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OFFICIAL GAZETTE

UNITED STATES PATENT OFFICE

VOL. 54

JAN. - MAR.

1891

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

VOLUME LIV.

JANUARY 6 TO MARCH 31, INCLUSIVE.

1891.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1891.

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ERRATA.

144,643, page 212, in title, name of assignee, for "Charles A. Sautmyer" read *Charles A. Santmyer.*

144,645, page 213, in heading, name of inventor, for "Philippe Frederick" read *Philippe Frederich.*

144,721, page 234, in title, strike out "assignor to the Peoria Metal Spinning Company, of Illinois."

144,772, page 251, second claim, line 2, for "outlet" read *inlet.*

144,844, page 282, in heading, title of invention, for "Metallic Box or Attachment, &c." read *Metallic Box or Attachment for Cultivators.*

144,882, page 301, in heading, names of inventors, for "Fradelshau Harris" read *Fradelshon Harris.*

145,274 and **145,275**, page 431, in title, name of assignee, for "Samuel D. Givin" read *Samuel D. Gwin.*

145,550, page 518, tenth claim, line 3, for "common" read *camera.*

145,749, page 589, ninth claim, line 2, strike out the hyphen between "bridge" and "arbor" and insert a comma instead.

145,785, page 599, in heading, after residence of inventor, insert *assignor to himself and Adolph W. Buckbinder.*

146,077, page 700, in heading, title of invention, for "Machines for Liquidizing Milk" read *Machines for Liquidizing Canned Milk.*

146,285, page 768, in heading, names of assignees, for "Alexander Curtus" read *Alexander Curtis.*

146,296, page 773, second claim, line 3, after "flat-bottomed" insert *socket constructed with a surrounding.*"

146,352 and **146,353**, page 789, strike out all after number, title, drawing, and claims, and insert CANCELED.

146,385, page 799, first claim, line 1, for "tubular" read *similar.*

146,457, page 839, in heading, name of assignees, for "Ossheimer Brothers" read *Ostheimer Brothers.*

146,485, page 847, in heading, title of invention, for "Steak Pounder" read *Beef-Steak Tenderer.*

146,617, page 883, in heading, name of assignee, for "Sidney S. Miles" read *Sidney S. Niles.*

146,634, page 889, in heading, name of inventor, for "William L. Heineken" read *William L'Heineken.*

146,868, page 973, strike out all after number, title, drawing, and claims, and insert WITHDRAWN.

147,393, page 1155, first claim, line 5, strike out "and a lifter below the chimney-supporting base."

147,569, page 1209, in heading, for "(Model)" read (*No model*).

148,357, page 1478, in heading, title of invention, for "Chaff Separators for Thrashers" read *Chaff Separators in Thrashers.*

148,393, page 1489, in heading, names of assignees, for "Frank Orris" read *Frank Orvis.*

148,600, page 1549, in heading, strike out "assignor of one-half to Daniel Culhane, same place," and title of invention, for "Process of Utilizing Galvanized Waste" read *Process of Utilizing Galvanizers' Waste.*

148,689, page 1587, claim 1, line 1, for "twist" read *wrist.*

148,999, page 1678, in heading, title of invention, for "Secondary Electric Clocks" read *Electric Clocks.*

149,094, page 1706, after residence of inventor, insert *assignor to the Steam Gauge and Lantern Company, same place, and the R. E. Dietz Company, New York, N. Y.*

149,616, page 1876, in heading, after residence of inventor, insert *assignors of three-fifths to Dwight McIntire, Leroy H. Smith, and George Livermore.*

149,625, page 1881, in heading, names of assignees, for "Lewis G. Peabody" read *Lewis S. Peabody.*

149,641, page 1886, in heading, names of assignees, for "Frank C. Wheeler" read *Frank E. Wheeler.*

20,564, Design, page 1117, strike out all after number and insert WITHDRAWN.

18,860, Trade-Mark, page 270, name of registrant, for "John Dzialyuski" read *John Dzialynski.*

18,865, Trade-Mark, page 270, strike out all after number and insert CANCELED.

Commissioner's Decisions, page 1265, second column, strike out line 3 from the bottom and insert the same after line 7.

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

JANUARY–MARCH, 1891.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 1. TUESDAY, JANUARY 6, 1891. PRICE---$5 per year.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Withdrawal of Cases from Issue.

(ORDER NO. 629.)

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

C. E. MITCHELL,
Commissioner.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Women Inventors.

The Patent Office has published and has for sale a volume, containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

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States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nevada	4	....
Arizona Territory	....	....	New Hampshire	21	1
Arkansas	1	....	New Jersey	1	....
California	15	1	New Mexico Terr'y	99	21
Colorado	8	....	New York	3	....
Connecticut	8	....	North Carolina	....	....
Delaware	....	....	North Dakota	30	2
District of Columbia	2	....	Ohio	1	....
Florida	....	....	Oregon	56	2
Georgia	1	1	Pennsylvania	1	....
Idaho	....	....	Rhode Island	1	....
Illinois	34	5	South Carolina	1	....
Indiana	12	....	South Dakota	1	2
Indian Territory	....	....	Tennessee	8	1
Iowa	12	1	Texas	1	....
Kansas	9	....	Utah Territory	1	....
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Nebraska	2	1			

TO CITIZENS OF FOREIGN COUNTRIES.

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Austria-Hungary	....	....	Mexico	....	....
Barbadoes	....	....	Netherlands	1	....
Belgium	2	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	New Zealand	....	....
Canada	4	....	Norway	....	....
Chili	....	....	Queensland	....	....
Colombia	....	....	Russia	....	....
Cuba	....	....	Scotland	....	....
Denmark	....	....	South Australia	....	....
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France	....	3	Switzerland	....	....
Germany	5	....	Victoria	....	....
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Italy	....	....			

DESIGNS.

20,439.—SUSPENDER-CLASP.—*Adolph Bernstein*, New York, N. Y. Application filed November 28, 1890. Serial No. 372,938. Term of patent 7 years.

20,440.—BADGE.—*William H. Brooks*, Philadelphia, Pa. Application filed December 1, 1890. Serial No. 373,229. Term of patent 14 years.

20,441.—HEAD-WEAR.—*Abraham Brahadi*, Montreal, Canada. Application filed July 31, 1890. Serial No. 360,593. Term of patent 3½ years. Registered in Canada July 29, 1889, No. 919.

20,442.—CALENDAR-STAND.—*Gilbert L. Crowell, Jr.*, Arlington, N. J., assignor to *Dominick & Haff*, New York, N. Y. Application filed November 21, 1890. Serial No. 372,256. Term of patent 3½ years.

20,443.—RADIATOR.—*Daniel Colestock*, Titusville, Pa. Application filed September 20, 1890. Serial No. 365,678. Term of patent 7 years.

20,444.—RADIATOR.—*Daniel Colestock*, Titusville, Pa. Application filed November 21, 1890. Serial No. 372,259. Term of patent 7 years.

20,445 and 20,446.—PANEL.—*Allan B. Cameron*, Williamsport, Pa. Application filed November 29, 1890. Serial Nos. 373,073 and 373,074. Term of patents 14 years.

20,447.—REIN-HOLDER.—*Edmond F. Daily*, Anderson, Ind. Application filed November 5, 1890. Serial No. 370,433. Term of patent 14 years.

20,448.—BAR OR STOCK OF WRENCHES.—*Robert C. Ellrich*, Southington, Conn. Application filed November 24, 1890. Serial No. 372,537. Term of patent 7 years.

20,449.—POLE FOR ELECTRIC WIRES.—*John R. Fletcher*, Dayton, Ohio. Application filed September 30, 1890. Serial No. 366,688. Term of patent 14 years.

20,450.—EWER OR JUG.—*David F. Haynes*, Baltimore, Md. Application filed November 28, 1890. Serial No. 372,980. Term of patent 3½ years.

20,451.—COVERED DISH.—*David F. Haynes*, Baltimore, Md. Application filed November 28, 1890. Serial No. 372,981. Term of patent 3½ years.

20,452.—SCHOOL-SEAT.—*Frank P. Jones*, Manitowoc, Wis. Application filed December 2, 1890. Serial No. 373,369. Term of patent 7 years.

20,453.—BADGE.—*Edwin W. Lawson*, Elgin, Ill. Application filed October 24, 1890. Serial No. 369,234. Term of patent 3½ years.

20,454.—CARPET.—*Thomas L. Lawton*, Philadelphia, Pa., assignor to *John Dunlap & Sons*, same place. Application filed November 25, 1890. Serial No. 372,642. Term of patent 3½ years.

20,455.—BADGE.—*Milton K. Light*, Worcester, Mass. Application filed November 24, 1890. Serial No. 372,538. Term of patent 7 years.

20,456.—ROLL-SPRING FOR COLLAR-PAD FASTENERS.—*Ernest F. Pflueger*, Akron, Ohio. Application filed November 29, 1890. Serial No. 373,071. Term of patent 7 years.

20,457.—WALL-PAPER.—*Christian P. Roos*, New York, N. Y., assignor to *The Robert Graves Company*, same place. Application filed November 25, 1890. Serial No. 372,641. Term of patent 3½ years.

20,458.—BEDSTEAD.—*Louis Zimskind*, New York, N. Y. Application filed November 4, 1890. Serial No. 370,348. Term of patent 14 years.

20,459.—STOVE SHELF AND SUPPORT.—*John F. Brayer and Edward J. King*, Rochester, N. Y., assignors to *The Co-Operative Foundry Company*, same place. Application filed June 25, 1890. Serial No. 356,780. Term of patent 7 years.

20,460.—WATCH-MAKER'S SIGN.—*Louis Solon Grout*, Chicago, Ill. Application filed November 10, 1890. Serial No. 370,960. Term of patent 7 years.

20,461.—GLOVE-FASTENER SOCKET.—*Edwin J. Kraetzer*, Gloversville, N. Y. Application filed September 10, 1890. Serial No. 364,590. Term of patent 14 years.

20,462.—CARPET.—*Thomas L. Lawton*, Philadelphia, Pa., assignor to *John Dunlap & Sons*, same place. Application filed October 8, 1890. Serial No. 367,461. Term of patent 3½ years.

20,463.—GLOVE-FASTENER CAP.—*Joseph R. Smith*, Waterbury, Conn. Application filed June 30, 1890. Serial No. 356,149. Term of patent 14 years.

20,464.—COOKING-STOVE.—*Henry Clay Bascom*, Lansingburg, N. Y. Application filed December 3, 1890. Serial No. 373,491. Term of patent 7 years.

20,465.—HEATING-STOVE.—*Henry Clay Bascom*, Lansingburg, N. Y. Application filed December 3, 1890. Serial No. 373,492. Term of patent 3½ years.

20,466.—HANDLE FOR SPOONS, &c.—*Charles Osborne*, New York, N. Y., assignor to *The Whiting Manufacturing Company*, same place. Application filed December 2, 1890. Serial No. 373,371. Term of patent 3½ years.

20,467.—HEATING-STOVE.—*George Henry Phillips*, Geneva, N. Y. Application filed December 13, 1890. Serial No. 374,629. Term of patent 7 years.

20,468.—COOKING-STOVE.—*George Henry Phillips*, Geneva, N. Y. Application filed December 13, 1890. Serial No. 374,630. Term of patent 7 years.

20,469.—BOTTLE.—*William T. Murphy*, New York, N. Y. Application filed December 13, 1890. Serial No. 374,631. Term of patent 3½ years.

20,470.—CARPET.—*Henry Schrader*, Brooklyn, N. Y. Application filed December 4, 1890. Serial No. 373,614. Term of patent 3½ years.

20,471.—RADIATOR.—*Thaddeus C. Joy*, Titusville, Pa., assignor to *T. C. Joy & Co.*, same place. Application filed December 8, 1890. Serial No. 373,964. Term of patent 7 years.

20,472.—BACK OF BRUSHES, &c.—*Austin F. Jackson*, Taunton, Mass., assignor to *The Reed & Barton Corporation*, same place. Application filed November 17, 1890. Serial No. 371,744. Term of patent 7 years.

20,743.—EMBROIDERY-PATTERN.—*Philip Kleeberg*, New York, N. Y. Application filed December 9, 1890. Serial No. 374,084. Term of patent 3½ years.

20,474.—RUG.—*Adolph Petzold*, Philadelphia, Pa., assignor to *John Bromley & Sons*. Application filed August 29, 1890. Serial No. 363,446. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

18,775.—MUSIC-BOXES.—*M. J. Paillard & Co.*, New York, N. Y. Application filed November 14, 1890. Used since April 15, 1874.

"The words 'SUBLIME HARMONIE.'"

18,776.—GLASS AND JET BUTTONS.—*Leo Prange*, Brooklyn, N. Y. Application filed November 15, 1890. Used since October 15, 1890.

"The word 'AGATINE.'"

18,777.—CARTRIDGES FOR FIRE-ARMS.—*The Creedmoor Cartridge Company*, New Portage, Ohio. Application filed October 23, 1890. Used since October 1, 1890.

"The word 'MANDAN.'"

18,778.—TOILET DEODORANT.—*Benjamin F. Carver*, New York, N. Y. Application filed October 21, 1890. Used since October 13, 1890.

"The word 'PERILLA.'"

18,779.—PRINTING AND WRITING PAPER.—*Clarke & Courts*, Galveston, Tex. Application filed October 28, 1890. Used since January, 1882.

"The representation of a flag having two stripes and a field containing a single star."

18,780.—LIQUID SHOE AND HARNESS BLACKING.—*Amédée Castaing*, New York, N. Y. Application filed October 28, 1890. Used since April 9, 1880.

"The letters 'B. D. B.' inclosed within a diamond-shaped figure."

18,781.—CANNED AND PRESERVED FOODS AND TABLE DELICACIES.—*Alexandre Eyquem*, Bordeaux, France, and New York, N. Y. Application filed May 6, 1890. Used since 1880.

"The letters 'A. E.' inclosed by a diamond-shaped figure."

18,782.—PREPARATION FOR SKIN DISEASES.—*Dock D. Harr*, Belmond, Iowa. Application filed November 7, 1890. Used since July 12, 1890.

"The word 'CUTIOLE.'"

18,783.—CANNED SALMON.—*Robert D. Hume*, San Francisco, Cal. Application filed November 24, 1890. Used since September 10, 1889.

"The words 'EMPIRE BRAND' and the pictorial representation of Queen Victoria."

18,784.—OINTMENT.—*Charles H. Harder*, Pittsfield, Ill. Application filed August 27, 1890. Used since June, 1890.

"The words 'BARBED WIRE,' the representation of a man in a sulky driving a trotting horse, and a section of barbed wire."

18,785.—REMEDY FOR HEADACHE AND NEURALGIA.—*Kohler Manufacturing Company*, Baltimore, Md. Application filed December 1, 1890. Used since January, 1890.

"The words 'DR. KOHLER'S ANTIDOTE.'"

18,786.—REMEDY FOR HEADACHE, NERVOUSNESS, AND INSOMNIA.—*Edwin T. Laidley*, Port Jervis, N. Y. Application filed December 1, 1890. Used since June 4, 1890.

"The words 'CURE-IT-QUICK.'"

18,787.—PLOWS AND CULTIVATORS.—*Mansur & Tebbetts Implement Company*, St. Louis, Mo. Application filed November 10, 1890. Used since January 1, 1887.

"The word 'KAISER.'"

18,788.—RUBBER GOODS.—*Chas. Macintosh & Company, Limited*, Manchester and London, England. Application filed March 13, 1890. Used since 1824.

"The representation of a cock and human hand surrounded by a band and ribbon."

18,789.—CANNED FISH, FRUITS, AND VEGETABLES.—*Oyster Cultivation and Canning Company*, Brunswick, Ga. Application filed December 6, 1890. Used since December 1, 1890.

"The word 'NEPTUNE.'"

18,790.—CHAMPAGNE.—*Eugène Perré & Co.*, Rheims, France. Application filed October 6, 1890. Used since January 1, 1886.

"The words 'EUGÈNE PERRÉ & CIE.' and the representation of a coat of arms, comprising a shield surmounted by a crown and having at one side a rampant animal somewhat resembling a dog and at its other side a dragon."

18,791.—REMEDY FOR COUGHS, COLDS, CONSTIPATION, AND DISEASES OF THE BLOOD.—*Prunine Medicine Company*, North Bend, Nebr. Application filed November 7, 1890. Used since July 1, 1890.

"The word 'PRUNINE.'"

18,792.—WOOD-WORKERS' TOOLS AND MACHINES.—*The Stanley Rule and Level Company*, New Britain, Conn., and New York, N. Y. Application filed November 7, 1890. Used since 1877.

"The word 'STANLEY.'"

18,793.—MINCE-MEAT.—*Woerner Preserving Company*, Syracuse, N. Y. Application filed November 14, 1890. Used since October 30, 1890.

"The word 'ROYAL.'"

18,794.—SHEET-IRON, TIN PLATES, AND TERNE-PLATES.—*The Melingriffith Company, Limited*, Melingriffith Works, near Cardiff, county of Glamorgan, England. Application filed November 21, 1890. Used since May, 1846.

"The letters 'R. G.'"

18,795.—TABLE CUTLERY.—*American Cutlery Company*, Chicago, Ill. Application filed October 27, 1890. Used since April, 1890.

"The representation of a keystone."

18,796.—SNUFF.—*August Beck & Company*, Chicago, Ill. Application filed November 13, 1890. Used since July 1, 1890.

"The words 'SWEDISH RAPPEE.'"

18,797.—MANUFACTURED TOBACCO.—*August Beck & Company*, Chicago, Ill. Application filed November 13, 1890. Used since July 1, 1890.

"A seal bearing a monogram composed of the letters 'B Co' and the character '&.'"

18,798.—REMEDY FOR CERTAIN NAMED DISEASES.—*Adolphus Bridgman*, New York, N. Y. Application filed November 28, 1890. Used since August 1, 1890.

"The word 'FEMALINE.'"

18,799.—PREPARED SOUPS.—*Chapman & Meehan*, New York, N. Y. Application filed November 24, 1890. Used since October, 1890.

"The representation of a soup-plate containing soup."

18,800.—FANCY CAKES.—*John W. Ettel*, New York, N. Y. Application filed November 24, 1890. Used since October 9, 1890.

"The words 'VIENNA WALNUT.'"

18,801.—PORTABLE GAME.—*Joseph S. Foster*, Salem, Mass. Application filed November 21, 1890. Used since November, 1890.

"The words 'SPITTING THE GOOSE.'"

18,802.—COPPER POLISH.—*John Grether*, Akron, Ohio. Application filed November 24, 1890. Used since September 15, 1890.

"The word 'BUCKEYE.'"

18,803.—ARTIFICIAL GRANITE FOR ORNAMENTAL AND BUILDING PURPOSES.—*Paul de Krystoffovitch*, Paris, France. Application filed February 20, 1890. Used since October 29, 1887.

"The word 'PYROGRANIT.'"

18,804.—GIN.—*Otto A. Krauss*, New York, N. Y. Application filed November 25, 1890. Used since July 6, 1887.

"The words 'VAN VLEET & Co.'"

18,805.—PRESERVATIVE FOR PAINT, WOOD, AND METAL.—*Linoide Manufacturing Company*, Boston, Mass., and Saco, Me. Application filed November 24, 1890. Used since April, 1888.

"The word 'LINOIDE.'"

18,806.—SILK PIECE-GOODS.—*Lion Silk Association*, New York, N. Y. Application filed October 22, 1890. Used since May 1, 1890.

"The representation of a lion."

18,807.—LEATHER BELTING.—*Main Belting Company*, Philadelphia, Pa., and Chicago, Ill. Application filed November 17, 1890. Used since September, 1890.

"The words 'OAK LEAF' and the representation of an oak-leaf."

18,808.—CHILDREN'S CLOTHING.—*W. W. Morgan & Co.*, Kansas City, Mo. Application filed November 25, 1890. Used since March 1, 1888.

"The words 'THE IRON CLAD.'"

18,809.—MONTHLY PUBLICATIONS.—*Noble & Haanel*, St. Louis, Mo. Application filed November 25, 1890. Used since May, 1887.

"The words 'HOME CIRCLE.'"

18,810.—ALUM.—*Orient Manufacturing Company*, Long Beach and New York, N. Y. Application filed December 1, 1890. Used since October 1, 1890.

"The representation of the sun rising above the horizon and the words 'RISING SUN.'"

18,811.—WHISKY AND BRANDY.—*Leopold Reuther*, New York, N. Y. Application filed November 19, 1890. Used since October 15, 1890.

"The words 'A QUIET SMILE.'"

18,812.—BUTTER.—*Reist, Nissly & Co.*, Mount Joy, Pa. Application filed November 21, 1890. Used since February, 1884.

"The letters 'E. D.'"

18,813.—WOVEN WOOL FABRICS.—*Tilton Mills*, Tilton, N. H. Application filed November 3, 1890. Used since July 1, 1890.

"An ornamental disk inclosing the representation of a deer."

18,814.—HOSIERY.—*Waukenhose Company*, Portland, Me., and Boston, Mass. Application filed November 15, 1890. Used since February, 1890.

"The word 'BLACKSURE.'"

18,815.—UNFERMENTED AND UNDISTILLED PRODUCTS OF GRAPES AND OTHER FRUITS.—*The Brook Lawn Farm Company*, Esopus and New York, N. Y. Application filed November 19, 1890. Used since October 28, 1890.

"The words 'FORBIDDEN FRUIT.'"

18,816.—SHEET-IRON, TIN PLATES, AND TERNE-PLATES.—*The Melingriffith Company, Limited*, Melingriffith Works, near Cardiff, county of Glamorgan, England. Application filed November 21, 1890. Used since May, 1846.

"The device popularly known as the 'Prince of Wales plumes.'"

18,817.—SHEET-IRON, TIN PLATES, AND TERNE PLATES.—*The Melingriffith Company, Limited*, Melingriffith Works, near Cardiff, county of Glamorgan, England. Application filed November 21, 1890. Used since May, 1847.

"The word 'PEN.'"

18,818.—SHEET-IRON, TIN PLATES, AND TERNE-PLATES.—*The Melingriffith Company, Limited*, Melingriffith Works, near Cardiff, county of Glamorgan, England. Application filed November 21, 1890. Used since October, 1888.

"The word 'ELYN.'"

18,819.—SHEET-IRON, TIN PLATES, AND TERNE-PLATES.—*The Melingriffith Company, Limited*, Melingriffith Works, near Cardiff, county of Glamorgan, England. Application filed November 21, 1890. Used since October, 1888.

"The word 'TYNANT.'"

18,820.—WASHING-BLUE.—*The Webb Manufacturing Company*, Nashville, Tenn. Application filed November 21, 1890. Used since January 1, 1884.

"The word 'SPURLOCK'S.'"

18,821.—REMEDY FOR DISEASES OF THE STOMACH AND CHILDRENS' DISEASES.—*The Webb Manufacturing Company*, Nashville, Tenn. Application filed November 21, 1890. Used since November 1, 1881.

"The word 'DUNCAN'S.'"

LABELS.

6,403.—Title: "MIXED ALE."—*Alfred M. Rickerby*, Brooklyn, N. Y. Application filed December 9, 1890.

6,404.—Title: "HALF AND HALF." (For alcoholic beverage.)—*Alfred M. Rickerby*, Brooklyn, N. Y. Application filed December 9, 1890.

6,405.—Title: "THE SODEN MINERAL PASTILLES."—*Soden Mineral Springs Company, Limited*, New York, N. Y. Application filed November 24, 1890.

6,406.—Title: "THE BARTHOLOMAY BAVARIAN." (For lager-beer.) *Bartholomay Brewery Company*, Rochester, N. Y. Application filed December 12, 1890. (Trade-Mark registered.)

6,407.—Title: "THE BARTHOLOMAY BOHEMIAN." (For lager-beer.) *Bartholomay Brewery Company*, Rochester, N. Y. Application filed December 12, 1890. (Trade-Mark registered.)

6,408.—Title: "THE BARTHOLOMAY STANDARD." (For lager-beer.) *Bartholomay Brewery Company*, Rochester, N. Y. Application filed December 12, 1890. (Trade-Mark registered.)

6,409.—Title: "FRUIT JULEP." (For medicine.)—*William D. Harnist*, Edwardsville, Ill. Application filed December 15, 1890.

PATENTS

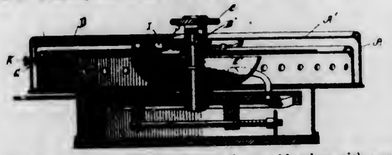
GRANTED JANUARY 6, 1891.

443,987. CLOTHES-LINE CONNECTING-PLATE. JAMES H. BREWER, Troy, N. Y., assignor of one-half to George H. Ensign, same place. Filed May 23, 1890. Serial No. 352,950. (No model.)



Claim.—The clothes-line connecting-plate A, made with the eye E at one end, thumb-plate T, and central opening O, the slot S, made with the beveled lip *l'* and connecting with said central opening O, and the pins N, arranged at each side of the said slot between the said lip and the opening O, substantially in the manner as and for the purposes set forth.

443,988. FARE-RECORDING REGISTER. JOHN DANK, Jr., Orange, N. J. Filed Sept. 30, 1887. Serial No. 251,091. (No model.)



Claim.—1. In a registering device, the combination, with a supporting-frame, a dial, an index-hand, and a rotating knob, of a disk adapted to be operated by said resetting-knob, loosely mounted on a post or projection, and provided with a morable or spring projection E', adapted to engage the said index-hand, substantially as and for the purpose set forth.

2. In a registering device, the combination, with a supporting-frame, a dial, an index-hand, and a knob or handle projecting through the outer face of the dial for advancing the index-hand, of a disk adapted to be operated by said knob or handle, said disk being provided with a movable spring projection for engagement with said index-hand, a stop depression or notch in said disk, and a movable bar or bridge for engaging said stop depression or notch, substantially as described, and for the purpose set forth.

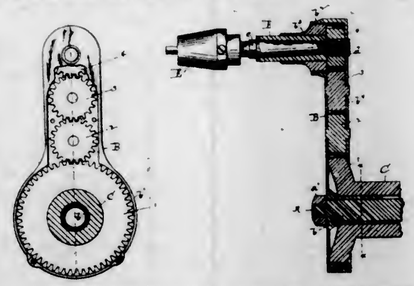
3. In a registering device, the combination, with the supporting-frame, the dial, the index-hand, and a resetting-knob, of a rotary ratchet-disk, a stop depression or notch in said disk for the purpose specified, a rod or bridge, a flange or projection on said rod or bridge for engaging said stop depression or notch, and a spring-actuated pawl secured on said bar or bridge for engaging the said ratchet-disk in its advance movement, substantially as described, and for the purpose set forth.

4. The combination, in a registering device, of a supporting-frame, a dial, an index-hand, and a resetting-knob, a disk adapted to be operated by said knob, provided with a stop projection and with a movable spring projection for engagement with said index-hand, and a rod or bridge for engagement with said stop projection to limit the movement of said disk, substantially as and for the purpose set forth.

5. In a registering device, the combination, with the supporting-frame, a dial, and an index-hand, of a resetting-knob, a disk attached to and operated by the said resetting-knob and provided with a spring-catch for engaging and carrying the said index-hand in one direction only, a stop depression or notch, and a bar or bridge provided with a movable spring projection, substantially as described, and for the purpose set forth.

6. The combination, in a recording-register provided with a dial and index-hand, of a rotary ratchet-disk provided with a resetting knob or handle and a spring-catch, substantially as described, a movable rod or bridge provided with a knob or handle and a spring for actuating the same, and a flange or projection for engagement with a notch in said rotary disk, substantially as described, and for the purpose set forth.

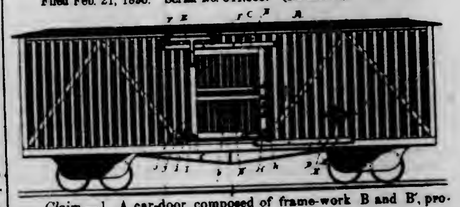
443,989. BIT-STOCK. WINFIELD S. DAVIS, Florence, Mass. Filed Feb. 15, 1889. Serial No. 300,062. (No model.)



Claim.—1. In a bit-stock, crank A, casing B, secured to one end of said crank, gears 1 2 3 4, mounted within said casing, sleeve C, loosely mounted upon said crank and being rigidly connected to said gear 1, and shaft D, mounted in bearing b^3 in said casing and having a rigid connection with said gear 4, combined and operating substantially as and for the purpose described.

2. In a bit-stock, the combination, with crank A, of casing B, secured to one end thereof, said casing having annular hub b^3 and removable cap-plate b^4, tool-carrying shaft D, having its bearing in said hub b^3, and a train of gears located within said casing and connecting a sleeve on said crank with said tool-carrying shaft, arranged and operating substantially as set forth.

443,990. CAR-DOOR. LOUIS DELLIERES and WILLIAM H. ROMICK, Kansas City, Kans.; said Romick assignor of one-half to said Delliéres. Filed Feb. 21, 1890. Serial No. 341,335. (No model.)



Claim.—1. A car-door composed of frame-work B and B', provided with a central slot, a horizontal roller G, operating in said slot, and a vertical roller G', mounted on shaft or bearing *g* and working against the lower part of frame-work B, thus holding the door in position, said bearing *g* being connected to the shaft of roller G, substantially as described.

2. A car-door composed of frame-work B and B', bearing-plates secured to one of the lower corners of the door, to which is secured a double-flange wheel, a T-shaped plate secured to the diagonally-opposite corner of the door, a plate E, secured to said T-shaped plate and having a portion *e* at right angles to its body, double-flange rollers

secured between said plates and working on tracks C and D, respectively, a spring-catch secured to the side of the car, and a notch *l* in the door, which is engaged by said spring-catch when the door is opened, substantially as described.

443,991. **DEVICE FOR EXHIBITION PURPOSES.** SIDNEY R. HALL, New York, N. Y. Filed Apr. 23, 1890. Serial No. 349,793. (No model.)

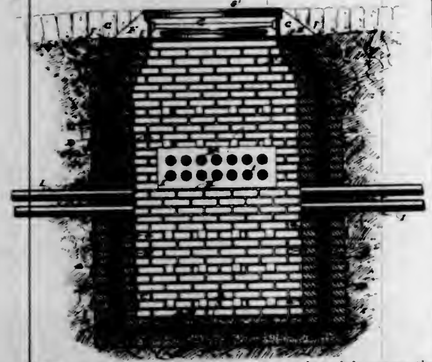


Claim.—1. The herein-described automatic whale, consisting of a wood or metal body covered with cork or some other suitable substance and furnished with devices, substantially as described, for propelling and guiding it.

2. The combination, in an automatic whale, of the body furnished with water-tanks, as described, and openings and valves for admitting water to the tanks, a pump connected with said tanks and with the nostrils of the whale, and devices for operating said pump, all substantially as and for the purposes set forth.

3. In an automatic whale, and in combination, the body, the lower jaw pivoted or hinged to the body, a lever secured to this lower jaw, and devices, substantially as described, for operating this lever and for opening and closing the lower jaw, all substantially as set forth.

443,992. **MAN-HOLE FOR UNDERGROUND ELECTRIC CONDUITS.** WILLIAM H. HART, Brooklyn, N. Y. Filed Mar. 22, 1890. Serial No. 344,911. (No model.)



Claim.—1. In a man-hole of an underground conduit system, the combination, with a base or floor of material impervious to gas and moisture, of the double walls C D, built upon said base and having the interposed filling B′ of composition impervious to gas and water beneath both walls.

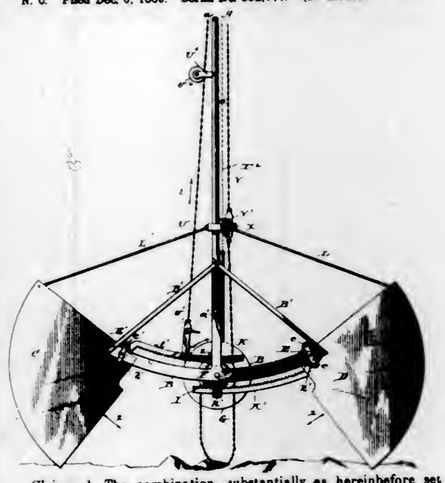
2. In a man-hole of an underground conduit system, the combination, substantially as set forth, of the base A, the layer of composition B, the double walls C D, both resting on the layer B, and the composition filling B′.

3. In the man-hole of an underground conduit system, the combination, substantially as set forth, of the double walls C D, having an opening through which the pipes or ducts enter, a filling B′ of composition between the double walls, and the body of composition B², poured around the ends of the ducts and uniting with the filling B′, as described.

4. In a man-hole of an underground conduit system, the combination of the conduit-walls of masonary, the cap or cover, the cover section or casting on which the cover rests, and a yielding gasket interposed between the cover-section and the walls of the man-hole to prevent jarring and loosening of the walls, substantially as described.

5. The combination, substantially as set forth, of the man-hole walls, a gasket of yielding material laid around its upper edge, a layer of composition, such as pitch or asphaltum, laid alongside of the gasket, and the cap or cover-section of the conduit laid upon the gasket, as described.

443,993. **HOISTING APPARATUS.** ROBERT P. HENRY, Waddells, N. C. Filed Dec. 6, 1889. Serial No. 332,777. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the buckets, supports for the inner ends of the buckets which move toward and from each other in the arc of a circle, pivotal connections between these supports and the buckets, and the supporting-rods L for the outer ends of the buckets, which are shorter than the radius of the arc through which the inner ends of the buckets traverse.

2. The combination, substantially as hereinbefore set forth, of the uprights, the horizontally-curved guide-rails on their lower ends, the buckets, their pivots supported on the guide-rails, and mechanism substantially such as described for spreading apart and closing the buckets.

3. The combination, substantially as hereinbefore set forth, of the uprights, the guide-rails on their lower ends, the buckets, their pivots supported on the guide-rails, the rack-bars connected with the buckets, a rotatable shaft operatively connected with the rack-bars, and means for rotating the shaft.

4. The combination, substantially as hereinbefore set forth, of the uprights, the guide-rails on their lower ends, the buckets, the guide-blocks to which the buckets are pivoted and which are supported on the guide-rails, the rack-bars connected with the buckets, the shaft journaled in the lower ends of the uprights, pinions thereon engaging with the rack-bars, and mechanism for rotating the shaft.

5. The combination, substantially as hereinbefore set forth, of the uprights, the guide-rails on the lower ends of the uprights, the buckets, the guide-blocks to which they are pivoted, the rack-bars pivotally connected with the guide-blocks, the guides through which the rack-bars extend, the cross-shaft at the lower end of the uprights, pinions thereon engaging with the rack-bars, and mechanism substantially such as described for rotating the shaft.

6. The combination, substantially as hereinbefore set forth, of the uprights, the buckets, the pivots for the buckets at the lower ends of the uprights, mechanism substantially such as described for shifting laterally the pivots of the buckets, the vertically-moving cross-head, a chain or cable connected with the pivot-shifting mechanism to draw the buckets together, a chain or cable connected with the bucket-shifting mechanism to spread the buckets apart, and a lifting-block on said chain to raise the cross-head.

7. The combination, substantially as hereinbefore set forth, of the uprights, the buckets pivoted at the lower ends of the uprights, the shaft, connections between the pivots of the buckets and the shaft for spreading them and bringing them together, a bucket-closing chain connected with the shaft, a bucket-opening chain also connected with the shaft, a vertically-moving cross-head, rods connecting the cross-head with the rear ends of the buckets, and a lifting-block on the bucket-opening chain adapted to engage with the cross-head.

8. The combination, substantially as hereinbefore set forth, of the uprights, the buckets, the guide-rails, the guide-blocks thereon to which the buckets are pivotally connected, the cross-shaft at the lower ends of the uprights, pinions thereon, the rack-bars connected with the guide-blocks and engaging with the pinions, the vertically-moving cross-head, connections between the cross-head and the rear ends of the buckets, bolts rigidly connecting the cross-head with the uprights when the cross-head is in one position, and bolt-tripping mechanism automatically operated to unlock the bolts when the buckets are closed.

9. The combination, substantially as hereinbefore set forth, of the uprights, the guide-rails at the lower ends of the uprights, the guide-blocks thereon, the buckets pivotally connected with the guide-blocks, the rack-bars, a cross-shaft, pinions thereon engaging with the rack-bars, the vertically-moving cross-head, connections between the cross-head and the rear ends of the buckets, bolts for securing the cross-head to the uprights when the cross-head is at its lowermost position, bolt-shifting devices substantially such as described, a lifting block and chain for raising the cross-head, a tripping-block for disconnecting the lifting-block from the cross-head, and a chain on which the tripping-block is carried.

10. The combination, substantially as hereinbefore set forth, of the uprights, the guide-rails at the lower ends of the uprights, the buckets, their pivots supported on the guide-rails, the cross-shaft, pinions thereon, the rack-bars engaging with the pinions and connected with the buckets, the vertically-moving cross-head, connections between the cross-head and the rear ends of the buckets, the lifting-block, a pulley on the shaft to which the lifting-block is connected, the backing-chain also connected with the shaft, a lifting-block secured to the backing-chain and having a latch engaging with the cross-head, a pivoted lever normally holding the latch in engagement with the cross-head, a tripping-block on the hoisting-chain, and a tripping-finger thereon adapted to engage with the lever and the lifting-block to shift it and permit the withdrawal of the latch from the cross-head.

11. The combination, substantially as hereinbefore set forth, of the uprights, the guide-rails thereon, the buckets, their pivots supported on the guide-rails, the rack-bars, mechanism for operating the rack-bars to close and spread the buckets, and the scrapers for cleaning the rack-bars and the guide-rails.

12. The combination, substantially as hereinbefore set forth, of the uprights, the buckets pivoted at the lower ends of the uprights, the vertically-moving cross-head, connections between the cross-head and the rear ends of the buckets, the bolts engaging with the uprights, a bolt-shifting lever, a spring with which it is connected, a block normally holding the spring out of engagement with the bolt-shifting lever, a spring-actuated rod to which this block is connected, a bell-crank lever operatively connected with this rod, and a tripping-rod connected with the bell-crank lever, for the purpose specified.

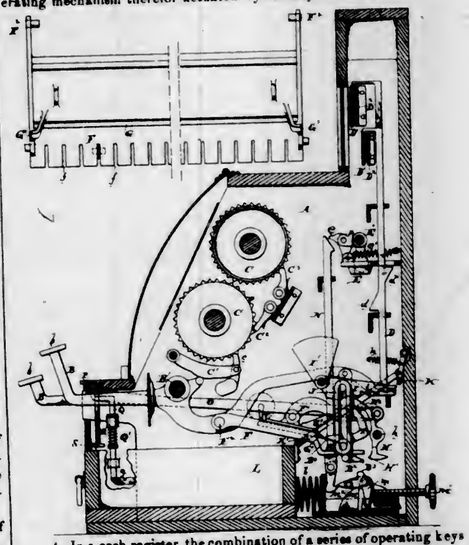
13. The combination, substantially as hereinbefore set forth, of the uprights, the pivoted buckets, the cross-head, the bolts for locking the cross-head to the uprights, a cord or chain for unlocking the bolts, and connections between the cross-head and the buckets for opening and closing them.

443,994. **CASH-REGISTER.** HOMER A. HERR, Philadelphia, Pa. Filed May 5, 1890. Serial No. 350,587. (No model.)

Claim.—1. In a cash-register, the combination of a series of operating keys or levers, a pivoted frame adapted to be operated by any of the said levers or keys, a pivoted locking-frame adapted to lock all of the levers against movement except those struck, supported independently of the said frame, cams upon the various levers or keys for oscillating the said locking-frame upon being struck, a locking-piece adapted to lock the levers or keys struck, so that a further movement of either of the levers struck will cause all of the levers originally struck to move together, the said locking-piece being carried by the first-mentioned frame, and a connection between the locking-piece and locking-frame, whereby both are simultaneously moved by the action of the key or lever struck.

2. In a cash-register, the combination of a series of keys or levers having portions at their inner ends provided with projections, a locking mechanism located under the rear ends of the levers or keys to lock two or more of said levers or keys together to insure a positive movement of two or more of such levers when simultaneously struck, consisting of a sliding locking-piece adapted to be forced under the projections of the key struck, and means to raise said locking-piece simultaneously with the raising of the inner ends of the keys or levers, whereby each of the keys or levers is required to perform its full function, independent locking mechanism operated by the levers or keys struck to lock the keys or levers not struck against movement, and a connection between the two locking mechanisms, whereby both operate simultaneously.

3. In a cash-register, the combination of a series of keys or levers having portions at their inner ends provided with projections, a locking mechanism to lock two or more of said levers or keys together to insure a positive movement of two or more of such levers when simultaneously struck, consisting of a sliding locking-piece adapted to be forced under the projections of the key or lever struck, a pivoted frame upon which the sliding locking-piece is supported, operated by the keys or levers struck, and connections, substantially as set out, for operating the sliding locking-piece by the upward movement of the levers or keys struck, whereby each of the keys or levers struck is required to perform its full function, and registering devices and operating mechanism therefor actuated by the keys or levers.



4. In a cash register, the combination of a series of operating keys or levers having projections at their inner ends, registering mechanism operated by the keys or levers, an oscillating locking-frame operated by the movement of any of the levers and adapted to be projected above the projections of all of the levers or keys except those struck, a locking-piece operated by the movement of the levers to be forced under the projections, and a lock to couple two or more of the levers which are struck together and force them both to move simultaneously.

5. In a cash-register, the combination of a series of operating keys or levers having projections at their inner ends, registering mechanism operated by the keys or levers, an oscillating locking-frame operated by the movement of any of the levers and adapted to be projected above projections of all the levers except those struck, a locking-piece operated by the movement of any of the levers to be forced under projections of the levers struck to lock or couple two or more of the levers which are struck together and force them both to move simultaneously, a frame carrying the locking-piece connected to and moving with the levers struck, and a connection between the oscillating frame and said locking-piece, whereby the said locking-frame and locking-piece simultaneously move the locking-frame to lock the levers not struck and the locking-piece to lock the levers which have been struck.

6. In a cash-register, the combination of a series of operating keys or levers having projections at their inner ends, registering mechanism operated by the keys or levers, an oscillating locking-frame operated by the movement of any of the levers and adapted to be projected above projections of all the levers except those struck, a locking-piece operated by the movement of any of the levers struck and adapted to be projected under projections of said levers to lock or couple two or more of the levers which are struck together and force them to move simultaneously, a frame carrying the locking-piece connected and moving with the levers struck, a connection between the oscillating frame and said locking-piece, whereby the said locking-frame and locking-piece simultaneously move the locking-frame to lock the levers not struck and the locking-piece to lock the levers which have been struck, a pivoted ratchet-lever adapted to lock the locking-frame against a return movement until the keys or levers struck have been fully moved, and mechanism, substantially as set out, for causing said ratchet-lever to be thrust into or out of contact with said locking-frame at the beginning and ending of the movement of the levers struck.

7. In a cash-register, the combination of a series of keys or levers, having a hanging arm or projection at their inner end, an oscillating locking-frame operated by the movement of any of the levers and

adapted to be projected above the projections of all the levers except the ones struck, and provided with a pawl projection, and a pivoted locking ratchet-lever having notches in which the pawl catches for locking said oscillating frame from a return movement until it has moved the full limit of play given it by the operating-key, and movable parts operated by the lever struck to oscillate the ratchet-lever.

8. In a cash-register, the combination of a series of keys or levers, a frame common to all of the keys or levers and operated by one of them, an oscillating locking-frame to lock the levers not struck against movement, an automatic lock for said oscillating locking-frame, whereby on the operation of any key or lever said automatic lock holds the locking-frame from releasing the levers or keys from a return movement until after it has completed the full limit of its play, and a connection between the frame common to all of the keys and levers and the said automatic lock for the locking-frame.

9. In a cash-register, the combination of a registering mechanism, a series of operating levers or keys for operating said registering mechanism and provided with depending arms, a frame common to all of said arms and adapted to be moved by the operation of one or more of said levers, a pivoted locking-frame operated by a cam projection upon said arms and adapted to lock all of said arms against vertical movement except those of the levers struck, a locking-piece carried by the first-mentioned frame and adapted to lock two or more of the arms together when slightly raised, and a connection between the pivoted locking-frame and the locking-piece, whereby both are simultaneously operated.

10. In a cash-register, the combination of a registering mechanism, a series of operating keys or levers for operating said registering mechanism and provided with depending arms, a frame common to all of said arms and adapted to be moved by the operation of one or more of said levers, a pivoted locking-frame operated by a cam projection upon said arms and adapted to lock all of said arms against vertical movement except those of the levers struck, a locking-piece carried by the first-mentioned frame and adapted to lock two or more of the arms together when slightly raised, a connection between the pivoted locking-frame and the locking-piece, whereby both are simultaneously operated, a lock to prevent backward movement of the pivoted locking-frame except when moved to its full extent, and a mechanical connection between the said locking device and the movable frame first mentioned, whereby the said locking device is thrown into action when the frame is down and out of action when the frame is raised.

11. In a cash-register, the combination of registering mechanism, a series of operating keys or levers therefor, a movable frame common to all of said keys or levers and adapted to be moved by the operation of any one or more of said keys or levers, and a lock to lock said frame against movement when it is desired to prevent the action of the machine.

12. In a cash-register, the combination of indicating mechanism, a series of operating keys or levers for operating said indicating mechanism, a movable frame common to all of the keys or levers and movable with each of said keys or levers, and a lock to lock said frame against movement, and thereby prevent the operation of the indicating mechanism.

13. In a cash-register, the combination of registering devices, operating parts for operating said registering mechanism and a signal-bell, a frame common to all of the operating parts for actuating said bell, an inclosing case, and a movable piece extending through the casing of the register, whereby said bell-trip may be thrown out of action when desired without impairing the operative function of the machine.

14. In a cash-register indicating mechanism, a series of rods therefor with a locking projection or shoulder, a series of operating parts or keys, one for each of said rods, a movable lock to lock the rods against movement, and thereby the keys also, except those whose keys or operating parts are struck, and mechanism, substantially as set out, for actuating said movable lock.

15. In a cash-register, the combination of indicating mechanism, a series of rods therefor having two sets of locking projections or shoulders, a series of operating parts or keys, one for each of said rods, a movable lock to lock the rods against movement except those whose keys or operating parts are struck, and a mechanical connection between said lock and various keys or operating parts, whereby the movement of any key is caused to operate said lock.

16. In a cash-register, the combination of indicating mechanism, a series of rods therefor having two sets of locking projections or shoulders, a series of operating parts or keys, one for each of said rods, a movable lock to lock the rods against movement except those whose keys or operating parts are struck, a frame common to all of the keys or operating parts and adapted to be moved by any one or more of said keys or parts, and a connection between said moving frame and the lock, whereby the operation of any key or part is caused to actuate the lock.

17. In a cash-register, the combination of indicating mechanism, a series of rods therefor having two sets of locking projections or shoulders, a series of operating parts or keys, one for each of said rods, a movable lock to lock the rods against movement except those whose keys or operating parts are struck, a frame common to all of the keys or operating parts and adapted to be moved by any one or more of said keys or parts, and a trip-connection between said moving frame and the lock, whereby the operation of any key or part is caused to actuate the lock when being depressed, but without effect upon the lock when rising.

18. In a cash-register, the combination of registering devices, a series of operating keys or parts therefor, a cash-drawer, a locking-bolt for said cash-drawer, a movable part to lock said bolt against movement, and connecting mechanism between the keys or operating parts and said movable locking part, whereby the operation of any key actuates the moving part for the purpose of permitting the movement of the locking-bolt.

19. In a cash-register, the combination of registering devices, a series of operating keys or parts therefor, a cash-drawer, a locking-bolt for said cash-drawer, a movable part to lock said bolt against movement, and connecting mechanism between the keys or operating parts and said movable locking part, whereby the operation of any key actuates the moving part for the purpose of permitting the movement of the locking-bolt, and mechanical devices, substantially as set out, actuated by the cash-drawer when closed, for resetting the locking part to relock the bolt against movement.

20. In a cash-register, the combination of registering mechanism, a series of keys or levers for actuating said registering mechanism, a movable frame actuated by either or all of said levers or keys, a cash-drawer, a locking-bolt to lock said cash-drawer, and a releasing mechanism for releasing the bolt to permit its operation actuated by said movable frame.

21. In a cash-register, the combination of registering mechanism, a series of keys or levers for actuating said registering mechanism, a movable frame actuated by either or all of said levers or keys, a cash-drawer, a locking-bolt to lock said cash-drawer, a releasing mechanism for releasing the bolt to permit its operation, actuated by said movable frame, consisting of a movable plate having an aperture adapted to be drawn over the locking-bolt, and a connection between said plate and the movable frame.

22. In a cash-register, the combination of registering mechanism, a series of keys or levers for actuating said registering mechanism, a movable frame actuated by either or all of said levers or keys, a cash-drawer, a locking-bolt to lock said cash-drawer, a releasing mechanism for releasing the bolt to permit its operation, actuated by said movable frame, consisting of a movable plate having an aperture adapted to be drawn over the locking-bolt, a connection between said plate and movable frame, and a giving connection between said movable plate and the cash-drawer, whereby said plate may be automatically reset to lock the locking-bolt when the draw is closed.

23. In a cash-register, a series of keys, a frame common to all of said keys and moved by the operation of any one of them, a drawer for holding the money, a movable part or plate above said drawer, which plate is operated by said frame, and a part adapted to be touched by the hand, covered or concealed by said plate, so that on operating any key said plate is moved by mechanism connected with said frame exposing said part, the touching of which opens the money-drawer.

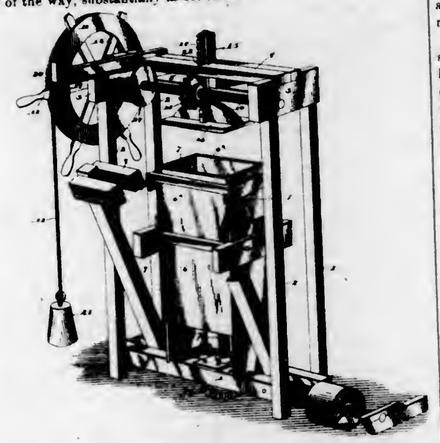
24. In a cash-register, a series of keys, combined with a movable plate, a money-drawer, and a part adapted to be operated by the hand, concealed by said plate, so that on operating any key said plate shifts its position, allowing the finger free access to said movable part to open the drawer.

25. The combination, in a cash-register, of a series of keys or levers, a drawer, a drawer-holder, a supplemental drawer-releasing key or part for releasing the drawer by the operation of the hand, connecting mechanism between the various keys or levers of the machine, and a supplemental drawer-releasing part, whereby upon the operation of any key or lever the said drawer-releasing part is unlocked or released, whereby it may be operated by the hand to release the drawer.

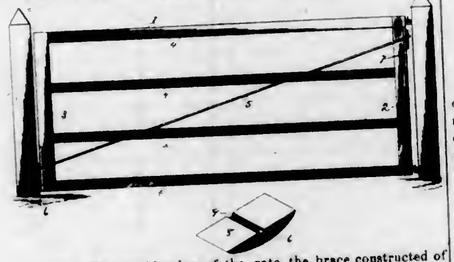
26. The combination, in a cash-register, of a series of keys or levers for registering amounts of cash paid in, a drawer, a supplemental drawer-releasing key or part adapted to be operated by the hand to release the drawer, a lock to hold the supplemental drawer-releasing key or part against movement and adapted to automatically lock the supplemental key or part against movement upon closing the drawer and when the registering keys or levers are in their normal positions, and connecting mechanism between the various registering keys or levers and the lock for the supplemental drawer releasing key or part, whereby upon operating any registering key or lever the said supplemental drawer-releasing key or part may be released for operation by the hand.

443,995. ATTACHMENT FOR COTTON-PRESSES. JOHN J. HEBER, Arcadia, La. Filed Apr. 30, 1890. Serial No. 350,063. (No model.)

Claim.—The combination, with the herein-described baling-press, comprising the press-box, the vertically-movable follower, the swinging frame mounted in the sill and carrying the top of the press-box, and mechanism for operating the follower, of the packing device or attachment arranged above the press-box and comprising a follower moving in line with the press-follower, and mechanism whereby a vertically-reciprocating motion may be imparted to said packing-follower when the swinging frame carrying the top of the press-box is out of the way, substantially as set forth.

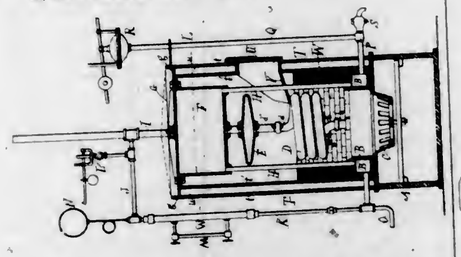


443,996. BRACE FOR GATES. SAMUEL P. HODGEN, Pittsfield, Ill. Filed July 16, 1890. Serial No. 358,887. (No model.)



Claim.—The combination of the gate, the brace constructed of wire and encircling the gate diagonally, and the semi-oval wedge provided with a groove or indentation to receive the brace and adapted to be driven downward, substantially as described.

443,997. BOILER. THOMAS A. KIDD, Rahway, N. J. Filed Dec. 16, 1889. Serial No. 334,006. (Model.)



Claim.—1. In a steam-heater, a coil connecting a water-reservoir surrounding the fire-pot with a steam-dome, and a secondary heater between the steam-dome and the coil, connected directly with the coil, so that the circulation from the water-reservoir to the steam-dome must pass through the coil and the secondary heater, as described.

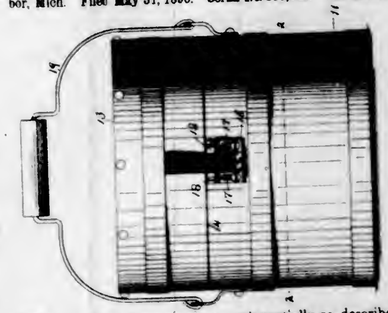
2. In a steam-heater, the combination of a water-reservoir surrounding the fire-pot, a coil ascending from the water-reservoir, a secondary heater between the steam-dome and the coil, connected directly with the coil, and a pipe connecting the secondary heater with the steam-dome, the whole arranged so that the circulation between the reservoir and the dome passes through the coil and the secondary heater, as described.

3. In a steam-heater, the combination of a water-reservoir surrounding the fire-pot, a coil ascending from the reservoir, a secondary heater directly connected with the coil and also with a steam-dome, and return circulation-pipes connecting the steam-dome with the water-reservoir, as described.

4. In a steam-heater, the combination of a lower water-reservoir surrounding the fire-pot, a coil rising from the reservoir, a secondary heater connected directly with the coil and placed vertically above the grate, so as to be exposed to the full effect of the flames, a pipe connecting the secondary heater with an upper steam-dome, and return circulation-pipes connecting the steam-dome with the water-reservoir, as described.

5. In a steam-boiler, the combination of an outer jacket formed with double walls, and a flanged top having perforations placed to come over the space between the walls of the jacket, whereby the said space may be filled with non-conducting material, as described.

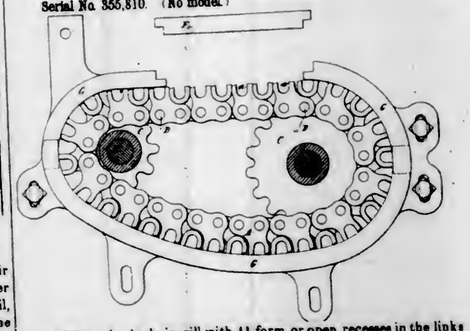
443,998. BUTTER-PACKAGE. REMUS A. KNEELAND, Benton Harbor, Mich. Filed May 31, 1890. Serial No. 353,745. (No model.)



Claim.—1. In a butter-package, substantially as described, the combination of a glass jar, a casing for it formed of paper having comminuted cork glued thereon, a pail designed to receive the jar and casing having metal catches on its sides, packing secured on the upper part of the pail, and a cover formed to close upon such packing and having spring-clasps designed to engage with said catches, as and for the purpose specified.

2. In a butter-package, the combination of a pail with a recess formed about its upper edge, a glass jar deeper than the pail, a cover with a recess formed on its lower edge corresponding to the said recess on the pail, packing in one or both recesses, catches having vertical slots secured on opposite sides of the pail, and clasps secured on the cover to engage with said catches, substantially as and for the purposes specified.

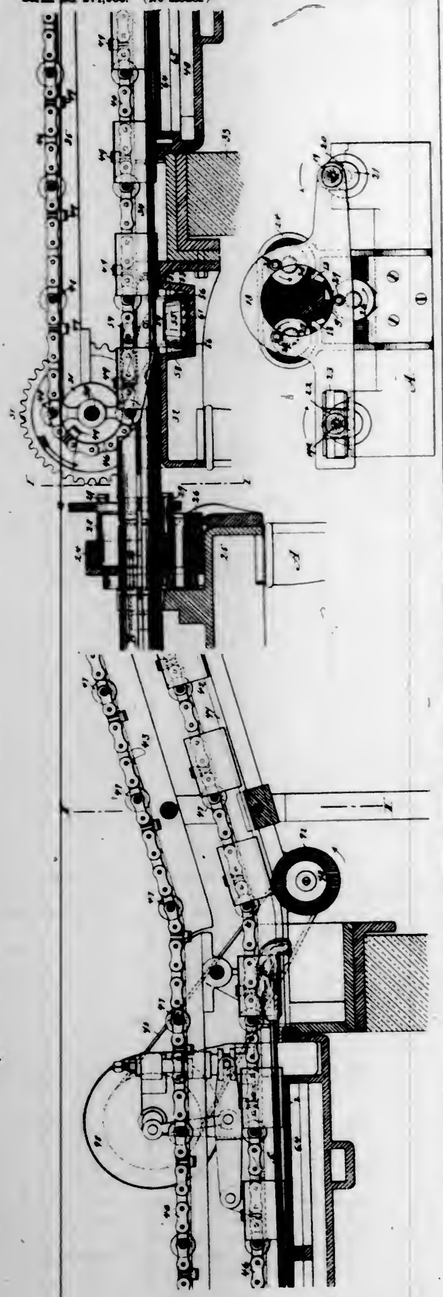
443,999. MACHINE FOR PREPARING FLAX, HEMP, JUTE, WOOL, AND OTHER FIBERS. ARTHUR T. LAWSON, FREDERICK W. LAWSON, and SOMERVILLE DEAR, Leeds, England. Filed June 17, 1890. Serial No. 355,810. (No model.)



Claim.—1. A chain gill with U-form or open recesses in the links in which the necks of the gill-bars are held and are able to turn.

2. A chain gill with U-form or open recesses in the links in which the necks of the gill-bars are held and with stationary guides retaining the gill-bars in place, substantially as described.

444,000. **CAN-BODY-FORMING AND SIDE-SEAM-SOLDERING MACHINE.** FRANK M. LEAVITT, Brooklyn, N. Y., assignor to Edwin Norton and Oliver W. Norton, both of Chicago, Ill. Filed Apr. 26, 1888. Serial No. 271,968. (No model.)



Claim.—1. A soldering-iron formed with a grooved upper face and with apertures leading from said groove.

2. A soldering-iron consisting, essentially, of an inverted-V-shaped iron formed with a groove in its apex and with a number of apertures leading from said groove.

3. A soldering-iron made up of a series of abutting sections, each formed with a grooved upper face and with apertures leading from its groove, as and for the purpose stated.

4. A soldering-iron made up of a series of inverted-V-shaped abutting sections, each formed with a grooved apex and with apertures leading from the groove, as and for the purpose stated.

5. The combination, with a solder-tank, of a soldering-iron, formed with a grooved upper face and with apertures leading therefrom, the said upper face being slightly below the general solder-level.

6. The combination, with a solder-tank, of a soldering-iron formed with a grooved upper face and with apertures leading from the groove, and a means, substantially as described, for regulating the flow of solder to the iron, as and for the purpose stated.

7. The combination, with a solder-tank formed with a side trough, a partitioned central trough, and an overflow-receptacle, of a soldering-iron formed with a grooved upper face and with apertures extending through the iron from said groove, the soldering-iron being mounted upon the partition of the central trough, the lower portion of said partitioned central trough communicating with said side trough, substantially as described.

8. The combination, with a solder-tank formed with a side trough, a partitioned central trough, and an overflow-receptacle, of a soldering-iron mounted upon the partition of the central trough and formed with a grooved upper face and with apertures leading from said groove and through the iron, and a pump mounted in connection with the overflow-receptacle and arranged to discharge into the side tank, the lower portion of said partitioned central trough communicating with said side trough, substantially as described.

9. The combination, with a solder-tank formed with a side trough, a partitioned trough communicating with the side trough, and an overflow-receptacle, of a soldering-iron having apertures through it mounted on the partition of the partitioned trough, and a pump mounted in connection with the overflow-receptacle and arranged to deliver solder therefrom to the side trough, the lower portion of said partitioned central trough communicating with said side trough, substantially as described.

10. The combination, with a solder-tank formed with communicating side troughs, a partitioned central trough communicating with the side troughs, and an overflow-receptacle arranged to receive the discharge from above the partition of the central trough, of a soldering-iron having apertures through it mounted above an opening or slot formed in the central trough-partition, and a pump mounted in connection with the overflow-receptacle and arranged to discharge into one of the side troughs, the lower portion of said partitioned central trough communicating with said side trough, substantially as described.

11. The combination, with a solder-tank formed with communicating side troughs, a partitioned central trough communicating with the side troughs, and an overflow-receptacle arranged to receive the discharge from above the partition of the central trough, of a soldering-iron having apertures through it mounted above an opening or slot formed in the central trough-partition, a pump mounted in connection with the overflow-receptacle and arranged to discharge into one of the side troughs, and a means, substantially as described, for regulating the flow of solder from the side troughs to the lower portion of the central trough, the lower portion of said partitioned central trough communicating with said side trough, as and for the purpose stated

12. The combination, with a solder-tank formed with a side or supply trough, a partitioned central trough, an overflow-receptacle, and a pocket, of a valve mounted in connection with an aperture formed in one of the pocket-walls, a soldering-iron having apertures through it mounted above a slot or opening formed in the central trough-partition, and a pump arranged to deliver solder from the overflow-receptacle to the side or supply trough, said pocket communicating with said side trough and with the lower portion of said central trough, substantially as described.

13. In a can-soldering machine, the combination, with an acid-tank, of a wick-tube and a means, substantially as described, for raising said tube, as and for the purpose stated.

14. In a can-soldering machine, the combination, with an acid-tank, of a wick-tube, a frame upon which said tube is mounted, levers to which said frame is connected, incline-faced bars connected to the levers, endless carrier-chains, rollers or wheels carried by the chains, and tracks upon which the wheels or rollers ride, the incline-faced bars being mounted in the paths of the wheel or roller treads, substantially as described.

15. In a can-soldering machine, the combination, with a horn, of a frame, rollers studded to the frame, a yoke, studs carried by the yoke and engaging the rollers, and a means, substantially as described, for imparting a rotary motion to the yoke, as and for the purpose stated.

16. In a can-soldering machine, the combination, with a horn, of a frame through which the horn passes, rollers studded to the frame, the peripheral faces of the upper rollers being partially cut away, a yoke, studs carried by the yoke and engaging the rollers, and a means, substantially as described, for imparting a rotary motion to the yoke, as and for the purpose stated.

17. In a can-soldering machine, the combination, with a horn, of a frame mounted about the horn, rollers studded to the frame, the peripheral faces of the upper rollers being partially cut away, a yoke, studs carried thereby and engaging the rollers, revoluble shafts provided with crank-arms, a connection between one of the crank-arms and the yoke, and a connection between the other crank-arm and a box mounted to slide in a slot formed in the yoke, substantially as described.

18. In a can-soldering machine, the combination, with a horn formed with sections of different diameters and with a groove in the under side of the larger section, of a stop-block connected to the under side of the smaller section, a fixed frame through which the horn passes, rollers studded to the frame, the peripheral faces of the upper rollers being partially cut away, a yoke, studs carried by the yoke and engaging the rollers, and a means, substantially as described, for imparting a rotary motion to the yoke, as and for the purpose stated.

19. In a can-soldering machine, the combination, with an acid-tank, of a wick-carrying tube mounted therein, a can-advancing mechanism, substantially as described, and a means, substantially as described, for throwing the wick against the can-body seam as the forward edge of the can-body comes in register with the forward edge of the wick.

20. In a can-soldering machine, the combination, with a horn, of a rod connected thereto, a wiper connected to the end of the rod, a solder-tank over which the rod extends, and a means, substantially as described, for advancing the can-bodies, as and for the purpose stated.

21. In a can-soldering-machine, the combination, with a track or way, of endless chains, cross-bars extending from chain to chain, and saddles carried by the chains in advance of the cross-bars, substantially as described.

22. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of a side-seam-soldering device and mechanism for delivering the can-body to the soldering device from the horn with its seam turned down, so that the soldering may be done from below, substantially as specified.

23. The combination, with a can-body-former horn, of a side-seam solderer and means for moving the can-body along from the horn over the solderer, substantially as specified.

24. The combination, with a can-body-former horn, of a side-seam-soldering device, mechanism for giving the can-body a partial revolution, so that it will be delivered to the solderer with its seam turned down, and means for moving the can-body along from the horn over the soldering device, substantially as specified.

25. The combination, with a can-body-former horn, of a side-seam solderer and an inside wiper secured to the horn and means for moving the can-body along from the horn over the solderer, substantially as specified.

26. The combination, with a can-body-former horn having a longitudinal groove on its under side at the end section thereof for the side seam, of a side-seam solderer into which the can-bodies are delivered directly from the horn with their seams turned down, so that they will be soldered from below, and means for moving the can-body along from the horn over the solderer, substantially as specified.

27. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of a side-seam solder bath and can-forwarding mechanism for conveying the cans from the horn through and over the solder bath, substantially as specified.

28. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of a side-seam solder bath and can-forwarding mechanism for conveying the cans from the horn through and over the solder bath, and an inside wiper secured to the horn, substantially as specified.

29. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of a side-seam solder bath, a device for turning the can-bodies a partial revolution, and can-forwarding mechanism for conveying the cans from the horn through and over the solder bath, substantially as specified.

30. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of mechanism for advancing the can-body along the same, a side-seam solderer, and a can-carrier device for conveying the cans through and over the solderer, said side-seam solderer being beneath the path of the can-carrier, substantially as specified.

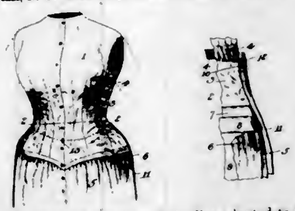
31. The combination, with the can-body-forming machine having a horn around which the can-body is formed and means for advancing the can-body along the horn, of a side-seam-soldering machine having a solder bath or device for soldering the seam from below, and means for moving the can-body along over said soldering bath or device, substantially as specified.

32. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of mechanism for advancing the can-body along the same, a device for turning the can-bodies, a side-seam solder bath, and a can-carrier for conveying the cans over the solder bath, substantially as specified.

33. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of can-forwarding mechanism and a heated soldering-iron beneath the path of the can-conveyer mechanism, over which the cans are carried by the conveyer mechanism from the horn, substantially as specified

34. In a combined can-body-forming and side-seam-soldering machine, the combination, with a can-body-former horn, of can-forwarding mechanism and a heated soldering-iron over which the cans are carried by the conveyer mechanism from the horn, said heater-iron having holes or perforations through which molten solder is delivered to the seam from below, substantially as specified.

444,001. **COMBINED WAIST AND SKIRT.** ELIZABETH LEE, Little Falls, N. Y. Filed May 7, 1890. Serial No. 350,938. (No model.)



Claim.—1. The combination of a bodice adapted to fit snugly to the form, a supporting-band secured thereon at a distance below the waist-line about equal to the distance from the natural waist-line to the upper line of the hips, fastening devices secured to said band to support a petticoat, and a skirt gathered and fulled at the top and also secured to said band, substantially as described.

2. The combination of a bodice adapted to fit snugly to the form, a supporting-band secured thereon at a distance below the waist-line about equal to the distance from the natural waist-line to the upper line of the hips, fastening devices secured to said band to support a petticoat, a skirt fulled and gathered at the top and also secured to said band, and supporting devices for other skirts attached to the outside of the bodice at a little below the waist-line, substantially as described.

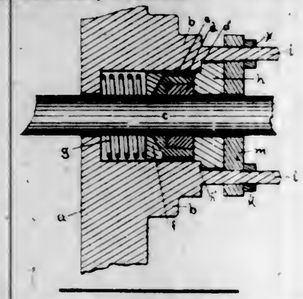
3. The combination of a bodice adapted to fit snugly to the form, a supporting-band secured thereon at a distance below the waist-line about equal to the distance from the natural waist-line to the upper line of the hips, fastening devices secured to said band to support a petticoat, a skirt fulled and gathered at the top and also secured to said band, supporting devices for other skirts, attached to the outside of the bodice at a little below the waist-line, and an inverted hook secured to the front of the bodice to engage with the outer skirt and prevent the same from riding up, substantially as described.

4. The combination of a bodice adapted to fit snugly to the form, a supporting-band sewed at its upper edge only to the inside of the bodice at a distance below the waist-line about equal to the distance from the natural waist-line to the upper line of the hips, fastening devices secured to the inner side of said band to support a petticoat, fastening devices secured to the outside of said band, and a skirt gathered and fulled at the top and adapted to be supported by said last-named fastening devices, substantially as described.

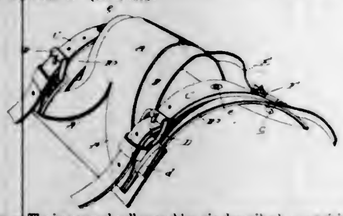
444,002. **PACKING FOR PISTON-RODS.** EUGENE F. LEWIS and FRANK T. WHALEY, Norwich, Conn. Filed July 2, 1890. Serial No. 357,571. (No model.)

Claim.—In a packing for piston-rods, the combination, with a counterbored bore, of a spring in the bottom of the counterbore, a washer having a flat face resting against the spring and having its opposite face provided with a cupped seat, a segmental outer ring, one end of which is conical and fits within the cupped seat of the washer, and the opposite end is provided with a conical counterbore, a cone-shaped segmental inner ring within the counterbore of the outer ring, the outer faces of said rings being flat, means for forcing the segments of the rings inward, a flat-surfaced gland fitting against

the flat faces of the rings, and a plate for holding the gland and packing in position, substantially as described.



444,003. COLLAR-PAD. FRANCIS M. LIMBAUGH, Woodbridge, Cal., assignor of one-half to Allen T. Covell, same place. Filed Sept. 5, 1890. Serial No. 363,973. (No model.)



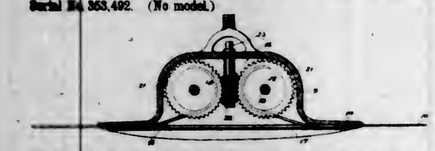
Claim.—The improved collar-pad herein described, comprising the leather B, slitted to form straps B^3, the metal ridge A, having its opposite ends forked and secured at each end to the extended corners of said leather, the free ends of the straps B^3 lying upon the opposite corners of the leather, as shown, the straps C, secured midway of their length to the straps B^3, and the buckles secured to the legs of the ridge and body-strap, whereby said straps B^3 are sustained at a lower altitude than the ridge and central portion of the leather, substantially as specified.

444,004. SALICYLATE OF PHENYLDIMETHYLPYRAZOLONE. HANS LOEWE and LUDWIG SCHOLVIEN, Berlin, Germany, assignors to the firm C. D. Riedel, same place. Filed Aug. 6, 1890. Serial No. 361,189. (No specimens.)

Claim.—1. The manufacture of salicylate of phenyldimethylpyrazolone by heating (preferably under pressure) phenylhydrazine, acetyl acetic ether, and methyl-salicylic ether in the presence of a haloid hydric acid.

2. As a new product, salicylate of phenyldimethylpyrazolone, which is a pure state crystallizes readily, melts at about 91.5° centigrade, and is soluble in alcohol, benzol, or acetone, but is insoluble in water and yields salicylic acid in the presence of a strong acid, such as sulphuric acid, and phenyldimethylpyrazolone in the presence of soda-lye.

444,005. TIGHTENING DEVICE FOR SUSPENDED ELECTRIC CONDUCTORS. DAVID MASON, New York, N. Y. Filed May 28, 1890. Serial No. 353,492. (No model.)



Claim.—1. A suspended electric conductor having a tightening device interposed therein for tightening or loosening the same, substantially as and for the purpose set forth.

2. A suspended electric conductor having a winding-drum interposed therein and to the barrel of which the conductor is attached, whereby the winding of the drum may act to tighten the conductor.

3. A suspended electric conductor having in combination therewith a winding-drum interposed in the line and to which the conductor is attached, so as to be wound or unwound thereby, said drum provided with a cog or ratchet, and a detent for engaging said cog or ratchet and retaining the same against backward rotation, substantially as and for the purpose set forth.

4. A suspended electric conductor having in combination therewith a suitably-mounted winding-drum interposed in the line and to which the conductor is attached, and a manually-operated worm for controlling the cog, substantially as and for the purpose set forth.

5. The combination, with a severed but electrically-connected conductor, of a pair of winding-drums, to each of which is attached the respective ends of the severed conductor, and a device for manually operating the drum independently or simultaneously to effect the tightening or loosening of the conductor, substantially as and for the purpose set forth.

6. The combination, with a hanger for sustaining a suspended electric conductor, of a tightening device mounted upon the hanger and to which the conductor suspended thereby is attached, whereby the conductor may be tightened, for the purpose set forth.

7. The combination, with a hanger for sustaining a suspended electric conductor, of a manually-operated winding-drum mounted upon the hanger and to which the conductor is attached, substantially as and for the purpose set forth.

8. The combination, with a hanger for sustaining a suspended electric conductor, of a tightening device mounted upon the hanger and to which the suspended conductor is attached, so as to be tightened or loosened thereby, and a removable plate mounted upon the hanger and provided with a guide-rib for guiding the trolley over the hanger, substantially as and for the purpose set forth.

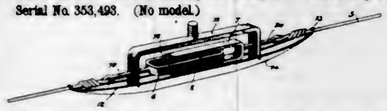
9. The combination, with a suspended electric conductor 10, of a manually-operated winding-drum 18, to which the said conductor is attached, and a detent for retaining the drum against backward rotation, substantially as and for the purpose set forth.

10. The combination, with a suspended electric conductor 10, of a winding-drum 18, to which said conductor is attached, a cog 21 for actuating the drum, and a worm 22 for operating the cog, substantially as and for the purpose set forth.

11. The combination, with a hanger 9, provided with the extensions 14 14 for receiving the conductor 10, of a tightening device mounted upon the hanger and to which is attached the said conductor, and a removable plate 15, attached to the hanger and provided with a guide-rib for the trolley, substantially as and for the purpose set forth.

12. The combination, with a hanger for sustaining a suspended electric conductor 10, the said conductor being severed at the hanger, of a pair of winding-drums 18, having cogs 21, to which the respective ends of the conductor 10 are attached, and a worm 22 for operating the cogs, substantially as and for the purpose set forth.

444,006. TIGHTENING DEVICE FOR SUSPENDED ELECTRIC CONDUCTORS. DAVID MASON, New York, N. Y. Filed May 28, 1890. Serial No. 353,493. (No model.)



Claim.—1. A tightening device for suspended electric conductors, comprising two relatively-adjustable members to which the conductor is attached, whereby the adjustment of said members may act to tighten the conductors, substantially as and for the purpose set forth.

2. A tightening device for suspended electric conductors, comprising two spring-acted relatively-adjustable members to which the conductor is attached, whereby the adjustment of said members may serve to tighten the conductor, substantially as and for the purpose set forth.

3. A suspended electric conductor having interposed therein a spring acting to tighten the conductor, for the purpose described.

4. A tightening device for suspended electric conductors, comprising two relatively-adjustable interlocking members, to which, respectively, the conductor is attached, and a spring interposed between said interlocking members, normally tending to force them together, substantially as and for the purpose set forth.

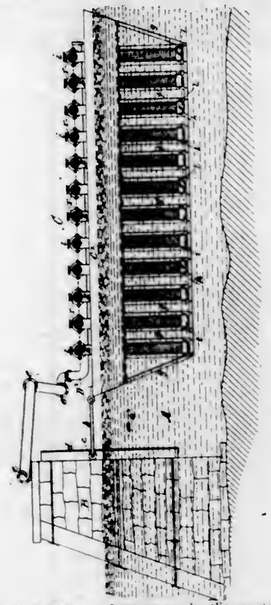
5. The combination, with a suspended yoke and two spring-acted relatively-adjustable members mounted thereon, and the electric conductors attached to each of said members, of a frame mounted upon the yoke and swung beneath the said members and the conductors and formed with a guide-rib 14 for the trolley to pass over, substantially as and for the purpose set forth.

6. The combination, with a hanger for a suspended electric conductor, of two relatively-adjustable members 6 and 7, to which the conductor 5 is secured, and a spring 8 for acting upon said members, substantially as and for the purpose set forth.

7. The combination, with a swinging yoke 11, of the relatively-adjustable members 6 and 7, mounted thereon and provided with a spring 8, the conductor 5, attached to said members, respectively, and a frame 12, mounted upon said yoke and provided with a guide-rib 14 for the trolley, substantially as and for the purpose set forth.

8. The combination, with a suspended yoke 11, of a pair of relatively-adjustable members 6 and 7, mounted thereon, the conductor 5, attached to the lower ends of said members, respectively, a bar 16, mounted loosely in the upper ends of said members and provided with adjustable stops 17, spring 8, interposed between said members 6 and 7, and a frame 12, passing below said members and formed with the guide-rib 14 for the trolley, substantially as and for the purpose set forth.

444,007. APPARATUS FOR WATER-SUPPLY. CLEOPHAS MONJEAU, Middletown, Ohio. Filed Feb. 19, 1889. Serial No. 300,489. (No model.)



Claim.—1. In a system of water-supply, the combination of a pumping-station, a receiving-main, and a filter consisting of a number of submerged filtering terminals suspended from branches or extensions of the receiving-main carried wholly above the water-surface and detachable independently of each other from said extension-mains without interfering with the general operation of the filter, substantially as set forth.

2. The combination of a pumping-station, a receiving-main, branches or extensions of said main floated above the body of water constituting the source of water-supply, a series of independently-detachable submerged filtering mouths or terminals suspended from said extensions, and valves controlling the communication between said filtering terminals and the extension main or mains, substantially as set forth.

3. The combination of a pumping-station, receiving-main, branches or extensions of said main, a floating vessel or caisson carrying said extension above the water-level, flexible pipes or pipe-joints connecting said receiving-main and extensions and adapted to permit the rise and fall of the caisson while preserving the pipe connections, a series of independent filtering mouths or terminals suspended from said extension-mains and submerged, connections for attaching and detaching said filtering terminals, and valves controlling the water connection between each said terminal and the extension-main independently.

4. A filtering apparatus adapted to be floated upon or founded in a body of water constituting the source of supply, and embodying, essentially, the combination of a frame having a series of parallel guides extending into the body of water, an extension of the pumping-main carried upon and supported by said frame, and filtering-inlets adapted to be held by and upon said guides and detachably and independently secured to said pumping-main extension, substantially as set forth.

5. A floating filter adapted to be carried upon a flowing stream, consisting, substantially, of one or more elongated boat-caissons, a frame-work supporting two or more series of vertical guides arranged in fore and aft planes submerged in the stream and carried upon said caissons, one or more extensions of the pumping-main supported by said caissons above the water between the series of guides, and filtering terminals adapted to be held by and between the guides in fore and aft planes at both sides of the main extensions and detachably secured thereto, substantially as set forth.

6. The filtering terminal P, as constructed, consisting, substantially, of a cast head provided with guide-lugs and a flanged side mouth, a cast base piece or cap also provided with guide-lugs, and an intervening tube-section of perforated cast or sheet metal (preferably corrugated) and adapted to receive an outer casing of fibrous or textile filtering material, substantially as set forth.

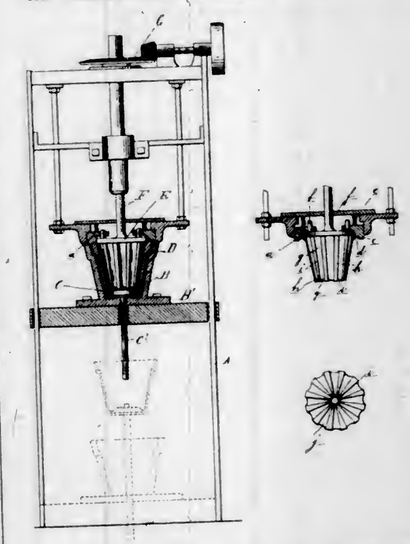
7. A filtering terminal embodying, in combination, a perforated tube adapted to be detachably secured to the pumping-main, an outer casing of filtering material, an inner tube extending approximately to the bottom of the perforated tube, and a back-pressure valve seated in the inner tube, substantially as set forth.

444,008. ROCK-REAMER. HORATIO B. MORRISON, Britt, Iowa. Filed Apr. 30, 1890. Serial No. 350,069. (No model.)



Claim.—In a reaming-drill, the combination of the drill-body having the vertical slot 5, the bit 4, the groove 18, and the transverse channel 19, connecting said groove with the slot 5, with the plate 7, pivoted in said slot and having the reaming-bit at its lower end, and the spring arranged at the upper end of said slot and bearing against the upper end of the plate 7, substantially as and for the purpose set forth.

444,009. FLOWER-POT MACHINE. CHARLES MCDONAGH, Toledo, Ohio, assignor of one-half to John McCaffrey, same place. Filed Jan. 25, 1890. Serial No. 338,153. (No model.)



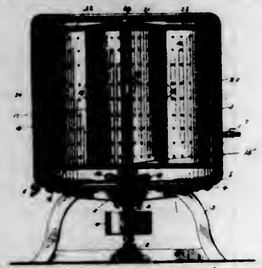
Claim.—1. In a pottery-machine, the rotary mold having segmental grooves *g* and curved faces *h*, substantially as described.

2. In a pottery-machine, the rotary mold having segmental grooves *g*, curved faces *h*, and radial corrugations or grooves *j* on its bottom, substantially as described.

3. In a pottery-machine, the combination, with the rotary mold having vertical pins on its upper face, of an apertured collar through which the pins pass, a plate above the mold, and springs interposed between the plate and collar, substantially as described.

4. In a pottery-machine, the combination, with a vertically-movable mold and a rotating mold, of a stationary plate above the latter, a grooved angular collar on the rotary mold, and springs interposed between the collar and plate, substantially as described.

444,010. **WASHING-MACHINE.** WILLIAM J. NORWOOD, Albany, N. Y. Filed Oct. 23, 1889. Serial No. 327,899. (No model.)



Claim.—1. A washing-machine consisting of an outer receptacle, a central hollow shaft having openings at its bottom communicating with the outer receptacle and a perforated upper portion, and concentric cylinders perforated from top to bottom and mounted upon said shaft, substantially as described.

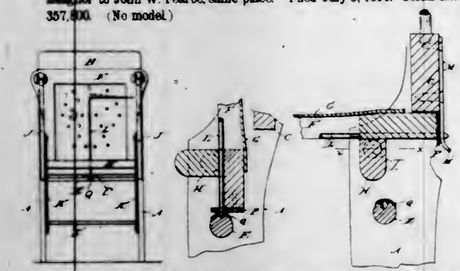
2. A washing-machine consisting of an outer receptacle, a central hollow shaft having openings at its bottom and a perforated upper portion, oppositely-bent pipes connected to the bottom openings, and concentric cylinders perforated from top to bottom and mounted upon said shaft, substantially as described.

3. A washing-machine consisting of an outer receptacle, a central hollow shaft provided at its lower portion with an upwardly-opening valve and with bottom openings below said valve and having a perforated upper portion, and concentric cylinders perforated from top to bottom and mounted upon said shaft, substantially as described.

4. A washing-machine consisting of an outer receptacle, a central hollow shaft provided at its lower portion with an upwardly-opening valve and with bottom openings below said valve and having a perforated upper portion, oppositely-bent pipes connected to the bottom openings, and concentric cylinders perforated from top to bottom and mounted upon said shaft, substantially as described.

5. A washing-machine consisting of an outer receptacle, a central hollow shaft having openings at its bottom communicating with the outer receptacle and a perforated upper portion, and concentric perforated cylinders mounted upon said shaft, the inner cylinder being closed at top and bottom, so as to promote or assist the circulation, substantially as described.

444,011. **FOLDING CHAIR.** CHARLES H. ORCUTT, Springfield, Ohio, assignor to John W. Pearce, same place. Filed July 5, 1890. Serial No. 357,800. (No model.)



Claim.—1. In a folding chair, the combination, with its back and its seat, the back being provided with an upper cross-piece having a socket and adapted to form a stop for said seat when folded, and also a lower cross-piece having a socket, and the seat being provided with a strengthening cross-piece near its rear end and pivotally connected to the said back, of a spring-actuated locking-bar mounted in said seat and adapted to engage with the sockets in both cross-pieces, respectively, whereby the chair is locked in both its sitting and its folded position.

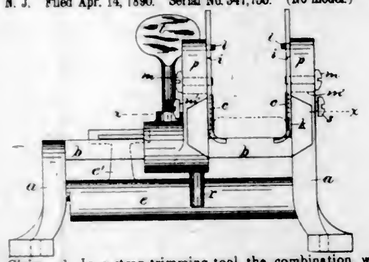
2. In a folding chair, the combination, with its seat and its back provided with a cross-piece having a socket and adjacent to the rear end of said seat, of a spring locking-bar mounted in said seat so as to be accessible from the front end thereof and normally projecting outward and adapted to automatically enter said socket when the chair is folded, and thus lock it in its folded position.

3. In a folding chair, the combination, with its back and its seat, of an upper and a lower piece carried by said back adjacent to the rear end of said seat, and a locking device consisting of a sliding member and a fixed member, one member being carried by said seat so as to engage with the other member carried by said upper piece, and also of a duplicate member carried by said lower piece, whereby the chair is locked in both its sitting and its folded position.

4. In a folding chair, the combination, with its seat, its back provided with an upper and a lower piece adjacent to the rear end of the said seat, and bearing or locking plates carried by said pieces, of a spring locking-bar mounted in said seat so as to be accessible from the front end thereof and adapted to engage with said bearing or locking plates on the said pieces, respectively, whereby the chair is automatically locked in both its sitting and its folding position and unlocked by manipulating said bar.

5. In a folding chair, the combination, with its seat and its back provided with a cross-piece adjacent to the rear end of the seat, of a spring locking-bar adapted to slide in and out from the edge of said seat and accessible from the front end thereof and adapted to engage said cross-piece and lock the chair in its folded position.

444,012. **STRAP-TRIMMING TOOL.** HENRY F. OSBORNE, Newark, N. J. Filed Apr. 14, 1890. Serial No. 347,755. (No model.)



Claim.—1. In a strap-trimming tool, the combination, with the guides and the stationary knives to fixed upright posts at the rear ends of the same, of cheek-pieces secured to the inner faces of the guides at their forward ends, and adjusting-screws applied to the opposite ends of the cheek-pieces adjacent to the knives to incline the rear ends of the said cheek-pieces toward each other, and to thereby vary the width of the channel at its rear end, as and for the purpose set forth.

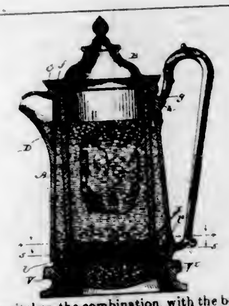
2. In a strap-trimming tool, the combination, with the knives and the guides for directing the strap thereto, of cheek-pieces consisting in flat springs secured at one end to the inner faces of the guides, and adjusting-screws applied to the opposite ends of the cheek-pieces adjacent to the knives, substantially as shown and described.

444,013. **ICE-WATER RECEPTACLE.** HOWARD PADDOCK, Albany, N. Y. Filed Jan. 19, 1887. Serial No. 224,740. (No model.)

Claim.—1. In a water-pitcher, the combination, with an open-bottomed interior receptacle, of a filter fitting therein and supported directly from the body of the pitcher, whereby the weight of the contents of the inner receptacle rests directly upon the body of the pitcher and not upon the walls of the inner receptacle.



444,013.



2. In a water-pitcher, the combination, with the body, of the inner receptacle separated therefrom by an intervening space, said inner receptacle being suspended from the upper rim of the body and supported at its lower edge against lateral movement, whereby when the pitcher is tilted the strain upon the inner receptacle is counteracted.

3. In a water-pitcher, the combination, with the body of the pitcher, of an inner receptacle connected with the body by a bayonet-joint and a lock for locking the bayonet-joint, all substantially as described.

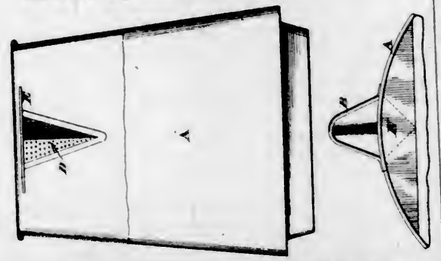
4. In a water-pitcher, the combination, with the body, of the inner receptacle separated therefrom by an intervening space, the said inner receptacle being supported from the bottom, and also against vertical and lateral movement, all substantially as described.

5. In a water-pitcher, the combination, with the body of the pitcher, of an interior receptacle provided at its bottom with a filter having a pin or stud resting on the bottom of the pitcher, all substantially as described.

6. In a water-pitcher, the combination, with the body of the pitcher provided at its bottom with a socket, of an interior receptacle provided at its bottom with a filter having a pivot-pin for engaging the socket, all substantially as described.

7. In a water-pitcher, the combination, with the body of the pitcher, of an interior receptacle connected to the body by a bayonet-joint and provided at its bottom with a filter having a pivot pin or stud for resting on the bottom of the pitcher, all substantially as described.

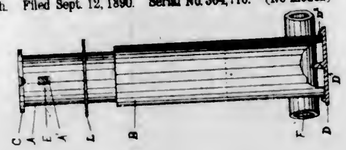
444,014. **COFFEE-BOILER.** GEORGE A. PHIFER, Harrison, Ohio. Filed Sept. 6, 1890. Serial No. 364,118. (No model.)



Claim.—1. In combination with a coffee boiler or pot having near its top a discharge-spout B and an opening C, leading into the latter, and a strainer D, projecting into the vessel, which strainer is raised in the center and slopes down to the sides and bottom of said opening, as herein described, and for the purpose stated.

2. In combination with a coffee boiler or pot having near its top a discharge-spout B and an opening C, leading into the latter, and a strainer D, projecting into the vessel, which strainer is raised in the center, slopes down to the sides and bottom of said opening, and is covered at top by a segmental plate E, arranged as herein described, and for the purpose stated.

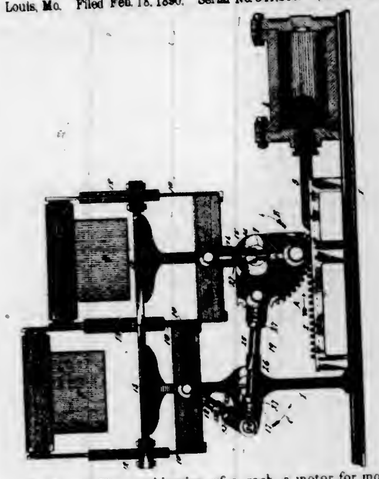
444,015. **STREET STOP-COCK BOX.** BENJAMIN PORTER, Jackson, Mich. Filed Sept. 12, 1890. Serial No. 364,716. (No model.)



Claim.—1. In a street stop-cock box, the combination, with the pipe A, of the cover C, provided with projecting lug C' and secured in position by a key passing through apertures in the pipe and lug, substantially as described.

2. In a street stop-cock box, the combination, with the pipe A provided with the cover C, lug C', openings A', and key E, of the flange L, substantially as described.

444,016. **MECHANICAL MOVEMENT.** TILLMAN PUETZ, Jr., St. Louis, Mo. Filed Feb. 18, 1890. Serial No. 341,216. (No model.)

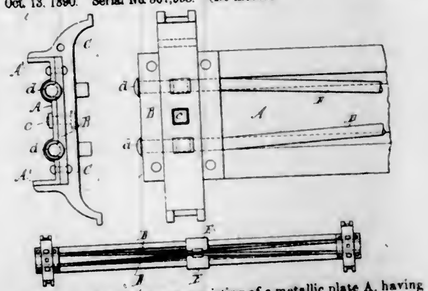


Claim.—1. The combination of a rack, a motor for moving the rack, a pivoted segment engaging the rack and moved thereby, objects to be moved, and adjustable pitmen connecting said segment to said objects, substantially as described.

2. In a mechanical movement, the combination of a pivoted segment, means for moving the segment, such as a rack, cylinder, and piston, an adjustable pitman connected to the segment and to an object to be moved, a second adjustable pitman connected to the segment and to a pivoted crank or link, and a third adjustable pitman connected to the crank or link and to an object to be moved, substantially as set forth.

3. In a mechanical movement, the combination of a pivoted segment, a rack engaging the segment, a cylinder and piston for moving the rack, a pitman connecting the rack to an object to be moved and consisting of tapped sleeves and a rod having right and left threads, a second pitman connecting the segment to a pivoted link or crank and consisting of tapped sleeves and a rod having right and left threads, and a third pitman connecting the crank or link to an object to be moved and consisting of tapped sleeves and a rod having right and left threads, substantially as set forth.

444,017. **BRAKE-BEAM.** WILLIAM A. PUNGS, Detroit, Mich. Filed Oct. 13, 1890. Serial No. 367,993. (No model.)



Claim.—1. A brake-beam consisting of a metallic plate A, having at each end an attached re-enforcing plate B, a central strut E, and two straining-rods D, seated between the plates and converging toward each other from the re-enforcing-plates to the central strut, substantially as described.

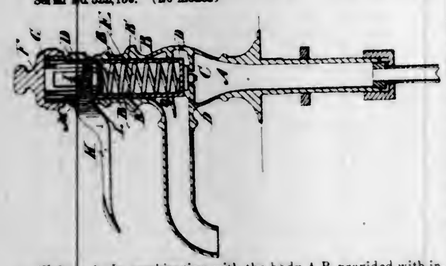
2. A metallic brake-beam consisting of the combination, with a metallic beam A, having flanges A', of two truss-rods and a strut to which the said truss-rods converge at the middle of the beam, said strut made adjustable longitudinally, substantially as and for the purposes described.

3. A metallic brake-beam consisting of the plate or beam A, provided with flanges A' and grooves A^2, in combination with a re-enforcing plate B and a strut at the middle of the beam, and in connection therewith one or more straining-rods D, substantially as and for the purposes described.

4. The combination, with a metallic plate A, provided with flanges A', of the re-enforcing plate B and one or more straining-rods D, seated in grooves between the plates A and B, said beam at the extremities shaped to receive the ordinary brake-head, substantially as and for the purposes described.

5. The combination, with a metallic plate or beam A and plate B, of one or more truss-rods D, having their ends clamped between said plates A and B and riveted beyond said plates, substantially as described.

444,018. SELF-CLOSING FAUCET. GEORGE W. RENTON, Somers, assignor to Frederick N. Du Bois, New York, N. Y. Filed Aug. 27, 1889. Serial No. 322,159. (No model.)



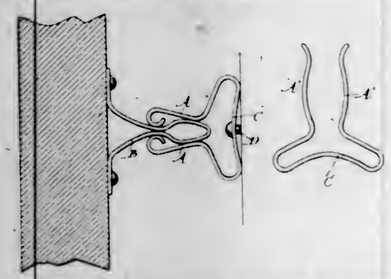
Claim.—1. In combination with the body A B, provided with internal separated guides or bearings O B', a valve D, fitting therein, a spring E, serving to hold the valve to its seat, a pin I, carried by the valve, and a lever K, mounted in the body of the faucet and engaging the pin I, all substantially as shown and described.

2. In a faucet, the combination, with the main body and its sliding valve D, of a spring, a follower bearing upon the spring, a cap fitting upon the body of the faucet and serving to adjust the follower, and means for raising the valve, all substantially as shown.

3. In a faucet, the combination, with the main body, of the hollow valve mounted therein, a spring contained within the valve, an adjustable cap F, and a follower interposed between the spring and cap, all substantially as shown.

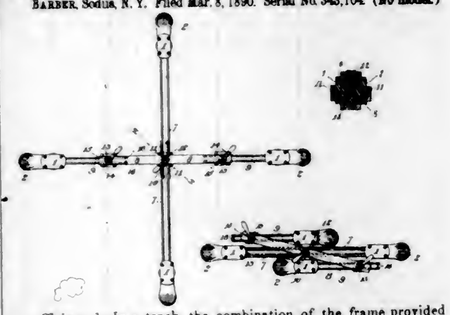
4. In a faucet, the combination, with the main body, of the hollow valve D, provided with a pin I and with a spring E, a slotted follower G, a lever K, and an adjustable cap, all combined substantially as shown.

444,019. DOOR-CHECK. MARION C. RICHARDS, Aurora, Ill., assignor of one-half to the Wilcox Manufacturing Company, same place. Filed Aug. 11, 1890. Serial No. 361,748. (No model.)



Claim.—A spring-holder consisting of a pair of spring catch-arms extending from a spring-plate C and integral therewith, said plate being arched outwardly in a direction toward the outer free ends of the catch-arms and away from the support to which it is adapted to be attached by a screw or bolt, by which pressure is brought to bear on the arched plate to throw the catch-arms toward each other, and thereby increase their tension, substantially as described.

444,020. STOVE-TRUCK. GEORGE H. ROGERS and ARTHUR J. BARBER, Sodus, N. Y. Filed Mar. 8, 1890. Serial No. 343,104. (No model.)



Claim.—1. In a truck, the combination of the frame provided with casters, the clamping-sockets to receive the caster-housings and the shoes, the latter having their upper surface depressed below the housings, substantially as set forth.

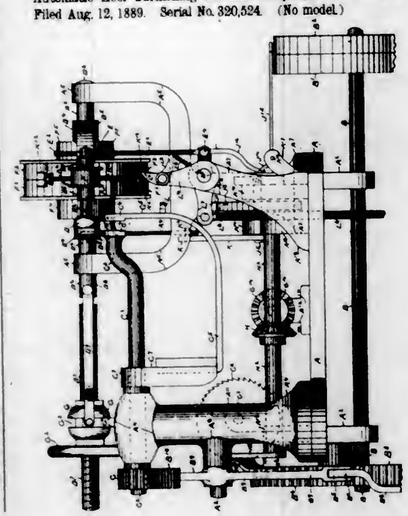
2. In a truck, the clamping-socket and shoe, the socket-plate being provided with bolt-holes and with a lug 4 and with a flange having slots 6 to receive the bars of the truck-frame, and a caster, the caster-housing being bolted in the socket, substantially as set forth.

3. In a truck-frame, the combination of a bar-holding shoe, two pairs of bars placed on edge within the shoe and overlapping each other, with a pair of bars, one of which is placed transversely and widthwise upon the bars first named and the other parallel with the said transverse bar and below the other bars, and a bolt passing through the upper and lower bars and shoe and between the pairs of edgewise bars, substantially as set forth.

4. In a truck-frame, the combination of a bar-holding shoe, two pairs of bars placed on edge within the shoe and overlapping each other, one of each pair having a stop, with a pair of bars, one of which is placed transversely and widthwise upon the bars first named and the other parallel with the said transverse bar and below the other bars, and a bolt passing through the upper and lower bars and shoe and between the pairs of edgewise bars, said latter bars and the bolt filling the shoe laterally, the bolt being in the path of the stops, substantially as set forth.

5. In a truck-frame, the combination of two pairs of overlapping endwise-adjustable bars placed edgewise, two bars placed transversely of said overlapping bars, one above and one below the same and adjustably bolted thereon, and two pairs of bars, each placed between the outer ends of said transverse bars and adjustably bolted thereto, whereby the several pairs of bars can be folded in approximately parallel positions, substantially as set forth.

444,021. HEEL-BURNISHING MACHINE. WINSLOW F. SAMPSON, Gofistown, assignor, by direct and mesne assignments, to the Sampson Automatic Heel Burnishing Machine Company, of Manchester, N. H. Filed Aug. 12, 1889. Serial No. 320,524. (No model.)



Claim.—1. In a machine for burnishing the edges of heels of boots and shoes, a shaft C^2, suitably supported, having an offset heel-rest C^4 and an arm C^5 for clamping a boot or shoe at its heel on said rest, in combination with means for oscillating said shaft, substantially as described, for the purposes specified.

2. In a machine for burnishing the edges of heels of boots and shoes, in combination, a shaft C^2, suitably supported, having a heel-rest and an appliance for clamping a boot or shoe at its heel on said rest, means for oscillating said shaft, a burnisher, a frame D^4, carrying the burnisher at one end, a horizontal support D^3, having the end of frame D^4 opposite to that carrying the burnisher hung on it so as to both swing vertically and to move rectilinearly horizontally to and fro across its vertical plane of swing, means for moving frame D^4 to and fro on its support D^3, a vertical spring E^2 at its upper end, secured to frame D^4 between the burnisher and support D^3, and a horizontal lever E^3, fulcrumed on a suitable support and having the lower end of spring E^2 secured to it.

3. In a machine for burnishing the edges of heels of boots and shoes, in combination, a shaft C^2, having a heel-rest and an appliance for clamping a boot or shoe at its heel on said rest, means for oscillating said shaft, a rotating burnisher, a carrier D^4, suitably supported, for said burnisher, driving pulley-wheels F^3 F^5 of said burnisher-carrier, and each pulley-wheel arranged to be separately driven, a belt F^4, for connecting said pulleys with a pulley-wheel F of the burnisher, a belt-shifting device K^4 K^9 K^8 K^{10} K^{11} of the burnisher-carrier D^4, and means for moving said belt-shifter to and fro on said carrier D^4 and thereby to shift the belt F^4 from one to the other of said pulley-wheels F^3 F^5, substantially as described, and for the purposes specified.

4. In a machine for burnishing the edges of heels of boots and shoes, in combination, a shaft C^2, suitably supported, having a heel-rest C^4 and an arm C^5 to clamp a boot or shoe at its heel on said rest, means for rotating said shaft, and appliances for placing said arm out of clamping position, consisting, essentially, of an eye L on the arm C^5, a vertical hook-lever L^3 L^4, and a vertical bell-crank lever L^4 L^7, suitably supported and having said hook-lever L^3 L^4 fulcrumed on and the arm L^3 of said hook-lever connected by a spring L^5 to its arm L^7, substantially as described, for the purposes specified.

5. In a machine for burnishing the edges of heels of boots and shoes, a shaft C^2, suitably supported, having a heel-rest and an appliance for clamping a boot or shoe at its heel on said rest, a pinion gear-wheel C of said shaft C^2, a segmental gear B^{10}, meshing said pinion and at one end of a lever-arm B^9 fulcrumed at A^2, in combination with a rotating wheel B^4, having radial slot B^5, and a pitman-rod B^8 at one end jointed in said slot B^5 of and secured to said wheel B^4 and at the other end jointed to said lever-arm, substantially as described, for the purpose specified.

6. In a machine for burnishing the edges of heels of boots and shoes, a shaft C^2, suitably supported, having a heel-rest and an appliance for clamping a boot or shoe at its heel on said rest, means for oscillating said shaft, a burnisher, a carrier D^4 for said burnisher, adapted to be moved to and fro on a suitable support, means for moving said burnisher-carrier to and fro on its said support, consisting, essentially, of a vertical fulcrumed lever-arm G^4, engaged with said carrier, a crank G^5, held on a rotating shaft G^7 and connected to said lever-arm, a ratchet-wheel G^6, held on said shaft, a pawl G^8, for engaging said ratchet-wheel, a lever-arm G^{10}, carrying said pawl and fulcrumed on said shaft, a shaft G^{12}, means to rock shaft G^{12}, and a pitman-rod G^{11}, connecting said rocker-shaft and said lever-carrying pawl, substantially as described, for the purpose specified.

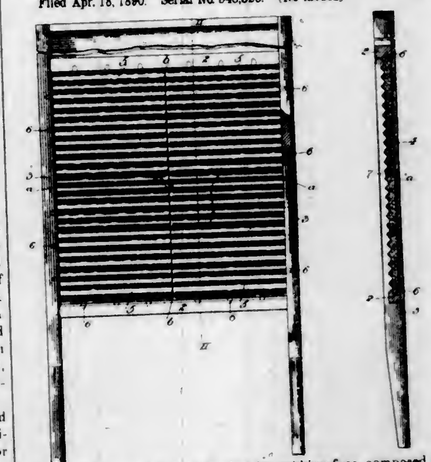
7. In a machine for burnishing the edges of heels of boots and shoes, a shaft C^2, suitably supported, having a heel-rest and an appliance for clamping a boot or shoe at its heel on said rest, means for oscillating said shaft, a rotating burnisher, a carrier D^4, suitably supported, for said burnisher, driving pulley-wheels F^3 F^5 of said burnisher-carrier and each pulley-wheel arranged to be separately driven, a belt F^4, for connecting said pulleys with pulley-wheel F of the burnisher, a belt-shifting device K^4 K^9 K^8 K^{10} K^{11} of the burnisher-carrier D^4, and means for moving said belt-shifter to and fro on said carrier D^4 and thereby to shift the belt F^4 from one to the other of said pulley-wheels F^3 F^5, and which consists, essentially, of an arm K, having pins K^9 K^8 at opposite points to abut against the arm K^4 of said belt-shifter, a shaft J^3, on which said arm is held, and means to rock said shaft and its said arm to and fro, substantially as described, for the purposes specified.

8. In a machine for burnishing the edges of heels of boots and shoes, in combination, a shaft C^2, suitably supported, having a heel-rest and an appliance for clamping a boot or shoe at its heel on said rest, means for oscillating said shaft, a burnisher, a carrier D^4, suitably supported, for said burnisher and adapted to be moved to and fro on said support and to exert an elastic and yielding pressure of the burnisher on the edge of the heel being burnished and to allow the burnisher to move outward and inward with the heel, appliances for acting on the burnisher-carrier and therethrough placing the burnisher in contact with the edge of the heel, means for fastening said appliances for placing the burnisher in operative position and for releasing them, a finger-piece J^{10} of the rotating carrier J^3, for working on said means for fastening said burnisher-placing appliances and thereby to release them, and means for rotating said carrier J^3, consisting, essentially, of a ratchet-wheel J^4, held on said carrier J^3, a pawl J^7, for engaging said ratchet-wheel, a lever-arm J^6, carrying said pawl and fulcrumed on said carrier J^3, a shaft J^5, a crank-arm J^2 of shaft J^5, and a pitman-rod J^8, connecting crank-arm J^2 and said lever-arm J^6, carrying pawl J^7, substantially as described, for the purposes specified.

9. A machine for burnishing the edges of heels of boots and shoes, consisting, essentially, of a shaft C^2, suitably supported, having an offset heel-rest C^4 and an appliance for clamping the heel of a boot or shoe on said rest, means for oscillating said shaft C^2, a rotating burnisher, a carrier D^4, suitably supported, for said burnisher and adapted to be moved to and fro on said support and to exert an elastic and yielding pressure of the burnisher on the edge of the heel being burnished and to allow the burnisher to move outward and inward with the heel, means for moving the burnisher-carrier D^4 to and fro on its support, a belt F^4, for rotating said burnisher, pulley-wheels F^3 F^5, held on said carrier D^4, for driving said belt F^4, and means for shifting said driving-belt from one to the other of said driving-pulleys, substantially as described, for the purposes specified.

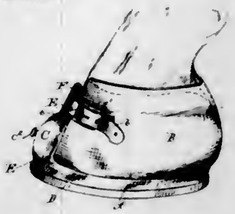
10. In a machine for burnishing the edges of heels of boots and shoes, in combination, a rotating burnisher, means for rotating the burnisher, and a carrier D^4 for the burnisher and its said means for rotating it, composed in one part of a longitudinal telescoping rod D^5, arranged to move to and fro on a suitable support, a screw-threaded nut G on part D^7 of rod D^6, means engaging said screw-nut for moving through it and rod D^6 the burnisher-carrier D^4 to and fro on its support, and a rod D^9 at opposite ends held on said means engaging the screw-nut and on part D^8 of rod D^6, substantially as described, for the purposes specified.

444,022. WASH-BOARD. MONTEZUMA SCOTT, New Brighton, Pa. Filed Apr. 18, 1890. Serial No. 348,520. (No model.)



Claim.—A wash-board having its rubbing-face composed of a series of corrugated or roughened vitreous-faced tiles or sections of limited size, substantially as and for the purposes described.

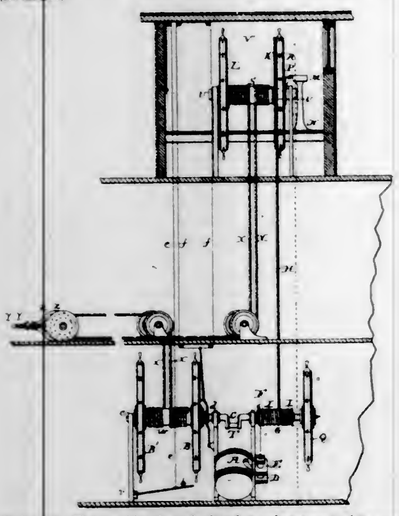
444,023. TOE-WEIGHT AND QUARTER-BOOT FASTENER. ORLANDO J. SKEPTON, Sedgwick, Kans. Filed Apr. 22, 1890. Serial No. 349,035. (No model.)



Claim.—1. The combination of a horseshoe having a tapering integral spur provided at its upper end with a loop, an adjustable toe-weight on said spur and having a set-screw, and a strap passing through said loop above the toe-weight, for the purpose set forth.

2. The combination of a horseshoe having a tapering integral spur provided at its upper end with a loop, an adjustable toe-weight on said spur and having a set-screw, and a boot having a fastening-strap passing through said loop above the toe-weight, for the purpose set forth.

444,024. **STEAM AND HAND STEERING-GEAR.** FREDERICK E. SICKELS, Kansas City, Mo. Filed Sept. 27, 1888. Serial No. 286,622. (No model.)



Claim.—1. The combination of a hand steering-gear and the controlling-wheel R of a steam steering-gear, loose upon the shaft of the hand steering-wheel and in the same pilot-house, with tiller-ropes, one end of which is worked to steer by hand and the other end is worked to steer by steam, substantially as described.

2. The combination of a hand gear and steam gear mechanism having one end of the tiller-rope leading to the hand gear and the other end of said rope leading to the steam gear, and locking mechanism whereby the hand gear is locked when the steam gear is in use and the steam gear is locked when the hand gear is in use.

444,025. **STREET-SWEEPING MACHINE.** SAMUEL M. SKIRVING and ANTHONY J. B. BERGER, Philadelphia, Pa. Filed Aug. 5, 1890. Serial No. 361,084. (No model.)

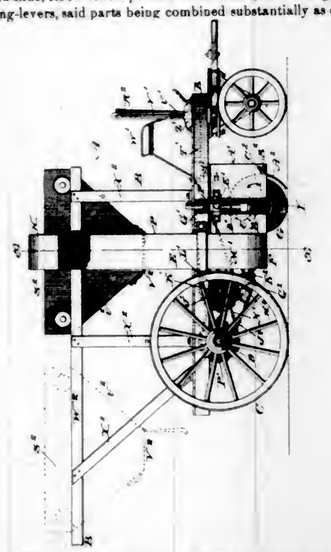
Claim.—1. A street-sweeping machine having a conveyer with a receiving-trough below the frame thereof, upright passage-ways communicating with said trough, a horizontal passage-way extending across the frame of the machine, an endless belt with buckets thereon, and a rotary brush substantially parallel with said trough, said parts being combined substantially as described.

2. A street-sweeping machine provided with a conveyer having a receiving-trough with an opening in its side, a rotary brush, a shield for said brush, vertical passage-ways on the sides of the frame, a horizontal passage-way extending across said frame, and an endless belt with buckets thereon, said parts being combined substantially as described.

3. The combination of a frame, a rotary brush, a dirt-gatherer adapted to be raised and lowered, and a conveyer with trough adapted to receive dirt from the brush and gatherer, substantially as described.

4. A street-sweeping machine having a conveyer with a receiving-trough below the frame thereof, a vertical passage therefrom, a horizontal passage-way above the frame having an opening in its under side, and a box movable on a track secured to the device having an opening in its top adapted to register with the opening in the under side of the said passage-way, said parts being combined substantially as described.

5. In a street-sweeping machine, a frame with boxes on its under side, slides vertically movable in the ends of said boxes, a rotary shaft journaled in said slides, a brush on said shaft, pivoted links connected with said slide, elbow-levers pivoted to the boxes, and sliding rods with operating-levers, said parts being combined substantially as described.



6. In a street-sweeping machine, a conveyer having an upper horizontal passage extending at one end thereof beyond the side of a descending vertical passage thereof, and an endless belt with buckets working in said passages, substantially as and for the purpose set forth.

7. In a street-sweeping machine, a frame with boxes on the under side, slides in said boxes, a brush with journals having bearings in said slides, and a pivoted circular shield partially encircling said brush and adapted to be raised and lowered by the movement of said slides, said parts being combined substantially as described.

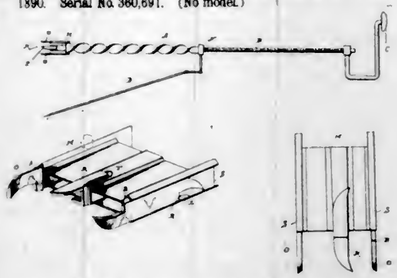
8. In a street-sweeping-machine, a frame with boxes having slides therein, a rotary brush mounted on said slides, a shield adapted to receive the dirt swept by the brush, and a conveyer having a trough adapted to receive the dirt from the brush and shield, said parts being combined substantially as described.

9. In a street-sweeping machine, a frame with boxes having the slots C^3 therein, a rotary brush journaled in slides in said boxes, and a shield journaled in said slots and partially encircling said brush, said parts being combined substantially as described.

10. In a street-sweeping machine, a pivoted shield for the rotary brush thereof, having its journal-bearings freely mounted in slots, substantially as and for the purpose set forth.

11. In a street-sweeping machine, a rotary brush having its journal-bearings in vertically-movable slides, a pivoted shield partially encircling said brush, studs on the slides supporting the upper end of said shield, and mechanism, substantially as described, for raising and lowering said brush, said parts being combined substantially as described.

444,026. **DRILL-BIT.** JOHN T. SNYDER, Luzerne, Pa. Filed Aug. 1, 1890. Serial No. 360,691. (No model.)

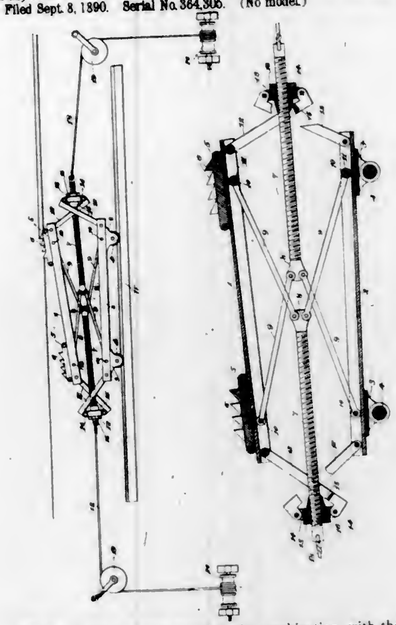


Claim.—1. The herein-described boring-tool, the same comprising a head H, having dovetailed grooves S in its sides, each groove containing a lug L at one side thereof, and boring-bits O, removably seated in said grooves and each having boring-faces at its ends, and shoulders R adjacent the same impinging against said lugs, as and for the purpose set forth.

2. In a boring-tool, the combination, with the head H, provided with the transverse slot T in its front end, and the side boring-bits O, detachably connected to said head, of the core-bit K, comprising a U-shaped body U, whose sides are extended from opposite ends thereof into points P, said body being detachably seated in said transverse slot, as and for the purpose set forth.

3. In a boring-tool, the combination, with the head H, having dovetailed side grooves S and a transverse slot T in its front end, lugs L in said side slots, and boring-bits O, removably seated in said side grooves and having shoulders R engaging said lugs, of the core-bit K, comprising a U-shaped body U, whose sides are extended from opposite ends thereof into points P, said body being detachably seated in said transverse slot, as and for the purpose hereinbefore set forth.

444,027. **MINING-MACHINE.** JOSEPH STEPHENSON, Spariand, Ill. Filed Sept. 8, 1890. Serial No. 364,305. (No model.)



Claim.—1. In a mining-machine, the combination, with the side frame-pieces, one of which is provided with rollers and the other with teeth or cutters, of mechanism for expanding or forcing apart the said frame-pieces, substantially as set forth.

2. In a mining-machine, the combination, with the side frame-pieces, one of which is provided with rollers and the other with teeth or cutters, of mechanism for expanding or forcing apart the ends of said frame-pieces independently of each other, substantially as set forth.

3. In a mining-machine, the combination of the side frame-pieces provided, respectively, with rollers and with teeth or cutters, the link-rods pivoted at the ends of said frame-pieces and crossing each other, the longitudinal rods having screw-threaded ends, the seat-rings mounted pivotally at the ends of the link-rods, the nuts mounted upon the ends of the screw-threaded rods and seated in said rings, and pivoted rods connecting the inner ends of said screw-threaded rods with the ends of the frame, substantially as set forth.

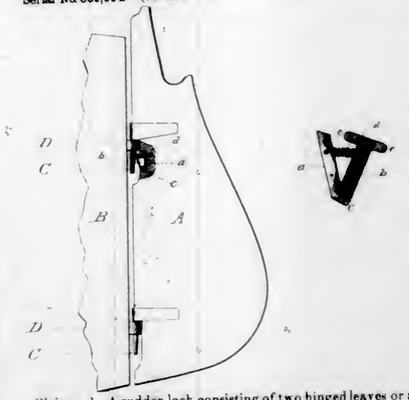
4. The combination of the channeled or U-shaped frame-pieces, one of which is provided with teeth or cutters, the link-rods pivoted at the ends of said frame-pieces and crossing each other, the seat-rings mounted pivotally at the ends of said link-rods, the screw-threaded rods having flattened inner ends, the pivoted rods connecting the same with the ends of the frame-pieces, the spacing sleeves or thimbles, and the flanged nuts seated in the rings at the ends of the link-rods and mounted upon the screw-threaded rods, substantially as set forth.

5. In a mining-machine, the combination, with the expansible frame, of the rollers mounted in suitable bearings upon the outer side of one frame-bar and the blocks secured at the ends of the other frame-bar, said blocks being provided with beveled teeth or cutters which are beveled in opposite directions at the opposite ends of the frame, substantially as and for the purpose set forth.

6. The mining-machine consisting of the herein-described expansible frame, provided on one side with grooved wheels or rollers and on the opposite sides with beveled teeth or cutters, in combination with the cables attached to the ends of the machine, the guide-track, the guide-pulleys, and the winding-drums, substantially as and for the purpose specified.

7. In a mining-machine, the frame composed, essentially, of the side pieces equipped, respectively, with wheels or rollers and with teeth or cutters, in combination with the pivoted rods or links connecting said pieces, and means for expanding the ends of the frame independently of each other, substantially as and for the purpose set forth.

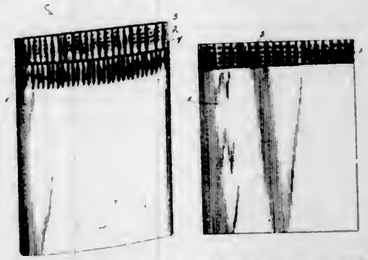
444,028. **RUDDER-LOCK.** ONSLOW STUART, Chilmark, Mass., assignor of one-half to Beriah T. Hillman, same place. Filed May 4, 1889. Serial No. 309,664. (Model.)



Claim.—1. A rudder-lock consisting of two hinged leaves or arms, one of which is adapted for attachment to a rudder or stern-post, and an interposed spring for forcing the free arm into engagement with the pintle and gudgeon.

2. A rudder-lock consisting of two hinged leaves or arms, one of which is adapted to be secured to the rudder or stern-post, its fellow having lugs or projections thereon to afford greater bearing-surface, and having a rod projecting from its inner face and surrounded by a spiral spring, the fixed arm having a perforation for the passage of the rod when the leaves are closed.

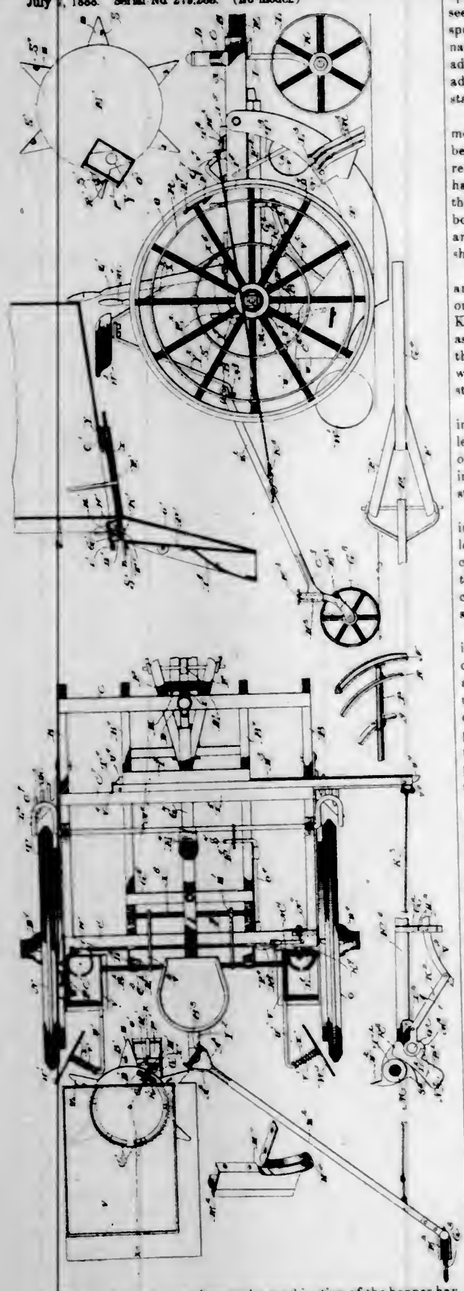
444,029. **PAPER SACK.** CHARLES H. VICKERY, Attica, N. Y. Filed Apr. 21, 1890. Serial No. 348,777. (No model.)



Claim.—1. A paper sack one wall of which is extended beyond the upper edge of the opposite wall to form a flap, said flap being crimped or fluted, and the entire mouth of the bag being likewise crimped or fluted, said flap being designed to fold over upon the mouth, the flutes or crimps of the two intermeshing, and said flap provided with several series of perforations, substantially as specified.

2. A paper sack one wall of which is extended beyond the opposite wall to form a flap adapted to bend over upon said opposite wall, said flap being provided with several transverse series of perforations, the perforations extending from near its free edge to near its fold-line, whereby when said sack is closed and the mouth gathered the upper fold-line or edge is thicker than the portion below the same, substantially as described.

444,030. **CORN-PLANTER.** HENRY J. WAGNER, Dayton, Mo. Filed July 7, 1888. Serial No. 279,263. (No model.)



Claim.—1. In a corn-planter, the combination of the hopper having a perforation D' in its bottom plate, the seed-plate mounted to revolve under the bottom of the hopper and having radially-extending spurs or tappets, a shaft mounted in bearings of the hopper, and the ejector-arms and operating-arms extending from said shaft, said ejector-arms being located in the path of the spurs of the seed-wheels, substantially as specified.

2. The combination, in a planter, of the hopper having the bottom opening D', the seed-plate arranged under the same and having the seed cups or openings, said plate being provided with the projecting spurs, the plate arranged under the seed-plates, and the shaft journaled on the bottom plate of the hopper and having the arms K', adapted to sweep through the opening D', and having the arms H', adapted to be engaged by the spurs or tappets of the seed-plate, substantially as described.

3. The combination, in a planter, of the hopper having the abutment or wall W at one side, and having the bottom portion projecting beyond said abutment or wall and provided with the opening D', the revolving seed-plate arranged under the bottom of the hopper and having the seed cups or openings adapted to successively register with the openings D', the shaft journaled on the projecting portion of the bottom of the hopper and having the ejector-arms K' and operating-arms H', and means, substantially as set forth, to partly rotate said shaft, substantially as described.

4. The combination, in a planter, of the hopper, the seed-plate arranged under the same, adapted to revolve, and having the seed cups or openings and the tappets B', the shaft H', having the ejector-arms K', adapted to move through the seed cups or openings in succession as the seed-plate rotates, the said shaft being further provided with the tappet-arms I', adapted to engage the tappets B' in succession, whereby said shaft is operated by the rotation of the seed-plate, substantially as described.

5. The combination, in a check-row planter, of the revolving driving-shaft having the tappet-arms U^3, the marker-arm V^3, the pivoted lever or bar K^3, connected to the marker-arm, and the cam-link N^3, pivoted to the rear end of the said lever or bar, adapted to turn thereon in one direction, and arranged in the path of the tappet-arms U^3, substantially as described.

6. The combination, in a check-row planter, of the revolving driving-shaft, having the tappet-arms U^3, the marker-arm V^3, the pivoted lever or bar K^3, connected to the said marker-arm, and the pivoted cam-link at the rear end of said lever or bar arranged in the path of the tappet-arm and adapted to turn on its pivot in one direction, said cam-link having the depending weight-arm P^3, substantially as described.

7. The combination, in a check-row planter, of the revolving driving-shaft having the tappet-arm U^3, the marker-arm V^3, the angle bar or lever K^3, pivoted to a suitable support and connected to the marker-arm, said angle bar or lever having the shoulder or offset M^3 on its under side at its rear end, and the cam-link N^3, pivoted to the rear end of said angle bar or lever, said cam-link being arranged in the path of the tappet-arms and having the offsets or shoulders S^9 on its rear side, adapted to engage the offsets or shoulder M^3, for the purpose set forth, and being further provided with the weight-arm P^3, substantially as described.

8. In a seed-planter, the combination, with the frame having the arched front cross-bar, of the front guiding-truck having the vertical crank-shaft, and the tongue having the hound-frame connected with the crank of said shaft, substantially as set forth.

9. The combination, in a planter, of the frame having the supporting-wheels and provided at its front end with the centrally-arched cross-bar C, the vertical clamp-bolt having its upper end pivoted in the center of the said cross-bar and provided with the crank, the trailing guiding-wheels secured to the lower end of said bolt, the tongue connected to the crank, and the runners or furrow-openers having their front ends pivoted to bars B, attached to the ends of bars C, for the purpose set forth, substantially as described.

10. The combination, in a planter, of the main frame, the marker-bar connected thereto and adapted to be swung to either side thereof, and having the trailing wheel, the bar H^3, arranged to slide transversely upon the main frame and adapted to be projected beyond either of its sides, and connections, substantially as set forth, between said bar H^3 and the marker-bar, substantially as described.

11. The combination of the transverse guide-bars I^3 I^3, of unequal length, the transversely-sliding bar H^3, and the angle-plates, pivoted at the ends of the latter and forming stops to engage the shorter guide-bar, substantially as set forth.

12. The combination of the guide-bars of unequal length, the bar arranged to slide transversely between the same, the angle-plates pivoted at the ends of the transversely-sliding bar and forming stops to abut against the ends of the shorter guide-bar, the notched lugs upon the upper sides of said angle-plates, the marker having the trailing wheel, and a rope attached to said marker and adapted to be connected with the notched lug of the angle-plate at either end of the transversely-sliding bar, substantially as set forth.

13. The combination, with the supporting-wheels having concentric rings, the outer one of which is provided with perforations in alignment with the wheel-spokes, of the tappet-rods having bifurcated inner ends catching over and engaging the inner concentric rings and screw-threaded outer ends extending through the perforations in the outer concentric rings and having screw-threaded ends and nuts thereon, substantially as set forth.

14. The combination, in a corn-planter, with the driving-wheels having the tappets, the hoppers, the revoluble seed-plates having the spurs to engage the tappets, and the depending studs S', of the seed-spouts and the spring-pressed valves therein adapted to be engaged and operated by the studs S', substantially as described.

15. The combination of the driving-wheels having tappets, the seed-wheels having spurs engaged by said tappets, the ejectors mounted upon shafts having operating-arms that lie in the path of the spurs of the seed-wheels, and the spring-pressed valves located in the seed-spouts and in the path of said spurs, the parts being timed to co-operate substantially as set forth.

16. The combination, in a planter, of the frame having the guides I^3 I^3, the slide-bar H^3, arranged between said guides, and the pivoted plates in the ends of said bar, substantially as described.

17. The combination, in a planter, of the frame having the guides I^3 I^3, the slide-bar arranged between said guides, and the pivoted plates in the ends of said bar, said plate having the right-angled arms U^4 V^4, and the latter being upturned and provided with the notches, substantially as described.

18. In a planter, the main frame, the marker-bar Z^3, having one end pivotally connected to the frame so as to turn in a horizontal and vertical plane, and the marker-wheel G^3, having a beveled rim and connected to the marker-bar by a shank swiveled vertically in the latter, as set forth.

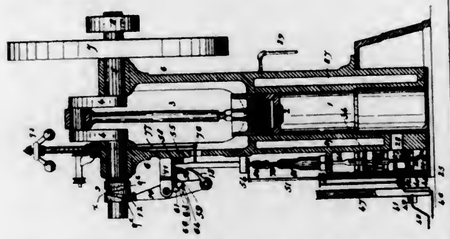
19. In a planter, the main frame, the marker-bar Z^3, having one end pivotally connected to the frame so as to turn in a horizontal and vertical plane, the marker-wheel G^3, having a beveled rim and mounted in a shank swiveled on the outer end of the marker-bar, the transversely-movable bar H^3, adapted to be projected beyond either side of the frame, and connections, as a chain or cord, between the outer end of the bar H^3 and the marker-bar, as set forth.

20. The frame having the arched cross-bar C, provided with offset D, the cranked vertical pivotal bolt I, having its bearing in the offset D, the tongue-hounds F, mounted on the bolt I, the lower end of said bolt being curved rearwardly, the axle K, secured in the lower curved end of the bolt, and the guiding-wheels L, carried by the axle, as set forth.

21. In a planter, the rock-shaft X^4, the arms V^4, projecting therefrom, a hand-lever Z' for the rock-shaft, the rods A^3, connected to the arms V^4, the crank-shaft B^3, having its cranks journaled in the runners, and the blocks C^3, having arms that fit in guideways E^3, said blocks serving as journal-blocks for the crank-shaft B^3, as set forth.

22. In a planter, the transverse shaft M, or axle carrying the wheels N O, the bars B^4, the curved arms H^4, secured thereto and having the curved slots H^5, through which the shaft M passes, as set forth.

444,031. **GAS-ENGINE AND IGNITOR THEREFOR.** GEORGE J. WEBER, Kansas City, Mo. Filed July 24, 1889. Serial No. 318,596. (No model.)



Claim.—1. In a gas-engine, the combination of the power-cylinder, piston, piston-rod, drive-shaft, a stationary double screw located on said drive-shaft, and means in connection therewith for operating the supply and exhaust valves, substantially as and for the purpose set forth.

2. In a gas-engine, the combination of a power-cylinder, piston, piston-rod, drive-shaft, and stationary double screw located on said drive-shaft for obtaining motions parallel with the drive-shaft for the purpose of operating valve-gear, substantially as described, and for the purpose set forth.

3. In a gas-engine, the combination of a drive-shaft, stationary double screw located on the drive-shaft, a rocking lever in engagement with the double screw, and means in connection therewith for operating the supply, ignition, and exhaust valves, substantially as described, and for the purpose set forth.

4. In a gas-engine, the combination of a drive-shaft, double screw located on said shaft, a rocking lever in engagement with said double screw, and pawls secured to the rocking lever, whereby the supply, ignition, and exhaust valves are operated, substantially as described, and for the purpose set forth.

5. In a gas-engine, the combination of a drive-shaft, double screw located on said shaft, a rocking lever having one of its ends in engagement with the double screw and the other end provided with pawls which engage with the valve-operating rods, and wipers for disengaging said pawls from said rods, substantially as and for the purpose set forth.

6. In a gas-engine, the combination of a drive-shaft, double screw on said shaft, rocking lever in engagement with the screw, pawls on the rocking lever, rod 67, for operating the gas-supply valve, rod 51, for operating the ignition-valve, wiper situated near the rods, a governor suitably located, and means for connecting the governor with the wiper, so that the wiper may be raised or lowered according to the speed of the governor, substantially as described, and for the purpose set forth.

7. In a gas-engine, the combination of the power-cylinder, piston, piston-rod, drive-shaft, a stationary double screw on said drive-shaft, a lever engaged by said screw and fulcrumed to be oscillated in a plane parallel with the shaft, and means in connection with said lever for operating the supply and exhaust valves, substantially as set forth.

8. In a gas-engine, the combination of the valve 39, having an opening 45, a stem 41, lever 42, the rocking lever having a pawl, a bar connected with lever 42 and adapted to be elevated by said pawl, and means for automatically oscillating said rocking lever, substantially as described, and for the purpose set forth.

9. In a gas-engine, the combination of the valve 39, stem 41, lever 42, and a spring 50, for imparting a circular motion to said valve, substantially as described, and for the purpose set forth.

10. In a gas-engine, the combination of a suitable ignition-valve, a trigger for holding the valve closed, and an adjustable trip for releasing said trigger connected to a moving part of the engine, substantially as set forth.

11. In a gas-engine, the combination of the valve 39, rod 51, means for connecting the rod with the valve, said rod being provided with a beveled portion 56 and a hook 58, and means in contact with said beveled portion, whereby the hook may be forced into engagement with a fixed point, substantially as described, and for the purpose set forth.

12. In a gas-engine, the combination of the ignition-valve 39, rod 51, having a hook 58, and a link 59, for the purpose of disengaging the hook from a fixed bearing, substantially as described, and for the purpose set forth.

13. In a gas-engine, the combination of the ignition-valve 39, valve-rod 51, link 59, rocking lever 10, and an eccentric on the rocking lever to which one end of the link is secured, substantially as described, and for the purpose set forth.

14. In a gas-engine, the combination of the ignition-valve 39, valve-rod 51, link 59, rocking lever 10, eccentric 61, and means for rotating the eccentric and fixing it at any desired point, substantially as described, and for the purpose set forth.

15. In a gas-engine, the combination of the ignition-valve, valve-rod 51, link 59, rocking lever 10, having holes 66, eccentric 61, and spring-arm secured to the eccentric, said arm carrying a point 65, which engages in the openings 66, substantially as described, and for the purpose set forth.

16. In a gas-engine, the combination of the ignition-valve and an adjustable trip adapted to permit said valve to open sooner or later while the engine is in motion, substantially as set forth.

17. In a gas-engine, the combination of the valve 39, having an opening 45, plate 40, having an opening 44, and a tube 46, secured in the opening, said tube being formed with two horizontal portions and one vertical portion, the lower portion being detachable in order that the tube may be cleaned out when desired, substantially as described, and for the purpose set forth.

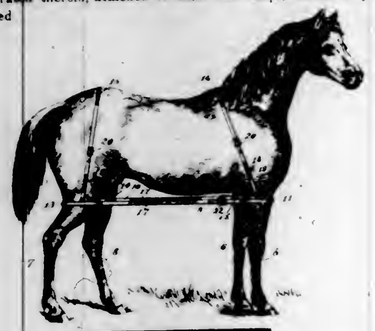
18. In a gas-engine, the combination of the valve 39, tube 46, connecting with the valve and having a vertical portion, a flue 47, surrounding said portion of the tube, and a gas-pipe projecting into said flue adjacent to said vertical portion, substantially as described, and for the purpose set forth.

19. In a gas-engine, the combination of the valve 39, tube 46, having a vertical portion, and flue 47, surrounding said vertical portion, said flue having a hood 49, in which is located a gas-pipe 48, adjacent to said vertical portion, substantially as described, and for the purpose set forth.

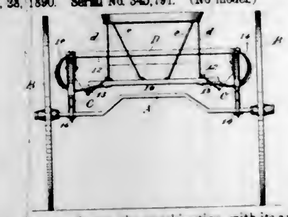
444,032. **HORSE-TRAINING HARNESS.** JOHN H. WHITAKER, Davenport, Iowa. Filed Dec. 19, 1889. Serial No. 334,345. (No model.)

Claim.—In a horse-training harness, the combination of straps 9 and 10, each having elastic material incorporated therein, the limb-straps attached thereto, and the body-straps, having elastic material

incorporated therein, attached to such limb-straps, substantially as described



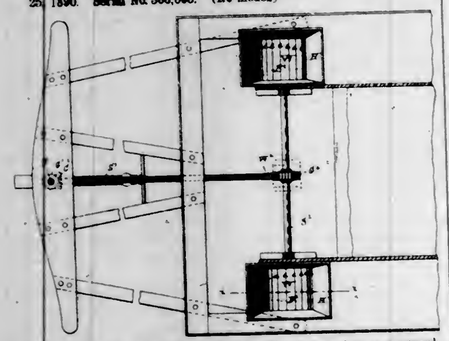
444,033. ROAD-CART. JOHN H. WHITAKER, Davenport, Iowa. Filed Mar. 28, 1890. Serial No. 345,791. (No model.)



Claim.—1. In a road-cart, the combination, with its axle, wheels, shafts, and the body, of the body between such shafts and at its front ends suspended to the shafts, the semi-elliptical springs, the rear ends of such body hinged to a spring at opposite sides, and each spring hinged at its upper end to a shaft, substantially as described.

2. In a road-cart, the combination, with its axle, wheels, shaft, and the body, of the two horizontal rods, the arms attached to each of said rods, each rod hinged to a side of the body, hangers attached to each shaft, each arm of a rod hinged to a hanger, the semi-elliptical springs, the rear end of such body hinged to a spring at opposite sides, and each spring hinged at its upper end to a shaft, substantially as described

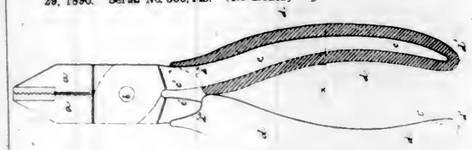
444,034. SAND-BOX FOR CARS. WALTER V. H. WILLSON, Troy, assignor of one-half to Herbert F. Ashton, West Troy, N. Y. Filed Sept. 25, 1890. Serial No. 366,093. (No model.)



Claim.—1. In an apparatus for distributing sand to a car-track, the combination, with a hopper adapted to contain sand and constructed with a rounded-out bottom having a discharge-opening, of a wheel having perimetral buckets, with said wheel constructed to be rotated within said hopper and the rounded bottom thereof, and said buckets constructed to deliver sand to said bottom-opening when said wheel is rotated and to prevent the delivery of the sand through said opening when the wheel is at rest, substantially as and for the purposes set forth.

2. In an apparatus for distributing sand to a car-track, the combination, with a hopper adapted to contain sand and provided with a rounded-out bottom provided with an opening and connected conveying-chute, of a mud-wheel having perimetral buckets, with said wheel constructed to be rotated within said hopper and the rounded bottom thereof, and said buckets constructed to deliver sand to said bottom-opening and chute when said wheel is rotated and to prevent the delivery of sand through said opening when the wheel is at rest, substantially in the manner as and for the purposes set forth.

444,035. PLIERS. GEORGE WYATT, Brooklyn, N. Y. Filed Sept. 29, 1890. Serial No. 366,445. (No model.)

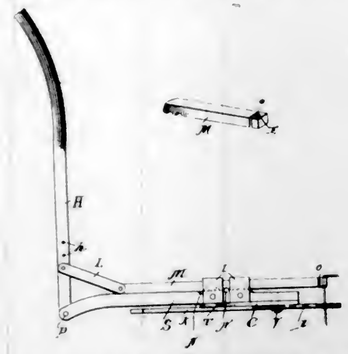


Claim.—1. As a new article of manufacture, pliers the handles of which are covered by non-conducting sleeves, substantially as specified.

2. A pair of pliers provided with non-conducting sleeves *d*, surrounding the handles, said sleeves being closed at their outer ends *d'*, so as to embrace the ends of the handles, substantially as specified.

3. A pair of pliers provided with non-conducting sleeves *d*, surrounding the handles, said sleeves being closed at their outer ends *d'* and provided with inclined inner edges *d²*, substantially as specified

444,036. WIRE-STRETCHER. DEVILLO BALL, Laona, N. Y. Filed Aug. 23, 1890. Serial No. 362,805. (No model.)



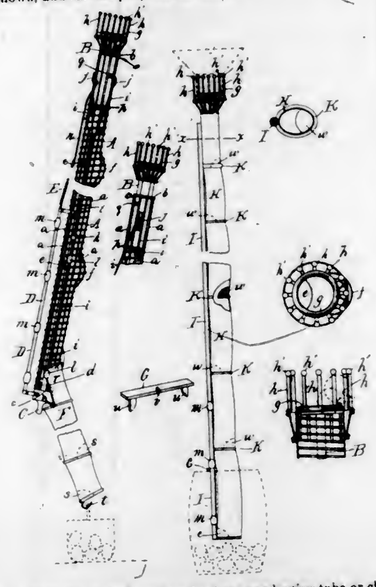
Claim.—1. In a wire-stretcher, the combination, with the stationary bar S, having a turned-down bifurcated rear end, the loops l, rising from said bar near the front end, and the handle H, mounted on a pivot P in said bifurcated end and having a number of bolt-holes *h* through its body, of the moving bar M, sliding upon said stationary bar and through said loops, links L, pivotally connected at their front ends to said moving bar and at their rear ends to one of said bolt-holes, and means, substantially as described, for locking the wire to the moving bar, the two bars to each other, and the stationary bar to a post, as set forth.

2. In a wire-stretcher, the combination, with the stationary bar S, having two semicircular notches N in its upper face, the loops l, rising from said bar forward of each notch, the moving bar M, sliding upon said stationary bar through said loops and having a number of registering notches in its lower face closer together than the distance between the notches in the stationary bar, and a lever for operating said moving bar, of a fastening-pin F, fitting said registering notches, and means, substantially as described, for locking the wire to the moving bar and the stationary bar to the post, as set forth.

444,037. FRUIT-GATHERER. CHARLES R. BANKS, Boston, Mass. Filed Mar. 31, 1890. Serial No. 346,097. (No model.)

Claim.—1. A fruit picker and gatherer consisting of a conducting tube or chute having cushions secured to the interior of the same at intervals along its length, and an opening at or near its lower end, in combination with an annular cushion secured to the upper end of the conducting-tube and surrounding the opening of the same, and a series of longitudinally-projecting fingers surrounding said cushion a short distance outside of the same, all substantially as shown, and for the purposes set forth.

2. In combination with a conducting-tube, the annular cushioned ring *g*, surrounding the opening of the upper end of said tube, and a series of longitudinal cushioned fingers surrounding said ring a short distance outside of the same and extending beyond the ring, substantially as shown, and for the purposes set forth.



3. A fruit picker and gatherer having a conducting tube or chute formed of two sections, the upper one of which is adapted to slide in or on the lower one, in combination with means for sliding said section, and an annular cushion or ring surrounding the opening of the end of the upper section, and a series of longitudinally-projecting fingers surrounding said ring a short distance outside of the same, all substantially as shown, and for the purposes set forth.

4. A fruit picker and gatherer having a conducting tube or chute formed of two sections, the lower one of which has cushions secured to the interior of the same at intervals along its length, the upper section of which is adapted to slide in or on the lower section, in combination with means for sliding said upper section, and an annular cushion surrounding the opening of the upper open end of the same, and a series of longitudinally-projecting fingers surrounding said ring a short distance outside of the same, all substantially as shown, and for the purposes set forth.

5. A fruit picker and gatherer consisting of a conducting tube or chute having cushions secured to the interior of the same at intervals along its length and an opening at or near its lower end, in combination with an annular cushion secured to the upper end of the conducting-tube and surrounding the opening of the same, a series of longitudinally-projecting fingers surrounding said cushion a short distance outside of the same, and a handle for holding up said tube, all substantially as shown, and for the purposes set forth.

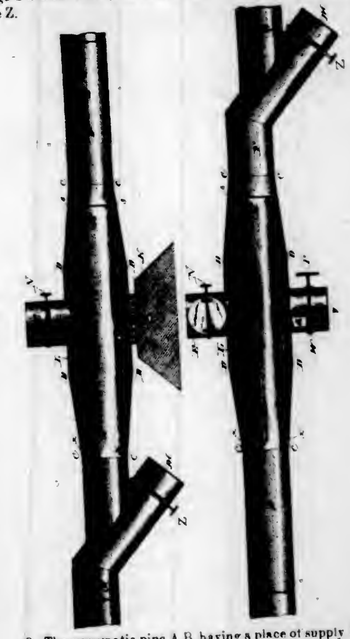
6. A fruit picker and gatherer having a conducting tube or chute formed of two sections, the lower one of which has cushions secured to the interior of the same at intervals along its length, the upper section of which is adapted to slide in or on the lower section, in combination with the cord i and pulleys *j*, an annular cushion surrounding the upper open end of the upper section, and a series of longitudinal projecting fingers surrounding said cushion, all substantially as shown, and for the purposes set forth.

7. In combination with the fruit-conducting tube, the handles having the swells or projections *m*, the bar G, having the recess *v* and extensions *u*, all substantially as shown, and for the purposes set forth.

444,038. PNEUMATIC CONVEYER. JAMES W. BEACH, Fernwood, Ill. Filed Aug. 23, 1890. Serial No. 362,877. (No model.)

Claim.—1. The pneumatic pipe A B, having a place of supply E, a funnel-shaped enlargement C C C C, and the pipe H H therein inserted in such manner as to leave the space or reservoir L L surrounding said pipe H H and the place of discharge from said space or reservoir S S.

2. The pneumatic pipe A B, having a place of supply E, with valve N, a funnel-shaped enlargement or reservoir C C C C, and the pipe H H therein inserted in such manner as to leave the space or reservoir L L surrounding the sides of said pipe H H and the place of discharge S S from said space or reservoir L L, and the aperture M, with valve Z.

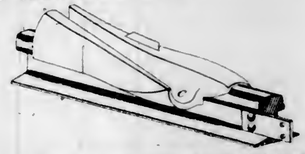


3. The pneumatic pipe A B, having a place of supply E, with valve N, a double funnel-shaped enlargement, space, or reservoir C C D D D D C C, and the movable pipe H H therein inserted in such manner as to leave the space or reservoir L L and the place of discharge S S from said space or reservoir, the slot in said pipe A B, the lug G, annexed to said pipe H H, the eye or threaded nut in said lug, the screw or bar W, and lever or wheel P, and the pipe or dome V, through which said screw or bar is operated, and said pipe H H is advanced either forward or backward, as desired.

4. The pipe H H, placed within a reservoir or conical or funnel-shaped enlargement of said pneumatic pipe A B in such manner as to leave the space L L and the place of discharge S S, the surface of the ends of said pipe H H being packed, beveled, or chamfered so as to form substantially an air-tight joint between said beveled ends and said funnel-shaped surface of said pipe A B upon said pipe H H being pressed either forward or backward so as to come in contact with said surface.

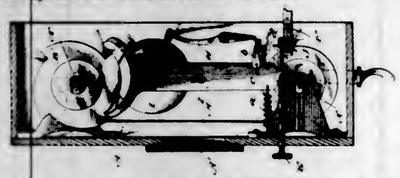
5. The pipe H H, inserted within a larger pneumatic pipe tapered substantially to the same interior diameter as said pipe H H, and one end of said pipe H H being annexed to the interior of said larger pipe A B, leaving the space or reservoir L L and place of discharge S S.

444,039. LIFE AND PROPERTY SAVING DERAILING-FROG. ALFRED G. BODLEY and JAMES F. BEELMAN, Plymouth, Ohio. Filed Jan. 13, 1890. Serial No. 336,858. (No model.)



Claim.—A life and property saving derailing-frog to prevent rear collisions on railway-trains, to be made as set forth in the specifications and shown in Figs. 1, 2, and 4 of drawings herewith, and comprising the incline to raise the wheel, the groove to catch the flange and force the wheel to a point over and past the rail, all combined in one device, substantially as set forth.

444,040. INDICATOR FOR CARS. PIERRE J. BOEIE, Boston, Mass. Filed Apr. 15, 1890. Serial No. 348,008. (No model.)

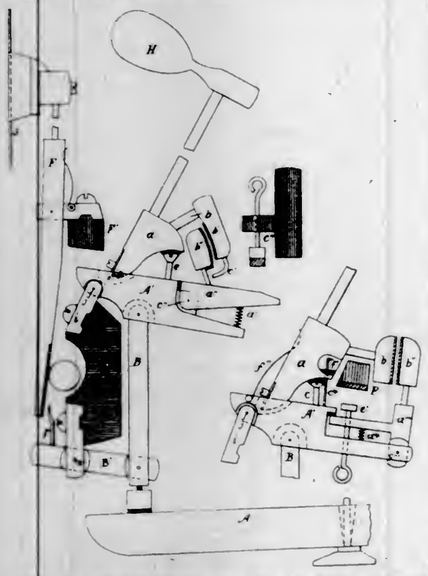


Claim.—1. In an indicator of the character described, the upper and lower rollers and the canvas containing the street-names and stations, in combination with a single ratchet-wheel and the single pivotal escapement-lever engaging directly with the ratchet-wheel, the spring for bringing the lever automatically back to its normal position, and the trip mechanism connected pivotally with said lever opposite the spring for ringing the bell, all inside of the casing, substantially as and for the purposes specified.

2. In an indicator of the character described, an upper roller having a ratchet-wheel and a lower roller having a spring and a canvas carrying the names of the streets and stations secured to and between rollers, in combination with a pivotal escapement-lever provided with a horizontal pivotal rod, one end of which is provided with a push-button and the opposite end provided with a catch, a link, and a hand-lever, all connected together, and a supplemental thumb-piece forming a virtual continuation of the escapement-lever, all constructed and combined to operate substantially as and for the purposes specified.

3. In an indicator of the character described, a main casing provided with an opening having a transparent cover in front, and also provided with an open space in the rear to facilitate lighting the same, in combination with the rollers, the canvas carrying the names of the streets and stations, and the escapement mechanism provided with operating-rods projecting from opposite sides and from the bottom adjacent to the opposite sides, substantially as and for the purposes specified.

444,041. REPEATING-ACTION FOR PIANOS. JOHN W. BRACKETT, Boston, Mass., and HORATIO N. MOORE, Savannah, Ga. Filed May 14, 1890. Serial No. 351,818. (No model.)



Claim.—1. The combination, with a key A, extension B, hammer, and stem H, of the hammer-butt *a*, pivoted to the rocker A' at the point *d*, all arranged and operating substantially as described.

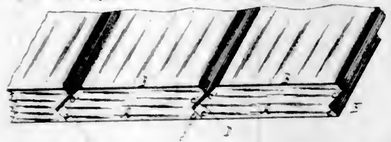
2. The combination, with a key, extension, hammer, and stem, of a hammer-butt, as described, pivoted to a rocker, as described, at a point *d*, and means, as the stop-screw *c*, projecting from the rocker A' to meet the under edge of the said hammer-butt *a*, for the purpose described.

3. The combination, with a key, extension, hammer, and stem, of the hammer-butt *a*, pivoted to the rocker A', the stop-screw *c*, the said hammer-butt *a* having extended obliquely from its upper end an arm *b*, carrying the triple trip-stop *b' c'*, for the purposes described.

4. The combination, with a key, extension, hammer, and stem, of the described hammer-butt pivoted to the described rocker, the stop-screw *c*, said hammer-butt having extended from its upper end obliquely an arm *b*, carrying the triple trip-stop *b' c'*, for the purposes described, the said rocker having a trip-lever, as *a''*, pivoted at the point *c''*, the free end of the said lever being followed by a spring *a'*, combined with the regulating screw and button *c''*, for the purposes herein described.

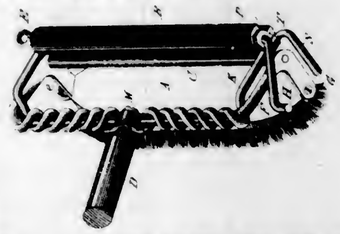
5. The combination, with a key, extension, hammer, and stem, of the described hammer-butt pivoted to a rocker, as described, the stop-screw *c*, said hammer-butt having extended from its upper end obliquely an arm carrying a triple trip-stop, operating as described and for the said purposes, the said rocker A' having the trip-lever *a''*, pivoted at the point *c''*, the free end of the lever *a''* being followed by the spring *a'*, combined with the regulating screw and button *c''*, an independent damper-rail F', in combination with the damper F, for the purposes described, and an extended extension-link B', in combination with the trip *f* and the damper F.

444,042. VENEERED LUMBER. WILLIAM E. BROCK, Plainfield, N. J. Filed Apr. 3, 1890. Serial No. 346,405. (No specimens.)



Claim.—The combination of boards, each having both of its edges inclined in parallel planes from both surfaces thereof to form at such edges respectively an angular projection and corresponding recess, and having a veneer upon one or both surfaces thereof, the edges of which veneer are folded and secured upon parallel portions of said inclined edges of the boards, substantially as and for the purpose described

444,043. MOP-STICK, MOP-WRINGER, AND SCRUBBING-BRUSH HOLDER COMBINED. JOSEPH A. BROSSEAU, Concordia, Kans. Filed Nov. 1, 1886. Serial No. 217,756. (No model.)



Claim.—1. In a combined mop-stick, mop-wringer, and scrub-brush holder, the frame F, having the roller C journaled in its arms, the spring coiled about the main portion of said frame and having its end portions bent at K N to conform to the shape of the arms of the frame, parts K being provided with bearings T, and roller B, journaled in said bearings and provided with crank H, parts N being extended downward at right angles to parts K and serving as guides to prevent the mop-cloth from being caught by the crank.

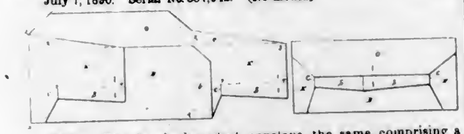
2. The roller B, provided with notch R, the crank-shaft H, hinged within said notch by means of loop S and pin P, the opposite end of said shaft being flattened and perforated, and the screw-eye E for detachably connecting said end to the opposite end of the roller, whereby said crank forms an axle for said roller and a clamp for securing the mop-cloth thereto, substantially as described.

444,044. WELDING COMPOUND. WILLIAM W. BROWN and MILTON C. REYNOLDS, Culbertson, Nebr. Filed May 22, 1890. Serial No. 352,803. (No specimens.)

Claim.—1. The within welding compound, composed of borax, muriate of ammonia, yellow prussiate of potash, and soapstone, substantially in the proportions specified.

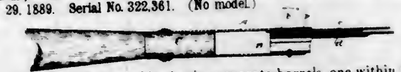
2. The method of forming the within compound, consisting in mixing together borax, muriate of ammonia, and yellow prussiate of potash with water sufficient to make a thin liquid, then boiling the mixture to the consistency of a thick cream, then cooling and pulverizing the compound, and then adding pulverized soapstone and incorporating it with the mixture, substantially as and for the purposes set forth.

444,045. ENVELOPE. BENJAMIN G. BUTTON, Waterloo, Iowa. Filed July 7, 1890. Serial No. 357,942. (No model.)



Claim.—The herein-described envelope, the same comprising a front F, having an upwardly-folding back, inwardly-folding lapping ends, and a downwardly-folding ordinary flap, the width of the ends being greater than that of said flap, and said ends being provided with cuts C, extending up to the lower edge of the folded flap, thereby forming a supplemental flap, as and for the purpose set forth.

444,046. PEN-HOLDER. PETER J. CAIRNS, Chicago, Ill. Filed Aug. 29, 1889. Serial No. 322,361. (No model.)



Claim.—1. A pen-holder having separate barrels, one within the other, and the inner barrel having free overlapping edges or sides, substantially as set forth.

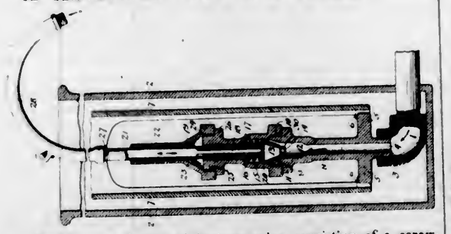
2. A pen-holder formed of barrels, one within the other, the outer barrel being a plain cylinder and the inner barrel a cylinder having free overlapping sides, substantially as set forth.

3. A pen-holder having two barrels, one of which has free overlapping sides with a bead on the overlapping portion and extends within the other barrel, substantially as set forth.

4. A pen-holder provided with separate seats for a pen and feeder, between which is a yielding portion of the holder provided with a bead or other means for holding the pen and feeder apart, substantially as set forth.

5. A pen-holder having an inner barrel of convolute form and an outer barrel to which said inner barrel is secured, substantially as described.

444,047. HYDRANT-VALVE. JAMES E. CALLAHAN, Philadelphia, Pa. Filed June 18, 1890. Serial No. 355,898. (No model.)



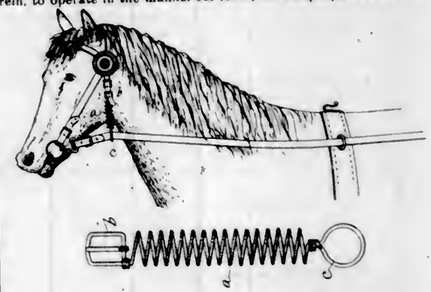
Claim.—1. An improved hydrant-valve consisting of a screw-threaded lower sleeve 8, provided with projections adapted to be removed by a wrench applied from above, and containing the valve-seat 9, in combination with a middle section 16, screwed thereto, and an upper section 22, provided with a valve-seat and guide fitted with the connected valves 13 and 19, spring 15, and the tube 21, constructed and arranged substantially as set forth.

2. An improved hydrant-valve consisting of a lower sleeve 8, containing the valve-seat 9, in combination with a middle section 16, screwed thereto, and an upper section provided with a valve-seat and guide fitted with the connected valve 13 and 19, and the tube 21, to close downwardly in the valve-seat 9 and upwardly in the valve-seat 23, constructed and arranged to operate substantially as set forth.

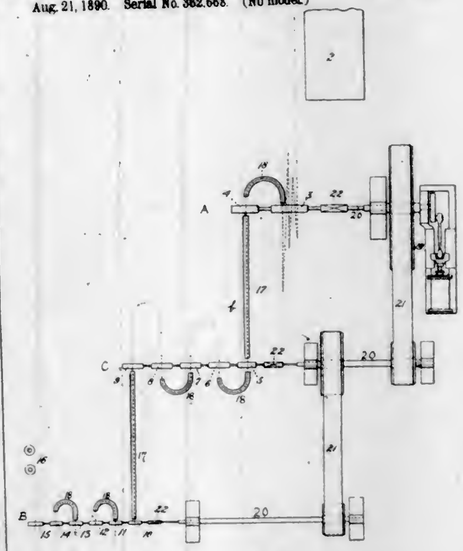
444,048. BRIDLE ATTACHMENT. ANDREW CHESEN, Sergeant Bluff, Iowa, assignor of one-half to Andrew J. Huntley, same place. Filed Sept. 17, 1889. Serial No. 324,261. (No model.)

Claim.—1. As an improved article of manufacture, a coil-spring having an integral buckle-frame at its top end, a tongue attached to the said frame, and an integral ring at its lower end, for the purposes stated.

2. The combination of a coil-spring having a buckle at its top end and a ring at its lower end, the throat-latch of a bridle, and a driving-rein, to operate in the manner set forth, for the purposes stated.



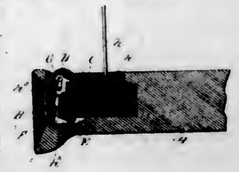
444,049. ROD-MILL. THOMAS W. FITCH, Edgewoodville, Pa. Filed Aug. 21, 1890. Serial No. 362,668. (No model.)



Claim.—1. An improvement in the art of rolling metal rods, which consists in passing a heated billet through billet-rolls, reducing and elongating it thereby into rod form, and after passing it entirely through the billet-rolls introducing it into a more highly-speeded rod-train, whereby independent action of the rod-train on the rod is secured and undue tension on the rod prevented, substantially as and for the purposes described.

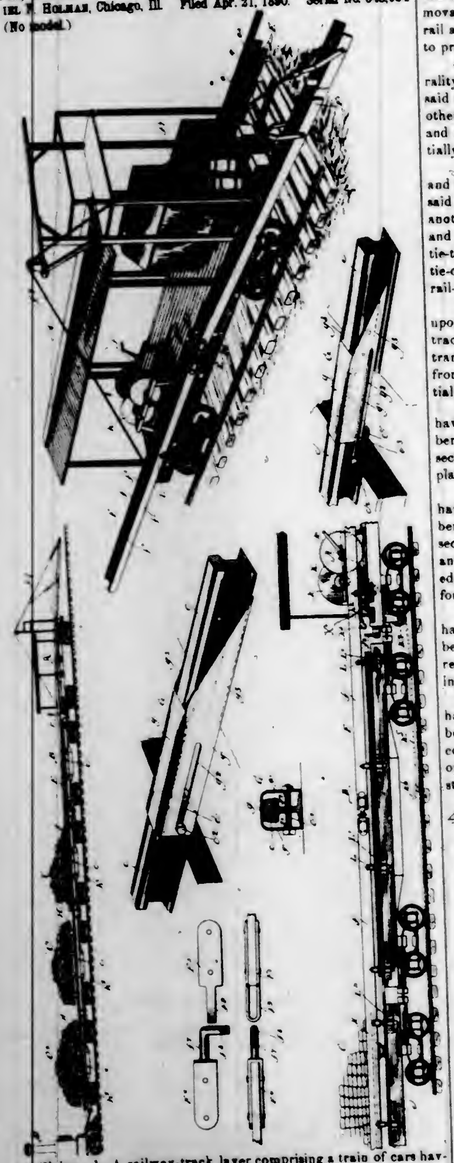
2. A rod-mill plant having billet-rolls, a series of roll-passes 5, 6, 7, 8, and 9, to which the rod travels in a direct pass from the billet-rolls and through which it travels in loops, and a final series of roll-passes 10, 11, 12, 13, 14, and 15, to which the rod travels in a direct pass and through which it travels in loops, substantially as and for the purposes described.

444,050. CAR-COUPLING. GABRIEL A. HENDRICKS, Bloomington, Ind. Filed Oct. 8, 1890. Serial No. 367,398. (No model.)



Claim.—In a car-coupler, the combination, with a draw-head having a central opening B and a recess in its upper side, of cars struck up from the metal at the forward end of said recess, a locking-pin of substantially bell-crank shape having a vertical elongated slot in the upper end of its vertical portion, a pin passing through said slot, a foot formed on the lower end of the vertical portion of the pin, extending rearwardly, and having a curved under side and a straight upper edge, a stop formed at the bottom of the opening, and a cord attached to the horizontal arm of the locking-pin, substantially as described.

444,051. APPARATUS FOR LAYING RAILWAY-TRACKS. DANIEL P. HOLMAN, Chicago, Ill. Filed Apr. 21, 1890. Serial No. 348,924. (No model.)



Claim.—1. A railway-track layer comprising a train of cars having a plurality of tie-cars, movable trucks upon said cars for receiving the ties, said trucks being adapted for movement from one car to another of the train, and tie-tramways located along the side of the train and extending from the front end thereof along the sides of a part only of the cars of the train, whereby the trucks containing the ties can be moved forward from the rear cars to the end of said tie tramway, unloaded upon said tie-tramway, and then carried to the front end of the construction-train.

2. In a railway-track layer, a train of cars comprising a tool-car and a plurality of rail and tie cars, tramways extending from the front end of said tool-car along the sides thereof to said rail and tie cars and movable trucks for receiving the ties, arranged to pass only over said rail and tie cars.

3. In a railway-track layer, a train of cars comprising a tool-car and a plurality of rail and tie cars, tramways extending from the front end of said tool-car along the sides of the train to said tool-car, and movable trucks for receiving the ties, arranged to pass only over said rail and tie cars, the meeting ends of said rail and tie cars being jointed to provide a continuous surface for the passage of said trucks.

4. A railway-track layer comprising a train of cars having a plurality of tie-cars, movable trucks upon said cars for receiving the ties, said movable trucks being adapted for movement from one car to another of the train, and tie-tramways located along the side of the train and extending from the front end thereof to the first tie-car, substantially as described.

5. A railway-track layer comprising a train of cars having rail and tie cars, movable trucks upon said tie-cars for receiving the ties, said movable trucks being adapted for movement from one car to another of the train, rail-tramways located along one side of the train, and tie-tramways located along the opposite side of said train, said tie-tramways extending from the front end of the train to the first tie-car, said movable trucks being adapted to be moved upon said rail-car, substantially as described.

6. A railway-track layer comprising a train of cars, a trackway upon said cars, movable trucks upon said trackway, the ends of said trackway at the meeting ends of the cars being coupled together, and tramways located along the side of said train and extending from the front end thereof along the side of a part only of the train, substantially as set forth.

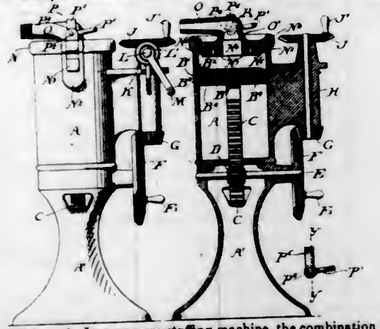
7. The combination, in a railway-track layer, with a train of cars having rails upon them for providing a trackway, of a coupling member for joining the rails at the meeting ends of the cars and which is secured to the end of a rail, said member comprising a tread and side plates, substantially as set forth.

8. The combination, in a railway-track layer, with a train of cars having rails upon them for providing a trackway, of a coupling member for joining the rails at the meeting ends of the cars and which is secured to the end of a rail, said coupling member comprising a tread and side plates and having said side plates extended with their top edges inclined downwardly toward their ends, substantially as set forth.

9. The combination, in a railway-track layer, with a train of cars having rails upon them for providing a trackway, of a coupling member for joining the rails at the meeting ends of the cars, said members resting on one of said rails and being secured to the other by a yielding connection, substantially as set forth.

10. The combination, in a railway-track layer, with a train of cars having rails upon them for providing a trackway, of a coupling member for joining the rails at the meeting ends of the cars, said member comprising a tread and side plates, said side plates having slots or openings for engagement with a bolt or pin in one of the rails, substantially as set forth.

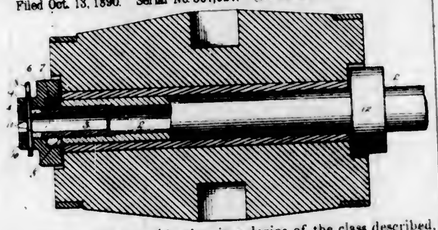
444,052. SAUSAGE-STUFFING MACHINE. CHARLES W. HOFFMAN, Philadelphia, Pa., assignor to John Eppler and John Klenk, both of same place. Filed Nov. 18, 1889. Serial No. 330,799. (No model.)



Claim.—1. In a sausage-stuffing machine, the combination of the lid thereof and the metallic ring attached to the under side of the lid, of the elastic ring located between said lid and the said metallic ring, with the piston and means for operating the same, substantially as shown and described.

2. In a sausage-stuffing machine, the combination of the lid thereof having a central aperture and provided with the lugs P^3, the elbow O, arranged to fit into the said aperture, with the bail P^2 and the lever-bail provided with trunnions and eccentrics adapted to turn, respectively, in the said lugs and the said bail, for the purpose set forth.

444,053. AXLE-NUT. JOSEPH L. HOUSE, Minneapolis, Minn., assignor of one-half to Peter B. Christian and Peter Faber, same place. Filed Oct. 13, 1890. Serial No. 367,927. (No model.)

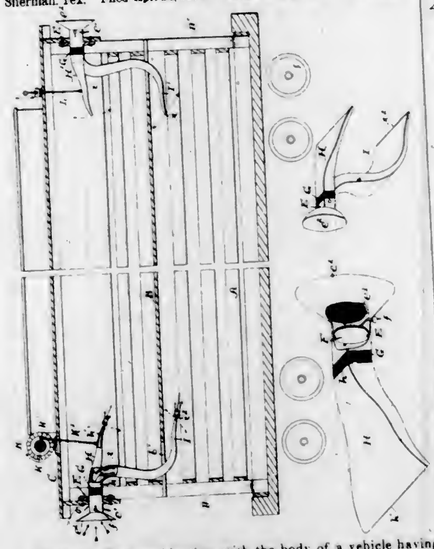


Claim.—1. The combination, in a device of the class described, of the threaded end of the axle with the adjustable nut, the recess in said nut of greater diameter than that of the end of the axle, one or more sets of oppositely-placed openings extending transversely through said nut, a slot or slots in the end of the axle, and a pin or key adapted to be inserted through the openings in the nut and through said slot, substantially as and for the purpose specified.

2. The combination, in a device of the class described, of the axle having the slotted and threaded end, with the nut 6, the recess 7 in said nut, the openings 9 in the nut, and the pin or key adapted to be inserted through said openings and the slotted end of the axle, substantially as described.

3. The combination of the axle 2 with the sleeve 3, having the threaded outer end 4, the slots 11 in said ends 4, the nut 6, having the recess 7 of greater diameter than the end of the axle 2, openings 9, provided in the nut, and the spring key or pin 8, adapted to be inserted through opposite pairs of said openings and through the slot 11 to lock said nut upon the end of the axle and against the end of the hub, substantially as described.

444,054. MEANS FOR VENTILATING CARS. SAMUEL LAZARUS, Sherman, Tex. Filed Apr. 24, 1890. Serial No. 349,347. (No model.)

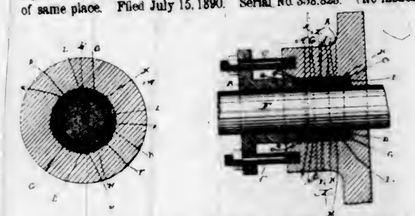


Claim.—1. The combination, with the body of a vehicle having its walls provided with a suitable pipe-opening, of an air-receiving pipe provided with a screen upon its outer end, a hollow fan-shaped air-distributer having an opening within said walls connected with the inner end of said air-receiving pipe, and a pipe-closing damper in said receiving-pipe between said screen and said air-distributer, as and for the purpose described.

2. The combination, with the body of a vehicle having its walls provided with a suitable pipe-opening, of an air-receiving pipe, a hollow fan-shaped air-distributer provided with an opening within said walls, an intermediate flexible sleeve connected with the inner end of said receiving-pipe and also with said air-distributer, and means for vibrating said air-distributer, in the manner described.

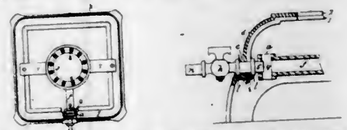
3. The combination, with the body of a vehicle having its walls provided with suitable pipe-openings at each end and air-receiving pipes in said openings, of hollow fan-shaped air-distributers having openings within said walls and arranged at each end of the body of said vehicle, flexible sleeves connected with each respective air-distributer and air-receiving pipes, and means, substantially as described, for vibrating one air-distributer and adjusting the position of the other, as and for the purpose described.

444,055. ROD-PACKING. THOMAS E. MURRAY, Albany, N. Y., assignor of two-thirds to Robert C. Blackall and Edward A. Maher, both of same place. Filed July 15, 1890. Serial No. 358,823. (No model.)



Claim.—The metallic packing for rods herein described, the same consisting of a series of metallic packing-rings G, separated into segmental pieces, each of said rings being provided with a circumferential groove or rabbet H on its perimeter, a like series of metallic supplemental rings K, separated into segmental pieces corresponding in length and form to the segmental pieces of the packing-rings G, and fitted to enter the grooves of the latter, the radial joints of both series of segmental pieces being arranged to form break joints with the different layers of said rings, springs L, interposed between said packing-rings and supplemental rings at the line of their curvilinear separation, an elastic cushion P, and a semi-elastic junk-ring Q, interposed between the upper layer of packing-rings G' and gland B, as and for the purpose specified.

444,056. GAS-STOVE. CHARLES W. MCCUTCHEN, Peekskill, N. Y. Filed Sept. 12, 1889. Serial No. 323,796. (No model.)



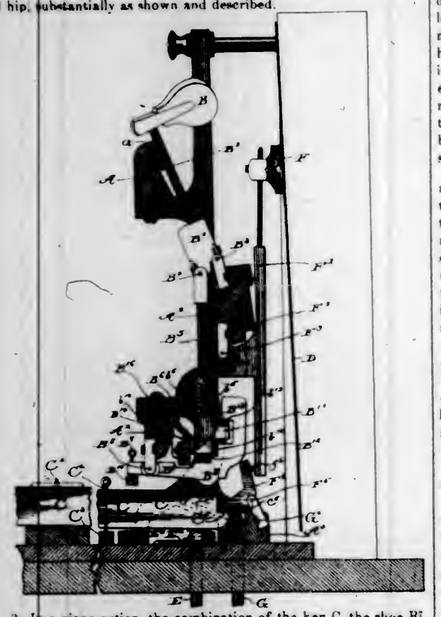
Claim.—1. The combination, in a gas-stove, of a gas-burner, with its supporting-bridge and supply-tube, the top and bottom plates of a gas-stove, and a gas-supply cock having an unthreaded nozzle projecting into the burner-supply tube, the cock having a bearing-surface to fit a space made for it when the top and bottom plates are joined together in the manner shown, all the parts being firmly held together when the top and bottom plate fastenings are in place, substantially as herein shown and described.

2. In a gas-stove, the combination, with the top plate 2 and bottom plate 1, forming when joined a space to receive the part *k*, of a gas-cock *h*, the burner and its supply-tube *f*, the gas-cock *h*, having a flanged stem to be clamped by the top and bottom plates, and an unthreaded nozzle 5, projecting into the part *a* of the tube *f*, substantially as herein shown and described.

444,057. PIANO-ACTION. MARTHA A. RUDOLF, San Francisco, Cal., administratrix of the estate of John Rudolf, deceased. Filed June 16, 1890. Serial No. 355,617. (No model.)

Claim.—1. The combination of the key C, pivoted between its ends, an adjustable buffer located beneath the rear end of said key, a shoe B^7, hinged to a rail above said key and having a heel resting upon the latter and having a hip B^{13} and a rising arm B^{12}, and the hammer-shaft B^6, depending from above said shoe and resting normally upon said hip, substantially as shown and described.

2. The combination of the key C, pivoted between its ends, a shoe B^7, hinged to a rail above said key and having a heel resting upon the latter and having a hip B^{13} and a rising arm B^{12}, and the hammer-shaft B^6, depending from above said shoe and resting normally upon said hip, substantially as shown and described.



3. In a piano-action, the combination of the key C, the shoe B^7, hinged to a rail directly above said key and having a heel resting normally upon the latter and having a hip B^{13} and a rising arm B^{12}, a hammer B, hammer-stem B', hammer-block B^3, hinged to a rail at B^3, and a hammer-shaft hinged to said hammer-block and depending from said hinge and resting normally upon said hip B^{13} and sufficiently near the arm B^{12} to be engaged by the latter when said shoe is rotated upon its hinge by the lifting of the rear end of the key C, substantially as shown and described.

4. The combination of the key C, pivoted between its ends, the hinged shoe B^7, located above said key and having at one side of its hinge a heel resting upon said key, and an adjustable buffer located between said key and shoe at the side of the hinge of the latter opposite said heel, substantially as shown and described.

5. The combination of the key C, pivoted between its ends, the hinged shoe B^7, located above said key and having at one side of its hinge a heel resting upon said key, and an adjustable buffer located between said key and shoe at the side of the hinge of the latter opposite said heel, and an adjustable buffer located beneath the rear end of the key C, substantially as shown and described.

6. The combination of the key C, the shoe B^7, hinged to a rail directly above said key and having a heel resting upon the latter and having a hip B^{13}, an adjustable buffer located between said key and shoe at the side of the hinge of the latter opposite said heel, the hammer B, stem B', hinged hammer-block B^3, a hammer-shaft B^6, hinged to said hammer-block and resting at its lower end upon said hip B^{13}, and means for dislodging the lower end of said shaft from said hip during the stroke of the key, substantially as shown and described.

7. The combination of the key C, the shoe B^7, hinged to a rail directly above said key and having a heel resting upon the latter and having a hip B^{13}, an adjustable buffer located between said key and shoe at the side of the hinge of the latter opposite said heel, the hammer B, stem B', hinged hammer-block B^3, a hammer-shaft B^5, hinged to said hammer-block and resting at its lower end upon said hip B^{13}, and means for dislodging the lower end of said shaft from said hip during the stroke of the key, and an adjustable buffer located beneath the rear end of said key C, substantially as shown and described.

8. The combination of the key C, the shoe B^7, hinged to a rail directly above said key and having its heel resting normally upon the latter and having a hip B^{13} and a rising arm B^{12}, a hammer B, hammer-stem B', hammer-block B^3, hinged to a rail at B^3, a hammer-shaft hinged to said hammer-block and depending from said hinge and resting normally upon said hip B^{13} and sufficiently near the arm B^{12} to be engaged by the latter upon the tilting of said shoe by the lifting of the rear end of the key C, and a spring B^{16} for returning the lower end of the shaft B^5 to its normal position, substantially as shown and described.

9. The combination of the key C, the shoe B^7, hinged to a rail directly above said key and having its heel resting normally upon the latter, and having a hip B^{13} and a rising arm B^{12}, a hammer B, hammer-stem B', hammer-block B^3, hinged to a rail at B^3, a hammer-shaft hinged to said hammer-block and depending from said hinge and resting normally upon said hip B^{13} and sufficiently near the arm B^{12} to be engaged by the latter upon the tilting of said shoe by the lifting of the rear end of the key C, and a spring B^{16} for returning the lower end of the shaft B^5 to its normal position, and an adjustable buffer located beneath the rear end of the key C, substantially as shown and described.

10. The combination of the key C, the shoe B^7, hinged directly above said key and having a heel resting upon the latter and hinged to a rail and supporting an adjustable downwardly-directed buffer on the side of said hinge opposite said heel and having a hip B^{13}, the hammer B, stem B', hammer-block B^3, hinged to a rail at B^3, a hammer-shaft B^5, hinged to said hammer-block and resting at its lower end upon said hip B^{13}, and means for dislodging the lower end of said shaft from said hip during the stroke of the key, and a spring B^{16} for returning the lower end of the shaft to its normal position, substantially as shown and described.

11. The combination of the key C, the shoe B^7, hinged to a rail directly above said key and having a heel resting normally upon the latter and having a hip B^{13} and a rising arm B^{12}, having its upper end directed horizontally toward said hip, a hammer B, hammer-stem B', hammer-block B^3, hinged to a rail at B^3, a hammer-shaft hinged to said hammer-block and depending from said hinge and resting normally upon said hip and having a lateral extension B^{17}, extending beneath the horizontal portion of the upper end of the arm B^{12}, substantially as shown and described.

12. The combination of the key C, a hinged shoe located above said key and having a heel resting upon the latter and having a hip B^{13}, a hammer-shaft depending from above said shoe and resting normally upon said hip B^{13} and having a laterally-directed arm, and an adjustable buffer B^{14}, located between said arm and said shoe, substantially as shown and described.

13. The combination of the key C, a hinged shoe located above said key and having a heel resting upon the latter and having a hip B^{13}, a hammer-shaft depending from above said shoe and resting normally upon said hip and having a laterally-directed arm and an adjustable buffer B^{14}, located between said arm and said shoe, and an adjustable buffer located below said key C, substantially as shown and described.

14. The combination of the key C, the shoe B^7, located immediately above said key and having a heel resting upon the latter and being hinged to a rail A^3, and having a hip B^{13} and a hammer-shaft depending from above said shoe and resting normally upon said hip and having a laterally-directed arm, with a face B^{15} extending opposite said rail A^3, substantially as shown and described.

15. The combination of the key C, the shoe B^7, located immediately above said key and having a heel resting upon the latter and being hinged to a rail A^3, and having a hip B^{13} and a rising horizontally-directed arm B^{12}, a depending hammer-shaft resting normally upon said hip and having a laterally-directed arm B^{17}, and buffers B^{14} and b^2, arranged in relation to each other substantially as shown and described.

16. The combination of the key C, the shoe B^7, located immediately above said key and having a heel resting upon the latter and being hinged to a rail A^3, and having a hip B^{13} and a rising horizontally-directed arm B^{12}, a depending hammer-shaft resting normally upon said hip and having a laterally-directed arm B^{17} and buffers B^{14} and b^2, and a spring B^{16}, arranged in relation to each other substantially as shown and described.

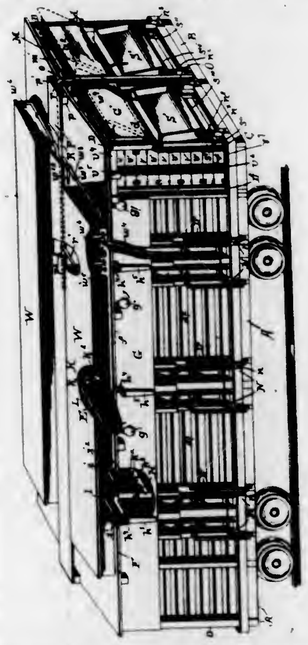
17. The combination, with the shaft B^5, having a lateral extension B^{17}, of a hinged shoe B^7, located beneath said shaft and having a rising horizontally-directed arm B^{12} extending over the extension B^{17}, substantially as shown and described.

18. The combination, with the shaft B^5, depending from the block B^2, of a hinged shoe B^7, located beneath said shaft and having a hip B^{13}, upon which said shaft normally rests, and a spring B^{16}, arranged to bear upon said shaft downward and laterally toward said hip, substantially as shown and described.

19. The combination of the key C, pivoted between its ends, an adjustable buffer located beneath the rear end of said key, a bell-crank F^6, damper F, and damper-stem F', arranged in relation to each other substantially as shown and described.

444,058. STOCK-CAR. JACOB R. STOWER, Kansas City, Kans., assignor to Samuel Laserus, Sherman, Tex. Filed Jan. 24, 1890. Serial No. 337,960. (No model.)

Claim.—1. In a stock-car having suitable compartments for the stock and transverse openings in the walls of said car, the combination, with transverse vibrating stall-partitions having end strips suspended at their upper ends from the inner top portion of said car, of a self-acting catch in said inner top portion of said car, engaging with the vibrating end portion of said partition, a releasing-lever connected with the said catch, having its end extending to the transverse openings in the walls of said car, and self-closing covers on said car over said transverse openings, substantially as and for the purpose described.



2. In stock-cars having folding water-troughs and a brace pivotally attached to and supporting the inner end portion of each trough, the combination of a vertically-sliding girdle-bar extending around said car and having suitable elevating-levers connected with said bar on the car, and supporting-plates on said girdle-bar pivotally connected with the outer end portion of said troughs, substantially as described.

3. In stock-cars having folding water-troughs and a brace pivotally attached to and supporting the inner end portion of each trough, the combination, with a vertically-sliding girdle-bar extending around said car, having suitable supporting-plates pivotally connected with the outer end portion of said troughs, of a rock-shaft on said car and rods connected with said girdle-bar and said shaft, substantially as and for the purpose described.

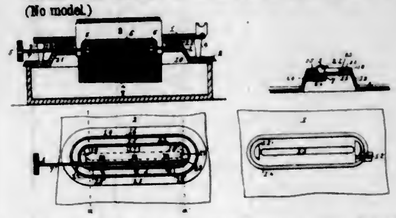
4. In stock-cars having folding water-troughs, the combination, with said troughs, of a girdle-bar extending around said car, having supporting-plates pivotally connected with the outer end portion of said troughs, trough-elevating devices on said car connected with said girdle-bar, and hinged folding supports at the other end of said troughs, substantially as described.

5. In stock-cars having folding water-troughs, the combination, with said troughs, of a girdle-bar extending around said car, having supporting-plates pivotally connected with the outer end portion of said troughs, folding braces at the other end of said troughs, and a rock-shaft on said car, having arms and a rod connected with said arms and said girdle-bar, for the purpose described.

6. In stock-cars having an opening in the walls for the entrance of the stock and vertical door-jambs provided with a vertical slot therein, the combination of a folding door consisting of a series of slats hinged together and having pivots in alternate slats arranged in the slots in said door-jambs, for the purpose described.

7. In stock-cars having an opening in the walls for the entrance of the stock, a folding door therefor consisting of a series of slats hinged together and adapted to unfold in line with the inner walls of the car, an overhead guide and a slide therein, and a vertical bar pivoted to said slide at one end and suitably braced at the other, for the purpose described.

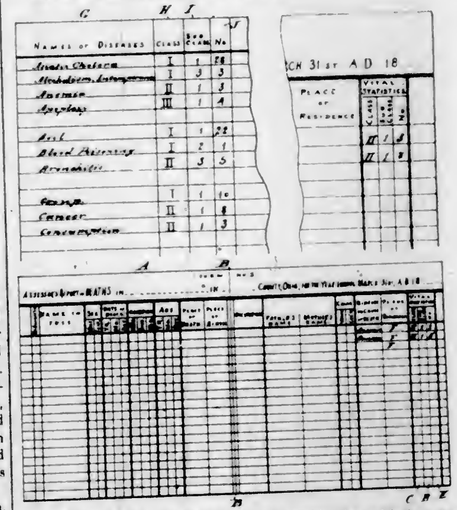
444,059. OIL-STOVE. JACOB VAN ALEN, Brooklyn, and CHARLES W. MCCUTCHEN, Peekskill, N. Y. Filed Feb. 15, 1890. Serial No. 340,639. (No model.)



Claim.—1. In an oil-stove, the combination of the following elements: plate 2, arched as at 10, and having end partitions 19 20 and 19' 20', affording support for the wick-raiser spindle and guards to prevent lateral movement of the wick-raisers, a top plate having projections on its under surface to bear on the wick-raiser spindle, and a wick-tube secured to the top plate and having one side below the top plate cut away, substantially as herein shown and described.

2. The combination, in an oil-stove, of the oil-reservoir cover 2, provided with arches 10, within which supports 21 22 are provided for the wick-raiser spindle, spindle 7, with the raisers 6, the top plate 1, having top bearings 11 12 for the wick-raiser spindle, and wick-tube 3, secured to the top plate, substantially as shown.

444,060. STATISTIC-BOOK. FREDERICK W. BARRETT, Springfield, assignor to Darius D. Clayton, Upper Sandusky, Ohio. Filed Dec. 23, 1889. Serial No. 334,699. (No model.)



Claim.—1. In a statistical book, the combination, with the entry-sheets ruled with lines to write on and having columns crosswise said lines and designated "class," "sub-class," and "number," of a list-sheet having alphabetical lists of diseases, and columns running crosswise to said lists and designated "class," "sub-class," and "number," and identifying characters or figures in these latter columns.

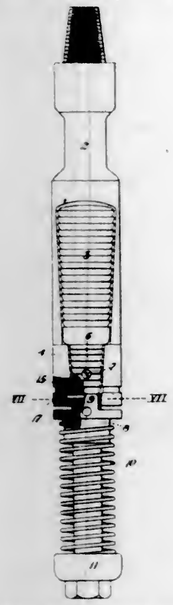
2. In a statistical book, the combination, with entry-sheets ruled with lines to write on and having blank columns designated "disease or cause of disease," and other columns designated "class," "sub-class," and "number," of a list-sheet having alphabetical lists of diseases subdivided into groups and columns running crosswise to said lists, and designated "class," "sub-class," and "number," and figures in said latter columns opposite the respective diseases, no two of said figures being of the same denomination.

3. In a statistical book, a detachable summary-sheet ruled substantially as shown and described and having different classes of statistical blanks, and a series of folding-lines between the different classes, whereby a number of said sheets may be folded and overlapped and the blanks of corresponding character on the different sheets brought into close proximity.

4. As a new article of manufacture, the herein-described statistical book, consisting of entry-sheets having lines to write on and

columns running crosswise to said lines, and designated "class," "sub-class," and "number," a list-sheet having alphabetical lists of diseases, arranged in groups, columns running crosswise to said lists designated "class," "sub-class," and "number," and different figures in said latter columns opposite to each disease, substantially as shown and described, and detachable summary-sheets ruled substantially as shown and described, and having different classes of blanks and folding-lines between the different classes, for the purpose set forth.

444,061. CASING-SPEAR. DAVID W. BLACK, Butler, Pa., assignor to Benjamin Masseth, same place. Filed June 19, 1890. Serial No. 355,012. (No model.)



Claim.—In a casing-spear, the combination, with the tool-stock, of two contrarily-acting sets of wedge-slips, a movable section by which one set of slips 6 is carried, a spring-lock adapted to hold said section in position to engage and uphold the other set of slips, a movable collar adapted to engage and project the set of slips 6, a torsion-spring by which the collar is actuated, and a lock adapted to hold the spring in a compressed and twisted condition, whereby by longitudinal motion of the tool-stock through the collar it is released and is turned and projected into engagement with the slips, substantially as and for the purposes described.

444,062. NUT-TAPPING MACHINE. CLARENCE L. CHAPMAN, Erie, Pa., assignor of one-half to Henry I. Petrie, Little Falls, N. Y. Filed Mar. 11, 1890. Serial No. 343,450. (No model.)

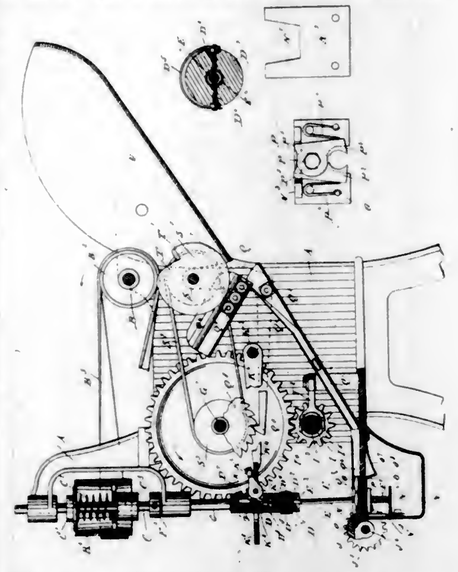
Claim.—1. In a nut-tapping machine, the combination, with an inclined chute U, having the space between its side walls at its inner open end contracted, of a rotary wheel T, the inner portion of which enters said contracted space and provided with a toothless periphery having a notch forming a single radial shoulder T', to pick up one nut at a time and carry it outside of the hopper, substantially as set forth.

2. In a nut-tapping machine, a nut-feeding device comprising a wheel having a shoulder adapted to pick up and carry a nut, and a vibrating inclined chute having flanges onto which discharges the shoulder of the said wheel, substantially as shown and described.

3. In a nut-tapping machine, a nut-feeding device comprising a wheel having a shoulder adapted to pick up and carry a nut, a vibrating inclined chute having flanges onto which discharges the shoulder of the said wheel, and a second chute having a twisted upper end and into which discharges the said chute, substantially as shown and described.

4. In a nut-tapping machine, a spindle having a tap-holder adapted to support the tap and a plunger within said holder to engage the upper end of the tap and push it out of the holder, substantially as shown and described.

5. In a nut-tapping machine, a spindle having a tap-holder adapted to support the tap, the spindle being held to slide vertically, in combination with a plunger for automatically disconnecting the tap when the said spindle moves upward, substantially as shown and described



6. In a nut-tapping machine, a tap-holder having a polygonal recess for the reception of the polygonal end of the tap, and spring-pressed pins held to slide in the said holder and adapted to lock the tap in place in the said holder, substantially as shown and described

7. In a nut-tapping machine, the combination, with a tap having a polygonal end formed with an annular semicircular recess, of a tap-holder having a polygonal recess for the reception of the polygonal end of the tap, spring-pressed pins held to slide in the said holder and adapted to lock the tap in place in the said holder, and a plunger having longitudinal movement in the holder to engage the upper end of the tap and push its recessed end past the pins, substantially as shown and described.

8. In a nut-tapping machine, the combination, with a tap having a polygonal end formed with an annular recess, of a tap-holder having a polygonal recess for the reception of the polygonal end of the tap, spring-pressed pins held to slide in the said holder and adapted to lock the tap in place in the said holder, and a plunger held to slide in the said tap-holder to disconnect the said tap and holder, substantially as shown and described.

9. In a nut-tapping machine, the combination, with a swinging arm, of a nut-holder and a clamp to grasp the tap when the arm and attached holder and clamp are swung outward, substantially as set forth.

10. In a nut-tapping machine, the combination, with a swinging arm, of a nut-holder thereon, a normally-open tap-grasping clamp adjacent thereto and closing on the tap when the arm is swung outward, and a clamp opener or releaser in the path of the clamp when the arm with its attached holder and clamp are swung inward, substantially as set forth.

11. In a nut-tapping machine, the combination, with a lubricant tank or receiver, of a swinging arm mounted to swing into and out of the tank or receiver and provided with a nut-holder on its end within the tank, substantially as set forth.

12. The combination, with a rock-shaft provided with a loosely-mounted operating-gear and a spring connecting the gear and shaft, of a nut-holder mounted on said arm, substantially as set forth.

13. In a nut-tapping machine, the combination, with a nut-holder mounted to swing and having an end opening, of a fixed chute adapted to register with the said end opening, and an inclined vibrating chute discharging into the said fixed chute, substantially as shown and described.

14. In a nut-tapping machine, the combination, with a nut-holder mounted to swing and having an end opening, of a fixed chute adapted to register with the said end opening, and a fixed spring adapted to be engaged by the said nut-holder and serving to close the end opening of the said chute, substantially as shown and described.

15. In a nut-tapping machine, the combination, with a nut-holder,

of a plate supporting the said nut-holder, spring-pressed jaws pivoted on the said plate, and a fixed plate having beveled arms adapted to be engaged by the said jaws to open the latter, substantially as shown and described.

16. In a nut-tapping machine, the combination, with a spindle mounted to rotate and to slide vertically, of a tap-holder held on the said spindle and adapted to support the tap, a rocking lever for imparting an upward sliding motion to the said spindle, and a plunger for disconnecting the tap and its holder when the spindle is on one of its upward movements, substantially as described.

17. In a nut-tapping machine, the combination, with a lever mounted to swing and provided with a ring, of a tap-holder passing centrally through the said ring and adapted to support the tap, and a second lever fulcrumed on the said tap-holder and adapted to travel with one end on the said ring, and a plunger held to slide in the said holder and operated by the said second lever to remove the tap from the holder, substantially as shown and described.

18. In a nut-tapping machine, the combination, with a lever mounted to swing and provided with a ring, of a tap-holder passing centrally through the said ring and adapted to support the tap, a second lever fulcrumed on the said tap-holder and adapted to travel with one end on the said ring, a plunger held to slide in the said holder and operated by the said second lever to remove the tap from the holder, and cams for actuating the said lever and the said holder to move both simultaneously upward, substantially as shown and described.

19. In a nut-tapping machine, the combination, with a lever mounted to swing and provided with a ring, of a tap-holder passing centrally through the said ring and adapted to support the tap, a second lever fulcrumed on the said tap-holder and adapted to travel with one end on the said ring, a plunger held to slide in the said holder and operated by the said second lever to remove the tap from the holder, cams for actuating the said lever and the said holder to move both simultaneously upward, and a spindle having a rotary and a sliding motion and carrying the said holder, substantially as shown and described.

20. In a nut-tapping machine, the combination, with a spindle mounted to turn and to slide, of a lever connected with the said spindle to raise the same, and a cam operating on the said lever to raise the same, substantially as shown and described.

21. In a nut-tapping machine, the combination, with a spindle mounted to turn and to slide, of a lever connected with the said spindle to raise the same, a cam operating on the said lever to raise the same, and a spring pressing on the said spindle to move the same downward, substantially as shown and described.

22. In a nut-tapping machine, the combination, with a spindle mounted to turn and to slide, of a lever connected with the said spindle to raise the same, a cam operating on the said lever to raise the same, a finger held in the said cam, a toothed wheel actuated by the said finger and carrying a pin, and a shaft carrying an arm adapted to be engaged by the said pin to turn the said shaft, substantially as shown and described.

23. In a nut-tapping machine, the combination, with a spindle mounted to turn and to slide, of a lever connected with the said spindle to raise the same, a cam operating on the said lever to raise the same, a finger held in the said cam, a toothed wheel actuated by the said finger and carrying a pin, a shaft carrying an arm adapted to be engaged by the said pin to turn the said shaft, a cam held on the said shaft, and a lever actuated by the said cam for detaching the tap from the said spindle, substantially as shown and described.

24. In a nut-tapping machine, the combination, with a spindle mounted to turn and to slide, of a lever connected with the said spindle to raise the same, a cam operating on the said lever to raise the same, a finger held in the said cam, a toothed wheel actuated by the said finger and carrying a pin, a shaft carrying an arm adapted to be engaged by the said pin to turn the said shaft, a cam held on the said shaft, a lever actuated by the said cam for detaching the tap from the said spindle, and a detaching device connected with the holder of the said spindle and actuated from the said lever, substantially as shown and described.

25. In a nut-tapping machine, the combination, with a shaft having a slow-turning movement, of a cam held on the said shaft, a shifting lever actuated by the said cam, a clutch held to slide on and to turn with the said shaft and connected with the said shifting lever, and a gear-wheel having a constant rotary motion, mounted loosely on the said shaft and provided with a clutch adapted to be engaged by the said first-named clutch, substantially as shown and described.

26. In a nut-tapping machine, the combination, with a shaft having a slow-turning movement, of a cam held on the said shaft, a shifting lever actuated by the said cam, a clutch held to slide on and to turn with the said shaft and connected with the said shifting-lever, a gear-wheel having a constant rotary motion, mounted loosely on the said shaft and provided with a clutch adapted to be engaged by the said first-named clutch, and a spring pressing on the said first-named clutch to force the latter suddenly in contact with the gear-wheel clutch, substantially as shown and described.

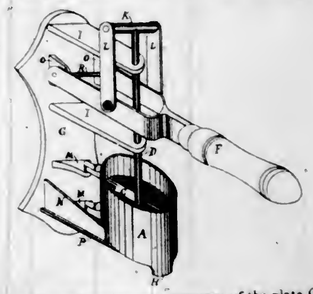
27. In a nut-tapping machine, the combination, with a shaft having an intermittent fast and slow rotary motion, of a cam-wheel secured on the said shaft and provided with a pin and a recess in its periphery, a lever adapted to be engaged by the said pin and provided with a segmental gear-wheel, a gear-wheel in mesh with the said segmental gear-wheel, a second shaft on which is mounted loosely the said gear-wheel, and a spring coiled on the said shaft and secured at one end to the said gear-wheel and at its other end connected with the said shaft, as set forth.

28. In a nut-tapping machine, the combination, with a shaft having an intermittent fast and slow rotary motion, of a cam-wheel secured on the said shaft and provided with a pin and a recess in its periphery, a lever adapted to be engaged by the said pin and provided with a segmental gear-wheel, a gear-wheel in mesh with the said segmental gear-wheel, a second shaft on which is mounted loosely the said gear-wheel, a spring coiled on the said shaft and secured at one end to the said gear-wheel and at its other end connected with the said shaft, and a segmental arm secured on the said shaft and carrying the nut-holder, substantially as shown and described.

29. In a nut-tapping machine, the combination, with a shaft having an intermittent fast and slow rotary motion, of a cam-wheel secured on the said shaft and provided with a pin and a recess in its periphery, a lever adapted to be engaged by the said pin and provided with a segmental gear-wheel, a gear-wheel in mesh with the said segmental gear-wheel, a second shaft on which is mounted loosely the said gear-wheel, a spring coiled on the said shaft and secured at one end to the said gear-wheel and at its other end connected with the said shaft, a segmental arm secured on the said shaft and carrying the nut-holder, and a tap-clamping device held on the said segmental arm and adapted to support the tap, substantially as shown and described

30. In a nut-tapping machine, the combination, with a shaft having an intermittent fast and slow rotary motion, of a cam-wheel secured on the said shaft and provided with a pin and a recess in its periphery, a lever adapted to be engaged by the said pin and provided with a segmental gear-wheel, a gear-wheel in mesh with the said segmental gear-wheel, a second shaft on which is mounted loosely the said gear-wheel, a spring coiled on the said shaft and secured at one end to the said gear-wheel and at its other end connected with the said shaft, a segmental arm secured on the said shaft and carrying the nut-holder, a tap-clamping device held on the said segmental arm and adapted to support the tap, and a fixed plate for opening the said clamping device, substantially as shown and described.

444,063. LEMON-SQUEEZER. EUGENE D. EMMONS, Grand Rapids, Mich. Filed June 5, 1890. Serial No. 354,390. (No model.)



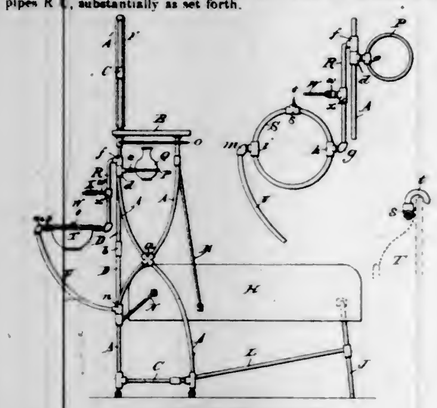
Claim.—The combination, in a squeezer, of the plate G, brackets I, M, O, and P, rod D, head C, cross-head K, links L L, and lever F, with the removable swinging cup A, with its hooks E E, removable perforated plate B, supporting-bracket P, and stop-flange N on said bracket, substantially as and for the purposes aforesaid described

444,064. FOLDING PARLOR-BEDSTEAD. JOHN D. ENNIS, Norfolk, Va. Filed Apr. 18, 1888. Serial No. 271,071. (No model.)

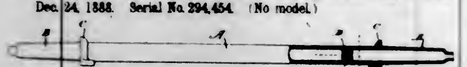
Claim.—1. In a folding parlor-bedstead, a frame-work composed of cross-tubing A A at each end, horizontal tubes C, connecting their lower ends, cross-tube G, connecting said horizontal tubes C, and cross-tubes D D, connecting said upright tubes A A in the rear, in combination with a shelf B, supported at the upper end of said metallic frame-work, a rectangular bed-frame, legs J J, pivotally connected to the front end of bed-frame, a cross-bar K, connecting said legs J J, rods L L, connecting said rod K to the rod G, suspending-rods M, connecting said bed-frame at the rear to the upper portion of said frame-work,

and rods N, connecting the rear end of said bed-frame to the lower portion of said frame-work, substantially as set forth.

2. In a folding parlor-bedstead, the vertical pipes A A of the frame-work, in combination with the pipes R U, pivotally connected thereto, and the wash-bowl bracket S, journaled to the ends of said pipes R U, substantially as set forth.

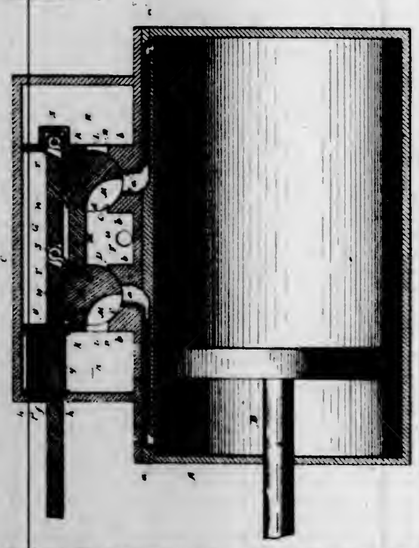


444,065. VEHICLE-AXLE. JOHN H. FLAGLER, New York, N. Y., assignor to the National Tube Works Company, Boston, Mass. Filed Dec. 24, 1888. Serial No. 294,454. (No model.)



Claim.—In an axle, the combination, substantially as set forth, of the tubular body and end portions of the axle and the elastic cup-shaped transverse partitions formed with peripheral slits.

444,066. ROTARY VALVE FOR STEAM-ENGINES. SAMUEL GRANT, Jr., Fort Worth, Tex. Filed Apr. 25, 1890. Serial No. 349,469. (No model.)



Claim.—1. The combination, in a rotary valve, of the valve-seats arranged in parallel pairs at each side of the valves, the valves having semicircular recesses on one side thereof, and the valve-stem pivotally secured to said rollers, substantially as described.

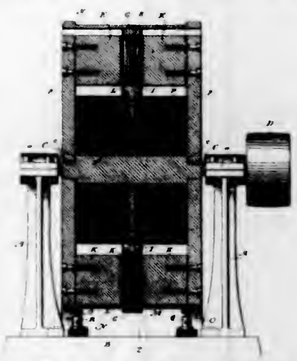
2. The combination, in a steam lower valve, of the valve-seats arranged in parallel pairs and having their contiguous side edges concaved or rounded out, the valves having semicircular recesses, the frame consisting of the end pieces, the central bar having its lower side edges coocaved or rounded out, and the strips having their lower side edges concaved or rounded out, substantially as described.

3. The combination, in a rotary valve, of the valves having semicircular recesses formed in one side thereof, the seats for said valves having their upper side edges rounded out to correspond to said valves, the frame consisting of the end pieces, the slotted side pieces, the central bar having its lower side edges rounded out, the strips having their lower side edges rounded out, and the semicircular flanges cast with said end pieces and adapted to fit over the ends of said valves, substantially as described.

4. The combination, in a steam-valve, of the steam-chest having the chambers at each end, the valve-seats having rounded-out side edges, the valves adapted to fit said seats and having semicircular recesses formed therein, the central cross-bar having its lower edges rounded out to fit said valves, the strips having their lower edges rounded out, the side pieces having slots near their lower edges, the valve-stem loosely connected to said valves, and a tubular sleeve connecting one of said side pieces and the end of the steam-chest, substantially as described.

5. The combination, in a rotary valve, of the valves having semicircular recesses therein, the valve-stem loosely connected to the upper surfaces of said valves, and the steam-tight sleeve through which said stem passes, substantially as described.

444,067. DYNAMO-ELECTRIC MACHINE. ALFRED G. HOLCOMBE, Long Island City, assignor of one-half to Charles L. Browne, New York, N. Y. Filed Sept. 17, 1890. Serial No. 365,271. (No model.)



Claim.—1. The combination of the core-shaft, the spiders revolving therewith, the oppositely and inwardly projecting pole-pieces, the inclosing shell, the ring secured on the inside thereof, the central diaphragm, radial strips connecting the diaphragm and ring, (the ring, strips, and diaphragm all being of non-magnetic material,) the single series of armature-coils interposed between the ring and diaphragm and wound parallel therewith around cores of insulated non-magnetic material, the spool in which the core-shaft revolves secured to the diaphragm, and the field-coils wound on opposite ends of the spool and separated by the diaphragm, the combination being and operating substantially as hereinbefore set forth.

2. The combination of the core-shaft, the spiders and pole-pieces revolving therewith, the inclosing shell, the ring secured therein, the central diaphragm, radial strips connecting the diaphragm and ring, (the ring, strips, and diaphragm all being of non-magnetic material,) and the sing leseries of armature-coils interposed between the ring and diaphragm and wound parallel therewith around cores of insulated non-magnetic material, the combination being and operating substantially as hereinbefore set forth.

3. The combination of the core-shaft, the ring, the central diaphragm, radial strips connecting the diaphragm and ring, (the ring, strips, and diaphragm all being of non-magnetic material,) armature-coils interposed in a single series between the ring and diaphragm and wound parallel therewith around cores of insulated non-magnetic material, and field-coils wound on a spool divided by and secured on the diaphragm, in which spool and diaphragm the core-shaft freely revolves, the combination being and operating substantially as hereinbefore set forth.

4. The combination of the core shaft, the ring, the central diaphragm, the radial strips connecting the diaphragm and ring, (the ring, strips, and diaphragm all being of non-magnetic material,) and field-coils wound on a spool divided by and secured on the diaphragm, in which spool and diaphragm the core-shaft freely revolves, the combination being and operating substantially as hereinbefore set forth.

5. The combination of the ring, the central diaphragm, radial metallic strips connecting the diaphragm and ring, and stationary armature-coils interposed between the ring and diaphragm, the combination being and operating substantially as hereinbefore set forth.

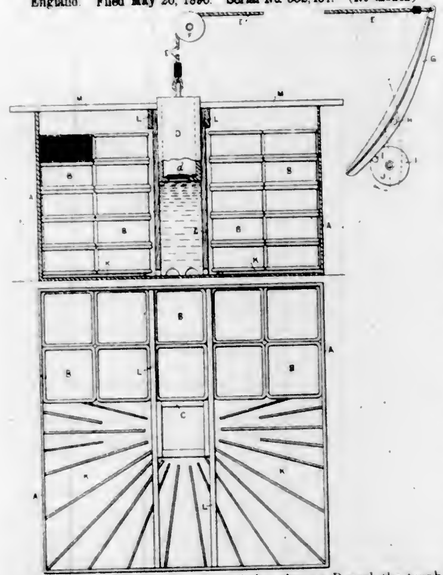
6. The combination of the core-shaft, the diaphragm, the spool secured thereto in which the core-shaft revolves, and the separate field-coils wound upon the spool on opposite sides of the diaphragm, the combination being and operating substantially as hereinbefore set forth.

7. The combination of the diaphragm, the spool secured thereto, the separate field-coils wound on opposite sides of the diaphragm, the core-shaft revolving freely in the spool, spiders on opposite ends of the core-shaft at both ends of the spool, and inwardly-projecting pole-pieces without coils, carried by the spiders, the combination being and operating substantially as hereinbefore set forth.

8. The combination, substantially as hereinbefore set forth, of the ring, the diaphragm, the radial strips, the armature-coils, and the revolving pole-pieces arranged in such relation to the radial strips as always to act uniformly upon them to neutralize counter-currents therein.

9. In a dynamo-electric machine or electric motor, the combination of the armature-coils, the pole-pieces, and the radial metallic strips arranged equidistant around the circle of armature-coils and pole-pieces and connecting the inner and outer rings of the frame within which the armature-coils are mounted.

444,068. APPARATUS FOR MAKING EXTRACTS FROM TAN-BARK. JOHN HUTCHINGS and WILLIAM N. HUTCHINGS, Warrington, England. Filed May 20, 1890. Serial No. 352,481. (No model.)



Claim.—1. The combination of the plunger D and the trunk C with a series of surrounding superimposed pervious supports carrying layers of the tanning material to be exhausted, substantially as described.

2. The combination of the pumping device C D, with the baskets B B, superimposed and in layers, covering the area of the pit not occupied by the pumping device C D, substantially as described.

3. The combination of the pumping device C D and channels K with superimposed layers of exhaustible tanning material, having spaces between the layers, substantially as described.

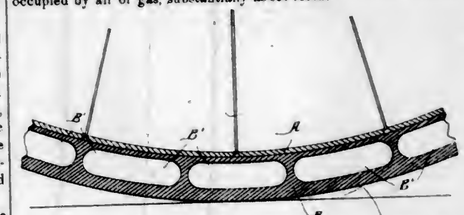
4. The combination, in a tan-pit, of a pumping device C D, the channels K, and a pervious supporting device above for the tanning material.

5. The combination of the pit A, trunk C, supports L, and planks M, substantially as and for the purposes described.

6. The combination of the pumping device C D, lice E, rocking beam G, and revolving eccentric-pin I, substantially as and for the purposes described.

444,069. WHEEL-TIRE. THOMAS B. JEFFERY, Chicago, Ill. Filed Sept. 8, 1890. Serial No. 364,260. (No model.)

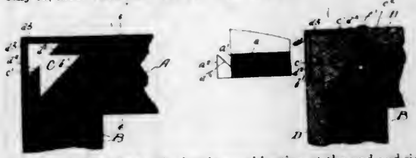
Claim.—1. An integral tire for vehicles, consisting of rubber or other flexible material having distributed throughout its circumferential extent a series of completely inclosed non-communicating cavities occupied by air or gas, substantially as set forth.



2. An integral tire for vehicles, consisting of rubber or other flexible material having distributed throughout its circumferential extent a series of completely inclosed non-communicating cavities occupied by air or gas at normal tension, substantially as set forth.

3. A tire for vehicles, consisting of an integral annulus of rubber or other flexible material having distributed throughout its circumferential extent a series of completely inclosed cavities separated by fixed partitions and thereby rendered non-communicating, such cavities being occupied by air or gas, each of said cavities being small in circumferential extent relatively to the entire circumference of the wheel, substantially as set forth.

444,070. BUGGY-BODY. NICHOLAS KASTLER, La Porte, Ind. Filed July 12, 1890. Serial No. 358,479. (No model.)



Claim.—1. In a buggy-body, the combination of the end and side sills furnished with continuous grooved marginal rims at and extending along their lower outer edges or corners with the upright posts furnished with grooves in their outer faces, with panels having their end and lower side edges fitting in said grooved posts and sills and held in place by said grooved marginal rims, said panels being provided with flanges overlapping said posts and sills, whereby said panels may be secured in place to said posts and sills without the use of nails or screws and at the same time the whole exterior surface of the body may be made of one kind of wood and thus be better adapted to receive a smooth and even finish, substantially as specified.

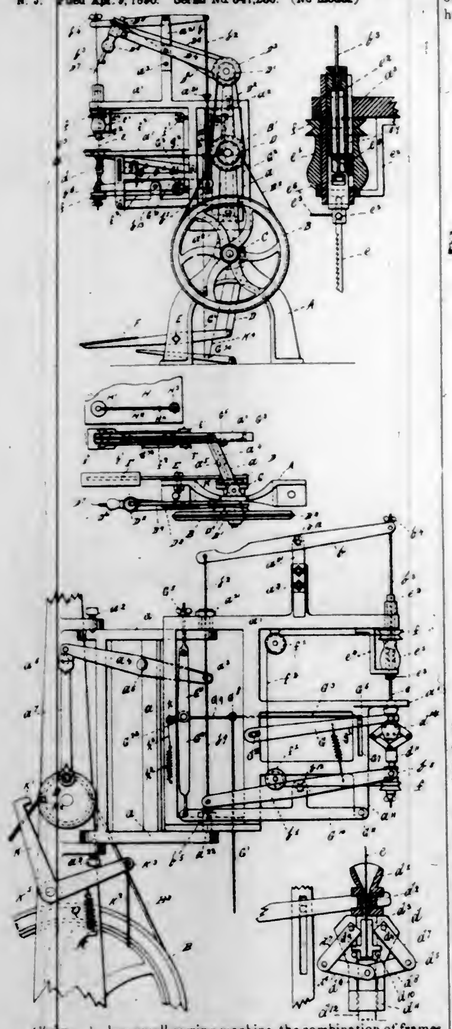
2. In a buggy-body, the combination of the end and side sills furnished with continuous grooved marginal rims at and extending along their lower outer edges or corners with the upright posts furnished with grooves in their outer faces, with panels having their end and lower side edges fitting in said grooved posts and sills and held in place by said grooved marginal rims, said panels being provided with flanges overlapping said posts and sills, whereby said panels may be secured in place to said posts and sills without the use of nails or screws and at the same time the whole exterior surface of the body may be made of one kind of wood and thus be better adapted to receive a smooth and even finish, said panels having dovetail tenons near their ends at their lower edges fitting in corresponding mortises in said sills and posts, substantially as specified.

3. In a buggy-body, the combination of sills A B, halved together at a b and having truncated corners a' b', posts C, having halved or notched ends c fitting the corners of said sills, the shoulder of said halved end of said post resting upon one of said sills, and panels D, said sills A B and post C having angle-grooves a^3 b^3 c' to receive the edges of said panels D, and said panels D being provided with overlapping flanges d' d^3, substantially as specified.

4. In a buggy-body, the combination of sills A B, halved together at a b and having truncated corners a' b', posts C, having halved or notched ends c fitting the corners of said sills, and panels D, said sills A B and post C having angle-grooves a^3 b^3 c' to receive the edges of said panels D, and said panels D being provided with overlapping flanges d' d^3, and said panels D having dovetail tenons d fitting in corresponding grooves formed in or between said posts and sills, substantially as specified.

5. In a buggy-body, the combination of the side and end sills A B, halved together and having truncated corners a' b', and the post C, having the halved lower end fitting the truncated corners of said sills and panels D, the shoulders at the halved end of said post resting upon one of said sills, substantially as specified.

444,071. **SCROLL-SAWING MACHINE.** JAMES LAIRD, Paterson, N. J. Filed Apr. 9, 1890. Serial No. 347,286. (No model.)

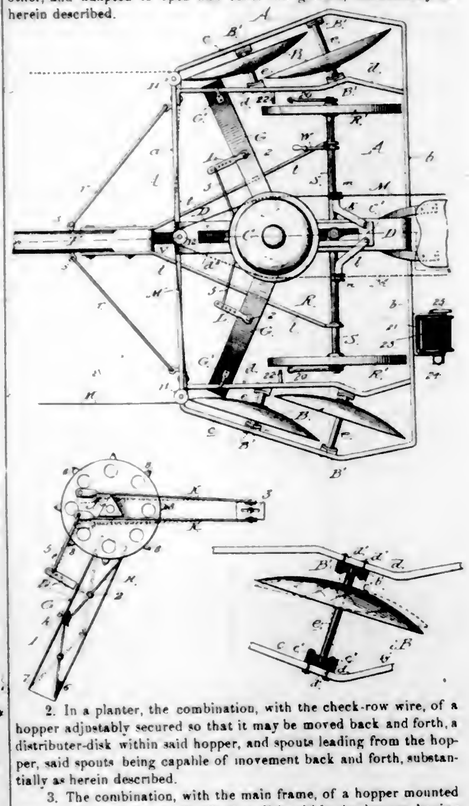


Claim.—1. In a scroll-sawing machine, the combination of frames, a primary frame A, fixed, from which motion is conveyed to an intermediary swinging frame *a* and thence to a swinging frame *a'*, carrying the saw, the last-mentioned two frames swinging on the centers a^2, a^3, a^{31} and a^{32}, (solid,) in combination with the endless cord or chain f^3, passing around pulleys *f f* and *f' f''*, for the purpose of guiding and, in conjunction with the handle *e'*, of turning the saw and enabling the person operating the saw to cut any desired figure without moving the board or other material which is being cut or sawed, the whole being constructed substantially as shown and described, for the purposes set forth.

2. The combination of the frames A, *a*, and *a'*, the grip *d*, lever G, the toggle-straining levers G^2 and G^{21}, acting on the shank of the grip through the lever G^{10}, which again acts on lower saw-arm *b'*, loosening the grip on the saw to permit its withdrawal from or insertion into the grip in conjunction with the driving mechanism, all constructed substantially as described, and for the purposes specified.

444,072. **PLANTER.** LEVI B. LANCASTER, Massillon, Iowa. Filed Aug. 28, 1890. Serial No. 363,246. (No model.)

Claim.—1. The combination of a centrally-disposed hopper, inclined spouts communicating therewith and leading from opposite sides thereof, and revolving disks mounted on inclined axes, one behind the other, and adapted to open and cover the ground, substantially as herein described.



2. In a planter, the combination, with the check-row wire, of a hopper adjustably secured so that it may be moved back and forth, a distributer-disk within said hopper, and spouts leading from the hopper, said spouts being capable of movement back and forth, substantially as herein described.

3. The combination, with the main frame, of a hopper mounted centrally thereon, a seed-distributing disk within the hopper having its periphery formed or provided with forked lugs for the check-wire, a cam on the shaft of the disk, spring-arms upon each side of the cam having their forward ends free, spouts leading from the hopper toward each side of the machine and having valves or pivoted plates, and arms fixed to the axis of the upper valves and having their outer ends connected with the free ends of the spring-arms, whereby said valves are operated, substantially as herein described.

4. In a planter, a centrally-disposed hopper having a distributer-disk, spouts leading therefrom toward each side of the machine, oppositely-inclined pivoted valves or plates within the spouts, a cam on the axis of the distributer-disk, and connections therefrom to the valves in the spouts for operating the latter, substantially as herein described.

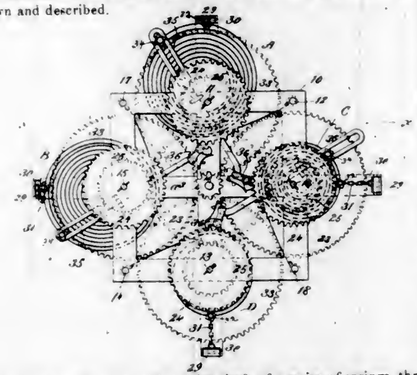
5. In a planter, a main frame and complementary seed-distributing mechanism, in combination with a wheeled frame within the sides of the main frame, a tongue and seat support carried by the wheeled frame, and rods flexibly connected with the tongue and front of the main frame, whereby a limber connection is made, substantially as herein described.

6. In a planter, the main frame, the disks, and the shafts or axis of the same, in combination with blocks *b'*, secured to said frame and having concave faces, and the concavo-convex boxes *c'*, having bearings for the shafts and slotted upon the bolts which secure the blocks *b'* in position, whereby said boxes are adjusted, substantially as herein described.

7. In a planter, the main frame thereof, in combination with means for raising and lowering the same, consisting of a shaft S within the main frame, a lever W, fixed to said shaft, and arms 20, rigid on the outer ends of the shaft and adapted to be brought into contact with lugs or stops 22 on the inner sides of the main frame, whereby the main frame is elevated, substantially as herein described.

444,073. **SPRING-MOTOR.** DANIEL R. MERRY and WILLIAM M. SHELMAN, East Las Vegas, N. Mex. Filed Apr. 22, 1890. Serial No. 348,984. (No model.)

Claim.—1. In a spring-motor, the combination, with a frame, two contiguous spindles held to turn in the frame, each provided with an attached ratchet-wheel, and an independent spring coiled around each spindle, having one end attached thereto and the other to the frame, of a lock-rod attached to the outer coil of one spring at one end and having the other end attached to a pawl adapted for engagement with the ratchet-wheel of the opposed spindle, a drive-shaft, and a connection between the drive-shaft and the said spindles, substantially as shown and described.



2. The combination, with a drive-shaft, of a series of springs, the axes or shafts of which are arranged around and parallel to said drive-shaft, a gear connection between the springs and drive-shaft, and lock-bars carried by various of the springs operating in conjunction with an adjacent spring, substantially as and for the purpose specified.

3. The combination, with a frame, a drive-shaft mounted in said frame, having a series of clutch-collars attached thereto, and spring-pressed pinions loosely mounted upon the drive-shaft, one pinion being adapted for engagement with each clutch-collar, of spindles held to turn in the frame, each spindle having a spring wound thereon, one end of which spring is secured to the spindle and the other to the frame, a gear attached to each spindle and meshing with one of the pinions of the drive-shaft, a ratchet-wheel attached to each pinion, pawls pivoted to the frame and adapted for engagement one with each of the ratchet-wheels of the spindles, and a slotted lock-bar attached to each spring at its outer end, the inner end of the said bars being connected with said pawls, substantially as shown and described, and for the purpose specified.

4. The combination, with a frame, a drive-shaft mounted in said frame, having a series of clutch-collars attached thereto, and spring-pressed pinions loosely mounted upon the drive-shaft, one pinion being adapted for engagement with each clutch-collar, of spindles held to turn in the frame, each spindle having a spring wound thereon, one end of which spring is secured to the spindle and the other to the frame, a gear attached to each spindle and meshing with one of the pinions of the drive-shaft, a ratchet-wheel attached to each pinion, pawls pivoted to the frame and adapted for engagement one with each of the ratchet-wheels of the spindles, a slotted lock-bar attached to each spring at its outer end, the inner end of the said bars being connected with the said pawls, a clutch-section formed upon the outer end of each spindle, a spring-pressed pinion loosely mounted upon each of the said spindles and adapted for engagement with the clutch-section thereof, a spur-wheel loosely mounted upon the drive-shaft and adapted for engagement with the said spring-pressed pinions, and shaft-levers fulcrumed upon the frame, the ends of which levers are attached to the spring-pressed pinions and the springs, substantially as and for the purpose specified.

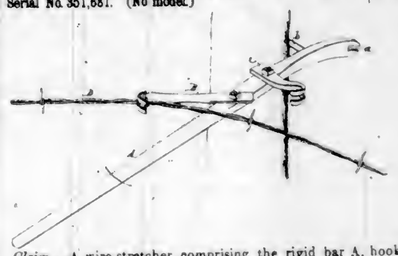
444,074. **URINAL.** JARED W. PLAIN, Toledo, Ohio. Filed Mar. 18, 1890. Serial No. 344,403. (No model.)



Claim.—1. The combination, with a urinal, of a deflector-column arranged vertically therein, the said column having a rounded upper end and decreasing in circumference toward its base, as and for the purpose set forth.

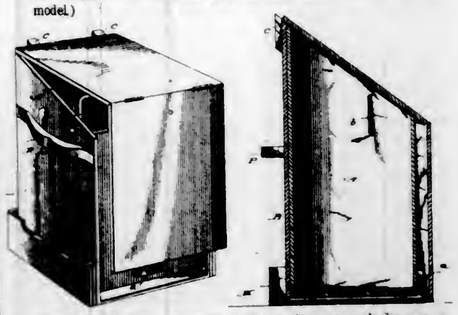
2. As an article of manufacture, a deflector-column for urinals, the said column having a base and a rounded upper end and gradually decreasing in circumference toward the base, as and for the purpose set forth.

444,075. **WIRE-STRETCHER.** FRANCIS O. REED, Paris, Tex., assignor of one-half to J. D. Williams, same place. Filed May 13, 1890. Serial No. 351,681. (No model.)



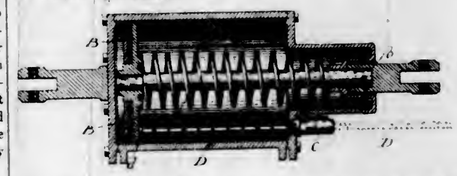
Claim.—A wire-stretcher comprising the rigid bar A, hooks B and C, pivoted to the bar, and a laterally-projecting arm *b*, all substantially as shown.

444,076. **HEARTH-CABINET.** SARAH G. SMITH, Cleveland, Ohio. Filed Sept. 8, 1887. Renewed Aug. 25, 1890. Serial No. 362,974. (No model.)



Claim.—The combination, with the main receptacle having an obliquely-opened top and a vertically-open communicating front, and also a base-recess and side loops, of the double-hinged cover for the top and front of the said receptacle, and the hod having its top cut obliquely and mounted on rollers, whereby the same may be rolled out and in on the floor of the receptacle when the cover has been raised, substantially as specified.

444,077. **PISTON-TRAVEL INDICATOR.** EDGAR B. THOMPSON and CHARLES A. SCHROYER, Chicago, Ill. Filed Nov. 21, 1889. Serial No. 331,086. (No model.)



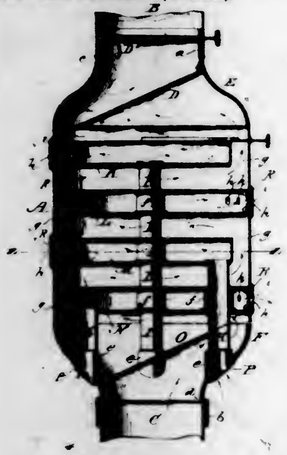
Claim.—1. A piston-travel indicator comprising a barrel or stuffing-box attached to the end of the cylinder, a bar sliding in such barrel and entering the cylinder, and means for retaining such bar in the position to which it is moved by the travel of the piston, substantially as described.

2. The combination of a cylinder, a piston, a barrel attached to the head of the cylinder, and a graduated bar passing through the barrel into the cylinder and adapted to be forced out of the cylinder by the movement of the piston, whereby the travel of such piston is indicated, substantially as described.

3. The combination of the cylinder A, piston B, barrel *c*, graduated bar D, having lugs *d d*, and spring E, substantially as described.

4. In a piston-travel indicator, a bar entering the cylinder and adapted to be pushed out therefrom by the movement of the piston and remaining in the position into which it is brought, whereby the travel of the piston is indicated, substantially as described.

444,078. **HEATING-DRUM.** PATRICK J. TRACY, Racine, Wis. Filed Nov. 3, 1890. Serial No. 370,117. (No model.)



Claim.—1. A heating-drum containing a plurality of supplemental drums having flat sides and substantially oval shape in horizontal section, whereby a space is left for the passage of the smoke and products of combustion between it and the interior sides of the main drum, and means for the supply of air to said supplemental drums and also for its discharge therefrom, substantially as and for the purpose set forth.

2. In a heating-drum, the combination, with deflectors at the top and bottom thereof, of a plurality of supplemental drums substantially oval shape in cross-section, whereby a space or passage is left for the smoke and products of combustion between the main and supplemental drums, and means for supplying air to the supplemental drums and discharging it therefrom, substantially as and for the purpose specified.

3. In a heating-drum, an outer shell adapted for attachment to a stove-pipe and provided with deflectors at its top and bottom, in combination with a plurality of supplemental drums substantially oval shape in cross-section and having suitable means for the escape of air therefrom, and air-supply pipes or tubes connected thereto and communicating with the outside atmosphere, substantially as and for the purpose specified.

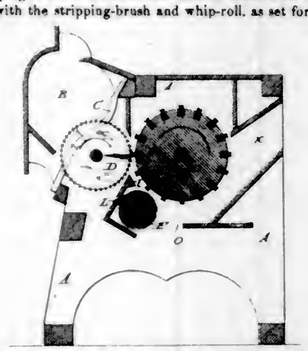
444,079. **HOLDER OR RACK FOR BROOMS, &c.** DANIEL VAN, Cincinnati, Ohio. Filed Apr. 26, 1888. Renewed June 9, 1890. Serial No. 354,702. (No model.)



Claim.—The combination of the fastening-plate or base A, holder C, provided with the opening c, depending wire rack or receptacle D E, and loops or eyes *d d'* at the opposite ends of the wire composing said rack, the whole constructed, arranged, and attached in place substantially as and for the purpose specified.

444,080. **SAW COTTON-GIN.** GEORGE WINSHIP and FREDERICK GARRAUX, Atlanta, Ga., assignors to the Winship Machine Company, same place. Filed June 4, 1890. Serial No. 354,265. (No model.)

Claim.—1. The combination, with the saws, the whip-roll, and the stripping-brush, of the inclined mote-board having its upper end close to the saws and provided with an inwardly-projecting lip overhanging the whip-roll beneath the point of contact between the saws and stripping-brush and below their axes to deflect the fine lint into contact with the stripping-brush and whip-roll, as set forth.



2. The combination of the saws, the stripping-brush having a solid perimeter and with its brushes in contact with the saws, the whip-roll revolving in contact with the lower part of the stripping-brush and in the same direction, and the inclined mote-board L, interposed between the saws and whip-roll with its upper end close to the saws, and provided with an inwardly-projecting lip overhanging the whip-roll, onto which it deflects the lint, the combination being and operating as set forth.

3. The combination of the hopper, the ribs, the saws rotating therethrough, the stripping-brush rotating in contact with and in the same direction as the saws, a whip-roll rotating in contact with the lower portion of the stripping-brush and in the same direction, and an inclined mote-board partly inclosing the whip-roll, having its upper edge close to the lower portion of the saws, and provided with an inwardly-projecting lip having one face substantially parallel with the stripping-brush and the other with the whip-roll, the combination being and operating substantially as and for the purpose set forth.

4. The hereinbefore-described improved cotton-gin, consisting of the combination of the frame, the hopper having an open bottom through which the seed are discharged, the grate of parallel ribs constituting one side of the hopper, saws rotating therethrough, the stripping-brush rotating in contact with the saws and in the same direction, the whip-roll rotating in contact with the lower side of the stripping-brush and in the same direction, the inclined mote-board partly inclosing the whip-roll, having its upper edge close to the lower portion of the saws and provided with an inwardly-projecting lip having one face substantially parallel with the stripping-brush and the other with the whip-roll, the lint-discharge flue, and the mote-discharge opening therein beneath the whip-roll, these members being organized and operating substantially as and for the purpose hereinbefore set forth.

444,081. **BALANCE-WHEEL.** JOHN S. WRIGHT, Greenfield, Mass. Filed Aug. 19, 1890. Serial No. 362,451. (No model.)

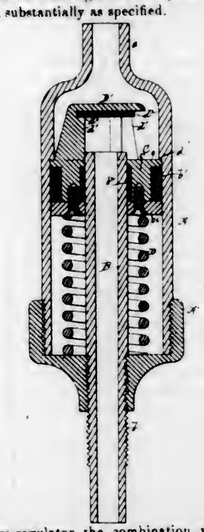


Claim.—In a balance-wheel, the combination of a recessed fly-wheel having the hub and rim, as described, the revoluble screw-rods having the annular grooves on their inner ends, said ends being inserted in the hub, the pins engaging the grooves and preventing the withdrawal of the rods, but permitting their revolution, and the outer ends of said rods being passed through the rim, and the weights on said rods adapted to be moved in or out by turning the rods, as and for the purposes set forth.

444,082. **PRESSURE-REGULATOR.** RICHARD W. F. ABEL, Belleville, N. J. Filed Apr. 15, 1890. Serial No. 348,071. (No model.)

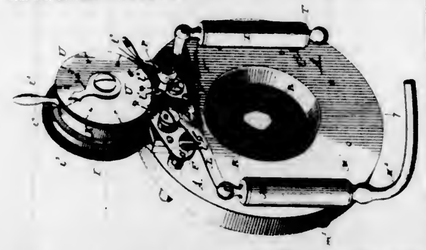
Claim.—1. In a pressure-regulator, the combination, with a shell having an interior annular shoulder or stop and a threaded end, a cap-nut having a threaded portion to engage the threaded end of the shell, a main pipe extended into the shell and having an extended threaded portion engaging with an interior thread of the cap-nut, a piston-valve, substantially such as described, movable on the main pipe within the shell, and a coiled spring bearing at one end upon the piston-valve and at the other end upon the inner surface of the cap-nut, whereby the spring may be varied by operating the cap-nut, substantially as specified.

2. In a pressure-regulator, the combination, with the cylinder having a threaded end, of a cap-nut engaging therewith, a main pipe extended into the cylinder and having an extended threaded portion to engage with the cap-nut, a piston-valve surrounding the main pipe within the cylinder, and a tension-spring bearing at one end against the piston-valve and at the other against the cap-nut and variable by means of the cap-nut, substantially as specified.



3. In a pressure-regulator, the combination, with the cylinder, the main pipe, and an adjustable tension, of the piston-valve surrounding the main pipe, comprising a plate having an annular web, a plate removably secured to the web, the packing, a valve plate secured to said piston-valve normally beyond the outlet of the main pipe, and a yielding disk removably secured to the inner face of the valve-plate, substantially as specified.

444,083. **PHOTOGRAPHIC SHUTTER.** EDWARD BAUSCH, GEORGE HOMMEL, and ANDREAS WOLLENSAK, Rochester, N. Y., assignors to the Bausch & Lomb Optical Company, same place. Filed July 2, 1890. Serial No. 357,469. (No model.)



Claim.—1. An annular body, a series of blades grouped around the center of the body and pivoted at their outer ends, and a sliding as distinguished from a rotary ring connected to and operating the series of blades, substantially as shown.

2. The annular body, the series of overlapping blades grouped around the central opening and individually pivoted at the outer end and each provided with a crank-pin, and the ring mounted on the crank-pins and having a reciprocating as distinguished from a rotary motion, said members combined for joint operation.

3. In a photographic shutter, a series of inwardly and outwardly swinging blades grouped around a central opening and pivoted at their outer ends, one or more of said blades being double or slotted that it may embrace or close over both sides of the remaining blades, and thus prevent the leakage of light at the center.

4. In combination with the pivoted blades and their actuating-ring C, the link G and arm H to move the ring, the drum and spring to move the arm, and a detent to hold the drum, whereby the rotation of the drum by the spring effects the opening and closing of the shutter.

5. In combination with the pivoted blades and their actuating-ring C, the slotted pivoted ring-operating arm D, the arm E, by which arm D is sustained and adjusted, the swinging arm F, and the link G and arm H to operate the other parts, whereby the shutter may be adjusted to open to a greater or less extent, as demanded, without changing the movement of the primary operating devices.

6. In a photographic shutter, the vibratory spring-actuated operating-arm H, link G, lever F, and lever D, operated by lever F and connected with the shutter proper, in combination with the pivoted arm E to sustain and adjust lever D and the rotary cam-plate I to adjust arm E, whereby the rotation of plate I is enabled to determine the extent to which the shutter opens.

7. In combination with its actuating-spring, the shutter-operating spring with a stud or stop pin, the turning and sliding lever or detent L to engage and hold the drum, the spring acting on said lever to cause its engagement, a pneumatic device to disengage said lever, the stop-lever O to arrest the drum in an intermediate position and hold the shutter open, and a spring acting on the stop-lever, whereby the lever L is enabled to hold the shutter when closed and set for action, and also enabled to actuate the stop-lever and permit the closing of the shutter.

8. In combination with the spring-actuated shutter-operating drum, the sliding and swinging detent-lever, and the stop-lever O, the device to hold the stop-lever out of action when instantaneous views are required.

9. The shutter-operating drum and its controlling lever or detent L, in combination with the pneumatic trip device connected at one end to the lever and mounted on a pivot that it may swing to follow the movement of the lever.

10. In combination with shutter-blades and motive devices to open and close the same, a retarding device and intermediate adjustable connections adapted to vary at will the distance of movement of the retarding device in relation to the distance of movement of the blades, whereby the speed of the blades and the time occupied by them in moving a certain distance are made variable and dependent upon the distance traveled by the retarding device.

11. In a photographic shutter, shutter-blades and a motor for operating the same, in combination with a movable brake or retarding device and an adjustable connection whereby the leverage upon the retarding device to move the same may be increased or diminished, whereby the speed of the shutter may be modified without adjusting the retarding device proper or changing the force exerted by the motive devices.

12. In combination with a photographic shutter provided with a motor-spring, a crank-pin of variable throw connected with the shutter, and a retarding device consisting of a plunger and piston, substantially as described, connected with the crank-pin.

444,084. **PROCESS OF ENAMELING PHOTOGRAPHS AND OTHER PRINTS.** CHRISTOPHER C. F. BRANDT, Muscatine, Iowa. Filed Mar. 13, 1890. Serial No. 343,753. (No specimens.)

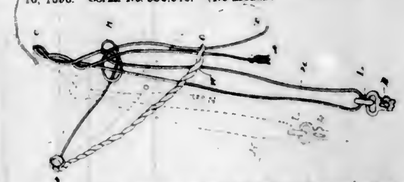
Claim.—1. An enameling composition consisting of the following ingredients: celloidine, alcohol, and ether, combined in substantially the proportions set forth.

2. An enameling composition consisting of the following ingredients: celloidine, ether, alcohol, and Diamond dyes, in substantially the proportions set forth.

3. The herein-described process of enameling photographs and other prints, consisting of first treating common window-glass with a mixture of talc and alcohol, then flowing the same with a solution of celloidine, ether, and alcohol, with Diamond dyes, in substantially the proportions set forth, then drying the prepared glass for one hour and again applying the following solution: gum-arabic, alcohol, glutina alba, and soft water, then immediately applying the article to be enameled and drawing out the air-bubbles and drying, and then removing the glass from the enameled surface, substantially as set forth.

4. An enameling-emulsion consisting of gum-arabic, alcohol, glutina alba, and soft water, in substantially the proportions set forth.

444,085. **BRIDLE.** HENRY G. BRENT, Brunswick, Mo. Filed July 10, 1890. Serial No. 358,318. (No model.)

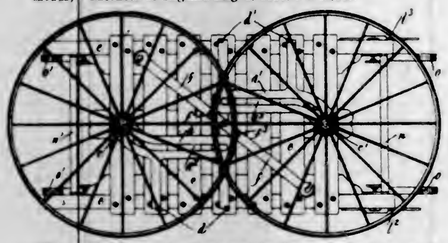


Claim.—1. The herein-described bridle, consisting of a single piece of rope comprising the crown-piece coil C, an adjustable head stall H, leading from one of the strands of said crown-piece, throat-latch knots K, each comprising another strand of said crown-piece

and the return member of the headstall, and the throat-latch T, leading from said knots, substantially as and for the purpose set forth.

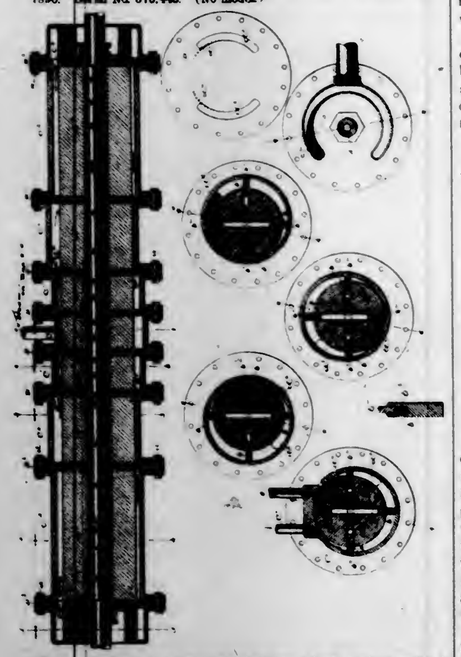
2. The herein-described bridle, consisting of a single piece of rope comprising a crown-piece coil C, an adjustable headstall H, leading from one of the strands of said crown-piece coil to the bit and returning to throat-latch knots K, a brow-band consisting of a twist W, embracing said headstall and having loops O at its ends, the second strand of said crown-piece coil C entering said side knots K, leading thence through said loops O, and forming the throat-latch T, and the headstall also entering said side knots and leading thence upwardly through a double knot D and into the opposite sides of the brow-band twist W, the whole arranged and adapted for use substantially as hereinbefore set forth.

444,086. **FOLDING BABY-CARRIAGE.** ALBERT R. BUCKTON, Keighley, England. Filed Aug. 25, 1890. Serial No. 363,057. (No model.) Patented in England Aug. 2, 1889, No. 12,268.



Claim.—The hinged bearings *a a'*, having slots a^2, as shown, the wheels *b b'*, the part *e*, the stay-piece *f*, jointed as described, the hinged sides *g g'*, the hinged back-rest A, the jointed shafts or handles *l l'*, the screws *m m'*, the foot-rests *n n'*, the brackets *o o'*, and the recessed holding-plates *p p'*, each and all of these several parts being formed and arranged substantially as herein specified, for the purposes set forth.

444,087. **ROTARY COMPOUND STEAM-ENGINE.** SAMUEL E. ST. O. CHAMBEAU, Ottawa, Canada. Filed Nov. 29, 1889. Renewed Dec. 3, 1890. Serial No. 373,440. (No model.)



Claim.—1. In a rotary compound engine, a large and a small cylinder arranged end to end, an intermediate division-plate having the holes or ports therethrough and the channel therein, in combination with the rotary piston-heads mounted eccentrically within the respective cylinders and provided with the radially-movable blades or abutments.

2. In a rotary compound engine, a shaft, a series of cylindrical pistons centrally mounted on said shaft and each provided with a series of radially-sliding blades or abutments, a series of circular chambers or cylinders in which the respective pistons are mounted, said cylinders arranged eccentrically and in progressive angular relations to said shaft, and division plates or heads separating the cylinders and each provided with a port leading from the exhaust-point of one cylinder at its inner periphery directly through the plate to the receiving-point of the next cylinder.

3. In a rotary compound engine, two cylindrical chambers or cylinders arranged end to end in eccentric relations, an intervening plate provided with a steam-port directly therethrough from the outer part of one cylinder into the outer part of the other, and rotary pistons mounted eccentrically in the respective cylinders and each provided with a series of radially-moving blades or abutments, whereby the ends of the pistons and the blades are caused to control the steam-port and steam exhausted from one cylinder to the other a number of times during each rotation.

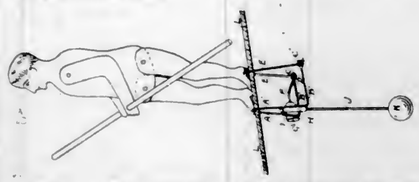
4. In a rotary compound engine, two cylinders arranged eccentrically end to end, and a division-plate having therethrough a steam-port consisting of a series of holes of successively diminishing size arranged in a curved line, as shown, in combination with the rotary pistons provided with radially-sliding blades or abutments.

5. In a reversible rotary compound engine, the central cylinder B, provided with the two steam-inlets C and C' through its periphery, the cylinders B B', arranged at opposite ends of the first cylinder and in eccentric relation thereto, the heads or plates arranged between and at the outer ends of the cylinders, each plate with two steam-ports directly therethrough from one cylinder to the next, the cylindrical pistons having a common central axis eccentric to the cylinders, the radially-movable blades or abutments mounted in the pistons, and the sliding reversing-valves applied to the cylinder heads or plates to cover their ports one at a time, whereby the steam is delivered through the successive cylinders directly from one to another in position to cause the backward or forward rotation of the pistons as demanded.

6. In a rotary compound engine, the shaft, the cylindrical pistons centrally mounted thereon, and the radially-moving blades mounted in said pistons, in combination with the series of eccentrically-arranged cylinders, the plates at their ends, each provided with two ports, reversing-valves applied to said plates to close the respective ports alternately, the cam-rings to move said valves, and the rock-shaft connected with the series of rings to operate them in unison.

7. In combination with the cylinder, the rotary pistons mounted eccentrically therein, the tubular piston-shaft, the radially-sliding blades, the reciprocating rods *b'*, located between the opposite blades, and the sleeve b^4, provided with oil-openings b^4, whereby oil may be delivered through the shaft to the rods *b'* and distributed by the latter to the wearing-surfaces.

444,088. **FIGURE TOY.** HERBERT Y. DICKINSON, London, County of Middlesex, England. Filed May 9, 1890. Serial No. 351,197. (No model.) Patented in England Jan. 2, 1888, No. 37; in France Jan. 20, 1888, No. 188,251; in Germany Jan. 26, 1888, No. 46,066, and in Belgium Dec. 4, 1889, No. 83,729.

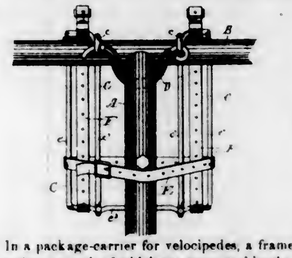


Claim.—1. The combination, in a figure toy having its legs pivoted to its body, of a looped wire rigidly attached at its middle point to the forward foot, bent first downwardly and then rearwardly and having its ends formed into loops or eyes, with a second looped wire pivoted near its center to the rearwood foot, its ends projecting downward and then bent outward at right angles to pass loosely through the looped ends of the first wire, one end of said second loop being extended and bent forward to form a crank, said crank being weighted at its end, and a second weight attached to and beneath the first wire and acting as a pendulum-bob thereon, all substantially as described, and for the purpose set forth.

2. The combination, in a figure toy having its legs pivoted to its body, of a looped wire rigidly attached at its middle point to the forward foot, bent first downwardly and then rearwardly and having its ends formed into loops or eyes, with a second looped wire pivoted near its center to the rearward foot, its ends projecting downward and

then bent outward at right angles to pass loosely through the looped ends of the first wire, one end of said second loop being extended and bent forward to form a crank, said crank being weighted at its end and a sleeve rigidly attached to the forward wire, the pendulum-weight rigidly attached to one end of the rod, the other end of which is headed, said wire rod sliding vertically in said sleeve, all substantially as described, and for the purposes set forth.

444,089. **LUGGAGE-CARRIER FOR VELOCIPEDES.** CHARLES H. LAMSON, Portland, Me. Filed Oct. 27, 1890. Serial No. 369,427. (No model.)



Claim.—1. In a package-carrier for velocipedes, a frame having two sides or arms the rear ends of which are supported by the handle-bar of the velocipede, and a loop in each of said sides in rear of said handle-bar, combined with a link connecting the two loops and passing around and conforming to said head, said link being detachable at one end, substantially as shown.

2. A package-carrier for velocipedes, having an upper horizontal portion supported when in position by the handle-bar, a main portion extending outward and downward in front of the head, the body of the carrier being formed of a single piece of wire, the central portion of which extends transversely across the lower end, thence it extends up on the outsides to form the outer side pieces of the frame, being bent at the top to form a loop, and thence it extends down to the outer side piece to form a double frame and is united at the lower end to the transverse piece described, in combination with a link for uniting the loops at the top of the frame, substantially as shown.

444,090. **MACHINE FOR CASTING LINOTYPES.** WILBUR S. SCUDDER, Brooklyn, N. Y., assignor to the National Typographic Company, of West Virginia. Filed June 7, 1890. Serial No. 354,638. (No model.)



Claim.—1. In a mechanism for casting linotypes curved on the printing-edge, the combination of a mold curved on its face, a series of matrices and spaces adapted to be arranged in a curved line against the face of the mold, and clamping devices to hold said line in place.

2. In a mechanism for casting linotypes, a mold concave at the back and convex at the front, in combination with matrices and spaces adapted to be arranged in a curved line at the front of the mold and clamping devices to hold said line in place.

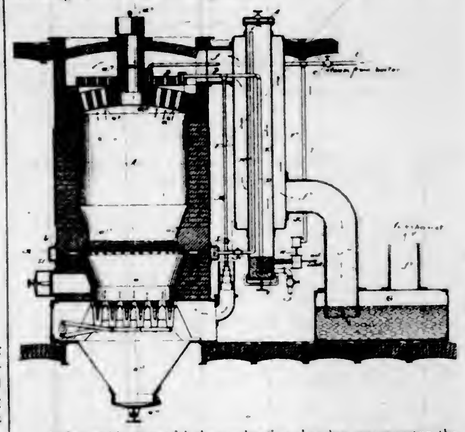
3. In a mechanism for casting linotypes, the combination of a mold having a curved front and means for supplying the same with molten metal, a series of matrices and spaces of equal width, and a curved support or clamp to hold the matrices and spaces in line against the mold.

4. In combination with a series of type and a series of spaces, each having parallel sides adapted to be arranged side by side in line, clamps adapted to confine said line endwise with the faces of the type in a curved line.

5. In combination with the linotype-mold curved on its face, the yielding knife to follow said face and dress the rear edge of the linotype.

444,091. **APPARATUS FOR THE MANUFACTURE OF GAS.** LEVI STEVENS, Trenton, N. J. Filed Apr. 8, 1889. Serial No. 306,420. (No model.)

Claim.—1. In a gas apparatus, the combination of the combustion-chamber or generator, the steam-superheater in its top, the upright elongated mixing-chamber E, its inclosing-jacket arranged to receive the products of combustion at its top directly from the generator, the steam-pipe leading from the superheater into the base of the mixing-chamber, the oil-forcing device also delivering into the base of the mixing-chamber, the pipe K, leading from the top of the mixing-chamber into the base of the generator and provided with a valve to maintain the pressure in the mixing-chamber, and the blower M, also delivering into the base of the generator.



2. In combination with the combustion-chamber or generator, the steam-superheater in its top, the independent mixing-chamber E and its surrounding jacket, through which the products of combustion are delivered from the generator, an oil-forcing device delivering into the mixing-chamber, a jet-blower N, delivering into the base of the combustion-chamber, a pipe D, leading from the superheater, provided with two branches leading one into the mixing-chamber and the other to the jet-blower, and a pipe K, leading from the mixing-chamber to the base of the generator.

444,092. **ENVELOPE.** RICHARD W. BAINBRIDGE, Brooklyn, N. Y. Filed Sept. 11, 1890. Serial No. 364,652. (No model.)



Claim.—1. In an envelope, the combination, with the body portion having perforations and the flaps adapted to fold upon the body portion, of elastic endless bands, each extended through a perforation of the body portion, and a bridge-piece extending transversely through the band across the perforation and secured at its ends to the body portion, substantially as specified.

2. In an envelope, the combination, with the body portion and the flaps, of the elastic endless bands and the attaching devices therefor consisting of the bridge-piece having the heads, the said attaching devices being of yielding material and having the spaces between the heads laterally of the bridge-piece entirely open, substantially as specified.

444,093. **SPRING-SCALES.** GEORGE H. CHATILLON, New York, N. Y., assignor to John Chatillon & Sons, same place. Filed Sept. 9, 1890. Serial No. 364,440. (No model.)



Claim.—In a spring-balance, the back plate E, having the bulge stamped integral therewith, combined with the bail G, said bail penetrating into the bulge and having an inner cross-bar *g* connected to and combined with the spring D, and the weight-carrying arm F, substantially as described.

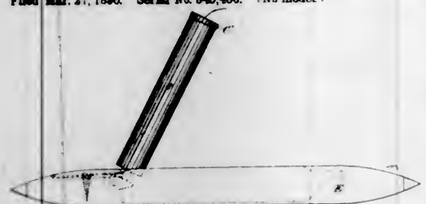
444,094. COMBINED POCKET-KNIFE AND PENCIL-GUARD. GEO. T. DARRAH, Shelburne Falls, Mass. Filed June 3, 1890. Serial No. 354,169. (No model.)



Claim.—1. The tube B, plug C, having the kerf c, blade E, and rivet e, combined and arranged for joint operation relatively to each other and to a lead-pencil, as herein specified.

2. The tube B, plug C, having the kerf c, blade E, and rivet e, in combination with the spring D D′ and slide G, or either of them, adapted to serve as herein specified.

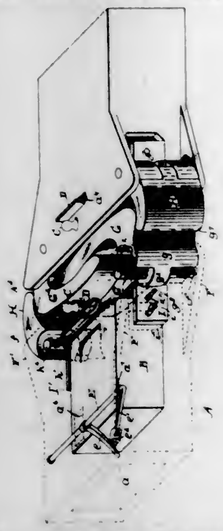
444,095. LOOM-SHUTTLE. ABRAM D. EMERY, Taunton, Mass. Filed Mar. 27, 1890. Serial No. 345,486. (No model.)



Claim.—1. A shuttle for weaving provided with a cylindrical cop-casing presenting a rough inner surface and closely surrounding the periphery of a cop of the kind which is unwound from the inside in the process of weaving.

2. A cylindrical cop-casing for closely surrounding the periphery of a cop of the kind which is unwound from the inside in the process of weaving, in combination with an inclosing cylinder or tube attached to or forming a part of the shuttle.

444,096. CAR-COUPLING. WALLACE W. GELATT, Chicago, Ill. Filed Mar. 21, 1890. Serial No. 344,840½. (No model.)



Claim.—1. The combination, with the draw-head of a car having suitable longitudinal and intersecting openings for the respective shackle and coupling pin, of a knuckle-bar pivotally attached to said draw-head and a transverse forked coupling combined with said draw-head attached to said knuckle-bar, having one forked end portion in advance of said draw-head and the other forked end portion extending within the said longitudinal opening in said draw-head in the path of the coupling-pin, substantially as and for the purpose described.

2. The combination, with the draw-head of a car having a coupling-pin and suitable longitudinal and intersecting openings for the respective shackle and said pin and a rebounding-pin-supporting plunger in said longitudinal opening, of a combined forked vibrating coupling consisting of a knuckle-bar pivotally attached to said draw-head, a transverse grapple-bar in advance of said draw-head, and a transverse trip-lever contacting with said plunger extending within said longitudinal opening in the path of said coupling-pin, both connected with said knuckle-bar, substantially as and for the purpose described.

3. The combination, with the draw-head of a car, having a pivoted knuckle-bar on the side thereof, and a shoulder on said bar, of a self-dropping plate on the side of said draw-head engaging with the shoulder on said knuckle-bar, substantially as and for the purpose described.

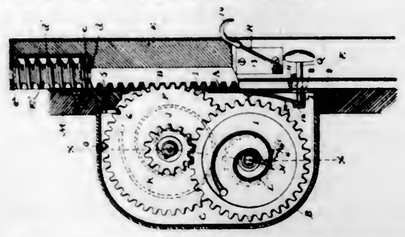
4. The combination, with the draw-head of a car, of a knuckle-bar adapted to support a grapple-coupling having a lug pivotally attached to said draw-head, and a shoulder and a self-dropping plate on the side of said draw-head engaging with the shoulder on said lug, having slots inclined in the direction of said lug on said knuckle, and pivots in said draw-heads within said slots, substantially as and for the purpose described.

5. The combination, with the draw head of a car, having a coupling-pin, a suitable longitudinal opening therein, a vertical opening for said pin, and an inclined slot in rear of said opening for said pin intersecting therewith in the draw-head, of a rebounding plunger in said longitudinal opening, a drop-plate in said inclined slot, and a lip on said plunger engaging with the said drop-plate within said draw-head, a knuckle-bar pivotally attached to said draw-head, and a forked coupling having one forked end portion in advance of said draw-head and the other forked end portion extending within the said longitudinal opening in the draw-head and contacting with said plunger, substantially as and for the purpose described.

6. The combination, with the draw-head of a car having a coupling-pin and suitable longitudinal and intersecting openings for the coupling-pin and shackle and a transverse opening in the end of said draw-bar, of an auxiliary coupling consisting of a knuckle-bar pivotally attached to the side of said draw-head, a combined transverse grapple-bar in advance of said draw-head, and a transverse trip-lever within the said transverse opening in the end of said draw-head and in the path of the said coupling-pin, both of said grapple and trip-lever bars being connected with said knuckle-bar, substantially as and for the purpose described.

7. The combination, with the draw-head of a car, of a knuckle-bar pivotally attached to and upon one side of said draw-head, a transverse grapple-bar combined with said knuckle-bar in advance of said draw-head, a guide-bar in the line of direction of and upon the other side of said draw-head, and a plate on said draw-head engaging automatically with said guide-bar, substantially as and for the purpose described.

444,097. SASH-BALANCE. SAMUEL N. GOLDY, San Francisco, Cal. Filed Oct. 11, 1890. Serial No. 367,783. (No model.)



Claim.—1. In a sash-balance, the combination, with the window-frame, of a boxing carrying two shafts, gear-wheels loosely mounted thereon, a pinion carried by one of the shafts and engaging one of the gear-wheels, a spring carried by each of the said gears and exerting pressure in opposite directions, and a rack-bar carried by the sash and engaging with one of the gear-wheels, substantially as and for the purpose specified.

2. In a sash-balance, a sash carrying a rack-bar constructed of a stationary and a revoluble portion, in combination with the window-frame carrying two spring-actuated gear-wheels, one of which meshes with the said rack-bar, and means for operating the revoluble portion of the rack-bar to increase or diminish the tension of the spring on the gear meshing therewith, substantially as described.

3. In a sash-balance, the combination, with the window-frame, of a boxing carrying two shafts, gear-wheels loosely mounted thereon, springs connecting the gears and shafts, a pinion rigidly mounted on one of the shafts and engaging the gear-wheel on the other shaft, ratchet-and-pawl mechanism for increasing or diminishing the tension of the springs, and a rack-bar carried by the sash and engaging one of the gear-wheels, substantially as described.

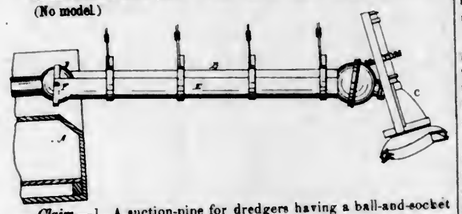
4. In a sash-balance, a window-frame carrying two spring-actuated gear-wheels, a spring provided with a lug, and a pin secured to the spring, in combination with the sash carrying a rack-bar meshing with one of the gear-wheels, and a spring adapted to engage the said pin and draw the lug into engagement with the said rack-bar, substantially as described.

5. In a sash-balance, the combination, with the window-frame, of a boxing carrying two shafts, gear-wheels loosely mounted thereon, springs connecting the wheels and shafts, a rigid pinion carried by one of the shafts and engaging the gear-wheel on the other shaft, ratchet-and-pawl mechanism carried by the latter shaft, and means for operating the same to regulate the tension of the two springs, substantially as described.

6. In a sash-balance, the combination, with the window-frame having a casing carrying two spring-actuated gear-wheels, a spring provided with a lug, and a pin having teeth secured to the spring of the sash carrying a rack-bar engaging one of the said wheels, a spring adapted to engage the pin to draw the lug into engagement with the rack-bar, and a pawl engaging the teeth on the pin, substantially as and for the purpose specified.

7. In a sash-balance, the combination, with the window-frame carrying two spring-actuated gear-wheels, of a rack-bar secured to the sash and engaging one of the said wheels and a revoluble worm carried by the rack-bar and a portion of the threads of which is cut away to form a continuation of the rack-bar, substantially as and for the purpose specified.

444,098. JOINT FOR SUCTION-PIPES OF DREDGERS. WILLIAM P. HUMPHREYS, San Francisco, Cal., assignor, by mesne assignments, to A. M. Stinson, same place. Filed Dec. 5, 1889. Serial No. 332,622. (No model.)



Claim.—1. A suction-pipe for dredgers having a ball-and-socket joint connecting it with the pipe upon the boat, provided with trunnions, as described, in combination with a turn-table mounted upon the boat and having bearings for said trunnions, as set forth.

2. A suction pipe for dredgers having a protector and a ball-and-socket joint connecting it with the pipe upon the boat and provided with trunnions, in combination with a turn-table mounted upon the boat and having bearings for said trunnions, as set forth.

3. A suction-pipe for dredgers provided with a ball-and-socket joint connecting it with a pipe upon the boat and a protector for said suction-pipe, in combination with a jacket or apron connecting said protector and the ball-and-socket joint and trunnions in line with the axis of said joint, as set forth.

4. The combination of a suction-pipe for dredgers provided with a ball-and-socket joint connecting it to the pipe on the boat and with a jacket surrounding the under side of said suction-pipe and of the moving part of said joint, and trunnions upon the sides in line with the axis of said joint, as set forth.

5. A suction-pipe for dredgers provided with a ball-and-socket joint connecting it to the pipe on the boat and having trunnions upon the flange of the moving part of said joint, in combination with a turn-table having bearings for said trunnions, as set forth.

444,099. JOINT FOR SUCTION-PIPES. WILLIAM P. HUMPHREYS, San Francisco, Cal., assignor to Alice M. Stinson, same place. Filed Apr. 15, 1890. Serial No. 348,136. (No model.)



Claim.—1. A joint for suction-pipes, consisting of the ends of two pipes having oblate spheroidal form, as set forth.

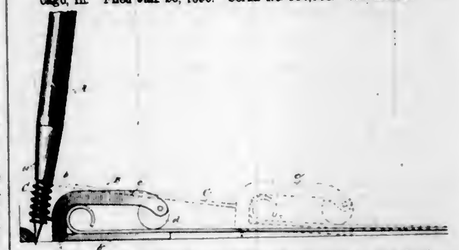
2. A joint for suction-pipes, consisting of the ends of two pipes having oblate spheroidal form and the inner one of said pipes being cut away at an oblique angle, the long side being underneath, as set forth.

3. The combination, with a suction-pipe and cutter, of curved telescoping pipes connecting them, as set forth.

4. The combination, with a suction-pipe and cutter, of curved telescoping pipes connecting them, and a slotted and bowed arm connected to one part and sliding over a pin secured upon the telescoping pipe connected to the other part, as set forth.

5. The combination of the curved telescoping pipes, a rigid arm connecting the outer one to the part to which said pipe is attached, and a slotted curved arm connected to the inner pipe and sliding over a pin on the outer pipe, as set forth.

444,100. STRETCHER FOR CARPETS. GORDON A. MAY, Chicago, Ill. Filed Jan. 20, 1890. Serial No. 337,511. (No model.)



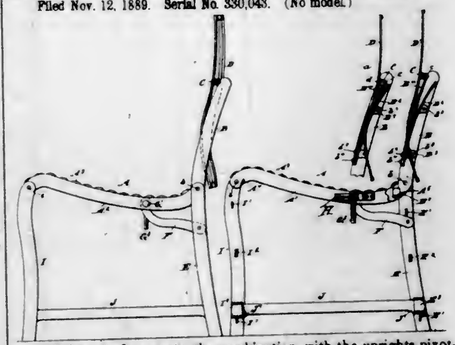
Claim.—1. In stretchers, the combination, with a suitable clamp for engaging the fabric to be stretched and a winding-cord attached to said clamp, of an upright revoluble staff attached to said cord and adapted to be extended laterally or at an angle from its pivotal point, so as to be within the grasp of the operator when standing free from the fabric, substantially as described.

2. In stretchers, the combination, with a suitable clamp for engaging the fabric to be stretched and a winding-cord attached to said clamp, of an upright revoluble staff attached to said cord and adapted to be extended laterally or at an angle from its pivotal point, said staff being provided at its bottom end with a pike-like tip, substantially as described.

3. In stretchers, the combination, with the staff having a pike-like tip, of a clamp comprising a base-plate provided beneath with a retaining-pin, an overhanging bracket and a pivoted clip thereon resting at its lower edge against the base-plate, and a flexible winding-cord connected to said staff and to said clamp, respectively, substantially as described.

4. In stretchers, the combination, with the staff, of a clamp comprising a base-plate provided beneath with a retaining-pin, an overhanging bracket and a grip-roller pivoted eccentrically to said bracket and resting at its lower face against said base-plate, and a flexible winding-cord connected to said staff and clamp, respectively, substantially as described.

444,101. FOLDING CHAIR. HENRY MILLER, Chappaqua, N. Y. Filed Nov. 12, 1889. Serial No. 330,043. (No model.)



Claim.—1. In a chair, the combination, with the uprights pivotally connected with the seat, of the web secured to the uprights, the spring secured to the web and having at its upper end eyes adapted to receive pivots on a transverse spring, and a yielding back secured to said spring and adapted to rock on the pivots and allow the back to tilt, substantially as specified.

2. In a chair, a transverse spring, a pair of upright springs having eyes, and a tilting back formed on a compound curve and curved webs to the rear of said springs, said springs being free to extend their effective lengths as the strain on them is increased, as set forth.

3. In a chair, a transverse spring supported in eyes, a tilting back

supported on such spring and rocking with the spring in such eyes, a pair of upright springs supporting the eyes, and bearings for such springs arranged to extend their effective length and stiffen the springs as the strain on them is increased, all substantially as herein specified.

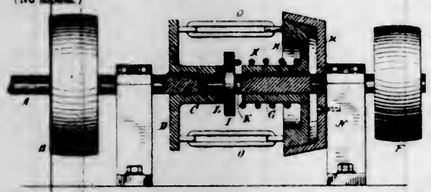
4. In a chair, a pair of back legs capable of partial rotation on pivots *b* at the junction of the seat and braced together to give lateral stiffness and turning on said pivots, combined with the seat and with hinged braces extending obliquely between the back legs and the seat and removably held at their inner ends and arranged to hold and release the back legs at will, removable horizontal braces, and diagonal braces between the legs, substantially as specified.

5. The combination, with the seat, hinged braces F, pivoted to the back legs, and back legs pivoted to the seat, of the flexible or jointed locking-pin for holding the braces F to the seat, and comprising a pin having a head at its outer end, a hinge at its inner end, and an extension connected to the hinge, substantially as specified.

6. In a chair, the combination, with the seat, of front legs pivoted to the front edge of the seat, back legs pivoted to the rear edge of the seat, the removable braces J and J', connecting the rear and front legs, the braces F, pivoted to the back legs, and the locking-pin G, securing said braces F to the seat, substantially as specified.

7. In a chair, the rear uprights R, pivoted at *b*, carrying the springs B⁴ and divergent bearings, the transverse spring C, pivoted on the springs B⁴, and the back D, fixed on the spring C and tilting or oscillating therewith, all combined and arranged to serve as herein specified.

444,102. BRAKE AND STARTER FOR MACHINERY. CHARLES R. PRATT, New York, N. Y. Filed Jan. 31, 1890. Serial No. 338,799. (No model.)



Claim.—1. The combination of a driving-shaft, a driven shaft, and a torsionally-yielding connection between them, consisting of a loose link connected with both shafts, substantially as set forth.

2. The combination of a driving-shaft, a driven shaft, and a loose torsionally-yielding link placed parallel to said shafts and connected at one end with the driving-shaft and at the other end with the driven shaft, substantially as set forth.

3. The combination of a driving-shaft, a driven shaft, a flange or collar fixed on each shaft, and loose torsionally-yielding links connecting said flanges or collars, substantially as set forth.

4. The combination of a driving-shaft, a driven shaft or body, and a brake for the latter controlled by the movement of the former, substantially as set forth.

5. The combination of a driving-shaft, a driven shaft or body, brake-shoes (one of which is movable) controlling the movement of said driven shaft or body, and a connection from the driving-shaft for operating the movable brake-shoe, substantially as set forth.

6. The combination of a driving-shaft, a driven shaft, a stationary brake-shoe, a movable brake-shoe on the driven shaft, and a connection from the driving-shaft to said brake-shoe, whereby the same is moved by the turning of the driving-shaft, substantially as set forth.

7. The combination of a driving-shaft, a driven shaft, a stationary brake-shoe, a movable brake-shoe on the driven shaft, and a loose link connecting the movable brake-shoe with the driving-shaft, substantially as set forth.

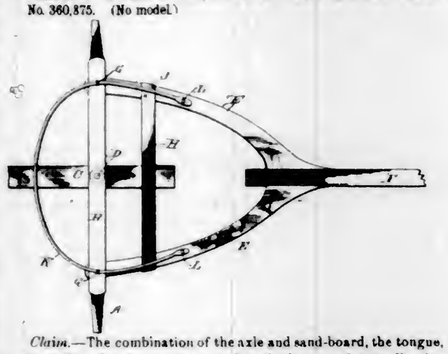
8. The combination of a driving-shaft, a driven shaft, a stationary brake-shoe, a sliding brake-shoe keyed on the driven shaft, and a loose connection from said driving-shaft to said brake-shoe, substantially as set forth.

9. The combination of a driving-shaft, a driven shaft, a stationary brake-shoe, a sliding brake-shoe keyed to the driven shaft, a loose connection from said driving-shaft to said brake-shoe, and a spring for moving said brake-shoe toward the stationary one, substantially as set forth.

10. The combination of a driving-shaft, a driven shaft, a stationary brake-shoe, a sliding brake-shoe keyed to the driven shaft, a flange or collar on the driving-shaft, and links connecting said flange or collar with said movable brake-shoe, substantially as set forth.

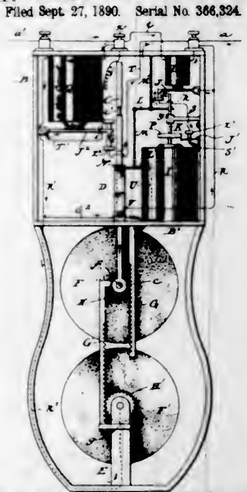
11. The combination of a driving-shaft, a driven shaft, a stationary brake-shoe, a sliding brake-shoe keyed to the driven shaft, a flange or collar on the driving-shaft, links connecting said flange or collar with said movable brake-shoe, and a spring for moving said brake-shoe toward the stationary one, substantially as set forth.

444,103. RUNNING-GEAR FOR VEHICLES. RICE READER and CHARLES W. WEINLAND, Primghar, Iowa. Filed Aug. 4, 1890. Serial No. 360,875. (No model.)



Claim.—The combination of the axle and sand-board, the tongue, a pair of diverging hounds connected to the latter and extending between said axle and sand-board, a slide-bar connecting the hounds in front of the axle, the reach extending between the axle and sand-board and beneath said slide-bar, a bowed brace-rod secured at its forward ends to said hounds, its bowed portion extending over the sand-board, under brace-rods secured at their forward ends to the hounds and extending beneath the axle, and vertical bolts passing through the bowed brace-rod, the sand-board, the axle, and said under brace-rods and securely connecting these parts together, as described.

444,104. ELECTRIC-ARC LAMP. ALBERT W. REPPY, Oakland Pier, Cal. Filed Sept. 27, 1890. Serial No. 366,324. (No model.)



Claim.—1. In an arc lamp, the combination of the two rotary carbon disks having the pinions of unequal diameters, the stationary rack engaging the smaller pinion, and the rack carried by the carbon having the smaller pinion, said rack engaging the larger pinion, whereby the carbons rotate at unequal rates of speed, substantially as described.

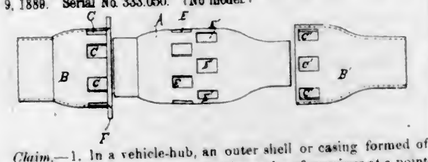
2. In an arc lamp, the combination of the two rotary carbon disks F F' in movable and stationary bearings, respectively, the pinion H on disk F, the stationary rack G, engaging said pinion, the moving rack G', carried by the carbon disk F', and the pinion H', of greater diameter than pinion H, attached to the carbon disk F' and engaging the moving rack, substantially as described.

3. In an arc lamp, the combination of the vertically-movable feed-rod and the moving rack connected thereto with the rotary carbon disk F, having its bearing on the feed-rod and provided with the pinion H, the stationary rack engaging said pinion, and the rotary carbon disk F', having a fixed bearing, and the pinion H', engaging the moving rack, said pinion being of greater diameter than the pinion H, substantially as described.

4. In an arc lamp, the combination of the feed mechanism, the magnet I, having the armature P attached to and operating the feed

mechanism, the switch-armature J and spring-switch J', normally in circuit with the said magnet, said switch-spring being in the path of and adapted to be operated by the armature, and the high-resistance magnet in shunt-circuit for actuating the switch-armature J, substantially as described.

444,105. HUB. ANDREW F. SHULER, Arcanum, Ohio. Filed Dec. 9, 1889. Serial No. 333,050. (No model.)



Claim.—1. In a vehicle-hub, an outer shell or casing formed of two parts, each part being provided with a series of openings at a point slightly removed from the inner end of said part, said openings being adapted to stand in staggered series when the parts are in position on the hub, said parts being shaped to fit the respective ends of the hub, and adapted to be forced in opposite directions thereon and joined together at their inner ends, and a projecting flange of uniform thickness between the respective series of openings, substantially as specified.

2. The combination, with an inner hub or core, of an outer shell having a central projecting flange and staggered openings arranged in series on either side of said flange, said shell being divided into two parts, so that each series of openings shall stand slightly back of the dividing-line between the parts, whereby the shell may be placed onto said hub from opposite ends and joined together between the respective series of openings, substantially as specified.

3. The combination, with a hub or core, of an outer casing formed in two parts, one of said parts being provided with a projecting flange having an annular recess therein adapted to receive the inner end of the other part, the said parts being adapted to slip onto a hub from opposite directions, substantially as specified.

4. The combination, with an inner hub or core, of an outer shell or core made in two parts and adapted to extend entirely over said hub or core and form a point and sand band therefor, one of said parts being provided with a projecting flange and an annular recess and the other part being adapted to fit into said recess, substantially as specified.

5. The combination, with an inner hub or core, of an outer shell having staggered openings therein, a projecting flange between said staggered openings, and an annular recess in said flange adapted to receive the inner end of the other portion of the shell, which is forced onto said hub from the opposite direction, substantially as specified.

444,106. PAPER-CUTTER. HENRY G. SPRAKER, Rich Hill, Mo. Filed Aug. 14, 1890. Serial No. 361,980. (No model.)



Claim.—1. In a paper-cutter, the combination of a pivoted knife, a rod extending across the same, and connections between said rod and knife whereby the movement of the latter causes the rod to clamp the paper between it and the knife, as and for the purpose set forth.

2. In a paper-cutter, the combination of a pivoted knife, a wire rod arranged behind the same, and hooks at opposite ends of said rods and in which the ends of the knife are adapted to be contained, whereby the upward movement of the latter causes the back rod to clamp the paper between it and the knife, as and for the purpose set forth.

3. In a paper-cutter, the combination of a pivoted knife having a weighted upper portion and a wire frame pivoted back of said knife and consisting of a straight rod extending across the latter and having a pair of hooks at its opposite ends confining the ends of the knife, whereby the upward movement of the latter causes the straight rod to clamp the paper between it and the knife, as and for the purpose described.

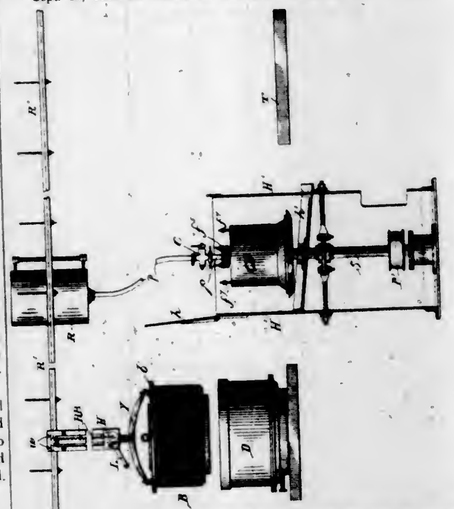
4. In a paper-cutter, the combination of the frame-work having a slot under which the paper passes and a weight loosely contained within the slot and adapted to rest upon the paper and prevent its slipping back, substantially as set forth.

5. In a paper-cutter, the combination of the frame-work having an upwardly-directed slot intersected by a transverse slot through which the paper is threaded and a weight loosely contained within the first-named slot and adapted to rest upon the paper and prevent its slipping back, substantially as set forth.

6. In a paper-cutter, the combination of a pivoted knife having a weighted upper portion and a weight loosely contained within a vertical slot, across which the paper passes and thence beneath the knife, substantially as described.

7. In a paper-cutter, the combination of a pivoted knife, a wire frame fulcrumed back of the latter and consisting of a straight rod having hooks at its opposite ends confining said knife, and a weight arranged to bear upon the paper and prevent it from slipping back, all arranged and adapted to operate in the manner and for the purpose substantially as described.

444,107. MANUFACTURE OF SUGAR. GUSTAVE ADANT, Brussels, Belgium. Filed June 14, 1890. Serial No. 355,510. (No model.) Patented in Belgium Oct. 7, 1887, No. 79,121; in France Nov. 4, 1887, No. 186,785; in Germany Dec. 31, 1887, No. 44,660, and in England Sept. 10, 1888, No. 13,084, and May 4, 1889, No. 7,517.



Claim.—1. In the purification of sugar, the herein-described basket for the centrifugal machine, comprising a top and bottom ring, a foraminous cylinder connected with said rings, a plurality of radial partitions alternately secured to the bottom and top rings, respectively, and extending from the cylinder toward the axis of the basket, and a locking device for detachably locking to the top ring those vertical partitions which are secured to the bottom ring, substantially as and for the purposes specified.

2. In the purification of sugar, the herein-described basket for the centrifugal machine, comprising a top and bottom ring, a foraminous cylinder connected with said rings, a plurality of vertical partitions wedge-shaped in cross-section extending from the cylinder toward the axis of the basket, the inclination of said partitions being such as to form rectangular spaces between them, the outer side of which is segmental, said rings being alternately secured to the top and bottom rings, and a locking device to lock to the top ring those partitions which are secured to the bottom ring, substantially as and for the purpose specified.

3. In the purification of sugar, the herein-described basket for centrifugal machines, comprising a top and bottom ring, a foraminous cylinder connected with said rings, a plurality of vertical partitions secured alternately to said top and bottom rings and extending from the cylinder toward the axis of the basket, a locking device for locking to the top ring those partitions which are secured to the bottom ring, and removable sheet-metal partitions for dividing the space between the vertical partitions, substantially as and for the purpose specified.

4. In the purification of sugar, the herein-described basket for the centrifugal machine, comprising a top and bottom ring, a foraminous cylinder connected with said rings, a plurality of vertical partitions wedge-shaped in cross-section and extending radially from the cylinder toward the axis of the basket, said partitions being alternately secured to said top and bottom rings, the inclination of the

partitions being such as to form substantially rectangular spaces between them, the outer side of which is segmental, and removable sheet-metal partitions for dividing the said spaces, substantially as and for the purpose specified.

5. In the purification of sugar, the herein-described basket for the centrifugal machine, comprising a top and bottom ring, a foraminous cylinder seated loosely on the bottom ring and secured rigidly to the top ring and vertical partitions secured alternately to said top and bottom rings, and a locking device for detachably securing to the top ring those partitions which are secured to the bottom ring, substantially as and for the purposes specified.

6. In the purification of sugar, the herein-described basket for the centrifugal machine, comprising a top and bottom ring, a foraminous cylinder seated loosely on the bottom ring and connected rigidly to the top ring, vertical partitions wedge-shaped in cross-section extending radially from the cylinder toward the axis of the basket, the inclination of the sides of the partitions being such as to form substantially rectangular spaces between them, having their outer side segmental, and a locking device for detachably locking to the top ring those partitions which are secured to the bottom ring, substantially as and for the purpose specified.

7. In the purification of sugar, the herein-described basket for the centrifugal machine, comprising a top and bottom ring, a foraminous cylinder seated loosely on the bottom ring and secured rigidly to the top ring, vertical partitions b^3, rigidly secured to the bottom ring, like partitions b^4, detachably connected to the top ring, and hook or eye bolts b^6 for connecting the partitions b^3 and b^4 to said top ring, substantially as and for the purpose specified.

8. In the purification of sugar, the combination, with a basket consisting, essentially, of a cylinder whose outer periphery is composed of a foraminous material, said cylinder being divided into chambers open at their inner ends for containing the forms, and provided with an annular foot-flange, the inner face of which is inclined, in combination with a filling-drum comprising two concentric cylinders forming an annular chamber for the reception of the cylindrical basket, said chamber being provided at its bottom with an annular recess for the reception of the foot-flange of the basket and with a duct or passage leading from said recess to the exterior of the drum, the inner cylinder of which is provided with rectangular recesses d^4, substantially as and for the purpose specified.

9. In the purification of sugar, the combination, with the described cylindrical basket B, having its chambers containing the forms open at their inner end, of a filling-drum composed of two concentric cylinders, the inner cylinder having vertical recesses d^4 formed in its walls, said recesses straddling the partitions of the basket-chambers, and the forcing-bars E, constructed to fit into said recesses, substantially as and for the purpose specified.

10. In the purification of sugar, the combination, with the cylindrical basket B, containing the forms and having an annular base or foot flange b^7 in its bottom ring b^2, the inner face of which flange is inclined, of the centrifugal drum provided with a base-flange having the inclined seat f^3 and the annular gasket f'', substantially as and for the purpose specified.

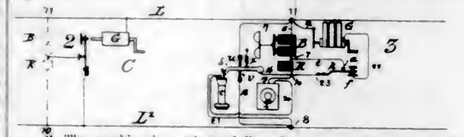
11. In the purification of sugar, the combination, with the cylindrical basket B, containing the forms, the top ring b' of said basket being provided with a vertical flange b^5 at its inner periphery, a revoluble drum provided with a suitable seat for the basket and with a corresponding vertical flange, and locking-bolts f^7 pivoted at the upper edge of the drum, of a locking plate or ring provided with an annular groove adapted to fit over the flanges of the drum and basket, and with holes for the passage of the pivoted bolts, and nuts for locking the ring to the bolts, substantially as and for the purpose specified.

12. The basket B, comprising top and bottom rings, a foraminous cylinder connected therewith, radial vertical partitions b^3 b^4, secured to said top and bottom rings and adapted to divide the same into substantially rectangular spaces, radial grooves formed in the proximate faces of said rings between the partitions b^3 b^4, and sheet-metal partitions B^3, adapted to fit into said grooves to divide the space between the partitions b^3 b^4, substantially as and for the purpose specified.

13. The drum C D, comprising a base f^{13}, having an axial tubular bearing, radial tubular arms f^{14}, detachably connected with said bearing, a substantially cylindrical body detachably connected with the base, and bolts hinged to said body at or near its upper edge, substantially as and for the purpose specified.

444,108. SIGNALING APPARATUS. ISAIAH H. FARNHAM, Wellesley, assignor to the New England Telephone and Telegraph Company, Boston, Mass. Filed Aug. 30, 1890. Serial No. 362,470. (No model.)

Claim.—1. In an electrical signaling system, an electric circuit, an electro-magnetic signal-bell or equivalent electro-magnetic signaling device in a permanently-closed branch of the said circuit, a signal-sending magneto-generator in a normally-open branch of the said circuit, and means for increasing the resistance of the said bell-branch circuit while the said generator is being operated to send outgoing signals.



2. The combination, substantially as hereinbefore described, with an electric circuit extending between two or more stations, an electro-magnetic call-receiving device located at each station in a permanently-closed bridge or branch of said circuit, and a call-sending generator at each station in a normally-open bridge or branch of the said circuit parallel to the said closed branch, of means for closing the said generator-circuit to send an outgoing signal and for simultaneously increasing the resistance of the parallel bell branch at the same station.

3. The combination of a metallic main-line circuit extending between and connecting two or more stations, an electro-magnetic call-bell at each station in a permanently-continuous bridge between the two wires of said circuit, a call-sending generator at each station in a normally-open bridge, said bridge being when closed parallel with the bell-bridge, a resistance, as described, in a shunt of the said bell-bridge, and means, as indicated, for breaking the said shunt and for introducing the said resistance into the bell-bridge circuit when the generator is being operated, and for withdrawing the same therefrom and for reinstating the said shunt when the generator becomes quiescent.

4. The combination of a metallic main-line circuit extending between and connecting a number of stations, an electro-magnetic call-bell at each station in a permanent bridge between the two wires of said circuit, a resistance adapted to be included with said call-bell in said bridge, but normally shunted therefrom, a call-sending generator at each station in a parallel bridge of said circuit normally open, but adapted to be closed in the act of sending signals, and a circuit-changing device controlling the generator-bridge and the resistance-shunt and adapted to close the one and open the other, and vice versa, according to its position.

5. In an electric-signaling system, an electric main circuit extending between two or more stations, a normally and permanently closed bridge or derived circuit at each station connected with said main circuit and including an electro-magnetic call-receiving device, a normally-open bridge or derived circuit at each station, also connected with said main circuit in multiple arc with the said bell branch and including a signal-sending generator, an inductive resistance, substantially as described, connected with the said permanently-closed bell branch, but normally shunted therefrom, and a circuit-changer controlling the said resistance-shunt and normally maintaining the continuity thereof, but capable of assuming a second position, in which the generator branch is closed and the said resistance included in the bell-circuit, for the purposes specified.

6. A station apparatus for a multiple-station metallic circuit combining two main-line terminals, one for each wire of the said metallic circuit, a permanently-continuous conductor uniting the said terminals and forming a bridge between them, an electro-magnetic call-bell, and a resistance included in said bridge, combined with a normally-discontinuous independent bridge also extending between said terminals parallel to the first, a call-sending magneto-generator in the circuit of the said normally-open bridge, a shunt-circuit normally closed round the bell-bridge resistance, and a circuit-changing key or switch normally forming, together with its back contact, a portion of said shunt-circuit and maintaining the continuity thereof, but adapted when operated to form, together with its front contact, a portion of the generator-bridge and to complete the same, whereby the act of sending the signal is caused to add resistance to the bell-bridge.

7. The combination, substantially as described herein, of an electric call-bell and a call-sending magneto-generator connected, respectively, in a permanently-closed and a normally-open bridge between the line-terminals of a telephone-station apparatus, with a suitable resistance and a circuit-changer controlling the same and adapted to connect the said resistance in the call-bell circuit during the operation of the said generator in sending outgoing signals, but to withdraw the same therefrom when said operation is intermitted, substantially as and for the purposes set forth.

8. The combination, in a telephone signaling system, of a metallic main circuit, a number of telephone-stations interconnected thereby, a permanently-continuous bridge or cross-conductor at each station, including the call-bell magnets, a resistance-coil at each station, also included in the said bell-bridge, but normally shunted or short-circuited, a normally-discontinuous independent bridge or cross-conductor at each station, a call-sending magneto-generator connected with the same and arranged to be included therein when the said cross-wire is closed, and a circuit-changer constructed to close the said open cross-wire during the operation of said generator and to simultaneously and automatically break the resistance-shunt, whereby the said extra resistance may remain shunted at all stations except that sending a call and shall at said call-sending station be introduced into the bell branch, substantially as described.

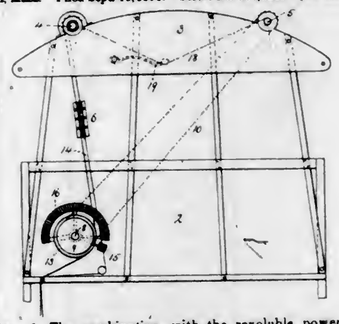
444,109. TRUCK FOR VEHICLES FOR ROPEWAYS. THEODOR OTTO, Schkeuditz, assignor to the firm of J. Pohlig, Cologne, Germany. Filed Sept. 20, 1890. Serial No. 365,645. (No model.) Patented in France Dec. 28, 1885, No. 173,193; in Belgium Dec. 28, 1885, No. 71,390; in Austria-Hungary May 13, 1887, No. 3,556 and No. 22,064; in England May 23, 1887, No. 7,507; in Italy June 30, 1888, XXII, 23,330, XLVII, 322, and in Spain June 30, 1888, No. 8,086.



Claim.—1. A truck for vehicles of ropeways, which comprises the plates b, taking between them the two guide-rollers a, the intermediate piece g, provided with the hole o for the pivot f of the hanger D, and the bolts d, screwed into the plates b and serving to support the said rollers a, substantially as described.

2. A truck for vehicles of ropeways, which comprises the rollers a, the plates b, the intermediate piece g, and the bolts d, that have a cavity for the reception of a lubricant and possess at one end a filling-hole adapted to be closed by means of a screw d^5 or the like, substantially as described.

444,110. BRAKE FOR ELECTRIC CARS. BELLVILLE L. RANDALL, Boston, Mass. Filed Sept. 11, 1890. Serial No. 364,625. (No model.)

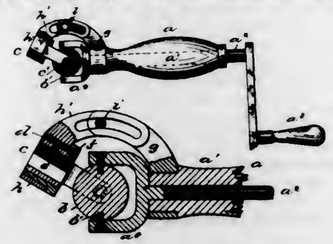


Claim.—1. The combination, with the revoluble power-rod, a rheostat, and its lever by which resistances are thrown in or out, of a revoluble brake-rod and mechanism, as a chain, by which the rheostat-lever is positively interconnected and operated separately by the power-rod or by the brake-rod, substantially as described.

2. In an electric car, a fixed rheostat, a shaft carrying two revoluble drums, a brake-rod and a power-rod respectively operating said drums, means for causing the latter to engage at certain points in their revolution, and a rheostat-lever actuated both by the power and by the brake-shafts, substantially as herein stated.

3. The combination, with the rotary power and brake rods 4 and 5, of the rod or shaft 8, fixed to the bottom of the car, the brake and power drums 9 and 13, loosely mounted on said shaft and provided with engaging abutments or shoulders 17 18, the regulating arm or lever 15, connected with the said power-drum to move therewith, and the bands or chains 10 14, connecting the said brake and power shafts with the said brake and power drums, as set forth.

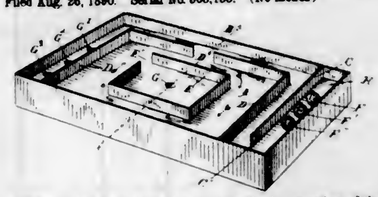
444,111. WRENCH. WILLIAM J. SHEA and CORNELIUS BIRKERY, Hartford, Conn. Filed Sept. 22, 1890. Serial No. 365,748. (No model.)



Claim.—1. A wrench consisting of a body, a head connected with the body by a universal joint, and an adjustable clamp between the head and body, substantially as specified.

2. A wrench consisting of a handle bearing a spindle having a crank fastened to one end and a ball pivoted to the opposite end, a socketed head pivoted to the ball, and a collar encircling the head adjustably connected with a collar encircling the handle, substantially as specified.

444,112. TOY GAME. FRANK W. BATDORF, Grand Rapids, Mich. Filed Aug. 26, 1890. Serial No. 363,133. (No model.)



Claim.—1. The toy game herein described, consisting of the board A, having the unbroken outer perpendicular wall B, the laterally-extending interior wall C, located near one end of said board and having an opening C' therein, said wall forming an inclosure H, the inner wall D having lateral and longitudinal sides arranged parallel to and a short distance from the walls C and B, respectively, said wall forming lateral and longitudinal passages, said lateral passage having communication with inclosure H through opening C' and said longitudinal passage having communication with the space within said wall D through an opening D', formed in the longitudinal side thereof, the innermost wall E having the gateway E', opening communication between its interior and the space between it and said wall D, rests or stops in the inclosure H and that formed by said wall E, and a plurality of balls of less diameter than the openings and spaces between the various walls.

2. The improved toy game herein described, consisting of a board A, having the unbroken outer perpendicular wall B, the inner wall C, arranged parallel to and a short distance from the end wall, the gate or opening C', the inner wall D, arranged parallel to and a short distance from the walls C and B, respectively, and having the opening D', the inner wall E, having the gateway or opening E', arranged a short distance from the walls C and B, respectively, and having the concavity G within its inclosure and the concavities G' G^3 G^4 between the end wall B and the wall D, and a series of balls F F^5 F^6, adapted to move along the alleys between the walls and engage the concavities, as shown and described.

444,113. SPOOL-HOLDER. JAMES E. BLACKMORE, Grand Rapids, Mich. Filed Aug. 15, 1890. Serial No. 362,128. (No model.)



Claim.—As an improved article of manufacture, a spool-holder comprising a back plate having means of attachment to the person of the user and formed at one side with an outwardly-projecting ear D, a spindle secured at one end to said ear and projecting across the face of said plate, said spindle serving to hold the spool of thread, and a flexible arm F, limiting the movement of the spool on said spindle and exerting a tension on the thread as it unwinds, as set forth, said arm being pivoted at its upper end to the forward face of said back plate, extending thence downward and forward toward the free end of said spindle, and formed near the same with a lug G, engaging the end of the spool.

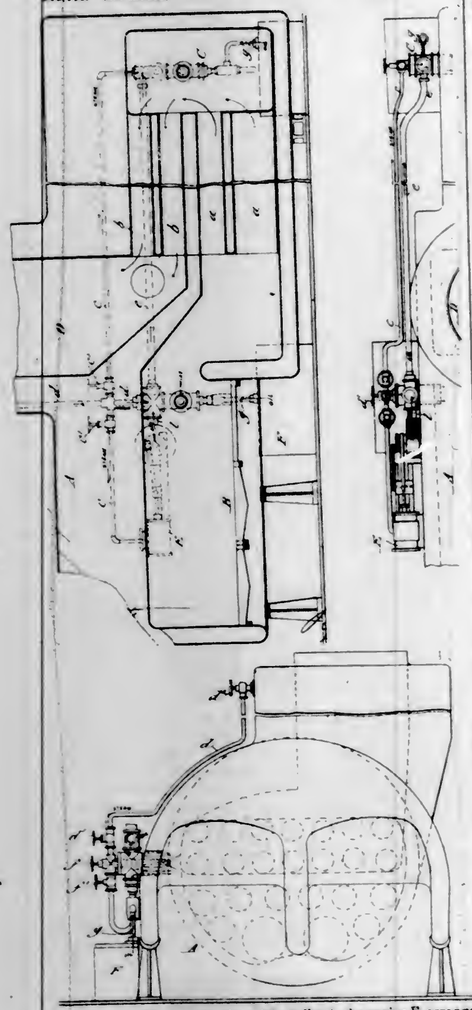
444,114. FIRE-KINDLER. RUDOLPH GUENTHER, Kansas City, Mo. Filed Sept. 1, 1890. Serial No. 363,647. (No model.)



Claim.—1. The combination of a steam-pipe H with a receptacle B, having the steam-chamber F, formed by perforated cap or partition E, the perforated partition D, upon which the peat is placed, and the lid or cover L, resting upon the cushion K of flange J and forming an air-tight joint, substantially as described.

2. The combination of a receptacle B, having a perforated floor therein, a steam-pipe connected therewith below the said perforated floor, and a perforated cover located over the said steam-pipe within the said receptacle, the space between the said cover and floor being filled with moss saturated with oil, as described

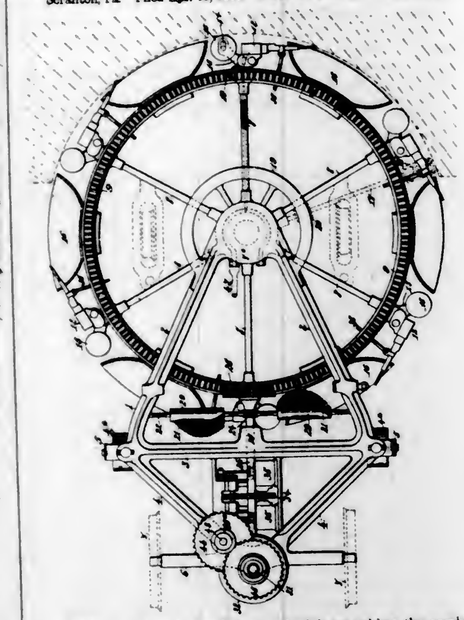
444,115. INJECTOR OIL-BURNER FOR BOILER-FURNACES. JAMES H. JONES, San Francisco, Cal. Filed July 20, 1889. Serial No. 318,118. (No model.)



Claim.—1. The combination of the boiler A, the engine E, arranged to generate a current of air, the air-fan operated by said engine, the horizontal air-pipe *c*, which receives air from the fan, the steam-pipe *c*, for supplying steam to drive the engine E, said steam-pipe *c* being provided with valves *c' c'*, located on each side of the point where the vertical steam-pipe *d* connects with the horizontal pipe *c*, the vertical steam-pipe *d*, that conveys steam from the boiler, said pipe having a valve d^3 to regulate the admission thereinto of steam from the boiler, and also with a valve *d'*, located at its intersection with pipe *c*, so as to regulate the course of the steam, and also with a valve *f* opposite the injector and a valve *f'* below the latter, and the injector-tube G, with valve K located in the end of said tube, substantially as described.

2. The combination of the boiler A, the engine E, arranged to operate a fan and thus generate a current of air, the injector consisting of tube G, having mouth J, the valve K, located within said mouth, said tube G having also the openings *i i*, the oil-tube I, surrounding the tube G, the air-tube L, the air-fan, the horizontal air-pipe *c*, which receives the air from the fan, the steam-pipe *c*, for supplying steam to drive the engine, E, said steam-pipe *c*, having valves *c' c'* located on each side of the point where the vertical steam-pipe *d* connects with the horizontal pipe *c*, the vertical steam-pipe *d*, for conveying steam from the boiler, said pipe *d* having a valve d^3 to regulate the admission thereinto of steam from the boiler, and with a valve *d'* located at its intersection with pipe *c* to regulate the course of the steam, and also with the valve *f* opposite the injector and the valve *f'* below the latter, substantially as described.

444,116. MACHINE FOR MINING COAL. FRANCIS A. POOCOCK, Scranton, Pa. Filed Apr. 15, 1890. Serial No. 348,041. (No model.)



Claim.—1. In an undercutting coal-mining machine, the combination of a main supporting-frame, a horizontally-arranged revolving frame or wheel having a circularly-channeled hub journaled in the main frame and rigid tubular spokes firmly connecting the channeled hub to the periphery of the frame or wheel, and a gang of cutting-tools secured at points around the periphery of the frame or wheel, working in a plane approximately parallel to the plane of movement of the frame or wheel, and actuated by a fluid conducted through the tubular spokes and channeled hub, with power-driven gear to continuously revolve the frame or wheel and cause the cutting-tools to effect their cutting action on the coal as they travel in a circular path with the continuously-revolving frame or wheel, substantially as described.

2. In an undercutting coal-mining machine, the combination of a main supporting-frame, a horizontally-arranged revolving frame or wheel having rigid tubular spokes and a circularly-channeled hub journaled in the main frame and carrying below the latter a central rolling bearing to rest on the floor of the cutting, and a gang of swinging cutting-tools secured at points around the periphery of the frame or wheel, working in a plane approximately parallel to the plane of movement of the frame or wheel, and actuated by a fluid conducted through the tubular spokes and channeled hub, with power-driven gear to continuously revolve the frame or wheel and cause the cutting-tools to effect their cutting action on the coal as they travel in a circular path with the continuously-revolving frame or wheel, substantially as described.

3. In a coal-mining machine, the combination, with a supporting-frame capable of direct and lateral adjustment, of a circular frame or wheel journaled thereon and having a gear on one side thereof, a shaft journaled in said frame and carrying a gear meshing with the gear on the frame or wheel, a motor revolving said shaft, a series of pivotally-mounted reciprocating tools carried by said wheel, a corresponding series of radial pipes giving communication between a chamber in the hub and the several motors operating the reciprocating tools, and rods or bars connected with the stocks of said tools and adjustable in sockets in or upon the circular frame or wheel, wherein they are locked by set-nuts, substantially as described.

4. In a coal-mining machine, the combination, with a supporting-frame capable of direct and lateral adjustment, of a circular frame or wheel journaled or having central bearing thereon, means for rotating said wheel, a series of reciprocating tools pivotally mounted upon supports carried by said wheel, means for operating said tools by power communicated through the radial bars or spokes of said wheel, and guide-rollers having their journals adjustable in slotted bearings on said wheel, the peripheries of said guide-rollers running upon the face or vertical wall of the cutting, substantially as described.

5. In a coal-mining machine, the combination, with a circular frame or wheel having continuous rotation upon a supporting-frame, of a series of reciprocating tools mounted pivotally upon said wheel, one or more trays or pans carried by said wheel and adapted to receive the dust and cuttings produced by the tools, and one or more brushes carried by radial shafts mounted in bearings upon the wheel and having actuating-gears which mesh with a mutilated rack on the frame supporting the wheel, whereby the floor of the under-cut is swept clean, substantially as described.

6. In an undercutting coal-mining machine, the combination, with a continuously-revolving support carrying a series of reciprocating tools and journaled upon a movable frame, of a pan or tray mounted upon said wheel in advance of each cutting-tool to receive the dust and cuttings produced by the action of such reciprocating tool, and a transverse brush-shaft mounted on said movable frame and carrying brushes by which all of said pans or trays are discharged after they emerge from the under-cut, substantially as described.

7. An undercutting coal-mining machine consisting of a continuously-revolving support having a channeled hub and radial channeled bars or spokes communicating with the channeled hub, a gang of reciprocating cutting-tools mounted at the periphery of the support and actuated by a working-fluid conveyed through the hub and the bars or spokes, means for adjusting the actiug ends of the cutting-tools and to form the periphery of the revolving support, a chip-pan secured to the support in advance of each cutting-tool and underlying the acting end thereof, and a transverse brush-shaft having brushes for clearing the pans as they successively emerge from the under-cut, substantially as described.

8. In a coal-mining-machine, the combination, with an angular frame consisting of two arms meeting at an apex and supporting a head or hub, of a circular frame supported by said hub and having a gear-wheel, a shaft journaled in said frame and in an extension thereof and carrying a gear meshing with the said gear-wheel, a motor carried by said frame-extension and operating said shaft, a series of reciprocating tools carried by said circular frame and operated by a medium of power carried to said tools by radial passages on said circular frame, a series of trays receiving the cuttings from said tools, and a shaft driven by a worm on the shaft driving the circular frame and carrying brushes which discharge and clean the trays as they pass out of the under-cut, substantially as described.

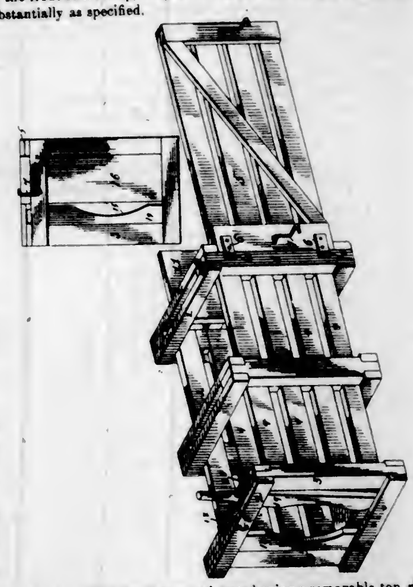
9. The combination, in an undercutting mining-machine, of a continuously-revolving circular support, a gang of swinging cutting-tools pivoted at the periphery of the support, devices for independently adjusting the acting end of each cutting-tool to and from the periphery of the support, a chip-pan secured to the support in advance of each cutting-tool, a brush for successively clearing the pans as they emerge from the under-cut, and a brush traveling with the revolving support for sweeping the under-cut, substantially as described.

10. The combination, in an undercutting mining-machine, of a main frame, a support continuously revolving in a horizontal plane and carrying at its periphery a gang of cutting-tools, a chip-pan secured to the support in advance of each cutting-tool, and a transverse brush-shaft journaled on the main frame and having brushes which successively clear the pans, substantially as described

444,117. COMBINED HOG TRAP AND CRATE. JOHN W. WADE, Lamotte, Ill. Filed Aug. 2, 1890. Serial No. 360,768. (No model.)

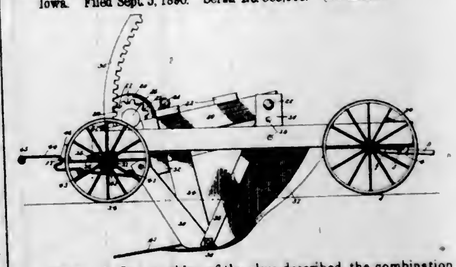
Claim.—1. In a hog-trap, the combination, with the frame provided at one side of its rear end with a hinged door and at its opposite side with hinge members, of a top mounted removably upon the frame and provided at one end with hinge members adapted to engage with the hinge members of the frame and to combine with the rear door of the frame to form a passage, substantially as specified.

2. In a hog-trap, the combination, with the vertically-sliding door 16 and its opposite guides and with the removable roof overlapping the said guides, of an L-shaped hook pivoted to the roof of the trap and extending over the upper end of the door, and a staple mounted on the front of the trap, adapted to engage the free end of said hook, substantially as specified.



3. A combined hog trap and crate having a removable top, means for securing the top in place, and means for hinging the top to the side of the trap, so as to be used to direct cattle into the trap, substantially as specified.

444,118. DITCHING-MACHINE. MATTHEW WILSON, Garrison, Iowa. Filed Sept. 5, 1890. Serial No. 363,990. (No model.)



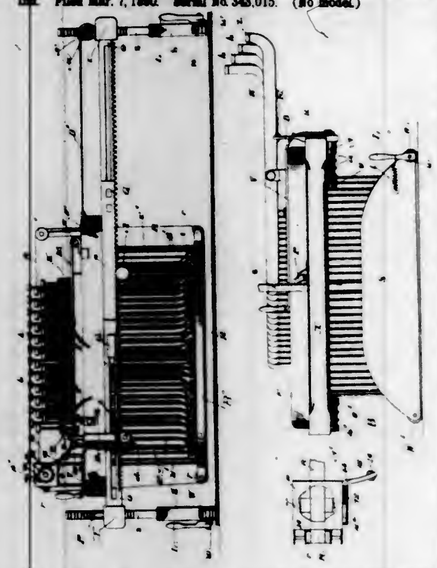
Claim.—1. In a machine of the class described, the combination, with the frame-work, a front axle, a draft-bail terminating in a central link, and a king-bolt pivoting the frame to the axle, of a depending shovel suspended from the frame, a U-shaped bail connected to the shovel, a draft-bail connected to the U-shaped bail and terminating at its center in an eye, and a draft-rod connected to the eye and passed through the eye of the draft-bail of the axle and terminating at its front end in a hook and in rear of the latter-mentioned eye in an offset or shoulder, substantially as specified.

2. In a machine of the class described, the combination, with the main oblong frame provided with opposite standards, each having a series of perforations, of the swinging frame removably mounted in the perforations, a shaft journaled at the front of said swinging frame, a pinion and perforated hand-wheel mounted on the shaft, a guide-bar secured in front of the pinion, an upwardly-disposed rack-bar rising from the main frame, passing through the guide-bar, and engaged by the pinion, means for locking the shaft at any point upon the rack-bar, and a shovel suspended from the frame and depending below the main frame, substantially as specified.

3. In a machine of the class described, the combination, with the oblong main frame, the front and rear axles and ground-wheels, the standards located upon the opposite side bars, a swinging frame adjustably pivoted in the standards, a transverse shaft having a pinion and perforated hand-wheel, a guide-bar located in front of the shaft,

a toothed rack-bar rising from the main frame, passing through the guide-bar, and engaged by the pinion, and a hooked rod loosely connected to the swinging frame and adapted at its free end to engage the perforations in the wheel, of opposite hangers depending from the swinging frame, a curved and at its rear end shared mold-board terminating at the front end in a point or shovel supported by the hangers, a vertical wall located at the land side of the shovel, a draft-bail leading from the shovel, a draft-bail leading from the front axle, and a draft-rod loosely connecting both bails and terminating at its front end in a draft-hook, substantially as specified.

444,119. TYPE-WRITING MACHINE. DANIEL C. BORUFF, Bedford, Ind. Filed Mar. 7, 1890. Serial No. 343,015. (No model.)



Claim.—1. In a type-writer, the combination, with the main frame, the basket, and the type levers and keys carried thereby, said type-levers being adapted to operate downwardly through the open bottom of the basket, of a supplementary frame-work supporting said main frame and means, substantially as described, for automatically moving said frame laterally upon said frame-work and for manually moving said frame-work over the paper at right angles to said lateral movement, as set forth.

2. In a type-writer, the combination, with the main frame, the basket, and the type levers and keys carried thereby, said type-levers being adapted to operate downwardly through the open bottom of the basket, of a supplementary pair of lateral bars provided with notches, the main frame resting upon said lateral bars, side bars connecting the ends of said lateral bars, supports for supporting said side bars, and a pawl and notched wheel operated by the type and space levers and connected with the notches in said lateral bars, substantially as and for the purpose set forth.

3. In a type-writer, the combination, with the main frame, the basket, and the type levers and keys carried thereby, said type-levers being adapted to operate downwardly through the open bottom of the basket, of the side supports, the side bars, the slotted bars extending inwardly from each end of said side bars and provided with notches on their lower edges, the intermediate notched bars between the adjacent inner ends of said slotted bars, lugs at the ends of said intermediate bars loosely engaging the slotted bars, guide-wheels carried by said frame and engaging the notches in said bars, and a pawl operated by the type and space levers and engaging said guide-wheel, as and for the purpose set forth.

4. In a type-writer, the combination, with the supports S, having the upwardly-extending toothed bars *s*, of the side bars 1, the pawls P carried thereby and engaging said toothed bars, the lateral bars connecting the ends of said side bars, and the main frame, basket, and type levers and keys supported by said lateral bars, substantially as described.

5. In a type-writer, the combination, with the main frame, the basket, and the type levers and keys carried thereby, said type-levers being adapted to operate downwardly through the open bottom of the basket, of the supplemental frame, the side supports S for supporting said supplemental frame, wheels W in said supports, and levers for turning said wheels, as and for the purpose set forth.

6. In a type-writer of the character described, the combination, with the printing mechanism and the supporting frame-work, of the side supports S, the wheels W, journaled therein and provided with polygonal peripheries, the ratchet-wheels *w*, keyed to the shafts of said wheels W, and the line-space levers L, journaled on said shafts and engaging said ratchet-wheels, as and for the purpose set forth.

7. In a type-writer of the character described, the combination, with the supporting mechanism, of the printing mechanism, the main frame F, carrying said printing mechanism, the studs U U', depending therefrom, the guide-wheels A and A', journaled in said studs, one of said guide-wheels having a toothed projection C, the additional stud *u*, in which the free end of said projection is pivoted, the space-bar Z, and the dog D, connecting said bar with said projection C, substantially as described.

8. In a type-writer, the combination, with the letter-space bar E and the rack O, of the finger 5, depending from said bar and engaging the rack, the dog D, the lever V for operating it, the rod 1, connected to said dog and passing through said finger, and the wedge 3 at the free end thereof, all substantially as and for the purpose described.

9. In a type-writer, the combination, with the reservoir 10, a shaft 11, journaled through the same, a gear-wheel 12 on one extremity thereof, and the endless ribbon R, passing through said reservoir over guide-rollers *r* on the frame, of the bar 13, having point 14 at one end engaging said gear, said bar being centrally pivoted at 16 and having its other end engaging some reciprocating part of the machine, all as and for the purpose set forth.

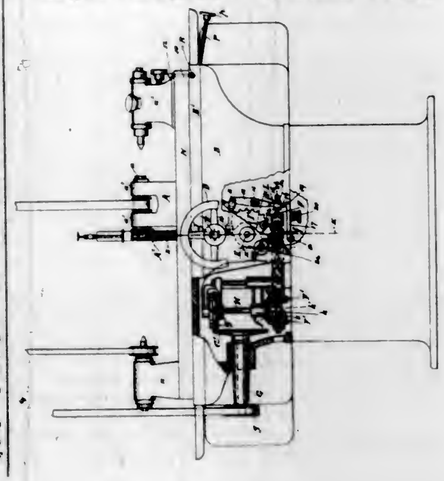
444,120. CARRIAGE-TOP JOINT. JOHN T. GROVES, Cincinnati, Ohio. Filed Sept. 6, 1890. Serial No. 370,474. (No model.)



Claim.—1. In a carriage-top joint, the combination, with the solid joint ends having shouldered and reduced inner extremities, of the hollow stump-joint secured upon said ends, each member of the joint comprising two halves and means for connecting them, substantially as described.

2. The herein-described joint for carriage-tops, the same comprising two hollow members, each of which consists of two halves connected together and each half having an integral disk, the disks of one member being stamped inside the planes of those of the other member, a washer having a head fitting between the inner disks and an enlarged shank fitting within the body of the inner joint member, and a pivotal rivet passing through all the disks and through the head of the washer, all as hereinbefore set forth.

444,121. GRINDING-MACHINE. ABRAHAM B. LANDIS, Waynesborough, Pa. Filed Sept. 15, 1890. Serial No. 365,083. (No model.)



Claim.—1. The combination, with the cross-shaft E, adapted to traverse the grinding-wheel longitudinally, and the worm-wheel mounted on the said shaft, of the longitudinal shaft F and the worm secured thereon and gearing into the said worm-wheel, reversing devices supported by the shaft F, a sleeve mounted on a screw-threaded portion of the shaft E, an oscillating plate secured upon the said sleeve and operatively connected with the said reversing devices, and collars secured to the shaft E at each end of the sleeve and provided with projections adapted to engage with lugs operatively connected with the said plate, and adapted to rock the said plate at each end of the traverse of the sleeve upon the shaft, and thereby to operate the said reversing devices and permit the shaft F to be revolved in the reverse direction, substantially as set forth.

2. The combination, with the hollow shaft F, provided with longitudinal slots, and the worm secured on the said shaft and operatively connected with the devices for traversing the grinding-head longitudinally, of the two beveled toothed wheels provided with projections and mounted on the said shaft, a revoluble beveled toothed driving-wheel gearing into the said two wheels, and a rod provided with a cross-plate projecting through the said slots and adapted to engage with either of the projections on the said two wheels, whereby the direction of the revolution of the shaft may be reversed by moving the said rod longitudinally inside the hollow shaft, substantially as set forth.

3. The combination, with the hollow shaft F and a sliding rod operatively connected to the reversing devices and provided with a screw-threaded end projecting from the said shaft, of a longitudinally-adjustable screw-threaded thimble engaging with the said end, a pivoted reversing-lever engaging with the said thimble and operatively connected with the traversing mechanism of the grinding-wheel, and a screw for clamping the thimble on the rod after its position has been adjusted, substantially as set forth.

4. The combination, with the cross-shaft E, adapted to traverse the grinding-wheel longitudinally, and the worm-wheel mounted on the said shaft, of the longitudinal shaft F and the worm secured thereon and gearing into the said worm-wheel, reversing devices supported by the shaft F, a sliding sleeve mounted on a screw-threaded portion of the shaft, an oscillating plate secured upon the said sleeve and operatively connected with the said reversing devices, collars provided with projections and secured to the shaft E at the ends of the traverse of the said sleeve, and wheels adapted to be slid lengthwise upon the ends of the said sleeve to adjust the length of the longitudinal traverse of the grinding-wheel, and provided with lugs adapted to engage with said projections of the collars at each end of the traverse of the sleeve upon the shaft, and thereby to operate the said reversing devices, substantially as set forth.

5. The combination, with the screw-threaded sliding sleeve K and the oscillating plate secured upon the said sleeve, of the toothed wheels provided with projecting lugs and screwed upon the end of the said sleeve, and the revoluble shafts journaled in the said plate and provided with toothed pinions and knobs for turning the pinions, whereby the position of the wheels upon the sleeve may be adjusted to vary the length of the longitudinal traverse of the grinding-wheel.

6. The combination, with the screw-threaded sliding sleeve K and the oscillating plate secured upon the said sleeve, of the toothed wheels provided with projecting lugs and screwed upon the ends of the said sleeve, the revoluble shafts journaled in the said plate and provided with toothed pinions gearing into the said wheels, and cones engaging with conical holes in the said plate, knobs splined on the said shafts, whereby the said pinions may be turned to adjust the position of the wheels upon the sleeve and to vary the length of the longitudinal traverse of the grinding-wheel, and thumb-nuts screwed upon the ends of the shafts which project through the said knobs for clamping the shafts after the position of the wheels upon the said sleeve has been adjusted.

7. The combination, with the cross-shaft E, adapted to traverse the grinding-wheel longitudinally, and the worm-wheel mounted on the said shaft, of the longitudinal shaft F and the worm secured thereon and gearing into the said worm-wheel, the screw-threaded sleeve K, sliding upon a screw-threaded portion of the shaft E, the collars provided with projections and secured to the shaft E, the oscillating plate secured upon the said sleeve, the adjustable toothed wheels screwed upon the ends of the said sleeve and provided with lugs adapted to engage with the projections of the said collars, reversing devices mounted on the shaft F, the pivoted reversing-lever operatively connected with the said reversing devices, a rod pivotally connecting the reversing-lever to the said plate, and a spring-actuated arm provided with a wedge-shaped projection adapted to engage with a similar projection upon the said reversing-lever and to complete the reversal of the said reversing devices when the said plate and adjustable wheels are moved by one of the said collars to actuate the reversing-lever, substantially as set forth.

8. The combination, with the top plate B', provided with a curved slot in each end, of a pivot-pin projecting from the said plate, a table pivoted upon the said pin, and also provided with a curved slot at each end, clamping-bolts adapted to be slid crosswise of the table in the slots of the top plate and table, wedges for tightening the said bolts, a bar operatively connecting the said wedges and pivoted to the said pin, and a screw at one end of the bed for tightening the clamping-wedges simultaneously at the opposite ends of the bed, substantially as set forth.

9. The combination, with the top plate B', provided with a curved slot at each end, of a pivot-pin projecting from the said plate between the said slots, a table pivoted upon the said pin and also provided with a curved slot at each end, and clamping-bolts adapted to be slid crosswise of the table in the said slots of the top plate and table, whereby the table may have an extensive angular adjustment.

10. The combination, with the top plate provided with slots, of a pivot-pin projecting from the said top plate, the table pivoted upon the said pin and also provided with slots, the clamping-bolts passing through the said slots of the top plate and table and provided with reversely-inclined heads, a wedge for clamping the bolt at one end of the table, the plate provided with a screw-threaded boss, the clamping-screw working in the said boss and bearing against the said wedge, a plate provided with wedges for clamping the bolt at the other end of the table, and a bar connecting the two said plates, whereby both ends of the table may be clamped simultaneously, substantially as set forth.

11. The combination, with the top plate provided with a slot, and the table, also provided with a slot and pivoted to the said top plate, of a clamping-bolt provided with a head having an inclined surface under the said top plate, a retractible wedge interposed between the said inclined head and the under side of the table, and a spring for raising the said bolt and unclamping the table when the wedge is drawn back.

12. The combination, with the slotted top plate, of the pivot-pin projecting from the top plate, the slotted table pivoted on the said pin, the clamping-bolts passing through the slots of the said top plate and table, a wedge for tightening the clamping-bolt at one end of the table, a plate provided with a screw-threaded boss, a clamping-screw working in the screw-threaded boss and bearing against the end of the said wedge, a plate provided with wedges for tightening the clamping-bolt at the other end of the table, a bar connecting the two said plates, whereby both ends of the table may be clamped simultaneously, and a plate secured to the said bar and provided with an elongated hole engaging with the said pivot-pin, whereby the said bolts may be moved crosswise of the table in the slots, substantially as and for the purpose set forth.

13. The combination, with the top plate and the table pivoted to the top plate, of an adjusting-screw journaled crosswise of the top plate beneath the table, a nut sliding on the said screw and provided with a groove across its upper side, and a removable pin pivoted in a hole in the table and provided with a projection engaging with the said cross-groove in the nut, substantially as and for the purpose set forth.

14. The combination, with the table, of an extensible water-fender consisting of a series of curved plates, each provided with an offset portion overlapping the next adjacent curved plate, a separate bracket secured to each curved plate and sliding on the table, and bolts for clamping the said brackets to the table.

15. The combination, with the hollow grinding-wheel shaft, of a revoluble hub-plate provided with radial passages communicating with the hollow shaft, and a stationary guard encircling the hub-plate and provided with a passage communicating with the said radial passages, and an outlet-pipe for delivering liquid upon the periphery of the grinding-wheel.

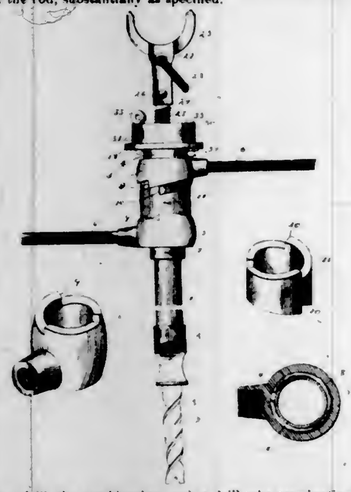
16. The combination, with the stationary guard encircling the grinding-wheel and provided with a passage for liquid, of a flexible outlet-pipe projecting from the said guard and communicating with the said passage, a guide secured to the end of the said pipe, and a thumb-screw for pivoting and clamping the upper end of the guide to the guard, whereby the pipe may be adjusted to deliver liquid at different places, substantially as set forth.

444,122. HAND DRILLING-MACHINE. EDMUND MOSER, Pittsburg, Kans. Filed May 6, 1890. Serial No. 350,760. (No model.)

Claim.—1. In a drill, the combination, with the drill-tube having opposite bearing-collars and an intermediate collar, the opposite edges of which are provided with ratchet-teeth, of operating-levers arranged at each side of the toothed collar and mounted for revolution upon the tube and encircling the bearing-collars and provided with internal annular recesses for the reception of the bearing-collars, and split spring-rings encircling the tube and located between the bearing-collars and the bottoms of the annular recesses in the lever-heads, substantially as specified.

2. In a drill, the combination, with a drill-tube and means for

rotating the same, of a feed-rod threaded in the rear end of the tube and terminating in a reduced portion having a recess, a yoke having a socket which loosely receives said portion, a pin passed through the wall of the socket and engaging in the recess, and a shaft mounted in the socket beyond the recess and provided with a cam for binding upon the end of the rod, substantially as specified.



3. In a drill, the combination, with a drill-tube terminating in its rear end in a threaded opening, of a feed-rod engaging the threads, a socket loosely mounted upon the rear end of the rod and terminating at its rear end in a U-shaped yoke, means for rotating the tube, and a transverse shaft terminating in a handle and provided with a cam located in the socket and the cam adapted to bind upon the rear end of the rod, substantially as specified.

4. In a drill, the combination, with the drill-tube having at its upper end the boxing 30, formed in sections removably secured together, the interior of the boxing being threaded, of the threaded feed-rod 21, passing through the boxing and incased within the drill-tube, the latter having the drill 3 at the bottom, the upper end of the feed-rod being extended beyond the drill-tube and provided with the yoke to hold the drill in position, the cam on the yoke to bind against the feed-rod, and operating mechanism connected with the drill-tube to move the latter along the feed-rod, as set forth

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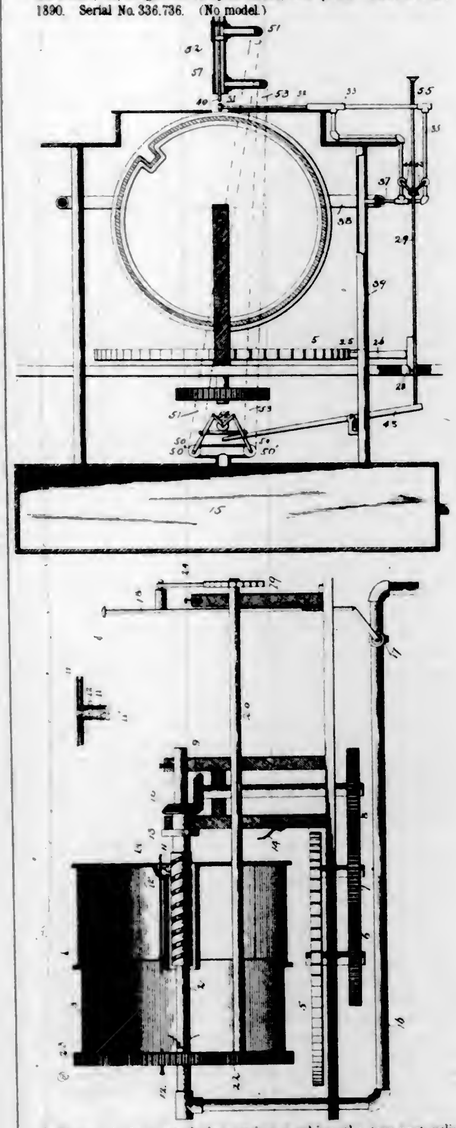
444,123. **CLOTHES-LINE.** ALBERT D. MCCALLEN, Effingham, Ill. Filed July 19, 1890. Serial No. 359,335. (Model.)



Claim.—1. The herein-described clothes-line, the same consisting of a number of connected links, each link comprising a straight body B, loops L at its ends, and upwardly-bent part E at the inner end of each loop, a horizontal piece H, extending inwardly from the upper end of said part E and standing normally above the body, and a downwardly-bent part D at the inner end of said horizontal piece, as and for the purpose set forth.

2. The herein-described clothes-line, the same consisting of a number of connected links, each link comprising a straight body B, having spring-loops L at its ends, and eyes I at the inner ends of said loops standing normally outward from said body, the shanks of said eyes standing at right angles to said bodies, whereby they may be passed over the same, as and for the purpose set forth.

444,124. **MATRIX-MAKING MACHINE.** GEORGE CALDER, Jr., Lancaster, Pa., assignor to Mary H. Calder, same place. Filed Jan. 13, 1890. Serial No. 336,736. (No model.)



Claim.—1. In a matrix-impressing machine, the two-part cylinder, one part being adapted to receive a matrix material and be moved upon the other longitudinally by the type-operating mechanism, and a conduit communicating with a reservoir or other source of compressed air and with the interior of said cylinder, substantially as set forth.

2. In a matrix-impressing machine, the two-part cylinder, one part being adapted to receive a matrix material and be moved upon the other longitudinally by the type-operating mechanism, a conduit communicating with a reservoir or other source of compressed air and with the interior of said cylinder, an operating-rod provided with a projection corresponding to the thickness of a type, devices for moving type into proper position adjacent to the matrix material, and intermediate mechanism, whereby the rod moves the matrix-supporting cylinder a distance equal to the thickness of a type, substantially as set forth.

3. In a matrix-impressing machine, the type-carrier and its rod provided with a piston, the piston-cylinder, conduits for compressed air communicating with the cylinder each side of the piston, the operating-rod provided with a pin, and cocks in the air-pipes, provided with arms having rings arranged to surround and engage said pin when the rod is moved and serving to change the position of the valves to alternately admit air on one side of the piston and simultaneously waste the air from the other side, substantially as set forth.

4. In a matrix-impressing machine, a type-carrier provided with several faces, each adapted to receive a type, a rod and piston connected thereto, a piston-cylinder, a grooved cylinder surrounding the rod and having angular connection therewith to permit endwise movement of the rod through said grooved cylinder while compelling them to rotate together, and a pin engaging the groove in the cylinder and movable in a slot in an extension of the piston-cylinder, whereby the type-carrier can be turned, substantially as set forth.

5. In a matrix-impressing machine, a cylinder and piston, a revoluble type-carrier, the carrier being connected to the piston in said cylinder, and devices for admitting air to suitably move the piston and carrier, substantially as set forth.

6. In a matrix-impressing machine, a hammer provided with a slot or opening in its face, and a type-carrier having type on opposite portions thereof, said opening in the hammer being of a size to embrace a type on one side and permit the hammer-face to strike the carrier to print or impress the opposite type, substantially as set forth.

7. In a matrix-machine, a cylinder, a piston having its rod extended through one end of the cylinder and provided with a hammer, said rod being also extended through the opposite end of the cylinder, which is made close and provided with a piston, and a second closed cylinder in which the last-named piston plays, said second cylinder being provided with cocks to regulate the escape of air from the same, whereby all egress of air is regulated, and whereby the force of the hammer-stroke may be controlled and adjusted, in combination with a type-carrier, substantially as set forth.

8. In a matrix-impressing machine, a piston-hammer, the cylinder in which the piston moves, conduits communicating therewith, one on each side of the piston, and with a reservoir or other source of compressed air, cocks located in the conduits, provided with arms connected by bars pivoted thereto and to each other, a lever adapted to move the arms and cocks to permit compressed air to pour through one and waste from the other alternately, means for reversing the cocks when the rod is released from the lever, and an operating-rod in the path of which the lever is arranged, substantially as set forth.

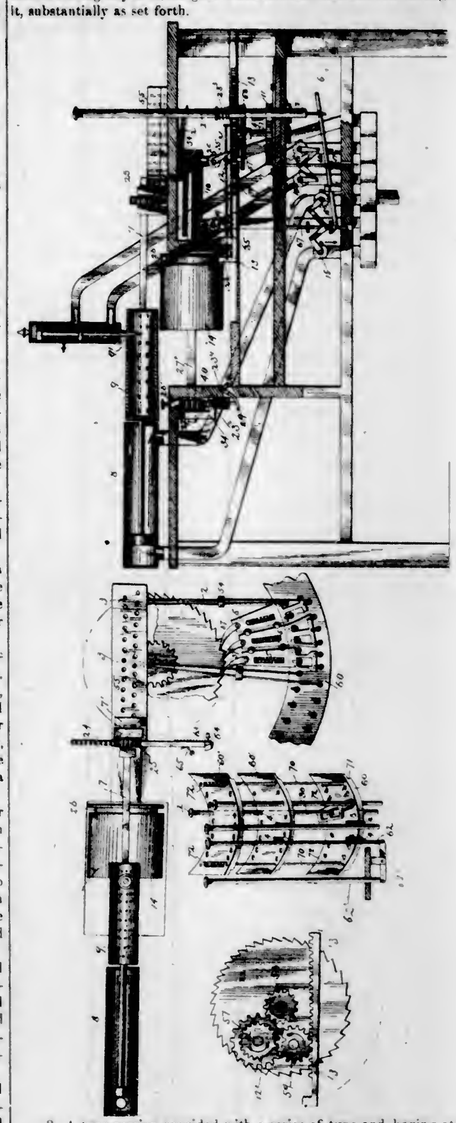
9. In a matrix-impressing machine, the matrix-cylinder provided with a gear, the pinion, and its axis, having thereon a ratchet, in combination with the operating-rod having a pawl pivoted thereto, and devices for returning the matrix-cylinder longitudinally to its initial position, said devices being adapted to be made simultaneously operative by the rod which moves the ratchet to turn the cylinder circumferentially, substantially as set forth.

10. In a matrix-impressing machine, the matrix-cylinder provided with a gear, the pinion, and its axis, having thereon a ratchet, in combination with the operating-rod having a pawl pivoted thereto, and a stop arranged in the path of a projection on the rod and made adjustable to permit the extent of the movement of the pawl and the rotation of the cylinder at each operation to be varied, substantially as set forth.

11. In a matrix-impressing machine, a cylinder, a piston connected to a type-carrier, a pipe or reservoir for compressed air, located immediately under the table constituting the top of the machine, and pipes or conduits communicating with the reservoir and with the cylinder on each side of the piston, substantially as set forth.

444,125. **MATRIX-MAKING MACHINE.** GEORGE CALDER, Jr., Lancaster, Pa., assignor to Mary H. Calder, same place. Filed Jan. 31, 1890. Serial No. 338,744. (No model.)

Claim.—1. The type-carrier containing several series of type and its rod or shaft, in combination with a rack and gear for moving the carrier circumferentially to bring different series under a type-hammer, said rod being keyed to the gear-wheel and movable endwise through it, substantially as set forth.



2. A type-carrier provided with a series of type and having attached to its end a rod or shaft, a gear-wheel or ratchet, said rod passing freely through the wheel endwise, but keyed or otherwise connected to revolve with it, a device for turning the wheel, and mechanism for moving the type-carrier and rod endwise, substantially as set forth.

3. A type-carrier provided with a series of type and having attached to its end a rod or shaft, a gear-wheel, said rod passing freely through the wheel endwise, but keyed or otherwise connected to revolve with it, a device for turning the wheel, and mechanism for moving the type-carrier and rod endwise, including a cylinder, air-inlet, piston, and piston-rod, the latter being connected to the type-carrier, substantially as set forth.

4. The combination of the grooved matrix-cylinder, said cylinder being longitudinally movable on its supporting-shaft, devices to revolve the cylinder for line-spacing, the rack-bar having a part engaging said groove, and mechanism for moving the bar, substantially as set forth

5. The combination of the grooved matrix-cylinder, said cylinder being longitudinally movable with its supporting-shaft, the rack-bar having a part engaging said groove, and mechanism for moving the bar, an air-cylinder, and a piston on the matrix-cylinder shaft adapted to move said shaft and cylinder, substantially as set forth.

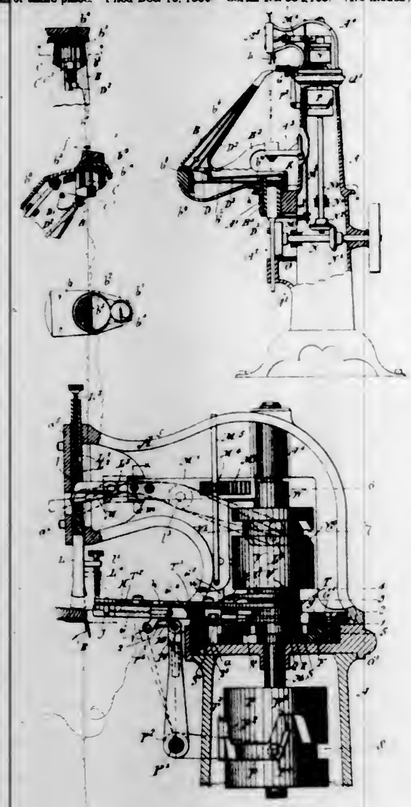
6. The combination of the grooved cylinder, said cylinder being longitudinally movable with its supporting-shaft, the rack-bar having a part engaging said groove, and mechanism for moving the bar, an air-cylinder, and a piston on the matrix-cylinder shaft adapted to move said shaft and cylinder, and a rod carried by the rack-bar to operate the air-cocks of the piston-cylinder, substantially as set forth.

7. The combination of the matrix-cylinder fixed on a shaft with the pivoted lever, spring-pawl, and ratchet-wheel, said shaft being keyed to the wheel, but movable endwise through it, and mechanism for moving the cylinder and shaft endwise, whereby the shaft is moved through the wheel and the cylinder against the lever, which actuates the pawl to turn the ratchet-wheel and cylinder, substantially as set forth.

8. The combination of the matrix-cylinder having its shaft extended into an air-cylinder and provided with a piston, devices for admitting compressed air to either side of said piston, a rack engaging said matrix-cylinder, and a gear-wheel for moving said rack and matrix-cylinder in one direction, said gear-wheel being mutilated to release the rack and permit it and the matrix-cylinder to be freely returned to their initial position, substantially as set forth.

9. The combination of the ratchet-wheel and intermediate gearing for moving the rack which engages the matrix-cylinder, with the sliding plate and pawl for moving said wheel, bar, and cylinder, and with a second or main plate which is made independently movable, whereby the ratchet-wheel and other connected parts can be first moved by the main plate and then moved by the plate first mentioned, substantially as set forth.

444,126. MACHINE FOR UNITING THE SOLES AND UPPERS OF BOOTS AND SHOES. WILLIAM CAREY, Montreal, Canada, assignor to himself, Thomas Hocking, William Carson, and William Russell Hamilton, all of same place. Filed Dec. 18, 1889. Serial No. 334,163. (No model.)



Claim.—1. In a machine for uniting the soles and uppers of boots and shoes, having a work-support and means for holding the work in place, a loop-inserter and a combined awl and nail-driver arranged to work actually or approximately at right angles to each other, means for imparting reciprocating movement to same, and means for placing in the path of said nail-driver wire locking-pieces, for the purpose set forth.

2. In a machine for uniting the soles and uppers of boots and shoes, having a work-support and means for holding the work in place, a loop-inserter and a combined awl and nail-driver, the one adapted to force a continuous thread in loops into the substances to be united and the other to puncture one of such substances and drive short pieces of locking material into same, and means for inserting said loop-inserter once into such substances and inserting the combined awl and nail-driver twice into one of such substances to form a single locking-toggle, as set forth.

3. In a machine for uniting the soles and uppers of boots and shoes, having a work-support and means for holding the work in place, a loop-inserter and a combined awl and nail-driver, and means for inserting the former once a limited distance into the substances to be united and driving the latter forward twice for different distances, for the purpose described.

4. In a machine for uniting the soles and uppers of boots and shoes, having a work-support and means for holding the work in place, the combination, with a loop-inserter and a combined awl and nail-driver, arranged to work approximately at right angles to each other, and means for imparting reciprocating movement to same, of means for varying the extent of movement of said loop-inserter and the angle at which said awl works, for the purpose described.

5. In a machine for uniting the soles and uppers of boots and shoes, having a work-support and means for holding the work in place, a loop-inserter and a combined awl and nail-driver, arranged and operating in such relation to the work-support that the former will force a continuous thread in loops entirely through one or more of the pieces being united together and partially through the remaining piece, and the nail-driver drive inward from the edge of the latter piece short locking-pieces within the loops of the continuous thread, for the purpose described.

6. In a machine for uniting the soles and uppers of boots and shoes, having a work-support, means for holding the work in place, and a combined awl and nail-driver, with means for imparting reciprocating motion thereto, a loop-inserter located within and adapted to work in and project through said work-support, and means for imparting a reciprocating motion thereto, as and for the purpose described.

7. In a machine for uniting the soles and uppers of boots and shoes, having a swinging work-supporting horn, and a loop-inserter carried by and working in and through the nose of same, the combination, with such loop-inserter, of means for holding it laterally in position during its vertical movement.

8. In a machine for uniting the soles and uppers of boots and shoes, having a work-supporting horn, and a loop-inserter carried by and working in and through the nose of same, the combination, with such loop-inserter, of a disk carried in the nose of such horn, having a slot corresponding to the shape in cross-section of such loop-inserter, which works through it, and an eye in line with such slot, through which a continuous thread may be drawn, and means for preventing any movement of such disk with the horn, for the purpose described.

9. In a machine for uniting the soles and uppers of boots and shoes, having a work-supporting horn, and a disk carried in the nose of such horn, having an eye through which a continuous thread may pass, and a fixed cutter carried by said horn for severing such thread within the horn at the completion of the stitching, for the purpose described.

10. In a machine for uniting the soles and uppers of boots and shoes, having a reciprocating loop-inserter and a combined awl and nail-driver working approximately at right angles to each other, a hinged carrier for such awl with depressers, and a yielding support adapted to vary the angle between such loop-inserter and awl, for the purpose described.

11. In a machine for uniting the soles and uppers of boots and shoes, having a reciprocating loop-inserter and a combined awl and nail-driver working approximately at right angles to each other, the combination, with a carrier for such awl capable of movement in three different directions, of means for varying the extent of movement in each of such directions, for the purpose described.

12. In a machine for uniting the soles and uppers of boots and shoes, the combination of a loop-inserter and a combined awl and nail-driver working approximately at right angles to each other, a work-support, presser-foot bar, and means for supporting, connecting, and operating the same, for the purpose described.

13. In a machine for uniting the soles and uppers of boots and shoes, the combination of a loop-inserter and a combined awl and nail-driver working approximately at right angles to each other, a work-support, a presser-foot bar depressible to varying distances, means for supporting, connecting, and operating the same, and means for effecting such varying depression of the presser-foot bar, for the purpose described.

14. In a machine for uniting the soles and uppers of boots and shoes, the combination of a loop-inserter and a combined awl and nail-driver, a swinging work-supporting horn carrying such loop-inserter, a presser-foot bar in line with same, a carrier for the awl, and means for supporting, connecting, and operating the whole, for the purpose described.

15. In a machine for uniting the soles and uppers of boots and shoes, the combination of a loop-inserter and a combined awl and nail-driver working approximately at right angles to each other, a swinging work-supporting horn carrying such loop-inserter, a presser-foot bar depressible to varying distances in line with loop-inserter in horn, a carrier for the awl capable of varying the angle between the loop-inserter and awl, and means for operating same and presser-foot and of varying their working relation to each other, for the purpose described.

16. The combination of horn B, having guides C^3, loop-inserter C, cross-head C', geared segment D', pivoted to horn, connecting-rods D^2 D^3, bell-crank levers D E, and means for operating the latter, for the purpose described.

17. The combination, with horn B, loop-inserter C, carried by and working in and through the nose of same, and disk b', through which said loop-inserter works, of disk b^3 in eccentric relation to and intermeshing with disk b', and mechanism whereby upon the oscillation of the horn the disk b^3 is rotated and serves by such rotation to prevent any movement of disk b' with said horn, for the purpose set forth.

18. The combination, with horn B and disk b', having eye b^4, of cutter b^{13}, fixed in said horn so as to be flush with the bottom of disk b' and act in conjunction with such eye to sever the thread extending through the latter.

19. The combination of top plate a', slide F, hinged carrier G G', pivoted to same, and means for imparting a reciprocating movement to such slide, for the purpose described.

20. The combination of a top plate a', slide F, hinged carriage G G', pivoted to same, spring-support G^4, and means for depressing such carrier, as shown, and for the purpose described.

21. The combination of head-section A^4, hinged carrier-section G, spring-support G^4, pin G^5, and cam-lever G^6, for the purpose described.

22. The combination, with hinged slotted carrier-section G, of combined awl and nail-driver H, cross-head H' for carrying the same, and means for giving a reciprocating movement to such cross-head, for the purpose described.

23. The combination of carrier-section G, having channel l^3, combined awl and nail-driver H, means for a giving a reciprocating movement to such slide, disks K K', spring-holder k^2, spindle k^4, ratchet K^4, and means for rotating such ratchet, all as and for the purposes described.

24. The combination, with the presser-foot bar, the loop-inserter, wedge-piece M, slide M', and means for operating the same, of sliding bar D', screw M^7, connections between same and loop-inserter, and connections between said slide M' and screw M^7 for rotating the latter, as and for the purpose set forth.

25. The combination of presser-foot bar L, having a slot L', slide L^3, fitting such slot, and screw L^4 for adjusting such slide in same, for the purpose described.

26. The combination, with head-section A^4, slide M', and cam W, of stud m^3 and spring m' and slide M', for the purpose described.

27. The combination, with awl-carrier G and presser-foot bar L, having a bracket l', of adjusting-screw L^4, for the purpose described.

28. The combination, with the pedestal A and shaft N^3, of cam-roller P^1, spindle P', carried in suitable bearings, bell-crank lever P^2, roller P^4, cross-head H', combined awl and nail-driver H, and connections between said cross-head and said lever P^2, for the purpose described.

29. The combination, with the shaft N^3 and slide F, having a rise Q' on the face of the circular opening in same, of cam Q and carrier-sections G G', secured to such slide, for the purposes described.

30. The combination, with the shaft N^3, slide F, having adjustable section F' and screw F^2, of cam R and carrier-sections G G', secured to such slide, for the purposes described.

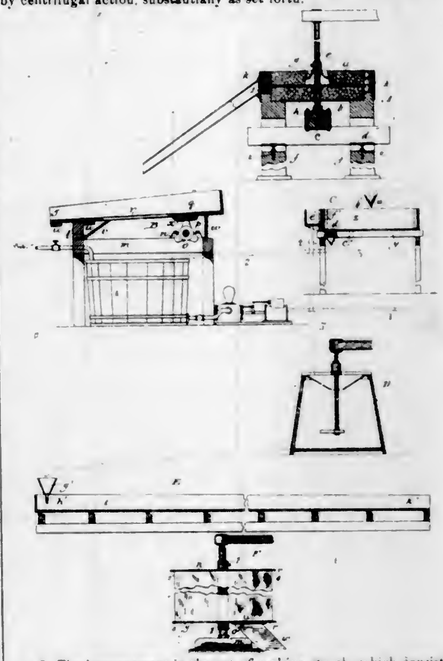
31. The combination, with head-section A^4, shaft N^3, and carrier-sections G G', the former having slot S^4, of cam S, lever S', pivoted to the slide F, nut S^2, and spring-pin S^3, for the purpose described.

32. The combination of shaft N^3, cams T and U, carrier-section G, slide J, levers T', T^2, and U', pivoted to such carrier-section, and the latter having spring-bolt U^3, pin l', ratchet K^4, disks K K', and combined awl and nail-driver H, all as and for the purposes described

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444,127. ART OF MAKING STARCH. JOHN H. C. VAN DEINSE and MARC J. REISIGER, Muskegon, Mich. Filed Dec. 3, 1889. Serial No. 332,385. (No model.)

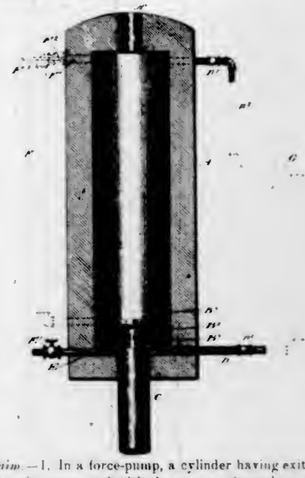
Claim.—1. The improvement in the art of making starch, which consists in finely griuding farinaceous tubers or vegetables, jolting the finely-ground pulp upon sieves to separate the starch, washing and settling the starch, and removing the dirty water by gradual decantation, stirring the settled starch with an addition of fresh water, and removing the remnant of fine impurities by dropping them and the starch in a state of suspension slowly upon inclined slides or planes, and finally expelling the remainder of water from the purified starch by centrifugal action, substantially as set forth.



2. The improvement in the art of making starch, which consists in finely grinding the entire substance of the tubers and separating the whole product of starch from the ground pulp by sieving and washing and then drying the purified product, substantially as set forth

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444,128. FORCE-PUMP. SAMUEL J. WEBB, Minden, La. Filed Feb. 13, 1889. Renewed June 3, 1890. Again renewed Dec. 11, 1890. Serial No. 374,363. (No model.)



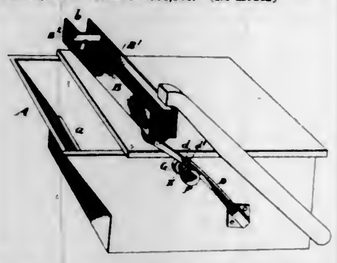
Claim.—1. In a force-pump, a cylinder having exit-opening at its top and a pipe connected with the source of supply and entering the

cylinder near its lower end, combined with a piston working in said cylinder and a valve carried by said piston and constructed to admit the fluid from the front to the back of the head of the piston and constructed to close during the initial movement of the piston, but to automatically open as the piston advances, substantially as described.

2. In a force-pump, a cylinder, combined with a piston working therein and a valve on the head of said piston, arranged in a depression in the piston-head and constructed to remain closed during the initial movement of the piston and to automatically open under the pressure of the water in the further movement of the piston, substantially as described.

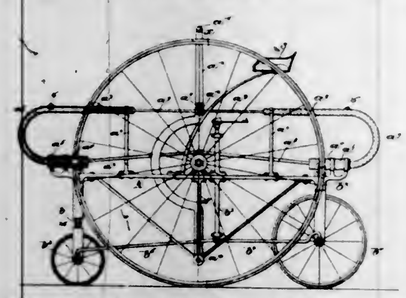
3. In a force-pump, the combination, with a cylinder having a discharge-opening in the top, of a piston working in said cylinder and a spring-pressed valve in the head of said piston, said valve opening in a direction opposite to the effective stroke of the piston and arranged to be closed during the initial forward movement of the piston and to automatically open in the further movement of the piston, substantially as described.

444,129. SIEVE ATTACHMENT FOR THRASHERS. HENRY L. WINDLER, Waverly, Mo., assignor of one-half to August Rass, same place. Filed Oct. 18, 1890. Serial No. 368,570. (No model.)



Claim.—The combination, with a thrasher-mouth box, of the trough B, having the interior sieve B' and side spout B^9, the supporting-spring C at the open end *b* of said trough, the spring D at the closed end *b'*, and the shaft E, carrying the cam G and pulley F, the said spring D being arranged diagonally to rest on said shaft, notched at *d*, and shouldered at *d'*, as and for the purpose set forth.

444,130. MECHANISM FOR PROPELLING VEHICLES. HARVEY F. CRAWFORD and RICHARD C. LAMBERT, Brockton, Mass.; said Lambert assignor of one-third of his interest to said Crawford. Filed June 23, 1890. Serial No. 356,316. (No model.)



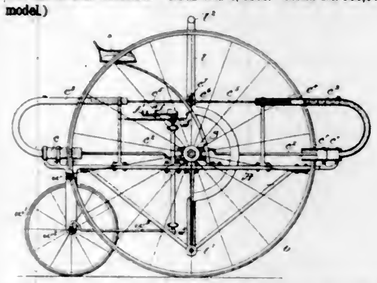
Claim.—1. The frame and the drive-axle having bearings therein and provided with a crank, combined with two cylinders having pistons to operate the said crank, plungers for said cylinders placed substantially in line, and mechanism to reciprocate the said plungers in unison, substantially as described.

2. The frame A and the drive-axle having bearings therein and provided with a crank, combined with a cylinder having a pistoo, a pitman connecting said piston and crank, a plunger for said cylinder, and a lever to operate said plunger, substantially as described.

3. The frame A and drive-axle *a*, having bearings in said frame and provided with a crank, combined with the cylinders a^5 a^6, pistons a^7, pitmen a^8 a^9, plungers a^{11} and the pivoted lever a^{12} to operate said plunger, substantially as described.

4. The frame A, the drive-axle having bearings therein, and the wheels *b*, combined with the wheels b^3 b^4, rods b^5 b^6, bar b^7, shaft b^8, and cross-bar b^{10}, to operate substantially as described.

444,131. VELOCIPEDE. HARVEY F. CRAWFORD and RICHARD C. LAMBERT, Brockton, Mass.; said Lambert assignor of one-third of his interest to said Crawford. Filed Oct. 2, 1890. Serial No. 366,870. (No model.)



Claim.—1. The frame and the driving-axle having bearings therein and provided with clutch mechanism, combined with two cylinders having pistons to operate the said clutch mechanism, plungers for the said cylinders placed substantially in line, and mechanism to reciprocate the said plungers in unison, to operate substantially as described.

2. The frame and the driving-axle having bearings therein and provided with a clutch mechanism, combined with a cylinder having a piston, a connection between said piston and clutch mechanism, a plunger for said cylinder, and the lever *l* to operate said plunger, substantially as described.

3. The frame, the driving-axle *a*, having bearings therein, and a clutch mechanism on said axle, combined with the cylinder *c*, piston c^2, piston-rod c^3, plunger c^4, and lever *l*, to operate substantially as described.

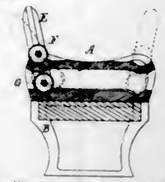
4. The frame, the driving-wheels *b*, and the wheel *w'*, combined with the rods w^2, cross-bar w^4, shaft w^5, and the cross-bar w^6, having foot-rests, to operate substantially as described.

5. The frame, the driving-axle having bearings therein, and the wheel *w'*, combined with the axle w^2, rods w^3, cross-bar w^4, shaft w^5, cross-bar w^6, and the adjustable foot-rests *f* pivoted thereto, to operate substantially as described.

6. The frame, driving-axle having bearings therein, and the wheels *o* and *w'*, combined with the cross-bar w^6, and mechanism, substantially as described, intermediate said cross-bar and wheel *w'*, and the springs 25 26, to operate substantially as described.

7. In a velocipede, the steering-shaft w^8, the threaded cross-bar w^6, having shoulders 10, and the nuts w^7, combined with the blocks 13 and foot-rests carried thereby, substantially as described.

444,132. RAILWAY-CAR SEAT. JAMES C. MITCHELL, Lancaster, N. H., assignor of two-thirds to William C. Smith, Berlin Falls, N. H., and Frank B. Bridges, Bethel, Me. Filed Feb. 18, 1890. Serial No. 340,861. (No model.)



Claim.—In a railway-car seat, the end frames, each provided with rails C and D, substantially parallel, each rail provided with a bearing or depression near its ends, said bearings in the rails C extending beyond those in the rails D, in combination with the back, having wheels F and G pivoted to each end of it, which, with said rails, support said back with relation to the seat, as explained.

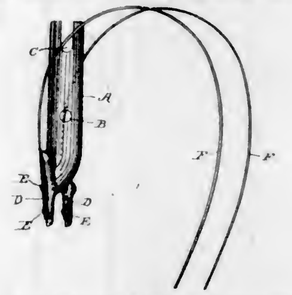
444,133. REED FOR LOOMS. FREDERICK OTT, Gloucester, N. J. Filed Feb. 11, 1890. Serial No. 339,985. (No model.)



Claim.—1. A reed having the dents placed in two rows which cross each other, every alternate dent being forward below and back above and the others back below and forward above, substantially as set forth.

2. A reed having the dents arranged in two rows which cross each other along a line parallel to the end bars of the reed.

444,134. CULTIVATOR ATTACHMENT. MARSHALL J. REED, Roann, Ind. Filed Oct. 23, 1890. Serial No. 369,022. (No model.)



Claim.—1. In an attachment for cultivators, the combination of a longitudinally slotted or bifurcated standard having lateral lugs at its lower end, located one in advance of the other, and the spring-arms or shares secured to said lugs, substantially as and for the purposes specified.

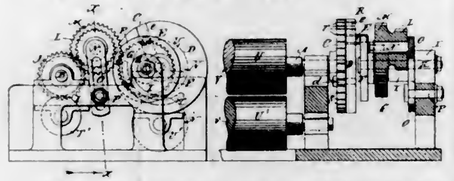
2. An attachment for a cultivator, consisting of a bifurcated standard having spring shovel or share arms, the said standard being provided with transverse apertures near its lower end for the passage of the bolt by which it may be secured to a plow-beam, and open slots at the upper ends of its members, through which may be passed a pin to secure said upper end to the plow-beam, the pin being of such nature as to yield or break when any undue strain is brought to bear upon the spring-arms, substantially as specified.

444,135. DETERGENT. JONATHAN SCHARR, Philadelphia, Pa. Filed Mar. 13, 1890. Serial No. 343,752. (Specimens.)

Claim.—1. The herein-described soap compound, consisting of water, carbonate of soda, carbonate of potash, soap-bark, crude turpentine, gum-arabic, sal-ammoniac, crude petroleum, oleine, olive-oil, carbolic acid, salicylic acid, and camphor, substantially in the proportions specified and prepared in the manner set forth.

2. The herein-described soap compound, consisting of water, carbonate of soda, carbonate of potash, soap-bark, crude turpentine, gum-arabic, sal-ammoniac, crude petroleum, oleine, and olive-oil, substantially in the proportions specified and prepared in the manner set forth.

444,136. ROTATIVE SPEED-REGULATING MECHANISM. ARTHUR SCOTT, Plainfield, N. J., assignor to Walter Scott, same place. Filed Sept. 17, 1889. Serial No. 324,208. (Model.)



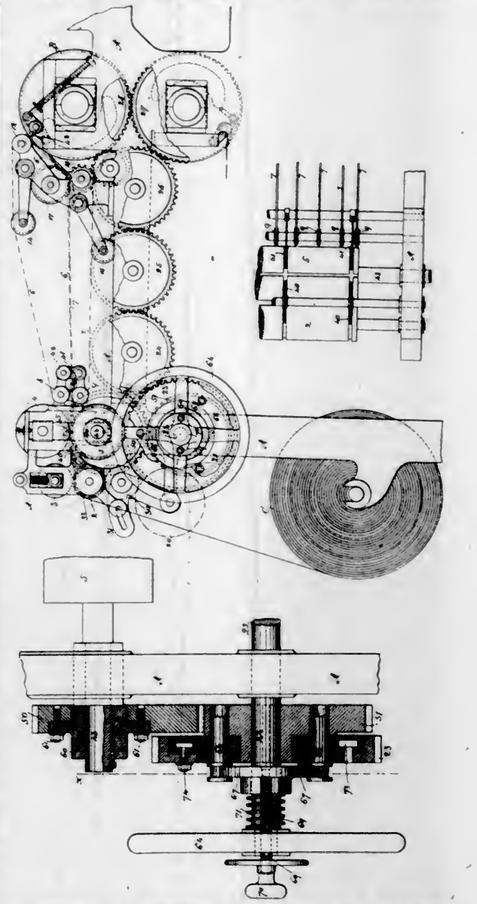
Claim.—1. In rotative speed-regulating mechanism, the combination, with driven and driving shafts, of a plate loose on the driven shaft and provided with a radial slot, means, substantially as specified, for coupling it to said driven shaft, an intermediate shaft set eccentrically to the driven shaft, a plate or arm on said intermediate shaft and provided with a pin entering the radial slot of the loose plate on the driven shaft, and gearing connecting the pin-carrying plate or arm with the driving-shaft, substantially as described, whereby any given point of the periphery of the driven shaft may be caused at a certain instant to travel at the same speed as the driving-shaft irrespective of the speed of the latter, as herein set forth.

2. In rotative speed-regulating mechanism, the combination, with driven and driving shafts, of a plate fixed to the driven shaft, an adjacent plate loose on said shaft and provided with a radial slot, means for holding the two plates together in different relative positions, an intermediate shaft set eccentrically to the driven shaft, a plate or arm on said intermediate shaft and provided with a pin entering the radial slot of the plate on the driven shaft, and gearing connecting the pin-carrying plate or arm with the driving-shaft, substantially as described, for the purposes set forth.

3. In rotative speed-regulating mechanism, the combination, with the driven shaft A and driving-shaft B, of a disk C, fast on shaft A, a disk D, loose thereon and provided with a radial slot *e*, an eccentrically-arranged shaft H, a plate or arm F thereon, carrying a pin E entering the slot *e* of disk D, and gearing, substantially as specified, connecting the plate F with the driving-shaft, said disks C D having a graduated scale S and mark or pointer R, substantially as herein set forth.

4. The combination, with a driven shaft A and a driving-shaft B, of geared feed-rolls and geared cutter-rolls, a plate D, loose on the shaft A and provided with a radial slot *e*, means, substantially as specified, for coupling the plate D and shaft A, an eccentrically-arranged shaft H, a disk or arm F thereon, having a pin E entering the slot *e* of plate D, and driving-gearing connecting the disk F and shaft B, substantially as described, whereby the speed of the knife-carrying roll on the shaft A may be regulated to cleanly cut into different lengths a web of paper or other material traveling at different speeds of the feed-rolls, as herein set forth.

444,137. CUTTING AND FEEDING MECHANISM FOR PRINTING-PRESSES. WALTER SCOTT, Plainfield, N. J. Filed June 19, 1886. Serial No. 205,693. (No model.)



Claim.—1. The combination, in a printing-press, of rollers for feeding in the web of paper, cutting-cylinders that act to cut the paper but not to feed the same, ranges of belts for carrying the paper to the printing mechanism, gearing for varying the speed of the feeding-rollers, and eccentric-gearing for giving motion to the cutting-cylinders and for regulating the speed of motion of the cutter when acting upon the paper, substantially as set forth.

2. The revolving shaft 22, changeable gearing and feed-rollers 2 and 3 for feeding in the paper, the cutting-cylinders 4 and 5, the eccentric-gears 50 and 51 for communicating motion to the cutting-cylinders, and the adjustable connections, substantially as specified, for varying the position of the eccentric-gear in relation to the cutter, substantially as set forth.

3. The combination, with the cutting-cylinders, of the eccentric-gears 50 and 51, mechanism for adjusting the gear 50 in relation to the cutter, the shaft 22 and hand-wheel for moving the same, the gear-wheel 23, and a clutch or coupling pins for disconnecting the gear 23 from the shaft 22 and thereby allowing the cutting-cylinders to be revolved by hand, substantially as set forth.

4. The combination, with the cutting-cylinders, of the shaft 22 and gearing for connecting the same with the cutting-cylinders, the train of gearing from the press, and the gear-wheel 23, made in two parts and having a rim that is adjustable in relation to the other part of the wheel for adjusting the position of the cutter in order that the end of the sheet may reach the impression-cylinder at the proper time, substantially as set forth.

5. The combination, with printing mechanism adapted to print upon different-sized sheets, and the conveying-belts for the sheets, of a feeding mechanism, substantially as specified, having a variable speed for supplying the proper length of paper, a cutter for separating the web into sheets, gearing, substantially as specified, for varying the speed of the cutter to correspond, or nearly so, at the time of cutting to the speed of the paper, and mechanism for adjusting the position of the cutter in relation to the printing mechanism, substantially as set forth.

6. The combination, with rollers for feeding paper from a web and a pair of revolving cutting-rolls, of changeable gearing connecting the cutting and feeding rolls for varying the speed of the paper and the length of the sheet, and variable gearing for regulating the movement of the cutter, so as to approximate the speed of the paper at the time of the cut, substantially as specified.

7. The combination, with the impression-cylinder and the cutting-cylinders for separating the web of paper into sheets, of gearing for connecting the cutting and printing mechanism, and an automatic clutch for connecting the parts at the right point after being disconnected for moving either part of the press separately, substantially as specified.

8. In a printing-machine, the combination of rollers for feeding the web of paper, a rotary cutting-knife that acts to cut or perforate the paper, ranges of belts for carrying the paper to the printing mechanism, gearing for varying the speed of the feeding-rollers, and eccentric-gearing for giving motion to the cutting-knife and for regulating the speed of the cutter when acting on the paper, substantially as set forth.

9. The combination, with the printing mechanism, rolls for supplying a web of paper from a roll, and a cutting mechanism, of changeable gearing for varying the speed of the feeding-rolls, gearing for driving the cutting mechanism and adjustable gearing for connecting the cutting and printing mechanism, and an index or indicating divisions upon or connected with the gearing to aid in adjusting the parts to adapt the press to different lengths of sheets, substantially as set forth.

10. The combination, with the printing mechanism and rollers for supplying the paper, of gearing for varying the speed of the feed-rolls and the length of paper supplied, a cutter for perforating or separating the paper, a train of gearing between the cutting mechanism and the printing mechanism having a two-part wheel, and a clamping device for holding the parts of the gearing after they have been adjusted to bring the advancing end of the sheet properly to the printing mechanism.

11. The combination, with the printing mechanism and rollers for supplying the paper, of gearing for varying the speed of the feed-rolls and the length of paper supplied, a cutter for perforating or separating the paper, a train of gearing between the cutting mechanism and the printing mechanism, and a two-part wheel having an annular groove and clamping bolts for holding the parts of the gearing after they have been adjusted to bring the advancing end of the sheet properly to the printing mechanism.

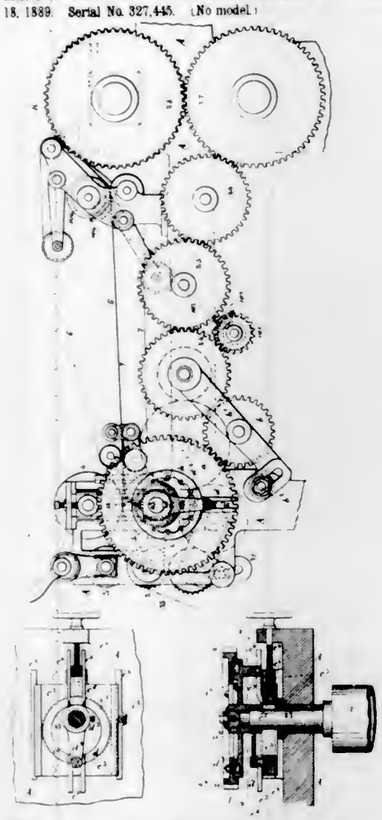
12. The combination, with the printing mechanism and the rollers for supplying the paper, of gearing for varying the speed of the feed-rolls and the length of paper supplied, a cutter for perforating or separating the paper, a train of gearing between the cutting mechanism and the printing mechanism, and clutch mechanism for separating the cutting and feeding mechanism from the printing mechanism when entering a fresh web of paper and for reconnecting the parts in their proper relative positions to bring the advancing end of the sheet properly to the printing mechanism.

13. The combination, with the cutting-cylinders, of the train of gearing from the press, and the gear-wheel 23, made in two parts and having a rim that is adjustable in relation to the other part of the wheel for adjusting the position of the cutter in order that the end of the sheet may reach the impression-cylinder at the proper time, substantially as set forth.

14. The combination, with a printing-press and the feeding rolls and variable gearing for feeding different lengths of sheets, of a cutter and gearing for giving to such cutter a faster speed in one portion of its revolution than another, and adjustable gearing for causing the cutter to act on the paper when its speed approximates the speed of the paper, substantially as specified.

15. The combination, with the impression-cylinder in a printing press, of feeding and cutting mechanism and gearing connecting the cutting mechanism with the impression-cylinder, and a clutch adapted to connect at one place only in its revolution, for insuring the proper position of the sheet to the printing mechanism after the feeding and cutting devices have been moved separately from the press in entering the web, substantially as specified.

444,138. **PAPER FEEDING AND CUTTING MECHANISM FOR PRINTING-MACHINES.** WALTER SCOTT, Plainfield, N. J. Filed Oct. 18, 1889. Serial No. 327,445. (No model.)



Claim.—1. The combination, with the feeding-rolls and changeable gears for feeding in a greater or less length of paper each movement of the press, and a cutter for separating the paper, of a crank connected with the axis of the cutter, and a wheel or ring occupying an eccentric position to the axis of the crank, and gearing for imparting motion to the crank and ring or wheel, substantially as set forth.

2. The combination, with the cutter for separating the web of paper and the printing mechanism, of the differential crank mechanism intervening between the gearing of the printing-press and the cutter, to rotate the cutter each movement of the press and to impart an accelerated and retarded movement, and feed-rolls and changeable gearing for varying the speed, substantially as set forth.

3. The combination, with the cutting and feeding mechanism in a printing-press, of a ring or wheel around the crank-shaft or axis of the cutter and occupying a position eccentric thereto, gearing for connecting and rotating such ring or wheel in harmony with the printing mechanism, and a crank-pin connected with the crank-shaft and receiving its motion from the eccentric wheel or ring, substantially as set forth.

4. The combination, with the feeding and cutting mechanism for the paper-web in a printing-press, of a loose wheel on the axis of the cutter, a wheel or ring eccentric to the axis of the cutter, an adjustable support for varying the relative position of the wheel or ring to the axis of the cutter, and the differential crank connections, substantially as set forth, for giving to the cutter an accelerated and retarded movement, as set forth.

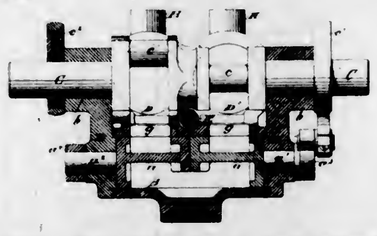
5. The combination, with the feeding and cutting mechanism in a web-printing press, of changeable gearing to vary the paper-feed and a differential crank mechanism between the gearing of the printing-press and the cutter, and an index to denote the relative positions of the parts in the differential crank mechanism as they may be adjusted to adapt the speed of movement of the cutter to that of the paper, substantially as set forth.

6. The combination, with the printing mechanism, of feeding-rolls, changeable gearing for varying the feed, a cutter for separating the paper, differential crank mechanism for giving motion to the cutter, and a loose wheel and clamping device intervening between the gearing of the press and the differential crank mechanism for allowing the movement of the cutting and feeding mechanism in adjusting the parts and then clamping the parts in their proper relation to the printing mechanism, substantially as specified.

7. The combination, with the printing mechanism, of feeding-rolls, changeable gearing for varying the feed, a cutter for separating the paper, variable mechanism for giving to the cutter a speed of movement when the cut takes place approximating that of the web of paper and a loose wheel and clamping device intervening between the cutter and the press for allowing the cutting and feeding mechanism to be moved by hand to bring the sheet properly to the printing mechanism and for clamping the parts after adjustment, substantially as specified.

8. The combination, with the printing mechanism, of feeding-rolls, changeable gearing for varying the feed, a cutter for separating the paper, variable mechanism for giving to the cutter a speed of movement when the cut takes place approximating that of the web of paper, and a loose wheel and clamping device intervening between the cutter and the press for allowing the cutting and feeding mechanism to be moved by hand to bring the sheet properly to the printing mechanism and for clamping the parts, the changeable gearing and the respective indicating devices being marked to correspond for determining the proper positions of the parts according to the sizes of sheets, substantially as specified.

444,139. **DOUBLE SCOTCH-YOKE ENGINE.** CHARLES H. SERGEANT, New York, N. Y. Filed July 17, 1890. Serial No. 359,063. (No model.)



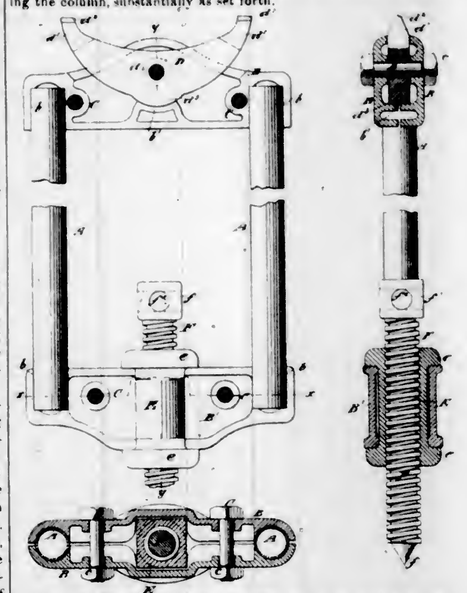
Claim.—1. The combination, with two pairs of cylinders and a steam-chest common thereto and provided with a single bore to form valve-seats, of a pair of valves, one for each pair of cylinders, seated in alignment within said bore, and means for operating the valves, substantially as set forth.

2. The combination, with the steam-chest and cylinders having an interlocking engagement therewith, of a single bolt for holding the cylinders and chest in assembled adjustment, substantially as set forth.

3. The combination, with the cylinders, the pistons, and the main shaft yoked to the pistons, of the steam-chest provided with laterally-extended heads which form bearings for the main shaft, substantially as set forth.

444,140. **MINING-COLUMN.** CHARLES H. SERGEANT, New York, N. Y. Filed July 17, 1890. Serial No. 359,064. (No model.)

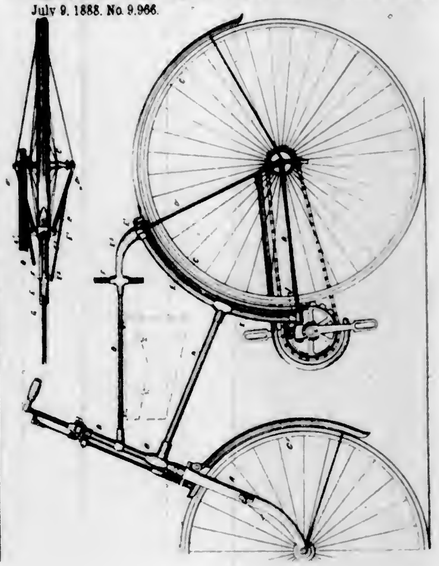
Claim.—1. The combination, with the standards and the cross-heads for securing the standards together, one of the cross-heads being formed in separable sections, of an engaging device pivotally secured between the separable sections of the cross-head, and a bearing upon the said cross-head with which the engaging device contacts when under strain before it contacts with its pivotal connection, the said sections of the cross-head forming a guide for the engaging device intermediate of its bearing and engaging ends, and means for adjusting the column, substantially as set forth.



2. The combination, with an upper and lower cross-head, each formed in half-sections and provided with sockets at their opposite ends, of standards adapted to enter said sockets for increasing or diminishing the length of the column, and engaging devices at the upper and lower ends of the column, substantially as set forth.

3. The combination, with a pair of standards, an upper sectional cross-head engaging the upper ends of the section, and a lower sectional cross-head engaging the lower ends of the standards, of an engaging fork pivotally secured between the sections of the upper cross-head and an engaging screw having a threaded connection with a sleeve, the latter being engaged between the sections of the lower cross-head, substantially as set forth.

444,141. **VELOCIPEDE.** GEORGE SINGER, Coventry, England. Filed Mar. 24, 1890. Serial No. 345,068. (No model.) Patented in England July 9, 1888, No. 9,966.



Claim.—1. The combination, in a front steering and rear driving wheel velocipede, with the socket B, of the bent arc tube E, the main tube H, connected to the socket B and to the tube E near the middle thereof, the brackets J and E', arm E^3, and diverging pairs of tubes D D', substantially as set forth.

2. The combination, in a front steering and rear driving wheel velocipede, with the socket B, of the bent arc tube E, the main tube H, connected to the socket B and to the tube E near the middle, the brackets J and E' at the respective ends of the tube E and having side lugs, the diverging pairs of tubes D D', the bracket-arm E^3, and tube or rod G, substantially as set forth.

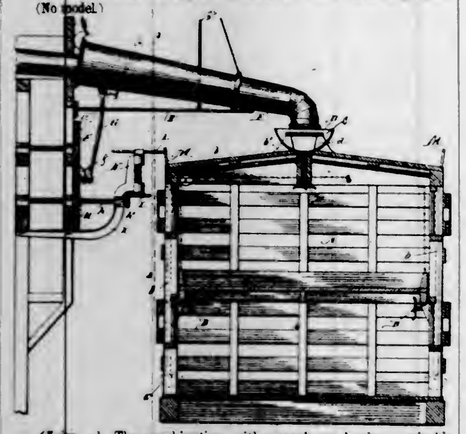
3. The combination, in a front steering and rear driving wheel velocipede, with a main inclined tube, of a bent arc tube conforming to the driving-wheel and connected to the main tube at a point intermediate to its respective ends, brackets at the ends of the bent tube and having side lugs, to which are connected the tubes of the frame extending to the axle of the driving-wheel, the lower bracket carrying the bearings of the crank-shaft and the upper bracket carrying the saddle-post, substantially as set forth.

444,142. FEED-STOPPER FOR MUCILAGE-BOTTLES. WILLIAM A. H. STAFFORD, New York, N. Y. Filed Oct. 2, 1890. Serial No. 366,850. (No model.)



Claim.—The herein-described feed-stopper, comprising a disk having a concave upper face and provided with a central perforation therethrough, a cap adapted to engage the margin of the disk and secure it to the bottle, a sponge, wiper, or brush secured to and seated in the upper concave surface of the disk, and a porous membrane secured to the under face of the disk at points outward from the feed perforation, substantially as set forth.

444,143. APPARATUS FOR SPRINKLING WATER UPON HOGS. ARTHUR W. STREET, Chicago, Ill. Filed July 24, 1890. Serial No. 359,821. (No model.)



Claim.—1. The combination, with a stock-car having a suitable trough to receive water, of a tank-spout, a valve for controlling the flow of water through said spout, a suitable projection or arm upon the car, and intermediate mechanism whereby the arm or projection upon the car can operate said valve, substantially as described.

2. The combination, with a stock-car having a suitable trough to receive water, of a movable tank-spout, a valve for controlling the flow of water through said spout, a suitable projection or arm upon the car, and intermediate mechanism whereby the arm or projection upon the car can operate said valve and move said spout into position for delivering the supply of water into the troughs on the car, substantially as described.

3. The combination, with a stock-car having a suitable trough to receive water, of a tank-spout, a valve for controlling the flow of water through said spout, a suitable projection or arm upon the car, a series of movable arms adjacent to the tank, a valve for controlling the flow of water through the tank-spout, and connecting mechanism between said valve and said movable arms, substantially as described.

4. The combination, with a stock-car having a suitable trough to receive water, of a vertically-movable tank-spout, a valve for controlling the flow of water through said spout, a suitable projection or arm upon the car, projecting arms adjacent to the tank, and gear mechanism connecting said projecting arms with said valve and with said movable tank, substantially as described.

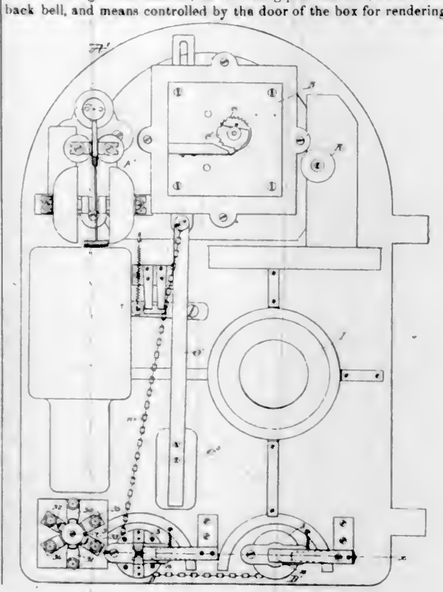
444,144. SIGNAL-BOX. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portland, Me. Filed Jan. 14, 1888. Serial No. 260,691. (No model.)

Claim.—1. In a signal-box, a signal-transmitter and a removable key or actuator by which the said signal-transmitter is operated, and an answer-back bell and shunt therefor, combined with a switch operated by said removable key for opening the said shunt, thereby including the bell in circuit, rendering it responsive, substantially as described.

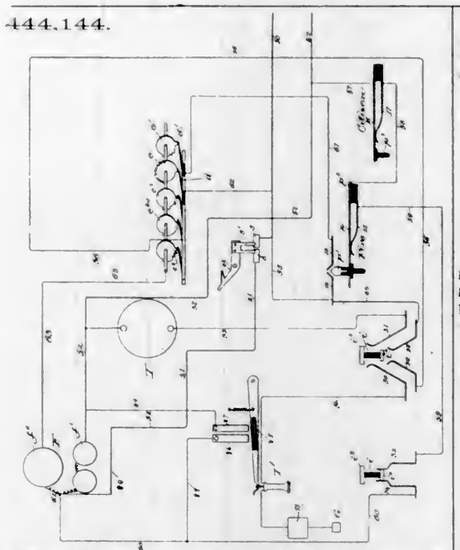
2. In a signal-box, the multiple signal-transmitter and an actuating-pull therefor, an answer-back bell and a shunt therefor, a switch for opening and closing said shunt, controlledby the box-door, combined with a removable key or actuator adapted to be inserted from the outside of the box when the door is closed for also effecting the operation of the transmitter, and a switch controlled by said key or actuator for opening the said bell-shunt, substantially as described.

3. In a signal-box, the combination, substantially as described, of a signal-transmitter, the actuating-pull and starting-lever therefor, the polarized bell, an inductive coil placed upon the permanent magnet of the polarized bell, a shunt for the inductive coil and transmitter, and a switch controlled by the actuating-pull for opening said shunt, including the said inductive coil at the time the transmitter is included, so that the current shall pass through the said inductive coil during the time each signal is being transmitted.

4. In a signal-box, the combination of the following instrumentalities, viz: a signal-transmitter, an actuating-pull therefor, an answer-back bell, and means controlled by the door of the box for rendering



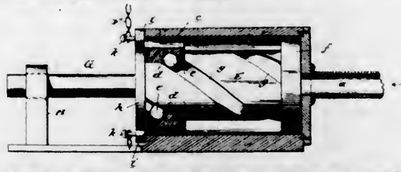
444,144.



it responsive, a removable key adapted to be inserted from the outside of the box when the door is closed for also effecting the operation of said transmitter, and means controlled by said removable key for also rendering the said answer-back bell responsive, substantially as described.

5. In a signal-box, a signal-transmitter and answer-back bell, a telephone, a shunt-switch for said answer-back bell automatically closed by the removal of the telephone, a normally-open ground branch leading from the signaling-circuit for the telephone, and a switch for closing it automatically when the door of the box is opened, substantially as described.

444,145. CAR-BRAKE. WILLIAM T. BOTHWELL, Jersey City, N. J. assignor of one-half to Alfred R. Boluss, Norwood, Ohio. Filed Apr. 18, 1890. Serial No. 348,514. (No model.)



Claim.—1. The combination, with a brake-cylinder, of a partially-rotatable piston adapted to be connected with brake mechanism, and anti-friction guide-rollers interposed between the cylinder and the piston, substantially as specified.

2. The combination, with a piston having spiral grooves arranged lengthwise thereof, of a cylinder and rollers to engage said grooves, substantially as specified.

3. The combination, with a brake-cylinder carrying rollers, of a piston arranged in the cylinder and having longitudinally-arranged spiral grooves to receive the rollers, substantially as specified.

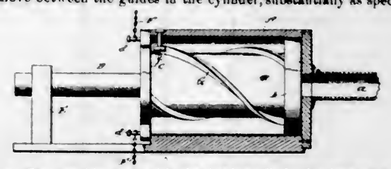
4. The combination, with a brake-cylinder, of a ring or annulus arranged in one end and adapted to receive the piston-stem, and the balls arranged in the ring and the piston having lengthwise spiral grooves to receive the balls, substantially as specified.

5. A piston having longitudinally-arranged spiral grooves and diametrically-arranged arms at one end for the attachment of brake-chains, in combination with a cylinder and rollers whereby the piston is rolled or given a partial rotation in its reciprocating movements, substantially as specified.

6. A car-brake mechanism having a partially-rotatable reciprocating piston provided at its outer end and eccentrically thereon with suitable means for the attachment of brake-chain, in combination with a brake-cylinder, substantially as specified.

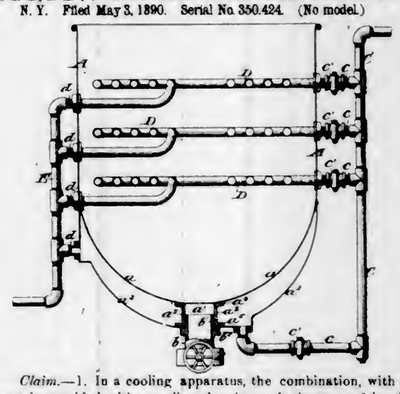
444,146. AUTOMATIC PNEUMATIC BRAKE. WILLIAM T. BOTHWELL, Jersey City, N. J., assignor of one-half to Alfred R. Boluss, Norwood, Ohio. Filed May 31, 1890. Serial No. 353,720. (No model.)

Claim.—1. In a car-brake, the combination, with a piston or brake-cylinder having roller-guides in one end, of a piston adapted to receive brake-chains and having longitudinal spiral flanges adapted to move between the guides in the cylinder, substantially as specified.



2. The combination, with the brake-cylinder having the roller-guides arranged in pairs in one end thereof, of the piston having longitudinal spiral flanges embraced by said guides, and also having a plate at its outer end for the attachment of brake-chains, substantially as specified.

444,147. CANDY-CREAM COOLER. THOMAS BURKHARD, Brooklyn, N. Y. Filed May 3, 1890. Serial No. 350,424. (No model.)

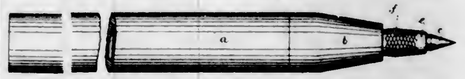


Claim.—1. In a cooling apparatus, the combination, with a receptacle provided with a cooling-chamber at its bottom, of a series of horizontal pipe-coils arranged at different levels within the receptacle, a common supply-pipe in independent communication with each of the several coils and with the chamber at the bottom, and a common discharge-pipe in communication with the several coils and the chamber at the bottom, substantially as set forth.

2. The combination, with a receptacle provided with a cooling-chamber at its bottom, of a series of horizontal pipe-coils arranged at different levels within the receptacle, a pipe for supplying a cooling medium to the several coils and to the chamber separately, and independent cut-off devices between the supply and the several coils and the chamber, substantially as set forth.

3. The combination, with a receptacle and its second or lower bottom and openings through the bottoms, of a short tube or nipple interposed between the bottoms around the openings, and a discharge-pipe engaged with the short tube or nipple and provided with an annular projection for seating the outer bottom against the lower end of the short tube or nipple, substantially as set forth.

444,148. LEAD OR CRAYON HOLDER. EBERHARD FABER, New Brighton, N. Y. Filed Aug. 1, 1890. Serial No. 360,610. (No model.)

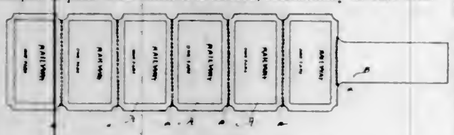


Claim.—The combination, with the tubular handle, of a metallic end having a tapering exterior and a tube within the tubular handle, and a sliding lead-holder within the tubular end, with a flange at its inner end to retain it in place, and having double-inclined jaws at the outer end for clamping the lead, substantially as specified.

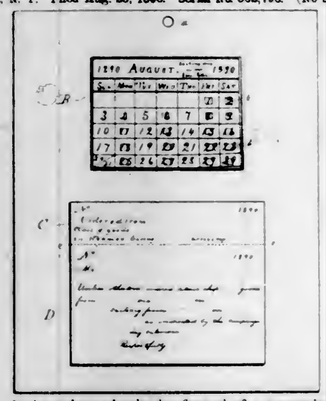
444,149. STRIP-TICKET. JAMES M. HARPER, Peoria, Ill. Filed Jan. 15, 1890. Serial No. 336,984. (No model.)

Claim.—A strip-ticket divided into a series of coupons and having one of its terminal coupons provided with a retaining-tongue for holding the coupons in mass, said retaining-tongue being of sufficient length

to pass around the mass of tickets or coupons and overlap upon the coupon in piece with which it is formed, substantially as described.



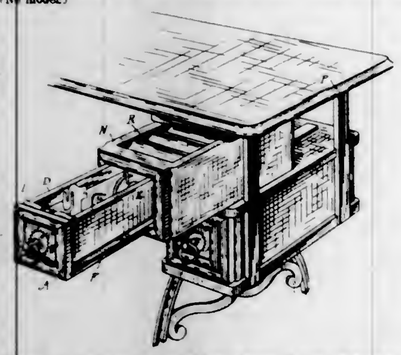
444,150. ORDER-PAD CALENDAR. WILLIAM H. HAWORTH, Brooklyn, N. Y. Filed Aug. 23, 1890. Serial No. 362,798. (No model.)



Claim.—1. An order-pad calendar formed of a supporting-back A, having a calendar B attached thereto, certain days *b b* of said calendar bearing a representation of a blue peter thereon, and having an order-pad the sheets of which are divided by a perforated line *c*, the part C being fixed to the back A and the part D being detachable, both of the said parts C and D having date-spaces to be filled with a date to correspond with some particular date marked on the said calendar by the blue peter, and other spaces to be filled with orders and a record thereof, as herein described.

2. In an order-pad calendar, the combination of a calendar, certain days of which are marked with an appropriate design, as a blue peter, and detachable order-blanks, each provided with a blank date-space to be filled with a date corresponding to some marked date on the said calendar, for the purposes herein described.

444,151. DRAWER FOR SEWING-MACHINE ATTACHMENTS. NICHOLAS A. HULL, Peru, Ind. Filed May 17, 1890. Serial No. 352,153. (No model.)

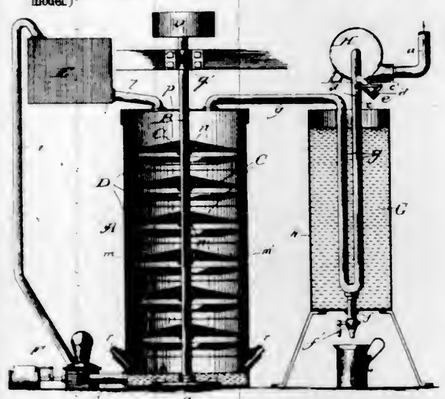


Claim.—1. As a new article of manufacture, a duplex drawer consisting of an outer casing having a central opening in its front and adapted to slide in a cabinet-frame, and a smaller interior drawer adapted to slide within the casing, said interior drawer consisting of a bottom, one or more sides hinged to said bottom and adapted to lie parallel therewith or to stand erect thereon, and a front which is secured to said bottom and adapted to fill the opening in the casing-front and to form a harmonious component part of said front, substantially as set forth.

2. As a new article of manufacture, a drawer consisting of a bottom piece, a front piece and a back piece erected at opposite ends of said bottom, a pair of opposed side pieces hinged to the opposite edges of said bottom between the front and back and adapted to open parallel with the bottom or to fold upright thereon, and a spring, clip, or like device for temporarily holding the sides in an upright position, said sides and bottom being provided with suitable clips for holding sewing-machine attachments or like implements thereon, all substantially as set forth.

3. The combination of the drawer-like casing having tray R and guides S S, the drawer fitted to slide therein, and consisting of the bottom piece, the front piece, and the back piece erected at opposite ends of the bottom, the pair of opposed sides hinged to the opposite edges of said bottom between the front and back and adapted to open parallel with the bottom or to fold upright thereon, the longitudinal bars secured to the bottom and projecting rearwardly therefrom, and the cross-bars H and O, all arranged to co-operate substantially as and for the purpose set forth.

444,152. APPARATUS FOR TREATING WHISKY. FRIDOLIN MADLENER, Chicago, Ill. Filed June 11, 1890. Serial No. 355,081. (No model.)



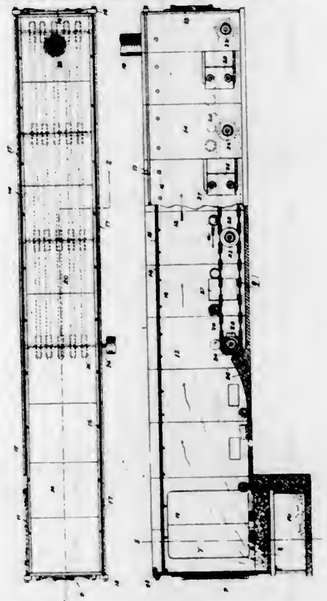
Claim.—1. In an apparatus for purifying whisky, the combination of a vaporizing-tank A, containing stationary shelves D, and a rotary spindle B, carrying heads C, alternating with and overlapping the shelves, a desired number of air-inlets *r* near the base of the tank, inclining upward outside the tank to a height beyond that at which the liquid may rise therein, a supply-reservoir E, communicating with the vaporizing-tank, a force-pump F, interposed in the said communication, and a draft-producing means, such as a fan H, communicating with the vaporizing-tank near its upper end, substantially as described.

2. In an apparatus for purifying whisky, the combination of a vaporizing-tank A, containing inwardly-slanting shelves D, rigidly secured at intervals to its wall, and a rotary spindle B, carrying outwardly-slanting disk-shaped heads C, formed with sectors *m*, affording intervening spaces *m'* and alternating with and overlapping the said shelves, a desired number of air-inlets *r* near the base of the tank, a supply-reservoir F, communicating with the vaporizing-tank, a force pump F, interposed in the said communication, and draft-producing means, such as a fan H, communicating with the vaporizing-tank near its upper end, substantially as described.

3. An apparatus for purifying whisky, comprising, in combination a vaporizing-tank A, containing inwardly-slanting shelves D, rigidly secured at intervals to its wall, and a rotary spindle B, carrying outwardly-slanting disk-shaped heads C, alternating with and overlapping the said shelves, a desired number of air-inlets *r* near the base of the tank, a supply-reservoir E, communicating with the vaporizing-tank through a conduit i, a force-pump F, interposed in the conduit between the vaporizing-tank and reservoir E, a condenser G, a fan H, a conduit *g*, connecting the fan with the upper portion of the vaporizing-tank and leading through the condenser, a trap *f* in the conduit *g* in the condenser, a branch *e* on the said conduit *g*, and valves *c* and *c'*, respectively inside the conduit and its branch and linked together, the whole being constructed and arranged to operate substantially as described.

444,153. KILN FOR CRUCIBLES. GEORGE NIMMO, Allegheny, Pa., assignor to the George Nimmo Company, of New Jersey. Filed Dec. 17, 1889. Serial No. 334,024. (No model.)

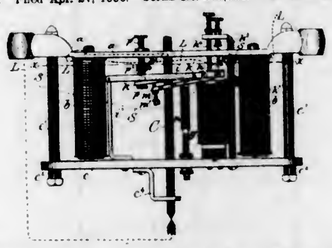
Claim.—1. A kiln for baking and burning crucibles, comprising a long narrow baking-chamber having a chimney and a charging-door at one end, a fuel-chamber in the opposite end of the baking-chamber communicating freely therewith, and a traveling conveyer within the baking-chamber for slowly moving the crucibles along the chamber from its charging end and delivering them to and upon the burning fuel in the fuel-chamber, whereby the crucibles are baked in their passage through the baking-chamber, and are then deposited directly onto the burning fuel and burned, substantially as described



2. A kiln for baking and burning crucibles, comprising a long narrow baking-chamber having a chimney and a charging-door at one end, a fuel-chamber in the opposite end of the baking-chamber communicating freely therewith, a traveling conveyer within the baking-chamber for slowly moving the crucibles therethrough from the charging end, and a chute or incline in the baking-chamber at the delivery end of said conveyer, whereby the crucibles are baked as they are carried slowly through the baking-chamber by the conveyer, and are then delivered upon the chute, whence they pass onto the burning fuel, where they are burned, substantially as described.

3. The hereinabove-described method of baking and burning crucibles, which consists in feeding the crucibles into one end of a long baking-chamber and baking them while being conveyed slowly therethrough to the opposite end, and then depositing said crucibles directly onto the fuel in the fire-chamber and burning them, substantially as described.

444,154. ELECTRIC-ARC LAMP. JOSEPH J. SKINNER, Boston, Mass. Filed Apr. 27, 1886. Serial No. 200,311. (No model.)



Claim.—1. The combination of the feed-controlling magnet and its armature with a clamp pivotally connected with the armature at one side of the carbon-rod and an independent lever connected at an intermediate point of its length with a fulcrum, and having one arm in position to be engaged by the armature of the feed-magnet and its other arm in position to engage with the free portion of the clamp, whereby the movement of the feed-magnet armature that carries one end of the clamp in one direction causes a movement of the lever that carries the opposite end of the clamp in the opposite direction, substantially as and for the purpose described.

2. The combination of the feed-controlling magnet and its armature with a clamp pivotally connected with the armature at one side of the carbon-rod and a stationary stop in position to engage another part of said clamp, and an independent lever connected at an intermediate point of its length with a fulcrum, and having one arm in position to be actuated by the armature of the feed-magnet and its other arm in position to engage with the free portion of the clamp, whereby a movement of the feed-magnet armature that carries one end of the clamp in one direction causes a movement of the lever that carries the opposite end of the clamp in the opposite direction, substantially as and for the purpose described.

3. In an electric lamp, a lifting-magnet and armature therefor, combined with feed mechanism supported on said armature, consisting of a feed-controlling magnet and its armature, and a clamp and connecting mechanism between the latter and the armature of the feed-magnet, whereby the clamp is acted upon simultaneously at different points, substantially as described.

4. In an electric lamp, the lifting-magnet and its armature, combined with feed mechanism supported on said armature, comprising a clamp and actuating devices therefor, the armature of the lifting-magnet being provided with a guide for the carbon or its holding-rod, and the clamp constituting the sole other guide therefor, substantially as described.

5. The combination of the feed-controlling magnet and its armature with a clamp pivotally connected at one point with the armature and an independent lever interposed between the armature and another point of the clamp, and a spring acting on said clamp in opposition to said lever, substantially as described

444,155. SANDPAPERING-MACHINE. EDGAR D. SWIFT, New York, N. Y. Filed Nov. 20, 1889. Serial No. 330,989. (No model.)

Claim.—1. In a sandpapering-machine, the combination, with a cylinder for sand-paper, of vertically-movable journal-boxes for said cylinder, links having one of their ends connected to said journal-boxes, a reversely-screw-threaded shaft, and nuts engaging the screw-threads on said shaft and to which said links are connected near their other ends, whereby when said shaft is rotated the said cylinder will be raised or lowered, substantially as specified.

2. In a sandpapering-machine, the combination, with a cylinder for sand-paper, of vertically-movable journal-boxes for said cylinder, links having one of their ends connected to said journal-boxes, a reversely-screw-threaded shaft, and nuts engaging the screw-threads on said shaft and to which said links are connected near their other ends, whereby when said shaft is rotated the said cylinder will be raised or

lowered, and independent adjusting devices for raising and lowering said shaft, substantially as specified.

3. In a sandpapering-machine, the combination, with two sandpapered cylinders, of shafts upon which said cylinders are mounted and which are capable of longitudinal movement, a lever fulcrumed between said shafts and having its arm connected to said shafts, a cam for imparting a rocking motion to said lever, so that said cylinders will be reciprocated alternately in opposite directions, and a rotary shaft upon which said cam is mounted, substantially as specified.

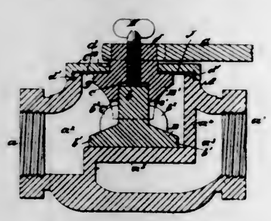
4. In a sandpapering-machine, the combination, with two sandpapered cylinders, of shafts upon which said cylinders are mounted and which are capable of longitudinal movement, a lever fulcrumed between said shafts and provided with ring-shaped portions A^3, sliding pieces A^4 on said ring-shaped portions, the collars A', secured upon said shafts, collars A^6, loosely surrounding said shafts, and the pins A^5, extending through said sliding pieces and engaging the collars A^6, substantially as specified.

5. In a sandpapering-machine, the combination, with an upper presser-roll frame in which feed-rolls are journaled, of screw-shafts arranged near the corners of said presser-roll frame, shafts provided with gear-wheels for imparting rotary motion to said screw-shafts to raise and lower said presser-roll frame, a main shaft, pulleys on said main shaft, pulleys on one of the shafts for transmitting motion to the screw-shafts, belts extending between the pulleys on the main shaft and said last-named pulleys, one of which belts is crossed, and two belt-tighteners for bringing either of said belts into operation to cause the rotation of said screw-shafts to raise or lower the presser-roll frame, substantially as specified.

6. In a sandpapering-machine, the combination, with feed-rolls, of spring-actuated wipers acting upon the under sides of said feed-rolls and having an extended contact therewith to remove dust and dirt therefrom, substantially as specified.

7. In a sandpapering-machine, the combination, with an upper presser-roll frame, of externally-screw-threaded hollow nuts engaging said presser-roll frame near the corners thereof, and screw-shafts engaging said nuts internally, substantially as described, whereby when said nuts are rotated said presser-roll frame may be adjusted independently of the screw-shafts, substantially as specified.

444,156. VALVE. GEORGE W. BURR, Round Lake, N. Y. Filed Feb. 19, 1890. Serial No. 341,041. (No model.)

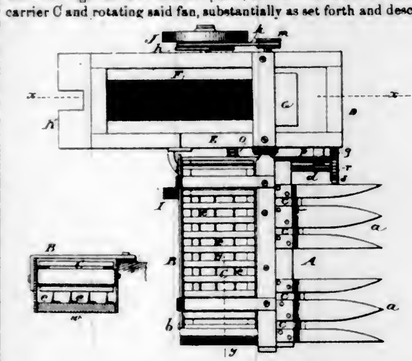


Claim.—In a valve, the combination, with a shell provided with an inlet-port and an outlet-port, of a valve-seat provided with an opening for the passage of liquid, a rotary plane-faced valve in engagement with and bearing and rotating upon said seat and adapted when rotated to open or close said opening, the valve being composed of two interlocking portions, one of said interlocking portions projecting through the shell, and a screw seated in said valve portion, which projects through the shell and having an engagement with the other valve portion to regulate its pressure upon its seat, the screw being accessible from the outside of the shell, substantially as set forth.

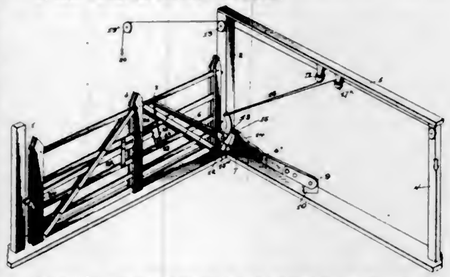
444,157. CORN-HARVESTER. WILLIAM W. HALL, Elk City, Kans. Filed May 14, 1890. Serial No. 351,746. (No model.)

Claim.—1. The combination, with the frame of a harvester, of a series of fixed gatherers *a*, cutting-knives *c*, a receiver located in rear of said gatherers, the bottom of said receiver being provided with springs, an endless apron C, provided with slats and mounted on rotative shafts which extend through said receiver, and a series of blades fixed longitudinally to the bottom of the said receiver, substantially as and for the purposes described.

2. The combination, with the frame of a corn-harvester, provided with a series of gathering devices *a* and fixed knives *c*, of a receiver placed at the rear of said gathering devices, a carrier C, mounted in said receiver, a box D, adjacent to said receiver, an inclined plane of open-work placed in said box in position to receive the gathered corn from the receiver, a rotative fan in position to drive an air-blast rearward through the said inclined plane, and mechanism for driving the carrier C and rotating said fan, substantially as set forth and described.



444,158. GATE. DANIEL D. MAYFIELD, Sullivan, Ind. Filed Oct. 18, 1890. Serial No. 368,574. (No model.)



Claim.—1. The combination, with a gate, of a two-part flexibly-connected drop-bar connected to the gate, a lock for securing the two sections, and cords or chains for releasing the lock, breaking the joint of the sections, and effecting the opening and closing of the gate.

2. The combination of a gate, a two-part drop-bar having the inner section or part connected to the gate, the outer part pivoted to a suitable support, a latch for normally locking the sections, and cords or chains connected to the latch for releasing the same and operating the drop-bar to open and close the gate.

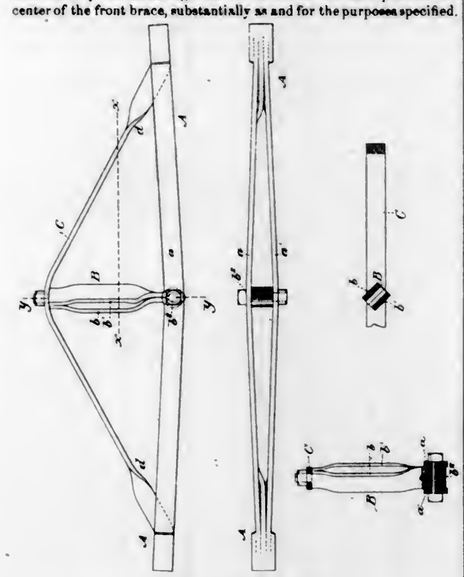
3. The combination of a gate, a two-part flexibly-connected drop-bar having one end connected to the gate and the other end connected to a suitable support, a latch pivoted on the gate, a chain connected to the inner end of the latch and the inner end of one section of the drop-bar, a swiveled guide-pulley secured to the gate for guiding the chain, and operating cords or chains connected to the drop-bar and operating to open and close the gate.

4. In a gate, the combination of the gate proper, the latch pivoted to the gate, the keeper for the latch, the chain connected to the inner end of the latch, the guide-pulley for said chain, the sectional drop-bar having its inner end connected to the gate and its outer end pivoted to a suitable support, said chain being also connected to the inner section of said bar, the latch for locking the sections of the drop-bar, and the cords or chains connected to said latch for releasing the latch and operating the bar to open and close the gate.

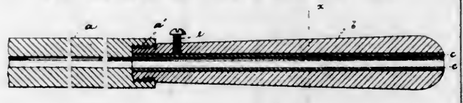
5. In a gate, the combination of the gate proper, the sectional drop-bar connected at its inner end to the gate and having its outer end suitably secured, the pin or keeper carried by the inner section of the drop-bar, the bifurcated piece or block carried by the outer section, the latch pivoted in the bifurcated end of the block and having the lug adapted to enter a socket in the block, the spring coiled around said lug, and the cords connected to the latch for releasing the same and operating the drop-bar to open and close the gate.

444,159. BRAKE-BEAM. JAMES PEARCE, Pittsburg, Pa. Filed Nov. 25, 1890. Serial No. 372,588. (No model.)

Claim.—The combination, in a brake-beam, of a back piece composed of two separate pieces and a front brace and a removable center piece, the ends of the pieces composing the back piece and the ends of the front brace being solidly welded together and the removable center piece extending from the center of the back piece to the center of the front brace, substantially as and for the purposes specified.



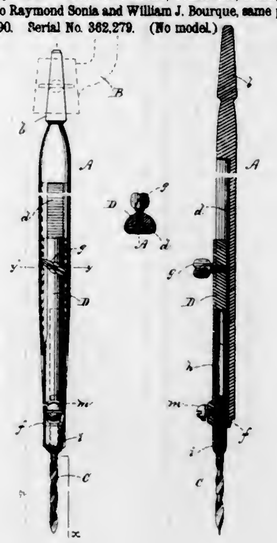
444,160. GLASS-BLOWING TUBE. AARON PITMAN, Matawan, N. J. Filed May 24, 1890. Serial No. 352,998. (No model.)



Claim.—1. A glass-blower's tube provided with a nozzle and an inner tube within said nozzle, substantially as specified.

2. A glass-blower's tube provided with a nozzle, a tube within the nozzle, and a graphite coating upon the tube, substantially as specified.

444,161. BIT. FRANCIS J. ROCHE, Somerville, Mass., assignor of two-thirds to Raymond Sonia and William J. Bourque, same place. Filed Aug. 18, 1890. Serial No. 362,279. (No model.)



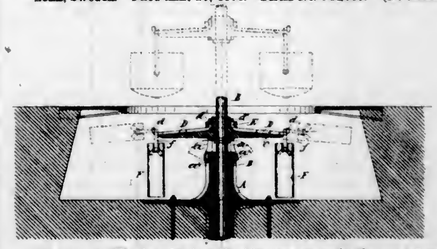
Claim.—1. The combination, with a screw-driver bit provided longitudinally with a groove, in combination with a boring-tool fitted to slide in said groove, and mechanism for securing it therein, substantially as described.

2. The combination of a screw-driver bit provided with a longitudinally-arranged groove, with a reamer fitted to slide in said groove and chambered longitudinally through its cutting end, and a boring-tool detachably secured in said chamber, substantially as described.

3. A screw-driver bit grooved longitudinally, in combination with a reaming-bit adjustably secured in said groove and chambered longitudinally, and a gimlet adjustably secured in said chamber, substantially as described.

4. The bit A, provided with the undercut groove *d*, in combination with the reamer D, having the chamber *h*, the gimlet C, disposed in said chamber, and the set-screws *g m*, arranged to operate substantially as described.

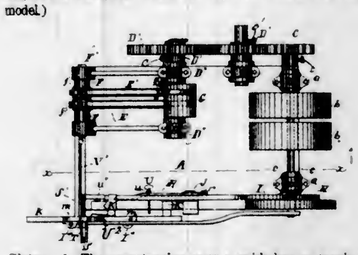
444,162. METHOD OF CASTING. JOHAN L. SERENIUS, Stockholm, Sweden. Filed Mar. 20, 1890. Serial No. 344,683. (No model.)



Claim.—1. The herein-described improvement in the art of casting metals under the influence of centrifugal force, which consists in first pouring the metal into an open mold or chill having its axis upright and then subjecting said chill or flask while in this position to centrifugal action about an upright axis outside of the mass of said chill or flask, the axis of the latter being gradually brought into a position radial to the axis of rotation as the metal in the flask cools, as set forth.

2. The herein-described method of removing gas-bubbles and impurities from cast-metal articles by centrifugal force, which consists in rotating the article while in a molten state and contained within its chill or flask about a vertical axis situated outside of the mass of the article, whereby the article treated, partly owing to the lines of centrifugal force occupying a different angle with said axis after the rotation has begun from that which they had when the rotation began and partly owing to the article itself having an open surface of metal in a molten state facing the axis, will be gradually freed from gases and lighter impurities at the said open surface as the metal sets in cooling, said impurities being forced out by the heavier metal under the action of the centrifugal force, as set forth.

444,163. SAW SETTING AND FILING MACHINE. JAMES TAYLOR, Beaver Falls, Pa. Filed Mar. 29, 1890. Serial No. 345,827. (No model.)



Claim.—1. The combination, with a guide bar or track and a sliding file-carriage mounted thereon, of a pivoted lifting-arm connected to said guide-bar or carriage and provided with a yoke I, and a cam-disk to operate said yoke and connected by a pitman to the file-carriage, substantially as described.

2. The combination, with a vertically-movable guide bar or track, of a file-carriage mounted on the same and consisting of two separable members secured together by bolts I", substantially as described.

3. The combination, with a guide bar or track dovetailed in cross-section, of a sliding file-carriage consisting of separable upper and lower sections, and wear-plates on the bearing-surface of the upper section, connected to adjusting-screws, substantially as described.

4. The combination, with a sliding file-carriage, of a vertically-

adjustable file-socket attached to the front of the carriage, and a swinging or laterally-adjustable file-socket for the rear end of the file, substantially as described.

5. The combination, with a sliding file-carriage having a vertical sleeve *n* at its front end, the front file-holder provided with a stem to fit in said sleeve and vertically adjustable therein, and a laterally-adjustable rear file-holder pivoted to the carriage and provided with an adjusting-bolt, substantially as described.

6. The combination, with a vertically-movable guide bar or track and a sliding carriage mounted thereon and carrying the file, of a pivoted lifting-arm connected at one end to the guide bar or track and provided at the other end with a yoke, the cam-disk carrying a cam-shoulder which operates within said yoke and is provided on opposite sides with offsets to engage the arms of the yoke, and a pitman connected to the file-carriage and pivoted to the cam-disk on the quarter-circle, whereby the guide bar or track is elevated and depressed at the ends of the forward and backward movements of the carriage, substantially as described.

7. The combination of a guide bar or track provided with vertical slides mounted in grooved standards, the file-carriage mounted on said guide bar or track, and a pivoted lifting-arm connected by a sliding joint with the guide bar or track, substantially as described.

8. The combination, with a reciprocating file-carriage carrying a beveled cam-block, of a swinging arm carrying a feeding-finger and adapted to be operated by the cam-block, substantially as described.

9. The combination, with a reciprocating file-carriage, of a swinging arm carrying a feeding-finger and adapted to be operated by a beveled block fixed to the carriage, and a spring to return said arm to its normal position, substantially as described.

10. The combination, with a reciprocating file-carriage carrying a beveled cam, of a swinging arm carrying the feeding-finger, and an adjustable screw mounted in said arm and adapted to be engaged by said cam, substantially as described.

11. The combination, with a reciprocating file-carriage, of a swinging arm carrying an adjustable screw to be engaged by a cam on said carriage, and a false lever having the feeding-finger pivoted thereto and connected at its free end to the swinging arm, substantially as described.

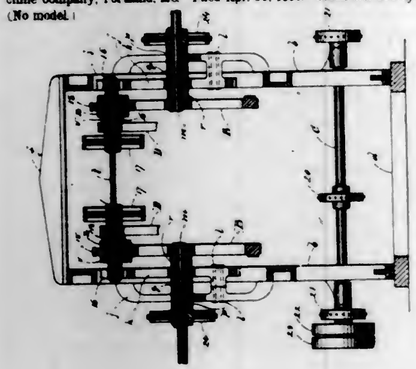
12. The combination, with a reciprocating file-carriage carrying a cam, of a spring-actuated swinging arm having a feeding-finger connected thereto and provided with an adjustable screw to be engaged by the cam on the carriage, and an adjustable stop-screw to limit the return movement of the swinging arm, substantially as described.

13. The combination, with a rotary cam, of the setting-levers provided with opposing die-holding jaws, the rotary sleeves mounted on a stationary shaft and fitting in eyes or openings in the jaws of the setting-levers, and set-screws to lock the latter to the said sleeves, substantially as described.

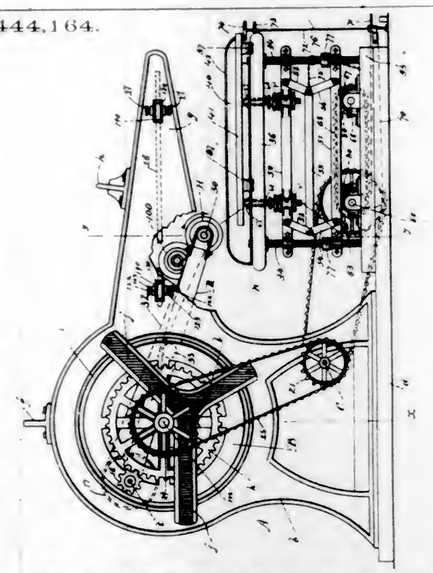
14. The combination, with a driving-shaft and a reciprocating file-carriage connected by a pitman to a disk on said shaft, of a rotary cam-block geared to the said driving-shaft and setting-levers arranged at their free ends on opposite sides of said cam-block, substantially as described.

15. The combination, with the setting mechanism and the reciprocating file-carriage, of a feeding mechanism having a swinging arm operated by said carriage, the feeding-finger T, connected to said swinging arm, and the supplementary feeding-finger connected to said swinging arm to carry the saw-blade through the setting mechanism, substantially as described.

444,164. MACHINE FOR WHITENING OR WORKING LEATHER. JOSEPH W. VAUGHN, Salem, Mass., assignor to the Vaughn Morocco Machine Company, Portland, Me. Filed Apr. 30, 1890. Serial No. 350,050. (No model.)



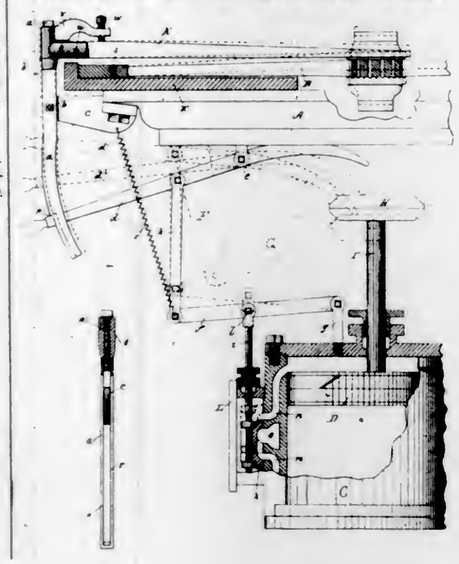
444,164.



Claim.—1. In a leather-machine, the combination of a carriage, a sun-gear, a shaft, a crank-disk on said shaft, a tubular crank-pin on said crank-disk, a rotary revolving shaft supported at one end in said tubular crank-pin and having a suitable bearing at the other end, a planetary pinion on said rotary revolving shaft meshing with said sun-gear, a pitman connecting said crank-pin with said carriage, a pulley on said rotary revolving shaft, a belt connecting said pulley with a pulley on the carriage, and a leather-supporting table beneath said carriage, substantially as described.

2. In a leather-working machine, the combination of a reciprocating tool-carriage and a bench for supporting the leather, consisting of upright standards, frames one above the other adapted to slide vertically on said standards, a bed supported on the upper frame, toggle-levers connecting said frames, a treadle mechanism for actuating said toggle-levers to adjust the bed, and cams actuated by the driving mechanism for raising and lowering the bed at regular intervals.

444,165. GAGE FOR TIRE-SETTERS. JONATHAN B. WEST, Rochester, N. Y. Filed Mar. 17, 1890. Serial No. 344,230. (No model.)



Claim.—1. In a machine for compressing tires or bands upon wheels, a gage acted upon by the wheel, in combination with a weight or spring to throw off the power and a detent for said weight or spring operated by said gage, substantially as described and shown.

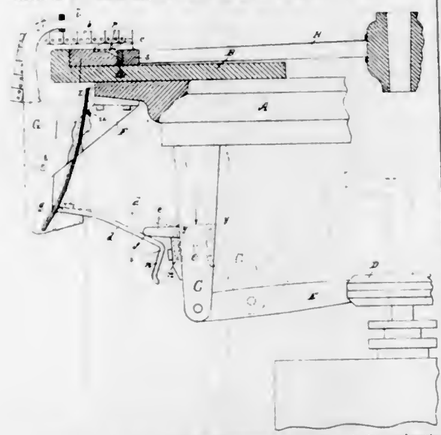
2. In a machine for setting tires or bands upon wheels, a gage acted upon by the wheel, in combination with a weight or spring to throw off the power and a detent for said weight or spring operated by said gage, the latter being adjustable with reference to the wheel, substantially as set forth.

3. In a machine for setting tires upon wheels, a gage over the wheel to be acted upon by the latter, in combination with a spring or weight to throw off the power and a detent for said weight or spring operated by the gage, the latter being pivoted so as to be turned away from the wheel, substantially as and for the purpose set forth.

4. In a machine for setting wagon-tires, a power-cylinder and a valve for the cylinder, in combination with a spring to move the valve, a detent for the valve to hold the latter in place against the action of the spring, and a gage to release the valve, substantially as shown, and for the purpose set forth.

5. In a machine for setting wagon-tires, a power-cylinder and a valve for the cylinder, in combination with a lever, a spring to move the valve, and a head to act upon said lever to move the valve against the action of the spring, substantially as and for the purpose specified.

444,166. TIRE-SETTING MACHINE. JONATHAN B. WEST, Rochester, N. Y. Filed May 6, 1890. Serial No. 350,821. (No model.)



Claim.—1. In a machine for setting wagon-tires, independently-acting compressing-jaws moved in radial directions against the periphery of the tire by levers pivoted to the frame, in combination with arms or levers to press the tire down upon said jaws, and operators for said arms or levers, substantially as shown.

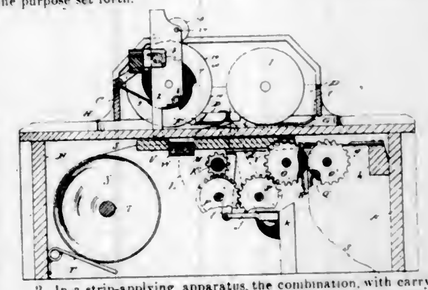
2. In a machine for setting wagon-tires, independently-acting compressing-jaws moved in radial directions against the periphery of the tire by levers C beneath said jaws, in combination with arms or levers to press the edge of the tire, and operators for said arms, said operators acting to move the arms or levers against the tire in advance of or at a time before said levers C move said compressing-jaws against the tire, substantially as and for the purpose set forth.

3. A machine for setting wagon-tires, having compressing-jaws to act against the periphery of the tire, and operating-levers beneath said compressing-jaws to drive the latter, in combination with arms to bear upon the edge of the tire moved by said operating-levers for the compressing-jaws, substantially as shown.

4. In a machine for setting tires on wheels, compressing-jaws to act upon the periphery of the tire, in combination with the pressure-levers to act against the edge of the tire, and operators for said pressure-levers, substantially as shown, said pressure-levers being each formed with a yielding part *d* at its lower or operated end, for the purpose set forth.

444,167. APPARATUS FOR APPLYING STRIPS TO NEWSPAPERS OR OTHER PERIODICALS. ROBERT D. BRAIN and CHARLES T. SHAFER, Springfield, Ohio; said Shafer assignor to said Brain. Filed June 21, 1890. Serial No. 356,189. (No model.)

Claim.—1. In a strip-applying apparatus, the combination, with carrying mechanism for carrying a newspaper through the machine, of a cutting mechanism having knives to divide a fastening portion from a continuous strip and to sever it therefrom, and strip-feeding mechanism for feeding the strip to the knives proper, a lifter for presenting the divided portion of the strip in position for engagement by the newspaper, and a depressor to secure the attachment of the fastening-strip constituted of the severed portion to the newspaper, for the purpose set forth.



2. In a strip-applying apparatus, the combination, with carrying mechanism for carrying a newspaper through the machine, of a cutting mechanism provided with knives having a shearing action on a continuous strip of fastening material, and a strip-feeding mechanism having intergeared rollers and driven by a feed-roll actuated by the passing newspaper, a pivoted lever operated by said cutting mechanism for feeding the strip to the knives proper to present the severed portion of the strip to be engaged by the newspaper, suitable adjunctive devices to assist such engagement, and a printing mechanism located to one side and forward of the fastening-strip and adapted to print a variable seal or mark conjointly on said newspaper and its fastening-strip engaged therewith, whereby each newspaper and its fastening-strip may be identified.

3. In a strip-applying apparatus, the combination, with the carrying mechanism for a newspaper and cutting mechanism consisting of a stationary and a pivoted knife adapted to work together for severing a portion of a strip of fastening material longitudinally while the remaining portion is drawn onward, of feeding mechanism for said strip, gluing means for the fastening portion, and trigger mechanism consisting of a trigger depressed by the passing newspaper and connected to said pivoted knife.

4. In a strip-applying apparatus, the combination, with carrying mechanism for the newspaper and cutting mechanism for severing a portion of a strip of fastening material, of feeding mechanism therefor consisting of a feed-driving wheel operated by the depressing action of the newspaper as it passes through the machine, feed-rolls adapted to feed said strip, and intermediate mechanism between said driving-wheel and feed-rolls, and trigger mechanism consisting of a trigger depressed by the passing newspaper, a trigger-arm, and link connections for operating said cutting mechanism by the release of said trigger.

5. In a strip-applying apparatus, the combination, with carrying rolls for the newspaper and strip-feeding mechanism for the fastening material, of spring-actuated cutting mechanism to cut a portion of said material to form a fastening-strip, the other portion being drawn onward by said feeding mechanism actuated by the onward passage of said newspaper, and trigger mechanism consisting of a trigger depressed by the passage of said newspaper, and intermediate connections between said trigger and said cutting mechanism, whereby the release of said trigger as the newspaper leaves it will allow said cutting mechanism to operate and prepare a fastening-strip for the next newspaper.

6. In a strip-applying apparatus, the combination, with carrying rolls for a newspaper, trigger mechanism and strip-feeding mechanism operated by the forward movement of said newspaper, whereby a strip of fastening material is drawn onward by said feed mechanism, and gluing means consisting of a glue-pot from which glue is forced by its own weight against a portion of said strip, of cutting mechanism to separate said portion, consisting of a stationary knife, a spring-actuated knife-lever pivoted adjacent to said knife to give a shear action, elevating means operated by said knife-lever to lift said prepared portion to engage with the newspaper, and trigger mechanism having a trigger and link connections to said cutting mechanism actuated by the newspaper to release said knife as the newspaper passes the trigger and thus divide and raise the prepared portion.

7. In a strip-applying apparatus, the combination, with strip-feeding rolls and actuating means therefor, consisting of a friction-wheel rotated by contact with the newspaper operated on and connected to said feed-rolls to advance a continuous strip of fastening material, of opposing knife-edges having a normal tendency to act on said strip, a trigger released by said newspaper to actuate said knife-edges to divide a portion of the strip to form a fastening-wrapper, and con

pressing-springs to apply said wrapper to a paper, the remaining portion of the strip being drawn onward by the action of the feeding mechanism to present an uncut portion to the knife-edges.

8. In a strip-applying apparatus, the combination, with carrying-rolls for carrying a newspaper having a wrapper of fastening material secured thereon, of a type, means to vary the angular position thereof, and a vibrating support for said type actuated by said newspaper, for the purpose described.

9. In a sealer or marker, a type-wheel, a trip-hanger therefor, brackets in which said hanger is rotatably mounted, a ratchet on said wheel, a pawl therefor on said hanger, and a detent for said wheel, whereby each time the hanger is operated the pawl rotates said wheel and the detent prevents its return.

10. In a sealer or marker, a type-wheel, a trip-hanger therefor, actuating mechanism to rotate said wheel, rotatable types, and means to intermittently rotate them, whereby an indefinitely-varied appearance of the seal or mark may be produced.

11. In a sealer or marker, a type-wheel, a support therefor, types having ratchet edges rotatably mounted in said wheel, and a stationary pawl carried by said support and adapted to engage with said ratchet edges and to rotate said types, whereby a varied seal or mark may be produced.

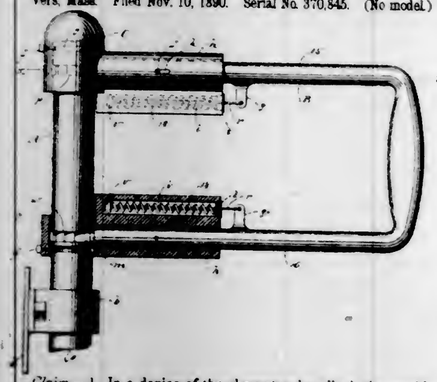
12. In a strip-applying apparatus, the combination, with a trigger mechanism to be operated by a newspaper passing through the machine, and strip-gluing means, of a stationary knife having a lengthwise-shearing edge, and a V-shaped edge at one end of the latter, whereby the fastening-strip is severed longitudinally and transversely from the feeding portion of the fastening material, a spring-actuated knife-lever pivoted so as to work with said stationary knife, and a lifter actuated by said lever to raise the severed portion of said fastening material adjacent to said V-shaped edge and in position to be engaged by the next newspaper passing through the machine.

13. In a strip-applying apparatus, the combination, with a strip of fastening material and a feeding mechanism, of a glue-pot provided with an air-inlet in the upper portion thereof to equalize the air-pressure on the glue, and having a flared lower portion and an opening in the top of said portion, and a depressor adapted to depress the said strip carried above said opening, whereby the surplus glue forced outward against said strip by hydrostatic pressure is scraped off as the strip is drawn onward by said feeding mechanism.

14. In a strip-applying apparatus, the combination, with the strip-feeding mechanism and cutting mechanism having a knife-lever and gluing means for said strip, of a lifter pivoted to said lever, consisting of a lifting portion having points or projections to prevent the glued strip from adhering thereto, a projecting portion or arm, and a stop to engage said arm and elevate said lifter as the knife-lever is raised.

15. In a strip-applying apparatus, the combination, with strip-feeding means adapted to intermittently feed a continuous strip of fastening material, of means to operate the same intermittently by the passage of a newspaper through the machine, a glue-reservoir having an opening to smear a portion of the strip continuously as it is drawn past said opening by the feeding mechanism, a cutting mechanism consisting of a longitudinal and a transverse knife-edge acting to divide the glued portion of said material to form a wrapper for a newspaper, and means to apply said wrapper thereto, the remaining portion of the strip serving to draw the glued portion still uncut within reach of the cutting mechanism by the action of the strip-feeding mechanism upon said remaining portion.

444,168. **BRAKE FOR STREET-CARS.** HENRY M. ELLIOTT, Danvers, Mass. Filed Nov. 10, 1890. Serial No. 370,845. (No model.)



Claim.—1. In a device of the character described, the combination of a brake-rod provided with two ratchet-grooves and a spring-tensioned U-shaped handle disposed with its ends in engagement with said ratchets, substantially as described.

2. In a car-brake, a rotatable brake-rod provided with two ratchets, in combination with sleeves rotatable on said rod, a U-shaped handle fitted to slide longitudinally in arms on said sleeves, and springs for holding the ends of said arms in engagement with said ratchets, substantially as described.

3. The combination of the brake-rod provided with ratchets, as *p w*, a U-shaped handle, and springs for holding said handle with its ends, respectively, in engagement with said ratchets, substantially as and for the purpose set forth.

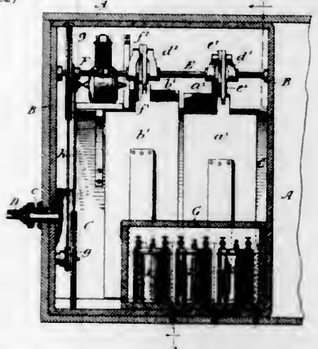
4. The combination of the brake-rod provided with ratchet-grooves, sleeves rotatable on the rod around said grooves, tubular arms on said sleeves, a U-shaped handle having its arms fitted to slide in said tubes, and springs connecting said arms and sleeves, substantially as and for the purpose set forth.

5. The brake-rod provided with the ratchet-grooves, in combination with the cap C and sleeve *y*, respectively having hollow arms *h*, the U-shaped handle B, fitted to slide in said arms and having points *m*, engaging said ratchets, and mechanism for limiting the outward movement of the handle in said arms, substantially as set forth.

6. The brake-rod A, provided with ratchets *p w*, in combination with the sleeves C *y*, having the arms *h*, the U-shaped handle B, fitted to slide in said arms and provided with pawl-points *m*, and the springs 18, connecting said handle and arms, substantially as described.

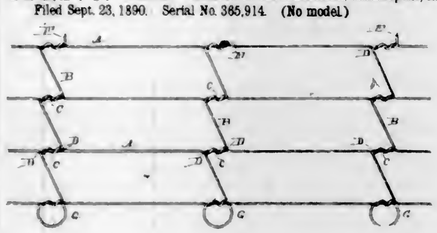
7. The rod A, provided with ratchets *p w*, in combination with the U-shaped handle B, having pawl-points *m* and fitted to slide in sleeves C *y*, rotatable on said rod, springs 18, disposed in said sleeves, connecting them with said handle, and pins *j*, for limiting the longitudinal movement of said handle, all being arranged to operate substantially as described.

444,169. **ELECTRIC-MOTOR ATTACHMENT FOR REED-ORGANS.** LEVI K. FULLER, Brattleborough, Vt., assignor to the Estey Organ Company, same place. Filed July 19, 1889. Serial No. 318,077. (No model.)



Claim.—The combination, with the inclosing casing A, adapted to serve as a seat for the organist, and the frame B, fitting into the same, of the fixed air-receiver C, mounted in the same and having a nipple *c*, which projects through the outer casing, the bumpers mounted in pairs on said receiver and coupled to cranks in the shaft E, the said shaft rotatively mounted in the frame B, an electric motor within the casing A, the intermediate speed-reducing gearing through which the motor drives shaft E, an electrical generator and circuit, and means, substantially as described, mounted on the casing A, whereby the player may regulate the force of the electric current at will, as set forth.

444,170. **FENCE.** CHARLES D. SHELLABERGER, Indianapolis, Ind. Filed Sept. 23, 1890. Serial No. 365,914. (No model.)



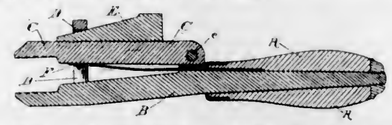
Claim.—1. A fence having longitudinal strands or cables and cross-wires provided at intervals with offsets parallel with said strands or cables, the strands or cables being coiled loosely around said offsets, whereby when said strands or cables are put under tension the said coils are enabled to extend and relieve the strain, substantially as specified.

2. A fence having longitudinal cables arranged at intervals and the cross-wires provided at intervals corresponding to the intervals between the cables with offsets parallel with the cables, and angles at the ends of said offsets, the cables being coiled around the offsets between the angles, whereby the cross-wires are held from displacement by said angles striking against the ends of the coils in the cables, substantially as and for the purpose specified.

3. The combination, in a fence, of longitudinal cables provided with coils, the cross-wires provided with offsets which extend axially through said coils, and the extensions at the ends of the cross-wires bent upon themselves to form rings, substantially as and for the purpose specified.

4. The combination, in a fence, of longitudinal cables provided with coils which are aligned axially with the cables, the cross-wires provided with offsets which are parallel with the cables and extend axially through said coils, and the barbs integral with and perpendicular to the offsets at the upper ends of said cross-wires, substantially as specified.

444,171. **WRENCH.** THEODORE F. VANDEGRIFT, Shelbyville, Ind., assignor to the Vandegrift Manufacturing Company, same place. Filed Jan. 2, 1890. Serial No. 335,618. (No model.)

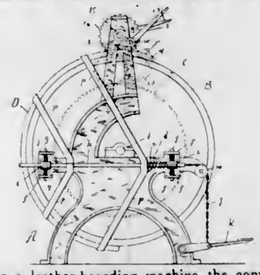


Claim.—1. The combination, in a wrench, of two jaws, one of which is pivoted to move toward and from the other, a loop surrounding said jaws, and a wedge whereby one may be forced toward the other, said jaw being provided with a groove into which the point of a wing on said wedge may enter and whereby said wedge is held in place thereon, substantially as set forth.

2. The combination, in a wrench, of a rigid jaw, a loop or clip mounted on said jaw and extending up around a pivoted jaw, said pivoted jaw, and a wedge mounted on said pivoted jaw and adapted to move longitudinally thereof and underneath said loop or clip, whereby said pivoted jaw may be moved in relation to said rigid jaw, substantially as set forth.

3. The combination, in a wrench, of a rigid and a pivoted jaw, a loop or clip surrounding them, a wedge mounted on said pivoted jaw and provided with wings which extend down alongside thereof, whereby it is held in position and adapted to move longitudinally thereof and underneath said loop or clip, and a spring interposed between said jaws and acting reversely to said wedge, substantially as set forth.

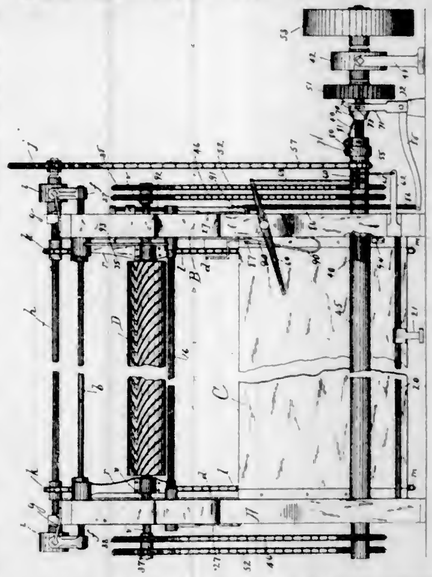
444,172. **LEATHER-BOARDING MACHINE.** JOSEPH W. VAUGHN, Salem, Mass., assignor to the Vaughn Morocco Machine Company, Portland, Me. Filed June 11, 1890. Serial No. 355,049. (No model.)



Claim.—1. In a leather-boarding machine, the combination of two end standards, a cylinder journaled therein, rods sliding in supports on said standards, an arc-shaped adjustable shell adapted to operate in conjunction with the periphery of said cylinder, provided with arms at its ends having eyes through which said rods pass, means for oscillating said cylinder, means for sliding the shell on said rods toward the cylinder, and means for clamping the leather, substantially as set forth.

2. In a leather-boarding machine, the combination of two end standards, a drum journaled therein, means for oscillating said drum, vertical guide-spindles supported in said end standards, blocks on said spindles, horizontal rods supported in said blocks, springs on said guide-spindles for cushioning said blocks, adapted to operate in conjunction with the periphery of said cylinder, provided with arms supported by said rods, springs for throwing out the shell, means for sliding the shell on rods toward the cylinder, and means for clamping the skins, substantially as set forth.

444,173. **LEATHER-WORKING MACHINE.** JOSEPH W. VAUGHN, Salem, Mass., assignor to the Vaughn Morocco Machine Company, Portland, Me. Filed July 28, 1890. Serial No. 360,196. (No model.)



Claim.—1. In a leather-working machine, the vertically-moving table, the lifting mechanism therefor, and the shaft *h*, to which said lifting mechanism is connected, in combination with the driving-shaft, the sliding cone 70, actuating mechanism for said cone, the clutch H, loose sprocket-wheel 55, having the elongated hub 56, and a chain connecting said sprocket-wheel with the shaft *h*, substantially as described.

2. In a leather-working machine, the vertically-moving table, the lifting mechanism therefor, and the shaft *h*, to which said lifting mechanism is connected, in combination with the driving-shaft, the sliding cone 70, actuating mechanism for said cone, the clutch H, comprising an outer sleeve 80, having a finger 81, bearing on said cone, and an inner sleeve 75, having a curved stud 78, engaged by said finger when the cone is moved, loose sprocket-wheel 55, having the elongated hub 56, and a chain connecting said sprocket-wheel with the shaft *h*, substantially as described.

3. In a leather-working machine, the vertically-moving table, the lifting mechanism therefor, and the shaft *h*, to which said lifting mechanism is connected, in combination with the driving-shaft, the sliding cone 70, actuating mechanism for said cone, the clutch H, comprising an outer sleeve 80, having a finger 81, bearing on said cone, and an inner sleeve 75, having a curved stud 78, engaged by said finger when the cone is moved, loose sprocket-wheel 55, having the elongated hub 56, one end of which sits within said inner sleeve 75, a split brake-sleeve 60 upon the other end of the hub, means for clamping it thereon, and a chain connecting said sprocket-wheel with the shaft *h*, substantially as described.

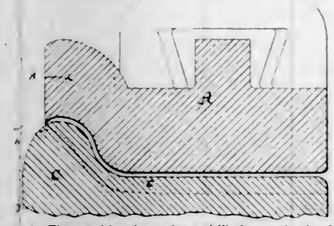
4. In a leather-working machine, the vertically-moving table, the lifting mechanism therefor, and the shaft *h*, to which said lifting mechanism is connected, in combination with the driving-shaft, the sliding cone 70, actuating mechanism for said cone, the clutch H, loose sprocket-wheel 55, having the elongated hub 56, a split brake-sleeve 60 upon said hub, said sleeve having ears 61, rods connected to said ears and crossing each other, one rod being secured to a fixed support and the other carrying an operating-handle, and a chain connecting said sprocket-wheel with the shaft *h*, substantially as described.

5. In a leather-working machine, the vertically-moving table, the lifting mechanism therefor, and the shaft *h*, to which said lifting mechanism is connected, in combination with the driving-shaft, the sliding

cone 70, a bell-crank lever pivoted at its angle and one end connected to said cone, an arm 93, connected with the other end of said lever, a stud 94 on the table, adapted to engage said arm 93, the clutch H, operated by the movement of said cone, loose sprocket-wheel 55, having the elongated hub 56, and a chain connecting said sprocket-wheel with the shaft A, substantially as described.

6 The driving-shaft, sliding table, and lifting mechanism, in combination with the sliding cone and actuating mechanism, the clutch H, and loose sprocket-wheel 55, arranged to operate substantially as set forth.

444,174. BRAKE-SHOE. AXEL S. VOGT, Altoona, Pa., assignor to Charles W. Roepper, Alliance, Ohio. Filed July 24, 1889. Renewed May 26, 1890. Serial No. 353,143. (No model.)

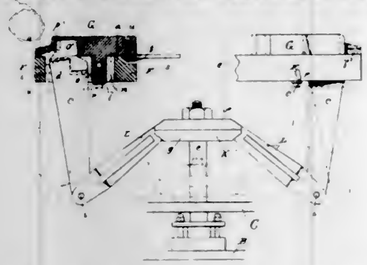


Claim.—1. The combination, with a chilled car-wheel, of a brake-shoe whose curved flange terminates with the terminal portion of the chill of the wheel-flange, substantially as set forth.

2 The combination, with a chilled car-wheel, of a brake-shoe having its free working-edge *a* located in the same curvilinear plane with the inner circular portion *b* of the chill of the wheel-flange, substantially as set forth

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444,175. MACHINE FOR SETTING TIRES. JONATHAN B. WEST, Rochester, N. Y. Filed Nov. 9, 1889. Serial No. 329,793. (No model.)



Claim.—1. In a tire-setting machine, a supporting-plate and a series of compressing-jaws arranged in a circle and held to move in radial bearings on the plate inwardly against the tire, the inner end of the jaws forming substantially a continuous circle, in combination with driving-levers for the jaws beneath the plate arranged in a circle, and a vertically-moving driving-head for the levers beneath the plate and surrounded by the levers, the plane of the driving-head being between the plane of the jaws and the plane of the lower ends of the levers, substantially as shown.

2. In a machine for setting bands and tires, a supporting-plate, in combination with jaws held to move radially thereon, levers to move the jaws, a driving-rod, a head upon the driving-rod, connecting-bars joining said head and levers, supporting-fingers secured to the jaws, and sectors held by said fingers, substantially as and for the purpose set forth.

3. In combination with the supporting-plate F of a machine for setting metal tires or bands, adjustable supports for the bands, compressing-jaws held by said plates, levers to operate the jaws, an operating-cylinder for the levers, and connections, substantially as shown and described, for said cylinder and levers.

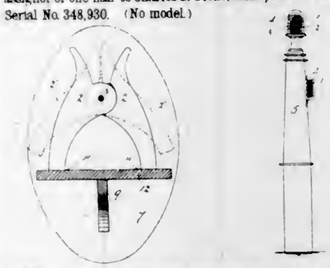
4. In a machine for setting tires, a supporting-plate, and a series of compressing-jaws arranged in a circle on the plate and held to move in radial directions inwardly against the tire, the inner ends of the jaws forming substantially a continuous circle, in combination with levers to move the jaws arranged in a circle beneath the plate, a power-cylinder having a non-rotating axial rod within the circle of levers beneath the plate, a head rigid with the rod, and connecting-bars for the head and the respective levers, substantially as and for the purpose set forth.

444,176. PANTALOONS-SUPPORTER. CHARLES P. COGGESHALL, Brooklyn, N. Y. Filed Jan. 28, 1890. Serial No. 338,353. (No model.)



Claim.—A pantaloons-supporter formed of a single piece of wire comprising the open elongated attaching-loop, a hook extending at right angles from the central portion of the loop, both the loop and the hook being in substantially vertical and parallel planes, the whole being adapted to be detachably applied to the ordinary loop-strap of a shoe, as and for the purpose set forth.

444,177. HITCHING-POST. ADOLPH E. FEHLHABEN, Denver, Colo., assignor of one-half to Charles B. Stone, same place. Filed Apr. 21, 1890. Serial No. 348,930. (No model.)



Claim.—1. A hitching-clamp consisting of a pair of levers 2 2, engaging each other and pivoted above their center of gravity within a suitable bracket adapted to be secured to a hitching-post or other suitable device, substantially as and for the purpose set forth.

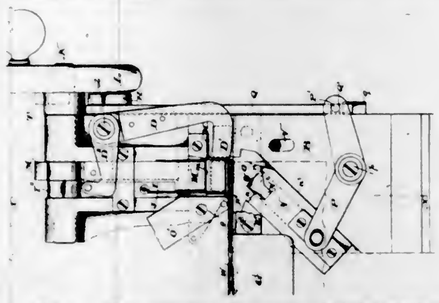
2. A hitching-clamp consisting of a pair of levers 2 2, toothed, corrugated, or notched on their clamping-surface, engaging each other and pivoted above their center of gravity within a suitable bracket, the bed-plate of the bracket engaging the levers being notched to correspond with the corrugations of the levers, substantially as described.

3. A hitching-post consisting of a suitable standard 5, provided with a clamping device composed of a pair of levers 2 2, engaging each other and pivoted above their center of gravity within or to the standard and adapted to clamp and secure in place a strap or other hitching device, substantially as and for the purpose set forth.

4. A hitching-clamp consisting of a pair of levers 2 2, each provided with an arc-shaped lug or projection engaging a corresponding recess in the opposite lever, said levers being pivoted above their center of gravity within a suitable bracket, substantially as described

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444,178. STAPLING-MACHINE. HENRY R. HEYL, Philadelphia, Pa., assignor to Isaac Fine, same place. Filed Aug. 2, 1890. Serial No. 360,737. (No model.)



Claim.—1. The combination of a support or table for a book or pamphlet, a guideway or passage extending upon both sides of said table, feeding devices to feed a piece of wire into said guideway or

passage with a portion of said wire upon each side of said support, a hammer to drive one portion only of said wire through the book or pamphlet, and a clincher located upon one side of said support to clinch the ends of said wire together.

2. The combination of a V-shaped support or table for an opened book or pamphlet with its folded edge upon the ridge of said support, a guideway or passage extending upon both sides of said table, feeding devices to feed a piece of wire into said guideway or passage with a portion of said wire upon each side of said support, a hammer to drive one portion only of said wire through the book or pamphlet, and a clincher located upon one side of said support to clinch the ends of said wire together.

3. The combination of a support or table for a book or pamphlet, a guideway or passage extending upon both sides of said table, a perforator for perforating said book or pamphlet, feeding devices to feed a piece of wire into said guideway or passage with a portion of said wire upon each side of said support, a hammer to drive one portion only of said wire through the book or pamphlet, and a clincher located upon one side of said support to clinch the ends of said wire together.

4. The combination of an inverted-V-shaped support for a book or pamphlet, having an opening or guideway through its ridge, a pusher to push a piece of wire into said guideway or opening with a portion upon each side of the book upon the support, a hammer to drive one portion of said piece of wire through the book or pamphlet, and a clincher to bend the ends of said wire toward each other.

5. The combination of an inverted-V-shaped support for a book or pamphlet, having an opening or guideway through its ridge, a pusher to push a piece of wire into said guideway or opening with a portion upon each side of the book upon the support, a feeding-support for a series of said pieces of wire for feeding them successively to the pusher, a hammer to drive one portion of said piece of wire through the book or pamphlet, and a clincher to bend the ends of said wire toward each other.

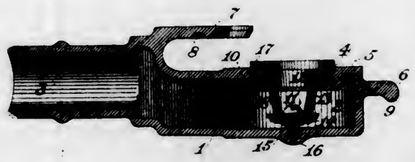
6. The combination, with a book-support having a passage or guideway extending through it, of a pusher to push a piece of wire into said guideway with a portion upon each side of said support, a hammer to depress said piece of wire and drive one end through the book upon the support, and a fixed obstruction in said passage-way under said support for bending said piece of wire when it is depressed by said hammer.

7. The combination of the support G and hammer M with the clincher N and stud O, said stud being adapted to bend the end of a wire staple into position to be operated upon by the clincher N.

8. The combination of the frame B, guide-plate E, having the slot *a*, the mandrel C, pusher D, and staple-clinching devices, substantially as described.

9. The combination of a supporting-table for a book or pamphlet, having one of its edges slotted to form a guide or passage way extending into the table through said edge, a pusher to push a bent piece of wire into position with a portion upon each side of said table, and means to bend the free end of said wire into a loop in said slot.

444,179. PIPE-COUPLING. THOMAS J. HOGAN, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Filed Oct. 20, 1890. Serial No. 368,667. (No model.)



Claim.—1. In a pipe-coupling, the combination, with a coupling-shell having an opening in its face for the passage of fluid, of a gasket fitted in the opening, a tapered ring bearing against the inside of the gasket for pressing the gasket into place, a yoke connected to the ring, and an adjusting-screw passing through the yoke and screwing into the shell of the coupling, substantially as set forth.

2. In a detachable pipe-coupling, the combination of a coupling-shell having an opening in its face formed with a groove in its wall, and a flange on the inner side of the opening, a gasket resting with its inner edge on the flange, and a tapered ring bearing against the inside of the gasket and so arranged as to be drawn toward the back of the shell by an adjusting-screw which passes through a yoke formed on the ring and screws into the back of the shell, whereby the gasket is pressed into the groove in the wall of the casing and supported on its inner face, substantially as set forth.

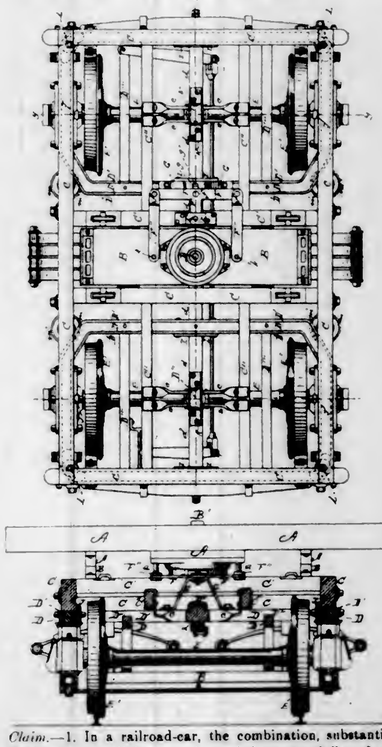
444,180. PROCESS OF PRODUCING PRESS COPIES FROM INK IMPRESSIONS. CLIFFORD MITCHELL, Chicago, Ill., assignor of two-thirds to Philip S. Rountree and Samuel R. Jewett, both of same place. Filed Dec. 2, 1889. Serial No. 332,324. (No specimens.)

Claim.—1. The process of producing press copies from ink impressions, consisting of, first, preparing ink with a readily-soluble reacting and deliquescent chemical or combination of chemicals, such as ferric chloride and calcium chloride, and, second, preparing copying paper by treating it with a readily-soluble deliquescent chemical which reacts chemically with the chemical with which the ink is prepared, such as potassium ferro-cyanide, or with a combination of chemicals of that character, and, third, then bringing the ink impressions in contact with the copying-paper without applying moisture.

2. Copying-paper treated with a readily-soluble chemical, such as potassium ferro-cyanide, and possessing the reacting deliquescing effect when in contact with ink containing a reacting deliquescing agent, substantially as specified.

3. Copying-ink prepared with a readily-soluble chemical, such as ferric chloride, and a chemical having affinity for moisture, such as calcium chloride, which possess the reacting deliquescing property when brought in contact with copying-paper containing a reacting agent, substantially as specified.

444,181. RADIAL CAR-TRUCK. WILLIAM ROBINSON, Boston, Mass., assignor to the Robinson Radial Car Truck Company, Portland, Me. Filed Feb. 6, 1884. Serial No. 119,904. (No model.)



Claim.—1. In a railroad-car, the combination, substantially as described, with a radial car-truck consisting, essentially, of a main-truck frame, supplemental-truck or axle frames pivotally connected thereto, and a bolster supporting the car-body and swinging bodily within and at right angles to the longitudinal axis of said main-truck frame, of adjustable bars or equivalent mechanical devices flexibly secured to the main-truck frame and to one of the supplemental frames and engaging the car-body, said bars or devices controlling and determining the position of said supplemental and main frames relatively to each other, while permitting the free swinging movement of said swing-bolster relatively to said main frame.

2. In a radial car-truck consisting, essentially, of a main-truck frame provided with a bolster swinging freely therein at right angles to the longitudinal axis thereof, and two supplemental trucks or wheel-frames pivoted thereto, the combination, with said main and supple-

mental trucks, of a lever or equivalent mechanical device pivotally connected to the main-truck frame and engaging the supplemental-truck frame, and one or more links or bars flexibly connected to said lever and to the car-body pivotally resting on said swing-bolster, substantially as and for the purpose described.

3. The combination, substantially as described, of a main-truck frame, a supplemental-truck or axle frame pivotally connected thereto, adjustable bars or equivalent mechanical devices flexibly secured to the main-truck frame and to the supplemental frame and adjustably engaging the car-body supported by said main-truck frame, said adjustable bars controlling and determining the position of said supplemental and main frames relatively to each other.

4. The combination of the car-body, the swing-bolster, the links, the radiating lever or mechanism, and the supplemental truck, substantially as and for the purpose described.

5. The combination of the frame or bar C, provided with the slot g', and the lever F F', provided with the bolt f'' and sliding block g, substantially as and for the purpose specified.

6. The lever F-F', provided with the longitudinal slot H', embracing the fulcrum-block h, secured to the main truck, the whole adapted to permit longitudinal adjustment of said lever, substantially as and for the purpose set forth.

7. The coobination, with the frame C, secured to the supplemental truck, and the plate h', secured to the main truck, of the lever F F', its stem F' being provided at each end with a pivotal block adapted to slide longitudinally in a slot, substantially as and for the purpose described.

8. A car truck or axle frame constructed of continuous parallel plates of metal bent at the corners and having their edges in a vertical position, the space between said plates being provided with a filling of wood or other suitable material, substantially as described.

9. In combination with the supplemental truck having its corner provided with the slot K', the bolt or rod L, passing through said slot and secured to the main-truck frame, said rod having its lower end provided with the flange or device L', adapted to support the corner of said supplemental truck, substantially as described.

10. The spring-seat m, provided with the flange or projection m', adapted to support the inner corner of the truck D, substantially as described.

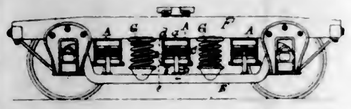
11. The combination, substantially as described, of the supplemental truck D, with the main truck C, the latter provided with flanges or devices L' m', adapted to adjustably engage the corners of said supplemental truck and to wholly or partly support the weight of the same.

12. The safety-lugs J, secured to the inside of the outer frame of the supplemental truck and projecting somewhat above the bottom of the main-truck frame and close thereto, said lugs being adapted to resist undue side pressure of one truck on the other, substantially as described.

13. The notched plate or brace I, secured to the supplemental truck and straddling the transom d and securing the same rigidly against side movement, substantially as described.

14. The combination, substantially as described, of the main truck C, the supplemental truck D, the lever F, the links F'', and the car-body provided with pins or equivalent mechanical devices a a, adapted to engage said links, for the purpose described.

444,182. CAR-SPRING CHECK. WILLIAM ROBINSON, Boston, Mass., assignor to the Robinson Radial Car Truck Company, Portland, Me. Filed Apr. 7, 1886. Serial No. 198,052. (No model.)



Claim.—1. In combination with a car-spring, a cylinder provided with a piston working therein, said cylinder and piston being adapted to retard and limit the vibration of said spring, substantially as described.

2. The combination, with a car or truck frame provided with a spring or springs, of a cylinder having a piston working therein, said cylinder and piston opening and closing in unison with said springs and adapted to retard and limit the vibrations thereof through the agency of fluid-pressure, substantially as set forth.

3. The combination, substantially as herein set forth, of a spring and a check mechanism, consisting, essentially, of a cylinder and a piston working therein, said check mechanism being wholly or partly inclosed by said spring and adapted to retard the vibrations thereof by means of fluid-pressure.

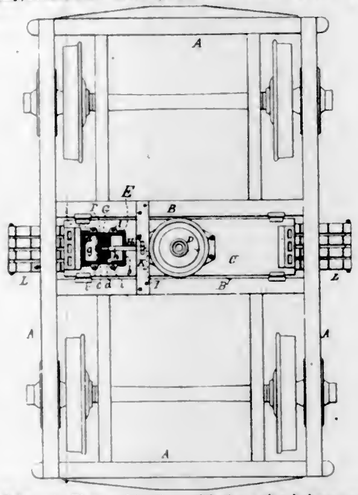
4. In combination with a car-spring, check mechanism consisting, essentially, of the cylinder B, the piston C, working therein and provided with cup-shaped packings d e, opening in opposite directions, for the purpose of securing a close fit while said piston is moving in either direction with reference to said cylinder, substantially as described.

5. In combination with the truck-frame F, the equalizer E, and the springs G, one or more check mechanisms consisting, essentially, of cylinders and pistons working therein, said check mechanisms being connected between said truck-frame and equalizer and adapted to retard and limit the vibrations of said springs by means of fluid-pressure, substantially as described.

6. A car-spring check mechanism constructed substantially as described, and provided at each end with a flexible or universal joint adapting said check mechanism to readily adjust itself to any irregular motion of the movable parts of the car or truck, substantially as set forth.

7. The combination, with a car-spring, of check mechanism consisting, essentially, of the cylinder B and piston C, working therein, said piston being provided with an opening or passage-way, whereby air or other fluid may pass alternately from one end of said cylinder to the other through said opening or passage-way, substantially as described.

444,183. SWING-BOLSTER CHECK FOR CAR-TRUCKS. WILLIAM ROBINSON, Boston, Mass., assignor to the Robinson Radial Car Truck Company, Portland, Me. Filed Apr. 7, 1886. Serial No. 198,053. (No model.)



Claim.—1. The combination, with the swing-bolster and truck-frame of a car-truck, of an air-chamber connected to said swing-bolster and truck-frame and operating to gradually retard or limit the movement of said swing-bolster by means of fluid-pressure, substantially as described.

2. The combination, with the swing-bolster and truck-frame of a car-truck, of the check mechanism E, consisting, essentially, of the cylinder F, with its piston G, said cylinder and piston being connected, respectively, to said swing-bolster and truck-frame, the whole adapted to gradually retard the movement of said swing-bolster by means of fluid-pressure or rarefaction in said cylinder, substantially as described.

3. In a car-truck, the combination, substantially as described, with the swing-bolster and truck-frame, of a check mechanism consisting, essentially, of a cylinder and piston connected, respectively, to said swing-bolster and truck frame, said piston being provided with a piston-rod having a bearing in the cylinder on each side of said piston, the whole operating to retard and limit the movement of said swing-bolster through the agency of fluid-pressure.

4. The combination, substantially as described, with the swing-bolster C and truck-frame A, of check mechanism consisting, essentially, of a cylinder and a piston working therein, said piston being provided with cup-shaped packings opening in opposite directions, as described, the whole operating to retard the movement of said swing-bolster through the agency of fluid-pressure.

5. In combination, substantially as described, the piston-rod H and the plate K, connected in movable relation to each other, whereby the vertical motion of the swing-bolster C is permitted without strain between said rod and plate.

6. The combination of the cylinder F, the piston G, and the piston-rod H with the fixed and horizontally-movable portions of a car-truck for the purpose of retarding and steadying the relative movements thereof through the agency of fluid-pressure, substantially as described.

444,184. CABLE CAR FOR STREET-RAILWAYS. WILLIAM ROBINSON, Boston, Mass., assignor to the Robinson Radial Car Truck Company, Portland, Me. Filed Apr. 3, 1882. Renewed June 2, 1890. Serial No. 354,006. (No model.)



Claim.—1. In a railway-car, the combination of the swiveling truck B, the laterally-moving frame or bar supported by the car-body and adjustably connected to said swiveling truck, and the guiding-bar G, connected to said laterally-moving bar and controlling the movement thereof, said guiding-bar G engaging in a slot or groove in the roadway parallel to the rail of the track, whereby the axle of said swiveling truck is brought into a radial position on curved tracks, substantially as described.

2. In a railway-car, the sliding bar or frame D, provided with the vertical guiding-bar G and adapted to be moved laterally on said car by means of said guiding-bar G, in combination with the swiveling trucks B B, pivotally connected to said sliding bar or frame D, situated between said trucks, the whole combined and operating substantially as described

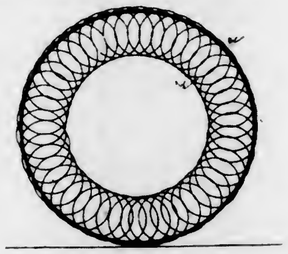
3. The combination of the following elements: the car-frame A, the swiveling trucks B B, and the laterally-sliding frame D, situated between said trucks and pivotally connected thereto, said sliding frame D being supported by said car-frame A and provided with the guiding-bar G, substantially as described.

4. The combination of the following elements: the car-frame A, the swiveling trucks B B, the laterally-sliding frame D, situated between said trucks and pivotally connected thereto and provided with the vertical guiding-bar G, and the roadway s, provided with a longitudinal slot or groove parallel to the rail of the track, substantially as described.

5. In a railway-car provided with swiveling trucks or axle-frames, the combination of a swiveling axle-frame, a laterally-moving bar or device supported by the car-frame and adjustably connected to said swiveling axle-frame and controlling the movement thereof, and a projecting bar or device secured to said laterally-moving bar and adapted to project into or engage in a longitudinal slot or groove in the roadway parallel to the rails of the track, whereby the axles of said car are caused to take radial positions on curved tracks and to become parallel on straight lines, substantially as described.

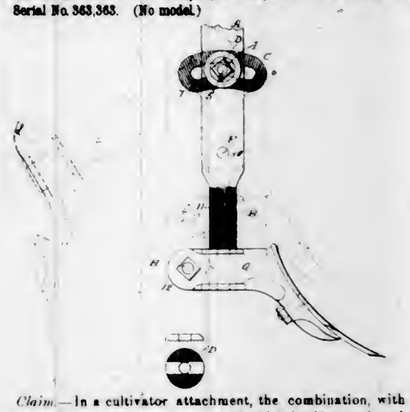
6. In a railway-car, the combination, with the swiveling truck or axle-frame carrying a single pair of wheels with their axle, of a downwardly-projecting guiding bar or device movable laterally with reference to the car-body and connected to said swiveling truck, said guiding bar or device projecting downwardly into or engaging in a longitudinal slot or groove in the roadway parallel to the rail of the track, whereby the lateral movement of said downwardly-projecting guiding bar or device produced by said slotted roadway will cause said axle to take a radial position on curved tracks, substantially as described.

444,185. CURRY-COMB. SETH ROGERS, Ballston Spa, N. Y. Filed May 7, 1890. Serial No. 350,930. (No model.)



Claim.—A curry-comb constructed from a spiral wire b, encircling a wire hoop a, substantially as shown, and for the purpose specified.

444,186. CULTIVATOR. CHARLES S. RUFF, Dixon, Ill., assignor to the Grand Detour Plow Company, same place. Filed Aug. 28, 1890. Serial No. 363,363. (No model.)



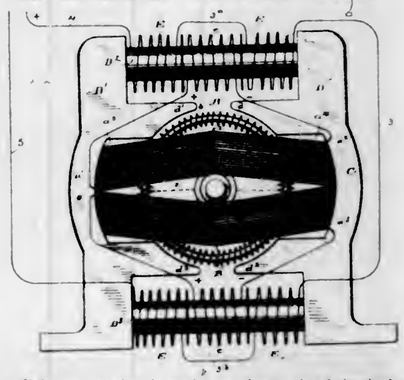
Claim.—In a cultivator attachment, the combination, with the shovel-bearing arm B, the upper end of which is bifurcated and provided with the slotted corrugated clamps and the break-pin holes and the lower end is round and provided with vertical corrugations, of a shovel-shoe G, suitably formed at its front end to receive the shovel and provided at its rear end with the rearwardly-extending elastic bifurcations, and having an inner cavity provided with vertical corrugations to conform with and fit upon the round corrugated portion of the arm B, and a transverse bolt H through the bifurcations, substantially as described.

444,187. CLEANING COMPOSITION. DAVID R. SUMNER, Franklin, Nebr. Filed May 28, 1890. Serial No. 353,487. (No specimens.)

Claim.—The herein-described composition of matter to be used in cleaning and removing stains from clothing and fine fabrics, consisting of beef-gall, cactus-root, soap, sal-soda, borax, oil of sassafras, and water, prepared and combined in substantially the proportions specified

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444,188. ELECTRIC MOTOR. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Mar. 22, 1889. Serial No. 304,234. (No model.)



Claim.—1. An electric motor comprising a closed-circuited armature having a coil in inductive relation thereto, a field-magnet and a single external source of current therefor, and coils in secondary relation to the coils of the field-magnet and connected to the induction coil of the armature.

2. In an electric motor for alternating or pulsating currents, an armature wound with a copper conductor or conductors connected in one or more closed circuits, an induction-coil placed over the armature, and a field-magnet having a primary and a secondary circuit or circuits, the said secondary circuit being connected to and energizing the induction-coil of the armature, substantially as described.

3. An electro-dynamic motor having a closed-circuited armature, an induction coil or coils over said armature, a primary circuit upon the core of the field-magnets arranged to receive current from an alternating or pulsating source, and a secondary circuit upon the field-magnets, the said secondary circuit being closed through the induction-

coil, which under the influence of the secondary currents induces tertiary magnetizing-currents in the armature, substantially as described.

4. An electro-dynamic motor comprising a stationary field-magnet, a stationary inducing system within the field-magnet and provided with coils arranged in inductive relation to the coils of the field-magnet and with coils in circuit therewith and in inductive relation to the armature, and an armature comprising one or more closed circuits rotatively mounted within the inducing system, whereby currents are produced in the armature to form poles therein, substantially as described.

5. In an electro-dynamic motor, a stationary field-magnet, a wire-wound armature, and a closed-circuit induction system surrounding the armature between the armature and field-magnet, part of its coils being wound in secondary relation to the field-magnet coils, whereby said inducing system is energized by secondary currents under the influence of primary currents of alternating or intermittent currents flowing in the field-magnet coils and acts inductively upon the armature to produce tertiary magnetizing-currents therein, substantially as described.

6. An electro-dynamic motor, a stationary field-magnet wound with magnetizing-coils in circuit with a source of alternating, pulsating, or intermittent currents, a wire-wound armature for said field-magnets, and a secondary inducing system surrounding the armature and arranged in inductive relation thereto, whereby the alternating or intermittent current traversing the coils of the field-magnets will produce secondary currents in the stationary inducing system, causing the latter to act inductively upon the armature to form tertiary magnetizing-currents therein, substantially as described.

7. An electro-dynamic motor comprising a stationary field-magnet, a closed-circuited armature rotatively mounted within the field of force, an inducing system comprising a secondary circuit in inductive relation to the field-magnet, energizing-coils surrounding the armature, and means for regulating the phases of current induced in the inducing system under the influence of the field-magnets when supplied with alternating or intermittent currents, substantially as described.

8. An electro-dynamic motor comprising a stationary field-magnet, a closed-circuited armature rotatively mounted within the field of force, an inducing system surrounding the armature, a secondary circuit in inductive relation to the field-magnet and energizing the coils surrounding the armature, and means for regulating the phases of current induced in the inducing system under the influence of the field-magnets when supplied with alternating or intermittent currents, substantially as described

9. An electric motor comprising a closed-circuited armature having a coil in inductive relation thereto, a field-magnet and a single external source of current therefor, coils in secondary relation to the coils of the field-magnet and connected to the induction-coil over the armature, and a regulating device placed in circuit between the secondary coils upon the field-magnets and the induction-coil over the armature.

10. An electro-dynamic motor comprising a stationary field-magnet, an armature rotatably mounted with respect thereto and having magnetizing-conductors upon its core, said conductors arranged to form one or more closed circuits thereon, an inducing system composed in part of an inducing-coil adjustably mounted between the poles of the field-magnet and the periphery of the armature, and means for adjusting the induction-coil with respect to the field-magnet poles.

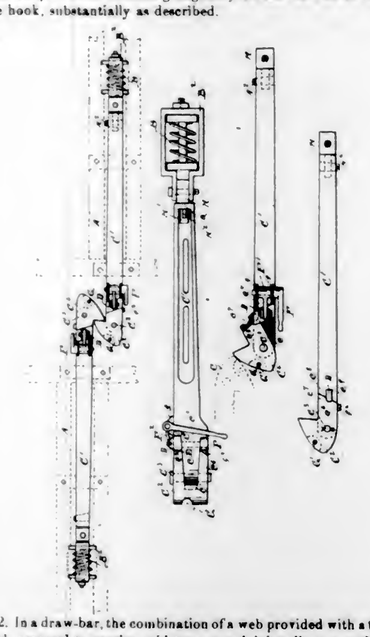
444,189. CRUTCH. LOUIS A. WILDBACK, Leadville, Colo. Filed Oct. 17, 1890. Serial No. 368,393. (No model.)



Claim.—A crutch or the like provided with an internally-screw-threaded ferrule projecting beyond the ends of the cane to provide a socket, in combination with a reversible removable plug, the same consisting of an externally-threaded cap adapted to screw into the socket in said ferrule, a spur projecting from one end of said sleeve, and an elastic cushion fitted in and projecting from the other end of said sleeve, substantially as shown and described.

444,190. DRAW-BAR FOR PASSENGER-CARS. DAVID WYLIE, Detroit, Mich. Filed Sept. 25, 1890. Serial No. 366,141. (No model.)

Claim.—1. In a draw-bar, the combination of the web, the hook jointedly engaged therewith, and a locking-pin constructed with an angular-shaped head extending angularly across the web at the rear of the hook, substantially as described.



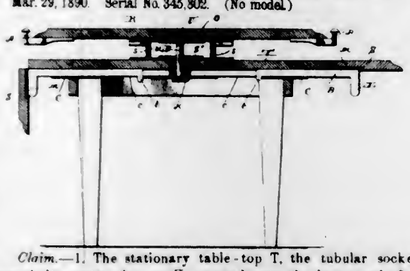
2. In a draw-bar, the combination of a web provided with a tongue, a hook recessed to receive said tongue and jointedly engaged therewith, a headed locking-pin engaged in the web at the rear of said hook, and an operating-lever to raise the bolt, substantially as described.

3. In a draw-bar, the combination of a web, a hook jointedly engaged therewith and provided with a shoulder c^3, a locking-pin located in said web at the rear of said hook, and an operating-lever connected with said pin, the construction and arrangement being such that when the bar is in an unlocked position said shoulder c^3 will ride under the head of said bolt and support the pin in a position to permit the coupling of the hook, substantially as set forth.

4. In a draw-bar, the combination of the web, the swinging hook, the operating-lever, and a locking-bolt, said bolt constructed with an angular-shaped head and an arm d, substantially as set forth.

5. In a draw-bar, the combination, with a web constructed with a tongue and a shoulder, of a swinging hook constructed with a shoulder c^3 and a locking-bolt having an augularly-shaped head located between said shoulders in its normally-locked position, said shoulder c^3 riding under said head in uncoupling the hook, substantially as set forth.

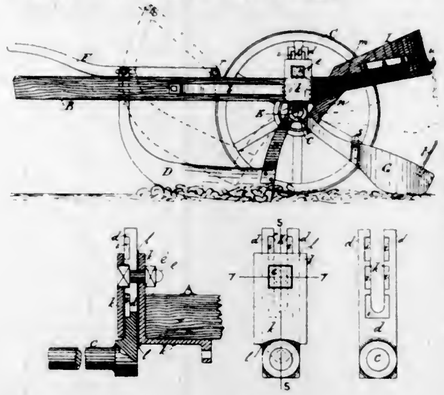
444,191. TABLE. JEFFERSON S. BORDEN, Valley Centre, Cal. Filed Mar. 29, 1890. Serial No. 345,802. (No model.)



Claim.—1. The stationary table-top T, the tubular socket S through its center, the cup K, screwed onto the lower end of said tube, and the stationary flange s, concentric with said tube, in combination with the revolving section R, a stud D at its center fitting in said tube, a concentric flange u around said stud fitting closely within said stationary flange s, and a lubricating-tube passing through the body of said section R and opening alongside said stud, all constructed as and for the purpose set forth.

2. The stationary top T and the upwardly-projecting circular flange s, rising from a plate S at the center thereof, in combination with the revolving section R, having a lubricating aperture through its body, the depending circular flange u at its center around said aperture, the lower edge of said flange resting upon said plate S just inside the stationary flange s, and a removable cap K, closing the cupshaped space formed by said plate S and upwardly-projecting flange s, all constructed substantially as and for the purpose hereinbefore set forth.

444,192. POTATO-PLANTER. ALEXANDER CHAPIN, Florisant, Mo. Filed May 12, 1890. Serial No. 351,532. (No model.)



Claim.—1. In a potato-planter, the combination, with the axle having adjustable spindles and a draft-beam, of a furrow-opener pivoted on the axle and having its forward end adjustably supported from the draft-beam, substantially as and for the purposes described.

2. In a potato-planter, the combination, with a T-frame composed of draft-beam and main axle, of adjustable spindles for said axle, a furrow-opener pivoted at its rear end to the axle and adjustable at its front end by means of a lever pivoted on the draft-beam, a hopper mounted upon the main frame in rear of the axle, and a furrow-closer pivoted at its front end to the axle and having a connecting-bar on its rear upper edge, forming a handle by which it may be suspended from the hopper, substantially as and for the purposes described.

3. In a potato-planter, the combination, with a main axle having adjustable spindles, of a furrow-opener pivoted at its rear on the axle and furrow-closers pivoted at the front ends on the said axle and having foot-rests for holding the same in the ground, substantially as and for the purposes described.

4. In a potato-planter, the combination, with the main axle, of a vertically-channeled plate secured thereto and having holes therein for the passage of a clamping-bolt, a spindle having an arm at right angle thereto, adapted to fit in said channel, said extension or arm having an open slot therein, and a series of recesses each side of said slot for the reception of the head of the clamping-bolt, substantially as and for the purposes described.

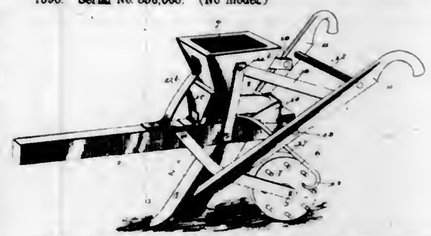
5. In a potato-planter, the combination, with the axle, of a furrow-opener pivoted at its rear end on said axle, a gravity furrow-closer pivoted at its front end on said axle, and a hopper which delivers immediately below the axle and between the furrow opener and closer, whereby the several parts have a common center of support, substantially as and for the purposes described.

6. In a potato-planter, the combination, with the main axle, draft-beam, and through-bolt, of a furrow-opener, and a furrow-closer pivoted on the axle, a bar in the form of a handle connecting the furrow-closers, and a hopper secured to the frame, having a rear extension in the path of the handle for retaining the same in a raised position, substantially as and for the purposes described.

7. In a potato-planter, the combination, with the main axle, of end plates for the reception of adjustable spindles, said end plates having bearings for a through-bolt which connects said end plates, a through-bolt which connects said end plates and forms a pivot for the furrow-opener and furrow-closer, and a furrow-opener and a furrow-closer pivoted on said through-bolt, substantially as and for the purposes described.

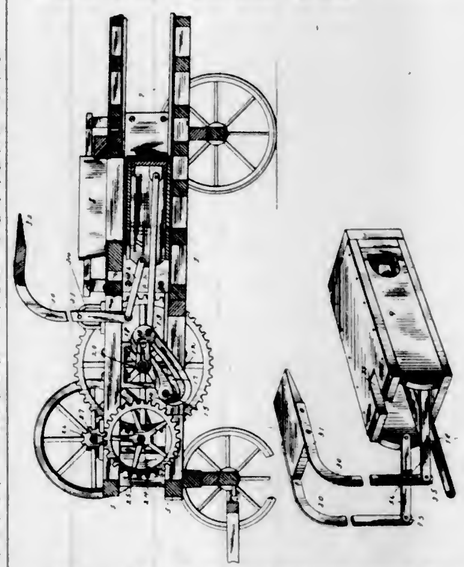
8. In a potato-planter, the combination, with the axle, of end plates having vertical channels with transverse bolt-slots, spindles having bifurcated arms at right angles to the spindles, adapted to enter the channels in the end plates of the axle, and said bifurcated arms provided with recesses for the reception of a bolt-head, and bolts and nuts for securing the spindle-arms in the end plates of the axle, substantially as and for the purposes described.

444,193. FERTILIZER-DISTRIBUTER. WILLIAM C. BYERS, Grover, N. C., assignor of one-half to James A. Ware, same place. Filed July 8, 1890. Serial No. 358,065. (No model.)



Claim.—In a machine of the class described, the combination of the beam, the standard, the feed-tube upon the rear side of the latter, the perforation in the beam forming an upward extension of said feed-tube, the hopper mounted pivotally between brackets connected with the beam and the handles, the spring mounted upon the beam and bearing against the front side of the pivoted hopper, the shoe hinged upon the upper side of the beam under the hopper and having a hooked arm, and the drive-wheel journaled between brackets extending in rear of the standard and having laterally-extending pins engaging the said hooked arms, substantially as and for the purpose set forth.

444,194. BALING-PRESS. DANIEL A. KENNA, Eagle Grove, Iowa. Filed Mar. 19, 1890. Serial No. 344,565. (No model.)



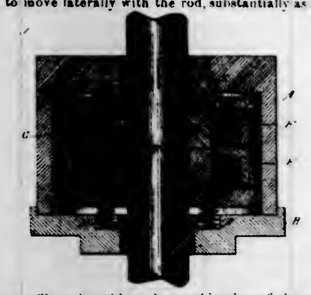
Claim.—In a hay-press, the feeding mechanism consisting, essentially, of three elements, to wit: a pair of L-shaped levers 30, similar in construction and having their upper bent ends extending horizontally over the feed-opening when in their normal position and provided with a rigid block 32, secured between them, the shaft 33, on which the levers are fulcrumed, and the pivoted rods or bars connecting the lower ends of the levers 30 directly to the plunger, as set forth.

444,195. METALLIC ROD-PACKING. EDWIN P. MONROE, Philadelphia, Pa. Filed Aug. 9, 1890. Serial No. 361,534. (No model.)

Claim.—1. In a metallic rod-packing, the combination, with a main casing and the movable parts adapted to accommodate the lateral movements of the rod, joined steam-tight and subject to steam-pressure, and ports and chambers arranged between these movable parts, as shown, so as to counterbalance the steam-pressure, substantially as set forth.

2. In a metallic rod-packing, the combination, with the cap-plate K and the follower M, each made in two parts bolted together, and the rod D, of the Babbitt-metal bushings L and m, substantially as set forth.

3. In a metallic rod-packing, the combination, with the rod and packing-rings, of a cap-plate made in two parts bolted together, and a follower made in two parts and bolted together with tapering pins and adapted to move laterally with the rod, substantially as set forth.



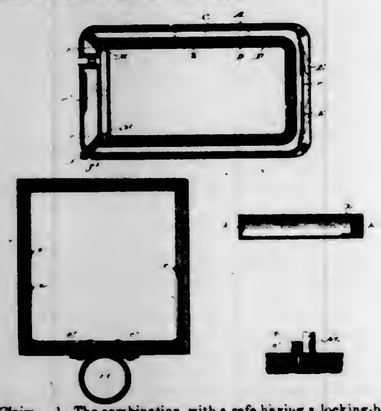
4. In a metallic rod-packing, the combination of the casing and the packing contained within the casing, and a plate through which the rod passes, composed of separable parts united together by tapering pins and adapted to move laterally with the rod, substantially as set forth.

444,196. CLINOMETER OR SLOPE-MEASURER. JAMES H. PARKS, Clarendon, Tex. Filed July 29, 1889. Serial No. 319,123. (No model.)



Claim.—A measuring-instrument comprising the square composed of the stationary short bar or arm 3 and the stationary long bar or arm 2, rigidly secured to one side of the short arm or bar and provided on its face 5 with a spirit-level and having a scale of graduations of which the length of the short bar or arm is the unit, the curved brace connecting the said parts, and the movable bar 4, hinged to the short bar or arm and adapted to move freely across the face of the long arm or bar, substantially as described.

444,197. SAFE. JOHN J. & H. PAYNE, Lipscomb, Tex. Filed May 31, 1890. Serial No. 353,782. (No model.)



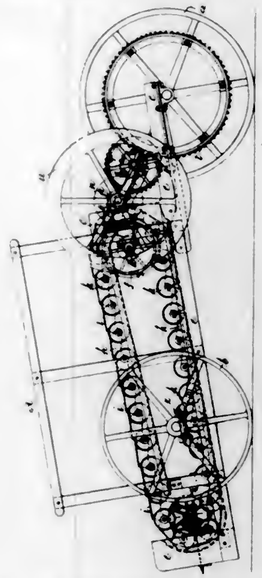
Claim.—1. The combination, with a safe having a locking-bolt, of a chamber containing condensed gas and a tube or extension thereof lying in the path of the locked bolt, whereby any attempt to force the safe will rupture the tube and permit the gas to escape, substantially as described.

2. The combination, with a safe having a locking-bolt and hollow walls forming a chamber containing condensed gas, of tubes or extensions communicating with said chamber and projecting into the path of the locked bolt, substantially as described.

3. The combination, with a safe having a chamber containing condensed gas, of a tube communicating with said chamber and having the solid end projecting into the path of the locked bolt, substantially as described.

4. The combination, with a safe having a chamber containing condensed gas, of a tube communicating with said chamber and having the solid end projecting into the path of the locked bolt, with the groove or weakened portion at the base of the solid end, substantially as described.

444,198. ROAD OR FIELD ROLLER. EDWARD PRATT, Uxbridge, County of Middlesex, England. Filed Apr. 22, 1890. Serial No. 348,969. (No model.) Patented in England Mar. 21, 1888, No. 4,370, and in France Jan. 26, 1889, No. 195,652.

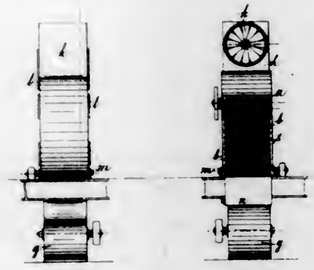


Claim.—1. The combination of the heavy roller *a*, endless traveling platform *i*, and gear *m*, *n*, *p*, *r*, *s*, and *t*, substantially as set forth and shown.

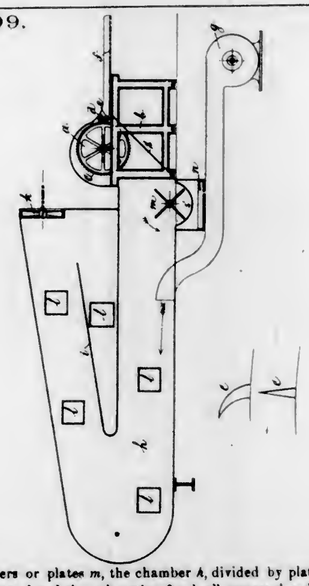
2. In combination with the traveling platform *i*, heavy roller *a*, and gear *m*, *n*, *p*, *r*, *s*, and *t*, the toothed wheels *m n*, toothed wheels and pinions *r* or *x*, and clutches and handle *y* for reversing the direction of movement of the heavy roller, substantially as set forth and shown.

444,199. APPARATUS FOR CLASSIFYING AND FINISHING PEAT FIBER. GEORGES H. BÉRAUD, Maestricht, Holland. Filed May 13, 1890. Serial No. 351,614. (No model.) Patented in England June 14, 1888, No. 8,742; in Belgium Mar. 26, 1889, No. 85,564; in France Mar. 27, 1889, No. 197,006; in Germany Apr. 13, 1889, No. 50,304; in Norway June 11, 1889, No. 1,541; in Italy June 12, 1889, No. 25,640, and in Canada Nov. 19, 1889, No. 32,867.

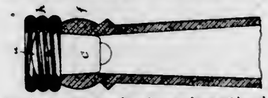
Claim.—In a machine for finishing and classifying peat fiber, the combination, with the revolving toothed drum or cylinder *a* and rollers *b c* for feeding in the fiber, of the dividing-plate *s*, the fan *g*, the revolving beaters or plates *m*, the chamber *A*, divided by plates *i* and having openings *l*, and the exhausting-fan *k*, all arranged and operating substantially as set forth and shown.



444,199.



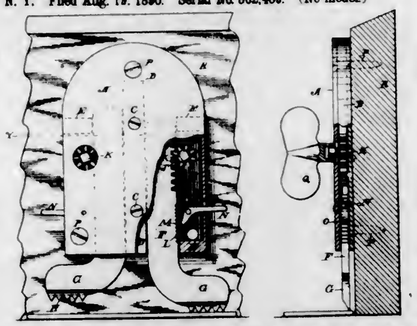
444,200. BOTTLE-STOPPER. GERARD C. CLARK, London, England. Filed Mar. 1, 1890. Serial No. 342,263. (No model.)



Claim.—1. A bottle-stopper made of one piece of hard material, having a screw-threaded head and having its stem or body which enters the bottle-neck covered with a ring of elastic material and provided with a screw-threaded cap or ring adapted to engage with such head, whereby the screwing down of such ring or cap against the top of the bottle-mouth serves to raise and loosen the stopper.

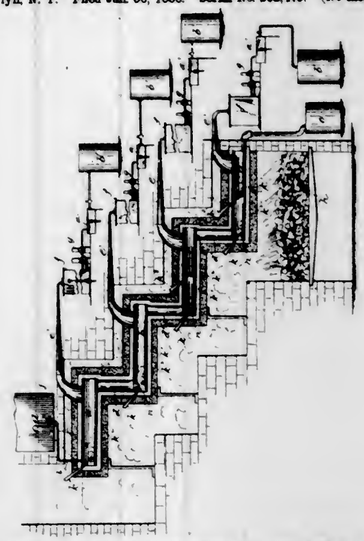
2. A bottle-stopper having a screw-head *c* and the stem *a*, all in one piece, this head having the larger diameter, and which is greater than that of the mouth of the bottle, and the stem having a diameter less than that of such mouth and having an annular groove *b* near its bottom, and provided with an elastic tube *c*, sprung on such stem, and whose lower end only enters such groove, all substantially as set forth.

444,201. CARPET-FASTENER. ROBERT J. JOHNSON, New York, N. Y. Filed Aug. 19, 1890. Serial No. 362,409. (No model.)



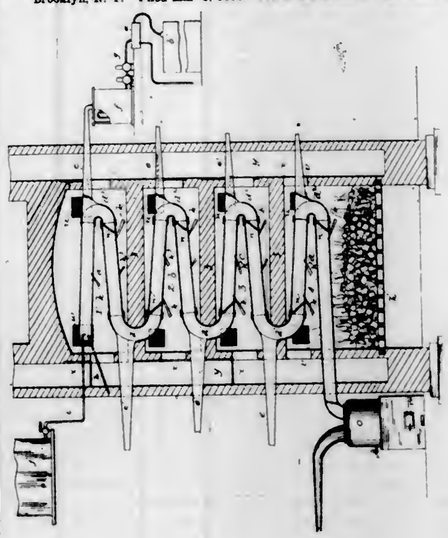
Claim.—A carpet lock or clamp composed of a case having therein one or more vertically-movable rack-bars, with an arbor and pinion for moving said bar, and pawl-and-ratchet teeth for holding the same, said rack-bar having its lower end serrated to engage with the carpet, substantially as set forth.

444,202. PROCESS OF DISTILLING OIL. ALLAN MASON, Brooklyn, N. Y. Filed Jan. 30, 1888. Serial No. 262,475. (No model.)



Claim.—The process of continuous fractional distillation of petroleum and other analogous oils in repeated steps of continuous succession and increased heat in which the previously unvaporized oil is successively treated, which consists of introducing the oil and steam together and causing the instantaneous junction of the same collectively in an atomized condition in the several heated chambers successively, instantaneously separating in the several chambers the portions vaporable by the respective temperatures, accelerating the movement of both the vaporized and unvaporized oil along the retort-chambers to their respective exit-passages by the impulse of the steam-jets, exposing the vaporized portions all alike to the same conditions of time and heat in the respective chambers, similarly exposing all the unvaporized portions therein, and likewise and instantaneously removing both the vaporized and unvaporized portions to the condensers and successive sections of the retort, respectively, so that all portions of each have like exposure to the heat and steam in the respective chambers, substantially as described.

444,203. APPARATUS FOR DISTILLING OIL. ALLAN MASON, Brooklyn, N. Y. Filed Mar 8, 1888. Serial No. 266,558. (No model.)



Claim.—1. The combination, in a still for continuous fractional distillation, of the continuous pipe-retort, comprising a series of successive chambers, each having the oil-inlet and a steam-injector at the receiving end impinging the steam jet directly on the entering stream of oil, so as to instantly atomize it in one body and project the same along the chamber to the opposite end, and each section having a vapor-exit and an oil-exit thereat, through which the vapor and oil respectively escape, the one to the condenser and the other to the next section of the retort, the arrangement being such that all of both the vapor and the unvaporized oil have like exposure as to heat and time in the respective sections of the retort, substantially as described.

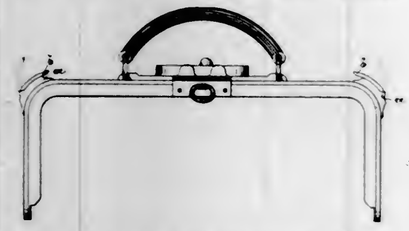
2. The combination, in a still for continuous fractional distillation, of the continuous pipe-retort, comprising a series of successive chambers, each having the oil-inlet and a steam-injector at the receiving end impinging the steam jet directly on the entering stream of oil, so as to instantly atomize it in one body and project the same along the chamber to the opposite end, and each section having a vapor-exit and an oil-exit thereat, through which the vapor and oil respectively escape, the one to the condenser and the other to the next section of the retort, the arrangement being such that all of both of the vapor and the unvaporized oil have like exposure as to heat and time in the respective sections of the retort, the furnace underneath said pipe-retort made in separate sections, each containing a section of the retort, the flues at the opposite extremities of the chambers and the passages and dampers causing the regular or irregular traverse of the heat products through the successive sections of the furnace, substantially as described.

444,204. COMBINED LETTER-COPYING PRESS AND BOOK. ORVILLE N. MCCLINTOCK, Topeka, Kans. Filed July 31, 1888. Serial No. 281,593. (No model.)



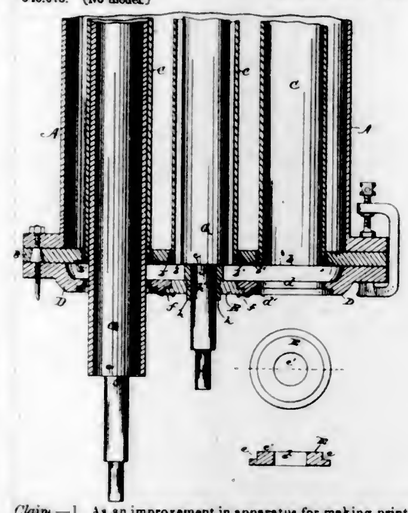
Claim.—The hereinbefore-specified letter-copying press and book, composed of a hollow spring-metal roller having its edges overlapping, and a book held by a lateral clamping pressure between the opposing sides of the said overlapping edges, which edges under pressure slide past each other and positively clamp the book.

444,205. TRAVELING-BAG FASTENING. JOHN BAUNACH, Newark, N. J. Filed May 31, 1890. Serial No. 353,801. (No model.)



Claim.—A snap-catch for bag-frames, consisting of a case adapted to be secured to the outside jaw of said frame, a finger-piece carrying a tail-piece and laterally-projecting pivots or journals, said finger-piece lying outside of said case and the tail-piece passing through said case and bag-frame, and said pivots having their bearings inside of said case, a spring arranged to bear upon said pivots to hold the parts in an open or closed position, two oppositely-projecting hooks secured to the inner jaw of said bag-frame, one of which is adapted to automatically engage in holding relation with said tail-piece when the bag is closed, and the other when the bag is being opened, to automatically engage with and throw said tail-piece back into position to engage again with the opposite hook when the bag is being closed, substantially as described, for the purposes set forth.

444,206. APPARATUS FOR MAKING PRINTERS' ROLLERS. LEANDER K. BINGHAM, New York, N. Y. Filed Apr. 5, 1890. Serial No. 346,675. (No model.)

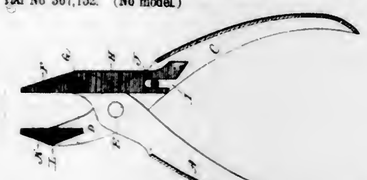


Claim.—1. As an improvement in apparatus for making printers' rollers, a removable bottom provided with perforations having a diameter greater than that of the rollers to be made, as set forth.

2. The combination of the frame or casing having the mold-tubes with the removable bottom provided with perforations having a diameter greater than that of the rollers to be made and registered with the holes in the lower head of the casing, as set forth.

3. The combination of the frame or casing having the mold-tubes, the removable bottom provided with the perforations having a diameter greater than that of the rollers to be made and registered with the holes in the lower head of the casing, and the annular plates fitting in the perforations, as set forth.

444,207. PLIERS. FREDRICH W. BROCKSIEPER, New Haven, Conn., assignor to Sargent & Company, same place. Filed Oct. 6, 1890. Serial No. 367,152. (No model.)

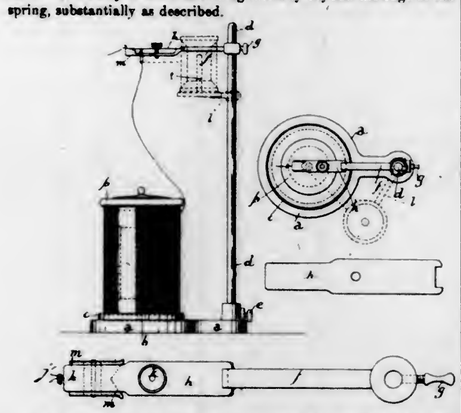


Claim.—A pair of pliers consisting of a pair of levers crossing each other and pivoted together at the crossing, the arms on one side of the pivot forming handles, with a jaw hung upon a pivot in the other arm of one of said levers and in slotted connection with a pivot on the handle-arm of the other lever, the said pivots upon which the said jaws are hung being substantially equidistant from the pivot on which the levers swing, combined with a second jaw hung upon the other arm of the said other lever and so as to rock in the plane of the swing of the levers, the said second jaw presenting a flat face toward the said first jaw, substantially as described.

444,208. THREAD-UNWINDING AND TENSION DEVICE FOR SEWING-MACHINES. ROBERT K. CLARK, Newark, N. J. Filed Aug. 9, 1890. Serial No. 361,547. (No model.)

Claim.—1. In a tension device, in combination with a seated spring, a set-screw controlling the same, a pivoted plate beneath the spring and supporting the free end of the same, and an arm upon which said plate is pivoted, said plate being V-shaped at its end next the confined end of the spring, and said arm being provided with a passage-way for the thread below the apex of said V, substantially as described.

2. In a tension device, in combination, a seated spring, a set-screw controlling the same, a plate beneath the spring and supporting the free end of the said spring, and an arm supporting the plate, the said plate being V-shaped at its end next the confined end of the spring and the extremity of the V extending laterally beyond the edge of the spring, substantially as described.



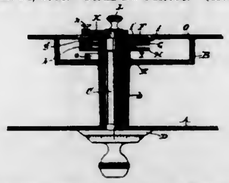
3. In combination, the base *a*, adapted for the stationary support of a long-length spool, a standard *d*, a bracket *l* secured thereto, adapted for the support of a revolving short-length spool, a tension device, means for varying the tension thereof, and an arm adapted to support said tension device axially with respect to the first-named spool and radially with respect to the last-named spool, substantially as set forth.

444,209. FELTING FUR BODIES. HOWARD W. FLAGG, Yonkers, N. Y. Filed May 12, 1890. Serial No. 351,529. (No specimens.)

Claim.—1. A method of felting fur bodies, consisting in working them in a fulling-mill, together with other fibrous bodies employed, in sufficient quantities to form a padding for them and prevent them from being injured or torn by the hammers of the fulling-mill, substantially as described.

2. A method of felting fur-hat bodies, consisting in working them in a fulling-mill simultaneously with wool-hat bodies employed in sufficient quantities to form a padding for the fur-hat bodies and prevent them from being injured or torn by the hammers of the fulling-mill, substantially as described.

444,210. PERMUTATION-LOCK. WILLIAM B. FOLGER, Cincinnati, Ohio. Filed Mar. 24, 1890. Serial No. 345,061. (Model.)

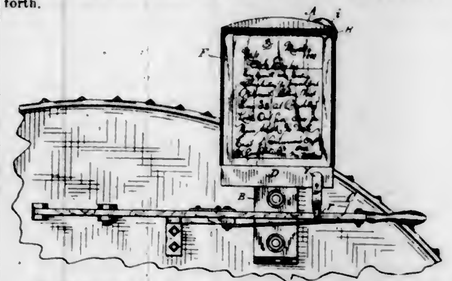


Claim.—1. The combination of the lock-arbor, the piece E, furnishing the inner bearing for the arbor and the journal-bearings for the tumblers fitted to revolve upon said bearing, the inner driving-tumbler F, having teeth *f'* radially arranged upon its face, and the radial arm K, secured upon said arbor and having pin *k* to enter the spaces between said teeth and couple the driving-tumbler to the arbor, substantially as shown and described.

2. The combination of the arbor, the piece E, furnishing the inner bearing for the arbor and the journal-bearings for the tumblers, the inner driving-tumbler F, having teeth *f'*, the radial arm K, secured upon said arbor and having pin *k* to couple the driving-tumbler and arbor, and the spring M between the inner tumbler and shoulder of piece *e* to press the tumblers inward and normally hold the driving-tumbler in engagement with the radial arm K, substantially as shown and described.

444,211. ENGINEER'S ORDER BULLETIN-BOARD. CHARLES W. KEMP, Charleston, Ill. Filed Apr. 12, 1890. Serial No. 347,663. (No model.)

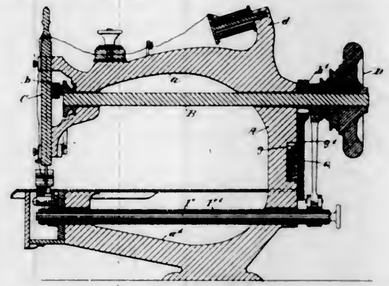
Claim.—1. In a bulletin-board, the combination of the board, the bar forming an extension of the board, the glass plate secured to the bar and arranged to cover the face of the board, and a spring-hinge connecting the bar and the board and arranged to hold the glass plate against the face of the board, substantially as and for the purpose set forth.



2. In a bulletin-board, the combination of the board, the bar forming an extension of the board, the glass plate secured to the bar and arranged to cover the face of the board, the spring-hinge connecting the bar and the board and arranged to hold the glass plate against the face of the board, and the opaque backing-plate arranged between the glass plate and the board, all arranged to co-operate substantially as set forth.

3. The combination of the bulletin-board adapted to hold and display an order-sheet, the throttle-lever, the bent lever pivoted to the bulletin-board and arranged with its free end in the path of said throttle-lever, the bell, the hammer arranged to strike the bell, and intermediate connecting mechanism connecting the bent lever and the hammer, all arranged to co-operate substantially as specified, whereby the act of moving the throttle-lever operates to strike the bell and to call attention to the bulletin-board, as set forth.

444,212. SEWING-MACHINE. MARTIN KRAMER, New York, N. Y., assignor to Eli W. Broadbent, same place. Filed Apr. 25, 1890. Serial No. 349,472. (No model.)



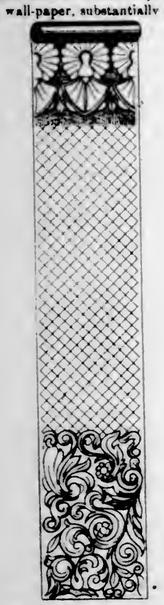
Claim.—1. In a sewing-machine, the combination, with a reciprocating needle, of a rock-shaft, a looper fixed thereon, a drive-shaft, and a bar having a longitudinally-sliding movement in a fixed line and connecting the drive-shaft and rock-shaft, through which a rocking motion is transmitted to the rock-shaft, substantially as set forth.

2. In a sewing-machine, the combination, with a reciprocating needle, a rock-shaft, a looper on the rock-shaft, a drive-shaft, and a cam on the drive-shaft, of a bar having a longitudinally-reciprocating movement in a fixed line, said bar being provided at one end with a loop to embrace the cam and at the opposite end with an arm eccentrically connected with the rock-shaft, substantially as set forth.

3. In a sewing-machine, the combination, with two concentric rock-shafts, one for actuating the looper and one for actuating the feed, of a feed-bar support located at one side of said actuating-shafts, a feed-bar having a limited longitudinal sliding movement on its support and also a swinging movement thereon, a cam on the looper-actuating shaft in engagement with the feed-bar to give it its swinging movement, and an arm on the feed-actuating shaft engaged with the feed-bar, so as to admit of a free movement of the bar toward and away from the actuating-shaft and at the same time cause the feed-bar to move longitudinally with the swinging of the arm, the engagements of the cam and arm on the two concentric shafts with the feed-bar being at points intermediate of the feed-bar support and its free end, substantially as set forth.

444,213. WALL-PAPER. NOBLE R. STRETTER, Brooklyn, N. Y. Filed Feb. 15, 1889. Serial No. 299,998. (No specimens.)

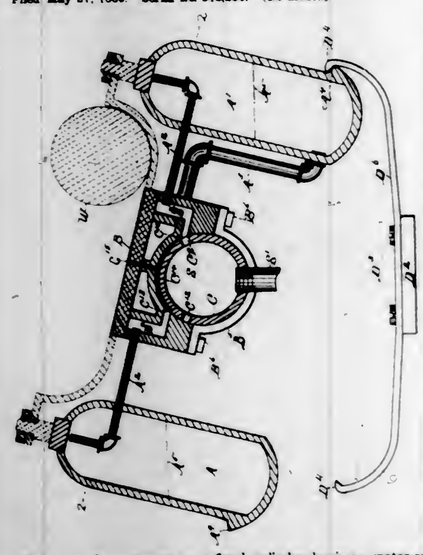
Claim.—1. As a new article of manufacture, a roll of wall-paper containing strips or lengths, each of which strips or lengths has combined a border with the wall-paper, substantially as described.



2. As a new article of manufacture, a roll of wall-paper containing strips or lengths, each of which strips or lengths has combined a dado with the wall-paper, substantially as described.

3. As a new article of manufacture, a roll of wall-paper containing strips or lengths, each of which strips or lengths has combined a border and dado with the wall-paper, substantially as described.

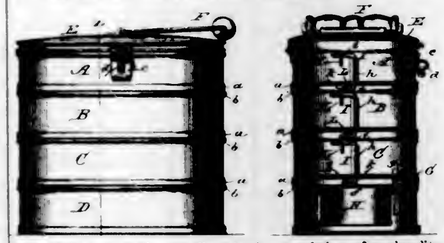
444,214. **STEAM-TRAP.** CHARLES A. SULEMAN, Waterford, N. Y. Filed May 27, 1889. Serial No. 312,250. (No model.)



Claim.—1. In a steam-trap, a fixed cylinder having a water-receiving chamber and eduction-ports at one end, a water-receiving chamber and induction-ports at the other end, and a central steam-chamber and eduction-ports, in combination with a water-supply pipe, a water-discharge pipe, a steam-supply pipe, a valve-case having one side concaved to fit such cylinder, substantially as described, and provided with water and steam chambers and ports leading therefrom adapted to alternately register with the cylinder-ports, substantially as described, two oppositely-located water-tanks supported by the valve-case, a steam-pipe connecting the upper end of each tank with a steam-chamber in the valve-case, a water-pipe connecting the lower end of each tank with a water-chamber in the valve-case, and means for controlling the rocking movements of the valve-case, as spring D^6 and engaging ledges A^4 upon the tanks, substantially as described.

2. In a water-trap having a pair of oppositely-located water-tanks supported by a valve-case adapted to rock upon a chambered cylinder, each connected with the case by a live-steam pipe, valved air-vents consisting of a duct C^{15} in the valve-case leading to a groove C^{14} in the periphery of the cylinder, valved ports C^{10} and C^{12}, adapted to alternately register with such groove, and steam-pipe A^3, substantially as described.

444,215. **DINNER-PAIL.** HORACE B. ADAMS, Owego, N. Y. Filed July 25, 1890. Serial No. 359,888. (No model.)



Claim.—1. A dinner pail or bucket consisting of a plurality of separable sections and means for securing them together, consisting of fastening devices which are wholly within the pail or bucket and engaging projections upon the interior walls of said sections, substantially as and for the purpose set forth.

2. In a dinner pail or bucket, the combination, with a plurality of separable sections, of means for securing them together, consisting of fastening devices wholly within said pail or bucket, the fastening device of one section extending down through the bottom thereof and engaging with a projection upon the inner walls of the section below it, substantially as and for the purpose described.

3. In a dinner pail or bucket, the combination, with a plurality of separable sections, of means for securing them together, consisting of fastening devices which are wholly within said pail or bucket, extending between adjacent sections thereof and engaging projections on the interior walls of both, substantially as and for the purpose specified.

4. In a pail or bucket, the combination, with a plurality of sections composing the same, of a plurality of fastening devices consisting of pivoted latches and keepers located within the sections and operating to lock or fasten the sections together, substantially as and for the purpose described.

5. In a pail or bucket composed of separable sections, the combination therewith of fastening devices for connecting said sections together, consisting of pivoted latches having catches at their upper and lower ends and located within the sections and engaging with keepers upon the interior walls of the sections, substantially as and for the purpose set forth.

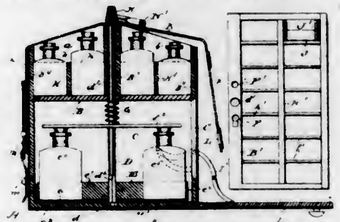
6. A pail or bucket composed of a plurality of separable sections detachably connected together, the lower one of said sections having a top with an opening and an upwardly-extending flange around the same, and a drinking-cup having a flanged bottom and held within said opening, substantially as and for the purpose specified.

7. In a pail or bucket, the combination, with the separable sections composing the same, of fastening devices for connecting them together, consisting of pivoted latches extending down through the bottoms of said sections and having catches at its ends above and below the bottoms, and keepers with which the catches engage, the latches and keepers being located wholly within the sections, substantially as and for the purpose set forth.

8. In a pail or bucket, the combination, with the separable sections thereof, of fastening devices located wholly within said sections and consisting of pivoted latches extending through the bottoms thereof and having catches extending at an angle to the body or vertical portion of the latch, and keepers with which the upper and lower catches of the latch engage, one of which has a notch to form a seat for the upper one of said catches, substantially as and for the purpose described.

444,216. **MEDICINE-CASE.** LEVI I. BODENHAMER, Kernersville, N. C. Filed Apr. 5, 1890. Serial No. 346,665. (No model.)

Claim.—1. The herein-described cabinet, divided into a lower and two upper compartments, a revoluble stand in the lower compartment, and the hinged drop-leaf secured to the cabinet, limited in its downward movement by a hinged brace, substantially as described.



2. The combination, with a cabinet divided into compartments, the upper two provided with receptacles, of the revoluble stand carried by a shaft in the lower compartment, said shaft having a point of bearing in a socket in the bottom of the cabinet and carrying at its upper end a milled head, substantially as described.

3. The combination, with a cabinet divided into compartments, of a revoluble stand in the lower compartment carried by a shaft, and vertical rods supported and guided in the cabinet and carrying a retainer-plate adapted to be forced down upon the stoppers in the bottles on the revoluble stand, substantially as described.

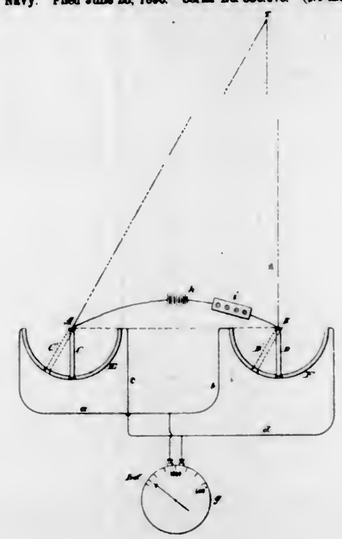
4. The combination, with a cabinet divided into compartments, of a revoluble stand in the lower compartment carried by a shaft, vertical rods supported and guided in the cabinet and carrying a retainer-plate adapted to be forced down upon the stoppers in the bottles on the revoluble stand, and a spring-controlled pin adapted to enter an opening in the depressor-knob, substantially as described.

5. The combination, with a cabinet constructed as described, of a spring-controlled retainer-plate carried by rods within the cabinet, adapted to be held in its lowered position by a pin entering an opening in a depressor-knob on one of the rods, substantially as described.

6. The combination, in a cabinet divided into a lower and two upper compartments, of a revoluble stand in the lower compartment, hinged drop-leaf secured to the cabinet, and flexible lids for said cabinet provided with dependent flaps having suitable fastenings at their lower edge, substantially as described.

7. The combination, in a cabinet divided into a lower and two upper compartments, the said lower compartment having an opening in the side, of a revoluble stand carrying bottles in said lower compartment, a hinged drop-leaf, and a flexible lid covering one of the upper compartments and the opening in the lower compartment, substantially as described.

444,217. **ELECTRICAL RANGE-FINDER.** BRADLEY A. FISKE, U. S. Navy. Filed June 26, 1890. Serial No. 356,673. (No model.)

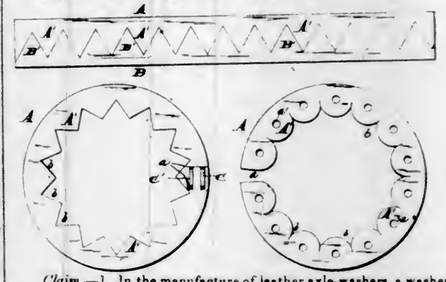


Claim.—1. The improvement in the art of finding the range of a distant object, which consists in determining a fractional portion of a conducting-body bearing in length a ratio to the angle included between two lines of sight directed upon a distant object and simultaneously causing a disturbance in an electrical balance including said body in its circuit proportional to the resistance of said fractional portion, and, second, observing the difference in potential in the said circuit due to said disturbance.

2. The improvement in the art of finding the range of a distant object, which consists in determining a fractional portion of a conducting-body bearing in length a ratio to the angle included between two lines of sight directed upon a distant object and simultaneously causing a disturbance in an electrical balance including said body in its circuit proportional to the resistance of said fractional portion, and, second reading directly from the suitably-marked scale of an electrical measuring-instrument constructed to measure the amount of said disturbance, the range corresponding to said angle between the lines of sight

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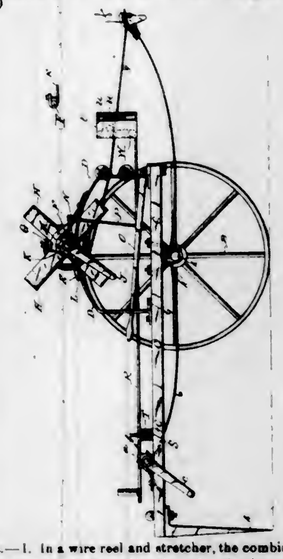
444,218. **AXLE-WASHER.** TIMOTHY GINGRAS, Buffalo, N. Y. Filed Aug. 8, 1890. Serial No. 361,437. (No model.)



Claim.—1. In the manufacture of leather axle-washers, a washer-blank of proper width and thickness having on one or both of its longitudinal edges serrations, as described, whereby a wide blank may be readily formed into a washer without upsetting the material, as and for the object stated.

2. A leather axle-washer formed from a blank of proper width and thickness and having serrations in one of its longitudinal edges and the meeting ends united by a suitable fastening, as stated.

444,219. **REEL FOR WINDING AND UNWINDING WIRE.** DAVID GROVE, Ellsworth, Ill. Filed Mar. 15, 1890. Serial No. 343,964. (No model.)

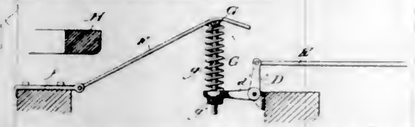


Claim.—1. In a wire reel and stretcher, the combination, with an axle F and a spool engaging said axle, a shunting-lever pivoted below the spool, carrying a horizontal roller and vertical rollers for guiding

the wire, and horizontal rollers located independently in front of the vertical rollers, of windlass *a*, journaled in the frame, a rope secured to said windlass, and a clamp secured to the rope, adapted to engage and stretch the wire, substantially as set forth.

2. In a wire stretcher and reel, the combination, with an axle F, journaled in the arches D, and a spool engaging said axle, a shunting-lever pivoted below the spool, carrying a horizontal roller and vertical rollers for guiding the wire, and horizontal rollers located independently in front of the vertical rollers, of the windlass *a*, journaled in the frame, a rope secured to said windlass *a*, a clamp secured to the rope, adapted to engage and stretch the wire, and rigid anchors secured to the ends of the shafts, substantially as shown and described.

444,220. **SWITCH.** MATHIAS N. JONES, Escanaba, Mich. Filed Sept. 9, 1890. Serial No. 364,445. (No model.)

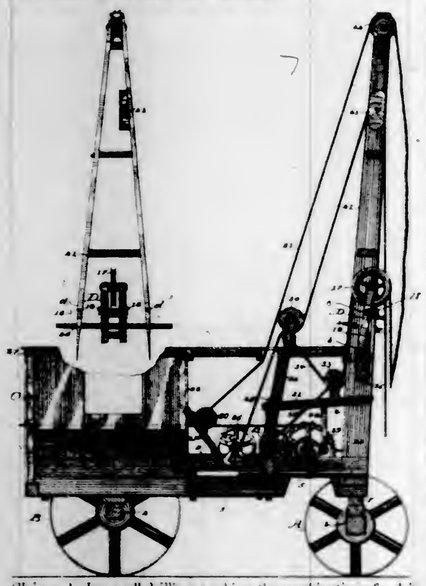


Claim.—1. The combination of the laterally-movable switch-rails C C', a lever D, connected thereto, a lever D', connected to the lever D, a swinging lever F, and a spring G, interposed between the levers F and D', substantially as and for the purpose described.

2. The combination of the laterally-movable switch-rails C C', a bell-crank lever D, connected thereto, a similar lever D', connected to the lever D, a swinging lever F, adapted to be depressed by the pilot of a passing locomotive to operate the device, and a spring G, placed between the levers F and D', such spring having sufficient resistance to move the switch-rails when empty, but to be compressed without moving such rails when the same are occupied, substantially as described

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444,221. **WELL-DRILLING MACHINE.** MARTIN B. MILLER, Carlisle, Pa., assignor of one-half to Theodore Cornman, same place. Filed Oct. 24, 1889. Serial No. 327,986. (No model.)



Claim.—1. In a well-drilling machine, the combination of a driving-shaft, a gear-wheel loose thereon, a clutch for said gear-wheel, a crank-shaft carrying a gear-wheel meshing with the driving-shaft gear and provided with a crank-head having a cross-plate 41, forming a shoulder across its face, a crank loose on the crank-head, a walking-beam having a sheave bearing on the drill-rope, the pitman connecting the crank to the walking-beam, and a bumper against which the walking-beam strikes, substantially as described.

2. In a well-drilling machine, the combination of a vertically-arranged standard provided with a bearing on its rear face, a walking-beam having plates secured to its side faces and extending beyond the rear end thereof and against the sides of the standard and provided with a journal arranged in the bearing on the rear face of the standard the rope or chain 34, having one end connected with the said standard, and the sheave 33, carried by the walking-beam and bearing on the said rope or chain, substantially as described.

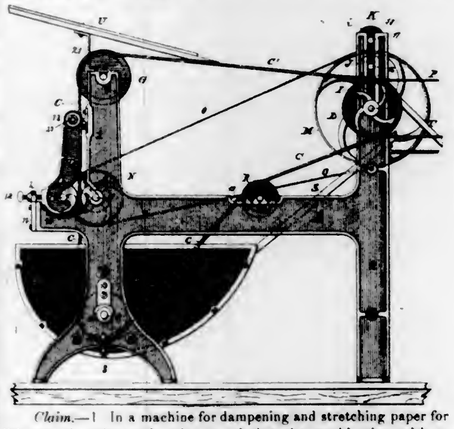
3. In a well-drilling machine, the combination, with the derrick having a cross-bar 15 and the drill-rope proper passing over a pulley in the derrick, of the swinging frame on said cross-bar having the sheave 17, the vertical standard, the walking-beam connected thereto, the buffer-block 35 on the bar 15 and in the path of the walking-beam, the sheave 33, adjustable on the walking-beam, the rope or chain 34, attached to the vertical standard and passing under the sheave 33 and over the sheave 17 and connected to the drill-rope proper, and the crank connected to the walking-beam, all arranged substantially as described.

4. In a well-drilling machine, the combination, with the derrick, of the swinging frame D, mounted thereon and carrying a sheave, rope or chain 34, fixed to some part of the machine and passing over the said sheave to the drill-rope proper, to which it is secured, and the walking-beam connected with the rope or chain 34 for operating the drill-rope, substantially as described.

5. In a well-drilling machine, the combination, with the bull-wheel, of a sliding box 90, a journal-rod therein carrying the gear and the hand-crank, and a crank-shaft 94, having a cam adapted to move the sliding box and thereby throw the gear into or out of mesh with the bull-wheel, substantially as and for the purpose specified.

6. In a well drilling machine, the combination, with the bull-wheel, of a slotted housing, the vertically-movable box therein, the journal-rod therein having a gear and a hand-crank, and a crank-shaft journaled in the housing below the sliding box and having a cam to operate said box to throw the gear into or out of mesh with the bull-wheel, all substantially as and for the purpose specified.

444,222. **MACHINE FOR DAMPENING AND STRETCHING PAPER.** WERNER NACKEN, Buffalo, N. Y. Filed Sept. 24, 1890. Serial No. 365,955. (No model.)



Claim.—1. In a machine for dampening and stretching paper for lithographic color-work prior to printing, the combination, with an endless apron consisting of a rubber-cloth belt having on its outer surface a napped fabric cemented thereto, of a wringing device consisting of the roller F, pivoted within a U-shaped frame H, hinged to the standards 1, as described, and provided with slotted apertures for the shaft 14, the roller F thereon, the roller E, journaled within the inclined slots 6 in the said standards, the cross-bar 11, connecting the arms 10 on said standards, and the set-screw 12 in said cross-bar bearing upon the center of the cross-bar *h'* of the U-shaped frame H, as and for the object stated.

2. In a machine for dampening paper for lithographic color-work prior to printing thereon, the combination, with the frame having the standards 1, provided with inclined notches 6, of the shaft 7, the roller E thereon, the U-shaped frame H, pivoted to the brackets 13 and having the cross-bar *h'* and notches *h* in its lower end, the roller F, journaled in said notches *h*, and an endless apron consisting of a rubber-cloth belt and a napped fabric cemented thereto, as and for the object set forth.

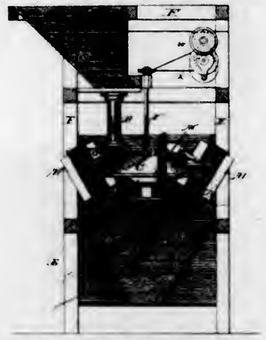
3. In a machine for dampening paper for lithographic color-work prior to printing thereon, the combination, with the frame having the horizontal webs A A', of the roller D, the wringer-rollers E F, the guide-roller G, the roller I, the tension-roller R, adjustably arranged in notches in the horizontal webs A A', and the endless apron consisting of a rubber-cloth belt and a napped fabric cemented thereto, as and for the object set forth.

4. In a machine of the class described, the combination, with the frames, of an endless apron revolving through a water-reservoir over suitable rollers, said apron being composed of a layer of rubber cloth and an outer layer of a napped fabric, a set of wringer-rollers, and a set of pressure and wiping rollers, as and for the object stated.

5. In a machine for dampening paper prior to printing thereon, the combination, with suitable guide and wringer rolls, of an endless apron consisting of a rubber-cloth fabric and a layer of a napped fabric cemented to the rubber cloth with the napped surface outermost, as and for the object stated.

6. In a machine for dampening paper prior to printing thereon, the combination, with a suitable frame, of an endless apron, suitable guide-rolls for the same, a water-reservoir through which the apron passes, a table above the upper course of said apron, a pressure-roller revolving freely in slots in said frame upon the apron, a wiping-roller having a covering of a napped fabric revolving in contact with the pressure-roller, and mechanism, substantially as described, for removing from the apron the surplus water, as and for the object specified.

444,223. **MAGNETIC-ORE SEPARATOR.** CLARENCE Q. PAYNE, Stamford, Conn. Filed Aug. 19, 1890. Serial No. 362,461. (No model.)



Claim.—1. In a magnetic separator, two segmental ring-shaped pole-pieces magnetized, respectively, by positive and negative polarity and placed concentrically, so as to constrain the lines of force to occupy positions normal to their adjacent surfaces.

2. In a magnetic separator, two segmental ring-shaped pole-pieces placed concentrically, said pole-pieces being magnetized, respectively, by positive and negative polarity by means of one or more electro-magnets, so as to constrain the lines of force to occupy positions approximately parallel throughout the magnetic field.

3. In a magnetic separator, two segmental ring-shaped pole-pieces placed concentrically, said pole-pieces being magnetized, respectively, by positive and negative polarity by means of one or more electro-magnets and having an approximately uniform distribution of magnetism at their surfaces.

4. In a magnetic separator, the combination of two pole-pieces magnetized, respectively, by positive and negative polarity with an apron placed between and close to one of them, whereby the magnetic particles fed upon said apron are held to it by said latter pole-piece.

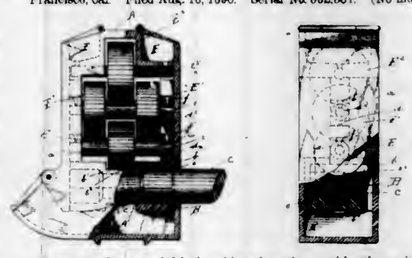
5. In a magnetic separator, the combination of two segmental ring-shaped pole-pieces placed concentrically and magnetized, respectively, by positive and negative polarity by means of one or more electro-magnets with a revolving apron placed between and close to one of them, whereby the magnetic particles fed on said apron are held to it by said latter pole-piece.

6. In a magnetic separator, two pole-pieces magnetized, respectively, by positive and negative polarity, one of which holds and separates the magnetic particles, while the other closes the magnetic circuit and maintains the lines of force normal to the adjacent surfaces of said pole-pieces.

7. In a magnetic separator, two pole-pieces forming segments of conical surfaces placed coaxially and magnetized, respectively, by positive and negative polarity by means of one or more electro-magnets, the magnetic particles being held to the surface of a revolving apron placed between them and close to one of said pole-pieces, while the other closes the magnetic circuit and maintains the lines of force normal to the adjacent surfaces of said pole-pieces, substantially as described.

8. The method of magnetically separating a mixture composed of magnetic and non-magnetic particles, which consists in passing the mixture through a magnetic field of the so-called "unipolar" type, which acts on the magnetic particles and in which the non-magnetic particles are removed by centrifugal force.

444,224. **ANTI-FRICTION BEARING.** EDWARD STEMPEL, San Francisco, Cal. Filed Aug. 18, 1890. Serial No. 362,331. (No model.)



Claim.—1. In an anti-frictional bearing, the combination, with the casing thereof, of the movable shaft journal-box located in the lower portion thereof, shaft secured within said journal, guide-channels formed within the casing-walls, and the successive bearings secured within the casing and adapted to move within the side channels, substantially as set forth and described.

2. In an anti-frictional bearing, the combination, with the outer casing thereof, of movable shaft-journal located within the lower portion, guide-channels formed in the inner face of the casing-walls, journal-boxes working within the channels, bearing-rollers working within said boxes, and the guide for maintaining the bearing-rollers in relative position, substantially as set forth and described.

3. In an anti-frictional bearing, the combination, with the casing thereof, of bearing-rollers secured therein, oil-reservoir located in said casing, said reservoir communicating so as to lubricate the bearing-rollers automatically, and the movable shaft journal-box, substantially as set forth and described.

4. In an anti-frictional bearing, the combination, with the casing thereof, of the movable shaft journal-box secured within the lower portion of the casing, upper and lower openings formed in said journal-box, and the multiple bearings working within the casing, as set forth and described.

5. In an anti-frictional bearing, the combination, with the casing thereof, of lower chamber or compartment for reception of waste, movable shaft journal-box secured within the casing, said box having openings in its top and bottom, bearing-rollers working within the casing, and suitable bearing-roller guides for maintaining the bearings in position, substantially as set forth and described.

6. In an anti-frictional bearing, the combination, with the sliding journal-box, of frame or casing within which said box is movable in the direction of greatest pressure, bearing-wheel contacting with the journal-shaft and having its shaft ends journaled so as to move in guide- or channels formed within the casing, and a second wheel or wheels bearing upon the axle of the first wheel and having its shaft in like manner journaled in movable boxes in the line of pressure, substantially as set forth and described.

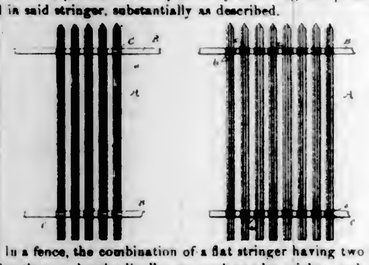
7. In an anti-frictional bearing, the combination, with the shaft journal-box movably secured within the casing and extending into the lower chamber thereof, said box adapted to move in line of greatest pressure, of bearing-roller located above the shaft journal-box and adapted to contact with journal-shaft working therein, said bearing being movably secured within the casing in the line of pressure, guide-rollers located above the bearing-rollers and contacting with the axle thereof, said guide moving in line of greatest pressure, movable upper bearing-roller contacting with the axle of the guide-rollers and moving in corresponding direction therewith, and the lubricating-oil reservoir located in the upper portion of the casing and provided with discharge-orifice, substantially as set forth and described.

444,225. **FENCE.** JOHANN C. TAUBER, Plain City, Ohio. Filed July 12, 1890. Serial No. 358,521. (No model.)

Claim.—1. In a fence, the combination of a flat perforated stringer, a wooden picket, and a staple loosely encircling said picket and having its ends inserted through said stringer and returned through the same into the picket, substantially as described.

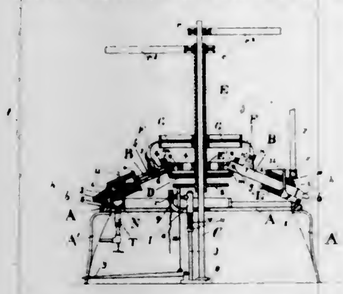
2. In a fence, the combination of a flat stringer having two pairs of perforations and a wooden picket and a flat staple loosely encircling the front of said picket and having its arms inserted through the outer pair of perforations and returned into the back of said picket through the inner pair of perforations, substantially as described.

3. In a fence, the combination of a flat stringer, a longitudinally-grooved wooden picket, and a staple loosely encircling said picket and secured in said stringer, substantially as described.



4. In a fence, the combination of a flat stringer having two pairs of perforations, a longitudinally-grooved wooden picket, and a flat staple loosely encircling the front of said picket, inserted through the outer pair of perforations, and returned into the back of said picket through the inner pair of perforations, substantially as described.

444,226. CAN-SOLDERING MACHINE. ELBERT THOMSON, Baltimore, Md. Filed Sept. 24, 1890. Serial No. 365,961. (No model.)



Claim.—1. In a can-soldering machine, the combination of the circular track, a vertical revoluble shaft C, concentric with the track and provided with a gear-wheel D, a tubular shaft E around the shaft first mentioned and provided with a hub, both shafts turning in the same direction, but at different speeds, can-holders pivoted by one end to said hub, and each having a pinion in gear with the wheel D on the shaft first mentioned, and a molten-solder trough, whereby each can will revolve on its own axis in a direction opposite to that in which its holders travel.

2. In a can-soldering machine, the combination of the circular track having at one place an elevated part *b'* and an incline up thereto and down therefrom, a vertical revoluble shaft C, concentric with the track and provided with a gear-wheel D, a tubular shaft E around the shaft first mentioned and provided with a hub E' and a wheel G, can-holders pivoted by one end to said hub and each having a pinion in gear with the wheel D on the shaft first mentioned, and a retracting-lever on each can-holder whose end will come in contact with the said wheel G on the tubular shaft when the outer end of the can-holder is raised.

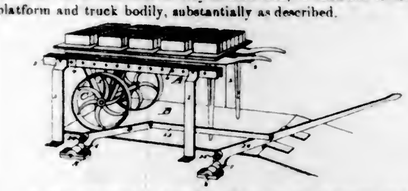
3. In a can-soldering machine, the combination of a molten-solder trough, a stationary flux device, can-holders movable over said solder-trough and flux device, a pendent skimmer pivoted to the can-holder, and a stationary arm I, above the flux device and in the path of the skimmer.

4. In a can-soldering machine, the combination of a molten-solder trough, can-holders movable over said trough, an automatic solder-supply device to feed wire-solder to the trough, said device movable on a supporting-rod, a spring to keep the solder-supply device moved normally to one position, and a foot-treadle connected with said device to act against the spring, for the purpose set forth.

444,227. BRICK OR TILE TABLE. GEORGE S. TIFFANY, Tecumseh, Mich. Filed Mar. 6, 1890. Serial No. 342,892. (No model.)

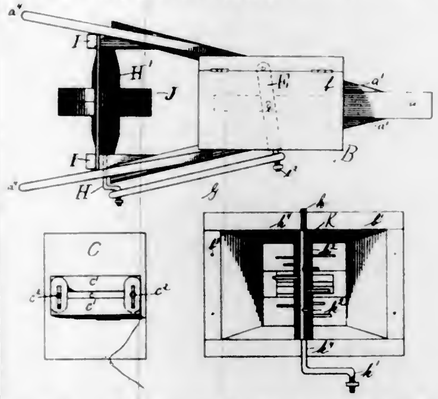
Claim.—1. The table to receive bricks or tiles on platens directly from a brick or tile machine, in combination with a vertically-movable platform arranged under said table and adapted to receive and bodily raise a truck under the platens to unload the latter from the table for removal, and devices, substantially as set forth, to lift the said platform.

2. The brick or tile machine receiving-table comprising the side rails having rollers and supports for said rails, the platform arranged between said rails at the base of the supports and adapted to receive a truck, and means, substantially as described, to raise and lower said platform and truck bodily, substantially as described.



3. The combination, with the brick or tile machine receiving-table on which loaded platens are discharged, of the vertically-movable platform under the table to receive the truck and having the hinged extension at one end, and devices, substantially as specified, for raising and lowering the platform and truck.

444,228. PLANTER. FREDRIC E. BARR, Saratoga, Ark. Filed June 24, 1890. Serial No. 356,516. (No model.)



Claim.—1. The combination of the frame provided with the plow-standards a^3 a^3 and the chute L, axle-bearers I, pivoted to the standards a^3, and one having in its lower end a slot and block i^3, semicircular arms i, adapted to lower and raise said bearers, the wheel J, having the grooves h^3, arms A, cylinder H', and axle H, having a crank-arm, hopper B, adapted to carry the seed-slide *b* or agitator K, and pitman G, all substantially as shown and described, and for the purposes set forth.

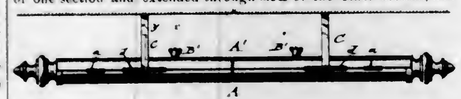
2. The combination of the frame provided with the plow-standards a^3 a^3 and chute L, adjustable axle-bearers I, pivoted to the standards a^3, hopper B, secured to said frame and having the upper part *b* and the lower part *b'*, held together by pins b^3, and having the slide-grooves b^2, top slots b^4, bottom slots *c*, and adjustable seed-regulator *c'*, said hopper adapted to carry the seed-slide D or agitator K, and pitman G, extending from said hopper to the crank-arm of the wheel J, all substantially as shown and described, and for the purposes set forth.

444,229. COMPOUND FOR COLORING BROOM-CORN. ROBERT M. DONOVAN, Portland, Oreg. Filed May 2, 1890. Serial No. 350,389. (No specimens.)

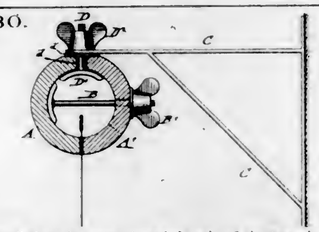
Claim.—A coloring composition for broom-corn, consisting of green aniline, burnt alum, water, and sulphuric acid, substantially as set forth.

444,230. CURTAIN-POLE. GUSTAVUS E. STRAUSS, New York, N. Y. Filed Feb. 8, 1890. Serial No. 339,736. (No model.)

Claim.—1. The combination, with hollow semicircular sections hinged together at one side, of fastening-bolts attached to the inside of one section and extended through slots of the other section, and



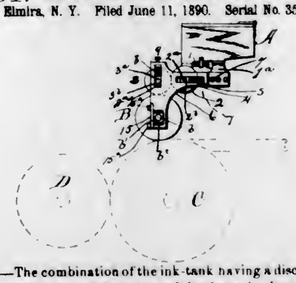
444,230.



screw-nuts applied to the outer threaded ends of the fastening-bolts, substantially as set forth.

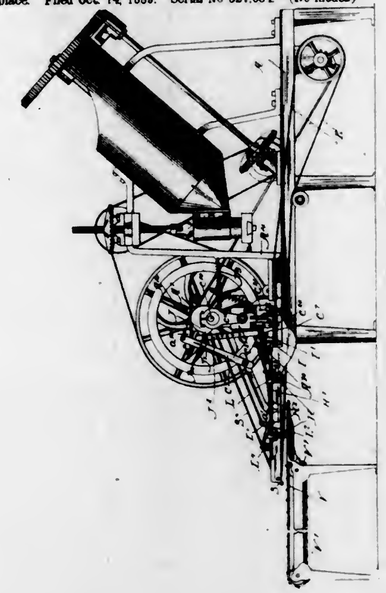
2. The combination of a curtain-pole provided with longitudinal slots or openings, with hanger-bolts having hanger-plates placed transversely to said slots, screw-nuts applied to the outer threaded end of said hanger-bolts, and supporting-brackets to which the hanger-bolts and screw-nuts are applied, substantially as set forth.

444,231. APPARATUS FOR PRINTING IN COLORS. HARRY S. BROOKS, Elmira, N. Y. Filed June 11, 1890. Serial No. 355,032. (No model.)



Claim.—The combination of the ink-tank having a discharge-gate, the frame supporting the ink-tank, each having a horizontal slotway, a vertical slotway, and a mortise, the ink-roller having arbors, boxes in which the arbors rotate, located in the horizontal slotways, the springs pressing against the boxes, the ink-distributing roll having arbors, boxes for the latter located in the vertical slotways, the springs pressing on the vertical boxes, the printing-roll, having a shaft, and bearings for the latter located in the mortises, substantially as described.

444,232. CLAY-SEAL-MAKING MACHINE. AUGUSTUS G. BURTON, Chicago, Ill., assignor to Chas. E. Davis and John W. Norris, same place. Filed Oct. 14, 1889. Serial No. 327,034. (No model.)



Claim.—1. In combination with the conveyer-belt, the receiving-tray located below the level of it at the delivery end, mechanism which actuates the tray longitudinally intermittingly a distance corresponding to the thickness of the seals at each impulse, the lip S^3, pivoted to the frame and normally upstanding from its pivot at the delivery end of the belt, and mechanism which rocks it from its position of rest outward slightly past the vertical position after each impulse of the tray-actuating mechanism, substantially as and for the purpose set forth.

2. In combination with the conveyer-belt, the receiving-tray located below the level of it at the delivery end, the lip S^3, pivoted to the frame and normally upstanding from its pivot at the delivery end of the belt and adapted to be rocked on its pivot outward from the belt, substantially as and for the purpose set forth.

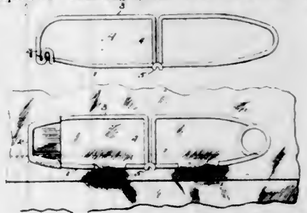
3. In combination with the conveyer-belt, the receiving-tray located below the level of its carrying-surface at the delivery end, the fixed lip S^3, secured to the frame overhanging the delivery end of the conveyer-belt and having its inner edge close thereto, and the lip S^4, pivoted to the frame and normally upstanding from its pivot and overhung at its upper end by the outer edge of the fixed lip S^4 and adapted to be rocked over its pivot outward from the delivery end of the conveyer, substantially as and for the purpose set forth.

444,233. TUBE. HARMER DENNEY, Brooklyn, N. Y. Filed Oct. 17, 1890. Serial No. 368,461. (No model.)



Claim.—A tube composed of a core formed of a paper strip wound spirally with great pitch and one or more covering-layers formed of paper strips wound spirally with less pitch on the spirally-wound core, the direction of the winding of the covering-layers being the reverse of the direction of the winding of the core, substantially as set forth.

444,234. SAFETY-PIN. NATHAN E. HALES and LOUIS F. REESE, Williamsport, Pa. Filed Aug. 6, 1890. Serial No. 361,172. (No model.)



Claim.—1. A safety-pin consisting of a catch-bar, a pin on the bar to engage the catch thereof, and a hooked support projected from the bar intermediate of the ends to engage and hold the pin between its end supports when the pin is in use, but from which the pin may be disengaged, substantially as described.

2. A safety-pin consisting of a single wire bent into a pin-arm and a catch-arm engaging at their free ends, and having formed in the middle of the catch-arm a loop extending across between the arms and terminating in a hook to engage and hold the wire of the pin-arm at its middle, substantially as described.

3. A safety-pin consisting of a pin-arm and a catch-arm, and having at the middle of the catch-arm a hook extending across to the pin-arm to engage and hold the pin-arm at its middle portion when its point is engaged in the catch on the end of the opposite arm, and from which the pin-arm may be disengaged when freed from the catch, substantially as described.

444,235. CLAMP FOR PIPES AND MAINS. TIMOTHY MCHUGH, Wakefield, assignor of one-half to the Smith & Anthony Stone Company, Boston, Mass. Filed Mar. 28, 1890. Serial No. 345,715. (No model.)

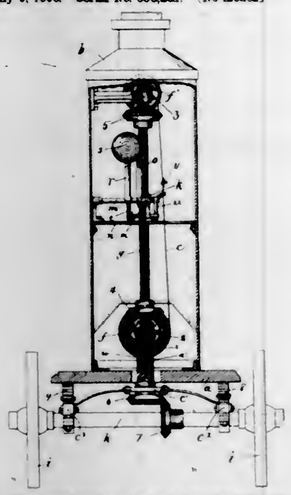


Claim.—1. The herein-described improved pipe-clamp, comprising the two curved members or sections having inner concaved faces and

outer opposite diametrically-opposed enlarged curved ends, one of said sections having a lower horizontal socket and an aperture and the other section having its lower end secured in said socket and provided with a threaded stem extended through said aperture, and the nut working on said stem and bearing against a shoulder on said former section, substantially as set forth.

2. The herein-described improved pipe-clamp, consisting of the curved member or section 2, having an inner concaved face, an outer enlarged end, a recess formed in said end for reception of a filling and a branch or outlet receiving-orifice, said section being provided at its lower horizontal end with a socket and an aperture, and the section 3, also having an inner concaved face and an outer enlarged end diametrically opposed to said end of said former section and provided at its lower horizontal end with a threaded stem projected through said socket and aperture of said section 2, a nut on said stem bearing against a shoulder of said latter section, and a packing *d*, substantially as set forth.

444,236. **ADVERTISING-WAGON.** GEORGE E. ROWE, Boston, assignor to Charles S. Crain, trustee, Newton, Mass. Filed Dec. 13, 1888. Renewed July 9, 1890. Serial No. 358,201. (No model.)



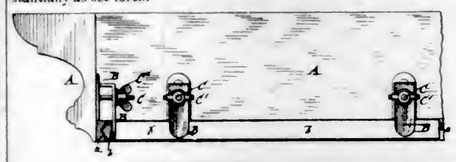
Claim.—1. The combination, in an advertising-wagon, of an advertising curtain or panorama, rollers *f f'*, to which the ends of the same are affixed, a telescopic shaft *g w*, composed of a section which is geared to one of the axles, and a sliding section rotatively engaged with said geared section and provided with gears adapted to engage with like gears on the rollers *f f'*, lugs moving with the curtain, and mechanism operated by said lugs to impart an endwise movement to the section *g* and thereby reverse the direction of movement imparted to the curtain, as set forth.

2. The combination of the advertising curtain or panorama, the curtain-rollers *f f'*, having the gears 2 3, the telescopic shaft composed of the section *w*, geared to one of the axles, and the sliding section *g*, rotatively engaged with the section *w* and having the gears 4 5, arranged as shown, so that in one position of the section *g* the gears 4 and 2 are in engagement and in the other portion the gears 5 and 3 are in engagement, the lugs *v v'*, attached to the curtain, the lever *u*, arranged to be moved by said lugs, and mechanism, substantially as described, operated by the movements of said lever, whereby the section *g* is moved endwise, as set forth.

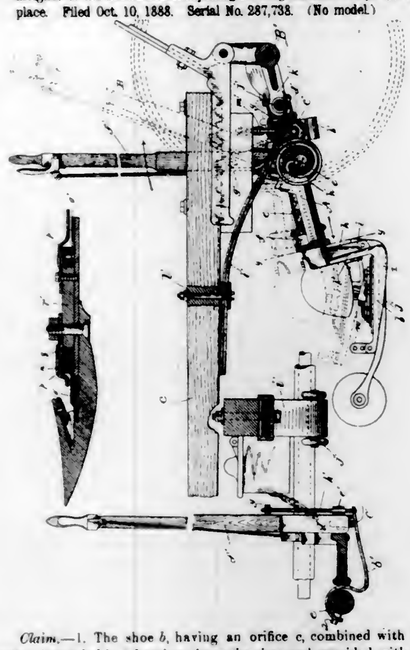
3. The combination, in an advertising-wagon, of an advertising curtain or panorama, rollers *f f'*, to which the ends of the same are affixed, a telescopic shaft *g w*, composed of a section which is geared to one of the axles, and a sliding section rotatively engaged with said geared section and provided with gears adapted to engage with like gears on the rollers *f f'*, said gears being arranged so that an endwise movement of the section *g* will reverse the direction of movement imparted to the curtain, as set forth.

444,237. **CURTAIN-CORNICE.** GUSTAVUS E. STRAUSS, New York, N. Y. Filed Feb. 8, 1890. Serial No. 339,737. (No model.)

Claim.—The combination, with a cornice having a grooved strip at its rear part, of a detachable tongue-shaped strip, clamping-plates extending over said tongue-shaped strip and having an angular or L-shaped portion abutting against the cornice, fixed screw-bolts attached to the cornice and passing through holes of the clamping-plates, and screw-nuts screwing on the posts and serving to apply the clamping-plates to the detachable strip and the latter to the fixed strip, substantially as set forth.



444,238. **MOWING-MACHINE.** JAMES O. BROWN, Boston, Mass., assignor to the Brown Self Sharpening Mowing Machine Company, same place. Filed Oct. 10, 1888. Serial No. 287,738. (No model.)



Claim.—1. The shoe *b*, having an orifice *c*, combined with the shaft *r*, journaled in a bearing above the shoe and provided with the sprocket-wheel located over said orifice, as set forth.

2. The combination of the main frame having bearings *f g*, the rocking sleeve *e*, journaled in said bearings and detachably secured to the bearing *g*, the finger-bar-supporting shoe attached to the rocking sleeve and provided with the knife-chain-driving shaft *r*, and the shaft *k*, journaled in the sleeve *e* and connected to the main driving-shaft by a gear *n* and to the shaft *r* by a gear *l*, said gear *n* being smaller than the diameter of the bearings *f g*, whereby when the rocking bearing is released from the main frame said rocking bearing with the shaft *k* may be moved endwise through the bearings *f g*, as set forth.

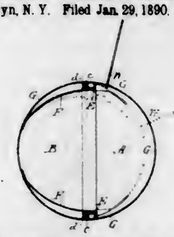
3. The combination of the main frame, the lifting-lever pivoted on a stud *c'*, affixed thereto and having the short arm *d'*, the rocking sleeve journaled in bearings on the main frame and containing the power-transmitting shaft *k*, the finger-bar attached to said sleeve, and the spring or yielding arm *b'*, affixed at one end to said rocking sleeve and resting at its other end against a roll journaled in the arm *d'* of the lifting-lever, as set forth.

4. The combination of the main frame, the lifting-lever pivoted on a stud *c'*, affixed thereto and having the short arm *d'*, the rocking sleeve journaled in the main frame, the finger-bar attached to said sleeve, the spring-arm *b'*, affixed at one end to said rocking sleeve and resting against a roll journaled in the arm *d'*, and the spring *K'*, secured at one end to the lifting-lever and at the other end to the stud *c'* and arranged to impart a backward pressure to the lifting-lever, as set forth.

5. The combination of the driving-axle A^3, the main frame mounted thereon and having an arm *k'* projecting forward at right angles with the axle, the tongue pivotally connected with the main frame, and the spring *i'*, attached to the tongue and engaged with the arm *k*, as set forth.

6. The combination of the knife-chain, the finger-bar, the arm d^8, pivoted to the outer end of the same, the loose wheel d^9, journaled on the free end of said arm, a spring for drawing said free end outward, and a stop to the inward play of said wheel, as set forth.

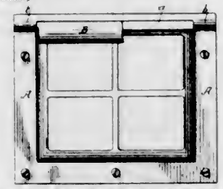
444,239. **PUZZLE.** FRANCIS E. CLARK, New York, and GEORGE WEXLER, Brooklyn, N. Y. Filed Jan. 29, 1890. Serial No. 338,511. (No model.)



Claim.—1. The puzzle, substantially as described, consisting of the two independent rotatable shells, one of which is perforated, in combination with a spring-catch projecting from within the one shell to engage and lock automatically with an uninterrupted annular seat or offset within the opposite shell in manner to admit of being carried, when thus locked, into registry with the perforation in said opposite shell, substantially as and for the purpose herein set forth.

2. The divided hollow spherical shell having its wall pierced with one or more perforations and its divisions rotatable one upon the other when locked, in combination with the spring-catches fixed within the one division in position to engage and lock automatically with the interior of the opposite division and to admit, when locked, of being brought by the rotation of either division into registry with one of said perforations for disengagement by the insertion of a loose key through the perforation, substantially in the manner and for the purpose herein set forth.

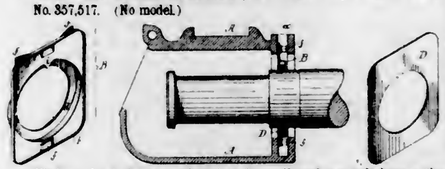
444,240. **CARD-CASE FOR FREIGHT-CARS.** FRANCIS J. COLE and EDWARD W. GRIEVES, Baltimore, Md. Filed July 2, 1890. Serial No. 357,516. (No model.)



Claim.—1. The within-described card-case for freight-cars, the same consisting of a plate of sheet metal having a central portion struck up and cut away in front so as to form an open case or cage for the reception of the card, said struck-up portion having bars extending across the opening therein, substantially as specified.

2. The combination of the sheet-metal plate having a central struck-up portion for the reception of the card, a slot at the upper end, and opposite pockets or offsets, with a cap or cover consisting of a curved plate of sheet metal passing through said slot and having opposite ears or lugs adapted to the pockets or offsets of the body-plate, substantially as specified.

444,241. **DUST-GUARD FOR CAR-AXLE BOXES.** FRANCIS J. COLE and EDWARD W. GRIEVES, Baltimore, Md. Filed July 2, 1890. Serial No. 357,517. (No model.)



Claim.—1. A dust-guard casing for railroad-car axle-boxes, the same consisting of a sheet-metal plate having the central portion struck up or dished to form a recess for the reception of packing, substantially as specified.

2. A dust guard or shield for car-axle boxes, consisting of a plate of sheet metal struck up or dished at the center, and a split ring adapted to said dished portion of the plate and bearing upon the axle or journal, substantially as specified.

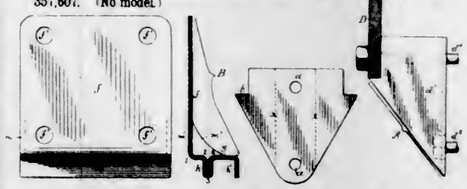
3. The within-described dust guard or shield for car-axle boxes, the same consisting of a plate of sheet metal struck up to form two recesses, one containing a slab or sheet for bearing against the face of the axle-box and the other containing a split ring for bearing on the axle, substantially as specified.

4. The combination of the split ring and its encircling spring with the casing consisting of a sheet-metal plate struck up to form a receptacle for said ring and its spring, substantially as specified.

5. The combination of the split ring with the casing consisting of a sheet-metal plate dished for the reception of said ring and having an internally projecting lug struck up from the plate to engage with said ring and prevent its rotation, substantially as specified.

6. The within-described dust-guard casing for railway-car axle-boxes, the same consisting of a plate of sheet metal struck up to form an outer flange for retaining a bearing slab or sheet, a centrally-dished portion for the reception of a bearing-ring, and top and bottom pockets for the reception of presser-springs, substantially as specified.

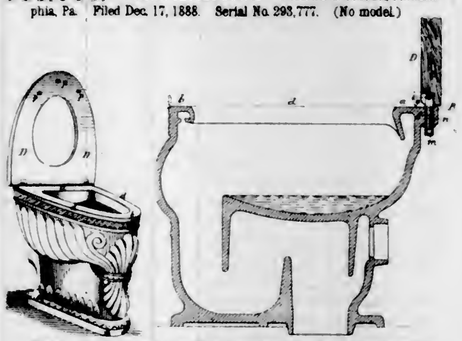
444,242. **FREIGHT-CAR-DOOR FIXTURE.** FRANCIS J. COLE and EDWARD W. GRIEVES, Baltimore, Md. Filed July 3, 1890. Serial No. 357,607. (No model.)



Claim.—1. The within-described door-track bracket for railroad freight-cars, the same consisting of a single plate of sheet metal bent to form a back-plate with projecting side wings for supporting the track, said wings being recessed at their upper outer corners for the reception of the track, substantially as specified.

2. The within-described shoe for freight-car doors, the same consisting of a single plate of sheet metal bent at right angles to form the vertical or attaching portion and the horizontal portion for riding upon the track, said shoe having diagonal corner-braces at each end and having guide-ribs projecting downward from the horizontal bearing-web and formed by bending or striking up portions of the plate, substantially as specified.

444,243. **WATER-CLOSET BOWL.** WILLIAM S. COOPER, Philadelphia, Pa. Filed Dec. 17, 1888. Serial No. 293,777. (No model.)

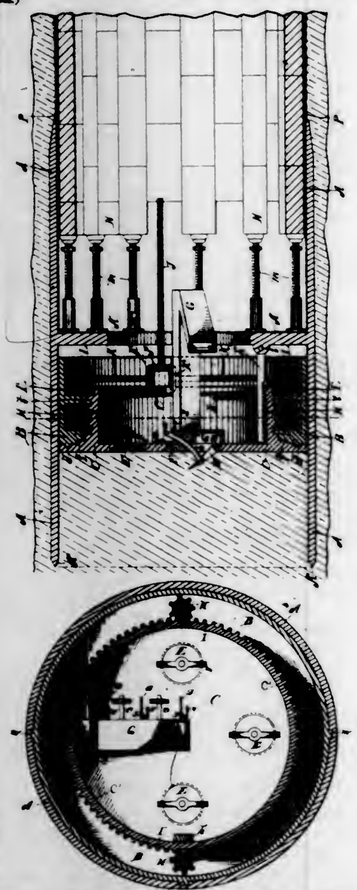


Claim.—1. A water-closet bowl having a wide rear portion with square back and rounded and contracted front, a discharge-opening at the front, and curved or tapering sides merging into said rounded and contracted front, substantially as specified.

2. The combination of the bowl having a square back with tubular projections, the recessed seats, bolts passing vertically through the projections on the bowl and having enlarged heads hung within the recesses in the seat, and nuts for confining the bolts to the projections, substantially as specified.

3. The combination of the seat having recesses therein, with buffers consisting of elastic tubes let into recesses in the seat, but projecting therefrom, and screws passing through said tubes and having heads for confining the tubes to the seat and causing partial contraction of the projecting portions of said tubes, all substantially as specified.

444,244. SUBAQUEOUS TUNNELING-MACHINE. LEONARD GROVER, Homer, Mich. Filed June 16, 1890. Serial No. 355,536. (No model.)



Claim.—1. In a subaqueous tunneling-machine, the combination of the hollow caisson open at both ends and having an annular flange A', means located between said flange and the construction end of the tunnel for moving the caisson horizontally, a ring slidingly fitted within the caisson, and a revolving head located within said ring and adapted to revolve therein, substantially as specified.

2. In a subaqueous tunneling-machine, the hollow caisson open at both ends and having means for advancing it from the construction end of the tunnel, combined with the ring slidingly located within the caisson and the revolving head located within said ring, said head carrying a knife adjustably mounted therein and having an opening through said head adjacent to said knife, substantially as specified.

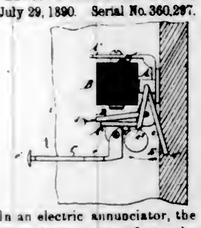
3. A subaqueous tunneling device comprising the following combined elements: the hollow circular caisson open at both ends and having means for advancing it horizontally, a revolving heading within the caisson, said head carrying a knife and having an opening therethrough adjacent to the knife, a conveyer mounted on said revolving head and adapted to revolve therewith, means for moving said head horizontally within the caisson, and means for revolving said head and its conveyer, substantially as specified.

4. A subaqueous tunneling-machine comprising the following combined elements: the caisson open at both ends and means for advancing said caisson, the ring slidingly mounted within the caisson, the knife-carrying head located in said ring and having the knife adjustably mounted thereon, the openings adjacent to said knife, the manhole in said head, and means for moving said head horizontally within the caisson.

5. In combination with the caisson, the revolving head located therein, said head carrying a series of knives, each knife having an adjustment with the revolving head, the series of knives arranged so as to extend from the center of the revolving head to its periphery, the openings through said revolving head adjacent to said knives, the series of man-holes through said head, means for revolving said head, and means for moving it horizontally within said caisson, as set forth.

6. In combination with the caisson, the revolving head located therein, the series of knives in said head, each knife having an independent adjustment, said knives extending from the center of the revolving head to the periphery thereof, the opening through said revolving head adjacent to said knives, means for revolving said head, and means for advancing it horizontally within the caisson, substantially as specified.

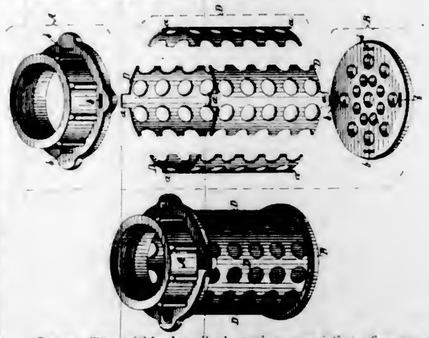
444,245. ELECTRIC ANNUNCIATOR. AUGUST HORMEL, New York, N. Y. Filed July 29, 1890. Serial No. 360,297. (No model.)



Claim.—1. In an electric annunciator, the combination of a C-shaped frame, with an electro-magnet fastened to the upper shank, an armature pivoted to the back part, and an elbow-lever pivoted to the lower shank of said frame, the armature having a knob or hook on its free end which engages the elbow-lever by means of an aperture when the latter is in upright position, substantially as set forth.

2. In an electric annunciator, the combination of an electro-magnet on the upper shank of a frame, and an armature pivoted to the back part of said frame and having a knob or hook on its free end, with an elbow-lever having an aperture and being pivoted to the lower shank of said frame in such a way that the same is kept in upright position by the knob or hook of the armature, and a lifting-lever by which the elbow-lever is lifted when the same is released from the armature and in horizontal position, substantially as set forth.

444,246. STRAINER. FRANCIS I. MAULE, Philadelphia, Pa. Filed Oct. 27, 1890. Serial No. 369,408. (No model.)



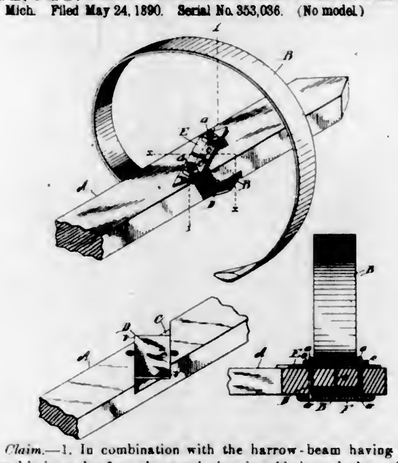
Claim.—The within-described strainer, consisting of a top end piece, a perforated bottom end piece, and a series of body-sections perforated throughout, said body-sections and end pieces being secured together by malleable lugs formed on one part and adapted to recesses in the other part, substantially as specified.

444,247. POLE-COUPLING. WILLIAM R. MAXWELL, Wakefield, Pa. Filed June 28, 1890. Serial No. 357,100. (No model.)



Claim.—A thill-coupling comprising the bracket 4, consisting of the plate 5, adapted to be secured to the curved cross-bar 2 and having the curved portion 9, the cross-bar formed integral with the plate 5 and extending at right angles to the tongue or pole and being approximately V-shaped in cross-section, the curved brace 7, having one end secured to the plate 5 and the other end perforated and receiving the end of the cross-bar, and the coupling-block 10, being laterally adjustable along the cross-bar and having at one end the eye 11 and at the other end the V-shaped opening to receive the cross-bar and provided with a set-screw arranged to engage the cross-bar, substantially as described.

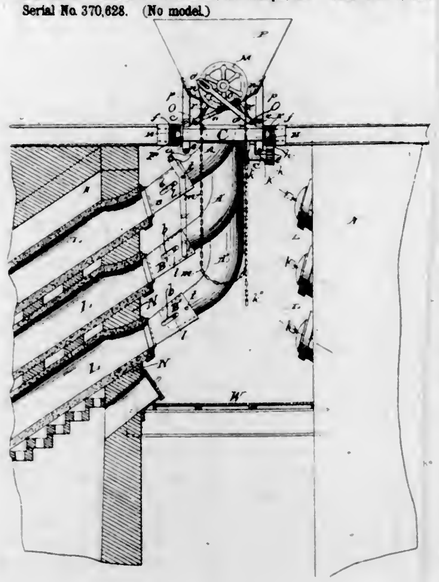
444,248. SPRING-TOOTH HARROW. HUSON V. MILLER, Jonesville, Mich. Filed May 24, 1890. Serial No. 353,036. (No model.)



Claim.—1. In combination with the harrow-beam having the channel in its under face, the metal plate in said channel, the spring-metal tooth below said plate, the clip crossing the under face of the tooth, with bolts passing through the clip and harrow-beam, substantially as specified.

2. The harrow-beam having the channel crossing its under face, combined with the square metal plate in said channel, the pin passing through said plate into the harrow-beam, the spring-metal tooth, the clip crossing the under face of said tooth, the metal strap crossing the upper face of the harrow-beam, the bolts passing therethrough and through the clip, and nuts on the upper ends of said bolts, as and for the purposes set forth.

444,249. COMBINED CHUTE AND HOPPER FOR CHARGING RETORTS. KERR M. MITCHELL, St. Joseph, Mo. Filed Nov. 7, 1890. Serial No. 370,628. (No model.)



Claim.—1. A device or apparatus for charging inclined retorts comprising a wheeled carriage, a coal-hopper mounted on the platform above the open mouth of a chute and having bottom doors adapted to be simultaneously opened, and a chute rotatively mounted in a circular opening in the platform of said carriage, substantially as described.

2. The hopper mounted upon a carriage and provided with two bottom doors meeting at the middle, in combination with two rock-shafts, one on each side of the carriage, two short lever-arms projecting from said shafts and bearing at their free ends against the doors, the lever-arms *o o'*, and an operating-wheel, said arms connecting the rock-shafts with said wheel for simultaneously opening the doors of the hopper, substantially as described.

3. An inclined charging-chute, oval or elliptical in cross-section and having an elongated opening in its mouth-piece, in combination with a hopper supported above it and having an elongated opening in its bottom, both of which openings are arranged with their long axes parallel with the mouths of the retorts, and means for closing the bottom of the hopper, whereby the charge of coal is evenly and uniformly spread in an inclined retort, substantially as described.

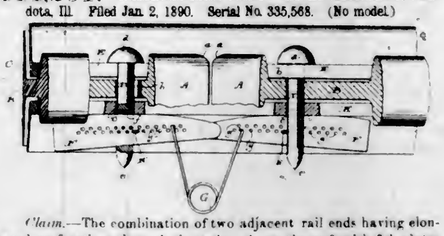
4. The coal-hopper mounted upon a carriage and provided with two bottom doors, in combination with two rock-shafts having lever-arms bearing at their free ends against the doors, the lever-arms *o o'*, an operating-wheel M, engaged by said arms, and an endless chain *m* on said wheel and extending down below the carriage, whereby an attendant standing on the working-floor below can by means of the chain discharge the coal from the hopper into a chute which may connect with a retort to be charged, as described.

444,250. WHIP. HENRY MULLER, Westfield, Mass., assignor to the American Whip Company, same place. Filed May 31, 1890. Serial No. 353,760. (No model.)



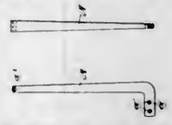
Claim.—A whip consisting of a core formed of a tapered and transversely square center, the major portion of the length of which consists of rattan, and having a solid square whalebone tip spliced thereon, thin strips of whalebone overlying and cemented to the flat sides of said rattan center and also extended to overlie and be cemented to the sides of said whalebone tip for a distance beyond said splice and serving to re-enforce the latter, a stocking or sidings of rattan surrounding the core, and a plaited covering over the sidings, substantially as and for the purpose set forth.

444,251. RAILROAD-RAIL JOINT. ALLISE NEUTASCHER, Mendota, Ill. Filed Jan. 2, 1890. Serial No. 335,568. (No model.)



Claim.—The combination of two adjacent rail ends having elongated perforations through the webs of one thereof, with fish-plates provided with registering perforations, pointed and headed bolts passed through said perforations and provided with longitudinal slots, wedge-shaped locking-plates passed through said slots with their small ends overlapping and provided with longitudinal rows of perforations, split spring locking-pins passed through said perforations adjacent to said bolts, and a double spring locking-pin having downward-turned ends passed through other of said perforations and thence bent inwardly against the under sides of the said locking-plates, substantially as set forth.

444,252. SCREEN. ALEXANDER A. PALM, Calico, Cal. Filed Aug. 12, 1890. Serial No. 361,826. (No model.)



Claim.—1. In a screen or grizzly, the several sections thereof composed of independent separated bars, the lower ends of the bars

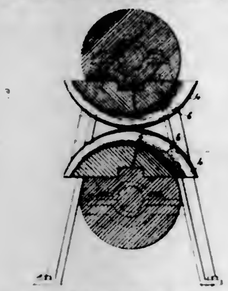
of one section lying between the upper ends of the bars of the succeeding section, whereby the spaces between the bars in one section are in line with the bars in the succeeding section, and a rod or bar passing through the lower and upper ends, respectively, of adjoining bars, substantially as herein described.

2. In a screen or grizzly, the several sections thereof composed of separated bars, the lower end of each bar being bent and passing down into and lying between the upper ends of adjacent bars of the succeeding section, and bolts passing through the ends of the bars, whereby they are held together, substantially as herein described.

3. In a screen or grizzly, the several sections thereof composed of separated bars having bent lower ends lying between the upper ends of the bars of succeeding sections, said bars having holes formed in their upper and lower ends, washers between the upper ends of the bars of the uppermost section and between the lower ends of the bars of the lowermost section, and bolts passing through the adjacent ends of all the bars and through the washers, substantially as herein described.

4. In a screen or grizzly, the several sections thereof composed of independent separated bars tapering downwardly in plan and cross-section, as described, and each bar having a bent lower end lying between the upper ends of the bars of succeeding sections, and each bar having holes in opposite ends through which uniting-bolts pass, substantially as herein described.

444,253. MACHINE FOR ROLLING AXLES. WOLCOTT J. PARMELEE, Wilkes-Barre, Pa. Filed Aug. 22, 1890. Serial No. 362,761. (No model.)



Claim.—1. In the manufacture of vehicle-axles, the process of forming the spindle by rolling, which consists in first compressing the end of the axle-blank to a tapering shape elliptical in cross-section, next upsetting the tapering elliptical portion by edgewise pressure to an approximate circular shape in cross-section, and finally finishing between tapering roller-dies circular in cross-section, substantially as set forth.

2. In the manufacture of vehicle-axles, the process of forming the tapering spindle by rolling, which consists in subjecting the blank to the action of revolving dies acting from the point in an inward direction, the blank being withdrawn from between the rolls after each operation of the dies, substantially as set forth.

3. In a machine for forming spindles upon axle-blanks, the combination, with the rolls, of the spindle-shaping dies mounted detachably upon the same, substantially as set forth.

4. The combination, with the rolls, of the spindle-shaping dies mounted detachably upon and extending part way around said rolls, substantially as set forth.

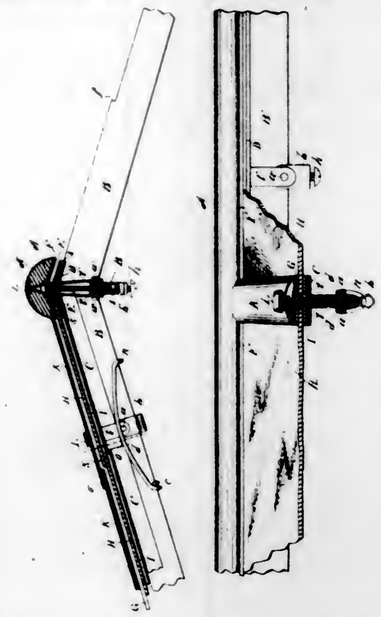
5. The rolls having longitudinal ribs, in combination with the dies mounted thereon, extending part way around the rolls and having tapering recesses respectively semi-elliptical and semicircular in cross-section, substantially as and for the purpose set forth.

444,254. ROOF FOR HOT-HOUSES. JAMES D. SCOVEL, Detroit, Mich. Filed Apr. 28, 1890. Serial No. 349,843. (No model.)

Claim.—1. In a roof for hot-houses, the combination of the purlin-strip and rafters, the saddle mounted on the purlin, the packing agents on said saddle, the glass, the ridge-roll, the packing interposed between the roll and glass, the tie-strap, and the yoke having the set-screw whereby said parts are detachably coupled, substantially as specified.

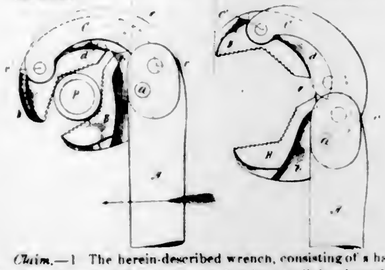
2. In combination with the metal purlin and metal rafters, the saddle mounted on said purlin, said saddle having inclined sides, the rubber strips thereon, the glass, the wooden ridge-roll, the rubber agent located between the ridge-roll and the glass, the yoke, the tie-strap passing through the ridge-roll and having engagement with the yoke, the chair, and the set-screw passing through the yoke and engaging with the chair, for the purposes specified.

3. In combination with the purlin and rafter, the saddle mounted on said rafter, the packing agent on said saddle, the glass located thereon, the metal cap, the rubber agent located between said cap and the glass, the tie-strap, the yoke engaged therewith, and spring-lock detachably coupling the parts to the rafters, substantially as set forth.



4. In combination with the metal rafter having the notch *f* in its upper edge, the metal saddle C, the packing agent on said saddle, the glass, the metal cap, the packing-strip located between said cap and the glass, and means, substantially as set forth, for locking said parts detachably to the rafter.

444,255. PIPE-WRENCH. GEORGE F. SHAW, Dedham, assignor of one-half to Charles G. Smith and Benjamin F. Smith, Somerville, and George G. Procter, Boston, Mass. Filed Oct. 6, 1890. Serial No. 367,229. (No model.)

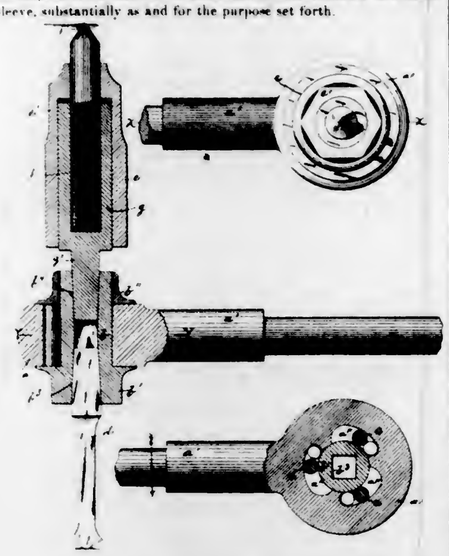


Claim.—1. The herein-described wrench, consisting of a handle, a lower jaw pivoted to it, and an upper jaw hung to links pivoted to said handle, said jaws having their inner ends hinged or connected together, substantially as and for the purpose set forth.

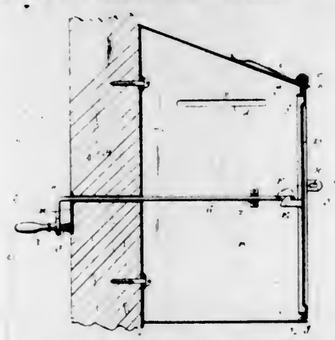
2. The herein-described wrench, consisting of a handle, a lower jaw pivoted to it, links pivoted to said handle on fulcra above the lower-jaw fulcrum, and an upper jaw pivoted to said links and connected or pivoted to the lower jaw, substantially as and for the purpose set forth.

444,256. DRILL-STOCK. BENJAMIN F. SMITH, Somerville, Mass. Filed Sept. 22, 1890. Serial No. 365,713. (No model.)

Claim.—In combination with a drill-stock, a detachable feed-screw device consisting of a sleeve *e* and a longitudinal screw *f* secured within it, and an internally-screw-threaded socket *g*, adapted to receive the said screw and fitting within said sleeve, and having a shank *g'*, adapted to be inserted in either end of the socketed drill-stock sleeve, substantially as and for the purpose set forth.



444,257. LETTER-BOX. ULYSSES G. STANNARD, Milton, Wis. Filed Oct. 6, 1890. Serial No. 367,162. (No model.)



Claim.—1. A mail-receptacle and its support, a door forming that portion of the receptacle farthest from the support and provided with an inwardly-extended catch, and a rotary adjustable sliding rod extended through the support and adjacent wall of said receptacle and provided with an eye for engagement with said catch, substantially as set forth.

2. A mail-receptacle and its support, a door forming that portion of the receptacle farthest from the support and provided with an inwardly-extended catch, a rotary adjustable sliding rod extended through the support and adjacent wall of said receptacle, an eye on the rod for engagement with the catch, and suitable means for returning said rod to its normal position after having been rotarily adjusted to disengage said eye and catch, substantially as set forth.

3. A mail-receptacle and its support, a door forming that portion of the receptacle farthest from the support and provided with an inwardly-extended catch, a rotary adjustable sliding rod extended through the support and adjacent wall of the receptacle and provided with an eye for engagement with the catch, a weighted crank on that end of the rod adjacent to said support, and a stop opposed to said crank when the latter is in its normal position, substantially as set forth.

4. A mail-receptacle and its support, a door forming part of the receptacle and provided with an inwardly-extended catch, a rotary adjustable sliding rod extended through the support and adjacent wall of said receptacle, a device carried by the rod for engagement with said catch, and suitable means for preventing longitudinal movement of the rod when the latter is in its normal position, substantially as set forth.

444,258. BICYCLE. PARDON W. TILLINGHAST, Providence, R. I. Filed Sept. 24, 1890. Serial No. 366,026. (No model.)



Claim.—1. In a bicycle, the combination, with the pedal, of a supporting-brace jointed thereto and adapted to be folded upon the pedal, substantially as described.

2. In a bicycle, the combination, with the pedal, of a supporting-brace jointed thereto and adapted to be folded upon the pedal and for adjustment in length, substantially as described.

3. In a bicycle, the combination, with the pedal, of a supporting-brace jointed thereto and adapted to be folded upon the pedal and provided with a spreading or forked end, substantially as described.

4. In a bicycle, the combination, with the pedal, of a supporting-brace jointed thereto and provided with a button which forms a stop against further outward movement when the brace is arranged for use, substantially as described.

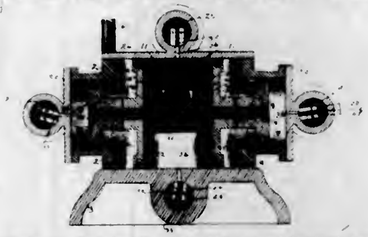
5. In a bicycle, the combination, with the pedal, of the supporting brace jointed thereto and provided with a button, which serves to prevent the folding movement of the brace when arranged for use, substantially as described.

6. In a bicycle, the combination, with the pedal provided with the removably-attached joint-plates, of the brace connected to the pedal by means of the said joint-plates and adapted for folding upon the pedal, substantially as described.

7. In a bicycle, the combination, with the pedal provided with the removably-attached joint-plates and the removably-attached catch-spring, of the brace connected to the pedal by means of the said joint-plates and adapted for folding upon the pedal, substantially as described.

8. In a bicycle, the combination, with the pedal provided with the removably-attached catch-spring, of the supporting-brace jointed to the pedal and adapted to be folded upon the same and held in its folded position by the catch-spring, substantially as described.

444,259. DOUBLE-ACTING ENGINE. CLINTON A. TOWER, Cleveland, Ohio. Filed July 27, 1889. Serial No. 318,832. (No model.)



Claim.—1. In a double-acting engine, the casing having opposite circular piston-chambers, a cylinder set in said casing at right angles to said chambers and carrying a pair of pistons working in said piston-chambers, and a pair of pistons working in said cylinder at right angles to the aforesaid pistons, all four of said pistons having equal surfaces exposed to pressure, substantially as set forth.

2. In a double-acting engine, the casing having a hollow interior chamber and circular piston-chambers opposite to one another and of less diameter than said interior chamber, in combination with a plain cylinder set at right angles to the axis of the said piston-chambers and carrying pistons working in said chambers, and a pair of connected pistons in the said cylinder, all of said pistons having an equal area subject to pressure, substantially as set forth.

3. In a double-acting engine, a casing provided with an interior chamber and cylindrical piston-chambers of less diameter than said interior chamber at right angles to the axis of the drive-shaft, in combination with a cylinder set in the casing intermediate of said piston-chambers and with its axis at right angles thereto, a pair of connected pistons in said cylinder, and a pair of pistons on the sides thereof and working in said cylindrical chambers, substantially as set forth.

4. In a double-acting engine, the outer cylindrical casing having a chamber in the center with flat sides at right angles to the axis of the main shaft, and a cylinder in said casing having its sides flattened to match the flat sides of the casing, in combination with pistons upon the outside of said cylinder and inside thereof, substantially as described.

5. In a double-acting engine, a cylinder containing two united pistons free to reciprocate therein and having two other pistons on its sides connected to said cylinder by arms, in combination with a casing having an interior chamber in which said cylinder works, and two piston-chambers on its sides for the pistons on the outside of the said cylinder, all said pistons having equal pressure area, substantially as set forth.

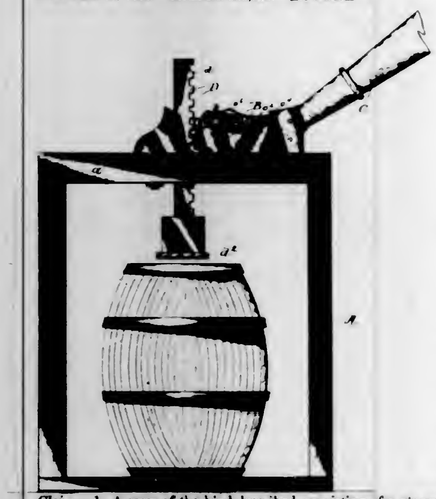
6. In a double-acting engine, a main casing provided with a hollow interior, a cylinder in said casing carrying two pistons on its inside and two pistons supported on arms at its outside and removed from the side of the cylinder by said arms, each set of pistons being at right angles to the other set and all of equal area, in combination with a separate valve for each piston, inlet and outlet ducts common to the several valves, and mechanism operating said valves, having a common center of movement, substantially as set forth.

7. In a double-acting engine, a casing having steam-ducts centering at the bearing of the drive-shaft, in combination with said shaft and a bearing for the shaft around which the steam passes from one side of the shaft to the other, substantially as set forth.

8. In a double-acting engine, a casing having an interior chamber and two piston-chambers outside the limits of said chamber and opening into the same, in combination with a cylinder having arms at its sides, carrying pistons working in said piston-chambers, the opening through said cylinder being at right angles to said piston-chambers, and a pair of connected pistons working in said cylinder, substantially as set forth.

9. In a double-acting engine, a main casing having an interior chamber and opposite piston-chambers distinct and separate from said chamber, but opening therein, in combination with a cylinder in the interior chamber, carrying two pistons at its sides working in said piston-chambers and two pistons inside at right angles to the other pistons, and a separate valve on the main casing opposite the face of each piston to control the flow of steam, substantially as set forth.

444,260. FRUIT-PACKER. WILLIS A. TRESCOTT, Fairport, N. Y. Filed June 19, 1890. Serial No. 355,995. (No model.)



Claim.—1. A press of the kind described, consisting of a plunger provided with a rack-bar, an operating-lever having pivoted thereto a pawl engaging the pinion, and a retaining-pawl having a rear extension to be struck by the operating-lever, substantially as described.

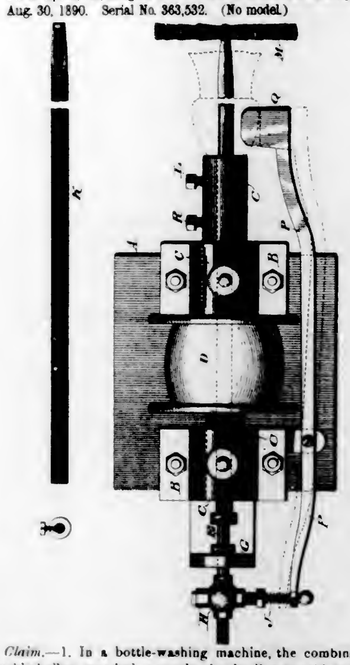
2. In a press of the kind described, a plunger provided with a rack-bar, a pinion engaging the rack-bar, an operating-lever having a pawl pivoted thereto and engaging the pinion, a frame for holding the lever having raised portions, and an extension from the operating-pawl resting on the frame and engaging the raised portions on the frame, substantially as described.

3. In a press of the kind described, a plunger provided with a rack-bar, a pinion arranged contiguous to the rack-bar and engaging the same, an operating-lever having an operating-pawl pivoted thereto and provided with an extension, and a retaining-pawl engaging the pinion and provided with a rear projection engaging the extension from the lever, substantially as described.

4. In a press of the kind described, a plunger provided with a rack-bar, a pinion engaging the rack-bar, an operating-lever having a pawl pivoted thereto and provided with an extension, a casing in which the lever is mounted provided with a raised portion, an extension from the pawl engaging the raised portion of the frame, and a retaining-pawl provided with a rear extension engaging the projection from the operating-lever, substantially as described.

5. In a press of the kind described, a plunger provided with a rack-bar, a pinion engaging the rack-bar, an operating-lever having a pawl pivoted thereto and provided with an extension, a casing in which the lever is mounted provided with a raised portion, an extension from the pawl engaging the raised portion of the frame, a retaining-pawl provided with a rear extension engaging the projection from the operating-lever, and a crank or handle on the shaft of the pinion, substantially as described.

444,261. BOTTLE-WASHING MACHINE. SELDEN TWITCHELL, Philadelphia, Pa., assignor to S. Twitchell & Brother, same place. Filed Aug. 30, 1890. Serial No. 363,532. (No model.)



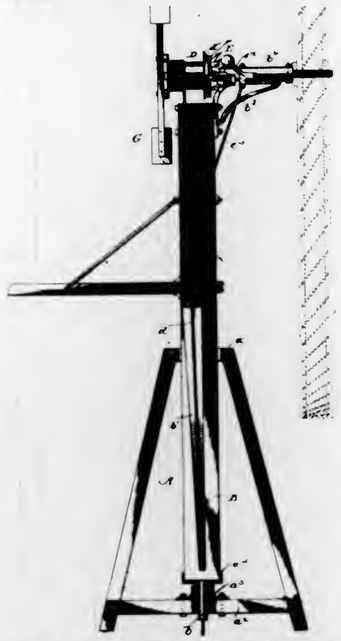
Claim.—1. In a bottle-washing machine, the combination of a rotatable hollow mandrel, a supply-pipe leading to said mandrel and having a valve in connection therewith provided with a stem having a spring thereon, a hollow brush-holder fitting in one end of said mandrel, and a horizontally-disposed pivoted lever fulcrumed to the frame and connected at one end to said spring-controlled valve-stem and having its opposite end held normally adjacent to the brush-holder, substantially as described.

2. In a bottle-washing machine, the combination of a hollow rotatable mandrel, a hollow brush-holder adjustable in said mandrel, a brush adjustable in said holder, a stationary water-pipe leading into said mandrel and provided with a valve having a stem encircled by a spring, and a lever pivoted to the frame and having its one end secured to said spring-encircled valve-stem and its opposite end normally held adjacent to the said brush-holder, substantially as described.

3. In a bottle-washing machine, the combination of a frame or support, a hollow rotatable mandrel journaled in said frame and having a pulley thereon, a stationary water-supply pipe leading into one end of said mandrel and provided with a valve having an extended spring-encircled stem, a hollow brush-holder fitted in the other end of said mandrel, and a rocking lever fulcrumed to the frame and having its one end pivotally connected to the spring-actuated valve-stem and its opposite end formed with a head adapted to engage the bottle when placed over the brush, substantially as described.

4. In a bottle-washing machine, a rotary mandrel, a valved water-pipe connected to one end of said mandrel, and a brush-holder fitted in the opposite end of said mandrel, combined with a pivoted lever connected at one end with the valve of the water-pipe and at its opposite end formed with a head adapted to engage the bottle when in position to be washed, substantially as described.

444,262. WINDMILL. ALBERT VAN NESS, Beloit, assignor to C. P. Stevens, Mitchell County, Kans. Filed Nov. 12, 1887. Serial No. 254,964. (No model.)



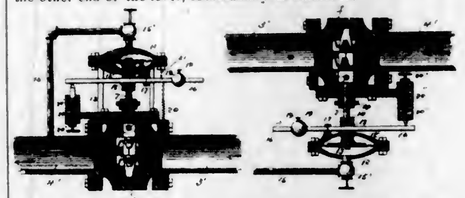
Claim.—1. In a windmill, the combination, with the wheel-shaft, of a drum loosely mounted thereon for the operation of the bucket-rope, an arm mounted rigidly on the wheel-shaft, a strap secured to one end of said arm and resting upon a flange formed upon the drum, the bent rod carrying a pin in one end, its opposite end carrying the opposite end of the strap, said pin engaging a lug on said arm, and means whereby said pin is moved vertically in said lug, operating the bent rod, and causing the strap to bind upon or loosen from the flange on the drum, substantially as described.

2. In combination with a windmill, the clutch governing the revolution of the drum for operating the bucket-rope, said clutch comprising an arm rigidly mounted on a wheel-shaft and carrying one end of the strap bearing on a flange on the drum, the bent rod having the strap attached at one end, the opposite end carrying the pin moving vertically through a lug on the arm, a collar mounted loosely on the wheel-shaft and sliding laterally thereon, links connecting said collar and the bent rod, and a lever operated by a bucket-rope and connected to the collar, whereby the collar will be moved laterally upon the wheel-shaft and the clutch be drawn into or out of engagement with the drum, substantially as described.

3. In a windmill, the combination, with the wheel-shaft, of a drum mounted loosely thereon, a clutch mounted rigidly thereon, a sliding rod mounted on the main frame and engaging a sliding collar on the main shaft, a weighted lever pivoted on the main frame, a rod pivotally connecting said weighted lever to the sliding bar and having a slot in which the pivot on the weighted lever moves, a rod pivoted at one end to the weighted lever and at its opposite end having an eye through which the bucket-rope passes, and stops placed at given points upon said bucket-rope, all combined and arranged to operate for the purpose of throwing the drum into and out of operation with the wheel-shaft, and thus cause the winding and unwinding of the rope thereon, substantially as and for the purpose set forth.

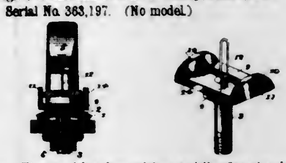
444,263. FLUID-PRESSURE REGULATOR. JOHN ACTON, New York, N. Y. Filed Mar. 25, 1890. Serial No. 345,285. (No model.)

Claim.—1. In a pressure-regulator, the combination of a valve-chamber having the high and low pressure pipes connected thereto, a diaphragm-chamber, a balanced valve fitted in said valve-chamber and having an extended rod, a diaphragm secured within the diaphragm-chamber and having the valve-rod connected thereto, a lever connected to the valve-rod at a point between the valve-chamber and the diaphragm-chamber and having its ends extended beyond said valve-rod, a weight on one end of said lever, and a spring operating against the other end of the lever, substantially as described.



2. In a pressure-regulator, the combination of a valve-chamber, the high and low pressure pipes, the vertical standards or rods rigid with said valve-chamber and supporting the diaphragm-chamber, the balanced valve seated in the valve-chamber, the diaphragm having the rigid follower, which operates freely through one side of the diaphragm-chamber, the valve stem or rod connected to said diaphragm-follower, and having a swiveled connection with the balanced valve, the lever pivoted to the valve-rod at a point between the diaphragm and balanced valve and carrying a weight at one end, and a spring operating against the other end of the lever, all combined and arranged substantially as described, for the purpose set forth.

444,264. CHECKREIN-HOOK. FRED. L. ADAMS, Prophetstown, Ill., assignor of one-half to John F. Kilroy, same place. Filed Aug. 27, 1890. Serial No. 363,197. (No model.)



Claim.—The combination, with a saddle-plate having a rectangular opening in its front end and a check-hook located under the opening, of a bolt having a square head mounted in the opening, depending through the opening and through the checkrein-hook, an oblong plate mounted upon the upper end of the bolt under the hook and having opposite flanges, a pintle connecting the flanges and a spring-wire bent at its center to form a tongue and having its terminals coiled in reverse directions around the pintle and bearing upon said plate at opposite sides of the pintle, substantially as specified.

444,265. ELECTRIC AGRICULTURAL SYSTEM. EDWARD M. BENTLEY, New York, N. Y. Filed May 11, 1888. Serial No. 273,621. (No model.)

Claim.—1. The combination, with a main supply-conductor A, extending along one side of a district, of a connection-conductor C at an angle thereto, a third conductor having traveling connection with conductor C, and an electrically-actuated machine having a traveling connection with the said third conductor.

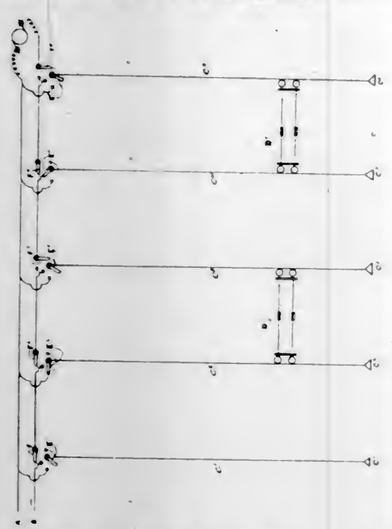
2. The combination, with a line-conductor extending along one side of a field or district to which it is desired to supply current in any part, of a transverse movable conductor extending across said field or district and having a traveling connection with said first-named conductor, and an electrically-actuated machine having a traveling electric connection with said transverse conductor.

3. The combination, with a line-conductor extending along one side of a field or district to which it is desired to supply current in any part, of a transverse movable conductor extending across said district and having a traveling connection with said first-named conductor, an electrically-actuated machine, and an upwardly-extending contact device from said machine traveling in electrical connection with said transverse conductor.

4. The combination, with a main supply-wire extending along one side of a district, of a transverse connection-wire at an angle thereto, provided with sockets to form a detachable support, and an electrically-actuated machine having a traveling connection with the said transverse conductor.

5. The combination, with two main supply-conductors extending along one side of a district, of a series of transverse connection-wires,

switches along the said supply-wires at intervals for connecting the transverse wires thereto, and an electrically-actuated machine having a traveling connection with the said transverse wires.



6. The combination, with a main connection-conductor C, of a transverse suspended conductor having a traveling connection therewith and an electrically-actuated machine having a traveling connection with the said suspended conductor.

7. The combination, with two conductors on opposite sides of a field or district, of two transverse suspended conductors having a traveling connection therewith and an electrically-actuated machine having a traveling connection with the said suspended conductors.

8. The combination, with conductors $C C^2$, of two trolleys G upon said conductors, respectively, and of two conductors $H' H^2$, suspended from these trolleys, being insulated from each other, but connected, respectively, to the two trolleys and through them to C and C^2, respectively.

9. The combination, in an electric-power system, of one or more main conductors, as A B, in circuit with a source of electricity, with a corresponding connection wire or wires, as $C C^2$, designed to travel over a field or district in electrical connection with the main conductor or conductors, and a traveling electrically-actuated machine movable along the line of the said wire or wires and kept in electrical connection therewith.

10. In an electrically-actuated system, the combination, with the main connection-conductors, of a transverse suspended conductor having a movable connection to the said connection-conductor, and an electrically-actuated machine having a traveling contact bearing against the said suspended conductor and movable about a vertical axis.

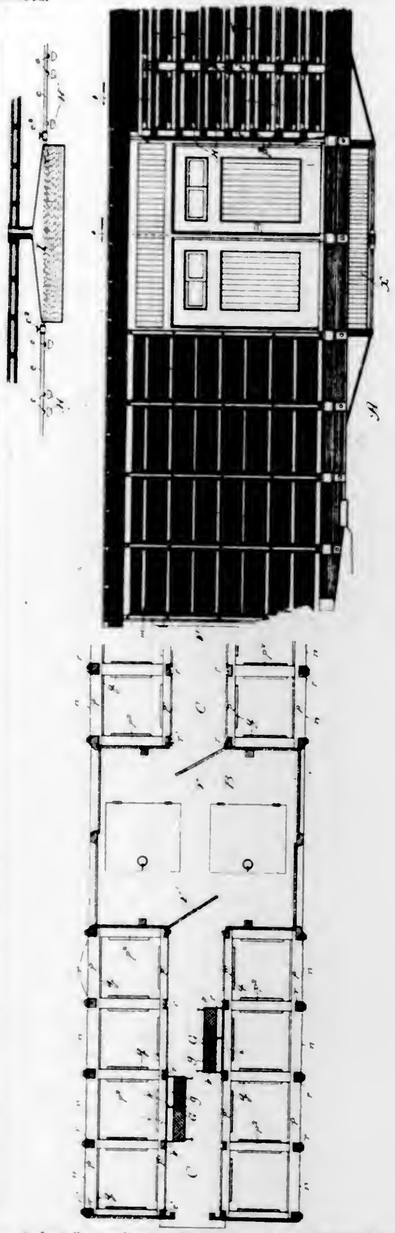
11. In an electrically-actuated machine, the combination, with a driving-axle, of an actuating-motor therefor, having one end supported upon said axle and the other end provided with a spring-support upon the third or steering wheel.

444,266. POULTRY-CAR. WILLIAM P. JENKINS and FRANK X. MUDD, Chicago, Ill., assignors to the Live Poultry Transportation Company, same place. Filed July 12, 1890. Serial No. 358,528. (No model.)

Claim.—1. In a live-poultry car divided internally into tiers of coops provided with decks, the outer sides of the car formed with open-work *n*, extending short of the decks of the coops and forming between the said decks and lower edges of the open-work cleaning-openings *m* of greater dimensions than the mesh of the open-work, substantially as described.

2. In a live-poultry car divided internally into tiers of coops at opposite sides of a longitudinal aisle C, the combination, with the coops, of decks and hinged doors G, controlling access to the coops from the aisle and narrower than the vertical width of the coops, thereby forming spaces *h* between the doors and upper sides of the decks, affording vertical series of steps for the vertical series of coops, substantially as described.

3. In a live-poultry car divided internally into tiers of coops at opposite sides of a longitudinal aisle C, the combination, with the coops, of decks and hinged doors G, controlling access to the coops from the aisle and narrower than the vertical width of the coops, thereby forming feed-insertion openings *g* above the doors, substantially as described.

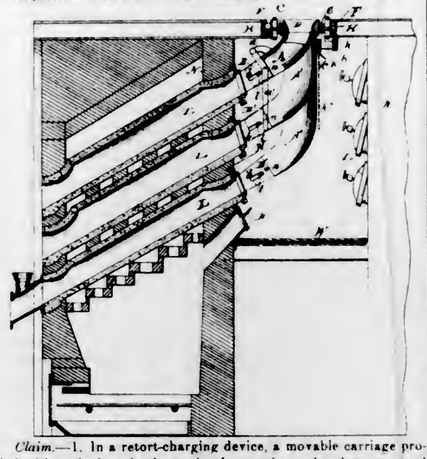


4. In a live-poultry car divided internally into tiers of coops at opposite sides of a longitudinal aisle C, the combination, with the coops, of decks and doors G, narrower than the vertical width of the coops and controlling access to the coops from the aisle and having extensions *k*, hinged from their lower edges to rods *i*, the said door construction forming feed-insertion openings *g* above the doors and between the doors and upper sides of the decks, and spaces *h*, affording vertical series of steps for the vertical series of coops, substantially as described.

5. In a live-poultry car, the combination, with the base A, of the outer uprights *r*, interior uprights *r'*, forming the longitudinal aisle C between them, longitudinal sills *p* and *p'*, and transverse sills p^2, forming the frame-work of tiers of compartments or coops at opposite sides of the said aisle, decks E, removable and adjustable from the aisle, open-work *n* at the outer sides of the car, secured to the uprights *r* and forming spaces *m* at the outer edges of the decks, and doors G, opening into the aisle, one for each compartment, and hinged from their lower edges to rods *i* and forming spaces *h* and *g*, respectively, below and above them, substantially as described.

444,267. WITHDRAWN.

444,268. RETORT-CHARGING DEVICE. KERR M. MITCHELL, St. Joseph, Mo. Filed Oct. 11, 1890. Serial No. 367,770. (No model.)



Claim.—1. In a retort-charging device, a movable carriage provided with a platform having a circular opening and a chute mounted in said opening and provided with flanges fitting over the edges of said platform, whereby the chute may be turned and adjusted to different retorts to be charged, substantially as described.

2. The combination, with a carriage, of an inclined charging-chute composed of an upper section having a flanged collar connected to the platform of the carriage and forming therewith a loose turning joint, and a lower sliding section, and a lever pivotally connected to an arm of the upper section and to the lower sliding section for adjusting the chute to the mouth of the retort, substantially as described.

3. In a retort-charging device, a wheeled carriage the platform of which is made of sections having semicircular openings in their abutting edges, in combination with two or more charging-chutes of different lengths connected by suitable flanged collars or heads in such semicircular openings of the platform, and forming therewith turning joints, substantially as described.

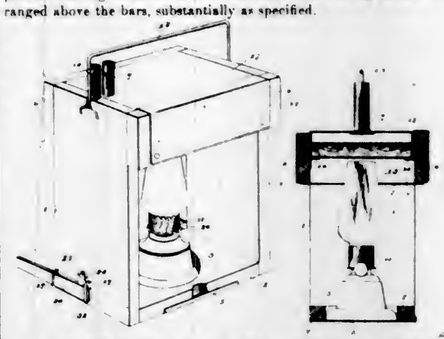
4. A carriage the platform of which is made in sections having semicircular openings in their abutting edges and connected together by lugs and bolts, in combination with a grooved and flanged collar adapted to receive the circular edges of the platform and turn thereon, and the inclined chute secured to the collar, substantially as described.

5. The combination, with the wheeled carriage supporting the charging-chutes and the rails upon which the carriage is mounted, one of such rails having at its under side a rack-bar, of a hanger connected to the under side of said carriage, a shaft in such hanger, carrying at one end a pinion meshing with said rack-bar and at the other end a wheel, and a chain on the wheel for turning it and the pinion, thereby traversing the carriage on its rails, substantially as described.

444,269. FOOT-WARMER. WILLIAM A. RANDLE, Oakland, Ala. Filed May 19, 1890. Serial No. 352,383. (No model.)

Claim.—1. A foot-warmer frame provided at its sides with opposite pairs of loops or keepers, one loop or keeper of each pair being located above the other, brace-bars loosely mounted in the keepers and adapted to be projected beyond the wall of the warmer, and means for locking the bars in position, substantially as specified.

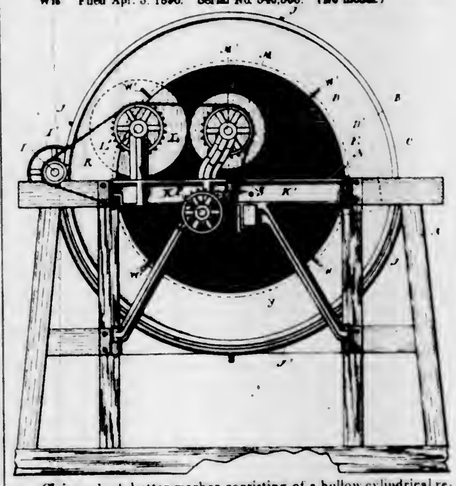
2. The combination, with the warmer-frame, the opposite standards of which are provided with opposite pairs of keepers, one keeper of each pair being located above the other, of sliding bars mounted in the keepers, having their rear ends provided with shoulders adapted to drop behind said keepers and their upper edges provided with stop-pins for limiting the movements of the bars, and binding-buttons arranged above the bars, substantially as specified.



3. The combination, with the frame or casing having the opening 3 in its bottom, the opposite ways 4, and the removable plate 5, mounted in the ways, of the lamp 11, adapted to be withdrawn downwardly through the opening and having the chimney 12, the side bars 6, and heating-plate 7, connecting the same and located between the standards 1 and provided with an opening for the chimney and of a size agreeing with the tank, the tank supported between the side bars and above the heating-plate and provided with a pipe, and a pipe leading from the space below the tank, substantially as specified.

4. The combination, with the opposite standards 1, the base 2, and the lamp secured therein, of the side bars connecting the standards, the heating-plate connecting the side bars and having a central opening for the lamp-chimney, the pipe 10, leading from the compartment or chamber formed by the side bars and heating-plate, and the removable oblong water-tank supported above the plate and combining therewith to form a heating-space extending entirely under the tank, said tank being provided with an escape-pipe, substantially as specified.

444,270. BUTTER-WORKER. HANS J. ANDERSON, Lake Mills, Wis. Filed Apr. 3, 1890. Serial No. 346,368. (No model.)



Claim.—1. A butter-worker consisting of a hollow cylindrical revolving drum and rollers therein arranged in two sets at right angles to each other, the rollers being provided with mechanism for rotating them, substantially as described.

2. In a butter-worker, a revolving cylindrical drum and a pressure-roller supported therein and having its axis parallel with the axis of the drum, in combination with two other pressure-rollers located within the drum and arranged at right angles to the axis of the drum, substantially as described.

3. In a butter-worker, the combination, with a hollow cylindrical revolving drum, of a pressure-roller located within the drum, having its axis parallel with the axis of the drum, a pair of pressure-rollers located within the drum at right angles to the drum and first roller, and a roller-conveyer located between the single pressure-roller and the pair of pressure-rollers, the roller-conveyer being adapted to carry

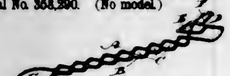
the butter from the single pressure-roller to the pair of rollers, substantially as described.

4. In a butter-worker, a drum supported and revoluble on a spindle affixed to one head thereof, in combination with a single pressure-roller supported by its arbor on a swinging arm and arranged to rotate within the drum, its axis being parallel to the axis of the drum, and a pair of rollers supported on another swinging arm and arranged to rotate within the drum parallel to each other and at right angles to the axis of the drum, substantially as described.

5. In a butter-worker having a revolving cylindrical drum provided with an aperture of considerable size through one of its heads, the combination, with a swinging arm located in front of the aperture in the head of the drum and rollers supported thereon, having their axes normally parallel with the axis of the drum, of another swinging arm located opposite the first arm and rollers supported thereon and arranged normally at right angles to the axis of the drum and to the axis of the rollers on the first arm, and mechanism, substantially as described, for operating the rollers when in their normal position within the drum, as set forth.

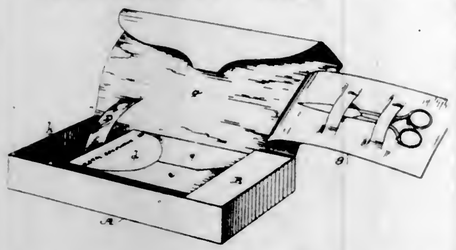
6. The combination, in a churn and butter-worker, of a revolnble drum having an aperture of considerable size in one head thereof, with swinging arms located in front of the aperture and carrying thereon rollers for working the butter, which rollers may be swung into or out of the drum through the aperture in the head thereof, substantially as described.

444,271. **CUFF-RETAINER.** FREDERICK W. BENDER, Narberth Park, and FERDINAND L. SCHEIDEMANN, Philadelphia, Pa. Filed July 10, 1890. Serial No. 358,290. (No model.)



Claim.—A cuff-retainer consisting of a piece of elastic wire bent in serpentine or corrugated shape, the opposing bends thereof bearing against each other, and thereby disconnecting the openings between the same, and having at one end a loop and at the other a throat with an eye bent at an angle thereto, the wire between said throat and eye being bent inwardly, forming a neck, substantially as described.

444,272. **FLY-BOOK.** JOHN S. BENN, San Francisco, Cal. Filed Sept. 21, 1889. Serial No. 324,677. (No model.)

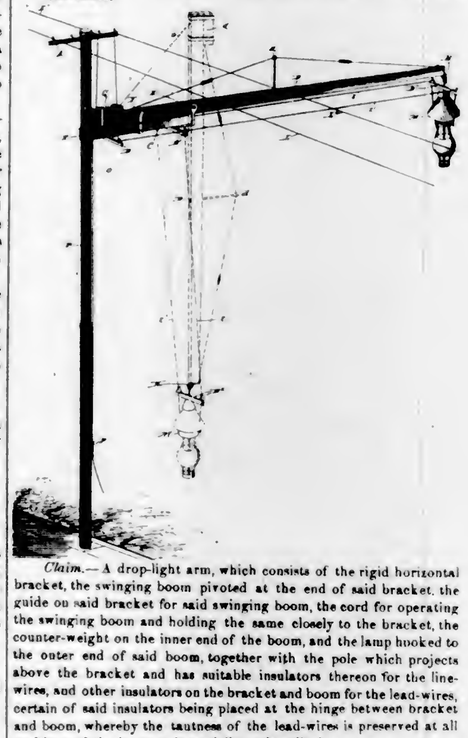


Claim.—1. An artificial-fly book consisting of the exterior case with a folding flap or cover and a transverse partition or strap at one end, the independent envelopes fitting the interior of the case, with one end extending beneath the partition, and the flexible lifting strap or ribbon having one end fixed in the bottom of the case and the other end passing above the envelopes at the opposite end, substantially as herein described.

2. An artificial-fly book consisting of the exterior case with a folding flap or cover, a transverse partition or strap at one end, the independent envelopes fitting the interior of the case, with one end extending beneath the partition, a flexible lifting strap or ribbon having one end fixed in the bottom of the case beneath the partition and the other end passing above the envelopes at the opposite end, a supplemental fly-leaf fixed within the flap or cover of the case, and an independent compartment forming an extension at one end of the case, substantially as herein described.

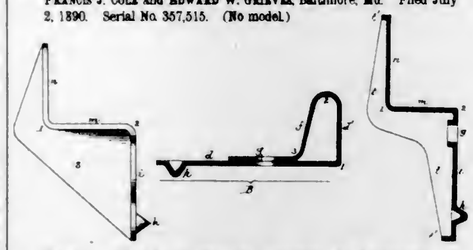
3. An artificial-fly book consisting of the exterior case with a folding flap or cover and the supplemental leaf and independent compartment, a transverse partition extending across the top of one end of the case, the independent folding envelopes adapted to contain the hooks and flies, fitting within the interior of said case, and having the ends cut away or beveled so as to be entered beneath the partition, and a strap beneath the envelopes, having one end secured to the case and the other end for lifting the upper ends of the envelopes out of the case, substantially as herein described.

444,273. **SWINGING OR DROP ARM FOR ELECTRIC LAMPS.** EDWARD CLIFF, Castleton, N. Y. Filed Mar. 21, 1890. Serial No. 344,793. (No model.)



Claim.—A drop-light arm, which consists of the rigid horizontal bracket, the swinging boom pivoted at the end of said bracket, the guide on said bracket for said swinging boom, the cord for operating the swinging boom and holding the same closely to the bracket, the counter-weight on the inner end of the boom, and the lamp hooked to the outer end of said boom, together with the pole which projects above the bracket and has suitable insulators thereon for the line-wires, and other insulators on the bracket and boom for the lead-wires, certain of said insulators being placed at the hinge between bracket and boom, whereby the tautness of the lead-wires is preserved at all positions of the boom, substantially as described.

444,274. **BRACKET-SUPPORT AND STOP FOR CAR-DOORS.** FRANCIS J. COLE and EDWARD W. GRIEVES, Baltimore, Md. Filed July 2, 1890. Serial No. 357,515. (No model.)



Claim.—1. The within-described door-stop for freight-cars, the same consisting of a single piece of sheet metal bent to form a base-plate with projecting stop-lug and a brace for the latter, and having one or more retaining lugs or projections struck up from said base-plate, substantially as specified.

2. The within-described bracket for freight-car doors, the same consisting of a single piece of sheet metal bent to form an attaching-web, right-angled bearing-web, and guard-web, and having a central hollow strengthening-rib struck up therefrom, substantially as specified.

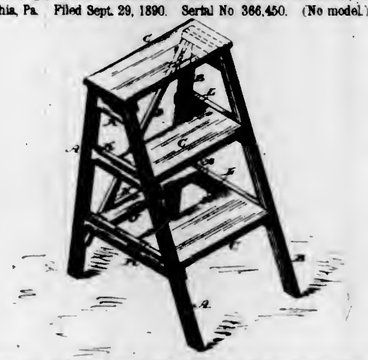
3. The within-described bracket for freight-car doors, the same consisting of a single piece of sheet metal bent to form the attaching-web, right-angled bearing-web, and guard-web, and having bent or struck up from the same one or more strengthening-ribs and one or more retaining lugs or projections, substantially as specified.

444,275. **ORE CONCENTRATOR AND AMALGAMATOR.** JOHN D. COPLEN, Denver, Colo. Filed June 7, 1890. Serial No. 354,579. (No model.)

Claim.—The combination of a table provided with cups or depressions and discharge-ways from the bottom of the cups, spring-operated vertically-moving valves, and means, as eccentrics, for lifting the valves to open the discharging-ways, substantially as described.



444,276. **FOLDING STEP-LADDER.** NEHEMIAH GOLDBERG, Philadelphia, Pa. Filed Sept. 29, 1890. Serial No. 366,450. (No model.)



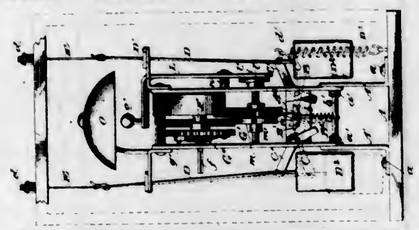
Claim.—1. A folding step-ladder consisting of legs and steps hinged thereto, and a diagonally-arranged brace hinged at one end and having an automatically-acting locking device at the opposite end, substantially as described.

2. In a folding step-ladder, a pin connected with the same, a brace having an opening to receive said pin, and a spring for automatically causing the engagement of said brace and pin and the retention of said brace in its locking position, substantially as described.

3. A folding step-ladder having a brace, a keeper which receives said brace and permits lateral play of the same therein, and means connected with said keeper, whereby the brace automatically engages with the pin and is retained in contact with the same, substantially as described.

4. A folding step-ladder having legs with steps hinged thereto, cross-bars which support said steps, having shoulders formed therein, a brace J, and a diagonal brace hinged at one end and having an automatically-locking device in connection therewith, substantially as described.

444,277. **FIRE OR BURGLAR ALARM.** WILLIAM HENRY, Columbia, S. C. Filed June 10, 1890. Serial No. 354,964. (No model.)



Claim.—1. In an alarm, the combination, with a pivoted lever arranged to engage directly with the rock-bar, of a centrally-arranged rock-bar disconnected from said lever and arranged in the path thereof, connections holding the lever normally out of contact with the rock-bar, and an alarm actuated by the tilting of the rock-bar, as set forth.

2. In an alarm, the combination, with a pivoted lever, cords holding the same, and a rock-bar independent of and arranged in the path of one arm of the lever, of a locking-wheel connected with a train of gearing and normally held from rotation by the rock-bar, and an alarm actuated by the releasing of the said wheel through the tilting of the rock-bar, substantially as specified.

3. The combination, with the pivoted levers arranged upon opposite sides of and arranged to directly engage the rock-bar and the cords connected therewith, of the rock-bar independent of said lever and arranged to be engaged and tilted by the same, the train of gearing, the locking-wheel arranged to hold the same from movement and thus held by the rock-bar, the weights connected with the levers, and the alarm actuated by the tilting of the rock-bar, substantially as specified.

4. The combination, with the pivoted levers, the cords and weights connected thereto, and the rock-bar pivoted between the levers and arranged to be engaged directly thereby, of the upwardly-extending finger on the rock-bar, the notched locking-wheel engaged by said finger, the train of gearing held by said wheel and finger, and the alarm operated by the gearing, substantially as described.

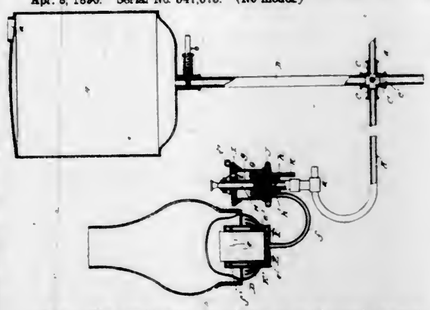
5. The combination, with the rock-bar arranged to be engaged directly by the lever, the vertical finger thereon, the train of gearing, the alarm, the locking-wheel engaged by said finger, the pivoted lever independent of the rock-bar, and the weight and cord connected therewith, of the spring connected with a lug depending from the rock-bar to normally keep it horizontal, substantially as specified.

6. The combination, with the centrally-arranged rock-shaft and the horizontal rock-bar carried thereby, of the pivoted levers having their pivots upon opposite sides of the rock-bar and arranged to contact therewith when moved on their pivots, connections holding the levers normally out of contact with the rock-bar, and an alarm actuated by the tilting of the rock-bar, as set forth.

7. The combination, with the train of gearing, the locking-wheel therefor, the disk provided with crank-pin, the bell, and the hammer-arm provided with elongated slot in which the crank-pin works, of the rock-bar provided with finger, the lever pivoted with one arm in the path of the rock-bar, and the cord connected to the other arm of the lever, substantially as specified.

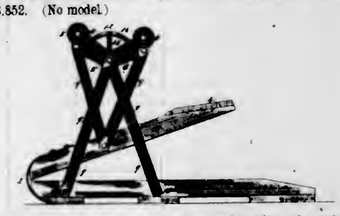
8. The combination, with the uprights and the guide-bars D', of the train of gearing, the rock-bar, the levers independent of and disconnected from the rock-bar, the weights on the levers, the rods D, connected with the outer ends of the levers and passing loosely through the guide-bars, and the cords connected to the said rods, substantially as specified.

444,278. **LAMP.** ALBERT G. MCDANIEL, Hannibal, Mo. Filed Apr. 8, 1890. Serial No. 347,073. (No model.)



Claim.—The combination, in a lamp, of an elevated reservoir, a valve-chamber provided with a perforated tube *g*, a valve therein, an air-vent *i*, an overflow tube, pipes connecting said valve-chamber with the said reservoir, provided with cocks, a casing F, for the lamp proper, communicating with the said valve-chamber by a pipe *f*, and the perforated wick-tube sustained within the casing F, as specified.

444,279. **MOP-WRINGER.** CHARLES MCDONALD, Norwalk, Ohio, and FRED C. MCDONALD, Chicago, Ill. Filed May 31, 1890. Serial No. 353,852. (No model.)

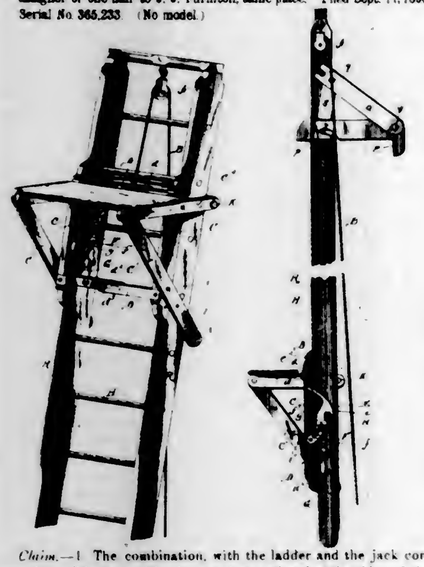


Claim.—1. In a mop-wringer, the combination of a suitable base and a treadle hinged to said base, and upwardly-extending supports rigidly secured to said base, with suitable levers pivoted to said supports and carrying the wringer-rolls, and links connecting the wringer-roll levers with the treadle, all substantially as herein set forth.

2. In a mop-wringer, the combination of a suitable base having

supports to which the wringer-roll levers are pivotally connected, with a treadle and suitable links connecting the wringer-roll levers with the treadle, said treadle being connected to the base by spring-straps, which serve the double purpose of a spring and hinge, substantially as herein set forth

444,280. **PAINTER'S JACK.** FRANK PEPIN, East Liverpool, Ohio, assignor of one-half to J. J. Purinton, same place. Filed Sept. 17, 1890. Serial No. 365,233. (No model.)



Claim.—1. The combination, with the ladder and the jack constructed to slide on and having portions embracing the sides of the ladder, and having the cross-rod K passed through the said side portions in the rear of the ladder to hold the jack thereto, of the pivoted catches E, adapted to catch over the rings of the ladder, and having the extensions e^2, the stops o to limit the forward movement of the said catches, and the sliding lifters F, held on the catches, substantially as and for the purpose described.

2. The combination, with the ladder, of the jack composed of two side frames, each frame composed of base C, to slide on the ladder, platform-support C^2, to extend along the side and beyond the rear of the ladder, and the brace C', adjustably connecting the platform-support C^2 with the base C, the cross-rod K, connecting the projected ends of the platform-supports, and the braces adjustably connecting the said side frames, substantially as described, for the purpose specified.

3. A painter's jack comprising two side frames and adjustable cross-bars connecting the said side frames, substantially as described.

4. The combination, with the ladder provided with a painter's jack, of a suspension device composed of a hook notched to receive a rung of the ladder, a brace pivoted to the hook and notched at its free end to engage the rung of the ladder above that engaged by the hook, and a brace or stay between the hook and the brace pivoted to the hook, substantially as described

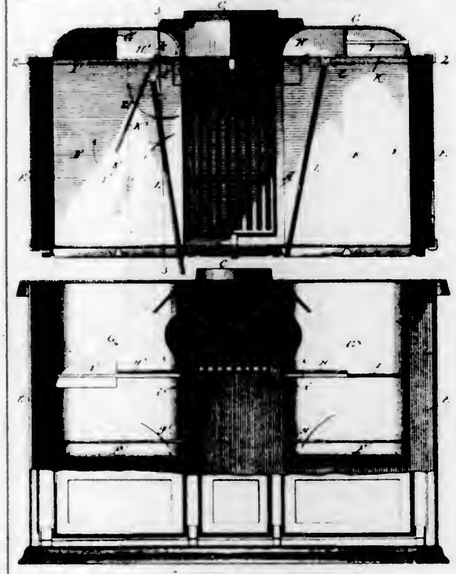
444,281. **RANGE.** CHARLES F. WALTHER, Buffalo, N. Y., assignor to Sherman & Jewett & Co., same place. Filed June 3, 1890. Serial No. 354,134. (No model.)

Claim.—1. In a sheet-flue range, a deflecting-plate arranged in the back flue and extending part way across the same and above the opening from the bottom flue, whereby the products of combustion are caused to pursue a tortuous passage through the said flue, and a damper arranged in the rear flue opposite the said deflecting-plate, substantially as set forth.

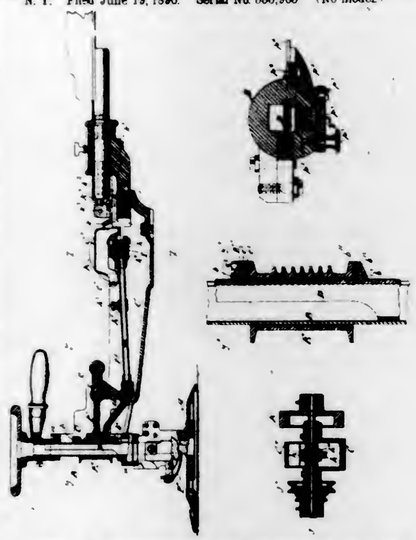
2. A stove or range having around an oven the top, the side, the bottom, and the rear flues, the opening from the bottom to the rear flue being at the side opposite the side flue, and there being a deflecting-plate arranged in the rear flue over the said opening from the bottom flue about midway vertically of the rear flue, substantially as described.

3. In a double-oven sheet-flue range, the deflecting-plates arranged in the back flues above the openings from the bottom flues, and the dampers arranged in the back flues opposite the ends of the deflecting-plates, substantially as described

4. In a stove or range, the oven arranged to one side of the fire-box, the partition-plate extending across the rear end of the fire-box and separating it from the back flue, the unobstructed top flue over the oven leading from the fire-box to a flue at one side of the oven, an opening from the said top flue to the back flue for the direct draft and a damper hinged at or near one end to the said partition-plate and arranged to close the said opening or when the direct draft is desired to be swung out into the top flue, and thereby deflect the products of combustion toward the front of the stove and cause them to circulate under the top plate, substantially as set forth



444,282. **CLOTH-CUTTING MACHINE.** ALBIN WARTH, Stapleton, N. Y. Filed June 19, 1890. Serial No. 355,965. (No model.)



Claim.—1. The combination, with the support A, the pillar B, the knife-bar D, fitted into the pillar, and the sleeve E, fitting on the pillar, of lugs $b\,b'$, extending from the knife-bar, one above and the other below the sleeve, and a box E', provided with internal ribs $e^2\,e^3$ to engage recesses $b^6\,b^6$ in the sides of the lug b, substantially as described.

2. The combination, with the support A, the pillar B, the knife-bar D, fitted into said pillar, the sleeve E, which fits the pillar and engages the knife-bar, and the arm C, which embraces said pillar, of the arbor J, the eccentric wrist-pin I, the journal-box h, embracing this eccentric wrist-pin and provided with a channel h^6, and the hollow connecting-rod H, having a supply-opening h' and extending from the journal-box h and geared together with the sleeve E, substantially as described

3. The combination, with the movable support A and with the knife carried by the same, of the arbor J, geared together with the knife, the belt-pulley J^6, and the brake-pulley K, mounted on said arbor, and a brake-shoe held in contact with the brake-pulley by a yielding pressure, substantially as described.

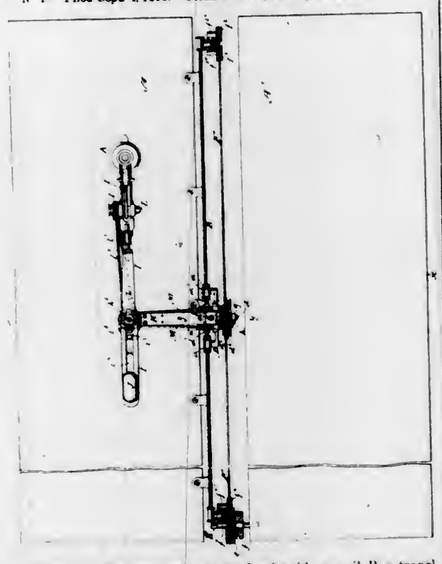
4. The combination, with the support A, the pillar B, the knife-bar D, fitted into the pillar, the sleeve E, fitting on the pillar and engaging the knife-bar, the arm C, having eyes $a\,a$, which embrace the pillar, and means for imparting to the sleeve a reciprocating motion, of a presser-foot P, the shank of which extends up into the pillar and terminates at the lower eye a of the arm C, a clamping-plate p^3, secured to the pillar beneath the lower eye by screws p^5, and an elastic packing p^{30}, interposed between the clamping-plate and the shank of the presser-foot, substantially as described

5. The combination, with the support A, the pillar B, the knife-bar D, fitted into the pillar, the sleeve E, fitting on the pillar and engaging the knife-bar, and means, substantially as described, for imparting a reciprocating motion to the sleeve, of the pintle p^8, the arm p^6, provided with an eye p^7 for supporting said pintle, the set-screw p^9, the presser-toe P^{30}, made to swing on the pintle, and the spring acting on the presser-toe, substantially as described.

6. The combination, with the support A, the pillar B, the knife-bar D, fitted into the pillar, the sleeve E, fitting on the pillar and engaging the knife-bar, and means, substantially as described, for imparting a reciprocating motion to the sleeve, of the knife-receiving socket or receiver R, formed with sloping edges rising above the support A, substantially as described.

7. The combination, with the support A, the pillar B, the knife-bar D, fitted into the pillar, the sleeve E, fitting on the pillar and engaging the knife-bar, and the arm C, which embraces the pillar, of the arbor J, mounted in said arm, the eccentric wrist-pin I, the journal-box h, embracing the wrist-pin, the connecting-rod H, extending from the journal-box h and geared together with the sleeve E, and the oil-protecting cap C^6, hinged to the arm C and swinging in a plane at right angles to the arbor J, substantially as described.

444,283. **MECHANICAL MOVEMENT.** ALBIN WARTH, Stapleton, N. Y. Filed Sept. 4, 1890. Serial No. 363,882. (No model.)



Claim.—1. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a pulley d', mounted on said carriage and geared with a driving-shaft E, an arm H, mounted on the carriage, an arbor h^5, mounted in said arm and geared with the pulley d', an arm I, connected to the arm H and free to swing both in a horizontal and in a vertical plane, and a tool secured to the arm I and geared with the arbor h^5, substantially as described

2. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a pulley d', mounted on said carriage, the driving-pulley e, the belt F, extending from said driving-pulley over the guide-pulleys $f\,f''\,f^3\,f^4$, the swivel-bar g^2, the pulleys $g^4\,g^4$, mounted in said swivel-bar and constructed to act upon the belt E, the dog g', for locking the swivel-bar g^2 in the required position, an arm H, mounted on the carriage, an arbor h^5, mounted in said arm and geared with the pulley d', an arm I, connected to the arm H and free to swing both in a horizontal and in a vertical plane, and a tool secured to the arm I and geared with the arbor h^5, substantially as described.

3. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said rail, a pulley d', mounted on said carriage, an arbor h^5, mounted in said arm and geared with the pulley d', an arm I, connected to the arm H and free to swing both in a horizontal and in a vertical plane, a tool secured to the arm I and geared with the arbor h^5, and means, substantially as described, for retaining the carriage D on the rail B in any desired position.

4. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a pulley d', mounted on said carriage and geared with the driving-shaft E, an arm H, mounted on the carriage, an arbor h^5, mounted in said arm and geared with the pulley d', a balance-arm I, connected to the arm H and free to swing both in a horizontal and in a vertical plane, a weight J, secured to this balance-arm on one side of its fulcrum, and a tool secured to said balance-arm on the opposite side of its fulcrum and geared with the arbor h^5, substantially as described.

5. The combination of a fixed guide or rail B, a traveling carriage D, fitting on said guide, a pulley d', mounted on said carriage and geared with the driving-shaft E, an arm H, mounted on said carriage, an arbor h^5, mounted in said arm and geared with the pulley d', a balance-arm I, connected to the arm H and free to swing both in a horizontal and in a vertical plane, means, substantially as described, for adjusting the balance-arm in the direction of its length, a weight J, secured to said balance-arm on one side of its fulcrum, and a tool attached to the balance-arm on the opposite side of its fulcrum and geared with the arbor h^5, substantially as described.

6. The combination of a fixed guide or rail, a traveling carriage D, fitted on said guide and geared with the driving-shaft E, a balance-arm I, connected to the traveling carriage and free to swing both in a horizontal and in a vertical plane, and a tool secured to the balance-arm and geared with the carriage, substantially as described.

7. The combination of the fixed guide or rail, a traveling carriage D, fitted on said guide and geared with the driving-shaft E, a supporting-arm H, connected to the carriage, a balance-arm I, connected to the supporting-arm and free to swing both in a horizontal and in a vertical plane, and a tool secured to the balance-arm and geared with the carriage, substantially as described.

8. The combination, with the driving-shaft E and the supporting-arm H, of a balance-arm I, attached to the supporting-arm at a point between its ends and free to swing both in a horizontal and in a vertical plane, and a tool secured to the balance-arm and geared with the driving-shaft, substantially as described.

9. The combination, with the driving-shaft E and the supporting-arm H, of a longitudinally-slidable balance-arm I, free to swing both in a horizontal and in a vertical plane, and of a tool secured to the balance-arm and geared with the driving-shaft, substantially as described

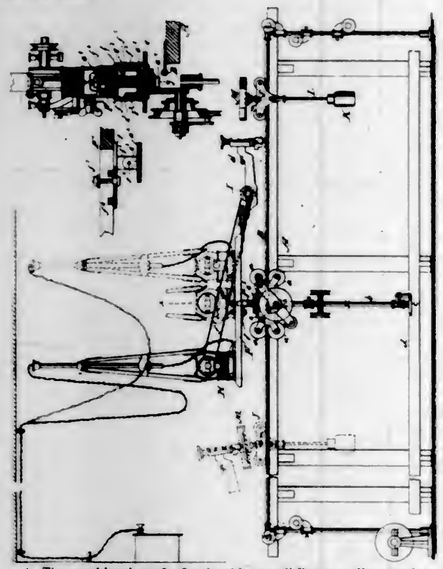
444,284. **MECHANICAL MOVEMENT.** ALBIN WARTH, Stapleton, N. Y. Filed Sept. 4, 1890. Serial No. 363,883. (No model.)

Claim.—1. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a balance-arm F, secured to the traveling carriage and constructed to swing both in a horizontal and in a vertical plane, a tool G, attached to the balance-arm on one side of its fulcrum, a motor H, secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

2. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a platform c, secured to said carriage, a bracket c', with a tubular projection c^2, supported by said platform, the plate f, connected to the bracket c' by pivots f^2, the balance-arm F, attached to the plate f, a tool G, secured to the balance-arm on one side of its fulcrum, a motor H, secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

3. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a balance-arm F, secured to the traveling carriage and constructed to swing both in a horizontal and in a vertical plane, means, substantially as described, for adjusting the balance-arm in the direction of its length, a tool G, attached to the balance-arm on

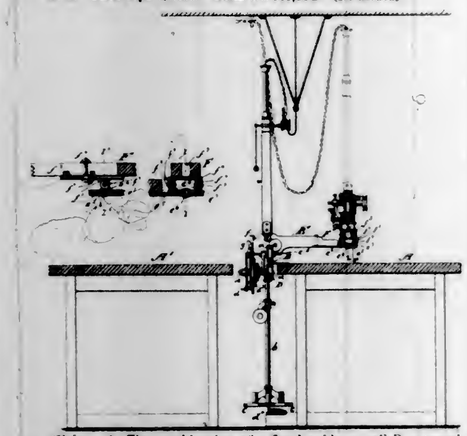
one side of its fulcrum, a motor H, secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.



4. The combination of a fixed guide or rail B, a traveling carriage D, provided with two pairs of wheels *a a'*, constructed to engage the guide B from opposite sides, a balance-arm F, secured to the traveling carriage and constructed to swing both in a horizontal and in a vertical plane, a tool G, attached to the balance-arm on one side of its fulcrum, a motor H, secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

5. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a balance-arm F, secured to the carriage and constructed to swing both in a horizontal and in a vertical plane, a tool G, attached to the balance-arm, and suitable means for imparting motion to the tool.

444,285. MECHANICAL MOVEMENT. ALBIN WARTH, Stapleton, N. Y. Filed Sept. 4, 1890. Serial No. 363,884. (No model.)



Claim.—1. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a supporting-arm E, secured to and traveling with the carriage, a balance-arm F, secured to the supporting-arm E and free to swing both in a horizontal and a vertical plane, a tool G, attached to the balance-arm on one side of its fulcrum, a motor H, secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

2. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, the bracket *c'*, with its tubular projection c^3, secured to said carriage, the supporting-arm E, fitted on the tubular projection c^3 and retained in position by a screw-bolt *e*, the latch *f*, the balance-arm F, secured to the supporting-arm E and free to swing both in a horizontal and in a vertical plane, a tool attached to the balance-arm on one side of its fulcrum, a motor H, secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

3. The combination of a fixed guide or rail B, a traveling carriage D, fitted on said guide, a supporting-arm E, secured to and traveling with the carriage, the swiveling bracket c^3, carried by the supporting-arm, the balance-arm F, the plate *f*, secured to the balance-arm and connected to the bracket c^3 by pivots f^2, a tool attached to the balance-arm on one side of its fulcrum, a motor H, secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

4. The combination of a supporting-arm E, a balance-arm F, connected to the free end of the supporting-arm and free to swing in a horizontal and in a vertical plane, a tool attached to the balance-arm on one side of its fulcrum, a motor secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

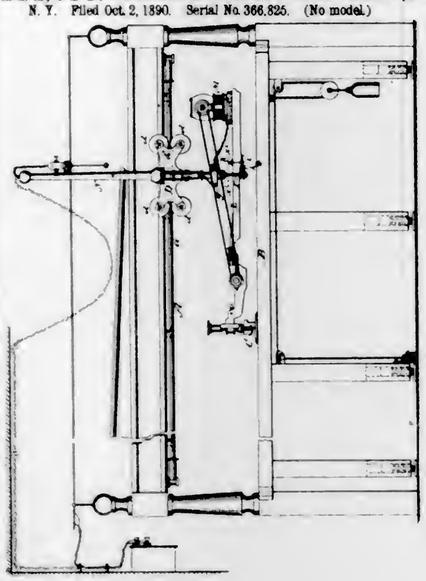
5. The combination of a supporting-arm E, a balance-arm F, connected to the free end of the supporting-arm and free to swing both in a horizontal and in a vertical plane, means, substantially as described, for adjusting the balance-arm in the direction of its length, a tool attached to the balance-arm on one side of its fulcrum, a motor secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

6. The combination of a bracket *c'*, the supporting-arm E, attached to said bracket and constructed to swing on the same, the balance-arm F, connected to the free end of the supporting-arm and free to swing both in a horizontal and in a vertical plane, a tool attached to the balance-arm on one side of its fulcrum, a motor secured to said balance-arm on the opposite side of its fulcrum, and suitable means for connecting the tool with the motor.

7. The combination of a fixed guide or rail B, a traveling carriage fitted on said guide, a supporting-arm E, secured to and traveling with the carriage, balance-arm F, secured to the supporting-arm and free to swing both in a horizontal and a vertical plane, a tool G, attached to the balance-arm, and means, substantially as described, for imparting motion to the tool.

8. The combination, with the supporting-arm E, of a balance-arm F, secured to said supporting-arm and free to swing both in a horizontal and in a vertical plane, a tool secured to the balance-arm, and a motor supported by the balance-arm and geared with the tool, substantially as described.

444,286. MECHANICAL MOVEMENT. ALBIN WARTH, Stapleton, N. Y. Filed Oct. 2, 1890. Serial No. 366,825. (No model.)



Claim.—1. The combination, with the track A and the carriage D, of a hanger depending from the carriage, a balance-arm L, mounted in the hanger and free to swing both in a horizontal and in a vertical plane, a tool attached to the balance-arm, and a motor M, carried by the balance-arm and geared with the tool, substantially as described.

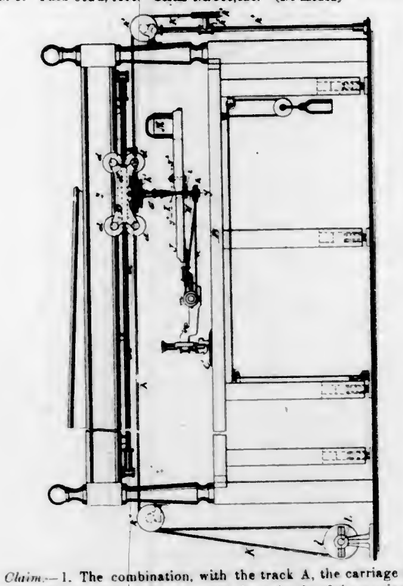
2. The combination, with the track A and the carriage D, of a hanger depending from the carriage, a balance-arm mounted in the hanger and adjustable in the direction of its length, said balance-arm being free to swing both in a horizontal and in a vertical plane, a tool attached to the balance-arm on one side of its fulcrum, and a motor attached to said balance-arm on the opposite side of its fulcrum and geared with the tool, substantially as described.

3. The combination, with the track A and the carriage D, of a hanger depending from and free to swivel in the carriage, a guide N, secured to the carriage, a tray *g*, secured to the hanger, a balance-arm supported by and swinging in a horizontal plane with the hanger and adapted also to swing thereon in a vertical plane, a tool C, attached to the balance-arm, and a motor M, carried by the balance-arm and geared with the tool, substantially as described.

4. The combination, with the hanger H I, of a balance-arm mounted in the hanger and free to swing both in a horizontal and in a vertical plane, a tool secured to the balance-arm, and a motor carried by the balance-arm and geared with the tool, substantially as described.

5. The combination, with the hanger H I, of a balance-arm mounted in the hanger, said balance-arm being free to move in the direction of its length and to swing both in a horizontal and in a vertical plane, a tool secured to the balance-arm, and a motor carried by the balance-arm and geared with the tool, substantially as described.

444,287. MECHANICAL MOVEMENT. ALBIN WARTH, Stapleton, N. Y. Filed Oct. 2, 1890. Serial No. 366,826. (No model.)



Claim.—1. The combination, with the track A, the carriage D, and the main driving-shaft L, mounted independently of the carriage, of a hanger depending from the carriage, a balance-arm J, mounted in the hanger and free to swing both in a horizontal and in a vertical plane, and a tool carried by the balance-arm and geared with the driving-shaft, substantially as described.

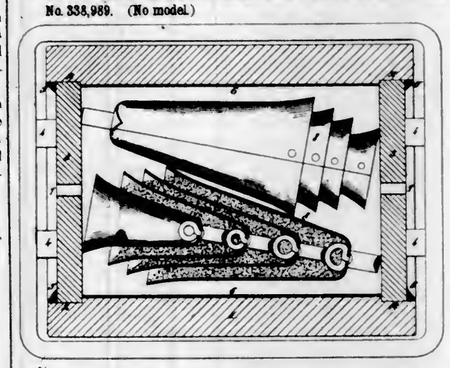
2. The combination, with the track A, the carriage D, and the main driving-shaft L, mounted independently of the carriage, of a hanger depending from the carriage, a balance-arm mounted in the hanger and made adjustable in the direction of its length, said balance-arm being free to swing both in a horizontal and in a vertical plane, and a tool carried by the balance-arm and geared with the driving-shaft, substantially as described.

3. The combination, with the track A, the carriage D, and the main driving-shaft L, mounted independently of the carriage, of a hanger depending from the carriage, a vertical arbor H, mounted in the hanger, a pulley A', mounted on the arbor H, a belt K, extending from the driving-shaft L, mechanism, substantially as described, for holding the two branches of the belt K in contact with the pulley A', a balance-arm J, mounted in the hanger and free to swing both in a horizontal and in a vertical plane, and a tool carried by the balance-arm and geared with the arbor H, substantially as described.

4. The combination, with a depending hanger and with the main driving-shaft L, mounted independently of the carriage, of the balance-arm J, mounted in the hanger and free to swing both in a horizontal and in a vertical plane, and a tool carried by the balance-arm and geared with the driving-shaft, substantially as described.

5. The combination, with a depending hanger and with the main driving-shaft L, mounted independently of the carriage, of the balance-arm J, mounted in the hanger and free to move in the direction of its length and to swing both in a horizontal and in a vertical plane, and a tool carried by the balance-arm and geared with the driving-shaft, substantially as described.

444,288. DEVICE FOR USE IN BRAZING AND COATING STOCK-BELLS. CHRETIAN G. BLUM, Collinsville, Ill. Filed Feb. 3, 1890. Serial No. 338,989. (No model.)

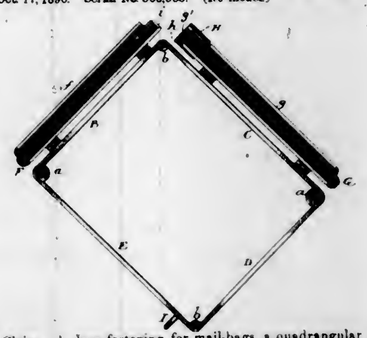


Claim.—1. The combination of a portable cylinder 1, of refractory material, whose diameter is equal throughout its whole length, whereby it may have an equal bearing from end to end when laid flat, and removable heads of less diameter than said cylinder inserted entirely within the ends of the latter, substantially as set forth.

2. The combination of a portable cylinder 1, of refractory material, having a straight exterior from end to end, and removable refractory heads of smaller diameter than said cylinder fitting entirely within the ends of the latter and being provided with perforations at a distance from their edges, substantially as and for the purposes set forth.

3. The combination of a portable cylinder composed of refractory material and having its exterior formed perfectly straight from end to end, removable refractory heads whose diameters are not greater than that of said cylinder, inserted entirely within the ends of the latter and having air-holes at or near their centers, and luting inserted within said cylinder against the heads for making the latter tight, substantially as set forth.

444,289. MAIL-BAG FASTENING. OWEN P. CALLAHAN, Spokane Falls, Wash., assignor of one-half to Lucy A. Simms, same place. Filed Oct. 17, 1890. Serial No. 368,383. (No model.)



Claim.—1. In a fastening for mail-bags, a quadrangular jointed frame consisting of two pairs of side plates of unequal length, adapted, when folded together, to break joints, combined with a top plate

hinged to two of said side plates and having a flange fitting over the other two side plates, and a locking device, substantially as specified.

2. In a fastening for mail-bags, a quadrangular jointed frame consisting of two pairs of side plates of unequal length, adapted, when folded together, to break joints, combined with a top plate in two sections, one section being hinged to one of the shorter side plates and the other section to one of the longer side plates, the two sections being adapted, when the bag is closed, to form a joint intermediate of the joints formed by the side plates, a flange on said top plate adapted to fit over the other two side plates, and a locking device, substantially as specified.

3. In a fastening for mail-bags, a quadrangular jointed frame, combined with a flanged top plate in two sections, a small plate attached to one of the said sections and projecting beyond its end, the end of the section carrying the small plate being undercut and the end of the other section beveled, whereby when the bag is closed the adjacent ends of the two sections will interlock, substantially as specified.

4. In a fastening for mail-bags, a quadrangular jointed frame, combined with a top plate in two sections hinged to two of the sides of said frame, the adjacent ends of said sections interlocking when the bag is closed, a flange on each of said sections, said flanges being cut away near the interlocking ends of the sections, a small plate fastened to one of the sections and adapted to overlap the end of the other section, a hasp hinged to the small plate and adapted to fit in the space formed by cutting away the said flanges, and a staple with which said hasp engages, substantially as specified.

444,290. GRAIN-DRILL. CHARLES M. CLINTON, Ithaca, and GEO. W KIRKPATRICK, Macedon, assignors to Helen M. Kirkpatrick, Macedon, N. Y. Filed June 12, 1890. Serial No. 355,234. (No model.)



Claim.—1. In combination with the duplex feed-wheel, the divided cup, the bridge confined between the two parts of the cup and provided with ears, and the reversible wicket or cut-off provided with journals seated in said ears.

2. In combination with the feed-wheel and cup, the bridge provided with the perforated and the slotted ear, and the reversible cut-off plate provided with journals and adapted for insertion in an endwise direction through the slotted ear.

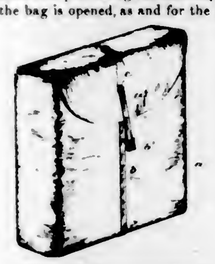
3. In a duplex seed-distributer, the reversible wicket marked to indicate different seeds and having variant journals, in combination with a support having corresponding ears, whereby the application of the wicket in an improper position is prevented.

4. In combination with the feed-wheel and feed-cup having variant passages therethrough, the hinged reversible wicket bearing on opposite sides the names of different grains, so that the adjustment of the feeder to distribute a given grain is attended by the exposure of its name and the concealment of the other.

444,291. TOBACCO-POUCH. WILLIAM J. CUSHEN, Richmond, Va. Filed Oct. 22, 1890. Serial No. 368,895. (No model.)

Claim.—1. The combination of a pouch provided along its rear side with a vertical series of eyelets, a cord secured to the upper edge of the rear side and having its free end carried around under the bottom of the bag and interlaced in the said vertical series of eyelets, and means for preventing the free end of the cord running back through the eyelets when the bag is opened, substantially as described.

2. A pouch having its rear side extended to form a flap, a vertical series of eyelets formed in the rear side of the bag and said flap, a lining secured to the interior of the flap and bag to cover the eyelets, a cord attached to the upper end of the flap and passed around under the bag and interlaced up through the series of eyelets, and means on the free end of the cord for preventing the same slipping back through the eyelets when the bag is opened, as and for the purpose described.

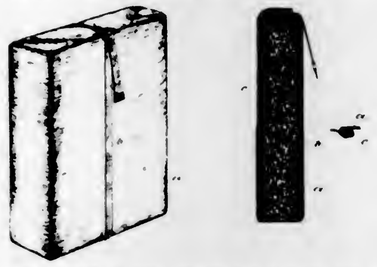


444,292. TOBACCO-POUCH. WILLIAM J. CUSHEN, Richmond, Va. Filed Oct. 22, 1890. Serial No. 368,896. (No model.)



Claim.—A tobacco-pouch provided at its rear side with an extension forming a flap, a vertical series of eyelets secured in the back of this pouch and extension, an eyelet *b*, secured in the end of the flap, a cord *c*, provided with a hook *b'* at one of its ends, this hook being removably inserted in the said eyelet *b*, and the free end of the cord passed around the pouch and fastened by being interlaced in the said series of eyelets, as and for the purposes described.

444,293. TOBACCO-POUCH. WILLIAM J. CUSHEN, Richmond, Va. Filed Oct. 23, 1890. Serial No. 369,067. (No model.)

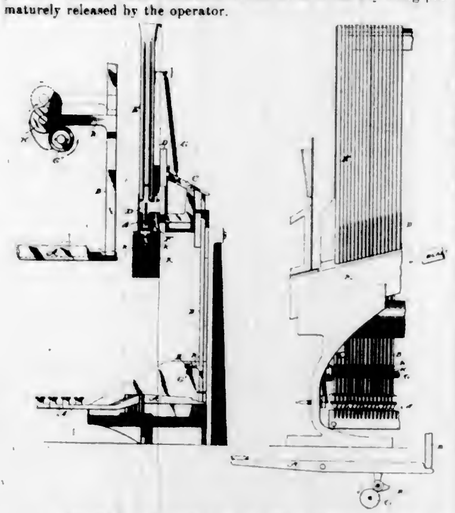


Claim.—A bag or pouch provided with a vertical tube open at both ends, this tube being formed along the rear side of the bag, and a cord attached at one end to the upper edge of the rear side of the bag and having its free end passed around the bag and up through the said vertical tube, whereby when the cord is drawn tight the outward pressure of the inclosed material will cause sufficient friction to prevent the cord slipping, substantially as described.

444,294. TYPE-COMPOSING MECHANISM. PHILIP T. DODGE, Washington, D. C. Filed Nov. 11, 1889. Serial No. 329,923. (No model.)

Claim.—1. In combination with a type-delivering device, a finger-key through which the same is actuated, and a power mechanism called into action by the initial movement of the key and acting in its turn to complete the action of the delivering devices in the event of the key being prematurely released, whereby the operation of a key at any time is permitted and the complete action of the discharging device is secured in every instance.

2. In combination with a finger-key free to be actuated at any time and a mechanism which receives an initial movement therefrom, a constantly-rotating driving device arranged to automatically complete the action of said mechanism in the event of the key being prematurely released by the operator.



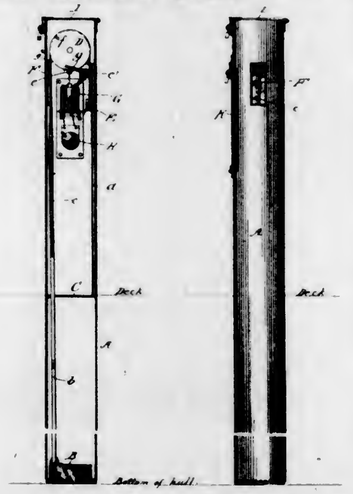
3. A series of type-discharging devices, in combination with corresponding finger-keys, each free to be operated at will, and a constantly-rotating mechanism common to the series of discharging devices, whereby their movements, initiated by the finger-keys, are completed in the order in which the keys are actuated.

4. In combination with the magazine-tube, the type-ejecting slide, the finger-key to actuate the slide, the constantly-rotating roll, and a device, substantially as shown, to engage the roll and continue the action of the slide when the key is but partially depressed.

5. The ejecting-slide, the finger-key, and the intermediate rod through which the slide is actuated, in combination with the eccentric movable bodily by the action of the key and the constantly-revolving roll.

6. The ejecting-slide, the shouldered matrices, the receiving channel or conductor, and the detaining-wires therein, as usual, in combination with the finger-key to actuate the slide to deliver the type, and power mechanism, substantially as shown, to positively continue the motion of the slide after being started by the key until the matrix engages the wire.

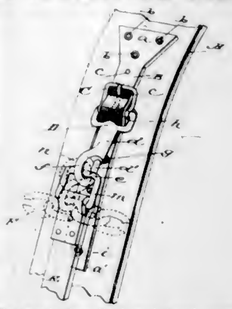
444,295. WATER-GAGE. IRA A. FULLER, Pepin, Wis. Filed Mar. 27, 1890. Serial No. 345,597. (No model.)



Claim.—1. The combination, with the outer case A, having transverse partitions C, of the float B, having stem *b* extending through said partition, the pulley D, arranged in the upper end of the case, the flexible graduated tape *c*, attached at one end to the rod *b* and passing over the pulley, the counterbalance-weight E, attached to the tape and provided with guide-eyes, and the guide-rod *a*, having a sliding connection with the weight, substantially as shown and described.

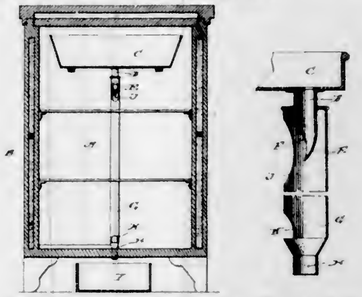
2. The combination of the outer case having glazed window F, doors I and K, and partition C, the float B, having rod *b* passing through the partition, the pulley D, arranged in the top of the case and provided with trip-pin *f*, the tape *c*, attached to rod *b* and passing over the pulley D and having counterbalance-weight E, with guide-rod *d*, and an electric circuit and bell with closing-switch *g*, arranged to be struck by the pin *f* of the pulley D, substantially as shown and described.

444,296. BACK-BAND. WILLIE L. JOHNSON, Lake City, Miss. Filed July 26, 1890. Serial No. 360,029. (No model.)



Claim.—The herein-described back-band, consisting of the band or strip A, provided with the perforated straps B, secured at both of their ends to the band A, the snap-hooks D, provided with the buckles C, the frames and tongues of which are pivoted on the loops of the hooks engaging the said straps B, and the belly-band E, provided with the rings *m* at its ends for engaging the hooked portion of the snap-hooks, substantially as herein shown and described.

444,297. WASTE-PIPE. THOMAS KELLY, Memphis, Tenn. Filed July 11, 1890. Serial No. 358,366. (No model.)



Claim.—1. The combination, with an outer pipe, of an inner drip-pipe provided with an inwardly-curved point terminating in the center line of the pipe, substantially as shown and described.

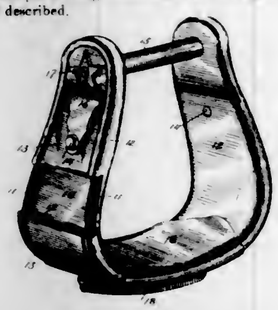
2. A waste-pipe comprising a vertically-arranged pipe and a drip-pipe extending into the upper end of the said vertical pipe and provided with an inwardly-curved lower end, the point of which is in line with the center line of the said vertical pipe, substantially as shown and described.

3. A waste-pipe comprising a vertically-arranged pipe having side openings near the top and bottom, and a drip-pipe extending in the said vertically-arranged pipes and provided with an inwardly-curved end, the point of which terminates in the center of the vertically-arranged pipe, substantially as shown and described.

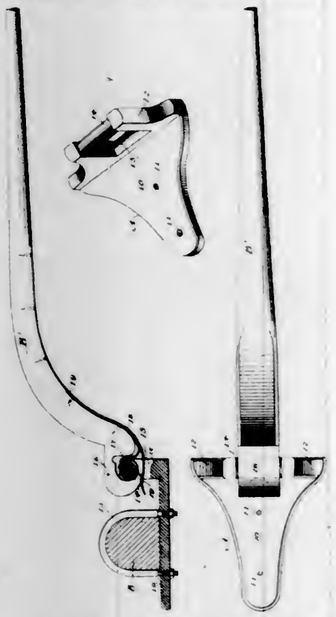
444,298. STIRRUP. GEORGE A. KERR, Victoria, Tex. Filed July 9, 1890. Serial No. 358,220. (No model.)

Claim.—As an improved article of manufacture, the herein-described stirrup, consisting of the metallic body portion struck up from sheet metal and formed with outwardly-projecting flanges at its edges.

a leather covering-piece stretched around the body portion from the interior of the same, the edges of the covering-piece approaching each other between the flanges on the body portion, a leather securing-piece arranged upon the exterior of the metal body portion between the flanges and covering the approaching edges of the covering-piece, rivets connecting the said parts, a shaft connecting the upper ends of the body portion, and the foot-pad laced around the lower part of the same, all of said parts being constructed and arranged substantially as shown and described.



444,299. THILL-COUPLING. LORENZO C. MILLS, Stony Brook, N. Y. Filed Oct. 22, 1890. Serial No. 368,944. (No model.)

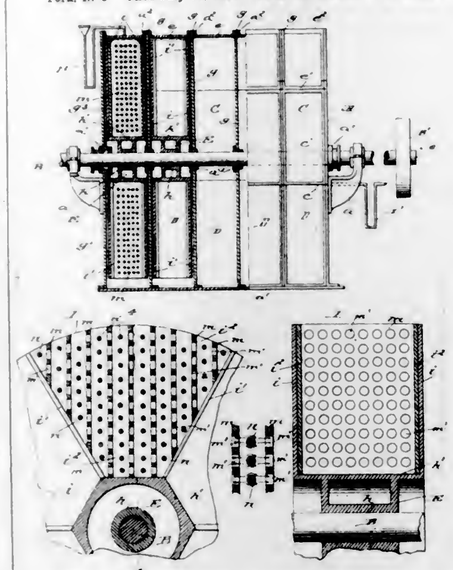


Claim.—1. In a thill-coupling, the combination of an axle-bracket provided with a head-block at right angles to the bracket and having a slot therein, the top portion of the slot forming a pintle, a thill-iron provided with a horizontal extension having a recess in its under face, and a spring secured to the thill and having its free end projecting through the slot of the bracket and extending beyond the rear face of the extension of the thill-iron, substantially as described.

2. In a device of the character described, the combination, with an axle-bracket and a pintle attached thereto, of a thill provided at its rear end with a horizontal extension having a semicircular recess in its under face, a spring-plate attached to the bottom of the extension and extending partially beneath the recess therein, and provided with a semicircular upward extension located in the recess, and a second spring-plate attached to the under surface of the thill at its forward end, the latter plate being carried downward and rearward in engagement with the thill and beneath the spring-plate of the extension and the rear portion of said extension, as and for the purpose specified

3. In a device of the character described, the combination, with an axle-bracket having a head-block formed at one end containing a recess, and a pintle spanning the upper portion of the recess, of a thill having a horizontal extension at its inner end, provided with a recess in its under face, a spring attached at one end to the lower face of the extension, the rear end of which spring is carried upward in semicircular form within the extension-recess, and a second spring-plate attached at its forward end to the under face of the thill and carried downward in engagement with the thill beneath the spring-plate of the extension, the lower face of the extension, and beyond the rear end of said extension, as and for the purpose specified.

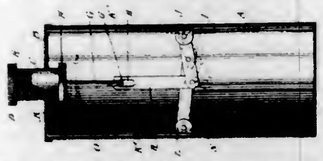
444,300. ROTARY GAS-SCRUBBER. WILLIAM MOONEY, North Plainfield, N. J., assignor of one-half to James R. Floyd & Sons, New York, N. Y. Filed July 12, 1890. Serial No. 358,492. (No model.)



Claim.—1. In a gas-scrubber, a scrubbing-frame consisting of two parallel-spaced segmental plates i^3, a series of transverse parallel foraminated plates m, and a series of rods or spindles between each pair of foraminated plates and in line with the opposing perforations m' m' therein, as shown and described.

2. A gas-scrubbing machine consisting of the tank A, having a curved top A', opposite longitudinally-extending side wings or extensions C, transverse partitions g, conforming in marginal contour to a transverse section through said tank, top, and wings and having openings p at alternate ends within said wings or extensions, inlet F and outlet G, a longitudinal shaft B, and scrubbing-wheels on the said shaft, one for every compartment, and each consisting of two circular plates i i, having radial ribs i' i', segmental frames seated between plates i on said ribs and formed of parallel segmental plates i^3, transverse parallel foraminated plates m, connecting the plates i^3, and rods or spindles n, between the foraminated plates and in line with their opposed apertures, the said wheels fitting closely the sides and curved top of the several compartments, substantially as set forth.

444,301. SELF-CLOSING CAN. STEPHEN O. MYERS, Mount Vernon, N. Y. Filed Apr. 11, 1890. Serial No. 347,574. (No model.)



Claim.—1. In a self-closing can, the combination, with a spring-pressed valve adapted to close the neck of the can from the inside, of a link pivotally connected with the said valve, a U-shaped plate the

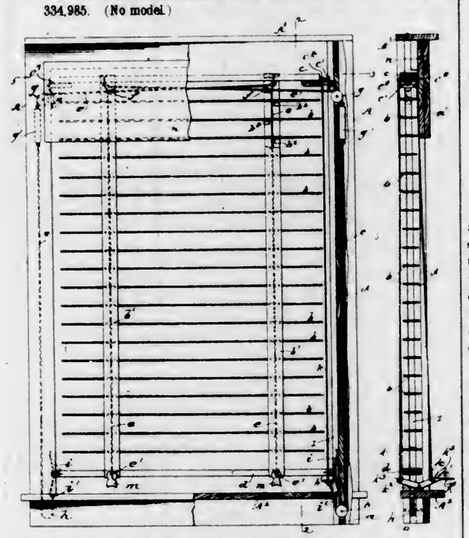
ends of which are seated against the inner walls of the can and on one end of which is pivoted the said link, and a second link pivoted on the other end of the said plate and pivotally connected with the first-named link, substantially as shown and described.

2. In a self-closing can, the combination, with a spring-pressed valve adapted to close the neck of the can from the inside, of a link pivotally connected with the said valve, a U-shaped plate the ends of which are seated on the inner wall of the can and on one end of which is pivoted the said link, a second link pivoted on the other end of the said plate and pivotally connected with the first-named link, and a spring held on the said plate and pressing on the said valve to force the latter to its seat, substantially as shown and described.

3. In a self-closing can, the combination, with a can-body and a cover adapted to close the said can-body and provided with a neck extending to the inside of the can, of a valve adapted to be seated on the inner end of the said neck, a link pivotally connected with the said valve, a U-shaped plate secured to the inside of the said cover, and the ends of which are seated on the inner wall of the can, and on one end of which is pivoted the said link, and a second link pivoted on the other end of the said plate and pivotally connected with the said first-named link, substantially as shown and described.

4. In a self-closing can, the combination, with a can-body and a cover adapted to close the said can-body and provided with a neck extending to the inside of the can, of a valve adapted to be seated on the inner end of the said neck, a link pivotally connected with the said valve, a U-shaped plate secured to the inside of the said cover, and the ends of which are seated against the inner walls of the can-body, and on one end of which is pivoted the said link, a second link pivoted on the other end of the said plate and pivotally connected with the said first-named link, and a spring held on the said plate and pressing with its free end on the said valve to seat the same on the neck of the cover, substantially as shown and described.

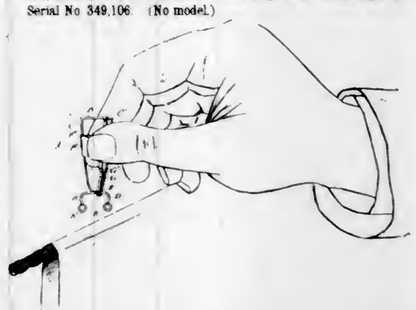
444,302. SLIDING VENETIAN BLIND AND FRAME THEREFOR. CHARLES NISS, Jr., Milwaukee, Wis. Filed Dec. 26, 1889. Serial No. 334,985. (No model.)



Claim.—1. The combination, with a frame and a slatted blind thereon supported to rock by a pintle c^3 at one end of its rocking bar, and a clamped journal-rod c', that is located at the other end, of two depending cords k, secured to ears on the clamp-plates c^3 c^3, which support the rod c', and a rocking lever k', supported pivotally on the frame below, to the ears k^2 of which the cords k are attached, substantially as set forth.

2. The combination, with a frame, of a rocking bar pivoted within the frame near the upper end of the same, pulleys secured to the under side of the same, pulleys arranged in the side portions of the frame near the upper and lower ends of the same, a slatted blind depending from the rocking bar, a pair of blind-elevating cords secured to the stretcher-bar near its ends, said cords being passed up through the blind and adjacent pulley attached to rocking bar, then crossed and passed round the pulleys upon the oppposite side of the frame, the binding-springs secured to ends of the stretcher-bar, adapted to bind against the sides of the frame, and to which the end of the opposite elevating-cord is attached, and the counterbalancing-weights, substantially as shown and described.

444,303. CLOTHES-PIN. CHARLES A. OSTROM, HANS H. THIELLESEN, and SAMUEL C. WAMPLER, Custer City, S. D. Filed Apr. 23, 1890. Serial No. 349,106. (No model.)



Claim.—1. A clothes-pin comprising a spring-wire having inclined sides, jaws formed on the ends of the said spring-wire, a slide engaging the said sides and adapted to open and close the jaws, and a spring-catch for locking the slide in place, substantially as shown and described.

2. A clothes-pin comprising a spring-wire having inclined sides, jaws formed on the ends of the said spring-wire, a slide engaging the said sides and adapted to open and close the jaws, a spring-catch for locking the slide in place, and a ring formed on the said spring-catch and adapted to engage the said jaws to prevent the latter from twisting, substantially as shown and described.

444,304. PEN-HOLDER. GEORGE H. RICHARDSON, Old Town, Me. Filed Nov. 21, 1890. Serial No. 372,153. (No model.)



Claim.—1. As a new article of manufacture, a hand pen-holder adapted to carry a ruling-pen for making waved or irregular lines, the same consisting of a stock or holder proper divided into two parts intermediately of its length and pivoted together to admit of the lateral vibration of its one or forward pen-carrying part upon the other part of the holder, and of a device arranged to rest and travel upon the paper to be ruled and operating to automatically vibrate said pen-carrying part for imparting to the pen its required wavy motion, substantially as specified.

2. In a hand pen-holder adapted to carry a ruling-pen for making waved or irregular lines, the combination of a divided pen stock or holder consisting of a main part A and forward pen-carrying part B, pivoted together to admit of the lateral vibration of the latter part, a lower wheel or roller E, carried by the main part A and provided with a waved groove in and around its periphery, and a pin or stud attached to the vibrating part B at a suitable distance from the pivot uniting the two parts A and B, and arranged to engage with the groove in the wheel or roller, essentially as shown and described.

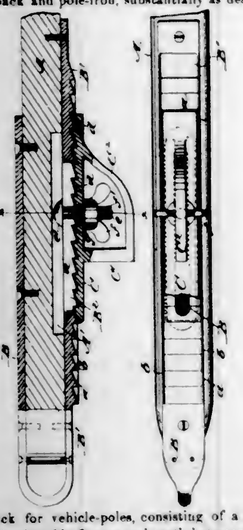
444,305. HOLDBACK FOR VEHICLE-POLES. HENRY W. ROBERTS, Cheboygan, Mich. Filed Apr. 14, 1890. Serial No. 347,842. (No model.)

Claim.—1. The combination, with a slotted pole-iron, of a holdback engaging the pole-iron and provided with an aperture, and a bolt passing through the slot of the pole-iron and the aperture of the holdback, substantially as described.

2. The combination, with a pole-iron slotted longitudinally and provided with ratchet-teeth, of a holdback apertured and provided with ratchet-teeth engaging the ratchet-teeth of the pole-iron, and a bolt passing through the slot of the pole-iron and the aperture of the holdback and locking the parts together, substantially as herein shown and described.

3. The combination, with a pole and a longitudinally-slotted pole-iron attached thereto, having side flanges and teeth between the flanges, of a holdback adapted to fit between the flanges of the pole-iron and

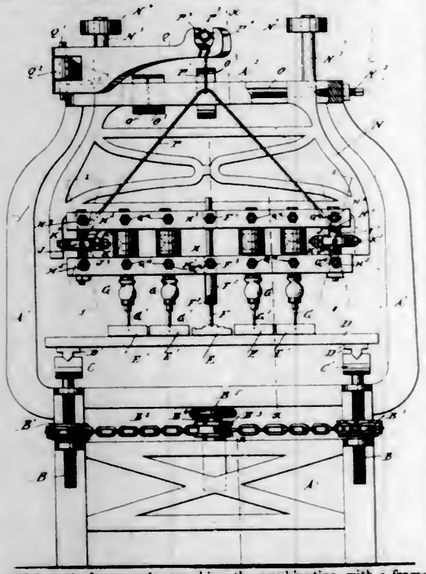
having teeth to engage the teeth of the pole-iron, and a bolt passing through the holdback and pole-iron, substantially as described.



4. A holdback for vehicle-poles, consisting of a longitudinally-slotted pole-iron having side flanges and teeth between said flanges, a plate adapted to fit between the flanges, having teeth to engage the pole-iron teeth and having a vertical projection, and a fastening-bolt, substantially as described.

5. The combination, with the pole A, having a recess A′ therein, and the pole-iron B, having teeth *a* and flanges *b* thereon and the longitudinal slot B^3 therein, of the plate C, having teeth *d* and a vertical projection C thereon, and means, as bolt *e* and nut *f*, for attaching the plate C and pole-iron B together, substantially as described.

444,306. CARVING-MACHINE. JOSEPH ROHLMANN, St. Joseph, Mo. Filed Aug. 26, 1889. Serial No. 322,001. (No model.)



Claim.—1. In a carving-machine, the combination, with a frame carrying the cutters and tracing-tool, of universal joints supporting the ends of the said frame, pivoted brackets supporting the said universal joints, and a counterbalanced lever connected with the free ends of the said brackets, substantially as shown and described.

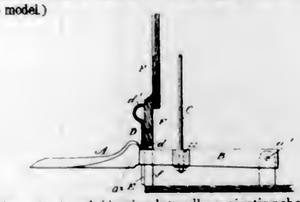
2. In a carving-machine, the combination, with a frame carrying the cutters and tracing-tool, of universal joints supporting the ends of the said frame, pivoted brackets supporting the said universal joints, a counterbalanced lever connected with the free ends of the said brackets, and a pivoted arm carrying a shaft on which the said lever is pivoted, substantially as shown and described.

3. In a carving-machine, the combination, with a main frame, of screw-rods guided in the said frame, side rails supported on the said screw-rods, a table held to slide horizontally on the said side rails, nuts screwing on the said screw-rods, and an endless chain passing over the said nuts and adapted to turn all the nuts simultaneously, substantially as shown and described.

4. In a carving-machine, the combination, with a main frame, of screw-rods guided in the said frame, side rails supported on the said screw-rods, a table held to slide horizontally on the said side rails, nuts screwing on the said screw-rods, an endless chain passing over the said nuts and adapted to turn all the nuts simultaneously, and means, substantially as described, for imparting a traveling motion to the said chains to turn the said nuts, as set forth.

5. In a carving-machine, the combination, with a main frame, of screw-rods guided in the said frame, side rails supported on the said screw-rods, a table held to slide horizontally on the said side rails, nuts screwing on the said screw-rods, an endless chain passing over the said nuts and adapted to turn all the nuts simultaneously, a sprocket-wheel mounted to turn in the said frame and over which passes the said chain, and means, substantially as described, for turning the said sprocket-wheel, substantially as shown and described.

444,307. PIANO-FORTE PEDAL AND GUARD. WALTHER T. STERNENBERG, New York, N. Y. Filed Aug. 23, 1890. Serial No. 362,873. (No model.)



Claim.—1. A pedal having laterally-projecting shoulder or shoulders overlying the instrument next the slot through which the pedal passes and practically concealing said slot, substantially as described.

2. A pedal made with a horizontally-ranging outer or treadle portion and a comparatively narrow inner stem portion, and provided at the points of junction of said outer and inner portions with laterally-projecting shoulder or shoulders next the slot through which the pedal-shank passes, said shoulders practically concealing said slot, substantially as described.

3. The combination, with the case or lyre of a musical instrument, of a metallic guard-plate held to the instrument at its pedal-slots, said plate having narrow slots, and the pedals having narrow inner stem portions entering the slots of the guard-plate and actuating the tone-regulating mechanism of the instrument, and having outer horizontal treadle portions, and provided with shoulders which project over the guard-plate and practically conceal its slots, substantially as described.

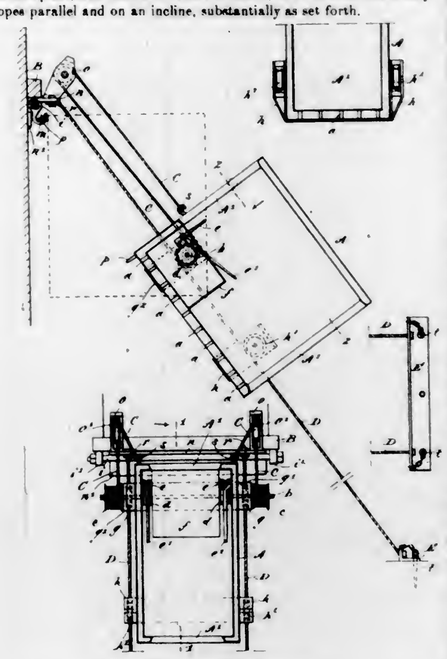
4. In pedal and guard devices, the combination, with a slotted musical instrument case or lyre, of pedals A, having outer horizontal treadle portions and inner narrow fulcrumed stem portions B, operating the tone-regulating mechanism of the instrument, said pedals having lateral shoulders a^3 at the point of junction of its outer and inner portions, and a guard-plate fixed to the instrument, and having narrow slots E, receiving the pedal-stems, substantially as described.

444,308. FIRE-ESCAPE. SAMUEL M. STEVENSON, Bastrop, La. Filed Apr. 29, 1890. Serial No. 349,889. (No model.)

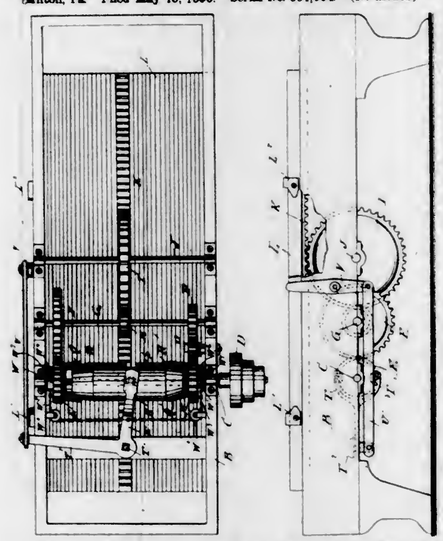
Claim.—1. In a fire-escape, the combination, with a fire-proof car having double walls and a door at each end, a transverse shaft having friction-drums and flanged pulleys thereon, and fire-proof flexible connections for these pulleys, attached at a window above and having their ends hooked to the car, of friction-brakes for the drums and an adjustable track whereon the car may travel, substantially as set forth.

2. In a fire-escape, a rectangular car having four revoluble grooved track-wheels and a door at each end, a transverse shaft on the car, having two brake-drums and two grooved pulleys on it, and a brake mechanism which may be operated manually, substantially as described.

3. In a fire-escape, the combination, with a rectangular car having four revoluble grooved track-wheels and a door at each end, a transverse shaft on the car, having two brake-drums and two grooved pulleys on it, and a brake mechanism which may be operated manually, and a bracket-plate removably secured on a building above, having sheaved brackets on its ends, of two leading fire-proof ropes wrapped upon the flanged pulleys and attached by one end of each thereto and engaging the sheaves of the bracket-plate, and two trolley-ropes having their lower ends attached to an adjustable anchor-plate, said adjustable anchor-plate, and means to secure it below, so as to hold the trolley-ropes parallel and on an incline, substantially as set forth.



444,309. DRIVING-GEAR FOR PLANERS. GEORGE F. WELIVAR, Milton, Pa. Filed May 13, 1890. Serial No. 351,664. (No model.)



Claim.—1. The combination, with the frame and the sliding bed thereon provided with a longitudinally-extending rack, of a transverse main drive-shaft to continuously rotate in one direction, and provided with two loose gear-wheels and an intermediate sliding clutch to alternately connect said gear-wheels and shaft, a shaft parallel with the drive-shaft geared to the said rack, and having a gear-wheel at one end meshing with one of said loose gears and another gear-wheel in line with the other loose gear-wheel, and an intermediate gear-wheel connecting said two last-named gear-wheels, whereby by shifting the clutch the bed may be moved in either direction, substantially as set forth.

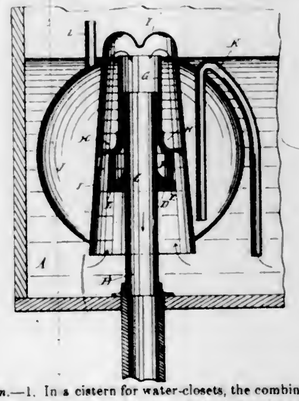
2. The combination, with the frame and the sliding bed thereon provided with a longitudinal rack and knockers or lugs, of the transverse main shaft to continuously rotate in one direction, and provided with two loose gear-wheels, an intermediate clutch on said shaft to alternately connect said gear-wheels therewith, a lever for operating said clutch, a vertically-rocking lever in the path of said knockers and connected to said clutch-lever, a shaft parallel with the drive-shaft geared to said rack, and having a gear-wheel meshing into one of said loose gear-wheels and a second gear-wheel in alignment with the other loose gear-wheel, and an intermediate gear-wheel connecting said two last-named gear-wheels, substantially as set forth.

3. In a driving-gear for planers, the combination, with a driving-shaft, of a double clutch mounted to turn with and to slide on the said shaft, a shifting fork connected with the said clutch and adapted to be operated on from the dogs of the bed, two sets of wheels connected with the bed and adapted to be alternately connected with the said double clutch, friction-collars held on the two sets of gear-wheels, and chains connecting the said friction-collars with the said shifting fork, substantially as shown and described.

4. The combination, with a drive-shaft having loose gear-wheels provided with hubs and an intermediate sliding clutch on the shaft to alternately connect said gears with the shaft, and a lever for shifting the said clutch, of friction collars or straps on said hubs, flexible connections between said lever and straps or collars, and guide-pulleys over which said connections pass, substantially as and for the purpose set forth.

5. The combination, with the frame, the drive-shaft having loose gear-wheels provided with hubs, an intermediate sliding clutch to alternately connect said gears with the shaft, and a lever for shifting the clutch, of friction-collars on the said hubs, flexible connections between the collars and lever, guide-pulleys for said connections, and stops on the frame to engage said collars, substantially as and for the purpose set forth.

444,310. CISTERN FOR WATER-CLOSETS. CHARLES G. ZEILMAN, Albany, N. Y. Filed May 7, 1890. Serial No. 350,889. (No model.)



Claim.—1. In a cistern for water-closets, the combination, with a pipe fitted to slide on a stationary overflow-pipe to form an extension thereof, of a float supported on the said pipe and a siphon held on the said float to charge and to empty the latter, substantially as shown and described.

2. In a cistern for water-closets, the combination, with a fixed overflow-pipe, of a pipe fitted to slide on the said overflow-pipe, a float provided with a pipe surrounding the said extension-pipe and supported from the latter and having a closed top and an open bottom, substantially as shown and described.

3. In a cistern for water-closets, the combination, with a fixed overflow-pipe, of a pipe fitted to slide on the said overflow-pipe, a float provided with a pipe surrounding the said extension-pipe and supported from the latter and having a closed top and an open bottom, and a siphon connected with the said float to charge and empty the same automatically, substantially as shown and described.

4. In a cistern for water-closets, the combination, with a fixed overflow-pipe, of a pipe fitted to slide on the said overflow-pipe, a stop to limit the movement of the said sliding pipe, a float provided with a pipe

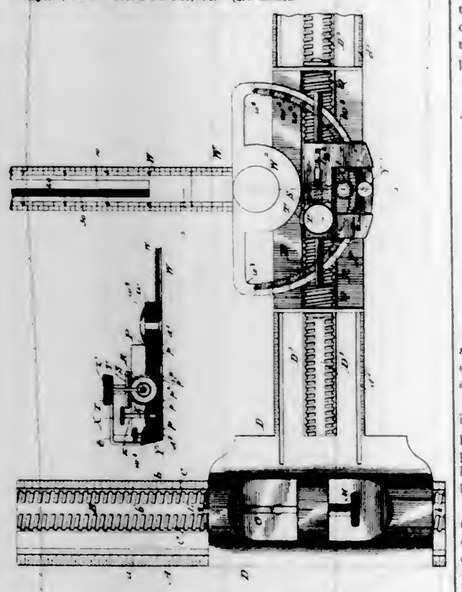
surrounding the said extension-pipe and supported from the latter and having a closed top and an open bottom, a siphon connected with the said float to charge and empty the same automatically, and an air-outlet pipe arranged on the top of the said float to discharge and admit air when the float is charged and emptied by the said siphon substantially as shown and described.

444,311. ANTI-FRICTION BEARING. PHINEAS ARNOLD, Canal Dover, Ohio. Filed Mar. 4, 1890. Serial No. 342,573. (No model.)



Claim.—In an anti-friction bearing, the combination, with the axle-spindle, the journal-box 20, having open outer end, and the cap 22, screwed on the end of the axle-spindle and covering the outer end of the journal-box, of the washers 18, one resting against the inner surface of the box and the other against the inner surface of the cap, the central washer 21, the said washers fitting loosely within the journal-box, and the two sets of independent friction-rollers 15, having spherical ends and arranged between the central and end washers, substantially as herein shown and described.

444,312. PLOTTER. GEORGE A. BROWN, Park City, Utah. Filed Apr. 5, 1890. Serial No. 346,768. (No model.)



Claim.—1. An improved drawing-instrument comprising a fixed base-plate, a T-square held for longitudinal movement thereon, and a protractor adapted to be detachably connected to the blade of said T-square and have longitudinal movement thereon, substantially as shown and described.

2. An improved T-square consisting of a base-plate adapted to be held upon the drawing board or table, provided with a longitudinal rack in its upper face, a T-square formed with a head portion D', held to slide on said base, a shaft journaled in said head D', provided with worm-gears adapted to engage the longitudinal rack in the base-plate, an indicator-wheel held on said shaft, and means for operating said shaft, substantially as and for the purpose described.

3. An improved T-square comprising a base-plate having a longitudinal rack-groove, a T-square portion formed with a head D', held to slide on said base-plate, a shaft journaled in said head, provided with worm-gears engaging the longitudinal rack-groove in the base-plate, a second shaft mounted in said head, differential gear-connections between said shafts and indicator-wheels mounted on the ends of said shafts, and means for operating said shafts, as shown, said wheels adapted to indicate the degrees of movement of said T-square in relation to the base-plate, substantially as and for the purpose described.

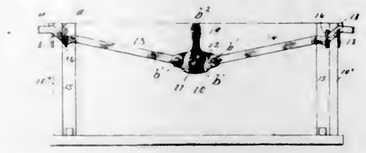
4. An improved T-square comprising the base-plate A, having a longitudinal rack-groove in its upper face, the T-square portion D, formed with a head D', detachably held to slide on said plate A, a shaft journaled with slight vertical movement in said head, having worm-gears adapted to engage said longitudinal rack-groove in the base-plate, means for rotating said shaft, whereby said head D' is moved gradually in longitudinal directions on said base-plate, and the lifting mechanism, substantially as shown, for raising said worm-gears from contact with the said rack-groove, whereby said head D' can be quickly moved on the base-plate, substantially as shown and described.

5. The combination, with the base-plate A and the T-square D, held for longitudinal movement thereon, of a protractor held for longitudinal movement on the T-square blade D^3 and means for moving said protractor at angles to said blade, substantially as and for the purpose described.

6. The combination, with the T-square blade D^3, formed with a longitudinal rack-groove, a head P, having worm-gearing mounted therein, adapted to engage said groove, and means for rotating such worm-gears, whereby said head is moved longitudinally on said blade, of a protractor held over said head and having a pivotal connection therewith and means for adjusting said protractor at angles to the blade D^3, substantially as and for the purpose described.

7. The combination, with the T-square D, formed with a longitudinal rack-groove on its upper face, a head P, held to slide thereon, a shaft journaled therein having worm-gears adapted to engage the rack-groove in the blade D^3, and means for rotating said shaft, as shown, of a protractor held over said plate P and pivotally connected therewith, said protractor formed with a blade having an elongated opening, one wall of which is in line with the pivotal axis of said protractor, and the gear mechanism for adjusting said protractor on its pivot, substantially as shown and described.

444,313. END-GATE FASTENING. JOHN J. COOK, Columbus Junction, Iowa. Filed May 3, 1890. Serial No. 350,420. (No model.)



Claim.—1. In an end-gate, the combination, with a rocking plate and locking-bars pivoted to the said plate, of a lever provided with opposite cam-faces and adapted for engagement with the adjacent pivoted ends of said locking-bars, substantially as shown and described.

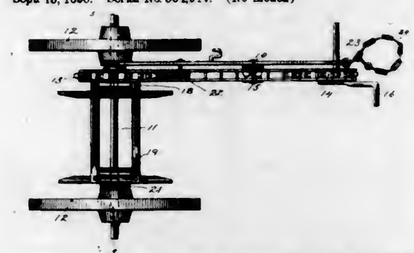
2. In an end-gate, the combination, with a rocking plate and locking-bars, one of said bars being pivoted to each extremity of the said plate, of a lever fulcrumed upon the pivot-pin of the rocking plate and provided with cam-faces upon opposite sides, the said cam-faces of the lever being adapted for contact with the pivotal ends of the locking-bars, substantially as and for the purpose specified.

3. In an end-gate, the combination, with a rocking plate and locking-bars pivoted to the ends of the said plate, extending outward in opposite directions, and provided with a lip at their outer extremities, of a lever fulcrumed upon the pivot-pin of the rocking plate and provided with cam-faces at opposite sides adapted for contact with the inner ends of the locking-bars, substantially as and for the purpose specified.

4. The combination, with a wagon-body, its end-gate, guide-staples secured to the said gate near each end thereof, and a rocking gate fulcrumed upon the end-gate at or near its center, of locking-bars pivoted to the ends of the said rocking plate, the said locking-bars being adapted to extend in opposite directions through the guide-staples, a lip integral with the outer end of each locking-bar formed at a right angle to the body of the said bar, angled brackets attached to the wagon-body at its sides and recessed to receive the locking-bars, and a lever fulcrumed upon the pivotal pin of the rocking plate and provided with a cam-surface at opposite sides adapted for engagement with the inner ends of the locking-bars, substantially as and for the purpose specified.

5. The combination, with the sliding locking-bars having inclines *a a* adjacent to their locking extremities *a' a'* and an operating mechanism connected with the inner ends of said bars, of guides 16 16, through which said inclines work when the arms are operated to throw their locking portions into and out of engagement with keepers 18, substantially as set forth.

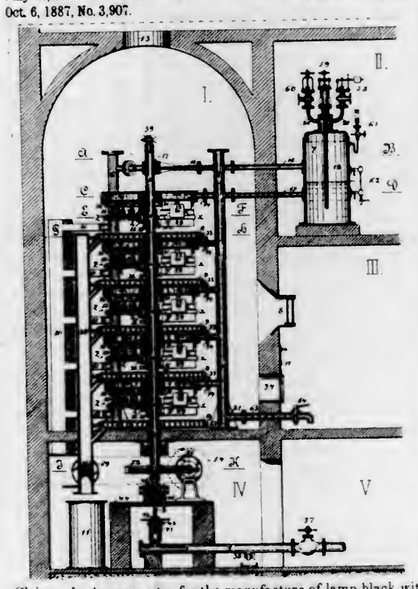
444,314. WIRE-REEL. GEORGE E. DIXON, Beacon, Iowa. Filed Sept. 13, 1890. Serial No. 364,917. (No model.)



Claim.—1. In a wire reel and stretcher, the combination, with a beam, of a shaft passed through the same at one end, traction-wheels mounted upon the ends of the shaft, a sprocket-wheel mounted upon the shaft upon the inner side of the beam, a sprocket-wheel journaled to the opposite end of the beam and also upon the inner side, the crank attached thereto, the drive-chain, the pawl pivoted to the inner side of the beam, and the wire-reel mounted loosely upon the shaft and operated by the adjacent sprocket-wheel, substantially as shown and described.

2. An improved wire reel and stretcher, consisting of the beam 10, axle or shaft 11, traction-wheels 12, sprocket-wheels 13 and 14, drive-chain 15, crank 16, hub 17, integral with the sprocket-wheel 13, the laterally-projecting pin 18, wire reel or spool 19, the bearing-sleeve 20, having the flange 21, and the pawl 22, all constructed and combined substantially as shown and described.

444,315. APPARATUS FOR THE MANUFACTURE OF LAMP-BLACK. ROBERT DREYER, Halle-on-the-Saale, Prussia, Germany. Filed July 30, 1888. Serial No. 281,372. (No model.) Patented in Germany Oct. 6, 1887, No. 3,907.



Claim.—1. An apparatus for the manufacture of lamp-black with simultaneous generation of steam, consisting of a hollow main shaft 3, with pivot-box 45, the cooling and steam-generating vessels 4 4, scraper 31, heating apparatus Z, the main pipes 6^a 6^b 6^c, the steam-collector and reservoir 7 for cooling-liquid, the delivery-pipe 10, with channels 35, and at its lower end the roller 36, substantially as shown, for the purpose specified.

2. In an apparatus for manufacturing lamp-black, the combination of a series of closed reservoirs in communication with each other, means for supplying the same with a cooling-liquid, and a hollow rotary shaft carrying burners and scrapers, the said burners and scrapers being below the reservoirs, substantially as described.

3. In an apparatus for manufacturing lamp-black, the combination, with a series of reservoirs, a steam-collector, and connections between the collector and reservoirs, of a hollow vertically-adjustable shaft, burners secured to the shaft, scrapers secured to the said shaft on the side opposite the burners, and means for rotating the shaft, substantially as described.

4. In an apparatus for manufacturing lamp-black, the combination, with a steam-collector, of a series of reservoirs, pipes connecting the reservoirs with the collector, and burners arranged below the reservoirs, substantially as specified.

5. In an apparatus for manufacturing lamp-black, the combination, with a series of reservoirs and burners and scrapers below the same, of troughs below the burners and scrapers, a delivery-pipe connected to the troughs, and rotary rakes in the troughs for carrying the carbon to the delivery-pipe, substantially as herein shown and described.

6. In an apparatus for the manufacture of lamp-black with simultaneous generation of steam, the combination of the collector 7, the main pipes 6^a 6^b 6^c and their branches 14, leading to the cooling and steam-generating vessels 4 4, and branch pipes 16 18 15, communicating with the steam-collector, substantially as shown.

7. In an apparatus for manufacturing lamp-black, the combination, with a series of reservoirs and a hollow shaft carrying burners, and a scraper below the reservoirs, of a trough below the burners and scraper, a rake in the trough, a delivery-pipe connected to the trough, a roller having opposite recesses in the delivery-pipe, and means for operating the shaft and roller simultaneously, substantially as herein shown and described.

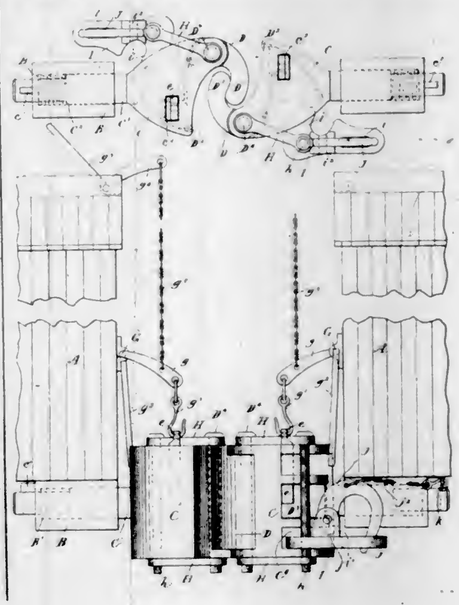
8. In an apparatus for manufacturing lamp-black, the combination, with a series of reservoirs and rotary burners below the same, of an air-supply pipe provided with branches projecting beneath the burners, substantially as described.

9. In an apparatus for manufacturing lamp-black, the combination, with the depositing or cooling surface, of a funnel below the said cooling-surface, and a scraper consisting of a pivoted lever having a scraper-blade on one arm and a weight on the other, the arm of the lever with the scraper-blade projecting into the funnel, substantially as described.

10. In an apparatus for manufacturing lamp-black, a depositing or cooling surface having depending concentric flanges, in combination with a scraper rotating between said flanges, substantially as and for the purpose set forth.

11. In an apparatus for manufacturing lamp-black, the combination, with a hollow shaft, of the plate 23, the slide 25, having recess 28 and adjustably secured to the said plate, and a burner-pipe connected to the said slide, substantially as herein shown and described.

444,316. CAR-COUPLING. JOHN LA BURT, New York, N. Y., assignor of one-half to Edward A. Page, same place. Filed June 4, 1890. Serial No. 354,244. (No model.)



Claim.—1. A car-coupling comprising a draw-head having a horizontal recess separated by a transverse vertical partition having an opening therein and a vertical opening from the recess through the top of the draw-head, a coupling-piece pivoted in the draw-head and fitting the front portion of the recess, said coupling-piece having a laterally-curved coupling-arm and a rearwardly-curved arm to move in the rear portion of the draw-head, and having a slot in its upper side, and a pin adapted to move in the vertical slot of the draw-head and engage the slot in the arm of the coupling-piece, substantially as described.

2. In a car-coupling, the combination, with a draw-head having a horizontal recess therein and a vertical slot extending from said recess through the top of the draw-head, of a coupling-piece pivoted in the draw-head and adapted to swing horizontally therein, said coupling-piece being provided with a laterally-curved coupling-arm and a rearwardly-curved arm adapted to move in the horizontal recess of the draw-head, said arm having a transverse slot in the upper part thereof, a spring fixed to the coupling-piece and adapted to normally hold the same in unlocked position, a pin mounted loosely in the vertical slot of the draw-head and adapted to enter the slot in the coupling-piece, and a lever mechanism connected with said pin and extending to the top and sides of the car, substantially as described.

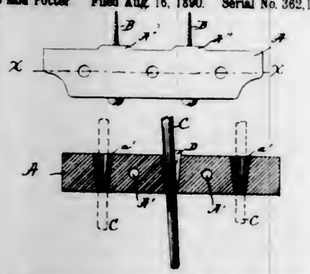
3. In a car-coupling, the combination, with a draw-head provided with a horizontally-swinging coupling-piece having a curved coupling-arm, as described, of a horizontally-swinging link pivoted to the draw-head and provided with a curved portion to engage the coupling-arm of the coupling-piece, and a vertically-swinging curved pin mounted upon the link and adapted to engage a link of an adjoining coupling, substantially as described.

4. In a car-coupling, the combination, with the draw-head C, suitably mounted upon the car and provided with horizontal recesses C^2 and C^3, and the connecting-slot C^4, of the coupling-piece D, pivoted in the recess C^3 and provided with the laterally-curved coupling-arm D', the tapered portion D^2, and the rearwardly-curved arm D^3, having a slot *d* therein, the pin *e*, movable in the slot of the draw-head and adapted to engage the slot *d* of the coupling-piece, and a suitable lever mechanism connecting with the said pin and extending to the top and sides of the car, substantially as described.

5. In a car-coupling, the combination, with the draw-head C and coupling-piece D, having the curved arm D', of the arms H, pivoted to the draw-head and connected at their outer ends by a rod *h*, the link I, pivoted upon said rod and provided with a forwardly-extending slotted portion i and a curved portion i' to engage the arm D', the curved pin J, mounted upon the link I, as shown, and the lever mechanism connected with said link and adapted to be operated from the top and sides of the car, substantially as described.

6. The combination, in a car-coupling, with the link I, suitably mounted upon the coupling, as shown, of the curved pin J, adapted to engage an adjoining link and provided with a depending portion *j'*, substantially as shown, and for the purpose described.

444,317. ELECTRIC-WIRE INSULATING-CLEAT. JOHN S. POTTER, Newton, and DAVID J. CARTWRIGHT, Boston, Mass.; said Cartwright assignor to said Potter. Filed Aug. 16, 1890. Serial No. 362,187. (No model.)



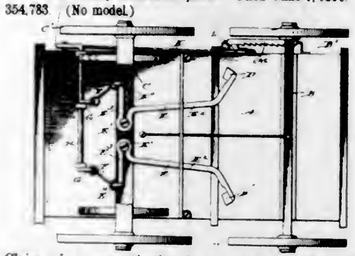
Claim.—1. An insulating wiring-cleat formed integral on its upper surface with the elevated bearing-surfaces A", and provided with the perforations A', extending through said elevated bearing-surfaces, and with tapering wire-retaining perforations *a'*, against the walls of which the wires are adapted to be wedged by suitable wedges, substantially as described.

2. An insulating wiring-cleat for electric wires, having the elevated or raised bearing-surfaces on its upper side, and perforations passing through the cleat and such bearing-surfaces for the reception of fastening-screws for the purpose of clamping the cleat against such bearing-surfaces only, substantially as specified.

3. The improved insulating wiring-cleat having the elevated or raised bearing-surfaces on its upper side and perforations going through the cleat and such bearing-surfaces, combined with transverse tapering wire-retaining perforations extending at right angles to the perforations which extend through the bearing-surfaces, substantially as and for the purpose set forth.

4. The improved insulating wiring-cleat having tapering wire-retaining perforations and wires passing through the same, combined with wedges for securing said wires temporarily against the walls of said tapering perforations, substantially in a manner as specified.

444,318. WAGON-BRAKE. RICHARD RABY, York, Pa., assignor of one-half to Henry Getz, same place. Filed June 9, 1890. Serial No. 354,783. (No model.)



Claim.—In a wagon-brake, the pivoted levers E, having the bent portions E', the long arms E^1, with bent end to receive the shoes, and the short arms formed with the loops E^4, in combination with the links F, the rock-shaft H, having the arms G G and the crank-arm I, the rod K, and the operating lever or handle L, substantially as described

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444,319. VAPORIZER. GARDNER M. SHERMAN, Springfield, Mass. Filed Apr. 23, 1890. Serial No. 349,139. (No model.)



Claim.—1. A vaporizer comprising an outer case having its walls perforated for a portion of its length and provided with a cover whose walls are perforated for a short distance and adapted when closed to seal said chamber.

2. A vaporizer comprising an outer case having its walls perforated for a portion of its length, and an inner cage or receptacle supported a short distance from the base for holding an absorbent, and provided with a cover whose walls are perforated for a short distance and adapted when closed to seal said chamber.

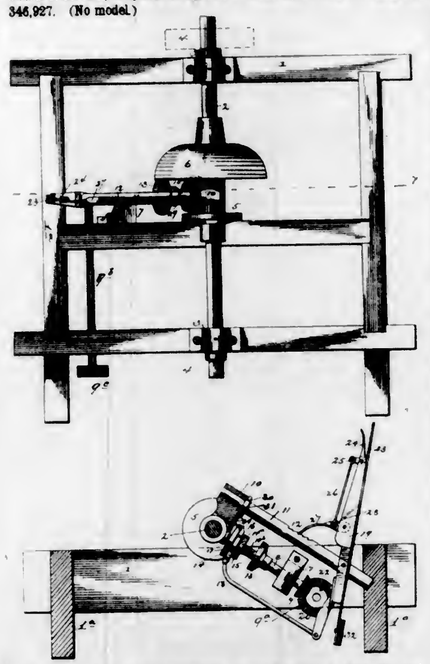
3. A vaporizer consisting of an outer perforated case having vertical sides, an inner cage or receptacle, an absorbent contained within said cage, and a cover whose perforations are out of register with those of the outer chamber.

444,320. CLOTHES-LINE STRETCHER. WILLIAM SOMERS, Atlantic City, N. J. Filed July 18, 1890. Serial No. 359,168. (No model.)



Claim.—In a clothes-line stretcher, the housing, the winch-shaft journaled therein, the ratchet on said shaft, the pawl for engaging said ratchet, the lifting-rod, and the pin for holding the pawl into and out of engagement with the ratchet, substantially as described.

444,321. FEED MECHANISM FOR SAW-MILL CARRIAGES. JACOB G. STONER, Waynesborough, Pa. Filed Apr. 7, 1890. Serial No. 346,927. (No model.)



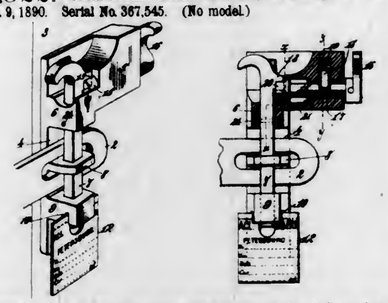
Claim.—1. In a sawing-machine, the combination, with the disks 5 and 6 and the shaft 8, having the disks 13 and 14, of the oscillating bar 11, having cam 31, the pivoted shifting bar 29, bifurcated at one end to receive the cam 31 and perforated at the other end to form a bearing for the upper end of shaft 8, and means for oscillating bar 11 and reciprocating disk 14, substantially as described.

2. The combination, with saw-arbor 2, disks 5 and 6, mounted thereon, shaft 8, having fixed disk 13 and reciprocating disk 14, provided with feather 14^a, working in groove 14^b in shaft 8, and with hub 15 and groove 16, of the bar 11, having cam 31, the shifting bar 29, and the lever 19, fulcrumed to bar 11 and connected with strap 17, working in groove 16 of disk 14, substantially as described.

3. The combination of the saw-arbor 2, disks 5 and 6, mounted thereon, shaft 8, disks 13 and 14, oscillating bar 11, having cam 31, shifting bar 29, and lever 19, fulcrumed to bar 11 and having weight 32 and connected with disk 14, substantially as described.

4. The combination of the saw-arbor 2, disks 5 and 6, shaft 8, disks 13 and 14, oscillating bar 11, having teeth 12 and cam 31, shifting bar 29, lever 19, having bar 26 and pawl 27, the weight 32 and 20, rod 18, and strap 17, working in groove 16 in disk 14, substantially as described.

444,322. SEAL-LOCK. ROBERT M. SULLY, Petersburg, Va. Filed Oct. 9, 1890. Serial No. 367,545. (No model.)



Claim.—1. In a seal-lock, the combination, with a bolt having a lug at or near one end, of a rotary and longitudinally-movable pin provided at one end with a recess to engage the lug on the bolt, said pin having a lateral open-ended recess intermediate its ends for engagement with a catch in the lock-case, whereby the bolt is secured and said pin held from rotary and longitudinal movement in the lock-case when the bolt is in locking engagement with a connected seal, substantially as described.

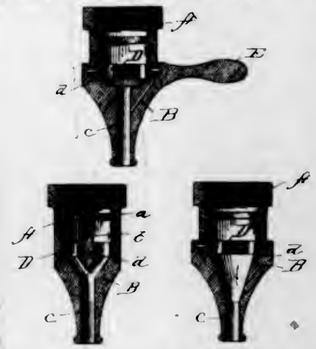
2. In a seal-lock, the combination of a stationary lock-case having a perforated lug at one end, a locking-bolt passed through said lug, a rotary and longitudinally-movable locking-pin supported in the lock-case and adapted to engage the locking-bolt, and a catch located in the lock-case and adapted to be automatically engaged with and disengaged from said pin, whereby the bolt and pin are secured from disengagement when the bolt is in locking engagement with a connected seal.

3. In a seal-lock, the combination of the stationary lock-case 5, the bolt 7, having a lug 13, the rotary and longitudinally-movable locking-pin 15, provided with recesses 14 and 17 and lever-arm 16, and catch 18, substantially as described.

4. In a seal-lock, the combination of the lock-case 5, having in its interior a shoulder 21, the locking-bolt 7, provided with lug 13, the rotary and longitudinally-movable locking-pin 15, provided with recesses 14 and 17, enlarged annular end 20, and lever 16, and the catch 18, substantially as described.

5. In a seal-lock, the combination of the stationary lock-case 5, the staple 8, the perforated lugs 6 and 9, the locking-bolt 7, the rotary and longitudinally-movable locking-pin 15, adapted to engage said bolt, and the catch 18, adapted to engage the locking-pin, whereby said bolt and pin are secured from disengagement when the bolt is in locking engagement with a seal, substantially as described.

444,323. FAUCET. EDWARD B. WILDER, St. Louis, Mo. Filed Jan. 23, 1890. Serial No. 337,806. (No model.)



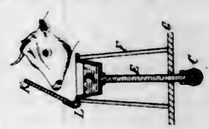
Claim.—1. In combination, the part A, having an unobstructed interior and an open end, a nozzle seated against the end of part A, a swiveled connection between the part A and the nozzle B, and the perforated disk D, fitted to the open end of the part A and resting against the inner end of the nozzle, the said disk being exposed to the pressure of water in the part A, and thereby kept constantly forced against the nozzle, substantially as described.

2. In combination with the nozzle, a coupling having a swivel connection, an exit-passage terminating at its upper end in an elongated opening, and a flexible diaphragm having passages adapted to register with said exit-passage, substantially as described.

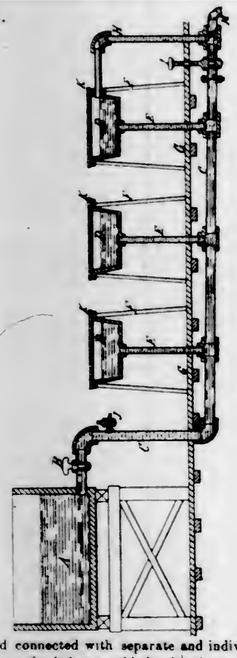
3. In combination with the nozzle having an exit-opening, a coupling, a swivel connection between the coupling and nozzle, consisting of pins in one part fitting an annular groove in the other, and a flexible diaphragm having openings therethrough, located in the end of the coupling and adapted to bear against the inner end of the holding-pins, substantially as described.

444,324. WATERING-TROUGH FOR STOCK. JOHN ALLIS, Lowville, N. Y. Filed Apr. 25, 1890. Serial No. 349,574. (No model.)

Claim.—An apparatus for watering stock, consisting of the main supply-pipe C, with its vertical branches E E, the former provided with the regulating-valves B and I and air-valve J, the branch pipes

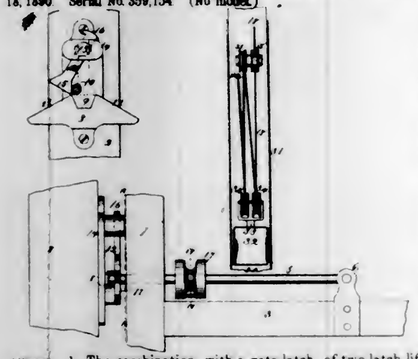


444,324.



entering into and connected with separate and individual troughs D D, the last of the series being provided with the safety or overflow drainage-pipe H, all arranged as set forth and described.

444,325. GATE. GEORGE H. AYLWORTH, Brighton, Ill. Filed July 18, 1890. Serial No. 359,154. (No model.)



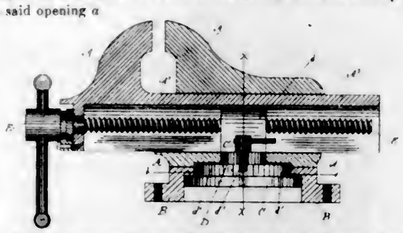
Claim.—1. The combination, with a gate-latch, of two latch-lifting cords, as 18 19, and a weight-pulley 17, turning freely on the latch, to which the ends of both cords are attached, substantially as and for the purpose set forth.

2. The combination, in a gate, of the latch 5, a weight-pulley 17, turning freely thereon, and two lifting-cords attached to the lower part of the pulley at one end and connected with a weight 32 at the other end, substantially as and for the purpose set forth.

3. The combination, with a gate-latch and a catch 8, provided with a recess 9, of the swinging stop-piece 12, formed with a flared lower end 15, having straight side edges, and a support for the stop-piece, in which it has limited movement to bring either of its side edges in perpendicular fixed position over the opposite side of the recess from which the lower end is moved, substantially as described.

444,326. VISE. JAMES O. BARRETT, Meadville, Pa., assignor to the Meadville Vise Company, Limited, same place. Filed Oct. 18, 1888. Serial No. 288,525. (No model.)

Claim.—1. In a vise, the combination, substantially as shown, of a fixed jaw having a transverse opening *a* to receive the bar of the movable jaw, a flanging base below said opening, and a central opening through said flanging base into said opening *a*, a pivot-block D, journaled in said central opening, which has a flange *d'* below said base, and an extension, in which is the nut *d*, which extends up into the said opening *a*.



2. In a vise, the combination, substantially as shown, of a base B, having a central opening with an inwardly-projecting flange *b*, a fixed jaw A, having a flanging base, a transverse opening *a* to receive the bar of the movable jaw, and a central opening through the base into the opening *a*, a pivot-block D, carrying the nut of the screw of the movable jaw, which is journaled in the central opening in the base B, and the jaw A, a clamping-plate C in the said central opening in the base B below the flange *b* and below the pivot-block D, and clamping-screws C', which bear on the base of the jaw A and tap into the clamping-plate C.

3. In a vise, the combination, with a swiveled non-traveling jaw, of a traveling jaw which has its bar pivoted concentric with the non-traveling jaw and movable pivotally on said common center independent of said non-traveling jaw.

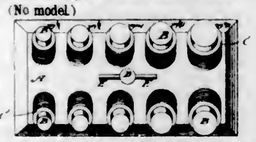
444,327. RAILWAY TIME-SIGNAL. CHARLES BARRY, Corning, N. Y. Filed May 26, 1890. Serial No. 353,207. (No model.)



Claim.—1. The combination of the rail seated on springs having slots in their ends engaged by or receiving pins or bolts, and the lever arranged transversely to and in contact with the under side of the said rail, substantially as and for the purpose set forth.

2. The combination of the rail seated on springs having their ends slotted, receiving pins or bolts projected from a plate secured to the tie, and the lever having a slot in one end engaging the flange of a suspended right-angular bar, substantially as and for the purpose set forth.

444,328. HOLDER FOR WASHERS, &c. FRED E. BOSS, New York N. Y., assignor to Ella May Boss, same place. Filed Apr. 17, 1890. Serial No. 348,409. (No model.)



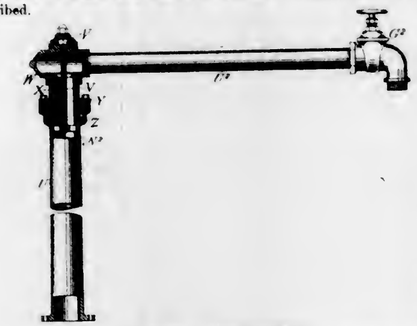
Claim.—A holder for washers and similar articles, consisting of a base having stems of varying diameters to accommodate varying sizes of washers, said stems being arranged in divergent rows, and a handle D E placed between said rows, substantially as described.

444,329. HYDRANT. THOMAS W. BROOKS, San Francisco, Cal. Filed Aug. 11, 1890. Serial No. 361,738. (No model.)

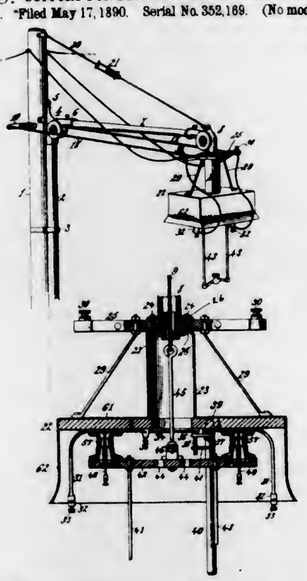
Claim.—1. In a hydrant, the combination of the main barrel A, having the covering-plate B and supplementary cover C, the foot-chamber D, receiving the valve-seat F and the inlet-pipe E, the valve G, having the metallic core H, the annular ring of flexible material I, and the follower-nut J, the valve-stem K, the screw-stem L, having the squared extension M, the long nut N, connected to the top end of the valve-stem K and sliding up and down in the sleeve or guide O, formed integral with the cover B, said nut N being provided with lugs P P which move in slides formed in the guide O, substantially as described.

2. In a water-hydrant, the main barrel A, formed with an extension T, a vertical pipe U, bolted thereon, and a swivel-joint at the top, held by a central screw-bolt V^3, the whole combined and operating substantially in the manner and for the purposes specified.

3. In a water-hydrant, the combination of the main barrel A, forming an extension T, a vertical pipe U, bolted thereon, a swivel-joint at the top, held by a central screw-bolt V^3, and the horizontal crane-pipe U^3, the packing-gland Y, and the sleeve X, together with the valve G^2 at the outer end of the crane U^3, substantially as described.



444,330. SUPPORT FOR ELECTRIC LAMPS. JAMES CHASE, Rochester, N. Y. Filed May 17, 1890. Serial No. 352,189. (No model.)



Claim.—1. The combination, with a pole or mast and the hood, of electrical conductors having a pivotally-mounted switch, by which the circuit may be either closed through the lamp or the latter cut out, and a staff having near one end a radial arm adapted to engage a hanger on the switch, said hood having an aperture in suitable proximity to the switch and adapted to receive the end of the staff and afford a bearing therefor, substantially as described.

2. The combination, with a pole or mast and the hood-board, of a pivotally-mounted switch, by which the current may be either short-circuited and the lamp cut in or out, and a staff having an insulating radial arm at or near one end adapted to engage a hanger on the switch, the hood-board being provided with an aperture arranged at the angle between the edge of the hood-board and its depending side to form a seat for the end of the staff, and to enable said seat to be readily found in the dark, substantially as described.

3. The combination, with a pole or mast and an arm from which the lamp is suspended, of a cross-head centrally affixed to the mast and elbow or angle irons adjustable longitudinally upon said cross-head, and having a series of bolt-openings in the parts abutting against the mast, and guy-wires extending from the ends of the cross-head to the hood, substantially as described.

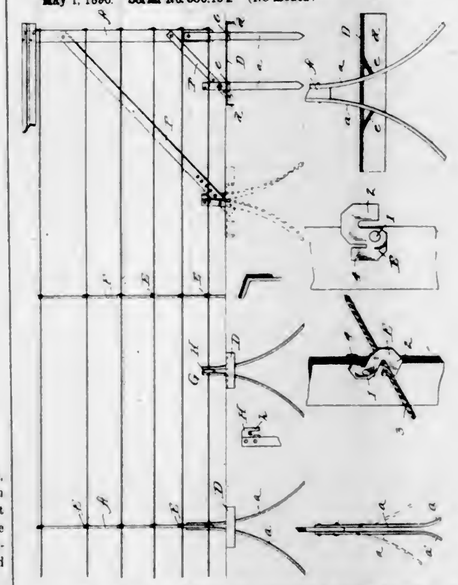
4. The combination, with a cross-head centrally affixed to the mast or post, of elbow or angle irons having one arm sliding upon the cross-head and provided with bolts lying in slots in said cross-head, while the other arms are each provided with a series of bolt-openings, and guy-wires extending from each end of the cross-head to the hood of the lamp, and having nuts by which their tension may be adjusted, substantially as described.

5. The combination, with a mast or post having an arm sustaining the lamp, of a hood-board having conductors, a switch pivoted on said board to connect and disconnect said conductors, a rising and falling support for the lamp, and spring-pressed spindle connections mounted on and insulated from the support and engaging with the conductors on the hood-board by the preponderating force of a weight by which the lamp is raised, substantially as described.

6. The combination, with a pole or mast having a U-shaped housing clipped to one side, of a tubular arm extending at substantially right angles from the top of the housing, a cord or cable having a weight moving in the housing and attached at the other end to the lamp-support, said cord moving in the tubular arm over pulleys at each extremity thereof, a lamp mounted on said support, electric conductors mounted on the hood-board and connected and disconnected by a switch, spring-pressed contact-spindles mounted on the lamp-support and insulated from it, male socket-pieces mounted on the movable lamp-support, and female socket-pieces on the hood-board, the former being of the form of a frustum of a cone, and the female pieces of a shape to receive the same and guide the spindles to their seats, substantially as described.

7. The combination, with detachable contacts adapted to unite with the terminals of the lamp, of a switch making and breaking the circuit through said terminals, and a switch-operating staff having an arm engaging the arm on the switch and operating the same, said arms being insulated or insulating, substantially as described.

444,331. FENCE. GUSTAVE A. CHRIST, Grand Rapids, Mich. Filed May 1, 1890. Serial No. 350,154. (No model.)



Claim.—1. A clip of flexible sheet material provided with a hole for connection with the post, a tongue for receiving the wire, and another tongue in position reversed to the first, adapted to be bent around the edge of the post, substantially as described.

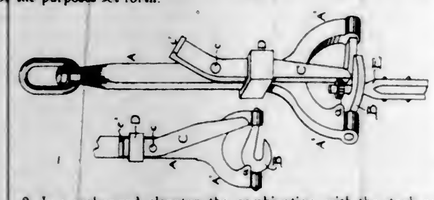
2. In combination with a wire fence, an anchor consisting of a pair of prongs, and a block interposed between said prongs and riveted thereto, said block having a hook to engage the wire, substantially as described.

3. In combination, the post having prongs at its lower end, a plate D to be placed on the ground and having openings to receive the prongs of the post, and the gripping-tongues *e*, projecting from the plate at the opening 11 and engaging the prongs, substantially as described.

444,332. SUCKER-ROD ELEVATOR. SETH CLOVER, Erie, Pa., assignor of one-half to Tobias Meyerhoefer, same place. Filed Sept. 6, 1890. Serial No. 364,143. (No model.)

Claim.—1. In a sucker-rod elevator, the combination, with the stock or frame-piece A A' and the clamp B, of the bent retaining-bar

C, pivoted to the stock A at *c*, and a clip embracing both the stock and bar and sliding freely thereon over said pivot, whereby as the clip is moved past the pivot the bar is swung thereon, substantially as and for the purposes set forth.



2. In a sucker-rod elevator, the combination, with the stock or frame-piece A A' and the pivot-clamp B, of the lug *a* on the part A' near the pivot of the clamp, as shown, whereby the clamp is prevented from turning beyond a horizontal position in one direction and a vertical position in the other direction.

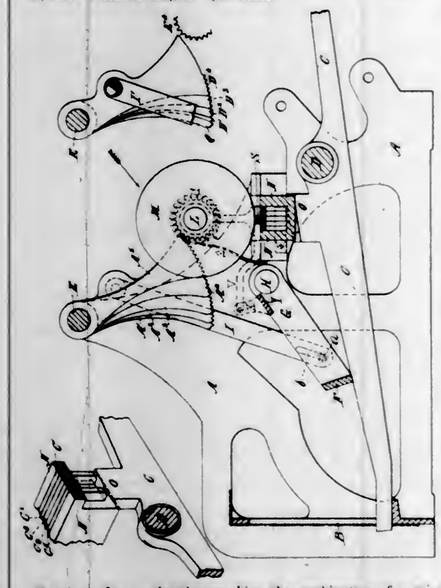
3. In a sucker-rod elevator, the combination, with the stock or frame A A', the pivoted clamp B, and a shifting retaining-bar, of a lug on the said frame, which limits the pivotal action of said clamp.

444,333. THILL-COUPLING. NORRIS M. COMPTON and WILLIAM H. LOWCOUY, Sullivanville, N. Y. Filed June 21, 1890. Serial No. 356,261. (No model.)



Claim.—In a thill-coupling comprising the rigid and spring members movably engaged at their inner ends, recessed, as described, to conjointly form the bolt-bearing, said members extending parallel, the rigid member having a threaded perforation and the spring member having on its under side adjacent to the front end an opening registering with said threaded opening, said spring member having on its outer face adjacent to its opening recesses or depressions, in combination with a headed bolt provided with projecting portions adapted to lie within said recesses to hold the bolt against rotation and lock the free forward end of the spring member, substantially as set forth.

444,334. CASH-REGISTER. HUGO COOK, Dayton, Ohio. Filed Dec. 13, 1889. Serial No. 333,573. (No model.)



Claim.—1. In a registering-machine, the combination of a series of racks arranged in the order described—that is, with the one having the highest number of teeth in advance, followed in regular decreasing order by those having the lower numbers of teeth, the whole being arranged to form one continuous series of teeth, and a series of co-operating pinions movable into and out of the path of the racks.

2. In a registering-machine, the combination of a series of racks arranged in the order described—that is, with the one having the highest number of teeth in advance, followed in regular decreasing order by those having the lower numbers of teeth, the whole being arranged to form one continuous series of teeth, a revoluble registering-shaft, and a series of pinions feathered thereon and movable into and out of the path of the racks.

3. In a registering-machine, the combination of the series of racks $A' A^2 A^3 A^4 A^5$, arranged in the order described, the registering-shaft L, the series of pinions $B' B^2 B^3 B^4 B^5$, feathered thereon and co-operating with the racks $A' A^2 A^3 A^4 A^5$, and the keys C, operatively connected with the racks and pinions to vibrate the former and shift the latter, for the purpose specified.

4. In a registering-machine, the combination of the operating-keys C, the vibrating bar F, the rock-shaft E, connected with and rocked by the vibration of the bar F, the series of segment-racks $A' A^2 A^3 A^4 A^5$, secured upon the rock-shaft and arranged in the order described, the registering-shaft L, the series of pinions $B' B^2 B^3 B^4 B^5$, feathered thereon, and the series of shifters $C' C^2 C^3 C^4 C^5$, actuated by the keys C and co-operating with the pinions $B' B^2 B^3 B^4 B^5$, for the purpose specified.

5. In a registering-machine, the combination of the registering-shaft L, cam projection *i*, carried thereby, shifter-bar S, shaft L', pinion P, and rack Q, the parts co-operating with each other substantially in the manner and for the purpose described.

6. In a registering-machine, the combination of the registering-shaft L, the cam projection *i*, carried thereby, the shifter-bar S, having the projection *j* and yoke T, the shaft L', the pinion P, loose thereon, the rack Q, and the registering-wheels M M', substantially as and for the purpose described.

7. In a registering-machine, the combination of a series of movable shifters and a series of operating-keys, each of which co-operates with two or more of said shifters, but not with the others, whereby the movement of one key may be transmitted through said shifters to two or more movable parts of the machine and the movement of another operating-key may be transmitted through them to other movable parts of the machine, substantially as and for the purpose described.

8. In a registering-machine, the combination of a shaft, a series of parts mounted thereon and movable longitudinally thereof, and a series of operating-keys, each connected with two or more of such parts to move them longitudinally of said shaft, substantially as described.

9. In a registering-machine, the combination of the movable shaft L, the hubs $b' b^2$, &c., sliding thereon and turning therewith, and a series of operating-keys, each connected with two or more of the hubs, substantially as and for the purpose described.

10. In a registering-machine, the combination of the laterally-movable hubs $b' b^2$, &c., the shifters $C' C^2$, &c., each connected with one of said hubs, and a series of operating-keys, each of which co-operates with two or more of said shifters, but not with the others, substantially as and for the purpose described.

11. In a registering-machine, the combination of the revoluble shaft L, the hubs $b' b^2$, &c., sliding thereon and turning with it, the shifters $C' C^2$, &c., each connected with one of said hubs, and a series of operating-keys, each co-operating with two or more of said shifters, but not with the others, substantially as and for the purpose described.

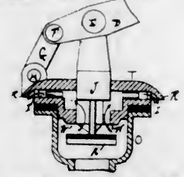
12. In a registering-machine, the combination of the slotted shifters $C' C^2$, &c., with the operating-keys provided with the wedge projections O, arranged to enter the slots in the shifters, each wedge being arranged to co-operate with two or more shifters, but not with the others, substantially as and for the purpose described.

13. In a registering-machine, the combination of the shaft L, laterally-movable hubs $b' b^2$, &c., thereon, the slotted shifters $C' C^2$, &c., each connected with one of the said hubs, and the operating-keys, each provided with a wedge projection O, arranged to co-operate with the shifters, substantially as and for the purpose described.

14. In a registering-machine, the combination of the revoluble shaft L, the hubs $b' b^2$, &c., sliding thereon and turning therewith, the slide-box N, having the slides $C' C^2$, &c., contained therein, each connected with one of the hubs $b' b^2$, &c., and the operating-keys O, each having a wedge O adapted to enter a slot in the box N when the key is operated, substantially as and for the purpose described.

444,335. FLOAT-VALVE. HENRY P. COPE, Detroit, Mich., assignor to Cope Brothers, same place. Filed May 3, 1890. Serial No. 350,467. (No model.)

Claim.—1. The combination, with a tank having an inlet-pipe, of a cup-shaped rim R, located at the upper end of the pipe and having its wall provided with water-ways, a valve-seat below the rim, a valve closing upwardly with the water-current, and a float in the tank, connected with the valve, substantially as described.



2. The combination, with a valve, of the bell T, having a valve-seat, an internal water-way, the water-ways I through its wall, and the rim R, substantially as shown and described.

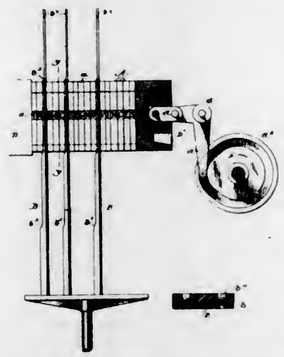
444,336. METALLIC CARTRIDGE. MANUEL J. CUADROS, Liege, Belgium. Filed Aug. 21, 1890. Serial No. 362,653. (No model.) Patented in Belgium May 28, 1890, No. 90,717.



Claim.—1. A metallic cartridge-shell having its rim provided with opposite parallel flat edges or faces 3, substantially as and for the purpose described.

2. A metallic cartridge-shell having the parallel opposite grooves 4 and a rim 2, formed with opposite parallel flat edges or faces 3, directly below the parallel grooves, substantially as and for the purpose described.

444,337. MECHANISM FOR JUSTIFYING MATRICES, TYPE, &c. PHILIP T. DODGE, Washington, D. C. Filed Oct. 8, 1889. Serial No. 326,319. (No model.)



Claim.—1. In combination with a line of matrices and means for compressing the same endwise, elastic compressible spaces seated in the line and presenting between the fronts of the matrices imperforate faces of heat-resisting material, whereby said spaces are adapted to permit justification of the line by compression, and also adapted to prevent the flow of molten metal between the matrices.

2. In a linotype-machine, a mold and mechanism for supplying the same with molten metal, in combination with a row of matrices and intermediate elastic compressible spaces of non-combustible material co-operating with the matrices to close the mold, and mechanism acting to compress the line endwise, whereby the justification of the line and the prevention of the leakage of metal are both effected.

3. In combination with a series of matrices, supports to maintain the same in line, a series of elongated compressible spaces of increasing thickness from one end toward the other, mounted in and movable endwise through the line, and means for compressing the line endwise, whereby the justification of the line may be approximately effected by moving the spaces endwise and thereafter completed by compressing the spaces laterally.

4. In combination with the elongated metallic space-bar of varying thicknesses, as shown, the internal compressible material.
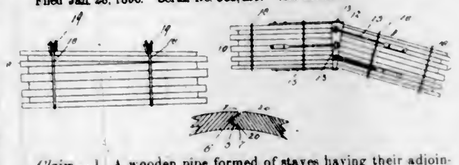
5. In combination with the elastic material therein, the metal space-bar constructed of varying thicknesses, as described, with the metal overlapped at the edge to cover the elastic material.

444,338. DOOR-CHECK. HORACE L. DODGE, Hornellsville, N. Y. Filed Oct. 9, 1890. Serial No. 367,538. (No model.)



Claim.—In a door check or holder, a stop having a recess within which is located an elastic collar, in combination with a fixture comprising casting B, carrying a vertical shank freely turning therein, and having a horizontally-projecting knob adapted to snugly enter the stop-recess and be frictionally retained by the elastic collar therein, substantially as set forth.

444,339. WOODEN PIPE. CHARLES W. DWELLE, Denver, Colo. Filed Jan. 28, 1890. Serial No. 383,423. (No model.)



Claim.—1. A wooden pipe formed of staves having their adjoining ends united by tongues and grooves, the tongues being formed integral with the staves and entirely across their ends and the grooves formed by cutting out the abutting stave ends and fashioned to receive said tongues, substantially as described.

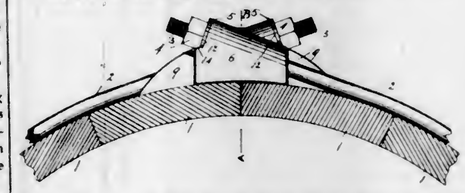
2. A wooden pipe formed of staves having their edges united by tongues and grooves, the tongues being of greater length than the depth of the grooves, so that a space 7 shall be left between the shoulders of the adjoining edges, substantially as described, and for the purpose set forth.

3. The combination, with two sections of built-up wooden pipe of different diameters, of an intermediate section of pipe adapted to join said sections, the intermediate section having one or more of its staves tapering to a point, while the other staves remain of the same width throughout their length, substantially as described.

4. The means herein described of joining two sections of wooden pipe extending in different directions, said means consisting of the metal elbow part 12, provided with lugs 13, and rods 15, secured to the sections of pipe at one extremity, the opposite extremity passing through the lugs 13 and secured in place by nuts screwed thereon, substantially as described.

5. A wooden pipe built up of staves of unequal length and surrounded by suitable hoops, said staves having their adjoining edges and ends united by tongues and grooves, the tongues being formed integral with the staves and throughout their length, the grooves being formed within the abutting edges of the staves and fashioned to receive the corresponding opposite tongues, for the purpose of supporting the end joints of the staves between the hoops, substantially as described.

444,340. COUPLING-SHOE. CHARLES W. DWELLE, Denver, Colo. Filed Apr. 14, 1890. Serial No. 347,899. (No model.)



Claim.—1. A coupling-shoe for uniting the extremities of hoops surrounding pipes, conduits, or tanks, said shoe being provided with a longitudinal rib projecting vertically below the under surface of the shoe, substantially as described.

2. A coupling-shoe with slots open on the bottom and provided with the central dividing-wall 8, projecting longitudinally beyond each end of the shoe, substantially as and for the purpose described.

3. A coupling-shoe for uniting the extremities of hoops surrounding pipes or tanks, said shoe having slots open on the bottom divided by the central dividing-wall 8, projecting longitudinally beyond each end of the shoe and vertically below the side walls of the slots, so as

to form a longitudinal rib adapted to bear upon the tank or pipe to the same extent and in the same manner as the contact portion of its connecting-hoop, substantially as described.

4. A coupling-shoe with slots open on the bottom, said slots being provided with the side walls 10, and the central dividing-wall 8, projecting longitudinally beyond the ends of the shoe and vertically below the side walls of the slots, substantially as described.

5. A coupling-shoe with a central longitudinal rib or projection on its under side, said rib projecting below the adjacent part of the shoe, substantially as and for the purpose set forth.

6. A coupling-shoe open at the bottom and provided with the central wall 8, the outer walls 10, and shoulders 12, forming seats for nuts screwed upon the extremities or hoops united by the shoe, and shoulders 13 14, adapted to support the nuts from below when screwed to their seat, substantially as described.

7. A coupling-shoe provided with two slots open on the bottom for the reception of the extremities of a suitable hoop surrounding a pipe or tank, said slots being provided with the side walls 10 and the central dividing-wall 8, this wall projecting vertically below the side walls, so as to form a rib adapted to indent the pipe or tank before the side walls engage the same, substantially as described

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444,341. **VELOCIPEDE.** GUSTAV A. EGG, Erie, Pa., assignor of one-third to Joseph A. Roth, same place. Filed May 10, 1890. Serial No. 351,272. (No model.)

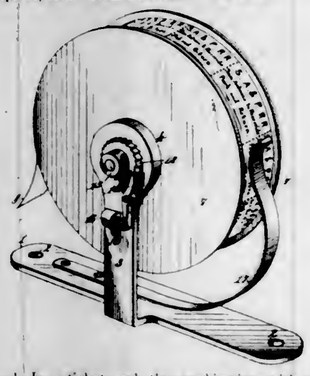


Claim.—1. In a velocipede, the combination of a driving-shaft and a driven shaft, two distinct sets of gearings connecting said shafts, one of which is adapted to move the driven shaft faster than the other, a manually-actuated clutch controlling the high-speed gearing, and an automatically-actuated clutch controlling the low-speed gearing, substantially as and for the purposes set forth.

2. In a velocipede, the combination of a driving-shaft, two driving-gears on said shaft, one of which is connected therewith by an automatically-acting clutch and the other by a manually-operated clutch, and a driving-wheel having on its shaft two gear-wheels, one of which is of a less diameter than the other and is driven from the driving-gear on the treadle-shaft, which is controlled by the manually-operated clutch, the other being driven from the driving-gear having the automatically-acting clutch.

3. In a velocipede, the combination of a driving-shaft and a driving-wheel driven from said shaft, two gears on the driving-shaft which engage therewith by clutches, one of which acts automatically and the other is moved from the brake mechanism, and two gears on the shaft of the driving-wheel, one of which is smaller than the other and is driven from the driving-gear, which is clutched through the action of the brake mechanism.

444,342. **TICKET-REEL.** MILTON EVERETT, San Antonio, Tex. Filed Sept. 20, 1890. Serial No. 365,583. (No model.)



Claim.—1. In a ticket-reel, the combination, with a bracket mounted on a suitable base-plate and having a bearing in its upper end, of an angular shaft having a journal at one end which lies in said bearing, and a reel having an angular central opening in which said shaft closely fits, a ratchet rigidly mounted upon the projecting end of the journal, and a spring-pressed pawl fulcrumed upon the bracket and having its nose engaging said ratchet, substantially as described.

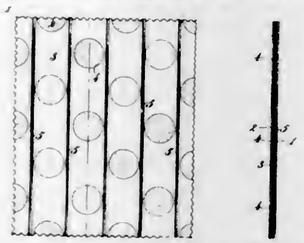
2. In a ticket-reel, the combination, with a bracket or standard mounted on a suitable base-plate adapted to be bolted or otherwise fastened to a table or desk, of an angular shaft having a round journal at one end adapted to lie in a bearing in the upper end of said bracket, a reel having an angular central aperture in its core in which the shaft fits, a ratchet rigidly mounted upon the end of the shaft-journal, projecting beyond the outside of the bracket and held in place by a short sleeve, and a friction-spring consisting of a strip of metal riveted or otherwise fastened to the base-plate and curved upward to bring its end to bear against the periphery of the strip upon the reel, substantially as described.

444,343. **HAT-PACKING RING.** FRANK P. FERRY, Danbury, Conn., assignor of one-half to Terrence E. Brady, same place. Filed Apr. 25, 1888. Serial No. 271,828. (No model.)



Claim.—A closed pasteboard hat-packing ring of a general cylindrical shape adapted to contain the crown of a hat, the inner face of said ring having a smooth unbroken surface, whereby no chafing-points are presented to the crown of the hat, while the top and bottom edges of said ring are curled outwardly to form a bead, whereby a smooth contact is afforded with the upper and under surface of the brim of the hat, substantially as shown and described.

444,344. **STAMP OR LABEL.** ADDISON C. FLETCHER, New York, N. Y. Filed Oct. 10, 1890. Serial No. 367,693. (No model.)



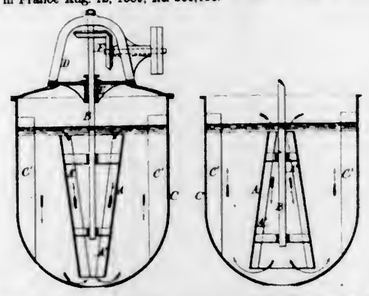
Claim.—1. A postage-stamp or other equivalent device having applied to its adhesive face a thin sheet of tissue having formed therein a number of openings through which the adhesive surface is exposed, substantially as described.

2. A postage-stamp or equivalent device having applied to its rearward or adhesive face a sheet of thin tissue having openings at suitable intervals through which the adhesive surface is exposed, said stamp thus prepared being embossed with ribs appearing in low relief upon the face alternately, substantially as described.

3. A postage-stamp or other equivalent device having a number of embossed figures appearing in low relief upon its outer or printed face and having the intaglios of said figures filled with a suitable adhesive gum, substantially in the same plane as to their surfaces with the unembossed rearward face of said stamp, the latter being also provided with ribs embossed in low relief upon the rearward face of the stamp and between said adhesive surfaces, substantially as described.

4. A series of postage-stamps or other equivalent devices having their rearward or adhesive faces covered by a sheet of thin tissue adhering thereto and provided with successive series of openings of any suitable form and size, whereby the adhesive material is exposed, arranged in such manner that the lines of separation or perforation between said stamps shall diametrically intercept four separate series of said openings to give adhesion to the edges, substantially as described.

444,345. **APPARATUS FOR MIXING LIQUIDS.** EDMOND R. GABBETT, Old Charlton, assignor of one-half to Samuel Bagster Boulton, Thomas Burt Haywood, and Harold Edwin Boulton, all of London, England. Filed July 23, 1890. Serial No. 359,670. (No model.) Patented in England Jan. 16, 1889, No. 840; in Belgium Aug. 17, 1889, No. 87,411, and in France Aug. 12, 1889, No. 209,153.

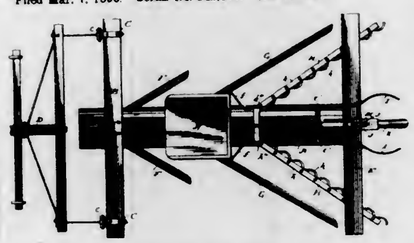


Claim.—1. An apparatus for mixing or circulating liquids, consisting of a closed tank or vessel for containing the liquid, a rotating conically-shaped shell secured to and suspended by a shaft vertically in the liquid and having upper and lower open ends of different diameters, through the interior of which shell the liquid is caused by centrifugal force to flow in one direction, while the liquid exterior of the shell is caused to flow in a reverse direction, and means for rotating the shell and causing such continuous circulation of the liquid within the tank or vessel and through the shell, substantially as described.

2. An apparatus for mixing or circulating liquids, consisting of a tank or vessel for containing the liquid, a rotating conically-shaped shell having a series of internal ribs immersed and suspended by a shaft vertically in the liquid and having upper and lower open ends of different diameters, and means for rotating the shell and causing a continuous circulation of the liquid within the tank and through the shell, substantially as described.

3. An apparatus for mixing or circulating liquids, consisting of a closed tank or caldron having on its internal surface a series of projecting ribs, the rotating conically-shaped shell immersed and suspended by a shaft vertically in the liquid, provided on its internal surface with a series of ribs and having upper and lower open ends of different diameters, and means for rotating the shell and causing a continuous circulation of the liquid within the tank and through the shell, substantially as described.

444,346. **CULTIVATOR.** ROBERT S. GARBEY, Rossville, Kans. Filed Mar. 7, 1890. Serial No. 342,977. (No model.)



Claim.—1. The combination, with the sled, of the blades F and G, attached thereto and projecting outward and rearward therefrom, the blades G being behind and attached at a higher level than the blades F, substantially as set forth.

2. The combination, with the sled, of the blades F, attached thereto near the front end and projecting from the bottom of the runner upward, outward, and rearward, and the blades G, attached to the sled behind and at a higher level than the blades F and projecting outward and rearward, substantially as set forth.

3. The combination, with the sled, of the blades F, projecting outward and rearward therefrom, and the longer blades G, attached to the sled behind blades F and projecting outward and rearward, substantially as set forth.

4. The combination, with a sled, of a harrow having a rigid V-shaped frame pivoted at its angle to the sled, substantially as set forth.

5. The combination, with the sled, of the harrow having a rigid V-shaped frame pivoted at its angle to the top of the sled and having the bends A^{III} and A^{IV}, substantially as set forth.

6. The combination of the harrow-frame and the teeth inclined downward and rearward and having their lower portions bent sidewise with respect to the line of draft, so as to form hooks, substantially as set forth.

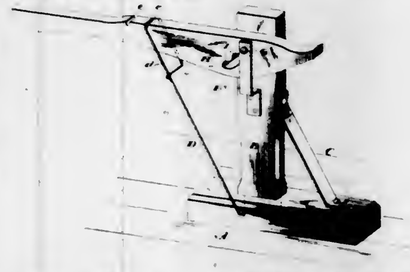
7. The combination, with the sled, of the harrow secured thereto and projecting outward and rearward therefrom, said harrow having teeth inclined rearward and bent outward at their lower ends, substantially as set forth.

8. The combination, with the sled, of blades F and G, projecting outward and rearward therefrom, the blades G being longer than blades F and situated behind them, and the V-shaped harrow attached to the sled behind blades G and projecting outward as far as said blades, substantially as set forth.

9. The combination, with the sled and the handle K, of the blades I, pivoted to the sides of the sled and connected by a part extending across it, the operating-rod J, connected at its lower end to said part and extending upward along the handle, and means for locking said rod, substantially as set forth.

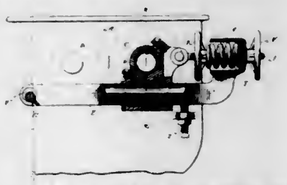
10. The combination, with the sled, of the blades F and G, projecting outward and rearward therefrom, the blades G being longer than the blades F and situated behind them, the V-shaped harrow having the rigid frame attached to the sled in rear of blades G, the blades I, pivoted to the sled and projecting rearward, the rod J for operating said blades I and means for locking said rod, substantially as set forth.

444,347. **WAGON-JACK.** JAMES W. GARRETT, Casey, Ill., assignor of one-half to Charles F. Johnson, same place. Filed Sept. 25, 1890. Serial No. 366,134. (No model.)



Claim.—A lifting-jack comprising the base A, a standard having its tenon bearing therein, a bracket F, secured on said standard, for maintaining one end of a fulcrum-pin, the other end of said pin being secured in the standard, and a lever E, provided with a vertically-inclined slot, having its upper wall provided with a series of depressions, the said lever being of increased thickness adjacent to said slot, together with a locking-bar having its lower end bent to pierce the base and standard-tenon and its upper end engaging with the lever, substantially as set forth.

444,348. **ROLLER GRINDING-MILL.** WILLIAM D GRAY, Milwaukee, Wis., assignor to the Edward P. Allis Company, of Wisconsin. Filed Aug. 24, 1889. Serial No. 321,812. (No model.)



Claim.—1. In a roller grinding-mill, a grinding-roll, two horizontal arms, and roll-sustaining boxes sustained by and movable on said arms, in combination with means for adjusting said arms endwise in unison and adjusting devices to raise and lower the arms independently

2. In a grinding-mill and in combination with a grinding-roll, a pair of horizontal vertically-adjustable arms, each provided with and wholly sustaining a sliding journal-box, a spring to advance the box along the arm, and an adjustable stop to limit the advance of the box.

3. In a roller-mill, a grinding-roll and journal-box sustaining its ends, in combination with horizontal arms by which said boxes are sustained and on which they are arranged to slide, a vertically-adjustable stop for each arm, a pressure mechanism mounted on one end of each arm and acting to advance the box thereon, and a roll-spreading de-

vice connected to the opposite end of the arm to move the same endwise.

4. In a roller grinding-mill, a grinding-roll, two horizontal roll-sustaining arms mounted at one end on eccentrics on a common shaft, and adjustable supports for raising and lowering said arms independently at their free ends.

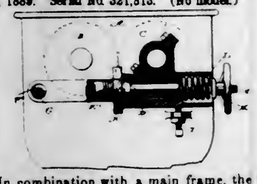
5. In a roller grinding-mill, a main frame and a grinding-roll mounted in fixed bearings therein, in combination with a movable roll, its sustaining-boxes, two horizontal arms on which the boxes slide and by which they are sustained, pressure devices sustained by the arms and urging the boxes toward the fixed roll, mechanism for moving the arms endwise to spread and close the rolls, and adjustable supports for raising and lowering the arms independently to align the rolls.

6. In a roller grinding-mill, the movable roll, its sustaining-boxes, and the horizontal arms on which the boxes slide and by which they are sustained, in combination with the eccentrics sustaining the arms at one end, the vertically-adjustable devices sustaining the arms at the opposite ends, the threaded rods attached to the box and extended through the upturned ends of the arms, their stop-nuts, and the springs acting to urge the boxes inward, said elements arranged for joint operation substantially as described.

7. In a roller grinding-mill, a main frame and a grinding-roll mounted in fixed bearings therein, in combination with a coacting movable roll, boxes sustaining the said movable roll, arms of circular cross-section by which said boxes are sustained and on which they are free to rock, pivotal supports at one end of said arms, and vertically-adjustable supports at the opposite ends of the arms, whereby the movable roll may be aligned with the stationary roll.

8. In a roller-mill and in combination with the grinding-roll, journal-boxes sustaining the same, the horizontal arms whereon the boxes are sustained and arranged to slide, said arms pivotally sustained at one end and upturned at the opposite end, the springs seated between the boxes and the upturned ends, and the screws or their equivalents to raise and lower the free ends of the arms.

444,349. ROLLER GRINDING-MILL. WILLIAM D. GRAY, Milwaukee, Wis., assignor to the Edward P. Allis Company, of Wisconsin. Filed Aug. 24, 1889. Serial No. 321,813. (No model.)

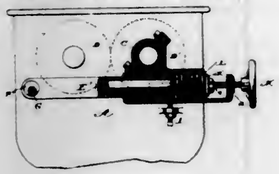


Claim.—1. In combination with a main frame, the fixed roll B, and the opposing roll C, the boxes sustaining the latter, the horizontal continuous guide-arms whereon the boxes slide, pivotal supports allowing said arms to swing upward and downward, vertically-adjustable supports whereon the boxes slide and by which they are directly sustained, and spring-pressure devices mounted on the free ends of the arms to urge the boxes inward.

2. In a roller grinding-mill, a fixed roll, a second roll co-operating therewith, boxes sustaining the second roll, horizontal vertically-swinging guide-arms whereon the boxes slide, means for sustaining the boxes and arms, spring-pressure devices mounted on the free ends of the arms and acting against the boxes to close the rolls, and stop-nuts encircling the guide-arms and adjustable thereon to limit the motion of the boxes.

3. In a roller grinding-mill, a roll and its sustaining-boxes, in combination with round guide arms or rods whereon the boxes slide and whereby they are maintained and guided, stop-nuts encircling said rods to limit the motion of the boxes in one direction, springs encircling the arms and urging the boxes toward the stop-nuts, and nuts applied to the arms to confine and compress the springs.

444,350. ROLLER GRINDING-MILL. WILLIAM D. GRAY, Milwaukee, Wis., assignor to the Edward P. Allis Company, of Wisconsin. Filed Aug. 24, 1889. Serial No. 321,814. (No model.)

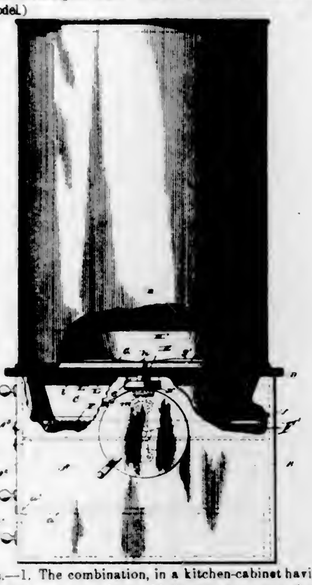


Claim.—1. In a roller grinding-mill, and in combination with a main frame, the roll B and co-operating roll C, the boxes sustaining the latter and provided with the upturned outer ends, the horizontal guide-arms whereon the boxes slide, provided with threaded necks, the eccentrics sustaining said arms at one end, supports for the boxes and free ends of the guide-arms, the springs acting at one end against the boxes, the spring-confining nuts applied to the necks, and the stop-screws seated in the boxes to limit their inward motion.

2. In a roller grinding-mill, a main frame, a grinding-roll, roll-sustaining boxes, horizontal guide-arms whereon the boxes slide and by which they are maintained in position, adjustable stop-screws mounted in the boxes and abutting against the guide-arms to limit the inward motion of the boxes, springs mounted on the arms and urging the boxes inward, horizontal pivots sustaining the guide-arms at one end, and vertically-adjustable supports mounted on the main frame

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444,351. FLOUR OR MEAL BIN AND SIFTER. WILLIAM H. HAMMER, Washington, Ohio. Filed May 27, 1890. Serial No. 353,316. (No model.)



Claim.—1. The combination, in a kitchen-cabinet having the top board of the sieve-receptacle provided with a transverse slot and elliptical openings, of a bar E, supported beneath said board and provided with means for supporting a sieve, a stirrer G, made of a single plate of metal having open-ended slots with upturned edges, bolts connecting said stirrer with the bar E, and means for actuating said bar E, substantially as set forth.

2. In combination with a flour-receptacle, a cabinet or support therefor, a top board of the sieve-receptacle provided with an opening *d*, a stirrer G, and bolts connecting said stirrer with a bar E, said bar also carrying a sieve-support consisting of a bail or loop E', and transverse bar F, pivotally connected to said loop, the play of one end of said bar F being limited by contact with the walls of a slot *f*, formed in the cross-bar F', substantially as set forth.

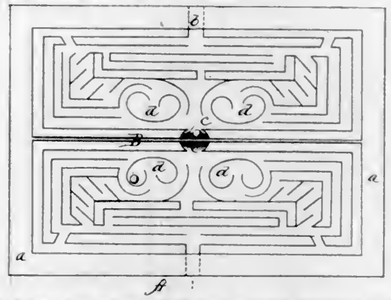
3. The combination, in a sifter and flour-receptacle, of a cut-off consisting of links pivotally attached to the board beneath the flour-receptacle, a bar L, pivotally connected to the free ends of said links, and a bar L', for moving the cut-off bar L beneath the opening *d*, substantially as set forth.

4. In combination with a bar E, supported as shown, bolts A, connecting a stirrer thereto, a pan-support carried by said bar E, a cut-off secured to the under side of the board which operates in the flour-receptacle from the sifter and provided with an operating-bar, and a pan-receptacle beneath the sifter, the parts being organized substantially as shown, and for the purpose set forth.

444,352. GAME-PUZZLE. CHARLES P. HARRIS, San Francisco, Cal. Filed May 27, 1890. Serial No. 353,317. (No model.)

Claim.—1. A game-puzzle consisting of a board or box divided by a partition into two compartments, a maze of passages in each compartment, and terminal recesses placed on opposite sides of the

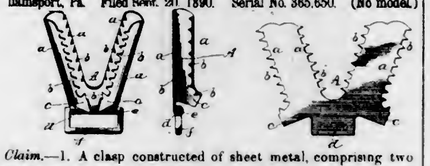
partition, formed by depressions in the flat upper face of the base-plate, substantially as described.



2. A game-puzzle consisting of a box or board divided by a partition into two compartments, terminal recesses on opposite sides of the partition, a maze of passages in each compartment, and the holding-pockets *d*, of substantially the form shown, communicating with the maze of passages on each side, substantially as described.

3. A game-puzzle consisting of a box or board divided into independent compartments, a maze of passages in each compartment, a terminal recess in each compartment, oppositely-placed entrances to said terminal recesses, and holding-pockets, substantially as described, communicating with the maze in each compartment, substantially as set forth.

444,353. CLASP FOR SUSPENDERS. CHARLES R. HARRIS, Williamsport, Pa. Filed Sept. 20, 1890. Serial No. 365,650. (No model.)



Claim.—1. A clasp constructed of sheet metal, comprising two leaves or members having teeth on both of their edges and adapted to be folded to embrace the edges of a suspender-strap or other web, and also having a short tongue rolled into a cylindrical or substantially cylindrical socket or bearing located below the leaves of the clasp for the reception of a wire loop, substantially as set forth.

2. A clasp constructed of sheet metal, comprising two leaves or members adapted to be folded to embrace the edges of a suspender strap or other web, said folding portions being of different widths and having teeth on their edges adapted to overlap each other and penetrate the web in different planes when folded, and also provided with a short tongue rolled into a cylindrical or substantially cylindrical socket or bearing, which is located below the leaves of the clasp for the reception of a wire loop, substantially as set forth.

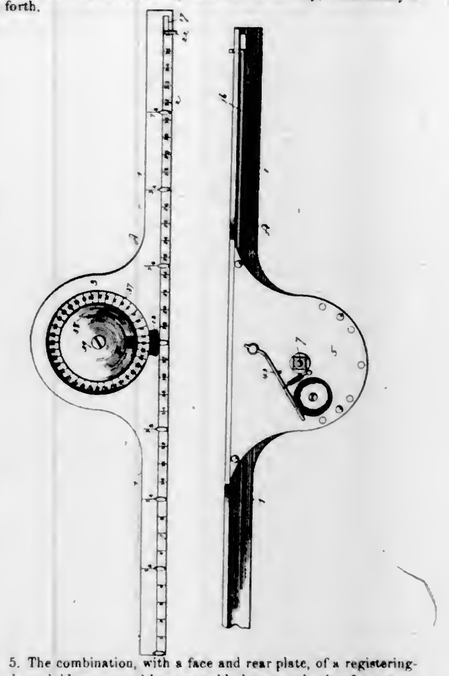
444,354. CLOTH-MEASURING MACHINE. ORLANDO F. HEATH, Northville, N. Y. Filed Feb. 15, 1890. Serial No. 340,538. (No model.)

Claim.—1. The combination, with a case having a measuring-scale thereon and a spring-actuated registering-wheel revolubly supported in the case, of a spring-actuated slide-rod to be slid with each measurement, a spring-actuated slide-pawl connected with the slide-rod and adapted to operate the wheel, locking mechanism, and trip mechanism for releasing said locking mechanism and the pawl from engagement with the registering-wheel, substantially as set forth.

2. The combination, with a face-plate having a measuring-scale and an enlargement at its center, a back held apart from the enlargement a suitable distance, a registering-wheel revolubly supported between the face and back plate, and a ratchet-toothed wheel on the inner hub of this wheel, of actuating and locking mechanism located in proximity to this toothed wheel and means connected therewith for operating and removing the operating and locking mechanism from the wheel simultaneously, substantially as set forth.

3. The combination, with a face-plate having a measuring-scale and a suitable enlargement, a back plate, and a spring-actuated registering-wheel revolubly supported between the face and back plate, said wheel having a ratchet-toothed wheel on its inner hub, of a spring-actuated sliding pawl adapted to engage the teeth of the ratchet-wheel, a rod for sliding the pawl to turn the wheel with each measurement, a locking-dog to engage the teeth of the ratchet-wheel, and a trip-bar connected with the pawl and dog for simultaneously operating them both, substantially as set forth.

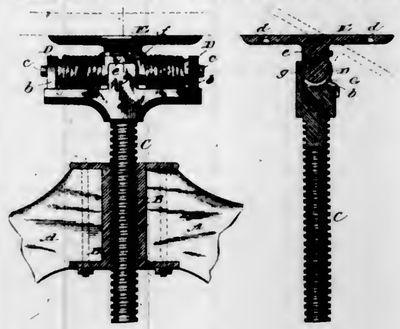
4. The combination, with a face-plate having a measuring-scale and an enlargement at or near the middle, a back plate held at a suitable distance back of the enlargement to form a suitable space, and a registering-wheel revolubly supported on an arbor in this space between the face and back plates, said wheel having a ratchet-toothed wheel on its inner hub, of a sliding pawl, a spring-actuated lever connected therewith, a rod connected with this lever and extending out to the end of the scale, where it may be slid with each measurement, a spring-actuated locking-dog, and a trip-bar connected loosely with the pawl and dog for operating them simultaneously, substantially as set forth.



5. The combination, with a face and rear plate, of a registering-wheel revolubly supported between said plates, mechanism for operating the wheel, a dial mounted loosely on the arbor which supports the registering-wheel and a pin in the dial for engaging it with the registering-wheel at the required point, and alarm mechanism adapted to be operated by this pin, substantially as set forth.

6. The combination, with a face-plate having a measuring-scale, a back plate, a spring-actuated registering-wheel revolubly supported between said plates, and mechanism for turning the wheel to indicate the number of measurements and resetting the wheel, of a dial, a spring-actuated pin for setting the registering-wheel, a bell, a hammer, and a trip device adapted to be struck by the pin when the predetermined number of measurements has been made, substantially as set forth.

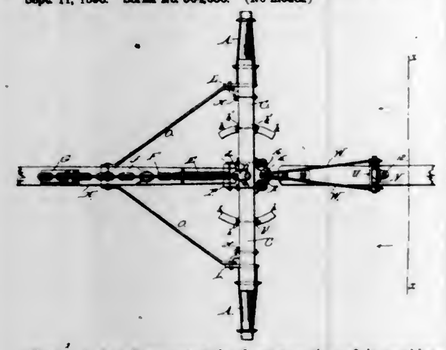
444,355. SPRING ATTACHMENT FOR TILTING CHAIRS. ROBERT HENDRICKSON, Meriden, Conn., assignor to Foster, Merriam & Co., same place. Filed July 11, 1890. Serial No. 358,456. (No model.)



Claim.—1. The combination, with the spindle having horizontal portion provided with lugs, of the seat-support having integral cylindrical portion provided with pintles journaled in said lugs, and a vertical integral connecting-web, and the spring coiled around the cylindrical portion and having a horizontal connecting portion bearing against said web, as set forth.

2. The combination, with the spindle formed with horizontal portion having lugs and vertical central lug *g*, of the seat-support having integral cylindrical portion and vertical web, and the spring coiled around the cylindrical portion, with a connecting portion bearing against the web and the ends of the spring bearing against the rear face of the horizontal portion of the spindle, substantially as specified.

444,356. **FARM-WAGON.** JOHN HERBY, Jamestown, N. Y. Filed Sept. 11, 1890. Serial No. 364,680. (No model.)



Claim.—1. In a farm-wagon, the front gear thereof, in combination with a pole slotted longitudinally and transversely at its rear end and having a hook pivoted therein and adapted to engage a bolt on said front gear, a pole-support having a hooked plate adapted to engage the pin on which said hook is pivoted, the draw-braces, and the plates N, having bolt ends adapted to pass through openings in the rear ends of the draw-braces, whereby the pole-support is held in an approximately horizontal position, substantially as herein described.

2. In a wagon, the front gear thereof and a detachably-secured pole, in combination with a support for said pole, consisting of the pole-support I, the draw-braces secured to said support, the draw-clips on the front axle, and the plates N, having ends passing through openings in the ends of the braces and draw-clips and securing the pole-support in an approximately horizontal position, substantially as herein described.

3. In a wagon, the front gear thereof, in combination with a pole slotted at its rear end and detachably fitted on a bolt on said gear, a hook pivoted within said slotted end and engaging said bolt, a pole-support, and a hook therefrom adapted to engage the pin on which the first-named hook is mounted, substantially as herein described.

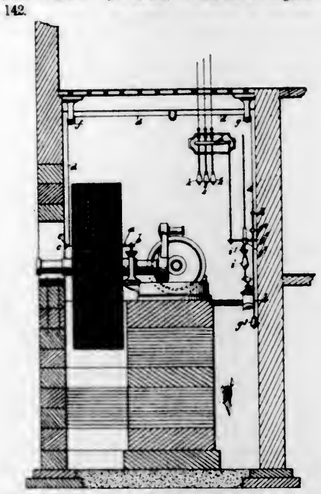
4. In a farm-wagon, the front gear thereof and the reach, in combination with a pole having its rear end slotted longitudinally and transversely, a plate P between the sand-board and axle, having its front end provided with lugs between which the rear end of the tongue is inserted, a bolt passing through said lugs and the transverse slot in the pole, a hook pivoted in the longitudinal slot of the pole, whereby the pole is detachably connected with said plate, and a ball-and-socket connection between the rear end of said plate and the front of the reach, substantially as herein described.

5. In a wagon, the swivel on the reach, consisting of an inner and outer plate or ring, the outer plate or ring having a hinged section and the braces extending from said outer plate or ring at points above and below the reach to the front gear, to the axle and bolster of which said braces are connected, substantially as herein described.

6. In a farm-wagon, the front gear and the reach, in combination with a swivel on the reach, consisting of an inner ring or plate secured by a flange to the reach and having a central opening through which the reach passes, an outer ring fitted in a groove in the periphery of the inner ring and having a hinged section adapted to be swung outward, and the braces W above and below the reach, secured at one end in lugs or ears on the outer ring of the swivel and having their forward ends secured to the bolster and axle, respectively, substantially as herein described.

7. In a farm-wagon, the front gear thereof and the reach coupled thereto by a ball-and-socket connection, in combination with two concentric plates on the reach, one of which is movable and fitted in a peripheral groove in the other and provided with a hinged section adapted to be swung outward, said movable plate having ears or projections 14, the braces W, secured at their rear ends to said ears at points above and below the reach, and plates 16 on the axle and bolster, with which the front ends of said braces are connected, substantially as herein described.

444,357. **APPARATUS FOR THE PREVENTION OF ACCIDENTS TO MACHINERY.** ROBERT HITCHEN, JAMES T. PEARSON, and THOMAS RICHMOND, Burnley, County of Lancaster, England. Filed Dec. 3, 1889. Serial No. 332,456. (No model.) Patented in England Jan. 5, 1885, No. 142.

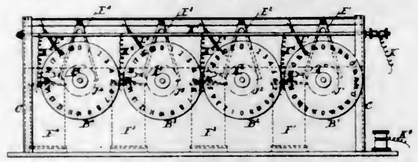


Claim.—1. In combination with the driving mechanism of a machine, the protector-rod *a*, located in juxtaposition with the part to be protected and in communication with a stop-valve, substantially as described.

2. In combination with the driving mechanism of a machine and a stop-valve, the rod or protector *a* and pivotal plane *j*, substantially as described.

3. The combination, with the driving mechanism of a machine and a stop-valve, of a grooved protector-rod located in juxtaposition to the part to be protected and connected with the stop-valve, substantially as described.

444,358. **REGISTERING MECHANISM OR COUNTER ACTUATED BY ELECTRIC CURRENTS.** ROBERT JEWELL, London, England. Filed June 20, 1890. Serial No. 356,096. (No model.) Patented in England Aug. 15, 1889, No. 12,903, and in France June 14, 1890, No. 206,378.

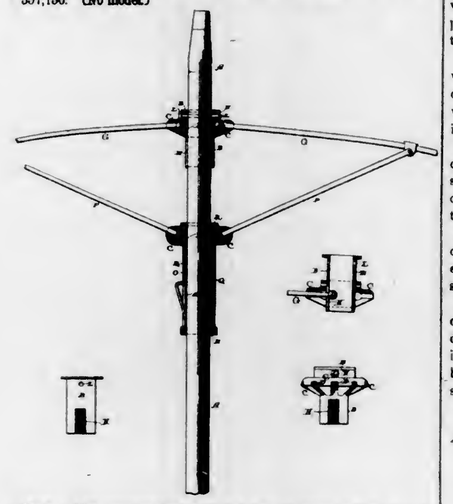


Claim.—1. In an electrical register, the combination of a main counter-spindle having a counter-disk and a ratchet-wheel, an actuating-lever for engaging and imparting a step-by-step movement to the wheel, an electro-magnet, an armature connected with and operating the lever when attracted by the energized magnet, a series of supplementary counter-spindles, each having a counter-disk and a ratchet-wheel, an actuating-lever for each ratchet-wheel of the supplemetary spindles, and means for successively operating the actuating-levers for the ratchet-wheels of the supplementary counter-spindles, substantially as described.

2. In an electrical register, the combination of a main counter-spindle and a series of supplementary counter-spindles having counter-disks and projecting arms, an electric circuit, an electro-magnet for each spindle, a pair of movable contact-pieces for directly connecting each magnet to the electric circuit, one of each pair being operated by an arm on a counter-spindle, and an armature for each magnet, the armatures for the magnets of the supplementary spindles being provided with arms to operate the contact-pieces of the pairs pertaining to said armatures for the magnets of the supplementary counter-spindle, substantially as and for the purpose specified.

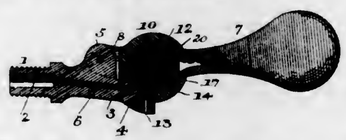
3. In an electrical register, the combination of the main counter-spindle and the supplementary counter-spindles having counter-disks, projecting arms, and ratchet-wheels, an actuating-lever for each wheel, an electric circuit, an electro-magnet for each spindle, pairs of movable contact-pieces for connecting the magnets directly to the electric circuit, and an armature connected to and operating each actuating-lever, the armatures for the actuating-levers of the ratchet-wheels on the supplementary spindles having arms to operate some of the contact-pieces, while the others are operated by the projecting arms on the spindle, substantially as described.

444,359. **UMBRELLA OR PARASOL.** JOHN F. JUDY and NELSON H. WILSON, Huntingburg, Ind. Filed June 28, 1890. Serial No. 357,130. (No model.)



Claim.—The combination, with the head having sockets and recesses extending therefrom, of the ribs having heads which are placed in the sockets, and a vertically moving and revolving longitudinal sleeve placed within the head and provided with a slot in one end beyond the head as large as the sockets, whereby the slot is made to register with the sockets by raising and turning it for the passage of the rib-heads, and which are locked in the sockets by a longitudinal movement of the sleeve, substantially as shown and described.

444,360. **GAGE-COCK.** JOSEPH JUNGBLUTH, Erie, Pa. Filed Aug. 12, 1890. Serial No. 361,841. (No model.)

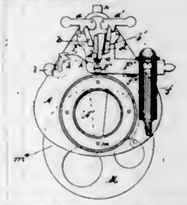


Claim.—1. In a gage-cock, the combination, with a coupling having a steam-passage, of a pivoted lever having a circular recessed portion, a washer, a disk-valve, and a stem having a thumb-piece, a screw-threaded end, and a square or angular intermediate portion, substantially as described.

2. The combination, with the coupling 1, having steam-passage, and projecting lug 5, of the lever 7, having weighted end and studs 8 8, a circular recessed portion 10, having groove 13 and annular recess 14, the washer 15, having peripheral projections 16, the stem or rod 17, having thumb-piece 18, square or angular portion 20, and the binding-nut 19, substantially as described.

444,361. **PHOTOGRAPHIC-CAMERA SHUTTER.** GEORGE F. KINCAID, San Francisco, Cal. Filed Mar. 7, 1889. Serial No. 302,255. (No model.)

Claim.—1. A photographic-camera shutter-wing having a slot composed of a straight central vertical portion and inwardly-extending end portions joining the straight central portion at its ends and terminating at the ends in short straight portions parallel with the straight central portion, as set forth.



2. In a photographic-camera shutter, the combination, with slotted wings and the pin for operating them, of a spring acting upon said pin, a pivoted support for said pin, and a cam for regulating the position of the support and the force of the pin, as set forth.

3. In a photographic-camera shutter, the combination, with slotted wings and operating-pin therefor, of a bell-crank lever having one limb connected to a pneumatic cylinder and a slot in the other limb through which the operating-pin works, and a shoulder in said slot for engaging the pin, as set forth.

4. In a photographic-camera shutter, the combination, with the operating-pin for the wings, of a pivoted bell-crank lever having a slot, as described, and one or more stop-levers pivoted to the bell-crank-lever, and one or more notched cam-arms or levers for operating the stop lever or levers, as set forth.

5. In a photographic-camera shutter, the combination, with the case having the sight-opening, of two concentrically-pivoted disks, each having an aperture coextensive with the sight-opening, and a series of smaller apertures graduated upon both disks, as set forth.

6. In a photographic-camera shutter, the combination, with the case having the sight-opening, of two or more concentrically-pivoted disks, each of which has an aperture coextensive with the sight-opening, and a series of smaller graduated openings, and one of said disks being provided with an imperforate space large enough to cover the sight-opening, as set forth.

444,362. **EYEGLASSES.** HENRY E. KIRSTEIN, Rochester, N. Y. Filed Apr. 8, 1890. Serial No. 347,115. (No model.)



Claim.—1. In an eyeglass, in combination, a clamp-post, an arm springing from the clamp-post, a nose-piece mounted free for rocking or adjusting movement upon said arm, the connection between the arm and the nose-piece being at the central portion of the latter so as to leave its extremities free, and a tongue springing from the nose-piece and adjustably engaged with but free for limited movement with respect to a fixed clip, substantially as set forth.

2. In an eyeglass, in combination with a clamp-post, a nose-piece, a bent spring-arm secured to said post and the central portion of said nose-piece, respectively, so that said nose-piece is capable of rocking movement about its own center as an axis, while its extremities are free, and a tongue-and-clip connection by which the movement of the nose-piece is limited, substantially as set forth.

3. In an eyeglass, in combination, a clamp-post, a nose-piece consisting of a flat or slightly-curved plate, an arm formed of resilient metal one extremity of which is secured to the clamp-post, while its body extends downward but terminates in a return bend, which return bend is secured against the central portion of the rear face of the nose-piece, thus leaving the extremities of the latter free, a tongue projecting from said nose-piece, and a clip secured to said clamp-post and adapted to receive the tongue, substantially as set forth.

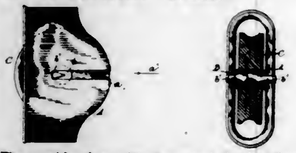
4. In an eyeglass, in combination, a clamp-post, a clip secured thereto and embodying a tongue-recess, a nose-piece secured as to its central portion upon the extremity of an arm of resilient metal bent substantially in the manner set forth, the extremities of which nose-piece are free, and a tongue mounted upon one free end of said nose-piece and entered free for limited longitudinal movement in the tongue-recess of the clip, substantially as set forth.

5. The combination, in an eyeglass, of a clamp-post, a clip secured thereto and embodying a tongue-orifice, a nose-piece, an arm embodying a bend and having one end attached to the clamp-post and the other to the central portion of the nose-piece, so that the extremities of the latter are free, and a tongue mounted upon said nose-piece, em-

bodying a hook and a bend, and entered in said tongue-orifice, substantially as set forth.

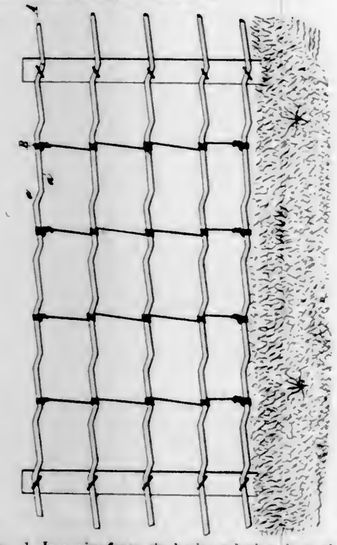
6. In an eyeglass, in combination with a nose-piece, an arm upon which said nose-piece is mounted free for rocking movement, and a clip-and-tongue connection which limits said rocking movement, one member of which connection is mounted upon said nose-piece, the inner end of the arm, and the other member of the clip-and-tongue connection being both secured to a common clamp-post, substantially as set forth.

444,363. SASH-CORD GUIDE. JOHN KNECHT, Freeport, Ill. Filed Dec. 21, 1889. Serial No. 334,514. (No model.)



Claim.—The combination, with the case A, having the slots *a*, of the arbor B, having the wedge-shaped end *b'* projecting beyond the side walls of the case, substantially as and for the purpose set forth.

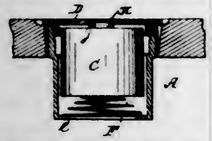
444,364. WIRE FENCE. ABEL LAND, Hudson, Mich. Filed Oct. 6, 1890. Serial No. 367,209. (No model.)



Claim.—1. In a wire fence, the horizontal wires, in combination with the vertical wires wrapped alternately around the horizontal wires thereof from opposite sides thereof and extending the width of the fence, substantially as described and set forth.

2. In a wire fence, the horizontal wires having crimps, in combination with the vertical wires wrapped around the horizontal wires alternately from opposite sides thereof and extending the width of the fence, substantially as described, and for the purpose set forth.

444,365. INK-WELL. WILLIAM A. MILLER, New York, N. Y. Filed July 17, 1890. Serial No. 359,002. (No model.)



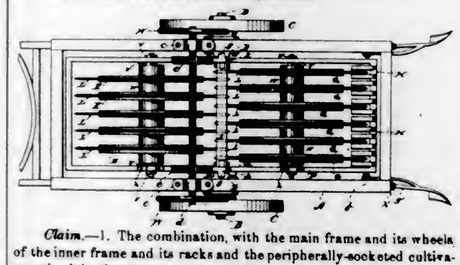
Claim.—1. In an inkstand, the combination, with the frame having a cap at its upper end, and the bottle having its neck projected through an opening in the cap, of a spring supported at its lower end by the frame and having its upper end pressing up on the bottle, and the cover for closing the bottle, having a stop or portion projected within the frame of the neck of the bottle to engage therewith and lock the cover in either an open or closed position, substantially as described.

2. The combination, with the frame having a cap, and having an opening in the cap and notches in the sides of the said opening, and the bottle having its neck projected up through the said opening, of the spring for pressing the bottle up and the cover for closing the opening in the cap, having a stop which projects within the plane of the neck of the bottle to limit the movement of the cover in each direction, the said stop entering one or the other of the said notches when at the limit of its movement in one direction, substantially as described.

3. The combination, with the frame, the bottle, and the spring for pressing the bottle up, of the cap having an opening through which the neck of the bottle is projected, and the cover having a stop which projects within the plane of the neck of the bottle and adapted to close the said opening in the cap, the said cap having an opening for the insertion of an instrument for pressing down on the bottle out of the path of the stop on the said cover, substantially as described.

4. An inkstand comprising a frame having an inner flange *c*, a conical spring placed on the said flange, the bottle supported on the spring, the cap having openings *m m* and *b*, and having notches *i* in the edges of opening *b*, screwed on the frame, and cover H, sliding in ways on the cap and having stop *j*, which is adapted to enter the notches *i*, and which projects within the plane of the neck of the bottle, substantially as set forth.

444,366. CULTIVATOR. FRED. T. NEITSCH, Houston, Tex. Filed Oct. 27, 1888. Serial No. 289,270. (No model.)



Claim.—1. The combination, with the main frame and its wheels of the inner frame and its racks and the peripherally-socketed cultivator-wheels having the tenoned triangular concavo-convex-edged blades, substantially as specified.

2. The blade T, having the concave shoulder edge and tenon, the concave front edge, the convex rear edge, and the chord-flanges having internally-beveled projecting edges extending forward, substantially as specified.

444,367. DERRICK. DOCTOR P. OLIVER, Oakland, Cal. Filed Aug 12, 1890. Serial No. 361,830. (No model.)

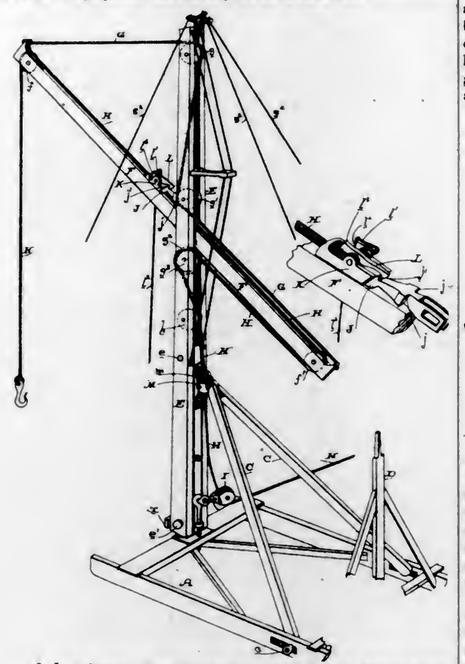
Claim.—1. In a derrick, the combination of the mast, the longitudinally-slidable boom suspended therefrom, a hoisting-rope connected with the boom for effecting its projection in the direction of its length, and an arresting device for the rope, substantially as herein described.

2. In a derrick, the combination of the mast having the top pulley *g*, sheave *g'*, rollers g^3, and pulley g^4 between said rollers, the boom mounted in said mast and guided by the rollers and sheave and adapted to have a longitudinal sliding movement, said boom having pulleys in the ends thereof, the supporting-rope hung from the top pulley of the mast and connected with the ends of the boom, and the hoisting-rope carried by the boom-pulleys and guided by the mast-pulleys, whereby the projection of the boom is effected, substantially as herein described.

3. In a derrick, the combination of the mast, the suspended slidable boom adapted to be projected therefrom, the hoisting-rope connected with the boom for effecting the projection of the same, and a stop for limiting the return of the boom, substantially as herein described.

4. In a derrick, the combination of the mast, the slidable boom suspended from the mast and adapted to be projected therefrom, the hoisting-rope connected with the boom for effecting the projection of the same, the stop on the boom, and the slotted stop J, connected with the mast and having side shoulders bearing against the mast, substantially as herein described.

5. In a derrick, the combination of the mast, the slidable boom mounted therein, the rope G, the hoisting-rope connected with the boom, whereby the projection of the boom is effected, the latch on the boom and means for operating it, and the catch carried by the mast, whereby the boom is locked in normal position and may be released to be projected, substantially as herein described.



6. In a derrick, the combination of the mast, the slidable boom, the rope G, the hoisting-rope connected with the boom for effecting the projection of the boom, the brake carried by the boom, and means for operating it to engage and arrest the hoisting-rope to aid in projecting the boom, substantially as herein described.

7. In a derrick, the combination of the mast, the slidable boom, the suspending-rope G, the stop J, carried by the mast and having a catch-shoulder, the stop K, carried by the boom, the spring-actuated latch mounted in the stop K and the crank and cord for operating it, and the hoisting-rope carried by the boom and mast and passing through the stops, said hoisting-rope being engaged by the end of the latch, substantially as herein described.

8. In a derrick, the combination of the bed-frame, the tilting standard pivoted thereto, the mast pivoted to the standard, and the braces hinged to the standard at their upper ends and connected by a slotted connection with the bed-frame at their lower ends, substantially as herein described.

9. In a derrick, the combination of the bed-frame, the pivoted standard, the braces, the hollow hinge connecting the braces with the standard, the mast pivoted to the standard, the slidable boom carried by the mast, the suspending-rope G, and the hoisting-rope carried by the boom and passing down through the hollow hinge of the standard, substantially as herein described.

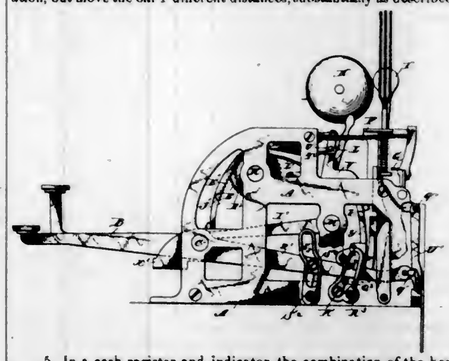
444,368. CASH REGISTER AND INDICATOR. EDWARD B. PARKHURST, Woburn, Mass., assignor to the National Cash Register Company, Dayton, Ohio. Filed July 28, 1890. Serial No. 360,216. (No model.)

Claim.—1. The combination of the operating-keys B, graduated bar I', rack J', segment-rack H' and gear E', and a ratchet-and-pawl connection between them, pinion D', and registering-wheel A', substantially as and for the purpose described.

2. The combination of the operating-keys B, pivoted on the shaft C, the graduated bar I', pivotally supported on an axis in rear of and parallel with the shaft C and provided with the pendent projections *a*, located at different distances from the pivotal support of the keys, the registering-wheel A', and an operative connection between the bar I' and wheel A', substantially as and for the purpose described.

3. In a cash register and indicator, the combination of the operating-keys B, pivoted on the shaft C, and the graduated bar I', hung on a shaft in rear of and parallel with the shaft C and having the pendent projections *a* arranged in the path of the keys at different distances from their pivotal support, whereby the bar I' is moved different degrees by different keys, for the purpose specified.

4. In a cash register and indicator, the combination of the operating-keys B, pivoted on the shaft C, and the graduated bar I', pivotally supported on an axis in rear of and parallel with the shaft C and having the pendent projections *a* arranged in the path of the keys at different distances from their pivotal support and made of different lengths, increasing from front to rear, whereby the different keys engage the projections *a* at substantially the same point in their operation, but move the bar I' different distances, substantially as described.



5. In a cash register and indicator, the combination of the keys B, pivoted on the shaft C, and the graduated bar I', pivotally supported on an axis in rear of and parallel with the shaft C and having the pendent projections *a* of different lengths and at different distances from the pivotal support of the keys, and the lower ends of the projections being slightly above the keys when the bar I' is in its normal position of rest, whereby the keys may be given a slight movement before lifting the bar, for the purpose specified.

6. In a cash register and indicator, the combination of a series of operating-keys, a primary and a secondary registering-wheel, a transfer-pawl for the secondary wheel, means operated by the primary wheel to set the pawl for the transfer, and a movable bar common to all the keys for actuating the pawl upon the next positive stroke of a key to turn the secondary wheel and effect the transfer, substantially as described.

7. In a cash register and indicator, the combination of a series of operating-keys, a primary and a secondary registering-wheel, a transfer-pawl, a spring tending to set the pawl for the transfer, a latch holding it against the tension of the spring, a trip for the latch operated by the primary wheel, and a movable bar common to all the keys for actuating the pawl to effect the transfer upon the next positive stroke of a key after the latch has been tripped by the primary wheel, substantially as described.

8. The combination of the keys B, the primary wheel A' and the secondary wheel A^3, the former provided with a pin *g* and the latter with a ratchet K^3, the transfer-pawl W, the arm V, the latch T, for holding the arm V and pawl W in forward position, a trip for the latch operated by the pin *g* on the wheel A', and the bar X, arranged to throw the arm V and pawl W forward upon the next positive stroke of a key, substantially as described.

9. The combination of the keys B, the primary wheel A' and the secondary wheel A^3, the former provided with a pin *g* and the latter with a ratchet K^3, the transfer-pawl W, engaging the ratchet, the arm V, provided with the lug U, the spring *j*, acting on the arm V, the latch T, engaging the lug U, a trip for the latch operated by the pin *g* on the wheel A', and the bar X, into whose path of movement the rear end of the arm V is brought upon the tripping of the latch V, for the purpose specified.

10. The combination of the keys B, wheels A' and A^3, the former provided with the pin *g* and the latter with the ratchet K^3, the bell-crank arm V, provided with the lug U, the spring *j*, pressing the arm rearward, the transfer-pawl W, pivoted to the arm V, the shaft P, the arm O, rigidly mounted thereon in the path of the pin *g*, the latch T, carried by the shaft at its opposite end and engaging the lug on the arm V, and the bar X, having the upwardly-extending arm Y, whose shoulder *k* clears the lower end of the arm V when the bar is lifted by the operation of a key, except when the latch T has been tripped and the upper end of the arm V thrown rearward by the spring *j*, substantially as and for the purpose described.

11. The combination of a series of registering-wheels mounted on a revoluble shaft, a series of pawls interposed between the shaft and the wheels and arranged to turn the wheels with the shaft when the latter is revolved in one direction but not in the other, a pinion tight on the shaft, a rack meshing with the pinion, and a handle for moving the rack to revolve the pinion and shaft, substantially as and for the purpose described.

12. The combination of the registering-wheels A' A^3, &c., mounted on the revoluble shaft J, the pawls N^3, carried by the shaft and arranged to engage projections rigid with the wheels when the shaft is revolved in one direction, the pinion M', tight on the shaft the segment-rack M^3, meshing with the pinion, and the lever N' for moving the rack, substantially as and for the purpose described.

13. The combination of the wheels A' A^3, &c., provided with the pins *g*, the arms O and Z^3, levers Z, bar X, provided with arms Y, engaging the rear ends of levers Z, and the lever I^3 with the lever N' of the resetting mechanism, whereby upon operating the lever N' the bar X is lifted by the lever I^3 to permit the pins *g* to pass under the arms O, substantially as described.

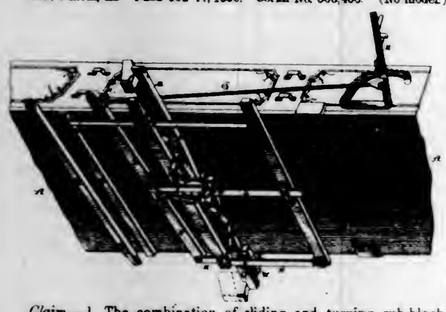
14. The combination of the keys B, provided with the lugs *l*, the hook-bar S', the cam-plate S^3, secured thereto, and the vibrating frame provided with a pin S^4, moving in the slot in the cam-plate, substantially as and for the purpose described.

15. The combination of the keys B, provided with the lugs *l'*, the vibrating bar X, the hook-bar Q', hung thereon, the cam-plate R^3, and the pin R', secured to the bar O' and working in the slot in said plate, substantially as and for the purpose described.

16. The combination of the keys B, the vibrating bar X, to which the keys become attached when displaced from normal position, the double-toothed pawl T, carried by the vibrating bar, and the rack T^3, having a beveled face *p* at each end, substantially as and for the purpose described.

17. The combination of the keys B, the vibrating bar X, and the locking-arm U', extending down into the drawer-compartment and arranged when swung forward to engage the vibrating bar and lock the keys from operation and to be disengaged therefrom to release the keys when swung rearward.

444,369. **WAGON-BRAKE.** JOHN L. PATTON and ARTHUR L. PATTON, Panola, Ill. Filed Oct. 17, 1890. Serial No. 368,406. (No model.)



Claim.—1. The combination of sliding and turning rub-block levers, a lever K, pivoted between its ends to the body connections between the ends of said lever and the rub-block lever, an operating hand-lever, and connections between the operating-lever and the lever K, substantially as shown.

2. The combination of the lever K, pivoted between its ends, the rub-block levers adapted to turn and slide, connections between the ends of the lever K and the rub-block levers, a lever F, a connection between the lever F and the lever K, an endwise-moving lever which engages the inner ends of the rub-block levers, and an incline upon the inner end of one of the levers which engages the endwise-moving lever, for the purpose described.

3. In wagon-brake, the combination, with sliding and turning rub-block levers, of an endwise-moving bar which engages the inner ends of the rub-block levers, an arm pivoted at its center to the said bar, links connected with the rub-block levers and the ends of the arm, a pivoted lever, and a connection between the arm and the pivoted lever, substantially as set forth.

4. In a wagon-brake, the combination, with endwise moving and turning rub-block levers, of an an endwise-moving bar which engages the inner ends of the levers, a bar pivoted at its center upon the endwise-moving bar, links connecting the rub-block levers and the ends of the arm, a pivoted lever, a connection between the pivoted lever and the pivoted arm, and a spring-catch which engages the endwise-moving bar and is operated by the pivoted lever, as described.

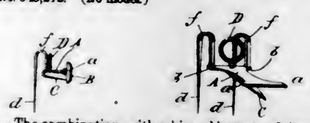
444,370. **HARNESS-ROSETTE.** ERNEST F. PFLUEGER, Akron, Ohio. Filed July 18, 1890. Serial No. 359,178. (No model.)

Claim.—1. The rosette having a concavo-convex shell or body portion constructed or spun up from a continuous piece of coiled wire, the interspaces of its coils being filled in with molten or liquid lead or solder, said wire being looped at its central terminal portion into an eye and then caused to assume a frame-like or rectangular shank, the wire finally passing through said eye, substantially as set forth.



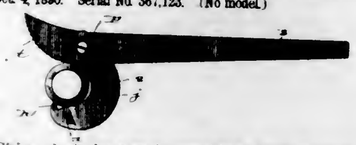
2. The rosette comprising the concavo-convex coiled wire shell or body coated with solder or lead, and the secondary shell or cap spun upon the aforesaid shell or body and coated with lead or solder, securing it to the latter, the wire of the main shell or body being looped into an eye and then caused to take the form of a frame-like or rectangular shank, the wire finally passing through said eye, substantially as stated.

444,371. **TAG-FASTENER.** PHILIP J. SCHREIBER, Dayton, Ohio, assignor of one-half to David Gross, same place. Filed Mar. 8, 1890. Serial No. 343,212. (No model.)



Claim.—The combination, with a hinged button, of the stem-plate A, provided with lower extended arms *b b*, pin C, ring D, and duple-curved pins *d d*, made fast to the arms *b b*, substantially as and for the purpose set forth.

444,372. **PIPE-WRENCH.** JOHN C. SPROULL, Bedford, Ind. Filed Oct. 4, 1890. Serial No. 367,123. (No model.)

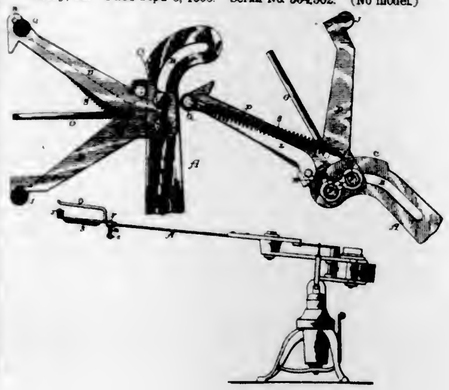


Claim.—1. A pipe-wrench comprising a shank, its upper end outwardly curved and toothed on its inner face, a recessed jaw pivoted thereto, its inner face irregularly curved, and hooks formed on the outer end thereof, substantially as described.

2. A pipe-wrench comprising a shank, its upper end outwardly curved and toothed, a recessed jaw having one or more hooks on its outer end for gripping the pipe, the inner face of the jaw irregularly curved, the upper part of such curve approximating a straight line, substantially as described.

3. A pipe-wrench comprising a shank, its upper end outwardly curved and having graduated teeth on its inner face, a recessed jaw having hooks on its outer end for gripping the pipe, the inner face of such jaw formed in curves, the upper one of which approximates a straight line, substantially as shown and described.

444,373. **TARGET-TRAP.** CHARLES SWAN and MAGGIE SWAN, Corry, Pa. Filed Sept. 8, 1890. Serial No. 364,302. (No model.)



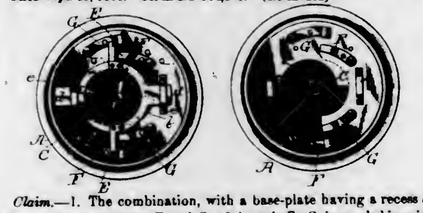
Claim.—1. The combination of a throwing-lever pivoted at one end, having a curved slot in its opposite end, and a target-carrier loosely connected with the lever through the slot and having a spring-actuated lever for holding the target and which engages the outer end of the throwing-lever, which latter is provided with a raised portion for tripping the holding-lever, substantially as described.

2. The combination of the lever provided with a curved slot in its end, a target-carrier which sweeps through a portion of a circle and which is loosely connected to the outer end of the lever through the said slot, a guard for catching over the outer side of the target, a stationary shoulder or stop rigidly secured to the carrier, a movable stop or carrier, and an automatically-operating mechanism for moving the carrier to release the target, substantially as described.

3. The combination of the lever A, provided with a curved slot in its outer end, with the target-carrier, which is connected with the said lever through the slot, provided with means for holding and releasing the target, and a spring-actuated friction device for regulating the movement upon the lever, substantially as set forth.

4. The combination of the lever provided with a curved slot through its outer end and the shoulder C with the target-carrier loosely connected by a suitable frictional device through the slot to the lever, the lever L, loosely connected to the carrier so as to have an endwise movement and having the stop or shoulder Q secured to its outer end, the spring S, the guard O, and the stationary stop or shoulder J, substantially as specified.

444,374. **ELECTRIC SWITCH.** CHARLES E. WILSON, Chicago, Ill. Filed Sept. 13, 1890. Serial No. 364,855. (No model.)

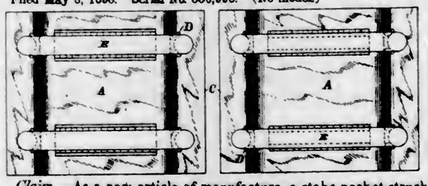


Claim.—1. The combination, with a base-plate having a recess *b* therein and contact-plates F and G, of the spindle C, journaled in said base-plate at about the center of said recess, spring-arm *c*, secured to and projecting from said spindle and co-operating with the sides of said recess, shifting frame, and brush E, as set forth.

2. The combination, with a base-plate having recess *b* therein and contact-plates, of a spindle C, journaled in said base-plate at about the center of said recess, spring-arm *c*, secured to and projecting from said spindle, co-operating with the sides of said recess, the reciprocating shifting ring D, as described, and brushes E E, projecting therefrom at right angles to its line of motion, as set forth.

3. The combination, with a base-plate having a recess *b*, the opposite side walls of which describe semicircles eccentric to the center of said recess and offset one from the other, and contact-plates F and G, of a spindle journaled at about the center of said recess and engages the sides thereof, a goose-neck-shaped spring-arm *c*, secured to said spindle, the end of which enters said recess, a shifting ring D, the inner circumference of which corresponds to the radius of the semicircular side walls of said recess, and which has guide-arms *d* projecting therefrom in the direction of its motion, and the brushes E E, projecting from said ring in diametrically-opposite directions and at right angles to the line of motion of said ring, as set forth.

444,375. **STAKE-POCKET.** HENRY W. AVERY, Cleveland, Ohio. Filed May 8, 1890. Serial No. 350,998. (No model.)



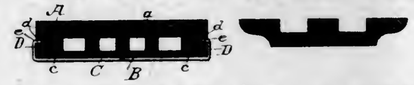
Claim.—As a new article of manufacture, a stake-pocket struck up from a single piece of sheet metal and having parallel rows of outwardly-projecting integral tongues, said rows being arranged in pairs, substantially as and for the purpose specified.

444,376. **BOOK-COVER.** PETER CLOSS, Wollaston, assignor of one-half to John W. Sanborn, Boston, Mass. Filed Feb. 8, 1890. Serial No. 339,746. (No model.)

Claim.—The combination, with the covers D and back B, said back having a perforation or perforations, of a substantially V-shaped clamp having a perforation or perforations in its rear end registering with the perforation or perforations in said back, an eyelet or eyelets passing through said perforation or perforations in said back and clamp and securing the same together, said eyelet or eyelets having clinched ends, and the removable book A, having its rear end inserted directly into said clamp and its sides at said end in close contact with the inner surfaces of the sides thereof.



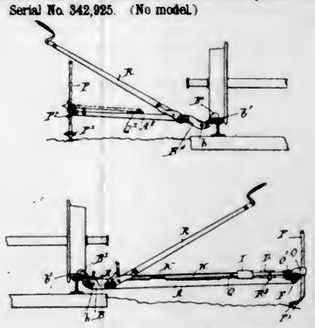
444,377. **MOLDING FOR ELECTRIC WIRING.** GEORGE CUTTER, Chicago, Ill. Filed July 21, 1890. Serial No. 359,404. (No model.)



Claim.—1. Molding A, having a groove *a*, and removable longitudinal partition-strips *b b*, of insulating material, placed and secured longitudinally in said groove, as set forth.

2. Molding A, having a groove *a*, and removable longitudinal partition-strips *b b*, of insulating material, placed and secured longitudinally in said groove, in combination with a cover B for closing said groove, so as to make independent channels therein between said strips, as set forth.

444,378. **WEIGHING-SCALES FOR RAILWAY-CARS.** ELOUILD DUPLESSIS, St. Hyacinthe, Canada, assignor of one-half to Jean-Baptiste Lalime and Emile A. Marchildon, both of same place. Filed Mar. 6, 1890. Serial No. 342,925. (No model.)



Claim.—1. A weighing-scales for railway-cars, comprising a bar provided with a pivoted cross-head at its inner end adapted to be used in connection with one wheel, a supplementary bar also provided with a pivoted cross-head at its inner end to be used in connection with the opposite wheel, supports, and pivoted swinging blocks connected with the outer ends of said bars, a weighing-beam carrying suitable weighing mechanism and pivoted to the outer end of the first-named bar and to one of said swinging blocks, and levers for adjusting said cross-heads to raise the car and secure a true balance, all as set forth.

2. In a weighing-scales, the combination, with a bar, of a cross-head pivoted to its inner end, means for supporting its outer end, and means for adjusting said cross-head vertically, as and for the purpose set forth.

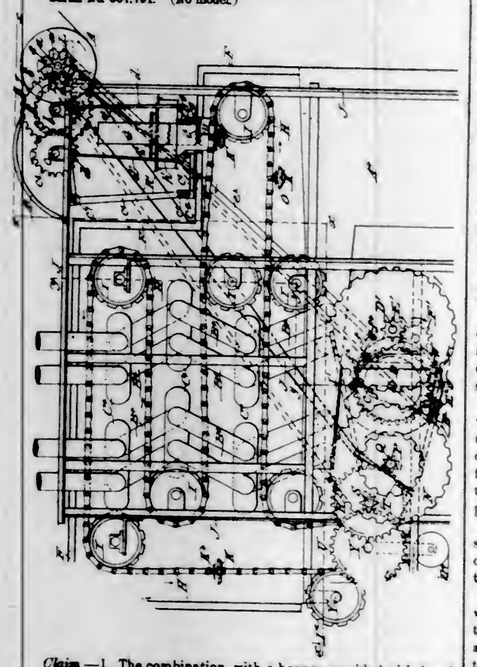
3. In a weighing-scales, the combination, with a bar, of a cross-head pivoted to its inner end, a weighing-beam pivoted to the outer end of said bar, a support for the outer end of such bar, a swinging

block or sleeve carrying such support and pivoted to said weighing-beam, and means for adjusting said cross-head vertically, substantially as and for the purpose set forth.

4. In a weighing-scales, the combination, with a bar having a cross-head pivoted to its inner end and carrying a knife-edge, and a lever pivoted to such bar for adjusting said cross-head, of a wedge-plate held loosely in place on same and adapted to be inserted between said knife-edge and the tire of a wheel to be elevated from contact with the rail, substantially as set forth.

5. In a weighing-scales, the combination of a bar and support for outer end of same, a cross-head pivoted to the inner end of said bar, and a lever pivoted to such bar and operating said cross-head, substantially as and for the purpose set forth.

444,379. **BAKING-MACHINE.** HORACE N. FOWLER, Philadelphia, Pa., and CHARLES EDWARD FOWLER, Hammonton, N. J.; said Charles Edward Fowler assignor to said Horace N. Fowler. Filed Apr. 19, 1889. Serial No. 307,791. (No model.)



Claim.—1. The combination, with a hopper provided with dough and dough-cooling chambers, cutters, and expelling-pistons, of mechanism, substantially as described, for reciprocating said hopper, for the purposes set forth.

2. The combination, with a movable hopper provided with dough and dough-cooling chambers, cutters, and expelling-pistons, of a slide adapted to close the aperture in the oven-jacket, lever connected to slide, and a wheel provided with a cam-groove for operating the lever and reciprocating the slide, for the purpose described.

3. The combination, with a hopper provided with a dough and dough-cooling chamber, cutters, and expelling-pistons and slide, of guides having grooves and inclines, levers pivoted to hopper and to cutter, and piston-carrying beams, said levers, grooves, and inclines being adapted to operate said cutters and pistons, for the purposes set forth.

4. The combination, with a hopper, of a slide provided with openings adapted to register with openings in the bottom of said hopper, a rock-shaft secured to the hopper, arms secured to rock-shaft and to slide, and L-shaped pieces pivoted to the hopper-guide and provided with flanges for the purpose of oscillating the arms and rock-shaft, and thereby reciprocating the slide, for the purpose described.

5. The combination of a driving-shaft, a clutch and loose gear on said shaft, a pivoted clutch-lever, a rod e^3, connecting said lever with an arm f, and having a slot at its lower end for the reception of a pin on said arm, arms $f\,f^3$, secured to a rock-shaft arm f^3, carrying a suspended weight, and a roller adapted to ride on a cam C, cam C for rocking arms $f\,f^3$, a cam b^3, arms $g\,g^3$, secured to a rock-shaft arm g^3, having a roller adapted to ride on cam b^3, a connecting-rod e^4, secured to arm g^3, and rod e^5 for the purpose of holding up said rod, the whole arranged and operating to lock and unlock the clutch on driving-shaft, and thereby start and stop automatically the mechanism for moving the hopper, substantially as shown and described.

6. The combination, with curved knives or scrapers, a movable frame to which said knives are pivotally secured, swinging arms pivoted to main frame and provided with rollers, and cams for swinging the arms and moving the knife-frame into and out of contact with the pans, of a rock-shaft, links connecting one end of said shaft with reciprocating bars attached to the knives, a roller on the opposite end of said shaft, a cam for rocking the shaft, and thereby oscillating the bars and knives, and a spring for returning the knives to their first position, all arranged to scrape the pans and remove the cakes, substantially as shown and described.

7. The combination of revolving brushes elastically mounted in a movable frame, the movable frame, rods connecting the frame to a rocking arm, the rocking arm provided with a roller, and a cam for rocking the arm, and thereby throwing the brushes into and out of contact with the pans, pulleys on the spindles of brushes, and a belt for driving them, whereby the brushes are revolved to clean the pans, substantially as described.

8. In a baking-machine, the combination, with a pan-carrying belt, of a baking-pan provided with curved arms on its ends, adapted to strike and engage with annular rims on driving-pulleys, and the driving-pulleys for inverting the pans, substantially as described.

9. The herein-described mechanism for throwing the clutch into and out of gear so as to start or stop the driving and pan-carrying belt, consisting of cam A^3, arms D^3 H^3, pivotally secured to shaft E^3 and to each other, arm D^3, having at its end a roller to ride on cam A^3, a rod connecting arm H^3 with the clutch-lever, arms G^3 I^3, pivotally secured to shaft E^3 and to each other, a rod connecting arm I^3 with clutch-lever, an arm G^3, having at its end a roller, a cam B^3 for rocking the arms G^3 I^3, the clutch-lever, the clutch loose gear Q on clutch-shaft gears R T, and gear U on belt driving-shaft, substantially as shown and described.

10. A baking-pan consisting of a plate provided with depressions or cups for holding dough, and having on its ends upright slotted arms adapted to be hung to a carrying-belt, and curved arms adapted to engage with rims on pulleys for inverting the pans, substantially as described.

11. In a baking-machine, the combination, with a hopper provided with dough and dough-cooling chambers and gearing for intermittently reciprocating said hopper, of cutters and pistons, guides and levers for operating said cutters and pistons, a slide, rock-shaft, arms and levers for reciprocating said slide, an oven, a slide for automatically closing the hopper opening in the oven, an intermittently-moving belt, and pans connected to said belt, for the purposes set forth.

12. The combination, with a movable hopper and an oven, of a slide adapted to automatically close and open the aperture in the oven-jacket upon the entrance and withdrawal of the hopper, substantially as described.

13. The combination, in a baking-machine, with a hopper provided with dough and dough-cooling chambers, cutters, and expelling-pistons, of guides and levers connected to the hopper and to said cutters and pistons, said levers and guides being adapted to operate the cutters and pistons, for the purposes set forth.

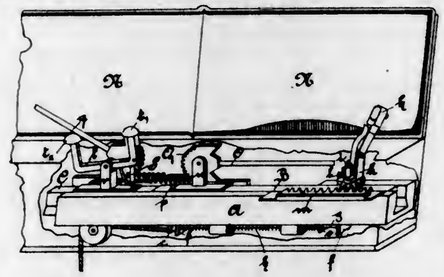
14. A movable hopper provided with dough and dough-cooling chambers, a reciprocating slide provided with apertures adapted to register with the open ends of the expelling-tubes, a rock-shaft having an arm connecting it with said slide, and an arm provided with a friction-roller adapted to be operated by swinging levers, and the swinging levers, in combination.

15. The combination, with baking-pans, of knives or scrapers, swinging arms, rock-shaft, and cams for intermittently moving said scrapers into and out of contact with said pans and oscillating them across the bottoms of said pans, for the purpose set forth.

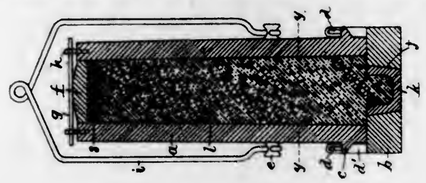
16. In combination, an intermittently-reciprocating hopper provided with dough and dough-cooling chambers, connecting-rods d', secured to said hopper and to cranks d, cranks d, gear-wheels c^3 b^3 b' a', and an automatically-operated clutch a^3 for intermittently setting in motion said gearing, whereby said hopper is reciprocated, substantially as shown and described.

444,380. **DEVICE FOR TURNING MUSIC-SHEETS.** JOHANN F. C. GRÜN, Hamburg, Germany. Filed Apr. 8, 1890. Serial No. 347,153. (No model.)

Claim.—In a device for turning music-sheets, the combination, with a fold-producer k, revoluble about pin i, and pinion l, rigidly connected thereto and gearing with rack-bar m, of slide-blocks B and C, adapted to be moved by aid of a pedal, cord, and spring device in a guide-piece A, a sheet-reverser pivoted in a block n, and consisting of a turning-rod O and a toothed segment O′, adapted to gear into a toothed bar p, a repetition-reverser mounted on slide-block C, and consisting of a reversing-rod q, connected with a toothed segment gearing into a rack-bar, a two-armed lever t, having its fulcrum in a block v, and a pivoted pin s, adapted to engage the slide-block B, substantially as and for the purpose set forth.



444,381. **PROCESS OF FORMING INGOTS.** WILLIAM R. HINSDALE, Jersey City, N. J. Filed Dec. 17, 1888. Renewed Jan. 7, 1890. Again renewed July 19, 1890. Serial No. 359,338. (No specimens.)



Claim.—1. The process of forming ingots, which consists, first, in forming the casting in an ingot-mold; secondly, protecting the top of the casting from the atmosphere by chilling the same, and, thirdly, reversing the casting.

2. The process of forming ingots, which consists, first, in filling the ingot-mold; secondly, in excluding the atmosphere from the mouth of the mold, and, thirdly, reversing the mold, as and for the purpose set forth.

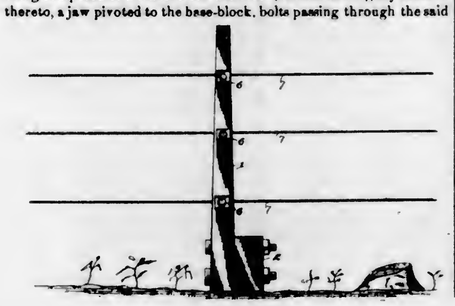
3. The process of forming ingots, which consists, first, in inserting a cup of heated material in the bottom of the mold; secondly, filling the mold, and, thirdly, reversing the mold, as and for the purpose set forth.

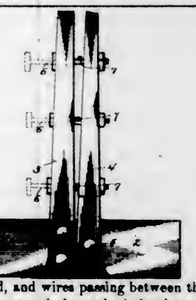
4. The process of forming ingots, which consists, first, in inserting a cup of heated material in the bottom of the mold; secondly, filling the mold; thirdly, excluding the atmosphere from the mouth of the mold, and, fourthly, reversing the mold, as and for the purpose set forth.

444,382. **FENCE.** SAMUEL M. J. HOUSE, Hillsborough, Va. Filed Oct. 16, 1890. Serial No. 368,294. (No model.)

Claim.—1. The combination, with a transverse base-block, of a standard rigidly secured to one side thereof, a jaw pivotally secured to the said block, and bolts passing through the said jaw and standard, as described.

2. A fence consisting of a series of posts, each of the said posts being composed of a transverse base-block, a standard rigidly secured thereto, a jaw pivoted to the base-block, bolts passing through the said jaw and the standard, and wires passing between the jaws and standards of the several posts and above the bolts thereof, as described.





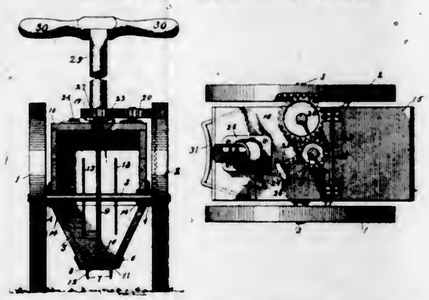
444,383. **DENTAL NERVE-BROACH.** JAMES W. IVORY, Philadelphia, Pa. Filed May 8, 1890. Serial No. 351,081. (No model.)



Claim.—1. A nerve-broach of the form of a spiral or helical coil with roughened or serrated edges, substantially as described.

2. A nerve-broach formed of pliable material coiled and tapering, substantially as described.

444,384. **TENNIS-COURT MARKER.** HARRY T. KINGSBURY, Keene, N. H. Filed May 9, 1890. Serial No. 351,129. (No model.)



Claim.—1. The combination of a pair of wheels and a receptacle pivotally supported between the same and extending nearly to the bottom thereof, said receptacle having an opening in its bottom and a screen in said opening, with a stirrer above and adjacent to said screen, and means between said stirrer and one of the supporting-wheels, whereby the stirrer is moved over the screen when the wheels are in motion, substantially as described.

2. The combination of a pair of wheels and a receptacle pivotally supported between the same and extending nearly to the bottom thereof, said receptacle having an opening in its bottom and a screen in said opening, with a shaft in the receptacle, having a stirrer or scraper adjacent to said screen, and gearing between the shaft and one of the supporting-wheels, whereby the shaft and its stirrer are rotated when the supporting-wheels are in motion, substantially as set forth.

3. In a tennis-court marker, the combination of a pair of wheels, one of which has an annular rack, and a receptacle pivotally supported between said wheels, its sides converging toward its bottom, the latter having a screen-covered opening, with a shaft having a stirrer or scraper on its lower end adjacent to said screen and a gear-wheel on its upper end, and a second gear-wheel meshing with the annular rack on one of the supporting-wheels and with the gear-wheel on the shaft, substantially as described.

4. The combination of a pair of supporting-wheels and an axle connecting the same, with a receptacle mounted to turn freely on said axle and extending a considerable distance below the same, said receptacle having a screen-covered opening in its bottom, a stirrer in the receptacle adjacent to its screen-covered opening, a cut-off plate below said opening, and gearing between the stirrer and one of the supporting-wheels, whereby the former is rotated when the wheels are in motion, substantially as set forth.

5. A tennis-court marker consisting of a pair of supporting-wheels, an axle connecting the same, a receptacle mounted to turn freely on the axle and extending a considerable distance below the same, said

receptacle having a screen-covered opening in its bottom, a stirrer adjacent to said opening, and a supporting and actuating shaft therefor, gearing between one of the supporting-wheels and said shaft for rotating the latter, and a propelling and guiding device attached to the receptacle, whereby the latter may be tilted and moved as desired, substantially as set forth.

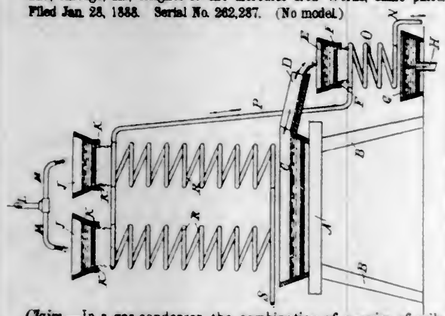
6. The combination of a pair of supporting-wheels and an axle connecting the same, with a receptacle mounted to turn freely thereon and exteeding a considerable distance below the same, said downwardly-extending portion having converging sides and a screen-covered opening in its bottom, a guiding and propelling device, means operated by one of the supporting-wheels for forcing material through the screen-covered opening, and a device attached to the receptacle for maintaining it in a substantially upright position when not in use, substantially as described.

7. The combination of a receptacle having an opening in its bottom and a screen in said opening, with a shaft in said receptacle, having a stirrer at its lower end, means for rotating said shaft, a pivoted lever in engagement with its upper end for moving it laterally, and means for locking the lever in position, substantially as described.

8. The combination of a pair of supporting-wheels, an axle rigidly connecting the same, and a receptacle mounted thereon having an opening in its bottom and a screen in said opening, with agitating-rods attached to said axle, a stirrer adjacent to said screen, and gearing between the stirrer and one of the supporting-wheels, whereby said stirrer is rotated, substantially as set forth

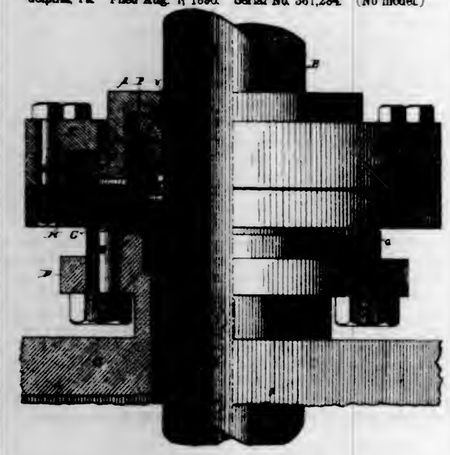
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444,385. **CONDENSER FOR GAS-PUMPS.** CHARLES A. MACDONALD, Chicago, Ill., assignor to the Hercules Iron Works, same place. Filed Jan. 28, 1888. Serial No. 262,287. (No model.)



Claim.—In a gas-condenser, the combination of a series of coils through the first of which the gas passes continuously upward, and through the last of which coils the gas passes from the top downwardly, said coils representing a continuous passage-way for the continuous progress of one and the same current of fluid, with water troughs and pipes disposed above the coils and arranged in series, so that the cooling-fluid therefrom passes over the last coils first and thence downward by gravity over the first coil.

444,386. **METALLIC ROD-PACKING.** EDWIN P. MONROE, Philadelphia, Pa. Filed Aug. 7, 1890. Serial No. 361,284. (No model.)

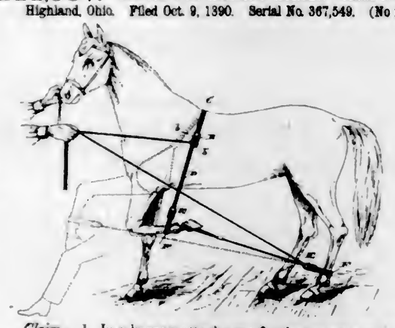


Claim.—1. In a metallic rod-packing, the combination of a main casing A, adapted to have a rocking and a sliding movement, the laterally-acting packing-springs, the ball-and-socket ring R, the block-plate M, and the follower K, constructed and arranged as set forth.

2. In a metallic rod-packing, the combination, with a main casing A, adapted to have a rocking and a sliding movement, the laterally-acting packing-rings, the ball-and-socket ring R, the block-plate M, the follower K, the spring-plate H, and the annular clamping-plate, constructed and arranged substantially as set forth.

3. In a metallic rod-packing, the combination of a main casing A, adapted to have a rocking and a sliding movement, the laterally-acting packing-rings, the ball-and-socket ring R, the block-plate M, the follower K, and the segmental packing-blocks adapted to move with the case and provided with springs bearing against the case to compensate for wear of the blocks, substantially as set forth.

444,387. **DEVICE FOR HOLDING HORSES.** JACOB J. HARRIS, Highland, Ohio. Filed Oct. 9, 1890. Serial No. 367,549. (No model.)

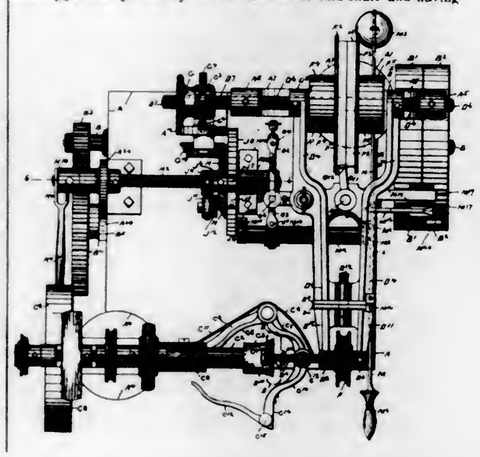


Claim.—1. In a harness attachment for the purpose set forth, the ropes or flexible connections C and D, connected to each other by clamps A and B, one of said clamps carrying a ring, the rope C, forming a loop adjacent to the clamp A, a strap and buckle having a loop through which the flexible connection D passes, the free end of said rope being passed through the ring carried by the clasp B, substantially as set forth.

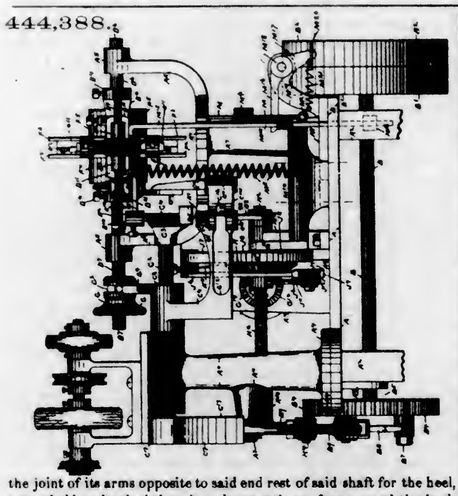
2. A harness attachment consisting of a flexible connection C, having an end loop and flexible connection D, clamped to each other, as shown, the connection D, extending beyond the clamp B, in combination with the strap F and auxiliary rope G, having a looped end, for the purpose set forth.

444,388. **HEEL-BURNISHING MACHINE.** WINSLOW F. SAMPSON, Gofistown, assignor, by direct and mesne assignments, to the Sampson Automatic Heel Burnishing Machine Company, Manchester, N. H. Filed Mar. 24, 1890. Serial No. 345,178. (No model.)

Claim.—1. In a machine for burnishing the edges of heels of boots or shoes, in combination, a shaft suitably supported and adapted to be reciprocatingly rotated and at one end to secure the rest of a boot or shoe at its inner heel portion, the combination of a jack composed of a toggle-lever jointed by one of its arms to said shaft and having



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the joint of its arms opposite to said end rest of said shaft for the heel, a rest held and swiveled on it and presenting a face toward the heel-face of said shaft, and a spring held on said shaft and arranged to press against and on the outer side of and against the joint of said toggle-lever, a burnisher, and means to operate said burnisher and to move it across the edge and from the treading-face to the sole-face of the heel held between the heel-rests of said jack and said reciprocatingly-rotated shaft carrying said jack, all substantially as described, for the purpose specified.

2. In a machine for burnishing the edges of heels of boots or shoes, in combination, a shaft suitably supported and adapted to be reciprocatingly rotated and at one end to secure the rest of a boot or shoe at its inner heel portion, the combination of a jack composed of a toggle-lever jointed by one of its arms to said shaft and having the joint of its arms opposite to said end rest of said shaft for the heel, a rest held and swiveled on it and presenting a face toward the heel-face of said shaft, a spring held on said shaft and arranged to press against and on the outer side of and against the joint of said toggle-lever, and a handle to the outer end of the arm of the toggle-lever opposite to that arm jointed to said shaft and adapted otherwise to be swung toward and outward from said shaft into line and butted against the end of the arm to which it is jointed, a burnisher, and means to operate said burnisher and to move it across the edge and from the treading-face to the sole-face of the heel held between the heel-rests of said jack and said reciprocatingly-rotated shaft carrying said jack, all substantially as described, for the purposes specified.

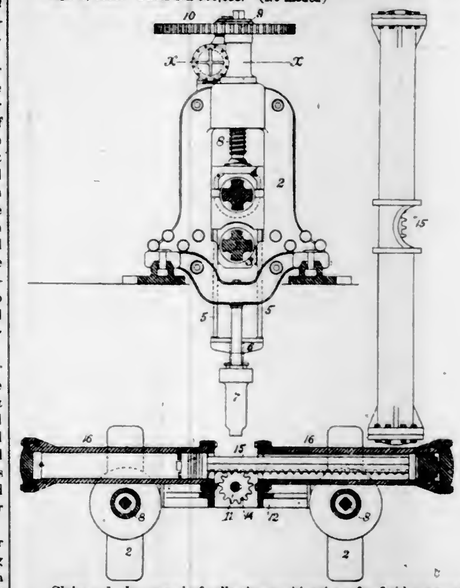
3. In a machine for burnishing the edges of heels of boots or shoes, the combination, with the frame or arm D^4 D^{11}, which is made in two parts connected together by a swivel-joint D^{12} and has its part D^4 at its outer end suspended for the frame to be moved laterally and horizontally and to swing vertically, and its part D^{11} at its outer end provided with the burnisher, of a spring applied to the part D^{11} of said frame and otherwise adapted to exert yielding pressure thereon in its swivel movement, and an abutment M^{14}, held on the part D^4 and adapted for contact with the part D^{11}, substantially as described, for the purposes specified.

4. In a machine for burnishing the edges of heels of boots or shoes, substantially as described, a horizontal rocker-shaft H^9, having suitable bearings, means to rock said shaft, a ratchet-wheel J^6 and a gear-wheel H, held thereon and adapted to rotate as one, a vertical arm J^4, fulcrumed and to swing on said shaft and at its upper end having a pawl J^7 to engage the ratchet-wheel, and thereby to rotate it and its said gear-wheel in one direction of the swing of the vertical arm and in the other direction thereof to pass freely over the ratchet, a radial arm held on and in one direction only of the rock of said shaft to work on said pawl-carrying arm, and a spring at one end held on said arm and at the other on a fixed support, in combination with mechanism connected with the burnisher of the machine and with and to be operated by the rotation of said gear-wheel H, whereby the burnisher is made to travel to and fro over the edge and from the treading-face of the heel to the upper, and vice versa, substantially as described, for the purpose specified.

5. In a machine for burnishing the edges of heels of boots or shoes, in combination, appliances for holding the boot or shoe with the edge of its heel exposed, means for reciprocatingly rotating said boot or shoe holding appliances, a burnisher, means for rotating said burnisher, consisting of a pulley-wheel held on said burnisher and together turning in suitable bearings, two loose pulley-wheels held and turning and located side by side on a common shaft and separately adapted to be driven, and a belt connecting said loose pulley-wheels and said burnisher pulley-wheel, a horizontal rocker-shaft H^3, having suitable bearings, means to rock said shaft H^3, arms O^9 O^9, held on and radially projected from said shaft H^3 and both in a common vertical plane and each at its outer end having an abutment-block O^4, an abutment-block O^5, having an abutment-face on its opposite sides and in the vertical plane of the abutment-blocks O^4 of said shaft H^3 and adapted to swing to and fro on a suitable support, a belt-shipper device in suitable connection with said driving-belt for the burnisher and adapted to rotate on a suitable support, and means connecting said belt-shipper and said swinging abutment-block and adapted to rotate the former from the swing of the latter, substantially as described, for the purposes specified.

6. In a machine for burnishing the edges of heels of boots or shoes, substantially as described, a horizontal rocker-shaft H^3, turning in suitable bearings, a pin M^{23}, eccentrically held on said shaft, a lever-catch M^7 M^8, arranged to be rocked on a suitable support in one direction by said pin and against and in the opposite direction with a spring M^{13}, applied to said catch, and a lever M, adapted and arranged for said lever-catch M^7 M^8 to be engaged and disengaged from it, in combination with an arm or frame D^4 D^{11}, at one end swinging on a suitable horizontal support and at its other end carrying the burnisher, a vertical spring M^3, at one end hung on said carrier and at the other end on said lever, and a vertical rod M^{16}, carried by said lever and adapted at its opposite ends to act as a stop to the up-and-down swing of said frame, substantially as described, for the purpose specified.

444,389. **ROLLING-MILL.** HENRY AIKEN, Pittsburg, Pa. Filed Sept. 1, 1890. Serial No. 363,653. (No model.)



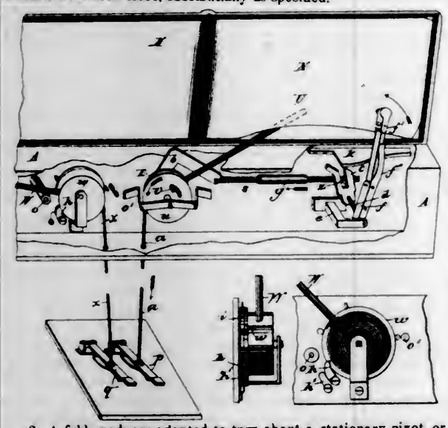
Claim.—1. In a stand of rolls, the combination of a fluid-pressure cylinder secured to the housing of said rolls, a rack operated by the piston of said cylinder, screws for adjusting the rolls, and gearing interposed between the rack and screws for rotating the latter, substantially as set forth.

2. In a stand of rolls, the combination of two single-acting cylinders secured to the housing of said rolls, a rack connecting the pistons of said cylinders, screws for adjusting the rolls, and gearing interposed between the rack and screws for rotating the latter, substantially as set forth.

444,390. **DEVICE FOR TURNING MUSIC-SHEETS.** OTTO F. C. BANNIER, Hamburg, Germany. Filed Apr. 8, 1890. Serial No. 347,146. (No model.)

Claim.—1. In a device for turning music-sheets, a driving apparatus consisting of a hollow cord-pulley *r*, a spring inclosed therein, cap *u*, placed over said pulley, angular link *b*, and rail *s*, guided in tube *g* and connected through said link to pulley *r*, said driving appa-

rates being adapted to be operated by any suitable force for turning the pulley and to return automatically into its inoperative state when released from such force, substantially as specified.

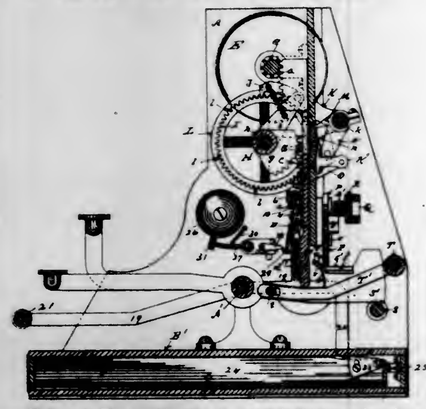


2. A fold-producer adapted to turn about a stationary pivot or pin from the inclined into the upright position through lever action, and consisting of a lower piece *f*, rigidly mounted on a shaft *d* and carrying leaf-spring *f''*, an upper piece *f'*, connected hinge fashion with *f*, a wedge-shaped plate *k*, a bifurcated lever *c*, and a base-block *e*, substantially as illustrated and described.

3. A music-sheet reverser secured to and movable with the cord-pulley *r* and consisting of the reversing-rod U and the cap *u*, substantially as specified.

4. An apparatus for turning back music-sheets for repetition, consisting of a reverser W, cord-pulley *w*, loose disk *i*, each of the latter two parts having a notch, click *h*, adapted to enter into said notches when coinciding, spring *h'*, and pins *o'* and *o*, the described combination of said parts allowing the apparatus to be secured in its elevated position and also to automatically resume its inoperative position, substantially as illustrated and described.

444,391. **CASH REGISTER AND INDICATOR.** WILLIAM H. CLARK, Albion, assignor to the Lovell Manufacturing Company, Limited, Erie, Pa. Filed Aug. 11, 1890. Serial No. 361,750. (No model.)



Claim.—1. The combination, in a cash indicator and register, of a group of key-levers, some of which are direct and some of which are compound, with a rack-bar foot resting on all of said key-levers, a vertically-moving rack-bar secured to said rack-bar foot, and indicating and registering wheels geared to and operated by said rack-bar, substantially as and for the purpose set forth.

2. The combination, in a cash indicator and register, of main key-levers and supplementary levers coupled to some of said main key-levers, with rack-bar feet resting upon and adapted to be operated both by the key-levers without supplementary levers and also by the supplementary levers coupled to others of said main key-levers, substantially as and for the purpose set forth.

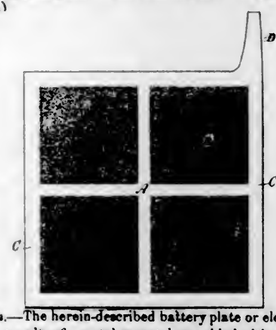
3. The combination, in a cash indicator and register, of key-levers, both simple and compound, a rack-bar foot resting upon and operated both by said simple and said compound key-levers, with a vertically-sliding locking-plate adapted to be operated by the rear ends of said levers, and hooked projections on the rear ends of said key-levers adapted to engage depressions in the rear faces of the rack-bar feet when the key-levers are fully depressed, substantially as and for the purpose set forth.

4. The combination, in a cash indicator and register, of a group of key-levers, a rack-bar foot resting upon all of said group and adapted to be actuated by each lever of said group independently of the others, and registering and indicating wheels actuated by a rack-bar secured to said rack-bar foot, with a vertically-sliding locking-plate resting on the rear ends of all of the key-levers of such group and adapted to be raised thereby, and a dog pivoted to the machine-frame and adapted to be forced into engagement with the teeth of the registering-wheel by said locking-plate when raised by the operation of any of the key-levers, substantially as and for the purpose set forth.

5. The combination, in a cash indicator and register, of a series of two or more groups of key-levers and a rack-bar foot, and a vertically-sliding locking-plate resting upon each of said groups of key-levers, with a series of horizontally-sliding bars mounted in bearings on the frame directly above said vertically-sliding locking-plates, and wedges on said locking-plates adapted to pass upward between the ends of said sliding bars, substantially as and for the purpose set forth.

6. The combination, in a cash indicator and register, of a key-actuated rack-bar, ratchet-teeth in the edges of said rack-bar, spring-actuated dogs operating in the teeth in the edges of said rack-bar, and a vertical rib on the outer surface of said rack-bar, with a horizontally-moving rod having pins thereon engaging with pins on said spring-dogs, and spring-hooks adapted to engage with the rib on the face of said rack-bar, substantially as and for the purpose set forth.

444,392. **ELECTRODE FOR SECONDARY BATTERIES.** STANLEY C. C. CURRIE, Philadelphia, Pa., assignor to the United Gas Improvement Company, same place. Filed June 10, 1890. Serial No. 354,908. (No model.)



Claim.—The herein-described battery plate or element, composed of the salt or salts of a metal or metals provided with an integral tough and compact or dense supporting-rim of the same material or materials, but distinguishable from the active portion of the plate or element.

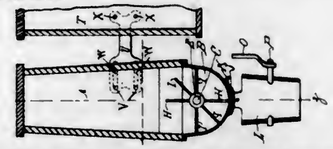
444,393. **HOE.** LEWIS DENNY, Advance, Ind., assignor of one-half to Nathaniel Graybill, same place. Filed Apr. 24, 1890. Serial No. 349,381. (No model.)



Claim.—A cultivator-hoe comprising the handle *h*, central shank *s*, having shouldered recesses 5 formed on the sides thereof, lateral shanks 2 2, adapted to fit in such recesses, connected to the central shank by a bolt 4, and blades 3, detachably connected to the main and lateral shanks, all combined substantially as shown and described.

444,394. **FERTILIZER-DISTRIBUTER.** HENRY P. DEUSCHER and FRANK J. BECKER, Hamilton, Ohio, assignors to the H. P. Deuscher Manufacturing Company, same place. Filed June 23, 1890. Serial No. 356,510. (No model.)

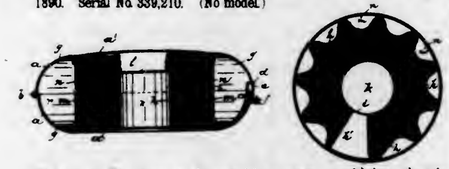
Claim.—1. A fertilizer-distributer provided with a spout pivoted to and depending from a feed-cup, the lower end thereof being capable of forward or backward adjustment, substantially as specified, and for the purpose set forth.



2. The combination, with a fertilizer-distributer, of arms attached thereto and longitudinally adjustable thereon, by means of which said distributer may be attached and adjusted more or less near to a corn or seed planter, substantially as described, and for the purpose set forth.

3. The combination, with a fertilizer-distributer, of arms pivotally attached thereto connecting said distributer with a corn or seed planter, substantially as described, and for the purpose specified.

444,395. **HAND OR FOOT WARMER.** JONATHAN T. ELLIS, Newark, N. J., assignor to Embury McLean, New York, N. Y. Filed Feb. 4, 1890. Serial No. 339,210. (No model.)



Claim.—1. The improved portable warmer combining therein cases *a a*, open at the center, and a fire-box arranged between the cases and coinciding with said openings, substantially as and for the purposes set forth.

2. The improved warmer herein described, combining therein cases *a a* and supplemental cases *a' a'*, having a fuel box or receptacle between, substantially as and for the purposes set forth.

3. The improved warmer herein described, combining therein concavo-convex cases open at the center and provided with perforations *g g*, supplemental cases, and interior perforated partitions forming with the supplemental cases a fire-box, substantially as and for the purposes set forth.

4. The improved warmer herein described, combining therein concavo-convex cases perforated near the periphery and provided therebetween with a perforated fire-box, substantially as set forth.

5. The improved warmer herein described, combining therein concavo-convex cases provided therebetween with a fuel-box having a perforated wall with recesses or corrugations for the reception of the fuel, substantially as set forth.

6. The improved warmer herein described, combining therein concavo-convex cases, a fire-chamber formed therebetween by partitions, and a cooling-chamber outside of said partitions, substantially as and for the purposes set forth.

7. The combination of casings *a a*, supplemental casings *a' a'*, one of which is perforated, a chemical or medicine chamber arranged on said supplemental casing adjacent to the perforations therein, and a fuel-chamber, said parts being arranged and adapted to operate substantially as and for the purposes set forth.

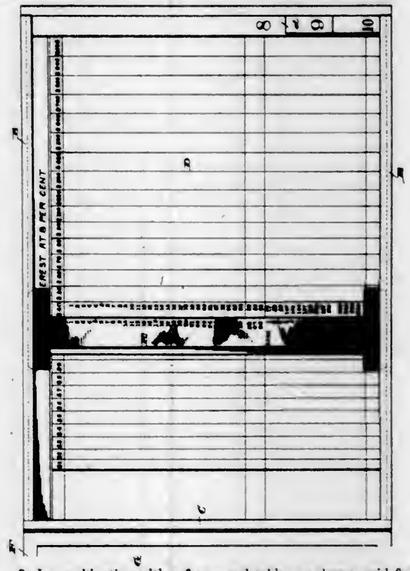
8. In combination, cases *a a*, supplemental cases *a' a'*, perforated and sieve-like partitions *m n*, and corrugated and annular partitions *h i*, all arranged and combined substantially as and for the purposes set forth.

9. The improved portable warmer combining therein concavo-convex cases *a a*, hinged, as at *b*, provided with perforations *g g* and large central perforations a^3 a^3, a catch *d e*, a fire-chamber having a corrugated or recessed wall to receive fuel conforming to said wall, substantially as and for the purposes set forth.

444,396. **INTEREST-CALCULATOR.** BENJAMIN F. HULL, Clinton, Ill., assignor to Emma Hull, same place. Filed July 24, 1890. Serial No. 359,791. (No model.)

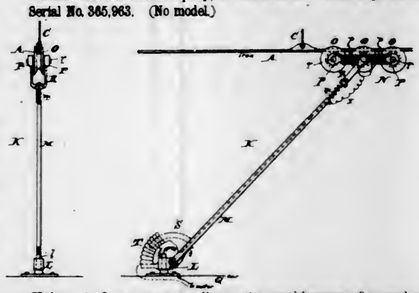
Claim.—1. The combination, in a device for calculating interest, of a frame having a base with side pieces B and end piece C rigidly secured thereto, the side pieces being grooved on their inner sides for the reception of a sliding indicator, a series of removable tables confined beneath the grooves in the side pieces by the indicator, a cover hinged to the end strip C and provided with a tablet, said tablet being adapted to lie within the end and side pieces when the cover is closed, and a retaining device, substantially as set forth.

2. The combination, in a device for calculating interest, of a frame having the inner sides of the upper and lower edges grooved for the reception of a sliding indicator, removable interest-tables, a cover hinged thereto and adapted to lie over the upper edges of the side pieces, a space being provided within the frame above the interest-tables and sliding indicator, substantially as shown, and for the purpose set forth..



3. In combination with a frame and tables, as shown, said frame having formed in its inner sides grooves or recesses *a a*, a sliding indicator having laterally-extended ends with rounded corners, and a central connecting portion having a straight edge, the opposite edge being upturned to provide a stiffening and grasping portion, substantially as set forth.

444,397. **CURRENT-COLLECTING DEVICE FOR ELECTRIC RAILWAYS.** RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 24, 1890. Serial No. 365,963. (No model.)



Claim.—1. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, and an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor.

2. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, the said electro-magnetic device consisting of a magnetic core having guides for traveling along the conductor and a magnetizing coil or coils surrounding the core and receiving current from the conductor.

3. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, the said electro-magnetic device consisting of a magnetic core having guides for traveling along the conductor, and a magnetizing coil or coils surrounding the core

and receiving current from the conductor and connected in series with the motor.

4. The combination of a railway, a conductor of magnetic metal arranged along the railway, a traveling car, a contact for the conductor having an iron core, a magnetizing-coil surrounding the core to energize it to hold to the conductor, and a connection between the contact and car.

5. The combination of a railway, a conductor of magnetic metal arranged along the railway, a traveling car, a contact for the conductor having an iron core, a magnetizing-coil surrounding the core to energize it to hold to the conductor, a connection between the contact and car, an electric motor to propel the car, and an electric circuit including the motor and magnetizing-coil of the contact.

6. The combination of a railway, a conductor of magnetic metal arranged along the railway, a traveling car, a contact for the conductor having an iron core, a magnetizing-coil surrounding the core to energize it to hold to the conductor, a connection between the contact and car, an electric motor to propel the car, an electric circuit including the motor and magnetizing-coil of the contact, and a shunt-circuit around the motor for the passage of current when the motor is cut out of circuit.

7. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, and a shunt-circuit around the motor for the passage of current employed to energize the electro-magnetic current-collecting device when the motor is cut out of circuit.

8. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, the said electro-magnetic device consisting of a magnetic core having guides for traveling along the conductor, a magnetizing coil or coils surrounding the core and receiving current from the conductor, and a shunt-circuit around the motor for the passage of current employed to energize the electro-magnetic current-collecting device when the motor is cut out of circuit.

9. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, the said electro-magnetic device consisting of a magnetic core having guides for traveling along the conductor, a magnetizing coil or coils surrounding the core and receiving current from the conductor and connected in series with the motor, and a shunt-circuit around the motor for the passage of current employed to energize the electro-magnetic current-collecting device when the motor is cut out of circuit.

10. The combination of a railway, a working-conductor of iron arranged along the railway, a supply-conductor of copper connected at intervals with the working-conductor, a source of electric supply connecting with the supply-conductor, a car, and an electro-magnetic current-collecting device making a traveling contact with the working-conductor.

11. The combination of a railway, a working-conductor of iron arranged along the railway, a supply-conductor of copper connected at intervals with the working-conductor, a source of electric supply connecting with the supply-conductor, a car, an electric motor to propel the car, an electro-magnetic current-collector making a contact with the working-conductor, a regulator, a motor-circuit including the regulator and collector, and a shunt-circuit around the motor, whereby the current-collector may be magnetized when the motor is cut out.

12. The combination of a railway, a working-conductor of iron arranged along the railway, a supply-conductor of copper connected at intervals with the working-conductor, a source of electric supply connecting with the supply-conductor, a car, an electric motor to propel the car, an electro-magnetic current-collector making a contact with the working-conductor, a regulator, a motor-circuit including the regulator and collector, a shunt-circuit around the motor, and controlling-switch for closing the shunt-circuit upon the regulator being used to interrupt the current passing to the motor, whereby the current-collector may be magnetized when the motor is cut out.

13. The combination of a railway, a working-conductor of iron arranged along the railway, a supply-conductor of copper connected at intervals with the working-conductor, a source of electric supply connecting with the supply-conductor, a car, an electric motor to propel the car, an electro-magnetic current-collector making a contact with the working-conductor, a regulator, a motor-circuit including the regulator and collector, a shunt-circuit around the motor, a controlling-switch for closing the shunt-circuit upon the regulator being used to interrupt the current passing to the motor, and a connection between the shunt-switch and regulator, so that they are simultaneously operated, whereby the current-collector may be magnetized when the motor is cut out.

14. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, a regulator, a motor-circuit including the regulator and collector, and a shunt-circuit around the motor, whereby the current-collector may be magnetized when the motor is cut out.

15. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, a regulator, a motor-circuit including the regulator and collector, a shunt-circuit around the motor, and a controlling-switch for closing the shunt-circuit upon the regulator being used to interrupt the current passing to the motor, whereby the current-collector may be magnetized when the motor is cut out.

16. In an electric railway, the combination of a conductor of magnetizable metal, a car, an electric motor to propel the car, an electro-magnetic current-collecting device moving with the car and making a traveling connection with the conductor, a regulator, a motor-circuit including the regulator and collector, a shunt-circuit around the motor, a controlling-switch for closing the shunt-circuit upon the regulator being used to interrupt the current passing to the motor, and a connection between the shunt-switch and regulator, so that they may be simultaneously operated, whereby the current-collector may be magnetized when the motor is cut out.

17. The combination of a conductor of magnetizable metal arranged along a railway, a traveling car, a motor to propel the car, an electro-magnetic current-collector held to the conductor by mechanism, a regulator for the motor, a motor-circuit including the regulator, collector, and motor, a shunt-circuit around the motor including the collector, a switch to close the shunt-circuit when the motor is cut out of circuit, and a resistance interposed in the shunt-circuit.

18. The combination of a conductor of magnetizable metal arranged along a railway, a traveling car, a motor to propel the car, an electro-magnetic current-collector held to the conductor by magnetism, a regulator for the motor, a motor-circuit including the regulator, collector, and motor, a shunt-circuit around the motor including the collector, a switch to close the shunt-circuit when the motor is cut out of circuit, a resistance interposed in the shunt-circuit, and a connection between the shunt-switch and regulator, whereby when the regulator increases the resistance in the motor-circuit the shunt-resistance is increased.

19. The combination of a conductor of magnetizable metal arranged along a railway, a traveling car, a motor to propel the car, an electro-magnetic current-collector held to the conductor by magnetism, a regulator for the motor having a variable resistance, a motor-circuit including the regulator, collector, and motor, a shunt-circuit around the motor including the collector, and a switch to close the shunt-circuit when the motor is cut out of circuit and insert a part of the resistance of the regulator in the shunt-circuit.

20. The combination of a railway, a suspended conductor of magnetic material, a car, and a current-collecting device consisting of an electro-magnetic contact held to the conductor by magnetic action and connected by a flexible or movable conductor with the car.

21. The combination of a railway, a suspended conductor extending along the railway and formed of magnetic material, a car, an electro-magnetic contact device held to the conductor by magnetic action, and an upwardly-extending arm connected to the car at one end and to the contact device at the other or free end and laterally movable at its free end.

22. The combination of a railway, a suspended conductor extending along the railway and formed of magnetic material, a car, an electro-magnetic contact device held to the conductor by magnetic action, and an upwardly-extending arm connected to the car at one end and to the contact device at the other or free end and vertically movable at its free end.

23. The combination of a railway, a suspended conductor extending along the railway and formed of magnetic material, a car, an electro-magnetic contact device held to the conductor by magnetic action, and an upwardly-extending arm connected to the car at one end and to the contact device at the other or free end and laterally and vertically movable at its free end.

24. The combination of a railway, a suspended conductor extending along the railway and formed of magnetic material, a car, an electro-magnetic contact device held to the conductor by magnetic action, an upwardly-extending arm connected to the car at one end and to the contact device at the other or free end and vertically movable at its free end, and means to hold said arm in an upright position with an elastic action.

25. The combination of a railway, a suspended conductor extending along the railway and formed of magnetic material, a car, an electro-magnetic contact device held to the conductor by magnetic action, an upwardly-extending arm connected to the car at one end and to the contact device at the other or free end and vertically movable at its free end, and means to hold said arm in an upright position with an elastic action, consisting of an electro-magnetic device carried close to the car.

26. The combination of a suspended conductor extending along a railway, a traveling car, an upwardly-extending current-collector making a contact with the conductor, and an electro-magnetic device for holding the current-collector in an upright position with freedom of vertical movement.

27. The combination of a suspended conductor extending along a railway, a traveling car, an upwardly-extending current-collector making a contact with the conductor and pivoted to the car on a vertical axis, and an electro-magnetic device for holding the current-collector in an upright position with freedom of vertical and lateral movement.

28. A current-collector consisting of an upwardly-extending arm having a contact at its upper or free end and hinged at its lower end with provision for vertical movement of its free end, a frame pivoted on a vertical axis and supporting the collector-arm, and an electro-magnetic device carried upon the pivoted frame and acting upon the collector-arm to hold it in an upright position.

29. A magnetic contact device consisting of two or more wheels of iron loosely connected to each other by magnets, and a flexible or loosely-connected conductor leading from said electro-magnetic contact device to a car.

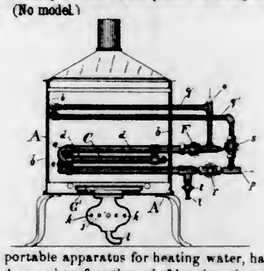
30. An electro-magnetic contact device consisting of two or more contact-wheels of iron combined with cores loosely hinged to the axles of the wheels, coils of wire surrounding the said cores, having one terminal electrically connected with the contact-wheels and the other terminal connected with a circuit leading from the contact device to the vehicle.

31. In a current-collector device for an electric railway, an electro-magnet having its pole formed with a groove for receiving the conductor and to which one terminal of the coil of the magnet is electrically connected and in which the other terminal of the coil is connected by a flexible conductor with the vehicle to which electricity is to be supplied.

444,398. LINIMENT. AARON ROSENBERG, Philadelphia, Pa., assignor to Morris Rosenberg, same place. Filed Nov. 11, 1890. Serial No. 371,056. (No specimens.)

Claim.—The herein-described medical compound, consisting of gasoline, capsicum, camphor, alkanet-root, oils of citronella, origanum, and sassafras, in the proportions named.

444,399. WATER-COIL BOILER. GUSTAV A. SETZER, Baltimore, Md., assignor to Mary C. Setzer, same place. Filed Aug. 21, 1890. Serial No. 362,593. (No model.)

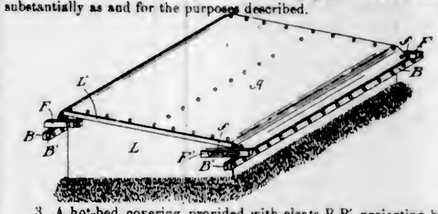


Claim.—A portable apparatus for heating water, having in combination a case A, a series of sections *d* of heating-pipes united by return-bends and placed side by side in a horizontal plane, and having an inlet *o*, controlled by a valve F, which is provided with a spray-aperture *m* to cause a spray of water to pass into the heating-pipes, an outlet *p*, provided with a cut-off valve *r*, a burner below the said heating-pipes, a shunt-pipe *q*, connecting with the said inlet at a point outside of the valve F and with the outlet *p* at a point outside of the cut-off valve *r*, and a cut-off valve *s* in said shunt-pipe, all arranged for the purpose specified.

444,400. HOT-BED COVERING. ARCHIBALD SMITH, Cambridge, Mass., assignor to Charles H. Breck, trustee. Filed July 19, 1890. Serial No. 359,256. (No model.)

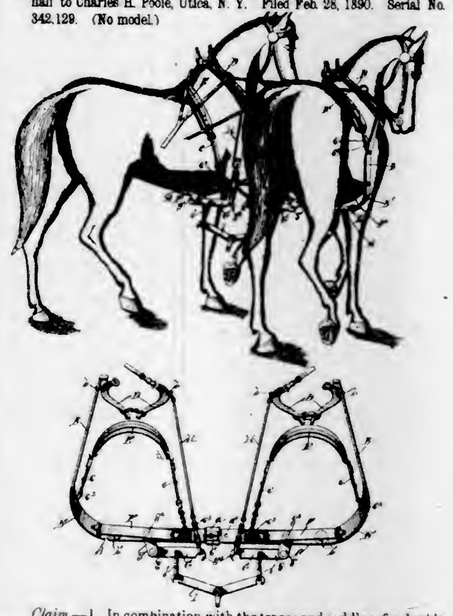
Claim.—1. A hot-bed covering consisting of an outer layer of water-proof rope or wood-pulp paper and an inner layer of water-proof paper held between double cleats at top and bottom and provided with air-spaces, in combination with a hot-bed frame having retaining-pieces engaging with said cleats, substantially as described.

2. A hot-bed covering consisting of layers of water-proof paper provided at top and bottom with fastening-cleats B B' and having a supporting interposed central cleat C, in combination with a hot-bed frame provided with retaining-pieces F F', engaging with said cleats, substantially as and for the purposes described.



3. A hot-bed covering provided with cleats B B', projecting beyond the edges of the covering on each side, in combination with a hot-bed frame provided with stationary retaining-pieces F, and sliding retaining-pieces F', secured to the frame, substantially as and for the purposes described.

444,401. HARNESS. DE WANE B. SMITH, Deerfield, assignor of one-half to Charles H. Poole, Utica, N. Y. Filed Feb. 26, 1890. Serial No. 342,129. (No model.)



Claim.—1. In combination with the traces and saddles of a double harness, the herein-described rigid cross or draw bar connected to said traces and saddles and composed of separable divisions having their inner extremities approximated, and a movable catch for engaging said extremities and removably securing them together, whereby a team may be harnessed singly, substantially as and for the purpose specified.

2. In combination with the traces and saddles of a double harness, the herein-described cross or draw bar connected to said traces and saddles and composed of separable divisions having their inner extremities approximated, and a spring-actuated sliding rod secured to one of said divisions and removably engaging the other for removably securing together said divisions, whereby a team may be harnessed singly, substantially as and for the purpose set forth.

3. In combination with the traces and saddles of a double harness, the herein-described cross or draw bar connected to said traces and saddles and composed of separable divisions, a socket provided on one of said divisions and adapted to receive the end of the other division, and a catch for removably securing said parts together, substantially as and for the purpose specified.

4. In combination with the traces and saddles of a double harness, a metallic cross or draw bar connected to said traces and saddles and adapted to be placed beneath the horse, and a strap above said metallic cross or draw bar adapted to be imposed between the horse and the said bar and having its opposite extremities secured to said cross-bar, substantially as and for the purpose specified.

5. In combination with the traces and saddles of a double harness, a metallic cross or draw bar connected to said traces and saddles and composed of separable divisions having their inner extremities removably secured together, whereby a team may be harnessed singly, and a strap above said cross or draw bar adapted to be imposed between the horse and said bar, substantially as and for the purpose set forth.

6. In a harness, the combination, with the collars, of a double harness, metallic traces loosely connected at their forward extremities to said collars, a cross or draw bar loosely pivoted to the rearward extremities of said traces, and a saddle for supporting said cross-bar, substantially as and for the purpose described.

7. In a harness, the combination, with a collar, a cross-bar, and a saddle for supporting said cross-bar, of a metallic trace having its forward end connected to said collar and having its rearward end deflected below the plane of its forward end, and laterally-extending arm provided on said rearward end and connected to said cross-bar, substantially as specified.

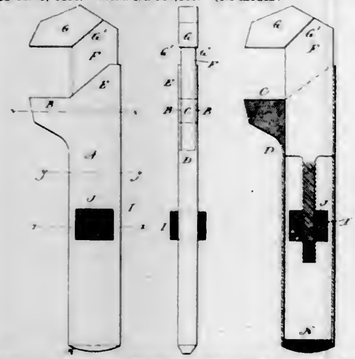
8. In combination with the collars and saddles of a double harness, the combination of metallic traces loosely connected at their forward extremities to said collars, a cross or draw bar loosely connected to the opposite extremities of said traces and composed of separable divisions, and a catch for removably securing together said divisions, whereby a team may be harnessed singly, substantially as and for the purpose set forth.

9. The herein-described harness, composed of a pair of saddles and collars, a cross or draw bar connected to the saddles, outer metallic traces pivotally secured to said collars and cross-bar, single whiffletrees connected to said bar, and a double whiffletree connected to said single whiffletrees, substantially as and for the purpose specified.

10. The herein-described harness, composed of a pair of collars and saddles, a cross or draw bar connected to said saddles, outer metallic traces pivotally connected to said cross-bar, single whiffletrees, links connecting the said whiffletrees and cross-bar, and a double whiffletree connected to the said single whiffletrees, substantially as and for the purpose set forth.

11. The herein-described harness, composed of a pair of collars and saddles, a cross or draw bar connected to said saddles and composed of separable divisions, and a catch for removably connecting said divisions, whereby a team may be harnessed singly, outer metallic traces pivotally connected to said collars and to said bar, single whiffletrees, links between the said whiffletrees and cross-bar, and a double whiffletree connected to the said single whiffletrees, substantially as and for the purpose set forth.

444,402. **MONKEY-WRENCH.** JOHN K. STARLEY, Coventry, England, assignor to the Overman Wheel Company, Chicopee Falls, Mass. Filed Oct. 6, 1890. Serial No. 367,185. (No model.)



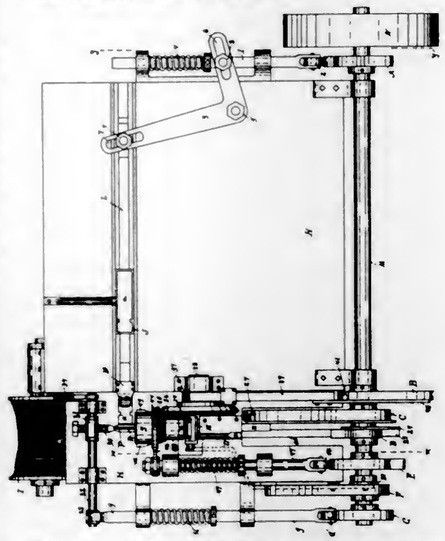
Claim.—1. A monkey-wrench having a hollow sheet-metal handle-piece provided with two projecting supports, and a hardened block located between and secured to the same and forming a rigid jaw, substantially as described.

2. A monkey-wrench having a hollow sheet-metal handle-piece provided with a jaw and with a re-enforce arranged to stand behind the shank of the movable jaw, substantially as described.

3. A monkey-wreoch having a hollow sheet-metal handle-piece having two projecting supports and a hollow re-enforce extending beyond it and standing behind the shank of the movable jaw, a hardened block located between and secured to the said supports and forming a rigid jaw, a movable jaw having a screw and a shank, the latter passing through the re-enforce and entering the handle-piece, and an adjusting-nut located in a transverse opening in the handle-piece and receiving the said screw, substantially as described.

4. A monkey-wrench having its handle-piece provided with a rigid jaw and a re-enforce extending beyond it and standing behind the shank of the movable jaw and having slanting edges, and a movable jaw having at its inner end slanting shoulders conformed in inclination to the inclination of the edges of the re-enforce, substantially as described.

444,403. **TAG-WIRING MACHINE.** ALBERT R. TIFFANY, Dayton, Ohio, assignor of one-half to Wesley Young, same place. Filed July 9, 1890. Serial No. 358,196. (No model.)



Claim.—1. In a tag-wiring machine, in combination with the wire feeding and cutting mechanism, the looping-fork R and the hollow twisting-head S, and the mechanism for reciprocating said looping-fork to place the wire around the tag, substantially as described.

2. In a tag-wiring machine, the combination of the reciprocating looping-fork R with the wire-feeding mechanism, consisting, substantially, of the jaws 12 and 13, operated by the pitman 20 and driving mechanism from the main shaft, whereby the wire is grasped and pulled forward into position in front of the looping-fork R, substantially as specified.

3. In a tag-wiring machine, the reciprocating looping-fork R, in combination with the jaws 12 and 13 and mechanism for reciprocating the same, the cutting-knife 26, and the mechanism for reciprocating the same at the end of the stroke of the feeding-jaws, substantially as specified.

4. In a tag-wiring machine, the combination of the looping-fork R and the mechanism for reciprocating the same, the hollow twisting-head S, with the cam-jaws 42 and 43, and the mechanism for operating said looping-fork to feed the wire forward over the tag, and the mechanism for clamping the jaws 42 and 43 for twisting the wire by a revolution of the head S and looping-fork R, substantially as herein set forth.

5. In a tag-wiring machine, the combination of an upright hopper J for containing a stack of superimposed tags, a reciprocating slide L, moving beneath the hopper and acting to engage and move a tag forward from the lower end of the hopper, the reciprocating looping-fork R for catching the wire, the hollow twisting-head S, through which the looping-fork passes, the wire-feeding jawe 12 and 13, and operating mechanism, substantially as described.

6. In a tag-wiring machine, the combination of an upright hopper J for containing a stack of superimposed tags, the slide L, moving beneath the hopper and acting to engage and move a tag forward from the lower end of the hopper, the looping-fork R, the hollow twisting-head S, and means for reciprocating the slide and looping-fork and rotating the twisting-head, substantially as described.

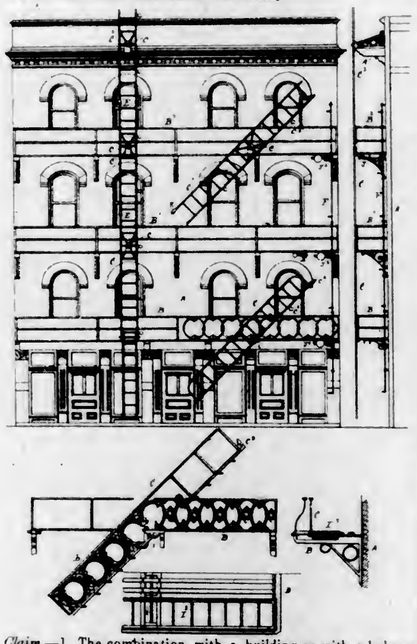
7. In a tag-wiring machine, the hollow twisting-head S, provided with vibrating jaws 42 and 43, a clamp-ring 44, and the mechanism for moving the clamping-ring and driving the twisting-head, substantially as specified.

8. In a tag-wiring machine, the combination of the reciprocating looping-fork R, provided with an eye for receiving and holding the slat, with the wire-holder 30 and mechanism for reciprocating the latter to engage and hold the wire fed forward by the looping-fork, substantially as described.

9. In a tag-wiring machine, the combination of the looping-fork R, provided with an eye for receiving and holding the slat, with means for moving the fork forward to carry the wire over the tag, substantially as described.

10. In a tag-wiring machine, the combination, with the twisting mechanism, of the reciprocating fork R, provided with an eye in rear of its slotted or forked portion for receiving and holding the slat which is passed through said eye, substantially as described.

444,404. **FIRE-ESCAPE.** ALFRED WOOD, Detroit, Mich. Filed May 15, 1888. Serial No. 274,014. (No model.)



Claim.—1. The combination, with a building or with a balcony engaged thereupon, of a ladder having a fixed oscillatory connection therewith, the arrangement being such that the plane of the ladder swings in a plane parallel with the front of the building, and an electric device to release said ladder from its folded position, substantially as set forth.

2. The combination, with a building or with a balcony engaged thereupon, of ladders connected therewith, the one provided with a hub and the other with a slotted plate engaged with the hub, substantially as described.

3. The combination, with a balcony, of a ladder having a fixed oscillatory connection therewith, the arrangement being such that the plane of the ladder may swing in a plane parallel with the front of the building, and a trap, said trap arranged to be opened simultaneously with the release of the ladder from its folded position, substantially as set forth.

4. The combination, with the balcony, of a flooring and balustrade connected together and having an oscillatory engagement intermediate their ends with said balcony, the flooring constructed to form a ladder when swung into proper position, substantially as set forth.

5. The combination, with a balcony, of a flooring and a railing connected with said flooring, said flooring and railing having an oscillatory connection with the balcony intermediate their ends, substantially as described.

6. The combination, with a balcony, of a flooring and a railing connected therewith, said flooring and railing forming a double ladder and having an oscillatory engagement upon the balcony, substantially as described.

7. The combination, with a building or with a balcony engaged thereupon, of a double ladder consisting of a front and a rear ladder, said double ladder having an oscillatory engagement upon a balcony or building and said front ladder forming the balustrade of the balcony, substantially as described.

8. The combination, with a balcony or building, of an extensible ladder having a fixed oscillatory connection therewith, the construction being such that the plane of the ladder swings in a plane parallel with the front of the building, and fastening devices to hold the ladder in position when extended, substantially as set forth.

9. The combination, with a balcony or building, of one or more ladders having a fixed oscillatory connection therewith, the arrangement being such that the plane of the ladder swings in a plane with the front of the building, fastening devices to hold the ladder in a folded position, and an operating-rod to release the fastening devices, substantially as set forth.

10. The combination, with a balcony, of a ladder flooring, the said flooring having an oscillatory engagement intermediate its ends with the balcony and constructed to form a ladder when swung into position, substantially as set forth.

11. The combination, with the balconies of a building, of a series of ladder floorings, each having an oscillatory engagement upon the balcony intermediate its ends, the construction being such that the series of floorings, when swung into a proper position, will form a continuous ladder, substantially as set forth.

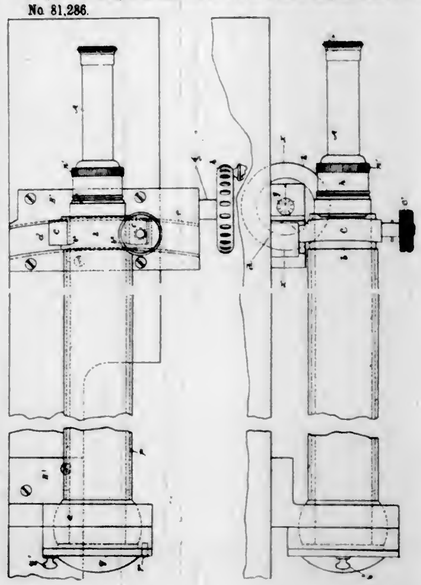
12. The combination, with the balconies of a building, of a series of ladder floorings, each having an oscillatory engagement upon the balcony intermediate its ends, the said series being constructed to form a continuous ladder when swung into proper position, and fastening devices for holding them in said position, substantially as set forth.

444,405. **SLEIGH.** DAVID G. WYETH, Newark, Ohio, assignor to Augustus G. Wyeth and William M. McCully, same place. Filed Dec. 5, 1889. Serial No. 332,718. (No model.)



Claim.—In sleighs, sleds, and sleigh-runner attachments for wheeled vehicles, the combination of two knees *c c'*, with rave *a* and and runner *b*, with unmortised and untenoned joints of said knees and runner and rave, the four side plates *d*, and four T-plates *g*, each of said side plates having two flanges *e*, and each of said T-plates having two flanges *h*, all combined and arranged as substantially set forth.

444,406. **RANGE-FINDING AND SIGHTING APPARATUS.** HARRY ANDREWS, 25 New Road, Woolwich, County of Kent, and JOHN A. NORTON, 49 Curtain Road, County of Middlesex, England, assignors of one-half to Edward W. Creecy, Washington, D. C. Filed Mar. 26, 1889. Serial No. 304,774. (No model.) Patented in England Dec. 21, 1887, No 17,580; in Germany Mar. 29, 1888, No. 47,425; in France Mar. 30, 1888, No. 189,696; in Italy Mar. 31, 1888, No. 23,295, and in Belgium Apr. 16, 1888, No. 81,286.

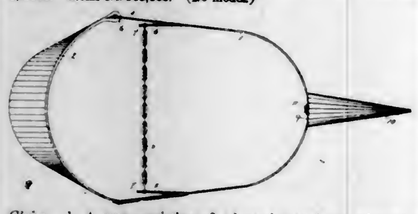


Claim.—1. A machine or other gun having mounted thereon and adjustably secured thereto a sighting-telescope wherein one or more range-finding scales are arranged, in combination with a vertical and a horizontal sighting-line crossing each other, substantially as and for the purpose set forth.

2. The combination, with a machine or other gun, of a range-finding and sighting telescope which is adjustable upon or about a ball-and-socket or other universal joint at its forward end, substantially as and for the purpose set forth.

3. The combination, with a machine or other gun and a telescope pivoted or joined thereto at its forward end, of a worm-wheel segment and a worm or endless screw for effecting the vertical or the lateral or horizontal adjustment of the telescope, (with or without one or more graduated scales,) substantially as and for the purpose set forth.

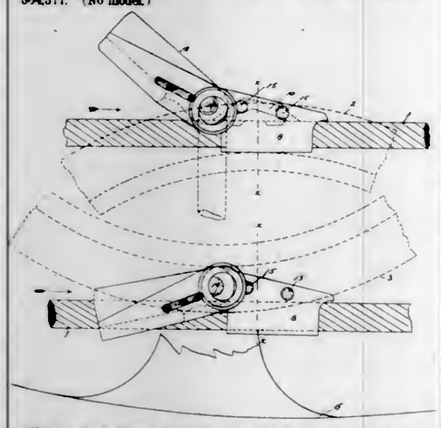
444,407. SPUR. GEORGE J. BANCROFT, Denver, Colo. Filed Sept. 3, 1890. Serial No. 363,865. (No model.)



Claim.—1. A spur consisting of a bow-shaped frame adapted to fit the rear portion of the boot, the free extremities of said frame being bifurcated, one branch of each bifurcated end extending upward and the other downward, suitable attachments secured to these ends for holding the spur securely upon the boot, and a suitable fixed prod secured to the rear central portion of the frame, substantially as set forth.

2. A spur consisting of a bow-shaped frame having its free extremities bifurcated, one branch of each bifurcated end extending upward and the other downward, a strap secured to one of the upper branches and adapted to buckle into the opposite corresponding branch, the lower branches being connected by a chain adapted to pass under the boot, and a horn-shaped or conical prod having its base fixed to the rear central portion of the frame, substantially as and for the purpose set forth.

444,408. BUCKET-CLIP FOR WIRE-ROPE TRAMWAYS. CHRISTOPHER T. FINLAYSON, Denver, Colo. Filed Sept. 8, 1890. Serial No. 364,377. (No model.)



Claim.—1. A device for securing the bucket-pendant to the cable of a wire tramway system, said device consisting of a clamping portion 8 and a part 18, hinged to part 8 and provided with a side projection or wing supporting the bucket-pendant, the center of support being so located that a horizontal line passed therethrough and produced will lie forward of the hinging center of the parts, substantially as described.

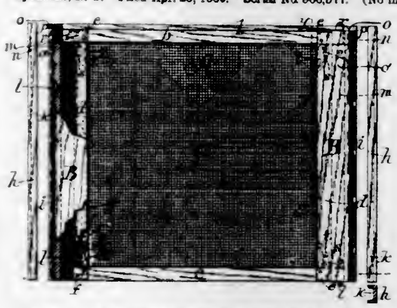
2. A clip for securing the pendent arm to the cable of wire tramway systems, said clip consisting of an adjustable spring-clamp 8, open at the top and provided with a socket for the cable and suitable means of tightening the clamp securely upon the cable, a part 18, hinged to part 8 and provided with a side projection or wing supporting the bucket-pendant, the center of support for the pendant being so located that a horizontal line passed therethrough shall lie forward of the hinging center of parts 8 and 18, substantially as and for the purpose set forth.

3. A clip for securing the bucket-pendant to a wire tramway-cable, said clip consisting of an adjustable clamp, open at the top and provided with a cavity for the cable in its lower portion and a recess located in its upper portion, a wedge 11, lying within said recess and provided with lugs on its under surface engaging the cable, means of tightening the clamp, and an arm 18, hinged to the clamp and provided with a side wing or projection supporting the bucket-pendant, the center of support being somewhat eccentric with the hinging center of parts 8 and 18, whereby part 18 assumes an upward inclination, substantially as and for the purpose set forth.

4. A clip for securing the bucket-arm to the cable of wire tramway systems, said clip consisting of a clamp 8, provided with a cavity for the cable and a recess above said cavity, a wedge lying within said recess and provided with double inclined faces on its upper surface and spiral-shaped lugs on its lower surface, rivets or bolts passing transversely through the clamp above the wedge and engaging each face thereof, whereby the clamp is tightened upon the cable, an arm 18, hinged to part 8 and provided with a side projection or wing supporting the bucket-arm, the center of support lying somewhat eccentric with the hinging center of the parts, substantially as and for the purpose set forth.

5. In a wire tramway system, the combination, with suitable supporting and overhead sheaves, of a clip consisting of a clamp made fast to the cable and an arm hinged to the rear extremity of the clamp and provided with a side projection or wing carrying a box for the reception of the upper extremity of the bucket-arm, the center of said box being somewhat eccentric with the hinging center of the parts, substantially as and for the purpose set forth.

444,409. ADJUSTABLE WINDOW-SCREEN. LE DRU R. POMEROY, Syracuse, N. Y. Filed Apr. 25, 1889. Serial No. 308,577. (No model.)



Claim.—1. In a window-screen, a screen-frame comprising top, bottom, and side rails secured together, the horizontal top rail thereof having upon one or both its sides flush with its top surface a lateral flange extending longitudinally therewith, vertical wings U-shaped in cross-section embracing the lateral edges of the screen-frame by means of a respective lateral slot, and the flange or flanges of the top rail, whose upper horizontal surface lies flush with the upper horizontal surface of the body of said top rail, adapted to rest at their end portions upon the top edge or edges of the transversely U-shaped wings, combined and operating together substantially as described.

2. The combination, in a window-screen, of a rectangular screen-frame comprising top, bottom, and side rails, its horizontal top rail having at its upper portion and flush with its top surface a lateral flange extending longitudinally therewith, vertical movable wings of U shape in cross-section disposed, respectively, at opposite extremities of the screen-frame, the top rail of the screen-frame whose lateral flanged portion projects outwardly substantially in line with the vertical face of the wings extending beyond the side rails of the screen-frame and fitting at each protruding end in a horizontal slot formed in the top portion of the respective wings, said wings inclosing by their vertically-slotted portions the side rails of the screen-frame and adapted to longitudinal adjustment thereon, all the said parts being constructed and operating together substantially as described, and for the purposes specified.

3. In a window-screen, a rectangular screen-frame comprising top, bottom, and side rails secured together, the horizontal top rail thereof having upon one or both its sides flush with its top surface a lateral flange extending longitudinally therewith, vertical wings U-shaped in cross-section respectively embracing the lateral edges of the screen-frame by a lateral slot, a horizontal slot at the top of said wings adapted to receive a projecting end of the flanged top rail of the frame, and cams mounted at the upper and lower portions of the interior of the U-shaped wings, that are adapted to be thrown into or out of frictional contact or engagement with the adjacent top or bottom rails of the screen-frame and hold it and the encompassing wings against lateral movement or displacement, combined together substantially as described, and for the purposes herein specified.

444,410. VEHICLE-WHEEL. EDWARD TAMMEWITZ, Grand Rapids, Mich. Filed June 23, 1890. Serial No. 356,483. (No model.)



Claim.—1. As a new and useful article of manufacture, a wheel having a hollow skein provided with hubs, and hubs provided with receptacles having an opening on one side, arranged to be closed around the end of the spoke by straightening the rim, substantially as and for the purpose set forth.

2. The combination, in a vehicle-wheel, of a hub having a serpentine rim and receptacles for the spokes, with openings in one side, shoulders at the back ends, apertures through the back ends to facilitate bending them to place, spokes having heads at one end to engage with the shoulders on the receptacles, and countersunk heads at the opposite ends to engage with the tire, a tire and a hollow mandrel, substantially as and for the purpose set forth.

3. The combination, in a vehicle-wheel, of a tire, spokes secured in the tire and provided with heads to engage with receptacles having openings on one side, shoulders at the back ends of the receptacles and a web between the receptacles so arranged that by throwing them up in a straight line the receptacles will be closed and the spokes secured firmly, and a hollow skein or shaft provided with shoulders, substantially as and for the purpose set forth.

4. The combination, in a vehicle-wheel, of a tire, spokes secured at one end to the tire, and the other ends provided with heads to engage with the hubs, hubs provided with receptacles arranged with openings on alternate sides, and shoulders formed by apertures through the back ends, a web set serpentine for opening the receptacles, and so set that the straightening of the web will close the receptacles and secure the ends of the spokes, and a hollow skein, substantially as and for the purpose set forth.

5. A hub for a vehicle-wheel, having open receptacles for the spokes of the wheel, an opening at the back ends of the receptacles, forming shoulders, and the receptacles connected by a crooked rim, the straightening of which will close the receptacles around the spokes, substantially as specified.

444,411. REMEDIAL COSMETIC. LOTTIE W. TRENT, Denver, Colo. Filed Nov. 24, 1890. Serial No. 372,549. (No specimens.)

Claim.—The herein-described composition of matter for use as a remedial cosmetic, consisting of Rochelle salt, water, and benzoin, combined substantially in the proportions specified.

444,412. PRINTING-MACHINE. ERNST LIETZE, Cincinnati, Ohio. Filed June 3, 1890. Serial No. 354,168. (No model.)

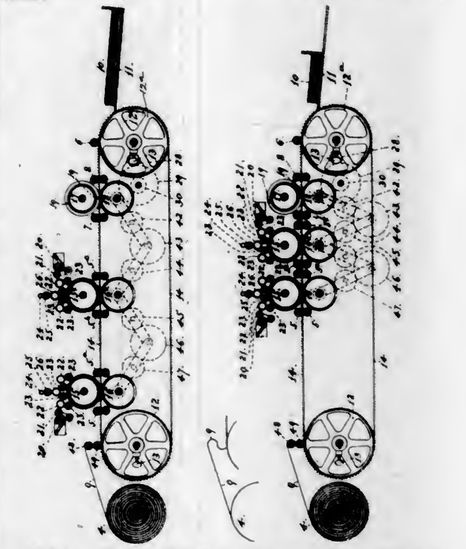
Claim.—1. In a machine for printing a continuous sheet, the combination of two or more pairs of operating-cylinders, the carriages in which said cylinders are mounted being adjustable along the line of the continuous sheet, and flexible trains of gearing transmitting motion from one set of said pairs of cylinders to another, substantially as described.

2. The combination of two or more sliding carriages adjustable with respect one to another, links which are pivoted one to another and to the carriages, gear-wheels whose axes coincide with said pivotal points, and intermediate gear-wheels mounted on said links, whereby motion may be conveyed from the mechanism mounted on one carriage to that mounted on the other independent of the relative positions of said carriages, substantially as described.

3. The combination of a feeding mechanism, a friction member in the line of gearing transmitting motion to said feed mechanism, a detent for the feeding mechanism, the knife-cylinder, and the detent-actuating apparatus which consists of the two cam-plates adjustable one upon the other, substantially as described.

4. The combination of a feed mechanism, a friction member in the line of gearing transmitting motion to said feed mechanism, a detent for the feed mechanism, the knife-cylinder, and the adjustable cam which revolves with said cylinder and actuates the detent, together with the operating cylinder or cylinders revolving at the same circumferential speed as the knife-cylinder, substantially as described.

5. The combination, with a cam which terminates suddenly and rises again gradually, of a detent-lever, a rectangular offset which affords the last bearing-point of the lever upon the cam, and a friction-roller which lifts the lever up onto the cam again, substantially as described.



6. The combination of the feed mechanism, which consists of two endless bands with rows of projections thereon, a set of transverse knives which do not quite extend to the said rows of projections, mounted on a knife-cylinder, and a second set of rotary knives upon a separate cylinder, which cut from the continuous web of material the edges which have been perforated by the feed mechanism, thereby forming a succession of separate sheets, substantially as described.

7. The combination of the feed mechanism, which consists of two endless bands with rows of projections thereon, a set of transverse knives which do not quite extend to the said rows of projections, mounted on a knife-cylinder, and a second set of rotary knives upon a separate cylinder, which cut from the continuous web of material the edges which have been perforated by the feed mechanism, thereby forming a succession of separate sheets, together with the forked and curved guides for removing said perforated edge portions, substantially as described.

8. The friction-gear for intermittent feed mechanism composed of a wheel formed of two parts pressed together by a screw, one of said parts being made hollow to form an oil-reservoir, a leather disk between said parts, and passages from said oil-reservoir to said disk, substantially as described.

REISSUES.

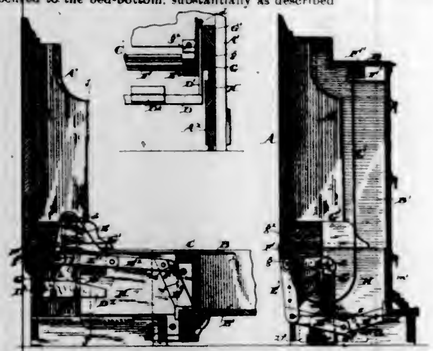
11,137. FOLDING BED. FREDERICK BENNETT, New York, N. Y., assignor, by mesne assignments, to the Hale & Kilburn Manufacturing Company, Philadelphia, Pa. Filed Sept. 26, 1890. Serial No. 366,266. Original No. 428,368, dated May 20, 1890.

Claim.—1. In a folding bed, the vertical stationary frame and the bed-bottom hinged thereto, provided with rigid arms on its lower edge, in combination with the intermediate sections E^2, the head-rail F, provided with the weight-levers E and links E', hinged to the sections E^2, and the weight frame or support pivoted to the levers E, the said head-rail being attached to the mattress and supported loosely at its ends, substantially as described.

2. In a folding bed, the head-rail F, supported upon curved tracks G, secured to the side pieces of the upright portion of the frame and provided near each end with the links E', each formed with a weight-arm E and having the mattress secured thereto, the opposite end of the mattress being secured to the foot-piece of the folding portion of the bed, in combination with the weight-support D D', pivoted to the ends of the said arms E, the intermediate sections E^2, hinged to the links E', and the arms E^3, attached to the bed-bottom and hinged to the intermediate sections E^2, substantially as described.

3. In a folding bed, the upright portion provided with the curved

tracks G and overhanging stops g^3, and the head-rail F, to which the mattress is attached, supported upon its ends on said tracks, in combination with links E', weight-arms E, weight-supports D, pivoted to the said arms E, sections E^3, hinged to the links E', and the arms E^3 secured to the bed-bottom, substantially as described



4. In a folding bed, the combination, with the upright portion provided with the sliding side or splice boards H, of the folding part provided with a projection *m* to engage a flange *m'* on said splice-board for operating the same, substantially as described.

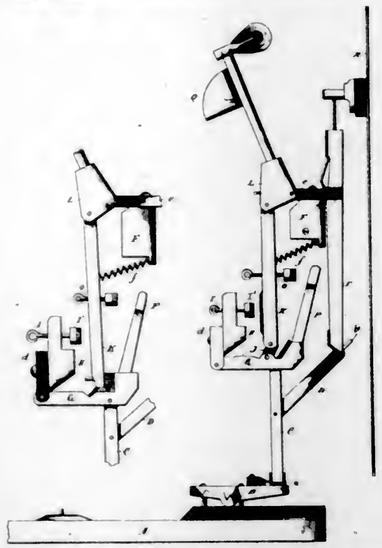
5. In a folding bed, the combination of a bed structure consisting of the upright portion and the bed-bottom or movable bed-bottom portion hinged to the upright portion and forming a gap between the upright portion and side rails of the movable bed-bottom portion when the latter in down, and movable splice-boards sustained at all times by the bed structure and arranged in line with the side rails of the bed-bottom portion and adapted to be shifted in guideways on the said bed structure into position for closing the gap when the bed-bottom or movable portion is lowered.

6. In a folding bed, the combination of the upright portion, the bed-bottom or movable portion hinged to the upright portion and forming a gap between the upright portion and side rails of the movable bed-bottom portion when the latter is down, movable splice-boards arranged in line with the side rails of the bed-bottom portion and adapted to be moved into position for closing the gap when the bed-bottom or movable portion is lowered, guides for said splice-boards carried on the upright portion, and means moved by the bed-bottom or movable portion acting upon said splice-boards to automatically draw them out into position upon lowering the bed-bottom or movable portion.

7. In a folding bed, a stationary part and a movable bed-bottom portion hinged to the stationary part, in combination with movable splice-boards in line with the side rails of the movable bed-bottom portion, and a connection between the movable bed-bottom portion and splice-boards for moving the latter upon opening or closing the bed.

8. In a folding bed, a stationary part and a movable bed-bottom portion hinged to the stationary part, in combination with movable splice-boards in line with the side rails of the bed-bottom portion, a connection between the movable bed-bottom portion and splice-boards for moving the latter upon opening or closing the bed, and counterweights to counterbalance the movable bed-bottom portion and assist it in operating the splice-boards upon closing the bed.

11,138. PIANO-FORTE ACTION. SAMUEL R. PERRY, Scranton, Pa. Filed Aug. 19, 1890. Serial No. 362,447. Original No. 406,405, dated July 2, 1889.



Claim.—1. In a piano-forte action, the short link J, connected directly to the actuating-lever G, and the long link K, said long link K in turn connected directly to the hammer-butt L, as and for the purposes specified.

2. The post P, rigidly attached to the actuating-lever G and combined with the links J and K, for the purposes named.

3. The link J, connected directly to the actuating-lever G, and the long link K, said long link being connected directly to the hammer-butt L and provided with a regulating-screw, and buffer *o*, adapted to engage the rigid post P, in the manner and for the purpose substantially as shown and described.

4. The links J and K, connecting directly the hammer-butt L and actuating-lever G, in combination with spring *f*, for the purpose named.

5. The links J and K, connecting directly the hammer-butt L and actuating-lever G, in combination with the rigid post P, pitman C, arm D, and key-rocker, in the manner and form stated.

6. The links J and K, connecting directly the hammer-butt L and actuating the lever G, in combination with rail H, regulating-screw I, and its buffer, adapted to engage the long link K and check the same, in the manner and for the purpose stated.

7. The links J and K, connecting directly the hammer-butt L and the actuating-lever G, the long link K, provided with a regulating-screw and buffer O, adapted to engage the post P, in the manner and for the purpose specified.

8. The actuating-lever G, routed upon its upper side and adapted to receive the short link J, in the manner specified.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

THE NEW YORK BELTING AND PACKING COMPANY, APPELLANT, *v.* THE NEW JERSEY CAR SPRING AND RUBBER COMPANY.

Decided December 22, 1890.

1. WOFFENDEN—DESIGN FOR RUBBER MATS.

The first claim of Letters Patent No. 11,208, granted George Woffenden, May 27, 1879, for a Design for a rubber mat, declared invalid as being too broad in view of old and well-known instances of producing contrasts and variations in light and shade or stereoscopic effects by depressions or elevations in the surface of materials.

2. SAME.

Whether the peculiar effect—"a sort of kaleidoscope effect"—produced by the particular Design in question impressed upon the substance of india-rubber would constitute a quality of excellence which would give to the Design a specific character and value and distinguish it from other similar designs that have not such an effect, *quære*.

3. SAME—DEMURRER TO BILL.

With reference to claims 2 and 3, *Held* that as they might fairly be regarded as confining the patentee to the specific Design shown and described in the patent, the demurrer to the bill should have been overruled.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. B. F. Lee and *Mr. W. H. L. Lee* for the appellant.

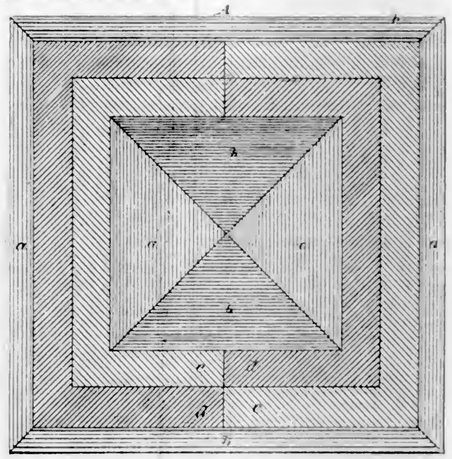
Mr. A. v. Briesen for the appellee.

Mr. Justice BRADLEY delivered the opinion of the Court.

This is a suit in equity brought upon a patent for a design by the New York Belting and Packing Company, assignee of George Woffenden, against the New Jersey Car Spring and Rubber Company. The bill was dismissed upon demurrer, and the case is here on appeal from that decree. The ground for dismissing the bill, as stated by the circuit judge in his opinion, was that the subject-matter of the patent was not patentable, (30 Fed. Rep., 785,) and this is the question which has been discussed on the appeal. The invention claimed in the patent is a new and original design for rubber mats of which the subjoined plate is a diagram.

Referring to the diagram, the specification describes the invention as follows:

In accordance with this design the mat gives under the light different effects, according to the relative position of the person looking at it. If the person changes his position continuously the effects are kaleidoscopic in character. In some cases moiré effects, like those of moiré or watered silk, but generally mosaic effects, are produced. Stereoscopic effects also, or the appearance of a solid body or geometric figure, may at times be given to the mat, and under proper conditions an appearance of a depression may be presented.



The design consists in parallel lines of corrugations, depressions, or ridges, arranged to produce the effects as above indicated.

The drawing represents a mat embodying this design.

A is the mat, which is, as represented, square, although it might be oblong or other desired shape. It is divided into a number of sections, *a b c d*, the corrugations or depressions and ridges in those represented by the same letter being parallel. Thus in the center and outer border formed by the sections *a b* the corrugations extend around the mat parallel with its outer edge and with each other. At the points where each depression crosses the diagonals drawn from corner to corner of the mat through the center it makes a right angle with its previous path. In the intermediate borders the corrugations in the sections *c* are arranged at an angle with those in the sections *d*, and in both they form an angle with the corrugations in the sections *a b*. By the different shading of the sections attempt has been made to represent the mosaic effects produced, which, it will be understood, vary like a kaleidoscope as the observer shifts his position.

The above forms simply one of the many ways in which my invention may be carried into effect. The corrugations in the center and outer border need not extend entirely around the mat; but in each of the sections a depression in one section may be opposite a ridge in the next; and it is not necessary that the corrugations be parallel with the edges of the mat. They may run in any direction. The ridges and depressions in the intermediate borders might be made to form different angles with each other or with those in the other sections, or the borders might be increased or diminished in number. It will, of course, be understood that the effect produced and the manner in which the appearance varies are modified more or less by these changes. Instead of making the corrugations in the center of mat to bend four times, they may be made to change their line of direction any desired number of times in a regular or irregular way—that is to say, instead of having four series of parallel depressions and ridges, a number of series, less or more, arranged at various angles with each other, may be employed. I may divide the mat by a number of imaginary lines representing a projection of any geometrical figure, and in each of the sections so formed make parallel corrugations or alternate ridges and elevations, the different sets of corrugations making with each other the proper angle to give the effects sought for.

To give the moiré effects I usually make the ridges and depressions undulating, while maintaining the parallel position with relation to each other. I desire, therefore, to have it understood that I do not intend to limit the Design to parallel corrugations which are straight throughout any considerable portion of their length, (as represented on the drawing, for example,) but that it includes the undulating ridges and depressions, or other disposition or formation in which the corrugations alter their direction

irregularly, or in which they may be straight for a certain distance and then formed in undulations, and that it includes the corrugations arranged in concentric circles, in spirals, in zigzags, or according to any desired figure.

Having thus described his invention, the patentee claims—

1. A design for a rubber mat, consisting of corrugations, depressions, or ridges in parallel lines, combined or arranged relatively, substantially as described, to produce variegated kaleidoscopic, moiré, stereoscopic, or similar effects, substantially as set forth.

2. A design for a rubber mat, consisting of a series of parallel corrugations, depressions, or ridges, the lines of said corrugations being deflected at one or more points, substantially as set forth.

3. A design for a rubber mat, consisting of a series of parallel corrugations, depressions, or ridges arranged in sections, the general line of direction of the corrugations in one section making angles with or being deflected to meet those of the corrugations in the contiguous or other sections, substantially as described.

The circuit judge in his opinion said:

The patent is an attempt to secure to the patentee a monopoly of all ornamentation upon rubber mats by which variations of light and shade are produced by a series of ridges and depressions, without regard to any particular arrangement or characteristics of the lines except that they are to be parallel. Although there is an illustration in the drawing, and although each claim is for a Design "substantially as described," the language of the specification is carefully expressed so as not to restrict the claims to the Design shown in the drawing, but so that the first claim shall include every variety which can be produced by the arrangement of corrugations, depressions, or ridges in parallel lines; the second, all obtainable when by the arrangement the corrugations are deflected; and the third, all obtainable when by the arrangement of corrugations in sections, those of one section make an angle with those in the contiguous or other sections.

It was not new to produce contrasts and variations in light and shade or stereoscopic effects by depressions or elevations in the surface of materials. It was old to do this by arranging them in parallel lines, as in wood, plaster, and corduroy cloth. It is not novelty which will sustain a Design Patent to transfer to rubber, or to a rubber mat, an effect or impression to the eye which has been produced upon other materials or articles by contrast or variation of light and shade. The design of this patent is not new unless it embodies a new impression or effect produced by an arrangement or configuration of lines which introduces new elements of color or form. This is not claimed.

None of the claims can be limited to design which produces any definite or concrete impression to the eye.

We think that the judge was right in holding that the first claim of the patent is altogether too broad to be sustained, and for the reason stated in the opinion. But as the other claims may fairly be regarded as confining the patentee to the specific design, exhibited in his patent and shown in the drawing, we think that the demurrer should have been overruled, and that the defendants should have been put to answer the bill. Whether or not the Design is new is a question of fact, which, whatever our impressions may be, we do not think it proper to determine by taking judicial notice of the various Designs which may have come under our observation. It is a question which may and should be raised by answer and settled by proper proofs.

There is one feature of this patent which presents an interesting if not a novel aspect. We are in the habit of regarding a Design as a thing of distinct and fixed individuality of appearance—a representation, a picture, a delineation, a device. A Design of such a character, of course, addresses itself to the senses and the taste, and produces pleasure or admiration in its contemplation. But, in the patent before us, the alleged invention is claimed to be something more than such a Design. It is claimed to have an active power of producing a physical effect upon the rays of light, so as to produce different shades and colors according to the direction in which the various corrugated lines are viewed—a sort of kaleidoscope effect. It is possible that such a peculiar effect, produced by such a particular Design, impressed upon the substance of india-rubber, may constitute a quality of excellence which will give to the Design a specific character and value and distinguish it from other similar Designs that have not such an effect. As this is a question which it is not necessary now to decide, we express no opinion upon it.

We reverse the decree of the circuit court and remand the cause, with directions to overrule the demurrer and take such further proceedings in accordance with this opinion as law and justice may require.

U. S. Circuit Court—Eastern District of Pennsylvania.

CONSOLIDATED ROLLER-MILL COMPANY *v.* WALKER.

Decided September 12, 1890.

1. GRAY—ROLLER GRINDING-MILLS—MECHANICAL SKILL.

The first claim of Letters Patent No. 228,525, granted June 8, 1880, to William D. Gray, for improvements in roller grinding-mills, declared invalid as evincing only the exercise of ordinary mechanical or engineering skill.

2. SAME—PRIOR STATE OF ART—CONSTRUCTION OF CLAIM.

In view of the terms of the specification and the prior state of the art, said claim must be limited to the specific organization shown and described and could not be so construed as to cover a roller-mill manufactured in accordance with Letters Patent No. 334,460, granted January 19, 1886, to John T. Obenchain.

3. ANALOGOUS USE.

The application of an old process machine or device to a like or analogous purpose, with no change in the mode of application and no result substantially different in its nature, will not sustain a patent, even if the new form of result has not before been contemplated.

4. SAME—DURATION OF PATENT—R. S., U. S. § 4887.

Under section 4887 of the Revised Statutes, a United States patent runs for the term for which the foreign patent was granted, notwithstanding the lapse or forfeiture of the foreign patent by the non-observance of a condition subsequently prescribed by the foreign patent law.

5. SAME—SAME—SAME.

By the Austrian patent law the "longest duration of privileges is fixed at fifteen years," and every patentee whose privilege has been granted for a shorter period than the longest may claim its prolongation for one or more years within the fixed longest period, provided such prolongation be demanded before the privilege has become extinct. In the original grant of an Austrian patent the allowance of the franchise was for one year, but on request it was four times extended, from year to year, and at the end of the fifth year the franchise was suffered to expire. A United States patent to the same patentee, and for the same invention, was issued after the Austrian patent was granted and during the first year it was in force. *Held*, that by the original grant of the Austrian patent the patentee was invested with the right, at his mere option, to have the patent prolonged for the full term of fifteen years, and that, under section 4887 of the Revised Statutes, the United States patent ran for that term, notwithstanding the expiration of the Austrian patent at the end of its fifth year.

6. SAME—DECISION OF FOREIGN PATENT OFFICE.

Under the Austrian patent law the ministry of commerce, in deciding the question of the length of the term which appertains to every Austrian patent, exercises a judicial function, and its opinion on that subject will be followed here, agreeably to the established rule that the courts of the United States adopt the construction of a statute of a foreign country made by the courts of that country.

Before MCKENNAN and ACHESON, Judges.

Mr. R. Mason for the complainant.

Messrs. Parkinson & Parkinson for the defendant.

ACHESON, *J.*:

The bill in this case charges the defendant with the infringement of two patents relating to roller-mills, one issued to William D. Gray and the other to Udolpho H. Odell; but at the final hearing the suit was pressed only as respects the former patent, and hence the Odell patent may be dismissed from consideration. The patent to William D. Gray is No. 228,525, and was granted June 8, 1880, upon an application filed May 2, 1879. Gray's invention relates to that class of mills in which horizontal grinding-rolls arranged in pairs are employed, and consists, the specification declares,

In the improved arrangement of belts and pulleys for communicating motion to the rolls, and in other minor details.

The patent contains several claims, but infringement of the first claim only is here charged. That claim is in these words:

1. In a roller grinding-mill, the combination of the counter-shaft provided with pulleys at both ends and having said ends mounted in vertically and independantly adjustable bearings, the rolls C E, having pulleys connected by belts with one end of the counter-shaft, and the rolls D F, independently connected by belts with the other end of the counter-shaft, as shown.

The answer sets up, among other defenses, want of novelty and want of patentability and non-infringement. After stating in his specification that driving the rolls by gearing occasions great noise, and also a jarring of the parts of the apparatus and trembling of the mill-floor, in turn causing an unevenness in grinding, and a rapid and uneven wear of the rolls, Gray adds:

To obviate these difficulties, and produce an even, steady motion, I discard the gearing hitherto employed, and substitute therefor a system of belting arranged in a peculiar manner, to give the proper direction and speed to the rolls.

And he mentions, as incident to his arrangement of belting, the further advantage that, by simply removing the pulley of any shaft and replacing it with another of proper size, any desired difference in the speed of the rolls may be obtained, which he states cannot be accomplished except by a complicated arrangement of intermediate wheels, where gearing is used. The specification, after referring to the accompanying drawings, explains the arrangement of the belts thus:

N represents the main driving-belt, which passes to and around the pulley c of the roll C, thence downward and around pulley *b* of the counter-shaft B, thence upward and around pulley e of the roll E, and back to the source of power, imparting to the rolls C and E a motion in one direction, and to the counter-shaft a motion in the reverse direction. From the pulleys *b' b''* on the rear end of the counter-shaft B belts P and R pass upward and around pulleys *d* and *f* of the rolls D and F, as shown in Fig. 2, imparting to said rolls a motion the reverse of that of the rolls C E. In this way the two rolls of each set are caused to revolve toward each other while being all driven from a common source primarily.

To fully understand the particular claim of the patent involved in this controversy, one other paragraph of the specification must be quoted:

In order to adapt the counter-shaft B to perform the double purpose of reversing the motion of certain of the rolls and of acting as a belt-tightener, it is mounted, at opposite sides of the frame or body A, in boxes swiveled or hung in yokes L, sliding vertically in guides or boxes K, and adjusted up and down therein by screw rods or stems S, the swivel-boxes permitting a slightly greater movement of the shaft B at one end than at the other without interfering with its free rotation, and thereby permitting the tightening of the belt or belts at one side of the machine without disturbing those at the other.

Gray's specification, as our quotations therefrom indicate, suggests the idea that he was the first to apply belt-drives to roller grinding-mills. But the fact is otherwise, as the proofs abundantly show. Nor was he the first to discard from such mills cog-gearing and friction-gears altogether, and substitute therefor belt-driving. Confining our attention here to Mechwart's Austrian patent, granted August 3, 1875, we find therein distinctly set forth the disadvantages resulting from the use of spur-gearing in roller grinding-mills—viz., the disagreeable rattling, the rapid wearing away of the gears, and the unequal movement and unequal wearing away of the rollers—and also the inefficiency of driving by means of frictional contact between the rolls, which latter, it is set forth, is only practical when the chop passes the rollers in very thin layers, and not in coarse particles, and is not applicable when an unequal peripheral speed of the rolls is required. All these disadvantages, it is declared, are avoided by Mechwart's invention, which consists in driving both co-operating rolls by means of belts, whereby, also, can be obtained an equal and also an unequal peripheral speed, while the diameter of the rolls, as well as the diameter of the belt-pulleys, can be varied relatively to each other for different objects. Mechwart's drawings show as examples six different arrangements of belting, which he states are intended to illustrate—

only some of the different arrangements of the belt-drive for roller-mills, without exhausting the possible variations in its application.

Fig. 3, Sheet A, shows a machine having two pairs of grinding-rolls, the pairs being vertical, and arranged side by side. A shaft mounted in the machine-frame in fixed bearings carries two pulleys, one at each side of the machine. A belt from one of these pulleys passes around a tightening-pulley at the upper right-hand corner of the machine, thence around a pulley on the upper left-hand roll-shaft, thence around a pulley on the lower right-hand roll-shaft, and thence back to the driving-pulley, and by this belt one roll of each pair is driven. From the other pulley, on the other side of the machine, a belt is arranged in a similar manner, so as to drive the other two rolls of the pair. Without further description of the Mechwart system, it is enough to say that his patent disclosed roller grinding-mills, single and double, with both vertical and horizontal pairs of rolls arranged side by side, driven by means of belts exclusively, his machine being equipped with adjusting or tightening pulleys, and having a shaft journaled directly into the machine-frame and receiving its motion from the prime mover of the mill, either directly or by belt.

But, turning now to machinery employed the in arts generally, it is certain that the use of belt-gearing interchangeably with or as a substitute for cog-gearing was very old and common before Gray's alleged invention. It was, too, an old and familiar expedient to keep the belt adjusted to a proper degree of tightness by means of tightening-pulleys, the shaft of which in revolving sometimes did other work about the machine; and shafts had been made movable in such manner as to tighten belts passing over pulleys on other shafts. It was also old, and very common in machine-shops and factories of various kinds, to provide an individual machine with a counter-shaft mounted directly in the machine-frame, the counter-shaft being driven by a belt from the line-shaft and the machine by a belt from the counter-shaft. Furthermore, it was no new thing to provide the journal boxes or hangers in which counter-shafts are mounted with means for independently adjusting the ends of the shaft.

In view of these things, then, we are unable to discover any patentable subject-matter in the first claim of Gray's patent. The case, it seems to us, falls directly within the established principle that the application of an old process, machine, or device to a like or analogous purpose, with no change in the mode of application and no result substantially different in its nature, will not sustain a patent, even if the new form of result has not before been contemplated. (*Pennsylvania R. Co.* v. *Locomotive E. S. T. Co.*, 110 U. S., 490, 4 Sup. Ct. Rep., 220; *Blake* v. *San Francisco*, 113 U. S., 679, 5 Sup. Ct. Rep., 692.) Moreover, it is quite clear that the application of belting to drive roller grinding-mills, to obviate the difficulties incident to the use of cog-gearing and to secure the advantages set forth in Gray's specification, did not originate with him. Therefore, even were it conceded that his peculiar arrangement is attended with better results than had been attained previously, still this would not sustain the patent: for the mere carrying forward of an original conception, resulting in an improvement in degree simply, is not invention. (*Burt* v. *Evory*, 133 U. S., 349, 10 Sup. Ct. Rep., 394.) After the most careful study of the subject, we think the conclusion is unavoidable that the combination set forth in Gray's first claim evinces only the exercise of ordinary mechanical or engineering skill, as the same has been defined by the Supreme Court and illustrated by so many recent decisions of that tribunal. (*Hollister* v. *Manufacturing Co.*, 113 U. S., 59, 5 Sup. Ct. Rep., 717; *Thompson* v. *Boisselier*, 114 U. S., 1, 5 Sup. Ct. Rep., 1042; *Aron* v. *Railway Co.*, 132 U. S., 84, 10 Sup. Ct. Rep., 24; *Hill* v. *Wooster*, 132 U. S., 693, 701, 10 Sup. Ct. Rep., 228; *Howe Machine Co.* v. *National Needle Co.*, 134 U. S., 388, 10 Sup. Ct. Rep., 570.)

It seems to be proper for us to add that our judgment is with the defendant upon the defense of non-infringement also. To understand the nature of the invention intended to be covered by the first claim, resort must be had to the specification, and we there find that the "swivel-boxes" are essential to the contemplated greater movement at one end of the shaft than at the other, whereby is effected "the tightening of the belt or belts at one side of the machine without disturbing those at the other." This is apparent on the face of the paragraph hereinbefore quoted at length; and the expert testimony is direct and convincing that, to the practical working of the described device as a belt-tightener, this swiveling feature is indispensable. Without the swiveled boxes Gray would not have "independently-adjustable bearings." True, those boxes are not expressly mentioned in the claim, but we think they are to be regarded as entering therein by necessary implication for the reason just stated, as well as by force of the words "as shown." Moreover, the prior state of the art would limit the claim to the specific organization shown and described. (*Caster Co.* v. *Spiegel*, 133 U. S., 360, 369, 10 Sup. Ct. Rep., 409.) But that organization the defendant does not use. His alleged infringement consists in the use of a roller-mill, manufactured under and in accordance with Letters Patent No. 334,460, granted January 19, 1886, to John T. Obenchain. In the defendant's machine the journal-boxes are rigidly supported, so as to be always horizontal and incapable of any tilting or swiveling motion, and this is essential to the working of the apparatus. A continuous counter-shaft is not employed, but three coupled base-shafts, the outer shafts or sections being each journaled at the outer end in a vertically-adjustable non-swiveling box and the inner end of each being forked and carrying a loosely-pivoted ring. These two rings are connected by a tumbling rod, forked at each end and pivoted to the rings, thus forming a universal coupling, and thereby, through the central shaft or tumbling-rod, rotary motion is transmitted from one of the end-shafts or sections to the other, no matter how much they may differ in vertical position.

Now, for the reasons already given, we are of opinion that such a construction of Gray's first claim as would embrace the Obenchain device is inadmissible. The foregoing views being decisive of the case, we deem it unnecessary for us to consider the other grounds of defense.

I am authorized by Judge McKennan to state that he concurs in the conclusions announced in the foregoing opinion.

October 10, 1890.

ACHESON, *J.*, (MCKENNAN concurring:)

Since the filing of our opinion we have been requested by the plaintiff's counsel, with a view to the final determination of the rights of the parties under a contemplated appeal to the Supreme Court after decree entered, to consider and pass on the question raised by the answer as to the effect of the expiration of two foreign patents—viz., a German patent and an Austrian patent—granted to William D. Gray upon the term of his United States patent, and, as the proofs are full and the question was elaborately argued, we accede to the request.

As to the German patent, little need be said. It was granted March 5, 1879, for the usual term of fifteen years, and expired and was canceled in consequence of the failure to pay the tax for the seventh year of the term. The case, then, as respects this patent, comes directly within the ruling of the Supreme Court in *Pohl* v. *Brewing Co.*, (134 U. S., 381, 10 Sup. Ct. Rep., 577,) in which it was held that, under section 4887 of the Revised Statutes, a United States patent runs for the term for which the foreign patent was granted, notwithstanding the lapse or forfeiture of the foreign patent by the non-observance of a condition subsequently prescribed by the foreign patent law.

By the fourth section, clause 25, of the Austrian patent law, (the imperial decree of August 15, 1852, 1 Abb. Pat. Laws, 15,) in force when Gray's United States patent was granted, "the longest duration of privileges is fixed at fifteen years." Clause 27 provides as follows:

> Every patentee whose privilege has been granted for a shorter period than the longest may claim its prolongation for one or more years within the fixed longest period, provided they demand such a prolongation before the privilege has become extinct. To obtain such a prolongation, a petition for the same must be delivered in due time, together with the original patent, and the tax in full for the required term of prolongation, or the receipt for the same from a public treasurer.

The Austrian patent to Gray was granted December 17, 1879. The term of the franchise as originally allowed was for one year, but on request it was four times extended, from year to year, and at the end of the fifth year the franchise was suffered to expire. The seventh section, clause 42, of the Austrian patent law, provides thus:

> The ministry of commerce and trades alone decides the question whether a patent, from any legal cause whatever, is to be considered as null and void, or as extinct. It therefore especially decides the question of the novelty of a discovery, invention, or improvement; moreover, the question as to whether it had only been imported from abroad and was not appropriate for a privilege. Finally, in contestations arising between two patentees, the ministry decides the question of the total or partial identity of their privileges.

The plaintiff has put in evidence a duly-authenticated copy of the official opinion of the Austrian ministry of commerce, dated October 10, 1888, from which we quote:

> The imperial and royal ministry of commerce certifies herewith: (1) That according to section 25 of the imperial decree of August 15, 1852, No. 184 of the Publication of the Laws of the Realm, the longest term of duration for all patents granted is indiscriminately fixed at fifteen years, which longest term of duration runs on uninterruptedly, provided the patentee fulfills the conditions mentioned, (sub. 27) and that this original term of fifteen years appertains to every Austrian patent granted in accordance with the imperial decree of August 15, 1852, No. 184 of the Publication of the Laws of the Realm, without exception. * * * (3) That in so far as in the deed of an Austrian patent granted according to the above-mentioned law one or more years are named in connection with the statement of the grant of the patent, this reference to one or more years has exclusively the purpose of stating that the annuity has been paid in advance for one or more years, and that by such reference the actual term of the patent is by no means touched upon, this term being, as above mentioned, fixed at the term of fifteen years.

It is, we think, clear that under the Austrian patent law the ministry of commerce, in deciding the question when patents terminate, exercises a judicial function; and, if so, then its opinion on that subject, cited above, is controlling here, agreeably to the established rule that the courts of the United States adopt the construction of a statute of a foreign country made by the courts of that country. (*Cathcart* v. *Robinson*, 5 Pet., 264.) And upon that view it would follow that by the original grant of the Austrian patent to Gray he was really invested with the lawful term of fifteen years, although the grant of the franchise purported to be for one year only. But upon an independent consideration of the question the same practical result, in our opinion, must be reached. In *Refrigerating Co.* v. *Hammond*, (129 U. S., 151, 9 Sup. Ct. Rep., 225,) it was held that where, under the Canada act, a patent was originally granted January 9, 1877, for the period of five years, but there was an extension for a further period of five years, and then a second extension for a like period, the extensions being a matter of right at the option of the patentee, a United States patent granted during the first period of the Canadian patent did not expire before the end of the fifteen years. Now that the fact that the Canadian patentee exercised his option, and thus kept the patent in force, was not a controlling circumstance appears from the declaration of Mr. Justice Blatchford, who, after reciting the facts, says:

> Therefore the Canadian patent does not expire, and it never could have been properly said that it would expire, before January 9, 1892.

This observation was the subject of special comment in the opinion of the Court, delivered by the same learned justice, in *Pohl* v. *Brewing Co.*, *supra*, which established the principle that the duration of a United States patent is not affected by the fact that a prior foreign patent has been suffered to lapse by non-payment of a tax or for other failure to comply with the requirements of the foreign patent law. It seems, therefore, to be the logical and necessary conclusion from these two decisions of the Supreme Court that if, by the foreign law under which a patent is granted the patentee, by virtue of the original grant, is invested with the right, at his mere option, to have the patent extended or prolonged for a fixed term, it is this latter term which limits the United States patent, under section 4887 of the Revised Statutes. Thus is the life of the United States patent definitely fixed when it is granted, and its duration is not left in perplexing uncertainty, depending upon the future exercise of an option in a foreign country, or the observance there of conditions subsequent. We have only to add that Gray's right to prolong his Austrian patent for the full term of fifteen years was as clear as was the right of the Canadian patentee in *Refrigerating Co.* v. *Hammond*, *supra*.

Our conclusion here does not conflict with the decision in *Commercial Manuf'g Co.* v. *Fairbank Canning Co.*, (135 U. S., 176, 10 Sup. Ct. Rep., 718,) for in that case the question ruled, both in the court below (27 Fed. Rep., 78) and in the Supreme Court, was as to the identity of the United States patent with the Austrian patent. Upon this branch of the case, then, our judgment is favorable to the plaintiff, but for the reasons expressed in our original opinion the decree must be for the defendant.

Let a decree be drawn dismissing the bill of complaint, with costs.

U. S. Circuit Court—Eastern District of Missouri.

AMERICAN ROLL PAPER COMPANY *v.* KNOPP *et al.*

Decided November 8, 1890.

1. PRIORITY OF INVENTION—DATE OF APPLICATION AS EVIDENCE—BURDEN OF PROOF.

Where in a suit for infringement it appeared that the patent in suit was granted August 13, 1889, on an application filed December 2, 1887, and renewed March 28, 1889, and that the defendants manufactured and sold the alleged infringing machine made in accordance with Letters Patent issued to defendants' assignor December 4, 1888, on an application filed September 8, 1888, *Held*, assuming that defendants' machine embodied substantially the same invention claimed and described in the patent in suit, and that the device of said patent possessed patentable novelty, that, under the circumstances and in the absence of other evidence, the court would not presume that plaintiff's assignor was the first inventor, simply because his application for a patent was first filed. *Held*, further, that the burden was on the plaintiff to establish that he was the first inventor; that such fact had not been shown, and that it was just as reasonable to infer that defendants' assignor was the first inventor.

2. RIGHT OF PATENTEE TO REFRAIN FROM MAKING, USING, AND SELLING HIS INVENTION.

Where in a suit for infringement it appeared that plaintiff was not manufacturing and had not manufactured or sold any machines under the patent in suit, but manufactured a machine made under an earlier patent and seemed to be using the latter patent merely to keep other manufacturers out of the market, *Held* that, whatever its technical right to make use of the patent might be, its conduct evidently deprived the public of whatever advantage the patent in suit possessed, contrary to the true policy of the patent laws.

Mr. George H. Knight for the complainant.

Mr. Paul Bakewell for the defendants.

THAYER, *J.*:

In this case it appears that the roll-paper machine manufactured and sold by defendants is manufactured strictly in accordance with the specification and draw-

ings of Letters Patent of the United States No. 394,121, owned by defendants, and issued to Edward L. Knopp December 4, 1888, the application for which was filed September 8, 1888.

Complainant's contention is that defendants' machine embodies substantially the same invention claimed and described in Letters Patent of the United States No. 409,028, granted to the complainant as assignee of Leo Erlich on August 13, 1889, the application for which appears to have been filed December 2, 1887, and was renewed March 28, 1889. Its contention is, also, that the machine is an infringement of the Erlich patent.

Assuming, but without deciding, that it is substantially the same invention, and that the Erlich device possesses patentable novelty, still complainant cannot recover in this case (defendants' patent having been first granted) unless it is shown in some way that Erlich was the original and first inventor of the device, and it has not been so shown to my satisfaction.

There is no evidence in the record as to whether Knopp or Erlich was the original and first inventor, unless the fact that Erlich's application for a patent was first filed creates a presumption that he was the first inventor; but the date of an application for a patent does not necessarily or ordinarily indicate the true date at which the invention was made, because inventors sometimes, if not often, fail to make an application for a patent for months after the invention is complete.

In the case at bar it appears, as before stated, that Knopp first obtained a patent, although Erlich's application for one was first placed on file.

Under the circumstances and in the absence of other evidence on the subject, the court will not presume that Erlich was the first inventor, and the burden is on complainant to establish that fact. It is just as reasonable to infer that Knopp was the first inventor.

I have not stopped to consider whether in a bill of this character, which is merely a suit for infringement, it is competent for the complainant to show that Erlich was the first inventor of the alleged infringing device, and thus invalidate the prior Knopp patent. For present purposes it is sufficient to say that if the fact in question may be shown it has not been, and a decree must go against the complainant on that ground.

Another feature of the case justifies comment. It was admitted at the hearing that the complainant is not manufacturing and has not manufactured any machines under the Erlich patent or put them on the market in any manner. It is manufacturing a machine made under a patent granted five years previous to the Erlich patent, which it evidently considers superior to the Erlich machine, and seems to be using the latter patent merely to keep other manufacturers of roll-paper machines out of the market.

Whatever its technical right to make such use of the patent may be, its conduct in this respect evidently deprives the public of whatever advantages the Erlich invention possesses, contrary to the true policy of the patent laws.

The bill is dismissed.

U. S. Circuit Court—Southern District of Iowa.

WESTINGHOUSE *v.* CARPENTER.

Decided June 29, 1888.

DISSOLUTION OF INJUNCTION—EXPIRATION OF PATENT.

After a patent, the infringement of which has been enjoined, expires, the injunction will be dissolved without reference to such articles as were manufactured while the patent was alive. The patentee may recover damages for such acts of infringement.

ON motion to dissolve injunction.

Bill by George Westinghouse against J. Fairchild Carpenter for the infringement of complainant's patent.

Mr. J. Snowden Bell, Mr. Nathaniel French, Mr. George H. Christy, and *Mr. William Bakewell* for the complainant.

Messrs. Banning & Banning for the defendant.

Before MILLER and LOVE, Judges.

MILLER, *J.*:

We are of the opinion that the motion ought to be granted. The attorney for the plaintiff practically concedes from the decisions of the courts on that subject that the motion to dissolve the injunction should be granted on account of the expiration of the patent which expired a few days ago with the expiration of a prior English patent. He, however, insists that the injunction should be continued as to the use and sale of those articles which were manufactured and sold while the patent was alive, the manufacture of which was an infringement of this patent; that he should have the benefit of having forbidden them while the patent was in existence, and that the injunction should be continued as to the selling or using of those manufactures, notwithstanding the expiration of the patent. We are of the opinion that with the expiration of his patent the plaintiff's right to forbid anybody to make, sell, or use the articles to which this invention refers expires. His monopoly is continued for seventeen years by law, or whatever period the law allows his patent to run. That monopoly is against the making, selling, or using of such articles. He has the benefit of that monopoly, and has had that benefit with regard to those articles in which he now asks to be further protected. He may recover the damages he has sustained, in this suit, which is still pending in this court. He may recover for the damages which were inflicted before the injunction was brought. And he still asks that the court shall enjoin the sale and use of those articles for which he expects to get damages. Speaking for myself—and also for Judge Love—I do not believe that is the true doctrine on this subject. There are some particular circumstances showing that the use of this patented article was an experiment to see whether it could be used successfully in this country; and, under all the circumstances, we are disinclined to make any modification of the motion to dissolve the injunction, but dissolve it absolutely.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 2. TUESDAY, JANUARY 13, 1891. PRICE---$5 per year.

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Changes of Classification.

(ORDER No. 658.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., January 7, 1891.

The following sub-classes are hereby established in Division XVI:

177. Electric Signaling:
Annunciators—
Drop,
Step-by-step.

178. Telegraphy:
Telegraphs, printing—
Multiple-wheel,
Wheel.

179. Telephony:
Calls—
Strength and polarity,
Step-by-step,
Reed.

C. E. MITCHELL,
Commissioner

Indexes to Foreign Patents.

The following indexes to foreign patents have been translated, compiled, and published under the authority of the Commissioner of Patents, and may be obtained as a Patent Office publication at the prices given below:

INDEX TO FRENCH PATENTS, 1791 to 1876, inclusive, (subject-matter, one volume, 935 pages, bound in cloth $10 00

INDEX TO ITALIAN PATENTS, 1848 to May 1, 1882, (subject-matter,) one volume, 120 pages—
Bound half-turkey 2 50
Bound in cloth 1 25
Paper covers 1 00

Protection of Industrial Property.

DEPARTMENT OF STATE,
Washington, August 14, 1890.

SIR: I have the honor to inform you that this Department has been officially notified by the Swiss Government that the Dominican Republic has re-adhered to the International Convention for the Protection of Industrial Property.

I have the honor to be, sir, your obedient servant,
WILLIAM F. WHARTON,
Acting Secretary.

The Secretary of the Interior.

Issue of January 13, 1891.

Patents	391	No. 444,413 to No. 444,806, inclusive.
Designs	9	No. 20,475 to No. 20,483, inclusive.
Trade-Marks	26	No. 18,822 to No. 18,847, inclusive.
Labels	9	No. 6,410 to No. 6,418, inclusive.
Reissue	1	No. 11,139.
Total issue	439	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire	4	
Arkansas	2		New Jersey	19	
California	20		New Mexico Territ'y		
Colorado	9	1	New York	71	12
Connecticut	12	1	North Carolina	1	
Delaware			North Dakota	2	
District of Columbia	4		Ohio	23	
Florida			Oregon	2	
Georgia	2		Pennsylvania	32	2
Idaho	1		Rhode Island	1	
Illinois	49	1	South Carolina		2
Indian Territory			South Dakota	1	
Indiana	9	1	Tennessee	2	2
Iowa	8		Texas	7	1
Kansas	4		Utah Territory		
Kentucky	5		Vermont		
Louisiana	2		Virginia	3	
Maine	2		Washington	1	
Maryland	1	3	West Virginia	3	
Massachusetts	37	2	Wisconsin	9	
Michigan	7		Wyoming		
Minnesota	8	1	U. S. Army		
Mississippi			U. S. Navy		
Missouri	6				
Montana			Total to citizens of the United States	372	29
Nebraska	3				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Mexico	1	
Austria-Hungary	1		Netherlands		1
Belgium			Newfoundland		
Bermuda			New South Wales	2	
Brazil			New Zealand		
Canada	4	2	Portugal		
Chili			Queensland		
Colombia			Russia		
Cuba			Scotland		
Denmark			South Africa		
Ecuador			South Australia		
England	7		Sweden		
Finland			Switzerland	2	
France	4	1	Victoria	1	
Germany	9	2	West Indies		
Hawaii					
Italy			Total to citizens of foreign countries	31	6
Japan					

DESIGNS.

20,475.—HANDLE SOCKET AND PLATE.—*Max Bremer*, New Bedford, Mass., assignor to *The Fairpoint Manufacturing Company*, same place. Application filed August 1, 1890. Serial No. 360,718. Term of patent 14 years.

20,476.—WATCH-CASE.—*John C. Dueber*, Newport, Ky. Application filed December 5, 1890. Serial No. 373,728. Term of patent 14 years.

20,477.—JEWEL-SETTING.—*Louis Mann*, New York, N. Y. Application filed October 21, 1890. Serial No. 368,866. Term of patent 7 years.

20,478.—GAME-BOARD.—*Elijah C. Sherman*, Montrose, Pa. Application filed October 18, 1890. Serial No. 368,608. Term of patent 7 years.

20,479.—HIP-TERRET. *George L. Buck*, Stewartsville, Mo. Application filed July 17, 1890. Serial No. 359,340. Term of patent 7 years.

20,480.—LATCH.—*David D. Nolley*, Wilson, N. C. Application filed November 15, 1890. Serial No. 371,604. Term of patent 7 years.

20,481.—OIL-BOX.—*Albert Schmid*, Allegheny, Pa. Application filed December 13, 1890. Serial No. 374,644. Term of patent 14 years.

20,482.—RANGE BACK AND SHELF.—*John F. Brayer* and *Edward J. King*, Rochester, N. Y., assignors to *The Co-Operative Foundry Company*, same place. Application filed June 25, 1890. Serial No. 356,729. Term of patent 7 years.

20,483.—WATCH-BRIDGE.—*Adrien Philippe*, Geneva, Switzerland, assignor to *Patek, Philippe & Co.*, same place. Application filed September 19, 1890. Serial No. 365,550. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

18,822.—VEGETABLE REMEDIES FOR EXTERNAL AND INTERNAL USE. *American Herbal Medicine Company*, New York, N. Y. Application filed November 12, 1890. Used since September 29, 1890.
"The representation of a shield and the letters and abbreviation 'A H M Co.'"

18,823.—MEAL FOR LIVE STOCK.—*Bowker Fertilizer Company*, Boston, Mass. Application filed November 26, 1890. Used since October 1, 1890.
"The word 'FISH-MEAL.'"

18,824.—MANGANESE BRONZE.—*B. H. Cramp & Co.*, Philadelphia, Pa. Application filed November 28, 1890. Used since December 1, 1885.
"The words 'AMERICAN MANGANESE' within a triangular figure."

18,825.—CERTAIN NAMED CHEMICALS.—*Chemische Fabrik auf Actien, vormals E. Schering*, Berlin, Germany. Application filed December 12, 1890. Used since November, 1870.
"The representation of a star with radiating lines and the letters 'E S.'"

18,826.—REMEDY FOR DROPSY.—*Julia Edwards*, Montreal, Canada. Application filed November 17, 1890. Used since November 10, 1890.
"The word 'SALVODROP.'"

18,827.—PRINTING AND LITHOGRAPHING INKS.—*Kast & Ehinger*, Stuttgart, Germany. Application filed December 9, 1890. Used since May 3, 1880.
"The representation of a raised shield, on which are placed a color-roller for printing-presses and the staff of Mercury."

18,828.—COOKING SODA.—*The Southern Soda Works*, Nashville, Tenn. Application filed December 13, 1890. Used since August 1, 1890.
"The representation of a star and the words 'STAR BRAND.'"

18,829.—BAKING-POWDER.—*Guy D. Arbuckle*, Denver, Colo. Application filed December 2, 1890. Used since March 22, 1889.
"The fac-simile signature 'ARBUCKLE'S.'"

18,830.—WINES.—*Barkhausen & Co.*, Bordeaux, France. Application filed October 3, 1890. Used since July 1, 1890.
"The representation of a cross pattee or formee with four red ends."

18,831.—SLICED CURED MEAT.—*Charles A. Beckford*, Albany, N. Y. Application filed November 12, 1890. Used since November 5, 1890.
"The representation of a piece of meat with a knife plunged into it."

18,832.—SAFETY-PINS.—*Consolidated Safety Pin Co.*, New York, N. Y. Application filed December 1, 1890. Used since February 19, 1889.
"The word 'DUPLEX.'"

18,833.—TIN AND TERNE PLATES.—*Rob. Crooks & Co.*, Liverpool, England, and New York, N. Y. Application filed December 15, 1890. Used since January 30, 1875.
"The letters 'W. L.'"

18,834.—TIN AND TERNE PLATES.—*Rob. Crooks & Co.*, Liverpool, England, and New York, N. Y. Application filed December 15, 1890. Used since February 24, 1875.
"The letters 'WER.'"

18,835.—WHISKY.—*Henry Corby*, Belleville, Canada. Application filed October 25, 1890. Used since May 1, 1890.
"The letters 'X. T. C.'"

18,836.—CANDIES.—*Costello & Co.*, Rochester, N. Y. Application filed December 8, 1890. Used since January, 1890.
"The words 'THE EXQUISITE.'"

18,837.—WHISKY.—*Charles Galdsborough*, Baltimore, Md. Application filed December 2, 1890. Used since August, 1887.
"The words 'THE WILSON DISTILLERY COMPANY.'"

18,838.—ARTICLES MADE WHOLLY OR IN PART OF SILVER.—*Daniel Low*, Salem, Mass. Application filed October 3, 1890. Used since July 1, 1890.
"The word 'WITCH.'"

18,839.—GIN.—*Arnoldus C. A. Nolet*, Schiedam, Holland. Application filed July 2, 1890. Used since 1882.
"The word 'MONOGRAM.'"

18,840.—[Withdrawn.]

18,841.—WATCHES.—*Jules Racine & Co.*, New York, N. Y., and Chicago, Ill. Application filed December 4, 1890. Used since July 1, 1883.
"The word 'SUCCESS.'"

18,842.—WATCHES.—*Jules Racine & Co.*, New York, N. Y., and Chicago, Ill. Application filed December 4, 1890. Used since July 1, 1889.
"The words 'NATIONAL PARK.'"

18,843.—BRASS AND COPPER SHEETS, TUBING, AND WIRE.—*The Bridgeport Brass Company*, Bridgeport, Conn., and New York, N. Y. Application filed November 8, 1890. Used since October, 1890.
"The capital letters 'B B' with the abbreviation 'Co.'"

18,844.—WRITING AND TYPE-WRITER PAPER.—*Wyckoff, Seamans & Benedict*, New York, N. Y. Application filed December 3, 1890. Used since February 9, 1885.
"The word 'PARAGON.'"

18,845.—WRITING AND TYPE-WRITER PAPER.—*Wyckoff, Seamans & Benedict*, New York, N. Y. Application filed December 3, 1890. Used since February 9, 1885.
"The word 'REGENT.'"

18,846.—GLOVES.—*Alice L. Frooman Wood*, Minneapolis, Minn. Application filed December 9, 1890. Used since March 1, 1882.
"The representation of a pair of gloves and the figure of a cupid."

18,847.—COTTON TWINE.—*William J. Hooper*, Baltimore, Md. Application filed December 12, 1890. Used since October 1, 1890.
"The words 'FISHERMEN'S CHOICE.'"

LABELS.

6,410.—Title: "GOLDEN SEAL COMPOUND." (For medicine.)—*American Herbal Medicine Company*, New York, N. Y. Application filed November 6, 1890.

6,411.—Title: "QUICK RELIEF." (For medicine.)—*American Herbal Medicine Company*, New York, N. Y. Application filed November 6, 1890.

6,412.—Title: "WHITE PINE AND MULLEIN COUGH REMEDY."—*Robert L. Eves*, Nashville, Tenn. Application filed December 16, 1890.

6,413.—Title: "SOUTH CAROLINA CHOICE." (For plug-tobacco.)—*Florence Tobacco Manufacturing and Warehouse Company*, Florence, S. C. Application filed November 8, 1890.

6,414.—Title: "FLORENCE COUNTY." (For plug-tobacco.)—*Florence Tobacco Manufacturing and Warehouse Company*, Florence, S. C. Application filed November 8, 1890.

6,415.—Title: "BUTTERMILK TOILET SOAP."—*L. Wilbert*, Chicago, Ill. Application filed November 28, 1890.

6,416.—Title: "HIGHSPIRE." (For whisky.)—*Charles Goldsborough*, Baltimore, Md. Application filed December 2, 1890.

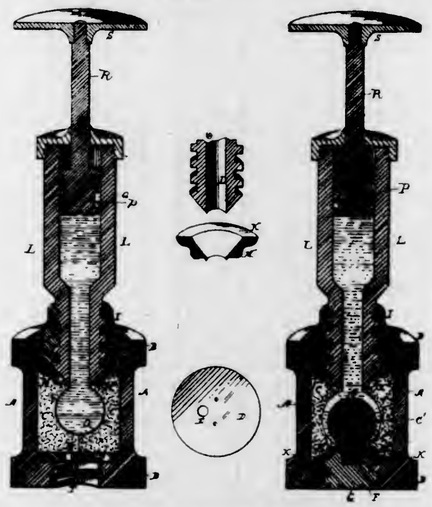
6,417.—Title: "GRANULAR EFFERVESCENT BROMO LITHIA."—*William R. Warner*, Philadelphia, Pa. Application filed December 15, 1890.

6,418.—Title: "DETCHON'S COMPOUND EXTRACT OF GRAVEL PLANT." *Irwin A. Detchon*, Crawfordsville, Ind. Application filed December 20, 1890.

PATENTS

GRANTED JANUARY 13, 1891.

444,413. MEANS FOR ORNAMENTING SHEET-METAL ARTICLES. BERNARD M. ABELL, New York, N. Y. Filed Nov. 11, 1890. Serial No. 371,114. (No model.)



Claim.—1 The casing containing the die whose matrix incloses the blank, combined with the threaded nut at the upper end of said casing, the water-cylinder held in said nut and supporting a column of water in contact with the walls of said blank, and the plunger in said cylinder, substantially as and for the purposes set forth.

2. The casing containing the die whose matrix incloses the blank, combined with the threaded nut at the upper end of said casing, the collar or ring between said nut and said die, the water-cylinder held in said nut and seated on said collar, and the plunger in said cylinder, substantially as set forth.

3. The casing containing the die whose matrix incloses the blank, said casing having the shoulder H, combined with the internally-threaded nut I, having the shoulder J, the roller K between said die and said nut, the externally-threaded water-cylinder L, held within said nut, and the plunger within said cylinder, substantially as set forth.

4. The casing containing the die whose matrix incloses the blank, combined with the collar which grips the flange of said blank against said die, the internally-threaded nut in the end of said casing, and the water-cylinder screwed into said nut and containing the plunger, substantially as set forth.

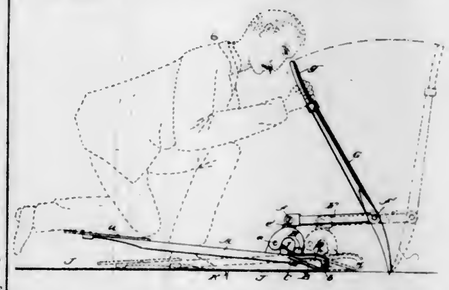
5. The casing containing the die whose matrix incloses the blank, combined with the internally-threaded nut at one end of said casing, the screw-plug and collar at the other end of said casing, the die within said blank, the water-cylinder held in said nut and supporting a column of water in contact with said blank, and the plunger in said cylinder, substantially as set forth.

444,414. RETICULE OR POCKET-BOOK. ADDIE ALDRICH, Cincinnati, Ohio. Filed Feb. 14, 1888. Serial No. 264,040. (No model.)

Claim.—A folding reticule consisting of a front, back, and flap portion connected together and having attached to the back portion a box with a hinged covering, the front portion being provided with a loop and side flaps, and a leaf connected at the junction of the back and front portions, substantially as described.



444,415. CARPET OR OIL-CLOTH STRETCHER. ANDREW R. ANDERSON, New York, N. Y. Filed Mar. 13, 1890. Serial No. 343,691. (No model.)



Claim.—1. The combination, in a carpet and oil-cloth stretcher, of a stretcher-bar having at its rear end or part a knee or presser plate and provided at its forward end with a fixed clamping-jaw, a relatively movable clamping-jaw pivoted to the stretcher-bar, an operating-lever, and a link connecting said lever with the movable clamping-jaw, substantially as described, for the purposes set forth.

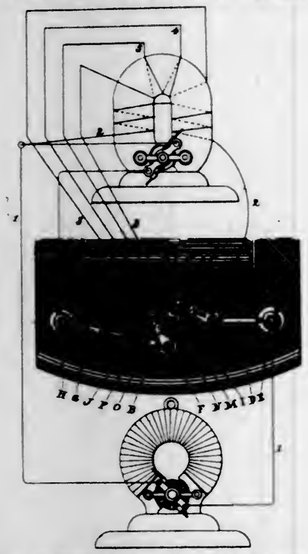
2. The combination, in a carpet and oil-cloth stretcher, of a stretcher-bar having at its rear end or part a knee or presser plate provided with removable spurs, said bar having at its forward end a fixed clamping-jaw, a relatively movable clamping-jaw pivoted to the stretcher-bar, an operating-lever, and a link connecting said lever with the movable clamping-jaw, substantially as described, for the purposes set forth.

3. A combined carpet and oil-cloth stretcher, consisting of a stretcher-bar provided with a head-plate, an operating-lever, the interchangeable clamp D E and toothed plate I, and a link connection between the bar and lever, substantially as and for the purposes set forth.

4. The combination, in a carpet and oil-cloth stretcher, of a main stretcher-bar A, having a rear knee or presser plate *a* and a front head-plate B, provided with an upturned perforated flange *b*, a clamp-jaw D, held to the head-plate, a movable clamp-jaw E, pivoted to the bar A, pointed operating-lever G, and a link F, connecting said lever with the clamp-jaw E, substantially as described, for the purposes set forth.

5. In a carpet and oil-cloth stretcher, the main stretcher-bar provided with a head-plate B, having an upturned perforated flange *b*, a removable concavo-convex stationary clamp-jaw D, held to the head-plate and having a groove *d* interlocking with the flange *b*, a movable clamp-jaw E, pivoted to the stretcher-bar, an operating-lever, and a link connecting the movable jaw and lever, substantially as herein set forth

444,416. ELECTRIC MOTOR. WILLIAM A. ANTHONY, Manchester, Conn. Filed May 14, 1890. Serial No. 351,743. (No model.)



Claim.—1. An electric motor the field-magnet of which is wound with a shunt-wire, the ends of which are connected with the main conductor at points on opposite sides of the motor, and is also wound with a resistance-wire separate from the shunt-wire and separate from the main conductor, but the ends of which are connected with the main conductor between the armature and one of the ends of the shunt-wire by means of an electric switch, all substantially as described.

2. An electric motor the field-magnet of which is wound with a shunt-wire, the ends of which are connected with the main conductor at points on opposite sides of the motor, and is also wound with resistance-wire separate from the shunt-wire and separate from the main conductor, but the ends of which are connected with the main conductor between the armature and one of the ends of the shunt-wire by means of an electric switch, and which motor is also provided with one or more additional wires connecting that resistance-wire at a point or points between its ends with a contact point or points in that electric switch between the contact-points to which the ends of that resistance-wire are connected, all substantially as described.

444,417. MACHINE FOR DESTROYING SAGE-BRUSH. WILLIAM D. ARNETT, Caldwell, Idaho. Filed Apr. 30, 1890. Serial No. 350,102. (No model.)

Claim.—1. In a machine for destroying sage-brush, the main frame provided with wheels and the cutter-frame, in combination with the front steering-truck swiveled thereto and provided with draft devices, and the rear propelling truck provided with wheels and draft devices and swiveled to the main frame.

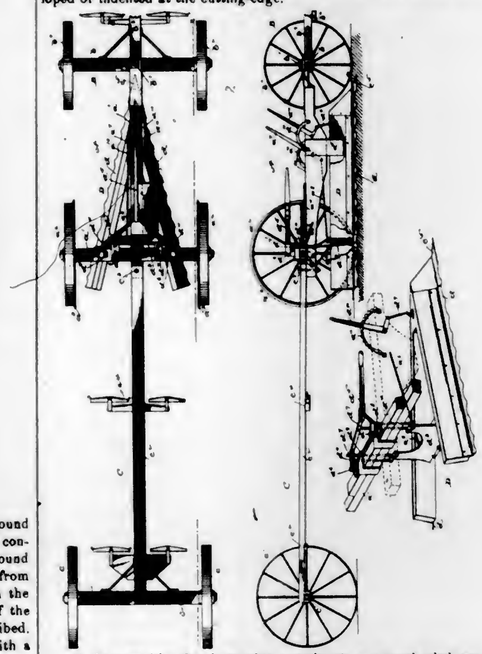
2. A front-wheeled steering-truck provided with draft devices, a main frame provided with two wheels and swiveled to said truck, a triangular frame having fixed cutter-blades along its lower edges and connected to the main frame by devices to effect its vertical adjustment, and a rear pushing-truck provided with two wheels and draft devices and swiveled to the main frame, said elements combined substantially as described and shown.

3. Two-wheeled trucks provided with draft devices and arranged one in advance of the other, in combination with an intermediate frame connected thereto and provided with a cutter-blade lying at or near the surface of the ground.

4. In a machine for destroying sage-brush, and in combination with a wheeled frame having the rigid depending frame, the pointed cutter-frame having a rigid bearing, against which the frame acts to propel the cutter, and swinging supports whereby the cutter-frame is suspended from the main frame.

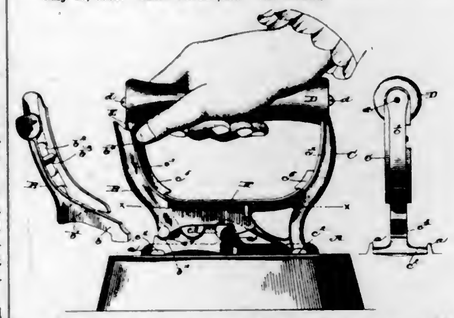
5. In combination with a wheeled frame or support, the pointed cutter-frame, the hand-lever and link at its front, the sustaining-plate d^3 at the rear, the guide-rods, links, and hand-lever controlling said plate, and the lever a^7 and link a^8 for lifting the cutter-frame to an operative position.

6. In a machine for destroying sage-brush, a main frame provided with two wheels having flanges to enter the ground and resist lateral motion, and the pointed cutter-frame suspended from the main frame and provided on opposite sides with the fixed converging blades scalloped or indented at the cutting-edge.



7. In a machine for destroying sage-brush, a rear-wheeled propelling or pushing truck, in combination with a cutter-carrying truck or frame swiveled to its forward end and flanged ground-wheels attached to the last named frame, whereby the propelling-frame is prevented from throwing the cutter out of its proper course when the two frames are turned out of line.

444,418. SAD-IRON. DANIEL B. BAKER, San Jacinto, Cal. Filed July 12, 1889. Serial No. 317,350. (No model.)



Claim.—1. A sad-iron comprising the iron having a central lift-bar, the handle-frame provided with an opening to receive the lift-bar, and the lever conforming to the configuration of the frame and being contiguous thereto and having its lower end formed into two arms straddling the bottom of the handle-frame, one of the arms forming a locking-pawl arranged to engage the lift-bar and retain the latter in said opening, substantially as described.

2. A sad-iron comprising an iron provided with a central lift-bar, the handle-frame having a handle and provided with an opening to receive the lift-bar, and having depending feet which elevate the bottom of the handle-frame above the iron, and the lever conforming to the configuration of the frame and having its lower end provided with arms which straddle the bottom of the handle-frame, one of which arms engages the central lift-bar, said lever being provided with a thumb-piece beneath the handle, substantially as described.

3. A sad-iron comprising the iron having the central lift-bar, the handle-frame having the opening c^3 to receive the central lift-bar and provided with a recess c^4, and the lever conforming to the configuration of the frame and having the pivot-bar b', arranged in the recess c^4 and provided with arms which straddle the handle-frame, one of said arms forming a pawl engaging the central lift-bar, substantially as described.

4. In a sad-iron of that class in which the handle grapples the iron at the center, the iron having the central lift-bar a', the sad-iron handle composed of a straight handle and curved open frame and having the opening c^3, and the operating-lever curved to conform to the shape of the curved frame and extending down one end and provided with arms which straddle and extend part way along the bottom of the frame, one of said arms terminating above the central lift-bar of the iron in a locking-pawl to engage said lift-bar, and the other arm serving as a guide to prevent lateral movement of the lever, the upper end of the operating-lever terminating in a thumb-piece which lies directly beneath the handle, substantially as described.

5. A sad-iron comprising the iron having parallel ridges extending throughout the length of the iron and provided with lugs and a central lift-bar connecting the lugs, the handle-frame having the opening c^3 and provided with feet which elevate each end and extend across the space between the ridges and bear against the latter, and the lever journaled in the frame and having its lower end straddling the handle-frame and engaging the central lift-bar, substantially as described.

444,419. PUNCTURING IMPLEMENT FOR SEWING-MACHINES. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Original application filed Sept. 17, 1888, Serial No. 285,575. Divided and this application filed Jan. 30, 1889. Serial No. 298,040. (No model.)



Claim.—1. A sewing-machine puncturing implement curved to the arc of a circle and having a cross-section of a greater diameter in the direction of the radius of its curve than at right angles thereto, and of uniform size throughout its working body and having both its outer and inner curved edges rounded transversely to the arc of a circle or ellipse, substantially as shown and described.

2. A sewing-machine awl having its working body curved to the arc of a circle and a cross-section throughout said working body of greater diameter in the direction of the radius of its curve than in the direction at right angles thereto, and having both the outer and inner curved edges rounded transversely to the arc of a circle or ellipse, substantially as described.

3. A sewing-machine awl having its working body curved to an arc of a circle and made oval or elliptical in cross-section, with its smallest diameter at right angles to the radius of its curve, and provided at its butt-end with a broad flat plate having formed therein an open-ended slot to receive the clamping-screw for securing it in position.

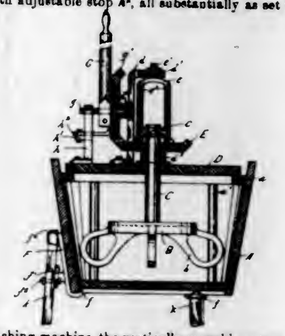
444,420. WHIFFLETREE-HOOK. WILLIAM W. CHANDLER, Long Prairie, Minn. Filed Aug. 11, 1890. Serial No. 361,718. (No model.)



Claim.—In a hook for the purposes specified, the combination, with the supporting end having a transverse groove therein and a shoulder, of a horizontally-swinging arm having its ends bent down at an angle, a shank on the lower part of the inner end having a groove therein and an inclined upper face, a pivot passing through the shank, and a spring-actuated dog having a tooth on its end formed with beveled sides, substantially as described.

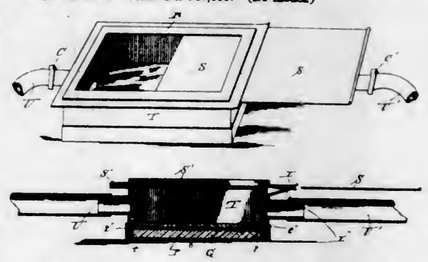
444,421. WASHING-MACHINE. AUGUSTUS G. CHRISTMAN, Reading, Pa. Filed Sept. 23, 1889. Serial No. 324,721. (No model.)

Claim.—1. In a washing-machine, the combination, with the cover and the agitator-shaft provided with a cross-head c, of bevel-wheel E, having guide-yoke extension e, with top journal e', standard d, with bearings d^2 and d^3, bevel-wheel g', and operating-lever on a shaft g and standard h, with adjustable stop h^3, all substantially as set forth.



2. In a washing-machine, the vertically-movable rotary scrubber-shaft passing loosely through the cover and through a gear-wheel supported thereon and guided vertically by and also rotated within an extension e of said wheel, substantially as described, in combination with a lever mechanism for rotating said gear-wheel, and a top bearing for said extension, all substantially as set forth.

444,422. PHOTOGRAPHIC APPARATUS FOR HOLDING AND DEVELOPING DRY-PLATES. GEORGE H. COBB, Elmira, N. Y. Filed Apr. 12, 1890. Serial No. 347,635. (No model.)



Claim.—1. In a developing-tray for photographic use, the combination of the tray, the upper extension thereof which has an opening that fits the face of the operator, the panels of glass in said extension for admitting non-actinic light, the slide for shutting off light, the tubes discharging into the interior of the tray, and apparatus for closing said tubes at will, substantially as described.

2. In a developing-tray for photographic use, the combination of the tray, the upper extension thereof which has an opening that fits the face of the operator, the panels of glass in said extension for admitting non-actinic light, the slide which shuts off light from above, the tubes discharging into the interior of the tray, and the clip for closing said tubes, substantially as described.

3. In a developing-tray for photographic use, the combination of the tray, the upper extension thereof which has an opening that fits the face of the operator, the slide which shuts off light from above, the panel of glass in the bottom of the tray for admitting non-actinic light, the tubes discharging into the interior of the tray, and the clip for closing said tubes, substantially as described.

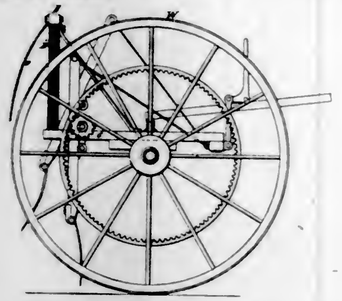
4. In a developing-tray for photographic use, the combination of the tray, the upper extension thereof which has an opening that fits the face of the operator, the panels of glass in said extension and the panels of glass in the bottom of the tray for admitting non-actinic light, the slide for shutting off light, and the tubes discharging into the interior of the tray, substantially as described.

5. In a developing-tray for photographic use, the combination of the tray, the upper detachable extension thereof which has an opening that fits the face of the operator, the panels of glass in said extension for admitting non-actinic light, the slide for shutting off light, the tubes discharging into the interior of the tray, and apparatus for closing said tubes at will, substantially as described.

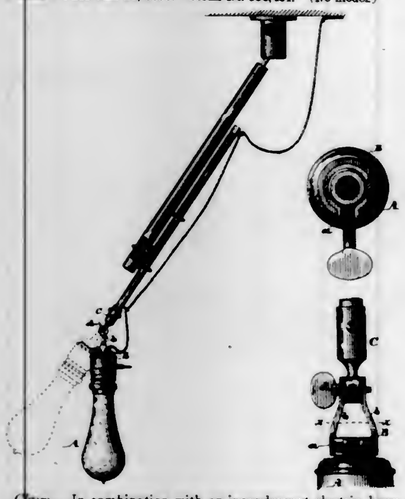
444,423. HAY-TEDDER. GIDEON CREWS, Pacific, Mo. Filed Dec. 7, 1889. Serial No. 332,991. (No model.)

Claim.—In a hay-tedding machine, the combination, with reciprocating arms, of a cross-bar carried upon uprights above the said

arms and fenders, each of the said fenders consisting of a single piece secured in its central part to the said cross-bar and having its opposite ends bent downward upon the opposite sides of one of the said reciprocating arms, as described.

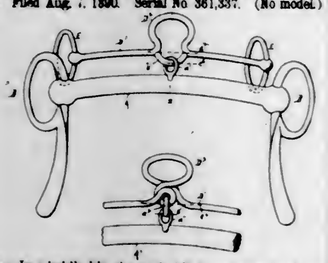


444,424. ELECTRIC-LIGHT SUPPORT. ALFRED DAWES, Chelsea, Mass. Filed Jan. 29, 1890. Serial No. 338,481. (No model.)



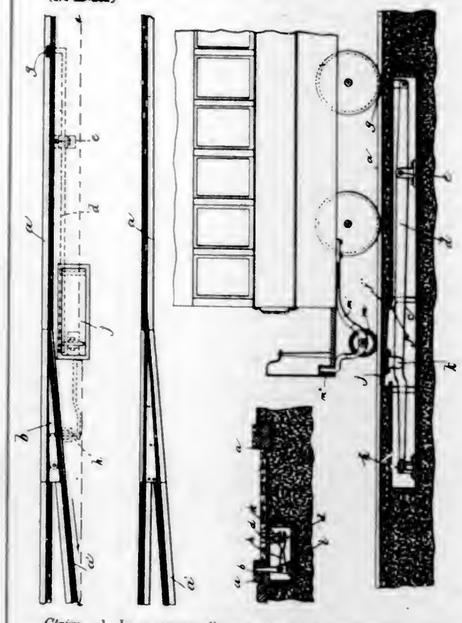
Claim.—In combination with an incandescent electric lamp and an adjustable supporting-arm, a strap or saddle clamped to said lamp and provided with upwardly-projecting arms, a thimble or socket secured to the end of said supporting-arm and provided with a boss at its end, and a clamping-screw pivot passing through said boss and the upper ends of the arms of the strap or saddle, substantially as described.

444,425. BIT FOR HORSES. CHARLES P. GREGORY, Stillwater, Minn. Filed Aug. 7, 1890. Serial No. 361,337. (No model.)



Claim.—In a bridle-bit, the main bit A, an overcheck-bit D', having a central loop D^a and connected to said main bit by a flexible joint, the central or pivotal point of said joint being between said overcheck-bit and main bit, whereby any downward movement of the horse's head will cause said overcheck-bit to be oscillated upon said flexible joint and cause said loop to be turned upward, but without materially altering the relative positions of the parts A D', substantially as and for the purpose set forth.

444,426. SWITCH-OPERATING MECHANISM. JOSEPH N. DUVAL and CHARLES F. DUVAL, Boston, Mass., assignors to the Duval Automatic Switch Company, same place. Filed Feb. 13, 1890. Serial No. 340,241. (No model.)



Claim.—1. In a street-railway switch, the combination of the main and branch rails, a pivoted switch-point, a bell-crank lever pivoted to a fixed support under the road-bed and connected with the switch point, a lever *d*, pivoted to a fixed support under the road-bed and engaged at one end with the bell-crank lever, an upwardly-projecting plunger connected with said lever and arranged with its upper end in position to be depressed by a car-wheel approaching the switch on one of the main-track rails, and thereby move the switch in one direction, a hinged or vertically-swinging platform located on the road-bed between the main-track rails, so that it may be depressed by an attachment on the platform of a car, the swinging end of said platform being connected, as described, with the switch-point, whereby the depression of the platform is caused to move the switch in the opposite direction, and a car having a vertically-movable attachment or operating device, as *m*, adapted to be depressed by the driver and arranged to act on said platform when depressed, as set forth.

2. In a street-railway switch, the combination of the main and branch rails, a pivoted switch-point, a bell-crank lever pivoted to a fixed support under the road-bed and having one arm engaged with the switch-point, a lever *d*, pivoted to a fixed support in the casing under the road-bed, and having a longer arm engaged with the bell-crank lever and a shorter arm provided with a plunger, which projects upwardly through the tread-surface of one of the main-track rails, and a hinged platform bearing at its swinging end upon the longer arm of said lever and adapted to be operated by an attachment on the car, as set forth.

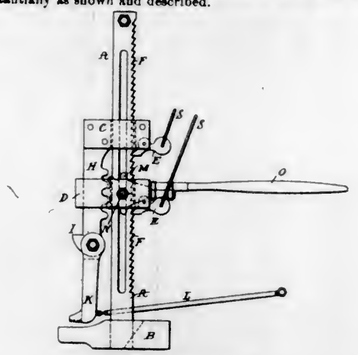
444,427. CONVERTIBLE SPIKE-EXTRACTOR OR LIFTING-JACK. CHARLES M. EDWARDS, Bloomingburg, Ohio, assignor to James H. Jefferson, same place. Filed Mar. 12, 1890. Serial No. 343,581. (No model.)

Claim.—1. In a lifting device, the combination of a pair of slotted standards having suitable ratchets, a pair of blocks carrying a rack-bar and engaging lever, respectively, and each having passages for the standards, said lever being secured in the block between the standards by a pin passed through the lever, the block, and the standard-slots, substantially as set forth.

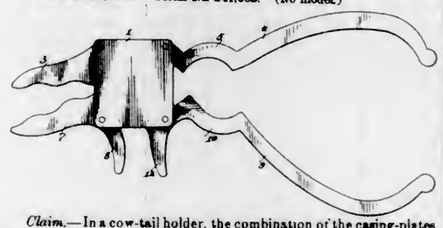
2. In the convertible device described, a swinging claw and a handle for controlling the claw

3. The convertible device described, comprising a pair of slotted

standards mounted in a bifurcated base, said standards being provided with ratchets, a pair of traveling blocks having openings through which the standards pass, each block having pawls for engagement with said ratchets and suitable controlling-wires attached to the pawls, a rack-bar mounted on the upper block and passing through the lower block, said rack-bar having a shoulder, and a pinion mounted on bearings passing through the slotted standards and lower traveler, said pinion engaging with the rack-bar and having a suitable controlling-handle, all substantially as shown and described.

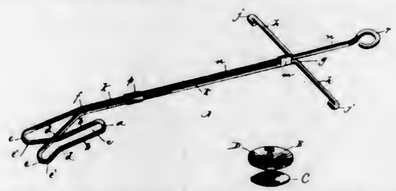


444,428. COW-TAIL HOLDER. EDWIN G. FARNHAM, Dover, Me. Filed Feb. 24, 1890. Serial No. 341,602. (No model.)



Claim.—In a cow-tail holder, the combination of the casing-plates, a bar secured between the same and having a jaw and a curved arm extending laterally in opposite directions, a jaw mounted pivotally at the corner opposite to the fixed jaw and having a laterally-extending handle, a curved arm mounted pivotally at the corner opposite to the fixed arm and having a laterally-extending handle, the lugs extending from said handles past each other, and a spring arranged within the casing and bearing against the inner lug, substantially as and for the purpose set forth.

444,429. ADJUSTABLE STUB-HOLDER. HERBERT W. FIELD, Chicago, Ill., and HENRY A. FOWLER, Northbridge, Mass. Filed Apr. 11, 1888. Serial No. 270,365. (No model.)



Claim.—1. The combination, with the cover and stubs of a book, of a stub-holder consisting of an elastic bar bent into a U shape, forming arms of unequal length, the longer arm arranged to extend over the stubs and the shorter arm being pivoted to the inner surface of the cover outside said stubs, so the longer arm can be swung upon said pivoted arm upon the stubs, substantially as described.

2. In combination with the leaves of a book, a holder bent at one end in U shape, with its longer arm resting upon the leaf to be held and its shorter arm pivoted to the body supporting the holder by means of a screw-threaded bolt and nut, said shorter arm being raised above the supporting-body so the pressure of the nut thereupon will serve to determine the pressure of the longer arm of the holder upon the leaf, substantially as described.

3. The combination, with a screw-threaded attaching bolt and nut, of the holder provided with an opening to receive the nut between the points *e e*, said opening being slightly less than the diameter of the nut, and a slot *c*, communicating with said opening to receive the bolt, substantially as described.

4. The combination, with the holder having an elastic arm resting on the leaf to be held, of a fixed sleeve *m*, a sliding extension-bar *n*, with a sleeve *p* sliding on said elastic arm, substantially as described.

5. The combination, with the cover of a book, of a leaf or stub holder provided with an opening to receive a bolt and nut, a narrow slot communicating with said opening to receive the bolt, an arm extending over the leaf to be held, and an attaching screw-threaded bolt and nut by which the holder is attached to the cover of the book, substantially as described.

444,430. WHEEL. BURTON H. GEDGE, Covington, Ky. Filed Jan. 3, 1889. Serial No. 295,335. (No model.)

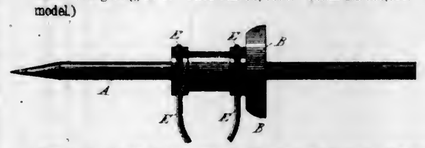


Claim.—1. The combination of the rim, spokes attached to the rim and having dents or channels *m*, and the hub having perforated flanges and inner beveled flanges, the wheel being coated with a coat of metal, substantially as and for the purposes specified.

2. The combination of the rim and central hub having external perforated flanges and sunken channel *p*, and inner beveled flanges, the spokes attached to the rim and having dents or channels *m* at or near one end and received into their respective channels *p*, substantially as and for the purposes specified.

3. In a wheel, a rim, metallic spokes attached thereto, a hub divided at right angles to its axis, each division of the hub having internal beveled flange d^3, and in the exterior flange the perforations *p*, which latter, if extended inwardly, would strike the bevel of the internal flange, the inner end of the spoke being passed through the perforation *p* and bent upward and lying on the beveled face of the inner flange and securely interlocked between said inner flange and the upper inner edge of the perforation *p*, substantially as and for the purposes specified.

444,431. PENCIL-SHARPENER. JAMES I. GORTON and JAMES BEDELL, Sing Sing, N. Y. Filed Jan. 31, 1890. Serial No. 338,833. (No model.)



Claim.—1. A pencil-sharpener having a wheel B with a diameter greater than that of the pencil, in which the pencil is placed, and which said wheel is adapted to be rotated by being rubbed back and forth on a desk, floor, or other stationary surface by means of the handle E, for the purpose mentioned.

2. In a pencil-sharpener, a revolving wheel in which the pencil is placed, with the opening to contain the pencil made sufficiently large to receive a hollow piece of india-rubber, in which the pencil is placed in the wheel, said wheel having at each end of said opening flanges or projections solidly attached to the wheel and extending inward toward the pencil and partly over the ends of said piece of india-rubber, which flanges or projections are large enough to retain the india-rubber in its place when it has been slipped in, and yet small enough to permit the india-rubber to be drawn out of the wheel when it is necessary to change it for another piece, all for the purposes mentioned, substantially as specified.

3. A pencil-sharpener having a single wheel B, with a diameter greater than that of the pencil, in which the pencil is placed, and which said wheel is adapted to be rotated by being rubbed back and forth on a desk, floor, or other stationary surface by means of a handle E and by reason of the difference in diameter of the wheel and pencil to partly roll the pencil and partly slide it over a stationary cutting surface, so as to grind it to a point.

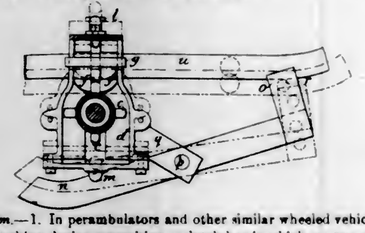
4. The combination, as described, of a single wheel B, a hollow piece of rubber or other material D for firmly holding the pencil in the wheel, fixed flanges or projections F at the ends for holding the rubber or pencil-holder in place, and a suitable handle E with bearings for the shaft, substantially as described.

5. In a pencil-sharpener, fixed flanges or projections firmly at-

tached to the wheel and extending inward toward the pencil and partly over the ends of the rubber or other material for holding the pencil for the purpose of holding the rubber in place in the wheel, said flanges or projections being of such a size as to permit the said rubber to be put in place in the wheel or withdrawn from it by slipping it past the said projections without moving them, substantially as specified.

6. A handle E, with its chief bearing between the wheel and the point of the pencil, so that pressure upon the handle shall operate upon both the wheel and the pencil to produce friction of the wheel upon the surface on which it is rubbed, and thus cause it to revolve and at the same time to produce friction of the pencil upon the cutting-surface on which it is rubbed, and thus grind it to a point.

444,432. WHEEL-LOCKING DEVICE FOR BABY-CARRIAGES. WILLIAM H. GRAHAM and GEORGE R. MCDONALD, London, County of Middlesex, England. Filed May 31, 1890. Serial No. 353,712. (No model.) Patented in England Apr. 30, 1888, No. 6,384, in France Mar. 7, 1889, No. 196,532, and in Belgium Mar 7, 1889, No. 83,672.

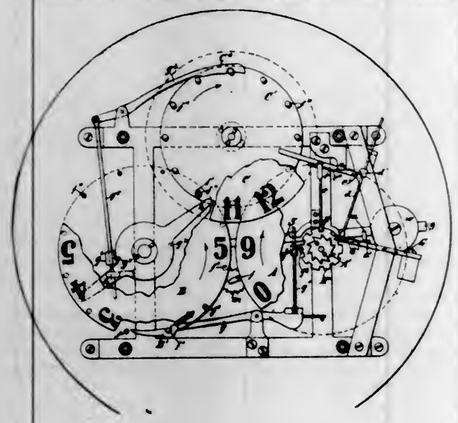


Claim.—1. In perambulators and other similar wheeled vehicles, a wheel-locking device comprising a clutch-box in which are two sliding pawls for engaging with lobes or teeth forming part of or connected to the wheel center, and operated from the driving-handle in such a manner that when the said handle is depressed the clutch-box is elevated and the sliding pawls disengage from the lobe-wheel, thus leaving the vehicle-wheels free to rotate, but when the hands are removed from the driving-handle the sliding pawls engage with one lobe of the said lobe-wheel, and thereby effectually lock the said vehicle-wheels, substantially as described.

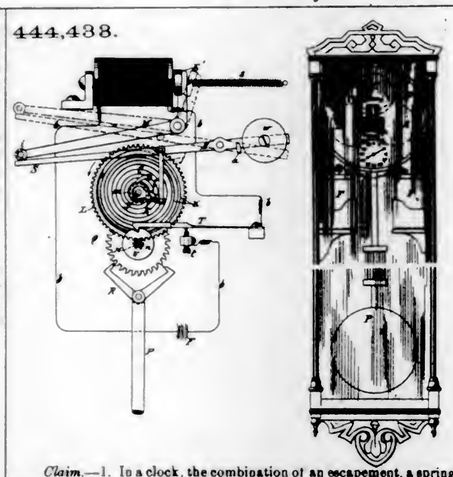
2. The combination, with a child's carriage, of the bent handle-rods pivoted to the front part of the frame, a toothed clutch-wheel secured to one of the carriage-wheels, and a spring-actuated stop device normally engaging with the said clutch-wheel and operatively connected with the handle-rods between the handle and the rod-pivots, whereby the axle may be released when the handle is depressed, substantially as set forth.

3. The combination, with a child's carriage, of the bent handle-rods pivoted to the front part of the frame, the toothed clutch-wheels secured to the carriage-wheels, the vertically-sliding clutch-boxes provided with pawls for engaging with the said clutch-wheels, the distance-rods connecting the clutch-boxes, the levers s, pivoted to brackets projecting from the axle and provided with the rod r for the handle-rods to rest on, and a spring normally holding the said clutch-boxes in their lower position, substantially as and for the purpose set forth.

444,433. INDEPENDENT ELECTRIC CLOCK. EMIL G. HANNER, Brooklyn, N. Y. Filed May 24, 1890. Serial No. 353,011. (No model.)



444,438.



Claim.—1. In a clock, the combination of an escapement, a spring for driving the escape-wheel thereof, a ratchet and pawl for winding up the spring at intervals, a time-indicating device, and an electro-magnet for actuating the pawl and indicating device.

2. In a clock, the combination of an escapement, a spring for driving the escape-wheel thereof, a ratchet and pawl for winding up the spring at intervals, a time-indicating device, an electro-magnet for actuating the pawl and indicating device, and a circuit-closer operated through the escapement for controlling the excitation of the electro-magnet, whereby the sole work of the escapement-spring is to drive the escapement and circuit-closer, and the heavier work of driving the indicating device is performed directly by the electro-magnet.

3. In a clock, the combination of an electro-magnet E, a lever M, to which the armature thereof is connected, a counterweighted lever S, the long arm of which is engaged by the long arm of the lever M, a vibrating arm *k*, connected thereto, a pawl *l*, carried by said arm, a ratchet-wheel *m*, an escapement, and a spring for driving the escape-wheel thereof, connected to said ratchet-wheel, to be wound by the action of the ratchet and pawl.

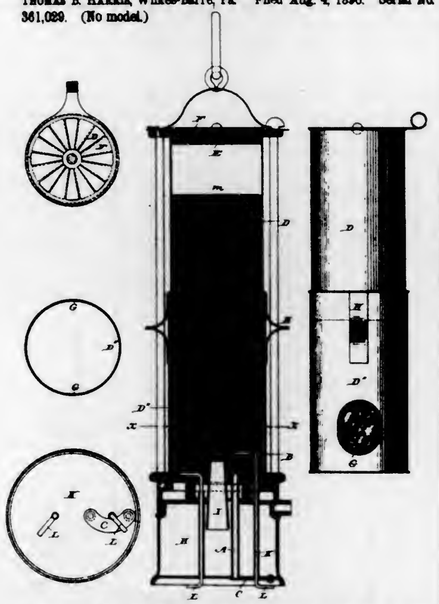
4. In a clock, the combination of numbered dials for indicating hours and minutes, and their driving mechanism, with an electro-magnet, a counterweighted lever S, actuated thereby and having an arm *a* for imparting motion to the dial mechanism, a time-measuring device, a spring for driving it, means connected with said lever for winding up the spring by the vibrations thereof, and a circuit-closer operated by the time-measuring device for controlling the excitation of the electro-magnet.

444,434. PUMP. JAMES P. HANNA, Wellington, Mich., assignor of one-half to T. E. Hastings, same place. Filed July 28, 1890. Serial No. 360,210. (No model.)



Claim.—In a pump, the combination of the upper and lower cylinders 1 2 the coupling 3, the packing-box 12, constructed in said coupling, the plunger-rod 10, having the valved plunger 6, working in the upper cylinder, the tube 11, extending from said valved plunger through the packing-box 12 into the lower cylinder, the solid plunger working in the latter and mounted upon the lower end of the plunger-rod, the inlet 4 at the upper end of the lower cylinder, having valve 5, the exit-pipe 16, extending upward from the upper cylinder, the stand-pipe 14, and the coupling 15, connecting the latter with the lower end of the lower cylinder, substantially as and for the purpose set forth.

444,435. SAFETY-LAMP. JOHN B. HARRIS, JOHN T. GRIFFITH, and THOMAS B. HARRIS, Wilkes-Barré, Pa. Filed Aug. 4, 1890. Serial No. 361,029. (No model.)



Claim.—1. In a safety-lamp, the combination, with the oil-reservoir having a suitable wick-tube arranged therein, of a tube open at both ends, extending through the oil-reservoir adjacent to the wick-tube, and containing an inflammable substance, a cover for closing the outer end of said tube, a second tube extending through said reservoir into proximity to said open-ended tube, and a device for igniting the inflammable substance, which consists of a rod extending through said second tube into proximity to an exposed portion of said substance, and which has its ends bent so as to form an exterior handle and an interior frictional igniting device, substantially as described.

2. A safety-lamp comprising an oil-reservoir, a wick-tube, a tube containing an inflammable substance and open at both ends, a cover for closing the outer end of such tube, and an adjustable swiveled rod extending also through the reservoir for effecting the igniting of such substance when it is manipulated from the outside and for closing the upper end of the open-ended tube, substantially as and for the purpose set forth.

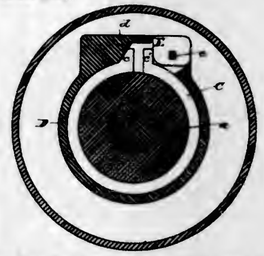
3. A safety-lamp comprising a wick-tube, an oil-reservoir, a wire-gauze cylinder, an outer casing provided with an adjustable or sliding section which can be manipulated to aid or smother the flame, and a ventilator at the top of the casing, substantially as and for the purpose set forth.

4. In a safety-lamp, the combination, with the oil-reservoir having the wick-tube, of the wire-ganze cylinder, the outer inclosing casing provided with a movable section having windows therein, and the ventilator at the top of the casing, substantially as described.

444,436. FRICTION-CLUTCH. JOSEPH L. HAYDEN, Portsmouth, N. H. Filed Aug. 14, 1890. Serial No. 361,990. (No model.)

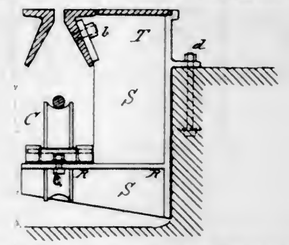
Claim.—1. A friction-clutch consisting of a driving-pulley, a shaft to be driven, a cut ring surrounding the hub of the pulley and adapted when compressed to hug the same, a part, as D, rigidly attached to the shaft to be driven, means, substantially as described, for producing initial friction of the ring upon the pulley-hub, and a wedge connection between the said part attached to the shaft and the cut ring, substantially as and for the purpose set forth.

2. In a friction-clutch, the combination, with the driving-pulley and its hub, of a shaft to be driven, a box secured to said shaft and surrounding the said hub, a cut ring interposed between the hub and the box, a wedge connection between the said ring and the opposed portion of the box, and means, substantially as described, for producing initial friction of the ring against the hub to lock the clutch by wedge action, as set forth.



3. In combination, the pulley A, provided with a hub *a*, the shaft B, the box D, secured thereto and surrounding the said hub, provided with a wedge-formed abutment *d*, the ring C, arranged between the hub and the box and provided with the abutment *c*, the cam-piece E, bearing against the free end *c'* of the ring and mounted upon the shaft *e*, the lug F, secured thereto to rock the same, and the lever G and slide H for operating the same, as set forth.

444,437. CABLE STREET-RAILWAY. LIONEL HEYNEMANN, San Francisco, Cal. Filed Apr. 7, 1890. Serial No. 346,865. (No model.)



Claim.—1. In cable railways, the combination of the street-trap T, arranged at one side only of the conduit, fastened to the continuous slot-irons upon one side, and the carrying-pulley C in the cable-conduit outside of said trap, both fastened together, substantially as described.

2. In cable street-railways, the combination of a trap T, arranged at one side only of the conduit, with its opening at the surface of the street, and the carrier-pulley C in the cable-conduit and outside of said trap, fastened together independently of the yoke or conduit, substantially as described.

3. In cable railways, the combination of a trap T, arranged at one side only of the conduit, opening at the surface of the street, with a vertical carrier-pulley outside of the same in the cable-conduit, fastened together independently of the yoke or conduit by the projecting sides S S of said trap, substantially as described.

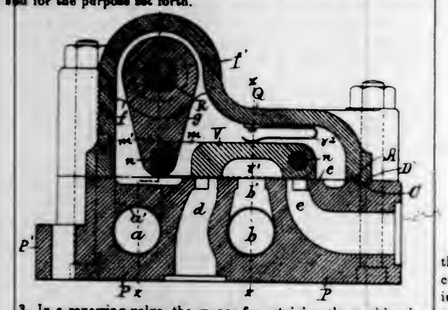
4. In cable-street-railways, the combination of the trap T, arranged at one side only of the conduit, with its cover opening at the surface of the street, the carrier-pulley C under the cable outside of said trap, and the separate pulley-frame F, attached to the sides S S of said trap, substantially as described.

5. In cable street-railways, the combination, with a street-trap T, of the slot-iron bolts *b b*, the trap sides S S, the pulley-frame F, with its pulley-axle journal-boxes, the bolts Q Q, and the carrier-pulley C in the cable-conduit, substantially as described, and for the purposes set forth.

444,438. SLIDE-VALVE. WILLIAM R. HEMINGWAY, Newark, N. J. Filed Mar. 21, 1890. Serial No. 344,701. (No model.)

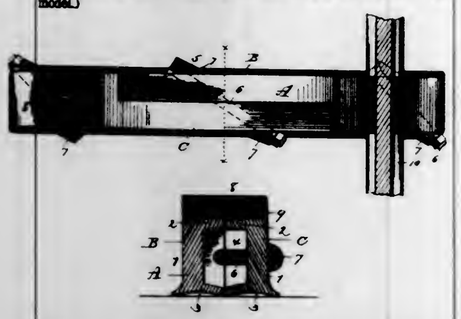
Claim.—1. In a reversing-valve, the combination, with a seat having inlet and outlet ports, of the chest Q, having the chamber F formed transversely through its sides, the spindle R, and movable sleeve *k*, shouldered as described, and provided with annular packings, means for moving the sleeve upon the spindle, an arm attached to the spindle between the packings, a slide-valve within the chest, and links connecting the slide-valve with the arm, substantially as herein set forth.

2. In a reversing-valve, the combination, with the valve-seat C, having inlet and outlet ports, and the valve fitted to slide upon the same, of the grooves *t*, formed adjacent to the narrow strips *c* at each side of the ports, and the surface of the seat outside such grooves being scraped slightly below the surface of the seat between such grooves, as and for the purpose set forth.



3. In a reversing-valve, the means for retaining the packing between the chest and bed, consisting in the bed provided with the ledges B and grooves C, and the chest formed with the ledges D to fit such grooves, and with grooves E, adapted to clear the ledges B, as and for the purpose set forth.

444,439. RAILROAD-TIE. JOHN W. HOLLIN and THOMAS B. SMITH, New Richmond, Ind. Filed July 9, 1890. Serial No. 358,161. (No model.)



Claim.—1. A sectional railway-tie having overlapping flanges on each section adapted to embrace opposite flanges of rails, and bolts adapted to pass obliquely through the sections of the rail, whereby the sections are drawn together and the overlapping flanges are tightened on the flanges of the rails, substantially as set forth.

2. A sectional railway-tie having oblique holes therein adapted to receive bolts, whereby the sections are drawn together when the nuts on the bolts are screwed up, substantially as set forth.

3. A railroad-tie made in two sections, diagonally-disposed bolts passing through said sections and securing them together, and flanges on said sections adapted to embrace the flanges of the rails, substantially as set forth.

4. A railroad-tie made in two sections secured together, the bottom of each section being concaved, bolts for securing the sections together, and flanges on the tops of said sections adapted to embrace the flanges of the rails, substantially as set forth.

5. A railroad-tie made in two sections, diagonally-disposed bolts passing through said sections, said bolts having heads at one end and nuts at the other end, and shoulders on the sections of the tie against which said nuts and heads are adapted to abut, substantially as set forth.

444,440. PAINT-DISTRIBUTER. GOTTLIEB H. HUTTENLOCHER and WILLIAM ULLNER, Des Moines, Iowa. Filed Oct. 11, 1890. Serial No. 367,944. (No model.)

Claim.—1. In an air-brush or paint-distributer, projecting arms or brackets attached to the case, and a spoon which receives and holds the liquid pigment, detached from the case, adapted to be adjusted and removably held on said case by said arms or brackets, as and for the purposes set forth.

2. In an air-brush or paint-distributer, projecting arms or brackets secured to and extending from the case thereof, in combination with a spoon which receives and holds the liquid pigment, having grooves or ridges formed thereon, said projecting arms or brackets being adapted to engage said grooves or ridges and detachably hold said spoon between them on the case, as set forth.



3. The combination, with the spoon having grooves or ridges thereon, of a projecting arm or bracket extending from the side of the case, and a springing finger also extending from the case, said projecting arm or bracket and finger being adapted to engage and detachably hold the spoon, as and for the purposes set forth.

4. The combination, with the case of an air-brush or paint-distributer, of a spoon having grooves or ridges, and a springing finger formed integrally with the vertical plate of the case, and a flanged projecting arm extending from the side of the case to hold the spoon detachably to the case, as and for the purposes set forth.

444,441. TOY PARACHUTE. SAMUEL W. KELLEY, Cleveland, Ohio. Filed June 14, 1890. Serial No. 355,424. (No model.)



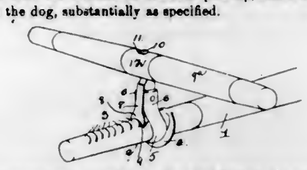
Claim.—1. A toy parachute constructed with a folding frame and having one or more springs adapted to distend the same, such spring or springs being compressed or strained in folding the parachute, substantially as set forth.

2. In a toy parachute adapted to be folded or distended, a spring-handle adapted to be folded inside the parachute in folding the latter, substantially as set forth.

3. The combination, with a toy parachute having a spring-handle, substantially as indicated, of a jumping-jack pivoted to the extremity of such handle, substantially as set forth.

444,442. POLE-TIP. JAMES F. KELLOGG, Mitchell, S. D. Filed June 6, 1890. Serial No. 354,538. (No model.)

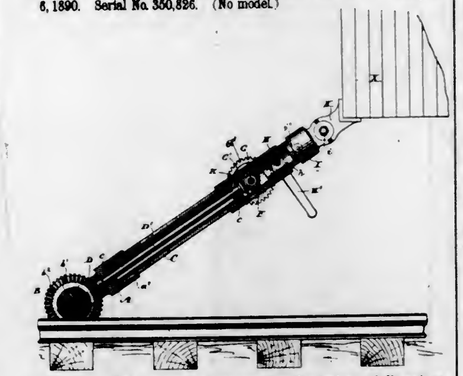
Claim.—1. In a pole attachment, the combination of a pole-tip provided with a series of notches on its upper face, the neck-yoke ring encircling the pole-tip and having a pivoted dog adapted to enter into engagement with the notches on the said pole-tip, and a neck-yoke swiveled on the dog, substantially as specified.



2. In a wagon-pole attachment, the combination of a pole-tip provided with a series of notches on its upper face, the neck-yoke ring encircling the pole-tip and having a pivoted dog provided at its lower end with a concave beveled edge conforming to the curvature of the pole-tip and adapted to engage with the notches in said pole-tip, said dog being also provided at its upper end with an integral shank-extension, and a neck-yoke swiveled on said shank, substantially as described.

3. In a pole attachment, the combination of a pole-tip provided with a series of notches on its upper face, the neck-yoke ring encircling the pole-tip and having a pivoted dog adapted to enter into engagement with the notches on the said pole-tip, substantially as specified.

444,443. CAR-PUSHER. CHARLES M. KIMBALL, Auburndale, Ohio, assignor of one-half to Katharine Havens, New York, N. Y. Filed May 6, 1890. Serial No. 350,826. (No model.)



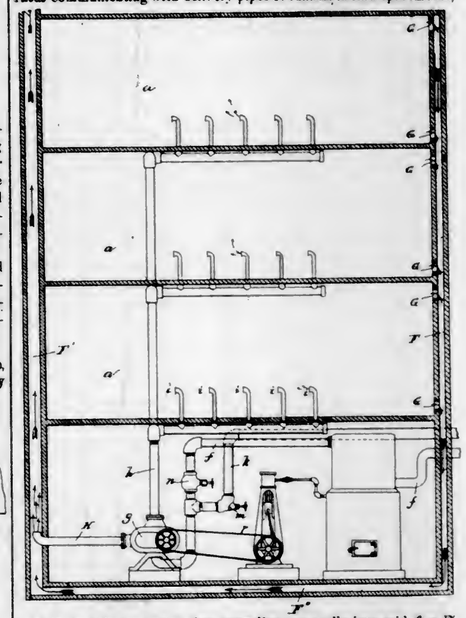
Claim.—1. In a car-pusher, the combination, substantially as hereinbefore set forth, of the frame or casing, the pushing-wheel journaled in the lower end of the casing, a driving-shaft extending through the casing and gearing with the pushing-wheel, a transverse shaft at the upper end of the casing, a pinion thereon gearing with the upper end of the driving-shaft, a crank for operating said transverse shaft, a second transverse shaft in the upper end of the frame, a crank for operating this shaft, and power-increasing gearing between said crank-shaft and the main driving-shaft.

2. The combination, substantially as hereinbefore set forth, of the pushing-wheel, the frame or casing, the driving-shaft gearing with the pushing-wheel, a transverse shaft at the upper end of the casing, a pinion thereon gearing with the driving-shaft, the crank for operating the transverse shaft, a large gear-wheel G^3 on said transverse shaft, a transverse shaft H, a small wheel *h* thereon gearing with the wheel G^3, a second operating-crank, and a pawl *i'*, adapted to engage with the wheel *h* to prevent its rotation.

3. The combination, substantially as hereinbefore set forth, of the pushing-wheel, the tubular frame or casing, the driving-shaft gearing with the pushing-wheel, a crank, gearing connecting the crank with the driving-shaft, the castings secured to the upper and lower ends of the tubular casing, and the casting K, having an angular socket adapted to engage the under side and vertical wall of a car-body and hinged at *i* to the casting at the upper end of the frame or casing.

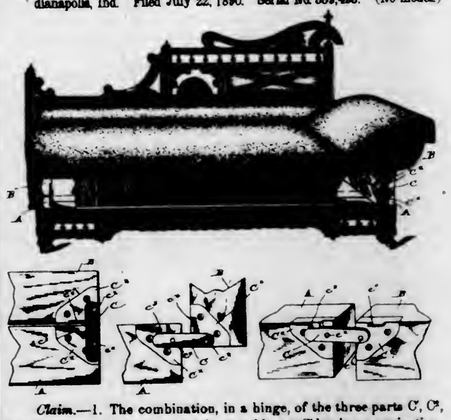
444,444. APPARATUS FOR VENTILATING BUILDINGS. CHARLES A. KIMPTON, Malden, assignor of three-fourths to J. C. Bennett and F. R. White, both of Lynn, Mass. Filed May 5, 1890. Serial No. 350,617. (No model.)

Claim.—The herein-described improved apparatus for ventilating buildings, which consists of the combination, with a building having a series of apartments, flues, or conduits F F', located at opposite sides of such apartments, said flue F extending downwardly from the upper portion of the building and communicating with said apartments to draw air therefrom, while the flue F' extends upwardly to the external air without communication with said apartments, and the flue F'', connecting said former flues at their lower ends, of an air-forcing apparatus communicating with delivery pipes or funnels in said apartments,



and having also an outlet-pipe extending upwardly into said flue F', substantially as set forth, whereby air is forced upward in said flue F' and is supplied to the apartments, as stated.

444,445. HINGE. GEORGE E. KRAUSE and ANDREW KRAMER, Indianapolis, Ind. Filed July 22, 1890. Serial No. 359,493. (No model.)

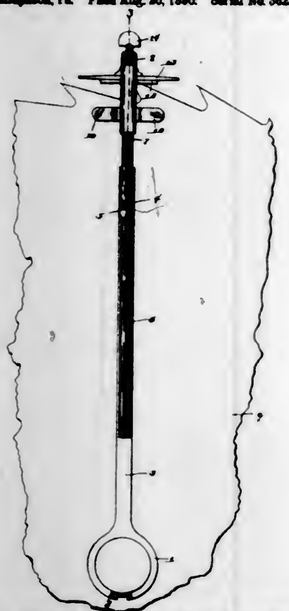


Claim.—1. The combination, in a hinge, of the three parts C', C², and C, connected together by pivots, said part C' having a projection, and said part C having an elongated end extending under said projection, its other end being free to move on its pivot, substantially as and for the purposes set forth.

2.—The combination, in a hinge, of the two parts C' and C², adapted to be connected to a frame-work, and the link C, connecting said two parts together, said part C² being provided with a projection which, when it is partially folded up, comes in contact with the side of the link and carries it from that point forward to the final position, substantially as shown and described.

3. The combination, in a hinge, of the three parts C', C², and C, said parts C' and C² being adapted to be attached to a frame-work and provided with projections c^3 and c^4, and said part C being connected to said two parts C' and C² by pivots and adapted when folded up to come in contact with said projections c^3 and c^4, whereby the edges of said parts are brought into and held in the same plane, substantially as shown and described.

444,446. DEVICE FOR DRESSING AND JOINTING SAWS. JOSEPH H. LEITZ, Sandpatch, Pa. Filed Aug. 20, 1890. Serial No. 362,503. (No model.)



Claim.—In a device of the class described, the U-shaped clamp mounted upon a suitable extension-rod extending from a ring or collar and having the socket provided with oppositely-beveled sides, the files 12 and 13, mounted in said socket, and the set-screw 14, adapted to force the said files against the points of the saw-teeth, substantially as set forth.

444,447. ELASTIC TROLLEY. CHARLES A. LIEB, New York, N. Y. Filed Nov. 22, 1890. Serial No. 372,790. (No model.)



Claim.—1. A trolley device provided with a groove and a yielding surface in the groove, substantially as set forth.

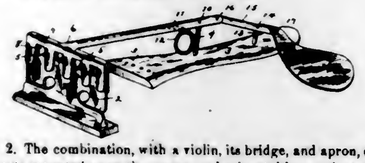
2. A trolley device having a groove and a bearing-surface for the trolley-wire within the grooves supported upon a spring or springs, substantially as set forth.

3. A trolley-wheel having its contact-surface composed of a plurality of yielding contact-points, substantially as set forth.

4. A contact-surface for trolleys, comprising, essentially, a series of compressible elastic contact-points adapted to contact successively with the wire, substantially as set forth.

444,448. TONE-MODULATOR FOR MUSICAL INSTRUMENTS. ALBERT H. LOEBS, Rochester, N. Y. Filed Apr. 12, 1890. Serial No. 347,717. (No model.)

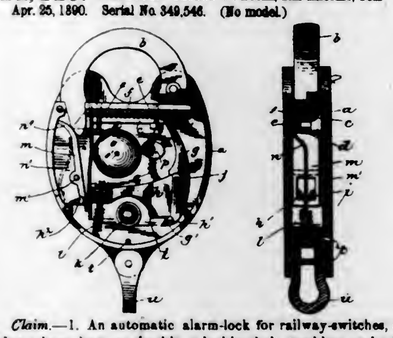
Claim.—1. The combination, with a stringed instrument, of a plate transversely bent into U form and adapted to embrace the bridge thereof and having recesses corresponding in number and location with the strings of the instrument, a series of levers mounted upon the instrument and connected with the attachment, a spring for raising that lever connected to the attachment, and an operating-arm connected with the levers for lowering the attachment against the tendency of the spring, substantially as specified.



2. The combination, with a violin, its bridge, and apron, of a pair of posts mounted upon the apron, a horizontal lever pivoted to the forward posts and extending at each side of the same, a coiled spring for raising the forward end of the lever, a U-shaped plate secured to said forward end adapted to embrace the bridge and having recesses agreeing in number and location with the strings, and a shorter lever pivoted at its center to the rear post and at its inner end to the rear end of the horizontal lever, said shorter lever being provided at its rear end with a laterally-projecting arm terminating in a chin-plate, substantially as specified.

3. The combination, with a stringed instrument, of a plate transversely bent into U form and adapted to embrace the bridge thereof and having its opposite terminals substantially parallel and provided with recesses corresponding in number and location with the strings of the instrument, and a series of levers mounted upon the instrument and connected with the attachment, a spring for raising that lever connected to the attachment, and an operating-arm connected with the levers for lowering the attachment against the tendency of the spring, said arm projecting laterally and terminating in a chin-plate, substantially as specified.

444,449. PADLOCK. GEORGE W. LOCAS, San Antonio, Tex. Filed Apr. 25, 1890. Serial No. 349,546. (No model.)



Claim.—1. An automatic alarm-lock for railway-switches, comprising a hasp, bow, or shackle, a locking-bolt, tumblers, and a lever to which the tumblers are pivoted and connecting said tumblers, a locking-bolt, and an audible alarm operated by the movement of the said tumblers, lever, and locking-bolt in locking the lock, substantially as described.

2. A hasp, bow, or shackle, a locking-bolt and a spring normally forcing the said bolt into locked position, a retracting-lever connected to said locking-bolt, tumblers pivoted to the said lever and having hooks on their forward ends, a tumbler-locking device adapted to be engaged with and disengaged from the said hooks on the tumblers, and a spring for holding the tumbler-locking device in position, substantially as described.

3. A hasp, bow, or shackle, a locking-bolt and a spring normally forcing the said bolt into locked position, a retracting-lever connected to said locking-bolt, tumblers pivoted to the said lever and having hooks on their forward ends, a tumbler-locking device adapted to be engaged with and disengaged from the said hooks on the tumblers, and a spring for holding the tumbler-locking device in position, combined with an audible alarm operated by the movement of the locking-bolt, tumblers, and retracting-lever as the hasp is fully locked, substantially as described

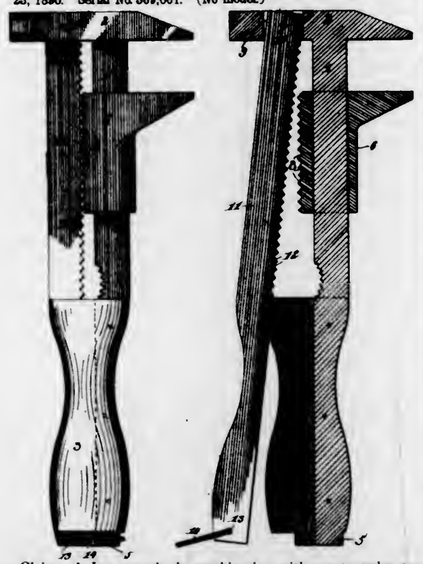
4. The case and the posts, *d*, combined with a locking-bolt *c*, supported on said posts, and pins or rivets *e*, secured in the case and the said posts to hold the bolt in place, bolt-operating mechanism, and a hasp, bow, or shackle, substantially as described.

5. In a padlock, a shackle having a cross-bar b^3 of comparatively small dimensions, combined with a locking-bolt *c*, whose end engaging

the said hasp is reduced to a cutting-edge, substantially as and for the purpose described.

6. The combination, with a bow, of a tumbler-locking device and a spring acting upon the upper end of the said tumbler-locking device adjacent to the nose of the bow and adapted to throw the said bow partly or entirely out of the lock-case when the lock is unlocked, substantially as described.

444,450. WRENCH. HENRY MARSHAL, Lincoln, Nebr. Filed Oct. 23, 1890. Serial No. 369,061. (No model.)

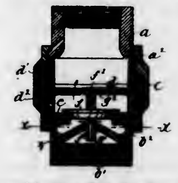


Claim.—1. In a wrench, the combination, with a rectangular stock terminating at its upper end in a transverse head or jaw and at its lower end in opposite handle-sections, combining to form a socket in rear of the stock, of a sliding jaw mounted on the stock between the head and handle, having its rear face provided with transverse teeth, and a lever pivoted in the head in rear of the jaw and having its inner face provided with teeth for engaging those of the jaw and its lower end adapted to fit between the handle-sections and constitute the remainder of the handle, substantially as specified.

2. In a wrench, the combination, with the stock terminating at its upper end in a transverse head and at its lower end in opposite handle-sections extended in rear of the stock and combined to form a recess, and a sliding jaw mounted on the stock between the head and handle and having its rear face provided with transverse teeth, of a locking-lever pivoted at its upper end in an opening in the head in rear of the stock and having its inner face provided with teeth for engaging those of the jaw, said lever being adapted to fit within the socket formed by the handle-sections and to thus complete the handle and carrying a ring at its lower end adapted to swing over the lower reduced end of the handle, substantially as specified.

3. The shank 1, having the handle at one end and the jaw at the other and above the handle provided with the curved-tooth recess 15, in combination with the lever 11, pivoted to the head and toothed opposite the recess, substantially as specified.

444,451. PIPE-COUPLING AND VALVE. WILLIAM T. MESSINGER, Boston, Mass. Filed May 31, 1888. Serial No. 275,646. (No model.)



Claim.—1. The combination of a pair of coupling-pieces, one provided with a valve-seat, with a coupling-nut and a chamber engaged at its ends by the said coupling-pieces and inclosed in said nut, being laterally removable from between said coupling-pieces without separating them, and a valve co-operating with the seat on the coupling-piece, substantially as described.

2. The combination of a pair of coupling-pieces and a co-operating coupling-nut with an independent chamber inclosed within the said coupling-nut and engaged at its ends by said coupling-pieces, being laterally removable from between said coupling-pieces without separating them, one of said coupling-pieces being provided with a valve-seat and valve-stem guide, and a valve co-operating with said seat and having a stem that works in said guide, substantially as described.

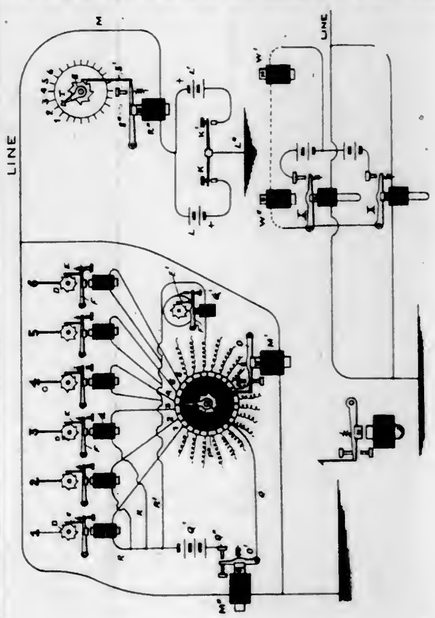
3. The combination of two coupling-pieces and a co-operating coupling-nut with a chamber inclosed within the said nut and interposed between said coupling-pieces, the said chamber being made in two parts, one laterally movable from between the other and the adjacent coupling-piece, and one of said coupling-pieces being provided with a valve-seat and valve-stem guide, and one portion of said chamber being provided with a valve-stem guide, and a valve co-operating with said seat, having a stem co-operating with said guides, substantially as described.

444,452. ELECTRICAL SPORTING-INDICATOR. SAMUEL D. MOTT, Passaic, N. J. Filed June 19, 1890. Serial No. 356,013. (No model.)

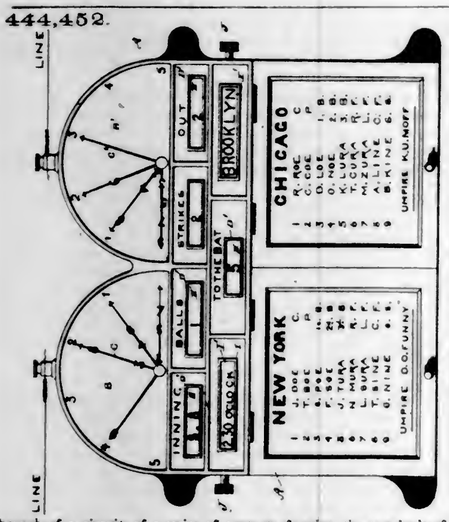
Claim.—1. In a sporting-indicator, the combination, with two or more movable pointers and cylinders adapted by changes in their position to indicate or display the various conditions of a game, electro-magnetic step-by-step motive devices for actuating the same, included in normally-open independent local circuits, and a circuit-closer common to all of said circuits, of a switch for closing the break in any one of the local circuits, a polarized electro-magnet in the main line with which the instrument is used, actuated by currents therein for moving or operating the said switch, and an oppositely-polarized electro-magnet in said main line, adapted when actuated by current impulses to operate the circuit-closer common to all the local circuits, as set forth.

2. The combination, with two or more movable pointers and cylinders constituting the display parts or elements of a sporting-indicator, electro-magnetic motive devices for imparting an intermittent movement to the same and each included in a normally-open branch of a local circuit, of a circuit-closer for connecting any one of said branches with the local circuit, a polarized magnet in the main circuit for operating or moving said circuit-closer, and an oppositely-polarized magnet, also in said main circuit, for making and breaking the local circuit and that one of its branches which is closed by the circuit-closer.

3. The combination, with two or more pointers and cylinders, an electro-magnetic motive device for each included in a normally-open



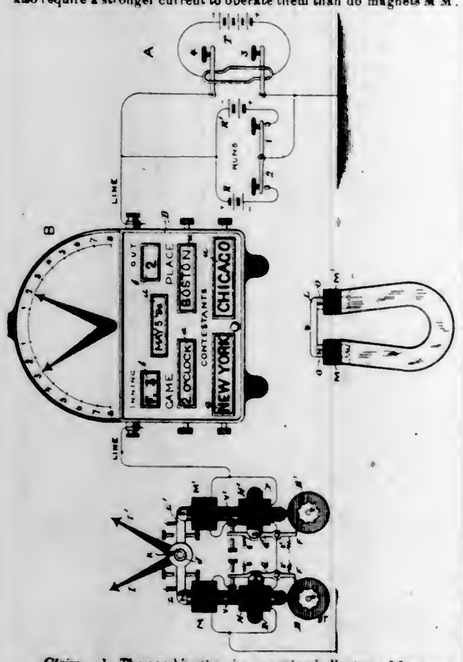
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branch of a circuit, of a series of contacts forming the terminals of such branches, a contact-arm adapted to sweep over said terminals and close the breaks in the branch circuits successively, a polarized main-circuit electro-magnet for moving said contact-arm, and an oppositely-polarized magnet in the main circuit for connecting with the branch circuits and disconnecting therefrom a local battery, as set forth.

444,453. ELECTRICAL SPORTING-INDICATOR. SAMUEL D. MOTT, Passaic, N. J. Filed June 19, 1890. Serial No. 356,014. (No model.)

Brief.—Magnets M M′ are slow-acting magnets and are oppositely polarized. Magnets H H′ are quick-acting magnets—cores being made of bundled iron wire—and are oppositely polarized. Magnets H H′ also require a stronger current to operate them than do magnets M M′.



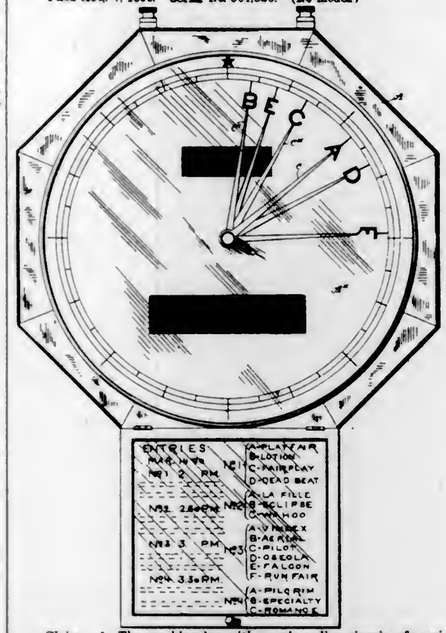
Claim.—1. The combination, in a sporting-indicator, of four movable parts, such as pointers or display-cylinders, adapted by changes in their position to indicate or display the various conditions in or of a game, two polarized slow-acting electro-magnets adapted to respond to a weak current for operating two of such movable parts, and two polarized quick-acting electro-magnets requiring for their operation a stronger current for operating the other of said parts, the circuits of the slow-acting magnets being controlled by the quick-acting magnets, respectively, and all of said magnets being connected with the same circuit, as set forth.

2. In a sporting-indicator, the combination, with two or more pointers or cylinders, or both and ratchets, and pawls for moving them step by step, of armature-levers carrying said pawls and oppositely-polarized electro-magnets for said armatures connected with the same circuit and of different degrees of sensitiveness to the action of a current, as set forth.

3. In a sporting-indicator, the combination, with two or more pointers or cylinders and ratchets and pawls for moving them step by step, of armature-levers carrying said pawls and polarized electro-magnets, two of which respond slowly to a weak current and two respond quickly to a stronger current, the circuit of the former being controlled by the latter, and all of said magnets being connected with the same electric circuit, as described.

4. In a sporting-indicator, the combination, with movable pointers and cylinders, of four electro-magnets separately connected with the same for moving or turning them, said magnets being polarized, whereby they will be operated or not according to the direction of the current, two of said magnets being sluggish or slow-acting, but capable of responding to a comparatively weak current, the others being quick-acting magnets requiring a current of greater strength than the others to effect their operation, the latter being connected in series in the circuit and the slow-acting magnets being included in normally-closed branches around the other two, respectively, said branches being formed in part by the vibrating armatures of the quick-acting magnets, as and for the purpose set forth.

444,454. RACING-INDICATOR. SAMUEL D. MOTT, Passaic, N. J. Filed Aug. 7, 1890. Serial No. 361,326. (No model.)



Claim.—1. The combination, with a main or line circuit, of a series of independent movable indicating devices or pointers, an electro-magnet for each pointer, all connected to a single local circuit controlled by the main circuit, and mechanism actuated thereby for imparting to said pointers intermittent movements of equal extent, independent electric circuits or branches for controlling the action or effect of said electro-magnets, and mechanism for closing any one of the independent circuits operated by the main circuit, as set forth.

2. The combination, in an electrical indicator, with a main line or circuit, of a series of devices, such as pointers, an electro-magnet for each pointer for imparting thereto intermittent movements of equal extent, each of said magnets being provided or wound with two coils, one connected with a circuit common to all and controlled by the main circuit and the other with an independent circuit or branch, and mechanism for closing any one of the said independent circuits operated by the main circuit, as set forth.

3. The combination, in an electrical indicator, with a main line or circuit, of a series of pointers, electro-magnetic step-by-step motors, one for each pointer, and all connected with a single local circuit controlled by the main, electro-magnetic controlling devices for retarding or accelerating the movement of any of the pointers and included in normally inacting independent circuits, and a switch mechanism operated by the main circuit for closing any one of said independent circuits, as set forth.

4. The combination, in an electrical indicator, with a main line or circuit, of a series of pointers, an electro-magnet for each pointer, all included in the same local circuit and adapted to impart movements of given extent to the pointers, a second electro-magnet for each pointer, each included in an independent circuit or branch and adapted to accelerate the normal movement of the pointers, and mechanism, substantially as described, operated or controlled by the main circuit for making and breaking the local circuit and any of the independent or branch circuits described.

5. The combination, in an electrical indicator, with a main line or circuit, of a series of pointers, an electro-magnetic motive device for each pointer, having two coils, one included in a local circuit common to all the motors, the other in an independent circuit or branch, a second electro-magnetic motive device for each pointer, each included in an independent circuit or branch and adapted to accelerate the normal movement of the pointers, and mechanism, substantially as described, operated or controlled by the main circuit for making and breaking the said local circuit and any of independent or branch circuits described.

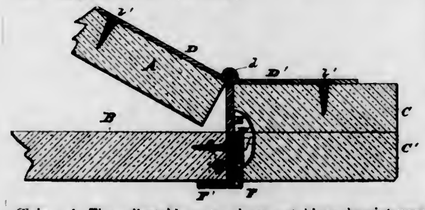
6. In an electrical indicator, the combination, with a series of concentric shafts carrying pointers, of a series of step-by-step electric motors for turning said shafts, means for accelerating or retarding any of the shafts, a second series of shafts corresponding to and engaging with the first, respectively, stops carried by the second shafts corresponding to the pointers on the first, and an electro-magnetic detent for engaging with all of said stops to bring the pointers to a given starting-point and releasing the same, as herein set forth.

7. In an electrical indicator, the combination, with a main or line circuit and a neutral and a polarized electro-magnet included therein, of a series of pointers, a step-by-step electro-magnetic motor for each, a local circuit common to all of said motors and controlled by the neutral magnet of the main line, a series of independent circuits or branches for controlling or modifying the relative movement of the pointers, and a circuit-closer operated by the polarized magnet of the main line to complete any of the said independent circuits, as set forth.

8. In an electrical indicator, the combination, with a main or line circuit and a neutral and a polarized electro-magnet included therein, of a series of pointers, a step-by-step electro-magnetic motor for each, a local circuit common to all of said motors, a circuit-breaker therein controlled by the neutral magnet of the main line, a series of independent derived circuits or branches from said local circuit, mechanism contained therein for retarding or accelerating the movement of the pointers, and a switch operated by the polarized magnet of the main line to complete any of the said independent circuits, as set forth.

9. The combination, in an electrical indicator, with pointers or similar devices and electro-magnetic motive devices for moving the same, each having two opposing circuits or coils, of a local circuit including one of the coils of each motor, independent derived or branch circuits from the local, each including one of the opposing coils, a main or line circuit, and two electro-magnets, one a neutral magnet for making and breaking the said local circuit, the other a polarized magnet for completing any one of the derived or branch circuits, as set forth.

444,455. ADJUSTABLE HINGE. WILLIAM MCCARTHY, Buffalo, N. Y., assignor of one-half to Henry Garono, same place. Filed Oct. 15, 1890. Serial No. 368,183. (No model.)

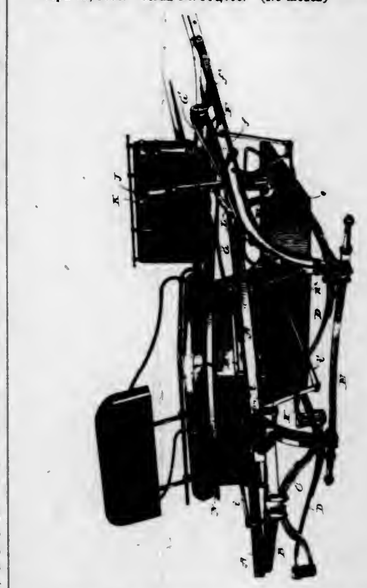


Claim.—1. The adjustable water-closet-seat hinge hereinbefore described, consisting, essentially, of two similar top leaves and of a third leaf at right angles to said top leaves, the latter being constructed of two parts adjustably secured together, whereby said third leaf may be lengthened or shortened to fit different thicknesses of the seat, as described.

2. In a water-closet hinge, the combination, with the two substantially similar top leaves, of an adjustable third leaf hinged to the pintle of the top leaves and provided with slotted apertures and serrations, and the adjustable hinge-piece having an aperture and serrations and a projecting lug, as described, said adjustable piece being adapted to be secured to the third leaf, as and for the object specified.

3. An adjustable water-closet-seat hinge consisting, essentially, of two similar leaves having knuckles, and a pintle, as described, to connect these leaves, and a third leaf connected centrally to the pintle between the knuckles of the two leaves, said third leaf being composed of two parts secured together face to face and provided with a lock to retain them in proper position, as and for the object stated.

444,456. ROAD-CART. SAMUEL J. MCDONALD, Gallatin, Mo. Filed Sept. 12, 1890. Serial No. 364,799. (No model.)



Claim.—1. In combination, the two-part shaft hinged together, the spring bolted to one part and loosely engaging the other, and the screw device on the former part engaging with said spring to adjust its tension, substantially as shown.

2. In combination, the two-part shaft hinged together, the spring co-operating therewith, the fulcrum-bolt for attaching said spring to one of said parts intermediate the ends of the springs, and the screw device for adjusting the tension of said spring engaging one of its ends, the other end of said spring engaging the other shaft part, substantially as shown.

3. In combination, the two-part shaft hinged together, the spring, the bolt passing through one of said parts and said spring near the end of the latter to secure them together, the bolt engaging said end and passing through said part, and the thumb-nut on the bolt, substantially as set forth.

4. As an improvement in road-carts, in combination, a shiftable body, a supporting-frame therefor, a pivoted shifting-lever on said frame connected with said body, the notched segment over which said lever may be moved, the latter being slotted for the purpose, and the pawl pivoted to the lever, provided with a lug or projection on each side thereof to engage the notches of said segment on each side of the lever in its line of movement in both directions to lock the same against forward and backward movement, substantially as specified.

5. In combination, the shaft-section carrying plates at its ends with upwardly-turned ends, the shaft-section pivoted between said plates, said sections being in line with each other, and the spring carried by the latter section and bearing at its end on a connection between upturned ends of said plates and having a hook loosely engaging therewith, as set forth.

6. In combination, the adjustable seat or body, the supporting-frame therefor, the adjusting mechanism, and the rigid bars connect-

ing the said seat or body at its forward end to the side bars of its supporting-frame, said rigid bars being pivotally attached to said body and said side bars, as set forth.

7. In combination with a vehicle-body, the side pieces thereof formed of two parts—a front and a rear—arranged in line with each other, and the pieces for holding them together, as set forth.

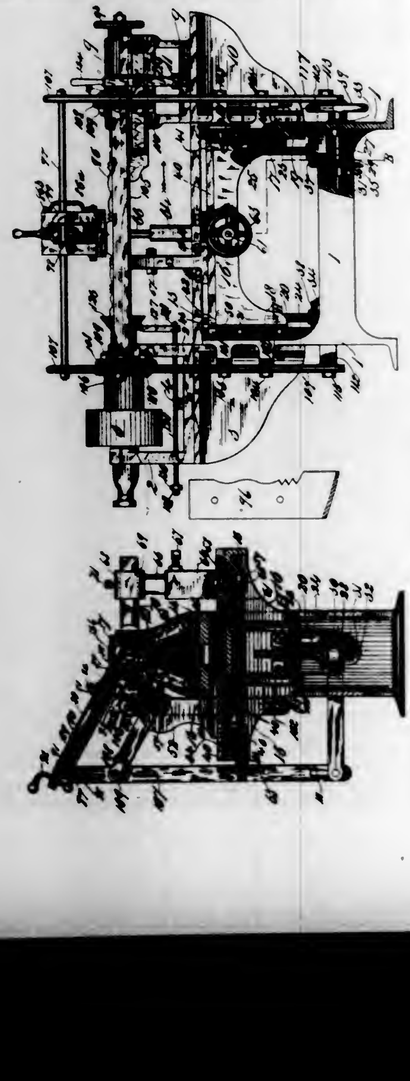
8. In combination with the seat or body of a road-cart, the side pieces thereof formed of two parts, a curved front and a straight rear part, the front end of the latter resting on the rear top edge of the latter, the two straight pieces, one on each side of said parts where they come together, so as to overlap the same, and bolts or screws for securing all of said parts, as set forth.

9. As an improvement in cart-bodies, in combination, the sides formed of two pieces—a straight rear piece and a curved front piece—arranged in line with each other, the pieces for holding them together overlapping the same, and the seat-risers bolted to said rear pieces, as set forth.

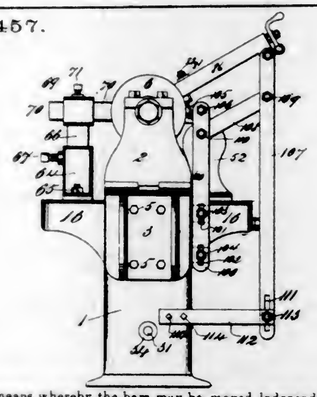
444,457. WOOD-TURNING LATHE. PETER NEWMAN, Indianapolis, Ind., assignor of one-half to George Massonne, same place. Filed May 8, 1890. Serial No. 351,011. (No model.)

Claim.—1. In a wood-turning lathe, the combination, with the pivotal tool, its guide, and contour-former, of the vertically-adjustable contour-former supporter, suitable outer adjustable guide-supporting bars, upper swinging arms pivoted to the said contour-former and guide-supporting bars at or near their summits, and suitable bottom supporting-arms extending from the frame of the lathe and whereto the said guide-supporting bars are adjustably secured, substantially as and for the purpose set forth.

2. In a wood-turning-lathe, the combination, with the pivotal tool, its guide, and contour-former, of the vertical adjustable contour-former supporters, suitable outer adjustable guide-supporting bars, upper swinging arms pivoted to the said contour-former and guide-supporting bars at or near their summits, suitable bottom supporting-arms extending from the frame of the lathe and whereto the said guide-supporting bars are adjustably secured at the outer ends of said arms, and



444,457.

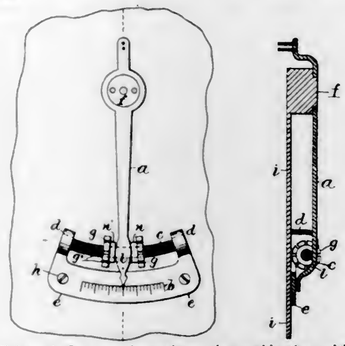


suitable means whereby the bars may be moved independently, substantially as and for the purpose set forth.

3. In a wood-turning lathe, the combination, with a suitable finishing-bit 54 and the arm 55, whereto said bit is secured, of the supporting-standards 52, whereto the said arm is pivoted, the table 16, the screw-threaded standards 23 and 24, and the sliding table 40, whereby the said tool is moved backward and forward and upwardly and downwardly while the machine is in motion, substantially as shown and described.

4. In a wood-turning lathe, the post 66, and steadying-rest 64, chambered to receive the said post whereon the head 68 is formed, with the rectangular opening 69, in combination with the table 58, clamping-screw 67, set-screws 71, and the rest 70, located in the said rectangular opening, substantially as shown and described.

444,458. WATCH-REGULATOR. CHARLES NOBS, Newark, N. J. Filed June 13, 1889. Renewed Sept. 27, 1890. Serial No. 366,309. (No model.)



Claim.—1. In a watch-regulator, the combination, with the regulator-lever, of the screw arranged transversely thereto, and the nuts fitted to the screw and arranged to press upon the opposite sides of the lever, as and for the purpose set forth.

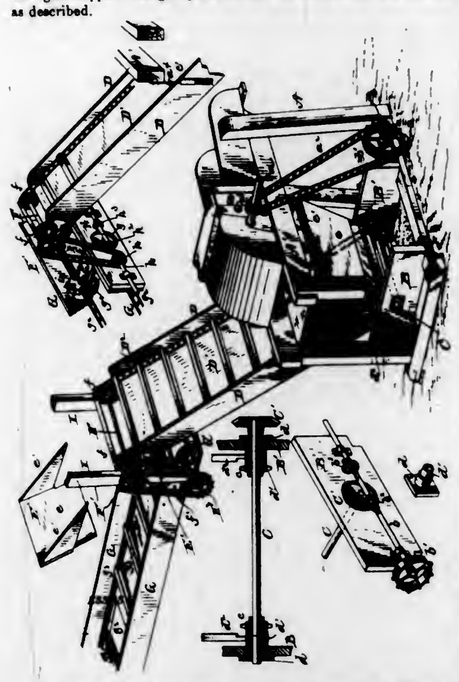
2. In a watch-regulator, the combination, with the regulator-lever, of the screw curved concentric with the lever-fulcrum and the nuts fitted to the screw upon the opposite sides of the lever and provided with collars for turning the same, as and for the purpose set forth.

3. In a watch-regulator, the combination, with the regulator-lever, of the screw curved concentric with the lever-fulcrum, the index-plate provided with lugs to sustain the screw at one side of said plate, and the nuts fitted to the screw at opposite sides of the lever, as and for the purpose set forth.

444,459. CARRIER ATTACHMENT FOR CUTTING-MACHINES. ELMORE W. ROSS, Springfield, Ohio. Filed Jan. 17, 1888. Serial No. 280,995. (No model.)

Claim.—1. In a removable carrier attachment to cutting-machines, the endless belt and the shaft thereof provided with a bevel-gear for actuating it, in combination with a removable gear-support therefor, a shaft thereon, and the bevel-gear adjustable on said shaft

to engage the bevel-gear on the carrier-shaft for adapting said carrier to be applied to and operated from either side of the cutting-machine, said gear-support being adjustable and removable with said carrier, as described.



2. The combination, with a carrier attachment to cutting-machines, of a gear-support connected to, upholding, and removable with said carrier, a driving-shaft journaled on said support and provided with a sprocket-wheel for actuating it and a bevel-wheel for actuating the carrier, and the carrier-shaft geared to said driving-shaft and provided with the carrier-driving sprocket-wheel, substantially as described.

3. The combination, with the gear-support for the endless carrier, of the shouldered tubular box *d*, provided with a flange at one end, through which it is secured to said gear-support, the endless-belt shaft journaled in said box, and the carrier-frame hinged on the shouldered end of said box, substantially as described.

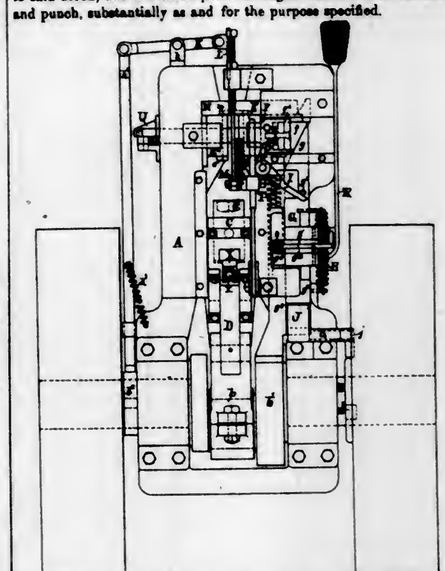
4. The combination, with the inclined endless carrier having the upper or outer endless-belt shaft provided on its extended end with a driving sprocket-wheel, of a supplemental carrier driven therefrom and connected therewith by a second sprocket wheel and chain, a shaft carrying said second sprocket-wheel and a bevel-wheel, and another bevel-wheel on the roller-shaft of the supplemental carrier, all substantially as described.

5. The carrier provided with a flooring having removable sections and thin strips bridging the openings for said sections and leaving open spaces between said strips and the carrier-sides, so that the endless carrier is upheld by said strips, whereby the discharge of the material operated upon is facilitated, substantially as described.

444,460. MACHINE FOR HEADING BOLTS, &c. CHARLES S. SEATON, Cleveland, Ohio, assignor of one-half to John A. Seaton, same place. Filed Mar. 25, 1890. Serial No. 345,196. (No model.)

Claim.—1. In a bolt or rivet heading machine, in combination, a stationary holding-die, a sliding carriage, a movable holding-die secured to said carriage, a breaker-plate secured to said carriage, and mechanism pressing directly against said breaker-plate to move said carriage forward, the whole being arranged substantially as described, whereby when the forward movement of said carriage is arrested before it reaches the end of its stroke a portion of said breaker-plate will be sheared away, for the purpose specified.

2. In combination with a movable holding-die of a bolt or rivet heading machine, a sliding carriage to which said die is secured, having separated shoulders, a block secured to the carriage, against which the pressure is applied to move said carriage forward, a punch secured to said block, and a breaker-plate arranged between said shoulders and punch, substantially as and for the purpose specified.



3. In a bolt or rivet heading machine, in combination, a sliding carriage having the separated vertical shoulders f^3 f^3, a breaker-plate engaging behind said shoulders, a block *f*, having the stud f^5, a holding-die, a cap-plate f^4, and mechanism for pressing directly against the block *f* to move said carriage forward, substantially as and for the purpose specified.

4. In combination with the movable holding-die of a bolt or rivet heading machine, a sliding carriage having separated shoulders f^3 f^3, a plate f^2, having a hole therethrough, resting against said shoulders, a breaker-plate f^1, secured to said plate across said hole, a block having a punch f^4, arranged to press against said breaker-plate through said hole, a beveled surface on the back of said block, a movable bar having an oppositely-beveled surface, and means for moving said bar, substantially as and for the purpose specified.

5. In a bolt or rivet heading machine, in combination, a block having a cutter-plate set below its surface, a feed-orifice passing through said block and plate, a stationary holding-die, a movable holding-die having its rear end in contact with the face of said block, and mechanism for moving said die across said feed-orifice, substantially as and for the purpose specified.

6. In a bolt or rivet heading machine, a cutter-block having a cutting-plate set into said block below its surface, both said plate and block having coincident holes, substantially as and for the purpose specified.

7. In a bolt or rivet heading machine, in combination, a cutting-plate having a suitable feed-orifice and a relatively-movable holding-die, the proximate faces of said plate and die being slightly separated, whereby a metal rod projecting through said feed-orifice is sheared off between the opposed edges of said die and feed-orifice, substantially as and for the purpose specified.

8. In a bolt or rivet heading machine, the combination, with the movable holding-die having a beveled surface at its back, of a sliding bar having an oppositely-beveled surface, said bar being made in two parts independently slidable side by side, mechanism for connecting and disconnecting said two parts, and mechanism for sliding said bar forward and backward, substantially as and for the purpose set forth.

9. In a bolt or rivet heading machine, a movable holding-die, a sliding bar made of two parts independently slidable side by side, mechanism for connecting and disconnecting said two parts, and suitable connecting devices between said bar and die, whereby said die is moved in both directions by the movement of said bar when its parts are connected, substantially as and for the purpose specified.

10. In a bolt or rivet heading machine, in combination with the movable holding-die having a beveled surface at its back, a sliding bar having an oppositely-beveled surface, a bent lever, the arms of which engage, respectively, with projecting studs which are secured directly or indirectly with said bar and die, and mechanism for sliding said bar in both directions, substantially as and for the purpose specified.

11. In a bolt or rivet heading machine, a movable holding-die, a

sliding bar made of two independently-slidable parts, a revolving cam engaging with one of said parts, and suitable connecting mechanism between said die and the other part with a shoulder on one of said parts, a latch pivoted to the other part, mechanism for moving said latch in front of said shoulder and for removing it, and an independent spring for moving each of said parts backward, substantially as and for the purpose specified.

12. In a bolt or rivet heading machine, the combination of the movable holding-die, a sliding bar made of two independently-slidable parts, and suitable connecting mechanism between said die and bar with a shoulder on one of the parts of said bar, a latch pivoted to the other part, a screw-threaded stem to said latch, a treadle, a bent bar connecting said treadle and stem, and a spring around said stem, substantially as and for the purpose specified.

13. In a bolt or rivet heading machine, the combination of the movable holding-die having a beveled surface at its back with a sliding bar having an oppositely-beveled surface, a cam, and a pawl adapted to engage with said bar when it is at the extreme end of its forward movement, substantially as and for the purpose specified.

14. In a bolt or rivet heading machine, the combination of the movable holding-die, a sliding bar, a cam, and suitable connecting mechanism between said bar and die, with a shoulder on said bar, a rock-shaft, a pawl secured thereto, an arm on said rock shaft, and a lug revolving with the main shaft of the machine and adapted to engage with said arm at each revolution of said shaft, substantially as and for the purpose specified.

15. In a bolt or rivet heading machine, in combination, a crank-shaft, a cross-head, a connecting-rod formed in two parts, which are pivoted together, shoulders on said two parts, whereby the connecting-rod is adapted to deliver an endwise thrust, and mechanism for causing said two parts to turn upon their common pivot, substantially as and for the purpose specified.

16. In a bolt or rivet heading machine, in combination, a crank-shaft, a cross-head, a connecting-rod made of two parts, pivoted together, said parts having shoulders which are adapted to abut and thereby adapt said rod to deliver an endwise thrust, a fin depending from one of said parts, a tripping-piece, and mechanism for moving said tripping-piece into and out of the line of travel of said fin, substantially as and for the purpose specified.

17. In a bolt or rivet heading machine, the combination of a crank-shaft, a cross-head, and a connecting-rod made in two parts having shoulders which are adapted to abut and thereby adapt the rod to deliver an endwise thrust, and having a fin depending from one of said parts, with a vertically-movable tripping-piece, a treadle-connecting mechanism between said tripping-piece and treadle, and a spring arranged to hold said treadle in such position that the tripping-piece is held normally in the line of travel of said fin, substantially as and for the purpose specified.

18. In a bolt-heading machine, a stationary holding-die having a horizontal groove, a movable holding-die having a horizontal groove and mechanism for moving the latter die against the former, projections from the face of both dies surrounding the socket formed by the two grooves, which projections when the blocks are in contact have substantially the same cross-sectional area as the bolt-head to be formed, with a cross-head, a revolving crank-shaft, a connecting-rod, and a heading-tool secured to said cross-head having a socket, the outer edges of which are beveled outward, said socket inside said beveled edges being of substantially the same shape and size as the bolt-head to be formed, except that it is slightly deeper than the thickness of said head, substantially as and for the purpose specified.

19. In a machine adapted to automatically cut from a rod a definite part thereof and to head the same at a single operation, a bracket pivoted to the machine at the feeding end thereof and adapted to be held in suitable relation to the feeding-orifice to support the rods as they are being fed, substantially as and for the purpose specified.

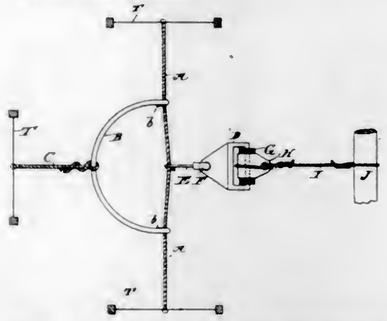
20. In a bolt or rivet heading machine, the combination of a stationary bracket secured to the side of the machine, a shearing-lever adapted to co-operate therewith, and suitable mechanism connecting said shearing-lever with some other moving part of the heading mechanism, whereby said lever is operated simultaneously with the heading mechanism, substantially as and for the purpose specified.

21. In a bolt or rivet heading machine, the combination, with a carriage which carries the movable holding-die, of a stationary bracket, a shearing-lever, and mechanism connecting said shearing-lever and carriage, whereby any desired length of rod may be cut while another rod is being headed, substantially as and for the purpose specified.

22. In a bolt or rivet heading machine, the combination of a shearing-bracket attached to the side frame of the machine and a pivoted shearing-lever adapted to co-operate with said bracket with a transversely-movable carriage and a link connecting said carriage and lever, substantially as and for the purpose specified.

23. In a bolt and rivet heading machine, the combination of a stationary and a movable holding-die provided with horizontal grooves, which when the dies are together form a socket in which the rod is held during the heading operation, a block against which said dies abut, having an orifice coincident with said socket, an ejecting-hammer, a lever to one end of which said ejecting-hammer is pivoted, a rod pivotally connected with the other end of said lever, and a quick-acting cam on the main shaft adapted to push said rod forward, substantially as and for the purpose specified.

444,461. **DEVICE FOR INSERTING BRANCH LINES ON MECHANICAL-TELEPHONE LINES.** GEORGE F. SHAVER, New York, N. Y., assignor to the Shaver Corporation, of New Jersey. Filed Mar. 22, 1890. Serial No. 344,942. (No model.)

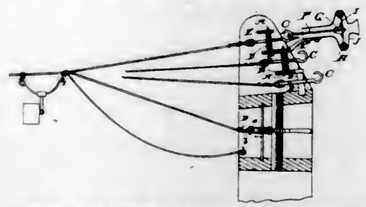


Claim.—1. A cutting-in device for mechanical-telephone lines, consisting of a bow-shaped spring-vibrator interposed between a main trunk line and a branch line and forming a part of a trunk-line circuit, in combination with a tension-setting guy adjusted upon said main trunk line at a point opposite said branch line, substantially as herein set forth.

2. A cutting-in device for mechanical-telephone lines, consisting of a spring-vibrator provided with terminal hooks for engagement with a main trunk line at two separate points, in combination with a branch line attached to the center of said vibrator, and a counter-weight, insulator, and tension-setting guy attached to said trunk line at a point midway between the terminal hooks of the said vibrator, substantially as herein set forth.

3. In a cutting-in device for mechanical-telephone lines, the combination of the vibrator B, hook E, counter-weight D, insulator G, and tension-guy I with main line A and branch line C, substantially as herein set forth.

444,462. **MECHANICAL-TELEPHONE EXCHANGE.** GEORGE F. SHAVER, New York, N. Y., assignor to the Shaver Corporation, of New Jersey. Filed May 1, 1890. Serial No. 350,211. (No model.)



Claim.—1. A permanent terminal support for mechanical-telephone lines, consisting of an elastic tube or cushion interposed between and in combination with a fixed support and the terminal of a line-wire, substantially as herein set forth and described.

2. A terminal support for mechanical-telephone lines, consisting of a wire A and an elastic envelope B, in combination with supporting-bars E and a mechanical-telephone line-terminal, substantially as herein set forth and described.

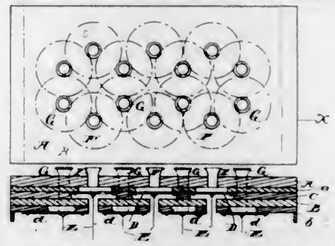
3. A mechanical-telephone line-terminal consisting of a loop or link C, provided with means for temporary engagement with a movable hand telephone, in combination with a fixed supporting-wire placed at right angles thereto, and an elastic tube or cushion interposed between said loop and the supporting-wire, substantially as herein set forth and described.

4. In a mechanical-telephone-exchange apparatus, the combination of a hook D, provided with an extended shank, said shank being bent into a circular form and inclosing an elastic tube *b*, fitted with a wire or bar *a*, passing through the center of said tube, substantially as herein set forth and described.

5. The diaphragm of a movable hand telephone fixed at right angles with a connecting-bar F by means of and in combination with the cone G, substantially as herein set forth.

6. A supporting-frame for mechanical-telephone line-terminals, consisting of a series of parallel bars arranged one above another and at an angle with the perpendicular, in combination with a series of mechanical-telephone line-supports connecting each pair of bars together, substantially as herein set forth and described.

444,463. **MECHANICAL-TELEPHONE EXCHANGE.** GEORGE F. SHAVER, New York, N. Y., assignor to the Shaver Corporation, of New Jersey. Filed May 6, 1890. Serial No. 350,754. (No model.)



Claim.—1. A mechanical-telephone exchange consisting of a number of diaphragms and connected line-wires mounted upon and in combination with a common sounding-board adapted to vibrate simultaneously with said diaphragm and line-wires, substantially as herein set forth and described.

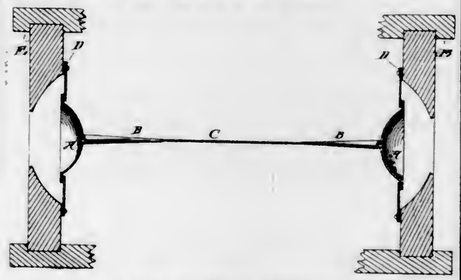
2. A common sounding-board supported at its outer edges, the remaining surface being free to vibrate, in combination with a series of diaphragms and connected line-wires mounted thereon, whereby the tension of said wire and diaphragms is imparted to said sounding-board, substantially as herein set forth and described.

3. A series of mechanical-telephone diaphragms and connected line-wires mounted upon a common sounding-board in such a manner that the tension of the connected line-wires tends to pull the diaphragm in a direction away from the sounding-board, substantially as herein set forth and described.

4. In a mechanical-telephone apparatus, two apertured boards mounted one over the other and separated by a partition-board, in combination with a series of diaphragms and connected line-wires mounted upon each board, the wires from the front or primary board being arranged to pass through apertures between the diaphragms mounted upon the underlying or secondary board, substantially as herein set forth and described.

5. A series of mechanical-telephone diaphragms and connected line-wires fastened to a common apertured supporting-board, in combination with a series of month-pieces arranged upon the opposite side of said board concentrically with respect to the said diaphragms and apertures, substantially as herein set forth and described.

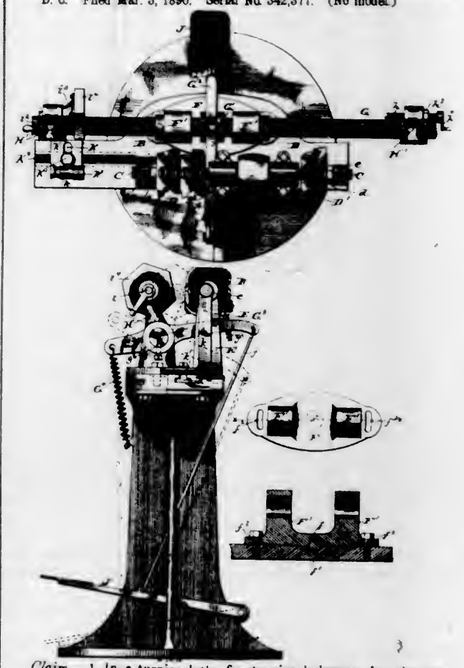
444,464. **MOLECULAR SOUND-RESONATOR.** GEORGE F. SHAVER, New York, N. Y., assignor to the Shaver Corporation, of New Jersey. Filed May 12, 1890. Serial No. 351,464. (Model.)



Claim.—1. A molecular resonator consisting of a disk of metal A, in combination with a rear extension-piece B and a connecting-wire C, all solidly soldered or brazed together into one continuous metallic conductor, substantially as herein set forth and described.

2. The combination of two metallic resonators connected one with the other by means of a jointless metallic conductor, substantially as herein set forth and described.

444,465. **TURNING-LATHE.** JAMES L. SIMMONS, Washington, D. C. Filed Mar. 3, 1890. Serial No. 342,377. (No model.)



Claim.—1. In a turning-lathe for turning balusters, &c., the combination, with the rotary cutter-heads, of a vibrating blank-feeding frame horizontally journaled in a vertically-pivoted frame, a pattern carried by the blank-frame, and a laterally-adjustable guide-roller adapted to bear against the pattern, whereby on the adjustment of the guide-roller the blank may be turned more or less, as desired, substantially as and for the purposes described.

2. In a blank-frame for wood-working machines, the combination, with a rock-shaft horizontally adjustable about a fixed center, of head and tail stocks adjustable on said rock-shaft, a spur-centering shaft rotary on the head-stock, and means for rotating said shaft, substantially as described.

3. In a wood-working machine, the combination, with the cutters, of a rock-shaft, head and tail stocks adjustable on said shaft, a rotary spur-centering shaft journaled in the head-stock, a pattern-plate secured to the centering-shaft and having an opening surrounding said shaft and adapted to receive and center one end of the blank, and a guide-roller adapted to bear against said pattern-plate and control the feeding of the blank to the cutters, substantially as described.

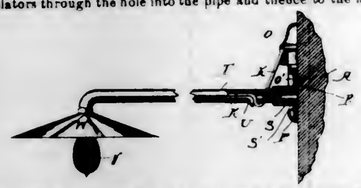
4. In a wood-working machine, the combination, with the cutter-heads, of a blank-feed frame carrying head and tail stocks, a rotary spur-centering shaft mounted in one of said stocks, a removable pattern-plate on said frame, means for rotating the blank and pattern, and a longitudinally and laterally adjustable guide-roller adapted to bear against the pattern to control the feeding of the blank, substantially as described.

5. In a wood-working machine, the combination, with the blank-feeding frame provided with head and tail stocks, a spur-centering shaft journaled in the head-stock, and a pattern-plate secured to said centering-shaft and provided with a central opening corresponding in size and shape to the blank to be operated on, one face of said pattern projecting beyond the spur on said shaft, substantially as described.

6. In a turning-lathe for turning balusters and like articles, the combination, with the bed-plate having standards formed thereon, of a cutter-shaft journaled therein, one or more cutter-heads adjustably secured near the ends of said shaft, supplemental supports removably secured to the bed-plate and having bearings therein adapted to fit over the ends of said shaft, a vertically-pivoted frame adjustable on said bed, and a rocking blank-frame journaled in bearings on said frame, substantially as and for the purposes described.

444,466. **ELECTRIC-LAMP BRACKET.** THOMAS C. SMITH, Philadelphia, Pa. Filed May 19, 1890. Serial No. 352,338. (No model.)

Claim.—1. A bracket consisting of a plate with a projecting thimble thereon, a pipe secured on such thimble and having a hole in one side thereof and adapted to receive the lamp-fixture at its other end, and insulators on such plate, so that the conductors may pass from such insulators through the hole into the pipe and thence to the lamp.



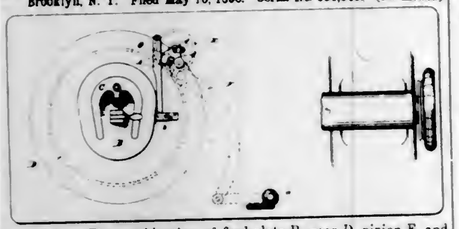
2. A bracket consisting of a plate adapted to be secured to the post, arms and insulators on such plate, a lamp-fixture, and a hollow pipe holding the same at one end and secured to the plate at the other, said pipe having an aperture into which the conductors from the insulators may pass.

3. In a bracket, the combination of a central plate, flanged to engage the post, with arms and insulators thereon, and a screw-threaded portion to receive the lamp-support.

4. In a bracket, the combination of a central plate, flanged to engage the post, with arms and insulators thereon, and a thimble projecting from such plate.

5. In a bracket, the combination of a central plate, flanged to engage the post, with arms and insulators thereon, and a thimble projecting from such plate, said thimble screw-threaded internally, in combination with a pipe screw-threaded into such thimble to receive the conductors from the insulators.

444,467. **BUTTON-HOLE SEWING-MACHINE.** RUDOLPH SPAHN, Brooklyn, N. Y. Filed May 10, 1890. Serial No. 351,313. (No model.)



Claim.—The combination of feed-plate B, gear D, pinion E, and lever F with cushion A and cam G, the cam G and pinion E arranged to be operated simultaneously by the lever F, as set forth.

444,468. **SLEEPING-CAR.** MONTGOMERY H. THROOP, Jr., Chicago, Ill. Filed Oct. 27, 1890. Serial No. 369,452. (No model.)



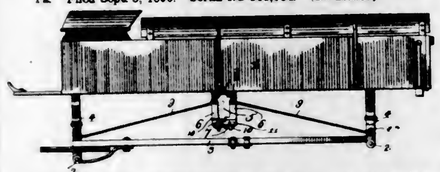
Claim.—1. In a combined sleeping and drawing salon, a frame pivoted to the side of the salon, adapted to swing upward against the side thereof or extend outward therefrom into the salon and form a frame upon which the mattress of the berth can be placed, in combination with a mattress having bars secured to the ends thereof, adapted to fit on the end bars of the pivoted frame, substantially as described.

2. A frame consisting of bars pivoted to the side of a salon, such bars having a groove on one side thereof, a bar secured to the outer end of such pivoted bars and extending from one to the other thereof, and legs pivoted to the outer end of such pivoted bars, whereby the frame may be placed against the side of the car or extended horizontally, in combination with a mattress having bars secured to the ends thereof adapted to fit into the grooves in the pivotal bars and form therewith the frame and mattresses of a berth in such salon, substantially as described.

3. In a combined sleeping and drawing salon, a frame consisting of bars pivoted to the side of the salon, such bars having a third bar secured to the outer ends thereof and extending from the one to the other, and legs pivoted to such frame, whereby the frame may be placed against the side of the salon or extended horizontally, a rotatable ratchet-wheel on the end bars of such frame, such ratchet-wheel having a hole in the center thereof, in combination with a mattress having bars secured to the ends thereof, such mattress-bars having squared ends, one of such ends adapted to fit into the square hole of the ratchet-wheel and the other of such ends adapted to have placed thereover a wrench, whereby when the mattress-bars are placed on the horizontal frame the mattress can be drawn taut by the turning of such mattress-bars, substantially as described.

4. In a combined sleeping and drawing salon, a frame pivoted to the side of the salon, adapted to swing upward against the side thereof or extend outward therefrom into the salon and form a frame upon which the mattress of a berth can be placed, in combination with a mattress having bars secured to the ends thereof, adapted to fit on the end bars of the pivoted frame, pivoted legs upon the end bars of the pivoted frame, and the side rail of the pivoted frame adapted to come against the panel of an upper berth and form an ornamentation therefor when such pivoted frame is against the side of the salon, substantially as described.

444,469. **WAGON-SPRING BRACE.** SAMUEL TRUMBORE, Easton, Pa. Filed Sept. 5, 1890. Serial No. 363,964. (No model.)



Claim.—1. The combination, with the body, axles, and springs of a wagon, of a bracket secured to the body and arranged between the axles, vertically-disposed equalizing-levers having their lower ends fulcrumed in the bracket and engaging each other, and rods connected with the upper ends of said levers and extending to the springs, substantially as and for the purpose set forth.

2. The combination, with the body, axles, and springs of a wagon, of a bracket secured to the wagon-body between the axles, a pair of levers having their lower ends pivoted to said bracket and controlled by each other, and rods connected with the free upper ends of the levers and with the springs, substantially as and for the purpose set forth.

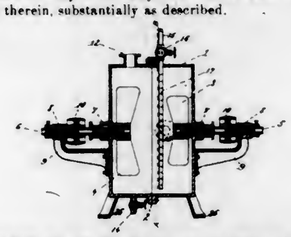
3. The combination, with the body, axles, and springs of a wagon, of a bracket connected with the wagon between the axles, a pair of vertically-disposed levers pivoted to said bracket and provided with intermeshing segments, and spring-rods connected with the free ends of the levers and with the springs, substantially as and for the purpose set forth.

4. The combination, with the body, axles, and springs of a wagon, of a bracket connected with the wagon-body between the axles, a pair of pins, a pair of levers pivoted on said pins and provided at their lower ends with intermeshing segments, a brace connecting said pins, and rods connected with the free ends of the levers and with the springs, substantially as and for the purpose set forth.

444,470. **MOLASSES-MIXER.** WILLIAM N. VILLAVASO, New Orleans, La. Filed Dec. 26, 1889. Serial No. 334,974. (No model.)

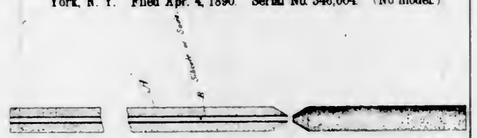
Claim.—1. An apparatus for treating and varying the density of molasses, consisting of a closed vessel having a pipe-connection for introducing the molasses and a pipe-connection for the discharge thereof, a pair of propellers rotating in reverse directions for agitating and mixing the molasses, and a valved perforated water-conducting pipe extending across the chamber for delivering water into the body of agitated molasses to vary the density thereof and dissolve the fine grains of sugar therein, substantially as described.

2. An apparatus for treating and varying the density of molasses, consisting of a closed vessel having a pipe-connection for introducing the molasses and a pipe-connection for the discharge thereof, a pair of independent revolving shafts, each carrying a propeller for agitating and mixing the molasses at different points in the closed chamber, and a valved perforated water-conducting pipe extending across the chamber between the propellers for delivering water into the body of agitated molasses to vary the density thereof and dissolve the fine grains of sugar therein, substantially as described.



3. An apparatus for treating and varying the density of molasses, consisting of a closed vessel having a pipe-connection for introducing the molasses and a pipe-connection for the discharge thereof, a pair of independent shafts revolving in reverse directions and each carrying a propeller for agitating and mixing the molasses at different points in the closed chamber, and a valved perforated water-conducting pipe extending across the chamber between the propellers for delivering water into the body of agitated molasses to vary the density thereof and dissolve the fine grains of sugar therein, substantially as described.

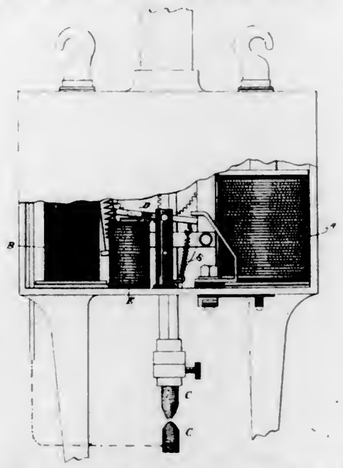
444,471. **CARBON FOR ARC LIGHTS.** BARTON B. WARD, New York, N. Y. Filed Apr. 4, 1890. Serial No. 346,604. (No model.)



Claim.—1. As a new article of manufacture, a carbon stick or pencil having a longitudinal bore or passage the walls of which are coated with a thin film or layer of a silicate.

2. As a new article of manufacture, a carbon stick or pencil having a longitudinal bore or passage at or near its center, the walls of which are coated with a thin layer or film of silicate of soda, as and for the purpose described.

444,472. **ELECTRIC-ARC LAMP.** BARTON B. WARD, New York, N. Y., assignor to the Electric Construction and Supply Company, same place. Filed Apr. 11, 1890. Serial No. 347,519. (No model.)



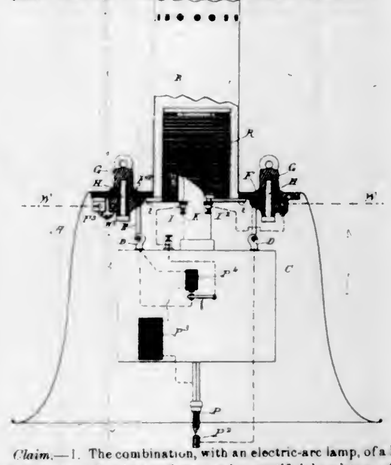
Claim.—1. The combination, in an electric-arc lamp, of a derived-circuit feed-regulating magnet B, a circuit-opening switch which normally or while the arc is of normal length maintains the connection of such derived-circuit magnet-coil with the main or supply circuit closed, but which is adapted on operation to hold such connection open, and devices responsive to abnormal resistance in the circuit of the arc for bringing said switch into operation, as and for the purpose described.

2. The combination, in an electric-arc lamp, of a feed-regulating magnet in a derived circuit around the arc, a circuit breaker and closer of such derived circuit which normally or while the arc is of normal length maintains a position to keep such derived circuit closed, and a controlling-magnet for such switch connected to the circuits of the lamp and responsive to abnormal increase in the circuit of the arc for bringing such switch into operation to open and hold open the circuit of the feed-regulating magnet.

3. The combination, in an electric-arc lamp, of a switch D, normally completing the circuit through the feed-regulating derived-circuit magnet for the lamp, a magnet-coil in the circuit of the arc adapted when excited to hold such switch in circuit-closing position, and a retractor operating on such switch for opening the circuit of the feed-regulating magnet when the current through the arc decreases to an abnormal extent.

4. The combination, in an electric-arc lamp, of a switch having back and front contacts, the front one of which is included in the circuit of the derived-circuit feed-regulating magnet, while the back contact is in a shunt or branch circuit around the lamp, and a controller-magnet for such switch having a coil in a circuit through the arc, as and for the purpose described.

444,473. **ELECTRIC-ARC LAMP.** BARTON B. WARD, New York, N. Y., assignor to the Electric Construction and Supply Company, same place. Filed Apr. 11, 1890. Serial No. 347,520. (No model.)



Claim.—1. The combination, with an electric-arc lamp, of a lamp-hood, a chimney for the arc lamp, and an artificial resistance-frame mounted in the chimney of the hood independently of the lamp and provided with a vertical passage or opening to receive the lamp-chimney.

2. The combination, with an electric-arc lamp, of a hood therefor, a chimney for the arc lamp, binding-posts for connection with the line-wire, mounted in the head of the hood for such lamp, an electric resistance-frame secured within the chimney of the hood and having a vertical central passage or opening for the chimney of the lamp, and binding-posts or connecting devices, substantially as described, for permitting the connections of the resistance with the lamp and line-wires to be charged at pleasure.

3. The combination, with an electric-arc lamp, of the lamp-hood provided with devices for sustaining an arc lamp within it, with the chimney of the lamp extending up within the chimney of the hood and an electric resistance-frame mounted in the chimney for the hood and having its resistance-wire connected to terminal binding-posts I^1, accessible within the lamp-hood, as and for the purpose described.

4. In an electric resistance-frame, the combination, with the supporting-frame having the heads provided with radial slots, of insulating bars or rods seated in the slots and superposed upon one another and resistance-wire wound over said bars in layers between them.

5. In an electric resistance-frame, the combination, with the heads connected by a tube and provided with the radial slots, of insulating bars or rods mounted in the slots and provided with notches or grooves to receive the resistance-wire and with rabbets or offsets engaging with the heads, as and for the purpose described.

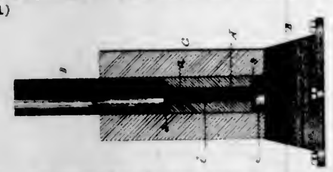
6. In an electric resistance-frame, bars or rods M, of insulating material, disposed at intervals around the circumference of such frame and provided with notches or grooves to receive the resistance-wire, said bars or rods being supported upon one another, as described, and holding the resistance-wire in place between them in the notches.

7. In an electric resistance-frame, the combination, with the heads L L^3, of the connecting-tube and the bars M, superposed upon one another in slots in the heads and having grooves or notches at their edges to hold the resistance-wire, as and for the purpose described.

8. The combination, with the hood for an electric-arc lamp, of a chimney for such hood rising above the same and provided at near its top with openings to allow the escape of heated air, and a resistance-frame mounted within the chimney below such openings, and provided with binding-posts mounted on the lower head of the frame at or near the bottom of the chimney and having their shanks connected, respectively, to the terminals of the resistance-coil.

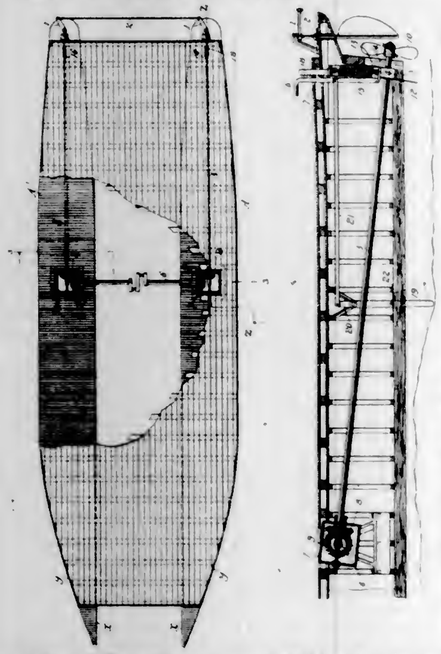
9. The combination, with the resistance-frame having the connected heads and a central passage or bore, of a wire-supporting bar or rod provided with notches in its outer edge and with rabbets or shoulders at its inner edge to hold it against longitudinal displacement.

444,474. METHOD OF MANUFACTURING BULLETS. ALFRED WEED, Tarrytown, N. Y. Filed Mar. 20, 1890. Serial No. 344,615. (No model.)



Claim.—The within-described improvement in the manufacture of bullets, substantially consisting in casting the bullet upon and condensing and swaging it upon a mandrel, substantially as set forth.

444,475. DEVICE FOR RAISING AND LOWERING PROPELLERS. ALFRED WEED and JOHN ROCKWELL, Tarrytown, N. Y. Filed May 23, 1890. Serial No. 352,876. (No model.)

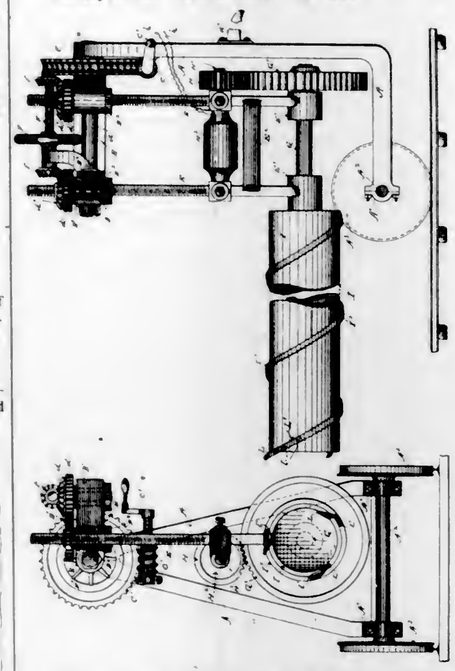


Claim.—1. The combination, with a vessel having a slot and curved guides at the stern-post, of a propeller-shaft passing through said slot and having its outer end supported in a bearing-box which is mounted to move in said curved guides and its inner end mounted in a pivoted box at the center of curvature of the guides, substantially as described.

2. The combination, with the pivoted propeller-shaft passing through a vertically-adjustable box at the stern, of an elevator for raising said box, a detent for holding the box against the action of the elevator, and a trigger projecting beyond the keel and connected with the detent, substantially as set forth.

3. The combination of the pivoted propeller-shaft, outer bearings vertically adjustable, spring connected with said bearing and with a fixed support, a detent connected with the bearing and engaging with a rack, and a trigger connected with said detent and projecting beyond the keel, substantially as described.

444,476. COAL-MINING MACHINE. CHRISTOPHER H. WOLFORD, Corry, Pa., assignor of one-half to James A. Anderson, Bedford, Ohio. Filed May 23, 1890. Serial No. 352,932. (No model.)



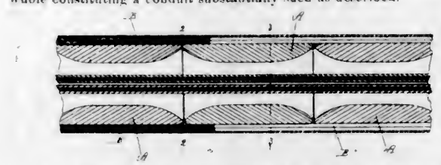
Claim.—1. The combination, with a coal-mining machine, of a frame, a shaft secured to the upper end of this frame, sleeves revolubly supported by the shaft, screw-threaded rods passing through the sleeves, a drill secured to the rods, and means for turning the sleeves, whereby the rods and drill are raised or lowered relatively to the frame, substantially as set forth.

2. The combination, with a frame, a shaft projecting from the upper end of the latter, a sleeve loosely mounted on said shaft and lugs connected with the said sleeve, and sleeves revolubly supported by the lugs, of a drill, threaded rods extending therefrom into the rotary sleeves, and gearing for swinging the sleeve on the shaft and for rotating the sleeves in the lugs, whereby the drill may be swung laterally and be raised or lowered, substantially as set forth.

3. The combination, with a frame mounted on suitable rollers or wheels and having handles thereon, a shaft projecting from the upper end of the frame, a sleeve loosely mounted on the shaft, a worm-gear mounted on the sleeve, and a worm for operating with this worm-gear, whereby the sleeve is rocked, of a hollow drill, a motor, gearing for communicating motion from the motor to the drill, screw-threaded rods extending upward from the drill, revolubly-supported sleeves through which the rods pass, and gearing for rotating said sleeves, whereby the drill is raised or lowered, substantially as set forth.

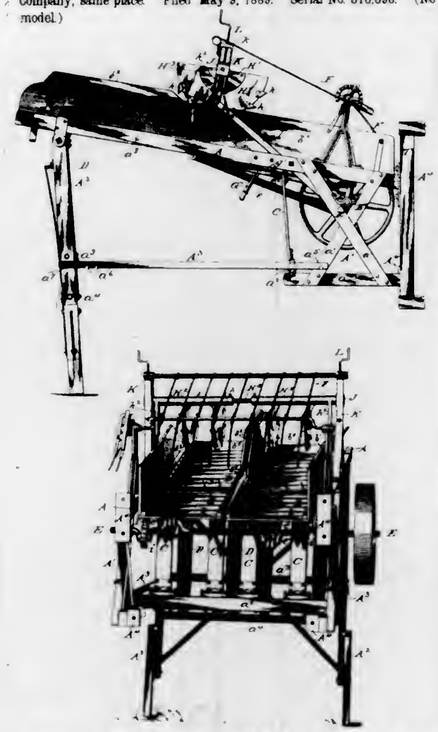
444,477. CONDUIT FOR ELECTRIC WIRES. ALEXANDER P. WRIGHT, Boston, assignor, by direct and mesne assignments, to Arthur Lord, trustee, Plymouth, Mass. Filed Apr. 18, 1890. Serial No. 348,569. (No model.)

Claim.—1. A conduit for electrical conductors, made up of a number of short tubes A, having an inner diameter at the ends greater than at the middle portion and each independent of the others, and a flexible pipe B, the pipe B holding the tubes A end to end, and the whole constituting a conduit substantially such as described.



2. A conduit for electrical conductors, made up of a number of tubes A, some of which are grooved substantially as described, held together by a flexible pipe B, which is contracted to fill the grooves about the grooved tubes, all substantially as described.

444,478. BAND-CUTTER AND FEEDER. OLIVER ANDERSON, Racine, Wis., assignor to the Anderson Band Cutter and Self Feeder Company, same place. Filed May 9, 1889. Serial No. 310,096. (No model.)



Claim.—1. In a band-cutter and feeder having one or more reciprocating feed-tables, the combination, with its longitudinal frame-beams, of a trussed downward-extending frame at its forward end and a pivotally-attached leg-frame vertically adjustable upon itself at its rear end.

2. The combination, with the frame having a trussed downward extension at its front end affording wide bearing against the thrasher-frame to which it is to be attached, of extensible legs pivoted to the rear of the frame and a brace or braces movably connected with the lower part of the trussed extension and adapted to detachably connect with both the legs and the rear part of the frame.

3. The combination, with a frame, of a leg structure vertically extensible upon itself and pivoted to the said frame so as to have a variable inclination from front to rear thereof, a reciprocating feed table or tables, and a flexible support or supports pivoted to or near the rear end of the table and to the leg structure above its extensible part.

4. The combination of the frame having at its front end a depending trussed extension embracing a cross-bar, as a^2, in its lower portion, of a reciprocating table having a flexible support or supports at its front end resting on said cross-bar, an extensible leg structure pivoted to the rear part of the frame, and a spring support or supports rigidly connected to the leg structure and pivoted to the rear portion of the table.

5. In a band-cutter and feeder, the combination, with a reciprocating table, of an oscillating cutter-plate having a curved edge, said plate being mounted over the table and provided at its edge with teeth having rearwardly-inclined cutting-edges which have a backward cutting movement simultaneously with a forward and feeding movement of the table and a forward feeding movement simultaneous with the rearward movement of the table.

6. The combination, with the frame-beams A and a reciprocating table or tables B, of standards on the frame-beams, vertically-movable slides fitted to said standards, a shaft mounted in said slides, and an oscillating cutter-plate on the shaft, having a curved edge provided with teeth sharpened only on their rear inclined edges.

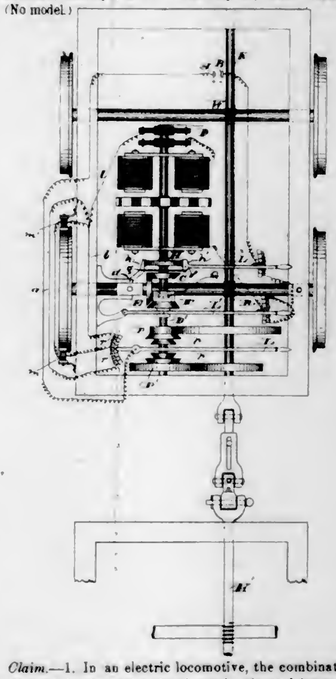
7. The combination, with the frame-beams A and reciprocating tables B B, of a transverse shaft adjustably supported from the frame-beams A and two separate oscillatory hubs mounted on said shaft and carrying cutters.

8. The combination, with the frame-beams A and reciprocating tables B B, of standards on the frame-beams, blocks vertically movable on or in said standards, means, substantially as described, for raising and lowering said blocks, a shaft supported by said blocks, and two separate oscillatory hubs bearing cutter-plates mounted on said shaft.

9. The combination, with a frame and a reciprocating table, of an overhead oscillating cutter, a rotating drive-shaft mounted on the frame and provided with oppositely-directed cranks imparting power to the table and to the cutter for reciprocating the table and oscillating the cutter, a pitman connecting one of said cranks with the table, and a second pitman connecting the other crank with the cutter.

10. The combination, with the reciprocating table or tables and a longitudinal frame having a depending trussed extension A′ at its forward end, said extension comprising horizontal side beams a, transverse beams a^2, and the crossed side bars a, of a crank-shaft E for reciprocating the table or tables, and bearing-boxes for said shaft, said boxes being secured to the said crossed side bars.

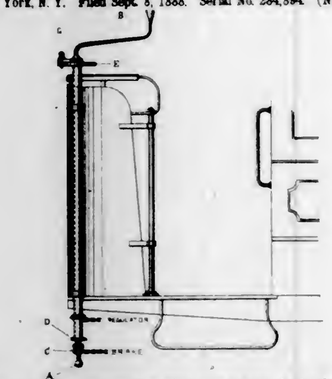
444,479. ELECTRIC-CAR-CONTROLLING DEVICE. EDWARD M. BENTLEY, Brooklyn, N. Y. Filed July 10, 1885. Serial No. 171,195. (No model.)



Claim.—1. In an electric locomotive, the combination of speed-changing mechanism, whereby the ratio of speed between the armature and wheels may be changed, a brake for the vehicle, and a common operating device for the brake and said mechanism.

2. The combination, in an electric locomotive, of an electric motor with speed-changing mechanism, whereby the ratio of speed between the armature and wheels of the car may be varied, a regulator for the motor, and a common operating device for the regulator and speed mechanism, as set forth.

444,480. ELECTRIC-RAILWAY CAR. EDWARD M. BENTLEY, New York, N. Y. Filed Sept. 3, 1888. Serial No. 284,894. (No model.)



Claim.—1. The combination, with a regulating device for an electric motor propelling a vehicle and a brake for the vehicle, of a common actuating device connected with both regulator and brake, so as to actuate both together, and means for adjusting one of said connections relatively to the other to preserve the desired relation of throw between them.

2. The combination, with a regulating device for an electric motor propelling a vehicle, of an actuating device therefor and a brake for the vehicle having an adjustable connection with the actuating device, such that a given movement of the actuating device may impart a varying throw to the brake-shoes.

3. The combination, with a brake-spindle on an electrically-propelled vehicle, of a chain actuating the brake by being wound around the spindle, a regulator for the propelling electric motor, a sleeve adjustable around said spindle, and a second chain leading to the regulator and wound on and off the said sleeve.

4. The combination, with an electrically-propelled vehicle and a regulator for the propelling electric motor, of a sleeve on and adjustable around the spindle from which the regulator is controlled, and a disk or extension on said sleeve, by which the sleeve is adjustably connected to the spindle.

5. The combination, with a brake-spindle on an electrically-propelled vehicle, of a sleeve thereon connected with the regulator for the vehicle, the two being loosely connected together, so that a preliminary movement may be given to one before both are moved together.

6. The combination of a device regulating or controlling the propelling-power of an electrically-propelled vehicle, and a brake for the vehicle, with operating connections for the two, respectively, whose length relative to one another is adjustable, and a common actuating device with which both are connected, substantially as described.

7. The combination of a brake and regulating device for the motor of an electrically-propelled vehicle with operating connections for the two, respectively, both leading to the driver's stand and each adapted to be operated independently, and means for connecting both together, but detachable at will, whereby the regulator and brake may be operated simultaneously or independently.

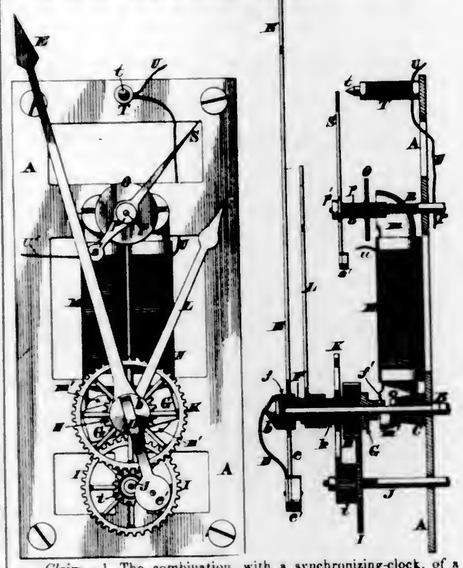
8. The combination, with a regulating device for an electrically-propelled vehicle and a brake for the vehicle, of operating connections for the two loosely connected together, so that a preliminary movement may be given to one before both are moved together.

9. The combination, with the brake and regulator for the motor of an electrically-propelled vehicle, of the brake-spindle, the sleeve adjustable thereon, a stop for holding the sleeve to the spindle in its adjusted position, and operating connections for the brake and regulator connected with the said spindle and shoe, as described.

444,481. PROCESS OF CLEANING BOILERS. JOHN M. BOYER, Cincinnati, Ohio. Filed July 13, 1889. Serial No. 317,462. (No specimens.)

Claim.—The process of removing and preventing scale by treating the water in the boiler with a composition of oxide of zinc and hydrocarbon or resinous products derived from the pine tree, substantially as described.

444,482. ELECTRIC HAND-SETTING MECHANISM FOR CLOCKS. WILLIAM W. BRADLEY and WILLARD N. PACKER, Canton, Ohio. Filed Mar. 28, 1890. Serial No. 345,690. (No model.)



Claim.—1. The combination, with a synchronizing-clock, of a magnet or a pair of magnets which when charged will first set the seconds-hand and then set the hour and minute hands, substantially as herein described.

2. The combination, in a synchronizing-clock, of spindle l' *p*, armature O *o*, mounted upon the shank *p* of said spindle, spring R, forcing said armature outwardly, a seconds-hand S, applied to said shank and clamped between the sleeve *o* and nut *p'*, and a magnet or magnets, as M *m* N *n*, for retracting said armature, as herein described.

3. The combination, in a synchronizing-clock, of the freely-swinging seconds-hand S and a magnet, as T, for arresting the vibrations of said hand when released from its driving-spindle, substantially as herein described.

4. The combination, in a synchronizing-clock, of the main spindle B, having a conical knob *b*, the tubular bearing C, having a V-shaped notch *c*, the armature G, having a sleeve F and V-shaped tooth *f'*, the minute-hand E, attached to said sleeve and having a shank *e*, to which is secured the bent plate-spring D, that bears against said knob *b*, a cannon-pinion H, that turns in unison with said armature and drives the hour-hand gearing, and a magnet or pair of magnets, as M *m'* N *n'*, that retract said armature and its attachments and cause said tooth to engage with said notch, as herein described, and for the purpose stated.

5. In a synchronizing-clock arranged to operate as herein described, the spring-pressed seconds-hand S, mounted upon the spindle-shank *p* and having an oblique slot *s*, for the purpose stated.

6. The combination, in a synchronizing-clock, of a sleeve shiftable along the main spindle, which sleeve is in constant geared connection with the clock-train and carries the hour and minute hands, and an armature that operates said sleeve and thereby sets the clock when the electrical current is let on, substantially as herein described.

7. The combination, in a synchronizing-clock, of a seconds-hand spindle, a stop or bearing secured thereto, a seconds-hand turning freely upon said spindle, and a spring-pressed armature that normally forces said hand against said stop and causes said hand to revolve in unison with said spindle, substantially as described.

8. A synchronizing-clock provided with a tubular guide or bearing for the main spindle, a V-shaped notch in the front end of said bearing, and an armature having a V-shaped tooth that is drawn into said notch when the electrical current is let on, substantially as described.

9. A synchronizing-clock having a magnet for setting the hour, minute, and seconds hands and an auxiliary magnet that arrests the seconds-hand when the clock is set, substantially as described.

10. A synchronizing-clock having hour and minute hands which are simultaneously shifted to set the clock by means of a charged magnet and then automatically restored to their normal positions when the electrical current is broken, said hands being carried by a sleeve having constant geared connection with the clock-train, as herein described.

11. A synchronizing-clock having hour, minute, and seconds hands which are simultaneously shifted to set the clock by means of a charged magnet or magnets and then automatically restored to their normal positions when the electrical current is broken, said hands being carried by a sleeve having constant geared connection with the clock-train, substantially as herein described.

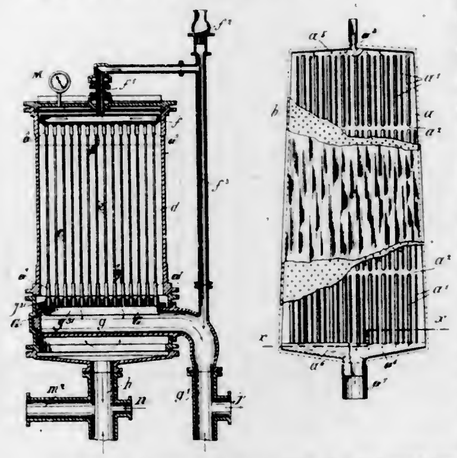
12. A synchronizing-clock having one armature for setting the seconds-hand, another armature for simultaneously setting the hour and minute hands, and a magnet which attracts said armatures when charged, the seconds-hand armature being located near the pole of said magnet, and the other armature more remotely from the opposite pole, for the purpose stated.

13. The combination, in a synchronizing-clock, of a main spindle, a longitudinally-shiftable sleeve mounted thereon, which sleeve carries the hour and minute hands and is in constant geared connection with the clock-train, an armature at the inner end of said sleeve, an electro magnet or magnets to attract said armature and draw back said sleeve and its attachments, whereby positive contact is made with a device that causes said sleeve to turn on said spindle, and a spring that restores the operative parts to their normal positions when the current is broken, substantially as herein described.

14. A synchronizing-clock having hour and minute hands carried by a sleeve having constant geared connection with the clock-train and a revolving armature attached to said sleeve for the purpose of simultaneously retracting and setting said hands, as herein described.

15. A synchronizing-clock having hour and minute hands carried by a sleeve having constant geared connection with the clock-train, an armature attached to said sleeve and revolving therewith, a seconds-hand frictionally coupled to a spindle by a revolving spring-pressed armature, and a magnet or pair of magnets whose opposite poles attract said revolving armatures when the electrical current is let on, substantially as herein described.

444,483. FILTER, &c. FRIEDRICH BREYER, Vienna, Austria-Hungary. Filed May 21, 1890. Serial No. 352,620. (No model.) Patented in Luxemburg Apr. 8, 1890, No. 1,270.



Claim.—1. A filtering medium consisting of a supporting-plate provided with alternate right and left hand corrugations and a foraminous jacket, in combination with a channel at opposite ends of the medium in communication with the corrugations of the supporting-plate and an outlet branch for said channels, substantially as set forth.

2. A filtering medium consisting of a supporting-plate provided with alternate right and left hand corrugations and a foraminous jacket composed of perforated sheet metal and a textile envelope, in combination with a channel at opposite ends of the medium in communication with the corrugations of the supporting-plate and an outlet branch for said channels, substantially as set forth.

3. A filtering medium consisting of a supporting-plate provided with alternate right and left hand corrugations and a foraminous jacket composed of perforated sheet metal and a textile envelope provided with an outer coating of finely-divided asbestus, in combination with a channel at opposite ends of the medium in communication with the corrugations of the supporting-plate and an outlet branch for said channels, substantially as set forth.

4. A filtering medium consisting of a supporting-plate provided with alternate right and left hand corrugations and intervening non-corrugated portions at right angles to the corrugations and a foraminous jacket, in combination with a channel at opposite ends of the medium in communication with the corrugations of the supporting-plate, substantially as set forth.

5. In the preparation of filtering media for sterilizing filtration, the mode of subdividing the asbestus, which consists in mixing the asbestus with water, freezing the mixture, and then reducing the same, as set forth.

6. In the preparation of filtering media for sterilizing filtration, the mode of subdividing the asbestus, which consists in subjecting a mixture thereof with water to alternate boiling and freezing temperatures and subdividing while in a frozen condition, as set forth.

7. A sterilizing filtering plant comprising a filter provided with a plurality of chambered filtering media arranged vertically therein, outlet-pipes in communication with the interior of the filtering media, a connection between said outlet-pipes, said connection having a branch opening to the atmosphere, a check-valve opening outwardly and seated in said branch, a receiver for the filtrate and a receiver for the asbestus emulsion connected with the outlet-pipes, suitable valves or stop-cocks in said connection, a valved supply-pipe connecting the filter-case with the receiver for the asbestus emulsion, a pump interposed in said supply-pipe, and a valved branch connecting the supply-pipe with the source of supply of the fluid to be filtered, said branch being interposed between the pump and filter, substantially as and for the purposes specified.

8. A sterilizing filtering plant comprising a filter provided with a plurality of chambered filtering media arranged vertically therein, outlet-pipes in communication with the interior of the filtering media, a connection between said outlet-pipes, said connection having a branch opening to the atmosphere, a check-valve opening outwardly and seated in said branch, a receiver for the filtrate and a receiver for the asbestus emulsion connected with the outlet-pipes, suitable valves or stop-cocks in said connections, a valved supply-pipe connecting the filter-case with the receiver for the asbestus emulsion, a pump interposed in said supply-pipe, a valved branch connecting the supply-pipe with the source of supply of the fluid to be filtered, said branch being interposed between the pump and filter, and a valved connection between the supply-pipe and a receiver for the impurities, substantially as and for the purposes specified.

9. A filtering plant comprising a filter-casing provided with a blow-off cock in its cover, a plurality of chambered filtering media arranged vertically in the casing, outlet-pipes in communication with the interior of the filtering media, a connection between said outlet-pipes, said connection having a branch opening to the atmosphere, a check-valve opening outwardly and seated in said branch, a receiver for the filtrate and a receiver for the asbestus emulsion connected with the outlet-pipes, suitable valves or stop-cocks in said connections, a valved supply-pipe connecting the filter-case with the receiver for the asbestus emulsion, a pump interposed in said supply-pipe, a valved branch connecting the supply-pipe with the source of supply of the fluid to be filtered, said branch being interposed between the pump and filter, and a valved duct connecting the supply-pipe with a source of air-supply, said duct being also interposed in the supply-pipe between the pump and filter, substantially as and for the purposes specified.

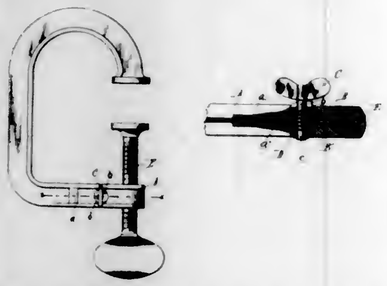
10. A filter comprising a filter-casing, a chamber *f* arranged in the upper end of the casing, an outlet-pipe connected with said chamber, a discharge-pipe at the lower end of the filter, a plurality of chambered filtering media arranged vertically within the filter-casing, the chambers thereof being in communication with upper chamber *f* and the discharge-pipe, respectively, and a supply branch *h*, opening into the bottom of the filter, substantially as and for the purposes specified.

11. A filter comprising a casing *d*, the chambers *f* in the upper part of the casing, the outlet-pipe *g* in the lower part of said casing, a series of chambered filtering media having their chambers connected with the casing *f* and pipe *g*, respectively, a pipe *f' f²*, connecting the pipe *g* with the upper chamber *f*, said pipe having a branch open to the atmosphere, a check-valve *f³* in said branch, and a supply-pipe *h*, connected with the filter-casing at the bottom thereof, substantially as and for the purposes specified.

12. A filter comprising a casing *d*, provided with a blow-off cock and pressure-gage, the chambers *f* in the upper part of the casing, the outlet-pipe *g* in the lower part of said casing, a series of chambered filtering media having their chambers connected with the casing *f* and pipe *g*, respectively, a pipe *f' f²*, connecting the pipe *g* with the upper chamber *f*, said pipe having a branch open to the atmosphere a check-valve *f³* in said branch, and a supply-pipe *h*, connected with the filter-casing at the bottom thereof, substantially as and for the purposes specified.

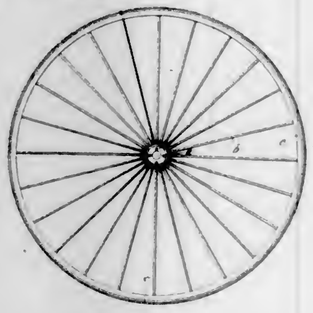
444,484. CLAMP. PERRY BROWN, Louisville, Ky. Filed Sept. 12, 1889. Serial No. 323,713. (No model.)

Claim.—1. The combination, in a clamp, of the body A, the screw E, the jaws B B', embracing said screw, the spring D, the thumb-piece C, and an incline *b* between the jaws and the thumb-piece, substantially as described.



2. The combination, in a clamp, of the body A, the screw E, the thumb-piece C, the spring D, surrounding the shank of the thumb-piece, and the two movable jaws B B', embracing said screw and having on one of them the inclines *b*, all substantially as shown and described.

444,485. WHEEL. STERLING ELLIOTT, Newton, Mass. Filed Aug. 12, 1886. Serial No. 210,685. (No model.)

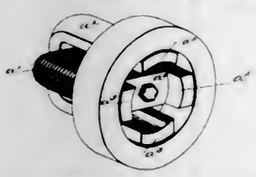


Claim.—1. In a wheel, a hub having a box rigidly secured to its end, and means, substantially as shown, for holding the box concentric with the outer band, in combination with a clutch mechanism intermediate said box and band for revolving the wheel, substantially as shown and described.

2. In a wheel, a hub having a box and an outer band provided with a rearwardly-extended flange i⁴, substantially as described, combined with a clutch mechanism located within the recess formed by the flange i⁴, substantially as described.

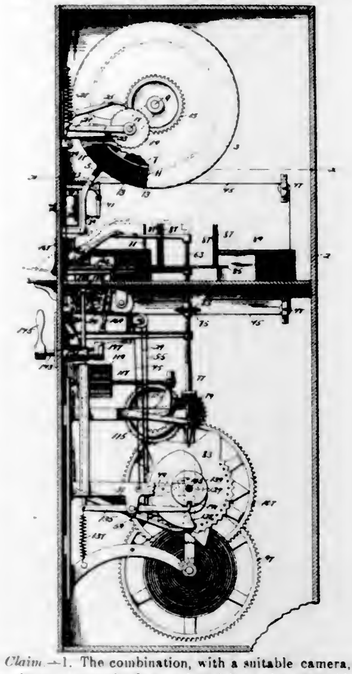
3. In a wheel, a hub having a box and an outer band provided with a rearwardly-extended flange, substantially as described, and a dust plate or guard attached to said flange, combined with a clutch mechanism within the recess formed by the flange and covered by said dust-plate, substantially as described.

444,486. DYNAMO-ELECTRIC MACHINERY. JUSTUS B. ENTZ, New York, N. Y. Filed July 10, 1890. Serial No. 358,272. (No model.)



Claim.—In a dynamo-electric machine or motor, a field-magnet consisting of a single coil of wire wound upon an elliptically-shaped core, and extended pole-pieces passing from one end of the core around the side of the magnet to the other end and alternating around a circle, with pole-pieces connected to said other end.

444,487. COIN-CONTROLLED AUTOMATIC PHOTOGRAPHIC APPARATUS. EDMUND G. FISHER, Minneapolis, Minn., assignor to the Fisher Specialty Manufacturing Company, same place. Filed Aug. 6, 1889. Serial No. 319,924. (No model.)



Claim.—1. The combination, with a suitable camera, of a plate reservoir or receptacle arranged to deliver plates to said camera, a plate-holder arranged to receive the plates from said camera and to dip them in suitable baths, means for vibrating said holder while the plates are in said baths, and an actuating mechanism arranged to be set in motion and to operate said devices upon the introduction of a suitable coin.

2. The combination, in a machine of the class described, with the actuating mechanism and the camera, of the slide provided with a suitable opening, a spring arranged to move said slide, and mechanism controlled by said actuating mechanism for releasing said slide and returning it after it has been moved by the spring to its former position.

3. The combination, in a machine of the class described, with the actuating mechanism and the camera, of the slide 37, the spring 53, connected to said slide, a cord also connected to said slide, a lever to which said cord is connected, and a cam controlling said lever, substantially as described.

4. The combination, with a suitable camera, of a plate-holder arranged to receive plates from said camera, and a coin-controlled actuating mechanism connected with said plate-holder and adapted to carry said plate-holder to suitable baths and dip the plates therein and vibrate said holder while the plates are in said baths for the purpose of developing and fixing the pictures upon the plates, substantially as described.

5. An automatic apparatus of the class described, comprising, in combination, a plate-receiver, a camera, a plate-holder, suitable developing, washing, and fixing baths, actuating mechanism connected with said plate-receiver, said camera, and said plate-holder, means for vibrating said plate-holder while the plate carried by it is in said baths, and a coin-controlled mechanism adapted to release said actuating mechanism upon the introduction of a suitable coin.

6. The combination, with a suitable camera, of a plate-receptacle arranged to deliver plates successively to said camera, a plate-holder adapted to receive the plates from said camera after they have been exposed therein and to pass them through and vibrate them in suitable baths for the purpose of developing and fixing the picture thereon, a plate-remover adapted to remove the plates from said holder and deliver them to the outside of the inclosing casing, and actuating mechanism automatically operating said several devices in succession, and a coin-controlled mechanism adapted upon the introduction of a suitable coin to release said actuating mechanism.

7. The combination, in a machine of the class described, of a plate-reservoir, a plate-holder, a chute for guiding the plates from said reservoir to said holder, a camera, a stop arranged to hold the plate in said chute opposite said camera, a slide arranged to expose said plate, and a coin-operated mechanism controlling said devices, substantially as described.

8. The combination, in a machine of the class described, with the plate-reservoir, the camera, and the chute, of the stops projecting into said chute, a spring arranged to withdraw said stops, and mechanism controlled by a suitable cam arranged to hold said stops and to release them when they are to be withdrawn by said spring, substantially as described.

9. The combination, in a machine of the class described, with the camera, of the slide provided with a suitable opening, a spring arranged to move said slide, and mechanism controlled by a suitable cam arranged to hold said slide and to release it when it is to be moved by said spring, substantially as described.

10. In a device of the class described, the combination, with the actuating mechanism, of the plate-holder comprising the jaws pivoted together and arranged to receive the plates as they pass from the camera.

11. The combination, with the actuating mechanism, of the shaft 77, having a rotary and longitudinal movement, the shaft 63, arranged in line therewith, the friction-plates connecting said shafts, and the plate-holder carried by said shaft 63, substantially as described.

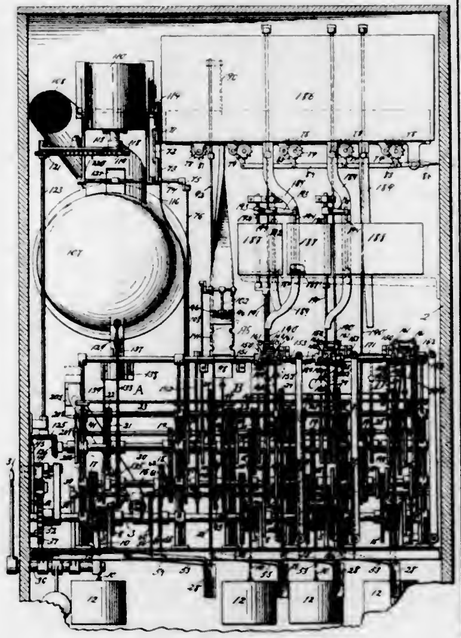
12. The combination, with the actuating mechanism, of the plate-holder connected therewith, receptacles adapted to contain the fixing, developing, and washing material, and stop-pins arranged to stop said plate-holder over each of said receptacles, substantially as described.

13. The combination, with the camera, of the plate-holder arranged to receive plates from said camera and to carry them to and vibrate them in the developing and fixing baths, and a plate-remover arranged to remove the plates from said plate-holder and to pass them outside of the inclosing casing, substantially as described.

14. The combination, with the camera of the plate-holder arranged to receive plates from said camera and to carry them to and vibrate them in the developing and fixing baths, and an actuating mechanism arranged to operate said plate-holder, adapted to be set in motion upon the introduction of a suitable coin.

15. The combination, with the camera, of a plate-holder arranged to receive plates from said camera and carry them to and move them up and down in the developing and fixing baths, and mechanism for operating said plate-holder, substantially as described.

444,488. AUTOMATIC CAMERA. EDMUND G. FISHER and ROBERT MCFARLANE, Minneapolis, Minn., assignors to the Fisher Specialty Manufacturing Company, same place. Filed Mar. 18, 1890. Serial No. 344,302. (No model.)



Claim.—1. An automatic picture-taking machine comprising, in combination, a plate-holder, a camera, a plate-carrier, tanks for holding the developing, fixing, and washing materials, means for operating the plate-holder, camera, and plate-carrier, and means for releasing from the tank the materials for developing, fixing, and washing the pictures.

2. An automatic picture-taking machine comprising, in combination, a plate-holder, a camera, plate-carriers, tanks for holding the developing, fixing, and washing materials, means for operating the plate-holder and camera, and independent means for operating the plate-carriers and discharging the materials from the tank.

3. An automatic picture-taking machine comprising, in combination, a plate-holder, a camera, means for conducting plates from said plate-holder to said camera and depositing them therein, tanks for containing materials for developing, fixing, and washing the picture, and a series of plate-carriers arranged to take the plates from the camera and move them into position to receive the materials from the tanks.

4. An automatic picture-taking machine comprising, in combination, a plate-holder, a camera, tanks for holding the developing, fixing, and washing materials, a series of plate-carriers adapted to take the plate from the camera and move it into position to receive the material from the tanks, mechanism controlling the plate-holder and camera, and independent mechanisms controlling said plate-carriers and tanks, substantially as described.

5. An automatic picture-taking machine comprising a series of clock-works arranged to operate in succession, a plate-holder and camera operated by the first clock-work, plate-carriers, and tanks for holding the developing, fixing, and washing materials operated successively by the other clock-works, substantially as described.

6. An automatic picture-taking machine comprising a camera, means for feeding plates thereto and therefrom, a series of tanks for holding the developing, fixing, and washing materials, a series of plate-carriers, a clock-work for operating said camera, and independent clock-works arranged to operate in succession and controlling said plate-carriers.

7. An automatic picture-taking machine comprising, in combination, a plate-holder, a camera, means for conducting plates from said plate-holder to said camera and exposing them therein, a flash-light, means for holding the developing, fixing, and washing materials, and means for moving the plates from said camera after exposure therein and carrying them into position to receive the material from said tanks, substantially as described.

8. An automatic picture-taking machine comprising, in combination, a series of successively-operating clock-works, each arranged to release the next succeeding clock-work, a coin-controlled device arranged to release the first clock-work, a camera controlled by the first clock-work, and developing and fixing mechanisms operated by the succeeding clock-works, for the purpose set forth.

9. In an automatic picture-taking machine, the combination, with a suitable camera, of a series of plate-carriers, a series of tanks or receptacles adapted to hold the developing, fixing, and washing materials, means for successively operating said plate-carriers and transferring the plates from said camera into position to receive the materials from said tanks, and means for discharging material from said tanks while said plates are in position to receive them, for the purpose set forth.

10. In an automatic picture-taking machine, the combination, with a suitable camera and tanks for holding and discharging the materials for fixing and developing the pictures, of a series of successively-operating plate-carriers arranged to take the plates from said camera and move them into position to receive the materials from the tanks and then into position to be discharged from the machine, for the purpose set forth.

11. In an automatic picture-taking machine, the combination, with means for exposing a plate and then developing and fixing the picture thereon, of a series of successively-operating clock-works, each arranged to set in operation the succeeding one, whereby the several parts of the picture-taking mechanism may be operated upon different plates simultaneously, substantially as described.

12. In an automatic picture-taking machine, the combination, with the operating mechanism, of the winding-shaft 3, provided with the gear-wheel 37, the rack-bar 35, engaging said gear-wheel, the shaft 30, connected with said rack-bar and provided with the arms 38, the locking-dog 39, the coin-holddr 40, and the arm 42, secured upon the shaft 3 and provided with the lug 43 and the stud 44, substantially as described.

13. In a machine of the class described, the combination, with the operating mechanism, of the winding-shaft 3, provided with the gear-wheel 37, the rack-bar engaging with said gear-wheel and provided with a series of ratchet-teeth 36, a pawl arranged to engage said ratchet-teeth as the rack-bar is moved in one direction and to be raised therefrom as it is moved in the other direction, and a locking device adapted to release said rack-bar upon the introduction of a suitable coin.

14. In a machine of the class described, the combination, with the camera and the picture developing and fixing devices, of the independent clock-works arranged to operate successively, and thereby to operate said camera and said fixing and developing devices, a winding mechanism common to all of said clock-works, and a coin-controlled locking device connected with said winding mechanism, substantially as described.

15. In a machine of the class described, the combination, with the series of clock-works, of the winding-shaft common to all of said clock-works, substantially as described.

16. In a machine of the class described, the combination, with the series of clock-works, of the winding-shaft common to all of said clock-works, coin-controlled mechanism for releasing said winding-shaft and starting the first clock-work, and means upon each of said clock-works for starting at the proper time the next succeeding clock-work, substantially as described.

17. In a machine of the class described, the combination, with the clock-work, of the winding mechanism, the locking-dog 39, the coin-holder 40, having an open center and arranged beneath a suitable coin-chute, the winding-shaft 3, and the arm 42 upon said shaft provided with the lug 43 and the projection 44, substantially as described.

18. In a machine of the class described, the combination, with a suitable camera, of the plate-reservoir 67, the series of sectional plate-holders 68, arranged therein, and means for feeding said plate-holders along in said reservoir, substantially as described.

19. In a machine of the class described, the combination, with a suitable camera, of a plate-reservoir 67, a plate-conduit leading from said reservoir to said camera, a series of sectional plate-holders 68, arranged in said reservoir, and means for feeding said plate-holders, substantially as described.

20. In a machine of the class described, the combination, with the open-ended reservoir 67, of the plate-holder 68, provided with rack-teeth, pinions arranged to engage said rack-teeth, means for throwing said pinions out of engagement therewith, and means for turning said pinions, and thereby moving said plate-holders along in said reservoir.

21. The combination, with the reservoir 67, of the sectional plate-holders 68, arranged therein and provided with the teeth 69, the pinions 81, engaging said teeth, movable arms 83, supporting said pinions, and the worm-shaft and wheel for driving said pinions.

22. In a machine of the class described, the combination, with a camera and means for exposing a plate therein, of a flash-light and means for operating said flash-light simultaneously with the exposure of said plate in the camera, and automatic mechanism controlling the camera and flash-light operating devices, substantially as described.

23. In a machine of the class described, the combination, with the camera, of the deflector 107, the lamp 129, the powder-holder, and means for discharging a portion of said powder upon the flame of said lamp as the exposure is made by said camera, substantially as described.

24. In a machine of the class described, the combination, with the camera, of the deflector 107, the lamp 129, provided with an extinguisher 130, the lighter 137, and means for discharging the powder upon the flame of said lamp 129, substantially as described.

25. In a machine of the class described, the combination, with the camera, of the deflector 107, the lamp 129, means for lighting and extinguishing said lamp, the powder-receptacle 110, and the tray 127 for receiving powder from said receptacle and discharging it upon the flame of said lamp 129, substantially as described.

26. In a machine of the class described, the combination, with the camera, of the deflector 107, the lamp 129, the powder-receptacle 110, provided with the rotating feed-plate 111, the slide 115, and the movable tray 127, all substantially as described.

27. The combination, with the camera, of a series of plate-carriers operating successively on the same plate, for the purposes set forth.

28. The combination, with the camera and the series of trays 171, of the series of successively-operating plate-carriers.

29. The combination, with the camera, the series of trays 171, and the shelves 180 and 182, of the series of successively-operating plate-carriers, substantially as described.

30. The plate-carrier comprising, in combination, the vertical and laterally-movable frame 150, the shafts 159, mounted thereon and provided with springs 160 and with plate-holding arms 161, and means for separating said arms, substantially as described.

31. The combination, with the plate-carrier, of the tray 171, mounted upon suitable pivots, and means for rocking said tray.

32. The combination, with the plate-carrier, of the pivoted tray 171, provided with a raised center, and means for rocking said tray.

33. The combination, with the plate-carrier, of the pivoted tray 171, provided with a raised center and having an opening in its bottom, the spring-controlled plate closing said opening, and means for rocking said tray.

34. The combination, with the plate-carrier, of the shelf 182 and the plate-ejector, substantially as described.

35. The combination, with the plate-carrier, of the shelf 182, the plate-ejector, and the slide for closing the opening in the wall of the casing.

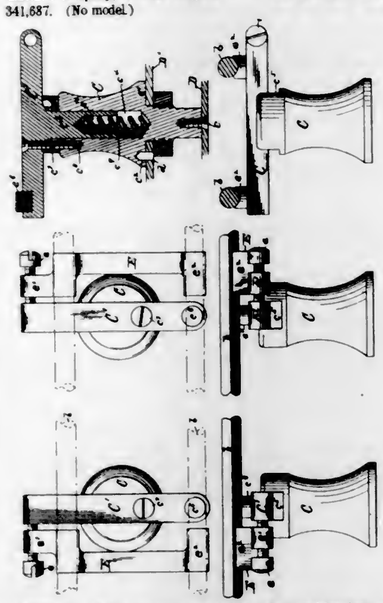
36. In a machine of the class described, the combination, with the series of clock-works, of the coin-controlling device connected with the first clock-work, the coin-chute, and a slide arranged to close said chute while the first clock-work is in operation.

444,489. WATER-PROOF LEGGIN. LOUIS W. GROAT and WILLIAM J. VAN VLECK, Hudson, N. Y. Filed July 24, 1890. Serial No. 359,788. (No model.)



Claim.—The improved leggin herein described, composed of leather or analogous material having the straps *b b* at its upper end and vertical slots in its sides extending partly the length of the leg, in which elastic goring is inserted and its lower portion continuous or unbroken, having the instep-strap *a* secured at each side of the open lower ends, said leggin also having perforations C through its upper portion, substantially as specified.

444,490. TYPE-WRITING MACHINE. EMERY M. HAMILTON, New York, N. Y., assignor, by mesne assignments, to the North American Machine Company, of West Virginia. Feb. 25, 1890. Serial No. 341,687. (No model.)



Claim.—1. In a type-writing machine, the combination, with the printing-type adapted to print at a common printing-point and a paper-carriage carrying the platen and adapted to move therewith over and across said printing-point of the type, of ways or tracks for said carriage seated in and adapted to have vertical play upon supporting-pillars, springs seated in said pillars and bearing against said ways or tracks, and set-screws engaging said ways or tracks and working in and adapted to control the seat-springs in said pillars, substantially as and for the purpose set forth.

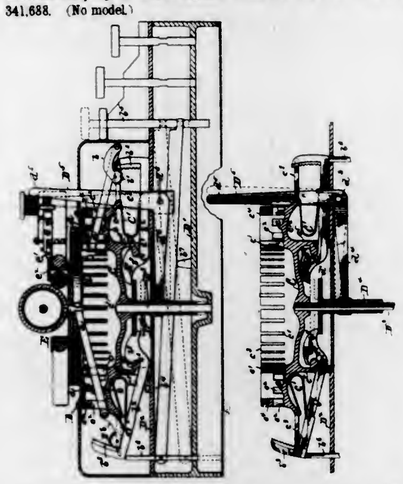
2. In a type-writing machine, the combination, with the printing-type and the paper-carriage carrying the platen upon which the type are adapted to print at a common printing-point, and which carriage is adapted to move on ways or tracks over and across said printing-point of said type, of pillars C C, recessed longitudinally at c^4, bars C C, supporting said carriage-ways and mounted to play vertically on said pillars by arms c^3, working in said recesses, springs c^9 in said recesses and bearing against said arms, and set-screws c^7, engaging said bars and working in said pillars, substantially as and for the purpose set forth.

3. In a type-writing machine, the combination, with the printing-type and paper-carriage carrying the platen upon which the type are adapted to print at a common printing-point, and which carriage is adapted to move on ways or tracks over and across said printing-point of the type, of pillars C C, laterally slotted on their top faces at c^4 and recessed longitudinally at c^4, bars C C, supporting said carriage-ways and adapted to fit in said top face slot and provided with with arms c^3, playing in said recesses in said pillars, springs c^9 in said recesses, bearing against said arms, and set-screws c^7, engaging said bars and working in said pillars, substantially as and for the purpose set forth.

4. In a type-writing machine, the combination, with the printing-type adapted to print at a common printing-point and the paper-carriage carrying the platen and adapted to move on ways or tracks over and across said printing-point, of bars C C, supporting said carriage-ways and each provided with an arm c^3, recessed endwise at c^{10}, pillars C C, recessed at c^4 to receive and permit play therein of the bar-arms, springs c^9, seated in said pillar-recesses and engaging and bearing against said bar-arms in the recessed ends, and set-screws c^7, engaging said bars and working in said pillars, substantially as and for the purpose set forth.

5. In a type-writing machine, the combination, with the printing-type adapted to print at a common printing-point and the paper-carriage carrying the platen and adapted to move on ways or tracks over and across said printing-point, of the recessed pillars C C, the bars C C, to which are hinged the yokes E, that support the carriage ways or tracks, and which have arms c^3, playing in said recessed pillars, springs c^9, seated in said recessed pillars and bearing against said bar-arms, and set-screws c^7, engaging said bars and working in said pillars, substantially as and for the purpose set forth.

444,491. TYPE-WRITING MACHINE. EMERY M. HAMILTON, New York, N. Y., assignor, by mesne assignments, to the North American Machine Company, of West Virginia. Filed Feb. 25, 1890. Serial No. 341,688. (No model.)



Claim.—1. In a type-writing machine, the combination, with the levers b^3 intermediate the key-levers and type-bars and provided, respectively, at their inner ends with hooks b^4, of a disk C, upon which the type-bars are supported and fulcrumed, having on its under face a depending annular flange c^5, provided with the edge or projections c^6, whereby said levers are fulcrumed on said disk, substantially as and for the purpose set forth.

2. In a type-writing machine, the combination, with the levers b^3 intermediate the key-levers and type-bars and provided, respectively, at their inner ends with hooks b^4, of a disk C, having on its under face a depending annular flange c^5, adapted in depth to serve as a support or standard for said disk and having the vertical slots c^7 and the projections c^8 at the bottom of said slots, respectively, whereby said levers are fulcrumed on said disk-flange and have play in said vertical slots, substantially as and for the purpose set forth.

3. In a type-writing machine, the combination, with the type-bars *a* and the levers b^3, provided on their inner ends, respectively, with upwardly and outwardly turned hooks b^4, of the disk C, having on its obverse face the annular rib *c*, on which the type-bars are fulcrumed and have play and on its reverse face the depending annular flange c^5, provided with the inwardly-turned edge or projections c^6, on which said levers are fulcrumed at their said hooked inner ends, substantially as and for the purpose set forth.

4. In a type-writing machine, the combination, with the type-bars *a* and their rocking arms *b* and pinions b', and the levers b^3, having toothed segments b^2 on their outer ends and provided at their inner ends with the hooks b^4, of the disk C, on the obverse face of which the type-bars are fulcrumed and have play, provided at its rim with the radial slots c^8, in which said rocking-arm pinions are journaled, and on its reverse face with the annular depending flange c^5, having the edge or projections c^6, on which said levers are fulcrumed at their said hooked inner ends, substantially as and for the purpose set forth.

5. In a type-writing machine, the combination, with the type-bars *a* and the levers b^3, provided at their inner ends with hooks b^4, of the disk C, having on its obverse face the annular type-bar fulcrum-rib *c* and the upwardly-projected vertically-slotted annular flanges c^3 and c' in which the type-bars have play on their said fulcrum-rib, and having on its reverse face the depending annular flange c^5, provided with the edge or projections c^6, on which said levers are fulcrumed by their said hooked inner ends, substantially as and for the purpose set forth.

6. In a type-writing machine of the class described, the single-lever system supporting disk C, having on its obverse face the upwardly-projecting vertically-slotted flanges c^3 and c', together with the annular rib *c* intermediate said flanges, on its obverse face the depending annular flange c^5, adapted to serve as a support or standard for said disk and provided with the vertical slot c^7 and the edge or projections c^8 at the bottom of said slots, and on its rim the radial slots c^8, said disk, with its flanges and projections and slotted, as described, being formed integral in one piece, substantially as and for the purpose set forth.

7. In a type-writing machine, the combination, with the levers b^3, provided at their inner ends with the hooks b^4, and the disk C, provided on its lower face with the depending annular flange c^5, having edge or projections c^6, on which said levers are fulcrumed by their said hooked inner ends, of the C-springs C, having respectively the bifurcated ends c^{10} engaging the said levers and their other ends seated on or against said disk, substantially as and for the purpose set forth.

8. In a type-writing machine, the combination, with the levers b^3, provided at their inner ends with the hooks b^4, and the disk C, provided on its lower face with the depending annular flange c^5, having the edge or projections c^6, on which said levers are fulcrumed by their said hooked inner ends, and provided on said lower face with the annular recess c^{13} beyond said depending flange, of the C-springs C, having respectively the bifurcated ends c^{10} engaging said levers and their other ends seated on or against said disk and playing when flexed by the movement of said levers in said annular recess in said disk, substantially as and for the purpose set forth.

444,492. TIRE-TIGHTENER. WILLIAM HOGAN, Corinth, Ga. Filed Sept. 25, 1890. Serial No. 366,055. (No model.)



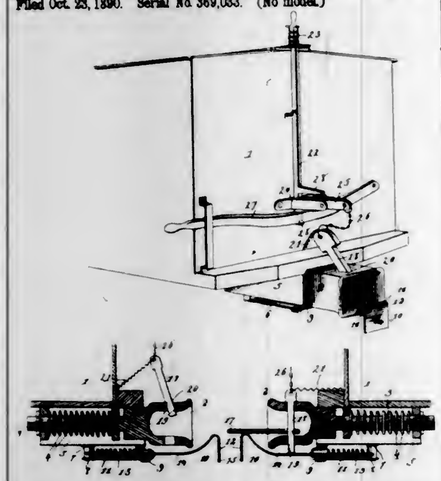
Claim.—1. In a tire-tightener, the combination, with the spokes and felly of a wheel, of thimbles mounted upon the former and under the latter and provided with a contracted screw-threaded extension projecting outwardly therefrom, a tenon of less diameter than said extension and adapted to be received by an eye or bore on the felly, said tenon being smooth and unthreaded throughout its length, and an interiorly-threaded sleeve closed at its outer end and working upon the threaded extension, the sleeve being provided with an unthreaded eye in its closed end corresponding to and receiving the tenon, substantially as and for the purpose set forth.

2. In a tire-tightener, the combination, with the spokes and felly of a wheel, of thimbles mounted upon the former and under the latter and provided with a contracted screw-threaded extension projecting outwardly therefrom, a tenon of less diameter than said extension and adapted to be received by an eye or bore in the felly, an adjustable

tightening-sleeve working on the threaded extension and retained against lateral displacement by the tenon in the manner described, and a flat washer-plate interposed between the outer face of the sleeve and the under side of the felly and having its projecting portions bent up against the sides of the felly, substantially as and for the purpose set forth.

3. As an improved article of manufacture, a tire-tightener consisting of a thimble provided with a socket at its inner end, an integral screw-threaded extension projecting from the outer end of the thimble and of less diameter than the latter, a tenon integral with the extension, of less diameter than the latter, and projecting from the outer end thereof, an interiorly-screw-threaded sleeve adapted to work upon the extension and provided with an angular outer end having a contracted bore or eye for receiving the tenon and working thereon, and a washer-plate adapted to be mounted upon the tenon and provided with outturned opposite sides adapted to overlap and brace the felly of a wheel, substantially as and for the purpose set forth.

444,493. CAR-COUPLING. COMODORE P. JACOBS, Aurora, Nebr. Filed Oct. 23, 1890. Serial No. 369,033. (No model.)



Claim.—1. In a car-coupling, the combination of a longitudinally-sliding draw-head, a pin mounted in the same and having at its lower end the notch adapted to engage the front edge of the slot in the top of the draw-head, and a spring connecting the head of said pin with the end of the car, substantially as and for the purpose set forth.

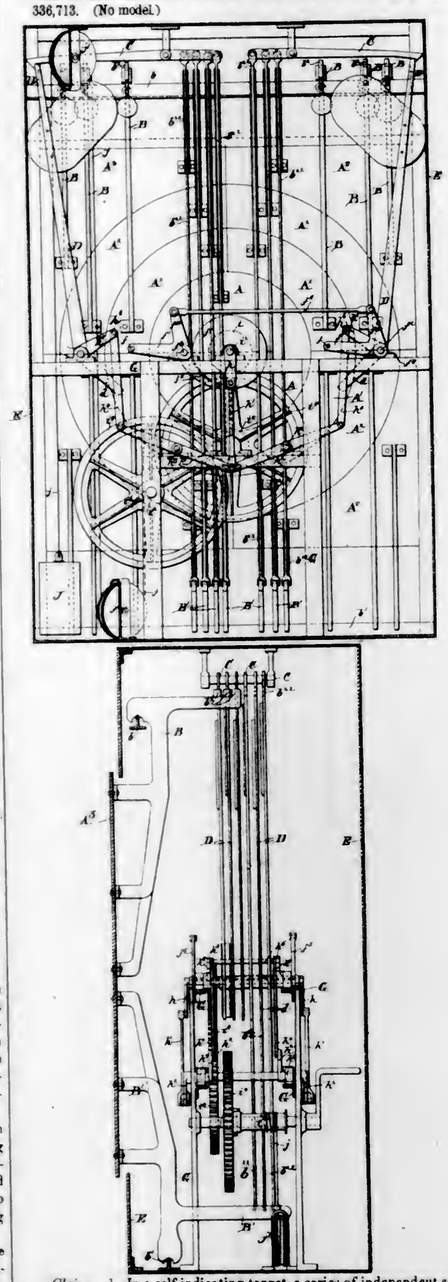
2. In a car-coupling, the combination of the draw-head, the pin mounted in the same and having at its lower end a notch adapted to engage the front edge of the slot in the top of the draw-head, a spring connecting the head of the pin with the end of the car, and a longitudinally-sliding spring-actuated link-support mounted below the draw-head and extended beyond the latter, substantially as and for the purpose set forth.

3. In a car-coupling, the combination of the draw-head having a longitudinal sliding movement between suitable supporting-flanges, the guide-strips secured under said flanges and connected by a plate at their front ends, the guide-plate at the rear ends of said guide-strips having a slot, the link-supporter, the shank of which is extended through said slotted guide-plate and provided with a cross-head mounted upon the guide-strips, and a spring coiled upon the shank of the link-supporter between the cross-head and the slotted guide-plate, substantially as set forth.

4. In a car-coupling, the combination of the draw-head, the pin mounted in the same and having a notch at its lower end, the spring connecting the head of said pin with the end of the car, the longitudinally-sliding spring-actuated link-support having an upwardly-curved and longitudinally-sliding front end provided with a downturned lip and having notches in its upper side, and suitable devices for raising the coupling-pin, substantially as herein set forth.

5. The combination of the longitudinally-sliding draw-head, the vertically-movable pin having a notch at its lower end, a spring connecting the upper end of said pin with the end of the car, a vertically-sliding spring-actuated rod having forwardly-extending arms engaging a lever which is pivoted in the lower bearing of said rod, a chain connecting the outer end of said lever with the coupling-pin, and a hand-lever adapted to engage the vertically-sliding rod, substantially as and for the purpose set forth.

444,494. AUTOMATIC-SIGNALING TARGET. ARTHUR T. M. JOHNSON, East Melbourne, Victoria. Filed Jan. 10, 1890. Serial No. 336,713. (No model.)



Claim.—1. In a self-indicating target, a series of independent sections or plates constituting the face of the target, a support for each of said sections consisting of an angle-lever to the vertical arm of which the section is secured, a revoluble signal-bar for each of said sections, a signal secured thereto, and a locking-lever in engagement with the signal-bar to lock the same against rotation, and adapted to be operated by the horizontal arm of the angle-lever support, for the purposes set forth.

2. In a self-indicating target, a series of independent sections or plates constituting the face of the target, a support for each of said sections consisting of an angle-lever to the vertical arm of which the section is secured, a revoluble signal-bar for each of said sections, a signal secured thereto, and a locking-lever in engagement with the signal-bar to lock the same against rotation, and adapted to be operated by the horizontal arm of the angle-lever support, in combination with a motor, and a lifting device operated thereby and operating to return the signal-bar into engagement with the locking-lever, for the purposes set forth.

3. In a self-indicating target in which the target-face is composed of independent sections, a support for a target-section consisting of an angle-lever adapted to vibrate upon a horizontal fulcrum, to the vertical arm of which lever the target-section is rigidly secured, as set forth.

4. In a self-indicating target, a series of independent oscillatory sections or plates constituting the face of the target, in combination with a corresponding series of gravity signal-bars, a tripping device for each of said signal-bars, against which device said sections have bearing, said gravity-bars having a common center of rotation and the same amplitude of motion, and a signal secured to each of said bars, said signals being arranged relatively to one another so as to lie in different planes, substantially as and for the purposes set forth.

5. In a self-indicating target, a series of independent oscillatory sections or plates constituting the face of the target, in combination with a corresponding series of gravity signal-bars, a tripping device for each of said signal-bars, against which device said sections have bearing, said gravity-bars having a common center of rotation and the same amplitude of motion, and a signal secured to each of said bars, said signals being arranged relatively to one another so as to lie in different planes, the signals of like denomination varying in dimension, substantially as and for the purposes set forth.

6. In a self-indicating target, a series of independent oscillatory sections or plates constituting the face of the target, in combination with a corresponding series of gravity signal-bars, a tripping device for each of said signal-bars, against which device said sections have bearing, said gravity-bars having a common center of rotation and the same amplitude of motion, and a signal secured to each of said bars, said signals being arranged relatively to one another so as to lie in different planes, the signals of like denomination varying in dimension and in color, substantially as and for the purposes set forth.

7. In a self-indicating target, independent oscillatory sections or plates arranged in groups and constituting the face of the target, in combination with a gravity signal-bar for each of said sections, a tripping device for each signal-bar, against which device said sections have bearing, said bars being arranged in groups, each group having a common center of rotation and the same amplitude of motion, and a signal secured to each of said bars, the signals for each group of plates being arranged relatively to one another so as to lie in the same plane, the groups of signals being arranged in different planes and of successively-increasing dimension, substantially as and for the purposes set forth.

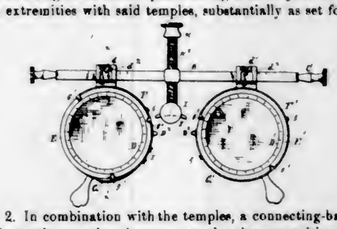
8. The combination of a casing E, provided with shutters K on opposite sides, and a target composed of a plurality of yielding sections arranged in the front of the casing, with a gravity signal-bar for each target-section adapted to drop in front of said shutters, and a detent for each signal-bar adapted to lock the same into a normal position and to be released by the movement of its target-section under the impact of a bullet, as and for the purposes specified.

9. The combination of a casing E, provided with shutters K on opposite sides, and a target composed of a plurality of yielding sections arranged in front of the casing, with a gravity signal-bar for each target-section adapted to drop in front of said shutters, and a detent for each signal-bar adapted to lock the same into a normal position and to be released by the movement of its target-section under the impact of a bullet, and a motor adapted to automatically return a signal-bar to its normal position after being released from the detent, as and for the purposes specified.

10. The combination, with a casing E, provided with shutters K on opposite sides, and a target composed of a plurality of yielding sections arranged in front of the casing, of a gravity signal-bar for each target-section adapted to drop in front of said shutters, and a detent for each signal-bar adapted to lock the same into a normal position and to be released by the movement of its target-section under the impact of a bullet, a motor adapted to return a signal-bar to its normal position after being released from the detent, and a detent adapted to lock the motor against operation and to be tripped by a signal-bar when released, as and for the purposes specified.

444,495. TRIAL SPECTACLE-FRAME. GEORGE JOHNSTON, Detroit, Mich. Filed May 31, 1890. Serial No. 353,711. (No model.)

Claim.—1. In combination with the temples, a connecting-bar made of a single continuous piece having a direct jointed engagement at its extremities with said temples, substantially as set forth.



2. In combination with the temples, a connecting-bar made of a single continuous piece bent rearward at its extremities, said temples having a jointed engagement with said extremities substantially on the same plane as the bar, as set forth.

3. In combination with the bar having a direct connection with the temples, a vertically-adjustable nose-piece, substantially as set forth.

4. In combination, the bar having a direct connection with the temples, a vertically-adjustable nose-piece, and a scale to register the adjustment of the nose-piece, substantially as set forth.

5. In combination, the bar having a direct connection with the temples and a vertically and horizontally adjustable nose-piece, substantially as set forth.

6. In combination, the bar connecting the temples, the operating-screw, and the sliding bows provided with sliding bearings engaging said bows upon said bar and said screw, said bearings made in two separate pieces united, substantially as set forth.

7. In combination, the indexed bar having a direct connection with the temples, and the sliding bows provided with sliding bearings engaging said bar, the front face of said bearings cut away to disclose the index upon said bar, substantially as set forth.

8. In combination, the bar connecting the temples and sliding bows engaged upon said bar, said bows provided with inwardly-projecting points, substantially as set forth.

9. In combination, a laterally-movable bow and a rotatable bow connected thereupon, the one provided with an index located within the other, substantially as set forth.

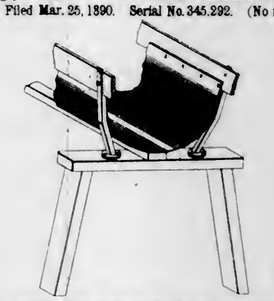
10. In combination with a bow, a spring located upon the outer periphery thereof, substantially as set forth.

11. In combination, the laterally-sliding bow, the rotatable bow connected thereupon, and the sliding bow provided with a sliding bearing which is offset to bring the front face of the sliding bow on a plane with the front face of the revolving bow, substantially as set forth.

12. In combination, the bar having a direct connection with the temples and a horizontally-adjustable nose-piece, substantially as set forth.

13. In combination, the bar connecting the temples, a vertically-operating screw carrying a nose-piece at its base, and an arm connected with the said bar through which the said screw works, substantially as set forth.

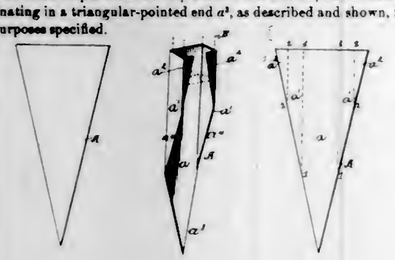
444,496. FLUME OR CONDUIT. MYRON H. LAYBOURN, New Windsor, Colo. Filed Mar. 25, 1890. Serial No. 345,292. (No model.)



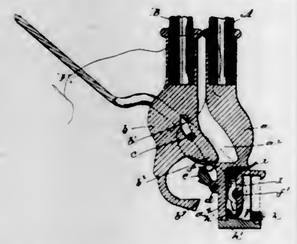
Claim.—A flume constructed substantially as herein described—that is to say, made of sections of sheet metal suitably joined together—combined with iron brackets and horizontal supporting-strips, one of which supports each upper margin and another the central portion of the bottom of the trough, substantially as set forth, the size and weight of metallic sheets and brackets being limited only by the size of the side walls of the flume.

444,497. METALLIC SOCKET FOR FENCE-POSTS, &c. CLEMENT A. LOUNSBERRY, Bismarck, N. D. Filed Oct. 21, 1890. Serial No. 368,801. (No model.)

Claim.—A socket for fence and other posts, poles, &c., composed of a sheet-metal blank, triangular in shape, bent as shown along the lines 1 1 and 2 2, forming a rectangular socket having sides a' a', whose front edges a^4 a^4 taper toward the back, front portion a^2 a^2, the front edges of which taper from the top toward the bottom, and a back a, terminating in a triangular-pointed end a^3, as described and shown, for the purposes specified.



444,498. ROOFER'S SEAMING-TONGS. EZRA S. MEALS, Harrisburg, Pa. Filed May 15, 1890. Serial No. 351,898. (No model.)



Claim.—1. The combination, with the lever a, provided with the pivoted bending-bar c, of the lever b, provided with the jaw b^2 and having a slotted or slip-joint connection with the said lever a, the said jaw b^2 being arranged to come beneath the said bending-bar.

2. The combination, with the lever a, provided with the recess a^3, the fixed pivot-bolt c, and the pivoted bending-bar c, of the lever b, having the slot b', receiving said pivot-bolt, the lug or toe-piece b^3, entering said recess a^3, the jaw b^2, arranged to come beneath said bending-bar, and the foot-lever F to operate said bending-bar.

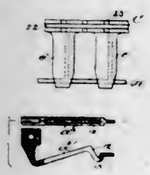
3. The combination, with the lever a, provided with the pivoted bending-bar c, of the lever b, provided with the jaw b^2, arranged to come beneath said bending-bar, the foot-lever F, having near its fulcrum lugs to engage the said bending-bar, the link connecting said foot-lever with the rear side of the said bending-bar, and the torsional spiral springs for lifting the said foot-lever and bending-bar, said springs being on the fulcrum-pin of said lever.

4. The combination, with the lever a, provided with the pivoted bending-bar c, of the lever b, provided with the jaw b^2, the foot-lever F, the hinged extension-leaf k', and the double-acting catch I to hold the said extension-leaf in its two positions.

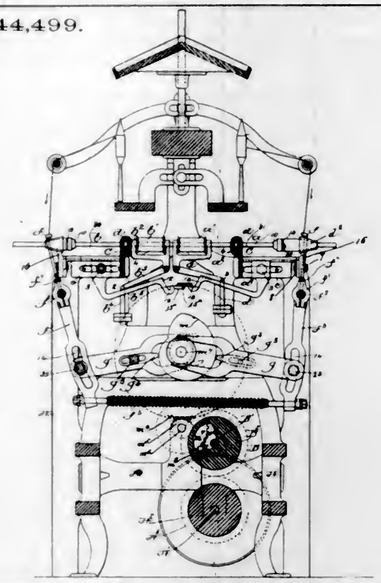
444,499. QUILLING-MACHINE. JOHN T. MEATS, Taunton, Mass. Filed July 8, 1887. Serial No. 243,723. (No model.)

Claim.—1. The traverse-shafts f^3 f^3, having adjustable guides f, spring-connected arms f^2, and forked links g g attached thereto, having toe-pieces g^3 at their inner ends, combined with a cam m, against the periphery of which bear the toe-pieces, substantially as described.

2. The bar C, having packed bearings for a spindle and provided with a horizontal extended arm c, having at its upper side a concaved shelf to receive a full bobbin and having a depending horizontally-slotted web integral therewith, combined with a detachable guide or

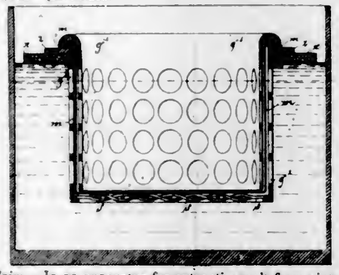


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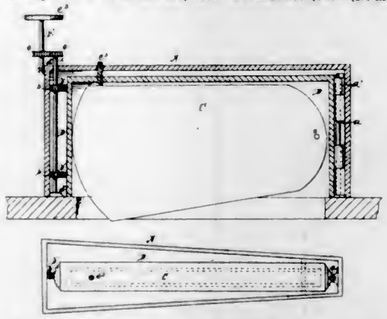
trumpet and with a horizontally-adjustable inclined bar a^5 or b^2, attached to the said web, as and for the purposes set forth.

444,500. APPARATUS FOR EXTRACTING SALT FROM MEATS. GEORG F. MEYER, Brunswick, Germany. Filed Oct. 1, 1890. Serial No. 366,724. (No model.)



Claim.—In an apparatus for extracting salt from victuals by osmose, the two perforated vessels g' g^3, one within the other, with the diaphragm m inserted between them, in combination with a third vessel adapted to be filled with water and to receive said apparatus.

444,501. CENTER-BOARD FOR VESSELS. FRANCIS M. MOORE, Brooklyn, N. Y. Filed June 20, 1890. Serial No. 356,172. (No model.)

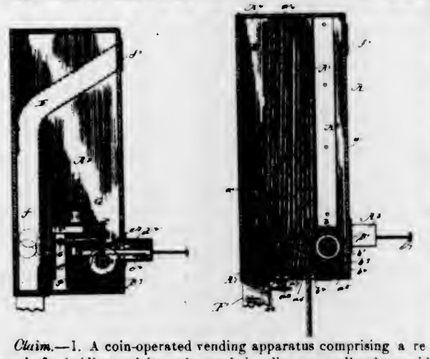


Claim.—1. In a vessel, the combination, with a stationary trunk, of a longitudinally-swinging trunk within the first-named trunk, carrying a center-board, substantially as specified.

2. In a vessel, the combination, with a stationary trunk having converging sides, of a deflecting trunk within the first-named trunk, a center-board therein, and mechanism for deflecting the said inner trunk, substantially as specified.

3. In a vessel, the combination, with a stationary trunk, of a deflecting trunk within the first-named trunk and carrying a center-board, a rack or racks on the deflecting trunk, a rotary shaft, and a gear-wheel or gear-wheels on said shaft engaging with the rack or racks, substantially as specified.

444,502. NEWSPAPER-VENDING APPARATUS. BENNO MOSSLER, Chicago, Ill. Filed Mar. 24, 1890. Serial No. 345,034. (No model.)



Claim.—1. A coin-operated vending apparatus comprising a receptacle for holding articles to be vended, rollers extending into said receptacle for discharging the articles and mounted upon a rotative shaft, an operating rod or bar geared to said shaft for turning the same, and a coin-lever engaging said shaft, said cam-lever being adapted to be withdrawn from engagement therewith by the action of a cam upon said lever, substantially as described.

2. A coin-operated vending apparatus comprising a receptacle for holding articles to be vended, rollers extending into said receptacle for discharging the articles and mounted upon a rotative shaft, a reciprocating rod or bar geared to said shaft for turning the same when moved in one direction and adapted to be disengaged therefrom when moved in an opposite direction, and a coin-lever engaging said shaft and adapted to be disengaged therefrom by the action of a coin, substantially as set forth.

3. A coin-operated vending apparatus comprising a receptacle for holding articles to be vended, rollers extending into said receptacle and mounted upon a rotative shaft, a reciprocating operating rod or bar geared to said shaft for turning the same, a cam slot or groove for guiding said rod or bar, whereby the latter is alternately engaged with and disengaged from said shaft, and a coin-lever engaging said shaft and adapted to be disengaged therefrom by the action of a coin, substantially as set forth.

4. A coin-operated vending apparatus comprising a receptacle for holding articles to be vended, rollers extending into the same for discharging said articles and mounted upon a rotative shaft, a reciprocating rod or bar geared to said shaft for turning the same, said rod or bar being supported in bearings permitting it to be moved away from said shaft to disengage it therefrom, and a cam-lever engaging said shaft and adapted to be disengaged therefrom by the action of a coin, substantially as set forth.

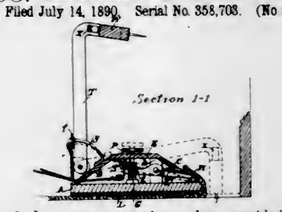
5. A coin-operated vending apparatus comprising a case or housing, a receptacle for holding articles to be vended, rollers extending into said receptacle for discharging said articles and mounted upon a rotative shaft, a reciprocating operating rod or bar geared to said shaft and located adjacent to the side of said case or housing, a pin or projection on one of said parts, a cam-slot on the other of said parts engaged by said pin or projection, said cam-slot having one member d for keeping the rod engaged with the shaft and another member d' for disengaging it therefrom, and a coin-lever engaging said shaft and adapted to be disengaged therefrom by the action of a coin, substantially as described.

6. A coin-operated vending mechanism comprising a case or housing, a receptacle for holding articles to be vended, rollers extending into said receptacle for discharging said articles and mounted upon a rotative shaft, a reciprocating operating rod or bar geared to said shaft and located adjacent to the side of said case or housing, a pin or projection on one of said parts, a cam-slot on the other of said parts engaged by the said pin or projection, said cam-slot having one member d for keeping the rod engaged with the shaft and another member d' for disengaging it therefrom, a spring-actuated catch or detent between said members opening toward said member d', and a coin-lever engaging said shaft and adapted to disengage it by the action of a coin, substantially as set forth.

7. A coin-operated vending apparatus comprising a receptacle for holding articles to be vended, an opening in said receptacle for the passage of said articles, rollers extending into said receptacle in the rear of said opening for discharging said articles and mounted upon a rotative shaft, means for turning said shaft, a notched cam-disk upon said shaft, a coin-chute, and a pivoted coin-lever engaging said notched disk at one end and having its other end extending into said coin-chute, substantially as set forth.

8. A coin-operated vending apparatus comprising a receptacle for holding articles to be vended, rollers extending into said receptacle for discharging said articles and mounted upon a rotative shaft, means for turning said shaft, a notched cam-disk upon said shaft, a coin-chute, a pivoted cam-lever engaging said notched disk at one end and extending into said coin-chute, said coin-lever being arranged so that the weight of a coin upon its end in the chute will disengage its other end from said disk, and a pivoted weighted arm engaging said lever to limit its movement under the influence of the coin, substantially as set forth.

444,503. CARPET-STRETCHER. DAVID H. MCFALLS, Ellensburg, Wash. Filed July 14, 1890. Serial No. 358,708. (No model.)



Claim.—1. In a carpet-stretcher, a box provided with a lower surface covered with rubber having attached a pole at one end, a hook engaging with the carpet at its edge, said hook pivoted to said box, having its shank on the opposite side of the fulcrum from the hook end attached to a fastening device holding the hook in contact with the carpet, and an arm attached to said box movable in a vertical plane, said arm having a weight adapted to carry a tack attached to the end of said arm, all substantially as described, and for the purpose as set forth.

2. In a carpet-stretcher, a box having a pole attached to one end thereof, in combination with a hook passing through a side of the box engaging with the carpet near its edge, said hook pivoted to said box, with a spring engaging with the end of the hook-shank, holding the hook in contact with the carpet, and a spring placed beneath the hook-shank, tending to force the hook away from the carpet, all substantially as described, and for the purpose as set forth.

3. In a carpet-stretcher, a box provided with a pole attached to one end thereof, in combination with a hook passing through a side of the box, engaging with the carpet near its edge, said hook pivoted to said box, a spring engaging with the end of the hook-shank, holding the hook in contact with the carpet, a spring placed beneath the hook-shank, tending to force the hook away from the carpet, an arm attached to said box movable in a vertical plane, provided at one end with a weight carrying a tack, and a spring attached to said box and engaging with said arm when the arm is in its vertical position, all substantially as described, and for the purpose as set forth.

4. In a carpet-stretcher, a box provided with a pole attached to one end thereof, in combination with a hook passing through a side of the box, engaging with the carpet near its edge, said hook pivoted to said box, a spring engaging with the end of the hook-shank, holding the hook in contact with the carpet, a spring placed beneath the hook-shank, tending to force the hook away from the carpet, an arm attached to said box movable in a vertical plane, provided at one end with a weight carrying a tack, a spring attached to said box and engaging with said arm when the arm is in its vertical position, chains attached to the loose ends of the springs, engaging, respectively, with the end of the hook-shank and with said arm, said chains secured together and passing along the pole toward the end of said pole farthest from the box, a handle pivoted to said pole, to which the chains are attached by the operation of said handle releasing said springs from their engagement with the hook-shank and arm, respectively, all substantially as described, and for the purpose as set forth.

444,504. HOT-PAN LIFTER. MATIE B. PENFIELD, Dallas, Tex. Filed Mar. 31, 1890. Serial No. 346,057. (No model.)

Claim.—1. A hot-pan lifter consisting of a blade having a shank, a lever pivoted to the latter and having a head provided with teeth

to engage or interlock with the edge of the pan-rim, and a spring for throwing the toothed head into engagement with the pan-rim, substantially as described.



2. A hot-pan lifter consisting of a blade having a shank, a rocking thumb-lever pivoted at or near the middle of its length on the shank and having its front end formed into a head having a series of transverse teeth on its under side, and a spring acting on the thumb-lever to throw the toothed head into engagement with the pan-rim, substantially as described.

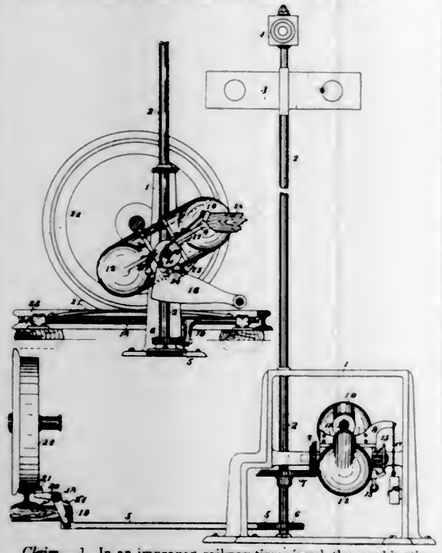
3. A hot-pan lifter consisting of a trowel-blade having stop-lugs and a shank carrying a handle and provided with an upwardly-projecting stop-pin, a thumb-lever pivoted at or near the middle of its length, adapted to rest on the stop-pin, and formed at its front end into a pan-engaging head, and a spring acting on the thumb-lever to normally hold it at rest on the stop-pin, substantially as described.

444,505. **TEMPLE FOR SPECTACLE-FRAMES.** BENJAMIN I. PRICE, Denver, Colo. Filed Mar. 3, 1890. Serial No. 343,183. (No model.)



Claim.—In a combined straight and riding temple for spectacle-frames, a bar 5, forming the straight part of the temple and having a tubular outer portion for the reception of the riding part, said tubular portion being furnished with a slot 6, a part 7, forming the riding portion of the temple and provided with a knob 8, secured to the inner extremity and having a neck sliding within the slot during adjustment, part 7 being capable of being concealed entirely within the tubular portion of bar 5, and also capable of extension from said bar, so as to engage the back portion of the ear, substantially as described.

444,506. **RAILWAY TIME-SIGNAL.** FRANK ROBINSON, Bangor, Me. Filed July 29, 1889. Serial No. 319,122. (No model.)



Claim.—1. In an improved railway time-signal, the combination, with a vertical shaft or mast provided with a vane and a lantern at its top and having a gear-wheel and a pinion secured to its lower portion, of a rack having a suitable operating mechanism at the end next the track and engaging with the pinion with its opposite end, a shaft journaled at right angles to the mast, having a gear-wheel and two bulbs or chambers connected therewith, said gear-wheel meshing with the gear-wheel on the mast, and the chambers having their interiors connected and one of the chambers being provided with a non-freezing liquid.

2. In a railway-signal, the operating device for the same, consisting of the combination of a signal-mast, having the usual vane and lantern, pinion 6, confined to said mast, rack 5, meshing with said pinion and pivoted to lever-arm 19, depending from trip-rod 18, the tripping-rod situated parallel with the track and having horizontally-extending arms 20, connected at their outer ends by tripping-spring 21 in a manner to be depressed by a passing train, gear 7, confined to signal-mast 2 and meshing with gear-wheel 8, located upon shaft 14, bulbs 10 and 12, connected and confined to shaft 14, said bulbs having their interior or chambers united by tubes 11 and 25, diametrically opposite each other, for the purpose described, one of said bulbs filled with a non-freezing liquid or other suitable substance, all connected and adapted to operate in the manner set forth and substantially as shown and described..

3. An improved railroad-signal consisting of the combination of signal-mast 2, provided with vane and signal-lantern, gear 7, meshing into gear-wheel 8, turning-shaft 14, bulbs 10 and 12, one of which is filled with a non-freezing liquid or other suitable substance for the purpose described, said bulbs fastened to shaft 14 and their chambers connected by tubes 25 and 11, of unequal diameter, secured diametrically opposite each other, arm 9, projecting from bulb 10 and connected by rope or chain to weight 16, centrifugal rebound-clutch 13, pivoted to one of the bulbs and adapted to engage notch 29, cut in stationary disk 15, for the purpose described, with suitable tripping-gear located at the side of a rail and connected to and adapted to set signal upon mast 2 by the passage of a car-wheel, all substantially as shown and described, and for the purpose set forth.

4. In combination with the operating mechanism of a railway time-signal, the tripping device for the same, consisting of a horizontal shaft located parallel with a track-rail and turning in suitable bearings confined to the rail-sleepers, horizontally-projecting arms projecting from said shaft near each bearing thereof and extending toward said rail, convex depression-spring secured to the ends of said arms in such manner as to project above the surface of said rail in the manner described, and a longer arm or lever depending downward from said horizontal shaft, this latter arm provided with means for attachment to a connecting-rod running to the signal device to operate or set said signal by a passing wheel upon said rail, all substantially in the manner shown, and for the purpose described.

5. In combination with the setting and reversing mechanism of a gravity railway time-signal, the centrifugal rebound-clutch consisting of the combination of a metallic hook, with depending extension and weight at the extremity of said extension, pivoted to the revolving portion of the signal-setting device, with a stationary disk located at the edge of said hook in such manner that the latter revolves around and is held against the periphery of the disk by centrifugal force in the manner described, said disk having a notch cut in its edge, into which the hook engages at the moment of rebound, substantially as shown, and operated in the manner described.

6. The combination, with a railway time-signal, of mechanism for operating the same by the passage of the train, and mechanism for automatically returning the signal to its original position, consisting of two bulbs or chambers, each provided with an arm for connecting it to a shaft transversely between them, two tubes for connecting the bulbs, one of which is smaller than the other and is provided with means for regulating the passage of liquid through it, one end of one of said tubes communicating with the shell of one of the bulbs, and one end of the other tube communicating with the shell of the other bulb, the opposite end of each of said tubes extending nearly to the bottom of the interior of the opposite bulb, and means for connecting said bulbs and shaft with the signal-mast.

444,507. **SIGN-LETTER.** GEORGE J. B. RODWELL, Toronto, Canada, assignor of two-thirds to Samuel John Moore and Herbert Canning Secord, both of same place. Filed Jan. 8, 1890. Serial No. 336,294. (No model.)



Claim.—1. An improved sign letter or symbol of the class herein specified formed recessed in its front or obverse side, as set forth.

2. An improved sign letter or symbol formed recessed in its front or obverse side and raised correspondingly on its back or reverse side, as set forth.

3. A sign letter or symbol formed recessed in its front or obverse side and with an attaching-edge on said side, as set forth.

4. A sign letter or symbol formed recessed in its front or obverse side and with an attaching-edge on said side and raised correspondingly on its back or reverse side, as set forth.

5. A sign letter or symbol formed V-shaped in cross-section of its body, the said recess being on its front or obverse side, as set forth.

6. A sign or advertisement composed of letters or symbols formed recessed in their obverse sides and secured thereat on the inner side of a glass pane, as set forth.

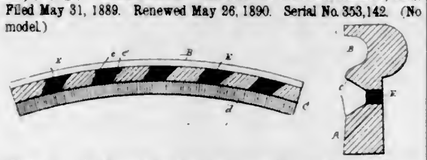
7. A sign letter, symbol, or ornament formed recessed in its front side, the said recess being shining, gilded, or otherwise ornamented, an attaching-edge surrounding said recessed face to receive the cement which holds the sign letter, symbol, or ornament in position with its polished, gilded, or otherwise ornamented face next the glass or other transparent material, as set forth.

8. A sign letter, symbol, or ornament recessed in its front or obverse side, the said recess being shining, gilded, or otherwise ornamented, in combination with a transparent cover placed over the recessed face, as set forth.

9. A sign letter, symbol, or ornament having a recessed face shining, gilded, or otherwise ornamented, in combination with a transparent cover cemented air-tight to said recessed face, as set forth.

10. A sign letter, symbol, or ornament having an angularly-recessed shining, gilded, or otherwise ornamented face surrounded by an edge to receive the cement which secures it to the glass with its gilded face next to said glass, as set forth.

444,508. **BRAKE-SHOE.** CHARLES W. ROEPPER, Alliance, Ohio. Filed May 31, 1889. Renewed May 26, 1890. Serial No. 353,142. (No model.)



Claim.—1. In a brake-shoe, an inner-tread portion provided with an opening, the lower edge of said opening having a downward slant, substantially as set forth.

2. In a brake-shoe, an inner-tread portion provided with openings, the longitudinal edges of said tread portion inclining toward said openings, substantially as set forth.

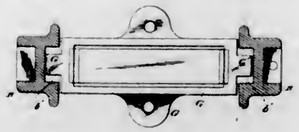
3. In a brake-shoe, the combination, with an outer-tread contacting portion, of an inner-tread portion lying in a plane withdrawn or depressed from the face of said outer-tread portion, a series of openings being formed through the face of said inner-tread portion, the respective longitudinal boundary-walls of said inner-tread portion inclining toward said openings, substantially as set forth.

4. In a brake-shoe, the combination, with an outer-tread contact portion, of an inner-tread portion lying in a plane withdrawn from or depressed below that of the inner edges of the faces of said flange and outer-tread portions, said inner-tread portion provided with a series of openings, the longitudinal boundary-walls of said inner-tread portion inclining toward said openings, substantially as set forth.

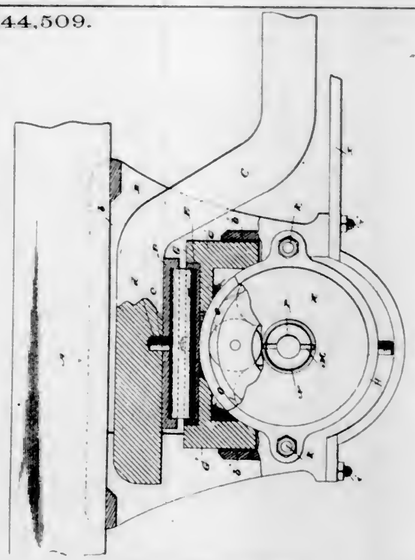
444,509. **JOURNAL-BOX.** WILLIAM S. SHARPNECK, Chicago, Ill., assignor, by direct and mesne assignments, to the Sharpneck Anti-Friction Journal Box Company, same place. Filed May 6, 1890. Serial No. 350,777. (No model.)

Claim.—1. The combination of a pedestal, a truss-bar fitting an aperture therein, a bearing-plate having an angular recess therein and connected to the truss-bar, a roller under said bearing-plate, a saddle under the roller having extensions running into recesses in the pedestal, and a casing or cylinder fitted to the saddle and receiving the axle and surrounding rollers, substantially as described.

2. The combination, in an axle-box, with the pedestal and its connections, of a casing H, constructed and arranged to be turned bottom side up to bring the unworn portion of the casing into use, substantially as described.



444,509.



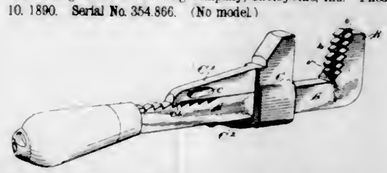
444,510. **EXTENSION-CLAMP.** JESSE J. TANNER, Oneida, N. Y., assignor of one-half to Robert J. Fish and Daniel C. Burke, both of same place. Filed Mar. 5, 1890. Serial No. 342,707. (No model.)



Claim.—1. The jaw *d*, formed with the shoe *e*, lug *f*, and head *f'* on said lug, in combination with the screw *s* and the bar *a*, provided with slots *e e e*, tapered in width toward the end of the bar farthest from said screw, as set forth.

2. In combination with the bar *a*, provided with a nut at one end, and a jaw adjustably connected to said bar, the clamping-screw *s*, working in said nut, and the jaw *d*, swiveled on the outer end of the screw, substantially as set forth and shown.

444,511. **WRENCH.** THEODORE F. VANDEGRIFT, North, assignor to the Vandegrift Manufacturing Company, Shelbyville, Ind. Filed June 10, 1890. Serial No. 354,866. (No model.)



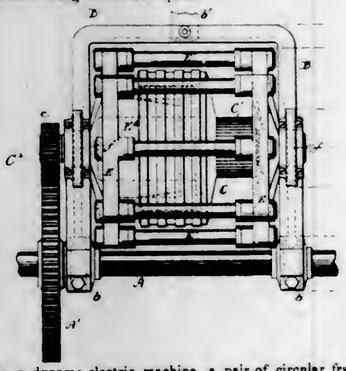
Claim.—1. The combination, in a wrench, of a bar having notches on its upper edge, a jaw secured to its outer end, and a second jaw mounted on said bar and provided with the tail-piece having the dog or pawl adapted to engage in said notches, the spring secured to said jaw and adapted to hold said dog or pawl into engagement with said notches, and cavities in the sides of said tail-piece forming finger-holds, whereby it may be operated reversely to the action of the spring, substantially as shown and described.

2. The combination, in a wrench, of a bar A, the jaw B, having a series of gripping-teeth tapered from the outer edges toward the center, thus making said teeth concave in the direction of their length, and a second jaw opposed to said toothed jaw, substantially as set forth.

444,512. **ELECTRIC LOCOMOTIVE.** MONTGOMERY WADDELL and JUSTUS B. ENTZ, New York, N. Y. Filed May 20, 1890. Serial No. 352,490. (No model.)

Claim.—1. In a dynamo-electric machine, a pair of circular frames or spiders connected at their edges to form a cylindrical space within.

field-magnets in said space and supported by the frames or spiders, and an armature rotating within said space.



2. In a dynamo-electric machine, a pair of circular frames or spiders connected at their edges to form a cylindrical space within, field-magnets in said space and supported by the frames or spiders, and an armature rotating within said space, the shaft of the armature extending concentrically through the said frames or spiders, and a spring or springs connecting the frames or spiders with a fixed support, for the purpose set forth.

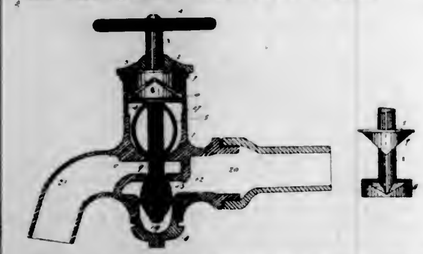
3. In a motor-truck for vehicles, the combination of a frame for supporting the motor, bearings in the same for the motor-shaft, an electric motor whose stationary element is mounted concentrically and in the same bearings with the main shaft, and a spiral spring surrounding the journal of said stationary element, the spring being secured at one end to the journal and at the other end to the frame.

444,513. PESSARY. EDWARD W. WAGNER, San Jose, Cal. Filed July 2, 1889. Serial No. 316,355. (No model.)



Claim.—In an inflatable soft-rubber-bulb pessary, the combination, with the inflating-tube B, extending from bulb A, of the inner tube C, open at its upper end, attached to and extending through the interior of the bulb A and passing out through the walls of the tube B, all as and for the purpose described.

444,514. SELF-CLOSING FAUCET. HENRY A. WALKER, Denver, Colo. Filed July 22, 1890. Serial No. 359,955. (No model.)

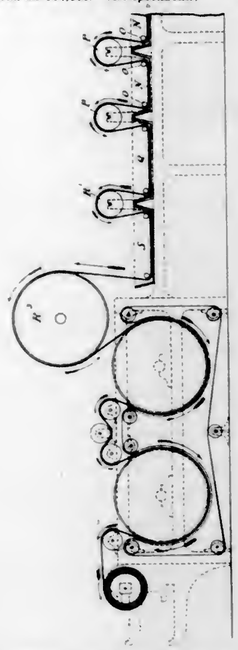


Claim.—1. In a self-closing faucet, the combination, with a suitable casing having a chamber 14 in its upper portion, of an oval or egg-shaped hollow bulb 15, located within this chamber, said bulb being normally free from contact with the walls of the chamber, except at the top and bottom or immediately around the stem at either extremity of the chamber, a valve-stem 9, passing through the hollow bulb and through an aperture in the bottom of chamber 14, within which the stem fits nicely, the top of the stem being provided with a disk 10, engaging the walls of the chamber which form a guide for the disk while compressing the bulb, and suitable means for depressing the valve-stem, substantially as described.

2. In a self-closing faucet, the combination, with a suitable casing having a chamber 14 formed in its upper portion, a circumferential ledge or shoulder 17, formed on the inner wall of the chamber, of a hollow oval or egg-shaped bulb located within said chamber, a valve-stem passing through the bulb and through an aperture formed in the bottom of the chamber, and a disk 10, rigidly secured to the top of stem 9 and adapted to compress bulb 15 when stem 9 is depressed in opening the valve, ledge 17 marking the limit of the downward movement of disk 10, substantially as described.

3. In a self-closing faucet, a shell or casing 1, having a supply-opening 20 on one side, a suitable discharge-opening 21 on the opposite side, and a chamber 14, located in its upper portion, a partition 12, provided with an aperture leading from the supply to the discharge opening, a partition 11, forming the bottom of chamber 14, a hollow egg-shaped bulb located in chamber 14, a valve-stem 9, passing through apertures formed in the top and bottom of the bulb, the opening in the top permitting the entrance and exit of air slowly around the stem to and from the interior of the bulb, stem 9 also passing through apertures formed in partitions 11 and 12, said stem being provided at its lower extremity with an elongated valve 13, adapted when seated to close the aperture in partition 12, a chamber 19 in the bottom of the casing for the reception of the valve when open, said chamber being sufficiently contracted at the top that it is nearly closed when the valve is depressed, the top of the valve-stem 9 being provided with a disk 10 of a diameter slightly less than that of chamber 14, and suitable means of depressing the valve-stem and opening the valve, substantially as described.

444,515. PROCESS OF PRODUCING CELLULOSE FILMS. JAMES WILLIAMS, Willesden Junction, England, assignor to the Patent Waterproof Paper and Canvas Company, Limited, same place. Filed Jan. 16, 1890. Serial No. 337,108. (No specimens.)



Claim.—1. The process hereinbefore described of exposing the fabric to the action of cuprammonium hydro-oxide to form a film thereon, drying it to remove the ammonia, and then subjecting the fabric to the action of acid to eliminate the copper.

2. The process hereinbefore described of floating the fabric upon the surface of a solvent, such as cuprammonium hydro-oxide, applying heat to the fabric, passing it successively through diluted acid and through water, and again drying it.

3. The process hereinbefore described of exposing the fabric to the action of the solvent, eliminating the solvent, and then removing the unchanged portion of the fabric from the amorphous film produced by the action of the solvent.

4. The process hereinbefore described of exposing the fabric to the action of cuprammonium hydro-oxide to form an amorphous film of cellulose thereon, then removing the ammonia by drying and the copper by acid, and afterward removing the unchanged portion of the fabric.

5. The process hereinbefore described of floating the fabric upon the surface of a solvent, such as cuprammonium hydro-oxide, to form an amorphous film of cellulose thereon, heating the fabric, subjecting it successively to the action of acid and to the action of water, again drying it, and afterward washing off the unchanged portion of the fabric.

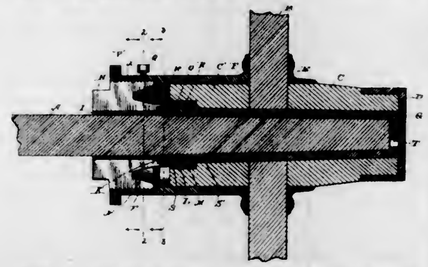
444,516. SHIRT-COLLAR AND TIE-HOLDER. WILLIAM H. BARBOUR, Colorado Springs, Colo. Filed Apr. 25, 1890. Serial No. 349,526. (No model.)



Claim.—1. A shirt-collar holder comprising the band 4 to fit around the neck of a shirt under the collar, and the arms secured to the inner face of the band and being curved upward and outward over the upper edges of the band and extending outward from the same, and arranged to support the points of the collar, substantially as described.

2. A shirt-holder comprising the spring-band adapted to fit around the neck of the shirt, and consisting of adjustable sections 5, having their ends 9 reduced and provided with flanges or projections 10, arranged to form ways to receive the reduced portion of the adjacent sections, the arms 6, secured to the ends of the band and extending outward therefrom at an angle and adapted to engage the points of the collar, and the V-shaped hooks secured to the band and arranged beneath the arms and adapted to confine the neck tie, substantially as described.

444,517. HUB-ATTACHING DEVICE FOR VEHICLE-AXLES. HENRY F. BOCK, Seester, Ill. Filed Mar. 4, 1890. Renewed Nov. 10, 1890. Serial No. 370,843. (No model.)



Claim.—1. The combination of an axle having a projecting collar upon it with a hub or wheel and a lubricating-block provided with an annular recess, both walls of which are contained within said block, substantially as and for the purposes set forth.

2. The combination of an axle having a projecting collar upon it with a hub or wheel and a lubricating-block containing an annular recess for retaining the lubricant, said recess being wholly in the face of said block, and the interior bores of said hub or wheel and of said lubricating-block provided with shoulders resting, respectively, against the opposite sides of said collar, substantially as shown.

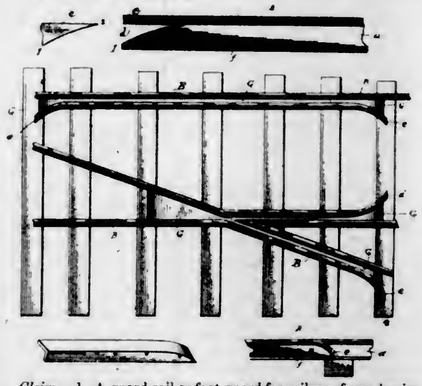
3. The combination of an axle and a journal having a projecting collar fixed adjustably upon it by screw-threads, said collar guarded on each side by removable washers, with a hub or wheel having a cylindrical thimble enlarged at its inner end so as to form a recess and a shoulder resting against one of said washers, and a lubricating-block containing an annular groove to retain the lubricant, and the inner projection of which is rabbeted so as to form a shoulder resting against the inner edge of the other washer, substantially as shown.

4. The combination of an axle or journal having a projecting collar fixed adjustably upon it by screw-threads, said collar being guarded by a movable washer on each side of it, the interior washer being in two segments, with a hub or wheel having a cylindrical thimble provided at its interior end with an enlargement of the cylinder forming a recess and a shoulder resting against one of said washers, said hub also provided with an exterior band or thimble with screw-thread, and a lubricating-block possessing on its exterior extension a screw-thread and containing an annular groove to retain the lubricant, and the inner projection of which is rabbeted so as to form a shoulder resting against the inner edge of said other washer, and a locking-out, substantially as shown.

5. A lubricating-block composed of two sections containing in its inner face an annular groove, the interior projections of which are rabbeted so as to form a shoulder, the inner angle of the surfaces of the sections having recesses to admit a packing at the sections, and the block provided with a screw-thread, in combination with an axle or journal and a hub or wheel, substantially as shown.

6. The combination of an axle, a hub, and a lubricating-block between such hub and axle, said block having a flaring recess, one wall of which slopes or inclines toward and extends to such axle, substantially as shown and described.

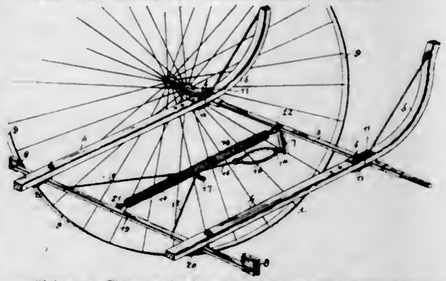
444,518. GUARD-RAIL OR FOOT-GUARD FOR RAILWAY-FROGS. JOHN E. BOWES and LORENZO H. HARRIS, Aurora, Ill. Filed Oct. 18, 1890. Serial No. 368,543. (No model.)



Claim.—1. A guard-rail or foot-guard for railway-frogs, having a portion of its web cut out between its tread and the end of its flange, as set forth, and having such part of its tread bent down on the web to or near the flange, substantially as and for the purposes described.

2. In combination with a railway-frog, a guard-rail or foot-guard having a part of its web cut away and its tread bent down on the edge of such cut web, and a filling applied and secured to the rail and frog, all substantially as set forth.

444,519. BABY-CARRIAGE. FRANK S. BRIGGS, New Hampton, Iowa. Filed June 25, 1890. Serial No. 356,692. (No model.)



Claim.—1. The combination of a baby-carriage, a brake-bar provided at its ends with brake-shoes, a spring connected to the brake-bar and normally holding the same in engagement with the wheels, and the handle having the lower ends of its bars 5 rigidly secured to the rear axle and hinged to the side bar 4 and connected with the brake-bar to throw the same out of engagement with the wheels, substantially as described.

2. In a baby-carriage, the combination of the rear axle, the sliding brake-bar provided at its ends with brake-shoes, a spring adapted to throw the shoes into engagement with the wheels, the handle-bars having their lower ends hinged and secured to the rear axle and adapted to move the brake-bar, the depending bar secured to the

rear axle, and the connection between the depending bar and the brake-bar, substantially as described.

3. In a baby-carriage, the combination of the rear axle, the sliding brake-rod provided at its ends with shoes, the spiral spring connecting the rear axle and the brake-rod and holding the shoes normally in engagement with the rear wheel, the hinged handle secured to the rear axle, the depending bar, and the adjustable connection between the depending bar and the brake-bar, said connection comprising the turn-buckle swiveled to the depending bar, the adjustable rod having one end engaged by the turn-buckle, and a diverging rod secured to the other end of the adjustable rod and to the brake-bar, substantially as described.

4. In a baby-carriage, the combination of the side bars, the handle-bars hinged to the side bars, the rear axle clipped to the handle-bar, the brackets secured to the side bar and bracing the rear axle and limiting the movement thereof, the guide-rods arranged beneath the side bars, the brake-bar provided with perforations receiving the guide-rod, the spring, and the connection between the rear axle and the brake-bar, substantially as described.

5. In a baby-carriage, the combination of the rear axle, the side bars 4, the sliding brake-bar provided at its ends with brake-shoes, a spring holding the shoes into engagement with the wheels, the handle-bars having their lower ends rigidly secured to the rear axle and hinged to the side bars 4, and the adjustable connection between the rear axle and the brake-bar, whereby when the handle-bars are depressed the brake-shoes will be held out of engagement with the wheels, substantially as described.

444,520. STREET-DOOR LETTER-BOX. DAVID K. BYLER, near Urbana, Ohio. Filed July 15, 1890. Serial No. 358,833. (No model.)



Claim.—1. The stationary box C, inserted in a hole in a door, having apertures in its front face for the insertion of mail-matter, as and for the purpose set forth.

2. The box C, inserted in a hole in a door, having its outer and inner faces hinged for ready access by the postman and mail-receiver and having an aperture in its outer face for the reception of mail-matter, as and for the purpose set forth.

3. The box C, inserted in a hole in a door, having an aperture in its outside face for the reception of mail-matter, the outside face of the box hinged for the convenience of the postman, and the bell that gives notice to the mail-receiver when the box is opened, as and for the purpose set forth.

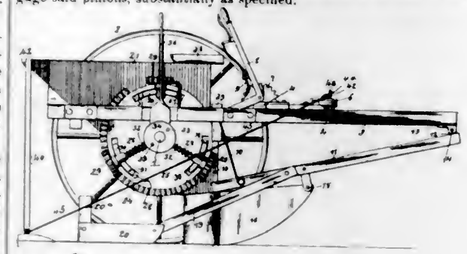
4. The box C, inserted in a hole in a door, having apertures in its outside face for the insertion of mail-matter and its inside face hinged to accommodate the box to amount of mail-matter put therein, as and for the purpose set forth.

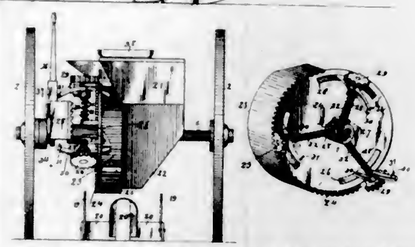
444,521. POTATO-PLANTER. LYMAN L. COWLES, Valley, Nebr., assignor to Mary S. Cowles, same place, and Carrie V. Hollister, Salt Lake City, Utah. Filed July 9, 1890. Serial No. 358,167. (No model.)

Claim.—1. In a potato-planter, the combination, with the frame and axle and its wheels, of a curved hopper, a delivery-chute arranged in front of the same, said hopper being provided with a series of teeth, an annularly-slotted disk mounted on the shaft and provided with a series of potato-gathering cups adapted to travel over the hopper, a series of shafts radiating from the center of and secured to the disk, picking-arms mounted on the shafts and adapted to travel through slots formed in the disk opposite the arms, a pinion mounted upon each of the shafts and engaging the teeth of the hopper, and a rack-bar located at the opposite side of the pinion to that occupied by the curved hopper and adapted to engage said pinion and reverse the movement of the potato-gathering arms, substantially as specified.

2. In a potato-planter, the combination, with a hopper, a series of radiating potato-picking arms journaled at one side of the hopper, and mechanism for rotating the arms within the hopper, of devices for reversing said arms and a delivery-spout located in the path of said arms, substantially as specified.

3. In a potato-planter, the combination, with the frame, a main hopper having an inclined bottom terminating in a discharge-spout, an adjustable delivery-chute provided with a furrow-opener, and a curved secondary hopper located at the side of the spout and provided with a circular series of teeth, of a disk mounted rigidly upon the shaft, a series of pairs of radiating brackets secured to the disk, radiating shafts mounted in the brackets, each of which is provided with a twin pair of picking-arms having opposite picking-pins and each provided with a pinion, said arms being adapted to operate within a circular slot formed in the disk, cups secured to the inner side of the disks opposite each pair of arms and communicating with the slot, and the rack-bar located at the opposite side of the shafts and adapted to engage said pinions, substantially as specified.





4. In a potato-planter, the combination, with an axle, a hopper having an inclined bottom, and a secondary hopper curved and located at one side thereof and communicating with the primary hopper, of a rotatable disk mounted on the axle at one side of the curved hopper and provided with a series of cups and mechanism mounted on the disk for removing the potatoes from the cups, substantially as specified.

444,522. KNIFE-SHARPENER. ALFRED DUDDEN, Santa Barbara, Cal. Filed June 28, 1889. Serial No. 315,921. (No model.)



Claim.—The combination, with the opposite leaves 1, the hinge 3, pivotally connecting the lower edges of the leaves, which latter are arranged with their flat faces disposed toward each other and provided with recesses 8 near their lower edges, the plates 10, mounted in each of the recesses, provided with inclined cutters 11, one of said plates being arranged a half-tooth in advance of the other, so that their respective teeth intermesh, and the standards 4, projecting from the free edges of the leaves about the same and provided with oppositely-threaded perforations, and the oppositely-threaded rod 7 and actuating-nut 6, substantially as specified.

444,523. WEATHER-STRIP. JOSEPH FISHER, Attleborough, Mass. Filed Dec. 26, 1889. Renewed Dec. 11, 1890. Serial No. 374,327. (No model.)



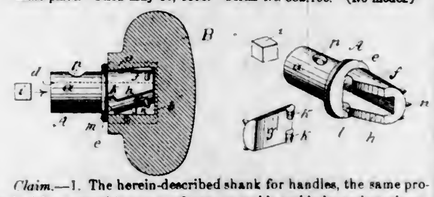
Claim.—1. The combination, with the door and the inclined strip secured thereto, of the movable strip, the inclined or curved arm upon the upper face thereof, and a spring carried by the said arm upon the under face thereof with its lower end free, substantially as specified.

2. The combination, with the door and the strip secured thereto, of the castings secured in recesses in the side pieces of the door-frame, one of the castings being formed with an end c on the arc of a circle, the movable strip turning on lugs on the said castings, and the curved arm on the upper face of the movable strip, substantially as specified.

3. The combination, with the door, its frame, the strip secured to the door, the castings in recesses in the side pieces of the frame and formed with curved lugs, of the movable strip notched at diagonally-opposite corners and guided by said lugs, and the curved arm on the upper face of the movable strip within one of the recesses, substantially as specified.

4. The combination, with the door, its frame, the strip on the door, the castings secured in recesses in the side pieces of the frame and formed with curved lugs, of the movable strip notched at its ends, as shown, the curved arm on the upper face of the movable strip at one end thereof within one of the recesses and recessed upon its under face, and a flat spring held within the recess in the said curved arm, substantially as and for the purpose specified.

444,524. SHANK FOR KNOBS OR HANDLES. JOHN L. GALLAGHER, Trenton, N. J., assignor to the Dibble Manufacturing Company, same place. Filed May 17, 1890. Serial No. 352,180. (No model.)



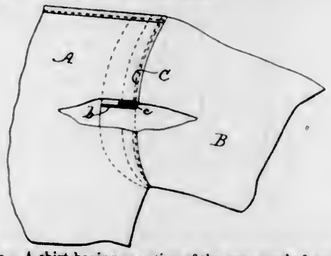
Claim.—1. The herein-described shank for handles, the same provided with an attaching-nose of two separable and independent pieces, an opening extending between the two pieces of the nose, and a plug or key adapted to said opening and for spreading the two pieces of the nose apart.

2. The herein-described shank for handles, the same consisting of a nose formed integral with the shank and reduced in diameter at its end, an independent portion adapted to be assembled with and form a portion of said nose, and a plug or key for spreading the independent portion from the fixed portion.

3. The herein-described shank for handles, the same consisting of a nose formed integral with the shank, a central opening extending to the end of the nose, the cut-away or incline *h*, an independent portion adapted to be assembled with the nose and form a portion thereof and also form one wall of the central opening, and a plug or key adapted to said opening and to force or spread the independent portion from the integral portion of the nose.

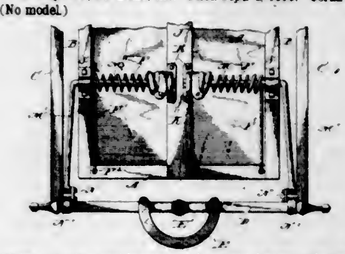
4. The herein-described shank for handles, the same consisting of a nose integral therewith, a central opening through the shank, the inclines *h*, terminating in recesses, an independent portion *g*, adapted to be assembled with and form part of the nose, having knuckles adapted to extend within said recesses, and a plug or key for forcing or spreading the independent portion from the integral portion of the nose.

444,525. SHIRT. SIMON MILLER, Philadelphia, Pa. Filed Sept. 20, 1888. Serial No. 285,940. (No model.)



Claim.—A shirt having a portion of the upper end of each sleeve returned upon itself, which return is then turned upwardly and laid flatly against the under surface of the shoulder-section of the garment, whereat, concealed from view, it is connected thereto by a continuous line of stitching, whereby when said stitching is broken away the sleeves will be lengthened to the extent of the unfolded return, substantially as described.

444,526. SPRING-CONNECTION FOR VEHICLES. GEORGE NORWOOD, Boston, Mass., and JOSEPH J. ROSE, Cincinnati, Ohio, assignors to W. T. Haydock, St. Louis, Mo. Filed Sept. 4, 1890. Serial No. 363,908. (No model.)



Claim.—1. In combination with a vehicle-gear, the spring F, secured at one end of the vehicle-body and at the other end to the lever G, having the shoulder G^3, across which the terminal end of the spring is bent, and the rod M, journaled in bearings S, provided with the lever-arm M', the rod M, passing through spring F and fixed to the device for rotating the lever G as the arm M is rotated, the lever being provided with screw G^7, arranged, substantially as described, for increasing or diminishing the torsional resistance of the spring F, substantially as and for the purposes specified.

2. In combination with a vehicle-gear, the spring F, secured at one end of the vehicle-body and at the other end to the lever G, having the shoulders G^3, across which the terminal end of the spring is bent, and the rod M, journaled in bearing S and provided with the lever-arm M', and the rod M passing through the spring F and fixed to the device for rotating the lever G as the arm M is rotated, and the holding device I, consisting of the arch I', provided with lugs I^3, and the locking-piece I^4, whose ends are arranged to engage with the inner wall or surface of the arch, the holding device I being adapted to engage the extension H^2 of the lever device at the end of the spring, substantially as and for the purposes specified.

3. The spiral spring F, at one end secured to the vehicle-body, substantially as described, and at the other end engaging a lever G, this lever being provided with the extension G', entering the space formed by the convolutions of the spring, and being also provided with the annular recess G^2, into which the adjacent end of the spring enters, the lever being provided with the shoulder G^3, across which the adjacent terminal portion of the spring is bent, arm G^4, rigidly attached to the lever G, lever H, provided with arm H^4, arranged to engage the arm G^4 of the lever G, and the rod M, journaled in bearing S, passing loosely through the opening G^5 of lever G and being rigidly fixed to the lever H, substantially as and for the purposes specified.

4. The spiral spring F, at one end secured to the vehicle-body, substantially as described, and at the other end engaging a lever G, this lever being provided with the extension G', entering the space formed by the convolutions of the spring, and being also provided with the annular recess G^2, into which the adjacent end of the spring enters, the lever being provided with the shoulder G^3, across which the adjacent terminal portion of the spring is bent, arm G^4, rigidly attached to the lever G, lever H, provided with arm H^4, arranged to engage the arm G^4 of the lever G, the rod M, journaled in bearing S, passing loosely through the opening G^5 of lever G and being rigidly fixed to the lever H, the lever H being provided with extension H^3, having recess H^5, and the holding device I, having arch I', securing-lugs I^2 I^3, and locking-piece I^4, whose ends are arranged to respectively engage the respective adjacent sides of the arch I', substantially as and for the purposes specified.

5. The spiral spring F, at one end secured to the vehicle-body, substantially as described, and at the other end engaging a lever G, this lever being provided with the extension G', entering the space formed by the convolutions of the spring, and being also provided with the annular recess G^2, into which the adjacent end of the spring enters, the lever being provided with the shoulder G^3, across which the adjacent terminal portion of the spring is bent, arm G^4, rigidly attached to the lever G, lever H, provided with arm H^4 arranged to engage the arm G^4 of the lever G, the rod M, journaled in bearing S, passing loosely through the opening G^5 of lever G and being rigidly fixed to the lever H, the lever H being provided with extension H^3, having recess H^5, and the holding device I, having arch I', securing-lugs I^2 I^3, locking-piece I^4, whose ends are arranged to respectively engage the respective adjacent sides of the arch I', and nut H^6, secured upon the end H^7 of the rod M, substantially as and for the purposes specified.

6. The spiral spring F, at one end secured to the vehicle-body, substantially as described, and at the other end engaging a lever G, this lever being provided with the extension G', entering the space formed by the convolutions of the spring, and being also provided with the annular recess G^2, into which the adjacent end of the spring

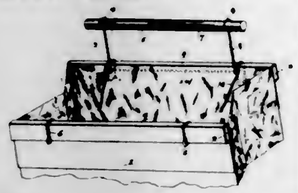
enters, the lever being provided with the shoulder G^3, across which the adjacent terminal portion of the spring is bent, arm G^4, rigidly attached to the lever G, lever H, provided with the arm H^4, arranged to engage the arm G^4 of the lever G, the rod M, journaled in bearing S, passing loosely through the opening G^2 of the lever G and being rigidly fixed to the lever H, the lever H being provided with the extension H^3, having the recess H^2, and the holding device I, having arch I', securing-lugs I^2 I^3, locking-piece I^4, whose ends are arranged to respectively engage the respective adjacent sides of the arch I', and the adjusting-screw G^7, screwed through the arm G^4 of the lever G, substantially as and for the purposes specified.

7. In combination with a device for twisting the spiral spring and the end bearing for upholding the same, the device I for upholding the said bearing, consisting of the arch I', lugs I^2, and locking-piece I^4, having its ends arranged to respectively engage the respective adjacent walls of the arch, the aforementioned bearing being received between the arch I' and the locking-piece I^4, substantially as and for the purposes specified.

8. In combination with a vehicle-gear, the spring F, secured at one end to the vehicle-body and at the other end to the disk G, the latter being provided with groove in its side and shoulder on its periphery, the adjacent coil of the spring lying in the groove, and the adjacent terminal end of the spring being bent across the said peripheral shoulder, and the rod M, journaled in bearing S and provided with the lever-arm M', the rod M passing through the spring F and fixed to the disk G, substantially as and for the purposes specified.

9. The four separate and independent levers, located, respectively, at their respective corners of the vehicle, and each consisting of a rod M, having a lever-arm M', the free end of the latter being connected to the vehicle gear-frame, the rod M, journaled in bearings fixed to the vehicle-body, each rod being provided with a coiled spring embracing the said rod and secured at one end to the vehicle-body and at the other end to a discal piece G, having a peripheral shoulder, around which the adjacent terminal end of the spring is bent, the rod M passing through the discal piece and provided with device for rotating the discal piece, substantially as and for the purposes specified.

444,527. PAPER BAG. WALTON D. SMITH, Prophetstown, Ill., assignor of one-half to George Seyller, same place. Filed Mar. 3, 1890. Serial No. 343,161. (No model.)



Claim.—1. A bag provided with the strips 2 and 3, arranged upon opposite sides of its mouth, the handle secured to one of the strips, the hooks arranged upon the other strip, and the cord secured to the strip having the handle and adapted to be engaged by the hooks, substantially as described.

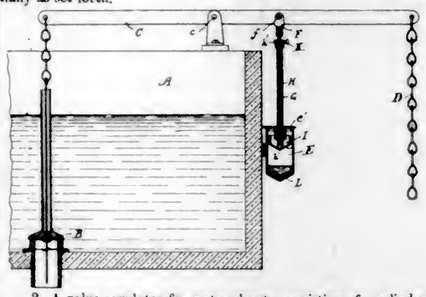
2. The combination of the bag, the strip 3, secured upon one side of its mouth, the handle comprising the bar 7 and the wire secured to the end of the bar and to the strip 3, the cord fastened to the strip and having its ends arranged upon the outside of the bag, and the strip 2, secured to the other side of the mouth and provided with hooks 6, adapted to receive the string, substantially as described.

3. The combination of the bag having its opposite sides folded upon themselves and providing loops, the strips 2 and 3, arranged within the loops, the handle-bar 7, the wires 8, doubled to provide loops 9 to engage said bar, said wires being twisted and having their ends passed through perforations in the strip 3, the hooks 6, constructed of wire and arranged upon the strip 2, and the cord secured to the strip 3 and designed to engage the hooks, substantially as described.

4. A paper bag provided with the flat strips 2 3, arranged upon opposite sides of its mouth, the handle composed of the rod 7 and the wires 8, which are secured to one of the strips, and tying devices attached to the strips so as to cause the two strips to be held flat against each other with the handle rising between the strips, as set forth.

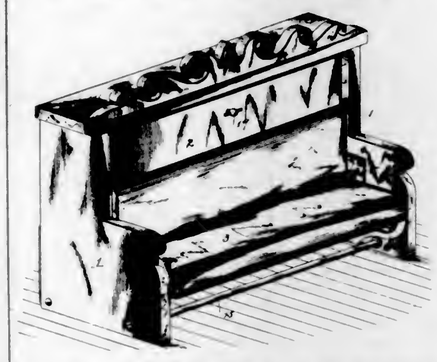
444,528. WATER-CLOSET-VALVE REGULATOR. JOHN BUCKLEY, Boston, Mass. Filed June 6, 1890. Serial No. 354,460. (No model.)

Claim.—1. A valve-regulator for water-closets, consisting of a cylinder adapted to be secured to the side of the cistern, a rod connected to valve-lever, a tube having a bucket at its lower end, provided with central openings and adjustably secured upon the said rod, and a fluid, such as mercury, in the bottom of the cylinder, substantially as set forth.



2. A valve-regulator for water-closets, consisting of a cylinder E, closed by a cover e, a layer of elastic material L in the bottom of said cylinder, and fluid M, in combination with a rod G, screw-threaded at its upper end, the saddle F, and the tube H, having a nut h' at its upper end and a bucket I at its lower end, provided with openings h and adjustably secured on the rod G, substantially as shown and described.

444,529. COMBINED SETTEE AND BED. RICHARD D. CODY, Winona, Minn. Filed Mar. 17, 1890. Serial No. 344,143. (No model.)



Claim.—1. In a combined settee and bed, the combination of a frame provided with tracks, a bed having rollers adapted to engage said tracks, ways carried by the frame, and a settee having a pivotal connection with the said bed and adapted to engage the said ways.

2. In a combined settee and bed, the combination of a frame having slots therein, tracks mounted adjacent thereto, a bed having rollers adapted to engage said tracks, supports carried by the bed, a settee pivoted in said supports, and ways on the frame adapted to engage said settee.

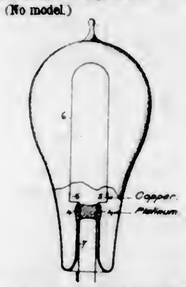
3. In a combined settee and bed, the combination of a frame having slots therein, tracks adjacent thereto, a bed having grooved rollers adapted to engage said tracks, triangular-shaped supports carried by the bed, a settee pivoted in said supports, ways on the frame, and projections carried by the settee and adapted to engage said ways.

4. In a combined settee and bed, the combination of a frame having slots therein, tracks adjacent thereto, a bed having grooved rollers adapted to engage said tracks, a settee having a pivotal connection with the bed, ways on the frame adapted to engage said settee, a cross-bar carrying springs, and means for connecting the bed and springs to cause the former to resume its closed position when open.

5. In a combined settee and bed, the combination of a frame, a bed having a sliding pivotal connection therewith, a settee having a pivotal connection with the said bed, ways on the frame adapted to engage said settee, and a cross-bar having spring-actuated collars thereon, and means for connecting the said collars and bed, whereby the bed will be caused to resume its closed position.

6. In a combined settee and bed, the combination of a frame having slots therein, tracks adjacent thereto, a bed having grooved rollers adapted to engage said tracks, triangular-shaped supports carried by the bed, a settee pivoted in said supports, ways on the frame, projections carried by the settee and adapted to engage said ways, springs for causing the said bed to resume its closed position, and means for locking the bed in that position.

444,530. LEADING-IN WIRE FOR INCANDESCENT ELECTRIC LAMPS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Sept. 15, 1890. Serial No. 364,946. (No model.)



Claim.—1. An incandescent electric lamp having leading-in wires composed of sections of different metals, one of which sections is of a metal whose coefficient of expansion is substantially the same as that of glass, the other of a metal which has a different coefficient of expansion, and both of said sections being sealed into the glass, substantially as set forth.

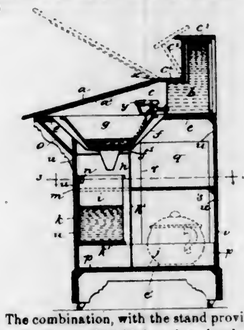
2. An incandescent electric lamp having leading-in wires composed of sections of different metals, one of which sections is of a metal whose coefficient of expansion is substantially the same as that of glass, the other of a metal which has a different coefficient of expansion, and both of said sections being sealed into the glass, the latter section extending out of the glass, substantially as set forth.

3. An incandescent electric lamp having leading-in wires composed of a section of fine platinum wire and a section of larger wire of a different metal, the glass of the lamp being sealed around the wire of both sections, substantially as described.

4. An incandescent electric lamp having leading-in wires of two metals, one section being a platinum wire and the rest being of a different metal, said platinum wire being sealed wholly within the glass, substantially as described.

5. An incandescent electric lamp having leading-in wires composed of three or more sections, one section being of platinum and wholly sealed into the glass, the other section being of a different metal and extending from the platinum-section into the sealed globe for connection with the filament and extending in the opposite direction for connection with the circuit-wires, substantially as described.

444,531. COMBINED WASH-STAND, DESK, AND CLOSET. WILLIAM A. GREENE, Berlin, Canada. Filed Aug. 30, 1889. Serial No. 322,458. (No model.)

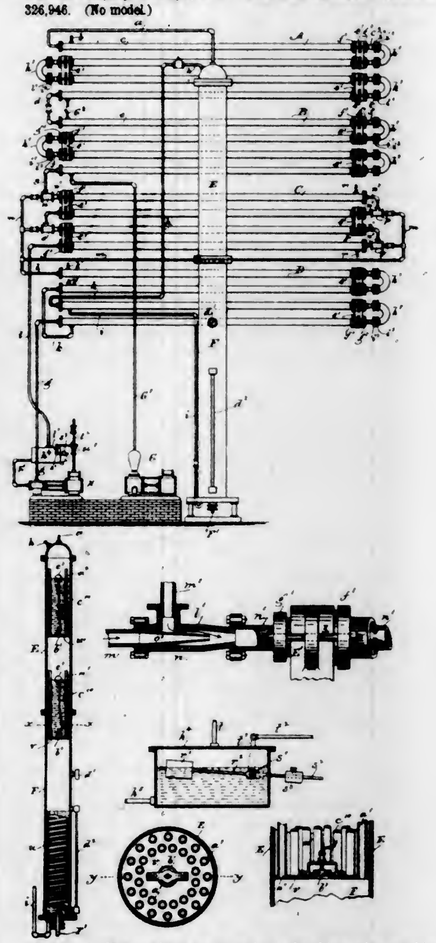


Claim.—1. The combination, with the stand provided with a slop-funnel, a slop-chamber beneath said funnel, and a door leading into said chamber, of a trap-like sink or well p, arranged in the bottom of said slop-chamber and wholly below the bottom of the door leading thereto, substantially as set forth.

2. The combination, with the stand provided with a slop-funnel in its top adapted to receive the wash-bowl, a slop-chamber under said funnel, a tray-like well or sink in the bottom of said chamber, and a door leading into said chamber above the top of said well, of the slop-jar mounted on said door with its bottom above the said sink, substantially as set forth.

3. The combination, with the stand provided with a slop-chamber and a door leading into same and provided with a shelf to support the slop-receptacle, of the said receptacle provided at its upper part with a key-hole slot to engage a headed stud on the door, substantially as set forth.

444,532. ICE AND REFRIGERATING MACHINE. DANIEL L. HOLDEN, New York, assignor to the New Process Ice and Refrigerating Machine Company, Brooklyn, N. Y. Filed Oct. 14, 1889. Serial No. 326,946. (No model.)



Claim.—1. The combination, in an ice and refrigerating machine having the series of pipes employed to carry out the various operations, of the two-part generator E F, the steam-coil u in the lower part thereof, partitions or heads dividing such generator into compartments, and vertical pipes connected to, opening through, and rising above said heads, there being openings in said heads for the descent of the liquid, substantially as set forth.

2. The combination, in an ice and refrigerating machine having the series of pipes employed to carry out the various operations, of the two-part generator E F, the steam-coil u in the lower part thereof, partitions or heads dividing such generator into compartments, vertical pipes connected to, opening through, and rising above said heads, there being openings in the heads v w and valves, chains, and floats, a pipe i for the spent liquid, and inlet-pipes h and a, substantially as set forth.

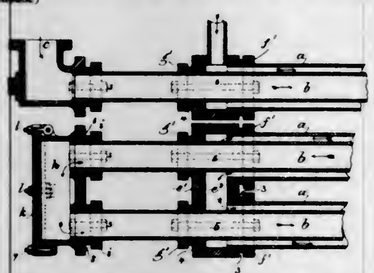
3. The combination, in an ice and refrigerating machine having the series of pipes employed to carry out the various operations, of boxes or castings c', having each a vertically-placed passage-way c^4 and smooth upper and lower openings at opposite sides thereof, the outer pipes c, having screw-threaded ends adapted to be loosely inserted into the larger openings in the boxes c' without being screwed.

the internal pipes c^2, passing freely through the said boxes c' and smaller openings, the loose collars f g upon the pipes c and c^2, the packing-rings 3, internally threaded and screwed upon the ends of the pipes c, the packing-rings 4 upon the pipes c^2, and the bolts 5, by which the collars are drawn together and held, whereby when the bolts 5 are removed the parts will freely separate, substantially as set forth.

4. The combination, in an ice and refrigerating machine having the series of pipes employed to carry out the various operations, of boxes or castings c', having each a vertically-placed passage-way c^3 and smooth upper and lower openings at opposite sides thereof, the outer pipes c, having screw-threaded ends adapted to be loosely inserted into the larger openings in the boxes c' without being screwed, the internal pipes c^2, passing freely through the said boxes c' and smaller openings, the loose collars f g upon the pipes c and c^2, the soft-metal packing-rings 3, internally threaded and screwed upon the ends of the pipes c, the packing-rings 4 upon the pipes c^2, the bolts 5, by which the collars are drawn together, the half-round elbows h' and their collars i', into which the screw-threaded ends of the pipes c^2 are loosely inserted, the loose collars i^2 around the pipes c^2, the packings 6, internally threaded and screwed upon the ends of the pipes c^2, and the bolts 7, the parts being constructed in the manner and for the purposes substantially as set forth.

5. The combination, with the box or bend connecting the ends of pairs of pipes and having a vertically-placed passage-way and smooth upper and lower openings having conical recesses, of pipes whose ends are received loosely into said openings, collars upon the pipes, conical packing-rings of soft metal internally threaded to screw upon the ends of said pipes and fitting into the conical recesses, and bolts for drawing up the collars and pressing the packing-rings against the screw-threads of the pipes and into the recesses to form tight joints, substantially as specified.

444,533. BEER-COOLING APPARATUS. DANIEL L. HOLDEN, New York, assignor to the New Process Ice and Refrigerating Machine Company, Brooklyn, N. Y. Filed Dec. 30, 1889. Serial No. 335,396. (No model.)

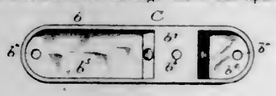


Claim.—1. The combination, with the pairs of external pipes a for cooling liquid, the boxes c', to which such pipes are connected and into which they open, and the pairs of internal pipes b for liquid to be cooled, passing through the pipes a and boxes c and projecting beyond, of the boxes h, connected to the ends of the pairs of pipes b and open at one end, and removable heads or covers to said boxes, by which access can be had to the interior of the internal pipes and boxes for purposes of cleaning, substantially as specified.

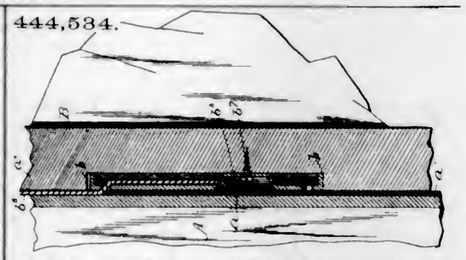
2. The combination, with the pairs of external pipes a for cooling liquid, the boxes c', to which such pipes are connected and into which they open, and the pairs of internal pipes b for liquid to be cooled, passing through the pipes a and boxes c' and projecting beyond, of the boxes h, connected to the ends of the pairs of pipes b and open at one end, the removable heads or covers k, pivoted by bolts 9 to the boxes, and the swinging eyebolts l, pivoted to the boxes and adapted to engage and secure the covers k, substantially in the manner and for the purposes set forth.

444,534. SASH-CORD FASTENER. JACOB G. KERNECKEL, Kansas City, Mo. Filed May 2, 1890. Serial No. 350,268. (No model.)

Claim.—The combination, with a swinging window-sash having a recess formed in its edge, of a reversible sash-cord fastener consisting of a plate having a marginal flange b', a depressed intermediate portion b^3 aperture b^4 at the ends of said plate, apertures in the walls of said depressed portion communicating with the recess formed by the depression, and a sash-cord led through one of said apertures at the

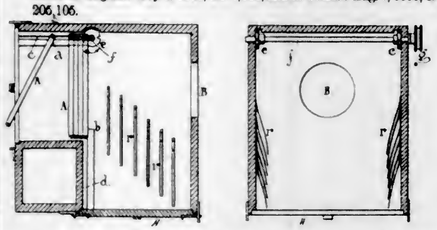


444,534.



end of the plate and into the recess, where it is knotted, substantially as set forth.

444,535. PHOTOGRAPHIC APPARATUS. LOUIS LUMIÈRE, Lyons, France. Filed July 19, 1890. Serial No. 359,258. (No model.) Patented in England May 6, 1890, No. 7,010, and in France Aug. 7, 1890, No. 205,105.

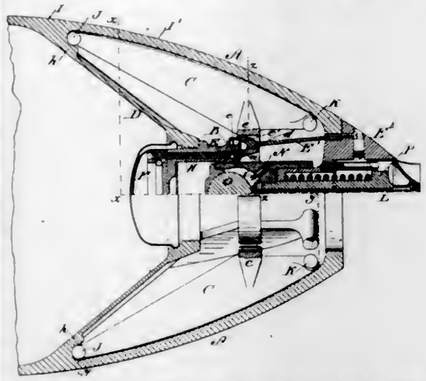


Claim.—1. The combination, with the camera-box, of the plate-holders A, having pivot-pins projecting at the corners, the guides or ribs inside the box having slots for receiving such pivots, and a shaft and notched disks for moving the plate-holders in succession, substantially as specified.

2. The plate-holder having projecting pivot-pins, in combination with a camera-box having ribs with intervening grooves for the pins, a shaft and notched disks for moving the plates in succession, openings and doors in the bottom and back of the box for introducing and removing the plates, substantially as specified.

3. The plate-holder having projecting pivot-pins, in combination with a camera-box having ribs with intervening grooves for the pins, a shaft and notched disks for moving the plates in succession, openings and doors in the bottom and back of the box for introducing and removing the plates, and the springs r at the inner surfaces of the box, substantially as specified.

444,536. EXPLOSIVE SHELL. HENRY P. MERRIAM, New York, N. Y. Filed Apr. 19, 1890. Serial No. 348,717. (No model.)



Claim.—1. In an explosive shell, a collapsible head, a series of longitudinal webs therein converging radially toward the axis of the shell, in conjunction with an annular series of percussion-primers opposite the inner surfaces of the said webs, and a detonator for the shell charge actuated by the said primers.

2. The combination, in an explosive shell, of a collapsible head, a detonator adjacent the shell charge, an annular series of percussion-primers in the central portion of the head connected with the detonator, and radiating webs bearing exploding-surfaces opposite the primers, extended segmentally to encircle the same, said webs forming longitudinal ridges fitting the interior of the collapsible head.

3. The combination, in an explosive shell, of a collapsible head, a detonator adjacent the shell charge, an annular series of percussion-primers in the central portion of the head connected with the detonator, and radiating webs bearing externally throughout the length of the interior surface of the head and having interior exploding-surfaces opposite the said annular series of primers located in a transverse plane of the head intermediate to the length of said webs.

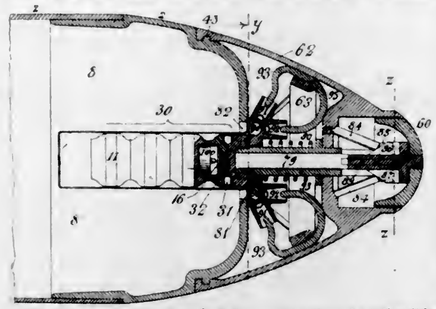
4. In combination with the collapsible head of an explosive shell for actuating the impact-fuses, the longitudinal webs converging toward the axis at the head, the annular series of percussion-primers opposite the inner surfaces of the webs, located in a transverse plane of the head intermediate to the length of the webs, and fulcrums, substantially as described, provided to the said webs in front and in rear of the said annular series of percussion-primers.

5. The combination, in a collapsible explosive shell, of a telescoping primer-case within the head, one member whereof bears the percussion-primers, the other member bearing a contracting surface opposite the same, and a cone-shaped shell within the head connected at its base with the larger circumference of said head at the latter's junction with the shell-body, said cone converging forward toward and bearing one telescoping member of the primer-case, for the purpose set forth.

6. The combination, with a cylindrical explosive shell, of a collapsible conoidal head, an annular series of detonating percussion-primers therein, an axial telescoping primer-case having adjacent conic surfaces between which such primers or their firing-pins are located, longitudinal radiating webs bearing exploding-surfaces opposite the said adjacent conic surfaces of the primer-case, extending to the surface of the head throughout the length thereof, and an interior conic shell connected at its base with the base of the head and converging forward toward and bearing one member of said primer-case, co-operating thereby to thrust the said conic surfaces together in a direction opposing the contracting movement of the said webs when the head of the shell is ruptured laterally, in the manner described.

7. The combination, in an explosive shell, of a cylindric body, an exterior conic or conoidal head and an interior conic or conoidal head, both united at a common base, converging at different angles toward the axis of the shell, and a two-part detonating fuse-case the members whereof are secured to the apices or lesser diameters of the respective cones or conoidal heads, and primers or firing-pins interposed between the said members actuated by longitudinal compression of the case.

444,537. SHELL FOR HIGH EXPLOSIVES. HENRY P. MERRIAM, New York, N. Y. Filed Apr. 19, 1890. Serial No. 348,718. (No model.)



Claim.—1. In an explosive shell, the combination of a collapsible head, a detonator, percussion-caps thereof variously disposed in directions facing the interior of the collapsible head, and exploding-arms secured to the interior of the head converging toward and facing the caps.

2. The combination of the annular detonator adjacent the shell charge, the collapsible head, percussion-caps of the detonator radially disposed toward the head, and exploding-arms secured to the interior of the head converging toward and facing the caps.

3. The combination, with the collapsible head, the detonator, and the percussion-caps variously disposed toward the head, of the compressible ring and the converging exploding-arms secured thereby within the interior of the head and facing the caps.

4. The combination, with an explosive shell, of a collapsible head, an annular detonator therein adjacent the shell charge, radially-disposed caps of the detonator and converging exploding-arms attached to the head, a second detonator adjacent the shell charge explosive by a rearward thrust, a shaft thereof extending through the annular detonator, and a depressible shell apex attached to the shaft.

5. The combination, with the longitudinally-movable detonator-shaft 79, the depressible apex 60, and socket thereof, of the movable supporting-stays 84, bearing between the bottom of said socket and the shoulders 85 of the shaft, and the wedge 87 on the back of the apex, normally sustained in front of the said shoulders for tripping the stays when driven back.

444,538. BLUE DYE. JOHANNES MOHLER and CARL A. MAYER, Basle, Switzerland, assignors to L. Durand, Huguenin & Co., same place. Filed Aug. 20, 1890. Serial No. 362,535. (No specimens.)

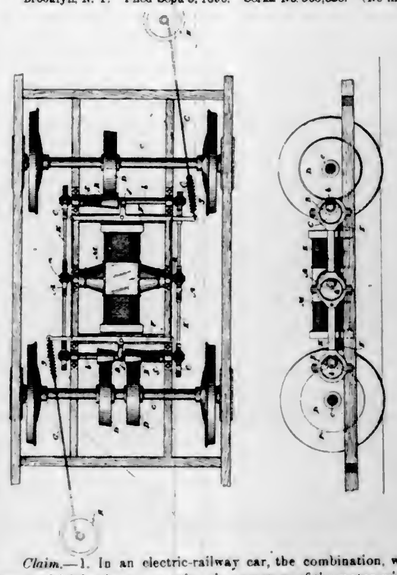
Claim.—1. The herein-described method of transforming the products obtained by the action of the nitroso derivatives of the tertiary aromatic amines on the products of condensation of tannin with aniline and its homologues, which method consists in subjecting said products to the action of primary aromatic amines at a temperature of from 212° to 392° Fahrenheit until the mixture becomes fluid, and then, when the mass has cooled and crystallized, separating the crystals of the newly-formed products of condensation from the excess of primary aromatic amine employed, substantially as set forth.

2. The herein-described method of preparing blue coloring-matters, which consists in treating with sulphuric acid the new product obtained by subjecting to the action of primary aromatic amines at a temperature of from 212° to 392° Fahrenheit the blue dye obtained by the action of the nitroso derivatives of the tertiary aromatic amines on the condensation products of tannin with aniline and its homologues, substantially as set forth.

3. The new products of condensation resulting from the action of the primary aromatic amines on the products of dyes obtained by the action of the nitroso derivatives of the tertiary aromatic amines on the condensation products of tannin with aniline and its homologues, said new products crystallizing in plates having a copper-colored luster, being scarcely soluble in alcohol and soluble in concentrated sulphuric acid with a cherry-red color, as set forth.

4. The coloring-matters obtained by sulpho-conjugating the new products resulting from the action of the primary aromatic amines on the dyes obtained by the action of the nitroso derivatives of the tertiary aromatic amines on the condensation products of aniline and its homologues, said coloring-matters being scarcely soluble in water, soluble in concentrated sulphuric acid with a cherry-red color, and forming with the alkalies salts with a copper-colored luster readily soluble in water and alcohol with a greenish-blue color, soluble in concentrated sulphuric acid with a cherry-red color and adapted to be employed for dyeing and printing, as set forth.

444,539. ELECTRIC-RAILWAY CAR. LAWRENCE A. MCCARTHY, Brooklyn, N. Y. Filed Sept. 3, 1890. Serial No. 363,823. (No model.)



Claim.—1. In an electric-railway car, the combination, with a motor, of driving-bars connecting the armature of the motor with the

intermediate shaft or shafts, and small pulleys arranged to move endwise on said shafts and controlled by levers and springs, said pulleys arranged to press against large friction-pulleys which are fastened on the car-axles, said driving-bars arranged to span cams fastened to the armature-shaft of the motor and the intermediate shaft or shafts, all substantially as set forth and shown.

2. In an electric car, the combination, with a motor, intermediate and axle shafts having friction-pulleys arranged to act on each other, and said friction-pulleys, of driving-rods arranged to connect said motor to said intermediate shafts, all substantially as set forth.

3. In an electric car, the combination, with an electric motor, one or more intermediate shafts, and one or more car-axles, of two or more driving-rods arranged to connect said motor with said intermediate shafts, the said intermediate shafts being arranged to be connected with the car-axles by means of friction-pulleys or pinions and gear-wheels, all substantially as set forth.

4. In an electric car, the combination, with an electric motor, driving-rods arranged to connect said motor with intermediate shafts, and said intermediate shafts, of movable pulleys mounted on said intermediate shafts and arranged to be pressed against friction-pulleys fastened on the axle-shafts, substantially as set forth, for the purpose of moving the car.

5. In an electric car, the driving-rods E, intermediate shafts *b*, friction-pulleys B and D, controlling-levers F, and springs S and *g*, in combination with an electric motor and car-axles, all substantially as set forth.

6. In an electric car, the combination of the cone-pulleys B, mounted on intermediate shafts and arranged to be pressed against pulleys D on the axle-shafts, with levers F and springs S and *g*, arranged to press the cone-pulleys B against or away from pulleys D, substantially as described and shown.

7. In an electric car, the combination, with an electric motor, driving-rods arranged to connect said motor with intermediate shafts, said intermediate shafts, and car-axles, of movable pulleys mounted on said intermediate shafts and controlled by levers and springs, substantially as shown.

8. In an electric car, the combination of springs *g* and S, with controlling device H, rods G, and levers F, arranged to flexibly press cone-pulleys B, that are mounted on the intermediate shafts against or away from pulleys D, which are mounted on the axle-shafts, all substantially as set forth.

9. In an electric car, the combination of the electric motor M, driving-rods E, intermediate shafts *b*, and movable pulleys B with fixed pulleys D on car-axles *c*, all substantially as set forth.

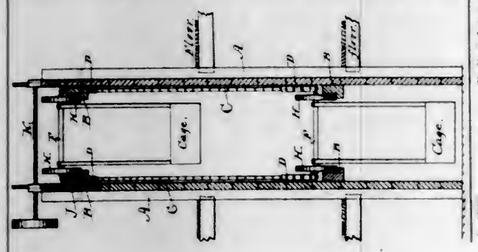
10. In an electric car, the combination, with an electric motor mounted under the center of the car, intermediate and axle shafts having pinions and gear-wheels arranged to mesh with each other, and said pinions and gear-wheels, of driving-rods arranged to connect said motor with said intermediate shafts, all substantially as set forth.

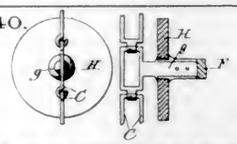
11. In an electric car, the combination of an electric motor, intermediate shafts, driving-rods arranged to connect said motor to said intermediate shafts, and car-axles with the pinions mounted on the intermediate shafts and the gear-wheels on the axle-shafts, said gear-wheels and pinions arranged to mesh with each other, substantially as and for the purpose specified.

444,540. ELEVATOR AND ENDLESS CARRIER. PETER NEWCOMER, Des Moines, Iowa. Filed Dec. 17, 1888. Serial No. 293,340. (No model.)

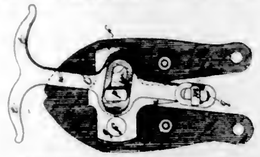
Claim.—1. In an elevator and endless carrier, a cross-bar F, having slotted journals on its ends, traveler-wheels on said journals, and chain-links having arms *g* fixed in the slots of said journals, arranged and combined in the manner set forth, for the purposes stated.

2. An elevator and carrier consisting of a frame having horizontal rails or tracks at two different points of elevation and in the same vertical planes, cross-bars F, having slotted journals on their ends and traveler-wheels on the journals, the chains C, provided with links at intervals, having arms *g* fixed in the slotted journals, driving mechanism to actuate the said chains, and cages suspended from the cross-bars F, arranged and combined substantially as shown and described.





444,541. CUTTER FOR WIRES. HENRY K. PORTER, Boston, Mass. Filed May 15, 1890. Serial No. 351,907. (No model.)



Claim.—1. In combination with a cutter of the general class specified and a guiding-hook arranged to co-operate therewith, a part or member, as *k*, extended rearward from the pivot-supporting strap and connected with and arranged to aid in supporting the hook, substantially as specified.

2. In combination with a cutter of the general class specified, a guiding-hook mounted thereon and provided with lateral adjustment relatively to the jaws of such cutter when opened, substantially as specified.

3. The combination, with a cutter of the general class specified, of a forked hook mounted thereon and having a transverse slot near its lineal center and a passage for a pivot at its rear end, together with such rear pivot, and a supporting-stud in said transverse passage, substantially as specified.

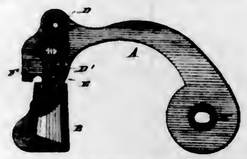
4. In combination with the jaws of the cutter and the pivot-supporting strap, the hook formed with the transverse and longitudinal slots and the hook-supporting studs arranged in said slots and secured in the strap and its extension, substantially as specified.

5. In combination with the cutter, the strap having the rearward extension, and the hook formed with the slots, as described, the T-headed studs, respectively arranged in said slots and secured in the strap and extension by being shouldered therein and riveted therein, substantially as specified.

6. The combination, with the cutter and the strap having a rearward extension, of the two pronged or forked hook having a transverse slot near its lineal center and a passage at its rear end, and studs arranged in said slots and secured in strap and extension, substantially as specified.

7. The combination, with the cutter and the T-shaped strap, of a guiding-hook thereto secured, substantially as specified.

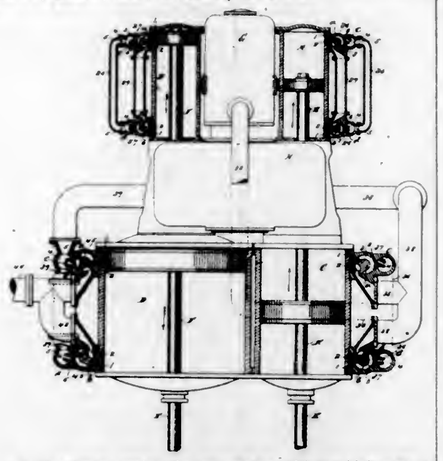
444,542. ATTACHMENT-HOLDER FOR SEWING-MACHINES. EDWIN J. TOOP, New Haven, Conn. Filed Feb. 2, 1882. Serial No. 51,729. (No model.)



Claim.—An attachment-holder for sewing-machines, consisting of a flexible plate provided with sockets or depressions at one end thereof, in combination with an attachment provided with a shank having projections thereon for engagement with said sockets or depressions, and a retaining arm or flange located on said flexible plate adapted to hold said projections in engagement with said sockets or depressions, substantially as described, and for the purpose set forth.

444,543. DUPLEX ENGINE. CHARLES C. WORTHINGTON, Irvington, and ANDREW J. CALDWELL, Brooklyn, N. Y.; said Caldwell assignor to said Worthington. Filed May 24, 1890. Serial No. 353,029. (No model.)

Claim.—1. In a duplex engine, the combination, with two high pressure cylinders, of an intermediate and a low-pressure cylinder, each forming with one of the high-pressure cylinders a side of the engine, and two receivers, through one of which the exhaust from both high-pressure cylinders passes to the intermediate cylinder and through the other of which the exhaust from the intermediate cylinder passes to the low-pressure cylinder, substantially as described.



2. In a duplex engine, the combination, with two high-pressure cylinders, of an intermediate and a low-pressure cylinder, each forming with one of the high-pressure cylinders a side of the engine, two receivers, through one of which the exhaust from both high-pressure cylinders passes to the intermediate cylinder and through the other of which the exhaust from the intermediate cylinder passes to the low-pressure cylinder, and cut-off valves controlling the supply from the receivers to the intermediate and low-pressure cylinders, substantially as described.

3. In a duplex engine, the combination, with two high-pressure cylinders, of an intermediate and a low-pressure cylinder, each forming with one of the high-pressure cylinders a side of the engine, two receivers, through one of which the exhaust from both high-pressure cylinders passes to the intermediate cylinder and through the other of which the exhaust from the intermediate cylinder passes to the low-pressure cylinder, and cut-off valves operated late in the strokes of the intermediate and low-pressure cylinders to prevent the sudden accession of pressure from the exhaust of the cylinder on the opposite side of the engine, substantially as described.

4. In a duplex engine, the combination, with two high-pressure cylinders, of an intermediate and a low-pressure cylinder, each forming with one of the high-pressure cylinders a side of the engine, two receivers, through one of which the exhaust from both high-pressure cylinders passes to the intermediate cylinder and through the other of which the exhaust from the intermediate cylinder passes to the low-pressure cylinder, and valves for controlling the amount of steam admitted to each of the high-pressure cylinders, substantially as described.

5. In a duplex engine, the combination, with the high-pressure cylinders at opposite sides of the engine, of a receiver through which the exhaust passes to a cylinder on one side of the engine only, substantially as described.

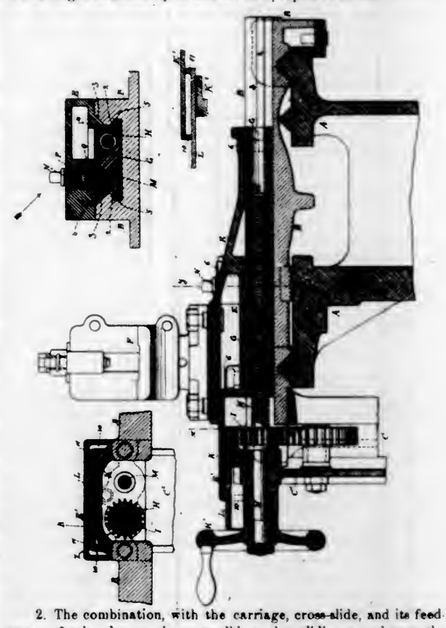
6. In a duplex engine, the combination, with the high-pressure cylinders at opposite sides of the engine, of a receiver placed between the cylinders, through which the exhaust from both cylinders passes to a cylinder on one side of the engine only, substantially as described.

7. In a duplex engine having two cylinders at each side, the combination, with the cylinders, of two receivers, through one of which the exhaust from one cylinder on each side passes to a third cylinder on one side and through the other of which the exhaust from the third cylinder passes to the fourth cylinder on the opposite side, substantially as described.

8. In a vertical duplex engine, the combination, with two cylinders at each side of the engine, of two receivers through which the exhaust passes, the lower receiver being placed above and forming the heads of the lower pair of cylinders and the upper receiver being supported upon the lower receiver and between the upper pair of cylinders, substantially as described.

444,544. LATHE. JOHN L. BOGERT, Flushing, N. Y. Filed Feb. 24, 1890. Serial No. 341,397. (No model.)

Claim.—1. The carriage and a feed-screw lying transversely of the carriage and occupying a fixed position in relation to such carriage, a cross-slide resting upon the carriage and having a nut for engaging the screw, and a hood extending out from the end of the cross-slide over the feed-screw and resting at its edges upon the top surface of the carriage, substantially as and for the purpose set forth.



2. The combination, with the carriage, cross-slide, and its feed-screw, of a hood upon the cross-slide and a sliding guard upon the carriage over the cross-slide feed-screw and between the same and the hood of the cross-slide, substantially as set forth.

3. The carriage and cross-slide feed-screw, in combination with the cross-slide having a hood E' and curtain 10, the sliding guard L beneath the cross-slide hood and having at its inner end lugs 11, such sliding guard resting upon the carriage and covering the screw, substantially as set forth.

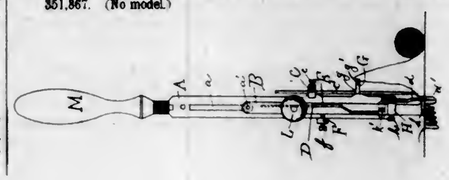
4. The carriage B and cross-slide feed-screw H and pinion I, in combination with the pinion-guard K, connected with the carriage and projecting inwardly over the pinion, the cross-slide E, resting upon the carriage, and the sliding guard L between the cross-slide and the pinion-guard, substantially as set forth.

5. The combination, with the lathe-bed, of a carriage having inwardly-projecting ribs 2, with upper inclined faces 3, the cross-slide E, having ribs 4 upon its under surface resting upon the inclined faces 3 of the ribs 2, the keep G, having sides that project under the ribs 2 and the screws to connect the keep and the cross-slide, substantially as set forth.

6. The combination, with the carriage and the cross-slide feed-screw, of the cross-slide resting upon the carriage, the keep G below the cross-slide and through which the screw passes, the adjustable stop-bar supported upon the carriage and passing through the keep, the tubular hub projecting upwardly from the keep and passing into an opening in the cross-slide, and a screw and clamp within the tubular hub for acting upon the adjustable stop-bar, substantially as set forth.

7. The combination, with the carriage, the cross-slide, and the cross-slide feed-screw, of a keep fitting into a recess on the under side of the cross-slide, forming a nut for the feed-screw, having edges that project beneath the ribs on the carriage, and means for connecting the keep and cross-slide, substantially as specified.

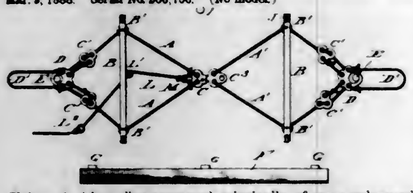
444,545. FABRIC-TURFING IMPLEMENT. DIO LEWIS and FANNIE L. GENERELLY, Prescott, Ark. Filed May 15, 1890. Serial No. 351,867. (No model.)



Claim.—1. The combination of the body A, having the slots *a* and *k*, nut F, and step-regulating screw *f*, needle-sleeve C and set-screw *c*, and elevation G, provided with the needle-rest *g* and perforation *g'*, impaler-arm H, provided with the slot E, impaler-holder H, and set-screw A, head I, having the neck *k'*, holding said impaler against the front face of said body, spring D, secured to said body, its free end working in slot E, needle *c'*, secured to said body, and impaler *d*, secured to said impaler-arm, all substantially as shown and described, and for the purposes set forth.

2. The combination of the body A, having the slots *a* and *k*, nut F, and step-regulating screw *f*, needle-sleeve C and set-screw c, and elevation G, provided with the needle-rest *g* and perforation *g'*, impaler-arm H, provided with the slot E, impaler-holder H, and set-screw A, head I, having the neck *k'*, holding said impaler against the front face of said body, spring D, secured to said body, its free end working in slot E, needle *c'*, secured to said body, impaler *d*, secured to said impaler-arm, and loop a^3, secured to the upper end of the bar A, substantially as shown and described, and for the purposes set forth.

444,546. HAY-SLING. WILLIAM LOUDEN, Fairfield, Iowa. Filed Mar. 9, 1888. Serial No. 266,766. (No model.)



Claim.—1. A hay-sling composed, principally, of ropes and spreaders, in combination with barbs or shoulders attached to the spreaders, substantially as shown and described.

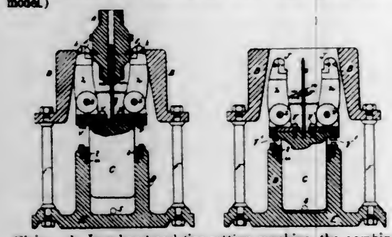
2. A hay-sling composed, principally, of ropes and spreaders and adapted to be loaded by sliding the hay upon it, in combination with pins attached to the spreaders, substantially as and for the purpose set forth.

3. In a hay-sling composed, principally, of ropes, the trip-coupling C, composed of a suitably-recessed casing provided with eyes for the attachment of the ropes and containing the grip-hook C^3 and trip-bolt M, in combination with the coupling-hook C^3, also provided with eyes for the attachment of the ropes, and the hooked end being adapted to enter the recess in the casing and engage the grip-hook C^3, substantially as set forth.

4. A hay-sling composed of the ropes A and A', trip-coupling C, spreaders B, adjustable clamps C' and B', and attaching-rings D, substantially as shown.

5. A hay-sling composed of the ropes A and A', trip-coupling C, spreaders B, adjustable clamps B' and C', attaching-rings D, and the extension-ropes D', substantially as shown and set forth.

444,547. BAND AND TIRE SETTING MACHINE. JONATHAN H. SAMUELS, Moline, Ill. Filed Mar. 28, 1890. Serial No. 345,789. (No model.)



Claim.—1. In a band and tire setting machine, the combination of a series of pivoted clamps A A A, consisting of two or more such clamps, the hydrostatic piston C, and the converging or cone-shaped ring B, substantially as and for the purpose set forth.

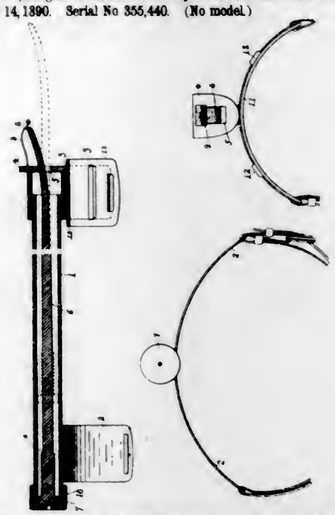
2. In a band and tire setting machine, the combination of the piston C, center standard *l*, and pivoted clamps A A A, substantially as and for the purpose set forth.

3. In a band and tire setting machine, the combination of the center standard *l*, adjustable plate *m*, nut-lock *n*, pivoted clamps A A A, and movable dies *j*, substantially as described.

4. In a band and tire setting machine, the combination of the pull-springs *f*, annular ring *d*, and pivoted clamps A, as and for the purposes set forth.

5. In a band and tire setting machine, the combination of the annular packing-ring *u* and the inclosed coil-spring *u'*, as and for the purposes set forth.

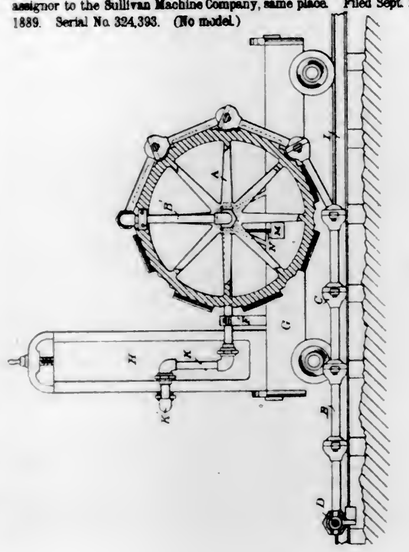
444,548. CAR-COUPLING IMPLEMENT. THOMAS J. THORP, Chicago, Ill., assignor of one-half to Henry F. Band, San Francisco, Cal. Filed June 14, 1890. Serial No. 355,440. (No model.)



Claim.—1. In a car-coupling device, the combination of a tube or case, devices adapted to secure it to the front of the forearm above the hand and in a line passing near the longitudinal center of the palm, and a rod movable in said case and adapted to be thrown from and returned to the case by a movement of the arm, substantially as set forth.

2. In a car-coupling device, the combination of a tube or case, devices adapted to secure it to the front of the forearm above the hand and in a line passing near the longitudinal center of the palm, a rod movable in said case and adapted to be thrown from and returned to the case by a movement of the arm, and a retaining-spring only operative when the rod is near its retracted position within the case, substantially as set forth.

444,549. CONVEYING STEAM. ALBERT BALL, Claremont, N. H., assignor to the Sullivan Machine Company, same place. Filed Sept. 19, 1889. Serial No. 324,393. (No model.)

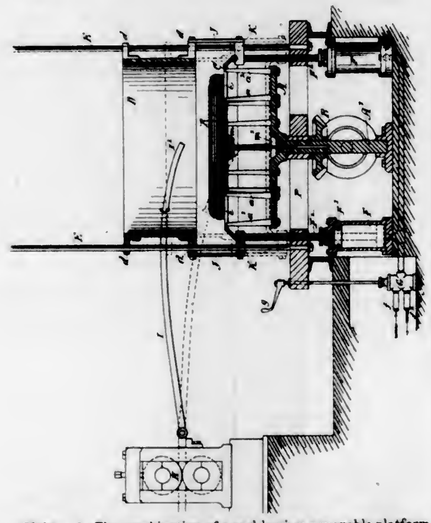


Claim.—1. The combination of a gang-drill rock-channeling machine having an engine thereon, a boiler adjacent to but independent of said channeling-machine, a reel on said channeling-machine and having suitable notches in its periphery, and a metallic swiveled pipe leading from said boiler and wound around said reel, so that the enlarged joints of said pipe will fit normally in said notches, substantially as herein set forth.

2. The combination of a reel A, axial pipe E, connected with the engine, metallic swivel-pipe B, connected with the boiler, a radial pipe B', connecting the metallic swivel-pipe and the axial pipe, substantially as set forth.

3. The combination of the main conducting-pipe D, metallic swivel-pipe B, radial pipe B', axial pipe E, right-angle pipe and connections with the engine, reel A, over which the metallic swivel-pipe passes, and a weight M, secured to said reel for reversing the same, substantially as set forth.

444,550. APPARATUS FOR COILING WIRE RODS. FRED H. DANIELS, Worcester, Mass. Filed Nov. 19, 1886. Serial No. 219,379. (No model.) Patented in England Mar. 26, 1887, No. 4,550; in France Nov. 29, 1887, No. 187,277; in Sweden Nov. 29, 1887, No. 1,312; in Belgium Nov. 30, 1887, No. 79,740, and in Germany Nov. 30, 1887, No. 44,693.



Claim.—1. The combination of a reel having a movable platform upon which the rod is deposited in coils, a movable guard surrounding the upper part of the reel, and mechanism, substantially as described, having connections adapted to engage with and move said platform and guard, substantially as and for the purpose set forth.

2. The combination of a reel having a movable platform upon which the rod is deposited in coils, a movable guard surrounding the upper part of the reel, mechanism, substantially as described, for moving said guard, and extensible connections that engage with and raise said platform with the movement of the guard, substantially as set forth.

3. The combination of a reel having a movable platform upon which the rod is deposited in coils, a movable guard surrounding the upper part of the reel and supporting the guide-pipe through which the rod is delivered onto the platform, a cylinder and operating piston for raising said guard and guide-pipe, and connections adapted to engage with and lift said platform simultaneously with the upward movement of the guard, for the purpose set forth.

4. The combination of a reel having a movable platform upon which the rod is deposited in coils, a movable guard surrounding the upper part of said reel, a guide-pipe supported by said guard, through which the rod is conducted onto said platform, an operating-piston for raising and depressing said guard, and extensible connections adapted to engage with and operate said platform by and during a portion of the movement of the guard, substantially as set forth.

5. In a rod-coiling apparatus, the combination of a coil-elevating platform, upon which the rod is delivered and coiled, and mechanism for actuating said platform, substantially as described, having lifters that engage the sides of said platform for raising and depressing it.

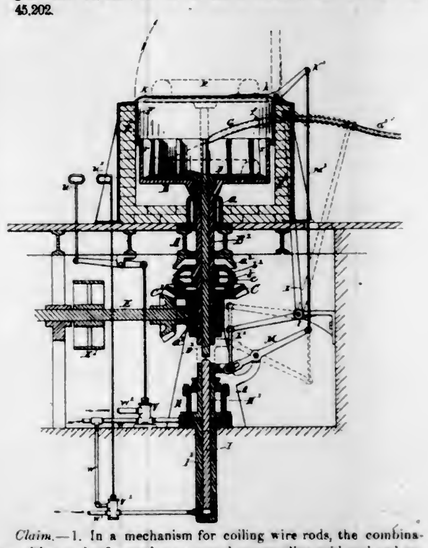
6. In an apparatus for coiling wire rods, the combination of a reel mounted and revoluble on an upright axis, a platform onto which the rods are deposited in coils, elevating mechanism normally independent and separable from said platform adapted for engaging the sides thereof and raising said platform above the top of the reel, substantially as and for the purpose set forth.

7. The combination, with a reel or rod coiling mechanism having a platform upon which the rod is coiled and movable for elevating the coil above the reel, of a lifter adapted to serve as a brake for overcoming the rotative movement of the mechanism while raising said platform, substantially as set forth.

8. The combination, with a rolling-mill and a rod-coiling reel mounted on a revoluble upright axis, of an adjustable guard and a guide-pipe for delivering the rod to said reel through an opening in said guard, and connected in a manner to be raised and depressed with the movement of the guard.

9. The combination, with a rod-rolling mill and a revoluble rod-coiling device or reel mounted on an upright axis and provided with a non-revoluble guard surrounding the upper portion of said reel and movable in the direction of the axis thereof, of a guide extending within the interior of the guard for directing or laying the rod upon the reel, and connected to said guard to be carried to and from the reel automatically with the movement of the guard.

444,551. APPARATUS FOR COILING WIRE RODS. FRED H. DANIELS, Worcester, Mass. Filed Nov. 26, 1886. Serial No. 219,869. (No model.) Patented in England Mar. 26, 1887, No. 4,551; in France Nov. 29, 1887, No. 187,279; in Sweden Nov. 29, 1887, No. 1,320; in Belgium Nov. 30, 1887, No. 79,742, and in Germany Nov. 30, 1887, No. 45,202.



Claim.—1. In a mechanism for coiling wire rods, the combination, with a reel, of a stationary guard surrounding said reel and extending above the top of the same, and means for ejecting or presenting the completed coil at the open end of the guard for its discharge bodily from the reel, substantially as set forth.

2. In a mechanism for coiling wire rods, the combination, with a revoluble reel, of a stationary guard surrounding said reel and extending above the top of the same, having an open top end through which to discharge the coil, and an elevating platform or spider adapted for raising the coil from the reel to a position above the guard, substantially as set forth.

3. In an apparatus for coiling wire rods, the combination, with a revolving reel, of a stationary guard surrounding said reel having an opened end for permitting the discharge of the coil of rod, and a movable cover over said opening for inclosing the reel and coil of rod within the guard and for opening to permit the discharge of the rod, as and for the purpose set forth.

4. In an apparatus for coiling hot rods or wire, the combination of a table or platform onto which the rods are coiled, and a stationary guard surrounding and extending above the cooling-receptacle, having an open end through which the supporting-platform and coil can be elevated for delivering the coil clear of the guard, and means, substantially as described, for raising and depressing said platform, as and for the purpose set forth.

5. The combination, with a reel for colling wire rods, of a table or platform onto which the wire is coiled, a guard surrounding and extending above the reel and having a cover, and means whereby said cover can be automatically closed or opened for retaining the rod within the guard or permitting the discharge of the coiled rod by elevating the supporting-platform, as and for the purpose set forth.

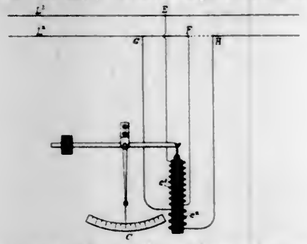
6. In an apparatus for coiling wire rods, the combination, with a reel and a surrounding guard or casing, of a guide-pipe for directing the wire onto said reel, having a telescoping end adapted to be retracted from its normal position, and means, substantially as described, for retracting and advancing the end of said guide, for the purpose set forth.

7. The combination, in an apparatus for coiling wire rods, of a reel, an elevating-platform, a lifting mechanism for stopping the reel and raising said platform, a stationary guard surrounding said reel, having an opening at the top through which the coiled rod is discharged, a movable cover adapted to close the top of the guard, and connections for automatically raising said cover when said platform-lifting mechanism is brought into action, substantially as set forth.

8. The combination of a guide-pipe having the movable telescoping end G, the hydraulic lifting-plunger H', and a connecting-lever, as L, whereby said guide-pipe can be retracted, substantially as and for the purpose set forth.

9. The combination, with the reel and its shaft having intermatching friction-rims for rotating and stopping the same, and the elevating-platform with its shaft extending through the reel-supporting shaft, of the cylinder H, provided with the hollow plunger H', and the cylinder I, provided with the plunger I', extending through said hollow plunger, and valves for independently controlling the pressure within said cylinders, substantially as shown and described.

444,552. ELECTRIC INDICATOR. JOHN HOPKINSON, Holmwood, England, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Feb. 23, 1889. Serial No. 300,846. (No model.) Patented in England July 27, 1882, No. 3,576.



Claim.—1. In an indicator, differentially-wound conductors, one designed to be connected in shunt upon the work-circuit and the other in series therewith, substantially as described.

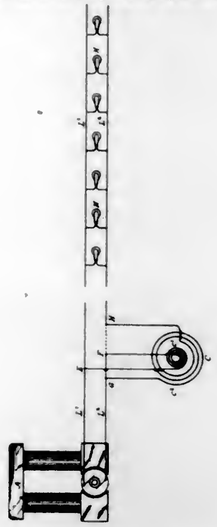
2. The combination, with a source of electricity and a work-circuit supplied therefrom, of an indicator having two opposing coils, one connected in shunt upon the work-circuit and the other in series therewith, substantially as described.

3. The combination of a source of electricity, translating devices supplied therefrom, and an indicating apparatus for determining the difference of potential upon the work-circuit, consisting of two opposing coils, one receiving currents proportional to the difference of potential at the terminals and the source and the other receiving currents proportional to the current delivered to the work-circuit, and an indicator operated by the resultant effects of the currents traversing the two coils.

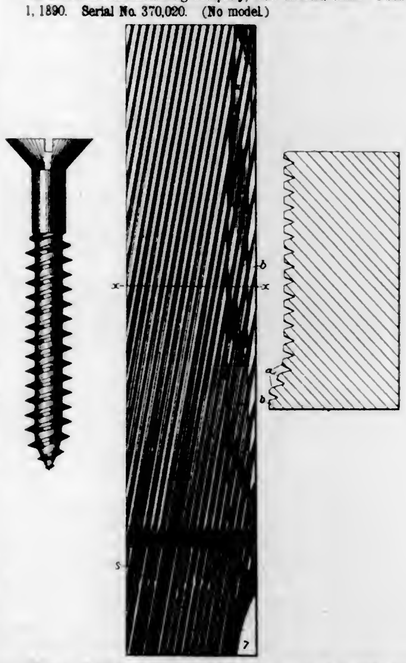
444,553. METHOD OF CONTROLLING CURRENTS UPON ELECTRIC CIRCUITS. JOHN HOPKINSON, Holmwood, England, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Feb. 23, 1889. Renewed Nov. 10, 1890. Serial No. 370,858. (No model.) Patented in England July 27, 1882, No. 3,576.

Claim.—1. In a system of electrical distribution, the hereinbefore-described method of controlling or indicating the difference of potential upon the work-circuit, which consists in producing an effect proportional to the currents flowing to the work-circuit, opposing thereto an effect proportional to the difference of potential at the source of current, and in causing the variations in the effect produced by a variation in the current flowing to the work-circuit to approximately equal the variations in the effect proportional to the difference of potential at the source of current.

2. In a system of electrical distribution, the hereinbefore-described method of controlling or indicating the difference of potential upon the work-circuit, which consists in producing an effect proportional to the currents flowing to the work-circuit, opposing thereto an effect proportional to the difference of potential at the source of current, and in causing the variations in the effect produced by a variation in the current flowing to the work-circuit to approximately equal the variations in the effect proportional to the difference of potential at the source as is required to compensate for the variation in the loss or fall of potential upon the circuit.

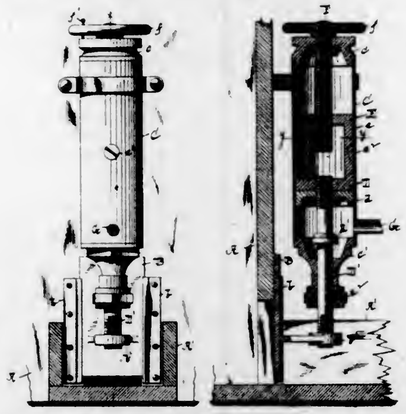


444,554. DIE FOR SWAGING THE THREADS OF GIMLET-POINTED SCREWS. HORACE K. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed Nov. 1, 1890. Serial No. 370,020. (No model.)



Claim.—The herein-described die for swaging gimlet-pointed screws, consisting of a transversely straight portion grooved at a uniform angle to its length for threading the body of the screw, and an inclined elevated portion through which said grooves are continued for swaging the point of the screw, which latter portion extends along by the side of said straight portion in a curved path, substantially as described, and for the purpose specified.

444,555. MECHANISM FOR OPERATING STUFF-GATES. ALBERT A. KELLOGG, Holyoke, Mass. Filed Jan. 30, 1889. Serial No. 298,153. (No model.)



Claim.—1. The stuff-gate-operating mechanism herein described, comprising a cylinder, a piston-head located within said cylinder, a screw-rod operatively connected with said piston-head, a rod connecting the piston-head with the gate, and means for admitting fluid under pressure to said cylinder, combined and operating substantially as set forth.

2. The combination, with a stuff-gate, of a cylinder located adjacent thereto, a screw-rod supported at one end of said cylinder, a piston-head located within said cylinder and having connected therewith a nut to receive said screw-rod, a pipe for admitting fluid under pressure to said cylinder, and a rod connecting said piston-head with the gate, arranged and operating substantially as set forth.

3. The combination, with a stuff-regulating box having an outlet-opening at or near the bottom thereof, and a vertically-movable gate for closing said opening, of a screw-rod and nut operatively connected with said gate for raising and lowering the latter, and means, substantially as described, for exerting a constant fluid or liquid pressure against said nut in a plane parallel with the axis of said screw-rod, whereby lost motion between said nut and rod is prevented, substantially as set forth.

4. The combination, with gate B, having the lateral extension *b'*, of cylinder C, piston-head D, located within said cylinder, rod D', connecting said piston-head with the gate, nut E, also located within said cylinder and having positive connection with the piston-head, a guide to prevent rotary movement of said nut, and screw-rod F, entering said nut at one end and having its opposite end mounted in one end of said cylinder, substantially as described.

444,556. GRIP FOR ELEVATOR SHIFTING-ROPES. SULLIVAN C. SWETT, Washington, D. C., assignor, by direct and mesne assignments, of two-thirds to James W. Brown and Frederick G. Alexander, both of same place. Filed Aug. 2, 1890. Serial No. 360,810. (No model.)



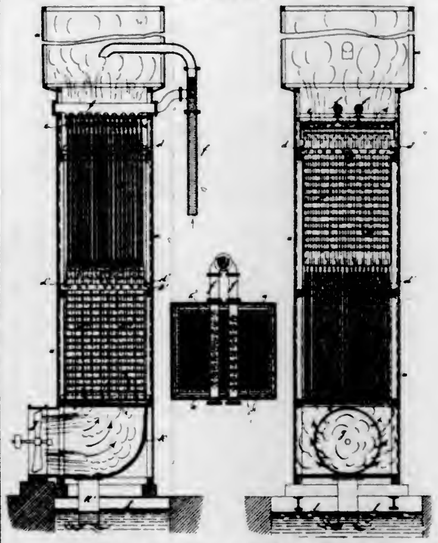
Claim.—The combination of an elevator-car, a shifting-rope passing through the same, a guide secured to the car, and a grip composed of clamping-jaws adapted to engage the shifting-rope, and spring clamping-jaws adapted to engage the guide when the clamping-jaws are out of engagement with the shifting-rope, all substantially as described.

444,557. KNOB-SHANK. CHARLES M. BURGESS, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Sept. 17, 1890. Serial No. 365,276. (No model.)



Claim.—The herein-described knob-shank, consisting of the internal tube and the metal knob-shank A, cast around said tube, the front portion forming the spindle-socket within said cast-metal shank, while its rear portion projects therefrom and forms the butt *b* for the subsequent attachment of a knob, substantially as described, and for the purpose specified.

444,558. LIQUID-COOLER. JOHANN KLEIN, Frankenthal, Germany. Filed July 17, 1890. Serial No. 359,031. (No model.) Patented in Austria-Hungary Feb. 24, 1890, No. 1,077.



Claim.—1. In a liquid-cooler, a casing *a*, in combination with an upper series of partitions *c* and a lower series of partitions *c'*, the latter being arranged at an angle to the former within said casing, and means for supplying liquid to one end of said casing and a current of air to the other end thereof, substantially as set forth.

2. In combination with an upper series of partitions and a lower series of partitions arranged at an angle thereto, a series of blades attached to the former series of partitions for conducting liquid therefrom into the lower series of partitions without crossing the path of the air-current, a casing inclosing said series of partitions, a fan for forcing air into one end of said casing, and a tube for supplying liquid to the other end, substantially as set forth.

444,559. WIRE-AND-SLAT-FENCE MACHINE. J. MARCUS ORCUTT, Harrisonburg, Va. Filed Aug. 1, 1890. Serial No. 360,681. (No model.)

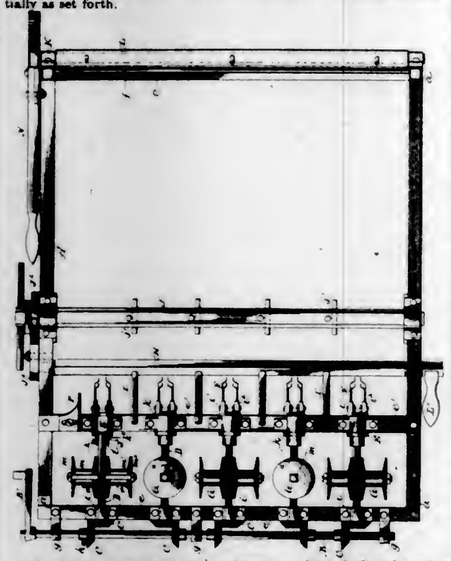
Claim.—1 In a fence-machine, a twister-head having double twister-fingers and each finger having an eye therein adapted to receive wire, substantially as set forth.

2. In a fence-machine, a twister-head having double twister-fingers, each of said twister-fingers being composed of a strip of spring metal bent upon itself at the rear end and secured to the twister-head, substantially as set forth.

3. In a fence-machine, the combination, with a series of shafts, of a series of twister-heads and sleeves adjustably secured to said shafts and adapted to lock or release the twister-heads, substantially as set forth.

4. In a fence-machine, the combination, with a series of shafts, of a series of twister-heads having perforated shanks to receive said shafts, a collar on each shank, and a set-screw passing through said

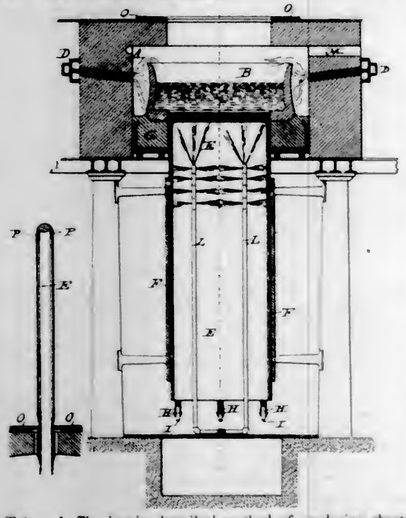
collar, whereby the shank is adjustably secured to the shafts, substantially as set forth.



5. In a fence-machine, the combination, with a shaft and a series of pinions adjustably secured thereon, of a series of shafts carrying pinions adapted to mesh with the first-mentioned pinions, a double reel secured to each shaft of the series, and a twister-head adjustably secured to each of said shafts, substantially as set forth.

6. In a fence-machine, the combination, with twisting mechanism, of a shaft having a series of fingers for forcing the palings forward, means for operating said shaft, a shaft having a series of pins therein for feeding the finished fence forward, means for operating said shaft and ratchet mechanism for preventing its rotation in one direction, a receiving-reel for the finished fence, and devices for operating said finishing-reel, substantially as set forth.

444,560. MANUFACTURING GLASS. ROGER S. PEASE, Rose, assignor of one-half to Arthur E. Bowe, St. Paul, Minn. Filed Apr. 26, 1890. Serial No. 349,660. (No model.)



Claim.—1. The herein-described method of producing sheets, plates, and films, which consists in passing a plunger upward through and above a mass of molten glass or metal and permitting it to set while held above said mass.

2. The method of producing plates, sheets, and films of uniform thickness, which consists in melting a mass of glass or metal, maintaining it constantly of uniform consistency, passing a plunger upward through and above the mass, and permitting the film or coating carried upward by the plunger to set or harden.

3. In the manufacture of plates, sheets, and films, the following steps, viz: first, melting the glass or metal; second, passing a plunger upward through the molten mass; third, stripping the glass from the sides of the plunger while in a plastic condition, and, lastly, exposing the sheet or film to a chilling atmosphere and thereby causing it to set.

4. In combination with a vessel adapted to contain molten glass or metal, a plunger adapted and arranged to be moved upward through and above the mass of metal contained in said vessel and to carry upward upon its end and sides a body of the metal without forcing the same against the sides of the containing-vessel, substantially as and for the purpose set forth.

5. In combination with a vessel adapted to contain molten glass or metal, a plunger movable upward through the same, and means, substantially such as described and shown, for elevating the plunger, the space between the sides of the plunger and the walls of the vessel being sufficient to prevent the metal from bridging across and filling the space within the vessel as the plunger rises.

6. In combination with a vessel adapted to contain molten glass or metal, a plunger movable upward through the same, means, substantially such as described, for elevating the plunger, and cut-off plates or slides adapted to be thrown against the sides of the plunger.

7. In combination with a vessel other than a mold adapted to contain molten glass or metal, a plunger movable upward through the same, and means, substantially as described, for maintaining the contents of the vessel at a uniform temperature.

8. In combination with a vessel B, adapted to contain molten glass or metal, a plunger movable upward through the same, and one or more furnaces communicating with and serving to supply vessel B.

9. In combination with chamber A, provided with openings M M, vessel B, located within said chamber, plunger E, movable upward through the vessel and the chamber, and rods or bars N, substantially as and for the purpose set forth.

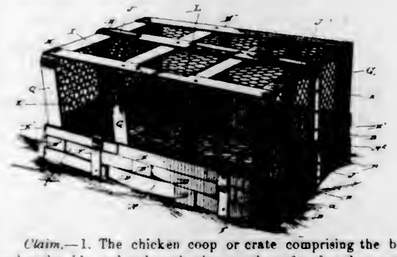
10. In combination with a vessel for containing molten glass or metal, a plunger movable through the mass, and means, substantially as described, for cooling said plunger.

11. In combination with a vessel for containing molten glass or metal, a hollow plunger movable through the same, and a pipe extending into the plunger and serving to convey a cooling agent thereto.

12. In combination with chamber A, vessel B, and plunger E, cut-off plates O, adapted and arranged to be forced against the sides of the plunger, as and for the purpose explained.

13. In combination with vessel B and plunger E, cables I and drum or windlass K, all arranged to operate substantially as set forth and shown.

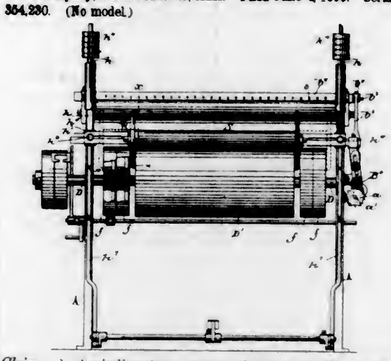
444,561. POULTRY-CRATE. ROBERT G. THOMASSON, Bumpass, Va. Filed Oct. 9, 1890. Serial No. 367,546. (No model.)



Claim.—1. The chicken coop or crate comprising the bottom having the side and end projecting portions forming the normally-upturned portions or sides and ends of the coop connected together by the short tucked-in corner pieces or strips, and the inner and outer opposite strips or pieces lapping and secured to the top edge strips of the sides and suitably re-enforced thereat, substantially as and for the purpose set forth.

2. The chicken-coop consisting of the bottom wicker-work portion having side and end portions held together as described, and having upper and lower bottom re-enforcing pieces or strips, also re-enforcing metallic pieces or strips near their corner edges, the wire-netting-covered bows with their braces or stays, said bows being secured to said bottom portion, the upright stays or braces secured to said bottom portion, and the end bows and the re-enforcing metal pieces secured to said upright stays and to said bottom portion and to the central top brace of said bows and the central underneath strip or brace of said bottom portion, substantially as set forth.

444,562. YARN-SPOOLER. GEORGE O. WICKERS, Lawrence, and JOSEPH H. STONE, North Andover, assignors to the Davis & Furber Machine Company, North Andover, Mass. Filed June 4, 1890. Serial No. 354,230. (No model.)



Claim.—1. A winding-drum, combined with spool-lifting rods and connected horizontally-adjustable bearings to receive the journals of the spool upon which the yarn is to be wound, the said bearings enabling spools of different lengths to be used, substantially as described.

2. In combination, in a spooling-machine, the bearings for the spool and the drum composed of a main cylinder and independent adjustable supplementary drums of like diameter, substantially as described.

3. The yarn-guide b^9, composed of a bar, combined with sleeves through which the said bar slides and with means to adjust the said sleeves about the longitudinal center of the bar, as and for the purpose set forth.

4. The drum and horizontally-adjustable bearings for the spool-journals, combined with and attached to vertically-movable supports for the said bearings, whereby the spool having its journals in the said bearings is adapted to be rotated by the said drum, substantially as described.

5. The drum and horizontally-adjustable bearings for the spool-journals, combined with and attached to vertically-movable supports for the said bearings, whereby the spool having its journals in the said bearings is adapted to rest and run upon the said drum, and with a treadle to lift the said rods and their attached bearings, as and for the purpose set forth.

6. The drum and the horizontally-adjustable bearings for the spool-journals, combined with a vertically-movable support for the bearings and weights to keep the spool held in the said bearings pressed toward the said drum, the combination being and to operate substantially as described.

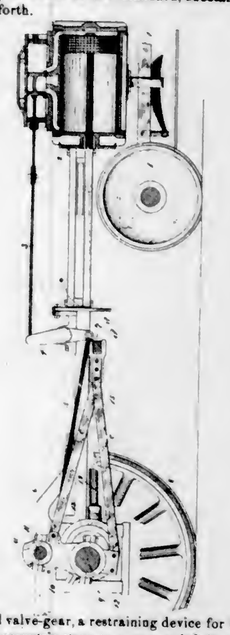
444,563. VALVE-GEAR FOR ENGINES. ELLIS J. WOOLF, Minneapolis, Minn., assignor to the Woolf Valve Gear Company, same place. Filed Apr. 19, 1890. Serial No. 348,662. (No model.)

Claim.—1. A carrier for a valve-gear, consisting of a rigid bell-crank lever having one arm loosely mounted on the eccentric-shaft and the other connected to some independent support, with freedom for a limited movement in the direction of its length, but without freedom to move at an angle to the line of its to-and-fro motion, whereby, while automatically adjusting the gear to the rising and falling of the shaft, the carrier always presents a rigid base of resistance to the valve-thrust.

2. In a locomotive, the combination, with the driving-axle, the eccentric, and the strap, of a restraining device for directing the outer end of the strap in a definite path variable at will, and a rigid bell-crank lever having one arm loosely mounted on the axle and supporting the restraining device and the other arm connected to the engine-frame, with freedom for a limited to-and-fro motion to compensate for the rising and falling of the axle, but always constant and rigid with reference to the valve thrust.

3. In a locomotive, the combination, with the driving-axle, eccentric, and strap, of a restraining device adapted to constrain the outer end of the strap to pursue a definite path variable at will, and a rigid bell-crank carrier for supporting said restraining device, having one of its arms loosely mounted on the axle and the other connected to the frame by a pivoted hanger, substantially as and for the purpose set forth.

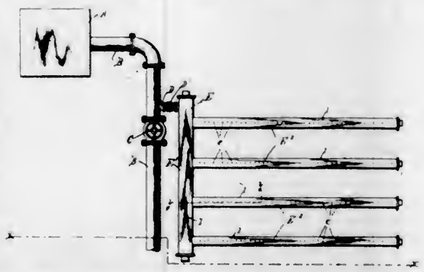
4. In a locomotive, the combination, with the axle, the eccentric, and the strap, of the standard boxed on the axle, the arm or lever rigid with the standard and angularly extended therefrom, of greater length than the standard, the pivoted hanger pivotally connecting the outer end of said arm with the frame, and a restraining device for the outer end of the strap mounted on said standard, substantially as and for the purpose set forth.



5. In a radial valve-gear, a restraining device for constraining the outer end of the eccentric-strap to pursue a definite path variable at will, consisting of a rock-shaft provided with a rigid arm and a bar pivotally connected at one end to said arm and at the other to said strap.

6. In a locomotive, the combination, with the eccentric-shaft, of the eccentric-strap, the standard loosely boxed on said shaft, a support for said standard, a rock-shaft on said standard provided with a rigid arm, and a bar pivotally connecting said arm and the outer end of the said strap, substantially as and for the purpose specified.

444,564. IRRIGATING APPARATUS. DAVID W. COPELAND, Syracuse, N. Y., assignor of one-half to Herman D. Selleck, same place. Filed Nov. 14, 1890. Serial No. 371,384. (No model.)



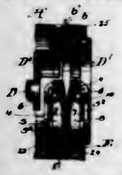
Claim.—1. In an irrigating apparatus, the combination, with a branch or head pipe, of a series of feeding-pipes extending at intervals therefrom and disconnected at their outer ends, said feeding-pipes having a series of minute perforations for permitting the gradual oozing of the water to the ground, and each of said pipes having its outer end normally closed, but adapted to be opened, as described, whereby any one or more of said pipes may be independently flushed to remove sediment or obstruction, substantially as described.

2. In an irrigating apparatus, the combination of a supply-reservoir, a trunk conveying-pipe, and a series of minutely-perforated feeding-pipes, in combination with a head-pipe from which the feeding-pipes extend and connecting them with the trunk-pipe, the ends of said head-pipe being normally closed by plugs, which are removable, as described, so that said head-pipe may be flushed to remove sediment and prevent its being carried into or through the feeding-pipes, substantially as described.

3. In an irrigating apparatus, the combination of a supply-reservoir, a trunk conveying-pipe, a series of branch or head pipes connected to the trunk conveying-pipe, valves controlling the flow of water in the pipes, and a series of feeding-pipes extending at intervals from the head-pipes and disconnected at their outer ends, the feeding-pipes having a series of minute perforations to permit the gradual oozing of the water to the ground and the ends of said head-pipes and the outer ends of each of said feeding-pipes being normally closed, but adapted to be opened, as described, whereby either of said head-pipes alone or any one or more of said feeding-pipes may be independently flushed to remove sediment or obstruction, substantially as described.

4. An irrigating apparatus consisting of a reservoir, trunk-pipe, connecting-pipes, and valves, combined with branch or head pipes and minutely-perforated feeding-pipes extending at intervals laterally therefrom and disconnected at their outer ends, the ends of said head-pipes and the outer ends of said feeding-pipes being normally closed by removable plugs, whereby any one or more of said pipes may, as desired, be independently flushed to remove any obstruction or sediment therein.

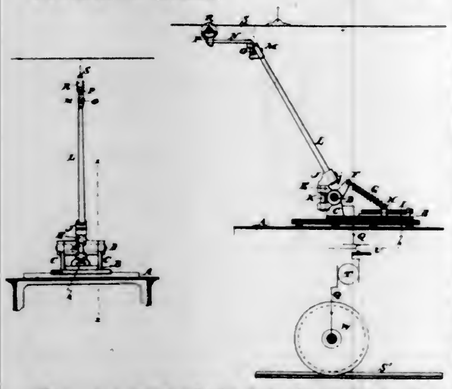
444,565. SEWING-MACHINE. LORENDER C. EMERSON, North Grafton, Mass., assignor of one-half to Charles H. Nelson, same place. Filed Mar. 18, 1890. Serial No. 344,352. (No model.)



Claim.—1. In a sewing-machine, a cylindrical arm A and the shaft D, having the two shuttle-drivers, the race-block E, mounted to turn about the vertical pivot E', the said race-block being provided with two shuttle-guiding faces, combined with two eye-pointed needles, means to actuate them, and two shuttles, substantially as described, fitted into the said race-block from opposite sides, the innermost shuttle being accessible from the rear side of the race-block after turning the same about its vertical pivot, substantially as described.

2. The cylindrical arm A, the pivoted shuttle-race block E, having two shuttle-races with a lip, as 21, between them, the throat-plate having a downward extension 25 to support the needles, two eye-pointed needles, a needle-bar, and means to actuate the latter, the lip being interrupted to receive said extension, combined with two shuttles having their points beveled in opposite directions and adapted to operate substantially as described.

444,566. CURRENT-COLLECTING DEVICE FOR ELECTRIC RAILWAYS. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 12, 1890. Serial No. 361,771. (No model.)



Claim.—1. A current-collecting device for an electric railway, consisting of an obliquely-arranged arm connected to the car with provision for lateral and vertical motion at its free end, in combination with a rearwardly-extending part jointed to the free end of the arm with freedom of lateral motion and carrying at its rear end a contact adapted to press against a conductor extending along the railway.

2. A current-collecting device for an electric railway, consisting of an obliquely-arranged arm connected to the car with provision for lateral and vertical motion at its free end, in combination with a spring to move said arm vertically, and a rearwardly-extending part jointed to the free end of the arm with freedom of lateral motion and carrying at its rear end a contact adapted to press against a conductor extending along the railway.

3. The combination of a suspended conductor extending along a railway, a traveling car, an upwardly and rearwardly extending collecting-arm movable on a transverse axis and supported by the car, and a rearwardly-extending part carrying a contact making a connection with the under surface of the conductor and jointed to the upper or free end of the arm with freedom of lateral movement.

4. The combination of a suspended conductor extending along a railway, a traveling car, an upwardly and rearwardly extending collector-arm movable on a transverse axis and supported by the car, a spring to cause the arm to move on its free end toward the conductor, and a rearwardly-extending part carrying a contact making a connection with the under surface of the conductor and jointed to the upper or free end of the arm with freedom of lateral movement.

5. The combination of a suspended conductor extending along a railway, a traveling car, an upwardly and rearwardly extending collector-arm movable on both a vertical and a transverse axis and supported by the car, and a rearwardly-extending part carrying a contact making a connection with the under surface of the conductor and jointed to the upper or free end of the arm with freedom of lateral movement.

6. The combination of a suspended conductor extending along a railway, a traveling car, an upwardly and rearwardly extending collector-arm movable on both a vertical and a transverse axis and supported by the car, a spring to cause the arm to move on its transverse axis to raise its free end toward the conductor, and a rearwardly-extending part carrying a contact making a connection with the under surface of the conductor and jointed to the upper or free end of the arm with freedom of lateral movement.

7. The combination of a suspended conductor extending along the railway, a traveling car, a frame hinged to the car on a transverse axis, and a rearwardly-extending arm having a contact for connection with the conductor and supported by said frame on an axis in the plane of the travel of the vehicle.

8. The combination of a suspended conductor extending along the railway, a traveling car, a frame hinged to the car on a transverse axis, a rearwardly-extending arm having a contact for connection with the conductor and supported by said frame on an axis in the plane of the travel of the vehicle, and a spring to hold the free end of the arm toward the conductor with an elastic pressure.

9. The combination of a suspended conductor extending along the railway, a traveling car, a frame hinged to the car on a transverse axis, a rearwardly-extending arm having a contact for connection with the conductor and supported by said frame on an axis in the plane of the travel of the vehicle, a spring acting on the frame to rotate it, and means to adjust the tension of the spring.

10. In a trolley for an electric car, the combination of a frame hinged to the car on a transverse axis, an obliquely and rearwardly extending trolley-arm carried by said frame and movable about a vertical or substantially vertical axis, and a spring to move said arm about the transverse axis.

11. In a trolley for an electric car, the combination of a frame hinged to the car with provision for movement on both vertical and transverse axes and having a socket, and a trolley-arm carrying at its free end a contact device and detachably connected in the socket.

12. In a trolley for an electric car, the combination of a frame hinged to the car with provision for movement on both vertical and transverse axes and having a socket, and a trolley-arm carrying at its free end a contact device and detachably connected in the socket, and a spring to cause said frame to move about the transverse axis.

13. In a trolley for an electric car, the combination of a frame connected to the car with provision for universal movement and having a socket, and a trolley-arm having a contact at its free end and at its lower end fitting into the socket of the frame.

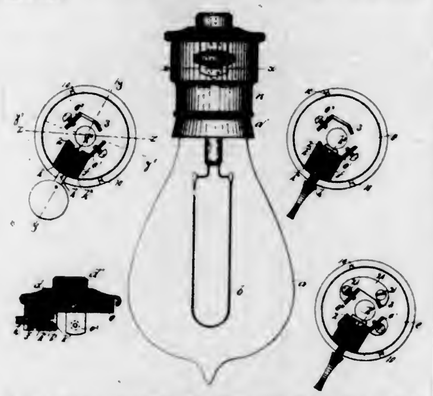
14. In a trolley for an electric car, the combination of a frame connected to the car with provision for universal movement and having a socket, a trolley-arm having a contact at its free end and at its lower end fitting into the socket of the frame, and a spring device to raise and lower the trolley-arm.

15. In a trolley for an electric car, the combination of a spring-actuated primary part loosely connected to the car, and a laterally-movable secondary part extending obliquely rearward and carried by the primary part.

444,567. INCANDESCENT-LAMP SOCKET. GEORGE R. LEAN, Boston, Mass., assignor to the Bernstein Electric Company, Portland, Me. Filed Mar. 27, 1890. Serial No. 345,538. (No model.)

Claim.—1. In an incandescent lamp, the bulb and block *c*, having a recess, and conducting-plates *m' m'*, combined with a fixed holder having legs 2 3, adapted to engage the block *c* by means of a bayonet-joint, substantially as described.

2. In an incandescent lamp, a bulb and block *c*, having a recess, and conducting-plates *m' m'*, with grooves beneath them, combined with a fixed holder having legs 2 3 with projections 4, substantially as described.



3. In an incandescent lamp, the bulb and block *c*, having a recess, conducting-plates *m' m'*, and limiting-stops 5 6, located as shown, combined with a fixed holder having legs 2 3, substantially as described.

4. In an incandescent lamp, the fixed holder for the bulb, consisting of the supporting-plate *d*, insulating-plate *e*, secured to it, legs 2 3, binding-posts c' c^3, secured to said plate, a key having a cross-bar to make and break connections between one of the legs and one of the binding-posts, and a projection formed on the inside of plate *e*, in which the key has its bearings, the cross-bar resting against said projection when the connection is broken, substantially as described.

5. In an incandescent lamp, the fixed holder consisting of the support *d*, having the annular inturned lip, openings therein, a plate *e*, combined with the shell *n*, adapted to enter between the plate and lip, and projections on the shell, whereby it is connected with the support *d* by a bayonet-joint, substantially as described.

6. In an incandescent lamp, the fixed holder consisting of the support *d* and shell *n*, adapted to be connected by a bayonet-joint, said shell having a side opening, and a plate *e*, having a projection thereon which enters said side opening to thereby prevent lateral movement of the shell, substantially as described.

444,568. APPARATUS FOR MAKING TUBING. PETER PATTERSON, McKeesport, Pa., assignor to the National Tube Works Company, same place. Filed July 5, 1890. Serial No. 357,804. (No model.)

Claim.—1. In tube-making apparatus, the combination, with the drawing-tag secured to the plate or skelp, of a sleeve fitting around and engaging with the tag and having a hook to engage with the drawing-chain, substantially as and for the purposes set forth.

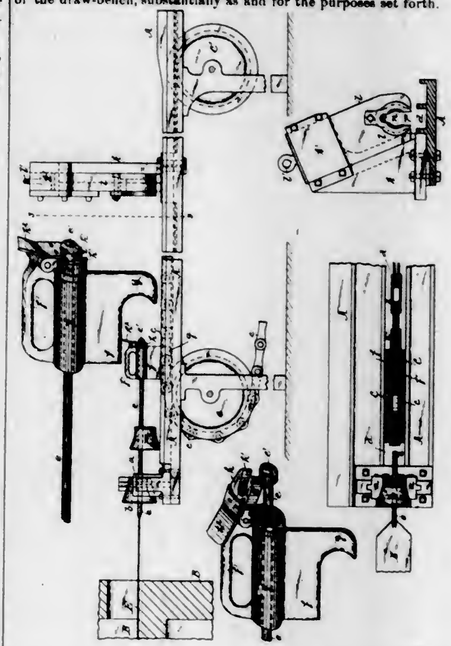
2. In tube-making apparatus, the combination, with the drawing-tag secured to the plate or skelp and having a head at one end thereof, of a sleeve fitting around the tag and provided with a catch engaging with said head and having a hook to engage with the drawing-chain, substantially as and for the purposes set forth.

3. In tube-making apparatus, the combination, with the drawing-tag having a head at one end thereof, of a sleeve having a swinging catch at one end fitting between the tag-head and sleeve and having the hook to engage with the drawing-chain, substantially as and for the purposes set forth.

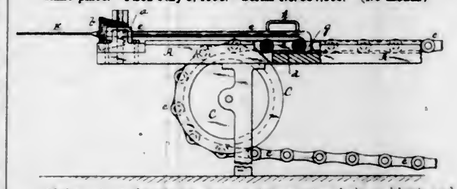
4. In tube-making apparatus, the combination, with the drawing-tag having a head at one end thereof, of a sleeve slipping over the drawing-tag and having a hook to engage with the drawing-chain, and the pivoted catch having the forked end between which the body of the tag passes, the forks of the catch forming shoulders to engage with the head, substantially as and for the purposes set forth.

5. In tube-making apparatus, the combination of a draw-bench having a traveling chain, drawing mechanism adapted to engage both with the blank and said chain, and a bell-holder above the draw-bench, having an open base to permit the passage of the drawing mechanism, substantially as and for the purposes set forth.

6. In tube-making apparatus, the combination of a draw-bench having a traveling chain, drawing mechanism adapted to engage both with the blank and said chain, and a bell-holder above the draw-bench, said bell-holder being upwardly and downwardly movable transversely of the draw-bench, substantially as and for the purposes set forth.



444,569. APPARATUS FOR WELDING TUBING. PETER PATTERSON, McKeesport, Pa., assignor to the National Tube Works Company, same place. Filed July 5, 1890. Serial No. 357,805. (No model.)



Claim.—1. A drawing-tag secured to a tube skelp or blank and having a hook formed integral therewith and depending therefrom and adapted to engage with the drawing-chain, substantially as and for the purposes set forth.

2. A drawing-tag secured to a tube skelp or blank and having a hook formed integral therewith and depending therefrom and having the body of the tag bent to form a handle therefor, substantially as and for the purposes set forth.

444,570. SPREADER FOR GAITING HORSES. JAMES R. PHELPS, Sacramento, Cal. Filed Oct. 2, 1890. Serial No. 366,892. (No model.)



Claim.—1. A spreader for horses, consisting of the curved elastic arms, the lower ends of which have straps connected with them to encircle the hind legs of the horse, and a support upon the harness, in which the upper ends of the arms are swiveled or pivoted to turn, substantially as herein described.

2. A device or spreader for horses, consisting of the elastic curved arms having their upper ends movable independently in a support upon the harness, the lower ends connected with straps to encircle the hind legs of the horse, whereby an outward pull is exerted upon the

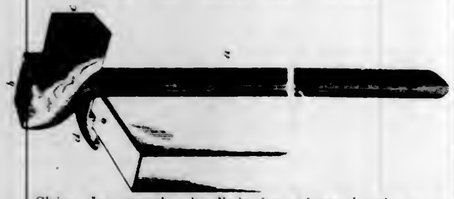
legs and the elastic arms are allowed to oscillate and move in unison with the movements of the horse's legs, substantially as herein described.

3. The independent elastic arms having the lower ends provided with straps to encircle the horse's hind legs, a pad adapted to be placed upon the horse's back and having supports or journals in which the upper ends of the elastic arms turn horizontally so as to move independently of each other, and a means for connecting said support with the girth or surcingle and retaining it in place, substantially as herein described.

4. The curved elastic movable arms supported from a pad upon the horse's back, straps connecting with the lower ends of said arms and adapted to surround the horse's legs, and the extending bar G, by which the outer portion of the strap is kept from contact with the outer side of the leg, substantially as herein described.

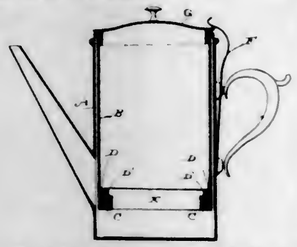
5. The combination, with the straps D, suspended from arms connected with the harness, of rigid bars within said straps, having end loops or buckles provided with tongues adapted to enter holes in the straps, whereby the straps are adjusted, substantially as herein described.

444,571. WAGON-WRENCH. WILLIAM G. SMITH, Binghamton, N. Y. Filed Nov. 7, 1890. Serial No. 370,691. (No model.)



Claim.—In a wrench, a handle having an integral socket at one end, said socket having its axis parallel with the handle, in combination with a laterally-extending arm for supporting the wrench in an upright position, in the manner and for the purpose as set forth.

444,572. COFFEE-POT. GEORGE A. WILLIAMS, San Francisco, Cal., assignor of one-half to Frank Jones, same place. Filed Sept. 12, 1890. Serial No. 364,773. (No model.)

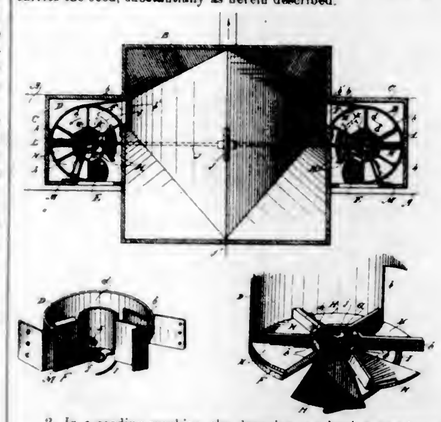


Claim.—1. A coffee-pot consisting of the cylindrical outer containing vessel, a corresponding cylindrical bottomless inner chamber fitted to telescope within the outer one, and having an inwardly-turned flange at the bottom, a plural number of concentric clamping-rings fitted one within the other and adapted to rest their edges upon said flange, and a bottom composed of a plural number of fibrous or textile material clamped between said rings, substantially as herein described.

2. A coffee-pot consisting of a cylindrical outer containing vessel, a corresponding bottomless cylinder of smaller diameter fitted to telescope within the outer vessel, having an inwardly-turned flange at the bottom, concentric rings fitted within the inner cylinder so as to rest upon the flange, and a bottom of fibrous or textile material stretched across the rings and having its edges clamped between them so as to form a bottom for the inner cylinder, in combination with a spring fixed on the outside of the outer vessel and adapted to press upon the side of the inner cylinder and to hold it at any desired point when raised within the outer cylinder, substantially as herein described.

444,578. SEEDING-MACHINE. DANIEL M. BALDWIN, Florence, Cal. Filed July 15, 1890. Serial No. 358,818. (No model.)

Claim.—1. In a seeding-machine, the semicircular guide-shells located within suitable casings and having a fixed plate with an opening therein, a series of swinging seed-carrying plates connected with a common hub and supported on the fixed plate for a portion of its movement and unsupported when aligned with the opening in the fixed plate, and a cam-track below the opening adapted to return said plate from its dropped position to the plane in which it receives and carries the seed, substantially as herein described.



2. In a seeding-machine, the dropping mechanism consisting of the combination of the rotary hub, the series of independent plates hinged to said hub, the brush operating over said series of plates, the partial supporting-plate under a portion of the series of hinged plates, and the cam-track secured to said underlying plate, substantially as herein described.

3. In a seeding-machine, the combination of the partial supporting-plate and the cam-track secured thereto, the rotary series of independent hinged plates operating upon said partial supporting-plate and cam-track, as described, and a scraper operating over the series of hinged plates, substantially as herein described.

4. In a seeding-machine, the combination of the partial supporting-plate and the cam-track secured thereto, the rotary hub-pinion having the series of independent drop-plates hinged to and about its circumference and operating over the supporting-plate and cam-track, as described, the rotary shaft having the pinion engaging the hub-pinion, and the brush on the end of the shaft operating over the hinged drop-plates, substantially as herein described.

5. In a seeding-machine, the combination of the partial supporting-plate and the cam-track secured thereto, the rotary series of independent drop-plates operating upon the supporting-plate and cam-track, as described, and a fixed guard located over the series of plates at a point just before they drop to prevent premature discharge of the seeds, substantially as herein described.

6. In a seeding-machine, the combination of the partial supporting-plate having the cam-track, the rotary series of independent hinged drop-plates operating upon said supporting-plate and cam-track, as described, and an inclosing shell in the passage of which the series of drop-plates travel, substantially as herein described.

7. In a seeding-machine, the combination of the partial supporting-plate having the cam-track, the rotary series of independent hinged drop-plates operating upon said supporting-plate and cam-track, as described, and the inclosing casing having a semicircular passage through which the drop-plates travel over the supporting-plate, substantially as herein described.

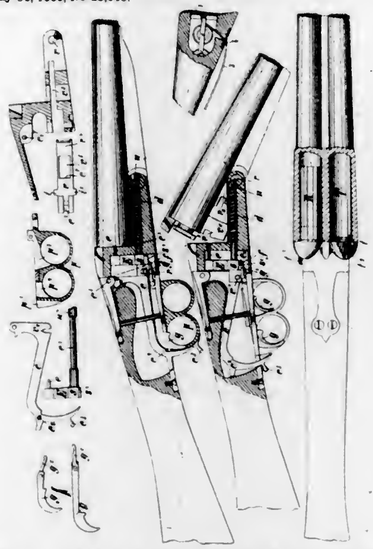
8. In a seeding-machine, the combination of the feed-hopper, the fixed shell having a curved passage, with a portion of which the hopper communicates, and the drop-tubes communicating with another portion of said passage, the partial supporting-plate under said passage, the cam-track carried by said plate, and the rotary series of independent hinged drop-plates operating upon said supporting-plate and cam-track, as described, and traveling through the passage, substantially as herein described.

9. In a seeding-machine, the combination of the shell having the curved passage *d*, the partial supporting-plate thereunder, the cam-track of said plate, the hub-pinion having the series of independent drop-plates hinged to its rim and operating upon the supporting-plate and cam-track and traveling through the passage, as described, the rotary shaft having the pinion engaging the hub-pinion, and the brush on the end of the shaft within the passage and operating over the drop-plates, substantially as herein described.

10. In a seeding-machine, the combination of the shell having the curved passage *d*, the partial supporting-plate with cam-track, the rotary series of independent hinged drop-plates, and the vertical brush in the passage *d*, operating over the drop-plates, substantially as herein described.

11. A dropping mechanism for seeding-machines, consisting of a fixed shell having a curved passage communicating with the feed-hopper and with the drop-tube of the machine, the partial supporting-plate under said passage, the cam-track of said plate, the rotary series of independent hinged drop-plates operating upon said supporting-plate and cam-track and traveling through the passage, as described, the hub-pinion of said series, the rotary shaft with pinion for driving the hub-pinion, the brush on the end of the shaft within the passage, and the fixed brush within said passage, all arranged and adapted to operate substantially as herein described.

444,574. BREECH-LOADING GUN. PÉTRUS BLACHON and ÉTIENNE MIMARD, St. Etienne, France. Filed Jan. 2, 1890. Serial No. 335,721. (No model.) Patented in France Oct. 27, 1887, No. 186,977; in Belgium Apr. 24, 1888, No. 81,549; in England May 9, 1888, No. 6,936, and in Italy July 30, 1889, No. 25,915.

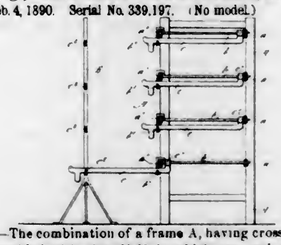


Claim.—1. In a fire-arm, the combination of the pivoted lever *c* with the sliding piece *v*, the barrel or barrels of the arm having lugs v^3 underneath to engage with the former, and the firing pin or pins attached to the traverse or traverses E, engaging with the corresponding trigger and actuated by a spring or springs *d*, substantially as and for the purpose specified.

2. In combination with cavities located in the gun-stock, a trigger-guard having slits p' p^2 p^3 for the reception of the triggers and lever *c*, the former pivoted in the lower part of the stock and lying round inside of the trigger-guard, the latter pivoted within the stock at *c'* and adapted to close round the outside of the trigger-guard, substantially as and for the purpose specified.

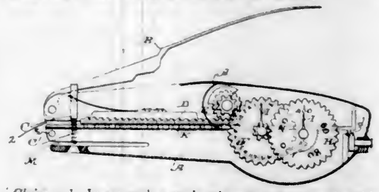
3. In combination with a fire-arm, the spring-barrel with a spiral spring journaled within the butt and connected to the rear end of the gun-belt, substantially as and for the purpose hereinbefore described.

444,575. SHOW-STAND. ERNST BROCKMANNS, Ellrich, Germany. Filed Feb. 4, 1890. Serial No. 339,197. (No model.)



Claim.—The combination of a frame A, having cross-bars *a a'*, the cross-bars provided with slots b^4 b^4, in which one end of a bar *b* is placed, said bar *b* being hooked at its other or front end and resting on front cross-bar *a'* and having end of hook prolonged downward and formed to a second hook, and the bar *c*, provided with hooks for reception of articles, having its one end sliding on bar *b* and its other resting in hook *b'* and adapted to be adjusted sideward in frame A, in the manner described.

444,576. TRAIN FARE-PUNCH. WILLIS D EITEL, San José, Cal. Filed July 1, 1890. Serial No. 357,454. (No model.)



Claim.—1. In a punch, a train of gearing contained within a case, a rack reciprocating within the case and engaging the gear-wheels so as to cause them to rotate, a slot made in the casing for the introduction of the ticket, whereby the reciprocating rack may be forced backward, and a spring which returns the rack to its normal position after the ticket is removed, in combination with an indicator or register operated by the movement of the gearing, substantially as herein described.

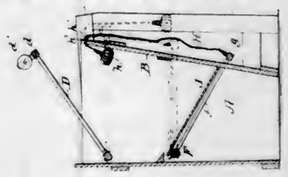
2. In a punch, the train of gearing contained within a casing, the reciprocating rack engaging said gearing so as to rotate it when the rack is moved in one direction, and a ratchet mechanism which allows the rack to return without acting upon the gearing, a spring by which the rack is returned after it has been forced inward, a slot into which a ticket may be introduced to press the rack backward and rotate the gearing, a punch and a handle whereby said punch is operated to perforate the ticket at any given point after it has been introduced into the slot, and an indicating or registering device operated by the train of gearing to register the amount which has been punched upon the ticket, substantially as herein described.

3. In a punch, a train of gearing contained within a case, a reciprocating rack engaging said gearing so as to rotate it in one direction, a spring by which said rack is returned, and a ratchet mechanism allowing the rack to be returned without acting upon the gearing, a slot into which the ticket may be introduced so as to engage the rack and force it backward, and an adjustable gage or stop with means for fixing it so as to limit the movement of the ticket and the rack, in combination with a punch and a handle whereby the punch may be operated so as to perforate the ticket, and an indicating mechanism whereby the amount punched from the ticket may be registered, substantially as herein described.

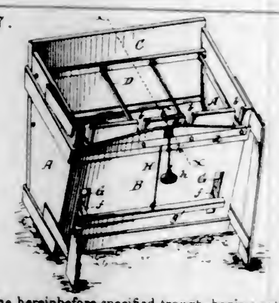
4. A punch consisting of two independent trains of gearing contained within a single casing and upon opposite sides thereof, independent racks engaging, respectively, the two trains of gearing, corresponding slots upon each side of the casing, into which a ticket may be introduced so as to force either of the racks backward to operate its own train of gearing, a punch consisting of a plate having projections upon each side corresponding with the two trains of gearing and reciprocating racks, and indicating devices whereby the amounts punched upon either side may be registered independently, substantially as herein described.

5. A punch consisting of a plate having the exterior projections C, a casing having a guiding-slot 3, within which the plate operates, channels 2 beneath each of the projections of the punch, into which a ticket may be introduced so as to be perforated by the punches, a second channel M, formed below these and having a central opening, and a central projection C' from the punch-plate moving in a corresponding hole, so as to punch a ticket introduced into the lower slot, a handle fulcrumed upon the case and acting to depress the punching-plate, and a spring whereby said plate and its punches and the operating-handle are returned to the normal position, substantially as herein described.

444,577. FEED-RACK. JOHN F. FITZGERALD, Trenton, Tenn. Filed Apr. 11, 1890. Serial No. 347,459. (No model.)

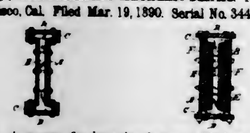


444,577.



Claim.—The hereinbefore-specified trough, having notch A^3 in its upper edge and having the slots G G, the slot-frame D, pivoted at its rear end to the trough and having the pulley d' at its front end, the bottom f, pivoted at its rear end and having portions projected through the slots G G, and the cord H, connected with the front end of the bottom f and passing over the said pulley d', and having weight h at its upper end, and the knot h', substantially as described, for the purpose specified.

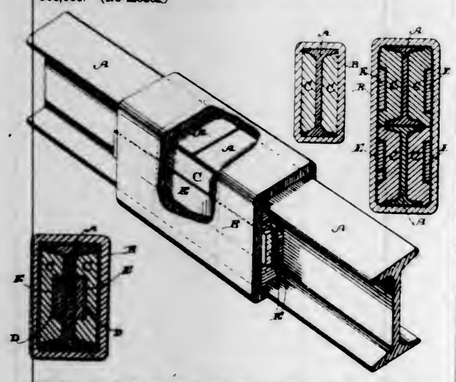
444,578. LENGTHENING METALLIC BEAMS. PETER H. JACKSON, San Francisco, Cal. Filed Mar. 19, 1890. Serial No. 344,557. (No model.)



Claim.—1. A means for lengthening metallic beams, consisting of metallic inclosing plates or cheek-pieces extending across the point of meeting of two abutting beams and fitting the webs and heads of said beams, in combination with top and bottom plates extending over said heads and said cheek-pieces, and the top and bottom plates being riveted together and to the heads of the inclosed beams, substantially as herein described.

2. The improvement in lengthening rolled beams and strengthening the joints formed by the meeting ends of two beams, consisting of metal cheek-pieces fitting the webs and heads of the beams, top and bottom plates riveted to said cheek-pieces and to the heads, and rivets passing through the cheek-pieces and the webs of the beams, substantially as herein described.

444,579. LENGTHENING METALLIC BEAMS AND GIRDERS. PETER H. JACKSON, San Francisco, Cal. Filed Oct. 13, 1890. Serial No. 368,000. (No model.)



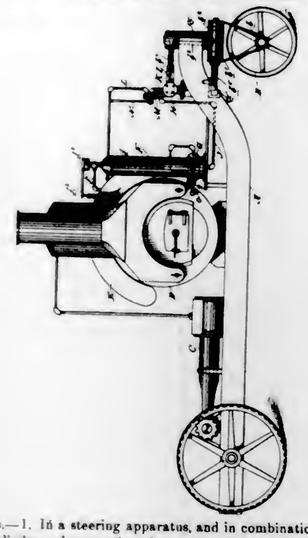
Claim.—1. A means for lengthening metallic beams and girders, consisting of an inclosing band or bands passing around the beams at the point of junction, cheek-pieces fitting the space formed between the webs and bands and the top and bottom flanges, and means for tightening said cheek-pieces within the bands, substantially as herein described.

2. The means for lengthening metallic beams and girders, consisting of a metallic inclosing band or bands fitting around the abutting ends of the beams and extending a short distance along the beams each side of said joints, metallic cheek-pieces fitting the spaces between the webs and the top and bottom flanges of the beams and the inner sides of the bands, wedges fitted to be driven between said cheek-pieces and bands or the webs, whereby the parts are rigidly locked together, substantially as herein described.

3. A means for lengthening metallic beams and girders, consisting of inclosing bands passing around the beams at the point of junction, a diaphragm between the beams and cheek-pieces fitting between the webs and bands and top and bottom flanges, and means for wedging or tightening said cheek-pieces, substantially as herein described.

4. A means for lengthening metallic beams, having their ends abutted together, consisting of an inclosing band or bands or casing fitting around the meeting ends of the beams, blocks fitting between the sides of the beams and the bands or casing, and wedges or keys whereby the structure may be united rigidly together, substantially as herein described.

444,580. STEERING APPARATUS. JOSEPH R. JARDINE, San Francisco, Cal. Filed Apr. 9, 1890. Serial No. 347,287. (No model.)



Claim.—1. In a steering apparatus, and in combination with the steering-cylinder and connections for operating the steering device, the compressing-cylinder F, having an escape-pipe extending down into it from its top and connected with the water-tank, a regulated by-pass or relief valve controlling said connection, and a pump for forcing water into the cylinder F and maintaining it under air-pressure, substantially as herein described.

2. In a steering apparatus for steam-propelled bodies, the cylinder F, in which water is maintained under an air-pressure greater than the pressure in the boiler, said cylinder having hydraulic connections with the steering device and a pipe connection with the boiler, whereby the water in said cylinder is utilized to operate the steering device and to feed the boiler, substantially as herein described.

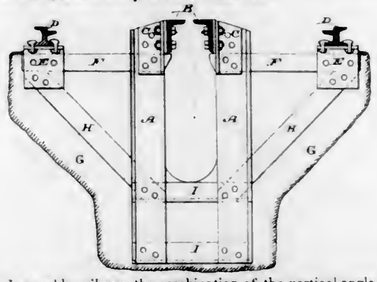
3. In a steering apparatus for steam-propelled bodies, the combination of the cylinder F, the pump for forcing water therein and maintaining it under an air-pressure greater than the pressure in the boiler, hydraulic connections between said cylinder and the steering device, and a valve-controlled pipe connection between the cylinder and the boiler, substantially as herein described.

4. In a steering apparatus for steam-propelled bodies, the combination of the water-tank, the boiler, the cylinder F, the pump connected with the water-tank and with the cylinder, an escape-pipe connection between the cylinder and the water-tank, a regulated relief-valve controlling said connection, a valve-controlled connection between the cylinder and the boiler, and valve-controlled hydraulic connections between said cylinder and the steering device, substantially as herein described.

5. In a steering apparatus, the yoke carrying the steering-wheel, the bolt b' in the head of the yoke, the king-pin journaled on said bolt, the extension b^3 of bolt b', and the fixed curved guide in which the rear end of said extension plays, substantially as herein described.

444,581. CABLE RAILWAY. PATRICK NOBLE, San Francisco, Cal. Filed Oct. 24, 1890. Serial No. 369,232. (No model.)

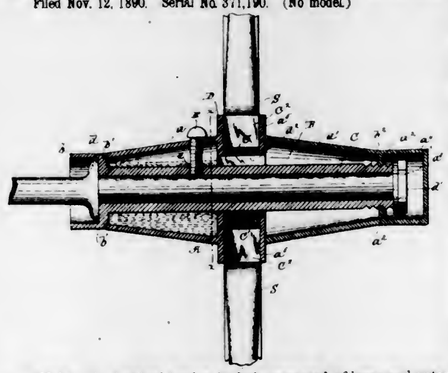
Claim.—1. In a cable railway, the vertical angle-iron bars, the slot-irons and connecting angle-plates by which they are secured to the vertical bars, the tracks and chairs or supports to which they are secured, and the horizontal connecting-bars F, in combination with a body of concrete in which said frame-work is embedded, said concrete having a channel formed through the center and between the angle-iron bars, substantially as herein described.



2. In a cable railway, the combination of the vertical angle iron plates having the inner plane edges upon each side of the tube or tunnel and adjacent thereto, and the angular portion which lies parallel with said tunnel at a distance from its sides, slot-irons secured to the upper ends of said plates by angle-irons bolted thereto, horizontal bars extending outwardly from the upper ends of the vertical angle-iron plates and having the chairs by which the track-rails are supported bolted to their outer ends, the inner ends bolted to the vertical angle-plates and extending inwardly so as to support the lower edges of the slot-irons, and a body of concrete surrounding and embedding said iron frame-work having a tube or tunnel formed in the central portion and between the vertical angle-iron plates, substantially as herein described.

3. In a cable railway, the vertical angle-iron plates having the angular portion parallel with the central tube or tunnel and at the greatest distance therefrom, slot-irons and angular plates by which said irons are bolted or united with the vertical angle-plates, horizontal bars having their inner ends riveted to the vertical plates and extending inwardly beneath the lower edges of the slot-irons, the outer ends secured to chairs upon which the track-rails are secured, diagonal braces extending downwardly and inwardly from these chairs and having their lower ends united to the lower portion of the vertical angle-plates, one or more transverse bars uniting the lower ends of said angle-plates, and a body of concrete embedding said iron frame-work and having a tube or tunnel formed centrally and between the inner edges of the angle-plates and forming a bond around the vertical angular portion of said plates, substantially as herein described.

444,582. AXLE-LUBRICATOR. JAMES SHARKEY, Fishville, Mich. Filed Nov. 12, 1890. Serial No. 371,190. (No model.)



Claim.—1. A wheel having its hub composed of inner and outer sections, one of which forms a cup or receptacle for a lubricant, and a screw working in said latter section for supplying the same to the axle-skein, substantially as set forth.

2. The herein-described wheel, comprising the hub having inner and outer sections, the central sleeve or tube having a hole or aperture, a cup or receptacle being formed by said inner section and the said sleeve, and the thumb-screw working in said hole or aperture and extended through said inner section, substantially as set forth.

3. The herein-described wheel, comprising the hub having inner and outer sections of cone shape, said inner section being provided with a plate or washer at its inner end, the sleeve or tube having a collar with which engages the reduced end of said inner section, the axle-skein, and the nut on the outer end thereof, substantially as set forth.

4. The herein-described hub, comprising the outer section having a threaded wall or partition, the sleeve or tube having a collar at one end, its other end being threaded to engage said wall or partition, the inner section having a plate or washer formed therewith and engaging said collar, and the thumb-screw working in an aperture of said sleeve or tube to regulate the lubricant-supply, substantially as set forth.

5. The herein-described wheel, consisting of the hub having the outer section provided with a reduced end and a threaded wall or partition, the inner section having a plate or washer formed therewith, the axle-skein having a shoulder and a threaded end, the sleeve or tube having a collar at its inner end, a hole or aperture, a thread on its outer end engaging said wall or partition, a rib or flange working in said hole or aperture, the nut on the outer end of said axle-skein, and the end cap inclosing said reduced end of the outer section, said rib or flange fitting correspondingly-shaped slots in the hub-section and spokes, substantially as set forth.

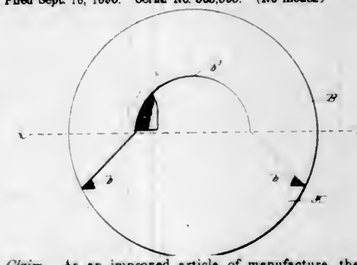
444,583. BANK-ACCOUNT BOOK. WALTER THOMSON, Fargo, N. D. Filed Mar. 19, 1890. Serial No. 344,518. (No model.)



Claim.—1. A bank-account book having leaves of equal size, each leaf having a crease b from top to bottom and a portion b' outside of said crease, which portion, after being folded inward to the left and having balance-entries then made upon it, will, when unfolded and the leaf turned over, show said entries adjacent to the depositors'-names column on the page of said leaf then showing, substantially as specified.

2. The herein-described bank-account book, comprising leaves of equal size, each leaf having a crease b from top to bottom near its outer edge and the column for depositors' names adjoining said crease at the inner side thereof, so that when the said leaf is turned to the left side of the book and the folded-down portion b' unfolded the depositors' names and the balance-entries made on the portion b' while folded will adjoin each other respectively on the right and left of said crease.

444,584. SAD-IRON HEATER. AUGUSTA JACOBY, Langhorne, Pa. Filed Sept. 18, 1890. Serial No. 365,395. (No model.)



Claim.—As an improved article of manufacture, the sad-iron holder or heater for gas or gasoline stoves herein described, consisting of the circular ring or plate, the plate or shield having a continuous flange and a vertical portion and a front central recess, as set forth, said plate or shield being parallel with the upper surface of said ring or plate, to which it is secured, as stated.

444,585. ROUNDABOUT. ALFRED W. ULLYER, Beverly, assignor to Horace I. Bettis, Salem, Mass. Filed Dec. 11, 1889. Serial No. 333,344. (No model.)

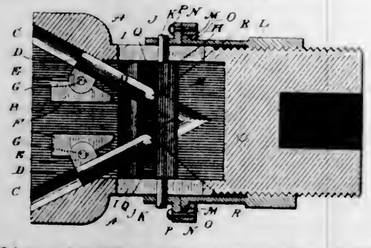
Claim.—1. A roundabout consisting of a cap having a center bearing, a pair of frames pivoted at their upper ends to said cap and having rolling supports at their lower ends, means for moving the lower ends of the frames to and from each other, a revolving and oscillating crown-piece solely supported by the center bearing, an annular carriage, and flexible supports suspending the carriage from the crown-piece, substantially as described.



2. A roundabout consisting of a central supporting-frame having at its upper end a cap provided with a pivot or bearing, a revolving and laterally-oscillating crown-piece solely supported by the pivot or bearing and comprising arches united by a ring or band, an annular seat, and suspension-cables hung from the ring or band and supporting the seat, substantially as described.

3. A roundabout consisting of a pair of frames having supporting-rollers below their lower ends to travel on a horizontal flooring, a cap to which the upper ends of the two frames are pivoted, a revolving crown-piece pivoted to the cap, a passenger seat or carriage suspended from the crown-piece and revolving therewith, and mechanism for moving the lower ends of the frames to and from each other to raise and lower the passenger seat or carriage, substantially as described.

444,586. **DRILL-CHUCK.** NELSON E. AUSTIN, Danbury, Conn. Filed May 27, 1890. Serial No. 353,360. (No model.)



Claim.—1. In a drill-chuck, the combination of the recessed head having inclined ways, the carriers adapted to slide within said ways, the jaws pivoted to said carriers, the slide-block to which said carriers are connected, and means for operating said block, substantially as set forth.

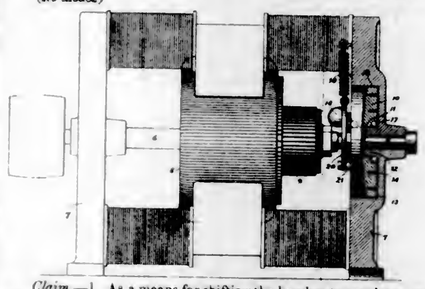
2. In a drill-chuck, the combination of the recessed head having inclined ways, the block adapted to slide longitudinally within said head, the jaw-carriers arranged to slide within said ways and having connection with said block, whereby they are carried and are permitted to have a free vertical movement, a threaded sleeve running on the rear end of the chuck-body, and means for properly connecting said sleeve and block, substantially as set forth.

3. In a drill-chuck, the combination of the slide-block capable of a longitudinal reciprocation within the chuck-head, the jaw-carriers secured to said block except as to vertical movement, and the jaws pivoted to said block, substantially as shown and described.

4. The combination of the jaw-carriers having their rear ends forked, with the slide-block provided with vertical grooves within which the ends of said forks extend, substantially as set forth.

5. The combination of the recessed chuck-head having inclined ways, the carriers adapted to slide within said ways and having forks at their rear ends, the jaws pivoted to said carriers, the slide-block having vertical grooves on opposite sides, within which the said forks extend, the annular ring around the chuck-body, the screws passed within said ring and slide to secure them together, the threaded sleeve on the rear end of the chuck-body, and means for swiveling said sleeve to the ring, substantially as hereinbefore set forth.

444,587. **REGULATOR FOR DYNAMO-ELECTRIC MACHINES.** ROYAL E. BALL, New York, N. Y. Filed Feb. 26, 1890. Serial No. 341,885. (No model.)



Claim.—1. As a means for shifting the brushes to regulate a magneto-electric machine, a movable magnetic body carrying the commutator-brushes and arranged in the yoke-piece of the field-magnets adjacent to the commutator, substantially as described.

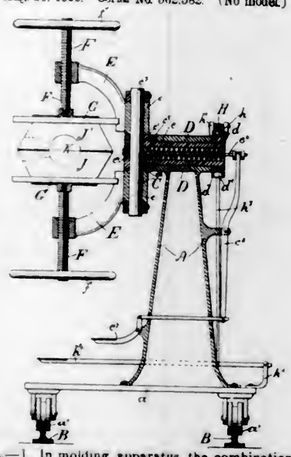
2. As a means for shifting the brushes to regulate a magneto-electric machine, a movable magnetic body carrying the commutator-brushes and arranged in the yoke-piece of the field-magnets adjacent to the commutator, and a sleeve extending from said yoke-piece around the armature-shaft for supporting said body, substantially as described.

3. As a means for shifting the brushes to regulate a magneto-electric machine, a movable magnetic body having axes of different magnetic resistances carrying the commutator-brushes and arranged in the yoke-piece of the field-magnets adjacent to the commutator, and a sleeve extending from said yoke-piece around the armature-shaft for supporting said body, substantially as described.

4. As a means for shifting the brushes to regulate a magneto-electric machine, a movable magnetic body suitably counterbalanced and having axes of different magnetic resistances and arranged in the yoke-piece of the field-magnets adjacent to the commutator, supports for the commutator-brushes carried by said magnetic body, and a sleeve extending from said yoke-piece around the armature-shaft for supporting said body, substantially as described.

5. As a means for shifting the brushes to regulate a magneto-electric machine, a movable magnetic body carrying the commutator-brushes and supported about the armature-shaft by anti-friction ball-bearings in the yoke-piece of the field-magnets adjacent to the commutator, substantially as described.

444,588. **MOLDING APPARATUS.** DAVID CARLIN, Pittsburg, Pa. Filed Aug. 21, 1890. Serial No. 362,582. (No model.)



Claim.—1. In molding apparatus, the combination, with a suitable support, of a rotary or swinging head mounted thereon and mold-supporting plates secured to the head and having a swinging adjustment relative thereto, the said rotary or swinging head forming the sole support for the plates and leaving free access to them in front and on both sides, substantially as set forth.

2. In molding apparatus, the combination, with a suitable support, of a rotary or swinging head mounted on the support and a pair of swinging mold-supporting plates mounted opposite each other on the head and having a swinging movement relative thereto, leaving a free open space for access to the plates in front and on both sides, substantially as set forth.

3. In molding apparatus, the combination, with a suitable support and a rotary or swinging head mounted thereon, of a pair of mold-supporting plates mounted on the head and having swinging movements in the plane transverse to that in which the head rotates or swings, the said plates being mounted in the same axial line in front of the supporting-head, leaving a free space for access thereto in front and on both sides, and means for forcing the mold-supporting plates toward and away from each other, substantially as set forth.

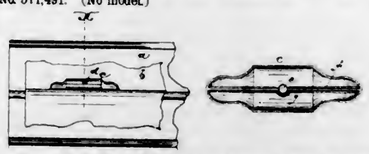
4. In molding apparatus, the combination, with a suitable support and a rotary or swinging head mounted on the support, and a pair of diametrically-opposite bracket-arms mounted on the head and having a swinging movement in unison relative to the head, and a pair of mold-supporting plates supported in front of the swinging head by screws from the said arms, and means for operating the screws to force the plates toward and away from each other, substantially as set forth.

5. In molding apparatus, the combination, with a pair of mold-supporting clamping-plates and a support for the plates, the said support having a rotary or swinging movement to reverse the plates and the plates being located in an axial line in front of their common support, leaving free access between them from the front and both sides, of follow-boards arranged to receive the opposite half of the pattern and form together therewith a core-box, the said follow-boards having a removable adjustment between the said clamping-plates, substantially as set forth.

6. In a molding apparatus, the combination, with a suitable support, a rotary or swinging T-shaped head mounted on said support, and mold-supporting plates secured to the opposite branches of the swinging head, of stops arranged at intervals along the path of the bearing of the head, a latch located in position to engage the stops and lock the head in the desired adjustment, and means for operating the latch, substantially as set forth.

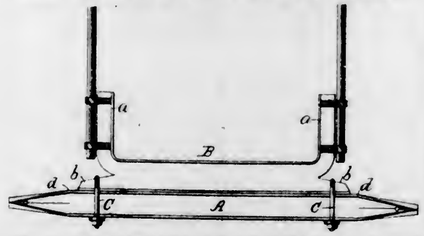
7. In molding apparatus, the combination, with a suitable support, a rotary or swinging head mounted thereon and provided with mold-supporting plates having a rotary adjustment in the swinging head, of a series of stops and a latch, the one secured in the rotary dog and the other upon the rotary plate-support, and a foot-lever connected with the dog for operating it, substantially as set forth.

444,589. **STAIR-CARPET FASTENER.** WILLIAM G. COLLINS, East Orange, N. J. Filed July 27, 1889. Renewed Nov. 15, 1890. Serial No. 371,491. (No model.)



Claim.—The improved stair-button or fastener herein described, consisting of an angular casting which is hollow on the under side, and in the center of said hollow is provided with a longitudinal rib adapted to press the carpet into the angle formed by the step and riser of the stairway, substantially as and for the purposes set forth.

444,590. **VEHICLE AXLE AND BOLSTER.** LUTHER P. FRIESTEDT, Chicago, Ill. Filed Oct. 22, 1890. Serial No. 368,929. (No model.)



Claim.—1. The method herein described of forming a wagon or vehicle bolster, which consists in taking a piece of a metal I-beam and splitting the same inwardly some distance from both ends through the web, then turning the upper split part upwardly at right angles to form integral standards T-shaped in cross-section, substantially as set forth.

2. A wagon or vehicle bolster formed from a metal I-beam and having the respective ends turned upwardly at right angles to form standards integral therewith, substantially as described.

3. A wagon or vehicle bolster consisting of a metal I-beam split inwardly from both ends, the upper and longer split ends being turned upwardly to form standards and the lower or shorter ends lying flatly on the axle, substantially as described.

4. In a wagon or vehicle structure, the combination, with an axle-bar formed from a metal I-beam and having spindles integral therewith, of a bolster formed from a similar beam and rigidly secured to the axle, the respective ends of said bolster being bent upwardly to provide standards, substantially as described

444,591. **WAGON-AXLE.** LUTHER P. FRIESTEDT, Chicago, Ill. Filed Oct. 22, 1890. Serial No. 368,930. (No model.)



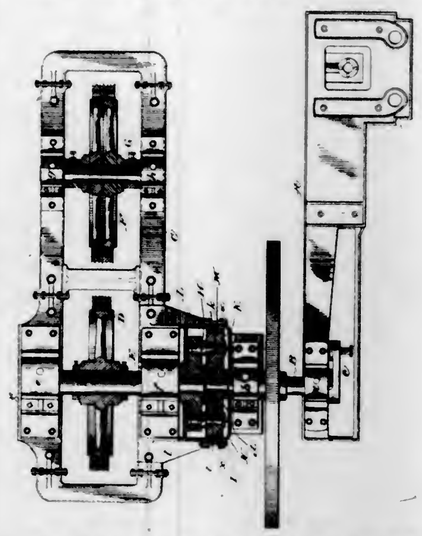
Claim.—1. The method herein described of forming vehicle-axle bars, which consists in notching the web of an I-beam at its ends and then pressing or forcing the said notched portions together to form the required spindle, substantially as set forth.

2. The method hereinbefore described of forming axle-bars, which consists in notching the web of an I-beam at its ends, then pressing or forcing the said notched portions together, and finally rounding or curling the flanged edges to form the required spindles, substantially as set forth.

3. As an article of manufacture, an axle-bar consisting of a metal I-beam of the required length, having V-shaped notches in its web at the ends, whereby said notched parts may be pressed or forced together to form the tapering spindles, substantially as described.

4. The combination, with an axle-bar having apertures in the spindle ends, and thimble-skeins fitting over the said spindles, of bolts having headed ends lodged in said apertures and from thence extending outwardly parallel with and through the spindle ends, and clamping-nuts on said bolts for retaining the thimble-skeins in position, substantially as described.

444,592. **HOISTING MACHINERY.** BENJAMIN W. GRIST, Philadelphia, Pa. Filed Oct. 9, 1890. Serial No. 367,471. (No model.)



Claim.—1. The combination of an engine-frame, a driving-shaft having a pinion secured thereon, a separate hoisting-frame, a shaft thereon supporting a drum and having a head supporting a loose or revoluble pinion, and a fixed annular gear-rack supported by the hoisting-frame.

2. The combination of an engine-frame, an engine-shaft having a pinion secured thereon, a separate hoisting-frame and a separate shaft supporting a drum and having a head attached to the end adjacent to the end of the engine-shaft having the pinion, loose or revo-

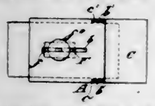
luble pinions attached to said head, and a fixed annular gear rack secured to the frame of the hoisting-drum.

3. The combination of an engine-frame, an engine-shaft supporting a pinion at one end, a shaft supporting a drum and having pinions which engage with the pinion on the engine-shaft, a hoisting-frame, a housing attached to the frame, and an annular gear-rack attached to said housing.

4. The combination of an engine-frame and a shaft having a pinion on one end, a separate hoisting-frame, a separate drum-shaft provided with a head and loose pinions at the end adjacent to the pinion end of the engine-shaft, a housing secured to the hoisting-frame, an annular gear-rack secured to the housing, and a shield attached to the outer edge of said rack.

5. The combination of an engine-frame and a separate hoisting-frame, arranged substantially as shown, an engine-shaft, a hoisting and an idler drum supported by the hoisting-frame, a detachable housing secured to one side and end of said hoisting-frame, an annular gear-rack secured to the housing, a pinion on one end of the engine-shaft, and a head on the drum-shaft supporting loose pinions.

444,593. **TICKET-HOLDER.** BUCKINGHAM ST. J. HOYT, New York, N. Y. Filed Oct. 16, 1890. Serial No. 368,323. (No model.)



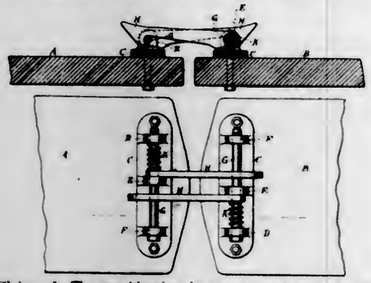
Claim.—1. A ticket-holder comprising a casing having an opening in one end for the passage of tickets, a spring for presenting the tickets opposite the opening, means for engaging one of the tickets to project it from the casing, a retaining device independent of the casing and adapted to engage the edges of the tickets to hold them, and means for retaining the tickets against unintentional displacement, substantially as set forth.

2. The ticket-holder comprising a casing having an opening in one of its ends for the passage of tickets, a spring for presenting the tickets one after another before the opening, a spring device in engagement with the sides of the several tickets to prevent them from unintentional displacement, and a sliding feed device adapted to engage the upper or outermost ticket to force it out of the casing, substantially as set forth.

3. The ticket-holder comprising the casing having an opening in one end for the passage of the tickets, means for feeding the tickets through the opening, a spring-plate for presenting the tickets one after another before the opening, and yielding wings provided with resilient fingers in engagement with the sides of the ticket to prevent them from unintentional displacement, substantially as set forth.

4. The herein-described ticket-holder, composed of a blank which forms the bottom, sides, ends, and portion of the cover, a hinged cover portion, a blank developed into a lifting and edge-retaining spring, and a feeding device, substantially as set forth.

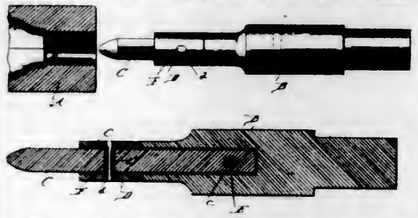
444,594. **CAR-COUPLING.** CHARLES W. HUNT, West New Brighton, N. Y. Filed Oct. 31, 1890. Serial No. 369,946. (No model.)



Claim.—1. The combination, in a car-coupling, of a horizontal pivot-bolt, a plate with lugs for the bolt, a hook with an eye for the bolt and swinging vertically thereon and engaging the similar bolt upon the adjoining coupling, and a spring to press the eye of the hook toward the center of the car, substantially as specified.

2. The car-coupling formed of hooks H, acting in opposite directions, the pivot-bolts G for the hooks, the plates C and lugs D E F, through which the pivot-bolts pass, and the springs K between the sides of the hooks and the lugs D, to press the hooks toward the lugs E, substantially as set forth.

444,595. **DIE-PUNCH FOR MAKING TURN-BUCKLES.** MARTIN KENNEDY, Chicago, Ill., assignor to the U. S. Rolling Stock Company, same place. Filed Mar. 17, 1890. Serial No. 344,108. (No model.)



Claim.—1. In a die-punch for forging turn-buckles, a body or stock B, provided with a punching-stem, in combination with the independent loose collar surrounding the stem just in front of the stock, substantially as and for the purposes specified.

2. In a die-punch for forging turn-buckles, a stock B, in combination with an independent stem C, socketed in said stock, and an independent sleeve or collar D, applied to the stem in front of the stock, substantially as and for the purposes specified.

3. In a die-punch for forging turn-buckles, the stock B, provided with the socket *b*, in combination with the stem C, fitted to said socket, the loose collar D, applied to the stem, and the fastening-pins E and F, substantially as and for the purposes specified.

444,596. **MORTISING-CHISEL.** ALVIN P. LANTERMAN, Chicago, Ill. Filed Apr. 1, 1890. Serial No. 346,237. (No model.)



Claim.—1. A hollow mortising-chisel provided at its cutting end with one or more chip-cutters for severing the chip between the bore formed by the bit, and the surrounding cut made by the cutting end of the chisel, substantially as set forth.

2. A hollow mortising-chisel having a cutting-edge formed by beveling the metal outwardly from its bore at one end of said chisel, and one or more chip-cutters arranged upon said beveled portion, substantially as set forth.

3. A mortising-chisel having a cylindric bore, and a cutting-edge formed by beveling the metal outwardly from the bore to one end of said chisel, and one or more chip-cutters arranged at said beveled portion with their inner wall or walls forming a continuation of the wall of said bore, substantially as set forth.

444,597. **ELECTRIC MAGNETIC MASSAGE-KNEADER.** DAVID LICHTENSTADT and CHARLES LICHTENSTADT, Chicago, Ill. Filed Dec. 8, 1890. Serial No. 373,927. (No model.)



Claim.—1. In a massage-kneader, the combination, with a frame A and a bar C, of a series of elements consisting of zinc and copper disks arranged upon said bar and adapted to be rolled over the surface to be treated, and felt pads *f*, interposed between the said elements, substantially as and for the purpose specified.

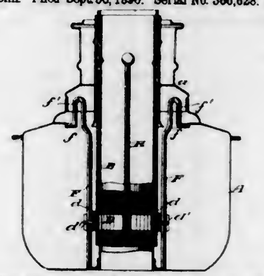
2. In a massage-kneader, the combination, with a frame A, of a bar C, permanently magnetized, and rotating disks mounted upon said bar, substantially as and for the purpose specified.

3. In a massage-kneader, the combination, with a frame A and bar C, of electric elements D, consisting of copper disks *d* and zinc disks *e*, said disks being provided with nipple *g* upon their periphery and being adapted to be rolled over the surface to be treated, and felt pads *f*, substantially as and for the purpose specified.

4. The combination, with a frame A and a bar C, permanently magnetized, of electric elements D, mounted upon said bar, and felt

pads interposed between the said elements, substantially as and for the purpose specified.

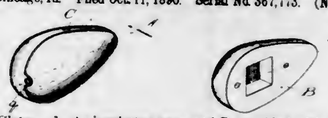
444,598. **WICK-RAISING MECHANISM FOR LAMPS.** BARTLETT P. LUCE, Boston, Mass., assignor to the Bristol Brass and Clock Company, Forestville, Conn. Filed Sept. 30, 1890. Serial No. 366,628. (No model.)



Claim.—1. The combination, with a wick-support and guides located upon opposite sides of the wick-support and spaced therefrom, said guides being provided with receding portions near their ends, of an operating-rod located at the side of the wick-support between the said guides, and a pair of spring grasping-jaws connected with the operating-rod, having a tendency to spring out of engagement with the wick and adapted to automatically follow the guides as they are moved up and down, substantially as set forth.

2. The combination, with a wick-support and guides located upon substantially diametrically-opposite sides of the wick-support and spaced therefrom, said guides being provided with receding portions near their upper ends, of an operating-rod located at the side of the wick-support between the guides, and a pair of grasping-jaws secured to the operating-rod and each having a sliding connection for securing it to one of the guides, whereby the jaws are caused to follow the guides as they are moved up and down to release and grasp the wick, substantially as set forth.

444,599. **ELECTRIC APPLIANCE FOR TRUSSES.** ALVA OWEN, Chicago, Ill. Filed Oct. 11, 1890. Serial No. 367,773. (No model.)



Claim.—1. An insulating truss-pad B, provided with an adjustable and removable metal cap C, having means for connecting with it a conductor *p*, substantially as and for the purpose set forth.

2. A truss-pad B, formed of insulating material and provided with a removable and adjustable metal cap C, conforming in shape to and snugly fitting over the surface of the pad to be brought into contact with the body, and having means for connecting with it a conductor *p*, substantially as and for the purpose set forth.

3. In a truss A, the combination, with the band *r*, of a pad B, of insulating material, and a metal cap C, conforming in shape to and snugly fitting over the surface of the pad to be brought into contact with the body, and thereby adapted to be readily adjusted in place and removed, and an eye *q* on the cap to receive a clasp *o* or hook for connecting a conductor *p* with the cap, substantially as described.

444,600. **MAGNETO-BELL.** WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed May 27, 1890. Serial No. 353,295. (No model.)



Claim.—1. In an electric bell, the combination, with the frame attached to one side of a board, of studs projecting freely through the board and adjustable gong-supporting plates pivoted to said studs, said plates being supported and held free from the board, substantially as and for the purpose specified.

2. The combination, with the metallic frame of an electric bell, of the case or door of the box, to the rear of which the frame is attached, of pivotal supports projecting freely through said door or case of the box, the adjustable plates supporting the gongs pivoted to said supports, said plates being provided each at its free end with an adjustable fastening to a bar *h*, substantially as and for the purpose specified.

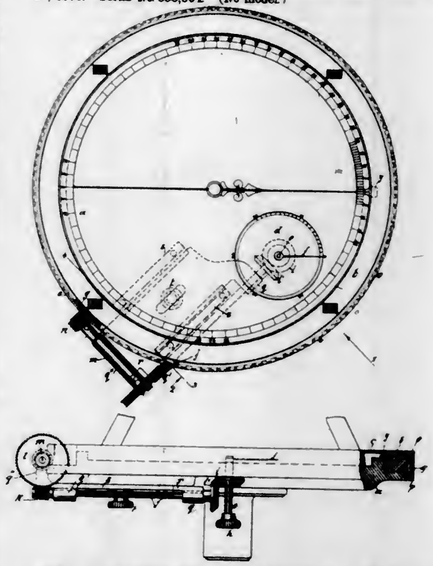
3. The combination, with the gongs of an electric bell supported upon the adjustable plates *e e'*, of the bar *h*, secured at *h'* to the wooden case or door, the sleeves *k k'* and means for holding the same between the bar, and adjustable plates independent of the said wooden door or case, whereby the position of the gongs once adjusted is maintained notwithstanding expansion or shrinkage of the case or door.

4. The combination, with the wooden door or cover, of the frame mounted on the rear side thereof and provided with two studs freely projecting through the board, the bar supported upon the rear of the board and provided, also, with two studs projecting freely through the board, and the adjustable gong-supports upon said studs free from the wooden door or cover, substantially as and for the purpose specified.

444,601. **REMEDY FOR CORNS, &c.** AMABLE ROBIDOUX, Roxton, Canada. Filed Aug. 21, 1890. Serial No. 362,688. (No specimens.) Patented in Canada May 13, 1890, No. 34,316.

Claim.—The medical compound or composition consisting of human urine, coarse salt, copperas, turpentine, and whisky with camphor, substantially in the proportions and for the purposes hereinabove mentioned.

444,602. **TRANSIT-INSTRUMENT.** CLINTON SUTPHEN, New York, N. Y., assignor of one-half to Eugene H. Hinton, same place. Filed May 27, 1890. Serial No. 353,364. (No model.)



Claim.—1. In a transit-instrument, the combination, with the compass circular plate containing a dial having minute subdivisions of a degree arranged within said compass circular plate, of a telescope-plate, the two plates being connected together, so as to be operated in conjunction, by gearing, substantially as described.

2. In a transit-instrument, the combination of the compass circular plate *a*, containing a dial *d* and its index-hand *f*, with a telescope-plate *b*, containing a circular cog-rack upon its outer edge, and intermediate gearing composed of bevel gear-wheels *i i'*, shaft *j*, worm-wheel *k*, cog-wheel *l*, shaft *m*, and worm-wheel *n*, substantially as described.

3. In a transit-instrument, the combination of a dial *d*, its index-hand *f*, bevel gear-wheels *i i'*, shaft *j*, worm-wheel *k*, cog-wheel *l*, shaft *m*, and worm-wheel *n* with the circular cog-rack *g*, placed on the upper plate *b*, substantially as described.

4. In a transit-instrument, the arrangement of a circular cog-rack upon the outer edge or periphery of the telescope-plate *b*, in combination with the compass circular plate *a*, containing a dial *d*, the two plates *a* and *b* being connected by gearing, and a plate or slide *r*, travel-

ing in ways *s s* on the compass-circular plate *a*, so as to permit of disconnecting the gearing on the instrument, substantially as described.

5. In a transit-instrument, the combination, with the compass-circular plate, of a plate carrying the telescope and containing an index-finger or marking-point for coinciding with the north pole of the compass, the two plates being free to turn entirely around on each other, substantially as described.

444,603. CLOTHES-PIN. HARVEY TERRILL, Pittsburg, N. H. Filed July 14, 1890. Serial No. 358,758. (No model.)

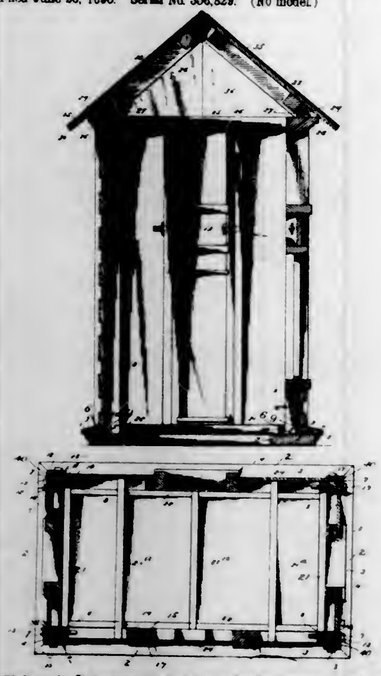


Claim.—1. In a metallic clothes-pin, the combination of a wire doubled to form diverging arms formed with offsets near their free ends and with outwardly-bulged clamping-jaws at said ends, and having the upper doubled end bent to form an eye at a right angle to said arms, with a wire having its upper end formed into an eye or ring sliding in the eye of said doubled wire and formed with a ring or slide at its lower end, which slides upon the arms of said wire and engages the offsets upon the same, substantially as described.

2. In a metallic clothes-pin, the combination of the wire 1, doubled to form the arms 2, having the offsets 4 and jaws 5 bent to form the eye 3, and having the loop 6″ formed upon one of said jaws, with the wire 7, having the eye or ring 8 at its upper end and the ring or slide 9 at its lower end, which slides upon said arms 2, substantially as described.

3. In a metallic clothes-pin, the combination of the wire 1, doubled to form the arms 2, bent to form the eye 3 and the shoulder 10 and having the bulges 4, and the jaws 5, one of which is doubled at its end and returned to form the guide-loop 6″, with the wire 7, sliding in the eye 3, having the ring 8 at its upper end and the ring or slide 9 at its lower end, which slides upon and clamps said arms 2, substantially as described.

444,604. PORTABLE HOUSE. HENRY W. BAKER, Keyser, W. Va. Filed June 26, 1890. Serial No. 356,829. (No model.)



Claim.—1. In combination, the base having an angular channel 6 extending along it, with an overhanging edge 6ª, the vertical corner and side posts having angular lugs at their lower ends adapted to fit the channel beneath the overhanging edge, and means for supporting the posts in position, substantially as described.

2. In combination, the base having an angular channel 6, the vertical posts having lugs on their outer sides at their lower ends fitting in said channel beneath its overhanging edge 6ª, and the braces bearing on the inner sides of the posts and forcing them outward, so that the lugs will fit in the channel, substantially as described.

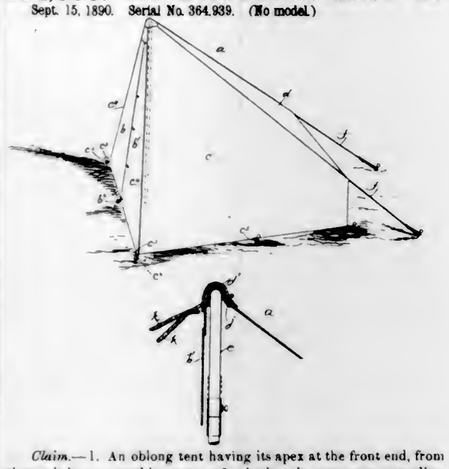
3. In combination, in a portable house, the base consisting of the flat boards 2, the sills 3, secured thereto, having the inner face 5 inclining from its edge 6ª downward and outward and forming an angular channel 6 with the boards 2, the posts having lugs on their outer side adapted to the angular channel, and, the means for holding the posts in position, substantially as described.

4. In a portable house, the combination, with the base having the inclined channel formed horizontally therein, the side and corner posts having the lower ends notched to interlock with said channel, the grooves in the inner opposite faces of said posts, the tongue fitting in said grooves, the sections supported and sustained by the said corner and side posts, the top fitting on the posts and sections, the inclined roof-supporting bars secured and supported on the top, said bars having recesses in the sides thereof, the roof-timbers, the strips or bars secured to the under sides of said timbers and having their ends fitting in the recesses in the sides of the roof-supporting bars, and the metal plates connecting the roof-timbers near their side edges, substantially as described.

5. In a portable house, the combination of the base having the horizontally-disposed inclined channel therein, the corner and side posts having their lower ends notched to fit and lock in said channel, the grooves in the outer and inner sides of the posts, the sections fitting in the grooves in the outer faces, the tongues fitting in the grooves in the inner faces, the bolts or keys for connecting the parts of the said posts, the top resting and supported on the posts and sections, the inclined roof-supporting bars supported on said top, the roof-timbers secured to the supporting-bars, and the yielding metal plates connecting the roof-timbers, substantially as described.

6. In a portable house, the combination of the base, the corner and side posts having their lower ends secured to the base, the grooves in the inner and outer walls of said posts, the tongues fitting in the grooves in the inner walls, the sections fitting in the grooves in the outer walls, the springs or yielding keys for securing the posts together, the windows and doors fitted between the side posts, the boxes formed in the side posts, the top resting on the walls and posts, and the roof supported by the top.

444,605. TENT. ALPHONSO S. COMSTOCK, Evanston, Ill. Filed Sept. 15, 1890. Serial No. 364,939. (No model.)



Claim.—1. An oblong tent having its apex at the front end, from whence it is supported by means of a single pole, guy-ropes extending from the pole in line with the rear corners, and a front section arranged in a plane oblique to the axis of the pole, whereby said front may be rendered taut to oppose the tensional strain of said guy-ropes, substantially as shown and described.

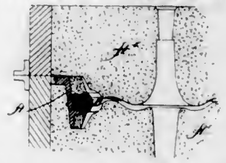
2. A tent having its front, sides, and rearwardly-slanting top arranged to converge to a single point forming the apex of the tent, at which point it is supported by means of a single pole located at the front of said tent, and means for bracing the same, substantially as described.

3. An oblong tent having its apex at the front end, from whence it is supported by means of a single pole, guy-ropes extending from the pole in line with the rear corners, and supplemental guy-ropes extending forward obliquely to the plane of the front of the tent, substantially as shown and described.

4. An oblong tent having its apex at the front end, from which it is supported by means of a single pole, guy-ropes extended from the pole in line with the rear corners, supplemental guy-ropes extending forwardly in lines oblique to the plane of the front of the tent, and a reversible flap *m*, adapted to fit over said front guy-ropes and form a continuation of one of the sides of the tent, thereby serving as a storm-screen to protect the doorway, substantially as shown and described.

5. The combination, with a tent having a pole at the front and forwardly-projecting guy-ropes, of the trapezium-shaped flap *m*, substantially as shown and described.

444,606. CHILL-MOLD FOR PULLEYS. FRANCIS M. DAVIS, Denver, Colo. Filed Dec. 30, 1889. Serial No. 335,313. (No model.)

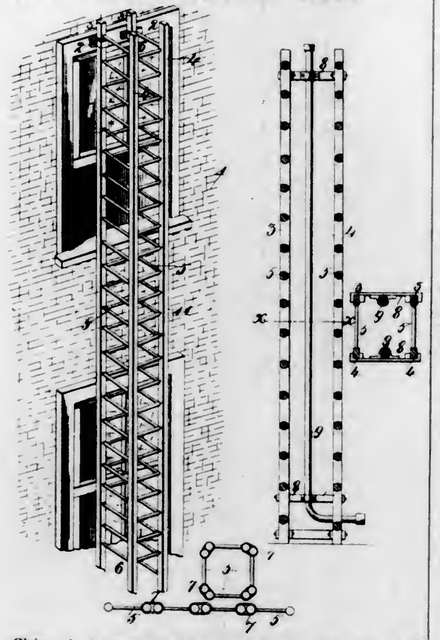


Claim.—1. In an apparatus for casting sheave-pulleys, a chill-seat A, to be placed in the mold, an annular chill B, supported by said seat, extending inwardly about midway thereof to leave a space above and below within the seat for the sand, substantially as described

2. In combination, the seat having an interior flange, and the movable chill B, supported by said flange and projecting inwardly beyond the same, leaving a space above and below within the seat for the reception of the sand, substantially as described.

3. In combination, the seat and the chill supported about midway thereof, said chill having its upper and lower surfaces inclining and converging outwardly, substantially as described.

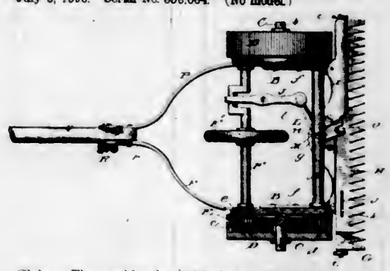
444,607. FIRE-ESCAPE LADDER. ELEANORE EDER, St. Louis, Mo. Filed Nov. 3, 1890. Serial No. 370,182. (No model.)



Claim.—1. A permanent fire-escape ladder consisting of a shaft 6, the front and back sides provided with rounds and the lateral sides thereof provided with sliding poles, as and for the purposes specified.

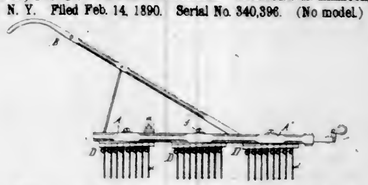
2. A permanent fire-escape ladder having a shaft provided with a combined tubular sliding pole and water-pipe, substantially as set forth.

444,608. LAWN-MOWER. EDWIN N. FOX, Winchester, Va. Filed July 8, 1890. Serial No. 358,064. (No model.)



Claim.—The combination, with the end disks and the rod connecting them, of the crank-shaft actuated from the wheels, the cutter-bar, and the pivotal connections, consisting of the vertical rod having the lower forked horizontal arm N, the pintles, and upper horizontal arm L, with ball *l* and the pitman J, substantially as described, between said vertical rod and the cutter-bar and crank-shaft, as set forth.

444,609. WEEDING-MACHINE. VALENTINE H. HALLOCK, Queens, N. Y. Filed Feb. 14, 1890. Serial No. 340,396. (No model.)



Claim.—1. A weeding-machine consisting of a frame having secured to its under side a number of separate blocks, each carrying a multiplicity of closely-set spring-teeth, said machine, with its blocks of spring-teeth, being adapted to be traversed between the rows of growing plants, substantially as described.

2 A weeding-machine consisting of a frame with fixed and adjustable bars having secured to their under sides separate detachable blocks, each carrying a multiplicity of closely-set spring-teeth, the machine being adapted to be traversed between the rows of growing plants, substantially as set forth.

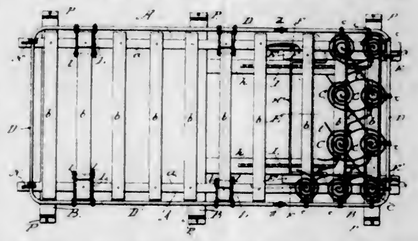
3. A weeding-machine consisting of a frame and a series of blocks, each with a multiplicity of closely-set spring-teeth like a brush, and with a bolt to secure the block to the frame, whereby the said block may be adjusted in a rotary direction about its securing-bolt, as and for the purpose set forth.

4. A weeding-machine consisting of a frame and a series of blocks, each with a multiplicity of spring-teeth and secured to the under side of the said frame, with the lower ends of the forward teeth higher than the lower ends of the rear teeth of each block, all substantially as and for the purpose set forth.

5 A curry-comb block for a weeding-machine, consisting of a backing with clamping-strips and fastening-bolts and a multiplicity of spring-teeth made in pairs, formed each pair with a central loop clamped between the strips, coils below the loop, and the two free ends forming the acting ends of the teeth, all substantially as described

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444,610. SPRING BED-BOTTOM. LEONARD B. HOUSTON, San Antonio, Tex. Filed Feb. 13, 1890. Serial No. 340,246. (No model.)

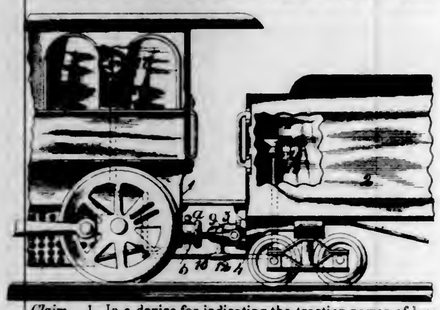


Claim.—1. An improved bed-bottom comprising the transverse bars B, the longitudinal bars secured to said transverse bars, and the slats, said longitudinal bars having their inner sides grooved or slot-

ted, a supplemental frame consisting of the longitudinal bars E', having the slats at the head portions secured to them and provided with pins at their inner ends engaging the grooves in the main longitudinal bars, springs secured to the slats, a jointed frame D, surrounding the upper ends of the springs, and supplemental side springs securing said jointed frame to the slats, substantially as herein described.

2. A main frame having slats and springs and a metallic frame encircling said springs, in combination with the curved brace-springs L, having the coils *l* and loops *m* pressing on top of the slats, said springs being secured to the slats and metallic frame, and the rods N, secured to said frame and passing through the ends of the slats, substantially as and for the purpose specified.

444,611. DYNAMOMETER FOR LOCOMOTIVES. ROBERT H. INNES, El Paso, Tex. Filed May 26, 1890. Serial No. 353,196. (No model.)



Claim.—1. In a device for indicating the traction power of locomotives, a draw-head, a chamber containing a liquid located therein, a piston operating in said chamber, means for connecting said piston with the opposite draw-head, suitable tubing connecting with the said chamber, and a pressure-gage mounted upon or attached to the said tubing and actuated by the said liquid, substantially as described.

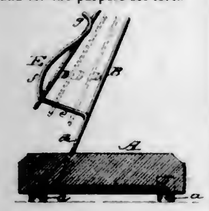
2. In a device for indicating the traction power of locomotives, a draw-head, a chamber located therein adapted to contain a liquid, a piston or the like working in the draw-head and bearing against the liquid in said chamber, means for connecting said piston with the opposite draw-head, and means whereby the pressure on said liquid may be registered, substantially as described.

3. In a device for measuring the traction power of locomotives, the combination, with a draw-head, of a chamber located therein adapted to receive a liquid, slots in the sides of the chamber, forming guides, a piston or the like having a cross-head working in the guides and operated by the pressure of the liquid in the chamber, and means for connecting said piston with the opposite draw-head, in combination with means for determining the pressure on said liquid, substantially as described.

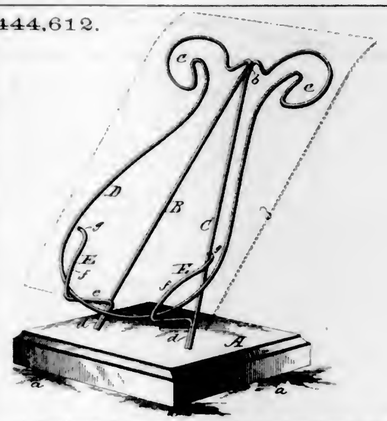
4. In a device for indicating the traction power of locomotives, the combination, with a draw-head, a chamber located therein adapted to receive a liquid, slots in the sides of the draw-head, forming guides, a piston bearing against the liquid in the chamber and having a cross-head working in said guides, and a stirrup 11, secured to the cross-head for engagement with the opposite draw-head, of a water-supply pipe leading from said chamber and connected with a suitable tank or the like, a valve located in said pipe adapted to admit water to the chamber but prevent its discharge therefrom, and means for indicating the pressure of the liquid within the chamber, substantially as described.

444,612. COPY-HOLDER. THOMAS K. S. MCGRIFF, Chicago, Ill. Filed Oct. 29, 1890. Serial No. 369,659. (No model.)

Claim.—1. The wire fingers E and arms B C, said arms being bent around and downward to form a spring-support D, which is located between the arms and fingers and capable of movement independent thereof, substantially as and for the purpose set forth

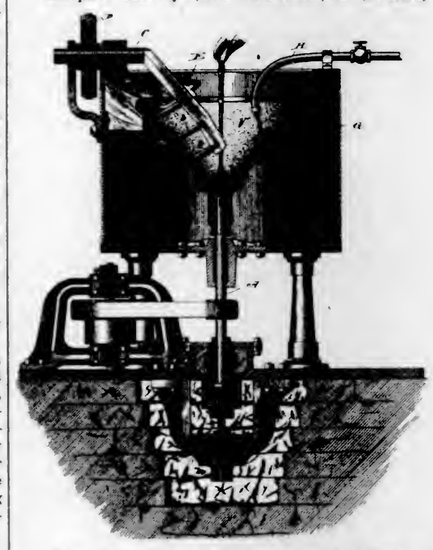


444,612.



2. The fingers E, having the bends *d e f* and terminating in curved ends *g*, in combination with the arms B C and the spring-support D, said arms being connected together at their upper ends and bent outward, as shown, substantially as and for the purpose specified.

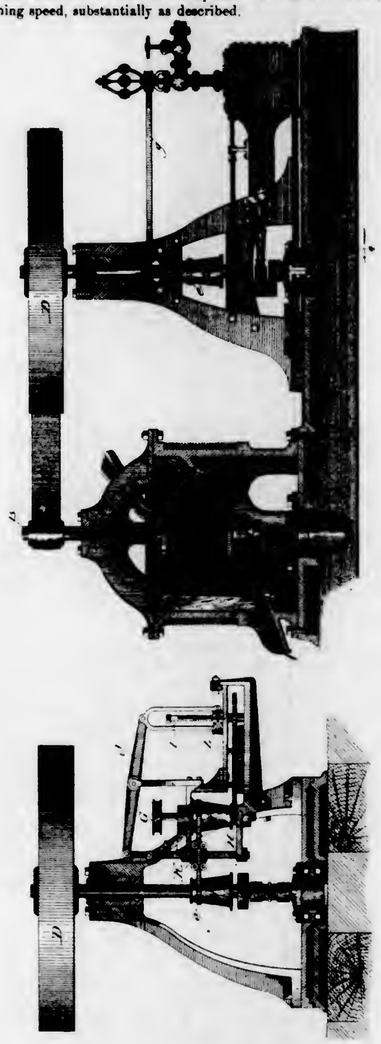
444,613. APPARATUS FOR SEPARATING PARTICLES OF METALLIC OR MINERAL-BEARING SUBSTANCES OF DIFFERENT SPECIFIC GRAVITY. ORRIN B. PECK, Chicago, Ill, assignor to Melinda Peck, same place. Filed May 10, 1889. Serial No. 310,274. (No model.)



Claim.—In an apparatus for separating particles of different degrees of specific gravity contained in metallic or metal-bearing substances, the combination of a revoluble receiving-vessel adapted to receive the material to be treated while in a fine or powdery condition, having its sides or walls flaring or increasing in horizontal diameter from the bottom to the top, a stirrer or agitator arranged in the receiving-vessel, but non-rotatable therewith and adjustable toward or from its sides or walls, a cutter or scoop arranged in the receiving-vessel, but non-rotatable therewith, with its operative or open end against the direction of rotation and adjustable toward or from its sides or walls, a revoluble actuating-shaft rotating said vessel as it revolves, and means for rotating the actuating-shaft, substantially as described.

444,614. PROCESS OF CENTRIFUGALLY TREATING PARTICLES OF METALLIC OR MINERAL-BEARING SUBSTANCES. ORRIN B. PECK, Chicago, Ill., assignor to Melinda Peck, same place. Filed May 23, 1890. Serial No. 352,907. (No specimens.)

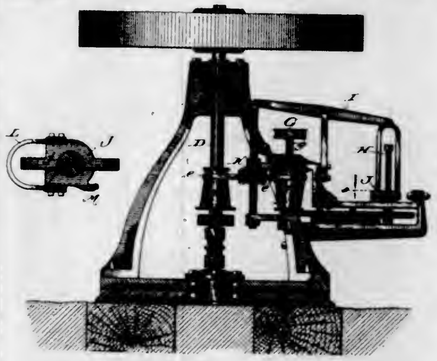
Claim.—The process of treating and separating particles of metallic or mineral-bearing substances of different degrees of specific gravity, which consists in subjecting them as introduced to the action of centrifugal force in a revoluble vessel rotating at a high degree of speed at the commencement of the operation and afterward at a diminishing speed, substantially as described.



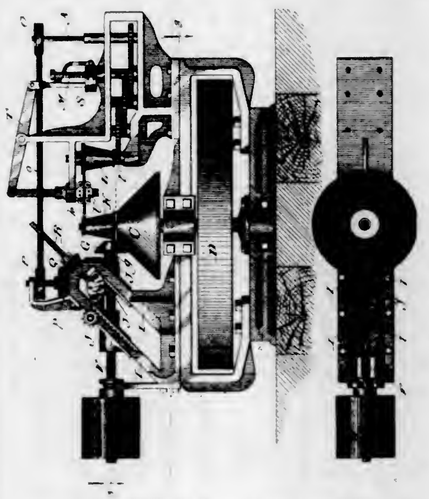
444,615. MACHINERY FOR CENTRIFUGALLY TREATING PARTICLES OF METALLIC OR MINERAL-BEARING SUBSTANCES OF DIFFERENT DEGREES OF SPECIFIC GRAVITY. ORRIN B. PECK, Chicago, Ill., assignor to Melinda Peck, same place. Filed May 23, 1890. Serial No. 352,908. (No model.)

Claim.—1. In machinery for centrifugally treating and separating particles of metallic or mineral-bearing substances, the combination of a revoluble vessel, means for rotating such vessel, and means for gradually and automatically decreasing its speed of rotation from the commencement to the end of the operation, substantially as described.

2. In machinery for centrifugally treating and separating particles of metallic or mineral-bearing substances, the combination of a revoluble vessel, an engine generating and supplying power for the rotation of such vessel, means for transmitting and applying such power, and means for gradually and automatically decreasing the speed of the engine, and thereby the speed of rotation of the revoluble vessel, from the commencement to the end of the operation, substantially as described.



444,616. MACHINERY FOR CENTRIFUGALLY TREATING PARTICLES OF METALLIC OR MINERAL-BEARING SUBSTANCES OF DIFFERENT DEGREES OF SPECIFIC GRAVITY. ORRIN B. PECK, Chicago, Ill., assignor to Melinda Peck, same place. Filed May 23, 1890. Serial No. 352,909. (No model.)



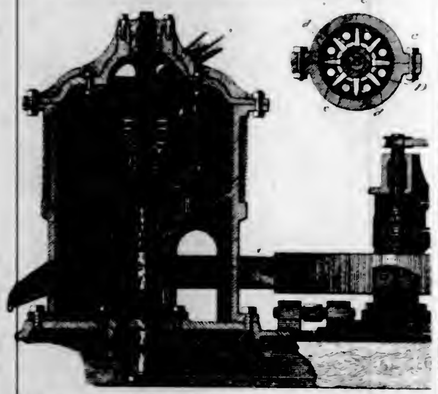
Claim.—1. In machinery for centrifugally treating and separating particles of metallic or mineral-bearing substances, the combination of a revoluble vessel, means for rotating such vessel, and means for gradually and automatically decreasing its speed of rotation from the commencement to the end of the operation in a constantly and gradually increasing degree or rate to decrease the centrifugal force developed gradually and as nearly uniformly as practicable, substantially as described.

2. In machinery for centrifugally treating and separating particles of metallic or mineral-bearing substances, the combination of a revoluble vessel and means for rotating such vessel, comprising, among other things, beveled friction gear-wheels, of which one is movable along the bevel surface of the other over its different diameters, while remaining in frictional contact therewith, substantially as described.

444,617. MACHINERY FOR CENTRIFUGALLY TREATING PARTICLES OF METALLIC OR MINERAL-BEARING SUBSTANCES OF DIFFERENT DEGREES OF SPECIFIC GRAVITY. ORRIN B. PECK, Chicago, Ill., assignor to Melinda Peck, same place. Filed May 23, 1890. Serial No. 352,910. (No model.)

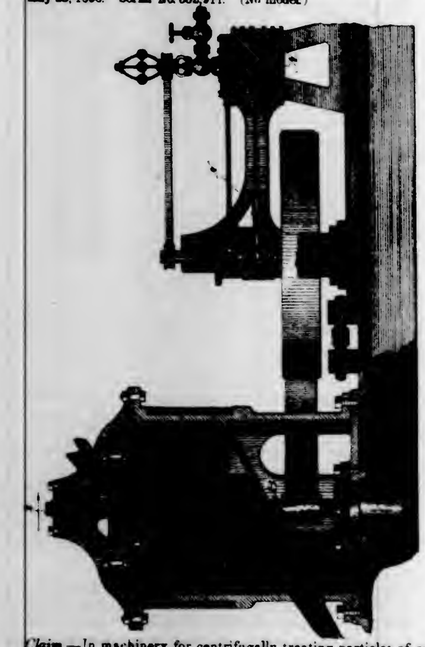
Claim.—1. In machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity, the combination of a revoluble vessel, a revoluble shaft ro-

tating it as it revolves, a non-revoluble spout or casing through which the material to be treated is introduced, and a stirrer, agitator, or mixer within the spout or casing and revolving therein to agitate or mix the material being introduced, substantially as described.



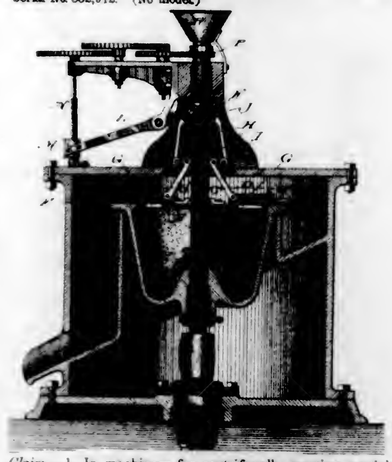
2. In machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity, the combination of a revoluble vessel, a revoluble shaft extending through the vessel and rotating it as it revolves, a non-revoluble spout or casing surrounding the shaft and provided with projecting flanges and through which the material to be treated is introduced, and a sleeve provided with projecting pins surrounding the shaft and within the spout or casing and revolving therein to agitate or mix the material being introduced, substantially as described.

444,618. MACHINERY FOR CENTRIFUGALLY TREATING PARTICLES OF METALLIC OR MINERAL-BEARING SUBSTANCES. ORRIN B. PECK, Chicago, Ill., assignor to Melinda Peck, same place. Filed May 23, 1890. Serial No. 352,911. (No model.)



Claim.—In machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity, the combination of a revoluble vessel, a revoluble shaft rotating it as it revolves, and a revoluble flexible covering within the vessel free or unconfined at the upper edge, beneath which the material is introduced and treated and from beneath which it forces a way of escape aronnd the free or unconfined upper edge, substantially as described.

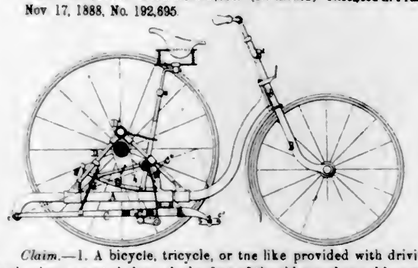
444,619. MACHINERY FOR CENTRIFUGALLY TREATING PARTICLES OF METALLIC OR MINERAL-BEARING SUBSTANCES OF DIFFERENT DEGREES OF SPECIFIC GRAVITY. ORRIN B. PECK, Chicago, Ill., assignor to Melinda Peck, same place. Filed May 23, 1890. Serial No. 352,912. (No model.)



Claim.—1. In machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity, the combination of a revoluble vessel having discharge-openings, means for gradually and automatically moving the points of discharge toward the axis of rotation of the vessel, and means for rotating the vessel, substantially as described.

2. In machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity, the combination of a revoluble vessel having discharge-openings, means for gradually and automatically diminishing the discharge-openings from their outer sides toward the axis of rotation of the vessel, and means for rotating the vessel, substantially as described.

444,620. VELOCIPEDE. CAMILLE A. ROUVEYRE, Paris, France. Filed Mar. 4, 1890. Serial No. 342,680. (No model.) Patented in France Nov. 17, 1888, No. 192,695.



Claim.—1. A bicycle, tricycle, or the like provided with driving mechanism operated through the feet of the rider, and a rocking seat for the latter independent of the said driving mechanism, whereby motion may be transmitted from the rocking seat to the driving mechanism through the body of the rider, all substantially as set forth.

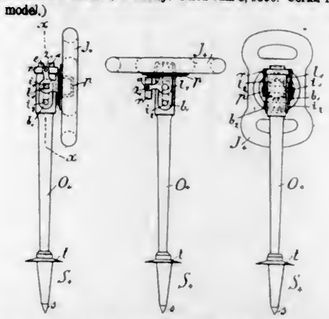
2. A wheeled vehicle provided with treadle-driving levers and a rocking seat for the rider independent of the said levers, whereby motion may be transmitted from the rocking seat to the said levers through the body of the rider, all substantially as set forth.

3. A wheeled vehicle having treadle-levers, mechanism to impart a rotary motion to the wheels from the treadle-levers, and a rocking seat for the rider independent of the said levers, whereby motion may be transmitted from the rocking seat to the levers through the body of the rider, all substantially as described.

4. A wheeled vehicle having treadles, pawl-and-ratchet mechanism between the treadles, and driving-wheels to impart a rotary motion to the latter from the treadles, and a rocking seat for the rider independent of the said treadles, whereby motion may be transmitted from the rocking seat to the treadles through the body of the rider, all substantially as described.

5. In a bicycle, tricycle, or the like, the combination of the frame, a support for the seat, a sector to which the support is secured rocking in the frame, and guides for each end of the sector, substantially as and for the purposes set forth.

444,621. COMBINED CANE AND CAMP-STOOL. AUGUST SCHNEIDER, Dresden-Neustadt, Germany. Filed Jan. 8, 1890. Serial No. 336,322. (No model.)



Claim.—1. A camp-stool consisting of the seat J^4, provided with a socket p, a staff having its upper end bifurcated and fitted to said socket, the lugs having the ring r held thereby, the pivot-pin i' in the bifurcated end of the staff, and the links having their pin i^2 also in the said bifurcated end of the staff, substantially as described.

2. In combination, a seat having a socket, a staff having its upper end slotted longitudinally, forming a bifurcated end, adapted to fit said socket, and a detachable sliding and pivotal connection between the seat and staff, consisting of the lugs having the pin i', adapted to the slot in the staff, and means for clamping the said connection to the staff, substantially as described.

444,622. DENTAL PLATE. RAYMOND J. WENKER, Watertown, Wis. Filed Aug. 14, 1890. Serial No. 361,978. (No model.)



Claim.—A metallic dental roof-plate adapted to cover the roof of the mouth and having a series of projections bent alternately in different directions, substantially as set forth.

444,623. FILTER. WILLIAM W. WHIDDIT, Newburg, N. Y. Filed Apr. 23, 1890. Serial No. 349,127. (No model.)



Claim.—1. In a filter, the combination of a frame, reservoirs supported thereon, separated by open air-spaces, and containing screens for holding the filtering material, gearing for reversing the reservoirs, and an adjustable screen for carrying off the water underneath the filtering material during the cleansing of the filter, as set forth.

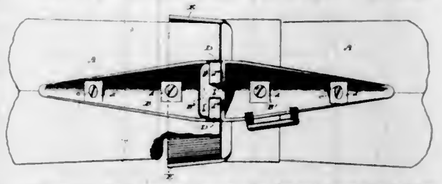
2. A filter composed of a frame A, reservoirs 1 2 3, supported and reversible upon frame-bearings C E, the interior screens L M, containing filtering material W, the delivery-reservoir G, inlet and outlet pipes I H, and the discharge-screen K, supported and adjustable upon frame-rods k k, all substantially as and for the purpose described.

444,624. CIGAR-BLANK. HARRY N. ANDERSON, Boston, Mass., assignor to William S. Rowe, same place. Filed Dec. 18, 1890. Serial No. 375,055. (No model.)



Claim.—A cigar-blank consisting of a flat filler composed of superposed flat layers, a binder folded as a cover upon the flat filler and covering both sides of the same, and a wrapper attached at one end to the binder and extending diagonally therefrom, whereby when the blank is rolled into a cigar the wrapper will assume its proper position on the cigar, as set forth.

444,625. HORSE-COLLAR FASTENER. PERLEY P. ARMOUR, Burlington, Wis. Filed July 26, 1890. Serial No. 359,977. (No model.)



Claim.—1. An improved horse-collar fastener consisting of two oppositely-acting members, one of which is provided at its engaging end with a T-shaped head and the opposite member of which is provided at its engaging end with a laterally-extending socket-piece having two slots extending at right angles to each other, one of said slots extending transversely to the length of the socket-piece and being open at its outer end, substantially as set forth.

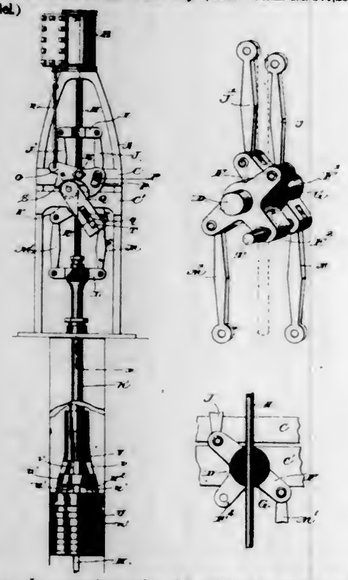
2. The combination, with a horse-collar, of two V-shaped coupling members having perforated bosses and secured to opposite ends of the collar, one of the members having at one end a lateral socket-piece which is formed with two slots extending at right angles to each other, one of which slots extends transversely to the length of the socket-piece and is open at its outer end, and the opposite member having at one end a T-shaped head to engage said socket, substantially as set forth

444,626. LUBRICATING COMPOUND. WILHELM BRIEGK, Linden, near Hanover, Germany. Filed Sept. 25, 1890. Serial No. 366,115 (No model.) Patented in Belgium Nov. 15, 1889, No. 88,259; in France Jan. 13, 1890, No. 201,654, and in Austria-Hungary Feb. 7, 1890, No. 47,118 and No. 70,568.

Claim.—1. The process for improving mineral oils for lubricating purposes by spreading finely divided or comminuted caoutchouc over the bottom of a suitable vessel, supplying successive quantities of the oil to the caoutchouc and stirring or agitating the mixture, and then filtering the resulting compound, the entire operation being carried on at the ordinary temperature, substantially as described.

2. The process for dissolving caoutchouc in mineral oils at the ordinary temperature, which consists in spreading over the bottom of a vessel about one part, by weight, of caoutchouc in a thin layer, covering this layer with about three parts, by weight, of mineral oil, allowing the whole to stand from twenty-four to forty-eight hours, then adding about twenty parts, by weight, of mineral oil, agitating and filtering the mixture, then exposing the residue which remains on the filter to additional successive quantities each of about twenty parts, by weight, of mineral oil, and agitating and filtering such successive mixtures, substantially as described

444,627. PUMPING-ENGINE. ROBERT M. DOWNIE and JOHN G. DOWNIE, Beaver Falls, Pa. Filed July 7, 1888. Serial No. 279,251. (No model.)

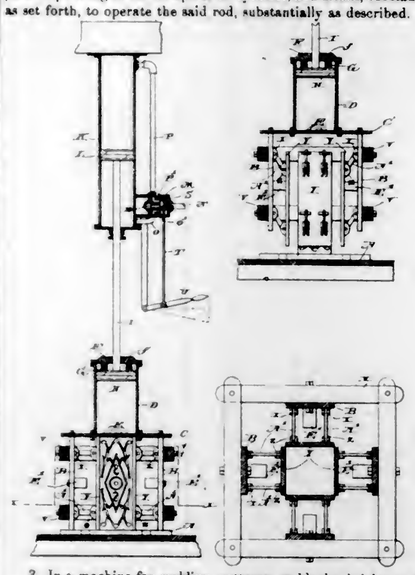


Claim.—In a pumping-engine, the combination of the rod K and piston-rod H, each carrying a plunger, the plunger of the rod K moving in an opposite direction to the plunger of rod H, said plunger having a valve playing loosely over the outside thereof and provided with openings, the areas of which openings combined are as great as or greater than the area of the cross-section of the cylinder in which the plunger works, whereby one plunger on the upstroke will raise an amount of water equal to the volume of the cylinder within the limits of the stroke and the other plunger in the downstroke will pass an amount of water equal to the volume of the cylinder without undue friction, as set forth.

444,628. APPARATUS FOR MOLDING PATTERNS ON HOLLOW BRICKS, TILES, &c. ROBERT M. DOWNIE, New Brighton, Pa. Filed Mar. 3, 1888. Serial No. 302,421. (No model.)

Claim.—1. In a machine for molding patterns on blocks, bricks, tiles, &c., the combination of the compression-cylinder, the vertically-movable frames suspended therefrom, the presser-plates adapted to encompass a hollow block, brick, or tile while the same is plastic, so as to form a hermetically-sealed joint between the several presser-plates, the latter being held stationary while the block or tile is being expanded, the flexible connections between the vertically-movable frames and the presser-plates, the rod having the piston operating in the compression-cylinder, and means, substantially as set forth, for operating the said rod, substantially as described.

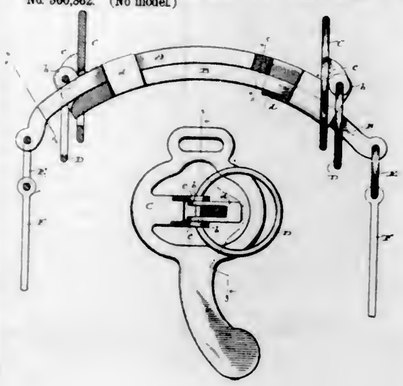
2. The combination of the compression-cylinder, the vertically-movable frames suspended therefrom, the presser-plates adapted to encompass a hollow block, brick, or tile while the same is plastic and held stationary while the block, brick, or tile is being expanded, the links connecting the presser-plates to the frames, the rod having the piston operating in the compression-cylinder, and means, substantially as set forth, to operate the said rod, substantially as described.



3. In a machine for molding patterns on blocks, bricks, or tiles, the combination of the compression-cylinder, the plate C, rigidly attached to the base thereof, the vertically-movable frames connected to and suspended from said plate, the presser-plates adapted to encompass a hollow block, brick, or tile while the same is plastic, so as to form a hermetically-sealed joint between the several presser-plates, the latter being held stationary while the block, brick, or tile is being expanded, the pivotal links connecting the presser-plates to the frames, the piston or plunger in the compression-cylinder, and means, substantially as set forth, to operate the same, substantially as described.

4. The combination of the compression-cylinder, the plate C, rigidly attached to the base thereof, the vertically-movable frames connected to and suspended from the said plate, the presser-plates adapted to encompass a hollow block, brick, or tile while the latter is plastic, so as to form a hermetically-sealed joint between the several presser-plates, the pivotal links connecting the presser-plates to the frames, the base-plate A, the piston or plunger in the compression-cylinder, the steam, air, or gas cylinder, the piston therein, and the rod connecting said piston to the compression-plunger, substantially as described.

444,629. BRIDLE-BIT. RICHARD EMERSON, Racine, WIS., assignor of one-half to William H. Pugh, same place. Filed Aug. 4, 1890. Serial No. 360,862. (No model.)



Claim.—1. A bridle-bit having two mouth-bars, each of which has a laterally-enlarged and recessed end portion loosely engaging the remaining portion of the other and a cheek-plate connected to said end portion of each mouth-bar, substantially as set forth.

2. A bridle-bit having two mouth-bars, each of which has a laterally-enlarged and recessed end portion loosely engaging the remaining portion of the other, a cheek-plate connected to said end portion of each mouth-bar, and rings connected to the free end of the respective mouth-bars, substantially as set forth.

3. A bridle-bit having two mouth-bars, each of which has a laterally-enlarged and recessed portion engaging the remaining portion of the other, lugs on the recessed portions of the mouth-bars, cheek-plates also provided with lugs in register with those aforesaid, rings passed through the registering lugs, and other rings passed through the free ends of said mouth-bars, substantially as set forth.

4. A bridle-bit having two mouth-bars, each of which has a laterally-enlarged portion thereof in the form of a mouth guard or shield, the remaining portion of one mouth-bar arranged to slide in the mouth guard or shield of the other, and cheek-plates connected to the respective mouth-guards, substantially as set forth.

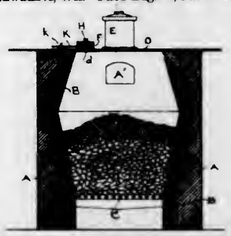
444,630. SCHOOL FURNITURE. OLIVER S. GARRETSON, Buffalo, N. Y. Filed June 14, 1884. Serial No. 134,898. (No model.)



Claim.—1. The combination, with a board provided with an undercut groove having serpentine or wavy sides, of a rib or tongue having on its sides alternate projections and depressions adapted to enter said groove and be locked therein by an endwise or longitudinal movement of the tongue in the groove, substantially as set forth.

2. The combination, with a supporting-frame provided with a dovetail tongue of serpentine form lengthwise, of a plank provided with a dovetail groove of serpentine form made wider than the tongue, whereby the parts are secured together by dropping the plank with its groove over the tongue and moving the tongue lengthwise in the groove, substantially as set forth.

444,631. POKE-HOLE FOR GAS-PRODUCERS. GEORGE W. GOETZ, Milwaukee, Wis. Filed Aug. 27, 1890. Serial No. 363,172. (No model.)



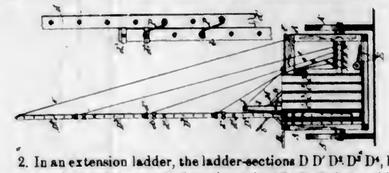
Claim.—1. An appliance for preventing the escape of gas from the poke-holes of gas-producers, comprising a frame arranged to be connected to a steam or fluid pressure generator and over the poke-opening and having a centrally-perforated and shouldered offset formed to fit into the said poke-opening, a plug-seat resting on the shoulder of said offset, a centrally-perforated deflector-plate resting on said frame and having an inwardly and downwardly inclined under margin, a closing-plug hinged to the frame, and a jet-opening arranged to discharge steam or fluid under pressure into the poke-opening against the gas within the producer, substantially as set forth.

2. The combination, with a gas-producer, of a frame secured upon its poke-hole, said frame being connected to a steam or fluid pressure generator and having a downwardly-inclined annular jet-opening arranged to discharge steam or fluid under pressure into said poke-opening against the gas within the producer, substantially as set forth.

3. The combination, with a gas-producer, of a frame, a removable seat contiguous to the poke-opening of the frame, a deflector carried by the frame, a duct for steam or fluid under pressure opening beneath the deflector, and a closing-plug hinged upon said frame, substantially as set forth.

444,632. FIRE-LADDER. HENRY GOODMANN, West Bend, Wis. Filed Nov. 6, 1883. Renewed July 28, 1890. Serial No. 360,001. (No model.)

Claim.—1. An extension-ladder consisting of ladder-sections of equal length and of gradually-decreasing width, which are provided with notches in the lower end of their side pieces, and at their upper ends with transverse rods terminating in loops, whereby said ladder-sections are adapted to fit and be supported on top of each other after each section has been raised its own length clear out of the adjustable ways provided in the truck-frame for said ladder-sections, as set forth.

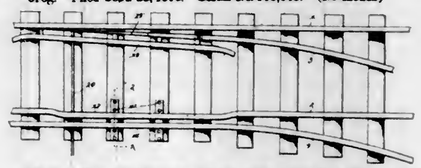


2. In an extension ladder, the ladder-sections D D' D² D³ D⁴, having hooped bars d' d' d', hoops d^3 d^3, and notches d^3 d^3 d^3, in combination with the upright ways C C, sliding table E, and connections, substantially as shown and described, and for the purpose set forth.

3. In an extension-ladder, the platforms G G, having clamps i i i, the bars H H, standards I I, and roller J, in combination with the toothed rack K K, pinions k' k', and hand-lever l, substantially as shown and described, and for the purpose set forth.

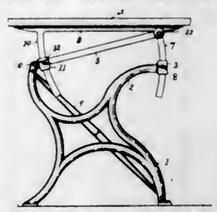
4. In an extension-ladder, the ladder-sections D' D² D³ D⁴, having ropes e e attached to the lower end of their side pieces d d, in combination with the roller J and winding-drums on shafts N N' N³ N⁴, substantially as shown and described, and for the purpose set forth

444,633. RAILROAD-SWITCH. ALBERT M. GRUBB, Forest Grove, Oreg. Filed Sept. 23, 1890. Serial No. 365,915. (No model.)



Claim.—The combination of the inner main-line rail having an outwardly-sprung portion, the inner siding-rail terminating in the movable rail, having a guard-rail attached to its inner side, and the outer siding-rail terminating in a rail parallel to the main line and having a raised or elevated portion, substantially as and for the purpose set forth.

444,634. INCLINING TABLE. CHARLES L. HARTSFELD, Newport, Ky. Filed Nov. 3, 1890. Serial No. 370,231. (No model.)



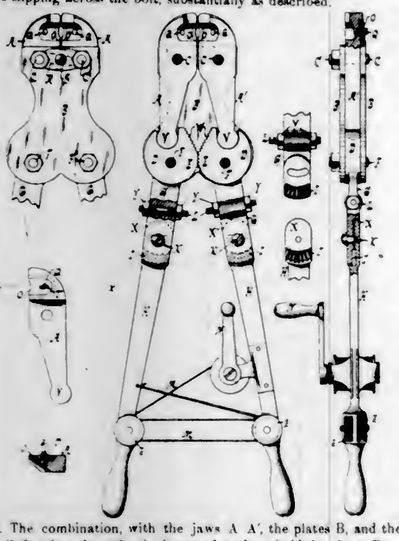
Claim.—The combination, in a table, of table-legs having sockets 3, the adjusting-arms 5, having one end pivoted to the table-legs and provided with sockets 11, and the opposite end having segments 7, movable in the sockets of the table-legs, and the table-top having supporting-arms 9, pivoted at or near one end to the said adjusting-arms and provided at or near the opposite end with segments 10, movable in the sockets of the adjusting-arms, substantially as and for the purpose described.

444,635. BOLT AND RIVET CUTTER. JOHN HELWIG, Dubuque, Iowa. Filed July 10, 1890. Serial No. 358,252. (No model.)

Claim.—1. The combination, with the jaws A A', provided with dovetailed sockets and knives seated in said sockets, of retaining-screws for said knives, said screws being adjustably secured to the jaws, so as to regulate the place at which the knives are to act, said knives being provided with slots or enlarged holes for the passage of the screws, so that the screws are not exposed to the strain on the knives during the operation of cutting, substantially as described.

2. The combination, with the actuating-handles, of cutters having longitudinally-concaved cutting-edges situated in the same plane with

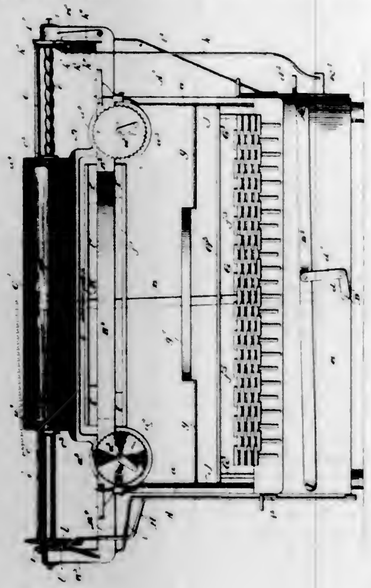
one another, so as to cut on a bolt close to the plate and prevent the cutters slipping across the bolt, substantially as described.



3. The combination, with the jaws A A', the plates B, and the screws C, forming pivots for the jaws and made to hold the plates B together, of a locking-plate R, interposed between and having its extremities fitted against the screws C to prevent turning of the latter, and a screw S passed through the locking-plate and screwing into one of the plates B, substantially as described.

4. The combination, with the jaws A A', of handles for actuating said jaws, each handle being made in two sections G H, adjustably united by a screw K, and cogs I for moving the lower handle-section to and from the other section, one handle-section being provided with a semicircular knuckle X, made to fit into a corresponding recess in the other handle-section, so that part of the strain is taken off the cogs and taken up by the knuckle and recess, substantially as described.

444,636. **TYPE-WRITING MACHINE.** WALTER B. HOHENSHELL and EDWARD H. OVERHOLT, Streator, Ill. Filed June 20, 1890. Serial No. 356,152. (No model.)



Claim.—1. The combination, in a type-writing machine, of the type-bars, keys, and intermediate connections, a frame vibrated by the keys, a shaft above the pivotal plane of the key, a paper-carriage mounted thereon, gearing to operate said shaft, a pawl engaging the same, a rod connecting said pawl with the vibrating frame, and a second pawl for reversing said gearing and connected by a rod to a lever moving independent of said vibrating frame, substantially as set forth.

2. The combination, in a type-writing machine, of a series of type-bars carrying single and compound impression characters, the latter extending horizontally to one side of said bars, keys and their levers for operating said bars, a frame vibrated by said key-levers, the latter being notched at their bearing portions to vary the depression of the frame, a shaft above the pivotal plane of the keys, a paper-carriage mounted thereon, gearing on said shaft, a pawl engaging the same, a rod connecting said pawl with the vibrating frame, and a second pawl for reversing said gearing and connected by a rod to a lever moving independent of said vibrating frame, substantially as set forth.

3. The combination, in a type-writing machine constructed and operating substantially as described, of a shaft and a carriage movable thereon, feeding devices, and rearwardly-extending plates hung on said shaft and connected by a rod playing through loops in the carriage, together with lever connections for depressing said rod and plates and thus partially turning said carriage, as specified.

4. The combination, in a type-writing machine constructed and operating substantially as described, of a threaded shaft, a carriage having a nut to move thereon, a pinion on said shaft, a gear-wheel meshing below the same, a plate hung on said gear-wheel shaft and carrying a pawl to engage the same, a spring for holding said plate in an elevated position, and a hook for locking it in a depressed position, as specified.

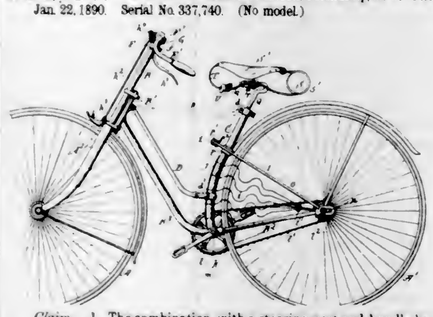
5. The combination, in a type-writing machine constructed and operating substantially as described, of a shaft and paper-carriage thereon, feeding devices and operating connections, a cylinder and ratchet for rotating the same, a rod and lever for rotating said ratchet, rearwardly-extending plates hung on said carriage-shaft and connected to a rod with which the carriage has a sliding engagement, a lever connecting with said plates to depress the same and tilt the carriage, and a spring-arm bearing upon said ratchet to prevent its movement when the carriage is tilted, as specified.

6. The combination, in a type-writing machine constructed and operating substantially as described, of a shaft and paper carriage thereon, feeding devices therefor, an arm projecting from the rear of the carriage, a horizontal link, a vertical lever connected by a swivel-joint to said link, a shaft rigidly connected to said lever, and means for turning said shaft to vibrate the lever and transversely move the carriage, as specified.

7. The combination, in a type-writer constructed and operating substantially as described, of a ribbon-supporter M, spanning the circular portion B^3 and having an elevated bridge provided with an impression opening, and side openings beneath the same for the passage of the ribbon, as specified.

8. The combination, in a type-writer constructed and operating substantially as described, of the paper-carriage and its cylinder, and feed devices, including gear-wheel h^4, of pawls h' and 3, normally out of engagement with the wheel h^4, together with connections for alternately throwing said pawls into engagement to differently operate the feed devices, as specified.

444,637. **VELOCIPEDE.** EMMIT G. LATTA, Friendship, N. Y. Filed Jan. 22, 1890. Serial No. 337,740. (No model.)



Claim.—1. The combination, with a steering-post and handle-bars pivoted at their inner portions to the post and capable of vertical adjustment, of means whereby the bars are held at any desired elevation, and handles attached to the outer ends of the handle-bars substantially at right angles thereto, whereby the handles retain the same angle in different positions of the handle-bars, substantially as set forth.

2. The combination, with a steering-post and handle-bars pivoted thereto and vertically adjustable thereon, of a vertically-adjustable spring-support, whereby the handle-bars are yieldingly sustained at different elevations, substantially as set forth.

3. The combination, with a steering-post and handle-bars pivoted thereto, of a vertically-adjustable spring-support bearing against the handle-bars, and an adjustable stop whereby the movement of the handle-bars is limited, substantially as set forth.

4. The combination, with a steering-post, of handle-bars pivoted thereto and bent upwardly and outwardly from the steering-post and thence backwardly, the backwardly-bent end portions of the bars being substantially parallel with the pivot of the bar, substantially as set forth.

5. The combination, with the steering-post and handle-bars pivoted thereto, of a clip adjustably attached to the steering-post and provided with upward extensions embracing the inner portions of the handle-bars, substantially as set forth.

6. The combination, with the steering-post and handle-bars pivoted thereto, of a clip adjustably attached to the steering-post and having upward extensions which embrace the handle-bars, and supporting-springs attached to said clip and bearing against the under side of the handle-bars, substantially as set forth.

7. The combination, with the steering-post and handle-bars pivoted thereto, of a clip adjustably attached to the steering-post and having upward extensions provided with elongated openings, through which the handle-bars pass, and supporting-springs attached to the clip and bearing against the under side of the handle-bars, substantially as set forth.

8. The combination, with the steering-post, the brake, and the vertically-movable handle-bars attached at their inner ends to the steering-post by a horizontal pivot, of a rigid brake-lever pivoted to one of the handle-bars, and a brake-rod connected to the brake-lever by a pivot arranged substantially in line with the pivot of the handle-bars, substantially as set forth.

9. The combination, with the steering-post, the brake, and the handle-bars pivoted at their inner ends to the steering-post, of a brake-lever pivoted to one of the handle-bars, a brake-rod attached at its upper end to the brake-lever by a pivot arranged substantially in line with the pivot of the handle-bars, and a universal or swiveling coupling connecting the lower end of the brake-rod with the brake, substantially as set forth.

10. The combination, with the wheels and frame of a velocipede, of a dress-guard composed of a series of elastic wires bent in serpentine form or corrugated and extending radially from the saddle-post to near the hub of the wheel, substantially as set forth.

11. The combination, with the wheels and frame of a velocipede, of a dress-guard composed of a series of elastic wires corrugated or bent in serpentine form, with the bends or corrugations increasing in radius from the hub toward the circumference of the wheel, substantially as set forth.

12. The combination, with the wheel and the main frame of a velocipede having a part or member adjacent to the periphery of the wheel, of a series of guard-wires secured at their ends to the fork or frame of the wheel and extending from the central portion of the wheel forwardly on one side thereof, thence around the part of the main frame adjacent to the periphery of the wheel, and backwardly to the central portion of the wheel on the opposite side thereof, substantially as set forth.

13. The combination, with a wheel and main frame of a velocipede, of a detachable supporting-plate attached to the frame in front of the periphery of the wheel, and a series of guard-wires passing around said supporting-plate, extending rearwardly on opposite sides of the wheel, and secured at their ends to the wheel-frame, substantially as set forth.

14. The combination, with the main frame, a wheel-frame, and a wheel-axle adjustably supported therein, of a fork or rod attached at one end to the wheel-axle and having its opposite end adjustably attached to the main frame, substantially as set forth.

15. The combination, with the main frame and a front steering and a rear driving wheel, of a crank-shaft arranged between the wheels, a frame or support in which the axle of the rear wheel is adjustable with reference to the crank-shaft, a fork or rod pivoted at one end to the rear wheel-axle, and an adjusting-screw connecting the opposite end of said fork with the main frame, substantially as set forth.

16. The combination, with the main frame and a front steering and a rear driving wheel, of a crank-shaft arranged between the wheels, a frame or support in which the axle of the rear wheel is adjustable with reference to the crank-shaft, a screw attached to the main frame, a fork or rod attached at its rear end to the wheel-axle and engaging with its opposite end with said screw, and adjusting-nuts arranged on said screw, whereby the fork is shifted, substantially as set forth.

444,688. **LETTER-BOX.** JOHN T. LENHAN, Washington, D. C. Filed Oct. 10, 1890. Serial No. 367,665. (No model.)

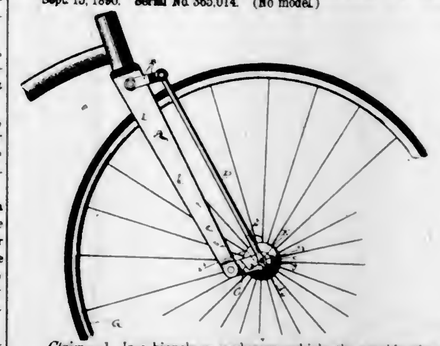
Claim.—1. In a letter-box having a closed arched top and at its front side provided with a receiving-aperture, the combination, substantially as hereinbefore described, of a pendent swinging lid closing said aperture and provided with means for manipulation, a letter-receiving tray rocking centrally and having its front edge normally depressed below said aperture, and a link connecting said tray with the lid, whereby on swinging said lid outwardly for uncovering the receiving-aperture the front portion of the tray will be lifted for receiving a letter and on dropping the lid the tray will promply rock and deliver its contents downwardly and forwardly into the box.



2. The combination, substantially as hereinbefore described, of a letter-box having a closed top and a receiving-aperture at its front side, a rocking tray provided with sides and top and having at its front an aperture corresponding to the aperture in the box, a pendent outwardly-swinging lid normally covering the box-aperture, provided with a finger-knob and connected by a link with the tray, whereby when the box-aperture is uncovered, as by swinging and raising the lid, the front portion of the tray will be raised from its normally-depressed position and its aperture registered with the box-aperture for receiving mail and no openings afforded between the interior of the tray and the adjacent walls of the box.

3. In a letter-box, the combination, with a rocking tray, of a pendent lid provided with end plates, and a link pivoted to said tray, and also pivoted to said lid on a pivot supported by both end plates, substantially as described.

444,639. **BICYCLE.** WILLIAM R. O'NEILL, Milwaukee, Wis. Filed Sept. 15, 1890. Serial No. 365,014. (No model.)



Claim.—1. In a bicycle or analogous vehicle, the combination of a vibratory fork and wheel and a spring arranged to exert torsional resistance to the vibrations of said fork and wheel, substantially as set forth.

2. In a bicycle or analogous vehicle, the combination of a vibratory fork and wheel and a torsion-spring connected to said fork and axle of the wheel, substantially as set forth.

3. In a bicycle or analogous vehicle, the combination of a fork, a wheel-carrying mechanism linked to the fork, and a rigidly-supported spring-bar connected to said fork and wheel-carrying mechanism, substantially as set forth.

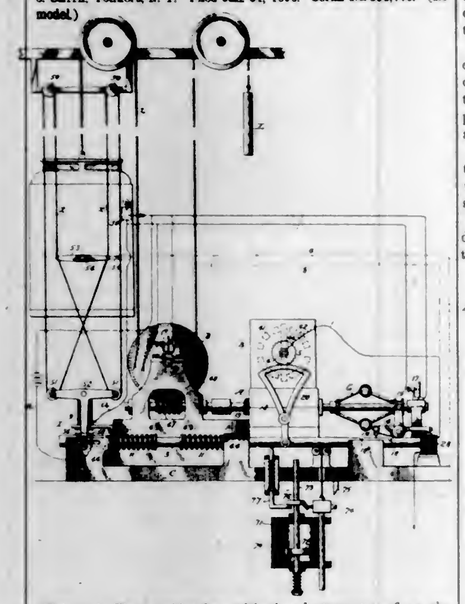
4. In a bicycle or analogous vehicle, a fork, upper and lower links pivotally connected to the fork, an axle connected to the lower links, a wheel arranged on the axle, rods arranged parallel to the fork branches and movable with the links, and a rigidly-supported spring-bar connecting the rods, substantially as set forth.

5. In a bicycle or analogous vehicle, a fork, upper and lower links pivotally connected to the fork, an axle supported by the lower links, a wheel arranged on the axle, rods arranged parallel to the fork branches and connected to the upper links, and a spring-bar having a portion thereof rigidly secured within said axle and likewise connected at its ends to said rods, substantially as set forth.

6. In a bicycle or analogous vehicle, a fork, links pivotally connected to the fork, a spring-controlled axle fast in the links, and a wheel arranged on the axle, substantially as set forth.

7. In a bicycle or analogous vehicle, links pivotally connected to the fork, an axle fast in the links, a wheel arranged on the axle, and a torsion-spring connected to said fork and axle, substantially as set forth.

444,640. **ELECTRIC ELEVATOR.** NORTON P. OTIS and RUDOLPH C. SMITH, Yonkers, N. Y. Filed Jan. 31, 1890. Serial No. 338,770. (No model.)



Claim.—1. The combination, with the electromotor of an elevator, of a current-controlling device constructed to both reverse and vary the current and provided with a switch, means for automatically turning the switch to its normal position with the current cut-off, and means for operating said switch from the cage to carry it from its normal position in either direction, substantially as set forth.

2. The combination, in an elevating apparatus, of an electromotor, a controller provided with a switch, a shifter connected with said controller and with the cage to be operated therefrom, automatic means for carrying the shifter to one position, a detent for holding the shifter in another position, and a governor connected with said detent and driven from a moving part of the apparatus, substantially as set forth.

3. The combination, with the cage and electromotor of an elevator, of a controller provided with a switch, a shifter connected to be operated from the cage and also connected to said switch, means for carrying the controller to one position, a detent engaging with bearings upon the controller to hold it in another position in either direction, and a governor driven from the armature and connected with said detent, the parts being arranged to release the shifter when the speed of the armature is reduced, substantially as set forth.

4. The combination, with the shifter connected to be operated from the cage and with the switch, of an alarm upon the cage and a circuit-breaker carried by the shifter to complete the circuit including the alarm when the position of the shifter is changed from one position to the other, substantially as described.

5. The combination of the switch controlling the current to the motor of an elevator, a circuit-indicator, and a circuit-breaker connected to move with said switch and in circuit with said indicator, substantially as described.

6. The combination, with the cage and electromotor, of a resistance controlling the current to the motor, the switch or cut-out of said resistance, a shifter connected to be operated from the cage and with said switch, automatic means for carrying the shifter to its mid-position, and a detent and governor controlling the same for holding the shifter in its extreme positions, substantially as set forth.

7. The combination, with the motor and cage of an elevator, of a regulating-switch controlling the circuit to the motor through a series of resistances, a detent controlling the switch, and an electrical governor for the detent, arranged in the main circuit and connected with the detent to release the switch when the main current becomes excessive to allow the switch to return to its normal position, substantially as set forth.

8. The combination, with an electromotor, a switch controlling the current through the same, means for moving the switch to one position, and a detent for holding it at the limit of its movement in either direction, of a timing device for releasing the detent, substantially as set forth.

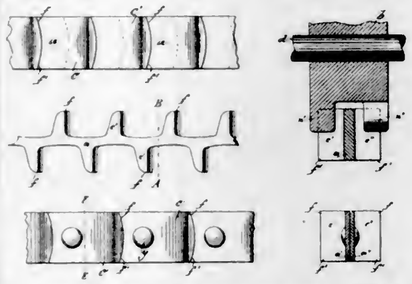
9. The combination, with the switch and with the shifting devices connected with the elevator-cage, of a detent for holding the switch, constructed to yield under the action of the shifting device, substantially as described.

10. The combination, with an elevator-cage and electromotor connected to operate the cage, of a switch controlling the circuits to operate the motor in either direction, devices for carrying the switch to its normal position, a detent for locking the switch in its operating position, and automatic means for operating the detent, substantially as set forth.

11. The combination, with the cage and shifter-bar and connections for moving it from the cage, of a switch and a lever connected with said bar and having a rack engaging a pinion on the switch-shaft, substantially as set forth.

12. The combination, with the cage, motor, switch, and yielding detent for holding the switch in one position, of a spring for shifting the switch, substantially as set forth.

444,641. **RACK-RAIL FOR RACK-RAILWAYS.** PAUL SIMONS, Darmstadt, Germany. Filed June 17, 1890. Serial No. 355,798. (No model.)



Claim.—1. A rack-rail for rack-railways, consisting of a web having at its opposite sides laterally-projecting teeth arranged in vertical planes and each having counterpart upper and lower acting end portions *f f'*, substantially as described.

2. A reversible rack-rail for rack-railways, consisting of a web or body *a*, having at opposite sides the laterally-projecting teeth *c c'*, provided with counterpart upper and lower acting end portions *f f'* to engage the teeth of a wheel, the construction being substantially as described, that by turning the rack-rail upside down to reverse it after one set of the acting ends of the teeth are worn the opposite set of acting ends of the teeth are brought into position for correct co-operation with a toothed wheel, substantially as described.

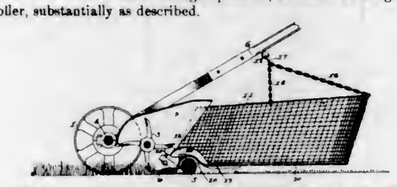
444,642. **LUGGAGE-CARRIER FOR CYCLES.** THOMAS G. ALLEN, Jr., Ferguson, Mo., WILLIAM L. SACHTLEBEN, Alton, Ill., and JOHN F. WALTERS, Bayswater, England. Filed Oct. 21, 1890. Serial No. 368,845. (No model.) Patented in England Sept. 10, 1890, No. 14,276.



Claim.—A hold-all adapted to fit within the space between the arch, strut, and tie of a cycle-machine, and composed of two side plates A B, edge strip C, one of the side plates being provided with a flap D to fold downward and coverable by an outside flap E to fold upward for inclosing the contents and preserving them from dust and rain, substantially as described.

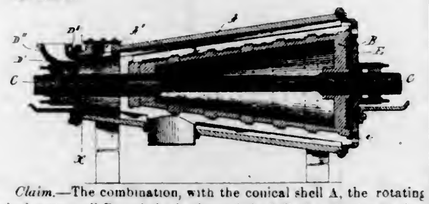
444,643. **LAWN-MOWER.** JOHN E. ASH, Carthage, assignor of one-half to Charles A. Sautmyer, Cincinnati, Ohio. Filed Feb. 20, 1890. Serial No. 341,118. (No model.)

Claim.—1. The combination, with a lawn-mower having a ground-roller 5 and propelling-handle 6, of the deflecting-chute 9, curved wholly over the cutters and having its forward end notched at the sides and projecting between the ground-wheels, and the grass-receptacle 11, separate and independent of the deflecting-chute and suspended at its rear portion from the handle by a chain connection, and provided with the attached rigid plate 10, arched over the ground-roller, substantially as described.



2. The combination, with a lawn-mower having a ground-roller 5, the propelling-handle 6, and the upwardly-projecting lugs 14, of the deflecting-chute 9, curved over the rotary cutter and projecting forwardly between the ground-wheels, and the grass-receptacle 11, independent of the deflecting-chute, suspended from the handle, and having the attached rigid plate 10, arched over the ground-roller, and the forwardly-projecting hooks 12, detachably engaging the lugs, substantially as described.

444,644. **JORDAN ENGINE FOR GRINDING PULP.** EDWIN W. BARTON, Lawrence, Mass. Filed Sept. 12, 1889. Serial No. 323,749. (No model.)



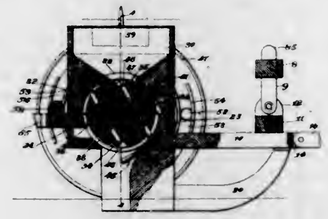
Claim.—The combination, with the conical shell A, the rotating conical cutter-roll B, and the horizontal shaft C of a Jordan engine, of the small head D, having a stuffing-box and formed between its periphery and said box with the segmental delivery-slot D', concentric with the axis of the shaft, and the vertical pipe D'', cylindrical at its top and having the laterally-expanded segmental knee D^4, conforming to and connecting with the segmental slot, to deliver the pulp-stock horizontally into approximately one-half of the upper side of the smaller end of the conical case, substantially as described and shown.

444,645. **CORN-PLANTER.** PHILIPPE FRIEDERICK, Langley, Kans. Filed May 23, 1890. Serial No. 352,956. (No model.)

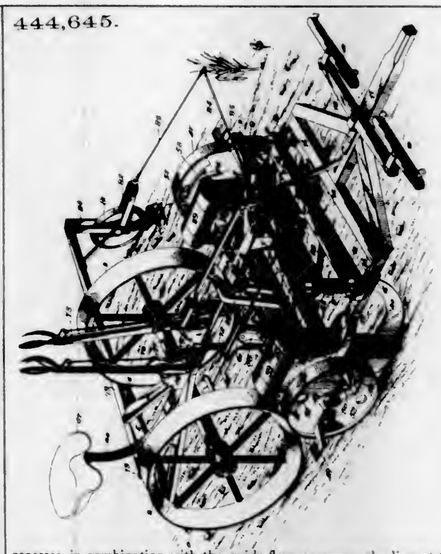
Claim.—1. In a check-row corn-planter, the combination, with the seeder-frame having the transverse revolving shaft or axle carrying the seed-wheels and marker-wheels, of the transverse sliding rods having friction-rollers adapted to engage recesses or perforations in the said marking-wheels, and mechanism for adjusting the said sliding rods, substantially as set forth.

2. The combination of the seeder-frame having the runners and the transverse shaft or axle with the seed-wheels and the marking-wheels mounted upon said axle, said marking-wheels being provided with segmental inclined recesses and with perforations at the ends of the latter, the springs covering the said recesses, the transversely-sliding rods mounted upon the seeder-frame and having friction-rollers to engage the marking-wheels, and mechanism for adjusting said sliding rods, substantially as set forth.

3. The marking-wheels having the segmental inclined recesses, the perforations at the ends of said recesses, and the springs covering said



444,645.



recesses, in combination with the guide-flanges arranged adjacent to said recesses and perforations, and the sliding rods mounted upon the seeder-frame and having friction-rollers adapted to engage the perforations in said marking-wheels to prevent the rotation of the latter, substantially as and for the purpose set forth.

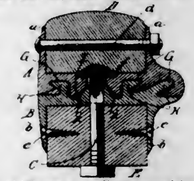
4. The seed-boxes having the bottoms provided with curved or segmental recesses and with downwardly-extending flanges, as 35, in combination with the seed-wheels fitted in said recesses and having peripheral flanges, as 34, bearing against the outer sides of the flanges 35, and the cut-off springs 36, bearing against the peripheries of the seed-wheels between the flanges of the latter, substantially as and for the purpose set forth.

5. The seed-wheels having transverse parallel perforations on opposite sides of and equidistant from the axle, in combination with the plungers mounted in said perforations, and suitable operating mechanism, substantially as set forth.

6. In a corn-planter, the combination, with the seeder-frame having the runners and the seed boxes or hoppers, of the seed-wheels having transverse parallel perforations terminating in seed-cups at their outer ends, the spring-actuated plungers mounted in said perforations, having beveled projecting inner ends, the spring cut-offs 37, and the blocks 36^a, mounted in the hoppers and serving to actuate said plungers to discharge the seed from the seed-cups, substantially as and for the purpose set forth.

7. The combination of the seeder-frame, the revolving axle having the seed-wheels and the marker-wheels, the latter provided with diametrically-opposite perforations, the transversely-sliding rods mounted upon the seeder-frame and having friction-rollers at their outer ends, an upright mounted upon the seeder-frame and having recesses in its upper side, a lever pivoted to said upright and having its lower end connected with the said slide-rods, and a spring-actuated treadle-bar pivoted to the upper end of said lever and having a catch adapted to engage the recesses in the upper end of the upright, substantially as and for the purpose set forth.

444,646. **WHIFFLETREE-COUPLING.** JOHN J. KOCHER, Los Angeles, Cal. Filed Mar. 28, 1890. Serial No. 345,774. (No model.)



Claim.—1. A whiffletree-coupling comprising the upper and lower sections, having a common axis, and provided in rear of such axis the one with a plurality of segmental rail-like portions and the other with a plurality of segmental undercut guides to receive said portions, all substantially as set forth.

2. A whiffletree-coupling comprising the upper section and the lower section, having a common axis, one of such sections being formed with undercut grooves on opposite sides of said axis and the other section with segmental ribs or rails formed to fit snugly in said grooves, all substantially as set forth.

3. An improved whiffletree-coupling consisting of the upper section and the lower section, having a common axis, one of such sections being provided in front of its axis with a curved groove and rear of its axis with a plurality of curved grooves, and the other section being provided with undercut ribs or rails fitted snugly in said grooves, substantially as set forth.

4. The combination, substantially as herein described, of the upper section A, having a central opening for the connecting-bolt and provided with undercut grooves, the lower section B, having a central non-circular opening for the connecting-bolt and provided with ribs fitting the grooves of the section A, and the connecting-bolt formed to turn freely in the opening of section A and keyed in the opening of section B, substantially as set forth.

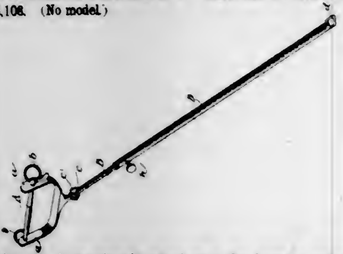
444,647. **PAPER-WEIGHT.** LUCIEN B. MARTIN, Fostoria, Ohio. Filed June 2, 1890. Serial No. 354,002. (No model.)



Claim.—1. As a new article of manufacture, a paper-weight having an etched or ground surface, substantially as described, whereby the same is adapted to be written on and the writing erased, as set forth.

2. As a new article of manufacture, the combined paper-weight and memoranda-tablet consisting of a body of glass having a plain surface which is etched or ground, and having lines formed thereon of the clear glass, substantially as and for the purpose set forth.

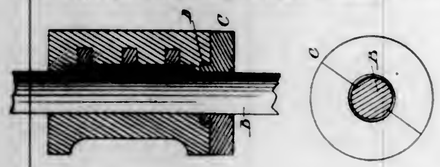
444,648. **MARTINGALE ATTACHMENT FOR HARNESS.** STILLMAN E. MATHEWS, Fullerville, N. Y. Filed Sept. 25, 1890. Serial No. 366,108. (No model.)



Claim.—1. A martingale attachment for harness, comprising a rigid rod which is forked at one end, has a bit-bar across the limbs of the fork that may be connected to a bridle, and a sleeve which slides on the rod, is securable thereon, and also attachble to the breast-collar or a strap of the harness, substantially as set forth.

2. A rigid martingale for harness, comprised, essentially, of a bifurcated rigid rod having a bridle bit-bar attached to the limbs of its bifurcated portion, a knuckle-joint on the rod near the bifurcated end, and a rigid sleeve that is adapted to slide on the rod and be secured thereon at any point of longitudinal adjustment and also attachable to the breast-collar or a strap of the harness, substantially as set forth.

444,649. **TAPPET.** WALTER N. NOLAN, El Oro, Tultenango, Mexico. Filed Sept. 27, 1890. Serial No. 366,346. (No model.)

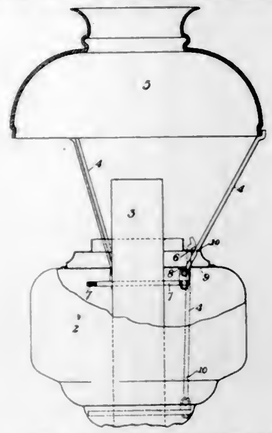


Claim.—1. In a tappet, a face formed by a ring split diametrically in sections and adapted to screw into the tappet-body, substantially as shown and described.

2. In a tappet, the combination, with the tappet-body, of a face formed by a ring split diametrically in sections, the said face being provided with a threaded hub adapted to screw into the tappet-body, substantially as shown and described.

3. In a tappet, the combination, with the body, of a face formed of a sectional ring provided with a hub having a thread running in an opposite direction to the movement of the cam, substantially as shown and described.

444,650. **LAMP-SHADE TRIPOD.** ARCHIBALD W. PAULL, Wheeling, W. Va. Filed Aug. 28, 1890. Serial No. 363,265. (No model.)



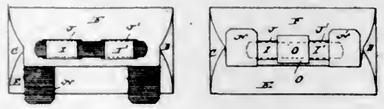
Claim.—1. The combination, with a lamp-bowl having sockets opening into the bowl, of shade tripod-legs set in said sockets and vertically movable therein into and out of the bowl, substantially as and for the purposes described.

2. The combination, with a lamp, of tripod-legs, sockets in the lamp-bowl, in which the legs are vertically movable into and out of the bowl, and shoulders by which the legs may be upheld in projected positions, substantially as and for the purposes described.

3. The combination, with a lamp, of tripod-legs, a ring or frame connecting them within the bowl, and sockets in which the legs are vertically movable into and out of the bowl, substantially as and for the purposes described.

4. The combination, with a lamp, of tripod-legs, a ring or frame connecting them within the bowl, and sockets in which the legs are vertically movable into and out of the bowl, said sockets being shaped to permit divergence of the legs when projected, substantially as and for the purposes described.

444,651. **ENVELOPE.** HERMAN A. J. RIECKERT, New York, N. Y. Filed Nov. 13, 1889. Serial No. 330,132. (No model.)

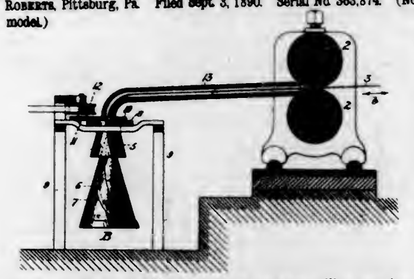


Claim.—1. An envelope provided with openings in its back and covering-flap, in combination with a flat strip interwoven in said openings and locking the flap to the back, substantially as described.

2. An envelope provided with two slots and an opening between the slots in its back and with two openings in its covering-flap, in combination with a strip interwoven in said slots and openings, the said strip passing under the parts of the back between the slots and opening and over the part of the flap between the openings therein, substantially as herein shown and described.

3. The combination, with an envelope provided with an opening and slots in its back and with openings in its covering-flap, of a separate strip adapted to be interlaced in the said openings and slots, with its ends resting upon the covering-flap, and gummed flaps formed on the said covering-flap and adapted to seal up the ends of the said strip, substantially as shown and described.

444,652. **APPARATUS FOR COILING METAL RODS.** HENRY ROBERTS, Pittsburg, Pa. Filed Sept. 3, 1890. Serial No. 363,874. (No model.)

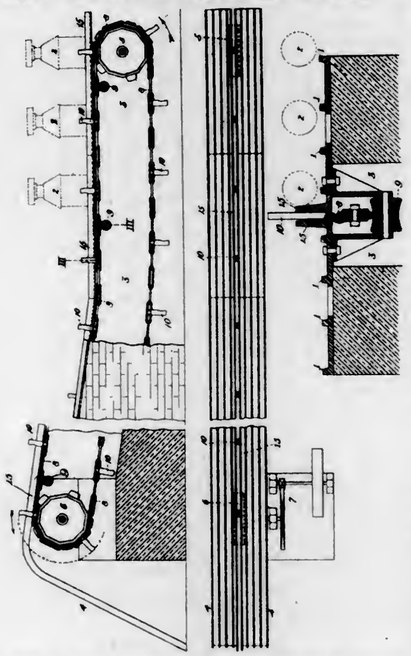


Claim.—1. In metal-coiling apparatus, a rotary coiling-cone having a longitudinal rib with a lateral flange, substantially as and for the purposes described.

2. In metal-coiling apparatus, a rotary coiling-cone having two longitudinal ribs with lateral flanges, substantially as and for the purposes described.

3. In metal-coiling apparatus, a rotary coiling-cone having an exposed outer surface along which the rod travels, a hollow collar, and driving-gear, substantially as and for the purposes described.

444,653. **ROD-COILING APPARATUS.** HENRY ROBERTS, Pittsburg, Pa. Filed Oct. 6, 1890. Serial No. 367,190. (No model.)



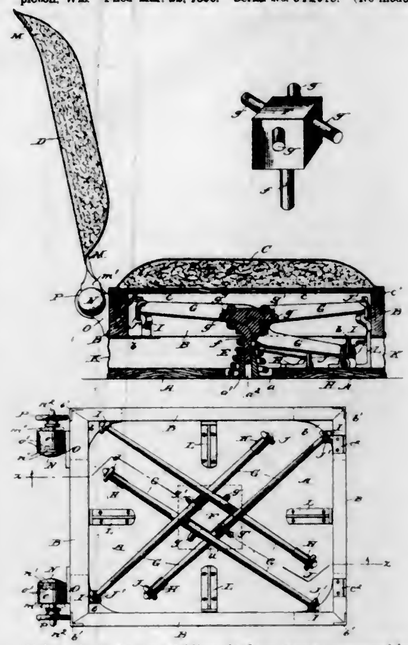
Claim.—1. In rod-coiling apparatus, the combination, with a rotatory coiling-cone having a downwardly-extending distributing-rib, of a lip set removably in a recess at the end of said rib and projecting below the same, and a drum which is vertically movable within the limit of rotation of the lip to cause removal of the last end of the rod, substantially as and for the purposes described.

2. In a rod-coiler, the combination, with a rotatory coiling-channel through which the rod passes and by which it is delivered in a coil, of a roller situate at the delivery end of the channel, substantially as and for the purposes described.

3. In apparatus for conveying coiled rods from a rod-coiler, the combination of a track or way, adjacent elevated rails 15, on which the coils may ride in an inclined position, said rails having an intermediate slot, and an endless chain having spurs projecting between the rails, substantially as and for the purposes described.

4. In apparatus for conveying coiled rods from a rod-coiler, the combination of a track or way on which the coils may ride, an endless connecting-chain having spurs for engaging and conveying the coils, driving-wheels for the chain, and a downwardly-inclined chute at the final driving-wheel, substantially as and for the purposes described.

444,654. **LOCOMOTIVE-CAB SEAT.** EDWARD M. STANNARD, Appleton, Wis. Filed Mar. 22, 1890. Serial No. 344,918. (No model.)



Claim.—1. A seat or yielding-platform structure comprising a supporting-base, a superposed yielding frame or part, a spring on the base, a head-block or support sustained by the spring, and crossed levers fulcrumed to the head-block and coupled at opposite ends to the base and superposed frame.

2. A seat or yielding-platform structure comprising a supporting-base, a superposed yielding frame or part, a spring on the base, a head-block or support sustained by the spring, crossed levers fulcrumed to the head-block and coupled at opposite ends to the base and superposed frame, and a flexible dust-guard connecting said base and frame.

3. A seat or yielding-platform structure comprising a supporting-base, a superposed yielding frame or part, a spring on the base, a head-block or support sustained by the spring, and two pairs of crossed levers fulcrumed to the head-block and coupled at opposite ends to the base and superposed frame.

4. A seat or yielding-platform structure comprising a supporting-base, a superposed yielding frame or part, a spring on the base, a head-block or support sustained by the spring, crossed levers fulcrumed to the head-block and coupled at opposite ends to the base and superposed frame, and guides on the base for said frame.

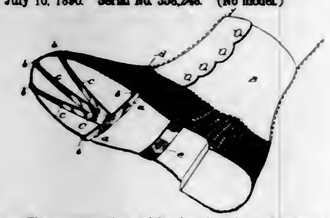
5. The combination, in a seat or yielding-platform structure, of a base, a bearing thereon, a spring fitted around said bearing, a head-block having a guide-pin entering the bearing and resting on the spring, and crossed levers fulcrumed to the head-block and coupled at opposite ends to the base and superposed frame, substantially as described.

6. The combination, in a seat or yielding-platform structure, of a supporting-base, a central apertured bearing, a spring and vertical guides on the base, a superposed yielding frame fitted to the guides, a head-block F, resting on the spring and having a stem *f* entering the central base-bearing, two pairs of crossed levers G G, fulcrumed to the head-block, and couplings connecting the opposite ends of the levers to the base and yielding frame, respectively, substantially as specified.

7. In a seat comprising a seat proper and a back, the seat-frame provided with bearings having a half-clutch, combined with the back having forked extremities, and journals adapted to the bearings and having a corresponding half-clutch, and provided also with a stud to

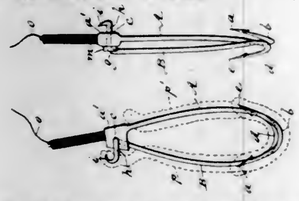
which the forked end of the back is adapted, said journals also having an end screw and a nut adapted to said screw and to clamp the clutched back, substantially as described.

444,655. LEGGIN-HOLDER. ALFRED STEINER, New York, N. Y. Filed July 10, 1890. Serial No. 358,246. (No model.)



Claim.—The combination, with a leggin adapted to cover the top of the foot, of a holder consisting of radiating limbs and hooks on the ends of said limbs, which hooks engage the marginal edge of the foot-covering portion of the leggin, substantially as set forth.

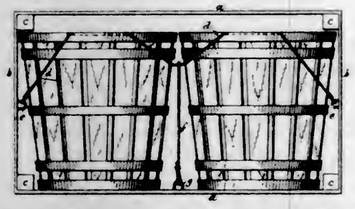
444,656. FISH-HOOK. JOSEPH STRETCH, Newark, N. J. Filed May 2, 1890. Serial No. 350,357. (No model.)



Claim.—1. In a fish-hook, two similar and jointed hook portions which have their bows adjacent and their barbs oppositely projected but concealed when in closed adjustment, one swinging hook portion being provided with a limb projected at right angles to a journal that is bent laterally from the body of this hook portion whereon it vibrates, and an integral curved small hook formed on the free end of the limb, substantially as set forth.

2. In a fish-hook, the combination, with a shank having a bow and a barb on one end portion and an enlargement on its body near the opposite end portion, which is laterally perforated, of a duplicate hook portion which is bent near its upper end laterally to engage loosely the hole in the enlargement and has a limb extended parallel to the enlargement and away from the barb on this hook portion, and an upwardly and inwardly curved hook on the end of this limb, substantially as set forth.

444,657. CRATE. GEORGE W. WORDEN, Lewiston, N. Y. Filed May 29, 1890. Serial No. 353,555. (No model.)

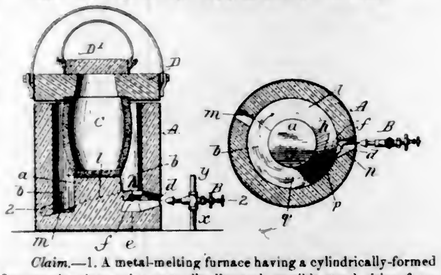


Claim.—1. A fruit-crate consisting of a rectangular box having an open side and provided with a retaining-wire adapted to pass over two or more baskets, and a tightening-wire connecting said retaining-wire with the bottom of the crate between said baskets, substantially as set forth.

2. A fruit-crate consisting of a rectangular box having an open side and provided with retaining-wires passing over two or more baskets and attached to opposite ends of the crate, and a tightening-wire passing over the retaining-wires between said baskets and having its ends attached to the bottom of the crate, substantially as set forth.

3. A crate consisting of a rectangular box having its end walls and its bottom provided with staples, retaining-wires passing over the fruit-baskets and fastened at their ends to the staples of the end walls, and a tightening-wire passing over the portions of the retaining-wires between the adjacent baskets and fastened at its ends to the staples at the bottom of the crate, substantially as set forth.

444,658. CRUCIBLE-FURNACE. JOHN F. BARKER, Springfield, Mass. Filed Sept. 22, 1890. Serial No. 365,719. (No model.)



Claim.—1. A metal-melting furnace having a cylindrically-formed furnace-chamber and a centrally-disposed crucible-stand rising from the furnace-bottom a short distance and of a diameter less than that of the furnace-chamber, an opening leading through the side of the furnace near its bottom, and a barrier or wall extending from about one side border of said opening across the annular space in the bottom of the furnace and tangentially toward said crucible-stand, for the purpose set forth.

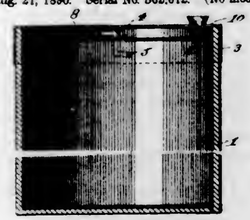
2. A metal-melting furnace having a cylindrically-formed furnace-chamber and a centrally-disposed crucible-stand rising from the furnace-bottom a short distance and of a diameter less than that of the furnace-chamber, an opening leading through the side of the furnace near its bottom, and a barrier or wall extending from about one side border of said opening across the annular space in the bottom of the furnace and tangentially toward said crucible-stand, combined with an injector-burner for introducing hydrocarbon fuel through said opening into the furnace, for the purpose set forth.

3. A metal-melting furnace having a cylindrically-formed furnace-chamber with a circular bottom and a centrally-disposed crucible-stand rising a short distance from the said circular bottom and of a diameter less than that of the furnace-chamber, and an opening leading through the side of the furnace above its bottom, a portion of said furnace-bottom being inclined or in the form of a segment of a spiral, substantially as shown, combined with an injector-burner for introducing hydrocarbon fuel through said opening into the furnace, substantially as and for the purpose described.

4. A metal-melting furnace having a cylindrically-formed furnace-chamber and a centrally-disposed crucible-stand rising from the bottom of the furnace-chamber a short distance and of a diameter less than that of said furnace-chamber, an opening leading through the side of the furnace near its bottom, and a barrier or wall extending from about one side border of said opening across the annular space in the bottom of the furnace tangentially toward said crucible-stand, the top of said wall being in the form of an overhanging ledge h, which is on a level above the top of said opening, for the purpose set forth.

5. A metal-melting furnace having a cylindrically-formed furnace-chamber and a centrally-disposed crucible-stand rising from the bottom of the furnace-chamber a short distance and of a diameter less than that of said furnace-chamber, an opening leading through the side of the furnace near its bottom, and a barrier or wall extending from about one side border of said opening across the annular space in the bottom of the furnace tangentially toward said crucible-stand, the top of said wall being in the form of an overhanging ledge h, which is on a level above the top of said opening, and a portion of said furnace-bottom being formed inclined, substantially as described and shown, and for the purposes set forth.

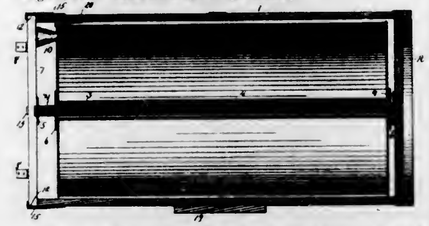
444,659. SHIPPING-CAN. WALTER M. BROWN, Albany, N. Y. Filed Aug. 21, 1890. Serial No. 362,612. (No model.)



Claim.—1. A can having a nozzle in its upper end and inclosed in a jacket, the latter having a cover with an opening to receive the nozzle, the cover having a flange encircling the top of the jacket, said flange having openings arranged to receive projections carried by the jacket and to be raised, lowered, and turned in order that the nozzle may protrude through the opening in the cover or to recede under the cover, and means for fastening the cover in its raised and lowered position, substantially as described.

2. A can having a nozzle in its upper end and inclosed in a jacket, the latter having a cover with an opening to receive the nozzle, the cover having a flange encircling the top of the jacket and having openings arranged to receive projections carried by the jacket and to be raised, lowered, and turned in order that the nozzle may protrude through the opening in the cover or recede under the cover, substantially as described.

444,660. SHIPPING-CAN. WALTER M. BROWN, Albany, N. Y. Filed Aug. 21, 1890. Serial No. 362,614. (No model.)



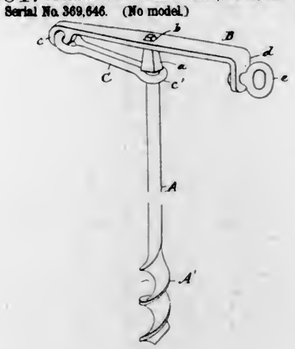
Claim.—1. A can revolubly hung on trunnions or pivots in a jacket and inclosed thereby and having a nozzle or discharge-opening in one of its ends, and a cover for the jacket, arranged to be opened and shut, said cam being arranged to slide back and forth in said jacket in order that the nozzle or discharge-opening may be projected beyond the outer edge of the end of the jacket and returned again, substantially as described.

2. A can suspended on a rod or pivots in a jacket and inclosed thereby and having a nozzle or discharge-opening in one of its ends, and a cover for the jacket, capable of being wholly or partly removed, said can being arranged to slide back and forth in said jacket in order that the nozzle or discharge-opening may be projected beyond or to the outer edge of the jacket-top and returned again, substantially as described.

3. A can revolubly hung on trunnions or pivots in a jacket and inclosed thereby and having a nozzle or discharge-opening in one of its ends, and a cover for the jacket, arranged to open and shut, said can being arranged to slide back and forth in said jacket in order that the nozzle or discharge-opening may be projected beyond the outer edge of the jacket and returned again, said can being counterweighted, the counter-weight being arranged to automatically keep the weighted side at its lowest and the nozzle or discharge-opening at its highest point when the can is laid on its side, substantially as described.

4. A can inclosed in a jacket and arranged to revolve and slide back and forth therein and having a nozzle or discharge-opening in one of its ends and having a retaining device arranged to retain said can at its lowest point in said jacket, said retaining device being arranged so as to be thrown in and out of position at will, substantially as described.

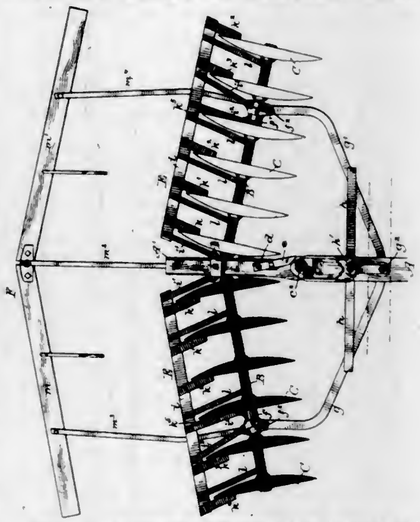
444,661. TETHER-PIN. LORIS P. CARL, Perris, Cal. Filed Oct. 29, 1890. Serial No. 369,646. (No model.)



Claim.—1. The combination, with a shank having an auger on one end and an integral squared and tapered head on the other end, of a link, a handle-bar loosely secured to the link and perforated to engage the head, and a ring-eye swiveled on the free end of the handle-bar, substantially as set forth.

2. The combination, with a rounded shank having an auger formed on one end and a squared longitudinally-tapered enlargement or head on the other end, of an elongated closed link loosely retained on the shank by one of its ends, a handle-bar having a square aperture near its longitudinal center to receive the shank-head, a hinge jointed by one end to the outer end of the link, and a ring-eye having a swiveled engagement with a lug bent at a right angle to the free end portion of the handle-bar, substantially as set forth.

444,662. DISK HARROW. GEORGE M. CLARK, Higganum, town of Haddam, Conn. Filed Sept. 22, 1886. Serial No. 214,242. (No model.)



Claim.—1. The combination, substantially as hereinbefore described, of the two disk-shafts and their disks, the pole having a rearward extension above the inner or coincident ends of said shafts and mounted thereon, and draft-rods pivoted to the pole and coupled to said shafts.

2. The combination, substantially as hereinbefore described, of the two disk-shafts and their disks, the pole having a rearward extension and mounted upon the inner ends of said shafts, a draft-rod extending from the pole to each shaft, and a lateral spring overlying both of said draft-rods and bearing thereon.

3. The combination, substantially as hereinbefore described, of the pole having a rearward extension or tail-piece, a pair of disk-gang shafts, a journal-box common to both of said shafts at their inner ends, beneath and supporting said tail-piece, but free to move longitudinally thereon, and a catch for confining said tail-piece against longitudinal movement independently of said box and for releasing the same in making angular adjustments of the gang-shafts with relation to the line of draft.

4. The combination, substantially as hereinbefore described, of the pole having a rearward extension, a hanger attached to said pole, the two disk-shafts coupled at their inner ends by a box sliding longitudinally in said hanger, and a catch for confining said box at any desired point in said hanger and for releasing the same during the angular adjustment of said shafts by a forward or a backward movement of the pole.

5. In a disk harrow, the combination of a gang-shaft provided with a cup-shaped bearing at its inner end, a journal-box at its inner end, and a ball within said box engaged by said cup-shaped bearing for receiving the end-thrust of said shaft and capable of rotation with and independently of said shaft, substantially as described.

6. In a disk harrow, the combination of the two gang-shafts, a box coupling their inner ends, and a single ball interposed between the ends of said shafts and capable of rotation with and independently of both of said shafts, substantially as described.

7. In a disk harrow, the combination, with the disk or gang shafts, of an end-thrust box containing a hollow perforated ball, substantially

as described, whereby a chamber is afforded within said ball for the reception of a solid lubricant, which will be yielded to the bearing when heated as a result of heavy service, or non-lubrication by oiling, because of the closure of oiling-apertures by dust and earth.

8. In a disk harrow, the combination of two gangs of disks and their shafts, coupled together by a box at their inner ends, a pole overlying said box, and a turf-cutter pendent from said pole in line with said box and rigidly set as against rearward deflection, and having a cutting-edge rounded outwardly in a vertical plane and also having sides rearwardly flaring toward the two inner disks on the gang-shafts, substantially as described, whereby sod may be cut and earth in the line of the connected ends of the gang-shafts placed within the influence of the two inner disks, and also whereby said turf-cutter may override ordinary obstacles.

9. The combination of the pole, a series of disks and their gang-shaft, a central journal-box secured to the pole for one end of said shaft, an outer journal-box near the outer end of said shaft and pivotally coupled to said pole by a draft-bar, a scraper-bar at the rear of the disks supported on arms projecting rearwardly from said two boxes, and a series of scrapers on said scraper-bar.

10. In a disk harrow, the combination, substantially as hereinbefore described, of a gang of disks, its shaft, its journal-boxes and arms, and a series of clod-breakers extending from below and in contact with said shaft and between the disks to a suitable support upon an adjacent portion of the harrow.

11. The combination, with the disks, a gang-shaft, and a scraper-bar, of a series of clod-breakers extending from said bar to and in contact with said shaft between the disks, substantially as described, whereby clods are broken and grass and weeds prevented from balling on said shaft.

12. The combination of a gang of disks and its shaft, a horizontal scraper-bar, and a scraper extended along the concave side of each disk and beneath the shaft, substantially as described.

13. The combination of a gang of disks and its shaft, a horizontal scraper-bar, a scraper extended along the concave side of a disk and beneath the shaft, and a clod-breaker extending from said bar along the convex side of a disk beneath the axle and thence longitudinally to said scraper, as and for the purposes specified.

14. The combination, substantially as hereinbefore described, of the disk-gangs and their shafts and a drag-bar at the rear of each gang of disks, coupled with their shaft and adjustable with relation to the line of draft to angles corresponding to the adjustment of the gang-shaft behind which it is located.

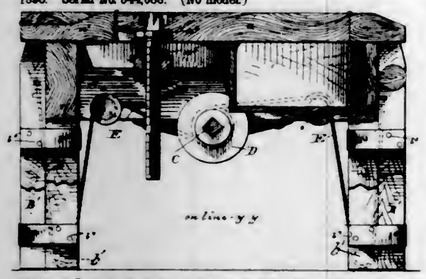
15. The combination, with the angularly-adjustable gang-shafts and their disks, of the drag-bar constructed in sections jointed centrally against rearward movement and each coupled near its outer end to the corresponding gang-shaft, substantially as hereinbefore described.

16. The combination, with the two disk-gangs and their shafts and the tail-piece of the pole, of a weight-box for each gang of disks, flexibly supported at one end on said tail-piece and at the other end upon a box on the gang-shaft, substantially as described.

17. The combination, with the two disk-gangs, their shafts, and the pole tail-piece, of the two weight-boxes, each over a gang-shaft and supported upon said tail-piece and on a box on said shaft, and a spring above said tail-piece, between the coincident ends of said boxes, for forcing their outer ends downward upon said shafts with yielding pressure, substantially as described.

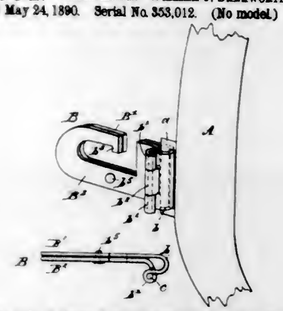
18. In a harrow, the combination, substantially as hereinbefore described, of a pole, frameless revolving disk or cutter gangs, hinged to the pole at their extreme inner ends, and draft-rods attached to said pole and gangs.

444,663. DESK. JOHN J. COLLIER, Renault, Ill. Filed Mar. 20, 1890. Serial No. 344,638. (No model.)



Claim.—In a desk, the combination of the frame A, fixed legs B, secured to said frame and having pulleys b' in their lower ends, clip b^3, secured to said fixed legs B, sliding legs B', having clip b^3 secured thereon, shafts C, journaled in frame A and having wheels D secured thereon at each end, wire or cord E, secured to said wheels D and passing over pulleys e and under pulleys b' and secured to sliding legs B' for operating said sliding legs, crank-handle c^3 on one end of said shaft C for operating said shaft, and the pawl and ratchet for retaining the shaft in position, substantially as shown and described.

444,664. HAME-HOOK. WILLIAM J. DANKWORTH, Gatesville, Tex. Filed May 24, 1890. Serial No. 353,012. (No model.)



Claim.—1. A hame-hook comprising two parallel hooked plates placed side by side, with their hooked portions registering to receive a trace-link, a hinge-joint connecting the inner ends of the two plates, and one of said plates being bent upon itself in rear of the hinge-joint to form a staple-receiving recess, substantially as set forth.

2. A hame-hook B, consisting in two parallel hooked plates B' B^3, placed side by side, with their hooked portions registering to receive a trace-link, knuckles b' b^3, respectively, on the inner extremities of said plates, a pintle c, passed through the said knuckles, the bend b in the rear end of plate B' forming a staple-receiving recess, and the aligned pin and aperture b^5 b^4 in the plates B^3 B', respectively, substantially as shown and described.

444,665. ANTI-FOULING PAINT. NICHOLAS B. DENNYS, London, England. Filed Nov. 14, 1889. Serial No. 330,332. (No specimens.) Patented in England Feb. 17, 1890, No. 2,539.

Claim.—The herein-described composition of matter to be used as an anti-fouling paint for ships' bottoms and other submerged surfaces, consisting of sulphate of zinc, sulphate of mercury, oxide of iron, oxide of copper, zinc slag, metallic zinc, solution of tannin, and shellac varnish, substantially in or about the proportions and prepared or mixed as specified.

444,666. MAGAZINE-GUN WITH PNEUMATICALLY-OPERATED MAGAZINES. ROBERT DURMORE, Weston, W. Va., assignor of one-half to Adolph Greenstein, same place. Filed Mar. 21, 1890. Serial No. 344,770. (No model.)

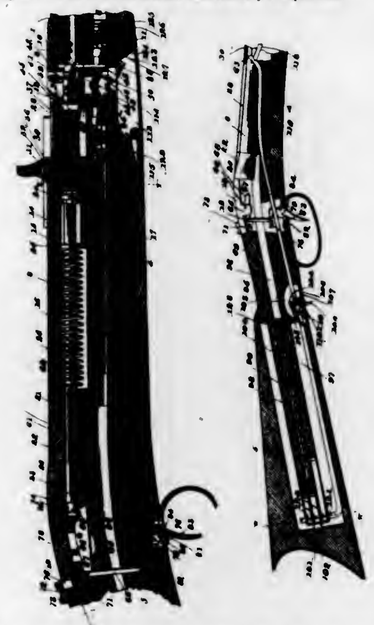
Claim.—1. In a magazine-gun, the combination, with a stock having a recessed butt and a tube leading from the recess, and a breech-section mounted upon the fore-arm of the stock and provided with a carrier-block moving across the tube, of a series of magazines pivoted in the recess of the butt and adapted to be swung so as to bring either into line with the tube of the stock, means, substantially as specified, for raising and lowering the breech-block, and means for feeding the cartridges from the magazines, substantially as specified.

2. In a magazine-gun, a recessed stock, in combination with a series of magazine-tubes pivoted at their rear ends in the recess, and means for swinging the series of tubes upon their pivot, so as to bring either one of the same into line with a cartridge-tube located in the grip of the stock, substantially as specified.

3. In a magazine-gun, a stock provided with a recess and in the grip of the same with a cartridge-passage, in combination with a series of magazine-tubes arranged parallel with each other and pivoted at their ends in the rear end of the recess, a bell-crank lever arranged in front of and below the magazines, a link pivotally connecting one branch of the same with the magazines, and a pivoted trigger loosely connected to the opposite end of the bell-crank and adapted to operate the same upon its pivot so as to raise and lower the magazines, substantially as specified.

4. In a magazine-gun, the combination, with the recessed butt of the stock provided with a cartridge-passage communicating with the recess and formed in the grip of the stock, of a series of parallel magazine-tubes pivoted at their rear ends in the rear end of the recess of the stock, a bell-crank lever pivoted in a recess in front of the magazine-recess, and a link loosely connecting one branch of the lever with

the series of magazines, a plate longitudinally slotted, mounted over the bell-crank-receiving recess, and provided at its opposite edges with indentations, and a trigger having opposite lugs adapted to take into the indentations, and having its upper end bifurcated to receive the remaining branch of the bell-crank, substantially as specified.



5. In a magazine-gun, the combination, with a stock having a recess, of a series of magazine-tubes pivotally mounted in the recess and provided at their rear ends with ports, means for raising and lowering the tubes, an air-tube arranged adjacent to the magazines and having ports so located that when one registers with a port of a magazine the others are out of register and closed, and means, substantially as specified, for forcing air from the tube into the magazines, substantially as specified.

6. In a magazine-gun, the combination, with a stock having a recess and a magazine located therein, of an air-tube leading to the rear end of the magazine, and means for forcing air into the tube, substantially as specified.

7. In a magazine-gun, the combination, with a stock provided with a recess, of a magazine-tube located therein, a spring-follower mounted in the tube, an air-pipe communicating with the tube, and means for forcing air into the pipe and tube in rear of the follower, substantially as specified.

8. In a magazine-gun, the combination, with a magazine, of an air-tube leading to the rear end of the same, and means, substantially as described, for forcing air into the tube at each discharge of the piece, substantially as specified.

9. In a magazine-gun, the combination, with a magazine, of a tube having an air-port, a pipe leading from the port to the rear end of the magazine, a headed plunger mounted in the tube, means for withdrawing the plunger and locking the same and for releasing the plunger, and a spring for throwing the plunger after its release, substantially as specified.

10. In a magazine-gun, the combination, with a magazine, of a tube having an opening, an air-pipe leading from the opening in the tube to the rear end of the magazine, a plunger having a head mounted in the tube and provided at its rear end with a shoulder and between its ends with a coiled spring, means for withdrawing the plunger from the tube, a pivoted catch spring-pressed for engagement with the shoulder, and a trigger adapted to be swung into contact with the rear end of the catch for depressing the front end of the catch out of engagement with the shoulder of the plunger, substantially as specified.

11. In a magazine-gun, the combination, with a magazine, of a sleeve having an opening, a plunger having a piston mounted for movement in the sleeve and having a coiled spring for forcing the same into the sleeve and terminating at its rear end in a shoulder and at its front end in a firing-pin, a pivoted latch adapted at its front end to engage the shoulder and having a depending L-shaped arm, and a pivoted trigger having an inverted-L-shaped arm depressed by the L-shaped arm of the latch, substantially as specified.

12. In a magazine-gun, the combination, with a front and rear magazine, of an intermediate tube having a port, oppositely-disposed air-pipes branching from the port and communicating with the rear ends of the front and rear magazines, a plunger having a piston-head mounted in the tube, a spring for throwing the plunger, and means for retracting and locking the plunger and for releasing the same, substantially as specified.

13. In a magazine-gun, the combination, with a series of rear magazines located in a recess in the stock of the gun and means for throwing either one of said series into line with a cartridge-tube located in front of the recess and in the stock, and a front magazine located under the barrel, of a tube provided with an orifice located between the front and rear magazines, a plunger having a piston mounted in the tube, a coiled spring for throwing the plunger, a pivoted latch for engaging the rear end of the plunger and terminating at the opposite side of the pivot in an L-shaped arm, an inverted-L-shaped trigger depressed by the arm, opposite air-pipes branching from the orifice of the tube, one of the air-tubes leading to the rear end of the front magazine and the opposite tube to the rear ends of the rear magazines, and means for throwing either one of said magazines into communication with said air-tube, substantially as specified.

14. In a magazine-gun, a magazine, in combination with a follower formed of opposite disks having an interposed cushioning-spring, an air-tube communicating with the rear end of the magazine, and means for injecting compressed air through the tube into the magazine in rear of the follower, substantially as specified.

15. In a magazine-gun, front and rear magazines terminating in rear of the breech of the barrel, in combination with pivoted gates located over the ends of the magazine, and means, substantially as described, for opening one gate and simultaneously closing the opposite gate, substantially as specified.

16. In a magazine-gun, the combination, with a receiver having a carrier-block well, a carrier-block mounted therein, and front and rear magazines communicating with the recess at opposite sides, of slots arranged in the walls of the recess opposite the openings of the magazines, gates pivoted over the openings and for movement in the slots, and a lever pivoted between the slots and having a lateral arm loosely engaging the ends of the gates, substantially as specified.

17. In a magazine-gun, the combination, with a receiver having a carrier-block well, front and rear magazine-passages communicating with the opening and provided with opposite slots, and a recess formed in one side of the receiver and provided with stops and indentations, of opposite gates mounted in the slots, a lever pivoted intermediate the slots within the recess and provided with a thumb-lug and a detent for taking in the indentations, and at the opposite side of its pivot with a longitudinally-slotted cross-arm engaging reduced ends of the gates, substantially as specified.

18. In a magazine-gun, a receiver having a carrier-block well and opposite cartridge-passages communicating with the opposite ends of the opening, a carrier-block mounted in the opening and provided with opposite recessed edges, and spring-pressed shutters mounted in the recesses and adapted to normally close the passages and to yield for the introduction of the cartridge into the passages, substantially as specified.

19. In a magazine-gun, the combination, with a receiver having a carrier-block well the wall of which is slotted, of a carrier-block mounted for vertical movement in the opening, a bell-crank pivoted in rear of the opening and having one of its terminals loosely engaging the block and passing through the slot in the wall of the opening, and means for tilting the bell-crank, substantially as specified.

20. In a magazine-gun, the combination, with a receiver having a carrier-block well one wall of which is slotted, of a carrier-block mounted in the opening, a bell-crank pivoted in rear of the opening and having one of its terminals inwardly bent to loosely engage the hoist-block, and a sliding tube mounted for movement above and in rear of the opening and loosely connected with the opposite branch of the bell-crank, substantially as specified.

21. In a magazine-gun, the combination, with a receiver having a carrier-block well, an opening above the same, and a bore below the opening and in rear of the wall, of a bell-crank pivoted to the receiver in rear of the well, one arm of the bell-crank passed through a slot in the wall of and into the well, the carrier-block mounted in the well and engaged by the said arm, a reciprocating sleeve mounted in the bore and having at one side a recess the base of which is elongated, and in which terminates the opposite arm of the bell-crank, a thumb-lug mounted upon the sleeve, and a plate hinged to the lug and mounted in the opening of the receiver and adapted for lateral movement into and out of the same, substantially as specified.

22. In a magazine-gun, the combination, with a receiver having a breech-opening and in rear of the same provided with a way, of a sliding tube mounted in the way and provided with a thumb-lug having an opening, a breech-plate adapted to close the opening in the

breech and having a perforated lug pivoted in the opening of the thumb-lug, and a spring arranged under the lug of the plate in rear of its pivot, substantially as specified.

23. In a magazine-gun, the combination, with a receiver having a longitudinal bore, of a sliding tube mounted in the bore and provided at one end with a firing-pin and in rear of the same with an operating-lug projecting upwardly through a slot in the receiver, a plunger provided with a piston-head mounted in the tube, a spring for throwing the same, said plunger terminating at its rear end in a shoulder, a spring-latch for engaging the shoulder, and a trigger for operating the latch to release the plunger, substantially as specified.

24. In a magazine-gun, the combination, with a magazine, a receiver having a bore, and a reciprocating tube mounted in the bore and provided with an operating-lug projecting through a slot in the receiver, of a plunger-rod having a piston, and in rear of the same a fixed collar for striking the end of the tube, a spring coiled upon the plunger for throwing the same, means for locking and releasing the plunger, an air-pipe leading from the reciprocating tube in front of the piston of the plunger and communicating with the rear end of the magazine, and a firing-pin mounted at the front end of the reciprocating sleeve, substantially as specified.

25. In a magazine-gun, the combination, with a receiver having an opening, of a bore arranged longitudinally in the receiver, magazine-passages terminating at each side of and near the bottom of the opening, a breech-arm, a carrier-block mounted in the opening, a hollow sleeve mounted for sliding in the bore and provided with a loose firing-pin adapted to enter an opening in the block, and said sleeve being provided with a recess elongated at its lower end, a bell-crank pivoted in rear of the hoisting-block and having one end engaging said block and the opposite end taking in the recess of the sleeve, a flat spring bearing against the shoulder formed within the bell-crank in front of its pivot, so as to normally elevate the same, a plunger mounted in the sleeve and provided at its front end with a piston and in rear of the same with a sleeve-striking collar, a spring coiled about the plunger, a pivoted spring-pressed latch arranged in rear of the plunger and adapted to engage a shoulder formed upon the same, a trigger for tilting the latch to release the plunger, and an air-tube leading from the sliding sleeve to the rear of the magazine, substantially as specified.

26. In a magazine-gun, a receiver having a carrier-block well and a longitudinal way in rear of and communicating with the opening, in combination with a carrier-block having a firing-pin-receiving opening, a reciprocating firing-pin, and a hollow sleeve revolubly mounted thereon and provided with a recess terminating in an elongated groove, and a bell-crank pivoted in rear of the carrier-block, connected thereto at one branch and having its opposite branch terminating in the groove of the sleeve, substantially as specified.

27. In a magazine-gun, the combination, with the stock having a recess in its butt, a breech-section, and barrel secured to the stock, of a magazine located under the barrel, a series of magazines located in a recess in the stock and adapted to be thrown into line with a cartridge-passage formed in the breech-section, a sleeve mounted above the cartridge-passage, a piston and plunger mounted in the sleeve, branch pipes leading from the sleeve to the front and rear magazines, and means for withdrawing the plunger, locking and releasing the same, substantially as specified.

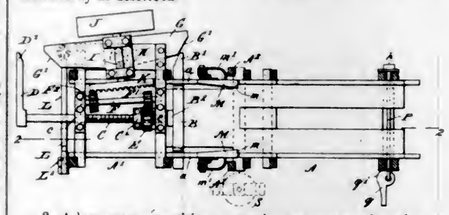
28. In a magazine-gun, the combination, with a sleeve having a firing-pin, of a plunger mounted in the sleeve and having a collar for abutting against the rear end of the same and terminating at its rear end in a shoulder, a pivoted latch for engaging the shoulder, and a locking-block mounted in rear of the latch and having a pin mounted in a slot above the latch and formed in the receiver, and a push button or slide mounted on the upper end of the pin, substantially as specified.

29. In a magazine-gun, the combination, with a receiver having an opening and opposite cartridge-passages leading from the magazines to the opening, of a carrier-block mounted in the opening and having its lower end recessed and provided at opposite sides with dovetailed ways, sliding shutters mounted in the ways, a bearing-pin mounted in the recess, leaves pivoted on the bearing-pin and having their free ends engaging openings in the shutters, and springs bearing upon said free ends of the leaves for depressing the shutters, substantially as specified.

30. In a magazine-gun, the combination, with a carrier-block having a bore the bottom of which is provided with a groove, of a firing-pin having an arm or rib for engaging the groove, and a hollow sleeve adapted to partially revolve upon the firing-pin and to withdraw and insert the same, substantially as specified.

444,667. HAY-PRESS. FRANK DONALD, Denison, Tex., assignor to himself and Neander S. Brust, same place. Filed June 13, 1890. Serial No. 355,356. (No model.)

Claim.—1. A hay-press comprising a frame or press-box, a plunger adapted to reciprocate therein, a screw-shaft mounted in suitable supports and connected with the plunger, a gear-wheel mounted on the screw-shaft and having an internal thread to fit the thread of the shaft, a shaft mounted in suitable supports nearly parallel with the screw-shaft and carrying pinions at each end thereof, one of said pinions meshing with the gear-wheel on the screw-shaft, a gear-wheel mounted on a suitable shaft at right angles to the pinion-shaft, and means for bringing said gear-wheel alternately into engagement with the pinions, substantially as described

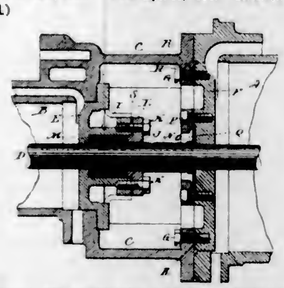


2. A hay-press comprising a press-box, a plunger adapted to reciprocate therein, a screw-shaft mounted in suitable supports and connected with the plunger, a gear-wheel mounted loosely on the screw-shaft and having an internal screw-thread to fit the thread of the shaft, a shaft mounted in suitable supports nearly parallel with the screw-shaft and carrying pinions at each end, one of which meshes with the gear-wheel of the screw-shaft, a horizontally-tilting frame mounted on suitable supports, a shaft mounted on said frame substantially at right angles to the pinion-shaft, said shaft having at its outer end a driving-pulley and at its inner end a gear-wheel adapted to engage the pinions, and means for automatically tilting the frame and bringing the gear-wheel mounted thereon into alternate engagement with said pinions at each end of the plunger-stroke, substantially as described.

3. In a hay-press, the combination, with the plunger having a sidewise-extending arm, a screw-shaft connected with the plunger and having a sidewise-extending arm, the pinion E on the screw-shaft, the shaft F, and pinions F' and F^2, of a tilting frame adapted to be engaged by the arms of the plunger and screw-shaft, the shaft L, and gear-wheel K, substantially as described.

4. A hay-press comprising a press-box A, the frame A', arranged at one end thereof, the plunger B, adapted to reciprocate in the press-box and having an inclined end B', as shown, the screw-shaft C, mounted in suitable supports, said shaft being connected at one end with the plunger and having its opposite end provided with a laterally-extending arm D, having an inclined face D', the gear-wheel E, mounted loosely upon the shaft C and having an internal screw-thread to fit the thread of the shaft, means, as keeper C', for holding the gear-wheel in position, the shaft F, mounted nearly parallel to the shaft C and carrying the pinions F' and F^2, the pinion F' meshing with the gear-wheel E, the horizontally-tilting frame G, pivoted in suitable supports and having the inclined ends G', which engage the inclined faces or ends of the plunger B and the arm D, and a shaft I, mounted on the frame G, said shaft carrying at one end a driving-pulley J and at the other a gear-wheel K, adapted to engage the pinions F' and F^2, substantially as described.

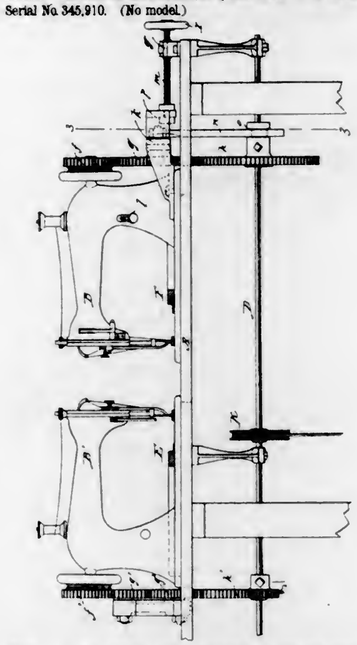
444,668. STUFFING-BOX FOR PISTON-RODS. EBENEZER HILL, South Norwalk, Conn. Filed Apr. 18, 1890. Serial No. 348,482. (No model.)



Claim.—1. The combination of the two cylinders arranged in line with each other, a single piston-rod common to both cylinders, a stuffing-box on the head of one cylinder and between the cylinders, a gland for said stuffing-box surrounding said piston-rod, and a tube rigidly attached to said gland surrounding said piston and extending toward and positively connected to the corresponding head of the other cylinder, the said tube longitudinally yielding, substantially as described

2. The combination of the two cylinders in line with each other, a single piston-rod common to both said cylinders, a stuffing-box on the head of one cylinder and between the cylinders, a gland for said stuffing-box surrounding the said piston-rod rigidly attached to the said gland and extending toward the corresponding head of the other cylinder, and a yielding diaphragm around the other end of said tube, the said diaphragm secured to the head of the other cylinder and whereby said tube is made longitudinally yielding, substantially as described.

444,669. METHOD OF AND MECHANISM FOR MAKING BLANK BOOKS. EDMUND N. MARTINEAU, Holyoke, Mass. Filed Mar. 29, 1890. Serial No. 345,910. (No model.)



Claim.—1. The method herein described of making blank books, which consists in providing a superposed series of leaf-sheets and a sheet of suitable back or cover fabric lying upon one side of said series, then stitching said leaf-sheets and cover fabric through and through in parallel lines within the edges of said sheets and separated from each other by a distance substantially equal to twice the distance of each of said stitching-lines from the edges of the sheets, and then severing the doubly-stitched leaf and cover sections midway between and parallel with said stitching-lines.

2. The method herein described of making blank books, which consists in providing a superposed series of leaf-sheets and a sheet of suitable back or cover fabric lying upon one side of said series, then stitching said leaf-sheets and cover fabric through and through in parallel lines within the edges of said sheets and separated from each other by a distance substantially equal to twice the distance of each of said stitching-lines from the edges of the sheets, then severing the doubly-stitched leaf and cover sections midway between and parallel with said stitching-lines, and then severing each of said so-divided portions transversely of its stitching-line into sub-sections, each of which constitutes a covered and sewed book.

3. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing mechanisms mounted thereon in suitably-separated relations, and a guide or gage located inside of the stitch-forming devices of one of said sewing mechanisms and ranging parallel to the direction of the line of feed of said mechanism, substantially as and for the purpose set forth.

4. A mechanism for making books, substantially as described, consisting of a work-table and two sewing mechanisms mounted thereon in suitably-separated relations, and a guide or gage located inside of the stitch-forming devices of each of said sewing mechanisms and ranging in the direction of the line of feed of said mechanisms, and each guiding-gage being independently adjustable toward and from the other, substantially as described.

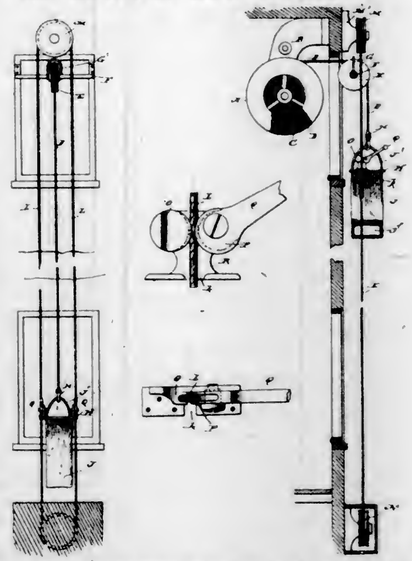
5. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing mechanisms mounted thereon in suitably-separated relations to each other, a shaft D under said work-table, and driving connections interposed between said shaft and the driving-shaft of each of said sewing mechanisms, for the purpose set forth.

6. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing-machines mounted thereon in suitably-separated relations, each sewing-machine having on the driving-shaft thereof a gear, and one of said sewing-machines being movable toward and from the other, a counter-shaft under said work-table having thereon a gear under each of said sewing-machine shaft-gears, and gearing intermediate of the gears on said sewing-machine shafts and counter-shafts, whereby said sewing-machine shafts are both rotated in the same direction, the said counter-shaft gear under the gear on the movable machine being splined on the counter-shaft, a part affixed to said movable machine and extended to engage with the hub of the said splined gear, whereby the latter is movable with said machine, and a suitable carrying support on the movable machine for the respective intermediate gearing between said spline-gear and the shaft-gear on the movable machine, substantially as described.

7. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing mechanisms in anitable separated relations to each other on said work-table, one of which is movable toward and from the other in suitable guide-ways, and a screw-shaft suitably mounted on said work-table and having an engagement with said movable sewing mechanism for insuring adjusting movements thereof, substantially as described.

8. In a mechanism for making books, substantially as described, in combination, a suitable support or work-table and two sewing mechanisms mounted thereon in suitably-separated relations to each other, a shaft D under said work-table, and driving connections interposed between said shaft and the driving-shaft of each of said sewing mechanisms, and devices for imparting a periodical rotation to said shaft D, consisting of a driven pulley G, a swinging lever I, carrying thereon an arbor having a pulley H and a friction-disk J, the pulley K on said shaft D, and a belt between said pulleys H and K, means for normally maintaining said swinging lever I in a position away from proximity to said driven pulley G, the treadle L, and the flexible connection, suitably guided between said treadle and said swinging lever, all so that when said treadle is depressed the lever I will be swung to present the friction-disk J in peripheral contact with said pulley G, substantially as set forth.

444,670. FIRE-ESCAPE. HENRY C. MOIR, Sydney, New South Wales. Filed Nov. 6, 1890. Serial No. 370,463. (No model.)



Claim.—1. In a fire-escape, the combination, with an endless guide-rope adapted to run over pulleys M N on the outside of a building, of a basket having recesses in its frame to receive the said guide-rope

and connected to one end of a rope whose other end is attached to a spring-drum on the inside of a building, substantially as herein shown and described.

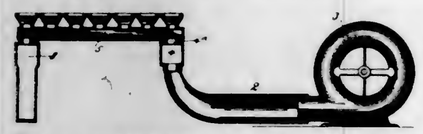
2. In a fire-escape, the combination, with an endless guide-rope adapted to run over pulleys M N, of a basket having recesses in its frame to receive the guide-rope and provided with a clamping device, and a rope attached to the basket and to a spring-drum and passing over a guide-pulley, substantially as shown and described.

3. In a fire-escape, the combination, with the pulleys M N, journaled on the outside of a building at the top of the same and below the sidewalk, respectively, and the endless rope L, passing over the said pulleys, of the bag J, the rope D, the pulley E, journaled on a cross-shaft F outside of the window, and the drum A, journaled in the room and containing a spiral spring C, substantially as herein shown and described, and for the purposes set forth.

4. In a fire-escape, the combination, with the pulleys M and N, journaled on the outside of the building at the top of the same and below the sidewalk, respectively, and the endless rope L, passing over the said pulleys, of the bag J, the rope D, the pulley E, journaled on a cross-shaft F outside of the window, the drum A, journaled in the room and containing a spiral spring C, and devices for locking the bag at one or both sides on the rope L, substantially as herein shown and described, and for the purposes set forth.

5. In a fire-escape, the combination, with the pulleys M and N, journaled on the outside of a building at the top of the same and below the sidewalk, respectively, and the rope L, passing over the said pulleys, of the bag J, the rope D, the pulley E, the drum A within the room, and the fixed jaw O and cam-lever P Q on the frame of the bag, substantially as herein shown and described, and for the purposes set forth.

444,671. **FURNACE.** HENRY PETERSEN, Chicago, Ill., assignor to James O. Parker, trustee, same place. Filed Oct. 22, 1889. Serial No. 327,784. (No model.)



Claim.—1. In a furnace-grate, a series of vertical tubes of polygonal cross-section set closely together and with their tubular connections forming air-passages, the upper ends of said vertical tubes being provided with foraminous plates which, together with the upper edges of said tubes, form the entire grate-surface, substantially as described.

2. In a furnace-grate, a series of flared tubes and tubular supports together forming air-passages, said flared tubes having their enlarged ends uppermost, in combination with foraminous plates set in the flared ends of said tubes and forming the grate-surface, substantially as described.

3. In a furnace-grate, a series of flared tubes of polygonal section forming air-passages and having their larger ends uppermost and in close contiguity, in combination with foraminous plates set in the flared ends of said tubes and having air-passages between the edges of said plates and the tube ends, substantially as described.

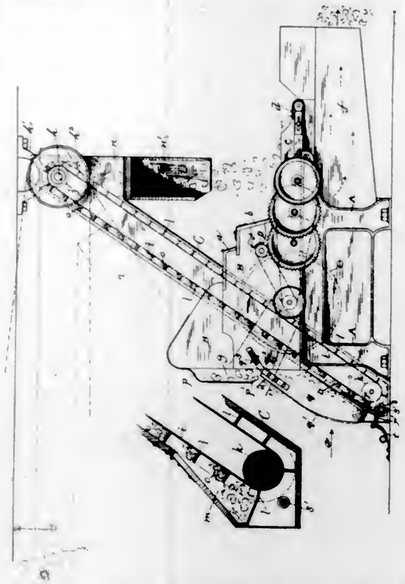
4. In a furnace-grate, the combination of a series of air-tubes traversing the furnace, having openings on their top surfaces, in which are affixed flared vertical tubes having their larger ends uppermost, and foraminous plates set in the upper ends of said tubes and forming the grate-surface, substantially as described.

5. In a furnace-grate, a series of hollow chambers having foraminous covers, combined with an air-distributing conduit or conduits and air-pipes leading from said conduit or conduits to said hollow chambers, substantially as specified.

444,672. **PICKER FOR RAGS AND WASTE.** SAMUEL A. PRESCOTT, Wilkinsonville, Mass. Filed Jan. 20, 1890. Serial No. 337,425. (No model.)

Claim.—1. The combination, with an ordinary picker for preparing rags or waste for carding, of an elevator having a series of small troughs on an endless belt moving around continuously, said elevator also having a suitable inlet or opening at its lower end, an inclined discharge-chute at its upper end, a guard arranged over the upper back end of the picker to stop and direct the flying particles of rags or waste downward, and a trough to direct said particles of rags or waste into the bottom of the elevator, whereby those bits or particles not properly picked and thrown out at the rear of the picker may be automatically conveyed to the front end of said picker to be repicked or worked over again, substantially as set forth.

2. The combination of the picker with the elevator C, pivoted at its upper end to the shaft A, so that it may be swung up and fastened in an elevated position, also having an inclined chute *n* at said upper end extending over the front end of said picker and an opening at its lower end to admit the bits of rags or waste to be elevated, the trough *q*, fastened at its upper end to the rear end of the picker and its lower end adapted to engage with the bottom of said elevator, also having a shaking device, substantially as described, combined with its lower end, and the guard *p*, secured to the upper rear end of the picker and projecting out and down from said rear end to direct the bits of flying rags or waste downward into said trough *q*, substantially as and for the purpose set forth.



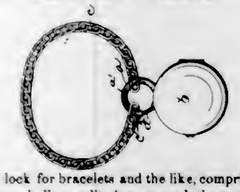
3. The combination of the rear end of the picker and trough *q* with the finger *r*, secured at its upper end to the bottom of said trough and at its lower end engaging with the stationary spring *t*, the ratchet-wheel *s* on the driving-shaft *s'*, and said stationary spring *t*, substantially as and for the purpose set forth.

4. The combination of the fan D, having the upturned flanges *y y* and the blade *u*, with the frame *v*, having the flanges *v' v'*, and holding-bolts *y' y²*, having suitable nuts, substantially as and for the purpose set forth.

5. The combination of the fan D, having the upturned flanges *y y*, blade *u*, secured to frame *v*, said frame *v* having flanges *v' v'* and *w² w²*, and holding-bolts *y' y²*, provided with suitable nuts, with the cross-bar *w*, casing B, horizontal holding-bolts *w'*, provided with suitable nuts, and vertical adjusting-bolts *w²*, substantially as and for the purpose set forth.

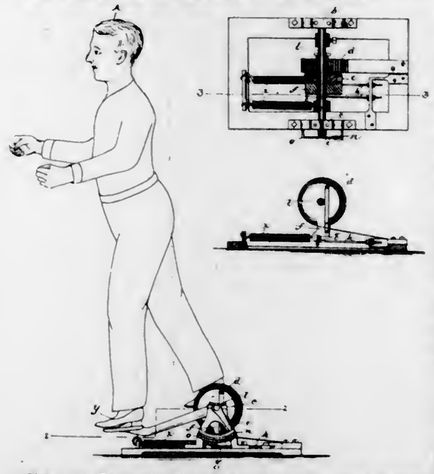
6. In a picker for preparing rags or waste for carding, the fan D and blade *u*, adjustably fastened to a suitable frame adapted to be in turn adjustably fastened in said picker, whereby said fan and blade may be properly adjusted to each other prior to fastening the same in the picker, substantially as set forth.

444,673. **JEWELRY.** LUDWIG J. ROHER, Newark, N. J. Filed Mar. 28, 1890. Serial No. 345,659. (No model.)



Claim.—A lock for bracelets and the like, comprising a locket or other ornament, a hollow split ring secured thereto and carrying a spring, and a locking-bolt working in said hollow split ring and engaging in a holding relation with a suitable seat, thereby closing the ring, said split ring being adapted to engage the opposite ends of a bracelet or necklace, as shown and described, for the purposes set forth.

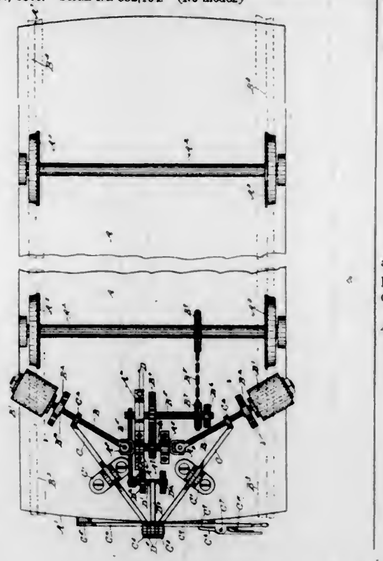
444,674. **EXERCISING APPARATUS.** GEORGE S. SANBORN, Lynn, Mass., assignor to the Sanborn Exercising Machine Company, Portland, Me. Filed Jan. 28, 1890. Serial No. 338,348. (No model.)



Claim.—1. The combination of the base, a rod revolubly mounted thereon, a representation of a human figure rigidly attached to said rod and adapted to move therewith, a spring to restore said figure to and maintain it in its normal or upright position, and a spring to restrain the forward motion of said figure, substantially as and for the purposes specified.

2. The combination of the base, a rod revolubly mounted thereon, a representation of a human figure rigidly attached to said rod and adapted to move therewith, a spring to restore said figure to and maintain it in its normal or upright position, a short arm carried by said rod, and a graduated arc, substantially as and for the purposes specified.

444,675. **RAILWAY-RAIL-CLEANING MACHINE.** JOHN SEROR, Cohoes, N. Y., assignor of one-half to Edward C. Doyle, same place. Filed May 17, 1890. Serial No. 352,184. (No model.)

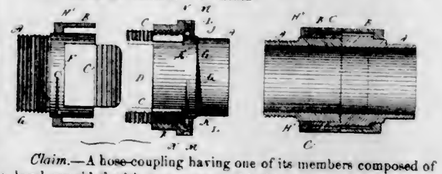


Claim.—1. In a railway-rail-cleaning machine, the combination, with a brush-shaft, of a fixed bearing located near one end of such shaft, a movably-adjustable bearing located near the other end, means, substantially as described, for adjustably moving such movable bearing, and gear connections between such shaft and a motor-shaft, substantially as described.

2. In a railway-rail-cleaning machine, the combination, with a shaft rotary in fixed bearings, a motor-shaft, and gear connections between such shafts, of a pair of brush-shafts respectively connected at one end by a universal joint to the ends of the driven shaft, movable bearings for the other ends of the brush-shafts, and means, substantially as described, for adjustably moving the movable ends of the brush-shafts.

3. In a railway-rail-cleaning machine, a shaft rotary in fixed bearings, a cogged wheel fixed on such shaft, a counter-shaft having a fixed bearing at one end and an adjustable bearing at the other end, a cogged wheel fixed upon the counter-shaft and engageable with the other cogged wheel, a sprocket-wheel fixed upon the counter-shaft, a car-axle, a sprocket-wheel fixed upon the axle, and a sprocket-chain connecting such sprocket-wheels, in combination with a brush-shaft connected at one end with the shaft rotary in fixed bearings by a universal joint, a movable bearing which supports the other end of the brush-shaft, an adjusting-lever movably connected at one end with the brush-shaft, a fixed fulcrum located intermediately of the ends of the adjusting-lever, a rock-shaft and levers with connections for connecting one of the rock-levers with the laterally-movable ends of the counter-shaft, a hand-lever fulcrumed upon a fixed support, and a link connection for connecting the hand-lever with the brush-adjusting lever and one of the rock-levers, substantially as described.

444,676. **HOSE-COUPLING.** JOSEPH C. SHULL, Meriden, Conn., assignor of one-half to Augustus H. Jones, same place. Filed July 26, 1890. Serial No. 360,009. (No model.)



Claim.—A hose-coupling having one of its members composed of a head provided with two segmental locking-arms located opposite each other, raised in relief above its main surface, so as to form clearance-spaces between its adjacent edges, and having their projecting ends exteriorly threaded, and a collar sleeved over and riding upon the inner ends of the said arms and having its outer end internally divided into blank and threaded spaces, as described, and secured to the head by spring-actuated pins carried by it and entering grooves therein, substantially as described.

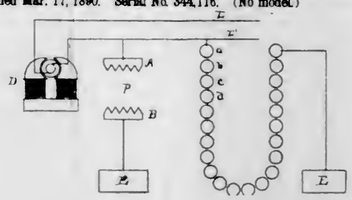
444,677. **INDEPENDENT CHECK FOR HORSES.** CARLO R. TAYLOR, Berlin, Wis., assignor of one-half to Josiah T. Whitcomb same place. Filed Nov. 19, 1889. Serial No. 330,921. (No model.)



Claim.—A chin-plate A, notched at its upper end, having an orifice at its lower extremity, and having attached thereto the spur-plate B, provided with spurs, the spring D, and rein-lugs E, substantially as described

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444,678. **LIGHTNING-ARRESTER.** ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Mar. 17, 1890. Serial No. 344,116. (No model.)



Claim.—1. A lightning-arrester having two conducting parts between which a difference of potential may exist, separated by a series of conducting-pieces, forming spaces the total length of which is too great to permit of an arc being maintained, but small enough to permit of a disruptive discharge.

2. A lightning-arrester having two conducting-pieces between which a difference of potential may exist, separated by a series of insulated conducting-pieces of suitable elastic capacity, between which is a series of spaces the total length of which is greatly in excess of the space ordinarily provided between the opposite parts of a lightning-arrester, whereby a disruptive discharge is permitted, but the formation of an arc prevented.

3. In a lightning-arrester having a series of disruptive spaces which the discharge must pass in reaching earth, a set of plates or surfaces whereby static capacity is secured, and separate connections from such plates or surfaces to dischargers, which form between them discharging-spaces in series, said dischargers being made of balls or other massive form as compared with the plates or extended surfaces, so as not to be readily heated by the spark of the discharge.

4. In a lightning-arrester, a column or compound condenser built up of conducting bodies, such as metal disks, and interposing insulating material, in combination with discharging-surfaces set spirally or angularly with relation to the axis of the column.

5. In a lightning-arrester, a series of plates separated by insulating material or spaces and having a determinate static capacity, a set of dischargers connected individually to the plates, with intervening disruptive spaces of limited extent between such dischargers, such dischargers and disruptive spaces between them being mounted or arranged so as to have an extended free air-space around them, substantially as described

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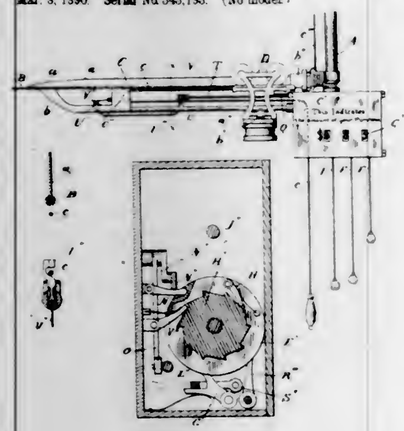
444,679. DIOXYNAPHTHALINE-MONO-SULPHONIC ACID. MORITZ ULRICH, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Oct. 31, 1890. Serial No. 369,971. (No specimens.)

Claim.—1. The process for producing a new dioxynaphthaline-mono-sulphonic acid or its salts by melting the salts of alpha-naphthol alpha disulphonic acid S, as described, with caustic alkali in a closed or an open vessel.

2. As a new product of manufacture, the dioxynaphthaline-mono-sulphonic acid S, which has the following characteristics: the soda salt crystallizes in small white leaves which are easily soluble in water or alcohol of eighty per cent., by adding perchloride of iron to a watery solution a dirty-green deposit, and with some drops of perchloride of lime a changeable-green solution is formed, the latter being decolorized by using a surplus of perchloride of lime; the new acid or its salts gives with diazobenzene a new azo dye-stuff similar in shade to acid magenta, and with ortho-tetrazo-ditolyl or tetrazo-diphenyl ethers direct dyeing coloring-matters of bright-blue shades. The acid has the following chemical formula

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444,680. STORE-SERVICE APPARATUS. JAMES WHITTEMORE, Detroit, Mich., assignor to Thos. S. Sprague & Son, same place. Filed Mar. 3, 1890. Serial No. 343,193. (No model.)



Claim.—1. The combination, with a store-service apparatus, of a cash-register and means actuated by the register for controlling the operation of the apparatus, substantially as described.

2. The combination, with a store-service apparatus, of a cash-register connected directly therewith and mechanism actuated by the register for controlling the operation of the apparatus, substantially as described.

3. In a store-service apparatus, the combination of a way connecting two stations, a carrier on said way, a cash-register at one of said stations, and means arranged and constructed to make the operation of the carrier dependent on the same, substantially as described.

4. The combination of a cash-carrier apparatus, a cash-register, and connecting mechanism arranged to make the operation of one dependent on the other, substantially as described.

5. The combination of a cash-carrier apparatus, a cash-register apparatus, and a lock for the cash-register adapted to be released by the carrier apparatus, substantially as described.

6. The combination of a cash-carrier apparatus, a cash-register apparatus, and connecting mechanism whereby the registering mechanism is returned to its initial position by the cash-car apparatus, substantially as described.

7. The combination of a cash-carrier apparatus, a cash register and indicator, and connecting mechanism whereby the indicating mechanism is returned to its initial position, ready for another indication by the movement of the car, substantially as described.

8. The combination of a cash-carrier apparatus, a cash register and indicator, and mechanism whereby the indication is removed upon the return of the car, substantially as described.

9. The combination of a cash-carrier apparatus, a cash register and indicator, and connecting mechanism whereby the indication is exposed during the travel of the car and is removed upon the return thereof, substantially as described.

10. The combination, with a cash-carrier and a cash register and indicator, of a series of indicating devices, mechanism for operating said devices, a tripping device common to all of said indicating devices, and a connection between said tripping device and the cash-car apparatus, whereby the indication is removed by the movement of the cash-car, substantially as described.

11. The combination, with a cash-car and a cash register and indicator, of a series of indicating-wheels, mechanism for operating each of said wheels independently, a tripping device common to all of said indicating-wheels, and a connection between said tripping device and the cash-car, whereby the indication is removed by the movement of the cash-car, substantially as described.

12. The combination, with a cash-car and a cash register and indicator, of a series of spring-actuated indicating-wheels, mechanism for operating each of said wheels independently, a tripping device common to all of said indicating-wheels, and connecting mechanism whereby the wheels are turned to their initial position by the incoming car, substantially as described.

13. The combination of a cash-carrier apparatus, a cash-register, a lock for the registering mechanism, and mechanism for disengaging said lock when the car is at the station, substantially as described.

14. The combination of a cash-carrier apparatus, a cash-register, a lock for the registering mechanism, locking said mechanism against operation during the absence of the car, an arm upon said car, and connecting mechanism disengaging said lock upon the return of the car, substantially as described.

15. The combination of a cash-carrier apparatus, a cash-register, a series of wheels adapted to register different denominations of monetary value, mechanism for operating the wheels of each denomination, a pawl to hold said wheels in their operated position, a trip common to all the registering actuating mechanism, tripping mechanism for operating said trip, operated by the movement of the carrier, whereby the registering actuating mechanism is reset by the movement of the cash-carrier, substantially as described.

16. The combination, in a store-service apparatus, of a propelling-cord, a cash-car, a cash-register, a locking device normally locking the propelling-cord of the car, and mechanism for releasing the cord upon the operation of the cash-registering device, substantially as described.

17. In a store-service apparatus, the combination of a cash-carrier and a cash-register, a locking device for the carrier, and mechanism between said locking device and the cash-register, whereby said lock is released upon the operation of said register, substantially as described.

18. In a store-service apparatus, the combination of a cash-carrier, a cash-register, a locking device for the carrier, and connecting mechanism with each denomination of the cash-register apparatus, whereby upon any indication of denomination of the cash-register the said lock is released, substantially as described.

19. The combination, in a store-service apparatus, of a cash-carrier and a cash-registering apparatus, of a lock normally holding the cash-carrier apparatus from operation and releasing it upon the registration of any amount, substantially as described.

20. The combination, in a store-service apparatus comprising a cash-carrier and a cash-register, of the locking-bar L, having the apertures M M', the propelling-cord of the carrier, the block L thereon, and connecting mechanism between the bar L" and the registering mechanism, whereby the cord is normally locked, but is unlocked upon the operation of the registering mechanism, substantially as described.

21. In a store-service apparatus, a cash register and a car normally held in an inoperative position by means controlled by the register, substantially as described.

22. In a cash-carrier apparatus, the combination of a cash-indicator and a lock for the indicator, and mechanism to release the lock by the operation of the carrier, substantially as described.

23. In a cash-carrier apparatus, the combination of a cash-indicator and connecting mechanism arranged to make the operation of the indicator apparatus dependent upon the presence of the car at the station, substantially as described.

24. In a cash-carrier apparatus and its actuating mechanism, the combination of a lock for said actuating mechanism and a cash-register adapted to actuate means to actuate said lock, substantially as described.

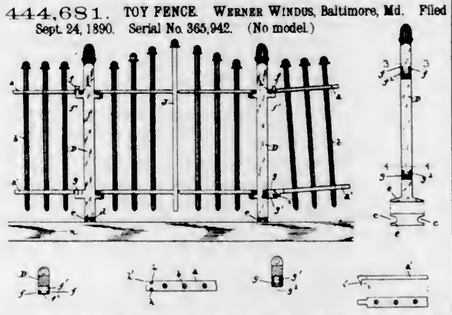
25. The combination, with a cash-carrier apparatus, of a cash-indicating mechanism and mechanism for making the actuation of the cash-carrier apparatus dependent upon prior actuation of the indicator, substantially as described.

26. The combination, with a cash-carrier, of a cash-indicator and means actuated by the carrier for removing the indication, substantially as described.

27. The combination, with a cash-carrier apparatus, of a cash-indicator and means so actuated by the indicator to release the carrier, substantially as described.

28. The combination of a cash-carrier apparatus, a cash-register, a lock for the registering mechanism, and mechanism for disengaging said lock when the carrier apparatus is in position to be operated, substantially as described.

444,681. TOY FENCE. WERNER WINDUS, Baltimore, Md. Filed Sept. 24, 1890. Serial No. 365,942. (No model.)



Claim.—A toy fence comprising posts D, each having attached at its lower end a flat-bottomed base-plate *e* to hold the post upright, and provided on its side with a double hook *f* and an ear *g*, and panels having two horizontal bars, one of which has T-shaped ends *h'* to engage with the double hook and the other has its ends provided with a hook having a beveled outer side *i'* to engage with the ear, as set forth.

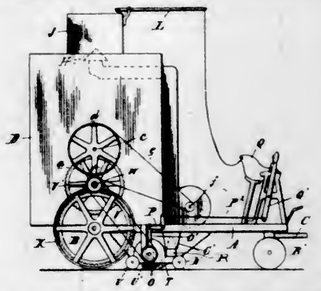
444,682. INTERCHANGEABLE DIE. HENRY B. ANABLE, Albany, N. Y., assignor to George H. Treadwell, same place. Filed Mar. 15, 1890. Serial No. 343,952. (No model.)



Claim.—1. In an apparatus for producing raised characters in substances, a die consisting of a retaining-band and having type distributed within said band and separated from each other therein by removable strips or blocks, and having an opening at or near the inner ends of the said type and said strips and a plug to fit in said opening, and also having a matrix having representations of the faces of the type arranged in the retaining-band sunken in its face so as to correspond with said characters in said retaining-band, substantially as described.

2. In an apparatus for producing raised characters in substances, a die consisting of a retaining-band and having type distributed within the retaining-band, and removable strips or blocks separating the type and having an opening through said type and said strips or blocks, said strips or blocks having a portion of their upper surfaces cut away to form a groove and their inner ends having a vertical projection rising from them, and a plug to fill said opening, said plug having a flange projecting from the upper end, said flange having a groove to correspond with the vertical projections on the inner ends of the type and strips or blocks and a projection to correspond with the groove in said type and blocks, and having a matrix having the faces of the type in the die sunken in its face to correspond with said type, substantially as described.

444,683. STREET-SWEEPING MACHINE. WILLIAM AUBERLIN, Detroit, Mich., assignor of three-fourths to Charles Auberlin, Herman Auberlin, and Gustave Auberlin, same place. Filed May 13, 1890. Serial No. 351,649. (No model.)



Claim.—1. In a street-sweeping machine, the combination, with the frame, of an independently-supported truck below the same, connections between the truck and frame, a rotary brush in the truck, a casing for the brush, a storage-compartment, a fan, a suction-spout, and an adjustable connection between the spout and the casing, substantially as described.

2. In a street-sweeper, the combination, with the frame, of an independently-supported truck, a brush adjustably secured on the truck, a casing for the brush, a suction spout or trunk on the casing entering the spout, having its end loosely held therein, whereby the same may be vibrated, and a fan, substantially as described.

3. In a street-sweeper, an independent brush-supporting truck, a storage-compartment, a suction-pipe leading into the same, a fan, and a casing for the brush, having a trunk extending into and loosely held in the suction-pipe, substantially as described.

4. In a street-sweeper, the combination, with the frame, a storage-compartment, and a suction-pipe leading into the same, of a fan in the suction-pipe, a rotary brush supported beneath the frame and independently thereof, a casing for the brush, a movable connection between the casing and spout, means for actuating the fan and brush, and means for simultaneously raising the brush and disconnecting the actuating means of the fan and brush, substantially as described.

5. In a street-sweeping machine, the combination of the independently-supported truck N, casing N', brush O, trunk R entering the suction-spout, and the plate T, substantially as described.

6. In a street-sweeping machine, the truck N, the supporting-chains S', the casing N', within which is the rotary brush O, the trunk R, having flanges R', the suction-spout G', having the flaps S, and the yielding plates T and U at front and rear of the truck, substantially as described.

7. In a street-sweeping machine, the combination, with the spout H, having an aperture I' in the upper end, of the cap H', having lateral aperture I, substantially as described.

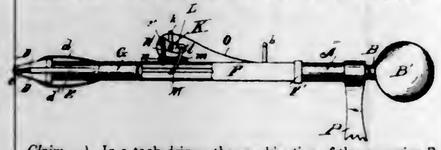
8. In a street-sweeping machine, the combination of the frame, the housing D, the blower having its discharge-spout entering said housing, the extension J, hinged screens J', and means for vibrating said screens, substantially as described.

444,684. CLOCK-PINION. ARCHIBALD BANNATYNE, Waterbury, Conn., assignor to the Waterbury Clock Company, same place. Filed Feb. 7, 1890. Serial No. 339,553. (No model.)



Claim.—In a lantern-pinion, the combination, with a staff, of two collets mounted thereon, one of which is constructed with a circular series of perforations and the other with a series of corresponding seats, leaves extending through said perforations of the one collet and into the corresponding seats in the other collet, with a cap mounted on said staff directly against the outer face of said perforated collet, substantially as described, and whereby the said leaves are prevented both from lateral and endwise displacement.

444,685. **TACK-DRIVER.** HORACE H. BARNES and JOHN S. BARNES, Detroit, Mich. Filed Apr. 4, 1890. Serial No. 346,583. (No model.)

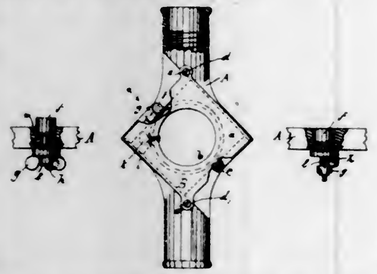


Claim.—1. In a tack-driver, the combination of the magazine F, to hold the tacks, with the curved finger M, separating the tacks, the rocking plate L on the rock-shaft K, the finger N, pivoted in the rocking plate L, the rock-shaft K, the spring to rotate the rock-shaft, the arm *k*, projecting from the rock-shaft, the arm *b* on the reciprocating bar B, and the reciprocating bar B, as and for the purposes set forth.

2. In a tack-driver, the combination of the magazine F, to hold the tacks, with the finger M, sliding into the magazine and pivoted to the rocking plate L, the rocking plate L on the rock-shaft K, the finger N, pivoted to the plate L and sliding into the magazine, the rock-shaft K, the arm *k*, projecting from the rock-shaft, the spring actuating the rock-shaft, the reciprocating hammer B, the arm *b* on the reciprocating hammer, the tube A, containing the reciprocating hammer, and the feeding-tube G, connecting the magazine F with the tube A, all substantially as described.

3. In a tack-driver, the combination of the magazine F, to hold the tacks, with the finger M, inserted in the magazine and pivoted to the plate L, the rocking plate L on the rock-shaft K, the finger N, pivoted on the rocking plate L and inserted in the magazine, the rock-shaft K, carrying the plate L, the arm *k* on the rock-shaft, the tube A, containing the reciprocating hammer B, the reciprocating hammer B, the feeding-tube G, through which the tacks pass from the magazine to the tube A, the springs *d d* on the tube A, and the lips D D on the springs *d d*, holding the tack for the hammer, all substantially as described.

444,686. **PIPE-STOCK.** DE WITT C. BEANE, Newark, N. J. Filed June 28, 1890. Serial No. 357,074. (No model.)

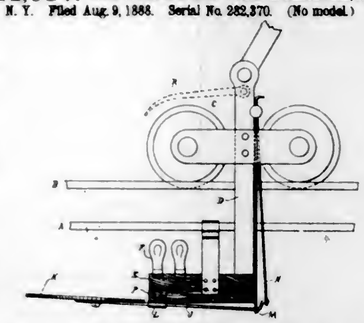


Claim.—1. In a pipe-stock, the combination, with a cutter-holder and a stock adapted on one side to receive the cutter-holder, of a locking device consisting of a stop in the bed-plate opposite the opening and against which the cutter-holder rests, a sliding pin opposite said stop, a winged nut on said pin, and cam projections on said bed-plate, all said parts being adapted to operate substantially as described, and for the purposes set forth.

2. In a pipe-stock, the combination, with a stock adapted to receive a cutter-holder, of an adjustable holding-pin and a winged nut on said pin constructed and adapted to operate substantially as described, and for the purposes set forth.

3. In a pipe-stock, a device for securing a cutter-holder in the socket in the stock, consisting of an adjusting controlling-pin, a spring adapted to hold said pin in its normal position, a winged nut on said pin, and cam projections on the bed-plate, on which said nut is adapted to slide, all said parts being arranged and adapted to operate as described, and for the purposes set forth.

444,687. **CONDUIT-INSPECTOR.** JOSIAH L. BLACKWELL, New York, N. Y. Filed Aug. 9, 1888. Serial No. 282,370. (No model.)



Claim.—1. The combination, with a mirror, of a supporting-shank adapted to extend through the slot of a conduit containing an electrical supply-conductor, and means for adjusting the position of the mirror relatively to the shank.

2. The combination, with a shank adapted to extend through the slot of a conduit containing an electrical supply-conductor, of an electric lamp supported thereby, and a contact connected to a terminal of said lamp, adapted to bear on the supply-conductor inclosed in the conduit.

3. The combination, with a shank adapted to extend into a conduit containing an electrical supply-conductor, of a mirror carried thereby, a contact adapted to bear upon the supply-conductor also carried by said shank, and an electric lamp connected to said contact.

4. The combination, with a slotted conduit containing an electrical supply-conductor, of a shank adapted to extend through the slot of a conduit, a mirror propelled thereby, with means for illuminating the interior of the conduit.

5. The combination, with a vehicle adapted to travel on the outside of a slotted conduit, of a shank extending therefrom into the conduit, an electric lamp carried by said shank, having its terminals in contact with the supply-conductor in a conduit, and a mirror for reflecting upward the light of said lamp.

6. The combination, with a shank adapted to extend through the slot of a conduit containing an electrical supply-conductor, of a horizontal mirror upon said shank and carried thereby at a point below the said conductor.

7. The combination, with a shank adapted to extend into the slot of a conduit, of a horizontal mirror within the conduit attached to said shank, and an artificial light placed above said mirror.

8. The combination, with a supporting-shank adapted to extend into the slot of a conduit, of a mirror carried thereby, an artificial light above said mirror, and means outside the conduit for adjusting the angle of the mirror.

9. The combination, with a shank adapted to extend into the slot of a conduit, of a horizontal mirror thereon and an adjusting device for the handle of the mirror extending out through the slot of the conduit.

10. The combination, with a shank adapted to extend into the slot of a conduit, of an insulating-block thereon, an electric lamp within the conduit upon said block, and a contact device for said lamp resting against a supply-conductor in the conduit.

11. The combination, in an inspecting device for an electric-railway conduit, of a horizontal mirror supported from without the conduit, a light, and means for illuminating the conduit above said mirror.

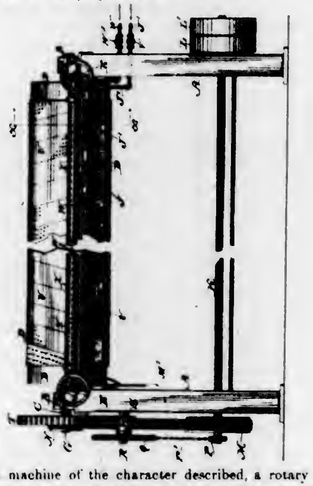
12. In an inspecting device for an electric-railway conduit, the combination, with a horizontal mirror propelled from without the conduit by a device extending through the slot, of means for illuminating the conduit above said mirror.

444,688. **MACHINE FOR FINISHING BLANKETS, &c.** ANDRÉ F. BORNOT, Philadelphia, Pa. Filed Aug. 26, 1890. Serial No. 363,097. (No model.) Patented in France July 31, 1889, No. 199,922.

Claim.—1. In a machine for the purpose set forth, the combination of a frame, a driving-shaft, a feeding-roller having a covering of sheet metal with roughened surface wound spirally thereon in opposite direction from the center thereof, a rotary brush, and mechanism, substantially as described, for rotating said feeding-roller at a less speed than the brush, substantially as described.

2. In a machine for the purpose set forth, a roller having a covering of sheet metal wound spirally in opposite direction from the center thereof and having a roughened surface, substantially as described.

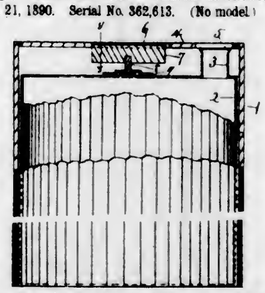
3. In a machine for the purpose set forth, a feeding-roller having a covering of perforated sheet metal wound spirally in opposite direction thereon from the center thereof and having a roughened surface at the edges of said perforations adapted to engage the fabric, substantially as and for the purpose set forth.



4. In a machine of the character described, a rotary brush, a feeding-roller having a covering of sheet metal with roughened surface wound spirally thereon in opposite direction from the center thereof, and mechanism for operating said brush at a greater speed than that of the feeding-roller, said parts being combined substantially as described.

5. A machine for the purpose set forth, having a roller with a sheet-metal covering, a perforated steam-pipe parallel with said roller and having a valve therein, a shield or guard with perforations in its upper side, a rotary brush, and mechanism, substantially as described, for operating said brush at a greater speed than that of the feeding-roller, said parts being combined substantially as described.

444,689. **SHIPPING-CAN.** WALTER M. BROWN, Albany, N. Y. Filed Aug. 21, 1890. Serial No. 362,613. (No model.)

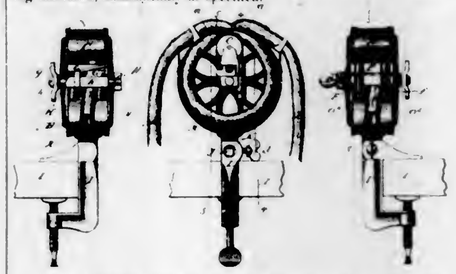


Claim.—1. A can having a nozzle in its upper end and a revoluble handle attached to said can, said can, nozzle, and handle being inclosed in a jacket, the latter having a cover with an opening to receive the nozzle and an opening to receive the handle, said handle being arranged to be seized by the hand, raised with the can until the nozzle projects through its opening in the cover and the handle rises through its opening therein, and then turned crosswise of said opening, so that the can may be suspended in said jacket with its nozzle protruding through the cover, said handle being also arranged to be turned and lowered with the can and its nozzle into said jacket again, substantially as described.

2. A can having a nozzle and a handle projecting from the upper end of the can, said can, nozzle, and handle being inclosed in a jacket, the latter having openings in its cover to receive the nozzle and the handle, the handle being arranged to be seized by the hand, and raised with the can until the nozzle and handle project through the openings in the cover, so that the can may be suspended in the jacket by the handle with its nozzle protruding, substantially as described.

444,690. **SURGICAL PUMP.** WILLIAM C. CARROLL and BURTON F. HALEY, Chicago, Ill. Filed Oct. 18, 1890. Serial No. 368,508. (No model.)

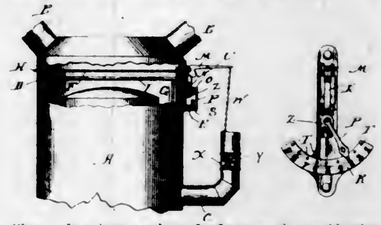
Claim.—1. In a surgical pump of the class described, and in combination, the yoke for supporting the traveling roller, provided with an inclined piece, as G, connected with the operating-shaft by a radially-sliding connection, a sliding piece adapted to work in connection with said inclined piece, and a screw and thumb-piece for operating the same, substantially as specified.



2. In a surgical pump of the class described, and in combination, the yoke for supporting the traveling roller, provided with an inclined piece connected with the operating-shaft by a radially-sliding connection, a sliding piece in connection with said inclined piece, a screw and thumb-piece for operating the same, and an adjustable stop for regulating the amount of movement of said sliding piece, as specified.

3. In a surgical pump of the class described, and in combination, the clamp l, provided with two cylindrical sockets intersecting each other at right angles, a set-screw adapted to both of said sockets, and a cylindrical shank having that portion of its surface which falls in the line of the set-screw made angular in cross-section, as and for the purpose specified.

444,691. **FURNACE-REGULATOR.** EDWARD J. COLBY, Chicago, Ill., assignor to the Retten Furnace Regulator Company, of Illinois. Filed Jan. 27, 1890. Serial No. 338,226. (No model.)



Claim.—In a heat-regulator for furnaces, the combination of an upper heat-chamber with the plates E and D on opposite sides thereof, the oppositely-screw-threaded rod F, screw-threaded into said plates and projecting into said chamber, the rod J, screw-threaded in one plate and passing into the opposite plate, the lever K, pivoted and adapted to be engaged by the rod J, the lever M, having the lug L to engage the lever K, the screw-threaded stud O, adapted to engage the outer end of the lever K and provided with the pointer P, the scale R, along which such pointer moves, and the extension U and spring V, secured on lever M, the whole constructed as and for the purpose described.

444,692. **BOILER-PEDESTAL.** ALLEN P. CREQUE, New York, N. Y. Filed Jan. 3, 1885. Serial No. 151,927. (No model.)

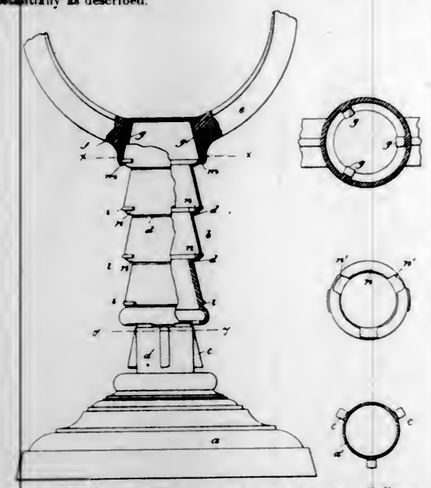
Claim.—1. A pedestal or support consisting of a base provided with a seat or bearing, a column or upright provided externally with shallow grooves, leaving a series of integral sections, each of which is shaped substantially as described and adapted to engage the seat of the said base, each section having an external seat for a bracket, and the bracket adapted to engage the uppermost of said sections, substantially as described.

2. The combination of the base and a bracket having an interlocking projection *m*, with an intermediate column or upright composed of a series of integral sections, the latter having interlocking projections *i*, the interlocking projection *m* extending under and embracing the projection *i* to prevent the bracket from being lifted from the column, substantially as described.

3. In a boiler pedestal or support, a one-piece or integral column provided externally with shallow grooves *d* to outline the integral column, with a series of integral sections, each having a locking projection on its exterior, substantially as described.

4. In a boiler-pedestal, the combination, with a base, as *u*, of a one-piece or integral column provided with grooves to outline detachable

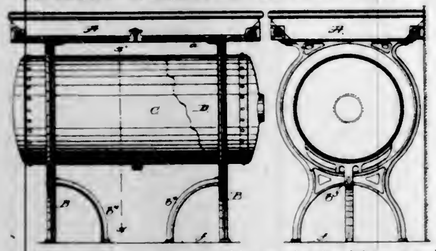
sections, and an independent bracket detachable from the column, the column having at one end an external seat and at its other end an internal seat to co-operate with the said independent base and bracket, substantially as described.



3. In a boiler-pedestal, the base and neck *a'*, having radially-projecting inclined seats *c*, combined with the column provided with integral sections, each having an internal seat to co-operate with the inclined seats *c*, substantially as described.

6. A pedestal or support consisting of a base provided with a seat or bearing, a column or upright provided externally with shallow grooves, leaving a series of integral sections, each of which is shaped substantially as described and adapted to engage the seat of the said base, each section having an external seat for a bracket, and the bracket adapted to engage the uppermost of said sections, substantially as described.

444,693. STAND OR SUPPORT FOR BOILERS. ALLEN P. CREQUE, New York, N. Y. Filed Apr. 14, 1887. Serial No. 234,769. (No model.)



Claim.—1. The combination, with a stand and a sink supported by it, of a boiler supported by the stand below the sink independently of the said sink, whereby the boiler may be removed without disturbing the sink, substantially as described.

2. A stand composed of two metallic side pieces B B, a sink supported above the side pieces and connecting them together at their upper ends, combined with a boiler arranged horizontally within the stand below the sink, substantially as described.

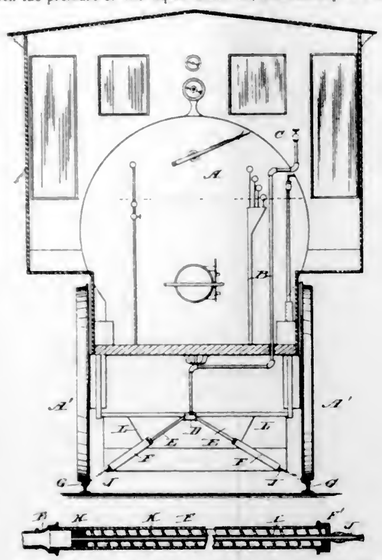
3. The combination, with a sink, of a stand to support it, provided with detachable bearings, as b^3, to receive directly upon them a boiler, substantially as and for the purpose set forth.

4. The sink and a metallic stand to support it, the said stand having two side legs, as B, provided with openings adapted to receive a boiler, and brace-legs, as b^4, extended from the said side legs to form a tripodal support for the opposite ends of the sink, substantially as described.

5. The combination, with a sink and a stand to support it, of a boiler supported below the said sink by the said stand, and a non-heat-radiating shield, to operate substantially as described.

444,694. RAIL-CLEANING AND LUBRICATING ATTACHMENT FOR LOCOMOTIVES. HORACE T. CURRIE, Albina, Oreg. Filed Mar. 12, 1890. Serial No. 343,573. (No model.)

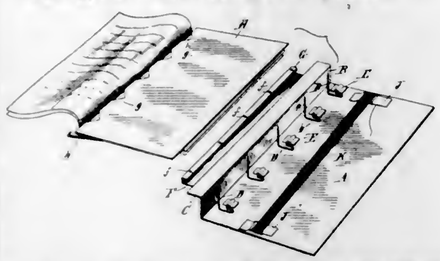
Claim.—1. In a rail-cleaning and lubricating attachment for locomotives, the combination, with a locomotive and a liquid-supply pipe carried by the locomotive, of a nozzle carried by the pipe and adapted to be projected to within a short distance of the heads of the rails by the pressure of liquid and to be automatically retracted when the pressure of the liquid is cut off, substantially as described.



2. In a rail-cleaning and lubricating attachment for locomotives, the combination, with the liquid-supply pipe, of a cylinder on the end of the said pipe, a nozzle carried by the said cylinder and adapted to be projected by the pressure of the liquid, and a spring for retracting the nozzle, substantially as herein shown and described.

3. In a rail-cleaning and lubricating attachment for locomotives, the combination, with a liquid-supply pipe provided with a valve, of cylinders connected with the said supply-pipe, a spring-pressed piston held in each of the said cylinders and provided with a central opening, a hollow piston-rod extending from each of the said pistons, and a nozzle held on the outer end of each hollow piston-rod and adapted to discharge onto the head of the rail in the rear of the drive-wheels, substantially as shown and described.

444,695. TEMPORARY BINDER. JACOB DORNBIRER, Sandusky, Ohio. Filed Mar. 10, 1890. Serial No. 343,347. (No model.)



Claim.—1. The combination, with the cover provided with the thorns and back of the cover, of the gage-plate having notches corresponding with the thorns, and hooks secured to said gage-plate and adapted to engage with the back of the cover, substantially as described.

2. The combination, with the cover provided with the thorns and the back of the cover, of the gage-plate adapted to engage in the folds of the paper and made of a size to project beyond the upper and lower edge of the paper, the spring-hook secured to said projecting edges, and the flaring notches formed on the inner edge of said gage-plate and corresponding with the thorns, substantially as described.

3. In a temporary binder, the combination, with the cover and a back formed integral therewith, having an outward-projecting flange forming a hand-hold, of thorns detachably secured in proximity to said back and having shanks parallel therewith, substantially as described.

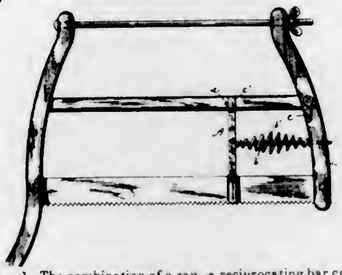
4. In a temporary binder, the combination of the cover A, back B, the outwardly-projecting flange integrally formed therewith, the locking-bar hinged to said flange and provided with apertures *f*, and the thorns D, secured to the cover, substantially as described.

5. The combination, with a cover, of the thorns provided with the upright portions, the foot formed thereon, and the shank slidingly engaging into sockets E, formed on the cover, substantially as described.

6. In a temporary binder, the combination of the cover A, back B and outwardly-projecting flange C integrally formed therewith, a locking-bar hinged to said flange and provided with the apertures *f*, and the thorns D, secured to the cover, and gage-plates H, provided with spring-hooks *h* and flaring notches *g*, all arranged to operate substantially as described.

7. The combination, with the cover A, provided with the back B, of thorns detachably secured in sockets to said cover a short distance from said back, said thorns having a vertical portion *a*, foot *b*, and shank *c*, adapted to be engaged in said sockets, substantially as described.

444,696. AUTOMATIC LUBRICATOR FOR SAWS. RICHARD J. EDWARDS, Galena, Ill. Filed Oct. 11, 1890. Serial No. 367,781. (No model.)



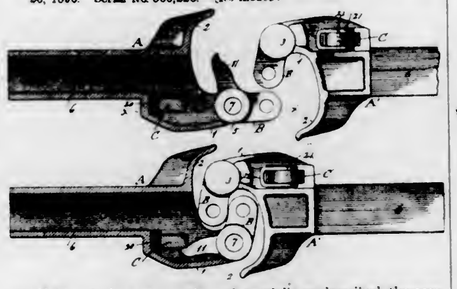
Claim.—1. The combination of a saw, a reciprocating bar carried by the saw and provided with lubricating-pads, these pads being adapted to bear upon the sides of the saw-blade while the same is in operation and automatically lubricate it, as and for the purposes described.

2. The combination of a saw, a reciprocating bar carried by the saw and provided with lubricating-pads adapted to bear upon the sides of the saw-blade and automatically lubricate it while in operation, and a spring for actuating the said bar, substantially as described.

3. The combination of a saw, a reciprocating bar applied thereto and carrying oiling-pads bearing upon the saw, a coiled spring attached to the said bar, a bar against which the spring presses, and means for guiding the said reciprocable bar, substantially as described.

4. The combination of a saw-frame carrying a saw-blade, a reciprocating bar carrying oiling-pads adapted to bear upon opposite sides of the saw, means for guiding this bar, a spring for actuating the said bar, and a hook adapted to engage the said bar and hold it out of operation, substantially as described.

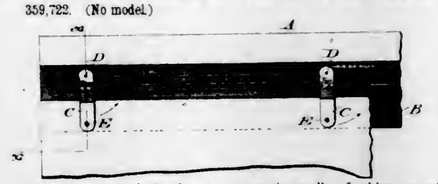
444,697. CAR-COUPLING. EZRA N. GIFFORD, Chicago, Ill., assignor to the Chicago Railway Device Company, same place. Filed Sept. 26, 1890. Serial No. 366,226. (No model.)



Claim.—1. In a car-coupler, substantially as described, the combination, with the draw-head and swinging hook pivoted thereto, of a locking-pin moving longitudinally in a vertical slot of the draw-head upon inclined shoulders to be lifted with being pushed backward and out of engagement with the tail end of the swinging hook and to move forward on such shoulders by its own gravity, a loop formed to the head of such pin, and a dog resting upon the top of the draw-head and having studs engaging the loop of the pin so that on swinging such dog it will lift and hold the pin out of engagement with the tail of the coupling-hook, substantially as set forth.

2. In a car-coupler, substantially as described, the combination, with the draw-head and swinging hook pivoted thereto and a locking-pin moving longitudinally in a vertical slot of the draw-head upon inclined shoulders to be pushed backward and out of engagement with the tail end of the swinging hook with being lifted and to move forward on these shoulders by its own gravity, of a transverse bar under the car-body, supported in slotted hangers, each slot having a shouldered recess, and of a longitudinal bar coupled with the transverse bar and extending under the coupling-pin, such longitudinal bar being supported on a stirrup of the car-body and having a V bend that with a rearward movement will ride upon the stirrup and will lift such longitudinal bar, that will raise and thereby disengage the locking-pin of the coupling-hook, all substantially as set forth.

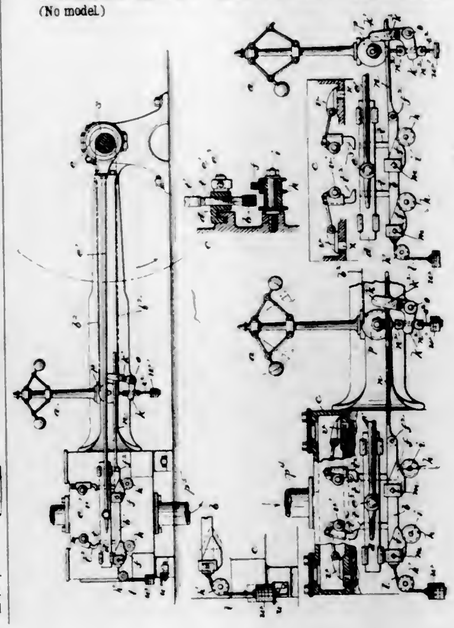
444,698. COMBINED RULER AND BLOTTING-PAD HOLDER. JOHN L. GORDON, Philadelphia, Pa. Filed July 24, 1890. Serial No. 359,722. (No model.)



Claim.—1. A rule having a groove the walls of which are of different lengths, the long wall forming a base, in combination with a stud rising from the upper face of said base, and an elastic clip which is pivoted to the body of the rule and overhangs the top short wall of the groove of the rule, all substantially as described.

2. A grooved rule provided with the base B', whose wall is extended beyond that of the groove, and having a stud rising from the upper face thereof, in combination with the elastic clip C, which is pivoted to the rule and overhangs the top short wall of the groove and engages with the stud, all substantially as described.

444,699. SAFETY VALVE-GEAR FOR STEAM-ENGINES. NOBLE T. GREENE, Providence, R. I. Filed Oct. 17, 1890. Serial No. 368,458. (No model.)

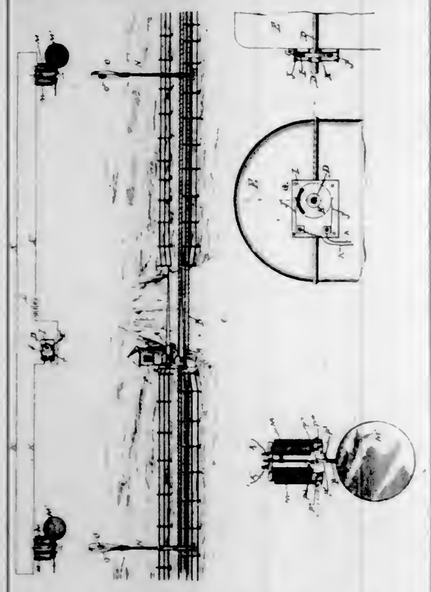


Claim.—1. In an automatic cut-off steam-engine, the combination of mounted steam-valve, operating rocking levers provided with toes, a reciprocating sliding bar, loosely-mounted tappets carried by the sliding bar and adapted to intermittingly engage said toes, and a governor actuated and controlled gage-bar having said tappets resting thereon provided with inclined bearing or supporting surfaces, whereby an endwise movement of the gage-bar imparts a vertical movement to the tappets, substantially as hereinbefore set forth, and for the purpose specified.

2. The combination, in an automatic detachable valve-gear having automatically-closing steam-valves, of a mounted and actuated sliding bar carrying tappets arranged and adapted to engage the valve mechanism to uncover the steam-ports, and a governor-actuated horizontally-mounted gage-bar provided with inclined surfaces for controlling the vertical movement of the tappets, substantially as hereinbefore set forth.

3. The combination, with a horizontally-mounted reciprocating sliding bar, tappets vertically mounted therein, and rocking valve-levers provided with toes adapted to engage and be actuated by said tappets, of a horizontally-mounted counterweighted governor actuated and controlled gage-bar having said tappets resting thereon, dogs provided with inclined faces adjustably secured to the gage-bar, and wheels supporting the gage-bar by the engagement of said inclined faces therewith, substantially as shown and hereinbefore described.

444,700. AUTOMATIC SIGNAL FOR RAILWAY-CROSSINGS. ALVAH W. HALL, New York, N. Y. Filed July 26, 1890. Serial No. 360,004. (No model.)



Claim.—1. In an automatic signal for railway-crossings, the combination, with the crossing-gates, of a circuit-changer combined therewith and operated thereby, two signals respectively located up and down the track on opposite sides of the gates, and each including a magnet and a semaphore-disk controlled thereby, and an electric circuit including the signal-magnets, the circuit-changer, and a battery, whereby when the gates are opened they will operate the circuit-changer, and thus influence the signal-magnets in allowing the semaphore-disks to take the positions in which they indicate "danger," substantially as described.

2. In an automatic signal for railway-crossings, the combination, with the crossing-gates, of a circuit-breaker combined therewith and consisting of a wheel and two contact-springs, two signals respectively located up and down the track on opposite sides of the gates, and each including a magnet and a semaphore-disk operated thereby, and a normally-closed electric circuit including the signal-magnets, the circuit-breaker, and the battery, whereby when the gates are opened the circuit will be broken and the semaphores allowed to take the positions in which they indicate "danger," substantially as described.

444,701. CABINET EXHIBITOR FOR SHADE FABRICS, WALL-PAPERS, &c. BENJAMIN HANDFORTH, Hoboken, N. J. Filed Apr. 21, 1890. Serial No. 348,829. (No model.)

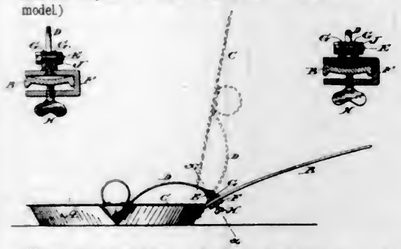


Claim.—1. The combination, in a cabinet for exhibiting shade fabrics, wall-papers, and similar articles, of a lid hinged at the upper edge and adapted to swing outwardly and upwardly, brackets attached upon the inner face to hold the rolls of goods to be exhibited, and devices for supporting the lid when raised, substantially as set forth.

2. A cabinet for exhibiting shade fabrics, wall-papers, and similar articles, the same composed of the bottom *a*, end pieces *b*, side pieces *c*, having slideways, the sliding top piece *g*, the frames of cross-pieces 4 and uprights 5 within the cabinet, and the hinged swinging lids *e e'* and their fastenings, substantially as specified.

3. The combination, with swinging hinged lids and the shades and rollers, of interchangeable brackets or fixtures adapted to be attached to said lids, and each provided with a slot and rounded opening for receiving the respective ends of the shade-roller, whereby said shade-roller is retained in place in either position of the swinging lid, substantially as set forth.

444,702. LID FOR FRYING OR OTHER PANS. CAROLINE HARTLEY, Philadelphia, Pa. Filed Sept. 4, 1890. Serial No. 363,889. (No model.)



Claim.—1. A pan having a handle and lid with a projecting arm and a clamp removably attached to the said handle, said arm of the lid being pivoted to said clamp, substantially as described.

2. A pan with a handle, a lid with an arm, and a clamp having a swiveled bracket or portion to a bolt in which said arm is pivoted, said parts being combined substantially as described.

3. A pan with a handle, a lid with an arm, and a clamp having ears swiveled to a limb thereof and provided with a bolt to which said arm is pivoted, said parts being combined substantially as described.

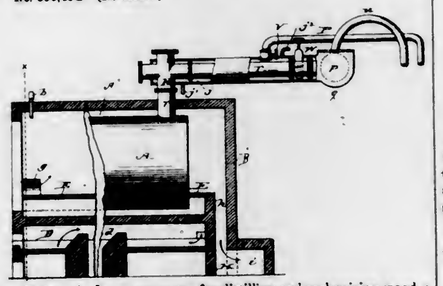
4. A pan with a handle, a lid with an arm, and a clamp having ears swiveled to a limb thereof, said arm being pivotally connected with said ears and the upper limb of the clamp conforming to the face of the handle, said parts being combined substantially as described.

444,703. BOOT. MILO F. JARDEN, Selkirk, Canada. Filed June 25, 1890. Serial No. 356,690. (No model.)

Claim.—A boot having the vamp and quarters made in two pieces joined together by the seams D and E, and a toe-tip having a central notch *f* and two wings *f*, said boot having its central opening extending into said notch and being strengthened by the wings extending up each side of the central opening, substantially as described and shown.



444,704. APPARATUS FOR DISTILLING WOOD. AUGUST KOCH, New Orleans, La. Filed Aug. 13, 1889. Renewed June 23, 1890. Serial No. 356,484. (No model.)



Claim.—1. In an apparatus for distilling and carbonizing wood, a furnace constructed with the retort-chamber A', the fire-chamber D, the flue *d*, and return-flues E E', having openings *g g'*, respectively, at the front ends, in combination with the retort A, substantially as shown and described.

2. In an apparatus for distilling and carbonizing wood, the hereindescribed furnace, constructed with the fire-chamber D, flue *d*, return-flues E E', having openings *g g'*, respectively, at the front ends, the retort-chamber A', and the downwardly-extending flue *h*, in combination with the retort A, substantially as shown and described.

3. In an apparatus for distilling and carbonizing wood, the furnace B, retort A, pipe *r*, having valve W, pipe P, having valve V, and the water-jacket *j*, the parts being combined substantially as shown and described.

4. In an apparatus for distilling and carbonizing wood, the furnace B, retort A, pipe *r*, having valve W, pipe P, having valve V, cylinder *p*, pipe *u*, and water-jackets *j q*, surrounding said pipe *r* and cylinder *p*, the parts being combined substantially as shown and described.

444,705. PLUMB-LEVEL. JAMES T. LAMBDIN, Philadelphia, Pa., assignor of one-half to Edgar L. Fisher, same place. Filed Jan. 25, 1890. Serial No. 338,073. (No model.)

Claim.—1. The combination of the stock, the fixed point, the swinging needle, and the supporting device for the latter, consisting of a suspended filament or thread and a supporting-ball mounted and free to swing in a socket or bearing, substantially as specified.

2. The combination of the stock, the fixed point, the swinging needle, the suspending-filament therefor, the supporting-ball, and a universally-jointed hanger providing a bearing for said ball, substantially as specified.

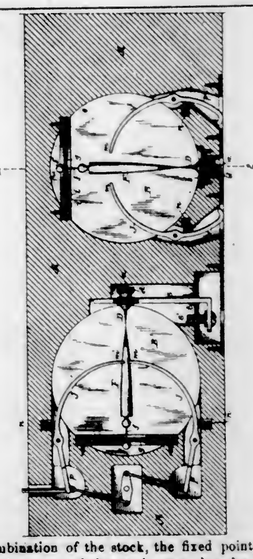
3. The combination of the stock and the swinging needle with the fixed needle adjustable laterally to effect proper centering of the same, substantially as specified.

4. The combination of the stock, the fixed point, the swinging needle, and clamping-jaws for said swinging needle, substantially as specified.

5. The combination of the stock, the fixed point, the swinging needle, and spring-actuated levers having clamping-jaws for said swinging needle, substantially as specified.

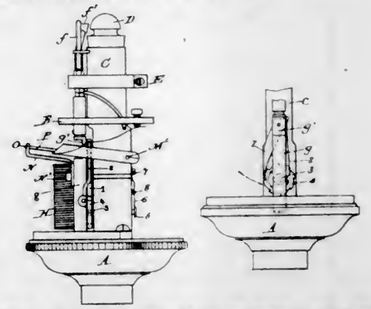


444,705.



6. The combination of the stock, the fixed point, the swinging needle, and spring-actuated levers having clamping-jaws for the swinging needle, and a portion or portions projecting beyond the stock so as to effect the automatic opening of the jaws, substantially as specified.

444,706. ELECTRIC GAS-LIGHTER. THOMAS W. LANE, Boston, Mass., assignor to the Electric Gas Lighting Company, of Maine. Filed June 13, 1889. Serial No. 314,097. (No model.)



Claim.—1. In an automatic electric gas-burner, a rotary gas-cock attached to a ratchet-wheel, and a pawl so connected with or operated by the armature as to admit the gas at its complete depression and thereafterward admit of a series of partial vibrations of the armature without withdrawing the pawl entirely from the tooth of the ratchet during pressure on the button, substantially as described.

2. In an automatic electric gas-burner, the combination of the bar *g*, pawl 1, flat spring 2, and ratchet-wheel 4, rigidly attached to the gas-cock 3, having teeth in proportion to its ways and adapted and arranged to permit a series of vibrations of the pawl without further revolution of the ratchet, substantially as described.

3. In a gas-lighting device, the combination of a rotating gas-cock whose spindle is attached to a ratchet-wheel having the number of its teeth in proportion to the number of gasways through the cock, so as to alternately turn on and off the gas, a pawl to rotate said cock, a spark-producing device, and an electro-magnet and its armature to operate said devices, the circuit of the electro-magnet being controlled by the movement of the armature, and the teeth of said ratchet being of such depth in relation to the play of the pawl that the ordinary spark-producing vibrations will not permit said pawl to gear with the following tooth until the circuit is permanently opened.

444,707. RHEOSTATIC SWITCH. JOSEPH H. LEHMAN, Philadelphia, Pa. Filed Mar. 8, 1890. Serial No. 343,124. (No model.)

Claim.—1. In an electric switch, a resistance device consisting of blocks of plumbago and potters' clay separated by disks of platinum

the disks being connected with separate contact-plates, and standards supporting the resistance device, substantially as described.

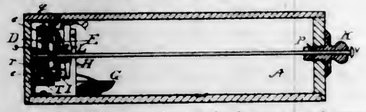
2. In an electric switch, a resistance device consisting of molded blocks, refractory material bearing against said blocks, and screws mounted in standards supporting said device, the said screws being reduced at their points, substantially as described.



3. In an electric switch, a base of refractory material, a series of contact-plates mounted thereon, a pivoted spring pressed by the contact-arm, also mounted thereon, a resistance device consisting of a series of blocks separated by disks of platinum and supported in standards on the plate, the disks being connected to the contact-pieces on the base, a sheath of refractory material surrounding the resistance devices, a perforated cover fitting the base, and refractory material placed between the cover and the resistance and contact devices on the base, substantially as described.

4. In an electric switch, a series of resistance-blocks supported between standards separated by intervening disks of refractory conducting material, the blocks consisting, essentially, of one part of plumbago and three parts of potters' clay mixed together, substantially as described.

444,708. TILL-LOCK. BIRDSALL H. MEAD, Cleveland, Ohio. Filed Apr. 17, 1890. Serial No. 348,416. (No model.)



Claim.—1. In a locking mechanism for drawers, a rod extending from front to rear of said drawer, the front end having a dial-knob arranged to turn the rod, but which allows a slight longitudinal movement of the rod, and a friction-disk on said rod for engaging with and turning the notched and slotted disk, substantially as and for the purpose set forth.

2. In a locking mechanism for drawers, a rod R, extending from front to rear of said drawer, a dial-knob K on front end of said rod, arranged to turn the rod, but allows the rod to have longitudinal movement, a friction-disk E, fixed on said rod, a notched disk D, having slot *d* and loosely placed on the rod, and a spring *s*, interposed between said disks, substantially as and for the purpose set forth.

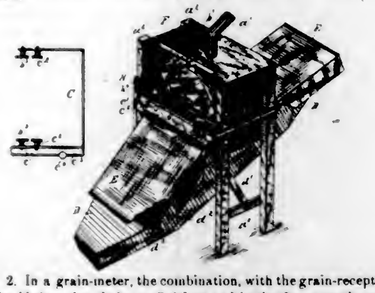
3. In a locking mechanism for drawers, the combination of a rod, as R, extending from front to rear of said drawer, a dial-knob K on front end of said rod, arranged to turn the rod substantially as described, a fixed friction-disk E on said rod, the notched and slotted loose disk D, also on the rod, and a spring *s*, interposed between said disks, an adjustable stop T, and the plate Q, having a swinging lug *q* for engaging with and locking the drawers, substantially in the manner specified.

4. In a locking mechanism for drawers, the combination of a rod, as R, extending from front to rear of said drawer, a dial-knob K on front end of said rod, arranged to turn the rod substantially as described, a fixed friction-disk E on said rod, provided with notches in its periphery, a spring-pawl *f*, engaging with said notches, a notched and slotted loose disk D, also on the rod, and a spring *s*, interposed between said disks, constructed to operate substantially as and for the purpose specified.

5. In combination with a locking mechanism for drawers, substantially as described, the alarm device consisting of a gong G, a plate H, a segmental lever I, pivoted in a slot in said plate and carrying hammer *h*, a spring J, connecting the lever I with a lug on plate H, a lever L, fulcrumed to plate H, for throwing said lever I, a latch-lever *m*, engaging lever I, spring *n*, actuating said latch-lever, and a push-pin O, both the lever L and pin O being actuated by lug *g* and spring-strip *z* on the cover by the movements of the drawer, substantially as described.

444,709. GRAIN-METER. JAMES B. MICHENER and TOBIAS L. VARNS, Kokomo, Ind. Filed Mar. 26, 1889. Serial No. 304,889. (No model.)

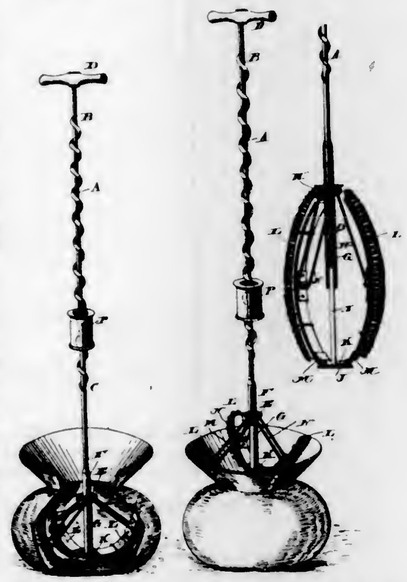
Claim.—1. The combination, in a grain-meter, with the casing A, of the grain-measuring receptacle B, divided into compartments mounted upon one portion of a scale-beam, the catch-bars G therein, the spring-metal strap F', having a catch thereon and adapted to yield vertically, and the spring-metal supporting-bars F therefor, adapted to yield horizontally and secured to the casing, substantially as described.



2. In a grain-meter, the combination, with the grain-receptacle B, of the U-shaped scale-beam C, fulcrumed in the frame-work and having its forward end looped to form the elongated eye c^2, with the sliding weight thereon, a jointed lever pivoted to the forward end of the loop c^2, and a registering device secured to the frame, to be operated by said lever as the end of the scale-beam is raised or lowered by the weight of the grain-receptacle, substantially as shown and described.

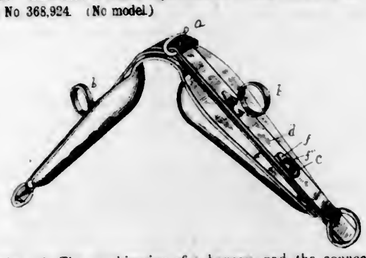
3. In a grain-meter, the combination, with the casing and grain-receptacle, of two vertically-arranged and horizontally-yielding springs secured on each side of the casing, a horizontally-arranged and vertically-yielding spring-bar secured to said springs and having notches or projections thereon, and catches secured to the grain-receptacle to engage said spring-bar, substantially as shown and described.

444,710. DEVICE FOR CLEANING CUSPIDORS. JOHN MCPHERSON, Wellsville, N. Y. Filed June 13, 1890. Serial No. 355,294. (No model.)



Claim.—The herein-described implement or device for cleaning cuspidors, consisting of the spirally-twisted standard having a loose handle at its upper end and a flanged tubular extension at its lower end, the rod sliding in the tubular extension, the folding and yielding brushes hinged at the lower end of said rod, the spring and the arms connecting the brushes to the lower end of the standard, all constructed and combined to operate substantially in the manner and for the purpose shown and specified.

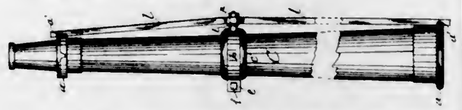
444,711. DEVICE FOR FASTENING PAD-SCREWS, &c., IN HARNESS. ELSWORTH E. REED, Taylorville, Ill. Filed Oct. 22, 1890. Serial No. 368,924. (No model.)



Claim.—1. The combination of a harness-pad, the connecting-bolts and their nuts, plates clamped under the heads of the bolts and provided with tongues to engage the straps of the pad, and pawls pivoted upon the said plates and adapted to engage the heads of the said bolts and prevent them turning, substantially as described.

2. The combination of a harness-pad, the straps thereof, the screw-bolts passed through the straps and pads and having their heads provided with notches, and independent stationary plates clamped to the straps and provided with pawls adapted to engage the notched heads of the screw-bolts and prevent them turning, whereby the said connecting bolts or screws will be prevented from jarring loose while the pad is in use, substantially as described.

444,712. HOSE-NOZZLE. DANIEL ROACH, Fulton, N. Y. Filed Oct. 8, 1890. Serial No. 367,427. (No model.)



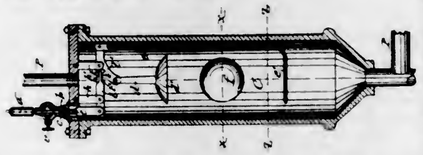
Claim.—1. The combination, with the hose-nozzle, of two levers formed of a continuous bar pivoted at the center of its length to the side of the nozzle, and catches on said nozzle sustaining said levers parallel with the nozzle, as set forth.

2. The combination, with the nozzle, of a metallic band embracing the said nozzle and rigidly secured thereto, and a bar pivoted central of its length to said band, as set forth.

3. The combination, with the nozzle, of a collar rigidly attached to said nozzle and provided with a circumferential groove, a metallic band embracing the grooved portion of said collar and terminating with perforated ears, a bolt passing through said ears and clamping the band on the collar, a trunnion projecting from the band, and a bar pivoted centrally of its length on said trunnion, substantially as described and shown.

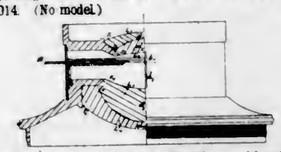
4. The combination, with the nozzle, of a trunnion on the side of said nozzle some distance from the ends thereof, collars on the end portions of the nozzle having notches in their exteriors, and a bar bowed at its center from the nozzle and pivoted thereat on the aforesaid trunnion, substantially as described and shown.

444,713. WATER-ALARM FOR STEAM-BOILERS. SEYMOUR E ROBERTS, Oneida, and JAMES E. LATHE, Vernon, N. Y. Filed Sept. 26, 1890. Serial No. 366,212. (No model.)



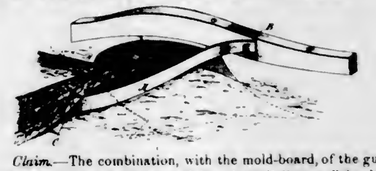
Claim.—In combination with the boiler, the upright cylindrical case C, connected to the exterior of said boiler and extending above and below the high and low water line thereof, the whistle *a*, connected to the top of said case at one side thereof and provided with the valve *b*, the hangers *k k'* at opposite sides of the axial center of the case, the levers *l l'*, fulcrumed on said hangers and coupled together between the same, the valve-stem *c*, connected to the outer end of the lever *l*, the push-bar *d*, suspended from the coupled end of one of said levers and terminated with a horizontal annular enlargement *d'*, concentric with the case, the horizontal annular catch *e'*, suspended from the opposite end of the lever *l'* and also concentric with the case, and the float *f*, disposed between said push-bar and catch and adapted to play freely between the same, substantially as described and shown.

444,714. PHOTOGRAPHIC OBJECTIVE. PAUL RUDOLPH, Jena, Germany, assignor to Carl Zeiss, same place. Filed Apr. 15, 1890. Serial No. 348,014. (No model.)



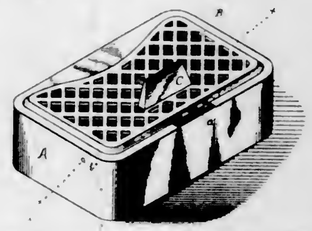
Claim.—In a photographic objective, the combination of two distinct systems of lenses, each composed of single lenses cemented together, the positive element of one system having a higher, the positive element of the other system a lower, refractive index than the respective negative elements cemented thereto, and each system being in itself approximatively achromatic, substantially as described.

444,715. PLOW ATTACHMENT. MARSENA H. SNOW, Sugar Grove, Ill. Filed Jan. 12, 1889. Serial No. 296,177. (No model.)



Claim.—The combination, with the mold-board, of the guide-bar fixed in front of the mold-board in substantially parallel relation to the curved face thereof, a short distance therefrom, and extending rearward from its connection with the plow, whereby to support the furrow-slice against the mold-board, to invert it and prevent its breaking off short, as described.

444,716. SCRAPER FOR BOOTS OR SHOES. CHARLES SPAHNER, Philadelphia, Pa., assignor to Eugene Promis, same place. Filed May 6, 1890. Serial No. 350,847. (No model.)



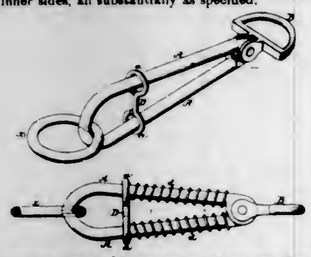
Claim.—1. A scraper for boots or shoes, consisting of a blade adapted to be pivotally and horizontally supported over a space or receptacle and provided with a lug or upset on its face, whereby upon applied pressure thereto the blade may be caused to assume a vertical position for use and be supported in such position by said upset, as described, and for the purposes set forth.

2. A scraper for boots or shoes, consisting of a blade adapted to be pivotally and horizontally supported over a space or receptacle and provided with a lug or upset on its face, whereby upon applied pressure thereto the blade may be caused to assume a vertical position for use and be supported in such position by said upset, and a counterbalance or weight on the back or under side of said blade to facilitate such upsetting, as described, and for the purposes set forth.

444,717. SNAP-HOOK. GEORGE M. STOUT, Philadelphia, Pa. Filed May 23, 1887. Renewed Oct. 13, 1890. Serial No. 368,010. (No model.)

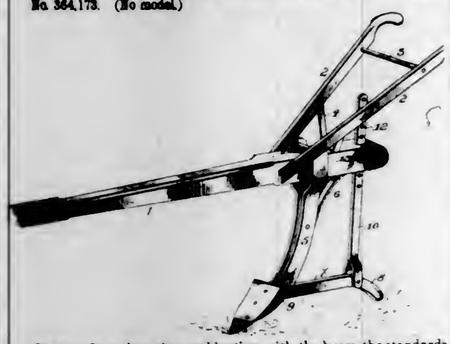
Claim.—1. The combination, in a harness-snap, of opposite arms A, jointed at their inner ends, diverging from the joint, and converging at an angle to a meeting-point at their outer overlapping ends, with an operating-yoke D, provided with eyes *a*, adapted to embrace the arms between the joint and the outer converging ends, said eyes *a* engaging with both the inner and outer faces of the opposite arms, said yoke being free to slide longitudinally on the arms, whereby as the yoke is advanced the arms are closed by pressure upon their outer

sides, and as the yoke is retracted said arms are separated by pressure upon their inner sides, all substantially as specified.



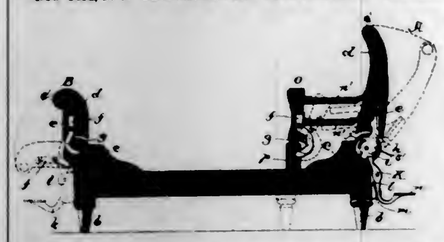
2. The combination, in a harness-snap, of opposite diverging arms jointed at their inner ends and converging at an angle to a meeting-point at their outer ends, an operating-yoke engaging with the adjacent faces of the operating-arms and bridging the space between the same, and one or more springs bearing against the yoke and serving to project the same, all substantially as specified.

444,718. PLOW. CHARLES D. STUART, McNeil, Tex., assignor of one-half to Robert McIntyre, same place. Filed Sept. 6, 1890. Serial No. 364,173. (No model.)



Claim.—In a plow, the combination, with the beam, the standards 2, provided with shovels, and the brace-rod 6, of the backwardly-extending arm 7, pivoted to standards 5 and having its free end formed into a knife-edge, the vertical bar 10, secured to said arm intermediate of its ends and provided with a series of holes 12, and the pin 13, passing through the beam 1 and through said holes, substantially as described.

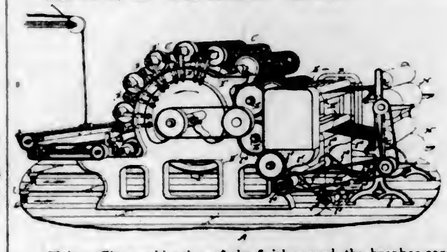
444,719. ATTACHMENT FOR CHAIRS, SOFAS, &c. JOHN ZAPP, New York, N. Y. Filed Oct. 26, 1889. Serial No. 328,300. (No model.)



Claim.—1. In a sofa or the like, the combination, with the frame having an upwardly-extended standard at one end, the swing-back having a cross-bar, a metal arm at its upper end rigidly secured to said cross-bar at or near its center to swing with the back, at its lower portion pivoted to said standard and having a segmental transverse slot, a pin secured to said standard and extending through said slot, one edge of the lower portion of said arm forming a toothed segment, an angle-catch pivoted in a plate secured to the frame, and a spring to hold one end of said catch in engagement with said teeth, substantially as and for the purpose set forth.

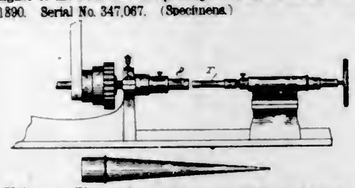
2. In a sofa or the like, the combination of the frame having two standards or raised portions, a swinging rest composed of two end posts and cross-bars, and a metal connecting-link at its upper end rigidly secured to the inner side of each end post and at its lower end pivoted to the inner side of one of said standards, so as to leave room for upholstering between the end posts and standards, said metal links having recesses in their inner edges opposite said spaces, substantially as and for the purpose set forth.

444,720. CARDING MACHINERY. EDDO V. BATES, Draput, Mass. Filed Dec. 28, 1889. Serial No. 335,207. (No model.)



Claim.—The combination of the finisher-card, the breaker-card, conveyers, each consisting of an endless belt of card-clothing and adapted to receive a waste sliver from said finisher-card and to carry the same to said breaker-card, and boxes, each inclosing one of said conveyers except at the points where said waste slivers are received and discharged by said conveyers, the teeth of each conveyer being hooked in the direction in which such conveyer travels to prevent the accumulation of fibers in said boxes and the clogging of said conveyers, as and for the purpose specified.

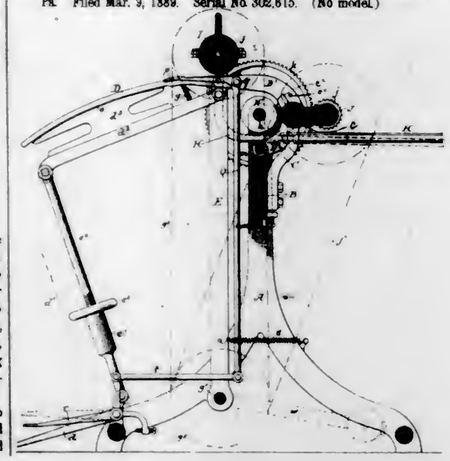
444,721. SPINNING TUBES. JAMES H. BEVINGTON, Peoria, Ill., assignor to the Peoria Metal Spinning Company, of Illinois. Filed Apr. 8, 1890. Serial No. 347,067. (Specimens.)



Claim.—1. The method of spinning metal by forcing it into or through a die of harder metal rerolving at a high rate of speed, so that the softer metal is heated by the friction between the parts, whereby the metal may be more easily spun or formed.

2. The method of forming tubes and other articles and reducing or increasing their diameter and welding tubes together by frictional contact by means of a revolving die or former, as hereinbefore described.

444,722. IRONING-MACHINE. GOTTLOB BINDER, Philadelphia, Pa. Filed Mar. 9, 1889. Serial No. 302,615. (No model.)



Claim.—1. In an ironing-machine, the combination of the table, an iron adapted to move over the same, a carrying-frame for said iron with bars attached to said frame, and rotating disks with which said bars are moved into contact upon the raising of said ironing-table for the purpose of reciprocating said iron, substantially as described.

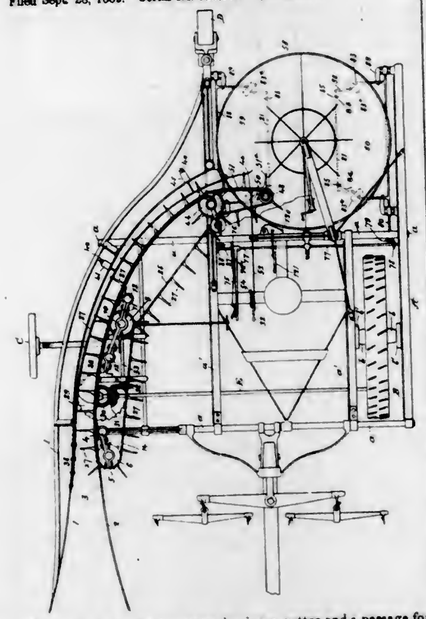
2. The combination, in an ironing-machine, of the ironing-table pivotally supported at its inner end by a rock-shaft, a reciprocating iron, and its carrying-frame with mechanism for reciprocating said carrying-frame, consisting of friction-bars attached to said frame, arms secured to the rock-shaft, anti-friction wheels *m*, carried by said arms, and constantly-rotating friction-disks with which said bars are adapted to be moved into contact, substantially as specified.

3. The combination, in an ironing-machine, of an iron, means for reciprocating the same, a table pivotally supported at its inner end, and a bracket hinged to said table and adapted to support the same during the action of the iron with mechanism for raising said bracket into contact with the table, substantially as specified.

4. The combination, in an ironing-machine, of a table D, a supporting arm D' therefor, a clamp-plate pivoted thereto, a lever Q, connected to said clamp-plate, a bell-crank treadle-lever having one of its arms connected to the long arm of said lever, and a spring *t*, adapted to keep said clamp-plate in close contact with the board, substantially as set forth.

5. The combination, in an ironing-machine, with a rotated iron and its reciprocated carrying-frame, of a curved table pivoted at one end to the frame at a point to the rear of the pivot-point of the iron-carrying frame, a supporting-bar d^2, pivoted at its rear end to the table, a foot-lever *d*, and a bar d', connecting said foot-lever to the front end of the supporting-bar for the purpose of lifting said table into contact with the iron, substantially as specified.

444,723. CORN-HARVESTER. DAVID W. BLAINE, Pratt, Kans. Filed Sept. 28, 1889. Serial No. 325,338. (No model.)



Claim.—1. In a corn-harvester having a cutter and a passage for the stalks leading therefrom, conveyers on one side of said passage and a spring on the opposite side having adjusting devices, substantially as set forth.

2. In a corn-harvester having a cutter and a walled passage for the stalks leading therefrom, conveyer-chains on one side of the passage having gathering-fingers, a spring-pressure plate on the opposite side having slots into which the fingers pass, and adjusting devices for the spring, substantially as set forth.

3. In a corn-harvester having a cutter and a passage for the stalks leading therefrom, a series of conveyer-chains working in said passage, a second series of chains at the rear ends of the first series, provided with pivoted gathering-fingers adapted to be overthrown by the incoming stalks, and mechanism for throwing said second series of chains into and out of action to form a receptacle, substantially as and for the purpose set forth.

4. In a corn-harvester having a walled passage for the stalks, means for conveying the stalks through the latter, a gathering table or platform, and an extension consisting of an extended wall at one side of the end of said passage, provided with conveyers, substantially as and for the purpose set forth.

5. In a corn harvester having a passage for the stalks, means for conveying the stalks through the passage, a gathering table or platform, and an extension of the conveyer, consisting of sprocket-chains provided with fingers and mounted on a support adjustable in horizontal angle to distribute the cut stalks on the platform.

6. In a corn-harvester, the combination of a passage to receive the cut stalks, a conveyer working therein, an extension of said conveyer adjustable in horizontal angle and driven with positive motion to deliver the stalks, and a revoluble platform receiving the stalks from the conveyer-extension and deriving rotation from pressure of the incoming stalks.

7. In a corn-harvester having a passage for the cut stalks and a gathering-table arranged to receive the stalks from said passage, a conveyer arranged to pass the stalks through the passage, and a swinging extension of said conveyer, provided with conveyers projecting over the gathering-table, substantially as and for the purpose set forth.

8. In a corn-harvester having a passage for the stalks, means for conveying the stalks through the latter, a gathering table or platform, a conveyer-extension adjustable in horizontal angle, and means for moving the latter, consisting of a lever and a rod connecting the latter with the conveyer-extension, substantially as set forth.

9. In a corn-harvester, a rotary table or platform made in sections; means for supporting said table so as to permit of rotation, and rock-arms for opening and closing the sections, substantially as set forth.

10. In a corn-harvester, a rotary table or platform made in two sections, swinging frames or rock-arms below and having detachable connection with the sections and adapted to bring the sections to upright position to deliver the shock, and means for swinging said frames, substantially as set forth.

11. In a corn-harvester, a rotary table or platform made in two sections, a pivotal central support on which the table turns, and means for bringing the sections to open position, substantially as set forth.

12. In a corn-harvester, a rotary table or platform made in two sections, overlapping plates at the inner edges of the sections having openings, a pivotal central support received by said openings, and means for opening and closing the sections, substantially as set forth.

13. In a corn-harvester, a rotary table or platform made in two sections, overlapping plates at the inner edges of the sections having openings in the shape of key-holes, a pivotal central support having a hook received by said openings, and means for opening and closing the sections, substantially as and for the purpose set forth.

14. In a corn-harvester, a rotary table or platform made in two sections, swinging frames consisting of hinge-rods below and having detachable connection with the sections and provided with arms, oscillating shafts to which said arms are attached, and means for oscillating said shafts, substantially as set forth.

15. In a corn-harvester, a rotary table or platform made in two sections, swinging frames or arms below and having detachable connection with the sections, providing a hinge for the latter, and rollers journaled on said frames, substantially as and for the purpose set forth.

16. In a corn-harvester, a rotary table or platform and a brake for retarding the movement of the same, substantially as set forth.

17. In a corn-harvester, a rotary table, an extensible standard independent of the table, an overhanging arm carried by said standard projecting to a point centrally over the table, and suitable means carried by the arm for supporting the top of the shock, substantially as set forth.

18. In a corn-harvester, a shock-gatherer consisting of a rotary platform forming a support for the base of the shock and a swiveled support for the upper ends of the stalks suspended concentrically over the platform and independent of the gearing of the machine, said support being adapted to be carried around by the stalks as they are caused to rotate the platform, substantially as herein set forth.

19. In a corn-harvester, a rotary table or platform, an extensible support independent of the latter and extending to a point centrally over the table, and revoluble radial fingers projecting from the upper support at said central point, substantially as set forth.

20. In a corn-harvester, the combination of a rotary table, a swinging conveyer projecting over said table, and centrally overhanging rotary arms or fingers above the table, substantially as set forth.

21. In combination with a corn-harvester, a rotary platform on which the stalks are received to form the shock, folding radial arms or fingers for holding the upper parts of the stalks while the shock is being formed, and a suitable support for said arms or fingers, substantially as set forth.

22. In a corn-harvester, a rotary platform on which the stalks are received to form the shock, folding radial arms or fingers, and a suitable support, said arms being retractible within the support, substantially as set forth.

23. In a corn-harvester, a rotary platform, folding radial arms or fingers, means for supporting said arms, the retracting-sleeve, and means for moving said arms and sleeves relatively, whereby the arms are collapsed and the discharge of the completed shock facilitated, substantially as set forth.

24. In a corn-harvester, a rotary table, a device overhanging said table, a sleeve swiveled to said device, pendent arms or fingers pivoted within the sleeve, and means for spreading and withdrawing the arms or fingers, substantially as and for the purpose set forth.

25. In a corn-harvester, a table or platform, a support extending from the main frame and overhanging said table, a sleeve swiveled to said support centrally over the table, arms or fingers projecting through openings in the sleeve, and a vertically-movable bell in the sleeve in which the arms or fingers are pivoted, substantially as and for the purpose set forth.

26. In a corn-harvester, a table or platform, a support extending from the main frame and overhanging said table, a sleeve depending from said support centrally over the table, arms or fingers projecting through openings in the sleeve, and a movable bell in the sleeve in which the arms or fingers are pivoted, substantially as and for the purpose set forth.

27. In a corn-harvester, a table or platform, a support extending from the main frame and overhanging said table, a sleeve depending from said support centrally over the table, arms or fingers, a swivel attachment within the sleeve, to one part of which the arms or fingers are pivoted, and means attached to the other part of said attachment whereby the fingers are adapted to be spread and withdrawn, substantially as and for the purpose set forth.

28. In a corn-harvester, a table or platform, a sleeve overhanging the center of the table, arms or fingers, a spring within said sleeve, a swivel attachment on one part of which said spring bears and to which the arms or fingers are pivoted, and means attached to the other part of said attachment whereby the fingers are adapted to be spread and withdrawn, substantially as and for the purpose set forth.

29. In a corn-harvester, a table or platform, a support independent of the latter and extending to a point centrally over the same, a rotary arm projecting radially from said support above the table and which carries one end of the binding-wire, said wire supporting, compressing, and tying the outside of the shock, and means for supporting the center of the top of the shock, substantially as and for the purpose set forth.

30. In a corn-harvester, a table or platform, a rotary spring-arm suspended above the table, a wire-twister carried by the arm, means for supplying wire to said twister, said wire supporting, compressing, and tying the outer side of the shock, and means for supporting the center of the top of the shock, substantially as and for the purpose set forth.

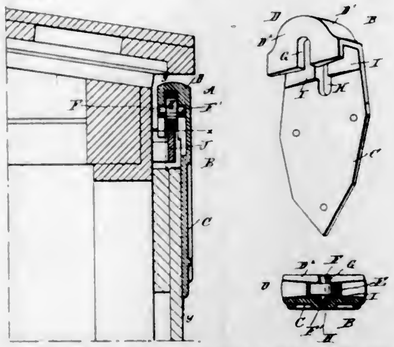
31. In a corn-harvester, a table or platform, a fixed support, a rotary sleeve supported on the latter and overhanging said table, arms or fingers carried by said sleeve, an arm attached to said sleeve, pawl-and-ratchet connection between the latter and said support, a twister carried by said arm, and means for supplying wire to the twister, substantially as set forth.

32. In a corn-harvester, a table or platform, a support independent of and overhanging the latter, a rotary arm suspended from said support above the table, a wire-twister carried by the arm, means for supplying wire to said twister, and arms or fingers overhanging the center of the table and pending from said support, substantially as and for the purposes set forth.

33. In a corn-harvester, a rotary table, a support independent of and overhanging the latter, rotary fingers supported on the support centrally over the table, a wire-twister, also supported with said fingers on said support above the table and rotatable in a circular path, all of said parts being adapted to move together, and means for supplying wire to said twister, substantially as set forth.

34. In a corn-harvester, a table, a support independent of and overhanging said table, a rotary arm suspended from said support over the table, a wire-twister carried by the arm, a spool, and wire leading from said spool and attached to the twister, whereby it is adapted to be carried around the top of the shock, forming means for tying the shock, substantially as set forth.

444,725. DOOR-HANGER. JOHNSON B. FLANDERS and JOHN M. SMITH, Toledo, Ohio. Filed Mar. 6, 1890. Serial No. 342,884. (No model.)

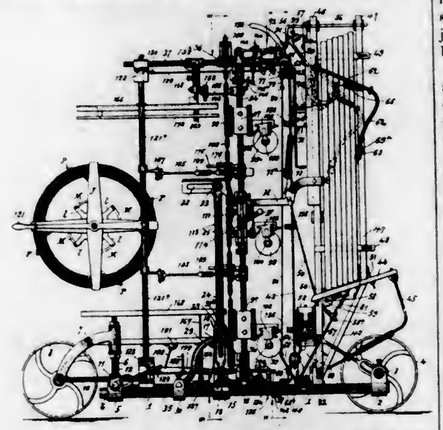


Claim.—In a hanger for sliding doors, a hanger-frame comprising a plate having on its inner face a vertical recess for the reception of a trunnion, an overhanging head formed on the said plate and provided with a curved top plate, and a rear plate having a slot for the reception of a trunnion, the inside of the main plate and the inner face of the rear plate of the head being formed with bevels, substantially as shown and described.

444,726. MACHINE FOR BUILDING PICKET FENCES. EZRA E. WITTER, Milford Centre, Ohio. Filed Jan. 20, 1890. Serial No. 337,548. (No model.)

Claim.—1. In a machine for building picket fences, an inclined supply-chute for holding a bundle of upright pickets in tiers, a transversely-inclined chute at the lower end thereof, means for depositing a tier of pickets at a time from the supply-chute into the transverse chute, the twisters, and means for carrying a picket at a time from the lower end of the transverse chute to the twisters, substantially as set forth.

2. In a machine for building picket fences, a supply-chute, a follower to act on a series of tiers of upright pickets in the chute, a transverse chute at the lower end of the supply-chute, toward which the pickets are forced by said follower, means for depositing a tier of pickets at a time from the supply-chute into the transverse chute, the twisters, and means for carrying a picket at a time from the lower end of the transverse chute to the twisters, substantially as set forth.



3. In a machine for building picket fences, a supply-chute for containing a series of tiers of upright pickets, a transverse chute at the lower end thereof, means for depositing a tier of pickets at a time from the supply-chute into the transverse chute, a follower to press against the tier of pickets in the transverse chute, the twisters, and means for carrying a picket at a time from the lower end of the transverse chute to the twisters, substantially as set forth.

4. In a machine for building picket fences, a supply-chute and a follower-arm having a rod or lateral extension adjustable thereon to press against the pickets, substantially as set forth.

5. In a machine for building picket fences, a supply-chute, a follower, and a spring acting on the follower to hold it in raised or lowered position when it has been raised or lowered by the operator, substantially as set forth.

6. In a machine for building picket fences, a supply-chute, a follower, a spring secured at one end to said follower, and a swinging bent link to which said spring is secured at its other end, substantially as set forth.

7. In a machine for building picket fences, an inclined chute for pickets, retracting claws or catches at the lower end of the chute, and a strip above the chute, against which the tops of the pickets impinge, substantially as set forth.

8. In a machine for building picket fences, a chute for pickets, a follower, retracting claws or catches at the lower end of the chute, and a strip above the chute, against which the tops of the pickets impinge, substantially as set forth.

9. In a machine for building picket fences, an inclined chute having slits or openings near its lower end, retracting claws or catches adapted to be projected through the openings, and a strip above the chute, against which the tops of the pickets impinge, substantially as set forth.

10. In a machine for building picket fences, a chute, an oscillatory shaft pivoted in bearings below the chute, claws projecting from said shaft and adapted to extend above the chute, a spring acting on said shaft to retract the claws, and positive means for projecting the claws above the chute, substantially as and for the purpose set forth.

11. In a machine for building picket fences, the combination of a frame, a chute, retracting-claws adapted to extend above the chute, and a strip secured to the frame above the chute adapted to be engaged by the tops of the pickets, substantially as and for the purpose set forth.

12. In a machine for building picket fences, the combination, with a supply-chute for containing a bundle of pickets and means for releasing one tier of pickets at a time, of a transverse chute at the lower end of the supply-chute, adapted to receive a tier of pickets, a follower adapted to press against said tier, and feed it forward, and suitable connection between the follower and said releasing means of the supply-chute, whereby they are both compelled to act together, substantially as set forth.

13. In a machine for building picket fences, in combination with a supply-chute and a transverse chute at the lower end thereof, a follower above the transverse chute, a cam actuated thereby, a pivoted lever adapted to be engaged by the cam, means for releasing a tier of pickets at a time in the supply-hopper, from which it is deposited into the transverse hopper, and intermediate mechanism connecting said releasing means and the lever, substantially as set forth.

14. In a machine for building picket fences, in combination with a supply-chute and a transverse chute at the lower end thereof, a follower above the transverse chute, a rock-shaft at the lower end of the supply-chute, having claws to project above the latter, an arm projecting from the shaft, and suitable mechanism connecting said follower with the arm of said shaft, substantially as set forth.

15. In a machine for building picket fences, in combination with a picket-chute, the wire-twisting mechanism, a picket-carrier at and operating transversely to the lower end of the chute, and means for supporting the upper ends of the pickets, substantially as and for the purpose set forth.

16. In a machine for building picket fences, the combination of a picket-carrier having a pocket to receive the lower ends of the pickets, means for supporting the upper ends of the pickets, means for depositing a picket in the pocket, and the wire-twisting mechanism, to which the picket is conveyed by the carrier, substantially as set forth.

17. In a machine for building picket fences, the combination of a lower picket-carrier, an upper picket-carrier, a chute for supplying a picket in upright position to said carriers, and the wire-twisting mechanism, to which a picket is conveyed in upright position by the carriers, substantially as set forth.

18. In a machine for building picket fences, a chute for supplying pickets in upright position, a lower picket-carrier consisting of a swinging arm, a device at the outer end thereof adapted to receive a picket from the chute, and means for supporting the upper ends of the pickets, substantially as set forth.

19. In a machine for building picket fences, a picket-carrier consisting of a swinging arm, and a notched support attached thereto to provide a pocket for a picket, substantially as set forth.

20. In a machine for building picket fences, a picket-carrier consisting of a swinging arm, and a notched support adjustably attached to said arm, substantially as set forth.

21. In a machine for building picket fences, a picket-carrier consisting of a swinging arm, a notched support attached to said arm, a cross-strip applied to said support at one side of the notch, and an upwardly-extending plate applied to the support at the other side of the notch, substantially as set forth.

22. In a machine for building picket fences, in combination with a lower picket-carrier, an upper picket-carrier consisting of a swinging arm, a hooking curved member secured thereto, which keeps the pickets from falling in advance of the carrier, and a pin projecting laterally from said member, substantially as set forth.

23. In a machine for building picket fences, in combination with the picket-carriers, a chute having means for depositing a picket in said carriers, consisting of a gravitating catch, means for actuating the same, and a detent actuated by said catch, substantially as and for the purpose set forth.

24. In a machine for building picket fences, in combination with the picket-carriers, a chute having means for depositing a picket in said carriers, consisting of a gravitating Y-shaped catch having a pendent stem, means for engaging said stem, and a detent actuated by said catch, substantially as and for the purpose set forth.

25. In a machine for building picket fences, the combination of a rock-shaft carrying a rack-arm, a chute, catches at the lower end of said chute adapted to be moved by said arm to release a picket in said chute, and a picket-carrier in which a picket is deposited, substantially as set forth.

26. In a machine for building picket fences, the combination of an upper and a lower picket-carrier, the latter being adapted to move in advance of the former, a rock-shaft, means of connection between the two picket-carriers, means of connection between the upper picket-carrier and the shaft, and the devices operated by the shaft, substantially as set forth.

27. In a machine for building picket fences, the combination of a picket-carrier, a strip carried at an angle thereto, provided with a slot at one end, a rock-shaft having a pin engaging in said slot, the carrier, when in normal position, presenting the slot at an incline to the pin, and the devices operated by the shaft, substantially as and for the purpose set forth.

28. In a machine for building picket fences, the combination of a picket-carrier having a swinging arm, a strip on the arm at an angle thereto adjustable transversely and longitudinally with relation thereto and having a slot, a rock-shaft having a pin engaging in said slot, the carrier, when in normal position, presenting the slot at an incline to the pin, and the devices operated by the shaft, substantially as and for the purpose set forth.

29. In a machine for building picket fences, the combination of the picket-carriers and means for actuating one in advance of the other, consisting of an operating rock-shaft, a rod operated by said

shaft and pivotally connected with one of the carriers, another rod connected with the shaft and provided with a slot, and a pin on the other of said carriers engaging in said slot, substantially as and for the purpose set forth.

30. In a machine for building picket fences, the combination of the picket-carriers, a rock-shaft operated by one of them, cams on the rock-shaft, the twisters provided with bobbins, and brakes to act on the bobbins and engaged by said cams to release them, substantially as and for the purpose set forth.

31. In a machine for building picket fences, the combination of the picket-carriers, divided twisters, a fixed support, a swinging support, each support carrying a half of each twister, means for moving the swinging support, and gravitating dogs or detents to engage and hold one-half of each twister when the divisions of the twisters are in line, substantially as and for the purpose set forth.

32. In a machine for building picket fences, the combination of the divided twisters, vertical supports, one for each half of said twisters, one of which supports is movable, the vertically-disposed picket-carriers, and connection between the picket-carriers and the movable support, whereby the latter is moved out simultaneously with the movement of the picket-carriers, substantially as and for the purpose set forth.

33. In a machine for building picket fences, the combination of the framing, upper and lower horizontal guideways for the completed fencing, supported above and below from the framing, means for moving the fencing along the guideways, and removable side strips or guides supported from above and below, substantially as set forth.

34. In a machine for building picket fences, the combination of upper and lower guideways for the pickets, and lifters working through the lower guideway to engage the lower ends of and to adjust pickets of different lengths, so that they will be in line at top, substantially as set forth.

35. In a machine for building picket fences, the combination of the upper and lower guideways for the completed fencing, and lifters pivoted below the lower guideway and adapted to be projected above the same and to engage the lower ends of the pickets, substantially as and for the purpose set forth.

36. In a machine for building picket fences, the combination of the upper and lower guideways for the completed fencing, lifters adapted to project above the lower guideway and engage the lower ends of the pickets, springs for keeping the lifters so projected, and means for retracting the lifters below the lower guideway, substantially as and for the purpose set forth.

37. In a machine for building picket fences, the combination of the carrying-truck, a standard supported therefrom, the frame-work carrying the operating parts of the machine proper pivotally supported above its middle on said standard, and the horizontal guide for the fencing fixed to the frame-work, substantially as and for the purpose set forth.

38. The combination, with the twisting mechanism, of means for supporting the line-wires, consisting of tension-blocks provided with drums for the wire, guides and retaining-hooks for engaging the wire from the drums and preventing it running off the drums, and a standard to which the blocks are attached by swivels, substantially as and for the purpose set forth.

39. A reel for supplying wire to the bobbins of the twisting mechanism in a fence-building machine, constructed with a frame on one side and outwardly-movable arms provided with lateral pins on the other side, and on which the coil of wire is supported, said arms when retracted permitting the insertion of the coil of wire upon the pins, substantially as set forth.

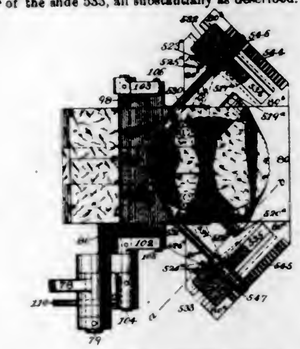
40. The combination, with a bobbin mounted on a slide, of means for winding the bobbin, comprising a suitable frame, a toothed shaft mounted therein, a worm or operating shaft parallel therewith and applied to the bobbin-shaft, and suitable shifting devices, substantially as set forth.

444,727. PAPER-BAG MACHINE. EDWARD E. CLAUSSEN, Hartford, Conn., assignor to Albert H. Walker, trustee, same place. Filed July 31, 1890. Serial No. 360,444. (No model.)

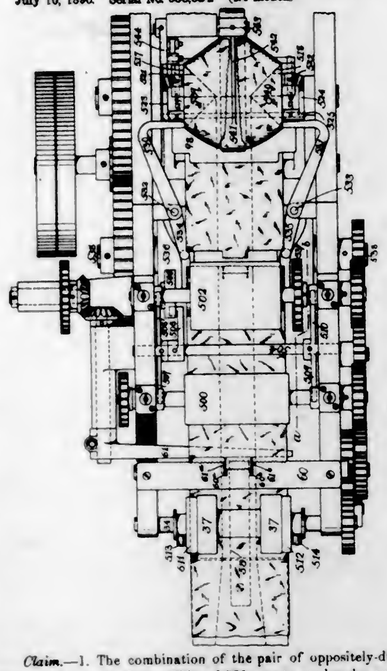
Claim.—1. A pair of oppositely-disposed, round, slender, end-rounded, outside-rolling side folders constructed and mounted to vibrate together to enter the tucks of a tucked paper tube and then to vibrate apart out of those tucks and to roll upon their own axes as they thus vibrate and to turn the upper folds of those tucks backward as they thus withdraw therefrom, all substantially as described.

2. The combination of the rolling side folders 530 and 531, the slides 533 and 533, provided with bearings for the rollers and with racks for their own propulsion, the sectors 536 and 537, meshing with those racks, the rock-shafts 538 and 539, working those sectors, the arms 540 and 541, rocking those shafts, and the cams 542 and 543, working those arms, all substantially as described.

3. The combination of the side holders 518ᵇ, turning upon the pivot 520ᵇ and worked by the rod 522ᵇ, the lever 524ᵇ, and the projection 526ᵇ of the slide 533, all substantially as described.



444,728. PAPER-BAG MACHINE. WILLIAM A. LORENZ, Hartford, Conn., assignor to Albert H. Walker, trustee, same place. Filed July 10, 1890. Serial No. 358,324. (No model.)



Claim.—1. The combination of the pair of oppositely-disposed end-rounded outside fingers 530 and 531, constructed and mounted to vibrate together to enter the tucks of a tucked paper tube and then to vibrate apart out of those tucks and to turn the upper folds of those tucks backward as they thus withdraw therefrom, with a pair of oppositely-disposed diagonal holders and with a transverse plate constructed substantially as described and operating to define a transverse line across the tucked paper tube midway between an imaginary line extending from one of said holders to the other and another imaginary line extending from the rounded end of one of said fingers to the rounded end of the other of said fingers when those fingers are at the outermost contact with the tucked paper tube, all substantially as described.

2. The combination of a folding-bed of a paper-bag machine, a pair of oppositely-disposed diagonal holders constructed and operating to hold the lower folds of a tucked paper tube on a plane or arc of that folding-bed, a transverse plate constructed substantially as described and operating to hold all the folds of the tucked paper tube between it and that folding-bed rearward of those holders, and the

pair of oppositely-disposed end-rounded outside fingers 530 and 531, constructed and mounted to vibrate together to enter the tucks of the tucked paper tube and then to vibrate apart out of those tucks and to turn the upper folds of those tucks as they thus withdraw therefrom backward over the transverse plate, all substantially as described.

3. The combination of a folding-bed of a paper-bag machine, a pair of oppositely-disposed diagonal holders constructed and operating to hold the lower folds of a tucked paper tube on a plane or arc of that folding-bed, a transverse plate constructed substantially as described and operating to hold all the folds of the tucked paper tube between it and that folding-bed rearward of those holders, the pair of oppositely-disposed end-rounded outside fingers 530 and 531, constructed and mounted to vibrate together to enter the tucks of a tucked paper tube and then to vibrate apart out of those tucks and to turn the upper folds of those tucks as they thus withdraw therefrom backward over the transverse plate, and the central longitudinal plate 541, constructed and operating to hold and fold the box-like form thus produced down into a diamond form, all substantially as described.

4. A pair of outside folding-fingers 530 and 531, provided with soft-rubber adjustable ends 530ᵃ and 531ᵃ, substantially as described.

5. The combination of the float 58, constructed narrower throughout its length than the space between the inner bends of the tucks of the tucked paper tubing which is continuously drawn over the float, the lip-knife 60, having that part of its cutting-edge which is opposite the cutting-edge of the float on a transverse line rearward of the other parts of its transverse cutting-edge, and the striker 61, all combined and operating together to sever continuous tucked paper tubing into lengths on lines mainly coincident with the cutting-edges of the lip-knife, but partly coincident with the cutting-edge of the float, all substantially as described.

6. The combination of the float 58, constructed substantially as described, the lip-knife 60, provided with the recesses 60ᵃ and 60ᵇ, and the striker 61, provided with the knives 61ᵃ and 61ᵇ, all constructed and operating together substantially as described.

7. The combination of the lip-knife 60, provided with the recesses 60ᵃ and 60ᵇ, and the striker 61, provided with the knives 61ᵃ and 61ᵇ, so constructed and operating together as that slits are cut in the ends of the paper tube by the same motion which separates one paper tube from another, all substantially as described.

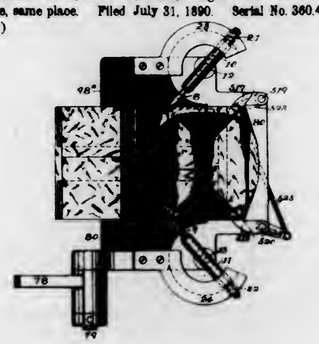
8. The combination of a pair of retarding-rolls having a comparatively slow speed for the temporary retardation of the paper running through the machine with a pair of accelerating-rolls having comparatively high speed for the subsequent compensatory acceleration of the speed with which the paper runs through the machine, all substantially as described.

9. The combination of a pair of retarding-rolls having a comparatively slow speed for the temporary retardation of the paper running through the machine and adapted to press that paper between them and release it at intervals with a pair of accelerating-rolls having a comparatively high speed for the subsequent compensatory acceleration of the speed with which the paper runs through the machine and adapted to press the paper between them and release it at intervals alternating with the intervals at which the retarding-rolls thus press and release the paper, all substantially as described.

10. The combination of a rock-shaft worked by an arm and a cam and provided with two pairs of oppositely-extending arms with a retarding-roll and an accelerating-roll so adjusted to those pairs of arms, respectively, as to be alternately raised and lowered by them, all substantially as described

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444,729. PAPER-BAG MACHINE. WILLIAM A. LORENZ and EDWARD E. CLAUSSEN, Hartford, Conn., assignors to Albert H. Walker, trustee, same place. Filed July 31, 1890. Serial No. 360,454. (No model.)



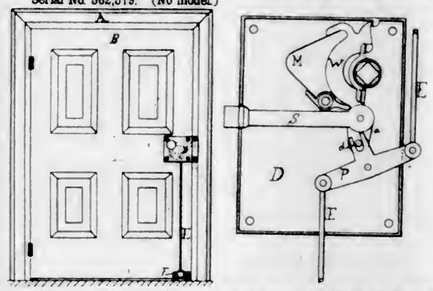
Claim.—1. The combination of a pair of oppositely-disposed end-rounded outside folders constructed and mounted to vibrate upon substantially parallel pivots located as described, and thus to enter the tucks of a tucked paper tube and likewise to vibrate apart out of those tucks and to turn the upper folds of those tucks backward as they thus withdraw therefrom, with a pair of oppositely-disposed diagonal holders, and with a transverse plate constructed substantially as described and operating to define a transverse line across the tucked paper tube directly between the said pivots, all substantially as described.

2. The combination of the rolling side-folders 8 and 9, the sleeves 10 and 11, provided with bearings for the side-folders, the shafts 12 and 13, carrying and vibrating the sleeves, the sector-pinions 21 and 22, turning the side-folders within the sleeves, and the sectors 23 and 24, turning the pinions, all substantially as described.

3. The combination of the fixed presser-plate 98ᵃ, having its forward edge sloping upward and backward, and the rocking gripper 1, provided with the backwardly-inclined flange 2 and adapted to clamp a paper-bag blank to that forward edge, all substantially as described.

4. The combination of the fixed presser-plate 98ᵃ, having its forward edge sloping upward and backward, the rocking gripper 1, provided with the backwardly-inclined flange 2 and adapted to clamp a paper-bag blank to that forward edge, and two vibrating side-folders constructed and operating together to enter the tucks of a tucked paper-bag blank, and to turn the upper folds thereof downward upon the presser-plate, so as to form inwardly-inclined triangular folds of portions of the material of the two tucks, all substantially as described.

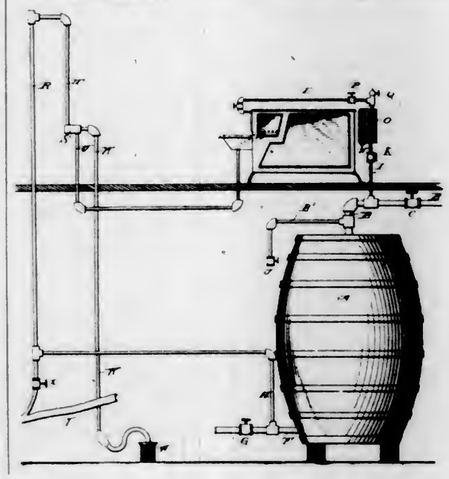
444,730. DOOR-CHECK. JOHN SHINN, Roxborough, assignor of one-half to Washington C. Snyder, Ashbourne, Pa. Filed Aug. 18, 1890. Serial No. 362,319. (No model.)



Claim.—A door-check for swinging doors, consisting of the combination of a knob-operated yoke W, having a pin *d*, a pivoted and slotted lever P, a connecting rod and bolt E, and stops G, as shown, described, and for the purpose specified

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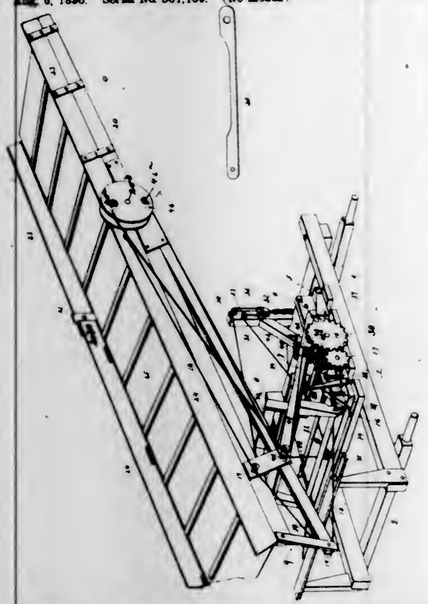
444,731. MEANS FOR STORING AND HANDLING PETROLEUM-OIL. LUTHER C. SNELL, Detroit, Mich. Filed Jan. 19, 1889. Serial No. 296,946. (No model.)



Claim.—1. The combination, with a storage-tank having at its lower end a valved connection, with a water-supply under pressure and a valved discharge-pipe at its bottom, of an oil-supply having a lateral discharge-opening within the tank and an oil-discharge pipe at the top of the tank, substantially as described.

2. The combination, with a storage-tank having at its lower end a valved connection, with a water-supply under pressure and a discharge-pipe at its bottom, of an oil-supply and a discharge-pipe at its top, a burner into which the oil-discharge enters, a stand-pipe connecting with the water-supply and an overflow-pipe, and the connection with the overflow-pipe at a point at or above the level of the burner, extended to and connected with the burner, substantially as described.

444,732. **STRAW-STACKER.** OTIS STACK, Ligonier, Ind. Filed Aug. 6, 1890. Serial No. 361,169. (No model.)



Claim.—1. The combination of the carrying-truck, the turn-table, the supporting-frame hinged to the latter, the stacker-frame hinged to said supporting-frame, the extension-frame having uprights 21, a shaft 15, journaled upon the turn-table and having ropes 18 passing through suitable guides and to the uprights 21 upon the extension-frame, and a shaft 26, journaled independently upon the turn-table and having a rope, the ends of which pass through suitable guides and are attached to a cross-bar of the hinged supporting-frame, substantially as set forth.

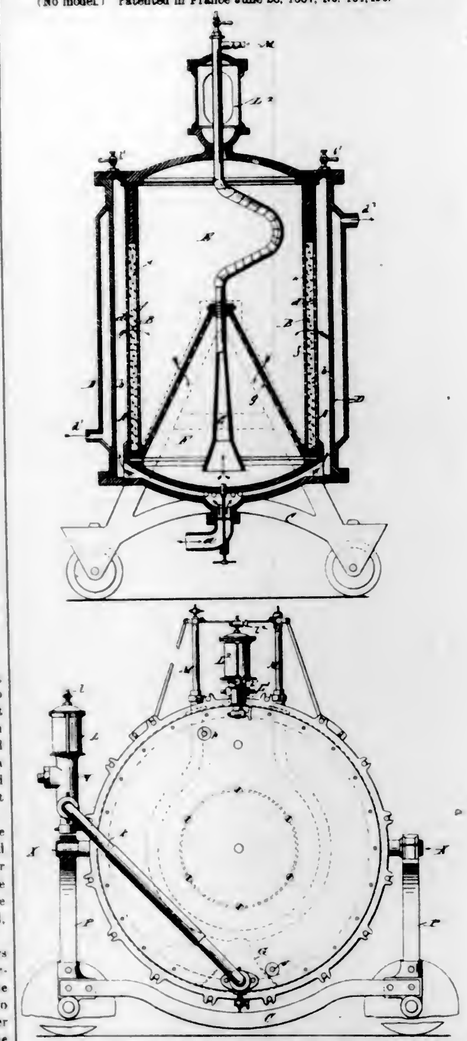
2. The combination of the stacker-frame, the extension-frame hinged to the latter and having uprights at its lower end, the hinged supporting-frame, a windlass journaled upon the latter, a wheel or disk secured to one of the uprights of the extension-frame, and a rope wound upon the windlass and passing through suitable guides to the said wheel or disk, to which the ends of the said rope are attached, substantially as set forth.

3. The combination of the hinged supporting-frame, the side bars 11, having cross-bar 12 and shaft 13, carrying the sleeve 14, the stacker-frame hinged to the supporting-frame, mechanism for adjusting the supporting-frame, and a shaft journaled to the turn-table or base to which the supporting-frame is hinged and having ropes passing under the roller 14 through suitable guides to uprights upon the sides of the stacker-frame, substantially as set forth.

4. The combination of the turn-table, the hinged supporting-frame, the stacker-frame hinged to the latter, a windlass-shaft journaled upon the turn-table, an upright having guide-pulleys at its upper end, a spring secured at the lower end of said upright and having a guide-pulley at its upper end, and a rope wound upon the windlass-shaft and having its ends passed through suitable guide-pulleys and attached to the hinged supporting-frame, one end of said rope being passed through the guide-pulleys at the upper end of the post or upright and at the upper end of the spring mounted near the lower end of said upright, substantially as set forth.

5. The combination of the turn-table, the hinged supporting-frame, the stacker-frame hinged to said supporting-frame, the shaft 15, having spur-wheels 17, the shaft 26, having one end journaled in a sliding box 27 and provided with a spur-wheel 30, the connecting-rod 28, the lever 29, the stop or detent 39, and the ropes 18 and 34, and suitable guide-pulleys, all arranged and operating substantially as and for the purpose set forth.

444,733. **FILTERING APPARATUS.** HEINRICH STOCKHEIM, Mannheim, Baden, Germany, assignor to Simon Uhlmann and Frederick Uhlmann, both of New York, N. Y. Filed Mar. 2, 1887. Serial No. 229,423 (No model.) Patented in France June 28, 1887, No. 181,490.



Claim.—1. The combination, substantially as before set forth, of the entry-chamber of the filtering apparatus and the filter-support and filtering material with a gas-trap and a vent-cock therefor connected with the said entry-chamber.

2. The combination, substantially as before set forth, of the entry-chamber of the filtering apparatus and the filter-support and filtering material with a gas-trap of lantern construction connected with said entry-chamber, and a vent-cock for the discharge of gas from said gas-trap.

3. The combination, substantially as before set forth, of the entry-chamber of the filtering apparatus, the filter-support and filtering material, and the discharge-chamber of the filtering apparatus with a gas-trap and a vent-cock connected with the said discharge-chamber, whereby the liberated gas may be trapped and permitted to escape.

4. The combination, substantially as before set forth, of the entry-chamber of the filtering apparatus, the filter-support and filtering material, and the discharge-chamber with a gas-trap of lantern construction connected with the discharge-chamber, and a vent-cock for the discharge of the accumulated gas therefrom.

5. The combination, substantially as before set forth, with the entry-chamber of the filtering apparatus, the filter-support and filtering material, and the discharge-chamber, of a supply-pipe for said entry-chamber, a gas-trap connected with the said supply-pipe, and a vent-cock for the discharge of gas therefrom.

6. The combination, substantially as before set forth, with the entry-chamber of the filtering apparatus, the filter-support and filtering material, and the discharge-chamber, of a supply-pipe for the said entry-chamber, a gas-trap of lantern construction connected with the said supply-pipe, and a vent-cock for the discharge of gas therefrom.

7. The combination, substantially as before set forth, of the entry-chamber of the filtering apparatus, the supply-pipe therefor, the filter-support and filtering material, and the discharge-chamber with a gas-trap connected with the said supply-pipe, and a float-valve fitted to close the passage to the said entry-chamber.

8. The combination, with the entry and discharge chambers, of a supply-pipe leading into the lower part of the entry-chamber, a discharge-pipe leading from the lower part of the discharge-chamber, gas-traps connected with the upper portions of said chambers, respectively, and vent-cocks for the escape of gas collected by said traps, substantially as hereinbefore set forth.

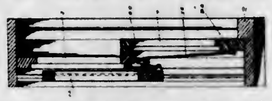
9. In apparatus for filtering beer and the like, the combination, with the entry and discharge chambers, of traps connected with said chambers, respectively, to trap and collect any liberated gases, and vent-cocks for the escape of said liberated gases, substantially as and for the purposes hereinbefore set forth.

10. In beer-filtering apparatus, the combination, with the inlet and discharge chambers and the filter-support and filtering material interposed between said chambers, of a valve or cock controlled vent located on the discharge side of the filtering material and communicating with the discharge-chamber, so that air and gas separated or separating from the beer may be discharged from the beer after its passage through the filtering material, substantially as and for the purposes hereinbefore set forth.

11. In beer-filtering apparatus, the combination of inlet and discharge chambers, the filter-support and filtering material interposed between said chambers, inlet and discharge pipes for said chambers, and valve or cock controlled vents on each side of the filtering material, these elements being organized and arranged together for joint operation substantially in the manner hereinbefore set forth, so that air and gas separated or separating from the beer may be discharged from the beer during the filtering operation both before and after its passage through the filtering material.

12. In beer-filtering apparatus, the combination of the inlet and discharge chambers of the filter, the filter-support and filtering material interposed between said chambers, valve or cock controlled vents located on each side of the filtering material, whereby air and gas may be discharged from the beer during the filtering operation both before and after its passage through the filtering material, and means, substantially as described, for exerting and maintaining a back-pressure upon the beer in the filter, substantially as and for the purposes hereinbefore set forth.

444,734. **WINDOW-SCREEN.** HENRY N. SWARTZ, Milton, Pa. Filed July 31, 1889. Serial No. 319,357. (No model.)



Claim.—1. In a window-screen, the combination, with the upper sash and the lower sash, of a sliding screen-frame located adjacent to the sash, opposite cords having their terminals connected to the lower sash and passed upwardly and over pulleys located between the lower sash and the frame and thence through eyes at the opposite lower ends of the screen-frame, and terminating in loops, and a series of screw-eyes located intermediate the guiding-eyes of the frame and adapted to engage the loops, as and for the purpose specified.

2. The combination, with the cords and the sashes and screen-frames, of the pulleys 21 for receiving the same, the inverted-U-shaped clip for supporting the pulleys, the casting 25, having the arms 24 and cross-pin 23 for supporting the clip and having the stud 26, and the plate 27, having the stud-opening 28 and screw-eyes 29, substantially as specified.

3. In a window-screen, the combination, with the upper and lower sashes, of the screen-frame sliding in independent guides of the window-casing, the plate 27, located between the sides and the screen-frame, the pulley-block 25, removable from the plate, the clip carrying the pulley and loosely suspended from the pulley-block, and the cords connected to one of the sashes, passing through the pulley, and attached to the screen-frame, whereby the movement of the sash causes a corresponding but opposite movement of the screen frame, as set forth.

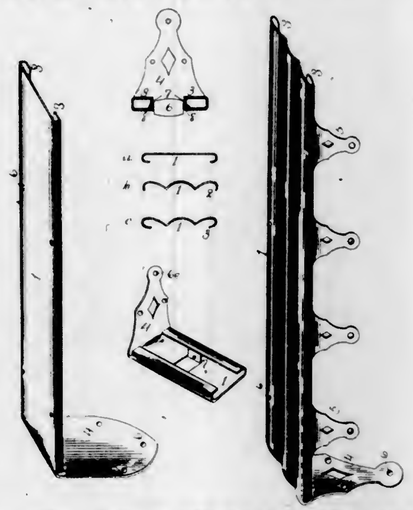
444,735. **VOLTAIC INSOLE.** MARY E. THOMAS, Cardington, Ohio. Filed Nov. 6, 1890. Serial No. 370,491. (No model.)



Claim.—1. In a voltaic or electro-galvanic insole for boots and shoes, the combination of the elements C and Z, electrically connected to each other and secured to the insole, said plates Z and C being cut away to provide U-shaped plates, substantially as set forth.

2. In a voltaic or electro-galvanic insole, the combination of an insole A, metallic plates C and Z, having solid portions adjacent to the shank, said plates being connected to each other, the central portion of the ends being cut away, a series of perforations *a*, and a cover D, having perforations above the plates, substantially as set forth.

444,736. **TRUNK-SLAT.** RICHARD TOPHAM, Chicago, Ill. Filed Feb. 25, 1890. Serial No. 341,761. (No model.)



Claim.—1. A trunk-slat consisting of a strip of metal longitudinally corrugated, the lower edges of the longitudinal ridges or ribs formed by the corrugations constituting bearing portions, which seat upon the trunk and support the body of the slat, and said corrugated slat having its longitudinal edges turned under to form a portion of the bearing-face of the slat, substantially as set forth.

2. A trunk-slat consisting of a strip of metal having its opposite edges turned under to form an inner bearing-face for the slat, and two end clamps or extensions of less width than the body of the slat before such edges are turned under, said clamps or extensions being formed integral with the body of the slat and bent downward from its two ends at an angle thereto, whereby said clamps or extensions protect and conceal the ends of the turned-under edges of the slat, substantially as set forth.

3. A metallic trunk-slat having side extensions or trimmings formed thereupon integral with the body of the slat and bent down from one of the longitudinal edges of the slat to form side clamps for purposes of attachment to a side of the trunk at an angle to that side of the trunk upon which the body of the slat is attached, the edge of the body of the slat between said extensions and the opposite edge of the body of the slat being turned under to form an inner bearing-face

for the slat upon the same side as that from which the clamps extend, substantially as specified.

4. A metallic trunk-slat having end extensions or clamps and edge extensions or trimmings formed integral therewith and extending at an angle to the body thereof in a position to form clamps for the purposes of attachment to a side or end of a trunk at an angle to that side of the trunk upon which the body of the slat is secured, the longitudinal side edges of the body of the slat being turned under to form an inner bearing-face for the slat upon the same side of the slat as that from which said clamps extend, substantially as and the purpose specified.

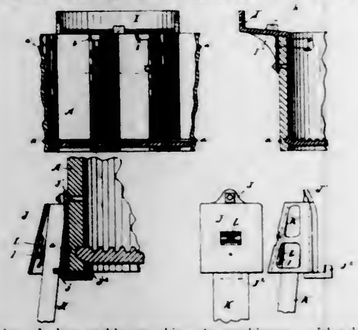
5. A trunk-slat consisting of a strip of metal having its opposite edges turned down to form an inner face for the slat, and opposite end clamps formed integral with the body of the slat and bent down at an angle thereto, the body of the slat being longitudinally corrugated, substantially as and for the purpose herein set forth.

6. A trunk-slat consisting of a strip of metal having its opposite edges turned down to form an inner bearing-face at a short distance from the part forming the outer face, ears struck inwardly from said outer face, and a roller journaled between said ears and projecting outwardly through the space from which the metal forming the ears is struck, substantially as set forth.

7. A trunk-slat consisting of a strip of metal having its opposite edges turned down to form an inner face at a short distance from the part forming the outer face, end clamps formed integral with the body of the slat and bent down at an angle thereto, ears struck inwardly from said outer face near the ends thereof, and a roller journaled between said ears and projecting outwardly through the space from which the metal forming the ears is struck, substantially as and for the purpose herein specified.

8. A trunk-slat consisting of a strip of metal having its opposite edges folded over to form an inner face at a short distance from the inner side of the part forming the outer face, end clamps formed integral with said outer face and bent inwardly at an angle thereto, ears struck inwardly from said outer face, near the opposite ends thereof, of a height equal to the distance between said inner and outer faces and in position to form a strut or support between said inner and outer faces, and a roller journaled between said ears and extending through the aperture formed by the striking out of the said ears, substantially as and for the purpose herein set forth.

444,737. **WASHING-MACHINE.** WILLIAM H. TURNBULL, Fort Wayne, Ind. Filed Sept. 30, 1889. Serial No. 325,527. (No model.)

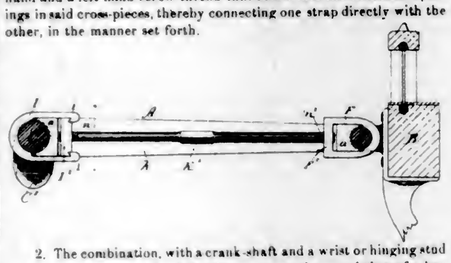


Claim.—1. In a washing-machine, the combination, with tub having a hinged cover, of inclined apron located opposite the free end of the cover, such apron having flanges adapted to hook over the edges of the tub, and having a depending bracket secured to the outside of the tub, substantially as set forth.

2. In a washing-machine, the combination, with tub, of metal leg-sockets secured to the tub, each socket having an ear at the top for attaching to the tub and having flanges at the bottom adapted to hook under the chines of the tub, the socket having an internal rib, a detachable leg having a corresponding notch for engaging such rib, and spring for holding the leg yieldingly in position in the socket, with the notch thereof engaging the internal rib of the socket, substantially as set forth.

444,738. **PITMAN-CONNECTION FOR LOOMS.** EDWARD WRIGHT, Worcester, assignor to the Davis & Furber Machine Company, North Andover, Mass. Filed Sept. 26, 1890. Serial No. 366,159. (No model.)

Claim.—1. The within-described pitman, composed of the rigid bar A, having the laterally-offset ends *a*, with transverse bearing-surfaces, straps F and I for the outer part of the bearings, fitted to and adjustable upon the respective ends of said bar, the inner end F′ and removable cross bar or nut I′ on the respective straps, extending across the bar A back of the lugs *a*, and having screw-threaded openings therein, and the tension-rod K, having at its respective ends a right-hand and a left-hand screw-thread that screw into the threaded openings in said cross-pieces, thereby connecting one strap directly with the other, in the manner set forth.



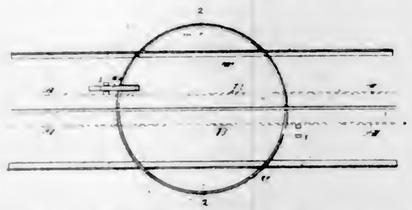
2. The combination, with a crank-shaft and a wrist or hinging stud on a part to be operated, of the pitman-connection consisting of a bar having at its respective ends bearing-surfaces that fit the crank-wrist and the hinging-stud, the strap F, adjustably fitted to one end of said bar and embracing the hinging-stud, the strap I, adjustably fitted to the opposite end of said bar and embracing the crank-wrist C and provided with the removable cross-bar or nut I′, and a tension-rod extending from one strap to the other and connecting the same by screw-threads, in the manner described, whereby simultaneous adjustment of the bearings at both ends of the pitman can be effected, substantially as set forth.

444,739. **TAG.** HERMAN BAUMGARTEN, Washington, D. C. Filed Oct. 30, 1890. Serial No. 369,838. (No model.)



Claim.—A metallic tag formed of ductile metal capable of being impressed, having a bushing of harder metal inserted in one end thereof and expanded therein, with the eccentric hole in said bushing located toward the center of the tag, so as to subject the thick side of the bushing to wear when suspended by a wire, substantially as set forth.

444,740. **ELECTRIC RAILWAY.** EDWARD M. BENTLEY, Brooklyn, N. Y. Filed July 10, 1885. Serial No. 171,194. (No model.)



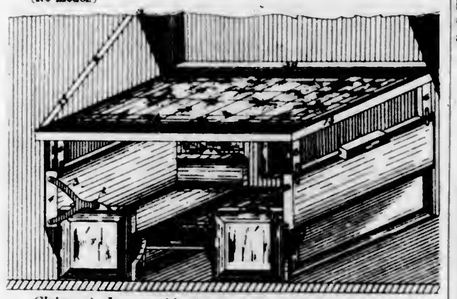
Claim.—1. The combination, in an electric-railway turn-table, of inclosing box therefor, a diametrically-slotted table, a transverse connection holding the two halves of the table, and an electrical insulated conductor beneath the table and above the said transverse connection substantially in line with a corresponding conductor in the main conduit.

2. The combination, in an electric railway having a slotted conduit and a conductor therein, of a transfer or turn table having also a conduit and conductor in line with the conduit and conductor of the main line, a track and rollers for said table below the level of said conduit, and an electrical connection between the conductor of the turn-table and the main conductor.

3. The combination of two sections of electric railway, each provided with a slotted conduit and a conductor therein on a common level, an intermediate transfer or turn table having a section of the conductor in line with the conductors of the sections, and a track for said table permitting movement at an angle to said sections.

4. The combination of two sections of electric railway, each provided with a slotted conduit, a conductor on a common level, a transfer or turn table and a section of conductor therein at the same level, and a track for said table below the level of said conduit, permitting movement of the table at an angle with the said sections.

444,741. **COMBINED SLEEPING AND DAY COACH.** ANTHONY A. BRANDENBURG, Denver, Colo. Filed Jan. 2, 1890. Serial No. 335,706 (No model.)



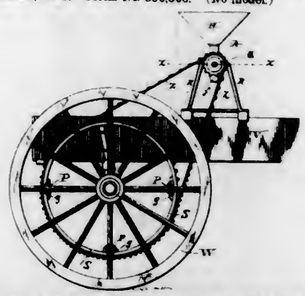
Claim.—1. In a combined sleeping and day car, seats provided with backs having hinged parts 6 6, adapted to occupy an upright position, in combination with the bottom of the upper berth, which rests upon and is supported chiefly by said parts 6, substantially as described.

2. In a combined sleeping and day car, seats having backs provided with a centrally-hinged locking portion 7 and hinged parts 6 6 on each side of part 7, said part 6 being capable of occupying an upright position, in combination with the bottom of the lower berth, which rests upon and is supported chiefly by said parts 6, substantially as described.

3. The combination, in an upper berth, with the bottom 13 and the end brackets 26, of a shelf 30 and a bar 28, connecting said end brackets, the bar being provided with hooks 29, substantially as described.

4. In a sleeping or day car, the combination, with the seats, of a combined mirror and lap-board or table 31, the mirror when not in use being protected by a slide 32, and the whole hinged to the side of the car and adapted to turn down between the seats or fold up into a recess in the side of the car, substantially as described.

444,742. **FEED-GRINDER.** CHARLES A. CLAYPOOL, Spencer, Iowa. Filed June 24, 1890. Serial No. 356,568. (No model.)



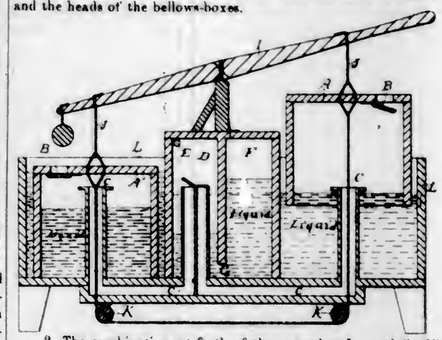
Claim.—In a grinding-mill, the combination, with the mill proper and a wagon supporting it, of the band S, having blocks *s* on its inner face, clips P, passing through said blocks and adapted to engage the spokes of a wagon-wheel W, lugs *g*, projecting outwardly from said band and adapted to rest against said spokes, and the chain Z, leading from said band to the sprocket-wheel Q of the mill, the whole constructed substantially as and for the purpose hereinbefore set forth.

444,743. **TOILET-CREAM.** KATHARINE CONWAY, Philadelphia, Pa. Filed Oct. 31, 1890. Serial No. 369,951. (No specimens.)

Claim.—The composition herein described, consisting of vaseline, white wax, borax, starch-powder, rose-water, distilled water, and extract of crab-apple, compounded substantially in the proportions and manner specified.

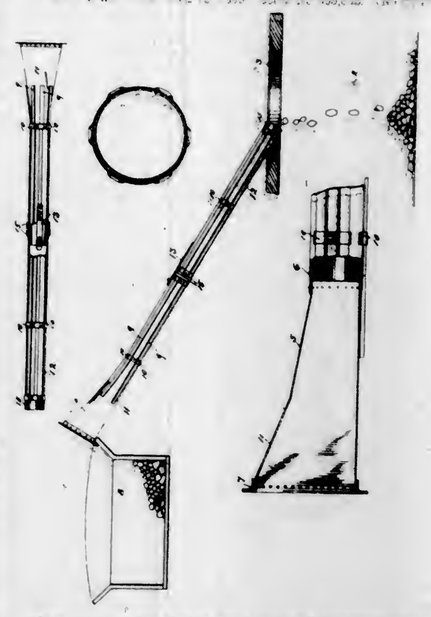
444,744. **BELLOWS.** SAMUEL T. CULP, Denver, Colo. Filed Feb. 24, 1890. Serial No. 341,600. (No model.)

Claim.—1. In a bellows, the combination set forth of a discharge-chamber provided with a discharge-pipe and with means for producing a pressure upon the air within such chamber, two extensible bellows-boxes having valved inlets and being connected with the discharge-chamber by valved outlet-pipes, the walking-beam I, and a cord attached by its ends to the ends of the walking-beam and in its intermediate length attached to the heads of the bellows-boxes and passing over pulleys, said pulleys respectively arranged opposite to and in line with the attachments of the cords with the walking-beam and the heads of the bellows-boxes.



2. The combination set forth of the water-box L, partially filled with liquid, the inverted tanks A A′, provided with valved inlet B, the walking-beam I, the pulleys K K, the cord J, attached by its ends to the walking-beam and in its intermediate length attached to the heads of the tanks A A′ and passing over said pulleys, the valved outlet-pipe C, discharge-chamber D and auxiliary chamber F, connected at the bottom by passage G and partially filled with liquid, and the discharge-outlet E.

444,745. **COAL AND GRAIN CHUTE.** THOMAS W. EMERY, Minneapolis, Minn. Filed Sept. 18, 1890. Serial No. 365,352. (No model.)



Claim.—1. In a device of the class described, the combination of the metallic pipe-sections, with ribs or slats movably secured upon the outside of said sections longitudinally thereof, a hopper connected to one of said sections, and an angle-iron frame secured upon the outside of said hopper at its upper edge, substantially as and for the purpose set forth.

2. In a chute, the combination of the hopper, the upper section or round pipe, the lower section or sections, slip-joints between said sections, means for coupling said sections together, and wooden slats secured longitudinally upon the said section by suitable staples, substantially as and for the purpose specified.

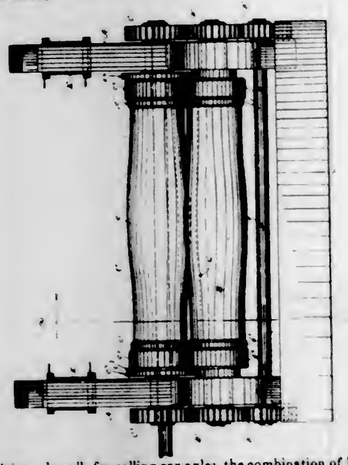
3. The combination, in a chute, of the hopper 4, provided with the angle-iron frame 7, with the portion 5, connecting said hopper

with the round pipe 6, the wooden slats 9, provided at convenient distances around said pipe 6, and the staples 10, substantially as described.

4. The combination, with the hopper, of the round sheet-metal pipe 6, the angle-iron 7, the lower section 12, connected with said pipe 6 by a slip-joint and a coupler 10, the lock 13, and the wooden slats 9, movably secured upon the several sections of the chute, substantially as described.

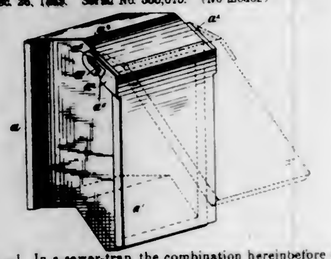
5. A chute comprising, in combination, a thin sheet-metal pipe, loops for staples upon the exterior of said pipe, slats inserted through said loops longitudinally of said pipe, and shoulders or collars upon said pipe, against which the ends of the slats abut, and by means of which they are held in position, substantially as described.

444,746. **ROLLS FOR MANUFACTURING CAR-AXLES.** DAVID L. EVANS, Cleveland, Ohio. Filed May 23, 1890. Serial No. 352,398. (No model.)



Claim.—In rolls for rolling car-axles, the combination of housings and rolls, each roll having at each end two narrow cylindrical sections of different diameters, and a groove located to the outside and adjacent to each larger cylindrical section, one of said rolls having a flange at each end for cutting off surplus metal at the ends of the axle, substantially as set forth.

444,747. **SEWER-TRAP.** CHRISTIAN C. FUNK, Springfield, Ohio. Filed Dec. 26, 1889. Serial No. 335,015. (No model.)



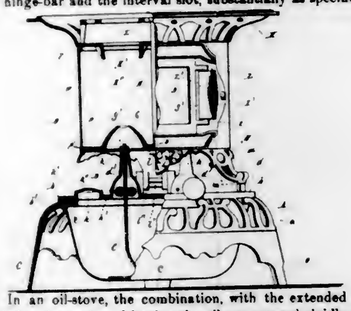
Claim.—1. In a sewer-trap, the combination hereinbefore stated of a gate or valve having offset lugs projecting from one side or face and having L-shaped slots formed therein as and for the purposes shown and described.

2. In a sewer-trap, the combination hereinbefore stated of a gate or valve having offset lugs projecting therefrom and L-shaped slots formed therein, with the projecting pin a^4, for the purposes described and shown.

3. In a sewer-trap, the combination hereinbefore stated of a box a, having a recess a^1 cast therein, with a valve having hinges cast thereon, with longitudinal and perpendicular slots, as shown and described, and for the purposes stated.

444,748. **OIL-STOVE.** JACOB GOLDSTEIN and ISRAEL BLOCK, New York, N. Y. Filed Aug. 9, 1890. Serial No. 361,519. (No model.)

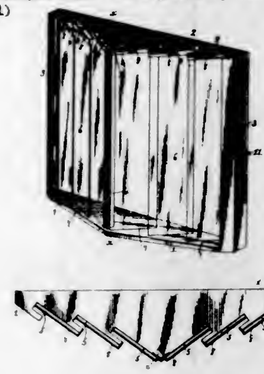
Claim.—1. The combination, with the cylinder-body B, of the door-frame casting having the curved hinge-flange, and the door having the hinge-bar and the interval slot, substantially as specified.



2. In an oil-stove, the combination, with the extended base A, channeled underneath and having the oil-pan secured rigidly thereto, its seat-ledge e, its catch projections, and studs, of the burner-plate and its notches, the lower cylinder-casting E, its hinge device, and recessed feet, substantially as specified.

3. The combination, with the lower cylinder-casting E, formed entire with the burner-cap and having the outer marginal bearing and the feet formed with the recessed bearings m', of the cylinder-body, the perforated cast plate G, the crown-casting K, having the exterior annular flange r, and the central perforation for the tie-rod, the cast frame L, and the said tie-rod extending upwardly through plate G, cast frame L, and crown-casting, substantially as described.

444,749. **DUST AND CINDER PROTECTOR.** ZACHARY J. GOODWIN, Memphis, Tenn. Filed Aug. 22, 1890. Serial No. 362,743. (No model.)

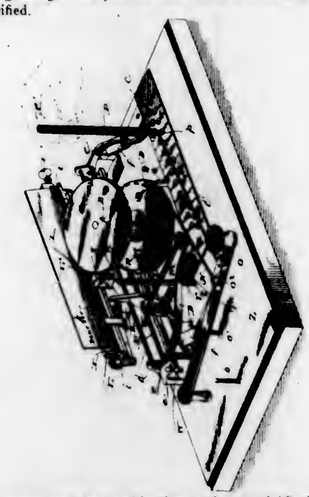


Claim.—1. The combined dust and cinder guard and ventilator, consisting of a frame adapted to be applied to a car-window and comprising upper and lower transverse strips, said strips being each provided upon its inner side and along its outer edge with fixed seats or sockets having their outer ends disposed toward the centers of said strips, and transparent removable panels rigidly mounted in the sockets, substantially as specified.

2. The herein-described guard and ventilator, consisting of a rectangular frame comprising upper and lower transverse strips, the upper strip being provided upon its under side with a series of grooves arranged at an angle to each other and to the strip, the lower strip having a series of kerfs agreeing with the grooves, sheet-metal sockets removably secured to each kerf, and a series of panels formed of glass and having their upper ends resting in the grooves and their lower ends in the sheet-metal sockets, substantially as specified.

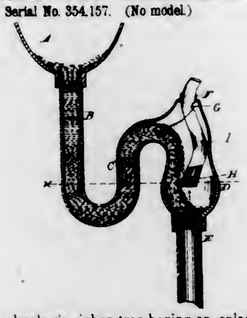
444,750. **TYPE-WRITING MACHINE.** JOHN J. GREEN, Boonton, N. J. Filed Dec. 13, 1888. Serial No. 293,459. (No model.)

Claim.—1. In a type-writer, the combination of the spring-actuated revoluble type-disk having two sets of type on its edge, end to end, the grooved pulley connected to the type-disk, the key-board, the shifting arm carrying a roller, and the cord coiled on a grooved pulley extending around said roller and provided with a style to engage said key-board, one set of type being normally in position and the other set being brought into position when the arm is shifted, substantially as specified.



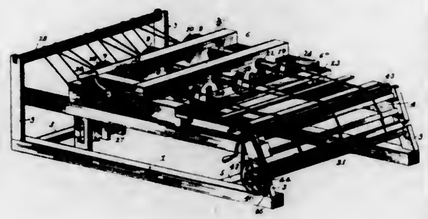
2. In a type-writer, the combination, with a revoluble disk having two sets of type on its edge, end to end, and a coiled spring to rotate it in one direction, of the cord coiled on a pulley connected to the said type-disk, a style connected to the end of said cord, a shifting arm having a guide-roller around which said cord passes between its ends, and stops for limiting the movement of said shifting arm, said stops being so spaced that the guide-roller on the arm will move a distance sufficient to rotate the type-disk one-half of a revolution, substantially as and for the purpose set forth.

444,751. **PLUMBER'S TRAP.** JOHN HARTFORD, Chicago, Ill. Filed June 3, 1890. Serial No. 354,157. (No model.)



Claim.—In a plumber's siphon-trap having an enlarged portion between the siphon-pipes and the discharge-pipe, a pipe inserted within the enlarged portion and extending down to near the discharge-pipe to form a direct passage to the ventilating-pipe and in position to prevent the rotary motion of water passing through the trap, and a small opening in and near the upper end of the pipe to prevent the accumulation of gas in the top of the large chamber, as specified.

444,752. **FENCE-MAKING MACHINE.** WILLIAM H. JENKINS, Girard, Ill. Filed Apr. 26, 1890. Serial No. 349,640. (No model.)



Claim.—1. In a fence-making machine, the combination, with a suitable supporting-frame, of a winding-roller journaled detachably at one end of said supporting-frame, a spool-carrying shaft mounted at the other end of said frame, and a carriage arranged to slide longitudinally upon said frame and carrying the twisting mechanism, substantially as set forth.

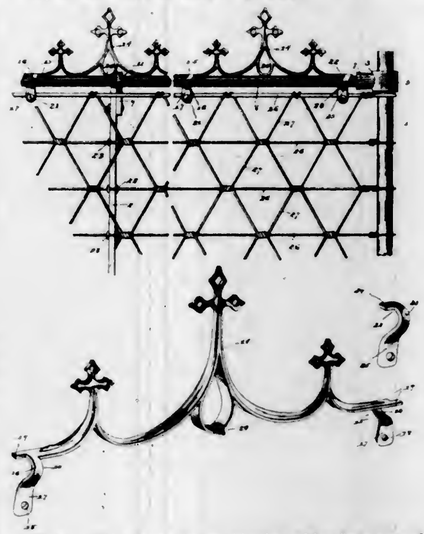
2. In a fence-making machine, the combination of a suitable supporting-frame having longitudinal tracks or guideways, a winding-roller journaled detachably at the front end of said frame, a guide-roller journaled at the rear end of said frame, a transverse vertically-adjustable shaft carrying the wire-spools, and a longitudinally-sliding carriage carrying the twisting mechanism, substantially as set forth.

3. In a fence-making machine, the combination, with the bed-frame, of the longitudinally-movable carriage, the twisting-tubes journaled in said carriage and provided with twisting-plates at their front ends having perforations for the passage of the wires, the transverse brace or slat-support arranged in front of said twisting-tubes and having the vertically-slotted uprights or gage-plates, and mechanism for simultaneously rotating the twisting-tubes, substantially as set forth.

4. In a fence-making machine, the combination, with the supporting-frame, of the longitudinally-movable carriage and the twisting devices journaled or mounted revolubly in said carriage, said twisting devices comprising the metal tubes, provided at their front ends with longitudinal slits forming diverging jaws, and the twisting-plates or spreaders secured at the front ends of said jaws and having slots with enlarged outer ends for the passage of the wires, substantially as set forth.

5. In a fence-making machine of the class described, the combination, with the frame having a longitudinally-movable carriage having a transverse brace or slat-support and carrying the wire-twisting mechanism, of the winding-roller mounted detachably in suitable bearings at the front end of said frame, said winding-roller being provided with a longitudinal slot, oppositely-extending arms mounted pivotally in said slot and provided at their inner ends with segmental racks meshing together, and a handle-bar connected pivotally with the arms, extending at one side of the roller, all constructed and combined to operate substantially as set forth.

444,753. **FENCE.** ALVA L. KITSELMAN, Ridgeville, Ind. Filed July 26, 1890. Serial No. 360,041. (No model.)



Claim.—1. In a fence, the combination, with a fence-post, of a rail-clamp comprising a flat plate having a rib or flange adapted to bear against the front edge of the post, and provided with a forwardly-extending neck or bracket having an eye or perforation to receive the tubular top rail, substantially as set forth.

2. The rail-clamping device consisting of a flat plate provided at its front edge with a rib or flange and having a forwardly-extending neck or bracket provided with an eye or opening to receive a tubular top rail, in combination with the set-screw or binding-screw adapted to secure such tubular rail against turning, substantially as set forth.

3. In a fence, the combination of the corner-posts, the intermediate posts, the rings or bands mounted upon the corner-posts and

having laterally-extending tapering sockets, the rail-clamps attached to the upper ends of the intermediate posts and having ribs or flanges bearing against the front edges of said posts, and forwardly-extending socks or brackets perforated to receive the tubular top rails and having the set-screws or binding-screws, and the tubular top rails mounted in the perforations of the rail-clamps and having their ends inserted into the tapering sockets of the corner-post clamps, substantially as set forth.

4. In a fence, the combination, with a tubular or cylindrical top rail, of the top ornaments provided at their meeting ends with outwardly-extending lips and with depending clamps connected beneath the rail by transverse connecting-bolts, substantially as and for the purpose set forth.

5. In a fence, the herein-described top ornaments provided at their meeting ends with downwardly-extending curved clamps to engage the tubular rail, having downward-extending perforated lips to be connected by transverse bolts under the said rail, substantially as set forth.

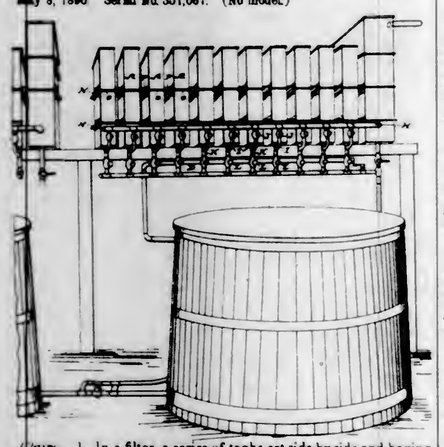
6. The top ornaments provided at their meeting ends with outwardly-extending lips and with clamping devices depending on opposite sides, said clamping devices consisting of the upper curved portions and the downwardly-extending perforated lips, substantially as and for the purpose set forth.

7. The top ornaments provided at their meeting ends with clamping devices engaging the tubular top rail of a fence and connected by transverse connecting-bolts under said fence-rail, said top ornaments being provided at points intermediate the ends with seats adapted to rest upon the top rail of the fence, substantially as and for the purpose set forth.

8. The top ornaments provided at their ends with clamping devices comprising the depending clamps and the outwardly-extending lips, in combination with the separate clamps consisting of the upper curved portions, the laterally-extending lips, and the downwardly-extending perforated lips, substantially as and for the purpose herein set forth.

9. In a fence, the combination of the posts, the top rail, the ornaments having clamping devices mounted upon said top rail and connected under the latter by transverse bolts, and the fencing material having horizontal top wires suspended upon the said connecting-bolts, substantially as set forth.

444,754. **FILTER.** EDWARD M. KNIGHT, San Francisco, Cal. Filed May 8, 1890. Serial No. 351,067. (No model.)



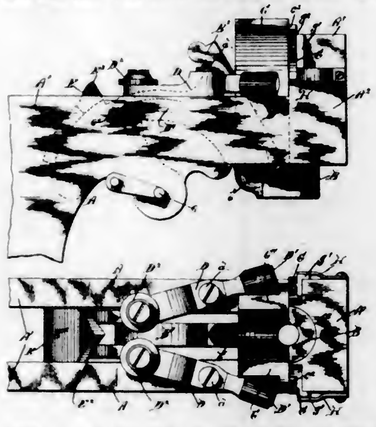
Claim.—1. In a filter, a series of tanks set side by side and having the inclosing bands or bars, and connecting-bolts whereby the sides of each tank are supported and a series of tanks connected together, substantially as herein described.

2. In a filter, a series of tanks set side by side and united together, a common supply-pipe having branch pipes with cocks delivering water into the bottom of each tank independently, other pipes connecting with the same inlet-passages and provided with cocks and connecting with the common discharge-pipe, through which the unfiltered water within any of the tanks may be discharged independent of the others, substantially as herein described.

3. A filter consisting of a series of tanks supported and united, as shown, a common supply-pipe having a branch pipe and cock opening into the bottom of each of the filter-tanks, discharge-pipes connecting with the same openings and having cocks and a common discharge-pipe with which they are connected, pipes connected with the filter-frames within the tanks and a common receiving-pipe for the filtered water with which said pipes are connected, and cocks whereby any one or more of the filter-chambers may be cut off from the receiving-pipe, substantially as herein described.

4. A filter consisting of a series of tanks having interior filter-chambers, pipes or passages leading from said interior chambers through the bottom or sides of the tanks and connecting with a common receiving and discharge pipe for filtered water, cocks whereby said pipes may be cut off from the common discharge-pipe, and other pipes connecting with said discharge-pipes and provided with cocks through which water may be drawn directly from any one or more of the filter-chambers independently of the others, whereby leakages may be detected and located, substantially as herein described.

444,755. **COMPRESSOR MECHANISM.** HENRY LA CASSE and SOL. WILE, Rochester, N. Y., assignors to the Bottlers' Specialty Company, same place. Filed Nov. 5, 1889. Serial No. 329,353. (No model.)



Claim.—1. In a compressor, the combination, with supports for the cork, arranged at right angles with each other, of a movable jaw for compressing the desired article in one plane, and a second movable jaw, arranged at right angles to the former jaw, for compressing said article in another plane, said jaws being hinged to each other at their lower extremity for compressing said article from the bottom upward, substantially as and for the purpose set forth.

2. In a compressor, the combination of a pair of jaws, one being movable and the other fixed, for compressing the interposed article in one plane, and oppositely-arranged movable jaws for compressing said article in another plane, said latter jaws being hinged to the former jaws at their lower extremities for compressing said article from the bottom upward, substantially as specified.

3. In a compressor, the combination of a pair of movable jaws hinged together at their lower extremities for compressing an interposed article in one plane from the bottom upward, and a jaw movable between and hinged at its lower extremity to one of said former jaws and adapted to compress said article in a plane at right angles with its former plane of compression, substantially as specified.

4. In a compressor, the combination of a jaw having an exit-opening in its lower part and a compressor-face extending upwardly above said opening, a jaw arranged opposite to the compressor-face and movable toward and away from the same for compressing an interposed article against the compressor-face of the aforesaid jaw, a pair of jaws hinged at their lower extremities to the former jaws and movable in planes at a right angle to the plane in which the aforesaid movable jaw is movable, for compressing the interposed article from the bottom upward in a plane at right angles to its former plane of compression, substantially as specified.

5. In a compressor, the combination of a jaw having an exit-opening at its lower part and a compressor-face extending upwardly above the opening, a rounding inner face on the compressor-jaw, and a movable jaw arranged opposite to said compressor-face of the former jaw, said latter jaw being hinged at its lower extremity to the former jaw and provided with a rounding inner face for compressing an interposed article against the former jaw, with movable compressor-jaws hinged at its lower extremity to the former jaws and movable in a plane at an angle to the former movable jaw, flat inner faces upon said latter movable jaws for compressing the said article in a plane at an angle to its former plane of compression, said latter movable jaws being brought into action before the former movable jaw, substantially as and for the purpose set forth.

6. In a compressor, the combination of a compressor-jaw, oscillating compressor-jaws hinged at their lower extremities to the former jaw and movable toward each other in a plane at right angles to the former jaw, and a jaw hinged at its lower extremity and arranged opposite to the former jaw and movable toward the same and between the second compressor-jaws, substantially as specified.

7. The combination, with a supporting-bracket, of a compressor-jaw movable in said bracket and having one extremity hinged and the other flaring outwardly from perpendicular to the hinged extremity, a movable closer between the extremities of said jaw, said closer being movable toward and away from the jaw for bringing it to a vertical plane and for permitting its retraction to an inclined plane, a projection on said jaw, a guide on the bracket for engaging said projection and retracting the jaw, and a second jaw arranged opposite to the former for forming a support for the compressed article, substantially as set forth.

8. In a compressor, the combination, with a supporting-bracket, a compressor-jaw movable up and down through said bracket in the same direction in which the compressed article is discharged, and movable compressor-jaws hinged at their lower extremity to said former jaw, of a closer bearing against the upper extremity of one of said jaws for operating the same to compress said article as the jaw descends, a stud provided upon said jaw, and a pivoted plate or lever for engaging said stud and retracting said jaw as the jaw ascends, substantially as set forth.

9. In a compressor, the combination, with a pair of compressor-jaws movable in the direction in which the compressed article is discharged, of a closer bearing against one of said jaws for operating the same to compress said article, a stud provided upon said jaw, a pivoted plate or retractor hinged in proximity to said stud, an inclined way provided upon said plate, and a spring for forcing said plate or retractor toward said stud, substantially as and for the purpose specified.

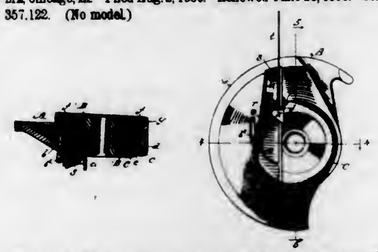
10. In a compressor, the combination of the front jaw B, side jaws C and C', movable toward each other and the jaw B, a rearward jaw B', movable between the jaws C and C' and toward the jaw B, the closers D, bearing against the side jaws, and the rocking lever F, connected, substantially as described, to said compressor-jaws and rear jaws, substantially as and for the purpose set forth.

11. In a compressor, the combination of the fixed jaw B, movable lengthwise, side jaws C and C', hinged to the former jaw, a rear jaw B', hinged to the jaw B, rocking lever E, connected to said rear jaw for closing the same, and a connection between said lever and side jaws for closing the same before the closing of the rear jaw, substantially as specified.

12. In a compressor, the combination of the jaw B, side jaws C and C', a lever D for closing one of said side jaws, a rear jaw B', a rocking lever or equivalent E, having a projecting pin e^3, and a slot B^4 in the rearward jaw B', substantially as specified.

13. In a compressor, the combination of a fixed jaw B, a rear jaw B', side jaws C and C', levers D, having one extremity bearing against said side jaws, and the rocking lever E, having the pointed flange E', for engaging the opposite extremity of said levers for approximating the side jaws, substantially as and for the purpose set forth.

444,756. **SHUTTLE FOR SEWING-MACHINES.** ARTHUR M. LESLIE, Chicago, Ill. Filed Aug. 2, 1886. Renewed June 28, 1890. Serial No. 357,122. (No model.)



Claim.—1. The combination, substantially as herein specified, of a rotary shuttle having a circular chamber provided with a circumferential catch-shoulder, and a non-rotary bobbin-case provided on its face with a holding-arm having an inner edge perpendicular to the face of the case, and with a retainer in the form of a spring-catch attached to its periphery and having a thumb-lug substantially parallel to said arm edge, for the purpose set forth.

2. In combination with a rotary shuttle having a circular chamber provided with a circumferential catch-shoulder, a non-rotary bobbin-case having a retainer in the form of a spring-catch attached to its periphery, and a diametrically-opposite rounded protuberance which likewise engages with said catch-shoulder, substantially as herein specified, for the purpose set forth.

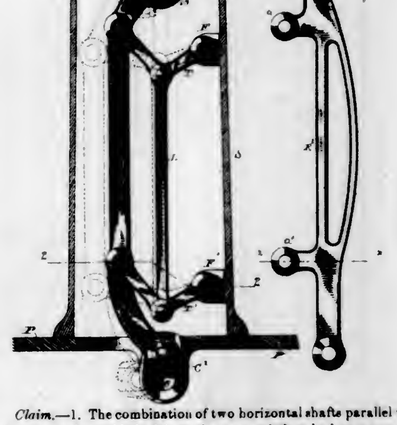
3. The combination, substantially as herein specified, of an annular rotary shuttle having a circular chamber provided with a circumferential beveled flange at the back of the shuttle, an annular non-rotary bobbin-case fitted to said chamber, extending inward to said flange, and having a corresponding beveled flange at its face, and having a radial thread-guide midway between its inner edge and said face, and a disk-bobbin running on its edges within said case, for the purposes set forth.

4. In combination with a rotary shuttle and its bobbin, a non-rotary bobbin-case having a holding-arm and a tension device on its face, and constructed with a radial thread-guide midway between its inner edge and its face, a slit extending thereto from said inner edge, a peripheral groove extending thence to said arm, and a self-threading guide in a longitudinal flange of said arm perpendicular to the face of the case, the tension-spring pressing against said flange and extending longitudinally thereof, substantially as herein specified.

5. In combination with a rotary shuttle and its bobbin, a non-rotary bobbin-case having on its face a holding-arm with a longitudinal flange perpendicular to the face of the case, and provided with a long-bowed tension-spring attached at one end to said flange and pressing against the same beyond a thread-guide therein, substantially as herein specified.

6. In combination with a rotary shuttle and its bobbin, a non-rotary bobbin-case having on its face a holding-arm with a longitudinal flange perpendicular to the face of the case, a thread-guide, and a fixed drilled and screw-tapped lug, and provided with a bowed tension-spring pressing against said flange beyond said guide, and a vertical regulating-screw which works in said lug and coacts with the bend of the spring, substantially as herein specified, for the purpose set forth.

444,757. **MECHANICAL MOVEMENT.** ARTHUR M. LESLIE, Chicago, Ill. Filed Sept. 22, 1887. Renewed Aug. 15, 1888. Again renewed July 5, 1890. Serial No. 357,800¼. (No model.)



Claim.—1. The combination of two horizontal shafts parallel with each other and provided with motion-transmitting devices, as cranks, a connection between the latter, a pair of toggles, each of which is coupled at one end to said connection and at its other end to a fixed abutment, and a link connecting the middle pivots of said toggles, substantially as herein specified.

2. The combination, substantially as herein specified, of a hollow standard provided at its back with a pair of fixed abutments, a motion-transmitting connection working vertically within said standard, and having a rearwardly-bent upper end, a pair of horizontal shafts to which said connection is coupled at its respective ends, a pair of toggles coupled to said abutments and to said connection at their respective ends, and a vertical link connecting the middle pivots of said toggles, for the purpose set forth.

3. The combination, substantially as herein specified, of a hollow standard provided at its back with a pair of fixed abutments, a mo

tion-transmitting connection working vertically within said standard, a pair of horizontal shafts to which said connection is coupled at its respective ends, the upper shaft being the driving-shaft, a pair of toggles coupled to said abutments and to said connection at their respective ends, and a vertical link connecting the middle pivot of said toggles, whereby high-speed rotary motion may be transmitted from the upper shaft to the under shaft in one and the same direction, in the manner set forth

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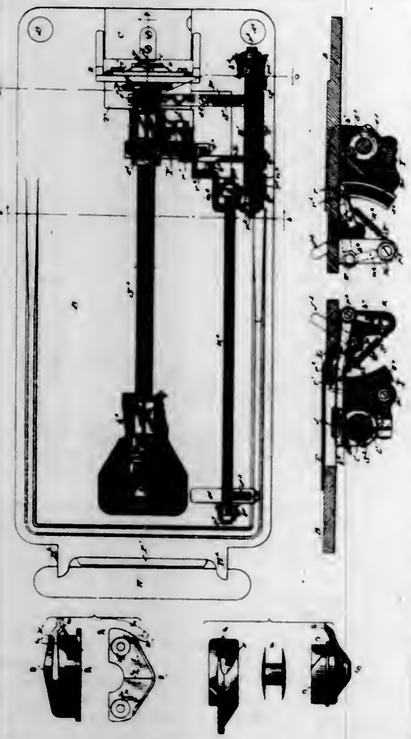
444,758. **SEWING-MACHINE.** ARTHUR M. LESLIE, Evanston, Ill. Original application filed Nov. 14, 1887, Serial No. 255,153. Divided and this application filed July 30, 1889. Renewed July 11, 1890. Serial No. 358,417. (No model.)



Claim.—1. In combination with a moving part, a link-motion structure to support and guide the same, composed of a link substantially of L shape, axial pivots at the extremities of one member thereof, a link pivoted to the said moving part at one end and having a laterally-yielding pivot at its other extremity and pivoted at an intermediate point to the other member of the link first named, and supports for said axial pivots and said laterally-yielding pivot, substantially as hereinbefore specified.

2. In combination with the needle-bar of a sewing-machine, a pair of link-motion guides, each composed of a link substantially of L shape, axial pivots at the extremities of one member thereof, a link pivoted to the needle-bar at one end and having a laterally-yielding pivot at its other extremity and pivoted at an intermediate point to the other member of the link first named, and supports for said axial pivots and said laterally-yielding pivot, substantially as hereinbefore specified.

444,759. **SEWING-MACHINE.** ARTHUR M. LESLIE, Chicago, Ill. Filed Jan. 13, 1885. Renewed July 11, 1890. Serial No. 358,418. (No model.)



Claim.—1. In a rotary-shuttle sewing-machine, a cloth-plate attached by a pivotal screw so as to swing horizontally, and having an elastic slitted corner portion forming a fastening means, in combination with a bed-plate having a re-entrant angle to coact with said corner, and a spring-finger depending from the under side of said cloth-plate to retain the bobbin-case in the shuttle, substantially as set forth.

2. In combination with a rotary shuttle and its disk-bobbin, a non-rotary bobbin-case having a cylindrical body which completely envelops the edges of the bobbin and provided with a threading-slit in its edge at the back of the case extending to a point midway between the disks of the bobbin, a peripheral groove leading therefrom to the face of the case, and a tension-guard and an upwardly-projecting arm attached to the face of the case, the arm comprising two parts, one of which is a longitudinal spring, together with a tension-screw uniting them, and one of said parts having a hook or threading-finger masked by said tension-guard and a guide hole or slot into which the under thread is directed by said finger, substantially as set forth.

3. In combination with a rotary shuttle and its disk-bobbin, a non-rotary bobbin-case having a cylindrical body which envelops the edges of the bobbin and provided with a threading-slit in its edge at the back of the case extending to a point midway between the disks of the bobbin, a peripheral groove leading therefrom to the face of the case, and a tension-guard and an upwardly-projecting arm attached to the face of the case, the arm comprising two parts, one of which is a longitudinal spring, together with a tension-screw uniting them, and one of said parts having a thread-guide at the upper end of the arm, and one of them having a hook or threading-finger and a guide-hole at the perimeter of the body of the case, into which the under thread is directed by said finger, substantially as set forth.

4. In a rotary-shuttle sewing-machine, the combination, with an annular shuttle-race, of a rotary shuttle having a marginal guide-flange provided with a radial slit or notch to carry out of the shuttle-race particles of thread or lint, substantially as set forth.

5. In combination with the shuttle-driver disk of a rotary-shuttle sewing-machine, a shuttle-driver having a shuttle-engaging portion at right angles to said disk inclined in opposite directions and provided with a tapering needle-admitting slot having its widest portion at the apex so formed, substantially as set forth.

6. In a rotary-shuttle sewing-machine, a bent-steel shuttle-driver having a flat back portion provided with a contracting slit and a shuttle-engaging portion at one edge thereof inclined in opposite directions and provided with a needle-admitting slot, substantially as set forth.

7. The combination, substantially as herein specified, of the rotary-shuttle driver-shaft provided with a stroke-cam and a lifting-cam, a rocking yoke embracing said stroke-cam and pivoted close thereto, a rock-shaft having a pair of arms, between which the longitudinal member of an L-shaped feed-bar is pivoted, a link connecting said longitudinal member with said rocking yoke, and a feed-dog carried by the other member of the feed-bar, for the object stated.

8. The combination, substantially as herein specified, of a link-motion feed mechanism having a rocking yoke embracing the stroke-cam, pivoted close thereto, connected by a link with the feed-bar, and having a sector groove or slot to coact with a roller-stud on said link as their coupling, a rock-shaft extending to a conveniently-located slot in the bed-plate and provided thereat with a finger-lever, and an arm projecting from said rock-shaft and suitably coupled with said link for adjusting said coupling of the latter with said rocking yoke to regulate the length of stitch, in the manner set forth.

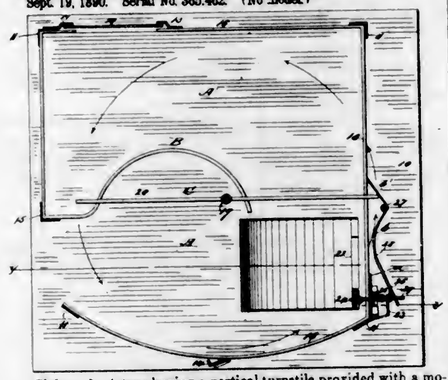
9. In a link-motion feed mechanism having a horizontally-arranged L-shaped feed-bar pivoted at the extremities of its longitudinal member and carrying the feed-dog on its other member, a steel bar interposed between said other member of the feed-bar and the lifting-cam, and a vertical screw for adjusting said steel bar, substantially as herein specified, for regulating the projection of the feed-dog, in the manner set forth.

10. In combination with the crank-shaft within the arm of the machine, an arm-casting bored large and notched at the bearing for the pulley end of said shaft, and a flanged bushing-sleeve fastened within the bearing-bore to form a closed bearing and cut off communication with the notch, substantially as herein specified, for the object stated.

11. The combination, in the upper tension device, of a spindle, a pair of disks mounted thereon having convex faces opposed to each other, a spiral spring which normally keeps the disks in contact, and a tension-relief lever interposed at one end between the outer disk and the spring and having in common with said outer disk a hole occupied by said spindle and loosely fitted thereto, so that said lever and outer disk are free to turn together upon the convex face of the inner disk as upon a hinge, substantially as set forth.

12. In combination with the presser-bar guided within the head of the machine at top and bottom of the latter, an intermediate link-guide having an adjustable split connection with the lifter-sleeve and a screw-pivot at its opposite end, substantially as herein specified, for the objects stated.

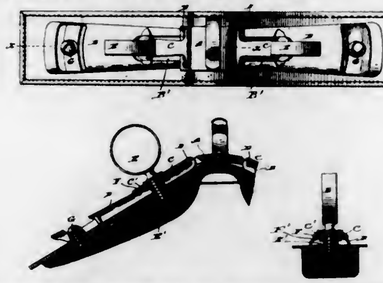
444,760. **ANIMAL-TRAP.** HENRY H. MAY, New Albin, Iowa, assignor to himself, Wells Gillette, and Lewis Haya, same place. Filed Sept. 19, 1890. Serial No. 365,462. (No model.)



Claim.—1. A trap having a vertical turnstile provided with a motor, a horizontal keeper 28, pivoted between its ends, with its longer curved arm *b* projecting into the path of the turnstile to be thrown outward thereby, to throw its shorter arm *b'* inward into the path of the stile and prevent its rotation, a vertically-movable latch holding the said longer arm *b* in its outward position, a connection between said vertically-movable latch and the entrance portion of the trap to cause the enteriog animal to operate the latch and thereby release the keeper 28, substantially as set forth.

2. A trap partially divided into two compartments, a vertical turnstile completing said division and provided with a motor, the tilting platform having a vertical rod 24, the vertically-swinging latch 23, pivoted between its ends, a link 25, connecting the upper end of the latch with said platform-rod, a horizontal latch pivoted between its ends and extending at both sides of its pivot into the path of the turnstile, as shown at *b b'*, the part *b* being held outward by the lower end of latch 23, and a spring pressing the latch outward above its pivot, substantially as set forth.

444,761. **HARNESS-SADDLE.** WILLIAM O. MILLER, Quincy, Ill. Filed May 19, 1890. Serial No. 352,375. (No model.)



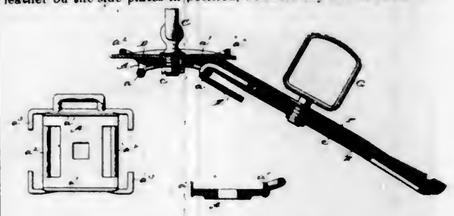
Claim.—1. In a harness-tree, the combination, with the check-hook plate provided with loops, eyes, or slots, as described, of the metal side plates provided with the hooks and terrets passed through said hooks, substantially as described.

2. In a harness-tree, the combination, with the check-hook plate provided with loops, eyes, or slots, as described, of the metal side plates having the hooks, the bridge-pieces beneath the hooks, and the terrets passing through the hooks and said bridge-pieces, substantially as described.

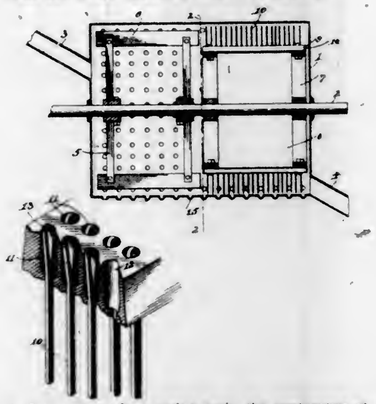
3. The side plate provided with a hook, as described, and made open or cut away beneath the hook, in combination with the shouldered bridge-piece located beneath the end of the hook and seated in the opening in the plate and with the terret, substantially as described.

444,762. **ADJUSTABLE HARNESS-TREE.** WILLIAM O. MILLER, Quincy, Ill. Filed May 27, 1890. Serial No. 353,351. (No model.)

Claim.—In a harness-saddle, the combination, with the check-hook plate having the loops or eyes at the sides, the upwardly-extending flanges at front and rear, the cross-bars, the leather overlying said plate and passing beneath the cross-bars, and the check-hook passing through said leather to hold it in place, of the side plates having the hooks engaging said loops or eyes on the check-hook plate, the leather overlying said plates and having its upper ends confined beneath the leather on the said plate, and the terrets for holding the leather on the side plates in position, substantially as described.



444,763. **GRAIN-SCOURING MACHINE.** WESLEY MORGAN, Chicago, Ill. Filed Nov. 7, 1890. Serial No. 370,645. (No model.)



Claim.—1. In a machine for scouring grain, the combination of a cylindrical casing and an interior revolving cylinder provided with radially-extending teeth constructed of flat steel wire, the sides of which are located in planes at right angles to the axis of the cylinder, substantially as set forth.

2. In a machine for scouring grain, the combination of a cylindrical casing provided at opposite ends with openings for the admission and escape of grain; a longitudinal shaft journaled in the ends of said casing, radial arms mounted upon said shaft at the end of the casing having the inlet and provided with beaters or agitators, and a cylinder mounted upon the opposite end of the shaft and having radially-extending teeth constructed of flat steel ribbon or wire with their edges presented in the direction of the rotation of the cylinder, substantially as set forth.

3. In a machine for scouring grain, the combination of a cylindrical casing provided with interior cup-shaped depressions, a longitudinal shaft mounted in said casing, radial arms extending from said shaft and carrying beaters or agitators, a cylinder mounted upon the opposite end of said shaft and having radially-extending teeth formed of flat wire with their edges presented in the direction of the rotation of the cylinder, and the openings at the ends of the casing for the admission and escape of the grain, substantially as and for the purpose set forth.

4. In a machine of the class described, the herein-described scouring-cylinder, composed of a series of segments having perforations enlarged at their inner ends, the teeth mounted in said perforations and composed of strips of flat steel wire or ribbon bent or doubled, as shown, and mounted with the sides of said teeth in planes at right angles to the axis of the cylinder, and the sheet-metal lining secured upon the inside of said segments, substantially as and for the purpose herein set forth.

444,764. **NIPPER OR WIRE-CUTTER.** JOHN P. NEBBLE, Newark, N. J. Filed Sept. 30, 1890. Serial No. 366,665. (No model.)

Claim.—1. In a cutter of the character described, the jaws and handles, in combination with the cutting-edges with which the jaws are provided, the same having one or more slanting portions, substantially as described, and for the purposes specified.

2. In a cutter of the character described, the jaws and handles

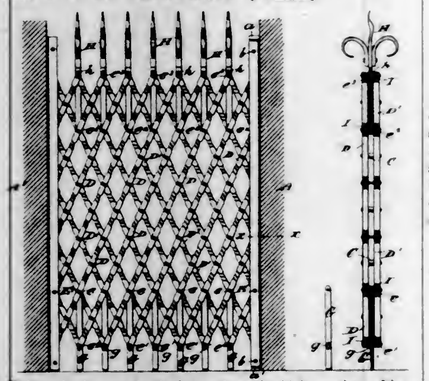
pivotally secured together and into position with relation to each other, in combination with cutting-edges, one of which is slanted or curved, substantially as described, and for the purposes specified.



3. In a cutter of the character described, the jaws and handles pivotally secured together and into position with relation to each other, in combination with cutting-edges, one of which is curved at one end and slanted at its opposite end, substantially as described, and for the purposes specified.

4. In a cutter of the character described, the jaws and handles pivotally secured together and into position with relation to each other, in combination with cutting-edges and centrally-depressed shoulders to convert the instrument into pinchers, substantially as described, and for the purposes specified.

444,765. FOLDING GATE. WILLIAM R. PITT, New York, N. Y. Filed Oct. 16, 1890. Serial No. 368,274. (No model.)



Claim.—1. A gate the body portion of which consists of bars pivoted together so as to fold and unfold, and side frames to which the folding bars are pivotally secured at the ends of a horizontal line of pivots, depending guard-bars pivotally secured to the gate along the horizontal line of gate-bar pivots and provided with elongated slots embracing the gate-bar pivots located below the line on which they are pivoted, and a series of pickets pivotally secured at one end to a horizontal line of pivots, and having a vertically-movable connection intermediate of their ends with the gate-bars, substantially as set forth.

2. A gate the body portion of which consists of bars pivoted together so as to fold and unfold, and a series of pickets pivotally secured at one end to a vertically-movable line of pivots which connect the folding bars and having a vertically-movable connection intermediate of their ends with the gate-bars, whereby the rise and fall of the pickets will be less than the rise and fall of the top of the gate, substantially as set forth.

444,766. SPOOL-RACK FOR SEWING-MACHINES. EDWARD POOLE, Perdyce, Ark. Filed June 4, 1890. Serial No. 354,263. (No model.)

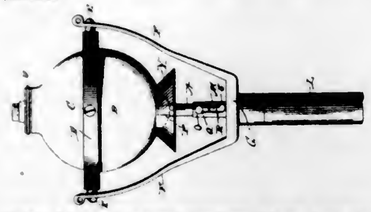


Claim.—1. A spool-rack for machines, comprising the bottom plate, the tube or hollow stem secured to the bottom plate and forming a socket to receive the spindle of a machine and provided at its upper end with oppositely-disposed feathers or projections having their lower edges beveled, the spool-spindles, the upper plate having oppositely-disposed slots, and the key-plate provided with similar slots and having notches 12 adapted to be engaged by the projections, substantially as described.

2. A spool-rack having a socket to receive the spindle of a machine and provided with the disk having its periphery upset and arranged at an angle to the body of the disk and sharpened, substantially as described.

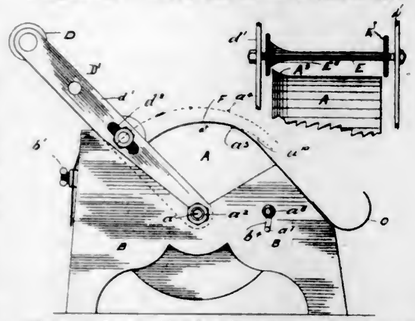
3. A spool-rack for machines, comprising the lower disk having its periphery upset and sharpened, the hollow stem secured to the lower disk and forming a socket to receive the spindle of a machine, the spool-spindle, and the upper disk provided with hooks 18, adapted to be engaged by a thread, substantially as described.

444,767. TORCH-LAMP FOR FIREMEN AND PATROLMEN. ANTON PRIER, Kansas City, Kans. Filed July 31, 1890. Serial No. 360,544. (No model.)



Claim.—In a torch, a supporting-frame, a lamp, a circular band encircling said lamp and secured thereto, the said band being pivotally secured to the frame, a handle attached to said frame, a sleeve also attached to the frame, a longitudinal slot M in said sleeve, a transverse slot S, connecting with the lower end of said first-mentioned slot, a bolt operating in the sleeve, and a spring to normally urge said bolt outward and into a recess or aperture in the base of the lamp, substantially as described.

444,768. CIGAR-MACHINE. JOHN E. RICHARDS, Birmingham, England. Filed Apr. 15, 1890. Serial No. 347,986. (No model.) Patented in England July 17, 1889, No. 1,443, and Mar. 25, 1890, No. 4,630.



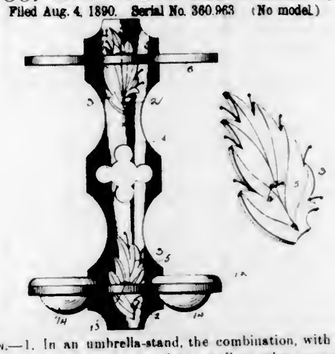
Claim.—1. In a machine for rolling cigars and similar articles, the combination of a table having a curved eccentric surface and journals which are free to turn in their bearings to a limited degree, with a flexible bunching-apron arranged over said eccentric surface, a bunching-roller and a support therefor mounted at or near the axis of said table, in order that the said roller in turning forward may approach the eccentric part of the periphery of said table and form a traveling bight in the bunching-apron, substantially as set forth.

2. In a machine for rolling cigars and similar articles, the combination of a table having a curved eccentric surface and journals which are free to turn in their bearings under strain, though held by friction against accidental motion, a stop which prevents the said table from turning too far forward, a bunching-apron extending over the said table, a bunching-lever, a bunching-roller carried by said lever, and a support carrying the said bunching-lever, the said support being mounted at or near the axis of the table, in order that the forward motion of the said roller may cause it to approach the eccentric part of the periphery of said table and form a bight in the bunching-apron, substantially as set forth.

3. In a machine for rolling cigars and other articles, a table having a curved eccentric surface, in combination with a bunching-apron

passing over said surface, a bunching-roller, and a handle or lever-frame which is obliquely slotted to allow the adjustment of said roller, the said lever being pivoted near the axis of said table, all substantially as and for the purpose set forth.

444,769. UMBRELLA-BRACKET. ALBERT A. SHERMAN, Plymouth, Mass. Filed Aug. 4, 1890. Serial No. 360,963. (No model.)



Claim.—1. In an umbrella-stand, the combination, with a back board or base adapted to be secured to a wall or other support and provided with angular sockets and above the same with perforated lugs, of upper and lower castings having tenons for entering the sockets, bolts passing through the lugs of the base and through the castings in front of the tenons, each of said castings having corresponding openings and dishes or bowls 14, fitting and removably mounted in the openings of the lower casting, substantially as specified.

2. In an umbrella-stand, the combination, with a back board or base and upper and lower cast-metal brackets secured thereto and provided with sockets and above the same with perforated ears or lugs, of upper and lower castings 6 and 12, having tenons 9 and perforated, as at 10, the tenons entering the sockets and the perforations registering with those in the lugs, screws or bolts passing through the perforations, said castings 6 and 12 having opposite large openings 7 and intermediate small openings 8, and correspondingly-sized bowls 14, removably seated and fitting the large and small openings of the lower casting, substantially as specified.

444,770. SOUND-BOARD FOR MUSICAL INSTRUMENTS. ALFRED SPRINGER, Cincinnati, Ohio. Filed Apr. 26, 1890. Serial No. 349,669. (No model.)



Claim.—1. A metallic sound-board for musical instruments, embodying a vibrating board or boards united integrally with the marginal or other supports by fusion in place, substantially as set forth.

2. A sounding board or body for re-enforcing the tone of a string or other initial tone-producing element, consisting of sheet-metal plates welded to the marginal or other supports into a homogeneous structure without extraneous fastening, substantially as set forth.

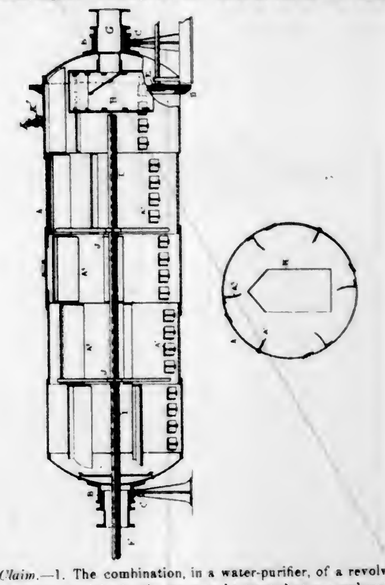
3. In a musical stringed instrument, a metallic sounding box or body structurally homogeneous and without contact-joints, substantially as set forth.

444,771. PROCESS OF BATING HIDES. NICHOLAS WILSON, Becket, Mass. Filed June 30, 1890. Serial No. 357,297. (No specimens.)

Claim.—1. In the process of tanning hides or skins after they have been subjected to the action of lime for removing hair, &c., the treating of them to a solution consisting of water, sulphuric acid, borax, and Glauber's salt, in about the proportions stated, for neutralizing the lime therein, and subseqoently treating said skins in the ordinary bark-liquor, to which is added muriatic acid and common salt in about the proportions stated, whereby all foreign substances in said liquor are precipitated and the skins soaked therein are rendered softer and more plump, substantially as set forth.

2. In the process of tanning hides or skins after they have been subjected to the action of lime for removing hair, &c., the treating of them to a solution consisting of water, sulphuric acid, borax, and Glauber's salt, in about the proportions stated, for neutralizing the lime therein, substantially as set forth.

444,772. APPARATUS FOR PURIFYING WATER. WILLIAM ANDERSON, Erith, assignor to the Revolving Purifier Company, Limited, London, England. Filed Apr. 25, 1890. Serial No. 349,482. (No model.)



Claim.—1. The combination, in a water-purifier, of a revolving chamber having an inlet for the water to be treated at one end and an outlet therefor at the other end, shelves on the inner face of the chamber for raising purifying material contained therein, and an air-pipe extending into said chamber, substantially as described.

2. The combination, in a water-purifying apparatus, of a revolving cylinder having an outlet for the water to be treated at one end and an outlet therefor at the other end, an air-pipe extending into said cylinder, and a blower with a pipe or air-passage leading therefrom to the water, substantially as described.

3. The combination, in a water-purifying apparatus, of a revolving chamber having a water-inlet at one end and an outlet at the opposite end, and an air-blower having a pipe or passage communicating with the water, substantially as described.

4. The combination, in a water-purifying system, of the revolving purifier having water inlet and outlet pipes, and a water-wheel in the path of the current flowing through said cylinder, geared to the drum, substantially as described.

5. The combination, in a water-purifying system, of the revolving purifying-cylinder having water inlet and outlet pipes, and a water-wheel in the path of the current flowing through said cylinder, geared to the drum and to an aerating blower, said blower having an air-pipe communicating with the water, substantially as described.

6. The combination, in a water-purifying system, of the revolving purifying-cylinder having water inlet and outlet, and a blower with a pipe leading therefrom to a section of the water-channel, having a perforated bottom, substantially as described.

7. The combination, in a water-purifier, of a revolving cylinder containing purifying material and having an inlet for the water to be treated at one end and an outlet therefor at the other end, and a series of shelves arranged in echelon on the inner face of the cylinder, substantially as described.

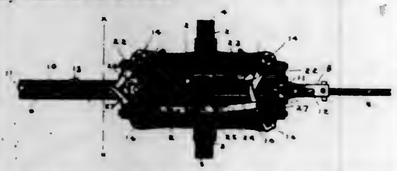
8. The combination, in a water-purifier, of a revolving cylinder containing purifying material and having an inlet for the water to be treated at one end and an outlet therefor at the other end, and a series of short shelves at an angle with the length of the cylinder and arranged in echelon on the inner face of the cylinder, substantially as described.

9. The combination of a water-purifier containing iron, means for showering the iron through the water, and an air or gas pipe extending into said purifier, substantially as described.

444,773. CUT-OFF MECHANISM FOR STEAM-ENGINES. EDWARD J. CHAPIN, Indianapolis, Ind. Filed Sept. 27, 1890. Serial No. 366,409. (No model.)

Claim.—1. In combination, a steam-cylinder having suitable inlet and exhaust openings, inlet-valve cocks set in openings on one side of

such cylinder and adapted to open or close ports leading from the inlet, levers upon the upper end of such valves outside the cylinder, a screw-rod carried in bearings moving in a grooved slide upon the top of such cylinder, and adjustable shifting blocks mounted on such rod, the latter connected by an arm to the piston-rod, whereby the movement of the latter actuates the shifting blocks upon the screw-rod and operates to open and close the inlet-valve cocks of the cylinder, substantially as shown and described.



2. In combination, a cylinder having inlet and exhaust openings, exhaust-valve cocks upon one side of such cylinder, having levers connected to their upper ends, such levers connected by a cross-bar to secure the simultaneous action of such exhaust-valves, such levers operated by shifting blocks carried on a rod on the top of such cylinder, and such rod actuated by the piston-rod, substantially as shown and described.

3. In combination, a steam-cylinder having suitable inlet and exhaust openings, inlet-valves set in one side of such cylinder, exhaust-valves upon the opposite side thereof, levers connected to the top of such inlet and exhaust valves and extending inward toward each other and over the top of the cylinder, and a rod carrying shifting blocks moving in a grooved slide on the top of such cylinder and connected to the top of the piston-rod, whereby the movement of the latter operates to carry the shifting blocks in contact with the levers of the valve and alternately open and close them, substantially in the manner shown and described.

4. In combination, a steam-cylinder having suitable inlet and exhaust openings, inlet-valves set in one side of such cylinder and at the ends, exhaust-valves set in the opposite side of such cylinder and at the ends, ports leading from such valves to the inlet and exhaust openings, levers connected to the top of the valve-stems outside the cylinder, and a rod carrying shifting blocks for engaging with such levers, reciprocating in a grooved slide upon the outside of the cylinder, such rod connected to and actuated by the piston-rod, whereby the movement of the piston in the cylinder operates alternately to open and close the inlet and exhaust valves, substantially as shown and described.

5. A steam-cylinder having inlet-valve cocks set in openings upon one side and at the ends, exhaust-valve cocks set in openings at the opposite side and ends of such cylinders, the exhaust-valves connected by a link or bar to insure simultaneous action, the inlet-valves provided with long and short levers and the exhaust-valve with a single lever, a right and left screw-rod carrying shifting blocks thereon adapted to reciprocate in a grooved slide upon the top of the cylinder and connected to the piston-rod and actuated thereby to open and close the valves by means of the contact of the blocks with the levers, and means for adjusting the blocks upon their rod, all combined substantially as described.

6. In a steam-cylinder having inlet and exhaust openings, steam and exhaust valves at the ends and on opposite sides thereof, and levers mounted on the upper end of the valve-stems, actuated by a reciprocating screw-rod carrying blocks for engagement with such lever, with means, such as a crank, connected to such rod, for adjusting the blocks on the screw-rod so as to cut off the steam at any point of the stroke, substantially as described.

444,774. WITHDRAWN.

444,775. PROCESS OF MANUFACTURING ARTIFICIAL IVORY.

ALEXANDRE DE POST and SILVIUS DE POST, Paris, France, assignors of two-thirds to Herbert Lushington Storey and Isaac Henry Storey, both of Lancaster, England. Filed Nov. 5, 1889. Serial No. 329,374. (No specimens.) Patented in England June 4, 1889, No. 9,267.

Claim.—1. The process of manufacturing artificial ivory, which consists in adding an aqueous solution of phosphoric acid to lime, thereby forming phosphate of lime, mixing therewith finely-divided earthy mineral matters such as described, and gelatine and albumen, allowing it to mature, desiccating the mass, and subjecting it hot to great pressure, substantially as described.

2. The process of manufacturing artificial ivory, which consists in mixing in a wet state slaked lime, tricalcic phosphate, carbonate of lime, magnesia, and alumina, all in a state of fine comminution, with albumen and gelatine, drying, and submitting the same to great pressure while heated, substantially as described.

3. The improvement in the process of forming artificial ivory, which consists in slaking lime and before the operation is completed adding phosphoric acid, mixing the other ingredients therewith, and leaving the whole to stand and complete their reaction before proceeding, whereby a much more homogeneous mass is formed than would be the case if each reaction were allowed to take its course separately.

4. The process of manufacturing ivory synthetically, which consists in treating hydrate of lime with an aqueous solution of phosphoric acid to form phosphate of lime, mixing therewith carbonate of lime, magnesia, and alumina precipitate, gelatine, and albumen, desiccating the mass, and subjecting it to a great pressure until solidified.

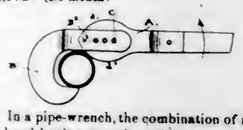
444,776. COMPOUND FOR CALCIMINE.

GEORGE A. CASSELMAN, Fort Dodge, Iowa. Filed Dec. 20, 1890. Serial No. 375,298. (No specimens.)

Claim.—The herein-described composition or compound, to be used in admixture of boiling-hot water as a paint or calcimine for covering walls, ceilings, &c., consisting of pulverized whiting, marble-dust, ground gypsum rock, borax, sulphate of zinc, alum, and glue, the materials specified being mixed in the proportions substantially as herein-before set forth, and ground to a fine powder.

444,777. PIVOTED-JAW WRENCH.

CLARENCE V. GREENAMYER, San Francisco, Cal., assignor to the Verner Wrench Car Mover and Power Manufacturing Company, same place. Filed Aug. 7, 1890. Serial No. 361,374. (No model.)

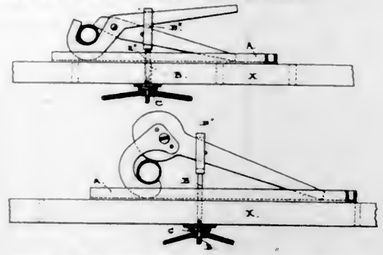


Claim.—1. In a pipe-wrench, the combination of a handle portion provided with a head having smooth toothless cam-gripping faces $a\,a^{\times}$ and a swinging hook pivoted on said head, whereby a pipe is held without being cut or marred by the wrench, as set forth.

2. The combination of a handle portion having a double cam-faced head, with a swinging hook having a bifurcated shank adjustably pivoted to the head, the pivot in all points of adjustment being equidistant from the cam-faces, as set forth.

444,778. BENCH-CLAMP FOR PIPE TONGS AND WRENCHES.

CLARENCE V. GREENAMYER, San Francisco, Cal., assignor to the Verner Wrench Car Mover and Power Manufacturing Company, same place. Filed Sept. 9, 1890. Serial No. 364,475. (No model.)



Claim.—1. The herein-described clamp or device for holding pipe tongs and wrenches, consisting of the grooved or channeled bar, the rod having a loop or stirrup on the end above the bar, its lower end screw-threaded, and a hand-nut on the screw-thread.

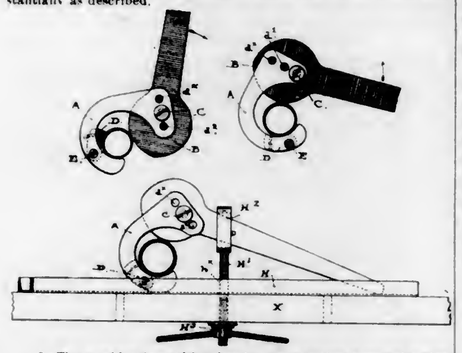
2. The combination, with the channel-iron bed adapted to take a pipe wrench or tongs, of the loop or stirrup having a screw-threaded end portion and a hand-nut as a means of drawing down and holding the stirrup.

444,779. ADJUSTABLE PIPE-WRENCH.

CLARENCE V. GREENAMYER, San Francisco, Cal., assignor to the Verner Wrench Car Mover and Power Manufacturing Company, same place. Filed Sept. 9, 1890. Serial No. 364,476. (No model.)

Claim.—1. The combination, with the head having double-curved faces, and a handle, of the swinging jaw formed of twin hooks which are attached to the head by a common pivot to operate against either face, and a spacing-block fixed between the outer ends of the hooks and uniting them at or near the bill, substantially as described.

2. The combination, with the head having double-curved faces, of the twin hooks attached to the head by a common pivot, and the adjustable bit fixed between the hooks at the bill or outer end, capable of being set out from the inner line or acting edge of the hooks, substantially as described.



3. The combination, with a head or part having a curved acting face, of the twin hooks pivoted to said part on opposite sides by a common pivot and having a widened butt with spaced holes extending laterally across the axis of the hooks, as described, and the adjustable bit fixed between the hooks at the bill, for operation as set forth.

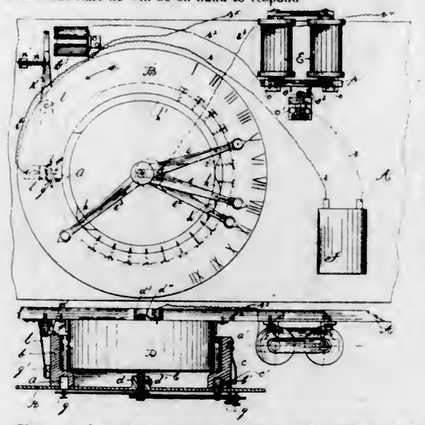
4. The herein-described wrench, consisting of the handle having an enlarged head with double-curved faces, the twin hooks pivoted to the head by a common pivot, the adjustable bit fixed between the hooks at the bill or outer end, and fastening means consisting of the screw, the spaced holes in the inner faces of the hooks, and the cross-pin, adapted to operate as set forth.

5. The combination, with the head or part having a double-curved acting face, and the swinging jaw formed of twin hooks attached to the head by a common pivot, of the grooved bar and the rod having on one end a loop or stirrup and on the other end a screw-threaded portion and a hand-nut.

444,780. TELEPHONE ENUNCIATOR OR INDICATOR.

GEORGE R. LAWRENCE, Manteno, assignor of one-half to Charles H. Oakwood, Danville, Ill. Filed Apr. 10, 1890. Serial No. 347,377. (No model.)

Brief.—A telephone attachment for subscribers, adapted to be set by the possessor, so that upon his calling being rung it will inform the caller at what time he will be on hand to respond



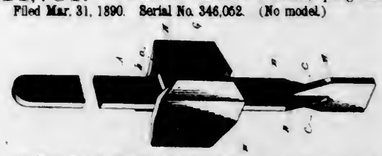
Claim.—1. In a telephone-enunciator, the combination of a dial-plate having on its face characters representing the numbers one to twelve, inclusive, and a circular guideway with a number of index-hands having suitable travelers adapted to move in the guideway, the cylindrical casing *b*, secured to the dial-plate and having the groove *a*, the lugs *g' m*, and the springs *c*, the shaft C, having mounted thereon the dial-plate and hands and being operated by a suitable clock-work mechanism, and means for connecting the device to the telephones, all constructed, arranged, and operating substantially as set forth.

2. In a telephone-enunciator, a dial-plate having on its face characters representing the numbers one to twelve, inclusive, and a circular guideway, in combination with a number of index-hands having suitable travelers adapted to move in the guideway, the cylindrical casing *b*, having the groove *a*, the lugs *g' m*, the springs *c*, the shaft C, having mounted thereon the hands and dial-plate and being operated by a suitable clock-work mechanism, the locking-lever K, the springs *l* and d^{8}, the magnet for attracting the lever, and the means for connecting the device to and transmitting sound over the telephone system, substantially as and for the purpose set forth.

3. In a telephone-enunciator, the dial-plate A, having on its face characters representing the numbers one to twelve, inclusive, and a circular guideway, in combination with a number of index-hands having the travelers *h' h* and buttons *g*, the cylindrical casing *b*, having the groove *a*, lugs *g' m*, springs *c*, the shaft C, having mounted thereon the dial-plate and hands and journaled in the casing D and operated by suitable clock-work in said casing, the springs d^{8} *l*, the lever *k*, having the projection *m'* and spring *n*, the magnet G, battery F, having the connections $r\,r'\,r^{2}$, the piece o^{3} and spring o^{3}, the magnet E, having the hinged armature *p*, the wires $r^{3}\,r^{4}\,r^{5}$, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

444,781. FENCE-POST.

EDWARD MINNICK, Spring Hills, Ohio. Filed Mar. 31, 1890. Serial No. 346,052. (No model.)



Claim.—The thin parallel-sided fence-post, having the point portion setting in a plane in the axis of the post but at right angles to its width, as described, and the adjustable loose bracing-casting having the elongated bearing to engage the post and provided with outwardly-concave flanges adjacent to the edges of said post and standing at right angles to its width and beveled on their inside edges to aid in the packing of the earth between the flanges, as shown.

444,782. RELIEF-VALVE.

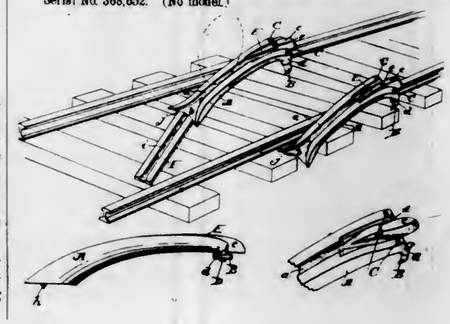
THOMAS W. MORAN, Louisville, Ky., assignor to the Moran Flexible Steam Joint Company, same place. Filed Feb. 24, 1890. Renewed Nov. 28, 1890. Serial No. 372,969. (No model.)



Claim.—In a double-acting relief-valve, the combination of the valve-case having the inlet valve-seat and the outlet-opening adapted to permit of the connection therewith of a coupling-pipe, the valve-seat plug having a steam-chamber and a vent-opening, and the valve having a double face, one engaging a seat at the inlet end of said case and the other engaging a seat on the inner end of said plug, the screw-thread way for the screw-threaded portion of the valve-stem having a steam-passage communicating with a chamber intermediate of the valve-seats and the steam-chamber of said plug, substantially as set forth.

444,783. CAR-REPLACER.

AMBRICUS G. MCKINNEY, Canton, Ohio, assignor of one-half to Henry Feasler, same place. Filed Oct. 20, 1890. Serial No. 368,652. (No model.)



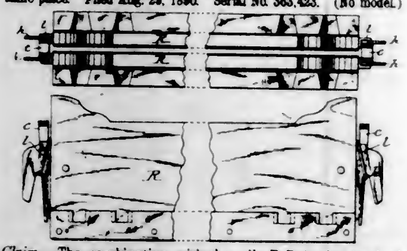
Claim.—1. The bar A, provided with the groove *a*, the center extension *c*, the arms *d*, and the grip-bars B, pivotally connected to the bolts C and provided with rounded serrated ends, substantially as and for the purpose specified.

2. The combination of the curved bar A, provided with the groove *a* and the flaring opening *b*, the pivoted switch-bar E, and the grip-bars B, substantially as and for the purpose specified.

3. The combination of the bar A, provided with the groove *a* and the points *h*, the center extension *c*, the pivoted switch-bar E, located in front of said center extension *c*, and the pivoted grip-bars B, substantially as and for the purpose specified.

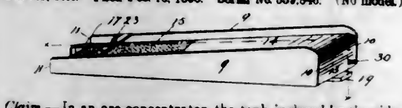
4. The combination of the bar A, provided with the groove *a* and the recess *j*, the grip-bars B, and the grooved bar F, substantially as and for the purpose specified.

444,784. **PACKING DEVICE.** JOSEPH PARK, Jr., Tully, N. Y., assignor of two-thirds to Ernest Johnson and William L. Earle, both of same place. Filed Aug. 29, 1890. Serial No. 363,423. (No model.)



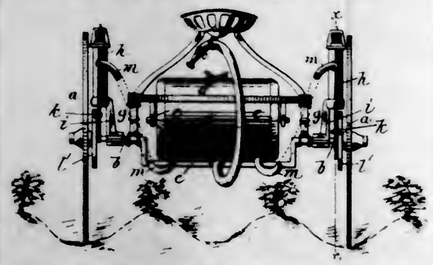
Claim.—The combination, with the rails R R, having hooks A A projecting from their ends, of the tie-loop I, encompassing said hooks, and the key *c*, inserted between said hooks and passing through the loop I between the top and bottom cross-bars thereof, substantially as described and shown.

444,785. **ORE-CONCENTRATOR.** FREDERICK C. L. SERGEANT, Denver, Colo. Filed Feb. 10, 1890. Serial No. 339,846. (No model.)



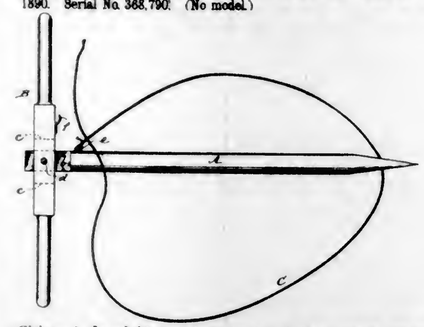
Claim.—In an ore-concentrator, the tank inclosed by the sides 9, the ends 12 13, and the inclined top 14, the sides 9 extending somewhat above top 14, a foraminous opening 15, through which the lighter mineral passes with the water to the receptacle 16, a spring 17, bumping-plate 19, and faucet 30, said tank being supported in a suitable frame, suitable propelling mechanism for giving an oscillating movement to the tank, and means of discharging the material to be treated upon plate 14, substantially as described.

444,786. **WHEELED INSECT-DESTROYER.** ALVIN D. TYRREL, Dayton, Ohio, assignor of one-half to Stephen J. Sibley, West Springfield, Mass. Filed Oct. 22, 1890. Serial No. 368,978. (No model.)



Claim.—In an insect-destroyer, in combination, the carriage having on the inside of its wheel-hubs grooved cams, the thill-frame spring-supported by its rear portion from and above the carriage-axle and provided with the hooked hangers *e e*, the closed tank having the studs by which it is removably supported in said hangers and having a discharge-pipe and nozzle, air-pumps removably supported on the axles inside of said wheel-hubs and having the conduits *m m*, detachably coupled to and communicating with the compressed-air chambers of said pumps and leading to the bottom of said closed tank, and the pistons of said air-pumps having their piston-rods formed forked and straddling for edgagement the axle and having the studs engaging said wheel-hub cams, and said air-pumps being provided with relief-valves, all substantially as described and shown, for the purposes set forth.

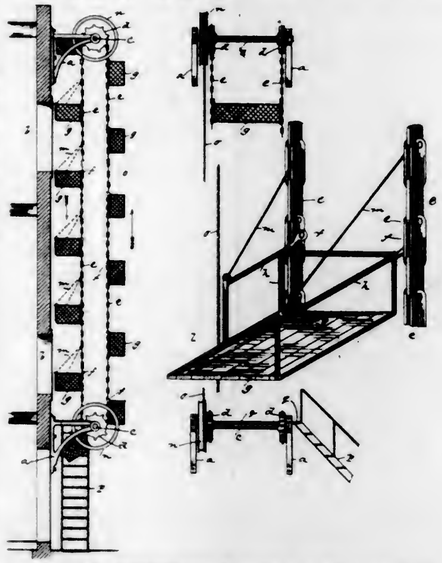
444,787. **SHOCK-COMPRESSOR.** JOSEPH C. VAIL, Maple's Mill, assignor to himself and George W. Wray, Bryant, Ill. Filed Oct. 21, 1890. Serial No. 368,790. (No model.)



Claim.—1. In a fodder or shock binder of the character herein referred to, the combination, with the cord-winding shaft of the binder, of an attached handle for rotating said shaft, fitted to swivel so as to occupy different angular positions relatively to the axial line of the shaft, substantially as and for the purposes specified.

2. In a fodder or shock binder, the combination of the shaft A, having a tenon-shaped rear portion *b*, the swiveling double handle B, having an elongated mortise *e* and cleats *f*, the pivot *d*, uniting said tenon portion of the shaft and mortised portion of the handle through or in which said tenon portion fits, and the cord C, fastened at its one end to the shaft near the handle, essentially as shown and described.

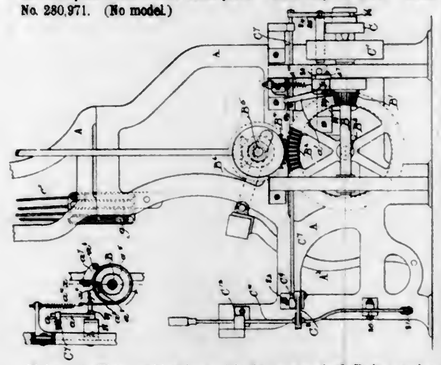
444,788. **FIRE-ESCAPE.** WILLIAM H. WYLAND, Pittsburg, Pa., assignor of one-half to Julius Arnd, same place. Filed July 1, 1890. Serial No. 357,406. (No model.)



Claim.—The herein-described fire-escape, consisting of two endless chains arranged side by side and operating over sprocket-wheels, the platforms *g*, hinged to the said chains and supported by flexible braces *m*, said platforms *g* consisting of a box-shaped frame *h*, surrounded on three sides with wire-netting and having an open end toward the building and an opening *l* at one side thereof, whereby the occupants of said platforms may have access to the landing *g* below,

the two large flanged wheels *n*, secured to the upper and lower shaft *c*, and an endless rope wound several times about the upper wheel *n* and passed over the lower wheel as a means of regulating and controlling the speed of the apparatus, and a short stair or laddder hinged to the landing in a manner that the same may be raised or lowered at will, substantially as and for the purpose described.

444,789. **LOOM.** HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed July 25, 1888. Serial No. 280,971. (No model.)

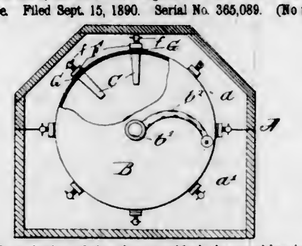


Claim.—1. The combination, with the power-shaft B, its ratchet a^3, and the loose friction-pulley a^4, having a pawl to engage the said ratchet, of the lever *a'*, means to operate it, and the friction strap and spring, substantially as described.

2. The lay, the crank-shaft, the connecting-rods, the gears B^4 and B^3, shaft B^3, shaft B, and gear B', and the ratchet-wheel a^3, combined with the pulley a^4, loose on the said shaft B, the pawl, and the spring-controlled friction strap and lever and means to actuate them, substantially as described.

3. In a loom, the power-shaft B, its ratchet a^3, and the loose friction-pulley a^4, having the pawl to engage the said ratchet, combined with the rod C', the lever *a'*, and friction strap and spring, to operate substantially as described.

444,790. **ICE-CREAM FREEZER.** WILLIAM T. BESSONETTE and CHARLES R. KING, Atlanta, Ga., assignors of one-half to J. M. Brosius, same place. Filed Sept. 15, 1890. Serial No. 365,089. (No model.)

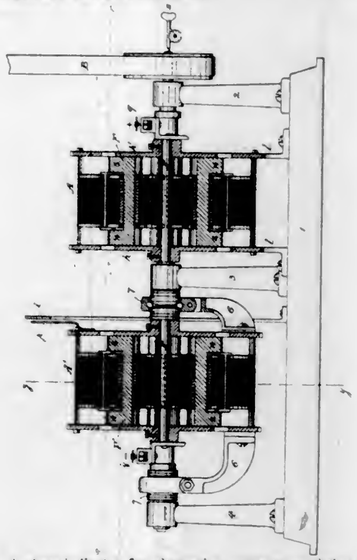


Claim.—In a device of the class specified, the combination of the casing A, the cylindrical vessel carried by bearings journaled in the said casing, one of said bearings being hollow for the purpose specified, the cups C, having the edges of their mouths flanged and seated in openings in the periphery of the vessel, the covers E, the hooks G, secured to the periphery of the vessel near the mouths of the cups, the clips F, engaging with the said hooks, and the screws *f*, substantially as and for the purpose specified.

444,791. **PHASE-INDICATOR FOR ALTERNATING ELECTRIC CURRENTS.** CHARLES S. BRADLEY, Yonkers, N. Y., assignor to the Fort Wayne Electric Light Company, Fort Wayne, Ind. Filed June 23, 1890. Serial No. 356,365. (No model.)

Claim.—1. An indicator for showing a difference of phase in two or more alternating currents, comprising a synchronous electric motor operated by one of said currents and a magnetic device controlled by another of said currents, said device co-operating with a rotary element, driven by the synchronous motor and adapted to be angularly displaced when corresponding phases of the two alternating currents are not simultaneous.

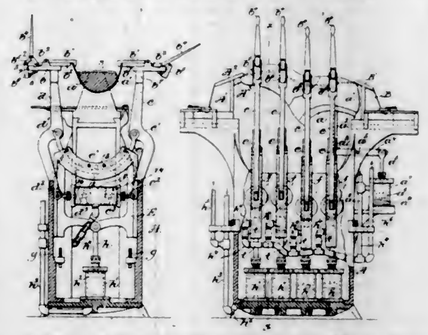
2. A phase-indicator for alternating currents, comprising an alternating-current motor having its rotary element co-operating with two independent circuits, one of which is fixed and conveys the waves of one alternating current to establish synchronism, and the other of which is movable and carries the waves of a separate alternating current, whereby if the corresponding phases of the two alternating currents are not simultaneous the degree of variation will be indicated by a deflection of the movable circuit.



3. A phase-indicator for alternating currents, consisting of two rotating multipolar field-magnets supplied with direct current and arranged in operative relation, one to a stationary multipolar armature connected to one alternating circuit, so as to preserve synchronism, and the other in operative relation to a similar but swinging multipolar armature connected with the other alternating circuit, and an index for showing the angular displacement of said armatures upon the passage of current.

4. In a phase-indicator for alternating currents, the combination of two rotating multipolar field-magnets supplied with direct current and arranged in operative relation, one to a stationary multipolar armature connected to one alternating circuit, so as to preserve synchronism, and the other in operative relation to a similar but swinging multipolar armature connected with the other alternating circuit, an index for showing the angular displacement of said armatures, and a motor adapted to drive said field-magnets and having variable speed and torque.

444,792. **LASTING-MACHINE.** MATTHIAS BROCK, Boston, Mass., assignor to the McKay & Copeland Lasting Machine Company, Portland, Me. Filed Apr. 26, 1890. Serial No. 349,588. (No model.)



Claim.—1. A lasting-machine containing the following instrumentalities, viz: jaws or devices to grasp the upper, carriers for the said jaws, and a series of pistons and cylinders and connections between said pistons and carriers, whereby the said carriers are moved

directly thereby to cause the jaws to stretch the upper about the last, substantially as described.

2. In a lasting-machine, a series of carriers and jaws mounted thereon, combined with a rod, as *e*, connecting the said carriers, a carriage *e'*, in which the said rod may slide to equalize the strain upon the upper during the vertical movement of the jaws in straining the upper about the last, and devices carried by and connecting the carriers to move them about their fulcra on the said rods, substantially as described.

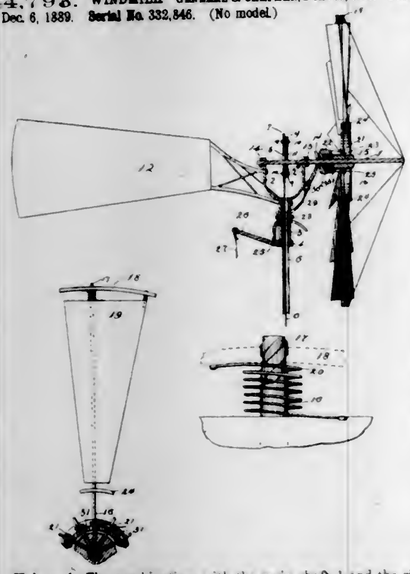
3. A series of jaws and carriers therefor, combined with a series of cylinders and two pistons for each of the said cylinders, the rods of the said pistons being connected to the carriers supporting pairs of jaws at opposite sides of the last, whereby the strain upon the upper during the inward or closing movement of the jaws is equalized, substantially as described.

4. In a lasting-machine, hold-downs and a last-pin rod to support the last, combined with a cylinder and piston and piston-rod and connections between the latter and the said last-pin rod, to operate substantially as described.

5. In a lasting-machine, a pair of jaws to grasp the upper and a lever for moving one of the said jaws, combined with a compensating device consisting of the lever b^4 and link b^5 and a spring acting thereon to enable the jaws to adapt themselves to the thickness of the upper between them, substantially as described.

6. In a lasting-machine, pivoted jaws, each consisting of a plate, a pivoted member b', a sliding member b^3, and an actuating-lever for the sliding member, the pivots of the jaws enabling them to be turned simultaneously thereon when desired, substantially as described.

444,793. WINDMILL. GENERAL S. CHAPMAN, Denver, Colo. Filed Dec. 6, 1889. Serial No. 332,846. (No model.)



Claim.—1. The combination, with the main shaft 1 and the rim 18, of spokes 16, pivoted in sockets in the hub upon the shaft at one extremity and entering apertures in the rim at the opposite extremity, the outer extremity of the spokes being threaded for a short distance, the apertures of the rim 18 being threaded to correspond with the threaded extremities of the spokes, the fans 19, rigidly secured to the spokes at one side of the longitudinal center of the fans, the springs 20, coiled around the spokes between the ends of the fans and the rim of the wheel, one extremity of the spring being secured to the said rim and the opposite extremity to the ends of the fans, substantially as described.

2. The combination, with the main shaft 1 and the rim 18, of the radial arms 16, pivoted in the hub upon the shaft, this portion of which is enlarged or provided with a hub 15, rigidly seated thereon, the outer extremities of the arms 16 being provided with threads 17, adapted to enter apertures in the rim correspondingly threaded, fans 18, rigidly secured to the radial arms, buttons 21, rigidly secured to arms 16 near the shaft, a sliding sleeve 22, secured upon the shaft in the rear of hub 15, a spring 23, secured within a recess between the sleeve and the hub, sleeve 22 being wedge-shaped and terminating in teeth 31, extending on each side of the base of the radial arms and beneath the buttons 21, and suitable means for giving a forward movement to sleeve 22 and forcing the radial arms outwardly, said means being connected with a rope or its equivalent and actuated by a downward pull, substantially as described.

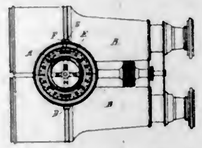
3. The combination, with the main shaft 1 and the rim 18, of the radial arms 16, pivoted in sockets in the hub upon the shaft, this portion of which is enlarged or provided with a hub 15, rigidly seated thereon, the outer extremities of the arms 16 being provided with threads 17, adapted to enter apertures in the rim correspondingly threaded, fans 18, rigidly secured to the radial arms, buttons 21, rigidly secured to arms 16 near the shaft, a sliding sleeve 22, secured upon the shaft in the rear of hub 15, a spring 23, secured within a recess between the sleeve and the hub, sleeve 22 being wedge-shaped and terminating in teeth 31, extending on each side of the base of the radial arms and beneath the buttons 21, and suitable means for giving a forward movement to sleeve 22, forcing radial arms outward, said means consisting of a combination of levers pivoted to the frame-work and actuated by a downward pull on a cord or its equivalent connected with said levers, substantially as described.

444,794. BRUSH FOR DYNAMOS. ALMERIN S. COOK, Cambridge, Mass., assignor to Hosea W. Leach, trustee, same place. Filed Mar. 28, 1890. Serial No. 345,913. (No model.)



Claim.—A carbon brush for dynamos and motors, the pores of which are filled with oil, substantially as set forth.

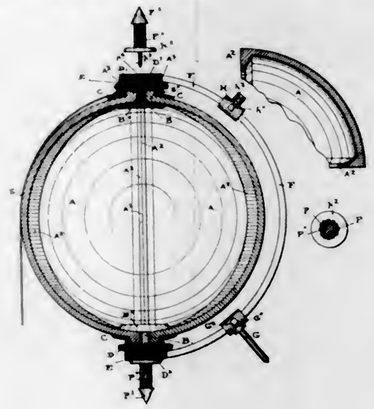
444,795. COMPASS ATTACHMENT FOR FIELD-GLASSES. EDWARD G. KING, San Francisco, Cal. Filed Apr. 4, 1890. Serial No. 346,612. (No model.)



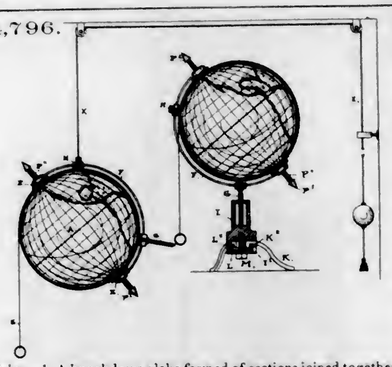
Claim.—1. The combination, with a field or marine glass, of a compass-containing case suitably mounted on said glass and provided with a stop device for engaging and holding the needle at any point.

2. In a field or marine glass, the saddle-frame permanently connected to the glass between the barrels or tubes thereof, to the arms or gimbals of which is connected a compass-containing case provided with a set-screw or stop engaging with the dial-plate or compass, substantially as and for the purpose herein set forth and specified.

444,796. GLOBE. JOSEPH LYNAM, San José, Cal. Filed Mar. 7, 1890. Serial No. 342,974. (No model.)



444,796.



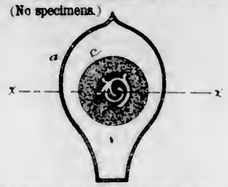
Claim.—1. A knockdown globe formed of sections joined together on lines of longitude, said sections being provided with shoulders at the pole ends and flanged meeting edges along the longitudinal divisions, in combination with a clamp or binding device set over said shoulders to hold the sections together, as set forth.

2. A knockdown globe formed of sections which join together on lines of longitude, said sections having relief-surfaces, in combination with butt-joints with internal flanges and shouldered ends at the poles, and clamping devices by which the sections are bound together at the poles, substantially as described.

3. The combination of the separable globe-sections having shoulders or projections on the ends, bolts having broad heads fitting the inside of the globe, and threaded stems which project through the ends, and nuts having clamping-flanges on their under faces to confine the shoulders, and trunnions on their upper faces, and a bail having bearings in which the trunnions operate, as set forth.

4. The combination of a sectional globe having shouldered ends, a bolt extending up between said ends and provided with a threaded opening in its outer end, a nut screwed upon the bolt and having a flange confining the shoulders of the sections, and a pole-magnet having a screw for engagement in the threaded opening in the end of the bolt, as set forth.

444,797. METHOD OF DECORATING GLASS. GEORGE W. MARTIN, Boston, Mass. Filed Mar. 29, 1889. Renewed June 14, 1890. Serial No. 355,511. (No specimens.)



Claim.—1. The method hereinbefore described of ornamenting glass, the same consisting in engraving the surface of the glass and thereby forming a design comprising both the smooth and the roughened or engraved portions of the glass and then applying metallic foil to said engraved surface, as set forth.

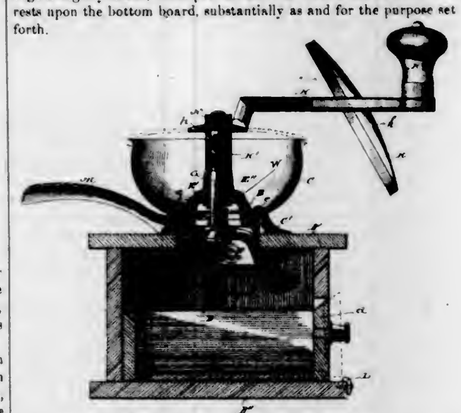
2. The method hereinbefore described of ornamenting glass, the same consisting in engraving the surface of the glass and thereby forming a design comprising both the smooth and the roughened or engraved portions of the glass, then applying metallic foil to said engraved surface, and finally applying a silver-white glaze or protective coating to the back of the coating of metallic foil, as set forth.

444,798. COFFEE-MILL. EDGAR H. MORGAN and CHARLES MORGAN, Freeport, Ill., assignors of one-third to Albert Baumgarten, same place. Filed Oct. 16, 1890. Serial No. 368,284. (No model.)

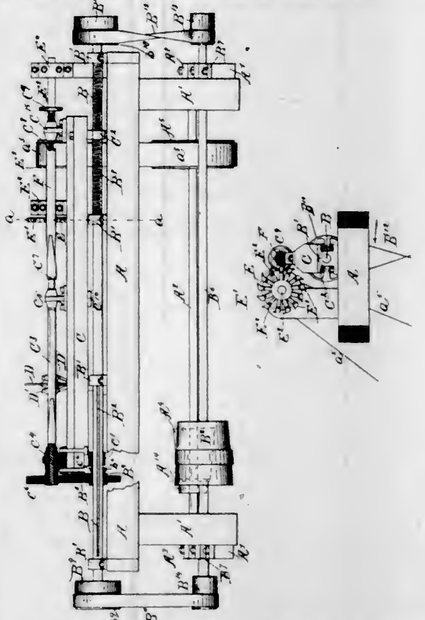
Claim.—1. In a coffee-mill, the combination, with a hopper, suitable grinding mechanism, and a crank for operating the same, of a cover adapted to rest upon the hopper and formed with a central opening adapted to be passed over the inner end of the crank in either direction, the inner end of the crank being formed with a disk adapted to substantially close the opening in the cover when the latter is in position on the hopper, substantially as and for the purpose set forth

2. The combination of the hopper C, the crank H, formed with the disk *h*, and the cover K, formed with the opening *k*, adapted to pass over the inner end of the crank and to fit closely about the disk *h*, substantially as and for the purpose set forth.

3. In a coffee-mill, the combination, with a box B, of the drawer D, formed substantially as set forth and inserted at one side of said box, and the lug L, projecting above the bottom part of the box and adapted to permit the withdrawal of the drawer when its external edge is slightly raised, but to prevent said withdrawal when the drawer rests upon the bottom board, substantially as and for the purpose set forth.



444,799. LATHE. JAMES B. PRESTON, Darlington, assignor of one-half to John Sandrocotta Marshall and Francis Cotton, both of Sydney, New South Wales. Filed Mar. 5, 1890. Serial No. 342,764. (No model.) Patented in New South Wales Apr. 3, 1889, No. 1,337.



Claim.—1. In a lathe for turning irregular forms, the combination, with the pattern provided at one end with a centering device, a gear-wheel rigidly secured to the opposite end of said pattern, and a head-stock provided with a centering-screw in the same straight line as the centering device on the pattern, of a revoluble shaft with which said parts are pivotally connected and on which they have endwise motion, and a gear-wheel adapted to revolve with the shaft and to have endwise motion thereon with the pattern, said gear-wheel being in perpetual gear with the like wheel on the pattern, for the purpose set forth.

2. In a lathe for turning irregular forms, the combination, with the pattern provided at one end with a centering device, a gear-wheel

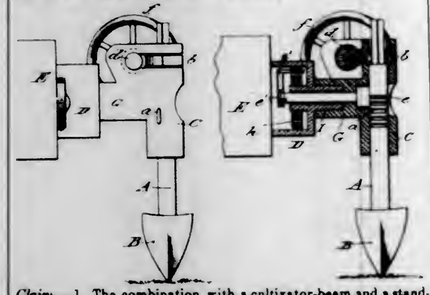
rigidly secured to the pattern at its opposite end, and a head-stock provided with a centering-screw in the same straight line as the centering device on the pattern, of a revoluble shaft with which said parts are pivotally connected and on which they have endwise motion, a gear-wheel adapted to revolve with the shaft and to have endwise motion thereon with the pattern, said gear-wheel being in perpetual gear with the like wheel on said pattern, a pattern-guide having a fixed position relatively to the pattern, and a weight arranged to exert power on the pattern and head-stock and tilt the same toward the pattern-guide, for the purpose set forth

3. In a lathe for turning irregular forms, the combination of the shaft B, screw-threaded at one end and provided with a longitudinal key-groove at the opposite end, the coupling-sleeve B^4, having annular flange b^4, and the gear-wheel B^3 on said sleeve, with the carriage C, provided with a groove c^4 for the reception of flange b^4 on coupling-sleeve B^4, the bearings C C^2 at opposite ends of the carriage, said bearing C^2 being screw-threaded interiorly, the pattern C^3, revoluble in bearings on the carriage, the wheel C^4 on said pattern and in gear with wheel B^3 on shaft B, and the head-stock C^{10}, secured to said carriage and having its lathe center in the horizontal axial plane of the like center on one end of the pattern, substantially as and for the purposes set forth.

4. In a lathe for turning irregular forms, the combination of the shaft B, screw-threaded at one end and provided with a longitudinal key-groove at the opposite end, the coupling-sleeve B^4, having annular flange b^4, the gear-wheel B^3 on said sleeve, a revoluble pattern-guide, and a revoluble cutter-disk E, carrying cutters E', arranged on the one side of shaft B, with the carriage C, provided with a groove c^4 for the reception of flange b^4 on coupling-sleeve B^4, the bearings C C^2 at opposite ends of the carriage, said bearing C^2 being screw-threaded interiorly, the pattern C^3, revoluble in bearings on the carriage, the gear-wheel C^4 on said pattern and in gear with wheel B^3 on shaft B, and the head-stock C^{10}, secured to said carriage and having its lathe center in the horizontal axial plane of the like center on one end of the pattern, and a weighted arm c^{10}, secured to the carriage on the side of said guide and cutter-disk, substantially as and for the purposes set forth.

5. In a lathe for turning irregular forms, the combination, with the shaft B, the gear-wheel B^3 thereon and a pair of fast and loose pulleys at each end thereof, the carriage C, the pattern C^3, the gear-wheel C^4 on said pattern in gear with the wheel B^3 on shaft B, and the shaft B^5, carrying a pulley E^5, of the transmitting-shaft B^6, its belt-pulleys B^{13} B^{14}, belted by crossed and straight belts with pulleys on shaft B, the main driving-shaft A^3, and the pulleys A^4 A^5 thereon belted, respectively, with pulley E^6 on cutter-shaft E^2 and with pulley B^6 on transmitting-shaft B^6, substantially as and for the purposes set forth.

444,800. CULTIVATOR. ALBERT H. TRIPP, Rago, Kans. Filed May 1, 1890. Serial No. 350,221. (No model.)

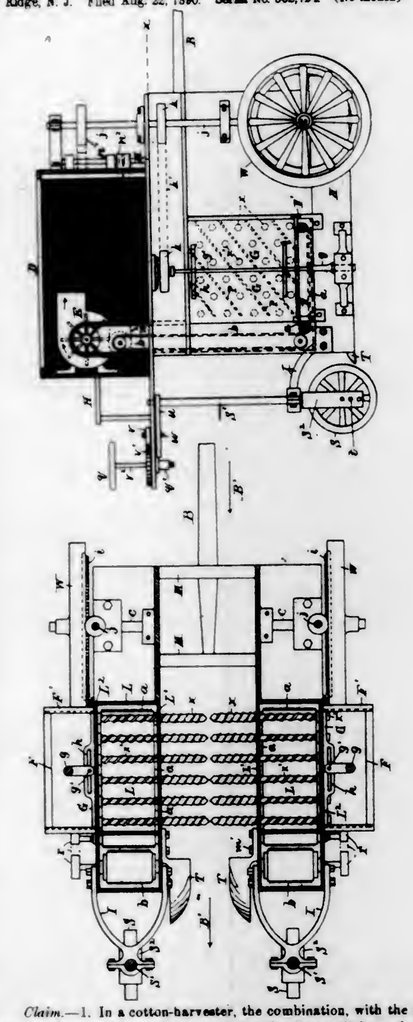


Claim.—1. The combination, with a cultivator-beam and a standard having a shovel secured thereto, of a tubular standard-holder having a tubular arm extending at right angles therefrom, a box secured to the cultivator-beam, said box having a tubular arm or pivot extending into and pivotally connected with said holder-arm, a coil-spring in said box, and a crank or break pin within said box, serving to secure the box and standard-holder together and to allow the shovel-standard to yield to obstructions, substantially as shown and described.

2. The combination, with a tubular holder adapted to be secured to a beam of a cultivator, of a worm-shaft mounted in said holder and adapted to be turned by hand, and a standard A, carried by said holder and provided with a gear-wheel in position to be engaged by said worm-shaft, substantially as set forth.

3. The combination, with a grooved standard A, provided with a shovel, of the holder C, worm-shaft *d*, mounted in said holder and provided with a hand-wheel, gear-wheel *b* on standard A, and a spring-key for securing the standard in the holder, substantially as and for the purposes described.

444,801. COTTON-HARVESTER. FERDINAND VAN DORN, Basking Ridge, N. J. Filed Aug. 22, 1890. Serial No. 362,724. (No model.)



Claim.—1. In a cotton-harvester, the combination, with the cotton-chest L, provided with apertures *y* in the front, of the series of nuts *e*, the rotary fingers *x*, arranged in line with the apertures, with threaded shanks *x'* fitted to the nuts, and the carrier G, having the shanks swiveled therein and reciprocated to and from the outer side of the chest to intermittingly project the fingers from the apertures, substantially as herein set forth.

2. In a cotton-harvester, the combination, with the chest L, provided with the apertures *y* and nuts *e*, of the series of fingers with threaded shanks fitted to the nuts, the reciprocating carrier G, having shanks swiveled therein, the inclined partitions P between the series of fingers, a cotton-receptacle D, with gauze exterior, and a fan for drawing the cotton from the chest and discharging it into the receptacle, substantially herein as set forth.

3. In a cotton-harvester, the combination, with the chests L, connected by the frame M and provided with apertures *y* and nuts *e*, as described, of the cotton-receptacle mounted over the chest with gauze exterior, the picking-fingers having threaded shanks fitted to the nuts *e*, the reciprocating carrier G, with the shanks swiveled therein, the inclined partitions in the chests, the fans located within the cotton-receptacles and having their inlets connected with the chests, the supporting-wheels W, and suitable gearing connecting the wheels with the fans E, substantially as herein set forth.

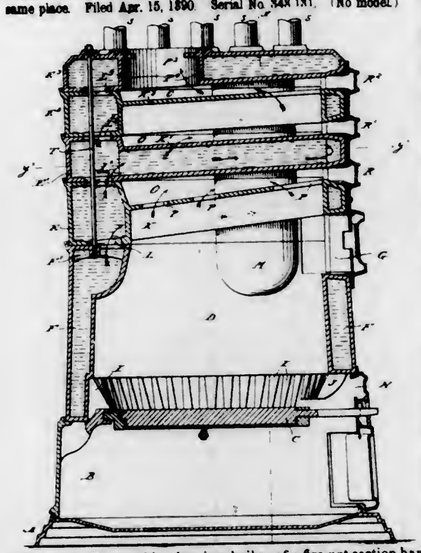
4. In a cotton-harvester, the combination, with the chests L, provided with apertures *y* and nuts *e*, and the rotary fingers having shanks fitted to the nuts and reciprocated in and out of the apertures, as set forth, of the frame M, connecting the chests, the wheels W, supporting the frame, the steering-wheels S, and the steering-shafts S', provided with forked bearings S^3, having the series of holes *t* for the axles of the steering-wheels, substantially as herein set forth.

5. In a cotton-harvester, the combination, with the chests L, provided with apertures *y* and nuts *e*, and the rotary fingers having shanks fitted to the nuts and reciprocated in and out of the apertures, as set forth, of the frame M, connecting the chests, the wheels W, supporting the frame, the adjustable guide-plates T, the steering-wheels S, the shafts S', provided with forked bearings and with lever-arms *u*, the rack *v*, connecting the arms and the pinion *v'*, and hand-wheel *q* for actuating the same, as and for the purpose set forth.

6. In a cotton-harvester, the combination, with the chest L, provided with the apertures *y* and the reciprocating rotary fingers, as set forth, the inclined partitions in the chest, and the cotton-receptacle over the chest, with suction-fan located therein, of the horizontal and vertical belts *a* and *b*, arranged as described and adapted to elevate the cotton to the inlet of the fan, as and for the purpose set forth

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444,802. HOT-WATER AND STEAM HEATER. EDWIN D. VAN STONE, Utica, N. Y., assignor to Russell Wheeler and Frank E. Wheeler, same place. Filed Apr. 15, 1890. Serial No. 348,131. (No model.)



Claim.—1. The combination, in a boiler, of a fire-pot section having a water-leg surrounding the same and superposed separated horizontal sections, the internal water-passages only of which are inclined from side to side of the heater and communicating at their lower and upper ends with vertical water-passages made by means of openings through the top and bottom plates of the sections and within the exterior line of the boiler, substantially as set forth.

2. The combination, in a boiler, of a fire-pot surrounded by a water-leg, a separate horizontal crown-sheet section, the internal water-ways of which are inclined from side to side of the heater, the inclination being all on the same line, and additional superposed sections having like inclined water-ways through them, the water-ways in the crown-sheet having greater inclination than those in the superposed sections, and the inclined water-ways in all of the sections communicating at both ends with vertical water-columns, substantially as set forth.

3. In a boiler, the combination of a fire-pot and superposed separated sections, the external surfaces of which are horizontal, each having vertical water-passages and also inclined internal water-passages and flues through them, the inclination of the inclined water-passages differing in different sections, substantially as set forth.

4. In a boiler, the combination of a fire-pot, superposed separated horizontal sections, each having vertical water-passages and inclined internal water-passages, the degree of inclination of the inclined water-passages being different in different sections at alternate sides of the heater, and flues formed through the sections, substantially as set forth.

5. In a sectional boiler, the combination of a fire-pot section and a crown-sheet section the external surfaces of which are horizontal and having internal water-passages inclined from side to side of the heater, and a feed-mouth located partly or wholly within the crown-sheet section, substantially as set forth.

6. The combination, in a boiler, of a fire-pot and superposed separated sections the external surfaces of which are horizontal, the superposed sections having vertical water-passages and internal passages inclined from side to side of the heater, and a feed-mouth partly or wholly within the crown-sheet section, substantially as set forth.

7. In a boiler, a fire-pot section having a water-chamber and inwardly-projecting separated or perforated fingers or flanges extending above the bottom of the water-chamber, an opening for slicing made in the water-leg of the fire-pot, and separated fingers between the slicer-door and the fire, substantially as set forth.

8. In a boiler, a horizontal crown-sheet section having vertical water-passages at different sides, internal water-passages inclined from side to side of the heater and communicating at both ends with the vertical water-passages, the vertical water-passages which communicate with the uppermost ends of the inclined passages extending directly to the manifold section at the top of the boiler, and a feed-mouth partly or wholly within the crown-sheet section, substantially as set forth.

9. In a boiler having cleaning-doors in its upper part, upwardly-extending recesses between the ends of crosswise water-tubes, whereby cleaning of the surfaces is facilitated, substantially as set forth.

10. In a boiler, the combination, with a fire-pot, of a series of superposed horizontal sections having inclined internal water-ways extending from side to side of the section, and continuous vertical water-ways connecting all the sections on their outer edges only, the upper ends whereof open into the manifold, the said vertical water-ways being within the exterior line of the boiler, and staggered flue-passages through the sections, substantially as set forth.

11. In a boiler, the combination, with a fire-pot, of a series of superposed horizontal sections having inclined water-passages and vertical water-passages connecting all the sections on the outer edges only, the upper ends whereof open into the manifold, the said vertical water-passages being within the exterior line of the boiler, substantially as set forth.

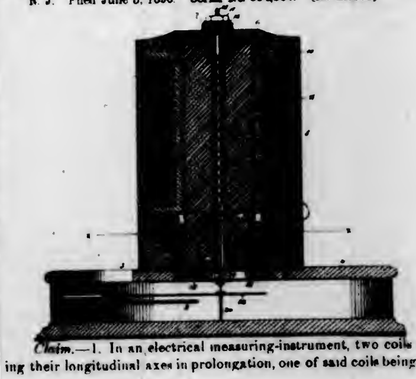
12. In a boiler, the combination of a fire-pot and superposed horizontal sections, the sections having inclined transverse water-passages and vertical water-passages formed by means of openings made through the top and bottom plate of the sections, respectively, and within the exterior line of the boiler, the upper ends of said vertical passages connecting with the manifold, substantially as set forth.

13. In a boiler, the combination of a fire-pot and superposed horizontal sections having inclined water-passages, and vertical water-passages formed by openings made in the upper and lower plate of the sections, respectively, and within the exterior line of the boiler, one at least of said vertical water-passages connecting with the manifold, substantially as set forth.

14. A section for a sectional boiler having transverse water-passages and vertical flue-openings, the spaces between the flue-openings being closed by webs extending across the spaces between the water-passages made integral with the section, whereby the vertical flue-passages are reduced in area and the cross-circuits of the gases are secured, substantially as set forth.

15. In a boiler, a fire-pot surrounded by a water-chamber and having integral therewith inwardly-projecting separated or perforated fingers or flanges extending above the bottom of the water-chamber substantially as set forth.

444,803. POTENTIAL-INDICATOR. EDWARD WESTON, Newark, N. J. Filed June 5, 1890. Serial No. 354,307. (No model.)



Claim.—1. In an electrical measuring-instrument, two coils having their longitudinal axes in prolongation, one of said coils being sup

ported so as to be rotary on its axis, and also movable with reference to the other coil and in inductive proximity thereto, and means for indicating the extent of rotary movement of said movable coil, said coils being connected in circuit.

2. In an electrical measuring-instrument, two coils having their longitudinal axes in prolongation, one of said coils being rotary on its axis and movable with reference to the other coil and in inductive proximity thereto, and means for initially adjusting one coil with reference to the other, said coils being connected in circuit.

3. In an electrical measuring-instrument, a fixed coil and a movable coil having their longitudinal axes in prolongation and placed in inductive proximity, the said movable coil being rotary on its axis and connected in circuit with said fixed coil, and means for initially adjusting the movable coil with reference to the fixed coil.

4. In an electrical measuring-instrument, two coils having their longitudinal axes in prolongation, one of said coils being movable with reference to the other coil, connected in circuit therewith, and in inductive proximity thereto, an elastic support for said movable coil, and a means of indicating the extent of movement of said movable coil.

5. In an electrical measuring-instrument, two coils having their longitudinal axes in prolongation, one of said coils being movable with reference to the other coil and electrically connected in circuit therewith and in inductive proximity thereto, the said movable coil being supported between opposed springs extending from said coil to abutment.

6. In an electrical measuring-instrument, two coils having their longitudinal axes in prolongation, one of said coils being movable with reference to the other coil, connected in circuit therewith, and in inductive proximity thereto, means for guiding the movement of said movable coil in the direction of its longitudinal axis, and means for indicating the extent of movement of said movable coil.

7. In an electrical measuring-instrument, an electro-magnet, a coil surrounding the core thereof and free to move in the direction of the axis of said core, a spiral spring connected to said coil, and an index-needle vibrated by said spring, the said magnet and coil being in circuit and the said spring rotating by its own elasticity during the movement of said coil and so vibrating said needle.

8. In an electrical measuring-instrument, an electro-magnet having one pole surrounding the other, a coil supported and free to move in an axial direction in the space between said poles, a means of causing said coil while so moving to rotate on its axis, and a means of indicating the extent of rotary motion of said coil, the said coil and magnet being connected in circuit.

9. In an electrical measuring-instrument, an electro-magnet, a hollow core, a coil surrounding said core, free to move in the direction of the axis thereof, and a spiral spring within said core and extending between said coil and a fixed abutment, the said coil and magnet being connected in circuit.

10. In an electrical measuring-instrument, an electro-magnet, a hollow core, a coil surrounding said core and free to move in the direction of the axis thereof, and a suspension device for said coil extending through said core, the said magnet and coil being connected in circuit.

11. In an electrical measuring instrument, an electro-magnet, a hollow core, a coil surrounding said core, free to move in the direction of the axis thereof, and two opposed springs extending from said coil to abutments, one of said springs being within said core, the said magnet and coil being connected in circuit.

12. In an electrical measuring-instrument, an electro-magnet, a movable coil surrounding the core of said magnet and free to move in the direction of the longitudinal axis thereof, and a guide-rod connected to said coil, moving in fixed bearings, and preventing lateral movement of said coil.

13. In an electrical measuring-instrument, an electro-magnet having an aperture or recess within its core, a movable coil surrounding the core of said magnet and free to move in the longitudinal axis thereof, and a guide-rod connected to said coil, extending into said recess and through a fixed bearing therein.

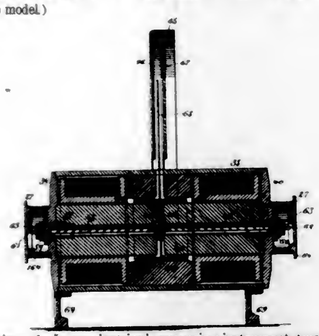
14. In an electrical measuring-instrument, an electro-magnet having the hollow vertical core or pole-piece 8 and the ring pole-piece 9, surrounding the end of said core, the coil 25, suspended in the annular interval between said ring 9 and core 8, the suspending-spring 14, threaded rod 15, connected to said spring 14, and nut 17.

15. In an electrical measuring-instrument, a tubular electro-magnet having its coil within its inclosing-tube, a core within said coil, and an annular pole-piece also within said tube and surrounding the protruding end of said core, in combination with a coil suspended in the annular space between said pole-pieces and free to move in the direction of the longitudinal axis of said magnet.

16. In an electrical measuring-instrument, an electro-magnet having the hollow core 8 and ring 9, the suspended ring 12 and coil 25 therein, the spiral suspension-spring 14 for said ring 12, the guide-rod 18 and bearings therefor, and the needle 23, connected to said core.

17. In an electrical measuring-instrument, the standard or case 1, case 5 thereon, and inclosing an electro-magnet having the core 8 and ring 9, the suspended ring 12 and coil 25 thereon, the needle 23, connected to said coil, and the scale-plate 2.

444,804. ELECTRICAL MEASURING-INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed June 11, 1890. Serial No. 355,095. (No model.)



Claim.—1. In an electrical measuring-instrument, two fixed coils and a movable coil having their longitudinal axes in prolongation, the said movable coil being supported between said fixed coils and in inductive proximity thereto, and means for indicating the extent of movement of said movable coil, the said coils being connected in circuit.

2. In an electrical measuring-instrument, two fixed coils and a movable coil having their longitudinal axes in prolongation, the said movable coil being supported between said fixed coils in inductive proximity and movable with reference thereto and rotary on its axis, and means for indicating the extent of rotation of said movable coil, the said coils being connected in circuit.

3. In an electrical measuring-instrument, two electro-magnets having like poles opposed, a coil surrounding said poles and free to move in the direction of the axial line of said magnets, and means for indicating the extent of motion of said coil, the said magnets and coil being in circuit.

4. In an electrical measuring-instrument, two electro-magnets, each having one pole surrounding the other and having like poles facing, a coil supported and free to move in an axial direction in the annular space between the poles of said magnets, a vibrating index-needle, and mechanism transmitting motion from said coil to said needle, the said magnets and coil being connected in circuit.

5. In an electrical measuring-instrument, two electro-magnets having like polar extremities of their cores facing and ring pole-pieces surrounding said extremities, in combination with a coil supported and free to move in the annular space between said ring pole-pieces and cores, and means for indicating the extent of movement of said coil, said movable coil and magnet-coils being in circuit.

6. In an electrical measuring-instrument, two electro-magnets having like polar extremities of their cores facing and a ring pole-piece common to both surrounding said extremities, in combination with a coil supported and free to move in the annular space between said ring pole-piece and cores, and means for indicating the extent of movement of said coil, said movable coil and magnet-coils being in circuit.

7. In an electrical measuring-instrument, two electro-magnets having their longitudinal axes in prolongation and provided with hollow cores with like polar extremities facing, a coil surrounding said polar extremities, and a suspension device for said coil extending through said cores, the said magnets and coil being connected in circuit.

8. In an electrical measuring-instrument, two electro-magnets having their longitudinal axes in prolongation and provided with hollow cores with like polar extremities facing, a coil surrounding said polar extremities, and two opposed springs secured to said coil and extending, respectively, through said cores, the said magnets and coil being connected in circuit.

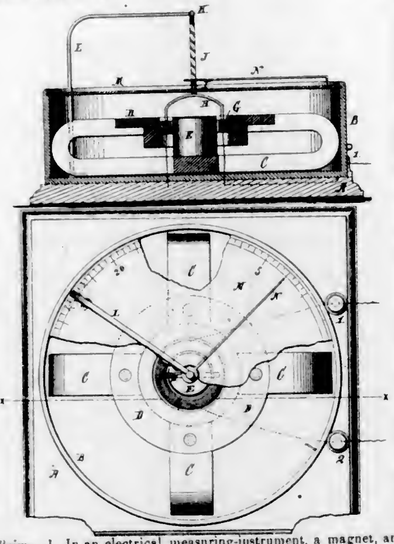
9. In an electrical measuring-instrument, two electro-magnets having their longitudinal axes in prolongation and provided with hollow cores with like polar extremities facing, a coil surrounding said polar extremities, two opposed springs secured to said coil and extending, respectively, through said cores, and means for adjusting the tension of each of said springs, the said magnets and coil being in circuit.

10. In an electrical measuring-instrument, the combination of the coils 44 and 45, having pole-pieces 41 and 42 of like name, with the suspended ring 46, carrying the coil 47 and surrounding said pole-pieces, and means for indicating the extent of movement of said ring, said coils 44, 45, and 47 being in circuit.

11. In an electrical measuring-instrument, the combination of the coils 44 and 45, having the hollow cores 41 and 42, with polar extremities of like name facing, the ring 46, carrying the coil 47 and surrounding said polar extremities, the opposed springs 48 and 49, secured to said ring and extending, respectively, through said hollow cores, and an index-needle and scale for showing the rotary movement of said ring, said coils 44, 45, and 47 being connected in circuit.

12. In an electrical measuring-instrument, the combination of the coils 44 and 45, having the hollow cores 41 and 42, with polar extremities of like name facing, the ring pole-pieces 43, surrounding said polar extremities, the ring 46, carrying the coil 47 and disposed in the annular space between said ring pole-piece 43 and the polar extremities of said core, the opposed springs 48 and 49, secured to said ring and extending, respectively, through said hollow cores, and an index-needle and scale for showing the rotary movement of said ring, said coils 44, 45, and 47 being connected in circuit.

444,805. ELECTRIC MEASURING-INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed Oct. 18, 1888. Renewed Oct. 16, 1890. Serial No. 368,279. (No model.)



Claim.—1. In an electrical measuring-instrument, a magnet, an electrical conductor in loop form loosely surrounded peripherically by one pole of said magnet, and a means of indicating the extent of movement of said conductor due to the passage of a current through the same, substantially as described.

2. In an electrical measuring-instrument, a magnet, an electrical conductor in loop form loosely surrounding one pole thereof and itself peripherically surrounded by the other pole, and a means of indicating the extent of movement of said conductor due to the passage of a current through the same, substantially as described.

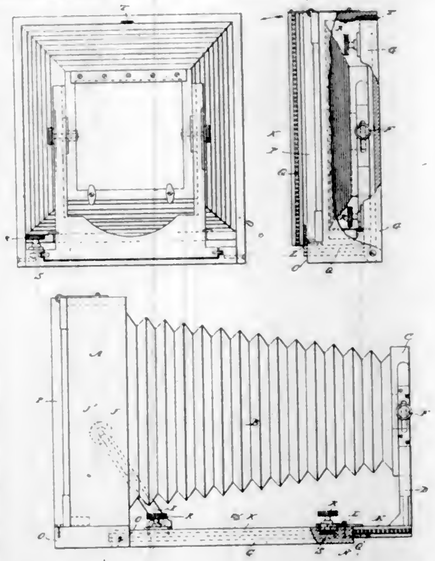
3. In an electrical measuring-instrument, a magnet having a vertical polar extremity, a coil horizontally suspended in the field of force of said pole, and a torsion-spring capable of rotation on its axis when the coil moves up or down, the said coil being suspended by said spring from a fixed support, substantially as described.

4. In an electrical measuring-instrument, a magnet having a vertical polar extremity, a coil horizontally suspended in the field of force of said pole, a torsion-spring whereby said coil is suspended, said spring being capable of rotation on its axis when said coil moves up or down, and an indicator-needle projecting from said spring, substantially as described.

5. The combination of the permanent magnet C, having the vertical cylindrical pole-piece E and an annular pole-piece D surrounding said pole-piece E, the coil G, supported in the annular space between said pole-pieces, spring H, from which said coil is suspended, a fixed support for said spring, a needle N, secured to said spring, and a fixed scale M for indicating the deflections of said needle, substantially as described.

444,806. PHOTOGRAPHIC CAMERA. ERASTUS B. BARKER, Newark, N. J., assignor to E. & H. T. Anthony & Company, New York, N. Y. Filed May 22, 1890. Serial No. 352,780. (No model.)

Claim.—1. The combination of a box, a base-frame adapted to fold against one side of the box, a two-part extension-frame adapted to move through the box, one part to remain therein and the other to fold up against the rear of the box, substantially as set forth.



2. The combination of a box, a base-frame adapted to fold against one side of the box, a two-part extension-frame adapted to move through the box and one part of it to fold up against the rear thereof, and means whereby the two parts of the extension-frame may be held in alignment with each other, substantially as set forth.

3. The combination of a box, a base-frame adapted to fold against the front side of the box, a two-part extension-frame adapted to move through the box, one part whereof folds up against the rear of the box, and mechanism on the extension-frame whereby the camera may be focused, substantially as set forth.

4. In a folding camera, a base-frame adapted to fold up and close one side of the box and an extension-frame supported and guided by the base-frame and constructed and arranged to close the other side of the box, whereby both the lens and the plate-holder or ground-glass frame are protected during transportation, substantially as set forth.

5. In a camera, an extension-frame comprising two parts, to one of which the lens-frame is attached and the other of which is constructed and arranged to fold against the rear of the box for the protection of the plate-holder or ground glass, substantially as set forth.

6. In a camera, a frame sliding within another frame, adapted to two positions, in one of which it holds the bellows in their projected position and in the other it protects the ground-glass or plate-holding frame, substantially as set forth.

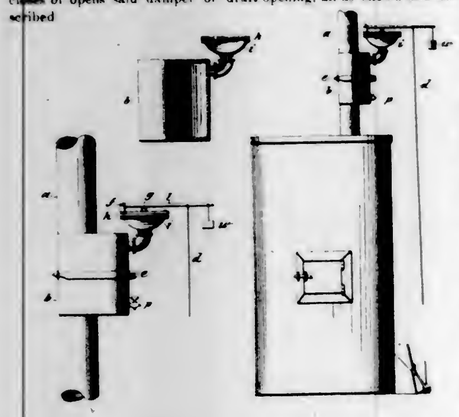
REISSUES.

11,139. DEVICE FOR AUTOMATICALLY REGULATING COMBUSTION IN HOT-WATER AND HOT-AIR HEATING APPARATUS. JOHN C. F. ATSATT, Mattapoisett, Mass. Filed Dec. 9, 1889. Serial No. 333,156. Original No. 406,018, dated July 2, 1889.

Claim.—1. In an apparatus for heating a detachable air-chamber adapted to conform to a vertical exterior heated surface of the apparatus and provided with a flexible diaphragm and with an air-injection opening which has a cut-off, a damper or draft-door which is adapted to close an air-inlet opening, and mechanism actuated by the diaphragm connecting the air-chamber and the damper or draft-door and operating to vary the volume of air admitted to the inlet-opening, in combination, substantially as shown.

2. A device for automatically regulating combustion in heating apparatus, consisting of the air-chamber *b*, having one of its sides concave to conform to the convex surface of the main pipe of said apparatus and adapted to be clamped thereto and provided with the cock *p*, in combination with the bowl i, connected with said air-chamber

and provided with flexible diaphragm *h*, and mechanism between said diaphragm and the damper or draft-opening of said heating apparatus, whereby the expansion and contraction of the air in said air-chamber closes or opens said damper or draft-opening, all as shown and described



3. A device for automatically regulating combustion in heating apparatus, consisting of the detachable air-chamber *b*, conformed to the surface of the vertical main pipe of said apparatus and adapted to be applied thereto and provided with flexible diaphragm *h*, and with mechanism between said diaphragm and the damper or door of the draft-opening of said heating apparatus, whereby the expansion and contraction of the air in said air-chamber closes or opens said draft-opening.

4. A device for the automatic regulation of combustion, which embraces an air-chamber which is provided with a closable air-injecting pipe, with a flexible diaphragm, and with a weighted lever which bears upon such diaphragm and is connected with a draft-door or damper, whereby combustion is made regulable by varying the pressure upon the diaphragm either from within outwardly or from without inwardly.

5. A device for the automatic regulation of combustion in heating apparatus, which is conformed and adapted to be detachably attached to an exterior vertical heated surface of such apparatus, and which embraces an air-chamber which is provided with a closable air-injecting pipe, with a flexible diaphragm, and with a weighted lever which bears upon such diaphragm and which has a connection with a draft-door or damper, whereby a regulable pressure is brought to bear upon either surface of the diaphragm.

6. The described portable air-chamber *b*, having the flexible diaphragm *h*, the air-injecting pipe or stop-cock *p* for condensing air within the chamber, and the variably-weighted lever *l* for regulating the downward pressure upon the diaphragm.

PHOTO-TYPE
NORRIS PETERS
WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE EDISON.

Decided January 6, 1891.

1. INDIVISIBILITY OF INVENTION—SPECIFIC AND GENERIC CLAIMS.

An invention embodied in a given structure and restrictedly claimed does not become a different invention when claimed more broadly or generically.

2. EXTENSION OF MONOPOLY—SAME.

To grant a patent upon an application claiming an invention broadly or generically after a patent has been granted to the same inventor for the same invention embodied in the same structure and more restrictedly stated would be in effect to grant a reissue of the previous patent and at the same time extend its term.

3. PRESENT CASE DISTINGUISHED FROM CASES RELATING TO SPECIFIC IMPROVEMENTS.

The case to be clearly distinguished from that of *ex parte* Edison, (C. D., 1889, 234, 49 O. G., 1691,) a case relating to specific improvements.

APPEAL from Examiners-in-Chief.

PHONOGRAPHS.

Application of Thomas A. Edison filed July 7, 1888, No. 279,321.

Messrs. Dyer & Seely for the applicant.

MITCHELL, *Commissioner:*

The claims appealed are as follows:

1. The combination, with a phonograph, of a removable phonogram-blank, substantially as set forth.
2. In phonographs, a phonogram-blank carrier adapted to receive a removable phonogram-blank, substantially as set forth.
3. In phonographs, the combination, with a phonogram-blank carrier, of a removable phonogram blank, substantially as set forth.
4. In phonographs, the combination of a phonogram blank carrier adapted to receive a removable phonogram-blank, with separate recording and reproducing instruments, substantially as set forth.
5. In phonographs, the combination, with a phonogram-blank carrier adapted to receive a removable phonogram-blank, of a reproducer and means for adjusting the reproducer laterally across the track of record, substantially as set forth.

The references are patents to applicant, granted, respectively, May 8, 1888, No. 382,416, and July 31, 1888, No. 386,974.

The Examiners-in-Chief did not think that appellant's invention was disclosed with sufficient particularity in Patent No. 382,416 to make it a valid reference, but rejected the said claims on Patent No. 386,974, which issued on an application pending concurrently with the present application, upon the ground that said claims were for indivisible parts of the same invention covered by said patent. Applicant now appeals from this decision. The question to be decided, then is, is applicant's Patent No. 386,974 a sufficient reference?

The object of applicant's invention as stated in his application is—

to enable the transmission of phonograph-records from place to place and the reproduction of the sounds upon different machines.

He further states that—

this necessitates the construction of a phonograph and a phonogram-blank which will enable the phonogram-blank to be removed from the machine upon which the record is produced and to be adapted to be again placed upon the same machine or another machine and have the sounds reproduced from the record. * * *

I prefer to use cylindrical phonogram-blanks made entirely or having a recording-surface made of wax or a wax composition. These blanks have cylindrical outer or recording surfaces and are preferably provided with tapering bores which fit upon phonogram-cylinders having a corresponding taper. The blanks hold themselves in position by the friction of the tapering surfaces.

My invention, however, is not limited to any particular form of the blank or of the blank-carrier, or any special form of the phonograph apparatus, since the feature of the removable phonogram-blank can be embodied in a great variety of forms of blank and constructions of apparatus and has been so embodied by myself.

The specification describes and the drawings represent the phonogram-blank having a cylindrical exterior and a tapering bore, being the blank spoken of in the foregoing extract as the preferable one, and the generic claims which are appended to the specification are simply broad statements of the invention embodied in the described and illustrated blank and blank-carrier.

Now, precisely the same blank and blank-carrier, in all the respects specified, were described and shown in Letters Patent to Edison, No. 386,974, of July 31, 1888, and both carrier and blank were included in the appended claims. Among the claims referred to are the following:

24. In a phonograph, the phonogram-cylinder tapering throughout its length, substantially as set forth.
25. In a phonograph, the combination, with the cylinder-shaft mounted in bearings and projecting at one end beyond such bearings, of a smooth-surface phonogram-cylinder tapering throughout its length and carried by the shaft outside of its bearings, substantially as set forth.
26. In a phonograph, the combination, with a tapering phonogram-cylinder, of two or more phonogram-blanks of different lengths having tapering bores adapted to fit said phonogram-cylinder and provided with cylindrical recording-surfaces, substantially as set forth.
27. In a phonograph, the combination, with a tapering phonogram-cylinder, of a phonogram having a tapering bore and a cylindrical outer surface held upon said cylinder by friction, substantially as set forth.

Letters Patent to Edison, No. 382,418, of May 8, 1888, granted prior to the filing of the present application, and referred to in Patent No. 386,974, contained the following claims:

1. A phonogram-blank or phonogram having a bore tapered throughout its length, substantially as set forth.
2. A phonogram-blank or phonogram having a cylindrical recording-surface and a tapering bore, substantially as set forth.
3. A phonogram-blank or phonogram having a cylindrical recording-surface of wax or wax-like material and provided with a tapering bore, substantially as set forth.

The facts thus presented bring the case clearly within the doctrine of *ex parte Lord*, (50 O. G., 987,)

where, after citing special cases "where division is impossible," it was added:

So, also, where claims based upon the same structure to secure the same invention are formulated, some to cover it in a broad or generic form, while others are drawn so as to be more specific in character. In all such cases one application only will lie, because manifestly broad and narrow claims for the same invention are not claims for different inventions. The failure to fully or adequately claim a given invention can be corrected by reissue when a case is made out within the statute; but a second original patent for the same invention, whether contemporaneously pending or otherwise, cannot be allowed under any circumstances. An invention, restrictedly stated, does not become a different invention when claimed more broadly or generically.

So, also, in *ex parte Holt*, (C. D., 1884, 43, 29 O. G., 171,) where the purpose sought to be accomplished was—

to divide the invention upon a line determined merely by the scope of the claim upon the same thing, claiming the species in the earlier patent and the genus in the later one,

the decision held that such a course could not be permitted.

In *ex parte Mullen and Mullen* (50 O. G., 837) a class of cases is referred to in which the claims differ among themselves only as they constitute different statements of one and the same indivisible invention. With reference to such cases it was said:

In all such cases one application only is permissible, whether pending concurrently or not, because only one patent can be granted for a single invention, and a second patent for the same invention under another guise would result inevitably in an illegal extension of the period of exclusive use.

To allow the present application would be, in effect, to grant a reissue of one or both of the patents already granted, and in so doing to extend the monopoly to nearly twenty years. Of course such a result is not to be contemplated.

This case is to be clearly distinguished from that presented in *ex parte Edison*, (C. D., 1889, 234, 49 O. G., 1691.) In that case, after reciting the several facts upon which the decision was based, the Commissioner said:

These facts should all be kept clearly in mind, as the question to be disposed of is, what is the law applicable to such facts, and not what is the law applicable either to divisional applications or to applications for two or more patents upon one subject-matter which is incapable of division.

To grant the present application would be to prevent the public from having the benefit of the invention at the expiration of seventeen years from the beginning of Edison's monopoly thereof, and because the statute expressly limits the duration of the period of exclusive use of a given invention to seventeen years, the prior patents to Edison must be held to be adequate references, and the decision of the Examiners-in-Chief is affirmed.

EX PARTE HOPKINSON.

Decided September 24, 1890.

1. WITHDRAWAL FROM ISSUE—INCORPORATION OF CLAIMS OF A FORFEITED APPLICATION FOR PROCESS IN AN APPLICATION FOR THE APPARATUS.

A petition to be allowed to withdraw an application for an apparatus from the issue, and to amend it by incorporating therein the claims of an application for a process which has been permitted to become forfeited for non-payment of the final fee within six months from notice of allowance, must be denied. Such action would in effect revive the forfeited claims without the payment of the fee required by law.

2. JOINDER OF INVENTIONS—PROCESS AND APPARATUS.

The practice of the Office recognizes the right of an inventor to secure protection in one patent for an apparatus and a process under certain conditions, but applicant has the right, if he so elects, to file separate applications for such inventions.

3. PRACTICE UPON FORFEITURE OF APPLICATION FOR PROCESS—SECTION 4897, REVISED STATUTES OF THE UNITED STATES.

When applicant seeks protection for the process in a separate application, which he subsequently allows to become forfeited, his relief is to be found in section 4897 of the Revised Statutes, which provides that applicant may file a second or renewed application for such invention or discovery within two years after the allowance of the original application. A specific relief having been thus provided, the statute would seem to impliedly prohibit relief by other methods.

ON petition.

ELECTRIC INDICATORS.

Application of John Hopkinson filed February 23, 1889, No. 300,846.

Mr. C. A. Terry for the applicant.

MITCHELL, *Commissioner:*

This is a petition complaining of the action of the Examiner in refusing to permit certain claims to be entered in the case. The petition sets forth that the present application and a companion application were both filed February 23, 1889, one of the cases being for a method and the other for an apparatus; that the two cases were allowed July 1 and July 3, 1889, respectively; that the present application was shortly after withdrawn from issue in order to be placed in interference with an application filed by another party; that the interference having been decided in favor of the applicant, the present application was again allowed June 27, 1890; that meanwhile the six months within which to pay the final fee on the companion application covering the process had been allowed to expire, it not being deemed advisable to issue the method case at an earlier date than the apparatus case, in view of the "prevailing decisions regarding such matters," and that the practice of the Office having meanwhile been changed so that method and apparatus claims can be allowed in the same application, it is desired to place the method claims, formerly allowed in the forfeited application, in the application at present pending.

The Examiner objects to the granting of the request upon the ground that to do so would be to revive a forfeited case without requiring a new fee.

Whether the reason given by the Examiner is the only one or not, I think it must be regarded as sufficient. The present practice of the Patent Office recognizes the right of the inventor of an apparatus and of a process, both being dependent upon each other and mutually contributing to produce a single result, to secure protection for both inventions in one patent. But the present practice permits the inventor, if he so elects, to file separate applications for process and apparatus respectively. (*Ex parte Lord*, 50 O. G., 987.) In the present case the applicant sought protection for the process in a separate application. That application was duly allowed and subsequently became forfeited for non-payment of the final fee within the period prescribed by law. The relief to which an applicant under such circumstances is entitled is provided by section 4897 of the Revised Statutes, which section provides that in a case like the present the applicant should have a right to make application for such invention or discovery the same as in the case of an original application, provided such second or renewed application be made within two years after the allowance of the original application.

The law having provided a given remedy, the steps prescribed by the statute should be followed, not necessarily because otherwise the Patent Office would lose a fee, but because the statute having prescribed a method of relief seems to impliedly prohibit relief by other methods.

Intentionally refraining from deciding what action might be taken if both of the applications were still pending before the Office, I am compelled, under the circumstances of this case, to deny the petition.

EX PARTE MEYER *et al.*

Decided September 11, 1890

1. WITHDRAWAL FROM ISSUE—ADDING AMENDED CLAIMS.

Where an application has been passed to issue, permitted to become forfeited by failure to pay the final fee, thereafter renewed and again allowed, a petition to withdraw such application from the issue to add amended claims, unaccompanied by any showing of "hardship or irreparable injury," was denied.

2. SAME.

The necessity of advancing the work of the Office compels conformity to the rule laid down in *ex parte Meyers*, (49 O. G., 131.)

ON petition.

ROTARY STEAM-ENGINES.

Application of Frederick Meyer, Joseph S. Kiehl, and Alexander Grant filed April 6, 1889, renewed June 25, 1890, No. 356,715.

Messrs. Dayton, Poole & Brown for the applicants.

MITCHELL, *Commissioner:*

This is a petition for withdrawal from issue in order to add amended claims. The Examiner, to whom the matter was referred, reports that the petition ought not to be granted.

The application was first allowed June 7, 1889, and was permitted to become forfeited by failure to pay the final fee. About a year afterward it was renewed, and on the 5th of July, 1890, was again allowed. Nearly two months after the second allowance the applicants filed this petition. In support of the petition they urge that in their opinion the present claims are unnecessarily restricted to combinations containing radial slotted pistons. The Examiner states that the petition contains no suggestion that any other kind of piston is intended to be used in the described rotary engine, and adds that if there are any other well-known equivalent pistons it does not appear to be any reason why applicants would be restricted to those described and shown, because the claims cover in legal effect not only what is shown and described, but all known equivalents as well.

Whether the position of the Examiner is correct or not, no case of "hardship or irreparable injury" is presented by the petitioners, and no reason is known why this application should be withdrawn from the issue which would not apply to a vast number of cases whose equity is at least equal to that of the present case. Besides, it is to be noted that this case does not present the equity which in some cases arises out of prompt action on the part of the applicant.

The necessity of advancing the work of the Office compels conformity to the rule laid down in *ex parte Meyers*, (49 O. G., 131,) and the petition must be denied.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

SOLOMONS *v.* UNITED STATES.

Decided December 8, 1890.

INVENTION BY GOVERNMENT EMPLOYÉ—USE BY GOVERNMENT.

The Chief of the Government Bureau of Printing and Engraving, being requested by his superior officer to devise an internal-revenue stamp, conceived the idea of a self canceling stamp, and, under his direction, the employés of the bureau, using Government property and machinery, prepared a die for printing. Recommending the adoption of this stamp, he stated to the Commissioner of Internal Revenue that he would make no charge for its use because he was in the Government employ, and used Government machinery in producing it. He however applied for a patent, which was issued December 21, 1869, to his assignee who brought suit for the use of said stamp. *Held*, that the Government had a right to use the stamp without making any compensation therefor. (Affirming 21 Ct. Cl., 479, and 22 Ct. Cl., 335.)

APPEAL from the Court of Claims.

STATEMENT OF THE CASE.

During the years 1867 and 1868, Spencer M. Clark was in the employ of the Government as Chief of the Bureau of Engraving and Printing. That bureau was not one created by any special act of Congress, but was established by order of the Secretary of the Treasury, under the general powers conferred by the second section of the act of July 11, 1862, (12 St., 532,) now section 3577, Revised Statutes, which provides as follows:

That the Secretary of the Treasury be, and is hereby, authorized, in case he shall think it inexpedient to procure said notes, or any part thereof to be engraved and printed by contract, to cause the said notes, or any part thereof, to be engraved, printed, and executed in such form as he shall prescribe, at the Treasury Department, and under his direction; and he is hereby empowered to purchase and provide all the machinery and materials, and to employ such persons and appoint such officers as may be necessary for this purpose.

While so employed, he conceived the idea of a self-canceling stamp, and under his direction the employés of that bureau, in the fall of 1867, using Government property, prepared a die or plate and put into being the conception of Mr. Clark. On February 10, 1868, Clark filed a caveat in the Patent Office, and, on September 1, an application for a patent. While this application was pending, and on December 6, 1869, he assigned, by deed duly recorded, his rights to the appellant, in payment of a long-standing account of appellant against him. On December 21, 1869, the patent was issued to appellant, as the assignee of Clark, antedated to June 21, 1869. On December 27, 1869, appellant notified the Commissioner of Internal Revenue that he was the owner of the patent, and sought an arrangement for proper compensation for the use of this patented stamp by the Government on whisky-barrels. No answer was made to this communication, and on September 17, 1875, appellant brought this suit in the Court of Claims to recover from the Government for such use. In addition to the matters heretofore stated, the following facts were found by the Court of Claims:

1. In the latter part of 1867, or early part of 1868, while the subject of revising the methods for collecting internal revenue was being considered by the Committee on Ways and Means of the House of Representatives, a sub-committee was given special charge of the tax on whisky and distilled spirits. A room was assigned by the Secretary of the Treasury, in the Treasury building, to this sub-committee, which immediately proceeded to hold official consultations with the Secretary of the Treasury, and Commissioner and Deputy Commissioner of Internal Revenue. Into these consultations Spencer M. Clark, the Chief of the Bureau of Engraving and Printing, was called officially, and to him

was assigned the duty of devising a stamp, and it was early determined and understood by all, including Mr. Clark, that the the scheme would proceed upon the assumption that the best stamp which he could devise would be adopted and made a part of the revised scheme. In these consultations it was mutually understood that Mr Clark was acting in his official capacity, as Chief of the Bureau of Engraving and Printing, and it was not understood or intimated that the stamp which he was to devise would be patented or become his personal property.

2. In the course of the consultations referred to in the first finding, Mr. Clark laid before the Commissioner and sub-committee a self-canceling revenue-stamp, as being, in his opinion, a very desirable stamp for the prevention of fraud. This stamp was satisfactory to the Committee on Ways and Means, and to the Commissioner of Internal Revenue. It was of the same design and construction as the stamp subsequently adopted by the Commissioner, and manufactured and used by the Government, as hereinafter set forth, and was the same device as that set forth and described in the specifications of Clark's patent annexed to and forming part of the petition.

3. No bargain, agreement, contract, or understanding was ever entered into or reached between the officers of the Government and Mr. Clark concerning the right of the Government to use the invention, or concerning the remuneration, if any, which should be paid for it. Neither did Mr. Clark give notice or intimate that he intended to protect the same by Letters Patent, or that he would expect to be paid a royalty if the Government should manufacture and use stamps of his invention. Before the final adoption of the stamp by the Commissioner of Internal Revenue, he stated to him that the design was his own, but that he should make no charge to the Government therefor, as he was employed on a salary by the Government, and had used the machinery and other property of the Government in the perfection of the stamp. No express license to use the invention was ever given by Mr. Clark to the Government, nor any notice prohibiting its use, or intimating that he would demand a royalty.

4. Immediately after the enactment of the act, July 20, 1868, (15 St., p. 125,) and before Mr. Clark had filed an application for a patent, the Commissioner of Internal Revenue adopted the stamp as the one to be used in the collection of the tax on whisky and distilled spirits. It was adopted by the Commissioner on the recommendation of Mr. Clark. The Commissioner's selection referred to the completed and perfected stamp, which had been devised by the claimant, and engraved and made in the Bureau of Engraving and Printing and approved by the Committee of Ways and Means, as set forth in the second finding. The Government then proceeded to manufacture at the Bureau of Engraving and Printing large quantities of these stamps. The first so manufactured were delivered to the Commissioner of Internal Revenue on the 25th August, 1868, and the 2d November following was fixed by the Secretary of the Treasury as the day for commencing the use thereof. Their manufacture and use were continued until some time in the year 1872, the last issue to the collection districts being on February 15, 1872.

And, upon these facts, judgment was entered in favor of the Government. (21 Ct. Cl., 479, and 22 Ct. Cl., 335.) From such judgment an appeal has been brought to this Court.

Messrs. Lewis Abraham and *B. F. Butler* for the appellant.

Mr. Solicitor-General Taft for the United States.

Mr. Justice BREWER, after stating the facts as above, delivered the opinion of the Court.

The case presented by the foregoing facts is one not free from difficulties. The Government has used the invention of Mr. Clark, and has profited by such use. It was an invention of value. The claimant and appellant is the owner of such patent, and has never consented to its use by the Government. From these facts, standing alone, an obligation on the part of the Government to pay naturally arises. The Government has no more power to appropriate a man's property invested in a patent than it has to take his property invested in real estate; nor does the mere fact that an inventor is, at the time of his invention, in the employ of the Government transfer to it any title to or interest therein. An employé, performing all the duties assigned to him in his department of service, may exercise his inventive faculties in any direction he chooses, with the assurance that whatever invention he may thus conceive and perfect is his individual property. There is no difference between the Government and any other employer in this respect. But this general rule is subject to these limitations: If one is employed to devise or perfect an instrument, or a means for accomplishing a prescribed result, he cannot, after successfully accomplishing the work for which he was employed, plead title thereto as against his employer. That which he has been employed and paid to accomplish becomes, when accomplished, the property of his employer. Whatever rights as an individual he may have had in and to his inventive powers, and that which they are able to accomplish, he has sold in advance to his employer. So, also, when one is in the employ of another in a certain line of work, and devises an improved method or instrument for doing that work, and uses the property of his employer and the services of other employés to develop and put in practicable form his invention, and explicitly assents to the use by his employer of such invention, a jury, or a court, trying the facts, is warranted in finding that he has so far recognized the obligations of service flowing from his employment and the benefits resulting from his use of the property, and the assistance of the co-employés, of his employer, as to have given to such employer an irrevocable license to use such invention. The case of *McClurg* v. *Kingsland*, (1 How., 202,) is in point. In that case was presented the question as to the right of defendants to use an invention made and patented by one Harley. The facts as stated, and the rulings of the Court, are these:

That Harley was employed by the defendants at their foundry in Pittsburg, receiving wages from them by the week. While so employed, he claimed to have invented the improvement patented, and, after several unsuccessful experiments, made a successful one in October, 1834. The experiments were made in the defendant's foundry, and wholly at their expense, while Harley was receiving his wages, which were increased on account of the useful result. Harley continued in their employment on wages until January or February, 1835, during all of which time he made rollers for them. He often spoke about procuring a patent, and prepared more than one set of papers for the purpose; made his application the 17th February, 1835, for a patent. It was granted on the 3d of March, and assigned to the plaintiffs on the 16th of March, pursuant to an agreement made in January. While Harley continued in the defendants' employment, he proposed that they should take out a patent, and purchase his right, which they declined. He made no demand on them for any compensation for using his improvement, nor gave them any notice not to use it, till, on some misunderstanding on another subject, he gave them such notice, about the time of his leaving their foundry, and after making the agreement with the plaintiffs, who owned a foundry in Pittsburg, for an assignment to them of his right. The defendants continuing to make rollers on Harley's plan, the present action was brought in October, 1835, without any previous notice by them. The court left it to the jury to decide what the facts of the case were, but, if they were as testified, charged that they would fully justify the presumption of license, a special privilege, or grant to the defendants to use the invention; and the facts amounted to "a consent and allowance of such use," and show such a consideration as would support an express license or grant, or call for the presumption of one to meet the justice of the case, by exempting them from liability, having equal effect with a license, and giving the defendants a right to the continued use of the invention.

On review in this Court, the rulings of the trial court were sustained. That case is decisive of this. Clark was in the employ of the Government when he made this invention. His experiments were wholly at the expense of the Government. He was consulted as to the proper stamp to be used, and it was adopted on his recommendation. He notified the Government that he would make no charge if it adopted his recommendation, and used his stamp; and for the express reason that he was in the Government employ, and had used the Government machinery in perfecting his stamp. He never pretended, personally, to make any charge against the Government. Indeed, there is but one difference between that case and this. In that Harley's wages were increased on account of his invention: in this, Clark's were not: but such difference does not seem vital. We think, therefore, the rulings of the Court of Claims were correct, and its judgment is affirmed.

Supreme Court—District of Columbia.

(IN GENERAL TERM.)

THE UNITED STATES EX REL. UNITED STATES ELECTRIC LIGHTING COMPANY *v.* THE COMMISSIONER OF PATENTS.

Decided June 23, 1890.

COMMISSIONER NOT REQUIRED OR AUTHORIZED TO FURNISH COPIES OF PENDING APPLICATIONS—SECTION 892, REVISED STATUTES OF THE UNITED STATES, CONSTRUED.

Section 892, Revised Statutes of the United States, providing for the obtaining of certified copies of any records, books, papers, or drawings belonging to the Patent Office, does not require or authorize the Commissioner of Patents to furnish copies of pending applications for patents, or of papers connected with such applications.

PETITION for a writ of mandamus against the Commissioner of Patents requiring him to furnish the relator with a certified copy of a pending application for Letters Patent.

The facts are stated in the opinion.

Mr. S. A. Duncan and *Mr. M. Bailey* for the relator.
Mr. N. L. Frothingham for the respondent.

Mr. Justice JAMES delivered the opinion of the court.

This is an action to compel the Commissioner of Patents to furnish to the relator a certified copy of an application for Letters Patent filed in the Patent Office by Thomas A. Edison on the 15th of December, 1880, together with a copy of the record of the proceedings in connection with such application.

The petition states in substance that the relator is defendant in a suit in equity brought in the Circuit Court of the United States for the Southern District of New York, by the Edison Electric Light Company for the alleged infringement of certain Letters Patent for incandescent lamps, now owned by said company as assignee of Edison; that, in order to make a case of infringement, the complainant in that suit has, through its expert, put a very broad construction on the claims of its patent, and that Edison, acting in the interest of his assignee, the complainant, has made application for another patent, in which he claims as a new invention the same thing which his assignee seeks by construction to include in the existing patent. The relator states, as the ground of his right to copies, that it proposes to offer the pending application for Letters Patent and the accompanying papers as evidence in the said suit in equity, to show the limitation which the patentee and his assignee have themselves put upon the patent now in suit.

It is claimed that section 892 of the Revised Statutes has imposed upon the Commissioner of Patents a ministerial duty to furnish these copies. That section is in the following words:

Written or printed copies of any records, books, papers, or drawings belonging to the Patent Office, and Letters Patent, authenticated by the seal and certified by the Commissioner or Acting Commissioner thereof, shall be evidence in all cases wherein the originals could be evidence, and any person making application therefor, and paying the fee required by law, shall have certified copies thereof.

It is insisted that this language, if considered separately from any other provision of the statute, would include every class of papers; and that when considered in connection with section 4902 of the Revised Statutes it still gives the right to have copies of every class of papers except those mentioned in the latter section. The section referred to is in the following words:

Any citizen of the United States who makes any new invention or discovery, and desires further time to mature the same, may, on payment of the fees required by law, file in the Patent Office a caveat setting forth the design thereof, and of its distinguishing characteristics, and praying protection for his right until he shall have matured his invention. Such caveat shall be filed in the confidential archives of the Office and preserved in secrecy, and shall be operative for the term of one year from the filing thereof; and if application is made within the year by any other person for a patent with which such caveat would in any manner interfere, the Commissioner shall deposit the description, specification, drawings, and model of such application in like manner in the confidential archives of the Office, and give notice thereof to the person by whom the caveat was filed, &c.

The argument on the part of the relator is that section 892 of the Revised Statutes was intended to state a general rule that applicants should have copies of papers of every class not expressly excepted by some other provision of the statute, and that section 4902, which was taken from the same original statute, was intended to state the sole exception to that rule; in other words, that the two sections, construed together, intended that any person who proposed to use them in evidence was entitled to have copies of any papers whatsoever belonging to the Patent Office, except caveats and applications for patents interfering therewith.

We think that neither of these contentions is correct.

It was not the primary and essential purpose of this statute to establish or to define the extent of the right of private persons to have copies of papers belonging to the Patent Office. Its primary object was to provide a rule of evidence by making certified copies of originals, which would be evidence, as competent in evidence as the originals, and it was only incidentally to that end that it provided that such copies should be obtainable on payment of the fees required by law. That consideration is important in determining whether this provision intended that papers and documents of every class whatsoever, except caveats and applications interfering therewith, should be thrown open to private inspection and use by means of copies and as a matter of right. We may as well say at once that nothing but the clearest expression of such an intention would justify such an application of the statutes.

The general inclination of the legislature in reference to copies of documents in the executive departments and offices should be considered in connection with this particular provision, and may be gathered from statutes *in pari materia*. We refer to the following examples:

The act of September 15, 1789, (1st Stat. at Large, 69,) relating to the Department of Foreign Affairs, simply provided that—

all copies of records and papers of the said office, authenticated, &c., * * * shall be evidence equally as the original record or paper.

The act of July 4, 1836, (sec. 4, vol. 5, p. 117,) provided that—

copies of any records, books, papers, or drawings belonging to said Office [the Patent Office] shall be competent evidence in all cases in which the original records, books, papers, or drawings would be evidence. And any person making application therefor may have certified copies of records, drawings, and other papers deposited in said Office, on payment, &c.

The act of February 22, 1849, (sec. 3, vol. 9, p. 347,) provided that—

all books, papers, documents and records of the War, Navy, Treasury, and Post-Office Departments, and of the Attorney-General's Office, may be copied and certified under seal in the same manner

as those of the State Department may now be, and with the same force and effect, &c.

The act of May 31, 1854, (sec. 2, vol. 10, p. 297,) provided that—

all books, papers, documents and records in the Department of the Interior may be copied and certified under the seal of that department, in the same manner as those in the other executive departments may now by law be, and with the same force and effect, &c.

These provisions, relating to the principal departments, have been consolidated in section 882 of the Revised Statutes, as follows:

Copies of any books, records, papers or documents in any of the executive departments, authenticated under the seals of such departments, respectively, shall be admitted in evidence equally with the originals.

Finally, by the act of July 8, 1870, (sec. 57, vol. 16, p. 207,) the provisions now found in section 892 were enacted.

It will be observed that the language of the original statutes which provided for copies of papers in the departments was permissive. It suggested the use of discretion. None of them indicated what classes of papers should be subjects of copy, much less that all papers without discrimination should be accessible for that purpose. None of them impaired the power of the heads of those departments to protect from publicity such papers as they should think it necessary, for reasons of public policy or interest, to withhold from private inspection or use. And it was a matter of notoriety that such protection was actually enforced in all of the great departments. Of course that practice had the sanction of the legislature.

Now, when this rule of evidence by copies was extended to papers and records in the Patent Office, was there anything in the business of that Office to suggest a departure from that policy? Was there an antecedent probability that Congress would peremptorily require the Commissioner to open the door to frauds by disclosing to competitors the pending and incomplete transactions of his Office? The opportunities for false pretenses of priority which would be afforded by knowledge of an invention which was yet unprotected by a patent were understood by the framers of this law, and some of its provisions show that they had in mind the importance of secrecy as a protection of inventors' rights. For example, when they provided, by sections 43, 44, and 45, (Rev. Stat., secs. 4905, 4906, and 4908,) for the taking of depositions to be used in cases pending in the Patent Office, they were careful to add that no witness should be deemed guilty of contempt for refusing to disclose any secret invention or discovery made or owned by himself. Where one section thus defends, even against semi-judicial inquiry, an inventor's right to secrecy, until he secures the protection of a patent, it would be unreasonable to construe the general language of another section as intending that an inventor's right of secrecy may be nullified by publishing a copy of his application for a patent. It it difficult to perceive any difference, in this respect, between the cases of the witness and of the applicant for a patent; the risk of fraudulent anticipation is the same in both cases, and both are on principle entitled to the same protection against disclosure. We think, therefore, that nothing but the most explicit expression of intention would justify an interpretation which would involve an inconsistent discrimination. Let us see whether the language of section 892 compels us to hold that an invention shall be disclosed to the world by furnishing a copy of the pending application for a patent.

As we have said, the language of this section is general, and omits to specify what classes of papers shall be subject to copy, or that any class is not thus subject. We think, however, that it is limited and applied by the context. When considered in connection with the purpose for which copies are authorized by this section—namely, for use as evidence in judicial proceedings—its scope is limited by that purpose. We do not mean that the Commissioner may determine that certain copies are not authorized on the ground that, in his opinion, they would not be admissible in evidence in the particular suit for which they are demanded, or for the purpose proposed by the applicant. We mean only that the very fact that this provision authorizes copies for use in evidence indicates that the statute refers to papers and records connected with and going to show title, whether the title of the applicant or of his adversary in the suit referred to. The statute plainly includes papers of this kind, and we think it is satisfied by applying it only to this class. Presumptively the object of requiring the Patent Office to furnish evidence for judicial use is the furtherance of the purpose for which the Patent Office itself exists—namely, the ascertainment and establishment of title to inventions and discoveries. It follows that the papers and documents to be furnished are to relate to title, and tend to establish it. This would exclude pending applications, which cannot tend to establish title.

A construction which thus applies the statute is, we think, the only one that is consistent with public policy, and with the essential right of inventors to enjoy the protection of secrecy until they shall have secured the protection of Letters Patent; and we conceive that the only reasonable construction of the general language of the statute is one which satisfies these considerations.

We are therefore of opinion that section 892 of the Revised Statutes does not require or authorize the Commissioner of Patents to furnish copies of pending applications for patents or of papers connected with such applications.

It is proper to add that we have reached this conclusion after full consideration of the views expressed in Pollok's case, (48 O. G., 1263.)

The writ of mandamus is refused.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 3. TUESDAY, JANUARY 20, 1891. PRICE---$5 per year.

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Changes of Classification.

(ORDER No. 659.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., January 12, 1891.

The following sub-classes are hereby established in Division XX:

Class 16, Builders' Hardware:
- Sash-fasteners—
  - Mid-rail,
  - Right-angle,
  - Sash-lifts.
- Sash-holders—
  - Roller bearing.
- Shutter fasteners—
  - Combined sash,
  - Fire.
- Shutter-workers—
  - Combined slat.
- Window and door buttons—
  - Automatic,
  - Tripper.

Class 70, Locks and Latches:
- Knob-spindle fasteners.
- Latches—
  - Sliding,
  - Sliding pivoted ends,
  - Lifting,
  - Lifting hooked ends.
- Locks—
  - Cylinder,
  - Pin,
  - Trap.

Class 128, Surgery:
- Bandages—
  - Bandage-machines,
  - Suspensory,

Class 128, Surgery:
- Bandages—Continued.
  - Water.
- Chest-protectors.
- Corn appliances.
- Inhalers—
  - Mask.
- Laryngoscopes.
- Needle holders and cases.
- Syringes—
  - Expanding-arms,
  - Pile,
  - Water-bag.
- Scalpels.
- Thermo-cauters.
- Transfusion of blood.
- Urinary apparatus.
- Veterinary horse-shields.

Class 32, Dentistry:
- Angle attachments.
- Bridge-work.
- Disks and holders.
- Engines.
- Hand-pieces.
- Jaw-braces.
- Matrices.
- Air-pluggers.
- Regulators and spacers.
- Rubber-dam clamps.

C. E. MITCHELL,
Commissioner.

Women Inventors.

The Patent Office has published and has for sale a volume, containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

Issue of January 20, 1891.

Patents	343	No. 444,807 to No. 445,149, inclusive.
Designs	6	No. 20,484 to No. 20,489, inclusive.
Trade-Marks	49	No. 18,848 to No. 18,896, inclusive.
Labels	5	No. 6,419 to No. 6,423, inclusive.
Reissue	1	No. 11,140.
Total issue	404	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire	4	
Arkansas			New Jersey	11	1
California	9		New Mexico Terr'y		
Colorado	5		New York	52	15
Connecticut	12	1	North Carolina		
Delaware			North Dakota		
District of Columbia			Ohio	14	1
Florida		1	Oregon		
Georgia	2	1	Pennsylvania	30	4
Idaho			Rhode Island		1
Illinois	30	4	South Carolina		
Indiana	6		South Dakota	2	
Indian Territory			Tennessee	9	
Iowa	4		Texas	4	
Kansas	5		Utah Territory		
Kentucky	6		Vermont		
Louisiana			Virginia	3	
Maine	3		Washington	1	
Maryland	5	1	West Virginia		
Massachusetts	50	1	Wisconsin	17	1
Michigan	10		Wyoming		
Minnesota	7		U. S. Army	1	
Mississippi	2		U. S. Navy	1	
Missouri	10	1			
Montana	2		Total to citizens of the United States	319	33
Nebraska	2				

To citizens of foreign countries: Patents and Designs—30; Trade-Marks and Labels—21.

DESIGNS.

20,484.—CHILD'S TOY.—*Mary M. Herrick*, Marinette, Wis. Application filed August 2, 1890. Serial No. 360,832. Term of patent 3½ years.

20,485.—WATCH-CHARM.—*Thomas Tugby*, Niagara Falls, N. Y. Application filed November 1, 1890. Serial No. 370,084. Term of patent 7 years.

20,486.—BRUSH.—*Charles E. Thompson*, Lansingburg, N. Y. Application filed October 9, 1890. Serial No. 367,597. Term of patent 14 years.

20,487.—DISH.—*John E. McBride*, Clinton, N. Y. Application filed December 22, 1890. Serial No. 375,510. Term of patent 7 years.

20,488.—BANK-CHECK.—*John L. Copp*, Rochester, N. H. Application filed September 15, 1890. Serial No. 365,102. Term of patent 7 years.

20,489.—ELECTRIC-ARC LAMP.—*James Beesley* and *Arthur B. Benjamin*, New York, N. Y., assignors to *The Clark Electric Company*, same place. Application filed October 20, 1890. Serial No. 368,725. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

18,848.—CIGARS.—*Lucio Arenal & Co.*, Havana, Cuba. Application filed December 18, 1890. Used since December, 1890.
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18,849.—CIGARS.—*Lucio Arenal & Co.*, Havana, Cuba. Application filed December 18, 1890. Used since 1882.
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18,894.—BISCUITS, CRACKERS, WAFERS, CAKES, AND KINDRED ARTICLES.—*The New York Biscuit Company*, Chicago, Ill., New York, N. Y., and Cambridgeport, Mass. Application filed November 12, 1890. Used since 1839.
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6,421.—Title: "MRS. CHARLOTTE BERGMAN'S FAMILY MEDICINE."—*Charlotte Bergman*, Brooklyn, N. Y. Application filed December 23, 1890.

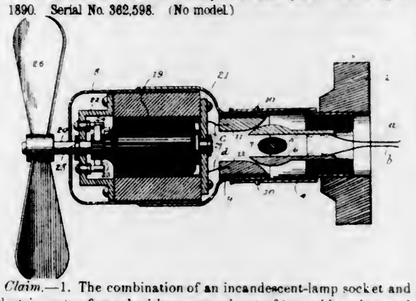
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PATENTS

GRANTED JANUARY 20, 1891.

444,807. **COMBINED ELECTRIC MOTOR AND LAMP-SOCKET.** RALPH H. BEACH, St. Paul, Minn., assignor, by direct and mesne assignments, to himself and Warren Carpenter, same place. Filed Aug. 21, 1890. Serial No. 362,598. (No model.)



Claim.—1. The combination of an incandescent-lamp socket and an electric motor formed with an extension to fit to said socket and provided with working-line terminals with which the wire terminals of the socket make contact, said motor and socket being separable from each other, substantially as described.

2. The combination of an electric motor, an inclosing case therefor having a cylindrical end or neck adapted to fit into an incandescent-lamp socket, and fixed terminals for the working-current wires of the motor, so arranged in said end that when the motor-case is inserted into a socket the line-wires of the socket can be switched into electrical connection with said terminals, substantially as and for the purposes set forth.

3. The combination, with an incandescent-lamp socket, of an electric motor, a fan upon its armature-shaft, a case inclosing said motor, having a cylindrical end adapted to fit into said socket, and fixed terminals for the working-wires of said motor, so arranged that when the motor is in place in the socket the line-wires of the socket can be switched into connection with the motor-terminals, substantially as and for the purposes set forth.

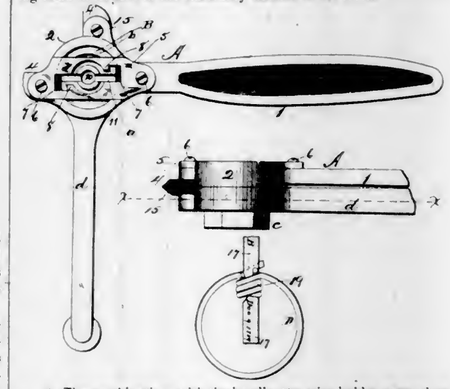
4. The combination, with the lamp-socket 4, having the line-wire terminals 5 and 6 and the switch 7, of the motor having the armature 19, the commutator 23, brushes 24 and 25, field-magnets 13 and 14, having the connecting-cores 15 and 16 and the coils 17 and 18 arranged upon said cores and connected with said brushes, the fan 26 upon the shaft of the armature, the inclosing case 8, having the narrowed end 9 adapted to fit into said socket, and the terminals 11 and 12, arranged in said narrowed end and electrically connected, respectively, with the coils 17 and 18, substantially as and for the purposes set forth.

444,808. **TOOL FOR TWISTING WIRE.** EBENEZER BEALS, Norwich, N. Y. Filed Feb. 12, 1890. Serial No. 340,122. (Model.)

Claim.—1. In a wire-tyer, the combination of a handle, a tubular twister mounted therein and provided with a diametrical groove in its outer end, a wire-holder secured to the handle and extending across the end of the twister and having a slot through which the overlapping ends of the wire are inserted and which holds the end portions thereof, and a crank connected to the twister, as set forth.

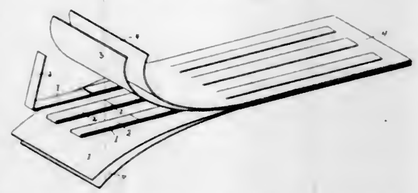
2. The combination, with the stationary handle provided with a top plate slotted centrally and longitudinally and provided with notches on opposite sides at the ends of the slot and beveled on the ends of the slot, of the rotating winder and twister mounted in the stationary handle, and the turning handle connected by a pawl and a ratchet to the twister and winder, as set forth.

3. The combination of the wire-holding plate secured upon the head of the stationary handle and provided with a longitudinal slotway having end notches and beveled ends, with the twisting and winding head having a central opening, annular flanges next to the opening, and radial grooves, and means for rotating the twisting and winding head in its seat in the stationary handle, as set forth.



4. The combination, with the handle, the wire-holder secured on top of the outer end thereof and provided with a slot enlarged centrally and widened at the ends on opposite sides, creating shoulders 8, and beveled at the widened ends, and provided also with parallel ribs upon its inner face on each side of the slot, of the tubular twister seated in the handle under the wire-holder and provided on its upper face with a diametrical groove and with inner and outer concentric flanges, a ratchet on the body of the twister, a crank fitting over the ratchet, a pawl in the crank engaging with the ratchet, and means for securing the crank and handle together.

444,809. **GARMENT-STAY.** CHARLES W. BELL, Tecumseh, Mich. Filed Aug. 15, 1890. Serial No. 362,109. (No model.)



Claim.—1. In a garment-stay, a stiffening-blade having its two faces and ends covered by a strip of reed, the ends of which meet on one face of the stay and in the same plane, for the purposes stated.

2. The herein-described garment-stay, consisting of a stiffening-blade, a re-enforce strip of reed covering the two faces and ends of said blade, an adhesive material binding the strip to the blade, and a textile covering held in place by said adhesive material, all as described, and for the purposes stated.

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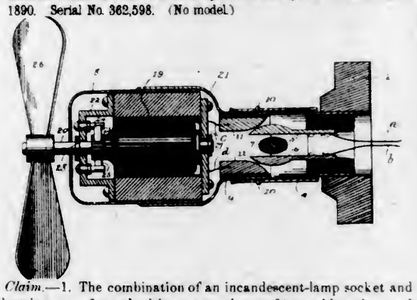
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2. The combination of an electric motor, an inclosing case therefor having a cylindrical end or neck adapted to fit into an incandescent-lamp socket, and fixed terminals for the working-current wires of the motor, so arranged in said end that when the motor-case is inserted into a socket the line-wires of the socket can be switched into electrical connection with said terminals, substantially as and for the purposes set forth.

3. The combination, with an incandescent-lamp socket, of an electric motor, a fan upon its armature-shaft, a case inclosing said motor, having a cylindrical end adapted to fit into said socket, and fixed terminals for the working-wires of said motor, so arranged that when the motor is in place in the socket the line-wires of the socket can be switched into connection with the motor-terminals, substantially as and for the purposes set forth.

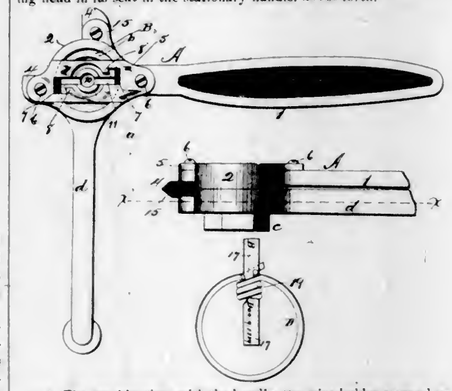
4. The combination, with the lamp-socket 4, having the line-wire terminals 5 and 6 and the switch 7, of the motor having the armature 19, the commutator 23, brushes 24 and 25, field-magnets 13 and 14, having the connecting-cores 15 and 16 and the coils 17 and 18 arranged upon said cores and connected with said brushes, the fan 26 upon the shaft of the armature, the inclosing case 8, having the narrowed end 9 adapted to fit into said socket, and the terminals 11 and 12, arranged in said narrowed end and electrically connected, respectively, with the coils 17 and 18, substantially as and for the purposes set forth.

444,808. **TOOL FOR TWISTING WIRE.** EBENEZER BEALS, Norwich, N. Y. Filed Feb. 12, 1890. Serial No. 340,122. (Model.)

Claim.—1. In a wire-tyer, the combination of a handle, a tubular twister mounted therein and provided with a diametrical groove in its outer end, a wire-holder secured to the handle and extending across the end of the twister and having a slot through which the overlapping ends of the wire are inserted and which holds the end portions thereof, and a crank connected to the twister, as set forth.

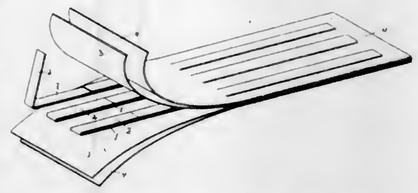
2. The combination, with the stationary handle provided with a top plate slotted centrally and longitudinally and provided with notches on opposite sides at the ends of the slot and beveled on the ends of the slot, of the rotating winder and twister mounted in the stationary handle, and the turning handle connected by a pawl and a ratchet to the twister and winder, as set forth.

3. The combination of the wire-holding plate secured upon the head of the stationary handle and provided with a longitudinal slotway having end notches and beveled ends, with the twisting and winding head having a central opening, annular flanges next to the opening, and radial grooves, and means for rotating the twisting and winding head in its seat in the stationary handle, as set forth.



4. The combination, with the handle, the wire-holder secured on top of the outer end thereof and provided with a slot enlarged centrally and widened at the ends on opposite sides, creating shoulders 8, and beveled at the widened ends, and provided also with parallel ribs upon its inner face on each side of the slot, of the tubular twister seated in the handle under the wire-holder and provided on its upper face with a diametrical groove and with inner and outer concentric flanges, a ratchet on the body of the twister, a crank fitting over the ratchet, a pawl in the crank engaging with the ratchet, and means for securing the crank and handle together.

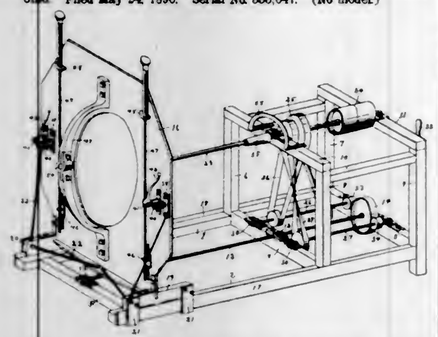
444,809. **GARMENT-STAY.** CHARLES W. BELL, Tecumseh, Mich. Filed Aug. 15, 1890. Serial No. 362,109. (No model.)



Claim.—1. In a garment-stay, a stiffening-blade having its two faces and ends covered by a strip of reed, the ends of which meet on one face of the stay and in the same plane, for the purposes stated.

2. The herein-described garment-stay, consisting of a stiffening-blade, a re-enforce strip of reed covering the two faces and ends of said blade, an adhesive material binding the strip to the blade, and a textile covering held in place by said adhesive material, all as described, and for the purposes stated.

444,810. HUB-BORING MACHINE. ALFRED BONNER, Paulding, Ohio. Filed May 24, 1890. Serial No. 353,047. (No model.)



Claim.—1. In a hub-boring machine, the combination of a face-plate, a series of friction-rollers, a threaded shaft engaging the face-plate, a friction-pulley carried by the said shaft, a cutter, and mechanism for throwing the friction-rollers into and out of contact with the pulley on the threaded shaft, whereby the face-plate will be caused to move to and from the cutter.

2. In a hub-boring machine, a face-plate having vertically-adjustable wheel-supports, means for clamping the wheel to the said plate, and a rest, in combination with a threaded shaft engaging the face-plate, a series of friction-rollers, a friction-pulley carried by the shaft, a cutter, and mechanism for throwing the friction-rollers into and out of contact with the said pulley to move the face-plate to and from the said cutter.

3. In a hub-boring machine, the combination of a revoluble cutter, a face-plate, a threaded shaft engaging the same, one portion of which is free from threads and carries a spring, and mechanism for revolving the shaft to cause the face-plate to move to and from the said cutter.

444,811. ORDER-HOLDER. JOHN F. BROWN, Chicago, Ill., assignor to Albert R. Baker, Indianapolis, Ind. Filed Nov. 18, 1889. Serial No. 330,646. (No model.)

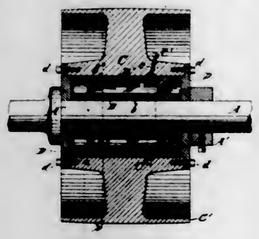


Claim.—1. The combination, with an order-holder having a clamping-spring essentially such as described, of a wire fulcrum device having its ends secured in the holder and adapted to be swung into and out of position for prying open the spring, substantially as specified.

2. The combination, with an order-holder essentially such as described, of a fulcrum device consisting of a wire having its ends secured in the spring of the holder, substantially as specified.

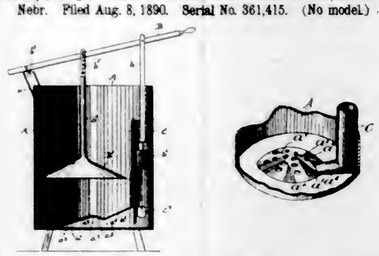
3. The order-holder consisting of the covers A, independent narrow boards B *b*, each united to one of the covers by a flexible joint, and a combined clamp and hinge and a swinging fulcrum device, substantially as specified.

444,812. SELF-LUBRICATING DEVICE FOR PULLEYS. WILSON W. CAREY, Lowell, Mass. Filed May 12, 1890. Serial No. 351,579. (No model.)



Claim.—The improved pulley self-lubricating device, consisting of a perforated central shell or sleeve B, loosely journaled on the axle, and an exterior perforation shell or sleeve B′, connected to the former and having an annular oil-chamber B″ arranged between said sleeves, combined with the pulley-hub C, loosely journaled on the sleeve B′, and cap-plates or covers D D, secured to the ends of the pulley-hub, substantially as and for the purpose set forth.

444,813. WASHING-MACHINE. JAMES H. CARPENTER, Ulysses, Nebr. Filed Aug. 8, 1890. Serial No. 361,415. (No model.)

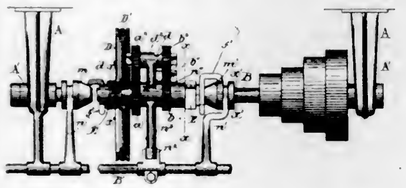


Claim.—1. In a washing-machine, the combination of a suds-box, a pump having inlet and discharge in the bottom of said suds-box, and a pounder in said suds-box and connected to reciprocate with and in the same direction as the piston in said pump, substantially as set forth.

2. In a washing-machine, the combination of a suds-box, a pump, a conical perforated chamber in the bottom of said suds-box and communicating with said pump, and a pounder in said suds-box connected to be reciprocated with and in the same direction as the piston in said pump, substantially as set forth.

3. In a washing-machine, the combination of a suds-box, a pump-cylinder in the same, a conical perforated chamber in the bottom of said suds-box, having a downwardly-inclined flue in one side, an upwardly-flaring flue communicating with said inclined flue and with said pumping-cylinder, a pounder having a flare corresponding to said conical chamber, a pump-piston, and a lever pivoted upon the edge of the suds-box and having said ponnder and piston pivotally connected to it, substantially as set forth.

444,814. REVERSING MECHANISM FOR COUNTER-SHAFTS. WILLIAM T. CARROLL, Worcester, Mass. Filed Nov. 17, 1890. Serial No. 371,690. (No model.)



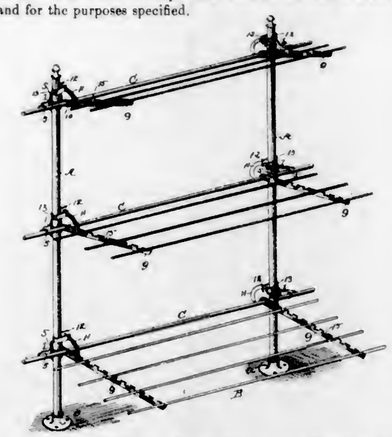
Claim.—The counter-shaft, the driven pulley D, a gear *a′* and *a*×, connected together and loose on the said shaft, the pinion *b*, also loose on the said shaft, a stand having a bearing and reversing shaft therein, provided at its opposite ends with gears in engagement, respectively, with the gear fast to the driven pulley, and an intermediate gear *b*⁴, pinion *b*, and clutch-actuating devices, combined with clutches normally rotating with the said counter-shaft and adapted to be engaged with either the hub *a*×, moving with the driven pulley, or with the hub of the pinion *b*, whereby the said counter-shaft may be driven in either of two directions at will, substantially as described.

444,815. SHOW-RACK FOR STORE-WINDOWS, &c. BENJAMIN G. CASLER, Cleveland, Ohio. Filed July 10, 1890. Serial No. 358,320. (No model.)

Claim.—1. In a show-rack, the combination, with frame-bars, of a corner-block having intersecting bar-grooves on one of its faces and clamps for securing the bars to the corner-block, substantially as and for the purposes specified.

2. In a show-rack, the combination, with frame-bars, of a curved corner-block having intersecting bar-grooves and clamps for securing the bars to the corner-block, substantially as and for the purposes specified.

3. In a show-rack, the combination, with frame-bars, of a corner-block having intersecting bar-grooves and hook-clamps arranged in holes in the corner-block and provided with thumb-nuts, substantially as and for the purposes specified.



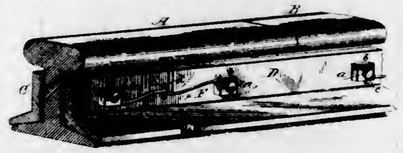
4. The combination, with a fixed support, of a shelf-arm having at one end a pivotal bearing and segment of a circle and a clamp or detent which binds on the fixed support and the segment to hold the shelf-arm in a fixed position, substantially as and for the purposes specified.

5. The combination of a shelf-arm having a pivotal bearing and segment at one end, a bracket-arm extending from the shelf-arm to the journal of said arm, and a clamp which binds on the segment to hold the shelf-arm in a fixed position, substantially as and for the purposes specified.

6. The combination, with a fixed support, of a shelf-arm having at one end a pivot and a segment with ratchet-teeth, and a dog or detent adapted to engage with the fixed support and with the ratchet-teeth of the segment of the shelf-arm, substantially as and for the purposes specified.

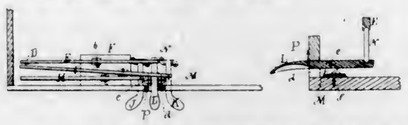
7. A shelf-arm having a pivotal bearing at one end and a semi-circular clamp-bar or segment which projects beyond the shelf-arm and whose center is the pivotal bearing of the arm, substantially as and for the purposes specified.

444,816. NUT-LOCK. CYRUS C. CLAY, Elmhurst, Pa. Filed Nov. 8, 1890. Serial No. 370,756. (No model.)



Claim.—In a device for locking nuts on bolts, the combination, with a plate having a slot, of a device composed of spring-wire and having a loop and arms extending from the sides of said loop, and a key for holding the loop in engagement with the plate after the same has been inserted through the slot, substantially as and for the purpose set forth.

444,817. UPRIGHT PIANO. GEORGE COOK, Boston, Mass. Filed Oct. 22, 1890. Serial No. 368,887. (No model.)



Claim.—In an upright piano, the combination of the pedal L, the chair supporting it adapted to turn horizontally, the catch P, the lever E, adapted to be moved by the pedal, the connecting-rod D, the pivoted arms C C′, and the cushion-bar A, all arranged and to operate essentially as and for the purpose explained.

444,818. REEL. EDWARD C. CORNWELL, Ypsilanti, Mich. Filed June 25, 1890. Serial No. 356,606. (No model.)



Claim.—1. The combination, with a gang of reels and an independent driving-gear for each reel capable of connection therewith and disconnection therefrom, of a main driving-gear constantly meshing with all of the reel-driving gears, substantially as described.

2. The combination of a gang of reels mounted in a revoluble frame, an independent driving-gear for each reel capable of connection therewith and disconnection therefrom, and means for driving all of said gears simultaneously, substantially as described.

3. The combination of a gang of reels mounted in a revoluble frame, an independent driving-gear for each reel capable of connection therewith and disconnection therefrom, and a main driving-gear constantly meshing with all of the reel-driving gears, substantially as described.

4. The combination, with a gang of reels provided with driving-gears loose on the reel-shafts and clutches for connecting said gears with and disconnecting them from their shafts at will, of a central driving-gear constantly engaging the gears upon the reel-shafts, substantially as and for the purpose specified.

5. The combination, with a revoluble gang of reels provided with driving-gears loose on the reel-shafts and clutches for connecting said gears with and disconnecting them from their shafts at will, of a central driving-gear constantly engaging the gears upon the reel-shafts, substantially as and for the purpose specified.

6. The combination of the supports A, the reel-frame C, pivotally supported thereby, the reels E, having shafts D, journaled in the reel-frame, the gears K, loose on the reel-shafts D, the clutch-pieces M, movable on the shafts D adjacent to the gears K, the rods L for operating the clutch-pieces, and the gear H for driving the gears K, substantially as and for the purpose described.

7. The combination and arrangement of the uprights A, the shaft B, journaled therein, the cross-arms C, fast thereto, the reels E, having shafts D journaled in the cross-arms, the gears K, loose upon the shafts D, the clutch-pieces M, feathered on the shafts D adjacent to the gears K, the rods L for operating the clutch-pieces, the gears G H, carried by a sleeve F, journaled on the shaft B, the gear H, constantly engaging with the gears K, and the driving-gear I, engaging the gear G, substantially as and for the purpose described.

444,819. RAILWAY-SIGNAL. NATHANIEL B. CREGIER, Chicago, Ill., assignor of one-half to De Witt C. Cregier, same place. Filed Oct. 25, 1887. Serial No. 253,283. (No model.)

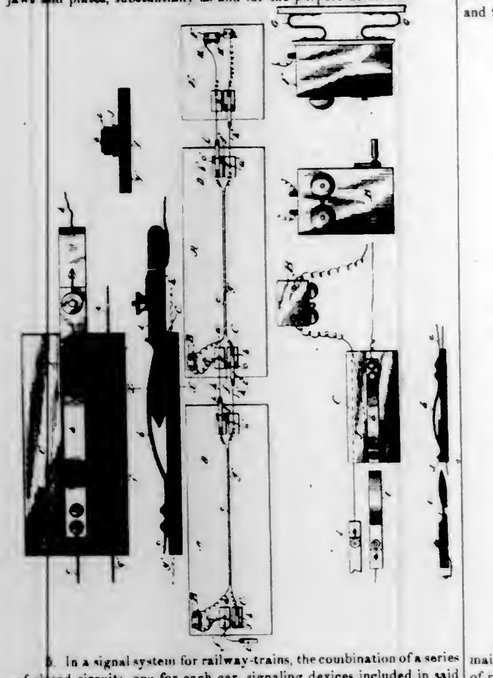
Claim.—1. In a signal system for railway-trains, the combination of a closed circuit for the electrical current and mechanical generators, signaling devices, and switches in and operating on said closed circuit, substantially as described.

2. In a signal system for railway-trains, the combination of a closed circuit for the electrical current and magneto-generators, signaling devices, and switches in and operating on said closed circuit, substantially as described.

3. In a signal system for railway-trains, the combination of a closed circuit for the electrical current and a mechanical generator and signaling devices located upon the engine and the several cars of the train in said circuit, switch-boards at both ends of the several cars, and plugs permanently secured at one end to the metallic circuit and electrically secured to the switch-boards, whereby a closed circuit is formed between the circuit of the adjacent cars, substantially as described.

4. In a signal system for railway-trains, the combination of a closed circuit for the electrical current, a spring-jaw and opposing contact-plate in said circuit, said plate being provided with parallel projecting

inclined side flanges, and a switch-plug, also in said circuit and having inclined sides corresponding with said flanges for insertion between the jaws and plates, substantially as and for the purpose described.



In a signal system for railway-trains, the combination of a series of closed circuits, one for each car, signaling devices included in said circuits, and separable switch devices for uniting all of said independent circuits into a single circuit, whereby the separation of any number of cars from the train will cause the automatic closing of the circuit through each section of the train, substantially as described.

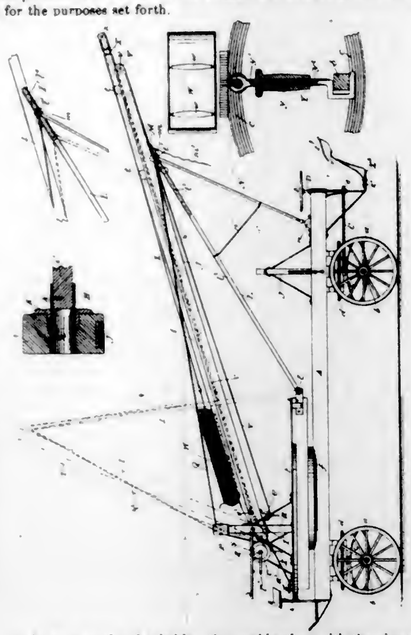
6. In a signal device for railway-trains, the combination of a series of closed metallic circuits, signaling device included in each of said circuits, and a separable switch device embracing a switch-board provided with a retaining-spring and a plate in said circuit, and a separable plug, which, when inserted between said spring and plate, closes the circuit with the spring and breaks the circuit between the spring and plate, substantially as and for the purpose described.

444,820. **EXTENSION FIRE-LADDER.** LEVI DEDERICK, Albany, N. Y. Filed Aug. 11, 1890. Serial No. 361,713. (No model.)

Claim.—1. The combination, in a fire-ladder, with the main ladder having its foot end pivoted through posts or brackets to a platform, and a windlass provided with means for revolving the same, and pulleys P P at a distance above the pivot of said ladder, of the sliding or movable supporting-bar *l*, applied to the lower side of said ladder, supporting-braces L L, having one end pivoted to the said platform and its opposite end to said supporting-bar, and the draft-lines Q Q, connecting said supporting-bar to said windlass, substantially as and for the purpose set forth.

2. In an extension fire-ladder, the combination, with the main ladder pivoted to a platform, and pulleys P P, loosely mounted on bearings which are at a distance above the plane of the pivot of said ladder, of flanged spools *r r*, which may be revolved at will, a sliding or moving supporting-bar applied across the lower side of the ladder, a supporting-brace hinged to the rear side of the platform and having its upper end pivoted to the supporting-bar, and a flexible draft line or lines between the said flanged spools and the said supporting-bar and winding on said spools, so as to gradually increase their diameters as they are being revolved, substantially as and for the purposes set forth.

3. In an extension fire-ladder, the combination, with a main ladder pivoted to a platform, extensible supporting-braces having their foot ends pivoted to the platform and their upper ends to a supporting-bar *l*, applied to the lower side of said ladder, and a hoisting device operating to elevate the rear end portion of said ladder, of the supplemental supporting-braces N N, having their upper ends hinged with the said supporting-bar, and their lower ends loosely setting in seats or steps secured to the body of the truck at a distance rearward of the pivot of the foot end of the extensible braces, substantially as and for the purposes set forth.



4. In an extension fire-ladder, the combination, with the pivoted main ladder, a hoisting device connecting with the supporting-bar *l*, of rack J, secured to the lower side of a side rail of the ladder, dog M, pivoted on said supporting-bar and operating with said rack, means for disengaging said dog, and supporting-braces pivoted at their foot ends to the platform the ladder is pivoted to and having their upper ends pivoted to the said supporting-bar, substantially as and for the purposes set forth.

5. In an extension fire-ladder, the combination, with the main ladder, which is pivoted to a platform and is elevated by means of revolving drums or spools and draft-lines, of extensible supporting-braces L L, pivoted to the said platform, the supplemental supporting-braces M, pivoted rearward of the braces L L and loosely holding steps or seats secured to the body of the truck for receiving the foot ends of said braces N, and flexible connection *n'* between said braces L and N, substantially as and for the purposes set forth.

6. In an extension fire-ladder, the combination, with the pivoted main ladder, hoisting-spools provided with flanges for holding each succeeding coil of the hoisting-lines on the preceding coil, and hoisting-lines connecting said flanged spools with a device for lifting the rear end portion of the pivoted main ladder, of the extension-ladder, windlass U, and the continuous dual hoisting-line *c'*, secured to said windlass and running over pulleys at the rear end of the main ladder, and having its middle portions bent on pulleys arranged with the foot ends of the side rails of the extension-ladder and then connected at its opposite end to the same windlass, substantially as and for the purposes set forth.

7. In an extension fire-ladder, the combination, with the extension member thereof, of a rescue-car adapted to be moved over the rounds thereof and having a width which will admit the passage of one individual between one of the side rails and said car, substantially as and for the purposes set forth.

8. In an extension fire-ladder, the combination, with the rear end running-gear of the truck, of a tiller-shaft provided with sprocket-wheel *e* and steering-wheel E, of the flexible connection C, having a belt or chain portion working with said sprocket-wheel and its opposite ends secured with the ends of the bolster above the springs, substantially as and for the purposes set forth.

9. In an extension fire-ladder, the combination, with the body of the truck and a platform pivoted thereto and secured to the turn-circle *f*, supported on the upper side of said sprocket-body, and a main ladder provided with hoisting mechanism which is operated from said platform, of sockets, one or more, secured to said platform and provided with levers, substantially as and for the purposes set forth.

10. In an extension fire-ladder, the combination, with the body of the truck and a platform pivoted thereto and secured to the turn-circle *f*, supported on the upper side of said truck-body, a main ladder provided with a hoisting device which is operated from said platform, and an extension member provided with devices also operated from the same platform for extending the said extension member, of sockets, one or more, secured to said platform and provided with levers, substantially as and for the purposes set forth.

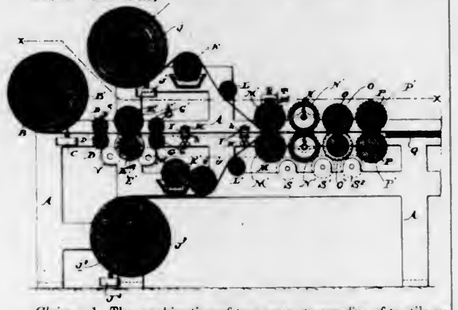
11. In an extension fire-ladder, the combination, with the truck-body provided at its front end with a seat from which the driver can guide and control the animals attached thereto, and provided also at its rear end with a supporting device from which a tiller-man can operate the steering mechanism of the rear end running-gear of the apparatus, of a revolving platform mounted on said truck-body for support of the ladders, its operating mechanism, and the operators of the same, substantially as and for the purposes set forth.

12. In an extension fire-ladder, the combination, with the hoisting-windlass of a spool, friction-wheel, and a ratchet-wheel, all mounted and secured on the same shaft, of a lever having between the pivot or fulcrum on which it moves and its handle end a friction-strap, and a pawl or dog for operation at the will of the operator with either the friction-wheel or the ratchet-wheel, substantially as and for the purposes set forth.

13. In a fire-ladder, the combination, with the side rail *i* and round *i'*, of the cylindrical sleeve *k* for receiving an end of the round, provided with an exterior screw-thread which works in screw-threads in a corresponding hole made in said side rail, substantially as and for the purposes set forth.

14. In a fire-ladder, the combination, with the side rail *i* and round *i'*, of the flanged sleeve K, provided with an internal screw-thread and seated in the side rail, and the cylindrical sleeve *k* for receiving an end of the round and provided with an external screw-thread which works into the said flanged sleeve and the hole in the said round, substantially as and for the purposes set forth.

444,821. **APPARATUS FOR MAKING LEAF-HINGES FOR BOOKS.** HENRY P. FEISTER, Philadelphia, Pa. Filed Dec. 4, 1889. Serial No. 332,563. (No model.)



Claim.—1. The combination of two separate supplies of textile or other material, a third supply of material, feeding devices, substantially as described, to feed said materials with their faces in contact with each other, the material from said third supply being intermediate between the other two materials, and pasting devices, substantially as described, to paste the faces of said materials together, and cutters to cut said third material into longitudinal strips before reaching said feeding devices.

2. The combination of two separate supplies of textile or other material, a third supply of material, feeding devices, substantially as described, to feed said materials with their faces in contact with each other, the material from said third supply being intermediate between the other two materials, and pasting devices, substantially as described, to paste the faces of said materials together, and cutters to cut said third material into longitudinal strips, and guides to guide said longitudinal strips and separate them from each other before reaching said feeding devices.

3. The combination of two separate supplies of textile or other material, a third supply of material with their faces in contact with each other, the material from said third snpply being intermediate between the other two materials, and pasting devices, substantially as described, to paste the faces of said materials together, and cutters to cut said third material into longitudinal strips, and two sets of guides to guide said longitudinal strips and separate them from each other and guide them parallel to each other to said feeding devices.

4. The combination of feeding-rollers to feed a number of longitudinal strips of material in contact with the pasted face of a second piece of material, with guides for separating said strips one from another and guiding them to the feeding-rollers.

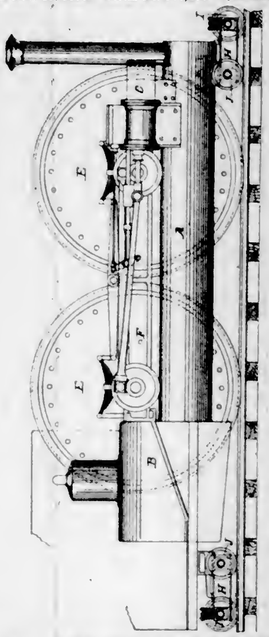
5. The combination of feeding-rollers to feed a number of longitudinal strips of material in contact with the pasted face of a second piece of material, with adjustable guides for separating said strips one from another and guiding them to the feeding-rollers, whereby the distances between the adjacent strips may be adjusted.

6. The combination of a support for a quantity of material, cutters to cut said material into longitudinal strips, feeding-rollers to feed said material to the cutters, a second pair of feeding-rollers to feed the material from the cutters, and feeding and pressure rollers to feed said strips in contact with the pasted face of a continuous piece of material to form a web of book-hinge material.

7. The combination of a support for a quantity of material, cutters to cut said material into longitudinal strips, feeding-rollers to feed said material to the cutters, guides to separate said longitudinal strips and guide them from said cutters, and feeding and pressure rollers to feed said strips in contact with the pasted face of a continuous piece of material to form a web of book-hinge material.

8. The combination, with a support for a roll of material, of feeding devices, substantially as described, to feed the material from said roll in a continuous web, a support for a second supply of material, and feeding devices, substantially as described, to feed the material therefrom, pasting devices, substantially as described, to apply paste to the face of one of said materials, pressure-rollers to press said materials with the pasted faces in contact, and cutters to cut one of said materials into longitudinal strips before it is fed to the pressure-rollers.

444,822. **BICYCLE-LOCOMOTIVE.** JOHN FISH, Summit, N. J. Filed Nov. 15, 1890. Serial No. 371,488. (No model.)



Claim.—1. In a bicycle-locomotive, a pilot bogie-truck carrying a central double-flanged pilot-wheel running on a central rail, in combination with two flangeless bearing-wheels running upon outer rails, substantially as specified and arranged, and for the purpose as herein set forth.

2. In a bicycle-locomotive, a pilot bogie-truck with central rail pilot-wheel and outer rail bearing-wheels, in combination with a bolster and center-pin, substantially as specified and described, and for the purpose as herein set forth.

3. In a bicycle-locomotive, the twin boiler suspended below the center of and each outside of the center rail driving wheel or wheels, in combination with a pilot bogie-truck having a double-flanged center rail pilot-wheel, and outside bearing-wheels running upon outer rails, substantially as specified, and as herein set forth.

4. In a bicycle-locomotive, the central driving wheel or wheels running upon a single rail, in combination with a bogie-truck having

a double-flanged pilot-wheel and outer bearing-wheels, substantially as specified and described, and for the purpose as herein set forth.

444,823. BASE-PIN AND CYLINDER-BRAKE FOR REVOLVERS. CHARLES FOEHL and CHARLES A. WEEKS, Philadelphia, Pa., assignors to the Foehl & Weeks Fire Arms Manufacturing Company, same place. Filed Apr. 10, 1890. Serial No. 347,357. (No model.)



Claim.—1. In combination with the cylinder of a pistol, an annular flange *m* on the forward end thereof, and a spring-bolt bearing against the side of the flange, all substantially as described.

2. In combination with the cylinder and its annular flange, the bolt having a part bearing upon the annular flange, and a stud projecting into a groove in the base-pin, all substantially as described.

3. In combination with the base-pin having a groove, the bolt *d*, having a stud fitted to the groove, a spring underneath the bolt, and a transverse push-pin having an inclined part fitted to the bolt, substantially as described.

444,824. SHOE-FASTENER. ALVAH S. FRENCH, New York, N. Y. Filed Jan. 25, 1890. Serial No. 338,080. (No model.)



Claim.—1. In a shoe-fastening device having a strap, sliding clasps, and runners, a guide-band secured to the shoe on either side of the lower ends of the runners and forming an arch over said ends, said arch being shaped to guide the successive clasps onto the runners as the strap is drawn into place, substantially as and for the purpose described.

2. In a shoe-fastening device having a strap with sliding clasps attached and runners on the flaps of the shoes with which the clasps engage, a guide-band secured to the shoe and forming an open arch over the lower ends of the ribs or runners, said arch being of suitable height above the surface of the upper, so that the strap with clasps attached will pass under it, and tapering in width so as to guide the successive clasps onto the runners and insure their reliably engaging with the same when the strap is pulled into place, substantially as shown and described.

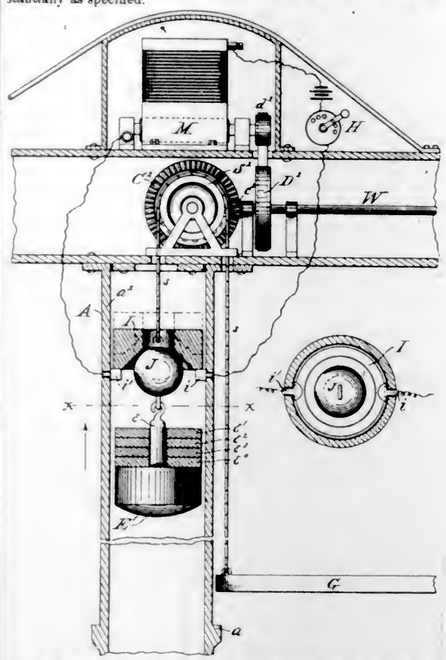
444,825. ELECTRIC GATE. HARLEIGH GILLETTE, Highland Park, Ill. Filed Oct. 3, 1890. Serial No. 366,993. (No model.)

Claim.—1. In an electric gate, the combination, with the posts provided with a guard-bar mechanically connected to two electric motors, a generator, circuits, and circuit-closers therefor, and two automatic circuit-breakers for same, one of which consists of a hinged connecting-lever provided with a projection adapted to be impinged upon and lifted by the said guard-bar upon reaching its extreme limit of motion, substantially as specified.

2. In an electric gate, the combination, with the posts provided with a guard-bar mechanically connected to two electric motors, a generator, circuits, and circuit-closers therefor, and two automatic circuit-breakers for same, one of which consists of a connecting-bridge mechanically connected to the motor, and provided with a guiding-slide, through which the same is automatically lifted to break the circuit, substantially as specified.

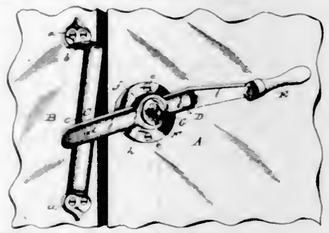
3. In an electric gate, the combination, with the gate proper, mechanically connected to two electric motors, provided with a generator, circuits, and automatic circuit-breakers, of circuit-closers therefor, consisting of a movable switching-conductor provided with a spring and carrying the armature of an electro-magnet, together with the said electro-magnet having its individual circuit, generator, and circuit-closer, substantially as specified.

4. The combination, with the posts and with gate-operating mechanism which includes pulleys, of a guard-bar suspended therefrom and provided with the semi-annular post-yokes *g* and *g'*, substantially as specified.



5. In an electric gate, the combination, with the gate-posts and cross-beam provided with a guard-bar suspended from pulleys and counterbalanced by weights, of an electric motor for lowering the said guard-bar, mechanically connected to the same, and provided with an electric generator, circuit, circuit-closer, and automatic cut-off, and another electric motor for opening the gate, with a generator, circuit, circuit-closer, and automatic cut-off therefor, substantially as specified.

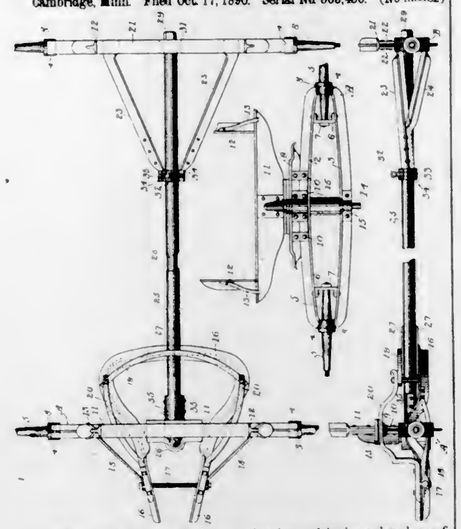
444,826. LATCH. CHARLES A. GLOEKLER, Pittsburg, Pa. Filed June 13, 1890. Serial No. 355,376. (No model.)



Claim.—1. The improved door fastener and opener, which consists of a cam-bar C and a rotary lever in combination therewith, one of said parts being carried by the door-jamb and the other by the door, said cam-bar extending longitudinally of and parallel with the meeting edges of said door and door-jamb, said cam-bar extending at an incline and so that a space is left between its under side and the part to which it is attached, whereby the working end of said lever may (when the door is closed) pass either above or below said cam-bar, depending on the direction in which it is moved, said cam-bar being curved or beveled on both its upper and lower faces along its longitudinal edge which is next to the meeting edges of the door and door-jamb, and the working end of said lever being also beveled on both its upper and lower surfaces, substantially as set forth.

2. The improved door fastener and opener, which consists of a cam-bar and a rotary lever co-operating therewith, one of said parts being carried by the door-jamb and the other by the door, the working end of said lever passing either above or below said cam-bar, depending upon the direction in which said lever is turned, in combination with a fixed bearing plate or disk F for said lever, said plate having a central projecting circular flange *f* and a central circular boss *g* projecting from said flange, said lever having an eye fitting over said boss, whereby said lever seats against said flange, a retaining screw-bolt G, which screws into said boss, and a disk or washer A, interposed between the head of said bolt and the outer face of said lever, substantially as set forth.

444,827. RUNNING-GEAR FOR WAGONS. HANS J. GOULDBERG, Cambridge, Minn. Filed Oct. 17, 1890. Serial No. 368,436. (No model.)



Claim.—1. In a wagon, the combination, with the axles thereof, of reversible spindles adapted to be secured thereto by screwing one of the tips of the spindle into a threaded opening in said axle, whereby the spindle is held rigidly in place and adapted to carry a wheel upon its outer end, substantially as and for the purposes set forth.

2. In a wagon, the combination, with the axle formed of two elliptically-curved members, of blocks rigidly secured between their meeting ends, having openings therethrough registering with each other, cross-bars between said axle members, having screw-threaded openings registering with the openings in said blocks, and double or reversible spindles removably arranged in the openings in said blocks and with their threaded tips screwed into the openings in said cross-bars, substantially as described.

3. In a wagon, the combination of the curved axle members 2 and 3, the blocks 4, secured between their adjacent ends, having openings therethrough in line with the axis of the axle, standards 6, secured between the members 2 and 3 and having screw-threaded openings in line with said axis, reversible spindles 5, removably inserted in the openings in said blocks with their tips screwed into said standards, and set-nuts 7, screwed upon the tips projecting through the standard 6, substantially as described.

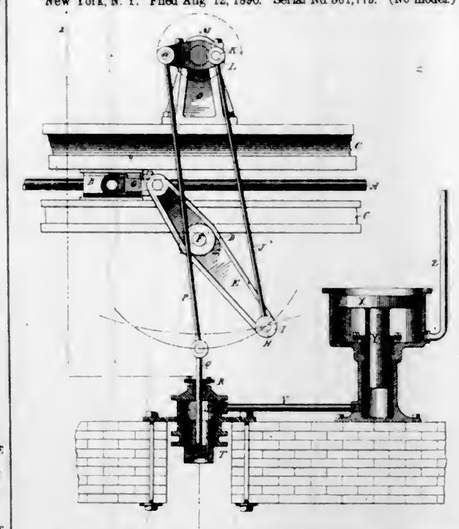
4. In a wagon, the combination, with the axle thereof, of a tubular metallic reach composed of telescoping members, the outer member having universal-joint connection with the forward axle and the inner member being rigidly secured to the rear axle and extending forward within the outer member, braces extending forward from the rear axle to said reach, a collar uniting the forward ends of said braces and surrounding the outer member of said reach, and a set-screw carried by said collar and engaging said outer member, substantially as and for the purposes set forth.

5. In a wagon, the combination, with its axles, of a telescoping tubular reach, the outer member being connected by a universal joint to the forward axle and the inner member rigidly connected to the rear axle, braces from said rear axle to said reach, a collar connecting said braces and surrounding said reach, a block carried by said collar and having freedom of circumferential movement, and a set-screw threaded in said block and bearing upon the outer member of said reach, substantially as described.

6. A metallic wagon running-gear comprising, in combination, a skeleton or frame made up of flanged or ribbed bars, a tubular telescoping reach, and reversible spindles rigidly but removably secured to the axles, substantially as and for the purposes set forth.

7. A wagon-axle comprising, in combination, a pair of oppositely-arched or elliptically-curved T-steel bars, with the cross-web of the bar forming the inner concave side, blocks rigidly connecting the adjacent ends of the bars, axle-openings therethrough, fixed cross-bars between the axle members, having axial threaded openings therethrough, and reversible spindles arranged in the openings in said blocks and with their tips screwed into said cross-bars, substantially as described.

444,828. DIRECT-ACTING STEAM-ENGINE. JOHN A. GROSHON, New York, N. Y. Filed Aug. 12, 1890. Serial No. 361,779. (No model.)



Claim.—1. The rocking lever E, connected at one end by the link G with the main piston-rod of the engine, and the auxiliary lever M, combined with the rod J, connecting the lower end of the lever E with one end of the lever M, and the rod P, passing from the other end of said lever M to a source of pressure to resist the movement of the main piston-rod during the first portion of its stroke and assist said rod during the latter part of its stroke, the elements specified being arranged and operating substantially as set forth.

2. The eccentrically-mounted rocking lever E, connected at one end with the main piston-rod of the engine, and the eccentrically-mounted auxiliary lever M, combined with the rod J, connecting the lower end of said lever E with one end of said lever M, and the rod P, passing from the other end of said lever M to a source of pressure to resist the movement of the main piston-rod during the first portion of its stroke and assist said rod during the latter part of its stroke, the elements specified being arranged and operating substantially as set forth.

3. The rocking levers E, connected at their upper end by the links G and slide B with the main piston-rod of the engine, and the auxiliary levers M, mounted above said levers E, combined with the rods J, connecting the lower end of the levers E with one end of the levers M, and the rods P, passing from the other end of said levers M to a source of pressure to resist the movement of the main piston-rod during the first portion of its stroke and assist said rod during the latter portion of its stroke, substantially as set forth.

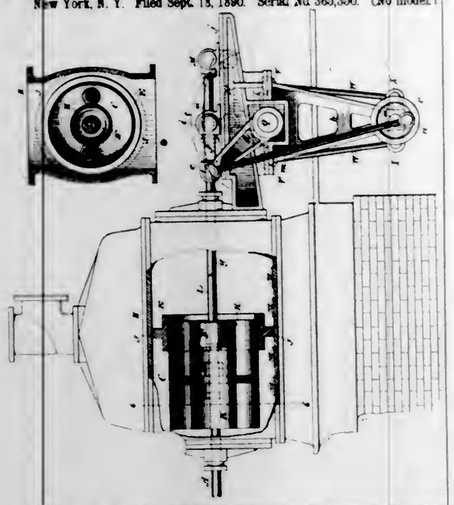
4. The rocking lever E, connected at one end with the main piston-rod of the engine, and the auxiliary rocking lever M, combined with the rod J, connecting the lower end of the lever E with one end of said lever M, the rod P, extending from the other end of said lever M, the piston connected with said rod P, and the cylinder receiving said piston and being in communication with a source of pressure, the elements specified being arranged and operating substantially as set forth.

5. The rocking lever connected at one end with the piston-rod of the engine and the auxiliary lever connected with the other end of said rocking lever, combined with the rod extending from said auxiliary lever, the piston connected with said rod, the cylinder receiving said piston, and the atmospheric accumulator in connection with said cylinder and containing differential pistons, substantially as set forth.

6. The atmospheric accumulator containing differential pistons and having the pipe leading thereto from the condenser and the cylinder and piston communicating with said accumulator, combined with

the system of levers under the pressure of said accumulator for opposing the movement of the piston-rod of the engine during the first portion of its stroke and assisting the same during the latter portion of its stroke, substantially as set forth.

444,829. DIRECT-ACTING STEAM-ENGINE. JOHN A. GROSHON, New York, N. Y. Filed Sept. 18, 1890. Serial No. 365,350. (No model.)



Claim.—1. In a direct-acting steam-engine, a plunger or plungers in the main water cylinder or cylinders and lever mechanism connecting the same with the main piston rod or rods, whereby the pressure in said cylinder or cylinders is caused to act in opposition to said rod or rods during the first portion of the stroke and in conjunction therewith during the latter part of the stroke, substantially as set forth.

2. In a direct-acting engine, the main water-cylinder having the usual plunger operable by the main piston-rod, combined with an auxiliary reciprocating plunger or plungers in said cylinder and lever mechanism connecting the same with the main piston-rod for transmitting the pressure of the water to the main piston-rod, the main and auxiliary plunger or plungers having a movement in opposite directions, substantially as and for the purposes set forth.

3. The main water-cylinder having the plunger and partition, combined with the auxiliary plunger or plungers whose ends are exposed to the pressure of the water at opposite sides of said partition and lever mechanism connecting the auxiliary plungers with the main piston-rod, whereby the pressure of the water may be caused to oppose the main piston-rod during the first portion of its stroke and to assist the same during the latter part of its stroke, substantially as set forth.

4. The water-cylinder with its main and auxiliary plungers, combined with lever *d*, the link connecting the same with the main piston-rod, the connecting-rod *m*, and intermediate mechanism between the end of said rod and the rod of the auxiliary plunger, whereby the pressure of the latter is transmitted to said rod *m*, substantially as and for the purposes set forth.

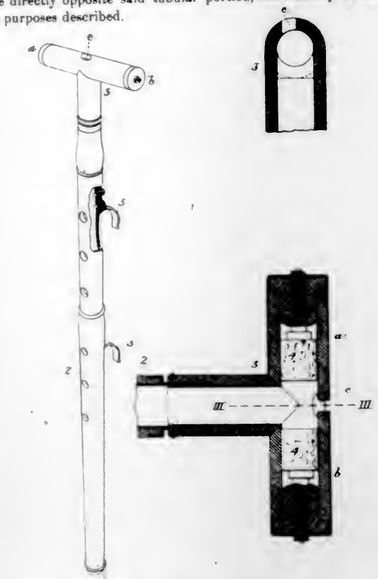
5. The water-cylinder with its main and auxiliary plungers, combined with the lever *d*, the link connecting the same with the main piston-rod, the connecting-rod *m*, connected at its upper end with the upper end of the lever *d*, the shaft *a*, the crank-wheel *c* thereon and securing the lower end of the rod *m*, the frame Z on the shaft *a*, the rods W, extending upward from opposite sides of said frame, and the lever P, connected with the upper ends of said rods W and by a link with the slide of the auxiliary plunger-rod, substantially as set forth.

444,830. FLUTE. KARL F. W. GUENTHER, Pittsburg, Pa., assignor of one third to Charles Davis-Carter, same place. Filed Sept. 13, 1890. Serial No. 364,837. (No model.)

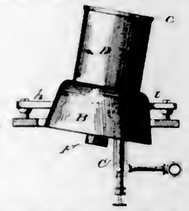
Claim.—1. A flute having a tubular portion, a lateral enlargement at the end, and an end flute mouth-hole situate directly opposite to the tubular portion, so that a straight passage for the wind from the mouth-piece through the tubular portion is afforded, substantially as and for the purposes described.

2. A flute mouth-piece having a tubular portion, lateral extensions at the end thereof, and an end flute mouth-hole directly opposite said tubular portion, substantially as and for the purposes described.

3. A flute mouth-piece having a tubular portion, lateral extensions at the end thereof, adjustable stoppers, and an end flute mouth-hole directly opposite said tubular portion, substantially as and for the purposes described.



444,831. CAN-SOLDERING MACHINE. THOMAS A. HAND, Baltimore, Md. Filed Nov. 14, 1890. Serial No. 371,454. (No model.)



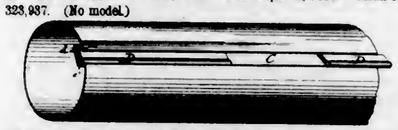
Claim.—1. In a can-soldering machine, the combination of a base having an inwardly-projecting flange at its upper end, a revoluble can-supporting disk having an outward and upward flame-spreading lower surface whereby the flame is deflected against the wall of the base, the upper surface of said disk being supported at a distance below the upper surface of the flange of the base approximating the depth of the flange on a can, a burner below the disk, and an annular flame-passage between the disk and the flange on the base.

2. In a can-soldering machine, the combination of a base having an inwardly-projecting flange provided with an upward-inclined flame-deflecting inner surface, a revoluble can-supporting disk, a burner below said disk, and an annular flame-passage between the disk and said flange.

3. In a can-soldering machine, the combination of a base having an inwardly-projecting flange at its upper end, a revoluble can-supporting disk, the upper surface of which is concave, and its bearing-surface for a can held at a distance below the upper surface of the flange of the base approximating the depth of the flange on a can and said disk provided with a convex flame-spreading lower surface, whereby flame is deflected against the wall of the base, a burner below the disk, and an annular flame-passage between the disk and the flange of the base.

4. In a can-soldering machine, the combination of a conical base open at both ends and having an inwardly-projecting flange at its contracted end, a revoluble can-supporting disk resting upon a spider, with its upper surface at a distance below the upper surface of the flange of the base approximating the depth of the flange on a can and having an outward and upward flame-deflecting lower surface, a burner under the disk within the base, and an annular flame-passage between the said disk and the flange on the base.

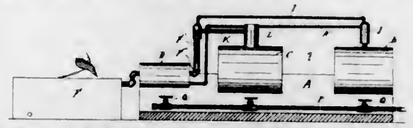
444,832. ATTACHING WINDOW-SHADES TO ROLLERS. STEWART HARTSHORN, Short Hills, N. J. Filed Sept. 14, 1889. Serial No. 323,937. (No model.)



Claim.—1. In a fastening for attaching shades to rollers, the combination, with a curtain-roller having a groove C, of a bar D, formed with a recess to receive the shade, said bar being adapted to be inserted in the groove C from the face of the roller, substantially as and for the purposes set forth.

2. In a fastening for attaching shades to rollers, the combination, with a curtain-roller having a groove C, of the folded bar D, adapted to receive the shade and to be inserted in the groove C from the face of the roller, substantially as and for the purposes set forth.

444,833. APPARATUS FOR REFINING OIL. BENJAMIN N. HAWES, Toledo, Ohio. Filed Dec. 2, 1889. Serial No. 332,179. (Model.)



Claim.—1. In an apparatus for refining oils, a steam-generator and an oil-vaporizing chamber, in combination with a desulphurizing-chamber containing gravel or other like substance, an intermediate chamber partially filled with gravel and connected with the desulphurizing-chamber, and pipes connecting the steam-generator and oil-vaporizing chamber with said intermediate chamber, as and for the purposes set forth.

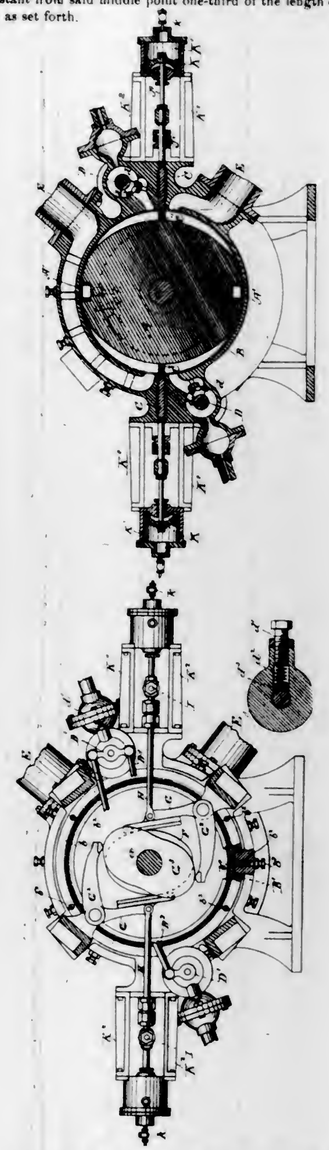
2. In an apparatus for refining oils, a steam-generator and an oil-vaporizing chamber, in combination with a desulphurizing-chamber containing gravel or other like substance, a series of steam-jets arranged to inject steam into the mass of gravel in the desulphurizing-chamber, an intermediate vertical chamber partially filled with gravel and connected with the desulphurizing-chamber, a steam-pipe leading from the generator into the upper portion of said vertical chamber, and a pipe leading from the oil-vaporizing chamber into the vertical chamber above the end of said steam-pipe, as and for the purposes set forth.

3. In an apparatus for refining oils, a steam-generator and an oil-vaporizing chamber, in combination with a horizontal chamber, a perforated plate dividing said chamber horizontally, the upper portion being filled with gravel, a steam-pipe leading from the generator into the lower portion of said chamber and there perforated, a vertical chamber partially filled with gravel and connected with the horizontal chamber, a steam-pipe leading from the generator into the upper portion of the vertical chamber, and a pipe leading from the vaporizer into the vertical chamber above the end of said steam-pipe, as and for the purposes set forth.

4. An apparatus for refining oils, comprising a steam-generator, an oil-vaporizing chamber, a desulphurizing-chamber filled with gravel, a condenser connected with the desulphurizing-chamber, a series of steam-jets arranged to inject steam into the mass of gravel in the desulphurizing-chamber, a vertical chamber partially filled with gravel and connected with the desulphurizing-chamber, a steam-pipe leading from the generator into the upper portion of the vertical chamber, a pipe leading from the vaporizer into the vertical chamber above the end of said steam-pipe, and means for heating the generator, the vaporizer, and the desulphurizing-chamber, for the purposes stated

444,834. ROTARY ENGINE. JOHN W. HAYES, Portsmouth, N. H., assignor to himself, Marcellus Eldredge, and Edmund S. Fay, same place. Filed Mar. 3, 1890. Serial No. 342,338. (No model.)

Claim.—1. In a rotary engine having a sliding piston-gate, a cam for controlling the motion of said gate, having a least diameter equal to the diameter of a circle whose circumference is of the length of the total piston travel per revolution of a reciprocating engine of any given or assumed capacity and having an outline formed of two arcs tangent to the said circle, their radii being of a length of the crank of the said reciprocating engine, and their centers lying in the said least diameter, and of two arcs having radii equal to one-half the length of the said crank, the centers of the two last-named arcs being in a line drawn through the middle point of said diameter and at right angles thereto, and distant from said middle point one-third of the length of the said crank, as set forth.



2. In a rotary engine having a sliding piston-gate, the combination, with a cam having the contour herein described, of a pivoted lever, a connection pivoted to the said lever at its free end and connected with the gate, and a face mounted upon the said free end of the lever opposite the said connection and bearing upon and operated by the said cam, substantially as set forth.

3. In a rotary engine having a sliding piston-gate, the combination, with a cam having the contour described, of a lever connected with and adapted to operate the said gate and having a face bearing upon and operated by the said cam, the said lever from its fulcrum to the point of its connection to the sliding gate being of a length equal to the length of the crank of the reciprocating engine with reference

to which the said cam is laid out, and the fulcrum of the said lever being located with reference to the center of the said cam in a line drawn through the same at an angle of forty-five degrees to the vertical or horizontal and at a distance therefrom equal to the square root of twice the square of the length of said crank, as set forth.

4. In a rotary engine, the combination, with a sliding piston-gate and a cam having the contour herein described, and lever constructed substantially as described, whereby the successive positions of the said gate are determined, of a pistoo having a common shaft with the said cam and having that portioo of its face opposed to said gate of a contour to correspond, when the piston is rotated, to the successive positions of the said gate as determined by the said lever and cam.

5. In a rotary engine having a sliding piston-gate and revolving piston, the combination of a cam mounted upon a shaft common with that of the piston, a lever operated by the cam, a connecting-rod from the lever to the gate, whereby the said gate is moved outwardly, or away from the piston, by the said cam, a steam-cylinder and a piston working therein and connected to the gate, and a steam-passage into the said cylinder in the rear of the piston or upon the side thereof farthest from the gate, whereby steam introduced into the said cylinder may operate to hold the lever at all times against the opposed face of the cam, substantially as and for the purposes set forth.

6. In a rotary engine, the combination, with the sliding gate, of an air and steam cushioning chamber, whereby the gate is cushioned by steam at the end of its outward travel and by air at the end of its inward travel, as set forth.

7. In a rotary engine having a sliding piston-gate, the combinatioo, with the said gate, of a piston K and cushioning-cylinder K', provided with steam-ports k and k' and air-port k^3, as described.

8. In a rotary engine, the combination, with a piston having its face tapered or recessed, as described, of a sliding piston-gate provided at its end next the said piston with a supplemental gate-block adapted to play as described, and tapered or beveled to fit the said tapered or recessed portion of the piston, as described.

9. In a rotary engine, the combination, with a sliding piston-gate C, of a supplemental gate-block C', fitted to its inner end, as described, and adapted to play both inwardly and outwardly and laterally with respect thereto, and a spring c', interposed between the inner end of the said sliding piston-gate and the supplemental gate-block to press the latter toward the face of the piston, as set forth.

10. In combination, the sliding piston-gate C, supplemental gate-block C', spring c', and gibs c^3, recessed at their inner ends to permit lateral play to the supplemental gate-block, as described.

11. In a rotary engine, a piston having its working-face formed with cylindrical outside portions and its intermediate portion made at two opposite points of slightly greater diameter than the said circular portion and gradually lessening between these points, as described, and for the purpose set forth.

12. In a rotary engine, a cylindrical piston having its working-face formed with cylindrical outside portions and an internal non-cylindrical or cam formed and recessed portion, the walls of the said grooved or recessed portion being tapered or beveled outwardly or toward the said cylindrical portions, as described, in combination with a sliding gate provided with a supplemental gate-block separate from said gate and having a similarly-tapered end portion to enter and match the said recess, as set forth.

13. In a rotary engine, the combination of the piston A, with hollowed-out portions, as described, a packing-block A', provided with supplemental sliding blocks a', levers A^3, posts A^2, and weights A^5, located within the hollowed-out portions, and rods A^4, pivoted to the said levers at their end opposite the said weights and connected to the said packing-blocks, as set forth.

14. In a rotary engine, the packing herein described, composed of the semicircular rings B', having one end secured as described, springs b^3, and tapering screw B, located at the free ends of said springs, as described.

15. In a rotary engine, the combination of main packing-rings B', recesses therein, supplementary packing-rings b^4, located in said recesses, springs b^2 and set-screws b^3 for pressing the said packing-rings B' against the piston by spring-pressure, and steam-passages b^5, passing through said main packing-rings and leading to the recesses containing the supplemental packing-rings, whereby the latter are packed upon the piston by steam-pressure, substantially as set forth.

16. In a rotary engine, the combination, with the cylinder-case B and packing-rings B', of the rings b, provided with flanges b', overlapping and covering the corners of the piston, as shown, said rings serving to hold the packing in place and said flanges to prevent the outward escape of fluid, as described.

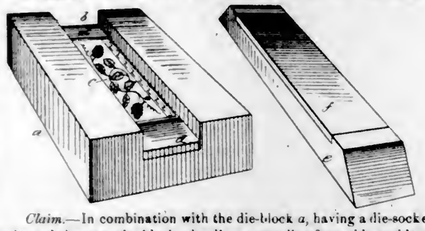
17. In combination, the piston A, having the circular portions a^3 and intermediate recessed portion, the sliding piston-gate C C', gibs c^3, packing-rings B' b^4, recessed cylinder B, and retaining-rings B^3, as described.

18. In a rotary engine, the combination, with a piston, of piston packing-blocks provided with laterally-movable supplemental packing-pieces a', as described.

19. In combination, the piston A, having the circular end portions a^3, piston packing-blocks A', supplemental blocks a', packing-rings B', recessed cylinder B, and retaining-rings B^3, as described.

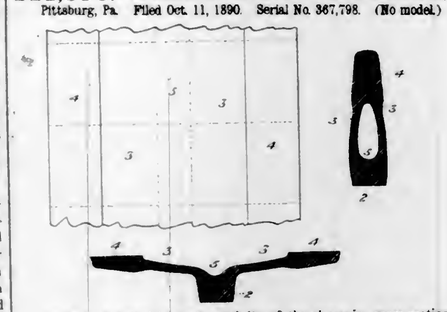
20. In a rotary engine, the combination, with the stem of the valve D, of the set-screw D', set in the steam-chest, covered spring d^3, and the follower d^3, bearing upon the stem of the said valve, whereby the spring may be compressed by the screw to force the follower down upon the valve-stem to hold the valve in place, as set forth.

444,835. **DIE FOR ORNAMENTING STRIPS OF METAL.** ARTHUR E. HOBSON, Hartford, Conn., assignor of one-half to I. J. Steane & Co., same place. Filed Mar. 15, 1890. Serial No. 344,061. (No model.)



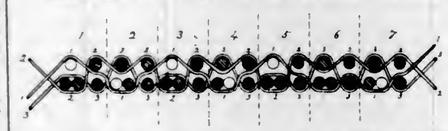
Claim.—In combination with the die-block a, having a die-socket b channeled across the block, the die c, extending from side to side of the socket and secured to the die-bed between end pieces in the socket, a platen adapted to fit within the socket and having the non-metallic working-face of leather or like material and held on all sides against lateral expansion when the die and block are in contact, all substantially as described.

444,836. **MANUFACTURE OF AXES.** CHARLES W. HUBBARD, Pittsburg, Pa. Filed Oct. 11, 1890. Serial No. 367,798. (No model.)



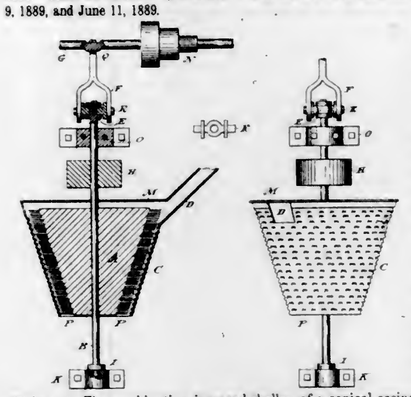
Claim.—A rolled bar substantially of the shape in cross-section shown in Fig. 2 and adapted to be divided into ax-poll blanks, substantially as and for the purposes described.

444,837. **INGRAIN CARPET FABRIC.** WILLIAM B. KREFER, Philadelphia, Pa. Filed Aug. 20, 1890. Serial No. 362,490. (Specimens.)



Claim.—An ingrain carpet fabric having two weft planes and having the warp-threads in sets of three warp-threads each and the weft-threads in sets of five weft-threads each, one plane of the weft-threads containing two weft-threads of a set and the other plane containing the remaining three weft-threads thereof, each weft-thread of the plane containing two weft-threads being bound by one of the warp-threads and the corresponding weft-thread or pair of weft-threads of the other weft-plane being bound by another warp-thread, while the remaining warp-thread lies in the middle of the fabric between the weft planes, and at each change in the position of the warp-threads one of the warp-threads passing from one face of the fabric to the other, thereby binding the two sides of the fabric together into a homogeneous fabric without pockets, substantially as described.

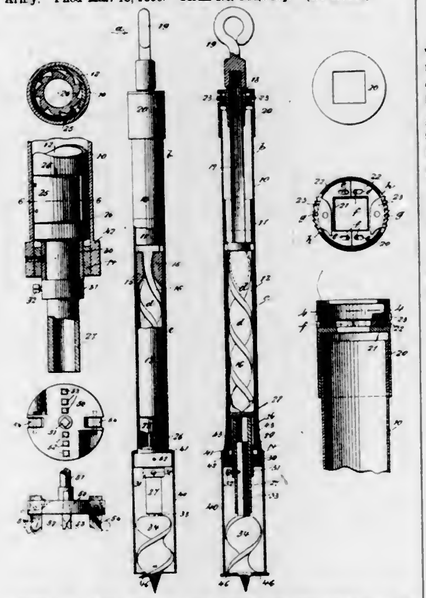
444,838. **SEED-SHELLER.** CHARLES A. LEES, Christchurch, and STEPHEN W. LESTER, Sydenham, assignors to the Canterbury (N. Z.) Seed Company, Limited, Christchurch, New Zealand. Filed June 6, 1890. Serial No. 354,525. (No model.) Patented in New Zealand Jan. 9, 1889, and June 11, 1889.



Claim.—1. The combination, in a seed-sheller, of a conical casing and conical brush therein, the spindle B, having the collar E, the clutch F, having the collar R, and the shaft G, having a crank Q connected with said clutch, whereby the brush is subjected to a circular and a vertical movement, substantially as described.

2. The combination, in a seed-sheller, of a conical casing having punched projections therein, as described, and a closed top, a conical brush therein, its spindle and pulley thereon to rotate it, with a clutch connected to said spindle, and a crank-shaft connected to said clutch, substantially as described.

444,839. **ARTESIAN-WELL BORER.** THOMAS H. LOGAN, U. S. Army. Filed Mar. 15, 1890. Serial No. 344,040½. (No model.)



Claim.—1. In an earth or rock auger, the combination, with a tube and a shank reciprocating in said tube and adapted to operate the auger, of dogs adapted to be projected through the tube by the reciprocation of the shank to engage the well-casing and hold the said tube from rotary movement, substantially as described.

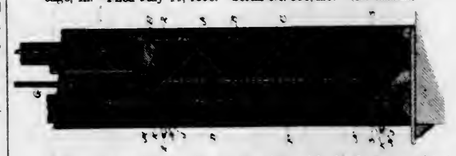
2. In an earth or rock auger, the combination, with a tube and a reciprocating shank provided with a wedge-shaped collar and adapted to operate the auger, of horizontal plates held to slide in the tube and engaged by said collar, and dogs carried by said plates, substantially as herein shown and described.

3. In an earth or rock anger, the combination, with an outer tube and means for preventing it from rotating, of an inner tube provided with inwardly-extending projections at its upper end, a tool-stock in the lower end of the inner tube, a reciprocating shank having a spiral extension, with which the projections of the tube engage and by which the said tube is rotated, and means for imparting the rotary movement of the tube to the tool-stock, substantially as and for the purpose set forth.

4. In an earth or rock auger, the combination, with the outer tube 10, the reciprocating shank 17, provided with the spiral extension 16, and means for preventing the tube from turning, of the inner tube 12, provided with the inwardly-extending projections 15 at its upper end and with the pawl 25 at its lower end, and the tool-stock 27, mounted to turn in the lower end of the tube 12 and provided with the ratchet 26, with which the pawl 25 engages, substantially as herein shown and described.

5. In an earth or rock auger or borer, the combination, with an inclosing tube, of a cap carried thereby and formed with slots in its peripheral face, and a partition 21, plates 22, held to slide upon the partition, dogs 23, pivotally connected to the plates 22 and formed with serrated edges, a rod-coupling shank formed with a spirally-grooved projection, a wedge-shaped sleeve 18, through which the shank passes, such sleeve being arranged to bear upon the plates 22, a tube 12, formed with projections 15, which enter the spiral groove of the rod-coupling-shank projection, a stock formed with a ratchet 26, a pawl carried by the tube 12 and arranged to engage said ratchet, and an inclosing casing 40, substantially as described.

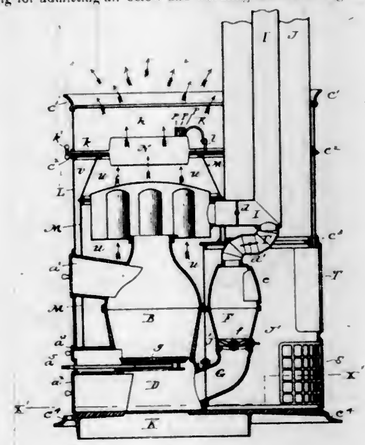
444,840. **WINDOW-BEAD FASTENER.** JOHN LOWENDAHL, Chicago, Ill. Filed July 11, 1890. Serial No. 358,425. (No model.)



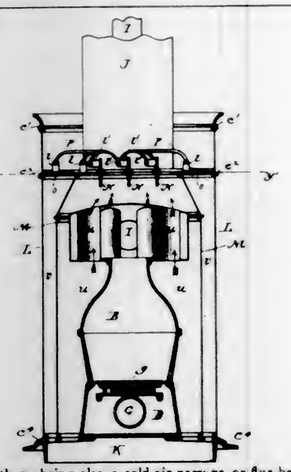
Claim.—In a window, the combination, with the frame provided with recesses along the inner edge thereof, the covering-plates for said recesses, provided with transverse slots extending inwardly from the edge thereof, the stop or guide-strip, and the parting-strip, of screw-bolts working in said slots and projecting through perforations in the guide-strip, said bolts being provided with heads engaging the under side of said plates, and thumb-nuts fitting the screw-threaded ends thereof, and lock-bolts working through guides on said plates and engaging the parting-strip, substantially as described.

444,841. **HYGIENIC STOVE.** FREDERICK W. MERRIAM, North Adams, Mass. Filed Feb. 26, 1890. Serial No. 341,841. (No model.)

Claim.—1. A portable stove or furnace having an outer and inner casing, there being suitable passages or flues inside of the inner casing for admitting air below and warming and delivering the same



444,841.



above the room, there being also a cold-air passage or flue between the outer and inner casings, and suitable valves placed within or over said passages or flues, said valves having intermediate rods and a central rod, all connected and adapted to be operated simultaneously by means of the said central and intermediate rods and to control the delivery of the air from said warm and cold air passages or flues to the room, all combined substantially as and for the purposes set forth.

2. In a hygienic stove or heater provided with an outer and inner casing, said casings forming the air-passages *u* and *v*, the valves N N N and O O O, placed above said passages *u* and *v* and separating them from chamber *h*, and provided with the connecting-rods *p* and the central rod *k*, in combination with said passages *u* and *v*, arranged and adapted to operate substantially as and for the purposes set forth.

3. In a hygienic stove adapted for warming and ventilating purposes, the auxiliary device herein described for creating an ascending current of air in the aspirating or ventilating flue, and consisting of the stove or heating device F and flue I′, in combination with smoke-pipe I, ascending inside the aspirating-flue, arranged and adapted to operate substantially as and for the purposes set forth.

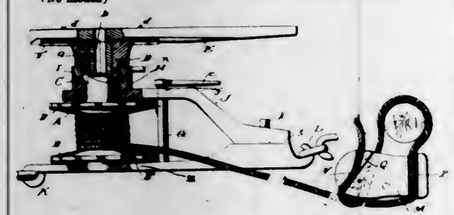
4. In a hygienic stove, the combination of the stove B and auxiliary device F, provided with the air and ash flue G, communicating with the ash-pit D and with the flue I′, and flues J and J′, communicating with the room, arranged to operate substantially as and for the purposes set forth.

444,842. PAINT. NATHAN J. MITCHELL, Philadelphia, Pa., assignor of one-half to Nathan M. Leathers, same place. Filed Oct. 25, 1890. Serial No. 369,364. (No specimens.)

Claim.—1. In a paint, the combination of a suitable vehicle for paints and a filler with plumbago, lime, salt, and coal-oil, combined in substantially the proportions specified.

2. In a paint, the combination of coal-tar, yellow ocher, plumbago, lime, salt, and coal-oil, combined in substantially the proportions specified.

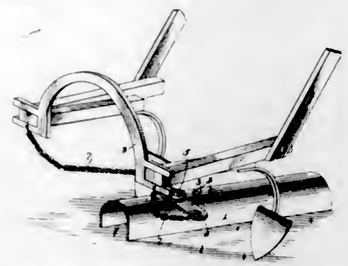
444,843. GRUBBING-MACHINE. CHARLES H. MOHLAND and LEOPOLD KERBER, Sigourney, Iowa. Filed July 5, 1890. Serial No. 357,807. (No model.)



Claim.—1. The main frame composed of the lower section having a hook or clevis at each end, and the upper removable section J, each provided with vertically-disposed aligned holes, in combination with the double pawl G, journaled in said holes, the handle on the upper end of said pawl, the drum having flanges at opposite ends provided with teeth, and also having its upper shaft provided with inclined teeth, the ratchet-ring secured to the upper face of the upper section J, the collar having a handle and having teeth adapted to engage those on said section, the draft-beam having a plain block on its under side, and a toothed clutch-section depending from said block and adapted to engage the teeth upon the shaft of the drum, substantially as specified.

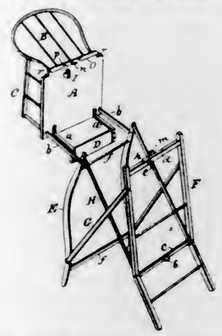
2. In a stump-puller, the combination, with a supporting-frame, of the winding-drum having the upper and lower toothed flanges B, and the shaft of said drum having a reduced portion at its upper end and a ratchet-face at the base of said reduced portion, a flange surrounding the shaft of the drum on the upper side of the frame and having inclined teeth, the ratchet-faced collar, the draft-beam journaled on the shaft of the drum and having a toothed depending portion to engage the teeth of the drum-shaft, and the pawl G, adapted to engage the toothed flanges B, substantially as specified.

444,844. METALLIC BOX OR ATTACHMENT, &c. FRANK E. MCMULLIN, Hastings, Iowa. Filed Apr. 20, 1889. Serial No. 308,038. (No model.)



Claim.—The combination, with the cultivator-frame, of the semi-cylindrical fender provided in front of its transverse center with a series of bolt-openings, the evening-bar, the bolt removably and pivotally connecting the bar with one of the adjusting-holes of the fender, and draft-chains connected to the opposite ends of the said bar and at their front ends to the frame of the cultivator, substantially as specified.

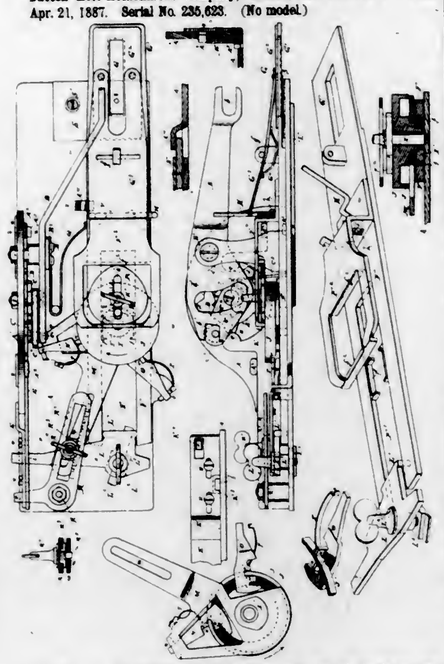
444,845. CONVERTIBLE CHAIR. HENRY ORCHARD, Peoria, Ill. Filed Aug. 7, 1889. Serial No. 320,066. (No model.)



Claim.—1. In a convertible chair, the combination, with a seat provided with a back and two fore legs fixed to said seat, of two rockers pivotally connected at their forward ends with said fore legs, two rear standards F, provided with a cross-bar *d*, braces G, pivotally connected with said rockers near their rear ends and with standards F near their upper extremities, braces H, provided with cross-bar *c* and pivotally connected with said rockers and with standards F, and devices for connecting said bars *c* and *d* severally with said seat, the parts being so constructed and connected that they may be adjusted either with the seat resting on the cross-bar *c* or on the cross-bar *d*, substantially as and for the purposes described.

2. The chair-seat provided with the catch I, beveled cleat *o*, and aperture *n*, in combination with the rear standards provided with cross-bar *d*, provided with projection *m*, and a spring-bolt *g*, which is mounted in bar *d* in position to connect with catch I, substantially as set forth and described.

444,846. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. JOHN H. PALMER, Philadelphia, Pa., assignor to the Acme Button Hole Attachment Company, Limited, New York, N. Y. Filed Apr. 21, 1887. Serial No. 235,623. (No model.)



Claim.—1. In a button-hole attachment, the cloth-clamp-operating lever F, having slot F′, the cam I′ for oscillating it in forming the ends of the button-hole, and slides *f*, interposed between said cam and faces of the slot F′, substantially as and for the purpose specified.

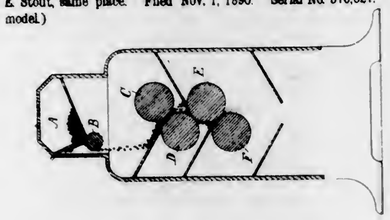
2. In a button-hole attachment, the main frame A A′, the reciprocating plate E, guided against part A′ of the main frame, and plate E′ secured to plate E and extending upon the other face of part A′ to hold plate E in position, and cloth-clamp-operating mechanism actuated by said reciprocating plate.

3. The combination of the vibrating cloth-clamp-operating lever F, having slot F′, the lever L, having adjustable fulcrum-block L^3 to vibrate lever F, the supporting-plate having the oblique slot L^4, and a reciprocating plate to vibrate the lever L.

4. The combination of the reciprocating plate E, the cloth-clamp-operating lever, cams to actuate said lever, a feed-wheel, a pivoted lever M, having a slot *m*, a clutch device between said lever M and feed-wheel, a pivoted lever R, having slot R^2, connecting said lever M and plate E, and an adjustable connection between levers M and R, substantially as and for the purpose specified.

5. The combination of the reciprocating plate E, the cloth clamp-operating lever, cams to actuate said lever, a feed-wheel, a pivoted lever M, having a slot *m*, a clutch device between said lever M and feed-wheel, a pivoted lever R, having slot R^2, and scale to indicate the different throws of the feed-wheel connecting said lever M and plate E, and an adjustable connection between levers M and R, substantially as and for the purpose specified.

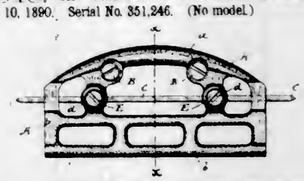
444,847. PROCESS OF COMMINUTING SEEDS AND SPICES. HENRY R. POMEROY, Indianapolis, Ind., assignor of two-thirds to Edward E. Stout, same place. Filed Nov. 1, 1890. Serial No. 370,027. (No model.)



Claim.—1. That improvement in the art of comminuting seeds or spices containing oil which consists in mixing with said seeds or spice previous to grinding the same a farinaceous absorbent, as wheat-flour or starch, and then grinding or otherwise reducing the compound to powder.

2. The improved product resulting from first enveloping seeds or spices containing essential oils in a dry absorbent and then grinding said mixture to powder.

444,848. SAW-JOINTER. RONELLO F. PRATT, Boston, Mass. Filed May 10, 1890. Serial No. 351,246. (No model.)



Claim.—1. A saw-jointer consisting of two pieces secured together by screws and having oblong slots or openings in which a file is held by means of four screws, substantially as shown and described.

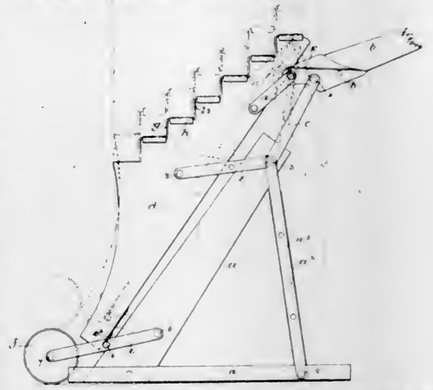
2. A saw-jointer consisting of two pieces A, secured together by screws B and having oblong slots or openings D to receive a file C, that is held therein by screws E, and a space F, in which the saw-teeth pass, and a space G for the blade of the saw, substantially as shown and described.

3. In a saw-jointer, a file held by set-screws in an oblong opening, whereby the full width of the file can be utilized, substantially as set forth.

4. A saw-jointer consisting of two pieces secured together by screws, the upper portion forming a handle and the lower portion a guide with a file adjustably secured therein, whereby the full width of the file can be utilized, substantially as set forth.

5. A saw-jointer consisting of two pieces secured together by screws, the upper portion forming a handle and the lower portion having openings to admit the saw-blade and teeth, and oblong slots in which a file is adjustably secured, substantially as set forth.

444,849. JACK. EDWIN PRESCOTT, Arlington, Mass. Filed Jan. 28, 1890. Serial No. 338,386. (No model.)



Claim.—1. A jack having a base, a standard thereon, and a co-operating notched lifting-head, combined with a wheel and connections between it and the said notched head, the said wheel being adapted to run on the floor when the notched head is down and to occupy a position above the floor when the notched head is raised, substantially as described.

2. A jack having a base, a standard, a notched lifting-head, pivoted links connecting the lower end of the head and the standard, and a wheel and connections between it and the said notched head, whereby the said wheel may run on the floor when the notched head is down, the wheel being lifted above the floor by the upward movement of the said head when the jack is in use, substantially as described.

3. In a jack, the base, the inclined standard, pivoted links *e* and *e′*, having their fulcra thereon, one at a considerable distance from the other with relation to a horizontal plane, combined with a notched lifting-head to which the outer end of the said links are connected, and

with a lever and links to connect the same with the said standard and with the said notched head, whereby the latter is raised in a substantially vertical direction, substantially as described.

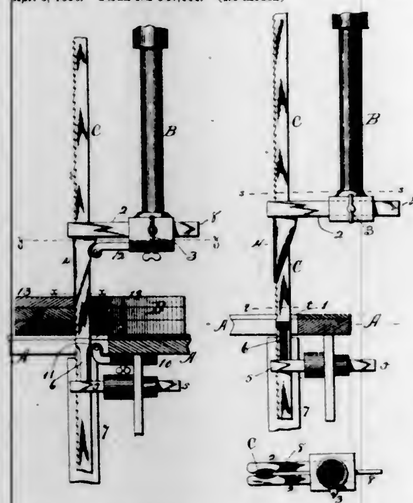
4. In a jack, the notched lifting-head, combined with the nonmetallic strips covering the vertical faces and upper corners of the said notches, and with metallic covering-caps placed upon the horizontal parts of the said notches, substantially as described.

444,850. **BURNER FOR NATURAL GAS.** FRANKLIN M. REED, Anderson, assignor of part to Stephen C. Keesling, George B. Best, and Jno. S. Moore, all of Muncie, Ind. Filed June 16, 1890. Serial No. 355,660. (No model.)



Claim.—In a burner for natural gas, the combination, with a perforated supply-pipe, of a porous sleeve surrounding said pipe and constituting the burner.

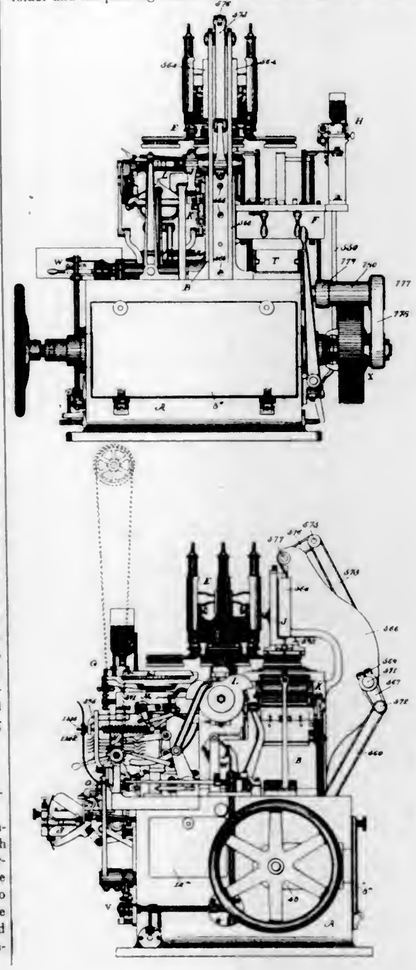
444,851. **SAW-GUIDE.** WILLIAM H. RICE, Syracuse, N. Y. Filed Apr. 3, 1890. Serial No. 347,101. (No model.)



Claim.—1. The combination, with the saw and the table provided with a saw-slot, of upper guide-bars mounted adjustably above the table and bearing against the sides of the saw, and guide-fingers dependent from the guide-bars and also bearing against the sides of the saw, and lower guide-bars supported beneath the table and bearing against the sides of the saw and elongated fingers carried by and projecting above the lower bars and having points on their upper ends engaging with the sides of the saw.

2. The combination, with the saw and the table provided with a saw-slot, of upper guide-bars mounted adjustably above the table and bearing against the sides of the saw, an adjustable back-rest between the bars, and guide-fingers dependent from the guide-bars and also bearing against the sides of the saw, and lower guide-bars supported beneath the table and bearing against the sides of the saw, an adjustable back-rest mounted between the lower guide-bars, and elongated fingers carried by and projecting above the lower bars and having points on their upper ends engaging with the sides of the saw.

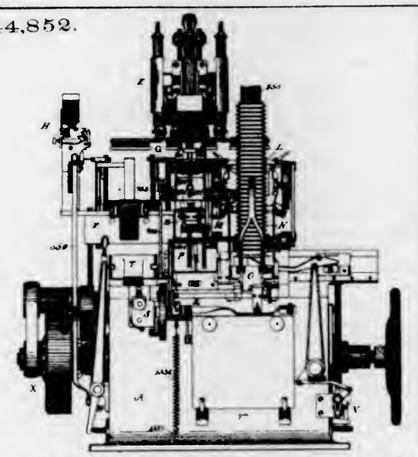
444,852. **ENVELOPE-MACHINE.** FRANCIS H. RICHARDS, Hartford, Conn. Filed May 7, 1890. Serial No. 350,923. (No model.)



Claim.—1. In an envelope-machine, the combination and organization, substantially as described, with the blank-supporter and with the bunch-receiving trough, of the intermittently-advancing picker-turret having pickers vertically movable for taking blanks from the blank-supporting mechanism and carrying the same from station to station in the picker-circuit, the blank-creaser located forward in the picker-circuit from the blank-station, the blank-folder located forward in the picker-circuit from the creasing-station, the picker-gummer intermediate to the folding and blank stations for regumming the pickers, the packing-box located adjacent to the bunch-trough, the bunch-plunger operating to eject the bunch from said box into the bunch-trough, the envelope-bander banding the bunch between the packing-box and the bunch-trough, the counter, connected substantially as described, for limiting the bunch-plunger movements, the envelope-carrier intermediate to the folding mechanism and the packing-box, envelope-transferrer taking the envelopes from the blank-folder and delivering them to the carrier, and a placer and plunger coacting to deliver the envelopes from the carrier into the packing-box, whereby the blank is gummed and picked up, creased, folded, transferred, and carried to be dried, and the completed envelopes packed, banded, and delivered in bunches.

2. In an envelope-machine, the combination and organization, substantially as described, with blank-supporter and with a bunch-receiving trough, of the intermittently-advancing picker-turret having outreaching pickers vertically movable for taking blanks from the blank-supporter and carrying the same from station to station in the picker-circuit, the creaser and printer located forward in the picker-circuit from the blank-station, a blank-folder located forward in the picker-circuit from the printing and creasing station, a picker-gummer intermediate to the folding and blank stations for regumming the pickers, the packing-box located adjacent to the bunch-trough, the plunger operating to eject the bunch from said box into the bunch-trough, the envelope-bander banding the bunch between the packing-box and the bunch-trough, the envelope-counter connected for limiting the bunch-plunger movements, the envelope-carrier intermediate to the blank-folder and the packing-box, the transferrer taking the envelopes from

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the blank-folder and delivering them to the carrier, and a placer and plunger coacting to deliver the envelopes from the carrier into the packing-box, whereby the blank is gummed and picked up, creased and printed, folded, transferred, and carried to be dried, and the printed envelopes packed, banded, and delivered in bunches.

3. In an envelope-machine, the combination and organization, substantially as described, with the blank-supporting mechanism, substantially as described, and with the bunch-receiving trough, of the intermittently-advancing picker-turret having outreaching pickers vertically movable for taking the blanks from the blank-supporting mechanism and carrying the same from station to station in the picker-circuit, the blank-creaser located forward in the picker-circuit from the blank-station, the folding-turret set radially to the picker-turret shaft and located forward in the picker-circuit from the creasing-station, a back-flap folder and a seal-flap folder coacting with said turret to fold the creased blank into an envelope, the envelope-carrier, the transferrer taking the envelope from the folding-turret and delivering the same to said carrier, the packing-box located adjacent to the bunch-trough, the bunch-plunger operating to eject the bunch from said box into said trough, and a placer and plunger coactiug to deliver the envelopes from the carrier into the packing-box, whereby the blank is gummed and picked up, creased, folded, transferred, and carried to be dried, and the completed envelopes packed and delivered one bunch at a time.

4. In an envelope-machine, the combinatiou and organization, substantially as described, with the blank-supporter and with the packing-box, of the intermittently-advancing picker-turret having pickers vertically movable for taking the blanks from the blank-supporter and carrying the same from station to station in the picker-circuit, the blank-creaser located forward in the picker-circuit from the blank-station, the folding-turret located forward in the picker-circuit from the creasing-station, a back-flap folder and a seal-flap folder coacting with said turret to fold the creased blank into an envelope, the envelope-carrier, the transferrer taking the envelope from the folding-turret and delivering the same to said carrier, the envelope-placer bringing the envelope into position on said way, and the plunger coacting with said placer to deliver the envelopes from the carrier into the packing-box, whereby the blank is gummed and picked up, creased, folded, transferred, and carried to be dried, and the completed envelopes packed into bunches.

5. In an envelope-machine, the combination and organization, substantially as described, with the blank-supporter and with the bunch-receiving trough, of the intermittently-advancing picker-turret having outreaching pickers vertically movable for taking the blanks from the blank-supporter and carrying the same from station to station in the picker-circuit, the creaser and printer located forward in the picker-circuit from the blank-station, the folding-turret set radially to the picker-turret shaft and located forward in the picker-circuit from the creasing and printing station, a back-flap folder and a seal-flap folder coacting with said turret to fold, crease, and print the blank into an envelope, the envelope-carrier, transfer apparatus, substantially as described, taking the envelope from the folding-turret and delivering the same to said carrier, the packing-box located adjacent to the bunch-trough, the plunger operating to eject the bunch from said box into said trough, and a placer and plunger coacting to deliver envelopes from the carrier into the packing-box, whereby the blank is gummed and picked up, creased and printed, folded, transferred, and carried to be dried, and the printed envelopes packed, banded, and delivered one bunch at a time.

6. In an envelope-machine, the combination and organization, substantially as described, with a central picker-shaft, of the picker-turret carried on said shaft and carrying vertically-movable picker-stems each having a pair of radially-projecting pickers, picker-actuating mechanism, substantially as described, carrying said pickers in succession to stations in the picker-circuit, a blank-supporter located at one of said stations, and blank-creasing mechanism, substantially as described, located at a succeeding station, whereby the blanks are taken up at one station and carried to and operated upon a succeeding station in the picker-circuit.

7. In an envelope-machine, the combination and organization, substantially as described, with a central picker-shaft, of the picker-turret carried on said shaft and carrying one or more vertically-movable picker-stems each having a pair of radially-projecting pickers, picker-actuating mechanism, substantially as described, carrying said pickers to successive stations in the picker-circuit, a blank-supporting mechanism, substantially as described, located at one said station, a combined creasing and printing mechanism, substantially as described, located at a second station, and a folding-turret, substantially as described, set radially to the picker-shaft and located at a third station in the picker-circuit, whereby the blanks are taken up at one station, creased and printed at a second station, and folded at a third station.

8. In an envelope-machine, the combination and organization, substantially as described, with a central picker-shaft, of the picker-turret carried on said shaft and carrying one or more vertically-movable picker-stems each having a pair of radially-projecting pickers, picker-actuating mechanism, substantially as described, carrying said pickers to successive stations in the picker-circuit, a blank-supporting mechanism, substantially as described, located at one said station, a blank-creasing mechanism, substantially as described, located at a second station, a blank-folding-turret mechanism, substantially as described, set radially to the picker-shaft and located at a third station, and a picker-gumming mechanism, substantially as described, located at a fourth station, whereby the blanks are taken up at one station, creased at a second station, delivered to the folding-turret at a third station, and the picker regummed at the fourth station.

9. In an envelope-machine, the combination and organization, substantially as described, with a central column and with the picker-shaft carried by said column, of the picker-turret carried on said shaft over said column, vertically-movable picker-stems carried on said turret and each having a pair of radially-projecting pickers, picker-actuating mechanism, substantially as described, carrying said pickers in succession to stations in the picker-circuit, and a series of mechanism, substantially as described, for supporting blanks, blank-creasing, blank-folding, and for gumming the pickers, said mechanisms being carried on said column at the stations in said circuit.

10. In an envelope machine, the combination, with the column B, carrying the picker-shaft, of the picker-turret carried on said shaft over said column, the vertically-movable picker-stems carried by said turret and each having a pair of radially-projecting pickers, the blank-supporter and a folding-turret carried on opposite sides, respectively, of said column, and a creasing mechanism, substantially as described, carried by said column intermediate to said blank-supporter and said folding-turret, said creasing mechanism having its upper die carried by the outwardly-curved creaser-upright 566, so that the said pickers may pass between the creasing-dies, substantially as described.

11. In an envelope-machine, the combination of the picker-shaft, a series of vertically-movable pickers carried on said picker-shaft, and a horizontal folding-turret having its axis substantially radial to the picker-shaft and geared to have simultaneous movements therewith, all substantially as described.

12. In an envelope-machine, the combination, with the folding-turret having end-fold wings and with means operating said wings, of the picker-turret carrying pickers vertically movable thereon, the axis of said fold-turret being substantially radial to the picker-shaft, and the two turrets being geared for simultaneous movement in opposite directions, all substantially as described.

13. In an envelope-machine, the combination, with the intermittently-advancing picker-turret, of a blank-creaser having lower and upper creasing-dies and located at a station in the picker-circuit, a vertically-movable picker-provided stem carried by said turret, outreaching picker-arms carried by said stem and arranged to pass between said dies from one side thereof, and picker-actuating mechanism, substantially as described, operating said stem to lower the same for presenting the blank onto the lower die, all substantially as described.

14. In an envelope-machine, the combination, with the intermittently-advancing picker-turret supported on the hollow picker-turret shaft, of a blank-creaser having lower and upper creasing-dies and located at a station in the picker-circuit, the vertically-movable picker-provided stem carried by said turret and having outreaching picker-arms arranged to pass between said dies from one side thereof, the

reciprocating cam-shaft carried in the picker-turret shaft, and the picker-cam fixed on said cam-shaft and operatively connected to actuate said picker at the creasing-station during the pauses in the picker-turret movement, whereby the blank is first presented between the creasing-dies and then lowered to the lower creasing-die, all substantially as described.

15. In an envelope-machine, the combination, with the fixed lower creasing-die, of a turret carrying outreaching pickers arranged to pass over said lower die, the upper creasing-die carried by the creasing-slide, a block adjustably fixed in said slide, and toggle levers or links operated to actuate said slide through said block and during the pauses in the picker-turret movement, all combined and operating substantially as described.

16. In an envelope-machine, the combination, with the intermittently-advancing blank-carrying pickers and with the fixed lower creasing-die, of a frame carrying the creasing-slide, the upper die on said slide above the lower die, and the lever 576, pivoted to said frame at a fixed point thereof and having a reciprocatory movement, said lever constituting one part of the slide-actuating toggle and being connected, substantially as described, to actuate said slide, all substantially as described.

17. In an envelope-machine, the combination, with intermittently-advancing blank-carrying pickers and with the fixed lower creasing-die and with the frame carrying the upper-die slide 595, of the shaft 571, having arm 568, lever 576, actuated by a rod from said arm, and connections, substantially as described, from said lever to said slide, the lever 576 constituting one part of one toggle and the arm 568 constituting one part of another toggle, said toggle working in opposition, all substantially as described.

18. In an envelope-machine, the combination, with the creasing mechanism, of the slide 595, lever 576, pivoted to the frame, block 581, carried clamped to the slide, link 578, connecting the lever and block, and the adjusting-screw connecting the slide and block for regulating the position of the slide on the frame, all substantially as described.

19. In an envelope-machine, the combination, with the picker-turret and with the folding-turret set radial to the picker-turret shaft and located at one of the stations of the picker-circuit, said picker and folding turrets being geared for movement in opposite directions, of the vertically-sliding picker-provided stem carried by said picker-turret, and the rotary reciprocating cam moving with said picker-turret during the forward movement thereof and imparting to said stem a vertical movement over the folding-turret while the picker-turret is at rest, all substantially as described.

20. In an envelope-machine, the combination, with the intermittently-advancing revolving picker-turret, of the gum-plate located at one station of the picker-circuit, blank-supporting apparatus located at a station forward of said plate, the vertically-sliding picker-provided stem carried by said picker-turret first to the gum-plate and afterward to the blank-station, and a picker-actuating cam operating to lower the picker onto the gum-plate at the one station and afterward onto the blank at the blank-station, all substantially as described.

21. In an envelope-machine, the combination, with the intermittently-advancing picker-turret provided with the picker-stem-carrying frame, of blank-supporting apparatus located at one station of the picker-circuit, blank-creasing mechanism located at a station forward of said apparatus and having the upper die carried by the overreaching frame, the vertically-sliding picker-stem provided with the outreaching pickers and carried by said frame first to the blank-station and afterward to the creasing-station, and a picker-actuating cam operating the picker-stem in said frame to lower the picker onto the blank at the blank-station and afterward to present the blank thus taken up onto the lower creasing-die, all substantially as described.

22. In an envelope-machine, the combination, with the intermittently-advancing picker-turret provided with a picker-stem-carrying frame, of creasing mechanism located at one station of the picker-circuit, the folding-turret set radially to the picker-turret shaft and located at a station forward of said creasing-station, the vertically-sliding picker-stem provided with the outreaching pickers and carried by the picker-turret first to the creasing-station and afterward to the folding-turret, and a picker-actuating cam operating said stem to first lift the blank from the lower creasing-die and afterward to lower the same to the folding-turret, all substantially as described.

23. In an envelope-machine, the combination, with the picker-turret and with the folding-turret, said turrets being geared and operating substantially as described, of the gum-plate located forward in the picker-circuit from the folding-turret, a vertically-sliding blank-carrying picker carried by the picker-turret first to the folding-turret and afterward to the gum-plate, and a picker-actuating cam operating the picker-stem first to deliver the blank to the folding-turret and afterward to lower the picker onto the gum-plate, all substantially as described.

24. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the gum-plate, blank-supporting apparatus, and blank-creasing mechanism located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by said picker turret to each said station successively and picker-actuating mechanism operating the picker, substantially as described, first to take gum from said plate, next to take up a blank at the blank-station, and afterward to present the blank onto the lower creasing-die, all substantially as described.

25. In an envelope-machine, the combination, with the intermittently-advancing picker-turret provided with the picker-stem-carrying frame and with blank-supporting apparatus, blank-creasing mechanism, and the folding-turret set radially to the picker-turret shaft and located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by said picker-turret to each said station successively and picker-actuating mechanism operating the picker, substantially as described, first to take up a blank, next to present the blank onto the lower creasing-die, and afterward to lower the blank to the folding-turret, all substantially as described.

26. In an envelope-machine, the combination, with the intermittently-advancing picker-turret provided with the picker-stem-carrying frame, of creasing mechanism located at one station of the picker-circuit and having upper and lower creasing-dies, folding-turret mechanism set radially to the picker-shaft and located at a station in the picker-circuit forward of said creasing-station, a vertically-sliding picker-stem provided with the outreaching pair of pickers and carried by said picker-turret to said stations successively, and the reciprocating cam 240, supported and actuated substantially as described and operatively connected to actuate said picker-stem, all organized and coacting to first lower the picker at the creasing-station, then raise said picker and carry the same to the folding-station, and next lower said picker at the folding-station, all substantially as described.

27. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with blank-creasing mechanism, the folding-turret, and the gum-plate, located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by the picker-turret to each said station successively and picker-actuating mechanism operating the picker, substantially as described, first to take the blank from the lower creasing-die, next to lower the blank to the folding-turret, and afterward to lower the picker onto said gum-plate, all substantially as described.

28. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the folding-turret, the gum-plate, and the blank-supporting apparatus, located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by the picker-turret to each said station successively and picker-actuating mechanism operating the picker, substantially as described, first to deliver one blank to the folding-turret, next to regum the picker by lowering the same onto the gum-plate, and afterward to take up a second blank at the blank-station, all substantially as described.

29. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the gum-plate, blank-supporting apparatus, and blank-creasing mechanism, located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by said picker-turret to each said station successively, the rotary reciprocating picker-cam, and cam-actuating mechanism operating said cam, substantially as described, first to gum the picker by lowering the same onto said gum-plate, next to take up a blank at the blank-station, and afterward to present the blank to the creasing mechanism, all substantially as described.

30. In an envelope-machine, the combination with the intermittently-advancing picker-turret and with blank-supporting apparatus, blank-creasing mechanism, and the folding-turret set radially to the picker-turret shaft and located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by said picker-turret to each said station successively, the rotary reciprocating picker-cam, and cam-actuating mechanism operating said cam, substantially as described, first to take up a blank by lowering the picker at the blank-station, next to present the blank to the blank-creasing mechanism, and afterward to lower the blank to the folding-turret, all substantially as described.

31. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with blank-creasing mechanism, the folding-turret, and the gum-plate, located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by the picker-turret to each said station successively, the rotary reciprocating picker-cam, and cam-actuating mechanism operating said cam, substantially as described, first to take the blank from the creasing mechanism, next to deliver the blank to the folding-turret, and afterward to regum the picker by lowering the same onto the gum-plate, all substantially as described.

32. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the folding-turret, the gum-plate, and the blank-supporting apparatus, located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by the picker-turret to each said station successively, the rotary reciprocating picker-cam, and cam-actuating mechanism operating said cam, substantially as described, first to deliver one blank to the folding-turret, next to regum the picker by lowering the picker at said station, next to regum the picker, and afterward to take up a second blank at the blank-station, all substantially as described.

33. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the gum-plate, blank-supporting apparatus, creasing mechanism, and folding mechanism, located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by the picker-turret to each said station successively, and picker-actuating mechanism operating the picker, substantially as described, first to gum the picker-face by lowering the picker onto said plate, next to take up a blank at the blank-station, then to present the blank to the creasing mechanism, and afterward to the folding mechanism, all substantially as described.

34. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the gum-plate, blank-supporting apparatus, creasing mechanism, and folding mechanism, located in the order named at stations in the picker-circuit, of the vertically-sliding picker carried by the picker-turret to each said station successively, the rotary reciprocating picker-cam, and cam-actuating mechanism operating said cam, substantially as described, first to gum the picker-face by lowering the picker onto said plate, next to take up a blank at the blank-station, then to present the blank to the creasing mechanism, and afterward to the folding mechanism, all substantially as described.

35. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the gum-plate, blank-supporting apparatus, creasing mechanism, and folding mechanism, located in the order named at stations in the picker-circuit, of the series of vertically-sliding pickers carried by said picker-turret and picker-actuating mechanism operating the pickers, substantially as described, to successively gum the each picker by lowering the same onto the gum-plate, to take up a blank with each picker successively, and to present the blank carried by each picker first to the creasing mechanism and afterward to the folding mechanism, all substantially as described.

36. In an envelope-machine, the combination, with the intermittently-advancing picker-turret and with the gum-plate, blank-supporting apparatus, creasing mechanism, and folding mechanism, located in the order named at stations in the picker-circuit, of the series of vertically-sliding pickers carried by the picker-turret, the rotary reciprocating picker-cam, and cam-actuating mechanism operating the pickers, substantially as described, to successively gum each picker by lowering the same onto the gum-plate, to take up a blank with each picker successively, and to present the blank carried by each picker first to the creasing mechanism and afterward to the folding mechanism, all substantially as described.

37. In an envelope-machine, the combination, with the folding-turret and its end-fold wings and end-fold cams and with the packing-box, of the envelope-carrier intermediate to the folding-turret and the packing-box, intermittently-acting transfer apparatus, substantially as described, intermediate to the folding-turret and carrier, the envelope-plunger arranged and operating to deliver envelopes from the carrier to the packing-box, the rock-shaft 119, operatively connected to actuate said plunger, rock-shaft 153, operatively connected to actuate said end-fold cams and to actuate said transfer apparatus, and connections actuating shaft 153 from shaft 119, all organized and coacting to take the envelope from the folding-turret to the carrier and afterward from the carrier into the packing-box, substantially as described.

38. In an envelope-machine, the combination, with the folding-turret and its end-fold wings and end-fold cams and with a packing-box mechanism, substantially as described, of the envelope-carrier intermediate to the folding-turret and the packing-box, intermittently-acting transfer apparatus, substantially as described, intermediate to the folding-turret and carrier, an envelope-plunger arranged and operating to deliver envelopes from the carrier to the packing mechanism, and the rock-shaft 153, connected to actuate the end-fold cams and the transfer apparatus and connected to actuate the packing-plate of the packing mechanism, said shaft having rotary reciprocating movements substantially in unison with the movements of said envelope-plunger, all organized and coacting to take the envelope from the folding-turret to the carrier and afterward from the carrier into the packing-box, substantially as described.

39. In an envelope-machine, the combination, with the picker-shaft and with the folding-turret set radially to the picker-turret shaft and geared to have simultaneous movements with said shaft, of the picker-turret carried by said shaft and carrying a series of vertically-sliding picker-stems carrying outreaching pairs of pickers, and picker-actuating mechanism, substantially as described, imparting to said stems successively a vertical movement in the picker-turret over said folding-turret, substantially as described.

40. In an envelope-machine, the combination, with the intermittently-advancing picker-turret, of the gum-plate located at a station in the picker-circuit, a series of vertically-sliding picker-provided stems carried by said turret, and picker-actuating mechanism, substantially as described, operating each picker-stem successively to lower the same in the picker-turret and onto said plate during the pauses in the turret movement, substantially as described.

41. In an envelope-machine, the combination, with the intermittently-advancing picker-turret, of the gum-plate located at a station in the picker-circuit, a series of vertically-sliding picker-provided stems carried by said turret, the rotary reciprocating picker-cam, and cam-actuating mechanism operating each picker successively to lower the same in the picker-turret and onto said plate during the pauses in the turret movement, all substantially as described.

42. In an envelope-machine, the combination, with the intermittently-advancing picker-turret, of the gum-plate geared to said turret to have simultaneous rotary movements therewith, a series of vertically-sliding pickers carried by said turret, and picker-actuating-mechanism operating said pickers successively to lower the same onto said plate during the pauses in the movement thereof, all substantially as described.

43. In an envelope-machine, the combination, with the intermittently-advancing picker-turret, of the vertically-movable picker-stem having thereon two pickers set at a distance apart, the revoluble gum-plate located at a station in the picker-circuit, and a gum-box extending over said plate between the descending pickers, all substantially as described.

44. In an envelope-machine, the combination, with the picker-turret, of the gum-plate bed vertically movable, substantially as described, the revoluble gum-plate on said bed, gum-spreading devices, substantially as described, over said plate, and gum-plate-bed-elevating devices arranged for raising said bed to bring the plate into contact with the descending pickers and to lower the same, substantially as described.

45. In an envelope-machine, the combination, with the picker-shaft and the picker-turret, of the gum-plate bed vertically movable, substantially as described, the revoluble gum-plate on said bed, gum-spreading devices, substantially as described, over said plate, gearing connecting said shaft and plate for simultaneous rotary movements, and elevating devices, substantially as described, raising and lowering said plate, substantially as described.

46. In an envelope-machine, the combination, with the picker-shaft and with the gum-plate bed vertically movable, substantially as described, of the revoluble gum-plate on said bed, the shaft 399, carried in said bed and engaging said plate, the spur-wheel 410 on said shaft, and gearing actuating said wheel from the picker-shaft, whereby the meshing of said wheels is unaffected by the movement of said bed, all substantially as described.

47. In an envelope-machine, the combination, with the bracket bored to receive the stem 398, of the bed 396, carrying the gum-plate and having the tubular stem 398 fitting said bore, the shaft extending through said stem and driving the gum-plate, means preventing the bed from rotating, and gum-plate-bed-elevating devices raising and lowering the bed and gum-plate on the bracket, substantially as described.

48. In an envelope-machine, the combination, with the gumming-mechanism bracket bored substantially as described, of the bed 396, carrying the gum-plate and having stem 398 fitting the bore in said bracket, and the crank engaging a notch in said stem for raising and lowering said bed and gum-plate, substantially as shown and described.

49. In an envelope-machine, the combination, with the bracket bored to receive stem 398, of the bed 396, carrying the gum-plate and having the stem 398 fitting said bore, the shaft 431, having a crank engaging said stem to slide the same, and the detent operating to detain said crank and thereby to detain the gum-plate in its upper or lower position, all substantially as described.

50. In an envelope-machine, the combination, with the revolving gum-plate and the gum-box thereon, of the scraper and guard 445, fitting the outer edge of said plate on the side thereof moving toward the gum-box, substantially as described.

51. In an envelope-machine, the combination, with the revolving gum-plate and the gum-box thereover, of the gum-gage fitted to move on an incline, substantially as described, and gage-adjusting means arranged to raise or lower said gage by imparting a longitudinal movement thereto, substantially as described.

52. In an envelope-machine, the combination, with the gum-plate bed, the revoluble gum-plate, and the gum-box, of the stop 401, fixed on said bed and engaging one end of said box, and a locking device, substantially as described, engaging the other end of said box, said locking device being hand-actuated, substantially as described.

53. In an envelope-machine, the combination, with the revoluble gum-plate and the gum-box thereover, of two adjustable gum-scrapers, one at each side of and at opposite ends of said box, whereby the

gum on one exposed side of said plate may be regulated independently of the other said side, all substantially as described.

84. In an envelope-machine, the combination, with the gum-plate and with the gum-box over said plate and having the inclines thereon, of the scraper fitting said inclines and the adjusting-screw journaled in the box and engaging said scraper for longitudinally moving the same, substantially as described.

85. In an envelope-machine, the combination, with the gum-plate and with the gum-box fixable thereover and having the passage 484, of the bottle-supporting devices supporting the gum-bottle in position over the receptacle 483, communicating with said passage, substantially as shown and described.

86. In an envelope-machine, the combination, with the picker shaft and turret carrying ontreaching pairs of pickers and with the intermittently-revolving folding-turret set radially to the picker-shaft and geared for movement in a direction opposite to the picker movement and having folding-plates provided with the end-fold wings, of the rotary reciprocating cams operated forwardly during the movement of said turret and backwardly while the turret is at rest, said cams having grooves engaging the roller-provided arms of the end-fold wings and said turret being operated independently of said cams, all substantially as described.

87. In an envelope-machine, the combination, with the intermittently-revolving picker-shaft and the folding-turret driven by gearing therefrom, of the end-fold wings, the end-fold cams, and cam-reciprocating devices imparting rotary reciprocating movements to said cams, all combined and operating substantially as described.

88. In an envelope-machine, the combination, with the intermittently-revolving picker-shaft and with the fixed turret-supporting sleeve, of the turret-shaft in said sleeve and geared to be driven from the picker-shaft, the turret on said sleeve and connected to its said shaft, the end-fold wings on the turret, the end-fold cams operatively connected with said wings, and cam-reciprocating devices, substantially as described.

89. In an envelope-machine, the combination, with the picker-shaft and with the fixed folding-turret-supporting sleeve set radially to the picker-shaft, of the folding-turret shaft carried in said sleeve and actuated from the picker-shaft by gears, substantially as described, the sleeve 827, carried on said fixed sleeve and operatively connected to the outer end of the folding-turret shaft, the folding-turret fixed to the inner end of said sleeve 827 and having the end-fold wings, and the oppositely-disposed cams, one carried on said fixed sleeve and the other carried on said sleeve 827, said cams being connected for rotary reciprocating movement and engaging the end-fold wings, all substantially as described.

90. In an envelope-machine having revolving pickers and folding-turrets, the combination, with the picker-turret shaft, of the fixed sleeve 826, set radially to said picker-shaft, the folding-turret-actuating shaft carried in said fixed sleeve, the gear 824, fixed on said folding-turret shaft, the adjustable gear 816 on the picker-shaft below the folding-turret shaft and meshing with said gear 824, and means adjusting the picker-shaft gear, substantially as described.

91. In an envelope-machine, the combination, with the folding-turret and the end-fold wings, of the end-fold cam and the adjustable eccentric-stud in said wing, whereby the pressure of said wing when closed may be regulated, all combined and operating substantially as described.

92. In an envelope-machine, the combination, with the folding-turret and the end-fold wing, of the end-fold cam, the eccentric-stud 841, adjustably fixed in the wing and carrying a roller engaging the cam, and the clamp-screw in the wing-arm for holding in place said stud, substantially as shown and described.

93. In an envelope-machine, the combination, with the main shaft and with the rock-shaft 119, actuated therefrom, of the intermittently-revolving picker-shaft actuated from the main shaft and carrying a picker vertically movable on said shaft, picker-actuating mechanism, substantially as described, operating to raise and lower the picker, the folding-turret set radially to the picker-shaft and actuated substantially as described and having end-fold wings, the end-fold cams, and connections from shaft 119 to operate said cams forwardly during the movement of said picker-shaft and backwardly during the pauses in the turret movement, whereby the blank is clamped to the folding-turret while carried by the picker, all substantially as described.

94. In an envelope-machine, the combination, with the main shaft and with the rock-shaft 119, actuated therefrom, of the intermittently-revolving picker-shaft actuated from the main shaft and carrying a vertically-movable picker, picker-actuating mechanism, substantially as described, operating to raise and lower said picker over the folding-turret, the folding-turret set radially to the picker-shaft and actuated substantially as described and having end-fold wings, the end-fold cams, rocker 167, actuated from shaft 119 and having arms 159, and connections 848 and 849, all substantially as described.

95. In an envelope-machine, the combination, with the main shaft and with the rock-shaft 119, actuated therefrom, of the intermittently-revolving folding-turret positively geared, substantially as described, to the picker-shaft and carrying end-fold wings, the end-fold cams, the end-fold rocker, connecting-rods from said rocker to said cams, arm 140 on shaft 119, and connecting-rod 160, all substantially as described.

96. In an envelope-machine, the combination, with the main shaft, of the intermittently-revolving picker-shaft actuated therefrom and carrying a vertically-movable outreaching picker, an eccentric on the main shaft connected by picker-actuating mechanism, substantially as described, to raise and lower said picker independently of the picker-shaft movements, the folding-turret set radially to the picker-shaft and geared thereto and carrying end-fold wings, and coonections, substantially as described, operating said wings, whereby the picker is first lowered to deliver a blank onto the turret and the said wings then operated to clamp the blank onto the turret, all substantially as described.

97. In an envelope-machine, the combination, with the intermittently-rotating folding-turret having folding-plates and end wings on said plates for clamping the envelope-blank thereto, of the lever 875, the seal-fold carrier pivoted to the upper end of said lever and provided with a seal-folder 867, the seal-folder arm 878, the spring 871, and cams, substantially as described, operating said lever and seal-folder arm, substantially as described.

98. In an envelope-machine, the combination, with a picker-turret frame 210, fixedly carried on the hollow picker-shaft, of the picker-frame, the roller-provided picker-stem fitted to slide in bearings in said picker-frame, the picker-cam and its shaft, and an outreaching guide-arm, substantially as described, preventing said stem from turning in its bearings, all substantially as described.

99. In an envelope-machine, the combination, with the picker-frame and picker-stem carried substantially as described, of the cam 240, the arm 215, fixed on said stem and furnished for bearing on said cam, and a guide engaging the inner end of said arm, all combined and operating substantially as described.

100. In an envelope-machine, the combination, with the picker-frame and picker-stem carried substantially as described, of the shaft 241 and cam 240, arm 215, having ear 215^a, carrying stud 218 and roll 217, and a guide engaging the inner end of said arm, all combined and operating substantially as described.

101. In an envelope-machine, the combination, with the picker-frame and the hollow picker-stem carried substantially as described in said frame, of the cam 240, the spring in said stem, and the spring-adjustment, substantially as described.

102. In an envelope-machine, the combination, with the picker-frame and the picker-stem carried substantially as described, of the cam 240, the arm 215, the guide-sleeve 243, carried substantially as set forth, and the guide-cap 244, said guide-arm being fitted to slide between said sleeve and cap, substantially as described.

103. In an envelope-machine, the combination, with the picker-turret frame, the picker-frames carried thereby, and the picker-stems, of the cam 240, the guide-sleeve carried substantially as set forth, a guide-arm 215, one for each stem, and a guide-cap for each said arm, all substantially as described.

104. In an envelope-machine, the combination, with the picker mechanism thereof and with the picker-stem having formed thereon the plate 214, of the oppositely-disposed outreaching picker-arms adjustably fixed on the opposite ends of said plate, said arms being each provided with picker-faces yieldingly carried thereon, substantially as described.

105. In an envelope-machine, the combination, with the main cam-shaft and with the picker-turret shaft carrying a series of picker-frames having upper and lower bearings, of the picker-stems carried in said bearings and having guides preventing rotation thereof in said bearings, the cam and roll-turret intermittently actuating said turret-shaft, the picker-cam shaft furnished and connected to actuate said picker-stems, and a rock-shaft connected to be actuated from said main cam-shaft and connected to actuate said picker-cam shaft, all substantially as described.

106. In an envelope-machine, the combination, with the main cam-shaft and with the picker-turret shaft carrying a series of picker-frames having upper and lower bearings, of the picker-stems carried in said bearings and having guides preventing rotation thereof in said bearings, picker-shaft-actuating devices, substantially as described, intermittently actuating said picker-turret shaft, the picker-cam shaft within said turret-shaft and furnished and connected, substantially as described, to actuate said stems, the rock-shaft 119, actuated substantially as described, the segment 135 on said rock-shaft, and the gear 250, fixed on said picker-cam shaft and meshing with said segment, all substantially as described.

107. In a printing envelope-machine, the combination, with the printing-slide and with the cam 102, of the rocker having arms 649 and 654 and carried on shaft 652, a spring connected to retract said slide, and the link 655, connected to an eccentric carried on the slide, said eccentric being fitted for operation by hand and having the spring-actuated index-pin 669 for locking said eccentric in its respective positions, all substantially as described.

108. In an envelope-machine, the combination, with the folding-turret and the envelope-carrier belt, of the transfer-trough leading from said turret to said belt and reciprocating transfer devices, substantially as described, constructed to first grasp and then take the envelopes from the turret and to pass the envelopes first to the trough and then from the trough to between the fingers of the carrier, substantially as described.

109. In an envelope-machine, the combination, with the folding-turret and the envelope-carrier, of the transfer-trough leading from said turret to said carrier, the detent-latches 946 and 946^a, and reciprocating transfer devices, substantially as described, constructed to convey the envelopes along said trough by successive steps, substantially as described.

110. In an envelope-machine, the combination, with the folding-turret and the transfer-trough, of reciprocating transfer devices having the gripper-fingers 886 and 891 operated to take the envelope from said turret and to deliver the same into said trough, all substantially as described.

111. In an envelope-machine, the combination, with the folding-turret and the transfer-trough, of reciprocating transfer devices, substantially as described, having gripper-fingers taking the envelope from the turret to the trough, and pushers 920, pushing the envelope along in the trough, all substantially as described.

112. In an envelope-machine, the combination, with the folding-turret and the transfer-trough, of reciprocating transfer devices, substantially as described, having the gripper-fingers 891, and the upper gripper 886, pivoted at 887 and spring-held against a stop carried by the transfer-arm, all substantially as described.

113. In an envelope-machine, the combination, with the folding-turret and the transfer-trough, of reciprocating transfer devices, substantially as described, having the gripper-finger 891, carried by the rock-shaft 917, and a friction-clamp 904, connected to actuate said rock-shaft in its bearing on the reciprocatory movement of the transfer-arm carrying said shaft, all substantially as described.

114. In an envelope-machine, the combination, in the creasing mechanism thereof, of an upper die and a lower die consisting of separate movably-supported sides, each having a lower creaser-blade and an upper spring-plate, said sides being constructed to close toward the upper die on the downward movement thereof, substantially as described.

115. In an envelope-machine, the combination, in the creasing mechanism thereof, of an upper die and a lower die consisting of separate parts yieldingly held, substantially as described, and each having a creasing-groove formed between two spring-plates, all substantially as described.

116. In an envelope-machine, the combination, in the creasing mechanism thereof, of the upper die and the lower die consisting of separate parts yieldingly held, substantially as described, and each having a creasing-groove formed between a lower blade and an upper spring-plate divided by cuts distributed along the edge thereof, substantially as described.

117. In an envelope-machine, the combination, in the creasing mechanism thereof, of the upper die and the lower die consisting of separate parts yieldingly held, substantially as described, and each having a creasing-groove formed between two spring-plates, each divided by cuts distributed along the edges thereof, substantially as described.

118. In an envelope-machine, the combination, in the creasing mechanism thereof, of the upper die and the lower die consisting of separate parts yieldingly held, substantially as described, and each having a creasing-groove formed between two spring-plates, each divided by cuts distributed along the edge thereof, the cuts in one said blade being located between the cuts of the other blade, substantially as described.

119. In an envelope-machine, the combination, with the envelope-way and guides leading to said way, of the intermittently-acting carrier bringing the envelope approximately to said way, the placer operating to bring the envelope to position on said way, and a reciprocating plunger pushing the envelope along said way, all combined and operating substantially as described.

120. In an envelope-machine, the combination, with the envelope-way and guides leading to said way, of the intermittently-acting carrier bringing the envelope approximately to said way, the placer operating to bring the envelope to position on said way, an envelope-plunger, substantially as described, and a counting-arm, substantially as described, operating in connection with the placer and constructed to be pushed forward by the envelope when this is brought to place, all combined and operating substantially as described.

121. In an envelope-machine, the combination, with the envelope-way, of the intermittently-acting carrier bringing the envelope approximately to said way, the reciprocating placer operating to bring the envelope to position on said way, the counting-arm operating in connection with the placer and constructed to be pushed forward by the envelope when this is brought to place, and a cam, substantially as described, engaging said arm to farther throw forward the same when the counting-arm has first been operated by the envelope, all combined and operated substantially as described.

122. In an envelope-machine, the combination, with the reciprocating placer and the counting-arm constructed to be partially operated by the envelope carried forward by said placer, of the cam 1009, carried by the placer and engaging said arm to complete the forward movement thereof, and the cam 1008, constructed and arranged to retract the counting-arm on the return movement of the placer.

123. In an envelope-machine, the combination, with the reciprocating placer and the counting-arm constructed to be partially thrown forward by the envelope carried forward by said placer, of the releaser-cam 1011, fixed on said counting-arm, and the cam 1009, located on said placer to pass above said releaser-cam in the absence of an envelope and to engage said releaser-cam when the counting-arm is partially thrown forward, substantially as described

124. In an envelope-machine, the combination, with the envelope-way and the placer and with the envelope-plunger arranged to slide envelopes longitudinally of said way, of the counting-arm constructed to be partially operated by the envelope carried forward by the placer, and counting-arm-actuating devices, substantially as described, constructed and operating to farther throw back the counting-arm when this has been partially thrown back by the envelope forward of the plunger, whereby the envelope is released from pressure between the placer and the counting-arm prior to being slid along the envelope-way by the plunger, all substantially as described.

125. In an envelope-machine, the combination, with the envelope-way, the placer, and the counting-wheel, and with a counting-arm, substantially as described, connected to actuate the counting-wheel and arranged to be operated by an envelope forward of said placer and having the cam 1011 and the stud or roller 1001, of the cam 1009, located on the placer to engage said cam 1011 when the placer moves forward after the counting-arm has been thrown partially forward by the envelope, and the cam 1008, carried on the placer and constructed to engage said stud or roller 1001 on the return movement of the placer, substantially as described.

126. In an envelope-machine, the combination, in counting apparatus, of the notched wheel 1020, the envelope-way, the placer operated, substantially as described, to bring envelopes to said way, the counting-arm operatively connected to actuate said wheel on the return movement of said placer, and cams, substantially as described, operating said arm from the placer.

127. In an envelope-machine, the combination, with the envelope-way, of the placer-slide intermittently actuated to bring envelopes to said way and having slots 988, of the counting-arm 998, having the fingers 1000 located to enter said slots in the absence of an envelope, substantially as described, and for the purpose specified.

128. In an envelope-machine, the combination, with the envelope-way and with the reciprocating placer-slide, of the main cam-shaft 70, a cam on said shaft connected to actuate said slide, the envelope-plunger operatively connected to be actuated by the rock-shaft 1050, and an eccentric on said shaft 70, operatively connected to actuate said shaft 1050, all being organized and coacting, substantially as described, to throw forward said plunger while the placer stands at rest in its forward position, substantially as set forth.

129. In an envelope-machine, the combination, with the envelope-way and the endless carrier intermittently actuated and having carrier-fingers 956, of the side guides 982 and 983, the rear guide 981, and the envelope-placer 986, supported and operated, substantially as described, to engage and move forward the lower edge of an envelope resting on said rear guide near to said way, substantially as described, and for the purpose specified.

130. In an envelope-machine, the combination, with the packing-box and the envelope-plunger, of two packing-plates operating to open one in advance of the other, substantially as described, and for the purpose specified.

131. In an envelope-machine, the combination, with the packing-box, of the bunch-plunger and two packing-plates operating to open, the one prior to the other after the completion of the forward stroke of the bunch-plunger, whereby an envelope is permitted to enter the box before the bunch entirely leaves the same, substantially as described.

132. In an envelope-machine, the combination, with the packing-box frame, of the pivot-shaft over said frame and the two packing-plates located side by side and together closing the front of said box, said plates being adapted for independent operation.

133. In an envelope-machine, the combination, with the packing-box, of the envelope-way leading to said box, the envelope-plunger delivering envelopes from said way into said box, a bunch-plunger arranged to eject the bunch of envelopes out of said box, a notched stop-

wheel holding the bunch-plunger retracted, and counting apparatus, substantially as described, connected to turn said wheel on the delivery of an envelope to said way, whereby the envelopes are driven from the packing-box at each revolution of said stop-wheel, substantially as described.

104. In an envelope-machine, the combination, with the packing-box and with the two packing-plates located side by side and together closing the front of said box, of the envelope-plunger operated to deliver envelopes into said box when the plates are opened and a bunch-plunger operated to drive the envelopes out of said box when the plates are closed, substantially as described.

105. In an envelope-machine, the combination, with the packing-box and with the envelope-way leading to said box, of the two packing-plates located side by side and together closing the front of said box, the envelope-plunger operated to deliver envelopes from said way into said box when the plates are opened, and packing plate-operating cams and connections, substantially as described, constructed to open one plate in advance of the other plate, whereby the envelope-plunger may slide an envelope into the box behind the first-opened plate before the second plate is opened, all substantially as described.

106. In an envelope-machine, the combination, with the packing-box and with the two packing-plates located side by side and together closing the front of said box, of packing-plate-actuating devices, substantially as described, opening one packing-plate in advance of the other and closing both packing-plates simultaneously.

107. In an envelope-machine, the combination, with the packing-box and with the two packing-plates located side by side and together closing the front of said box, of the oscillating packing-plate-actuating cams operatively connected, substantially as described, to open one plate in advance of the other and to close both plates simultaneously, substantially as described.

108. In an envelope-machine, the combination, with the packing-box having the curved supporting-plate 1100 and with the swinging packing plate or plates thereof, of the hook forward of the lower side of said box, said hook being operated to be retracted just prior to the completion of the closing movement of said plate or plates and to be projected prior to the opening of said plate or plates, whereby the envelopes already in the box are detained therein during the opening of the packing-plate, all substantially as described.

109. In an envelope-machine, the combination, with the packing-box having the curved supporting-plate 1100 and with the swinging packing plate or plates, of the hook 1143, carried by an arm adapted to have a vertical movement, and hook-actuating devices, substantially as described, constructed and arranged to lower said arm during the closing of the said plate or plates.

110. In an envelope-machine, the combination, with the packing-box and the packing plate or plates, of the hooks 1136 and 1143, carried by the arms 1138 and 1145, pivotally supported at the back of the box and connected for simultaneous operation, substantially as described.

111. In an envelope-machine, the combination, with the packing-box and the packing plate or plates, of the upper hook 1136, carried by arm 1138, pivotally supported at 1139 and operated in one direction by spring 1148, the lower hook 1143, carried by arm 1145, pivotally supported at 1146 and constructed to bear at its upper end against the end of arm 1138 in opposition to spring 1148, and a cam located and operating to impart an intermittent movement to arm 1145, whereby said hooks are simultaneously withdrawn by said cam and simultaneously thrown forward by said spring.

112. In an envelope-machine, the combination, with the packing-box and its packing plate or plates, of the hook-provided arms 1138 and 1145, carried by shafts and connected for simultaneous operation, one of said shafts having the dog 1151, and the latch-cam 1152, carried by a reciprocating arm and engaging said dog to operate said hooks, all substantially as described.

113. In an envelope-machine, the combination, with the packing-box and packing-plates, substantially as described, and with the guide-blocks 1160 and 1162, of the bunch-plunger guided between said box and guide-blocks and having an arm extending between said guides into the box and carrying the plunger-plates for ejecting the envelopes.

114. In an envelope-machine, the combination, with the packing-box and with its packing-plates, of the plunger-plates 1171 and 1172, carried by an arm projecting into said box, said plates being spring-actuated to completely fill the thickness of the box, substantially as described, and for the purpose specified.

115. In an envelope-machine, the combination, substantially as described, with the packing-box and with the plunger 1179, guided between the box and the guide-blocks thereof, of the arm 1175, upwardly inclined into said box and carrying on the upper end thereof the plunger-faces 1171 and 1172, whereby the passing of any oil from the plunger-guides along said arm into the box is prevented.

116. In an envelope-machine, the combination, in the packing mechanism thereof, of the packing-box, the bunch-plunger extending into said box, the notched counting-wheel and the stop-book 1185, pivotally supported in the plunger, and a spring normally holding said stop-hook in position for engaging said wheel, whereby the plunger may be retracted and said stop-hook pass said stop-wheel while the notch is out of alignment therewith, substantially as described.

117. In an envelope-machine, the combination, with the packing-box and the two packing-plates, of one cam operating through connections, substantially as described, to open one plate and two cams having dissimilar movements and operating in succession through the same connections to open the other plate, and springs connected to close the plates, all substantially as described.

118. In an envelope-machine, the combination, in the envelope-packing mechanism thereof, of the packing-plate-actuating devices consisting of the arms 1113 and 1124, connected to said plates, respectively, the rock-shaft 153, the cam 178, carried by said shaft and acting upon arm 1113, and the oscillating double cam 171, having one cam-face 172 operating arm 1113 and having another cam-face 173 operating arm 1124, substantially as described.

119. In an envelope-machine, the combination, in the packing mechanism thereof and with the arms 1113 and 1124, cam-actuated, substantially as described, of the packing-plates 1086 and 1090, having arms 1088 and 1092, respectively, eccentric-studs in each of said packing-plate arms, and connections from said studs to said arms 1113 and 1124, whereby the working positions of said packing-plates may be adjusted relative to the packing-box and to each other, substantially as described.

120. In an envelope-machine, the combination, with the packing-box and one or more packing-plates, substantially as described, of the end plate 1104 and one or more blocking-pieces, as 1076 and 1076*, closing the opposite end of said box above or below the bunch-plunger faces, and the retaining-hook 1166, located at the other end of said box adjoining said end plate, whereby the envelopes are prevented from longitudinal movement in the box prior to the operation of the bunch-plunger.

121. In an envelope-machine, the combination, in the packing mechanism thereof, of a packing-box substantially as described, having at one side of its envelope-receiving space the plunger-receiving ways, the bunch-plunger comprising the rod 1179, connected to its actuating-arm 1194 and having the rearwardly and upwardly projecting arm extending into said envelope-receiving-space, and guides carried on the forward end of said rod and sliding in ways in said box and carrying the envelope-ejecting spring-opened plates pivotally attached to the end of said arm in the packing-box, substantially as described.

122. In an envelope-machine, the combination, with the packing-box, of the end plate 1104 and two packing-plates located side by side and together closing the front of said box and adapted for independent operation, the packing-plate 1086, having the rib 1089, guarding the passage between the plates when one plate is open and the other closed, substantially as described.

123. In an envelope-machine, the combination, with the packing-box, of the packing-plates 1086 and 1090, a handle for opening the plate 1086 by hand, and the hook on plate 1090 engaging the plate 1086 when this plate is opened, whereby both said plates are simultaneously opened by hand by means of a handle on one of them, all substantially as described.

124. In an envelope-machine, the combination, with the packing-box and with the first packing-plate 1086 and the second packing-plate 1090, each having a stud-provided arm, substantially as described, of the arms 1113 and 1124, connected to said plates, respectively, and the reciprocating cams 172 and 173, operated in unison, and the cam 178, said cam 173 operating the arm 1124 and the two cams 172 and 178 each operating in succession the arm 1113, whereby said packing-plates are opened one in advance of the other and are closed simultaneously, substantially as described.

125. In an envelope-machine, the combination, with a blank-supporting plate and with plate-lifting apparatus, substantially as described, supporting said plate, of the fixed bearing 318, the hook-provided rod 298, laterally movable in said bearing and operatively connected to elevate said plate on the lifting of said rod, the intermittently-advancing picker-turret carrying a vertically-movable picker-provided stem having rising and falling movements over said plate, the spring acting laterally on said rod, and the latch 231, located on said picker-stem to engage said hook on the descent of said stem below a predetermined point, all substantially as described.

126. In an envelope-machine, the combination, with the main shaft and with the driving-wheel and a clutch for engaging said wheel and shaft, of a shipper-rod, as 1261, spring-actuated and connected to unclutch said wheel, a latch engaging said rod to hold the same retracted, the packing-box, the envelope-plunger, and stop-motion devices, substantially as described, operatively connected with said plunger and constructed to unhook said latch on the return of the plunger after a partial stroke, substantially as described.

127. In an envelope-machine, the combination, with the main shaft and with the driving-wheel and a clutch for engaging said wheel and shaft, of a shipper-rod, as 1261, spring-actuated and connected to unclutch said wheel, a latch engaging said rod to hold the same retracted, the packing-box, the bunch-plunger, and stop-motion devices, substantially as described, operatively connected with said plunger and constructed to unhook said latch on the return of the bunch-plunger after a partial stroke, substantially as described.

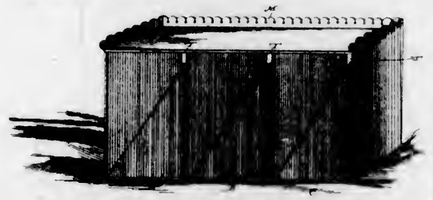
128. In an envelope-machine, the combination, with the main shaft and with the driving-wheel and a clutch for engaging said wheel and shaft, of a shipper-rod spring-actuated and connected to unclutch said wheel, a latch engaging said rod to hold the same retracted, the packing-box, the envelope-plunger, the bunch-plunger, one set of stop-motion devices operatively connected with the envelope-plunger and constructed to unhook said latch on the return of the envelope-plunger after a partial stroke, and another set of stop-motion devices, substantially as described, operatively connected with the bunch-plunger and constructed to unhook said latch on the return of the bunch-plunger after a partial stroke, whereby the failure of either plunger to make a complete forward stroke releases the shipper-rod on the return-stroke of that plunger, substantially as described.

129. In an envelope-machine, the combination, with the main shaft and with the driving-wheel and a clutch for engaging said wheel and shaft, of a shipper-rod spring-actuated and connected to unclutch said wheel, a latch engaging the said rod to hold the same retracted, the packing-box, the envelope-plunger, and stop-motion devices comprising the plate 1236, operatively connected with said latch, the guard plate 1240, and the arm 1221, operatively connected with said plunger, said arm having a pawl adapted to engage said plate, all combined and operated substantially as described.

130. In an envelope-machine, the combination, in the banding mechanism, of the band-shuttle rolls, substantially as described, carrying said shuttle by engaging between the rollers forming part of the shuttle, said shuttle-supporting rolls, one of them having the enlarged flanges 1492, holding the shuttle in place longitudinally of said supportiog-rolls, and means actuating said rolls to feed the band-tube over the shuttle, substantially as shown and described.

131. In an envelope-machine, the combination, in the banding mechanism, of the shuttle and its supporting-rolls geared for simultaneous movement, the shaft 1519, supporting one said roll and carrying the pawl 1510, engaging a ratchet-wheel formed on the roll, spring-pressed bearings carrying the opposite shuttle-supporting roll, and a cam operatively connected, substantially as described, to impart a reciprocating movement to said shaft, all substantially as described.

444,853. **INDEXED FILE.** ROBERT D. RICHARDSON, Winnipeg, and CHARLES A. SADLEIR, Toronto, Canada. Filed Mar. 8, 1890. Serial No. 343,127. (No model.)



Claim.—1. An indexed file which consists of the combination of a number of portfolios of uniform size, each bearing on its face a general descriptive title of its contents and a particular character or abbreviation referring to the special sub-class contained therein, together with a corresponding number of blanks of the same size as the portfolios, each of said blanks having a tag or projection which bears the same character or abbreviation as the portfolio to which that blank corresponds, said tags being so placed that when the complete set of blanks are assembled the tags will not obscure one another, but will all be visible to the observer, substantially as described.

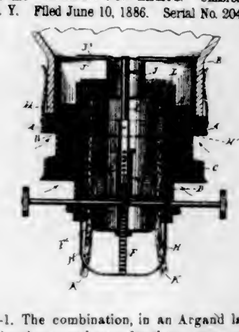
2. An indexed file which consists of the combination of a case having any number of separate compartments for general classes of matter, and in each compartment a number of portfolios of uniform size, each bearing on its face a general descriptive title of its contents and a particular character or abbreviation referring to the special sub-class contained therein, together with a corresponding number of blanks of the same size as the portfolios, each of said blanks having a tag or projection which bears the same character or abbreviation as the portfolio to which that blank corresponds and next to which it is placed, said tags being so placed that when the complete set of blanks is assembled the tags will not obscure one another, but will all be visible to the observer, substantially as described.

3. An indexed file which consists of the combination of a number of portfolios of uniform size, each bearing on its face a general descriptive title of its contents and a particular character or abbreviation referring to the special sub-class contained therein, and each of said portfolios having a tag or projection associated therewith which bears the same character or abbreviation as the portfolio bears upon its face, said tags projecting beyond the backs of the folios, being so placed that when the complete set of portfolios are assembled the tags will not obscure one another, but will all be visible to the observer, substantially as described.

4. An indexed file which consists of the combination of a case having any number of separate compartments for general classes of matter, and in each compartment a number of portfolios of uniform size, each bearing on its face a general descriptive title of its contents and a particular character or abbreviation referring to the special sub-class contained therein, and each of said portfolios having a tag or projection associated therewith which bears the same character or abbreviation as the portfolio bears upon its face, said tags projecting beyond the backs of the folios, being so placed that where the complete set of portfolios are assembled the tags will not obscure one another, but will all be visible to the observer, substantially as described.

5. A set of portfolios for biblical notes, each portfolio being devoted to one book of the Bible and provided with an indexing-table which has vertical lines for chapters and horizontal lines for verses, with blank spaces at the intersection of said lines in which a character may be written referring to the porttolio which that portion of the contents of the portfolio which relates to that chapter and verse occupies relative to the rest of the contents of the portfolio, substantially as described.

444,854. **BURNER FOR LAMPS.** CASSIUS M. RICHMOND, New York, N. Y. Filed June 10, 1886. Serial No. 204,695. (No model.)



Claim.—1. The combination, in an Argand lamp-burner, of the central air-tube, the central stem fitted to carry and support said tube and extending therethrough, and a deflector mounted upon the upper end of said stem above the open upper end of said tube, substantially as described.

2. The combination, with an Argand lamp-burner, of the central air-tube and deflector mounted above it, the stem carrying and supporting said tube and deflector, and a rack and pinion elevating connection for said stem, substantially as described.

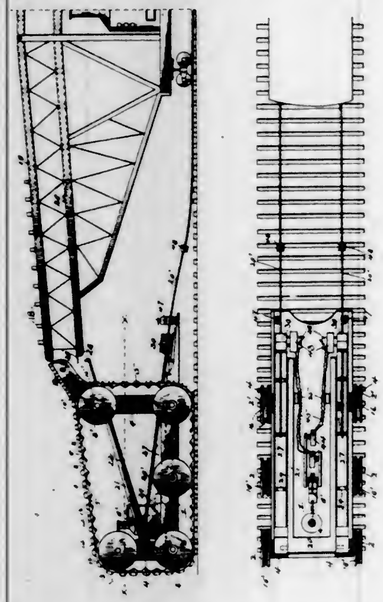
3. The combination, in an Argand lamp, of the joined wick-tubes having lateral air-inlet openings leading through the inclosed vertical passage for the wick, the flanged tube fitted to said wick-tubes, having perforations in its lower end to admit air to the inlet-openings of said wick-tubes and extending upward to form the outer wall of the burner, and the perforated chimney-supporting collar fitted to said flanged tube, substantially as described.

4. In an Argand lamp, two tubes fitted together to form a vertical passage-way for the feed-wick between them and provided with lateral air-inlet openings extending through said tubes, and the inner of said tubes being extended above the outer tube, in combination with an external removable tube fitted to said outer wick-tube and provided at its lower end with air-inlet openings communicating with and feeding air to the air-inlet openings of said wick-tubes and fitted at its upper end to inclose the burning wick of the lamp and constitute the outer wall therefor, substantially as described.

5. The combination, in an Argand lamp-burner, of two tubes mounted one within the other to form a vertical passage-way for the feed-wick between them and provided with lateral air-inlet openings extending through said tubes, the inner of said tubes being extended above the outer tube to admit of fastening said feed-wick thereto above said outer tube, the burning-wick carrier mounted outside said feed-wick, and the removable tube fitted to said outer wick-tube and provided at its lower end with air-inlet openings communicating with the air-inlet openings of said wick-tubes and fitted at its upper end to inclose said burning wick and constitute the outer wall thereof, substantially as described.

6. The combination, with the wick-tubes of an Argand lamp, of a vertically-adjustable carrier for the wick, a vertically-adjustable deflector, adjusting connections supporting said carrier and deflector, and a guide common to both said connections, arranged centrally in the wick-tubes, substantially as described.

444,855. **PORTABLE ELECTRIC WELDING APPARATUS.** ELIAS R. RICE, Baltimore, Md. Filed Aug. 2, 1890. Serial No. 360,743. (No model.)



Claim.—1. A portable welding apparatus for welding and laying continuous metallic structures formed of separate parts, sections, or lengths, the same consisting of a movable frame or platform containing the welding-clamps, means for progressively moving the same along the structure from joint to joint, a source of electric heating-current for said welding-clamps, arranged to move with the same, and means for controlling the heating-current, substantially as described.

2. A portable electric line-welding apparatus comprising a source of heating-current, suitable welding clamps or holders in electrical connection with the same and arranged to grasp the ends of the metals to be united during the welding process, means, substantially as described, for successively feeding additional lengths of the metal designed to form the line structure to the welding clamp or clamps and for progressively moving the welding apparatus along the newly-completed section of the line after each welding operation to the point at which the next joint is to be formed, substantially as described.

3. A welding apparatus for producing continuous lines of metallic structures such as railway-rails and electric conductors, consisting of a wheeled vehicle movable along the line of the structure, a source of electric welding-current and welding-clamps mounted upon the vehicle, and mechanism for delivering or paying out the metals to be welded to the welding-clamps, substantially as described.

4. An electric rail-welding apparatus consisting of a wheeled vehicle adapted to travel upon the road-bed of a railway, a generator of alternating high-tension currents actuated by the driving-power of the vehicle, a converter charged by the generator for producing low-tension welding-currents, and welding-clamps suitably mounted in the lines of the rails of the road, substantially as described.

5. An electric welding or metal-working apparatus comprising a wheeled vehicle containing welding-clamps or other metal-working appliances, a source of power upon said vehicle for driving the same, and connections for utilizing said source of power or a portion thereof for supplying the welding or metal-working electric current, substantially as described.

6. An electric welding or metal-working apparatus comprising a wheeled vehicle containing welding-clamps or other metal-working appliances, a steam-engine mounted on the vehicle for propelling the same, one or more electric generators driven by the steam-engine for supplying the requisite current, and metal-working appliances for utilizing said current, substantially as described.

7. In an apparatus for electrically welding and laying continuous lines of railway-rails, the combination of a wheeled vehicle adapted to travel upon the road-bed, and a tie-carrier, and depositor constituting a traveling track of the vehicle and actuated by the driving-power of the same, with a rail-depositor also mounted upon the vehicle, electric welding-clamps in operative relation to the rail-depositor, and a source of electric welding-current, substantially as described.

8. In an apparatus for electrically welding and laying continuous lines of railway-rails, the combination of a wheeled vehicle adapted to travel upon the road-bed, and a rail-depositor for receiving and depositing rails on the line of the track, with welding-clamps and tempering-boxes in operative relation to the rail-depositor, and a source of welding-current, substantially as described.

9. An electric welding or metal-working apparatus consisting of a platform arranged to be moved bodily along the work to the approximate point at which the operation is required, and an auxiliary platform or base carrying the holding or welding clamps mounted upon the first-named platform and independently adjustable thereon, whereby when the apparatus is brought into approximate position an accurate adjustment of the clamps upon the work may be obtained, substantially as described.

10. In an electric welding or metal-working apparatus, the combination of a base-plate or support provided with ways or guides, and a second base-plate carrying the welding or holding clamps, mounted upon the first-named plate or support and independently adjustable thereon, substantially as described.

11. In an electric welding or metal-working apparatus, the combination of a pivoted base-plate or supporting-table arranged to be inclined from a horizontal position to any desired degree, welding or holding clamps mounted thereon, one or both of which are movable, and an adjustable inclined feeding-platform in line with the welding or holding clamps, whereby the metal pieces to be welded or otherwise operated upon are impelled toward the clamps by gravity, substantially as described.

12. In an electric rail-welding apparatus, the combination, with the pilot truck or carriage, of the inclined supporting-bed and rail-feeding ways, the adjustable welding-clamps on the inclined bed, and the rail receiving and depositing arm, substantially as described.

13. A portable electric welding or metal-working apparatus for joining or uniting together two or more parallel lines of rails, wires, tubes, and similar structures, (while the same are permanently deposited in place,) the same comprising a transformer or other source of electric heating-current, and two or more separate sets of clamps or holders for the work, means for feeding the sections to be united to their respective clamps or holders, and means for contemporaneously joining the ends of the additional sections to those of their respective main structures, whereby the construction of two or more parallel lines may be carried on simultaneously, substantially as described.

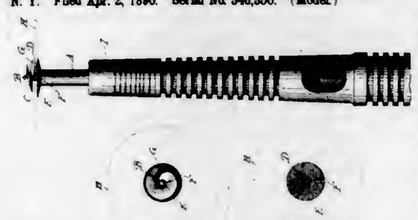
14. A portable rail-welding apparatus provided with two sets of welding-clamps separated approximately by the distance of the gage of the track to be laid, each set of clamps being arranged and constructed to electrically unite the rail length on its side of the track, substantially as described.

15. A portable rail welding and depositing apparatus comprising a wheeled vehicle or truck adapted to travel along the support or bed upon which the rails are to be laid, welding-clamps upon said vehicle, a source of heating electric current for said clamps, means for adjusting one of the clamps upon the free end or ends of the rail section or sections welded, and means for feeding an additional rail section or length to the other clamp and for holding the same in alignment during the welding operation, substantially as described.

16. A portable rail welding and depositing apparatus comprising a wheeled vehicle or truck adapted to travel along the support or bed upon which the rails are to be laid, welding-clamps upon said vehicle, a source of heating electric current for said clamps, means, substantially as described, for feeding the rails to the clamps, and a hardening and tempering box for restoring the temper of the welded rails at the joint, substantially as described.

17. A portable electric welding apparatus constructed and arranged to be transported from place to place or from joint to joint along the line of a metallic-line structure, said apparatus having one or more fixed and movable clamps or holders forming the terminals of an electric heating-circuit and arranged to grasp the ends of the line-sections to be joined and to hold the same in proper alignment, means for forcibly approaching the movable toward the fixed clamp during the process of joining the metals, and means for releasing and properly supporting the united sections after union and for transporting the apparatus to the point where the next joint is to be produced, substantially as described.

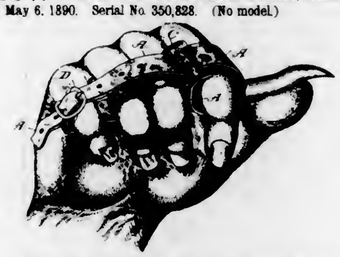
444,856. **DENTAL DISK-CARRIER.** MARVIN L. ROWE, Albany, N. Y. Filed Apr. 2, 1890. Serial No. 346,350. (Model.)



Claim.—1. In a disk-carrier, the combination, with a main shank, of a spiral flange having a cutting-edge and an upturned lower end, and a supporting-flange arranged below said spiral, substantially as shown and described.

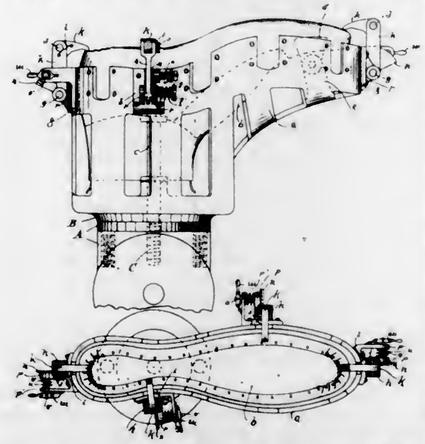
2. In a disk-carrier, the combination, with a main shank, of a spiral flange having a cutting-edge and an upturned lower end, and a supporting-flange having a fin extending outward from its face, substantially as shown and described.

444,857. **HUSKING-PIN.** JOHN R. SATTERTHWAITE, Trenton, N. J. Filed May 6, 1890. Serial No. 350,828. (No model.)



Claim.—The combination, with the husking-pin, of the straps A and B, riveted to the pin, the strap A passing freely through the loop C formed in the same strap and adjustably connected with the strap B by means of the buckle D or similar device, forming the adjustable finger-receptacles *x* and *y*, substantially as and for the purposes herein set forth.

444,858. **LASTING-MACHINE.** AUGUSTUS SEAVER, Boston, and WILLIAM S. HAMM, Newton, assignors to Charles F. Brown, trustee, Reading, Mass. Filed Dec. 14, 1889. Serial No. 333,796. (No model.)



Claim.—1. A portable frame provided with last-holding devices and formed to surround a last, combined with a series of independently-movable fingers, clamps, or dogs formed to penetrate the material of a boot or shoe upper and supported by said frame, each finger projecting inwardly over the bottom of a last supported by said frame, and a series of locking devices for each finger, whereby each may be held independently in a series of positions while engaged with the edge of a boot or shoe upper, and thus caused to exert any desired strain on the portion of the upper with which it is engaged, as set forth.

2. The combination of a last-holding frame, a series of arms pivotally connected with said frame, upper holding fingers or clamps supported by said arms and arranged to project inwardly over the bottom of a last on said frame, automatic means for independently locking said arms to the frame, and springs arranged to throw the holding-arms outwardly from the upper when said arms are unlocked or released, as set forth.

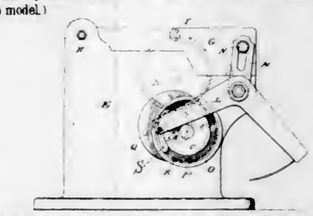
3. The combination of the last-holding frame, an arm *h*, pivoted thereto, a holding finger or clamp *k*, secured to one end of said arm, and a dog and ratchet whereby the arm may be locked to the frame to hold the finger in engagement with an upper, as set forth.

4. The combination of the last-holding frame, an arm *h*, pivoted thereto and provided with a ratchet, an upper holding finger or clamp secured to one end of said arm, and a dog or bolt fitted to slide in fixed guides on the frame and adapted to engage said ratchet and thereby lock the arm and its finger, as set forth.

5. The combination of the last-holding frame, an arm *h*, pivoted at its lower end to said frame, a finger or clamp *k*, pivoted to the upper end of the arm, the ratchet and dog whereby the arm may be locked to the frame, and the spring *s*, arranged to throw the arm *k* outwardly from the frame, as set forth.

6. The combination of the last-holding frame, an arm *h*, pivoted thereto at its lower end, the upper holding finger or clamp *k*, pivoted to the upper end of the arm, a spring *l*, whereby said finger is held in yielding contact with the upper, and means for locking the arm *h* to the frame, as set forth.

444,859. **MACHINE FOR SEWING LOOPED FABRICS.** JOSEPH SOPER, Ypsilanti, Mich. Filed Sept. 24, 1889. Serial No. 324,943. (No model.)



Claim.—1. In a machine for sewing looped fabrics, the combination of a drive-shaft, a second shaft parallel thereto gearing between the same, a lifting-arm, a cam on said second shaft terminating in a sudden drop, an eccentric secured to rotate with said drive-shaft, a needle-arm operated by said eccentric, and a loose and sliding connection between the lifting-arm and needle-arm, all arranged and adapted to operate in the manner and for the purpose substantially as described.

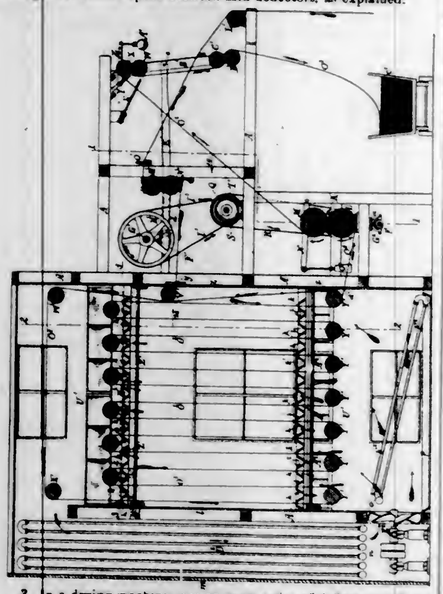
2. In a machine for sewing looped fabrics, the combination, with the frame thereof, of a lifting-arm pivoted thereto, a needle-arm provided with a link having a loose and sliding connection with the lifting-arm, a drive-shaft, a second shaft parallel thereto gearing between the same, a cam on the second shaft, which cam terminates in a sudden drop, an eccentric secured to rotate with said drive-shaft, a groove in the face of the eccentric, and a sliding shoe located within the groove and pivoted to the needle-arm, all arranged and adapted to operate in the manner and for the purpose substantially as described.

444,860. **MACHINE FOR DRYING YARNS, FABRICS, &c.** BRADFORD STETSON, Uxbridge, Mass. Filed Nov. 13, 1889. Serial No. 330,163. (No model.)

Claim.—1. The drying-machine, substantially as described, it consisting of the main shaft F, the pinion H, fixed thereto, the gear I, engaging the said pinion, the nip-rolls L M, the former fixed to the shaft of the gear I, the gear P', engaging the said gear I, the sprocket-wheel Q', fixed to the gear P', the chain belt R', sprocket-wheels S', series of rolls T, to the shafts of which the sprocket-wheels S' are fixed, the series of rolls Y', rolls V', W', and X', the adjustable bearings supporting the shafts and rolls, the closed drying-chamber U', having the partition *l* and the inlets *y* and outlets *a'*, the deflectors and separators arranged in said chamber, as shown, in combination with the heater D^3, the blower E^2, and the condenser F^2, all arranged and to operate essentially as set forth.

2. In a drying-machine, the combination of the series of rolls T and Y', the series of deflectors B^3 and C^3, and the drying-chamber, said deflectors being arranged with relation to the said rolls, as repre-

seated, the heated air impinging the deflectors being caused to pass in cross-currents against and through the chains of yarns as they move through the narrow space between said deflectors, as explained.



3. In a drying-machine, one or more series of deflectors and one or more series of separators, in combination with the drying-chamber and the several series of rolls for supporting in the drying-chamber one or more chains of yarns, said deflectors and separators being arranged in the drying-chamber and with relation to the rolls essentially as set forth and represented.

4. In a drying-machine, the combination, with the main shaft F, the pinion H, the gear I, and nip-rolls L M, of the pulley P, fixed to the shaft of the roll L, the shaft S, provided with the pulleys Q T U, the shaft G', having the pulley H', the bands R and I', the nip-rolls W and X, the band *e*, connecting the shaft S and roll W, the folder-arms B', pivoted on the journals of the roll W, and the rolls C D', supported by said arms, the connecting-rods E', joining said arms B' and the cranks F', the said cranks fixed to the shaft G', all being supported and arranged as shown, and operating to fold the yarns as they are drawn from the drying-chamber, as explained.

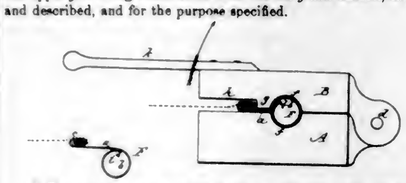
5. The drying-machine, substantially as described, it consisting of the main shaft F, the pinion H, fixed thereto, the gear I, engaging the said pinion, the nip-rolls L M, the former fixed to the shaft of the gear I, the gear P', engaging the said gear I, the sprocket-wheel Q', fixed to the gear P', the chain belt R', sprocket-wheels S', series of rolls T', to the shafts of which the sprocket-wheels S' are fixed, the series of rolls Y', the rolls V', W', and X', the adjustable bearings supporting the shafts and rolls, the closed drying-chamber U', having the partition *l*, and the inlets *y* and outlets *a'*, the deflectors, and separators arranged in said chamber, as represented, in combination with a heater D^2 and a blower E^2, all arranged and to operate substantially as explained.

6. In combination with the journals of the rolls and shafts of a drying-machine, the adjustable bearing G^2, consisting of the slotted flange *v*, the socket *u*, projecting therefrom, the fork *s*, pivoted in said socket, the pivots *r r* in the prongs of said fork, the box *q*, sustained by said pivots and adapted to swing in a plane at right angles to the axis of said fork, and the screw *x*, connecting the fork to the socket, the shoulder *v'*, and washer v^2, as and for the purpose explained.

7. The adjustable bearing G^2, substantially as described, consisting of the slotted and chambered flange *v*, the socket *u*, projecting therefrom, the fork *s*, supported in and adapted to turn in said socket, the adjustable pivots *r r* in the prongs of said fork, the box *q*, sustained by said pivots and adapted to swing in planes at right angles to the axis of the fork, the screw *x*, connecting the fork to the socket, and the washer v^2, as and for the purpose explained.

444,861. SHEET-METAL-STAMPING APPARATUS. DRAPER BROTHERS, Rochester, N. Y. Filed May 15, 1890. Serial No. 351,977. (No model.)

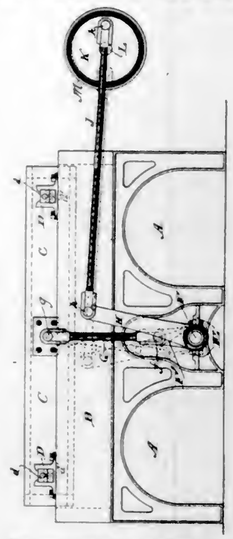
Claim.—1. In an apparatus for stamping window-screen frames, the combination of the two jaws A B, provided with half-grooves *f f*, the upper jaw being constructed with the die *g* and offset *h*, as shown and described, and for the purpose specified.



2. The combination, with the jaws A B, provided with half-grooves *f f*, of a plunger *m*, provided with the wedge-shaped inner end *n*, and suitable means for operating the plunger, the whole arranged to operate in the manner and for the purpose specified.

3. The combination, with the jaws A B, provided with the half-grooves *f f*, of a plunger *m*, provided with the wedge-shaped inner end *n*, and the handle *r*, as shown and described, and for the purpose specified.

444,862. PULP-SCREEN FOR PAPER-MILLS. PETER R. THOM, Appleton, Wis. Filed Feb. 12, 1890. Serial No. 340,180. (No model.)



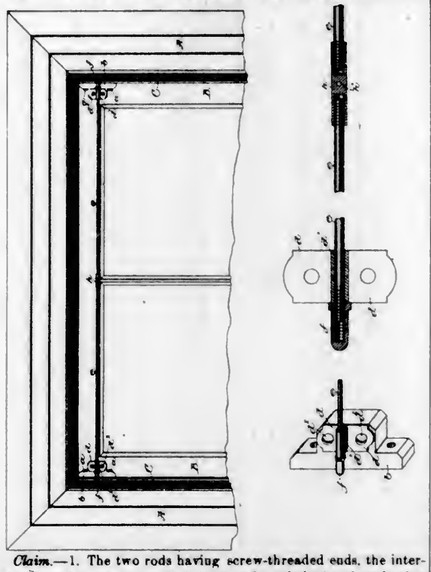
Claim.—1. The combination, substantially as hereinbefore set forth, of the vat, the pulp-screen, vertical guides for said screen at each side thereof and near its ends, a transverse rock-shaft centrally beneath the screen and provided with vertical crank-arms at each side of the frame vibrating to each side of the vertical, or, in other words, departing from the dead-center to the right and left, links connecting said cranks to journals from the center of the screen, and means for oscillating said rock-shaft.

2. The combination, substantially as hereinbefore set forth, of the vat, two or more screens mounted therein, vertical guides for said screens at each side thereof, transverse rock-shafts centrally beneath each screen, provided with crank-arms at each end, a rod connecting the cranks of each rock-shaft at one side of the supporting-frame, links connecting each crank with the center of the respective screens, and means for reciprocating said rod.

3. The combination, substantially as hereinbefore set forth, of the vat, the superposed screen, the vertical guide-brackets, the elastic cushions therein, and the boxes sliding in said guide-brackets and carrying the screen.

4. The combination, substantially as hereinbefore set forth, of the vat, the screen, the vertical guides at each side of the screen, the transverse rock-shaft centrally beneath the screen, the crank at each end of the rock-shaft, the links connecting said cranks with journals from the center of the screen, the actuating-arm fixed to said rock-shaft, the driving-shaft and its disk, and the connecting-rod coupling a wrist-pin upon said disk with a wrist-pin upon the upper end of the actuating-arm.

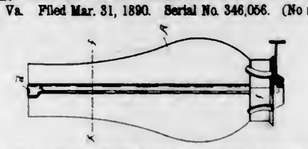
444,863. CURTAIN-HOLDER. THOMAS TRIBE, Colorado Springs, Colo. Filed Sept. 23, 1889. Serial No. 324,829. (No model.)



Claim.—1. The two rods having screw-threaded ends, the intermediate coupling to receive their inner ends, and the brackets having tubular portions to receive the outer ends of said rods, combined with nuts abutting against the outer side of the tubular portions by which to strain the said rods, substantially as described.

2. The two rods having screw-threaded ends, the intermediate coupling to receive their inner ends and provided with the hole *h*, and the brackets having tubular portions *d* to receive the outer ends of said rods, combined with nuts abutting against the outer side of the tubular portions by which to strain the said rods in opposite directions, substantially as described.

444,864. SECTIONAL LAMP-CHIMNEY. WILLIAM H. WADDELL, Lexington, Va. Filed Mar. 31, 1890. Serial No. 346,056. (No model.)



Claim.—As an article of manufacture, a bisected lamp-chimney the sections thereof having flanges or beads at their meeting edges to form a tight joint, one of the sections at its upper end having grooved catches or lugs to receive the bead or flange of the other section and prevent lateral separation of the sections, substantially as described.

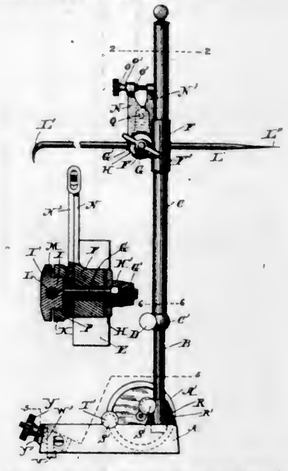
444,865. SURFACE-GAGE. FRED A. WELLES, Milwaukee, Wis. Filed May 1, 1890. Serial No. 350,209. (No model.)

Claim.—1. In a surface-gage, the combination, with a base-piece supporting an adjustable pointer, of pins inserted movably in the under side of the base and a transverse rod bearing adjustably against the pins, substantially as described.

2. In a surface-gage, the combination, with a base-piece, of pins inserted movably in the under surface of the base-piece, a transverse rod bearing adjustably against the pins, a nut through which the transverse rod passes, and a set-screw bearing against the base-piece and turning into the nut through which the rod passes, substantially as described.

3. In a surface-gage, the combination, with a base-piece having a vertical flange, of a vertically-revoluble wheel pivoted on the flange and provided with a bracket supporting the standard of the gage therein, and means for clamping the wheel to the base, substantially as described.

4. In a surface-gage, the combination, with a base-piece, of a vertically-revoluble wheel pivoted thereon, which wheel supports the standard of the gage, and a bearing-block movable in the base-piece, and means for holding the bearing-block adjustably against the surface of the wheel, substantially as described.



5. In a surface-gage, the combination, with a base-piece, of a revoluble wheel axled thereon and clamped adjustably thereto, and a standard secured adjustably in a bracket on the wheel at one side of its axis, substantially as described.

6. In a surface-gage, the combination, with a standard, of a split sleeve movable thereon, which sleeve has a head-block, as F, rigid to one part of the sleeve and a small portion or projection, as F', rigid to the other part of the sleeve, a movable washer about a bolt passing through the head-block, which washer bears against the head-block and the movable part F', and a nut turning on the bolt for clamping the washer against the head-block and the part F', substantially as described.

7. In a surface-gage, the combination, with a head-piece, as F, supported movably on a standard, of a bolt, as G, passing through the head-piece, which bolt is provided with a head having an inner lesser diameter and an outer greater diameter, a ring, as K, about the part of the head having the smaller diameter, a pointer, as L, inserted through the head between the ring K and the outer part of the head of the bolt, and means for clamping the head of the bolt against the ring and against the head-block, substantially as described.

8. In a surface-gage, the combination, with a head-block, as F, a bolt, as G, passing through the head-block movably, and a pointer L, inserted transversely through the head of the bolt, of an arm, as N, rigid on the head block, a movable arm, as N', pivoted on the bolt between the head-block and the head of the bolt and bearing frictionally against the head of the bolt, and means, substantially as described, for adjusting the arm N' toward and from the arm N.

9. In a surface-gage having a pointer-supporting head-block, as F, a bolt inserted movably through the head-block and provided with a head, through which the pointer is inserted transversely, in combination with a movable arm, as N', pivoted on the bolt between the head-block and the head of the bolt, and a soft-metal frictional washer, as P, inserted between the arm N' and the head of the bolt, substantially as described.

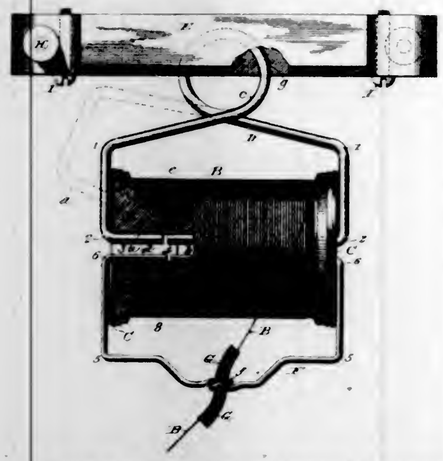
10. In a surface-gage having a pointer-supporting head-block, as F, a bolt passing movably through the head-block, which bolt is provided with a head in which the pointer is inserted transversely, in combination with a washer H, a set-screw G' turning on the bolt, and an interposed washer H', fitted on the bolt with a faced surface, so as not to be revoluble thereon, substantially as described.

11. In a surface-gage, the combination, with a wheel revoluble vertically on the base, and a bracket on the wheel at one side of its axis, of a standard adjustable in the bracket on the wheel, a sleeve, as C, adjustable endwise on the standard, and a sleeve, as E, carrying the pointer and adjustable on the sleeve C, substantially as described.

444,866. TWINE-REEL. FREDERIC C. WERNER, Watertown, Wis. Filed Sept. 23, 1889. Serial No. 324,782. (No model.)

Claim.—1. In a twine-reel, a supporting-frame constructed from a single piece of spring-wire bent midway of its length to form a ring or loop, then carried outwardly and bent downward in straight form at each side of the frame, and then bent inwardly to form trunnions for the spool or reel, one of said inturned portions being longer than

the other, in combination with a pair of caps formed to abut against the ends of the spool and having tubular hubs or bosses to receive the inturned ends of the frame and to enter the bore of the spool or reel, substantially as described.



2. In a twine-reel, a supporting-frame constructed from a single piece of wire bent midway of its length to form a ring or loop, then carried outwardly and bent downward in straight form at each side of the frame, and then bent inwardly to form trunnions for the spool, in combination with a pair of caps formed to abut against the ends of the spool and having tubular hubs or bosses to enter the bore thereof, a guide-frame constructed from a single piece of spring-wire bent midway of its length to form a guide-loop, then carried outwardly, then upward in straight lines at each side of the frame, and then inward, one inturned end of each of said frames being longer than the other, and all of said ends extending removably into the hubs of the caps, substantially as and for the purposes described.

3. In a twine-reel, a guide-frame consisting of a single piece of spring-wire bent midway of its length to form a loop, and thence suitably bent to enter the opposite ends of the bore of a spool or reel, in combination with an elongated flexible tubular guide confined about midway of its length in the loop and adapted to have the outgoing strand of cord or twine passed longitudinally through it, substantially as described.

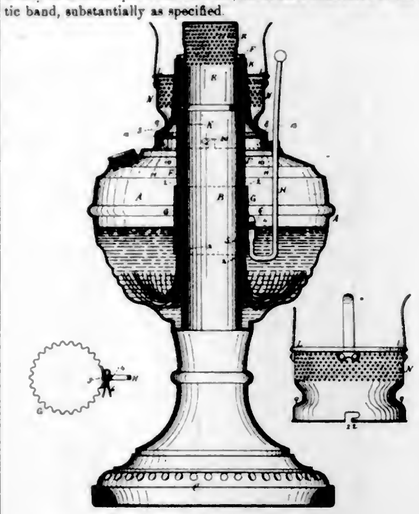
4. In a twine-reel, a supporting-frame constructed of a single piece of spring-wire bent midway of its length to form a ring or loop, and then suitably bent to enter the bore of a spool or reel at its opposite ends, in combination with an attaching device for said support, consisting of a base composed of two longitudinal half-sections formed with registering semicircular grooves constituting a semicircular socket to receive half of the loop, and clamping-screws for holding said half sections together, substantially as described.

444,867. ARGAND LAMP. JAMES H. WHITE, New York, N. Y., assignor to the Manhattan Brass Company, same place. Filed May 7, 1890. Serial No. 350,960. (No model.)

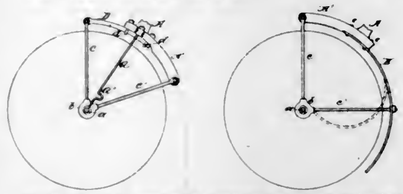
Claim.—1. The combination, in an Argand lamp, with the reservoir and central air-tube passing through the reservoir, of a wick-tube setting closely around the wick at its upper end and having a flaring lower end to rest upon the top of the reservoir and close the opening therein, and a separate chimney-holder removably connected to the reservoir and surrounding and confining the lower end of the wick-tube in place, substantially as set forth.

2. The combination, with the reservoir and central air-tube in an Argand lamp, of a wick-tube having an upper end setting closely around the upper end of the wick and a lower end flaring outwardly, a chimney-holder and air-distributer surrounding the wick-tube and contracted to form an annular groove setting closely over the flaring portion of the wick-tube to confine the same in place, and a locking device to connect the base of the removable chimney-holder and air-distributer to the reservoir, substantially as set forth.

3. The combination, with the reservoir and Argand burner, having a central air-tube upon which the cylindrical wick is raised and lowered, of an endless band of sheet metal surrounding the wick and having vertical corrugations to render it elastic for applying to the wick the friction necessary to hold the same in any position to which it may be moved upon such air-tube, and a lifter connected to the elastic band, substantially as specified.



444,868. BICYCLE. WILLIAM O. WORTH, Cedar Rapids, Iowa, assignor to the Chicago Bicycle Company, same place. Filed Nov. 4, 1889. Serial No. 329,202. (No model.)



Claim.—1. In a bicycle, the combination of a fork having outwardly-diverging arms, one of them flexible, and a steering-head having a rigid arm extending from its lower end in the plane of the wheel's periphery and connecting with said fork, substantially as and for the purpose set forth.

2. In a bicycle, the combination, with a fork substantially as described—that is to say, having outwardly-diverging arms—of a steering-head having a rigid extension in the plane of the wheel's periphery and a spring-connection with the arm of the fork opposite thereto, substantially as and for the purpose set forth.

3. In a bicycle, the combination, with a fork having diverging radial arms, of a steering-head having a rigid forwardly-extending arm connecting with one arm of the fork and a rearwardly and downwardly extending spring connecting with the other arm of the fork and adapted to serve as a fender, substantially as set forth.

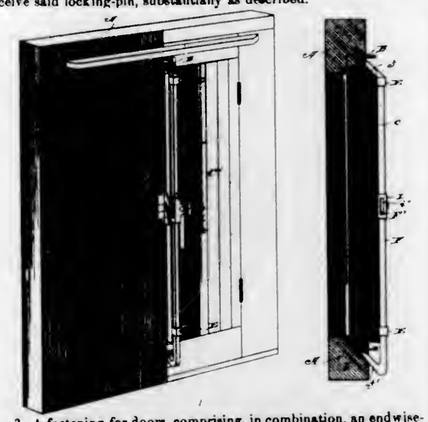
4. In a bicycle, the combination, with a fork having diverging radial arms and a steering-head having a flexible connection with the outer extremities of said arms, of an intermediate brace extending from the steering-head to a connection with the fork between its arms, substantially as and for the purpose set forth.

5. In a bicycle, the combination, with a fork having diverging radial arms and a steering-head having a flexible connection with the extremities of said arms, of a brace connecting the hub of said fork with the steering-head between said arms and having a bend or offset therein to admit of limited longitudinal vibration, substantially as set forth.

444,869. DOOR-BOLT. ARNOLD W. ZIMMERMAN, Washington Heights, Ill. Filed Feb. 28, 1890. Serial No. 342,063. (Model.)

Claim.—1. A fastening for doors, comprising, in combination, an endwise-movable bar having a sliding connection with the door and projecting bent ends, seats in the frame to receive said ends, and an operating-lever pivotally connected with the bar and with the door, said bar having a fixed stud adapted to engage a catch secured at the side of the door, substantially as described.

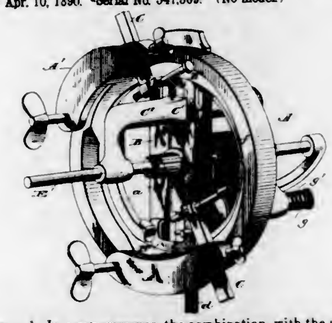
2. A fastening for doors, comprising an endwise-movable bar having a sliding connection with the door and its ends terminating in projecting catches, seats in the frame at the ends of the door to receive said catches, an operating-lever pivotally connected with the bar, a swinging link having one of its ends connected with the door and its other end with the operating-lever, whereby to provide a movable fulcrum, a locking pin or stud secured upon the bar, and a locking-plate secured at the edge of the door and having an inclined slot to receive said locking-pin, substantially as described.



3. A fastening for doors, comprising, in combination, an endwise-movable bar having its ends bent to provide engaging-catches whose surfaces are inclined planes, a locking-stud secured upon the bar, seats adapted to receive the ends of the bar and the locking-stud, an operating-lever pivotally connected at one of its ends to the bar, and a swinging lever pivotally connected at one end to the bar and at the other to the door, whereby to provide a movable fulcrum, substantially as described.

4. A door-fastening comprising, in combination with a pair of doors whose edges are to be closed in contact, an endwise-movable bar mounted to slide in keepers secured to one of the doors, said bar having its ends bent downwardly and in the same direction to provide locking-catches whose bearing-faces are inclined planes, seats to receive said catches, a locking-stud secured with the bar near its center, a locking-plate secured on the other door and having an inclined slot therein to receive the locking-stud, an operating-lever pivotally connected at its inner end to the bar below the central catch, and a swinging link having one of its ends pivotally connected to the door opposite the central locking-catch and its other end pivotally connected to the operating-lever, all substantially as described.

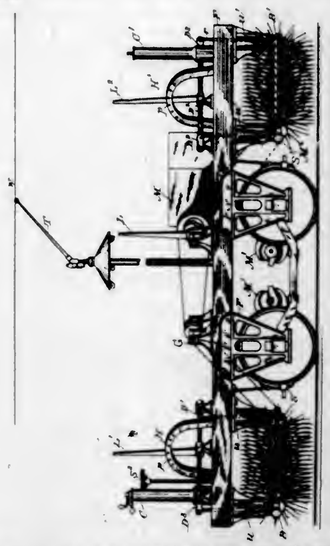
444,870. SAW-GUMMING MACHINE. FRANCIS H. ABBOTT, Chrisney, Ind., assignor of one-half to Martin A. Abbott, same place. Filed Apr. 10, 1890. Serial No. 347,369. (No model.)



Claim.—1. In a saw-gummer, the combination, with the movable tool-slide and its feeding-screw provided with a worm-wheel, of a cutter-shaft and spring-retracted counter-shaft, both mounted in the tool-slide and having intermeshing gear-wheels, a spiral rib on the counter-shaft gear-wheel to engage and actuate the worm-wheel, together with a pivoted catch to retain the counter-shaft and hold said rib in engagement with the worm-wheel, and an adjustable stop-plate designed to trip the catch when the slide reaches the limit of a predetermined feed, substantially as set forth.

2. In a saw-gummer, the combination, with the ring-plate having the inner circular flange and outer clamp projections all in one piece, of the circumferentially-adjustable plate carrying the movable tool-slide, the latter comprising in a single piece the central portion C^3 and outer bearing-arm C^2 C^4, together with clamp-screws, cutter, and counter-shafts, gearing and feed mechanism, substantially as set forth.

444,871. SNOW-SWEEPER. ISAAC F. BAKER, Lynn, and ROBERT BOOTH, Malden, Mass., assignors to the Thomson-Houston Electric Company, of Connecticut. Filed Jan. 29, 1890. Serial No. 338,441. (No model.)



Claim.—1. In a railway snow-clearing apparatus, the combination, with the two rotary brushes or snow-clearing devices, of a motor geared to such brushes through devices for rotating the brushes at different speeds, and a clutch whereby the motor may be connected to either brush.

2. The combination, in a railway-sweeper, of one or more propelling electric motors, two rotary brooms, an electric motor independent of the propelling-motor, driving-gear between the same and the brooms, and a clutch whereby said motor may be geared to either broom.

3. The combination, in a railway-sweeper, of an electric motor connected to a suitable shaft through a speed-reducing gear, a rotary broom geared to said shaft directly, and a second broom geared to said shaft through a counter-shaft, as and for the purpose described.

4. In a rotary snow-sweeper for electric railways, the combination of an electric motor mounted on a platform over the wheels, hangers depending from such platform beneath the same, and a rotary brush mounted on said hanger and belted to a shaft actuated by said motor.

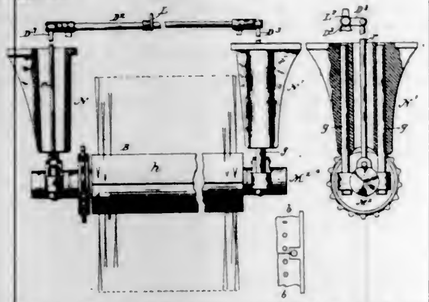
5. The combination, with the horizontal rotary broom and the hangers in which the broom-shaft is mounted, of guides for said hangers depending from a car sill or platform above the wheels, and a horizontal rock-shaft from which said hangers are suspended.

444,872. SNOW-BROOM. ISAAC F. BAKER, Lynn, and ROBERT BOOTH, Malden, Mass., assignors to the Thomson-Houston Electric Company, of Connecticut. Original application filed Jan. 29, 1890, Serial No. 338,441. Divided and this application filed Mar. 10, 1890. Serial No. 343,222. (No model.)

Claim.—1. The combination, in a rotary brush, of a cylindrical stock or head divided into segments, in combination with circumferential clamps for holding the segments in place on the hub or backing against centrifugal displacement, and end pieces or heads carried by the shaft and between which the segments lie, as and for the purpose described.

2. In a rotary sweeper, the combination, with the broom-shaft, of heads movable longitudinally with relation to one another on said shaft, and a broom hub or backing built up around the shaft and clamped between said heads.

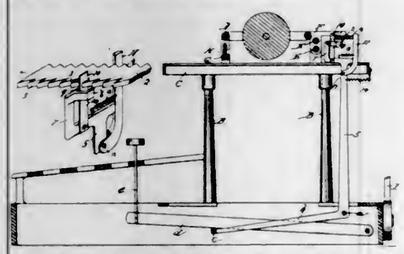
3. The combination, in a rotary broom, of the journal-shaft, the heads mounted thereon, clamp-rods connecting the same, a sectional hub between the heads, and detachable splint-carrying stocks clamped upon said hub.



4. The combination of the central journal-shaft, the heads and longitudinal clamping-bolts, the sectional hub, the splint-carrying segments assembled around said hub, and the clamps carried by the heads and bearing on the splint-carrying sections.

5. The combination, in a rotary track-clearing broom, of the journal-shaft, heads carried thereby, a sectional splint-carrying cylinder built up around the shaft, and clamps carried by said heads and bearing on the said cylinder.

444,873. TYPE-WRITING MACHINE. WALTER J. BARRON, New York, N. Y., assignor to the Yost Writing Machine Company, same place. Filed Mar. 31, 1888. Serial No. 269,060. (No model.)



Claim.—1. In a type-writing machine, the combination of a feed-rack having a row of teeth on each side, a rocker-arm carrying two stops, a spring-pawl 10, adapted to play between said stops and engage one set of the teeth, and a pawl, as 11, adapted to engage the other set of said teeth.

2. In a type-writing machine, the combination, with a driving mechanism, of a feed-rack having a row of teeth on each side, a rocker-arm carrying two stops, a spring-pawl adapted to play between said stops and engage one set of the teeth, and a yielding pawl, as 11, connected to said rocker-arm and adapted to engage the other set of said teeth.

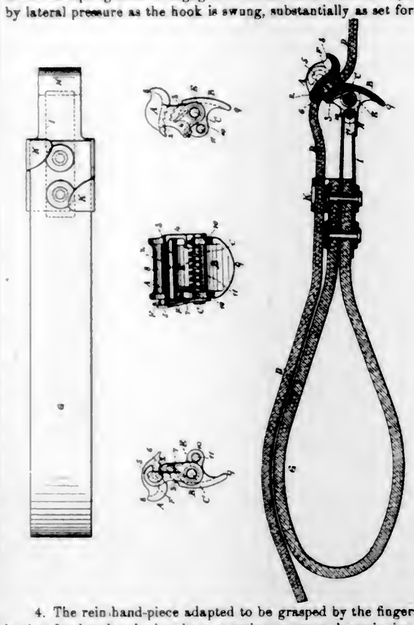
3. In a type-writing machine, the combination of a duplex rack, a rocker-arm having the stops 8 and 9, a spring-pawl 10 between said stops, a pivoted dog 11, and a spring 13 for said dog.

444,874. REIN-BUTTON. MARCELLUS F. BERRY and NELSON STAFFORD, Brooklyn, N. Y. Filed May 17, 1890. Serial No. 352,122. (No model.)

Claim.—1. In a rein-holder, the jaws A and B, with corrugated surfaces, between which the rein is received, and rounding surfaces, against which the fingers press in grasping the rein-holder, in combination with the pivot-stud upon which the jaw B swings, said pivot-stud being connected to the jaw A by the plate 4 at one side, the rein-holder being open at the other side for the lateral insertion of the rein, and a spring for forcing the faces of the jaws toward each other in clamping the rein, substantially as set forth.

2. The combination, in a hand-hold for reins, of the jaw A, having a side plate 4 and the pivot-stud C projecting therefrom, the swinging jaw B upon such pivot-stud, a spring tending to close the jaws in grasping the rein, and the movable hook F, extending from the pivot-stud C to the fixed jaw A and serving to confine the rein within the clamp, substantially as set forth.

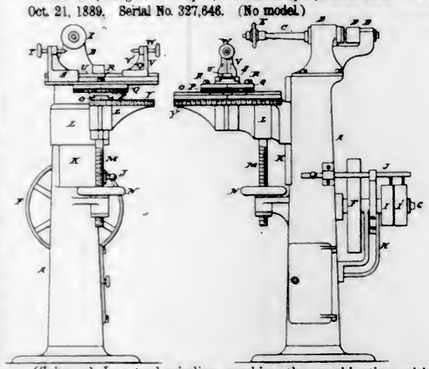
3. The combination, in a rein hand-piece, with the fixed jaw A, side plate 4, and pivot-stud C, of the swinging jaw B upon the pivot-stud, a spring around the pivot-stud to move the swinging jaw, a spring-hook at the end of the pivot-stud, and a stud upon the fixed jaw with which the spring-hook is engaged or from which it can be separated by lateral pressure as the hook is swung, substantially as set forth.



4. The rein hand-piece adapted to be grasped by the fingers and having fixed and swinging jaws, a spring to move the swinging jaw, and a rod connected with the swinging jaw, in combination with a loop and a hoop at the end of the loop adapted to be removably connected with the rod upon the swinging jaw, substantially as set forth.

5. The combination, with the clamping hand-piece adapted to be removably connected with the rein, of a loop, a hook connected with the loop for attaching the hand-piece and loop, and the lips K upon the sheet-metal base of the hook and projecting inwardly from the diagonally-opposite corners for receiving between them the rein, substantially as set forth.

444,875. CUTTER OR REAMER GRINDER. ERNEST W. BRADLEY, Akron, Ohio, assignor to Taplin, Rice & Company, same place. Filed Oct. 21, 1889. Serial No. 327,646. (No model.)

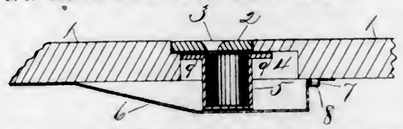


Claim.—1. In a tool-grinding machine, the combination, with a standard having a grinder mounted thereon, of a vertically-movable carriage on the side of the standard having a semicircular disk at one side, said disk being provided with a graduated edge, an elongated block on the table, the upper side of which is provided with a horizontal guide and the lower side is provided with a dependent pin to fit in the hole in the disk, and a slide and a plate on the block provided with means for supporting the article to be ground, substantially as described.

2. In a tool-grinding machine, the combination, with a standard having a grinder mounted thereon, of a vertically-movable carriage on the side of the standard, a plate on the carriage having a guide, a slide on the guide provided with a vertical bracket and having a bar projecting from its front, and a vertical bracket adjustable on the free end of the bar, substantially as described.

3. In a tool-grinding machine, the combination, with a standard having a grinder mounted thereon, of a carriage on the side of the standard, a plate on the carriage provided with a guide, a slide on the guide provided with a bracket and a forwardly-projecting bar, a bracket on the free end of the bar, the upper portion of which is provided with a center point and the lower portion is split vertically nearly to the center point, and a bolt for clamping the bracket on the bar, substantially as described.

444,876. INK-WELL FOR DESKS. WALTER M. BROWN, Albany, N. Y. Filed Nov. 10, 1890. Serial No. 370,896. (No model.)



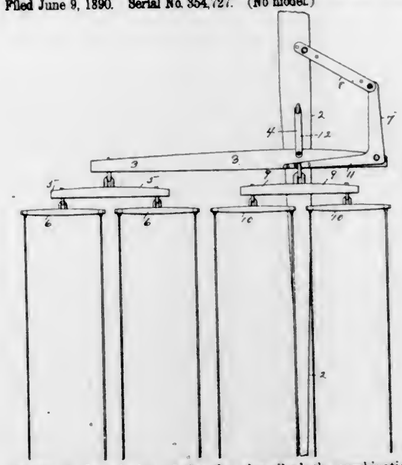
Claim.—1. A desk having a pen-hole through its top and having a coverless ink-well with its upper edge or mouth continuously held against the under side of the desk-top and arranged to be moved so that the mouth of the well will coincide with or recede from the pen-hole, substantially as described.

2. A desk-top having an opening in its under surface to receive an ink-well and a pen-hole through its top surface in communication with the opening in its under surface, and an ink-well removably held in said opening with its upper edge or mouth pressed against the desk-top, said well being arranged to move in its opening in the desk-top in order that the opening or mouth of the well may be made to coincide with or recede from said pen-hole at will, and the well be thus opened or closed, substantially as described.

3. An ink-well removably held in communication with a desk-top by a spring, said spring being attached to the desk by one end, but free at its other end, the free end of said spring being arranged to engage with a catch in order that said spring may securely hold the well in place, substantially as described.

4. A desk-top having an ink-well cover sunk therein, its upper surface flush with or below the upper surface of the desk-top, said cover having a pen-hole therein through which a pen may be passed, and having an ink-well whose mouth is retained underneath said cover and arranged to be moved so that the mouth of said well may be made to coincide with or recede from the pen-hole in said cover, substantially as described.

444,877. DRAFT-EQUALIZER. JOHN E. CARLSON, Appleton, Minn. Filed June 9, 1890. Serial No. 354,727. (No model.)

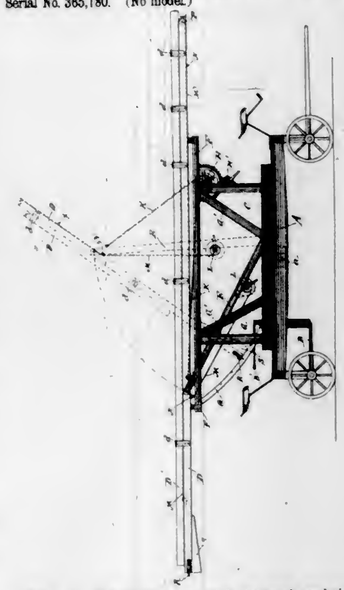


Claim.—1. In a device of the class described, the combination, with the pole 2, of the evener-bar 3, pivoted thereto, the bell-crank lever 7, pivoted to the short arm of said bar and connected by means of the link 8 to said pole in the rear of said bar, the evener 5, connected to the other end of said bar, and the evener 9, connected to the transverse arm 11 of the bell-crank lever 7, substantially as and for the purposes set forth.

2. The combination, with the pole 2, the evener-bar 3, pivoted transversely thereof, the bell-crank lever 7, pivoted to one end of said bar, the link 8, pivotally connected to said pole and to one arm of said bell-crank lever, so as to form an obtuse angle with said arm, the evener 5, connected to the other end of said evener-bar, and the evener 9, connected to the transverse arm of said bell-crank lever, substantially as and for the purposes set forth.

3. In a device of the class described, the combination, with the pole of the vehicle, of a transverse evener-bar pivoted thereto, a bell-crank lever pivoted upon one end of said bar, having its rearwardly-extending arm diagonally linked to said pole, and eveners and their whiffletrees connected, respectively, to the other end of said evener-bar and the other arm of said bell-crank lever, substantially as and for the purposes set forth.

444,878. FIREMAN'S LADDER. LOUIS DE LORIA, Minneapolis, Minn., assignor, by direct and mesne assignments, of one-half to Joseph Bayorgeon and Maxime Rabllard, same place. Filed Sept. 16, 1890. Serial No. 365,180. (No model.)



Claim.—1. The combination, with the truck and the turn-table, of the extension-ladder, the swinging support pivotally connecting the ladder and the table, and fixed guides on said table for preventing the lateral displacement of said swinging support.

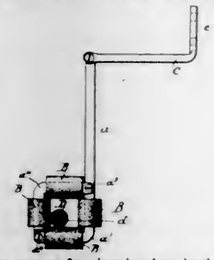
2. The combination, with the truck and the turn-table, of the extension-ladder, the elevated rectangular frame fixed to said table, and the swinging support located between the side bars of said frame, pivotally connecting the ladder and the table, whereby the frame is adapted to support the ladder in its horizontal position and guide the support in its movement.

3. The combination, with the truck and the turn-table, of the elevated rectangular frame, the extension-ladder, the swinging support located between the side bars of the frame and pivotally connecting the ladder and the table, the hoisting-windlass on said frame, with cable connected to upper end of said support, and the ladder-extension windlass located on the swinging support, the extension-ropes therefrom to the movable section of the ladder, and the sheaves at the head of fixed section for applying said ropes, substantially as described.

4. The combination, with the truck and turn-table and base-plate, of the extension-ladder, the swinging support pivotally connecting the ladder and the table, and a sliding bolt or latch carried by the heel of the support, engageable with the base-plate or turn-table to secure the support in an elevated position.

444,879. INSULATOR. CHARLES ELKINS, Saccarappa, Me. Filed Apr. 22, 1890. Serial No. 349,053. (No model.)

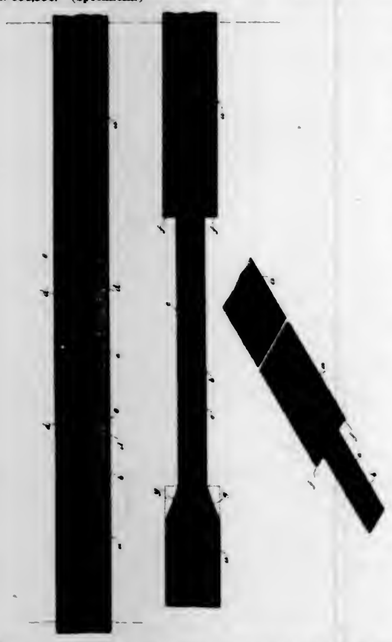
Claim.—1. A hanger or support for electric wires, having a rectangular frame, and anti-friction rollers on the sides of said frame.



2. A hanger or support for electric wires, having a rectangular frame in two parts, and an insulating anti-friction roller on each of the four sides of the frame.

3. A hanger or support for electric wires, consisting of a frame carrying a plurality of anti-friction rollers, and a bracket pivotally connected to said frame and forming the means of attaching to a support.

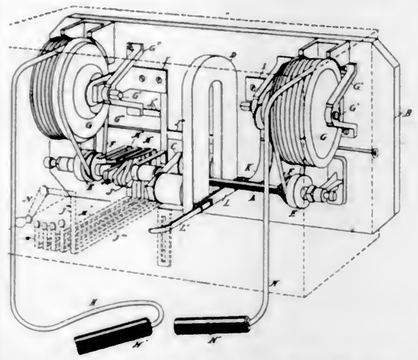
444,880. NECK TIE OR SCARF AND THE METHOD OF MAKING THE SAME. WILLIAM B. ERSKINE, New York, N. Y., assignor to the John Erskine & Company, same place. Filed July 12, 1890. Serial No. 358,590. (Specimens.)



Claim.—1. An improved method of manufacturing a tie, which consists in weaving the material for the tie in a single piece in the form of a tube, making the tube of the desired diameter of width in the tie portion proper and of smaller diameter or width in the neck portion by raising or lowering the outer warp-threads at the neck portion out of the path of the filling-threads, and thus preventing such outer warp-threads from being woven with the fabric of the neck portion, then cutting out these outer warp-threads at the neck portion, and then folding in, sewing, and finishing the raw ends or edges of the tie portions, substantially as described.

2. An improved tie consisting of a single piece of fabric woven in the form of a tube, having the desired diameter or width in the tie portion proper and having a smaller diameter or width in the neck portion by reason of having a smaller number of the warp-threads woven into the neck portion, and having the raw ends or edges of the tie portions next to the neck portions folded in, sewed, and finished, substantially as described.

444,881. ELECTRICAL EXERCISING-MACHINE. JOSEPH B. GARDINER, Nyack, assignor to the American Electric Exercise Machine Company, New York, N. Y. Filed June 2, 1890. Serial No. 353,907. (No model.)



Claim.—1. In combination, a magneto-electric mechanism, connections whereby the current generated thereby is transmitted to the person of an operator, a shaft, a pulley rotating thereon, a pull connected to the said pulley, a spring connected to the shaft and pulley, connections from the pulley to operate the magneto-electric mechanism, and means whereby the shaft may be turned and held in adjusted position and the tension of the spring thus varied to suit the strength of different individuals.

2. In combination, a magneto-electric mechanism and means whereby the current generated thereby is transmitted to the person of an operator, a shaft, a pulley rotating thereon, a pull connected to the said pulley, a spring connected to the pulley and shaft, connections from the pulley to operate the magneto-electric mechanism, a nut or boss on the shaft, a spring-pawl to engage the said nut or boss and thus hold the said shaft in adjusted position, and means whereby the shaft may be turned and the tension of the spring thus varied.

3. In combination, a magneto-electric mechanism, connections for conveying the current produced thereby to the person of an operator, two pulleys, two pulls, two ratchet mechanisms on the shaft of the magneto-electric mechanism, and means whereby the said ratchet mechanisms are operated from the respective pulleys and the current produced from the reciprocation of either pull.

4. In combination, a magneto-electric mechanism, connections for conveying the current produced thereby to the person of an operator, two pulleys, two pulls, two ratchet mechanisms on the shaft of the magneto-electric mechanism, and belts connecting the said pulleys to the respective ratchet mechanisms, whereby the current is produced from the reciprocation of either pull.

5. In combination, a magneto-electric mechanism, connections for conveying the current thereby produced to the person of an operator, two shafts, two pulleys thereon, two springs connecting the said shafts and pulleys, means whereby the said shafts may be turned up and held in adjusted position, two pulls connected to the said pulleys, two ratchet devices on the shaft of the magneto-electric mechanism, and two belts connecting the said pulleys to their respective ratchet devices, whereby the current is produced from the reciprocation of either pull.

6. In combination, a magneto-electric mechanism, connections for conveying the current thereby produced to the person of an operator, two shafts, two pulleys thereon, two springs connecting the said shafts and pulleys, nuts or bosses on the said shafts, spring-pawls adapted to engage the said nuts and hold them in adjusted position, means whereby the said shaft may be turned up as desired, two pulls connected to the said pulleys, two ratchet devices on the shaft of the magneto-electric mechanism, and two belts connecting the said pulleys to the said ratchet devices, whereby the current is produced from the reciprocation of either pull.

7. In combination, a pull and a resisting-spring therefor, a magneto-electric mechanism actuated by said pull, means whereby the electric current is transmitted to the person of an operator, and a lever or device whereby the current may be short-circuited and the device used simply as an exercising apparatus.

8. In combination, in a magneto-electric apparatus, the rotating shaft carrying the armature, the stationary or field magnet, a lever or other device which in one position is in contact with both the magnet and actuating-shaft, and suitable connections whereby when the lever or other device is in the position indicated a short circuit through the shaft and magnet will be closed.

9. In combination, in a magneto-electric apparatus, the rotating shaft carrying the armature, the stationary or field magnet, the keeper moving in contact with the magnet, whereby the force of the current may be varied by a magnetic short-circuiting, the said keeper in its extreme position being in contact with both magnet and shaft, and suitable connections whereby in this position of the keeper an electric short circuit through the magnet and shaft will be closed.

10. In a magneto-electric apparatus, the rotating shaft carrying the armature, the field-magnet, and suitable connections, combined with means whereby the magnet and shaft may be connected, so that an electric short circuit through the shaft and magnet is closed.

11. In combination, in a magneto-electric mechanism comprising an armature and field-magnet, a series of contact-breakers, each of which has a distinct magnetic relation to the armature and field-magnet, and means whereby any one of the series of contact-breakers may be thrown into electric circuit and the alternating current be thereby converted into a series of shocks or impulses of greater or less intensity corresponding to the magnetic relation between the armature and field-magnet and the contact-breaker then in operation.

12. In a magneto-electric mechanism, in combination, the rotating shaft carrying the armature, a series of contact-breakers carried thereby, each of which has a distinct magnetic relation to the armature, and means whereby any one of the series of contact-breakers may be thrown into electric circuit and the alternating current be thereby converted into a series of shocks or impulses of greater or less intensity corresponding to the magnetic relation between the armature and the contact-breaker then in operation.

13. In a magneto-electric mechanism, in combination, the rotating shaft carrying the armature, a series of cams carried thereby, each of which has a distinct magnetic relation to the armature, and means whereby any one of the series of cams may be thrown into electric circuit and the alternating current be thereby converted into a series of shocks or impulses of greater or less intensity corresponding to the magnetic relation between the armature and the cam then in operation.

14. In a magneto-electric mechanism, in combination, the rotating shaft, a series of cams carried thereby, contact-springs for each of the cams, and a switch, contact-points, and connections whereby any one of the cams may be thrown into electric operation and the alternating current converted into a series of shocks or impulses of varying intensity.

15. In a magneto-electric mechanism, in combination, the rotating shaft, a series of cams carried thereby inclined at different angles to the armature, contact-springs for each of the cams, a switch, and contact-points and connections whereby any of the cams may be thrown into electric operation and thereby the alternating current converted into a series or succession of impulses of varying intensity.

16. In a magneto-electric machine, in combination, the rotating shaft carrying the armature, the field-magnet, the cams M, the springs M′, the terminal J, connected to the coils of the armature, the switch N connected thereto, and connections from the springs M′, so that by moving the switch N any one of the cams may be thrown into electric connection and thus convert the alternating current into a series of impulses or shocks, or by breaking all connections with the cams M the simple alternating current is obtained.

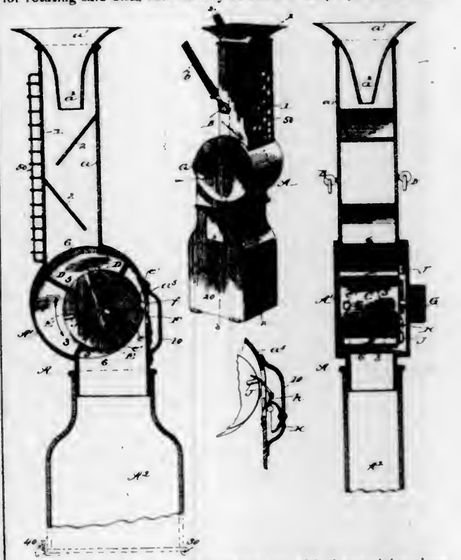
17. In combination, two shafts, two pulleys, springs connecting the shafts and pulleys, two pulls, a magneto-electric mechanism, connections for conveying the current to the person of the operator, and means whereby the magneto-electric mechanism is actuated from the pulleys upon the reciprocation of either pull.

18. In combination, two shafts, two pulleys, two pulls, a magneto-electric mechanism, connections for conveying the current to the person of the operator, and means whereby the magneto-electric mechanism is actuated from the pulleys upon the reciprocation of either pull.

444,882. FARE-COLLECTOR. MOSES D. GREENGARD and FRADELSHAU HARRIS, St. Louis, Mo. Filed Mar. 15, 1890. Serial No. 344,064. (No model.)

Claim.—1. In a fare-collector, the combination, with the receiving-chamber *a*, the cash-box A^3, and the intermediate chamber A′, of the disk C, journaled eccentrically in the said chamber A′, one face of said disk arranged for contact with one wall of said chamber A′, whereby a coin-passage between said disk and the opposite wall of chamber A′ is formed, a series of valves radially adjustable in disk C, said disk formed with a series of notches and a series of projections, a stop-pawl, and a gong-operating device projected through the wall of the chamber A′, adjacent the meeting end of said chamber and disk, adapted to engage, respectively, with the notches and projections on the disk, substantially as and for the purpose described.

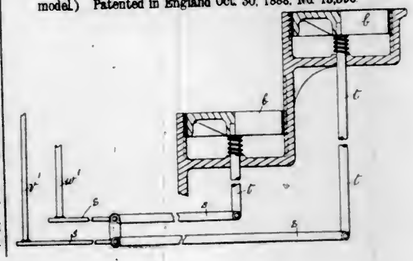
2. In a fare-collector, the combination, with the receiving-chamber *a*, having a transpicuous side, the cash-box A^3, and the casing A′ intermediate of the chamber *a* and the box A^3 and communicating therewith, of the disk C, journaled eccentrically in the said casing, a series of radially-movable blades operating through said disk and adapted to cut off communication between the chamber and box, a series of notches formed in the disk, a detent adapted to engage said notches and hold said disk from movement in one direction, and means for rotating said disk, substantially as and for the purpose described.



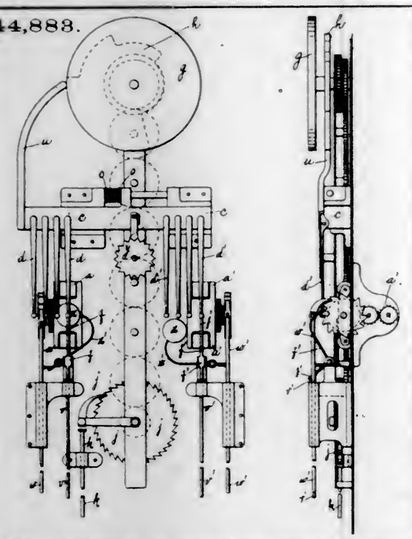
3. In a fare-collector, the combination, with the receiving-chamber *a*, the cash-box A^3, and the circular casing A′, disposed intermediate of and communicating with said chamber and box, of the disk C, centrally journaled eccentrically of the circular casing A′, the radially-adjustable blades operating through said said disk, said blades adapted to close communication between the chamber *a* and box A^3 and to arrest the fare, a turning knob secured to said disk, a series of projections formed on said disk of a number similar to the blades, and a gong having a spring-hammer adapted to normally project in the path of the movement of the projection, substantially as and for the purpose described.

4. The hereinbefore-described improved fare collector, consisting of a receiving-chamber having a receiving-opening at its upper end, a transpicuous side, a series of deflectors arranged below the receiving-opening, a circular casing A′, arranged below said chamber, a cash-box secured to the lower edge of said casing, said box, chamber, and casing having open communication, the disk C, journaled eccentrically within said casing, provided with radially-adjustable blades operating in transverse apertures in the disk, said blades adapted to project to close the communication between said chamber *a* and box A^3, said disk provided with a series of notches and a series of projections, a spring-detent adapted to engage said notches and hold the disk from movement in one direction, a gong having a spring-hammer, the free end thereof adapted to be engaged by the projections on the disk when said disk is rotated, and means for rotating said disk, all arranged substantially as and for the purpose described.

444,883. REGISTERING AND RECORDING APPARATUS FOR TRAM-CARS AND OMNIBUSES. THOMAS GREGORY, Southport, England. Original application filed Nov. 4, 1889, Serial No. 329,252. Divided and this application filed July 22, 1890. Serial No. 359,558. (No model.) Patented in England Oct. 30, 1888, No. 15,596.

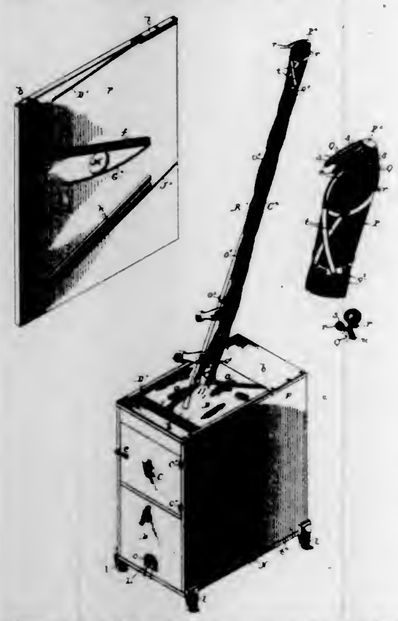


444,883.



Claim.—In registering and recording apparatus, the combination of stampers *d d* and *d' d'*, the sliding bar *c c*, and the covering disks *x x*, which stampers *d d* and *d' d'* are respectively operated substantially as herein set forth.

444,884. FRUIT-GATHERER. JOHN W. HOWELL, Montana, Kans. Filed Aug. 16, 1889. Serial No. 320,984. (No model.)



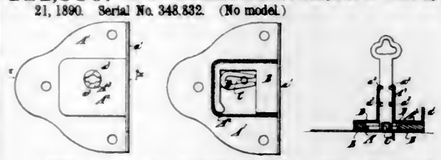
Claim.—1. In a fruit-gatherer, the combination, with a flexible tubular body, of forked wires above the top thereof and knives pivoted to the said wires, as described.

2. In a fruit-gatherer, the combination, with converging forked wires, of pendent pivoted knives mounted thereon, as described.

3. In a fruit-gatherer, the combination, with converging forked wires, of knives pivoted thereon and depending therefrom, the said knives having their opposite ends at different distances from the said wires, as described.

4. In a fruit-gatherer, the combination of a flexible conveyer, a scoop-shaped head constructed of wire-gauze on the top thereof, forked converging wires above the said head, and pendent knives pivoted to the said wires, as described.

444,885. LOCK. WILLIAM F. HYATT, Brooklyn, N. Y. Filed Apr. 21, 1890. Serial No. 348,832. (No model.)



Claim.—1. In a lock, the combination of a case, a bolt having a notch or opening formed in it, a post fastened to the lock-case and protruding into said notch or opening of the bolt, and a cam having two resilient arms which embrace said post, substantially as specified.

2. A lock having a case provided with a tubular post in which a ward is formed by slitting the metal of which it is composed and bending a portion which is intermediate of the slits transversely to the length of the slits, substantially as specified.

3. In a lock, the combination of a case, a bolt having a notch or opening formed in it, and a cam for operating the bolt, located within said notch or opening and having a spring connection with its support, whereby it will be retained in position, substantially as specified.

4. In a lock, the combination of a substantially flat case having an opening in one side or plate and a bolt offset intermediately of its ends to extend through said opening, and having one end portion bearing against one surface of the said side or plate of the lock-case and the other end portion bearing against the other surface of the said side or plate of the lock-case, substantially as specified.

444,886. BROOM-HEAD. HENRY W. JUDEVINE, Edgar Springs, Mo. Filed June 26, 1890. Serial No. 356,536. (No model.)



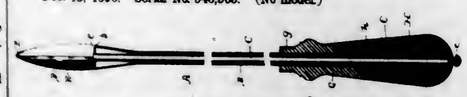
Claim.—1. In a broom-head, the combination, with wire clamps which are applied to opposite sides of the straw and having vertical portions outside of the straw, which are provided with lateral bends at their upper ends, of horizontal clamping-plates which extend across the straw and have their end engage the said bends, and clamping-bolts which pass through the plates and secure the parts together, substantially as shown.

2. In a broom-head, the combination of the two wire clamps applied to the sides of the straw, having bends at their upper ends, of clamping-plates having perforated ends which rest in the bends, and a plate which passes through the straw between the plates, having perforations in its ends which register with the perforations in the plates, and clamping-bolts which pass through the said perforations for securing the parts together, substantially as described.

3. The combination of the two wire clamps provided with bends near their upper ends, the plates C, having their ends turned at right angles, so as to catch outside of the clamps, the clamping-bolts, and the plate which is passed through the center of the head, substantially as specified.

4. A broom-head consisting of the combination of the two wire clamps, which are fastened at their upper ends to the broom-handle and provided with bends at their upper ends, the clamping-plates provided with flanges upon their inner sides and having their ends turned at right angles so as to catch outside of the wire clamps, the clamping-bolts, the plate which passes through the central portion of the head, and the bent wires which connect the lower ends of the clamps together, substantially as described.

444,887. SAMPLER. CARLES J. MENGES, Kansas City, Mo. Filed Feb. 15, 1890. Serial No. 340,583. (No model.)



Claim.—1. In a sampler, the combination of two tubes, the one within the other, a spoon eccentrically mounted on the end of each of the said tubes, the one spoon being contained within the other, and means for rotating the said tubes, as described.

2. A sampler having two spoons, the one within the other, each of the said spoons having teeth upon one of its sides, and means for rotating the said spoons, as described.

3. In a sampler, the combination of two tubes, the one within the other, two spoons, one contained within the other, the outer of the said spoons being eccentrically mounted on the outer tube, and the inner spoons being eccentrically mounted on the inner tube, the said spoons having their opposite sides serrated, the said serrated side of the outer spoon being closer to the pivotal point thereof than is its opposite side, while the serrated side of the inner spoon is farther from the pivotal point thereof than its opposite side, and means for rotating the said tubes in relation to each other, as described.

4. In a sampler, the combination, with a tube having a spoon upon its end, the said tube communicating with the said spoon by means of an enlargement, an inner tube contained within the first-named tube and having a spoon upon its end contained within the first-named spoon, the last-named spoon having a plate therein closing the enlargement of the outer tube, and means for rotating the inner tube, as described.

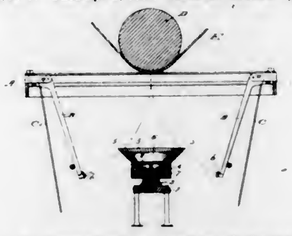
5. In a sampler, the combination of an outer tube having a spoon on one end thereof and a handle upon the opposite end, a tube within the said outer tube having a spoon upon one end thereof, with the interior of which the central orifice of the inner tube connects, the opposite end of the inner tube projecting beyond the outer tube, and a stopper therefor.

444,888. SHOE. CHARLES A. MERRILL and FRANK STOWE, Kansas City, Mo. Filed June 6, 1890. Serial No. 354,438. (No model.)



Claim.—As an improved article of manufacture, a shoe having inserted on both sides of the upper quarter a reticulated material forming a net-work for ventilation and secured in place to the bindings at the top and foxing at the bottom by stitches, as herein shown and described.

444,889. TYPE-WRITING MACHINE. MORTIMER G. MERRITT, Springfield, Mass., assignor to the Yost Writing Machine Company, New York, N. Y. Filed Apr. 9, 1887. Serial No. 234,252. (No model.)



Claim.—1. In a type-writing machine in which the type print directly onto the paper, the combination of a paper-platen, a series of radially-arranged type-carriers adapted to strike at a common center, and a series of inclined textile inking-pads arranged to intersect the paths of travel of the type.

2. In a type-writing machine in which the type print directly onto the paper, the combination of a paper-platen, a series of radially-arranged type-carriers adapted to strike at a common point, an ink-pad support arranged vertically in line with the common center of the type, and a series of textile ink-pads arranged to radiate from said support in substantially the direction of the pivots of the type-carriers and to intersect the paths of travel of the type.

3. In a type-writing machine in which the type print directly onto the paper, the combination, with the paper-platen and the radially-arranged type-carriers, of an inking contrivance arranged vertically in line with the impression-point, and consisting of an ink-reservoir and a flexible inking surface disposed in the paths of travel of the type, substantially as set forth.

4. In a type-writing machine in which the type print directly onto the paper, the combination, with the paper-platen and type-carriers, of an inking contrivance consisting of an ink-reservoir, a flexible flaring inking-surface, and a tapering or inclined holder, substantially as set forth.

5. The combination of the ink-reservoir, the tapering or inclined holder, and the flexible inking-surface projecting beyond the holder, substantially as set forth.

6. The combination of the ink-reservoir, the adjustable tapering or inclined holder, and the flexible inking-surface projecting beyond the holder, whereby the feed of the ink to the free end of the inking-surface may be regulated, substantially as set forth.

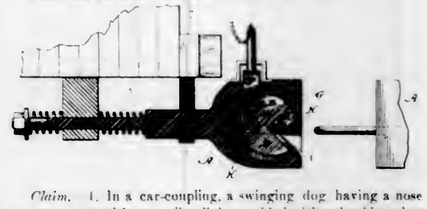
7. The combination of an ink-reservoir, a holder having a perforated web, an inking-pad between the reservoir and the holder, and the retaining and adjusting screw.

8. The combination of a base or standard formed with a seat or bearing, an ink-reservoir provided with a hub or spindle, a holder, and an inking-pad clamped between the reservoir and the holder.

9. An inking contrivance having a flexible inking-surface clamped near one end and supported interiorly to near its other end, whereby two points of bending are provided, substantially as set forth.

10. An inking contrivance provided with a series of independent textile inking-pads arranged in the form of an inverted frustum of a cone.

444,890. CAR-COUPLING. HENRY A. STEVENS, Norristown, Pa. Filed June 13, 1890. Serial No. 355,382. (No model.)



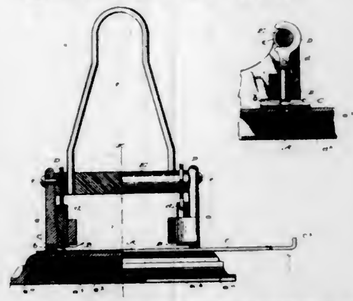
Claim. 1. In a car-coupling, a swinging dog having a nose in front to engage with a coupling-link provided with a shoulder adapted to be engaged by a vertically-movable pin, and a depending heel rearward of said nose and the axis of the dog, substantially as described.

2. In a car-coupling, a swinging dog having a nose to be engaged by a vertically-movable pin to lock the nose closed, said dog also having a recess G for reception of the end of the pin to hold the dog open and thereby allow entrance of the link, substantially as described.

3. A car-coupling consisting of a swinging dog formed with a depending nose in front and a depending heel rearward of said nose and the axis, said heel extending below the nose and substantially parallel therewith and presenting its front face to the advancing coupling-link, so as to throw back said heel and thereby lower the nose into said link, substantially as described.

4. In a car-coupling, a rotatable dog having a recess G therein, together with a shoulder and nose C, combined with a movable pin and a link, substantially as described.

444,891. PUNCH. PHILIP H. YAWMAN, Rochester, N. Y., assignor to the Office Specialty Manufacturing Company, of New York. Filed May 20, 1890. Serial No. 352,509. (No model.)



Claim.—1. The duplex paper-punch consisting of the base-plate, its standards, the sliding punches in said standards, the eccentric-shaft

sustained by the standards, and the yokes or links connecting the two punches with the shaft.

2. In a paper-punch, the combination of a base-plate and a rigid standard overhanging the same and integral therewith, a punch sliding vertically within the standard, an eccentric connected to the standard, and a yoke or link pivotally connected at one end to the punch and at the opposite end embracing the eccentric.

3. In a paper-punch, the combination of a standard, a sliding punch guided therein, a circumferentially-grooved eccentric, and a yoke or link jointed to the punch, provided with a side opening to receive the eccentric and contracted upon the latter to prevent its escape.

4. A duplex punch consisting of the base-plate having the standards and the bottom chamber, the eccentric-shaft, the links connected thereto, the punch connected to the links and guided in the standards, and the gage-plate fixed to the bed-plate and provided with openings through which the punches act to deliver the punchings into the base-chamber.

444,892. COMBINED CUT-OUT AND LIGHTNING-ARRESTER. ALBERT T. ALDRICH, Worcester, Mass. Filed June 20, 1890. Serial No. 356,081. (No model.)



Claim.—1. The bearings H, having means for fastening the same to the supports and the line-wires D E, in combination with the detachably-fastened fuse-wire holders B and fuse-wire C, the insulated spring-actuated metal pin *h*, passing through the holder and engaging with the fuse-wire, the metal plate *f*, secured to a suitable support and against which the pin *h* is held, and the ground-wires F, connected with said plate *f*, substantially as and for the purpose set forth.

2. In a protector for telephone and similar lines, the fuse-wire holder B and fuse-wire C, in combination with a transverse insulated metal pin *h*, passed through the holder and engaging with said fuse-wire, the metal plate *f*, secured to a suitable support and engaging with said metal pin, and the ground-wire F, connected with said plate, substantially as and for the purpose set forth.

3. In a protector for telephone and similar lines, the fuse-wire holder B and fuse-wire C, in combination with the metal pin *h* and insulating-tube *h'*, both passed through the holder and engaging with said fuse-wire, the metal plate *f*, secured to a suitable support, means for holding the pin *h* against said plate, and the ground-wires F, connected with the plate *f*, substantially as and for the purpose set forth.

444,893. TROLLEY FOR ELECTRIC RAILWAYS. HARRY H. BLADES, Detroit, Mich. Filed Aug. 11, 1890. Serial No. 361,676. (No model.)



Claim.—1. In an overhead trolley for electric railways, the combination, with the trolley-rod pivoted at its base to the supporting-plate, of two coil-springs having their lower ends rigidly engaged to the said supporting-plate and their upper ends engaged to the rod above its pivoted end, substantially as described.

2. In an overhead trolley for electric railways, the combination, with the trolley-rod engaged at its base to the supporting-plate by a universal joint, of two coil-springs having their lower ends rigidly engaged to the said supporting-plate and their upper ends engaged with the rod, substantially as described.

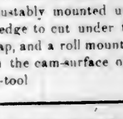
3. The combination, with the trolley-rod engaged to the supporting-plate by a ball-and-socket joint, of two coil-springs rigidly engaged at their lower ends to the said supporting-plate and having their upper ends engaged to a cross-arm or yoke on the rods, substantially as described.

4. The combination, with a trolley-rod having an armor-yoke embracing the same and adjustable lengthwise of the rod, said rod engaged to its supporting-plate by a universal joint, of two coil-springs having their lower ends rigidly engaged to the supporting-plate and their upper ends engaged to the yoke, substantially as described.

5. The combination, with a trolley-rod pivoted to its supporting-plate and having a cross-arm or yoke adjustable lengthwise of the rod, of two coil-springs having their lower ends rigidly engaged to the supporting-plate and their upper ends engaged to the yoke, substantially as described.

6. The combination, with a trolley-rod having its end engaged to the supporting-plate by a ball-and-socket joint, and having a cross-arm or yoke adjustable lengthwise of the rod, of two coil-springs rigidly engaged at their base to the supporting-plate and having their upper ends engaged to the yoke, substantially as described.

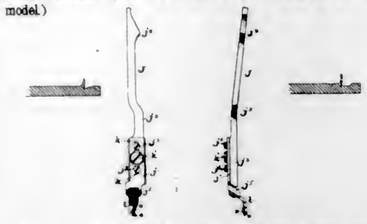
444,894. METHOD OF MAKING WATCH-DIALS. JOHN JACOBSON, Boston, Mass. Filed Mar. 20, 1888. Serial No. 267,913. (No model.)



Claim.—1. That improvement in the art or method of making watch-dials which consists in providing the metal base of the dial with a covering of enamel of uneven thickness but level surface, molding the said enamel by stamping and depressing the surface of the thicker portion, and baking the said enamel, substantially as described.

2. That improvement in the art or method of making watch-dials which consists in providing the metallic base of the dial with a covering of plastic enamel, baking the said enamel, and stamping or pressing the same to the desired shape while heated, substantially as described.

444,895. CHANNEL-CUTTING AND FLAP-TURNING ATTACHMENT FOR SEWING-MACHINES. ALBERT E. JOHNSON and CYRUS H. PORTER, Brockton, Mass. Filed May 22, 1890. Serial No. 352,700. (No model.)



Claim.—1. In combination with the stitch-forming and work-feeding mechanisms of a sewing-machine, a channel-forming tool provided with a knife-edge adapted to cut an incision beneath a portion of the stock of the sole, and a share or inclined projection in the shank of said tool in suitable proximity to said cutting-edge to raise and turn back the flap of stock so cut under, said tool being constructed and arranged to operate upon the sole or other article being sewed just in advance of the needle and awl and cut and turn up a short section of the channel-flap during the formation of each stitch of a line of sewing.

2. The combination, with the stitch-forming and work-feeding mechanisms of a sewing-machine, of the tool *l*, provided with the cutting-knife *o* and the flap-turning share *o'*, formed upon the shank of said tool in suitable proximity to the cutting-edge of said knife to raise and hold up the flap of material cut under by said knife, the lever J, provided with a cam-surface, and the roll *m*, constructed and arranged to act upon said cam-surface to vibrate said lever during the formation of each stitch of a line of sewing.

3. The combination, with the stitch-forming and work-feeding mechanisms of a sewing-machine, of the lever J, provided with a cam-surface and pivoted to and movable with the presser-foot bar, the channeling-tool *l*, adjustably mounted upon said lever and provided with a cutting knife-edge to cut under the flap and a share to raise and turn back said flap, and a roll mounted upon a vibrating arm and arranged to act upon the cam-surface of said lever J to vibrate said lever and channeling-tool

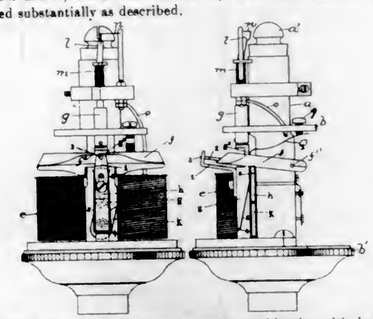
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444,896. AUTOMATIC ELECTRIC IGNITING DEVICE. THOMAS W. LANE, Boston, Mass., assignor to the Electric Gas Lighting Company, of Maine. Filed June 13, 1889. Serial No. 314,098. (No model.)

Claim.—1. In an electric gas-lighting device, in combination with the gas-pillar having a fixed electrode, magnet, and armature, an angle-piece 1, angle-pin 2, and pawl-carrying bar *g*, having an enlarged recess g^3 so arranged as to allow a greater movement to the pawl-carrying bar than to the armature-bar, substantially as described.

2. In combination with an automatic electric gas-burner having a proper gas-tube, magnet, and armature, the recessed pawl-carrying bar *g*, angle-piece 1, angle-pin 2, pawl *h*, block *k*, having the unequal

recesses *k'* and k^3, and a cock actuated by said block, adapted and arranged substantially as described.



3. In an electric gas-lighting device, in combination with the gas-pillar having a fixed and a movable electrode, magnet, armature, pawl-carrying bar, a pawl for tilting the gas-cock, and a gas-cock, a V-shaped spring 5, supported on the pawl-carrying bar and controlling the pawl normally in a vertical position, substantially as described.

4. In an electric gas-lighting device having a magnet for turning on and off the gas, whose coil is normally in circuit with the breaker-piece or movable electrode at the burner-tip, and having also an oscillating gas-cock operated by a pawl and having said breaker-piece and pawl, the combination, with the armature, of an angle-piece 1, pin 2, pawl-carrying bar *g*, properly recessed at g^3, so as to allow a greater range of motion to the bar than to the armature, substantially as described.

5. In an electric gas-lighting device having a magnet for turning on and off the gas, whose coil is normally in circuit with the breaker-piece or movable electrode at the burner-tip and having also said breaker-piece and an oscillating gas-cock operated by a pawl carried by a pawl-carrying bar controlled by the armature, the combination, with the pawl-carrying bar and pawl, of a V-shaped spring so adjusted as to normally retain said pawl in a vertical position, substantially as described.

444,897. CARPENTER'S PLANE. OLIVER LONGVAL, Millbury, Mass. Filed Apr. 5, 1889. Serial No. 306,093. (No model.)



Claim.—In a carpenter's plane, the combination, with the plane-bed A, having a series of vertical openings *a* therein, of detachable cups *d* and *e*, having suitable plugged inlets *d'* *e'* and fitted over said openings *a* in the bed, the fastening-screws *b*, passed vertically through the oil-receptacles into the bed, the absorbent material contained within the oil-receptacles, and the packings *c*, interposed between the under side of the heads of the fastening-screws and the oil-receptacles and between said oil-receptacles and the top of the bed, substantially as and for the purpose set forth.

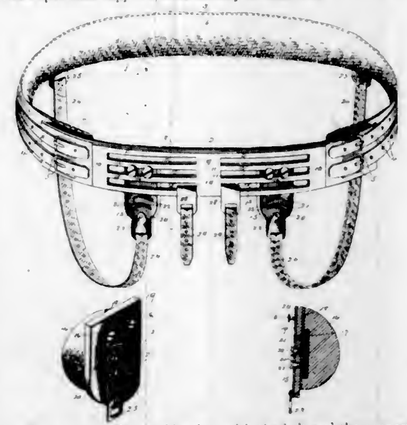
444,898. METHOD OF APPLYING LITHOGRAPHIC IMPRESSIONS TO POTTERY-WARE. JOHN RIDGWAY and EDWARD A. RIDGWAY, Stoke-on-Trent, County of Stafford, England. Filed Feb. 8, 1889. Serial No. 299,186. (No specimens.) Patented in England Apr. 26, 1887, No. 6,053.

Claim.—The method of applying lithographic impressions to pottery-ware, consisting in coating transfer-paper with a solution of Irish moss, drying and calendering the treated paper, separately lithographing the semi-liquid colors thereonto and subsequently dusting with the same color, and applying the impression to the dry-sized ware by laying the face of the impression on the ware, moistening the back of the paper, pressing it gently onto the ware, and carefully removing it, so as to leave the design intact on the ware, as set forth.

444,899. TRUSS. TALTON E. WHEELER, Garrard County, Ky. Filed Sept. 3, 1890. Serial No. 363,806. (No model.)

Claim.—1. In a truss, a two-part belt 1, composed of the front and rear sections 2 and 3, the straps and buckles 4 and 5, arranged at or near the ends thereof, the cushion 6, secured to said rear section and extending from end to end thereof, the pads 7, secured to the ends of said front section and arranged to overlap the ends of said rear cushioned section, and the narrow cushioned strip 8, connecting said pads, substantially as described.

2. In a truss, the combination, with the belt and the supporting-plate secured thereto and formed each with a series of horizontally-arranged registering slots, of the pad-supports, means for vertically and horizontally adjusting them upon said slotted belt and plate, the pads, and means for adjusting the same vertically and in the arcs of circles upon said supports, substantially as described.



3. In a truss, the combination, with the belt and the supporting-plate secured thereto and formed each with a series of horizontally-arranged registering slots, of the pad-supports, means for vertically and horizontally adjusting them upon said slotted belt and plate, the pads, and means for adjusting the same vertically and in the arcs of circles upon said supports, said means consisting, respectively, of the set-screws in the upper ends of said supports and the curved slots and set-screws in the front or outer faces thereof, substantially as described.

4. In a truss, the combination, with the belt and the supporting-plate secured thereto and formed with a series of horizontal slots, of the pad-supports provided with loops at their lower ends, the slotted plates secured to the rear part of said belt, the movable buckles connected to said slotted plates, and the under straps attached to said loops and buckles, substantially as described.

5. A pad for trusses, which is formed with a recess in its front or outer side, which is filled with a core or plug of brass or other soft metal, which is provided with a plate of the same size as the outer side of said pad, in combination with a pad-support composed of a block of leather and a metallic plate secured to the outer face thereof, both being formed with registering curved slots and set-screws passing through said slots and into said core or plug of soft metal, substantially as described.

6. In a truss, the combination, with the belt and the supporting-plate secured thereto and formed with a series of horizontal slots, of the pad-supports provided with loops at their lower ends, the slotted plates secured to the rear part of said belt, the movable buckles connected to said slotted plates, the laterally adjustable and removable hoops or loops connected to said plate, and the straps for supporting a suspensory, substantially as described.

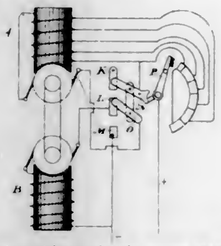
7. In a truss, the combination, with the belt and the supporting-plate secured thereto and formed with a series of horizontal slots and solid middle and end portions, of the vertically and horizontally-adjustable pads, the pad-supports provided with loops at their lower ends, the slotted plates secured to the rear part of said belt, the movable buckles connected to said slotted plates, the under straps attached to said loops and buckles, the laterally adjustable and removable hooks or loops connected to said plate, and the straps for supporting a suspensory, substantially as described.

444,900. REGULATING APPARATUS FOR ELECTRIC MOTORS. MERLE J. WIGHTMAN, Scranton, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 19, 1890. Serial No. 365,681. (No model.)

Claim.—1. The combination, with two electric motors geared to the same mechanism, of a controlling-switch having contacts connected to the terminals of both motors, respectively, and to the line-terminals, and provided with a field-magnet regulator for one or both of the motors, whereby the said switch may be used to vary the speed of the mechanism by changing the field-magnet strength and shifting the motors from series to multiple arc.

2. The combination, with two electric motors geared to the same mechanism, of a controlling-switch having contacts connected to the

terminals of both motors, respectively, and to the two line-terminals, and provided with a field-magnet regulator for one or both of the motors, a single operating-handle being connected to the moving parts for the contacts and the regulator, whereby a single movement of the switch may be employed to vary the speed of the mechanism by changing the field-magnet strength and shifting the motors from series to multiple arc.

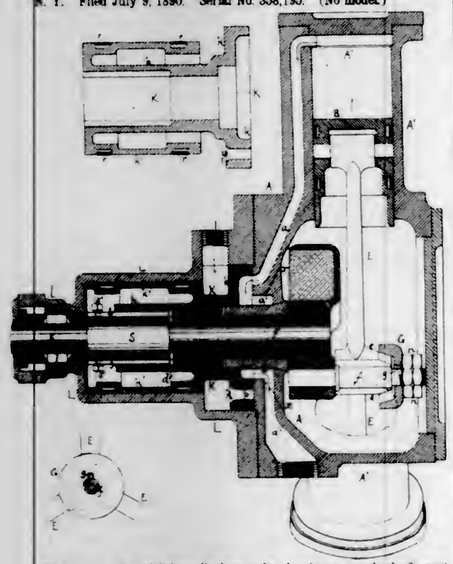


3. The combination, with two electric motors geared to the same mechanism, of a controlling-switch having contacts connected, first, to the terminals of both motors, respectively, second, to the two line-terminals, and, third, to one or more intermediate points in the field-magnet coils of one or both motors, and a common contact-lever passing over the said contacts and successively regulating the field-magnet strength and shifting the motors from series to multiple-arc connection, whereby the said switch may be used to vary the speed of the mechanism by effecting the said changes of connection.

4. The combination, with two electric motors geared to the same mechanism, of a controlling-switch for changing the motors from series to multiple-arc connections and a cut-out switch for each of the said motors, whereby the speed of the said mechanism may be varied by changes in the motor connection and either of said motors removed from circuit at will.

5. The combination, with two electric motors geared to the same mechanism, of a regulating-switch consisting of contact-plates connected to the motor-terminals and the line terminals and a movable piece bearing thereon acting to shift the motors from series to multiple arc, of a resistance and a contact-plate connected therewith, so that it may be put into and out of circuit at will to give an additional degree of regulation.

444,901. **MULTIPLE-CYLINDER ENGINE.** CHARLES C. ABBE, Brooklyn, assignor to the Abbe Steam Engine Company, New York, N. Y. Filed July 9, 1890. Serial No. 358,195. (No model.)

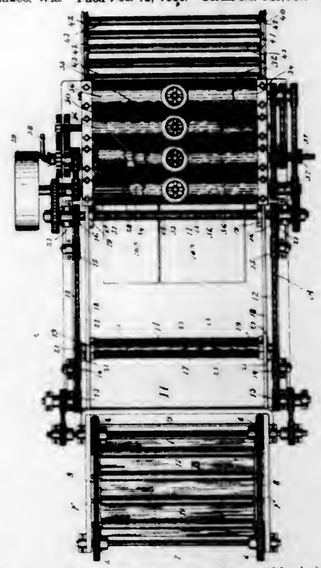


Claim.—1. A multiple-cylinder engine having a crank-shaft, with a rotary disk-valve around the crank-shaft, and a counterbalancing-piston which is formed in one with or secured to the disk portion and which is adapted to an extended bearing in the casing to support the valve independently of the shaft, with which it has only a driving connection, all substantially as set forth.

2. A multiple-cylinder engine having a casing and a crank-shaft turning in a bearing, with a rotary counterbalanced disk-valve about the crank-shaft and turning on the bearing for the crank-shaft and also in a peripheral bearing in the casing.

3. The combination of the crank-shaft of a multiple-cylinder engine with a counterbalanced disk-valve about the crank-shaft and having within its hub an internal longitudinal key seat or seats, and a sleeve on the shaft entering into the hub, with a key or keys adapted to the said seat or seats.

444,902. **SHINGLE-PAINTING MACHINE.** CHARLES CUNO, Milwaukee, Wis. Filed Feb. 12, 1890. Serial No. 340,147. (No model.)



Claim.—1. In a shingle-painting machine, a shingle-holding table hinged in the top of a vertically-moving leg supported and guided in a fixed post and held up to its work yieldingly by a spring, substantially as described.

2. In a shingle-painting machine, the combination, with a vertically-moving shingle-holding table, of a surrounding box or guard, substantially as described.

3. In a shingle-painting machine, the combination, with a vertically-moving shingle-holding table held yieldingly upward, of a set of sprocket-chains carried on wheels, the chains being located above the shingle-holding table and provided with transverse bars arranged and adapted to engage a single shingle or layer of shingles and force the same forward as the sprocket-chains travel, substantially as described.

4. In a shingle-painting machine, a set of endless sprocket-chains carried on sprocket-wheels in and above a liquid-holding tank, and a track extending parallel with the sprocket-chains through a portion of their course, in combination with shingle-gripping devices suspended on the sprocket-chains and guided by the track throughout its length, and at a part of the course of the chains where the track does not exist being carried with the chains below the track and near to the liquid in the tank, substantially as described.

5. In a shingle-painting machine, a set of sprocket-chains carried on wheels in and above a liquid-holding tank, in combination with gripping devices pivoted at distances apart on the sprocket-chains, and a track extending alongside the sprocket-chains throughout their course, except for a short distance in a lower part thereof, on which track the gripping devices are guided and held in a vertical position when traveling alongside, the gripping devices being so constructed as to tilt a part of a revolution by the gravity of their loads when not supported and guided by the track, substantially as described.

6. In a shingle-painting machine, a track having an upper horizontal line recurved at its ends and lower horizontal lengths, and an incline 18', the track being omitted for a certain portion of the distance of its lower horizontal line between the extreme horizontal length of the track, in combination with endless sprocket-chains running parallel with the track throughout its course and dropping below

the line of the track at the point in its course of the absence of the track, and gripping devices carried on the chains, which devices are provided with wheels that bear against the track while traveling alongside thereof, substantially as described.

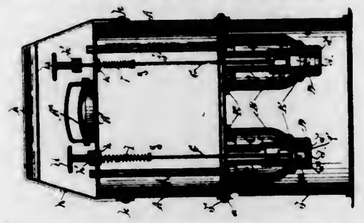
7. In a shingle-painting machine, a gripping device secured to and carried on endless sprocket-chains, consisting of head-blocks 19 19, journaled in arms 21 21, wheels 22 22, axled on the head-blocks, and gripping-rollers 23 23, supported movably and yieldingly in the head-blocks, substantially as described.

8. In a shingle-painting machine, the combination, with a set of endless sprocket-chains and tracks running parallel thereto through a portion of the course of the chains, of head-blocks 19 19, carrying yielding gripping-rollers 23 23 and journaled in arms 21 21, affixed to the sprocket-chains, and wheels 22 22, axled on pins inserted in the head-blocks and arranged to travel on the tracks and support the head-blocks in a desired position with reference thereto, substantially as described.

9. In a shingle-painting machine, an upper and lower revolving steam-drum and an upper and lower revolving brush arranged parallel to each other, the steam-drums being provided with pipes for supplying them with steam, the drums and the brushes being held yieldingly near to each other, in combination with two sets of feed-rolls, one set before and the other set following the steam-drums and brushes, substantially as described.

10. In a shingle-painting machine, the combination, with endless sprocket-chains carrying devices arranged to grip one or more shingles and carry them forward into and out of a liquid-holding tank, of an independent set of sprocket-chains arranged above an automatically vertically-moving table, which independent sprocket-chains are provided with cross-bars, whereby they are adapted to feed shingles to the gripping devices automatically, substantially as described.

444,903. **MEASURING MILK-CAN.** RICHARD EAGAN, Syracuse N. Y. Filed June 22, 1889. Serial No. 315,261. (No model.)



Claim.—1. The combination of a reservoir, a depending tube or chamber connected to said reservoir, a measuring-receptacle mounted around said tube, with the lower extremity thereof projecting below the measuring-receptacle, a cap or nut engaging said lower extremity and retaining the measuring-receptacle in position, a valve-seat in said cap or nut, and a valve movable toward or away from said seat for allowing or cutting off the discharge from said valve-seat, substantially as and for the purpose set forth.

2. The combination of a reservoir, a tube depending from said reservoir, a measuring-receptacle mounted around said tube, a valve-rod having a valve for admitting and discharging the liquid from said measuring-receptacle, a shoulder on said valve-rod, and a spring supported by said shoulder and by the top of said reservoir, substantially as and for the purpose set forth.

3. The combination of a reservoir having a depending flange, a tube depending from said reservoir, a measuring-receptacle mounted around said tube, with the upper extremity around said flange and the lower extremity above the lower extremity of said tube, a nut engaging said lower extremity of the tube and abutting against the measuring-receptacle, and packing-joints between the said measuring-receptacle, reservoir, and nut, substantially as and for the purpose specified.

4. The combination of a reservoir, a measuring-receptacle, a valve for discharging the measuring-receptacle, the rod G, carrying said valve, an opening in the reservoir for allowing the passage of the rod G, and a plate or washer *h* for closing said opening, substantially as and for the purpose specified.

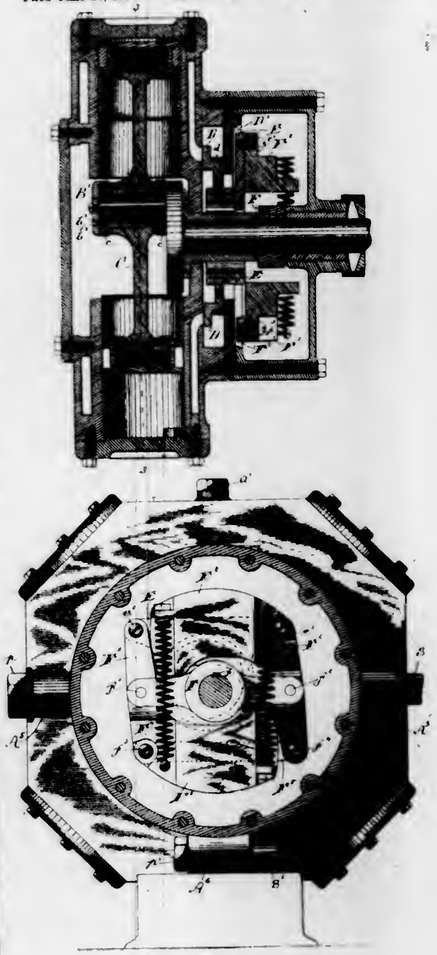
5. The combination of a reservoir, a measuring-receptacle, a valve for discharging the measuring-receptacle, the rod G, having a shoulder *g* and carrying said valve, an opening in the reservoir for allowing the passage of said rod, a plate *h* for closing said opening, and a spring I, interposed between said plate and the shoulder *g*, substantially as and for the purpose set forth.

6. The combination of a reservoir, a measuring-receptacle, a valve for discharging the measuring-receptacle, the rod G, carrying said valve and having a shoulder *g*, an opening in the reservoir for allowing the passage of said rod G, a movable plate or shoulder for closing said opening, a spring I, interposed between said plate and the shoulder *g*, and a fixed shoulder mounted upon said rod on the outside of said reservoir and adapted to be drawn through the opening in the reservoir, substantially as set forth.

7. The combination of a reservoir and a measuring-receptacle with a tube connected to the reservoir and extending through the measuring-receptacle, an opening or openings in said tube, valve-seats above and below said openings, a double-faced valve for abutting against either of said valve-seats and opening the passage through the opposite one, a projection upon said reservoir, a detachable cap for engaging said projection and protecting said measuring-receptacles, and a spring-catch for engaging said reservoir, substantially as specified.

8. The combination of a reservoir, a depending tube or chamber connected to said reservoir, a measuring-receptacle mounted around said tube, with the lower extremity projecting below the measuring-receptacle, a cap or nut engaging said lower extremity and retaining the measuring-receptacle in position, a valve-seat in said cap or nut, a valve movable toward or away from said seat for allowing or cutting off the discharge therefrom, a valve-rod extending to the top of the can and provided with a handle, and a holding-handle connected to the reservoir in proximity to the handle upon said valve-rod, substantially as and for the purpose specified.

444,904. **STEAM-ENGINE.** GEORGE C. PYLE, Indianapolis, Ind., assignor to the National Electric Head Light Company, same place. Filed June 20, 1889. Serial No. 314,968. (No model.)



Claim.—1. The combination, in a steam-engine, of the valve D, having a flange, a yoke also having a flange which engages with the flange on the valve, said yoke being pivoted to the governor, said governor consisting of two weighted arms and a cross-arm fixed rigidly on the shaft and pivoted to said governor-arms, whereby as the speed increases said arms are thrown apart by centrifugal force and said yoke drawn in, decreasing the eccentricity of its relation to the valve and causing said valve to cut off the ports in proportion to the speed developed, substantially as set forth.

2. The combination, in an engine, of the cross-arm F, rigidly fastened to the engine-shaft, the two L-shaped arms F^1 F^2, each pivoted about midway of its lighter wing to an end of said cross-arm, cross-bars connecting the extreme ends of said lighter wings to points at or near the angles of the opposite arms, and springs attached to and connecting said L-shaped arms transversely of said cross-bars, substantially as shown and described.

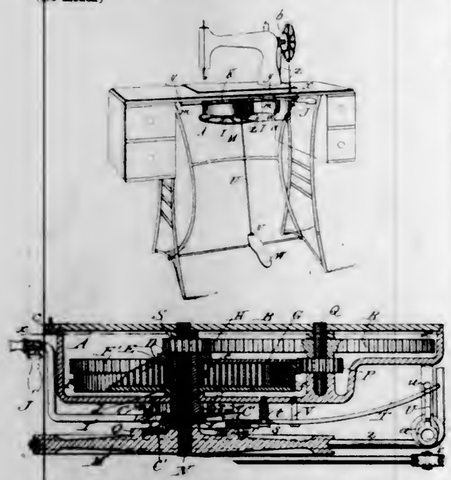
3. The combination, in an engine, of an arm rigidly attached to the engine-shaft, two weighted arms connected thereto, a cross-bar connecting said arms at one end, and a yoke, (which is in part also a cross-bar connecting said arms at the other end,) said yoke being provided with a ring or flange set eccentrically to the shaft when the parts are assembled and which engages with the governor, substantially as set forth.

4. The combination, in an engine, of a steam-chest having four ports therein, a valve in the form of an annular ring having a flange, and a governor having a part attached thereto, with a corresponding flange set eccentrically to the center of the steam-chest and which engages with the governor, whereby said governor is operated.

5. The combination, in a steam-engine, of the steam-chest, the main shaft passing centrally through said steam-chest, ports disposed around said shaft at equal distances therefrom, an annular valve having a flange, and a flat surface which rests on the surface containing said ports, and a governor mechanism provided with a flange, which engages with the flange on the valve, whereby said valve may be moved eccentrically to open and close said ports or to run concentrically with said shaft, closing all the ports, substantially as shown and described.

6. The combination, in a steam-engine, of an octagon casting with four cylinders cast therein, a steam-chest, four ports leading therefrom to said cylinders, and an oil-chamber in said casting between the two uppermost cylinders and said octagon-shaped casting, serving as a receptacle for oil and water to lubricate the running parts of the engine, and also as a steam-jacket on said cylinders, whereby condensation of steam therein is reduced to a minimum, substantially as shown and described.

444,905. SPRING-MOTOR. ELI S. REED and CARL T. PAINTER, Chattanooga, Tenn., assignors to the Universal Sewing Machine Motor Attachment Company, same place. Filed Mar. 17, 1890. Serial No. 344,264. (No model.)



Claim.—1. In a spring-motor, the combination, with a spring-driven train of gearing which includes a geared drum containing the drive-spring, of a winding-ratchet having an integral part thereof serving as a journal for the geared drum, a sleeve surrounding said journal within the drum, one end of the spring being attached to said sleeve and the other end to the drum, said sleeve being itself connected to the said integral part of the ratchet, and the drive-shaft with its drive-wheel, said shaft being actuated by the gearing and said wheel being belted to the driven machine.

2. In a spring-motor, the combination of the drum having a geared rim, the spring within the drum, the winding-ratchet having an integral tube on which the drum revolves, the sleeve or thimble surrounding said tube within the drum and connected to the tube, to which sleeve one end of the spring is attached, the shaft within said tube carrying the main drive-wheel, and the multiplying-gearing connecting the geared drum and shaft for actuating the latter.

3. The combination, in a spring-motor, of the drum having a geared rim, the spring within the drum, the winding-ratchet having an integral tube on which the drum revolves, the drive-shaft within said tube carrying at its lower end a drive-wheel, the sleeve on the tube within the drum, to which sleeve one end of the spring is attached, and a parallel shaft carrying a pinion that engages the drum-gear and a gear-wheel that engages a pinion on the drive-shaft.

4. The combination of the drum having a geared rim, the spring within the drum, the winding-ratchet having an integral tube on which the drum revolves, a thimble or sleeve surrounding said tube, to which one end of the spring is connected, the drive-shaft within the ratchet-tube carrying at its lower end a drive-wheel, the gearing connecting the geared drum with the drive-shaft, and the winding-lever with its pawls for operating the winding-ratchet.

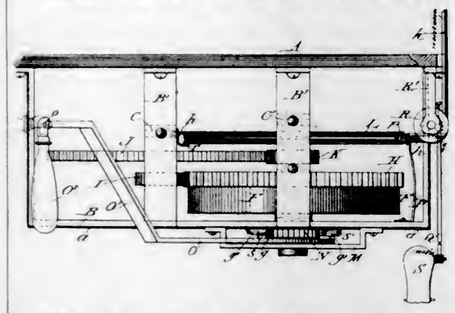
5. The combination of the drum having a geared rim, the spring within the drum, the winding-ratchet having an integral tube on which the drum revolves, the drive-shaft within said tube carrying at its lower end a drive-wheel, the plate connected to the lower end of the ratchet-tube below the ratchet, the winding-lever on the lower end of the ratchet-tube between said plate and the ratchet, said lever being provided with pawls for operating the ratchet, and the gearing connecting the drum with the drive-shaft.

6. In a spring-motor, the combination, with the drive-wheel, of the brake-lever, the treadle connected to one end thereof, the fulcrum-pin supporting said lever, and the spring-provided screw arranged in connection therewith, substantially as described.

7. The combination, with the drive-wheel, of the brake-lever T, the screw-pin V, supporting it, the spring-provided screw *s*, the rod U, and the treadle, substantially as described.

8. In combination with the drive-wheel M, having the integral concentric flange O, the brake-lever T, having shoe *q*, adapted to bear on the flange O, the screw V, supporting the lever, the spring-provided screw *s*, the rod U, having the ball *u* and the eye *v*, and the treadle connected to said rod, substantially as described.

444,906. SPRING-MOTOR. ELI S. REED, Chattanooga, Tenn., assignor to the Universal Sewing Machine Motor Attachment Company, same place. Filed May 29, 1890. Serial No. 353,622. (No model.)



Claim.—1. In a spring-motor, the combination, with a spring-driven train of gearing, which includes a geared drum containing the drive-spring, of a winding-ratchet having an integral part thereof serving as a journal for the geared drum, one end of the spring being attached thereto, the drive-shaft with its drive-wheel, said shaft being actuated by the gearing and said wheel being belted to the driven machine, the winding-lever, a pair of spring-actuated pawls on the main frame engaging the teeth of the ratchet for the purpose of holding the same, and another pair of spring-actuated pawls on the winding-lever, likewise engaging the said ratchet, substantially as described.

2. In a spring-motor, the combination of the geared drum, the spring within the drum, the winding-ratchet having an integral tube on which the drum revolves and to which one end of the spring is attached, the shaft within said tube carrying a drive-pulley connected to the driven machine, the second shaft carrying a pinion engaging the geared drum, a large gear-wheel engaging a small pinion on the shaft which is within the ratchet-tube, and a winding-lever having a pair of pawls thereon which engage the teeth of the ratchet, together with the pair of pawls on the main frame, which engage likewise the teeth of the ratchet for holding the latter, substantially as described.

3. In a spring-motor, the combination of a geared drum, a spring within the drum, a winding-ratchet having an integral tube, a shaft within said tube, a second shaft outside the tube carrying a pinion engaging the geared drum, and carrying also a large gear-wheel engaging a small pinion on the shaft that lies within the tube, a wheel at the upper end of the latter shaft, a brake device whose shoe is applied to the periphery of said wheel, and a winding-lever, substantially as described.

4. In a spring-motor, the combination of the sewing-machine table A, the main frame of the motor secured beneath the frame, the drum F, having the geared rim H, the spring G within the drum, one end connected to the wall thereof and the other to the ratchet-tube, the ratchet-wheel N, integral with ratchet-tube N', the shaft E within the ratchet-tube, the shaft D, parallel to shaft E, the pinion I on shaft D, engaging the geared rim H, the large gear-wheel J on shaft D, above the pinion, and the pinion K on shaft E, meshing with gear-wheel J, substantially as described.

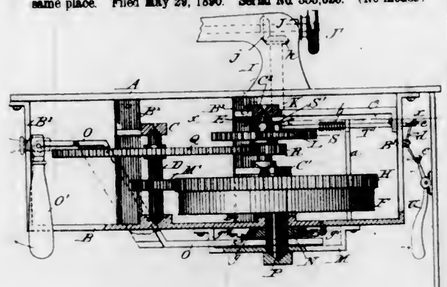
5. In a spring-motor, in combination with the train of gearing and the spring for actuating the same, a winding-ratchet for winding the spring, a pair of pawls for holding said ratchet, a winding-lever, and a pair of pawls thereon for engaging the ratchet, one member of each pair of pawls being shorter than the other member, so as to operate substantially as described.

6. In a spring motor, the combination of the drive-wheel L, the flat brake-spring P, having a shoe *p* and a horizontal arm *p'*, the brake-rod Q, passing through a perforation in said arm *p'* and provided with a terminal ball *q* above the arm, a pin or projection *q'* below the same, and a treadle S, to which the lower end of the brake-rod is connected.

7. In a spring-motor, the combination, with the geared drum, its spring, a winding-ratchet having an integral tube, a shaft within said tube, and a system of gearing connecting the geared drum with said shaft, of the brake device consisting, essentially, of the vertical spring carrying the brake-shoe which is applied to the periphery of the wheel, said spring having a perforated arm, and a depending rod connected to said arm at its upper end and at its lower end to a treadle, substantially as described.

8. In a spring-motor, the combination of a geared drum, a spring within the drum, a winding-ratchet having an integral tube, a shaft within said tube, a system of gearing connecting the geared drum with said shaft, a wheel on the upper end of the shaft that lies within the ratchet-tube, a brake device consisting of a vertical spring having a shoe applied to the periphery of said wheel, and a winding device for winding up the spring, substantially as described.

444,907. SPRING-MOTOR. ELI S. REED, Chattanooga, Tenn., assignor to the Universal Sewing Machine Motor Attachment Company, same place. Filed May 29, 1890. Serial No. 353,623. (No model.)



Claim.—1. In a spring-motor, the combination of the motor-frame, the drum F, having a geared rim H, the actuating-spring G, the shaft P, on which the drum revolves, the winding-ratchet N on the shaft P, the shaft D parallel to the shaft P, the pinion M' on the said shaft meshing with the gear H, the large gear Q, also keyed to the shaft D, the short drive-shaft E above and to one side of the shaft P, the pinion R on the short drive-shaft E, engaging the large gear Q, and the gear-wheel S, likewise on the shaft E, substantially as described.

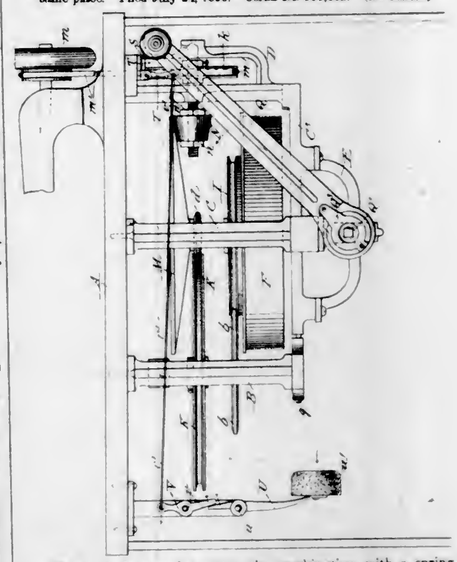
2. The combination of a geared drum, a winding-ratchet on the shaft on which the drum revolves, a spring within the drum, having one end connected to the shaft and the other to the wall of the drum, a drive-shaft above and out of line with the aforesaid shaft, said drive-shaft having a gear engaging the geared drum and also a gear engaging the pinion on the drive-shaft, the winding-lever provided with a pair of spring-actuated winding-pawls which engage the ratchet for actuating the same, together with a pair of spring-actuated holding-pawls on the main frame and likewise engaging the winding-ratchet, and the brake device for regulating the speed of the motor and for stopping and starting the same, substantially as described.

3. The combination, with the drive-shaft of a spring-motor, of the horizontal endwise-movable brake-rod having the shoe on one end thereof acting against the drive-shaft, said rod being held in suitable bearings, a spring coiled around the rod and tensioned between a projection thereon and some stationary part of the frame, the outer end of the rod being perforated, the knee-lever, and the lever connecting the knee-lever with the end of said rod, substantially as described.

4. The combination, with the spring-driven train of gearing, of the brake device consisting of the horizontal rod, the spring surrounding the same and tensioned between a pin on the rod and a stationary part of the frame, the outer end of the rod being perforated, the lever *d*, having the bent ends *e e*, one of which engages the perforated end of the horizontal rod, and the knee-lever U, pivoted to the frame and engaged by the other end of the lever *d*, substantially as described.

5. The combination of the geared drum, the spring within the drum, the winding-ratchet having a shaft on which the drum revolves, to which shaft one end of the spring is attached, while its other end is connected to the wall of the drum, the drive-shaft above and out of line with the ratchet-shaft, said drive-shaft having a gear and a pinion thereon, a third parallel shaft having a gear engaging the geared drum, and also a gear engaging the pinion on the drive-shaft, the aforesaid gearing constituting a multiplying train of back gearing, and the brake device consisting of an adjustable horizontal brake-rod surrounded by a spring tensioned between the pin thereon and the stationary part of the frame and having a shoe acting on the drive-shaft, together with a knee-lever for operating the brake-rod.

444,908. SPRING-MOTOR. ELI S. REED, Chattanooga, Tenn., assignor to the Universal Sewing Machine Motor Attachment Company, same place. Filed July 24, 1890. Serial No. 359,802. (No model.)



Claim.—1. In a spring-motor, the combination, with a spring-driven train of frictional gearing, which includes a drum having a frictional wheel connected thereto, and said drum containing the drive-spring, of another frictional wheel having an integral part thereof serving as a journal for the drum, together with a short shaft carrying a wheel which is belted to the driven machine, said shaft being actuated by the aforesaid train of frictional gearing.

2. In a spring-motor, the combination, with a spring-driven train of, frictional gearing, that includes a drum having a frictional wheel connected thereto, and said drum containing the drive-spring, of another friction-wheel having an integral tube on which the drum revolves as a journal, a shaft carrying a wheel belted to the driven machine and actuated by the aforesaid train of gearing, and winding devices for rotating the friction-wheel and its integral tube.

3. In a spring-motor, the combination of the drum having a frictional wheel connected thereto, the spring within the drum, the friction-wheel and its integral part on which the drum revolves, the shaft above the drum, the bevel-wheel carried thereby, the multiplying gearing connecting the friction-wheel on the drum with the said shaft of the bevel-gear, and the horizontal shaft carrying the bevel-pinion acted on by the bevel-wheel and carrying also a pulley belted to the driven machine.

4. In a spring-motor, the combination of the drum, the spring-driven train of gearing, including a friction-wheel connected to the drum, a frictional disk or wheel having an integral tube on which the drum revolves, and the friction-dogs acting on said disk.

5. In a spring-motor, the combination, with the spring-driven train of frictional gearing, which includes a friction-wheel connected to the drum containing a drive-spring, of a frictional-disk having an integral part thereof serving as a journal for the drum, the dogs acting to clutch said disk, and devices for rotating the same for the purpose of winding the spring.

6. In a spring-motor, the combination, with a spring-driven train of frictional gearing, including a frictional wheel connected to the drum which contains the drive-spring, of a friction wheel or disk having an integral part serving as a journal for the drum, friction-dogs acting in connection with the periphery of said friction-wheel, a bevel-gear mounted below the wheel and loosely connected thereto, so as to rotate therewith, and winding devices for actuating said bevel-gear.

7. In a spring-motor, the combination, with a spring-driven train of frictional gearing, including a frictional wheel connected to the drum containing the drive-spring, of a frictional wheel having an integral part thereof serving as a journal for the drum, the friction-spring-provided dog acting to clutch the periphery of said frictional wheel, the horizontal shaft geared to the friction-wheel, and the winding-lever provided with clutching devices whereby the said shaft is rotated for the purpose of winding the drive-spring.

8. In a spring-motor, the combination, with the spring-driven train of frictional gearing, of the drum containing the drive-spring, a friction wheel or disk having an integral part on which said drum revolves, the dogs acting in connection with the periphery of said friction-wheel, the bevel-gear having a projection on its upper side engaging a recess in the said friction-wheel, the horizontal shaft carrying a bevel-gear engaging the aforesaid bevel-gear, and the winding-lever containing a disk which is connected to said shaft, together with one or more dogs operating in connection with said disk to cause the parts to act as a clutch.

9. In a spring-motor, the combination, with a spring-driven train of frictional gearing and a drum containing the drive-spring, of the frictional wheel having an integral part on which the drum revolves, the dogs P P, having springs *p p* and acting in connection with said frictional wheel, the gear O, having a projection *o* on the upper side thereof, adapted to enter the recess *h* in the friction-wheel and the bottom shaft *o'* beneath the gear, the shaft R, having a gear R', engaging the gear O, and the winding-lever Q, carrying the disk Q', together with the dog Q^3, substantially as described.

10. In a spring-motor, the combination of the drum containing a drive-spring, the train of multiplying frictional gearing for actuating the shaft which carries the pulley belted to the driven machine, the frictional wheel or disk having an integral part on which the drum revolves as a journal, the dogs for clutching said disk, and a winding-lever provided with a clutch mechanism for operating a shaft which is connected to said frictional wheel, so that the spring may be readily wound by the vibrations of the said lever.

11. In a spring-motor, a frame for the mechanical parts, consisting, essentially, of the uprights B B, connected by transverse pieces, the uprights C C, likewise connected by transverse pieces, the bottom bar C^3, having an integral transverse bar C^4 connected to the uprights C C and having an end e adjustably connected to the bottom connection between the uprights B B, the lower skeleton frame E, connected to the bottom parts, and the skeleton upright D, adjustably connected at its lower end to one end of the bottom part C^3, all substantially as described.

12. In a spring-motor, the combination of the drum having a frictional wheel connected thereto, the spring within the drum, the winding frictional wheel having an integral part on which the drum revolves, together with the clutching-dogs, the shaft above said drum carrying a large bevel friction-wheel, the multiplying gearing connecting the frictional wheel on the drum with the shaft above, and the horizontal shaft carrying a bevel-pinion engaging the bevel-wheel and likewise a pulley belted to the driven machine, together with a suitable supporting-frame for the several mechanical parts, substantially as described.

13. In a spring-motor, the combination of the drum having a frictional wheel connected thereto, the spring within the drum, the winding frictional wheel with its integral tube, on which the drum revolves, the short shaft above the drum, the train of multiplying frictional gearing connecting the friction-wheel on the drum with the said shaft, together with the large bevel-wheel on the said shaft, said bevel-wheel being so arranged that it may be readily reversed to act in combination, either above or below, with a bevel-pinion on the horizontal shaft carrying a pulley belted to the driven machine.

14. In a spring-motor, the combination of a drum, a frictional wheel connected to said drum, a spring within the drum, the winding frictional wheel having an integral tube on which the drum revolves, a shaft parallel to said tube and carrying a friction-pinion engaging the friction-wheel on the drum and also carrying the large friction-wheel, the short vertical shaft above the drum carrying the friction-pinion engaging the aforesaid large friction-wheel and also carrying a bevel friction-wheel, and a horizontal shaft having thereon the pulley belted to the driven machine, and the beveled friction-pinion engaged by the beveled friction-wheel.

15. In a spring-motor, the combination of a drum having a frictional wheel connected thereto, a spring within the drum, a winding frictional wheel having an integral tube on which the drum revolves, a shaft above the drum carrying a bevel friction-wheel and a small friction-pinion, the latter being adjustable on the shaft and the shaft itself being reversible, a parallel shaft carrying an adjustable friction-pinion engaging the friction-wheel on the drum and also an adjustable friction-wheel engaging the friction-pinion on the short shaft, and a horizontal shaft carrying an adjustable bevel friction-pinion, together with a pulley.

16. The combination of a drum having a grooved friction-wheel, a winding frictional wheel having an integral tube on which the drum revolves, the short shaft above the drum carrying an adjustable friction-pinion and a large bevel-wheel, a parallel shaft having a screw-threaded part and carrying thereon an adjustable friction-pinion, together with a nut, a large peripherally-grooved friction-wheel likewise adjustable on said shaft, and a horizontal shaft carrying a peripherally-grooved pulley and having one end screw-threaded, whereon is carried a bevel friction-wheel adjustable between nuts, with its bevel-surface in contact with the aforesaid friction-wheel.

17. The combination of the drum having a connected friction-wheel, a spring within the drum, a winding friction wheel or disk having an integral tube on which the drum revolves, a multiplying train of friction back gearing, and the horizontal shaft carrying the pulley belted to the driven machine and actuated by said back gearing, together with the frame supporting said mechanical parts and adjustable at different points, as described.

18. The combination of the drum F, containing spring G and having friction-wheel I, the winding-disk H', having the integral part H, on which the drum revolves, the vertical shaft J, having the screw-plug bearing *b'* at its upper end, the short shaft L above the drum and having the screw-plug bearing *l'* at its upper end, and the train of multiplying friction-gearing carried by said shaft, substantially as described.

19. The combination of a drum having a friction-wheel, a spring within the drum, a winding friction wheel or disk having an integral tube on which the drum revolves, the shaft above the drum carrying friction-gearing, the parallel shaft carrying frictional gearing, and the horizontal shaft carrying friction-gearing, all arranged substantially as described, so that the spring may actuate the train of friction-gearing for the purpose of driving a machine belted to the pulley on the horizontal shaft.

20. The combination of the drum F, having frictional wheel I, the spring G within the drum, the winding frictional wheel H', having an integral part H on which the drum revolves, the shaft J, carrying friction-pinion *b*, engaging wheel I, and also carrying friction-wheel K, the shaft L, carrying friction-pinion *d*, engaging wheel K, and also beveled friction-wheel M, and the horizontal shaft *f*, carrying bevel friction-pinion N and pulley *k*, substantially as described.

21. In a spring-motor, the combination, with the spring-driven train of friction-gearing, which includes a drum having a connected frictional gear-wheel and containing the drive-spring, of a frictional winding wheel or disk having an integral part thereof serving as a journal for the drum, a sleeve surrounding said journal within the drum and keyed thereto, one end of the spring being attached to said sleeve and the other to the drum, and the horizontal shaft carrying a pulley which is belted to the driven machine, which shaft is actuated by the aforesaid train of gearing.

22. In a spring-motor, the combination of the drum having a frictional gear-wheel connected thereto, the spring within the drum, the frictional winding disk or wheel having an integral tube on which the drum revolves, the sleeve or thimble surrounding said tube within the drum and connected to the tube, to which sleeve one end of the spring is attached, the shaft above said drum carrying the bevel friction-wheel, the horizontal shaft having a bevel-pinion actuated by said wheel, and the multiplying gearing connecting the frictional wheel of the drum with the short shaft for the purpose of actuating the latter.

23. The combination, in a spring-motor, of the drum having a frictional gear-wheel connected thereto, the spring within the drum, the frictional winding-disk having an integral tube on which the drum revolves, the horizontal shaft carrying a pulley belted to the driven machine, a sleeve on the tube within the drum, to which sleeve one end of the spring is attached, the short shaft carrying its friction-gear and the parallel shaft carrying a friction-pinion that engages the friction-wheel on the drum, and a friction gear-wheel that engages a friction-pinion on the short shaft.

24. The combination of the drum and its connected friction gear-wheel, the spring within the drum, the frictional winding-disk having an integral part on which the drum revolves as a journal, a sleeve surrounding said journal, to which sleeve one end of the spring is connected, the horizontal drive-shaft, the frictional gearing connecting the friction-wheel on the drum with the said horizontal shaft and the dogs for clutching the frictional winding-disk, the winding-lever provided with clutch mechanism, and the shaft geared to the frictional winding-disk, all designed to operate in combination substantially as described.

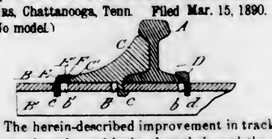
25. The combination of the drum, the frictional gear-wheel connected thereto, the spring within the drum, the frictional winding-disk having an integral tube on which the drum revolves, the horizontal shaft carrying a pulley belted to the driven machine, the train of multiplying friction-gears connecting the friction-wheel on the drum with the said pulley-shaft, the dogs acting to engage the frictional winding-disk, the beveled gear loosely connected to said disk, the horizontal shaft having a bevel-gear engaging the aforesaid gear, the winding-lever provided with the disk Q', which is provided with the opening to receive the end of the aforesaid shaft, and a dog Q^3, operating in connection with the periphery of said disk, all substantially as described.

26. In a spring-motor, the combination, with the pulley belted to the driven machine, of a brake-lever having a shoe applied to the periphery of said pulley, a spring acting to press said shoe against said periphery, a right-angled lever having one arm operating against the end of the brake-lever to remove the shoe from the pulley, a connection between the end of the other arm with a lever fulcrumed on the machine-frame, and a second lever carrying a plate or pad and having its other end operated in connection with the lever just mentioned, substantially as described.

27. The combination, with the pulley *k*, of the spring-actuated brake-lever S, having a shoe S', the right-angled lever T, having one arm acting upon the end of the lever S, and the levers U and V, said lever V being connected by the connection *v'* with the right-angled lever T.

28. The combination, with the pulley *k*, of the brake-lever S, fulcrumed at s^2, having shoe S' and provided with spring *s'*, the right-angled lever T, fulcrumed at *t*, the lever V, fulcrumed at *v* and connected by a connection *v'* with the end of the right-angled lever T, and the lever U, fulcrumed at *u* and having a knee or foot pad *u'*, all substantially as described.

444,909. RAILWAY RAIL TIE AND TRACK FASTENER. WILLIAM G. SEARS, Chattanooga, Tenn. Filed Mar. 15, 1890. Serial No. 343,983. (No model.)



Claim.—1. The herein-described improvement in track-fasteners, consisting in the combination, with the slotted tie and the rail, of the clamp for the inner base-flange of the rail and the combined clamp and brace for the outer side of the rail, consisting of the bar having a doubly-inclined face, a brace-block having an inclined face, and the interposed wedge between the inclined faces of the bar and block and having its wedging-faces doubly inclined—that is, from end to end, and also vertically, said vertical inclinations of the faces being in the same general direction, but at different angles.

2. As an improvement in track-fasteners, the combination, with the tie and rail, of the inner clamp, the outer clamping-bar having a doubly-inclined face, the block bearing on the outer side of the rail and having an inclined face, and the interposed wedge between the inclined faces of the bar and the block, having its wedging-faces doubly inclined—that is, from end to end, and also vertically, said vertical inclinations of the faces being in the same general direction, but at different angles.

3. In a clamping device for tracks or other objects to be secured, the herein-described wedge, having its wedging-faces doubly inclined—that is, from end to end, and also vertically, said vertical inclinations of the faces being in the same general direction, but at different angles—in combination with the adjoining parts of the clamp between and in connection with which the wedge operates to secure the track or other object in a firm position, substantially as described.

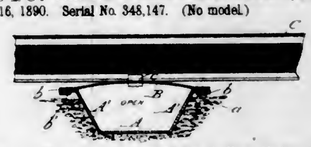
4. In a fastener for tracks or other similar objects, the combination, with the track or object to be secured, of the inner clamp acting against one side of the object, a clamping-bar on the other side of the object, having a doubly-inclined face, a brace-block against the object and between it and said bar and having an inclined face, and the interposed wedge located between the inclined faces of the brace-block and the bar, said wedge having its wedging-faces doubly inclined—that is, from end to end, and also vertically, said vertical inclinations of the faces being in the same general direction, but at different angles.

5. In a track or other fastener, the combination of the flat supporting-surface of the tie or similar object, the rail or other object resting thereon, the inner clamp on one side of the object, the clamping-bar on the other side, said bar having a doubly-inclined face, the vertical inclination of said face being at an acute angle to the upper surface of the tie, the brace-block between the object and the bar, said block having an inclined face, which face is vertically inclined at an obtuse angle to the upper surface of the tie, and the wedge between the inclined faces of the bar and the brace-block, said wedge having its wedging-faces doubly inclined—that is, from end to end, and also vertically, said vertical inclinations of the faces being in the same general direction, but at different angles.

6. In a track-fastener, the combination of the slotted tie, the inner clamp, and the outer clamping devices consisting of the doubly-inclined bar, the brace-block with its inclined face, and the wedge having doubly-inclined wedging-faces—that is, inclining from end to end, and also vertically, said vertical inclinations of the faces being in the same general direction, but at different angles.

7. The combination of the metallic tie slotted at *b*, b^3, and *b'*, the rail A, the inner clamp D, having the T-head *d*, which is received into slot *b*, the clamping-bar E, having the doubly-inclined face *E'* and the T-head *e*, which enters the slot *b'*, the clamping-block C, having the inclined face C' and the projection *c*, which enters slot b^3, and the wedge having the doubly-inclined wedging-faces *f* and *f'*, all substantially as described.

444,910. RAIL-TIE. WILLIAM G. SEARS, Chattanooga, Tenn. Filed Apr. 16, 1890. Serial No. 348,147. (No model.)

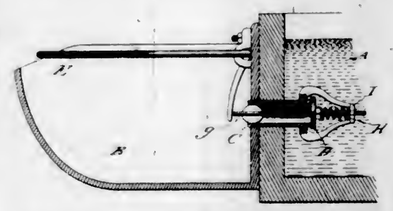


Claim.—1. The combination of the hollow tie-box having its sides provided with horizontal flanges, the transverse spring rail-supporting plates having projections at the ends adapted to enter notches in the horizontal flanges, and track-fastenings on said plates for securing the rails thereon, substantially as described.

2. The combination of the hollow tie-box having its sides provided with horizontal flanges, transverse rail-supporting spring-plates fastened thereon, and track-fastenings on said plates for securing the rails thereon, substantially as described.

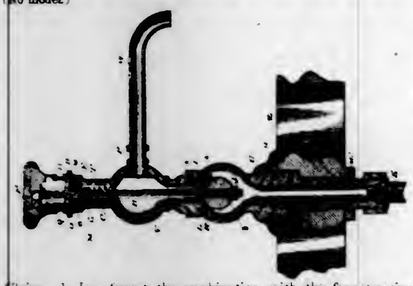
3. The combination of the hollow tie-box having its sides provided with horizontal flanges having notches, the transverse rail-supporting spring-plates having the bends at each end, and the struck-up projections adapted to enter the notches in the horizontal flanges, substantially as described.

444,911. AUTOMATIC STOCK-WATERING TROUGH. CHARLES A. YONT, Brock, Nebr. Filed May 21, 1890. Serial No. 352,673. (No model.)



Claim.—In an automatic stock-watering trough, an actuating-bail encircling the upper edge of the drinking-cup, fulcrumed at the rear, the ends there forming a vertically-depending leg resting normally in operative contact with the projecting head of the valve-bolt and adapted to admit water to the cup when bail is depressed by the chin or neck of the animal, substantially as and for the purpose stated.

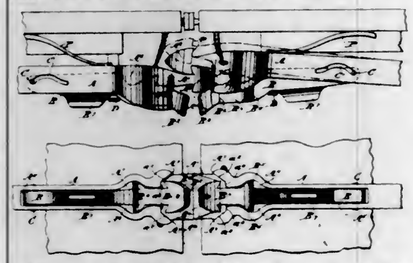
444,912. SELF-CLOSING FAUCET. JOHN MEANY and CHARLIE S. BODIE, Santa Barbara, Cal. Filed Aug. 13, 1890. Serial No. 361,860. (No model.)



Claim.—1. In a faucet, the combination, with the faucet-casing V, having a chamber T in its upper end provided with interior and exterior screw-threads at its mouth, a valve A within said casing, and a rod B for operating the valve, said rod passing centrally through said chamber, of a nut E, screwed into the mouth of the chamber and loosely surrounding said rod, said nut having a raised center *e*, a cap-piece H, screwed upon the exterior of said casing and covering said nut E, and a flexible packing D between said nut and cap-piece and around said rod, as and for the purpose set forth.

2. In a self-closing faucet, the combination, with the faucet-casing V, having a valve-seat at its lower end and a chamber T in its upper end, provided with interior and exterior screw-threads at its mouth, a rod B, moving vertically through said casing and chamber, an upwardly-closing valve upon said rod, an expansive spring C within said chamber, surrounding the rod, and an adjusting-nut G on said rod at the upper end of said spring, of a nut E, screwed into the mouth of said chamber, a cap-piece H, screwed upon the exterior of said casing and covering the nut E, a flexible packing D between said nut and cap-piece, the rod B, passing loosely through said nut E, packing D, and cap H, and a knob F secured to the upper end of said rod, as and for the purpose hereinbefore set forth.

444,913. CAR-COUPLING. THOMAS H. WALSH, Montreal, Canada. Filed Sept. 26, 1890. Serial No. 366,151. (No model.)



Claim.—1. A draw-bar for coupling cars, having a closed head hooked on a horizontal plane and adapted to lock, and downwardly-projecting side guards formed in one with said draw-bar, for the purpose set forth.

2. A draw-bar for coupling cars, having a closed head hooked on a horizontal plane and adapted to lock, and downwardly-projecting side guards formed in one with said draw-bar and containing buffing-faces, as set forth.

3. In a car-coupler, the combination, with a main recessed draw-bar having a head formed in one with it and hooked on a horizontal plane, of an auxiliary draw-bar arranged within said main draw-bar and means for holding same together, as set forth.

4. In a car-coupler, the combination, with a main recessed draw-bar having a head hooked on a horizontal plane, of an auxiliary draw-bar arranged to slide within said main draw-bar and having a head hooked in a vertical plane, and means for holding such draw-bars together, as set forth.

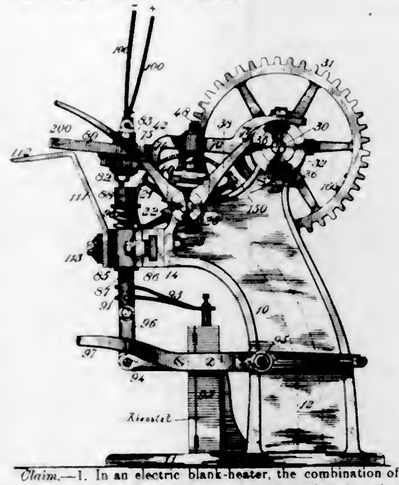
5. In a car-coupler, the combination, with a main recessed draw-bar having a head formed in one with it and hooked on a horizontal plane, of an auxiliary draw-bar arranged to slide within said main draw-bar and having a chambered head with pin-hole, and means for holding such draw-bars together, as set forth.

6. In a car-coupler, the combination, with a main recessed draw-bar having a head hooked on a horizontal plane, of an auxiliary draw-bar arranged to slide within said main draw-bar and having a hooked projection on its upper side adapted to engage with the hooked lower side of said main draw-bar, and means for holding such draw-bars together, as set forth.

7. In a car-coupler, the combination, with a main recessed draw-bar having a head hooked on a horizontal plane, of an auxiliary draw-bar arranged to slide within said main draw-bar and having a beveled projection on its under side adapted to slide over and rest on the usual supporting-sling, and means for controlling the movement of such auxiliary bar, as set forth.

8. In a car-coupler, the combination, with a main draw-bar having a head hooked on a horizontal plane and buffing-shoulders and a cavity open and extending along its bottom for about two-thirds the length of the draw-bar back from such buffing-shoulders and having enlargements on each side, of an auxiliary draw-bar arranged to slide within such cavity and having a locking-head and buffing-shoulders, and pin projections working in slots in the sides of said main bar, as set forth

444,914. ELECTRIC BLANK-HEATER FOR FORGING-MACHINES. GEORGE D. BURTON, Boston, and EDWIN E. ANGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Oct. 7, 1890. Serial No. 367,356. (No model.)



Claim.—1. In an electric blank-heater, the combination of two electrodes adapted for holding a blank to be heated, and vertical and horizontal oscillators for imparting vertical and horizontal oscillation to said electrodes.

2. In an electric blank-heater, the combination of two levers carrying electrodes adapted for holding a blank to be heated, a guideway, and pivot-blocks adjustable in said guideway and provided with pivot-pins for said levers.

3. In an electric blank-heater, the combination of pivot-blocks, pivot-pins adapted to slide in said blocks, springs for affording an elastic adjustment of said pivot-pins, and electrode-levers fulcrumed on said pivot-pins.

4. In an electric blank-heater, the combination of two pivoted levers provided with electrodes adapted for holding a blank to be heated, oscillating supports for the pivots of the levers, and eccentric disks provided with peripheral cam-grooves engaging said levers for imparting vertical and horizontal oscillations thereto.

5. In an electric blank-heater, the combination of a frame, an oscillating guideway disposed therein, pivot-blocks adjustable on said guideway, pivot-pins disposed in said blocks, levers fulcrumed on said pivot-pins and provided with forks at their rear ends and electrodes at their front ends, and eccentric cams provided with grooves engaging said levers.

6. In an electric blank-heater, the combination of an oscillating guideway, pivot-blocks adjustable in said guideway and provided with pivot-pins, and levers fulcrumed on said pivot-pins.

7. In an electric blank-heater, the combination of two levers carrying electrodes adapted for holding a blank to be heated and provided with forked ends having pins, and eccentric cams engaging said forked ends and provided with cam-grooves engaged by said pins.

8. In an electric blank-heater, the combination of two levers carrying at one end electrodes adapted for holding a blank to be heated and provided with forked extensions at their opposite ends, adjustable pivots for said levers, a feathered sleeve, and cams adjustable on said sleeve engaging the forked ends of said levers.

9. In an electric blank-heater, the combination of two levers carrying at one end electrodes adapted for holding a blank to be heated and provided with forked extensions at their opposite ends, adjustable pivots for said levers, a feathered sleeve, cams adjustable on said sleeve engaging the forked ends of said levers, and adjustable contact-pins for the electrodes.

10. In an electric blank-heater, the combination of two levers carrying at one end electrodes adapted for holding a blank to be heated and provided with forked extensions at their opposite ends, adjustable pivots for said levers, a feathered sleeve, cams adjustable on said sleeve engaging the forked ends of said levers, adjustable contact-pins for the electrodes, a shaft within said sleeve, a clutch mechanism for connecting said sleeve and shaft, and a lever for unclutching the clutch mechanism and arresting the motion of the sleeve.

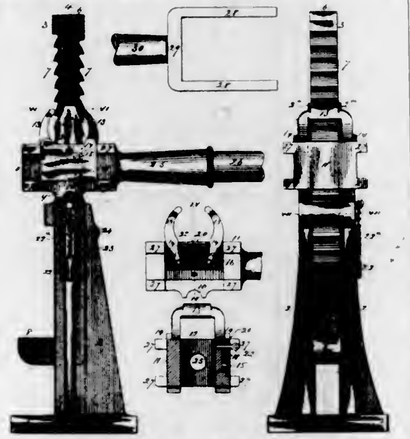
11. In an electric blank-heater, the combination of the lever 70, having the arms 74, the electrodes 80, disposed on said arms and insulated therefrom, the bolts 82, clamping said electrodes to said arms and provided with binding-posts at their upper ends, and spring contact-pins 84 for contact with said bolts.

12. In an electric blank-heater, the combination of a guideway 86, the sockets 85 adjustable therein, and the spring contact-pins 84, supported in said sockets.

13. In an electric blank-heater, the combination of the sockets 85, spring contact-pins 84, disposed therein, and a foot-lever connected with one of said contact-pins for depressing it to break the contact.

14. In an electric blank-heater, the combination of two electrodes adapted for holding a blank to be heated, strippers disposed in vertical planes passing between said electrodes, and means for depressing said electrodes below the strippers.

444,915. LIFTING-JACK. THOMAS A. CAVENDER, St. Louis, Mo. Filed July 3, 1890. Serial No. 357,636. (No model.)



Claim.—1. The combination, in a lifting-jack, of a lifting-bar with ratchet-teeth on opposite sides, a rocking head having pawls engaging the ratchets and having fingers 15, a spring 18, with projection 19, having eye 20, and pin 22, passing through the eye, substantially as and for the purpose set forth.

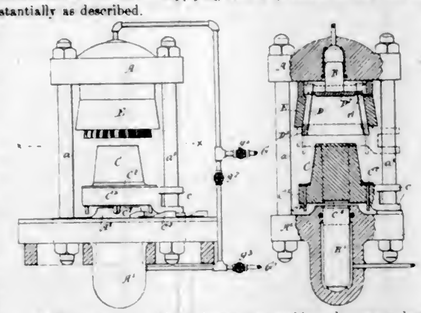
2. The combination, in a lifting-jack, of a lifting-bar 3, with ratchets 7, a rocking head with spring-pawls 13, and having a fixed handle 26, a supplemental handle forked to embrace the rocking head, and projections on the rocking head engaging the fork, substantially as set forth.

3. The combination, in a lifting-jack, of the stand 12, with rounded bearings 9, the head 11, rocking on these bearings and carrying spring-pawls 13, a lifting-bar having on opposite sides ratchets 7, engaged by the pawls, and a handle 26, adapted for rocking the pawl-head 11, substantially as set forth.

444,916. MACHINE FOR MOLDING PULP. DAVID H. FERGUSON, Montreal, Canada. Filed July 5, 1889. Serial No. 316,696. (No model.)

Claim.—1. In combination, in a machine for molding articles from pulp, an endless flexible non-elastic mold with means for reducing its diameter under lateral pressure, substantially as described.

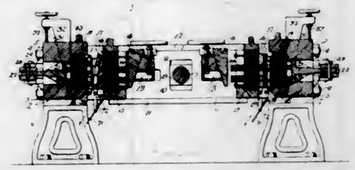
2. In combination with a flexible non-elastic mold, a series of external ribs, and means for applying lateral pressure to said ribs, substantially as described.



3. In combination with a former and molds and pressure devices for each, the pressure being of different degrees, whereby one of the parts yields to the force of the other, while at the same time the blank is under pressure of both, substantially as described.

4. In combination, a movable former, a flexible metal mold, a stationary cone-shaped ring, and ribs between the mold and the ring, the movement of the mold vertically reducing its diameter and applying lateral pressure to the article, substantially as described.

444,917. WASHER-PUNCHING MACHINE. AMOR J. MASON, Norristown, Pa., assignor to James P. Mason, same place. Filed July 25, 1890. Serial No. 359,958. (No model.)



Claim.—1. In a machine for punching washers from plate metal, the dies and punches, arranged in rows with intermediate spaces equal to the outer dimensions of the washer, to punch washers from the plate from the portion intermediate between previous punching to avoid waste, in the manner set forth, shown, and described.

2. In a machine for punching washers from plate metal, the horizontally-reciprocating slide having dies attached thereto upon opposite ends thereof, in combination with opposed stationary punches supported endwise by adjustable keys resting upon the stationary frame, substantially as and for the purpose set forth.

3. In a machine for punching washers from plate metal, the horizontally-moving punches, each having a central aperture constructed and arranged to operate as a die, each in combination with a stationary die and each provided with a central punch supported upon adjustable keys to adjust the position of cutting and to compensate for wear, substantially as set forth.

4. In a machine for punching washers from plate metal, the dies and punches arranged to telescope the one within the other, in combination with the discharging-rods resting upon adjustable keys for expelling the washers and scrap, substantially as set forth.

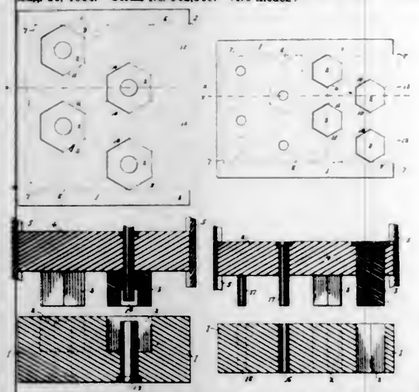
5. In a washer-punching machine, the combination of cylindric punches and dies, provided with a retaining-collar with a correspondingly counterbored chuck adapted to fit recesses in the frame and sliding head of the machine, substantially as set forth.

6. In a washer-punching machine, the series of punches and dies telescoping with each other, as described, in combination with a guiding-plate reciprocating on a pivot for guiding and delivering the scrap and washers in opposite directions, substantially as set forth.

7. In a washer-punching machine, the series of dies and punches arranged in conjunction with the feeding devices, as described, to cut washers from a plate of metal so closely as to sever the scrap located between the washers, in combination with a pair of shearing-blades arranged to divide the marginal surplus metal of the sheet into short scrap, substantially as set forth.

8. In a washer-cutting machine, the arrangements of dies in series at such distances from each other that the plate intervening between the contiguous die-apertures shall include a circular space equal to the outer diameter of the washers, and thereby effect a severance of the scrap located between the washers when such intermediate portion of plate is punched, substantially as set forth.

444,918. METHOD OF AND APPARATUS FOR MAKING NUTS AND WASHERS. JAMES P. MASON, Norristown, and S. LLOYD WIEGAND, Philadelphia, Pa.; said Wiegand assignor to said Mason. Filed Aug. 20, 1890. Serial No. 362,563. (No model.)

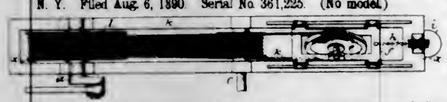


Claim.—1. In a machine for cutting hexagon nuts and washers or like shape, the method of arranging the dies so as to present angles to the side of the plate and produce triangular scrap, as described, and straight lines toward the end of the plate, and feeding the plate so that the cut opening will upon one or more of its sides coincide with the side of the washer next cut without intervening scraps, substantially as set forth.

2. In dies for making hexagon nuts from plates of metal, the punches and dies arranged in series, so as to place one nut with sides on the line of severance of preceding nuts in dies of the series, in combination with a second series of dies and punches adapted to punch the eyes of nuts from plate metal to centrally register with the series of hexagon dies for severance of the nuts from the plate, substantially as set forth.

3. In dies for simultaneously punching several nuts from the same plate of metal, the arrangement of dies in series or lines with intervening distances equal to the multiple of the breadth of the nuts, so that the cut surface left by the severance of one nut by progressively moving the plate between the punches and dies forms without further cutting a surface of another nut, cut subsequently from the plate, substantially as set forth.

444,919. ROPE TRANSMISSION. THOMAS S. MILLER, New York, N. Y. Filed Aug. 6, 1890. Serial No. 361,225. (No model.)



Claim.—1. In combination with a continuous power-transmitting rope, a driving-sheave, a driven sheave of different diameter, and a tension-wheel, the grooves in the sheave of greater diameter forming a more obtuse angle than the grooves in the sheave of lesser diameter, substantially as described.

2. In combination with a power-transmitting rope, a driving-sheave, a driven sheave, an idler-wheel, and a tension-wheel, the driving-sheave and driven sheave being of different diameters, and the grooves in the sheave of greater diameter being of a more obtuse angle than the grooves of the sheave of lesser diameter, substantially as described.

3. In combination, a driving-sheave, a driven sheave of different diameter, and a power-transmitting rope, the said sheaves being provided with grooves, those of the larger sheave having a more obtuse angle than the grooves of the smaller sheave, substantially as described.

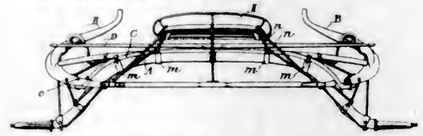
444,920. LAMP-HANGER. MORTIMER MCROBERTS, Chicago, Ill. Filed May 7, 1890. Serial No. 350,881. (No model.)

Claim.—In a lamp-hanger, the independent and separate side rods *a*, provided with hooks or bends *a'* at their upper ends and a^3 at their lower ends, in combination with the suspending and clamping device B C, recessed and adapted to receive the hooks *a'*, and the lamp-support and clamping device D E, recessed and adapted to receive and clamp the bent lower ends of the side arms, substantially as and for the purposes specified.

444,920.



444,921. SULKY. HARRY B. PAUL, Camden, N. J. Filed May 31, 1890. Serial No. 353,761. (No model.)

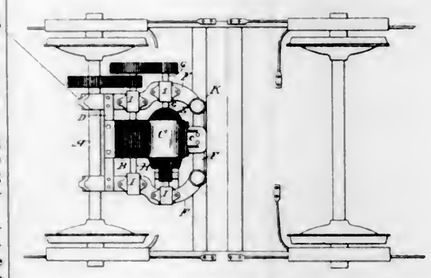


Claim.—1. The combination, in a sulky with a centrally-elevated axle and its mounting A, of a centrally-elevated axle-brace C, corresponding in curvature thereto, and secured at its extreme ends to the shafts and intermediately for the greater part of its length to the axle-mounting by direct contact therewith, and a front curved cross-bar C', secured at its ends to the shafts and at its extreme center indirectly to the said axle-brace by a connecting brace or braces, substantially as described.

2. The combination, in a sulky with an axle-brace secured at its ends directly to the shafts and centrally to the axle, of a front curved cross-bar and of a pair of braces which extend from the rear ends of the shafts to said axle-brace and thence to said front cross-bar, substantially as described.

3. The combination, in a sulky, with an axle-brace, of a stay-iron and seat-stay consisting of a base-plate 6, secured to the axle-brace and having projections 1 and 2 extending, respectively, to the rear ends of the shafts and to the central portion of the front cross-bar, and a third projection extending to and secured to the under portion of the seat, substantially as described.

444,922. MOUNTING FOR ELECTRIC-CAR MOTORS. EDWIN W. RICE, Jr., Lynn, Mass. Filed Aug. 15, 1889. Serial No. 320,906. (No model.)



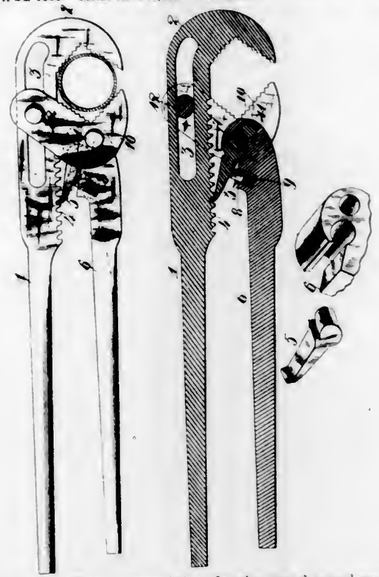
Claim.—1. The combination, with the supporting-frame carrying the journal-bearings for the armature-shaft, of the yoke-piece for the field-magnet extended laterally for attachment to said frame.

2. The combination, substantially as described, of a frame F, consisting of side pieces sleeved at one end on the car-axle and a uniting cross-piece at their opposite end, an electric motor having an armature journaled in said side pieces, and a field-magnet supported at its yoke end from the side pieces and at its pole end by extensions from said poles resting on the cross-piece.

3. The combination, substantially as described, of a frame consisting of side pieces and a uniting cross-piece, with an electric motor having a field-magnet supported at its yoke end on the side pieces and at its pole ends by extensions from said poles resting upon the cross-piece.

4. The combination, substantially as described, of the frame F, consisting of side pieces and a uniting cross-piece, and an electric motor supported from and bolted to the side pieces at one end and having an extension resting upon and bolted to the cross-piece.

444,923. PIPE-TONGS. CHARLES F. SPERY, Hermann, Mo. Filed Nov. 24, 1890. Serial No. 372,498. (No model.)



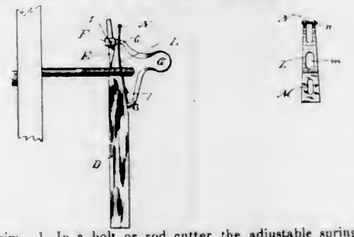
Claim.—1. Pipe-tongs consisting of a primary and secondary arm, the latter of which is fulcrumed between the power adapted to be applied thereto and the resistance to be overcome, as and for the purposes specified.

2. Pipe-tongs consisting of a primary arm provided with a hook or jaw, a similar hook or jaw adapted to move on said arm, a secondary arm pivoted thereto, and a dog which acts as a fulcrum for said secondary arm, substantially as set forth.

3. Pipe-tongs consisting of a primary arm provided at its front end with a jaw 2, provided with teeth, hook plates or jaws 10, adapted to move on said arm, and a yieldingly-mounted pin S for holding said dog in functional contact with primary arm 1, substantially as set forth.

4. The combination of a primary arm 1, provided with a toothed jaw 2, an elongated slot 3, and hooks 4, a secondary arm 6, provided with a socket 7 and a suitable depression for receiving a spring 9 and pin S, a dog 5, located in said socket, jaws 10, and rivets 11 and 12 for securing said arms and jaws together, substantially as set forth.

444,924. BOLT OR ROD CUTTER. JOSEPH C. STOKES, Condit, Ohio. Filed Oct. 22, 1890. Serial No. 368,902. (No model.)



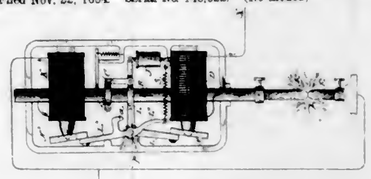
Claim.—1. In a bolt or rod cutter, the adjustable spring, the devil D, and the cutting-chisel, the free end of the said spring having a holder in which is secured the said chisel, and the other end of the spring being secured in the said devil, substantially as shown and described, and for the purpose set forth.

2. In a bolt or rod cutter, the adjustable spring and chisel-holder formed in one piece, the devil D, having one end of the said spring secured thereto and the other end left free, so as to suspend a chisel or like tool over the face of the said devil, substantially as shown and described.

3. An adjustable guide for bolt or rod cutters, substantially as shown and described, consisting of the guide having the slot M, the aperture *m*, the U-shaped opening, and the cross-pin connecting the sides of the said opening, for the purpose described.

4. In a rod or bolt cutter, the adjustable spring having the tool-holder, and the devil D, having one end of the said spring secured thereto, in combination with the adjustable guide having the U-shaped opening, wherein the free end of the said spring is operated, substantially as shown and described.

444,925. ELECTRIC-ARC LAMP. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Nov. 22, 1884. Serial No. 148,622. (No model.)

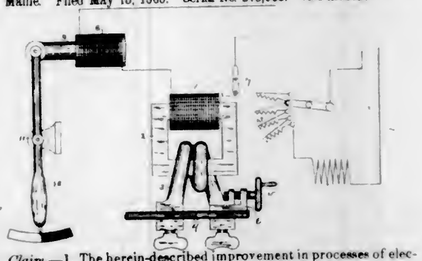


Claim.—1. The combination, in an electric-arc lamp, of a carbon or carbon-carrier, a feed-adjusting mechanism engaging therewith and carried upon a suitable movable support, by which said mechanism and the carbon are sustained, a main-circuit magnet acting on said support with a power substantially constant and adjusted with relation to the retractive influence, so that the magnet may just lift or cause separation of the carbons, a derived-circuit magnet having an armature subjected to a retractive influence independent of first-named magnet, a retractor and a movable support for the armature of the derived-circuit magnet independent of that of the main-circuit magnet and arranged, as described, to operate upon the support for the carbon-feed mechanism in a direction to lower the same only when moved away from its extreme retractive position, the retractive influence for the armature of said derived-circuit magnet being adjusted, as described, so that said derived-circuit magnet may act in opposition to the main-circuit magnet only when a normal arc is exceeded.

2. The combination, in an electric-arc lamp, of a main-circuit magnet, through which the whole or substantially the whole current flowing to the arc passes, a carbon-supporting and feed-releasing mechanism mounted upon the armature-lever of said magnet, a derived-circuit magnet having an independently-mounted armature-lever normally disengaged from but adapted to engage with the support carrying the feed mechanism and to act upon the same in magnetic opposition to the main-circuit magnet, and a retractor for the armature-lever of said derived-circuit magnet, adjusted as described to hold the armature-lever out of engagement with the support carrying the feed mechanism until the arc increases beyond normal length.

3. The combination, in an electric-arc lamp, of a support for the carbon-feed mechanism, a main-circuit magnet continually traversed by all or substantially all of the current flowing through the carbons, exerting a magnetic pull upon said support in one direction, a derived-circuit magnet having an independently-supported armature, the support of which is normally disengaged from, but when attracted is adapted to engage with and move, the support for the carbon-feed mechanism in an opposite direction when the said magnet acquires the proper power, and a retractor for the armature-support of said derived-circuit magnet, adjusted in the manner described to hold the same out of position, where it will engage with the support for the feed mechanism until the arc shall increase beyond its normal or adjusted length.

444,926. METHOD OF ELECTRIC WELDING. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed May 15, 1888. Serial No. 273,985. (No model.)



Claim.—1. The herein-described improvement in processes of electric welding, &c., which consists in applying to the objects a heating-current of the proper or desired volume and subsequently reducing the volume of such current, as and for the purpose described.

2. The herein-described improvement in processes of electric welding, &c., which consists in applying to the object a current of large volume, as described, and subsequently lowering the volume of the current to reduce the accumulation of heat.

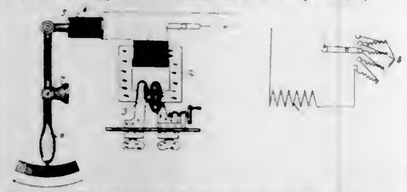
3. The herein-described improvement in processes of electric welding, &c., which consists in applying to the object a current of the requisite amount and subsequently lowering the current in amount sufficient to lower the temperature of the object.

4. The herein-described improvement in electric welding, &c., which consists in first applying a current of large heating effect, permitting the object to accumulate heat under such current until the requisite temperature is nearly reached, and then lowering the current, but not so much as to prevent rise of temperature to the proper point.

5. The method of electric welding which consists in putting the pieces in contact with a suitable pressure, applying a current of gradual heating effect, and then diminishing the volume of such current.

6. The herein-described improvement in the method of forming a case-hardened joint, which consists in forming the weld or joint by an electric current of the desired volume and subsequently diminishing the current to bring and maintain the object at the proper case-hardening temperature.

444,927. METHOD OF ELECTRIC WELDING. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed May 15, 1888. Serial No. 273,986. (No model.)



Claim.—1. The herein-described improvement in methods of electric welding, &c., which consists in applying at the start a current of large volume to the work and gradually diminishing the current from the beginning as the work heats.

2. In electric welding or other electric working of metals, the method of cooling or restoring the work to normal temperature, consisting in gradually diminishing the heating-current while the work is exposed to a cooling medium.

444,928. METHOD OF ELECTRIC WELDING. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed June 14, 1890. Serial No. 355,502. (No model.)



Claim.—1. The herein described method of forming an elongated joint by the electric welding process, consisting in feeding the work in the longitudinal direction of the joint through suitable pressure devices while properly arranged, so that the pressure devices will press the surfaces to be welded against one another, and simultaneously passing an electric current through the work at the point of pressure.

2. The herein-described improvement in forming electrically-welded joints, consisting in lapping the pieces to be welded upon one another, passing the lapped pieces through or between suitable pressure devices, forming the electrodes of an electric heating-circuit, and applying pressure to effect the weld.

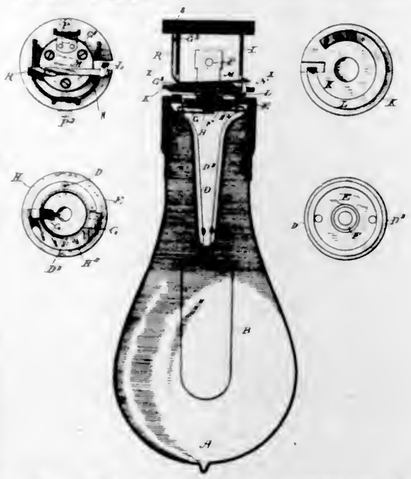
3. The herein-described improvement in forming longitudinal seams or joints between strips or pieces of metal, consisting in feeding the strips or pieces through suitable rolls while arranged in proper position to be pressed together by such rolls, and at the same time passing a heating electric current from one roll to another and through the surfaces to be welded, as and for the purpose described.

4. The herein-described improvement in electric welding and shaping of metals, consisting in feeding two or more strips of metal to be welded together through forming or shaping rolls in the longitudinal direction of the joint, pressing the surfaces to be welded together by such rolls, and at the same time passing a current from roll to roll of sufficient volume to heat the strips to plasticity, so as to effect the weld and at the same time shape the metal to the desired form in cross-section.

5. In an electric welding apparatus, an abutment or rest for the work, made of insulating material at its surface immediately beneath the parts to be welded and of conducting material to one side of it, so as to cause a current to pass or be delivered through surfaces near the edge of the work, as and for the purpose described.

6. In an electric welding apparatus, a pressure and conducting roll a part of the surface of which is a conductor while another part is a non-conductor, for the purpose of directing the current through the work under pressure.

444,929. INCANDESCENT ELECTRIC LAMP. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Original application filed Dec. 27, 1886, Serial No. 222,547. Divided and this application filed Aug. 4, 1890. Serial No. 360,940. (No model.)



Claim.—1. The combination, with an incandescent lamp, of one or more cut-outs adapted to be operated by the electric arc or continuation of the electric arc formed within the lamp on breakage of the incandescent conductor, and a second cut-out consisting, essentially, of two electrodes connected, respectively, to opposite poles of the circuit and separated by a thin layer of an insulating medium, through which the current may take a path by disruptive action on interruption of the current flow at other points in the lamp or its cut-out devices, as and for the purpose described.

2. The combination, with an electric lamp, of a lamp-support having connecting terminals or electrodes adapted to form connection with the lamp-terminals and separated by a thin insulating-film adapted to permit the electric current to force its way across from one electrode or support for the same to the other on interruption of the portion of normal path leading from one electrode to the other through the light-giving portion of the lamp, as and for the purpose described.

3. The combination, with an incandescent electric lamp, of a screw-socket or support therefor and a cut-out or short-circuiting spring mounted on said support in position where it will be engaged by the lower face of the lamp-base, so as to be moved away from its position of contact as the lamp is screwed into place, as and for the purpose described.

4. The combination, with an incandescent electric lamp, of a screw-support with which one electrode of the lamp makes connection, a spring placed in the path of a plate or contact forming the other electrode of the lamp, and a contact-stop with which the spring makes contact when the lamp is removed, said spring and stop forming opposite poles of the circuit, as and for the purpose described.

5. In an incandescent electric lamp, connecting terminals or electrodes formed on or attached to supporting-plates separated from one another by a sheet of mica or other insulating material made sufficiently thin to permit the electric current used in operating the lamp to force its way across from one plate to the other through the insulation on rupture of the conducting-path through the incandescent conductor.

6. In a socket or support for an incandescent electric lamp, a conducting-plate M, carrying a screw for connection with a screw-threaded plate or block connected to a lamp-terminal, and a plate K, carrying a contact-spring L and separated from plate M by a thin sheet of mica or other non-conducting material, as and for the purpose described.

7. The combination, with the support or socket for an incandescent lamp, of a cut-out switch whose two electrodes, normally tending to make contact with one another, are insulated by an interposed non-conducting film and are respectively mounted upon or attached to portions of said support or socket connecting with opposite poles or electrodes of the lamp.

8. The combination, with the plate secured to the lamp-base, of a second plate or block mounted on the first, but insulated therefrom by a mica or other film, springs mounted on said plates and each having its free end over the other spring or the plate supporting the same, and lamp-conductors soldered to and supporting said springs, as and for the purpose described.

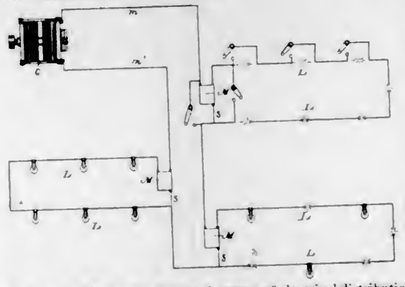
9. In a socket or support for an electric lamp, a conducting supporting-frame carrying a spring connected with said frame, in combination with a plate provided with a stop for said spring and insulated from the frame by a thin film of mica, as and for the purpose described.

10. In a socket or support for an electric lamp, a film or plate of mica interposed as an insulator between the parts of said socket forming or connected to opposite poles of the circuit and made sufficiently thin to permit the electric current to force its way from one part to the other through the insulation in case of rupture of the electric path through the lamp.

11. The combination, with an incandescent lamp having cut-out devices operated by the electric arc or continuation of the electric arc formed within the lamp through rupture of the filament, of a supplemental cut-out consisting, essentially, of electrodes separated from one another by a thin layer of insulation, over which the current may force its way disruptively in case the breakage of the lamp-globe should result in a failure of the arc to form through the rupture of the incandescing conductor.

12. The combination, with an incandescent electric lamp having cut-out devices adapted to be operated by the electric arc or continuation of the electric arc formed within the lamp on rupture of the incandescing conductor, of a supplemental cut-out adapted to be operated by the disruptive action of the electric current on failure of the arc to form on sudden interruption of the current in the lamp by breakage of the filament or incandescing conductor.

444,930. SYSTEM OF DISTRIBUTING AND METERING ELECTRIC ENERGY. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 22, 1890. Serial No. 365,759. (No model.)



Claim.—1. The herein-described system of electrical distribution, comprising a constant-current or series circuit adapted to operate translating devices in series, a loop of such circuit containing the translating devices, and means for keeping a registry of the voltage difference at the terminals of said loop, as and for the purpose described.

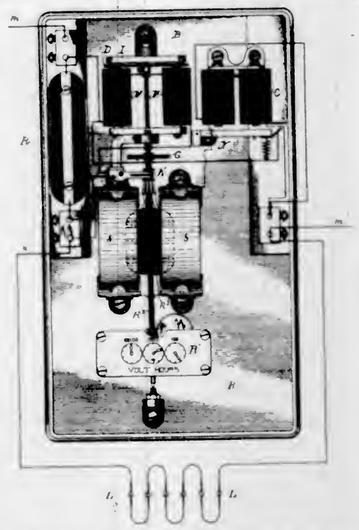
2. The herein-described method of measuring the electricity employed by translating devices on a constant-current circuit, consisting in making a registry of the voltage difference at the terminals of a loop upon which said devices are established.

444,931. ELECTRIC METER. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 22, 1890. Serial No. 365,760. (No model.)

Claim.—1. The combination, with translating devices on a constant-current or series circuit, of an electric motor, one element of which is traversed by a current variable according to the differences of potential at the terminals of a series of translating devices in said circuit, while the other element has a substantially constant excitation and a register of the movements of the armature of said motor.

2. The combination, with a loop on a series line and one or more translating devices in series in the loop, of a high-resistance shunt to the loop using an extremely small fraction of the current for furnishing the field for the rotation of an armature traversed by current, the rotations of which armature are measured by a suitable register, and a retarding device applied to said armature, substantially as described.

3. The combination, with a loop on a series line and one or more translating devices in series in the loop, of a high-resistance shunt to the loop using an extremely small fraction of the current for furnishing the field for an electric-motor armature in the series circuit, a register for counting the movements of said armature, and a retarding device connected to said armature, as and for the purpose described.



4. The combination, with a loop on a series line and translating devices in series on the loop, of an electric-motor field-coil in a branch of high resistance connected to the terminals of the loop, an armature for said motor in the series circuit, a register for counting the movements thereof, and a damping or retarding device connected to the armature, as and for the purpose described.

5. The combination, with a translating device or devices on a series or constant-current circuit, of an electric meter having a motor, one element of which (armature or field) is traversed by a constant current taken from a branch of the main, while the other is traversed by current varying with the potential difference at the terminals of a loop containing a translating device or devices.

6. The combination, with a series electric line, of an electric motor having a field-coil in a high-resistance shunt around translating devices on said line, and an armature in a constant-current branch of said line, and a register of the rotation of said armature, as and for the purpose described.

7. The combination, with a series electric line, of an energizing-coil in a high-resistance shunt around translating devices on said line, an armature in a field produced by said coil and traversed by a constant current taken from said line, and a work or load for said motor which is directly proportional to the speed of rotation.

8. The combination, with a number of translating devices in a constant-current circuit, of an electric motor having a field-coil in a high-resistance branch around the translating devices, an armature traversed by a constant current from any source, and suitable retarding and registering devices connected to said armature.

9. The combination, with a series line supplied with a current which is constant despite variations in the number of translating devices in circuit, of a shunt around any number of such devices, a high-resistance stationary coil in said shunt, a motor-armature acted upon by said coil, a magnetic retarding device, substantially such as described, and a register for indicating the movement of the armature connected to such retarding device.

10. The combination, with the electric meter having motor-coils in a branch of high resistance around the translating devices, of a cut-off magnet in series with said coils as and for the purpose described.

11. The combination, substantially as described, with translating devices on a series or constant-current circuit, of an electric motor, one element of which is in a branch of high resistance around translating devices arranged in series, while the other element is in the main or principal circuit, a branch of said circuit around the latter element and containing an adjustable resistance whose amount may be varied for adjusting the rotation of the motor, and a counter for registering the number of rotations of the armature of said motor.

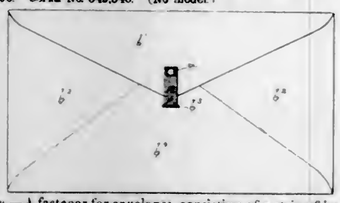
12. The combination, substantially as described, with a series of translating devices on a constant-current line, of an electric motor having a field-magnet in a branch of high resistance connected to the terminals of the loop containing such translating devices, an armature for the motor in the main circuit, an adjustable resistance in the branch around said armature for adjusting the rotation of the motor, and a register for counting the rotations of the armature.

13. The combination, substantially as described, with the electric motor having coils in a branch of high resistance around the translating devices in series, of an armature for said motor in a branch of the main circuit, a retarding device having exciting-coils also in the branch of the main circuit, and a variable resistance for determining the flow of current in the armature and retarding device, as and for the purpose described.

14. The combination, with an electric motor having field-coils in a circuit of high resistance connected to the terminals of a loop in a series circuit, of an armature for said motor and a retarding-magnet, both in one branch of the series circuit, and a variable resistance in a branch of the main circuit in multiple with the first for adjusting the strength of the current passing through the armature and retarding-magnet.

15. The combination, with translating devices arranged in series on a series or constant-current circuit, of an electric motor excited by current in a high-resistance derived circuit around the series of translating devices, an armature for said motor in the main circuit, a branch around said armature, and a counter for registering the movements of said armature.

444,932. ENVELOPE-FASTENER. CHARLES H. VOLL, San Francisco, Cal., assignor of one-half to Oscar Fischer, same place. Filed Apr 25, 1890. Serial No. 349,540. (No model.)



Claim.—A fastener for envelopes, consisting of a strip of bendable metal, one end of which is passed into the envelope and the other lies without it and crosses the point of the free fly, said inner end having a die integral therewith and said outer end having an integral eyelet on the same side as the die, said eyelet passing through the fly and underlying flaps of the envelope and adapted to be flanged within the envelope by contact with the die, substantially as herein described.

444,933. FOLDING HAT AND CLOTHES RACK. GILBERT F. BARNES, Chicago, Ill. Filed May 19, 1890. Serial No. 352,403. (No model.)



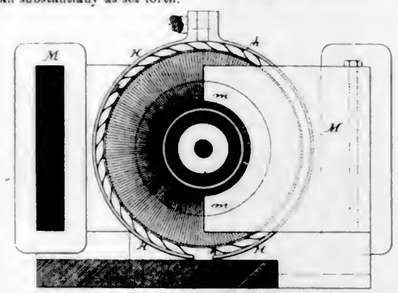
Claim.—1. A folding hat and clothes rack comprising, in combination, a base-plate 1 and an outer plate 3, hinged together at top, the one carrying a clothes-hook 5 and the other a hat-holding spring-clip 4, essentially as described.

2. A folding hat and clothes rack comprising, in combination, a base-plate 1, an outer swinging plate 3, and a swiveled suspension-hook 2, all hinged together by a common pivot, the base-plate 1 being provided with a clothes-hook 5, and the swinging plate 3 with a hat-holding spring-clip 4, essentially as described.

444,934. ALTERNATING-CURRENT MOTOR. CARL O. C. BILLBERG and PAUL A. N. WINAND, Philadelphia, Pa. Filed June 10, 1890. Serial No. 354,965. (No model.)

Claim.—1. An alternating-current motor having an armature in the form of a laminated Faraday disk or cylinder and electro-magnets to act thereon, having one or more primary and one or more secondary windings, the armature being connected in the secondary circuit, all substantially as described.

2. An alternating-current motor having an armature in the form of a laminated Faraday disk or cylinder, with electro-magnets to act thereon, having one or more primary and one or more secondary coils, means supplying alternating current to the primary windings, and collectors for the armature connected up with the secondary windings, all substantially as set forth.

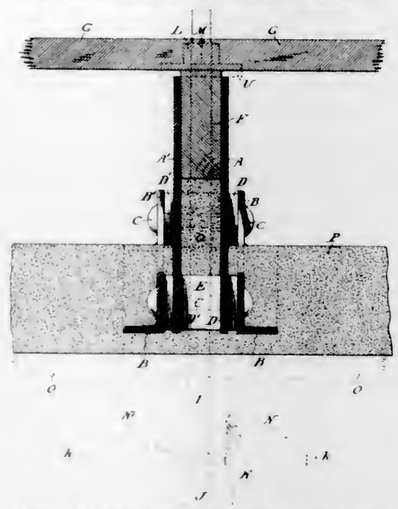


3. An alternating-current motor having an armature in the form of a laminated Faraday disk, collectors at the hub and periphery of the disk, and electro-magnets to act on the said disk and having one or more primary and one or more secondary coils, the secondary coils being connected up to the collectors, substantially as set forth.

4. An alternating-current motor having an armature in the form of a laminated Faraday disk or cylinder, and collectors for the armature, each collector consisting of a ring or sections of rings, with brushes connecting all parts of the disk in circuit at the same time, and electro-magnets to act on the disk and having primary and secondary windings, the primary windings being connected to the leads and the secondary windings to the collectors, substantially as set forth.

5. An alternating-current motor having an armature in the form of a laminated Faraday disk or cylinder and electro-magnets acting thereon and having three sets of coils, one set connected up to the leads, another set connected up in circuit through the armature, and the third set connected to the leads and the armature, substantially as described.

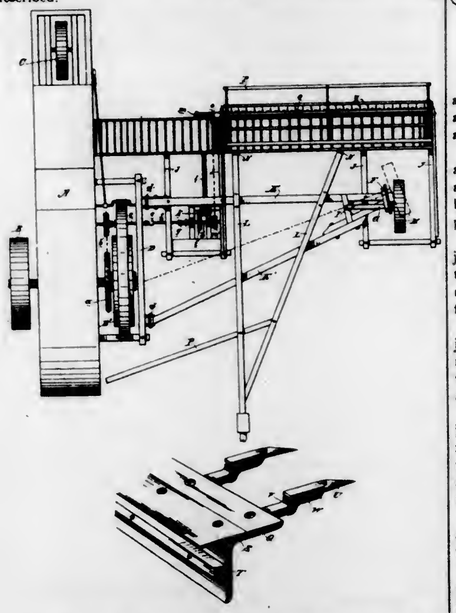
444,935. FIRE-PROOF FLOOR. FRANK FURNESS, Philadelphia, Pa. Filed Nov. 4, 1890. Serial No. 370,299. (No model.)



Claim.—In a fire-proof floor, the combination of a series of hollow joist-frames open at top and bottom, substantially as set forth, a pair of flanged angle-irons secured along each of said joist-frames, and a body of concrete extending into the hollow interior of the joist-frames, enveloping the bottom edges and angle-iron flanges thereof, and also extending from joist to joist, the concrete within said joist-frames being integral with the exterior body thereof, substantially as set forth.

444,936. TRAVELING HARVESTER. GEORGE W. HAINES, Stockton, Cal. Filed June 2, 1890. Serial No. 354,040. (No model.)

Claim.—1. In a harvester, a thrashing-machine mounted upon the main bearing and driving wheels, a header-frame hinged to the side of the thrashing-machine frame, so that its front projects approximately at right angles with said frame, a bearing-wheel for the outer end of the header-frame situated in front of the axial line of the main bearing-wheels and having the inner end of its shaft or axle extended inward and fulcrumed to the outer end of the header-frame, so that the wheel may swing about the fulcrum-point to stand in the line of travel when the machine is advancing and to stand diagonally and in a line which intersects the outer end of the axle of the wheel B' when the machine is turning corners, and a guide-box F, within which said axle is supported as it swings about its fulcrum, substantially as herein described.



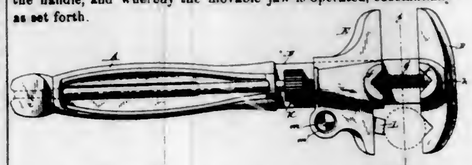
2. A header-frame hinged to the side of the thrashing-machine having the front timber at right angles therewith and forward of the line of the bearing-wheels of the thrashing-machine, a bearing-wheel for the outer end of the header-frame journaled approximately in line with the front timber of said header-frame, an axle upon the outer end of which said bearing-wheel turns, having its inner end fulcrumed to the outer end of the header-frame, a guide-box through which said axle passes and within which it swings from front to rear around the fulcrum-point, so that the position of the outer bearing-wheel may be changed with relation to the main bearing-wheels of the machine, substantially as herein described.

3. In a harvester, the thrashing-machine mounted upon bearing and driving wheels, a header hinged to one side thereof and projecting at right angles from the thrashing-machine, a bearing-wheel upon which the outer end of the header-frame is supported, having the inner end of its axle fulcrumed to the outer end of the header-frame, so that the wheel may be turned about the fulcrum-point, supplemental timbers J, suspended beneath the front timber E of the header-frame parallel with the line of travel, a sickle-bar fixed to the front end of said timbers having the fingers and guide-plate bolted thereto, upright posts M, fixed upon the timber E in line above the suspending-links of the timbers J, a lever L L, fulcrumed upon the posts M, the hooks O, fixed to the movable supplemental frame, the detachable links N, connecting the levers L with the hooks O, and the supplemental diagonal lever P, substantially as herein described.

4. The angle-iron or steel sickle-bar Q, having the depression formed in the rear edge of the top portion, and the steel plate S, bolted in said depression, so that its front edge is flush with the front of the top of the bar and its rear edge projects behind the bar, in combination with the fingers bolted beneath the upper inclined portion of the bar and having depressions formed in front of the front edge of the bar to receive and guide the cutter-bar, and slots within which the cutting-sections travel, so that their rear edges are above the level of the bar Q, substantially as herein described.

444,937. WRENCH. SILVANUS HUSSEY, Brant, N. Y. Filed Oct. 25, 1890. Serial No. 369,269. (No model.)

Claim.—1. The combination, with the handle and the shank provided with a fixed jaw, of a movable jaw sliding toward and from the fixed jaw, and an adjusting-screw terminating at the outer portion of the handle, and whereby the movable jaw is operated, substantially as set forth.



2. The combination, with the handle and the shank provided with a fixed jaw, of a movable jaw sliding toward and from the fixed jaw, and an adjusting-screw extending through the handle and the movable jaw, and whereby the latter is operated, substantially as set forth.

3. The combination, with the handle and the shank provided with a fixed jaw, of a movable jaw sliding toward and from the fixed jaw, and a rotary adjusting-screw extending to the outer portion of the handle, held against lengthwise movement, and provided at its outer portion with a knob or thumb-piece, substantially as set forth.

4. The combination, with the handle and the shank having a fixed jaw, of a rotary adjusting-screw extending from the stationary jaw to the outer portion of the handle and held against lengthwise movement, and a movable jaw operated by said screw, substantially as set forth.

5. The combination, with the handle and the shank having a fixed jaw, of a movable jaw guided on said shank, auxiliary jaws arranged, respectively, on said fixed and movable jaws and projecting laterally therefrom, and an adjusting-screw whereby the movable jaw is operated, substantially as set forth.

6. The combination, with the handle and the shank having a fixed jaw, of a movable jaw guided on said shank, auxiliary jaws arranged, respectively, on said fixed and movable jaws and projecting laterally therefrom, and an adjusting-screw held against lengthwise movement and extending through said auxiliary jaws and the handle, substantially as set forth.

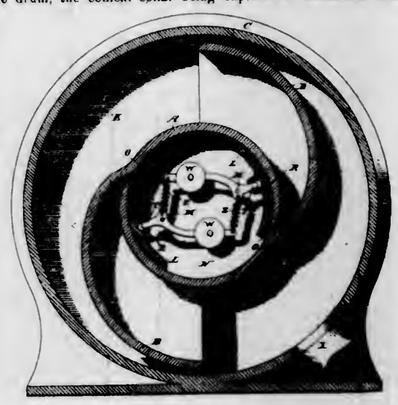
7. The combination, with the handle having a socket arranged in a plane parallel with the handle, of a shank carrying a jaw and secured in the socket of the handle, substantially as set forth.

8. In a wrench, the combination, with the fixed jaw, of the movable jaw having a chamber or recess provided with a spherical socket, and a movable gripping-bar arranged in said recess and having a spherical knuckle seated in said socket, substantially as set forth.

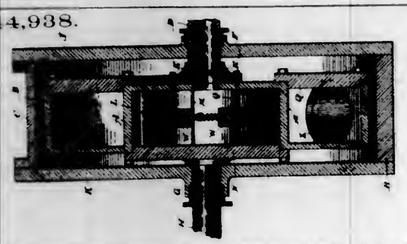
9. The combination, with the shank of the wrench having a fixed jaw, of a movable jaw having an aperture, whereby it slides upon the shank, and a chamber or recess opening into said aperture and provided with a spherical cavity, and a gripping-bar arranged in said chamber and having a spherical head seated in said cavity, substantially as set forth.

444,938. ROTARY ENGINE. THOMAS W. KINKAID, U. S. Navy. Filed Aug. 26, 1890. Serial No. 363,085. (No model.)

Claim.—1. In a rotary engine, the combination, with a central revolving drum, of a supply-pipe coaxial with said drum and having upon the end adjacent to said drum a step-shaped conical head, and a step-shaped conical collar fitted to said conical head and secured to the drum, the conical collar being capable of continuous rotation



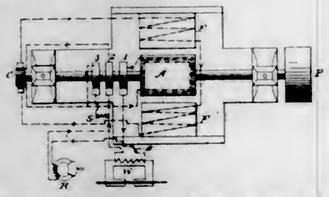
444,938.



about the conical head, the conical stepped surfaces of said collar and head being in continuous contact, substantially as shown and described.

2. In a rotary engine, the combination, with a central revolving drum having ports in its periphery, of pieces called "valve-plates," shaped to conform to the inner cylindrical surface of said drum and capable of motion in contact with said surface, said pieces having a form at the ends nearest the respective ports approximately in continuation of one of the nozzle-surfaces, and revolving weights the varying centrifugal force of which moves said valve-plates so as to effect an opening of said ports suitable for maintaining a rotative speed, for which said revolving weights may be adjusted, substantially as described.

444,989. ALTERNATING-CURRENT DYNAMO. HERMANN LEMP and LOUIS M. SCHMIDT, Lynn, Mass., assignors to the Thomson Electric Welding Company, of Maine. Filed Sept. 8, 1890. Serial No. 364,370. (No model.)



Claim.—1. The combination, substantially as described, in a dynamo-electric machine, of armature-coils supplying the work-circuit with alternating currents, a field-magnet circuit in series with the work-circuit and the armature-coils supplying the same, a commutator connected to the field for locally straightening the currents which flow on said work-circuit, and a branch around the work-circuit applied as shown, so that the currents flowing therein from the armature-coils supplying the work will flow through the commutator and field-magnet.

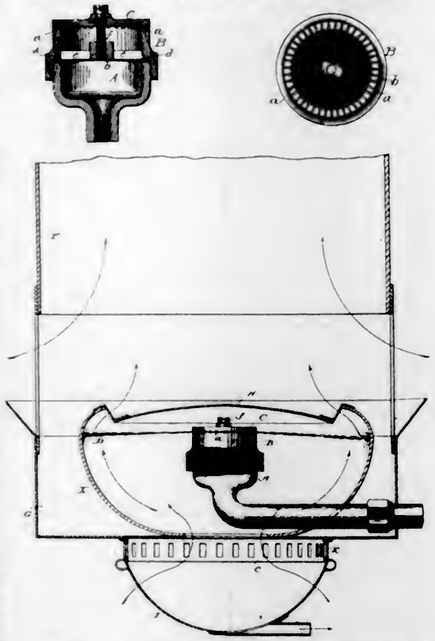
2. The combination, substantially as described, in an alternating-current dynamo-machine having its armature connected directly to the work-circuit, so as to supply the same with alternating currents, of a counter-electro-motive-force resistance in a branch taken around the said work-circuit from a point between the work and the armature supplying the same, and a field-magnet coil and commutator therefor in series with the work-circuit and branch around it containing the counter-electro-motive-force resistance.

3. The combination, substantially as described, with a dynamo-electric machine having its armature-coils connected directly to a work-circuit for supplying the same with alternating currents, of an adjustable counter-electro-motive-force resistance in a branch through which currents from said coils may flow around the work, a field-magnet coil in series with the work-circuit and branch around the same, and a commutator between such field-magnet and the work-circuit as and for the purpose described.

4. The combination, substantially as described, of a dynamo-electric machine having its armature connected directly to a work-circuit, so as to supply the same with alternating currents, a branch around the work-circuit connected to the circuit between the work and the armature and containing a resistance, a field-magnet coil and commutator through which the currents of the work-circuit and the branch around the same flow as commuted currents, and a branch around the field-magnet connected to the circuit between the field-magnet and a portion of the circuit containing the work, as and for the purpose described.

5. The combination of an alternating-current source, a series circuit between the terminals thereof, branched at two points, two of said branches in multiple with one another containing, respectively, the work and an artificial resistance through which the current from the source may flow independently of the work, while the two other branches in multiple with one another contain, respectively, the field-magnet coil for a dynamo producing the alternating currents and an artificial resistance, and a commutator between the field-magnet coil and the portion of the circuit in series therewith in which the alternating currents flow through the work and the branch around the same.

444,940. AIR-MOISTENING APPARATUS. EMIL H. C. OEHLMANN, Berlin, Germany, assignor to the United States Aërophor Air Moistening and Ventilating Company, Boston, Mass. Filed May 4, 1888. Serial No. 272,761. (No model.) Patented in England Dec. 28, 1887, No. 17,852; in Belgium Jan. 31, 1888, No. 80,166; in France Mar. 20, 1888, No. 187,976; in Luxemburg Apr. 24, 1888, No. 982; in Spain Apr. 30, 1888, No. 7,787; in Italy May 3, 1888, No. 22,899/462; in Austria-Hungary June 1, 1888, No. 50,479 and No. 11,346; in Germany July 17, 1888, No. 44,744, and in Switzerland Jan. 21, 1889, No. 56.



Claim.—1. In a nozzle for an air-moistening apparatus, the combination, with a part surrounding the central passage and having at its top edge an annular flat surface in a plane at right angles to the axis of said passage, of a part having a perfectly flat surface, one of said surfaces having radial grooves, and the said parts or surfaces when compressed together being adapted to form jet-apertures along the lines of the grooves, substantially as shown and described.

2. In a nozzle for an air-moistening apparatus, the combination, with an annular part surrounding the central passage and having a radially-grooved flat surface in a plane at right angles to the axis of the said passage, of a part having a flat surface, said parts or surfaces when compressed together being adapted to form jet-apertures along the lines of the grooves, substantially as shown and described.

3. In a nozzle for an air-moistening apparatus, the combination, with a part surrounding the central passage and having an annular flat surface in a plane at right angles to the axis of said passage, of a top part or cover having a flat surface, one of said surfaces having radial grooves, and of a fastening device adapted to lock the said parts together without causing a grinding of their contacting surfaces, substantially as shown and described.

4. The combination, with the bottom section of a nozzle for an air-moistening apparatus, of a part resting on the same and having an annular flat top surface, of a top part or cover having a flat surface, one of said surfaces being radially grooved, and of a fastening device for locking the bottom section and the upper parts all together, substantially as shown and described.

5. In a nozzle, the combination, with a bottom section, of a wire-netting or sieve resting on the top edge of the same, a top part resting on the sieve and having radial grooves in its top edge, and a cover held on said grooved edge, substantially as herein shown and described.

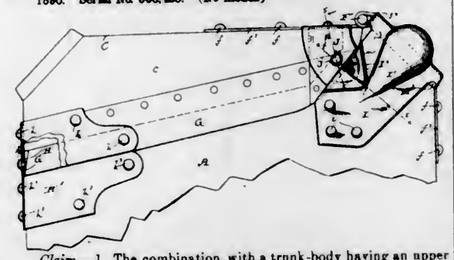
6. In a nozzle, the combination, with a bottom section, of a sieve or wire-netting resting on the top edge of the same, a top section having radial grooves in its top edge, a cover held on said grooved edge, and a fastening device for locking the bottom section, top section, and cover together, substantially as herein shown and described.

7. In an air-moistening apparatus, the combination, with a suitable impingement or stop surface, of a nozzle having two flat surfaces, one of said surfaces being radially grooved.

8. In an air-moistening apparatus, the combination, with a suitable stop-surface, of a nozzle having two flat surfaces, one of said surfaces being radially grooved, together with a fastening device, substantially as described, for holding the two surfaces together.

9. In an air-moistening apparatus, the combination, with a nozzle consisting of two flat surfaces, one of which is radially grooved, of a stop-surface completely surrounding said nozzle, said stop-surface being substantially perpendicular to the spray issuing from said nozzle.

444,941. TRUNK. FRANK J. PALICA, Racine, Wis. Filed Oct. 17, 1890. Serial No. 368,425. (No model.)

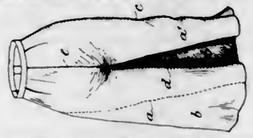


Claim.—1. The combination, with a trunk-body having an upper oblique rear edge and a series of hinges intermediate of the ends of the trunk, of a pair of rear angular corner-irons, one arm of each corner-iron being secured to said upper oblique rear edge and its other arm to the side of the trunk-body and each angular corner-iron having one of its arms formed with an offset, and a companion angular iron having one of its arms provided with an extension to enter beneath said offset, substantially as set forth.

2. The combination, with a trunk-body having a strip located adjacent to the rear edge of the cover or lid and projecting outwardly beyond the upper line of the latter, of a hinge having one of its arms bent to conform tranaversely to the projecting strip, and also having its pintle-socket depressed below the upper edge of the strip and having its opposite arm extending upon the top of the trunk-cover, substantially as set forth.

3. The combination, with a trunk-body having an upper oblique rear edge, of a strip located upon said oblique rear edge and projecting outwardly beyond the upper line of the trunk-top and the vertical line of the trunk-back, and angular corner-irons, one arm of each of which is secured to the side of the trunk-body and the other arm to the said strip, the said corner-irons each having inwardly-projecting lips to cover the corners of the said strip, and also a swell or bumper coincident with the angle of the said corner-irons, substantially as set forth.

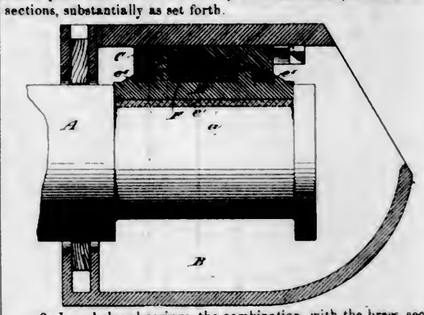
444,942. RIDING-HABIT. WILLIAM SHINGLETON, London, England. Filed Oct. 23, 1890. Serial No. 369,031. (No model.)



Claim.—A riding-habit in which the skirt is attached to the side seam of the right leg of the trousers, and after being passed across in front of both legs is brought round and behind the left leg and attached to the inner or leg seam thereof and to the seat-seam, substantially as described and shown.

444,943. CAR-AXLE BEARING. WILLIAM B. SMITH, Atlanta, Ga., assignor of one-half to George W. McCarty, same place. Filed July 3, 1890. Serial No. 357,656. (No model.)

Claim.—1. In axle-box bearings, the combination, with the brass section fitted to the spindle or journal and a stationary section secured to the box, of an intermediate section secured to the brass, the said intermediate section and the stationary section secured to the box being provided the one with a convex surface and the other with a concave surface adapted to conform to and seat upon the said convex surface of the other, one of the said sections being further provided with inwardly-curved-faced ribs or lips which engage the opposite sides of the other section and permit a limited rocking movement in a horizontal plane and at the same time prevent lateral displacement of the sections, substantially as set forth.

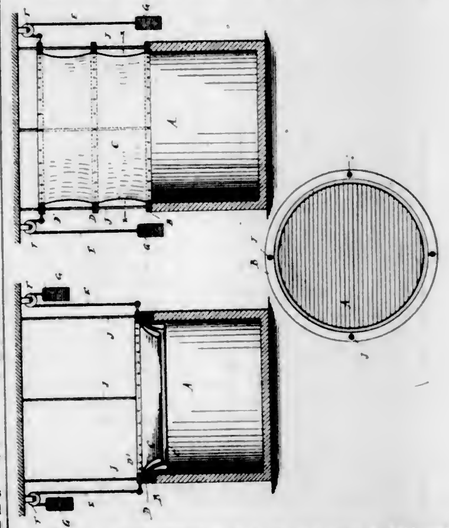


2. In axle-box bearings, the combination, with the brass section fitted to the axle or journal and a stationary section secured to the box and provided with a concave seat and with depending ribs or lips at the opposite sides of the seat, the depending ribs or lips having inwardly-curved faces, of an intermediate section fixed to the brass and provided with a convex bearing-face adapted to conform to the said concave seat, the said intermediate section being further provided with lugs at its sides to form stops against the lateral displacement of the sections and having its upper edges cut away to afford play and prevent binding, substantially as set forth.

3. In axle-box bearings, the combination, with the brass section and the section fitted to the box, of an intermediate section fixed to the brass section, the said intermediate section being provided with a convex bearing-face, the ends of the brass being provided with upwardly-extending curved-faced projections at its opposite ends, which form continuations of the curve of the intermediate sections, substantially as set forth.

4. In axle-box bearings, the combination, with the brass and the section fitted to the box, of the intermediate section fixed to the brass and provided with a seat for the section fitted to the box and an interposed layer of soft metal between the intermediate section and the brass, substantially as set forth.

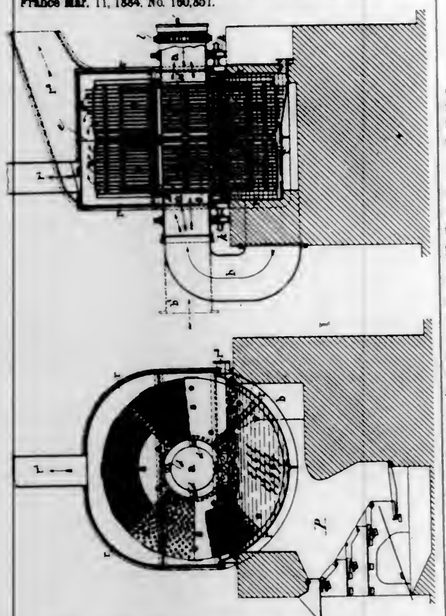
444,944. GUARD FOR FERMENTING-VATS. GUSTAV SOBOTKA, New York, N. Y., assignor to Fleischmann & Co., same place. Filed Oct. 17, 1890. Serial No. 368,464. (No model.)



Claim.—The combination, with a vat, of a series of guide-rods projecting upward from the top of the same, rings of the same diameter as the top of the vat, through which rings the guide-rods pass, so as

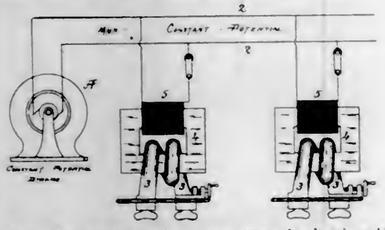
to adapt said rings to slide on said guide-rods, a collapsible sleeve open at the top and bottom and secured to said rings and to the top of the vessel, and counterbalancing-weights connected with the top ring for the purpose of forming a collapsible vessel open at the top, substantially as set forth.

444,945. EVAPORATING AND COOLING APPARATUS. EDUARD THEISEN, Cologne, Germany. Filed Feb. 17, 1888. Serial No. 264,332. (No model.) Patented in Germany Oct. 25, 1885, No. 28,241, and in France Mar. 11, 1884, No. 160,851.



Claim.—The combination, with the vessel to contain the liquid to be acted upon, of a group of disks with the central openings diminishing in size, and a second group of disks successively of larger diameter, and a partition between the groups, substantially as set forth.

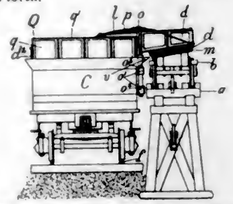
444,946. METHOD OF ELECTRIC WELDING. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed May 15, 1888. Serial No. 273,988. (No model.)



Claim.—The herein-described improvement in electric welding and other metal-working operations involving the application of a heating electric current to the object to be heated, consisting in maintaining at the work itself a constant or fairly-constant potential difference, so as to permit a gradual heating to be effected automatically by the increments of electric resistance due to increase of temperature.

444,947. APPARATUS FOR TRANSFERRING COAL TO MOVING LOCOMOTIVE-TENDERS. JOHN VAN NEST, Jr., and WILLIAM B. KINNEY, Newark, N. J. Filed Apr. 14, 1890. Serial No. 347,838. (No model.)

Claim.—1. The combination, with a tender moving on a railroad-track, of a coal-platform movable parallel with the track at a rate different from that of tender, and an adjustable scoop movable laterally to and from the tender over the platform, substantially as and for the purpose set forth.



2. The combination, with a tender moving upon a railroad-track, of a coal-platform movable parallel with the track at a rate different from that of tender, and an adjustable scoop movable laterally to and from the tender over the platform, and provided with a brush to sweep the coal from the platform, as and for the purpose set forth.

3. The combination, with a tender moving upon a railroad-track, of a coal-platform movable parallel with the track at a rate different from that of tender, an adjustable scoop movable laterally to and from the tender over the platform, provided with a brush to sweep the coal from the platform, and means for locking the scoop in its operative position, substantially as and for the purpose set forth.

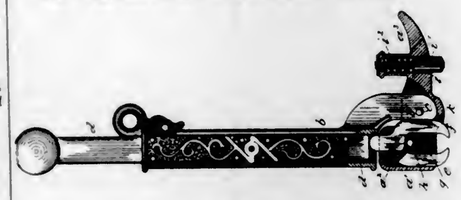
4. The means for drawing coal into a tender, consisting in a scoop fixed to the spindle *o*, pivoted in bearings upon the side of the tender, and a lever attached to such spindle for adjusting the scoop, substantially as herein described.

5. The means for drawing coal into a tender from a platform, consisting in an upright spindle pivoted at the side of the tender, a scoop projecting from the spindle, a lever attached to the scoop and projected across the tender, and sockets to retain the lever at the ends of its throw, as and for the purpose set forth.

6. The combination, with a tender moving upon a railroad-track, of a coal-platform movable parallel with the track at a rate different from that of tender, a scoop movable to and from the tender over the platform, and a shield at the rear of the tender to arrest the coal, substantially as herein set forth.

7. The combination, with a tender moving upon a railroad-track, of a coal-platform movable parallel with the track at a rate different from that of tender, a lip extended from the side of the tender contiguous to the platform, and a scoop movable to and from the tender over the platform, as and for the purpose set forth.

444,948. NAIL-EXTRACTOR. GEORGE J. CAPEWELL, Hartford, Conn. Filed June 21, 1890. Serial No. 356,188. (No model.)



Claim.—1. In a nail-puller, in combination, the jaw-lever, the foot-piece hinged to said lever, the nail-jaws, and the yielding fulcrum located back of the main fulcrum, all substantially as described.

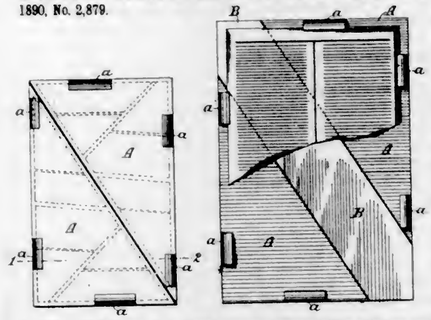
2. In combination, in a nail-puller, a foot-piece having a jaw-socket, the sliding jaws located and supported in said socket in the line of movement of a percussive device, the jaw-lever hinged to the foot-piece independently of the nail-grasping jaws, and the percussive device supported on the jaw-lever, all substantially as described.

3. In combination, in a nail-puller, a foot-piece having a jaw-socket, the sliding jaws located in said socket in the line of movement of a percussive device, and a yielding fulcrum located outside of the main fulcrum, all substantially as described.

4. In combination with the foot-piece having the jaw-socket and a fulcrum-arm, the independently-movable nail-grasping jaws wholly supported within said socket, the jaw-lever hinged to the foot-piece and forming a back support for one of the jaws, and the percussive device supported on the jaw-lever, all substantially as described.

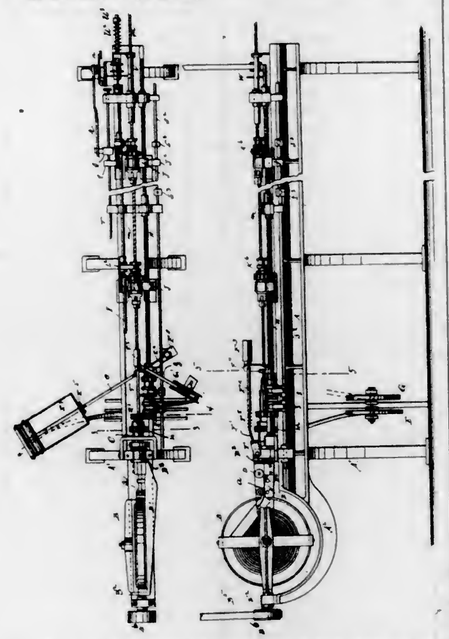
5. In combination with the foot-piece having the nail jaw-socket and the fulcrum, the independently-movable jaws located in said socket and halved together at their outer end, the spring located between the inner edges of the jaws, the jaw-retaining pin, the percussive device supported on the jaw-lever, and the jaw-lever, all substantially as described.

444,949. BACKING-BLOCK FOR STEREOTYPE-PLATES. HARVEY DALZIEL, London, England. Filed Apr. 29, 1889. Serial No. 308,934. (No model.) Patented in England Feb. 6, 1889, No. 2,088; in France Mar. 19, 1889, No. 196,832; in Germany Apr. 5, 1889, No. 49,361; in Italy Dec. 24, 1889, XXIII, 26,672; in Belgium Jan. 4, 1890, No. 89,076; in Canada Feb. 25, 1890, No. 33,781, and in Austria-Hungary Apr. 27, 1890, No. 2,879.



Claim.—In a backing for stereotype-plates and like printing-surfaces, the combination of two outer members of the form of right-angled triangles and a filling-piece interposed between and conforming to the diagonal faces of said members, substantially as and for the purpose herein described.

444,950. MACHINE FOR MAKING TUBING FROM PAPER STRIPS. HARMER DENNEY, New York, N. Y., assignor to the Interior Conduit and Insulation Company, same place. Filed Feb. 27, 1890. Serial No. 341,934. (No model.)



Claim.—1. In a machine for making tubes from strips, the combination, with a rotating reel mounted on a bar having a tubular pivot, of a mandrel secured to said bar and projecting through the tubular pivot, and a tapering end piece on the tubular pivot, through which tapering end piece the said mandrel passes, substantially as set forth.

2. In a machine for making tubes from strips, the combination, with a rotating reel formed on a bar provided with a tubular pivot, of a mandrel secured to the bar and projecting through the said tubular pivot, a block having a rounded edge at the inner end of the mandrel, and a roller having a concave circumferential groove adjacent to the curved edge, substantially as set forth.

3. In a machine for making tubes from strips, the combination, with a rotating mandrel, of a rotating tube surrounding it, a tapering end piece in said tube, through which tapering end piece the mandrel passes, and a spring-strip, the free end of which rests against the mandrel a short distance beyond the said end piece, substantially as set forth.

4. In a machine for making tubes from strips, the combination, with a rotating reel, a tube connected with the reel to rotate with the same, and a rotating mandrel passed through the tube and connected with the tube, of a guide for guiding two strips upon a core on the mandrel, and springs for pressing one of said strips upon the core on the mandrel, substantially as set forth.

5. In a machine for making tubes from strips, the combination, with a rotating reel, tube, and mandrel, of a pivoted frame, a rod on said frame, a tube surrounding the rod and connected therewith by a spring, and guides for strips on the swinging end of said rod, substantially as set forth.

6. In a machine for making tubes from strips, the combination, with means for forming a core from a strip, of means for covering the core, and two reciprocating clutching devices adapted to grip or clutch the tube formed on said core, which tube clutches or gripping devices constantly travel in opposite directions, substantially as set forth.

7. In a machine for making tubes from strips, the combination of mechanism for forming a core from a strip of paper and mechanism for covering said core, with two reciprocating tube gripping or clutching devices mounted to constantly travel in opposite directions, and a screw having a right and left hand thread and engaging parts of said gripping devices or clutches, substantially as set forth.

8. In a machine for making tubes from strips, the combination of means for forming a core from a strip and mechanism for covering said core, with two reciprocating tube clutching or gripping devices mounted to move in opposite directions, a screw-spindle having right and left hand threads and engaging projections on said gripping devices, and means for automatically reversing the direction of rotation of the screw-spindle, substantially as set forth.

9. In a machine for making tubes from strips, the combination of means for forming a core from a strip and mechanism for covering said core, with reciprocating clutching devices for gripping the tube, and a swinging saw-frame operated from one of the gripping devices, substantially as set forth.

10. In a machine for making tubes from strips, the combination of means for forming a core from a strip and mechanism for covering said core, reciprocating gripping devices, a sliding and swinging saw-frame, and means for bringing said sliding and swinging saw-frame into operative position, which means are actuated by one of said gripping devices, substantially as set forth.

11. In a machine for making tubes from strips, the combination of means for forming a core from a strip and mechanism for covering said core, with reciprocating gripping devices or clutches, a sliding and swinging saw-frame, a ratchet-wheel operated from one of the gripping devices, and cams on said ratchet-wheel for inclining the saw-frame, substantially as set forth.

12. In a machine for making tubes from strips, the combination of of means for forming a core from a strip and mechanism for covering said core, with reciprocating gripping devices or clutches, a sliding and swinging saw-frame, a reciprocating rod operated from one of the gripping devices, a pawl-lever connected with said rod, a ratchet-wheel operated from said pawl-lever, cams on said ratchet-wheel for inclining the saw-frame, a head on said reciprocating rod for pushing the saw-frame in the direction of its length, and a spring for pressing the saw-frame in the reverse direction, substantially as set forth.

444,951. PROCESS OF PREPARING PLATES OR SURFACES FOR ORNAMENTATION. HANNIBAL GOODWIN, Newark, N. J. Filed Dec. 4, 1885. Serial No. 184,752. (No model.)

Claim.—1. The process herein described of preparing plates or surfaces for purposes of ornament or utility, which consists in applying to or imposing on said plate a film of sensitized albumen or its equivalent, then photographically impressing said film, inking the same to re-enforce the impressed film, and developing the reproduced design by dissolving out the unimpressed portions of the film and the overlying re-enforce, then further re-enforcing the remaining portions of the film by applying an insulating or resisting dust, such as ebonite, then etching or cleaning out the bare surfaces, then flowing the plate with a resist or insulating-film insoluble in the solvent of the ink, then applying a solvent of said ink and removing the latter with its overlying film, leaving the film of light hardened albumen where first impressed, then flowing the plate with or applying thereto another resist or insulating film or covering insoluble in the solvent of the said underlying albumen film, then applying a solvent of said albumen film and removing the latter with its overlying film, then giving to this last-mentioned double resist still greater insulating capacity, then

cleansing or etching out the surfaces made bare by the removal of albumen and imposing or depositing thereon a metallic covering that is to form one of the final colors of the finished picture or design, then flowing the plate with a resist or insulating-film insoluble in the solvent of the first-applied resist or resists, then applying a solvent or solvents of said underlying first resist or resists and removing the, latter, together with its overlying film, leaving the plate partly covered with the remainder of the resist last applied and an underlying deposit or application of metal and partly bare, then depositing on or applying to said bare parts a metallic film in suitable contrast to that underlying the said remainder of the resist, and then removing the remainder of the resist, leaving the two deposited or applied metals bare, substantially as set forth.

2. The process herein described of preparing plates or surfaces for purposes of ornament or utility, which consists in first flowing upon or otherwise applying to the surface of the plate a film of matter sensitive to the light, impressing or imprinting and developing a design or picture in said film by removing the unimpressed parts of the film, then re-enforcing the remaining portion or portions of said film or giving it or them greater insulating capacity, then cleansing or etching out the bare portions of the plate and imposing, applying, or depositing a coloring-matter, such as a metallic film, then flowing the plate with a resist or insulator insoluble in the solvent of the underlying re-enforced film, then applying a solvent of said underlying film and removing the latter, together with its overlying film, leaving the plate partly covered with the remainder of the resist last applied and an underlying coloring and partly bare, and then coloring said bare parts or applying, imposing, or depositing on said bare parts a suitable coloring-matter in contrast to the coloring first applied or secured, and then removing the remainder of the resisting or insulating film, substantially as set forth.

3. The process of imposing two electro-deposits on a given plate and forming a design in different metals on said plate, which consists in applying to said plate a film of photographically-sensitive matter, impressing the design or image to be reproduced on said sensitive matter and developing the same, and then substituting for the light impressed portion of the film an electro-deposit of one metal and for the unimpressed portion an electro-deposit of another different metal, substantially as set forth.

4. The process herein described of preparing plates or surfaces for purposes of ornament or utility, which consists, essentially, in flowing upon or applying to the said surface or plate a film of sensitive matter, impressing or imprinting the design or pattern upon said film and developing the design by removing portions of said film, leaving the plate partly bare, then etching or cleansing out the bare portions and depositing or imposing a metallic covering on the bare surfaces, then flowing the plate with or applying to said plate a resist or insulating film or covering insoluble in the solvent of the underlying film, then applying a solvent of said underlying film and removing the latter, together with its overlying film, then depositing or applying to the bare parts a metallic film or covering in suitable contrast to that underlying the said remainder of the resist, and then removing the said remainder of the resist, leaving the deposited or applied metals bare, substantially as set forth.

5. In the process of preparing plates or surfaces for purposes of utility or ornament, the process which consists in applying to or imposing on said plates a film of sensitive matter, then photographically impressing said film and inking the same and then developing a picture on the plate or surface by laying part of said plates bare, then flowing the plate with a resist or insulating-film insoluble in a solvent of the ink covering the underlying film of sensitive matter remaining on the plate after the development of the picture, then applying a solvent of said ink and removing the latter, with its overlying film, leaving the film of light hardened matter where first impressed, then flowing the plate with or applying thereto another resist or insulating film or covering insoluble in the solvent of the said underlying film of sensitive matter, then applying a solvent of said sensitive film and removing it with its overlying film, substantially as set forth.

6. In the process of preparing plates or surfaces for purposes of utility or ornament, the process which consists in applying to or imposing on said plates a film of sensitive matter, then photographically impressing said film and inking the same and then developing a picture on the plate or surface by laying bare parts of said plate, then cleansing or etching out the bare surface, then flowing the plate with a resist or insulating-film insoluble in the solvent of the ink covering the underlying film of sensitive matter remaining on the plate after the development of the picture, then applying matter where first impressed, then flowing the plate with or applying thereto another resist or insulating film or covering insoluble in the solvent of the said underlying film of sensitive matter, then applying a solvent of said sensitive film and removing it with its overlying film, then giving to this last-named double resist still greater insulating capacity, then cleansing or etching out the surfaces made bare by the removal of the film of light hardened sensitive matter, then imposing or depositing a metallic covering that is to form one of the colors of the finished picture or design, then flowing the plate with a resist or insulating-film insoluble in the solvent of the first-applied resist or resists, then applying the solvent or solvents of said underlying first resist or resists, and removing the latter with its overlying film, substantially as set forth.

7. In the process of preparing plates or surfaces for purposes of ornament or utility, the process which consists in applying to or imposing on said plate a film of sensitive albumen, then photographically impressing, inking, and developing a picture on said plate or surface, parts of said plate or surface being then bare and parts covered with a film, then re-enforcing said film by applying an insulating-dust, such as ebonite, then cleansing or etching out the bare surfaces, then flowing the plate with a resist or insulating-film insoluble in the solvent of the ink, then applying a solvent of said ink and removing the latter with its overlying film, leaving the film of light hardened albumen where first impressed, then flowing the plate with or applying thereto another resist or insulating film or covering insoluble in the solvent of the said underlying albumen film and removing the latter with its overlying film, substantially as set forth.

8. In the process of preparing plates, the process which consists in applying to a plate a sensitive film and photographically impressing it, inking the impressed film, and then washing away the unimpressed portions, together with the overlying ink, leaving the plate with an inked and light hardened film and partly bare, depositing a metallic film upon the bare parts, then covering the whole surface with a resist which is insoluble in the solvent of ink, removing the ink and the underlying light hardened film, thus leaving the plate at this stage in a suitable condition to be etched down, substantially as set forth.

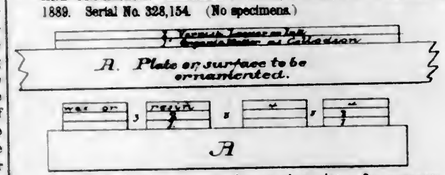
9. In the process of preparing plates herein described, the process which consists, essentially, in applying to the plate a picture in fatty ink, fatty varnish, or asphalt, depositing a film of metal upon the parts of said plate remaining bare, covering the whole surface with a resist which is insoluble in the solvent of the ink, varnish, or asphalt, removing by said solvent the said ink, varnish, or asphalt, and leaving the plate at this stage in a suitable condition to be etched down, all substantially as herein set forth.

10. The process herein described, which consists in imposing a photographically-sensitive film on a plate and developing a picture therein by removing portions of said film and thus laying parts of said plate bare, and then applying ebonite in the form of a dust or powder to said film to re-enforce the same, substantially as set forth.

11. In the process of preparing plates for purposes of utility or ornament, the process of protecting or re-enforcing a resisting film with ebonite in the form of powder or dust, substantially as set forth.

12. In the process of preparing plates for purposes of ornament or utility, the process of flowing the plate with a film sensitive to light, impressing said film and removing the unimpressed parts forming a picture or design, and substituting for said sensitive and developed film a film having greater capacity for resisting the action of a galvanic current, said film preserving the same developed design, substantially as set forth.

444,952. **PROCESS OF PREPARING PLATES FOR UTILITY AND ORNAMENT.** HANNIBAL GOODWIN, Newark, N. J. Filed Oct. 25, 1889. Serial No. 328,154. (No specimens.)



Claim.—1. In the process of preparing plates for purposes of utility or ornament, the combination of the following elemental steps: first applying to a plate a design in varnish, lacquer, or fatty ink, then superposing a resist, then removing all said varnish, lacquer, or fatty ink, together with the overlying resist, and re-enforcing the remaining matter, substantially as set forth.

2. The process of preparing plates or surfaces for purposes of utility or ornament, which consists of applying to the plate a film of varnish, lacquer, or fatty ink, then cutting out a design in said film, leaving the plate partly bare, applying to the plate a resist or film of insulating matter, then removing from the plate all the ink, varnish, or lacquer and the overlying resist, re-enforcing the remaining resist or film of insulating matter, and then removing the last-added re-enforcing resist from all parts of the plate except where it immediately covers the first-applied resist, further operations or processes eventuating in the ornamentation of said plate or its suitableness for purposes of utility or ornament, substantially as set forth.

3. The process of preparing plates for purposes of utility or ornament, which consists in first flowing the plate with organic matter, such as collodion or collodion followed by a film of albumen, then applying a film of varnish, lacquer, or fatty ink, then cutting out the design with a suitable tool, leaving the plate partly bare and partly covered with the above films, applying to the plate a resist or film of insulating matter, then removing from the plate all the ink, varnish, or lacquer and the overlying resist, then re-enforcing the remaining resist or film of insulating matter, and then removing the last-added and re-enforcing resist to all the parts of the plate except where it immediately covers the first-applied resist, substantially as set forth.

4. The process herein described, which consists in transferring to or brushing onto a plate a design in varnish, lacquer, or fatty ink, then re-enforcing the same with an insulating-dust, then flowing over the plate a solution of benzoin, then dissolving out the design in varnish, lacquer, or fatty ink, leaving intact the benzoin covering the parts that were bare, then flowing the plate with a solution of asphaltum, then re-enforcing the asphaltum by incorporating with it an insulating-dust, and finally removing this last-added re-enforced asphaltum from all the parts of the plate except where it immediately covers the first resist, substantially as set forth.

5. The process herein described, which consists in transferring to or brushing on a plate a design in varnish, lacquer, or fatty ink, then flowing over the plate a solution of benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing the plate with asphaltum, then re-enforcing the asphaltum by incorporating with it an insulating-dust, and finally removing this last-added re-enforced asphaltum from all the parts of the plate except where it immediately covers the first-applied resist, substantially as herein set forth.

6. The process herein described, which consists in transferring to or brushing on a plate a design in varnish, lacquer, or fatty ink, then re-enforcing the same, then flowing the plate with benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing with asphaltum, and finally removing said asphaltum from all the parts of the plate except where it immediately covers the first-applied resist, substantially as set forth.

7. The process which consists in transferring to or brushing on a plate a design in varnish, lacquer, or fatty ink, then flowing said plate with benzoin, then dissolving out the varnish, lacquer, or fatty ink, and flowing with asphaltum, and finally removing this last-added asphaltum from all parts of the plate except where it immediately covers the first-applied resist, substantially as set forth.

8. The process herein described, which consists in transferring to or brushing on a plate or design in varnish, lacquer, or fatty ink, then re-enforcing the same, then flowing the plate with benzoin, and then dissolving out the varnish, lacquer, or fatty ink, leaving on the parts first bare the benzoin as the only resist, substantially as set forth.

9. The process which consists in transferring to or brushing on a plate a design in varnish, lacquer, or fatty ink, then flowing the plate with benzoin, and finally dissolving out the varnish, lacquer, or fatty ink, leaving benzoin as the only resist.

10. The process which consists in transferring to or brushing on a plate a design in varnish, lacquer, or fatty ink, then re-enforcing the same, then depositing platinum on the bare parts, then flowing the plate with benzoin, then dissolving away the varnish, lacquer, or fatty ink, then flowing with asphaltum, and finally removing the asphaltum from all the parts of the plate except where it immediately covers the benzoin, substantially as set forth.

11. The process which consists of transferring to or brushing on a plate a design in varnish, lacquer, or fatty ink, then re-enforcing the same, then depositing platinum on the bare parts, then flowing the plate with benzoin, and finally removing the varnish, lacquer, or fatty ink, substantially as set forth.

12. The process which consists in first flowing a plate with a film of organic matter, as collodion, then transferring to or brushing on said collodion surface a design in varnish, lacquer, or fatty ink, then re-enforcing the same, then flowing the plate with benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing with asphaltum, then re-enforcing the asphaltum, and finally removing this re-enforced asphaltum from all the parts of the plate except where it immediately covers the benzoin, substantially as set forth.

13. The process which consists of first flowing the plate with a film of organic matter, as collodion, then transferring to or brushing on said collodion surface a design in varnish, lacquer, or fatty ink, then flowing the plate with benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing with asphaltum, then re-enforcing the asphaltum, and finally removing the re-enforced asphaltum from all parts of the plate except where it immediately covers the benzoin, substantially as set forth.

14. The process which consists in flowing a plate with a film of organic matter, as collodion, then transferring to or brushing on the collodion surface a design in varnish, lacquer, or fatty ink, then re-enforcing the same, then flowing with benzoin, then dissolving away the varnish, lacquer, or fatty ink, then flowing with asphaltum, and finally removing the asphaltum from all the parts of the plate except where it immediately covers the benzoin, substantially as set forth.

15. The process which consists in flowing a plate with a film of organic matter, as collodion, then transferring to or brushing on said collodion a design in varnish, lacquer, or fatty ink, then flowing with benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing with asphaltum, and finally removing the asphaltum from all parts of the plate except where it immediately covers the benzoin, substantially as set forth.

16. The process which consists in first flowing a plate with a film of organic matter, such as collodion, then transferring to or brushing on said collodion a design in varnish, lacquer, or fatty ink, then flowing with benzoin, and finally removing the varnish, lacquer, or fatty ink, substantially as set forth.

17. The process which consists in applying to a plate a film of varnish, lacquer, or fatty ink, then cutting out a design in said film, leaving the plate partly bare, then flowing with benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing with asphaltum, then re-enforcing the asphaltum, and finally removing the re-enforced asphaltum from all parts of the plate except where it immediately covers the first-applied resist of benzoin, substantially as set forth.

18. The process which consists in applying to a plate a film of varnish, lacquer, or fatty ink, then cutting out a design in said film, then flowing the plate with benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing with asphaltum, and finally removing the asphaltum from all parts of the plate except where it immediately covers the benzoin, substantially as and for the purposes set forth.

19. The process which consists in applying to a plate a film of varnish, lacquer, or fatty ink, then cutting out a design in said film, then flowing with benzoin, and finally removing from the plate all the varnish, lacquer, or fatty ink, leaving the benzoin as the only resist, substantially as set forth.

20. The process which consists in first flowing a plate with a film of organic matter, such as collodion, then applying to said collodion surface a film of varnish, lacquer, or fatty ink, then cutting out a design in said film, then flowing with such resisting matter as benzoin, then dissolving out the varnish, lacquer, or fatty ink, then flowing with asphaltum, and finally removing the asphaltum from all parts of the plate except where it immediately covers the benzoin, substantially as set forth.

21. The process which consists in first flowing a plate with a film of organic matter, such as collodion, then applying to said collodion a film of varnish, lacquer, or fatty ink, then cutting out a design in said film, then flowing with benzoin, and finally removing from the plate all the varnish, lacquer, or fatty ink, substantially as set forth.

22. The process which consists in applying to a plate a film of spirit lacquer or varnish, then cutting out a design in said film, then applying asphaltum as a resist, then dissolving out the varnish or lacquer, then applying benzoin to re-enforce the asphaltum, and finally removing the benzoin from all parts of the plate except where it immediately covers the asphaltum, substantially as set forth.

23. The process which consists in applying to a plate a film of spirit varnish or lacquer, then cutting out a design in said film, then applying asphaltum as a resist, and finally dissolving away the spirit lacquer or varnish, substantially as set forth.

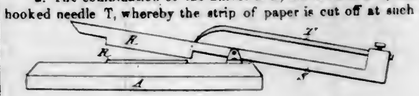
24. The process which consists in first flowing a plate with a film of organic matter, such as collodion and bichromatized albumen, then applying to said film a spirit lacquer or varnish, then cutting out a design in said film, then applying asphaltum, then dissolving out the varnish or lacquer, then flowing with benzoin, and finally removing the benzoin from all parts of the plate except where it immediately covers the asphaltum, substantially as set forth.

25. The process which consists in flowing a plate with a film of albumen and bichromatized albumen, then applying to said film a film of spirit varnish or lacquer, then cutting out a design in said film, then applying asphaltum as a resist, and finally removing the lacquer or varnish, substantially as set forth.

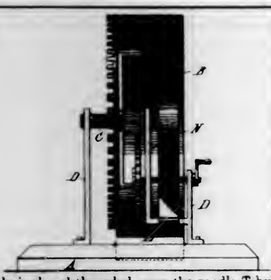
444,953. **MACHINE FOR USE BY STENOGRAPHERS AND SHORTHAND-WRITERS.** FRANK E. GRANGER, Aberdeen, (Dak. Ter.,) S. D. Filed May 23, 1887. Serial No. 239,165. (No model.)

Claim.—1. The combination of the table F, the lever and elbow H H, the loose dog K, the drive-wheel B, with its toothed edge, and the mechanism for propelling the same, whereby the strip of paper is carried from right to left at equal distances upon each lifting of the writer's pen or pencil while writing thereon, substantially as and for the purposes set forth.

2. The combination of the knives R R, the lever-arm S, and the hooked needle T, whereby the strip of paper is cut off at such dis-

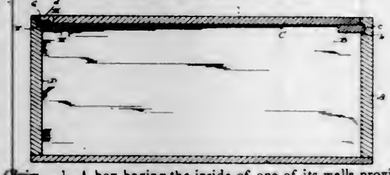


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tances as may be desired and threaded upon the needle T by a single pressure upon the lever-arm S, substantially as and for the purposes set forth.

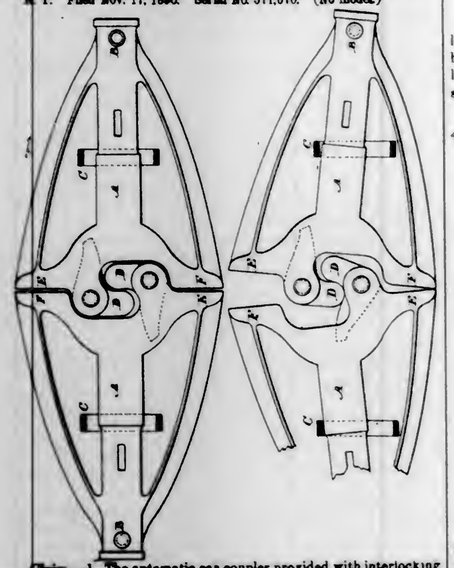
444,954. BOX-CLOSURE. EDWIN A. HEATH, Milwaukee, Wis. Filed Nov. 26, 1889. Serial No. 331,437. (No model.)



Claim.—1. A box having the inside of one of its walls provided with a groove adjacent to the upper end, a lid having an area equal to the inner dimensions of the box, a batten secured to the underside of the lid at one end of the latter and arranged to have its entire length project beyond one edge of said lid for engagement with said groove, and a support within said box for the other end of the said lid, substantially as set forth.

2. A box having the inside of one of its walls provided with a groove adjacent to the upper end, a lid having an area equal to the inner dimensions of the box, a batten secured to the under side of the lid at one end of the latter and arranged to have its entire length project beyond one edge of said lid for engagement with said groove, and a support within said box for the other end of the said lid, in combination with locking and sealing devices, substantially as set forth.

444,955. CAR-COUPLING. CHARLES W. HUNT, West New Brighton, N. Y. Filed Nov. 17, 1890. Serial No. 371,670. (No model.)



Claim.—1. The automatic car-coupler provided with interlocking hooks or knuckles, in combination with the faces E and F, extending laterally from the head of the coupler and at right angles to the center line of such coupler, substantially as set forth.

2. The combination, with the interlocking knuckles or hooks, of a coupler-bar having a head with laterally-projecting faces E F, that bring the couplers into line with each other when pressed together, substantially as set forth.

444,956. AUGER. MAURICE H. JONES, Baltimore, Md. Filed Apr. 29, 1890. Serial No. 349,917. (No model.)



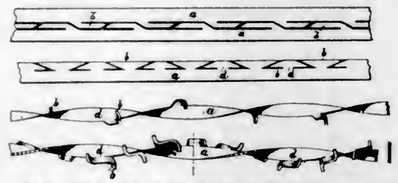
Claim.—1. An improvement in augers consisting in an auger barrel or body and a detachable cutting lip or edge therefor, combined with connecting mediums consisting of a suitable number of tenons and sockets extending transversely of the barrel and lip and longitudinal keys, pins, or dowels driven and secured in the barrel and lip, substantially as described.

2. The auger body or barrel and a detachable cutting lip or edge, combined with a suitable number of tenons and sockets made integral with these parts and adapted to connect them, and detachable keys, wedges, or dowels applied longitudinally and transversely to the barrel and lip, substantially as described.

3. The auger body or barrel and a detachable cutting edge or lip therefor, combined with a suitable number of tenons and sockets integral with these parts and adapted to connect them and extending transversely thereof, and wedges or keys applied to the barrel and lip or edge in suitable grooves disposed in their peripheries, substantially as described.

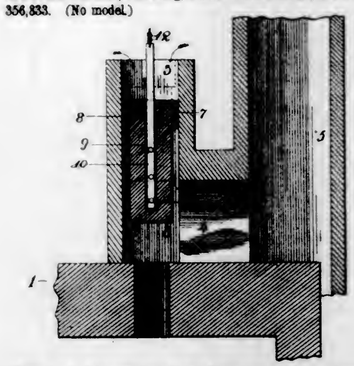
4. An auger provided with a longitudinal wall or partition *o*, arranged in the screw and at the upper end thereof, substantially as and for the purpose described.

444,957. BARBED FENCING. EDMUND JORDAN, Brooklyn, assignor to Michael H. Cashman, New York, N. Y. Filed Dec. 31, 1885. Serial No. 187,290. (No model.)



Claim.—Flat twisted strips barbed on the edge, with barbs bent laterally or sidewise to the flat plane of the strip and having integral base connection with the edge of the strip of shorter length than the length of the narrower part of the strip between the barbs each side, substantially as described.

444,958. DAMPER FOR FURNACES. WILLIAM LANYON, Jr., and JOSIAH LANYON, Pittsburg, Kans. Filed June 26, 1890. Serial No. 356,833. (No model.)



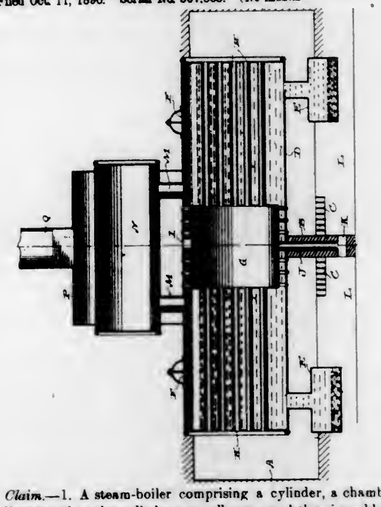
Claim.—1. The combination of the casing 3, located over the discharge-opening of a furnace and leading to the outer air, the smoke-stack 5, the throat 4, connecting said casing and smoke-stack, with the valve 6, sliding in the casing, a flange at the upper end of said valve, vertical apertures 8 in said flange, a central opening in said valve, a rod 10, secured therein, and a device secured to said rod to operate the damper, as described.

2. A damper for furnaces, consisting of a casing located over the discharge-passage leading from the furnace and in contact with the outer air, a sliding valve located therein, a flange on the upper end of said valve, apertures in said flange leading from the outer air to the interior of the casing, a central vertical opening in the valve, a rod secured therein, and a device connected to the said rod to operate the valve, as described.

3. A damper for furnaces, consisting of a vertically-sliding valve located directly over a discharge-passage leading from a furnace, a flange surrounding the said valve and provided with vertical openings, and a device for operating the said valve, substantially as described.

4. A damper for furnaces, consisting of a casing located over the discharge-passage leading from the furnace and in contact with the outer air, a sliding valve located therein, a vertical opening formed therein, a rod secured within the said opening, and a chain or other device connected to the said rod by means of which the valve is operated, substantially as described.

444,959. STEAM-BOILER. JOHN O. MAGUIRE, Milwaukee, Wis. Filed Oct. 11, 1890. Serial No. 367,805. (No model.)



Claim.—1. A steam-boiler comprising a cylinder, a chamber of less diameter than the cylinder centrally arranged therein and having a flue extended up through the same, and tubes extended through the heads of the chamber and cylinder within the latter, in combination with a furnace-casing inclosing the aforesaid cylinder and divided by a central wall into compartments, each of the latter being in communication with one set of the said tubes, substantially as set forth.

2. A steam-boiler comprising a cylinder, a chamber of less diameter than the cylinder centrally arranged therein and having a flue extended up through the same, and tubes extended through the heads of the chamber and cylinder within the latter, in combination with a furnace-casing inclosing the aforesaid cylinder, a wall arranged to divide the furnace into compartments and provided with a transverse opening having its ends communicating with the ash-pit of said furnace, and a flue leading from said chamber down through said wall to the opening in the latter, substantially as set forth.

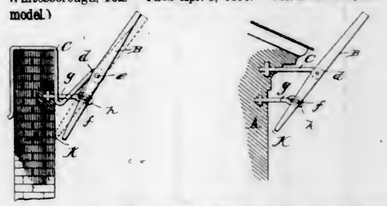
3. A steam-boiler comprising a cylinder, a chamber of less diameter than the cylinder centrally arranged therein and having a flue extended up through the same, and tubes extended through the heads of the chamber and cylinder within the latter, in combination with a furnace-casing inclosing the aforesaid cylinder and divided by a central wall into compartments, a steam-dome parallel to the cylinder and connected therewith by flues, a casing surrounding the steam-dome, and a smoke-flue leading from the casing, substantially as set forth.

444,960. FENCE OR GATE. HENRY FRIDAY, Houston, Tex. Filed Sept. 24, 1889. Serial No. 324,577. (No model.)

Claim.—A fence or gate composed entirely of pipes interchangeably connected together by couplings, and consisting of the long tubular pickets C and the intermediate short tubular pickets, each long tubular picket being formed by two short tubular pickets connected by an intermediate coupling in the form of a Greek cross, a similar coupling at the top of each long and short tubular picket, and the T-shaped couplings at their bottoms, combined with a series of horizontal tubes, the horizontal tubes and tubular pickets being respectively composed of pipes of the same length, the couplings being all of the same size and each composed of two similar sections connected by bolts passing through the sections between the horizontal tubes and the ends of the vertical tubes of the pickets, and all the parts being interchangeable and adapted to be removed and replaced, substantially as described.



444,961. CONFLAGRATION-ARRESTER. FLORENCE N. PUCKETT, Whitesborough, Tex. Filed Apr. 3, 1890. Serial No. 346,500. (No model.)

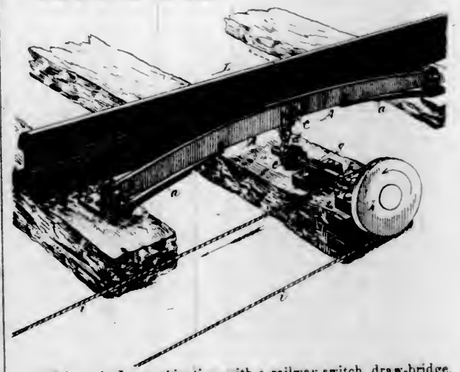


Claim.—1. In a device of the class described, the combination of a series of inclined arms provided with eyes at their outer ends and having hooks to engage the side of a building, a shelf or deflector, and a rod so connecting the latter pivotally with the eyes of the inclined arms that the upper part of said shelf shall overbalance the lower part, which shall normally rest against the wall, substantially as set forth.

2. In a device of the class described, the herein-described shelf or deflector connected pivotally to arms at the upper ends of the sides of a building in such a manner that the part of said shelf above the axis shall overbalance the lower part, which is thus normally held in contact with the wall, substantially as and for the purpose set forth.

3. In a conflagration-arrester, the combination of a shelf, arms projecting from the building, to which it is pivoted so that its upper part will tip away from the building, a rod projecting from the building and having elongated eyes, and a rod carried by said shelf and adapted to work in said eyes, substantially as set forth.

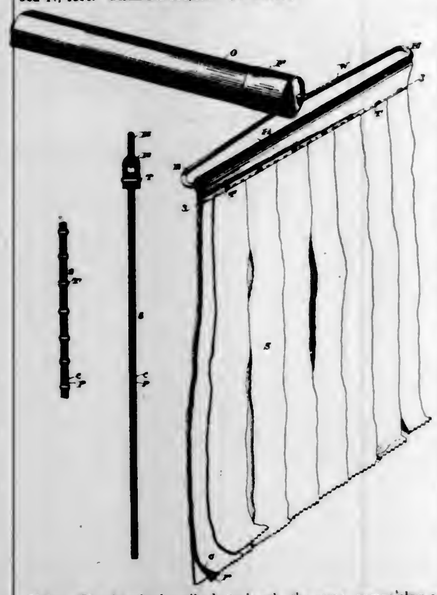
444,962. DEVICE FOR AUTOMATICALLY OPERATING POWER CAR-BRAKES. BENTON C. ROWELL, Boston, Mass. Filed May 26, 1890. Serial No. 353,146. (No model.)



Claim.—1. In combination with a railway-switch, draw-bridge, or danger-signal, one or more pivoted levers beside the rail, a spring beneath each lever to hold it normally in an operative position with relation to the brake-valve-operating devices of a passing train, and a rod or chain connecting each of said levers with a crank or wheel operated by mechanism connected with the switch or draw-bridge to withdraw the levers from said operative position, substantially as described.

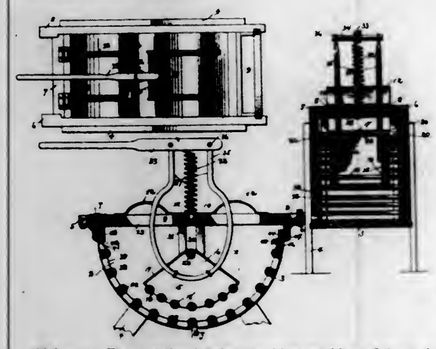
2. The combination of one or more levers pivoted beside the rail of a railway-track, a spring to hold each lever normally in a raised position, and a flexible connection between the said levers and a wheel beneath upon a shaft connected with a switch or draw-bridge, whereby said levers will be raised by the spring to a position to operate the brake-valve of a passing train when the switch or draw-bridge is open and will be lowered by the action of the interconnecting mechanism when the switch or draw-bridge is closed, substantially as described.

444,963. FLY-BRUSH. JOSEPHINE RUSSELL, Tabor, Iowa. Filed Oct. 17, 1890. Serial No. 368,414. (No model.)



Claim.—The herein-described fly-brush, the same comprising a handle O, an elongated wire loop W, connected at its center to said handle and having enlarged rounded ends E, a head H, inclosing the outer member of said loop between its ends, and strips S, secured to and depending from said head, substantially as set forth.

444,964. WASHING-MACHINE. WILLIAM R. TURNER, MARTIN HAMILTON, and ALBERT T. LONG, Bowers, Ind. Filed July 30, 1890. Serial No. 360,421. (No model.)



Claim.—1. The combination, in a washing-machine, of the body, the cover provided with the arched portions or recesses, and the swinging rubber suspended from the cover and adapted to be partially received in the arched portions or recesses, substantially as described.

2. The combination, in a washing-machine, of the body, the cover provided with depending hangers having vertical slots, the rubber provided with journals arranged in the slots of the hangers, the supporting-rods secured to the rubber, the operating-lever attached to the supporting-rods, and the spring arranged to hold the journals in the bottom of the slots, substantially as described

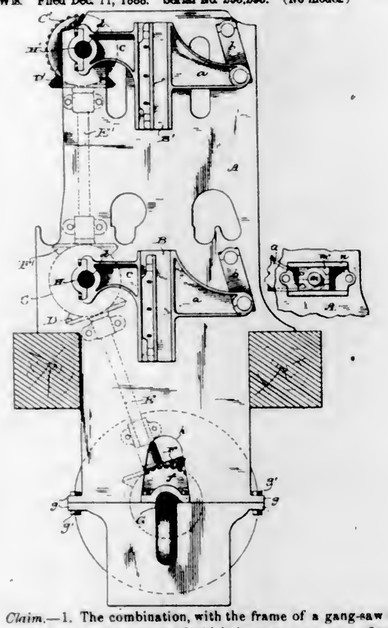
3. The combination, in a washing-machine, of the body, the cover comprising the rectangular frame and the plate secured to the frame and provided with arched portions and having longitudinal slots, the rubber, the operating-lever, and the supporting-rods secured to the rubber and arranged in the slots of the cover and connected with the operating-lever, substantially as described.

4. The combination, in a washing-machine, of the body, the cover having arched portions, the rubber comprising the sector-shaped side pieces, the sheet-metal back secured to the straight edges of the side pieces, and the rubber-bars secured to the curved edges of the side pieces, the operating-lever, and the supporting-rods secured to the side pieces of the rubber and connected with the operating-lever, substantially as described.

5. The combination, in a washing-machine, of the body, the cover, the rubber, the operating-lever provided with the parallel bars 34, and the supporting-rods having the circular portions secured to the sides of the rubber and the parallel portions secured to the bars of the operating-lever, substantially as described.

6. In a washing-machine, the combination of the body, the cover having the arched portions, the longitudinal slots, and the depending hangers, the rubber provided with laterally-extending journals arranged in the hangers, the operating-lever having the parallel bars extending laterally from it, the supporting-rods provided with circular portions secured to the rubber and arranged in the longitudinal slots of the cover, the parallel portions secured to the ends of the laterally-extending bars, and the spring secured to the operating-lever and the cover and adapted to hold the journals at the bottoms of the hangers, substantially as described.

444,965. GANG-SAW MILL. THEODORE S. WILKIN, Milwaukee, Wis. Filed Dec. 11, 1888. Serial No. 293,293. (No model.)



Claim.—1. The combination, with the frame of a gang-saw mill, of a sash-guide, each member of which has two arms, one of which arms is swung to the frame, an eccentric shaft, to which the other arm of each member is boxed, and means for communicating motion from the driving-shaft to said eccentric shaft.

2. The combination, in a gang-saw mill, of two eccentric shafts arranged in suitable bearings, one above the other, and connected with each other and with a driving-power, two sash-guides, each member of each of said sash-guides having two arms, one of which is boxed to the eccentric shaft and the other hung loosely to the frame, substantially as described.

3. The combination, in a gang-saw mill, of two sash-guides, each of which has a laterally-yielding support on one side, with a pair of eccentric shafts, to one of which each member of each sash-guide is boxed on the other side, and mechanism connecting the two eccentric shafts

with each other and with a suitable driving-power, substantially as described.

444,966. ELECTRIC INDICATOR. CHARLES WIRT, Orange, N. J. Filed Jan. 6, 1890. Serial No. 336,068. (No model.)

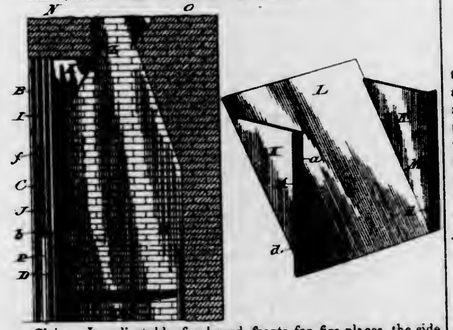


Claim.—1. The combination of a conductor, an armature suspended in proximity thereto, and an indicator operated by such armature, said armature free to move only so that each point of its effective surface traverses a path equidistant from that of the current at the effective portion of the conductor.

2. The combination of a conductor and armature similarly curved, and an indicator operated by such armature, which is suspended so that the opposed points on the effective surfaces of the curve are substantially constantly equidistant.

3. The combination of a conductor-coil having in part the form of a cylindrical surface, the remaining portion having some form inclosing more volume than the said imaginary cylinder, with a movable armature curved to a substantially cylindrical form and pivoted on a line which is substantially the axis of the curved part of the cylindrical portion of the coil and armature.

444,967. SMOKE-DEFLECTOR. JOHN WISDOM, Chicago, Ill. Filed Mar. 3, 1890. Serial No. 342,372. (No model.)

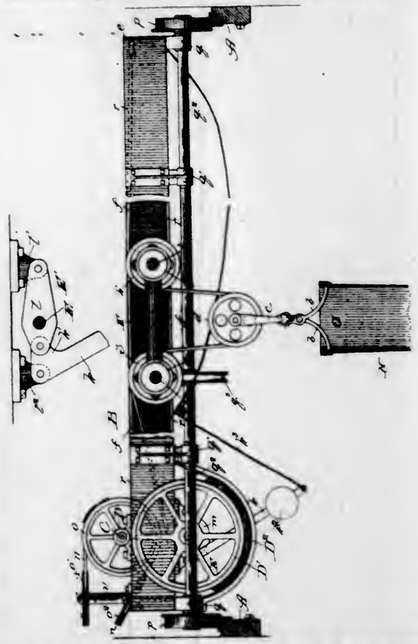


Claim.—In adjustable fire-board fronts for fire-places, the side vertical frame-pieces of such front inclined inward to fit the jambs of the fire-place, in combination with the smoke-deflector which is adjustably secured to the end frame-pieces, inclined back from them, and provided with ends which are also inclined inward to fit the jambs to deflect smoke, as specified.

444,968. TRAVELING CRANE. FREDERICK W. WOLF, Chicago, Ill. Filed Oct. 7, 1890. Serial No. 367,311. (No model.)

Claim.—1. In a traveling crane, the combination of a carriage B, adapted to run on an elevated track and supporting a driving-shaft C, a shaft E, journaled at one end in a yielding bearing E', controlled by a weighted lever *k* and adapted to be geared with the shaft C, a truck F on the carriage, having guide-pulleys *i'* and *k'*, a rope *f* or cable secured at one end to the shaft C, passing thence over the guides *i'* and *k'*, and fastened at its opposite end, and means for engaging a weight H to be carried suspended on the rope *f* from between the said guides on the truck, substantially as described.

2. In a traveling crane, the combination of a carriage B, adapted to run on an elevated track and supporting a driving-shaft C, having a friction-pulley D, a shaft E, journaled at one end in a yielding bearing E' and carrying a friction-wheel D' and controlled through the medium of a weighted lever *k* to produce and release frictional contact between the pulley D and wheel D', a brake D^2 for the said friction-wheel, a truck F on the carriage having guide-pulleys *i'* and *k'*, a rope *f* or cable secured at one end to the shaft C, passing thence over the guides *i'* and *k'*, and fastened at its opposite end, and means for engaging a weight H to be carried suspended on the rope *f* from between the said guides on the truck, substantially as described.



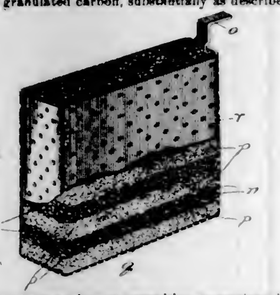
3. In a traveling crane, the combination of a carriage B, adapted to run on an elevated track and supporting a driving-shaft C, carrying a friction-pulley D, a shaft E, carrying a friction-wheel D' and a drum *m*, said shaft being journaled at one end in a yielding bearing E', comprising a pivotal link *l* and a weighted lever *k*, eccentrically with which the link is connected, a friction-wheel D' on the shaft E, a brake D^2 for the friction-wheel, a truck F on the carriage, having guides *i'* and *k'*, a rope *f* or cable secured at one end to the drum *m*, passing thence over the guide-pulleys *i'* and *k'*, and fastened at its opposite end, and means for engaging a weight H to be carried suspended on the rope *f* from between the said guides on the truck, substantially as described.

4. A traveling crane comprising, in combination, a carriage B, adapted to run on an elevated track and having a frame formed with channel-bars *r*, connected at their ends by trusses *q*, having journal-bearings for the axles of the carriage-wheels, bearings *q'* for the said axles on the bars *r*, a driving-shaft C, journaled on the carriage-frame and provided with a pulley *o* and a friction-pulley D, a guide-pulley *o'*, journaled in a horizontal position, and a guide-pulley o^3, journaled in an inclined position adjacent to the pulley *o*, to guide the operating-rope *n* thereon, a shaft E, carrying a friction-wheel D' and a drum *m*, said shaft being journaled at one end in a yielding bearing E', comprising a pivotal link *l* and a weighted lever *k*, eccentrically with which the link is connected, a friction-wheel D' on the shaft E, a brake D^2 for the friction-wheel, a truck F, supported on the flanges of the channel-bars *r* and having guide-pulleys *i'* and *k'* on its axles, a rope *f* or cable secured at one end to the drum *m*, passing thence over the guides *i'* and *k'*, and fastened at its opposite end, a pulley *d*, suspended on the rope *f* between the pulleys *i'* and *k'*, and tongs G, suspended from the pulley *d*, the whole being constructed and arranged to operate substantially as described.

444,969. ELECTRODE FOR SECONDARY BATTERIES. FOREST BAIN, Chicago, Ill. Filed Oct. 17, 1890. Serial No. 368,385. (No model.)

Claim.—1. A secondary-battery element comprising an envelope A, of perforated metal, and containing active material *p* and a porous conducting material *n*, such as carbon, substantially as described.

1. A secondary-battery element comprising an envelope A, of perforated metal, and containing active material *p* and a porous conducting material *n*, of granulated carbon, substantially as described.



3. A secondary-battery element comprising an envelope A, of perforated metal, and containing alternating strata of active material *p* and porous conducting material *n*, such as carbon, substantially as described.

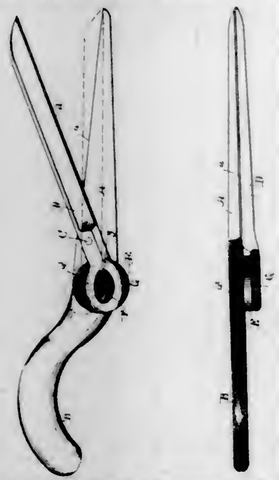
4. A secondary-battery element comprising an envelope A, of perforated metal, and containing alternating strata of active material *p* and granulated carbon *n*, substantially as described.

5. A secondary-battery element comprising an envelope A, of perforated lead or an alloy thereof, and containing active material *p*, having mixed with it bisulphate of mercury, and a porous conducting material *n*, such as carbon, substantially as described.

6. A secondary-battery element comprising an envelope A, of perforated lead or an alloy thereof, and containing alternating strata of active material *p*, having mixed with it bisulphate of mercury, and granulated carbon *n*, substantially as described.

7. A secondary-battery element comprising an envelope A, of perforated type-metal, and containing alternating strata of active material *p*, having mixed with it bisulphate of mercury, and granulated carbon *n*, substantially as described.

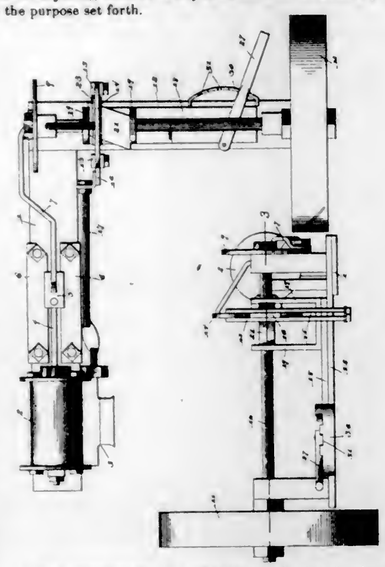
444,970. SHEARS. GEORGE W. BAKER, Colmesneil, Tex. Filed Sept. 17, 1890. Serial No. 365,206. (No model.)



Claim.—In a pair of shears, the combination, with a lower member provided with a handle, of a roller journaled to said member and provided with an elongated eccentric-pin, an upper member pivoted to said lower member, and a rearwardly-extending projection from said upper member provided with a suitable elongated opening for the engagement of said pin, substantially as and for the purpose set forth.

444,971. ENGINE REVERSING-GEAR. JOHN BARNES, Paxton, Ill. Filed Aug. 26, 1890. Serial No. 363,112. (No model.)

Claim.—1. In a reversing-gear for steam-engines, the combination, with the main shaft, of a rhomboidal block mounted on said main shaft by a transverse perforation at right angles to its opposite sides, a slide mounted upon the base and having uprights provided with perforations fitting over the main shaft on opposite sides of said rhomboidal block, the eccentric disk having a transverse slot mounted upon the said block and an annular groove engaging the eccentric ring, the vertically-sliding uprights forming bearings for the said eccentric ring to prevent lateral movement of the latter, and the hand-lever for adjusting the transversely movable slide, substantially as and for the purpose set forth.



2. In a reversing-gear for steam-engines, having the rhomboidal block mounted slidingly upon the main shaft and engaging a transverse slot in the eccentric disk, the slide mounted to move transversely upon the base and having uprights provided with perforations admitting the main shaft and fitted against the opposite ends of the rhomboidal block, which latter may thus be moved longitudinally upon the main shaft, substantially as set forth.

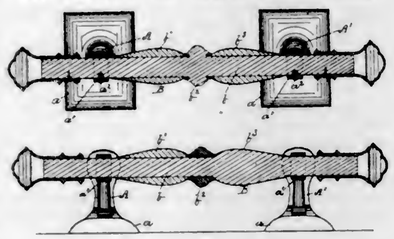
444,972. TUNING-PEG FOR VIOLINS. RUDOLPH C. BOOKSER, Buffalo, N. Y. Filed Mar. 31, 1890. Serial No. 345,976. (No model.)



Claim.—1. A tuning-peg for stringed instruments, provided on one side with a transverse recess, a longitudinal socket or opening extending from the end of the peg inwardly beyond the transverse recess and intersecting the same, and a movable pin or rod seated in said longitudinal opening, around which the string is looped, substantially as set forth.

2. A tuning-peg for stringed instruments, provided with a longitudinal socket or opening extending inwardly from the end of the peg, a transverse recess intersecting said longitudinal opening, a movable rod or pin inserted in said longitudinal opening, and a spring whereby the pin is held in its opening, substantially as set forth.

444,973. HANDLE FOR COFFINS. MAX BREMER, New Bedford, Mass. Filed Sept. 25, 1890. Serial No. 366,073. (No model.)



Claim.—The improved casket-handle above described, composed of two arms provided with rod-receiving rings, a rod mounted in the rings, and two sleeves upon the rod and between the rings and of outer diameters greater than the inner diameters of the rings, substantially as and for the purpose set forth.

444,974. HOLDER FOR PENCILS AND CRAYONS. WILLIAM W. CLEMENSON, Honey Brook, Pa. Filed Apr. 16, 1890. Serial No. 348,277. (No model.)

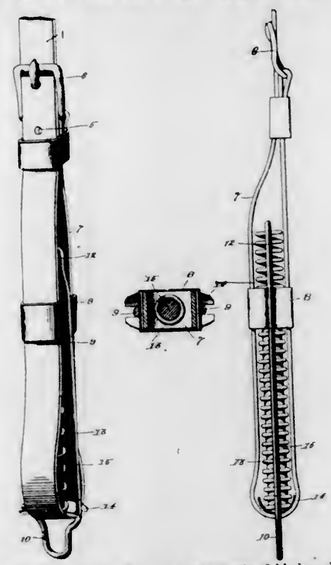


Claim.—1. In a pencil and crayon holder, the combination of a slotted sheath, a pencil fitted therein and having an annular groove, and an external sleeve provided with the compressible clamps or fingers, which are arranged within the sheath and fitted in the groove of the pencil, substantially as and for the purpose described.

2. In a pencil and crayon holder, a clasp made of a single piece of sheet metal of uniform width, which is bent into annular form to provide an external clasp 10, having the ends recurved upon itself substantially concentric with said annular external ring and arranged within the same to form the fingers 11, said fingers having the edges flush with the edges of the annular external ring and adapted to clasp a pencil or crayon and to ride against the internal surface of a sheath, for the purpose described, substantially as set forth.

3. In a pencil and crayon holder, the combination, with a slotted sheath, of a clasp consisting of the external ring 10 and the recurved pencil-clasping fingers 11, arranged wholly within said external ring, substantially eccentric therewith, and out of lateral contact with the same, whereby said fingers are adapted to clasp a pencil or crayon and to ride against the internal surface of the slotted sheath, for the purpose described, substantially as set forth.

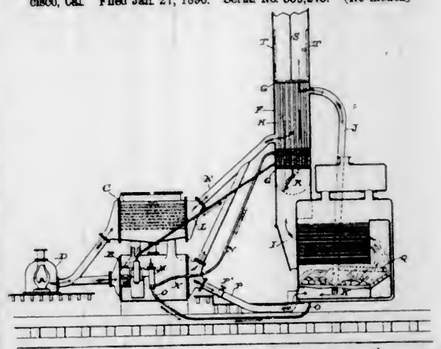
444,975. CHECKREIN FOR HARNESS. WILLIAM W. DAVISSON, Mineral Point, Wis. Filed Sept. 9, 1890. Serial No. 364,397. (No model.)



Claim.—1. The combination of a checkrein folded or doubled upon itself, forming the loop 7, and having means, as a buckle, for rigidly connecting the free end of the strap with the body thereof, the stationary band or sleeve arranged exteriorly on said loop, the bail adapted to be connected to a check-hook and rigid with the sleeve or band, a sliding plate arranged within the loop 7 and guided by the bail, and the cushion-spring housed within the loop 7 and operating between the sliding plate and the bail, substantially as and for the purpose described.

2. The combination of a checkrein folded or doubled upon itself and having its free end rigidly secured to the body of the strap, as by a buckle, to form the loop 7, the stationary sleeve or band fitted on said loop of the strap, the longitudinal bail rigid with the sleeve or band and having one end terminating within the loop of the strap and its other end provided with an eye 10, adapted to engage a check-hook, the notched plate arranged within the loop of the strap and fitted between the sides of the bail, the longitudinal rod attached to the sliding plate, and the coiled spring fitted around said rod and operating between the sliding plate and the inner end of the bail, substantially as described.

444,976. FUEL-SAVING DEVICE. MILES R. DODGE, San Francisco, Cal. Filed Jan. 27, 1890. Serial No. 338,275. (No model.)



Claim.—1. The combination, with an engine, its condenser, and the boiler-furnace, of an air-forcing mechanism, pipes or passages whereby the air is delivered through the condenser for the purpose of condensing steam from the engine, other pipes by which the air from the condenser is delivered to a superheating-chamber within the smoke-stack, and pipes by which it is led from said chamber and delivered into the furnace, together with a branch pipe leading from the condenser to the boiler-furnace, and a gate through which air may be delivered to the furnace, substantially as herein described.

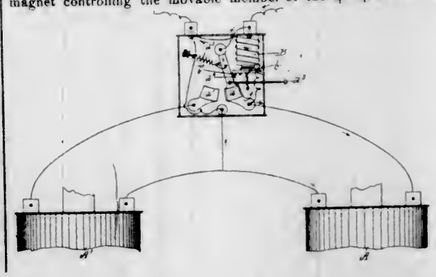
2. The engine and condenser, the boiler, boiler-furnace, and the superheating-chamber within the smoke-stack, in combination with the pipes and the air-forcing mechanism delivering air under pressure through the condenser and into the superheating-chamber, the water-pipes L and N, and a pump whereby the water of condensation is conveyed from the condenser to the lower part of the heating-chamber and thence to the boiler-feed pump, substantially as herein described.

3. The engine and condenser, the air-forcing mechanism and pipes delivering air therefrom to the condenser, a superheating-chamber formed within the smoke-stack of the boiler-furnace and a pipe delivering the air from the condenser into said chamber, vertical tubes or heat-passages passing through said chamber, a diaphragm fixed vertically and centrally within the smoke-stack above the chamber, and a valve adapted to close either half of the stack, substantially as herein described.

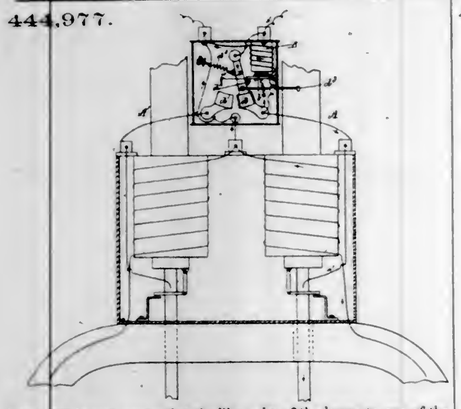
4. A superheating-chamber adapted to receive air and water from the condenser and having the heat-conveying tubes extending vertically through it, a vertical central diaphragm within the smoke-stack above the chamber, and doors T T opening into either side of the stack above the chamber, in combination with the swinging valve or gate R, whereby either half of the stack may be closed or opened at pleasure, substantially as herein described.

444,977. ELECTRIC-ARC LAMP. WILLIAM H. ELKINS, Hornellsville, assignor of two-thirds to Henry E. Irvine, New York, N. Y. Filed July 26, 1890. Serial No. 360,096. (No model.)

Claim.—In combination, a spring-switch with two blocks, a shunt-magnet controlling the movable member of the spring-switch, two

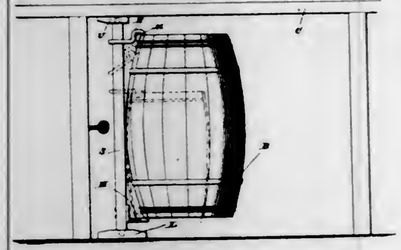


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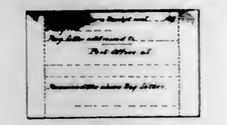
lamps, conductors connecting the like poles of the lamps to one of the main terminals, other conductors connecting the other poles of the lamps to the switch-blocks of the spring-switch, and a shunt-circuit of which the coil of the switch-controlling magnet forms a part and with one of its terminals connected to one of the switch-blocks, all substantially as set forth.

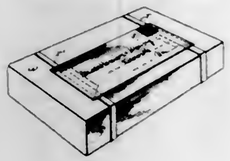
444,978. SWINGING BARREL-SUPPORT. JAMES H. GAMBLE, Merrimac, Wis. Filed July 1, 1890. Serial No. 357,461. (No model.)



Claim.—In a barrel-stand, the combination, with the vertical rectangular staff S, turning in bearings at its ends, of the fixed hook H near the lower end of said staff and the removable hook M, sliding on the staff, said movable hook consisting of a square rod bent around the rear face and sides of the staff, extending thence forwardly, and having upturned ends E, with downturned hooked extremities A, as and for the purpose set forth.

444,979. ENVELOPE. JAMES P. HARRISON and JOHN L. WARING, Danville, Va. Filed May 6, 1890. Serial No. 350,745. (No model.)

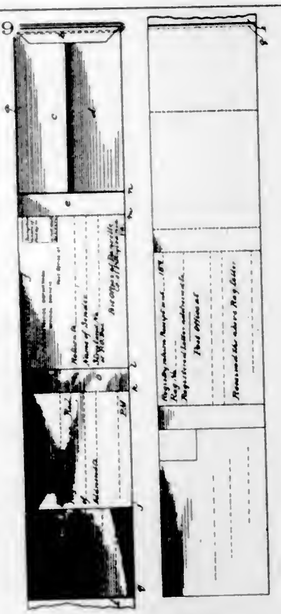




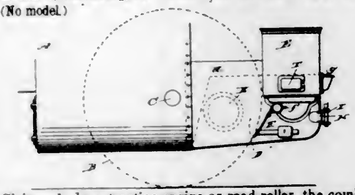
Claim.—1. In combination with an envelope, a return postal-card detachably secured thereto and having gummed ends upon opposite sides thereof, and a series of detachable stubs connected to the card, in the manner and for the purpose substantially as described.

2. The combination of an envelope, a return postal-card detachably secured thereto, and a series of stubs detachably connected to the card, the latter being interposed between the envelope and stubs, in the manner and for the purpose substantially as described.

444,979.



444,980. TRACTION-ENGINE OR ROAD-ROLLER. MARTIN E. HERSHEY, Harrisburg, Pa. Filed June 30, 1890. Serial No. 357,240. (No model.)



Claim.—1. In a traction-engine or road-roller, the combination, with the boiler and drive-wheels at the rear end of the same, of the tank located between the drive-wheels and rigidly connected to the rear end of the boiler, leaving a space between the front end of the tank and said boiler, substantially as described.

2. In a traction-engine or road-roller, the combination, with the boiler, of the tank secured rigidly thereto in rear of the same and having its forward end inclined outwardly at the top, whereby access may be had to the fire-box, substantially as described.

3. In a traction-engine or road-roller, the combination, with the boiler having rearwardly-extending plates, the main axle passing through said plates, and the drive-wheels, of the tank located between the drive-wheels and secured rigidly to said rearwardly-extending plates, having its bottom or lower plate inclined upward toward the rear, substantially as described.

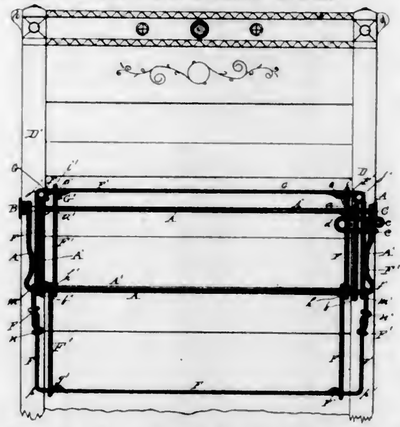
4. In a road-roller, the combination, with the boiler and the drive-wheels, of the tank secured rigidly to the boiler and extending outward from between the drive-wheels to form a platform for the engineer, and the semicircular fuel-boxes located at each side of the rear end of the tank above the level of the same and leaving a central passage-way, substantially as described.

5. In a traction-engine or road-roller, the combination, with the boiler, of the tank secured rigidly thereto in rear of the same and extending beyond the drive-wheels, the semicircular fuel-boxes mounted on the tank at the rear end and leaving a central passage-way, the brackets on the tanks for holding said boxes in place, and the filling-orifice, substantially as described.

6. In a road-roller, the combination, with the boiler having the tank secured rigidly thereto in rear of the same to form the engineer's platform, of the channel-iron secured across the rear end of the tank and the coupling-heads on said channel-iron, substantially as described.

7. In a traction-engine or road-roller, the combination, with the boiler, of the tank secured rigidly thereto in rear of the same and extending beyond the drive-wheels, the semicircular fuel-boxes mounted on the tank at the rear on each side, and the tool-boxes formed in the bottom of said fuel-boxes, with the door opening to the exterior, substantially as described.

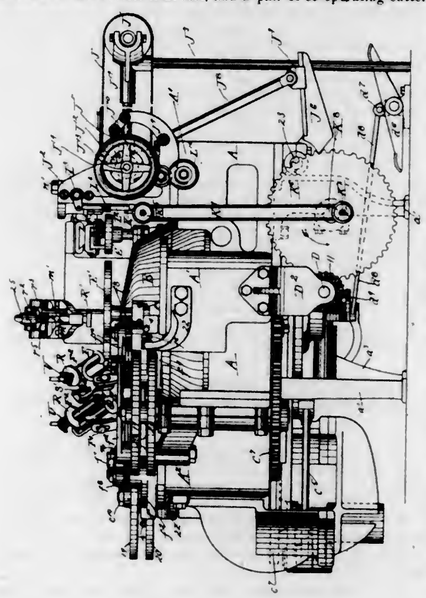
444,981. PILLOW-SHAM HOLDER. FRANCIS KARR, Chicago, Ill. Filed Mar. 3, 1890. Serial No. 342,330. (No model.)



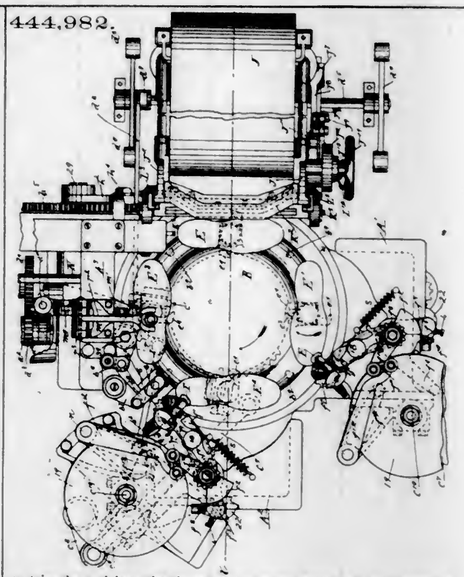
Claim.—In a pillow-sham holder made entirely of wire, the combination of a two-part extensible main frame, pivot and cam-brackets attached to the bedstead and supporting said frame, a two-part extensible tilting frame connected with the main frame, and eyes formed integrally with said tilting frame and surrounding parts of said main frame, whereby both frames are extended by the extension of either, as specified.

444,982. SOLE-CUTTING MACHINE. MARGARET E. KNIGHT, South Framingham, and HERBERT B. STEELE, Medford, Mass. Filed Aug. 1, 1890. Serial No. 360,698. (No model.)

Claim.—1. In a machine for cutting articles of curvilinear outline from sheet material, the combination of an intermittently-revolving carrier which supports and carries two or more stock-holding patterns, intermittently-moving mechanism to engage the spindles of each of said patterns at prescribed locations and turn them during the intervals when the carrier is at rest, and a pair of co-operating cutters



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to trim the article to the shape of the pattern while it is being turned, substantially as described.

2. In a machine for cutting articles of curvilinear outline by pattern, the combination of two or more rotating patterns to hold the stock to be cut, supported in a revolving carrier which is intermittently rotated by a rack and gear, and mechanism by which it is locked to and unlocked from the gear at regular intervals, one or more pairs of rotating cutters, and mechanism, substantially as described, which gives them universal lateral adjustment with relation to the edge of the pattern.

3. In a machine for cutting articles of curvilinear outline to specified form, the combination of an intermittently-revolving carrier, which supports and carries two or more stock-holding patterns, an independent clutch or dog beneath the carrier to turn one or more of the patterns during the intervals when the carrier is at rest, and a pair of rotary cutters to trim the article to the shape of the pattern while it is being turned, substantially as described.

4. In an organized machine for automatically cutting articles of specified form from sheet material, the combination of a chambered stock-support which has its upper surface provided with a series of perforations, and which is connected with the suction-pipe of an air-pump, whereby the material may be held upon the support while being cut, a trimming-knife to cut the material to the form of the support, and mechanism, substantially as described, to automatically open or close the air-pipe for the purpose specified.

5. In a machine for cutting sheet material to specified form, the combination of one or more chambered patterns with perforated upper surface, each supported upon a hollow spindle through which the said pattern-chamber is connected with an air-pump, whereby the air may be exhausted from the chamber and the material be held upon the pattern thereby while being trimmed, and mechanism, substantially as described, to close the passage leading to the air-pump and open the passage to the pattern-chamber when the article is to be removed.

6. In a machine for cutting sheet material to specified form, the combination of one or more chambered patterns, each provided with a perforated upper surface and each supported upon a hollow spindle through which the pattern-chamber is connected with an air-pump, whereby the air may be exhausted from the chamber and the material thereby held upon the pattern while being trimmed, and mechanism, substantially as set forth, to lower the pattern and its spindle, and thereby close the passage leading to the air-pump and open the passage to the pattern-chamber when the trimmed article is to be removed and to raise the pattern when another blank has been placed thereon, substantially as described.

7. In a machine for cutting sheet material to specified form, the combination of two or more swiveled stock-holding patterns, an intermittently-revolving turret or carrier which sustains and carries the patterns, blank feeding and cutting devices, essentially such as shown, to cut and feed blanks to one pattern, and cutters to trim the blank upon another pattern in the intervals between the partial rotations of the carrier, substantially as described.

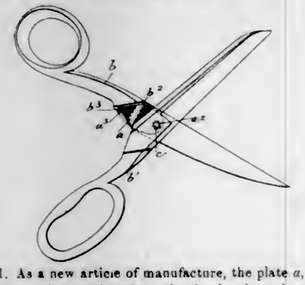
8. In a machine for cutting articles of curvilinear outline from sheet material, organized with blank cutting and feeding mechanism and blank-trimming knives, the combination of two or more pivoted stock-holding patterns supported in a pivoted carrier, a reciprocating rotary disk provided with actuating mechanism, and devices to lock together the said disk and carrier during each oscillation of the disk in one direction, substantially as described.

9. In a machine for cutting articles of specified form by pattern and from blanks cut from sheet material, an intermittently-moving stock-feeding apron, a tilting shelf between the pattern and the apron-support nearest the machine, a reciprocating blank-cutting knife, and friction-supports for the free end of the shelf, which are engaged and raised by the knife-carrying devices when the knife advances in the operation of cutting a blank, and are lowered when the knife retreats, substantially as described.

10. In a machine for cutting sheet material by pattern, the combination of a rotating pattern to hold the stock, a swinging arm which supports and carries the cutter-frame, a pair of trimming-knives supported in the frame which is pivoted at the free end of the said arm, and a cam with interconnecting mechaniam, substantially as described, between it and the said frame to automatically turn the frame upon its pivot and keep the plane of the knife-blades substantially tangent at their cutting-edges to the varying curves of the pattern during the cutting operation, substantially as described.

11. In a machine for cutting sheet material to specified form, the combination of two or more stock-holding patterns, an intermittently-rotating turret or carrier to support and carry said patterns, a swinging arm which supports and carries the trimming-knives at its free end, and a cam lever or clutch adapted automatically to engage with the said swinging arm and turn its free end away from the turret during the periods of its partial rotation, substantially as described.

444,983. SHEARS. EMIL KRUMUS, Solingen, Germany. Filed July 10, 1890. Serial No. 358,230. (No model.)



Claim.—1. As a new article of manufacture, the plate *a*, formed with an arched or spring portion *a'*, terminating in a lateral projection a^2, and an aperture or opening a^2 through the plate in front of said spring portion *a'*, substantially as shown and described.

2. The combination, with scissors, of a spring-plate interposed between the members thereof, said plate having an aperture through which the pivot-screw of the scissors passes, and having a projection fitting a recess of one of the members of the scissors, substantially as described.

444,984. BOILER-FURNACE. SAMUEL PORTER, Denver, Colo. Filed Apr. 1, 1890. Serial No. 346,161. (No model.)

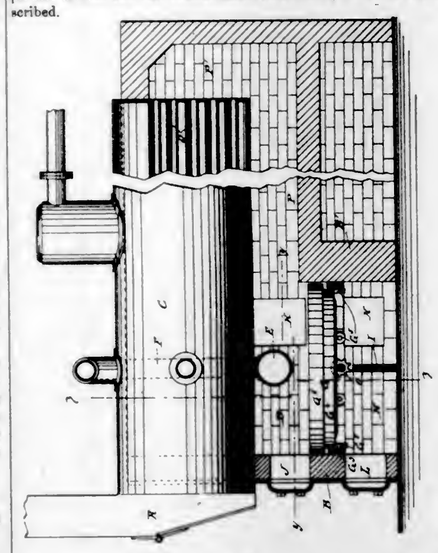
Claim.—1. In a furnace, the combination, with a fire-box provided with a revoluble grate, of a divided ash-pit arranged below the said grate, substantially as shown and described.

2. In a furnace, the combination, with a grate mounted to turn, of a transversely-divided fire-box arranged above the said grate and a similarly-divided ash-pit arranged below the said grate, substantially as shown and described.

3. In a boiler-furnace, the combination, with a water-drum connected with the water-compartment of the boiler, of a fire-box through which passes transversely the said water-drum, and a circular grate mounted to turn below the said fire-box, substantially as shown and described.

4. In a boiler-furnace, the combination, with a water-drum connected with the water-compartment of the boiler, of a fire-box through which passes transversely the said water-drum, a circular grate mounted to turn below the said fire-box, and doors leading to the front compartment of the said fire-box and a door leading from the rear compartment of said fire-box, substantially as shown and described.

5. In a boiler-furnace, the combination, with a water-drum connected with the water-compartment of the boiler, of a fire-box through which passes transversely the said water-drum, a circular grate mounted to turn below the said fire-box, and an ash-pit arranged below the said grate and having a transverse partition dividing the ash-pit into a front and rear compartment, substantially as shown and described.



6. In a boiler-furnace, the combination, with a water-drum connected with the water-compartment of the boiler, of a fire-box through which passes transversely the said water-drum, a circular grate mounted to turn below the said fire-box, an ash-pit arranged below the said grate and having a transverse partition dividing the ash-pit into a front and rear compartment, and doors leading to the front compartment of the said ash-pit and a door leading from the rear compartment of the said ash-pit, substantially as shown and described.

7. In a furnace, the combination, with a transversely-extending water-drum connected with the boiler, of a fire-box divided by the said drum into a front and a rear compartment, inlet and outlet doors connected with the said front and rear compartments, respectively, and a circular grate mounted to turn and arranged in the bottom of the said fire-box, substantially as shown and described.

8. In a furnace, the combination, with a transversely-extending water-drum connected with the boiler, of a fire-box divided by the said drum into a front and a rear compartment, inlet and outlet doors connected with the said front and rear compartments, respectively, a circular grate mounted to turn and arranged in the bottom of the said fire-box, and means, substantially as described, for imparting a rotary motion to the said grate, as set forth.

9. In a furnace, the combination, with a transversely-extending water-drum connected with the boiler, of a fire-box divided by the said drum into a front and a rear compartment, inlet and outlet doors connected with the said front and rear compartments, respectively, a circular grate mounted to turn and arranged in the bottom of the said fire-box, and an ash-pit having a transverse partition dividing it into a front and a rear compartment, each having a door, substantially as shown and described.

444,985. FOUNTAIN-PEN. LOUIS BERNHARD, Bloomsburg, Pa. Filed Dec. 17, 1889. Serial No. 334,123. (No model.)

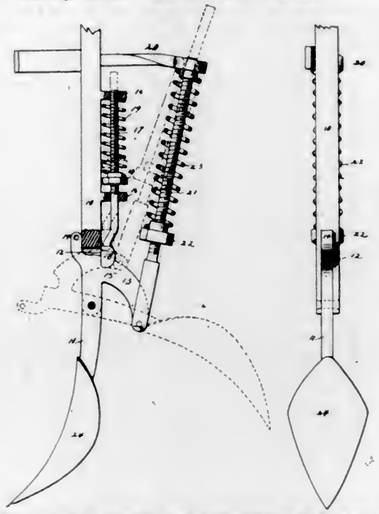


Claim.—1. In a fountain-pen, the combination of the nozzle, the pen, the cylindrical plug adapted to engage the pen and securely retain it in the nozzle and having the longitudinal opening 12 arranged directly beneath the pen and communicating with the bore, and the slightly-curved shaft 14, extending through the bore of the plug and engaging the pen and preventing the ink reaching the point in too large quantities and adapted to conduct the ink back into the nozzle, substantially as described.

2. In a fountain-pen, the combination of the nozzle provided at its rear end with a notch 13, the pen, the elastic cylindrical plug having the opening 12 and being slightly flattened at each side of the opening, and the curved shaft 14, extending through the bore of the plug and having its rear end fitted in the recess 13 and its front end bearing against the under side of the pen, substantially as and for the purpose described.

3. The combination of the pen provided about midway its length with a transverse opening, the tongue provided at a point intermediate of its ends with a bend arranged in said transverse opening and dividing the tongue into a feeding and a conveyer portion and having an opening 10, and the elastic plug fitting against the feed-tongue and holding the same and the pen in place, substantially as described.

444,986. CULTIVATOR. NATHANIEL F. BLOOMINGER, Rochester, Ill. Filed Sept. 29, 1890. Serial No. 366,545. (No model.)



Claim.—1. In a cultivator, the combination, with a shank constructed in two hinged sections, the lower section being provided with a stop-lug at one side and a downwardly-curved extension at the opposite side, of a spring-pressed latch adapted to enter a pocket in the curved extension of the shank, and a spring-pressed sliding bar connected with the lower extremity of said extension, as and for the purpose specified.

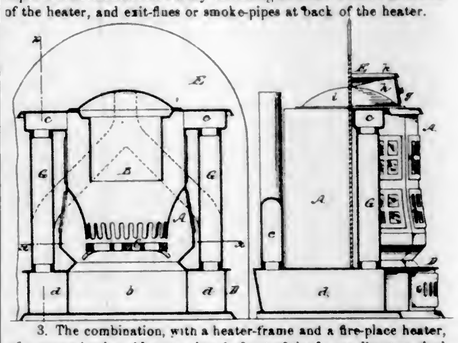
2. In a cultivator, the combination of a shank formed of two sections pivoted together, the lower section being provided with a stop-lug on one side and on the other side with a downwardly-curved arm having a recess, and a spring-pressed and sliding bar carried by the upper section and engaging the recess of the said arm, substantially as described.

3. In a cultivator, the combination, with a shank comprising an upper section slotted at its lower end, a lower section pivoted in the slot of the upper section and provided with a forwardly and upwardly extending stop-lug, and a downwardly and rearwardly curved extension having a pocket formed therein, of a spring-pressed latch-bar held to slide above and engage with the curved extension of the lower shank-section, a bracket projected laterally from the upper shank-section, a bar held to slide in said bracket, having its lower end pivotally connected with the lower shank-extension and provided with a threaded body, a nut screwed upon the threaded surface of the bar, and a spring encircling the bar and having a bearing against the nut and the bracket, as and for the purpose specified.

444,987. FIRE-PLACE HEATER. NATHANIEL A. BOYNTON, New York, N. Y. Filed May 11, 1885. Serial No. 165,078. (No model.)

Claim.—1. The combination, in a fire-place heater, of a heater-frame, a fire-box, a combustion-chamber over the same, front vertically-descending flues arranged wholly in front of the frame and connected directly to the combustion-chamber, horizontal rearwardly-extending base-flues, and exit-flues or smoke-pipes.

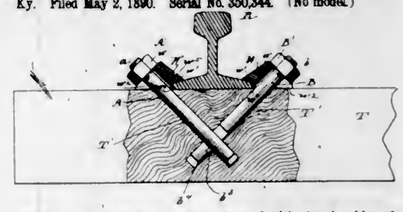
2. The combination, with a heater-frame and a fire-place heater having its combustion-chamber extending in front of the frame, of direct vertical downdraft-flues located in front of the frame and connected directly to the combustion-chamber in front of the frame, independent horizontal rearwardly-extending side base-flues on each side of the heater, and exit-flues or smoke-pipes at back of the heater.



3. The combination, with a heater-frame and a fire-place heater, of a crown having side extensions in front of the frame, direct vertical downdraft-flues located in front of the frame, and base-flues connected by said vertical flues with the extensions and extending rearwardly to the exit-flues.

4. In a fire-place heater, the combination, with the body, fire-chamber A, fire-board E, and base D, of the upper side flues or branches *c c*, connecting with the body of the heater at its top, the exterior downtake-flues G G in advance of the fire-board and center of the body of the heater and arranged to connect the upper branch flues *c c* with the base D, the horizontal ground-flues *d d*, leading under and behind the fire-board, and the uptake and Y flue in the rear, all as herein shown and described, whereby the side downtake-flues G G have a prolonged radiating-surface extending from the top of the heater to its base, as set forth.

444,988. INTERLOCKING BOLT. THOMAS J. BUSH, Lexington, Ky. Filed May 2, 1890. Serial No. 350,344. (No model.)

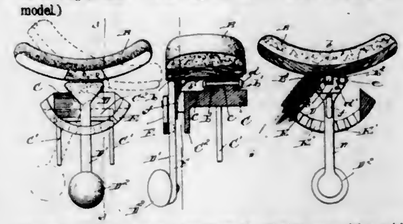


Claim.—1. The straight bolt A, formed with the shoulder a^2 and flat surface a^3 below the said shoulder, in combination with the bolt B, formed with the recess b^2 in extension of the flat surface b^3, substantially as and for the purposes set forth.

2. The straight bolt A, formed with the shoulder a^2 and flat surface a^3, and the bolt B, formed with the recess b^2 and flat surface b^3, in combination with the beveled and slotted washers W, substantially as and for the purposes described.

3. The cross-tie having intersecting diagonal holes bored therein a distance apart somewhat greater than the width of the base of the rail, and the straight interlocking bolts placed in said holes, in combination with the washers W, notched to engage with the edges of the rail and slotted to receive the bolts and permit adjustment of the rail and washers, substantially as described.

444,989. HEAD-REST FOR CHAIRS. ISAIAH D. CRISPELL, West Stockbridge, Mass. Filed May 22, 1890. Serial No. 352,727. (No model.)



Claim.—1. An improved head-rest for chairs, comprising a block adapted to be secured to the back of a chair and provided with a rack, a head-rest pivoted to the said block, and a handle-lever secured to

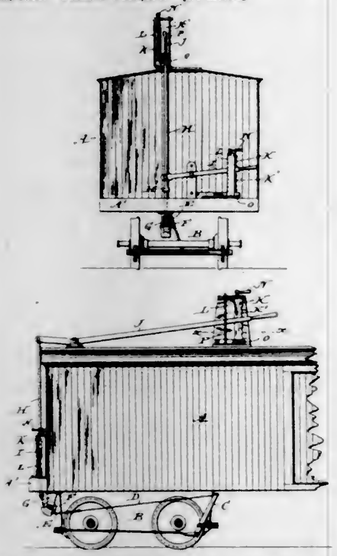
the head-rest and adapted to engage the rack of the block to hold the head-rest in the position to which it has been adjusted, substantially as herein shown and described.

2. An improved head-rest for chairs, comprising a block provided with means for securing it to a chair, and with a rack, a head-rest pivoted to the block, a handle-lever pivoted to the head-rest, and a spring for pressing the handle-lever into engagement with the rack, substantially as described.

3. An improved head-rest comprising the block C, provided with the depending standards C^3, the segmental rack E, recess F between the standards and rack, the head-rest B, pivoted to the block, a handle lever pivoted to head-rest and projecting down through the recess F, and a spring for pressing the handle-lever into engagement with the rack, substantially as herein shown and described.

4. The herein-described head-rest, consisting of the block C, provided with the downwardly-projecting standards C^3, the segmental rack E, having notches on its inner face, the recess F between the standards and rack, the head-rest B, pivoted to the block, the handle-lever D D' D^2, pivoted to the head-rest and projecting down through the recess F, and the spring f, secured to the head-rest and having its free end resting against the handle-lever, as specified.

444,990. **CAR-BRAKE.** JOHN KINNEY, Philipsburg, Mont. Filed May 15, 1890. Serial No. 351,896. (No model.)



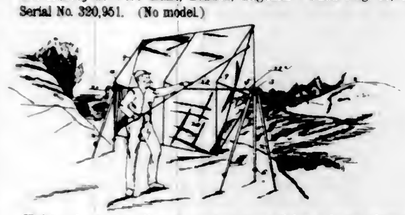
Claim.—1. A locking device for brake-operating levers, comprising a pivoted and notched bar provided with a handle for turning it to bring its notches into engagement with the lever, substantially as described.

2. A locking device for brake-operating levers, comprising a pivoted and spring-pressed notched bar provided with a handle for turning it to bring its notches into engagement with the lever, substantially as herein shown and described.

3. In a mechanism for operating railroad-car brakes, the combination, with a rod mounted to slide vertically at the end of the car and adapted to be connected with the brake mechanism proper, of a lever pivotally connected with the said rod and fulcrumed on the car, a locking device connected with the said lever and comprising a notched bar mounted to turn and adapted to engage by means of one of its notches the said lever, and a handle held on the said notched bar for conveniently turning the same, substantially as shown and described.

4. In a mechanism for operating railroad-car brakes, the combination, with a rod mounted to slide vertically at the end of the car and adapted to be connected with the brake mechanism proper, of a lever pivotally connected with the said rod and fulcrumed on the car, a locking device connected with the said lever and comprising a notched bar mounted to turn and adapted to engage by means of one of its notches the said lever, a handle held on the said notched bar for conveniently turning the same, and a spring for turning the said notched bar to relieve the brake, substantially as shown and described.

444,991. **SIGNALING APPARATUS.** OCTAVIUS MORGAN and JOSEPH CROWLEY, Los Angeles, Cal.; said Crowley assignor of part to James Douglas, same place, William H. Burnett, Ouray, Colo., and Alfred Salter and Aubrey de Vere Hunt, London, England. Filed Aug. 16, 1889. Serial No. 320,951. (No model.)



Claim.—1. A signaling apparatus comprising a large plane surface mounted pivotally on a longitudinal axis, so as to be capable of being exposed alternately with its face and edge to the angle of vision, substantially as set forth.

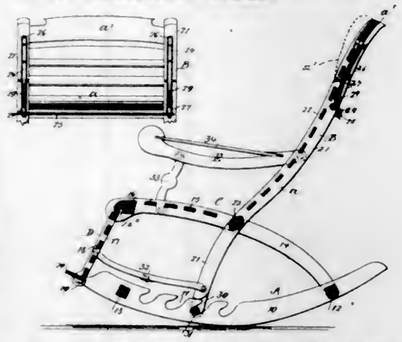
2. A signaling apparatus comprising a screen or surface mounted pivotally on a longitudinal axis, so as to be capable of being exposed alternately facewise and edgewise to the angle of vision, in combination with stops to limit the rotary movement of the shaft upon which said screen or surface is mounted, said stops being attached, respectively, to the shaft of the screen and to one of the bearings in which said shaft is journaled, substantially as set forth.

3. A signaling apparatus comprising a large screen or surface mounted pivotally on a longitudinal axis, so as to be capable of being exposed alternately facewise and edgewise to the angle of vision, in combination with folding tripods having bearings for the shaft of such screen or surface, one of said bearings being swiveled to the supporting-tripod, substantially as set forth.

4. In a signaling apparatus, the combination, with a pair of supporting-tripods having bearings at their upper ends, of a shaft journaled in said bearings, a folding frame attached to said shaft, a screen secured detachably to said frame, and means for rotating the said shaft, substantially as set forth.

5. A signaling apparatus comprising a large screen or surface mounted pivotally on a longitudinal axis, so as to be capable of being exposed alternately facewise and edgewise to the angle of vision, in combination with folding tripods having bearings for each end of the shaft of such screen or surface, substantially as set forth.

444,992. **CHAIR.** HENRY U. POHL, Saginaw, Mich. Filed Feb 27, 1890. Serial No. 341,916. (No model.)



Claim.—1. A folding rocking-chair consisting of rockers having undercut recesses in their upper edges, a seat pivoted to the rockers, a back pivoted to the seat and provided with a cross-bar at its lower end adapted to enter the recess of the rockers, arms pivoted to the back, links pivoted to the seat and arms, a foot-rest pivoted between the side bars of the seat, and links pivoted to the foot-rest and to the lower end of the back, substantially as described.

2. A folding rocking-chair consisting of rockers having undercut recesses in their upper edges, a seat pivoted to the rockers, a back formed of two hinged sections pivoted to the seat and provided with a cross-rod at the lower end of the lower section, arms pivoted to the back, links pivoted to the seat and arms, a foot-rest pivoted between the side bars of the seat, and links pivoted to the foot-rest and to the lower ends of the lower back-section, substantially as herein shown and described.

3. In a chair, the combination, with a back formed of two sections hinged together, of springs secured to one section and provided with pins adapted to enter apertures in the other section, substantially as and for the purpose set forth.

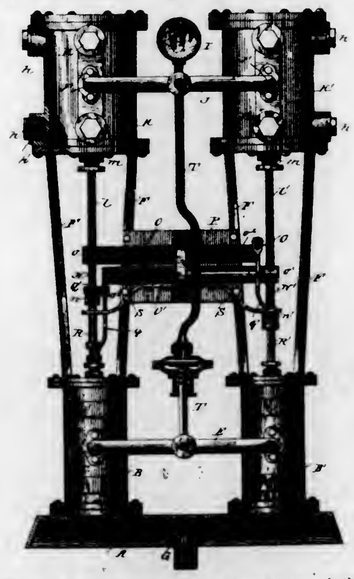
4. In a chair, an arm having a concave upper surface, recesses in the extremities of said concave surface, and a strip of pliable material sprung into said recesses over the said concave surface, substantially as and for the purpose specified.

444,993. **HALTER.** LOUIS E. SHIPPY, Sandy Hill, N. Y. Filed Oct. 29, 1890. Serial No. 369,664. (No model.)



Claim.—A halter comprising a head-band, a throat-latch strap connected with the ends of the head-band, the cheek-guards C C', having two slits a b, the cheek-straps A A', passing down through the brow-band and loosely through the slits a b to form the nose-band B, the loose rings D D', suspended on the loops e, formed by the portions of the straps A A' where they cross the guards C C' between the slits a b, and the curb-strap G, connecting the two rings D D', substantially as set forth.

444,994. **HYDRAULIC BEER-PUMP.** JOSEPH L. SHIRING, Allegheny, assignor to Robert Wellens, Joseph Wellens, and Thomas Moroney, all of Pittsburg, Pa. Filed Aug. 1, 1890. Serial No. 360,712. (No model.)



Claim.—1. A beer-pumping apparatus comprising two hydraulic-pump cylinders B B', valve-chambers C C', connected therewith, slide-valves operating therein, the air-cylinders H H', the pistons L M, operating in said pump and air cylinders, as shown, and devices intermediate the cylinders B B' and valve-chambers C C', whereby the movement of the piston of one cylinder in one direction will serve to move the piston in the opposite cylinder in a reverse direction, substantially as shown and described.

2. A beer-pump comprising two cylinders B B', valve-chests C C', connected therewith, a valve held to slide in each of said chests, a fluid-pressure main connected with said chests C C', air-chambers connected with each other and located above said cylinders B B', pistons M L, rods l l', connecting said pistons with each other and operating in the pump and air cylinders, respectively, and devices intermediate the rods l l' and the said slide-valves, whereby said valves will be alternately shifted to start one of the pistons M down before the opposite piston reaches its uppermost limit, substantially as and for the purpose described.

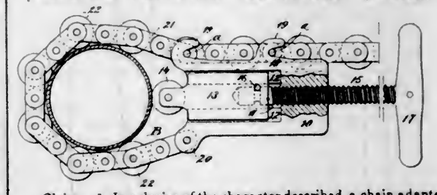
3. In a beer-pumping apparatus, the combination, with the pump-cylinders B B', the alternately-operating pistons M and L, the valve-chests C C', connected with the pump-cylinders, formed each with ports c c^2 c' c^2, arranged near their upper and lower ends, said parts connected with the upper and lower ends of the pump-cylinders, a fluid-supply pipe opening into said chests centrally of said ports, and the outlets G G in the bottom of said chests, of the tubular slide-valves D, having enlarged heads d d fitting the bore of the chests, whereby an annular fluid-space d' between said enlarged heads is formed, and the alternately-operated valve-stem q, connected with the valves, and connections between said stem q and the oppositely-disposed pump piston-rods, substantially as and for the purpose described.

4. In a beer-pumping apparatus, the combination of the pump-cylinders B B', the air-cylinders H H', connected with each other and formed with inlet and outlet ports, as shown, the pistons L M, operating in the air and pump cylinders, respectively, the rods l l', connecting said pistons L M with valve-chests C C', connected to said cylinders B B, the fluid-supply pipe E, connected with said chests, the chambers C^3 of said chest formed with ports c c', communicating with said cylinders B B', valves D, operating in said chambers C^3, said valves formed with projecting stems R R', and a double set of rock shafts and levers alternately connected with the rods l l' and the valve-stems R R', whereby the movement of the rods l l' will impart a reverse movement to the stems R R', substantially as and for the purpose set forth.

5. In a beer-pumping apparatus, the combination, with the pump-cylinders B B', formed with valve-chambers having ports c c' arranged to communicate with the upper and lower ends of the said cylinders, slide-valves operating in said chambers to alternately open and close said ports and formed with projecting stems, a fluid-supply pipe connected with said chambers, the air-cylinders H H', an air reservoir or pipe J, connecting said air-cylinders, pistons L M, connected by rods l l', operating in said air and pump cylinders, respectively, and tappets n, secured upon said rods l l', of the rock-shaft O O', formed with lever-arms N N' and crank-arms Q Q', said arms N N' adapted to be rocked by engagement with the said tappets, and the arms Q Q' connected with the valve-stems R R', all arranged substantially as and for the purpose described.

6. In a beer-pumping apparatus, the combination of a pair of pump-cylinders, each formed with a valve-chamber formed with the inlet and outlet ports c c' and an exhaust G, a tubular valve operating in said chamber, adapted to alternately close and open said ports with the main supply, a fluid-supply pipe connected with said chambers, said valves formed with projecting stems, two air-cylinders formed with inlet and outlet valves disposed above the pump-cylinders, vertically-reciprocating rods l l', operating in said cylinders and formed with pistons L and M on the ends thereof, as shown, an air-storage J, connected with the air-outlets of said air-cylinders, a pressure-gage connected therewith, devices intermediate the rods l l' and the valve-stems R R' for connecting the rods alternately with the opposite valve-stems, whereby the valves D are alternately operated by the movement of the rods l l', a pipe connecting the fluid-supply and the air pipe J, and a pressure-regulating valve in said pipe adapted to close the fluid-supply pipe when air is up to standard in the pipe J, all arranged substantially as and for the purpose described.

444,995. **PIPE OR ROD CUTTER.** WILLIAM VANDERMAN, Willimantic, Conn. Filed Oct. 3, 1890. Serial No. 366,937. (No model.)



Claim.—1. In a device of the character described, a chain adapted to surround the article to be cut, and a series of cutters carried by the chain, substantially as and for the purpose specified.

2. In a device of the character described, a chain adapted to surround the article to be cut, and a series of disk-cutters pivotally attached to the chain, substantially as and for the purpose specified.

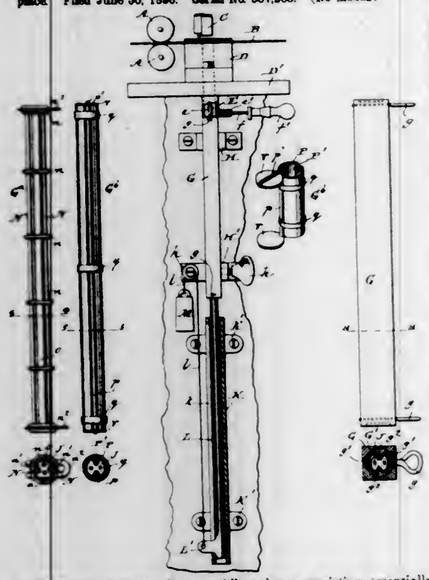
3. In a device of the character described, a body-frame, a chain attached to the frame, adapted to surround the article to be cut, rotary cutters mounted in the links of the chain, and an adjusting device connected with the frame, as and for the purpose specified.

4. In a device of the character described, a body-frame, a chain adjustably attached to the frame and adapted to surround the article to be cut, rotary cutters mounted in the links of the chain, and an adjusting device connected with the frame and also provided with a rotary cutter, as and for the purpose specified.

5. In a device of the character described. the combination, with a body-frame, a block held to slide in the frame, a rotary cutter attached to one end of the block, and an adjusting device connected with the opposite end of the said block, of a chain connected with the frame and adapted to surround the article to be cut, and cutters pivoted to the links of the chain, substantially as shown and described, and for the purpose specified.

6. In a device of the character described, the combination, with a frame, a block held to slide in the frame, a cutter secured to one end of the block, and an adjusting device connected with the opposite end of the block, of a chain connected with the frame and adapted to surround the article to be cut, disk cutters pivoted in the links of the chain, and a locking device, substantially as shown and described.

444,996. **DEVICE FOR ASSEMBLING CLASPS.** GARDNER A. WATKINS, Gardner, Mass., assignor to Haywood Brothers & Co., same place. Filed June 30, 1890. Serial No. 357,283. (No model.)



Claim.—1. A device for assembling clasps, consisting, essentially, of a hollow die on which the clasps are cut, the opening in the die corresponding to the shape of the clasps, and a hollow magazine adapted to align with the opening in the die, the bore of the magazine corresponding to the bore of the die-opening, substantially as described.

2. In a device for assembling clasps, the combination, with a hollow die having an opening corresponding to the shape of the die, of a magazine having a central opening therein corresponding in shape to the shape of the die-opening, said magazine having suitable gates at top and bottom, substantially as described.

3. In a device for assembling clasps, the combination, with a hollow die having an opening therein corresponding in shape to the shape of the clasps, and a tube aligning with the opening of the die and having its inner bore shaped to correspond with the die-opening, said tube having at its lower end a gate adapted to close the same, of a magazine adapted to align with the tube, said magazine having its inner bore shaped to correspond with the bore of the tube and having a suitable gate at each end thereof, substantially as described.

4. In a device for assembling clasps, the combination, with a die having an opening therein corresponding in shape to the shape of the clasp, and a magazine aligning with the die-opening and having a central opening therein corresponding in shape to the shape of the clasps, of a vertically-movable follower mounted in a suitable support and adapted to extend normally through the opening in the magazine, substantially as described.

5. In a device for assembling clasps, the combination, with a hollow die having an opening therein corresponding in shape to the shape of the clasps, and a magazine having a central opening therein adapted to align with the opening in the die and shaped to correspond therewith, of a vertically-slotted tube supported beneath the magazine, a follower mounted in the tube and adapted to extend into the magazine, said follower having a lateral ear extending through the slot of the tube, and a weighted cord extending over a suitable pulley and adapted to press the follower normally through the magazine, substantially as described.

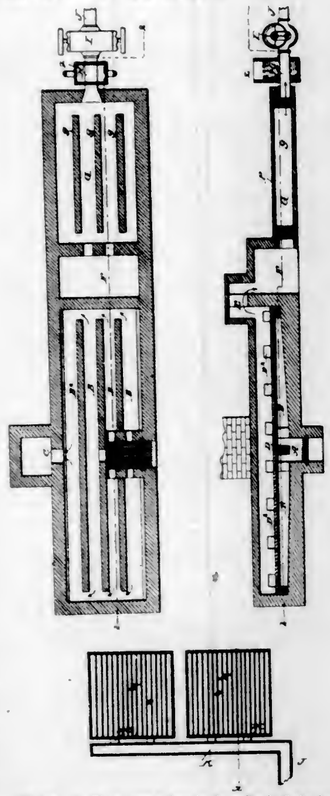
6. In a device for assembling clasps, a hollow magazine having a central longitudinal bore therein shaped to fit the clasps, substantially as described.

7. In a device for assembling clasps, a magazine having a central longitudinal bore therein shaped to correspond with the shape of the clasps, said magazine having suitable gates for closing the ends thereof, substantially as described.

8. A device for assembling clasps, consisting, essentially, of a hollow magazine having its bore shaped to correspond with the shape of the clasp, and means for packing the clasps back to face within the magazine, substantially as described.

9. In a device for assembling clasps, the combination, with a hollow magazine having its bore shaped to correspond to the shape of the clasps, of means for packing the clasps under pressure within the magazine, substantially as described.

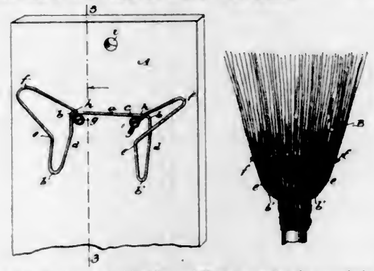
444,997. **PROCESS OF TREATING ZINC ORES.** WILLIAM WEST, Denver, Colo., assignor of one-half to Joseph E. Clemons, same place. Filed Dec. 13, 1889. Serial No. 333,608. (Specimens.)



Claim.—1. The process herein described of eliminating zinc from complex ores, as described, which consists in roasting the ore to form sulphurous-acid gas and oxidize the zinc, then cooling this gas to a temperature of 180° Fahrenheit or below and passing the same in gaseous form in conjunction with steam and without oxidation into sulphuric acid through a previously-roasted charge to form soluble sulphite of zinc, and then immediately leaching out and separating the zinc sulphite with water at a temperature below 180° Fahrenheit, as described.

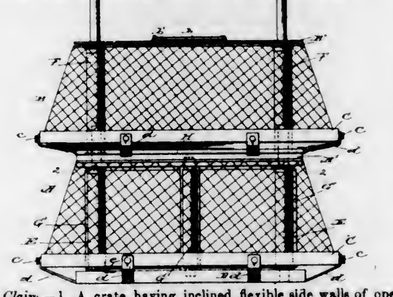
2. The process herein described of eliminating zinc from complex ores, which consists in roasting the ore, passing the sulphurous-acid gas arising therefrom in conjunction with steam through a previously-roasted charge at a temperature below 180° Fahrenheit to form soluble sulphite of zinc, leaching out the sulphite of zinc with water at a temperature below 180° Fahrenheit, and simultaneously drying the leached ore residuum by the transit of the hot sulphurous-acid gas and thereby cooling said gas, substantially as shown and described.

444,998. **BROOM-HOLDER.** JESSE H. ALLISON, New Vienna, Ohio. Filed June 3, 1890. Serial No. 354,103. (No model.)



Claim.—A broom-holder formed from a single wire consisting in a longitudinal strand or cross-piece *a*, looped limbs *d*, depending from the ends thereof, curved at *b'* to form supports, and extending upward and outward to the points *f f*, above the cross-piece *a*, thence downward and inward across the said cross-piece, as at *h h*, and provided with eyes *g g* just below the cross-piece, substantially as set forth.

444,999. **KNOCKDOWN CRATE.** HENRY M. BICKEL, Larned, Kans. Filed Aug. 29, 1890. Serial No. 363,422. (No model.)



Claim.—1. A crate having inclined flexible side walls of open-work, a permanent closure in its smaller end provided with a series of post-openings and a door, posts for preventing the crate from collapsing endwise, and a marginal strip around its larger open end provided with fastening devices, substantially as set forth.

2. A double crate consisting in two single crates having inclined flexible side walls of open-work, permanent closures secured in the smaller ends of the crates and each provided with a series of post-apertures, marginal strips C around the larger ends of the crates, fastenings on the two strips for connecting the crates together, and posts having reduced ends fitting said apertures and preventing the crates from collapsing endwise, substantially as set forth.

3. A crate having a removable closure for one end, provided with folding hinged posts to engage the opposite end when extended, substantially as shown and described.

4. A crate having a removable closure for its open end, provided with folding hinged posts tenoned at their distal ends, fastenings for said removable closure, and apertures in the permanently-closed end of the crate, through which said tenoned ends of the posts project, substantially as shown and described.

5. A crate having tapering side walls formed of flexible open-work material, a permanent closure for the smaller end of the crate, provided with post-openings, and a removable closure for the larger open end of the crate, also having post-openings, said removable closure being of about the same diameter as the permanent closure to permit it to rest thereon, flexible fastenings to connect said removable closure with the open end of the crate, and posts tenoned at their ends to enter the apertures in the two closures and prevent the crate from collapsing, substantially as shown and described.

6. A partition for crates, consisting of a central post having longitudinal slots and two webs passing movably through the slots and provided at their ends with posts parallel with the central post, substantially as shown and described.

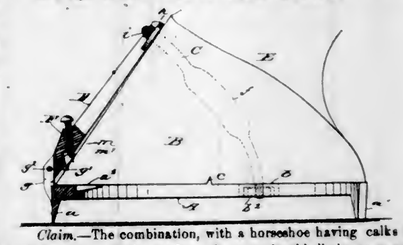
7. The combination, with a crate having a suitable floor, as shown, of a removable partition for the crate, said partition comprising a central post and posts arranged near the edge of the floor, the latter posts and said central post being connected by a suitable web, substantially as described.

8. A double crate comprising two similar crates having beveled side walls and opposite flat sides, one of which is open, as shown, a detachable floor adapted to extend beneath the lower crate, said floor having means for attaching it to the side walls of the crate, posts supported upon the floor and extending through the top of the lower crate, a flexible floor adapted to be mounted upon the lower crate, said floor having openings near the corners for the passage of the posts and having means for connecting it with the side walls of the upper crate, and supporting-posts for the upper crate, said supporting-posts having vertical bores in their lower ends to rest upon the lower posts and having reduced upper ends, substantially as described.

9. The combination, with a crate having an open side, as shown, of a flexible floor closing the said side and having an encircling rib H', adapted to enter the open side of the crate, and provided with means for attachment to the side walls of the crate, substantially as described

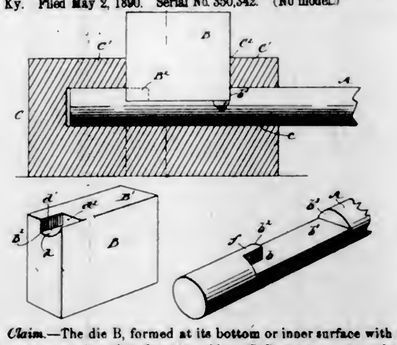
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445,000. **HORSESHOE.** HENRY S. BRISCOE, Morrisonville, Ill. Filed Sept. 19, 1890. Serial No. 365,460. (No model.)



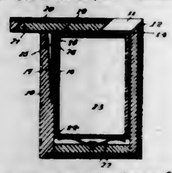
Claim.—The combination, with a horseshoe having calks on its heels and toe, opposite perforated ears on its side limbs, an upwardly-projecting lug on its toe, and transverse ribs on its top face entering mating grooves in the hoof, of a locking-bar bifurcated at its lower end and pivoted thereat to the lug on the shoe and laterally enlarged at the upper end and cross-grooved above said flanged enlargement, an arched clamping-bar having threaded ends passing through the ears on the shoe and provided with nuts, and a set-screw adjustable in the locking-bar near its lower end and provided with a swiveled presser-block having tangs on its lower face, substantially as set forth.

445,001. **DIE FOR MAKING BOLTS.** THOMAS J. BUSH, Lexington, Ky. Filed May 2, 1890. Serial No. 350,342. (No model.)



Claim.—The die B, formed at its bottom or inner surface with an aperture or cup shaped to form shoulders d' d^3 at one corner of the lower or contact surface, to be used jointly with the die C, formed with a seat for the bolt-blank and with an aperture for the die B coincident with the said seat, substantially as described.

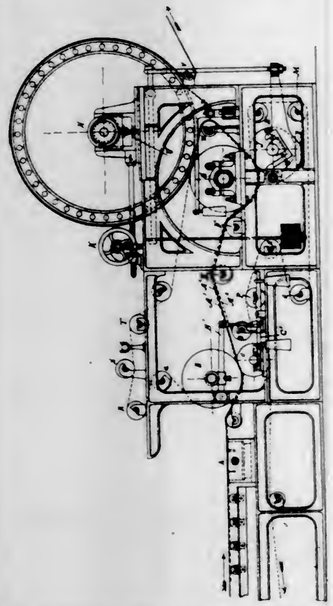
445,002. **JEWEL-CASE.** HEINRICH GROSSRUCK, New York, N. Y. Filed Sept. 11, 1890. Serial No. 364,601. (No model.)



Claim.—1. As an improved article of manufacture, a jewel-case consisting of a box-like casing open at one end only and provided with a spring at the bottom of its inner chamber, a latch located in one side wall of the body-chamber, a drawer adapted to enter the chamber and engage with the spring and latch, and a cover adapted to close the open end of the box-body, substantially as shown and described.

2. A jewel-case consisting of a box-like body open at one end only, the top and bottom inner surfaces of the body at said open end being provided with grooves, one side having a recess produced therein and the other side an inwardly-beveled surface, a spring located in the bottom of the body-chamber, a spring-latch located in one side wall of said chamber, a drawer adapted to enter the chamber of the body and engage with the spring and provided with a keeper for engagement with the latch, and a cover adapted to slide in the grooves of the box-body, the said cover having one end surface beveled, as and for the purpose specified.

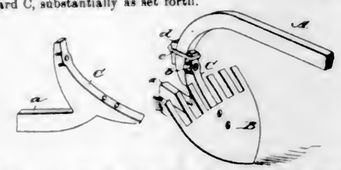
445,003. **PAPER-MAKING MACHINE.** HEINRICH HOESORN, Heme, Germany. Filed Feb. 12, 1889. Serial No. 299,610. (No model.) Patented in Germany Dec. 9, 1887, No. 46,422; in England Jan. 13, 1888, No. 585; in France Jan. 30, 1888, No. 188,433, and in Belgium Jan. 30, 1888, No. 80,461.



Claim.—In a paper-making machine, the combination of the couch-rolls B C, the press-rolls G J, the upper and lower felts, and guide-rollers E F, arranged between the couch and press rolls, substantially as herein described, whereby the paper in its passage from the couch-rolls to the press-rolls is made to pass between two felts and is guided between the same in a broken line forming an obtuse angle to the press-rolls, as set forth.

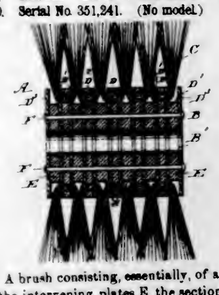
445,004. **POTATO-DIGGING ATTACHMENT FOR PLOWS.** AUGUSTUS LEONARD, Howell's Run, Ohio. Filed Feb. 25, 1890. Serial No. 341,703. (No model.)

Claim.—1. A potato-digging attachment for single-shovel plows, consisting in a curved standard C, having attaching bolt *b* at its upper end, a rearward-extending runner *a*, and the shield-shaped shovel or blade B, having tines at its upper end and bolted to the front face of standard C, substantially as set forth.



2. A potato-digger comprising the plow-beam A, having its rear end curved downward, the curved standard C, fitting against the forward edge of said rear end, a bolt *b*, passing through the two, a link *c*, embracing the upper end of the standard and the curved end of the beam, a wedge *d*, driven through the link along the rear edge of said curved end, the runner *a*, extending rearward from the standard, and the shovel B, bolted to the forward edge of the standard and having a furcated upper edge, substantially as set forth.

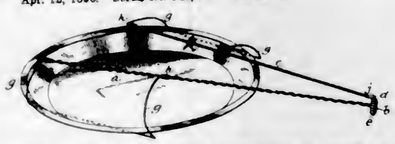
445,005. **BRUSH.** LOUIS P. MAHLER, New York, N. Y. Filed May 10, 1890. Serial No. 351,241. (No model.)



Claim.—1. A brush consisting, essentially, of a core formed of the sections D and the intervening plates E, the sections D being made up of the outer plates D′ and the inner portions D² and having eyelets *d* near the periphery, and the bristles C, extending through the eyelets *d* and doubled to extend radially from the brush-core, substantially as described.

2. A brush consisting of a central core formed of alternate series of plates or sections, one of said series projecting beyond the other, said projecting series being formed of metal plates and an interposed plate of a more elastic material, the projecting plates having eyelets near their peripheries, and metal bristles inserted through the eyelets and doubled upon themselves to extend radially from the brush-core, substantially as described.

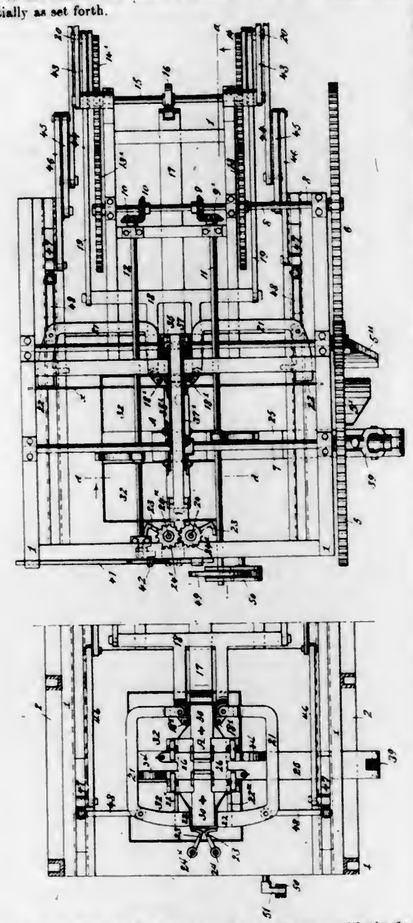
445,006. **PIE-LIFTER.** DAVID MUNSON, Indianapolis, Ind. Filed Apr. 12, 1890. Serial No. 347,637. (No model.)



Claim.—The pie-lifting device herein described, consisting of the doubled and twisted arm *a*, having its ends terminating in separate coils *b*′ and *b*², which stand out to each side of the said twisted arm, the twist of the arm forming an eye i at its other end, the other arm c having a pintle end secured in said separate coils by a soldered head *e* upon said pintle, and loops secured upon the free ends of the arms by coiled ends *h*, as shown and described.

445,007. **MACHINE FOR MAKING TIMBER-HANGERS.** JACOB RUSSELL, Brooklyn, N. Y. Filed May 2, 1890. Serial No. 350,298. (No model.)

Claim.—1. In a metal-bending machine, the die A, comprising the body secured to the frame at its upper part, end portions 30, hinged to said body at their lower edges, and two side flaps or twisters, said flaps each comprising a central portion hinged to the body at its lower edge, and two end portions 26×, said portions being hinged at their lower edges to the respective end portions of the die and at their sides to the ends of the middle or main portion of the twister, substantially as set forth.



2. In a metal-bending machine, the combination, with the fixed upper die having end portions and hinged and depressible side flaps or twisters, of means, substantially as described, for depressing and elevating said end portions and twisters, the reciprocating lower die and its support, and the falling supports under said end portions of the die, all arranged to operate substantially as set forth.

3. In a metal-bending machine, the combination, with the upper die having a fixed body 31 and hinged end portions 30, of the reciprocating lower die 25, arranged under the upper die, the reciprocating slide 28, provided with depressors 29 for depressing said end portions, and connectors 36, uniting the said end portions of the die and their respective depressors, substantially as set forth.

4. In a metal-bending machine, the combination, with the upper die A, secured to the machine-frame at its upper part and provided with a tongue 25′, of the reciprocating lower-die 25, mounted in guides and adapted to slide under and transversely of the said die A, said lower die having a groove which engages the tongue on the upper die, substantially as and for the purposes set forth.

5. In a metal-bending machine, the combination, with the fixed upper die, of the reciprocating clamping-slide for holding the bar to the die, the reciprocating rollers for effecting the primary bends, the reciprocating side clamps or jaws for holding the branches of the bar up to the die, and the rocking or vibrating toes for bending the extremities of the bar up to the die, whereby the bar is given the form of an oblong link embracing the die.

6. In a metal-bending machine, the combination, with the fixed upper die, of the hinged jaws 21, having heads 22, which clamp the bar to the die, the slides 47, mounted in guideways in the machine-frame, the links 48, which couple the said slides to the respective jaws, and means for reciprocating said slides, whereby the said links are made to serve as toggles behind the jaw-heads, as set forth.

7. In a metal-bending machine, the combination, with the upper die, of the mechanism for bending the extremities of the bar toward one another at the end of said die, said mechanism comprising the toes 23, their shafts, the gear-wheels on said shafts, and the mechanism, substantially as described, whereby said shafts are rocked in opposite directions.

8. In a machine for bending metal, the combination, with the fixed upper die, the reciprocating lower die which plays under the upper die, and the support for said lower die, of the falling support 32 under said upper die, the hinged strut 32× under said support, the rock-shaft 52, means, substantially as described, for rocking said shaft, and the roller-bearing arm 52× on said shaft, the roller on said arm bearing on said strut, as set forth.

9. The combination, with the die 25, mounted to slide in guides, of the shaft 7, the wheel 5 thereon, the cams 5′ and 5″, mounted on the side of said wheel, and the lever 39, fulcrumed on the shaft 7 and coupled at its lower end to said die 25, all arranged to operate substantially as set forth.

10. The combination, with the upright rock-shafts 24 and 24×, the toothed wheels on same that gear them together, and the toes 23 on said shafts, of the gear-wheel 24″ on one of said shafts, the sliding rack 40, gearing with wheel 24″, the rack-bar 41, provided with a cam-slot 41×, the rotating shaft 12, and the crank-pin 42, carried by said shaft and engaging said slot, substantially as set forth.

11. The combination, with the hinged jaw 21, of the mechanism for imparting a reciprocating movement to the same, said mechanism comprising a crank-wheel 14, having a crank-pin 20, the slotted arm 43, attached to the frame at its upper end and said crank-pin engaging its slot, the slotted link 44, coupled by its slot to arm 43 and at its other end to a lever 45, said lever 45 coupled at its lower end to the frame, the slide 47, mounted in a slideway in the frame, the link 46, connecting said slide with the upper end of the lever 45, and the link 48, coupling the slide 47 to the jaw 21, all arranged to operate substantially as set forth.

12. In a machine for bending timber-hangers, the combination, with the die A, having hinged end portions and side flaps or twisters, and mechanism for depressing and elevating said end portions and twisters, of the reciprocating jaws 21, provided with lugs 22×, respectively, substantially as and for the purposes set forth.

445,008. **INSULATOR.** WILLIAM VOGLER, Somerville, Mass. Filed May 23, 1890. Serial No. 352,841. (No model.)



Claim.—1. The herein-described insulator, it consisting of an inner body of high insulating capacity and an outer body of high refractory nature protecting the inner body, substantially as described.

2. The herein-described insulator, it consisting of an inner body of high insulating capacity and an outer body of high refractory nature enveloping the inner body, substantially as described.

445,009. **COMBINED RULER AND PAPER-CUTTER.** WILLIAM H. ATKINSON, Brooklyn, N. Y. Filed Sept. 20, 1890. Serial No. 365,591. (No model.)

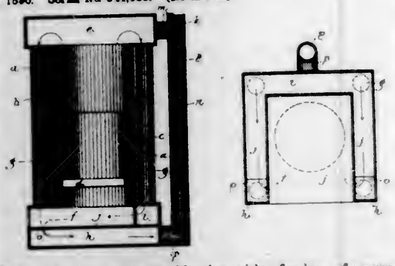


Claim.—1. The combined ruler and paper-cutter consisting of a cylindrical or prismoidal ruler and a blade having a concave part, the curve of which is developed from the downward curve of the cylinder, and a cutting or tearing edge bent downward from the concave part obliquely to the plane of support of the ruler, substantially as described.

2. The combined ruler and paper-cutter formed of a single piece of sheet metal, and consisting of the cylindrical or prismoidal ruler 1 and a blade having the concave part 2 developed from the downward

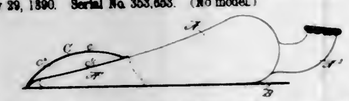
curve of the cylinder and the scaled cutting or tearing edge 3 bent downward from the concave part obliquely to the plane of support of the ruler, substantially as described.

445,010. HEATER. JAMES K. BROWN, Portland, Me. Filed Feb. 27, 1890. Serial No. 341,955. (No model.)



Claim.—In a heater, the combination, with a fire-box, of a reservoir in direct communication with said fire-box, a chamber in the base around the outside except at the front, flues leading from said chamber near the front into the chamber out of which leads the escape-flue, and pipes leading from said reservoir to the intermediate chamber, as and for the purposes set forth.

445,011. BED-PAN. MARY J. CUNNINGHAM, Boston, Mass. Filed May 29, 1890. Serial No. 353,653. (No model.)



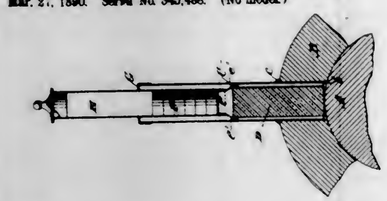
Claim.—The herein-described bed-pan cushion, consisting of a double-walled pad and a foundation-layer B, the said pad being large enough to cover the wedge-shaped nose of the pan and form a yielding cushion over the said nose, the foundation extending backwardly beyond the opening in the top of the pan to support the lower side of the pan, as and for the purpose set forth.

445,012. LAWN-CHAIR. JAMES J. DICKS, Toronto, Canada. Filed July 2, 1890. Serial No. 357,503. (No model.)



Claim.—The frame A, having a rigid bar at the top, slots in the sides, a movable bar whose ends are contained in said slots, and a spring bearing on said bar, in combination with a seat B, having one end attached to the front of the frame and its other end passing over the rigid bar on the top of the frame and attached to the movable bar, substantially as described and shown.

445,013. LUBRICATOR. WILLIAM J. PAUL, Brooklyn, N. Y. Filed Mar. 27, 1890. Serial No. 345,488. (No model.)



Claim.—1. The combination, with a tubular holder, of a follower fitted loosely to the said holder, said follower being tubular and having a closed bottom to receive adjustable weights and provided around its closed bottom with an outwardly and downwardly projecting flange fitting closely to the holder and serving to center a stick of grease, substantially as set forth.

2. The combination, with the bearing and the tubular holder, of the nut or collar loosely surrounding the tubular holder and provided with a tapered threaded opening, and a threaded split thimble adapted to surround the tubular holder and engage the wall of the said opening in the nut or collar, and thereby clamp the holder in the desired adjustment, substantially as set forth.

445,014. BARBER'S CHAIR. CHARLES FERST, Louisville, Ky. Filed Feb. 8, 1890. Serial No. 339,681. (No model.)

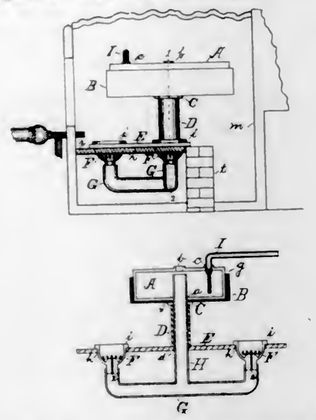


Claim.—1. The combination of the chair, the pivoted back, the recessed ratcheted segments placed in the back, the lever pivoted between the two ratchets, the spring-catch which engages with the ratchets, and the supporting-rod which is pivoted to the lever at its upper end and to the seat at its lower end, substantially as shown.

2. The combination of the chair, the yoke journaled in its under side and provided with the pivot which extends into the base, and the slotted arm with the shaft provided with a cam upon its inner end and a handle upon its outer end, whereby the chair can be tilted on the yoke so as to raise the front of the chair, substantially as described.

3. The combination of the chair, the foot-frame secured to its front, the frame X, pivoted at its lower end to the said frame, the toothed segment Z, pivoted upon the frame X, a rod connected at one end to the said segment and at its opposite end to the foot-frame, and a catch which engages the segment for locking it against rotation, substantially as shown.

445,015. OIL-BURNER. JOHN H. GRAHAM, Warren, Pa. Filed Aug. 30, 1890. Serial No. 363,473. (No model.)



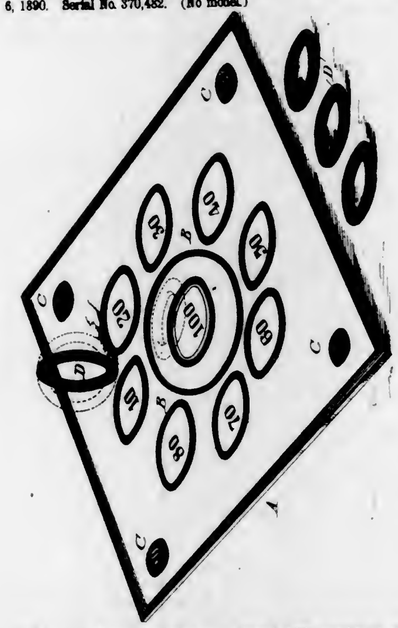
Claim.—1. In a vaporizing hydrocarbon-burner, the combination, with the supporting-plate, of the burners located therein, having air-inlets communicating with the open air below said plate and their discharge ends above said plate, substantially as described.

2. In a hydrocarbon-burner, the combination, with the supporting-plate, of the burners located therein, having air-inlets below said plate, and the draft-check below the plate and forming therewith a closed air-chamber, substantially as described.

3. In a hydrocarbon-burner, the combination, with the supporting-plate adapted to be placed in the fire-box of a steam-boiler, of the burners located therein and supported thereby, the generating-chamber, and the pipes connecting it with the burners, whereby said burners and chamber and their connections are supported by said plate, substantially as described.

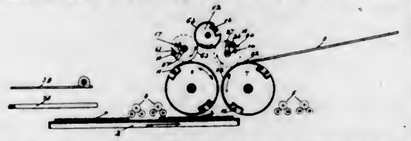
4. In a hydrocarbon-burner, the combination, with the supporting-plate and burners, of the generating-chamber, the shield therefor, the pipe connecting the said chamber with the burner-pipes, and the shield for said pipe between the supporting-plate and shield for the generating-chamber, substantially as described.

445,016. GAME. MARY A. GREENE, Philadelphia, Pa. Filed Nov. 6, 1890. Serial No. 370,482. (No model.)



Claim.—A game consisting of a board with numbered circles thereon, and spinning-rings, the combination and operation being substantially as described.

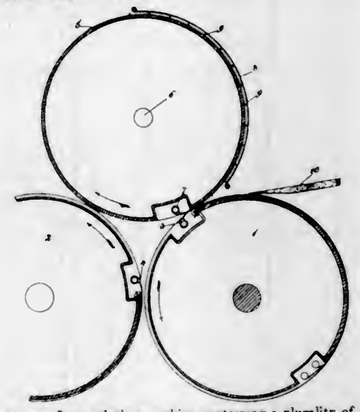
445,017. TWO-COLOR-PRINTING MACHINE. JOHN T. HAWKINS, Taunton, Mass. Filed Feb. 18, 1890. Serial No. 340,253. (No model.)



Claim.—1. In a two-color-printing machine, in combination with two continuously-revolving impression-cylinders, as 7 and 8, each making two revolutions to one impression and each carrying grippers, as 10 and 11, two sets of rotating gripper-arms, as 26, and an intervening transfer-cylinder, as 12, each carrying grippers, as 60, 13, and 61, said impression-cylinders, rotating gripper-arms, and transfer-cylinder being geared together in train and adjusted so that their respective grippers coact for the transfer of a sheet from one impression-cylinder to said transfer-cylinder and thence to the second impression cylinder without contact of the printed side of the sheet with any part of the mechanism, substantially as set forth.

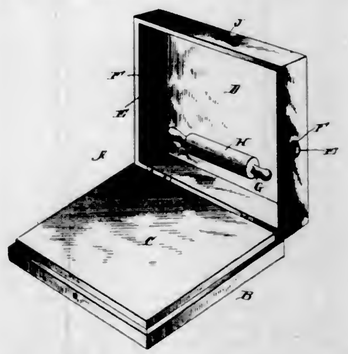
2. In a two-color-printing machine, the combination of a reciprocating bed, as 2, carrying two forms, as 3 and 4, a corresponding number of continuously-revolving impression-cylinders, as 7 and 8, each making two revolutions to each impression and carrying grippers, as 10 and 11, rotating gripper-arms, as 26, carrying grippers, as 60 and 61, coacting with the grippers of said impression-cylinders, an intervening transfer-cylinder, as 12, carrying grippers, as 13, coacting with the grippers of said rotating gripper-frames, a feed-board, as 9, leading to the first impression-cylinder, and a fly, as 59, to take the sheet from the second impression-cylinder, whereby sheets fed to the first impression-cylinder are printed on one form, transferred to said transfer-cylinder, thence transferred to the second impression-cylinder, and printed on the second form, and then delivered upon a fly-table or other receptacle without contact of the printed side of the sheet with either transfer or delivery mechanism, substantially as set forth

445,018. SHEET-TRANSFER APPARATUS FOR PRINTING-MACHINES. JOHN T. HAWKINS, Taunton, Mass. Filed Feb. 13, 1890. Serial No. 340,257. (No model.)



Claim.—In a printing-machine containing a plurality of impression-cylinders, as 1 and 2, in combination with said impression-cylinders, one or more transfer-cylinders or series of pulleys, as 5, armed with projecting points, as 9, one or more guard-aprons, as 8, whereby sheets are transferred from one to the next succeeding impression-cylinder and carried around said transfer-cylinder or series of pulleys in the process of transfer, with the printed side toward said transfer-cylinder, and prevented from falling away from said transfer-cylinder or series of pulleys in passing downward, and said transfer effected without contact of the printed sides of the sheets with the faces of said transfer-cylinder or series of pulleys, substantially as set forth.

445,019. DOUGH-BOARD. ENOCH R. IRBELL, Paris, Tenn. Filed Nov. 10, 1890. Serial No. 370,927. (No model.)



Claim.—1. The herein-described dough-board, consisting of the base having the dough-board projecting above the same, the cover hinged to said base and having the openings in the side, and the screens covering said openings.

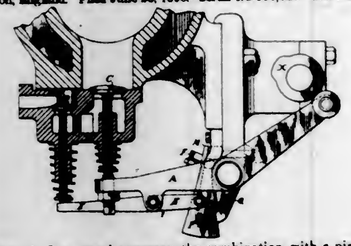
2. The herein-described dough-board, consisting of the base having the dough-board projecting above the same, the cover hinged to the base and provided with ventilating-openings, and the supports or hangers on the lid for the rolling-pin.

445,020. WRENCH. EDWIN H. KIMBEY, Buffalo, N. Y. Filed Oct. 27, 1890. Serial No. 369,492. (No model.)



Claim.—As an improved article of manufacture, a pipe and bolt wrench consisting of the body A, having the handle B formed thereon, the lateral projection C on said body, the curved serrated jaw D on said projection, the studs F on said body, and the wheels G G', journaled upon said studs on both sides of the body, as and for the purpose set forth.

445,021. GAS-ENGINE GOVERNOR. FREDERICK W. LANCHESTER, London, England. Filed June 20, 1890. Serial No. 356,048. (No model.)

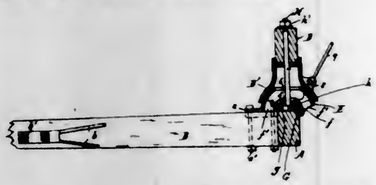


Claim.—1. In a speed-governor, the combination, with a pivoted lever A, for opening the air-valve, of a lever E, for opening the gas-valve, pivoted to the said lever A and provided with a catch-plate, a gravity-actuated blade pivoted to a stationary support and adapted to engage with the said catch-plate to effect the opening of the gas-valve, and a pivoted exhaust-valve lever B, provided with a tappet for lifting the said blade clear of the catch-plate, substantially as and for the purpose set forth.

2. In a speed-governor, the combination, with a pivoted air-valve lever A, of a gas-valve lever E, pivoted to the said lever A and provided with a catch-plate, a weight pivoted to a stationary support, a pivoted exhaust-valve lever B, provided with a tappet for raising the said weight, and a pivoted blade for engaging with the said catch-plate, adapted to fall with the said weight and to be raised by a projection on the weight, substantially as and for the purpose set forth.

3. In a speed-governor, the combination, with a pivoted air-valve lever A, of a gas-valve lever E, pivoted to the said lever A and provided with a catch-plate, a gravity-actuated blade pivoted to a stationary support and adapted to engage with the said catch-plate to effect the opening of the gas-valve, an adjustable spring for regulating the speed of the fall of the said blade, and a pivoted exhaust-valve lever B, provided with a tappet for lifting the said blade clear of the catch-plate, substantially as and for the purpose set forth.

445,022. VEHICLE. FRANK F. LANDIS, Waynesborough, Pa. Filed Nov. 8, 1890. Serial No. 370,795. (No model.)



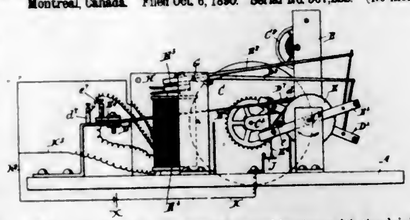
Claim.—1. The combination, with the axle pivoted to the bolster by a ball-and-socket joint and the tongue secured to an axle, of the axle-skeins secured to the ends of the axle and provided with projecting bosses on their upper and lower sides, the diverging brace-rods secured at one end to the tongue and having eyes at their other ends engaging with the said bosses, and the bolts passing through the said bosses and through the ends of the axle, substantially as set forth.

2. The combination, with the axle-skein engaging with the end of the axle and provided with a boss projecting from its upper side, of a brace-rod having an eye engaging with the said boss, a bolt passing through the boss, and a washer-plate provided with a dirt-guard and a lug for the check-chain and adapted to be held in position by the said bolt over the said eye on the brace-rod, substantially as set forth.

3. The combination, with an upper hemispherical socket adapted to be secured to a vehicle-body, of an upper hemispherical block adapted to be secured to the axle and provided with an internal hemispherical socket concentric with the curved surfaces of the said block and the upper socket, and webs connecting together the said upper block and the internal socket, a lower hemispherical block sliding in the said internal socket, and a king-bolt secured to the said lower block and operatively connecting the upper block with the upper socket, substantially as set forth.

4. The combination, with the upper hemispherical socket secured to the bolster, of the hollow hemispherical block secured to the axle and provided with an internal hemispherical socket concentric with the curved surface of the said block, and webs connecting together the said hollow block and the internal socket, a lower hemispherical block sliding in the said internal socket and provided with a pocket in its lower side, and a king-bolt provided with a head engaging with the said pocket and operatively connecting the upper block with the upper socket, substantially as set forth.

445,023. INDEPENDENT ELECTRIC CLOCK. EDOUARD LEFEBVRE, Montreal, Canada. Filed Oct. 6, 1890. Serial No. 367,222. (No model.)



Claim.—1. In an electric clock, the combination, with the driving-arbor in gear with the usual clock-work mechanism intervening between it and the index-arbor, of electro-magnets and armatures, the latter extended in length and pivoted at a point which will place a preponderance of weight on one side thereof and furnish sufficient surface for attraction by such magnets on the other, a battery, and make-and-break mechanism operated from said arbor for passing the current from such battery alternately through different magnets to elevate the heavier ends of said armatures, and connections between these latter and said arbor, whereby upon their being released they will drop and rotate such arbor, as set forth.

2. In an electric clock, the combination, with an extended main arbor in gear with the usual clock-work mechanism intervening between it and the index-arbor, of ratchet-wheels rigidly secured to such main arbor, frames mounted loosely on same and carrying pawls to engage said ratchets, electro-magnets and armatures, each of the latter having an arm extended on one side of the pivoting-point of the armature and connected with said frames, a battery, and make-and-break mechanism operated from said arbor for passing the current from such battery alternately through different magnets controlling different armatures, as and for the purposes set forth.

445,024. TONGUE-SUPPORT. JOHN W. LINDQUIST, Galesburg, Ill. Filed Sept. 3, 1890. Serial No. 363,872. (No model.)

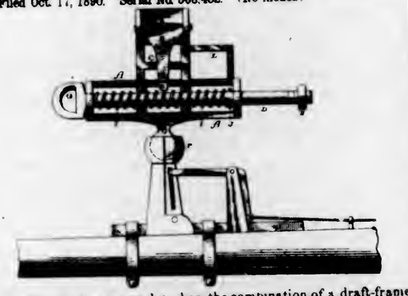


Claim.—1. A wagon-tongue support composed of a single bar bent at its mid-length part into U-shaped form, and each of its end portions again bent to form open hooks, which hooks can be readily engaged with and disengaged from the rod or bolt on which the wagon-tongue is pivoted without removing said rod or bolt, while the connecting-bar of the U-shaped part rests beneath the tongue and the end parts beneath the axle, substantially as described.

2. A wagon-tongue support composed of a single bar bent at its mid-length part into U-shaped form, and each of its end portions again bent to form hooks, which hooks engage with the rod or bolt on which the wagon-tongue is pivoted, while the connecting-bar of the U-shaped part rests beneath the tongue and the end parts beneath the axle, and an invertible wedge-shaped adjusting-block having transverse grooves located between the tongue and the mid-length part of the support, substantially as and for the purpose specified.

3. A wagon-tongue support composed of a single bar bent at its mid-length part into U-shaped form, each side bar A' of which is again bent to form a hook A^3, which hooks engage with the bar or bolt *f*, while its arms or ends A^3 rest beneath the axle and the bar A^4 of the loop A rests beneath the tongue, substantially as and for the purpose specified.

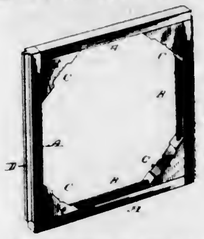
445,025. HORSE-DETACHER. ROBERT P. MORAN, Glasgow, Ky. Filed Oct. 17, 1890. Serial No. 368,402. (No model.)



Claim.—1. In a horse-detacher, the combination of a draft-frame having a means of attachment to the harness, a spring-actuated draft-bar, a projection upon its lower edge, a clamp consisting of a stationary part secured to the shaft, a second part pivoted at its lower end to the lower end of the stationary part, the two parts having a socket in their upper ends to receive the projection, a spring for closing the pivoted part, and a means connected therewith for closing it, substantially as shown and described.

2. In a horse-detacher, the combination of a draft-frame having a means of attachment to the harness and a projection, a two-part clamp secured to the shaft in which the projection is placed, one of the parts being movable and provided with a longitudinal slot, and a lever pivoted upon the shaft which engages the said slot, and an operating cord or rod attached to the lever, substantially as shown and described.

445,026. WINDOW-SCREEN FRAME. JUDSON B. PHILLIPS, Penton, Mich. Filed Oct. 6, 1890. Serial No. 367,259. (No model.)



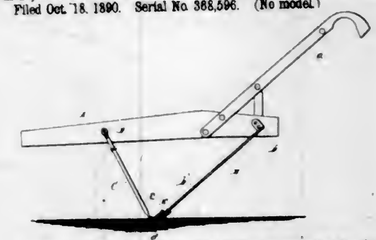
Claim.—1. A frame composed of four like bars provided with tenons upon their inner sides and corner-pieces engaging the tenons of two adjoining bars, each bar extending at one end beyond its tenon and overlapping with said end the end of one of its adjoining bars in like manner in all the bars composing the frame, substantially as described.

2. A frame composed of four like bars provided with tenons upon their inner sides and corner-pieces engaging the tenons of two adjoining bars, each bar extending at one end beyond its tenon to a distance equal to the width of the bar and overlapping with said end the end of one of its adjoining bars in like manner in all the bars composing the frame, substantially as described.

3. A knockdown frame comprising four like bars, each formed on one side with a tenon cut away near one end of the bar equal to the width of the bar, whereby said bars may be arranged to form a frame in which each bar overlaps the end of one adjoining bar and its tenon overlaps the tenon of the other adjoining bar in like manner in all the bars, substantially as described.

4. A knockdown frame composed of four like bars, each formed on its inner side with a T-head tenon cut away near one end of the bar and of four triangular corner-pieces having two rectangular sides provided with mortises adapted to engage the tenons of the bars, said bars being adapted to be arranged into a frame in which each bar overlaps the end of one adjoining bar and its tenon overlaps the end of the tenon of the other adjoining bar in like manner in all the bars, and the corner-pieces being adapted to engage with the tenons of two adjoining bars to unite the same into a frame, substantially as described.

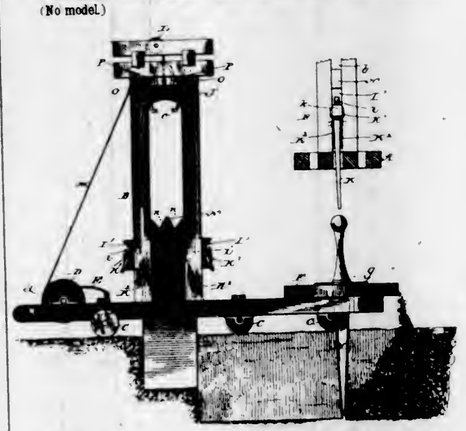
445,027. PLOW. WHEELER WATSON, Strong's Station, Miss. Filed Oct. 18, 1890. Serial No. 368,596. (No model.)



Claim.—1. The plow or cutter for the purpose herein described, said plow or cutter having the laterally and downwardly extending rods or drag-bars secured to each side of the plow-beam and carrying a transverse cutter or digger at their lower ends, substantially as described.

2. The plow or cutter having the forward and rearward laterally and downwardly extending rods or drag-bars secured to each side of the beam, said forward and rearward rods or bars being united at their lower ends and having arms adapted to bear on the ground, in combination with a transverse cutter or digger carried by said arms, substantially as described.

445,028. APPARATUS FOR STRENGTHENING DIKES. ALBERT Q. WITHERS, Victoria, Miss. Filed Sept. 5, 1890. Serial No. 364,079. (No model.)



Claim.—1. An apparatus, substantially as described, comprising the framing, the cutter, the hammer adapted to drop upon the said cutter, and automatically-detachable connections between the said hammer and cutter, such connections being constructed and arranged to automatically disengage at the end of the stroke when the hammer and cutter are dropped together, all substantially as described, whereby the cutter may be raised with the hammer and the latter be dropped with, automatically detached from, and then lifted and dropped independently of the cutter, substantially as set forth.

2. The combination of the framing, the cutter having links K', and the hammer having hooks i and inclines l', all substantially as and for the purposes set forth.

3. The combination, substantially as described, of the cutter tapering and increasing in thickness toward its upper end and provided at such end with a head and with links K', the hammer having hooks i and inclines l', and the grappling-block having grapples by which to engage the hammer, all substantially as and for the purposes set forth.

4. In an apparatus, substantially as described, the combination of the cutter provided at its upper end with a head adapted to receive the stroke of the hammer, the hammer adapted to drop upon the said headed end of the cutter, means for connecting the hammer and cutter, whereby the latter may at will be lifted with the hammer, and devices by which to elevate and release the hammer, all substantially as and for the purposes set forth.

5. An apparatus, substantially as described, comprising the framing, the cutter, and the filling-piece adapted to form a closure in the cut made by the cutter in rear of the said cutter, all substantially as set forth.

6. The improved apparatus, substantially as described, comprising the framing, the cutter, the mixing-box supported in rear of the said cutter, and the filling-piece located between the said cutter and the rear end or discharge of the box and adapted to form a closure in the cut between the said cutter and box, all substantially as and for the purposes set forth.

7. The combination of the mixing box or trough having an opening G and a guard surrounding the same, and the filling-piece fitted to the said opening, all substantially as and for the purposes set forth.

8. The apparatus for strengthening dikes, substantially as described, consisting of the framing, the cutter, the hammer, detachable connections between said hammer and cutter, devices whereby to elevate and release the said hammer, the mixing-box supported on the framing in rear of the cutter and having a central opening G and a shield *g* surrounding the same, and the filling-piece driven through the opening G and adapted to prevent the grout from passing forward to the cutter, all substantially as and for the purposes set forth.

445,029. **NUT-LOCK.** HARWIN T. BARLEY, Lebanon, Pa. Filed Apr. 10, 1890. Serial No. 347,302. (No model.)

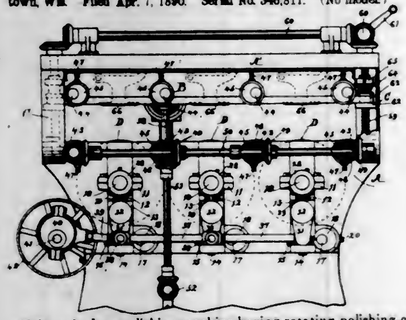


Claim.—1. A nut-lock consisting of an internally-grooved nut 2, a bolt having a longitudinally-extending opening 5 within the body thereof, and diverging apertures 6, extending from the opening, with a peak 8 at the base of said opening and forming the lower walls of the apertures, a spring-key having a shank occupying said opening, and diverging legs occupying said apertures, said legs being adapted to be spread by said peak and when disengaged by the nut to be drawn into the body of the bolt, said parts being combined substantially as described.

2. In a nut-lock, a bolt having an opening 5 extending centrally therein and the apertures 6, the latter extending through the periphery of the bolt and in communication with the said opening, thereby forming a peak 8, in combination with the spring-key 3, with diverging legs 7 and projecting head 9, said key, with its legs, being adapted to be drawn outward in said opening, substantially as described.

3. In a nut-lock, a bolt having an opening, and diverging apertures with a peak within the body thereof and a spring-key whose legs are adapted to ride on said peak so as to be spread and afterward close within said body, substantially as described.

445,030. **POLISHING-MACHINE.** AMSON P. BOARDMAN, Watertown, Wis. Filed Apr. 7, 1890. Serial No. 346,811. (No model.)



Claim.—1. In a polishing-machine having rotating polishing-cylinders, the device at each end of the cylinders for adjusting them vertically, consisting of a leg extending rigidly downwardly from each of the journal-boxes, which leg is received and guided in a part of the frame arranged therefor, a screw-threaded bolt extending rigidly downwardly from and as a continuing part of the leg, and a nut turning thereon, which nut bears movably above and below against the frame, substantially as described.

2. In a polishing-machine having rotating polishing-cylinders, the combination, with legs extending downwardly from the journal-boxes of the cylinders, which legs are provided with screw-threaded bolts, and nuts turning thereon bearing above and below against the frame, of a shaft provided with a worm meshing with teeth on the nut on the bolt aforesaid, which shaft has its bearings eccentrically in rotatable cylinders in the frame, and means for rotating the shaft, substantially as described.

3. In a polishing-machine having polishing-cylinders provided with bearings permitting endwise movement, and a ring riding on the journal of the cylinder and having rotary but not endwise movement thereon, which ring is provided with an outwardly-projecting pin, in combination with a rocking arm pivoted on the frame and provided with a diagonal slot in which the pin on the ring is received and by which it is moved as the rocking arm oscillates, and means, substantially as described, for oscillating the arm.

4. In a polishing-machine having a polishing-cylinder so journaled as to be movable endwise, and a ring riding rotatably on the journal of the cylinder and provided with a projecting pin, in combination with a rocking arm having a diagonal slot, which arm is pivoted on a hollow longitudinally-slotted pin affixed to the frame, a sliding block inserted and traveling in the hollow pivot-pin, into which block the pin on the ring enters and by which it is steadied, and means, substantially as described, for oscillating the rotating arm.

5. In a machine having transverse feed-rollers, cylindrical blocks in which the feed-rollers are journaled eccentrically, the blocks being supported rotatably in the frame and provided with means for rotating them limitedly, the blocks being adapted to adjust the feed-rollers vertically, substantially as described.

6. In a polishing-machine, a feed-roller having projecting journals, in combination with cylindrical blocks in which the journals have their bearings eccentrically, the blocks being supported rotatably in the frame, and a set-screw turning through the frame against the block for locking it in position, substantially as described.

7. In a polishing-machine having transverse polishing-cylinders in the lower or body part of the frame, and a vertically-moving frame located above the body of the frame, in combination with vertical screw-threaded adjusting-rods having rotary but not endwise movement in the frame, headed nuts having screw-threaded sleeves traveling on the adjusting-rods, the nuts being held against rotation by ways in the frame, on which nuts the vertically-moving frame is supported, and springs coiled about the sleeves of the nuts, bearing against the frame and against other nuts turning on the sleeves of the traveling nuts, substantially as described.

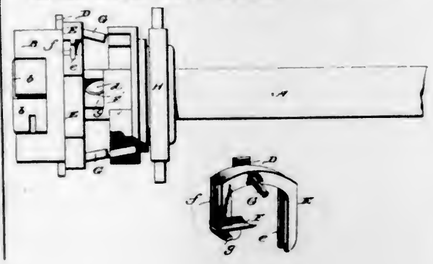
445,031. **REMOVABLE BINDING.** HERMAN G. BARLOW and JOHN R. BARLOW, Grand Rapids, Mich. Filed May 17, 1890. Serial No. 352,164. (No model.)



Claim.—1. In a removable binding, the combination of two covers C C, said covers being connected together by a flexible back, the top or front cover provided with a hinge, as I, the lower or back cover being without hinges, a block composed of leaves or sheets of paper, a socket provided with a head adapted to rest against the shoulder formed in the lower cover, and a screw adapted to pass through the top cover and engage with said socket, and thereby to bind a bundle of paper in sheets or leaves of greater or less size or thickness, as may be required, substantially as described.

2. In a removable binding, the combination of the covers, as C C, the top or front cover hinged at a point near to the binding device, the lower cover being rigid, a socket having a head, as H, adapted to rest in close proximity to the shoulder upon the lower cover, and provided also with an internal screw-thread, and a screw adapted to go through the top cover and to fit into and engage with said socket, whereby the binding can be adapted to bind a greater or less number of sheets or leaves of paper and to allow for the removal of a part or the whole of the same, substantially as and for the purpose described.

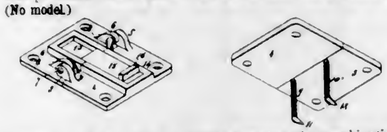
445,032. **TURNING-MACHINE.** ALBERT G. BAUMEISTER and NICHOLAS HEINS, Sandusky, Ohio. Filed Apr. 10, 1889. Renewed Dec. 23, 1890. Serial No. 375,857. (No model.)



Claim.—1. The combination of the tubular shaft having lateral apertures, the rougher-head secured to the end of said shaft and provided with diametrical grooves on its rear side, an expansion-collar having lugs engaging said grooves, provided with inclined pins on its rear side, and carrying cutters entering the lateral apertures in the tubular shaft, and a sliding sleeve mounted on the shaft and provided with inclined sockets engaging the inclined pins on the expansion-collar, as set forth.

2. The expansion-collar composed of two sections, each having two branches, one of said branches having a groove *e* in its inner side, and the other having a lug *f* on its outer side, the latter branch having a cutter-seat *g*, carrying a cutter, as set forth.

445,033. **FASTENER FOR THE MEETING-RAILS OF SASHES.** JOHN N. BEALL, Greenfield, Ill. Filed Apr. 21, 1890. Serial No. 348,757. (No model.)

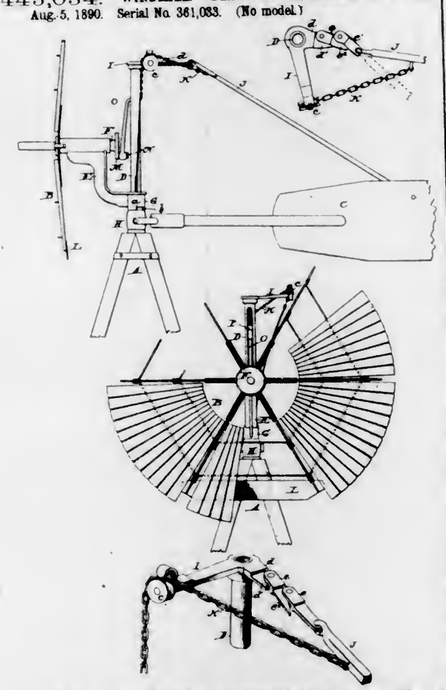


Claim.—1. In a door or window fastening, the combination of the members 3 and 4, hinged together and provided with guides, means for securing the members to the door or window frame, and a slide 15, fitting in both guides and adapted to lock both members in line together, substantially as and for the purpose set forth.

2. In a door or window fastening, the combination of the members 3 and 4, pointed pins, the inner ends of which serve to hinge said members together, and a slide 15, substantially as and for the purpose set forth.

3. In a door or window fastening, the combination of the members 3 and 4, hinged together, pointed pins united to the members, a slide 15 for rigidly connecting the members, and a spring 17, substantially as and for the purpose set forth, for holding the slide in position.

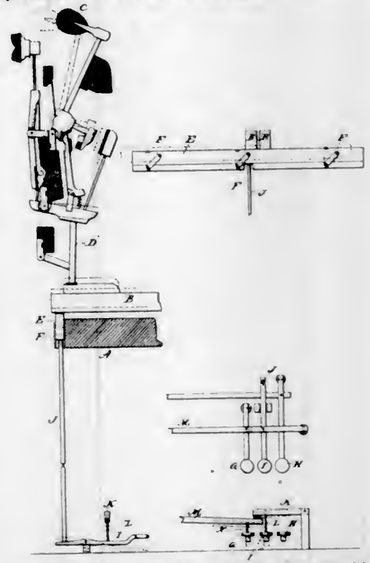
445,034. **WINDMILL.** DEMONCEY BIRD, Madison, Wis. Filed Aug. 5, 1890. Serial No. 361,033. (No model.)



Claim.—1. In a windmill, the combination of the rotatable post or standard, the wheel-frame and wheel, the vertically-movable vane, the hub to which the vane is pivoted, the arm *d*, secured to the upper end of the post, blocks *e e'*, secured to the arm, and a bar J, extending from the block *e'* to the vane.

2. In a windmill, the combination of the rotatable post, the wheel-frame and wheel, the vertically-movable vane and its hub, the arm *d*, provided with a point or extension *d'*, block *e*, pivoted to arm *d* and provided with an arm e^3, a block *e'*, pivoted to block *e*, and a bar or rod J, connected at one end with the block *e'* and at the opposite end with the vane.

445,035. **PEDAL ATTACHMENT FOR PIANOS.** RUFUS W. BLAKE, Derby, Conn., assignor to the Sterling Company, same place. Filed Sept. 29, 1890. Serial No. 366,525. (No model.)



Claim.—The combination of the parallel bar E, arranged beneath the tails of the keys and so as to move freely up and down to correspondingly raise or liberate the keys, the pedals G and I, in connection, respectively, with the lever M and the bar E, a lever K, hung to the pedal I and so as to bear upon the said lever M under the depression of the said pedal I, substantially as described.

445,036. **CIGARETTE-MACHINE.** HENRY BOHLS, San Francisco, Cal., assignor to the Bohls Cigarette Machine Company, Lynchburg, Va. Filed Apr. 21, 1890. Serial No. 348,804. (No model.)

Claim.—1. In a cigarette-machine, the combination, with a feed-belt, of mechanism to granulate the tobacco, and one or more inclined shaking trays adapted to have lateral vibrating motion substantially parallel to the direction in which the feed-belt travels and to receive the tobacco from the granulating mechanism and distribute it upon the feed-belt, substantially as described.

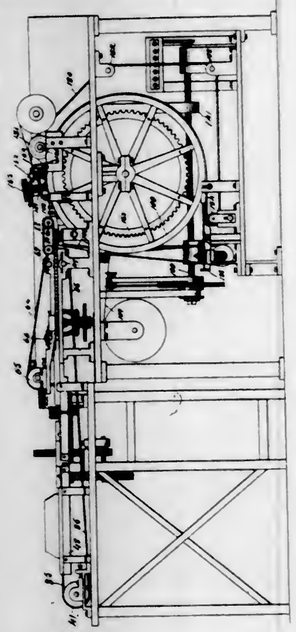
2. In a cigarette-machine, the combination, with a feed-belt, of mechanism to granulate the tobacco, a series of inclined trays adapted to have lateral vibrating motion and to receive the tobacco from the granulating mechanism, the lower tray of the series being located to distribute the tobacco upon the feed-belt, and having a movement substantially parallel to the direction in which the feed-belt travels, and a guard-plate located opposite the lower tray and over the edge of the feed-belt remote from the tray, substantially as specified.

3. In a cigarette-machine, the combination, with a feed-belt and granulating-disks to dress and separate the tobacco, of a series of inclined trays adapted to be given lateral shaking motion and to receive the tobacco from the granulators, the lower tray of the series being arranged to distribute the granulated tobacco upon the feed-belt, and having a movement substantially parallel to the direction in which the feed-belt travels, and an elevator for carrying the tobacco to the upper set of granulating-disks, substantially as described.

4. The combination, with a feed-belt of a cigarette-machine, of compressing-jaws arranged above the feed-belt and having a reciprocating movement to and from each other transversely to the direction of travel of said feed-belt, substantially as described.

5. The combination of a feed-belt of a cigarette-machine, compressing-jaws adapted to reciprocate across the belt from opposite sides,

the connecting-lever 62, the revoluble shaft 50, and an eccentric and strap carried by the shaft 50 and actuating the compressing-jaws, substantially as described.



6. In combination with a feed-belt, a series of flexible scraping-blades 42, constructed as described, and extending over the edge of the belt from opposite sides and adapted to bring the tobacco to the middle of the feed-belt, substantially as described.

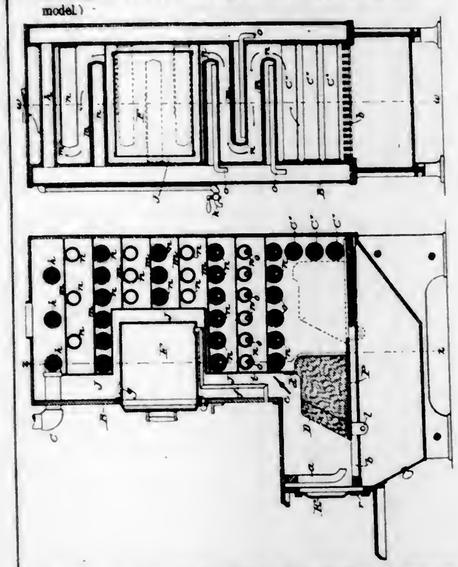
7. In a cigarette-machine, the rotating disk 116, adapted to act as a pasting-disk, in combination with a paste-supply trough having a paste-feeding wheel partially immersed and rotating in the trough, and a paste-carrying device formed of an endless cord or thread which is carried over the top of said feed-wheel and arranged to run in contact with the face of the disk, substantially as described.

8. The combination, with a rotating pasting-disk and a paste-trough, of a paste-feeding wheel partly immersed and having rotation in said trough, a cord or thread arranged to travel over the top of said feeding-wheel clear of the trough and take a charge of paste from the wheel, and guide-pulleys adapted to carry said cord or thread in working contact across the face of said pasting-disk, substantially as described.

9. In a cigarette-machine, an endless feed-belt and compressing and feeding-in belts arranged above and at the sides of the feed-belt and forming with it a filler-shaping passage, combined with a wrapper-supply reel, folding and pasting devices, a grooved carrier-wheel, belts operating therewith for continuing the movement of the continuous cigarette after it has passed the folding and pasting devices, a cutter for severing the continuous cigarette into suitable lengths, and gearing for imparting uniform movement to the feed-belt, the feeding-in and compressing belts, and the carrier-wheel and its belts, and for timing the cutter with respect to the forward movement of the continuous cigarette, substantially as set forth.

10. In a cigarette-machine, filler-forming belts, a grooved carrier-wheel, and a carrier-belt 108, adapted to travel in the groove around the greater portion of the periphery of said carrier-wheel, combined with a mouth-piece comprising an upper and a lower section, the lower section having a V-shaped recess the bottom of which is concave, and having also a groove in the bottom of said recess for the reception of the carrier-belt, and the upper section having a V-shaped end the lower surface of which is convex to fit in the recess in the lower section, a space being left between the two sections for the passage of the paper wrapper above the carrier-belt, said upper section having also a guide-way along which the filler passes onto the paper wrapper, and with folding and pasting devices located in advance of the mouth-piece, substantially as set forth.

445,037. COMBINED COOKING AND HEATING RANGE. ALBERT P. BROOMELL, York, Pa. Filed Sept. 20, 1890. Serial No. 365,588. (No model.)



Claim.—1. A combined cooking and water-heating apparatus having the rear wall of its fire-box arranged to be moved forward or back in a right line, substantially as and for the purpose set forth.

2. The combination, in a cooking and water-heating apparatus, of the rear wall of the fire-box arranged to slide forward and back, the elevated oven F, with its heat-flue J, having a damper c arranged therein, and the draft-opening *d* in the rear wall of said flue, with a damper for closing the same, substantially as shown and described.

3. In combination with the elevated oven F, one or more pipes *f*, arranged within the heat-flue and having one end opening into the oven, with the other end opening out through the front wall above the top plate of the fire-box, said oven having one or more openings *g* in its top, as set forth.

4. In combination with the adjustable brick or rear wall of the fire-box, the depending ears or lugs *l* for moving or adjusting the same, as set forth.

5. In combination, a cooking-range and a water-heater composed of hollow side walls having rows of horizontal tubes *n* connected thereto, with the baffle-plates *m*, arranged substantially as shown and described.

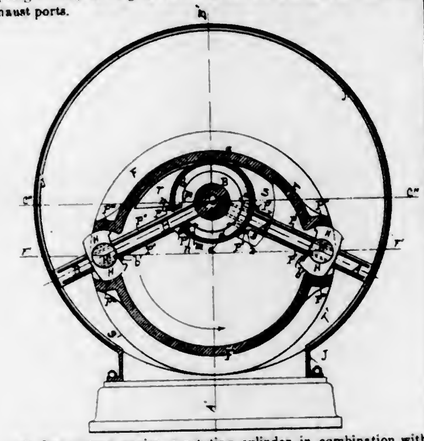
6. A water-heater for use in connection with a cook stove or range composed of side walls having water-spaces therein and a series of horizontal tubes connected thereto at one end and having their opposite ends closed, the rows of tubes projecting from one side wall being located at different heights from the rows projecting from the opposite side wall, whereby the said horizontal rows are made to overlap one another, and thereby produce a direct and continuous zigzag flue for the passage of heat and smoke, substantially as shown and described.

7. In a water-heater, the combination of the vertical water-chamber, the horizontal tubes *n*, having their free ends closed, and the circulating-tubes *o*, having their outer ends bent at an angle and placed within the tubes *n*, substantially as shown and described.

8. A sectional water-heater composed of a series of vertical tubes connected together and provided with a series of horizontally-projecting water-tubes *n*, with openings at the bottom for the admission of water and at the top for the expulsion of the same, the horizontal tubes being arranged in horizontal rows, substantially as and for the purpose set forth.

445,038. ROTARY STEAM-ENGINE. SAMUEL G. BROSIUS, Columbus, Ohio. Filed Feb. 17, 1890. Serial No. 340,828. (No model.)

Claim.—1. In a rotary steam-engine, a cylinder having one end fixed to a driving-shaft and the other end journaled upon a fixed head, in combination with pistons mounted eccentrically to said cylinder and extending through the circumference of said cylinder, and packing-rings surrounding and fixed to the hubs of said pistons, said packing ring or rings serving as an abutment between the steam inlet and exhaust ports.



2. In a rotary engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder, and packing-rings surrounding and fixed to the hubs of said pistons, said packing ring or rings serving as an abutment between the steam inlet and exhaust ports.

3. A rotary engine having a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and provided with suitable piston-guides in the circumference thereof, and packing-rings surrounding and engaging the piston-hub.

4. In a rotary engine having a rotating cylinder, the combination, with pistons mounted upon a shaft within said cylinder, of packing-rings around the hubs of said pistons, consisting of a slotted cylinder or cylinders having the ends internally beveled, and interior rings correspondingly beveled, and springs bearing against said interior rings for forcing them outward along said beveled ends, whereby the packing-rings are pushed outward as wear takes place to maintain steam-tight joints.

5. In a rotary engine having the necessary co-operating parts, the combination, with the hubs of the pistons, of packing-rings consisting of slotted cylinders having inwardly-turned flanges for holding interior rings in place, which interior rings have projections which fit in cavities in the hubs for holding the packing in place.

6. In a rotary engine having the necessary co-operating parts, the combination, with the hubs of the pistons, of packing-rings around the hubs, consisting of slotted cylinders having inwardly-turned flanges along the slot for holding interior spreading-rings in place, which interior rings are partly cut away and have inward projections at the points where cut away, which fit into cavities in the hubs of the pistons, and projections or flanges on the pistons bearing against the slotted cylinders, whereby the packing is held in place.

7. A rotary engine having a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and provided with packing around the hubs of said pistons, which packing consists of a slotted cylinder or cylinders having the ends internally beveled, rings correspondingly beveled, and springs bearing against said interior spreading-rings for forcing them outward along said beveled ends, whereby the slotted cylinders are spread out as wear takes place to keep steam-tight joints.

8. In a rotary engine, a rotating cylinder having inlet and outlet steam ports which communicate with the interior of the cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder, and packing-rings surrounding and engaging the hubs of said pistons, said packing-rings serving as an abutment between the steam inlet and exhaust ports.

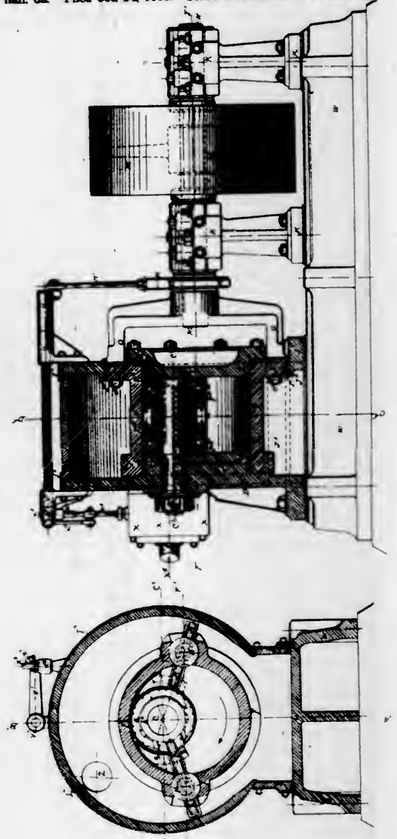
9. In a rotary engine, a rotating cylinder having inlet and outlet steam ports which communicate with the interior of the cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder, said inlet-port being provided with a suitable valve, and packing-rings surrounding and engaging the hubs of said pistons, said packing ring or rings serving as an abutment between the steam inlet and exhaust ports.

10. In a rotary engine, an outer inclosing casing and an inner rotating cylinder having inlet and exhaust ports which communicate with the interior of the cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder, and packing-rings surrounding and engaging the hubs of said pistons, said packing ring or rings serving as an abutment between the steam inlet and exhaust ports.

11. In a rotary engine, an outer inclosing casing and an inner rotating cylinder having one end fixed to a driving-shaft and the other end journaled upon a fixed head, in combination with pistons mounted upon a shaft eccentric to said cylinder and extending through the circumference of said cylinder, and packing-rings surrounding and engaging the hubs of said pistons, said packing ring or rings serving as an abutment between the steam inlet and exhaust ports.

12. In a rotary engine, a rotating cylinder having pistons mounted upon a shaft eccentric to said cylinder, in combination with guides journaled in the circumference of said cylinder and through which the pistons pass, said guides being cut away on their inner sides, so as to fit over flanges which hold the packing ring or rings around the hubs of the pistons.

445,039. ROTARY STEAM-ENGINE. SAMUEL G. BROSIUS, Savannah, Ga. Filed Oct. 24, 1890. Serial No. 369,153. (No model.)



Claim.—1. The combination, in a rotary steam-engine, of a rotating cylinder and a double crank attached to the driving-shaft and connected to the said rotating cylinder, substantially as and for the purpose set forth.

2. The combination, in a rotary steam-engine, of a rotating cylinder having flanges extending outwardly and a double crank attached to the driving-shaft and connected to the flanges on said cylinder, substantially as and for the purpose set forth.

3. The combination, in a rotary steam-engine, of a rotating cylinder having flanges extending outwardly with a double crank attached to a driving-shaft and connected to the flanges on said cylinder beyond the periphery of the removable rotating cylinder-head, substantially as and for the purpose set forth.

4. In a rotary steam-engine, the combination of a rotating cylinder having a flange to which the double crank is attached with removable caps attached to the flange to facilitate the placing of the pistons, substantially as described.

5. In a rotary steam-engine, the combination of a rotary cylinder and its pistons with a fixed head on which it is journaled at one end, said head being provided with inlet and exhaust ports, and a second fixed head at the other end provided with an annular opening in which said cylinder revolves, substantially as described.

6. In a rotary steam-engine, the combination of a rotating cylinder and its pistons with a fixed head on which it is journaled at one end, said head being provided with inlet and exhaust ports, a second head at the other end provided with an annular opening in which said cylinder revolves, and an outer casing secured between the two heads and attached to the base-plate, substantially as described.

7. In a rotary steam-engine, a steam-chest with a single port controlled by a valve which makes two cut-offs to each revolution of the cylinder by passing and repassing entirely over said port, substantially as described.

8. In a rotary steam-engine, a steam-chest with a single port controlled by a sliding valve which makes two cut-offs to each revolution of the cylinder by passing and repassing entirely over said port, substantially as described.

9. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and automatic split packing-rings surrounding the hubs of said pistons and being fixed to said hubs by guides fitting in dovetail cavities in said packing-rings, substantially as described.

10. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and automatic split packing-rings surrounding the hubs of said pistons and being fixed to said hubs by guides fitting in dovetail cavities in said packing-rings, said packing ring or rings serving as an abutment between the inlet and exhaust ports, substantially as described.

11. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and automatic split packing-rings surrounding the hubs of said pistons and consisting of a split packing-ring and two outer and two inner expansion-rings, substantially as described.

12. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and a packing surrounding the hubs of said pistons, consisting of a split packing-ring and two outer expansion-rings having annular cavities for the reception of inner expansion-rings, whereby the split packing-ring is packed steam-tight against the inner periphery of the rotating cylinder, substantially as described.

13. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and a packing surrounding the hubs of said pistons, consisting of a split packing-ring and two outer expansion-rings having annular cavities for the reception of inner expansion-rings, said packing-ring having wedges on its inner periphery bearing against the outer beveled periphery of the two outer expansion-rings, whereby said packing-ring is expanded by the movement of the expansion-rings along and against the said wedges of the packing-ring, substantially as described.

14. In a rotary steam-engine, the combination of a rotating cylinder with the hubs of the eccentric-pistons, said hubs being provided with dovetail guides and inner and outer expansion-rings, said rings provided with cavities into which said guides fit, whereby said inner expansion-rings are held in contact with and around the said hubs, but permitting lateral movement, substantially as described.

15. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and packing-rings surrounding the hubs of said pistons and consisting of a split packing-ring and two outer expansion-rings having annular cavities into which fit the inner expansion-rings, said outer expansion-rings being held to said inner expansion-rings by bolts firmly fixed thereto and whose heads are countersunk in the outer ring sufficiently deep to prevent protrusion when the rings are compressed together, and springs in said cavities to hold said rings apart, whereby the outer ring can decrease but not increase its distance from the inner ring, so as to hold the packing-ring against the inner periphery of the rotating cylinder and to allow it to adjust itself to any inequalities in said periphery, whether due to wear or disalignment of the engine in any of its parts, substantially as described.

16. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and packing-rings surrounding the hubs of said pistons and consisting of a split packing-ring and two outer expansion-rings having annular cavities into which fit inner expansion-rings, said outer expansion-rings having flanges or lugs at each end turned inwardly and abutting against the ends of the inner expansion-rings, substantially as described.

17. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and packing-rings surrounding the hubs of said pistons and consisting of a split packing-ring and two outer expansion-rings having annular cavities into which fit inner expansion-rings, said packing-rings having flanges or lugs turned inwardly at each end and abutting against the ends of said outer expansion-rings, substantially as described.

18. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and packing-rings surrounding the hubs of said pistons, consisting of a split packing-ring with flanges on the ends turned inwardly and wedges on the inner periphery thereof and two outer expansion-rings on their outer periphery beveled to correspond to the wedges of the packing-ring, with flanges or lugs turned inwardly and abutting against the ends of the inner expansion-ring, which is held in the annular cavity in the outer expansion-ring, the said flanges of the packing-ring and the outer expansion-ring correspondingly beveled to each other, so that the sum of the bevels of the flanges on the outer expansion-rings and the packing-ring shall be to the bevel on the periphery of the outer expansion-rings, which correspond to the wedges of the packing-ring, as the circumference of a circle is to its diameter, thereby allowing for the expansion of the packing-ring to be adjusted on said flanges, substantially as described.

19. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder and packing-rings surrounding the hubs of said pistons and consisting of a split packing-ring and two outer expansion-rings having cavities into which fit the inner expansion-rings, said packing-rings having in their sides cavities to receive the cut rings for the purpose of packing the split packing-rings against each other and against the heads of the rotating cylinder, substantially as described.

20. In a rotary steam-engine, a rotating cylinder, in combination with two pistons mounted upon a shaft eccentric to said cylinder, one piston having two hubs and the other piston one hub which fits in and against the two outer hubs, thereby avoiding any tendency of the piston to twist, each hub being provided with one set of automatic packing secured by guides projecting therefrom, substantially as described.

21. In a rotary steam-engine, a rotating cylinder, in combination with pistons mounted upon a shaft eccentric to said cylinder, said pistons consisting of a flanged ring and a hub or hubs to which it is firmly secured by a key and by bolts passing through said flanges and fastened in said hub or hubs, said flanges having packing-strips in their face next to the ends of the split packing-rings, substantially as described.

22. In a rotary steam-engine, a rotating cylinder and pistons mounted upon a shaft eccentric to said cylinder and passing through the circumference of the cylinder, in combination with guides through which the pistons pass, having at one end a reduced portion and journaled in said rotating cylinder, so as to facilitate placing said guides in position, substantially as described.

23. In a rotary steam-engine, a rotating cylinder and pistons mounted upon a shaft eccentric to said cylinder and having the inlet and exhaust steam ports so located as to exhaust the steam when the area of back-pressure on the following piston is nearly or just equal to the area of steam-pressure on the leading piston, thereby balancing or nearly balancing the following piston through that portion of the stroke in which the travel and consequent friction through the guides of the following piston is greatest, thereby reducing the friction, substantially as set forth.

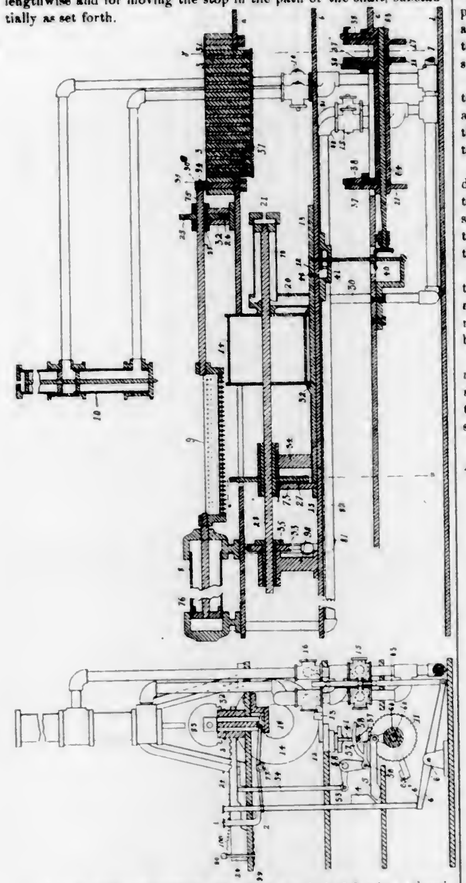
24. In a rotary steam-engine, a rotating cylinder and pistons mounted upon a shaft eccentric to the cylinder and having a packing around the hub of said pistons, which acts as an abutment between the inlet and exhaust steam ports, which ports are so located as to exhaust the steam when the area of back-pressure on the following piston is nearly or just equal to the area of steam-pressure on the leading piston, thereby balancing or nearly balancing the following piston through that portion of the stroke in which the travel and consequent friction through the guides of the following piston is greatest, thereby reducing the friction, substantially as set forth.

25. In a rotary steam-engine, a rotating cylinder and a fixed outer casing, in combination with pistons mounted eccentric to said cylinder, said pistons provided with packing within said rotating cylinder and so constructed as to be out of contact with said outer casing, thereby preventing the use of steam under pressure in said outer casing, substantially as described.

26. In a rotary steam-engine, a rotating cylinder having one head fixed and the other revolving with it and an outer casing with both heads fixed in combination with pistons mounted eccentric to and passing through cylindrical guides journaled in the sides of said rotating cylinder and being packed against the inner periphery, the heads, and in the cylindrical guides of said rotating cylinder, said pistons provided with packing within said rotating cylinder and so constructed as to be out of contact with said outer casing, thereby preventing the use of steam under pressure in said outer casing, substantially as described.

445,040. MATRIX-MAKING MACHINE. GEORGE CALDER, Jr., Lancaster, Pa., assignor to Mary H. Calder, same place. Filed Apr. 14, 1890. Serial No. 347,854. (No model.)

Claim.—1. In a matrix-impressing machine, the type-carrier provided with a shaft having on its free end an elastic cushion or bumper, in combination with a stop and with means for moving the carrier lengthwise and for moving the stop in the path of the shaft, substantially as set forth.



2. In a matrix-impressing machine, a matrix-bed fixed to a longitudinally-movable shaft having a piston on its end, a cylinder in which said piston moves, an inlet for compressed air, devices for moving the matrix-bed and the piston against the air-pressure, and a tripping device whereby when the devices for moving the bed are tripped the bed is returned to its initial position by the air-pressure on the piston, substantially as set forth.

3. In a matrix-impressing machine, the matrix-bed fixed to a shaft, a ratchet-wheel, and a pulley, the wheels and pulley being keyed to the shaft, a weight on the pulley to keep the key always in contact with its seat on the same side thereof, and mechanism for moving the bed lengthwise and for producing lines in the matrix, substantially as set forth.

4. In a matrix-impressing machine, the matrix-bed fixed on a shaft, the rack provided with projections embracing the bed and with a cam or incline, devices for moving the rack, a ratchet-wheel keyed to the shaft, a pawl for driving the wheel, having an arm arranged in the path of the cam-face on the rack, and devices for moving the cam against the arm, whereby the matrix-bed is moved lengthwise and thereby partially rotated, substantially as set forth.

5. In a matrix-impressing machine, the matrix-bed fixed on a shaft, the rack provided with projections embracing the bed and with a cam or incline, devices for moving the rack, a ratchet-wheel keyed to the shaft, a pawl for driving the wheel, having an arm arranged in the path of the cam-face on the rack, and devices for moving the cam against the arm, whereby the matrix-bed is moved lengthwise and thereby partially rotated, and an adjustable stop to vary the throw of the pawl-arm and the rotation of the bed, substantially as set forth.

6. In a matrix-impressing machine, a key-rod provided with a cam, a sliding plate movable by the cam, a ratchet-wheel to drive the matrix-bed-moving mechanism, a weighted pawl-arm loose on the shaft of the ratchet-wheel and connected to the sliding plate, a pawl pivoted to said arm, a swing-stop, the weight of the pawl-arm being arranged to keep the stop against the arm, and devices for adjusting the stop-arm and slide to vary the effect of the cam on the slide, substantially as set forth.

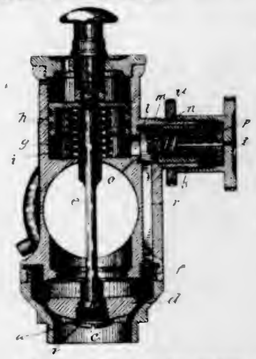
7. In a matrix-impressing machine, the swinging stop pivoted to the bell-crank, the bell-crank, the rod pivoted thereto, and the movable bar having depressions of varying depths, in combination with the driving-pawl, ratchet, intermediate gears, and matrix-bed, substantially as set forth.

8. In a matrix-impressing machine, the movable rack-bar having depressions of varying depths, the gear-wheel keyed to the shaft of the type-carrier, the vertical rod, bell-crank, stop, pawl, pawl-arm, sliding plate, and key-rod, all in combination, whereby the rack that turns the type-carrier also adjusts the length of movement of the rack that transmits motion to the matrix-bed, substantially as set forth.

9. In a matrix-impressing machine, a key-board, a hammer, a type-carrier provided with series of type, a matrix-bed, mechanism for moving the carrier and mechanism for moving the bed, and a bar that moves the carrier and also adjusts the extent of the movement of the bed under the influence of the rod, substantially as set forth.

10. In a matrix-impressing machine, the combination of the key-rods and intermediate mechanism with gears made interchangeable and with the matrix-cylinder, whereby the extent of the movement in the direction of the line of the latter may be varied, substantially as set forth.

445,041. RELIEF-VALVE. CORNELIUS CALLAHAN, Boston, Mass., assignor to the Cornelius Callahan Company, same place. Filed Oct. 9, 1890. Serial No. 367,521. (No model.)



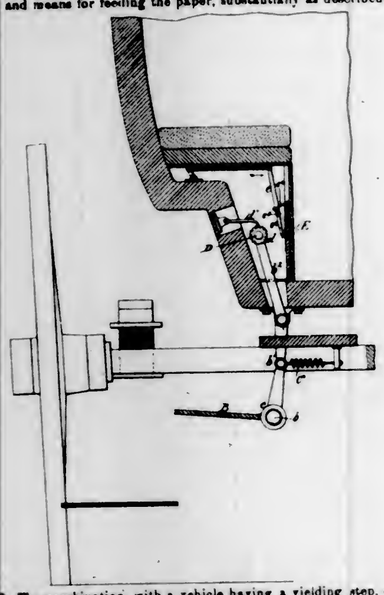
Claim.—1. A relief-valve for gravity and increased water pressure, consisting of the valve-casing provided with an outlet-port *c* and valve-chamber *i*, a valve *h* in said chamber, ports *j j*, leading from the casing-chamber to the valve-chamber *i*, a valve *d* to close the outlet-port *c*, a valve-stem connecting the two valves *d h*, the face of the valve *h* being of greater area than the face of the valve *d*, the valve-chamber *l*, the spring-pressed valve *n* to close the port leading from the valve-chamber *i* to the valve-chamber *l*, and a port or passage *r*, communicating between the valve-chamber *l* and the outlet-port *c*, as set forth.

2. A relief-valve for gravity and increased water pressure, consisting of the casing *a*, provided with the outlet-port *c* and valve-chamber *i*, a valve *h* in said valve-chamber, ports *j j*, leading from the interior of the casing to the valve-chamber *i*, a valve to close the outlet-port, a valve-stem connecting the two valves *d* and *h*, the face of the latter valve being of greater area than the face of valve *d*, the valve-chamber *l*, the valve *n* to close the port leading from the valve-chamber *i* to the valve-chamber *l*, a spring to press the valve *n* upon its seat, a screw-cap for adjusting the tension with which the said spring may bear upon the valve *n*, and a port *r*, leading from the chamber *l* to the outlet-port *c*, as set forth.

445,042. APPARATUS FOR RECORDING FARES BY OMNIBUSES, &c. ARTHUR CARRARA, Governor Lane, Gibraltar. Filed Apr. 10, 1890. Serial No. 347,332. (No model.) Patented in England June 12, 1889, No. 9,720; in France Mar. 5, 1890, No. 204,173, and in Belgium Mar. 5, 1890, No. 89,724.

Claim.—1. The combination, with a vehicle, of a yielding step, a shaft supporting the step and having a lever, a swinging frame actu-

ated by the lever when the step is depressed, a traveling marker carried by the swinging frame for marking or recording on a sheet of paper, and means for feeding the paper, substantially as described.



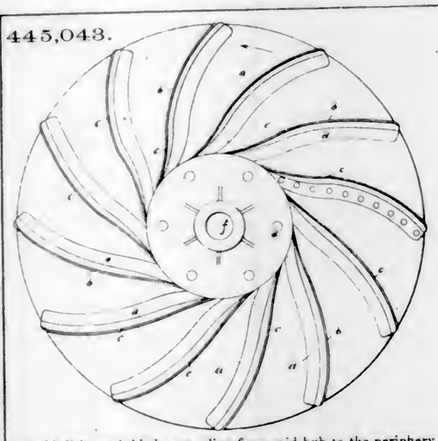
3. The combination, with a vehicle having a yielding step, of a swinging frame actuated by the movement of the step, a rotating screw mounted in the swinging frame and carrying a nut having a marker to mark or record on a sheet of paper, and means for feeding the paper, substantially as described.

3. The combination, with a vehicle having a yielding step, of a shaft supporting the step and having a lever, a swinging frame connected with the lever and actuated thereby when the step is depressed, a rotating screw mounted in the swinging frame, a traveling nut engaged with the screw and having a marker to mark or indicate on a sheet of paper, and means for feeding the paper, substantially as described.

4. The combination, with a vehicle having yielding steps for the entrance and exit of passengers, of independent swinging frames connected with and swung by the steps when depressed, a rotating screw mounted in each frame and carrying a traveling nut which is provided with a marker to mark or record on a sheet of paper, and means for feeding the paper, substantially as described.

5. The combination, with a vehicle having yielding steps for the entrance and exit of passengers, of independent swinging frames connected with and swung by the steps when depressed, a rotating screw mounted in each frame and carrying a traveling nut having a marker to mark or record on a sheet of paper, a paper-roller, and mechanism actuated by a wheel of the vehicle for rotating the paper-roller to automatically feed the paper, substantially as described.

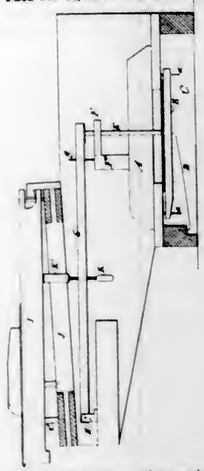
445,043.



of said disk, each blade extending from said hub to the periphery of the disk and having its outer edge set in advance of the general plane of its acting face, said working-face being concave near the hub and convex near the periphery of the disk.

2. A centrifugal fan having blades extending outward from a common center, the acting face of each blade being inclined transversely and forwardly and longitudinally concaved near its root and longitudinally convexed at its outer portion, substantially as described.

445,044. ORGAN. JOSEPH H. CHASE and JAMES B. TRACY, Meriden, Conn., assignors to the Aeolian Organ and Music Company, New York, N. Y. Filed Oct. 14, 1889. Serial No. 327,039. (No model.)

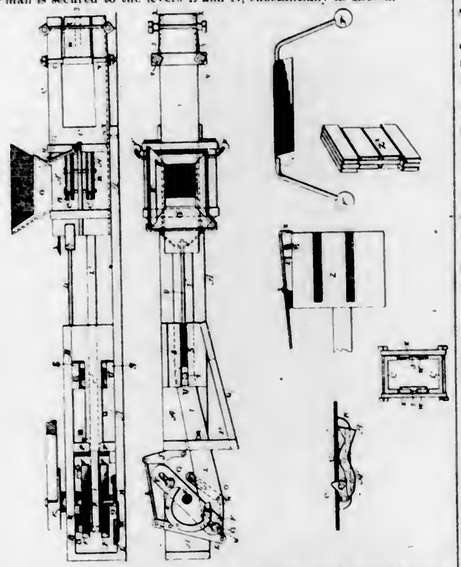


Claim.—1. In an organ-action, the combination, with a reed-board, of valves, levers G, pins at the end of said levers extending to the valves near their center, springs engaging with the valves in line with the pins, keys above and forward of the valves, and adjusting-screws between the levers and keys, accessible below the key-board in front of the valves, substantially as specified.

2. In an organ-action, the combination of the narrow cheek projections, the wind-chest below and in the rear of the cheek projections, the keys above said cheek projections, reed-valves below the keys, and connections between the keys and valves, consisting of levers G, pins E, and buttons or screws attached to the levers and accessible from the front below the keys, substantially as specified.

445,045. BALING-PRESS. MINOR S. COLEMAN, Cañon City, Colo. Filed Apr. 30, 1890. Serial No. 350,077. (No model.)

Claim.—1. The combination of the operating-shaft to which the power is applied, the slotted arms projecting from the shaft, the pins placed in the slots, the jointed pitman, the levers J, L, and N, the connecting-rods K M, and the pin O, by which the front end of the pitman is secured to the levers L and N, substantially as shown.

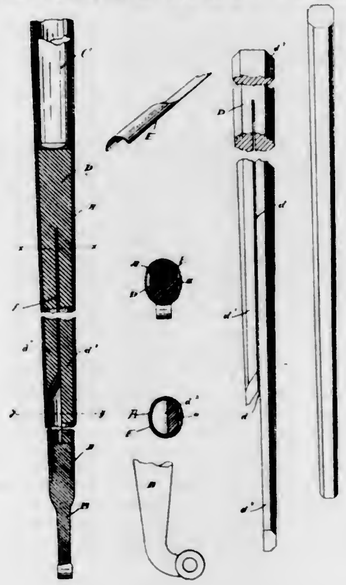


2. In a press, a baling-chamber, a power-frame, a plunger, a sliding bar, a pitman pivoted to the bar, a mechanism for reciprocating the pitman, guides secured to the power-frame and extending laterally therefrom above and below the pitman, a brace secured to the outer ends, and a stop upon the pitman which engages the inner sides of the guides, combined substantially as specified.

3. In a baling-press, a baling-chamber having its top and bottom separated and adapted to be drawn together, clamping-rods for contracting the parts, tension-doors hinged upon the rods, and a clamping-yoke surrounding the doors between their ends for regulating the tension, substantially as specified

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445,046. BOW-SOCKET FOR BUGGY-TOPS. JAMES C. COSS, Mansfield, Ohio. Filed May 10, 1890. Serial No. 351,214. (No model.)



Claim.—1. In a bow-socket, the tube and filler and a plate having its upper end in the filler and its lower end bent outward and curved, substantially as described.

2. In a bow-socket, a strengthening-plate having its lower end curved in cross-section and secured upon the outside of the slat-iron, an outside tube, and a wood filler having stems of different lengths adapted to said strengthening-plate, substantially as described.

3. In a bow-socket, a wood filler having beveled edges and flat sides and stems of varying lengths, and a strengthening-plate having a flat portion resting between said stems and a curved portion attached to the slat-iron, and a tube inclosing the said filler and plate, substantially as described.

4. In a bow-socket, an outside tube and a strengthening-plate rigid with the spindle of the slat-iron and curved therewith at its lower end, in combination with a filler having a central slit inclosing the flat upper portion of said plate, substantially as described.

5. In a bow-socket, the combination of the tube A, the slotted filler D, and the plate E, bent and curved at its lower end, substantially as described.

445,047. PULLEY. GEORGE C. COWLES, Saginaw, Mich., assignor of one-half to Edward Germain, same place. Filed June 14, 1890. Serial No. 355,446. (No model.)



Claim.—1. In a pulley, the combination, with the web, of the removable section extending from the center out through the rim, said removable section being secured to the main portion by a bolt rigidly engaged to the removable section and extending through the web to the opposite side, where it is suitably engaged, substantially as described.

2. In a pulley, the combination, with the web and a removable section extending from the center out through the periphery, of a U-bolt having its closed end passed through said removable section and its free ends extended through the main portion of the web to a point adjacent to the rim of the pulley, where it is suitably engaged to the web, substantially as described.

3. In a pulley, the combination, with the web and the removable section extending from the center out through the rim, of a suitable U-bolt having its closed end passed through an orifice in said removable section and its free ends extending through the main portion of the web to a point adjacent to the rim, where they are engaged by suitable nuts, and the suitable covering-block E, adapted to fill the opening in the rim, and suitable means for engaging said block to the web, substantially as described.

4. In a pulley, the combination, with the removable web and the clamping-bolt, of the main web, against which the clamping-bolt bears the grain of said web being parallel with the length of the bolt, substantially as described.

445,048. FRUIT-TREE PROTECTOR. DAVID CRIPPS, near Iuka Ill. Filed Sept. 17, 1890. Serial No. 365,203. (No model.)



Claim.—A fruit-tree protector consisting of a sheet of suitable material coiled longitudinally around the tree, and spiral springs placed upon the outer surface of the paper between its upper and lower ends for yieldingly holding the paper in contact with the tree, substantially as shown and described.

445,049. HAMMOCK. JAMES J. DICKS, Toronto, Canada. Filed July 2, 1890. Serial No. 357,504. (No model.)

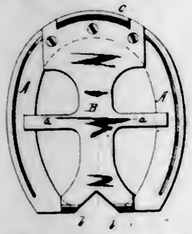
Claim.—1. A stretcher A, provided with hooks *a* to engage with the hammock B, and a plate C, pivoted on the said stretcher, in com-

bination with a sunshade or hood D, pivoted on the stretcher, substantially as and for the purpose specified.



2. A stretcher A, provided with hooks *a* to engage with the hammock B, hooks *b*, to which a pillow may be connected, and a plate C, pivoted on the said stretcher, in combination with a sunshade or hood D, pivoted on the stretcher A and provided with tapes or cords E, connected to the hammock, substantially as and for the purpose specified.

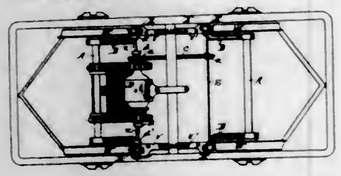
445,050. HOOF-PAD. JOSEPH T. DUCK, Geneva, N. Y. Filed July 31, 1890. Serial No. 360,580. (No model.)



Claim.—1. The combination, with the shoe and the lips projecting inwardly from the rear ends thereof, of a pad secured to the front end thereof and engaging with said lips when the pad is under pressure, and lateral arms upon the pad, arching outward and having their free ends in contact with the lower face of the shoe.

2. The combination, with the shoe and the lips projecting inwardly from the rear ends thereof, of a pad secured to the front end thereof and engaging with said lips when the pad is under pressure, and lateral arms upon the pad, arching outward, with their free ends in contact with the lower face of the shoe, and shoulders upon the arms engaging with the inner edges of the shoe when pressure is applied to the pad.

445,051. ELECTRIC-MOTOR TRUCK. ROYAL P. FARIM, Wichita, Kans. Filed Sept. 23, 1890. Serial No. 365,876. (No model.)

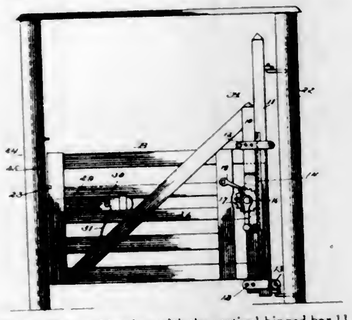


Claim.—1. The combination, in an electric-motor truck, with the armature-shaft of the electric motor and the traveling wheels of the truck, of the friction wheels or rolls yieldingly held in contact with the truck-wheels and flexibly connected with and arranged to be driven by the said armature-shaft, substantially as and for the purpose set forth.

2. The combination, in an electric-motor truck, with the armature-shaft of the electric motor and the traveling wheels of the truck, of the friction-wheels R, having the shafts J and supported by means of sliding heads in such manner as to yieldingly bear against the traveling wheels of the truck from the influence of springs, and the universal couplings and intermediate shafts for connecting said friction-wheels and armature-shaft, substantially as and for the purpose set forth.

3. The combination, in an electric-motor truck, with the armature-shaft of the electric motor and the traveling wheels of the truck, of the friction wheels or rolls supported by means of the sliding heads and given yielding pressure against the traveling wheels by means of springs bearing against said heads, the couplings *d d'* and shafts Y, Z for connecting the friction wheels or rolls in line with the armature-shaft with said shaft, and the sprocket-wheels *a a'*, the chain c, and shaft S for connecting the opposite wheels or rolls with said armature-shaft, in the manner substantially as and for the purpose set forth.

445,052. GATE. JAMES W. FISHER, Palouse, Wash., assignor of one-half to Elbert W. Jones and Ernest A. Jones, both of same place. Filed Apr. 25, 1890. Serial No. 349,477. (No model.)



Claim.—The combination, with the vertical hinged bar 11, having a rack 16 on its inner face, of the vertically-sliding gate having a vertical bar 10 at its inner end provided with straps 12, embracing the bar 11, and provided with rollers 13, traveling on the face of the said bar opposite its rack, a transverse shaft 16, journaled in bar 10 and provided with an operating handle and gear 17, meshing into the rack-teeth, and a pawl mounted on the gate and engaging said gear, substantially as set forth.

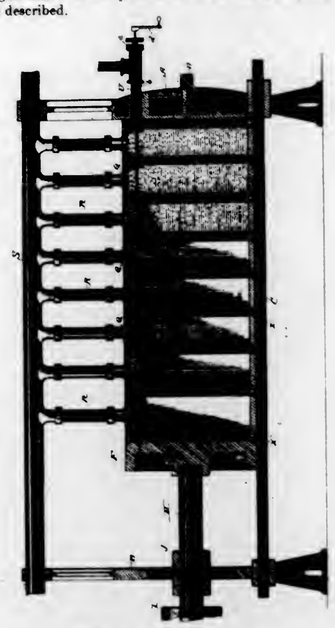
445,053. FILTER-PRESS. RUDOLPH GIEBERMANN, Chicago, Ill., assignor of one-half to the Bouton Foundry Company, same place. Filed May 17, 1890. Serial No. 352,254. (No model.)

Claim.—1. In a filter-press, the combination, with a series of filter-plates provided with perforations in the top bar thereof, of a series of distance-frames interposed between and alternating with said plates, the upper bars of which are provided with perforations opening into the interior of said frames and registering with the perforations of said plates, and a feed-pipe registering with the perforation in the end filter-plate, substantially as described.

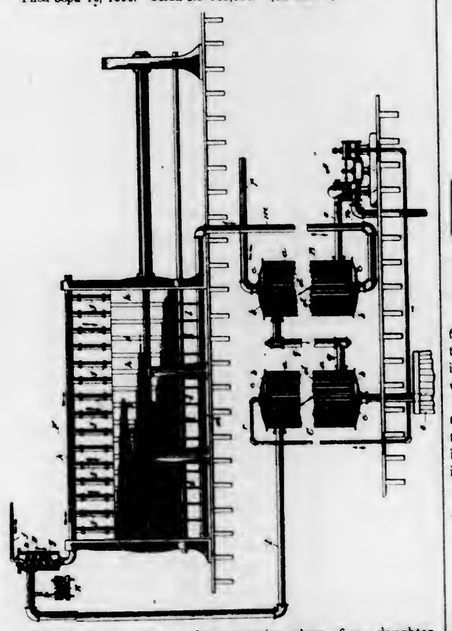
2. In a filter-press, the combination, with a series of filter-plates provided with perforations in the top bar thereof, of a series of distance-frames interposed between and alternating with said plates, the upper bars of which are provided with perforations opening into the interior of said frames and registering with the perforations of said filter-plates, a feed-pipe registering with the perforations in the end filter-plate, and a stirrer working through said feed-pipe and the perforations in said plates and frames, substantially as described.

3. In a filter-press, the combination, with a series of filter-plates the top bar of each of which is perforated at the center of length thereof, of a series of distance-frames alternating with said plates, the top bar of each of which at the center of length is provided with vertical and horizontal perforations opening into the interior of said frames, the latter registering with the perforations in said plates, feed-pipes leading to each of said vertical perforations, and a supplemental

feed-pipe registering with the perforation in the end filter-plate, substantially as described.



445,054. APPARATUS FOR SEPARATING GLUTEN FROM SLAUGHTER-HOUSE WASHINGS. RUDOLPH GIEBERMANN, Chicago, Ill., assignor of one-half to the Bouton Foundry Company, same place. Filed Sept. 16, 1890. Serial No. 365,161. (No model.)

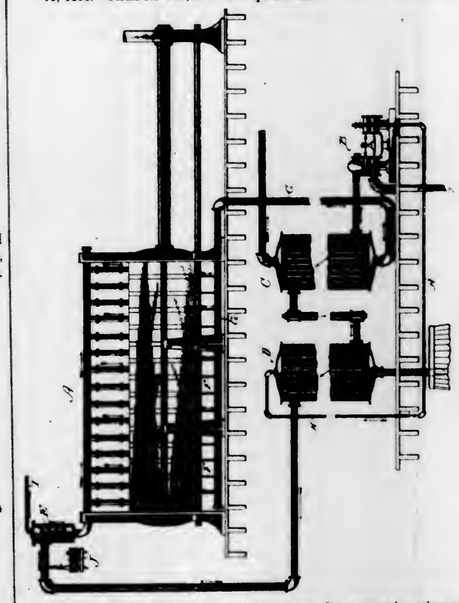


Claim.—1. An apparatus for separating gluten from slaughter-house washings, comprising a pair of heaters connected together for heating the washings to different temperatures, a precipitator connected with one of said heaters, a pump for injecting chemicals into the pipe connecting said heater and precipitator, a filter-press connected with said precipitator, and a force-pump for forcing the washings through all of said apparatus, substantially as and for the purpose described.

2. An apparatus for separating gluten from slaughter-house washings, comprising a force-pump, a filter-press, a pair of heaters, and a precipitator, said heaters being connected together and connected, respectively, with the pump and precipitator, one being heated by the filtered water from the filter-press and the other by exhaust-steam from the pump, and a pump for injecting chemicals into the pipe connecting one of said heaters with the precipitator, substantially as described.

3. An apparatus for separating gluten from slaughter-house washings, comprising a force-pump, a filter-press, a precipitator connected with said press, a live-steam injector therefor, a pair of heaters connected together and respectively connected with the force-pump and precipitator, one of said heaters being heated by the filtered water from the press and the other by exhaust-steam from the force-pump, and a pump for injecting chemicals into the pipe connecting one of said heaters and the injector, substantially as described.

445,055. PROCESS OF SEPARATING GLUTEN FROM SLAUGHTER-HOUSE WASHINGS. RUDOLPH GIEBERMANN, Chicago, Ill., assignor of one-half to the Bouton Foundry Company, same place. Filed Sept. 16, 1890. Serial No. 365,162. (No specimens.)



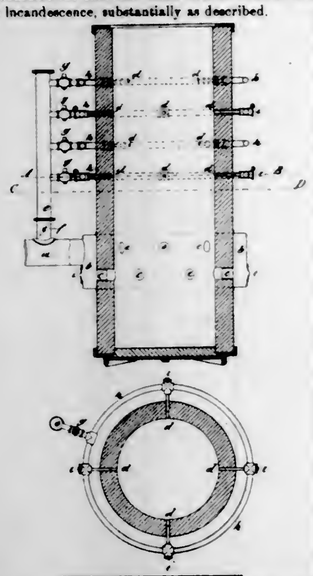
Claim.—1. The herein-described process for separating gluten from slaughter-house washings, the same consisting in first raising the temperature of the washings to the desired degree, then introducing into the washings an alumina compound, and afterward passing the washings through a filter, substantially as described.

2. The herein-described process for separating gluten from slaughter-house washings, the same consisting in first gradually raising the temperature of the washings to the desired degree, then introducing into the washings an alumina compound, and finally passing the washings through a filter, substantially as described.

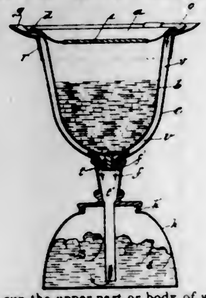
445,056. PROCESS OF MELTING METAL. ARTHUR GRÜNER, Chisnovoda, Austria-Hungary. Filed Oct. 15, 1885. Serial No. 180,029. (No model.) Patented in Germany Mar. 28, 1885, No. 33,212; in France May 20, 1885, No. 169,043; in Belgium May 20, 1885, No. 68,950, and in England June 6, 1885, No. 6,939.

Claim.—The within-described process of melting iron with coke fuel in cupolas, which consists in applying air in a number of small currents in an ascending series throughout and confined to the neutral zone in cupola-furnaces to the combustible gases therein during the process of melting at a pressure less than that at the lower tuyeres, preferably in the proportion of two below to one above, and regulat-

ing the same during the process, so that the pressure and quantity of the air applied to the different parts of the neutral zone shall be adapted to consume the carbonic oxide therein without heating the solid fuel to incandescence, substantially as described.



445,057. DRINKING-CUP. ALEXANDER HARROUN, near Syracuse, N. Y. Filed June 6, 1889. Serial No. 313,268. (No model.)



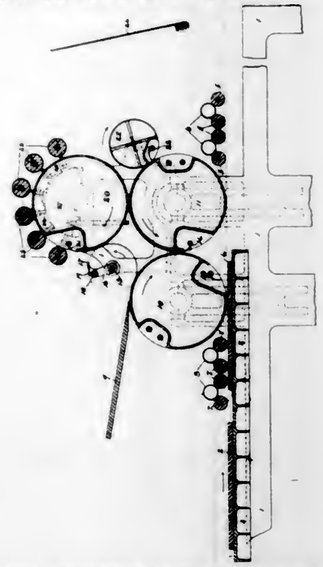
Claim.—1. A cup the upper part or body of which is formed of two cups *c* and *b*, one surrounding the other, with the space *v* between them, the outside cup having a rim at or near the top extending outward and upward and having the opening *t* at the bottom, the upper edge of the inside cup being so expanded as to extend over a part of the rim upon the outside cup, and the whole connected with and supported by the base and receptacle *h*.

2. A cup the upper part or body of which is formed of two cups *c* and *b*, one surrounding the other, with the space *v* between them, the outside cup having a rim at or near the top extending outward and upward and having the opening *t* at the bottom, the upper edge of the inside cup being so expanded as to extend over a part of the rim upon the outside cup, the inside cup having a lid with the space *o* between the lid and the member of the cup to which it belongs, and the whole connected with and supported by the base and receptacle *h*.

3. A cup the upper part or body of which is formed of two cups *c* and *b*, one surrounding the other, with the space *v* between them, the outside cup having a rim at or near the top extending outward and upward and having the opening *t* at the bottom, the upper edge of the inside cup being so expanded as to extend over a part of the rim upon the outside cup, and below the body of the cup the receptacle *h*, with the pipe *t'* as a medium for conducting fluids into it.

4. A cup the upper part or body of which is formed of two cups *c* and *b*, with the space *v* between them, one cup surrounding the other, the outside cup having a rim at or near the top extending outward and upward and having the opening *t* at the bottom, the movable band *r*, connected with the arm *g*, the upper edge of the inside cup being so expanded as to extend over a part of the rim upon the outside cup, and the whole connected with and supported by the base and receptacle *h*, as set forth, and for the purpose described.

445,058. PERFECTING PRINTING-MACHINE HAVING MEANS FOR PREVENTING OFFSET. JOHN T. HAWKINS, Taunton, Mass. Filed Mar. 28, 1889. Serial No. 305,191. (No model.)

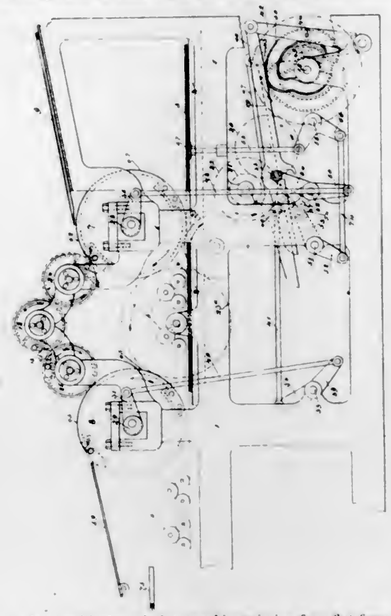


Claim.—In a perfecting printing-machine printing from flat forms, as 3 and 4, in combination with two impression-cylinders, as 10 and 11, carrying grippers, as 13 and 14, a sheet-conveyer, as 16, carrying grippers, as 19, a reversing-cylinder, as 20, carrying grippers, as 21, placed and timed in the machine so as to receive the sheets printed on their first sides on their passage from the first to the second impression-cylinder without contact of their first-printed sides with said sheet-conveyer and with their said sides exposed upon said reversing-cylinder, and an ink-offset apparatus applied to the first-printed sides of the sheets for the purpose of removing surplus ink therefrom during their passage upon said transfer-cylinder, whereby superfluous ink is removed from the freshly-printed first sides of the sheets and offset upon the second impression-cylinder prevented, substantially as set forth.

445,059. MULTICOLOR-PRINTING MACHINE. JOHN T. HAWKINS, Taunton, Mass. Filed Feb. 13, 1890. Serial No. 340,254. (No model.)

Claim.—1. In a multicolor-printing machine, in combination with a plurality of reciprocating forms, as 3 and 4, and a corresponding number of continuously-revolving impression-cylinders, as 7 and 8, each making two revolutions to one impression and carrying grippers, as 10 and 11, means for transferring the sheet from one impression-cylinder to the next succeeding impression-cylinder and timing the sheet to meet the successive forms, consisting of three successive intervening transfer-cylinders, as 24 12 25, each carrying grippers, as 60 13 61, geared by spur-gears on their respective axes and on the axes of the said impression-cylinders in a train from one impression-cylinder to the next succeeding impression-cylinder and so adjusted and timed that the respective grippers shall coact to transfer the sheet from one to the next succeeding impression-cylinder in proper time to meet the succeeding forms, substantially as and for the purposes set forth.

2. In a multicolor-printing machine, the combination of the following-named elements: a reciprocating bed, as 2, carrying a plurality of forms, as 3 and 4, a corresponding number of continuously-revolving impression-cylinders, as 7 and 8, each making two revolutions to one impression and carrying grippers, as 10 and 11, placed at sufficient distance apart to admit of an inking apparatus being placed between any two impression-cylinders, and for any two impression-cylinders means for transferring the sheet from one impression-cylinder to the succeeding impression-cylinder and timing the sheet to meet the corresponding form, consisting of three successive intervening transfer-cylinders, as 24 12 25, each carrying grippers, as 60 13 61, geared by spur-gears on their respective axes and on the axes of the said impression-cylinders in a train from one impression-cylinder to the next succeeding impression-cylinder and so adjusted and timed that their respective grippers shall coact to transfer the sheet from one impression-cylinder to the next succeeding impression-cylinder in proper time to meet the succeeding form, a feed-board, as 9, leading to the first impression-cylinder, and a fly, as 59, to receive the sheet from the last impression-cylinder, substantially as and for the purposes set forth.



3. In a multicolor-printing machine printing from flat forms, the combination of the following-named elements: two or more forms, as 3 and 4, mounted on a reciprocating bed, as 2, a corresponding number of continuously-revolving impression-cylinders, one for each form, each making two revolutions to one impression and placed so as to permit of a set of inking form-rollers between every two impression-cylinders, a corresponding number of sets of form-inking rollers, as 5 and 6, each placed upon the same side of its respective impression-cylinder, and a sheet-transfer apparatus, substantially as described, for each impression-cylinder less one, whereby sheets fed to the first impression-cylinder are printed on the first form, transferred to the second impression-cylinder, printed on the second form, and similarly for as many impression-cylinders, forms, and sets of inking-rollers as may be used, substantially as and for the purposes set forth.

445,060. SWITCH FOR OVERHEAD RAILWAYS FOR DRESSED MEATS. WALTER C. JARVIS, Kansas City, Mo. Filed Sept. 22, 1890. Serial No. 365,813. (No model.)

Claim.—1. The combination of a track having a decreased end forming a lateral shoulder extending downwardly and rearwardly, and having a forward decreased end inclined forwardly and downwardly, with a switch having a decreased portion provided with an inclined shoulder and end, which are adapted, when the switch is closed, to engage upon and under the end and shoulder of the track, substantially as described.

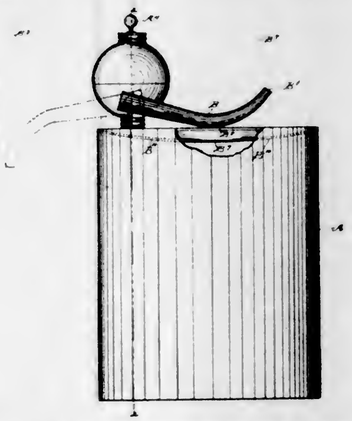
2. The combination, with a track having a downwardly and forwardly inclined decreased end forming a lateral shoulder, the said shoulder having a groove therein, of a switch having a decreased portion provided with an inclined shoulder and inclined beveled end, which are adapted to engage upon and under the end and grooved shoulder of the track, as described.



445,060.



445,061. OIL-CAN. MATHIAS JOLLY, Troy, N. Y., assignor to Myrtle E. Hart, same place. Filed May 22, 1890. Serial No. 352,787. (No model.)

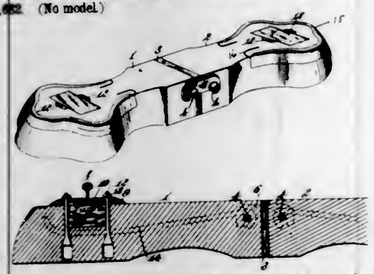


Claim.—1. In an oil-can, the combination, with the main receptacle, a pump-barrel projecting exteriorly above the same, and a pump piston and rod projecting above the barrel, of a nozzle and a tubular hook-and-eye hinge laterally connecting the nozzle with the barrel, said barrel being located near the outside of the can and the nozzle rotatable in a vertical plane, whereby it is adapted to be raised by a lamp or other article, which in the meantime receives the drip, substantially as described.

2. In an oil-can, the combination, with the main receptacle having a concave apertured top, and the pump-barrel, of a nozzle having an escape-opening B^6 below the outlet B', and a horizontal tubular hinge-connection between such nozzle and barrel, substantially as described.

445,062. WITHDRAWN.

445,063. CONSTRUCTION OF RAILWAY TIES OR SLEEPERS. CHARLES D. KURACH, Baltimore, Md. Filed Sept. 11, 1890. Serial No. 364,682. (No model.)



Claim.—1. A railway-sleeper cast in two substantially equal parts meeting in the central line of the track and connected by link-plates looking over the projecting ends of pins cast in the inner ends of the divided parts of the sleeper, substantially as described.

2. A railway-sleeper formed of plastic material cast or molded in two substantially equal parts, each having a transverse pin cast in or near its inner end and provided with tie-rods buried in the plastic material and hooking at one end over said transverse pins, and link-plates hooked over the projecting headed ends of said transverse pins, substantially as described.

3. A railway-sleeper composed of plastic material suitably molded and formed in two parts, united centrally, or substantially so, each part having a broadened end containing a resilient base or support for the rail, whereby an increased or extended base of support is provided with a less number of sleepers, substantially as described.

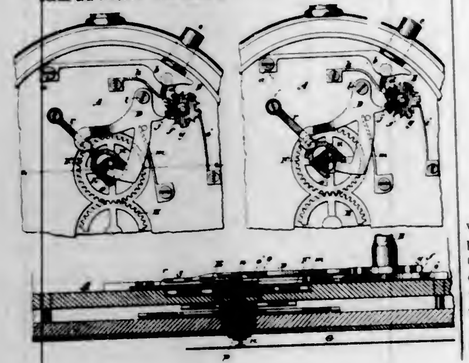
4. A railway-sleeper formed of cement or other plastic material in two substantially equal portions, each having a transverse pin cast therein and being provided with tie-rods cast longitudinally in each half part and having their ends hooking over said transverse pins, and link-plates hooking over the projecting headed ends of the transverse pins, each molded half part of the sleeper being provided with a resilient base or support for the rail, substantially as described.

5. A railway sleeper or tie composed of two substantially similar parts, each molded of plastic material and united by suitable connections, the supporting end of each sleeper having a resilient base of support inserted therein and extended in a direction transverse to the tie, and being provided also with strengthening-bars cast in the material forming the sleeper, substantially as described.

6. In a railway-sleeper formed of plastic material and having inserted in the ends resilient material to form a support for the rails, the combination, with bolts having flaring heads engaging with corresponding recesses in the sleeper, of clamping-plates engaging the foot of the rail and the ends of the bolts, substantially as described.

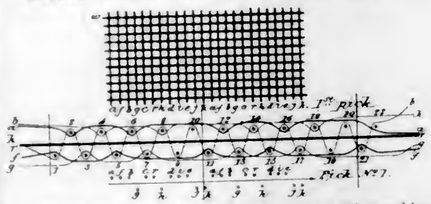
7. A railway-sleeper formed of plastic material cast or molded in two substantially similar parts connected by tie-plates, a resilient material being interposed between the abutting ends of said parts, substantially as described.

445,064. STOP-WATCH. EDMOND KUHN, Brooklyn, assignor to the Manhattan Watch Company, New York, N. Y. Filed Mar. 21, 1890. Serial No. 344,743. (No model.)



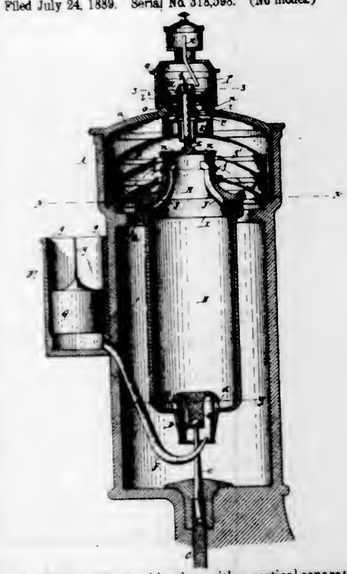
Claim.—The longitudinally-movable spindle *n*, carrying the sweep-second-hand G, the clutch-section *g*, and heart-cam E, combined with the spring *r*, driving-wheel F, having clutch-section *o'*, and with the claw-shaped lever D, one arm of said lever being adapted to depress the spindle *n* and the other arm *s* bent out of plane with the first arm and adapted to bear against the edge of the heart-cam, and with means, substantially as described, for actuating the said lever D, substantially as herein shown and described.

445,065. ELASTIC OR CORDED FABRIC. WILLIAM LAPWORTH, Easthampton, assignor to the Hopedale Elastic Fabric Company, Hopedale, Mass. Filed Dec. 3, 1885. Serial No. 184,560. (Specimens.)



Claim.—The herein-described fabric, composed of face and back warps, binder-warps, rubber or cord warps, and successive picks of weft-thread uniting the said warps together, the face of the fabric being formed in ten-time motion, the face warps being each on the face or outer side of the weft for three picks, then on the inner or under side of the weft for one pick, next on the outer side of the said weft for five picks, and then on the inner side thereof for one pick to complete the pattern, the back warps and the weft being similarly or differently interwoven to form the back of the fabric, the face and back warps being united by the binder-warps passing from the back to the face of the fabric, and vice versa, at each pick, substantially as described.

445,066. CENTRIFUGAL SEPARATOR. GUSTAF DE LAVAL, Stockholm, Sweden, assignor to the Aktiebolaget Separator, same place. Filed July 24, 1889. Serial No. 318,598. (No model.)



Claim.—1. The combination, with a vertical separating-bowl provided at its bottom with a receiving-cup having its lower imperforate portion arranged below said bottom and opening downwardly and its upper portion arranged above said bottom and provided with lateral openings, of an elevated feed-cup and a feed-pipe extending downwardly from the feed-cup and provided at its lower end with an upturned nozzle, substantially as set forth.

2. The combination, with a vertical separating-bowl provided at its bottom with a receiving-cup opening downwardly and having a hub within said receiving-cup, of a spindle arranged below the bowl and having its upper end seated in said hub, an elevated feed-cup, and a feed-pipe extending downwardly from said receiving-cup and provided at its lower end with an upturned nozzle, substantially as set forth.

3. The combination, with the bowl, of a driving-spindle, a flexible extension connecting the spindle with one end of the bowl, a journal attached to the opposite end of the bowl, and a movable bearing in which said journal is supported, substantially as set forth.

4. The combination, with the bowl provided at its upper end with a journal and the frame provided with an oil-cup having an internal collar surrounding the journal, of a bearing having a surrounding flange, an elastic ring interposed between the flange and said collar, and a cover provided with a transverse pin entering notches in the oil-cup and bearing, substantially as set forth.

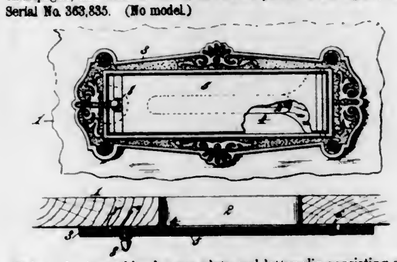
5. The combination, with the bowl having its cover provided with a contracted neck and a discharge for the heavy liquid in said neck, of a flange or curtain depending from said cover near the inner surface of the bowl, and a conduit for the heavy liquid penetrating said flange or curtain with its receiving end and leading to said discharge, substantially as set forth.

445,067. BOX FOR TOOTH-POWDER. ISRAEL W. LYON, Brooklyn, N. Y. Filed Dec. 19, 1889. Serial No. 334,314. (No model.)



Claim.—In a box for tooth-powder, the combination, with the box, of the elongated tube D, closed at its outer end and open at its inner end, and provided with an elongated opening H in its side to regulate the discharge, and with the peripheral swelling *d*, which closely fits the mouth of the box and by frictional contact therewith prevents the tube from dropping down when drawn out and from slipping outward when pushed down, substantially as and for the purposes set forth.

445,068. DOOR-PLATE AND LETTER-SLIP. OLIVER F. MITCHELL, Merrill, Wis., assignor of three-fourths to Walter A. Scott, P. B. Champagne, and John N. Cotter, all of same place. Filed Sept. 3, 1890. Serial No. 363,835. (No model.)



Claim.—1. A combined name-plate and letter-slip consisting of a frame-plate having a letter-slot and provided in its rear side with upper and lower pivot-sockets, and a name-plate located in front of the slot and having at one end a continuous pivot-bar projecting at its ends above and below the edges of the plate and seated in the pivot-sockets at the rear of the frame-plate, substantially as described.

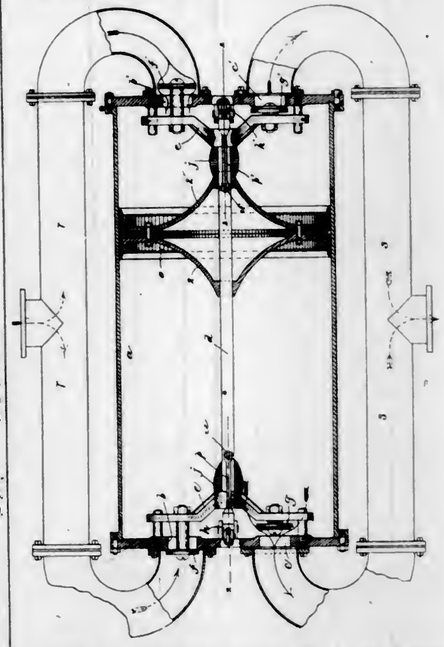
2. The combined name-plate and letter-slip herein set forth, the same consisting of an ornamental frame surrounding a letter-slot in the door and provided with a thin web lying within the interior of said frame and cut away to expose the letter-slot, a name-plate having a pivot-pin at one end, the extremities lying in sockets in the frame-plate, and provided at the other end with a button entering an opening in the web at the end of the frame, where it is adapted to swing under said frame, substantially as described.

445,069. HORSE-COLLAR. CHRISTOPHER MOLLENCOPF, Malta, Ill. Filed Sept. 23, 1889. Serial No. 324,785. (No model.)



Claim.—The horse-collar described, having the body or pad composed of the two layers of felt *a'* *a*[1], of unequal width, of which the outer layer *a'* projects at its outer edge beyond the corresponding edge of the inner layer, and a sheet of leather or other suitable material *a*, having its outer edge stitched to the projecting edge of said outer layer, and a central filling C, substantially as described.

445,070. PISTON WATER-METER. JAMES A. MOSHER and CORNICK MCMAHON, Boston, Mass. Filed Apr. 29, 1890. Serial No. 349,943. (No model.)

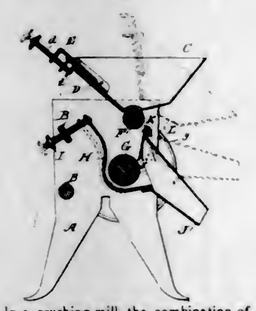


Claim.—1. In a fluid-meter, the combination of a cylinder having two ports at each end, two pairs of valves, one pair at each end of the cylinder, connections between said valves, whereby they are all moved simultaneously, said valves being arranged to open the inlet and close the outlet port and at the same time close the inlet and open the outlet at the opposite end of the cylinder, weighted levers arranged to press in opposite directions on said series of valves, latches or detents arranged to act alternately in locking the valves against said endwise pressure, and a piston movable in said cylinder and formed to actuate said latches.

2. In a fluid-meter, the combination of a cylinder having two ports at each end, one of said ports being an inlet and the other an outlet, a rod movable lengthwise of the cylinder, two pairs of valves connected with said rod and arranged, as described, to open the inlet and close the outlet port at one end of the cylinder and at the same time close the inlet and open the outlet port at the opposite end of the cylinder, weighted levers arranged to press in opposite directions on said rod, latches or detents arranged to act alternately in locking the rod against the endwise pressure exerted upon it, and a piston movable in said cylinder and formed to actuate said latches, as set forth.

3. In a fluid-meter, the combination of a cylinder having two ports at each end, one of said ports being an inlet and the other an outlet, a rod movable lengthwise of the cylinder, two pairs of valves connected with said rod and arranged, as described, to open the inlet and close the outlet port at one end of the cylinder and at the same time close the inlet and open the outlet port at the opposite end of the cylinder, weighted levers arranged to press in opposite directions on said rod, latches or detents arranged to act alternately in locking the rod against the endwise pressure exerted upon it, and a piston movable in said cylinder and provided with inclines formed to act on and displace said weighted levers, and thereby cause the latter to disengage the latches from the rod, as set forth.

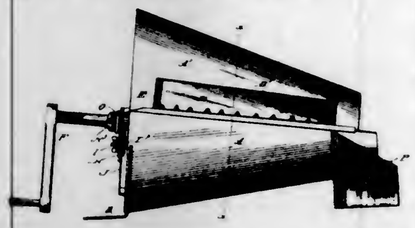
445,071. CRUSHING-MILL. ALEXANDER OLSEN, Hallock, Minn. Filed July 21, 1890. Serial No. 359,416. (No model.)



Claim.—1. In a crushing-mill, the combination of the cylinder, the concave, means for adjusting the concave to and from the cylinder, the cross-bar K, jonrnaled at its ends and extending to form a deflector or guard-plate, and the discharge-spout secured to the said cross-bar and adapted to tilt therewith and having its lower side overlapping the lower edge of the concave, substantially as set forth.

2. A crushing-mill comprising the standards A, cylinder G, concave H, means for adjusting the concave to and from the cylinder, the cross-bar K, journaled in the standards A and extended to form the deflector *f*, the delivery-spout secured to and adapted to tilt with the said cross-bar and having its lower side overlapping the lower edge of the concave, the hopper having brackets which are journaled on the extended journals of the cross-bar K, the nuts *l* for fastening the hopper and cross-bar rigidly to the said standards, and the feed-roller F, substantially as specified.

445,072. ICE-CREAM FREEZER. JAMES M. O'NEALL, Dallas, Tex. Filed May 4, 1889. Serial No. 309,662. (No model.)



Claim.—1. In an ice-cream freezer, the conical revolving ice-receptacle having a hollow axle at its lower end and the flanged opening in its upper end, and the screw-cap therefor having an axle formed thereon, substantially as set forth.

2. In an ice-cream freezer, the conical revolving ice-receptacle having a cylinder secured within it and having a hollow axle at its lower end and the flanged opening in its upper end, and the screw-cap therefor having an axle formed thereon, substantially as set forth.

3. In an ice-cream freezer, the combination, with an outer casing and a revolving ice-receptacle, of a combined scraper and trough, and a spiral conveyer mounted therein and driven by connection with the revolving ice-receptacle, substantially as set forth.

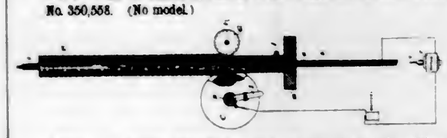
4. The combination, with the conical outer casing and the conical revolving ice-receptacle having a pulley on its upper axle, of the combined scraper and trough, and the spiral conveyer having a pulley on the upper end of its shaft and a belt connecting said pulleys, substantially as set forth.

5. The combination of the conical outer casing having the hinged top and feed-hopper and the box at its lower end, the conical ice-receptacle having a hollow axle at one end and the flanged opening at the other, the screw-cap therefor having the hollow axle formed thereon and the pulley on the same, the combined scraper and trough, and the spiral conveyer mounted therein and having the pulley on its upper end and the belt, substantially as set forth.

6. The combination of the conical outer casing having the hinged top and feed-hopper and the box at its lower end, the conical ice-receptacle having the cylinder within it and having the hollow axle at one end and the flanged opening at the other, the screw-cap therefor having the hollow axle formed thereon and the pulley on the same, the combined scraper and trough and the spiral conveyer mounted therein and having the pulley on its upper end and the belt, substantially as set forth.

7. The combination, with the outer casing and the revolving ice-receptacle, of the adjustable brace in which one end of the axle has its bearing, substantially as set forth.

445,073. CLOCK-WINDING MECHANISM. WILLARD N. PACKER and WILLIAM W. BRADLEY, Canton, Ohio. Filed May 5, 1890. Serial No. 350,558. (No model.)



Claim.—1. In clock mechanism, an exteriorly-threaded weighted screw supported in a perpendicular position and a gear-wheel in the said mechanism actuated by said screw, substantially as described.

2. A weighted tube provided with a thread on its surface, a gear-wheel actuated by said tube, and power mechanism connected with the tube to turn and raise the same, substantially as described.

3. The combination of a worm-gear and a weighted screw for maintaining uniform tension or pressure on the mechanism connected with said gear, substantially as described.

4. The weighted tube and a rotatable shaft on which the tube is free to gravitate without turning, a wheel actuated by the tube, and mechanism to rotate the said shaft and raise the tube, substantially as described.

5. The clock mechanism having a worm-gear, in combination with a threaded tube to operate said gear and a rotating bearing opposite said gear in contact with said tube, substantially as described.

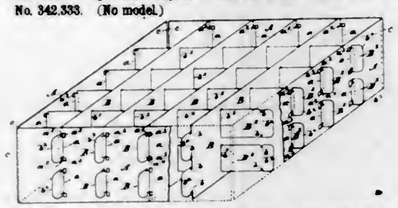
6. A weighted threaded tube and a shaft on which said tube is arranged to slide, a motor to turn said shaft, and a worm-wheel actuated by said tube, in combination with clock mechanism driven by said wheel, substantially as described.

7. Clock mechanism having a worm-gear to operate the same, in combination with a shaft, a tube having threads meshing with said worm-gear and arranged on said shaft to gravitate downward thereon, a motor to turn said shaft, and means to lock the tube on said shaft therewith, substantially as described.

8. The operating-tube having a threaded surface and a power-wheel meshing therewith, in combination with an electric motor to turn said tube and a contact-point arranged to make and break the circuit on the motor, substantially as described.

9. The operating threaded tube, a motor, and connections between motor and tube to turn the tube, in combination with clock mechanism driven by the said tube and an electrical contact-point operated by said mechanism and making and breaking circuit on the said motor, substantially as described.

445,074. EGG-CARRIER. LEVI H. PAGE, Chicago, Ill., assignor to the Garden City Filler Company, same place. Filed Mar. 3, 1890. Serial No. 342,333. (No model.)



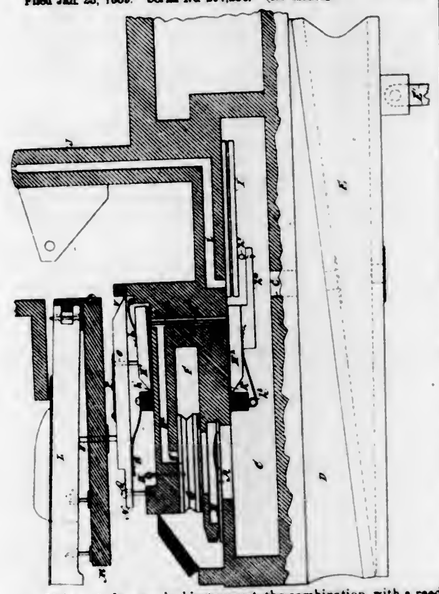
Claim.—1. In carriers for fruit, eggs, &c., of the class herein described, the combination, with the outside longitudinal and transverse strips having their edges adjacent to but not interlocked with each other, said strips being formed with slots a^3 a^3 and tongues *a*, of the notched compartment-forming strips adapted to interlock with said outside strips.

2. In carriers for eggs, fruit, &c., wherein slats or strips are employed to form series of separate compartments, substantially as herein set forth, the frame-work composed of the outside and compartment-forming strips, said outside strips being interlocked or otherwise connected with the compartment-forming strips and not connected or interlocked with each other, all arranged substantially in the manner and for the purpose herein described.

3. In carriers for fruit, eggs, &c., of the class herein described, the longitudinal and transverse outside strips, said longitudinal strips being unconnected with said transverse strips, in combination with

longitudinal and transverse compartment-forming strips, the ends of said longitudinal compartment-forming strips being secured to said transverse outside strips and the ends of said transverse compartment-forming strips being secured to said longitudinal outside strips.

445,075. MUSICAL INSTRUMENT. ROBERT W. PAIN, New York, N. Y., assignor to the Aeolian Organ and Music Company, same place. Filed Jan. 23, 1889. Serial No. 297,230. (No model.)



Claim.—1. In a musical instrument, the combination, with a reed-cell, of a combined pallet-valve and pneumatic motor arranged at the outer side thereof and communicating internally through ducts g^2 g^3 g^3 with the atmosphere and the wind-chest, substantially as specified.

2. In a musical instrument, the combination, with the pallet-valve or pneumatic G, of the adjustable stop K, substantially as specified.

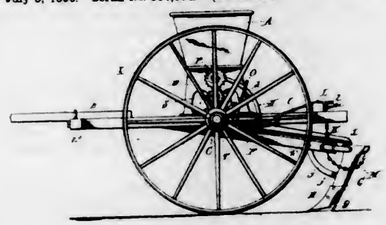
3. In a musical instrument, the combination, with a valve controlling the speaking of a sound-producing device, of a key, a lever interposed between the key and the valve, and a spring-connection between the lever and the valve, substantially as specified.

4. In a musical instrument, the combination, with a valve controlling the speaking of a sound-producing device, of a key, a lever interposed between the key and the valve, and a spring transmitting motion from the lever to the valve, substantially as specified.

5. In a musical instrument, the combination, with a valve provided with an upwardly-extending pin and controlling the speaking of a sound-producing device, of a key, a lever interposed between the key and the valve and receiving the pin of the valve, and a spring attached to the lever and bearing upon the pin, substantially as specified.

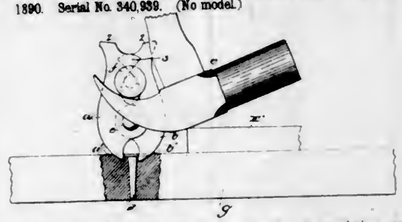
6. In a musical instrument, the combination, with a valve controlling the speaking of a sound-producing device, of a key, a spring providing a direct yielding connection between the valve and key, and an adjustable stop preserving a proper initial coaction between the spring and valve, substantially as specified.

445,076. WHEAT-DRILL. OLA L. PETERSON, Assaria, Kans. Filed July 5, 1890. Serial No. 357,894. (No model.)



Claim.—In a wheat-drill, the combination of a main frame, a hopper mounted thereon, devices for distributing the grain, and a trough connecting said hopper and distributing devices, said trough being composed of a series of concave sections, each of said sections being loosely pivoted at its corners only to the section next adjoining, whereby said trough is adapted to conform to any desired curvature, and transverse braces connected to the corners of said sections at the point of pivoting, as described.

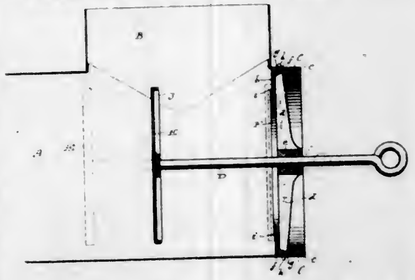
445,077. NAIL-PULLER. WALTER E. PETTENGILL, Rockville, Conn., assignor of one-half to Asa Pettengill, same place. Filed Feb. 18, 1890. Serial No. 340,939. (No model.)



Claim.—1. The herein-described nail-puller, it consisting, essentially, of two jaws pivoted side by side and having cams or inclines upon their inner sides above their pivotal point, the inner sides of the jaws overlapping above said cams, and an actuating device intermediate said cams, consisting of the headed stud *f*, to operate substantially as described.

2. The herein-described nail-puller, it consisting of two jaws pivoted side by side, having their lower ends offset, as described, and their upper ends flattened, cams upon their inner sides above their pivotal point, the headed stud *f*, intermediate said cams, to actuate the jaws, and a projection 3 to retain the stud in place, substantially as described.

445,078. CHECK-DAMPER FOR STOVES, &c. WILLIAM PHIPPS, Milwaukee, Wis., assignor of one-half to George T. Phipps, same place. Filed Apr. 25, 1890. Serial No. 349,453. (No model.)



Claim.—1. The combination of a heater smoke-flue having an end thereof open to outside air, a chimney-pipe communicating with the smoke-flue, and a cut-off for the air-inlet adjustable in said smoke-flue across the chimney-pipe opening, substantially as set forth.

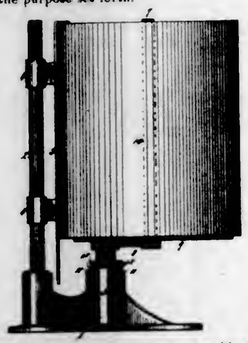
2. The combination, with a heater smoke-flue and chimney-pipe, of an inwardly-flanged ring fitted in the outer end of the smoke-flue and provided with a hub, a rod loose in the hub, and a damper connected to the inner end of the rod in opposition to the flange on the ring, substantially as set forth.

3. The combination, with a heater smoke-flue and chimney-pipe, of a ring C, fitted in the outer end of the smoke-flue and provided with the flanges *b c*, and the cross-piece *d*, having the central hub *e*, the lip *i* on the flange *b*, the rod D, loose in said hub the damper E, connected to said rod, and the flange *j* on said damper for engagement with said lip on the ring-flange *b*, substantially as set forth.

4. The combination of a heater smoke-flue having an end thereof open to outside air and provided with a central guide, a chimney-pipe communicating with the smoke-flue, a rod adjustably arranged in a guide and extended into said smoke-flue, and a cut-off for the air-inlet carried on the rod across the chimney-pipe opening, substantially as set forth.

445,079. ROLL-PAPER HOLDER AND CUTTER. CHARLES K. PICKLES, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Dec. 9, 1889. Serial No. 333,120. (No model.)

Claim.—1. In a roll-paper holder and cutter, the combination of a fixed knife, a roll of paper, and a supporting-stem for the said roll, located eccentrically with relation to the center of said roll, substantially as and for the purpose set forth.



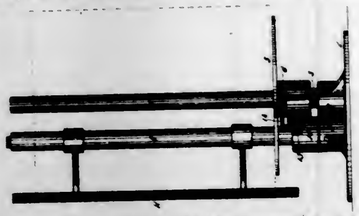
2. In a roll-paper holder and cutter, the combination of a fixed knife, a roll of paper, a supporting eccentric stem for said roll, and inclined bearing-surfaces for said stem, substantially as and for the purpose set forth.

3. In a roll-paper holder and cutter, the combination of a base having inclined bearing-surfaces, an eccentric stem having projections bearing against said surfaces, a roll of paper supported by said stem, and a fixed knife, substantially as set forth.

4. In a roll-paper holder and cutter, the combination of a base having a hollow extension provided with inclined bearing-surfaces, a stem fitting in said extension and provided with projections bearing against said inclined surfaces, a disk carried by said stem and upon which the roll of paper rests, and a fixed knife, substantially as and for the purpose set forth.

5. In a roll-paper holder and cutter, the combination of a base, a hollow extension 5, having inclined surfaces 11, a stem 6, having projections 12, and an arm 8, disk 7 on said stem, a roll of paper 10, resting on the disk and held thereon by a central core or rod, and a fixed knife 3, substantially as and for the purpose set forth.

445,080. ROLL-PAPER HOLDER AND CUTTER. CHARLES K. PICKLES, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Dec. 24, 1889. Serial No. 334,815. (No model.)



Claim.—1. The combination of a falling support for a roll of paper, a knife located eccentrically relative to the center of the roll, having a rotating support, and a connection between the falling support and the rotating support, by which the latter is rotated to cause the knife to move toward the roll by the weight of the roll as the paper is removed, substantially as described.

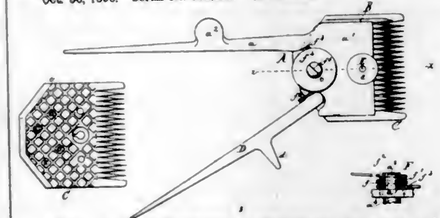
2. The combination of a suitable base, a spindle for receiving the roll of paper, a falling support for said roll, having a lateral projection, and a knife located eccentrically relatively to the center of the roll, having a rotating support provided with an inclined bearing for said projection, substantially as described.

3. In a roll-paper holder and cutter, the combination of a base, an upright spindle for receiving the roll of paper, a falling support for receiving the roll of paper, a projection on the support, a knife, and a knife-support having an inclined bearing-surface upon which the said projection bears, substantially as and for the purpose set forth.

4. In a roll-paper holder and cutter, the combination of a base, a spindle 7, a roll-supporting disk 5, having a friction-roller 14 and adapted to fall as the size of the roll decreases, a knife, and a knife-supporting rod 8, provided with an incline 13, substantially as and for the purpose set forth.

5. In a roll-paper holder and cutter, the combination of the base 1, stem 3, collar 4, having a projection 14, a disk 5, shaft 8, collar 12, having an incline 13, and a knife secured to the shaft, substantially as and for the purpose set forth.

445,081. HAIR-CLIPPER. JOSEPH K. PRIEST, Nashua, N. H. Filed Oct. 30, 1890. Serial No. 369,833. (No model.)



Claim.—1. In a hair-clipper, in combination, the arms *a* and D, the spring F, perpendicular pin *f*, bearing against the lower coils of the spring, and inclined pin *f'*, bearing against the bottom coil of said spring, substantially as described.

2. In a hair-clipper, the comb-plate having its under surface provided with depression *c* between its comminuted bearing-surface portions, said depressions being cut across the path of movement of the hair-clipper, substantially as described.

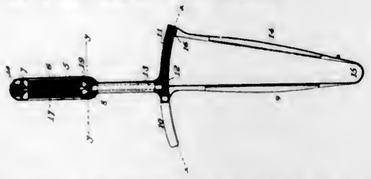
445,082. LAMP-BURNER. FRANK RHIND, Meriden, Conn., assignor of one-half to Edward Miller & Company, same place. Filed May 1, 1890. Serial No. 350,248. (No model.)



Claim.—1. In a lamp-burner of the class described, the combination of a wick-tube, a removable dome, a slot in said dome, and a foraminous partition secured to and removable with said dome and surrounding said wick-tube, said partition being of greater diameter at its upper than at its lower end, substantially as described.

2. In a lamp-burner of the class described, the combination of a ratchet-cap, a wick-tube passing through said ratchet-cap, a removable dome, a slot in said dome, and a foraminous partition secured to and removable with said dome and extending downward substantially to said ratchet-cap, said partition being of greater diameter at its upper than at its lower end, substantially as described.

445,083. ROTARY BRUSH. ROSARIO ROY, Richmond, Va. Filed Nov. 13, 1890. Serial No. 371,278. (No model.)



Claim.—1. The combination of a tooth-brush in cylindrical form mounted on a shaft provided with a pinion and journaled in bearings of a frame having a fixed handle portion, a movable handle portion attached at its outer end to the outer end of the fixed portion of the handle by a joint permitting oscillating motion, and a segmental toothed rack fitted to slide in the frame to engage the aforesaid pinion and connected with the free end of the movable portion of the handle, substantially as described.

2. The combination of a handle 9, having the slideway 10 and the bearing 8, the segmental rack 11, fitted to the said slideway, the pinion 12, provided with a shaft 13, journaled in the bearing 8 to engage the rack 11, a rotatory brush 5, connected with the said shaft, and a handle portion 14, connected at its outer end with a handle 9 by a spring 15 and connected at its inner end with the said rack 11, substantially as described.

3. The combination of a handle, a shaft journaled therein, means for rotating the shaft, a shield connected with the handle, a socket-bearing in the outer end of the said shield, a spring impelling the socket-

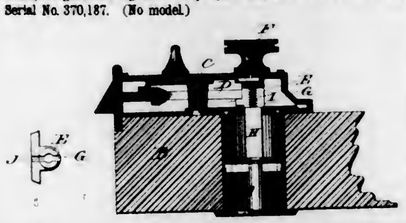
bearing inward, and a cylindrical brush provided with a shaft adapted to be journaled at one end in the said socket and having a removable socket connection at its other end with the aforesaid pinion-shaft, substantially as described.

445,084. CHECK-LOOP. MACK SANSOUCY, Kenosha, Wis., assignor to L. D. Jones and L. Thiers, same place. Filed Sept. 5, 1890. Serial No. 364,006. (No model.)



Claim.—In a check-loop, the combination of a ring having a shank formed with lateral projections at its inner end, a flexible loop into which the shank and projections are inserted, and a holding-sleeve which surrounds the inner end of the loop around the shank of the ring to prevent the loop spreading, combined to operate in the manner described.

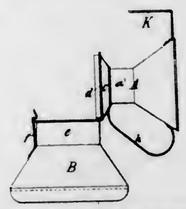
445,085. CYLINDER-LOCK. JOSEPH B. SARGENT, New Haven, Conn., assignor to Sargent & Company, same place. Filed Nov. 3, 1890. Serial No. 370,187. (No model.)



Claim.—1. In a cylinder-lock substantially such as described and in which the cylinder is detached from the lock-case, the hub by which the bolt is operated constructed with a diametrical slot, a connecting-bar one end of which is adapted to be loosely engaged with the cylinder and the other to enter the said diametrical slot of said hub, with a spring adapted to yieldingly bear longitudinally upon said connecting-bar, substantially as described.

2. The combination of a lock-case carrying the bolt, a rotating hub E, arranged in the case, adapted to operate upon said bolt, the said hub constructed with a diametrical slot G opening from its inner end, and also constructed with a longitudinal spring-cavity J, a spring I, arranged in said cavity, a key-cylinder detached from said lock-case and adapted to be applied upon the side of the door opposite the lock-case, a connecting-bar H, one end of which is adapted to be loosely engaged with said cylinder and the other end adapted to enter the said diametrical slot of the hub and bear upon said spring, substantially as described.

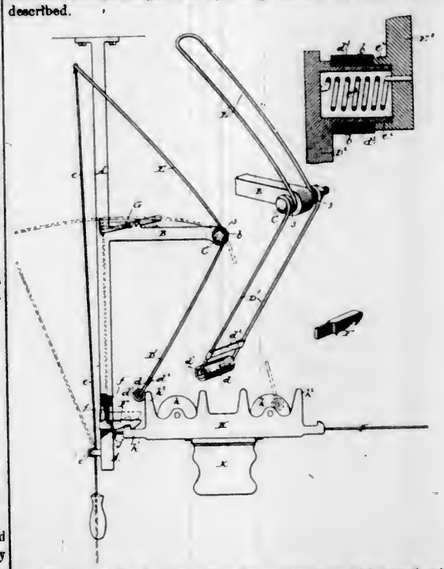
445,086. SPEWING-BOX FOR USE ON BOARD SHIPS. HEINRICH SCHELLER, Christiania, Norway. Filed May 7, 1890. Serial No. 350,918. (No model.)



Claim.—A spewing-box consisting of a cup-shaped lower section B, having at its top portion a contracted neck *c*, and an upper funnel-shaped section A, comprising an overhanging hooked arm K, a handle *h*, and a contracted neck *a'*, having a conical or flaring base-plate *c*, movably connected with the contracted neck of the cup-shaped lower section, substantially as described.

445,087. CASH AND PARCEL CARRIER. JOSEPH M. SEGUR and JAMES R. HAIGHT, Adrian, Mich. Filed Nov. 17, 1888. Serial No. 291,146. (No model.)

Claim.—1. In a cash and parcel carrier, the combination, with a track-wire and a carriage traveling thereon, of a pivoted spring-actuated lever having one end engaging the carriage and its other end provided with means for compressing the spring, a catch engaging the carriage, and a trip-lever connected to the catch and lying in the path of the upper end of the pivoted spring-actuated lever and adapted to be moved by said lever to operate the catch and release the carriage, all constructed, arranged, and operating substantially as shown and described.



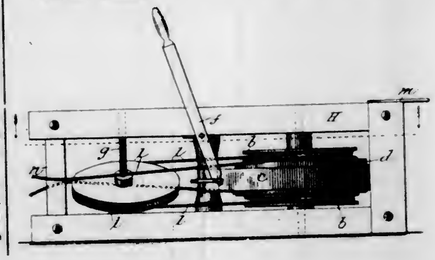
2. In a cash and parcel carrier, the combination, with a track-wire and a carriage traveling thereon, of a pivoted lever having its free end engaging the carriage, a spring acting upon the pivotal point or fulcrum of the lever, an arm or lever for compressing the spring, a spring-depressed catch for engaging the carriage, a trip-lever pivoted in the path of the lever for compressing the spring, and a cord or chain connecting one end of the trip-lever to the spring-catch, the construction being such that when the lever is depressed to compress the actuating-spring the trip-lever will be engaged, the spring-catch raised, and the carriage released and propelled forward, substantially as shown and described.

3. In a cash and parcel carrier, the combination, with a track wire or way and a carriage traveling thereon, of a propelling-lever pivoted in a bearing permanently fixed with relation to the way, and a roller mounted in the free end of the lever and adapted to engage the carriage, substantially as shown and described.

4. In a cash and parcel carrier, the combination, with a track wire or way and a carriage traveling thereon, of a propelling-lever pivoted in a bearing permanently fixed with relation to the way, said lever having its free end bifurcated, and a roller mounted in said bifurcated end and adapted to engage the carriage, substantially as shown and described.

5. In a cash and parcel carrier, the combination, with a track wire or way and a carriage traveling thereon, of a propelling-lever pivoted in a bearing fixed with relation to the way, said lever having its free end bifurcated, and a roller mounted in said bifurcated end and adapted to engage the carriage, substantially as shown and described.

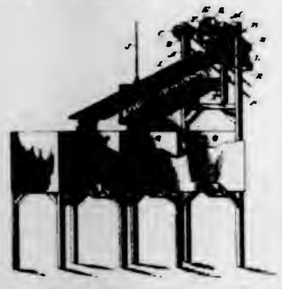
445,088. GRAVITY-HAULAGE-MACHINE. FRANK A. SELL and WILLIAM O'CONNOR, Red Lodge, Mont. Filed Aug. 11, 1890. Serial No. 361,756. (Model.)



Claim.—1. The combination of a portable frame, an inclined pulley, a drum, a pulley connected to the drum at each side thereof, a rope passing about all the pulleys and adapted for connection with cars on opposite inclined tracks, and a brake applied to the drum, whereby to regulate the movement of the rope and thereby of the cars.

2. The combination of a frame, an inclined pulley mounted therein, a drum, a pulley secured to the drum at each side thereof, a rope passing about all the pulleys and adapted for connection with cars on opposite inclined tracks, a brake-band applied to the drum, and means connected with the end of said brake-band, whereby to regulate the operations of the drum, the pulleys, and the rope, substantially as set forth.

445,089. **SCREEN.** WILLIAM E. SELLECK, Chicago, Ill. Filed Aug. 11, 1890. Serial No. 361,633. (No model.)



Claim.—1. The combination, with a screen, vertically-movable hangers supporting one end thereof, and projections on said hangers, of a revolving shaft and radial pins thereon adapted and arranged to engage the projections on the hangers, substantially as described.

2. The combination, with a screen and a rotatable shaft, of hangers pivotally connected with and supporting the screens at one end thereof, and having a slotted connection with said shaft at the opposite ends thereof, projections on said hangers, and radial pins on said shaft adapted and arranged to engage said projections, substantially as described.

3. The combination, with a screen, an adjustable support therefor, vertically-movable hangers supporting one end of said screen, and projections on said hangers, of a revolving shaft and radial pins thereon adapted and arranged to engage the projections on the hangers, substantially as described.

4. The combination, with a screen, an adjustable support therefor, and a rotatable shaft, of hangers pivotally connected with and supporting the screens at one end thereof and having a slotted connection with said shaft at the opposite ends thereof, projections on said hangers, and radial pins on said shaft adapted and arranged to engage said projections, substantially as described.

5. The combination, with a screen, a rotatable drive-shaft, a sprocket-wheel mounted on said shaft, and an elevating-conveyer working over said wheel, provided with flights or buckets, of hangers suspending said screen from the shaft and means for intermittently lifting said hangers, substantially as described.

6. The combination, with a screen, a rotatable drive-shaft, a sprocket-wheel mounted on said shaft, and an elevating-conveyer working over said wheel, provided with flights or buckets, of hangers suspending said screen from the shaft, means for intermittently lifting said hangers, and a bumper located beneath and arranged to be struck by the screen when dropped, substantially as described.

7. The combination, with a screen, an adjustable support therefor, a rotatable drive-shaft, a sprocket-wheel mounted on said shaft, and an elevating-conveyer working over said wheel, provided with flights or buckets, of hangers suspending said screen from the shaft, means for intermittently lifting said hangers, and a bumper located beneath and arranged to be struck by the screen when dropped, substantially as described.

8. The combination, with the screen, the drive-shaft, a sprocket-wheel mounted thereon, and an elevating-conveyer working over said wheel and provided with flights or buckets, of the hangers pivotally connected with and supporting the screen at their lower ends and having a slotted connection with the shaft at their upper ends, projections on said hangers, and radial pins on said shaft adapted and arranged to engage said projections, substantially as described.

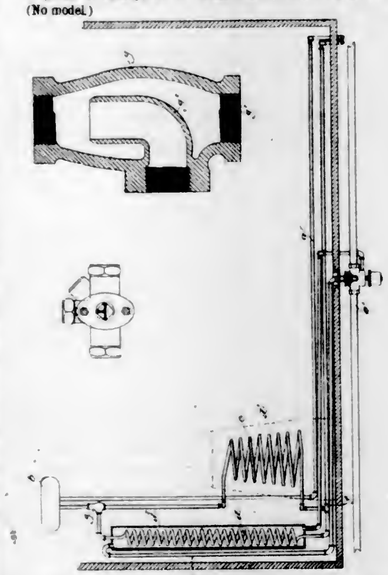
9. The combination, with the screen, the drive-shaft, a sprocket-wheel mounted thereon, and an elevating-conveyer said working over wheel and provided with flights or buckets, of hangers pivotally connected with and supporting the screen at their lower ends and having a slotted connection with the shaft at their upper ends, projections on said hangers, radial pins on said shaft adapted and arranged to engage said projections, and a bumper located beneath and arranged to be struck by the screen when dropped, substantially as described.

10. The combination, with the screen, an adjustable support therefor, the drive-shaft, a sprocket-wheel mounted thereon, and an elevating-conveyer working over said wheel and provided with flights or buckets, of hangers pivotally connected with and supporting the screen at their lower ends and having a slotted connection with the shaft at their upper ends, projections on said hangers, radial pins on said shaft adapted and arranged to engage said projections, and a bumper located beneath and arranged to be struck by the screen when dropped, substantially as described.

11. The combination, with a screen, an adjustable support therefor, vertically-movable hangers supporting one end of said screen, an adjustable connection between said screen and hangers, and projections on said hangers, of a revolving shaft and radial pins thereon adapted and arranged to engage the projections on the hangers, substantially as described.

12. The combination, with a screen, an adjustable support therefor, vertically-movable hangers supporting one end of said screen, and projections on said hangers, of a revolving shaft, radial pins thereon adapted and arranged to engage the projections on the hangers, and an adjustable bumper located beneath and arranged to be struck by the screen when dropped, substantially as described.

445,090. **CAR-HEATING APPARATUS.** JAMES H. SEWALL, Portland, Me., assignor to the Consolidated Car Heating Company of West Virginia, of Albany, N. Y. Filed Jan. 7, 1889. Serial No. 295,647. (No model.)



Claim.—1. In a car-heating apparatus, a system of circulating-pipes within the car and two independent heaters, both in operative contact with said circulating system, adapted to be operated simultaneously or separately by heat imparted thereto, combined with a current-director interposed at the junction or point of contact of the said heaters and circulating system, substantially as described.

2. In a car-heating system, the combination, with a system of water-circulating pipes within the car, of a suitable radiator in contact with said circulating system, mechanism for supplying the said radiator with steam as a primary means of heating said circulating system, and a secondary independent heater also in operative contact or connected with said circulating system and adapted to heat the same, combined with a current-director, substantially as described, interposed at the junction or point of contact of the primary and secondary heaters, and the circulating-pipes, substantially as described.

3. In a car-heating system, the combination, with a system of circulating-pipes within the car and two independent heaters in operative contact with said circulating system, each having exposed radiating-surfaces, one of the said heaters being adapted to contain a fire and the other to receive steam, combined with a current-director, substantially as described, located at the point of contact or junction of the said heaters and circulating system, substantially as described.

4. In a car-heating apparatus, the circulating system located within the car and having an expansion-drum, two independent receptacles containing the circulating-pipes connected at each end with the circulating system, a steam-receiving case inclosing one of the said receptacles, combined with a current-director located at the junction of the upper end of the said receivers, and the circulating system, substantially as and for the purposes set forth.

445,091. **PROCESS OF DISSOLVING WATER-GLASS.** PAUL SIEVERT, Deuben, Germany. Filed Mar. 26, 1890. Serial No. 345,406. (No specimens.)

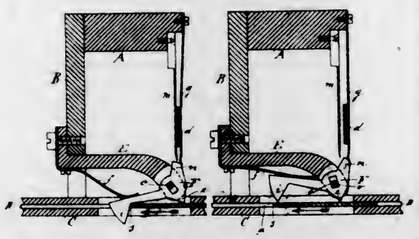
Claim.—The herein-described mode of producing a clear solution of water-glass, consisting in placing the lump water-glass in a vessel and forming the same into a pile, discharging a stream of steam forcibly against said lump water-glass, and thereby softening and partially dissolving the same, and treating the same with a spray of alkaline lye, the solution being richened by flowing over the undissolved glass lumps on its way to the discharge, and the solution being continuously discharged as it forms, as set forth.

445,092. **ERASER.** WILLIAM E. SIMONDS, Canton, Conn. Filed Dec. 5, 1890. Serial No. 373,654. (No model.)



Claim.—In combination, the wedge-shaped stock *a*, the wedge-shaped sleeve *c*, and the pliable erasive strip *d*, all substantially as described, and for the purposes set forth.

445,093. **MUSIC-BOX.** JOHANN SONNENMANN, Berlin, Germany. Filed Apr. 12, 1890. Serial No. 347,582. (No model.)

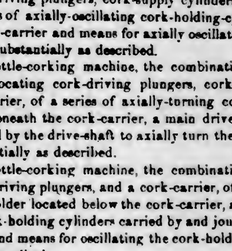


Claim.—1. The combination, with a paper ribbon having longitudinally-rectangular perforations and being guided in a slotted plate and moved by suitable rollers, of vibratable tongues, and of keys, one for each tongue, each key having an oblong eye pivoted upon a round pin and provided with a V-shaped heel and an arm with a V-shaped toe, both engaging the perforations of the paper ribbon, and with a nose for tripping the tongue to vibrate, all substantially as set forth, to operate as specified.

2. The combination, with a paper ribbon having longitudinally-rectangular perforations and being guided in a slotted plate and moved by suitable rollers, with vibratable tongues, and with keys, one for each tongue, each key having an oblong eye pivoted upon a round pin and provided with a V-shaped heel and an arm with a V-shaped toe, both engaging the perforations of the paper ribbon, and with a nose for tripping the tongue to vibrate, of springs with pads as dampers for the tongues operated by the noses of the keys simultaneously with the tripping movement thereof, all substantially as set forth, to operate as specified.

445,094. **APPARATUS FOR HUMIDIFYING AIR.** WILLIAM TATTERSALL, Bradford, England. Filed May 2, 1890. Serial No. 350,307. (No model.)

Claim.—The herein-described apparatus, consisting in the combination of the depending air-pipe having an open nozzle on its end, a water-supply vessel, means suspending said vessel from said pipe beneath the nozzle thereof, an open water-tube having its lower open end extending into the water in said vessel and its outer end bent and provided with a nozzle having its mouth close and at an angle to the nozzle of said air-pipe, the rigid disk opposite said air-nozzle, and means to support said water-tube.



445,095. **BOTTLE-CORKING MACHINE.** JOHN J. TAYLOR, 2d, Warren, Pa., assignor to Ezra T. Hazeltine, same place. Filed June 28, 1888. Serial No. 278,435. (No model.)

Claim.—1. In a bottle-corking machine, the combination, with a main frame, a traveling bottle-carrier, a series of cork-driving plungers, a series of cork-supply cylinders, and a cork-carrier which receives the corks from the cylinders and moves them beneath the plungers, of a series of cork-holding cylinders arranged beneath the cork-carrier to rest upon the bottle-mouths, a rotating shaft, and devices connected with the cork-holding cylinders and operated by the shaft to elevate the said cork-holding cylinders after the corks have been driven into the bottles, substantially as described.

2. In a bottle-corking machine, the combination, with a bottle-carrier, cork-driving plungers, cork-supply cylinders, and a cork-carrier, of a series of axially-oscillating cork-holding-cylinders arranged below the cork-carrier and means for axially oscillating the cork-holding cylinders, substantially as described.

3. In a bottle-corking machine, the combination, with a bottle-carrier, reciprocating cork-driving plungers, cork-supply cylinders, and a cork-carrier, of a series of axially-turning cork-holding cylinders located beneath the cork-carrier, a main drive-shaft, and mechanism operated by the drive-shaft to axially turn the cork-holding cylinders, substantially as described.

4. In a bottle-corking machine, the combination, with a bottle-carrier, cork-driving plungers, and a cork-carrier, of a rising and falling cylinder-holder located below the cork-carrier, a series of axially-oscillating cork-holding cylinders carried by and journaled in said cylinder-holder, and means for oscillating the cork-holding cylinders, substantially as described.

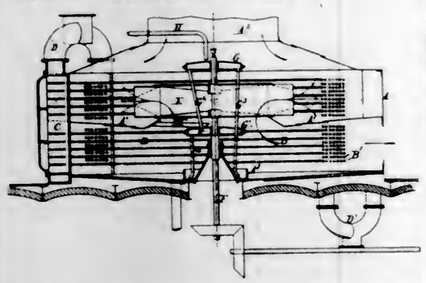
5. In a bottle-corking machine, the combination, with a bottle-carrier, a series of cork-driving plungers, and a cork-carrier, of a series of axially-oscillating cork-holding cylinders and means for oscillating the cork-holding cylinders and operating the plungers to give each cork two blows, substantially as described.

6. In a bottle-corking machine, the combination, with a bottle-carrier, a series of cork-driving plungers, and a cork-carrier, of a series of axially-oscillating cork-holding cylinders between the cork-car-

rier and bottle-carrier and a rotating cam connected with the plungers and constructed to operate the plungers for imparting two blows to each cork, substantially as described.

7. In a bottle-corking machine, the combination of a series of axially-oscillating cork-holders with reciprocating cork-driving plungers, each having its driving-head divided into a series of sections, substantially as described.

445,096. CONDENSER. EDUARD THEISEN, Sinzig, Germany. Filed May 14, 1890. Serial No. 351,766. (No model.)



Claim.—1. In apparatus for simultaneously condensing vapors and evaporating liquids, the combination of a fan for producing air-blast, sets of pipes arranged round such fan, and a supply of liquid made to flow by centrifugal action and with the air-blast in contact with the one surface of such pipes, while the steam or vapor to be condensed is made to flow in contact with the outer surface thereof, substantially as described.

2. In apparatus for simultaneously condensing vapors and evaporating liquids, the combination of a set or sets of pipes through which the vapor to be condensed is made to flow, a vertical revolving shaft carrying a fan or fans situated centrally within the set or sets of tubes for propelling currents of air in contact with the pipes, and a vessel or vessels carried by the said shaft, which is or are supplied with water or other liquid to be evaporated, and from which the water is propelled onto the said tubes by centrifugal force, substantially as described.

3. In apparatus for simultaneously condensing vapors and evaporating liquids, the combination of a set or sets of pipes through which the vapor to be condensed is made to flow, a vertical revolving shaft carrying a fan or fans situated centrally within the set or sets of tubes for propelling currents of air in contact with the pipes, and a vessel or vessels carried by the said shaft, which is or are charged with water or other liquid to be evaporated, and which carries a number of rising pipes through which the water is propelled by centrifugal force, substantially as described.

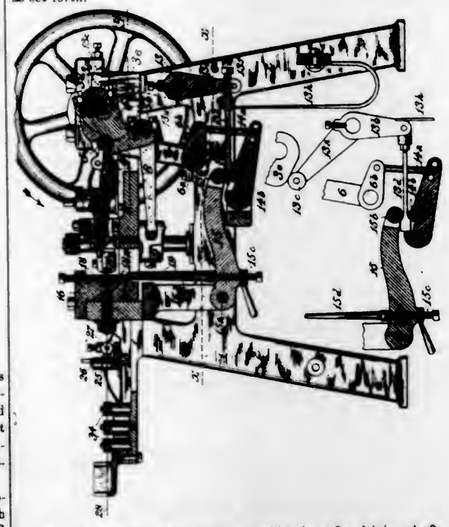
4. In apparatus for simultaneously condensing vapors and evaporating liquids, the combination of a set or sets of pipes through which the vapor to be condensed is made to flow, a revolving shaft carrying a fan or fans centrally within the set or sets of pipes for propelling air in contact with the pipes, means for distributing water over the outer surfaces of the pipes, and a surface condenser situated below the said apparatus, through which the steam is made to pass before entering the before-mentioned pipes, such surface condenser being supplied with water from the upper condensing apparatus, substantially as herein described.

5. In apparatus for condensing steam and other vapors, the combination of groups of pipes B B', connected to boxes C C', for the supply of steam and for the exhaust, a fan or fans E on a vertical shaft F, a vessel L, carried by the said shaft and charged with water, and pipes l^4 on the vessel L, through which water is discharged by centrifugal action onto the pipes B B', substantially as described.

445,097. WIRE-NAIL MACHINE. JOSEPH W. THOMPSON, Salem, Ohio, assignor of one-half to the Buckeye Engine Company, same place. Filed Sept. 6, 1890. Serial No. 364,136. (No model.)

Claim.—1. In a wire-nail machine, the combination of a driving-shaft, a cam fixed therein, a heading-ram actuated by the driving-shaft, and a gripping-die actuated by suitable known mechanical connections, to which movement is imparted, preliminarily from the cam and secondarily from the driving shaft, in substantial coincidence with the movement of the heading-ram, substantially as set forth.

2. In a wire-nail machine, the combination of a driving-shaft, a cam fixed thereon, a heading-ram actuated by the driving-shaft, a fixed gripping-die, a movable gripping-die, a gripping-lever coupled to the movable die, an intermediate lever coupled to and vibrated by the driving-shaft in substantial coincidence with the movement of the heading-ram, a spreader-bar actuated by the cam and adapted to preliminarily transmit pressure from the cam to the gripping-lever and secondarily transmit increased pressure from the driving-shaft to said lever through connections independent of the cam, substantially as set forth.



3. In a wire-nail machine, the combination of a driving-shaft, a cam fixed thereon, a heading-ram actuated by the driving-shaft, a fixed gripping-die, a movable gripping-die, a gripping-lever coupled to the movable die, an intermediate lever coupled to and vibrated by the driving-shaft in substantial coincidence with the movement of the heading-ram, a spreader-bar actuated by the cam and adapted to preliminarily transmit pressure from the cam to the gripping-lever and secondarily transmit increased pressure from the driving-shaft to said lever through connections independent of the cam, and a spring acting upon the spreader-bar in opposite direction to the pressure imparted thereto by the cam, substantially as set forth.

4. In a wire-nail machine, the combination of a driving-shaft, a cam fixed thereon, a heading-ram actuated by the driving-shaft, a fixed gripping-die, a movable gripping-die, a gripping-lever coupled to the movable die, an intermediate lever coupled to and vibrated by the driving-shaft in substantial coincidence with the movement of the heading-ram, a spreader-bar actuated by the cam and provided with an enlarged and wedge-faced head adapted to be forced between bearings on the gripping-lever and the intermediate lever by pressure from the cam, and a spring acting upon the spreader-bar in opposite direction to the pressure imparted thereto by the cam, substantially as set forth.

5. In a wire-nail machine, the combination of a driving-shaft, a cam fixed thereon, a heading-ram, a connecting-block coupled to a crank-pin on the driving-shaft and to the heading-ram, a fixed gripping-die, a movable gripping-die, a gripping-lever coupled to the movable die, a roller journaled on said gripping-lever, an intermediate lever coupled to and vibrated by the connecting-block, a roller journaled on said intermediate lever, a double-armed rock-shaft having a roller on its upper arm bearing on the periphery of the cam, a spreader-bar connected to the lower arm of the rock-shaft and provided with an enlarged and wedge-faced head adapted to be forced between the rollers of the gripping and intermediate levers by the pressure of the cam on the roller of the rock-shaft arm, and a spring acting upon the spreader-bar in opposite direction to the pressure imparted thereto by the cam, substantially as set forth.

6. In a wire-nail machine, the combination of a bearing-block fitted with the capacity of axial adjustment in the frame of the machine, and a cutting-lever journaled eccentrically on said bearing-block, substantially as set forth.

7. In a wire-nail machine, the combination of a bearing-block fitted with the capacity of axial adjustment in the frame of the machine and provided with opposite lateral recesses, adjusting-screws, each bearing against the frame and against the face of one of said recesses, and a cutting-lever journaled eccentrically on the bearing-block, substantially as set forth.

8. In a wire-nail machine, the combination of a bearing-block fitted with the capacity of axial adjustment in the frame of the machine, said block being provided with a threaded opening eccentric to its axis and being split or divided radially on opposite sides of said opening, adjusting-screws bearing against the frame and against opposite lateral faces on the bearing-block, a cutting-lever pivot having a thread engaging that of the opening of the block, and a cutting-lever journaled on said pivot, substantially as set forth.

9. In a wire-nail machine, the combination of a driving-shaft, a fixed gripping-die, a movable gripping-die actuated through intermediate connections from the driving-shaft, a bearing-block fitted with the capacity of axial adjustment in the frame of the machine, and a cutting-lever journaled eccentrically on said bearing-block, so as to be brought nearer to or farther from the gripping-dies by axial adjustments of the bearing-block, substantially as set forth.

10. In a wire-nail machine, the combination of a driving-shaft, a feed-carriage fitted to reciprocate on the frame of the machine, a connecting-rod coupled to a crank-pin rotated by the driving-shaft and to the feed-carriage, a double-armed feed-dog pivoted on the feed-carriage and having an arm which is moved in opposite directions by the vertical vibration of the connecting-rod and by a spring, respectively, and a feed-chisel fixed to the opposite arm of the feed-dog, substantially as set forth.

11. In a wire-nail machine, the combination of a driving-shaft, a feed-carriage fitted to reciprocate on the frame of the machine, a shaft journaled transversely on the carriage, a connecting-rod secured to said shaft and coupled at its opposite end to a crank-pin rotated by the driving-shaft, a double-armed feed-dog pivoted on the feed-carriage, a lug fixed to the transverse shaft of the carriage and bearing against one of the arms of the feed-dog, a spring exerting tension upon the feed-dog in direction opposite to that of the pressure of the lug, and a feed-chisel fixed to the opposite arm of the feed-dog, substantially as set forth.

12. In a wire-nail machine, the combination of a series of straightening-rollers journaled upon pivots fixed to the frame of the machine, a stem pivoted to the frame adjacent to said rollers, a carrier fitted to move longitudinally upon said stem, and straightening-rollers journaled upon pivots fixed to said carrier, substantially as set forth.

13. In a wire-nail machine, the combination of a series of straightening-rollers journaled upon pivots fixed to the frame of the machine, a stem having a laterally-enlarged head and pivoted to the frame adjacent to said rollers, a carrier fitted to move longitudinally upon the stem, straightening-rollers journaled on pivots fixed to the carrier, a spring bearing against the stem and against the carrier, a lever pivoted to the stem and adapted to bear against the carrier in direction opposite to that of the tension of the spring, and adjusting-screws bearing against the frame and against the lateral enlargements of the head on the stem, substantially as set forth.

445,098. SHEDDING MECHANISM FOR LOOMS. FELIX TONNAR, Dulken, Germany. Filed Sept. 25, 1889. Serial No. 325,005. (No model.) Patented in England Aug. 30, 1889, No. 13,728.

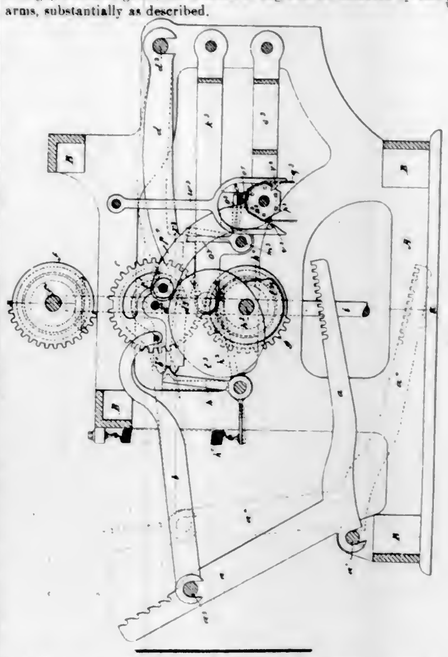
Claim.—1. In a loom, the combination of a series of vertically-movable gear-wheels, the constantly-revolving toothed cylinders, one of which is mounted above and the other below said gears, a series of levers for carrying said gears, a pattern-cylinder, a series of catches actuated by the pattern-cylinder to engage the gear-carrying levers, a series of pins acting on said catches, a series of arms carrying pins to engage the gears, a series of angle-levers actuated by said arms, the frames k^3 s^3, and mechanism for actuating said frames, substantially as described.

2. In a loom, the combination of the constantly-revolving toothed cylinders, a series of vertically-movable gear-wheels intermediate said cylinders, a series of levers for carrying said gear-wheels, a pattern-cylinder, a vertically-movable frame s^3 for carrying the pattern-cylinder, the frame k^3, means for actuating said frames, and a series of catches actuated by the pattern-cylinder to engage the gear-carrying levers, substantially as described.

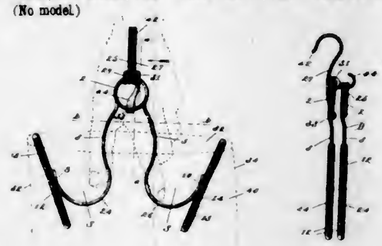
3. In a loom, the combination of a series of levers, gear-wheels carried thereby, constantly-revolving cylinders, one mounted above and the other below said gears, a cam-operated pattern-cylinder, a cam-operated lifting-frame, and catches on said lifting-frame operated by said pattern-cylinder to engage with the levers and bring the gears into engagement with either of the cylinders, substantially as described.

4. In a loom, the combination of a series of levers, a series of mutilated gears carried thereby, the constantly-revolving toothed cylinders, one of which is mounted above and the other below said gears, a series of arms carrying pins adapted to engage the gears, a series of angle-levers actuated by said arms, a pattern-cylinder, the frames k^3 s^3, means for actuating said frames, and a series of catches carried by one of said frames and actuated by the pattern-cylinder to engage the gear-carrying levers, substantially as described.

5. In a loom, the combination of a series of levers, gears carried thereby, cylinders above and below said gears, a vertically-moving frame, a pattern-cylinder carried thereby, a series of catches actuated by the pattern-cylinder to engage the levers, a cam-operated frame carrying said catches, a series of pins acting on said catches, a pawl adapted to operate the cylinder, a series of arms carrying pins adapted to engage the said gears, and a series of angle-levers actuated by said arms, substantially as described.



445,099. TROUSERS STRETCHER AND HANGER. JUSTUS A. TRAUT, New Britain, Conn. Filed June 17, 1890. Serial No. 355,734. (No model.)



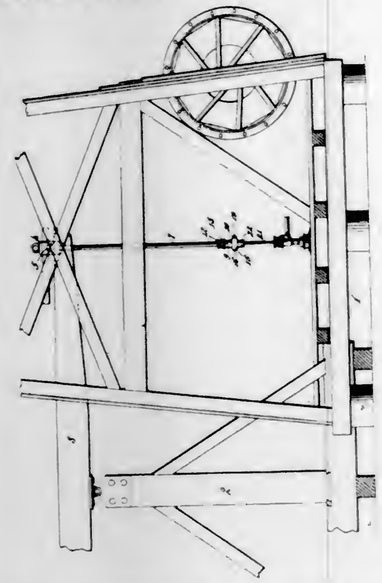
Claim.—1. In a trousers stretcher and hanger, the combination, with the spring-loop and with the handle-bars extending therefrom and carrying pressure-bars, of the hook-loop carried on the spring-loop and having two hooks, one for suspending the stretcher and hanger and the other for receiving a duplicate stretcher and hanger, substantially as shown and described.

2. In a trousers stretcher and hanger, the combination, with the spring-loop and with handle-bars extending therefrom and carrying pressure-bars at the ends thereof, of a supporting-hook, substantially as described, engaging one side of said spring-loop and extending to and fastened to the opposite side of said loop.

3. In a trousers stretcher and hanger, the combination, with a spring-loop and handle-bars carrying at their ends pressure-bars, substantially as described, of the supporting-hook engaging one side of said loop and fastened to the other side of said loop, said hook carrying a second hook for supporting a second pants-supporter.

4. In a supporter of the class specified, the combination, with the central spring-loop, of a supporting-hook formed of the folded wire, one part of which is fastened to said spring-loop and the other part extends outwardly and upwardly to form a pants-supporter-carrying hook

445,100. APPARATUS FOR REMOVING PARAFFINE FROM THE PIPES OF OIL-WELLS. MORDECAI TURTON, Lima, Ohio, assignor of one-half to Thomas G. Laney, same place. Filed Oct. 13, 1890. Serial No. 367,976. (No model.)



Claim.—1. The combination, with the walking-beam of a cross-head having trunnion-arms and provided with a pipe depending from said cross-head, of a coupling swiveled upon said pipe, the latter being provided with a collar lying against an internal shoulder in the coupling and between the same and a threaded sleeve loose on said pipe and adapted to engage a female screw-thread in said coupling above the internal collar, substantially as described.

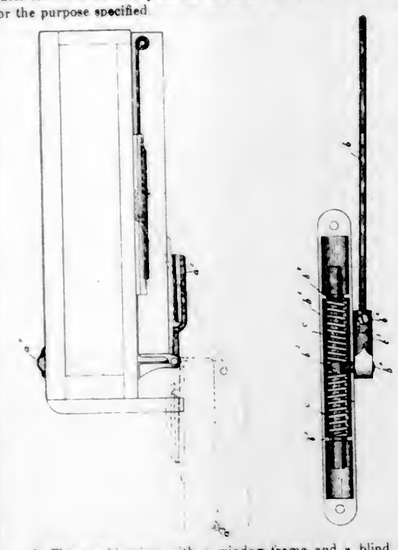
2. The combination, with a cross-head having a rigid depending pipe provided with a collar at its lower end, of a coupling having an opening interiorly threaded and an internal shoulder below said threads upon which the collar on the tube rests, a threaded sleeve loose upon the tube above said collar and having a rigid head and a jam-nut, a plug entering the coupling transversely and having a threaded bolt projecting from one side of said coupling and adapted to receive a nut, and a polished rod traversing said coupling and entering the tube and passing through an ovoid opening in the solid body of the plug substantially as described.

3. The combination, with a walking-beam of a cross-head having trunnion-arms and provided with a pipe depending from said cross-head, of a coupling swiveled upon said pipe, the latter having a collar lying between an internal shoulder in the coupling and a threaded sleeve loose on said pipe and adapted to engage a screw-thread in the coupling, and a plug consisting of a block of metal lying in a recess in said coupling and having an ovoid opening entirely surrounded by the solid metal of the block to receive the polished rod, and provided, also, with a threaded bolt projecting outside the coupling to receive a nut by which the block is adjusted to clamp the rod between the converging sides of the ovoid opening, substantially as described.

445,101. DOOR-SPRING. ABEL D. TYLER, Jr., Brockton, Mass., assignor to the Tyler Manufacturing Company, Portland, Me. Filed Feb. 26, 1890. Serial No. 341,898. (No model.)

Claim.—1. The combination, with a window-frame and a blind hinged thereto, consisting of an outer and an inner fold, of an intermediate connection between the said frame and outer fold of the blind, composed, essentially, of a rod and housing and means to normally center and also to permit of longitudinal movement of the rod, whereby the inner fold of the blind is always brought into its proper place when open, and pivotal connections attaching the rod to the outer fold and housing, substantially as described.

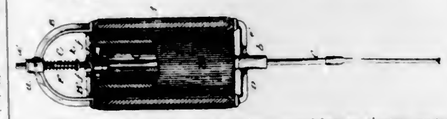
2. The combination, with a window-frame and a blind hinged thereto, and consisting of an outer and an inner fold, of a rod and housing and a spring in said housing encircling said rod to normally center and also permit of longitudinal movement of the rod, said housing and rod being secured to the window-frame and pivotally connected to the outer fold of the blind by an intermediate rod *b*, substantially as and for the purpose specified.



3. The combination, with a window-frame and a blind hinged thereto, consisting of an outer and an inner fold, of a housing, a rod sliding therein, and an intermediate rod detachably connected to said housing and pivoted to the housing and blind, respectively, and a spring to permit of longitudinal movement of the sliding rod and also to normally center it, substantially as described.

4. The combination, with a window-frame and blind hinged thereto, consisting of an outer and an inner fold, of a housing rigidly secured to the window-frame, a reciprocating rod b^3, adapted to slide in said housing, springs inclosing said rod on each side of the crank-arm to normally center it, a crank-arm secured to said rod, and a rod, as *b*, pivotally secured to the said crank-arm and pivotally connected to the outer fold of the blind, substantially as described.

445,102. ELECTRIC-MOTOR RECIPROCATING ENGINE. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Apr. 18, 1890. Serial No. 348,547. (No model.)



Claim.—1. A reciprocating engine comprising an electric motor the armature of which is revoluble within its field-magnet and sleeved upon a tool-stock adapted to be reciprocated through said armature and bearings for the tool-stock arranged to prevent end motion of the armature, substantially as described.

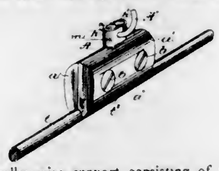
2. A reciprocating engine comprising an electric motor having a stationary part or field-magnet, a rotating part or armature revoluble therein, a tool-stock adapted to be reciprocated through said rotating part or armature, the latter being sleeved thereupon, a motor-spring acting upon and imparting the power-stroke to the tool-stock, and means carried by said rotating part or armature for alternately compressing and releasing the motor-spring, substantially as described.

3. A reciprocating engine comprising an electric motor having a stationary part or field-magnet, a rotating part or armature revoluble therein, a tool-stock adapted to be reciprocated through said rotating part or armature, the latter being sleeved thereupon, a motor-spring acting upon and imparting the power-stroke to the tool-holder, and means carried by the armature acting directly upon the tool-holder for alternately compressing and releasing the motor-spring, substantially as described.

4. A reciprocating engine comprising a reciprocated tool-stock and a motor-spring therefor, and a rotating electric motor having its armature rotatably mounted upon the tool-stock and provided with a cam for retracting the tool-stock and alternately compressing and releasing the motor-spring, substantially as described.

5. A reciprocating electric engine comprising an electric motor the armature of which is revoluble within its field-magnet and sleeved upon a reciprocated tool-stock, bearings sustaining the tool-stock and preventing end motion of the armature, a cam carried by said armature, and a motor-spring acting upon the tool-stock and alternately compressed and released by the rotation of the cam carried by the armature, substantially as described.

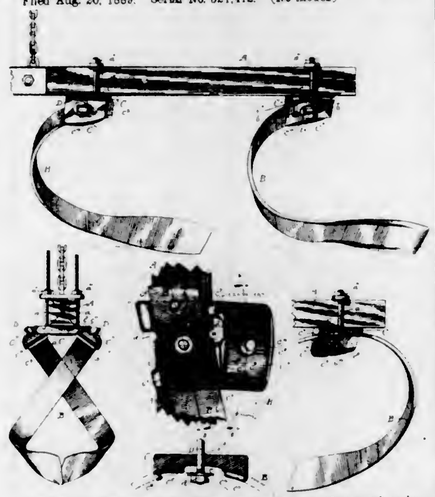
445,103. TROLLEY-WIRE CLAMP OR SUPPORT. WILLIAM VOGLER, Somerville, Mass. Filed Apr. 8, 1890. Serial No. 347,047. (No model.)



Claim.—1. A trolley-wire support consisting of two members grooved at their inner sides to inclose a trolley-wire for more than one-half of its circumference, means to clamp said members together, and a locking device to retain the ends of the wire, substantially as described.

2. A trolley-wire clamp or support comprising two members grooved on their contacting faces to receive and inclose a trolley-wire, and means for clamping said members together, combined with a filling-piece of wire, as f^2, to operate substantially as described.

445,104. TOOTH-SEAT. EFFINGER E. WHIPPLE, St. Johns, Mich. Filed Aug. 20, 1889. Serial No. 321,412. (No model.)



Claim.—1. The herein-described device for securing teeth to harrows or cultivators, consisting of a plate, an inclined seat or seats attached thereto, to which the tooth or teeth are secured, means for securing the plate to the harrow, said plate being provided with means for adjusting the position of the plate and tooth with respect to the harrow or cultivator, substantially as described.

2. The herein-described device for securing teeth to harrows or cultivators, comprising a plate having a main body portion, an inclined portion or portions to which the tooth or teeth are secured, a bolt or equivalent means for securing the plate to the harrow, said plate being provided with means for adjusting the position of the plate and tooth with respect to the harrow or cultivator.

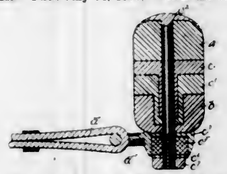
3. A device for securing teeth to harrows or cultivators, comprising a plate having a main body portion adapted to be adjustably secured to the harrow or cultivator, and an inclined portion arranged at an angle to the main portion, one or both of said main and inclined portions being provided with grooves or depressions formed in the under face thereof, within which the end of the tooth is secured.

4. A device for securing teeth to harrows or cultivators, comprising a plate having a main body portion provided with slots or openings through which the bolts pass that secure said plate to the harrow, an inclined extended portion arranged at an angle to said main body portion, and means for securing the tooth to said inclined extended portion.

5. A device for securing teeth to harrows or cultivators, comprising a plate having a main body portion provided with slots or openings through which the bolts pass that secure said plate to the harrow, an inclined extended portion arranged at an angle to said main body portion, and means for securing the tooth to said inclined extended portion, substantially as described.

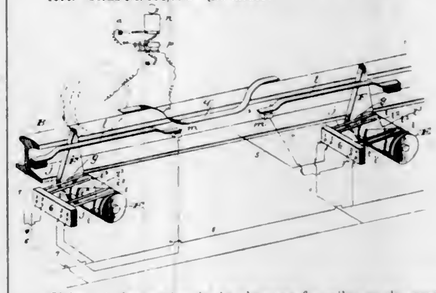
6. The combination, with the beam of a harrow or cultivator and a curved tooth, of an interposed part or member wider than the tooth, and a bolt or clip for securing the latter and said tooth to said beam, the ends of the bolt or clip passing through elongated slots or openings in said interposed member, said interposed member being provided with a depression on its under face adapted to receive the tooth, whereby sidewise movement of the latter is prevented, substantially as specified.

445,105. STRAP-LOOP FOR CARRIAGES. DANIEL D. WHITNEY, Cornwall, N. Y., assignor to the Whitney Coupling Company, Whitinsville, Mass. Filed July 11, 1890. Serial No. 358,393. (No model.)



Claim.—The cross-bar, whiffletree, and whiffletree-connections, combined with the under plate c^4, having a socket formed therein on its under side, a yielding cushion in said socket, a retaining-nut, and a loop d', integral with said under plate and extended from its upper part at right angles thereto, substantially as described.

445,106. ELECTRIC SIGNAL FOR RAILROADS. EDGAR C. WILEY, Bristol, Tenn., assignor of two-thirds to James A. Dickey, same place, and Napoleon B. Ainsworth, McAlester, Ind. Ter. Filed May 15, 1890. Serial No. 351,964. (No model.)



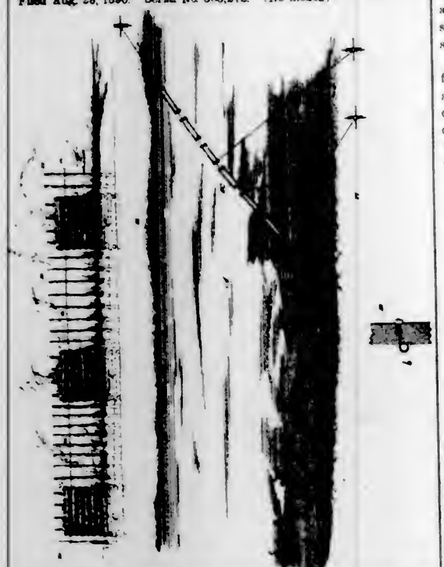
Claim.—1. In an electric signal system for railways, the combination of the incomplete circuits connected with rotary commutators, contact-plates, and the rails, the commutators having arms which are adapted to be depressed by a train or locomotive, and when depressed will partially complete the circuits, said circuits being completed by brushes contacting with the plates so as to sound an electric alarm mechanism carried by the locomotive, and means for automatically elevating the arms attached to the commutators, substantially as set forth.

2. In a circuit-closing device for electric signals for railways, a rotary commutator having a pair of complete contact-plates and adjacent thereto pairs of short contact-plates with connecting-wires, as shown, each pair being circumferentially on a line with each other, a bar G, carrying four contact-brushes and wires connecting said brushes with the line-wires and with the rail and adjacent contact-plates, and means carried by the locomotive and tender for electrically connecting the contact-plates and rails when the commutator is turned substantially as set forth.

3. In a signaling system for railways, the combination of incomplete circuits and commutators adapted to close the same, each having an arm adapted to be struck by the locomotive to turn its commutator, a spring designed to restore said arm to a vertical position, and a cylinder carrying a valved piston the piston-rod of which is connected to the commutator to retard the action of the spring, substantially as set forth.

4. In a circuit-closing device for electric signals for railways, the combination, with a box provided with a contact-strip upon its upper side, a commutator-cylinder located in said box and having one of its journals projecting beyond the side of the same, a contact-arm connected with said journal, a cylinder also located in said box and containing a piston connected by a rod with the commutator-cylinder, and a valve movably located adjacent to said piston on said rod, together with commutator-brushes, substantially as set forth.

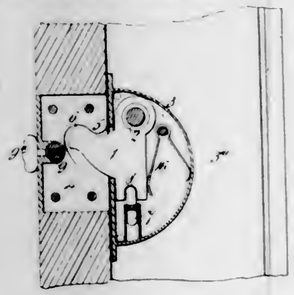
445,107. LUMBER-BOOM. ALSON F. WILLEY, Bluff City, Tenn. Filed Aug. 28, 1890. Serial No. 363,272. (No model.)



Claim.—1. In a lumber-boom, a series of rigid structures or pens permanently located in the bed of a stream and extending from said bed above the water-level, cables rigidly secured to said pens, a fence made up of vertical posts, which are secured to the cables between the pens, said posts extending from the bed of the stream above the water-level, and a floating sheer secured at one end to the fixed pen, substantially as shown, and for the purpose set forth.

2. In a lumber-boom, a series of pens or permanent and rigid structures built in the bed of the stream so as to extend above the water-level, cables rigidly secured to the pens and stretched between them, a series of vertical posts secured to said cables, so as to be maintained in a vertical position, said posts extending from the bed of the stream above the water level, bolts having bent ends secured to the posts so as to grasp the cables and permit the vertical post to be moved to form an opening or passage-way between the pens, and a sheer attached to the upper pen and connected to windlasses on each side of the stream, the parts being organized substantially as set forth.

445,108. LATCH. EDWARD WRIGHT, Southend, England. Filed June 18, 1889. Serial No. 314,747. (No model.)

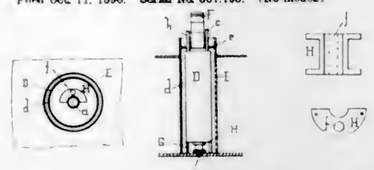


Claim.—1. The combination of a lock-case 3, adapted to be applied to a door-frame, a lock-bolt 1, pivoted in said case and formed with double-inclined edges, a spring arranged to normally maintain the lock-bolt projected, a catch 4, adapted to be mounted on a door and having a cam-shaped edge 5, and a locking-bolt 7, arranged to move in said lock-case and engage with said bolt 1, substantially as herein described, for the purpose set forth.

2. A lock consisting in the combination of a case, a swinging lock-bolt pivoted therein and having its locking end held yieldingly projecting therefrom, the outer edge of said bolt being vertically beveled or inclined and provided with a locking inclined edge forming an angle with said outer edge, and the catch having the cam-shaped recess arranged to engage the outer edge of the bolt and depress the same, so that the locking edge swings up into said recess, and means to lock said bolt, substantially as described.

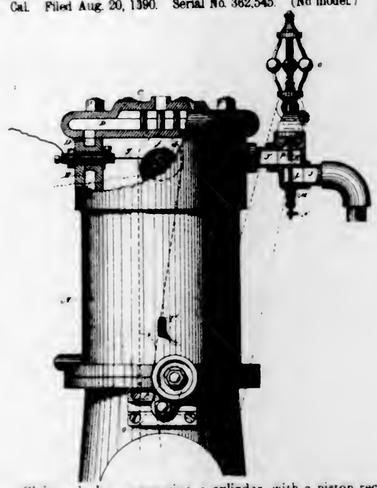
3. A lock having a bolt pivoted to swing in a vertical plane and formed with two inclined surfaces arranged at an angle to each other, a spring yieldingly projecting said bolt, a catch arranged to act against one or the other of said inclined surfaces when the door is opened or closed, a locking-bolt arranged in the lock-case to hold said lock-bolt projected, and a supplementary locking-bolt carried by the door and capable of securing said lock-bolt projected, substantially as described.

445,109. PORTABLE RANGE. DANIEL H. ERDMAN, Camden, N. J. Filed Oct. 11, 1890. Serial No. 367,793. (No model.)



Claim.—The combination, with a portable range, vertical boiler, and drum, of a bottom brace or blow-off pipe, for the purpose shown and described.

445,110. GAS-ENGINE. MARCELLUS A. GRAHAM, San Francisco, Cal. Filed Aug. 20, 1890. Serial No. 362,545. (No model.)



Claim.—1. In a gas-engine, a cylinder, with a piston reciprocating therein and a means for supplying gas or explosive vapor to the interior of the cylinder, with inlet-valve, governor, and exhaust-valve, as shown, in combination with a spring-arm projecting into the cylinder and forming one electrode, a horizontal rotary shaft *d*, extending through the side of the cylinder explosion-chamber to form the other electrode and having its inner end slotted, a radial arm *f*, fitted to the slot, and a set-screw by which the arm is secured and its radial length is regulated with reference to the elastic electrode, substantially as herein described.

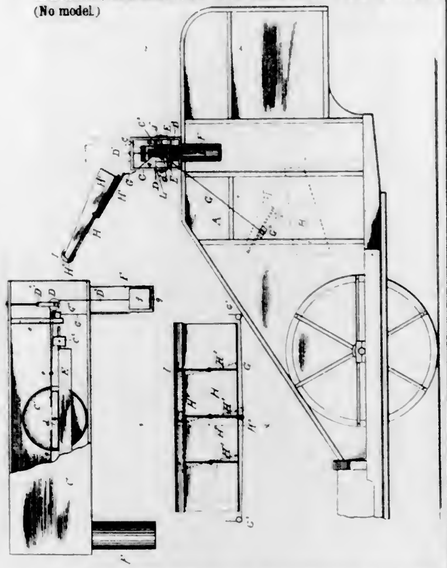
2. In a gas-engine, a cylinder and a reciprocating piston, a means for supplying gas or explosive vapor to the interior of the cylinder, with inlet and exhaust valves and regulating mechanisms, a shaft *d* extending through the side of the cylinder into the explosion-chamber, sprocket-wheels and connecting-chains with tension devices whereby motion is communicated from the engine-shaft to rotate the shaft *d*, a stuffing-box through which said shaft passes, and a pipe or passage *m*, whereby the lubricant is delivered at the bottom or inner end of the stuffing-box chamber, substantially as herein described.

445,111. COMPOSITION FOR TREATING ARTICLES MADE FROM PAPER. LUDWIG GROTE, Dresden, Germany. Filed Apr. 23, 1890. Serial No. 349,167. (No specimens.)

Claim.—1. A composition for the purpose set forth, comprising starch, water-glass, and a fatty substance, substantially as described.

2. The composition for the purpose set forth, comprising a starchy substance, water-glass, and beeswax, substantially as described.

445,112. GRAIN-SEPARATING MECHANISM FOR TRAVELING THRASHERS. LOREN H. HILL, Oakdale, assignor of one-half to James K. Kendrick, Germantown, Cal. Filed Mar. 19, 1890. Serial No. 344,582. (No model.)



Claim.—1. In a thrashing-machine, the combination, with a grain-shoe and a grain-board arranged above said shoe and carrying transversely-movable flanges thereon, of a roller movable transversely with respect to the thrasher in a casing above the grain-board, the weights connected with said roller and adapted to shift the same, and the cords connecting the flanges of the grain-board with said roller, whereby said flanges are shifted upon the grain-board, substantially as and for the purpose specified.

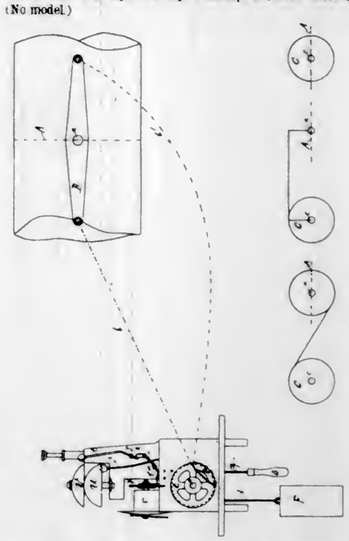
2. A grain-saving device adapted to traveling thrashers, consisting of the box C, mounted upon the top of the trunk A and containing the roller C, having its shaft-bearings in the blocks *d*, adapted to slide back and forth with the swaying of the machine upon the tracks E, attached to the sides of the box C, such roller C being actuated by cords D^2, passing over rollers D in the forks of the rods D', suspended from the top of the box C and having weights *f* at their lower ends within drums F, attached to the ends of the box C, the drums F having the rubber bumpers *g* at their bottoms, and the cords G, reciprocating with the cords D^2 and causing the flanges H' of the grain-board H to move with the sway of the machine, substantially as described and set forth.

3. The combination, substantially as described, of the trunk A, the shoe B, the grain-board H, provided with the swinging-flange system H' H^2 H^3, the box C, containing the roller C, the weights F, connected to said roller and adapted to operate the same, and connecting pulleys and cords actuating the swinging-flange system of the grain-board H.

4. The grain-board H and its back I, in combination with the flanges H', the rod H^3, rigidly attached to the center flange H', the connecting-rod H^3, flexibly attached to the back ends of the flanges H', and means for automatically shifting the flanges upon the grain-board, substantially as and for the purpose specified.

5. The combination, with the roller C, adapted to slide back and forth with the blocks *d* in the casing C, of the transversely-arranged bumpers C^2, mounted on a transverse shaft adjustable in longitudinal slots in the side walls of the casing, and the guards L, covering said longitudinal slots and adapted to prevent dust from entering the casing, substantially as specified.

445,113. AUTOMATIC DAMPER. FRIEDRICH O. HORENZ, Radebeul-Dresden, Saxony, Germany. Filed Apr. 23, 1890. Serial No. 349,202. (No model.)



Claim.—1. In apparatus for automatically regulating the supply of air to boiler and other furnaces, the combination, with a damper-closing device arranged in the flue or air-passage, of clock-work mechanism comprising a pendulum *x y z*, a sheave W, in which the upper part *x* is contained, a flat spring *y* for connecting the upper part *x* with the lower part *z*, whereby the latter engages with a forked arm or crutch *x'*, connected with the pallet or anchor of an escapement-wheel, and connections from the clock-work to said closing device, substantially as and for the purpose set forth.

2. In an apparatus for the purpose described, the combination of a damper-closing device, a clock-work mechanism, a drum *c*, operated by said mechanism, a segment D on said drum, and a chain *b*, connecting said closing device and segment and so arranged as to gradually operate said closing device, as set forth.

3. In combination, in a device for the purpose mentioned, the lever B, drum C, segment D thereon, connections *b b'* between said lever and drum and segment, as set forth, and clock-work mechanism, for the purpose set forth.

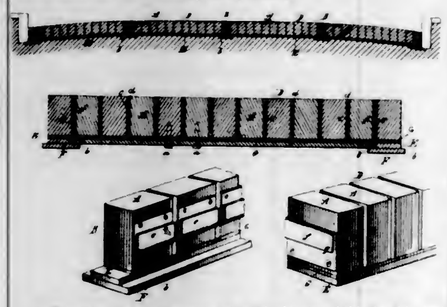
4. In apparatus for automatically regulating the supply of air to boilers and other furnaces, the combination, with a damper or valve closing device arranged in the flue or air-passage, of clock-work mechanism for operating the same and a signaling apparatus operated by said clock-work and comprising an audible alarm and mechanism, substantially as described, to operate said alarm on the running down and on the winding of the clock-work, substantially as and for the purpose set forth.

5. In apparatus for automatically regulating the supply of air to boiler and other furnaces, the combination, with a damper or valve closing device arranged in the flue or air-passage, of clock-work mechanism operating said device and a recording apparatus adapted to record both the termination of the combustion period herein referred to as well as the reopening of the damper operated by said clock-work and comprising pivoted prickers and levers or arms for turning the same, substantially as and for the purpose set forth.

445,114. PAVEMENT. SAMUEL B. JEROME, New York, N. Y. Filed Apr. 21, 1890. Serial No. 348,817. (No model.)

Claim.—1. Pavement-sections composed of blocks placed side by side, a board or base beneath said blocks, to which base said blocks are rigidly secured, and a cushion of tough fabric rigidly held between said blocks and base, whereby the parts are all immovably held to-

gether, and the sections can be lifted and transported while the parts remain connected, substantially as described.



2. Pavement sections composed of blocks placed side by side and a separate base-board to which said blocks are rigidly secured, which base-board extends laterally on opposite sides of said blocks, forming ledges upon which other sections can rest, whereby the parts composing the sections will remain connected when the sections are moved, substantially as described.

3. Pavement-sections composed of blocks placed side by side and rigidly secured upon a base-board extending laterally beyond said blocks forming continuous ledges on opposite sides, combined with other sections composed of base-boards upon which blocks are rigidly secured and extending at right angles to said other sections, and that rest at their ends upon said ledges, substantially as described.

4. The longitudinal base-board E and the cushion G of tough fabric on the same, combined with the blocks A upon said cushion, and with spikes or the like that hold the blocks upon the base, and also hold said cushion between the blocks and the base, whereby the parts are all held firmly together in a compact structure, substantially as described.

5. The longitudinal sections B, combined with the cross-sections D, whose ends are placed against the sections B, and with clamps between said sections B and D to hold them together, substantially as described.

6. The longitudinal pavement-sections B, having clamps on their sides, combined with the cross-sections D, having corresponding clamps on their ends to engage the clamps on the sections B, substantially as described

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445,115. **BEER-COOLER.** BARTIS B KINN, Dunkirk, N Y Filed Mar. 13, 1890. Serial No. 343,793. (No model.)

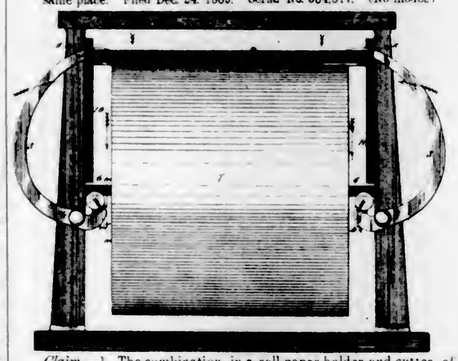


Claim.—1. In a beer-cooler, the ice-chest located below the storage-compartment, the said ice-chest having mounted therein a platform actuated by a series of springs, whereby the ice is forced up against the kegs and that portion of the beer which is drawn off at this point kept at a very low temperature, as set forth.

2. A beer cooler or refrigerator having the supporting-shelves provided with coils of pipe the ends of which communicate with the outer air, substantially as and for the purpose set forth

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445,116. **ROLL-PAPER HOLDER AND CUTTER.** EDWARD S KNIGHT, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Dec. 24, 1889. Serial No. 334,817. (No model.)



Claim.—1. The combination, in a roll-paper holder and cutter, of a gravitating knife and pivoted levers bearing at one end upon the knife and giving bearing at the other end to the paper roll, substantially as and for the purpose set forth.

2. The combination, in a roll-paper holder and cutter, of suitable standards, a gravitating knife guided by the standards, and levers pivoted to the standards, the lower ends of said levers extending in an inward and upward direction from the pivots and carrying the roll of paper, and the outer ends of said levers extending in an outward and upward and inward direction from the pivots and bearing upon said knife, substantially as and for the purpose set forth

3. The combination, in a roll-paper holder and cutter, of suitable standards, a gravitating grooved knife and pivoted levers, the lower ends of said levers receiving and carrying the roll of paper, and the upper ends of the levers fitting in the groove of the knife, substantially as and for the purpose set forth.

4. In a roll-paper holder and cutter, the combination of the standards provided with guides 10, a grooved knife having notched ends and levers pivoted to the standards, said levers carrying the roll of paper and bearing upon said knife, substantially as and for the purpose set forth

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445,117. **DRAW-BRIDGE GATE.** WENZEL KREJCI and BENJAMIN KAPINOS, Jackson, Minn. Filed Apr. 22, 1890. Serial No. 349,027. (No model.)



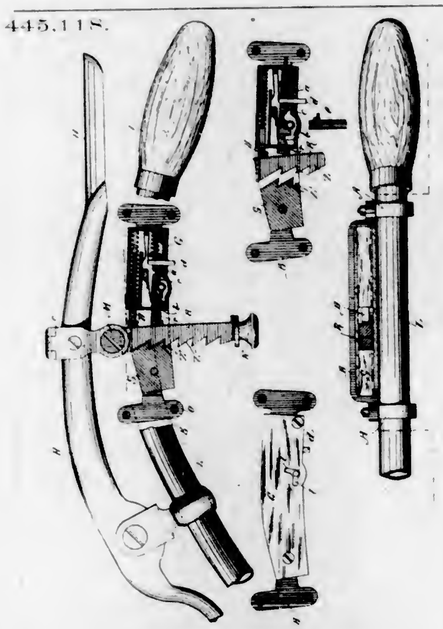
Claim.—1. In a draw-bridge, the combination, with the gate-support and the gate having a broad foot-rail, of the plates overlapping the edges of the said foot-rail, substantially as set forth.

2. In a draw-bridge, the combination, with the two angle-irons or plates and the rollers between the said plates, of the gate having a broad foot-rail which runs on the rollers, and the plates secured to the horizontal portions of the angle-irons and overlapping the foot of the rail, substantially as described.

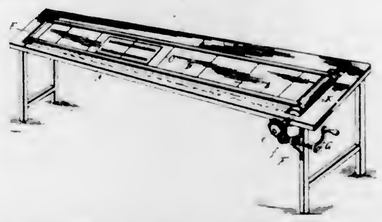
445,118. **BRAKE-HOLDER FOR VELOCIPEDES.** JULIUS KRIEGER and ALBERT DALLMER, Dresden, Germany. Filed Jan. 17, 1890. Serial No. 337,272. (No model.) Patented in England Dec. 24, 1889, No. 20,761.

Claim.—The combination, with the brake-bar and the handle-bar, of a laterally-swinging rack-bar pivoted to the brake-bar and provided with a series of ratchet-teeth in one edge, a lock secured to the handle-bar by a band or yoke and consisting of an apertured case through which said rack-bar extends, said case being provided with teeth to mesh with said rack-teeth, and with a spring-pressure bolt constantly bearing against the edge of said rack-bar and with another bolt whereby the said rack-bar can be locked, substantially as described.

445,118.



445,119. **TIME-INDICATING DEVICE FOR MUSICIANS.** ISAAC G. LAWSHE, Sioux Falls, S. D. Filed Oct. 17, 1889. Serial No. 327,301. (No model.)



Claim.—1. The combination, with music held stationary, of a time-indicator composed of a traveling carrier and markers, substantially as described.

2. The combination, with music held stationary, of a time-indicator comprising an endless carrier having markers, substantially as set forth.

3. A time-indicator for music, composed of an endless carrier comprising two members, and markers secured at their ends to the said members, substantially as described.

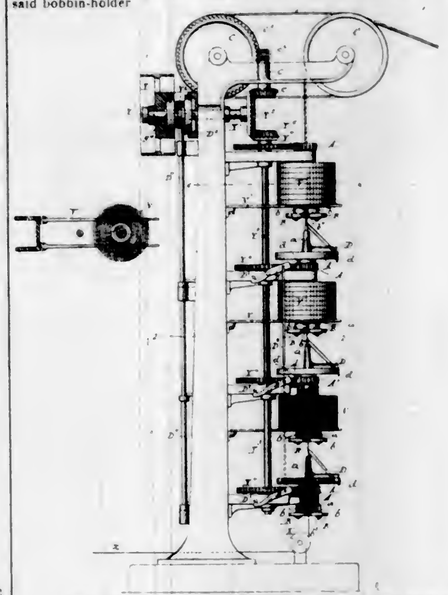
4. The combination, with the music-support and the rollers E and E', the roller E' being driven by suitable power, of the endless carrier having markers passing around said rollers and receiving motion from the roller E', substantially as described.

445,120. **MACHINE FOR COVERING WIRE.** GEORGE LISPENARD, Brooklyn, N. Y., assignor to the Norwich Insulated Wire Company, same place. Filed Oct. 31, 1889. Serial No. 328,801. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of a main frame, a revolving bobbin-holder having a vertical axis and constructed to support a bobbin or coil of covering material concentrically therewith, devices for feeding a wire or core centrally through the bobbin-holder and through the bobbin, a holder for reserve bobbins above the bobbin-holder, and means for rotating the bobbin-holder and actuating the wire-feeding devices.

2. The combination, with a winding-flier, of a holder for a reserve bobbin or spool, which holds the bobbin or spool in such position that the wire passes through it after being covered.

3. The combination, substantially as hereinbefore set forth, of wire-feeding devices, a revolving holder adapted to carry a coil or bobbin of covering material concentrically with its axis, through which holder and bobbin the wire centrally passes, and a holder for the reception of reserved bobbins arranged to hold them concentrically with said bobbin-holder



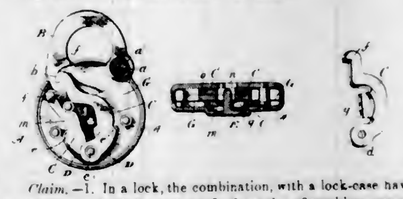
4. The combination, substantially as hereinbefore set forth, of wire-feeding devices, mechanism for applying a ribbon or ribbons spirally around the wire, and the die-wheels having parallel axes about which they are adjustable.

5. The combination, substantially as hereinbefore set forth, of wire-feeding devices, mechanism for applying a ribbon spirally around the wire, and dies composed of wheels having grooved peripheries.

6. The combination, substantially as hereinbefore set forth, of wire-feeding mechanism, a driving-shaft, a driving-pulley thereon, a friction-clutch adapted to engage with the driving-pulley, a stationary clutch-block, with which the clutch may also engage, mechanism for applying a ribbon or ribbons spirally around the wire, and connections between the mechanism for applying the ribbon to the wire and the clutch mechanism, whereby the clutch is shifted when a ribbon breaks.

7. The combination, substantially as hereinbefore set forth, of the main frame, a revolving bobbin-holder, a main driving-shaft, gearing between the driving-shaft and the bobbin-holder, a driving-pulley, a clutch connecting it with the driving-shaft, a spring-actuated rod, connections between this rod and the clutch, a pawl normally holding the spring-rod to insure the engagement of the clutch with the driving-pulley, a tripping-arm for disengaging this pawl from the spring-actuated rod, and means for operating the tripping-arm.

445,121. **PADLOCK.** FRANK W MIX, New Britain, Conn. Filed Dec. 4, 1890. Serial No. 373,520. (No model.)

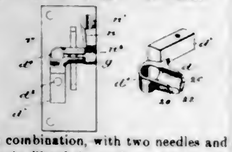


Claim.—1. In a lock, the combination, with a lock-case having a recess in one or both faces thereof, of a series of tumblers, one of the latter for each recess having an offset resting within said recess, substantially as set forth

2. In a lock, the combination, with a lock-case having a depression or recess in one face thereof, of a series of tumblers arranged in pairs, one of said tumblers of the pair adjacent to the depression or recess having an offset resting in said depression or recess, substantially as set forth

3. In a padlock, the combination, with a lock-case having a depression or recess in one face thereof and a spring-actuated hasp pivoted to the case and provided at its free end with shoulders, of a plate or ward rigidly secured within the case and provided with a key-slot, and tumblers arranged on opposite sides of said plate or ward, the tumbler adjacent to the depression or recess having an offset resting within said depression or recess, substantially as set forth.

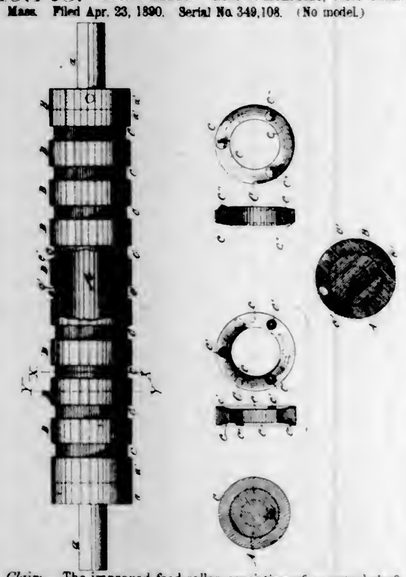
445,122. SEWING-MACHINE. LORENZ MUTHER, Chicago, Ill., assignor to the Union Special Sewing Machine Company, same place. Filed Jan. 2, 1889. Serial No. 295,260. (No model.)



Claim.—1. The combination, with two needles and a looper and a throat-plate, of a yoke-like deflector located below the throat-plate and having spring-arms, the inner surfaces of said arms being beveled or inclined to place the needles side by side in order that the loops of thread carried by them may be correctly entered by the looper and the needles enter the slot between the arms, substantially as described.

2. In a needle-bar, its two needles *a b*, the looper having the shoulder 12, and the throat-plate, combined with the fixed finger *n*, connected to the under side of the throat-plate and located at the side of the needle-hole toward which the loops of needle-thread are drawn by the receding looper, and lying partially across the path in which the said looper reciprocates, the said finger retaining the said loops of needle-thread discharged from the shoulder 12 and preventing said loops while yet engaged by the looper from slanting forward in the path of the descending needles, the further backward movement of the looper causing it to release the loops to enable the stitch to be repeated, substantially as described.

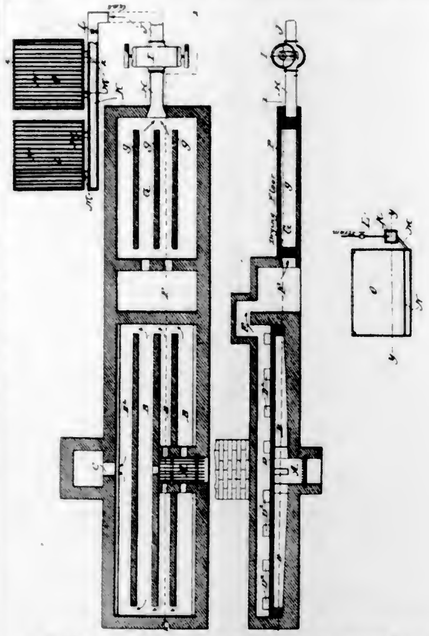
445,123. FEED-ROLLER. LEVI G. MCKNIGHT, West Gardiner Mass. Filed Apr. 23, 1890. Serial No. 349,108. (No model.)



Claim.—The improved feed-roller, consisting of a central shaft A and a series of alternate rubber rings arranged thereon, combined with the intermediate metal washers C C, having inclined faces and notches or projections, substantially as and for the purpose set forth.

445,124. HEARTH-FURNACE FOR TREATING ZINC ORES. WILLIAM WEST, Denver, Colo., assignor of one-half to Joseph E. Clemons, same place. Filed Nov. 30, 1889. Serial No. 332,102. (No model.)

Claim.—1. The furnace comprising a roasting-chamber provided with a floor of tiling, flues B B^3, longitudinally arranged beneath the floor and communicating with each other at their ends, and a fire-place A, located midway the ends of the furnace beneath the floor and at one side of the longitudinal center of the same and communicating with the flues B, in combination with the chamber F, arranged at the end of the furnace and communicating with the space above the tile floor, and the drying-floor arranged at the end of chamber F and composed of partitions *g*, with flues G, communicating with chamber F, and covering plates or tiles P, substantially as shown and described.



2. The furnace comprising a roasting-chamber provided with a floor of tiling, flues B B^3, longitudinally arranged beneath the floor and communicating with each other at their ends, and a fire-place A, located midway the ends of the furnace beneath the floor and at one side of the longitudinal center of the same and communicating with the flues B, in combination with the chamber F, arranged at the end of the furnace and communicating with the space above the tile floor, and the drying-floor arranged at the end of chamber F and composed of partitions *g*, with flues G, communicating with chamber F, and covering plates or tiles P, substantially as shown and described.

3. The combination, with a roasting-furnace, of a drying-floor arranged at the end of the furnace and at or near the ground-level, the said drying-floor consisting of tiles or plates P and sustaining-partitions *g*, forming flues communicating with the furnace, the leaching-tanks O, with false bottom N, a blower I, with pipes H J, interposed between the flues of the drying-floor and the false bottom of the leaching-tanks to draw the gases from the flues of the drying-floor and force them beneath the false bottom, and a steam-pipe connected with the gas-pipe leading beneath the false bottom, substantially as shown and described.

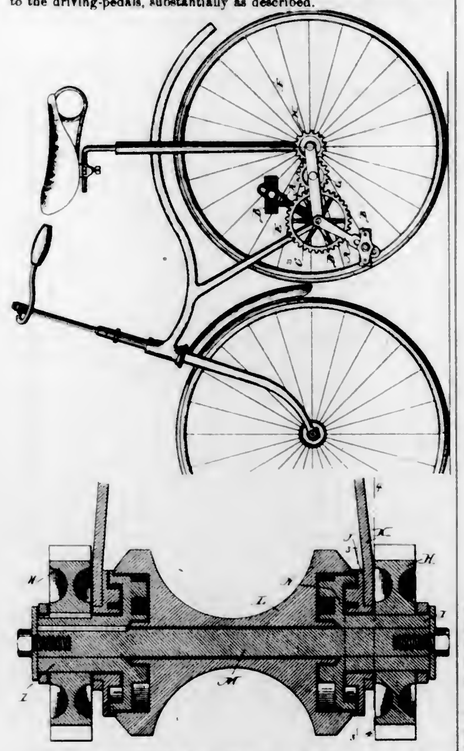
445,125. VELOCIPEDE. CHARLES E. MCGLINCHEY, Chicago, Ill., assignor of two-thirds to Charles H. Dunham and Frank Brady, both of same place. Filed June 11, 1890. Serial No. 355,042. (No model.)

Claim.—1. The combination, in a velocipede, of a clutch connecting the driving-wheel and pedals having two gripping devices operative in reverse directions, and a latch or stop adapted to release one of said gripping devices, substantially as described.

2. The combination, in a velocipede, of a clutch connecting the driving-wheel and pedals having two gripping devices operative in reverse directions, a latch or stop adapted to release one of said gripping devices, a clutch secured to the frame of the velocipede and adapted to prevent the backward movement of the pedals, and a latch or stop adapted to release said clutch, substantially as described.

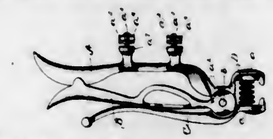
3. The combination, in a velocipede, of a pin on which the driving-wheel may revolve, gears secured on each end of said pin, a clutch connecting said gears and the driving-wheel, and gearing on each side of said driving-wheel connecting the pedal-crank to the first-named gears, substantially as described.

4. The combination, in a velocipede, of a driving-wheel F, revolving freely on the pin M and having a hub L, provided with an annular recess, a disk N entering said recess, provided with clutch-blocks O P and cam S, a pin *p*, projecting from block P, latch X, coacting with pin *p*, and driving-gears H, connected to the clutch-disks N and to the driving-pedals, substantially as described.



5. The combination, in a velocipede, of a driving-wheel E, revolving freely on the pin M and having a hub L, provided with an annular recess, a disk N entering said recess, provided with clutch-blocks O P and cam S, a pin *p*, projecting from block P, latch X, coacting with pin *p*, driving-gears H, connected to the clutch-disks N and to the driving-pedals, clutch-disk J, attached to the fork K and provided with clutch-blocks T and cam V, pin *t*, inserted in block T, and latch W, coacting with pin *t*, substantially as described.

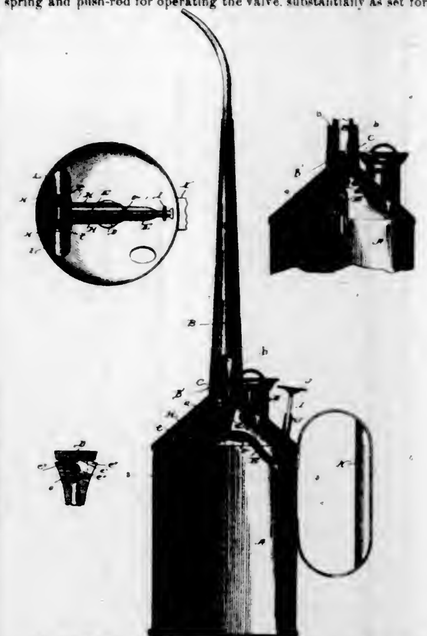
445,126. WHIP-SOCKET. EUGENE D. ODELL and ARIJAH JONES, Darien, assignors of one-half to the Racine Malleable and Wrought Iron Company, Racine, Wis. Filed Mar. 27, 1889. Serial No. 304,951. (No model.)



Claim.—In a whip-socket, the combination of the parts A, B, and C, pivoted near their lower ends by the pivot *b*, the parts A and C having the caps *a* and *c* upon the lower ends of same, with recesses upon their inner sides, and the spiral spring D, having its ends located in the recesses upon the inner side of said caps, substantially as described, and for the purpose set forth.

445,127. OIL-CAN. CHARLES E. RAND, Chicago, Ill., assignor to the Rau Manufacturing Company, same place. Filed Aug. 26, 1890. Serial No. 363,126. (No model.)

Claim.—1. In a feeder, the combination, with the body, the spout, and the valve-seat situated at the inner end of the spout, of a valve having its face presented upward, a valve-stem to which said valve is pivoted having stops for limiting the oscillation of said valve, and a spring and push-rod for operating the valve, substantially as set forth



2. In a feeder, the combination, with the body, the spout, and the valve-seat presented downward, of the valve-stem, a valve resting loosely upon said stem and having its face presented upward, a loose connection between the valve and stem, stops carried by the stem for limiting the oscillation of the valve, and a spring and push-rod, substantially as set forth.

3. In a feeder, the combination, with the body, the spout, and the valve-seat presented downward, of the valve-stem having an upwardly-projecting arm, a valve resting loosely upon said arm and having its face presented upward, a loose joint between said arm and valve, said arm carrying stops for limiting the oscillation of the valve, a spring for holding said valve seated, and a push-rod for unseating said valve, substantially as set forth.

4. In a feeder, the combination, with the body, the spout, and the valve-seat presented downward, of the valve-stem, a valve having a rolling bearing thereon and having its face presented upward, stops for limiting the independent movement of the valve, and a spring and push-rod, substantially as set forth.

5. In a feeder, the combination, with the body, the spout, and the valve-seat presented downward, of the valve-stem, a valve loosely pivoted thereto face upward and having a rolling bearing thereon, stops for limiting the independent movement of said valve, and means for seating and unseating it, substantially as set forth.

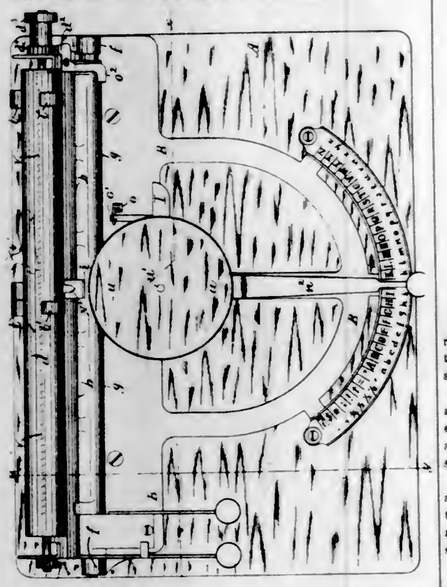
6. In a feeder, the combination, with the body, the spout, and the valve-seat presented downward, of a valve-stem, a valve loosely connected face upward thereto, so as to be capable of sliding longitudinally thereon, stops for limiting the independent movement of the valve, and means for seating and unseating said valve, substantially as set forth.

7. In a feeder, the combination, with the body, the spout, and a valve-seat presented downward into the body of the feeder, of the valve-stem, an upwardly-presented valve connected with said stem and having vertical and longitudinal movement independent thereof, stops for limiting the longitudinal movement of said valve, said stops being independent of the can and spout, and means, substantially as described, for seating and unseating said valve, substantially as set forth.

8. In a feeder, the combination, with the body, the spout, and the valve-seat situated at the inner end of the spout and presented downward, of a valve situated opposite said seat with its face presented upward, a spring-actuated valve-stem having the curved portion *c'* bearing directly against the back of the valve, loose connections between the valve and stem, the stops *c''*, for limiting the movement of the former relatively to the latter, and a push-rod engaging the valve-stem, substantially as set forth.

9. In a feeder, the combination, with the body, the spout, and the valve-seat presented inward, of the valve-stem consisting of a lever having at one of its ends a cross-head *t*, fulcrumed to the can, a valve situated opposite said seat and connected to the valve-stem so as to have a limited lost motion, and a spring and push-rod for actuating said stem, substantially as set forth.

445,128. TYPE-WRITING MACHINE. CARL J. A. SIOBERG, Brooklyn, N. Y., assignor to the Garvin Machine Company, of New York. Filed Jan. 27, 1890. Serial No. 338,197. (No model.)



Claim.—1. In a type-writer, the combination, with a type-wheel, of an annular ribbon inclosing the periphery of the type-wheel, as and for the purpose set forth.

2. In a type-writer, the combination, with a type-wheel, of a circular carrier fixed upon the top of the wheel and an annular ribbon suspended therefrom and inclosing the periphery of the wheel, substantially as herein set forth.

3. In a type-writer, the combination, with a type-wheel, of a circular carrier pivoted upon the top of the type-wheel to turn freely thereon, and an annular ribbon suspended therefrom and inclosing the periphery of the type-wheel, as and for the purpose set forth.

4. In a type-writer, the combination, with the type-wheel, of a circular carrier pivoted to turn freely upon the top of the same, and an annular ribbon secured at its edges to two hoops and fitted removably upon such carrier, as and for the purpose set forth.

5. In a type-writer, the combination, with a type-wheel and a frame vibrating to and from the same, of a feeding-carriage movable upon the frame and the elastic-ribbon guard affixed to the frame to vibrate therewith and provided with an aperture coincident with the type in the printing operation, as and for the purpose set forth.

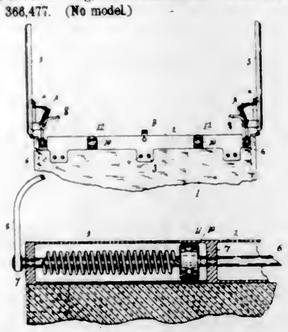
6. In a type-writer, the combination, with the type-wheel, the vibrating frame, and the feeding-carriage movable thereon, of the bell mounted upon the frame of the machine adjacent to the type-wheel, the hammer *o*, suspended by lever-arm o', and the tappet o^2 upon the feeding-carriage, arranged to strike the lever-arm, substantially as herein set forth.

7. In a type-writer having a type-wheel and vibrating frame with feeder-carriage movable thereon, the combination, with the feeder-carriage having a flange *v* at the top and a feed-roll *d* rotated above such flange, of a feeder-guide spring applied to the flange and bent around the front side of the feed-roll, as and for the purpose set forth.

8. In a type-writer having a type-wheel and vibrating frame with feeder-carriage movable thereon, the combination, with the feeder-carriage having a flange *v* at the top and a feed-roll *d* rotated above such flange, of a feeder-guide consisting in a spring applied to such flange and formed with the loop *l* and extension *l'* bent around the front side of the feed-roll, as and for the purpose set forth.

9. In a type-writer having a type-wheel and vibrating frame with feeder-carriage movable thereon, the combination, with the feeder-carriage, with the vibrating frame having the carriage-guide *a* near its middle, of the carriage *b*, carrying feed-roll *d* and provided with slot *b'*, and the feeder-guide *l'*, bent around the front side of the feed-roll, with foot secured over the slot by screw and gib, and operating as a stop to the stroke of the carriage, substantially as herein set forth.

445,129. SHOW-CASE. JOHN M. SWEENEY, Lebanon, assignor of one-half to Julius Lang, Jr., Cincinnati, Ohio. Filed Sept. 29, 1890. Serial No. 366,477. (No model.)



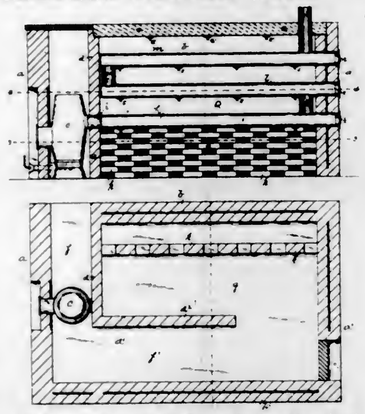
Claim.—1. In combination with the show-case, the axial rod carrying crank-arms engaging in guides attached to the sash-doors, so that the recoil of the spring will force the arm through the guides and elevate the doors, substantially as described.

2. In combination with a show-case, the axial rod 6, inclosed in a housing 2 and provided with one or more springs and crank-arms engaging with cam-slots in compartment-doors, whereby the same are automatically opened when the spring is released, substantially as described.

3. In combination with a show-case having one or more doors, axial rod carrying lifting-arms journaled in cam-guides attached to the compartment-doors, and a catch B for holding said door closed against the action of the opening lifting force, substantially as described.

4. In a show-case, the combination of arms 8 with the cam-guides A, attached to the doors, and a spring device for actuating said arms to open the doors, substantially as described.

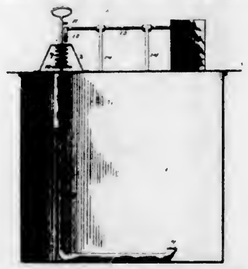
445,130. AIR-HEATING FURNACE. JOHN YOUNG, Pittsburg, Pa. Filed Mar. 12, 1890. Serial No. 343,626. (No model.)



Claim.—1. The air-heating furnace having side and end walls, the partition-wall *d*, forming an air-entrance flue *f* between an end wall and said partition-wall, said flue communicating with the lower part of the air-heating chamber, and the heater *c*, located in said air-entrance flue *f*, substantially as and for the purposes set forth.

2. The air-heating-furnace having side and end walls, the air-entrance flue *f*, said flue communicating with the lower part of the air-heating chamber *g*, the heater *c*, located in said air-entrance flue *f*, the checker-work wall *k*, having the area of the openings therein about equal to the area of the entrance-flue, and the horizontal pan or radiator connected to said heater *c* and extending over said chamber *g* to said checker-work wall *k*, substantially as and for the purposes set forth.

445,131. APPARATUS FOR PRESERVING FISH ALIVE. WILLIS ADAMS, Jr., and JAMES MARET, Mount Vernon, Ky.; said Adams assignor to Lizzie B. Adams. Filed Aug. 23, 1890. Serial No. 362,838. (No model.)



Claim.—1. The herein-described apparatus, consisting of a tank or vessel, a pump and air-pipe leading therefrom into the vessel, a valve in the pump and a valve on the end of the air-pipe, a rotary shaft mounted on the tank and adapted to operate the pump, and mechanism for rotating the shaft, as described.

2. The herein-described apparatus, consisting of a tank or vessel, a pump-cylinder, an air-pipe leading from the pump, a plunger in the cylinder, a spring for forcing the plunger down, a shaft mounted on the tank and adapted to rotate and elevate the plunger, and mechanism for rotating said shaft, thereby insuring a steady and constant flow of air to the tank.

3. The herein-described apparatus, consisting of a tank or vessel, a pump-cylinder therein, an air-pipe leading into the vessel, a spring-actuated plunger, a rotating shaft mounted on the vessel and engaging the plunger, and mechanism for operating the shaft.

4. The herein-described apparatus, consisting of a tank or vessel, a pump-cylinder and air-pipe communicating with the vessel, a plunger, a spring for forcing the plunger down, a rotating shaft mounted on the tank and having a cam or head at one end for engaging the plunger to raise the same, and mechanism for operating the shaft, whereby air is constantly supplied to the tank or vessel.

5. The herein-described apparatus, consisting of a tank, a pump communicating with said tank, having a spring-actuated plunger provided with a lug, bearings on the tank, a shaft mounted in said bearings, having a cam at one end to engage the lug on the plunger, and mechanism connected with the other end of the shaft to rotate the same, substantially as and for the purpose described.

445,132. ENGINEER'S BRAKE-VALVE. GEORGE A. BOYDEN, Baltimore, Md., assignor to the Boyden Brake Company, same place. Filed June 10, 1890. Serial No. 354,925. (No model.)

Claim.—1. The combination of a train-pipe, an engineer's brake-valve, and an air-receiver having such connection and relation to the said other parts that air may discharge from the train-pipe directly into the air-receiver when the air in the train-pipe moves toward the engineer's brake-valve.

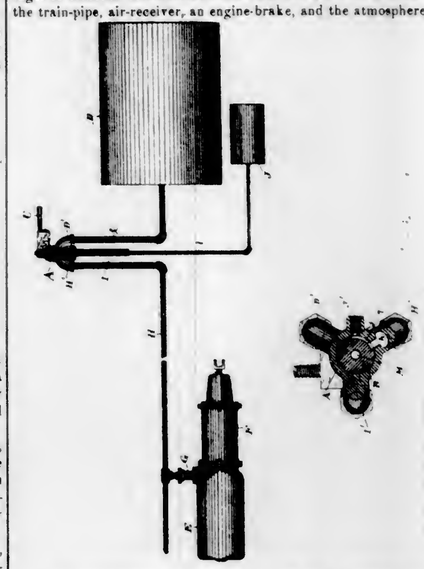
2. A device to gradually stop the forward movement of compressed air in the train-pipe, comprising the combination of a train-pipe, an engineer's brake-valve, an air-receiver, and means to discharge the train-pipe air into the air-receiver when the discharge from the train-pipe to the atmosphere is cut off.

3. The combination of automatic brake mechanism on the cars, a train-pipe, the engineer's brake-valve having a blank position, and an air-receiver with which the train-pipe is put in communication when the said brake-valve has been turned to the blank position.

4. The combination of a train-pipe, an air-receiver for receiving expanded air from the train-pipe, and an engineer's brake-valve having ports and passages by which the train-pipe is put in communication with the air-receiver and by which air may be allowed to escape from the train-pipe and air-receiver simultaneously.

5. The combination of automatic brake mechanism on the cars, a train-pipe, an air-receiver, an engineer's brake-valve casing having ports and passages communicating with the said train-pipe and air-receiver, a valve to turn in said valve-casing and provided with ports and passages to communicate with the atmosphere and with the ports and passages of the valve-casing leading to the train-pipe and air-receiver, respectively.

6. The combination of the main air-reservoir, automatic brake mechanism on the cars, a train-pipe, an air-receiver, an engineer's brake-valve casing having ports and passages for communicating with the said main air-reservoir, the train-pipe, air-receiver, and an engine-brake, and a plug to turn in said valve-casing having ports and passages to establish communication between the said main air-reservoir, the train-pipe, air-receiver, an engine-brake, and the atmosphere.



7. The combination of the main air-reservoir, automatic brake mechanism on the cars, the train-pipe, an engineer's brake-valve casing having ports for communicating with said main air-reservoir, a direct-acting engine-brake, and the train-pipe, a plug to turn in said valve-casing and provided with a supply-port *m*, and a release-port *p*, which communicates with the atmosphere and so arranged that when the plug is in one position communication is established between the main air-reservoir and train-pipe through the said supply-port and also established between an engine-brake and the atmosphere through the said release-port, and when the plug is in another position communication is established between the main air-reservoir and an engine-brake through the supply-port and also established between the train-pipe and the atmosphere through the release-port *p*, for the purpose set forth.

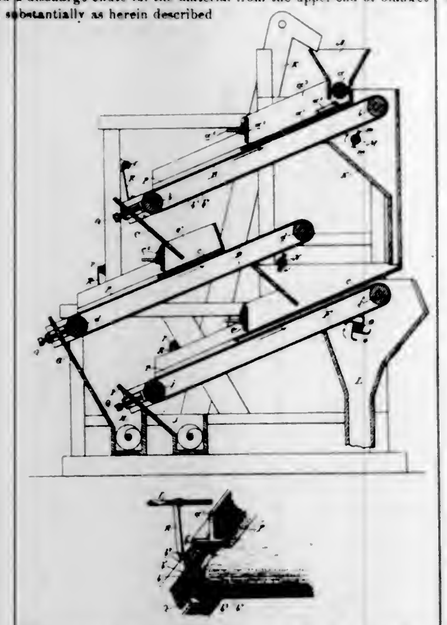
8. The combination of the main air-reservoir, automatic brake mechanism on the cars, the train-pipe, an air-receiver, an engineer's brake-valve casing having ports and passages to communicate with said main air-reservoir, train-pipe, and air-receiver, a plug to turn in said engineer's valve-casing and provided with a supply-port *m*, a graduation-port *o*, and a groove *q*, all so arranged that when the plug is in one position communication is established between the main air-reservoir and train-pipe through the said supply-port, when in another position communication is established between the train-pipe and the atmosphere through the graduating-port *o*, and when in a third position communication is established between the train-pipe and air-receiver through the said groove *q*.

445,133. SEPARATOR. AUSTIN COOK and WILLIAM L. HARVEY, San Francisco, Cal., assignors of one-third to T. J. Parsons, same place. Filed Aug. 25, 1890. Serial No. 363,033. (No model.)

Claim.—1. In an oat-separator, the combination of an endless blanket mounted at an inclination and having an uphill travel imparted to it, a feed-hopper above, a feed-board extending from said hopper over the blanket and having side guides, side guards carried by said guides and forming side flanges for the blanket, a receiver under the lower end of the blanket for the material which slides down over its lower end, and a receiver for the oats, which cling to it and are carried around its upper end, substantially as herein described.

2. In an oat-separator, the combination of the series of inclined blankets B, D, and F, each having an uphill travel, a feed device for directing the material upon the surface of the blanket B, a connecting-chute for directing the material from the lower end of blanket B onto the surface of blanket D, a connecting-chute for directing the material from the upper ends of blankets B and D onto the surface of blanket F, a receiving-chute for the material from the lower end of blanket D, a receiving-chute for the material from the lower end of blanket F.

and a discharge-chute for the material from the upper end of blanket F, substantially as herein described



3. In an oat-separator, the combination of the series of inclined blankets B, D, and F, each having an uphill travel, a feed device for directing the material upon the surface of the blanket B, a connecting-chute for directing the material from the lower end of blanket B onto the surface of blanket D, a connecting-chute for directing the material from the upper ends of blankets B and D onto the surface of blanket F, a receiving-chute for the material from the lower end of blanket D, a receiving-chute for the material from the lower end of blanket F, a discharge-chute for the material from the upper end of blanket F, and the brushes, knockers, or scrapers for disconnecting the material from under the upper ends of said blankets, substantially as herein described

4. In an oat-separator, the combination of the endless traveling inclined blanket, the feed-board, the side guides of said board, and the flexible guards secured to said guides and forming side flanges for the traveling blanket, substantially as herein described.

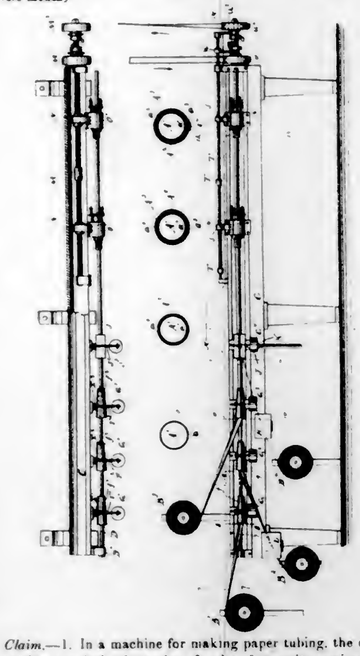
445,134. **MERRY-GO-ROUND.** WILLIAM D. CRONIN and CYRIL B. ADAMS, Philadelphia, Pa., assignors, by direct and mesne assignments, to said Cronin and George L. Horn, same place. Filed Mar. 5, 1890. Serial No. 342,800. (No model.)



Claim.—1. In a merry-go-round, the combination, with radially-arranged arms, of a revolving platform secured to said arms at their outer portions, a hub secured to the inner end of the arms, a circular grooved track secured to the under side of the arms, a correspondingly-grooved track beneath the first track, balls running in the grooves of the said tracks, and a stationary platform within the revolving platform and over the hub and the inner ends of the arms, substantially as described.

2. In a merry-go-round, the combination, with a revolving platform, of the animals or supports for the riders, arranged thereon in a circle, each of said supports being hinged to the platform at one end, a circular cam-shaped track below the platform, a rigid rod for each support passed down through the platform and guided thereby, the upper end of said rod being attached to the support, and a roller journaled in the lower end of each rod, which travels upon the track, substantially as described.

445,135. **MACHINE FOR MAKING PAPER TUBING.** HARMER DENNEY, Brooklyn, N. Y. Filed Apr. 24, 1890. Serial No. 349,331. (No model.)



Claim.—1. In a machine for making paper tubing, the combination, with a mandrel, of a series of pairs of opposite semi-cylindrical guides embracing the mandrel, the lower guide of each pair being fixed and the upper one movable, and weights for pressing the movable guides downward, substantially as set forth.

2. In a machine for making paper tubing, the combination, with a mandrel, of a fixed block below the mandrel, a hinged block above the mandrel, a weight for pressing the hinged block downward, and a burner below the fixed block, substantially as set forth.

3. In a machine for making paper tubing, the combination, with a mandrel, of a series of reels arranged alternately below and above the mandrel, independent devices for pressing the strip from each reel independently upon the mandrel or upon the strips previously applied on the mandrel, and of two tube-gripping devices mounted to reciprocate in opposite directions, substantially as set forth.

4. In a machine for making paper-tubing, the combination, with a mandrel, of a series of reels arranged alternately below and above the mandrel, independent devices for pressing the strip from each reel independently upon the mandrel or upon the strips previously applied on the mandrel, and of two tube-gripping devices mounted to reciprocate in opposite directions, and a right and left hand screw-spindle for operating said clutching devices, substantially as set forth.

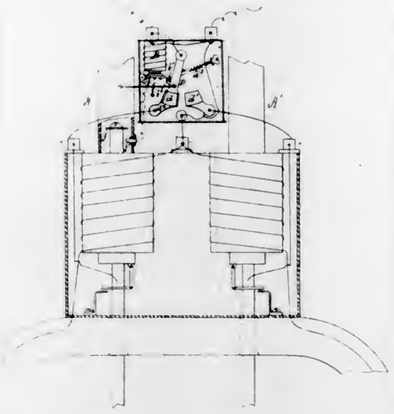
5. In a machine for making paper tubing, the combination, with a mandrel, of a series of reels arranged alternately above and below the mandrel, independent devices for pressing the strip of paper from each reel independently upon the mandrel or upon the strips previously applied upon the mandrel, tube-clutching devices for drawing lengthwise the tube formed from the strips upon the mandrel, a spindle having right and left hand screw-threads engaging said clutching devices, a sliding rod operated by the clutching devices, and a reversing-gear operated by said rod, substantially as set forth

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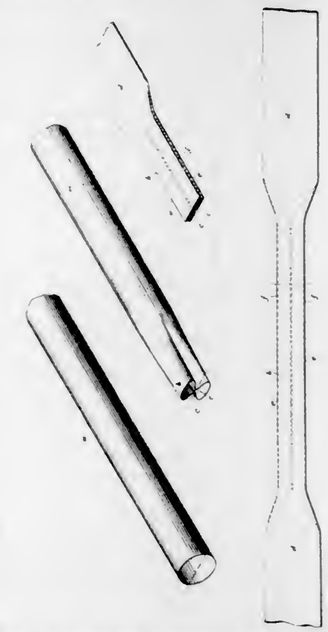
445,136. **MULTIPLEX-ARC LAMP.** WILLIAM H. ELKINS, Cambridge, Mass., assignor of two-thirds to Henry E. Irvine, New York, N. Y. Filed Oct. 25, 1890. Serial No. 369,271. (No model.)

Claim.—1. In combination, a switch with two blocks, a shunt-magnet controlling the movable member of the switch, two lamps, conductors connecting the like poles of the lamps to one of the main terminals, other conductors connecting the other poles of the lamps to the blocks of the switch, and a shunt-circuit, of which the coil of the controlling-magnet forms a part, and which contains two electrodes, *f f'*, controlled by the carbon-carrier of one of the lamps, all substantially as set forth.

2. In combination, a spring-switch with two blocks, a shunt-magnet controlling the movable member of the switch, two lamps, conductors connecting the like poles of the lamps to one of the main terminals, other conductors connecting the other poles of the lamps to the blocks of the spring-switch, and a shunt-circuit of which the coil of the switch-controlling magnet forms a part, and which is adapted to be made and broken at two places, one by the contacts *f f'*, controlled by the carbon-carrier, and the other by the contacts *d d'*, controlled by the switch, all substantially as set forth.

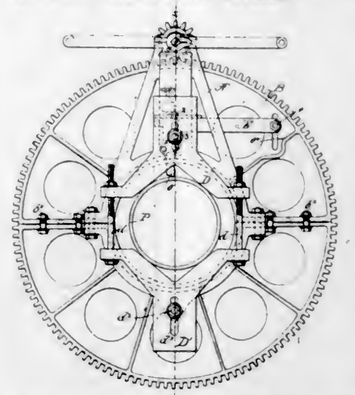


445,137. **NECKSCARF.** WILLIAM B. ERSKINE, New York, N. Y., assignor to John Erskine & Co., same place. Filed July 21, 1890. Serial No. 359,419. (No model.)



Claim.—As an article of manufacture, a four-in-hand scarf comprising a seamless tubular fabric of substantially uniform diameter, having its central portion at opposite sides infolded and the edges of such infolds secured together, whereby a scarf having wide seamless outer ends and a narrow central or band portion is formed, substantially as described.

445,138. **PIPE-CUTTING MACHINE.** WILLIAM H. GARLAND, Somerville, Mass., assignor of three-fourths to James Nicol, same place, and James W. Brine and George A. Lloyd, both of Arlington, Mass. Filed Apr. 19, 1890. Serial No. 348,683. (No model.)



Claim.—1. In a machine for cutting off pipe, a rotating wheel and a pivoted cutter-carrier made adjustable thereon, an adjustable pivot for said cutter-carrier, whereby the cutting-edge of the tool is brought into proper central line, a radial slot in said wheel, a bolt at the inner end of said cutter-carrier adapted to enter said slot and to be clamped against the wheel to prevent the cutter from jumping, and a cutter, and a feed-screw for moving the free end of the said cutter-carrier, combined with clamps to clamp the pipe to be cut, substantially as described.

2. In a machine for cutting off pipe, the side frames, and the rotating divided or separable wheel mounted therein and carrying a cutter, combined with adjustable clamps D D', having ears, bolts extended through said ears and connecting the clamps, and means, as described, for rigidly securing the clamps to the side frames in adjustable positions, to operate substantially as described.

3. A pipe-cutting machine containing the following instrumentalities, viz: side pieces, a slotted rotating wheel having bearings in and supported by and between the said side pieces, a pivoted cutter-carrier E, provided with a cutter vertically adjustable therein, a threaded block having a projection to enter a slot in the wheel, a feed-screw carried by said block, means for holding said block in adjusted position and for adjusting the pivot of the cutter-carrier, a bolt at the inner end of the cutter-carrier, a radial slot in the wheel in which said bolt enters and means to clamp the bolt against the wheel, clamps to hold in central position the pipe to be cut, and means for rotating the said wheel, substantially as described.

445,139. **WIRE-STAPLING MACHINE.** WILLIAM E. HARPER, Chicago, Ill. Filed Jan. 30, 1890. Serial No. 338,558. (No model.) Patented in England Aug. 9, 1886, No. 10,145, and in Germany May 8, 1888, No. 44,976.

Claim.—1. In a wire-stapling machine, a movable feed device, an adjustable gripper engaging said feed, a cutter, a sliding block for said cutter connected with the adjustable gripper, and means for simultaneously actuating said cutter and gripper, substantially as described.

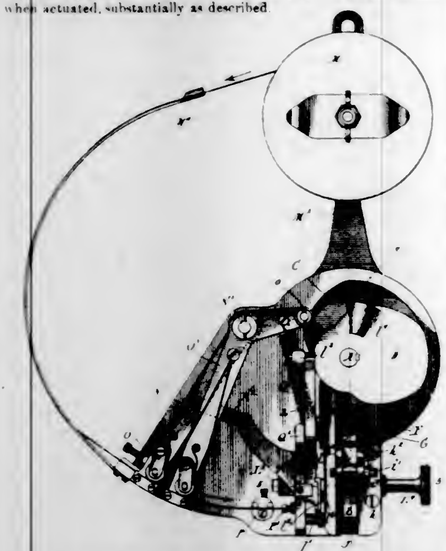
2. In a wire-stapling machine, the combination of a vibrating feed and adjustable gripper, a stop-connection between said gripper and feed, a sliding block, a cutter mounted upon said block, and a link connecting the gripper and block, substantially as described.

3. In a wire-stapling machine, a feed-lever and gripping-lever, a pivot-bearing common to both of said levers, a sliding block and cutter mounted upon said block, a link connecting the block with the gripping-lever and pivoted thereto centrally of its length, and an anvil across which the wire is fed, whereby the feed and cutting devices may be adjusted for staples of different length without producing any variation in the relative length of legs thereof, substantially as described.

4. In a wire-stapling machine, the combination of a wire-feed, a vibrating cutter, a cam directly engaging and actuating said cutter, and a spring maintaining said cutter in contact with the cam and in a position to sever the wire when actuated by said cam, substantially as described.

5. In a wire-stapling machine, the combination of a wire-feed, a vibrating cutter provided with an adjustable and removable cutting-jaw, and means for actuating said cutter, whereby the cutting-edge

may be adjusted both for wear and to sever at the proper moment when actuated, substantially as described.



6. In a wire-stapling machine, the combination of a bender provided with internal grooves receiving the legs of the staple, and a driver provided with splines working in said grooves, whereby the width of the driver is equal to or substantially equal to the entire width of the staple and its force is imparted in a direct line through the legs of the staple, substantially as described.

7. In a wire-stapling machine, the combination of the bender and driver, a pivoted and combined anvil and supporter, and means for actuating the same, substantially as described.

8. In a wire-stapling machine, the combination of the bender, the driver, and a pivoted and combined anvil and supporter provided on their upper surface with an incline engaged by the driver, substantially as described.

9. In a wire-stapling machine, the combination of a bender and driver, a pivoted and combined anvil and supporter, and means for actuating the same and normally maintaining said anvil and supporter in their operative position under the driver, but permitting them to yield as the driver descends, substantially as described.

10. In a wire-stapling machine, the combination of the bender, the driver, the pivoted and combined anvil and supporter, a spring maintaining said anvil and supporter in the path of the driver, but permitting them to recede as the driver descends, and means for adjusting the tension of said spring, substantially as described.

445,140. WIRE-STAPLING MACHINE. WILLIAM E. HARPER, Chicago, Ill. Filed Jan. 30, 1890. Serial No. 338,559. (No model.) Patented in Germany May 18, 1887, No. 42,280.

Claim.—1. In a wire-stapling machine, the combination, with a single moving cam-piece, of a wire-feed, a cutter, an anvil, a bender, and a driver having direct connection with and actuated by said single cam-piece, substantially as described.

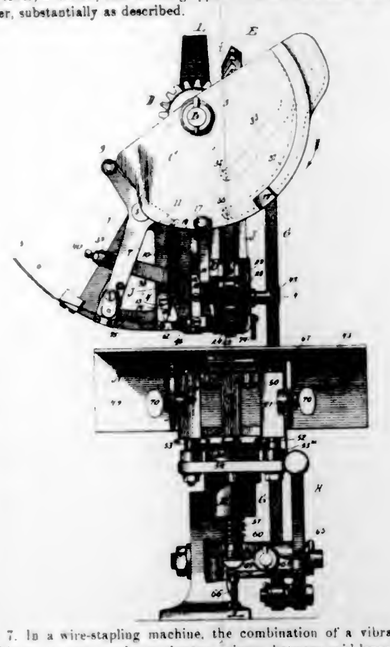
2. In a wire-stapling machine, the combination of a single vibrating cam, means for actuating the same, a wire-feed, a cutter, a bender, an anvil, and a supporter directly engaging and actuated by said vibrating cam, substantially as described.

3. In a wire-stapling machine, the combination of an adjustable feed-lever, an adjustable cutter, an arm between and connecting said cutter and lever, and means for actuating said arm, whereby the feed-lever and cutter are simultaneously and uniformly adjusted for staples varying in length, substantially as described.

4. In a wire-stapling machine, the combination of an adjustable feed, an adjustable cutter, a sliding block supporting said cutter, and an arm connecting said block and feed, and means for actuating said block, substantially as and for the purpose described.

5. In a wire-stapling machine, the combination of a wire-feed, a sliding-block, a cutter pivoted to said block, and an arm connecting the cutter-support with the wire-feed, a screw, and a thumb-nut journaled in the machine-frame and actuating said screw, substantially as described.

6. In a wire-stapling machine, the combination of a vibrating feed-lever, a cutter, and a wire-gripper between the feed-lever and cutter, substantially as described.



7. In a wire-stapling machine, the combination of a vibrating feed-lever, a cutter, and a stationary gripper between said lever and cutter, substantially as described.

8. In a wire-stapling machine, the combination of a work-supporting table, a frame or support therefor, and a pivot-connection between said table and support, whereby the table may be bodily adjusted, substantially as described.

9. In a wire-stapling machine, a work-table having two faces at a right angle to each other, a support for said table, and a pivot-connection between said table and support, whereby the table may be swung so as to present either a flat surface or inclined surface for the work, substantially as described.

10. In a wire-stapling machine, the combination of a work-supporting table having rigidly-jointed angular faces and a support upon which said table is pivotally adjustable, which said support is also vertically adjustable, substantially as described.

11. In a wire-stapling machine, the combination of a work-supporting table having angular faces rigidly joined and slotted, a support for said table, a pivot-connection between said support and table, and clinching devices projecting through said slot, substantially as described.

12. In clinching devices for a wire-stapling machine, the combination of a hollow post provided at its upper end with an opening and a reciprocating clinching-blade working in said post and adapted to be projected through said opening, substantially as described.

13. In a wire-stapling machine, the combination, with a reciprocating clinching-blade, of a hand-lever connected with and adapted to actuate said blade, substantially as described.

14. In a wire-stapling machine, the combination of a reciprocating clinching-blade, a hand-lever, and a rocking lever adapted to be actuated by the hand-lever so as to operate the clinching-blade, substantially as described.

15. In a wire-stapling machine, the combination, with a reciprocating clinching-blade, of an adjustable stop engaging and regulating the stroke of said blade, substantially as described.

16. In a wire-stapling machine, the combination of a reciprocating clinching-blade, a rocking lever engaging and actuating said blade, and an adjustable stop below said rocking lever and engaging therewith, substantially as described.

17. In a wire-stapling machine, the combination of a tubular post, a reciprocating clinching-blade therein, an adjustable nut on the end of said clincher, and a spring confined between said nut and tubular post, whereby the clincher is maintained at the limit of its downward stroke and the tension of said spring may be adjusted, substantially as described.

18. In a wire-stapling machine, the combination of a work-supporting table, an adjustable support therefor, a gage on said support, a pointer for said gage, a face-plate provided with a corresponding gage, and an adjustable vibrating feed-lever in the path of said gage and operating as a pointer therefor, substantially as and for the purpose described.

19. In a wire-stapling machine, the combination of an adjustable work-supporting table, a gage therefor, an adjustable vibrating feed-lever, and a gage therefor, and a toe-piece secured to said face-plate above the work-table, substantially as and for the purpose described.

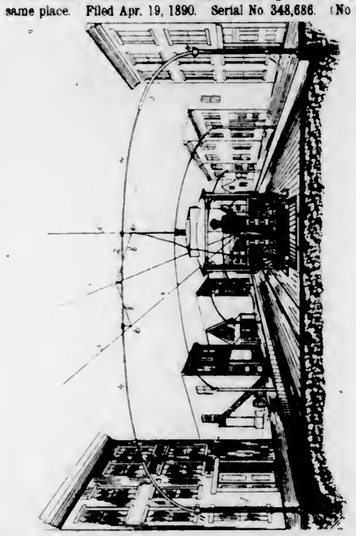
445,141. WOVEN TAPE. CHARLES C. HOYT, Revere, Mass., assignor of one-half to the Hope Webbing Company, Providence, R. I. Filed Apr. 25, 1890. Serial No. 349,548. (Specimens.)



Claim.—1. A tape consisting of the longitudinal margins *a a* and the central strip *b* of flexible woven fabric, and the raised longitudinal ribs formed by laying the weft around the longitudinal rigid cords *c c*, as described.

2. A tape of flexible woven fabric having two longitudinal ribs, one near each edge, of greater longitudinal strength than the rest of the fabric.

445,142. TROLLEY-WIRE SUPPORT FOR ELECTRIC RAILWAYS. JAMES S. HUGHES, St. Paul, Minn., assignor to Dana M. Hughes, same place. Filed Apr. 19, 1890. Serial No. 348,686. (No model.)



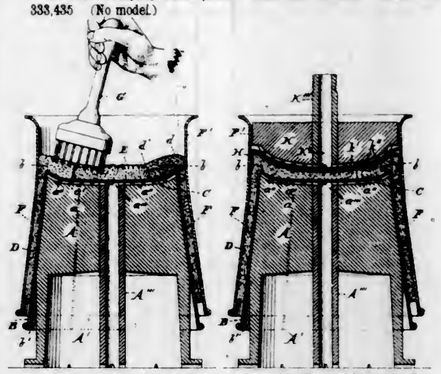
Claim.—1. A support for the trolley-wires of electric railways, consisting of a tubular arch spanning the roadway, the wires being supported from the middle portion thereof by insulated connections and the extremities of said arch insulated from the ground, as and for the purpose specified.

2. A support for the trolley-wires of electric railways, consisting of a tubular arch, from the middle part of which the said wires are adapted to be supported, the said arch being formed in sections of gradually-increasing diameter from the middle to the ends thereof, as and for the purpose specified.

3. A support for the trolley-wires of electric railways, consisting of a tubular arch, from the middle part of which the said wires are adapted to be supported, the said arch being supported upon upright posts at each side of the roadway, and a non-conducting material forming the connection between the extremities of the curved portion of the arch and said upright posts, as and for the purpose specified.

4. A support for the trolley-wires of electric railways, consisting of a tubular arch, from the middle portion of which the said wires are adapted to be suspended, the said arch being constructed in sections of increasing diameter from the middle to the extremities thereof, upright posts upon which the ends of the arch are supported, and a non-conducting cap forming connection between the extremities of said arch and said posts, substantially as and for the purpose herein specified.

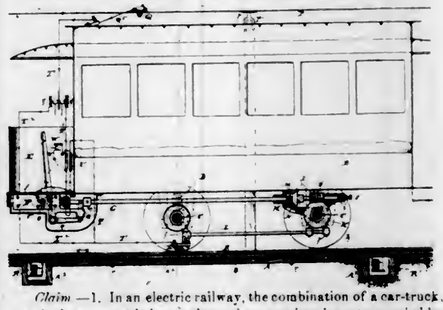
445,143. PROCESS OF MAKING PAPER PAILS. UZAL HULL and WILLIAM W. MCEWAN, Belvidere, N. J., assignors to the New York Wood Fibre Company, same place. Filed Dec. 12, 1889. Serial No. 333,435. (No model.)



Claim.—1. The process of making paper pails, consisting in, first, forming a wet-paper tube; second, bending inward the end portion of said wet-paper tube, thereby providing a plicated flange portion around the bottom center: third, picking said plicated flange portion, thereby reducing it to a homogeneous pulp the fibers of which are intimately commingled and locked together, and finally pressing the pulped and picked portion to expel the water and give the proper density and shape to the bottom thus provided, substantially as specified.

2. The process of making paper pails, consisting in, first, forming a wet-paper tube; second, befiding in the end portion of the same, thereby providing a plicated flange surroundiog a central opening and applying within said central opening a bottom center disk of wet paper: third, picking said plicated flange and bottom center disk, thereby reducing them to a homogeneous pulp the fibers of which are intimately commingled and locked together, and finally pressing the pulped portions to expel the water and give the proper density and shape to the bottom thus provided, substantially as specified.

445,144. ELECTRIC-RAILWAY CAR. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Filed Oct. 4, 1886. Serial No. 215,199. (No model.)



Claim.—1. In an electric railway, the combination of a car-truck, a car-body supported thereon by springs, an electric motor carried by the car-body, located below the floor and independent of the truck, connecting-gearing between the motor-shaft and axle of the truck and a frame for the gearing and motor-shaft sleeved on the axle independent of the car-body.

2. In an electric railway, the combination of a car-truck, a car-body supported thereon by springs, an electric motor carried by the car-body and suspended below the floor in front of the forward axle of the truck and having its shaft arranged longitudinally on the car and below the floor thereof, and connecting-gearing between the motor-shaft and rear axle of the truck, also located below the floor of the car-body.

3. In an electric railway, the combination of a car-truck, a car-body supported thereon, an electric motor carried by the car-body and located wholly under the front platform, connecting-gearing between the motor and axle of the truck located below the car-body and

independent of it, a regulator for the motor arranged upon the platform, and connecting-circuits between the regulator and motor.

4. In an electric railway, the combination of the car-truck, a car-body supported thereon, an electric motor carried by the car-body under the front platform independently of the axles of the truck, a door on said platform to expose the motor, and connecting-gearing between the motor and axle of the truck.

5. The combination of the car-axle, the car-body supported thereon, an electric motor supported by the car-body, a longitudinal bearing independent of the car-body for the motor-shaft, journaled upon and adapted to move concentrically with the axle to keep the end of the motor-shaft always in a fixed relation to the said axle, and connecting-gearing independent of the car-body between said shaft and axle.

6. The combination of the car-axle, the car-body supported thereon by springs, an electric motor supported by the car-body, bearings for the motor-shaft independent of the car-body, adapted to move concentrically with the axle to keep the end of the motor-shaft always in a fixed relation to the said axle, and connecting-gearing independent of the car-body between said shaft and axle.

7. The combination of the car-axle, the car-body supported thereon, an electric motor pivoted or hinged below the car-body, a motor-shaft adapted to move concentrically with the axle to keep the end of the motor-shaft always in a fixed relation to the said axle, a bearing arranged below the car-body and supported on the axle independent of the car-body to support the end of the motor-shaft, and connecting-gearing between said shaft and axle.

8. The combination of the car-axles, the car-body supported thereon by springs, an electric motor arranged under the forward platform, a motor-shaft extending obliquely rearward to the rear axle, a bearing for said shaft on the axle to hold it a given distance from the axle, and connecting-gearing between said axle and shaft.

9. The combination of the car-axles, the car-body supported thereon, an electric motor arranged under the forward platform, a motor-shaft extending rearward to the rear axle, a bearing for said shaft on the axle to hold it a given distance from the axle, connecting-gearing between said axle and shaft, and a removable platform over the motor.

10. The combination of the car-axles, the car-body supported thereon by springs, an electric motor arranged under the forward platform, a motor-shaft extending rearward to the rear axle, a bearing for said shaft on the axle to hold it a given distance from the axle, connecting-gearing between said axle and shaft, and an adjustable thrust-box at the rear end of the motor-shaft.

11. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, and a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface.

12. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface, and a movable thrust-bearing to prevent the longitudinal movement of the motor-shaft.

13. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface, a movable thrust-bearing to prevent the longitudinal movement of the motor-shaft, and a hand-lever to operate the thrust-bearing.

14. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, a stationary thrust-bearing at one end, a spring to press the shaft against said bearing, and a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface.

15. The combination of the motor, the car-axles, a longitudinally-movable jointed motor-shaft, the two parts thereof being connected by a sliding coupling, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, and a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface.

16. The combination of a motor, a vehicle propelled thereby, a mechanical connection between the motor-shaft and axle of the vehicle, and a brake-shoe actuated by the motor-shaft placed so that the brake is put into action when the revolution of said shaft is slowed down.

17. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface, a source of electric energy, and means to reverse the current in the motor.

18. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface, a source of electric energy, a motor-circuit, and means to short-circuit the armature to make the motor act as a generator and assist the mechanical brake.

19. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, a stationary brake-surface placed so that as the motor slows down the brake-shoe is thrust against the brake-surface, a source of electric energy, a motor-circuit, means to short-circuit the armature to make the motor act as a generator and assist the mechanical brake, and a resistance-changer in said armature-circuit.

20. In an electric car or vehicle, the vehicle-axle having a fixed vertical relation to the earth, in combination with a motor having its body supported on springs independently of the axle, but connected thereto so that it may move in the arc of a circle about said axle, and connecting-gearing supported by the axle independently of the motor-support and arranged between the axle and motor-shaft.

21. In an electrically-propelled vehicle, the combination of the vehicle-axle, a frame supported upon the axle with provision for vertical movement and also capable of moving upon the axle as an axis, an electric motor having its field-magnets connected to the frame and being also hinged to the axle through said frame and the motor-shaft and gearing, and connecting-gearing between the motor-shaft and axle.

22. In an electrically-propelled vehicle, the combination of the vehicle-axle, a frame supported upon said axle through the mediation of springs with provision for vertical movement and capable of moving upon the axle as an axis, an electric motor having its field-magnets connected to the frame and being hinged to the axle through the said frame and the motor-shaft and gearing, connecting-gearing between the motor-shaft and axle supported independently of the frame, and circuits and regulating apparatus carried upon the vehicle for controlling the current leading from the source of electrical energy to the motor.

23. In an electric car, the combination of the axles, a frame supported upon said axles, an electric motor positively and directly connected to one axle through the shaft and gearing and movable with respect to the other axle, whereby it may move in the arc of a circle about the axle to which it is connected and vertically with respect to the other axle, and an elastic support for the motor, whereby its weight is elastically supported and sustained by both axles.

24. In an electric railway, the combination of a suspended conductor, a collector-truck adapted to run thereon and consisting of one or more wheels provided with grooves resting against the said conductor, a pivoted arm connected to the frame carried by said first-mentioned wheel or wheels, a spring connecting the pivoted arm with the said frame; a grooved collector-wheel carried by the free end of said pivoted arm and movable against the conductor upon the side opposite to the first-mentioned wheels, a traveling vehicle, and a connecting-conductor connecting the collector with the vehicle.

25. In an electric railway, the combination of an electrically-propelled vehicle, a suspended working-conductor, a collector-truck adapted to run thereon, provided with a pivoted spring-lever carrying a tension-wheel, and a connecting-conductor connecting the spring-lever of the collector with the vehicle.

26. The combination of the electrically-propelled vehicle with suspended working-conductor P, collector Q, consisting of truck Q^3 and its wheels Q', pivoted lever Q^2, carrying tension-roller Q^4, spring q, and conductor Q^5, connecting the lever Q^3 with the traveling vehicle.

27. In an electric railway, an electrically-propelled vehicle, in combination with a suspended conductor, a gripping collector-truck running upon said conductor and provided with spring-pressed gripping-rollers, and a towing-conductor connecting it with the vehicle and directly acting against the spring of the gripping portion of the collector, the said devices working to automatically reduce the gripping action when the collector meets with obstructions or excessive resistance.

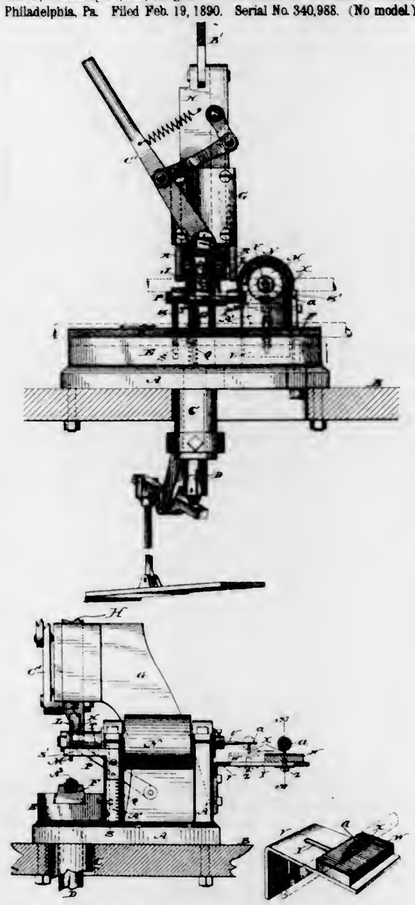
28. In an electric railway, the combination of an electrically-propelled vehicle, a motor arranged below the car-floor, and a dust-case independent of the motor, inclosing said motor or the working parts thereof.

29. The combination of the motor, the car-axles, a longitudinally-movable motor-shaft, a worm and worm-wheel connection between the said shaft and axle, a brake-shoe carried by the shaft, a stationary brake-surface so placed that as the motor slows down the brake-shoe is thrust against the brake-surface, a movable thrust-bearing to prevent the longitudinal movement of the motor-shaft, a source of electric energy, and means to reverse the current in the motor.

30. In an electrically-propelled vehicle, the combination of a worm-wheel on the axle, a motor, a loose shaft-connection between the motor and worm, so that the motor may move longitudinally independently of the worm, and independent supports for the motor and worm.

31. In an electrically-propelled vehicle, the combination of the axles, a spring-support on the axles, an electric motor carried by the spring-support, a flexible motor-shaft having one end connected to the motor and the other end connected to the axle through gearing, gearing between the motor-shaft and axle, and a frame carried by the axle independent of the spring-support for holding the end of the flexible shaft and gearing in a fixed relation to the axle.

445,145. MACHINE FOR SLOTTING AND BORING UMBRELLA OR OTHER STICKS. JOHN B. JESSON, Camden, N. J., and JACOB K. WEED, Philadelphia, Pa., assignors of one-third to Leonard E. Ladd, Philadelphia, Pa. Filed Feb. 19, 1890. Serial No. 340,988. (No model.)



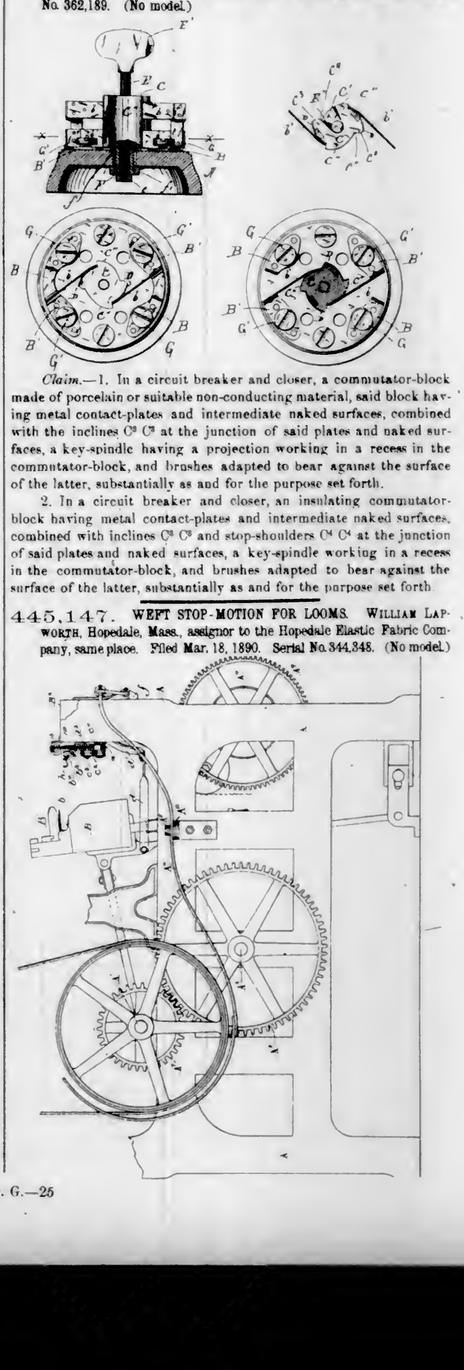
Claim.—1. A slotting or kerfing machine comprising a base, a rising and falling table for supporting the stick or article to be slotted or kerfed, a slide on said table, a plunger with cutters above said table, a saw, a movable gage P', which is raised automatically by the action of a spring and positively lowered by the descent of the plunger, and the stops S and S', substantially as described.

2. A machine for slotting or kerfing sticks, &c., having a slotting or kerfing device, a boring tool or bit, a carriage for advancing the sticks to and from said tool, an upper plunger carrying cutters, a rising and falling table for supporting the stick or article to be slotted or kerfed, a slide on the latter table, the gage P, which is raised by the action of a spring and lowered by the descent of said plunger, and the stops S and S', substantially as described.

3. A saw and cutters, a rising and falling table supporting the stick or article to be slotted or kerfed, and a rising and falling plunger carrying said cutters, in combination with a movable gage which is raised by the action of a spring and lowered by the descent of said plunger, and a stop against which said gage abuts when the latter is in elevated position, substantially as described.

4. A machine for slotting and kerfing sticks, &c., comprising a rising and falling table supporting the stick or article to be slotted or kerfed, a rising and falling plunger carrying cutters, a movable gage which is raised by the action of a spring and lowered by the descent of said plunger, a stop against which said gage abuts when the latter is in elevated position, a saw mounted on one end of an extended arbor having a drum or pulley thereon, a boring bit or tool attached to the opposite end of said arbor, a slotted support adjacent to said bit or tool, a carriage adjustably mounted on said support, and a slotted guide mounted on said carriage, substantially as described.

445,146. ELECTRIC SWITCH. BENJAMIN B. KEYES, Chelsea, assignor to John S. Potter, Newton, Mass. Filed Aug. 16, 1890. Serial No. 362,189. (No model.)

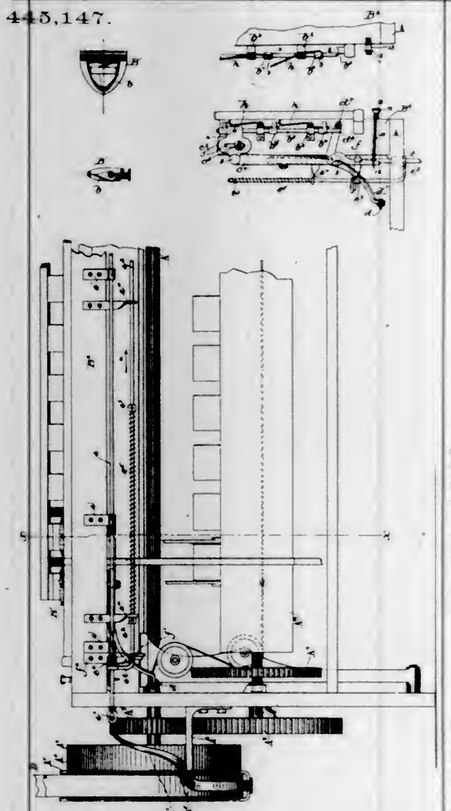


Claim.—1. In a circuit breaker and closer, a commutator-block made of porcelain or suitable non-conducting material, said block having metal contact-plates and intermediate naked surfaces, combined with the inclines C^3 C^3 at the junction of said plates and naked surfaces, a key-spindle having a projection working in a recess in the commutator-block, and brushes adapted to bear against the surface of the latter, substantially as and for the purpose set forth.

2. In a circuit breaker and closer, an insulating commutator-block having metal contact-plates and intermediate naked surfaces, combined with inclines C^3 C^3 and stop-shoulders C^4 C^4 at the junction of said plates and naked surfaces, a key-spindle working in a recess in the commutator-block, and brushes adapted to bear against the surface of the latter, substantially as and for the purpose set forth.

445,147. WEFT STOP-MOTION FOR LOOMS. WILLIAM LAPWORTH, Hopedale, Mass., assignor to the Hopedale Elastic Fabric Company, same place. Filed Mar. 18, 1890. Serial No. 344,348. (No model.)

445,147.



Claim.—1. The lay, a series of shuttles having drop-wires to drop when the weft breaks or becomes exhausted, combined with the slide having lugs and the series of feelers against which the drop-wires act, substantially as described.

2. The lay, its series of shuttles having drop-wires adapted to drop when a weft breaks or becomes exhausted, a controlling mechanism including a slide having lugs and a link d^4, and the feelers to arrest the movement of the said slide, combined with the lever d^3, having a stud or projection to act upon and lift the said link when the slide is arrested by a feeler, means to actuate said lever, the shipper-bar, means to actuate it, a releasing device f between the said link and shipper-bar, and with the shipper-rod and belt-shipper, to operate substantially as described.

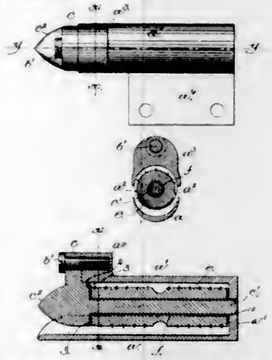
3. In a loom, the following instrumentalities, viz: a lay, a series of shuttles provided with drop-wires, a series of feelers, a belt-shipper rod, a belt-shipper, controlling mechanism adapted to be arrested by the said feelers, actuating mechanism for the said controlling mechanism, a releasing device, and a shipper-bar and means to actuate it, to operate substantially as described.

4. The breast-beam, the lever d^3, having a pin or projection 8, the lay, means between the lay and lever to vibrate the said lever, combined with a link having a notch to be engaged by the said pin or projection, the plate, and the slide, to operate substantially as described.

5. A lay, a series of shuttles provided each with a drop-wire and adapted to drop when the weft breaks or is exhausted, a series of feelers adapted to be actuated by the said drop-wires, and a belt-shipper rod, combined with a slide-bar having lugs, means to actuate said slide-bar, and intermediate devices between the said shipper-rod and slide, to operate substantially as described.

445,148. **LOOM-TEMPLE.** CHARLES A. LITTLEFIELD, Manchester, N. H., assignor to the Dutcher Temple Company, Hopedale, Mass. Filed June 18, 1890. Serial No. 355,842. (No model.)

Claim.—1. A loom-temple head having a lug a^3 projecting therefrom, combined with a spindle having an enlargement or head provided with an ear c, the said ear and lug being connected by a screw, substantially as described.



2. The loom-temple head, combined with a spindle having an enlargement or head c^3, provided with a shoulder, as 2, to fit the inner side of the cap, the end of the said spindle opposite the said enlargement taking a bearing in the upright wall of the temple, and a connecting device between the said spindle and head, substantially as described.

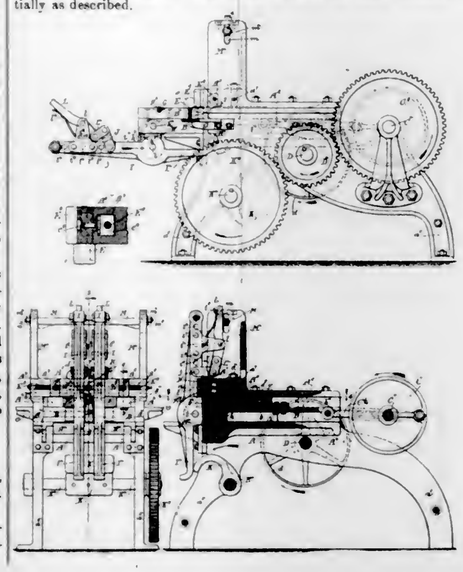
3. A loom-temple spindle provided at one end with an enlargement or head, and having its body coated with vitreous material to form a bearing for the temple-roll, substantially as described.

4. A loom-temple spindle having an enlargement or head, the spindle and the inner side of the said enlargement or head being provided with a vitreous coating, to operate substantially as described.

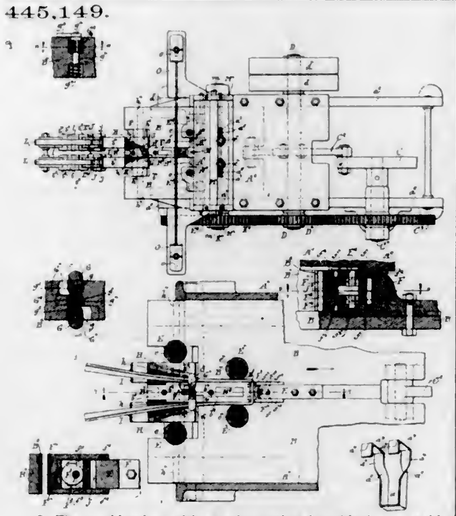
445,149. **MACHINE FOR MAKING TIMBER-HANGERS.** JOHN GRANT, Chicago, Ill., assignor to the Grant Manufacturing Company, same place. Filed Apr. 17, 1890. Serial No. 348,362. (No model.)

Claim.—1. The combination, with a reciprocating form-block, of two stationary bending-rolls located at opposite sides of the form-block and two other bending-rolls located at opposite sides of the form-block and at a distance therefrom equal to the thickness of the bar to be bent, substantially as described.

2. The combination, with a reciprocating form-block, a movable carriage supporting the latter, and bending-rollers located at opposite sides of the form-block, of forming-dies mounted upon the part of the form-block remote from the carriage and movably connected with said form-block, and means upon the carriage acting in connection with said forming-dies to give a twisted form to the blank, substantially as described.



445,149.



3. The combination, with a reciprocating form-block, a movable carriage supporting the latter, and bending-rollers located at opposite sides of the form-block, of two forming-dies mounted upon the part of the form-block remote from the carriage and extending laterally at opposite sides of the form-block, said forming-dies being pivotally connected with the form-block, and means upon the carriage acting in connection with said forming-dies to give a twisted form to the blank, substantially as described.

4. The combination, with a reciprocating carriage and a form-block thereon, of stationary bending-rollers, forming-dies mounted on the form-block and extending laterally from opposite sides thereof, and cam-arms pivotally supported upon the carriage and operating in connection with the said forming-dies to give a twisted form to the blank, substantially as described.

5. The combination, with a reciprocating carriage, a form-block thereon, and stationary bending-rollers, of forming-dies mounted on the block and extending laterally at opposite sides thereof, cam-arms mounted on the carriage and operating in connection with the said forming-dies to give a twisted form to the blank, and a stationary part or roller adapted for contact with the said cam-arms, by which the latter are actuated during the movement of the carriage, substantially as described.

6. The combination, with a form-block and bending-rollers operating in connection therewith to make a central bend or loop in the blank, of forming-dies mounted on the form-block and extending laterally from opposite sides thereof, cam-arms operating in connection with said forming-dies to give a twisted form to the blank, bending-levers pivoted to the ends of said cam-arms, and stationary surfaces or dies opposed to said bending-levers, substantially as described.

7. The combination, with a form-block and bending-rollers operating in connection therewith to make a central bend or loop in the blank, of forming-dies mounted on the form-block and extending laterally from opposite sides thereof, cam-arms operating in connection with said forming-dies to give a twisted form to the blank, bending levers pivoted to the ends of said cam-arms, bending-arms pivoted to the said bending-levers, and stationary surfaces or dies opposed to said bending-levers, substantially as described.

8. The combination of a form-block, bending-rollers operating in connection therewith to make a central bend or loop in the blank, forming-dies mounted on the form-block and extending laterally from opposite sides thereof, cam-arms operating in connection with said forming-dies to give a twisted form to the blank, bending-levers pivoted to the ends of said cam-arms, and a revolving cam or wiper for actuating said bending-levers, substantially as described.

9. The combination of a reciprocating carriage, a form-block mounted thereon, stationary bending-rollers operating in connection with the form-block to make a central loop in the blank, forming-dies mounted upon the form-block and extending laterally at opposite sides thereof, cam-arms mounted upon the carriage and operating in connection with said forming-dies to give a twisted form to the blank, stationary parts or rollers for actuating said cam-arms, bending-levers pivoted to the ends of said cam-arms, and a revolving cam or wiper actuating said bending-levers, substantially as described.

10. The combination of a reciprocating carriage, a form-block mounted thereon, stationary bending-rollers operating in connection with the form-block to make a central loop in the blank, forming-dies mounted upon the form-block and extending laterally at opposite sides thereof, cam-arms mounted upon the carriage and operating in connection with said forming-dies to give a twisted form to the blank, stationary parts or rollers for actuating said cam-arms, bending-levers pivoted to the end of said cam-arms, a revolving cam or wiper actuating said bending-levers, bending-arms pivoted to the outer parts of said bending-levers, actuating-levers pivoted upon the bending-levers and connected with the said bending-arms, and a stationary part or bar upon the machine-frame adapted for contact with said actuating-levers, whereby the said bending-arms are moved, substantially as described.

11. The combination, with a reciprocating carriage and a form-block mounted thereon, of stationary bending-rollers located at opposite sides of the form-block at a distance therefrom equal to the thickness of the blank, forming-dies mounted upon the form-block and extending laterally from opposite sides thereof, cam-arms pivoted to the carriage and operating in connection with said forming-dies to give a twisted form to the blank, and other stationary bending-rollers located at opposite sides of the form-block at a distance therefrom equal to the width of the blank, substantially as described.

12. The combination, with a reciprocating carriage and a form-block mounted thereon, of stationary bending-rollers located at opposite sides of the form-block at a distance therefrom equal to the thickness of the blank, forming-dies mounted upon the form-block and extending laterally from opposite sides thereof, cam-arms pivoted to the carriage and operating in connection with said forming-dies to give a twisted form to the blank, other stationary bending-rollers located at opposite sides of the form-block at a distance therefrom equal to the width of the blank, and bending-levers pivoted to the ends of the cam-arms, substantially as described.

13. The combination, with a reciprocating form-block and bending-rollers operating in connection therewith to form a central loop in the blank, of a clamping device for holding the blank against the end of the form-block, a lever for actuating said clamping device, and a stationary part of or upon the machine-frame adapted for engagement with said lever during the reciprocatory movement of the block, whereby the clamp is automatically actuated, substantially as described.

14. The combination, with a reciprocating form-block and bending-rollers operating in connection therewith to form a central loop in the blank, of a clamping device for holding the blank against the end of the form-block, a lever for actuating said clamping device, and a stationary part of or upon the machine-frame adapted for engagement with said lever during the reciprocatory movement of the block, whereby the clamp is automatically actuated, and a spring for releasing the clamp, substantially as described.

15. The combination of a reciprocating form-block, bending-rollers operating in connection therewith, forming-dies mounted on and extending laterally from opposite sides of the form-block, and cam-arms operating in connection with said forming-dies, said forming-dies being movably connected with the form-block, and a stationary part of or upon the machine-frame engaging said forming-dies or a part connected therewith during the reciprocation of the form-block, whereby said forming-dies are moved or shifted into operative position, substantially as described.

16. The combination, with a machine-frame, a reciprocating form-block, and bending-rollers operating in connection therewith, of forming-dies pivotally connected with the form-block, cam-arms operating in connection with said forming-dies to give a twisted form to the blank, an actuating-lever connected with said forming-dies, and a part of or upon the machine-frame adapted to engage said actuating-lever to move the forming-dies during the reciprocation of the form-block, substantially as described.

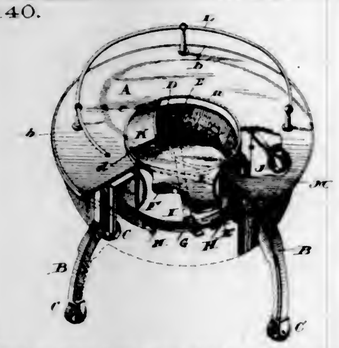
REISSUES.

11,140. **BABY-WALKER.** ALFRED BURKHOLDER, Toronto, Canada. Filed Nov. 24, 1890. Serial No. 372,525. Original No. 428,452, dated May 20, 1890.

Claim.—1. A table supported on suitable legs provided with caster-wheels and having a hole made in its center to receive a child, in combination with a spring-supported ring located in said hole, a revoluble supplemental ring to which supporting-straps are connected, and friction-rollers H between said rings, substantially as set forth.

2. A table A, provided with legs B, having caster-wheels C placed on their feet, a bead a, formed on the table A and surrounding the hole made in its center, and a bead b, surrounding the outer rim of the table A, a shelf K, hinged at d to the table A and provided with hooked supports e, in combination with an elastically-supported padded ring E and supplemental ring G, supported on friction-rollers H

11,140.



and carrying the straps I, the whole being arranged substantially as and for the purpose specified.

3. In a combined baby-walker and baby-jumper, the combination, with a table A, suitably supported and having a hole therein to receive a child, of an elastically-supported ring E, located in said hole, a revoluble supplemental ring G, carried by the ring E, and a suitable seat F, supported on the revoluble ring G, substantially as set forth.

4. In a baby-walker, the combination, with the table A, suitably supported and having a hole therein to receive a child, of an elastically-supported revoluble ring G and a suitable seat F, carried by said ring, whereby the child is enabled to easily turn its spring-supported seat without turning the table, as set forth.

5. In a baby-walker, the combination, with the table A, suitably supported and having a hole therein to receive a child, of an elastically-supported ring E, located in said hole, and a suitable seat F, supported beneath the lower edge or rim of the ring E, substantially as and for the purpose described.

6. In a combined baby-walker and baby-jumper, the combination, with the table A, having therein a hole to receive a child, of the elastically-supported ring E, located within said hole, and the hinged shelf or leaf K, located within the ring E, as shown and described.

7. The combination, with the table, of an elastically-supported and revoluble ring provided with the supporting-straps, substantially as and for the purpose described.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE WHITE.

Decided September 12, 1890.

INVENTION—AGGREGATION.

There is no invention in aggregating in a single vendible commodity magnesium adapted to use for flash-light purposes and put up in a case or shell and a time-fuse attached to said case or shell for communicating fire to the magnesium. The improvement may possess commercial advantages, but it lacks the quality of invention.

APPEAL from Examiners-in-Chief.

LIGHTS FOR PHOTOGRAPHING.

Application of Norman White filed March 1, 1889, No. 301,681.

Messrs. Gifford & Brown and *Mr. E. H. Brown* for the applicant.

MITCHELL, *Commissioner:*

In this case the claims appealed are as follows:

1. The combination, with magnesium, of a case or shell and a fuse attached to the case or shell for communicating fire to the magnesium, substantially as specified.

2. The combination, with magnesium, of a case or shell, consisting of a pasteboard box, and of a fuse attached to the case or shell, for communicating fire to the magnesium, substantially as specified.

The references are patent to Fuller, July 31, 1888, No. 386,875, and *Photographic News*, vol. 27, p. 26, 1883; *Photographic News*, vol. 8, p. 575, 1864; *British Journal of Photography*, vol. 12, p. 87, 1865; *British Journal of Photography*, vol. 13, p. 417, 1866.

The only reference which bears with any considerable directness upon the matter claimed is Fuller's patent of 1888, which fully discloses the subject-matter of the present application, the claims being, however, limited to a combination in which a coating of collodion is employed as an essential feature. This patent has been anticipated by the applicant, who has complied with Rule 75 for that purpose. But the fact that the applicant can antedate Fuller does not clothe his improvement with patentable quality. He claims in effect the application of a time-fuse to magnesium adapted to use for flash-light purposes and put up in a case or shell.

I agree with the Examiners-in-Chief and with the Primary Examiner that—

there is nothing of patentable invention in using a time-fuse in connection with a flash-light, the same having been used in connection with time-signals as well as in all explosions previously where it was an object to gain time. Neither is there anything patentable in putting up a specified charge of an explosive in a case or cartridge.

It may be added that there can be no invention in aggregating both features in a single vendible commodity. The improvement may possess commercial advantages, but it lacks the quality of invention.

The decision of the Examiners-in-Chief is affirmed.

EX PARTE SHIELDS.

Decided January 5, 1891.

INVENTION—MECHANICAL SKILL.

Where it appeared that all that applicant professed to do was to take an old and well-known bolt and nut and to screw them together in the ordinary way, and then to take an old and well-known chisel and make an incision in the bolt lengthwise and nearest the upper surface of the nut in order to prevent the bolt from rotating, *Held* that applicant had only displayed the expected skill of the calling and accomplished what a skillful mechanic would do whenever required.

APPEAL from Examiners-in-Chief.

NUT-LOCKS.

Application of James H. Shields filed June 5, 1890, No. 354,353.

Mr. C. M. Alexander for the applicant.

MITCHELL, *Commissioner:*

The claims appealed are as follows:

1. The mode herein described of securing and holding a nut in place upon its threaded bolt, consisting in forcing a suitable tool into the body of the bolt tangentially to the longitudinal axis of said bolt in such manner as to lift or raise not only the metal of one or more of the threads of said bolt, but also a portion of the body below the depth or kerf of the thread, as and for the purpose specified.

2. The combination of a bolt and nut thereon, a portion of the threads of the bolt immediately next to the outer face of the nut being cut up or raised by a cut extending longitudinally of the bolt and inclining tangentially thereto, substantially as described.

The references are patents to Watson (reissue) June 2, 1874, No. 5,906; Withers, January 25, 1876, No. 172,815.

In an amendment to the specification filed July 30, 1890, it is stated as follows:

Applicant lays no claim to be the first inventor of the method of securing a nut upon a bolt by striking up a portion of the thread of the latter, but what he does claim as his invention is the *peculiar manner* of cutting up the threads immediately adjacent the nut. Briefly speaking, this invention consists in making a longitudinal cut and extending or inclining it *tangentially to the bolt*, the cut taking in one or more of the threads and extending *down into the body* of the bolt.

It is contended by applicant that nothing is found in the patents cited to approach or suggest this method of securing the nut.

In the patent to Withers the locking-lip is formed by raising the thread of the bolt by cutting. In the patent to Watson the locking-lip is formed by bending the thread on the bolt nearest the outer surface of the nut.

In view of the references, it must be held that there is nothing patentable in the claims.

It has been repeatedly held by the Supreme Court of the United States that—

it is not enough that a thing shall be new, in the sense that in the shape or form in which it is produced it shall not have been before known, and that it shall be useful, but it must, under the Constitution and the statute, amount to an invention or discovery.

Hill v. *Wooster* (132 U. S., 693) and cases there cited.

Furthermore, applicant has but slightly modified the manner in which Withers accomplished substantially the same result; he simply cuts deeper into the body of the bolt than did Withers and does away with the lugs on the nut; but Watson also does away with the lugs and bends over the thread on the bolt nearest the outer surface of the nut. Applicant only accomplishes to a greater extent what has before been accomplished by those who have preceded him. In other words, he has displayed but the expected skill of the calling, which did not involve invention.

A mere carrying forward or new or more extended application of the original thought, a change only in form, proportions, or degree, doing substantially the same thing in the same way, by substantially the same means, with better results—

is not such invention as will sustain a patent. (*Ex parte West*, 47 O. G., 1731; *Smith* v. *Nichols*, 21 Wall., 112; *Roberts* v. *Ryer*, 91 U. S., 150.)

It may also be added that all that applicant professes to do is to take an old and well-known bolt and nut and screw them together in the ordinary way, and then to take an old and well-known chisel and make an incision in the bolt lengthwise of the bolt and nearest the upper surface of the nut, in order to prevent the bolt from rotating. This, apart from any references, does not amount to invention, for applicant has done only what a skillful mechanic would do whenever required. (Walker on Patents, section 35, and cases there cited.)

The decision of the Examiners-in-Chief is affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

THE WEBSTER LOOM COMPANY v. HIGGINS *et al.*

Decided September 13, 1890.

1. INFRINGEMENT—EXCEPTION TO MASTER'S REPORT—LIABILITY OF INFRINGER FOR PROFITS.
The exceptions to the master's report as to the liability of the defendants for profits upon reargument overruled, and *Held* that upon the facts presented the defendants were not accountable for any part of their profit upon the material when it was ready for the loom included in its market value at that time, or for any part of the seller's profit in the increased production. Case of *Webster* v. *Carpet Co.* (2 Ban. & A., 67) not followed.

2. SAME—ACCOUNTING BETWEEN PATENTEE AND INFRINGER—SAME.
In settling an account between a patentee and an infringer the liability of the latter for profits is measured by the advantage which he has gained by the use of the patented invention.

3. SAME—SAME—ADVANTAGE GAINED BY USE OF PATENTED INVENTION.
The advantage gained by the infringer who makes and vends a patented article is measured by the value which the invention contributes to the market value of the article, and he is held accountable to that extent, unless his net profit in making and selling the article is less than the value of the invention.

4. SAME—SAME—SAME—BURDEN OF PROOF UPON PATENTEE.
If the invention invests the article with its whole value as a marketable commodity, his entire gains are attributed to the invention. If it contributes only a subsidiary value, this value segregated from the independent market value of the article is the advantage for which he is accountable; and it is incumbent upon the patentee to show affirmatively what this advantage is worth by reliable evidence, however difficult it may be to do so.

Mr. Edward Stephens and *Mr. Esek Cowen* for the complainant.

Mr. Walter K. Griffen and *Mr. Livingston Gifford* for the defendants.

WALLACE, *J.*:

I have sat with Judge Shipman upon the reargument of the exceptions to the master's report in order that a ruling of mine made upon the application of the defendants for instructions to the master might be reconsidered, and the other questions which have been reargued will be disposed of by Judge Shipman without my participation. At the threshold of the accounting the defendants applied for instructions to the master, which would, if allowed, preclude the complainant from investigating the cost of carpet material to the defendants at any stage of manufacture before it was ready for the loom. These instructions could not have been given without disregarding the decision of Judge Nixon in *Webster* v. *New Brunswick Carpet Co.*, (2 B. & A., 67.) He had decided that an infringer of the patent was liable for the net profits realized upon the number of yards of carpet made by the use of the invention in excess of the quantity that could have been made by using non-infringing looms. That decision was accepted as the correct rule of recovery upon the application for instructions without any independent consideration of the nature of the patent or the character of the infringement. Notwithstanding the excellent authority of the opinion of Judge Nixon in support of the ruling, I am satisfied that my ruling was radically erroneous.

The invention which the defendants have appropriated is specified in the fifth claim of the patent, and is for an improvement in the wire-motion devices of looms for weaving pile fabrics. The improvement enables the loom to be driven more rapidly, and thereby the weaver can make more yards of carpet in the same period of time than he could make upon a loom without it. The defendants were manufacturers of carpets on a large scale, having the requisite capital and general facilities for carrying on an extensive business. They bought the material—chiefly wool—of which carpeting is made in the raw state, and after subjecting it in the various departments of their factory to the operations of washing, sorting, combing, carding, spinning, dyeing, &c., in order to prepare it for the loom, at the last stage of the production of carpets wove it upon looms some of which contained the patented invention. When the material was prepared for the loom, it was in that condition a marketable commodity, and presumably could have been sold in the market at a profit above cost, which would have yielded the defendants a partial return, at least, for the use of their capital and for their experience and judgment in purchasing and treating it. During the period of infringement there were other looms open to public use having devices for effecting the result accomplished by the patented devices and by which the same result of increased rapidity in weaving was actually accomplished with a greater or less degree of success. The defendants employed many non-infringing looms in their factory, together with sixty-one infringing looms. They wove 8,277,012 yards of carpeting on the infringing looms, which quantity, according to the theory of the complainant, was 4,145,872 yards more than they could have woven on the same number of non-infringing looms. Consequently it appears, in the aspect of the proofs most favorable to the complainant, that the defendants could have made all the carpeting they did make if, instead of using the sixty-one infringing looms, they had used twice that number of non-infringing looms. Upon such a state of facts it is entirely clear that the defendants are not accountable for any part of their profit upon the material when it was ready for the loom included in its market value at that time, or for any part of the sellers' profit on the increased production.

In settling an account between a patentee and an infringer the liability of the latter for profits is measured by the advantage which he has gained by the use of the patented invention. It is often difficult to ascertain with even approximate accuracy what the value of this advantage is in a particular case, and the rule established by the adjudications, which imposes upon the patentee the burden of ascertaining and separating this value from the profits which the infringer might have made without appropriating the invention, but did not make nor attempt to make, frequently strips the patent of all value. Nevertheless the rule obtains and must be applied as best it may be to cases as they arise by the light of the illustrations afforded by the reported cases. The adjudications declare that the advantage gained by the infringer who makes and vends a patented article is measured by the value which the invention contributes to the market value of the article, and he is held accountable to that extent, unless his net profit in making and selling the article is less than the value of the invention. If the invention invests the article with its whole value as a marketable commodity, his entire gains are attributed to the invention. If it contributes only a subsidiary value, this value segregated from the independent market value of the article is the advantage for which he is accountable; and it is incumbent upon the patentee to show affirmatively what this advantage is worth by reliable evidence, however difficult it may be to do so. In *Elizabeth* v. *Pavement Co.* (97 U. S., 126) the patented article was a wood pavement and did not differ from other wood pavements open to public use, except in the mode of arranging and combining the materials of which it was composed, but the infringer was held liable for the whole difference between the cost of materials and labor and the price received for the pavement when laid, upon the theory that the whole value of the pavement was contributed by the invention.

The court said:

The parts were so correlated to each other from bottom to top that it required them all, put together as he put them, to make the complete whole and produce the desired result. * * * Thus combined and arranged they made a new thing, like a new chemical compound. It was this thing, and not another, that the people wanted and required.

On the other hand, in *Dobson* v. *Hartford Carpet Co.* (114 U. S., 439) the patent was for a design for carpets, and the court below had allowed as profits the difference between the cost to the infringer and the selling price. But the Supreme Court considered it a matter of common knowledge that as between carpets of different designs, one patented and another not, the one with the patented design might or might not command in the market a higher price than the other, and reversed the decree below, applying the doctrine that the entire profit from the manufacture and sales of a patented article is not chargeable to the infringer

unless it appears by reliable evidence that its entire value as a marketable article is properly and legally attributable to the patented feature.

The Court held in that case that the owner of the patent could not recover anything as infringer's profits because the value of the advantage attributable exclusively to the design was not shown. In the more recent case of *Callaghan* v. *Myers* (128 U. S., 617, 666) the infringer of a copyright had published and sold books in which copyrighted matter was incorporated with matter which he had a right to use, and the court held that the lawful matter in the infringing book being useless without the unlawful, and it being impossible to separate the profit on the latter from that on the former, and the volume being sold as a whole, the defendant was responsible for the consequences and liable for the entire profit. In the recent case of *Am Ende* v. *Seabury*, decided in this court, the infringing corporation was held liable to the owner of a patent for a chemical preparation—borated cotton—to the extent of the whole profit made on the sale of the article. It was insisted that the ingredients of the compound could have been sold at a profit, and that it was incumbent upon the patentee to prove what part of the whole profit arose exclusively from selling them as borated cotton; but the court held that the defendant having converted them into the new chemical composition, and having sold them as such, whatever profit accrued was attributable to the patented invention.

The embarrassment so often found in ascertaining the value of the advantage derived by an infringer, when the infringement is the selling of a patented article, seldom occurs in cases where the infringement consists in using a patented process or machine by which a thing old in itself may be made more economically than it could be without employing the invention. In these cases the advantage attributable to the invention is the gain in economy of manufacture; and it matters not whether the general business of manufacturing and selling the product has proved profitable to the infringer or not, he is responsible to the patentee to the extent that he has saved himself from loss by using the patented invention. (*Mowry* v. *Whitney*, 14 Wall., 620; *Cawood Patent*, 94 U. S., 710; *Black* v. *Thorn*, 111 U. S., 123; *Thompson* v. *Wooster*, 114 U. S., 104; *Conover* v. *Mers*, 11 Blatchf., 104, affirmed, 125 U. S., 144; *Tilghman* v. *Proctor*, 125 U. S., 136.) In such infringements it is immaterial what profits the infringer has made in his business or from his manner of conducting it; but the expense of using the process or machine, over that of using one open to the public, is to be ascertained by the manner in which he has conducted his business and not by the manner in which he might have conducted it. The advantage derived by the farmer who

has raised a crop of grain and thrashed it with a patented machine which thrashed more in a given time than any other machine could have thrashed is not, according to the rule of the adjudged cases, the profit made on the sale of the excess, including the contribution made by the use of his land and by his labor in plowing, planting, reaping, and harvesting. No more is it in the present case the profits made by the defendants upon the manufacture and sale of their increased production of carpets.

Assuming that the defendants were by the use of the patented wire motion enabled to weave more yards of carpet than they could under similar conditions and circumstances with non-infringing looms, the inquiry in the case is how much more it would have cost them to employ enough non-infringing looms to do the work done by the patented looms. It is not necessary to consider at this time what factors enter into this inquiry. It suffices for present purposes to indicate what is the ultimate inquiry to be solved upon the accounting.

U. S. Circuit Court—Southern District of New York.

WEBSTER LOOM COMPANY *v.* HIGGINS *et al.*

Decided September 13, 1890.

1. ACTION FOR INFRINGEMENT—NEWLY-DISCOVERED EVIDENCE.

Where in an action for infringement it appeared that the defendants had introduced evidence in respect to a certain device at the close of a long and expensive hearing before the master, and that while plaintiff's counsel had not brought themselves without question within the rules which ordinarily govern the reopening of a hearing to admit newly-discovered evidence, the plaintiff had not presented that part of its case and had not had a full opportunity to do so, and it appeared that it would be inequitable to say that it never should present it, *Held* that a motion to reopen by plaintiff for the purpose of introducing new testimony in respect to said device should be granted.

2. SAME—MASTER'S REPORT.

Where in action for infringement the master in his report on the question of damages sustained by plaintiff did not specifically find as to the alleged superiority of a non-infringing loom over the one infringed, and it appeared that he did not intend to state his conclusions in regard to said non-infringing loom, although he might have thought that its superiority was proved, *Held* that the case should be recommitted to him in order for him to state his own conclusions from his patient study and accurate knowledge of the evidence, rather than that they should be spelled out from the answers to the defendants' requests.

Mr. Edward Stephens and *Mr. Esek Cowen* for the plaintiff.

Mr. Walter K. Griffin and *Mr. Livingston Gifford* for the defendants.

SHIPMAN, *J.*:

There are two motions in regard to the above-entitled cause. They were made in consequence of the opinion of the court, which recommitted the report to the master. (*Webster Loom Co.* v. *Higgins*, 39 Fed. Rep., 462.) One is by the plaintiff, that it may be permitted to present to the master new evidence in regard to the Johnson loom. The second is by the defendants, asking for a reargument of the question arising upon the exceptions to the master's report. So much of the defendants' motion as relates to the exception to the master's conclusion in regard to the rule for the computation of profits, in case an advantage was found by the use of the patented device described in the fifth claim of the patent, was heard before Judge Wallace and myself. Judge Wallace's opinion, in which I concur, is to the effect that the rule which the master adopted was the proper one, and consequently the exceptions which relate to that part of the report are overruled, and his conclusion that there was a failure to establish a legal basis for the computation of profits is sustained.

The question then arises as to the propriety of recommitting the report, either for the purpose of taking additional evidence in regard to the Johnson loom or for new findings of fact.

The master said in his report:

> In view of the expenses in time and money already consumed in this case, I deem it proper to report further respecting the factor of superiority of complainant's invention, so that in case the conclusions of law may be overruled on exceptions the necessity of sending the case back for further report may possibly be avoided.

This course was eminently proper. The accounting before him commenced in the latter part of 1882 or in 1883. The defendants' testimony in regard to the Johnson motion was taken in May, 1887, and their testimony was closed July 21, 1887. The master's draft report was dated July 27, 1888. The hearing was a long and very expensive one, the testimony is voluminous, and the questions of fact require much study. The case will probably go to the Supreme Court, and if the conclusion of law in regard to the rule for the computation of profits should not be sustained it would be very desirable to have the findings of the master and of this court upon the volume of testimony in such condition that the Supreme Court can also review the questions of fact and, if practicable, bring this expensive litigation to a close. To this end it is important that the report should be recommitted for the purpose specified in my former opinion.

The next question is in regard to the admission of new testimony by the complainant in respect to the Johnson device. The defendants' testimony in regard to this loom was taken near the close of the exhaustive hearing before the master. The complainant's counsel were not at the time able to find and obtain rebutting testimony for the reason stated in the affidavit of Mr. Stephens, and, also, in my opinion, did not give to this part of the defendants' testimony the importance which it subsequently assumed. They are now able to find and to produce testimony which they deem important. While they do not bring themselves, without question, within the rules which ordinarily govern the reopening of a hearing to admit newly-discovered evidence, the complainant has not yet prosecuted that part of its case and has not had a full opportunity to do so, and it would be, in my opinion, inequitable to say that it never shall present it. The motion of the plaintiff is granted.

The remaining question arises upon the application of the defendants for a reargument of the exceptions to the master's report in order to show that the facts in regard to the Johnson motion which the court desires to have found were found by the master.

After a draft report had been submitted and exceptions thereto had been filed, which were considered and overruled, the master signed and filed the draft as his final report. He also says in his report:

> Written requests, somewhat voluminous, to find facts and conclusions upon matters not included in such report having been presented, such requests are filed herewith with my action indicated thereon.

The defendant filed ninety-two requests to find upon matters of fact, and fourteen requests to find conclusions of law. To the requests upon matters of fact the master appended the words "I so find," or "I do not so find," or "substantially correct." These findings were treated by the parties as, and I have assumed them to be, addenda to the master's report, but I have not attributed to the statements contained therein the same importance which unquestionably belongs to the main report.

The ninth request is to find that the following number of yards of carpet were woven at defendants' mill during the years 1874–'81, inclusive, the average amount woven per loom per day being stated as reduced pro rata to the number of wires to the inch of carpet to an arithmetically equivalent number of yards of nine-wire carpet, the yards so reduced being termed nine-wire level, xxx, on fifty-four Gilbert & Taft looms, including the Sterling loom, and three sample looms, Nos. 54, 55, and 56, with the Davis and Duckworth wire-motion devices, xxx. Average per day 53.37 yards. The master says, "I so find." Similar requests were made in regard to each set or class which made up the sixty-one infringing looms. The daily average of the sixty-one looms is found to be 52.90 yards.

The fifty-ninth request is that the Johnson looms with the said motion, for the seven years, May 1, 1874, to April 30, 1881, wove from 1,288,623 yards to 1,842,314 yards per year of ten-wire tapestry, 216 sets of worsted ends, and averaged a daily production in gross per year of from 44.65 to 50.55 yards per loom of said carpet. A small and immaterial amount in fact of shoe carpet was woven in the earlier years irregularly on a few looms. The gross daily average or loom for said seven years was 48,531 yards of ten-wire carpet, equal to 53,935 yards of nine-wire level. The master said "substantially correct." In reply to subsequent requests the master found facts which, it is claimed, gave the Johnson loom additional allowances in its favor, so that if an estimate of these allowances was made it would be found that the Johnson loom, with its motion, could weave 8.16 per cent. more per day than the sixty-one infringing looms did upon an average weave. If this evidence enables the master to find, as his conclusion from it and the other testimony, that the Johnson motion was equal or superior to the motion which, for convenience sake I call the Webster motion, he can easily state such conclusion. He did not state it in his answers to the eighty-second and eighty-eighth requests, although he had an opportunity to do so, and the omission seemed to me of importance. The general conclusions which the defendants asked the master to find in regard to the superiority of the motions, seven of which they claimed to be free and open to the public at the date of the Webster patent, were, with the answers thereto, as follows:

> 81. Complainants have not shown any gain or profit or advantage to defendants by the use of the Davis or Duckworth motions, as compared with the use under similar circumstances of the following motions:
> (*a*) The Bigelow.
> (*b*) The Collier bandy, (1862.)
> (*c*) The Collier overhead or upright.
> (*d*) The Johnson.
> (*e*) The Weild trough.
> (*f*) The Weild cylindrical.
> (*g*) The Moxon.
> (*h*) The Magnetic.
> I so find. J. A. S.
>
> 82. Defendants have shown that said motions *a*, *b*, *c*, *d*, *e*, *f*, *g*, and *h* of request No. 81 are equal or superior to the Davis or Duckworth motions, and of equal or superior advantage or usefulness in carpet manufacture.
> I do not so find. J. A. S.
>
> 87. Complainants have not shown any increase in the average amount of carpet woven per loom in the same time, due to the use of the Webster combination of the fifth claim, as compared with said wire motions *a*, *b*, *c*, *d*, *e*, *f*, *g*, and *h* of request No. 81.
> I so find. J. A. S.
>
> 88. Defendants have shown that said motions *a*, *b*, *c*, *d*, *e*, *f*, *g*, and *h* of request No. 81, upon looms old and well known in the art prior to the date of the Webster patent and of the period of infringement herein, are capable of running at as great and greater loom speed than the Davis or Duckworth motions were run at, and of weaving more carpet per day per loom.
> I do not so find. J. A. S.

The answers throw no light upon the subject to which the questions relate. Requests 82 and 88 were probably construed by the master to call for a finding of the inferiority of the Davis or Duckworth motions to each one of the specified motions, and his negative answer is therefore consistent with a belief that the Davis or Duckworth motions had been proved to be inferior to one or more of the specified motions. It is nevertheless true that the master could, if he had chosen, have made a specific finding under question 82 in regard to the Johnson or any other motion. In reference to the plaintiff's requests, he had already indicated his opinion in regard to the state of the evidence upon the productive capacity of the Moxon and Magnetic looms. I think that he did not intend to state his conclusions in regard to the Johnson motion, although he may think that its superiority is proved, and, therefore, I prefer that he should state his own conclusions from his patient study and accurate knowledge of the evidence rather than that they should be spelled out from the answers to the defendants' requests.

U. S. Circuit Court—Eastern District of Missouri.

AMERICAN ROLL PAPER COMPANY *v.* KNOPP *et al.*

Decided January 3, 1891.

1. PRIORITY OF INVENTION—DATE OF APPLICATION AS EVIDENCE.

Where in a suit for infringement it appeared that the application of the patent sued on was filed December 2, 1887, and the application of the defendants' patent was filed September 8, 1888, and that there was no evidence that the original application of the patent in suit was modified or amended in any respect after it was filed, *Held* that it must be conceded in the absence of other evidence that plaintiff's assignor was presumptively the first inventor.

2. INFRINGEMENT—INTERFERING PATENT.

In the ordinary case of a bill for infringement filed by the holder of a senior patent against the holder of a junior patent, the claims whereof conflict, it is no defense that the defendant is acting under a patent.

3. SAME—SAME—SECTION 4918, REVISED STATUTES OF THE UNITED STATES.

Where in a suit for infringement it appeared that the defendants held and were operating under a patent granted before plaintiff's patent was granted, *Held* that it was incumbent on the plaintiff to proceed in the first instance under section 4918, Revised Statutes of the United States, to have the invalidity of the defendants' patent, in whole or in part, judicially ascertained and declared, although the application upon which plaintiff's patent was granted was filed before that on which the defendants' patent issued.

4. SAME—SAME—JOINDER OF COUNT FOR INFRINGEMENT AND COUNT UNDER SECTION 4918, REVISED STATUTES OF THE UNITED STATES, IN THE SAME BILL.

There appears to be no objection to joining in the same bill a count for infringement and a count under section 4918, Revised Statutes of the United States.

ON motion for rehearing.

Mr. John G. Chandler and *Mr. George H. Knight* for the complainant.

Mr. Paul Bakewell for the defendants.

THAYER, *J.*:

1st. Under the authorities cited it must be conceded that in the absence of proof showing the true date of each invention the presumption is that each invention was made at the time the respective applications were filed. (*Bates* v. *Coe*, 98 U. S., 33, 34; *Pennington* v. *King*, 7 Fed. Rep., 463; *Dane* v. *Chicago Mfg. Co.*, 3 Bissel, 380.)

According to this view, as the Ehrlich application was filed December 2, 1887, and the Knopp application on September 8, 1888, and as there is no evidence that Ehrlich's original application was modified or amended in any respect after it was filed, it must be conceded, as the proof stands, that Ehrlich is presumptively the first inventor.

2d. But, although Ehrlich's application was first filed, defendants' patent antedates his by eight months, and defendants appear to be manufacturing paper-rollers strictly in accordance with the claims of their patent. Plaintiff's contention is that defendants' patent is subordinate to the Ehrlich patent, and that it is for the same invention covered by the first three claims of the Ehrlich patent. It has accordingly filed a bill in the ordinary form for an alleged infringement of its exclusive rights.

In view of these facts defendants insist that complainant cannot maintain a simple bill for infringement, in view of the priority of their letters, but that it should couple with its bill for infringement a count under section 4918 to have the Knopp patent adjudged void, in whole or in part, because of the alleged interference.

The question thus raised seems to be one of first impression; at all events I have not been referred to any case where the precise point has been considered and adjudicated. It was not considered in the case of *Lane* v. *Sovereign*, (43 Fed. Rep., 890,) for the decision in that case turned merely on a question of pleading, the cause having been submitted on the bill, answer, and replication; nor was the question at all discussed in *Johnsen* v. *Fassman*, (5 Fisher, 471,) nor in the case of *Howe* v. *Young*, (3 Fisher, 335,) cited by defendants' counsel. In the latter case the defendant was acting under a reissued patent later in date than complainant's; but defendant's original patent antedated complainant's patent.

In the ordinary case of a bill for infringement filed by the holder of a senior patent against the holder of a junior patent, the claims whereof conflict, it is no defense that the defendant is acting under a patent.

The reason of the rule, as I apprehend, is that by the grant of the first letters the Government exhausts its powers to grant to another person a monopoly of the same invention. Hence the holder of the prior patent is at liberty to treat the subsequent patent as utterly void, in so far as it conflicts with the earlier grant. (Robinson on Patents, section 370.)

But there is an obvious distinction between such a case and one where the defendant proceeded against holds the prior grant and is operating thereunder in good faith. Ordinarily a prior grantee of a right, privilege, or estate cannot be proceeded against as a trespasser by a subsequent grantee of the same grantor, even though the prior grant is for some reason voidable, until the proper steps have been taken to have the invalidity of the prior grant judicially ascertained and declared.

The principle last referred to seems to be applicable to the case at bar.

It may be that the Commissioner of Patents erred in granting a patent to the defendants while the earlier application of Ehrlich was on file; but be that as it may, if such action was erroneous it was an error in my judgment that merely renders the patent voidable in a direct proceeding brought to establish its invalidity, as the Government clearly had power when the grant was made to issue a patent for the invention in question.

A suit for infringement which proceeds plainly upon the theory that the defendants are trespassers, although acting strictly within the terms of a prior grant, and that they are liable to the subsequent patentee for profits and damages, even before the invalidity of the prior grant has been judicially ascertained, would not seem to be a proper remedy, in view of the fact that a more appropriate remedy has been provided by statute.

Section 4918 is well designed to afford relief in a case like the one at bar. It provides in substance that whenever there are interfering patents any one interested in any one of them may have relief against the interfering patentee by a suit in equity, and the court, after due proceedings had according to the course of equity, may adjudge either of the patents void in whole or in part. The judgment in such case binds the parties thereto and those acquiring title to or an interest in the patent in question subsequent to such adjudication.

Under the provisions of this section the complainant, if its contention is well founded, may obtain a decree determining to what extent defendants' prior patent is subordinate to its own, and to what extent, if any, the claims of the prior patent are invalid.

Upon the whole, therefore, I conclude that in a case like the one at bar, where defendant holds and is operating under a prior grant, it is incumbent on the plaintiff to proceed in the first instance under section 4918 to have the invalidity of defendants' patent in whole or in part judicially ascertained and declared.

That method of procedure appears to the court more regular and more in accordance with the analogies of the law than to permit the complainant to proceed against the defendants merely for infringement. It has been held that a count for infringement and a count under section 4918 may be joined in the same bill, and I can see no objection to that course of procedure. (*Leach* v. *Chandler*, 18 Fed. Rep., 262; *Holliday* v. *Pickhardt*, 29 Fed. Rep., 853; *Swift* v. *Jenks*, Id., 642.)

The decree heretofore entered was for the right party and will be allowed to stand, but it will be modified so as to show that the dismissal ordered is without prejudice to the right to proceed as herein indicated.

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VOL. 54---No. 4. TUESDAY, JANUARY 27, 1891. PRICE---$5 per year.

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Changes of Classification.

(ORDER No. 660.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., January, 15, 1891.

It is hereby directed that in Division III, Class 7, Brewing and Fermenting, and all sub-classes under the same, and Class 124, Distillation, and all sub-classes thereunder, be abolished. The establishment of the following classes and sub-classes in the same division is hereby directed:

Class 194, Alcohol:
1. Beer—
2. Purifying.
3. Finings and shavings.
4. Preserving.
5. Pasteurizing.
6. Distilled spirits—
7. Aging.
8. Apparatus,
9. Electric.
10. Rocking racks.
11. Processes.
12. Apparatus.
13. Stills,
14. Columns.
15. Doublers and worms.
16. Vapor-filters.
17. Rectifying processes.
18. Fermenting—
19. Apparatus.
20. Vats.
21. Vent-bungs.
22. Processes.
23. Malting—
24. Apparatus.
25. Cylinders rotary.
26. Malt-stirrers.
27. Processes.
28. Mashing—
29. Apparatus.
30. Digesters and disintegraters.
31. Fore-mashers.
32. Mash-tubs.
33. Rakes.
34. Tubular rakes.
35. Hops.
36. Processes.

Alcohol:
33. Mashing—
34. Wort.
35. Hopping.
36. Purifying.
36. Wines.

Class 195, Mineral Oils:
1. Apparatus—
2. Reducing gravity.
3. Stills.
4. Stirrers and scrapers.
5. Condensers.
6. Bottoms.
7. Feeders.
8. Flues.
9. Furnaces and flues.
10. Heads.
11. Jackets.
12. Rotary.
13. Series.
14. Tubular.
15. Utilizing gases and residue.
16. Vacuum.
17. Vapor-outlets.
18. Supplementary heating.
19. Coal-oil—
20. Retorts.
21. Rotary.
22. Processes.
23. Compositions—
24. Burning-fluid.
25. Paraffine.
26. Processes—
27. Chemical.
28. Injecting gases.
29. Residuum.
30. Washing and filtering.

C. E. MITCHELL,
Commissioner.

Notice.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.
Washington, D. C., December 23, 1890.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

C. E. MITCHELL,
Commissioner.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Issue of January 27, 1891.

Patents	378	No. 445,150 to No. 445,527, inclusive.
Designs	3	No. 20,490 to No. 20,492, inclusive.
Trade-Marks	17	No. 18,897 to No. 18,913, inclusive.
Labels	2	No. 6,424 to No. 6,425, inclusive.
Reissue	1	No. 11,141.
Total issue	401	

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Illinois	35	....	South Carolina	1	....
Indian Territory	....	....	South Dakota	....	....
Indiana	12	....	Tennessee	2	....
Iowa	8	....	Texas	2	....
Kansas	5	....	Utah Territory	....	....
Kentucky	2	....	Vermont	1	1
Louisiana	4	1	Virginia	1	....
Maine	3	....	Washington	2	....
Maryland	5	....	West Virginia	2	1
Massachusetts	26	2	Wisconsin	7	....
Michigan	17	....	Wyoming	....	....
Minnesota	3	....	U. S. Army	1	....
Mississippi	4	....	U. S. Navy	....	....
Missouri	11	1			
Montana	....	....	Total to citizens of the United States	352	17
Nebraska	2	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Mexico	1	....
Austria-Hungary	....	....	Netherlands	....	1
Belgium	....	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	New Zealand	....	....
Canada	3	....	Portugal	....	....
Chili	....	....	Queensland	....	....
Colombia	....	....	Russia	....	....
Cuba	....	....	Scotland	....	....
Denmark	....	....	South Australia	1	....
Ecuador	....	....	Spain	1	....
England	8	1	Sweden	....	....
Finland	....	....	Switzerland	1	....
France	2	....	Victoria	....	....
Germany	10	....	West Indies	....	....
Hawaii	....	....			
Italy	2	....	Total to citizens of foreign countries	29	2
Japan	....	....			

DESIGNS.

20,400.—POT OR JAR.—*Christian William Meinecke*, Jersey City, N. J. Application filed December 18, 1890. Serial No. 375,143. Term of patent 7 years.

20,401.—BURIAL-CASKET.—*Leo Stein*, Rochester, N. Y. Application filed April 22, 1889. Serial No. 308,213. Term of patent 14 years.

20,402.—FAMILY ALTAR.—*George Shickluna*, St. Catharines, Ontario, assignor to *Loanmi Harrington*, Toronto, Canada. Application filed December 12, 1890. Serial No. 374,491. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

18,897.—WHIPS.—*A. C. Barnes & Co., Westfield, Mass.* Application filed December 29, 1890. Used since December 1, 1890.

"The word 'KANGAROO' and the representation of a kangaroo."

18,898.—WHIPS.—*A. C. Barnes & Co., Westfield, Mass.* Application filed December 29, 1890. Used since December 1, 1890.

"The word 'HOTTENTOT' and the representation of a male Hottentot."

18,899.—LAMP-BLACK.—*Godfrey L. Cabot*, Worthington, Pa. Application filed December 20, 1890. Used since December, 1887.

"The word 'ECLIPSE.'"

18,900.—CIGARETTE-PAPER.—*Wm. Demuth & Co.*, New York, N. Y. Application filed November 13, 1890. Used since July 30, 1890.

"The words 'NORWAY PINE.'"

18,901.—MINERAL WATER.—*John Morgan*, New York., N. Y. Application filed December 24, 1890. Used since September 1, 1890.

"The word 'IMPERIAL' and the representation of a miniature human figure holding a bottle."

18,902.—TIN AND TERNE PLATES.—*Gunmey, Spering & Co.*, Philadelphia, Pa. Application filed October 30, 1890. Used since December 16, 1885.

"The word 'ALDERLY.'"

18,903.—REMEDY FOR LIVER AND KIDNEY DISEASES.—*The Harter Medical Co.*, Sedalia, Mo. Application filed October 8, 1890. Used since August 1, 1890.

"The words 'THE GREAT VITALIZER' and 'GERMAN SYSTEM TONIC' and the portrait of Mr. Jesse M. McFarland."

18,904.—EMBROCATION.—*Joseph Wilson*, Chislehurst, England. Application filed December 24, 1890. Used since September, 1888.

"The word 'ANTI STIFF.'"

18,905.—COMPOUNDS FOR CLEANING AND POLISHING METALS.—*William J. Ladd*, New York N. Y. Application filed December 9, 1890. Used since May, 1888.

"The word 'PRESTOLINE.'"

18,906.—TABLE-WARE TECHNICALLY KNOWN AS FLAT WARE.—*William H. Lyon*, Newburg, N. Y. Application filed December 5, 1890. Used since September 1, 1890.

"A representation of the building known as 'General Washington's headquarters at Newburg.'"

18,907.—COFFEE.—*New Orleans Coffee Company, Limited*, New Orleans, La. Application filed December 16, 1890. Used since January 21, 1890.

"The words 'FRENCH MARKET.'"

18,908.—COCOA.—*C. J. Van Houten & Zoon*, Weesp, Holland. Application filed December 2, 1890. Used since 1882.

"The words, letters, and characters 'C. J. VAN HOUTEN & ZOON, WEESP, HOLLAND,' arranged in a circle, within this circle and concentric with it the words 'VAN HOUTEN'S GUARANTEED,' and across the center the words 'PURE SOLUBLE COCOA.'"

18,909.—WOMEN'S OUTER GARMENTS OF SILK PLUSH RESEMBLING SEAL-SKIN.—*Adam E. Burkhardt*, Cincinnati, Ohio. Application filed November 10, 1890. Used since August, 1889.

"The word 'SEALETTE.'"

18,910.—POISON FOR VERMIN.—*Haskin & Todd*, Ithaca, N. Y. Application filed November 7, 1890. Used since October, 1889.

"The words 'ROACH BANE PASTE' and the figure of a skeleton in an inclosure with bow in its hands and facing a rat and roach, each pierced by an arrow."

18,911.—NURSERY PRODUCTS, INCLUDING TREES, PLANTS, SCIONS, AND FRUITS.—*Herbert A. Jones*, Himrods, N. Y. Application filed October 31, 1890. Used since August 18, 1890.

"The word 'FITZ' upon a landscape scene over the outline of two pears, the same being crossed diagonally by the facsimile signature of the registrant."

18,912.—MEDICINE FOR INHALATION.—*George W. Mowry*, Rochester, N. Y. Application filed December 1, 1890. Used since November 8, 1890.

"The words 'ANTI-BACTERIA INHALATION' and a representation of a splash of blood."

18,913—POWDER, FUSES, CAPS, AND OTHER ARTICLES FOR BLASTING PURPOSES.—*New York Powder Company*, New York, N. Y. Application filed October 25, 1890. Used since May 1, 1890.

"The representation of a large star with the words 'RED STAR BLASTING SUPPLIES.'"

LABELS.

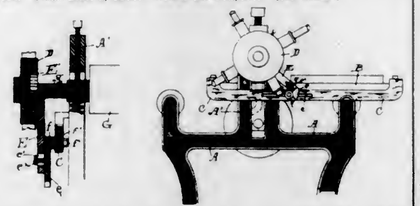
6,424.—Title: "STEARNS' AMMONIATED FOOD FOR HOUSE PLANTS."—*Frank H. Stearns*, Felchville, Vt. Application filed December 31, 1890.

6,425.—Title: "DR. WARREN'S INSOMNIA CURE."—*J. N. Murdoch*, Parkersburg, W. Va. Application filed December 31, 1890.

PATENTS

GRANTED JANUARY 27, 1891.

445,150. **PLATE-PRINTING PRESS.** FRED H. ALLEN, Auburn, Me. Filed Mar. 8, 1889. Serial No. 302,496. (No model.)



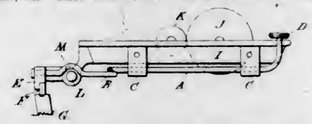
Claim.—In a plate-printing press, the combination of a movable bed, an outrigger attached to the side thereof, a stud or roll secured to said outrigger, an arm secured to the impression-roll journal, and a cam adjustably secured to said arm and adapted to impinge on said stud and to release it at any desired point, substantially as shown.

445,151. **EXTENSIBLE TREE-PROP.** GEORGE F. ANDREWS, Riverside, Cal. Filed June 21, 1890. Serial No. 356,289. (No model.)



Claim.—In a tree-prop, the combination, with the two sliding sections A and B, having contact throughout their opposite faces, the lower section being provided upon its outer upper end with a transverse bearing groove or recess, and a stop-pin projecting from one side of the section above the groove, and the upper opposite section terminating in a crotch or fork, of the metal strap secured to the upper section and loosely embracing the opposite section, the rectangular bail, the rear end bar of which is cylindrical and seated in the transverse recess and the opposite side bars of which are converged toward their front ends and adapted to bind upon the front corners of the upper section, and the plate covering said groove, substantially as specified.

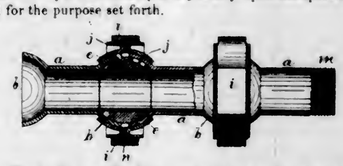
445,152. **TYPE-WRITING MACHINE.** LOUIS E. BAKER, San Francisco, Cal. Filed June 25, 1890. Serial No. 356,746. (No model.)



Claim.—In a type-writing machine, the combination of the sliding carriage, the tilting rack at the rear thereof provided with an arm, a lever independent of the line-feed lever, pivoted to the carriage and connecting with said arm and extending to or near the front of the carriage, and a finger-key for operating said lever, all substantially as herein set forth.

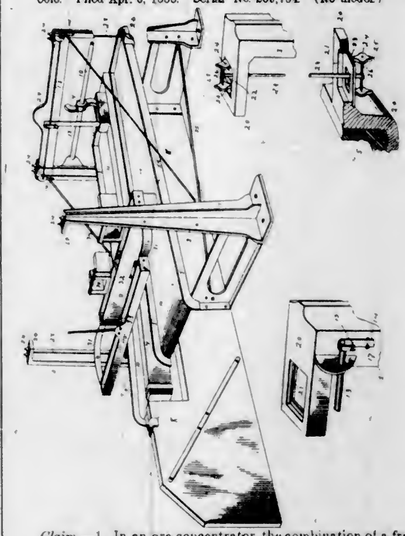
445,153. **FLEXIBLE METALLIC HOSE.** JAMES C. BATLES, East Orange, N. J. Filed May 31, 1890. Serial No. 353,807. (No model.)

Claim.—1. The flexible metallic hose consisting in a series of spools *a*, provided at opposite ends with spherical cups *b*, the perforated spherical balls *c*, applied within the cups, and the covers *e*, divided into two parts and clamped adjustably upon the spherical cups, as and for the purpose set forth.



2. The flexible metallic hose consisting in a series of spools *a*, provided at opposite ends with spherical cups *b*, the perforated spherical balls *c*, applied within the cups, and the covers *e*, divided into two parts and provided each with the threaded flange *j*, coupled together by threaded collar *i*, as and for the purpose set forth.

445,154. **CONCENTRATOR.** SILAS BERTENSHAW, Black Hawk, Colo. Filed Apr. 6, 1888. Serial No. 269,784. (No model.)



Claim.—1. In an ore-concentrator, the combination of a framing, a table, arms sustaining said table, bearings upon said arms permitting the table to swing, a cam for moving the table in one direction, means for rotating the cam, and a torsional spring-rod secured at its ends upon the framing and connected at its center by a depending arm to the table to move it in the other direction, substantially as set forth.

2. In an ore-concentrator, the combination of a framing, a table, arms sustaining said table, bearings at the ends of said arm, each bearing consisting of two knife-edges united by an arm 26, adjustably secured to the sustaining-arm, a bearing-frame receiving the knife-edges, and means for reciprocating the table, substantially as set forth.

3. In an ore-concentrator, the combination, with the framing, the table, and the arms sustaining the table, of pivotal or rocking bearings, each consisting of a frame 20 receiving the centrally-apertured

bearing-plate 22, provided with bearings 23, and two knife-edges 25, united by arm 26 and fitting upon a sustaining arm or rod 28, substantially as set forth.

4. In an ore-concentrator, the combination of a framing, a swinging table, arms sustaining the table from the framing, a cam and means for rotating the cam, a torsional spring-rod adjustably clamped at either end, and an arm clamped to the center thereof and depending therefrom and taking against a projection upon the table, substantially as set forth.

5. In an ore-concentrator, a table formed of cast-iron with its sides and bottom made integral and cast in one continuous piece, whereby a trepulousness may be imparted to the units of the mass composing the table, in combination with means for vibrating said table, substantially as and for the purposes set forth.

6. In an ore-concentrator, the combination, with the cast-iron table composed of two compartments 4, each having sides 5 formed integrally with the bottom of the compartment, of the longitudinally-intervening timber or rib 7, having said compartments secured to opposite sides thereof, said intermediate timber or rib serving as a bumper, substantially as and for the purposes set forth.

7. In an ore-concentrator, the combination, with the uprights 1 and 2, the longitudinally-extending bumper-block 8, having said uprights braced thereto, of the cast-iron table, the rib 7, projecting beyond the head of the table, and means suspending said table from the uprights, substantially as and for the purposes set forth.

8. In an ore-concentrator, the combination of the standards, sustaining-rods 28, table 3, bearings 25, cam 9, torsion-spring 13, arm 18, box 11, and rib 7, substantially as set forth.

9. In an ore-concentrator, the combination, with the table and supporting-frame, of hangers having knife-edge bearings at opposite ends and connecting said table and frame to suspend the table from the frame, a torsional spring extending transversely across the frame and having an arm connecting it with a portion of the table, and means for reciprocating the table, substantially as and for the purposes set forth.

10. In an ore-concentrator, the combination, with the table and supporting-frame and means for reciprocating the table, of hangers suspending the table from the frame, a transverse torsional spring connecting with a portion of the table, and means for adjusting the torsion of the spring, substantially as and for the purposes set forth.

11. In an ore-concentrator, the combination, with the table, means for reciprocating the table, and the supporting-standards, of the frames projecting laterally from the standards, the frames projecting laterally from the table, and the sustaining-rods or hangers provided at their upper portion with knife-bearings supported by said lateral frames and at their lower portion with knife-bearings taking against the lower face of the lateral frames to sustain the table, substantially as and for the purposes set forth.

445,155. WIRE FRAME. CHARLES L. BETTS, New York, assignor to the Steam Gauge and Lantern Company, Syracuse, and the R. E. Dietz Company, New York, N. Y. Filed Aug. 22, 1890. Serial No. 362,739. (No model.)



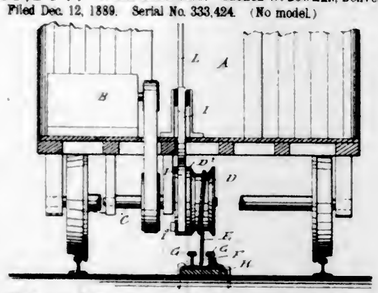
Claim.—The combination, with a wire ring constructed with undercut overlapping end portions, whereby the end portions are interlocked against a longitudinal movement on each other, of a sleeve or clasp which embraces the overlapping ends and whereby the latter are firmly secured together without solder, substantially as set forth.

445,156. FOLDING CHAIR. JOHN W. BOWEN, Jacksonville, Ill. Filed Mar. 4, 1890. Serial No. 342,675. (No model.)



Claim.—The combination of the legs pivoted together, the back pivoted to the upper ends of the rear legs, the seat connecting the upper ends of the front legs and the lower end of the back, the latches having their rear ends pivoted to the sides of the back near the lower end of the same and provided near their front ends with longitudinal L-shaped slots, lateral pins on the front legs engaging said slots, and lateral pins on said legs below the front ends of the latches adapted to impinge against the same, substantially as described.

445,157. CABLE RAILWAY. GEORGE W. BOWMAN, Denver, Colo. Filed Dec. 12, 1889. Serial No. 333,424. (No model.)



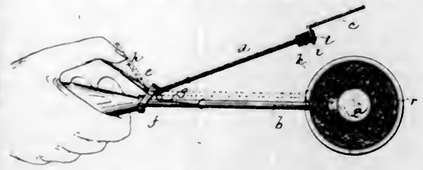
Claim.—1. In a cable railway, the combination, with a drum mounted to turn and a stationary cable wound on said drum, of a cable-channel and a pilot-wheel mounted in front of the drum and constructed to travel upon said channel, substantially as and for the purpose set forth.

2. In a cable railway, the combination, with a drum or drums and a stationary cable wound on the said drum or drums, of rails laid close together to form a cable-channel, a swinging draw-bar, and a pilot-wheel carried by said draw-bar and having a central portion fitting between the rails and reduced end portions resting upon the rails, substantially as herein shown and described.

3. In a cable railway, two T-rails arranged alongside each other to form the cable-channel, substantially as shown and described.

4. In a cable railway, the cable-channel comprising two T-rails arranged alongside each other, and chairs on which the said rails are secured, substantially as shown and described.

445,158. SOLE-EDGE-INKING DEVICE. CHARLES K. BRADFORD, Lynnfield, Mass. Filed Dec. 31, 1889. Serial No. 335,529. (No model.)



Claim.—1. The combination of a brush, a handle therefor, a shank or arm pivotally secured at one end to said handle and having an extended portion projecting outwardly from said brush-handle, and a guard on the outer free end of said shank, whereby the latter and said guard have a lateral movement with relation to said brush and handle, substantially as set forth.

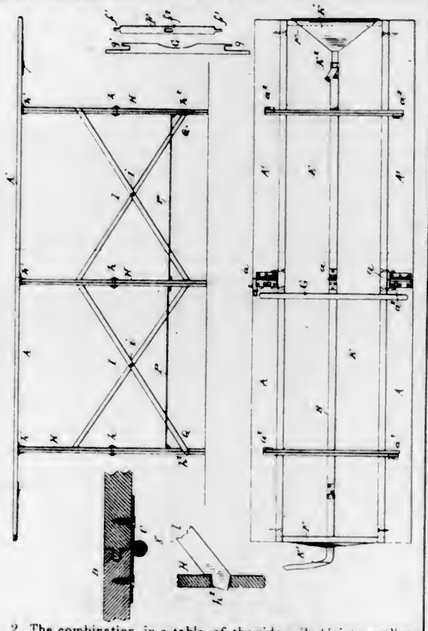
2. The combination of the brush having a handle, a guard having a shank pivotally connected at one end to one side of said handle, said guard being secured to the outer free end of said shank, and a spring located between and connected to said shank and handle, whereby said guard and shank have a lateral movement with relation to the side of said brush and handle, substantially as set forth.

3. The combination of the brush, its handle, the guard-shank pivoted to the said handle and provided with a thumb-piece *h*, guard *c*, mounted upon the swinging end of the shank, and a spring whereby the guard is normally forced toward the brush, as set forth.

4. The combination of the brush, its handle, the shank having ears pivotally secured to said handle, guard *c*, mounted upon the swinging end of the shank, and a guard-controlling spring connected to said shank and brush-handle, as set forth.

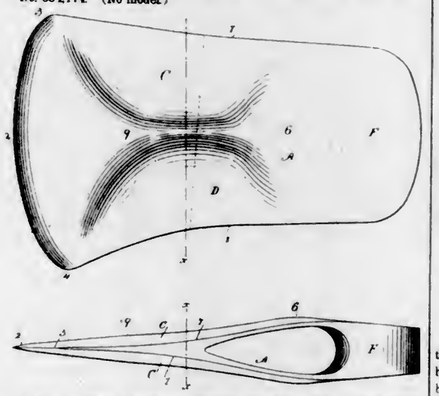
445,159. PORTABLE TABLE. PETER J. BRENNAN, New York, N. Y. Filed May 10, 1890. Serial No. 351,348. (No model.)

Claim.—1. The combination, in a table, of the side rails A', intermediate canvas E attached thereto, and center bar B, with the stretchers F G, said stretcher F fitting into the ends of the rails A' and receiving the rail B, and the stretcher G having slotted ends *g* embracing the side rails, substantially as described.



2. The combination, in a table, of the side rails A', intermediate canvas E attached thereto, and center bar B, with the stretchers F G to keep the canvas stretched transversely, and the flaps E, straps E', and buckle E² to keep the cloth stretched longitudinally, substantially as described.

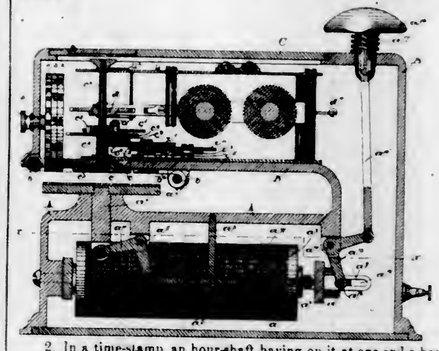
445,160. AX. JAMES W. CARVER, Pawlet, Vt., assignor to himself and Gibbons L. Kelty, Brooklyn, N. Y. Filed June 3, 1890. Serial No. 354,174. (No model.)



Claim.—The ax having the concave surfaces C and D upon opposite faces forming concave bearing-points upon such faces of the ax between the portions 6 and 9 of the surfaces, the ax being the thickest through the eye at 6 and the head portion F of the ax being thinner, substantially as and for the purposes set forth.

445,161. AUTOMATIC TIME-STAMP. HENRY A. CHASE, Boston, Mass. Filed July 31, 1890. Serial No. 360,557. (No model.)

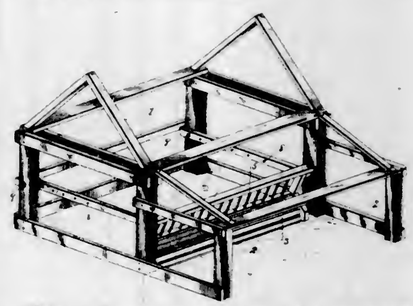
Claim.—1. In a time-stamp, an hour-shaft having on it at one end a hand or pointer, a minute-shaft revolving about the hour-shaft and having at one end a hand or pointer, a dial-plate concentric with said shafts and with which dial the hands or pointers co-operate, a hand on the opposite end of the hour-shaft, a visible auxiliary dial with which it co-operates, and an actuating-train for said hour and minute shafts, combined with a platen and an electro-magnet to move said platen against the dial-plate in the direction of its axis, substantially as described.



2. In a time-stamp, an hour-shaft having on it at one end a hand or pointer, a minute-shaft revolving about the hour-shaft and having at one end a hand or pointer, a dial-plate concentric with said shafts and with which dial the hands or pointers co-operate, a hand on the opposite end of the hour-shaft, a visible auxiliary dial with which it co-operates, and an actuating-train for said hour and minute shafts, combined with a platen movable against the dial-plate in the direction of its axis, and means to move said platen, substantially as described.

3. In a time-stamp, an hour-shaft having on it at one end a hand or pointer, a minute-shaft revolving about the hour-shaft and having at one end a hand or pointer, a dial-plate concentric with said shafts and with which dial the hands or pointers co-operate, a hand on the opposite end of the hour-shaft, a visible auxiliary dial with which it co-operates, an actuating-train for said hour and minute shafts, the fixed stud *c*, having thereon the character M, the movable stud adjacent thereto having on it the characters A P, and means for moving it automatically, combined with a platen, and an electro-magnet to move said platen against the dial-plate in the direction of its axis and also against said fixed and movable studs, substantially as described.

445,162. ADJUSTABLE HAY SHIELD AND MANGER. JOHN W. COFFIN and WESLEY SHOEMAKE, Oskaloosa, Iowa. Filed June 17, 1890. Serial No. 355,721. (No model.)



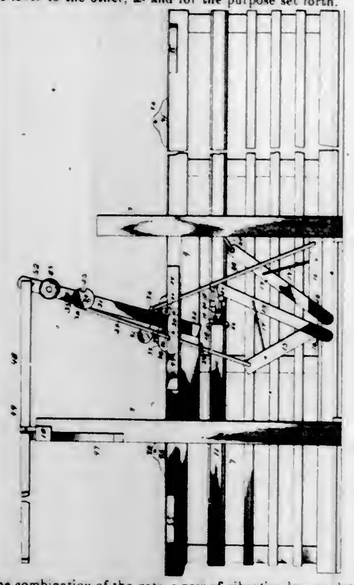
Claim.—1. The combination, with suitable supporting-posts, of the combined hay shield and manger, the bars 7, secured to the combined hay shield and manger, and means for adjustably securing the bars to the posts, substantially as described.

2. The combination, with suitable supporting-posts, of the combined shield and manger and the bars secured to the combined shield and manger and provided with series of perforations, whereby the bars are movably secured to the posts by means of bolts or the like, and the combined shield and manger adapted to be moved against the hay as the same is eaten, substantially as described.

445,163. SLIDING GATE. WILLIAM H. COX, Virden, Ill. Filed July 5, 1890. Serial No. 357,855. (No model.)

Claim.—1. The combination of the gate, a pair of vibrating levers, sliding clutches connected to the same and adapted to automatically grip the gate, means, substantially as described, for operating said

levers, and shifting mechanism for automatically transferring the action from one lever to the other, as and for the purpose set forth.



2. The combination of the gate, a pair of vibrating levers, clutches connected thereto and arranged to automatically grip the gate, a vertical slide-bar, mechanism for operating the same, suitable connections between said bar and the vibrating levers, and mechanism for alternately disconnecting the bar from the levers, substantially as and for the purpose described.

3. The combination of the gate, a pair of bell-crank levers, sliding clutches connected thereto and arranged to automatically grip the gate, a vertical slide-bar, mechanism for operating the same, rods connecting said levers and said slide-bar, and mechanism for alternately disconnecting said rods from said bar, as and for the purpose set forth.

4. The combination of the gate, a pair of vibrating levers, clutches connected thereto and arranged to automatically grip the gate, a vertical slide-bar, mechanism for operating the same, rods connected to said vibrating levers and adapted to engage said bar, and a rocking arm arranged to throw said rods alternately in and out of engagement with said slide-bar, substantially as and for the purpose described.

5. The combination of the gate, a pair of vibrating levers, clutches connected thereto and arranged to automatically grip the gate, a vertical slide-bar, mechanism for operating the same, rods connected to said vibrating levers and adapted to engage said bar, a rocking lever for throwing said rods alternately in and out of engagement with said slide-bar, and a shifting arm or vane connected to said rocking lever and operated by means of projections on the gate, substantially as described.

6. The combination of the gate, a pair of vibrating levers, clutches connected thereto and arranged to automatically grip the gate, a vertical slide-bar, a plate on the same having depressions in its opposite sides, mechanism for operating said slide, rods connected to said levers and having catches at their upper end arranged to engage the depressions in said slide-bar plate, a rocking lever adapted to engage said rods to alternately free the catches from the depressions in the plate, a shifting arm or vane for operating said rocking lever, and projections on the gate arranged to shift said vane, substantially as described.

7. The combination of the gate, a pair of vibrating levers, clutches connected thereto and arranged to automatically grip the gate, a vertical slide-bar, levers connected to the upper end of the same and extending out over the roadway, having fulcrums on a suitable cross-arm, rods connected to said vibrating levers, and mechanism for causing said rods to alternately engage said vertical slide-bar, substantially as and for the purpose described.

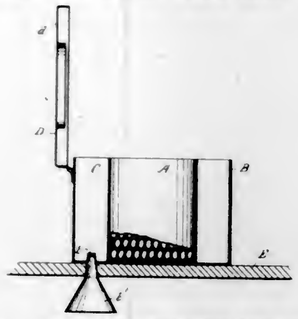
8. The combination of the gate, a vibrating lever, a clutch consisting of a sliding band operating on a strip forming part of the gate, suitable connections between said clutch and said vibrating lever, whereby the former is caused to bind upon and grip said strip, and mechanism for operating the lever, substantially as described.

9. The combination of the gate, a vibrating lever, a clutch consisting of a pair of slides operating on a strip forming part of the gate, and a connecting arm or bar rigidly secured to one slide and pivotally connected to the other, a rod connecting said clutch and said vibrating lever, and mechanism for operating said lever, substantially as described.

10. The combination of a gate, a vibrating lever, a clutch arranged on a strip forming part of the gate, and consisting of a pair of encircling bands or boxes and an arm or bar connecting them, being rigidly secured to one band and pivotally connected to the other, a rod connecting said arm and the vibrating lever, and mechanism for operating the latter, substantially as described.

11. The combination, with the gate, of a pair of vibrating levers, clutches operating on a strip forming part of the gate, and each consisting of a pair of sliding bands connected by an arm rigidly secured to one band and pivotally connected to the other, rods connecting said clutches and said vibrating levers, mechanism for operating the latter, and stops against which the pivotal portions of said clutches abut to prevent them from binding on the strip when in their normal positions, substantially as described.

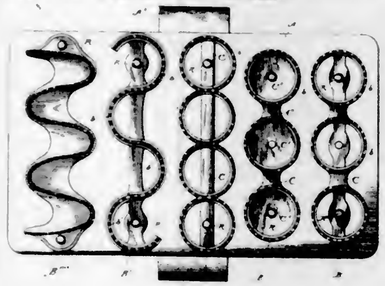
445,164. PROCESS OF PRESERVING EGGS. ALFRED DEISHER, Fleetwood, Pa. Filed Oct. 2, 1890. Serial No. 366,816. (No model.)



Claim.—1. The process of preserving eggs, which consists in first applying an acid, as vinegar, to the shell, and thereafter coating the same with a composition of rye-flour and plaster-of-paris, substantially in the manner and for the purpose set forth.

2. The process of preserving eggs, which consists in first applying an acid, as vinegar, to the shell, then coating the same with a composition of rye-flour and plaster-of-paris, and finally in maintaining a low surrounding temperature after packing, substantially as set forth.

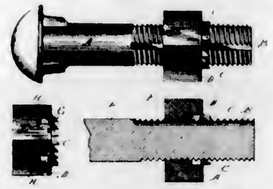
445,165. CURRY-COMB. LEVI M. DEVORE, Freeport, Ill. Filed Jan. 30, 1890. Serial No. 338,601. (No model.)



Claim.—1. In a curry-comb of the class described, the combination, with a flexible back and a loop or handle attached to the one face thereof, of a series of sections fastened to the opposite face thereof in lines approximately parallel to the line of the handle, each of said sections being provided with teeth arranged in curved lines, substantially as and for the purpose set forth.

2. In a curry-comb of the class described, the combination, with a flexible back, of a handle attached to and extending across one face thereof and a series of sections attached to the opposite face of the back in lines approximately parallel to the line of the handle, said sections being provided with teeth arranged in lines made up of a series of reversely-arranged curves, substantially as set forth.

445,166. NUT-LOCK. GEORGE C. ELLIOTT, Chicago, Ill., assignor, by direct and mesne assignments, to Luella M. Elliott, same place, Robert Blackstock and Ira B. Blackstock, Paxton, Ill., and William M. Blackstock, Lafayette, Ind. Filed Feb. 12, 1889. Serial No. 299,607. (No model.)

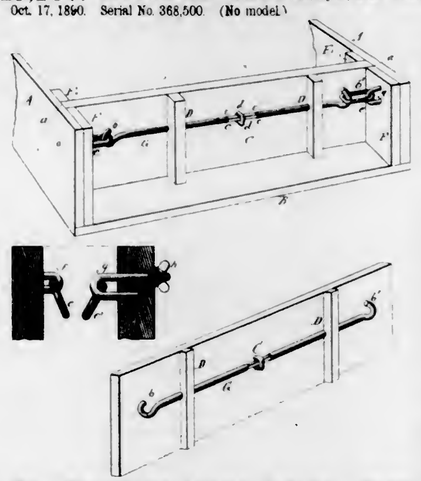


Claim.—1. The combination, with a screw-bolt provided with a longitudinal peripheral groove, of a nut working on said bolt, a lock-plate secured thereto, and teeth or projections on said plate adapted and arranged to be bent down so as to project into said groove, substantially as described.

2. The combination, with a screw-bolt provided with a series of longitudinal peripheral grooves spaced unequal distances apart, of a nut working on said bolt and a lock-plate secured to said nut having a series of teeth or projections spaced equal distances apart and adapted and arranged to be bent so as to project into said grooves, substantially as described.

3. The combination, with a screw-bolt provided with a longitudinal peripheral groove, of a nut working on said bolt provided with an annular recess in one face thereof, a lock-plate secured to said nut covering said recess, and teeth or projections on said nut adapted and arranged to be bent down so as to project into said groove or bent inwardly and upwardly so as to lie within said recess, substantially as and for the purpose described.

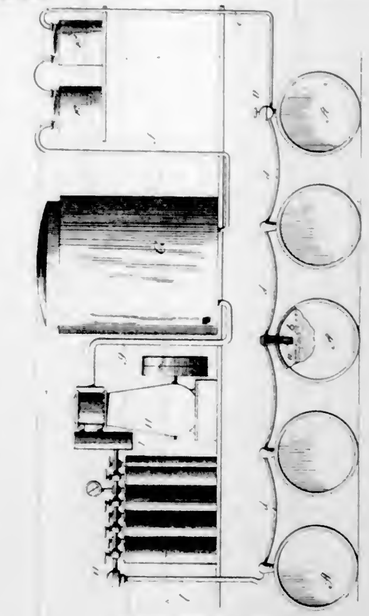
445,167. WAGON END-GATE. GEORGE EVANS, Lyon, Miss. Filed Oct. 17, 1890. Serial No. 368,500. (No model.)



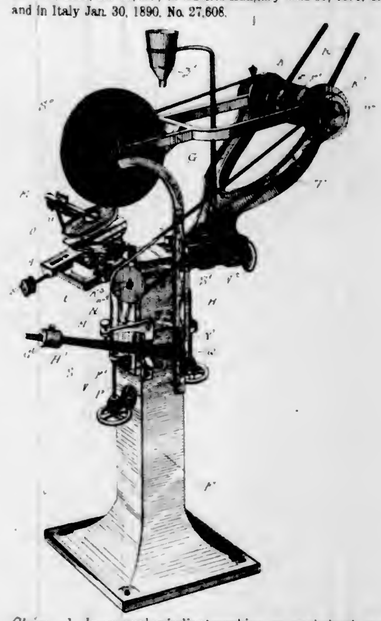
Claim.—The combination of the body, the fixed and adjustable staples secured to the rear ends of the sides thereof, and the links connected to said staples, with the tail-gate, the longitudinally-movable horizontal rod attached to the gate and having its central portion squared and shouldered and passed through a staple attached to the gate by which the movement of the rod is regulated, and having its ends formed into upturned hooks adapted to be engaged by the links, all substantially as set forth.

445,168. APPARATUS FOR TREATING FERMENTED LIQUORS. WILLIAM H. FOYE, Chicago, Ill. Filed Apr. 28, 1890. Serial No. 349,713. (No model.)

Claim.—The apparatus described, consisting in the combination of a gasometer, a compression-pump, and a storage cylinder or cylinders, in connection with pipes and a regulating-valve, said pipes leading from the said storage cylinder or cylinders through a series of bunging-tubes having induction and eduction passages, a terminal regulating-valve, and pipes leading therefrom back to a gasometer, whereby circulation is kept up through the series of casks, all substantially as described.



445,169. OVAL-GRINDING MACHINE. ROBERT FRIEDEL, Stuttgart, Germany, assignor to the Stuttgart-Further Holz & Spiegelmanufactur, same place. Filed May 20, 1889. Serial No. 311,495. (No model.) Patented in England Apr. 29, 1889, No. 7,136; in France Apr. 29, 1889, No. 197,824; in Germany Apr. 30, 1889, No. 49,820; in Belgium Nov. 11, 1889, No. 88,410; in Austria-Hungary Jan. 23, 1890, 40/441, and in Italy Jan. 30, 1890, No. 27,608.



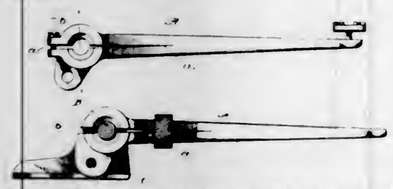
Claim.—1. In an oval-grinding machine, an oval-chuck comprising a rotary mandrel, a cross-slotted plate *u* thereon, a frame *v*, guided in said slot and adapted to be reciprocated therein, a pin *a* on said

frame C, and a clamp E for attachment of the object to be ground on said frame C, substantially as set forth.

2. The combination, substantially as set forth, with a support F, of a vertically-adjustable slide S thereon, an obliquely-set oval-chuck on said slide, a vertically-adjustable slide S' on said support, a horizontally-adjustable bracket T' on said latter slide, a swing-frame G, pivoted to said bracket, and a rotary grinding-disk supported by said swing-frame.

3. The combination, with a support F, of an adjustable slide S thereon, a rotary chuck on said slide, a clamp E on said chuck, an adjustable slide S' on said support, a horizontally-adjustable bracket T' on said slide S', a swing-frame G, hinged on said bracket, a rotary grinding-disk S⁰ in said swing-frame, rod H, lever H', and adjustable abutment M for said lever H', the whole substantially as and for the purpose set forth.

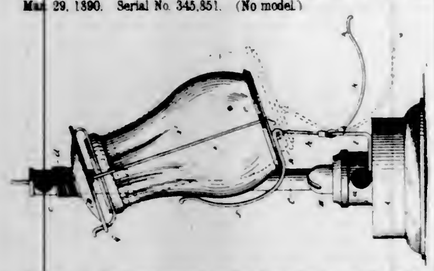
445,170. TYPE-BAR FOR TYPE-WRITING MACHINES. SILAS N. BALLUF, Macedon, N. Y. Filed Nov. 30, 1888. Serial No. 292,186. (No model.)



Claim.—1. In a type-writer, a stationary bearing plate or bracket, a rigid pivot-pin B, fixed at its two ends in said plate and provided at its middle with the encircling V-groove, in combination with the type-carrying arm having the divided end encircling the pin and fitting the groove, and means for contracting said end, substantially as described.

2. In a type-writer, the stationary bearing-plate and the continuous grooved bearing-pin fixed therein at its two ends, in combination with the type-carrying arm having the exterior screw-thread and the divided end clasping the grooved part of the pin, and the ring or nut applied to the arm, as shown.

445,171. TUBULAR LANTERN. GEORGE J. GERBER, Chicago, Ill., assignor, by mesne assignments, to the Steam Gauge and Lantern Company, Syracuse, and the R. E. Dietz Company, New York, N. Y. Filed Mar. 29, 1890. Serial No. 345,851. (No model.)



Claim.—1. The combination, with the tubular lantern-frame and the globe-frame capable of movement up and down in the tubular frame, of a lifting-lever pivoted to the base of the tubular frame and having its outer arm extending upwardly along the outer side of the globe and forming a guard, substantially as set forth.

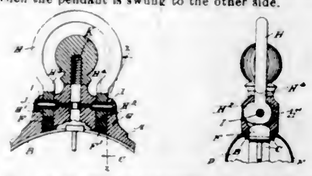
2. The combination, with the tubular lantern-frame and the globe-frame capable of movement up and down in the tubular frame, of a guard arranged on one side of the globe and secured to the globe-frame, and a lifting-lever forming a guard on the opposite side of the globe, substantially as set forth.

445,172. WATCH-CASE PENDANT. DUNCAN E. GRANT, Quebec, Canada. Filed Aug. 12, 1889. Serial No. 320,548. (No model.)

Claim.—1. In combination with a watch-case and its lid or cover, a locking spring or catch and a pendant-bow adapted to act upon and to force back said spring or catch when moved to one side.

2. In combination with a watch-case and its lid or cover, a spring or catch for locking the same closed and a bow-pendant provided with a cam, said cam being arranged to bear upon and force back the spring or catch when the pendant is turned or swung laterally.

3. In combination with a watch-case and with front and back lids or covers therefor, catches or springs, one for each lid or cover, and a bow-pendant provided with two cams, one arranged to bear upon and release one catch or spring when the pendant is swung to one side and the other arranged to bear upon and release the other spring or catch when the pendant is swung to the other side.



4. In a watch-case, the combination of the stem, the ring journaled at its ends therein and provided with a cam, the case-spring, and a connection between the cam and the spring, whereby when the ring is swung down its cam will depress said connection and the spring, substantially as set forth.

5. In a watch-case, the combination, with a pivoted ring carrying cams, of a cylinder operated on by the said cams, and springs in the path of and operated on by the said cylinder when it is actuated by the cams, substantially as shown and described.

6. In a watch-case, the combination, with a pivoted ring carrying cams, of a cylinder operated on by the said cams, springs movable vertically by the said cylinder, and a stem-winding key carried by the said cylinder and movable vertically therewith, substantially as shown and described.

7. In a watch-case, the combination, with a pivoted ring carrying cams, of a cylinder operated on by the said cams, springs moved vertically by the said cylinder, a stem-winding key carried by the said cylinder and movable vertically therewith, and a spring held in the said cylinder and pressing against the said stem-winding key, substantially as shown and described.

8. In a watch-case, the combination, with a pivoted ring carrying cams, of a cylinder operated on by the said cams, springs moved vertically by the said cylinder, a stem-winding key carried by the said cylinder and movable vertically therewith, a spring held in the said cylinder and pressing against the said stem-winding key, and an apertured plate held in the said cylinder and on which rests the last-named spring, and which prevents the spring from turning when winding the watch, substantially as shown and described.

445,173. COTTON-CULTIVATOR. JESSEE L. GUINN, Neala, Miss. Filed June 7, 1890. Serial No. 354,587. (No model.)

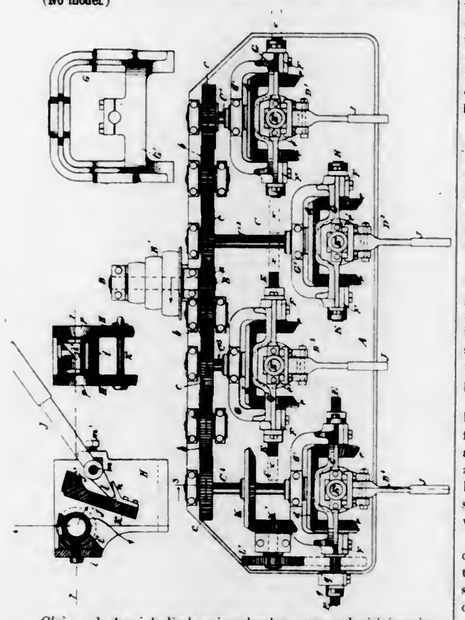
Claim.—In a plow of the class described, the combination, with the side beams and the plow-shovels secured thereto, of the brackets having a central inclined recess, that of one bracket being inclined in a direction opposite that of the other, and said brackets being located upon the inner face of each of the beams and further provided with opposite securing-plates, the outer ones of which have each a single perforation and the inner or adjacent ones of each of which have a pair or series of perforations, adjusting-bolts mounted in the perforations, a straight knife mounted in the recess of the right-hand bracket, and a curved knife mounted in the recess of the left-hand bracket, set-screws passing through the brackets and taking against the knives, which latter terminate at their lower ends in advance of the shovels, substantially as specified.

445,174. PICTURE-CARD. WOLFF HAGELBERG, Berlin, Germany. Filed Aug. 1, 1890. Serial No. 360,699. (No model.)



Claim.—A composite picture-card consisting of a front card A, a middle card B, and a back card C, in which the picture exposed on the middle card and through the opening of the front card or frame is illuminated by a light of a color suitable to the nature of the picture exposed, reflected from opposite reflecting material *f f'* of the desired color on the back of the front card, such reflecting material receiving light through a recess of the back card C.

445,175. BORING AND SCREW CUTTING MACHINE. THORVALD F. HAMMER, Branford, Conn. Filed Mar. 3, 1890. Serial No. 342,420. (No model.)



Claim.—1. A quick-discharging chuck constructed with jaws having a recess for holding and centering rounded objects, the one an upright fixed jaw and the other an upright movable jaw, means for forcing them together to hold the work between them, and a downward discharge-passage between and beneath the jaws to enable the work to drop out immediately upon the opening of the jaws.

2. A quick-discharging chuck consisting of an upright fixed jaw, a supporting-frame therefor having uprights on opposite sides of the jaw and formed with a downward discharge passage or opening beneath the jaw, an upright movable jaw mounted between said uprights, and means for forcing the movable jaw against the fixed jaw to grip the work, whereby on opening the jaws the work may drop out immediately.

3. A quick-discharging chuck consisting of an upright fixed jaw, a supporting-frame therefor having uprights on opposite sides of the jaw and formed with a downward discharge passage or opening beneath the jaw, an upright movable jaw pivoted beneath between said uprights, so that its upper part may be thrown back from the fixed jaw, and means for forcing the movable jaw against the fixed jaw to grip the work, whereby on opening the jaws the work may drop out immediately.

4. A quick-discharging chuck constructed with jaws having a recess for holding and centering rounded objects, the one an upright fixed jaw and the other an upright movable jaw, the latter pivoted beneath, so that its upper part may be thrown back from the fixed jaw, and means for forcing it toward the fixed jaw to hold the work between them, consisting of a lever having a wedging-arm acting against the movable jaw and arranged with its heavier arm in its lowermost position when the jaws are closed, whereby the weight of the lever-arm tends to keep the chuck closed.

5. A quick-discharging chuck constructed with an upright fixed jaw and an upright pivoted movable jaw and means for forcing them together to hold the work, consisting of a lever having a wedging-arm acting against the movable jaw, and an adjustment for said lever, consisting of sliding blocks for the fulcrum-pin thereof and set-screws for adjusting said blocks to move the axis of the lever toward the movable jaw.

6. In a machine for tapping or boring small articles, the combination of a chuck, two or more tool-spindles arranged on radial axes and movable into and out of the work held in said chuck, a bevel-gear for driving each such spindle, a driving-shaft with its axis perpendicular to and intersecting the axes of the spindles, and a bevel-gear thereon meshing simultaneously with the bevel-gears on the spindles, whereby by the alternately opposite rotation of the driving-shaft the tools carried by the spindles are caused to enter and recede from the work.

7. In a machine for tapping or boring small articles, the combination, with a chuck for holding the article, of an arched frame, radial tool-spindles mounted in bearings borne by said frame, bevel-gears for rotating said spindles, a driving-shaft with its axis coincident with the intersection of the radial spindles, and a bevel-gear thereon meshing with the gears on the spindles for imparting simultaneous motion thereto, the said frame constructed with recesses and bearing-boxes constructed to be fastened in said recesses, whereby by removing said boxes the spindles may be detached and replaced by others.

8. In a machine for tapping or boring small articles, the combination, with a chuck for holding the article, two or more radial tool-spindles, bevel-gears thereon for driving them, a driving bevel-gear meshing with the gears on the spindles, and a driving-shaft on which said gear is fixed, of an arched frame carrying bearings for the tool-spindles and having a horizontal cross-frame carrying the bearing of the central driving-shaft, whereby the driving-shaft and tool-spindles are carried rigidly in invariable relative positions.

9. The combination of radial tool-spindles, their bevel-gears, boxes in which the spindles and gears have bearings, a driving-shaft and a gear thereon meshing simultaneously with the gears on the spindles, and a frame for supporting the spindles, constructed with recesses for inclosing said bearing-boxes, said recesses arranged all on the same side of the frame, and fastenings for securing the bearing-boxes thereon, whereby the removal of the boxes, spindles, and gears and their replacement by others are facilitated.

10. In a tapping-machine, the combination, with tap-spindles E E, having bevel-gears *e e*, of a driving-shaft C and a bevel-gear *d* thereon for driving the gears on the spindles E E, change-gears K, K', and L', and a tap-spindle for cutting left threads adapted to be substituted for a right-threaded spindle and having (in lieu of a bevel-gear *e*) a gear L, adapted to mesh with the change-gear L', whereby the left tap-spindle is revolved in the opposite direction from the right tap-spindle, which it replaces.

11. In a multiple tapping or boring machine, the combination of chucks for holding the work and working-heads, consisting each of two or more tool-spindles, gearing for driving them and a frame for supporting them, a main driving-shaft, an intervening gearing for driving the spindles of the several heads therefrom, and the heads arranged alternately toward the front and rear, a rear head being arranged between and extending partly behind two front heads, whereby the machine is rendered more compact, in the manner specified.

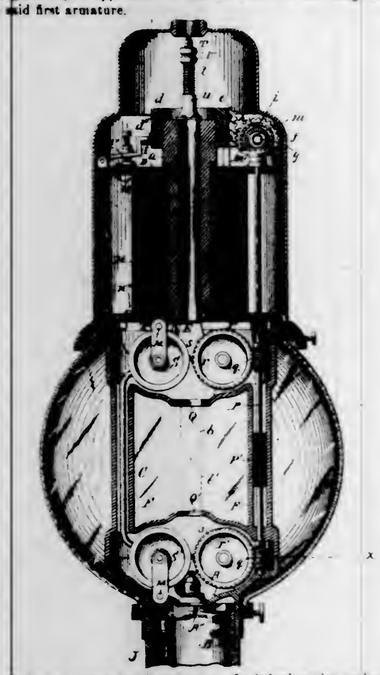
12. In a multiple tapping or boring machine, the combination of chucks for holding the work and working-heads consisting each of two or more tool-spindles, one or more of such spindles extending horizontally, gearing for driving them, comprising a horizontal shaft extending rearwardly from the head and a frame for supporting them, a main driving-shaft, an intervening gearing for driving the shafts of the several heads therefrom, and the heads arranged alternately toward the front and rear, a rear head being arranged between and extending partly behind two front heads and arranged with its horizontal spindle or spindles in a different horizontal plane in order to clear the driving-shafts of the front heads, in the manner substantially as specified.

13. In a machine for tapping or boring small articles, the combination of two or more tool-spindles arranged with their axes in an approximately vertical plane, with one of the spindles arranged above the work, and a chuck for holding the work, consisting of two jaws to clamp the work between them and constructed to afford a downward discharge-passage between and beneath the jaws to enable the work to drop out immediately upon opening them, and means for relatively opening and closing said jaws, whereby the work may be discharged immediately the cutting-tools clear it.

445,176. ELECTRIC-ARC LAMP. JOEL A. HAYES, Carson City, Nev. Filed Apr. 23, 1890. Serial No. 349,076. (No model.)

Claim.—1. In an electric-arc lamp, the combination, with the operating-armature thereof, of a rack attached thereto, a pinion engaging with said rack, a ratchet-wheel fixed to said pinion, a pawl engaged with said ratchet-wheel and mounted upon a collar which carries a beveled wheel and a second ratchet-wheel upon opposite ends, a secondary armature pivoted to the first armature and provided with a second pawl, a vertical shaft provided with a beveled wheel which is geared to the first beveled wheel, worms upon said shaft, one of the worms engaging with means, such as worm-wheels, for operating or feeding the upper carbon of the lamp and the other with similar means

for operating the lower carbon, main and shunt magnets with inductive relation to said armatures, a circuit-closer in circuit with said shunt-magnet, a projection upon said armature for operating said circuit-closer, the said two pawls being oppositely engaged to said ratchet-wheels for the purpose hereinbefore described, and means, such as springs, acting in opposition to the attraction of said magnets upon the said first armature.



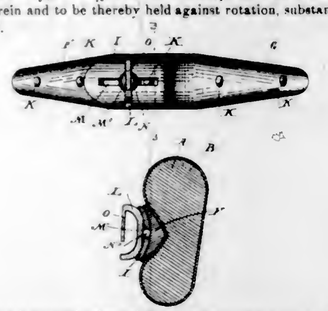
2. In an electric-arc lamp, means for bringing the carbons together upon closing the circuit, consisting of a magnet in said circuit, an armature therefor, a secondary armature pivoted upon the first-named armature and carrying a pawl, a ratchet-wheel into which said pawl is engaged and mounted upon an arbor provided with a beveled gear-wheel, and a vertical shaft geared to the upper and lower carbons in the manner and for the purpose described and geared to said beveled gear-wheel.

3. In an electric-arc lamp, the combination of an operating or vibrating armature for feeding the carbons, a core of a magnet projecting into and fitting loosely in said armature and carrying supports u, provided with guiding-holes, through which pass vertical rods J, attached to said armature, nuts v at the upper ends of said rods, and helical springs tending to straighten, surrounding said rods and located between said supports and said nuts.

4. In an electric-arc lamp, a socket carrying the same and rotary upon a post or similar support, a terminal A of the lamp being located upon the lamp and a terminal A″ of the main line upon the post, the two terminals being so located as to come into contact with each other when the socket is rotated, and a projection or terminal B″, attached to the post and lying so that it comes in contact with the terminal A″ when the lamp is rotated, the terminal B″ being the opposite terminal of the main line from terminal A″.

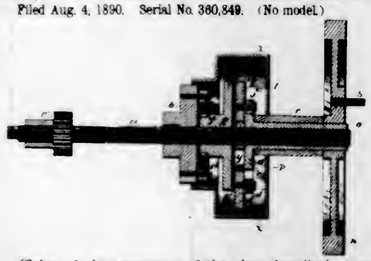
445,177. HORSE-COLLAR FASTENER. BERNHARD H. HELMING, Jr., and JOHN M. MCINTYRE, Milwaukee, Wis. Filed May 8, 1890. Serial No. 350,977. (No model.)

Claim.—1. The combination, with a horse-collar formed in two parts, which parts meet together at their lower ends, of two metal plates of less width than the collar, secured on the outside rigidly to the collar in the groove thereof, one plate to each part, the inner ends of the metal plates being flush with the ends of the collar and arranged to abut together when the two parts of the collar meet each other, a projection on one of the plates extending beyond the end thereof, which when the two parts are together overlaps the other plate and is provided with a longitudinal slot, and an elongated button pivoted to the other plate and arranged to pass through the slot in the projection and to be turned at right angles thereto, thereby locking the two parts of the collar together, the outer surface of the button being concave transversely of the plates when the two parts are locked together thereby, whereby the button is adapted to receive the hame-strap therein and to be thereby held against rotation, substantially as described.



2. In a horse-collar formed in two parts and provided with rigid metal plates, a projection on one of which plates overlaps the other plate and is provided with a longitudinal slot therein, an elongated button pivoted to the plate, having no projection and adapted to pass through the slot in the projection on the other plate and to be turned at right angles thereto, the elongated ends of which button are turned outwardly, one being provided with an inwardly-turned keeper forming with the outer surface of the button a recess extending transversely of the collar, adapted to receive therein the hame-strap, as and for the purpose set forth.

445,178. GOVERNOR. DANIEL S. HENRIE, Three Rivers, Mich. Filed Aug. 4, 1890. Serial No. 360,849. (No model.)



Claim.—1. In a governor of the class described, a rotary shaft having a head secured to rotate therewith, in combination with a reciprocating check-bar having its opposite ends arranged to alternately project beyond the edge of the head, and a cam and continuously-rotating balance-wheel adapted to intermittently actuate the bar to check and release said head and shaft, in the manner and for the purpose substantially as described.

2. In combination with a rotary shaft having a driving-disk secured to turn therewith, a head loosely mounted upon said shaft and actuated by pawls upon said disk, a reciprocating check-bar arranged across the face of said head, anti-friction rollers upon said bar, a cam mounted loosely upon the shaft and located between the rollers so as to actuate the slide, and a balance-wheel arranged to turn with the cam, all adapted to operate in the manner and for the purpose substantially as described.

3. In a governor, a shaft having a reciprocating slide mounted thereon and movable at right angles to its axis, in combination with an actuating-cam secured to rotate loosely upon said shaft and carrying with it a balance-wheel having a continuous motion, whereby the shaft is intermittently stopped and started, in the manner and for the purpose substantially as described.

4. The combination of a driven shaft having a driving-disk secured to rotate therewith, a loose head provided with a reciprocating check-bar having its opposite ends adapted to alternately extend beyond the radius of the head, and a rotary cam having a sleeve carrying a balance-wheel secured to rotate with the cam, in the manner and for the purpose substantially as described.

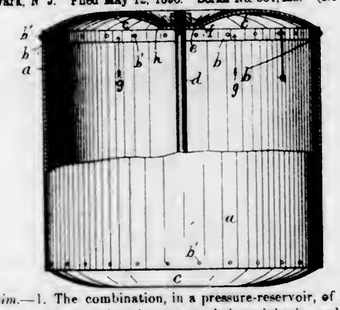
5. In a governor, a shaft, in combination with a reciprocating check-bar and a cam so arranged that the one alternately actuates the other, in the manner and for the purpose substantially as described.

445,179. SAW-SWAGE. EDWIN HOAG, Harrison, Mich. Filed Mar. 23, 1888. Serial No. 268,302. (No model.)

Claim.—A saw-swage A, having one end larger than the other and being about two inches long and with its width nearly equal to its thickness, and having a slot B across its larger end, said slot B being on the line of an angle of about fifty degrees and being just wide enough to admit of the point of a tooth of a saw, the walls of said slot B being parallel for about a quarter of an inch in depth, whereby when driven upon the tooth the point will be bent to the same angle as the slot B, as desired, and for the purpose set forth.



445,180. HEAD FOR PRESSURE-RESERVOIRS. JOHN W. HYATT, Newark, N. J. Filed May 12, 1890. Serial No. 351,425. (No model.)



Claim.—1. The combination, in a pressure-reservoir, of a cylindrical shell, heads secured to the same at their peripheries and formed each with an annular convexity and a central depression, and a stay-rod inserted through the centers of such heads with a bearing in such depressions, substantially as herein set forth.

2. The combination, in a pressure-reservoir, of a cylindrical shell, heads secured to the same at their peripheries and formed each with an annular convexity and a central depression, seats in the bottoms of such depressions, and a hollow stay-rod inserted through the centers of such heads with a bearing upon such seats, and the stay-rod being provided with apertures between the heads, as and for the purpose set forth.

445,181. AUTOMATIC BAND-BRAKE FOR RAILWAY-CARS. THOMAS INGLIS and WILLIAM SCHIERMANN, Tyler, Tex. Filed Feb. 15, 1890. Serial No. 340,650. (No model.)

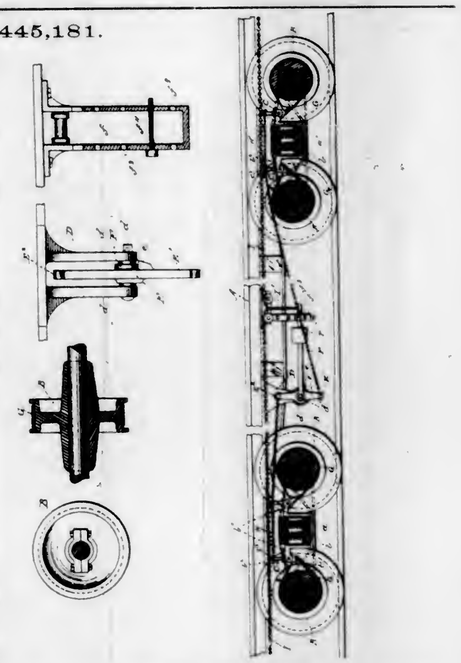
Claim.—1. In an automatic brake, the combination, with the trucks of a car, of three-armed levers pivoted in brackets secured to said trucks, the brake-bands attached to the three-armed levers engaging flanged disks carried by the wheel-axles, and means, substantially as shown and described, for operating said brakes in the manner specified.

2. In an automatic brake, the combination, with the trucks of a car, of three-armed levers pivoted in brackets secured to said trucks, the brake-bands attached to the levers engaging flanged disks carried by the wheel-axles, and a connection between the three-armed levers and an equalizing-lever pivoted to a bracket dependent from the bottom of a car, and means, substantially as shown and described, for operating said brakes, as specified.

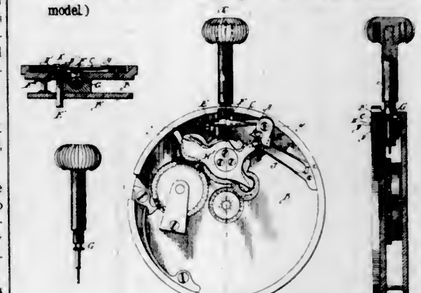
3. The combination, with a car and the trucks carried thereby, of three-armed levers pivoted in brackets secured to said trucks, the brake-bands attached to the levers engaging flanged disks carried by the wheel-axles, and a flexible connection between the three-armed levers and an equalizing-lever pivoted on a bracket dependent from the bottom of the car, provided with a projection adapted to contact with a weighted lever fulcrumed on the bottom of the car, and means, substantially as shown and specified, for operating the brakes, as specified.

4. The combination, with a car and the trucks carried thereby, of three-armed levers pivoted in brackets secured to said trucks, the brake-bands attached to the lower arms of the levers engaging flanged disks on the wheel-axles, and a connection between the three-armed levers and an equalizing-lever on the car provided with a projection adapted to contact with a weighted lever fulcrumed to a bracket on the car, the outer end of said lever working in a guideway, and a connection between the lever and the winding-drum, and means for operating said lever and brakes and the cutting out of the same, substantially as specified.

445,181.



445,182. STEM WINDING AND SETTING WATCH. JOHN JOHNSON, Baton Rouge, La. Filed July 13, 1885. Serial No. 171,425. (No model.)



Claim.—1. In a stem winding and setting watch, the yoke and the key-pipe, in combination with a flexible lever constituting a direct connection between said yoke and key-pipe, substantially as described.

2. The combination of the yoke, the key-pipe, the bell-crank lever, and the spring-arms J J′, one of said arms bearing against and actuating said yoke and the other arm bearing against and actuating the bell-crank lever, substantially as described.

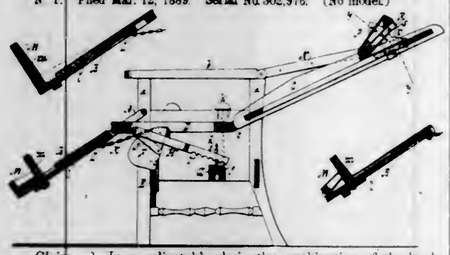
3. In a stem winding and setting watch, the yoke and the key-pipe, in combination with a flexible lever forming a direct connection between said yoke and key-pipe, and a set-screw for elevating and depressing said lever, substantially as described.

4. In a stem winding and setting watch, the yoke and the key-pipe, in combination with a flexible lever forming a direct connection between said yoke and key-pipe, and a set-screw projecting beyond the top and bottom plates of the movement and adapted to elevate and depress said lever, substantially as described

5. In a stem winding and setting watch, the yoke and the key-pipe, in combination with a flexible and pivoted bell-crank lever, a grooved set-screw, and a projection on one end of the lever engaging said groove, substantially as described.

6. In a stem winding and setting watch, the yoke and the key-pipe, in combination with a flexible lever forming a direct connection between said yoke and key-pipe, a set-screw for elevating and depressing said lever, and a spring connecting the lever and yoke, substantially as described

445,183. ADJUSTABLE CHAIR. CHARLES H. KNIGHT, Rondout, N. Y. Filed Mar. 12, 1889. Serial No. 302,976. (No model.)



Claim.—1. In an adjustable chair, the combination of the back, the leg-rest hinged to the front of the chair-frame and provided with a sliding foot-rest, the movable seat pivoted in front to the leg-rest, and the quadrant pivoted to the frame below the seat and connected with the seat by a pivoted link and with the sliding foot-rest by a tie K, all constructed and operating substantially as and for the purpose described.

2. In an adjustable chair, the combination of the back hinged to the rear of the chair-frame, the leg-rest hinged to the front of the frame and provided with a sliding foot-rest, the seat pivoted to the back and to the leg-rest, and the quadrant pivoted to the frame below the seat and connected with the seat by a pivoted link and with the sliding foot-rest by a tie K, all constructed and operating substantially as and for the purpose described.

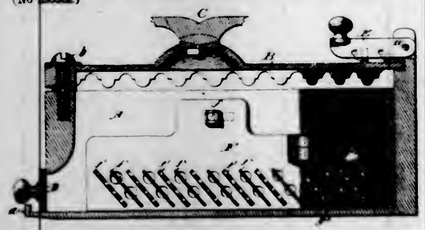
3. In an adjustable chair, the combination of the back comprising the posts C C, pivoted near their lower ends to the rear part of the tie-frame, and the bars N N, also pivoted at their lower ends to the frame and at their opposite ends by sliding pivots to the posts C C, the leg-rest B, pivoted to the front part of the frame and provided with a sliding panel L, the seat D, pivoted to the posts C C and to the leg-rest, and the pivoted quadrant F, connected with the panel L by the chain K and also connected with the seat, all constructed and operating substantially as and for the purpose described.

4. In an adjustable chair, the combination of the back, the hinged leg-rest, the swinging seat pivoted to the leg-rest, the pivoted quadrant, the tie K, connecting the quadrant with a slide in the leg-rest, the pivoted link connecting the quadrant with the seat, all operating as set forth, and the bar H, whereby the several parts are locked in different positions, substantially as and for the purpose described.

5. In an adjustable chair, the combination of the back, the hinged leg-rest, the swinging seat pivoted thereto in front and otherwise properly supported, the quadrant pivoted to the frame below the seat and connected with the seat by the bars J J, the tie K, connecting the quadrant with a slide in the leg-rest, the bar H, connected at its front end with the seat, the latch-plate *d*, with which the rear end of the bar H engages, and the tripping-bar provided with a suitable handle, all constructed and operating substantially as and for the purpose described.

6. In an adjustable chair, the head-rest consisting of the combination of the rectangular frame or panel R, with a covering of cloth stretched across it and attached to the opposite sides of the frame and with a roll or cushion formed at its lower side, and the brackets forming, with the cross-bar uniting them, the frame *r*, the panel being pivoted at its lower side to the brackets and provided with catches to engage with the brackets and hold the panel at different degrees of inclination, substantially as and for the purpose described.

445,184. SAD-IRON. HEINRICH KOEPP, Milwaukee, Wis., assignor to Katharina Roes, same place. Filed June 10, 1889. Serial No. 313,653. (No model.)

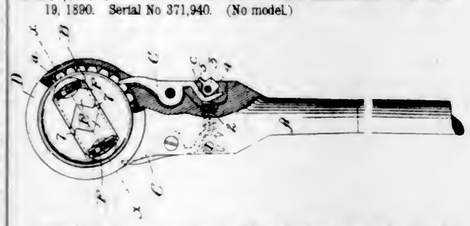


Claim.—1. The combination, with a chambered sad-iron the sides of which are bent toward each other to form the point and are provided with draft-openings both in front of and behind the bends therein, of dampers composed of sections jointed together adjacent to the bends in the sides of the iron and movable lengthwise thereof so as to open and close said openings, substantially as and for the purposes set forth.

2. The combination, in a chambered sad-iron having draft-openings in the sides, of dampers having corresponding openings and inwardly-projecting wings across said openings, substantially as and for the purposes set forth.

3. The combination, in a chambered sad-iron, of draft-openings formed in the sides thereof, and horizontally-movable dampers provided with corresponding openings and with inwardly-projecting inclined wings located between the rows of openings therein and similar wings extending midway across said openings, substantially as and for the purposes set forth.

445,185. WRENCH. EDWARD C. MEAD, Elkhart, Ind. Filed Nov. 19, 1890. Serial No. 371,940. (No model.)



Claim.—1. In combination, the frame having the hollow head, the ratchet located therein and carrying the gripping-jaws, and the pawl for operating the ratchet, pivoted to the frame, the said head having a flange on one side for retaining the ratchet in place and a ring-cap on the other removably secured to the head.

2. In combination, the hollow head having a flange on one side, the ratchet within the head, the ring-cap having an inwardly-projecting flange screw-threaded into the head, and a suitable operating-pawl for the ratchet, substantially as described.

3. In combination with the head and pawl, the ratchet having a recess, the jaws arranged to be adjusted therein, the means for moving them, the said jaws having overlapping projections, substantially as described.

4. In combination with the head and pawl, the ratchet having a recess, the jaws arranged therein, the thumb-nuts having screw-threaded shanks engaging the jaws, and the pins *f*, on which the nuts turn, said parts being within the recess, substantially as described.

5. In combination, the head, the ratchet, and gripping-jaws, the pawl pivoted to operate reversely upon the ratchet, the springs, and the pivoted detents for holding the pawls out of engagement with the ratchet, substantially as described.

445,186. WALKING-CULTIVATOR. SAMUEL E. MORRAL and JOHN MORRAL, Morral, Ohio. Filed Sept. 8, 1890. Serial No. 364,284. (No model.)

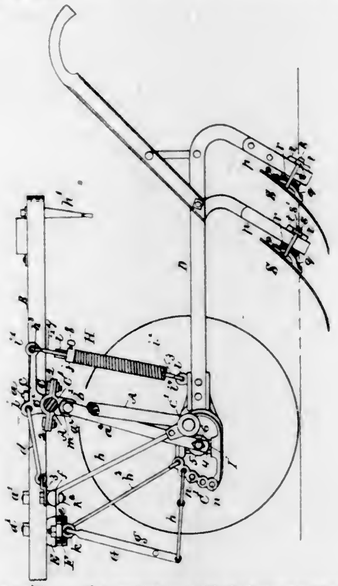
Claim.—1. In a cultivator, the combination, with the axle, of clamp-blocks, a hanger cast upon the cap of the latter and having an eye on the top of the upright for connecting it with the cross-tree, and an arm provided with an eye for connecting it with the plow-beam, substantially as set forth.

2. In a cultivator, the combination, with the axle and the tongue mounted upon said axle, of the swinging plow-beams, a cross-tree connected with said axle, an evener pivotally suspended under said tongue and connected with the forward ends of said plow-beams, pivoted devices supported by said axle, each connected at one end with said cross-tree and formed with a rearward extension, and coiled springs elastically connecting said extensions and plow-beams.

3. In a cultivator, the combination, with the axle and the tongue mounted upon said axle, of swinging plow-beams, a cross-tree connected to said axle, pivotally-supported divided clamp-blocks surrounding said axle, the upper sections of said clamp-blocks having rearward extensions, connections between said clamp-blocks and cross tree, and elastic connections between said extensions and plow-beams.

4. In a cultivator, the combination, with the axle, of the clamp-blocks, a hanger cast upon the cap of the latter, the cross-tree, links connecting the hangers and cross-tree, braces connecting the ends of said cross-tree with collars on the spindles, the swinging bars, the plow-beams pivoted to the latter, and the adjustable spiral springs connecting said plow-beams and hangers, substantially as set forth.

5. In a cultivator of the class described, the combination of the tongue of a doubletree-plate, a cross-tree formed on the latter, an evener pivotally suspended under said tongue, the hitch-irons swung from said evener, the rods b^3, connecting said evener directly with the clevis ends of the plow-beams, and the jointed link-rods *h*, connecting said swinging hitch-irons with the latter, said plow-beams being pivotally suspended by swinging bars, whereby they are adapted to be controlled by the movements of said evener, substantially as and for the purpose set forth.



6. In a cultivator, the combination, with the hanger and the plow-beam of the adjustable spiral spring connecting said hanger and the latter, said spring being comprised of the following elements, viz: a spiral-wire coil, a flat bar having a hook formed on its lower end connecting it with the plow-beam and adjustable within said coil, a doubled wire rod formed into a hook at the doubled end and straddling said flat bar longitudinally and having its ends turned outward and engaging the lower end of said coil, a cap covering the top of the latter provided with cross-slots to allow it to slide over said flat bar and the hook-rod, and a set-screw engaging the edge of said flat bar in said cap, whereby the adjustment is effected, substantially as set forth.

7. In a cultivator, the combination, with the tongue and evener, of a doubletree-plate intermediate of said tongue and said evener and having its rear portion formed into a cross-tree, whereby it is adapted for the attachment of brace-rods connecting it with the axle, and links connecting it with the hanger-bars to strengthen this part of the implement, substantially as set forth.

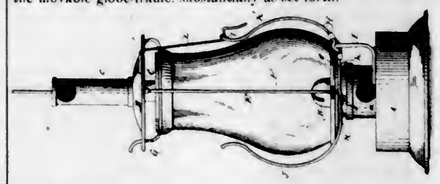
8. In a cultivator, the combination, with the clevis and the hanger-frame, of the clevis-coupling pivoted vertically by means of the opposite pins or pintles in said clevis-frame, an exteriorly-angular sleeve in two sections inclosing said pintles, and the pivoted blocks clamped upon said sleeve, whereby a series of movements is allowed to the plow-beams, substantially as set forth.

9. In the clevis-coupling, the combination, with the clevis-frame having the inwardly-extending pintles, of the sleeve in two half-sections, the pieces fitting against said sleeve upon either side and having an enlarged hole in each, and the outer piece having a hub inserted in said hole, and the bolt, substantially as and for the purpose hereinbefore set forth.

10. In a cultivator, the combination, in a shovel-fastening, of the bifurcated shovel-stock, a shovel-block having a concave forward face, straight shoulders fitting against the inner edges of said stock and two headed limbs extending into the opening in said stock and adapted to be adjusted up or down thereon, a shovel having a loop-iron convex (in cross-section) on the inner or front side and concave on the rear or outer side, a stirrup-iron, a washer-plate, and nuts, all substantially as shown and described.

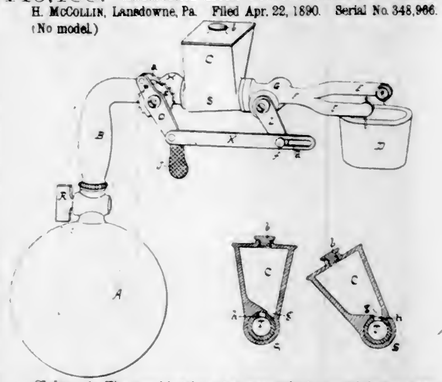
445,187. TUBULAR LANTERN. WARREN MCARTHUR, Chicago, Ill., assignor to the Steam Gauge and Lantern Company, Syracuse, and the R. E. Dietz Company, New York, N. Y. Filed Mar. 22, 1890. Serial No. 344,960. (No model.)

Claim.—1. The combination, with the tubular lantern-frame and the globe-frame capable of moving up and down in the tubular frame, of a lifting-lever pivoted to the base of the tubular frame and having one arm connected with the lower portion of the globe-frame, and a catch attached to the movable globe-frame and engaging with the other arm of the lifting-lever, whereby the lifting-lever is locked to the movable globe-frame, substantially as set forth.



2. The combination, with the tubular lantern-frame provided with a depending central tube, of a bell capable of vertical movement on said tube, a globe-supporting plate, lift-wires connecting said plate with the bell, a lifting-lever pivoted to the base of the tubular frame and having its upper arm projecting upwardly along the globe, and a catch secured to the bell and extending downwardly to the lifting-lever, substantially as set forth.

445,188. ARTIFICIAL LIGHT FOR PHOTOGRAPHY. THOMAS H. MCCOLLIN, Lansdowne, Pa. Filed Apr. 22, 1890. Serial No. 348,966. (No model.)



Claim.—1. The combination of a reservoir A, containing oxygen gas under pressure, tube B, valves H and G, chamber T, tubes F E E *e e*, and lamp D, substantially as described, and for the purpose set forth.

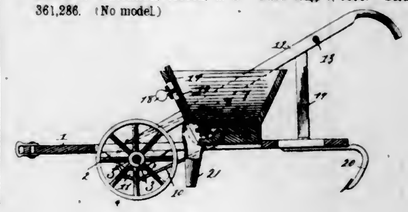
2. The combination of the reservoir A, containing compressed oxygen gas, tubes B, F, E, and *e*, with the valve H, ratchet-wheel *c*, pawl *a*, and trigger-lever J O P, for the purpose set forth, substantially as described.

3. The combination of the valve H, ratchet-wheel *c*, pawl *a*, trigger-lever J O P, rod K, pin *f*, slot *d*, with the lever L, and valve G, for the purpose of producing the successive action of the valves G and H, substantially as described, and for the purpose set forth.

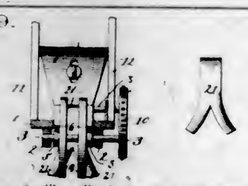
4. The combination, with the reservoir A, containing compressed oxygen gas, of the tube B, valves H and G, chamber T, and tubes F E *e* and lamp D, and magnesium-receptacle C, fitted to swivel axially, as shown, for the purpose of charging the chamber T with magnesium.

5. The combination, with the tube B, valves H and G, chamber T, tubes F E *e*, and lamp D, of a removable oxygen-reservoir A, enabling the said reservoir to be detached for the purpose of charging it with oxygen gas under pressure, for the purpose set forth.

445,189. FERTILIZER-DISTRIBUTER. JOHN F. MCLAURIN and DAVID L. WHITAKER, McColl, S. C. Filed Aug. 7, 1890. Serial No. 361,286. (No model.)

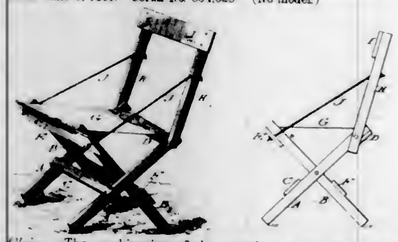


445,189.



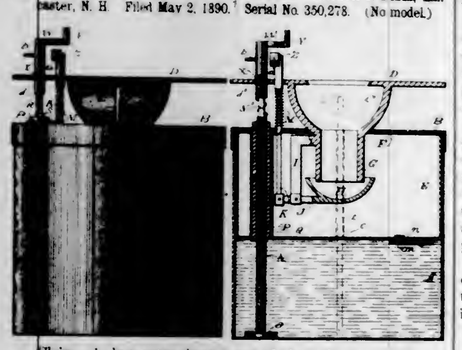
Claim.—In a fertilizer-distributer, the combination of the frame, the hopper, a shaft mounted transversely in the latter having the fluted roller extending through a slot in the front side of said hopper, the regulating-slide mounted adjustably upon the front wall of the latter, the shaft having the transporting-wheels mounted adjustably thereon and provided on their outer sides with laterally-extending hubs or collars having set-screws, the bifurcated discharge-spout, and means for transmitting motion from the shaft or axle to the roller-shaft in the hopper, substantially as set forth.

445,190. FOLDING CHAIR. JOHN G. NICOLAY, Washington, D. C. Filed June 2, 1890. Serial No. 354,028. (No model.)



Claim.—The combination of the cross-legs A and B, pivoted together, the braces C, D, E, and F, secured to the outer edges thereof, the seat G, secured to braces D and E, the standards H, pivoted to legs A, and cords J, secured to said standards and braces E, substantially as described.

445,191. PORTABLE WATER-CLOSET. ARTHUR J. NILES, Lancaster, N. H. Filed May 2, 1890. Serial No. 350,278. (No model.)



Claim.—1. In a water-closet, a pair of telescoping receptacles, one of which is adapted to contain water, a hopper, and means, substantially as described, for lowering the other receptacle down upon said water to force it to said hopper, as set forth.

2. In a water-closet, a stationary receptacle adapted to contain water, a vertically-movable receptacle fitting within said stationary receptacle, a hopper opening at its lower end into the interior of said movable receptacle, and mechanism, substantially as described, for lowering the latter down upon the water in the outside receptacle to force it to said hopper, as set forth.

3. In a water-closet, a water-receptacle, a second receptacle contained within it, and a screw passing through said inner receptacle and arranged to operate to carry the latter down upon the water and force it to the hopper, substantially as described.

4. In a water-closet, the combination of a water-receptacle, a second receptacle fitting within it, a hopper extending into said inner receptacle, a screw passing through the latter and connected to the water-receptacle, and suitable means for turning said screw to carry the inner receptacle down upon the water to force the latter to the hopper, substantially as described.

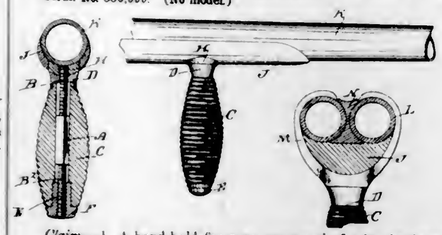
5. In a water-closet, the combination of a water-receptacle, a second receptacle placed within it, a threaded sleeve extending through said inner receptacle, a clamp for removably holding said sleeve to the latter, and a screw engaging the sleeve and arranged to operate to carry the inner receptacle down upon the water and force the latter to the hopper, substantially as set forth.

6. In a water-closet, a pair of telescoping receptacles, one containing water, a screw passing through the other and arranged to force it down upon the water, a hopper to which the water is sent, a pivoted bottom to said hopper contained within the inner receptacle, and suitable connections between said pivoted bottom and the screw, whereby the turning of the latter causes the dumping of the bottom, substantially as described.

7. In a water-closet, a pair of telescoping receptacles, one containing water, a screw passing through the other, a crank for turning said screw to carry down the inner receptacle upon the water, a hopper extending into said inner receptacle, a pivoted bottom to said hopper, a rod extending from the same, and suitable connections between said crank and rod, whereby the latter is lifted and the pivoted bottom emptied by the turning of the crank, substantially as described.

8. In a water-closet, the combination of a pair of telescoping receptacles, one containing water, a screw extending through the other, a crank on said screw, a hopper, a pivoted basin closing the bottom of the latter, a rod for operating said basin, a projection on said rod, and a projection on said crank arranged to come in contact with that of the rod to elevate the latter, all arranged and adapted to operate substantially as described.

445,192. HAND-HOLD FOR GUNS. FRANK NYE, RICHARD F. DENHAM, and OLE KNUDSON, Lake Park, Iowa. Filed June 27, 1890. Serial No. 356,999. (No model.)

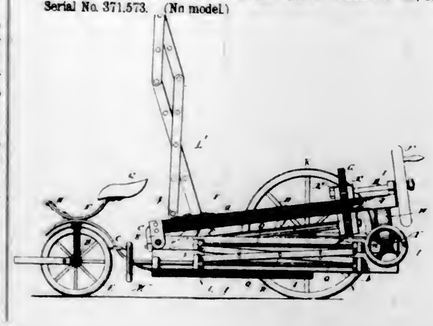


Claim.—1. A hand-hold for guns, composed of a bar having an angular body portion and round screw-threaded end portions, an outer sleeve or handle having a longitudinal angular bore, an adjusting-nut on one end portion of the rod, and a metal ferrule on the opposite end portion of the bar, in combination with a screw-seat fixed to the fore-end of a gun, as and for the purposes set forth.

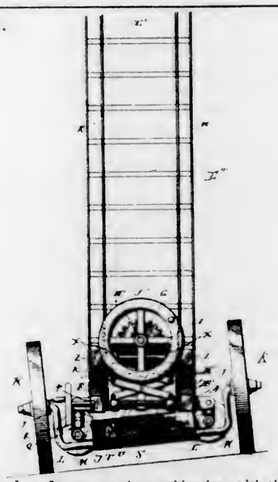
2. A hand-hold for the fore-end of fire-arms, consisting of a rod or bar having an angular body portion and circular screw-threaded end portions, a nut mounted upon one end of the rod, a sleeve having an angular bore mounted upon the middle portion of the rod, and a metal ferrule mounted on the end portion of the bar opposite to the nut, together with means for attaching the bar to the said fore-end, as shown and described, to operate in the manner set forth, for the purposes stated.

3. A hand-hold for guns, comprising a loop or clasp adapted to encircle a gun-barrel, and a handle adapted to be detachably fixed to the bottom of the loop or clasp and to clamp the clasp fast to the gun in the manner set forth.

445,193. COMBINED AERIAL LADDER AND ELEVATOR. DAVID L. OSBORN, Kansas City, Mo., assignor of two-thirds to David G. Blair and Emerson S. Northup, both of same place. Filed Nov. 15, 1890. Serial No. 371,573. (No model.)



445,193.



Claim.—1. In a fire-escape, the combination, with the frame B, of the frame N, carried thereon, a worm-bar on each side of the said frame B, and lazy-tongs on each side of the said frames, having their lower arms engaged by the bars upon the corresponding side and their upper ends movably connected with the said frame N, whereby the latter may be held horizontal without regard to the inclination of the frame B, as described.

2. The combination, with a frame B, of a worm-bar on each side of the said frame and carried thereby, threaded collars upon the said bars, a frame N, carried on the said frame B and having ears upon its sides, a rod carried in the said ears on each side of the frame N, collars sliding on the said rod, and lazy-tongs having their upper and lower ends pivoted to the collars upon the rod and upon the worm-bars, as described.

3. The combination, with a frame N, of a transverse worm-bar in the rear end of the said frame N, a frame A', pivoted to the forward end of the frame N and carrying a suitable tower upon its forward end, and lazy-tongs having their lower ends engaging the said worm-bar in the frame N and their upper ends movably connected to the rear of the frame A', as described.

4. The combination, with a frame N, of a transverse worm-bar carried in the rear end of the frame N, threaded collars V upon the said worm-bar, a frame A', having its forward end pivoted to the forward end of the said frame N, and having a lazy-tongs structure on its forward end, a transverse rod Y on rear of the frame A', collars X, sliding upon the said rod Y, and lazy-tongs having their upper ends connected to the said collars X and their lower ends to the said threaded collars V, as described.

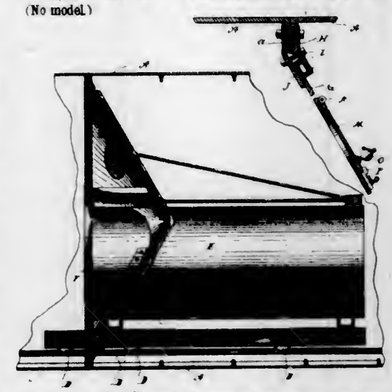
5. In a fire-escape, the combination, with the frame B, of the frame N, carried thereon, a worm-bar on each side of the said frame B, and lazy-tongs on each side of the said frames, having their lower arms engaged by the bars upon the corresponding side and their upper ends movably connected with the said frame N, whereby the latter may be held horizontal without regard to the inclination of the frame B, a transverse worm-bar in the rear end of the said frame N, a frame A', having its forward end pivoted to the forward end of the frame N and carrying a suitable tower upon its forward end, and lazy-tongs having their lower ends engaging the said worm-bar in the frame N and their upper ends movably connected to the rear of the frame A', as described.

6. In a fire-escape, the combination, with the frame B, of the frame N, carried thereon, a worm-bar on each side of the said frame B, lazy-tongs on each side of the said frames, having their lower arms engaged by the bars upon the corresponding side and their upper ends movably connected with the said frame N, whereby the latter may be held horizontal without regard to the inclination of the frame B, a transverse worm-bar T, carried in the rear end of the frame N, threaded collars V upon the said worm-bar T, a frame A', having its forward end pivoted to the forward end of the said frame N and having a lazy-tongs structure on its forward end, a transverse rod Y in the rear of the frame A', collars X, sliding upon the said rod Y, and lazy-tongs having their upper ends connected to the said collars X and their lower ends to the said threaded collars V, as described.

7. The combination, with a frame B, of a worm-bar on each side of the said frame and carried thereby, threaded collars upon the said bars, a frame N, carried on the said frame B and having ears upon its sides, a rod carried in the said ears on each side of the frame N, collars sliding on the said rod, lazy-tongs having their upper and lower ends pivoted to the said collars upon the rod and upon the worm-bars, a transverse worm-bar in the rear end of the said frame N, a frame A', pivoted to the forward end of the frame N and carrying a suitable tower upon its forward end, and lazy-tongs having their lower ends engaging the said worm-bar in the frame N and their upper ends movably connected to the rear of the said frame A', as described.

8. The combination, with a frame B, of a worm-bar on each side of the said frame and carried thereby, threaded collars upon the said bars, a frame N, carried on the said frame B and having ears upon its sides, a rod carried in the said ears on each side of the frame N, collars sliding on the said rod, lazy-tongs having their upper and lower ends pivoted to the collars upon the rod and upon the worm-bars, a transverse worm-bar T, carried in the rear end of the frame N, threaded collars V upon the said worm-bar T, a frame A', having its forward end pivoted to the forward end of the said frame N and having a lazy-tongs structure on its forward end, a transverse rod Y in the rear of the frame A', collars X, sliding upon the said rod Y, and lazy-tongs having their upper ends connected to the said collars X and their lower ends to the said threaded collars V, as described.

445,194. PNEUMATIC TUNNELING APPARATUS. WILLIAM H. PAINE, New York, N. Y. Filed Feb. 25, 1890. Serial No. 341,640. (No model.)



Claim.—1. In a pneumatic tunneling apparatus, the combination of two or more air-locks with a diaphragm or partition made of steel or iron for inclosing the air-chamber or heading.

2. In a pneumatic tunneling apparatus, the combination of two or more air-locks with a diaphragm or partition connected to each other and so arranged as that they may both be moved together while so connected.

3. In a pneumatic tunneling apparatus, the combination of two or more air-locks mounted on wheels or trucks, as described, with a diaphragm or partition attached to the said locks, whereby the whole apparatus can be moved simultaneously, if desired, substantially as set forth.

4. In a pneumatic tunneling apparatus, the combination of two or more air-locks with a concave-shaped or conical diaphragm or partition, as and for the purposes set forth.

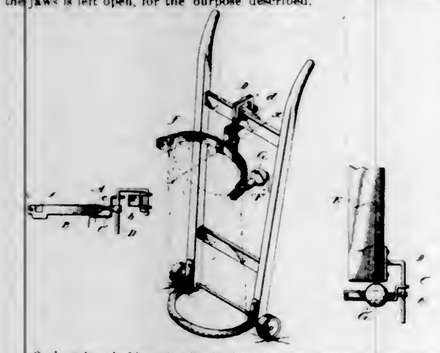
5. In a pneumatic tunneling apparatus, the combination of one or more air-locks with a diaphragm or partition of somewhat smaller diameter than the interior of the tunnel, and means, substantially as shown, for filling the space between the periphery of the diaphragm and the walls of the tunnel.

6. In a pneumatic tunneling apparatus, the combination, with one or more air-locks, of a diaphragm or partition closing the interstice between said air-locks and the tunnel-walls, the said diaphragm having ports which when open afford communication from the heading to the main tunnel-way, said ports being normally closed by externally-weighted safety doors or valves adapted to be opened automatically by any excess above a predetermined heading pressure, as and for the purposes set forth.

445,195. BAG-HOLDER. WILLIAM H. PENDERY, Wyoming, Ohio, assignor to Emma D. Pendery, same place. Filed Aug. 11, 1890. Serial No. 361,724. (No model.)

Claim.—1. In a bag-holder, the fixed clamping-jaw approximately semicircular in form and supported at or near its middle, in combination with the co-operating movable clamping-jaw of similar

shape and hinged at the outer ends of the fixed jaw, so as to swing over upon the same, whereby the space between the opposite ends of the jaws is left open, for the purpose described.



2. In a bag-holder, the fixed clamping-jaw approximately semicircular in form, and a vertically-adjustable support for the same secured to it at or near its middle, in combination with the co-operative movable clamping-jaw of similar shape and hinged at the outer ends of the fixed jaw, so as to swing over upon the same, substantially as and for the purpose described.

3. In a bag-holder, the fixed clamping-jaw approximately semicircular in form and supported at or near its middle, in combination with the co-operating movable clamping-jaw of similar shape and hinged at the outer ends of the fixed jaw, and a twine-carrier secured to the hinged jaw and serving as an operating-handle therefor and provided with a twine-severing knife, substantially as described.

4. The combination and arrangement of the hinged jaws A B, arm C, fast to the jaw B and provided with the spring tilting-bolt *b*, and supporting-rod D, substantially as described.

5. The combination and arrangement of the hinged jaws A B, arm C, fast to the jaw B and provided with the spring tilting-bolt *b*, supporting-rod D, bracket-plate *d*, and spring *e*, substantially as described.

445,196. COMBINED PAPER-CUTTER AND BOOK-MARK. THOS. H. PERRY, Indianapolis, Ind. Filed June 6, 1890. Serial No. 354,435. (No model.)



Claim.—1. As an improved article of manufacture, the herein-described combined paper-cutter and book-mark, comprising a main cutter-blade having a cutting-edge extending continuously around its side edges and end, and a rectangular head or handle portion embodying a short blade having a pointed or sharpened end and a straight connecting neck portion against which the edges of the leaves of a book are adapted to closely and squarely abut, substantially as and for the purpose set forth.

2. The herein-described improved paper-cutter and book-mark, comprising a main cutting-blade having a cutting-edge upon its upper face extending continuously around the side edges and end, and a rectangular head or handle portion comprising the short insertible blade pointed upon both its inner and outer faces and the square connecting neck portion against which the corresponding edges of the leaves of a book are adapted to squarely abut, substantially as and for the purpose set forth.

3. The herein-described improved paper-cutter and book-mark, comprising the main cutting-blade having the convergent or pointed end and provided upon its upper surface with a bevel forming a cutting-edge extending continuously around the side edges and ends and terminating about on a plane corresponding to the front end of the shorter blade, and the rectangular head or handle portion formed by the rear end of the main blade, the straight connecting neck portion at a right angle thereto, and the short insertible blade at a right angle to the neck portion and parallel with the main blade the insertible blade having its front end pointed from both its outer and inner sides, substantially as and for the purpose set forth.

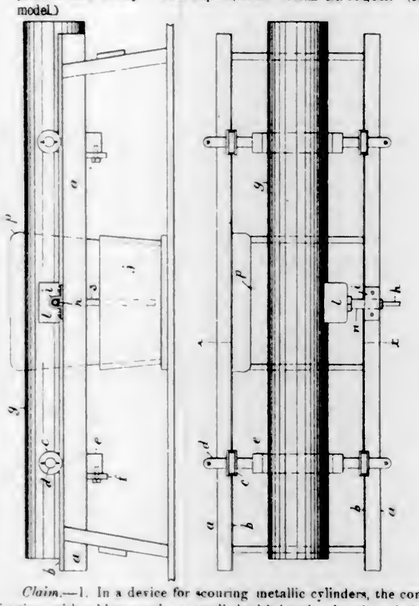
4. As an improved article of manufacture, a combined paper-cutter and book-mark comprising a main cutting-blade having a cutting-edge, and a rectangular or angular head or handle portion formed by the rear end of the cutting-blade, a straight connecting neck portion at a right angle to the main blade, and a short insertible blade at a right angle to the neck portion and parallel with the end of the main blade, substantially as and for the purpose set forth.

5. As an improved article of manufacture, a combined paper-cutter and book-mark comprising a main cutting-blade having a cutting-edge extending continuously around its side edges and across its end, and a rectangular head or handle portion adapted to tightly and squarely receive the corresponding edges of the leaves of a book, substantially as and for the purpose set forth.

6. An improved combined paper-cutter and book-mark having a main cutting-blade having a cutting-edge upon its upper face opposite the shorter blade, and a rectangular head or handle portion projecting from the upper face of the main blade at its rear end and comprising a straight neck portion at a right angle to the main blade and a short insertible blade at a right angle to the neck portion and parallel with the main blade and opposite its upper face, having the cutting-edge, the end of the shorter blade being sharpened or pointed on its inner face opposite the cutting-edge of the main blade, whereby the edges of the leaves of a book are adapted to be admitted loosely in the rectangular head and be tightly compressed by reason of the reduced opening above the sharpened or beveled end, substantially as and for the purpose set forth.

7. In a device of the class described, the rectangular head or handle portion formed by the end of the main blade, a connecting neck portion at a right angle to the main blade, and an insertible blade at a right angle to the neck portion and parallel with the main blade, the said insertible blade having upon its inner face opposite the main blade a beveled or sharpened end, whereby a number of leaves of a book are loosely received within the rectangular head and are tightly compressed within the reduced opening above the beveled or sharpened end with their edges abutting squarely against the neck portion, substantially as and for the purpose set forth.

445,197. DEVICE FOR SCOURING METALLIC CYLINDERS. HENRY PHILLIPS, Newark, N. J., assignor to the Spiral Weld Tube Company, of New Jersey. Filed Sept. 9, 1890. Serial No. 364,449. (No model.)



Claim.—1. In a device for scouring metallic cylinders, the combination, with a blast-nozzle *n*, supplied with jet-pipe *h* and sand-pipe *s*, of a hood provided with the cheeks fitted, respectively, to the straight and curved sides of the cylinder, substantially as herein set forth.

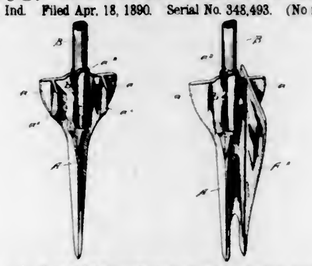
2. In a device for scouring metallic cylinders, the combination, with a blast-nozzle *n*, supplied with jet-pipe *h* and sand-pipe *s*, of a hood provided with the flexible sheet-metal cheeks *m'* and removable cheeks *m*, as and for the purpose set forth

3. In a device for scouring metallic cylinders, the combination, with the blast-nozzle *n*, provided with the passages *o* and *o'*, arranged as described, of the jam-nuts *q*, fitted to the end of the nozzle, the hood *l*, clamped between the jam-nuts, the flexible cheeks *m'* at the top and bottom of the hood and the removable cheeks *m* at the ends of the hood, and bolts *r* for securing such removable cheeks, as and for the purpose set forth.

4. The apparatus herein described for scouring metallic cylinders, consisting in the frame carrying the rails *b*, cradles having axles fitted to wheels upon such rails and adapted to sustain a cylinder movable in relation to the frame, and a nozzle *n*, sustained upon the frame with the hood *l* attached thereto and provided with cheeks *m* to fit the side of the cylinder, substantially as herein set forth.

5. The apparatus herein described for scouring metallic cylinders, consisting in the frame carrying the rails *b*, the wheels *c*, the cradle *e*, with axles *d*, fitted loosely to the wheels and provided with the anti-friction rolls *f*, and a nozzle *n*, sustained upon the frame with the hood attached thereto and provided with cheeks *m* to fit the sides of the cylinder, substantially as herein set forth.

445,198. FENCE-POST BASE. ROBERT E. POINDEXTER, Indianapolis, Ind. Filed Apr. 18, 1890. Serial No. 348,493. (No model.)

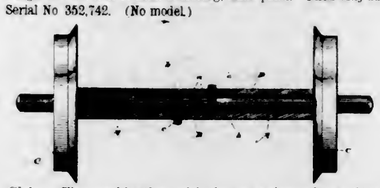


Claim.—1. A post-base consisting of a main web A, having wings *a*, and a socket for the post, consisting of a ring-like portion a^2 at its extreme upper edge and a dowel a^2 at the bottom of the socket and over which the hollow lower end of the fence-post is adapted to fit, substantially as shown and described.

2. The combination, with a hollow fence-post, of a post-base consisting of a main web or portion extending into the ground, wings thereon, a wide transverse wing upon said main web or portion located to one side of its center, and a socket to receive the post, substantially as shown and described.

3. The combination of a post-base having a socket, a hollow post fitted in said socket and having a transverse hole, and a pin passing through said hole and engaging with the edges of the post-socket sides in said post-base, whereby said post is held securely in said socket, substantially as shown and described.

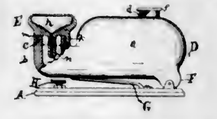
445,199. CAR-AXLE. HENRY N. POMEROY, Cross Plains, Wis., assignor of one-half to Emil G. Hering, same place. Filed May 22, 1890. Serial No. 352,742. (No model.)



Claim.—The combination, with the two axle-sections, of the same diameters throughout their lengths, with the exception of annular grooves formed therein near their inner ends, which ends are convexed, of the loose disk or washer located between the ends, the sleeve having a plain uniform bore extending throughout the length of and forming a bearing for the axle-sections, said sleeve being provided at each side of its transverse center with threaded perforations registering with the said grooves of the axle-sections, and plugs plain at their inner ends and exteriorly threaded from their middles to their outer ends, mounted in the perforations and having their plain inner ends lying and terminating in the grooves of the axle-sections, substantially as specified.

445,200. INKSTAND. EDWARD S. RAFF, Canton, Ohio. Filed Oct. 29, 1890. Serial No. 369,680. (No model.)

Claim.—As an article of manufacture, an inkstand having a support consisting of a base A, said base having at one of its ends upwardly-projected lugs B, having at their top portion a cross-bar C, and a fountain D, having lugs B, by which said fountain is pivotally secured to said base to swing about said bar, a spring to support the front end of said fountain, and a stop H to arrest the downward movement of the fountain, substantially as described, and for the purpose set forth.



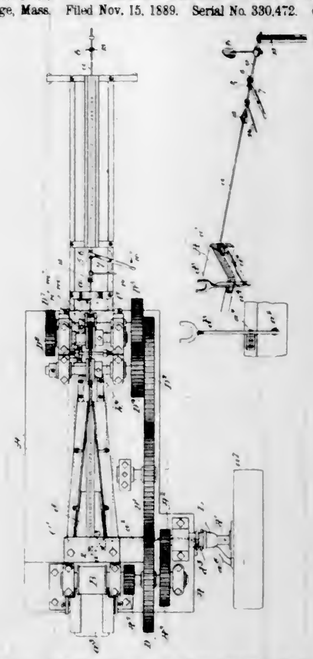
445,201. INKSTAND. EDWARD S. RAFF, Canton, Ohio. Filed Oct. 29, 1890. Serial No. 369,681. (No model.)



Claim.—1. As an article of manufacture, an inkstand having a support consisting of a base A and side frames B, said frames having at their top portion a cross-bar C, and a fountain D, having bails notched to engage said bar, by which said fountain is supported to swing about said bar and adapted to be moved back and forward to balance or adjust the fountain thereon, substantially as described, and for the purpose set forth.

2. In an inkstand, the supporting-frame described and an ink-fountain having notched bails by which said fountain is supported to swing on said frame, and a stop G to arrest the downward movement of the fountain at a desired point, substantially as described, and for the purpose set forth.

445,202. PIPE-FORMING MACHINE. DAVID A. RITCHIE, Cambridge, Mass. Filed Nov. 15, 1889. Serial No. 330,472. (No model.)

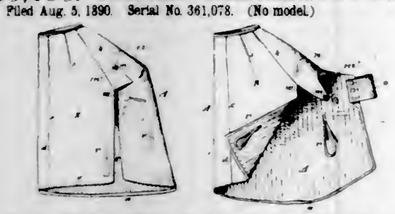


Claim.—1. In a pipe-forming machine, means to feed the pipe as it is formed, driving mechanism therefor, and a stop-motion comprising a rod having a stop arranged in the path of travel of the pipe, and connections between said rod, and means, such as a friction-clutch, to stop the motion of the driving mechanism, substantially as described.

2. The shaft A', a friction-clutch, the lever 7, the elbow-lever a', the link n^3, the rod a, combined with the stop b thereon, adapted to be struck by a pipe when it is desired to move the said cone in one direction upon the said shaft, substantially as described.

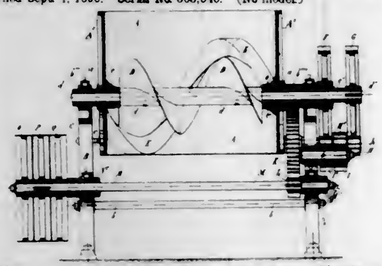
3. In a pipe-forming machine, a stop-motion comprising a rod having a longitudinal motion and made in two parts which are connected by a turn-buckle, a stop on said rod, and a lever for rotating said rod to turn its stop into and out of the path of movement of the pipe, substantially as described.

445,203. RIDING-HABIT. HERMAN ROSSBERG, New York, N. Y. Filed Aug. 5, 1890. Serial No. 361,078. (No model.)



Claim.—The herein-described riding-habit, the same being composed of two pieces A and B, a side opening being formed between said pieces at one side, said piece A having darts r and s, a loop end n, extending therefrom, a piece n to engage therewith and to encompass the wearer's limb above the knee, and a loop or band o, secured to one edge of said piece A and designed to encompass the limb below the knee, said piece B being secured at its edges to corresponding edges of piece A and provided with a single dart h, substantially as set forth.

445,204. KNEADING-MACHINE. CARLO SACCO, Genoa, Italy. Filed Sept. 1, 1890. Serial No. 363,640. (No model.)



Claim.—1. In a dough-kneading machine, the combination, with the kneading-trough, of two coaxial helices adapted to revolve one within the other and having their operative faces in such proximity as to knead or cut the dough between them, substantially as and for the purposes set forth.

2. In a dough-kneading machine, the combination, with the kneading-trough, of two revoluble coaxial helices having threads of different pitch, substantially as and for the purposes set forth.

3. In a dough-kneading machine, the combination, with the kneading-trough, of two helices, arranged one within the other and having threads of like direction, said helices being adapted to revolve in reverse directions, substantially as and for the purposes set forth.

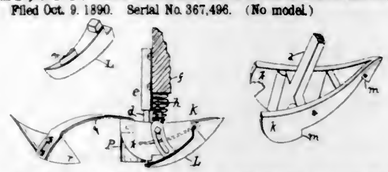
4. In a dough-kneading machine, the combination, with the kneading-trough, of two coaxial revoluble helices, the outer helix having a thread of substantially a V shape in cross-section and arranged to revolve with its broad face in proximity to the inner face of the trough, for the purposes set forth

5. In a dough-kneading machine, the combination, with the kneading-trough provided with a semi-cylindrical bottom, of two coaxial revoluble helices, the threads of which run in like directions, the radii of the threads of the outer helix being slightly greater than the radii of the inner helix and slightly less than the radius of the bottom of the kneading-trough, substantially as and for the purposes set forth.

6. In a dough-kneading machine, the combination, with the kneading-trough provided with a semi-cylindrical bottom, of two coaxial helices, the outer one of which has a thread of a substantially triangular form in cross-section and arranged to present the sharp edge of the thread to the corresponding edge of the thread of the inner helix, substantially as and for the purposes set forth.

7. In a dough-kneading machine, a reversible kneading-trough provided with a semi-cylindrical bottom and means for locking said trough against revolution, in combination with coaxial helices and a driving-gear adapted to revolve said helices within the trough in reverse directions, substantially as and for the purposes set forth.

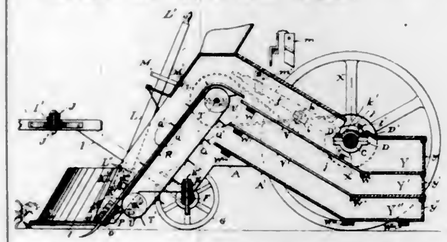
445,205. SEED-PLANTER. JACOB J. SIMON, McDonaldsville, Ohio. Filed Oct. 9, 1890. Serial No. 367,496. (No model.)



Claim.—1. The combination, with the hopper A, of a series of removable hoppers D, having an apertured seed-slide, a lever H, pivotally secured to the axle B, one end of which is provided with a friction-roller, the other end having a linked connection with the slide E, and a cam-wheel G, having cams a to give the seed-slide its full throw one way, and the small intermediate cogs b to settle the seed in the orifices of the slide, substantially as described, and for the purpose set forth.

2. In a seed-planter, a shoe K, having diverging shares k, a removable cutter L, a rearwardly-projected arm q and scraper r, a tube-supporting sleeve P, guiding-standard d, a tube e to receive said standard, by which the shoe is drawn over the ground, a coil-spring h to hold the shoe down upon the ground, and an adjustable gage M, by which the depth of furrow is determined, substantially as described, and for the purpose set forth.

445,206. POTATO-DIGGER. PETER D. SMITH, Springfield, Ohio. Filed Aug. 18, 1890. Serial No. 362,255. (No model.)

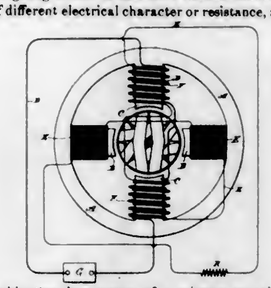


Claim.—1. In a potato-digger, the combination, with a frame having double bolsters and carrying-wheels, a scraper for the vines, a series of inclined shovel-blades supported next to said scraper and having shanks inclined upward and backward at the top, forming a dirt-screener, of a series of elevating-bars mounted to travel under said shanks and having floats on their lower edges extending up between the shanks, means to operate said bars, whereby all sizes of potatoes are raised and delivered over the ends of said shanks, a series of inclined potato-screens of increasing fineness, one below the other, to receive the potatoes delivered from said dirt-screener, and a compartment-box connected with the lower ends of said potato-screens, each compartment receiving the potatoes from its respective screen and having a rear door giving access thereto, whereby all of the potatoes are sorted into separate lots according to size and may be conveniently removed from the said box.

2. In a potato-digger, the combination, with a frame having double bolsters and carrying-wheels, a scraper supported thereby and having guides, an arched cutter-bar mounted to reciprocate in said guides, a rotatable crank-shaft directly connected at one end to said cutter-bar, and means to rotate it, of a series of shovels adjacent to said scraper and adjustable to vary the depth of action in the ground, a series of strips connected to said shovels and inclined upward and backward, a series of cross-bars Q, having floats Q', acting on the potatoes from below and the rear, mechanism to cause the same to travel beneath the said inclined strips and deliver the potatoes over the upper ends thereof, a number of inclined screeners B B', adapted to receive the potatoes delivered thereto and assort the same according to size, and a series of compartments, each connected to its respective screener and having rear doors, whereby each compartment receives potatoes of uniform size, the larger ones being in the upper compartment.

445,207. ELECTRO-MAGNETIC MOTOR. NIKOLA TESLA, New York, N. Y., assignor to the Tesla Electric Company, same place. Filed May 20, 1889. Serial No. 311,417. (No model.)

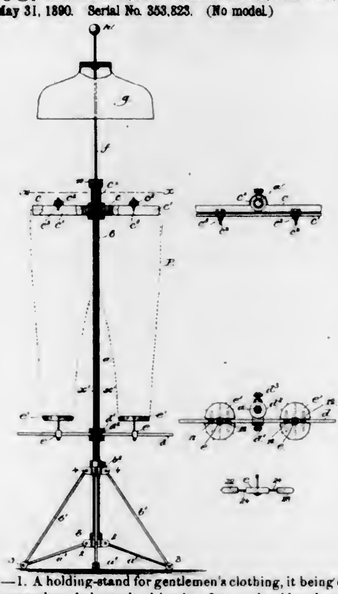
Claim.—1. The combination, in a motor, of a primary energizing-circuit adapted to be connected with the circuit of a generator and a secondary energizing-circuit in inductive relation thereto, the two circuits being of different electrical character or resistance, as set forth.



2. The combination, in a motor, of a primary energizing-circuit adapted to be connected with the circuit of a generator and a secondary energizing-circuit in inductive relation thereto, the two circuits being of different self-induction, as herein set forth.

3. The combination, in a motor, of primary energizing-coils adapted to be connected to a source of current and secondary energizing-coils in a circuit in inductive relation thereto, one set of said coils being formed by conductors of small size and few turns, the other by conductors of larger size, as set forth.

445,208. GARMENT-STAND. WILLIAM VOGLER, Somerville, Mass. Filed May 31, 1890. Serial No. 353,823. (No model.)



Claim.—1. A holding-stand for gentlemen's clothing, it being composed of a screw-threaded standard having feet, a shouldered nut rotatable on the threaded part of the said standard, a two-part clamp-bar mounted loosely on the said nut, a bottom bar, and leg-holders to engage and hold the legs of the pantaloons, substantially as described.

2. A holding-stand for gentlemen's clothing, it being composed of a screw-threaded standard having feet, a shouldered nut rotatable on the threaded part of the said standard, a two-part clamp-bar mounted loosely on the said nut, a bottom bar, and leg-holders to engage and hold the legs of the pantaloons, the rod f, mounted on said shouldered nut, and a coat-support sustained by said rod above the said clamping-bars, substantially as described.

445,209. CARPET-CLEANING MACHINE. JOHN L. WAGNER, Terre Haute, Ind. Filed Sept. 1, 1890. Serial No. 363,713. (No model.)

Claim.—1. The combination, in a carpet-beating machine, of a casing having an open bottom side arranged to rest upon a carpet on the floor, beaters arranged within said casing above and in close proximity to said open lower side, mechanism for operating said beaters, and a suction-fan arranged upon said casing having its receiving-opening communicating with the interior of said casing and its discharging-opening leading to the outside to where it is desired to discharge the dust, substantially as set forth.



2. The combination, in a carpet-beating machine, of a casing, two rock-shafts mounted at the lower edge of said casing at or near its opposite sides and provided with arms or fingers constituting beaters extending toward each other, and mechanism for operating the same, substantially as set forth.

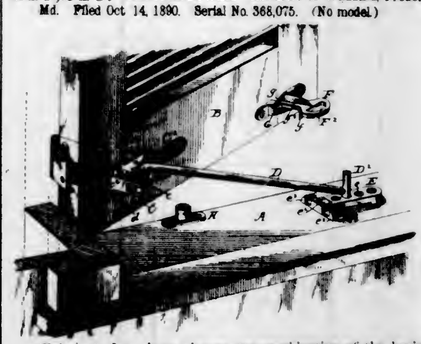
3. The combination, in a carpet-beating machine, of a casing, rock-shafts mounted within and near the opposite sides of said casing and provided with arms extending toward each other and interlacing and constituting beaters, a spring attached to the rock-shaft and operating to force said beaters into contact with the carpet over which the machine is placed, and mechanism operating reversely to the spring, which periodically engages therewith and becomes disengaged therefrom.

4. The combination, in a carpet-beating machine, of the casing, a rock-shaft or rock-shafts mounted within said casing and provided with beaters, a spring attached to each rock-shaft, arranged to force it back to position where the beaters will operate on the carpet, an arm or projection also on each rock-shaft, and a second shaft arranged transversely to said rock-shafts and provided with an arm or projection for each rock-shaft, which as said second shaft revolves engages with the corresponding arm or projection on the adjacent rock-shaft, whereby several rock-shafts may be operated from one second shaft, substantially as set forth.

5. The combination, in a carpet-beating machine, of the casing, rock-shafts therein carrying beaters, springs and projections attached to said rock-shafts, a transverse shaft having projections arranged to engage with the projections on the rock-shafts, a driving or crank shaft, and a connection between said two last-mentioned shafts, substantially as set forth.

6. The combination, in a carpet-beating machine, of a casing having an open bottom side arranged to rest upon a carpet on a floor, a rock-shaft carrying beaters arranged within said casing above and in close proximity to said open lower side, a spring attached to said rock-shaft, arranged to force it back to position where the beaters will operate on the carpet, an arm or projection also on said rock-shaft, and mechanism arranged to engage intermittingly with said projection, and thereby rotate said rock-shaft in one direction while said spring operates to move it in the other, substantially as set forth.

445,210. SHUTTER-BOWER. REVERDY R. WALLING, Frederick, Md. Filed Oct. 14, 1890. Serial No. 368,075. (No model.)



Claim.—1. In a shutter-bower, the combination of the horizontally-slotted arm C, having a base-plate and a side rib c^2 uniting the top and bottom portions of said slotted arm, the bent rod D, having a cross-head D^3 extending above and below said rod, and a sill-plate E, substantially as described.

2. The combination of the horizontally-slotted arm C, the bent

rod D, having a cross-head D^2 extending above and below said rod, the pivoted catch F, having a perforated handle F^2 to receive one of the extensions of the head D^2, and a sill-plate having perforations therein and the two hooked ends e^2, substantially as and for the purpose described.

3. The combination of the horizontally-slotted arm C, the bent rod D, having a cross-head D^2 extending above and below said rod, the pivoted catch F, having a perforated handle F^2 to receive one of the extensions of the head D^2, a rib f^2 on top thereof, and a cap-plate G, having an opening in its top for the passage of the catch and its top rib, and a T-shaped sill-plate having perforations therein and two hooked ends e^2, substantially as described.

445,211. COMPOSITION OF MATTER FOR RETARDING THE SETTING OF PLASTER. EDWARD WATSON, Grand Rapids, Mich. Filed Dec. 20, 1890. Serial No. 375,294. (No specimens.)

Claim.—1. The herein-described composition of matter to be used for restraining the setting of calcined gypsum, consisting of a solution of the substance of hair, as specified.

2. The herein-described composition of matter to be used for restraining the setting of calcined gypsum, consisting of a solution of the substance of hair and reduced to a powder, substantially as specified.

445,212. KNIFE AND PENCIL SHARPENER. JAY H. WEST, Chicago, Ill. Filed Mar. 15, 1890. Serial No. 344,063. (No model.)



Claim.—1. The combination, with a holder having a longitudinal groove therein, of a key having a blade of a width corresponding to that of said groove, within which it fits.

2. The combination, with a holder having a longitudinal groove therein, the side walls of which are undercut, of a key having a blade of a width corresponding to that of said groove, and having its longitudinal side edges beveled, so as to fit within the same, as set forth.

3. The combination, with a holder having a longitudinal groove therein of a width slightly greater at one end than at the other, of a key having a corresponding width to the same and slightly tapering toward its outer end, so as to fit within the same, as set forth.

4. The combination, with a holder having a longitudinal groove therein of a width slightly greater at one end than at the other and having its side walls undercut, of a key having a blade, the longitudinal side edges of which are beveled, and which is slightly tapered so as to correspond to the width of said groove, so as to fit within the same, as set forth.

5. The combination, with a holder A, having a longitudinal groove *a* on each side, of the key B, having one end bifurcated, so as to provide two blades of dimensions corresponding to those of the grooves and separated such a distance apart that the part of the holder between grooves *a a* can enter between them, so as to fit within the same, as set forth.

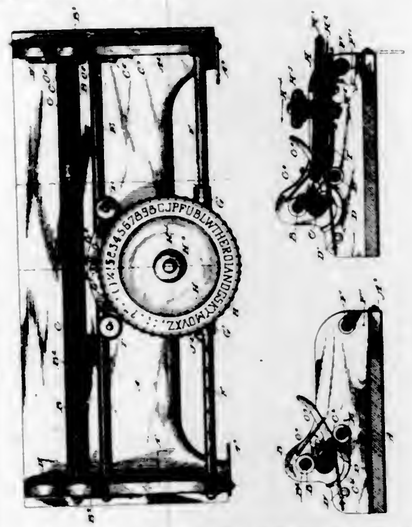
6. The combination, with a holder A, having a longitudinal groove on opposite sides thereof, the side walls of which are undercut, of a key having one end bifurcated, so as to provide two blades of dimensions corresponding to those of the grooves, having their longitudinal side edges beveled and separated such a distance apart that the part of the holder between grooves *a a* can pass between them, so as to fit within the same, as set forth.

7. The combination, with a holder having a longitudinal groove therein, and a strip of emery-paper or similar fabric having its side edges downturned to reduce it to the width of said groove, of a key having a blade of a width corresponding to that of said groove into which it enters, so as to fit within the same, as set forth.

445,218. TYPE-WRITING MACHINE. RUEL W. WHITNEY, San Francisco, Cal. Filed May 21, 1889. Serial No. 311,559. (No model.)

Claim.—1. A type-carriage bearing a type-wheel provided with types and corresponding pins set radially in the offset below the type, combined with a slotted paper-flattener attached to the front of the carriage, a bearing-plate, and a guide carried by said plate and provided with an opening for the reception of said pins, substantially as specified.

2. A type-carriage having a type-wheel provided with types and corresponding radial pins terminating within the periphery of the wheel and in an offset below the type, in combination with a paper-flattener having resilient portions, and a guide attached to the front of said carriage and provided with an opening for the passage of said pins, substantially as specified.



3. A type-carriage bearing a type-wheel provided with types and corresponding pins set radially, combined with a bearing-plate G and a guide upon said bearing-plate, and comprising two lugs separated by a narrow longitudinal passage opening toward the operator in a flaring entrance, substantially as described.

4. A type-carriage bearing a type-wheel provided with types and corresponding pins set radially, combined with a slotted bearing-plate provided with a paper-flattener having springing risers, substantially as described.

5. In a type-writer, a rack-bar, and a recessed carriage bearing a sleeve loosely surrounding said bar, in combination with a type-wheel borne upon said carriage and sliding back and forth upon the same in said recess, a plate arranged in the recess of the carriage, and a pivoted pawl on said plate, the end of which is adapted to engage with the teeth of said rack, substantially as specified.

6. In a type-writer, a rack-bar, and a carriage bearing a sleeve loosely surrounding said bar, in combination with a type-wheel mounted upon said carriage and sliding back and forth thereupon at right angles to the travel of the carriage, and a pawl pivoted beneath the type-wheel and having its end in engagement with the teeth of said rack, substantially as specified.

7. A paper-holder, a rack-bar, and an intermediate support, in combination with a carriage having a sleeve loosely surrounding said rack-bar, a slot in said carriage, the forward end of said carriage resting upon said intermediate support, a type-wheel having a guide-plate adapted to slide in said slot, and a pawl pivoted to said plate and having its end in engagement with the teeth of said rack, substantially as specified.

8. In a type-writer, a rack-bar and a carriage provided with a sleeve loosely surrounding said bar, said sleeve having a recess, in combination with a type-wheel sliding back and forth on said carriage at right angles to the travel of the carriage, a pawl pivoted beneath said wheel, and a spring bearing upon said pawl and tending to keep its end in engagement with the teeth of said rack, substantially as specified.

9. In combination with the paper-holder of a type-writer, a type-wheel reciprocating in front of said holder, and rotatable also, and resilient arms attached to said wheel and bearing ink-rollers turning in contact with the types on said wheel, substantially as specified.

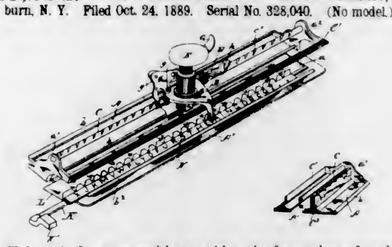
10. In combination with a paper-roller and the side brackets in which it is journaled, said brackets having vertically-elongated slots over said roller, a top roller borne in said slots and provided with elastic contact-pieces and bearing upon the top of said paper-roller, and springs at the sides of said brackets bearing upon the outer ends of said top roller, substantially as specified.

11. In a type-writer, a type-carriage horizontally disposed and having a slot, in combination with a type-wheel, a guide-plate sliding in said slot, and a cross-piece projecting across said slot upon the pivot of the wheel and holding the wheel to the carriage, substantially as specified.

12. In combination with the type-carriage of a type-writer, a pulley at the left of the same, and an elastic cord attached to the carriage running over said pulley, concealed within a stationary portion of the base, and attached at the right of said carriage, substantially as specified.

13. In combination with the paper-holder of a type-writer, a type-wheel reciprocating in front of said holder and rotatable on the vertical axis, the guide-plate, the arms secured to said guide-plate, and ink-rollers carried by the free end of said arms and turning in contact with the types of the type-wheel, substantially as specified.

445,214. TYPE-WRITING MACHINE. ALONZO WOODRUFF, Auburn, N. Y. Filed Oct. 24, 1889. Serial No. 328,040. (No model.)



Claim.—1. In a type-writing machine, the frame thereof made in the form of an open rectangle, or having the open center, as at *a*, in combination with the longitudinally-adjustable flexible type-plate projecting over said opening, the independent laterally-moving plunger supported above said type-plate and over said opening, and the plunger-carriage and its supporting notched or toothed bar, all for the purpose and substantially as described.

2. The combination, in a machine for printing on stationary flat surfaces, of an open rectangular frame, a laterally-moving carriage and plunger, a type-carrying plate independently adjustable longitudinally relatively to said carriage and frame, a flexible type-plate carrying the type, secured to and moving with said adjustable carrying-bar and overhanging the opening *a* of the frame, and the notched or toothed bar supporting the plunger-carriage and its mechanism, substantially as described.

3. The combination, with the frame, of an adjustable type-carrying bar provided with the flexible type-plate, the type on said plate, and the interposed supporting-springs secured to and moving with said carrying-bar.

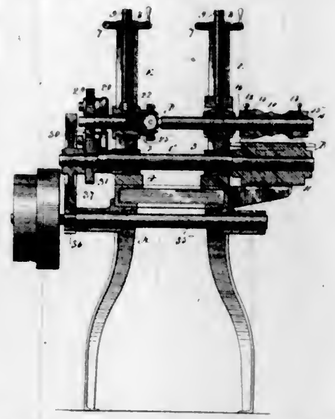
4. The combination, with the machine-frame provided with the central rectangular aperture, of the laterally-moving plunger-carriage mounted and traveling on the notched or serrated bar, a plunger mounted in said carriage, pawls connected therewith and operated thereby to engage the serrated bar and impart motion to said carriage, the independently-moving longitudinally-adjustable type-plate overhanging said central aperture, and the inking-pads connected to and moving laterally with the plunger-carriage, substantially as described.

5. In a machine for printing on stationary flat surfaces, the combination, with the machine-frame provided with the open center, of the laterally-moving plunger-carriage, a plunger mounted on said carriage and moving through a perforation therein, an independent longitudinally-adjustable flexible type-plate overlying said open center of the frame, a type indicator-bar moving with said type-plate, a pin or finger on said plunger, a toothed plate attached to and moving with the type-plate for engaging said finger for giving proper position to the type, and an indicator-finger attached to said carriage and overlying the type indicator-bar, substantially as described.

6. In a machine for printing on flat stationary surfaces, the frame thereof made in the form of an open rectangle having a central aperture, in combination with a laterally-movable plunger-carriage, the plunger mounted therein and movable vertically relatively thereto, a longitudinally-adjustable independently-moving flexible type-plate overlying said central aperture, the serrated bar on which said plunger-carriage moves, the pawl and lever pivoted to said carriage for moving it, and the pin *e'* on the plunger for operating said pawl and lever, substantially as described.

7. In a printing-machine, the combination, with an open rectangular frame, of the laterally-movable plunger-carriage, the plunger mounted therein and vertically movable relatively thereto, the inking-pads moving with said carriage and arranged on either side of the path of the plunger, a longitudinally-adjustable flexible type-plate moving independently of the plunger-carriage, a type indicator-plate adjustable with said type-plate, an index-finger on the plunger-carriage, and means, substantially as described, for automatically moving said carriage laterally.

445,215. MOLDING-MACHINE. WILLIAM ZOELLER, Chicago, Ill. Filed July 1, 1890. Serial No. 357,380. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, in a molding-machine, of the two standards or housings, the lower horizontally-arranged arbor C, extended at one end beyond the pair of standards or housings and carrying upon its extended end a suitable roll or die, the upper jointed arbor D, composed of a section 19, having its inner end portion extended between the two standards or housings and its outer end portion provided with a suitable roll or die and extended beyond the pair of standards or housings, and a section 20, supported in a vertically-adjustable box and connected with the inner end of the arbor-section 19 by a single universal joint at a point between the standards or housings, and a rocking bearing supporting the arbor-section 19 and pivoted to a vertically-adjustable box, so as to have a free rocking action independent of said box during the vertical movement of either of the two boxes in their allotted standards or housings.

2. The combination, substantially as hereinbefore set forth, of a rotary arbor for the lower die or roll and a rotary jointed arbor for the upper die or roll, each section of said upper jointed arbor being supported in vertically-adjustable bearings and one of said sections being provided with expansion-gearing, whereby the integrity of the power-transmitting connection for driving said adjustable jointed arbor will always be preserved.

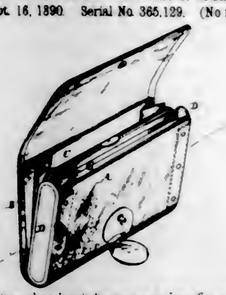
3. The combination, substantially as hereinbefore set forth, of a rotary arbor for the lower die or roll, the rotary jointed adjustable arbor for the upper die or roll, vertically-adjustable boxes for the sections of the jointed arbor, one of the said boxes being provided with a pivoted bearing permitting the tilting of one section of said jointed arbor, the other section being provided with expansion-gearing for the purpose described.

4. The combination, substantially as hereinbefore set forth, of a rotary arbor for the lower die or roll, a rotary jointed arbor for the upper die or roll, adjustable boxes in which the sections of the jointed arbor are supported, one of said boxes being provided with a pivoted bearing permitting the tilting of one section of said jointed arbor, the other section being provided with expansion-gearing for the purpose described, housings in which the said boxes are arranged, and means, substantially as described, mounted upon said housings and connected with said boxes, for adjusting the latter.

5. The combination, substantially as hereinbefore set forth, of a rotary arbor for the lower die or roll, a rotary arbor for the upper die or roll, vertically-adjustable boxes carrying the arbor for the upper die or roll, a pair of housings for said boxes, said arbors being extended beyond the housings and provided on their extended ends with dies or rolls in co-operative relationship to the table, said dies and rolls being removably secured to said arbors, for the purpose described.

6. The combination, substantially as hereinbefore set forth, in a molding-machine, of the arbors provided with suitable dies or rolls, and the two-part table B, arranged to provide space between the opposing ends of its sections for a die or roll on the lower arbor, and having its said sections adjustably supported so that they can be adjusted to vary the width of said space in conformity with the size of die or roll employed on the lower arbor.

445,216. POCKET-BOOK. ADOLPHUS Y. ANDREWS, Philadelphia, Pa. Filed Sept. 16, 1890. Serial No. 365,129. (No model.)



Claim.—1. A pocket-book having a series of expansible compartments, an outer covering, and end guard-pieces arranged between the edges of said outer covering and extending over and covering the edges of said expansible compartments when the pocket-book is closed, but permitting the expansion of said compartments beyond the end pieces in opening or expanding the pocket-book.

2. A pocket-book having the adjacent side edges of its outer portion separate one from the other and provided with guards carried by one of said adjacent side edges and extending toward the other to close the space between said edges.

3. A pocket-book having the adjacent side edges of its outer portion separate one from the other and provided with guards carried by one of said adjacent side edges and extending toward the other to close the space between said edges, said guard consisting of metallic pieces covered with leather.

4. A pocket-book having a central compartment, a series of expansible money-compartments adjacent thereto, and end-guard pieces of greater width than the width of said central compartment arranged on the ends of the pocket-book between the edges of the outer covering and extending over the edges of said expansible money-compartments, so as to completely close the ends of the pocket-book.

445,217. THERMAL CUT-OUT. ALBERT BARRETT, Kansas City, Mo. Filed Dec. 5, 1890. Serial No. 373,670. (No model.)



Claim.—1. A thermal protector for an electric circuit and apparatus included therein, comprising a ball or mass of material solid and hard at a normal temperature, but capable of fusing or softening when heated, a loop or hook having one end embedded in the said mass, a fixed ring or bracket support for the said mass and its dependent hook, an attenuated and relatively fragile section of circuit-conductor extending between terminals and having a portion of its length coiled within the substance of said heat-responsive mass and adapted to serve as a heat-concentrator therefor, and a power device, such as a spring or weight, normally engaged and supported by the said loop and held in tension thereby and adapted to break the attennated conductor when freed by the development of heat in the embedded coil-section of said conductor, substantially as described.

2. In a thermal protector for electric circuits, an attenuated and relatively fragile section of circuit-conductor, a portion of which is coiled round the shank of a loop-support and embedded within a mass or ball of material adapted to become plastic when warmed, combined with a rigid support for said mass, and a spring engaged by said loop and normally held in tension thereby, but adapted to overcome the same and to tear the said loop and the coils secured thereto from the heat-responsive mass on the passage of an unduly strong current through the said coils.

3. The combination, in a thermal-protector cut-out, of a section of attenuated and relatively fragile circuit-conductor having a portion of its length coiled within a ball or mass of material ordinarily solid and hard, but capable of becoming plastic when warmed, a loop or hook having one end attached to the fragile conductor-coils within the heat-responsive mass and depending therefrom, and a strong spring engaged by said loop and adapted to pull the same away and to exercise its power on the fragile conductor when the said heat-responsive mass is softened, substantially as described.

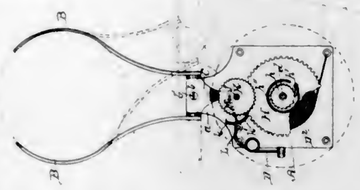
4. The combination, with a mass or ball of easily-fusible material and a link of fine wire forming a portion of an electric circuit, a portion of the length of said fine wire being coiled within said mass, of a strong spring or its equivalent attached to the said fine wire, but normally held in tension away therefrom by a support sustained by said fusible mass and adapted when released by the softening of said mass to exercise its full power on said fine wire and to disrupt the same.

5. The combination, in a thermal protector substantially as hereinbefore described, of a non-conducting foundation or base-plate, meta armor-strips therefor secured round the two ends, respectively, binding-screw terminals, one for each metal end strip, a strong spring secured to the base-plate by one arm terminating in an annular bracket, the other arm being terminated by a hook and adapted when unconstrained to separate itself widely from the first, a ball or mass of wax-like material sufficiently large to rest on the said annular bracket, a loop depending from said ball through said bracket adapted to engage the spring-arm-hook terminal and to support the same in tension, and a section of fine wire of relatively high resistance uniting the two binding-screw terminals and having a portion of its length coiled round the shank of said loop and embedded within the said wax-like mass, substantially as and for the purpose specified.

6. In a thermal protecting device or circuit-breaker, a detachable slide comprising in a single compound attachment a non-conducting foundation-plate armed at each end with metal strips supporting wire-terminals, a fine and fragile section of insulated wire uniting said terminals, a portion of said wire being coiled within a mass of wax or like material, a spring-supporting loop attached within said mass to said coils, and a spring engaged by said loop and tending to pull the same away from said mass and to thereby break the said fragile wire, combined with spring jack or jaws suitably mounted, forming associated terminals of the circuit to be protected, and adapted, respectively, to receive and to maintain frictional contact with the metal strips of the said detachable slide for the purpose of including the said fragile section of conductor in the circuit to be protected, substantially as hereinbefore described.

7. The combination, in a thermal protecting device, of a section of fine insulated wire of relatively high resistance, forming part of the circuit to be protected, and having part of its length coiled up within a mass of wax or like material becoming plastic when warmed, a strong spring device attached to and tending to exercise when in tension a breaking strain on said fine wire, and a loop-support engaging the said spring, having its fixed end also embedded in said wax-like mass, and thereby taking the tension of said spring normally from said fine wire, substantially as described.

445,218. ALARM ATTACHMENT FOR DOOR-KNOBS. THOMAS BRADEN, Des Moines, Iowa. Filed May 29, 1890. Serial No. 353,526. (No model.)

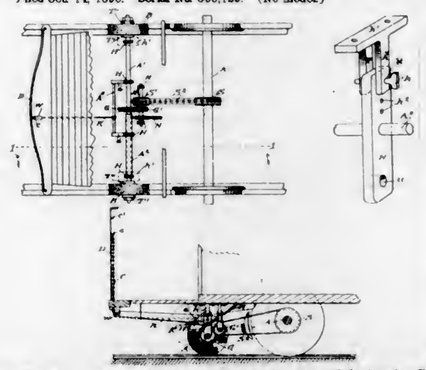


Claim.—1. In an alarm attachment for door-knobs, a case or frame adapted to support and carry a bell and striker and operative mechanism having an upward projection at its top and center, a detent or stop pivoted to the top of said frame, and a knob-clasping device fixed to said detent or stop, arranged and combined to operate in the manner set forth, for the purposes stated.

2. An improved alarm attachment for door-knobs, consisting of a frame or case having a detent or stop pivoted to its top portion and a knob-clasping device fixed to said detent or stop, a bell and striker, and mechanism for operating the striker, attached to and carried by said case or frame, and combined with said detent or stop to operate in the manner set forth, for the purposes stated.

3. The frame A, having an integral projection *a*, the stop C, pivoted to said projection, the spring-arms B, fixed to said stop, the shafts *d* and *d'*, and the gong or bell E, the spring D^2, the toothed wheel H, fixed to the shaft *d*, the ratchet-wheel *h*, fixed to the shaft *d'*, the shaft *j*, having a fixed pinion or lantern wheel J, the rock-shaft L, carrying the hammer D, pawls *k* and *k'*, and a tang or extension M, arranged and combined substantially as shown and described, for the purposes specified.

445,219. TRACK-SWEEPER. WILLIAM H. BRIGGS, Albany, N. Y. Filed Oct. 14, 1890. Serial No. 368,129. (No model.)

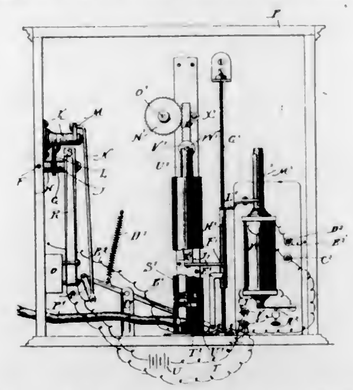


Claim.—1. In a track-sweeper, the combination of the brushes B, the shafts A' and A^3, and means of actuating the same, with the vertically-adjustable supports H, as hereinbefore described and set forth.

2. In a track-sweeper, the combination of the brushes B, the shafts A' and A^3, and means of actuating the same, and the vertically-adjustable pivoted supports H, with the spring N, as and for the purpose hereinbefore described and set forth.

3. In a track-sweeper, the combination of the brushes B, the shafts A' and A^3, and means of actuating the same, the vertically-adjustable pivoted supports H, and the spring N, with the rod R and chain C, as and for the purpose hereinbefore described and set forth.

445,220. COIN-CONTROLLED ELECTRIC COIL. EDWARD J. COLBY, Chicago, Ill. Filed Oct. 17, 1889. Serial No. 327,341. (No model.)



Claim.—1. In an electric testing apparatus, the combination of the case with a shocking-coil therein, handles adapted to be brought into circuit with such coil, and a movable thumb-piece operatively connected with the core of the coil, and an indicating-dial whose hand is operatively connected with such core or thumb-piece, so that by grasping the handles the circuit may be closed through the body and by operating the thumb-piece the current may be varied and indicated.

2. In an electric testing apparatus, the combination of a case with the handle D and thumb-piece E and the circuit-closing strips S and R, connected with the circuit, the rod F, pin G thereon, and the arms M and L on the piece K, substantially as and for the purpose shown and described.

3. In an electric testing-machine, the combination of a case with exterior handles and a thumb-piece with its reciprocating rod and induction-coil, with a movable core, a series of connecting-bars from the movable core to such thumb-piece, so that by pushing the same in the core is reciprocated to increase the strength of the current, and a circuit-closer connected with and operated by such thumb-piece.

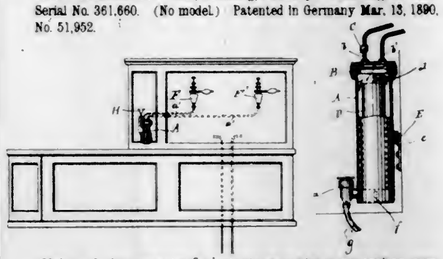
4. In an electric testing-machine, the combination of a case with exterior handles and a thumb-piece, with its reciprocating rod and induction-coil, with a movable core, a series of connecting-bars from the movable core to such thumb-piece, so that by pushing the same in the core is reciprocated to increase the strength of the current, and a circuit-closer connected with and operated by such thumb-piece, and an indicating-dial also connected with such thumb-piece, so as that when the thumb-piece is pushed in the circuit is closed, and as it is pushed in the strength of current is increased and indicated on the dial.

445,221. FEED-RACK. JOHN C. HURST, Holton, Kans. Filed Sept. 27, 1886. Serial No. 214,642. (No model.)



Claim.—In a portable feed-rack, the large open-bottom base A, composed of slats and corner-posts, as described, and provided on each side with mangers B, each separated from the other by slats *b'*, the mangers on each side covered by a lid E, hinged to the receptacle C and adapted to be held open by a hook, and the receptacle C, placed centrally over the base and composed of slats of which the lowest is the largest, said slats being secured to corner-posts, its top covered with the hinged and slanting lids D, and having in its side a door F, the several parts constructed, arranged, and all combined in the manner and for the purposes set forth.

445,222. APPARATUS FOR INSTANTANEOUS STEAM-GENERATION. HERMANN F. C. HUSS, Bernburg, Germany. Filed Aug. 11, 1890. Serial No. 361,660. (No model.) Patented in Germany Mar. 13, 1890, No. 51,952.



Claim.—1. An apparatus for instantaneous steam-generation, comprising a cylinder closed at its bottom and provided with a feed-pipe, and having a removable head-piece provided with one or more discharge or exhaust pipes, and a removable metallic block or bolt adapted to be inserted within said cylinder, whereby steam is quickly generated independently of the location of the fire by heating said bolt or block before its insertion into the cylinder and admitting water in contact with the bolt or block within the cylinder, substantially as and for the purpose set forth.

2. The combination, with a cylinder closed at its bottom and provided at or near its lower end with a feed-pipe and interiorly on its bottom with a stud, and a head-piece removably secured to said cylinder and provided with two discharge-pipes, one of which is fitted with a cock, of a bolt or block of metal of a size adapting it to fit within said cylinder and provided with a grooved or drilled projection at one end, substantially as and for the purpose set forth.

3. The combination, with a cylinder closed at its bottom and provided with a feed-pipe, and with a stud on its exterior surface, and a head-piece removably secured to said cylinder and provided with a discharge pipe or pipes, of a bolt or block of metal adapted to fit within said cylinder and a fixed bearing, as *c*, co-operating with the stud on the exterior surface of the cylinder, substantially as set forth.

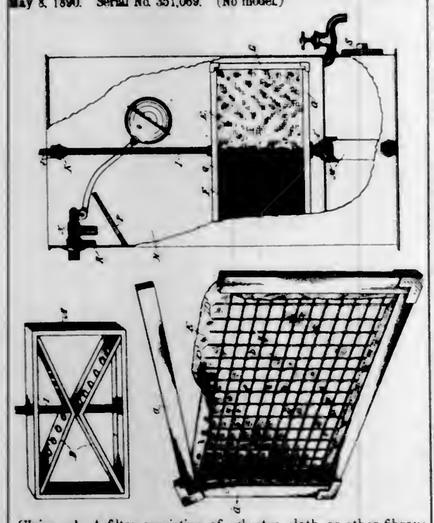
4. The combination, with a cylinder closed at its bottom and pro-

vided with a feed-pipe, a head-piece removably secured to said cylinder and provided with a discharge-pipe, and a removable metal bolt or block adapted to fit within said cylinder, of a beer-conduit and its draft-cock and rubber tubing connecting the discharge-pipe of the cylinder with said draft-cock, substantially as set forth.

5. The combination, with a cylinder closed at its bottom and provided at or near its lower end with a feed-pipe, a head-piece removably secured to said cylinder and provided with a discharge-pipe, and a metal bolt or block adapted to fit within the cylinder, of a water-receptacle arranged in proper relation to the cylinder, connected at its bottom with the aforementioned feed-pipe, and provided at its top with a funnel, substantially as set forth.

6. The combination, with a cylinder closed at its bottom and provided at or near its lower end with a valved feed-pipe, a head-piece removably secured to said cylinder and provided with a discharge-pipe, and a metal bolt or block adapted to fit within the cylinder, of a water-receptacle arranged in proper relation to the cylinder and connected at its bottom with the aforementioned feed-pipe, a pipe connected with the upper end of said cylinder and terminating within the water-receptacle near its top, and a funnel provided with a cock and inserted within the upper end of the water-receptacle, substantially as and for the purpose set forth.

445,223. FILTER. EDWARD M. KNIGHT, San Francisco, Cal. Filed May 8, 1890. Serial No. 351,069. (No model.)



Claim.—1. A filter consisting of asbestus cloth or other fibrous material, an exterior coating of filtering medium spread upon the cloth, and an interior rigid supporting-screen over which the fibrous material is stretched and by which it is prevented from sagging, said inner supporting-screen having projecting prongs over which the edges of the fibrous material are passed, whereby said material is secured, substantially as herein described.

2. In a filter, the foraminous plate or screen forming an interior rigid support for the filter-bed, a filter-bed composed of asbestus cloth or other fibrous material stretched over the exterior of the screen and having the edges projecting and folded over the edges of the screen, and folded metal plates adapted to clasp the edges of the cloth and the screen, said plates being soldered or secured so as to retain the screen and cloth and form a tight joint between the edges thereof, substantially as herein described.

3. A filter consisting of asbestus cloth or other fibrous material and an exterior coating of filtering medium in the form of paste spread upon the cloth, a rigid interior screen forming a back or support for the filter-bed, over the edges of which the cloth is folded, clamping-strips fitting over the folded edges of the cloth and soldered or secured so as to retain it stretched over the screen, and supplemental corner pieces or plates fitted upon the angles of the filter-frame, substantially as herein described.

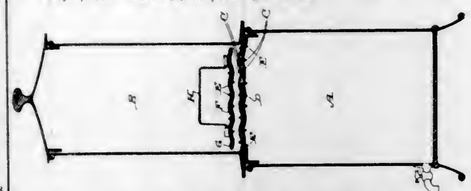
4. In a filter, the exterior frame having the filtering sides, the supporting-screens, and the diagonal plates upon which the screens rest, in combination with the tubular stay extending vertically through the filter-frame and diagonal plates and having the adjusting-collars, whereby the stay is connected with both top and bottom of the frame and the central plates, so that the filter-frame may be lifted without twisting it out of shape, substantially as herein described.

5. In a filter, the filter-frame having the diagonal and perforated bracing-plates, the sides formed of screens supported upon the edges of the interior plates and hermetically secured to the edges of the frame, a fibrous filter-bed stretched over said screen, having its edges secured thereto, and a coating of filtering material applied to the exterior of the fibrous cloth in the form of a paste, in combination with an exterior casing for containing unfiltered water within which the filter-frame is submerged, and a tubular stay extending through the filter-frame from top to bottom, having perforations in the lower part within the filter-frame, through which water may flow from the interior of the filter-frame into the tube, a ground or rubber joint exterior to the lower part of the filter-frame, through which the filtered water passes out, and a transverse brace fixed across the upper part of the casing and having a locking device which engages the upper end of the tubular stay, whereby the filter-frame is prevented from rising and the joint at the lower end is kept tight, substantially as herein described.

6. A filter consisting of an exterior casing, one or more filter-frames having the filtering sides, interior screen-supports for said sides, and the plates upon which the screens are supported, a tubular stay extending through each of the filters, having a ground or rubber joint at the lower end, by which connection is made with the reservoir or receiver of the filtered water, openings in said tube near the bottom and interior of the filter-frame, through which water escapes therefrom into the tube, and openings in the upper part within the filter-frame, through which air may be admitted from the upper end of the tube to aerate the filtered water, a transverse brace fixed in the upper part of the exterior casing, and adjusting nuts or collars fitted upon the tubular stay, so as to engage the brace and hold the filter-frames in place within the casing, substantially as herein described.

7. A filter consisting of an exterior casing, one or more filter-frames having the filtering sides through which the water passes from the exterior casing to the interior of the filter-frames, and a pipe or passage through which the water escapes from the interior of said filter-frames, in combination with a reservoir into which said pipes deliver the filtered water, a ground or rubber joint between the unfiltered and filtered water reservoirs, and a strenghtening stay or support within the filtered-water reservoir, upon which the ground-joint is fixed and supported, substantially as herein described.

445,224. FILTER. EDWARD M. KNIGHT, San Francisco, Cal. Filed July 1, 1890. Serial No. 357,394. (No model.)



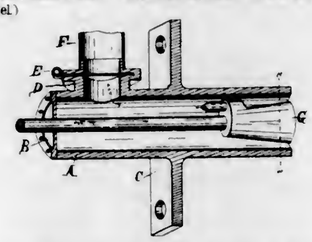
Claim.—1 In a filter having a supply and delivery chamber, a fixed filtering-screen, and a removable filtering-screen, said fixed and removable screens each consisting of an upper and lower foraminous plate and an intermediate fibrous material and a flange or rim bent over the edges of the upper and lower plates and fibrous material and inclosing said edges to prevent leakage, substantially as herein described.

2. A filtering apparatus consisting of the supply and delivery chambers, a filter composed of wire screens having a fibrous material clamped between them and a surrounding ring or flange, whereby the parts are held together and leakage around the edges is prevented, a coating of filtering material spread upon the upper surface and in the interstices of the wire-cloth, and a removable screen or guard above the filter, substantially as herein described.

3. A filtering apparatus consisting of the supply and delivery chambers, the intermediate filter consisting of disks of wire-cloth with an intermediate fibrous material compressed between them, a removable screen consisting of similar disks of wire-cloth with intermediate fibrous material, and a rim or flange around the periphery of the disks, whereby the whole is clamped together, and a coating of filtering material in the form of a paste spread upon the upper surface of the lower screen or filter, substantially as herein described.

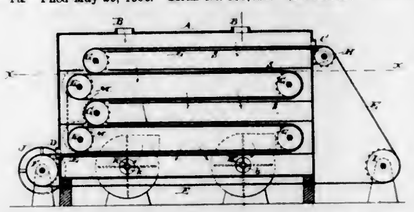
4. In a filter having a supply-chamber, a chamber below the same made conical in form and having a discharge-pipe leading therefrom, fixed and removable screens above the conical chamber, and each consisting of a fibrous material compressed between an upper and lower foraminous disk, and a clamping-flange surrounding the edges of both disks and fibrous material, whereby leakage at said edges is prevented, substantially as herein described.

445,225. HYDROCARBON VAPORIZER AND BURNER. THOMAS A. LATHROP, Canton, Ohio. Filed Sept. 15, 1890. Serial No. 364,969. (No model.)



Claim.—The combination, with an inclosing tube, of an air-duct, communicating therewith, an oil-supply pipe projecting into said tube, and a spreader secured to said pipe and provided with a chambered portion which communicates with said oil-pipe, and an outlet to said chambered portion, said outlet directing the oil and vapor in a direction opposite that of its entrance into said hollowed chamber, and forming with said oil-pipe and hollowed chamber a continuous circulating passage, substantially as set forth.

445,226. DRYING-MACHINE. JOHN H. LORIMER, Philadelphia, Pa. Filed May 26, 1890. Serial No. 353,127. (No model.)



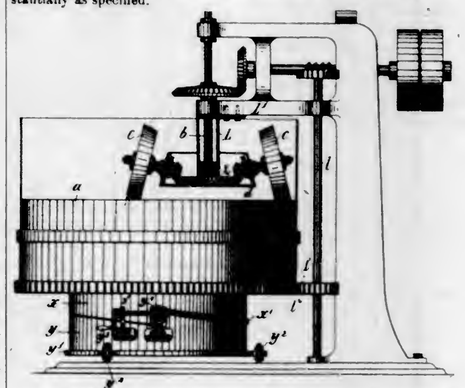
Claim.—1. In a drying-machine, the combination of a closed chamber provided with apertures for the admission of a drying medium, such as air or gas, with exhausters or fans for creating a current of air or drying-gas through said machine in a vertical direction, an endless apron of open-work passing from the outside of the drying-chamber to the interior thereof through an aperture, thence back and forth through said drying-chamber and to the exterior thereof through a second aperture, guide-wheels for said apron, one or more endless aprons located wholly within the drying-chamber and moving in close contact with said first-mentioned apron, and guide-wheels for said last-mentioned apron or aprons, the said aprons passing backward and forward through the drying-chamber directly in the path of the drying gases or air.

2. The combination of a drying-chamber A, having one or more apertures for the admission of air or gases, one or more fans or exhausters K, for causing a circulation of the drying air or gas, located at or near the opposite portion of the drying-chamber, an endless apron E, of open-work, passing backward and forward through the drying-chamber, guide-wheels G within the drying-chamber for guiding the said endless apron, guide-wheels H, I, and F, exterior to the drying-chamber, for guiding the said apron exterior to said drying-chamber for receiving and delivering the material being dried, one or more endless aprons M, arranged to travel in close juxtaposition with the endless apron E at points wholly within the drying-chamber, and one or more guide-rollers L for said aprons M, for bringing the said aprons M beyond the apron E, where it passes over the adjacent guide-wheels G, whereby said aprons M may receive and support the material being dried as it is conveyed over and around the last-mentioned guide-wheels G.

445,227. GRINDING-MILL. ANDREAS MAISCH, Munich, Germany. Filed Sept. 27, 1888. Serial No. 286,512. (No model.)

Claim.—1. The combination of bed-stone *a*, having central shaft *a'* and flange b^3, with shaft *l* and gear-wheel *l'*, that engages said flange, a pair of cylinders *x y*, having inclined contact-edges, a rack *x'* on periphery of cylinder *x*, a crank-shaft y^4, having worm y^4, engaging said rack, and with a hub a^2 in cylinder *y* for receiving shaft *a'*, substantially as specified.

2. The combination of bed-stone *a* with cross-beam L', sleeve L, secured thereto and placed eccentrically to the bed-stone, and with bevel-wheel Z, secured to the sleeve, a shaft *b*, passing through the sleeve, a drum *d*, secured to the shaft, and runners C, having spindles *e*, that project into the drum and are intergeared with wheel Z, substantially as specified.

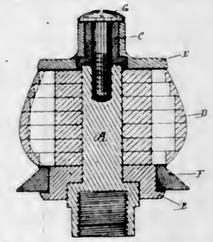


3. The combination of suspended sleeve L, carrying bevel-wheel Z, with inclosed shaft *b*, carrying drum *d*, and with runners C, having spindles *e*, that pass through the drum and are intergeared with wheel Z, and with the perforated disk S, lubricator S', nuts *k k'*, and chamber e^3 on spindles *e*, substantially as specified.

445,228. SELVAGE OF COTTON PILE GOODS. ROBERT MIDDLETON and HERBERT T. JONES, Manchester, England. Filed May 13, 1890. Serial No. 351,671. (No model.) Patented in England Feb. 28, 1890, No. 3,182.

Claim.—The combination, with a cotton pile fabric having a border of uncut material on which the pile is not raised, of a strip applied by adhesive material covering said border, enriching the appearance of the fabric and constituting an artificial selvage, substantially as set forth.

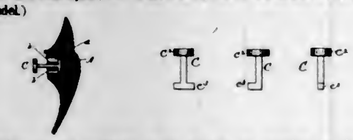
445,229. HEEL-TRIMMING TOOL. OSCAR L. NOBLE, Boston, Mass. Filed Mar. 13, 1886. Serial No. 195,164. (No model.)



Claim.—1. The improved tool for trimming heels, consisting of the cutter D, bushings B and C, guard E, and tread-rest F, combined together substantially as and for the purpose set forth.

2. The improved tool for trimming heels, consisting of the cutter D, bushings B and C, guard E, and tread-rest F, the tread-rest being a grooved ring loosely mounted on its bushing, substantially as and for the purpose set forth.

445,230. ARTIFICIAL TOOTH. ALFRED PAGE and SAMUEL S. BLOOM, Philadelphia, Pa. Filed Feb. 6, 1890. Serial No. 339,405. (No model.)



Claim.—1. An artificial tooth having an opening in the side thereof, and a strip or strips of platina extending about centrally across said opening, in combination with a pin having a stem provided with a projection on the inner end for engaging the strip or strips, as set forth.

2. The combination of an artificial tooth having an opening, as described, and provided with a pair of platina strips crossing such opening, with a space between them, with a pin having a T-head on its inner end for insertion between and beyond and in engagement with the strips by turning the pin, as set forth.

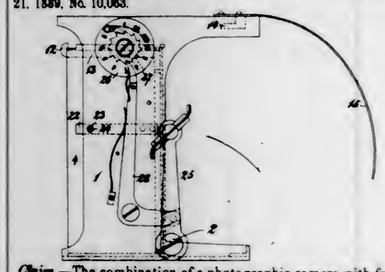
445,231. ARTIFICIAL TOOTH. ALFRED PAGE and SAMUEL S. BLOOM, Philadelphia, Pa. Original application filed Feb. 6, 1890, Serial No. 339,405. Divided and this application filed June 25, 1890. Serial No. 356,740. (No model.)



Claim.—1. The combination, in an artificial tooth having an opening in the side, of a strip set across said opening, and a pin having a bifurcated stem clamped upon the strip, as set forth.

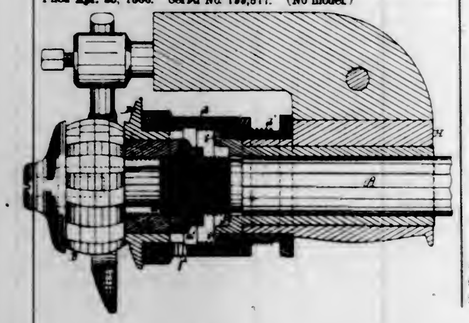
2. The combination, in an artificial tooth having an opening, as described, of a strip set across said opening, and a bicurcated pin having a recess in one limb for receiving the strip, as set forth.

445,232. PHOTOGRAPHIC APPARATUS. ORESTE PASQUARELLI, Torino, Italy, assignor to C. A. Steinheil Söhne, Munich, Germany. Filed Dec. 26, 1889. Serial No. 334,975. (No model.) Patented in Italy June 21, 1889, No. 10,063.



Claim.—The combination of a photographic camera with frame 1, a plate-holder 4, pivoted thereto, a locking-lever 19, hook 14, and spring 15, substantially as and for the purpose specified.

445,233. HEEL-TRIMMING MACHINE. CHARLES E. PHILLIPS, Rochester, N. Y., assignor to Homer Rogers, trustee, Boston, Mass. Filed Apr. 23, 1886. Serial No. 199,877. (No model.)

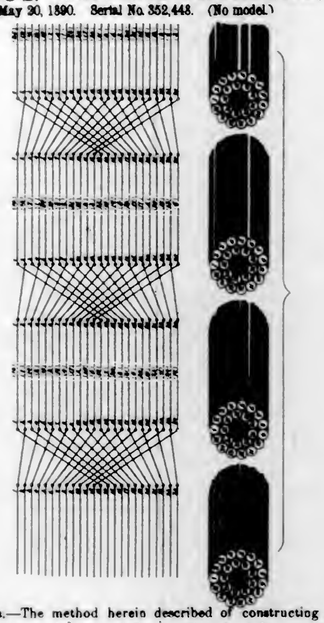


Claim.—1. In a heel-trimming machine, the tread-guide D and cutter B, combined with a nut d' and screw d', the nut d' having an arm d^3 to keep the nut from turning, substantially as and for the purpose set forth.

2. In a heel-trimming machine, the rotary tread-guide D, with its eccentric orifice d^3, in combination with cutter B, substantially as and for the purpose specified.

3. In a heel-trimming machine, cutter B, in combination with tread-guide D, a support therefor, means, substantially such as described, comprising nut d' and screw d', for moving the tread-guide toward and away from the end of the cutter, and means, substantially such as described, comprising set-screw f, for clamping tread-guide D to its support, the tread-guide being movable along and around said support, all substantially as and for the purpose set forth.

445,234. ELECTRIC CABLE. JOHN C. REILLY, Brooklyn, N. Y. Filed May 30, 1890. Serial No. 352,448. (No model.)



Claim.—The method herein described of constructing electric cables, which consists in insulating a series of conductors, arranging them in concentric rows, applying a suitable sheathing, dividing them into a series of longitudinal sections, arbitrarily designating the terminals of each conductor of each section in regular succession with consecutive numerals, and then connecting each conductor of one section to a conductor of the next succeeding section by the formula c b unless and until $c\,b$ exceeds m, when n is substituted for c, substantially as described.

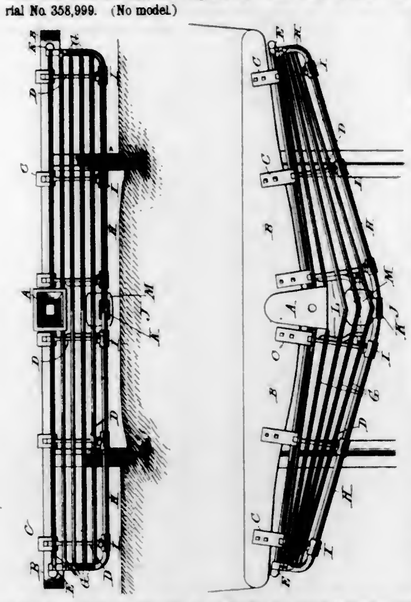
445,235. PULP-DIGESTER. GEORGE F. RUSSELL, Lawrence, Mass. Filed Oct. 18, 1890. Serial No. 368,558. (No model.)



Claim.—1. The improved pulp-digester herein described, having an outer shell A and a continuous lining or coat B of cement, as described, applied to the interior of the said shell, for the purpose set forth.

2. The improved pulp-digester herein described, having an outer shell A, a continuous lining or coat B of cement, substantially as described, applied to the interior of the said shell, and an inner lining of tiles C, all substantially as set forth.

445,236. GUARD FOR STREET-RAILWAY CARS. FRED W. WOOD and JOHN FOWLER, Los Angeles, Cal. Filed July 16, 1890. Serial No. 358,999. (No model.)



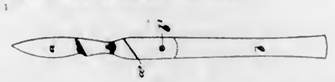
Claim.—1. The combination, in a fender or guard for street-railways, and especially cable roads, of the peculiarly-shaped hinged brackets C D and the cross-bars G, secured thereto, the sleeve or coupling K, and the wheel M, the said fender or guard being made in two parts joined together with the sleeve or coupling K and provided with the long spindled adjusting-wheel M, the whole guard being adapted to be placed on a car or dummy whose front is not straight and to conform closely to the angle of said car-front, and at the same time be capable of being lifted vertically to clear obstructions or adjust itself to the varying grades, all substantially as set forth in the drawings and specifications.

2. A fender or guard for street-cars, constructed in two parts and adapted to swing vertically and connected together by a sliding joint or sleeve K, as set forth.

3. The street-car guard or fender described, constructed in two parts, each comprising brackets C D and bars G and mounted upon axes arranged at an angle to each other, as set forth.

4. The combination, with the divergently-swinging sections of the guard, of the long spindled rubber-faced adjusting-wheel M, substantially as set forth.

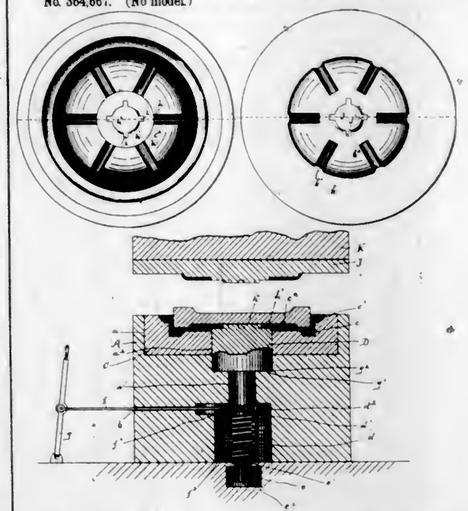
445,237. SCALPEL. SIDNEY YANKAUER, New York, N. Y. Filed Oct. 29, 1890. Serial No. 369,682. (No model.)



Claim.—1. A scalpel or surgical instrument consisting of a handle and blade correspondingly countersunk and provided with a diagonal joint, whereby the blade is rendered firm when attached to the handle, substantially as described.

2. A scalpel or surgical instrument consisting of the combination of a handle provided with a countersunk flange having its outer end cut diagonally across and its inner end provided with a circular groove, in combination with a blade having a countersunk flange provided with a circular outer end and a diagonal inner end, said inner end being also provided with a groove, whereby when said parts are united together a firm joint will be made, substantially as described.

445,238. MACHINERY FOR FORMING CAR-WHEELS. CLIFTON B. BEACH, Cleveland, Ohio. Original application filed Nov. 5, 1888, Serial No. 290,042. Divided and this application filed Sept. 11, 1890. Serial No. 364,667. (No model.)



Claim.—1. In car-wheel-forming machinery, a swaging-die provided with a central projected disk, substantially as set forth.

2. In car-wheel-forming machinery, a swaging-die provided with a central projected disk portion and an annular projected portion inclosing said projected disk portion, said disk portion projected in greater relief from the face of the die than said inclosing portion, substantially as set forth.

3. In car-wheel-forming machinery, a swaging-die provided with a central projected disk portion, a smooth outer annular portion, and an intermediate projected portion lying between said two former portions, said central projected disk portion projected in greater relief from the face of the die than the face of said intermediate projected portion, substantially as set forth.

4. In car-wheel-forming machinery, the combination of two swaging-dies, each provided with central projected disk portions, said disk portions registering with each other, substantially as set forth.

5. In machinery for forming car-wheels, the combination of two swaging-dies, the one die provided with a central projected disk portion and an annular projected portion inclosing said projected disk portion, said disk portion projected in greater relief from the face of the die than is said inclosing portion, the companion die provided with a central projected disk portion registering with the central projected disk portion of said die, substantially as set forth.

6. In machinery for forming car-wheels, the combination of two swaging-dies, the one die provided with a groove, a central projected disk portion, and an annular projected portion intermediate of the latter two, the height in relative relief of said latter projected portion being less than that of the disk portion, said annular projected portion provided with a series of radial receding portions, said companion die provided with a plain outer annular portion, a central projected disk portion, and an outer projected portion intermediate of the two, said central projected disk portion having greater relative height of relief from the face of the die than does said intermediate projected portion, substantially as set forth.

7. A swaging-die provided with a central projected disk vertically adjustable, substantially as set forth.

8. A swaging-die provided with a spring-pressed projected disk portion vertically adjustable, substantially as set forth.

9. A swaging-die provided with a central projected disk portion vertically adjustable and having a solid bearing, substantially as set forth.

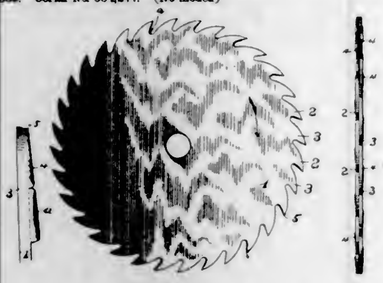
10. The combination, with a swaging-die provided with a spring-pressed central projected disk portion vertically adjustable, of a clutch engaging therewith, said disk portion having a solid bearing, substantially as set forth.

11. In machinery for forming car-wheels, the combination of an anvil-die provided with an annular groove and an opening, an ejector fitting within said opening and having its face flush with the surrounding face of the die, said ejector having a solid bearing, and a hammer-

die adapted to engage with said first die and ejector, substantially as set forth.

12. In machinery for forming car-wheels, the combination, with a die provided with an annular groove and an annular projected portion lying within said groove and in greater projection from the face of the die than is said groove, said die also provided with an opening, of an ejector fitting within said opening, the marginal portions of said ejector flush with the surrounding face of the die, substantially as set forth.

445,239. SAW. JOHN BOWLES, Washington, D. C. Filed Dec. 19, 1889. Serial No. 334,277. (No model.)



Claim.—1. A saw-tooth made integral with the saw-blade and having its inner end or base forced laterally of the blade or swaged, substantially as shown and described, and provided with a polishing-surface on one of its lateral faces, the swaged portion of the tooth and the planing-surface being situated at one side of the plane of the saw-blade or out of line therewith, substantially as and for the purpose described.

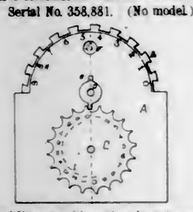
2. A saw-tooth having a planing and a polishing surface on one of the lateral faces thereof, the portion of the tooth below the planing-surface projecting slightly beyond the same to provide the smoothing and polishing surface, for the purpose described.

3. A saw-tooth having on one of its lateral faces a planing-surface and a smoothing and polishing surface, said smoothing and polishing surface being arranged interiorly of the planing-surface and inclined outwardly from plane of the saw-blade and extending backwardly from the planing-surface to the base of the tooth, substantially as described, for the purpose set forth.

4. A saw-tooth having on one of its lateral faces the inclined planing and polishing surfaces which extend from a point near the cutting-edge of the tooth to the base thereof, the polishing-surface being arranged interiorly of the planing-surface and substantially continuous with the same, substantially as and for the purpose described.

5. A saw-tooth having on one of its lateral faces a planing-surface and a compressing and polishing surface arranged interiorly of said planing-surface, substantially as described, for the purpose set forth.

445,240. ADDING-MACHINE. ROYAL CORBIN, Plattsburg, N. Y. Filed July 16, 1890. Serial No. 358,881. (No model.)



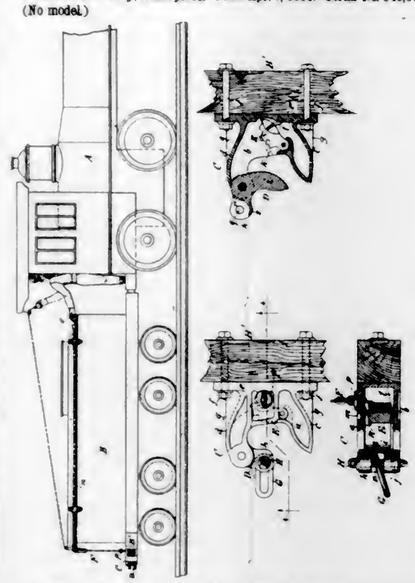
Claim.—1. In an adding-machine, the plate A, constructed of the rectangular portion and the semicircular portion, and having on the margin of the semicircular portion suitable numerals or characters, in combination with the units-wheel and the tens-wheel movably attached to opposite sides of said plate, and the intermediate tappet, substantially as described.

2. In an adding-machine, the combination, with the plate A, constructed as described, and having the three vertically-arranged openings, of the units-wheel B, attached to one side of said plate by means of an eyelet passing through the central opening thereof, a tappet attached to the other side of said plate by means of the same eyelet, and a tens-wheel having its bearing in the lower opening on the other side of the plate and adapted to be turned by the movement imparted to said units-wheel, substantially as set forth.

445,241. SAND-BLAST STENCIL. JOHN H. CROSKEY and DANIEL C. RIPLEY, Pittsburg, Pa., assignors to Ripley & Co., same place. Filed May 14, 1890. Serial No. 351,774. (No model.)

Claim.—The hereinbefore-described method of making stencils for sand-blasting, which consists in forming on an article of desired form an outline of the pattern to be made, covering the article and the applied pattern with a plastic or flexible covering, molding the covering to take the impression of the article and of the pattern, hardening the covering on the article, and then cutting out the stencil on the outlines impressed by said pattern, substantially as and for the purposes described.

445,242. CAR-COUPLING. OTTO FLOHR, Buffalo, N. Y., assignor to Charles A. Pooley, same place. Filed Apr. 7, 1890. Serial No. 346,868. (No model.)



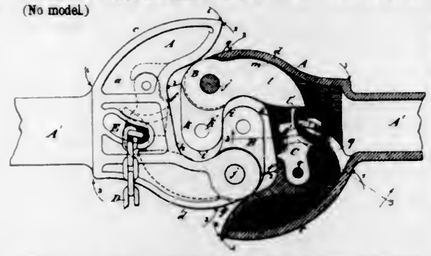
Claim.—1. In a car-coupler for locomotive-tenders, the combination, with the tender and a car-coupler secured thereto and consisting of a swinging coupling-jaw constructed to have a normal tendency to swing to the uncoupled position and a swinging pawl for locking said jaw in the coupled position, of a connection secured at one end to said pawl and adapted when pulled to move the latter and release said jaw, said connection extending from said pawl forward along the tender and terminating near the forward end thereof and within the reach of the engineer of a locomotive to which the tender may be attached, whereby by operating said connection the engineer can control said coupler without leaving his position.

2. In a car-coupler, the combination, with a swinging coupling-jaw and a swinging pawl for holding the latter in the coupled position, and an inclosing casing or draw-head within which said jaw and pawl are pivoted, said casing being constructed with a hole in its upper part, of a connection secured at one end within said casing to said pawl and extending thence through the hole in the top of said casing and adapted when pulled to operate said pawl, and a cover or stopper secured to said connection and constructed when said pawl is in the locked position to cover the hole in said casing, whereby when the coupling is in the locked position the entrance of dust within said casing through said hole is prevented by said cover.

3. In a car-coupler for locomotive-tenders, the tender and a car-coupler secured thereto, said coupler consisting of a swinging coupling-jaw constructed to have a normal tendency to swing to the uncoupled position and a swinging locking-pawl for locking said jaw in the coupled position, in combination with a chain secured at one end to said pawl and adapted when pulled to move the latter and release said jaw, said chain extending from said pawl forward along the tender, guided by suitable guides, and terminating near the forward end of the tender in a handle within the reach of the engineer of the locomotive to which the tender may be attached, substantially as set forth.

4. In a car-coupler for locomotive-tenders, the tender and a car-coupler secured thereto, said coupler consisting of a swinging coupling-jaw and a swinging locking-pawl for locking said jaw in the coupled position, in combination with a guide tube or pipe secured to and extending along the tender from a point above the coupling to a point at the forward end of the tender, and a chain secured at one end to said pawl and extending therefrom through said guide-tube and terminating outside of the front end of said guide-tube in an operating-handle, substantially as set forth.

445,243. CAR-COUPLING. OTTO FLOHR, Buffalo, N. Y., assignor to Charles A. Pooley, same place. Filed Apr. 7, 1890. Serial No. 346,992. (No model.)



Claim.—1. A car-coupler having a swinging coupling-jaw and a horizontally-swinging pawl for locking said jaw, in combination with an inclosing draw-head within which said jaw and pawl are pivoted, said head constructed with an internal curved flange constructed to embrace the pivoted end of said locking-pawl and serve as a re-enforce bearing therefor, whereby strains transmitted to said pawl are resisted by said flange.

2. In a car-coupler, the combination, with an inclosing draw-head, a horizontally-swinging coupling-jaw, and a horizontally-swinging pawl for locking the latter in the coupled position, of a chain or equivalent flexible connection attached to said pawl, said draw-head constructed with an elongated slot in its upper wall through which said chain passes out, said slot formed to uncover the path traversed by the point of attachment of said chain during the swinging of the pawl, whereby when said chain is pulled in order to unlock said pawl the tension exerted is transmitted directly to the pawl throughout its swinging movement.

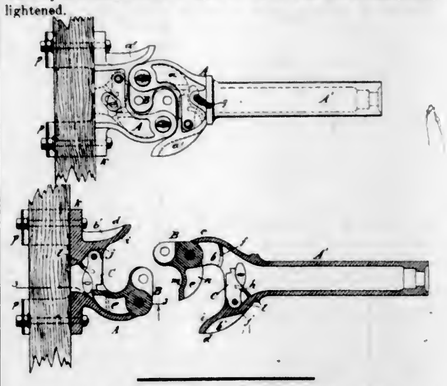
3. In a car-coupler, the combination, with the hollow draw-head A, having top and bottom walls and front and side walls and formed with an opening through its top, of the swinging coupling-jaw B, having arms *k* and *l*, and the swinging locking-pawl C, fulcrumed to the draw-head and constructed with stops *p* and *p'*, adapted to successively engage with the jaw and with a recess *s* on its upper side, the chain or connection D, secured to the pawl within said recess and passing out through said top opening, whereby the pawl may extend close to the top wall of the draw-head.

4. In a car-coupler, the combination, with the hollow draw-head A, having top and bottom walls and front and side walls of the shape shown and described, of the swinging coupling-jaw B, having arms *k* and *l*, and constructed on its under side with the inclines *n n*, the swinging locking-pawl C, fulcrumed to the draw-head and constructed with stops *p* and *p'*, adapted to successively engage with the jaw and with the recess *s* on its upper side, the chain or connection D, secured to the pawl at a point within the recess *s*, and adapted when pulled to swing the pawl, said draw-head A being constructed with top and bottom arc-shaped inclines *q* and *r*, arranged at different radial distances from the pivotal center of the pawl C above and below the pawl, whereby when the latter is swung it will be moved vertically by contact with such inclines, and the draw-head constructed with the re-enforcing flange F, engaging the fulcrumed end of the pawl C and adapted to receive the strains transmitted to the latter, all as and for the purpose set forth.

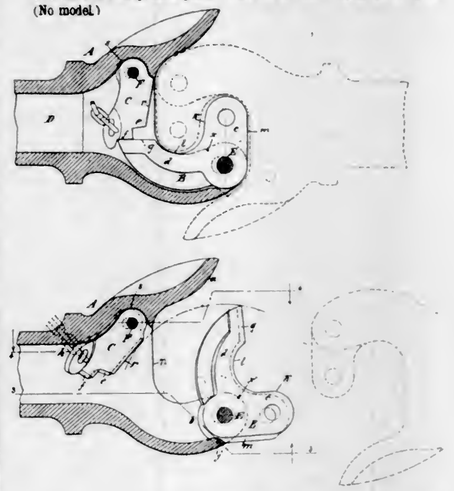
445,244. CAR-COUPLING. OTTO FLOHR, Buffalo, N. Y., assignor to Charles A. Pooley, same place. Filed Aug. 7, 1890. Serial No. 361,336. (No model.)

Claim.—1. A coupler-head of the described class, having its guiding-horn constructed with a curved vertical face-wall on its front side extending backwardly, formed with a curve concentric with the pivot of the locking-pawl to constitute a re-enforce bearing therefor, and extended thence back to the supporting-base of the head, and strengthening-webs behind said wall in horizontal planes joining the top and bottom walls of the head.

2. In a coupler of the described class, the coupling-head formed with a hollow horn *c*, and an incline *f* therein, combined with a coupling-jaw pivoted in the end of said horn, capable of vertical displacement by the engagement of said incline with its inner or locking arm *e*, and this arm formed of a front wall *m* and top and bottom webs *n n*, whereby it is made hollow or open on its rear side and is consequently lightened.



445,245. CAR-COUPLING. OTTO FLOHR, Buffalo, N. Y., assignor to Charles A. Pooley, same place. Filed Oct. 6, 1890. Serial No. 367,274. (No model.)



Claim.—1. A car-coupler comprising a bifurcated head and a swinging coupling-jaw pivoted to one of the horns of said head on an axis inclined from the vertical, and said head constructed with its horn to which said jaw is pivoted terminating in vertical exterior faces eccentric to the pivotal axis, whereby said horn is adapted to engage the vertical meeting faces on the head of another coupler with which it is intercoupled.

2. A car-coupler comprising a bifurcated head and a swinging coupling-jaw pivoted to one arm thereof on an axis inclined from the vertical, said jaw formed with the engaging face of its coupling-arm out of parallel with the axis, so as to be vertical when in the coupled position, and said head formed with its arm to which said jaw is pivoted terminating in vertical exterior faces eccentric to the pivotal axis and coincident with the exterior faces of the jaw when it is in the coupled position, for the purposes specified.

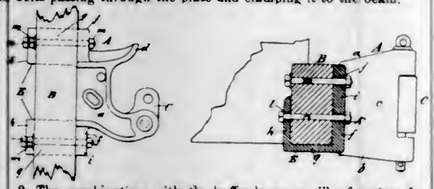
3. A car-coupler comprising a head, a swinging coupling-jaw, and a swinging locking-pawl, said pawl pivoted to the head on an inclined axis, whereby it tends normally to swing to the locked position.

4. A car-coupler comprising a head, a swinging coupling-jaw, and a swinging locking-pawl, said pawl pivoted to the head on an inclined axis, whereby it tends normally to swing to the locked position, and formed with its engaging faces vertical when in the locked position.

445,246. CAR-COUPLING. OTTO FLOHR, Buffalo, N. Y., assignor to Charles A. Pooley, same place. Filed Oct. 13, 1890. Serial No. 367,939. (No model.)

Claim.—1. The combination, with the buffer-beam or sill, of a

plate for abutting against the front side of said beam and having projections embracing the latter, a coupling-head carried by said plate, and bolts passing through the plate and clamping it to the beam.



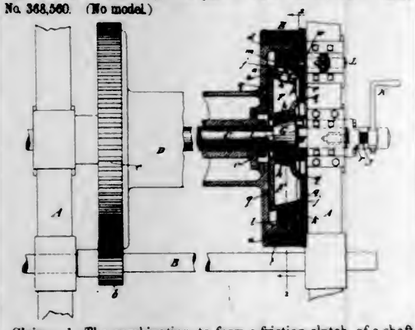
2. The combination, with the buffer-beam or sill, of a plate for abutting against the front side of said beam, having projections embracing the latter and formed integrally with a coupling-head, and bolts passing through the plate for clamping it to the beam.

3. A coupling-head formed with a base-plate adapted to fit against the front side of a buffer-beam or car-sill, and having a projection for embracing the side of said beam, and bolt-holes for the passage of bolts for clamping it to said beam.

4. A coupling-head formed with a base-plate adapted to fit against the front side of a buffer-beam or car-sill, and having a projection for embracing the side of said beam and a projection for embracing the rear side of the latter, and bolt-holes for the passage of bolts for clamping it to said beam.

5. A coupling-head formed with a base-plate *f*, having hooks E E extended from its lower side rearwardly and upwardly to engage the under and rear sides of a buffer-beam to which the coupling-head is bolted.

445,247. FRICTION-CLUTCH. OTTO FLOHR, Buffalo, N. Y., assignor to Charles A. Pooley, same place. Filed Oct. 18, 1890. Serial No. 368,560. (No model.)



Claim.—1. The combination, to form a friction-clutch, of a shaft, a cone sliding thereon and applied thereto, a sectional or divided disk the inner portion of which has an opening entered by said cone and splined thereto, whereby the cone forms a driving connection between the shaft and disk, and a part to be clutched to said shaft, having a flange inclosing said disk and against which its outer portion bears frictionally when expanded.

2. The combination, to form a friction-clutch, of a shaft, a sectional or divided disk and means for expanding it, said disk connected to and revolving with the shaft, a sectional ring of frictional material, the sections of which are fastened against the periphery of the sections of said disk, means for adjusting the sections of said ring outwardly relatively to said disk to compensate for their wear, and a part to be clutched to said shaft, having a flange inclosing said disk and against which the periphery of its frictional ring bears when it is expanded.

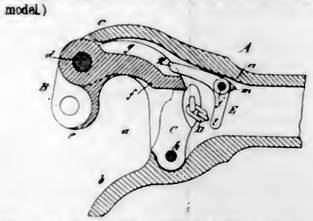
3. The combination of a shaft, a sectional or divided disk connected thereto so as to rotate therewith and having means for expanding it, said disk formed with a conical outer surface, a sectional ring having a conical inner surface fastened against the outer surface of the disk by an adjustable fastening, whereby as it wears it may be adjusted outwardly over said conical surface, and a part to be clutched to said shaft, having a flange inclosing said disk and ring.

4. The combination of a shaft, a sectional disk connected thereto so as to rotate therewith and having means for expanding it, said disk formed with an outer conical rim, a sectional ring of frictional material having a conical inner surface applied against the exterior of said rim, and fastenings therefor, consisting of headed bolts passing through slots in said rim, whereby the ring may be adjusted outwardly by moving the bolts in said slots, and a part to be clutched to said shaft, having a flange inclosing said disk and ring.

5. The combination of a shaft, a sectional disk connected thereto having a conical outer rim formed with longitudinal slots, a sectional friction-ring applied around the exterior of said disk and fastened thereto by bolts passing through said slots, means for adjusting said ring outwardly to take up wear, consisting of screws engaging said bolts for moving them outwardly in said slots, and a part to be clutched to said shaft, having a flange inclosing said disk and ring.

6. The combination of a shaft, a sectional disk having a conical outer rim formed with longitudinal slots, a sectional friction-ring applied around said rim, a fastening therefor consisting of chairs *m m*, fixed to the ring at intervals, and bolts *n n*, fixed to said chairs and passing through the slots in said rim, and a part to be clutched to said shaft, having a flange inclosing said disk and ring.

445,248. CAR-COUPLING. OTTO FLOHR, Buffalo, N. Y., assignor to Charles A. Pooley, same place. Filed Oct. 23, 1890. Serial No. 369,045. (No model.)



Claim.—1. A car-coupler comprising a head, a swinging coupling-jaw, and a swinging pawl for locking the jaw, in combination with provisions on the head actuated by said parts and constructed when said pawl is swung out of the locking position to swing said jaw toward the open position and when said jaw is swung closed to swing said pawl into engagement therewith.

2. A car-coupler comprising a head, a swinging coupling-jaw, and a swinging pawl for locking the jaw, in combination with a lever fulcrumed in said head, projecting into the paths of travel of said jaw and pawl, and constructed when said pawl is unlocked to be actuated thereby and to move said jaw and when said jaw is closed to be actuated thereby and to move said pawl.

3. A car-coupler comprising a head, a swinging coupling-jaw, and a swinging pawl for locking the jaw, in combination with a lever fulcrumed in said head, projecting into the paths of travel of said jaw and pawl, and constructed to be moved by the pawl when unlocking and by the jaw when closing, and provisions for limiting the swing of said lever.

4. A car-coupler comprising a head, a swinging coupling-jaw, and a swinging pawl for locking the jaw, in combination with a lever fulcrumed in said head, projecting into the paths of travel of said jaw and pawl, and constructed to be moved by the pawl when unlocking and by the jaw when closing, and abutting shoulders on said head and lever for limiting the swing of said lever.

5. A car-coupler comprising a head, a swinging coupling-jaw having a recessed locking-arm, and a lock for locking the jaw, in combination with a lever mounted in said head, entering the recess in said locking-arm at one end, and extending rearwardly of said lock at the other end, said lever constructed to be moved by said lock and to swing said jaw.

6. In a car-coupler, the combination, with the head A, coupling-jaw B, and locking-pawl C, pivoted at *h*, of the lever E, pivoted at *j*, and having arm *l*, extending back of the pawl, and arm *k*, extending back of the jaw, said lever constructed when the pawl is unlocked to move the jaw open and when the jaw is closed to move the pawl into engagement therewith.

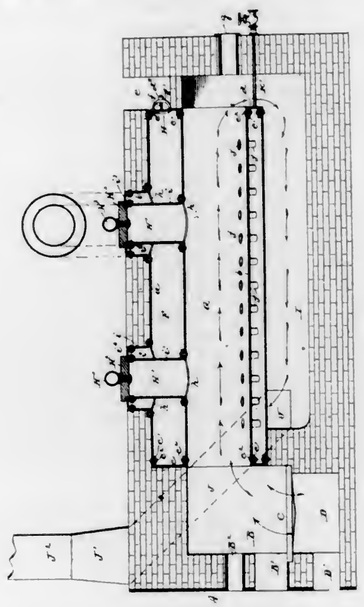
445,249. FURNACE. WILLIAM A. HATCHER, Dallas, Tex., assignor of one-fourth to M. W. Keene, same place. Filed Apr. 15, 1890. Serial No. 348,072. (No model.)

Claim.—1. In a furnace, the combination, with suitable masonry having a fire-box built therein, of a boiler inclosed by said masonry and having a flue in communication with said fire-box, and means for introducing material into said flue, substantially as set forth.

2. In a furnace, the combination, with a fire-box, of a boiler having a flue therein, said boiler having mouths or openings communicating with said flues, and a chamber beneath the boiler and communicating with the flue in the boiler, substantially as set forth.

3. In a furnace, the combination, with a fire-box, of a boiler having a flue in communication with said fire-box, said boiler being provided with openings or mouths in its upper portion and flues or passages in its lower portion in communication with the flue in the boiler, and a chamber beneath the boiler, substantially as set forth.

4. In a furnace, the combination, with a fire-box, of a boiler having a flue in communication with said fire-box, said boiler being provided with mouths which extend to the top of the furnace and communicate with the flue in the boiler, lids for said mouths, and a chamber beneath the boiler, in communication with the flue therein, substantially as set forth.



5. In a furnace, the combination, with a fire-box, of a boiler having a flue in communication with said fire-box, said boiler being provided with openings in its upper portion, sleeves secured to and surrounding said openings and extending to the top of the furnace, lids adapted to cover said sleeves, and a chamber beneath the boiler, in communication with the flue in the boiler, substantially as set forth.

6. In a furnace, the combination, with a fire-box, of a boiler having a flue in communication with said fire-box, said boiler being provided with openings in its upper and lower portions, which communicate with the flue in the boiler, a chamber beneath the boiler, in communication with the flue therein, and flues connecting said chamber with a smoke-stack, substantially as set forth.

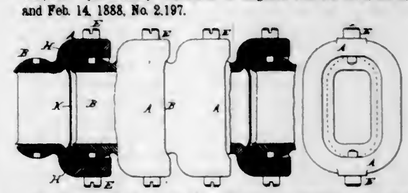
7. In a furnace, the combination, with a fire-box, of a boiler having a flue in communication with said fire-box, said boiler being provided with openings in its upper and lower portions, which communicate with the flue in said boiler, a chamber beneath the boiler, and flues communicating at one end with said chamber at opposite sides of the boiler and at their other ends in a common smoke-stack, substantially as set forth.

8. In a furnace, the combination, with suitable inclosing masonry and a fire-box, of a boiler having a flue in communication with said fire-box, said boiler having openings or mouths in communication with the flue therein, the boiler also having an opening in one end, a valve or door for closing said opening, a chamber beneath the boiler, and flues connecting said valve with the open air, substantially as set forth.

9. In a furnace, the combination, with suitable inclosing masonry and a fire-box, of a boiler having a flue in communication therewith, mouths in said boiler in communication with said flue, a chamber beneath the boiler, in communication with the flue in the boiler, said masonry being provided with an opening in one end of the furnace, by means of which access may be had to the flue in the boiler, substantially as set forth.

10. In a furnace, the combination, with a fire-box, of a boiler having a flue in communication therewith, said boiler comprising two shells arranged eccentrically one within the other, said shells being provided with openings in their upper and lower portions, sleeves connected to the tops of said shells and surrounding the openings to produce mouths communicating with the flue in the boiler, flues inserted in the openings in the lower portion of the shells, and a chamber beneath the boiler, substantially as set forth.

445,250. FLEXIBLE PIPING FOR PNEUMATIC BRAKES, &c. PHILIP C. LAWLESS, Allegheny, Pa. Filed Apr. 9, 1890. Serial No. 347,213. (No model.) Patented in England Feb. 24, 1886, No. 2,661, and Feb. 14, 1888, No. 2,197.



Claim.—1. The improved flexible piping consisting of a number of short tube lengths with socket ends and journal ends, the journals being externally smaller than the mouths of their sockets and also materially smaller than the insides of their sockets, connecting-pivots hinging the lengths together, and yielding packing between the journals and sockets, all substantially as and for the purpose described.

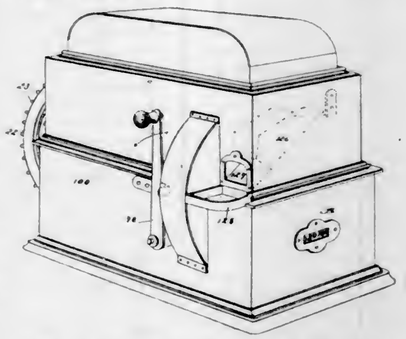
2. The improved flexible piping consisting of a number of short tube lengths with socket ends and journal ends, the journals being externally smaller than the mouths of their sockets and also materially smaller than the insides of their sockets, connecting-pivots hinging the lengths together, and resilient yielding packing between the journals and sockets, tending to return the lengths to position after strain, substantially as described.

3. A metal tube length for flexible piping, having at one end a socket grooved for packing and at the other end a journal materially smaller than the inside of the socket, whereby when a number of these are put together with intermediate packing a flexible piping with a certain amount of elasticity is provided, all substantially as described.

4. The improved flexible piping consisting of short tube lengths formed with socket ends and journal ends connected by pivots with packing-rings to make the joints fluid-tight and wire-gauze or other permeable diaphragm or lining combined with the packing, substantially as and for the purpose set forth.

5. Flexible piping consisting of short tube lengths formed with socket ends and journal ends connected together by pivot-pins and having a circular socket at the end, in combination with a pipe-nozzle having a bead and fitted into said circular socket, screws engaging behind the bead to hold the nozzle in place, and a packing-ring and wire-gauze in a groove in the socket to make a fluid-tight joint, all substantially as described.

445,251. TICKET-PRINTING MACHINE. GIDEON B. MASSEY, Mamaroneck, N. Y.; Sarah R. Massey and Stanley A. Bryant administrators of said Gideon B. Massey, deceased. Filed Oct. 19, 1889. Serial No. 327,575. (No model.)



Claim.—1. In a ticket-printing machine, the combination, with a wheel adapted to receive a number of destination-plates, of a number of sets of numeral-disks carried by the wheel, a means, substantially as described, for throwing the disks, and a means, substantially as described, for turning the wheel, substantially as described.

2. In a ticket-printing machine, the combination, with a wheel formed with grooves in its peripheral face, of destination-plates arranged to fit said grooves, independent sets of numeral-disks carried by the wheel, a set of numeral-disks being arranged in connection with each destination-plate, a disk-operating mechanism, and a means, substantially as described, for turning the wheel, substantially as described.

3. In a ticket-printing machine, the combination, with a destination-plate-carrying wheel, of a number of sets of numeral-disks car-

ried thereby, an index-wheel arranged in connection therewith, and a means, substantially as described, for turning the wheels in unison.

4. In a ticket-printing machine, the combination, with a destination-plate-carrying wheel, of a number of sets of numeral-disks carried thereby, an index-wheel arranged in connection therewith, means, substantially as described, for bringing the destination-plate wheel into register, and a means for turning the wheels in unison.

5. In a ticket-printing machine, the combination, with a body-printing plate, of a wheel carrying a number of destination-printing plates, a number of sets of numeral-disks carried by the wheel, a disk-operating attachment, a platen, feeding-rollers, and means, substantially as described, for turning the wheel, turning the rollers, and throwing the platen, as and for the purpose stated.

6. In a ticket-printing machine, the combination, with a body-printing plate formed with a groove adapted to receive a plate carrying the name of the station from which the ticket is sold, of a wheel carrying a number of destination-printing plates, a number of sets of numeral-disks carried by the wheel, a disk-operating attachment, a platen, feeding-rollers, and means, substantially as described, for turning the wheel, turning the rollers, and throwing the platen, as and for the purpose stated.

7. In a ticket-printing machine, the combination, with a body-printing plate, of a wheel carrying a number of destination-printing plates, a case carrying a set of dating-types, a number of sets of numeral-disks carried by the wheel, a disk-operating attachment, a platen, feeding-rollers, and means, substantially as described, for turning the wheel, turning the rollers, and throwing the platen, as and for the purpose stated.

8. In a ticket-printing machine, the combination, with a body-printing plate, of a wheel carrying destination-printing plates, an index-wheel, a shaft common to the two wheels, a number of sets of numeral-disks arranged in connection with the destination-printing plates, a platen, feeding-rollers, and means, substantially as described, for throwing the numeral-disks, turning the wheels, and throwing the platen, as and for the purpose stated.

9. In a ticket-printing machine, the combination, with a body-printing plate, of a wheel carrying destination-printing plates, an index-wheel, a shaft common to the two wheels, a number of sets of numeral-disks arranged in connection with the destination-printing plates, a means, substantially as described, for throwing the numeral-disks, a platen, feeding-rollers, a web-severing attachment, and means, substantially as described, for turning the wheels, turning the rollers, and throwing the platen, as and for the purpose stated.

10. In a ticket-printing machine, the combination, with a body-printing plate, of a wheel carrying a number of destination-printing plates, a number of sets of numeral-disks carried by the wheel, a disk-operating attachment, a platen, feeding-rollers, one of which rollers is a printing-roller, an inking device arranged in connection with the printing-roller, and means, substantially as described, for turning the wheels, turning the feeding-rollers, and throwing the platen, as and for the purpose stated.

11. In a ticket-printing machine, the combination, with a body-printing plate, of a wheel carrying destination-printing plates, an index-wheel, a number of sets of numeral-disks arranged in connection with the destination-printing plates, a means, substantially as described, for throwing the numeral-disks, a platen, a means, substantially as described, for recording each throw of the platen, feeding-rollers, and means, substantially as described, for turning the wheels, turning the feeding-rollers, and throwing the platen, as and for the purpose stated.

12. In a ticket-printing machine, the combination, with a wheel carrying a number of destination-printing plates, of an index-wheel arranged in connection therewith, a handle carried by the index-wheel, a spring-pressed stem arranged within the handle, a fixed disk formed with apertures arranged to be entered by the stem-head, a number of sets of numeral-disks arranged in connection with the destination-printing plates, a platen, feeding-rollers, and means, substantially as described, for throwing the numeral-disks, throwing the platen, turning the index and destination-plate-carrying wheels, and for turning the feeding-rollers, as and for the purpose stated.

13. In a ticket-printing machine, the combination, with a ticket-printing mechanism, of a numbering mechanism consisting of a set of numeral-disks loosely mounted on a shaft and provided with ratchet-teeth, cam-disks rigidly mounted on a shaft and formed with recesses, fingers pivotally connected with the numeral-disks and for engaging the adjacent ratchets when not prevented by the adjacent cams, cams which are complementary to the recessed section of the cam-disks, and connections, substantially as described, whereby when a ticket is printed the right-hand disk will be advanced one step, as and for the purpose stated.

14. In a ticket-printing machine, the combination, with a ticket-printing mechanism, of a ticket-numbering mechanism consisting of a set of numeral-disks loosely mounted on a shaft and provided with ratchet-teeth, cam-disks rigidly mounted on a shaft and formed with recesses, fingers pivotally connected with the numeral-disks and for engaging the adjacent ratchets when not prevented by the adjacent cams, cams which are complementary to the recessed sections of the cam-disks, springs arranged in connection with the disks, and connections, substantially as described, whereby the right-hand disk will be advanced when a ticket is printed, substantially as described.

15. In a ticket-printing machine, the combination, with a ticket-printing mechanism, of a ticket-numbering device consisting of a set of numeral-disks provided with ratchets and loosely mounted on a shaft, cam-disks rigidly mounted on the shaft between the disks, fingers pivotally connected to the disks and arranged to overlap the cams and ratchets to the left, complementary cams, springs arranged in connection with the disks, a slide formed with a tongue adapted to engage the ratchet of the right-hand numeral-disks, springs arranged in connection with the slide, and a means, substantially as described, for throwing the slide, substantially as described.

16. In a ticket-printing machine, the combination, with a ticket-printing mechanism, of a ticket-numbering mechanism consisting of a number of numeral-disks provided with ratchets and loosely mounted on a shaft, cam-disks rigidly mounted on the shafts between the disks, fingers pivotally connected with the disks and arranged to overlap the cams and ratchets to the left, complementary cams, springs arranged in connection with the disks, a slide formed with a tongue adapted to engage the ratchet of the right-hand numeral-disks, springs arranged in connection with the slide, a lever 44, arranged to bear upon the slide, a cam-disk 97, rigidly mounted on a shaft, a pawl-carrying disk 95, such pawl being arranged to engage the crank-disk, a gear 92, arranged in connection with the disk 95, a segment 91, and a means, substantially as described, for throwing the segment, the segment being arranged to engage the gear, substantially as described.

17. In a ticket-printing machine, the combination, with a destination-plate wheel, of a number of sets of numeral-disks carried by the wheel, a means for revolving the wheel, an impression-roller, a web-carrying reel, and a means, substantially as described, for holding the impression-roller against the destination-plates, substantially as described.

18. In a ticket-printing machine, the combination, with a destination-plate-carrying wheel, of a number of sets of numeral-disks carried by the wheel, a numeral-disk-operating mechanism, an impression-roller 138, a spring 142, arranged in connection therewith, a web-carrying reel, and a means, substantially as described, for revolving the destination-plate-carrying wheel, substantially as described.

19. In a ticket-printing machine, the combination of a wheel carrying ticket-numbering disks, a means for taking an impression or report of said disks, consisting of an impression-roller mounted in a frame that is pivoted to be thrown toward the numbering-disks when desired to take a report, and a ticket-printing mechanism, substantially as described.

20. In a ticket-printing machine, the combination of a wheel carrying numbering-disks, a pivotally-mounted impression-roller for taking an impression or report of said disks, and a spring normally maintaining said impression-roller out of contact with the said disks, substantially as described.

21. The combination, in a printing-machine and with the ticket-numbering mechanism thereof, of a means for taking a report or impression of said numbering mechanism, consisting of an impression-roller normally maintained out of contact with the numbering mechanism, but movable into contact therewith when it is desired to take a report, substantially as described.

22. The combination, in a ticket-printing machine, of a wheel carrying destination-plates and carrying sets of numbering-disks corresponding to said destination-plates, a series of recording-disks recording the whole number of tickets printed, and a means for taking an impression or report of the numbering-disks, consisting of an impression-roller movable into contact with the wheel carrying said numbering-disks, substantially as described.

445,252. FORM OF LEADS, CRAYONS, OR PENCILS. HAROLD P. NORTON, Washington, D. C. Filed June 19, 1890. Serial No. 355,969. (No model.)



Claim.—1. A lead, crayon, or pencil of such a form that a section at right angles to its axis will be a polygon two of whose sides are arcs of the same circle, whose center is within the polygon, and two of whose sides are arcs of external circles, curves, straight lines, or a combination of curves and straight lines, such that when the lead, crayon, or pencil is cut by a plane oblique to its axis the sides and the oblique plane will form a point of the desired width, substantially as set forth.

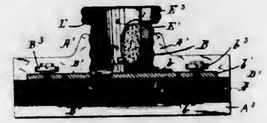
2. A lead, crayon, or pencil of such a form that a section at right angles to its axis will be a polygon one of whose sides is the arc of a circle whose center is within the polygon, and two of whose sides are arcs of external circles, curves, straight lines, or a combination of curves and straight lines, which arcs of the external circles, curves, straight lines, or combination of curves and straight lines shall intersect at an angle, so that when the lead, crayon, or pencil is cut by a plane oblique to its axis the sides and the oblique plane will form a fine point, substantially as set forth.

3. A lead, crayon, or pencil of such a form that a section at right angles to its axis will be a polygon one of whose sides is an arc of a circle whose center is within the polygon, the side opposite the arc a straight line, and two of whose sides are arcs of external circles, curves, or straight lines, or a combination of curves and straight lines, so that when the lead, crayon, or pencil is cut by a plane oblique to its axis its sides and the oblique plane will form a point the width of the side opposite the arc, substantially as set forth.

4. A lead, crayon, or pencil of such a form that a section at right angles to its axis will be a polygon whose sides are straight lines, and which if it has more than three sides those which are opposite and parallel shall not be of the same length, so that when the lead, crayon, or pencil is cut by a plane oblique to its axis its sides and the oblique plane will form a point of the desired width, substantially as set forth.

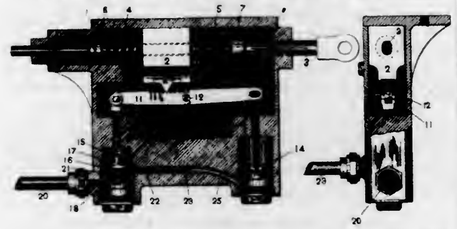
5. A lead, crayon, or pencil of such a form that a section at right angles to its axis will be a polygon, (other than a regular rectangle with equal sides or a regular hexagon,) the sides of said polygon to be formed of arcs of circles, curves, straight lines, or combination of curves and straight lines, so that when the lead, crayon, or pencil is cut by a plane oblique to its axis its sides and the oblique plane will form a point of the desired width, substantially as set forth.

445,253. ELECTRIC CUT-OUT. JOHN S. POTTER, Newton, Mass. Filed Aug. 16, 1890. Serial No. 362,196. (No model.)



Claim.—In an electric cut-out, an insulating-base and a metal shell having a metallically-connected binder-plate and an insulating-disk at its bottom, combined with a detachable binder-plate and an insulating-block arranged between such binder-plate and shell, and a fusible wire metallically connected to such insulated binder-plate and shell, substantially as and for the purpose set forth.

445,254. FLUID-GRADUATING DEVICE. WILLARD F. RICHARDS, Pittsburg, Pa. Filed Apr. 24, 1890. Serial No. 349,228. (No model.)



Claim.—1. In a fluid-pressure brake, the combination of a shiftable fulcrum controlled in its position by the load depression of the vehicle-body, a fulcrum-lever operating by contact with said shiftable fulcrum, and a differential-valve mechanism operatively connected to the fulcrum-lever and serving to tilt the latter and thus graduate the effective brake-pressure, substantially as set forth.

2. In a fluid-pressure brake, the combination of a shiftable fulcrum controlled in its position by the load depression of the vehicle-body, a fulcrum-lever operating by contact with said shiftable fulcrum but separate therefrom, and a differential-valve mechanism operatively connected with said lever and serving to move the latter into and out of contact with the fulcrum and to tilt the lever and thus graduate the effective brake-pressure, substantially as set forth.

3. In a fluid-pressure brake, the combination of a shiftable fulcrum retained in normal position by spring-pressure and shifted by the load depression of the vehicle-body, of a fulcrum-lever operating by contact with the fulcrum, and a differential-valve mechanism operatively connected with the lever and serving to tilt the latter and thus graduate the effective brake-pressure, substantially as described.

4. In a fluid-brake mechanism, the combination, with a train-pipe, an auxiliary reservoir communicating therewith, and a brake-cylinder also communicating with said pipe, of a shiftable fulcrum controlled in its position by the load depression of the car-body, a fulcrum-lever operating by contact with said fulcrum, and a differential-valve mechanism in communication with the reservoir and brake-cylinder and operatively connected to the said lever so as to tilt the same and thus graduate the fluid-braking pressure, substantially as described.

5. In a fluid-brake mechanism, a shiftable fulcrum mounted upon the car-body and operatively connected to a stationary portion of the truck, in combination with a fulcrum-lever operating by contact with said fulcrum, and a differential-valve mechanism the opposing members of which are operatively connected to opposite ends of said lever, said valve mechanism serving to tilt said lever and thus graduate the effective brake-pressure, substantially as set forth.

6. In a fluid-brake mechanism, the combination of a shiftable fulcrum mounted upon the car-body and controlled in its position by the load depression of the vehicle-body, a fulcrum-lever operating by contact with said fulcrum, piston-valves of different areas operatively connected to opposite ends of the lever, and an exhaust-valve carried by the valve-piston of lesser area, substantially as set forth.

7. In an attachment for fluid-brakes, the combination of a casing having valve-chambers of different areas communicating with each other and provided with ports for communication with the fluid-cylinders, a fluid-brake mechanism, valves of different areas located in said chambers, a lever operatively connecting said valves, and a shiftable fulcrum located within said casing and in proximity to said lever, substantially as set forth.

8. In a fluid-graduating device, the combination of a supporting-body movable under variations of load, an adjustable spring-pressed fulcrum connected with said supporting-body, and a lever adapted to engage with said fulcrum, substantially as set forth.

9. In a fluid-graduating device, the combination of a car-body movable under variations of load, a fixed support connected to said car-body, a pivotal bell-crank connected to said car and said fixed support, a movable fulcrum also connected with said bell-crank, and a lever adapted to engage with said fulcrum and carrying on one extremity a valve and on its opposite extremity a piston, said valve controlling opening of a fluid-passage that is in connection with said piston, substantially as set forth.

10. In a fluid-graduating device, the combination of a car movable under variations of load, a fulcrum connected therewith and spring-pressed in the plane of its movements, said fulcrum provided with a tooth portion, and a lever provided with a series of notches with which said fulcrum is adapted to engage, substantially as set forth.

11. In a fluid-graduating device, the combination of a car body movable under variations of load, a fixed support connected with said car, a pivotal bell-crank secured to said car and connected with said fixed support, whereby it is moved with the load movements of the car, a fulcrum, a rod connected with said bell-crank and on which said fulcrum has bearing, springs located on either side of said fulcrum and in engagement with it, a lever adapted to engage with said fulcrum, a valve-piston connected to one extremity of said lever, and a second piston of greater area than said valve-piston connected to the opposite extremity of said lever, said valve-piston controlling communication with a fluid-passage leading to said piston of greater area, substantially as set forth.

12. In a fluid-graduating device, the combination of a supporting-body movable under variations of load, a fixed support connected with said supporting-body and adjustable longitudinally thereon, a lever adapted to engage with said fulcrum, a piston attached to each end of said lever, one of said pistons being of greater area than the other, a fluid-passage connecting said piston-cylinders, a cage structurally connected with one of said pistons, and a valve located in said cage and adapted to operate both said pistons, substantially as set forth.

13. In a fluid-graduating device, the combination of a supporting-body movable under variations of load, a fulcrum connected with said supporting-body and adjustable relative thereto by the load movements of said body, a lever adapted to engage with said fulcrum, a piston attached to each end of said lever, one of said pistons being of greater circumferential area than the other, said piston-cylinders being connected by a fluid-passage, and a hollow cage structurally connected with one of said pistons and having a spring-pressed exhaust-valve adapted to be controlled by said pistons in their positive movements and controlling them in its open position, substantially as set forth.

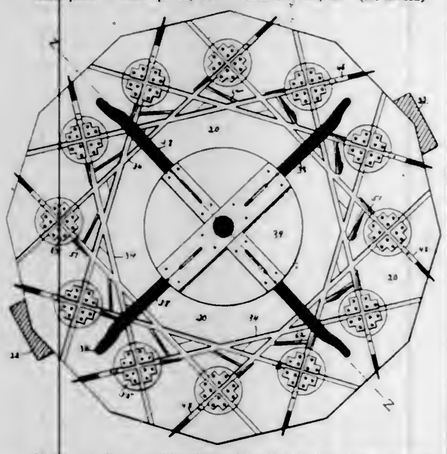
445,255. PROCESS OF MAKING FERTILIZERS. WILLIAM B SEAL, Baltimore, Md. Filed Oct. 29, 1889. Serial No. 328,574. (Specimens.)

Claim.—1. The process of making fertilizer, consisting in, first, subjecting raw phosphate material to the action of sulphuric acid, and,

second, adding powdered coal while the chemical changes are taking place between the first-named ingredients, substantially as set forth.

2. The process of making fertilizer, consisting in, first, subjecting raw phosphate material to the action of sulphuric acid; second, adding powdered coal while the chemical changes are taking place between the first-named ingredients, and, third, adding nitrogenous material, substantially as set forth.

445,256. MACHINE FOR MAKING BRAIDED CORDAGE. ORVILLE R. VAN VECHTEN, Norwich, Conn., assignor to John E. Warner, same place. Filed Apr. 11, 1890. Serial No. 347,548. (No model.)



Claim.—1. In a machine for making braided cordage, in combination with a stationary bed having a series of channels forming intersecting squares, as set forth, a series of channeled turn-tables located at the angles of said squares, and mechanism, substantially as described, for partially rotating said turn-tables at intervals, for the purpose specified.

2. In combination with a stationary bed, having seated therein a series of turn-tables, both bed and turn-tables being channeled, as set forth, mechanism, as described, for partially rotating said turn-tables at intervals, and spring-actuated bolts that enter said turn-tables at each quarter-revolution, all substantially as specified.

3. In combination with a bed and a series of turn-tables seated therein, both bed and turn-tables being channeled, as set forth, mechanism, as described, for partially rotating said turn-tables at intervals, spring-actuated bolts that may enter said turn-tables at each quarter-revolution, and a series of arms radiating from and carried by a horizontal disk secured to a vertical shaft at the center of the complete machine, all substantially as and for the objects specified.

4. In combination with a channeled bed and a series of correspondingly-channeled turn-tables seated in said bed, as set forth, pawl-and-ratchet mechanism, as described, for partially rotating said turn-tables at intervals, spring-actuated bolts that enter said turn-tables at each quarter-revolution, and a series of pawls 51, located at the entrance to said turn-tables in the path of the bobbin-carriers, substantially as and for the purpose specified.

5. In combination with a channeled bed and a series of correspondingly-channeled turn-tables seated in said bed, as set forth, pawl-and-ratchet mechanisms for partially rotating said turn-tables at intervals, and a series of arms 38, radiating from a rotatable disk at the center of said bed, said arms being capable of endwise movement in said disk and being forced normally outward by springs 52, substantially as specified.

6. In combination with a channeled bed and a series of correspondingly-channneled turn-tables seated therein, as set forth, mechanism, as described, for rotating said turn-tables, spring-pressed bolts that enter said turn-tables at each quarter-revolution, a series of arms radiating from a rotatable disk carried by a shaft at the center of the said bed, said arms being provided with rollers 63 on their under sides, a series of cam-switches 62, vertically movable in said bed, and mechanism, substantially as described, for raising said switches into the path of rollers 63 at stated times, for the purpose specified.

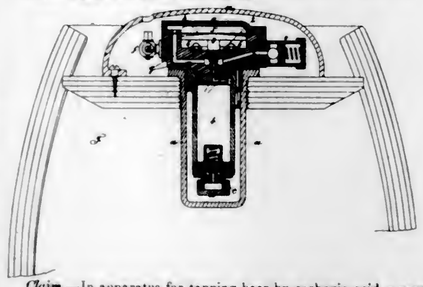
7. In combination with a channeled bed and a series of correspondingly-channeled turn-tables seated therein, as set forth, a central vertical shaft, a disk 39, secured to the upper end of said shaft and carrying a series of radial arms 38, a disk 56, secured to said central shaft beneath the said channeled bed and provided near its perimeter with a serpentine cam-groove, as set forth, pawl-and-ratchet mechanisms, substantially as described, for partially rotating said turn-tables, and lever-connections between said serpentine cam-groove and pawls, all for the objects specified.

8. In combination with a channeled bed and a series of correspondingly-channeled turn-tables seated therein, spring-pressed bolts that enter the turn-table channels at each quarter-rotation, as set forth, each of said bolts being provided with a stud 67, that projects through a slot in the machine-bed, an oscillating pawl having one end adapted to engage ratchet-teeth on one of the said turn-tables and the opposite end projecting into the path of one of said studs 67 in such manner that when said spring-pressed bolt is in locking engagement with the turn-table the said pawl end is out of operative engagement with the said ratchet-teeth, and mechanism, as set forth, for operating said pawls, all being substantially as and for the objects specified.

9. A stationary bed channeled to form intersecting squares, a series of correspondingly-channeled turn-tables located at the angles of said squares, and mechanism, as described, for rotating said turn-tables, in combination with a series of radial arms carried by a disk concentric with said bed and a series of bobbin-carriers fitted to slide in said bed and turn-tables, as and for the purpose specified.

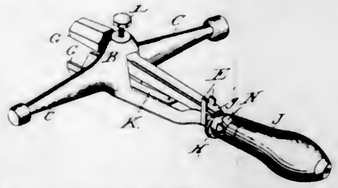
10. In combination with a channeled bed and a series of correspondingly-channeled turn-tables seated therein, as set forth, mechanism, substantially as described, for rotating said turn-tables, a central vertical shaft carrying at its upper end a disk 39, with longitudinally-movable radial arms 38, and at its lower end a bevel-gear 27, and a horizontal driving-shaft bearing a bevel-gear 26, that meshes with the said gear 27, and fast and loose pulleys, substantially as and for the objects specified.

445,257. APPARATUS FOR TAPPING BEER BY MEANS OF CARBONIC ACID. PAUL BECK, Augsburg, Germany. Filed Oct. 11, 1890. Serial No. 367,762. (No model.)



Claim.—In apparatus for tapping beer by carbonic acid, a vessel *a*, continually connected with a cask and containing a reservoir *b* for carbonic acid, said reservoir *b* provided at its inner extremity with a valve *c* and at its outer extremity with a reduction-valve *r*, a space being left between the vessel *a* and the reservoir *b*, said space communicating with the atmosphere by a channel *a'*, in combination with a safety-valve *v*, secured to and communicating with the one side of the reduction-valve, and with a cock *f*, secured to and communicating with another side of the reduction-valve, said cock being connected with a return-valve *i*, the latter containing concentrically-arranged holes *k'*, closed by a rubber plate *e* with an aperture *e'* in its center, said return-valve communicating with the interior of the respective casks, for the purpose as described.

445,258. WAGON OR CARRIAGE WRENCH. DANVERS CRAM, Liberty, Me. Filed June 5, 1890. Serial No. 354,411. (No model.)



Claim.—In a wagon or carriage wrench, the combination of the jaw G, the yoke B, connected thereto near its end and carrying the adjustable screw L, the movable jaw G', passing beneath the yoke, and the cam H, operating on the rear end of said movable jaw G', all substantially as shown and described.

445,259. LAMP-SHADE. WALLACE B. CURTIS, Pomeroy, and CHARLES HIMROD, Jackson, Ohio. Filed Aug. 7, 1890. Serial No. 361,299. (No model.)



Claim.—1. The combination, with the collar and its rods, of the shade-sections hinged upon the said rods and adapted to be moved independently of each other and each formed with a depression to receive one-half of the bulb, cut away at the upper end and their lower ends extended beyond the bulb, substantially as specified.

2. The combination, with the collar and its rods, of the shade-sections independently movable upon the rods, the spring-arms on the shade-sections, and the pin on the collar, substantially as specified.

3. A hinge portion for the purpose specified, formed with a socket to receive a rim on a shade-section and inwardly-extending lips and a bored portion to receive its pintle, as set forth.

4. The combination, with a shade-section formed with a rim, of a hinge portion having a socket of a shape corresponding with that of the rim, lips at the entrance to the socket, and a longitudinal bore, substantially as and for the purpose specified.

445,260. GAME APPARATUS. ULRICH GREMINGER, St. Gall, Switzerland. Filed Oct. 8, 1890. Serial No. 367,382. (No model.)



Claim.—1. As an article of manufacture, a magnetic game or pastime containing a movable plate F, provided with numbers at one side and with pins G at the other, in combination with a magnet B, secured to box A and adapted to decrease and stop the rotation of plate F, the latter being turned by a knob D, projecting over the cover H of box A, for the purpose as described.

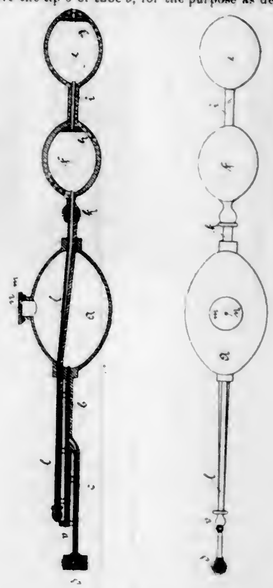
2. The knob D, with shell E and plate F, in combination with a movable hand K, the hand sliding along numbers upon the cover H, the latter being provided with one or more openings I, showing several numbers of plate F, for the purpose as described.

445,261. PRIMING-MACHINE FOR KINDLING FIRES. MICHEL HETT, Münstereifel, Germany. Filed Aug. 25, 1890. Serial No. 363,068. (No model.)

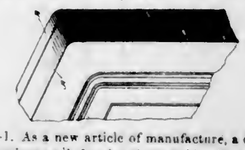
Claim.—1. In a fuse or priming-machine for kindling fuels, the reservoir *a*, with the tube *l* and the cover *m*, in combination with a rubber ball *f*, having the valve *h* and attached to the reservoir by the tube *k*, the rubber ball *f* connected by the tube *i* with a second rubber ball *e*, having the valve *g*, for the purpose as described.

2. In a fuse or priming-machine for kindling fuels, the reservoir *a*, with the tube *l*, and provided with the tube *b*, having the upwardly-extending tip *o*, and the parallel tube *c*, the latter furnished with a case *d*, filled with sponge or the like and closed by a sieve of wire-gauze, for the purpose as described.

3. In a fuse or priming-machine, the reservoir *a*, with the tube *l*, the latter terminating at one side in the rubber ball *f* and at the other shortly before the tip *o* of tube *b*, for the purpose as described.



445,262. METALLIC DOOR. WILLIAM R. KINNEAR, Columbus, Ohio. Filed Feb. 14, 1890. Serial No. 340,398. (No model.)



Claim.—1. As a new article of manufacture, a door composed of sheet-metal sections, each forming the one side of the door, and flanges A' and B', curved at the corners of the door and connected by a double fold joint, substantially as described.

2. As a new article of manufacture, a door composed of sheet-metal sections, each forming the one side of the door, flanges A' and B', turned up from the said sections and curved at the corners of the door, and a double-loop connection formed by the flange B' and extension *a*, to join the said sections and form an edging-bead, substantially as described.

3. As a new article of manufacture, a door composed of sheet-metal sections A and B, each forming the one side of the door and provided with strengthening-rails C, flanges A' and B', joined at their meeting edges and curved at the corners of the door, and a filling D between the said sections to render the construction solid, substantially as described.

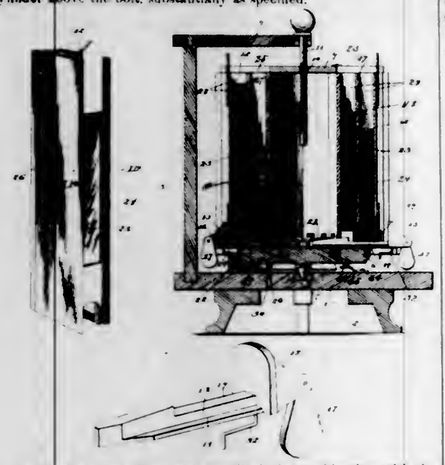
445,263. SPOOL-CABINET. JACOB C. KINNEY, Hubard, Ark. Filed Sept. 2, 1890. Serial No. 363,780. (No model.)

Claim.—1. In a cabinet of the class described, the combination, with a frame-work, of a cylinder mounted in the frame and adapted to rotate and divided into a series of radiating spool-receiving compartments, and slides mounted in each of said compartments and adapted at each outward reciprocation to withdraw a spool, substantially as specified.

2. In a cabinet of the class described, the combination, with a frame-work, of a cylinder mounted for rotation therein and having a series of radiating compartments, slides mounted in the compartments, a circular track mounted on the base and provided with an opening, and depending keepers secured to the slides and taking against the innerside of the track, substantially as specified.

3. In a cabinet of the class described, the combination, with the frame-work, of a revolving cylinder mounted therein and provided with spool-receiving compartments, a spring-pressed bolt mounted in

the base, and a series of openings located in the under side of the cylinder above the bolt, substantially as specified.



4. In a cabinet of the class described, the combination, with the base, of a rotatable cylinder mounted in the base and provided with a series of radiating compartments, each of which is provided with opposite ways, a slide mounted in each of the compartments, terminating in a pull at its front end and in rear of the same provided with a longitudinal rib upon its upper side, said rib being reduced at a point opposite the compartments, and a series of removable spool-receiving boxes mounted in the compartments, each having a partition for subdividing the blocks, which partition at its lower edge is provided with a recess to afford communication between the lower ends of the compartments, substantially as specified.

5. In a cabinet of the class described, the combination, with a frame-work, of a cylinder mounted in the frame and adapted to rotate and divided into a series of radiating spool-receiving compartments, slides mounted in each of said compartments and adapted at each outward reciprocation to withdraw a spool, and depending keepers secured to the slides to limit the outward movement of the same, substantially as described.

6. In a cabinet of the class described, the combination, with a frame-work, of a cylinder mounted in the frame and adapted to rotate and divided into a series of radiating spool-receiving compartments, slides mounted in each of said compartments and adapted at each outward reciprocation to withdraw a spool, and a spring-pressed bolt adapted to lock the cylinder at various intervals of its rotation, substantially as described.

7. In a cabinet of the class described, the combination, with the base, of a rotatable cylinder mounted in the base and provided with a series of radiating compartments, a slide mounted in each of the compartments, and a series of removable spool-receiving boxes mounted in the compartments, substantially as specified.

445,264. STUCCO FOR PLASTERING. EDWARD OLSON, Jewell Junction, Iowa. Filed Dec. 6, 1890. Serial No. 373,791. (No specimens.)

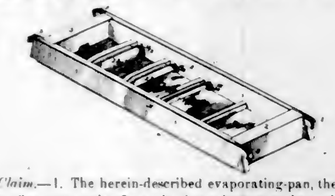
Claim.—The herein-described compound, consisting of a decoction of hickory-bark, slippery-elm bark, pine-tar, alum, Brazilian gum, and white glue, with water, in about the proportions described, for the purpose set forth.

445,265. INKING-RIBBON-SPOOL MOUNTING FOR TYPE-WRITING MACHINES. HARVEY RAY, Mobile, Ala. Filed Nov. 12, 1889. Serial No. 330,031. (No model.)



Claim.—In a type-writer, the combination, with the rigid bearings 2 2, the shaft 3, journaled permanently therein and having an angular recess in one end, and a gear-wheel 4 on said shaft between the bearings driven by the writing mechanism, of the additional rigid bearing 5 in alignment with said shaft, the block 6, sliding in said additional bearing, the spring 7, pressing the block toward the shaft, the shaft 8, journaled at one end in said block and having its other extremity angular and removably seated in said recess, and a ribbon-spool 11 on said shaft 8, all substantially as described.

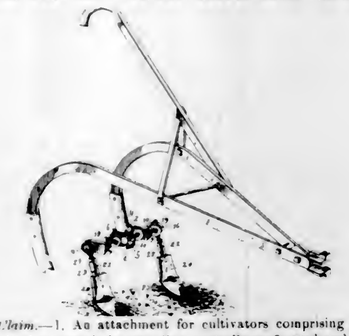
445,266. EVAPORATOR OR SIRUP-PAN. GEORGE W. RODGERS, Lisbon, La. Filed May 27, 1890. Serial No. 353,312. (No model.)



Claim.—1. The herein-described evaporating-pan, the same consisting of a rectangular frame having a bottom and a series of transverse partitions, forming a series of compartments, and provided with openings in their lower edges to afford communication between the compartments, the rear end bar of the frame being provided with a draw-off passage leading from one end of the said bar to about the center thereof and communicating with the end compartment of the series at that point, substantially as specified.

2. The herein-described evaporating-pan, the same comprising the opposite end and side bars, the rear one of which is provided with a longitudinal sirup-passage terminating at one end and at the center of the bar, the opposite side bars, the bottom, the series of transverse partitions gradually increasing in depth from front to rear, their lower edges being cut away to form passages and their upper ends notched to form overflow-passages, and gates located in front of the first-mentioned passages, substantially as specified.

445,267. ATTACHMENT FOR PLOWS. THOMAS G. TASKER, Wyoming, Iowa. Filed June 9, 1890. Serial No. 354,784. (No model.)



Claim.—1. An attachment for cultivators comprising a center plate having oppositely-extending centrally-perforated and radially-grooved wings, extension-plates provided with centrally-perforated and radially-grooved wings, the centrally-perforated and radially-grooved clamping-plates, and suitable connecting-bolts and nuts, substantially as and for the purpose set forth.

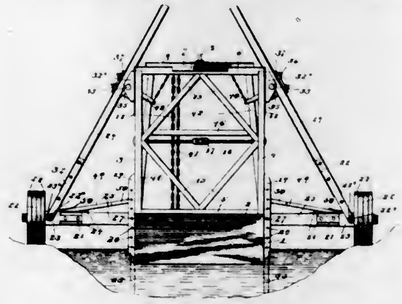
2. In a cultivator attachment, the herein-described center plate having oppositely-extending centrally-perforated and radially-grooved wings, said center plate being provided at its upper and lower edges with grooved flanges forming seats for the clips, whereby it is to be attached to a cultivator-standard in position for operation, substantially as set forth.

3. In a cultivator attachment, the combination of the center plate having grooved flanges or clip-seats and provided with oppositely-extending centrally-perforated and radially-grooved wings, the extension-plates having oppositely-extending, centrally-perforated, and radially-grooved wings, the clamping-plate having central perforations, radially-grooved meeting faces, and diametrical grooves in their outer sides, the connecting-bolts and nuts, the eyebolts, and the shanks carrying the cultivator-shovels and having rounded upper ends, substantially as and for the purpose set forth.

4. In a cultivator-attachment, the combination of the center plate adapted to be attached to a cultivator-standard, the extension-plates and the clamping-plates, said center plate, extension-plates, and clamping-plates being provided with centrally-perforated and radially-grooved meeting faces, and the connecting-bolts, the eyebolt, and the shanks carrying the shovels, all arranged and operating substantially as set forth.

5. The combination, with the central plate 2, the ends of which are provided with wings 3, extending in opposite directions, said central plate being clamped to a cultivator-standard, of the extension-plate 9 on each side of the central plate, said extension-plate being likewise provided with wings 11, which are clamped to the wings 3 of the central plate, and the cultivator-shanks clamped to the extension-plates, as set forth.

445,268. DREDGING-MACHINE. WILLIAM H. WHEELER, Scioto-ville, Ohio. Filed Sept. 29, 1890. Serial No. 366,522. (No model.)



Claim.—1. The combination, with the hull of a dredge, of a spud-frame mounted thereon, a pair of arms hinged to the frame and terminating at their outer ends in bearings, wheels mounted on the bearings, opposite spuds pivoted at their lower ends to the arms, and means for adjusting the spuds, substantially as specified.

2. The combination, with the hull of a dredge, of a spud-frame mounted thereon, opposite arms adjustably pivoted at their inner ends to the frame, opposite spuds pivoted to the arms, means for adjusting the spuds, and wheels mounted on the ends of the arms, substantially as specified.

3. The combination, with the hull of a dredge and a pair of opposite arms adjustably pivoted at their inner ends, of opposite spuds removably pivoted to the outer ends of the arms and means for adjusting the spuds, substantially as specified.

4. The combination, with the hull of a vessel, of a spud-frame, opposite arms hinged at their inner ends to the vessel, bearings located at the upper ends of the spud-frame, a shaft mounted in each of the bearings and provided with a reduced eccentric-bearing, a block mounted on the bearing, a clamping-plate mounted on the block, opposite spuds provided with slots for the reception of the blocks, pivoted at their lower ends to the arms and having their upper ends adapted to ride upon the shafts, and means for rotating said shafts, substantially as specified.

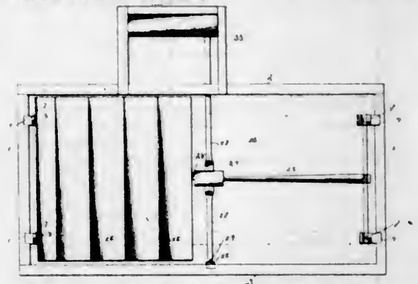
5. The combination, with the hull of a vessel, of a spud-frame mounted thereon, opposite arms hinged at their inner ends to the vessel, bearings located at the upper ends of the spud-frame, a shaft mounted in each pair of bearings and provided with an eccentric intermediate bearing, blocks mounted upon the bearings, opposite spuds provided with slots receiving said block and at their lower ends pivoted to the arms, clamping-plates embracing the spuds, levers mounted on the ends of the shafts, chains connected to the levers and leading to suitable operating-levers, conveniently located, and pulleys for guiding the chains, substantially as specified.

6. In a dredge, the combination, with the hull and the pair of opposite rectangular frames, trussed and braced as described and provided with the pairs of opposite perforated bars 19, of the opposite arms 21, removably pivoted in the perforations, the opposite spuds removably pivoted to the outer ends of the arms and adapted to be adjusted between said bars 19, and means for adjustably securing the spuds to the upper ends of the frames, substantially as specified.

7. In a dredge, the combination, with the hull, the spud-frame, the opposite pivoted arms, the adjustable spuds, and the wheels mounted on the ends of the arm, of the vertical timbers 45, the connecting-bar 46, the opposite bars 47, having the vertical series of eyes 48, and the rear braces 49, pivoted to the outer ends of the bars 21 and to the eyes, substantially as specified.

8. In a dredge, the combination, with the hull, the opposite adjusting-bars, the opposite arms pivoted in the bars and the spuds pivoted to the arms, of the anchor-bars 53, pivoted to the opposite sides of the hull in rear of the adjusting-bars and depending below said hull, substantially as specified.

445,269. WAGON-SCALES. LINUS G. CLAWSON, Pleasant Hill, Mo., assignor of one-half to E. G. Wheeler, same place. Filed Aug. 7, 1890. Serial No. 361,315. (No model.)



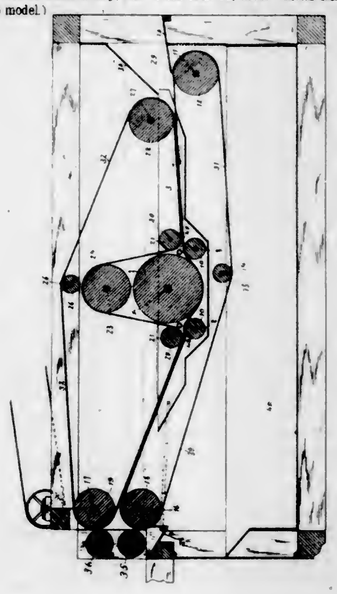
Claim.—1. In a wagon-scales, the combination of the frame, the rock-shafts mounted at the ends of the frame and having eccentric or cam-shaped heads supporting the platform, a transverse lever pivotally connected to one side piece of the frame and having its free end connected with the scale-beam, and arms attached to the rock-shafts and having their free ends supported by the said transverse lever, substantially as set forth.

2. The combination of the rock-shafts having eccentric or cam-shaped heads, the lever arranged transversely in the frame, provided with a central transverse perforation and a sharp-edged bearing-point 23 and having its free end connected with the scale-beam, a supporting-stirrup mounted upon the bearing 23 of said lever and having a cross-bar extending through the transverse perforation in the latter, and arms extending from the rock-shafts and having their free ends supported in said stirrup, substantially as and for the purpose set forth.

3. The lever arranged transversely in the frame, provided with a central transverse perforation and having its free end connected with the scale-beam, in combination with a supporting-stirrup having a bearing upon the upper side of said lever and provided with a bottom plate extending through the opening therein, and the rock-shafts having eccentric heads supporting the platform and provided with arms the free ends of which rest in said supporting-stirrup, substantially as set forth.

4. The lever constructed in two parts provided with flanges at their meeting ends, at which point a transverse perforation is formed, in combination with the supporting-stirrup adapted to be mounted in said perforation, substantially as set forth.

445,270. MACHINE FOR TREATING LEAF-TOBACCO. ROBERT W. COFFEE, Bedford City, Va. Filed Mar. 18, 1890. Serial No. 344,388. (No model.)



Claim.—1. In a machine for treating leaf-tobacco, the combination of a suitable casing, the guide-rollers 10 10 12 15 18 and 19 26 28 21 21, the aprons arranged upon said guide-rollers, a tank or vat in which the rollers 10 21 are located, and the rollers 7 and 24 arranged between the said aprons and serving to spread or force them apart at an intermediate point of the casing, one of said rollers 7 serving to force the lower apron into the said tank or vat, substantially as set forth.

2. In a machine for treating leaf-tobacco, the combination of a suitable casing, a tank within the same, the rollers 10, 12, 18, and 15, an endless apron mounted upon said guide-rollers and surrounding the said tank, the roller 7, arranged to press against the upper side of said apron and to force it downwardly between the rollers 10 into the said tank, and an endless apron mounted upon end rollers 21, 24, 26, 19, and 28 and coacting with the lower apron to form a carrier, substantially as set forth.

3. In a machine for treating leaf-tobacco, the combination of a suitable casing, a tank within the same, the rollers 10, 12, 18, and 15, an endless apron mounted upon said rollers and surrounding the said tank, a roller arranged to press the upper side of said apron downwardly into the said tank, rollers 21, arranged within the latter above the rollers 10, an endless apron mounted upon the rollers 21, 19, 28, and 26 and coacting with the lower apron to form a carrier, and a guide-roller 24, arranged under the central portion of said upper apron between the latter and the roller, arranged to press against the upper side of the lower apron, substantially as and for the purpose set forth.

4. In a machine for treating leaf-tobacco, the combination of a suitable casing, the endless aprons arranged within the same and coacting to form a carrier, a tank arranged within the casing, the rollers 10 arranged in said tank beneath the upper portion of the lower apron, the roller 7 depressing the latter into the tank between the rollers 10, and the wringing-rolls mounted at the delivery end of the machine, substantially as set forth.

5. In a machine for treating leaf-tobacco, the combination of a suitable casing, the endless aprons mounted within the same and coacting to form an endless carrier, the rollers 7, 10, 21, and 24, arranged as described, the tank arranged below and adapted to receive the upper part of lower apron, the wringing-rolls at the delivery end of the machine, the tray arranged below said wringing-rolls, and an inclined pipe connecting said tray with the tank aforesaid, substantially as and for the purpose set forth.

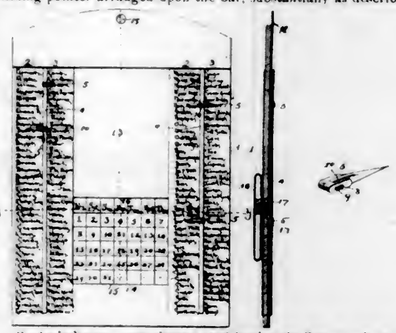
6. In a machine for treating leaf-tobacco, the combination of a suitable casing, the endless aprons, the rollers 10, 12, 18, 15, 7, 21, 17, 28, 24, and 26, the tank 3 and the supply-pipes terminating in spray-pipes arranged transversely in the casing in front and in rear of the central roller bearing against the lower apron, and means for regulating the admission of fluid or other agents through said pipes, substantially as set forth.

7. In a machine for treating leaf-tobacco, the combination of a tank arranged in a suitable casing, endless aprons arranged within said casing upon suitable guide-rolls and coacting to form an endless carrier, a tank arranged below the upper part of the lower apron, spacing-rolls 7 and 24 arranged between the said aprons at an intermediate point of the tank, the rollers 10 and 21, located in said tank, supply-pipes terminating in spray-pipes arranged adjacent to the lower spacing-roll 7, the wringing-rolls at the delivery end of the casing, a catch-tray arranged below said wringing-rolls, a pipe connecting said tray with the tank, a vat arranged in the bottom of the casing, a valved drain-pipe connecting said vat with the tank arranged below the lower apron, and an escape-pipe connecting said vat with a receiving-tank, substantially as set forth.

8. In a machine for treating leaf-tobacco, the combination of a suitable casing, a carrier extending longitudinally through said casing, and composed of two aprons mounted upon suitable guide-rollers 10, 12, 15, 18, 19, 21, 28, and 26 in the casing, a receiving-tank arranged below the lower apron, spacing-rollers 7 and 24, arranged between said aprons at an intermediate point of the casing, the lower spacing-roll serving to depress the lower apron into the receiving-tank the supply-pipes having regulating-valves, the spray-pipes arranged transversely in the casing adjacent to the lower spacing-roll 7, means for regulating the supply of material through either or both supply-pipes, a vat arranged in the bottom of the casing, and valved pipes connecting said vat with the tank arranged below the lower apron and with the receiving-tank outside the casing, substantially as and for the purpose set forth.

445,271. INDICATOR. JAMES L. DAWSON, Tuscola, Ill. Filed Aug. 12, 1890. Serial No. 361,804. (No model.)

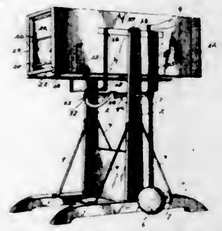
Claim.—1. An indicator comprising a card having the lists or columns of names 2 and 3 arranged in pairs, the bar constructed of sheet metal and bent to form the top flange 6 and the web 7, and provided at intervals with the integral portions 11, adapted to be passed through the card and bent against the same for securing the bar in place, and a sliding pointer arranged upon the bar, substantially as described.



2. An indicator comprising a card having the lists or columns, the T-shaped bar secured to the card and the pointer sliding on the bar and constructed of metal and provided with a loop having the transverse opening to receive the web of the bar and provided with the integral spring-tongue adapted to receive the bar, substantially as described.

3. An indicator comprising a card having the lists or columns, the bar secured to the card, and the pointer sliding on the bar and provided with the spring-tongue, substantially as described.

445,272. CHURN. LAWRENCE A. HARPER, Russellville, Ky., assignor to John Miller, same place. Filed Oct. 7, 1890. Serial No. 367,315. (No model.)



Claim.—1. In a churn, the combination of the standards, the churn-body arranged between the standards and engaging the same, the rock-shaft provided with oppositely-extending arms, and the stirrups connecting the arms and the churn-body and supporting the latter, substantially as described.

2. In a churn, the combination of the standards provided with slots, the churn-body provided with projections or journals engaging the slots, the rock-shaft having oppositely-extending arms, and the stirrups connecting the arms and the churn-body and supporting the latter, substantially as described.

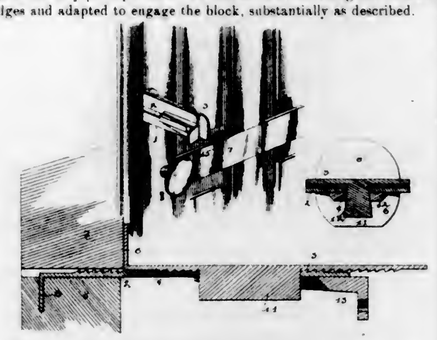
3. In a churn, the combination of the standards provided with slots, the churn-body arranged between the standards and provided with projections engaging the slots, the rock-shaft having oppositely-extending arms, and the U-shaped stirrups centrally pivoted to said arms and having their ends connected to and supporting the churn-body, substantially as described.

4. In a churn, the combination of the standards provided with slots, the churn-body having journals engaging the slots, the rock-shaft having oppositely-projecting arms, the stirrups connecting the arms and the churn-body and supporting the latter, and the pendulum or operating bar secured to one end of the rock-shaft and provided at its upper end with a handle and provided at its lower end with an adjustable weight, substantially as described.

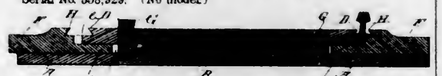
5. In a churn, the combination of the body provided with trunnions at each side, standards or uprights provided with slots receiving said trunnions, stirrups pivoted at each side of said trunnions, a rock-shaft journaled in said standards, a rocking lever carried by the rock-shaft and pivotally connected with said stirrups, and a pendulum and crank projecting from said shaft, substantially as and for the purpose set forth.

445,273. DOOR-SECURER. PHILIP HISE, Cincinnati, Ohio. Filed Apr. 26, 1890. Serial No. 349,644. (No model.)

Claim.—In a door-securer, the combination of the sections 2 and 3, provided with laterally-bent ends 6 and having their opposed faces provided with teeth oppositely shouldered, the section 2 having the longitudinal slot 9, the block 11, secured to the section 3 and provided with inwardly-inclined sides 12 and adapted to be arranged in the slot 9, and the key-plate provided with the slot 14 and having the beveled edges and adapted to engage the block, substantially as described.

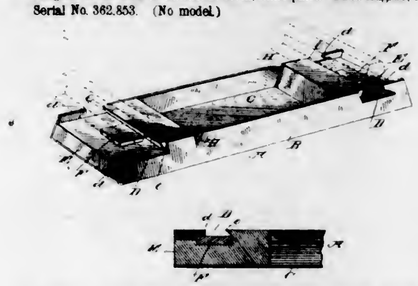


445,274. RAILROAD-TIE. HARRY I. JEFFERS, Lexington, Miss., assignor of one-half to Samuel D. Givin, same place. Filed July 16, 1890. Serial No. 358,929. (No model.)



Claim.—A railway-tie consisting of a metal bar formed with a rectangular opening in its center and flat cut-away outer upper faces, the inner end walls of the cut-away portions being inclined inwardly to form gripping-tongues extending entirely across the tie, and having longitudinal channels in the cut-away portions terminating at their inner ends in slots beneath the tongues and leading into the central openings, the sliding clamping-bars in the channels, their ends extending through the slots and formed with vertical apertures, the outer ends of the bars formed with enlarged gripping-tongues, and wedges passing through the apertures in the bars and impinging against the end walls of the central opening, substantially as described.

445,275. RAILWAY-TIE. HARRY I. JEFFERS, Lexington, Miss., assignor of one-half to Samuel D. Givin, same place. Filed Aug. 23, 1890. Serial No. 362,853. (No model.)



Claim.—1. As a new article of manufacture, a metal railway-tie consisting of a metal base having inclined sides, blocks dovetailed in the same, and a bent-in portion in the rear of the blocks for retaining the same in place, substantially as described.

2. In a metal railway-tie, the combination, with the base having inclined sides with grooves therein and retaining-tongues, of blocks in the tie having retaining-tongues opposite said other tongues, and a bent-down portion of the tie in the rear of the blocks, substantially as described.

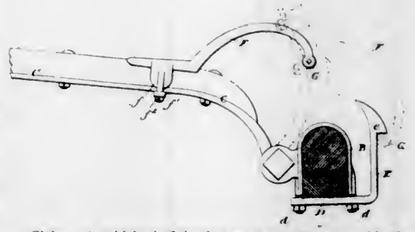
3. In a railway-tie, a sliding block dovetailed therein, a cushion on the blocks, tongues on the tie and blocks, and a bent-down retaining-point on the tie in the rear of the blocks, substantially as described.

445,276. WOOD-WORKING TOOL. WILLIAM H. JOHNSON, Argentine, Mich. Filed June 3, 1890. Serial No. 354,101. (No model.)

Claim.—The herein-described wood-working tool, the same comprising a handle and a metallic shank seated therein, the shank being of approximate Y shape, with one of its outer ends pointed and the other widened and ground to a knife-edge standing parallel with the shank, the tips of said ends being an equal distance from the handle and forming a V-shaped notch in the outer end of the shank, all substantially as and for the purposes specified.

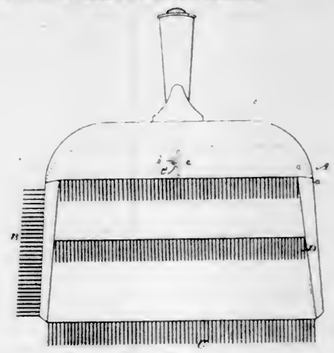


445,277. SHAFT-SUPPORT FOR VEHICLES. JEREMIAH J. BARKER, Washington, D. C., assignor to Andrew B. Webb, Samuel D. Webb, and Martin V. Webb. Filed Nov. 6, 1890. Serial No. 370,520. (No model.)



Claim.—A vehicle-shaft having secured to the upper side thereof a spring-arm having a roller in its free end, in combination with an axle having an upwardly-projecting arm terminating in an enlarged head adapted to engage the roller on the spring-arm and retain the shafts in an elevated position, substantially as described.

445,278. DUST-PAN. CHARLES ST. J. CHUBB, U. S. Army. Filed May 6, 1889. Serial No. 309,844. (No model.)



Claim.—1. A dust-pan constructed, substantially as hereinbefore set forth, with brush-clearing teeth on its exterior surface.

2. A dust-pan constructed, substantially as hereinbefore set forth, with clearing-teeth on its exterior surface and on one edge thereof.

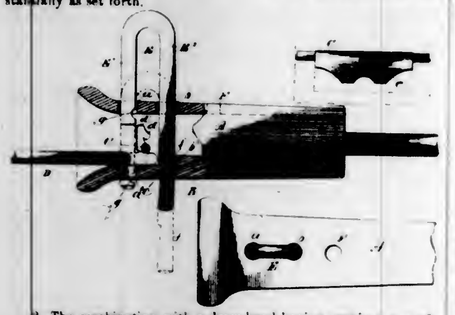
3. A dust-pan constructed, substantially as hereinbefore set forth, with a cover and a comb or rake adjustably secured to the cover.

4. The combination, substantially as hereinbefore set forth, of the dust-pan, its cover, the comb or rake, and the knob secured thereto and adapted to slide back and forth in a slot in the cover.

445,279. CAR-COUPLING. LEONARD L. FROST, Barada, Nebr. Filed Apr. 19, 1890. Serial No. 348,647. (No model.)

Claim.—1. The combination, with a draw-head having aligned perforations therein, of a coupling-pin and guide-rod adapted to pass through said perforations, said guide-rod having a shoulder thereon,

and a rigid block in the draw-head in rear of the perforations, substantially as set forth.

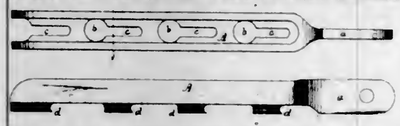


2. The combination, with a draw-head having openings or perforations therein, of a coupling-pin and connected guide-rod adapted to pass through said perforations, said guide-rod having a shoulder thereon for engaging the draw-head, and a link-supporting device located in a vertical plane passing between the plane of the coupling-pin and the plane of the guide-rod, the said link-supporting device being supported at its ends in the sides of the draw-head, substantially as set forth.

3. The combination, with a draw-head having aligned perforations therein, of a coupling-pin passing through said perforations and a link-supporting device of elastic material passing through the draw-head and supported at its opposite ends in the sides of the draw-head, substantially as set forth.

4. The combination, with a draw-head having aligned perforations therein, of a coupling-pin passing through said perforations, said pin having a recess *g* on its rear face near its free end to receive one end of a link, substantially as set forth.

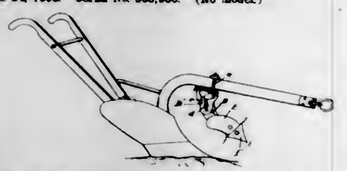
445,280. DEVICE FOR TIGHTENING WIRES. ABRAM NEWKIRK, Cleveland, Ohio. Filed Apr. 10, 1890. Serial No. 347,406. (No model.)



Claim.—1. A wire-tightener consisting of a perforated bar adapted to have a lever attached thereto and having recesses extending from the openings in said bar, and hooks on the under side of the bar on each side of the recesses and about midway thereof, substantially as described, and for the purposes set forth.

2. In a wire-tightener, the combination of the hooks *d d*, the recesses *c c*, and the holes *b b*, arranged with reference to each other in the channeled bar A, provided with means for the attachment of a handle or lever, substantially as shown and described.

445,281. PLOW-JOINTER. JOHN T. BENDER, Canton, Ohio. Filed Sept. 24, 1890. Serial No. 365,980. (No model.)



Claim.—1. The combination of the jointer-head A and means for attaching said jointer-head to a plow-beam, the arm B, provided with a convex end received by a corresponding concaved portion of the jointer-head A, the elongated slot C, the clamping-bolt c, the jointer-arm D, adjustably attached to the jointer-arm B, the mold-board E, and the point F, substantially as and for the purpose specified.

2. The combination of the head A, the arms B and D, and the triangle-point F, provided with the points *f*, substantially as and for the purpose specified.

445,282. PLOW-WHEEL. JOHN T. BENDER, Canton, Ohio. Filed Oct. 1, 1890. Serial No. 366,708. (No model.)

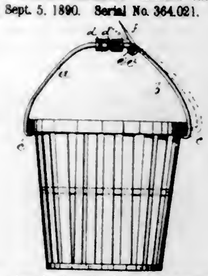
Claim.—1. The combination of the arm A, formed semicircular in cross-section, the head B, provided with the semicircular portion *b*, the slot *c*, the clamping-bolt c, the clamping-bolt *f*, the bar *g*, and the wheel C, substantially as and for the purpose set forth.



2. The combination of the arm A, the thimble H, the box F, located around said thimble and provided with the lug *h'*, the hub E, provided with the recess h^2, the collar I, the cap J, the clamping-bolt I_2, and means for adjusting the wheel C, substantially as and for the purpose specified.

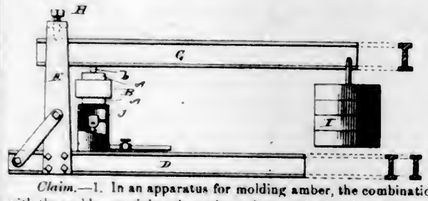
3. The combination of the arm A, the head B, provided with the recess D, the ears *h*, the clamping-bolts *f*, and the bar *g*, substantially as and for the purpose set forth.

445,283. BASKET-CARRIER. ARTHUR CLEVELAND, Lyons Farms, N. J. Filed Sept. 5, 1890. Serial No. 364,021. (No model.)



Claim.—The herein-described basket-carrier, consisting of the arms *a* and *b*, having the claws or hooks *c*, the arm *b* having an eye *e* and tail-piece *f*, and the arm *a* having an eye e^2, a pivot *e'* passing through the eyes, and a handle *d*, all arranged and adapted to serve as described.

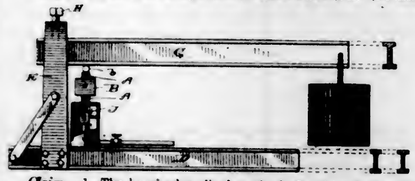
445,284. APPARATUS FOR MOLDING AMBER. FREDERICK EGGE, Bridgeport, Conn. Filed July 26, 1890. Serial No. 360,044. (No model.)



Claim.—1. In an apparatus for molding amber, the combination, with the molds containing the amber, of means for heating said molds and means for applying thereto a constant and uniform automatic pressure, substantially as set forth.

2. In an apparatus for molding pieces of amber into a single article, the combination, with the molds containing the amber and means for heating the same, of means for synchronously applying thereto a constant and uniform automatic pressure, substantially as set forth.

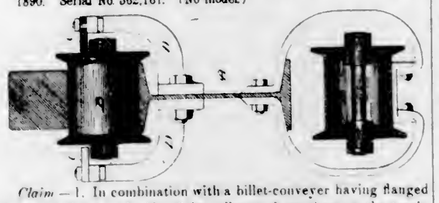
445,285. METHOD OF MOLDING AMBER. FREDERICK EGGE, Bridgeport, Conn. Filed July 26, 1890. Serial No. 360,045. (No model.)



Claim.—1. The herein-described method of making integral articles from pieces of amber, consisting in molding said pieces into shape under the application of heat and an automatic pressure constantly and uniformly applied, as set forth.

2. The method of molding amber, which consists in heating the molds and amber and synchronously subjecting the same to an automatic pressure constantly and uniformly applied, as set forth.

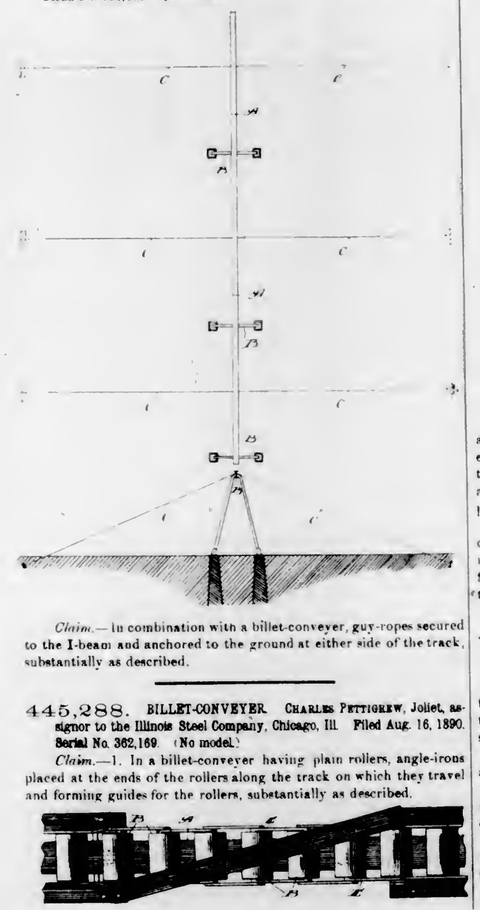
445,286. BILLET-CONVEYER. CHARLES PETTIGREW, Joliet, assignor to the Illinois Steel Company, Chicago, Ill. Filed Aug. 16, 1890. Serial No. 362,167. (No model.)



Claim.—1. In combination with a billet-conveyer having flanged rollers, a guide at each side of the rollers to keep them on the track, substantially as described.

2. In combination with a billet-conveyer having flanged rollers, guides at each side of the rollers supported on brackets secured to the I-beam, substantially as described.

445,287. BILLET-CONVEYER. CHARLES PETTIGREW, Joliet, assignor to the Illinois Steel Company, Chicago, Ill. Filed Aug. 16, 1890. Serial No. 362,168. (No model.)

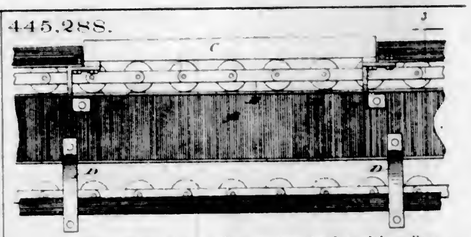


Claim.—In combination with a billet-conveyer, guy-ropes secured to the I-beam and anchored to the ground at either side of the track, substantially as described.

445,288. BILLET-CONVEYER. CHARLES PETTIGREW, Joliet, assignor to the Illinois Steel Company, Chicago, Ill. Filed Aug. 16, 1890. Serial No. 362,169. (No model.)

Claim.—1. In a billet-conveyer having plain rollers, angle-irons placed at the ends of the rollers along the track on which they travel and forming guides for the rollers, substantially as described.

445,288.

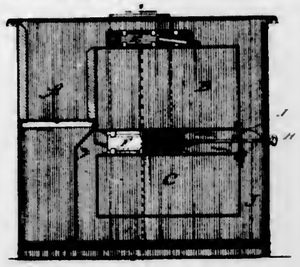


2. In combination with a billet-conveyer having plain rollers, a switch extending diagonally across the track of the rollers to dump the billets, substantially as described.

3. In combination with a billet-conveyer having plain rollers, angle-irons at the sides of the track adjustable to form a switch to dump the billets, substantially as described

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445,289. RANGE. ISAAC RUBEL, Chicago, Ill. Filed Sept. 2, 1890. Serial No. 363,764. (No model.)





Claim.—1. In a range, the combination of two chambers, one above the other and provided with a space between them, a partition extending from about the middle of the flue back diagonally across the space to a point short of the side of the range opposite the flue, and a sliding damper to alternately open and close the front and rear passages to the flue, substantially as described

2. In a range, the combination of an upper chamber and a lower chamber provided with a space leading from the fire-box above the upper chamber, behind both chambers, under the lower chamber, in front of the lower chamber, and between the two chambers, substantially as described.

445,290. BILLET-CONVEYER. FRANCIS H. TREAT, Chicago, Ill., assignor to the Illinois Steel Company, same place. Filed Aug. 16, 1890. Serial No. 362,199. (No model.)

Claim.—1. In a billet-conveyer, traveling rollers and mechanism for supporting and operating the same to form a straight section and truncated rollers and mechanism for supporting and operating the same to form a curved section, substantially as described.

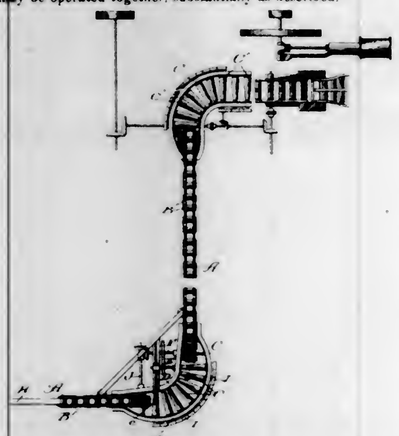
2. In a billet-conveyer, a curved section having truncated rollers and mechanism for operating the same, substantially as described.

3. In a billet-conveyer, a curved table, a series of rollers arranged radially with reference to the curve of the table, and mechanism for operating the rollers, substantially as described.

4. In a billet-conveyer, a curved table, truncated rollers arranged radially with reference to the curve of the table, and gear mechanism for operating the rollers, substantially as described.

5. In a billet-conveyer, a curved table, truncated rollers arranged

radially with reference to the curve of the table, gear mechanism for revolving one of the truncated rollers, and a train of beveled gearing connecting said one with other rollers, whereby all the connected rollers may be operated together, substantially as described.



5. In a billet-conveyer, a curved table, truncated rollers arranged radially with reference to the curve of the table, mechanism for operating the rollers, and side rails supporting the rollers and forming guards, substantially as described.

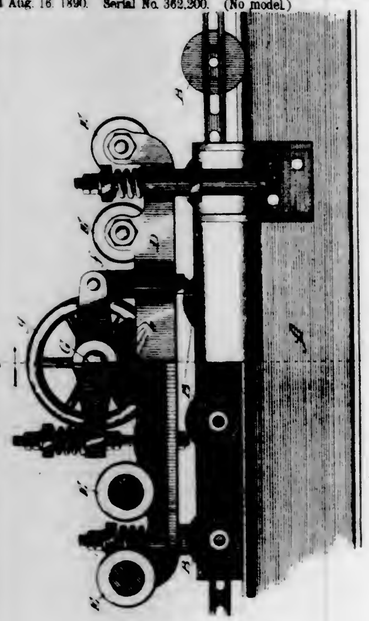
7. In a billet-conveyer, a curved section having side rails forming guards, substantially as described.

8. In a billet-conveyer, a roller having projecting teeth to receive or raise the end of the billet, substantially as described.

9. In a billet-conveyer, the combination, with a straight section and a curved section, of a truncated roller at the receiving end of the curved section having projecting teeth to receive or raise the billet as it passes from the straight section to the curved section, substantially as described.

10. In combination with a billet-conveyer, an adjustable bracket for taking up the slack of the chain, substantially as described.

445,291. APPARATUS FOR STAMPING BILLETS. FRANCIS H. TREAT, Chicago, Ill., assignor to the Illinois Steel Company, same place. Filed Aug. 16, 1890. Serial No. 362,200. (No model.)



Claim.—1. In combination with a billet-conveyer having traveling rollers, a stamping-machine above the conveyer to mark the billets while in their course of travel, substantially as described.

2. In combination with a billet-conveyer, a roller placed above the conveyer, having marking-dies secured therein, and means for operating the roller to bring the dies into contact with the billet, substantially as described.

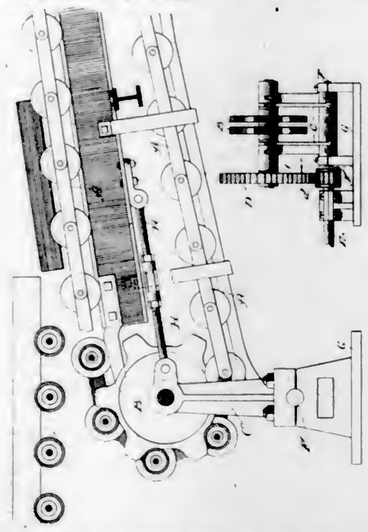
3. In combination with a billet-conveyer, a segmental roller having marking-dies secured therein mounted in adjustable bearings, and means for operating the segmental roller to bring the marking-dies into contact with the billet, substantially as described.

4. In combination with a billet-conveyer, a segmental roller having marking-dies secured therein mounted in flexible and adjustable bearings, and a hand-wheel for operating the roller to bring the marking-dies in contact with the billet, substantially as described.

5. In combination with a billet-conveyer, a segmental roller having marking-dies secured therein, a plain roller in front and rear of the segmental roller, and means for operating the segmental roller to bring the marking-dies into contact with the billet, substantially as described.

6. In combination with a billet-conveyer, a stamping-machine above the conveyer, comprising frame-work, a roller having marking-dies secured therein mounted in the frame-work, a plain roller or rollers in front and rear of the segmental roller, and springs pressing upon the frame-work to hold the same in position and permit of its yielding when subjected to undue strain, substantially as described.

445,292. BILLET-CONVEYER. FRANCIS H. TREAT, Chicago, Ill., assignor to the Illinois Steel Company, same place. Filed Aug. 16, 1890. Serial No. 362,201. (No model.)



Claim.—1. In combination with a conveyer having an endless chain, adjustable driving mechanism comprising a radius-arm, a sprocket-wheel mounted thereon, and mechanism for adjusting the arm and sprocket-wheel, substantially as described.

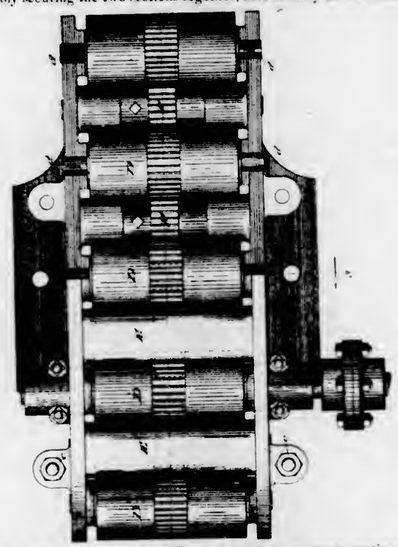
2. In combination with a conveyer having an endless chain, a radius-arm pivotally secured to a support at its lower end, a sprocket-wheel mounted on the upper end of the radius-arm, and a bridle-rod adjusted lengthwise by a sleeve-nut, substantially as described.

3. In combination with a conveyer having an endless chain, a spur and pinion wheel for operating the conveyer, a radius-arm one-half the length of the sum of the diameter of the spur and pinion wheels, a sprocket-wheel mounted on the upper end of the radius-arm, and mechanism for adjusting the arm and sprocket-wheel, substantially as described.

445,293. BILLET-RECEIVING TABLE. FRANCIS H. TREAT, Chicago, Ill., assignor to the Illinois Steel Company, same place. Filed Aug. 16, 1890. Serial No. 362,202. (No model.)

Claim.—1. In a receiving-table for billets, an upper section and a lower section detachably secured together, substantially as described.

2. In a receiving-table for billets, an upper section and a lower section meeting at the center line of the rollers and mechanism for detachably securing the two sections together, substantially as described.

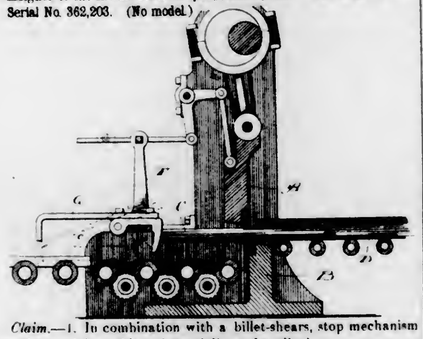


3. A receiving-table for billets, comprising an upper section, a lower section, rollers having their shafts clamped between the two sections, and mechanism for detachably securing the two sections together, substantially as described.

4. A receiving-table for billets, comprising an upper section, a lower section, rollers having their shafts clamped between the two sections, cross-bars bridging the spaces between the rollers, and bolts and nuts for securing the sections together, substantially as described.

5. In a receiving-table for billets, the combination of rollers and gear mechanism for operating the same, the gear mechanism being formed in the body of the rollers and having its teeth flush with the surface thereof, substantially as described.

445,294. BILLET-SHEARS. FRANCIS H. TREAT, Chicago, Ill., assignor to the Illinois Steel Company, same place. Filed Aug. 16, 1890. Serial No. 362,203. (No model.)



Claim.—1. In combination with a billet-shears, stop mechanism above the receiving-table, substantially as described.

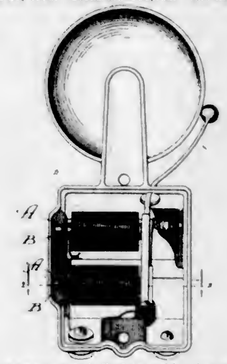
2. In combination with a billet-shears, stop mechanism comprising a downwardly-projecting portion pivoted to a cross-bar, substantially as described.

3. In combination with a billet-shears, stop mechanism comprising a downwardly-projecting portion pivoted to a cross-bar and a hook secured to the pivoted portion to move therewith, substantially as described.

4. In combination with a billet-shears, stop mechanism above the receiving-table secured by crank mechanism to the shear-knife, whereby the stop mechanism and knife may be operated in unison, substantially as described.

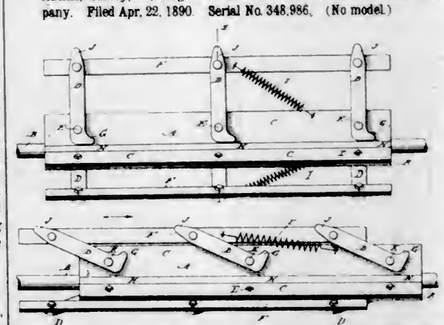
5. In a billet-shears, the combination of a shear-knife long enough to cut two billets and stop mechanism to stop the blooms and prevent the billets from crowding the conveyer, substantially as described.

445,295. ELECTRIC BELL. JOHN F. WOLLENSAK, Chicago, Ill. Filed Sept. 29, 1890. Serial No. 366,502. (No model.)



Claim.—In an electric bell, the combination of a supporting-frame, an armature, and independently-adjustable magnet-spools movable toward or from the armature, substantially as described.

445,296. REEL FOR FENCE-MAKING MACHINES. GEORGE Q. ADAMS, Quincy, Ill., assignor to the Adams Power Fence Machine Company. Filed Apr. 22, 1890. Serial No. 348,986. (No model.)



Claim.—1. A reel for fence-machines, comprising, essentially, a shaft, a plurality of bars parallel thereto, arms connecting the shaft and the bars and pivoted to both, and a spring to retract the bars, substantially as set forth.

2. A reel for fence-machines, comprising, essentially, a shaft, a plurality of bars parallel thereto, arms connecting the shaft and the bars and pivoted to both, the end of one at least of the arms projecting beyond the bar to which it is attached, and a spring to retract the bars, substantially as set forth.

3. A reel for a fence-machine, comprising, essentially, a shaft, a plurality of bars parallel thereto, arms connecting the shaft and the bars and pivoted to both, a spring-controlled finger for laying hold of the fence, and a spring to retract the bars, substantially as set forth.

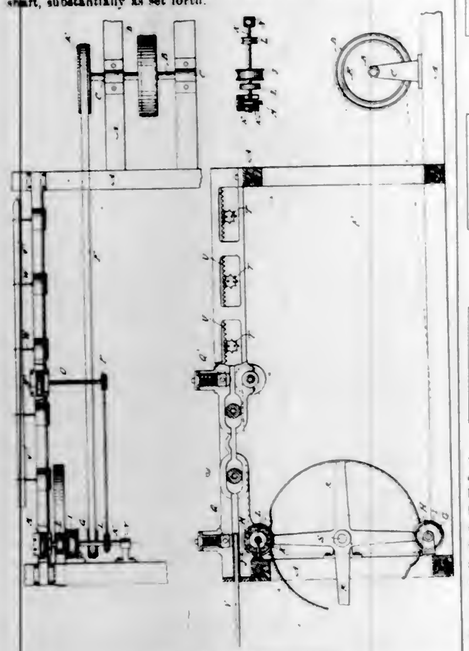
4. A reel for a fence-machine, having fence-supporting spring-actuated bars which move toward the shaft of the reel during the act of pulling the fence therefrom, and which automatically assume their normal position when the fence has moved off from the reel, substantially as set forth.

445,297. ROLLER-FEED FOR POWER FENCE-MACHINES. GEORGE Q. ADAMS, Quincy, Ill., assignor to the Adams Power Fence Machine Company. Filed Apr. 28, 1890. Serial No. 349,851. (No model.)

Claim.—1. The combination, in a fence-making machine, of an upper and lower feed-roller constructed and arranged to have intermittent separation from each other, and driving mechanism for the rollers, constructed and arranged so that when the rollers are separated they will be at rest, substantially as set forth.

2. The combination, in a fence-making machine, of two sets of feed-rollers, one set constructed and arranged to have intermittent separation from the other, and driving mechanism for both sets of rollers, constructed and arranged so that they shall be at rest when the first set of rollers is separated from the other, substantially as set forth.

3. In a fence making machine, a wheel having two diameters, a shaft supporting a feed-roller, the end of the shaft to which the feed-roller is attached being capable of limited downward movement, a roller upon the shaft, which engages with the larger diameter of the wheel having two diameters, a flanged pulley on the shaft, and a belt going over some moving part of the machinery placed below the said shaft, substantially as set forth.

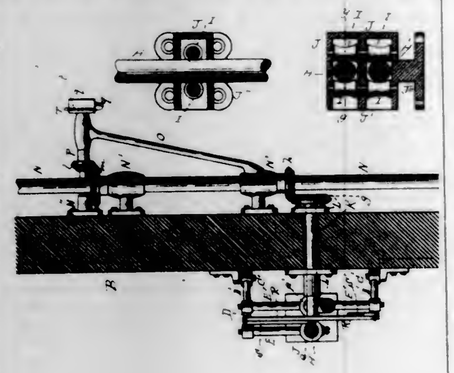


445,298. DENTAL ANODYNE. JAMES W. HARTIGAN, Morgantown, W. Va., assignor of one-half to Edward S. Avis. Filed Dec. 10, 1890. Serial No. 374,146. (No specimens.)

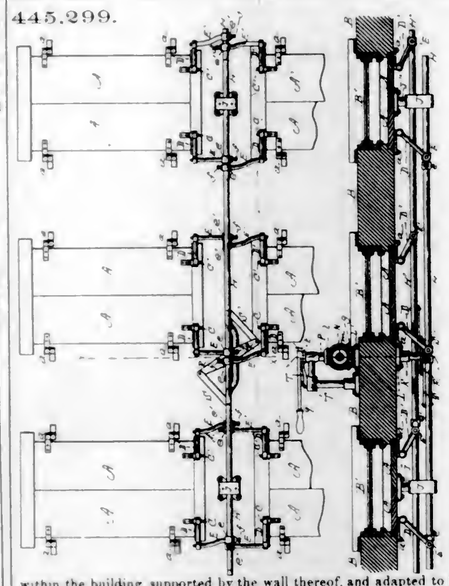
Claim.—The herein-described composition of matter to be used for the painless extraction of teeth, consisting of ninety-five per cent. alcohol, fluid extract of hydrastis canadensis, fluid extract of geranium maculatum, salicylic acid, oil of cloves, carbolic acid, hydrochloride of cocaine, and Squibb's sulphuric ether, in the proportions specified.

445,299. SHUTTER-WORKER. JOHN F. NEWHALL, Lynn, Mass., assignor to the Newhall Shutter Working Company, of Maine. Filed July 18, 1890. Serial No. 359,320. (No model.)

Claim.—1. The herein-described improved shutter-working apparatus, comprising the following parts, viz: the vertical shaft N, located



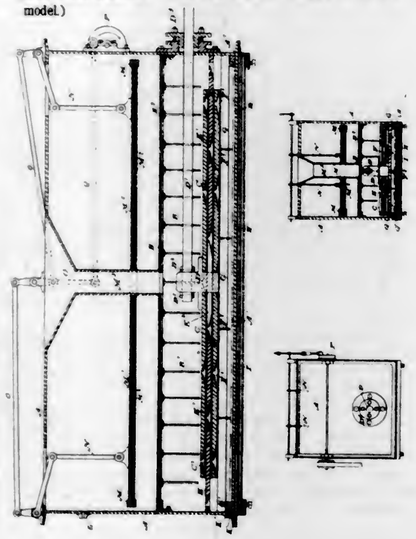
445,299.



within the building, supported by the wall thereof, and adapted to be operated by a crank, the horizontal shaft K, engaged by the shaft N by means of suitable gear and extending through to the outside of the building, the lever R, centrally engaged by the shaft K, the substantially parallel rods H H', supported on the outside of the building between two stories, the links or levers S S', having one end pivotally secured to the rods H H', respectively, and the other to the opposite ends of the lever R, and the adjustable parts E E' and links D D' for directly operating the shutters, substantially as set forth

2. In a shutter-working apparatus, the combination, with the actuating-rods H H', placed horizontally outside the building, of the boxes or housings J, containing the rollers I I', said housings being closed at their tops, sides, and ends, with the exception of perforations of size to admit the rods, whereby the rollers are protected from rain or snow, substantially as described.

445,300. MACHINE FOR AMALGAMATING GOLD AND SILVER BEARING ORES. JOHN T. PENNY and WILLIAM H. RICHARDSON, Adelaide, South Australia. Filed Jan. 9, 1890. Serial No. 336,349. (No model.)



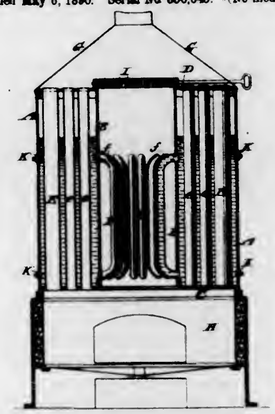
Claim.—1. In a triturating-machine, the combination, with a suitable vessel or pan, of a stationary plate mounted therein, a movable plate C parallel and in proximity to the stationary plate and having openings C' and a boss D, a stuffing-box D^4, and a rod D', connected with the boss and passing through said box, substantially as set forth.

2. In a triturating-machine, the combination, with a suitable vessel or pan, of a stationary plate, a reciprocating plate C, and a stationary open frame-work B above the latter and having a series of spikes or harrows B', substantially as set forth.

3. In a triturating-machine, the combination, with a suitable vessel or pan, of a stationary plate having a slot E^3, a reciprocatory plate C above the same, a boss D on the plate C and having a part extending downward through said slot, a second reciprocatory plate F below the stationary plate and engaged by said boss, and means for actuating the movable plates, substantially as set forth.

4. In a triturating-machine, the combination, with a suitable vessel or pan, of a stationary plate having a slot E^3, a reciprocatory plate C above the same, a boss D on the plate C and having a part extending downward through said slot, a second reciprocatory plate F below the stationary plate, having harrows F^2 and engaged by said boss, and means for actuating the movable plates, substantially as set forth.

445,301. FIRE AND WATER TUBE BOILER. THOMAS J. REYNOLDS, Brooklyn, N. Y., assignor of one-half to Francis Nolan, same place. Filed May 6, 1890. Serial No. 350,845. (No model.)



Claim.—1. In a boiler, the combination, with an outer and an inner casing united by headers and leaving a central fire-space, of fire-tubes of different diameters leading directly from the fire-chamber and connecting the headers, the tubes of greater diameter being located nearer the outside of the boiler, substantially as set forth.

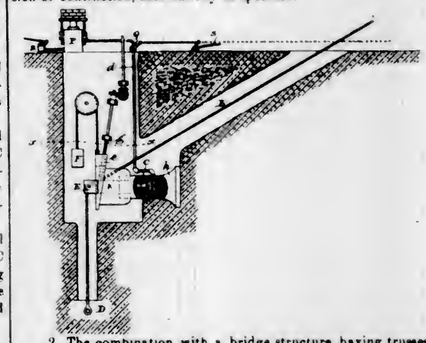
2. In a boiler, the combination, with an outer and an inner casing and headers connecting the two casings, leaving a water-space between the casing and a fire-space within the inner casing, of water-tubes within the inner casing and communicating at their upper and lower ends through the inner casing with the water-space, and fire-tubes connecting the headers and arranged in groups, leaving free space between the outer casing and the points where the said water-tubes connect with the inner casing, substantially as set forth.

3. In a boiler, the combination, with an outer casing and an inner casing and headers connecting the two casings, leaving a water-space between them, of water-tubes extending within the inner casing and communicating at their upper and lower ends with the water portion of the boiler and fire-tubes connecting the headers, the said fire-tubes nearer the outer portion of the boiler being of greater diameter than those nearer the center, substantially as set forth.

4. The herein-described boiler, comprising an outer casing, an inner casing, headers connecting the two casings, leaving a water-space between them, upright fire-tubes of varying diameters connecting the headers, water-tubes within the inner casing and communicating with the water-space between the casings, and the damper at the upper end of the inner casing to regulate the draft therethrough, substantially as set forth.

445,302. BRIDGE. EDWARD W. SERRELL, New York, N. Y. Filed Oct. 27, 1890. Serial No. 369,493. (No model.)

Claim.—1. The method herein specified of maintaining a bridge structure having sustaining-cables in substantially a constant position by applying a force independent of the bridge itself for moving one or more of the bearings for the cable or cables to compensate expansion or contraction, substantially as specified.



2. The combination, with a bridge structure having trusses and sustaining-cables, of movable bearings for such cables and devices actuated by mechanical power for moving such bearings to compensate expansion or contraction in the cables, substantially as set forth.

3. The combination, with a truss and sustaining-cables in a bridge structure, of movable bearings for such cables between the tower and the anchorage and mechanical appliances for varying the positions of such movable bearings to compensate expansion or contraction in the cables, substantially as set forth.

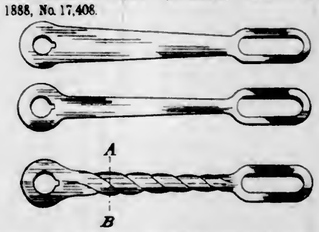
4. The combination, with a bridge structure having sustaining-cables, of movable bearings for such cables and a hydraulic cylinder and ram for moving such bearings and maintaining the bridge structure in a normal position by compensating expansion or contraction, substantially as set forth.

5. The combination, with a cable in a bridge structure, of a hydraulic cylinder and ram and a bearing moved by such ram and a wedge between the movable bearing and a rigid structure for supporting said bearing independent of the hydraulic ram, substantially as set forth.

6. The combination, with the bridge structure having cables, of hydraulic cylinders acting to take up slack caused by expansion and the reverse, an accumulator containing a liquid under pressure, and a connection between the accumulator and the hydraulic cylinders, substantially as specified.

7. The combination, with the bridge structure having cables, of hydraulic cylinders acting to take up slack caused by expansion and the reverse, an accumulator containing a liquid under pressure, a connection between the accumulator and the hydraulic cylinders, and a valve in the connecting-pipe actuated automatically or by hand, substantially as specified.

445,303. MODE OF MANUFACTURING PEDAL-CRANKS FOR VELOCIPEDES. FRANK SOUTHARD, Southampton, England. Filed Oct. 17, 1890. Serial No. 368,472. (No model.) Patented in England Nov. 29, 1888, No. 17,408.



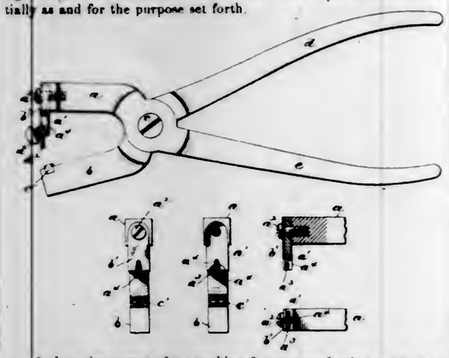
Claim.—The method of manufacturing pedal-cranks for velocipedes by twisting them in their length to increase their strength, substantially as described.

445,304. BUTTON-SETTING TOOL. JAMES F. THAYER, Providence, R. I. Filed Nov. 19, 1890. Serial No. 371,914. (No model.)

Claim.—1. An instrument for attaching pronged fasteners to fabrics, one member of which is provided with a die for bending and clinching the legs of the fastener, the opposite members having a vertical and transverse groove to receive the crown or arch of the fastener, and a spring to retain the crown or arch in said groove, substantially as set forth.

2. An instrument for attaching pronged fasteners to fabrics, one

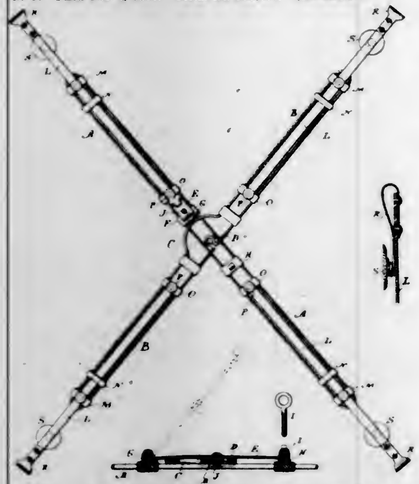
member of which is provided with a die for bending and clinching the legs of the fastener, the opposite member being provided with a rectangular V-shaped groove and a transverse groove substantially at right angles thereto and further provided with a flat spring, substantially as and for the purpose set forth.



3. In an instrument for attaching fasteners to fabrics, and in combination with the clinching member thereof, the fastener-holding member having a cross-slotted V-shaped groove to receive the crown or arch of the fastener, and a bifurcated spring to clamp said crown or arch flatwise in said groove, substantially as specified.

4. An instrument for attaching fasteners to fabrics, one member of which is provided with a groove to receive the crown or arch of the fastener, and a flat spring to clamp said crown or arch flatwise in said groove, the opposite member being provided with clinching-dies for bending and clinching the legs of the fastener, substantially as set forth.

445,305. PICTURE-HANGER. WALTON C. TIDBALL, Brooklyn N. Y. Filed Feb. 4, 1890. Serial No. 339,207. (No model.)



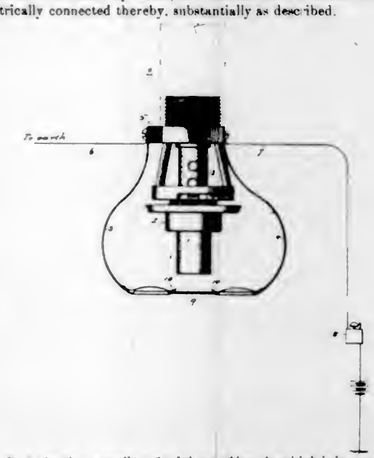
Claim.—1. In a picture-hanger, the main cross-arms A B, formed of wire, there being a loop D and arc wire C on one of the cross-arms, in combination with the hinged clamp-lever having a pin passing into the loop and adapted to clamp the arc wire, substantially as set forth.

2. The picture-hanger having main cross-arms connected together at the center and adapted to be held at any desired angle to each other, in combination with the extension-bars L and clamping devices for holding the extension-bars to the main cross-arms, and spring-clips at the ends of the extension-bars for receiving the corners of the picture, substantially as set forth

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445,306. CIRCUIT-CONTROLLER AND ALARM. CHARLES M. WOOLCOTT and ALBERT R. WILMOT, New York, N. Y., assignors to Thomas W. Robertson and Charles R. Ongley, both of same place. Filed Oct. 16, 1890. Serial No. 368,390. (No model.)

Claim.—1. A circuit-controller of a conducting material which is dissolved or softened by water, in combination with circuit-terminals electrically connected thereby, substantially as described.



2. A circuit-controller of sulphate of iron in which is incorporated a conducting-powder, substantially as described.

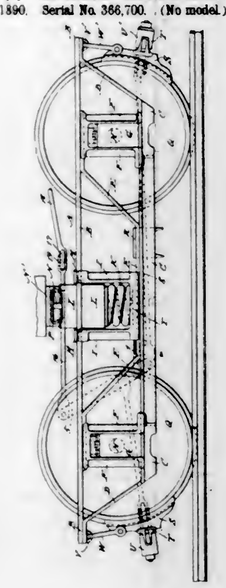
3. The combination, with a circuit containing an electrically-operated device, of circuit-terminals and a circuit-controller of a conducting material which is dissolved or softened by water, said circuit-controller being in the circuit and normally maintaining it closed, substantially as described.

4. The combination, with an automatic sprinkler, of an electric circuit having terminals at the sprinkler and a circuit-controller which is dissolved or softened by water between the terminals and holding them to maintain the normal condition of the circuit, substantially as described.

5. The combination, with a sprinkler, of springs mounted thereon, one being insulated from the body of the sprinkler, and a circuit-controller held below the sprinkler by said springs, substantially as described.

6. The combination of a sprinkler with springs or arms mounted thereon, one being insulated from the body of the sprinkler, clips at the outer end of said springs or arms, and a circuit-controller held in said clips below the sprinkler, substantially as described.

445,307. CAR-BRAKE. GEORGE M. BRILL, Philadelphia, Pa. Filed Sept. 30, 1890. Serial No. 366,700. (No model.)



Claim.—1. A car-truck having a bolster, in combination with a connected equalizing-lever, brake-beam, and upright brake-levers supported on the truck entirely at one side of the bolster, an equalizing-lever and brake-beam connected with the brake-levers and located at the other side of the bolster, and means for operating the upright brake-levers, substantially as described.

2. A car-truck having a bolster, in combination with an equalizing-lever, brake-beam, and upright brake-levers, all connected together, the brake-levers being supported on the truck entirely at one side of the bolster, an equalizing-lever and brake-beam connected with brake-levers and located at the other side of the bolster, a floating lever and rods connected to the upright brake-levers, and means for operating the floating lever, substantially as described.

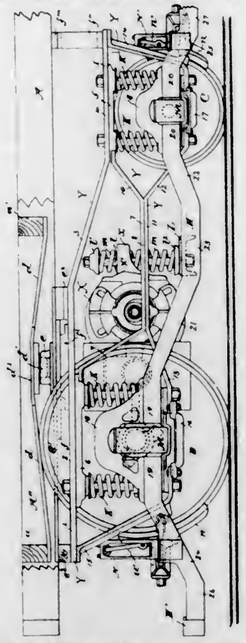
3. In an equalizing car-brake, the combination of the equalizing-levers connected with the brake-beams and the upright brake-levers mounted on a transverse beam of the truck entirely at one side of the pivotal point of the truck, the said equalizing-levers and upright brake-levers being operatively connected, substantially as described.

4. In an equalizing car-brake, the combination of the equalizing-levers connected with the brake-beams and the upright brake-levers mounted on a transverse beam of the truck entirely at one side of the pivotal point of the truck, said pivotal point being located to one side of a line drawn semi-distant between the truck-axles, substantially as described.

5. In an equalizing car-brake, the combination of the equalizing-levers connected with the brake-beams, upright brake-levers mounted on a transverse beam of the truck entirely on one side of the pivotal center of the truck, the said equalizing-levers and upright brake-rods being operatively connected, and a floating lever and rods connected to the upright brake-levers, as set forth.

6. In an equalizing-brake, the combination, with the inflexible rod 18 and means for operating it and a brake system supported upon a truck-frame and having levers 4 and 5, of the floating lever 17, suspended transversely of the truck and secured to the rod 18, and rods 15 and 16, secured at one end to the lever 17 and to the said levers 4 and 5 at the other, substantially as described.

445,308. MOTOR-TRUCK FOR CARS. JOHN A. BRILL, Philadelphia, Pa. Filed Oct. 3, 1890. Serial No. 366,954. (No model.)



Claim.—1. In a swiveling car-truck, the combination of a truck-frame comprising an upper continuous chord, a lower chord having supports for springs united to the upper chord, one end of the frame being enlarged and the other contracted, and a pair of driving-wheels and running-gear in the enlarged end and truck-wheels smaller than the driving-wheels in the contracted end with the pivotal center located substantially over the driving-wheel axle, substantially as described.

2. In a swiveling car-truck, the combination of a truck-frame comprising an upper continuous chord, a lower chord having supports for springs united to the upper chord, one end of the frame being enlarged and the other contracted, and a pair of driving-wheels and running-gear in the enlarged end and truck-wheels smaller than the driving-wheels in the contracted end, with the pivotal center between the actual center of the truck and driving-wheel axle, substantially as described.

3. The combination of a car-body mounted upon a truck, said truck having a frame large forward and smaller rear wheels, axles and axle-boxes for the same, side beams carried by the axle-boxes, and a motor sleeved on the axle at one end, its free end being spring-supported from the said side beams, substantially as described.

4. In a pivotal car-truck, the combination of a car-body mounted upon a truck, said truck having a frame, forward and rear axle-boxes, axles and wheels, a pivotal center located between the actual center of the truck and the center of one of the axles, and a motor sleeved upon one of the axles, and springs for supporting the free end of the motor, mounted upon the truck-frame, substantially as described.

5. In a pivotal car-truck, the combination of a car-body mounted upon a truck, said truck having a frame, forward and rear axle-boxes, axles and wheels, a pivotal center located between the actual center of the truck and the center of one of the axles, side beams hung from the axle-boxes, and a motor sleeved upon one of the axles, and springs for supporting the free end of the motor, mounted upon the side beams, substantially as described.

6. In a pivotal car-truck, the combination of a car-body mounted upon a truck, said truck having a frame, forward and rear axle-boxes, a pair of truck-wheels at one end and a pair of driving-wheels larger in diameter than the truck-wheels at the other end of the frame, a pivoted center located between the actual center of the truck and the center of the driving-axle, and a motor sleeved upon one of the axles, and springs for supporting the free end of the motor, mounted upon the truck-frame, substantially as described.

7. In a pivotal car-truck, the combination of a car-body mounted upon a truck, said truck having a frame, forward and rear axle-boxes, axles and wheels, a pivotal center directly over the center of one of the axles, a motor sleeved to the axle over which the pivotal center is located, and springs for supporting the free end of the motor, mounted upon the truck-frame, substantially as described.

8. In a pivotal car-truck, the combination of a car-body mounted upon a truck, said truck having a frame, forward and rear axle-boxes, a pair of truck-wheels at one end and a pair of driving-wheels larger in diameter than the truck-wheels at the other end of the frame, a pivotal center located between the actual center of the truck and the center of the driving-axle, side beams hung from the axle-boxes, and a motor sleeved upon the axle of the driving-wheel, and springs for supporting the free end of the motor, mounted upon the side beams, substantially as described.

9. In a pivotal car-truck, the combination of a car-body mounted upon a truck, said truck having a frame, forward and rear axle-boxes, a pair of truck-wheels at one end and a pair of driving-wheels larger in diameter than the truck-wheels at the other end of the frame, a pivotal center located directly over the driving-axle, and a motor sleeved to the driving-axle, and springs for supporting the free end of the motor, mounted upon the truck-frame, substantially as described.

10. In a pivotal car-truck, the combination of a car-body mounted upon a truck, said truck having a frame, forward and rear axle-boxes, a pair of truck-wheels at one end and a pair of driving-wheels at the other end of the frame, a pivotal center located directly over the driving-axle, side beams hung from the axle-boxes, and a motor sleeved upon the axle of the driving-wheel, and springs for supporting the free end of the motor, mounted upon the side beams, substantially as described.

11. In an electrically-propelled car-truck, the combination of a rigid truck-frame having forward and rear axle-boxes, a pair of truck-wheels at one end of the frame, a pair of driving-wheels larger in diameter than the truck-wheels mounted in axle-boxes at the opposite end of the frame, side beams supported from the axle-boxes, and a motor sleeved at one end upon the driving-axle, and the free end spring-supported upon the side beams, substantially as described.

12. In an electrically-propelled car-truck, the combination of a rigid truck-frame having forward and rear axle-boxes, a pair of truck-wheels at one end of the frame, a pair of driving-wheels larger in diameter than the truck-wheels mounted in axle-boxes at the opposite end of the frame, side beams hung from the axle-boxes, and a motor sleeved at one end upon the driving-axle, a beam transversely connecting the side beams, an upwardly-disposed stud secured to said beam, and springs secured upon the said stud, the free end of the motor engaging with said springs, substantially as described.

13. In an electrically-propelled car-truck, the combination, with

a car-body, of a rigid truck-frame having forward and rear axle-boxes, side and rear rub-plates secured to the upper chord of the rigid truck-frame, corresponding rub-plates on the car-body, a pair of truck-wheels at one end of the truck-frame and a pair of driving-wheels mounted in axle-boxes at the opposite end of the frame, side beams supported on the axle-boxes, and a motor sleeved at one end upon the driving-axle, and the free end spring-supported from the side beams, substantially as described.

4. In an electrically-propelled car-truck, the combination, with a car-body, of a rigid truck-frame having forward and rear axle-boxes, side and rear rub-plates secured to the upper chord of the rigid truck-frame, corresponding rub-plates on the car-body, a pair of truck-wheels at one end of the truck-frame and a pair of driving-wheels mounted in axle-boxes at the opposite end of the frame, the pivotal center of the car-body and truck being directly over the driving-axle, side beams supported on the axle-boxes, and a motor sleeved at one end upon the driving-axle, and the free end spring-supported on the side beams, substantially as described.

5. In a pivotal car-truck, a frame having forward and rear wheels and running-gear for the same, and a truck center plate and bolster, both being located above and entirely without the body of the truck-frame, whereby a shorter wheel-base of the truck may be had, substantially as described.

6. In a pivotal car-truck, a frame having forward and rear wheels, running-gear for the same, a transversely-disposed beam or arch-bar secured to the upper chord of the said frame, a longitudinally-disposed truss secured to the upper chord of the frame at one end and to the said transverse beam at the other, and a center plate supported upon the horizontal truss, substantially as described.

7. In a pivotal car-truck, a frame having a continuous upper chord, forward and rear wheels and running-gear for the same, a center plate located above the said upper chord, and side and rear rub-plates on the upper chord, substantially as described.

8. In a pivotal car-truck, a truck-frame having a continuous upper chord, forward and rear wheels and running-gear for the same, rub-plates carried on the upper chord of said truck-frame and a rear rub-plate on the rear portion of the upper chord of the said frame, substantially as described

9. In a pivotal car-truck, a frame having a continuous upper chord, forward and rear wheels, running-gear for the same, a center plate located above the said upper chord, side and rear rub-plates on the upper chord, the axis of the center plate and side rub-plates being in the center plate, said axis aligning with the axis of one of the axles of the truck, substantially as described.

20. In a truck, a frame with an upper continuous chord 1, having the raised section 2, downwardly-extending section 3, and depressed section 4, large driving-wheels and running-gear supported from the section 2, and small truck-wheels and running-gear supported from the section 4, substantially as described.

21. A rigid frame for a truck, comprising an enlarged section at one end and a contracted section at the other, having side rub-plates located on the enlarged section and an end rub-plate on the contracted section, substantially as described

22. In a truck, the combination of a truck-frame having axles and axle-boxes at varying heights, and side beams adapted to be supported on the axle-boxes of such frame, substantially as described.

23. In a pivotal truck, the rigid frame comprising an enlarged section at one end and a contracted section at the other, combined with driving-wheels and running-gear located in the enlarged section and truck-wheels and running-gear in the contracted section, and side rub-plates set on the enlarged section and an end rub-plate on the contracted section, substantially as described.

24. In a pivotal truck, the rigid frame comprising an enlarged section at one end and a contracted section at the other, combined with driving-wheels and running-gear located in the enlarged section, truck-wheels and running-gear in the contracted section, and side rub-plates set on the enlarged section with their mutual axis substantially aligning with the axis of the driving-wheel axle, substantially as described

25. In a pivotal truck, the rigid frame comprising an enlarged section at one end and a contracted section at the other, combined with driving-wheels and running-gear located in the enlarged section, truck-wheels and running-gear in the contracted section, and an end rub-plate on the contracted section, located substantially over the axis of the truck-wheels, as set forth.

26. In a truck, the combination of a truck-frame having axle-boxes at varying heights, side beams adapted to be supported on the axle-boxes, and wheel brake-shoes mounted on the side beams, substantially as described.

27. In a truck, the combination of a truck-frame having axle-boxes at varying heights, axles set in said axle-boxes, side beams adapted to be supported on the axle-boxes, and a motor sleeved on one of the axles at one end and its free end spring-supported from the side beams, substantially as described.

28. In a truck-frame, the combination of a truck-frame having axle-boxes at varying heights, axles set in said axle-boxes, side beams adapted to be supported on the axle-boxes, a motor sleeved on one of the axles at one end and its free end spring-supported from the side beams, and wheel brake-shoes mounted on the side beams, substantially as described.

29. The combination of a truck having a frame, axle-boxes in its forward and rear ends, driving-wheels and truck-wheels smaller in diameter than the driving-wheels and axles set in the axle-boxes at opposite ends of the frame, and side beams supported on the axle-boxes, said side beams having an elevated section where they are supported upon the driving-wheel axle-boxes and a depressed section where they are supported upon the truck-wheel axle-boxes, substantially as described.

30. The combination of a truck having large and small wheels, and side beams having an elevated section where they are supported upon the axle-boxes of the large wheels and a depressed portion where they are supported upon the axle-boxes of the truck-wheels, substantially as described.

31. In a pivotal truck, a frame with an upper continuous chord 1, having the raised section 2, downwardly-extending section 3, and depressed section 4, and a center plate located upon the said chord in the raised section 2, substantially as described.

32. In a pivotal truck, a frame with an upper continuous chord 1, having the raised section 2, downwardly-extending section 3, and depressed section 4, a center plate on the said chord in the section 2, large driving-wheels and running-gear in section 2, and smaller truck-wheels and running-gear in section 4, substantially as described.

33. In a pivotal truck, the combination of the rigid frame having a contracted section at one end and an enlarged section at the other, a center plate and side rub-plates located upon the upper chord in the enlarged section of said frame, driving-wheels and running-gear in the enlarged section and truck-wheels and running-gear in the contracted section of said frame, the mutual axis of the side rub-plates and center plate being substantially over the axis of the driving-wheel, substantially as described.

34. In a pivotal truck, the combination of the rigid frame having a contracted section at one end and an enlarged section at the other, a center plate and side rub-plates located upon the upper chord in the enlarged section of said frame, a rear or end rub-plate located upon the upper chord in the contracted section of said frame, driving-wheels and running-gear in the enlarged section and truck-wheels and running-gear in the contracted section of said frame, the mutual axis of the side rub-plates and center plate being substantially over the axis of the driving-wheel, substantially as described.

35. The combination, with a truck-frame having an enlarged section at one end and a contracted section at the other, of driving-wheels and running-gear in the enlarged section, truck-wheels and running-gear in the contracted section, side beams supported upon the running-gear, and wheel brake-shoes mounted upon the side beams, substantially as described.

36. The combination of a car-body and a pivotal truck having large driving-wheels and running-gear, the car-body having recesses below the car-flooring proper within which the driving-wheels may radiate, with a body-bolster and truck-bolster extending up into the car-body but below the flooring thereof, substantially as described.

37. The combination of a car-body and a pivotal truck having large driving-wheels and running-gear, the car-body being provided with a recess below the flooring proper of the car within which the driving-wheels can radiate, with a bolster on the car-body extending up within the car-body but below the flooring proper thereof, substantially as described.

38. In a pivotal car-truck, the combination of a truck-frame having an upper chord, a beam or arch-bar secured transversely to the said upper chord, a horizontal truss secured to the said transverse beams and upper chord of truck-frame, a female center plate secured to said horizontal truss, with an X-shaped brace supported by the car-body, upwardly inclined, and having a male center plate secured to it, substantially as described.

39. A car-truck having a rigid frame, said frame comprising a continuous upper chord, a lower chord having supports for springs, and a central brace uniting the upper and lower chords, one end of the frame being enlarged and the other contracted, substantially as described.

40. A car-truck having a rigid frame, said frame comprising the continuous upper chord 1, having the raised and flat section 2, downward-extending section 3, and depressed and flat section 4, a lower chord united at its ends with the upper chord, and a centrally-disposed brace uniting the upper and lower chords, substantially as described.

41. A car-body having longitudinal sills and transverse girders, the outside longitudinal sills having side rub-plates, a rub-plate transversely secured to the longitudinals to the rear of the side rub-plates, and means for carrying the center plate, secured to the transverse girders, between the centrally-located longitudinals, substantially as described.

42. A car-body having the longitudinal sills A A′ A″ A‴ and transverse girders *a a′*, the sills A A‴ having side rub-plates *f*, a rub-plate *f‴*, secured to one or all of the said sills, and the body-bolster *d*, having an upwardly-inclined portion ending in the plate d^3, having center plate *d′*, secured to the girders *a a′*, substantially as described.

43. In a pivotal truck, the combination of the car body and truck, the said truck having a rigid frame, forward and rear axle-boxes and wheels, side and rear rub-plates secured to said rigid frame, corresponding rub-plates on the car-body, and side beams supported upon the axle-boxes, the pivotal center of the car body and truck being located substantially over the axis of one of the axles, substantially as described.

44. In a pivotal truck, the combination of the car body and truck, the said truck having a rigid frame, forward and rear axle-boxes and wheels, side and rear rub-plates secured to said rigid frame, corresponding rub-plates on the car-body, and a motor supported upon the truck-frame, the pivotal center of the car body and truck being located substantially over the axis of one of the wheels, substantially as described.

45. In a pivotal car-truck, the combination of the car body and truck, the said truck having a rigid frame, forward and rear axle-boxes and wheels, side and rear rub-plates secured to said rigid frame, corresponding rub-plates on the car-body, side beams supported upon the axle-boxes, and a motor sleeved at one end upon one of the axles and its free end spring-supported from the side beams, the pivotal center of the car body and trucks being located substantially over the axis of the axle upon which the motor is sleeved, substantially as described.

46. In a pivotal car-truck, the combination of the car body and truck, the said truck having a rigid frame, forward and rear axle-boxes and wheels, side and rear rub-plates secured to said rigid frame, corresponding rub-plates on the car-body, side beams supported upon the axle-boxes, a transverse beam connecting the side beams, having an upwardly-extending stud, spring and spring-caps on said stud, and a motor sleeved at one end upon one of the axles and its free end engaging the springs on said stud, the pivotal center of the car body and truck being located substantially over the axis of the axle upon which the motor is sleeved, substantially as described.

47. In a pivotal car-truck, the combination of the car body and truck, the truck having a rigid frame comprising an enlarged section at one end and a contracted section at the other, said frame having forward and rear axle-boxes and wheels, side and rear rub-plates secured to said frame, and corresponding rub-plates on the car-body, the pivotal center of the car body and truck being located substantially over the axis of one of the axles, substantially as described.

48. In a pivotal truck, the combination of the car body and truck, the said truck having a rigid frame, forward and rear axle boxes and wheels, side and rear rub-plates secured to said frame, corresponding rub-plates on the car-body, and side beams secured to the axle-boxes, the pivotal center of the car body and truck being located substantially over the axis of one of the axles, substantially as described.

49. In a pivotal truck, the combination of the car body and truck, the said truck having a rigid frame, side and rear rub-plates secured to said frame, corresponding rub-plates on the car-body, side beams secured to the axle-boxes, and wheel brake-shoes mounted upon the side beams, the pivotal center of the car body and truck being located substantially over the axis of one of the axles, substantially as described.

50. In a pivotal car-truck, the combination of the car body and truck, the car body having a body-bolster and center plate secured within its longitudinal sills, the truck having a rigid frame, forward driving-wheels and rear truck-wheels with running-gear for the same, side and rear rub-plates, and a center plate secured to the upper chord of said frame, and corresponding rub-plates on the car-body, the pivotal center of the car body and truck being substantially over the axis of the driving-wheel axle, substantially as described.

51. In a pivotal car-truck, the combination of the car body and truck, the car-body having a body-bolster and center plate secured within its longitudinal sills, the truck having a rigid frame comprising a contracted section at one end and an enlarged section at the other, driving-wheels and running-gear in the enlarged section, truck-wheels and running-gear in the contracted section, side rub-plates secured on the enlarged and a rear rub-plate on the contracted section of said frame, corresponding rub-plates on the car-body, and a center plate secured to and above the upper chord in the enlarged section of said frame, substantially as described

52. In a truck-frame, the combination of a truck-frame having axle-boxes at varying heights, axles set in said axle-boxes, side beams adapted to be supported on the axle-boxes of such a frame, and fenders or life-guards carried by the side beams, substantially as described.

53. In a pivotal truck, the rigid frame comprising an enlarged section at one end and a contracted section at the other end, a beam having an upwardly-rising section transversely secured to the upper chord of said frame, and a brace secured to the said transversely-disposed beam at one end and to the said upper chord at the upper end, and a center plate located upon said brace, all of which are located upon and above the upper chord in the enlarged section of said frame, substantially as described.

54. A car-body having longitudinal sills, an X-shaped brace secured between two of said longitudinal sills, said brace having an upwardly-rising section terminating in substantially a flat plate, and a center plate secured to said flat plate, substantially as described.

55. The combination, in an electrically-propelled car, of a truck pivotally secured to said car-body, said truck having wheels, axles, and axle-boxes, side beams secured to the axle-boxes, a motor sleeved at one end upon one of the axles, its free end being supported by the side beams, and a rub-plate located upon the end of the truck opposite to that end upon which the motor is located, substantially as described

56. The combination, in an electrically-propelled car-truck, of a truck-frame having driving-wheels, axle, and axle-boxes at one end, truck-wheels, axle, and axle-boxes at the other, the said truck-wheels being smaller in diameter than the said driving-wheel, a motor sleeved upon the axle of the driving-wheel, its free end being supported upon said truck-frame, and a rub-plate located upon the end of the truck-frame opposite to that end upon which the motor is located, substantially as described

57. In an electrically-propelled car-truck, the combination of a frame having an enlarged section at one end and a contracted section at the other, large driving-wheels, axle, and axle-boxes located in enlarged section, smaller truck-wheels, axle, and axle-boxes located in the contracted section, a motor sleeved upon the axle of said driving-wheels, its free end being supported upon the truck-frame, and a rub-plate located upon the end of the truck-frame opposite to that upon which the motor is located, substantially as described.

58. In an electrically-propelled car-truck, the combination of a truck-frame having driving-wheels, axle, and axle-boxes at one end, truck-wheels smaller in diameter than the driving-wheels, located at the other end, and running-gear for the same, side beams supported upon the axle-boxes, a motor sleeved upon the axle of the driving-wheels, its free end being sprng supported upon side beams, and a rub-plate located upon the end of the truck opposite to that upon which the motor is located, substantially as described.

59. In an electrically-propelled car-truck, the combination of a truck-frame having an enlarged section at one end, a contracted section at the other end, driving-wheels, axle-boxes, and an axle located in the enlarged section, truck-wheels smaller than the driving-wheels, an axle and axle-boxes located in the contracted section, side beams mounted upon the axle-boxes, a motor sleeved upon the axle of the driving-wheels, its free end being spring-supported from the side beams, and a rub-plate located on the end of a truck opposite to that end upon which the motor is located, substantially as described

60. The combination, in an electrically-propelled car, of a truck pivotally secured to the car-body, said truck having wheels and running-gear at each end thereof, and side beams hung from the running-gear, of a motor sleeved upon one of the axles, its free end being spring-supported from the side beams, and a rub-plate on the frame and opposite the end upon which the motor is located, substantially as described.

61. A truck having a frame, said frame comprising the continuous upper chord 1, having a raised and flat section 2, downwardly-extending section 3, depressed and flat section 4, a lower chord united at its ends with the upper chord, and a centrally-disposed brace uniting the upper and lower chords, combined with large driving-wheels and running-gear in section 2 and smaller truck-wheels in section 4, substantially as described.

445,309. **DENTAL BRIDGE-WORK.** EDWARD E. CALL, Peoria, Ill. Filed Jan. 24, 1890. Serial No. 337,971. (No model.)

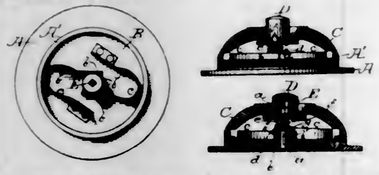


Claim.—For replacing artificial teeth either upon bridge-plate or pivot-work, an artificial tooth having one or more holes pierced through it from the palatal to the labial side, countersunk on the labial side, held in place by a tube fitted with a screw upon its interior surface, and having a bolt fitted to screw into the said tube, all acting together in the manner and for the purpose specified.

445,310. **ELECTRIC SWITCH.** GEORGE CUTTER and CHARLES G. ARMSTRONG, Chicago, Ill. Filed July 31, 1890. Serial No. 360,482. (No model.)

Claim.—1. The combination, with a plate B of insulating material, a stationary post projecting therefrom, a revoluble rectangular shunt-block *b*, having two side edges, insulated boss *g*, integrant with shunt-block *b*, having teeth *d*, and the spring-brushes *c c*, of the non-revoluble

counterpart boss E, having teeth *f* and movable longitudinally, and the push-button, as set forth.



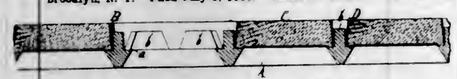
2. A plate of insulating material B, stationary post *a*, projecting therefrom, a revoluble rectangular shunt-block having two opposite side edges insulated, boss *g*, integrant with said shunt-block and having teeth *d*, as described, and the U-shaped spring-brushes *c c*, in combination with the non-revoluble counterpart boss E, having teeth *f* and movable longitudinally, and the push-button, as set forth.

3. A plate of insulating material B, stationary post *a*, projecting therefrom, a revoluble rectangular shunt-block having two sides insulated, boss *g*, integrant with said shunt-block and having teeth *d*, as described, and the spring-brushes *c c*, in combination with the non-revoluble counterpart boss E, having teeth *f* and movable longitudinally, spring *e* for automatically restoring said boss E to its original position, and the push-button, as set forth.

4. A plate of insulating material B, stationary post projecting therefrom, having its inner portion cylindrical and its outer portion square in cross-section, a rectangular shunt-block revoluble on the cylindrical part of said post, having two side edges thereof insulated, boss *g*, integrant and concentric with said shunt-block, having teeth *d*, as described, and the spring-brushes *c c*, in combination with a non-revoluble counterpart D on the square part of said post, having teeth *f*, and the push-button, as set forth.

5. The combination, with a plate B, a stationary post projecting therefrom, a revoluble rectangular shunt-block *b*, having two side edges insulated, teeth *d*, and brushes *c c*, of the toothed push-button D, which when pressed down upon causes said shunt-block to revolve, as set forth.

445,311. PAVEMENT OR FLOOR LIGHT. JAMES C. FRENCH, Brooklyn, N. Y. Filed July 9, 1889. Serial No. 316,917. (No model.)



Claim.—The herein-described pavement or floor light, consisting of a perforated supporting-frame provided with retaining-lugs extending upwardly about the perforations, lenses resting over the perforations on the frame, surrounding the perforations, fibrous rubber bands provided with light-colored faces adjacent to the peripheries of the lenses, the said bands being located about the lenses between their peripheries and the retaining-lugs, and hard cement filled in between the lugs and rubber bands up to a level with the upper edges of the lenses, substantially as set forth

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445,312. INSOLE. JAMES C. FRENCH, Brooklyn, N. Y. Filed Jan. 24, 1890. Serial No. 337,916. (Model.)



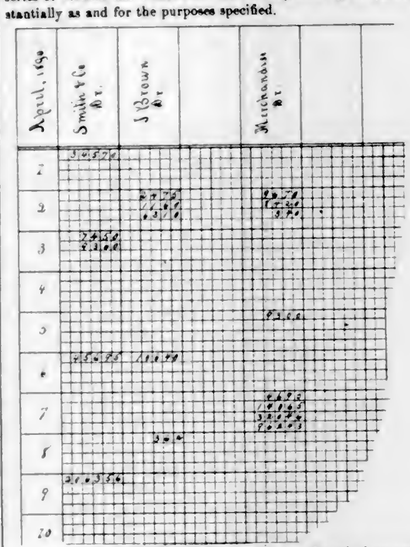
Claim.—As an article of manufacture, an insole for boots and shoes, comprising layers of leather or similar material shaped to substantially conform to the interior of the boot or shoe adjacent to the sole, and an intermediate layer of thin sheet metal of substantially the same shape as the layers of leather or similar material and cemented to the said layers of leather or similar material, the said insole being separable from the boot or shoe, substantially as specified

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445,313. ACCOUNT-BOOK. JAMES W. GARNEAU, St. Louis, Mo. Filed June 3, 1890. Serial No. 354,150. (No model.)

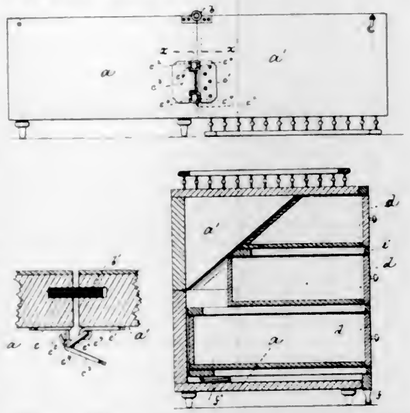
Claim.—1. An account-book page having a series of vertical account-columns intersected by transverse lines corresponding to the month dates and crossed at the bottom of the page by a series of transverse lines which form trial-balance sections corresponding to the several account-columns, and a transverse total-column interposed between the date-columns and the trial-balance sections and corresponding to the several account-columns, substantially as and for the purposes specified.

2. An account-book page having a series of vertical account-columns intersected by transverse lines corresponding to the month dates and crossed at the bottom of the page by a series of transverse lines which form trial-balance sections, and a transverse total-column corresponding to the several account-columns and interposed between the date-columns and the trial-balance sections, the whole divided up by a series of vertical and transverse lines into separate figure-spaces, substantially as and for the purposes specified.



3. An account-book page having a series of vertical account-columns intersected by transverse lines corresponding to the month dates, a transverse total-column which corresponds to the several account-columns, a series of transverse lines which form trial-balance sections below the transverse total-column and corresponding to the several account-columns, and a series of vertical lines at the extreme right of the trial-balance sections and intersecting the same to form sum-total columns, substantially as and for the purposes specified.

445,314. BATH-TUB. KALLMANN GLASS, New York, N. Y. Filed Sept. 2, 1889. Serial No. 322,675. (No model.)

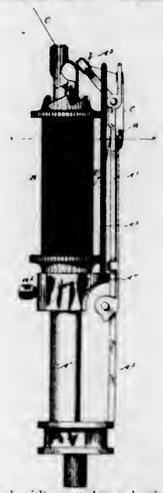


Claim.—1. The combination, in a bath-tub, of sections *a a'*, grooved on contiguous edges, with the gasket *b'* within the grooves and with the hinges *b* at the upper edges of sections *a a'* and with a clasp upon the sides of such sections, substantially as specified.

2. The combination, in a bath-tub, of sections *a a'*, grooved on contiguous edges, with the gasket *b'*, plate *c'*, links *c*³, eccentric *c*⁴, and with the plate *c*, having bent edge *c*³, substantially as specified.

3. The combination of a sectional folding bath-tub with frame *c*, rails *c'*, uprights *c*³, feet *f*, and hinged feet *f'*, substantially as specified.

445,315. CARRIER OR RACER FOR BRAIDING-MACHINES. HUGO GROSSENBACH, Brooklyn, and WILHELM PANHORST, New York, N. Y. Filed Apr. 29, 1890. Serial No. 349,912. (No model.)



Claim.—A carrier for braiding-machines, having a spool-supporting spindle, a standard provided with a yarn-guiding eye, and with a deflector-rod A^4 placed parallel with the spindle and carried by the collar on which the spool rests independent of the guide, substantially as shown and described

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445,316. RIBBON-NEEDLE. CAROLINE F. HATHAWAY, Rockford, Ill. Filed July 31, 1890. Serial No. 360,518. (No model.)



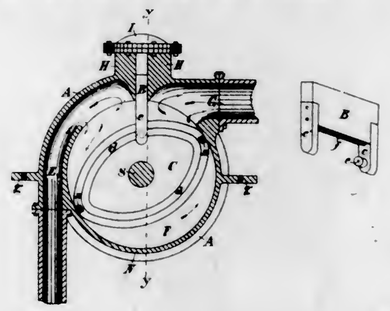
Claim.—A ribbon-needle comprising a substantially flat strip of material tapering to a point at its outer end and having a series of eyes at its inner end extending transversely to the longitudinal axis of the needle, its side edges being regular in form, substantially as set forth.

445,317. FOUNTAIN-PEN. GEORGE H. JONES, London, England. Filed May 28, 1889. Serial No. 312,378. (No model.) Patented in England May 16, 1888, No. 7,293.

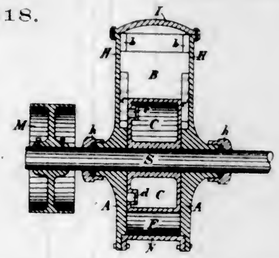


Claim.—The combination, with the tubular ink-reservoir, perforated nozzle, and flexible cap, located at the upper end of the reservoir and adapted to aid the flow of ink to the nib, of a screwed or otherwise securely-attachable cap to cover the nozzle, and a socket formed with or adapted to receive a nib and fitted to slide on the said tubular reservoir, substantially as and for the purpose above specified.

445,318. ROTARY PUMP. RUFUS LEACH, Clark's Island, assignor of five-eighths to Edward A. Buck and Albion C. Batchelder, Bangor, Me. Filed Dec. 20, 1888. Serial No. 294,170. (No model.)

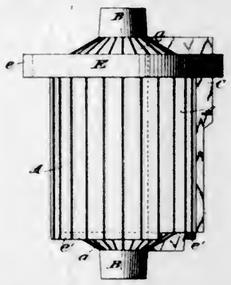


445,318.



Claim.—In a rotary pump, the combination, with the casing consisting of the centrally-perforated side plates, each having a radial groove extending from near the perforation to the circumference, and a circular wall between the plates having an inlet and an outlet opening substantially at a tangent to the ring, and a slotted portion between the inlet and outlet openings, which extends from the inner diameter out beyond the exterior diameter, said slot registering with the grooves in the side plates, of a shaft through the casing, an elliptical drum on the shaft, the length of which is equal to the diameter of the casing, and having a groove in one side, a flat abutment in the slotted portion of the ring of a greater length than the width of the drum, and a leg on each end of the abutment, which fits within the grooves in the side plates, and one of which is provided with a roller which fits within the groove in the side of the drum, substantially as described.

445,319. COMMUTATOR-PATTERN. PHILIP F. LENHART, Brooklyn, N. Y., assignor of seven-eighths to Atkins Stover, same place. Filed June 17, 1890. Serial No. 355,711. (No model.)



Claim.—1. The pattern for casting commutators, comprising a central body portion, wings extending longitudinally of and radiating from the central body portion, a flange extending outwardly from the body portion between the wings at one end, an annular ring forming a part of said flange in engagement with and circumscribing the extreme outer edges of the radial wings at said end, and a ring forming, in connection with the ends of the several wings, a closure at the opposite end of the pattern, substantially as set forth.

2. The pattern for casting commutators, comprising the central body portion provided with wings radiating therefrom and detachable from the body portion, a flange extending outwardly from the body portion between the wings at one end of the pattern, a ring thereon surrounding the said flange and circumscribing the outer edges of the wings, and a segmental ring in contact with the ends of the wings at the opposite end of the pattern to form a closure therewith, the segmental ring being divided at points beneath the several radiating wings, substantially as set forth.

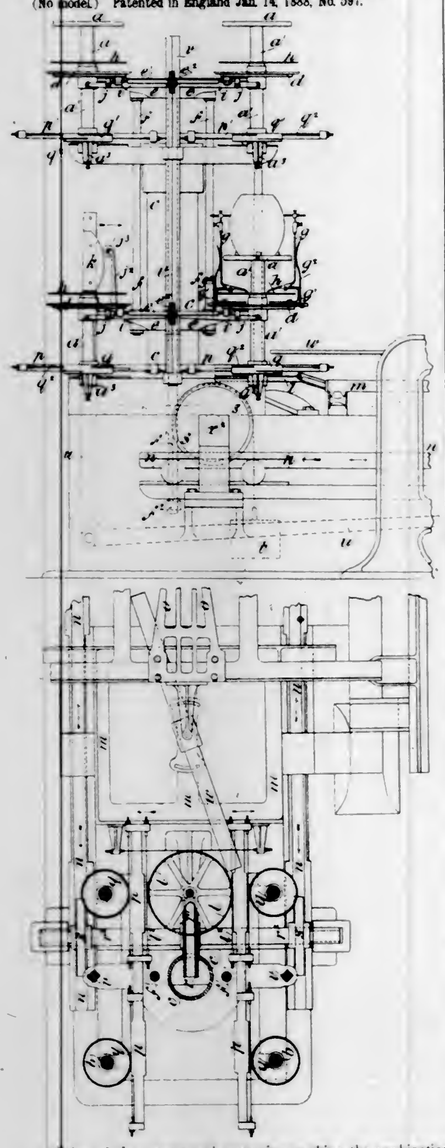
445,320. COMPOSITION FOR TREATING THE SURFACES OF METALS. JOHANN MEESE, Leer, Prussia, Germany. Filed Mar. 4, 1890. Renewed Dec. 30, 1890. Serial No. 376,214. (No specimens.) Patented in Belgium Sept. 23, 1889, No. 87,823, and in England Nov. 9, 1889, No. 17,878.

Claim.—1. A composition for the purpose described, comprising nickel-oxide, chromate of iron, and a suitable flux.

2. A composition for the purpose set forth, consisting of nickel-oxide, chromate of iron, a suitable oil or oils, and a lead-glass flux.

3. A composition for the purpose described, consisting of nickel-oxide, chromate of iron, oil of stearine, oil of turpentine, and a lead-glass flux, substantially as described.

445,321. PANTOGRAPH ENGRAVING-MACHINE. GEORGE MOULTON, Manchester, England. Filed Nov. 26, 1889. Serial No. 331,660. (No model.) Patented in England Jan. 14, 1888, No. 597.



Claim.—1. In a pantograph engraving-machine, the combination, with a plurality of tables mounted and adapted to vibrate upon vertical axes, of a hollow shaft, a post inside the same, and means for imparting both a vertical and rotary motion to said tables, substantially as set forth.

2. In a pantograph-machine, the combination, with a plurality of tables mounted and adapted to vibrate upon vertical axes, of a hollow shaft, a post inside the same, and two steel centers on said hollow shaft, one of which rests in a seating in the upper and the other in the lower end of the said post, the latter center being carried by an arm attached to the wheel upon the hollow shaft, whereby it is moved, substantially as specified.

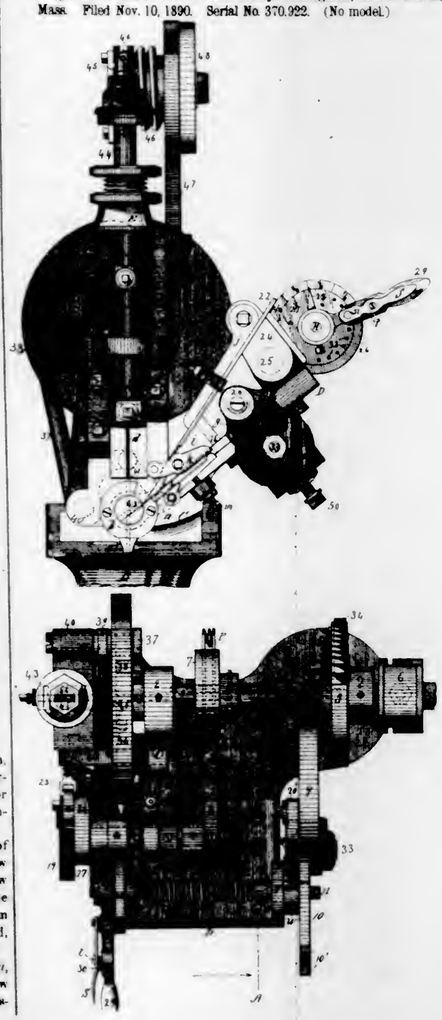
3. In a pantograph-machine, the combination, with the tables *a*, hollow shaft *a'*, provided with centers a^2, post *b* within said hollow shaft, wheels *q*, bands q^2, connected therewith, bars *p*, and cross-heads *e*, connected by arms *f f'*, of the shaft r^2, wheel *r*, fixed thereto, bars *n n*, and wheels *s s*, resting thereon, whereby when said bars move motion is communicated to the cross-heads *e e* and said tables are moved, substantially as specified.

4. In a pantograph-machine, the combination, with the tracer-carriers *d*, tracer-levers *q*, plates N, levers *i i*, rods i^2, shaft *j'*, bowl j^3, and templet *k*, of the cross-heads *e e*, rods *f f'*, connecting the same, wheel-shaft r^2, wheel *r*, mounted thereon, wheel *s*, and bar *n*, whereby motion is imparted through the cross-heads to the tracers, substantially as specified.

5. The bars *v*, the spindles *e'*, the wheels *l'*, the cross-heads *e*, the rods *f f'*, the bar f^3, the band *r'*, the wheel *r*, the weight *l*, the wheels *s*, and the bars *n*, in combination with a pantograph-machine, substantially as and for the purpose set forth.

6. The tables *a*, the hollow shaft *a'*, the centers a^2, the posts *b*, the wheels *q q'*, the bands q^2, the bars *p*, the bands *t'*, the wheel *l*, the frame *m*, the tracer-carriers *d*, the tracer-levers *q*, the springs q^3, the plates *h*, the levers *i i*, the rods i^2, the shaft *j'*, the lever j^3, the dowel j^3, the templet *k*, the bars *n*, the spindles *e'*, the wheels e^2, the cross-heads *e*, the rods *f f'*, the bar f^3, the band *r'*, the wheel *r*, the weight *l*, the wheels *s*, the shaft *s'*, and the bars *n*, in combination with a pantograph-machine, substantially as and for the purpose set forth.

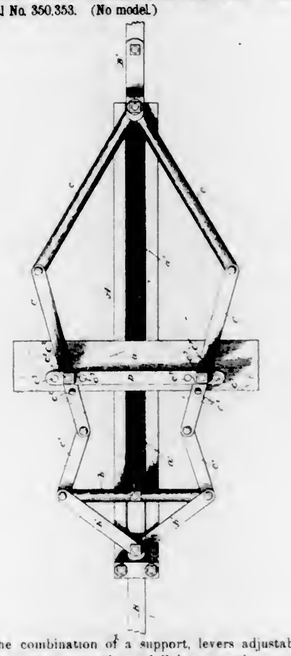
445,322. TACKING-MACHINE. JOHN P. SMITH, Exeter, N. H., assignor to Frank M. Stevens and Henry Cunningham, both of Boston, Mass. Filed Nov. 10, 1890. Serial No. 370,922. (No model.)



Claim.—1. In a nail-forming machine, the combination, with the wire-feeding mechanism, of lever *k*, having a roll at its end, pivoted arm *t*, arranged to act against the arm of said lever, and an adjusting-screw *m*, arranged to act against said arm, all substantially as specified.

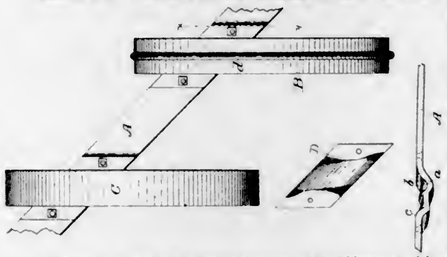
2. The combination, with the wire-feeding mechanism, of an arm secured upon the feed-roll shaft with means to actuate the same, a rod pivoted to said arm and provided with a stop or stud, a stair-stepped cam pivotally supported and arranged with its steps in the line of said stop or stud, a shaft having a spring with one end thereof secured thereto and the other to said cam, an adjusting-lever secured upon said shaft with a locking device therefor, and an indicating mechanism, whereby the degree of adjustment may be graduated according to the length of nail required.

445,323. DEVICE FOR REGULATING THE THROW OF CONNECTING-RODS. HIRAM STAPLES, Battle Creek, Mich. Filed May 2, 1890. Serial No. 350,353. (No model.)



Claim.—The combination of a support, levers adjustably connected to said support, a connecting-rod, links connecting one extremity of the pivoted levers and the connecting-rod, an extension-rod, and the links connecting the outer extremities of the levers and the extension-rod, whereby the length of throw of a connecting-rod may be regulated and adjusted, substantially as described

445,324. SPRING-TOOTH HARROW. FREDERICK VAN PATTEN, Auburn, N. Y. Filed Nov. 27, 1888. Serial No. 291,953. (No model.)

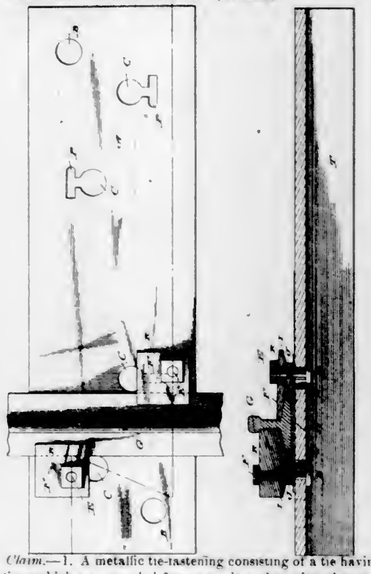


Claim.—1. In a spring-toothed harrow, the combination, with a metallic bar A, having integral depressed seats, and end walls formed in its upper surface, of harrow-teeth fitting in said seats, and clamps or clips for securing said teeth in place.

2. In a spring-toothed harrow, the combination, with a metallic bar A, provided with integral depressed seats, having end walls formed in its upper surface, of harrow-teeth fitting in said seats, and clamps or clips having recessed lower faces to partly receive the said teeth.

3. In a spring-toothed harrow, the combination, with a metallic bar A, having in its upper surface integral depressed seats, each having a groove *a* and end walls *b* and *c*, of harrow-teeth B, having ribs *d* fitting said grooves, and clamps or clips D for securing said teeth in place.

445,325. RAILWAY-TIE. DAVID Y. WILSON, Gum Tree, Pa. Filed Feb. 17, 1890. Serial No. 340,718. (No model.)



Claim.—1. A metallic tie-fastening consisting of a tie having perforations which are extended from an enlarged portion, the extension being narrower than the main perforation, and having an extending portion at the narrower end, which extends at right angles to the line of the track when in its operative position, in combination with a bolt, a cushioning for the rail, and a washer-block having a raised polygonal portion on its lower side, and also having beveled edges and a key beneath the washer-block, all constructed and combined to operate substantially as described.

2. A metallic tie-fastening consisting of a tie having perforations which are extended from an enlarged portion, the extensions being narrower than the main perforation made T shape at its narrower end, in combination with a bolt, a cushioning for the rail, a washer-block having a raised polygonal portion on its lower side, and also having beveled edges and provided with recesses at the various sides for the reception of the edges of the cushioning, and a bifurcated key beneath the washer-block with its bifurcated end astride the bolt, all constructed and combined to operate substantially as described.

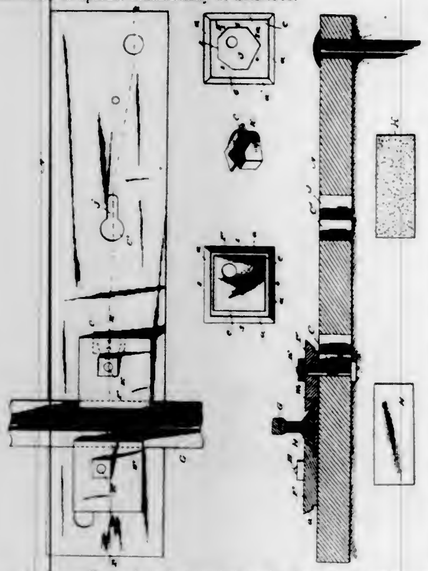
445,326. RAILWAY-TIE AND FASTENER. DAVID Y. WILSON, Gum Tree, Pa. Filed June 5, 1890. Serial No. 354,308. (No model.)

Claim.—1. A metallic tie-fastening consisting of a tie having perforations which are extended from an enlarged portion, the extensions being narrower than the main perforation, in combination with a bolt, a cushioning for the rail, a washer-block having a raised polygonal portion on its lower side and having beveled edges, and provided with recesses at the various sides for the reception of the edges of the cushioning, and a plug beneath the washer-block, all constructed and combined to operate substantially as described.

2. A metallic tie-fastening consisting of a tie having perforations which are extended from an enlarged portion, the extensions being narrower than the main perforation, in combination with a bolt, a cushioning for the rail, which is provided with a waterproofing preservative, a washer-block having a raised polygonal portion on its lower side and also having beveled edges, and provided with recesses at the various sides for the reception of the edges of the cushioning, and a plug beneath the washer-block, all constructed and combined to operate substantially as described.

3. A metallic tie-fastening consisting of a tie having perforations

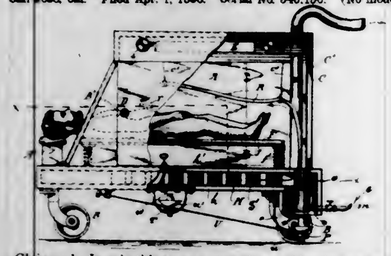
which are extended from an enlarged portion, the extensions being narrower than the main perforation and having an extending portion at the narrower end, which extends at right angles to the line of the track when in its operative position, in combination with a bolt, a cushioning for the rail, and a washer-block having a raised polygonal portion on its lower side and also having beveled edges, and provided with recesses at the various sides for the reception of the edges of the cushioning, and a plug beneath the washer-block, all constructed and combined to operate substantially as described.



4. A metallic tie-fastening consisting of a tie having perforations which are extended from an enlarged portion, the extensions being narrower than the main perforation, made T shape at its narrower end, in combination with a bolt, a cushioning for the rail, a washer-block having a raised polygonal portion on its lower side and also having beveled edges, and provided with recesses at the various sides for the reception of the edges of the cushioning, and a plug beneath the washer-block, all constructed and combined to operate substantially as described.

5. A metallic tie-fastening consisting of a tie having perforations which are extended from an enlarged portion, the extensions being narrower than the main perforation, which is approximately flush with the under surface of the tie, in combination with a bolt, a cushioning for the rail, a washer-block having a raised polygonal portion on its lower side and also having beveled edges, and provided with recesses for the reception of the edges of the cushioning, and a plug beneath the washer-block, all constructed and combined to operate substantially as described.

445,327. INVALID'S BATHING APPLIANCE. MILTON DE BARR, San José, Cal. Filed Apr. 1, 1890. Serial No. 346,156. (No model.)

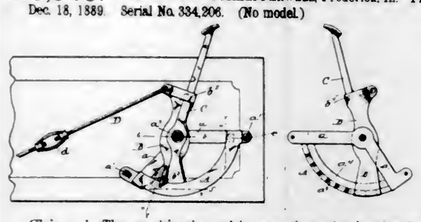


Claim—1. In a bathing apparatus, the combination of a housing or casing provided with side arm-openings, heaters or lamps, and obliquely-arranged rods for controlling the heat generated by the lamps, said rods having one end connecting with the lamp and their free end in position to be reached by the arms of the patient through the arm-openings, substantially as set forth.

2. A portable invalid's bathing apparatus having a heating-chamber located therein surrounded by double walls, heat-circulating space between the walls thereof, double bottom having heat-circulating passage interrupted by cross-partitions communicating with end air-chamber, and outlet-flue communicating with said air-passage for the outflow of utilized heat, substantially as and for the purpose set forth and described.

3. The combination, in a portable invalid's bathing apparatus, of the heating-chamber, exit-flues for the escape of vitiated air or heat, located in the top thereof, air-circulating fans secured therein, inclined bed or couch secured upon springs within the chamber, inclined curtain provided with head-opening forming a partition between the head rest or support and heating-chamber, air-circulating space or passage surrounding the heating-chamber, lamps or generators suspended beneath the apparatus and adapted to discharge heat within the circulating-passage, heating-oven located at one end, air-inlet pipe connected therewith, supply pipe or hose running from the oven into the heating-chamber, and the discharge-flue for carrying off the utilized air, substantially as and for the purpose set forth and described.

445,328. LOCK-LEVER. PULASKI FARWELL, Frederick, Ill. Filed Dec. 18, 1889. Serial No. 334,206. (No model.)



Claim.—1. The combination, with a ratchet, of a locking-lever having a tooth or pawl to engage said ratchet, and an operating-lever having an incline arranged to engage the locking-lever to release said tooth or pawl from the teeth of said ratchet when desired by a direct movement of said operating-lever.

2. The combination, with a ratchet, of a locking-lever having a tooth or pawl to engage said ratchet, and an operating-lever arranged to engage the locking-lever and force the tooth or pawl from the ratchet on imparting a direct movement to the operating-lever, substantially as and for the purpose described.

3. The combination, with a ratchet, of a locking-lever having a tooth or pawl to engage said ratchet, and an operating-lever having its hand-hold extending beyond or to a point above the adjacent end of the locking-lever, said operating-lever being arranged to engage the locking-lever and release said tooth or pawl from the teeth of said ratchet, substantially as and for the purpose described.

4. The combination, with a ratchet, of a loosely-pivoted locking-lever having a tooth or pawl to engage said ratchet and provided with an incline, and an operating-lever, also having an incline arranged to engage the first-named incline to release said tooth or pawl from the teeth of said ratchet when desired by a direct movement of said operating-lever.

5. The combination, with the ratchet-plate A, of the lever B, having pawl or tooth b, incline b', stop or lug b^3, and yoke b^5, and the operating-lever C, having the incline c.

6. The combination, with the ratchet-plate A, of the lever B, having pawl or tooth b, incline b', stop or lug b^3, and yoke b^5, provided with incline b^4, and the operating-lever C, having the incline c.

7. The combination, with the ratchet-plate A, provided with incline c, of the locking-lever B, having pawl or tooth b and incline b', and the operating-lever C, having incline c.

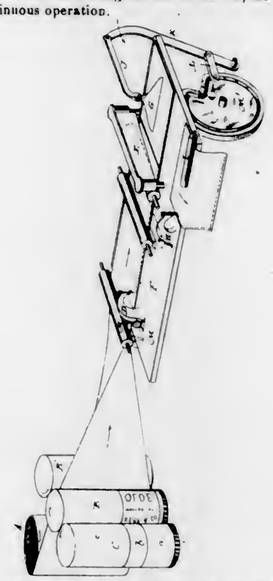
8. The combination, with the ratchet-plate A, having the plain portion a^4 above its ratchet-teeth, of the lever B, having pawl or tooth b, and stop b^3, having finger b^2, and the lever C, having its lower end confined between said plain portion a^4 and lever B.

9. The combination, with the ratchet A, of the locking-lever B, having a tooth or pawl b to engage said ratchet, and an incline b', the operating-lever C, having the incline c, the rod D, formed in two parts, and the coupling d, connecting the said parts of said rod.

445,329. METHOD OF MAKING BAGS. WILLIAM H. KERR, Durham, N. C. Filed Apr. 15, 1889. Serial No. 307,350. (No specimens.)

Claim.—1. An improvement in the method of manufacturing bags in one continuous operation, which consists in folding the strip lengthwise through its middle, moving the same forward longitudinally, sewing the edges of the folded strip, severing the folded and sewed strip and moving the severed section transversely to the line of travel of the folded strip, and finally sewing the severed section across one end.

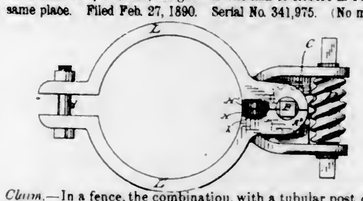
2. The improvement in the method of making bags, consisting in severing from a longitudinally folded and moving strip of cloth a length sufficient for the formation of a bag, moving the severed section transversely to the line of travel of the folded strip, and finally stitching the severed section along the line of the cut, the whole constituting a continuous operation.



3. An improvement in the method of manufacturing bags in one continuous operation, which consists in first printing upon the continuous web or sheet of bag material; second, folding the printed sheet lengthwise through the middle and sewing its edges, so as to form a tube; third, severing the tube and moving the severed section transversely to the tube, and, fourth, sewing the severed section across one end.

4. An improvement in the method of manufacturing bags at a continuous operation, which consists in first printing upon the continuous web or sheet of bag material; second, folding the web or sheet longitudinally through its middle, with the printed face inside, and subsequently sewing, cutting, and sewing the folded printed strip.

445,330. WIRE FASTENER AND TIGHTENER. CHARLES M. KILER, Indianapolis, Ind., assignor of one-half to Robert E. Poindexter, same place. Filed Feb. 27, 1890. Serial No. 341,975. (No model.)



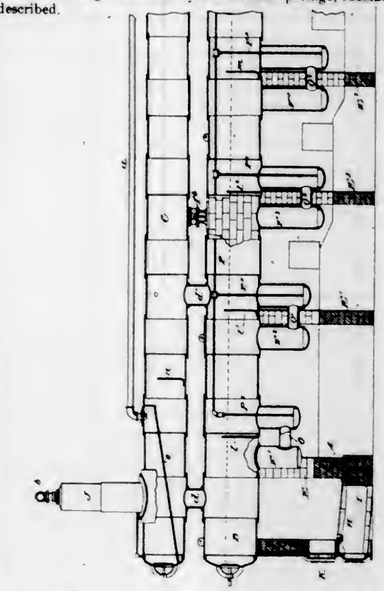
Claim.—In a fence, the combination, with a tubular post, of a two-part casing having arms to embrace said post, as shown, and having the slotted winding-drum B, the shaft B' of which is journaled in said casing, a toothed wheel fixed to said shaft, and a worm D at right angles to the axis of the toothed wheel, meshing therewith, and having angular ends projected beyond the casing to be engaged by a wrench or key, all substantially as and for the purpose set forth.

445,331. APPARATUS FOR MAKING ANHYDROUS AMMONIA. PATRICK J. MCMAHON, New Orleans, La. Filed Nov. 18, 1889. Serial No. 330,714. (No model.)

Claim.—1. In a device for the purpose described, a horizontal still provided with depending legs in descending series, substantially as specified.

2. In a device for the purpose described, a horizontal still provided with depending legs arranged in pairs in descending series, substantially as described.

3. In a device for the purpose described, a horizontal still provided with depending legs in pairs in descending series, the legs of each pair being connected by a transverse passage, substantially as described.



4. In a device for the purpose described, a horizontal still provided with depending legs in pairs, the legs of each pair having communication with each other and the pairs arranged in descending series with the shortest legs nearest the source of heat, substantially as described.

5. In a device for the purpose described, a horizontal still provided with depending legs in pairs, and with a partition within the horizontal portion of the still between the legs of each pair, as set forth.

6. In a device for the purpose described, a horizontal still provided with depending legs in pairs, with a communication between the legs of each pair, and a vertical partition within the horizontal portion between the legs of each pair, substantially as described.

7. In a device for the purpose described, a horizontal still having depending legs, combined with a draw-off pipe having branches extending into said legs, as set forth.

8. In a device for the purpose described, a horizontal still having depending legs with communication between each two legs forming a pair, and a vertical partition within the horizontal portion of the still, between the legs of each pair, combined with a draw-off pipe having depending branches extending into one of the legs of each pair, as set forth.

9. In a device for the purpose described, the combination, with the horizontal still, of a gas-chamber above the same and having communication with the horizontal portion, a supply-pipe to the gas-chamber, and a perforated plate within the gas-chamber, beneath the discharge end of the supply-pipe, as set forth.

10. The combination, with the horizontal still, of the gas-chamber parallel with and communicating with the same, a supply-pipe to said gas-chamber, a perforated plate within the gas-chamber, beneath the discharge end of the supply-pipe, and a vertical partition within the gas-chamber in proximity to the perforated plate, as and for the purpose specified.

11. The combination, with the horizontal still and the gas-chamber communicating therewith, of the heater D, and a supply-pipe leading from said heater to the gas-chamber, as set forth.

12. The combination, with the horizontal still and the gas-chamber communicating therewith and having a perforated plate, of the vertical partition within the gas-chamber in proximity to said plate, the heater D, and the supply-pipe from said heater to the gas-chamber discharging above said plate, as set forth.

13. The combination, with the horizontal still, of the gas-chamber C communicating therewith, the vertical gas-chamber at one end of said chamber C, the condenser, and the pipe leading from the vertical gas-chamber to said condenser, as set forth.

14. The combination, with the horizontal still, the horizontal gas-chamber communicating therewith, and the vertical gas-chamber at

one end of the horizontal gas-chamber, of the heater D, the pipe leading from the heater to the horizontal gas-chamber, the condenser, and the pipe leading from the vertical gas-chamber to the said condenser, as set forth.

15. The combination, with the horizontal still, the horizontal gas-chamber communicating therewith, the vertical gas-chamber at one end of the horizontal gas-chamber, the heater, and the pipe leading therefrom to the horizontal gas-chamber, of the condenser, the pipe leading from the vertical gas-chamber to the condenser, and a connection between said condenser and the storage-tank, as set forth.

16. The combination, with the horizontal still and the condenser connected therewith, of the storage-tank connected with the condenser, the charging-tank connected with the storage-tank, and a valve-controlled outlet from the charging-tank, as set forth.

17. The combination, with the horizontal still and the condenser connected therewith, of the storage-tank connected with the condenser, the charging-tank connected with the storage-tank, a valve-outlet to the charging-tank, and a pump or tube adapted to produce a vacuum between the valves, substantially as and for the purpose specified.

18. The combination, with the strong-solution tanks and the concentrator connected therewith, of the weak-solution tanks, the vacuum-tank, and connections, substantially as described, between said parts, as set forth.

19. The combination, with the strong-solution tanks, the concentrator, and the weak-solution tanks, of the vacuum-tank, the various pumps, and their connections with the above-mentioned parts, substantially as and for the purpose specified.

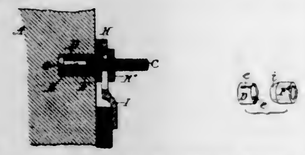
20. The combination, with the strong and weak solution tanks and a concentrator connected with the strong-solution tanks, of the condenser, the various pumps, and connections between the pumps, condenser, and concentrator, as set forth.

21. The combination, with the still, the strong and weak solution tanks, and the concentrator connected with the strong-solution tanks, of the condenser, the pumps, and connections, substantially as described, between the concentrator, still, condenser, and tanks, as set forth.

22. The combination, with the condensing-coils and the circulating-pumps, of the perforated distributing-pipes arranged above said coils and having connection with the pumps, substantially as described

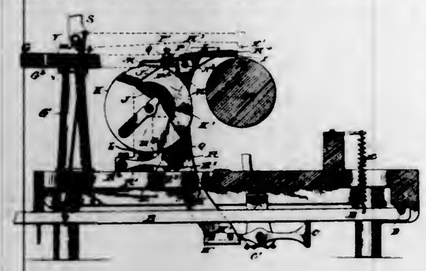
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445,332. EXPANSIBLE BOLT-FASTENING DEVICE. CORNELIUS J. PHILLIPS, New York, N. Y. Filed May 31, 1890. Serial No. 353,724. (No model.)



Claim.—The combination, in an expansion-fastening for bolts, of a threaded bolt or screw, an expansion-collar slitted at one end and having the annular expanding edge of said end in a plane substantially at a right angle with its axis, a cylindrical sleeve having a continuous annular beveled edge adapted to enter and engage the slitted end of the expanding collar, and a nut working upon the bolt, whereby the divided end of the collar is made to expand radially at every point thereof by means of the beveled edge of the sleeve through the action of the screw and nut, substantially in the manner and for the purpose herein set forth.

445,333. TYPE-WRITING MACHINE. CHARLES SPIRO, New York, N. Y. Filed Feb. 19, 1890. Serial No. 341,019. (No model.) Patented in England Nov. 28, 1889, No. 19,138.



Claim.—1. A standard for a ribbon-carrier having integral tables terminating in diagonal edges provided with a ribbon-guiding slot passing vertically through the table, substantially as specified.

2. A ribbon-carrier standard having an integral table provided with transverse ribbon-receiving slot and a diagonally-transverse ribbon-guide, substantially as specified.

3. The combination, with the universal bail of a type-writing machine, of a ribbon-carrier formed of two standards, each having a table provided with a ribbon-guide and a ribbon-receiving slot, substantially as specified.

4. In a ribbon-carrier, standards having tables and guards secured to the tables and projecting from the tables toward the printing-point, substantially as specified.

5. In a ribbon-carrier, the combination of slotted tables having ribbon-guides and an adjustable tension-plate bridging the ribbon for keeping the ribbon on the table free from wrinkles, substantially as specified.

6. The spool-feeding pawl formed of sheet metal and having its head bent to an angle from and in a vertical plane with its body and perforated for the reception of a pivot and also for a spring, substantially as specified.

7. A pawl formed of sheet metal and having at one edge an integral angularly-disposed head perforated for a pivot and having its body portion bent between said head and its free end, substantially as specified.

8. The combination, with a ribbon-carrier standard having an elongated aperture, of a pawl and a pawl-pivot having a T-head fitted to the opening of the standard and means for connecting the pawl and pivot with the standard, substantially as specified.

9. The combination, with a ribbon-carrier standard having an elongated opening, of a pawl, a T-headed screw-threaded pivot, and a shouldered nut, substantially as specified.

10. The combination, with ribbon-spools and a ribbon-carrier, of a pawl-and-ratchet mechanism, the pawls of which are adjustably connected to the carrier, substantially as specified.

11. The combination, with the pawl-and-ratchet mechanism of the ribbon-spools, of detents having inclined or beveled free ends, a spring having a tendency to raise said detents, and an oscillating shaft having arms for depressing said detents, substantially as specified.

12. The combination, with the pawl-and ratchet mechanism of the ribbon-spool, of a ribbon-carrier pivotally supporting the pawls and provided with springs for keeping the points of the pawls in contact with the ratchets, and a vertical shaft having arms arranged between the carrier and the ratchets and operating to lift the pawls in opposition to the spring, substantially as specified.

13. The combination of a type-bar, a single-armed type-bar bracket, and a pivot with a space surrounding said pivot, substantially as specified.

14. A type-bar bracket comprising a single standard having a projecting bearing, a type-bar having projecting bearings, and a pivot-bolt having a bearing agreeing with that of the type-bar, with a space surrounding the bearings, substantially as specified.

15. A type-bar bracket comprising a single standard having a projecting convex bearing, a type-bar formed with a socket to receive said bearing, and a bolt passed through the bearings and socket, with a head conforming to the socket with separated bearings, substantially as specified.

16. The combination, with the type-bar bracket having a single standard bored and having raised annular bearing convex in cross-section, of the type-bar bushed as shown and a bolt for uniting the parts passed through the same, with the bolt portion free of the bushing, substantially as specified.

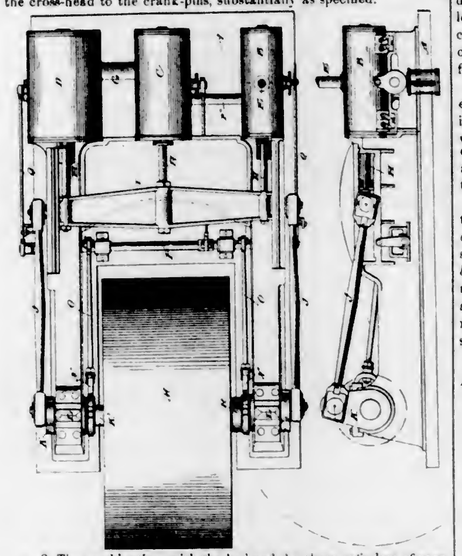
17. The combination, with the type-bar bracket having slotted base, of the type-bar, the transverse bolt, and a ball-and-socket connection between the type-bar bracket and bolt, substantially as specified.

18. In a ribbon-carrier, the combination of slotted tables having ribbon-guides and an adjustable tension-plate conforming substantially to the shape of the tables for keeping the ribbon on the tables free from wrinkles, substantially as specified.

19. In a ribbon-carrier, the combination of slotted tables having ribbon-guides and an adjustable tension-plate conforming substantially to the shape of the tables mounted thereon and bridging the ribbon for keeping the same on the table free from wrinkles, substantially as specified.

445,334. STEAM-ENGINE. WILLIAM WRIGHT, Newburg, N. Y. Filed June 10, 1890. Serial No. 354,868. (No model.)

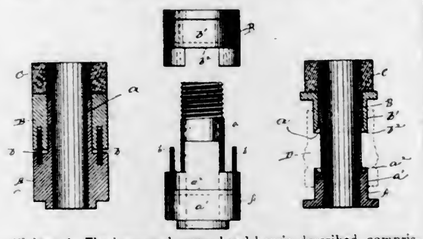
Claim.—1. The combination, with the bed and the three cylinders of varying capacity arranged in line transversely of said bed, of the cross-head common to and connected with all the piston-rods of said cylinders, the drive pulley arranged centrally in relation to said cylinders, the crank-shaft bearing on each side of the drive-pulley, and the connecting-rods, one upon each side of the engine and connecting the cross-head to the crank-pins, substantially as specified.



2. The combination, with the bed and the three cylinders of varying capacity arranged transversely thereof, of the piston-rods, the cross-head common to and connected with all of said rods and having a journal on the ends outside of the slides, the piston-rods of the outer cylinders being connected to the cross-head inside of the slides, the drive-pulley centrally arranged, the rock-shaft P, the connecting-rods connecting the same with the eccentrics, and the rods J, one upon each side of the engine and connecting the cross-head with the crank-pins, substantially as shown and described.

3. The combination, with the bed and the three cylinders of varying capacity arranged transversely thereof, of the piston-rods, the trussed cross-head common to and connected with all of said rods and having a journal on the ends outside of the slides, the piston-rods of the outer cylinders being connected to the cross-head inside of the slides, the drive-pulley centrally arranged, the rock-shaft P, the connecting-rods connecting the same with the eccentrics, and the rods J, one upon each side of the engine and connecting the cross-head with the crank-pins, substantially as shown and described.

445,335. ROTARY CUTTER-HEAD. CHARLES L. GOEHRING, Allegheny, Pa. Filed Apr. 19, 1890. Serial No. 348,724. (No model.)



Claim.—1. The improved cutter-head herein described, comprising two sections movable the one longitudinally of the other and guided upon a tubular extension thereof, each section being furnished with undercut shoulders and exterior bearing-faces for the reception of the bits, substantially as described.

2. The combination, with the head or section A, provided with exterior curved faces and an undercut shoulder, of the section B, guided to move toward section A and provided with exterior curved faces and a corresponding undercut shoulder, and means for clamping the two sections together and upon the rib formed on the back of a curved bit, substantially as described.

3. The hereinbefore-described improved cutter-head, comprising the section A, formed with tubular extension, exterior bearing-faces, and an undercut shoulder, the section B, fitted to the tubular extension of section A and provided with exterior bearing-surfaces and undercut shoulders, and bits provided with a dovetailed rib extending longitudinally thereof and adapted to be received between the undercut shoulders on sections A B and having the faces on opposite sides of said rib fitted to and resting in contact with the exterior bearing-faces of the sections A B, substantially as described.

4. The hereinbefore-described improved cutter-head, composed, essentially, of two sections A B, provided with exterior curved bearing-faces conforming substantially to the curved inner face of the bit, with intermediate undercut shoulders forming a dovetail groove, one of said sections being guided to move longitudinally upon the other and provided with interlocking portions to prevent rotation, substantially as described.

5. In a cutter-head such as described, the combination of the section A, having arc-shaped surfaces or sides a' and undercut shoulders a^3 and provided with a tubular extension a, the section B, fitted to slide upon tubular extension a and provided with arc-shaped surfaces b' and undercut shoulders b^3, the pins engaging the sections to prevent rotation, the nut applied to the tubular extension and engaging movable section B, and the curved bit provided with narrower dovetailed ribs fitted and clamped between shoulders a^3 b^3, substantially as described.

445,336. LOOM-TEMPLE. SILVANUS HAMBLIN, New Bedford, assignor of one-half to Daniel E. Damon, Plymouth, Mass. Filed Aug. 7, 1889. Serial No. 320,060. (No model.)

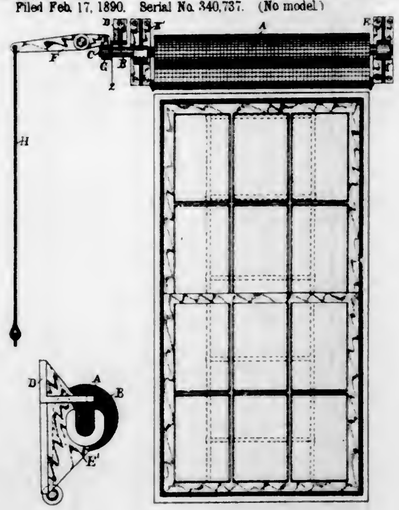


Claim.—1. In a temple for looms, the combination, with the stem having a curved trough, of the cap formed with depending bearings at opposite ends, and two rollers arranged in substantially the same horizontal plane, one carried by the cap and the other by the stem and trough, substantially as described.

2. In a temple for looms, the combination, with the stem having a curved trough formed with an upwardly-extending lip, and the detachable cap formed with depending lugs at opposite corners, of two corrugated rollers, one having its bearings in the lugs on the cap and the other its bearings in the lips of the trough and the stem, substantially as described.

3. In a temple for looms, the combination, with the stem having a curved trough and upwardly-extending lip, of the roller having its bearings in said lip and the stem, the detachable cap formed with depending lugs, a second roller having bearings in said lugs, with a curved passage-way between the rollers, said rollers being arranged in substantially the same horizontal plane and the cap covering both rollers, substantially as specified.

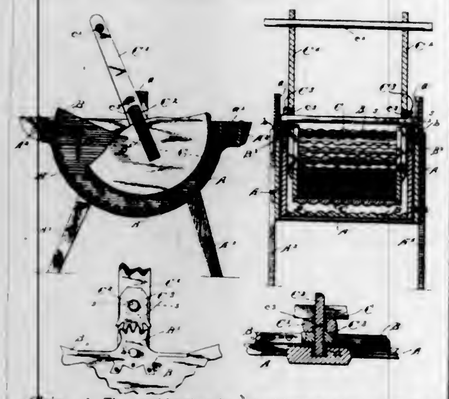
445,337. FIRE-CURTAIN. WILLIAM R. MONROE, Cleveland, Ohio. Filed Feb. 17, 1890. Serial No. 340,737. (No model.)



Claim.—1. The combination of a fire-resisting curtain, a roll to which said curtain is secured, brackets secured above the opening the curtain is designed to close, bearings in said brackets in which the roll is mounted, a stationary bracket, a socket in the roll, and a pin of easily-fusible alloy which engages with said bracket and socket, substantially as and for the purpose specified.

2. The combination of a fire-resisting curtain, a roll to which said curtain is secured, brackets secured above the opening the curtain is designed to close, loose bearings in said brackets in which the roll is mounted, with a pivoted lever having secured to one end a bearing-block, in which one end of said roll is journaled, a stationary bracket, a socket in the roll, a pin of easily-fusible alloy which engages with said bracket and socket, and mechanism for holding said lever in the position necessary to continue the engagement of said fusible pin with said bracket and socket, substantially as and for the purpose specified.

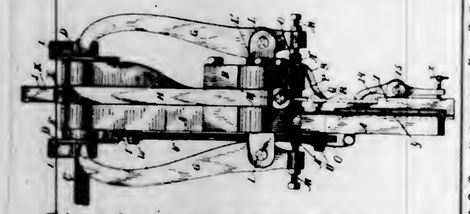
445,338. WASHING-MACHINE. ALBERT OGLE, Muncie, Ind. Filed Apr. 25, 1890. Serial No. 349,434. (No model.)



Claim.—1. The combination, in a washing-machine, of two rubbers, one located within the other, the outer one having segmental racks attached centrally to its upper edge, and the inner one having central slots through its sides, blocks the lower edges of which are also segmental racks engaging with the racks on the outer rubber and the inner sides whereof are ribs entering the slots in the sides of the inner rubber, and a shaft extending across the machine and resting at the ends in grooves in the sides thereof and upon which said blocks are mounted, substantially as shown and described.

2. The combination, in a washing-machine, of the casing provided interiorly with vertical grooves in its opposite sides, an outer rubber mounted by means of gudgeons in said grooves, an inner rubber having upwardly-extended handles at its center and slots extending through said handles and the sides of said rubber, and a gearing consisting of segmental racks secured to the upper edges of the outer rubber, and blocks the lower edges of which are segmental racks, and which are mounted in said slots in the sides of said inner rubber, and a shaft connected to said blocks, the ends whereof also rest in the grooves in the casing of the machine, substantially as set forth.

445,339. SAW-TOOTH SWAGE. JAMES B. RHODES, Grand Rapids, Mich. Filed Feb. 2, 1889. Serial No. 298,480. (No model.)



Claim.—1. In a device of the class described, the combination, with a suitable supporting-frame, of a shaft journaled in said frame, provided with cams having their outside faces provided with full parts forming inclined spiral ways or tracks, gripping-levers pivoted to the frame, having their upper ends inwardly turned and engaging said ways on the faces of said cams and their lower ends provided with set-screws, gripping-pins movable in said frame toward and away from the saw-tooth and having their outer ends engaging said set-screws, an anvil and rear pivoted die adapted to engage the point of the saw-tooth for swaging, and a lever adapted to operate said die, pivoted to said frame and having its upper end engaging with a cam on said shaft for actuating the same, substantially as set forth.

2. In a device of the class described, the combination, with a suitable supporting-frame, of a shaft journaled in said frame, provided with a cam E, a rear pivoted die 3, and an anvil upon which the point of the saw-tooth rests during the operation of swaging, means for placing the saw-tooth on the anvil and holding it securely during the operation, a longitudinally-movable pin 2, and a lever H, pivoted to the frame and engaging the cam E at its upper end and the pin 2 at its lower end, whereby the revolution of the shaft C upon its axis causes the die 3 to strike upon the point of the saw-tooth, substantially as set forth.

3. In a device of the class described, the combination of a suitable frame, a die pivoted thereto, an anvil engaging the point of the die, a guide adapted to support a saw movable on said frame toward and away from said anvil, a lever and rod connecting said slide with a cam upon a shaft journaled in said frame, whereby the revolution of the shaft upon its axis will cause the saw to approach and recede from said anvil, gripping-levers pivoted to the frame and operated by cams on said shaft, and gripping-pins actuated by the levers for holding the saw-teeth, and a swage-pin engaging the die and operated by a pivoted lever engaging with a cam on said shaft, substantially as set forth.

4. In a device of the class described, the combination, with a suitable supporting-frame, of a shaft journaled in said frame, provided with cams having their outer faces provided with full parts forming inclined spiral ways or tracks, gripping-levers pivoted to the frame, having their upper ends engaging said ways on the faces of said cams, and their lower ends provided with set-screws, gripping-pins longitudinally movable in said frame toward and away from the saw-tooth, and having their outer ends engaging said set-screws, a rear pivoted die 3, and an anvil upon which the point of the saw-tooth rests during the operation of swaging, a guide movable on said frame for placing the saw-tooth on the anvil in proper position for swaging, a longitudinally-movable pin 2, and a pivoted lever H, engaging the pin 2 at its lower end and a cam E on the shaft at its upper end for actuating the die 3, substantially as and for the purposes set forth.

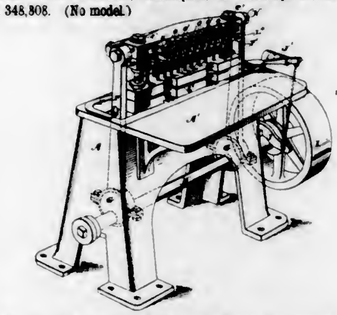
5. In a device of the class described, the combination, with a suitable supporting-frame, of a shaft journaled in said frame, provided with cams having faces provided with full parts forming inclined spiral ways, gripping-levers pivoted to the frame, having their upper ends inwardly turned and engaging said cams and their lower ends engaging with suitable longitudinally-movable gripping-pins for holding a saw-tooth, a rear pivoted die 3, and an anvil upon which the point of the saw-tooth rests during the operation of swaging, a guide adapted to support a saw movable in said frame toward and away from the anvil, a pawl adapted to engage a saw-tooth pivoted to a lever pivoted to the frame, a cam on the shaft engaging with the said pawl-lever for actuating the same, whereby the saw may be longitudinally moved in its seat on said guide, a longitudinally-movable pin adapted to engage the die, and a lever for operating the pin, arranged substantially as set forth.

6. In a device of the class described, and in combination with a suitable frame, a revoluble shaft C, journaled in the frame and having cams D D, E, and F arranged thereon, as set forth, a spring-operated rear-pivoted die 3 and an anvil 5, arranged as described, a longitudinally-movable guide T, provided with a shoulder adapted to engage the back of a saw-rod V, and lever I, engaging with the cam F for operating the guide-pawl 13, and lever J, having the arm K, engaging the cam E, for shifting the saw on the guide, as set forth, transversely-arranged longitudinally-movable gripping-pins N N, adapted to engage the saw-tooth, levers and cams, arranged as described, for operating the same, and the swage-pin, and its driving mechanism, arranged substantially as described, and for the purposes set forth.

7. In a device of the class described, the combination, with a suitable supporting-frame, of a shaft journaled in said frame, cams secured thereon, a pivoted swaging-die and anvil secured thereto, a guide adapted to carry the saw to and away from the anvil, a shifting device adapted to move the saw longitudinally on the guide, gripping devices operated by mechanism connected to the shaft, and means for operating the swage, substantially as set forth.

8. In a device of the class described, and in combination with a suitable supporting-frame, a revoluble shaft journaled in said frame, cams secured thereon, levers engaging said cams, a rear-pivoted spring-actuated die and anvil secured to the frame, a guide for carrying the saw, a pawl for moving the same longitudinally, gripping-pins for engaging the sides of the saw-teeth, and a swage-pin for operating the die, said guide, pawl, and gripping and swaging pins being actuated by said levers engaging said cams, substantially as set forth.

445,340. MACHINE FOR PUNCHING HOLES IN JACQUARD CARDS. OTTO W. SCHAUM, Philadelphia, Pa. Filed Apr. 21, 1890. Serial No. 348,808. (No model.)

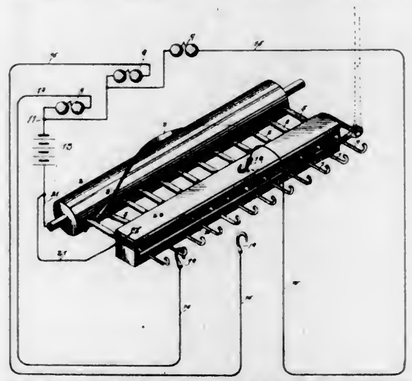


Claim.—1. In a machine for punching holes in Jacquard cards, substantially as described, the combination, with the movable head having vertical perforations d d' and horizontal perforations d^4 leading into the same, as described, punches K, passing through the perforations d' and having heads k situated in the part d thereof, bolts M, situated in perforations d^4, and finger-keys O, pivoted to the movable head and with their ends resting against bolts M, all substantially as and for the purpose specified.

2. In a machine for punching holes in Jacquard cards, substantially as described, the combination, with the movable head having vertical perforations d d' and horizontal perforations d^4 leading into the same, as described, punches K, passing through the perforations d' and having heads k situated in the part d thereof, bolts M, situated in perforations d^4, rods n n', secured to the movable head, and finger-keys O O', pivoted on said rods, as described, and so as to form two rows with a staggered arrangement and with their ends resting against the ends of the bolts M, all substantially as and for the purpose specified.

3. In a machine for punching holes in Jacquard cards, substantially as described, the combination, with the movable head having vertical perforations d d' and horizontal perforations d^3 leading into the same, as described, punches K, passing through the perforations d' and having heads k situated in the part d thereof, bolts M, situated in perforations d^4, finger-keys O, pivoted to the movable head and with their ends resting against bolts M, a bar L', situated at the back of the head, having a series of rods L, passing into perforations d^5, rods L^2 L^3, secured to bar L' and passing through holes d^7 in the head, handles L^4, secured to the end of rods L^3, and springs L^5, arranged to push the bar L' backward, all substantially as and for the purpose specified.

445,341. ELECTRIC GUEST-CALL. ALEXANDER STEIEMER, Sleepy Eye, Minn. Filed July 29, 1890. Serial No. 360,312. (No model.)



Claim.—1. In a device of the class described, the combination, with a rotating cylinder provided with a spiral rib, a series of call-bells, and a battery in partial circuit with said cylinder, of a series of springs arranged to be successively engaged by the rib on said cylinder, and wires connected with said bells arranged to be connected with any one of said springs, for the purpose specified.

2. In a device of the class described, the combination, with a rotating cylinder, a series of contact-springs with which contact is successively made by said cylinder, call-bells, and a battery in partial circuit with said cylinder, of wires adapted to be connected to said springs, and an insulated conductor connected to said battery and adapted to have said wires from the call-bells brought into contact with it for the purpose of repeating the call in any room.

3. In a device of the class described, the combination, with a series of contact-springs, a rotating circuit-closer adapted to successively make contact with said springs at predetermined intervals of time, and a series of call-bells and battery in partial circuit with said circuit-closer, of wires from said call-bells adapted to be connected with said springs, and a conductor connected with the wire from the battery with which any one of said wires from the call-bells may be brought into contact for the purpose of repeating the call in any room, substantially as described.

4. In a device of the class described, the combination, with a series of call-bells, of a series of contact-springs with which the wires from said bells are adapted to be connected, a rotating circuit-closer having a battery connection and adapted to successively make contact with said springs, and means connected with the battery for simultaneously closing the circuit through all of the wires connected to said springs substantially as described.

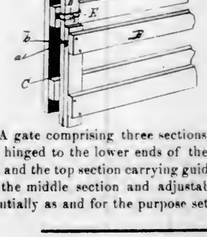
5. In a device of the class described, the combination, with the call-bells, of the rotating cylinder having a battery connection, the series of springs with which said cylinder successively makes contact, the hooks connected with said springs, the wires adapted to be connected to said hooks, and the hinged bar having a battery connection and adapted to be brought in contact with all of said hooks, for the purpose specified.

445,342. PROCESS OF FUMIGATING TREES AND OTHER PLANTS. WILLIAM B. WALL and MOSES S. JONES, Tustin, and AMOS D. BISHOP, Orange, Cal. Filed Dec. 10, 1889. Serial No. 333,240. (No specimens.)

Claim.—The process set forth of fumigating plants with hydrocyanic-acid gas in the absence, substantially, of the actinic rays of light

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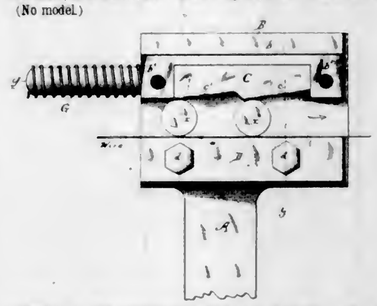
445,343. GATE. WILLIAM COOPER, Traverse City, Mich. Filed Sept. 8, 1890. Serial No. 364,358. (No model.)



Claim.—A gate comprising three sections, the lowest or bottom section being hinged to the lower ends of the vertical pieces of the middle section and the top section carrying guides sliding on said vertical pieces of the middle section and adjustable thereon by thumb-screws, substantially as and for the purpose set forth

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445,344. WIRE-NAIL FEEDER. HENRY HARTSUFF and JOSEPH MURPHY, New Castle, Pa. Filed July 19, 1890. Serial No. 359,266. (No model.)



Claim.—1. The combination, with a nail-machine, of a reciprocating feeder provided with a tapering recess through which the material to be fed passes, and a roller working in said recess, substantially as described.

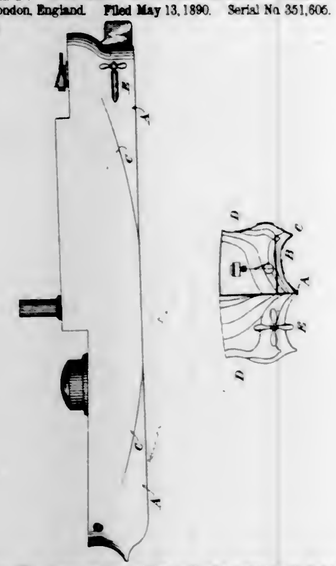
2. The combination, with a nail-machine, of a reciprocating feeder provided with a tapering recess through which the material to be fed passes, a roller working in said recess, and a spring yielding in the direction of the feed of the material and operating to press the roller in the opposite direction, whereby said roller rolls over the material while the feeder is moving in one direction and clamps it when moving in the other, substantially as described.

3. The combination, in a nail-feeder and with a base and the bearing-block, of a wedge-block and rollers loosely held between said bearing and wedge blocks, substantially as described.

4. The combination, in a wire-nail feeder and with the base, of a frame secured thereto, a wedge-block supported within said frame, a bearing-block against which the wire bears, rollers adapted to travel against the inclines of the wedge-block, and a feed-plate provided with pins for holding the rollers in position, substantially as set forth.

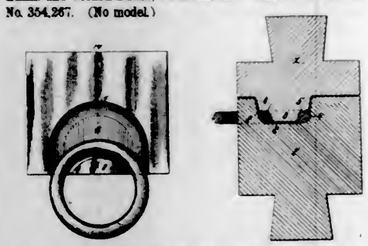
5. The combination, in a feeder and with the feed-bar upon which the feeder is secured, of a frame B, a wedge-block supported by said frame, a bearing-block, rollers arranged between the latter and the wedge-block, a plate provided with pins to secure and limit the rollers, and a spring acting on said plate, substantially as set forth.

445,345. **IRON-CLAD OR OTHER VESSELS.** JAMES F. HODGETTS, London, England. Filed May 13, 1890. Serial No. 351,606. (No model.)



Claim.—The construction of the hull of a vessel with the bottom and bilge formed by a pair of curves, such as reverse catenarian curves, in the plane of the cross-section of the vessel concave to the water and springing from a central keel with a curve of small curvature and dipping at their outer extremities with curves of much curvature to side keels parallel to the center keel, substantially as described.

445,346. **DIE FOR WELDING AND SWAGING LINKS.** FRANZ KREIS and JOSEPH FLAIG, St. Louis, Mo. Filed June 4, 1890. Serial No. 354,267. (No model.)



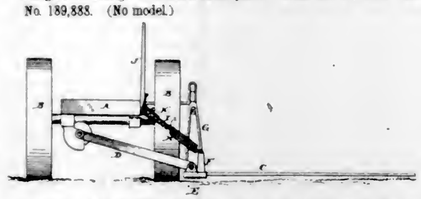
Claim.—1. The improved die for welding and swaging, consisting of two members, one of said members having a recess forming inner and outer shoulders and the other member having a projection provided with inner and outer recesses, substantially as and for the purpose set forth.

2. The improved die for welding and swaging, consisting of the member 1, having a projection 3, with the concave recesses 4 5, and the member 2, having a recess 6, forming shoulders 8 7, substantially as and for the purpose set forth.

3. The improved die for welding links, &c., having the projections 10 and 12 on its respective members for closing the links, substantially as shown and described.

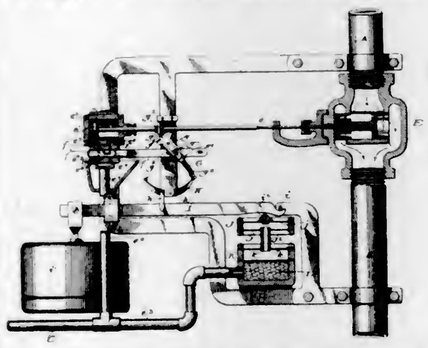
4. The improved die for welding links, &c., having a grooved projection 10 on its lower member and a ledge 12 on its upper member, substantially as and for the purpose set forth.

445,347. **MOWING-MACHINE.** EPHRAIM SMITH, Pittsburg, Pa., assignor to George V. Willson, same place. Filed Jan. 27, 1886. Serial No. 189,888. (No model.)



Claim.—In a mowing-machine, the combination, with the coupling-bar, of a finger-bar pivotally connected therewith, a standard located upon the finger-bar near the point of connection of the finger-bar and coupling-bar, a lifting-lever, and an adjustable spring connection between said lever and the finger-bar, attached at one end to the lever, extending thence over a point on the frame above and inward of the finger-bar's pivot to the standard on said finger-bar, substantially as and for the purposes set forth.

445,348. **PRESSURE-GOVERNOR.** JAMES P. STABLER, Sandy Spring, Md. Filed July 23, 1890. Serial No. 359,643. (No model.)



Claim.—1. In a fluid-pressure regulator, the combination of a main valve, a motive mechanism to open and close the same, a detent to prevent the action of said mechanism, and an independent weighted diaphragm subject to the pressure of the fluid under control and acting to control the detent, whereby the diaphragm is caused to determine the action of the motor and the latter caused to move the valve.

2. The combination of a main valve, a piston and cylinder to actuate the same, a reversing-valve to control the piston, a spring-motor set by the movement of the piston and acting in turn to move the reversing-valve, and an independent detent to hold the motor, whereby the action of the reversing-valve may be deferred for any required length of time.

3. In a fluid-pressure regulator, a diaphragm subject to the pressure of the controlled fluid, a weight acting on the diaphragm in opposition to said pressure, a pressure-regulating valve, a cylinder and piston to move the same, a reversing-valve to control the action of said piston, a motor to actuate the reversing-valve set for action by the piston, and a detent acting to hold the spring under tension and adapted to be released by the movement of the diaphragm, whereby the diaphragm is relieved from the labor of operating either of the valves.

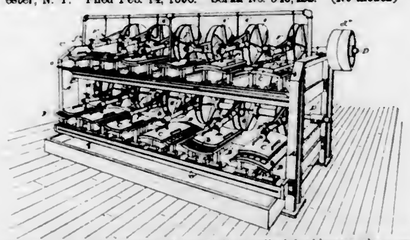
4. The valve-operating spindle and the cylinder and piston to move the same, in combination with the reversing-valve to control the

movement of the piston, the valve-spindle and the stud, the vibrating finger, the spring tending to hold the finger in a middle position, the sliding plate on the finger provided with a stud to throw the reversing-valve, the collar on the piston-rod adapted to swing the finger to the right and left of the middle position and to move the sliding plate upon the finger that the interlocking studs may pass, and the detent to hold the finger.

5. The reciprocating valve-spindle, with its shoulders and the intermediate stud, in combination with the vibrating finger having the stud to engage the shoulders and lock the spindle, the spring to throw the finger to a central position, the sliding plate, with its stud mounted on the finger, the spring acting on said plate, means for swinging the finger positively to and fro, and the detent to hold the finger to the right and left.

6. In a fluid-pressure regulator, the valve-operating piston and the compressible sack communicating therewith and containing an operating-fluid, in combination with the chamber inclosing said sack and means for supplying fluid to said chamber outside of the sack.

445,349. **LENS-GRINDING MACHINE.** WILLIAM BAUSCH, Rochester, N. Y. Filed Feb. 14, 1890. Serial No. 340,422. (No model.)



Claim.—1. In a machine for grinding cylindrical lenses, the combination of a cylindrical block, a complementary cylindrical shell, and mechanism, substantially as shown, for producing simultaneously longitudinal and lateral reciprocation between said shell and block.

2. In a lens-grinding machine, the cylindrical lens-block, the complementary shell, the shell-operating pitman, its actuating crank or eccentric, and means, substantially as shown, for rotating said eccentric and moving the same laterally.

3. In combination with the lens-block, the grinding-shell, a pitman to move the shell, an eccentric and crank to actuate the pitman, and independently-driven mechanism for moving the first-named shaft endwise, whereby the course of the shell over the lenses may be varied by changing the relative speeds of the shaft.

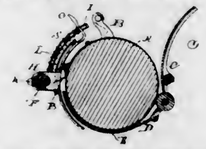
4. In combination with the lens-block, the grinding-shell, the shell-operating pitman, the eccentric to move the same, the driving-shaft eccentric, and an intermediate clutch mechanism whereby the shell may be stopped without arresting the motion of the shaft.

5. In combination with the laterally and longitudinally reciprocating pitman, the pin or finger having a spherical end, a grinding-shell having a corresponding socket to receive the pin, and the cylindrical block on which the shell is loosely mounted, whereby the shell is moved by the pitman, but permitted entire freedom of motion on the block.

6. In combination with the grinding-shell, its actuating-pitman, the eccentric carrying said pitman, the driving-disk, the driving-pin, its actuating-spring, and the trip-pin mounted in the pitman and movable at the will of the operator.

7. In a lens-grinding machine, and in combination with the removable lens-block, the support having the longitudinal and transverse ribs to receive the block.

445,350. **TYPE-WRITING MACHINE.** ALEXANDER T. BROWN, Syracuse, N. Y. Filed Sept. 25, 1890. Serial No. 366,136. (No model.)



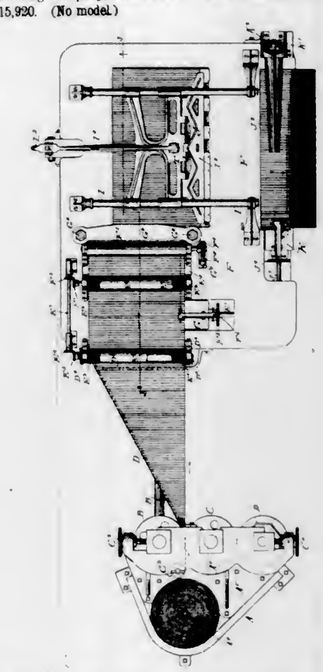
Claim.—1. The combination, with the paper-roll or cylindrical platen of a type-writing machine, of a rod parallel therewith and a curved finger carried by said rod about centrally of the cylindrical platen and movable in the direction of the circumference of the roll and concentric therewith, substantially as described.

2. The combination, with the paper-roll of a type-writing machine of a rod parallel therewith, a grooved block on said rod, and a curved finger supported in the groove in the block and movable circumferentially of the roll and parallel with the surface thereof, substantially as described.

3. The combination, with the roller of a type-writing machine, of a rod parallel therewith, a block on the rod, a curved finger mounted in sliding bearings in said block and moving circumferentially in the direction of the circumference of the roll and parallel with the periphery thereof, and a spring bearing on said finger to retract the same, substantially as described.

4. The paper-roll, the rod parallel therewith and having a curved horn, a curved finger having bearings in the block and on the horn, and a spring surrounding the curved horn and bearing against the curved fingers, substantially as described.

445,351. **BAG-MAKING MACHINE.** WILLIAM H. KERR, Durham, assignor, by direct and mesne assignments, to the KERR Bag Manufacturing Company, Concord, N. C. Filed June 28, 1889. Serial No. 315,920. (No model.)



Claim.—1. In an organized machine for the manufacture of cloth bags from a continuous strip of cloth, the combination, with a printing mechanism, of a folder constructed and arranged, substantially as shown and described, to take the printed strip and lay its longitudinal edges one upon the other, a sewing mechanism adapted to unite the edges of the folded strip, a cutter for severing the tube thus formed, and a second sewing mechanism for uniting one end of the severed section, said mechanisms being combined and arranged for operation substantially as shown and described.

2. In an organized machine for the manufacture of bags from a continuous strip of cloth, the combination, with a horizontal bed or table, of a sewing mechanism or mechanisms mounted thereon, an upright cloth-carrier, a printing mechanism adapted to act upon the material as it unwinds from the carrier, and a folder arranged, substantially as shown and described, to take the strip of material as it comes from the printing mechanism and deliver it with its edges folded one upon the other in position to be acted upon by the sewing mechanism.

3. In an organized machine for the manufacture of bags from a continuous strip of cloth, the combination, with a printing mechanism, of a folder adapted to fold the printed strip through the middle with the printed face inside and with the edges of said face lying one upon the other, and a sewing mechanism or mechanisms for uniting the edges of the folded strip, all combined and arranged to operate substantially in the manner shown.

4. In a machine for the manufacture of bags from a continuous strip of cloth, the combination of the following instrumentalities, to wit: a printing mechanism arranged to print upon the continuous strip of cloth, a folding device adapted to receive and to fold the printed strip longitudinally through the middle, a cutter, and a bag-sewing mechanism or mechanisms to receive the folded material and sew it into proper form for use as bags, the folding device being located between the fabric-supply and the cutter, and the parts being arranged to operate substantially in the manner set forth.

5. In a bag-machine, the combination, with the printing and sewing mechanisms, of a base A, a socketed screw A′, a plate or disk A^3, and a stem or spindle A^4, passing through the plate and into the screw.

6. In a bag-machine, the combination, with a printing mechanism, of a stitching mechanism, a folder adapted to fold the bag material lengthwise through the middle with the printed face inside, and a feed-roller reduced in diameter between its ends and adapted to bear upon the cloth only at one or both ends.

7. In a bag-machine, the combination, with the table F and a sewing mechanism, of a printing mechanism, the feed-roller D^3, having enlarged ends E^3, and a covering applied to the reduced portion of the roller.

8. In a bag-machine, the combination, with the table F, of a sewing mechanism, feed-rollers D^4 D^5, journaled in bearings on the table, worm-wheel Z, secured to one of said rollers, a shaft E′, provided with a gear-wheel D^6, and a shaft D^8, provided at opposite ends with a gear D^9 and a worm D^7, said shaft D^8 being hung upon the shaft E′, substantially as shown.

9. In a bag-machine, the combination, with the printing mechanism, of a folder adapted to fold the material lengthwise through the middle with the printed face inside, two feed-rolls D^5 and E^4, adapted to bear only at their ends upon the folded bag material, and a stitching mechanism interposed between the feed-rolls.

10. In a bag-machine, the combination, with a table having an opening or recess, as E^5, of a stitching mechanism, and a continuously-rotating feed-roll on one side of said opening, and an intermittently-acting feed-roll and an intermittently-acting cutter on the other side of said opening.

11. In a bag-machine, the combination, with the table F, having an opening or recess, as E^5, of the feed-rollers D^5 and E^4, the interposed stitching mechanism G, located in advance of the opening, an intermittently-acting cutter in rear of the opening, and an intermittently-acting feed-roller F^3, also located in rear of the opening, but in advance of the cutter.

12. In a bag-machine, the combination, with a suitable sewing mechanism, of a cutter, a feed-roller, and intermediate connections, substantially such as shown, whereby the roller is adapted to be thrown out of action by the cutter.

13. In a bag-machine, the combination, with a suitable sewing mechanism, of a cutter, a feed-roller, gearing for imparting motion to the feed-roller, and an arm carried by the cutter-frame and connected with the gearing, whereby when the cutter descends the gearing will be thrown out of action and when the cutter ascends it will be thrown into action.

14. In a bag-machine, the combination, with a suitable sewing mechanism, of a cutter, a feed-roller provided with operating mechanism adapted to be automatically thrown into and out of operation by the movements of the cutter, and means, substantially such as shown, for throwing said operating mechanism out of operation manually without stopping the action of other parts of the machine.

15. In combination with the reciprocating cutter-frame provided with an arm G^7, a feed-roll provided with a worm-wheel F^6, a shaft F^8, provided with a yoke G^3, gear G′, and a worm F^7, a rod G^4, connected with the shaft F^8 and arm G^7, and a shaft E′, provided with a gear G^5.

16. In combination with the reciprocating cutter-frame having an arm G^7, a feed-roll F^6 provided with a worm-wheel F^6, a shaft E′, provided with a gear-wheel G^2, a second shaft F^8, hung upon the shaft E′ and provided with worm F^7 and gear-wheel G′, a block G^3, through which shaft F^8 passes, a rod G^4, passing through the arm G^7 and connected with block G^3, and a spring H^6, arranged for operation substantially as shown.

17. In a bag-machine, the combination, with a sewing mechanism, and suitable feed-rollers, of a cutter adapted to sever the material into bag-lengths, a second sewing mechanism arranged out of line with the first and adapted to sew the end of the severed length, a horizontally-moving pusher adapted to carry the severed section from the cutter to the second sewing mechanism, and means for imparting motion to the various parts.

18. In a bag-machine, the combination, with a sewing mechanism, of a cutter adapted to sever the material transversely as it comes from the sewing mechanism, a pusher movable horizontally at approximately right angles to the line of feed of the sewing mechanism, substantially as shown, a second sewing mechanism adapted to receive and sew the severed section, and means for imparting motion to the various parts.

19. In a bag-machine, the combination, with two sewing mechanisms operating substantially at right angles to each other, of a cutter and a horizontally-moving pusher interposed between the sewing mechanisms, all substantially as shown.

20. In a bag-machine, the combination, with two sewing mechanisms operating continuously, of an intermittently-acting cutter and an intermittently-acting pusher interposed between the sewing mechanisms to carry the severed section horizontally from one sewing mechanism to the other, and means for imparting motion to the various parts, all substantially as shown.

21. In a bag-machine in which the bags are made from a continuous strip of cloth folded longitudinally through the middle, the combination of the following elements, to wit: first, a sewing mechanism adapted to sew the folded strip along its edge, second, a cutter adapted to sever transversely the tube thus formed; third, a horizontally-moving pusher adapted to move the severed section approximately at right angles to the line of movement of the cloth tube, and, fourth, a second sewing mechanism adapted to sew the severed bag-section across its end, the said elements being timed to operate substantially in the order set forth.

22. In a bag-machine, the combination, with a sewing mechanism G, of a cutter H, adapted to cut the material into lengths suitable for the formation of a bag as it comes from the said sewing mechanism, a cam or eccentric for operating the cutter, a laterally-moving pusher J, adapted to take hold of the severed section and move it sidewise in the plane in which it passes beneath the cutter, a second sewing mechanism K, arranged to sew one edge of the severed bag-section, and a cam or eccentric for operating the pusher, the cutter and pusher-cams being so arranged that as soon as the cutter descends and severs the tube of cloth the pusher will be brought into action to remove the severed section.

23. In a bag-machine, the combination, with two sewing mechanisms, of a vertically-reciprocating cutter and a horizontally-moving pusher interposed between the two mechanisms.

24. In combination with a bed or table and the elevated guides or supports I, a pusher J, mounted thereon, a pivoted lever I^3, a link connecting the lever and pusher, a driving-shaft, and a cam thereon for actuating the lever.

25. In combination with guides or supports I I, a pusher J, comprising frame or cross-head I′ and pivoted plate I^3, a lever I^3, a link connecting the lever with the plate above the pivot of the latter, and a cam or eccentric for moving the lever.

26. In combination with table F, having grooved bracket J^3, shaft H^3, provided with cam J^3, a pivoted lever I^3 and pusher J, and a block I^7, carried by the lever and engaging the bracket and cam.

27. In combination with table F, bracket J^3, having the separated arms grooved as at J′, shaft H^3, provided with a cam J^3 to run between the arms of the bracket, a pivoted lever I^3 and pusher J, and a bifurcated block I^7, secured to the lever, the said block being provided with a stud J^4 to engage the cam and studs I^9 to engage the grooves J′ in the bracket.

28. In a bag machine, the combination, with two sewing mechanisms and their feeding devices, of a pusher for carrying the material from one mechanism to the other, and means independent of the sewing mechanisms or their feeding devices for raising or elevating the pusher as it recedes.

29. In a bag-machine, the combination, with the table F, of a sewing mechanism K, an overhanging arm J^9, and a roller J^8, carried by said arm.

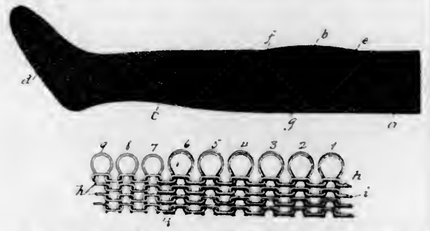
30. In a bag-machine, the combination, with an arm or bracket J^9 and the roller J^8 carried thereby, of the worm-wheel K′, secured to the roller-shaft outside of the arm or bracket, a shaft J^7, provided with a bevel-gear K^6, a shaft K^8, provided at one end with a worm K^9 and at the other end with a bevel-gear K^5, and a yoke K^4, connecting the shafts J^7 and K^3.

31. In a bag-machine, the combination, with the roller J^8, of the reciprocating pusher J, adapted to carry the material under the roller, and a stitching mechanism arranged opposite the roller.

32. In a bag-machine, the combination, with sewing mechanisms G and K and suitable feed-rollers to act in conjunction therewith, of a reciprocating cutter, a horizontally-moving pusher to convey the bag material from one sewing mechanism to the other, a main driving-shaft, and gearing, substantially such as shown, for imparting motion to the several mechanisms from said driving-shaft.

445,352. STOCKING AND METHOD OF MAKING THE SAME. OSCAR L. MERROW and ALBERT E. SANBORN, Laconia, N. H.; said Merrow assignor and said Sanborn assignor of one-half to Dennis O'Shea and John O'Shea, Jr., both of same place. Filed May 9, 1890. Serial No. 351,127. (No specimens.)

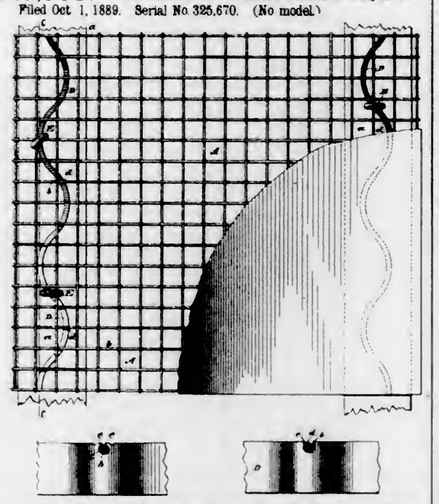
Claim.—1. The improvement in the art of knitting tubular webs for stockings, &c., which consists in knitting the body of the web in a regular stitch of any suitable length, introducing an additional yarn at desired points for a portion of the way around the web, and lengthening the stitch at the points where the additional yarn is introduced, as set forth.



2. A tubular knit fabric for stockings, &c., having the main or body portion knit in a regular stitch of any suitable length and having an additional yarn knit into the web for a portion only of the way therearound, the stitch at the points containing the additional yarn being of greater length than in the body portion, as set forth.

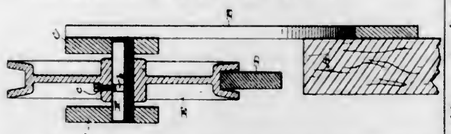
3. A tubular knit fabric for stockings, having the main or body portion knit in a regular stitch of any suitable length and having an additional yarn knit into the web at the knee-point for a portion only of the distance therearound, the stitch at the knee-point containing the additional yarn being of greater length than in the body portion, as set forth.

445,353. WIRE LATHING. PURCHES MILES, Brooklyn, N. Y. Filed Oct 1, 1889. Serial No. 325,670. (No model.)



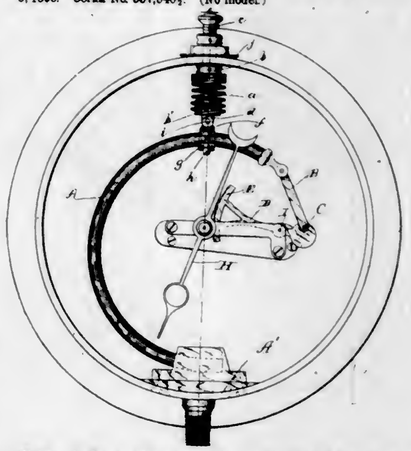
Claim.—A series of longitudinal wires and a series of cross-bars contiguous thereto, and extending at about right angles thereto, said cross-bars having recesses or slots extending at about right angles to the length of the bars, and a lip or lips at the edge of each recess or slot, the corresponding longitudinal wires being placed in said recesses or slots in the cross-bars, and the lip or lips at the edges of said recesses or slots swaged or turned over or upon said wires to rigidly bind the longitudinal wires to the cross-bars, substantially as described.

445,354. DOOR-HANGER. EDWARD Y. MOORE, Milwaukee, Wis. Filed June 23, 1890. Serial No. 356,408. (No model.)



Claim.—A door-hanger sheave, an axle loosely mounted therein, and holding devices carried with the sheave and axle, whereby the latter is locked against lateral movement in the former, substantially as set forth.

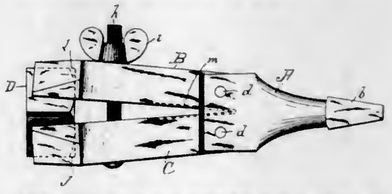
445,355. PRESSURE-GAGE. MURDOCK MCNEIL, Boston, Mass., assignor to the Empire Steam Gauge Company, same place. Filed July 5, 1890. Serial No. 357,840. (No model.)



Claim.—1. In a pressure-gage, the combination of the casing, the spring-tube A therein, the spring *a*, interposed between the casing and the tube, a holder or support for the outer end of said spring, attached to the casing, a clamp attached to the tube, a nut or collar engaged with the inner end of the spring, and a hinge or joint connecting the collar with the clamp, as set forth.

2. In a pressure-gage, the combination of the casing, the tube A therein, the spring *a*, interposed between the casing and the tube, the adjusting-screw *c*, engaged with the casing and supporting a nut which is engaged with the outer end of the spring *a*, the clamp *g*, attached to the tube, the nut or collar *b′*, engaged with the inner end of the spring, and the hinge or joint connecting said collar *b′* with the clamp *g*, as set forth.

445,356. WRENCH. JOHN B. PERAULT, Belmont, Mass. Filed Nov. 10, 1890. Serial No. 370,854. (No model.)



Claim.—1. A nut-wrench comprising a body adapted to be secured in a bit-stock, two parallel jaws pivoted to swing laterally in said body and chambered to receive a nut, and mechanism for setting the jaws against said nut, substantially as described.

2. In a nut-wrench, a body combined with two parallel jaws pivoted to spread therein and having their free ends recessed to receive a nut, a spreading-spring in the jaws, and a bolt and nut for adjusting said jaws, substantially as described.

3. In a nut-wrench, the body provided with a bit-head, in combination with jaws B C, pivoted in said body and provided with recesses *g*, having diverging wall *j*, and mechanism for adjusting said jaws, substantially as described.

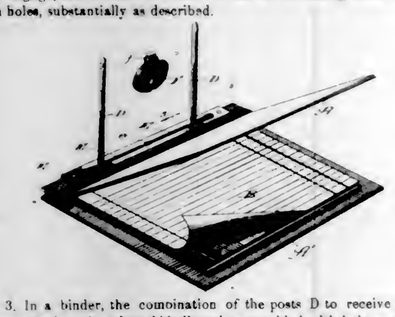
4. In a nut-wrench, the body A, provided with the head *h*, in combination with the pivoted jaws B C, recessed at *g* and having the inclined walls *j*, the spring *m*, the bolt *h*, and nut *i* for adjusting said jaws, substantially as described.

445,357. BINDER. LEVI G. RUBEL, Chicago, Ill. Filed Sept. 18, 1890. Serial No. 365,341. (No model.)

Claim.—1. A binder comprising covers A A′, binding-posts D D, a spring-plate E, provided with one or more holes *e*, corresponding to but of less diameter than such posts, and means whereby such holes may be increased in size to pass over the posts and then allowed to spring back to rigidly bind the plate to the posts, substantially as described.

2. In a binder, a slotted spring-plate E, the slot being grooved to form one or more holes *e*, smaller than the binding-posts with which

they engage, and a hole *e'* to receive a cam for increasing the size of such holes, substantially as described.

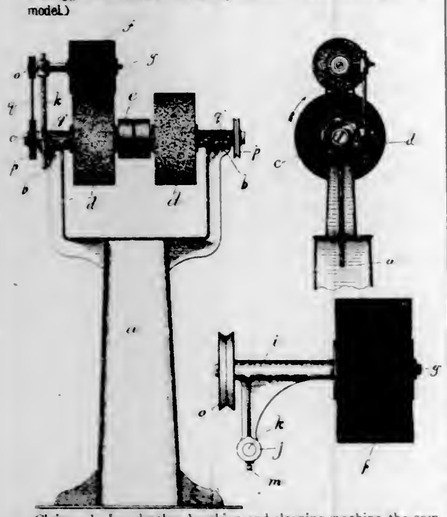


3. In a binder, the comoination of the posts D to receive the sheets to be bound, a slotted binding-plate provided with holes *e*, corresponding to but smaller than the posts D, a hole *e'* to receive a cam, and a key F, provided with a cam *f*, engaging with the hole *e'*, whereby as the cam is turned in one direction the slot in the plate E is widened and the size of the holes *e* increased, enabling them to pass over the posts D, and as the cam is turned back the resiliency of the plate E will tend to diminish the size of the holes *e* and then bind the plate to the posts, substantially as described.

445,358. NON-CONDUCTING COMPOUND. FREDERICK SPRINKMANN, Milwaukee, Wis., assignor of one-half to William S. Grubb, Chicago, Ill. Filed Dec. 13, 1890. Serial No. 374,531. (No specimens.)

Claim.—A non-conducting compound consisting of a combination of kaolin, ground wood fiber, and the soft downy covering of cotton-seed, substantially as set forth.

445,359. MACHINE FOR CLEANING SHOE-UPPERS. HAROLD A. WEBSTER, Haverhill, assignor, by mesne assignments, to George H. P. Flagg, Boston, Mass. Filed July 24, 1890. Serial No. 359,738. (No model.)



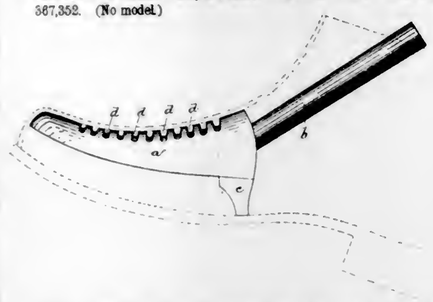
Claim.—1. In a leather brushing and cleaning machine, the combination of a rotary brush of soft material, means for rotating the same, a rotary cleaning-wheel, also of soft material, arranged with its periphery in contact with that of the brush, and means for positively rotating said cleaning-wheel, whereby its periphery is caused to remove dirt from the brush, as set forth.

2. The combination of a rotary brush *d*, means for rotating it, a supporting-frame in which the shaft of said brush is journaled, the cleaning-wheel *f*, means for adjustably supporting said cleaning-wheel with its periphery in contact with that of the brush *d*, and means for positively rotating said cleaning-wheel, as set forth.

3. The combination of the brushes *d d*, their supporting-shaft *c*, having pulleys *e*, the supporting-frame having sockets *q' q'*, the standard *k*, adapted to be detachably secured to either socket *q'*, the bearing *i*, adjustably mounted on said standard, the shaft *g*, journaled in said bearing and having a pulley *o*, and the cleaning-wheel mounted on said shaft with its periphery in contact with the periphery of one of the brushes, as set forth.

4. In a leather brushing and cleaning machine, the combination, with a rotary brush, of a cleaning-wheel composed of cloth disks and arranged with its periphery in contact with that of the brush, and means for positively rotating said cleaning-wheel, whereby it is caused to remove dirt from the brush, as set forth.

445,360. LAST FOR CREASING BOOT OR SHOE UPPERS. EDWARD C. WOODARD, Campello, Mass. Filed Oct. 7, 1890. Serial No. 367,352. (No model.)



Claim.—1. The improved creasing-last composed of a thin last-shaped piece having transverse grooves in its upper surface, and means for pressing said grooved surface against the upper of a boot or shoe in which the piece is inserted, as set forth.

2. A creasing-last formed to move freely between the sole and upper of a boot or shoe in which it is inserted, and provided with transverse grooves in its upper surface, a foot projecting downwardly from its lower surface, and an operating-handle, as set forth.

3. The improved creasing-last composed of the thin last-shaped piece *a*, adapted to be inserted in a boot or shoe, and provided with transverse grooves *d*, handle *b*, and foot or fulcrum *c*, as set forth.

445,361. CORDING ATTACHMENT FOR SEWING-MACHINES. FRANK M. BAKER, New York, N. Y., assignor to Julius M. Cohn, same place. Filed June 30, 1890. Serial No. 357,209. (No model.)



Claim.—1. A cording attachment for sewing-machines having a presser-foot provided with three or more staggered needle-holes, a folder located at the forward end of the presser-foot, and a multiple cord or stay-strip guide constructed with two or more isolated passages respectively arranged in line with the spaces between the needle-holes, the said guide being made independent of the folder and located below the same, whereby ample room for arranging the passages with respect to the needle-holes is secured and the interference and chafing of the fabric and the cords or strips avoided, substantially as described.

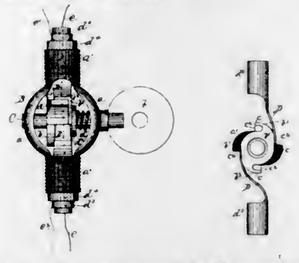
2. A cording attachment for multiple-needle sewing-machines having a presser-foot provided with three or more staggered needle-holes, a folder located at the forward end of the presser-foot, and a multiple cord or stay-strip guide located below the folder and consisting of a flat sheet-metal loop containing two or more parallel bars dividing it into isolated passages respectively arranged in line with the spaces between the needle-holes in the presser-foot, substantially as described.

445,362. CUT-OUT. SIGMUND BERGMANN, New York, N. Y. Filed Jan. 25, 1890. Serial No. 338,132. (No model.)

Claim.—1. In a cut-out, the combination of the frame having the tubular portions adapted to connect with a tubing, a rotary shaft, a cut-out wheel on said shaft, contacts on the wheel, and resilient contact-pieces extending into and secured within the tubular portions of the frame, substantially as specified.

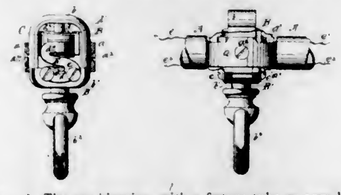
2. In a cut-out, the combination of the frame having the tubular portions constructed to connect with tubing, a rotary shaft, a cut-out wheel loosely mounted on said shaft, contact-plates on the wheel, and resilient contact-pieces having tubular shanks secured in the tubular portions of the frame and insulated therefrom, substantially as specified.

3. In a cut-out, the combination of the rotary shaft, a wheel loosely mounted thereon and having cam-surfaces on its side, a pin extending from the shaft to engage with the shoulder portions of the cam-surfaces, contact-plates on the periphery of the wheel having an integral connecting-strip provided with a hole for the passage of the shaft, the said plates and strip being held in place by friction, and resilient contact-pieces, substantially as specified.



4. In a cut-out, the combination of the frame consisting of the outwardly-bowed side portions and the tubular end portions, a rotary shaft having bearings in the side portions of the frame, a cut-out wheel and contacts, and the casing consisting of two parts constructed to inclose the cut-out and frame, substantially as specified.

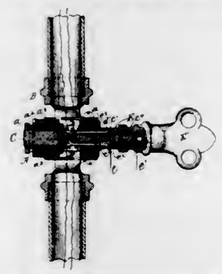
445,363. ELECTRIC CUT-OUT. SIGMUND BERGMANN, New York, N. Y. Filed Feb. 17, 1890. Serial No. 340,700. (No model.)



Claim.—1. The combination, with a fixture tube or arm having a seat for a cut-out open at two of its sides, of a cut-out having its frame removably secured in said seat transversely to the length of the tube or arm, substantially as specified.

2. The combination, with a cut-out substantially such as described, of a fixture tube or arm having a seat open at its sides, the frame of the cut-out passing transversely through the seat, and screws for securing the cut-out and frame within the seat.

445,364. KEY FOR ELECTRIC CUT-OUTS. SIGMUND BERGMANN, New York, N. Y. Filed May 5, 1890. Serial No. 350,695. (No model.)



Claim.—1. In a cut-out, the combination, with the rotary shaft having the channels and reduced portion at its end, and spring-arms, of the tubular attaching-piece having the enlarged inner portion to engage over a section of the main portion of the shaft and the smaller inner portion to engage over the outer portion of the shaft, and perforations to engage lugs on the spring-arms, substantially as specified.

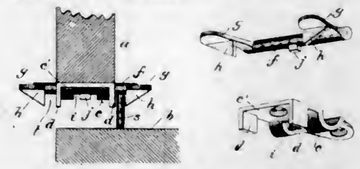
2. In a cut-out, the combination, with the rotary shaft having the channels and the transverse hole, of the spring-arms seated in said channels and having an integral transverse portion extended through the transverse hole in the shaft, and the key or finger-piece constructed to removably engage with said shaft and spring-arms, substantially as specified.

445,365. ELECTRIC-CABLE CONNECTOR. SIGMUND BERGMANN, New York, N. Y. Filed July 24, 1890. Serial No. 359,779. (No model.)



Claim.—The combination, with electric cable or conductor sections abutted end to end, of a longitudinally-tapering strip wound around the end portions of the sections, with its wider end innermost and fastened in place thereon, substantially as specified.

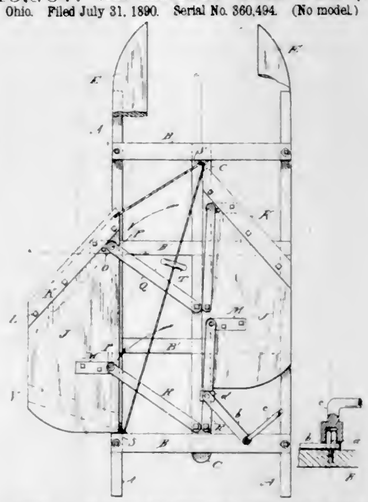
445,366. SHUTTER-FASTENER. GEORGE H. BURROWS, Somerville, assignor to Ubert K. Pettingill, Boston, Mass. Filed May 19, 1890. Serial No. 352,313. (No model.)



Claim.—1. The improved blind-fastener consisting of a flat socketed plate formed to bear on the lower edge of the blind and provided at one end with downwardly-projecting vertical stops, arranged to strike the staples or fixtures on the window-sill and on the side of the building, and a rod or spindle fitted to rotate in the socket of said plate and provided at its ends with arms projecting in a substantially horizontal direction, said arms having downwardly-projecting beveled lugs, the inner ends of which are outside the stops on the socketed plate and are separated from said stops by spaces *t t*, adapted to receive the said staples or fixtures, as set forth.

2. The combination of a flat socket formed to bear on the lower end of a blind, a rod or spindle *f*, fitted to turn in said socket and provided at its ends with substantially horizontal arms *g* and beveled lugs *h*, said arms and lugs being adapted to rise and fall by the turning of the spindle in the socket, and the stops *d d*, affixed to and projecting downwardly from the lower edge of the blind and arranged opposite the inner ends of the lugs *h* and separated therefrom by spaces of sufficient width to receive the staples or fixtures on the building, as set forth.

445,367. CORN-HARVESTER. ADDISON W. BUTT, Springfield, Ohio. Filed July 31, 1890. Serial No. 360,494. (No model.)



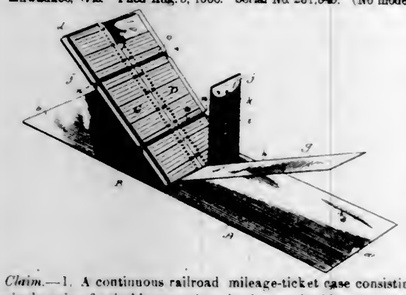
Claim.—1. In a corn-harvester, the combination, with a vehicle or sled, of stalk-cutting mechanism and intermediate toggle connections between the vehicle or sled and said mechanism, adapted to throw the cutting-edge out beyond the vehicle or sled, and operating mechanism to effect such movement of said mechanism and toggle connections.

2. In a corn-harvester, the combination, with a sled or vehicle, of cutting-blades, a board for each blade, a set of bars pivoted to the board and to the structure, and adjusting devices to operate the bars back and forth to swing the blades in and out.

3. In a corn-harvester, the combination, with a sled or vehicle having a floor with a space beneath the same and above the sled or vehicle, of cutting-blades, a board for each blade, bars pivoted to the board and to the central part of the structure, the said board and bars occupying said space, and adjusting devices to swing the board or frame and bars out and in.

4. In a corn-harvester, the combination, with a sled, of bars pivoted thereto, a board pivoted to the bars, a blade carried by the board, and a rope or chain connected to the board and passing through suitable guides carried by the sled, whereby the blade is thrown outward upon drawing the rope or chain in one direction and thrown inward by drawing it in the opposite direction.

445,368. RAILROAD MILEAGE-TICKET. MALCOLM Y. CAMPBELL, Milwaukee, Wis. Filed Aug. 3, 1888. Serial No. 281,845. (No model.)



Claim.—1. A continuous railroad mileage-ticket case consisting of a single strip of suitable paper bent back upon itself to the center and then bent up and doubled to form the support for the ticket proper, and thence extended outward in a section of reduced width intermediate between the central ticket-support and the front cover portion.

2. In a railroad mileage-ticket, the combination, with the casing, of a loose strip of less width and length than the casing and independent thereof, and having an upper straight edge and secured to said casing by an elastic band or cord.

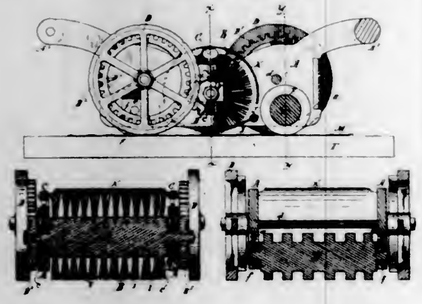
3. In a railroad mileage-ticket, the combination, with the casing, of a longitudinally-perforated continuous ticket and a central ticket-support, and a leaf of reduced width secured thereto and having a straight side edge.

4. In a railroad mileage-ticket, the combination, with the casing, of a longitudinally-perforated continuous ticket and a central ticket-support, a leaf of reduced width secured thereto and having a straight side edge, and a loose strip having an upper straight edge secured to said casing by an elastic band or cord.

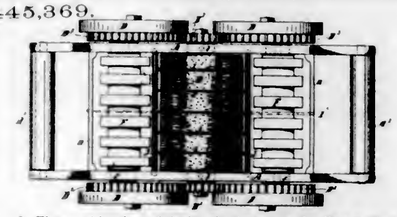
5. In a railroad mileage-ticket, the combination, with the casing, of a central ticket-support, a continuous ticket-strip divided by a central longitudinal row of perforations or indentations folded and held to said central support by rubber bands, a leaf of reduced width with a straight side edge secured to said casing, a loose strip with an upper straight edge, and an elastic band or cord connecting said loose strip and the casing.

445,369. HAND-RUBBER. ROMAN B. FYLER, Worcester, Mass. Filed Sept. 22, 1890. Serial No. 365,698. (No model.)

Claim.—1. In a washing-machine, the cylindrical rotatable brush and a circumferentially-grooved roll at each side of said brush, in combination with a frame, traveling wheels supporting said frame, and gears connecting said traveling wheels with said brush for imparting rotative movement thereto, substantially as set forth.



445,369.

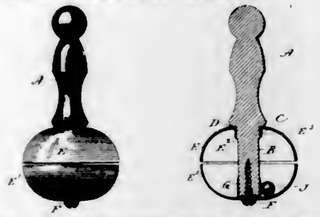


2. The combination of the brush, the grooved rollers at the opposite sides of the brush, adjustable bearings for said rollers, the frame having slots in which said bearings are supported, and springs for pressing downward said bearings and rollers and the wheels and gearing for operating the brush, substantially as set forth.

3. The combination, with the revoluble brush B, its supporting-frame A, mounted upon traveling wheels D, and the brush-operating gears D' and B', of the guard-wires L, arranged across the face of the brush and having their ends supported by transverse bars fixed in said frame at either side of said brush, substantially as shown and described.

4. The combination of the frame supported on carrying-wheels D and having handles A', the revoluble brush B, its adjustable bearings *b*, spring *c*, and thumb-screw C, the brush-operating gears D' and B', the circumferentially-grooved rollers F F, the adjustable bearings *f* and springs *e* for said rollers, and the guard L beneath said brush, all substantially as and for the purpose set forth.

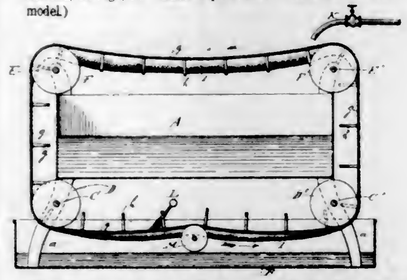
445,370. BELL. NORMAN N. HILL, East Hampton, Conn. Filed Sept. 29, 1890. Serial No. 366,508. (No model.)



Claim.—1. In a bell, the combination, with a handle having a spindle forming an extension of one of its ends, of two bells placed mouth to mouth and one being driven over the said spindle and the other being seated upon the outer end thereof, means for securing the last-mentioned bell to the end of the spindle, and a jinglet interposed between the two bells, substantially as described.

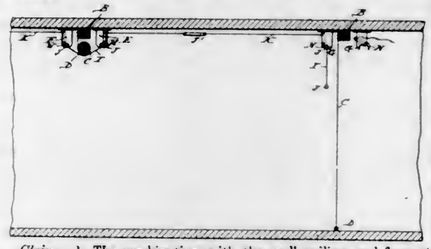
2. In a bell, the combination, with a handle having a spindle made integral with one of its ends and a shoulder where the same meets it, of two bells placed mouth to mouth and one being driven over the said spindle and against the said shoulder and the other being seated upon the outer end of the spindle, means for securing the bell last mentioned to the spindle, and a jinglet, substantially as described.

445,371. APPARATUS FOR FILTERING SIRUPS. OMAR H. JEWELL, Chicago, Ill. Filed Sept. 8, 1890. Serial No. 364,384. (No model.)



Claim.—In combination with a receptacle for the filtered material, an endless apron composed of flexible material suitable for filtering, secured between two endless belts connected by cross-bars, wheels arranged above and below the receptacle for carrying the endless belt, a pipe for feeding the liquid to be filtered above the endless apron, and a perforated pipe below such receptable for ejecting jets of steam or water upon the lower portion of the apron, substantially as set forth.

445,372. FIRE-ISOLATING APPARATUS. HENRY W. JOHNS, Jr., New York, N. Y. Filed Sept. 12, 1890. Serial No. 364,747. (No model.)



Claim.—1. The combination, with the wall, ceiling, and floor of a building, of gravity-acting rolled screens normally held at or near the ceiling by holding devices which embody in their construction material which under the action of heat without flame destroys or breaks the holding device, substantially as set forth.

2. The combination, with the wall, ceiling, and floor of a building, of gravity-acting rolled screens normally held at or near the ceiling by clutches which are held closed by controlling-devices which embody in their construction material which under the action of heat without flame destroys or breaks the said holding devices, substantially as set forth.

3. The combination, with the wall, ceiling, and floor of a building, of gravity-acting screens arranged to leave a hallway across the floor and normally held at or near the ceiling by devices automatically released by the action of heat, substantially as set forth.

4. The combination, with the wall, ceiling, and floor of a building, of a rolled screen normally held at or near the ceiling by a clutch which is held closed by a cord, wire, or the like which extends from the clutch to and fro across the ceiling, composed partly of easily-fusible material or with an explosive device, substantially as set forth.

5. The combination of a rolled screen fastened at one edge at or near the ceiling, a clutch which holds the screen suspended, and a controlling device for the clutch, embodying in its construction material which under the action of heat without flame destroys or breaks the clutch-holding device, said device extending across the ceiling in different directions and passing around pulleys, where its course is deflected, substantially as set forth.

6. The combination of a screen, a clutch which holds the screen suspended, and a cord or wire which holds the clutch closed and which passes across the ceiling and around pulleys held to their supports by easily fusible or explosive material, substantially as set forth.

7. The combination of a screen, a clutch which holds the screen suspended, a cord or wire which holds the clutch closed, a hinged pulley around which the cord passes, a latch which holds the support for the pulley against the pull of the cord, and means whereby the latch may be withdrawn, substantially as set forth.

8. The combination of a screen, a clutch which holds the screen suspended, a cord or wire which holds the clutch closed and which passes across the ceiling and around pulleys which are held to their support by easily fusible or explosive material, and a spring interposed in the cord or wire for counteracting expansion and contraction, substantially as set forth.

9. The combination herein described of a series of screens suspended from the ceiling and arranged at angles to each other, so that when they drop they will divide the underlying floor-space into inclosed smaller areas, the said screens being maintained near the ceiling by devices automatically released by the action of heat without flame, substantially as set forth.

445,373. POCKET-BOOK. CHARLES JOSEPH, New York, N. Y., assignor to Rose Joseph, same place. Filed July 31, 1890. Serial No. 360,453. (No model.)



Claim.—A pocket-book having an interior coin-pocket which is provided with a closing frame, the hinged jaws of which are applied to the outwardly-bent strips or flanges stitched to the end gussets of the coin-pockets, and with a lining the side walls of which are extended from one corner of the closing frame to the other on a line with the top of said frame, forming folding guard-flaps for the coin-pockets, substantially as described.

445,374. MANUFACTURE OF CARBON FILAMENTS. WILLIAM M. R. KEEN and WILLIAM F. HAARMANN, New York, N. Y., assignors of one-fourth to Egbert Le Fevre, same place. Filed June 19, 1890. Serial No. 356,929. (No specimens.)

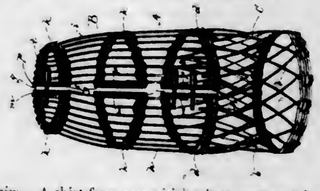
Claim.—1. The hereinbefore-described process of manufacturing carbon filaments for incandescent electric lamps, consisting in saturating a ligature of vegetable or animal fiber, such as cellulose or silk, with a mixture of hops and a solution of saccharine matter and glue concentrating said mixture by boiling, drying the saturated material and carbonizing said ligatures.

2. The hereinbefore-described process of manufacturing carbon filaments for incandescent electric lamps, consisting in saturating a ligature of vegetable or animal fiber, such as cellulose or silk, with a saccharine and an aqueous solution of glue containing hops, heating and drying the saturated ligatures for the purpose described, and finally carbonizing said ligatures.

3. A carbon filament consisting of carbonized animal or vegetable porous ligatures saturated with a boiled aqueous solution of saccharine matter and glue containing hops.

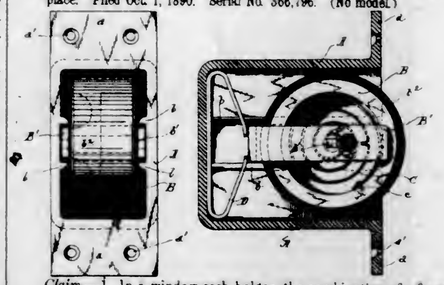
4. A ligature from which to manufacture carbon filaments, consisting of the combination of animal or vegetable fiber saturated with a boiled aqueous solution containing hops.

445,375. SKIRT-FORM. THOMAS LEAVIS, Wakefield, Mass. Filed Aug. 25, 1890. Serial No. 362,970. (No model.)



Claim.—A skirt-form comprising a base constructed of interlaced rods rigidly secured together at their lower ends, said rods being extended in parallel directions to form the upper or hip portion of said form, which is divided vertically into two sections, in combination with means for adjusting said sections laterally with relation to each other.

445,376. SASH-BALANCE. JOSEPH P. MAGNEY, Oakland, Cal., assignor of one-half to Henry A. Davis and David Wilson, both of same place. Filed Oct. 1, 1890. Serial No. 366,796. (No model.)

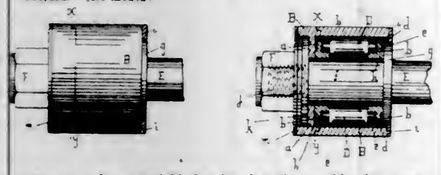


Claim.—1. In a window-sash holder, the combination of a frame provided with an opening at its inner end and guideways upon its inner side faces, a U-shaped brace fitting in said guideways and having its ends at opposite points provided with circular openings communicating with smaller elongated openings, a transverse shaft having its ends normally fitting in the elongated openings, and a spring actuated and rotatable bearing-roller upon said shaft, substantially as set forth.

2. In a window-sash holder, the combination of a casing provided with ways upon its inner side faces, a U-shaped brace fitting in said ways and provided upon its ends, at opposite points, with circular openings terminating in smaller elongated openings, a shaft having its ends normally fitting in the elongated slots, a roller mounted upon the shaft.

and a spring having its free ends bearing against the brace and adapted to press the roller inward, and at the same time keep the axle within the elongated slots, substantially as set forth.

445,377. **ANTI-FRICTION BEARING FOR VEHICLE-WHEELS.** JAMES F. MORELL, Camden, N. J. Filed Sept. 29, 1890. Serial No. 366,432. (No model.)

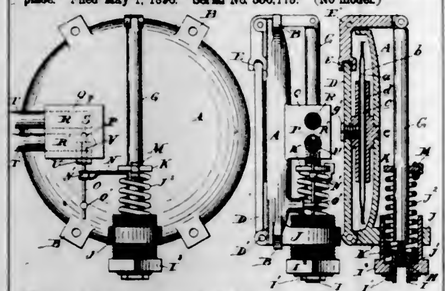


Claim.—1. In an anti-friction bearing, the combination, with a box, of the roller-cage C, comprising the annular end pieces *b*, and the longitudinal strips *c*, connecting said end pieces and arranged at suitable distances around the same, said end pieces being provided in their opposing faces with the bearings *d*, which are closed at the outer side and inner end and open at the outer end and inner side, and the rollers having the journals fitted in said bearings, for the purpose set forth.

2. In an anti-friction bearing, the box B, provided with the internal diametric partition *a* near one end thereof and divided circumferentially on a line close to and within said partition, in combination with a cage housed within the larger portion of said box, the rollers journaled within said cage, and disks bearing against the ends of the box for holding the parts of the box together, whereby the box can be separated to permit access to the cage and the removal of the rollers therefrom without detaching the box from the shaft or axle, for the purpose set forth.

3. In an anti-friction bearing, the combination of the box B, having the internal diametric partition *a* near one end thereof, the roller-cage housed within the box and bearing against the inner face of said partition *a*, the rollers journaled in said cage, the collar *g*, the dust-ring *i*, fitted against the inner end of the box and around the collar *g*, the washer *k*, bearing against the outer face of the partition *a*, the axle, and the nut secured on the axle and having the disk *m* bearing against the outer end of the box and the washer, for the purpose set forth.

445,378. **TEMPERATURE-REGULATOR.** JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car Heating Company, same place. Filed May 1, 1890. Serial No. 350,173. (No model.)



Claim.—1. In a temperature-regulator, the combination, with the frame-plate, of a bell-crank hinged thereto formed with a forked end, a lever hinged to the opposite end of the plate and engaging the forked end of said bell crank, an expansion-chamber interposed between the levers and plate, a rod connected with the bell-crank in the rear of the plate, a regulating-spring on the frame engaging the rod, and a valve-controlling arm on the rod, substantially as described.

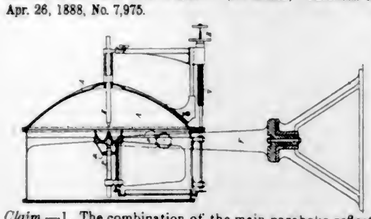
2. In a temperature-regulator, the combination, with the frame, of a lever hinged thereto, an expansion-chamber secured to the lever and frame, respectively, a bell-crank pivoted to the frame, one end of which engages the lever, a rod secured to the bell-crank, a regulating-spring on the frame engaging the rod, and a yielding valve-controlling arm connected with the rod, substantially as described.

3. In a temperature-regulator, the combination, with the expansion-chamber and frame, of a lever actuated by the chamber, a rod on the lever, an adjusting-nut on the frame, a guide in said nut, and a tension-spring on the rod engaging with the nut, substantially as described.

4. In a temperature-regulator, the combination, with the expansion-chamber and frame, of a bell-crank actuated by the expansion-chamber, a rod on the bell-crank, a regulating-spring on the frame engaging said rod, and a controlling-valve actuated by the rod, substantially as described.

5. In a temperature-regulator, the combination, with the frame, of a lever pivoted thereto and extending up directly in front of the same, an expansion-chamber interposed between and secured to the frame and lever, a valve-operating rod actuated by the lever, a spring on the frame engaging the rod, and means for regulating the tension of the spring, substantially as described.

445,379. **REFLECTOR.** ISAAC PERAL, San Fernando, Spain. Filed Mar. 18, 1888. Serial No. 274,292. (No model.) Patented in Spain Apr. 26, 1888, No. 7,975.



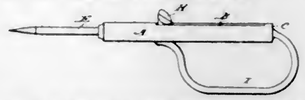
Claim.—1. The combination of the main parabolic reflector, the burner situated in the focus thereof, and the supplemental hemispherical reflector of smaller size than and situated opposite to and facing the main reflector and arranged to focus at the burner and having its central portion cut away to permit the passage of certain of the direct rays from the burner, substantially as described.

2. The combination, with the burner, of the main reflector consisting of the outer parabolic portion and the central spherical portion, and the supplemental spherical reflector situated opposite to and facing the spherical portion of the main reflector and having its central portion cut away, whereby the rays reflected from the spherical portion of the main reflector may pass the supplemental reflector, substantially as described.

3. The combination, with the burner, of the main reflector consisting of the outer parabolic portion and the central spherical portion, the supplemental reflector situated opposite to the spherical portion of the main reflector and having its central portion cut away, whereby the rays reflected from the spherical portion of the main reflector may pass the supplemental reflector, and a lens situated in the path of such reflected rays for making them parallel, substantially as described.

4. The combination, with the main parabolic reflector and a supplemental spherical reflector, each centrally perforated for the passage of electric-light carbons and arranged opposite to each other, the foci of the said reflectors coinciding, of an electric-arc light arranged at the focal point and having its carbons arranged parallel with the axis of the parabolic reflector, substantially as described.

445,380. **SCRATCH-AWL.** FRANK PHILIP, Stockport, N. Y. Filed Feb. 24, 1890. Serial No. 341,448. (No model.)

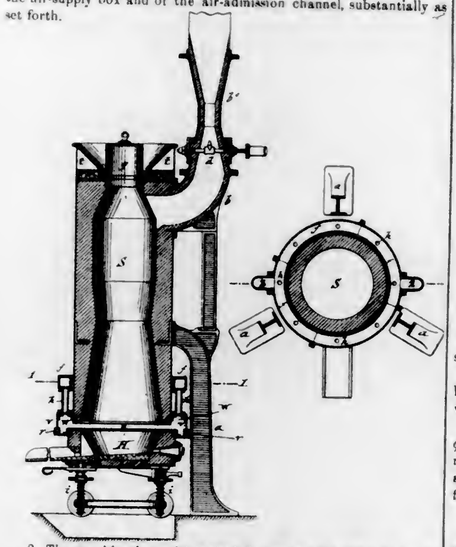


Claim.—1. A scratch-awl in which is comprised a hollow slotted handle, a pointed rod playing in said handle and having a block at its inner end bearing a manipulating thumb-piece which projects through the slot in the side of the handle, said thumb-piece being placed at an angle and having its center depressed, as set forth, and a spring which normally holds the awl drawn into the handle, substantially as shown and described.

2. In a scratch-awl of the character herein specified, a tubular slotted handle closed at one end and having an opening at the other, a finger-piece secured to said handle, a pointed rod within said handle provided with a manipulating thumb-piece projecting through the slot in the tube, and a coiled spring encircling the pointed rod, the whole combined and arranged to operate substantially as shown and described.

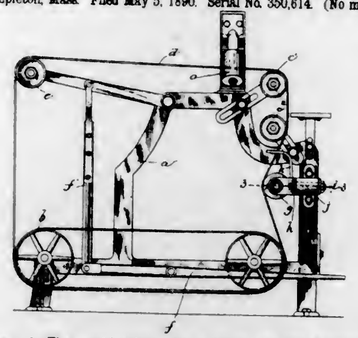
445,381. **CUPOLA SMELTING-FURNACE.** CARL SAHLER, Cologne, Germany, assignor to the firm of F. A. Herbertz, same place. Filed Dec. 13, 1889. Serial No. 333,687. (No model.)

Claim.—1. The combination, with a shaft having an open lower end, of a vertically-adjustable hearth below the same, separated from said shaft by an annular air-admission channel, and an annular air-supply box extending around the adjoining ends of the shaft and hearth and formed of two sections, the lower section of which is attached to the hearth and provided with a trough, while the upper section is attached to the shaft and has an outer wall extending loosely into the trough of the lower section, so as to permit the simultaneous adjustment of the air-supply box and of the air-admission channel, substantially as set forth.



2. The combination, with a shaft S, open at the lower end, of a vertically-adjustable hearth H below the same, separated from said shaft by an annular air-admission channel *o*, an annular air-supply box *f*, extending around the lower part of the shaft S, vertical connecting-pipes *h* and a sectional annular air-supply box W, extending around the air-admission channel *o* and formed of a lower section attached to the hearth and provided with a sand-filled trough *r*, and of an upper section attached to the shaft and having an outer wall *v*, extending into the trough, substantially as set forth.

445,382. **BELT GUIDE AND SUPPORT.** OLIVER SAWYER, East Templeton, Mass. Filed May 5, 1890. Serial No. 350,614. (No model.)



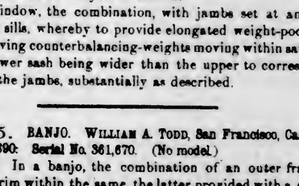
Claim.—1. The combination, with a driven belt and supporting-pulleys therefor journaled in fixed bearings, of an oscillatory pulley the shaft or axle of which is adapted to oscillate and stand either parallel with the axes of the belt-supporting pulleys or at an angle thereto, and arms connected with said oscillatory pulley and arranged at opposite edges of the belt, whereby edgewise displacement of the belt in either direction is caused to incline the axis of the oscillatory pulley and neutralize such displacement, as set forth.

2. The combination, with a driven belt and supporting-pulleys therefor journaled in fixed bearings, of an oscillatory pulley in frictional contact with the belt, a holder for said pulley mounted to turn or rotate in a bearing at right angles with the bearings for the belt supporting pulleys, and arms attached to said holder and arranged at opposite edges of the belt, as set forth.

3. The combination, with a driven belt and supporting-pulleys therefor, of oppositely-inclined edge guiding-pulleys bearing against the edges of said belt, as set forth.

4. The combination, with a driven belt and supporting-pulleys therefor, of oppositely-inclined edge guiding-pulleys bearing against the edges of said belt, said edge guiding-pulleys being located at one side of a pair of the belt-supporting pulleys, an oscillatory pulley in frictional contact with said belt at the opposite side of said pair of supporting-pulleys, and arms connected with said oscillatory pulley and bearing against the edges of the belt, as set forth.

445,383. **LET-OFF MECHANISM FOR LOOMS.** WILLIAM E. SHARPLES, Fall River, Mass. Filed Nov. 25, 1887. Serial No. 256,051. (No model.)

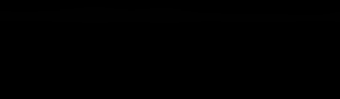


Claim.—1. The combination, with a toothed wheel, of a band-rim secured to the periphery of the toothed wheel, substantially as set forth.

2. A toothed wheel for let-off mechanisms for looms for weaving, having a band-rim detachably secured to the periphery of the toothed wheel, substantially as set forth.

3. The combination of the warp-beam and its gear A', the shaft *g*, having a pinion G, a toothed wheel secured to said shaft, a band-rim or pulley-face secured to said toothed wheel, a weighted vibrator, and a friction-band K, passed partially around said band-rim or pulley-face and connected with the vibrator, substantially as set forth.

445,384. **WINDOW.** SAMUEL C. TAYLOR, Chicago, Ill. Filed Mar. 31, 1890. Serial No. 345,952. (No model.)



Claim.—1. A window-frame having the jambs thereof set at an obtuse angle on the sill and facing outwardly, in combination with sash-frames, the lower one of which is wider than the upper to correspond to the setting of the jambs, cords having counterbalance-weights and connected to the sash-frame near their upper ends, and pintles projecting from the edges of the frames into ways provided in the frame, and said ways having transverse apertures therein through which the pintles may be inserted and removed, substantially as described.

2. A window comprising, in combination, jambs set at an obtuse angle on the sill, a counterbalanced sash-frame arranged to move in ways, said ways having apertures therein, and pintles projected from the edges of the sash-frame and into said ways and adapted to pass through said apertures, whereby the sash may be tipped to permit access to its outer side, substantially as described.

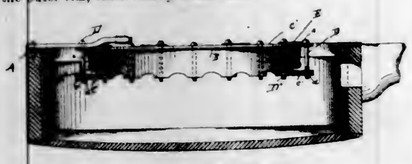
3. In a window, the combination, with jambs set at an obtuse angle on the sill, of outer and inner stops for the sash-frames, set at right angles to said frames, to provide passages for suspending cords, said cords secured to the rear sides of the sash-frames, the lower sash having its side margins extended to correspond with the setting of the jambs by strips secured to the margins, pintles projecting from said strips toward the ends thereof, ways wherein the pintles travel, and apertures in said ways to permit the passing through of the upper pintles, whereby the lower sash-frame may be tipped to permit access to its outer side, substantially as described.

4. In a window, the combination, with jambs set at an obtuse angle upon the sills, whereby to provide elongated weight-pockets, of sash-frames having counterbalancing-weights moving within said pockets, and the lower sash being wider than the upper to correspond to the setting of the jambs, substantially as described.

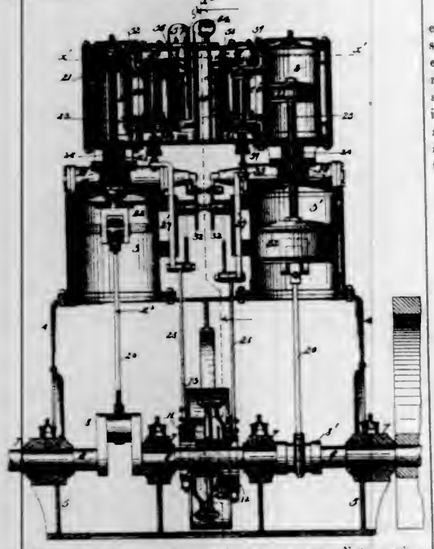
445,385. **BANJO.** WILLIAM A. TODD, San Francisco, Cal. Filed Aug. 11, 1890. Serial No. 361,670. (No model.)

Claim.—1 In a banjo, the combination of an outer frame, an outer annular rim within the same, the latter provided with a depending annular flange, a ring against which the lower end of said flange bears, an inner rim provided with an outwardly-extending annular flange, vertical screws passing through the outer rim and through the annular flange of the inner rim, whereby the latter may be adjusted, and the head having its edges fitting between the outer and inner rims and passing around the ring, substantially as set forth.

2. In a banjo, the combination of an inner and an outer rim and a head having its edges fitting therebetween, of radial arms having their outer ends secured to the frame of the banjo and their inner ends to the outer rim, substantially as set forth.



445,386. COMPOUND ENGINE. STEPHEN WILCOX, Brooklyn, N. Y. Filed June 28, 1890. Serial No. 357,065. (No model.)



Claim.—1. A compound engine having an intermediate receiver, consisting of a double-acting high-pressure cylinder and a single-acting low-pressure cylinder located adjacent to and in alignment with said high-pressure cylinder, and having connected pistons which are connected to a single crank, and provided with a single valve-gear that governs the distribution of steam in the respective cylinders, substantially in the manner described.

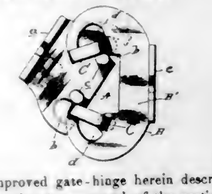
2. The combination, in a compound receiver-engine, of two or more double-acting cylinders located in lateral relation, single-acting cylinders arranged in common axial alignment severally therewith, provided with connected pistons within the commonly-aligned cylinders, their shaft crank connecting rods being severally pivoted upon and guided by the single-acting pistons, and a valve-gearing that governs the distribution of steam in said commonly-aligned cylinders.

3. The combination, in a compound receiver-engine, of a double acting high-pressure and intermediate cylinder located in lateral relation, single acting low-pressure cylinders severally located in common axial alignment with said high and intermediate pressure cylinders, connected pistons in the aligned cylinders, and steam-distributing valves and successive passages for the same, delivering the steam first to the said double-acting cylinders in series consecutively and then to the distributing-valves of the single-acting cylinders, the respective supply-passages of the latter being connected in common.

4. The combination, in a compound engine, of a double-acting high-pressure cylinder and receiver, a double-acting intermediate cylinder and receiver located in lateral relation to the high-pressure cylinder, and single-acting low-pressure cylinders severally aligned with the said high and intermediate pressure cylinders, having pistons connected in common therewith, as described, and having the induction side of their distributing-valves connected in common with the final receiver of the said double-acting cylinders.

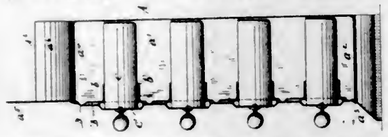
5. The combination, in a compound receiver-engine, of a double-acting high-pressure and intermediate cylinder located in lateral relation, single-acting low-pressure cylinders axially aligned therewith, connected pistons in the aligned cylinders, reciprocating steam-distributing valves for the double-acting cylinders, and rock-motion distributing-valves for the single-acting cylinders, together with connecting valve-gearing for operating all the valves of the respective aligned cylinders.

445,387. GATE-HINGE. JOHN J. WRIGHT, Bremen, Ind. Filed July 23, 1890. Serial No. 359,651. (No model.)



Claim.—The improved gate-hinge herein described, consisting, essentially, of the section A, composed of the vertical flange *a*, the shelf-plate extending from the middle thereof and having its outer edge provided with the recesses *b b*, and the vertical pintles c, arranged upon the upper side of the shelf and between said recesses, and the section B, having the vertical flange *e*, the shelf-plate B', having the curved loops or stops *d d*, the strips C, arching said recesses, and the pintles D, depending from the under side of the shelf and adapted to take into the recesses *b* of the opposite section, substantially as specified.

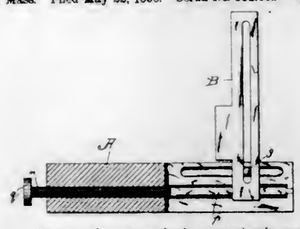
445,388. SHEET-METAL CABINET. DAVID BLOCK, New York, N. Y. Filed Aug. 20, 1890. Serial No. 362,517. (No model.)



Claim.—1. A sheet-metal cabinet formed of a rear part, in which the rear and side walls of the body are made integral with the base and top part, and of a front wall having inwardly-bent guide-pieces for the drawers or boxes, which guides are made integral with the front walls, substantially as set forth.

2. The combination of the main part or body of a sheet-metal cabinet, formed of a rear part and a front wall having inwardly-bent guides made integral with the front part and drawers or slides, the front walls of which drawers are made larger than the guide-openings of the front plate, substantially as set forth.

445,389. COMBINED SQUARE AND BEVEL. ARTHUR G. CHASE. Boston, Mass. Filed May 22, 1890. Serial No. 352,692. (No model.)



Claim.—1. In a bevel-square, a body or stock triangular in cross-section and slotted vertically and longitudinally, in combination with a slotted blade and a ball disposed in the stock-slot and forming a pivot for said blade, substantially as and for the purpose set forth.

2. In a bevel-square of the character described, the combination of a triangular body or stock slotted and grooved longitudinally, with a slotted blade, a ball disposed in said stock-groove and forming a pivot for said blade, and a rotary clamping-rod mounted in said stock, substantially as set forth.

3. In a bevel-square of the character described, a stock triangular in cross-section and provided with a face-plate, said stock and plate being slotted longitudinally, in combination with a ball disposed in said stock, a slotted blade pivoted on said ball, and a rotary clamping-rod, arranged substantially as described.

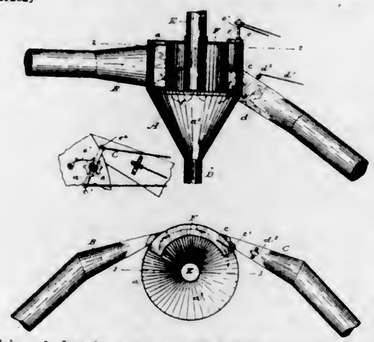
4. In a bevel-square of the character described, a stock triangular in cross-section and a plate secured to one face thereof and extended beyond its edges, in combination with a slotted blade disposed in a longitudinal slot in said stock, a ball working in a groove in said stock, on which said blade is pivoted, a cam-rod for clamping the blade, and rectangular blocks or buttons pivoted to said face-plate, substantially as described.

5. In a bevel-square of the character described, the stock A, provided with the slot *d*, and ball *g*, working in a groove opening into said slot, in combination with the slotted blade B, pivoted on said ball, substantially as set forth.

6. In a bevel-square of the character described, the stock A, provided with the slot *d*, ball *g*, the face-plate *b*, the slotted blade B, pivoted on said ball, and the binding-rod *m*, arranged to operate substantially as described.

7. In a bevel-square of the character described, the stock A and face plate *b*, provided with slots *d*, in combination with the slotted blade B, the ball *g*, on which said blade is pivoted in the stock-slot, the binding-rod *m*, and buttons *f*, arranged substantially as and for the purpose set forth.

445,390. FUEL FEEDER AND SEPARATOR. WILLIAM F. COSGROVE, Jersey City, N. J.; Ellen Cosgrove administratrix of said William F. Cosgrove, deceased. Filed Apr. 30, 1890. Serial No. 349,993. (No model.)



Claim.—1. In a furnace-feeder and fuel-separator, the combination, with a separator cylinder or shell, of the tangentially-arranged inlet-tube for the blast, the outlet-tube to the furnace, also arranged tangentially to the shell and on substantially the same level as the inlet-tube, and means, substantially as described, within the shell for directing the whole or a part of the fuel-laden blast into and through the said outlet-tube to the furnace, substantially as and for the purposes set forth.

2. In a furnace-feeder and fuel-separator, the combination, with the separator cylinder or shell, of the tangentially-arranged inlet-tube for the blast, the outlet-tube to the furnace, also arranged tangentially to the shell and on substantially the same level as the inlet-tube, means, substantially as described, within the shell for directing the whole or a part of the fuel-laden blast into and through the outlet-tube to the furnace, and means, substantially as described, for varying the proportions of air and fuel passing through said outlet-tube, substantially as and for the purposes set forth.

3. In a furnace-feeder and fuel-separator, the combination, with the separator cylinder or shell A, of the inlet-tube B for the forced blast, the outlet-tube C, leading to the furnace, and the passage *f'*, formed within said shell A and concentric with the wall of same, said passage extending between the mouths of tubes B and C, as and for the purposes set forth.

4. In a furnace-feeder, the combination, with the separator-shell A, of the inlet-tube B for the forced blast, the outlet-tube C, leading to the furnace, the passage *f'*, formed within the shell A, and extending between the mouths of tubes B and C, and the valve *c*, arranged within the shell and adapted to close the month of tube C, whereby the whole or a part of the forced blast may be directed into and through said tube C to the furnace, as and for the purposes set forth.

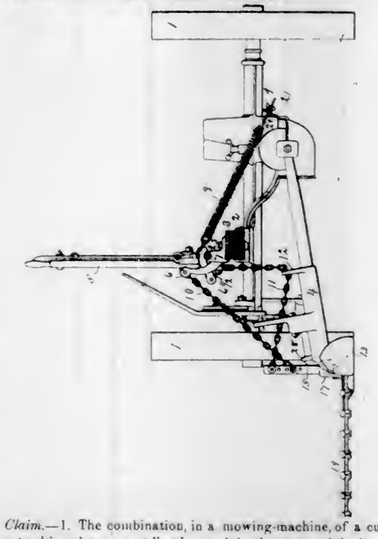
5. In a furnace-feeder, the combination, with the separator-shell A, of the inlet-tube B for the forced blast, the outlet-tube C, leading to the furnace, the passage *f'*, formed within the shell A and extending between the mouths of tubes B and C, the valve *c*, arranged within the shell and adapted to close the month of tube C, whereby the whole or a part of the forced blast may be directed into and through said tube to the furnace, and the damper *d*, arranged across the tube C, whereby the proportions of fuel and air passing through the tube C may be varied, all arranged to operate substantially as set forth.

6. In a furnace-feeder and fuel-separator, the combination, with the separator-shell comprising an upper cylindrical portion *a* and a lower hopper-like portion *a'*, of the inlet-tube B for the blast and the outlet-tube C to the furnace, both arranged tangentially to the cylindrical part *a* of the shell and on substantially the same level, the pipe D, leading from the bottom of the hopper-like portion of the shell to the fuel-storage tower, the exhaust-outlet E for the blast, and means, substantially as described, for regulating the feed of fuel to the furnace, substantially as set forth.

7. In a furnace-feeder and fuel-separator, the combination, with the separator cylinder or shell comprising the upper cylindrical portion *a* and the lower hopper-like portion *a'*, of the inlet-tube B for the forced blast, the outlet-tubes C and D, leading, respectively, to the furnace and to the fuel-storage tower, the exhaust-tube E for the forced blast, the passage *f'*, formed in shell A and concentric with the wall of same, said passage extending between the mouths of tubes B and C and tapering toward its end, and means, substantially as described, for regulating the feed of fuel to the furnace, substantially as and for the purposes set forth.

8. In a furnace-feeder and fuel-separator, the combination, with the separator-shell, of the inlet-tube B for the forced blast, the outlet-tubes C and D, leading, respectively, to the furnace and to the fuel-storage tower, the exhaust-outlet tube E for the forced blast, extending down into the interior of the shell, and means, substantially as described, for regulating the feed of fuel to the furnace, substantially as and for the purposes set forth.

445,391. MOWING-MACHINE. JOHN J. COURTNEY, Minneapolis, Minn., assignor to the Minneapolis Harvester Works, same place. Filed Mar. 18, 1890. Serial No. 344,433. (No model.)



Claim.—1. The combination, in a mowing-machine, of a cutting apparatus hinged to a coupling-bar and having an upright lever attached at the stubble end thereof, a double compensating cam upon the main frame or pole of the machine in a higher horizontal plane and stubbleward of the upright lever, a chain or its equivalent connected at one end to the upright lever and extending thence in an upward oblique direction stubbleward to the compensating cam, to one arm of which the other end of the chain is attached, and a spring having one end connected to the other arm of the compensating cam and the other end connected to the main frame at the stubbleward side thereof in substantially the same horizontal plane as that in which the compensating cam is connected to the upright lever, substantially as described.

2. The combination, in a mowing-machine, of a cutting apparatus hinged to a coupling-bar and having an upright lever pivoted thereto at the stubble end thereof, a shoulder or stop to limit the stubbleward movement of the upright lever, a double compensating cam upon the main frame or pole of the machine in a higher horizontal plane and stubbleward of the upright lever, a chain connected at one end to the upright lever and extending thence in an upward oblique direction stubbleward to the compensating cam, to one arm of which the other end of the chain is attached, and a spring at the opposite side of the pole from the cutting apparatus, having one end attached to the other arm of the compensating cam and the other end attached by an adjustable connection to the main frame at the stubbleward side thereof in substantially the same horizontal plane as that in which the com-

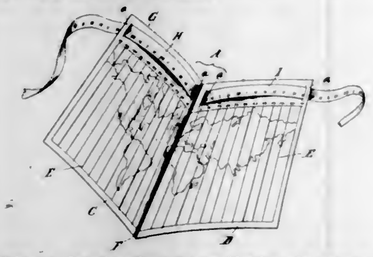
pensating cam is connected to the upright lever, substantially as described.

3. The combination, in a mowing-machine, of a cutting apparatus hinged to a coupling-bar and having an upright lever pivoted thereto at the stubble end thereof, a double separably-constructed compensating cam upon the main frame or pole of the machine in a higher horizontal plane and stubbleward of the upright pivoted lever, a chain connected at one end to the upright pivoted lever and extending thence in an upward oblique direction stubbleward to the compensating cam, to one arm of which the other end of the chain is attached, and a spring having one end connnected to the other arm of the compensating cam and the other end connected to the main frame at the stubbleward side thereof in substantially the same horizontal plane as that in which the compensating cam is attached to the pivoted lever, substantially as described.

4. In a mowing-machine, a double separately-constructed compensating cam for equalizing the lifting-power of a spring as applied to the cutting apparatus thereof, composed of the separate parts 6 and 6½, in combination with the bolt 23, the bracket 7, and stop 24, substantially as described.

5. The combination, in a mowing-machine, of the cutting apparatus 10, the coupling-bar 4, the upright pivoted lever 15, the shoulder 18, the chain 10, the separably-constructed compensating cam 6 and 6½, the stop 24, the bolt 23, the bracket 7, the spring 8, adjustable connection 20, and lug 21 on the main frame, substantially as described.

445,392. **TIME-CHART.** EDWARD R. E. COWELL, Ypsilanti, Mich., assignor of one-half to Henry P. Glover, same place. Filed June 23, 1890. Serial No. 356,321. (No model.)



Claim.—1. In a time-chart, the combination of a map on Mercator's projection, having the meridians marked thereon at intervals both ways from the standard meridian, and a sliding strip marked with divisions of time corresponding to the intervals between the meridians and slidingly secured in the chart by passing through the same at intervals, substantially as described.

2. In a time-chart, the combination, with a map on Mercator's projection, having the meridians marked thereon, of a sliding strip marked with divisions of time corresponding to the time intervals between the meridians and secured in position by passing through slits in the chart beyond the map, substantially as described.

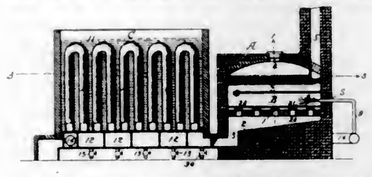
445,393. **TIME-GLOBE.** EDWARD R. E. COWELL, Ypsilanti, Mich., assignor of one-half to Henry P. Glover, same place. Filed Sept. 9, 1890. Serial No. 364,481. (No model.)



Claim.—1. A time-globe indicator consisting of a globe having a groove therein and of an independent movable zone or ring retained in the groove and carried by the globe, said zone or ring carrying the divisions of the day or night, substantially as described.

2. A time-globe indicator consisting of a globe provided with an equatorial annular groove and an independent annular ring sprung into said groove and carried by the globe and carrying the divisions of the day and night, substantially as described.

445,394. **APPARATUS FOR MAKING COKE.** EDWARD T. COX, New York, N. Y. Filed Feb. 26, 1890. Serial No. 341,840. (No model.)



Claim.—1. A coking-oven provided with a closed chamber with perforations in the bottom and adapted to receive the coal, a bottom channel leading to a receptacle for the liquid products below said bottom, a heating-casing arranged within the chamber in position to be surrounded by the coal, and means for introducing a heating medium into the casing, substantially as described.

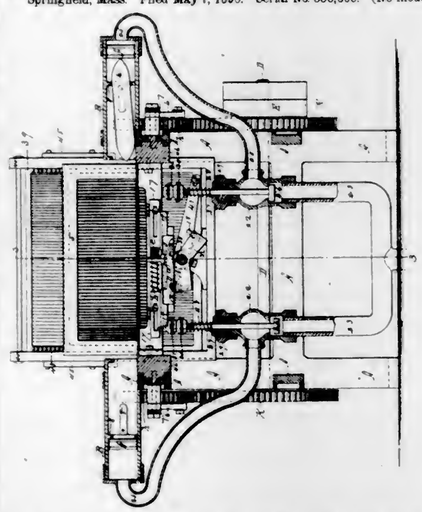
2. The combination, with the coke-oven having the perforated bottom and a channel below said bottom, of the casing B within the oven communicating with a flue, means for introducing a heating medium into said casing, and the condenser C, communicating with said channel, substantially as described.

3. The combination, in a coking apparatus, of a chamber adapted to receive the coke and provided with a perforated bottom, a casing arranged within the chamber, a gas-pipe extending into said casing, and a flue communicating with said casing, substantially as described.

4. The combination of the coking-oven, the casing arranged within the same and communicating with the flue, means for introducing a heating medium into said casing, a perforated bottom to the said oven, a conduit for the receptioo of the distillates, arranged below said bottom, and a condenser communicating with said conduit, substantially as described.

5. In a coke-oven, a perforated false bottom and grooved plates for covering the perforations, substantially as described.

445,395. **LOOM.** JAMES F. CRANSTON and JOSEPH H. WESSON, Springfield, Mass. Filed May 7, 1890. Serial No. 350,860. (No model.)



Claim.—1. In a loom, the batten thereof, having a longitudinally-reciprocating movement in the frame thereof, and mechanism, substantially as described, for so actuating said batten, shuttle-throwing mechanism consisting of shuttle-boxes arranged on opposite sides of the loom, compressed-air conduits connected with said boxes, and a piston in each of said boxes having a pneumatically-actuated movement therein against the shuttle, combined with an air-valve for each shuttle-box in said air-conduits, each valve having a spindle projecting therefrom, a valve-operating slide-bar attached to said batten and alternately engaging said valve-spindles, and mechanism, substantially as

described, actuated by said batten for moving said slide-bar thereon, substantially as set forth.

2. In a loom, the batten thereof, having a longitudinally-reciprocating movement in the frame thereof, and mechanism, substantially as described, for so actuating said batten, shuttle-throwing mechanism consisting of shuttle-boxes arranged on opposite sides of the loom, compressed-air conduits connected with said boxes, a piston in each of said boxes having a pneumatically-actuated movement therein against the shuttle, combined with an air-valve for each shuttle-box in said air-conduits, each valve having a spindle projecting therefrom, a valve-operating slide-bar having cam-grooves therein, attached to said batten and alternately engaging said valve-spindles, an intermittently-rotating shaft extending across the loom, a pawl-and-ratchet connection, substantially as described, between said shaft and batten, a rock-shaft extending longitudinally in the loom, having laterally-extending arms thereon, two cam-wheels fixed on said intermittently-rotating shaft, having alternate engagement with said arms, and a bar-shifter fixed on said rock-shaft, having pins thereon for engagement with the cam-grooves of said slide-bar, whereby a sliding motion is imparted thereto toward and from each of said valve-spindles, substantially as set forth.

3. In a loom, standards fixed to the frame thereof, between which the heddle-frames are supported and have their movements at right angles to the line of the warp, heddle-frames having racks on their inner adjacent sides, and pinions supported on said standards, having engagement with said racks, combined with the batten having a longitudinally-reciprocating movement in the frame of the loom, mechanism, substantially as described, for so actuating said batten, an intermittently-rotating shaft extending across the loom, a pawl-and-ratchet connection, substantially as described, between said shaft and batten, a rock-shaft extending longitudinally in the loom, having laterally-extending arms thereon, two cam-wheels fixed on said intermittently-rotating shaft, having alternate engagement with said arms, and an arm fixed on the rear end of said last-named shaft, having its free end pivotally connected with one of said heddle-frames, substantially as set forth.

4. The batten having a longitudinally-reciprocating movement in the frame of the loom, and mechanism, substantially as described, for so actuating the same, the slide-bar carrying the springs c c, having a sliding connection, substantially as described, with the batten and having pending lips thereon, and cam-grooves and pin-channels in its lower side, combined with the spindles of the air-valves, each having a conical-sided nut thereon for engagement with said pending lips, the rocking-bar shifter, having spring-supported pins therein for engagement with the slide-bar, a two-armed rock-shaft on which said bar-shifter is fixed, an intermittently-rotating shaft, having two cam-wheels fixed on said last-named shaft having alternate engagement with said arms, and a pawl-and-ratchet connection, substantially as described, between said intermittently-rotated shaft and the batten, substantially as set forth.

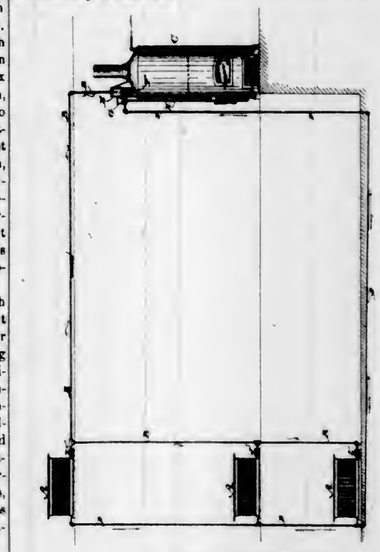
5. The batten having a boss *a* centrally located on the side of its frame, the slide-bar 17, having a bar *b* therein extending through said boss, and springs on said bar *b*, acting against the opposite sides of said boss to move the slide-bar to a normally-central position on the batten-frame, combined and operating substantially as set forth.

6. The batten having a sliding connection, substantially as described, with the loom-frame, and the shaft 9, having ratchet-wheels fixed thereon, combined with the shaft J, having crank-gears thereon, connecting-rods between said gears and batten, pawls connected to the batten for engagement with said ratchet-wheels, springs attached to said connecting-rods and engaging with said pawls, and pins on the loom-frame on which said pawls ride, substantially as set forth.

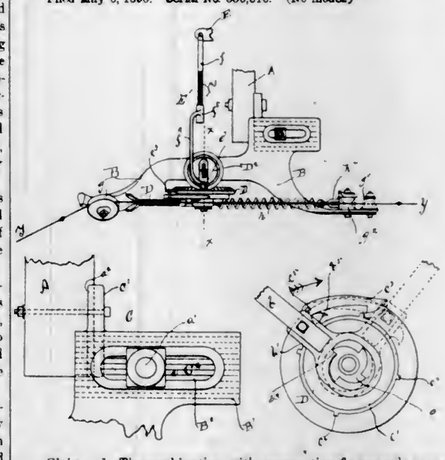
7. In a loom, the batten thereof, having a longitudinally-reciprocating movement in the frame thereof, and mechanism, substantially as described, for so actuating said batten, shuttle-throwing mechanism consisting of shuttle-boxes arranged on opposite sides of the loom, said boxes each having a piston-stop on its inner wall to limit the inward movement of the piston therein, compressed-air conduits connected with said boxes, and a piston in each of said boxes having a pneumatically-actuated movement therein against the shuttle, combined with an air-valve for each shuttle-box in said air-conduits, each having a spindle projecting therefrom, a conical-sided nut attached to each of said spindles, and a spring applied thereto to draw the valve to its seat, a valve-operating slide-bar attached to said batten and alternately engaging said valve-spindles, and mechanism, substantially as described, actuated by said batten, for moving said slide-bar thereon, substantially as set forth.

445,396. **STEAM-HEATING APPARATUS.** CHARLES EDGERTON, Philadelphia, Pa. Filed Jan. 7, 1890. Serial No. 336,123. (No model.)

Claim.—In a steam-heating apparatus, a steam-generator, a radiator, a live-steam-conveying pipe, and a pipe for the return of exhaust or condensed steam, combined with an engine or motor, a pump, the said engine or motor and pump having a shaft common to both and respectively connected to the live and exhaust steam pipes, and a pipe connected to said pump and generator, whereby the water of condensation or exhaust is forced back to the boiler of said generator, substantially as described.



445,397. **CHECK-ROWER.** AUSTIN C. EVANS, Springfield, Ohio. Filed May 6, 1890. Serial No. 350,810. (No model.)



Claim.—1. The combination, with a supporting-frame and an operating-wheel journaled thereon, of a bifurcated lever having an elongated opening adapted to surround a ratchet on said operating-wheel, and a projecting shoulder in said opening formed integral with the walls of said opening, adapted to engage said ratchet, substantially as specified.

2. The combination, with an operating-wheel having the ratchet-teeth and an annular flange with stop projections thereon, of a bifurcated operating-lever having an elongated opening and an engaging projection in said opening formed integral with the walls thereof, a movable catch adapted to engage with said stop projections, and a cam-faced lug on said lever to hold said catch normally out of engagement with said stop projection, substantially as specified.

3. The combination, with an operating-wheel having oppositely-inclined ratchet-teeth on each side thereof, of a bifurcated lever with an elongated opening adapted to surround one of said ratchets, a projection in one of the walls of said opening to engage said ratchet, stop projections on said wheel, and a pivoted catch adapted to engage said stop projections, means on said lever for normally holding said mov-

able catch out of engagement with stop projections, and a pivoted pawl adapted to engage with the ratchet on the opposite side of said operating-gear, substantially as specified.

4. The combination, with a check-rower, of a pivoted operating-lever having an elongated opening and engaging projection formed integral with the walls of said opening and adapted to engage with the ratchet on an operating-gear, a crank-gear meshing with said operating-gear, and an adjustable crank-arm attached to said crank-gear, substantially as specified.

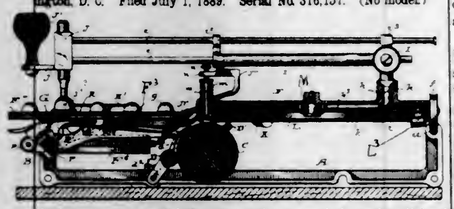
5. The combination, with an operating-gear having oppositely-arranged ratchets on the opposite sides thereof and a pivoted lever adapted to engage with one of said ratchets when moved in one direction, of a stop-catch adapted to limit the movement of said operating-gear, said stop-catch being normally held out of its engaging position by a cam on said lever, said cam being adapted to release said stop-catch before said lever reaches the limit of its forward stroke, a crank-gear engaging with said operating-gear, and means, substantially as described, for connecting said crank-gear to the dropping mechanism, substantially as specified.

6. The combination, in a check-rower and with the supporting-frame thereof, having a projecting lug or ear provided with an elongated opening and horizontal serrations therein, of a fastening-plate having the annular wings, as described, one of which is provided with serrations corresponding to the serrations on said projecting ear, and the other wing being adapted to be secured to the planter-frame, substantially as specified.

7. The combination, with the operating-lever, of the operating-gear having oppositely-arranged ratchets on opposite sides thereof and adapted to be moved in one direction by the vibration of said lever engaging with one of said ratchets, a crank-gear engaging with said operating-gear, and an adjustable two-part link connection from said crank-gear to the dropping mechanism, substantially as specified.

8. The combination, with the main frame, of an operating-gear having oppositely-arranged ratchet-teeth on the opposite sides thereof, said gear being adapted to turn on a sleeve secured to the main frame, a crank-gear journaled in a bearing on said frame and adapted to mesh with said operating-gear, an adjustable crank-arm secured to said crank-gear, a bolt extending through said gear and crank and adapted to hold said parts in their relative positions, and a collar through which said bolt passes, adapted to hold said gear in its bearings, substantially as specified.

445,398. TYPE-WRITING MACHINE. William W. Evans, Washington, D. C. Filed July 1, 1889. Serial No. 316,157. (No model.)



Claim.—1. A type-disk for type-writers, consisting of a disk of sheet metal slitted radially to form spring type-bearing arms, in combination with conical guides located above the extremities of the said type-bearing arms, and a movable plunger for forcing down said type-bearing arms, adapted to register with the guides, substantially as described.

2. A type-disk for type-writers, consisting of a disk of sheet metal slitted radially to form spring type-bearing arms and having printing characters formed integral with the extremities of said arms, combined with conical guides located above the extremities of the said type-bearing arms, and a movable plunger for forcing down said type-bearing arms and adapted to register with the guides, substantially as described.

3. A type-disk for type-writers, consisting of a disk of sheet metal slitted radially to form spring type-bearing arms and having printing characters formed integral with the extremities of said arms upon one side and conical pins formed integral with said arms upon the other side, and a movable plunger for forcing down said type-bearing arms and adapted to register with the pins, substantially as described.

4. The combination of a type-disk for type-writers, consisting of a disk of sheet metal slitted radially to form spring type-bearing arms, and a fly-wheel provided with an annular series of funnel-shaped guide-openings located above the extremities of the type-bearing arms, substantially as described.

5. The combination of a type-disk for type-writers, consisting of a disk of sheet metal slitted radially to form spring type-bearing arms, and a fly-wheel provided with an annular series of funnel-shaped guide-openings located above the extremities of the type-bearing arms and formed with a depending flange upon which the type-disk is removably secured, substantially as described.

6. In a type-writer, a telescopic key-lever hinged to move vertically and pivoted to swing horizontally, a disk carrying suitable type and rotatably mounted on its axis, and a suitable connection between the pivot of the key-lever and the axial support of the type-disk, substantially as described.

7. In a type-writer, the combination, with a hinged and pivoted telescopic key-lever, of a pivoted fly-wheel, a disk of sheet metal slitted radially, thus forming spring type-bearing arms, and secured to said fly-wheel, and suitable gearing extending between the pivot of the key-lever and the axial support of the fly-wheel.

8. In a type-writer, the combination, with a hinged and pivoted telescopic key-lever, of a rotatably-mounted type-disk, connections between the pivot of the key-lever and the type-disk for rotating the latter, and a key-board arranged at the front of the machine remote from the type-disk and provided with indicating characters or signs, whereby the end of the key-lever remote from its pivotal point is guided, all the characters on the key-board being arranged on separate radial lines, substantially as described.

9. In a type-writer, a key-lever comprising a hinged and pivoted support, parallel guide-rods secured at one end to said pivoted hinge and at their other end to a head *a'*, said head having a central tubular opening, a frame sliding between said guide-rods, and a rod passing through said tubular bearing attached at one end to said frame, an arm *j*, attached to the opposite end of said rod, said arm being provided with a downwardly-projecting pointer, and a finger-piece J', substantially as described.

10. In a type-writing machine, a key-lever provided with a downwardly-projecting pointer, in combination with a key-board having indicating characters or signs on its surface, said key-board being provided with openings corresponding to the characters on its surface, said openings being surrounded by saucer-shaped depressions, substantially as described.

11. In a type-writer, the combination of a rotatably-mounted type-disk having guides located above the extremities of the arms of the type-disk, a pivoted key-lever having a toothed sector secured to the pivot thereof, and an intermeshing pinion on the axis of the type-disk, whereby said disk is rotated in accordance with the movement of the lever.

12. In a type-writer, the combination of a rotatably-mounted type-disk and fly-wheel containing guide-openings located above the extremities of the arms of the type-disk, a pivoted key-lever having a toothed sector secured to the pivot thereof, and an intermeshing pinion on the fly-wheel, whereby the fly-wheel and type-disk are rotated in accordance with the movement of the lever, substantially as described.

13. In a type-writing machine, a hinged and pivoted telescopic key-lever, a rotatably-mounted type-disk and connections between the same and the pivot of the key-lever for rotating said type-disk, said type-disk being arranged to form type-bearing arms with a series of guides arranged thereon, and a vertically-movable plunger in the path of the key-lever, whereby the characters for printing will be positioned by the key-lever and the depression of the same will force the plunger into engagement with the guides to perform the printing, substantially as described.

14. In a type-writing machine, in combination with a suitable supporting-frame, an intermittently-moving carriage containing the printing and feeding mechanism, said carriage being constructed in two parts connected by frame-pieces, one of said parts carrying the printing mechanism and the other part the mechanism whereby the carriage is fed, substantially as described.

15. In a type-writing machine, the combination of a slitted type-disk having arms provided with printing characters and having an annular series of funnel-shaped openings arranged above said arms, a hinged and pivoted telescopic key-lever geared to said type-disk, whereby the disk and guide openings are suitably rotated in accordance with the movements of said key-lever, a vertically-moving plunger in the path of the telescopic key-lever, and a key-board having indicating characters or signs to guide the extremity of the key-lever, said characters being each located upon a separate radial line with respect to the path of the key-lever.

16. In a type-writing machine, in combination with a suitable frame, a paper-roller supported thereby, a scale, an intermittently-moving carriage containing the printing and feeding mechanism, said carriage being constructed in two parts, one part carrying the printing mechanism and the other the feeding mechanism, suitable arms uniting the two parts of the carriage and bridging the paper-roller, and a pointer located in the space between the parts of the carriage opposite the printing-opening and in juxtaposition to the scale, substantially as described.

17. In a type-writing machine, the combination, with the frame, of the carriage and the rack-bar, a box-spring secured to the carriage and engaging the teeth of the rack-bar, a block arranged to slide upon the rack-bar and provided with a rocking lever or spring-dog normally engaging the rack-bar, and a pair of pivoted levers on the opposite side of the block normally out of engagement with the rack-bar and provided with means for releasing the dog when their outer extremities are depressed to bring their inner ends into engagement with the teeth of the rack-bar, and connections between said lever and the printing mechanism, whereby they are depressed at each operation thereof.

18. In a type-writing machine, the combination, with the main supporting-frame and the rack-bar pivotally mounted thereon, of a block P, arranged to move laterally upon said rack-bar, a box-spring secured to the carriage and provided with teeth on its periphery engaging the rack-bar, a rocking lever or spring-dog carried by the block and also engaging the teeth of the rack-bar, a pair of levers pivoted to the block and secured to a transverse bar S^8 and arranged to engage the rack-bar when their outer ends are depressed and to simultaneously raise the spring-dog out of engagement therewith, and arms extending downward from the plunger-arm and resting upon the transverse bar S^8, whereby when the plunger is depressed in the operation of printing the downwardly-extending arms will depress the said bar S^8 to release the spring dog and operate the escapement, substantially as described.

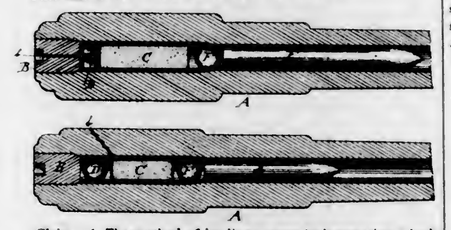
19. In a type-writer, the combination, with the intermittently-moving carriage thereof, of a rack-bar, a box-spring secured to the carriage and provided with teeth upon its periphery engaging the teeth of the rack-bar, a block secured to the carriage and arranged to slide upon the rack-bar, an endwise-moving rocking lever or dog mounted between arms projecting from one side of the block and extending over the rack-bar and into engagement therewith, vertically-moving pivoted levers, also attached to the block and arranged when their outer ends are depressed to engage the teeth of the rack-bar and to disengage the dog, permitting the same to advance the desired distance while the carriage is held by the pivoted levers, and means for regulating the advance of the spring-dog, substantially as described.

20. In a type-writing machine, the combination, with the escapement mechanism, of spacing-keys attached to pivoted levers normally resting upon but not secured to a downwardly-moving operative part of the said escapement mechanism, substantially as described.

21. In a type-writing machine, a carriage propelling a printing device, a type-disk pivotally mounted in one portion thereof, and a flange or support arranged below said type-disk and formed with a plurality of depressions, said depressions being provided with a lining of fibrous material, as felt, and a flexible roller arranged therein and adapted to come in contact with the faces of the printing characters as said type-disk is rotated, substantially as described.

22. In a type-writing machine, the combination of the carriage, the rack-bar, a rocking lever or spring-dog normally carried by the carriage and engaging the rack-bar, means, substantially as described, for disengaging the dog at each operation of the printing mechanism, and a movable wedge for limiting the travel of the dog and determining the space between each printed character, substantially as described.

445,399. METHOD OF LOADING ORDNANCE. Louis Gathmann, Chicago, Ill., assignor to the Gathmann Ordnance Company, same place. Filed May 8, 1890. Serial No. 351,097. (No model.)



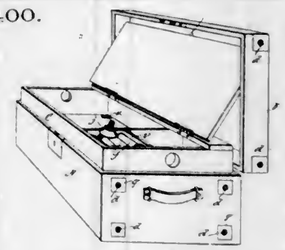
Claim.—1. The method of loading cannon by interposing a body of compressed gases between the powder-cartridge and breech-block, substantially as set forth.

2. The method of loading cannon by interposing between the powder-cartridge and breech-block and between the powder-cartridge and projectile a body of compressed gases, substantially as set forth.

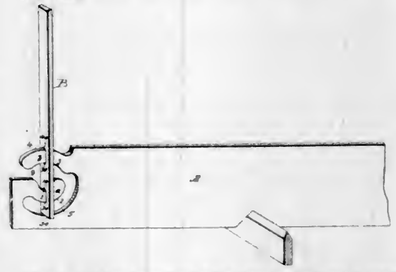
445,400. CONVERTIBLE TRUNK OR WARDROBE. Greta L. S. Hayes, Springfield, Mass. Filed Dec. 12, 1889. Serial No. 333,522. (No model.)

Claim.—A wardrobe-trunk body having at one end near each corner a socket for a removable leg and having corresponding leg-sockets in the end of the cover, in combination with removable legs constructed to fit the sockets or to be stored in the trunk, substantially as described.

445,400.



445,401. JOINT FOR MECHANICAL ELEMENTS. George S. Heath, Springfield, Mass. Filed June 11, 1890. Serial No. 355,003. (No model.)

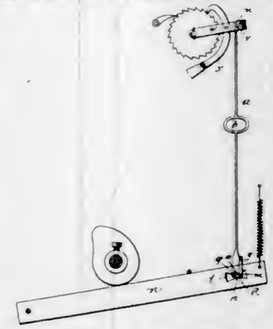


Claim.—1. A part provided with a bearing, as 1, and a member *b*, the opposite borders 3 and 4 of which comprise arcs which are concentric with said bearing 1, combined with a part having a surface 10 to rest on said bearing 1 and having at a suitable distance therefrom a perforation, through which said member *b* is passed, and on the opposite borders of which perforations the said borders 3 and 4 of said member *b* bear, for the purpose set forth.

2. A part provided with two separated arms, each of arc form, the borders of both of which are described from substantially a common center to constitute four concentric bearing-faces, and the bearing-surface 5, also concentric with the borders of said arms, combined with an element having the bearing-surfaces 10, 20, 30, 40, and 50 for contact with all the bearing-surfaces of said first-named part, substantially as described.

3. A part provided with two opposing and separated bearing-arms *a* and *b*, each of arc form, the borders of which are described from substantially a common center, and the space between said arms being extended to the extremity of said part, combined with another element provided with an aperture having bearings 30 and 40 to contact with the borders of said arm *b*, and also provided with a bearing-surface, as 10, to contact with a border of said arm *a*, all whereby the said parts may be connected to form, in substance, a pivotal joint, and also readily detached, substantially as described.

445,402. CONNECTING-ROD. George S. Heath, Springfield, Mass. Filed June 11, 1890. Serial No. 355,004. (No model.)



Claim.—1. In combination, an actuating-lever, a movable part to be operated by said lever, and a connecting-rod by its terminals

uniting said actuating-lever, and said movable part having its intermediate portion formed of a ring of ductile material capable of being distended longitudinally and transversely, whereby the longitudinal extent of said connecting-rod may be increased or diminished to accord with wear and adjustment of the said lever or part actuated thereby and without disconnecting said rod from said parts, substantially as described.

2. A connecting-rod having at its extremity the ledge *d* and provided with the overhanging portion *g*, partially separated by a slit from the extremity of the rod proper and having its terminal extended into contact or proximity with said ledge, substantially as described.

3. The combination, with a lever having an aperture the opposite borders of which are curved or inclined, as described, of a connecting-rod having at its extremity the ledge *d*, entered through said aperture and having a rocking bearing in said borders thereof, and provided with the overhanging part *g*, substantially as and for the purpose set forth.

4. The connecting-rod intermediately provided with the ring *b*, integrally formed with said rod, and one of the terminals of said rod being provided with the lateral extension or ledge *d* and the overhanging portion *g*, substantially as and for the purpose described.

5. The connecting-rod intermediately provided with the ring *b*, integrally formed therewith, and one of the terminals of said rod being provided with the lateral extension or ledge *d* and the overhanging portion *g* and the other of said terminals having the pivot-studs *v v*, integrally formed with said rod, substantially as and for the purpose described.

445,403. **FISHING-REEL.** ANDREW B. HENDRYX, New Haven, Conn., assignor to the A. B. Hendryx Company, same place. Filed Sept. 1, 1890. Serial No. 363,601. (No model.)



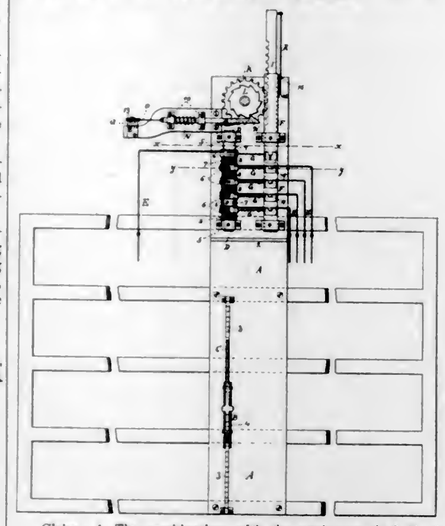
Claim.—In a reel for fishing-rods, the combination of the winding-drum, the cap, and the adjacent frame-plate thereof, a spring-brake A, rigidly attached by one end to the outer face of said plate, the plate constructed with an opening through it onto the flange of the drum, the said brake bent outward from its rigid point of contact with the plate and so as to present an inclined surface upon its outside, its other end turned inward through said opening in the plate and so as to bear upon the flange of the drum, and a sliding button arranged in the cap and adapted to bear upon the inclined outer surface or back of the brake, all substantially as and for the purpose described.

445,404. **DRIVING RAILWAY-CARS.** BENJAMIN S. HENNING, New York, N. Y. Filed June 12, 1890. Serial No. 355,190. (No model.)



Claim.—The combination, with a track having two or more reverse inclines, of a cable extending the length of the track, one or more cars and means for continuously connecting them with the cable, and means for utilizing the movement of the cable when driven by a car in descending to store up power in the cable-motor, substantially as set forth.

445,405. **LEAF-TURNER.** THOMAS D. HOLCOMB, Brooklyn, N. Y. Filed Sept. 27, 1890. Serial No. 366,328. (No model.)



Claim.—1. The combination, with the stationary shaft D, the leaf-turners and their springs, of the notched latch-tube F and plunger I, substantially as set forth.

2. The combination, with the shaft D, of the leaf-turners E, each leaf-turner being formed with a ring 6, the helical spring connected with such ring and with the music-rack, sleeves around the shaft D, between the respective rings, and helical springs surrounding the sleeves, substantially as set forth.

3. The combination, with the leaf-turners and their supporting-shaft and springs, of a latch-tube notched and having tongues against which the leaf-turners are held, and a plunger within the latch-tube, and mechanism for giving to such plunger an endwise movement to unlatch the leaf-turners successively, substantially as set forth.

4. The combination, with the stationary shaft, the leaf-turners upon such shaft, and the springs for moving such leaf-turners, of latches for holding the leaf-turners, a sliding plunger acting to separate the leaf-turners from the latches, and a ratchet-wheel and pawl for giving to the plunger an end motion, substantially as set forth.

5. The combination, with the leaf-turners and the latches for holding the same, of the plunger, a rack and gear-wheel for giving end motion to the same, a ratchet-wheel and pawl for moving the gear, a spring to give motion in one direction to the pawl, and a cord and treadle moving the pawl in the other direction, substantially as set forth.

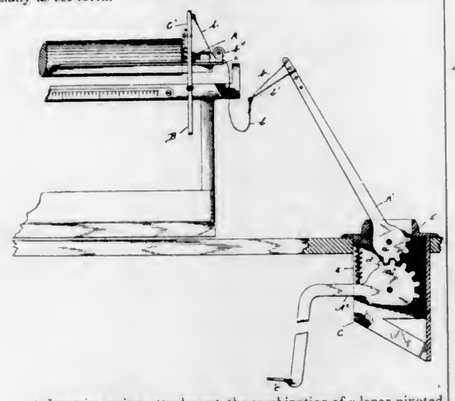
6. The combination, with the music-rack and the leaf-turners above the music, of a toothed rack 3, a sliding music-holder upon the toothed rack, and a spring-finger for holding the music when placed in position, substantially as set forth.

445,406. **REVERSE-MOVEMENT ATTACHMENT FOR TYPE-WRITING MACHINES.** HENRY O. HOOPER, San Francisco, Cal. Filed July 25, 1890. Serial No. 359,902. (No model.)

Claim.—1. In a type-writer attachment, the combination of a lever pivoted to the table and extending beneath the same, means for operating said lever, a laterally-extending eyed rod secured to the upper end of the lever, a pulley mounted upon the carriage-frame, a spring metallic bar secured to the hand-lift of the machine, and a cord secured to the rear of spring metallic bar, thence passing beneath the pulley, through the eye of the laterally-extending arm, and finally secured to the upper end of the operating-lever, substantially as set forth.

2. In a type-writer attachment, the combination of a lever pivoted to the table of the machine, having its inner end enlarged and toothed and its outer end extending downwardly so as to be manipulated by the operator's foot or limb, a second lever pivoted to the table and also provided with an enlarged toothed inner end meshing with the corresponding end of the other lever, a spring-bar secured to the hand-lift of the machine, a cord connecting the rear end of said bar with the rear end of the upper lever and adapted to move the carriage laterally to the right and to partly rotate the roll or platen, substantially as set forth.

3. In a type-writer attachment, the combination of a lever pivoted to the table of the machine, having its inner end enlarged and toothed and its outer end extending downwardly so as to be manipulated by the operator's foot or limb, a laterally-extending pivoted arm having its outer end weighted and its inner end notched to engage the teeth of the lever, an upwardly-extending lever pivoted to the table and also provided with an enlarged toothed inner end meshing with the corresponding end of the other lever, a spring-bar secured to the hand-lift of the machine, and a cord connecting the rear end of said bar with the end of the upper lever and adapted to move the carriage laterally to the right and to partly rotate the roll or platen, substantially as set forth.



4. In a type-writer attachment, the combination of a lever pivoted to the table of the machine, having its inner end enlarged and toothed and its outer end extending downwardly so as to be manipulated by the operator's foot or limb, a second lever pivoted to the table and also provided with an enlarged toothed inner end meshing with the corresponding end of the other lever, a spring-bar secured to the hand-lift of the machine, a cord connecting the rear end of said bar with the rear end of the upper lever and adapted to move the carriage laterally to the right and to partly rotate the roll or platen, and a stop for limiting the downward play of the downwardly-extending lever, substantially as set forth.

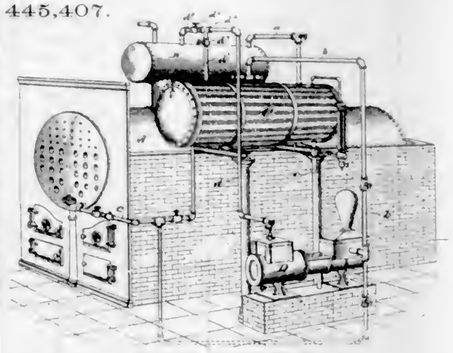
5. In a type-writer attachment, the combination of a casing secured to the table of the machine, a lever pivoted therein, having its inner end enlarged and toothed at its outer end extending from the casing so as to be manipulated by the operator's foot or limb, a second lever pivoted within the casing and also provided with an enlarged toothed inner end meshing with the corresponding end of the other lever, a spring-bar secured to the hand-lift of the machine, a cord connecting the rear end of the spring with the end of the upper lever and adapted to move the carriage laterally to the right and to partly rotate the roll or platen, a spring within the casing, having one end connected thereto and the other end connected to the downwardly-extending lever, and a stop formed within the casing for limiting the play of said downwardly-extending lever, substantially as set forth.

445,407. **FEED-WATER PURIFIER.** JOHN J. HOPPES, Springfield, Ohio. Original application filed June 30, 1888, Serial No. 278,692. Divided and this application filed Oct. 10, 1890. Serial No. 367,704. (No model.)

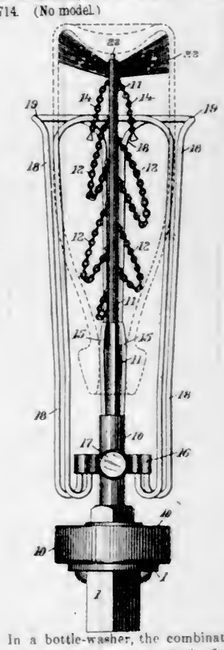
Claim.—1. The combination, with a feed-water purifier connected directly to a steam-boiler, of a separate steam-connection leading from said purifier to a steam-using device, said steam-connection being provided with a branch to the boiler, and stop-valves in the respective branches of said steam-connection, substantially as specified.

2. The combination, with a feed-water purifier connected directly to a steam-boiler, of a boiler-feeder adapted to supply said purifier, and a steam-connection from said boiler-feeder to said purifier, said steam-connection being provided with a branch to the steam-boiler and stop-valves in the respective branches of the said steam-connection, whereby the steam-supply from the boiler or purifier may be cut off, as desired, substantially as specified.

445,407.



445,408. **BOTTLE-WASHER.** JAMES A. HOUSE, Bridgeport, Conn., assignor to Ed. A. Nichols, New York, N. Y. Filed Aug. 11, 1890. Serial No. 361,714. (No model.)



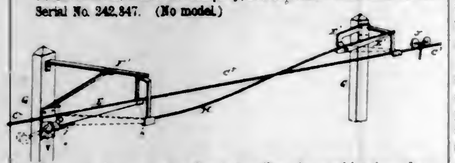
Claim.—1. In a bottle-washer, the combination, with the base having the upwardly-extending conduits 5, the flange 3, and the oblique openings 4 to said flange, of the wheel 8, the cleansing devices carried by said wheel, and the valve 21 and its stem 22, all arranged as described, and for the purpose set forth.

2. In a bottle-washer, the combination, with the rotative spindle carrying suitable cleaning devices, and means for operating said spindle, of the vertically-sliding base 16, the thumb-screw 17 for securing it, and the laterally-movable vertically extending spring-arms 18, adapted to inclose and hold the bottle, substantially as described.

3. In a bottle-washer, the combination, with the hollow spindle, of a wheel secured upon and adapted to drive said spindle, a valve located below the wheel and normally closing the service-pipe, and a valve-stem projecting upward through the wheel axis and spindle, and adapted to be operated by the pressure of the bottle to be washed.

4. In a bottle-washer, the base provided with a central conduit and with branch conduits 5, a rotative spindle adapted to receive water from the central conduit and deliver the same into the bottle, a wheel arranged upon said spindle and driven by water from the conduits 5, a valve between the openings of each of said conduits and the service-pipe, and a valve-spindle projecting upward through the wheel-axis and adapted to be operated by the bottle, substantially as described.

445,409. TURN-OUT FOR ELECTRIC RAILWAYS. RUDOLPH M. HUFFER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Filed June 29, 1887. Serial No. 242,847. (No model.)



Claim.—1. In a current-collecting trolley, the combination of supporting-wheels to run upon the line-conductor, a supporting-frame having a connection for the collecting-conductor, and a horizontal and laterally-movable guard-wheel normally out of contact with the line-conductor and adapted to project under the line-conductor and prevent abnormal upward movement of the collecting-wheels.

2. In a current-collecting trolley, the combination of supporting-wheels to run upon the conductors, a supporting-frame having a connection for the collecting-conductor, a horizontal and laterally movable guard-wheel adapted to project under the line-conductor and prevent the upward movement of the collecting-wheels, a pivoted arm supporting said guard-wheel to the supporting-frame, whereby said wheel is adapted to hang by gravity so as to normally bring its edge under the line-conductor.

3. In a current-collecting trolley, the combination of supporting-wheels made in two parts *t t* to grip the line-conductor and adapted to run upon the same, a spring to press these parts together, a supporting-frame having a connection for the collecting-conductor, and a horizontal and laterally movable guard-wheel adapted to project under the line-conductor and prevent the upward movement of the collecting-wheels.

4. A collector-wheel having a grooved periphery and divided in the plane of rotation so as to rest upon the conductor and grip it on the sides, in combination with a spring to press said parts together to form a complete grooved wheel.

5. The combination of a collector-trolley having one or more collecting-wheels T, formed on the parts *t t*, substantially as shown, an axle to support said wheels, a spring to press the two parts of the wheels together, and a frame supporting axles and extending below the wheels.

6. The combination of a collector-trolley having one or more collecting-wheels T, formed of the parts *t t*, substantially as shown, an axle to support said wheels, a spring encircling the axle to press the two parts of the wheels together, and a frame supporting axles and extending below the wheels.

7. The combination of a collecting-trolley having one or more collecting-wheels T, formed of the parts *t t*, substantially as shown, an axle to support said wheels, a spring to press the two parts of the wheels together, means for adjusting the tension of the spring, and a frame supporting axle and extending below the wheels.

8. The support for the working-conductor, consisting of the arm having a support for the conductor and lateral guide flanges or parts *k k*.

9. The support for the working-conductor, consisting of the arm having a support for the conductor, lateral guide flanges or parts *k k*, and retaining-band N.

10. The support for the working-conductor, consisting of the arm having a support for the conductor and lateral guide flanges or parts *k k*, having locking-flanges.

11. The combination of a suspended conductor for supplying electricity to an electrically-propelled vehicle, a hanging support for said conductor extending down upon one side of same, a current-collecting trolley running upon said conductor and having a curved depending or hanging conducting-arm extending down below and under the conductor and in a line through the trolley-wheels, an electrically-propelled vehicle, and a conductor connecting the depending arm of the trolley with the vehicle.

12. The combination of a suspended conductor with a current-collecting trolley having two grooved supporting-wheels arranged in line running upon said conductor and provided with a locking device connected to the frame of the collector above the conductor and extending down to a point below the conductor to prevent it from running off the conductor.

13. In an electric railway, the line-conductor, a branching conductor at a lower point than the line-conductor, and a hinged switch-point adapted to rise or fall to come into line with either the line or branching conductor and connect the line-conductor with the branching conductor.

14. In an electric railway, the line-conductor, a branching conductor at a lower point than the line-conductor and to one side thereof, a hinged switch-point having a transverse oblique axis adapted to rise or fall in an oblique direction to come into line with either the line or branching conductor.

15. In an electric railway, the line-conductor, a branching conductor at a lower point than the line-conductor, a hinged switch-point adapted to rise or fall to come into line with either the line or branching conductor and adapted to connect the line-conductor with the branching conductor, and a spring or its equivalent to raise said switch to normally close the line-conductor.

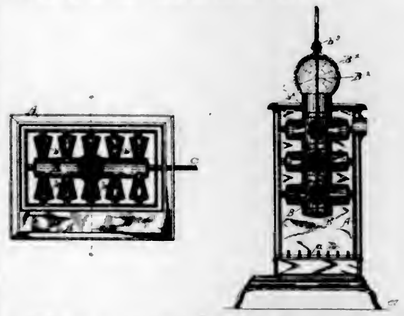
16. The combination of the line-conductor insulated from the earth and made continuous, a branching conductor having its terminal at a higher point than the line-conductor, and a hinged switch-point pivoted to the end of the branch and adapted to swing down at an angle upon the line-conductor to guide a trolley from one conductor to the other.

17. The combination of the line electric conductor insulated from the earth and made continuous, a branching electric conductor having its terminal at a higher point than the line-conductor, a hinged switch-point pivoted to the end of the branch and adapted to swing down at an angle upon the line-conductor to guide a trolley from one conductor to the other, and a spring or equivalent device to normally hold said switch in a raised position to make the line-conductor clear for passage of a trolley under the switch.

18. The combination of the line electric conductor insulated from the earth and made continuous, a branching electric conductor having its terminal at a higher point than the line-conductor and to one side thereof, and a hinged switch having a transverse oblique axis adapted to rise and fall obliquely and laterally to come in line with the line-conductor or allow a clear passage-way for a trolley over the line-conductor.

19. The combination of the line-conductor, a turn-out conductor having one of its ends lower and the other end higher than the line-conductor, and a switch at each end to connect the line and branch conductors.

445,410. STEAM-BOILER. THOMAS NESOM, Indianapolis, Ind., assignor to the Acorn Steam Boiler and Heating Company, same place. Filed Apr. 28, 1890. Serial No. 349,742. (No model.)



Claim.—1. A steam-boiler composed of a steam-dome and one or more sections secured together and supported therefrom, each of which sections has a central portion with a vertical opening or passage leading to said dome, and a horizontal tube extending out in opposite directions from said central portion, said horizontal tubes being provided with hollow arms projecting out from opposite sides thereof, substantially as set forth.

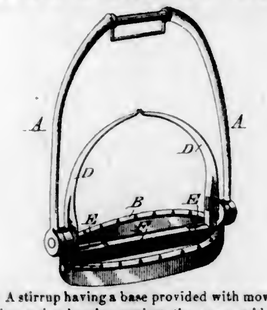
2. A steam-boiler composed of a dome and one or more sections secured thereto, said sections consisting of a hollow casting communicating with said dome, and a series of arms projecting out therefrom, the bottom of each of said arms being inclined downwardly from its outer end inwardly, substantially as described, and for the purposes specified.

3. The combination, in a steam-boiler, of the dome and the several sections secured together, as described, of the arms *b*, extending out from said sections and provided with hollow flanges on their top and under sides, substantially as described, and for the purposes specified.

4. In a steam-boiler, the combination, with the main portions thereof, of arms extending out therefrom, the outer ends of which are bell-shaped, and the top and under sides of which are provided with channels from the outer to the inner ends, the lower one of which inclines downwardly and the upper one of which inclines upwardly, substantially as set forth.

5. The combination, in a steam-boiler, of the casing provided with an opening in its top, the dome mounted in said opening and supported in position by means of an external flange or collar which rests on the stove or casing, and the sections of boiler connected therewith and supported therefrom by a rod extending through said dome and said several sections of the boiler, substantially as set forth.

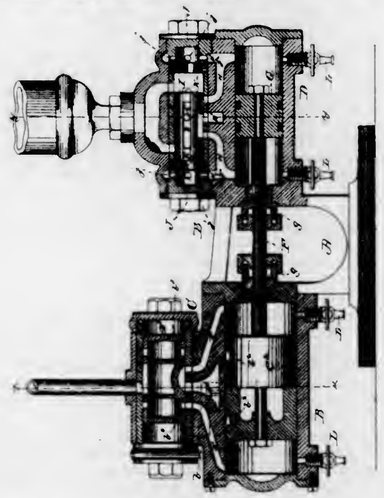
445,411. STIRRUP. NELS PEARSON and SVEN OLSSON, Philadelphia, Pa. Filed Oct. 29, 1890. Serial No. 369,740. (No model.)



Claim.—1. A stirrup having a base provided with movable guard-arms and a closing-spring bearing against the same, said base being pivoted to the bowl and said arms being primarily located within said bow in closed condition and adapted to open when the base overturns, thus releasing the foot, substantially as described.

2. A stirrup consisting of a frame with pivoted base-piece, ears projecting from said frame, arms pivoted to said ears, a tube secured to said base-piece and having a spring therein, and plugs freely fitted in said tube and held by the action of said spring against said arms, said parts being combined substantially as described.

445,412. STEAM-PUMP. DANFORTH H. ROYCE and CYRUS TUFTS, Columbus, Ohio, assignors to James G. Pulling, same place. Filed May 17, 1890. Serial No. 352,179. (No model.)

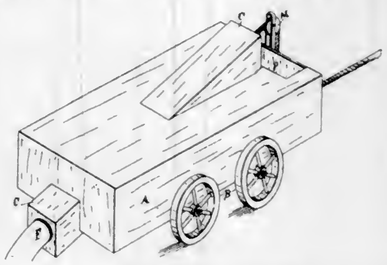


Claim.—In a pumping-engine, the combination, with the water-cylinder, of the water-valve chest carried by said cylinder, provided at each end with a screw-threaded head ported on opposite sides, the rubber cushions within the water-valve chest held in position by a sleeve within the said chest, and the water-valve located within the said chest and adapted to be moved longitudinally by the action of the water against the heads thereof, as set forth.

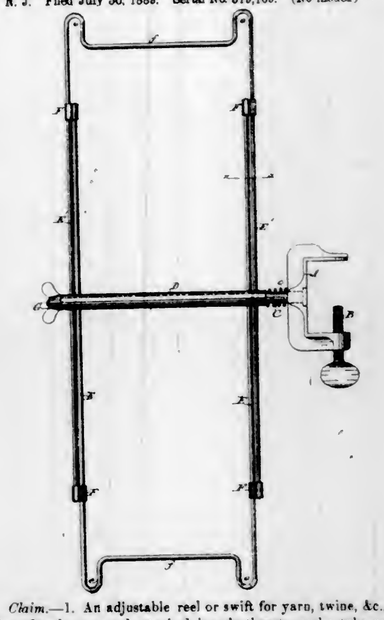
445,413. PORTABLE WATER-TANK. JOHN M. SAUSSER, Osnaburg, Ohio. Filed Sept. 1, 1890. Serial No. 363,628. (No model.)

Claim.—1. The combination of a portable water-tank, a pump-barrel C, secured in a diagonal relation therein, a piston H to move in said barrel, having rollers J and K to carry said piston free from the bottom and sides of the barrel, packing-lips L to engage the sides of the barrel, the valve G, and bail R, substantially as described, and for the purpose set forth.

2. The combination of a portable tank, a pump-barrel C, secured in diagonal relation thereto, a piston H, having rollers to carry said piston apart from the bottom and sides of said barrel, packing-lips L about said piston, valve G, and bail R, the rollers M and N, and rope Q, substantially as described, and for the purpose set forth.



445,414. REEL OR SWIFT. EPHRAIM G. SHREVE, Long Branch, N. J. Filed July 30, 1889. Serial No. 319,169. (No model.)

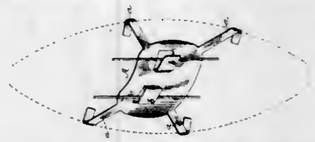


Claim.—1. An adjustable reel or swift for yarn, twine, &c., consisting of a clamp, a rod attached loosely thereto, and a tube on said rod, in combination with the wires E E', bent as shown, and the tube D and thumb-nut G, all as and for the purpose specified.

2. The combination of the wires E E', bent as shown and movable in opposite directions through a tube and rod attached to a clamp, and the spring *c* and thumb-nut G, arranged as and for the purpose set forth.

3. The adjustable reel or swift for yarn and twine herein described, having two wires bent, as at *e*, to form the part *f*, in combination with a rod C and tube D, the clamp A, with screw B, and the spring *c* and the thumb-nut G, all constructed as and for the purpose specified.

445,415. CUTTLE-FISH HOLDER. OTTO VAHLE, Philadelphia, Pa. Filed Sept. 18, 1890. Serial No. 365,331. (No model.)

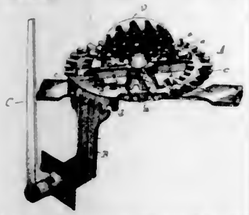


Claim.—1. A cuttle-fish holder formed of a single piece of sheet metal, comprising a central body, radiating arms extending from said

body for application to a cuttle-fish, said central plate being provided with prongs adapted for attachment to the wires of the cage, substantially as specified.

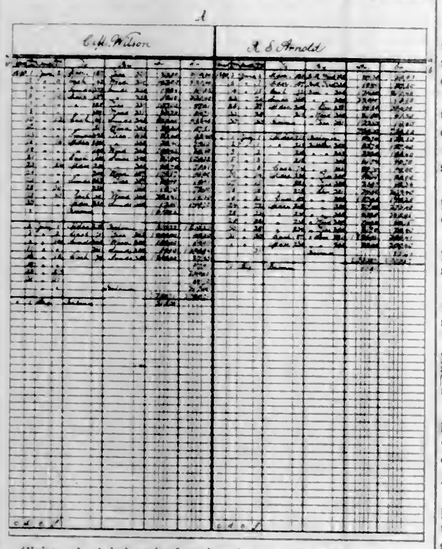
2. The combination, with a piece of cuttle-fish, of a holder comprising a central plate, radiating arms extending from said plate and bent over the edges of the cuttle-fish at the side, and holding-prongs struck up from the plate, forming, when the holder is applied to the cuttle-fish, tapering spaces for the wires of the cage, substantially as set forth.

445,416. BOILER OR STOVE GRATE. JOHN H. WATERMAN, Detroit, Mich. Filed Nov. 11, 1889. Renewed Oct. 10, 1890. Serial No. 367,680. (No model.)



Claim.—In a grate, the combination, with shaking-section A, provided with arms *a*, bearing *b*, and pivot-pins *c*, mounted upon such arms, of a dumping center D, formed with bearings for pins *c*, the parts so arranged that the pins will be beneath the dumping center and protected thereby, as set forth.

445,417. LEDGER LEAF OR SHEET. CASSIUS M. WILSON, Fairchild, Wis. Filed Sept. 16, 1890. Serial No. 365,171. (No specimens.)

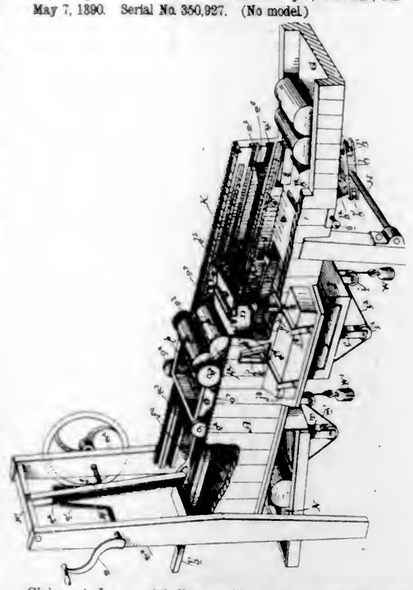


Claim.—1. A ledger leaf or sheet having rulings for one or more accounts, each account being provided with two daily date-columns, one of which is for a debit and the other for a credit entry, whereby debit and credit entries of different dates, as well as those of the same date, can be entered on the same horizontal line, substantially as described.

2. A ledger leaf or sheet provided with rulings for one or more accounts, each account having two daily date-columns, one of which is for a debit and the other for a credit entry, a single year-column, and a single month-column, substantially as described.

3. A ledger leaf or sheet having rulings for one or more accounts, each account being provided with two daily date-columns, one of which is for a debit and the other for a credit entry, a single year-column, and a single month-column, two items or commodity columns, one of which is for credit and the other for debit entries, and two amount-columns, one of which is for debit and the other for credit amounts, substantially as described.

445,418. CAN-LABELING MACHINE. HENRY ALBERT, Crescent City, assignor of one-third to Thomas R. Hayes, Pasadena, Cal. Filed May 7, 1890. Serial No. 350,927. (No model.)



Claim.—1. In a can-labeling machine, the combination of the can-runway, the label-box opening into said runway, the reciprocating frame in the runway, the paste-roller mounted in said frame, and the can-puller connected with said frame, substantially as herein described.

2. In a can-labeling machine, the combination of the can-runway, the frame adapted to reciprocate therein, having a guide-stem, the cranked power-shaft, the slotted lever in which the crank of the shaft works, and the link connecting the lever with the reciprocating frame, substantially as herein described.

3. In a can-labeling machine, the horizontally-reciprocating can-puller having a top roller for bearing on the can, substantially as herein described.

4. In a can-labeling machine, the horizontally-reciprocating can-puller having a vertically-adjustable top roller bearing on the can, substantially as herein described.

5. In a can-labeling machine, the horizontally-reciprocating can-puller having the small rollers on the inner surface of its sides, substantially as herein described.

6. In a can-labeling machine, the horizontally-reciprocating can-puller consisting of the side and the separated top bars and intervening top roller adapted to bear on the can, substantially as herein described.

7. In a can-labeling machine, the horizontally-reciprocating can-puller consisting of the side and top bars and the top roller having its ends mounted so as to slide vertically and springs controlling said ends, whereby the roller is kept pressed down on the cans and may yield to different-sized cans, substantially as herein described.

8. In a can-labeling machine, the horizontally-reciprocating can-puller consisting of side and top bars, the top roller for bearing on the can, and the small rollers on the inner surface of the sides, substantially as herein described.

9. In a can-labeling machine, the reciprocating can-puller, in combination with the can-runway having tracks in which said can-puller operates, said tracks being so arranged as to guide the can-puller on its forward stroke in a plane higher than on its return-stroke, and switches in said tracks to direct the can-puller from one track to another, substantially as herein described.

10. In a can-labeling machine, the reciprocating can-puller having end rollers, in combination with the runway in which said puller operates, the lower track-groove in the sides of the runway in which the can-puller rollers operate on one stroke, the upper track-groove in said sides in which the rollers operate on the other stroke, the switch-bars connecting the two grooves at one end, whereby the can-puller is raised into the upper groove, and the grooves connecting said track-grooves at their other ends, whereby the can-puller drops upon the can, substantially as herein described.

11. In a can-labelling machine, the reciprocating frame having a paste-roller and a can-puller pivoted to said frame, whereby it may rise and fall, in combination with the can-runway having track-grooves in its sides for guiding the frame and can-puller, and switches in the grooves to direct the can-puller to a plane higher on one stroke than on the other and to direct the paste-roller in the same plane, substantially as and for the purpose herein described.

12. In a can-labeling machine, the frame A, having the runway, with the upper and lower track-grooves in its sides, the pivoted switch-bars connecting the grooves at one end, said bars resting their lower ends in the lower grooves and extending their upper ends beyond their pivots to a point above the upper grooves, the grooves connecting the track-grooves at their other ends, in combination with the reciprocating frame mounted in the runway and having supporting-rollers traveling in the lower grooves, the paste-roller carried by said frame, the can-puller having arms pivoted to said frame, whereby it may rise and fall, and having rollers adapted to pass from one groove to the other and operate the switch-bars to permit the passage of the frame-rollers in the lower grooves, substantially as herein described.

13. In a can-labeling machine, the combination, with the runway thereof, of oppositely-moving inclined stop-plates in the path of the cans, a rock-shaft and connections for moving the plates in opposite directions, oppositely-swinging inclines pivoted to the sides of the guide-channel, and the right and left hand screws engaging said swinging inclines and adjusting them, substantially as herein described.

14. In a can-labeling machine, the combination of the runway, the reciprocating can-puller, the alternately-operating inclines and the swinging inclines pivoted to the sides of the guide-channel, and means for adjusting said swinging inclines, substantially as herein described.

15. In a can-labeling machine, the combination of a reciprocating piece in the can-runway, a label-box under said runway and communicating therewith, pivoted locks or holders extending from each side of the runway into the interior for controlling the label pile and operated to relieve it by the reciprocating piece, a vertically-movable bottom in the label-box, and a tilting platform carried by the movable bottom, substantially as and for the purpose herein described.

16. In a can-labeling machine, and in combination with a reciprocating piece in the can-runway and the label-box thereunder, the locks for holding the label pile, consisting of the swinging holders overlapping the sides of said pile, and a trip mechanism for said holders projecting into the path of the reciprocating piece, whereby said holders are operated to relieve the topmost label of the pile, substantially as herein described.

17. In a can-labeling machine, and in combination with a reciprocating piece in the can-runway and the label-box thereunder, the locks for the label pile, consisting of flat strips pivoted and overlapping the sides of the pile, and the means for operating said strips, consisting of the stems, the sliding bars with which the stems engage, the springs of said bars for returning them, the pivoted trigger-bars extending into the path of the reciprocating piece, and the links connecting said trigger-bars with the sliding bars, substantially as herein described.

18. In a can-labeling machine, and in combination with a reciprocating piece in the can-runway and the label-box thereunder, the pivoted locks for holding the label pile, the spring-controlled stems of said locks, the catch-bars holding said stems and having their inner ends projecting into the path of the piece, and the springs controlling said catch-bars, substantially as herein described.

19. In a can-labeling machine, and in combination with a reciprocating piece in the can-runway and the label-box thereunder, the pivoted locks for the label pile, having stems, the slide-bars connected with the stems, the springs controlling the slide-bars, the trigger-bars extending into the path of the reciprocating piece and connected with the slide-bars, and the spring-controlled catch-bars engaging the stems of the locks and projecting into the path of the reciprocating piece, substantially as herein described.

20. In a can-labeling machine, the reciprocating frame having the swinging can-puller connected with it and the runway in which said frame and puller operate, in combination with the label-box, the locks or holders for the label pile, the trigger-bars extending into the path of the can-puller sides and connected with and operating the locks or holders, the upper and lower track-grooves in the runway sides, and the switches for directing the swinging can-puller from one groove to the other, substantially as and for the purpose herein described.

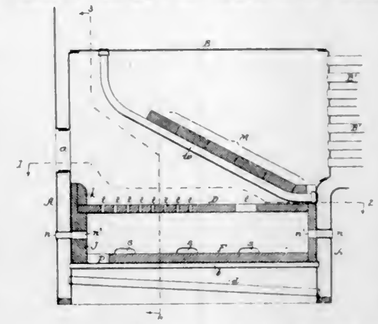
21. In a can-labeling machine, the runway having the upper and lower track-grooves and switches connecting them, in combination with the label-box, the locks or holders for the label pile, the trigger-bars projecting into the runway and adapted to operate the locks or holders, and a reciprocating swinging piece in the runway adapted to operate the trigger-bars and having rollers mounted and adapted to travel in the track-grooves, whereby said piece is directed from one groove to the other, substantially as and for the purpose herein described.

22. In a can-labeling machine, the combination of the runway having the track-grooves and switches connecting them, the reciprocating frame B, having the paste-roller and rollers traveling in the lower track-grooves, the can-puller pivoted to the frame and having rollers mounted in the track-grooves and adapted to be switched from one to the other to swing the can-puller, the label-box, the locks or holders for the label pile, and the trigger-bars for operating the locks or holders, said bars projecting into the path of and operated by the can puller, substantially as herein described.

23. In a can-labeling machine, the can-runway having the track-grooves *a'*, with underlying ledges, in combination with the can-puller having the rollers traveling in the track-grooves and its sides resting and sliding on the ledges, whereby the can-puller is steadied and kept level, substantially as herein described.

24. In a can-labeling machine, the combination of the can-runway and the reciprocating frame therein with a paste-roller, the label-box under the runway, and the vertically-movable guard at the end of the label-box to prevent the end displacement of the labels, substantially as herein described.

445,419. STEAM-BOILER FURNACE. FRANCIS G. BATES, Philadelphia, Pa. Filed May 1, 1890. Serial No. 350,153. (No model.)



Claim.—1. The combination, in a fire-box, of the fire-places, located side by side, and the hollow partition interposed between said fire-places and extending only part way to the top of the combustion-chamber, said partition having inlets for receiving air and outlets for discharging the heated air into the products of combustion arising from the fire-places, substantially as specified.

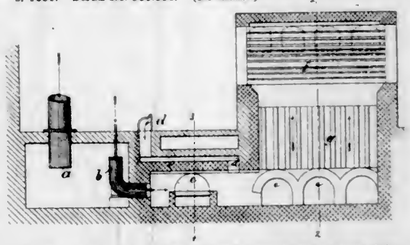
2. The combination of the fire-places, located side by side, and the hollow partition interposed between the fire-places and extending only part way to the top of the combustion-chamber, said partition having inlets for the air and side and top outlets therefor, so as to cause the escape of the heated air both laterally and vertically into the products of combustion from the fire-places, substantially as specified.

3. The combination of the fire-places, located side by side, the hollow partition separating the fire-places and having air inlets and outlets, and a deflector in the upper portion of the fire-box above said partition, substantially as specified.

4. The combination of the two fire-places, the hollow partition separating the same and having air inlets and outlets, and vertical air-heating passages formed in the front plate of said partition, substantially as specified.

5. The combination of the two fire-places, the hollow partition separating the same and having air inlets and outlets, and water-tubes serving to support said partition, substantially as specified.

445,420. GAS-HEATING DEVICE FOR STEAM-BOILERS. MARTIN BOECKER, Friedenshütte, near Morgenroth, Germany. Filed Apr. 8, 1889. Serial No. 306,350. (No model.)



Claim.—A gas-furnace for boilers provided with a gas-inlet, an air-inlet, a fire-grate, and a mixing-chamber for the air and gas, in combination with a lattice-grating between the said mixing-chamber

and the boiler, the said grating being provided with long straight channels and extending under the entire length of the boiler, all substantially as and for the purposes set forth.

445,421. ADJUSTABLE STOVE-BACK. TIMOTHY L. BOBART, Indianapolis, Ind., assignor to the Acorn Steam Boiler and Heating Company, same place. Filed Apr. 28, 1890. Serial No. 349,731. (No model.)

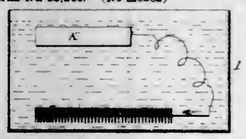


Claim.—1. The combination, in a fire-back, of a main part provided with hook-like projections, two longitudinally-movable wings secured to said main part by said hook-like projections, and two vertically-movable plates secured to said wings by bolts, the points of which are adapted to be forced against said main part, and thereby not only secure said plates and wings together, but secure said wings to fixed position on said main part, substantially as set forth.

2. The combination, in an adjustable fire-back, of the main part A, the wings B, secured thereto and provided with raised or arched portions *b*, having slots in the crowns thereof, plates C, having corresponding raised portions, bolts *c'*, passing through said plates and the slots in the wings B, and nuts c^3, arranged in the open spaces under the raised or arched portions *b*, with which said bolts engage, substantially as shown and described.

3. The combination, in an adjustable fire-back, of the main part A, the wings B, and the plates C, which extend inwardly from the ends and overlap each other at the center of the device, one of which plates has a slot *s* and the other a projection *o*, whereby the endwise movement of said plates is guided and limited, substantially as set forth.

445,422. SECONDARY BATTERY. CHARLES F. BRUSH, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed June 9, 1881. Serial No. 35,269. (No model.)



Claim.—1. The method of making a secondary-battery element, consisting in producing on a suitable body, frame, or support a coating or filling of electrically-deposited spongy lead, then immersing the frame or support thus coated in a battery-fluid in which said coating is insoluble, and peroxidizing the coating by electrical action, substantially as set forth.

2. A method or process of making a secondary-battery element, consisting in constructing a suitable body, frame, or support, applying thereto a compound of lead in a saline solution, and decomposing the compound by electrical action, thereby producing upon the frame or support a coating or filling of spongy lead, then immersing the coated support in a battery-fluid in which the coating is insoluble, and peroxidizing the coating by electrical action, substantially as set forth.

3. A method or process of making a secondary-battery element consisting in constructing a suitable body, frame, or support with cells grooves, perforations, or other receptacles, placing within said receptacles a compound of lead in a saline solution, decomposing the compound by electrical action, thereby producing a permanent coating or filling of spongy lead, then immersing the coated support in a battery-fluid in which the coating is insoluble, and peroxidizing the coating by electrical action, substantially as set forth.

4. A secondary-battery element provided with a permanent coating or filling of electrically-deposited spongy lead, substantially as set forth.

5. A secondary-battery element provided with a coating or filling of electrically-deposited spongy lead, in combination with a battery-fluid in which said coating is insoluble, substantially as set forth.

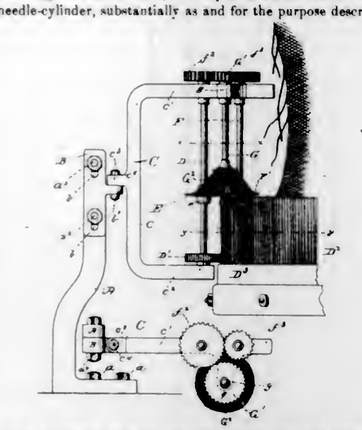
6. A secondary-battery element provided with a coating of electrically-deposited spongy lead, said coating being electrically formed, in combination with a battery-fluid in which said coating is insoluble, substantially as set forth.

7. A secondary-battery element constructed with grooves, cells, perforations, or other receptacles and provided with a coating of electrically-deposited spongy lead, in combination with a battery-fluid in which said coating is insoluble, substantially as set forth.

445,423. TRIMMER FOR KNITTING-MACHINES. WILLIAM E. CAHILL, Utica, N. Y. Filed June 16, 1890. Serial No. 355,812. (No model.)

Claim.—1. In a knitting-machine, the combination, with the revolving needle-cylinder, of a shaft provided with a circular-trimming blade and actuated by means of a spur-wheel secured to said shaft and meshing with the needles of the needle-cylinder, a similar shaft provided with a cutting-blade, and intermeshing gear secured to these shafts, whereby both are operated by the needle-cylinder, substantially as and for the purpose set forth.

2. In a knitting-machine, the combination, with the needle-cylinder, of a vertically-adjustable frame carrying a pair of shafts provided with circular-trimming blades arranged to operate in conjunction, a spur-wheel secured to one of said shafts and meshing with the needles of the needle-cylinder, and gear-wheels secured to said shafts, intermeshing with each other, whereby both shafts are actuated by the needle-cylinder, substantially as and for the purpose described.



3. In a knitting-machine, the combination, with the needle-cylinder, of a standard provided with laterally-extending pins, a supplemental arm or extension provided with elongated slots, through which said pins extend, set-nuts upon said pins, a frame pivotally secured to said supplemental arm, circular-trimming blades, shafts mounted in said frame, carrying the said trimming-blades, operative connections between said shafts, whereby one is actuated from the other, and a gear on one of said shafts engaging with the needles, substantially as described.

4. The combination, in a knitting-machine, with the revolving needle-cylinder, of an upright arm having laterally-extending pins, a supplemental arm provided with slots through which the pins extend, set-nuts on the pins, a frame pivoted to the supplemental arm, carrying two dependent shafts provided with circular-trimming knives operating in conjunction, and a brush-shaft, intermeshing gears connecting the shafts at their tops or upper ends, and a toothed wheel on one of the knife-shafts engaging the needle-cylinder, whereby the shafts are operated by the needle-cylinder, substantially as and for the purpose described.

5. In an automatic trimmer for knitting-machines, the combination, with the needle-cylinder, of a frame, shafts mounted in said frame, two of which carry circular-trimming blades and a third a rotary brush, and operative connections between said shafts, whereby two are actuated from one, the actuating-shaft being adapted to receive motion from the needle-cylinder, substantially as and for the purpose described.

6. In a knitting-machine, the combination, with the needle-cylinder, of dependent shafts supported in an adjustable frame and adapted to be operated by the needle-cylinder by means of a gear-wheel at the lower end of one shaft meshing with the needles, and intermeshing gears secured to the upper ends of said shafts, one of said shafts carrying a plurality of outwardly-beveled trimming-blades with an intervening space, and the other shaft carrying a trimming-blade working in said space between the contiguous blades, substantially as described.

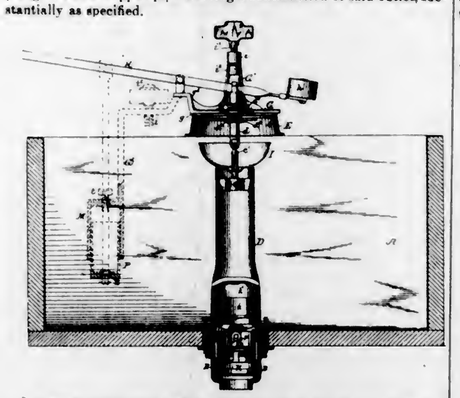
445,424. WATER-CLOSET RESERVOIR. WILLIAM S. COOPER, Philadelphia, Pa. Filed Dec. 20, 1888. Serial No. 294,144. (No model.)

Claim.—1. The combination of the tank and its top frame having a ring with a cross-bar carrying the valve-operating lever and adjustable circumferentially on said ring around the axis of the valve-rod, all substantially as specified.

2. The combination of the tank and its cross-frame having a flanged ring, the cross-bar carrying the valve-operating lever, the valve-lifting rod, the guiding-sleeve therefor, a spider engaging with the flange of the ring, and means for securing the cross-bar and spider to the guide-sleeve of the lifting-rod, all substantially as specified.

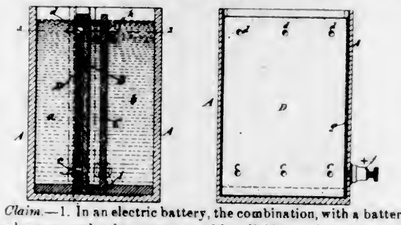
3. The combination of the overflow-tube and the float-cup closing the upper end of the same with the guide-rod recessed to increase the area of air-inlet as the float-cup rises, substantially as specified.

4. The combination of the discharge-box of the tank and its internal cup, the valve having a plunger adapted to said cup, and having a contracted outlet for the escape of water from beneath the plunger, and a trapped pipe forming a continuation of said outlet, substantially as specified.



5. The combination of the discharge-box and its internal cup, the valve having a plunger adapted to said cup, and having a contracted outlet for the passage of water from beneath the plunger, and a pipe forming a continuation of said outlet and having its upper portion coiled to form a water-trap, all substantially as specified.

445,425. GALVANIC BATTERY. WALTER A. CROWDUS, Memphis, Tenn., assignor to Jo. W. Allison, trustee, same place. Filed Oct. 7, 1890. Serial No. 367,340. (No model.)



Claim.—1. In an electric battery, the combination, with a battery-jar and a non-conducting porous partition dividing it into two chambers for the respective electrolytes, of a conducting porous partition arranged against and co-operating with the non-conducting partition, whereby the thickness and resistance of the latter may be reduced without increasing the osmotic mixing of the electrolytes.

2. In an electric battery, the combination, with a battery-jar and a non-conducting porous partition dividing it into two chambers for the respective electrolytes, of a positive electrode in one of said chambers and a negative electrode in the other, consisting of a conducting porous partition arranged against and co-operating with the non-conducting partition in separating the electrolytes.

3. In a two-fluid battery, the porous partition consisting of a plate of porous non-conducting material and a plate of porous carbon, arranged together to co-operate in separating the electrolytes.

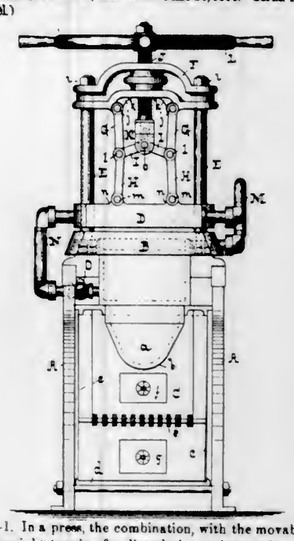
4. In an electric battery, the combination, with a battery-jar and a non-conducting porous partition dividing it into two chambers for the respective electrolytes, of a positive electrode in one of said chambers and a negative electrode in the other, consisting of a plate of porous carbon arranged against and co-operating with the non-conducting plate, and provided with chambers or passages additional to its porous interstices for admitting the electrolyte in a predetermined volume through the carbon and into contact with the non-conducting plate, whereby the electrolytic circulation may be increased to any desired extent beyond the capacity of the natural porosity of the carbon.

5. In a two-fluid battery, the porous partition consisting of a plate of porous non-conducting material and a plate of porous carbon arranged against it, and formed to admit a circulation of a thin stream or film of the electrolyte between it and the non-conducting plate.

6. In a two-fluid battery, the porous partition consisting of a plate of porous non-conducting material and a plate of porous carbon arranged against it, having perforations through it and grooves or chambers on its side next the non-conducting plate to admit a circulation of the electrolyte between them.

7. In a two-fluid battery, the porous partition consisting of a plate of porous non-conducting material, and a negative electrode consisting of a plate of porous carbon arranged against it and formed to admit a stream or film of the electrolyte to circulate between it and the non-conducting plate.

445,426. POWER-PRESS FOR VULCANIZING RUBBER, &c. JOHN F. W. DORMAN, Baltimore, Md. Filed June 21, 1890. Serial No. 356,257. (No model.)



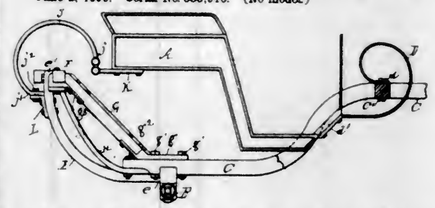
Claim.—1. In a press, the combination, with the movable platen, of a pair of upright toggles for directly imparting motion thereto, a horizontal toggle connecting the central joints of the upright toggles, and a screw working in the fixed yoke and directly connected with the central joint of the horizontal toggle, substantially as specified.

2. In a press, a stationary water and steam bed and a movable steam-platen situated over the bed, combined with flexible connecting-pipes arranged to carry steam to the platen and return the same or water of condensation to the bed at a point below the water-line, substantially as and for the purpose specified.

3. In a press, a stationary water and steam bed and a movable steam-platen situated over the stationary bed, combined with flexible connecting-pipes arranged to carry steam to the platen and return the same or water of condensation to the bed at a point below the water-line, and a check-valve in the return-pipe to prevent the ebullition of water in the bed from checking the circulation of the steam, substantially as and for the purpose specified.

4. A press having a stationary water-holding bed and a steam-holding platen, combined with a flexible pipe which connects the steam-space of the bed at one end thereof with the opposite side of the platen, and a similar pipe which unites the platen with the bed at a point below the water-line and in a reverse position to the first, substantially as and for the purpose specified.

445,427. ROAD-CART. WILLIAM H. FANNING, Lapeer, Mich. Filed June 2, 1890. Serial No. 353,910. (No model.)



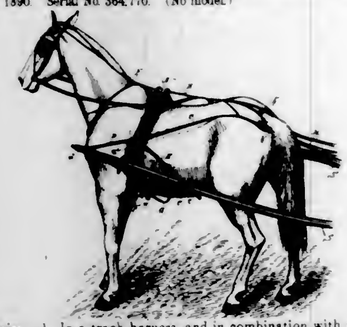
Claim.—1. The combination, with the axle B, the shafts C, and the body A, having its forward portion suspended from the shafts by the curved leaf-spring D, of a frame rising from the shafts and axle

in rear of the body, and the C-springs connected to the upper end of the frame and the rear end of the body, substantially as described.

2. In a road-cart, the combination, with the shafts, the body, and C-springs pivotally engaged to the rear portion of the body, of a frame-work for supporting said C-springs, consisting of the curved pieces E, standards G, and cross-bars F, substantially as described.

3. In a road-cart, the combination, with the shafts, the body, and C-springs pivotally engaged to the rear portion of the body, of a frame-work for supporting said C-springs, said frame-work consisting of the curved pieces E, cross-bar F, and standards G, said standards consisting of the main portion G and end pieces g g^3, substantially as described.

445,428. **HARNESS.** JOHN E. FOSTER, Ferndale, Cal. Filed Sept. 12, 1890. Serial No. 364,770. (No model.)



Claim.—1. In a track-harness, and in combination with the saddle, back-strap, and crupper, the holdback-straps C, secured at their rear ends to the crupper and at their forward ends to the saddle, and the straps D and E, secured at one end to the saddle and at their opposite ends to the shafts at a point forward and back of the saddle, respectively, substantially as herein described.

2. In a track-harness, and in combination with the saddle, back-strap, and crupper, the holdback-straps C, secured at their rear ends to the crupper and at their forward ends to the saddle, the straps D, secured at their rear ends to the saddle and having the sockets secured to their forward ends and adapted to fit over the ends of the shafts, and the straps E, connecting the saddle with the shafts, substantially as herein described.

3. In a track-harness, and in combination with the saddle, back-strap, and crupper, the holdback-straps C, secured at their rear ends to the crupper and at their forward ends to the saddle, the straps D, secured at their rear ends to the saddle and at their forward ends to the shafts at a point in front of the saddle, and the tightening-straps E, secured at their forward ends to the saddle and at their rear ends to the shafts at a point back of the saddle, substantially as herein described.

4. In a track-harness, and in combination with the saddle, back-strap, and crupper, the holdback-straps C, secured at their rear ends to the crupper and at their forward ends to the saddle, and a strap on each side secured at its ends to the shafts at points forward and back of the plane of the saddle and at its intervening portion to said saddle, substantially as herein described.

5. The track-harness consisting of the saddle with its belly-band, the back-strap with its crupper, the holdback-straps secured to the crupper and to the saddle, the straps secured to the shafts at points forward and back of the plane of the saddle and to said saddle, the neck-strap secured at its lower end to the belly-band, and the straps G, secured to the shafts and to the belly-band, substantially as herein described.

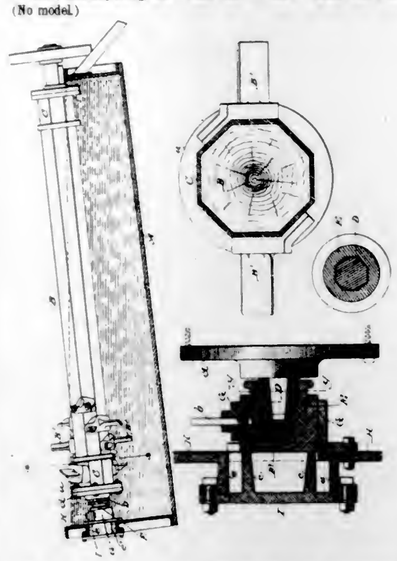
6. In a harness, the combination, with the saddle, of the hold-back-straps C and the crupper to which said straps are connected, said crupper having an elongated opening, and a band sliding on the crupper, substantially as herein described.

445,429. **COMB-FRAME FOR BEE-HIVES.** ISAAC M. GRUBB, Glenville, Nebr. Filed Aug. 18, 1890. Serial No. 362,336. (No model.)



Claim.—A comb-frame for bee-hives having a head-block provided in its under side with a longitudinal channel, one of the walls or sides of which is inclined and the other vertical, said channel carrying a removable bar corresponding to it in shape and held by a clamping device, and carrying upon its vertical side an artificial comb foundation, substantially as shown and described.

445,430. **ORE-WASHER.** SAMUEL C. MCLANAHAN and WILLIAM P. KIRK, Hollidaysburg, Pa. Filed Nov. 5, 1890. Serial No. 370,424. (No model.)



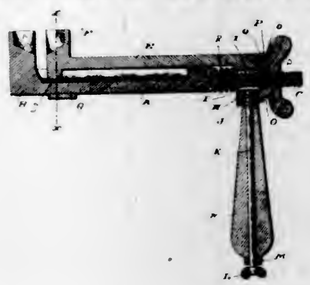
Claim.—1. The combination, with the revolving stirrer-shaft in an ore-washer, of an end plate having an opening through it opposite the journal of said shaft, a journal-box of smaller size than said opening, a support for the journal-box of said shaft, and an end cap for closing said opening, substantially as shown and described.

2. The combination of the stirrer-shaft having gudgeon D with removable journal-thimble E, the journal-box F, the supporting-bracket G, the end plate H, with opening in the same larger than the journal-box, and the closing-cap I, closing said opening and having flanges e abutting against the journal-box, substantially as shown and described.

3. The combination of the inclined water-box and the inclined stirrer shaft of an ore-washer, a sleeve having the end of the shaft socketed therein and provided with a journal, as described, and a stirrer blade or blades bolted to the said sleeve, substantially as and for the purpose described.

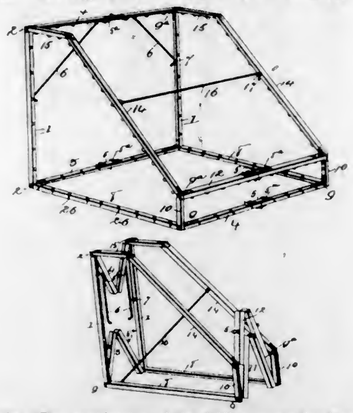
4. The combination of the inclined water-box and the inclined stirrer-shaft of an ore-washer, a sleeve C, having the end of the shaft socketed therein and provided with a flange a, a gudgeon or journal having flange d, bolted to the flange of the sleeve, and a stirrer blade or blades bolted to said sleeve, substantially as shown and described.

445,431. **BUGGY-WRENCH.** EMANUEL NIGHSWANDER, Welsh Run, Pa. Filed Apr. 7, 1890. Serial No. 346,923. (No model.)



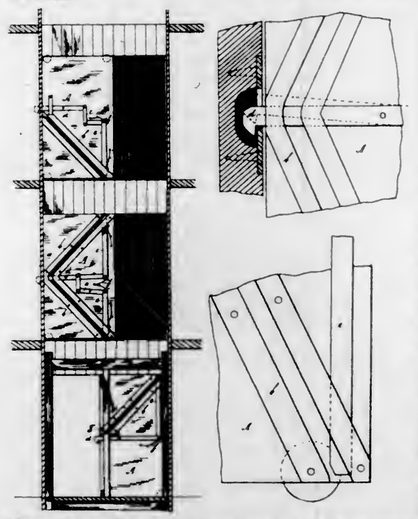
Claim.—The herein-described wrench, consisting of the bar A, having jaw B and longitudinal screw-threaded extension C, bar E, having jaw F, keeper G, boss or projection S, depending bearing H, provided with the plain aperture I and screw-threaded aperture J, intersecting each other at right angles, handle-bolt K, threaded at its upper end and having finger-hold L, washer M, and handle N, the thumb-nut D, having circumferential groove O, the spurred finger P, and the coiled spring R, substantially as described.

445,432. **FOLDING VAPOR-BATH.** OLOF PEHRSSON, Tacoma, Wash. Filed Aug. 25, 1890. Serial No. 362,983. (No model.)



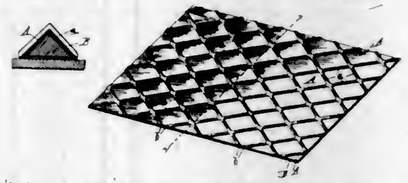
Claim.—The combination of the folding supporting-frame, the lower bars thereof being formed with the transverse openings 26, and the lower and upper bars having the buttons 22 27, the side and end covers having their upper ends passing around the upper bars of the supporting-frame and buttoned on the buttons thereof and having secured to their lower ends the apertured strips 23, the top cover having the flap and the neck-opening and buttoned on the buttons 22, the bottom cover having the upwardly-inclined apertured edges, and the straps 25, passing through the strips 23, the upper ends of the bottom cover, and the openings 26 of the bottom bars of the supporting-frame, substantially as set forth.

445,433. **AUTOMATIC DOOR AND LOCK FOR ELEVATORS.** ANDREW PONTIUS, Cincinnati, Ohio. Filed Sept. 26, 1890. Serial No. 366,231. (No model.)



Claim.—A laterally-movable elevator gate or door having zigzag guideways and a spring-actuated latch connected to bell-crank levers projecting into said guideway, in combination with a stud projecting from the car-frame into said guideway and engaging said crank-levers, substantially as and for the purposes set forth.

445,434. **FABRIC FOR COVERING MOLDINGS, &c.** JOHN D. RIPSON, Toronto, Canada, assignor to Donald Campbell Ridout, trustee, same place. Filed May 1, 1889. Serial No. 309,267. (No model.)



Claim.—1. As an improved article of manufacture, a fabric having hollow ridges above the body of the cloth united to a plain flexible backing adapted to be used as an ornamental covering for moldings, substantially as described.

2. As an improved article of manufacture, a fabric having hollow ridges united to a plain flexible backing by a water-proof material, substantially as described.

3. In combination with a piece of wood or other hard material, a covering of fabric secured thereto, provided with hollow ribs raised above the surface of the adjoining portion of the cloth or fabric adhering to the wood, substantially as described.

4. In combination with a piece of wood or other hard material, a covering of fabric secured thereto, provided with hollow ribs raised above the surface of the adjoining portion of the cloth or fabric adhering to the wood with its edges bent under the wood, so that when attached the edges will be hidden, substantially as described.

445,435. **NEWSPAPER-HOLDER.** DANIEL WAGNER, Unity, Ohio. Filed Sept. 20, 1890. Serial No. 365,664. (No model.)



Claim.—1. The herein-described holder for newspapers, having two jaws or members pivotally connected together at their ends and designed to receive and hold a newspaper lengthwise, as set forth.

2. The herein-described holders for newspapers, consisting of two jaws or members, a hinge connecting said jaws or members at their upper ends, and a screw working in a hole or aperture of one of said jaws or members and designed to engage a coincident hole or aperture of the other jaw or member, as set forth.

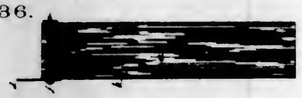
3. As an improved article of manufacture, the herein-described newspaper-holder, consisting of the two jaws or members pivotally connected together and having lower curved or rounded handle ends, and an eye-screw for binding said jaws or members together, substantially as set forth.

445,436. **TOILET-PAPER FIXTURE.** SETH WHEELER, Albany, N. Y. Filed June 26, 1890. Serial No. 356,764. (No model.)

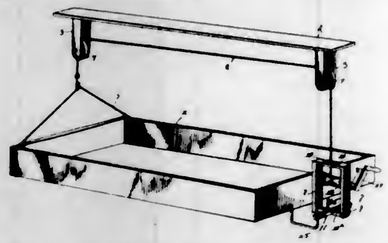
Claim.—1. A bundle of toilet-paper having a rivet through its sheets near one of its edges, in combination with a hanger-plate which is capable of turning upon said rivet, so as to form a hook as well as a hanger-plate, substantially as described.

2. A bundle of toilet-paper, in combination with a hanger consisting of a flat metal plate provided with an elongated opening and pivotally secured to the bundle so as to be reversible, substantially as described.

445,436.



445,437. COMBINED WAGON-BED LIFTER AND WIRE-STRETCHER. HARDIN WILSON, Buchanan, Tenn. Filed Oct. 9, 1890. Serial No. 367,540. (No model.)



Claim.—1. The herein-described windlass-frame, the same comprising a windlass at one end, a cross-bar at the other end, and a hook projecting from each end of said cross-bar, substantially as and for the purpose set forth.

2. In the herein-described windlass-frame or tension device, the combination of end bars 10 10ª, side bars 9, cross-bar 11, extending across bar 10ª, a hook at each end of cross-bar 11, and a windlass provided with a shaft journaled in the side bars 9, the end bar 10 being provided with a slot or opening, all substantially as and for the purpose set forth.

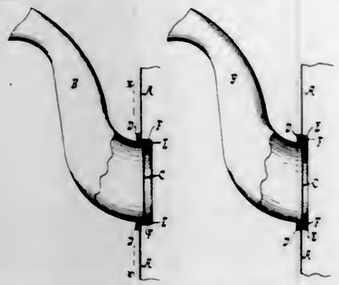
445,438. TOBACCO-SMOKING MIXTURE. HENRY BINGHAM, Freshfield, near Liverpool, England. Filed July 31, 1890. Serial No. 0,556. (No specimens.)

Claim.—1. As an article of manufacture, the herein-described smoking-mixture for pipes and for the fillers of cigars and cigarettes, consisting of tobacco and incombustible fibrous material mixed together, substantially as and for the purposes described.

2. A smoking-mixture for pipes and for the fillers of cigarettes and cigars, consisting of tobacco and asbestus mixed together, substantially as and for the purposes described.

3. A smoking-mixture consisting of from about ninety-nine to ninety-seven parts, by weight, of tobacco and of one to three parts, by weight, of asbestus, substantially as described.

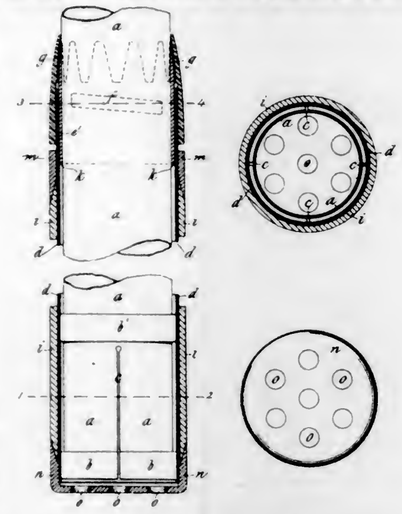
445,439. SHEET-METAL VESSEL OR POT. MATTHEW C. CHAMBERS, Brooklyn, N. Y. Filed June 28, 1890. Serial No. 357,103. (No model.)



Claim.—The combination, with a pot or vessel, of a strainer set into the side of the pot, said strainer having a flange resting against the outer face of the side of the pot and being provided with a groove, and a spout having its edge set into said groove, the spout edge and groove-walls being bent against the inside of the pot, substantially as described.

445,440. TELESCOPIC JOINT. EDWARD C. DAVIS and THOMAS BALDWIN, London, England. Filed Aug. 2, 1890. Serial No. 360,827. (No model.) Patented in England July 17, 1890, No. 11,156.

Claim.—In the construction of telescopic joints, the combination, with the tubes to be joined, of a coned collar provided with studs engaging with inclined slots in the larger tube, and a series of gripping-teeth formed on the end of the larger tube and adapted to be pressed by the coned collar against the smaller tube, substantially as described.



445,441. TAG-FASTENER. WILLIAM R. DEAN and WILLIAM H. BARNETT, Ottawa, Kans.; said Barnett assignor of one-half to said Dean. Filed June 17, 1890. Serial No. 355,743. (No model.)



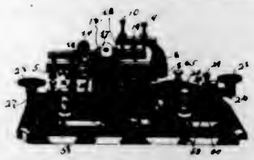
Claim.—1. In a tag-fastener, the combination, with the arms B, of the spring-guides F, having the turned ends *f*, substantially as and for the purpose set forth.

2. In a tag-fastener, the arms B, pivoted together and provided with jaws having oppositely-located loops forming a recess for the reception of the tag, and the spring-guides secured to the forward end of said jaws, substantially as described.

3. In a tag-fastener, the combination, with the arms B, provided with jaws having loops forming a recess in which to insert the tag, of a stop-plate secured to one of said loops, substantially as described.

4. In a tag-fastener, the combination, with the arms B, having jaws provided with oppositely-located loops for the reception of a tag, of the stop-plate secured to one of said loops, and the spring-guides secured to the forward end of said jaws, substantially as described.

445,442. TELEGRAPH-KEY. JOHN DOGGETT, Plain City, Ohio. Filed July 28, 1890. Serial No. 360,219. (No model.)



Claim.—1. In a telegraph-key, the combination, with a sounding-arm, a support for the same, and a pivoted key-lever having arms extending at each side of its fulcrum, of pivoted rods depending from each side of the pivot of the sounding-arm and terminating below one of the arms of the key-lever and a pivoted switch located between said arms and adapted to engage and rigidly connect either one of said rods with the key-lever, substantially as specified.

2. In a telegraph-key, the combination, with a pivoted sounding-arm, a support for the same, and a pivoted key-lever extended at each side of its pivot to form operating-arms and provided in one of said arms with a pair of openings, of a pair of pivoted rods, one located at each side of the pivot of and depending from the sounding-arm and each passing through an opening in the key-lever, and a switch-lever pivoted to the under side of the key-lever between the lower ends of the rods and provided at each side of its pivoted end with a shouldered flange adapted to engage kerfs formed in the lower ends of the rods, and thereby lock either of said rods rigidly with said key-lever, substantially as specified.

3. In a telegraph key, the combination, with a pivoted sounding-arm, a support for the same, and a pivoted key-lever arranged under the arm, of a pair of rods pivoted at their upper ends to and at each side of the fulcrum of the sounding-arm and having their lower ends depending through openings formed in the key-lever, one of said rods being threaded, a set-nut threaded on the rod above the key-lever, and a coiled spring encircling the rod and interposed between the said nut and the support for the sounding-arm, and means for locking either of said arms rigid with the key-lever, substantially as specified.

4. The relay having the posts 52 and 53, in combination with the battery 54, the wire 55, leading from the battery to the post 52, the key-connections between the same and the key and post 53 and armature and between the key and relay-coils, and the portable wire 72, connecting the posts 52 and 53, substantially as specified.

5. A telegraph-key the base of which is provided with the binding-posts 58 63 65 and the lever 61 and the insulated and non-insulated posts 59 and 60, respectively, in combination with a relay and battery, said relay having the posts 50 to 53, inclusive, the wire 55, leading from the battery to the posts 52 of the relay, the wire 62, leading from the battery to the post 63 of the key, the wire 64, leading from the post 53 to the post 65 and forming, in connection with the wires 55 and 62, a local circuit, the wire 56 of the main line connected to the post 50 of the relay, and the main-line wire 57, connected to the post 58 of the key and to the contact-point, the wire 67, leading from the post 63 to sounder-coils, the wire 69, leading from coils to contact-point under key, the wire 70, leading from post 69 to contact-point under key, the wire 66, leading from contact-point of key to post 58, and the removable wire 72, connecting the posts 52 and 53, substantially as specified.

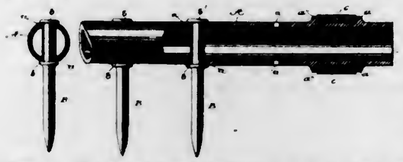
445,443. KNEADING-BOARD. MARY M. EVERHARD, St. Joseph, Mich. Filed Nov. 12, 1890. Serial No. 371,193. (No model.)



Claim.—1. As an improved article of manufacture, a molding or kneading board formed from sheet metal and having the rear vertically-disposed integral wall *a*, and the lateral walls tapering from their inner to their outer ends and the shallow outer transverse edge, substantially as specified.

2. A molding or kneading board formed from sheet metal, and having its marginal edges turned slightly upward from the body portion, the rear edge being of a greater elevation than the forward edge, substantially as specified.

445,444. HARROW. GEORGE W. FRENCH and WILLIAM P. BETTENDORF, Davenport, Iowa. Filed Apr. 15, 1890. Serial No. 348,043. (No model.)



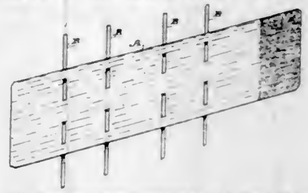
Claim.—1. In a harrow, a tubular frame-bar, in combination with a tooth inserted therethrough and upset and enlarged both above and below said bar.

2. In combination with a tubular perforated sustaining-bar, a harrow-tooth having its upper end upset to produce the enlarged collar or shoulder below the bar and the enlarged neck within the bar, as described and shown.

3. A tubular frame-bar for a harrow having perforations to receive the teeth and enlargements or collars to resist end motion of the bar in the frame.

4. In a harrow, a metal tooth-sustaining bar provided with encircling shoulders or collars a' a^3, formed integral therewith, in combination with frame-bars encircling said toothed bars between the collars.

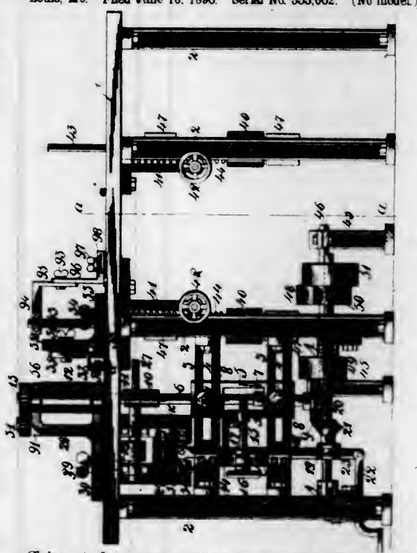
445,445. COIN-WRAPPER. WILLIAM S. GAGE, San Francisco, Cal. Filed Aug. 18, 1890. Serial No. 362,329. (No model.)



Claim.—1. A coin-wrapper consisting of a strip of suitable material to be wound about the coin-roll, and strips of flexible material secured transversely to the winding-strip and having each end projecting to form tongues to be bent down upon the ends of the coin-roll, substantially as herein described.

2. A coin-wrapper consisting of the strip of material to be wound about the coin-roll and the strips of flexible sheet metal piercing the winding-strip transversely and having their ends projecting from the sides of said strip, forming tongues to be bent down upon the ends of the coin-roll, substantially as herein described.

445,446. WOOD-WORKING MACHINE. EDWARD H. GIBSON, St. Louis, Mo. Filed June 16, 1890. Serial No. 355,602. (No model.)



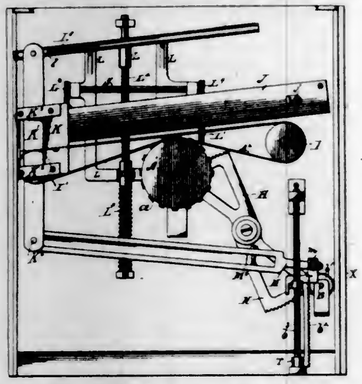
Claim.—1. In a wood-working machine, the adjustable guides 32 32, provided with slots or recesses 77, in combination with the guide-lock 75, provided with wings 76, substantially as described.

2. In a wood-working machine, the combination, with a guide-bracket, of a carriage composed of two sections, the lower section thereof being vertically movable in the said bracket and having a beveled face on its surface, the upper section of the said bracket sliding on the said face on the lower section and having a rack-bar thereon, a vertical shaft mounted upon the said lower section and having a gear-wheel upon its upper end engaging the said rack-bar, a horizontal shaft mounted in the upper section of the said carriage, and a tool mounted upon the said shaft, as described.

3. In a wood-working machine, the combination, with a table, of two opposite supports therefor having tongued and beveled inner surfaces, respectively, a sliding carriage having opposite grooved and beveled ends sliding between the said supports, a vertical shaft carried by the said carriage, and a cutter-head upon the said shaft, as described.

4. In a wood-working machine, the combination, with a table, of two opposite supports therefor having tongued and beveled inner surfaces, respectively, a sliding carriage having opposite grooved and beveled ends sliding between the said supports, a vertical rack-bar upon the said carriage, a horizontal shaft carried by the said table, and having a wheel thereon gearing with the said rack-bar, a vertical shaft carried by the said carriage, and a cutter-head upon the said shaft.

445,447. CALCULATING-MACHINE. HENRY C. HART, Detroit, Mich. Filed Feb. 7, 1889. Serial No. 298,906. (No model.)



Claim.—1. In a calculating-machine, a vibrating lever, mechanism, substantially as described, for moving said lever through any desired portion of its stroke, registering mechanism adapted to be operated by the motion of said lever, and means, substantially as described, for shifting the point of contact of said registering mechanism with said lever, substantially as and for the purposes set forth.

2. In a calculating-machine, the combination, with a pivoted lever having one arm connected with actuating mechanism, of an indicator adjustably connected with the other arm, substantially as and for the purposes set forth.

3. In a calculating-machine, the combination of a vibrating lever, mechanism, substantially as described, for moving said lever through any desired portion of its stroke and for indicating said movement, means, substantially as described, for varying the relative lengths of the arms of said lever and for indicating said changes, and an indicator adjustably connected with and actuated by said lever, substantially as and for the purposes set forth.

4. In a calculating-machine, the combination of three graduated dials, the third having as many divisions as the product of the highest numbers on the other two, and each dial having a movable pointer, a movable lever adjustably connected with the pointer of said third dial, mechanism for moving one of said pointers and proportionally varying the connection between said lever and the pointers of the third dial, and mechanism for simultaneously moving the remaining pointer and said lever, substantially as and for the purposes set forth.

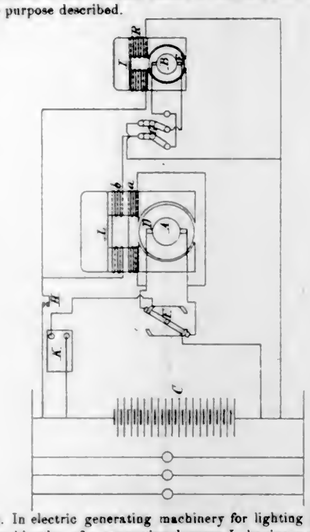
5. In a calculating-machine, the combination of the dials C, D, and E, the pointers F', G, and E', the lever M, adjustably connected with pointer E', the shaft *a*, connected with pointer F' and with the connection between lever M and pointer E', and the shaft B, connected with lever M and pointer G, substantially as shown and described.

445,448. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. JOHN H. HOLMES, Newcastle-on-Tyne, England. Filed May 14, 1890. Serial No. 351,771. (No model.) Patented in England Dec. 17, 1889, No. 20,344, and in France Mar. 31, 1890, No. 204,702.

Claim.—1. In electric machinery for lighting railway-trains, a generating-dynamo the field-magnets of which have, in addition to the ordinary shunt-wound exciting-circuit, a supplemental circuit connected to an independent source of current, and having in series with it the armature-circuit of a regulating-dynamo driven at the same speed or subject to the same degree of speed variation as the generating-dynamo, the electro-motive force of the regulating-armature being made to oppose the electro-motive force of the independent source of current, so that its variation in proportion to the variation of speed will practically maintain constant the electro-motive force of the dynamo, substantially as described.

2. In a generating-dynamo for lighting railway-trains, the combination, with the ordinary shunt exciting-circuit for the field-magnets, of a supplemental exciting-circuit connected to an external independent source of electric current and to the armature-circuit of a regulating-dynamo subject to the same variations of speed as the generating-dynamo, the electro-motive force of the armature-circuit being opposed to that of the independent source of current, so as in counteracting it to a greater or less degree, according to the speed of the regulating-armature, to maintain the electro-motive force of the generating-dynamo practically uniform.

3. In a generating-dynamo for lighting railway-trains, the combination, with the ordinary shunt exciting-circuit for the field-magnets, of a supplemental exciting-circuit which is subject to two opposing electro-motive forces, the one proceeding from a constant independent source of current and the other from the armature-circuit of a regulating-dynamo whose armature revolves at the same speed or is subject to the same speed variation as that of the generating-dynamo, so that as the electro-motive force of the regulating-armature increases with an increase of speed it will tend to neutralize the electro-motive force of the constant source of current, substantially as and for the purpose described.



4. In electric generating machinery for lighting railway-trains, the combination of a generating-dynamo L, having a shunt exciting-circuit *a* and a supplemental exciting-circuit *b* connected to an external source of current C and in series with the armature of a regulating-dynamo I, driven at the same speed or subject to the same speed variation as the generating-dynamo, the last-named armature being so connected to the exciting-circuit *b* that its electro-motive force acts in opposition to the electro-motive force of the independent source of current, substantially as and for the purposes described.

5. In dynamo-electric generating machinery wherein the armature is required to operate when revolving in either direction for effecting the reversal of the lead of the commutator-brushes when the direction of rotation is reversed, a friction-clutch, part of which revolves with the armature-shaft, while the other part is attached to the brush-gear, and which operates in combination with a governor so as to be kept in gear when the shaft is stationary or revolving at a very slow speed, but which is moved out of contact by means of the governor as soon as a certain slow speed is exceeded, substantially as herein described.

6. The combination, with a governor, of a friction-clutch for actuating the commutator-brushes, which is moved out of gear by the governor when a certain rate of speed is exceeded, a contact device acted upon by the governor when the speed requisite for producing a certain electro-motive force is attained, so as to couple up the exciting-circuits, the governor being made to act upon the said contact device so as to uncouple the exciting-circuits when the speed falls below the said rate, substantially as described.

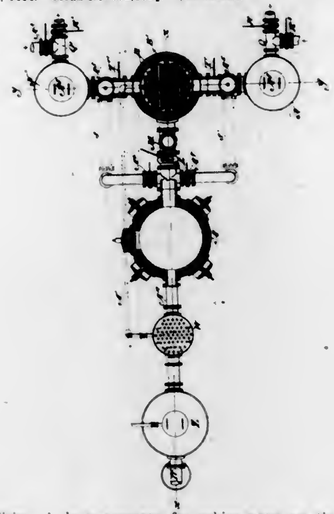
7. The combination of a generating-dynamo, a regulating-dynamo whose circuit includes a regulating-coil on the generating-dynamo, mechanism for reversing the position of the commutator-brushes on the reversal of the motion of the armature-shaft, and a switch connected to said mechanism, so that when this reverses the position of the brushes it also reverses the connections of armature of the regulating dynamo with the regulating-coil on the field-magnets of the generating-dynamo, substantially as described.

445,449. DEVICE TO PREVENT RAILROAD-RAILS FROM SPREADING. CALVIN KEELER, Hobart, N. Y. Filed June 13, 1890. Serial No. 355,274. (No model.)



Claim.—In a railroad, the combination, with the rails 2, the fish-plates 4, the bolts 6, and nuts 7, of the retaining-plates 8 and 9, connected together at their inner ends, and their other ends provided with grips to engage the rails, and with upwardly-projecting portions 15, recessed at 16, to engage with and lock the nuts of the fish-plates, substantially as described.

445,450. APPARATUS FOR THE MANUFACTURE OF WATER-GAS. THADDEUS S. C. LOWE, Norristown, assignor to the Guarantee Trust and Safe Deposit Company, trustee, Philadelphia, Pa. Filed Nov. 28, 1888. Serial No. 292,113½. (No model.)



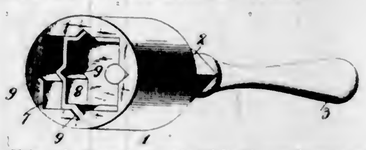
Claim.—1. In an apparatus for making water-gas, the combination, with the gas-generator A and the steam generator and superheater B, of the stoves N N', each provided with an internal open net-work or structure of heat-absorbing materials, flues for connecting said stoves and generators, and regulating-valves by which the outgoing products of combustion from the gas-generator and superheater are caused to pass out through said stoves alternately and the inflowing air-blast for sustaining combustion in the gas-generator is caused to pass through said stoves alternately, substantially as described.

2. In an apparatus for making water-gas, the combination of the gas-generator A, the superheater B, provided with an internal open-work structure of bricks and metal bars, and with conduits for admitting water or steam, or both water and steam, into the superheater, the stoves N N', provided with internal open-work structure of heat-absorbing materials, flues connecting said parts of the apparatus, and valves for controlling said flues, substantially as described.

3. In an apparatus for making water-gas, the combination of the gas-generator A, having ash-pit K and gas-flue A^{10}, the tubular boiler W for receiving gas from the generator through said flue, the superheater B, having in its lower part a gas-combustion chamber F, an open-work structure of bricks and metal bars located in said superheater above the gas-combustion chamber, the pipe A' for conveying hot water from the boiler to the superheater, the stoves N N', each provided with an internal open-work structure of heat-absorbing materials, flues for connecting the gas-generator, superheater, and stoves, valves located in said flues for causing the products of combustion escaping from the generator and superheater to pass out through said stoves alternately, and the air-blast for sustaining combustion in the gas-generator and superheater to pass in through said stoves alternately, substantially as described.

4. In an apparatus for making water-gas, the combination of the gas-generator A, the steam generator and superheater B, the stoves N N', the tubular boiler W, the scrubber Z, pipes for supplying the apparatus with atmospheric air, flues for conducting producer-gas from the generator A to the superheater B, a pipe for conveying water or steam from the boiler to the superheater, pipes for conveying water-gas from the generator to the tubular boiler and from the boiler to the scrubber, valves for causing the products of combustion escaping from the gas-generator and from the superheater to pass out through said stoves alternately, and the air-blast for sustaining combustion in the generator and superheater to pass in through said stoves alternately, substantially as described.

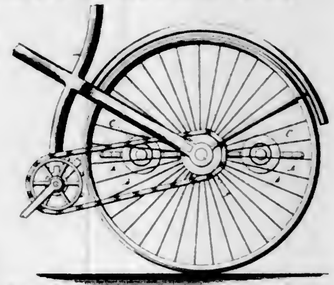
445,451. VEHICLE-WRENCH. JOHN A. MILLER, St. Louis, Mo. Filed Nov. 3, 1890. Serial No. 370,198. (No model.)



Claim.—1. As an improved article of manufacture, a vehicle-wrench having two sockets of different dimensions, each of which sockets is provided with four triangular side depressions, the smaller socket 8 having side depressions of smaller dimensions than those formed in the larger socket 7, and whereby four squares of different dimensions are formed in the wrench, substantially as specified.

2. The improved wrench consisting of a thin metallic shell 1, adapted for insertion in the end of a vehicle-hub, two sockets 7 and 8, of different dimensions, formed in said shell with their centers in alignment, each of which sockets is provided with four triangular side depressions 9, the dimensions of the triangular depressions in the smaller socket being smaller than those formed in the larger socket, whereby four squares of different dimensions are formed in said shell, substantially as specified.

445,452. ATTACHMENT FOR BICYCLES. WILLIAM MURRAY, Washington, D. C., assignor of one-half to Charles Butt, same place. Filed May 3, 1890. Serial No. 350,479. (No model.)



Claim.—The attachment for bicycles, comprising the sectional bar or lever having the inner or meeting ends provided with the hinged-together coupling-sections adapted to be held upon the driving-wheel axle, and the adjustable weights arranged upon or carried by said lever or bar, substantially as set forth.

445,453. LADDER. GEORGE E. NOWLAND, New Boston, Mich. Filed Nov. 6, 1890. Serial No. 370,459. (No model.)



Claim.—1. The combination, in a ladder, of the sections A B, side bars D, pivotally attached thereto and carrying stirrups which embrace the ends of the sections, substantially as set forth.

2. The combination, in a ladder, of the sections A B, having plates *e* and *e'* secured thereto, bars D, connecting said sections and carrying stirrups the projecting ends of which embrace the plates *e* and *e'*, substantially as set forth.

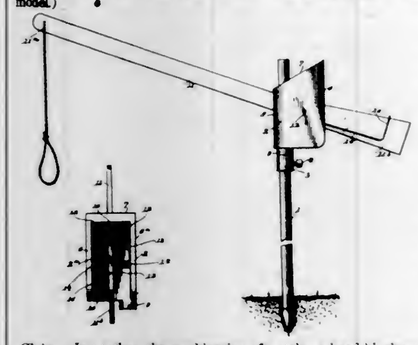
3. In a ladder, the combination of the sections A and B, plates *e* and *e'*, rigidly secured to the ends of said sections to overlap the same, side bars D D, bolted to the sides of the sections near the ends thereof and carrying stirrups *g*, the projecting ends of which embrace the plates *e* and *e'*, the parts being organized substantially as set forth.

4. The combination, with the ladder-sections connected to each other by bars D D, of a platform E, having angle-irons i, which are adapted to embrace the side pieces of said ladder-sections, said platform carrying on its under side a cleat or brace against the ends of which a rung of each ladder-section abuts, substantially as set forth.

5. The combination, with the ladder-sections A and B, connected to each other by bars D D, of a platform E, adapted to rest upon the upper rungs of the ladder and provided with a cleat or brace having turn-buttons for securing the platform to the rungs, substantially as set forth

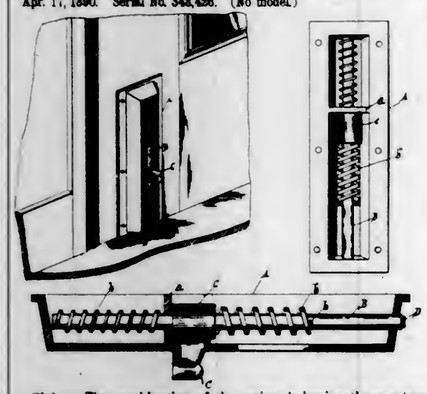
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445,454. TETHER. FRANCIS M. POWELL and WILLIAM H. VICKERY, Hartwell, Ga. Filed Aug. 29, 1890. Serial No. 363,437. (No model.)



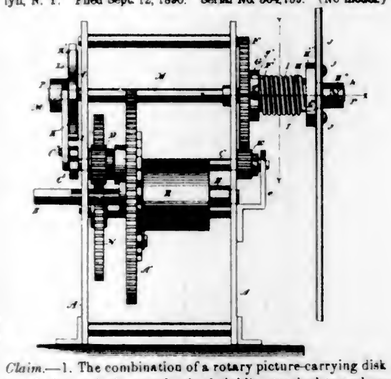
Claim.—In a tether, the combination of a stake, a head-block supported thereon so as to turn, and a spring-operated lever fulcrumed in said block, said block being constructed with a front 5, sides 6 6^a, an inclined top 7, into which the upper end of a vertical slot in the front 5 extends, and a boss 9, through which extends a perforation at one corner of the block to receive the stake, said vertical slot permitting vertical play of the lever, substantially as set forth.

445,455. DOOR-CHECK. LUCIEN RAWDON, Windsor, Ohio. Filed Apr. 17, 1890. Serial No. 348,426. (No model.)



Claim.—The combination of the casing A, having the apertured lower end and the apertured partition *a* and having the longitudinal slot in its front face, the edge of which is formed with the series of inclined teeth, the sliding bolt having the fixed pin *b'*, the spring *b*^{a} encircling the bolt above this pin, the sliding collar C, arranged on the bolt above this spring and having the projecting handle *c*, and the lifting-spring *b* encircling the bolt above the partition *a* and secured at its upper end to the bolt, substantially as set forth.

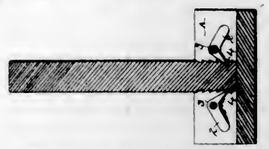
445,456. AUTOMATIC EXHIBITOR. WILLIAM H. RODGERS, Brooklyn, N. Y. Filed Sept. 12, 1890. Serial No. 364,789. (No model.)



Claim.—1. The combination of a rotary picture-carrying disk rigidly attached to a shaft, a catch-wheel rigidly attached to and revolving with the same shaft, a gear-wheel revolving loosely upon the same shaft as the picture-carrying disk and catch-wheel, a pallet or catch to catch or release the catch-wheel, and a motor for operating said gear-wheel and said pallet or catch, the gear-wheel having attached to it a spring adapted by the revolution of the gear-wheel to give a rotary motion to the picture-carrying disk and the catch-wheel at the time the catch-wheel is released by the pallet or catch, substantially as described.

2. The combination of a rotary picture-carrying disk rigidly attached by a hub to a shaft, a catch-wheel rigidly attached to and revolving with the same shaft, a gear-wheel revolving loosely upon the same shaft as the picture-carrying disk and catch-wheel and having a projecting hub in contact or substantially in contact with the hub of the picture-carrying disk, a pallet or catch to catch or release the catch-wheel, and a motor to operate the gear-wheel and the pallet or catch, said gear-wheel having adjustably attached to the projecting hub a ring or collar to which is fixed one end of a spiral spring, the other end of said spring being attached to the hub of the picture-carrying disk, so that a rotary motion is thereby given by the revolution of the gear-wheel to the picture-carrying disk and catch-wheel at the time the catch-wheel is released by the pallet or catch, substantially as described.

445,457. POST-ANCHOR. GEORGE W. STITES and JAMES W. HALSEY, Hinesborough, Ill. Filed Sept. 24, 1890. Serial No. 366,003. (No model.)

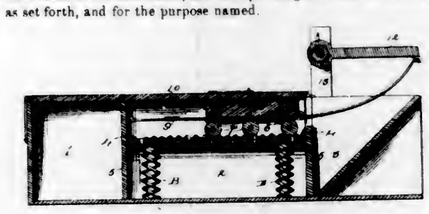


Claim.—1. The combination, with a fence-post, of the post-anchor A, formed with the vertical central opening and the radial slots communicating with said opening, and the locking-cams 3 3, pivoted in the said slots and having the pointed inner ends and the weighted outer ends, substantially as set forth.

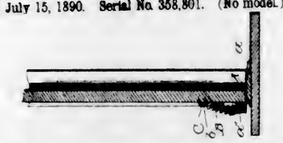
2. The combination, with the fence-post, of the post-anchor A, provided with a cylindrical or other shaped hole, the face of which is properly corrugated or roughened for contact with the post, and further provided with the locking-cams 3 3, the heavy ends of which are adapted to hold the teeth upward against the post and against its withdrawal from the hole, substantially as set forth.

445,458. WASHING-MACHINE. SAMUEL J. STOKES, Holt's Summit, Mo. Filed Aug. 7, 1890. Serial No. 361,261. (No model.)

Claim.—In an improved washing-machine, the combination, with the body having the three compartments, as described, of the downwardly-movable wash-board, the upper surface of which is properly corrugated, the rubbing device consisting of the frame carrying on its under side a series of rollers and movably attached to the lid by suitable eyelets or staples, the lid carrying the rubbing device by means of the downwardly-bent rod, each end of which is secured to the lid after passing through the openings in the ends of the frame, the pitman connected to said frame, and the operating-lever, all substantially as set forth, and for the purpose named.



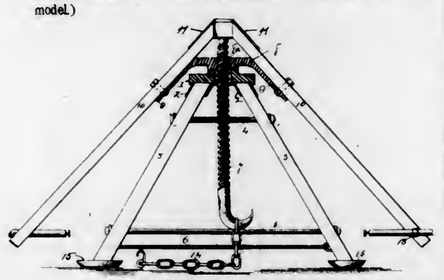
445,459. WEATHER-STRIP. CHESTER S. TINGLE, Hortonville, Ind. Filed July 15, 1890. Serial No. 358,801. (No model.)



Claim.—1 A removable weather-strip consisting of the body A having the sections *a a''*, the ends of which are cut to conform to the shape of the frame and casing of the door, the spiral spring secured to the middle of the section *a''* and adapted to reach upward to engage with the staple C, substantially as set forth.

2. The combination, with the door and its casing, of a removable weather-strip consisting of the body A, provided with the sections *a a''*, the spiral spring reaching from the middle of the latter to the staple C and adapted to hold the weather-strip temporarily in position, substantially as described, and for the purpose named.

445,460. STUMP-PULLER. ROBERT S. WARREN and WILLIAM A. EASLEY, Clinton, Ky. Filed Sept. 5, 1890. Serial No. 364,050. (No model.)



Claim.—The stump extractor comprising the cap-piece 1, formed with the sockets 2 on its lower side and the annular bearing 1^b on its upper side, the uprights 3, having their upper ends fitting in said sockets and connected by the fixed rods 4 5, and the movable rods 6, hinged at one end and having the hooked ends fitting in eyes 6^a, the dished plates 15, secured on the lower ends of the uprights, the bearing-plate 8, formed with the central threaded opening, and the inclined bearings 9, the inclined sweeps bolted near their upper ends in said bearings, the cap 11, secured on the upper ends of said sweeps, the rods 12, and the screw having the hooked lower end, substantially as set forth.

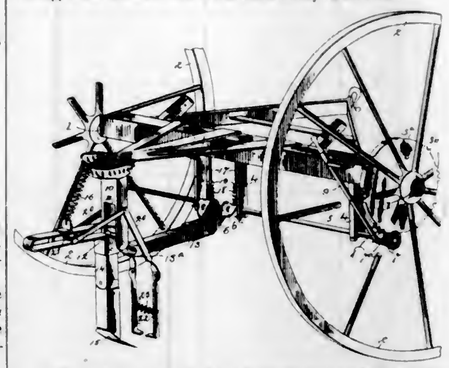
445,461. COTTON-CHOPPER. JOHN J. BARRON, Valmont, Colo. Filed Sept. 24, 1890. Serial No. 366,016. (No model.)

Claim.—1. In a cotton-chopper, the combination of the crank-shaft, means for turning the same, the recessed pillar 10, having the guide-roller in its lower end, and the curved beam 13, carrying the cutting blade, formed with the curved slot 13^a, and pivoted at its front end on the crank-shaft, substantially as set forth.

2. In a cotton-chopper, the combination of a spring-actuated crank-shaft, means for turning the same, the recessed pillar 10, having the guide-roller in its lower end, and the curved beam 13, carrying the cutting-blade, formed with the curved slot 13^a, and pivoted at its front end on the crank-shaft, substantially as set forth.

3. The combination of the mutilated gear-wheel 3, secured to one of the drive-wheels, the crank-shaft 5, having the loose clutch-pinion 7 and the clutch-sleeve 8, the fixed hooked rods 17, having their free ends passing through the apertures 6^a of the crank-shaft, the spiral springs 18, arranged on said hooked rods, the recessed pillar 10, having the guide-roller 12 in its lower end, and the curved beam 13, carrying the cutting-blade, formed with the curved slot 13^a, and pivoted at its front end on the crank-shaft, substantially as set forth.

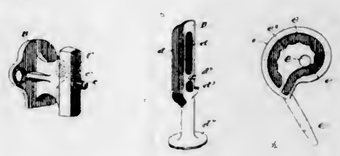
4. The combination of the mutilated gear-wheel 3, secured to one of the drive-wheels, the crank-shaft 5, having the loose clutch-pinion 7 and the clutch-collar 8, the fixed hooked rods 17, having their free ends passing through apertures 6^a of the crank-shaft, the spiral springs 18, arranged on said hooked rods, the recessed pillar 10, having the guide-roller in its lower end, the curved beam 13, carrying the cutting-blade, formed with the curved slot 13^a, and pivoted at its front end on the crank-shaft, and the spring 16, secured to the seat-frame and the rear upper end of the curved beam, substantially as set forth.



5. The combination, with the reciprocating beam 13, of the standard 14, secured thereto and hinged at its center to permit of side adjustment of its lower end, and the cutting-blades secured to said lower end, substantially as set forth.

6. The combination of the mutilated gear-wheel secured to one of the drive-wheels, the crank-shaft having the loose clutch-pinion 7 and the clutch-sleeve 8, the fixed hooked rods 17, having their free ends passing through apertures 6^a of the crank-shaft, the spiral springs 18, arranged on said hooked rods, the recessed pillar 10, having the guide-roller in its lower end, the curved beam 13, having the hinged standard carrying the cutting-blade, formed with the curved slot 13 , and pivoted at its front end on the crank-shaft, the spring 16, the levers 20, pivoted to the pillar 10 and having the guide-roller 21 secured between their rear ends, and the side hoes 22, pivoted to the lower ends of levers 20 and connected by the transverse rod 23, having the spiral spring 24 mounted upon it, substantially as set forth.

445,462. DOOR-CHECK. WILLIAM H. BROADHEAD, Cleveland, Ohio, assignor of two-thirds, by direct and mesne assignments, to Jacob Boesel, same place. Filed May 24, 1890. Serial No. 352,999. (No model.)

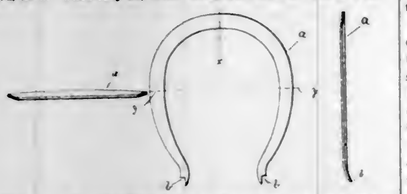


Claim.—1. The bracket having a head with parallel sides and a spindle projecting centrally from the face of the head, a bolt having a longitudinal slot with sides adapted to the sides of said head and a lug on its face at one side of its center and near the inner end of said slot, and an eccentric having a groove engaging the lug on the bolt, substantially as described.

2. The bracket provided with a head and spindle, and a slotted bolt supported on the said head and having a lug on its face, in combination with a scalloped eccentric engaging said lug, substantially as described.

3. In a door-stop, the bracket having a head with parallel converging sides, and a slotted bolt having its sides flared to match the said head and provided with a lug d^3 at one side of its center, in combination with the eccentric having a scalloped edge e^1 to engage said lug d^3, and a handle, substantially as described.

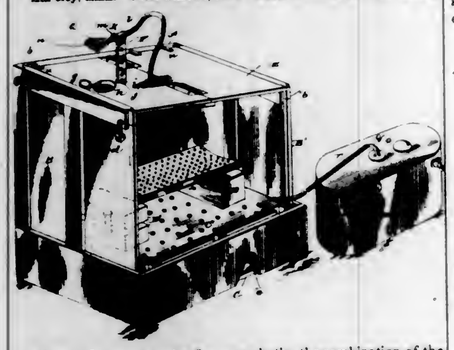
445,463. HEEL-EXPANDER FOR HORSES. GEORGE T. CHAPMAN, White Plains, assignor of one-half to Wm. Harvey Merritt, New York, N. Y. Filed May 29, 1890. Serial No. 353,537. (No model.)



Claim.—1. The lyre-shaped heel-expanding spring consisting of the thin flat bar widest at the middle and gradually tapered to the ends and having the pitch in the cross-section of the bar oblique to the plane of the entire spring, substantially as described.

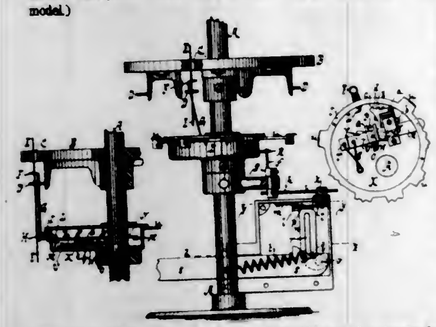
2. The lyre-shaped heel-expanding spring consisting of the thin flat bar widest at the middle and gradually tapered to and upturned and outwardly projecting at the ends and having the pitch of the cross-section of the bar oblique to the plane of the entire spring, substantially as described.

445,464. APPARATUS FOR VAPOR-BATHS. NATHANIEL CRANK, Hill City, Kans. Filed June 21, 1890. Serial No. 356,269. (No model.)



Claim.—In an apparatus for vapor-baths, the combination of the vapor-chamber having the perforated false floor, discharge beneath the same, and vertical recessed corner-beams *a*, and sections vertically sliding in said beams, and securing devices, a lid comprising hinged sections, one of which is perforated for the passage of the head of the occupant, a flexible tube communicating with the interior of the chamber and provided externally with a mouth-piece and clamps, and an adjusting-bar for said mouth-piece secured in the lid, as described, together with a vapor-generator communicating with the vapor-chamber, substantially as set forth.

445,465. STOP MECHANISM FOR KNITTING-MACHINES. FRANK CRAWFORD, New Brunswick, N. J., assignor of one-half to Alfred March, same place. Filed June 28, 1890. Serial No. 357,124. (No model.)



Claim.—1. The combination, with a belt-shifter and a detent for said shifter, of a spring-actuated releasing slide or actuator R, intermediate devices operatively connecting the detent with the slide or actuator, a locking arm or lever U, connected to said slide, a catch or detent for said locking-arm, a releasing disk or lever N, made to act on said catch, and a finger G for actuating said disk or lever, substantially as described.

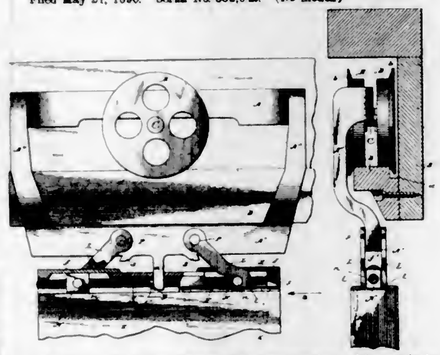
2. The combination, with a belt-shifter and a detent for said shifter, of a spring-actuated slide or actuator R, a finger *h*, devices connecting the latter with the slide or actuator, a finger *i*, connected to the shifter-detent and actuated by said finger *h*, a locking arm or lever U, connected to said slide, a catch for said locking-arm, a releasing disk or lever N, made to act on said catch, and a finger G for actuating said disk or lever, substantially as described.

3. The combination, with a belt-shifter and a detent for said shifter, of a spring-actuated slide or actuator R, intermediate devices operatively connecting the detent with the slide or actuator, a locking arm or lever U, connected to said slide, a catch for said locking-arm, a releasing disk or lever N, made to act on said catch, a fork Q and stud P for connecting the slide R and disk or lever N, and a finger G for actuating said disk or lever, substantially as described.

4. In a stop mechanism, the combination, with the spring-pressed slide or actuator R, of a slide-locking lever U, a spring-pressed catch or detent Z for holding the lever to lock the slide, the releasing-fingers G, and devices intermediate the catch or detent and the fingers for causing the latter to actuate the catch or detent and release the locking-lever, substantially as described.

5. A releasing-finger for a stop mechanism, said finger consisting of a wire stem having its end formed into a coil, in combination with an axle H, made to enter said coil and provided with a notch for the engagement of the stem or finger, substantially as described.

445,466. DOOR-HANGER. RICHARD D. BIRKBEN, Freeport, Ill. Filed May 21, 1890. Serial No. 352,642. (No model.)



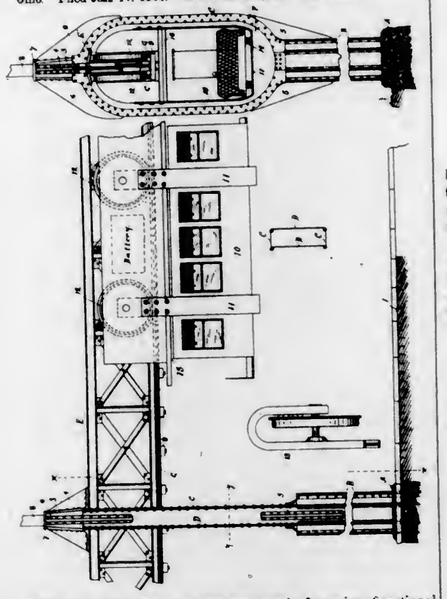
Claim.—1. In a door-hanger, the combination, with a suitable frame and a plate adapted to be fastened to the edge of a door, of a right and left screw seated in said plate, nuts engaging the screw and adapted to be moved toward or away from each other by the rotation of the screw, and links connecting said nuts with the frame, whereby the rotation of the screw may vary the distance between said frame and said plate, substantially as and for the purpose set forth.

2. The combination, with the rollers and hanger-frame, of the plate F, adapted to be attached to a door and formed with arches *f*, the right and left screw S, seated in said plate and susceptible of rotation therein, the nuts N N, engaging said screw and provided with lateral gudgeons *n n*, and the links L, pivoted at their upper ends to the hanger-frame and provided at their lower ends with hooks *l l*, adapted to engage the gudgeons *n n* and support the plate, substantially as and for the purpose set forth.

3. The combination, with the rollers and hanger-frame, of the plate F, adapted to be attached to a door, a right and left screw seated in said plate, the nuts N N, engaging said screw and provided with lateral gudgeons *n n*, and the links L L, pivoted to the hanger-frame and provided at their lower ends with hooks *l l*, adapted to engage the gudgeons *n n*, the hanger-frame being provided with stops adapted to limit the oscillation of the links, whereby when the links have reached their limit of oscillation the nuts may be moved still farther in the same direction and disengage from the hooks, substantially as and for the purpose set forth.

4. The combination, with the rollers and hanger-frame, of the plate F, provided with the arches *f* and bars *f'*, a right and left screw S, seated in said plate, the nuts N N, engaging said screw and lying beneath and in contact with the bars *f'*, and the links L L, connecting said nuts with the hanger-frame, substantially as and for the purpose set forth.

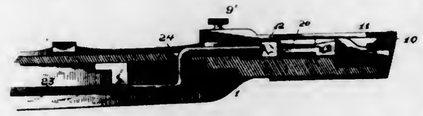
445,467. ELEVATED RAILWAY. LEVI H. GOODWIN, Cincinnati, Ohio. Filed Jan. 17, 1890. Serial No. 337,208. (No model.)



Claim.—1. An elevated railway composed of a series of sectional posts, a double arch located on top of each post, a truss for connecting said arches together, and web brackets for strengthening the same, substantially as described.

2. In an elevated railway, the combination, with a series of sectional posts B and the arches supported thereby, of the truss E and the knee-braces 3 for securing the same, substantially as described.

445,468. FEEDING DEVICE FOR SEWING-MACHINES. WILLIAM H. HANNA, Petersburg, Ill. Filed Apr. 26, 1890. Serial No. 349,602. (No model.)

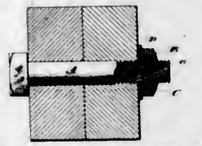


Claim.—1. In a sewing-machine, the combination of a tubular fixed throat, the vibrating throat-plate provided with a needle-eye at one end and hung or suspended so that its eye receives said tubular throat, the retracting-spring connected to the throat-plate, and a reciprocating slide arranged to contact with said throat-plate at suitable intervals and provided with means for giving vertical vibration to said throat-plate, substantially as and for the purpose described.

2. In a sewing-machine, the combination of a vibrating throat-plate pivoted at one end, having an eye at or near its free end and a wedge-shaped cam or surface at an intermediate point of its length, a fixed tubular throat arranged to enter the eye in said throat-plate, a reciprocating slide below the throat-plate and having a cam-shaped surface adapted to contact with the corresponding surface on the throat-plate, mechanism for moving the slide at suitable intervals, and a spring connected to the throat-plate to depress said plate when released from contact with the slide, as and for the purpose described.

3. In a sewing-machine, the combination, with the foot-feed, of a vibrating throat-plate, having an eye, a fixed tubular throat arranged to enter the eye in said throat-plate when the same is depressed, mechanism, substantially as described, for lifting the throat-plate at the instant the foot-feed engages the work, said throat-plate being held in its elevated position by its actuating-mechanism during the interval that the foot-feed engages and feeds the work, and the springs for retracting the throat-plate after the actuating mechanism is moved to allow said throat-plate to be depressed, as and for the purpose described.

445,469. NUT-LOCK. FRANCIS B. HARVEY, Pickering, Pa. Filed Oct. 16, 1890. Serial No. 368,292. (No model.)



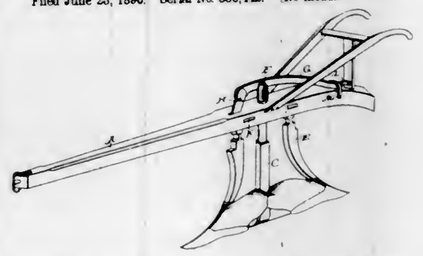
Claim.—1. In a nut-lock, the combination of the bolt having a longitudinal slot, a nut having a cavity in its under side with recesses, for the purpose set forth, and a soft-metal or non-elastic ring which is adapted to be upset by the pressure of the nut, so as to fill the cavity therein and enter the slot in the bolt, substantially as set forth.

2. In a nut-lock, the combination of the bolt A, having a longitudinal recess *a*, a soft-metal or non-elastic ring C, and a nut B, having the inner face countersunk and recesses forming an irregular surface adjacent to said countersunk portion of the nut, substantially as set forth.

445,470. REMEDY FOR COUGHS, &c. MARY E. HESS, Foristell, Mo. Filed May 29, 1890. Serial No. 353,632. (No specimens.)

Claim.—A medical compound or cough-sirup made up of a decoction of mullein-leaves, pennyroyal, sage, and savory, with water and sugar, in about the proportions set forth.

445,471. PLOW. EDGAR A. HOLLISTER, Welch Glade, W. Va. Filed June 23, 1890. Serial No. 356,442. (No model.)



Claim.—1. A reversible plow having the center post adapted to pass through the beam, the colters extending from the noses and reaching upward into the mortises provided on the under side of the beam, the lever I, adapted to secure such colters in the mortises by means of the inwardly-projecting teeth thereon, the swiveled head upon the post, and the operating-lever secured thereto, adapted to force said post downward, enabling the beam to rotate thereon, substantially as described.

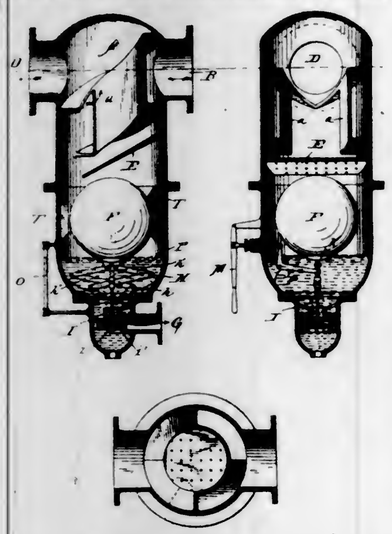
2. In a reversible plow, the combination of the shares, the upwardly-extending colters secured thereto, the center post journaled in the beam and extending above the same, while it is engaged by the swiveled head attached to the operating-lever, the locking-lever I, having the inwardly-extending teeth, the operating-lever G, pivotally secured to the beam by means of the bifurcated standard, as shown, the swiveled head upon the post, and the locking-dogs L and M, adapted to secure the lever, substantially as described.

3. A reversible plow having the cutting parts thereof duplicated, as shown, the center post extending upwardly through the beam, which is adapted to rotate thereon, the duplicated colters extending upward from the noses of the shares and arranged to be secured in the mortises on the under side of the beam, the locking ever I, having the inwardly-projecting teeth K, arranged to secure the colters by entering the grooves provided therein, and the operating-lever G, pivotally secured to the beam and the swiveled head of the post, substantially as described, and for the purpose set forth.

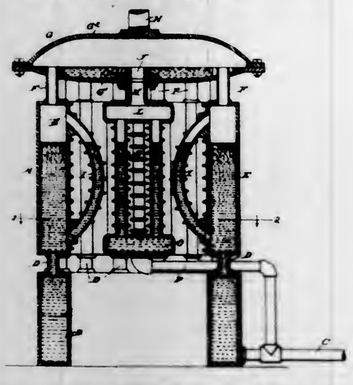
445,472. SEPARATOR FOR STEAM. CHARLES E. MANNING, New York, N. Y. Filed Jan. 17, 1890. Serial No. 337,177. (No model.)

Claim.—1. In combination, the shell having inlet and outlet nozzles at its upper end and a channel extending intact across the inlet, inclosing the same and having helicoidal branches *a a* extending downward to direct the entire volume of steam from the inlet around and downward within the interior of the casing, the said branches *a a* opening within the casing and opposite each other, whereby the currents of steam will collide before issuing from the shell, substantially as described.

2. In combination with a steam-separator, a discharge-valve mechanism consisting of a balanced piston-valve, a float, and a system of compound levers connected to said valve and to the float for automatically operating the valve, and an external connection for operating by hand



445,473. BOILER. CHARLES E. MARSTON, Dover, N. H. Filed Mar. 1, 1890. Serial No. 342,240. (No model.)



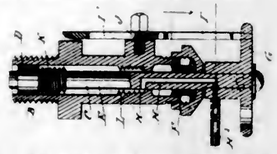
Claim.—1. In a steam-boiler, the combination, with a dome having a dish-shaped bottom and a hollow base, of a series of vertical tubes arranged to form a combustion-chamber, with three sides of each tube presented to the combustion-chamber, and tubes provided with inwardly-curved branch pipes, the top end of said pipes to discharge back into the vertical tubes above the water-line in said tubes, and short pipes connecting the tubes with the dome, projecting into the dome and above the bottom thereof, substantially as shown and described.

2. In a boiler, the combination, with a dome having a dish-shaped bottom, of a chamber below the dome, a pipe connecting the chamber and dome, said pipe projecting into the dome above the bottom thereof, a second chamber below the first-named chamber and communicating with the water-supply, and vertical pipes connecting the two chambers, substantially as described.

3. In a boiler, the combination of a dome having a dish-shaped bottom, a ring-shaped base, vertical tubes communicating with the base and dome and provided with inwardly-curved branch pipes, a chamber below the dome and communicating therewith, a second chamber communicating with the water-supply, and vertical tubes connecting the two chambers, substantially as herein shown and described.

4. In a steam-boiler, the combination of a dome having a dish-shaped bottom, vertical tubes provided with curved branch pipes and arranged to form a combustion-chamber, a series of pipes leading from the tubes into the dome, with their ends projecting above the bottom thereof, a chamber below the dome and provided with an upwardly-extending pipe, a short pipe secured to the center of the bottom of the steam-dome and in communication with the pipe of the said chamber, a second chamber below the first-named chamber, and pipes connecting the two chambers, the vertical tubes and the lower chamber being connected with the water-supply, substantially as described.

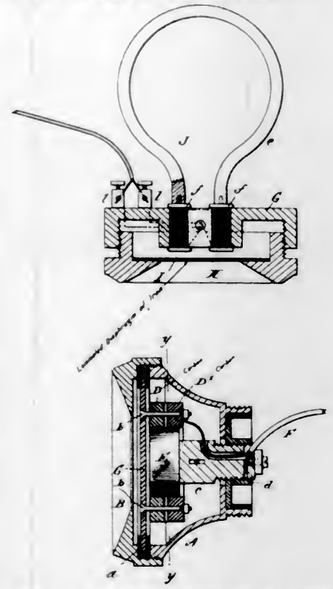
445,474. GAGE-COCK. MARSHALL J. MCCARTER, Norristown, Pa. Filed July 3, 1890. Serial No. 357,615. (No model.)



Claim.—1. In a gage-cock, the combination, with a barrel having a central bore and a screw-thread formed therein, of a piston fitted loosely in the said bore, and a rod extending from the said piston and provided with a thread adapted to engage the said bore-thread, substantially as shown and described.

2. In a gage-cock, the combination, with a barrel having a central bore and a screw-thread formed therein, of a piston fitted loosely in the said bore, a rod extending from the said piston and provided with a thread adapted to engage the said bore-thread, and a stuffing-box held on the said barrel, and through which is adapted to pass the said rod, substantially as shown and described.

445,475. TELEPHONE. ELOY NORIEGA, Mexico, Mexico. Filed Oct. 2, 1890. Serial No. 366,863. (No model.)



Claim.—1. In a telephone-transmitter, the combination, with a diaphragm-cell, of a diaphragm of wood or analogous material, annular electrodes connected with the diaphragm and supported by a cylindrical electrode, and the electrical connections, the annular electrodes being arranged for sliding upon the cylindrical electrode, substantially as specified.

2. In a telephone-transmitter, the combination of the diaphragm-cell A, provided with a mouth-piece B, the wooden diaphragm C, furnished with the elastic binding *a*, the sliding annular carbon electrodes D D', the adjustable electrode E, and the electrical connections, substantially as specified.

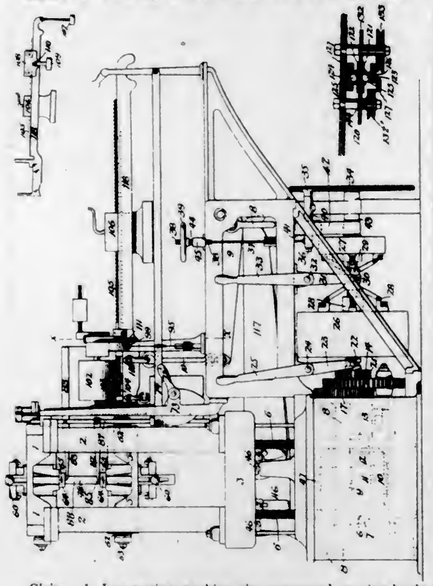
3. In a telephone-receiver, the combination of the permanent magnet *e*, the bobbin formed of the screw *i*, heads *g g'*, rods *h*, and the conductor *k*, wrapped about the rods, substantially as specified.

4. In a telephone-receiver, the combination of a polarized magnet formed of the permanent magnet *e*, the bobbins *f*, each formed of the heads *g g'*, the screw *i*, rods *h*, wrapping *j*, conductor *k*, the diaphragm-cell G, and the laminated diaphragm I, substantially as specified.

5. In a telephone, the combination of the transmitter formed of the diaphragm-cell A, the wooden diaphragm C, sliding annular electrodes D D', the adjustable electrode E, the receiver J, formed of the permanent magnet *e*, bobbins *f*, diaphragm-cell G, laminated diaphragm I, the induction-coil N, and the electrical connections, substantially as specified.

6. A carbon electrode formed of binoxide of manganese, graphite, tar, sulphur, and water, combined in about the proportions stated, substantially as specified.

445,476. RECORDING TESTING-MACHINE. TITIUS OLSEN, Philadelphia, Pa. Filed May 23, 1890. Serial No. 352,827. (No model.)



Claim.—1. In a testing-machine, the compound gearing having an additional idle-wheel 16, in combination with the train of gearing consisting of the wheel 14, pinion 15, wheel 17, pinion 19, and wheel 21, arranged to transmit motion alternatively, as and for the purpose set forth.

2. In the heads of a testing-machine for holding specimens, the gripping-jaws 49, in combination with the blocks 51, slide 53, bolt 56, lever 57, and counter-weight 59, as and for the purpose set forth.

3. The head 5, blocks 51, jaws 49, and plungers 61, fitted through the said blocks 51 and arranged to bear directly on the inclined surface of the jaws 49, in combination with the screws 62, fitted in nuts formed in the head 5 and arranged to operate substantially as set forth.

4. The head 5 and jaws 49, in combination with the plungers 61 and screws 62 and 63, as and for the purpose set forth.

5. The clamp 64, having screws 65, adapted to impinge upon specimens and provided with tenons 67, in combination with the removable cap-plate 66 for facilitating the introduction of specimens and bracing the clamps against the thrust of the screw 65, substantially as set forth.

6. The guide-plate 68 and clamp 64, having the side plate 66 and screws 65, in combination with the screws 69, nuts 70, and washer 71, constructed and arranged substantially as and for the purpose set forth.

7. The clamp 64, having screws 65, in combination with the guiding-block 72, screw 69, nuts 70, side plate 66, and tenons 67, as and for the purpose set forth.

8. The slide 76, the clamps 64, and blocks 75, fitted adjustably as to distance on the said slide 76 and provided with seats adapted to fit the clamp 64, in combination with the eccentrically-journaled prism 78, angularly adjustable in bearings in the blocks 75, and a mechanism to hold said prisms in angular adjustment for the purpose of facilitating the central application of the clamp upon series of specimens at uniform distances for testing, substantially as set forth.

9. The curved lever-arms 91 and 92, the intermediate knife-edge fulcrum 89, the arm 86', and the bars 87 and 88, in combination with clamps 86, fitted thereon, having caliper-arms 84 and 85, pivotally attached thereto and balanced upon curved lever-arms 91 and 92, resting upon an intermediate fulcrum 89, supported by the clamp 86, substantially as and for the purpose set forth.

10. In a testing and automatic recording-machine, the combination of the cylinder 102, the clamps 64, the calipers 82 and 83, and connected lever 97, proportioned and arranged as described, for limiting the transmitted motion to the difference of the motion of the calipers as controlled by the clamps 64 on the specimen, substantially as set forth.

11. In a testing-machine, the pulley 99 in vertical plane with the axis of the balancing-pivot, in combination with the drum or winding-barrel 100 and cord 95, connected with and operated by the calipers 82 and 83, substantially as and for the purpose set forth.

12. In a testing-machine, the combination of the caliper 82, sliding bar 87, lever 88, cord 95, pulley 96, pulley 99, drum or winding-barrel 100, lever 97, link 101, lever 88, and calipers 83 for measuring and transmitting the motion proportioned to the changes of space between the two calipers to the recording-cylinder, substantially as set forth.

13. In combination, the beam 118, provided with the pivotally-suspended poise 107, the poise 106, and poise-carriage 108, bearing a pivotally-suspended poise 109, constructed and arranged substantially as and for the purpose set forth.

14. In a testing-machine having a poise automatically moved on the beam, the combination of the friction-wheels 120 and 132 with the adjustable wheels 121 and 122, and a connected power-transmitting gear to vary the rate of motion of the poise, substantially as set forth.

15. The balls 123 and 124, the balls 125, the lever-arms 127, and the convex-faced wheels 121 and 122, supported by said balls 123 and 124, resting and turning upon said smaller balls 125, combined therewith and arranged to roll in grooves 126 in the lever-arms 127, substantially as set forth and shown.

16. In a testing-machine, the electrodes 134 and 135 and a connected alarm-circuit, in combination with the beam 118, arranged to operate with the abnormally-longer oscillations of the beam 118 and to remain inoperative with the normal oscillations thereof, substantially as set forth and shown.

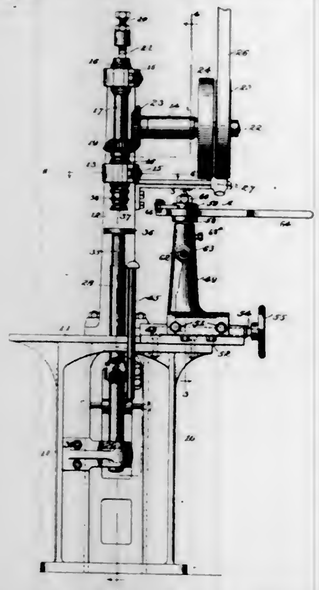
17. The diagram-sheet-holding cylinder 102, the cord 95, and the pulley 99, in combination with the beam 118 constructed and arranged to oscillate and balance upon the fulcrum 111 and to support said sheet-holding diagram-cylinder 102, the calipers 82 and 83, arranged to rest upon and move with the specimen under test, the lever 97, connected therewith and with the said cord 95, guided by the pulley 99, located in the same vertical and horizontal planes as the fulcrum 111 of the beam 118 for the purpose of transmitting motion from the calipers to the diagram-sheet-holding cylinder without affecting the equilibrium of the beam, substantially as set forth.

18. In an automatic testing-machine, the cord 95, the clamps 64, the calipers 82 and 83, arranged to rest upon said clamps and participate therewith in the motions of two portions of the specimen under test, in combination with the lever 97, having a fulcrum 98 and a point upon each side of said fulcrum connected with one of the calipers for the purpose of transmitting indications of differences between the motions of two calipers through said cord 95 and eliminating the coincident motion of both calipers from such indication, substantially as set forth.

19. In an automatic combined testing and recording machine, the weighing mechanism, the diagram-holding cylinder, the calipers 82 and 83, adapted to rest upon and participate in the motions of two portions of the specimen under test, and the lever 97, connected at points located upon opposite sides of its fulcrum with each of said calipers, in combination with the cord 95, operated by the lever 97 and connected with said diagram-holding cylinder, and a pencil moved and guided in parallel direction with the axis thereof by a mechanism connected to said weighing mechanism for the purpose of graphically recording combined indications of stress and motion between the parts of the specimen, substantially as set forth.

20. In a combined testing and automatic indicating and recording machine, the combination of the poise or weight 106, beam 118, diagram-holding cylinder 102, the lever 97, and the calipers 82 and 83, adapted to rest upon and participate in the motions of two portions of the specimen under test and connected with said diagram-holding cylinder by the said lever 97 for eliminating the motion of the entire specimen and transmitting only the differences of motion between the calipers with the recording-cylinder, and a pencil connected with the poise or weight 106 on the weighing-beam 118, combined with and controlled by the contact of electrodes operated by the oscillations of the beam 118, substantially as set forth.

445,477. **CAN-CAPPING MACHINE.** FERNAND SAGNIER, Nantes, France, assignor to Reiss & Brady, New York, N. Y. Filed June 7, 1890. Serial No. 354,558. (No model.) Patented in France Mar. 24, 1888, No. 189,570.



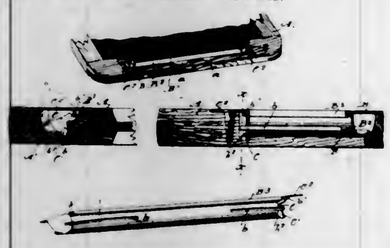
Claim.—1. In a can-capping machine, the combination, with a vertical rest-bar carrying a can-supporting disk, of a weighted lever connected to the rest-bar and mounted on an adjustable fulcrum, substantially as described.

2. In a can-capping machine, the combination, with a vertically-movable rest-bar carrying a can-supporting disk, of a vertical stationary screw, a sleeve mounted on the screw, and a weighted lever pivoted to the sleeve and having one end detachably connected to the rest-arm, substantially as and for the purpose set forth.

3. In a can-capping machine, the combination, with a supporting-table provided with a dovetail rib, of a post provided with a dovetail recess of greater width than the width of the rib, a wedge-key secured to the post in the recess thereof, and a set-screw for adjusting the key to and from the said rib, substantially as and for the purpose specified.

4. In a can-capping machine, the combination, with a post having a socket in its upper end, and a transverse opening below the socket, of a pivot-stud projecting into the socket of the post, a wedge in the said opening for adjusting the pivot-stud, and a shaping-arm carrying forming-rollers pivoted on the said stud, substantially as herein shown and described.

445,478. **PENCIL-HOLDER.** JOHN S. SHAW, Durango, Colo. Filed May 21, 1890. Serial No. 352,588. (No model.)

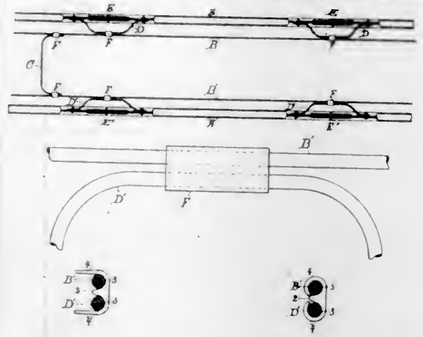


Claim.—1. The combination, with a slate-frame having a longitudinal recess therein, of a spring-actuated receptacle pivoted in the recess and having an opening in the side to receive a pencil, said receptacle having a flat top portion countersunk in the frame and having projecting stops fixed to each end thereof, and plates fixed in the ends of the recess and adapted to engage the stops of the receptacle and limit the movement thereof, substantially as described.

2. The combination, with the frame A, having a recess A′ therein, and the depending plates C, fixed in the ends of the recess and having a downwardly-projecting portion C′, as shown, of the receptacle B, pivoted in said plates and provided with a flat portion B′ and flange B^2, said portions being countersunk in the frame, an opening B^3 in the side thereof, springs *b*, fixed to the receptacle and adapted to engage the plates C, as shown, and stops b^2, projecting from the ends of the receptacle and adapted to engage the horizontal portion C^2 of the plates C and limit the movement of the receptacle, substantially as described.

3. The combination, with the slate-frame having a longitudinal recess therein and the plates fixed in the ends of the recess and provided with depending portions, as shown, of the receptacle pivoted in the plates and fitting the recess of the frame, said receptacle having springs fixed to the back and projecting from the ends to engage the fixed plates, stops projecting from the ends to engage the depending portions of the plates, and an opening in the side to receive a pencil, substantially as described.

445,479. **ELECTRIC CONNECTION FOR TRACK-WIRING.** SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Oct. 10, 1890. Serial No. 367,725. (No model.)



Claim.—1. In combination with the track of an electric railway, the cross-connected main-track wires, each connected with the adjacent line of rails through branch wires electrically connected with and mechanically fastened to said main-track wire, substantially as described.

2. In combination with a line of rails or sectional conductor, a main-track wire or parallel conductor and branch wires secured at their ends to said rails or conductor-sections on opposite sides of the joints and at their middle to said main-track wire, substantially as described.

3. The conducting system or track-wiring, comprising a main-track wire or wires, branch wires, and grooved or open-sided connectors having the said wires fixed in the grooves or sockets of said connectors, which thus couple the branch wires with the main-track wires, substantially as described.

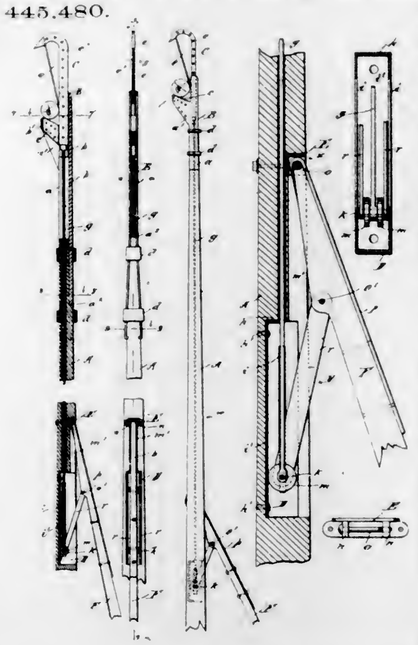
4. The described connector, having a rib between two grooves or sockets and lips outside the same adapted to be folded down upon or wrapped around the wires on opposite sides of said rib, substantially as set forth.

5. In combination with electrical wires, the described electrical and mechanical connectors, having each a rib between two grooves or sockets and lips outside the same, said wires being retained in said grooves or sockets by the folded-over lips, substantially as set forth.

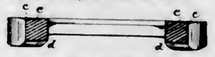
445,480. **PRUNING IMPLEMENT.** JOHN SIEBEL, Oskaloosa, Iowa. Filed July 7, 1890. Serial No. 357,978. (No model.)

Claim.—The combination, with a pole, a knife-stock which is removable, a sliding knife within the stock, the stock having a toothed spur on one edge, through which a shear-cutting blade of the knife may slide, and the knife-blade provided with lateral re-enforce plates, which have bent upper portions that are secured to the shear-cutting blade and are adapted to slide above the spurs on the knife-stock, of a depending connecting-rod that slides through a longitudinal perforation in the pole, a frame embedded in the pole and laterally slotted to receive the ends of a cross-shaft, a transverse shaft, anti-friction wheels on the shaft, one on each side of the connecting-rod, which is loosely engaged by the shaft, two links pivoted at their lower ends to the shaft and by their upper ends to a lever, and a lever that is jointed at its upper end to the pole-body by a bracket-plate and adapted to swing laterally, substantially as set forth.

445,480.

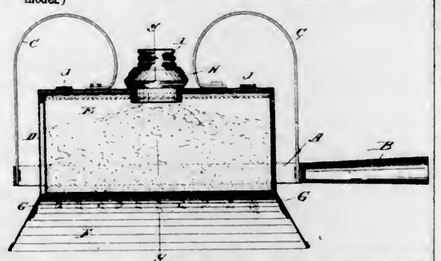


445,481. **HORSESHOE.** THOMAS L. TIPTON, Jerusalem, Ohio. Filed Sept. 23, 1890. Serial No. 365,902. (No model.)



Claim.—The within-described horseshoe, made of increased thickness back of its nail-holes, as at *b*, and with its heel ends or portions from or near such points of increased thickness, and to the outer extremities of the heel ends constructed on their upper surfaces to droop downward, as at *c*, and to bevel or incline laterally outward, as at *e*, and to curve or turn upward beneath, as at *d*, substantially as and for the purposes herein set forth.

445,482. **INSECT-POWDER DISTRIBUTER.** ANDY M. WADDILL, Jr., Thomastown, La. Filed June 18, 1890. Serial No. 355,882. (No model.)



Claim.—1. In an insect-powder distributer, the combination, with a frame, of springs secured to the said frame, and a powder-box connected with the said springs and extending through the said frame, substantially as shown and described.

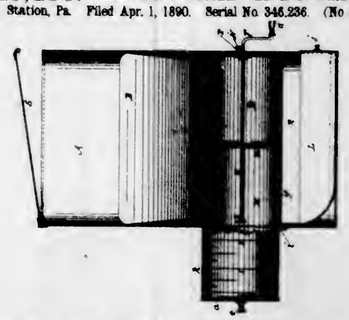
2. In an insect-powder distributer, the combination, with a handled frame, of springs secured to the ends of the said frame, a casing connected with the said springs and arranged within the said frame, and a powder-box held in the said casing and having a perforated bottom, substantially as shown and described.

3. In an insect-powder distributer, the combination, with a handled frame, of springs secured to the ends of the said frame, a casing connected with the said springs and arranged within the said frame, a powder-box held in the said casing and having a perforated bottom, and an outwardly-flaring hood arranged on the lower end of the said casing below the bottom of the said powder-box, substantially as shown and described.

4. In an insect-powder distributer, the combination, with a handled frame, of springs secured to the ends of the said frame, a casing connected with the said springs and arranged within the said frame, a powder-box held in the said casing and having a perforated bottom, and an inlet arranged in the said casing and opening into the said powder-box, substantially as shown and described.

5. In an insect-powder distributer, the combination, with a handled frame, of springs secured to the ends of the said frame, a casing connected with the said springs and arranged within the said frame, a powder-box held in the said casing and having a perforated bottom, an inlet arranged in the said casing and opening into the said powder-box, and a cap for closing the said inlet, substantially as shown and described.

445,483. **MEASURING-VESSEL.** LEWIS D. WARNOCK, Manor Station, Pa. Filed Apr. 1, 1890. Serial No. 346,236. (No model.)

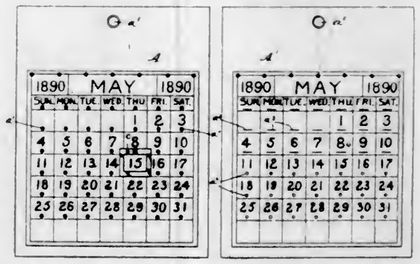


Claim.—1. The combination of a vessel having downwardly-inclined converging sides leaving an opening between them for the passage of such material as may be placed in the vessel, a revoluble cylindrical tube having an opening along one side thereof in close contact and corresponding with the opening in said vessel, a central shaft within and immovably attached to said cylinder, and around said cylinder another cylinder extending through the frame and adjustable in the direction of its length, a scale or series of figures marked along its outside surface, a longitudinal slot in the under side of this adjustable cylinder, and a stationary pin projecting upward into said slot to prevent said cylinder from rotating.

2. The combination consisting of a hopper, an open-sided revoluble cylinder in close proximity to the under side of said hopper, a shaft arranged centrally within said cylinder, and a cheek or stop pressed upon the the outer side of the shaft by means of a suitable spring to hold the cylinder in proper position while being filled and discharged.

3. The combination consisting of a hopper having downwardly-converging sides, a removable tightly-fitting lid as a cover to said hopper, a revoluble cylinder beneath said hopper, an opening through one side of the cylinder, through which it may be filled when in one position, and a removable tray or drawer beneath the revoluble cylinder to receive the contents thereof when the cylinder is brought to a position for discharging its contents.

445,484. **CALENDAR.** NATHAN A. WHEELER, Alpowa, Wash. Filed July 8, 1890. Serial No. 358,068. (No model.)



Claim.—1. The combination of the calendar-sheet having the customary numeral dates thereon, the frames adapted to indicate a par

ticular date, and means for attaching the frames to the calendar-sheet opposite each date-numeral, substantially as described.

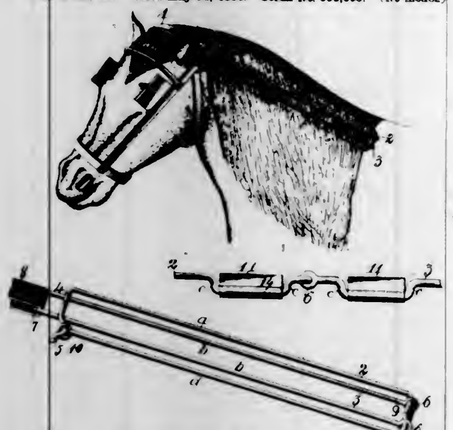
2. The combination, with a calendar-sheet having the usual dates thereon and having supports adjacent to each date, of indicating-frames adapted to encircle or point out a particular date, said frames having laterally-extending hooks to engage a support on the calendar-sheet, substantially as described.

3. The combination, with a calendar having stationary date-marks thereon and slideways above the date-marks, of slips adapted to slide in the ways, said slips to represent the year, month, and days of the week, substantially as described.

4. The combination, with a calendar having the usual date-marks thereon and having a pocket, as described, of slips representing the year, month, and days of the week, and means for securing said slips upon the calendar, so that they may be moved thereon, substantially as described.

5. A calendar comprising a calendar-sheet having the usual date-marks thereon with perforations and stitches, as shown, and having a pocket, as described, slips representing the year, month, and days of the week attached to the calendar-sheet, so as to be movable thereon, and indicators adapted to point out a particular date, said indicators being removably attached to the calendar-sheet, so as to be moved thereon from day to day, substantially as described.

445,485. MANE-HOLDER FOR HORSES. WILLIAM AMBRUSTER, St. Louis, Mo. Filed May 31, 1890. Serial No. 353,695. (No model.)



Claim.—1. In a mane-holder for horses, a pair of parallel arms or jaws, a locking device formed on said parallel arms and integrally therewith, and a similar pair of arms hinged to said first-mentioned pair, substantially as described.

2. In a mane-holder for horses, a jaw 2, a U-shaped jaw hinged thereto, its free end extending beyond the end of the first-mentioned jaw forming a loop whereby it may be secured to the harness, and a collar on the jaw 2 between the ends of the other jaw, substantially as described.

3. In a mane-holder for horses, a jaw 2, a second jaw hinged thereto, an eye on one end of jaw 2, and a hook upon the other end to engage the eye, substantially as described.

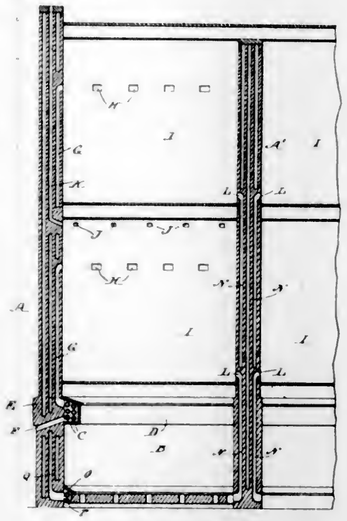
4. In a mane-holder for horses, a jaw 2, a second jaw hinged thereto, corrugated plates on each of said jaws, and means whereby said jaws may be fastened together, substantially as described.

5. In a mane-holder for horses, a jaw 2, a second jaw hinged thereto, each of said jaws having depressions, corrugated plates located in said depressions, and elastic material on said corrugated plates.

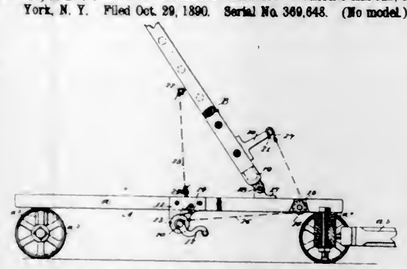
445,486. HEATING AND VENTILATING BUILDINGS. DONALD ANDREWS, Lockport, N. Y. Filed Feb. 27, 1890. Serial No. 341,914. (No model.)

Claim.—1. In a building, walls provided with a continuous fresh-air passage arranged near the inside of the walls, and a second continuous foul-air-discharge passage arranged next to the fresh-air passage near the outside of the walls, in combination with means for heating the incoming air at the lower ends of the said two passages, substantially as shown and described.

2. In a building, walls provided with a continuous fresh-air passage arranged near the inside of the walls, a second continuous foul-air-discharge passage arranged next to the fresh-air passage near the outside of the walls, outlets formed in the said walls and connecting the said fresh-air passage with the rooms, and hollow partitions connected with the room by openings and adapted to discharge with the said foul-air passage, in combination with means for heating the incoming air at the lower ends of the said two passages, substantially as shown and described.



445,487. FRUIT-PICKER'S LADDER. WHITING ARNOLD, New York, N. Y. Filed Oct. 29, 1890. Serial No. 369,648. (No model.)

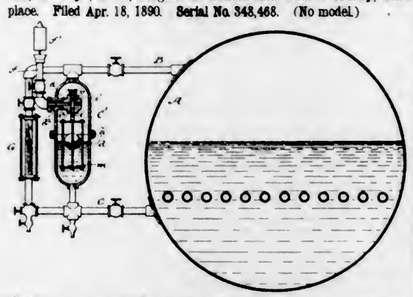


Claim.—1. In a device of the character described, the combination, with a truck provided with a windlass and guide-pulleys and cables attached to the windlass extending upward over the pulleys and provided with hooks upon their upper or outer ends, of a ladder pivoted at its base upon the truck and arms projected at an angle from the sides of the ladder and apertured to receive the hooks of the cables, as and for the purpose specified.

2. In a device of the character described, the combination, with a truck, a shaft journaled in hangers beneath the same, provided with a crank and an attached ratchet-wheel adapted for engagement with a spring-pressed pawl, guide-pulleys located between the shaft and the forward end of the truck, cables attached to the shaft and passing upward over the guide-pulleys, and hooks secured to the upper or outer ends of the cables, of a shaft mounted upon the upper portion of the truck, sockets movable upon the shaft, a ladder having its side pieces at their lower ends shaped to fit into the sockets, and arms projected at an angle from the sides of the ladder near its base, the said arms being apertured to receive the hooks of the cables, as and for the purpose specified.

3. In a device of the character described, the combination, with a truck, a shaft journaled in hangers beneath the same, provided with a crank and an attached ratchet-wheel adapted for engagement with a spring pressed pawl, guide-pulleys located between the shaft and the forward end of the truck, cables attached to the shaft and passing upward over the guide-pulleys, and hooks secured to the upper or outer ends of the cables, of a shaft mounted upon the upper portion of the truck, sockets movable upon the shaft, a ladder having its side pieces at their lower ends shaped to fit into the sockets, arms projected at an angle from the sides of the ladder near its base, the said arms being apertured to receive the hooks of the cables, and means for limiting the upward movement of the ladder, substantially as shown and described.

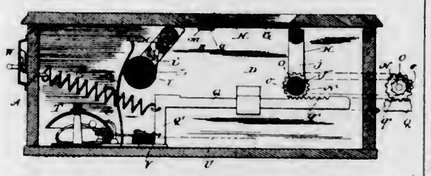
445,488. ALARM FOR STEAM-GENERATORS. FRANK M. ASHLEY, Brooklyn, N. Y., assignor to himself and John J. Ashley, same place. Filed Apr. 18, 1890. Serial No. 348,468. (No model.)



Claim.—1. An alarm for steam-boilers, comprising a chamber connected at top and bottom to the boiler and provided with an inclosed horizontal cock formed with a passage which communicates through a pipe with an alarm, in combination with an inclosed float attached to a rod provided at the top with a valve which works in a seat in the inclosed horizontal body of the cock, substantially as shown and described.

2. In an alarm of the character described, the combination, with a case having water and steam connections with the boiler, of an axially-bored cock fitted in said case and connected with an alarm, a vertical plug or cut-off movable in said cock across the axial bore thereof and having transverse apertures, and a float rigidly secured to said plug for actuating the latter, substantially as shown and described.

445,489. COMBINED CASH DRAWER AND RECORDER. WILLIAM ASSHETON, Baltimore, Md. Filed Sept. 27, 1890. Serial No. 366,406. (No model.)



Claim.—1. The improved cash-box having a partially-glazed sight-opening, a support for a strip of paper under said opening, such support including a gear-wheel, a longitudinally-movable rack-bar meshing with said gear-wheel, a spring for actuating the said bar in one direction, the cash-drawer, interengaging portions between the said drawer and rack-bar, whereby the drawer may move and hold the rack-bar against the stress of its spring, and a latch by which the drawer may be held closed, all substantially as and for the purposes set forth.

2. In an apparatus substantially as described, the combination of the frame or casing, the paper-strip-supporting rolls, one of which has a toothed wheel, the longitudinally-sliding bar arranged to operate one of such rolls, a spring for actuating such bar in one direction, the drawer, interengaging portions on the drawer and bar, whereby the drawer when closed may serve to hold the bar back against the stress of its spring, and a latch for the drawer, all substantially as and for the purposes set forth.

3. The combination, in an apparatus substantially as described, of the frame or casing, the paper-supporting rolls, one of which has a gear-wheel, the spring-actuated rack-bar adapted to mesh with such wheel and having its toothed portion movable into and out of mesh with the toothed wheel, the drawer arranged to operate such rack-bar, and the latch for such drawer, all substantially as set forth.

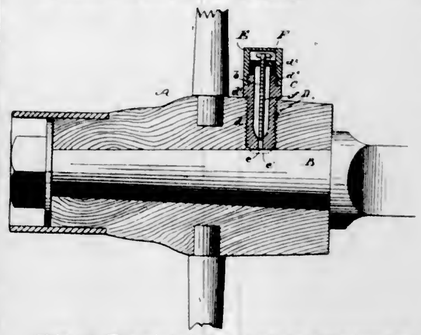
4. In an apparatus substantially as described, the combination of the frame or casing, the paper-supporting rolls, one of which has a gear-wheel, the rack-bar arranged to mesh with said wheel, the spring for actuating said rack-bar in one direction, the drawer arranged to actuate the bar in the other direction, the gong, and connections between the hammer of the gong and the rack-bar, substantially as set forth.

5. In an apparatus substantially as described, the combination of the paper-supporting rolls, one of which has a gear-wheel, the rack-bar arranged to mesh with said wheel and having an arm Q^3, a spring by which to actuate the rack-bar forward, the cash-drawer having a slot or recess U, the front wall V of which is arranged to abut the arm Q^3 and force the rack-bar back when the drawer is closed, and the latch for securing the drawer closed, substantially as set forth.

6. In an apparatus substantially as described, the combination of the casing, the paper-strip-supporting rolls, one of which has a gear-wheel, the rack-bar arranged to mesh with said wheel and having an arm or portion Q′, arranged at about right angles to its main portion and provided at its end with a lateral arm arranged for engagement by the cash-drawer, and the spring connecting with the rack-bar at or near the upper end of the arm Q, whereby the spring will actuate the bar longitudinally and will at the same time operate to hold the rack-bar in engagement with the toothed wheel, all substantially as and for the purpose set forth.

7. The combined cash-drawer and recorder herein described, consisting of the casing having a partially-glazed sight opening or aperture, paper-supporting rolls, one of which is provided with a gear-wheel and with a ratchet and pawl connecting such wheel with its roller, the rack-bar meshing with said wheel and movable longitudinally and provided with an arm Q^3, the adjustable support Q′, by which the rack-bar may be held in mesh with the gear-wheel or be permitted to be set out of such mesh at will, the drawer having a slot or recess in which the arm Q^3 of the rack-bar projects, the wall V of which engages said arm Q^3, the gong having its hammer connected with the rack-bar, and the latch by which to secure the drawer closed, all substantially as and for the purposes set forth.

445,490. OIL-CUP. CHARLES H. BAKER, New York, N. Y. Filed Apr. 12, 1890. Serial No. 347,597. (No model.)



Claim.—1. The main body formed with an oil-chamber and orifice *c* and having its exterior formed with screw-threads *d d′ d²*, in combination with the inner and outer caps and the screw rod *f* to regulate the flow of oil, substantially as described.

2. The main body formed with an oil-chamber and an orifice *c* and formed with the tips *e′* at the lower end and screw-threaded at *d d′ d²*, in combination with the screw-caps E F and the screw-rod *f*, fitted in the inner cap, substantially as described.

445,491. BUCKLE-CONNECTION. ANTHONY BIESEN, Merrill, Iowa. Filed Oct. 23, 1890. Serial No. 369,253. (No model.)

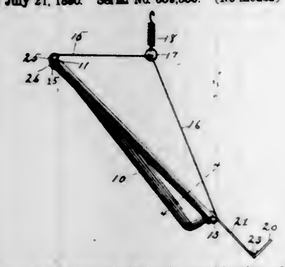


Claim.—1. The fastening for buckles, consisting of a plate having in one end holes *c*, with juxtaposed sockets or caps *c′*, and on the other end spurs *b*, with ends adapted to be passed through the holes *c* and housed in the sockets *c′*, substantially as shown and described.

2. The plate for connecting a buckle and strap, having its two ends adapted to be bent parallel and clinched together, and having also formed integral with the plate a loop or keeper for the free end of the strap, substantially as shown and described.

3. The connecting-plate C for buckles and straps, having stamped spurs *b* at one end, holes and sockets *c c′* in the other end, and also keeper *f* and side clips *e*, all made in one piece, substantially as shown and described.

445,492. HAMMOCK-CHAIR. RUDOLPH BILLEAUX, Chicago, Ill. Filed July 21, 1890. Serial No. 359,353. (No model.)



Claim.—In a hammock-chair, the combination of side poles having pins fixed in their ends, end poles having holes through them for the supporting-cords, and sockets to receive said pins, a hammock-body made wider at one end than at the other and secured along its sides to the side poles, cords passing through said holes, being knotted under the poles and being secured above to the ring 17, hooks on the upper sections of the cords next to the narrower end of the hammock-body, a seat formed to fit upon the side poles and to rest against the end pole at the wider end of the hammock-body, and a foot-rest connected with the seat by a frame-work hinged to seat and foot-rest, as and for the purpose stated.

445,493. BAIL-LOCK. WILLIAM BOYRER, New York, N. Y. Filed Nov. 14, 1890. Serial No. 371,459. (No model.)



Claim.—1. A bail-lock comprising a clamp adapted to clamp one of the ears of the pot or kettle and a swinging arm pivoted on the said clamp and adapted to engage the bail or handle, substantially as shown and described.

2. A bail-lock comprising a clamp formed of a single piece of metal bent in U shape to engage one of the ears of the pot or kettle and an arm made of a single piece of wire doubled up in its middle to form parallel arms terminating in curved arms provided with trunnions journaled in the said clamp, substantially as shown and described.

3. A bail-lock comprising a clamp formed of a single piece of metal bent in U shape to engage one of the ears of the pot or kettle, an arm made of a single piece of wire doubled up in its middle to form parallel arms terminating in curved arms provided with trunnions journaled in the said clamp, and a sleeve fitted to slide on the said parallel arms to lock the bail or handle in place between the two parallel arms, substantially as shown and described.

445,494. LOOP-HOLDING MECHANISM FOR KNITTING-MACHINES. HENRY BRINTON, Philadelphia, Pa. Filed Mar. 24, 1888. Serial No. 268,320. (No model.)



Claim.—1. The combination, with a needle-cylinder provided at the top with grooves a^3, and having also the radially-grooved flange B below the top of said cylinder, of the needles and their operating-cams, and the holders or sinkers D, provided with the notch d^6, and operative mechanism therefor, said holders or sinkers engaging and working in the grooves of the flange B and the grooves of the cylinder, substantially as described.

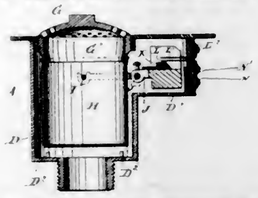
2. The combination, with a needle-cylinder provided at the top with a portion reduced to the plane of the bottom of the needle-grooves, of a radially-grooved flange below such reduced portion, and loop-holders engaging and working in the grooves of said flange and provided each with a loop-engaging offset above the top of the cylinder, and means for operating said loop-holders, substantially as described.

3. The herein-described holder or sinker, having its work-engaging portion located out of the plane of the main body and cam-engaging portion of the same.

4. The herein-described holder or sinker, having the horizontally-disposed main body d^3, provided with the cam-engaging projection d^5, and the work-engaging portion located out of the horizontal plane of these parts.

5. The combination, with the radially-grooved cylinder and flange, the grooves of the two parts being in different horizontal planes, of the holders or sinkers having parts engaging the radial grooves of the cylinder and flange, substantially as described.

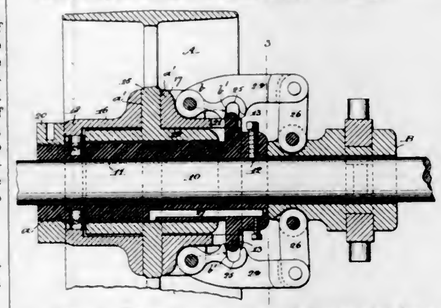
445,495. LEAK-DETECTOR FOR PIPES. ANDREW H. BROWN, New York, N. Y. Filed Sept. 20, 1890. Serial No. 365,635. (No model.)



Claim.—1. In a leak-detector, the combination, with a casing adapted to be secured in the bottom of a drip-pan, of a pivoted and counterbalanced forked lever, a bucket provided with trunnions by which it is hung upon the said lever, and contact-plates connected with an annunciator, said plates being arranged one above the other and adapted to be pressed into contact with each other by the said lever, substantially as herein shown and described.

2. In a leak-detector, the combination, with a casing having an extension and provided with a perforated top and lugs on its bottom, of a counterbalanced forked lever pivoted in the extension, a bucket provided with trunnions by which it is hung upon the said lever, an insulated block on the weighted end of the lever, and contact-plates arranged one above the other and adapted to be connected to an annunciator, substantially as herein shown and described.

445,496. FRICTION-CLUTCH. CLARENCE M. CARHART, Plainfield, N. J. Filed Oct. 16, 1890. Serial No. 368,254. (No model.)



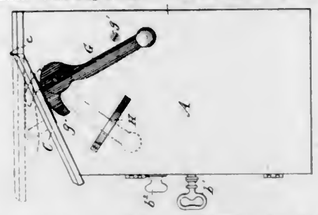
Claim.—1. The combination, with a pulley having a hub-flange, a clamping-collar engaging the hub and adapted for contact with the flange, and a fixed sleeve, of a cam-lever pivoted to the collar and engaging with the sleeve, and a shifting mechanism connected with the cam-lever, as and for the purpose specified.

2. In a device of the character described, the combination, with a sleeve provided with diametrically-opposite lugs and a pulley held to turn upon the sleeve, the hub of which is provided with an annular flange, of a collar encircling the pulley-hub at one side of the flange and engaging with the flange, the said collar having a connection with the sleeve, a collar also encircling the hub and engaging with the opposite side of its flange, a shifting device, and a link-connection between the latter collar and the shifting device, several of the links being provided with a recess to receive the lugs of the sleeve, one wall of said recesses being a cam-surface, as and for the purpose specified.

3. In a device of the character described, the combination, with a sleeve, a pulley mounted loosely upon the sleeve, the hub of which is provided with an annular flange, and a fixed collar loosely surrounding the hub, connected with the sleeve and adapted for engagement with one side of the hub-flange, of a movable collar also encircling the hub and adapted for engagement with its flange, lugs formed upon the sleeve, a shifting device, and links connecting the shifting device and the movable collar, several of which links are provided with recesses to receive the lugs of the collar, one side wall of which recesses constitutes cam-surfaces, as and for the purpose specified.

4. In a device of the character described, the combination, with a sleeve provided with diametrical lugs, a pulley mounted loosely upon the sleeve, the hub of which is provided with an annular flange, and a collar on the hub connected with the sleeve and adapted to engage one side of the hub-flange, of a movable collar on the hub adapted for engagement with its flange, cam-levers pivoted on the movable collar and adapted to engage the sleeve-lugs, a shifting device, and links connecting the levers and shifting device, as and for the purposes specified.

445,497. LETTER-BOX. FRANCIS CATUDAL and ELZEAR DROLET, Clyde, Kans. Filed Aug. 5, 1890. Serial No. 361,101. (No model.)



Claim.—1. A letter or mail box made with a drop-lid opening outwardly, an interior tray opening downwardly, links connecting the lid and tray, and a cam-lever adapted for action on the lid to open it, substantially as described.

2. A letter or mail box made with a drop-lid opening outwardly, an interior tray opening downwardly, links connecting the lid and tray, a cam-lever adapted for action on the lid to open it, and a detent for the cam-lever, adapted to hold the lid open temporarily, substantially as described.

3. The combination, in a letter or mail box, of a main body portion A, having a front door B, a hinged drop-lid C, an interior hinged tray D, links F, connecting the lid and tray, and a cam-lever G, fulcrumed to the box and having an eccentric head g acting on the drop-lid, substantially as described.

4. The combination, in a letter or mail box, of a main body portion A, having a front door B, a hinged drop-lid C, an interior hinged tray D, links F, connecting the lid and tray, a cam-lever G, fulcrumed to the box and having an eccentric head g acting on the drop-lid, and a bow-spring H on the box for temporarily retaining the cam-lever for holding the drop-lid open, substantially as described.

445,498. MACHINE FOR FOLDING, PASTING, TRIMMING, AND COVERING SHEETS OF PAPER. CYRUS CHAMBERS, Jr., WILLIAM MENDHAM, and THORWALD C. DAMBORG, Philadelphia, Pa., assignors to said Chambers. Filed Sept. 30, 1882. Serial No. 73,142. (No model.)

Claim.—1. The combination, in a single machine, of a sheet-carrier provided with a transverse and a longitudinal paster interchangeably operative, with folders and trimmers, substantially as described, whereby either eight-page or sixteen-page sheets may be pasted, folded, and trimmed, each by automatic and continuous operations, all substantially as set forth.

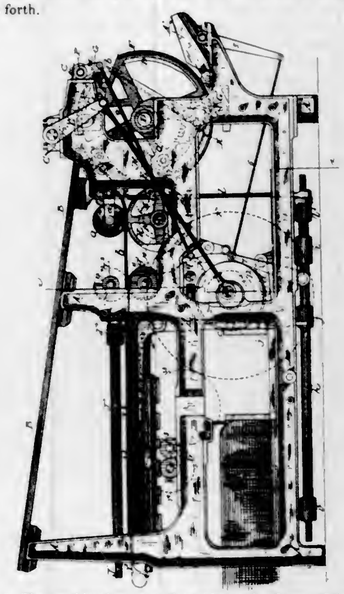
2. The combination, in a single machine, of a sheet-carrier provided with a transverse and a longitudinal paster interchangeably operative, with folders and trimmers and a cover feeding and pasting mechanism, substantially as described, whereby eight-page sheets may be pasted, folded, and trimmed and sixteen-page sheets may be pasted, folded, trimmed, and covered, each by automatic and continuous operations, all substantially as set forth.

3. The drum D, loose upon its shaft and provided with grippers, in combination with the creasing-blade E and its fixed arms Q', provided with the slots w' and bar T, with clamping-nuts, all constructed and operating substantially in the manner and for the purposes set forth.

4. The combination of the grippers G on drum D, gripper-shaft b', pinion c', wheel A^3, tumbler-stud B^3, oscillating cam C^3, and reciprocating cam D^2, all constructed and operating substantially as and for the purposes set forth.

5. The mechanism making a first fold in sheet, and the bars i i, combined and arranged as shown with relation to the bite of the folding-rollers and their creasing-blades making the second fold in said sheet, whereby the folded sheet is withheld from being gripped by said rollers before the crease is forced into their bite by said blades and the under ply of the folded sheet is prevented from being drawn off from the upper ply before the blade can tuck it into the bite of the rolls, substantially as described.

6 The combination of the drum D, having the arms Q', carrying creaser-blade E, the nipper-roll H, binder-rolls Q, curved bar b, and a conveying mechanism, substantially as described, for carrying the once-folded sheet under the said bar and away from roll H, substantially as set forth.



7. The combination, with the main carrier-drum, of the circular paste-blade on its periphery and a vibrating paste-fountain applying paste to said blade at every other or idle revolution of the drum, whereby the paste-line is made upon the inside surface of the sheet, substantially as shown and described.

8. In combination with the carrier-drum D, provided with the fixed pasting-blade F, the paste-fountain A', with roller E', vibrated upon rock-shaft B' in and out of contact with said blade at suitable intervals by means of the levers and cams, substantially as described.

9. In a folding and pasting machine, the combination, with the main carrier-drum, of a paste-fountain, a paste-blade pivoted within and revolving with said drum and caused to project beyond the periphery of the latter by suitable mechanism, substantially as described, to take paste from the paste-fountain, and mechanism, substantially as described, for then projecting the blade against the inner surface of the sheet upon the drum, substantially as and for the purposes set forth.

10. In combination with the carrier-drum, provided with the grippers G, the paste-blade K, adjustable on the arc of said drum, substantially as shown and described.

11. In combination with the drum, the grippers, the creasing-blade, and the pasting-blade, the said blades being adjustable with relation to the grippers and with each other, substantially as set forth.

12. In combination with the carrier-drum D and the adjustable arms U', carrying paste-blade K, the adjusting-box B', substantially as shown and described.

13. The combination of the adjustable paste-blade K, its bar v', bell-crank w', cam-roller y', spring-bar A^3, and cams z' and B^3, all as and for the purpose specified.

14. In a folding-machine, the combination, with the two coacting folding-rollers having steel ends, of a trimming-blade constructed, arranged, and operated substantially as described.

15. In combination with the folding-rollers, the rotating circular trimming-blade U, arranged at the end of the rollers to cut the sheet about opposite to the bite of the rollers, as and for the purpose specified.

16. In combination with the folding-rollers and trimmer-blade U,

the adjustable box W, whereby the rollers (or sections thereof) and the trimmer may be simultaneously adjusted to suit the different sizes of sheets to be trimmed, substantially as described.

17. In combination with the folding-rollers, the trimmer U, secured to a hollow journal *m* by means of a bolt Y, passing through the latter, and a nut *n*, substantially as shown and described, whereby the trimmer may be readily removed and replaced, substantially as specified.

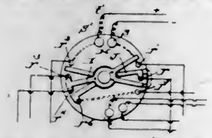
18. In combination with the trimmer U, the folding-rollers provided with the biting or contact collars V, for the purpose of firmly holding the folded sheet as it passes between the rollers and for the trimmer to shear against, substantially as shown and described.

19. In a paper-folding machine, the combination, with one pair of folding-rollers, of two pairs of folding-rollers, arranged one on each side of the former, together with suitable conveying mechanisms whereby the sheet may be folded in or out, substantially as shown and set forth.

20. In combination with the rollers 2 2 and transverse rollers 3 3, the double fourth pair of rollers 4 4, adapted to be used for controlling the position of the title-page, substantially as described.

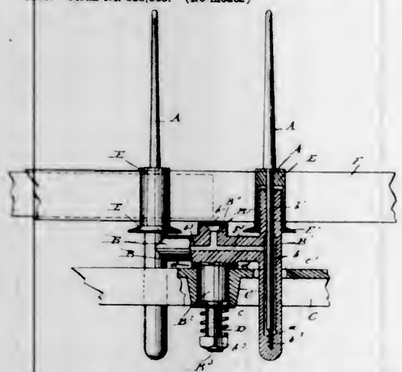
21. In combination with the feed-table and the main drum provided with devices for gripping the sheets, the treadle and devices for connecting it with the feed-table, whereby the latter may be raised to lift the sheets away from said gripping mechanism, substantially as shown and described.

445,499. ELECTRIC MOTOR. WILLIAM M. DERRICKELL, Brainerd, Minn. Filed June 9, 1890. Serial No. 354,839. (No model.)



Claim.—In an electric motor, the combination, with the armature-coils, of an insulating-disk carrying series of contact-points connected with the armature-coils, and two three-armed switch-arms placed upon the armature-shaft, insulated from each other and from the shaft, and adapted to change the connections of the armature from series to parallel or the reverse, substantially as specified.

445,500. SPINDLE SUPPORTING AND DRIVING DEVICE FOR SPINNING-FRAMES. JOSEPH DUFFY, Paterson, N. J. Filed June 11, 1890. Serial No. 355,065. (No model.)



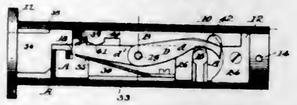
Claim.—1. The combination, with the frame of a spinning-machine and with a horizontally-moving belt arranged across the frame, of an oscillating bolster having a suitable trunnion mounted in a bearing in the frame, said trunnion having a downwardly-projecting end carrying a suitable tension-spring and vertical arms fixed to opposite sides of the bolster, and spindles mounted in said arms, said spindles having suitable whirls attached thereto adapted to press against the belt, substantially as described.

2. The combination, with the frame of a spinning-machine and an endless belt moving horizontally across the frame, of an oscillating bolster pivoted in the frame, said bolster having vertical arms upon opposite sides, each provided with an enlarged recess, as shown, a horizontal bore extending through the body of the bolster from one arm to the other, a vertical bore opening from said horizontal bore through the top of the bolster, and spindles mounted in the bolster-arms, said spindles having whirls fixed thereto adapted to press against the belt, substantially as described.

3. A bolster for spinning-frames, consisting of a body having arms provided with bearings for the spindles, a central pivot, and oil-passages extending through the body to the arm-bearings, substantially as described.

4. A bolster for spinning-frames, consisting of a body having arms provided with bearings for the spindles, and a central trunnion having a reduced end provided with a nut to retain a spring, substantially as described.

445,501. LOCK. BENJAMIN EDWARDS, New York, N. Y. Filed Aug. 5, 1890. Serial No. 361,097. (Model.)



Claim.—1. In a lock, the combination, with a bolt, of sliding tumblers provided with recesses in one edge adapted to register, and a trip-lever adapted for engagement with the bolt and the tumblers, substantially as shown and described

2. In a lock, the combination, with a bolt, of sliding spring-pressed tumblers provided with recesses in one of their edges adapted to register, and a spring-pressed trip-lever capable of being operated upon by a key and adapted for engagement with the tumblers and the bolt, as shown and described.

3. In a lock, the combination, with a bolt provided with two recesses near its head and a recess near its inner end, and spring-pressed tumblers held to slide near the bolt, provided with recesses in one edge adapted to register, of a spring-pressed lever, one end of which is carried over the inner recess of the bolt, the other end being provided with a lip to enter the forward bolt-recesses and a stud to enter the recesses of the tumblers when said recesses register, as and for the purpose specified.

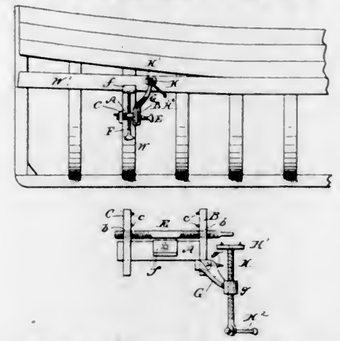
4. In a lock, the combination, with a bolt, of sliding tumblers provided with recesses in their upper edges near one end adapted to register, and also with recesses in their lower edges, angle guide-plates held to slide in the lower recessed portion of the tumblers, toothed disks having connection with the guide-plates and tumblers, and a spring-pressed trip-lever adapted, for engagement with the bolt and the sliding tumblers, as and for the purpose specified.

5. In a lock, the combination, with a casing provided with a key-hole therein, of spring-pressed tumblers held to slide in the casing, provided with recesses in their upper edges near one end adapted to register, and also provided with recesses in their lower edges, the rear walls of which recesses are located at one side of the key-hole, angle guide-plates held to slide in the lower recessed portion of the tumblers, the rear ends of which plates are located at one side of the key-hole opposite the rear end of the tumblers, toothed disks engaging the guide-plates and tumblers, a lock-bolt, and a trip-lever adapted to be acted upon by the key and engage with the bolt and the tumblers, as and for the purpose set forth.

6. In a lock, the combination, with a casing, tumblers held to slide in said casing, provided with recesses in the upper edges at one end adapted to register, and also provided with recesses in their under edges, angle guide-plates held to slide in the lower recesses of the tumblers, springs bearing upon one edge of the tumblers, and toothed disks the teeth of which enter recesses in the guide-plates and tumblers, of a tie-plate covering the toothed disks, a spring attached to the said plate, a bolt held to slide in the casing upon the plate, and a trip-lever fulcrumed upon the plate and having a bearing upon the spring, one end of which trip-lever is adapted to be acted upon by the key and the opposite end for engagement with the bolt and tumblers, as and for the purpose specified.

7. In a lock, the combination, with a casing, tumblers held to slide in said casing, provided with recesses in the upper edges at one end adapted to register, and also provided with recesses in their under edges, angle guide-plates held to slide in the lower recesses of the tumblers, springs bearing upon one edge of the tumblers, and toothed disks the teeth of which enter recesses in the guide-plates and tumblers, of a tie-plate covering the toothed disks, a spring attached to the said plate, a bolt held to slide upon the tie-plate, provided with two spaced recesses near its head and a curved recess near its inner end, a trip-lever centrally fulcrumed upon the trip-plate and having a bearing against the spring, one end of which lever is curved upward over the inner recess of the bolt, the opposite end being provided with an upwardly-extending lip adapted to enter the forward recess of the bolt, and a horizontally-projecting stud capable of entering the upper recesses of the tumblers when said recesses are in registry, as and for the purpose specified.

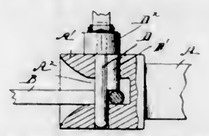
445,502. APPARATUS FOR APPLYING SHEATHING TO THE HULLS OF VESSELS, &c. FRANKLIN EWING, Jr., Atlantic Highlands, N. J. Filed Aug. 28, 1889. Serial No. 322,370. (No model.)



Claim.—1. The apparatus herein shown and described, comprising a body-piece carrying a lifting-screw, two jaws applied to the body-piece, a right-and-left-hand screw for operating them, an arm applied to one of the jaws, and a pressure-screw held by said arm, substantially as described.

2. The body-piece A, carrying the lifting-screw F, in combination with the jaws B C, applied to the ends of the body-piece, and the right-and-left-hand screw E for operating the jaws, substantially as described.

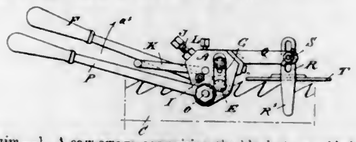
445,503. CAR-COUPLING. THEODORE M. FISHER and ALEXANDER SLYE, Mecca Mills, Ind. Filed July 8, 1890. Serial No. 358,032. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head and a vertically-movable coupling-pin mounted therein, of angular braces fixed to the draw-head, levers pivoted in the upper ends of the braces and pivotally connected with the coupling-pin, and a chain fixed to one of the levers and to a brace below, thereby limiting the movement of the lever, substantially as described.

2. A car-coupling comprising a draw-head, a vertically-movable coupling-pin mounted in the draw-head and provided with a tongue fitting in a corresponding recess in the draw-head, angular braces fixed to opposite sides of the draw-head, spring-pressed levers pivoted in the braces and extending at right angles to the draw-head, connecting-rods pivoted to the inner ends of the levers and to the coupling-pin, and a chain fixed to one of the levers and to a brace below to limit the movement of the coupling-pin, all substantially as described.

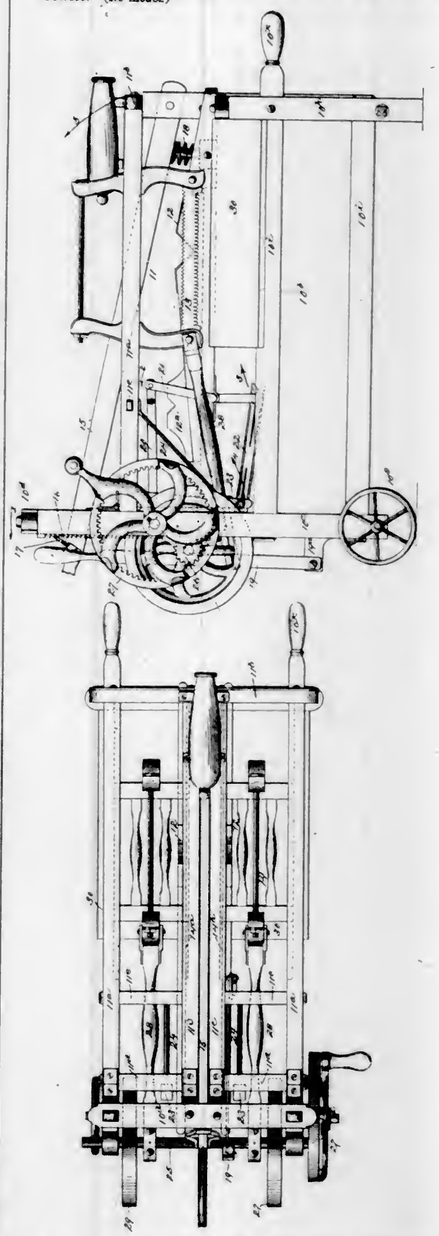
445,504. SAW-SWAGE. JOHN HANCHETT, Big Rapids, Mich. Filed Aug. 27, 1890. Serial No. 363,210. (No model.)



Claim.—1. A saw-swage comprising the block A, provided with a recess B, having an inclined bottom B', the rectangular anvil-die H, resting on said bottom and having rounded ends, a transverse screw I, crossing the recess B and supporting the said die opposite said inclined bottom, the screw J, bearing at its inner end on the outer rounded end of said die, and the longitudinally-adjustable shaft E, extended transversely through the block and having a swage-die D adjacent to the inner rounded end of the anvil-die and provided with an operating lever or handle F, substantially as set forth.

2. A saw-swage comprising the block A, having recess B and the adjustable anvil-die H, the longitudinally-adjustable shaft E, extending through the block, having at one projecting end a series of annular grooves E', and formed with an elongated swage-die D between its ends of greater length than the width of the recess B, and the slotted adjustable plate G on the block and engaging one of the annular recesses with one end, substantially as set forth.

445,505. SAWING-MACHINE. BENJAMIN E. HARRELD and ANDERSON F. HARRELD, Hallowell, Kans. Filed Apr. 10, 1890. Serial No. 347,419. (No model.)

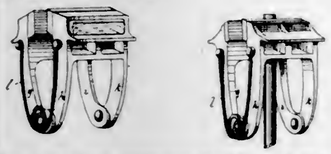


Claim.—1. In a sawing-machine, the combination, with a main frame, of a supplemental frame, the hand-lever pivoted to the main frame, a rock-shaft mounted also on the main frame, the link-arm con-

necting said shaft and hand-lever, and the link-arm connecting the shaft and supplemental frame, whereby when the lever is thrown back the supplemental frame will be elevated, and vice versa, substantially as shown and described.

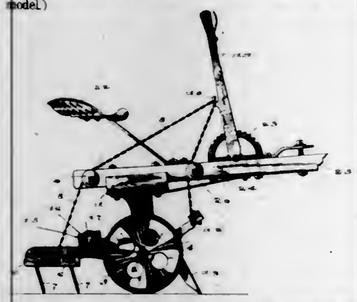
2. In a sawing-machine, the combination, with a main frame having a buck arranged upon the longitudinal center of the same, and dust-chutes arranged upon each side of the buck, of a supplemental frame hinged to the main frame and divided longitudinally into two horizontal saw-carrying frames, and saws arranged to reciprocate in said frames, substantially as shown and described.

445,506. VISE-CLAMP. FERDINAND KREES, Berlin, Germany. Filed Oct. 30, 1890. Serial No. 369,798. (No model.) Patented in Germany Feb. 20, 1889, No. 48,794.



Claim.—A vise-clamp consisting of two clamp-heads, each provided with two independent and separated legs, the independent pivots connecting the lower ends of one pair of legs to the lower ends of the other pair, for providing an unobstructed space between the pivots and legs which permits the insertion of long articles vertically between the clamp-heads, and means for closing the clamp-heads, substantially as described.

445,507. COMBINED HARROW AND SOD-CUTTER. JOSEPH B. OKEY, Indianapolis, Ind. Filed Oct. 11, 1890. Serial No. 367,864. (No model.)

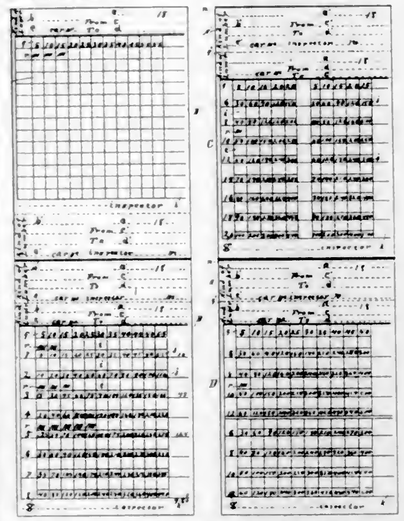


Claim.—1. A tillage-machine comprising a main frame, an axle journaled therein, a series of cutting-disks mounted on such axle, thimbles interposed between such disks for spacing the same, a toothed harrow-frame connected to arms pivoted on the outer ends of such axle and behind the disks, an auxiliary frame-work pivotally connected to the arms of the harrow-frame and extending forward of the disk, carrying cutting-blades, and lever mechanism for raising and lowering the harrow and cutter frames simultaneously, all combined substantially as shown and described.

2. A tillage-machine comprising, in combination, a main frame, an axle journaled therein, a series of cutting-disks mounted on such axle and separated by spacing-thimbles, a toothed harrow-frame pivoted on the outer ends of the axle and carried behind the disks, a frame-work carrying suitable cutter-blades pivoted behind the axle and extending in front of the disks, a tongue centrally connected to the frame with the driver's seat thereon, a lever mechanism disposed within reach of the driver's hand, connected to the machine, with chains or cords extending from such lever to the harrow and cutter frames, whereby both may be raised and lowered simultaneously, substantially as shown and described.

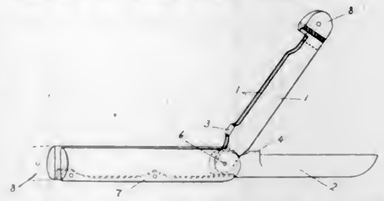
445,508. TALLY-SHEET. MILLARD R. STOCKWELL, Grand Rapids, Mich. Filed July 9, 1888. Serial No. 279,483. (No model.)

Claim.—1. As a new and useful article of manufacture, a lumber tally-book having a permanent cover bound with a flexible back, a false cover for supporting the book when open, stubs for recording a synopsis of the contents of the leaf, and detachable sheets provided with a head-line of figures for showing the number of pieces tallied upon each line of blanks, a marginal line of figures showing the amount in each piece tallied, blank spaces for recording the tallies, foot-line figures interspersed in alternate rows with the tally-blanks and so arranged that the amount of lumber tallied upon each line of blank spaces will be shown by the figures immediately below the last blank filled, and a marginal blank for carrying out the total of every tally, substantially as specified.



2. As a new and useful article of manufacture, a lumber tally-book bound with a flexible back and provided with stubs for containing a synopsis of the contents of the sheets, detachable sheets or leaves, a row of perforations between the leaf and the stubs, a heading upon the leaves, provided with blank spaces for recording a brief statement of the amount and kind of lumber tallied, date of shipment, by whom and to whom shipped, a portion of said leaves being provided simply with a row of head-line figures below the heading, a number of blank spaces for recording the number of pieces tallied, and marginal spaces on each side of the tally-blanks for recording the class of lumber tallied and carrying out the sum of the lumber tallied, a portion of the leaves provided with an additional marginal line of figures showing the amount of lumber in each piece tallied, and a portion of the leaves provided with head-line figures showing the number of pieces tallied, marginal figures showing the amount in each piece tallied, blank spaces for recording the tallies as made, and foot-line figures interspersed upon alternate lines with the tally-blanks and so arranged that the exact amount of lumber tallied upon a line is shown by the figures directly below the last blank filled, and a marginal blank for carrying out the sum of all the tallies made upon the sheet, substantially as and for the purpose set forth.

445,509. POCKET-KNIFE. CLIFFORD P. THAYER, Holbrook, Mass. Filed Apr. 3, 1890. Serial No. 346,460. (No model.)

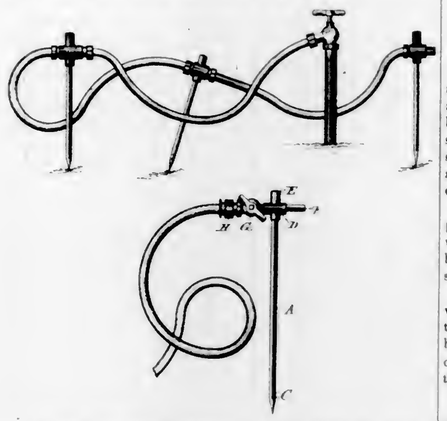


Claim.—In a clasp-knife, a lifting or opening device comprising, essentially, two parallel pivoted plates connected by a transverse section and terminating at one end in any device suitable for an outside finish, substantially as shown and described.

445,510. AGRICULTURAL IMPLEMENT FOR IRRIGATING. STEPHEN S. BLACK, Pasadena, Cal. Filed Mar. 28, 1890. Serial No. 345,780. (No model.)

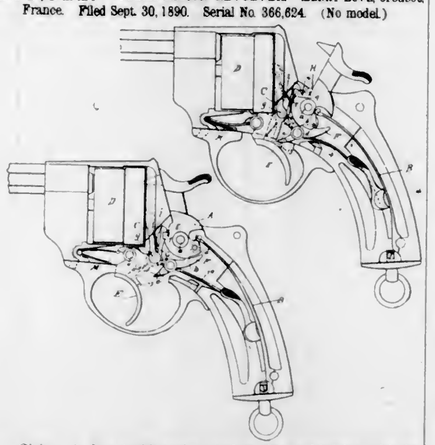
Claim.—1. The portable irrigating implement set forth, comprising the combination of a hose, stop-off cock, cross, and pointed tubular needle provided with eyes communicating with its bore near the point.

2. In a portable irrigating implement, the combination, with a line of hose, of hollow pointed metallic needles, each perforated into the bore near its point and each provided with a cross on its proximal end adapted to be secured water-tight in a line of hose.



3. The combination, in a portable irrigating implement, of a hollow pointed metallic needle and cross, said cross being provided with a solid extension in a direction opposite to that occupied by the needle for the purpose of receiving blows, substantially as set forth.

445,511. DOUBLE-ACTION REVOLVER. HENRY LOVE, Creusot, France. Filed Sept. 30, 1890. Serial No. 366,624. (No model.)



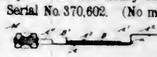
Claim.—1. In a double-action revolver, the combination, with the hammer, the trigger, the sear, and devices for raising the hammer by the motion of the trigger until caught at full-cock by the sear, of a movable spring-mounted tripper carried by the trigger and disposed in the plane of the sear so as to trip the same upon a further motion of the trigger, substantially as described.

2. The combination of the hammer, the trigger, the lifter carried by the trigger and engaging with the hammer, the sear, and the tripper pivoted to the trigger and adapted to trip the sear by further motion of the trigger after the hammer has been set at full-cock, substantially as described.

3. The combination, with the hammer, trigger, and sear, of the lifter carried by the trigger, and the sear-tripper pivoted to said trigger and adapted to move the lifter out of engagement with the hammer before tripping the sear, substantially as described.

4. The combination, with the hammer, trigger, and sear, of the lifter and its spring, the tripper pivoted on the trigger, and the tripper-spring arranged to press the tripper toward said sear and lifter when the hammer is cocked, said spring having greater strength than the lifter-spring, the tripper being arranged to come in contact with the lifter and hold it away from the hammer before tripping the sear, substantially as described.

445,512. CUFF-FASTENER. LOUIS A. NEGRAVAL, Jersey City, N. J., assignor to Henry C. Frank and Henry Gutmann, New York N. Y. Filed Nov. 7, 1890. Serial No. 370,602. (No model.)

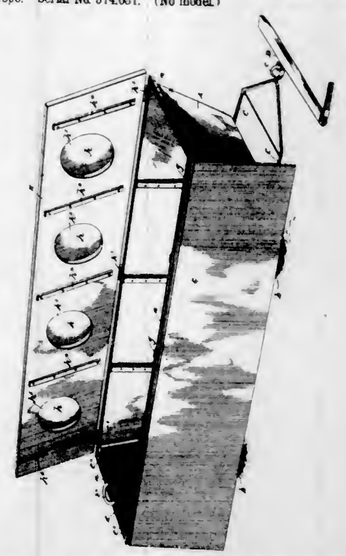


Claim.—1. In a cuff-fastener, the body A, having an offset A' and point of extension A^2, substantially parallel with the part A, adapted to be thrust partially through the button-holes of a cuff and having a clasp M on the rear end, in combination with a slide B and suitable guiding means therefor, adapted when thrust forward to present its point parallel with the point upon the opposite side of the cuff, and thus firmly lock the device to the cuff while the clasp holds the device to the shirt-sleeve, all substantially as herein specified.

2. In a cuff-fastener, the body A, with offset A', having hole *a*, point A^2, lips A^3, and pivot A^4, in combination with the clasps M and with the slide B, guided within the lips A^3 and playing through the hole *a* and having an operating catch or handle B', all arranged to serve substantially as herein specified.

3. The slide B, formed tapering, as described, in combination with the body A, having the hole *a*, and the lips A^3, adapted to arrest the slide by friction at the outward extreme of its movement, and having the offset A', point A^2, and clasps M, all arranged for joint operation relatively to each other and to a cuff and sleeve, substantially as herein specified.

445,513. PORTABLE DRY CLOSET. WILLIAM H. POWELL, Washington, D. C., assignor to David P. Wolhaupter, same place. Filed Dec. 9, 1890. Serial No. 374,031. (No model.)



Claim.—1. In a dry closet, a portable tank, a top provided with seat-openings detachably connected to said tank, and a cover designed to inclose the top of the same after the removal of said detachable top, substantially as set forth.

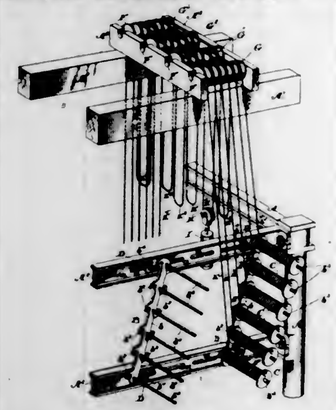
2. In a dry closet, a portable tank, a detachable top provided with seat-openings secured to the tank, and a cover permanently hinged to said tank and designed to cover the top of the same after the removal of said detachable top and to be swung down for use as a footboard when said top is in position, substantially as set forth.

3. In a dry closet, a portable tank, a sliding end gate working within the tank at one end, a detachable top provided with seat-openings secured to the tank by sliding hinges, and a cover permanently hinged to said tank and designed to cover the top of the same after the removal of said detachable top, substantially as set forth.

4. In a dry closet, a tank formed of sections of sheet metal riveted together and mounted on wheel-carrying axles, draft-bars pivotally secured to the forward axle, a sliding end gate working in a groove

within the tank at one end, said groove being formed by parallel strips firmly secured to the inner sides and bottom of the tank, a detachable top provided with seat-openings attached to the tank by sliding hinges, and a cover permanently hinged to said tank and designed to cover the top of the same after the removal of said detachable top, and to be swung down as a foot-board when said top is in position, substantially as set forth.

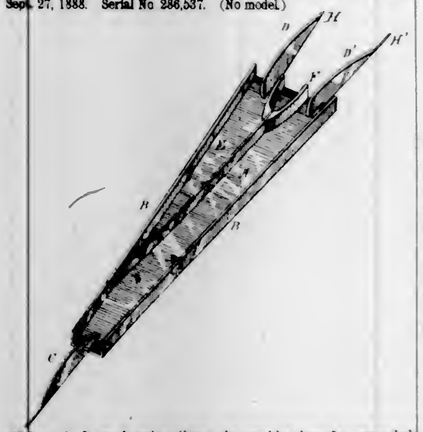
445,514. SPOOL-HOLDING BRACKET FOR LOOMS. OTTO W SCHAUM, Philadelphia, Pa., assignor to Schaum & Uhlinger, same place. Filed Mar. 17, 1890. Serial No. 344,061. (No model.)



Claim.—1. As a new article of manufacture, a spool-bracket B, having spool-holding rods b^2 projecting from its center, its breadth less than that of the spool-heads, and detents upon each side thereof to engage a pin projecting from the spool-head, all substantially as and for the purpose specified.

2. As a new article of manufacture, a spool-bracket B, having spool-holding rods b^2 projecting from its center, its breadth less than that of the spool-heads, detents upon each side thereof to engage a pin projecting from the spool-head, and slotted lugs b^4 extending from each end, all substantially as and for the purpose specified.

445,515. CONDUCTOR-SWITCH FOR ELECTRIC RAILWAYS. FRANK J. SPRAGUE and JORAN F. S. BRANTH, New York, N. Y. Filed Sept. 27, 1888. Serial No. 286,537. (No model.)



Claim.—1. In an electric railway, the combination of a suspended conducting-wire which receives an upward pressure from traveling grooved contact-wheels, a branch wire, and a switch-plate at the junction for receiving the upward thrust of the contact-wheels, said switch-plate having a movable deflecting-rib for guiding the contact-wheels across its surface, substantially as set forth.

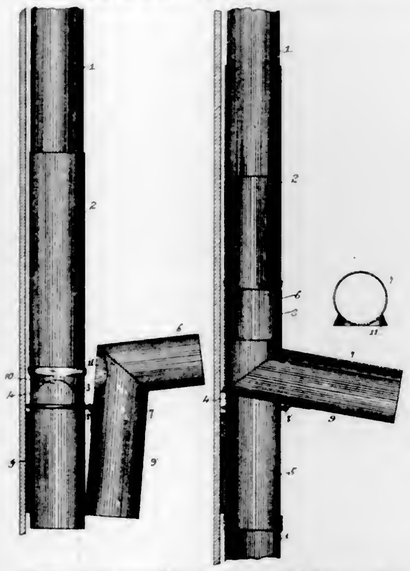
2. In an electric railway, the combination of a suspended conducting-wire which receives an upward pressure from traveling grooved contact-wheels, a branch wire, and a switch-plate at the junction for receiving the upward thrust of the contact-wheels, said switch-plate having side ribs and a movable central rib for guiding the contact-wheels across its surface, substantially as set forth.

3. In an electric railway, the combination of branching conductors on which a contact device travels, and a switch-plate at the junction of said conductors, across whose surface said contact device moves, said switch-plate having depressing-ribs at its extremities and a movable deflecting-rib, substantially as set forth.

4. In an electric railway, the combination of branching conductors on which a contact device travels, and a switch-plate at the junction of said conductors, across whose surface the contact device moves, said plate having central ribs at its extremities and a movable deflecting-rib, substantially as set forth.

5. In an electric railway, the combination of branching conductors on which a contact device travels, and a tapering switch-plate at the junction of said conductors, across whose surface the contact device moves, said plate having side ribs, depressing-ribs at its extremities, and a movable deflecting-rib, substantially as set forth.

445,516. CONDUCTOR CUT-OFF. ELBRIDGE G. WEST, Canandaigua, N. Y., assignor of one-half to Alasco C. Robison, same place. Filed Aug. 8, 1890. Serial No. 361,431. (No model.)



Claim.—1. In a cut-off, the combination, with the supporting-pipe having a sliding section, of the cistern-pipe having its upper end provided with curved edges forming a seat, and the angle-elbow composed of straight sections, one of the sections being hinged intermediate its ends to one side of the seat, whereby the elbow is adapted to rest on the seat and close the top of the cistern-pipe, substantially as described.

2. In a cut-off, the combination of the cistern-pipe having its upper end provided with a seat, the elbow hinged to the cistern-pipe and adapted to rest in the seat and having flanges 11, and the supply-pipe having the sliding section adapted to engage either the elbow or the upper end of the cistern-pipe, substantially as and for the purpose described.

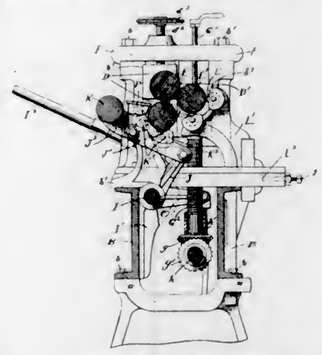
445,517. TUBE-MAKING MACHINE. THOMAS C. BELDING, Canton, Ohio, assignor to the Canton Steel Roofing Company, same place. Filed June 13 1890. Serial No. 355,317. (No model.)

Claim.—1. In a metal-forming machine, the combination of forming-rolls E E, the adjustable forming-roll E', the sliding bracket L', carrying the roll, the swinging roll or bar K, located at the entering side of the machine, and the operating-levers I^3, substantially as and for the purpose specified.

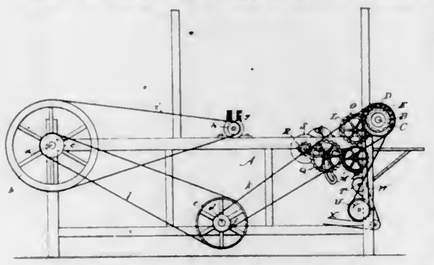
2. The combination of the shaft I, having attached thereto the operating-levers I^3 and the arms J, the connecting-links J' and J^3, and the swinging roll K, substantially as and for the purpose specified.

3. The combination of the shaft I, having attached thereto the arm J, the connecting-links J' and J^3, the swinging roll K, the counter-weight M, the bar N, fulcrumed at or near its center, the link N^3, and the arm O, attached to the shaft I, substantially as and for the purpose specified.

4. The combination, with the rolls E, the forming-roll E', and the roll-carrying bracket L', of the vertical screws G G^3, operating on the forming-roll and the bracket, and the shaft A, rotating said screws through bevel-gear g g', substantially as described.

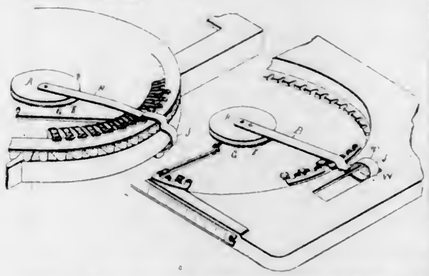


445,518. PAPER-RULING MACHINE. LUCIUS S. BIGELOW, Harrisburg, Pa. Filed May 21, 1890. Serial No. 352,631. (No model.)



Claim.—The combination, with the frame of a ruling-machine and a high-speed motor mounted adjacent thereto, of a pen-cylinder and lower feed-rolls mounted on said frame, a power-pulley B and a shaft therefor on said frame, a driving-pulley D, belted to the said lower feed-rolls, a driving-gear E, geared to said pen-cylinder through speed-conveying gearing, a clutching device connecting the said pulley D and gear E and adapted to clutch with and unclutch from the said pulley B, and speed-reducing pulleys mounted on said frame and belted together to the pulley B and to said motor.

445,519. TYPE-CLEANER FOR TYPE-WRITING MACHINES. WILLIAM S. BOYD, Washington, D. C. Filed June 14, 1888. Serial No. 277,157. (No model.)



Claim.—1. The combination, with a type-writing machine having its type arranged to strike at a common point, of a circular cleaner secured thereto with its center at one side of said common point and having its periphery extending beyond said point, substantially as described.

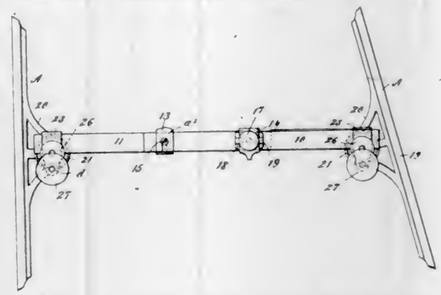
2. The combination, with a type-writing machine having its type arranged to strike at a common point, of a flat circular cleaner secured thereto, having the cleaning material annularly arranged around the periphery upon the under side, the cleaner being pivotally secured with its center to one side of the common point, whereby some portion of the cleaning material is over the common point at all times when the cleaner is being used, substantially as described.

3. In a type-cleaner for writing-machines, the combination, with a flat handle having a flat curved clamping-hook at one end, of a circular rotary cleaning device at the opposite end, substantially as described.

4. In a type-cleaner for writing-machines, the combination, with a flat handle having a transverse crease near one end and the portion beyond the crease formed into a flat curved clamping-hook, of a rotary cleaning device pivotally secured to the opposite end, substantially as described.

5. In a type-cleaner for writing-machines, the combination, with a flat handle having a flat curved clamping-hook at one end and a hole in the opposite end, of a shouldered rivet, and a rotary cleaning device pivotally secured upon the rivet, substantially as described.

445,520. BEVEL. ALFRED M. BROWN, Worcester, Mass. Filed Apr. 10, 1890. Serial No. 347,334. (No model.)



Claim.—1. In an implement of the character described, the combination, with the two bars 10 11, overlapping at their inner ends and provided near their outer ends with notches 12 12, of the U-shaped clip 13, embracing the two bars and having a lip a^3 on the forward end of its lower member and a slot in its upper member, a screw 15, extending from the bar 10 through said slot, a second similarly-formed clip 14, the lower member of which is slotted and the upper member provided with a lip b^3 and a vertical set-screw 17, the screw 16, passing through said slot into bar 11, and the plate 18 between the upper face of the bar 10 and the inner face of the member b', and having fingers 19 19, holding it to said member b', substantially as set forth.

2. The combination, with the two bars adjustably connected at their inner ends, of the bevel-arms at the ends thereof, each having a central disk 21, the upper and lower channeled tie-plates 23 24, embracing the ends of said bars, a screw 25, passed through the disks and each pair of tie-plates, and a set-screw 27, passed down through the upper tie-plate of each pair parallel with screws 25 and bearing on the lower tie-plates to bind them to the disks 21, substantially as set forth.

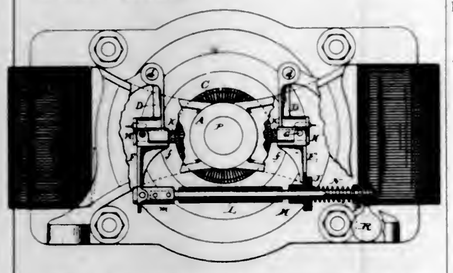
3. The combination, with a bar, of a bevel-edge A, provided with a central disk 21 on its rear edge, having an annular flange 22 on its upper side, channeled tie-plates embracing the bar, the lower of the two plates resting on said flange 22, a screw passing through the said disk and plates, and a second screw 27, passed down through the upper tie-plate and bearing at its lower end on the other plate to bind it to the said flange 22, substantially as set forth.

4. An implement of the character described, consisting in two bars adjustably connected at their inner ends and each having a gage-notch 12 in its forward edge, bevel-edges A A, having central pivot-apertures, channeled tie-plates embracing the ends of the bar, pivot-screws passed through said apertures, notches 12, and the tie-plates, and the adjusting-screws passed through the outer tie-plates and bearing at their inner ends on the lower tie-plates to bind them against the bevel-edges, substantially as set forth.

5. In a tool of the character described, the combination, with the bar, of channeled tie-plates contacting with the upper and lower faces of the bar, the upper tie-plate being provided with a recess and the lower plate with a spring-surrounded stud adapted to enter the recess, a set-screw held to turn in the upper plate and contact with the lower plate, a bevel-arm having one straight edge and a rear central extension, a screw having one of its sides flattened passed through the extension of the bevel-arm, the upper and lower tie-plates, and in con-

tact with the bar, and a lock-nut located upon the upper projecting end of said screw, as and for the purpose specified.

445,521. COMMUTATOR-BRUSH HOLDER FOR ELECTRIC MOTORS. GEORGE H. CONDICT, Philadelphia, Pa., assignor to the Electric Car Company of America, of Pennsylvania. Filed Apr. 18, 1890. Serial No. 348,450. (No model.)



Claim.—1. The combination of a commutator, two brush-holders movable to or from the commutator, a screw-threaded tension-rod for drawing said brush-holders toward each other, and an adjusting-nut provided with a weight whereby said nut may be maintained in any predetermined position upon the rod and be unaffected by the jarring of the machine.

2. The combination of a commutator, two brush-holders movable to or from the commutator, a screw-threaded tension-rod for drawing said brush-holders toward each other, an adjusting-nut provided with a weight whereby said nut may be maintained in any predetermined position upon the rod and be unaffected by the jarring of the machine, and a spring arranged between the nut and one of the brush-holders.

3. The combination of the commutator with two brush-holders, hinged to the frame of the machine and having their free ends connected through a rod and spring, and an adjusting-nut acting upon the spring and provided with a weighted portion to prevent its being rotated when jarred.

4. The combination of the commutator with two brush-holders, hinged to the frame of the machine and having their free ends connected through a rod and spring, an adjusting-nut acting upon the spring, provided with a weighted portion to prevent its rotating when jarred, and an insulating-sleeve inclosing said rod below the commutator.

5. A commutator-brush consisting of a primary part hinged to the frame of the machine, a secondary part hinged to said primary part and provided with a jaw or clamping portion adapted to act in conjunction with said primary part to clamp the commutator-brush when said secondary part is moved toward the commutator, and a spring device acting upon the outer portion of the secondary part to cause said secondary part to clamp the commutator-brush and move it toward the commutator.

6. The combination of a commutator with a brush-holder consisting of a primary part hinged so as to be movable to or from the commutator and formed with a socket at its lower portion to receive the commutator-brush, a secondary part hinged to said primary part and provided with a jaw or projection extending toward the commutator and adapted to clamp the commutator-brush and held in the socket of the primary part, and a spring acting upon said secondary part to move it toward the commutator.

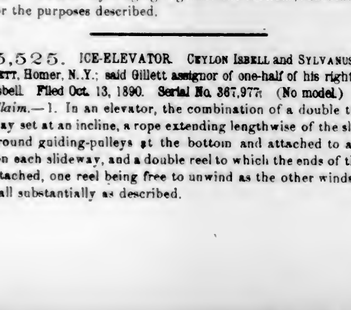
7. The combination of a commutator with a brush-holder consisting of a primary part hinged so as to be movable to or from the commutator and formed with a socket at its lower portion to receive the commutator-brush, a secondary part hinged to said primary part and provided with a jaw or projection extending toward the commutator and adapted to clamp the commutator-brush and hold it in the socket of the primary part, and a removable shutter carried by the brush-holder adapted to form an obstruction to the outer or rear portion of the socket of the primary part to prevent the escape of the commutator-brush.

8. The combination of a commutator with a brush-holder consisting of two parts loosely connected together and forming between them a socket portion for receiving and holding the commutator-brush, a support for one end of one of said parts, and a tension device acting upon the opposite end of the other part, whereby the said portions of the commutator-brush holder simultaneously act to clamp and hold the brush and feed it against the commutator.

9. A brush-holder for an electric motor or dynamo-electric machine, consisting of a primary part D, having a socket portion, combined with a secondary part F, hinged thereto at G and provided with a clamping-jaw *f*, and a loosely-connected shutter H, carried by the primary part and movable so as to expose the socket portion from the rear for the insertion or removal of the commutator-brush.

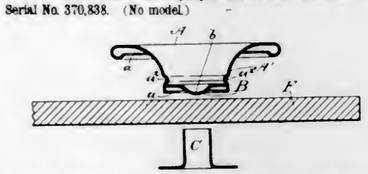
10. A commutator-brush holder consisting of two parts hinged together and having their adjacent portions formed with flattened surfaces for the purpose of receiving and clamping the commutator-brush, in combination with a tension device acting upon said brush-holder to cause said parts to clamp the brush and move the brush-holder as an entirety toward the commutator.

445,522. VENTILATOR-CAP. JOHN DELLINGER, Buffalo, N. Y., assignor to Harry C. Albro, same place. Filed Dec. 9, 1889. Serial No. 333,063. (No model.)



Claim.—In a ventilator-cap, the combination of the cap 1, interior lugs 2, each having a notch or offset 3, strap-iron connecting-pieces 6, and the pipe 7, the connecting-pieces 6 connecting with the cap and with the pipe by passing down through it and terminating in the hook-shaped portion 8, which turns up over the lower edge of the pipe, substantially as described.

445,523. BUTTON. FRANK R. HALL, Newton, Mass., assignor to the Consolidated Fastener Company, Portland, Me. Filed Nov. 10, 1890. Serial No. 370,838. (No model.)



Claim.—A button provided with a button head and shank made in one piece, said head and shank piece having an inwardly-turned retaining-flange a' next the material and a rolled-in shoulder a^3 in the shank thereof, in combination with a separate flanged anvil-piece B within said shank, and a flanged clinching-eyelet C, substantially as described.

445,524. SAMPLE-EXHIBITING BARREL-COVER. HENRY J. HEINZ, Sharpsburg, and ROBERT HOFFMAN, Pittsburg, Pa. Filed Feb. 6, 1889. Serial No. 298,826. (No model.)

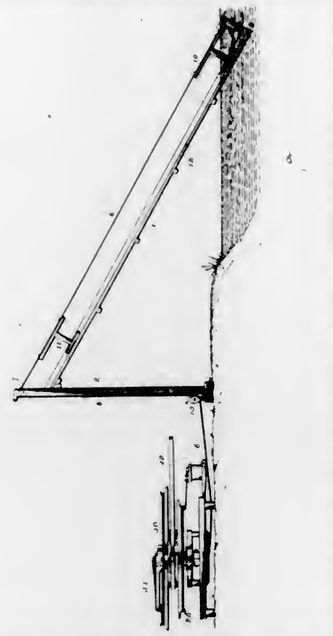


Claim.—The sections 2 and 3, having depending flanges or lugs 4, one of the sections being provided with a sample-exhibiting cavity, the meeting edges of the sections overlapping, and the loops 7 and hooks 8 for detachably hinging together the sections, substantially as and for the purposes described.

445,525. ICE-ELEVATOR. CEYLON ISBELL and SYLVANUS M. GILLETT, Homer, N. Y.; said Gillett assignor of one-half of his right to said Isbell. Filed Oct. 13, 1890. Serial No. 367,977. (No model.)

Claim.—1. In an elevator, the combination of a double track or slideway set at an incline, a rope extending lengthwise of the slideway and around guiding-pulleys at the bottom and attached to a car or crab on each slideway, and a double reel to which the ends of the rope are attached, one reel being free to unwind as the other winds on the rope, all substantially as described.

2. The combination, with an elevator-way of the character described, of a winding device consisting, essentially, of two reels on a vertical axis, a sweep between the reels, and a clutch connected to the sweep in position to engage one or the other of the reels, substantially as described.

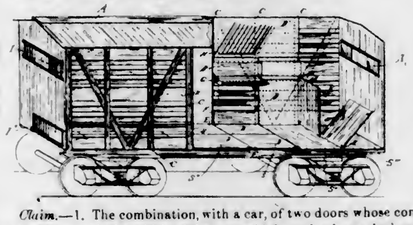


3. The combination, with an elevator-way of the character described, of a winding device consisting of two reels and an intermediate sweep, and a turn-button pivoted on the sweep and having an abutment above and below in position to engage one or the other of the reels, substantially as described.

4. The combination, with the elevator having a double way and an elevator-rope, as described, of the winding device consisting of a double reel and intermediate sweep on a hollow central axle, one end of the rope being wound on the lower reel by direct engagement, the other rope end passing up through the axle and out to the outside of the upper reel, substantially as described.

5. The inclined way, the horse-power having a hollow central post and two reels and a sweep pivoted thereon, a rope connected to one reel and extending around guide-pulleys to a crab on the way, thence around pulleys and so back to the horse-power, thence through the central post and out a bar to the outside of the second reel, and a clutch on the sweep in position to couple the sweep to one reel, but not to both at the same time, all substantially as described.

445,526. RAILROAD FREIGHT-CAR. JOHN C. KENNEY, St. Louis, Mo., assignor of one-half to Edwin G. Merriam, same place. Filed May 20, 1890. Serial No. 352,455. (No model.)



Claim.—1. The combination, with a car, of two doors whose combined width equals the width of the car, said doors having swivel-connections with the sides of the car, whereby they may be arranged vertically and horizontally to form either a false bottom or partitions in said car, substantially as and for the purposes described.

2. The combination, with a car having slatted sides, of a series of doors and swivel-connections between said doors and the sides of the car, whereby said doors may be arranged vertically and longitudinally and vertically and transversely in the car, substantially as and for the purposes described.

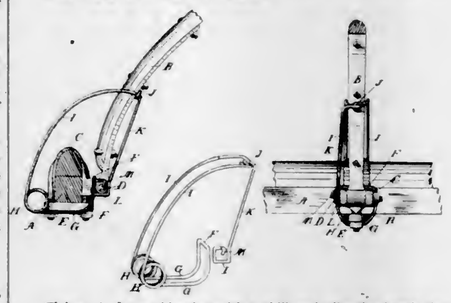
3. In a freight-car, the combination, with the open or slatted sides, of a series of upper and lower doors whose combined width equals the slatted portion of the car, the combined width of the lower doors being equal to the width of the car, and two sets of swivel-bolts and eyes in the sides of the car, to which the inner edges of the doors are hinged, whereby said car may be divided into a series of compartments or stalls, substantially as and for the purposes described.

4. In a freight-car, the combination, with the open or slatted sides, of a series of upper and lower doors whose combined width equals the slatted portion of the car, the combined width of the lower doors being equal to the width of the car, two sets of swivel-bolts and eyes for the lower doors arranged at the sides of the car, to which said doors are detachably secured through the medium of hinges on their inner edges, whereby said car may be divided into a series of compartments or stalls, and a series of slatted sections hinged at one edge to the top of the car and adapted to be connected at their opposite edge to the sides of the car at an angle thereto, substantially as and for the purposes described.

5. In a railroad freight-car, the combination of a car constructed as a cattle-car, with lower flaps secured to the lower edge of the sides of the car by hinges with removable pintles and forming a false bottom to the car, upper flaps hinged to the upper edges of the sides of the car in such a manner as to drop to the sides of the car, frames secured by hinges to the roof of the car and capable of being swung and secured to the sides of the car, forming feeding-racks, semicircular troughs secured to the sides of the car in such a manner as to permit them to be lowered to a horizontal position for watering the cattle, and jointed supporting-rods for the troughs, substantially as and for the purposes described.

6. In a freight-car, the combination, with the open or slatted sides, of a series of upper and lower doors whose combined width equals the slatted portion of the car, swivel-bolts and eyes arranged on the sides of the car, a series of slatted sections hinged at one edge to the top of the car, to which said doors are hinged at their inner edges and adapted to be connected at the opposite edges with the side of the car at an angle thereto, and a series of removable water-troughs pivoted to the sides of the car, substantially as and for the purposes described.

445,527. COMBINED ANTI-RATTLER, NUT-LOCK, AND THILL-SUPPORT. ALBERT J. GIDDINGS, Grand Rapids, Mich. Filed Nov. 16, 1889. Serial No. 330,464. (No model.)



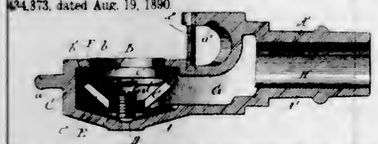
Claim.—1. In combination with a thill and clip, the herein-described combined anti-rattler, nut-lock, and support for thills, consisting of the loop F, adapted either to embrace the shank of or be inserted between the jaws of the clip, substantially as described, parallel parts G G, springs H H, parallel curved parts I I, and hooks J, arranged substantially as and for the purpose set forth.

2. In combination with a thill and clip, an anti-rattler and thill-support composed of a single piece of wire bent near its center to form a loop, adapted to be arranged between the clip and bolt, and having short parallel arms arranged underneath and extending to the rear side of the axle-springs H H, arranged at the rear end of said short arms and in the rear of the axle, and arms I I, extending from the springs upward and over the axle and attached to the thill at their upward and forward ends, substantially as and for the purposes set forth.

3. In combination with a thill-clip and axle, an anti-rattler and thill-support constructed of spring-wire or other suitable material, having a loop, as F, arranged in front of the axle, parallel parts, as G G, arranged underneath the same, springs, as H H, arranged at the rear of the same, parallel arms, as I I, projecting over the same from rear to front, hooks J, arm K, and loop L, and point M, all arranged substantially as described, and for the purposes specified

REISSUES.

11,141. AIR-BRAKE HOSE-COUPLING. AMARIAH W. JACKSON, Chicago, Ill. Filed Sept. 5, 1890. Serial No. 364,073. Original No. 434,373, dated Aug. 19, 1890.



Claim.—1. The combination, in a hose-coupling, of a compressor for a gasket or packing located within the chamber of the coupling-shell and having a bearing-face to impinge against the wall of the gasket or packing, and an adjuster having screw-threaded engagement with the compressor for advancing and receding the compressor within its chamber and have the advance of the compressor force and tightly close the gasket or packing circumferentially around its opening, substantially as and for the purposes specified.

2. The combination, in a coupling, of a coupling-shell, a chamber in such shell, a port communicating with the chamber, a gasket or packing entering and located circumferentially around the port, a compressor located in the chamber and having an acting face to engage the wall of the gasket or packing within the chamber-shell, and an adjuster having screw-threaded engagement with the compressor to advance and recede the compressor in its chamber for removing, inserting, and tightly closing the gasket or packing circumferentially around the port without removal of the compressor or the wall of its chamber, substantially as specified.

3. The combination, in a coupling, of a connecting-port, a gasket or packing for such port having a wall entering the port and a wall circumferentially around the port on the inside, a compressor having an acting face to engage the inside wall of the gasket or packing at all points, and an adjuster having a positive engagement with the compressor for both advancing and receding the compressor within the walls of the coupling without moving the bearing-wall of the adjuster, substantially as and for the purposes specified.

4. The combination, in a hose-coupling for air and steam, of a gasket-compressor having an annular acting rim bearing against the entire circumferential face of the gasket, with bracing-arms from the rim to a center or hub, and a screw-threaded adjuster coacting with said hub for advancing and receding the compressor-rim with the movements of the adjuster for removing, inserting, and compressing a gasket or packing without removing the wall of the coupling-shell, substantially as and for the purposes specified.

5. The combination, in a hose-coupling, of a gasket-compressor having an annular acting face with a center or hub carrying the acting face, and an adjuster passing through and having screw-threaded engagement with the center or hub and bearing against the back wall of the coupling-shell for advancing and receding the compressor and inserting, removing, and tightly closing a gasket or packer peripherally around its port, substantially as specified.

6. The combination, in an air-brake hose-coupling, of the gasket-compressor C, having an annular rim with arms connected therewith converging to a hub at an angle, forming a cone, with an adjuster-screw D fitted in said hub with its head on the concave side, its point resting against the inner back of the shell A, and the rim pressing the gasket B up against the under side of the port, substantially as described.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

ZEIDLER *et al. v.* LEECH *et al.*

Decided January 19, 1891.

1. MOTION TO DISSOLVE FOR WANT OF INTERFERENCE IN FACT—APPEAL.

The appeal from a decision of the Primary Examiner denying a motion to dissolve on the ground that no interference in fact exists lies directly to the Commissioner and not to the Examiners-in-Chief. (Rule 124.)

2. SAME—QUESTION RAISED BY SUCH MOTION.

The only question raised by a motion to dissolve for want of interference in fact is whether an interference in fact exists between allowable claims, and the only inquiry arising on such a motion is one which assumes that the claims are allowable.

3. SAME—WHAT THE EXAMINER DECIDES ON SUCH MOTION.

The question presented by such motion cannot be transformed into any other question by *obiter dicta* contained in the decision of the Primary Examiner; neither can the appellate jurisdiction be deflected by reasons of appeal which are not warranted by the nature of the question presented by the motion. In other words, the Examiner decides nothing but the question raised by the motion, and the appeal brings up nothing for review but the decision and the motion decided.

4. SAME—RULE 124 (3) CONSTRUED.

Questions involving "the merits of an invention" are questions concerning the meritorious or unmeritorious attitude of an alleged invention to the antecedent rights of the public; or, in other words, questions other than questions of "form" arising between the applicant and the Office. The presence in Rule 124 of the words quoted means no more than that the questions which go the Examiners-in-Chief, when they arise *directly* under Rule 133, go to the same tribunal when they arise *collaterally* under Rule 124.

5. SAME—RULE 124 CONSTRUED.

All appeals in which, under the rule, the party only "whose claim is affected" has a right to be heard lie to the Examiners-in-Chief, and if decided adversely by them, to the Commissioner, and if by him decided adversely, to the Supreme Court of the District of Columbia. All appeals from the Examiner's decision upon motions to dissolve upon which both parties have the right to be heard go directly to the Commissioner, and from his decision there is no further appeal.

IN the matter of the reference by the Examiner of Interferences for instructions relative to the decision rendered by the Examiners-in-Chief on the 15th of December, 1890, on an appeal taken by Zeidler and Waltmann from the decision of the Primary Examiner denying their motion to dissolve the interference entitled "*Zeidler and Waltmann* v. *Leech and Fogle*."

Messrs. J. B. Crallé & Co. for Zeidler and Waltmann.

Messrs. C. A. Snow & Co. for Leech and Fogle.

MITCHELL, *Commissioner:*

On the 1st day of September, 1890, Zeidler and Waltmann filed a motion to dissolve this interference in the following language:

The junior party to the above-mentioned interference hereby moves the dissolution of the interference herein declared on the ground that no interference in fact exists. (Rule 122.)

The Primary Examiner denied the motion. On the 10th of October an appeal was taken to the Examiners-in-Chief in the following language:

In the matter of the interference proceeding of *Zeidler and Waltmann* v. *Leech and Fogle*, No. 14,609, the applications hereto subscribed, hereby appeal to the honorable Board of Examiners-in-Chief from the decision of the Primary Examiner, dated September 27, 1890, denying a motion made by them for a dissolution of the interference, on the ground that no interference in fact exists.

The appellants say that the said decision is based on errors of fact, which a comparison of the respective inventions on a hearing will develop. They therefore pray to be accorded such hearing, and transmit ten dollars for such purpose.

The Examiners-in-Chief affirmed the decision of the Primary Examiner refusing to dissolve the interference, holding that the claims of the respective applications "being identical in invention" there was an interference in fact. The following language from the opinion discloses the supposed authority in the rules for entertaining the motion on appeal:

Since the decision of this appeal requires a decision whether the inventions are the same in patentable merit, the appeal falls into the third class of motions appealable to this board, namely, those "involving the merits of the invention."

January 10, 1891, the Examiner of Interferences referred the case to the Commissioner for instructions, saying:

As no limit of appeal was set by the board, I am in doubt as to what action I should take in the premises.

The question apparently assumes that if the board had jurisdiction it was because the decision of the Primary Examiner was adverse to the *ex parte* rights of an applicant and that the judgment below having been affirmed, the decision on appeal must necessarily be of the same character as the original decision, so that if the first appeal was permissible a second appeal to the Commissioner is equally within the rules.

Should the Examiner of Interferences proceed to determine the question of priority or should he await a further appeal to the Commissioner?

Interferences are only declared when the invention specified in the rival claims has been found to be patentable. In *ex parte Lombard* (C. D., 1888, 56, 43 O. G., 1347) Mr. Commissioner Hall said:

Section 4904 requires an interference to be declared whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any other pending application. When, in his opinion, no such interference exists, such declaration is not required. Undoubtedly the interference may, *prima facie*, appear upon the face of the two applications. The patentability of the invention is first ascertained, and the statute has always been construed as referring to applications whose inventions were recognized and held by the Office to be patentable, and interferences are only declared after such determination.

Rule 93 defines an interference as—

a proceeding instituted for the purpose of determining the question of priority of invention between two or more parties claiming substantially the same patentable invention.

Rule 95 provides that before a—

declaration of interference * * * the invention which is to

form the subject of the controversy must be decided to be patentable.

The word "patentable" as employed in the above rules is used in the broad sense of allowable, the underlying principle being that until a claimed invention is held to be allowable as against the public it is not in proper condition to be the basis of an interference. When the "merits of the invention" have been favorably passed upon, the Primary Examiner, acting for the Commissioner, declares an interference if two or more applications or applications and patents contain conflicting claims for that invention. The interference having been declared, if either party is dissatisfied therewith he is permitted at the proper time to file a motion to dissolve. Among the more frequent of these motions are motions to dissolve for want of interference in fact, and motions which deny the allowability, for some stated reason, of the claims or of some of them. Motions to dissolve for want of interference in fact conclusively assume that the claims are allowable, but challenge in terms the existence of a conflict between them; the other class of motions mentioned conclusively assume a conflict, but challenge in terms the patentability of the claims or the right to make them or raise some question involving the merits of the invention. In disposing of the first class of motions the appellate jurisdiction of the Examiners-in-Chief is not involved, because, the application being allowable, their full appellate function has either been discharged or has not been invoked by reason of the favorable action of the Primary Examiner. When, however, a motion of the other class is made, the *ex parte* rights of the applicant whose claims are challenged are again brought into question, and the jurisdiction of the Examiners-in-Chief is brought into requisition in the event of an unfavorable decision by the Primary Examiner. When a motion to dissolve is based upon the alleged absence of interference in fact, the appeal is directly to the Commissioner, in order that he may give expression to that opinion upon which the question of interference in fact must turn, if the statute (section 4904) is to be regarded. Such a motion conclusively assumes the allowability of the invention specified in the rival claims, and therefore no statutory jurisdiction of any other tribunal of the Office is encroached upon by his appellate action. The Commissioner simply decides that, assuming the claims to be allowable, there is or is not an interference in fact, as the case may be. He assumes that if either party is dissatisfied with the action of the Office upon the question of patentability or the right to make the claims, or any question of merits, the proper motion to raise that question will be filed, and that when filed it will be decided in due course by the proper tribunals having original or appellate jurisdiction.

Of course on motions to dissolve for want of interference in fact the prior art is sometimes considered for purposes of construction, explanation, or illustration, just as in a court the claim is read in the light of the prior art when its validity is not put in issue. The question directly involved in the motion is whether the claims, lawfully construed, conflict or do not conflict. Nor can the question thus presented be transformed into any other question by *obiter dicta* contained in the decision of the Primary Examiner. (*Von Welsbach* v. *Lungren*, 48 O. G., 537.) Nor can the appellate jurisdiction be deflected by reasons of appeal which are not warranted by the nature of the question presented by the motion. If the motion to dissolve is made on the ground of want of *de facto* interference and the Examiner attempts to decide some question relating to the merits, appeal will nevertheless lie to the Commissioner, who, unless he elects to exercise his supervisory jurisdiction, will refuse to inquire whether the claims are allowable or not allowable, and will decide the question of interference in fact between the claims as they have previously been pronounced patentable by the proper tribunals of the Office. So if the motion is a motion to dissolve for want of patentability or for want of right to make the claims or for any question affecting the merits, and the Examiner attempts to decide some question not germane to the motion, such attempt in no way affects the course of the appeal, which lies, on the part of the party whose claim is unfavorably affected, to the Examiners-in-Chief, because the question raised by the motion is cognizable on appeal in the first instance by them. In the present case the only question raised by the motion is whether an interference in fact exists between allowable claims, and the only inquiry before the Examiner on such a motion is one which assumes that the claims are allowable, and the only appeal is directly to the Commissioner.

A critical examination of Rule 124 affirms the conclusion thus reached. That rule provides that all appeals shall be taken directly to the Commissioner from the decision of the Primary Examiner on all motions excepting three classes specified, the first class being motions which deny patentability, the second class motions which deny the right to make the claim, and the third class being all other motions "involving the merits of the invention." Questions involving "the merits of an invention" are questions concerning the meritorious or unmeritorious attitude of an alleged invention to the antecedent rights of the public; or, in other words, questions other than questions of "form" arising between the applicant and the Office. The same words which are found in Rule 124, to wit, "involving the merits of the invention," are found in Rule 133 governing the jurisdiction of the Examiners-in-Chief on appeals from the Examiner. That rule (133) provides that—

> every applicant for a patent, any of the claims of whose application have been twice rejected for the same reasons, upon grounds involving the merits of the invention, * * * may, upon payment of a fee of ten dollars, appeal from the decision of the Primary Examiner to the Examiners-in-Chief.

I think that there can be no room whatever for doubt that the same words in both rules refer to the same subject-matter of inquiry and that their presence in Rule 124 means no more than that the questions which go to the Examiners-in-Chief when they arise *directly* under Rule 133 go to the same tribunal when they arise *collaterally* under Rule 124. It is because "questions involving the merits of the invention" are *ex parte* questions arising between the applicant and the public that upon appeals to the Examiners-in-Chief under Rule 124 the party only whose claim is affected has a right to appear and be heard. If they were not *ex parte*—that is to say, if the questions which go to the Examiners-in-Chief in the first instance under Rule 124 were not always and necessarily *ex parte* questions—the rule which denies to all but one of the parties the right to be heard would be formulated injustice and nothing else.

All appeals in which, under the rule, the party only "whose claim is affected" has a right to be heard lie to the Examiners-in-Chief, and if decided adversely by them, to the Commissioner, and if by him decided adversely, to the Supreme Court of the District of Columbia. All appeals from the Examiner's decision upon motions to dissolve upon which both parties have the right to be heard go directly to the Commissioner, and from his decision there is no further appeal.

The power to dissolve interferences for want of interference in fact has always been exercised upon direct appeal by the Commissioners. Some of the many decisions may profitably be referred to.

In *Fuller* v. *Brush et al.* (C. D., 1879, 328, 16 O. G., 1188) Mr. Commissioner Paine said:

> From a dissolution based merely on the ground that the inventions are different, which does not deny the operativeness of either device, and therefore does not deny the patentability of either, an appeal lies directly to the Commissioner. But when the reason of non-interference is that one is not operative, and therefore not patentable, a question affecting the merits of that invention is raised, as to which the case becomes an *ex parte* case, appealable not directly to the Commissioner but first to the Examiners-in-Chief.

Here it was distinctly held that where the motion is based upon the ground "that the inventions are different" the appeal lies directly to the Commissioner; but that where a question "affecting the merits" of the invention is raised the appeal lies in the first instance to the Examiners-in-Chief, the case becoming an *ex parte* one. The passage quoted distinctly implies that the question whether "the inventions are different" is not a question "affecting the merits."

In *Drawbaugh* v. *Blake* (C. D., 1883, 17, 23 O. G., 1221) the appeal was from the decision of the Primary Examiner granting the motion to dissolve the interference upon the ground that the parties do not claim the same invention. It is noteworthy that the Primary Examiner dissolved the interference and dissolved it on grounds involving the right of each party to go out of the Office with a patent for his invention. It has been claimed that such a decision is a decision affirming the patentability of the claim or the applicant's right to make the claim, and that therefore no appeal lies to any superior officer. Mr. Commissioner Marble, however, took jurisdiction, and in a learned decision, discussing the various questions involved in determining whether the inventions were the same or different, reversed the decision of the Primary Examiner and held that an interference in fact existed.

In *Scott* v. *Hawkins* (33 MS. Dec., 418) the motion to dissolve was based upon the ground that no interference in fact existed. The opinion states that the motion was denied by the Primary Examiner. Mr. Commissioner Montgomery proceeds to say:

> As said above, this motion was denied by the Primary Examiner, and on the 25th of June last Hawkins appealed from such denial to the Examiners-in-Chief. On the 24th day of last month the Examiners in-Chief dismissed the appeal "for want of jurisdiction in the board," and declared that the appeal "should be to the Commissioner."
>
> On the 1st of March instant Hawkins petitioned the Commissioner, in which petition he asked for a review of the Examiner's denial of his motion to dissolve. I think that the Examiners-in-Chief were right in declaring that the appeal from this denial lay not to them but to the Commissioner. It was a motion to dissolve an interference upon the ground that no interference in fact existed. Such a motion is appealable to the Commissioner, and the petition of Hawkins may be treated as such appeal.

In *Von Welsbach* v. *Lungren* (48 O. G., 537) it was held by the present Commissioner that from a decision of the Primary Examiner granting or denying a motion to dissolve an interference upon the ground that no interference in fact exists appeal lies to the Commissioner under the first paragraph of Rule 124 without any reference whatever to the reasons which the Examiner may give for deciding the motion either affirmatively or negatively. It cannot be too emphatically stated that the Examiner decides nothing but the question raised by the motion and that the appeal brings up nothing but the decision and the motion decided. If the decision of the Examiner goes upon grounds that are germane to the motion, it aids the Commissioner in reaching his decision; but if it goes upon grounds that are not germane it is sloughed out of the discussion.

In *Manny* v. *Easley* v. *Greenwood, Jr.*, (48 O. G., 538,) a motion was made to obtain a dissolution of the interference on account of the prior existence of a patent to one Gernert. One of the grounds stated was—

> because no interference in fact exists, as the issue is fully shown and described in said patent to Gernert, issued more than three years prior to the claimed conception thereof by either Manny or Greenwood, Jr.

The motion was incongruous, to be sure, but it clearly enough challenged the patentability of the inventions and challenged nothing else, and it was properly held to present a question for the Examiners-in-Chief on appeal. The Assistant Commissioner, in declining to take jurisdiction, added:

> The case is distinguishable from one in which the motion to dissolve is based upon the want of interference in fact, and in which the Examiner in reaching his conclusion has given reasons involving the merits. In such case the Commissioner has jurisdiction; but it is determined by the real ground of the motion and not by the reason given by the Examiner in his decision.

It is not necessary to cite further cases. Nor is it necessary to dwell upon the inconvenience that would result from recognizing a course of appeals on motions of this character, which, if permitted to be taken to the Examiners-in-Chief in the first instance, might be taken in succession to the Commissioner and perhaps to the Supreme Court of the District of Columbia.

The best practice requires that in drafting motions to dissolve, grounds which involve different courses of appeals should not be included in the same motion.

The Examiner of Interferences is advised that no lawful appeal was taken from the decision of the Primary Examiner in this case, and that therefore it is to be proceeded with as if no appeal had been taken and no decision thereon rendered.

EX PARTE JOHNSON.

Decided January 20, 1891.

DUPLICATE CLAIMS—DUTY OF THE OFFICE WITH RESPECT TO.

Where a simple invention is made the subject of numerous claims, differing in mere methods of expression with no corresponding difference in the concrete subject-matter, the Office should insist that one claim only be allowed for a given subject-

matter of invention, and that mere differences in phraseology shall not be regarded when urged in defense of a needless multiplication of claims.

APPEAL from Examiners-in-Chief.

PRINTING PRESSES.

Application of Henry Johnson filed August 10, 1886, No. 210,508.

Mr. James A. Skilton for the applicant.

MITCHELL, *Commissioner:*

The invention covered by this application has for its object to improve the ink-distributing apparatus of a certain class of printing-presses. The invention is comparatively simple in its nature. The application as filed contained thirty-six claims. Thirty-two of these claims were rejected by the Examiner, some upon references and some because they were duplicates in legal effect of one or more of the remaining claims. The Examiners-in-Chief on appeal reversed the decision of the Examiner as to sixteen of the claims and affirmed it as to the remainder.

The decision of the Examiners-in-Chief is now affirmed, excepting as to claims 1 and 2, one of which may be allowed upon the election of the applicant.

In reaching the conclusion thus announced, so far as that conclusion is not dependent upon the references, I have proceeded upon the principle laid down in *ex parte Woodruff* (17 O. G., 453; C. D., 1880, 90) that—

where the invention is simple in nature and can be clearly stated in simple language and in one claim, there is no justification for setting out the invention in a series of claims which all mean the same thing.

And I most emphatically indorse the further statement contained in the case referred to that claims are not like counts in pleadings, setting forth the same cause of action in different forms of language to provide against the hazards of proof, but that their object is to set forth distinctly and concisely just what the invention is which the applicant asks to have secured to him by his patent. As was said in that decision:

Where the terms of a claim in a patent are clear and distinct, as they always should be, no necessity arises for repeating such claim in different forms of language, and subjecting the Office and the courts to great labor in scrutinizing them and to doubt and annoyance as to their limitations and construction.

Where there is an evident purpose on the part of the applicant to state the various claims in such a manner as not to embrace in any two claims the same subject-matter of invention, the Office should not be exacting, but should remember that the exigencies of litigation cannot be altogether anticipated. (*Ex parte Laskey*, 48 O. G., 539; C. D., 1889, 181.) But where a simple invention is made the subject of numerous claims, some of them differing from others in mere methods of expression with no corresponding difference in the concrete subject-matter, the Office should insist, courteously but firmly, that one claim only be allowed for a given subject-matter of invention, and that mere differences in phraseology shall not be regarded when urged in defense of a needless multiplication of claims.

It is not intended herein to express an opinion upon the question whether the Examiner's conclusion that two or more claims are alike should take expression in the form of an objection or in the form of a rejection.

Excepting as to claims 1 and 2, the decision of the Examiners-in-Chief is affirmed.

EHRLICH *v.* VAN HORN.

Decided December 12, 1890.

INTERFERENCE—MOTION TO VACATE JUDGMENT.

Where, after a judgment of priority by the Commissioner, and after the claims of the defeated party had been rejected under Rule 132, it appeared that certain of said claims were clearly special to his structure and would not be infringed by anything contained in the device of the prevailing party, *Held* that said judgment should be vacated as to said claims. *Held*, further, that as to another of said claims, which was liable to be construed so as to embrace matter common to the organization of the structures of both parties, the judgment should not be vacated.

MOTION to vacate judgment.

PAPER-CUTTERS.

In the above-entitled interference judgment of priority had been rendered by the Commissioner in favor of Van Horn, and thereafter the Primary Examiner rejected Ehrlich's claims involved in the interference, under Rule 132.

Application of Leo Ehrlich filed May 22, 1888, No. 274,700. Application of William Van Horn filed February 9, 1888, No. 263,434.

Messrs. Knight Brothers for Ehrlich.
Mr. Charles J. Gooch for Van Horn.

MITCHELL, *Commissioner:*

This is a motion to set aside, as to claims 2, 3, and 4, the judgment heretofore rendered by the Commissioner. (43 MS., 171; *Ib.*, 410.)

The ground of the motion is that the claims set forth combinations not found in the application of Van Horn. The decision of the Commissioner upon the question of priority set forth the devices of the respective parties. In general, it may be said that in Van Horn's combination the roll is suspended from the support which carries the knife. In Ehrlich's combination the paper-roll bears down bodily upon a small roller, which is so mounted as to cause the cutting-knife to press against the paper.

The third and fourth claims of Ehrlich are clearly special to his structure, and would not be infringed by anything contained in the device of the prevailing party to the interference. There is no doubt, therefore, that the judgment should be vacated as to these claims. The second claim, although capable of a construction which limits it to Ehrlich's special combination, is nevertheless liable to be construed so as to embrace matter common to both organizations. The judgment should not therefore be vacated as to such second claim, although there is no reason why the subject-matter of such claim should not be allowed after being so varied in expression as to make it beyond reasonable doubt that it would exclude the structure of Van Horn.

The motion to vacate the judgment is granted as to claims 3 and 4.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Indiana.

WALKER *v.* CITY OF TERRE HAUTE.

Decided October 29, 1890.

1. FIRE-ALARMS—REISSUE.

Letters Patent issued July 13, 1875, to Robert Bragg, for the combination, with a fire-alarm gong, of mechanism which automatically releases the fire-engine horses from their stalls simultaneously with the alarm, contained the following claim: "The rod with its knob E and the oscillating lever C, for the purpose of releasing a suspended weight by the direct action of a gong-hammer, substantially as and for the purpose herein described." The reissued patent, No. 6,831, issued January 4, 1876, contained these claims: "The trip-rod D, arranged as described, and the oscillating lever C, for the purpose of releasing a suspended weight by the movement of a gong-hammer, substantially as and for the purpose described," and "the trip-rod D, oscillating lever C, and suspended weight B, in combination with the hammer of a gong, for the purpose of operating mechanism distant from the gong, substantially as above described." *Held* that the claims of the reissue were fairly embraced in the claim of the original.

2. SAME—INFRINGEMENT.

Said patent is infringed by a device whose only difference from the patented machine is that its trip-rod receives the stroke of the hammer in its backward instead of its forward motion.

3. REISSUE—REVISED STATUTES, UNITED STATES, SECTION 4916.

The Supreme Court has never so construed the statute which authorizes reissues as to deny to a patentee, on application made in due time and before adverse rights have accrued, the right to obtain a reissue broad enough to cover his entire invention as originally described and as he intended to claim it.

Messrs. McDonald, Butler & Snow and *Mr. Robert H. Parkinson* for the complainant.

Messrs. Baker & Daniels, Mr. Horace B. Jones, and *Mr. D. N. Taylor* for the defendant.

GRESHAM, *J.:*

The complainant, as assignee of reissued Patent No. 6,831, brings this suit for an injunction and accounting against the city of Terre Haute. The inventor, Robert Bragg, filed his application for a patent June 16, 1873, and the patent was granted July 13, 1875. The application for a reissue was filed October 9, 1875, and the reissue was granted January 4, 1876. The reissue, like the original, covers a combination, with a fire-alarm gong, of mechanism which operates automatically and releases the horses from their stalls simultaneously with the alarm. The device is so arranged that the blow of the gong-hammer, announcing the alarm, also and at the same time trips the liberating mechanism, opens the stall-doors, and allows the trained horses to spring to the pole of the engine before the striking of the signal is completed. This was a great improvement on the old method of releasing the horses by hand and leading them to the pole, and since its introduction engines can and do reach fires more quickly.

The object of my invention—

says the specification—

is to provide a novel attachment for gongs; and it is principally valuable and applicable to fire-engine houses, where the horses which draw the engines ought to be released at the very instant of the first stroke of an alarm, so that they can take their places at the engine and hose-carriage, ready to be attached thereto by the first man who may arrive.

My invention consists in the employment of an arm, which is so situated that at the first stroke of the hammer upon the gong it will also strike this arm, which has attached to it any suitable mechanism, so that the force of the blow will release, through this mechanism, a weight. The falling of this weight will pull a rope, which is connected with the mechanism to be operated, in such a manner that the pull upon it will operate the mechanism. * * * The operation will be as follows: The gong-hammer, upon its first stroke, will strike the pad E, and thus force the rod D and the arm or lever C back until the roller G is released from the recess F. * * * Various mechanical devices may be substituted for those herein described, as will be readily seen; but the principal point of novelty is the operating of these devices directly from the gong-hammer.

Bragg did not limit himself to the precise mechanism described in his specifications and illustrated in his drawings. He had in mind that mechanism and its equivalents—any suitable means for utilizing the force of the gong-hammer in releasing a weight (which is the equivalent of a spring) for operating any distant mechanism simultaneously with the stroke of the hammer. The claims of the reissue which are involved in this suit (the first and fourth) read:

1. The trip rod D, arranged as described, and the oscillating lever C, for the purpose of releasing a suspended weight by the movement of a gong-hammer, substantially as and for the purpose described.

4. The trip rod D, oscillating lever C, and suspended weight B, in combination with the hammer of a gong, for the purpose of operating mechanism distant from the gong, substantially as above described.

The claims in the original read:

1. The rod with its knob E and the oscillating lever C, for the purpose of releasing a suspended weight by the direct action of a gong-hammer, substantially as and for the purpose herein described.

2. In combination with the rod D and the recessed oscillating lever C, pivoted as described, the weight B and its roller G, for the purpose of relieving friction and removing the rod D from the action of the gong-hammer, substantially as herein described.

3. In combination with the weight B, caused to fall, as shown, the bell-crank lever I, cord K, and lever L, for releasing the slide O and weight R, and thus releasing the horses by means of the cord T, substantially as herein described.

The specifications in both patents describe the same invention. The defendant's expert found no invention referred to in either the description or the claims of the reissue not described in the original as instrumental in carrying out the object of the invention. He thought, however, that the claims of the reissue, without covering any new invention, allowed greater freedom in construction than did the claims of the original. "The rod with its knob E," one of the elements of the combination in the first original claim, is described in the corresponding claim in the reissue as "the rod D, arranged as described," the "knob E" being omitted. In the reissue the rod projects in the path of the hammer, as it did in the original, and operates precisely as it did before. The claims in the original covered any rod extending within the sweep of the gong-hammer, so that when struck it would perform the function of tripping, as described. The knob at the end of the rod performed no function independent of the rod, and it was not an operating element in the combination. The original specification showed that the action of the gong-hammer upon the suspended weight was not immediate or direct, but through intermediate elements, and, literally construed, the claims were not for the invention described, and while the first claim in the reissue is more accurate it is still limited to the combination which constitutes the invention—

a combination of elements, operating substantially as and for the purpose described.

Obviously the patentee feared that the original first claim might be held too broad or general, and for that reason he desired the fourth claim, covering a sub-

division of the invention. This claim was fairly embraced in the original first claim. It is more limited than that claim; but it is clearly within the original statement of invention. The reissue contains no claim which might not have been made and allowed upon the original record. The real invention consisted in the combination of the designated elements acting in co-operation to accomplish a specified result, and the patentee was not limited to the precise forms of the elements shown in the drawings. Elements possessing the essential qualities and performing the same functions as those described in the specifications and illustrated in the drawings, although differing in mere mechanical construction or form, were covered by the original patent. A combination patent cannot be evaded by a mere formal variation of all or part of the elements. Even if the claims of the reissue be construed as broader than the original claims, the former are clearly within the described invention, and the reissue was applied for in less than three months after the original was granted and before any new rights had intervened. While an inventor may not obtain a reissue enlarging his invention, he may, under proper conditions, surrender his patent and obtain a reissue with enlarged claims, not extending, however, beyond the bounds of his described invention. It is not claimed that Bragg obtained his reissue to cover improvements made after the date of his first patent, and the defendant's expert testified that the reissue contained no new invention. The Supreme Court has never so construed the statute which authorizes reissues as to deny to a patentee, on application made in due time and before adverse rights have accrued, the right to obtain a reissue broad enough to cover his entire invention as originally described and as he intended to claim it. In *Marsh* v. *Seymour* (97 U. S., 348) the Supreme Court say:

> The patentee may redescribe his invention and include in the description and claims of the specification not only what was well described before, but whatever else was suggested or substantially indicated in the old specification, drawings, or Patent Office model which properly belonged to the invention as actually made and perfected. Corrections may be made in the description, specification, or claims of the patent where the patentee has claimed as new more than he had a right to claim, or where the description, specification, or claim is defective or insufficient; but he cannot, under such an application, make material additions to the invention which were not described, suggested, nor substantially indicated in the original specifications, drawings, or Patent Office model.

The statute authorized the granting of the reissued patent.

The defense of prior use is not supported by the evidence. Brown S. Flanders testified that in 1869, while acting as engineer in connection with engine No. 8 of the Boston fire department, he constructed and put into practical use a device which operated automatically on the same principle as the device described in the patent in suit, and his statements were corroborated by four or five witnesses who at that time were his associates in the same company. If the Flanders mechanism was in use, as claimed, as early as 1869, the patent in suit is invalid for want of novelty, and a detailed description of it is therefore unnecessary. The complainant introduced a number of witnesses who testified that during their connection with the same company in 1869, and for several succeeding years, they never saw or heard of such an automatic device for releasing horses from their stalls. And a still larger number of witnesses who were employed in other engine-houses in Boston during the period of alleged prior use, some of whom visited No. 8 from time to time, testified that before the application for the patent in suit they never saw or heard of the Flanders device or anything like it. A Philadelphia engine company sent a committee to Boston in the spring of 1869 to inspect the engines and fire department of that city and note all improvements in apparatus and methods, should any be observed, and during the four or five days that the committee spent in Boston engine-house No. 8 and others were visited and inspected. Flanders testified that his automatic device was then in use at No. 8 and that it was seen by the committee and by him explained to them or some of them, and his statements were corroborated by several witnesses who belonged to the company in 1869 and later. The surviving members of the committee, as well as several members of their company who went with them, were subsequently called, and testified that neither the Flanders device nor anything like it was shown to them by him or any one else, and that they never saw or heard of that device in engine-house No. 8 or elsewhere during their visit to Boston. The records of the Boston fire department, covering the period of alleged use, make no mention of such a device, and it is incredible that Flanders should have invented or introduced an improvement of such marked utility without bringing its merits to the attention of the fire department, or making an effort to obtain a patent for it.

The remaining question is that of infringement. The complainant's two expert witnesses testified that the device used by the defendant in its engine-houses contained the invention embraced in the first and fourth claims of the patent in suit, and the defendant's only expert witness testified, on cross-examination, to the same effect. It is true that in the defendant's device the trip-rod receives the stroke of the hammer in its backward or reflex motion, while in the device described in the Bragg patent the rod receives the blow in the forward or direct stroke of the hammer. But this mere alteration of the location of the trip-rod would readily occur to any skilled mechanic. The effect of the tripping is the same, whether the rod receives the blow in the forward or backward action of the hammer. Without dwelling in detail upon this and other structural differences, it is sufficient to say that I am satisfied the defendant's device embraces all the elements of the Bragg invention. The conclusions I have reached are in harmony with the decrees entered in *Bragg* v. *City of Portland*, in the district of Oregon, *Bragg* v. *City of San José*, in the northern district of California, and the opinion of Judge Sawyer in *Bragg* v. *City of Stockton*, (27 Fed. Rep., 509.) Injunction granted as prayed for, and the case is referred to the master to take testimony and report the damages.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 5. TUESDAY, FEBRUARY 3, 1891. PRICE---$5 per year.

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Notice.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., December 23, 1890.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

C. E. MITCHELL,
Commissioner.

Order Rescinded.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., January 23, 1891.

SIR: I am directed by the Secretary of the Interior to inform you that the order of the Department dated August 18, 1880, directing that Julius A. Palmer, of Camden, Mich., be no longer recognized as agent or attorney before the Department of the Interior or any bureau thereof, has this day been rescinded.

Very respectfully, E. M. DAWSON,
Chief Clerk.

To the Commissioner of Patents.

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1889, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Changes of Classification.

(ORDER No. 662.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., January 21, 1891.

It is hereby directed that the sub-class of Thermostats, Class 73, Measuring-Instruments, Division XXIII, be abolished.

The following changes in classification in Division IV are hereby directed:

Sub-class 8, Flush-tank siphons, is established in Class 182, Sewerage.

In Class 14, Bridges, sub-classes 10, Towers, and 3, Girders and columns, are abolished.

A new class is established, with sub-classes as follows:

Class 200, Towers:
1. Girders and columns,
2. Skeleton,
3. Telegraph-poles.

Sub-class 25, Jacks, is added to Class 159, Fire Escapes and Ladders.

In Class 37, Excavating, sub-class 8, Warping lands, is abolished, and a sub-division of sub-class Scrapers is established, to be entitled "20, Distant power;" a new sub-class is added in same class—21, Treating quicksands.

The following changes are directed in Division XXX:

Three new classes are established:
199. Linotype-Machines.
198. Matrix-Making.
197. Type-Writing.

Sub-classes 42, 44, Class 101, Printing, are abolished.

The following sub-classes in Class 67, Lamps and Gas-Fittings, are hereby abolished:

Calcium and magnesium lights,	Shades,
Drop-lights and hangers,	Car-lamps,
Extinguishers,	Miners' lamps,
Gas-extinguishers,	Lighting devices,
Lighting devices,	Locomotive head-lights,
Lamp-burners, no-chimney,	Reflectors,
Lamp-chimneys,	Wick-raisers.
Collars,	

The following sub-classes are established:

53. Automatic cut-offs,	74. Gas brackets and valves.
54. Pressure cut-offs,	75. Hydrogen-platinum lights.
55. Drop-lights, burner attachments,	76. Carriage-lamps.
	77. Globes.
56. Drop-lights, counterweight,	78. Harps and hangers.
57. Drop-lights, friction and clutch,	79. Lamp attachments.
	80. Pedestals.
58. Drop-lights, spring drum,	81. Pocket-lighters.
59. Mechanical extinguishers,	82. Hooded reflectors.
60. Fluid-extinguishers.	83. Lamp-boxes.
61. Pneumatic extinguishers,	84. Lighting systems.
62. Gas-lighting attachments,	85. Special lamps.
63. Lamp-lighting attachments,	86. Wick-pickers.
64. No-chimney lamps,	87. Bicycle-lamps.
65. Fonts, collars, and tops,	88. Flat-wick raisers,
66. Canopy shades and reflectors,	89. Distributers.
	90. Dark lanterns.
67. Shade-supports.	91. Integral chimneys.
68. Side reflectors,	92. Composite chimneys.
69. Safety lamps and lanterns.	93. Double chimneys,
70. Head-lights,	94. Guards,
71. Lighting implements,	95. Oil indicators and fillers.
72. Miscellaneous reflectors,	96. Christmas-tree lights.
73. Street-light hangers,	97. Miners' candlesticks.

C. E. MITCHELL,
Commissioner.

Issue of February 3, 1891.

Patents	439—No.	445,528 to No. 445,966, inclusive.
Designs	15—No.	20,493 to No. 20,507, inclusive.
Trade-Marks	37—No.	18,914 to No. 18,950, inclusive.
Labels	10—No.	6,426 to No. 6,435, inclusive.
Reissue	1—No.	11,142.
Total issue	502	

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Alabama			Nevada	1	
Arizona Territory			New Hampshire	2	
Arkansas	3		New Jersey	18	2
California	12	1	New Mexico Terr'y	1	
Colorado	2		New York	85	7
Connecticut	18		North Carolina	1	
Delaware	1		North Dakota		
District of Columbia	1		Ohio	30	1
Florida			Oregon		
Georgia	2	2	Pennsylvania	42	5
Idaho			Rhode Island	7	
Illinois	30	4	South Carolina	2	
Indiana	8	2	South Dakota	1	
Indian Territory			Tennessee	3	1
Iowa	10		Texas	8	2
Kansas	2		Utah Territory		
Kentucky	8	1	Vermont	1	
Louisiana	3		Virginia	3	
Maine	3	1	Washington	1	
Maryland	8	1	West Virginia	1	
Massachusetts	58	3	Wisconsin	8	4
Michigan	11	3	Wyoming		
Minnesota	7		U. S. Army		
Mississippi	4		U. S. Navy		
Missouri	7				
Montana			Total to citizens of the United States	419	41
Nebraska	6	1			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1		Mexico		
Barbadoes			Netherlands		
Belgium	2		Newfoundland		
Bermuda			New South Wales	1	
Brazil			New Zealand		
Canada	5	1	Norway		
Chili			Queensland		
Colombia			Russia		
Cuba			Scotland		
Denmark			South Australia		
Ecuador			Spain		
England	14	1	Sweden		
France	5	4	Switzerland	1	
Germany	6		Victoria		
Gibraltar					
Ireland			Total to citizens of foreign countries	35	6
Italy					

DESIGNS.

20,493 to 20,496, inclusive.—SPOON.—*John H. Johnston*, New York, N. Y. Applications filed December 29, 1890. Serial Nos. 376,130 to 376,133, inclusive. Term of patents 7 years.

20,497.—CIGAR-LIGHTER.—*Benjamin Dalton Milliken*, Somerville, Mass. Application filed April 18, 1890. Serial No. 348,554. Term of patent 3½ years.

20,498.—DRAWER-PULL.—*William J. Swan*, Detroit, Mich. Application filed November 24, 1890. Serial No. 372,536. Term of patent 3½ years.

20,499.—STAIR-CARPET FASTENER.—*David Walker*, Newark, N. J. Application filed January 6, 1890. Serial No. 336,095. Term of patent 14 years.

20,500 and 20,501.—STAIR-CARPET FASTENER.—*David Walker*, Newark, N. J. Applications filed November 6, 1890. Serial Nos. 370,548 and 370,549. Term of patents 14 years.

20,502.—PANEL FOR CEILINGS, &c.—*Frederick F. Bischoff*, Chicago, Ill. Application filed October 20, 1890. Serial No. 368,729. Term of patent 14 years.

20,503.—OIL OR GAS STOVE.—*Jacob Goldstein* and *Israel Block*, New York, N. Y. Application filed December 29, 1890. Serial No. 376,129. Term of patent 14 years.

20,504.—ORNAMENTATION OF GLASS OR OTHER WARE.—*John Hoare*, Corning, N. Y. Application filed December 13, 1890. Serial No. 374,652. Term of patent 7 years.

20,505.—JUG.—*William C. King*, Pittsburg, Pa. Application filed December 20, 1890. Serial No. 375,348. Term of patent 3½ years.

20,506.—FONT OF PRINTING-TYPE.—*Charles E. Heyer*, Chicago, Ill., assignor to *Barnhart Brothers & Spindler*, same place. Application filed October 31, 1889. Serial No. 328,846. Term of patent 14 years.

20,507.—METAL BAR.—*Alonzo W. Spooner*, Port Hope, Ontario, Canada. Application filed January 8, 1891. Serial No. 377,170. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

18,914.—MEDICAL PREPARATION OF SANDAL-WOOD AND COPAIBA.—*Evans, Lescher & Webb*, London, England. Application filed December 27, 1890. Used since 1840.

"The word 'SAVARESSE.'"

18,915.—BITTERS.—*George S. Fleming*, Pittsburg, Pa. Application filed December 12, 1890. Used since 1868.

"The words 'WE' and 'HEALTH AND STRENGTH TO ALL MANKIND,' together with a likeness of General Grant."

18,916.—REMEDY FOR DISEASES OF THE LIVER.—*John E. Hetherington*, New York, N. Y. Application filed December 11, 1890. Used since September 6, 1890.

"The words 'GOLDEN GRAINS.'"

18,917.—CORSETS.—*Albert F. Jammes*, New York, N. Y. Application filed December 27, 1890. Used since May 1, 1889.

"The word 'LAVALLIÈRE.'"

18,918.—REMEDY FOR DYSPEPSIA.—*George B. Layton*, New Glasgow, Canada. Application filed December 29, 1890. Used since December 13, 1890.

"The letters 'K. D. C.'"

18,919.—TOYS KNOWN AS TALKING-BOARDS.—*Kennard Novelty Company*, Baltimore, Md. Application filed December 30, 1890. Used since July 1, 1890.

"The word 'OUIJA.'"

18,920.—BRANDY.—*E. Rémy Martin & Co.*, Rouillac, France. Application filed June 18, 1890. Used since 1850.

"The representation of a centaur."

18,921.—BRANDY.—*E. Rémy Martin & Co.*, Rouillac, France. Application filed June 18, 1890. Used since 1876.

"The representation of a squirrel perched upon a bough."

18,922.—BRANDY.—*E. Rémy Martin & Co.*, Rouillac, France. Application filed June 18, 1890. Used since 1876.

"A diamond surmounted by a crown and the representation of an ermine."

18,923.—BRANDY.—*E. Rémy Martin & Co.*, Rouillac, France. Application filed June 18, 1890. Used since 1882.

"The representation of a crowned dolphin."

18,924.—HOSIERY.—*John H. Parker*, Boston, Mass. Application filed December 8, 1890. Used since April 1, 1886.

"The word 'ARCTIC.'"

18,925.—CASTOR-OIL.—*A. B. Richards edicine Co.*, Sherman, Tex. Application filed December 15, 1890. Used since September 1, 1890.

"The representation of three frogs standing in a pond and holding up a bottle bearing the words 'CHEATHAM'S TASTELESS CASTOR OIL.'"

18,926.—SHIRTS, DRAWERS, AND OVERALLS.—*The Middlesex Manufacturing Company*, Jamesburg, N. J. Application filed December 10, 1890. Used since April 1, 1889.

"The word 'MIDDLESEX' arranged upon a parallelogram representing a raised panel."

18,927.—EMBALMING-FLUID.—*R. H. Elliott & Son*, Pontiac, Mich. Application filed December 11, 1890. Used since February 1, 1889.

"The word 'ROSE.'"

18,928.—VETERINARY REMEDIES.—*William D. Harnist*, Edwardsville, Ill. Application filed October 31, 1890. Used since February, 1886.

"The representation of a horse in a rearing position, a human figure at the side thereof grasping the bridle and in a bowed and pulling position, and an ornamental border."

18,929.—KÜMMEL.—*Bettie Hochstadter*, New York, N. Y. Application filed December 17, 1890. Used since August, 1890.

"The words 'DER DEUTSCHE MICHEL' and 'HOCHSTADTER'S GETREIDE DOPPEL-KÜMMEL.'"

18,930.—CANNED SALMON.—*Robert D. Hume*, San Francisco, Cal. Application filed November 24, 1890. Used since June 1, 1874.

"The words 'ROYAL BRAND.'"

18,931.—INCANDESCENT ELECTRIC LAMPS.—*The Sunbeam Incandescent Lamp Company*, Chicago, Ill. Application filed December 20, 1890. Used since February 1, 1890.

"The word 'SUNBEAM.'"

18,932.—COOKING AND HEATING STOVES AND RANGES.—*Bowie & Terhune*, Rome, Ga. Application filed December 31, 1890. Used since January 1, 1884.

"The words 'COTTON OPTION.'"

18,933.—BOTTLED LAGER-BEER.—*Emanuel Benswanger*, Philadelphia, Pa. Application filed December 31, 1890. Used since December 1, 1890.

"The words 'ROCHESTER PREFERRED.'"

18,934.—BOOTS AND SHOES.—*Norman & Bennett*, Boston, Mass. Application filed January 2, 1891. Used since December 13, 1890.

"A monogram composed of the letters and character 'N & B' and two concentric circles."

18,935.—BOOTS, SHOES, AND LASTS.—*H. E. Smith & Co.*, Worcester, Mass. Application filed December 26, 1890. Used since April, 1886.

"The words 'NOX 'EM ALL.'"

18,936.—OINTMENTS.—*Benjamin D. Blackstone*, Martinsville, Ind. Application filed December 13, 1890. Used since August 1, 1890.

"The word 'DERMACURA.'"

18,937.—GRAIN.—*Pittman & Harrison*, Sherman, Tex. Application filed October 15, 1890. Used since July 1, 1890.

"The representation of an ear of corn loaded upon a wagon."

18,938.—REMEDY FOR HAY FEVER AND CATARRHAL DISEASES.—*Nathan Tucker*, Mount Gilead, Ohio. Application filed December 12, 1890 Used since November 15, 1890.

"A star bearing a shield and the word 'SPECIFIC.'"

18,939.—MUSICAL INSTRUMENTS.—*Charles G. Conn*, Elkhart, Ind. Application filed December 27, 1890. Used since June, 1886.

"The word 'WONDER.'"

18,940.—COUGH-DROPS.—*Albert M. Greule*, Newport, Ky. Application filed December 15, 1890. Used since August 24, 1888.

"The word 'ELECTRIC.'"

18,941.—STEAM-BOILERS.—*William E. Kelly*, New Brunswick, N. J. Application filed December 22, 1890. Used since April, 1885.

"The word 'NATIONAL.'"

18,942.—CARAMELS AND CANDIES.—*Lancaster Caramel Co.*, Lancaster, Pa. Application filed September 14, 1889. Used since July 1, 1888.

"A circular figure having the letter 'A' printed thereon and a ribbon draped across said figure and letter and having thereon the word 'CRYSTAL.'"

18,943.—GUITARS, MANDOLINS, ZITHERS, BANJOS, AND LIKE STRINGED INSTRUMENTS.—*Max Meyer & Brother Company*, Omaha, Nebr. Application filed November 20, 1890. Used since February 6, 1890.

"The word 'EMORY.'"

18,944.—POMADE FOR THE COMPLEXION.—*Mary N. Roberts*, Chicago, Ill. Application filed November 12, 1890. Used since December 15, 1890.

"The words 'CONVENT FORMULA.'"

18,945.—FLOWERS AND FEATHERS FOR MILLINERY.—*Salomon Mandel*, New York, N. Y. Application filed November 24, 1890. Used since July 14, 1890.

"The representation of a triumphal arch and the monogram 'S M.'"

18,946.—WHISKY.—*Stanton & Company*, Chicago, Ill. Application filed December 30, 1890. Used since 1859.

"The word 'CLARKE' in connection with the Latin motto 'OMNIA VINCIT.'"

18,947.—MEDICINE FOR EXTERNAL APPLICATION.—*Sun I See Oil Company*, Racine, Wis. Application filed March 21, 1890. Used since May, 1886.

"The word 'SUN,' the pictorial symbol of an eye, and the word 'SEE' in connection with a picture of the sea with the sun rising out of it."

18,948.—GRAPE-VINES.—*The Diamond White Grape Company*, Rochester and Brighton, N. Y. Application filed November 14, 1890. Used since March 1, 1889.

"The representation of a bunch of grapes upon a diamond-shaped figure."

18,949.—REMEDY FOR RHEUMATISM.—*Henry Vosburgh*, Allegan, Mich. Application filed December 19, 1890. Used since April 15, 1889.

"The letter 'V' bearing the words 'SURE CURE' upon a different-colored serrated disk."

18,950.—MEN'S OUTFITTINGS.—*Yeatts & Troth*, Philadelphia, Pa. Application filed October 23, 1890. Used since January 10, 1876.

"The representation of a wivern and a crown, the wivern being issuant with its wings flanking the neck and head thereof."

LABELS.

6,426.—Title: "WINTER'S LIFE ELIXIR TONIC AND ANTIPERIODIC." *John B. Daniel*, Atlanta, Ga. Application filed January 2, 1891.

6,427.—Title: "EDWARDS' CHERRY AND TOLU COMPOUND.—*F. C. Joslyn & Co.*, Syracuse, N. Y. Application filed January 2, 1891.

6,428.—Title: "WHITE PINE PECTORAL."—*H. P. Marshall*, Mohawk, Tenn. Application filed January 5, 1891.

6,429.—Title: "BARKER'S IMPROVED CHEMICAL & VEGETABLE HORSE, CATTLE, & POULTRY POWDER."—*The Barker, Moore & Mein Medicine Company*, Philadelphia, Pa. Application filed January 7, 1891.

6,430.—Title: "CULBERT & TAYLOR AGENTS FOR MARTINI & ROSSI." (For vermouth.)—*Culbert & Taylor*, New York, N. Y. Application filed December 24, 1890.

6,431.—Title: "STERN'S OIL." (For neuralgia and rheumatism.) *Morris H. Stern*, Milwaukee, Wis. Application filed November 10, 1890.

6,432.—Title: "STERN'S CREAM." (For throat and lung diseases.) *Morris H. Stern*, Milwaukee, Wis. Application filed November 10, 1890.

6,433.—Title: "STERN'S TONIC."—*Morris H. Stern*, Milwaukee, Wis. Application filed November 10, 1890.

6,434.—Title: "DIFFUSIBLE TONIC."—*Diffusible Tonic Company*, Sturgis, Mich. Application filed January 12, 1891.

6,435.—Title: "COMPOUND RHEUMATIC OIL."—*Henry M. Jewett*, Belfast, Me. Application filed January 13, 1891.

DISCLAIMER.

401,680.—*Edward S. Boynton*, New York, N. Y. IMPROVEMENT IN VALVES FOR PNEUMATIC PIPES OR TUBES. Patent dated April 16, 1889. Disclaimer filed January 21, 1891, by the assignee, *The Campbell Printing Press and Manufacturing Company*.

Enters its disclaimer to the first claim in said specification, which is in the following words, to wit:

"1. In combination with an external pivoted valve, a compressive helical spring inclosed within a tubular guide formed upon or attached to the valve, substantially as and for the purposes set forth."

PATENTS

GRANTED FEBRUARY 3, 1891.

445,528. COMPOUND FOR FROSTING GLASS. WILLIAM H. AKESTER, Fulham, England. Filed June 26, 1890. Serial No. 356,877. (No specimens.) Patented in Belgium Apr. 28, 1890, No. 94,037.

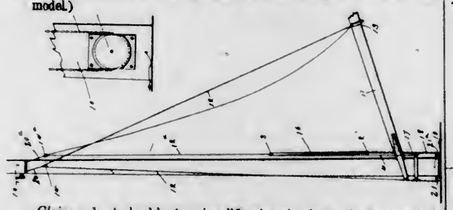
Claim.—The herein-described compound for frosting articles of glass, consisting of a solution of nitro-cellulose in acetate of amyl, to which solution has been added kaolin or other like silicate of alumina or gypsum.

445,529. BOOT OR SHOE. HERBERT F. ALLEN and DANIEL N. GIBBS, Grafton, Mass. Filed Mar. 31, 1890. Serial No. 346,103. (No model.)



Claim.—In a leather boot, the combination, with the rear section 2 and the lining 4, stitched at its upper edge to the section 2, and the counter 6, stitched to the lower edge of the lining 4 independent of the section 2, of the interlining 8, of water-proof material, extending between the section 2 and the lining 4 and counter 6 and cemented thereto, substantially as set forth.

445,530. AUTOMATIC DOUBLE TOPPING-LIFT. THOMAS L. ARNOLD, Brooklyn, N. Y. Filed Aug. 22, 1890. Serial No. 362,744. (No model.)



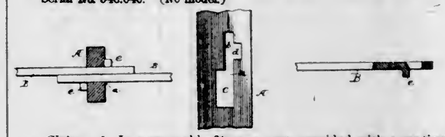
Claim.—1. A double topping-lift wherein the main lines or halyards are connected to the blocks of a single tackle and arranged to pass downward upon opposite sides of the sail, substantially as described.

2. The combination, with a pair of guiding-sheaves arranged for connection with the bounds, of lines or halyards adapted to pass about said sheaves and arranged to pass downward upon opposite sides of the sail and for connection with a boom, a tackle to the blocks of which the lines or halyards are connected, and a sheave arranged for connection with the lower part of the mast and about which one of the lines or halyards passes, substantially as described.

3. The combination, with a pair of sheaves arranged for connection with the bounds, of lines or halyards adapted to pass about said sheaves and arranged for connection with a boom, a tackle, to the upper block of which tackle one of said lines is connected, a chain connected to the lower tackle-block and to the other line, a sheave arranged for connection to the lower part of the mast and about which the chain passes, and a locking-pin, substantially as described.

4. The combination, with a pair of sheave-carrying blocks that are provided with pennants arranged for connection with the bounds, of lines or halyards arranged to pass downward upon opposite sides of the sail for connection with a boom and adapted to pass about the block-sheaves, a tackle to the blocks of which the lines or halyards are connected, and a pair of guiding-sheaves arranged for connection with the deck to the rear and at either side of the mast, one of the lines or halyards being arranged to pass about said sheaves, substantially as described.

445,531. FENCE. LEWIS BARNES, Belvidere, N. J., assignor to the Barnes Iron Fence Company, of New Jersey. Filed Apr. 15, 1890. Serial No. 348,046. (No model.)



Claim.—1. In a separable fence, a post provided with a vertical opening having a lateral slot, the lower portion of the opening being expanded on the side opposite the slot, substantially as described.

2. In a separable fence, the combination, with the posts having elongated openings therein widened at the lower end and provided with one or more slots in one side wall of the upper contracted end, of rails having side bearings, substantially as described.

3 In a separable fence, the combination, with the posts having approximately L-shaped openings and one or more slots in the outer side wall of said openings near the upper end, of rails provided with lateral bearing-lugs, substantially as described.

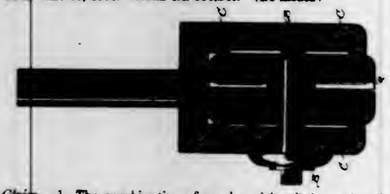
445,532. FLUSH HINGE FOR TABLES, DESKS, &c. JUSTIN BATCHELLER, Wallingford, Vt. Filed July 25, 1890. Serial No. 359,885. (Model.)



Claim.—1. A flat hinge-leaf having a socket or mortise projection extending at a right angle therefrom and a cross-bar at the bottom of said socket near the front of the plate, and a second flat leaf having a flat-plate tongue at a right angle thereto, said tongue extending into the socket of the first leaf and pivoted about centrally therein, substantially as described.

2. A flat hinge-leaf having a socket extending at a right angle from its plane face and near one end thereof, and a second flat leaf having a rigid tongue at a right angle thereto and near one end thereof, said tongue entering the socket aforesaid and pivoted therein, substantially as described.

445,533. DRILL-CHUCK. JAMES A. BUCHER, Mishawaka, Ind. Filed June 21, 1890. Serial No. 356,246. (No model.)



Claim.—1. The combination of a yoke with a bolt passing therethrough and serving to draw the arms or jaws thereof together and a drill-chuck composed of sections each of which is provided with a portion of a pocket or hole for a tool, substantially as shown and described.

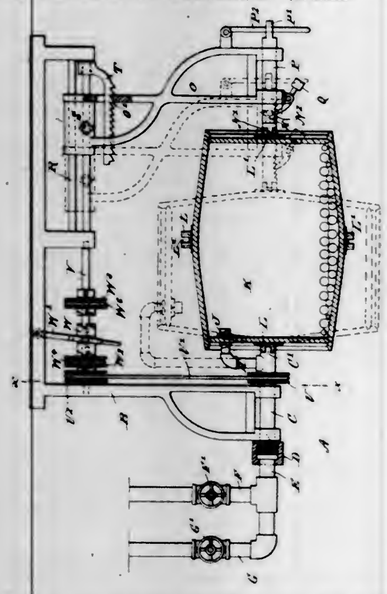
2. The combination of a drill-chuck having an indented or equivalent face, a dog or catch for engaging the same, but normally forced away therefrom, and a bolt forming the axial support of the drill-chuck and bearing at one end against the dog or catch, whereby the latter is forced into engagement with the drill-chuck when the bolt is screwed up, substantially as shown and described.

3. The combination of a yoke, a bolt with an enlarged head or washer having a bearing and socket in the arms of the same, a dog or catch forced outward by a spring and having its outer end engaged by the enlarged head or washer of the bolt, and a sectional drill-chuck having an indented face inclosed by the arms or jaws of the yoke and mounted axially upon the bolt, substantially as shown and described.

4. The combination of a yoke, a bolt mounted therein, a sectional drill-chuck having sockets of different sizes formed therein, and a dog or catch operated by the bolt to lock and unlock the drill-chuck, substantially as shown and described.

5. The combination of a yoke having a bearing and socket in its arms, a bolt having an enlarged head or washer, a dog arranged in a recess in the yoke and under the head of the bolt, a spring normally forcing the dog outward, and a sectional drill-chuck having an indented outer face and the inner surface of each section provided with portions of sockets of different sizes for the reception of different-sized tools, substantially as shown and described.

445,534. BARREL-WASHER. GEORGE A. BIDWELL, Pittsfield, Mass. Filed May 22, 1890. Serial No. 352,723. (No model.)



Claim.—1. A barrel-washer comprising a hollow shaft mounted to rotate and adapted to connect at one end with a steam and water supply and at its other end forming a support for the barrel, a branch pipe leading from the said hollow shaft to discharge into the barrel, and an adjustable support for the barrel, arranged in line with the said shaft, substantially as shown and described.

2. A barrel-washer comprising a hollow shaft mounted to rotate and adapted to connect at one end with a steam and water supply and at its other end forming a support for the barrel, a branch pipe leading from the said hollow shaft to discharge into the barrel, an adjustable support for the barrel, arranged in line with the said shaft, and means, substantially as described, for imparting a forward and backward motion to the said shaft to rotate the barrel in opposite directions, as set forth.

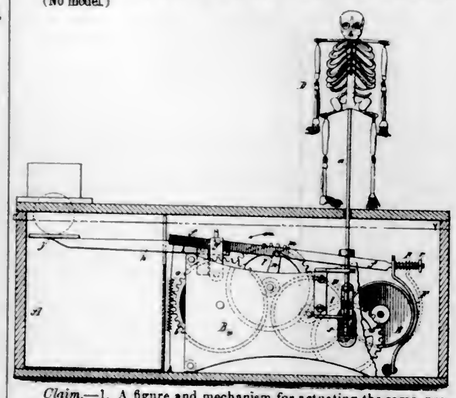
3. In a barrel-washer, the combination, with a hollow shaft mounted to turn in one direction, of a fixed pipe leading into one end of the said hollow shaft and connected with a water and steam supply, a branch pipe leading from the said hollow shaft and adapted to discharge into the barrel to be washed, and a longitudinally-adjustable shaft forming with the said hollow shaft bearings for the barrel, so as to turn the latter, substantially as shown and described.

4. In a barrel-washer, the combination, with a hollow shaft mounted to turn in one direction, of a fixed pipe leading into one end of the said hollow shaft and connected with a water and feed supply, a branch pipe leading from the said hollow shaft and adapted to discharge into the barrel to be washed, a longitudinally-adjustable shaft forming with the said hollow shaft bearings for the barrel, so as to turn the latter, a longitudinally-adjustable frame supporting the said shaft, and means for locking the adjustable frame, substantially as shown and described.

5. In a barrel-washer, the combination, with a longitudinally-adjustable frame, of a sleeve mounted to slide therein, a shaft connected with the said sleeve and free to revolve therein, but sliding with the said sleeve, and a barrel-bearing adapted to be engaged by the outer end of the said shaft, substantially as shown and described.

6. In a barrel-washer, the combination, with a longitudinally-adjustable frame, of a sleeve mounted to slide therein, a shaft connected with the said sleeve and free to revolve therein, but sliding with the said sleeve, a barrel-bearing adapted to be engaged by the outer end of the said shaft, and a hollow shaft mounted to rotate and connected with a barrel-bearing opposite the first-named shaft, substantially as shown and described.

445,535. COIN-CONTROLLED DANCING FIGURE. JAMES N. BLAGWELT, Brooklyn, N. Y. Filed May 7, 1890. Serial No. 350,859. (No model.)



Claim.—1. A figure and mechanism for actuating the same, provided with a fly or regulating wheel, combined with a brake for stopping said mechanism, another wheel of the train or mechanism, and connections between said brake and said last-mentioned wheel, whereby said last-mentioned wheel will actuate said brake to stop the mechanism automatically, substantially as described.

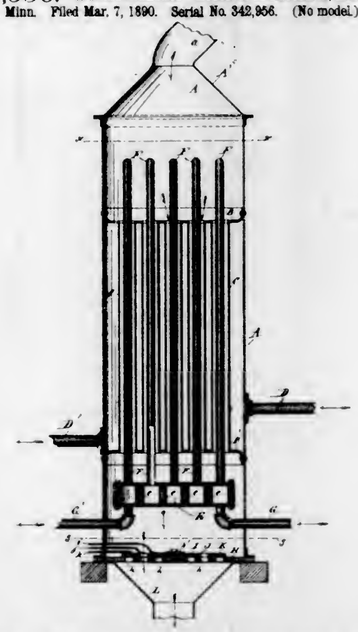
2. A figure and mechanism for actuating the same, provided with a fly-wheel, combined with a brake for said wheel, a rod *f*, connected to said brake, and connections between the rod *f* and another wheel of the mechanism, whereby said last-mentioned wheel will act to press said brake against said fly-wheel by drawing on said rod *f* and automatically stop the mechanism, substantially as described.

3. A train of gearing, and a fly-wheel in the same, combined with a brake, a rod *f*, a spring *p*, interposed between the rod *f* and the brake, and connections between the rod *f* and a wheel of the train, whereby said rod will be drawn by said last-mentioned wheel to press the brake against the fly-wheel, the spring *p* permitting the rod *f* to have a slight independent movement, substantially as described.

4. The mechanism B and wheel E in said mechanism, a brake to engage said wheel, and a rod *f*, connected to said brake, said rod having a notch *l*, combined with a pin or projection *m* on a wheel of the mechanism, to engage said notch to draw the rod *f*, and coin-actuated mechanism for releasing the pin from the notch, substantially as described.

5. The mechanism B, fly-wheel E, and brake F, combined with the rod *f*, coin-actuated lever *h*, and connections between the rod *f* and a wheel of the train for actuating the rod by said wheel, substantially as described.

445,536. WHEAT-HEATER. AUGUSTUS H. BROCKMAN, Minneapolis, Minn. Filed Mar. 7, 1890. Serial No. 342,956. (No model.)



Claim.—1. The combination, with the heating-chamber and its series of heating-pipes, of a supply-manifold for said pipes, provided with a series of open-ended tubes through which the cereals pass, substantially as and for the purpose specified.

2. The combination, with the heating-chamber, of partitions secured near the top and bottom thereof, a series of open-ended tubes connecting said partitions, a manifold supported in the chamber below the lower partition, and a series of pipes closed at their upper ends passing from the manifold through the tubes and into the top of the heating-chamber, substantially as and for the purpose specified.

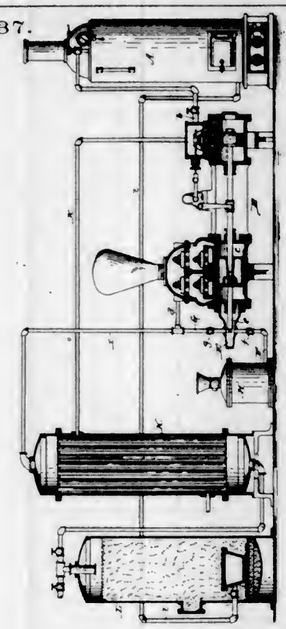
3. In an apparatus for heating wheat, the combination of a heating-chamber, partitions riveted to the inner wall thereof, a series of tubes secured at their open ends to said partitions, a manifold supported in the chamber below the lower partition and containing a series of short open-ended tubes, and a series of pipes secured to the top plate of the manifold, passing through the first-named tubes, and entering the top of the heating-chamber, substantially as and for the purpose specified.

445,537. APPARATUS FOR PURIFYING WATER. FRANCIS A. BUNNELL, Syracuse, N. Y., assignor to Christopher C. Bradley and Mary E. Bunnell, both of same place. Filed Mar. 31, 1890. Serial No. 345,964. (No model.)

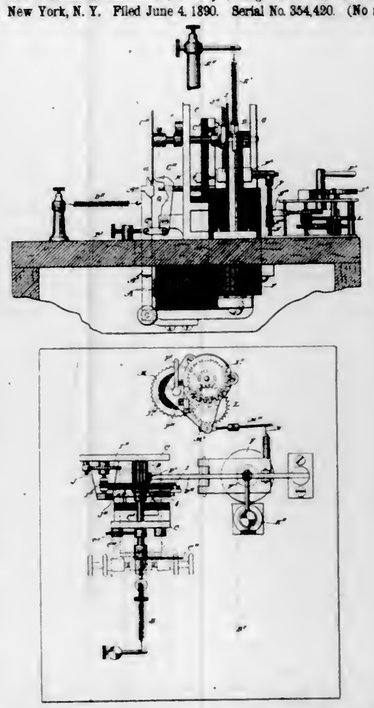
Claim.—1. The herein-described method of purifying feed-water, which consists in injecting a precipitant into the feed-water, then heating the feed-water containing the precipitant, whereby the impurities held in solution are rendered insoluble in transit without forming scale deposits, and then passing the feed-water through a filter in which the insoluble matter is intercepted, substantially as set forth.

2. The combination, with the feed-water heater and its inlet-pipe, of a feed-pump and a precipitant-pump working in unison with the feed-pump, both pumps discharging into the inlet-pipe of the heater, and a filter which receives the heated water containing the precipitant from the heater; substantially as set forth.

445,537.



445,538. ELECTRIC SIGNALING DEVICE. SAMUEL J. BURRELL and WILLIAM H. MARKLAND, Brooklyn, assignors to Charles F. Burrell, New York, N. Y. Filed June 4, 1890. Serial No. 354,420. (No model.)



Claim.—1. In a signaling apparatus, the combination of an electro-magnet and armature vibrated by current impulses over a main line, a serrated or notched plate, an electro-magnet in a normally-closed

local circuit for moving said plate against a retractile force across the path of the vibrating armature, and a retarding device in connection with the said plate for restraining and slowing the movement thereof, a portion of the notches in said plate being of greater depth than the others, whereby the armature will engage with and arrest the plate when entering a shallow notch, but will pass through the plate when encountering a deeper one, as set forth.

2. In a signaling apparatus, the combination of an electro-magnet and armature vibrated by current impulses over a main line, a serrated or notched plate and a retarding device connected therewith, an electro-magnet in a normally-closed local circuit for moving said plate against a retractile force across the path of the vibrating armature, or an extension thereof, and a circuit-breaker in said local circuit, the serrations or notches in the plate being of unequal depth, whereby the vibrating armature will engage with and arrest the plate when entering a shallow notch, but will pass through said plate and engage the local circuit-breaker when encountering a deep notch.

3. In a signaling apparatus, the combination of an electro-magnet and armature vibrated by current impulses over a main line, a serrated or notched plate and a retarding device connected therewith, an electro-magnet in a normally-closed local circuit, an armature therefor connected with and adapted to move the notched plate against a retractile force across the path of the vibrating armature, a circuit-closing or signaling device adapted to be set in operation by the armature when it has reached a given point in its approach to its magnet, and a circuit-breaker in the circuit of said magnet, these parts being arranged as herein described, and the movable plate being provided with notches of unequal depth, whereby the vibrating armature will engage with and arrest the plate by its engagement with the shallow notches, but will pass through said plate when it encounters a deeper notch and operate the local circuit-breaker, as herein set forth.

4. In a signaling system, the combination, with a local signaling-instrument adapted to be operated or started by the movement of an armature to a predetermined point, an electro-magnet in normally-closed local circuit, an armature constituting the means for starting the local signaling mechanism, and an automatically-retracted plate connected with and moved by the armature and serrated or formed with notches of unequal depth disposed in a definite order, of means for starting or operating the local signaling mechanism, consisting, essentially, of an automatic transmitter at the main station adapted to transmit a succession of long and short impulses corresponding to the order of notches in the plate at the local station, a magnet at the local station, and an armature normally locking said plate and adapted when vibrated by the impulses produced by the appropriate transmitter to engage with the short notches only in the plate, as set forth.

5. In a signaling apparatus, the combination, with the shaft C, carrying the curved and serrated or notched plate or bar, of an escapement and intermediate pawl-and-ratchet connection between the escapement-wheel and shaft C, whereby the movement of the latter in one direction only is retarded, a rack engaging with a pinion on the shaft, an electro-magnet in a normally-closed local circuit for moving said rack in one direction, and a spring for retracting it.

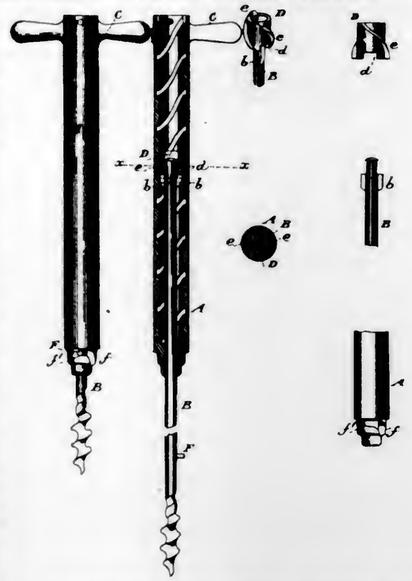
6. The combination, with the armature-lever and extension thereon vibrated by current impulses over the main line, and a lever pivoted to a fixed support, carrying a blade at one end and connected by a link to the armature-lever at the other, of the curved arc-shaped plate provided with shallow notches with which the armature-lever and the blade engage, and deep notches through which the lever may pass without engaging the plate, the said plate being capable of movement across the path of the armature-lever when disengaged therefrom, as set forth.

7. In combination with a main line or circuit of a main office or station and two or more local or way stations, automatic transmitters at the main office, one for each local station, and each adapted to transmit a definite number of long and short impulses in a certain order, an electro-magnet and armature at each local station included in a normally-closed circuit, a signaling or transmitting instrument adapted to be started in operation by a movement of the armature of predetermined extent, a swinging plate with notches of unequal depth connected with the said armature, a magnet and an armature vibrated by impulses of current in the main line and engaging with the swinging plate, and means, substantially as described, for interrupting the movement of a plate and returning it to its starting position when the signals or impulses transmitted fail to correspond with the combination represented by the order of shallow and deep notches in said plate.

445,539. CORKSCREW. GEORGE W. CAMPBELL and JOHN D. HOUGH, Lowville, N. Y. Filed Apr. 17, 1890. Serial No. 348,344. (No model.)

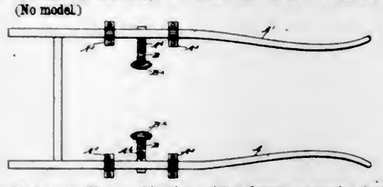
Claim.—1. The combination, with the case having the slot *f* at its lower end and the traveling head having a spiral-thread connection with the said case, of the screw connected with the said head and having a limited independent rotary movement and the interlocking projection or arm adapted to engage the slot in the lower end of the case, as and for the purpose described.

2. The combination, with the case and the traveling head having spiral-thread connection with the said case and having notches in its lower edge, of the screw having a loose connection with the said head and having lateral projections to work in the said notches and limit the movements of the said screw, substantially as described.



3. The hereinbefore-described corkscrew, composed of the case having spiral slot *f* and lateral notch *f'*, the head D, having spiral-thread connection with the said case, the screw having a loose connection with the said head and an independent rotary movement, and the interlocking projection or arm, substantially as and for the purpose described.

445,540. HORSE-TRACKING DEVICE FOR VEHICLES. PATRICK W. CASHION, Glens Falls, N. Y. Filed June 10, 1890. Serial No. 354,943. (No model.)



Claim.—1. The combination, with a fixture upon the shaft of a vehicle, of a standard longitudinally and laterally adjustable thereon, and a buffer vertically adjustable on the standard, substantially as described.

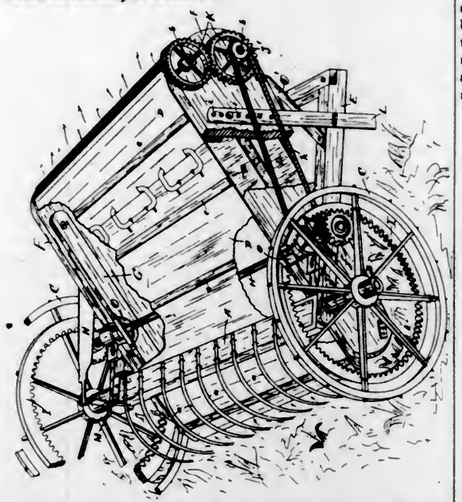
2. The combination, with a standard having a curved arc and an attaching-shank, of a buffer-arm having a correspondingly-curved arc, means, substantially as described, for adjustably binding the curved portions together, and a buffer secured to the buffer-arm, substantially as described.

3. The combination, with the shaft of a vehicle, of a standard erected therefrom, a buffer movably secured to the upper end of the standard, and a buffer-controlling spring, substantially as described.

4. The combination, with the shaft of a vehicle, of a standard erected therefrom, a buffer pivoted upon such standard, and means, substantially as described, for adjustably securing the buffer in a fixed position upon its pivot, substantially as described.

445,541. COMBINED HAY RAKE AND LOADER. DAVID C. CHADDOCK, Minerva, CHARLES E. SUTTON, Richmond, and ALEXANDER C. MCCULLOUGH, Knoxville, Ohio. Filed June 16, 1890. Serial No. 355,699. (No model.)

Claim.—1. In a hay rake and loader, the combination of the rake-head A, having attached thereto the teeth *a*, the wheel-axles B, attached to the rake-head A, the frame E, having journaled thereto the shaft H, carrying the pinions *f* and the ratchet-collars *g g'*, the elevating-webs D, located one above the other, and means for operating the same, substantially as described.

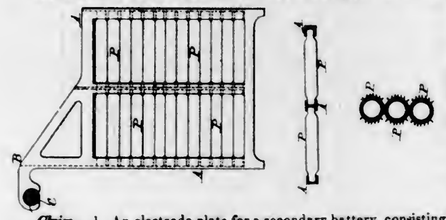


2. In a hay rake and loader, the combination, with the rake-teeth at the rear of the device, of the upper and lower elevating-webs D and the side pieces supporting said webs, said side pieces pivoted at their middle portion to the machine-frame, and capable of a longitudinal adjustment, substantially as described.

3. In a hay rake and loader, the combination of the rake-head A, having teeth *a*, the frame E, having adjustably attached thereto the inclined side pieces F, rollers *c*, *d*, and *d'*, located at top and bottom of the side pieces, the elevating-webs D, intermeshing cog-wheels on the rollers *c*, and an endless chain A, connected by intermediate gearing with the wheel C and imparting motion to one of said cog-wheels, substantially as described.

4. In a hay rake and loader, the combination, with the rake-head having teeth attached thereto, the frame E, carrying elevating-webs D, and the main wheels C, of a bent axle B, connecting the rake-head and wheels, the arm M, and the connecting-rod N for varying the position of the rake-head and wheels with respect to the frame E, substantially as described.

445,542. SECONDARY BATTERY. HENRY T. CHENWRIGHT, Carcassonne, France. Filed Apr. 14, 1890. Serial No. 347,793. (No model.)

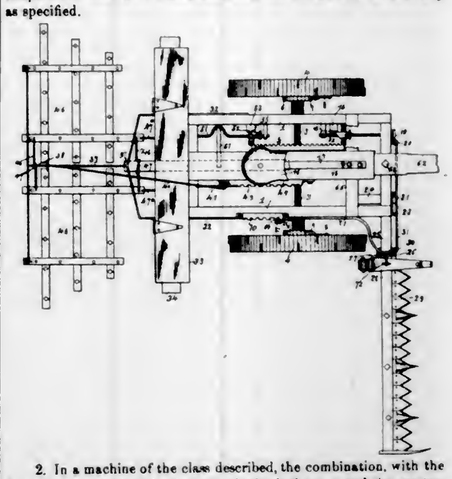


Claim.—1. An electrode-plate for a secondary battery, consisting of a number of lengths of ribbed pipes of lead or alloy held in a suitable frame and having the intervals between their ribs charged with lead oxide, substantially as described.

2. For connecting the electrode-plates of a secondary battery, the combination of gabs in brackets projecting from them with longitudinal bolts on which are strung lengths of pipe as distance-pieces between the plates, substantially as and for the purpose set forth.

445,543. COMBINED HARROW, SEEDER, AND MOWER. HARRISON V. CONWAY, Boone, Iowa. Filed Apr. 3, 1890. Serial No. 346,446. (No model.)

Claim.—1. In a machine of the class described, the combination, with a frame-work, its supporting-axle and ground-wheels, and a master-gear mounted on the axle, of bearings located under the frame, a reciprocating rotatable shaft mounted in the bearings, a lever for reciprocating the shaft, a pinion mounted on the shaft and adapted to be thrown into and out of mesh with the master-gear, a crank-disk mounted on the end of the shaft, a pivoted bell-crank lever, a rod connecting the same with the crank-disk, a depending lateral arm, a bracket for supporting the arm and bell-crank, said arm being adapted to receive and form detachable connection with a finger-bar, and a rod removably connected to the lower end of the bell-crank and adapted for removable connection with the cutter-bar, substantially as specified.



2. In a machine of the class described, the combination, with the frame, the rotatable axle, the ground-wheels thereon, and the master-gear rigid therewith, of brackets secured to the frame, a longitudinally-disposed shaft mounted for rotatable and longitudinal movement in the brackets, a lever for operating the shaft, a pinion mounted on the shaft and meshing with the master-gear, a crank-disk secured to the end of the shaft and having a crank-pin, a pivoted bell-crank and brackets for the same, a rod connecting the upper end of the bell-crank with the crank-pin, a transversely-extending arm, a finger-bar of a mowing-machine, having opposite perforated lugs, a removable pin inserted through the lugs and through an eye in the arm, a cutter mounted on the finger-bar, and a rod pivotally connected with the cutter-bar and removably connected with the lower end of the bell-crank, substantially as specified.

3. In a machine of the class described, the combination, with a main frame, a revoluble axle, ground-wheels mounted thereon, and a master-gear rigid with the axle, of a vibrating arm pivoted to the main frame, extending to the rear, a crank-shaft mounted in brackets and provided with a pinion meshing with the master-gear, and a link connecting the crank-shaft with the vibratory arm, said main frame and vibrating arm being adapted for loose connection with the harrow-frame, substantially as specified.

4. In a machine of the class described, the combination, with a main frame adapted to be loosely connected with a harrow, of a revoluble axle, ground-wheels mounted thereon, a master-gear rigid therewith, bearings secured to the frame, a crank-shaft mounted for reciprocation in the bearings and provided with a pinion meshing with the master-gear, a vibratory arm pivoted under the main frame, a link connecting the same with the crank of the shaft, said arm terminating at its rear end in a hook adapted for connection with a bridle having an eye by which the harrow-sections are connected and adapted to engage the hook, and a pivoted lever secured in the main frame and having its lower end engaging the crank-shaft and its upper end provided with a lock, substantially as specified.

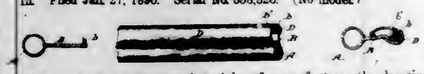
5. The combination, with the main frame, the supporting-axle, and the master-gear rigid therewith, of the reciprocating and revoluble crank-shaft, a lever for reciprocating the shaft, a pinion mounted on the shaft and engaging the master-gear, a vibrating arm pivoted under the same and connected by a link to the crank-shaft, said main frame being adapted for connection with and loosely suspending a harrow and said lever being adapted for loose connection, the said harrow for agitating the same, and the said frame being also adapted to support a transverse seed-box having a seed-slide, and a post adapted to connect the slide with the arm, substantially as specified.

6. The combination, with the oblong frame having rearwardly-extending side bars, and opposite depending hooks adapted to receive

opposite harrow-sections which are provided at their front ends with rods adapted for removably engaging the hooks and at their rear ends with an eye, of a Y-shaped arm pivoted in the ends of the opposite bars by removable pins, a pivoted lever, means for locking the same, and a connecting-rod adapted for connecting the lever with the Y-shaped arm, whereby the latter may be elevated and lowered, substantially as specified.

7. In a machine of the class described, the combination, with the oblong frame, the supporting-axle, the ground-wheels, and the master-gear, of the bearing-brackets located at one side of the gear, the crank-shaft mounted for reciprocation therein, the pivoted vibrating arm terminating at its rear end in a hook, the link connecting the arm with the crank-shaft, said frame being adapted for loose connection with harrow-sections, which latter are provided with opposite eyes into which the arm is adapted for insertion, loose rods adapted for removably connecting the front ends of the harrow-sections with hooks, a Y-shaped arm perforated at its ends, removable pins connecting said ends with the bars in a pivotal manner, the rear end of the Y-shaped arm forming a hook and adapted for engaging the rear eye of the harrows, the lever pivoted to the frame and adapted to lock with the toothed segment, and the connecting-rod pivoted to the lever and to an eye on the rod, substantially as specified.

445,544. **WEATHER-STRIPPING.** WILLIAM H. COSPER, Chicago, Ill. Filed Jan. 27, 1890. Serial No. 338,320. (No model.)

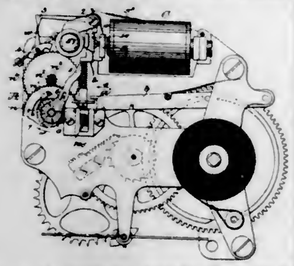


Claim.—1. As an improved article of manufacture, the herein-described weather-stripping, consisting of a flexible strip having an enlarged main or interstice-closing portion, a web extending therefrom, and having a heel at its free end, a rigid strip embracing said web, and means located between said heel and the main portion of the flexible strip for securing said web and embracing-strip together.

2. As an improved article of manufacture, the herein-described weather-stripping, consisting of a flexible strip having an enlarged main or interstice-closing portion, as A, a web, as B, extending therefrom and having a heel, as *b*, at its free end, a metallic strip, as D, bent to inclose said web, and a filament, as *b'* for securing said web and metallic strip together.

445,545. **NON-INTERFERENCE SIGNAL-BOX.** MOSES G. CRANE, Newton, Mass. Filed Nov. 22, 1889. Serial No. 331,190. (No model.)

Brief.—When armature is released, it moves the three-armed lever *a* backward, removing connecting-plate *a'* from under arm *b*, thus rendering pull 105 inoperative. The lever is returned slowly by time-train. Armature held to magnet when door is closed by knob 51.



Claim.—1. In a signal-box, signaling mechanism and a movable connecting-plate which controls its operation, combined with a non-interference magnet, its armature, and retractile spring, the latter operating to positively move said connecting-plate from its normal into its abnormal position when the magnet is demagnetized, and a motor mechanism for moving said connecting-plate from its abnormal to its normal position, substantially as described.

2. In a signal-box, signaling mechanism, a connecting-plate which controls its operation, and a two-armed lever 3 5 for effecting movement of said connecting-plate, combined with a non-interference electro-magnet and its armature, which, when retracted, moves said two-armed lever and connecting-plate into its abnormal position, and the independent motor mechanism A, operatively connected with the said arm 5 for returning said lever and connecting-plate to its normal position, substantially as described.

3. In a signal-box, a connecting-plate interposed between the signaling-lever and signaling mechanism for controlling its operation, the electro-magnet C and its armature, which, when retracted, moves the said connecting-plate into its abnormal position, combined with motor mechanism operatively connected with said connecting-plate for positively but slowly moving it into its normal position, substantially as described.

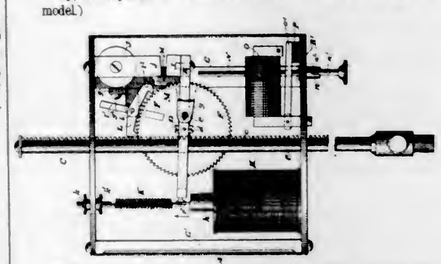
4. In a signal-box, the starting-lever, the connecting-plate, the signaling-lever, the electro-magnet C, and its armature, combined with a motor mechanism A and the friction-plate *o*, operatively connected with the said connecting-plate and with the said armature, said friction-plate being moved by the motor mechanism in one direction and by the armature in the opposite direction, substantially as described.

5. In a signal-box, the lever carrying a connecting-plate controlling the operation of the signaling mechanism, the non-interference electro-magnet C, and its independently-movable armature by which the said lever is moved into its extreme abnormal position on each movement of the armature, combined with the motor mechanism A and the friction-plate *o*, operatively connected with the said connecting-plate and frictionally engaging one of the wheels of the motor mechanism, to be moved in one direction by said connecting-plate and in the opposite direction by the motor mechanism, substantially as described.

6. In a signal-box, signaling mechanism comprising motor mechanism, a signaling-lever, a circuit-wheel, and co-operating contact-pen, combined with a non-interference magnet, its armature 12, pivoted armature-carrying lever 10, a pivoted lever carrying the connecting-plate for controlling the operation of the signaling mechanism, arranged adjacent to but independent of the said armature 12 or its carrying-lever, to be moved directly by it into its abnormal position, and means, substantially as described, continually in engagement with the said pivoted lever for restoring it to its normal position slowly, substantially as and for the purposes set forth.

7. In a signal-box, signaling mechanism and a connecting-plate constituting a part of the actuating mechanism, combined with a non-interference magnet and its armature, a three-armed lever, one of which arms carries the connecting-plate, said lever being moved into its abnormal position by the retraction of said armature, and an independent time-train controlled by another one of the arms of said three-armed lever for restoring the three-armed lever to its normal position, the operative connection of said train being formed by the third arm of this three-armed lever, substantially as described.

445,546. **ELECTRIC-ARC LAMP.** JAMES W. EASTON, New York, N. Y., assignor to P. Minturn Smith, Plainfield, N. J., and William D. Perry, Brooklyn, N. Y. Filed Feb. 19, 1890. Serial No. 340,986. (No model.)



Claim.—1. In an arc lamp, the combination of the carbon-carrying rod, an escapement-wheel adapted to control the movement thereof, a pivoted frame on which said escapement-wheel is mounted, an escapement mounted on the fixed frame of the lamp for controlling the movement of said wheel, and means for adjusting the position of the axis of said escapement, whereby the lamp may be arranged to feed at any desired voltage, substantially as and for the purposes set forth.

2. In an arc lamp, the combination of the carbon-rod, an escapement-wheel connected therewith, a pivoted frame in which said escapement-wheel is journaled, an escapement controlling the movement of said wheel, and a stop on said frame adapted to engage with said escapement and prevent it from swinging into contact with the wheel when the latter is lowered beyond a certain point, substantially as and for the purposes set forth.

3. In an arc lamp, the combination of the carbon-rod, an escapement-wheel connected therewith, a pivoted frame in which said escapement-wheel is journaled, an escapement controlling the movement of said wheel, a stop on said frame adapted to engage with said escapement and prevent it from swinging into contact with the wheel when the latter is lowered beyond a certain point, and a support N, substantially as and for the purposes set forth.

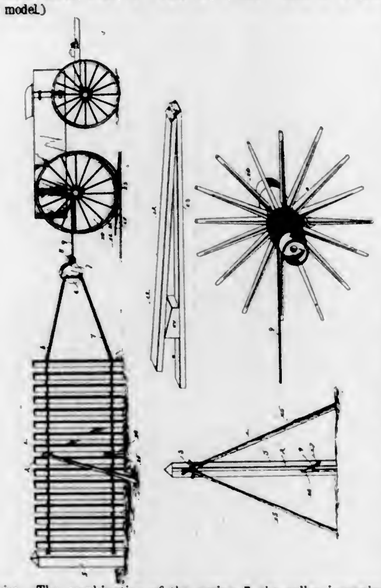
4. In an arc lamp, the combination of the carbon-rod, an escapement-wheel mounted on a pivoted frame or lever and adapted to control the movement of said rod, an escapement mounted on the fixed frame of the lamp for controlling the movement of said wheel, a high-resistance magnet arranged in a shunt of the main circuit for controlling the movement of the feeding mechanism, a low-resistance magnet also in a shunt of the main circuit and operating when energized to release the feeding mechanism and complete the main circuit of the lamp, and a magnet arranged in the main circuit for throwing said low-resistance shunt-magnet out of action when the main circuit is completed, substantially as and for the purposes set forth.

5. In an arc lamp, the combination, with the carbon-rod and feeding mechanism, substantially as described, for controlling the movement thereof, of a solenoid or electro-magnet arranged in a high-resistance shunt of the main circuit of the lamp, an electro-magnet provided with two coils wound in opposite directions to oppose each other's action, one coil being in permanent connection with the main circuit of the lamp and the other coil being in permanent connection with said high-resistance shunt-circuit, and a low-resistance shunt-circuit adapted to be closed when the action of one of said coils neutralizes the effect of the other, substantially as and for the purposes set forth.

6. In an arc lamp, the combination of the carbon-rod, the escapement-wheel and escapement controlling the movement thereof, a pivoted frame in which said escapement-wheel is journaled, a solenoid or electro-magnet arranged in a high-resistance shunt of the main circuit of the lamp and having its core or armature connected with said frame, an armature or electro-magnet arranged in a low-resistance shunt of the main circuit and having its armature attached to said frame, and an electro-magnet provided with a pivoted armature and with two coils wound in opposite directions, one coil being in the main circuit of the lamp and the other in the said high-resistance shunt-circuit, the armature of said last-mentioned magnet acting as a switch to close the said low-resistance shunt-circuit when the core of its magnet is de-energized, substantially as and for the purposes set forth.

7. In an automatic cut-out for arc lamps, the combination of a magnet having a differentially-wound core, one coil thereof being in the main circuit of the lamp and the other coil thereof being in a high-resistance shunt of said main circuit, and a pivoted armature and a contact-point, both in a low-resistance shunt of the main circuit, substantially as and for the purposes set forth.

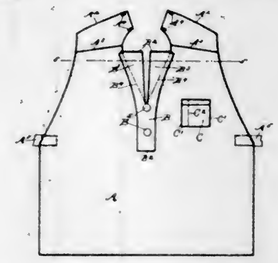
445,547. **TENSION DEVICE FOR SLAT-AND-WIRE FENCES.** FLETCHER EMLEY, Rome, Ga. Filed July 3, 1890. Serial No. 357,648. (No model.)



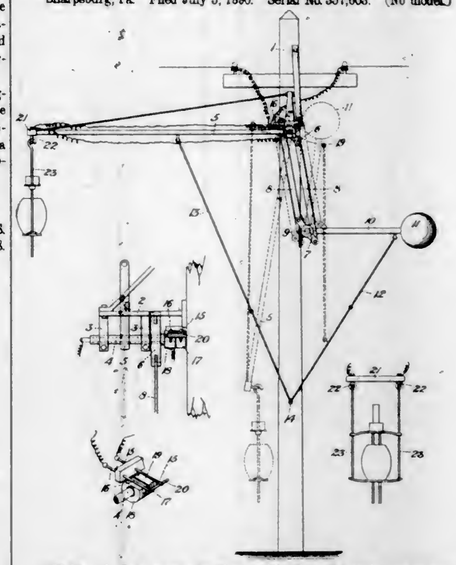
Claim.—The combination of the casing 7, the pulley journaled therein and adapted to receive the continuous strands 3 and 4 of a fence, the wheel 10, the rope connected to the wheel and the casing, and the wheel-lock arranged to engage the wheel, and consisting of the boards 12 and 13, hinged together, and the wedge-shaped block adapted to spread the boards, substantially as described.

445,548. **APRON.** CHARLES A. FILKINS, Amsterdam, N. Y. Filed July 11, 1890. Serial No. 358,428. (No model.)

Claim.—In an apron, the combination, with a body having its lower front closed and its upper front slitted, of a lapel-piece slitted for a part of its length and secured to the body with its slitted edges superimposed upon the slitted edges of the body and its end beyond the slit upon the closed front of the body, and means for securing the apron to the person of the wearer, substantially as and for the purposes set forth.



445,549. **MAST-ARM FOR ELECTRIC LIGHTS.** GEORGE FITCH, Sharpsburg, Pa. Filed July 3, 1890. Serial No. 357,603. (No model.)



Claim.—1. In a mast-arm, the combination of a main arm pivotally connected at the inner end, and a secondary counterweighted balancing-arm pivoted at a point below and connected to the main arm by equalizing links and levers, substantially as shown and described.

2. In a counterweighted mast-arm, the combination therewith of interposed equalizing-links for transmitting leverage, and means for operating and holding the parts in position, substantially as shown.

3. In a mast-arm, the combination of circuit-terminal points, a short-circuiting wire, and disk-blocks provided with flattened faces, whereby a circuit is automatically made and broken by the movement of such disk-blocks operated by the mast-arm, substantially as shown.

445,550. **PHOTOGRAPHIC CAMERA.** WILLARD H. FULLER, Passaic, N. J., assignor to the Scovill & Adams Company, New York, N. Y. Filed July 30, 1889. Serial No. 319,181. (No model.)

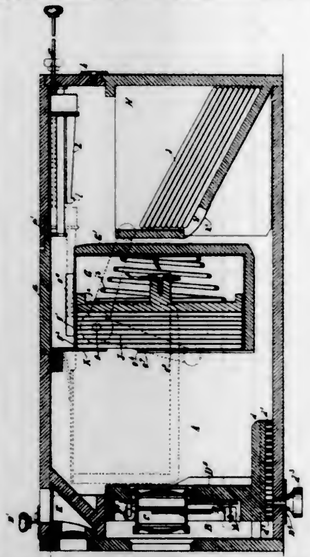
Claim.—1. In a photographic camera, the combination of an adjustable box or receptacle within the camera-body for photographic plates, and an adjuster for removing the plates from the said box or receptacle, substantially as specified.

2. In a photographic camera, the combination of an adjustable box or receptacle within the camera-body for photographic plates, an adjuster for removing the plates from the said box or receptacle within the camera-body, and another receptacle for receiving the plates so removed, substantially as specified.

3. In a photographic camera, the combination of a swinging or

oscillating box or receptacle within the camera-body for photographic plates, and an adjuster for removing the plates from the said box or receptacle, substantially as specified.

4. In a photographic camera, the combination of a box or receptacle for plates constructed to swing from a position in which the plates will be vertical to a position in which the plates will be at an angle to the first-named position, and an adjuster for removing the plates from the said box or receptacle, the arrangement of the box or receptacle and adjuster being such that when the box or receptacle is in its normal position the plates cannot be reached by the adjuster and that when the box or receptacle is moved into its other position the plates can be reached by the adjuster, substantially as specified.



5. In a photographic camera, the combination of a box or receptacle for plates constructed to swing from a position in which the plates will be vertical to a position in which the plates will be at an angle to the first-named position, and a reciprocating adjuster for removing the plates from the said box or receptacle, the arrangement of the box or receptacle and adjuster being such that when the box or receptacle is in its normal position the plates cannot be reached by the adjuster and that when the box or receptacle is moved into its other position the plates can be reached by the adjuster, substantially as specified.

6. In a photographic camera, the combination of a box or receptacle for plates, a case with which said box or receptacle is removably connected, which case is adjustably supported in the body of the camera, and an adjuster for removing the plates from the said box or receptacle, substantially as specified.

7. In a photographic camera, the combination of a swinging box or receptacle for plates, having one side open and an adjacent side cut away and fitted with a spring-actuated follower, substantially as specified.

8. In a photographic camera, the combination of a swinging box or receptacle for plates, having one side open, an adjacent side cut away, flanges at certain of the sides, and a follower, substantially as specified.

9. In a photographic camera, the combination of a box or receptacle for plates, having one side open, a follower fitted opposite the said open side, and a catch on the follower constructed to engage with the back of the box or receptacle, substantially as specified.

10. In a photographic camera, the combination of a box or receptacle for plates and a case for receiving the same, the latter being arranged within the common body and having one open side and end and provided with flanges, substantially as specified.

11. In a photographic camera, the combination of a box or receptacle for plates and a case for receiving the same, the latter having one open side and end and provided with flanges and catches, substantially as specified.

12. In a photographic camera, the combination of a receptacle for plates swinging on trunnions, an arm outside the body of the camera, operating in conjunction with one of the trunnions, and a follower within the receptacle, substantially as specified.

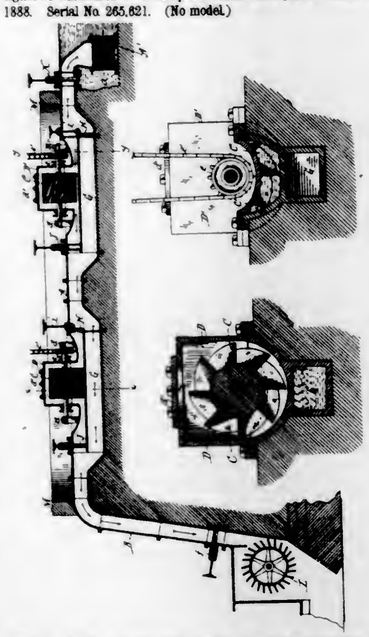
13. In a photographic camera, the combination of a plate-receptacle made in the form of a slide and swinging on trunnions, and an arm outside the body of the camera, operating in conjunction with one of the trunnions, substantially as specified.

14. In a photographic camera, the combination of a box or receptacle for photographic plates, an adjuster supported independently of the box or receptacle for removing the plates from said box or receptacle, and another receptacle for receiving the plates so removed, substantially as specified.

15. In a photographic camera, the combination of a box or receptacle for plates movable from a position in which the plates will be vertical to a position in which the plates will be at an angle to the first-named position, and an adjuster for removing the plates from the said box or receptacle, the arrangement of the box or receptacle and adjuster being such that when the box or receptacle is in its vertical position the plates cannot be reached by the adjuster, and when the box or receptacle is turned into its other position the plates can be reached by the adjuster, substantially as specified.

16. In a photographic camera, the combination of a box or receptacle for plates movable from a position in which the plates will be exposed to a lens to a horizontal position, and an adjuster for removing the plates from the box or receptacle when in its last-named position, substantially as specified.

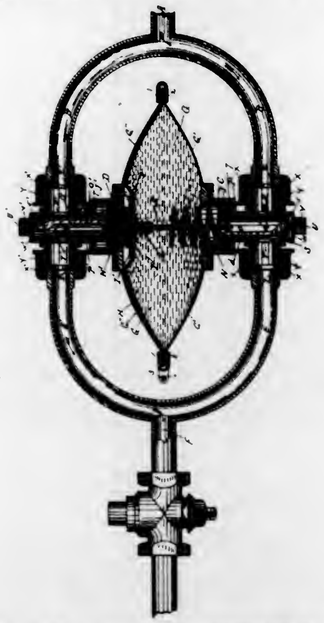
445,551. WATER-MOTOR. SAMUEL GOLDEN, Buffalo, N. Y., assignor of one-fourth to Christopher Cullen, same place. Filed Feb. 28, 1888. Serial No. 265,821. (No model.)



Claim.—1. The combination, with the tight flume composed of a main portion which is arranged horizontally, or nearly so, and a descending tail portion, of a raised casing arranged in the horizontal main portion of the flume, a water-wheel arranged in said casing with its lower portion in the flume, an auxiliary water-passage arranged below said casing and the main portion of the flume, a sliding gate or valve arranged at the head of said auxiliary water-passage, whereby the water can be shut off from the wheel-casing and directed through the auxiliary passage, and a sliding gate or valve arranged in the main portion of the flume opposite the tail of said auxiliary passage, whereby the water flowing through the auxiliary passage is prevented from entering the wheel-casing, substantially as set forth.

2. The combination, with the tight flume composed of a main portion arranged horizontally, or nearly so, and a descending tail portion, of two or more tight casings raised above the main portion of the flume and opening into the flume, a water-wheel arranged in each of said casings with its axis lengthwise of the flume and having oblique blades trending lengthwise of the flume, an auxiliary water-passage arranged below each casing and communicating at opposite ends with the main portion of the flume, sliding gates or valves arranged at the head of each auxiliary passage, whereby the flow of water can be shut off from the wheel-casings and admitted through the auxiliary passages, and sliding gates or valves arranged in the main portion of the flume in rear of the casings and opposite the tail portions of the auxiliary passages, whereby the water flowing through the auxiliary passages is shut off from the wheel-casings above said auxiliary passages, substantially as set forth.

445,552. DIAPHRAGM METER. WILLIAM J. GURD, Sarnia, Canada. Filed Feb. 23, 1886. Serial No. 192,822. (No model.)



Claim.—1. The combination, in a registering-meter for fluids, &c., consisting of a chamber composed of two disks, substantially as shown, with a flexible diaphragm secured in position between the united edges of said disks, two channel-ways connecting with and extending from a supply or inducting pipe adapted to convey the contents into the center of the chamber, and two channel-ways connecting at the same centers for the discharge of the same, substantially as and for the purpose set forth.

2. In a registering-meter for fluids, &c., the combination, with a chamber whose only openings are located at the center thereof and a centrally-arranged flexible diaphragm, of valves adapted to reciprocate horizontally by means of the said diaphragm, and by which the supply and discharge of the meter are regulated, substantially as set forth.

3. In a registering-meter for fluids, &c., the combination, with a chamber provided with a centrally-located flexible diaphragm, of sliding tubular valves adapted to operate in conjunction with said diaphragm, substantially as and for the purpose set forth.

4. In a registering-meter for fluids and other matter, the combination, with a receiving and discharging chamber, operating flexible diaphragm, and inducting and discharge channels, of tubular sliding valves located at each side of said diaphragm, substantially as described, whereby the said matter to be measured is received, directed, and discharged in measured quantities, substantially as set forth.

5. The combination, in a registering-meter consisting of a chamber formed of two concave disks provided with central openings and a flexible diaphragm interposed between, substantially as set forth, and two tubular valves provided with receiving and discharge ports, of one or more coiled springs serving to impart an accelerated movement to the valves, substantially as and for the purpose set forth.

6. In a registering-meter, the combination, with a chamber and flexible diaphragm such as described, inducting and discharge channel-ways, valves, and springs, of latch-levers for holding in check the said valves, substantially as and for the purpose set forth.

7. In a registering-meter, the combination, with a chamber, interposed flexible diaphragm, inducting and discharge valves, springs, and latch-levers, of a rod connecting said valves, whereby they are moved in unison, substantially as and for the purpose set forth.

8. In a registering-meter, the combination, with a receiving-chamber, flexible diaphragm, inducting and discharge valves, springs, latch-levers, and rod uniting said valves, of a device operated by said diaphragm and adapted to lift said latch-levers, substantially as and for the purpose set forth.

9. In a registering-meter substantially such as described, the combination, with a flexible diaphragm, of a device serving as a sleeve, stuffing-box, and trip for operating the latch-levers, substantially as and for the purpose set forth.

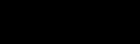
10. The combination, in a registering apparatus consisting of two concave disks, a centrally-located flexible diaphragm supporting a piston adapted to vibrate through its center, sliding tubular supply and discharge valves located at opposite ends of said piston and adapted to be operated by the same, and a grooved strap for inclosing and uniting the outer periphery of said disks together, united and clamped substantially as shown and set forth.

11. In a registering-meter substantially such as described, the combination, with a flexible diaphragm and chamber, of a pin or piston adapted to be operated by the movement of said diaphragm, whereby a registering device is operated, substantially as set forth.

12. In a registering-meter substantially such as described, provided with a receiving-chamber, and a flexible diaphragm adapted to vibrate from side to side within said chamber, of a pin or piston adapted to reciprocate through the side thereof and operate a ratchet and dials for registering the quantity of matter passed through the meter, substantially as set forth.

13. In a meter for fluids, &c., the combination, with a receiving-chamber provided with a diaphragm adapted to vibrate from side to side and operate coiled springs, of tubular valves provided with exterior flanges against which said springs act, substantially as and for the purpose set forth.

445,553. SUSPENDERS. EMIL GUTMANN, New York, N. Y. Filed Oct. 1, 1890. Serial No. 366,762. (No model.)



Claim.—1. In suspenders, the combination, with the shoulder-straps, of the back-piece B, arranged in the form of a loop to inclose said straps at the point of crossing, and the slide D, adapted to be moved upon one side of the loop in clamping and releasing the straps, substantially as and for the purpose specified.

2. The back-piece for suspenders, consisting of a metallic loop roughened on part of its interior, and a slide arranged upon one side of the loop and adapted by its movement thereon to clamp the suspenders firmly down upon such roughened part, all combined as and for the purpose set forth.

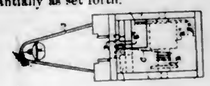
3. In suspenders, the metallic back-piece composed of the body B, having curved ends $B' B^2$, with the ridge B^2 and hole *b*, and the hinge *c*, the tongue C, inclined as shown, and having the turned-up end $C C^2$, adapted to engage and disengage, as shown, and the slide D, adapted to tighten and relax the clamp by being moved on the inclined tongue C, all arranged for joint operation as herein specified.

445,554. MECHANICAL TOY. HENRY HARGREAVES, London, County of Middlesex, England. Filed Jan. 9, 1890. Serial No. 336,878. (No model.)

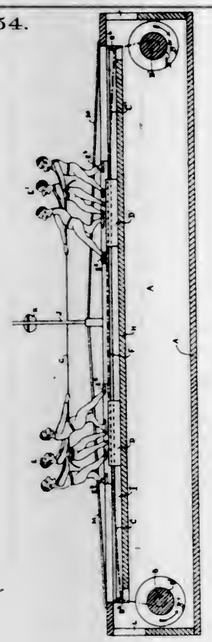
Claim.—1. The improved competitive mechanical toy, consisting of a figure mounted on a stand, a guideway for the latter, and independent rollers, each connected with said stand and adapted to be operated by different individuals in competition to pull oppositely upon the said figure, substantially as set forth.

2. The toy representing the game known as "tug of war," said toy consisting of the combination of a box or frame, stands D D', adapted to move thereon, opposing figures E E', carried on said stands, a connection between the stands, and means, such as the cords C C' and rollers B B', for pulling said stands oppositely by different persons in competition, substantially as set forth.

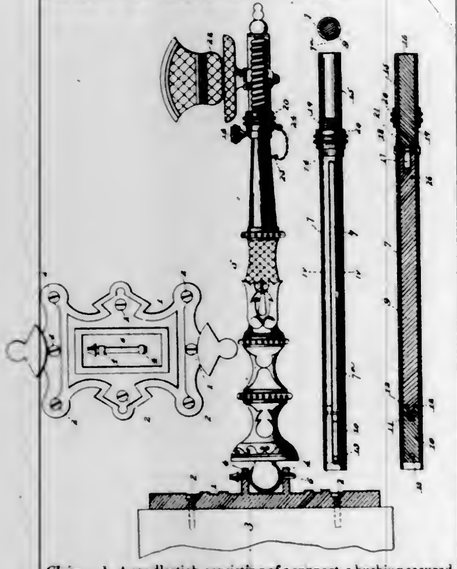
3. The improved competitive mechanical toy, consisting of a figure mounted on a stand, a guideway for the latter, a signal device, such as a bell K, adapted to be operated by the figure, and independent rollers, each connected with said stand and adapted to be operated by different individuals in competition to pull oppositely upon the said figure, substantially as set forth.



445,554.



445,555. CANDLESTICK. ADALBERT HECKI, Mannheim, Germany. Filed Sept. 2, 1890. Serial No. 363,760. (No model.)



Claim.—1. A candlestick consisting of a support, a bushing secured to the support, a rod formed in two sections hinged together and sliding within the bushing, a carrier hinged to the rod, and a holder secured to the carrier, substantially as described.

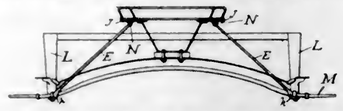
2. A candlestick consisting of a support, a bushing secured therein having a screw-threaded portion, a rod within the bushing having a carrier provided with a screw-threaded portion, a screw-threaded collar working over the screw-threaded portions, and a holder secured to the carrier, substantially as described.

3. A candlestick consisting of a support, a bushing secured to the support, a sliding rod formed in two sections, pin-and-slot connection between the bushing and the rod, the carrier hinged to the rod, and the holder secured to the carrier, substantially as described.

4. A candlestick consisting of a support, a bushing secured to the support, a rod formed in two sections hinged together and sliding within the bushing, the outer section having a slotted end and a cross-pin, a carrier formed with a longitudinal sliding piece having a longitudinal opening through which the cross-pin passes, a pin for locking the carrier to the rod, and a holder secured to the carrier, substantially as described.

5. A candlestick consisting of a support, a bushing secured to the support, a rod formed in two sections hinged together and sliding within the bushing, a carrier hinged to the rod, a holder secured to the carrier, and a screen surrounding the holder, having a vertical slot, substantially as described.

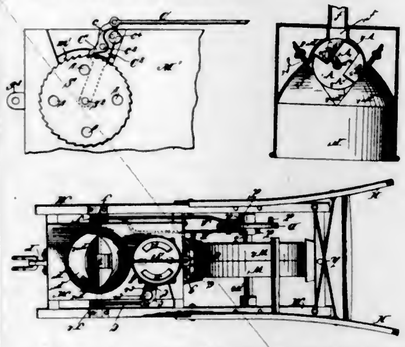
445,556. TWO-WHEELED VEHICLE. JACKSON W. HEWITT, Jackson, Mich. Filed Sept. 27, 1890. Serial No. 366,414. (No model.)



Claim.—1. In a two-wheeled vehicle, the combination of the seat, the axle, and bars E E, each of said bars being adapted to be detachably secured to the seat at one end and detachably secured to the axle near its end at the other end, substantially as and for the purpose described.

2. In a two-wheeled vehicle, the combination of the seat, the locking devices N N, secured to the seat, the axle, and bars E E, each of said bars being adapted at one end to be secured by one of said locking devices and provided at the other end with a saddle H, adapted to fit over the axle and abut against the butting-ring or other object at the end of the axle adapted to prevent the movement of said saddle along the axle, substantially as shown and described.

445,557. CORN-PLANTER. FRANK P. HOWARD, Bridgton, Me., assignor of one-half to Mellen A. Pingree, same place. Filed Oct. 16, 1889. Serial No. 327,201. (No model.)



Claim.—1. In a machine of the class described, the horizontally and vertically adjustable covering-shovels G G, with means for securing them in their horizontally and vertically adjusted positions.

2. The combination of the frame M, support I, shovels G G, pivoted to said support, so as to swing both horizontally and vertically, the rod G' and cross-piece *g*, adjustably secured to the frame M, and means for adjustably securing the shovels to the cross-piece, substantially as shown and described.

3. In a machine of the class described, the wheel or roller W, composed of two sections W' and W², having the adjacent edges of their peripheries rabbeted, so that when brought together a close joint and a roller having a continuous cylindrical surface is formed, substantially as shown and described.

4. In a machine of the class described, a valve adapted to oscillate within the outlet of the fertilizer-hopper, consisting of a semi-cylindrical top, as V, adapted to close the upper entrance of said outlet, and a rectangular bottom V', adapted to close the lower entrance to said outlet, as and for the purposes described.

5. In a machine of the class described, a fertilizer-hopper having a basin-like bottom F', divided into parts by sloping guides, as F³, and provided with an aperture, the size of which can be increased or diminished by means of adjustable plates as *f*⁵, secured to the sides of the guides F³, as and for the purposes described.

6. The combination of the rock-shaft J, actuated by the main drive-wheel through intermediate mechanism, with the crank J³, the link C, the pawl C', and the dropping-plate S', having a toothed periphery.

7. The combination of the link C, the pawl C', the oscillating plate C³ carrying said pawl, and the toothed dropping-plate S', substantially as shown and described.

8. The combination of the link C, the pawl C', the oscillating plate C³, carrying said pawl, the toothed dropping-plate S', and means for holding the pawl in engagement with the toothed dropping-plate, substantially as shown and described.

9. The combination, with the link C, to which a reciprocal motion may be imparted, of the pawl C', curved at *c* and pivoted at *c*³ to the plate C³, the eccentric button *c*⁴, adapted to engage with the said pawl, the plate C³, and the dropping-plate S', the said plate and dropping-plate adapted to swing around the same center, as and for the purposes described.

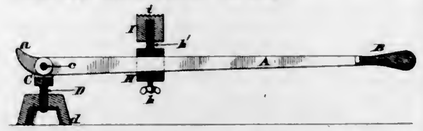
10. The combination, with the fertilizer-hopper F, stationary upon the main frame, of the rock-shaft J and oscillating valve V, the link C and pawl C' and its means of adjustment, the dropping-plate S³, and the seed-box S, the said fertilizer-hopper and seed-box having suitable outlet-apertures.

11. The combination of the links A and B, actuated from the main drive wheel or roller W, with the crank J', the rock-shaft J, carrying the oscillating valve V, the fertilizer-hopper F, the link C, pawl C', sliding plate *c*³, button *c*⁴, the dropping-plate S', and seed-box S.

12. The plow P, having the beam *p*, terminating in the ridge *p*² and sloping sides *p*⁴, and provided with apertures *p'* and *p*³, as and for the purposes described.

13. The combination, with the plow P, having the beam *p*, ridge *p*², and apertures *p'* and *p*³, of the fertilizer-hopper F and valve V, and seed-box S and dropping-plate S', as and for the purposes described.

445,558. LEVER. GUSTAVE H. JANTZ, Cincinnati, Ohio. Filed Oct. 20, 1890. Serial No. 368,633. (No model.)



Claim.—1. A lever of the second class provided with a longitudinally-shiftable weight-bearing having a device for securing it in position, substantially as herein described.

2. A lever of the second class provided with a longitudinally-shiftable weight and vertically-adjustable bearing and a device for securing it in position, substantially as herein described.

3. A lever of the second class provided with a longitudinally-shiftable weight-bearing and coupled to a vertically-adjustable swivel-fulcrum, substantially as herein described.

4. The combination of second-class lever A, slide H, clamp-screw *h*, screw-threaded shank *h'*, and bearing I, engaged with said shank, for the purpose described.

5. The combination of a second-class lever A, pivot *c*, ears C, screw-threaded shank D, and foot *d*, engaged with said shank, for the purpose described.

6. The combination of second-class lever A, slide H, clamp-screw *h*, screw-threaded shank *h'*, bearing I, pivot *c*, ears C, screw-threaded shank D, and foot *d*, all as herein described, and for the purpose stated.

445,559. MACHINE FOR PRODUCING PRINTING-SURFACES. FRANK A. JOHNSON and WALTER E. CRANE, Minneapolis, Minn., assignors to the Johnson-Crane Matrix Company, same place. Filed June 25, 1889. Serial No. 315,508. (No model.)

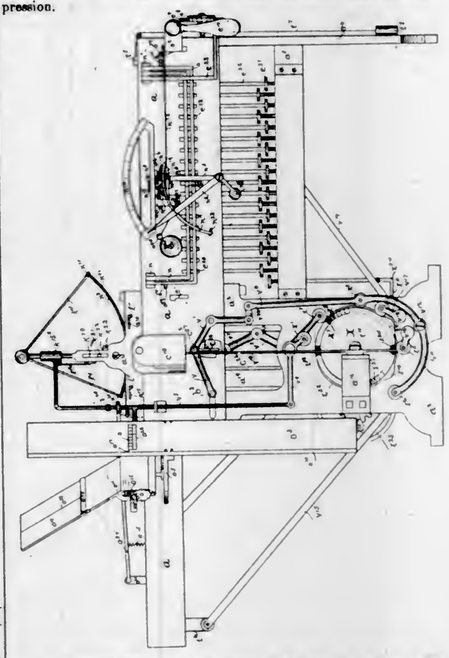
Claim.—1. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies mounted in said guides, said fonts being movable therein to assemble the selected dies into a transverse line.

2. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies mounted in said guides and movable lengthwise thereof to assemble the selected dies into a transverse line, and means for moving the selected dies, and those only, out of their original paths of motion for condensation into a compact line.

3. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies mounted in said guides movable lengthwise thereof to assemble the selected characters into a transverse line, means for moving the selected dies, and those only, out of their original paths of motion for condensation into a justified line, and means for returning the selected dies directly to their original positions in their respective fonts after impression.

4. The combination, with the guides, of the fonts of disconnected dies movable lengthwise thereof to assemble the selected dies into a transverse line, and a line-holder adapted to receive the selected dies and permit their condensation into a compact line and the distribution of the same after impression.

5. In a machine for producing printing-surfaces, the combination, with a series of guides, of fonts of disconnected dies, said fonts being movable therein, and a die-distributer adapted to restore the entire line of selected dies simultaneously to their respective fonts after impression.



6. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies movable longitudinally of said guides to assemble the selected dies into a transverse line, condensing mechanism adapted to condense the selected dies into a compact line, and a die-distributer adapted to restore the whole line of selected dies simultaneously to their respective fonts after impression.

7. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies movable lengthwise thereof to assemble the selected dies into a transverse line, a line-holder adapted to receive and guide the selected dies in their transverse movement, a condensing device for moving the dies lengthwise of the line-holder to condense the dies into a compact line, and a die-distributer for restoring the whole line of selected dies simultaneously to their respective fonts after impression.

8. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies movable longitudinally of said guides to assemble the selected dies into a transverse line, condensing mechanism adapted to condense the selected dies into a compact line, and a die-distributer adapted to distribute the whole line simultaneously, comprising a series of independent carriers, one for each of the selected dies, having differential movements for returning the dies to their respective fonts.

9 The combination, with the guides, of the fonts of disconnected dies movable lengthwise of the guides to assemble the selected dies into a transverse line, a line-holder adapted to receive the selected dies and permit their condensation into a justified line, an impression material, and an impression device for forcing together the impression material and the compacted line of selected dies.

10. The combination, with the guides, of the fonts of disconnected dies movable lengthwise of the guides to assemble the selected dies into a transverse line, a line-holder adapted to receive the selected dies and permit their condensation into a justified line, an impression material and an impression device for forcing together the impression ma-

terial and the justified or compacted line of selected dies, and a die-distributer adapted to restore the whole line of dies simultaneously to their respective fonts.

11. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies movable in said guides, and stops movable into the paths of motion of said fonts at different points to stop the same in proper relative positions to assemble the selected dies into a transverse line.

12. The combination, with a series of guides, of a corresponding series of independently-movable fonts of disconnected dies mounted in said guides, and independently-controllable stop devices for stopping said fonts in a proper relative position to assemble the selected dies into a transverse line, whereby any error in the selection of an individual die may be corrected without disturbance of the other selected dies.

13. The combination, with a series of guides, of a corresponding series of independently-movable fonts of disconnected dies mounted in said guides, independently-controllable stop devices for stopping said fonts in a proper relative position to assemble the selected dies into a transverse line, and an indicating device to show what dies have been assembled in the transverse line for the detection and correction of errors.

14. The combination, with a series of guides, of a corresponding series of independently-movable fonts of disconnected dies mounted in said guides, independently-controllable stop devices for stopping said fonts in a proper relative position to assemble the selected dies into a transverse line, and a selected die-indicator consisting of independent character-bars movable into an exposed transverse line coincidently with the assembling of the selected dies.

15. The combination, with a series of guides, of a corresponding series of independently-movable fonts of disconnected dies mounted in said guides, independently-controllable stop devices for stopping said fonts in a proper relative position to assemble the selected dies into a transverse line, and a selected die-indicator consisting of independent character-bars movable into an exposed transverse line coincidently with the assembling of the selected dies, and a proof-taking device, whereby a proof is taken of each line of indicator characters as assembled.

16. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies movable longitudinally of said guides, stops movable into the paths of motion of said fonts at different points to stop the same in the proper relative positions to assemble the selected dies into a transverse line, a character-board containing characters corresponding to the dies, and intervening connecting mechanism from said character-board to said stops for actuating the same.

17. The combination, with a series of fonts of disconnected dies and mechanism for assembling dies selected from said fonts into a line, of an impression material and a duplicating impression device adapted to take two or more impressions in succession directly from the line of dies.

18. The combination, with a series of fonts of disconnected dies and mechanism for assembling dies selected from said fonts into a line, of an impression device, the said line of dies and impression material being movable relatively to each other, whereby successive impressions can be made, substantially as and for the purpose specified.

19. The combination, with a series of guides, of a corresponding series of fonts of disconnected dies movable in said guides, and devices for stopping the motion of said fonts at different points to bring the same in proper relative positions to assemble the selected dies into a transverse line, substantially as and for the purpose specified.

20. The combination, with a series of guides, one part of said series being stationary and the other movable, of a series of fonts of dies movable in said guides, substantially as and for the purpose specified.

21. The combination, with a series of partible guides and means for moving one part of said series to and from the other, of a series of dies mounted in the movable part of said series and a series of stops located in the stationary part thereof, substantially as and for the purpose specified.

22. The combination, with a series of partible guides and a series of fonts of dies movable in said guides, of an impression-bed and means for operating said bed, substantially as and for the purpose specified.

23. The combination, with a series of guides, one part of which is movable with relation to the other, and a series of fonts of disconnected dies movable in said guides to assemble the selected dies into a transverse line, of an impression-bed and means for receiving the selected dies and forcing them together into a justified line, substantially as and for the purpose specified.

24. The combination, with a series of partible guides and means for moving one part of said series to and from the other part, of a series of fonts of disconnected dies mounted in said guides and movable therein to assemble the selected dies into a transverse line, an impression-bed, means for compacting the assembled dies into a justified line, and an impression-roller, substantially as set forth.

25. The combination, with a series of guides, one part of which is fixed to the frame and the other movable with relation thereto, of a series of fonts of disconnected dies mounted in the movable part of the guides and a series of stops located in the stationary part of said guides, substantially as set forth.

26. In combination with a series of guides, a series of fonts of dies mounted therein, a series of push-heads, a series of stop-heads, and a series of stops movable in and out of the guide-channels, substantially as set forth.

27. The combination, with the guide-channels and series of fonts of disconnected dies therein, of movable stop-heads placed in each channel in advance of each font and movable stops for arresting the motion of the stop-heads and dies, substantially as set forth.

28. In combination with a guide-channel and series of dies therein, a stop-head located within the channel in advance of the dies and provided with a yielding portion, substantially as set forth.

29. The combination, with a series of guide-channels formed of grooved bars having widened bases, of a series of fonts of dies movable therein, a stop-head in advance of each font having ribs fitting within the grooves in the said bars, and a push-head at the rear of each font, having similar ribs, substantially as set forth.

30. The combination, with a guide, a series of disconnected dies, a stop-head, and a push-head movable in said guide, of a dog and mechanism for tripping said dog to release the stop-head and permit the font to move forward, substantially as set forth.

31. In combination with a series of guides, a series of fonts of disconnected dies, a series of push-heads, a series of stop-heads, a series of dogs, mechanism for tripping any one of said dogs to release the stop-head of the desired channel, a series of stops, and mechanism for operating said stops, substantially as set forth.

32. The combination, with a series of guide-channels, of a series of fonts of disconnected dies movable therein, an impression-bed, sliding carriers for receiving the selected dies from the type-channels, and means for forcing said carriers together to assemble the selected dies into a justified line, substantially as set forth.

33. The combination, with the guide-channels arranged side by side and fonts of disconnected dies mounted in said channels, of sliding carriers for receiving the dies selected from the fonts and assembling them into a justified line, an impression-bed, and guiding and clamping bars for holding the dies rigidly in alignment, substantially as set forth.

34. The combination, with movable fonts of disconnected dies, of an impression-bed, die-carriers for assembling the dies in a transverse line, and clamping devices attached to the bed and serving to hold the dies held in the carriers in alignment while the impression is being made, substantially as set forth.

35. The combination, with an impression-bed and die-carriers, of slotted posts attached to the bed and clamping-bars mounted in the slots of the posts, substantially as and for the purpose set forth.

36. The combination, with an impression-bed and die-carriers, of posts attached to the bed and clamping-bars loosely connected to the posts, substantially as set forth.

37. The combination, with a transverse line of dies and means for supporting the same, of movable bail-shaped clamping-bars, substantially as set forth.

38. The combination, with the main frame and slotted pieces secured to the top thereof, of the impression-bed, slotted posts secured to said bed, the die-carriers, and the clamping-bars carried by the slotted posts and having ends projecting within the slots of the top pieces of the frame, substantially as set forth.

39. The combination, with the main frame having slotted top pieces provided with lateral projections, of the movable impression-bed, the die-carriers, and the clamping-bars having parts adapted to engage with the said lateral projections, substantially as set forth.

40. The combination, with the die-carriers, the movable impression-bed, and the clamping-bars carried thereby, of a spring for forcing down the clamping-bars and the dies when the downward movement of the bed occurs, substantially as set forth.

41. The combination, with the guide-channels and fonts of disconnected dies, said fonts being movable therein, of an impression-bed, die-carriers, clamping devices, and a check-bar, substantially as and for the purpose specified.

42. The combination, with the guide-channels and fonts of disconnected dies therein, of an impression-bed, die-carriers, clamping-bars, and a loop-shaped check-bar having a thin edge, substantially as set forth.

43. The combination, with the table b, having posts b^3, of the check-bar l^3, hinged in said posts and having a thin edge l^{14}, the movable impression-bed c^{30}, having slotted posts l^3, and the clamping-bars $l\,l$, mounted in the slotted posts, substantially as set forth.

44. The combination of the box-like frame supported by suitable standards, the parallel bars having channels between them, and the fonts of disconnected dies or types mounted in said channels, each type having a body resting on the bars and a projection or leg which extends down into the channel, substantially as set forth.

45. The combination, with the frame and fixed guide-bars having slots in their ends, of the movable guide-bars having tongues which enter the said slots, substantially as set forth.

46. The fixed guide-bars having vertical and horizontal slots, in combination with the movable guide-bars having tongues with inclined ends and wedge-shaped plates, substantially as set forth.

47. The fixed guide-bars having slots in their ends, the impression-bed, and the die-carriers, in combination with the movable guide-bars having tongues and wedge-shaped plates, substantially as set forth.

48. The combination of the fixed guide-bars having slots, stops placed in said slots, the fonts of disconnected dies, and means for throwing the stops into the type-channels, substantially as set forth.

49. The combination, with the fixed guide-bars having a series of recesses and widened bases containing vertical slots, of crank-shaped stops and mechanism for operating said stops, substantially as set forth.

50. The fixed guide-bars b', having widened bases containing vertical slots b^4 and above said bases recesses b^{32}, in combination with the crank-shaped stops b^7, having projecting portions b^8 b^{10}, substantially as set forth.

51. The combination, with the guide-bars and series of stops, of the fonts of disconnected dies, a stop-setting carriage, and mechanism for operating the same, substantially as set forth.

52. The combination, with the guide-bars and series of stops movable in and out of the channels between said bars, and the series of fonts of disconnected dies, of a carriage, a series of movable pieces on said carriage, and means for throwing up any one of said pieces, whereby the desired stop may be made to obstruct the channel, substantially as set forth.

53. The combination, with the guide-bars and series of stops movable in and out of the channels between said bars, of a carriage, a series of springs on said carriage, and mechanism for throwing up any one of said springs, substantially as set forth.

54. The combination, with the guide-bars and series of stops, of a carriage, a series of springs thereon, means for intermittingly advancing said carriage, and means controlled by key-levers for throwing up the desired springs on the carriage, substantially as set forth.

55. A stop-setting carriage provided with a series of springs, in combination with a series of sliding and vertically-movable bars and devices for operating said bars, substantially as set forth.

56. The combination of the stop-setting carriage, slides to which said carriage is connected, movable in guides in the frame, gearing for operating said slides, a weight or its equivalent for advancing said carriage, and pawl-and-ratchet devices for releasing the carriage to permit the advance thereof, substantially as set forth.

57. The combination, with the carriage c, provided with a series of springs c^4, slides c' c^3, to which said carriage is connected, shaft c^2, having pinions c^5 c^4, sliding and vertically-movable bars c^{26}, and key-levers c^{28}, of pawl-and-ratchet devices for releasing shaft c^2 and means actuated by the bars c^{26} for releasing said pawl-and-ratchet devices, substantially as set forth.

58. The combination of the key-levers, the series of longitudinally and vertically movable bars actuated by said levers, the carriage, the series of springs thereon, the stops, and the guide-channels, substantially as set forth.

59. The combination of the guide-bars, the series of stops, the stop-setting carriage, a cord and weight for advancing said carriage, a series of springs attached to the carriage, a series of bars having inclined slots, means for actuating said bars, bail-shaped bars hinged to the main frame, and means for connecting the bail-shaped bars with the devices for releasing the carriage, substantially as set forth.

60. The combination of the guide-bars, the fonts of disconnected dies, the series of stops, mechanism for setting said stops, and mechanism for returning said stops to their original positions, substantially as set forth.

61. The combination, with a series of guide-bars, of a series of stops mounted in the channels between said bars and provided with depending portions, and a device engaging with such portions for withdrawing the stops from the channels, substantially as set forth.

62. The combination, with a series of guide-bars, of a series of stops movable into and out of the channels between said bars and provided with portions depending below said bars, and a movable plate having slots for receiving said depending portions of the stops, substantially as set forth.

63. The combination, with the guide-bars, stops, and movable plate, of a stop-setting carriage and means carried by such carriage for operating the movable plate, substantially as set forth.

64. The combination, with the guide-bars, stops, and movable plate, of the carriage, pins on the slide-bars of the carriage, and means actuated by said pins for operating the movable plate, substantially as set forth.

65. The combination, with the guide-bars and stops, of a plate provided with a series of slots through which the lower ends of the stops project, swinging supports for said plate, a stop-setting carriage, and pins thereon for operating the supports, substantially as set forth.

66. The combination, with the guide-bars and crank-shaped stops, of the plate b^{11}, having slots b^{12}, the cross-pieces b^{14}, movable in horizontal slots a^{17}, the swinging supports b^{14} b^{17}, and the stop-setting carriage having pin c^{28}, substantially as set forth.

67. The combination, with the guide-bars and dogs at the end of one section thereof, of the fonts of disconnected dies, the stop-setting carriage and means carried thereby for releasing the dogs, the stop-heads, and the fonts of disconnected dies, substantially as set forth.

68. The combination, with the guide-bars, the stops, the pivoted dogs, and the fonts of disconnected dies, of the push-heads and the stop-setting carriage having an inclined surface on one of its slides, substantially as set forth.

69. The combination, with the guide-bars, the stops, and the fonts of disconnected dies, of a collecting-bar for forcing the dies back to their normal positions in the guide-channels, substantially as set forth.

70. The combination, with the guide-channels and fonts of disconnected dies movable in said channels, of a series of die-carriers movable toward and from each other, substantially as and for the purpose specified.

71. The combination, with the guide-channels and fonts of disconnected dies movable in said channels, of a series of die-carriers movable toward and from each other, each carrier being slotted to receive the die, substantially as set forth.

72. The combination, with a support, of a series of die-carriers, each carrier being provided with a projecting rod or wire, substantially as set forth.

73. A die-carrier consisting of a perforated body having a slot for the reception of the die and a projecting rod or wire, substantially as set forth.

74. The combination, with a series of guides and fonts of disconnected dies mounted in said guides, of an impression-bed and die-carriers and distributers mounted on said bed, substantially as set forth.

75. The combination, with the guide-bars and fonts of disconnected dies mounted in the channels between said bars, of an impression-bed, slotted die-carriers on said bed, plates inclosing the outer and upper sides of said carriers, mechanism for forcing the carriers together to assemble the dies held by them into a justified line, substantially as set forth.

76. The combination, with a series of die-carriers, each provided with a projecting rod or wire terminating in a head, of an impression-bed and mechanism for forcing the carriers together thereon, substantially as set forth.

77. The combination, with the impression-bed, of the series of die-carriers movable thereon, a condensing-carriage, and a plate connected thereto for forcing the carriers together, substantially as set forth.

78. The combination, with the die-carriers and support therefor, of a condensing-carriage, gathering-plates thereon, and mechanism for operating said carriage, substantially as set forth.

79. The combination, with the die-carriers, of a condensing-carriage, a fixed gathering-plate at one end of said carriage, and a yielding gathering-plate connected to the other end thereof, substantially as set forth.

80. The combination, with the movable die-carriers, of a condensing-carriage, a gathering-plate fixedly attached thereto, a rod, and a gathering-plate yieldingly supported on said rod, substantially as set forth.

81. The combination, with the die-carriers, of the condensing-carriage, the gathering-plate fixed to one end thereof, the rod attached to the other end of said carriage, a spring coiled around said rod, and a gathering-plate sleeved on the rod and bearing against the spring, substantially as set forth.

82. The combination, with the die-carriers, of the condensing-carriage, the gathering-plates, the lever connected to said carriage, and mechanism for operating the lever, substantially as set forth.

83. The combination, with the die-carriers and condensing-carriage provided with gathering-plates, of a pivoted lever connected to said carriage, links connecting said lever with a second lever, and a cam-wheel, substantially as set forth.

84. The combination, with the die-carriers and movable condensing-carriage, of a pivoted arm, a latch for said arm, and a projection on the condensing-carriage which comes into contact with said arm, substantially as set forth.

85. The combination, with the die-carriers and condensing-carriage, of a pivoted arm, a projection on the carriage for stopping the movement thereof by engagement with such arm, and a lever made of elastic material for actuating the condensing-carriage, substantially as set forth.

86. The combination of the die-carriers, the condensing-carriage, the gathering-plates carried by said carriage, a right-angled pivoted arm, a spring-actuated latch for engaging the lower part of said arm, and means on the carriage for tripping the latch, substantially as set forth.

87. The combination, with an impression-bed, of a series of die-carriers, guiding-plates for said carriers, a condensing-carriage, a fixed

gathering-plate at one end of said carriage, a headed rod attached to the other end of the carriage, a spring coiled around the rod, a sleeve loosely mounted on the rod between the spring and head thereof, a gathering-plate attached to said sleeve, and a lever for operating the condensing-carriage, substantially as set forth.

88. The combination, with a series of guide-bars and series of fonts of disconnected dies movable longitudinally in the channels between said bars, of an impression-bed, a series of die-carriers thereon, a condensing-carriage, and means carried thereby for forcing the carriers and dies into a compact transverse line, and clamping-bars dropped astride the line of dies, substantially as set forth.

89. The combination, with the impression-bed, of the die-carriers c c, each provided with a headed rod c^{29}, substantially as set forth.

90. A die-carrier having a perforated body provided with a laterally-projecting headed rod and with a vertically-projecting slotted portion narrower than the body for the reception of the die, substantially as set forth.

91. The combination, with the guide-bars, of a series of fonts of disconnected dies movable therein, each die consisting of a body which rests on the bars, a projection or leg extending into the channel between the bars, and a cut-away portion, substantially as set forth.

92. The combination, with the standards, of an impression-roll journaled therein, an impression-sleeve, a gear on said sleeve, a device for holding the matrix material, and a rack for engaging the gear on the impression-sleeve, substantially as set forth.

93. The combination, with an impression-roll, of a holder for the matrix material, a rod attached to said holder, and means for actuating said rod to move the holder along the roll, substantially as and for the purpose specified.

94. The combination, with the standards and cross-rod, of an impression-roll, a sleeve movable endwise on said roll, a holder for the matrix material, and arms connecting said holder to a sleeve on the cross-rod, substantially as set forth.

95. The combination, with the impression-roll, of a sleeve splined to said roll, a holder for the impression material, gearing on the holder and sleeve, and means for rotating the impression-roll, substantially as set forth.

96. The combination, with the standards, the impression-roll journaled therein, and a ratchet-wheel on the end of said roll, of the impression-sleeve, a bent lever hung on the axis of the impression-roll, a pawl attached to said lever, and mechanism for operating said lever, substantially as set forth.

97. The combination, with the impression-roll having a ratchet-wheel on its end, of a bent lever hung to the axis of said roll and carrying a pawl, a slotted plate adjustable on the lower end of the bent lever, and means for actuating the lever to turn the impression-roll, substantially as set forth.

98. The combination, with the impression-roll having a ratchet-wheel on one end, of a bent lever sleeved on said roll and carrying a pawl, a plate hinged to the lower part of said lever and provided with a slot, a thumb-screw working through the slot, and a toggle connected with another slot in the lever, substantially as set forth.

99. The combination, with the impression-roll, the impression-sleeve, and the holder for the matrix material, of a connecting-rod, a segment-gear to which said rod is connected, a second segment-gear, and means for actuating said gear, substantially as set forth.

100. The combination, with an impression-roll, an impression-sleeve, and a holder for the matrix material, of a connecting-rod, two segment-gears, a sliding sleeve, a swinging pawl, and pins on the upper segment-gear with which the pawl alternately engages, substantially as set forth.

101. In a machine for the production of printing-surfaces, the combination, with a graduated scale, of a pointer, a swinging bar having a projection with an inclined surface, mechanism for actuating said bar, and devices intermediate to the bar and pointer, substantially as set forth.

102. The combination, with a graduated scale, of a pointer having a toothed rack, a lever-arm carrying a pawl engaging with the rack, a swinging bar having a projection with an inclined surface, and means for actuating said bar, substantially as set forth.

103. The combination, with the scale, pointer, rack, and lever-arm carrying a pawl, of a series of hinged bars having projections on their inner side and a projection on the other side of one of said bars provided with an inclined surface for actuating the lever-arm, substantially as set forth.

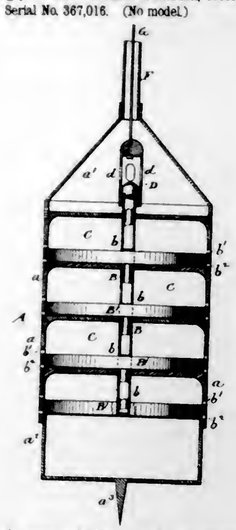
104. The combination, with the guide-bars, the series of stops, and the series of fonts of dies, of a series of weights for advancing the fonts, a series of parallel bars also connected to the weights and provided with letters on their front surfaces, and a frame having a horizontal slot, substantially as set forth.

105. The combination of a frame having a horizontal slot, a series of weights, and a series of bars connected to and movable with the weights, each of said bars having printed on its front surface the letters or characters produced by the machine, substantially as set forth.

106. The combination of the proof-printing table, a double pinion, one part of which engages with a stationary rack, and a sliding rack engaging with the other part of such pinion, substantially as set forth.

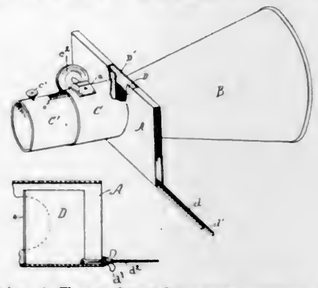
107. The combination, with the proof-printing table and a double pinion journaled to the under side of said table, of a stationary rack with which one part of said pinion engages, a sliding rack engaging the other part of said pinion, and means for operating said sliding rack, substantially as set forth.

445,560. PUMP. GEORGE J. KELLER, Osceola, Nebr. Filed Oct. 3, 1890. Serial No. 367,016. (No model.)



Claim.—A pump-cylinder divided into sections a a' a^3, screw-coupled together and provided with the openings b b' b^3, in combination with an interior hollow piston-rod B, communicating by the holes b with the section-chambers C, and the pistons B', screw-coupled to the piston-rod, as and for the purpose set forth.

445,561. CAMERA ATTACHMENT. CHARLES L. KNOX, Nashville, Tenn., assignor of one-half to Nathan Cohn, same place. Filed Aug. 18, 1890. Serial No. 362,362. (No model.)



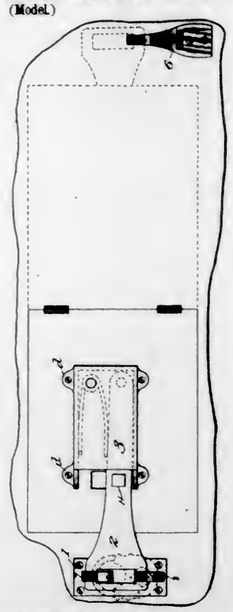
Claim.—1. The attachment for cameras, consisting of funnel B, tube C, sliding tube C', provided with set-screw c', slide-box A, and slides contained therein, all in combination, as and for the purpose intended, substantially as described.

2. In the described camera attachment, the slide-box A, at right angles to the axis of the camera-lens, and ruby-glass slides adjustably held therein, as and for the purpose intended, substantially as described.

3. In the described camera attachment, the slides constructed of ruby glass and each provided with a laterally-extending graduated strip or rod whereby the slides may be shifted in the slide-box, as and for the purpose intended, substantially as described.

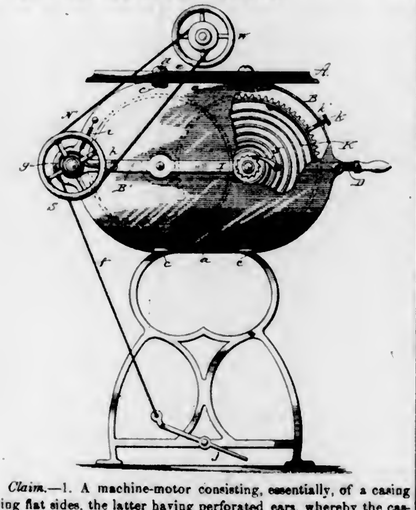
4. In the described camera attachment, the slide-box A, provided with ruby-glass slides adjustably held therein, the adjacent vertical edges of said slides being beveled, as and for the purpose intended, substantially as described.

445,562. LATCH. CORNELIUS E. LEGG, OLIVER G. ALEXANDER, and GEORGE W. LEGG, Dunkerton, Iowa. Filed Dec. 23, 1889. Serial No. 334,763. (Model.)



Claim.—The keeper-plate 1, having the stud 8, beveled as shown, and provided with a notch in its upper inner edge, and also having the stud 7, similarly constructed and provided with the eye 11, in combination with the keeper 6 and the door hinged between said keepers so that its latch-bolt may engage them when opened and closed, the latch-casing 3, secured to the door, the latch-bolt 2, pivoted at its inner end in said casing and its outer end slotted to receive the keeper-stud 7, the spring 5, arranged in the latch-casing and pressing upon said latch, the latch also having arms H I on opposite sides, and one of the arms passing through a slot in the door, all substantially as specified.

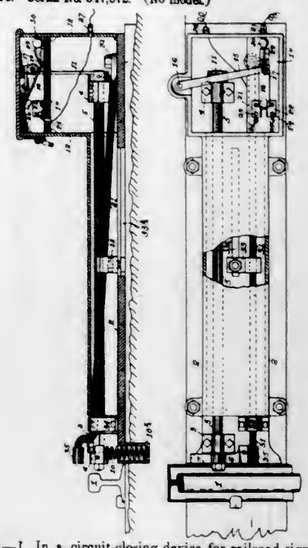
445,563. SPRING-MOTOR. CHARLES A. LORING, Atlanta, Ga. Filed Mar. 15, 1890. Serial No. 343,967. (No model.)



Claim.—1. A machine-motor consisting, essentially, of a casing having flat sides, the latter having perforated ears, whereby the casings can be attached to the upper or under side of a table, driving mechanism within the casing, a driving-wheel and a friction-wheel located outside the casing, and a brake pivoted to the casing and adapted to engage the friction-wheel, substantially as set forth.

2. In a spring-motor, the combination, with a casing, of a drum therein having teeth at or near one side thereof, and a thumb-screw secured to the casing with its free end in position to engage the smooth section of the drum, whereby the speed of the latter can be regulated, a shaft mounted in the casing, gearing connecting the teeth on said drum with the shaft, a friction-wheel and a driving-wheel on said shaft, a shoe to engage said friction-wheel, and means for actuating the shoe, substantially as set forth.

445,564. AUTOMATIC CIRCUIT-CLOSING DEVICE FOR RAILROAD-SIGNALS. IRVIN W. LOY and RICHARD O'TOOLE, Mechanicstown, assignors of one-third to John E. Mathews, Baltimore, Md. Filed Apr. 12, 1890. Serial No. 347,672. (No model.)



Claim.—1. In a circuit-closing device for railroad signaling apparatus, the combination of a rock-shaft mounted in suitable bearings and located near a railroad-track and provided on the end nearest the track with a rock-shaft lever secured to the rock-shaft, elastic means for maintaining said lever in any adjusted position, a finger-bar secured to the other end of said rock-shaft, a lever pivoted at about right angles to the finger-bar and engaged and operated by said finger-bar, a contact-lever engaged and operated by said pivoted lever, and electrical contact-plates which are arranged to co-operate with the contact-lever to close an electrical circuit, substantially as described.

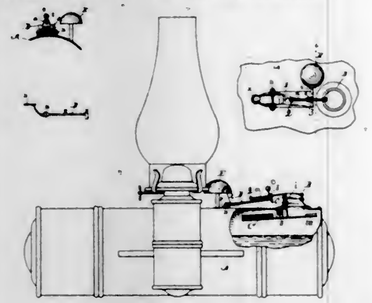
2. In a device for automatically operating a railroad signaling device, the combination of a rock-shaft suitably journaled, located near a railroad-track, and provided on the end next the track with a transverse lever secured to said rock-shaft and a spring treadle-bar, one end of which is secured to the bed of the device, while the other end is free and extends to the edge of the track and stands somewhat above it and in the path of a locomotive driving-wheel, a staple or other equivalent device limiting its motion, and which is so located that when the treadle-bar is struck by a locomotive driving-wheel moving in the direction from the treadle to the rock-shaft it will cause the end of the treadle to move with said wheel and downward to a sufficient extent to strike the end of the rock-shaft lever and depress it, while when the wheel is moving in the opposite direction the treadle-lever will be moved with the wheel a sufficient extent to escape the end of the rock-shaft lever, thus operating the signaling device when moving in one direction, but not in the other.

445,565. LAMP-FILLING INDICATOR. LEWIS N. LOSH, Kalamazoo, Mich. Filed May 1, 1890. Serial No. 350,160. (No model.)

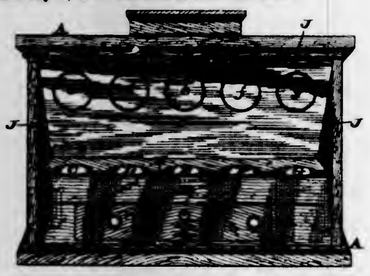
Claim.—1. The combination of a lamp, a float fulcrumed in said lamp and provided with a projection extending out of the lamp, a spring-actuated latch provided with a clapper and adapted to be interlocked with the projection of the float, and a bell in position to be struck by the clapper when the latch descends, substantially as set forth

2. In a lamp, the combination of the float having the projection, the hinged spring-actuated latch provided with a clapper and with a handle to raise the latch by, and a bell, substantially as set forth.

3. The combination of a lamp, the fulcrumed float having the weighted end beyond the fulcrum and having the projection, a spring-actuated latch adapted to engage said projection when raised, a clapper attached to said latch, and a bell in position to be struck by said clapper when the latch descends, substantially as set forth.



445,566. **REFLECTING MONEY-TILL.** GEORGE R. METTLER, Cincinnati, Ohio, assignor of one-half to James Hall Foote, same place. Filed July 17, 1890. Serial No. 359,069. (No model.)



Claim.—The combination, in a money drawer or till, of a case or cabinet A, having an opening J in it, a division B, provided with a series of pits or bowls for containing assorted change, and a reflector I, inclined at such an angle as to expose said bowls and their contents, substantially as described.

445,567. **PROCESS OF MAKING ACID PHOSPHATES.** ALLARD MESSINGER, Charleston, S. C., assignor of one-half to Augustine L. Smythe and Moses E. Lopez, both of same place. Filed May 15, 1890. Serial No. 351,962. (No specimens.)

Claim.—1. The improvement in the art of manufacturing superphosphate from a phosphatic material, which consists in combining said material with an acid and a fluoride compound.

2. The improvement in the art of accelerating the drying of a compound of phosphatic material and acid by adding thereto a substance containing fluorine.

3. The improvement in the art of manufacturing superphosphate from a phosphatic material, which consists in combining said material with sulphuric acid and calcium fluoride.

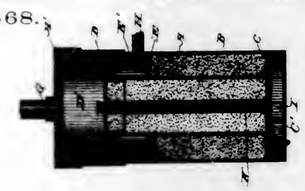
4. The improvement in the art of graduating the drying period of a compound of phosphatic material and an acid, which consists in comminuting said material to a definite degree and adding thereto a greater or less proportion of a fluoride compound.

5. The improvement in the art of graduating the drying period of a compound of phosphatic material, an acid, and a definite proportion of a fluoride compound, which consists in varying the degree of comminution of said phosphatic metal.

445,568. **FILTER.** JAMES H. MILLER, Bloomington, Ind. Filed Sept. 24, 1890. Serial No. 366,013. (No model.)

Claim.—The combination, with the outer and inner casing, of a perforated plate supporting the latter, a pipe extending through the inner casing, a perforated plate in the upper end of the inner casing, of a perforated plate between the casings near the top, and cocks for drawing off the water, substantially as described.

445,568.

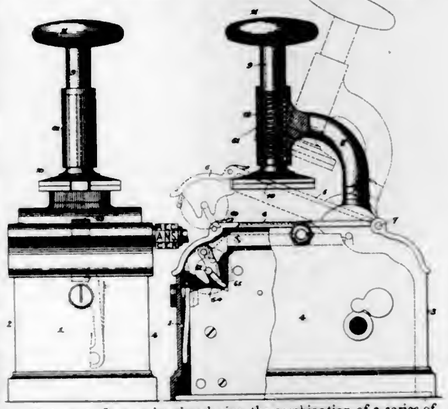


445,569. **DRIP-CATCHER.** JOSEPH MORNINGSTAR, New York, N. Y. Filed July 2, 1890. Serial No. 357,537. (No model.)



Claim.—The drip catcher described, having an exterior or shell A B C, of hard material, in combination with washers D' D^2, of elastic material, as rubber, mounted in the interior and arranged to serve on a bottle-neck, substantially as herein specified.

445,570. **TIME-REGISTERING STAMP.** EDWIN W. MORTON, White Plains, assignor, by mesne assignments, to John H. Allen, New York, N. Y. Filed Sept. 21, 1889. Serial No. 324,702. (No model.)



Claim.—1. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its periphery with indentations of varying depth, and type or other device for registering or indicating, with a rocking or reciprocating frame provided with a series of pawls suitably mounted to engage the indentations in the wheels and arranged so that one or more of said pawls may engage the indentations while the others are out of engagement, with a time mechanism consisting of a time-train and an escapement, one of the gears of which is mutilated, and the arbor upon which said gear is mounted being provided with a crank which engages the rocking frame of the registering device and operates it at predetermined intervals, substantially as described.

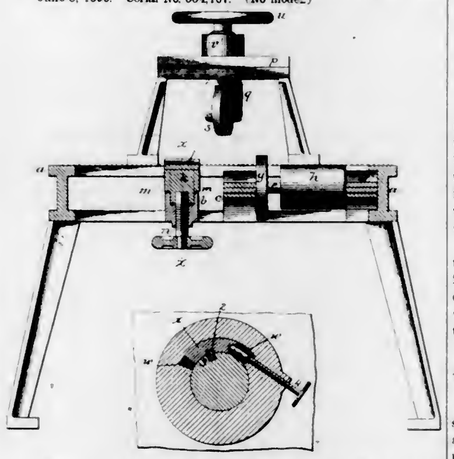
2. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its periphery with indentations which vary in depth, and type or other device for registering or indicating, with a rocking or reciprocating frame provided with a series of pawls suitably mounted to engage the indentations in the wheels and arranged so that one or more of said pawls may engage the indentations while the others are out of engagement, with a time mechanism consisting of a time-train and an escapement connected by a mutilated gear, the teeth of which form a segment of a circle and which meshes with a pinion of the escapement, and the arbor upon which said gear is mounted being provided with a pinion engaging the time-train, and a crank which engages and operates the rocking pawl-frame, substantially as described.

3. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its periphery with indentations which vary in depth, and type or other device for registering or indicating, with a rocking or reciprocating frame provided with a series of pawls suitably mounted to engage the indentations in the wheels and arranged so that one or more of said pawls may engage the indentations while the others are out of engagement, with a time-train and an escapement connected by a mutilated gear, the teeth of which form a segment of a circle and which meshes with a pinion of the escapement, and the arbor upon which said gear is mounted being provided with a pinion engaging the time-train, and a crank which engages and operates the rocking pawl-frame, and the time-train being so geared to the mutilated gear that the period during which the teeth of the gear engage the escapement shall be fifty-nine and a fraction seconds, substantially as described.

4. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its face with indentations of varying depth and length and registering type, several of said wheels having twelve indentations and one of said wheels having ten indentations, the indentations in the wheel having ten being considerably longer on the face of the wheel than those in the wheel having twelve, with a rocking frame and a series of pawls mounted pivotally therein engaging the indentations in said wheel, said pawls being rigidly secured together and varying in elevation, and a means for imparting motion to said pawls of an extent equal to one-tenth of a revolution of the type-wheel, the pawls which engage the type-wheel having ten notches and those having twelve notches falling into said notches at the same time, but that pawl engaging the wheel having ten notches biting upon said notch in such a manner as to move the wheel forward some time before the pawl falling into the notch of the wheel having twelve notches engages the end of said notch and moves said wheel, the difference in the length of said notches being equal to the difference between one-tenth and one-twelfth of the circumference of the type-wheel.

5. In a registering device, the combination of a series of wheels mounted upon a shaft, each of said wheels being provided upon its face with indentations of varying depths and registering type, said wheels bearing unequal numbers of registering types, and the spaces between the types in different wheels being of different lengths, with a rocking frame and a series of pawls mounted pivotally therein engaging the indentations in said wheel, said pawls being rigidly secured together and varying in elevation, and means for imparting motion to said pawls to an extent equal to the portion of a complete revolution of the type-wheels which is equal to the distance between the centers of the types upon the wheel having the smallest number of types, substantially as described.

445,571. **MACHINE FOR STRAIGHTENING AND POLISHING METAL BARS, &c.** WILLIAM A. MCCOOL, Beaver Falls, Pa. Filed June 3, 1890. Serial No. 354,187. (No model.)



Claim.—1. In a machine for straightening and polishing metal articles of cylindrical form, the combination of the supporting-rolls, a vertically-adjustable support having a concave groove coincident with the circumference of the article, and a pressure-roll arranged to act upon the article at a point between its rotating and fixed supports, substantially as described.

2. In a machine for straightening and polishing metal articles of cylindrical form, the combination of the supporting-rolls, an angular supporting-block having a concave groove coincident with the circumference of the article, an angular socket-seat for said block, an adjusting device for raising and lowering said concave supporting-block, and the pressure-roll acting between the rigid grooved support and the supporting-rolls, for the purpose stated.

3. In a machine for straightening and polishing metal articles of cylindrical form, the combination of the supporting-rolls, the vertically-adjustable concave supporting-block having a concave bearing-surface of greater length than the width of the supporting-rolls, and the vertically-adjustable pressure-roll, arranged and operating as described.

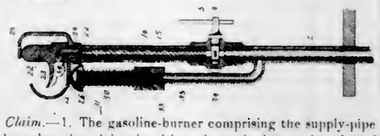
4. In a machine for straightening and polishing metal articles of cylindrical form, the combination of the supporting-rolls, the vertically-adjustable concave supporting-block having a concave bearing-surface coincident with the circumference of the article, the pressure roll, and a device for adjusting its angle or pitch in relation to the axis of the article, substantially as described

5. In a machine for straightening and polishing metal articles of cylindrical form, the combination of the supporting-rolls, the vertically-adjustable concave supporting-block having a concave bearing-surface coincident with the circumference of the article, the vertically-adjustable pressure-roll, its supporting-yoke head having a cylindrical stem provided with a vertical feather, a housing having a bore for said yoke-head and provided with a segmental recess, a segmental plate within said recess having a face-groove to receive said feather, and a screw connected with said segmental plate, whereby to adjust the pitch or angle of the pressure-roll in relation to the axis of the article, for the purpose stated

6. In a machine for straightening and polishing metal articles of cylindrical form, the combination of the supporting-rolls, the angular concave block k, its angular guide-seat m, and the adjustable screw n, the pressure-roll, its yoke-head having a threaded bore and a vertical feather, the hand-screw for vertically adjusting said pressure-roll, a suitable housing for said screw, and means for adjusting the pressure-roll laterally, consisting of the segmental plate 2, having a groove connection with said feather, and the screw 4, connected with said segmental plate and the said housing, substantially as described.

7. In a machine for straightening and polishing metal articles of cylindrical form, wherein the article is supported upon rotating rolls and a concave bearing-surface, a pressure-roll above and between said moving and non-moving supports, having its axis at an angle with the axis of the article and rolling upon the latter at a pitch or angle, for the purpose stated.

445,572. **AUTOMATIC GASOLINE-BURNER.** NELSON NEWMAN, Springfield, Ill., assignor of two-thirds to George A. Sanders and Samuel J. Willett, both of same place. Filed Feb. 5, 1890. Serial No. 339,326. (No model.)



Claim.—1. The gasoline-burner comprising the supply-pipe having the valve, the wick-tube rising above the latter, the plate 20 on the upper end of the wick-tube and having the curved deflecting-plate 21, with a vertical opening 26 in its base, and the depending hood 31 the plug 22, rising from plate 20 and having the aperture 40 and the flame-plate 23, and the ignitor 30, with its upper end in the hood 31, the ignitor being connected to the supply-pipe at a point below the valve, substantially as described

2. In a gasoline-burner, the plug 22 in the upper end of the wick-tube and having the opening 40 and the flame-plate 23, and the plate 20, attached to the upper end of the wick-tube, said plate having the curved deflecting-plate 21, for the purpose set forth, and the arm 25, which latter has its upper end bent over the top of the plug, substantially as described

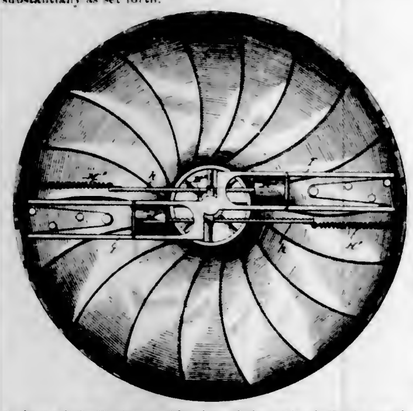
445,573. **WINDMILL.** WILLIAM PALMER, Jr., Rincon, N. Mex. Filed Sept. 9, 1889. Serial No. 323,414. (No model.)

Claim.—1. In a windmill, the combination, substantially as described, of a wind-wheel, a pitman, a crank-pin engaging said pitman, arranged to be turned around its center of motion by such wheel, and movable toward and from its center of motion whereby to vary its throw, and means whereby said crank-pin may be moved automatically out and in, substantially as set forth.

2. In a windmill, the combination of the wheel, the pitman, the crank-pin engaging said pitman, arranged to be turned around its center of motion by said wheel, and movable radially toward and from such center of motion, the main shaft connected with the wheel and

arranged to support the movable crank-pin and the governor-shaft extended through the main shaft, and intermediate mechanism between said governor-shaft and the movable crank-pin, substantially as set forth.

3. In a windmill, the combination of the main wheel-supporting shaft, the crank-pin support held to said main shaft, the crank-pin movable radially on said support, the governor-shaft extended through the main shaft and capable of turning independently thereof, and mechanism between the governor-shaft and the crank-pin whereby the turning of such shaft may effect an adjustment of the crank in and out, substantially as set forth.



4. In a windmill, the combination of the main shaft, the crank-pin support consisting of a bar held rigidly to said main shaft, the crank-pin having a carrier sliding on said supporting-bar, the governor-shaft fitted within the main shaft, and connections between said governor-shaft and the crank-pin, substantially as set forth.

5. In a windmill, the combination of the main shaft provided with the support for the crank-pin, the governor-shaft having a disk provided with a cam groove or slot, the crank-pin movable radially, and a pin connected rigidly with such crank-pin and entering the said cam-groove, substantially as set forth.

6. In a windmill, the combination of the main shaft, the crank-pin support consisting of an outer bar and an inner bar fixed to the main shaft, the governor-shaft having a disk operating between the inner and outer bars of the said support and provided with a cam groove or slot, the pitman, and the crank-pin having a carrier sliding on the outer bar of such frame and provided with a projection entering the said cam-groove, substantially as set forth.

7. In a windmill, the combination of the radially-movable crank-pin, the pitman engaged thereby, the main shaft supporting the crank-pin, the wind-wheel fixed on such main shaft, the governor-shaft, connections between such governor-shaft and the crank-pin, and means for turning such governor-shaft independently of the main shaft, substantially as set forth.

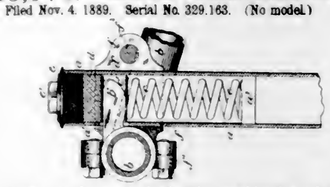
8. In a windmill, the combination of the wind-wheel, the main shaft, the governor-shaft movable independently of the main shaft, a radially-movable weight supported and revolving with said wheel and connected with the governor-shaft, whereby to turn the latter as the weight moves outward, and a spring by which to retract said weight, substantially as set forth.

9. In a windmill, the combination of the windmill having a hollow main shaft, the governor mechanism arranged in rear of such wheel, the governor-shaft extended through the main shaft, connected at its rear end with the governor mechanism and extended in front of the wheel, a radially-movable weight arranged in front of the wheel and geared with the governor-shaft, whereby its radial movement may turn such shaft, and a spring for retracting such weight, substantially as set forth.

10. In a windmill, the combination of the wheel, the governor-shaft capable of turning independently of the wheel, a slide-frame supported on the front of the wheel and extending radially on opposite sides of its center, the weights sliding in said frame on opposite sides of the governor-shaft and geared therewith, and springs by which to retract the weights, substantially as set forth.

11. In a windmill, the combination of the wheel having a hollow shaft and provided at the inner end thereof with a crank-pin support, the pitman, the crank-pin sliding radially on its support and arranged to engage the pitman, the governor-shaft fitted in the main shaft, having a rack-wheel at its forward end and provided at its rear end with a disk having a cam groove or slot, a projection connected with the crank-pin and entering said groove or slot, weights sliding radially in guides across the face of the wind-wheel and provided with rack-bars engaging the rack-wheel of the governor-shaft, and springs for retracting such weights, substantially as set forth.

445,574. VELOCIPEDE. WALTER PHILLIPS, Coventry, England. Filed Nov. 4, 1889. Serial No. 329,163. (No model.)

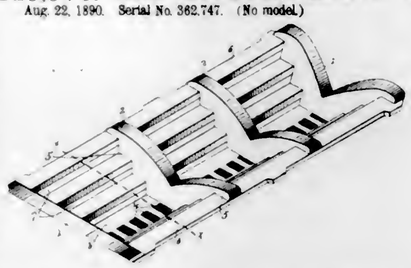


Claim.—1. In a velocipede, the combination of a handle-bar formed with re-turned ends and mounted with capability of turning in a bearing fixed to the steering-post, a nose or projection formed or fixed on the handle-bar, a hollow steering-post formed with a slot therein, through which such nose projects, springs or cushions carried within the steering-post and located above and below the nose or projection and offering an elastic resistance to the movement of the handle-bar, and independent adjusting devices for regulating the tension of the springs or cushions above and below the nose or projection, all in manner substantially as herein shown and described, and for the purpose stated.

2. In a velocipede, the combination of a handle-bar formed with re-turned ends and mounted with capability of turning in a bearing fixed to the steering-post, a nose or projection formed or fixed on the handle-bar, a hollow steering-post formed with a slot therein, through which such nose projects, springs or cushions carried within the steering-post and located above and below the nose or projection, offering an elastic resistance to the movements of the handle-bar, and an adjusting device at the top of the steering-post for regulating the degree of compression of the springs or cushions, all in manner substantially as herein shown and described, and for the purpose stated.

3. In a velocipede, the combination of a handle-bar formed with re-turned ends and mounted with capability of turning in a bearing fixed to a short hollow pillar, a nose or projection formed on or fixed to the handle-bar, the hollow-shaft pillar being formed with a slot therein, through which such nose projects, springs or cushions carried within the short pillar and located above and below the nose or projection and offering an elastic resistance to the movements of the handle-bar, adjusting devices for regulating the degree of compression of both upper and lower springs or cushions, a hollow open-topped steering-post to receive the short pillar, and a clamp to securely bind the parts together, all in manner substantially as herein shown and described, and for the purposes stated.

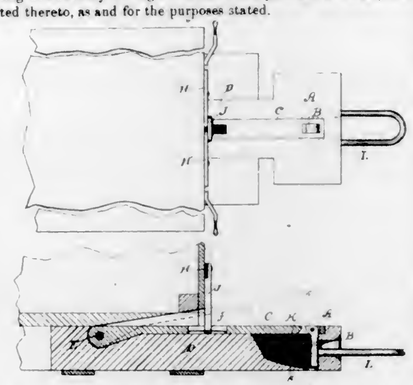
445,575. GRATE. REUBEN H. SMITH, Russellville, Ark. Filed Aug. 22, 1890. Serial No. 362,747. (No model.)



Claim.—A grate comprising a series of intermediate and opposite end bars, each of which upon its under side is cut away or inclined in an opposite direction at each side of its center, a central bar having a series of perforations or openings connecting the series of bars at their centers, and a series of longitudinal grate-bars seated in the offsets and connecting the series of transverse bars, substantially as specified.

445,576. CAR-COUPLING. THOMAS McK. STUART, Corning, Iowa. Filed June 5, 1890. Serial No. 354,405. (No model.)

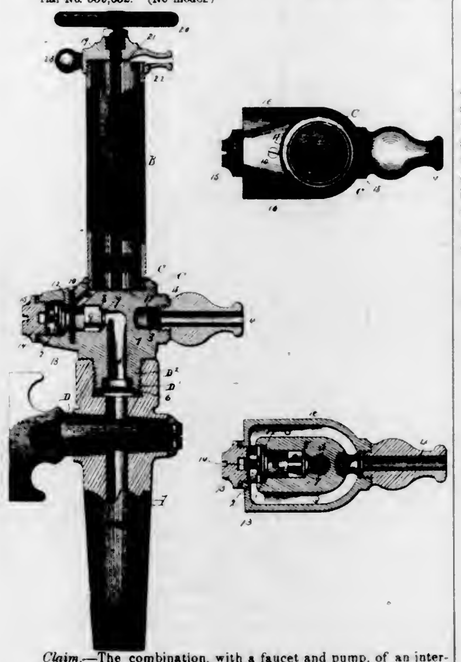
Claim.—1. In a car-coupling, the combination of a draw-head having cheeks or faces between the interior thereof which form a recess for holding a link, a swinging gravity-pin pivoted to the outer end of a slotted bar pivoted within the draw-bar at the rear end, and a pivoted horizontal hand-actuated rod and connecting-lever, the latter passing downwardly through the slot of the pivoted bar loosely connected thereto, as and for the purposes stated.



2. In a car-coupling, a bar pivoted to the top of a sliding draw-bar to extend forward over the roof of the link-cavity to carry a coupling-pin pivoted to its front end, and a bar or rod the end of which passes through a slot in the said pivoted link-carrying bar and having a confining-pin fixed to its lower end for the purpose of lifting the bar and pin, as and for the purposes set forth.

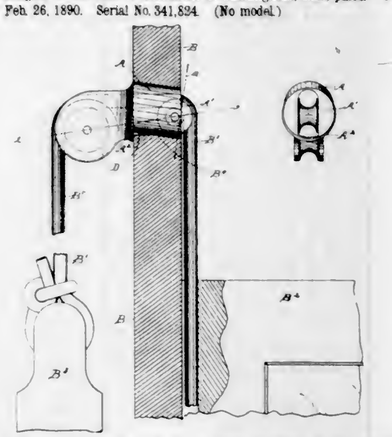
3. A draw-head having a bell-shaped opening in its front face, a vertical pin-hole intersecting the rear end of said opening and extending down through the draw-head, a vertical slot extending rearward from said pin-hole, and mating slots or grooves in the parallel side faces produced by the said vertical slot, said grooves intersecting the rear end of the bell-shaped opening in front of said pin-hole, substantially as shown and described, for the purposes stated.

445,577. PUMP. JOHN W. WADSWORTH, Allegheny, assignor of one-half to S. S. D. Thompson, Pittsburg, Pa. Filed July 17, 1890. Serial No. 359,052. (No model.)



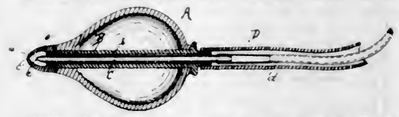
Claim.—The combination, with a faucet and pump, of an intermediate controlling mechanism connected with said parts, this controlling mechanism having a spigot at one end, a main duct leading through from the faucet to the pump, valve mechanism in said duct, and ducts leading from this valve mechanism around the main duct and terminating in the spigot, substantially as set forth.

445,578. SASH-CORD GUIDE. JAMES R. WALSH, Troy, N. Y., assignor of one-half to Alexander G. Cunningham, same place. Filed Feb. 26, 1890. Serial No. 341,824. (No model.)



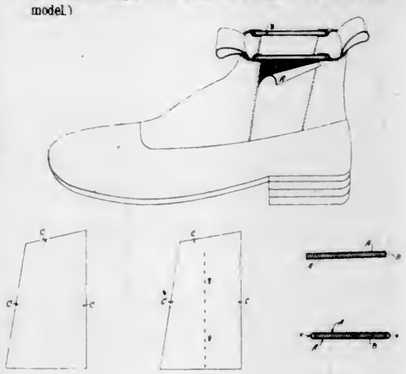
Claim.—In a sash-cord guide, the shell consisting of the cylindriform part and the extensions, these parts being inclined to each other and the cylindriform part being adapted to be drawn into a similarly-inclined opening in the style from the rear, substantially as set forth.

445,579. VAGINAL ATOMIZER. WILLIAM E. WELDON, San Francisco, Cal. Filed May 2, 1890. Serial No. 350,272. (No model.)



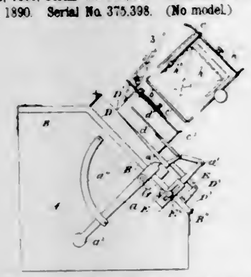
Claim.—In a vaginal atomizer, the combination of a vagina-bulb, an air-tube passing centrally therethrough, said tube having one end screw-threaded, a removable cone-shaped tip provided with threads registering with the threads of the air-pipe and also having an orifice at its apex, a liquid-conveying tube within said air-tube with an intervening annular space, said liquid-conveying tube provided at its outer end with an orifice in line with the orifice of the cone-shaped tip, a liquid-containing vessel, a flexible tubing forming a connection between said air-pipe and liquid-conveying tube and the liquid-conveying vessel, and a reservoir-bulb having flexible connection with the liquid-containing vessel, substantially as set forth.

445,580. PROCESS OF INSERTING GORES IN SHOES. ALBERT E. WICKS, Brooklyn, N. Y. Filed Oct. 28, 1890. Serial No. 369,630. (No model.)



Claim.—The herein-described process of inserting gores in shoes, which consists in covering the same on both sides, temporarily securing the same in the shoe by attaching the lining and upper to said coverings, then permanently uniting said upper, lining, and gore by stitches along the edges thereof, and finally removing the covering, substantially as described.

445,581. PHOTOGRAPHIC-PRINTING APPARATUS. RICHARD J. WYNKOOP and JOHN M. KEMP, Paterson, N. J. Original application filed June 16, 1890, Serial No. 355,688. Divided and this application filed Dec. 22, 1890. Serial No. 375,398. (No model.)



Claim.—1. The combination, with a negative-holder, of a paper-feeder and a paper-cutter, substantially as set forth.

2. The combination, with a casing, a negative-holder, and shutter, of a paper-cutter and a shaft from which the shutter and paper-cutter are operated, substantially as set forth.

3. The combination of a casing, a negative-holder, a shutter on the latter, a paper-feeder, a paper-cutter, and a shaft from which the shutter, feeder, and the cutter are operated, substantially as set forth.

4. The combination, with a casing, of a negative-holder, a vignette-holder on the latter, and a shutter on the vignette-holder, substantially as set forth.

5. The combination, with a casing, of a negative-holder, a vignette-holder on the latter, a shutter on the vignette-holder, a spring-arm for operating the shutter, and a shaft adapted to vibrate the spring-arm, substantially as set forth.

6. The combination, with a casing, of a negative-holder, a vignette-holder on the latter, a shutter on the vignette-holder, a spring-arm for operating the shutter, a shaft having an arm, and a slide adapted to be acted upon by said arm, and said slide connected with the spring-arm, substantially as set forth.

7. The combination, with a negative-holder, of a frame to which the latter is connected and having a slot therein adapted to receive a slide whereby light is excluded when the negative-holder is raised from the frame, substantially as set forth.

8. The combination of a casing, a cover provided with an opening, a negative holder, a vignette-holder, a cover or shutter, a spring on the cover, a projection on the cover, a spring-arm, a spring-actuated slide having a nose thereon, and a crank having an extension thereon, substantially as set forth.

9. In an apparatus for photographic printing, the combination, with a pad or support for supporting the film or sensitized paper, of a spring-actuated bar for pressing the film or paper against the pad and a gripping device for feeding the paper and drawing it across and in close contact with the pad or support, substantially as set forth.

10. In an apparatus for photographic printing, the combination of the casing, a frame, shaft, guide-plates, and a swinging paper-feeder on the shaft, substantially as described and shown.

11. In an apparatus for photographic printing, the combination of the casing, a frame, shaft, U-shaped bar *i*, cross-pieces, a spring-pad, rods, and cranks on the shaft, substantially as described and shown.

12. In an apparatus for photographic printing, the combination of the casing, a frame, a swinging paper-feeding device, and the curved plates P P″ for guiding the paper, substantially as described and shown.

13. In an apparatus for photographic printing, the combination of the casing, frame thereon, a pad in said frame, a shaft, spring *m* on the same, adapted to act on the pad, a negative-holder, and a paper-feeding device, substantially as set forth.

14. In an apparatus for photographic printing, the combination of the casing, the frame H, guides for a paper sheet, guides *k*, and a swinging paper-feeder on which the guides K *k* act, substantially as described and shown.

15. In an apparatus for photographic printing, the combination of the casing, the frame H therein, a paper-feeder, a shaft from which said paper-feeder is operated, the guide-plates, and a cutter below said plates and operated from the shaft, substantially as described and shown.

16. In an apparatus for photographic printing, the combination of the casing A, the frame H therein, the guide-plates P P″, a swinging paper-feeder operated from the shaft G, and a fixed knife below the plates P P″, operated from the shaft G, substantially as described and shown.

17. In an apparatus for photographic printing, the combination of a casing A, a negative-holder, a paper-feeder and a paper-cutter operated from the same shaft, a drawer in said casing, and a slide on said drawer, substantially as described and shown.

18. In a photographic apparatus, the combination, with a negative-holder and a support for the film or sensitized paper, of a gripping device for feeding the paper and another device for holding the paper while the gripping device is being moved to take a fresh grip, substantially as set forth.

19. In a photographic apparatus, a cutter, in combination with a negative-holder and means for severing the sensitized paper after the operation of printing, substantially as set forth.

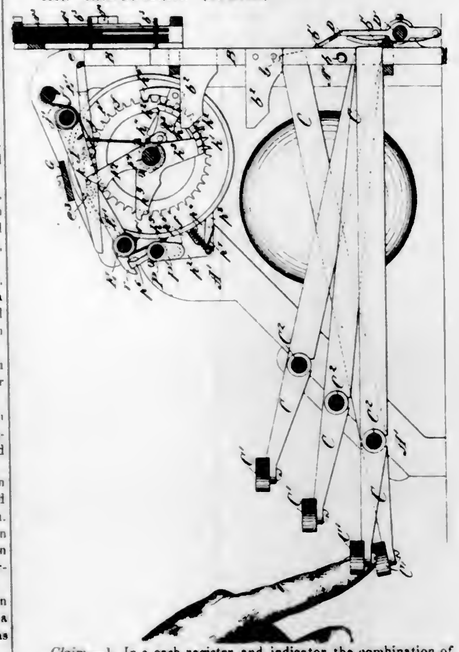
20. In a photographic apparatus, the combination, with a negative-holder and support for the film or sensitized paper, of a cutter for cutting the sensitized paper after it has been printed and a device for gripping and holding the paper while it is being cut, substantially as set forth.

21. In a photographic apparatus, the combination, with a cutter, of a removable box for receiving the severed sheets of sensitized paper, the box being provided with a cover to exclude the light from its contents, substantially as set forth.

22. In a photographic apparatus, the combination, with a negative-holder shutter and means for supporting sensitized paper while being printed, of means for feeding and holding the sensitized paper and a cutter for severing it into sheets after it has been printed, substantially as set forth.

23. In a photographic apparatus, the combination of the following instrumentalities, to wit: a negative-holder, a support for the film or sensitized paper, and means for automatically feeding, holding, and cutting the sensitized paper, substantially as set forth.

445,582. CASH REGISTER AND INDICATOR. WILLIAM H. WYTHE and WILLIAM W. WYTHE, East Orange, N. J. Filed Oct. 16, 1889. Serial No. 327,598. (No model.)



Claim.—1. In a cash register and indicator, the combination of an oscillating shaft carrying the registering-wheels and provided with a segment located thereon provided with two engaging arms or surfaces, and a secondary shaft supporting the "carrying mechanism," so called, provided with an arm or projection adapted to be engaged by the engaging arms or surfaces of said oscillating segment to operate its supporting-shaft, substantially as described, and for the purpose set forth.

2. In a cash register and indicator, the combination, with the registering-wheels, supporting-shaft, and operating mechanism, of a segment located on said supporting-shaft, provided with a cam-groove therein, the latter adapted to act upon an arm or extension of the shaft supporting the carrying mechanism to operate the latter, substantially as described, and for the purpose set forth.

3. In a cash register and indicator, the combination, with a supporting-shaft and registering-wheels loosely journaled thereon and a secondary shaft provided with a frame or support loosely journaled thereon, the latter being provided with a pawl adapted to engage with teeth on said registering-wheels, of a segment secured on said supporting-shaft, provided with a cam-groove therein adapted to engage with an arm or extension of said secondary shaft to operate the latter, and thereby said frame or support and connected parts, substantially as described, and for the purpose set forth.

4. In a cash register and indicator, the combination, with the registering-wheels and supporting-shaft, of a secondary shaft operated by the latter, and a frame or support loosely journaled thereon, provided with a carrying-pawl and a stop or catch for engagement with said registering-wheels, substantially as and for the purpose set forth.

5. In a cash register and indicator, the combination, with the registering-wheels provided with teeth, of a frame or support loosely journaled on a supporting-shaft and provided with a carrying-pawl and a stop device adapted to engage with the teeth of said wheels at certain intervals, and a notched arm or catch for engagement with said frame or support to adjustably hold the pawl and stop device thereon in a normal position from engagement with said wheels, substantially as and for the purpose set forth.

6. The combination, in a cash register and indicator, with the registering-wheels and supporting-shaft, of a secondary shaft and a frame loosely journaled thereon provided with a carrying-pawl and a stop device adapted to engage with said registering-wheels, substantially as set forth, a retaining arm or catch for adjustably holding said frame in a normal stationary position, and a spring connecting with said frame or part thereof, adapted to carry the pawl supported by the latter, and thereby the registering-wheel, forward when the frame is released by said retaining-arm, substantially as described, and for the purpose set forth.

7. In a cash register and indicator, the combination, with the registering-wheels provided with four pins or projections arranged at equal distances thereon, a secondary shaft and operating mechanism, a frame supported on said secondary shaft, provided with a carrying and a stop device for engagement with said registering-wheels, and a retaining arm or catch for holding said frame stationary, adapted to be operated upon by one of the pins or projections on the registering-wheels to release the same from engagement with the said frame to allow the carrying device thereon to move the registering-wheel, substantially as described, and for the purpose set forth.

8. In a cash register and indicator, the combination, with the registering-wheels provided with teeth on one side thereof, of a shaft and operating mechanism, said shaft supporting the carrying mechanism, consisting in part of a frame provided with a carrying-pawl for engagement with the teeth on said registering-wheel, a spring for moving said pawl forward, and an arm or extension on said shaft for moving said pawl backward for engagement with the preceding tooth, substantially as described, and for the purpose set forth.

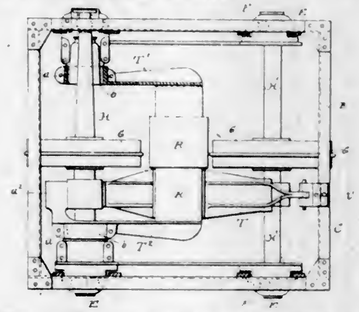
9. The combination, in a cash register and indicator, with a shaft provided with a segment having a cam-groove therein, of a secondary shaft provided with an arm or extension having a friction-roller at or near its free end thereof extending within the said cam-groove, the action of which, in combination with a spring, as set forth, operates the said arm or extension and thereby its supporting-shaft, substantially as described, and for the purpose set forth.

10. In a cash register and indicator, the combination, with the registering-wheels and their supporting-shaft provided with a segment N thereon, of a secondary shaft supporting the carrying mechanism thereon and provided with an arm or extension having connection at or near its free end with a coiled spring and adapted to be operated upon by the segment N and a pawl n^3 thereon, substantially as described, and for the purpose set forth.

11. The combination, in a cash register and indicator, of the vertical (tablet-supporting) sliding rods provided with projections thereon, pivoted key-levers adapted at their free end to engage said projections on the sliding rods, pawls loosely journaled on a supporting-rod adapted to engage said sliding rods when raised, and a pivoted lever adapted to engage an arm of said supporting-rod to operate the latter and the pawls thereon in one direction, and springs to operate said pawls in the opposite direction, in a manner substantially as described, and for the purpose set forth.

12. In a cash register and indicator, the combination, with the registering-wheels, supporting-shaft, and segment located on said shaft, of a secondary shaft provided with an arm thereon adapted to be engaged by said segment to operate said secondary shaft, a frame loosely journaled on said secondary shaft forming a part of and supporting the "carrying mechanism," so called, a retaining arm or catch for adjustably engaging with and holding said frame in a stationary position, and a spring to support said retaining-arm in a position from engagement with said frame, substantially as and for the purpose set forth.

445,583. ROLLING-STOCK FOR TRAMWAYS OR RAILWAYS. CHARLES ZIPERNOWSKY, Buda-Pesth, Austria-Hungary. Filed Sept. 22, 1890. Serial No. 365,860. (No model.)



Claim.—1. The combination of a wheeled vehicle and a propelling-electromotor mounted thereon, having its field-magnet sleeved on extensions of the axle-boxes of the driving-axle of said vehicle, substantially as set forth.

2. The combination of a wheeled vehicle and a propelling-electromotor mounted thereon, the field-magnet of which is sleeved on extensions of the axle-boxes of said vehicle at one end and supported by a movable connection to the body of the vehicle at the other end.

3. The combination, with a wheeled vehicle elastically supported upon the axles thereof, of an electromotor supported at one end by the vehicle-frame and at the opposite end by one or more of the axle-boxes.

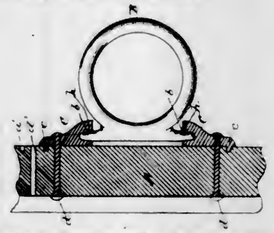
4. The combination of a wheeled vehicle and a propelling-electromotor mounted thereon, the field-magnet of which is sleeved upon the axle-boxes of the driving-axle of said vehicle, an armature for said motor supported by said field-magnet, and a gearing between the armature-shaft and the driving-axle of the vehicle, substantially as set forth.

5. The combination, with a wheeled vehicle, of a propelling-electromotor centered upon the boxes of the driving-axle thereof, an armature for said motor, provided with a worm-gear, and a toothed gear upon the driving-axle of said vehicle, which meshes with the worm-gear on the armature-shaft.

6. The combination, with a wheeled vehicle, of axle-boxes provided with extensions *b*, a propelling-electromotor sleeved thereon, and a pivotal support for said motor directly connected to the vehicle-frame.

7. The combination, with a vehicle-frame, of a bogie-truck therefor, a propelling-electromotor suspended in the manner described on said truck, and a dependent arm or arms from said truck carrying bearing-rollers adapted to bear upon the guiding-rails of a vertical railway.

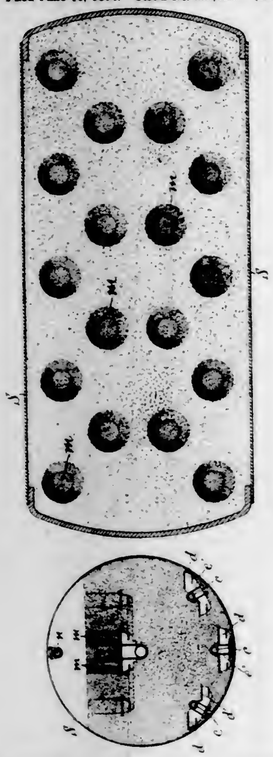
445,584. HAME. WALTER S. CARR, Andover, N. H. Filed May 22, 1890. Serial No. 352,791. (No model.)



Claim.—The combination, with a hame A, having holes therethrough, of two perforated wedge-shaped ears C C, secured to said hame, said ears being alike and each provided with the lug *c* on its under side and a hole in its larger end, said hole only extending part of the way through the ear, and a terret-ring B, provided with the projections *b*, extending in opposite directions from one side thereof

and in a straight tangential line to that side of said ring and fitting in the holes in the ears, substantially as described.

445,585. DOWNWARD FILTRATION. JOHN W. HYATT, Newark, N. J. Filed June 16, 1890. Serial No. 355,531. (No model.)



Claim.—1. The method of operating a filter containing a granular filter-bed with a water-space above the same, which consists in introducing the unfiltered fluid at intervals of space within the upper part of the filter-bed, below the surface, and forcing the unfiltered fluid upwardly through the bed into the water-space above the same and then downward through the substance of the filter-bed and outward through strainers located in the bottom of the same, substantially as herein set forth.

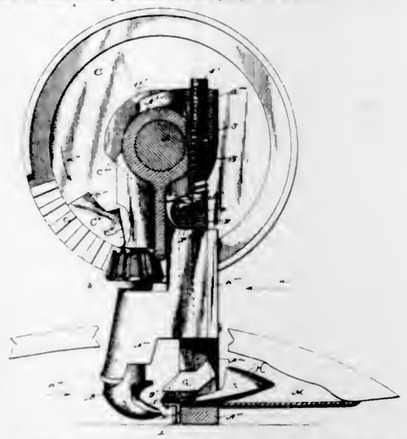
2. The combination, in a filter operated by downward filtration, of a casing containing a granular filter-bed with water-space B' above the same, a series of separate inlet-strainers arranged at intervals within the substance of the filter-bed below the surface, with their discharge-apertures upon the upper side and adapted to cut away distinct portions of the filter-bed upon its surface, a pipe to supply the unfiltered fluid to such strainers during the filtering operation, outlet-strainers arranged in the lower part of the filter-bed, and a pipe connected therewith to draw the filtered water from such outlet-strainers, the whole arranged and operated as and for the purpose set forth.

3. The combination, in a filter having a horizontal cylindrical casing B, containing a granular filter-bed, with water-space B' above the same, of the inlet-pipe *a*, inserted through the middle of the heads, and strainers *c*, connected with such pipe and arranged to discharge the fluid within the substance of the filter-bed, the series of outlet-pipes *c*, arranged within the bottom of the bed adjacent to the shell S and provided with strainers *d*, and suitable cocks and pipes for operating the same, substantially as herein set forth.

445,586. AUTOMATIC GRAIN-BINDER. TALBOT LENNOX, Marshalltown, Iowa. Filed Apr. 22, 1890. Serial No. 348,995. (No model.)

Claim.—1. The combination, with the knotter and a stationary bar A''', of a reciprocating plunger P, provided with the guide G and horn H, a second reciprocating plunger P', provided with a foot I, and means, substantially as shown and described, for operating said plungers, whereby during a part of each rotation of the knotter the lower face of the horn H is pressed upon the base A''' and during the remainder of such rotation the upper face of the foot I is pressed upon the lower face of the foot G, thereby forming two alternately-operating cord-clamps, substantially as and for the purpose set forth.

2. The combination, with the knotter and the reciprocating needle, of the plunger P, provided with the horn H, having the oblique face *h*, and the guide G, having the oblique face *g* inclined in the direction opposite to the face *h* of the horn, whereby during the backward movement of the needle the cord is guided by the faces *g h* in its downward movement and passes under the horizontal face of the guide G, substantially as and for the purpose set forth.

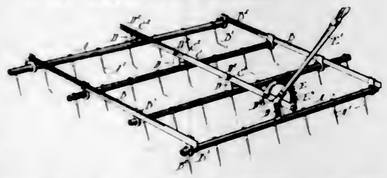


3. The combination, with the plunger P, having the guide G and horn H, of the plunger P', having the foot I and roller *p'*, the spring S, adapted to press downward the plunger P, and the driving-wheel C, having the cam C', adapted to engage the roller *p'* and raise the plungers at a predetermined time during each rotation of the wheel, substantially as and for the purpose set forth.

4. The combination, with the plunger P, having the guide G and horn H, of the plunger P', provided with the foot I and knife K, said knife being provided with a hook *k*, adapted to prevent the escape of the cord when once under the knife, substantially as and for the purpose set forth.

5. The combination, with the knotter, of the plunger P, having the guide G, and the plunger P', having the foot I, adapted to be pressed against the lower face of the guide G to form a cord-clamp, the two jaws of said clamp being beveled toward the knotter, whereby in the rotation of the knotter the bill and tongue thereof may pass respectively below and above the edge of said clamp, thereby reducing the necessary space between the knotter and cord-clamp, substantially as and for the purpose set forth.

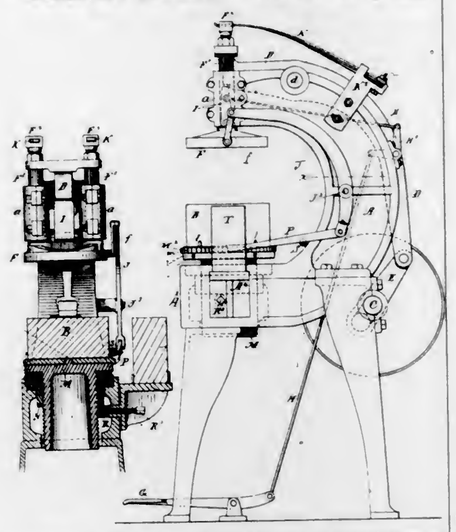
445,587. HARROW. JAMES MACPHAIL, Rockford, Ill. Filed July 25, 1890. Serial No. 359,942. (No model.)



Claim.—1. In combination in a lever-harrow, the tilting beam having circular openings therein provided with lateral slots, and the tilting-beam posts having horizontal stud-journals projecting therefrom and adapted to be inserted through the circular openings in the tilting beam, and provided at their free ends with laterally-projecting lugs for retaining the stud-journals therein, substantially as and for the purpose specified.

2. In combination in a lever-harrow, the harrow-beams, the cross-beams, the hangers secured to and depending from the cross-beams and having circular openings therein, through which the harrow-beams are inserted and wherein they may be oscillated, the tilting beam having circular openings therein provided with lateral slots, and the tilting-beam posts having horizontal stud-journals projecting therefrom and adapted to be inserted through the circular openings in the tilting beam, and provided at their free ends with laterally-projecting lugs for retaining the stud-journals therein, substantially as and for the purpose specified.

445,588. LEATHER-CUTTING MACHINE. HENRY C. PEASE, Worcester, Mass. Filed Sept. 3, 1890. Serial No. 363,822. (No model.)



Claim.—1. The adjustable block-supporting base having the cylindrical externally-screw-threaded body, the non-rotatable internally-screw-threaded ring surrounding the same, and the main frame having the hollow rim with an inwardly-projecting ledge for supporting said ring, in combination with the cutter-bed block and striking mechanism, substantially as set forth.

2. The block-supporting base having the screw-threaded cylindrical body, the non-rotatable internally-screw-threaded bearing supported in the main frame, wherein said base is adjustable up or down by bodily rotation, as described, and the supplemental plate M^3, provided with a notched periphery, mounted upon and rotatable on said base, in combination with the cutter-bed block supported on said plate, and means, substantially as described, for intermittently imparting movement to said supplemental plate, for the purpose set forth.

3. The combination, in a leather-cutting machine, of the cutter-bed block, a rotatable block-supporter having ratchet-teeth thereon, a pawl that engages said ratchet-teeth, the vertically-reciprocating striker-plate mounted in guides on the head-frame above the cutter-bed block, and connections from said striker to said pawl, whereby said block-supporter and cutter-bed block are given slight rotative movement, substantially as described, for the purposes set forth.

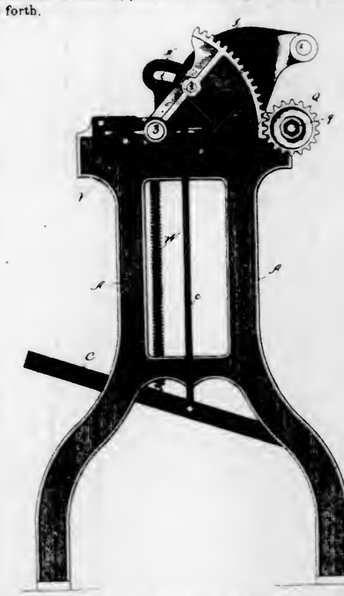
4. The combination, with the block-supporting base, the rotatable supplemental plate pivoted thereon and having a series of ratchet-teeth, the cutter-bed block mounted on said plate, the striker, and striker-operating mechanism, of the swinging lever J, the pawl P, pivoted to one arm of said lever, the spring S, and the link *f*, connecting the other arm of the lever with the striker, for operation substantially as set forth.

5. The combination, with the striker F, having two guiding-bars that work up and down through bearings *a* on the head of the frame, of the two lifting-springs K, having their front ends respectively linked to said guiding-bars, and the spring supporting-seats K', bolted to the main frame and having the rear ends of the springs attached thereto, substantially as set forth, whereby the adjustment of the springs is facilitated.

445,589. SHEET-METAL-FOLDING MACHINE. CHARLES R. PEASLEE, Louisville, Ky. Filed Aug. 11, 1890. Serial No. 361,627. (No model.)

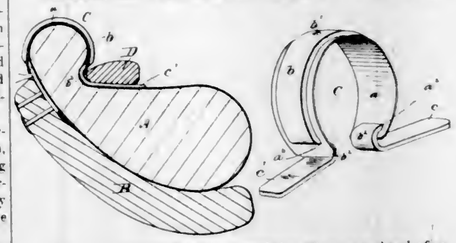
Claim.—1. The combination, in a folding-machine, of the table having the offset E, the gages and gage-bar, and the bar J, both said bars acting to support the material, both the gage-bar and the bar J being located over said offset and supporting the sheet material, substantially as specified.

2. The combination, with the table, the knife, and the folding-bar pivotally supported and provided with actuating-gears at its pivots, of the segments S, meshing with said gears and provided with pins *s*, and the slotted oscillating pieces N, receiving said pins, substantially as set forth.



3. The combination, with the knife and folding-bar, of the swinging arms L, having cam-shaped edges *m*, the slotted oscillating pieces N, having rollers impinging upon said arms L, the segments S, actuated by said pieces N, and gears carrying power from said segments to the folding-bar, substantially as set forth.

445,590. SWEAT-PAD FASTENER. CHARLES H. WENTZ, South Charleston, Ohio. Filed Oct. 4, 1890. Serial No. 367,058. (No model.)

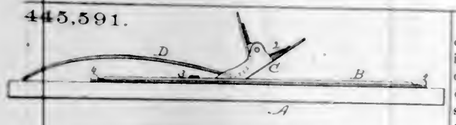


Claim.—A sweat-pad fastener consisting of an open band of resilient material adapted to spring over the rim of a collar, said band being provided with transverse slots through the body thereof approximate to the free ends, and a flexible strap passing around the outside of the main portion of the band and thence through the respective slots, so as to come on the inside of the band opposite the free ends thereof, and thus form a lining or cushion between the ends of said band and the collar when said fastener is in place, the said strap being extended to form fastening projections, one of which is adapted to be connected to the sweat-pad and the other between the hame and collar when said device is in use, substantially as specified.

445,591. MUSIC-BOOK HOLDER. CARRIE A. WEST, Dayton, Ohio. Filed Jan. 13, 1890. Serial No. 336,777. (No model.)

Claim.—The flat metal base-plate, the flat metal sliding plate C, confined and longitudinally slidable on the upper face of said base-plate, and having its rear end bent up at an obtuse angle to form a handle, said plate having ears struck up from its edges, in combination with the clamping-finger mounted between said ears and provided with an actuating-spring, and having its handle end bent up above said handle end of the sliding plate to correspond therewith, as set forth.

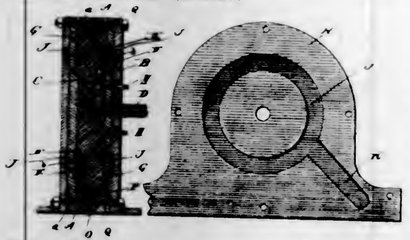
445,591.



445,592. LINIMENT. JOSEPH WILFONG, Lancaster, Pa., assignor of one-half to Samuel Bowman Diller, same place. Filed Mar. 20, 1890. Serial No. 344,668. (No specimens.)

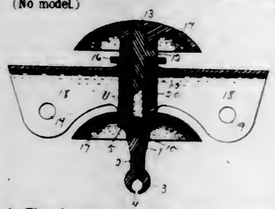
Claim.—The herein-described composition of matter to be used as a medicinal compound for external application, consisting of cider vinegar, litharge, sweet oil, white lead, alum, and water, combined in substantially the proportions specified, together with the specified proportions of staff-tree bark, May apple, and nettle.

445,593. MOTOR. NELSON E. AUSTIN, Danbury, Conn. Filed Nov. 4, 1889. Serial No. 329,142. (No model.)



Claim.—The combination of the casing having the exhaust-port O, the steam-chest L, and the annular channels J, the wheel mounted in the casing and of a less diameter, thereby forming an annular space *a*, communicating with the exhaust-port, and provided with steam-pockets, and the cap having steam-pockets and inlet-ports communicating with the channels J, and escape-ports leading to the annular space *a*, as specified.

445,594. ELECTRIC-CONDUCTOR SUPPORT. CHARLES FOSTER and WILLIAM H. BEVIS, Cincinnati, Ohio. Filed July 30, 1890. Serial No. 360,366. (No model.)



Claim.—1. The electric-conductor support consisting of the combination of a conductor-clamp having a supporting projecting part, a hanger having a central vertically-perforated body part and integral side-supporting parts having eyes at their ends, a roof shape, and parallel sides forming a cover for supporting-connections, a bolt secured in the perforation of the hanger-body and connecting the parts together, and suitable insulating material interposed between the connecting-bolt and the other parts, substantially as set forth.

2. The electric-conductor support consisting of the combination of a conductor-clamp having a supporting projecting part, a hanger having a central vertically-perforated body part and integral side-supporting parts having eyes at their ends, a roof shape, and parallel sides forming a cover for supporting-connections, a bolt having a head at top and screwed into the clamp projection at bottom as means for connecting the parts of the device, and insulating material interposed between the bolt-body and its head and the contiguous parts connected together by the bolt, substantially as set forth.

3. The electric-conductor support consisting of the combination of a conductor-clamp having a supporting projecting part, a hanger having a central vertically-perforated body part and integral side-supporting parts having eyes at their ends, a roof shape, and parallel sides forming a cover for supporting-connections, a bolt having a head at top and screwed into the clamp projection at bottom and held in the vertical perforation of the hanger as means of connecting the parts of the device, and an insulating spool or sleeve interposed between the bolt and the hanger-body, the bolt-head engaging the end of the sleeve and clamping it endwise, substantially as set forth.

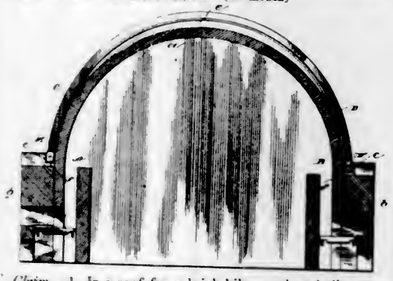
4. The electric-conductor support consisting of the combination of a conductor-clamp having a supporting-stem with a flat end-bearing surface and an end-threaded recess, a hanger having a central vertically-perforated body part and integral side-supporting parts having eyes at their end, a roof shape, and parallel sides forming a cover for supporting-connections, a bolt having a head at top and screwed into the recess of the clamp-stem at bottom, and an insulating-sleeve interposed between the bolt and the hanger-body, the sleeve being clamped between the bolt-head and the end of the clamp-stem, substantially as set forth.

5. The electric-conductor support consisting of the combination of a conductor-clamp having a supporting-stem with a flat end-bearing surface and an end-threaded recess, a hanger having a central vertically-perforated body part and integral side-supporting parts having eyes at their ends, a roof shape, and parallel sides forming a cover for supporting-connections, a bolt having a head at top and screwed into the recess of the clamp-stem at bottom, a bell-shaped cap of insulating material interposed between the hanger-body and the end of the clamp-stem, and an insulating-sleeve interposed between the bolt-body and the hanger-body, the bolt passing through the said cap and clamping it against the end of the clamp-stem, substantially as set forth.

6. The electric-conductor support consisting of the combination of a conductor-clamp having a supporting-stem with a flat end-bearing surface and an end-threaded recess, a hanger having a central vertically-perforated body part and integral side-supporting parts having eyes at their ends, a roof shape, and parallel sides forming a cover for supporting-connections, a bolt having a head at top and screwed into the recess of the clamp-stem at bottom, an insulating-sleeve interposed between the bolt and the hanger-body, and a top weather-protecting cap secured to a projection of the bolt-head, all of the parts being secured together by the central bolt, substantially as set forth.

7. The electric-conductor support consisting of the combination of a conductor-clamp having a supporting-stem with a flat end-bearing surface and an end-threaded recess, a hanger having a central vertically-perforated body part and integral side-supporting parts having eyes at their ends, a roof shape, and parallel sides forming a cover for supporting-connections, a bolt having a head at top and screwed into the recess of the clamp-stem at bottom, an insulating-sleeve having a flanged end collar at top and interposed between the bolt-body and the hanger-body, the bolt clamping the parts together and the said collar insulating the bolt-head from the upper end of the hanger-body, substantially as set forth.

445,595. BRICK-KILN. THOMAS GAMON, Philadelphia, Pa. Filed May 9, 1890. Serial No. 351,184. (No model.)



Claim.—1. In a roof for a brick-kiln or other similar structure, the combination of a curved arch of brick and curved metal girders clasping the brick arch at the sides and leaving a space between the crown of the said arch and the said metal girders, substantially as described, and for the purposes set forth.

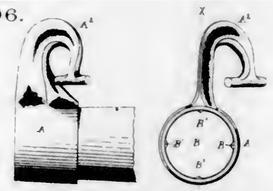
2. The combination, in a brick-kiln or other similar structure, of a curved brick arch forming the roof, the metal girders surrounding said arch and leaving a space between said girders and the top of said brick arch, and a shoe secured to the girders for adjusting, setting, and keeping in position the girders, substantially as described.

3. The combination of the kiln having an arched roof, the shoe secured in the side walls of the kiln, the knees secured to the said shoes, and the arched girders extending over the roof of the kiln and having their ends secured to the knees, as set forth.

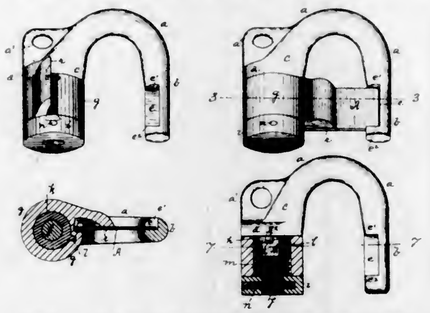
445,596. FERRULE. JAMES MACPHAIL, Rockford, Ill. Filed Nov. 20, 1889. Serial No. 331,030. (No model.)

Claim.—A ferrule having semi-conoidal barbs A′ projecting transversely inward from the interior thereof and being provided with a hook located on its exterior, all of said parts being integral, substantially as and for the purpose specified.

445,596.



445,597. SEAL-LOCK. EDUARD MEISE, Pittsburg, Pa. Filed May 23, 1890. Serial No. 352,919. (Model.)



Claim.—1. In a seal-lock, a body having a lip or shoulder thereon, in combination with a seal-carrier mounted therein and provided with a longitudinal groove or recess to engage with the seal, and a seal entering said groove and held by the seal-carrier against the lip of the body, substantially as and for the purposes set forth.

2. In a seal-lock, a bow having one arm provided with a seat to receive one end of the seal, in combination with a seal-carrier mounted on the second arm and having a tongue extending out therefrom and adapted to press on the opposite face of the seal to that engaging with the said seat, substantially as and for the purposes set forth.

3. In a seal-lock, a bow having one arm provided with a seat to receive one end of the seal, said seat having end walls to hold the seal against longitudinal motion, in combination with a seal-carrier mounted on the other arm and having a tongue extending out therefrom and adapted to press on the opposite face of the seal from that engaging with the said seat, substantially as and for the purposes set forth.

4. In a seal-lock, a bow having one arm provided with a seat to receive the end of the seal, in combination with a seal-carrier mounted on the other arm and having a groove or recess formed therein of greater width than the thickness of the seal, said recess having a shoulder at the forward edge to engage with the seal, and a tongue extending out from the rear edge to engage with the back of the same, substantially as and for the purposes set forth.

5. In a seal-lock, a body having a seat to receive the seal and having a shouldered washer, in combination with the seal-carrier mounted on said body and having a shouldered washer to engage with the washer of the body, substantially as and for the purposes set forth.

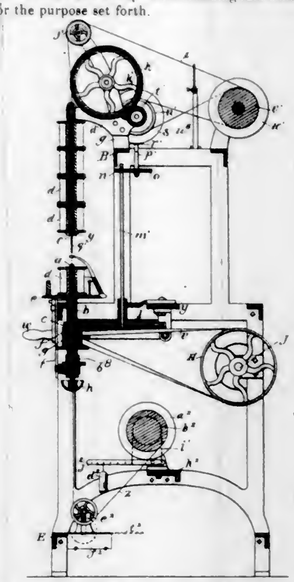
6. In a seal-lock, the combination of a shaft provided with a shouldered washer, a seal-carrier fitting around the same, and a shouldered washer fitting around the shaft and within the seal-carrier and engaging with the seal-carrier by a feather, and a spring pressing against said washer, substantially as and for the purposes set forth.

7. In a seal-lock, the body *a*, having the shaft *f*, provided with the shouldered washer *h*, in combination with the shouldered washer *k*, mounted on said shaft, the spring *m*, and the seal-carrier fitting around said shaft and around said spring and shouldered washer and engaging with the washer by a feather, and the base-plate *i*, confining said spring and seal-carrier upon the shaft, substantially as and for the purposes set forth.

8. In a seal-lock, the combination of the body having a seat to receive the seal and a shouldered washer *h*, provided with an insertible shoulder *h′*, in combination with the seal-carrier mounted in said body and having a shouldered washer *k* to engage with the inserted shoulder *h′* of the washer *h*, substantially as and for the purposes set forth.

445,598. WIRE-COVERING MACHINE. JOHN MCCAHEY, Providence, R. I., assignor to the New England Butt Company, same place. Filed Apr. 15, 1890. Serial No. 347,950. (No model.)

Claim.—1. The combination of the tube *a*, plate *e*, and the guide-arm *j*, pivoted to the said plate *e* and capable of being turned away from over the tube *a* and the spool surrounding said tube, substantially as and for the purpose set forth.

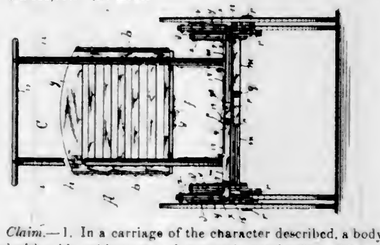


2. The tube *a*, through which passes the wire to be covered and upon which is to be placed a spool holding the covering material, plate *e*, and a flier or guide arm set in said plate at an angle to the center line of the tube *a*, as described, and containing a drop-wire, in combination with means for driving the plate and flier, substantially as described.

3. The combination of the tube *a*, plate *e*, inclined flier arm, and drop-wire with the lever *r*, knee-lever *s*, and shipper-lever *w*, substantially as and for the purpose specified.

4. The stand *g′*, wheel *j′*, and adjustable wheel *h′*, having means for driving it, and the tube *c′*, having a sliding tube in it, in combination with a wire-covering mechanism, substantially as set forth, and for the purpose specified.

445,599. COLLAPSIBLE BABY-CARRIAGE. JAMES W. OULTON, Lynn, and DAVID A. MEISTER, Boston, Mass. Filed May 22, 1890. Serial No. 352,717. (No model.)

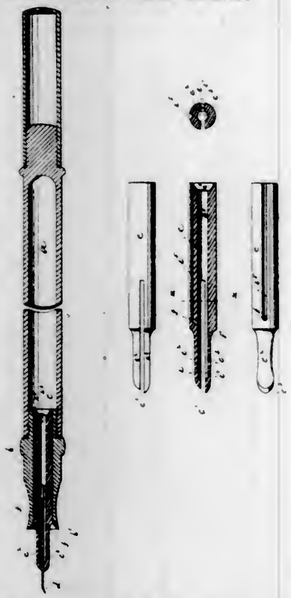


Claim.—1. In a carriage of the character described, a body provided with a hinged bottom and mounted on axles formed in sections fitted to slide longitudinally on each other, combined with wheels mounted on bars pivoted to said axles, and locking mechanism for said bars and axle-sections, substantially as described.

2. In a carriage of the character described, a body comprising sides connected by a hinged or detachable bottom and mounted on sectional axles, the axle-sections being fitted to slide longitudinally, in combination with wheels journaled on bars pivoted to swing vertically on said axles, stops for said bars, and locking mechanism for the bars and axle-sections, substantially as set forth.

3. In a carriage of the kind described, a laterally-collapsible body mounted on springs secured to sectional axles, the axle-sections being fitted to slide longitudinally, wheels journaled on bars pivoted to swing vertically on said axles, locking mechanism for the wheels and axles, and a detachable handle, combined substantially as described.

445,600. FOUNTAIN-PEN. NOYES F. PALMER, Brooklyn, N. Y. Filed Sept. 11, 1890. Serial No. 364,629. (No model.)



Claim.—1. The combination of a fountain-pen *a* with a divided pen-plug having a central feed-duct c^4, delivering to the heel of the pen, an upper feed-duct c^3, delivering to the top of the pen, and a vent f', substantially as specified.

2. The combination of a fountain-pen *a* with a tubular pen-plug having a pair of feed-tongues, a central feed-orifice, and an additional duct c^3, communicating with the central feed-orifice, substantially as specified.

3. The combination of a fountain-pen *a* with a tubular pen-plug having a pair of feed-tongues c^2 c^2, ducts *c c'* on the contiguous faces of said tongues, an additional communicating duct c^3, and a vent *f'*, substantially as and for the purpose specified.

4. The combination of a fountain-pen *a* with a pen-section *b*, having a bell-shaped mouth, and with a tubular pen-plug having a pair of feed-tongues, a central feed-orifice, and an additional communicating duct c^3, the pen-plug being held in the pen-section by frictional contact, substantially as specified.

445,601. PNEUMATIC MOTOR. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed Apr. 4, 1889. Renewed July 11, 1890. Serial No. 358,398. (No model.)



Claim.—1. In a structure of the class specified, the combination, with the cylindrical tank-shell having oppositely-disposed perforations therein near the lower side thereof, said perforations being separated by a continuous portion of said shell, of the axle passing through said perforations and the interior of said shell, and a re-enforcing frame, substantially as described, secured within said tank and covering said perforations and axle, all substantially as described.

2. In a structure of the class specified, the combination, with the cylindrical tank-shell having the oppositely-disposed perforations in the sides thereof, of the axle passing through said perforations and the interior of said shell, a re-enforcing frame, substantially as described, secured within the tank and covering said perforations and axle, wheels on said axle, the axle-boxes, and the axle-box frames, substantially as described.

3. In a structure of the class specified, the combination, with the tank-shell having perforations in the sides thereof, of the axle passing through said perforations and the interior of said shell, a frame, substantially as described, secured within the tank and covering said perforations and axle, wheels on said axle, and the driving-box frames depending from said frame, the ends of said frame being inwardly arched to form wheel-pockets and shaped to form seats for securing thereto said frames, all substantially as described.

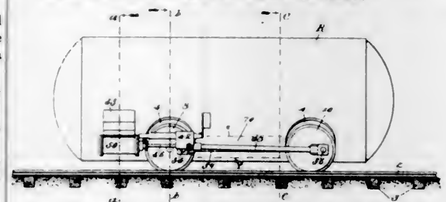
4. In a structure of the class specified, the combination, with the tank-shell R, having perforations 4 and 6, of the frame B, secured within said shell and having its ends inwardly arched to cover said perforations and form outwardly-opening pockets, all substantially as described.

5. In a structure of the class specified, the combination, with the tank-shell, perforated substantially as described, of the frame B within said shell and covering the perforations therein and having seats 17 and 19, the axle-boxes, the frames 18 and 20, secured to said seats and carrying said boxes, and the axle and wheels, all substantially as described.

6. In a structure of the class specified, the combination, with the tank-shell, perforated substantially as described, of the frame B, having oppositely-disposed ends, each inwardly arched to cover the openings in said shell and to form wheel-pockets, the central part of said frame being arched to cover an axle passing through the interior of the shell, said frame being affixed by its outer edges to said shell, substantially as described.

7. In a structure of the class specified, the combination, with the frame B, joined to the shell R and having the wheel-pocket, the frame-seats 17 and 19, and the dome 22, of the frame 18, having arms 13 secured to said seats, the axle and wheels, the axle-boxes, and the springs, all substantially as described.

445,602. PNEUMATIC MOTOR. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed Oct. 1, 1889. Renewed July 11, 1890. Serial No. 358,399. (No model.)



Claim.—1. In a motor, the combination, with a structure, substantially as described, constituting the reservoir and frame-work and having transverse passages therein, substantially as described, of the wheel-provided axles passing through said passages and carried by bearings on said frame-work, the motor-cylinders carried on said reservoir, and connections, substantially as described, connecting said cylinders with said wheels, substantially as described.

2. In a motor, the combination, with the cylindrical structure constituting the reservoir and having therein passages for the axles and wheel-pockets, substantially as described, of the wheel-provided axles passing through said passages and carried in bearings supported on said reservoir, the whole being constructed and organized to bring a portion of the shell of said reservoir substantially in a line between the bearings of the respective axles, whereby said portion constitutes a direct-thrust member, all substantially as described.

3. In a motor, the combination, with the cylindrical shell R, having therein transverse covered passages and wheel-pockets, substantially as described, of the wheel-provided axles passing through said shell and carried in bearings thereon, the motor-cylinders attached to the shell, and the connections actuating the wheels from the cylinders, all substantially as shown and described.

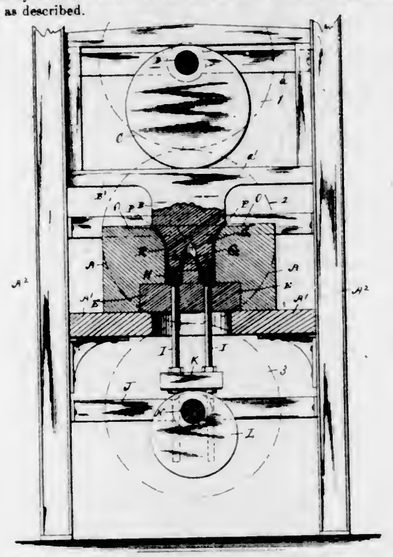
445,603. MACHINE FOR STAMPING AND PERFORATING SHEET METAL. WILLIAM A. TURNER, Worcester, Mass., assignor to Edmund Converse, same place. Filed Sept. 6, 1890. Serial No. 364,116. (No model.)

Claim.—1. In a machine for stamping sheet metal, the combination, with a pair of dies forming a male and female die, by which the sheet-metal blank is formed, of a spur-point placed within said female die, whereby the sheet metal is punctured as it is formed by the action of said dies, substantially as described.

2. In a machine for stamping sheet metal, the combination of a male and female die by which the blank is formed, a spur-point placed within said female die, whereby the blank is punctured as it is formed,

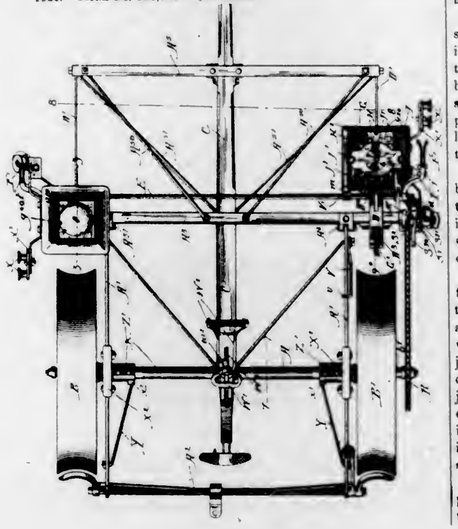
and an annular ring surrounding said spur-point and having a reciprocating motion, by which the punctured blank is forced off said spur-point, substantially as described.

3. In a machine for stamping sheet metal, the combination, with a male and female die by which the blank is formed, of a ring placed in said female die and provided with letters or figures, whereby the surface of the blank is embossed, said ring having a reciprocating motion by which the blank is carried out of the female die, substantially as described.



4. In a machine for stamping sheet metal, the combination, with a female die in which the sheet-metal blank is shaped, of a male die having its sides parallel with the sides of said female die, said male die being provided at its upper end with an overhanging surface forming an angle with the side of the die and extending outwardly the distance occupied by the blank between the two dies, said overhanging surface being arranged to enter within said female die and compress the edge of the blank within the space between the two dies, whereby said edge is brought into a horizontal plane, substantially as described.

445,604. PLANTER. EMIL TYDEN, Chicago, Ill. Filed Oct. 14, 1889. Serial No. 326,923. (No model.)



Claim.—1. In a planter, in combination with the wheel-frame, the planter-frame pivoted thereto, comprising the transverse bar A^8 and the truss A^9 parallel thereto, and the braces A^{50} and A^{51}, secured at the ends, respectively, of the truss A^9, the braces A^{50} being secured to the bar A^8 at its upper side near the middle, and the braces A^{51} being made rigid with said bar near the middle below the same, substantially as set forth.

2. In a planter, in combination with the planter-frame comprising the bar A^8, having rigid with it the loop-bracket A^{53} near the middle, the truss A^9, and the braces A^{50} and A^{51}, the tongue extended through the truss A^9 and bolted to its struts, and extending also through the loop-bracket A^{53} and bolted thereto, substantially as set forth.

3. In a planter, in combination with the hopper, the feed-disk pivoted below it, and a spring-actuated bolt which constitutes the pivot, said bolt being provided with a handle by which it may be withdrawn to release the disk and permit its removal, substantially as set forth.

4. In a planter, in combination with the hopper and its bottom disk having apertures to permit the downward escape of the corn, the plate H, secured to the under side of the hopper-bottom, the feed-disk located between said plate and the hopper-bottom, said plate having the boss J^4, provided with a cavity, the bolt I, located in said cavity, and a spring, also within the cavity, operating upon the bolt to force it upward and cause it to protrude above the surface of the plate and into the center of the feed-disk, said bolt being provided with a handle which protrudes from the boss at the lower end, whereby it may be retracted to release the disk, substantially as set forth.

5. In a planter, in combination with the hopper, the plate J, secured to the bottom of the hopper, with an intervening space between them under the central part of the hopper, the feed-disk located in such space and adapted to be withdrawn edgewise therefrom, and a removable pivot for such disk which retains it in such space when in place, substantially as set forth.

6. In a planter, in combination with the hopper, the plate J, secured to the bottom of the hopper, with an intervening space between them under the central part of the hopper, the feed-disk located in such space and adapted to be withdrawn edgewise therefrom, a bolt suitably retained in the plate J and projecting above the same into the feed-disk to serve as the pivot for the latter, such bolt extending through the plate and accessible and removable at the under side, the hopper being pivotally connected to the planter-frame and adapted to be turned bottom upward thereon, substantially as set forth.

7. In a planter, in combination with the hopper having the bottom disk provided with apertures G^{33}, located in a circle and leading up through the bottom into the hopper, the plate J, bolted onto the bottom of the bottom disk, said feeding-disk having a series of openings H' arranged in a circle underneath the circle in which the apertures G^{33} in the bottom disk are located and pivoted at the center of such circle, the plate J, having an aperture J', located in position to coincide with said holes successively as the disk revolves, but not underneath any of the apertures G^{33} which lead into the hopper, and mechanism whereby the disk is rotated intermittingly a distance from one hole to the next at each impulse, substantially as set forth.

8. In a planter, in combination with a fixed hopper support or standard, the hopper pivoted thereto on a horizontal pivot, whereby it is adapted to be inverted without being detached from the support, the feed-disk pivoted to the hopper-bottom and adapted to be carried by the latter when the hopper is inverted, the pawl-operating arm supported on the fixed hopper-support, and the feed-disk-operating pawl pivoted to such arm on a horizontal pivot, such pivot being in line with the hinged pivot when the pawl-operating arm is in a position of rest, substantially as set forth.

9. In a planter, feed mechanism, in combination with the hopper-bottom disk or plate having the annular groove G^{33} in its under side, the cut-off G^4, bolted into the under side of the bottom disk and having its edge G^{40} flush with the the lower edges of the bounding walls of said annular groove, and the yielding cut-off G^5, pivoted on said fixed cut-off, substantially as set forth.

10. In a planter, in combination with the wheel-frame and planter-frame hinged together, the hopper and feeding mechanism located on the planter-frame, a sprocket or equivalent driving-wheel on the axle and rotated by the supporting-wheel of the wheel-frame, a secondary wheel operated by a belt or chain from the first-mentioned wheel and journaled on the planter frame, the axis of its journal-bearing being coincident with the axis of the hinge whereat the two frames are joined, a trip-arm rotated by said wheel, and a rock-shaft journaled on the planter-frame and having also a lever-arm which protrudes into the path of the revolving trip-arm, whereby the feeding mechanism is actuated automatically by the rotation of the drive-wheel, substantially as set forth.

11. In a planter, in combination with the wheel-frame and the planter-frame hinged together, and mechanism for tilting the machine to elevate the planting mechanism by changing the relative position

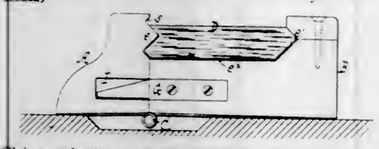
of the two frames about their hinge connection, the planting mechanism comprising a rock-shaft journaled on the planter-frame and having the lever-arm V', and the latch V on the wheel-frame adapted to engage said lever-arm V' and limit the rocking movement of the rock-shaft when the machine is tilted up, substantially as set forth.

12. In a planter, in combination with the planting mechanism and the rock-shaft which operates it, the lever-arm T, secured to said rock-shaft, the lever S^4, rotated by suitable connection with the drive-wheel and provided with two oppositely-projecting arms, one of said arms being at the extremity broader than the other, the lever-arm T having its rear end projecting into the path of rotation of the broader of said arms and also into the path of rotation of the narrower of them when the lever is in one position on its shaft, but out of the path of said lever-arm when the lever is reversed on its shaft, said lever being capable of being reversed on its shaft at will, whereby the feed mechanism may at the will of the operator be actuated once or twice for each revolution of said lever, substantially as set forth.

13. In a planter, in combination with the middle portion of the axle, the trunnions terminating inwardly in sleeves which receive the end of the middle portion of the axle and are bolted thereto, the side bars made fast to the trunnions, respectively, and the braces Y, secured at one end to the inner ends of the sleeves, respectively, and at the other end to the side bars, respectively, substantially as set forth.

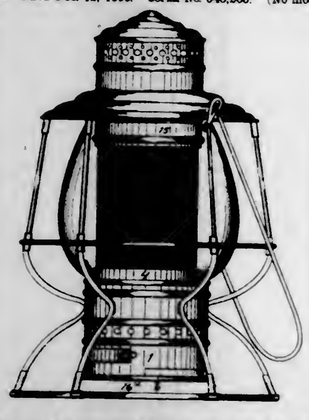
14. In a planter, in combination with the middle portion of the axle, the trunnions bolted thereto and having transverse seats extending through them, respectively, the side bars A', inserted through and secured in said seats, said trunnions having also the sleeves X', extending inward from the side bars, and the braces fastened to the inner ends of said sleeves, respectively, and to the side bars at a distance from their seats in the trunnions, substantially as set forth.

445,605. MOLD FOR VENEERING LUMBER. WILLIAM E. BROCK, Plainfield, N. J. Filed Apr. 3, 1890. Serial No. 346,404. (No model.)



Claim.—A lumber-veneering mold having two sections hinged together at the bottom of the mold to swing in vertical planes, each constructed to conform with one edge of a board, and one constructed at its upper part with a shoulder forming an abutment for the veneer introduced in the mold, in combination with a stop for regulating the opened position of the mold-sections, consisting of an end recess in one section and a strip of the other section entering said recess, forming jointly a stop for regulating the opened position of the mold-sections, substantially as and for the purpose described.

445,606. SIGNAL-LANTERN. THOMAS S. EASTERBROOK, St. Paul, Minn. Filed Feb. 12, 1890. Serial No. 340,206. (No model.)



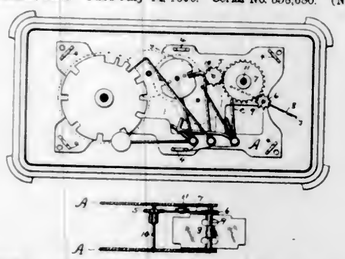
Claim.—1. The combination, with the base of a lantern having a circular wall surrounding the same and a lamp mounted upon said base, of a cylinder having an outwardly-extending annular flange at its base fitting within said wall and interior spiral grooves formed therein, the annular shade-support surrounding the lamp within the cylinder, studs upon the outer circumference of said shade-support, a pin or knob secured to said cylinder and extending through a semi-circular slot in the base of the lantern, and a spring-catch upon said circular wall for preventing the upward movement of said cylinder, substantially as specified.

2. The combination, with the base of a lantern having a circular surrounding wall and lamp mounted in the center thereof, of a cylinder having a bearing within said wall and spiral grooves formed in the interior thereof, means for rotating said cylinder, studs upon said shade-support engaging with said grooves, grooved guides extending upwardly from said base upon each side within said support, the shade, and vertical bars secured to said support having hooks at their upper extremities adapted to grasp the upper edge of the shade, the said bars lying in the grooves of said guides and adapted to slide therein, substantially as specified.

3. The combination, with the base of a lantern having a circular surrounding wall and lamp mounted in the center thereof, of a cylinder having a bearing within said wall and spiral grooves formed in the interior thereof, means for rotating said cylinder, an annular shade-support mounted between the said lamp and cylinder, studs upon said support engaging with said grooves, guides between which said support is mounted extending upwardly upon opposite sides of the same, a cylindrical shade resting upon said support, and a ring resting upon the top of said guides in position to receive and support the upper edge of said shade, substantially as and for the purpose herein specified.

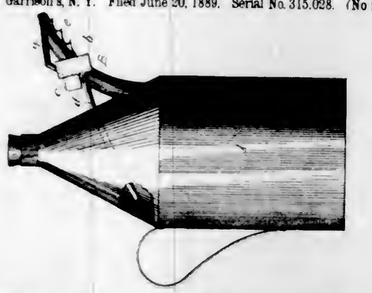
4. The combination, with the globe and frame of the lantern, the lamp having a projecting base and circular surrounding wall, of a cylinder having a bearing within said wall and spiral grooves formed in the interior thereof, means for rotating said cylinder, an annular shade-support mounted between said lamp and cylinder, studs upon said support engaging with said grooves, guides between which said support is mounted extending upwardly upon each side of the lamp, a cylindrical shade resting upon said support, and a ring mounted at the upper extremities of said guides in position to receive and support the upper edge of the shade, and yielding points or projections upon the said ring adapted to rest against the interior of the globe, substantially as and for the purpose specified.

445,607. CLOCK STRIKING MECHANISM. ALMERON M. LANE, Meriden, Conn. Filed July 14, 1890. Serial No. 358,680. (No model.)



Claim.—A clock striking-train having an idle-wheel 7 interposed between the pinion of the fly or fan shaft and the wheel which drives said pinion, substantially as described, and for the purpose specified.

445,608. ACOUSTIC ALARM FOR OIL-CANS. JOHN A. POLLOCK, Garrison's, N. Y. Filed June 20, 1889. Serial No. 315,028. (No model.)

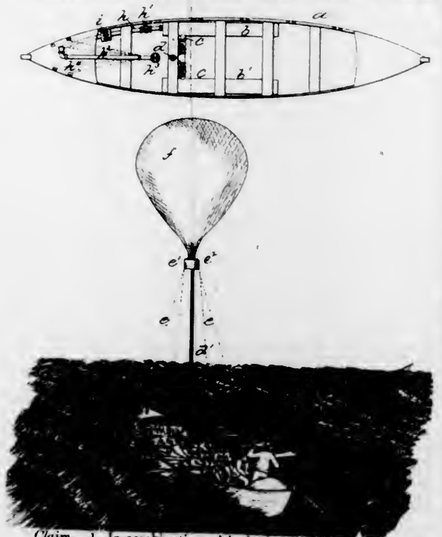


Claim.—1. The combination, with the oil-can and its nozzle having two communicating air-chambers attached thereto, of the air-tubes connected with said chambers, one extending from near the end of the nozzle to a point within one of the said chambers in proximity to the opening affording communication between the two chambers, and the other extending from one of said chambers to a point within the can which shall be above the level of the oil when the can is tilted, substantially as and for the purpose specified.

2. The combination, with the can-body, the nozzle, the two communicating air-chambers, the automatic alarm formed by the air-chambers, and the air-tubes, one extending from the outer end of the nozzle to near the opening g in the said air-chambers, and the other extending from one of the chambers to a point within the can which will be above the level of the oil when the can is tilted, of the shoulders e upon the nozzle and adapted to limit the distance that the nozzle is inserted in the lamp or other receptacle to be filled from the can, substantially as and for the purpose specified.

3. The combination, with the can-body, the nozzle having shoulders, as described, the two air-chambers attached to the nozzle, and communication by two air-passages g and g', provided in the wall separating the air-chambers, of the air-tubes a and d, connected with one of the air-chambers and forming with them a continuous air-inlet to the body of the can, the tube a, terminating in proximity to the opening g, and the tube d, extending from one of the chambers to a point within the can which shall be above the level of the oil when the can is tilted, substantially as and for the purpose specified.

445,609. LIFE-SAVING APPARATUS. WILLIAM W. RILEY, Cromwell, Conn. Filed June 29, 1889. Serial No. 316,064. (No model.)



Claim.—1. In combination with the boat or like floating structure, the gas-reservoir, the hollow mast, the pipe connections from the hollow mast to the gas-reservoir, the valves in the connecting-pipes, the balloon adapted to be secured to the upper end of the hollow mast, the flexible connecting part between the mast and the balloon, and the guard on the upper end of the mast, arranged to prevent the abrasion of the neck of the balloon, all substantially as described.

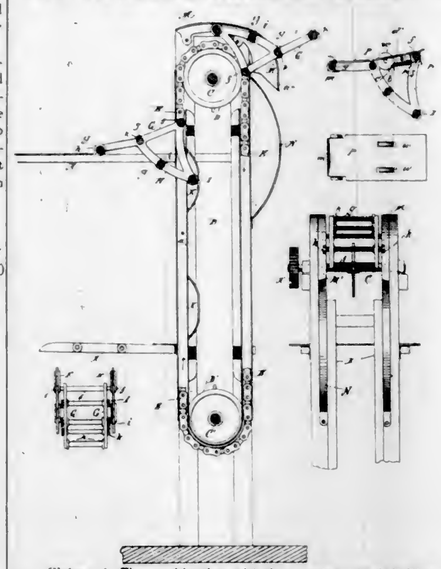
2. In combination with a boat, raft, or like floating structure, the gas-reservoir, a hollow mast, the pipe connections from the mast to the gas-reservoir, the valve or gate in the connecting-pipes, the stays for supporting the mast in a vertical position, the balloon, and the ball-and-socket joint forming a means of connection between said balloon and the mast, all substantially as described.

3. In combination with a boat, raft, or like floating structure, the gas-reservoir, the pipe connection with the tubular signal-standard, the gas-burner on the upper end of the signal-standard, and the folding standard with the supporting-stays, all substantially as described.

4. In combination with a boat or like floating structure, the gas-reservoir, the hollow mast, the pipe connections from the mast to the gas-reservoir, the valve in said connecting-pipe, the balloon secured to the upper end of the hollow mast, the flexible connecting means between said balloon and the mast, and the air-pump connected on the suction side of said pump to the gas-pipe at a point beyond the valve in said pipe and on its delivery side to the gas-reservoir, all substantially as described.

5. In combination with a boat, raft, or like floating structure, the gas-reservoirs located at opposite sides of the boat, the pipe connection from said reservoirs to a tubular mast adapted to support a balloon, stays for supporting said mast, the balloon connected to the upper end of said mast, the ball-and-socket joint forming the means of junction between the balloon and the pipe, the pipe connection to the folding signal-mast, and the stove with the tubular connection to one of the cylinders provided with gate or valve, all substantially as described.

445,610. PLATFORM-ELEVATOR. GEORGE RUDDELL, New York, N. Y. Filed May 26, 1888. Serial No. 275,152. (No model.)



Claim.—1. The combination, with the sprocket-wheels D D', endless chains E, frame B, having one or more fixed cams K, and platform G, having brackets H, of the cams M and M', and the rollers i and k at the lateral edges of the platform, and arranged to engage, respectively, with the under side of the cam M and the outer side of the cam M', substantially as and for the purpose herein set forth.

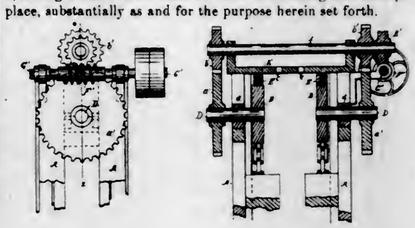
2. The combination, with the sprocket-wheels D D', endless chains E, frame B, having one or more fixed cams K, and platform G, having brackets H, of the anti-friction rollers k and i and fixed cams M, M', and N, all substantially as and for the purpose herein set forth.

445,611. PLATFORM-ELEVATOR. GEORGE RUDDELL, New York, N. Y. Filed June 11, 1890. Serial No. 355,012. (No model.)

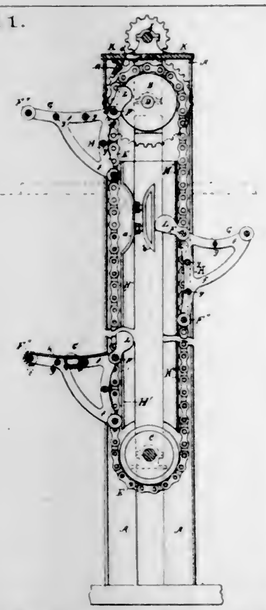
Claim.—1. The sprocket-wheels B B, mounted upon separate shafts at the top of the hoistway, whereby a clear space is left between them, in combination with bearings c', arms L, a tilting platform, and endless chains E, actuated by said sprocket-wheels, substantially as and for the purpose set forth.

2. The sprocket-wheels B B, mounted upon separate shafts, whereby a clear space is left between them, bearing c', and an inclined guide M, in combination with the arms L, a tilting platform, and the endless chain E, actuated by said sprocket-wheels, substantially as and for the purpose herein set forth.

3. In a hoisting apparatus, the platform G, composed of side pieces and the cross-bars g, in combination with a movable floor-piece h, having hooks i and a latch or bolt n for holding said floor-piece in place, substantially as and for the purpose herein set forth.



445,611.



4. In a hoisting apparatus, the platform G, composed of side pieces and the cross-bars *g*, in combination with a movable floor-piece *h*, having hooks *i*, rollers *l*, and a latch or bolt *n* for holding said floor-piece in place, substantially as and for the purpose herein set forth.

445,612. SELF-CLOSING GAS-BURNER. WILLIAM TEN EYCK, Oakland, Cal. Filed Apr. 25, 1890. Serial No. 349,518. (No model.)



Claim.—1. In a self-closing gas-burner, the combination of a gas-reservoir provided with a horizontal dividing-partition, a spring-actuated valve working in the lower compartment of said partition, the valve-stem thereof passing through said lower compartment, a valve also working in the lower compartment and having its stem passing through the upper compartment, and expansible threads connected with the last-named valve-stem and adapted to control the same through expansion and contraction, substantially as set forth.

2. In a self-closing gas-burner, the combination of a gas-reservoir provided with a horizontal dividing-partition, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, said valves adapted to open and close appropriate ports in the partition, and expansible threads connected with the last-named valve-stem and controlling the same through expansion and contraction, substantially as set forth.

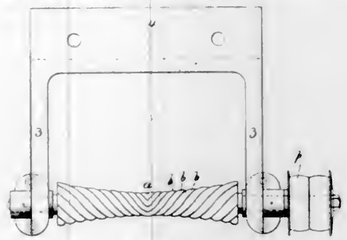
3. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom and provided with a horizontal dividing-partition, said partition provided with suitable ports, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, said valves adapted to open and close the ports in the partition, and expansible vertical threads connected with the valve-stem, which works in the upper compartment, said threads arranged on a plane parallel with the slit of the burner, substantially as set forth.

4. In a self-closing gas-burner, the combination of a reservoir provided with a horizontal dividing-partition having suitable ports, a valve and valve-stem working in the lower compartment and controlling one of the ports, a coiled spring encircling said valve-stem, a valve also working in the lower compartment of the reservoir and controlling the other port, the valve-stem thereof passing through the upper compartment and the upper end of said valve-stem passing through the reservoir, a coiled spring seated in the lower compartment and bearing against the valve of said stem, and vertical expansible threads connected with the upper end of the stem, substantially as set forth.

5. In a self-closing gas-burner, the combination of a gas-reservoir provided with a horizontal dividing-partition, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, a non-expansible rod secured to the reservoir and having its upper end bent inwardly, a horizontal rod secured to said inwardly-extending end, a horizontal rod secured to the external end of the upper valve-stem, and expansible threads connecting said horizontal rods, substantially as set forth.

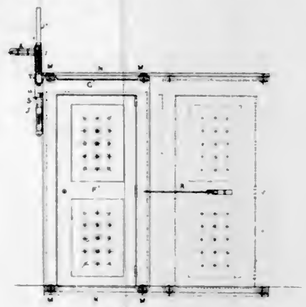
6. In a self-closing gas-burner, the combination of a gas-inlet, a reservoir connected therewith, said reservoir provided with a horizontal dividing-partition having suitable ports therein, spring-actuated valves working in the lower compartment, the valve-stem of one passing through said lower compartment and the valve-stem of the other through the upper compartment, a burner secured to said reservoir, and vertical expansible threads connected to the upper valve-stem, substantially as set forth.

445,613. CHANNEL-FLAP-LAYING MACHINE. JOHN HEMINGWAY and DAVID B. ALDOSS, Lynn, Mass.; said Hemingway assignor of one-half his interest to Alfred C. Hemingway, same place. Filed May 9, 1890. Serial No. 351,134. (No model.)



Claim.—In a channel-flap layer, the combination, with a supporting-frame, of a longitudinally-concave roll journaled in bearings in said frame and provided with reversed spiral ribs formed with convex rounded smoothing surfaces or edges, whereby they are adapted to smooth or press down the flap without scraping or cutting the surface of the sole, the concavity of the roll being such that its ribbed surface conforms to the transverse convex curvature of the bottom of the sole, whereby said ribs are adapted to bear on the channel-flap at both edges of the sole simultaneously, as set forth.

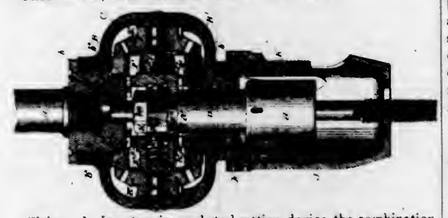
445,614. APPARATUS FOR OPENING DOORS. VICTOR MEHAY, Brussels, Belgium. Filed July 14, 1888. Serial No. 279,982. (No model.) Patented in Belgium Feb. 8, 1888, No. 80,576, and in England Feb. 25, 1888, No. 2,843.



Claim.—1. The combination of a door, a movable frame in which the door is mounted, a catch moved by gravity to release the said frame, but held to lock the said frame to the casing or wall in which it is mounted, and a bolt which engages with the said catch to hold it in its locking position, substantially as described.

2. The combination of the door, the movable frame in which the door is mounted, a catch J, moved by gravity and which locks the said frame, and a sliding bolt K, which engages with the said catch and holds it in its locking position, substantially as described.

445,615. TAPPING DEVICE. JOHN H. RATHBUN, Milwaukee, Wis. Filed June 16, 1890. Serial No. 355,540. (No model.)



Claim.—1. In a tapping and stud-setting device, the combination of a driving-spindle having a polygonal block, a recessed head loosely mounted thereon, and yielding bearing-pieces held in said head so as to engage with said polygonal block, substantially as and for the purposes set forth.

2. In a tapping and stud-setting device, the combination of a spindle having a polygonal part, a driving-head loosely mounted upon said spindle, yielding bearing-pieces inserted in apertures in said head so as to engage the polygonal part of the spindle, springs tending to force said bearing-pieces toward the spindle, and means of adjusting the tension of the springs, substantially as and for the purposes set forth.

3. In a tapping and stud-setting device, the combination of a spindle having a polygonal part, a recessed head mounted upon said spindle around said polygonal part and having radial apertures opening inwardly toward said polygonal part, bearing-pieces placed in said apertures in engagement with said polygonal part, screw-plugs in the outer ends of said apertures, and springs interposed between said plugs and bearing-pieces, substantially as and for the purposes set forth.

4. In a tapping and stud-setting attachment for drill-presses, &c., the combination of a non-rotating gear-case, a shank capable of turning in said case and attachable to the spindle of a drill-press or other machine, oppositely-arranged bevel-gears in said gear-case, one fixed to said shank, oppositely-arranged idle bevel-gears engaged by said first-mentioned gears and journaled in said gear-case, a tool-holding spindle capable of rotation and a limited endwise movement in said gear-case, a head mounted upon said spindle between said gears and bearing, having clutch formations adapted to engage similar formations on said gears, and yielding bearing-pieces carried by said head in engagement with a polygonal block on said spindle, substantially as and for the purposes set forth.

5. In a tapping device, the combination of a suitable gear-case, a driving-shank capable of turning therein, oppositely-rotated clutches journaled in said gear-case and driven by said shank, a tool-holding spindle revoluble and capable of a limited endwise movement in said gear-case, a driving-head mounted upon said spindle between said clutches and arranged to be engaged and driven by either one of them, and yielding bearing-pieces held in said head in engagement with a polygonal part on said spindle, substantially as and for the purposes set forth.

6. In a tapping device, the combination, with a non-rotating gear-case provided with oppositely-arranged clutch-gears, idle-gears meshing therewith, and a driving stem or shank connected with one of said clutch-gears, of a spindle revoluble and capable of endwise movement in said gear-case, and a driving-head mounted upon said spindle between said clutch-gears and provided with yielding bearing-pieces adapted to engage with flattened surfaces on said spindle, said head being movable with said spindle into engagement with either of said clutch-gears, substantially as and for the purposes set forth.

7. In a tapping device, the combination of a rotary tool-holding spindle having flattened surfaces, and a driving-head capable of turning thereon and provided with yielding bearing-pieces adapted to engage with the flattened surfaces on said spindle, substantially as and for the purposes set forth.

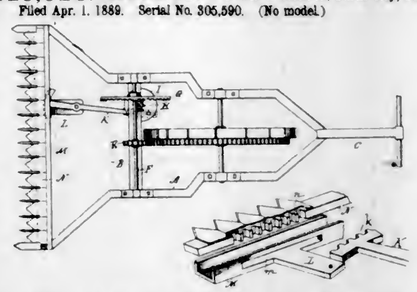
8. In a tapping device, the combination of a tool-holding spindle having flattened lateral surfaces, a driving-head mounted thereon and having apertures opening against said flattened surfaces, and yielding bearing-pieces inserted in said apertures so as to engage with the flattened surfaces on the spindle, substantially as and for the purposes set forth.

9. In a tapping device, the combination of a rotary spindle having flattened lateral bearing-surfaces, and a driving-head mounted thereon and provided with separate yielding bearing-pieces adapted to engage the flattened surfaces of said spindle, substantially as and for the purposes set forth.

10. In a tapping device, the combination of a rotary spindle having flattened lateral bearing-surfaces, a driving-head mounted thereon and provided with yielding bearing-pieces made separate therefrom and adapted to engage the flattened surfaces of said spindle, and means of adjusting the pressure of said bearing-pieces against said spindle, substantially as and for the purposes set forth.

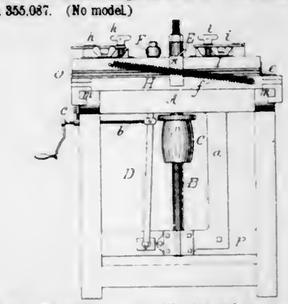
11. In a tapping device, the combination of a suitable case or frame, a driving-shank journaled therein, oppositely-rotated clutches journaled in said case and connected with and driven by said shank, a tool-holding spindle revoluble and capable of endwise movement in said case, a driving-head mounted upon said spindle between said clutches and arranged to be engaged and driven by either of said clutches, and yielding bearing-pieces carried by said head in engagement with flattened bearing-surfaces on said spindle, substantially as and for the purposes set forth.

445,616. LAWN-MOWER. EDWIN E. RUNYON, Burns City, Tex. Filed Apr. 1, 1889. Serial No. 305,590. (No model.)



Claim.—In a lawn-mower, the combination, with the cutter-bar having a rack in its rear edge and supported in a channel or groove in the finger-bar, also having a slot in its rear side, of the oscillating lever having a segmental rack engaging the rack of the cutter-bar the drive-wheel having on its side a circular series of cogs engaging a pinion secured on a horizontal shaft bearing a beveled wheel, the upright shaft carrying a pinion gearing with said beveled wheel, and the crank-wheel secured to said upright shaft and having a stud or pin playing in a slot in the said lever, substantially as set forth.

445,617. SHAPING-MACHINE. ROMANTA D. WOODFORD and GEORGE C. RAYMOND, Binghamton, N. Y. Filed June 11, 1890. Serial No. 355,087. (No model.)

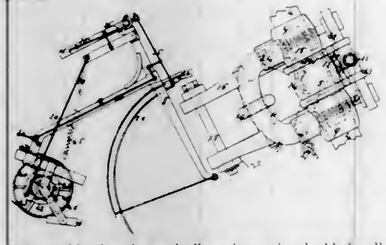


Claim.—The combination, with the bed supported on standards and provided with longitudinal ways, of a table mounted and movable longitudinally upon the ways, transverse ways upon the table, a frame mounted and movable upon them transversely to the table, springs connecting the frame and table, a central cutter and means to rotate it, clamps on one side of the frame to hold the pattern, clamps on the opposite side to hold the work, and a guide-roller following the contour of the pattern, as set forth.

445,618. VELOCIPEDE. FREDERICK W. ZIMER, London, England. Filed Mar. 13, 1890. Serial No. 343,711. (No model.)

Claim.—1. In combination, a double handle-bar 4, working on a horizontal axis and provided with duplicate angular extensions or handles, by both of which acting simultaneously it can be vertically reciprocated about such axis, a vertical or approximately vertical support 7, carrying the axial part of the handle-bar and connected to the steering device 8, a framing 12, supporting the support 7 and permitting of its being turned about its axis by lateral movement of the handle-bar, an extension 11, projecting from the near side of the axial part of the handle-bar concentric with the intersections of the axis of the handle-bar and of its support 7, lever-like under extensions 16, projecting from the framing 12 and adapted to be reciprocated in a vertical plane, a connection 19, connecting the extensions 11 16 in all positions of the handle-bar, extensions 33 34, projecting from the oppo-

site side of the axis of the handle-bar and loosely mounted thereon and connected with a brake device 28, normally occupying an inoperative position, under extensions 31, projecting from the axial part of the handle-bar, an adjustable device 21, arranged to normally prevent the handle-bar from being lowered sufficiently to cause the extensions 31 to operate the extensions 33 34, but permitting of such movement and actuation when laterally displaced, a clutch-operating device 42 or the like on the shaft of the mechanism to be operated, and treadles for operating such shaft by the feet in a normal manner, and connections 20 from the extensions 16 to such clutch or like device 42, so arranged as to permit of the unimpeded lowering of the double handle-bar between following depressions of the treadles and of the raising thereof by both hands coincidently with the depression of each treadle, as set forth.



2. In combination, the vertically-reciprocating double handle-bar 4, laterally-adjustable support 7, supporting-frame 12, connected extensions 11 and 16, oppositely-projecting extensions 33 34 31, adjustable device 21, clutch-operating device 42 or the like on the shaft of the mechanism to be operated, treadles or the like for operating such shaft by the feet, and spring connections 20 48 from the extensions 16 to such clutch or like device 42, so arranged as to be compressed by the upward pull of the double handle-bar effected by both hands coincidently with the depression of each treadle and as to be automatically operative in actuating the clutch during each lowering movement of the handle-bar, as set forth.

3. In combination, the vertically-reciprocating double handle-bar 4, laterally-adjustable support 7, supporting-frame 12, connected extensions 11 and 16, clutch-operating device 42, shaft operated by treadle, and connections 20 from the extensions 16 to such clutch, so arranged as to permit of the unimpeded lowering of the double handle-bar between following depressions of the treadles and of the raising thereof by both hands coincidently with the depression of each treadle, as set forth.

4. In combination, the vertically-reciprocating double handle-bar 4, laterally-adjustable support 7, supporting-frame 12, connected extensions 11 and 16, clutch-operating device 42, shaft operated by treadles, and spring connections 20 48 from the extensions 16 to such clutch, so arranged as to be compressed by the upward pull of the double handle-bar effected by both hands coincidently with the depression of each treadle and as to be automatically operative in actuating the clutch during each lowering movement of the handle-bar, as set forth.

5. In combination, the vertically-reciprocating double handle-bar 4, clutch-operating device 42, shaft operated by treadles, and connections 20 from such handle-bar to such clutch, so arranged as to permit of the unimpeded lowering of the double handle-bar between following depressions of the treadles and of the raising thereof by both hands coincidentally with the depression of each treadle, as set forth.

6. In combination, the vertically-reciprocating double handle-bar 4, clutch-operating device 42, shaft operated by treadles, and connections 20 48 from such handle-bar to such clutch, so arranged as to be compressed by the upward pull of the double handle-bar effected by both hands coincidently with the depression of each treadle and as to be automatically operative in actuating the clutch during each lowering movement of the handle-bar, as set forth

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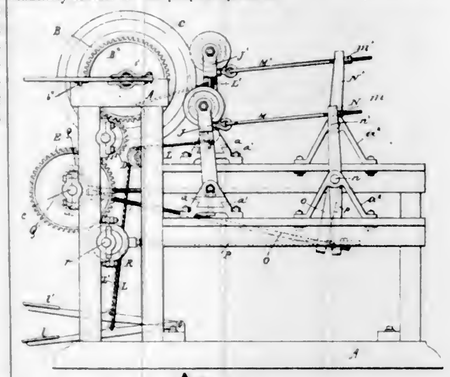
445,619. HEADING-DRESSING MACHINE. WILLIAM H. CURRAYN, Riverside, Ohio. Filed June 20, 1890. Serial No. 356,165. (No model.)

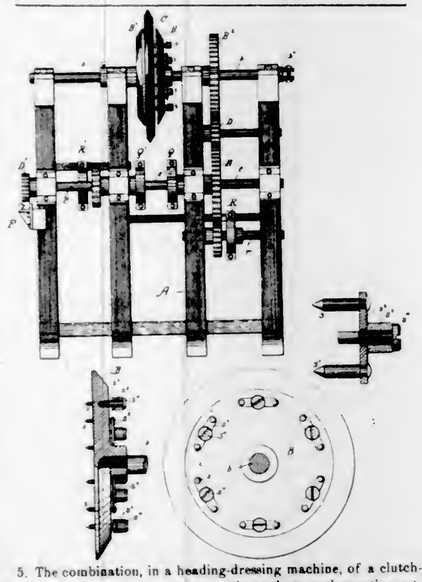
Claim.—1. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating rotary motion and two reciprocating cutters, substantially as and for the purpose specified.

2. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating rotary motion and two reciprocating cutters adjustable longitudinally of said machine, substantially as and for the purpose specified.

3. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating rotary motion and two reciprocating cutters adjustable transversely of said machine, substantially as and for the purpose specified.

4. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating rotary motion and two reciprocating cutters adjustable transversely and longitudinally of said machine, substantially as and for the purpose specified.





5. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating rotary motion and two reciprocating cutters automatically adjusted to dress an oval surface, substantially as and for the purpose specified.

6. The combination, in a heading-dressing machine, of a clutch-block having a rotary motion, two reciprocating cutters, and eccentrics, whereby each cutter is automatically alternately forced toward and withdrawn from the clutch-block at alternate quarters of each rotation of the clutch-block, substantially as and for the purpose specified.

7. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating rotary motion, eccentrics, each having a motion relative to that of the clutch-block, and two reciprocating cutters controlled thereby, substantially as and for the purpose specified.

8. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating motion, cutters, lever-arms adapted to automatically withdraw the cutters, eccentrics actuating the arms, and means for forcing the cutters into engagement with the heading, substantially as and for the purpose specified.

9. The combination, in a heading-dressing machine, of a clutch-block having a reciprocating rotary motion, cutters, lever-arms adapted to withdraw the cutters, and eccentrics actuating the arms, substantially as and for the purpose specified.

10. The combination, in a heading-dressing machine, of a main shaft to which a reciprocating rotary motion is given by means of a rack and pinion, a clutch-block operated thereby, cutters, and an eccentric whereby the cutters are adjusted, substantially as and for the purpose specified.

11. The combination of disks B B', dogs *s s'*, mounted on arms s^3, and an elastic bearing for said arms, substantially as and for the purpose specified.

12. The combination, in a heading-dressing machine, of disks B B', one of which is provided with dogs *s s'*, mounted on elastic arms s^3 s^3, shaft *b*, adapted to move disk B toward and away from disk B', and a lever b^3, substantially as and for the purpose specified.

13. The combination, in a heading-dressing machine, of a frame A, clutch-blocks B B', a main shaft *e*, pinion D', rack F, cutters I I', arms J J', a chain or cord L, treadle L', and eccentrics Q Q', whereby the cutters are adjusted to dress an oval surface, substantially as and for the purpose specified.

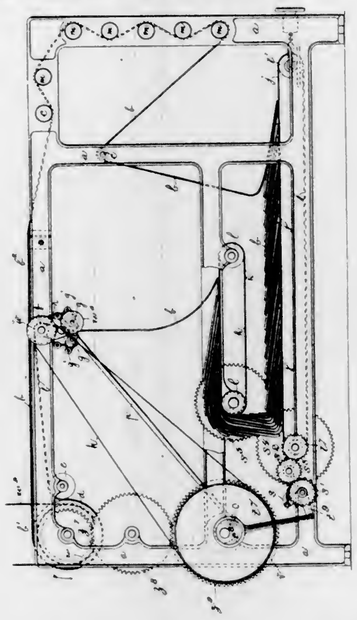
14. The combination, in a heading-dressing machine, of frame A, clutch-blocks B B', having a reciprocating rotary motion, cutters I I', rods M M', arms N N', arms *o o'*, rods O O', and eccentrics Q Q', substantially as and for the purpose specified.

15. The combination, in a heading-dressing machine, of a frame A, clutch-blocks B B', having a reciprocating rotary motion, cutters I I', rods M M', arms N N', arms *p p'*, rods P P', and eccentrics R R', substantially as and for the purpose specified.

16. The combination, in a heading-dressing machine, of a frame A, clutch-blocks B B', having a reciprocating rotary motion, cutters I I', rods M M', arms N N', arms *o o' p p'*, rods O O' P P', and eccentrics Q Q' R R', substantially as and for the purpose specified.

17. The combination, in a heading-dressing machine, of a frame A, clutch-blocks B B', shaft *e*, pinion D', rack F, cutters I I', arms J J', a chain or cord L, treadle L', rods M M', arms N N', arms *o o' p p'*, rods O O' P P', and eccentrics Q Q' R R', substantially as and for the purpose specified.

445,620. APPARATUS EMPLOYED IN THE CUTTING OF WEFT PILE FABRICS. OSCAR DREY, Manchester, England. Filed Apr. 29, 1890. Serial No. 349,963. (No model.) Patented in England Feb. 26, 1889, No. 3,399; in France Nov. 27, 1889, No. 202,260; in Belgium Nov. 27, 1889, No 88,683; in Spain Dec. 20, 1889, No 10,347, and in Italy Jan. 17. 1890, XXIII, 26,655, and LII. 291.



Claim.—The combination, with a plaiter, of a traveling surface upon which cloth is deposited in folds by the said plaiter, and an opposing traveling web having guide-rollers *l*, upon which the folded cloth is allowed to fall and by which it is turned over, all substantially as herein set forth.

445,621. AGRICULTURAL FORK. FREDERICK S. KRETTINGER, Fort Madison, Iowa. Filed July 16, 1890. Serial No. 358,963. (No model.)



Claim.—1. A fulcrum-plate for forks, comprising a detachable plate C, curved in semicircular form so that its upper end shall bear against the fork-handle, and having its lower end furnished with a clip, the parts whereof shall bear upon all four sides of the fork-head to guard against the displacement of the clip, substantially as described.

2. A fulcrum-plate for forks, comprising a curved plate C, having its lower end provided with a shank *c* and shank-bead *c'*, adapted to engage with the fork-head, and provided also with lugs c^4, and having its upper end provided with an extension c^5 to bear against the fork-handle, substantially as described.

445,622. PEN-HOLDER. LILLIAN L. W. MCMURTRY, Mattawa, Canada. Filed Oct. 29, 1890. Serial No. 369,703. (No model.)

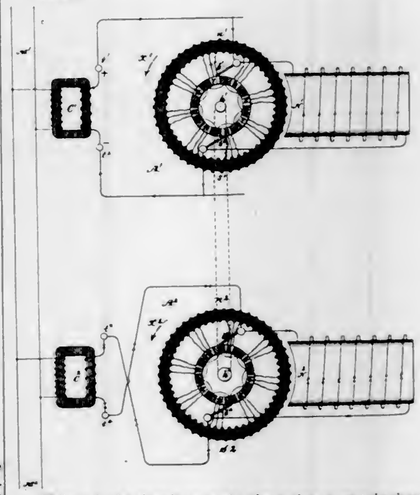


Claim.—1. A pen-nolder provided with a convex pen-receiver and a concave hinged flap having projections near its ends, and a ring movable on the holder and flap and confined between said projections, as set forth.

2. The combination, with the pen-holder A, having depression *e*, as shown, of the concave flap hinged to the holder in proximity to said depression and provided with upturned end and teat, and the ring movable on the holder and flap and confined between the upturned end and teat, substantially as specified

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445,623. ELECTRIC MOTOR. FRANCIS J. PATTEN, New York, N. Y., assignor, by mesne assignments, to the Patten Alternating Motor Company, of New Jersey. Filed Oct. 6, 1890. Serial No. 367,188. (No model.)



Claim—1. An electric motor for alternating currents having two independent armatures secured to a common spindle, independent field-magnets for said armatures, separate independent circuits of sup-

ply for each armature and its corresponding field-magnet, and separate commutators or collectors for each armature, substantially as described.

2. In an alternating-current electric motor, two armatures with separate independent commutators all secured to a common spindle, the commutators being provided each with alternate groups of segments connected to the armature-winding, and segments connected to each other which short-circuit the supply-current, substantially as described.

3. In an alternating-current electric motor, two armatures having independent circuits secured to the same spindle and a separate commutator or collector for each, said commutators having alternate groups of segments that are connected to the armature-circuits and segments that are connected to each other, the commutators being so placed upon the spindle with reference to the brushes bearing on them that one armature-circuit is connected to the source of supply while the other is out of action or short-circuited, and vice versa, substantially as described.

4. An alternating-current motor consisting of two independent machines, the armatures of which are secured to a common spindle the field-magnets being connected to separate alternating-current sources of supply, said supply-circuits being periodically and alternately short-circuited by groups of commutator-segments that are connected together and arranged to short-circuit the supply-current through the brushes, substantially as described.

5. An electric motor provided with an armature the commutator or collector of which is composed of groups of conducting-segments connected to the armature-circuit directly in the ordinary way, and additional groups of conducting-segments located between the former, but disconnected from the armature-circuit and connected to each other, substantially as described.

6. An electric motor for alternating currents having two armatures connected to a common spindle, and a commutator for each armature, each armature-circuit being connected to alternate segments or groups of segments of its commutator, and the remaining segments not connected to the armature being connected to each other, substantially as described.

7. An alternating-current electric motor having two independent armatures connected to the same spindle, said armatures having separate commutators, in both of which alternate segments or groups of segments are connected to the armature-segments, the intermediate segment or group of segments in each being connected to each other, and the armatures and commutators so placed upon the common spindle that the connected segments of one armature correspond in position with reference to the axis of the spindle with the disconnected segments of the other, and independent brushes for each armature that bear simultaneously upon the connected segments of one armature and the disconnected segments of the other, substantially as described.

8. The described method of utilizing alternating currents in the transmission of energy, which consists in converting one set of primary currents into two independent like sets of secondary currents and causing these two to successively excite the operative circuits of the same machine, substantially as described.

445,624. ELECTRIC MOTOR. FRANCIS J. PATTEN, New York, N. Y., assignor, by mesne assignments, to the Patten Alternating Motor Company, of New Jersey. Filed Oct. 18, 1890. Serial No. 368,519. (No model.)

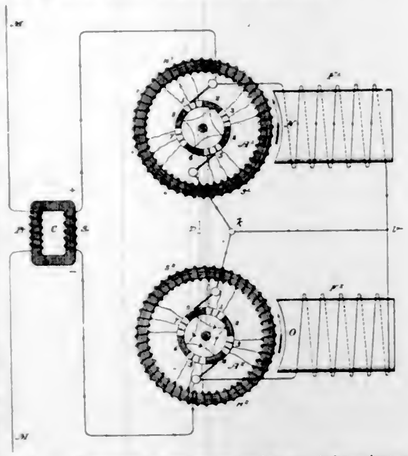
Claim.—1. An electric motor for alternating currents having two independent armatures secured to a common spindle, independent field magnets for said armatures, separate commutators for said armature-circuits, and separate pairs of brushes bearing on the latter, said brushes being connected to the same source of alternating currents, substantially as described.

2. An alternating-current motor having two armatures secured to a common spindle, but located in independent magnetic fields, said armatures being provided with collectors having alternate groups of segments connected to the armature-winding, the intermediate segments or groups of segments being connected to each other, substantially as described.

3. An alternating-current electric motor having two armatures with independent circuits secured to a common spindle, and commutators for each that have alternate groups of segments connected to the armature-winding, and intermediate segments that are connected together, said armatures being connected in series through their brushes to a single source of supply of alternating currents, the armatures and commutators being so placed upon their spindles with reference to their brushes that one armature is short-circuited by the connected segments of its commutator, while the other is supplied with current through the segments connected to its coils, substantially as described.

4. An alternating-current motor consisting of two independent armatures secured to a common spindle and electrically connected to independent field-magnets, the armature-circuits being connected in series with each other, and the independent field-magnet circuits connected likewise in series with each other and in parallel with the two armature-circuits to the same source of supply of alternating currents, substantially as described.

5. An alternating-current motor having two separate armatures secured to a common spindle and independent field-magnets for each of said armatures, the exciting-circuits of said armatures and field-magnets being connected in series multiple to the same source of alternating-current supply, substantially as described.



6. An alternating-current motor having two independent armatures and field-magnets, each field-magnet circuit being connected in parallel or shunt relation to its corresponding armature-circuit, which latter is provided with alternate segments or groups of segments that are connected to the armature-winding and intermediate segments or groups of segments that are connected together, whereby the field-magnet circuit being connected to the brushes is intermittently closed upon itself, substantially as described.

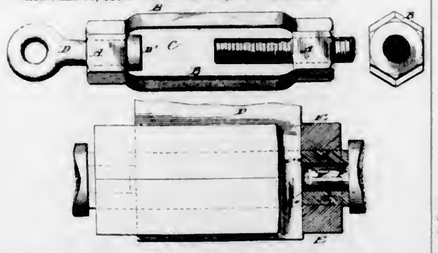
7. An alternating-current motor having separate independent field-magnets and armatures, the latter secured to a common spindle, the circuits of all being connected to the same source of alternating currents, the armatures being in series from brush to brush, and the separate field-magnet circuits being likewise in series with each other in a circuit taken as a shunt from the brush that conveys current into one armature around to the brush that conveys it out of the other, and a lead or bridge circuit one extremity of which is connected to the two remaining brushes and the other end to a point of the field-magnet circuit midway between the two separate field-magnet windings, substantially as described.

8. An alternating-current motor having separate independent field-magnets and armatures, the latter secured to a common spindle, the circuits of all connected to the same source of alternating currents, the armatures being in series from brush to brush, and the separate field-magnet circuits likewise in series with each other in a circuit taken as a shunt from the brush that conveys current into one armature around to the brush that conveys it out of the other, and a lead or bridge circuit one extremity of which is connected to the two remaining brushes and the other end to a point of the field-magnet circuit midway between the two separate field-magnet windings, in combination with commutators for said armatures, having alternate segments or groups of segments connected to the armature-winding, the intermediate segments being connected together, and these commutators being so placed with reference to their brushes that each armature in turn is short-circuited or cut out while the other is operative, substantially as described.

9. An alternating-current motor having separate independent field-magnets and armatures, the latter secured to a common spindle, the circuits of all being connected to the same source of alternating currents, the armatures being in series from brush to brush, and the separate field-magnet circuits likewise being in series with each other in a circuit taken as a shunt from the brush that conveys current into one armature around to the brush that conveys it out of the other, and a lead or bridge circuit one extremity of which is connected to the two remaining brushes and the other end to a point of the field-magnet circuit midway between the two separate field-magnet windings, in combination with commutators for said armatures having alternate segments or groups of segments connected to the armature-winding, the intermediate segments being connected together, and these commutators being so placed with reference to their brushes that the exciting-circuit of each armature and its corresponding field-magnet is in turn short-circuited or cut out and the field-magnet circuit closed on itself through the intermediate connected segments of the commutator, substantially as described.

10. The method of operating electric motors on alternating-current circuits, which consists in connecting the operative circuits of two independent machines, the rotary parts of which are carried by a common spindle to a source of alternating current through commutators that short-circuit or cut out the exciting-circuits of each machine in turn during the period of time that the circuits of the other are excited by the current from the source of supply, substantially as described.

445,625. TURN-BUCKLE. CHARLES H. WILLIAMS, Cleveland, Ohio. Filed June 10, 1890. Serial No. 354,878. (No model.)



Claim.—1. In a turn-buckle, filling-pieces consisting of rectangular blocks having in each a groove, substantially as specified.

2. In a turn-buckle, filling-pieces in the form of rectangular grooved blocks arranged with the groove of one block adjacent to that of the other, substantially as specified.

3. A blank or bar for filling-pieces of turn-buckles, the said bar being rectangular in cross-section and provided with a longitudinal groove extended along one side thereof, substantially as specified.

4. The method of making filling-pieces of turn-buckles, which consists in rolling a bar with a groove in one side thereof and subsequeotly severing said bar into blocks, substantially as specified.

5. The method of making turn-buckles, which consists in producing a bar having a groove extending longitudinally therein and in one side thereof, severing said bar into blocks and arranging said blocks with their grooves adjacent each other, and welding arms to the blocks and across the joints of said blocks, substantially as specified.

6. A turn-buckle the head of which is formed of the ends of its arm portions welded to the sides of grooved filling-blocks arranged with their grooves adjacent to each other, substantially as specified.

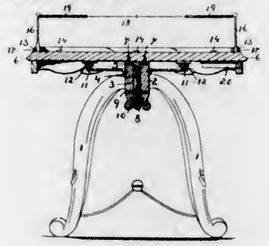
7. The method of making turn-buckles herein described, which consists in assembling grooved filling-blocks and arms and compressing the arms and filling-blocks transversely against each other and longitudinally against a fixed inner die, substantially as described.

8. In the art of making turn-buckles, a method of welding the head portions which consists in laterally compressing the same against each other and upon a plunger and longitudinally compressing the same against a fixed die so as to form a fillet within the bore of the head, substantially as specified.

9. A turn-buckle formed of arms and divided filling-blocks, substantially as specified.

10. A turn-buckle formed of arms and divided filling-blocks, the arms being welded across the joints of the filling-blocks, substantially as specified.

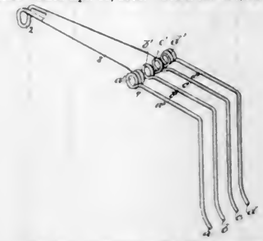
445,626. MINIATURE BILLIARDS. ASA F. COGSWELL, Humboldt, Nebr., and SIDNEY F. WOODY, Kansas City, Mo. Filed Jan. 8, 1890. Serial No. 336,277. (No model.)



Claim.—1. A game-table having a rotary top with a non-frictional surface, rigid banks extending around the outer edge of said table, and elastic rings capable of being forced into contact with each other and with the banks, substantially as described, and for the purpose set forth.

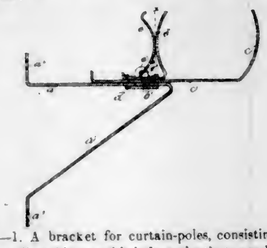
2. A game-table consisting of a top 6, supporting-legs 1, projections or banks 13 on the table, provided with openings, removable posts 16, received by said openings, wire 18, and counting-buttons 19 on said wire, said posts being removable so that the table may be transposed into an ordinary table, substantially as and for the purpose set forth.

445,627. WEFT-FORK FOR LOOMS. JACOB H. KNOWLES, Lawrence, Mass. Filed Apr. 11, 1890. Serial No. 347,440. (No model.)



Claim.—A weft-fork provided with fingers composed of wire having spring-coils therein, the coils being in the direction, substantially as described, to cause strain upon the inner sides of the fingers to further wind the coils, as and for the purpose set forth.

445,628. BRACKET OR SUPPORT FOR CURTAIN-POLES. JAMES W. LESLIE, Everett, Mass. Filed Mar. 12, 1890. Serial No. 343,644. (No model.)



Claim.—1. A bracket for curtain-poles, consisting of two pole-holding arms adjustably movable independently toward and from each other to embrace and hold the pole between them, and a support for said arms, substantially as described.

2. A bracket for curtain-poles, consisting of two separable pole-holding arms, a locking device therefor, and a support upon which said arms are longitudinally adjustable, substantially as described.

3. A bracket for curtain-poles, consisting of two vertical arms, one of which is adjustably movable toward and from the other to thereby embrace poles of different sizes, a locking device, and a support, substantially as described.

4. A bracket for curtain-poles, consisting of two pole-holding arms, one of which is adjustably movable toward and from the other to embrace and hold the pole between them, a locking device having a cam or projection pivoted to a guide-block, a guide-block inclosing said holding-arms and support, and a support, substantially as described.

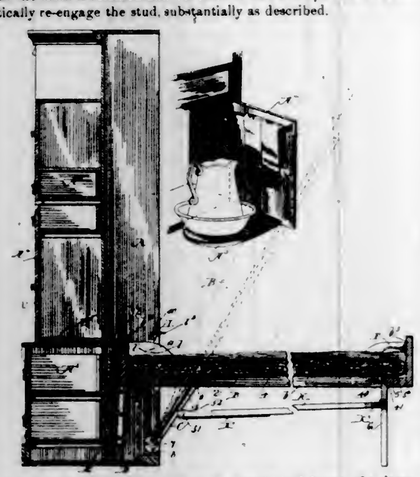
445,629. FOLDING BED. ISAAC OSGOOD, Chicago, Ill. Filed Apr. 10, 1889. Serial No. 306,740. (No model.)

Claim.—1. In a folding bed, the combination, with the main casing and the bed-frame, of pivot-plates connected to the main casing for sustaining the bed-frame, said pivot-plates having sockets formed integral therewith to receive suitable casters for sustaining the main casing, whereby the weight of the bed-frame will be thrown directly upon the casters, and whereby separate plates for the attachment of the casters are avoided, substantially as described.

2. In a folding bed, the combination, with the main casing and the bed-frame, of swinging arms pivotally attached to the bed-frame, pivot-plates fixed to the inclosing casing and having open sockets wherein said swinging arms will loosely rest, hinged legs pivotally fastened to the bed-frame, and connecting-rods fastened to said swinging arms and united to said hinged legs, whereby the legs will be extended and collapsed by the swinging arms, and whereby the removal

of the bed-frame from the inclosing casing will be permitted by merely lifting the swinging arms out of the open sockets and without detaching the rods that operate the hinged legs, substantially as described.

3. In a folding bed, the combination, with the inclosing casing and the bed-frame pivotally connected therewith and provided with a stud 61 near its head portion, of the swinging latch L, affixed to the main casing at a distance above its pivotal connection with the bed-frame, said latch having an inclined end *l* and a shoulder *l'* arranged to depend into the path of the stud 61, whereby when the bed-frame is lowered to its horizontal position the stud will ride against the inclined end of the latch, and rest upon the shoulder of the latch to prevent the tipping upward of the bed-frame until the latch is released, and whereby when the latch is released and reversed it will be in position to automatically re-engage the stud, substantially as described.



4. In a folding bed, the combination, with the bed-frame, of a clamp for holding the bedding in position, said clamp comprising a ratchet-plate, a clamping-bar pivoted to said ratchet-plate in a manner permitting it to swing in vertical direction, and a pawl attached to said clamping-bar and having its end in engagement with said ratchet-plate, said pawl serving to control the pivotal movement of said clamping-bar, substantially as described.

5. In a folding bed, a clamp for holding the bedding in place, comprising a ratchet-plate, a swivel-block pivotally connected to said ratchet-plate, and a clamping-bar pivotally held by said swivel-block, and a pawl adapted to engage with said ratchet-plate and hold the clamping-bar in depressed position, substantially as described.

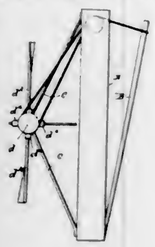
6. In a folding bed, the combination, with the inclosing casing, of a clamp for holding the bed-clothing in place, comprising a journal-plate O, having a rack-bar *o'*, a swivel-block 71, having a slot or groove 74 throughout its length, and a clamping-bar P, provided with a pawl P', said clamping-bar being pivotally sustained within said swivel-block, substantially as described.

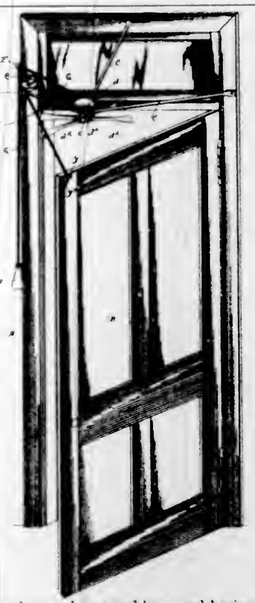
7. In a folding bed, the combination, with the inclosing casing, of a door for closing a portion of the front of said casing, and a shelf hinged to said door and provided with a projecting lug, said casing being provided with a groove or way to receive said lug, substantially as described.

445,630. FLY-FAN. GEORGE W. SLAWSON, Davenport, Nebr. Filed Nov. 28, 1890. Serial No. 372,884. (No model.)

Claim.—1. The combination, with the door, the casing thereof, and pulleys suitably arranged upon said casing, of a fan suitably







mounted near the door and operated by a cord having one end attached to the door and passing about the pulleys aforesaid and having upon its other end a weight, substantially as and for the purpose described.

2. The combination of the casing, the door, the fan, the supporting-rods attached to said casing and extending outwardly and uniting to form a bearing for the shaft of the fan, said shaft having upon its upper end a pulley and upon its lower end radial sockets receiving the inner ends of the fan-blade, with the weighted cord and guide-pulleys for said cord, substantially as and for the purpose described.

445,631. CARRIAGE-TOP JOINT. DANIEL T. SMITH, Auburn, N. Y., assignor of one-half to John T. Groves, same place. Filed May 8, 1890. Serial No. 351,026. (No model.)



Claim.—1. In a carriage-top joint, the stump-joint composed of two halves stamped from sheet metal in convex, concave, tubular, oval, square, or other shape in cross-section, each half having a disk D formed integral therewith, and said halves being joined together with their meeting edges flat against each other to form a hollow structure, substantially as set forth.

2. A carriage-top joint, the same comprising two tubular members, each composed of two halves stamped from sheet metal and joined at their meeting edges, each half having a perforated disk at its end and the disks of one member being driven inside the plane of its body in the act of stamping, and a rivet passed through the aligned perforations, substantially as described.

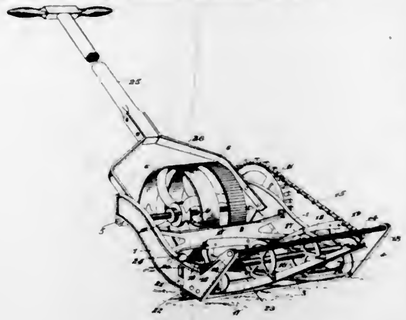
3. A carriage-top joint, the same comprising two tubular members, each composed of two halves stamped from sheet metal and joined at their meeting edges, each half having a perforated disk at its end and the disks of one member standing just inside the disks of the other, a perforated washer fitting between the two inner disks, and a rivet passing through the aligned perforations, substantially as described.

445,632. LAWN-MOWER. LUTHER SMITH, Cedar Falls, Iowa. Filed Sept. 11, 1890. Serial No. 364,596. (No model.)

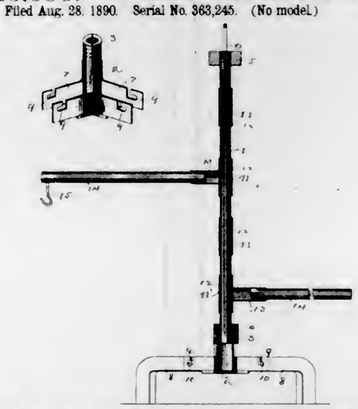
Claim.—1. The combination of the side pieces, the central transverse brace connecting the same, the knife or cutter, the links pivoted to the inner sides of the side pieces, the shaft journaled in said links and resting loosely upon the upper edges of the side pieces, and the wheels or disks mounted upon said shaft and having the spirally-arranged knives, substantially as set forth.

2. The combination of the frame, the axle having the supporting-

wheels, the links pivoted to the inner sides of the side pieces of the frame, the reel, the shaft of which is journaled in said links and rests loosely upon the upper sides of the side pieces of the frame, the brackets extending upward from said side pieces and connected by a guard-rod, the knife or cutter, the vertically-adjustable gage-roller, and means for transmitting motion from the axle to the reel-shaft during the forward movement of the machine, substantially as set forth.

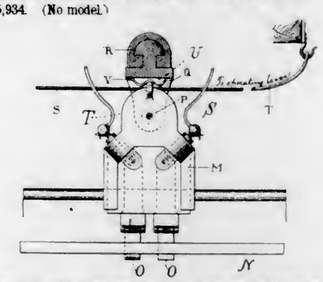


445,633. CLOTHES-DRIER. JOHN J. BECKER, Fort Wayne, Ind. Filed Aug. 28, 1890. Serial No. 363,245. (No model.)



Claim.—In a clothes-drier, the combination of the standard, the vertical tubular socket having its upper end split and provided with a nut and receiving the lower end of the standard and supporting the same, and provided at its lower end with the rectangular boxes arranged at an angle and having their top and outer ends open and provided in their sides with L-shaped slots, and the removable legs provided with laterally-extending pins adapted to engage the L-shaped slots, substantially as described.

445,634. CONTACT DEVICE FOR ELECTRIC RAILWAYS. EDWARD M. BENTLEY, New York, N. Y. Filed Sept. 20, 1888. Serial No. 285,934. (No model.)



Claim.—1. The combination, in an electric railway, of a contact device pivoted on a transverse axis to a traveler movable laterally with respect to the vehicle.

2. The combination, with a transverse guide, of a traveler Q, sliding thereon, and a contact device M, pivoted to said traveler on a transverse axis.

3. The combination, with a laterally-movable traveler, of a contact device pivoted thereto on a transverse axis, and a spring-catch connection between the said contact device and the traveler, by which the former is held normally in its operative position.

4. The combination of a contact device attached to a laterally-movable traveler, and a flexible actuating device leading from said contact device to a fixed point on the vehicle, whereby the contact device may be operated independently of its transverse movement.

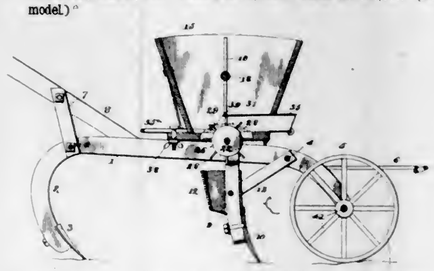
5. The combination, in an electric railway, of a conduit and supply-conductor therein with a vehicle, a transverse guide thereon, and a contact device traveling along said guide and movable into and out of the conduit without moving the guide.

6. The combination, in an electric railway, of a transverse guide with a traveler movable along said guide, and a contact device pivoted to the traveler upon a substantially horizontal axis.

7. The combination of a transverse guide, a traveler movable along the guide, and a contact device pivoted to the traveler, with a flexible conducting-lead extending directly from the said contact device to the car.

8. The combination, with a laterally-movable traveler, of a contact device movable relatively to the traveler, and a spring-catch connection between the contact device and the traveler, by which the former is held normally in its operative position.

445,635. COMBINED COTTON AND CORN PLANTER. EDWARD D. CARTER, Celeste, Tex. Filed Feb. 18, 1890. Serial No. 340,891. (No model.)



Claim.—1. In a planter of the class described, the combination, with a hopper, of a feed-shaft and means for operating the same, and a wheel provided with a series of radiating spokes, a bifurcated handle embracing the wheel, a set-screw for adjusting the same, and an inverted-V-shaped hood mounted over the wheel, substantially as specified.

2. In a planter of the class described, the combination, with the side beams and the hopper, of a feed-shaft and means for rotating the same, a corn-feeding wheel mounted on the shaft and provided with grain-receiving recesses, an imperforate guard mounted in guides adapted for lateral movement over the wheel and provided with a handle or bar projecting beyond the wall of the hopper and provided with a series of notches, and a latch adapted to be swung down into one of said notches and thereby adjust the guard over the wheel, substantially as specified.

3. In a planter of the class described, the combination, with the hopper and the feed-shaft having the cotton and corn planting wheels, of the handle passing longitudinally through the hopper, the set-screw for adjusting the same, the inverted-V-shaped guard flanged at its inner end and mounted on the handle, and the removable sliding cap fitting the flanges, and the laterally-movable guard mounted over the corn feeding wheel and having the notched handle-bar projecting through the hopper, and the latch secured to the wall of the hopper and adapted to take into the notches, substantially as specified.

4. In a planter of the class described, the combination, with the feed-shaft, of the feed-wheel mounted fixedly upon the shaft, and a second feed-wheel movably mounted on the shaft and interlocking with the fixed feed-wheel, substantially as specified.

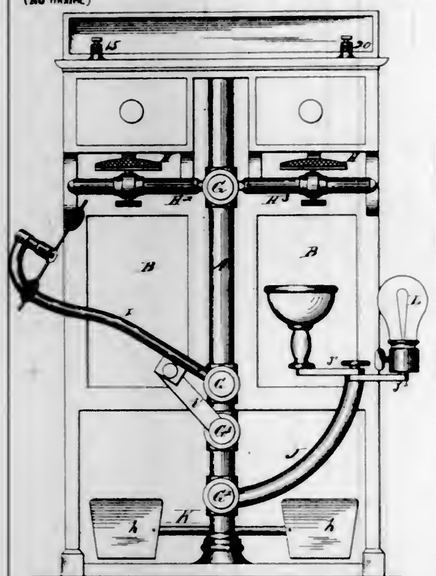
5. In a machine of the class described, the combination, with the feed-shaft provided with a fixed feed-wheel, of a removable feed-wheel, the adjacent faces of the wheels being provided with alternating recesses and lugs and adapted to interlock with each other, substantially as specified.

6. In a planter of the class described, the combination, with the side beams and the hopper, of a feed-shaft and means for rotating the same, a corn-feeding wheel having grain-receiving recesses mounted on the shaft, an imperforate guard mounted in guides adapted for lateral movement over the wheel, and means for locking the guard over the wheel, substantially as specified.

7. In a planter of the class described, the combination, with the hopper and the feed-shaft having the cotton and corn planting wheels, of the handle passing longitudinally through the hopper, the set-screw for adjusting the same, the inverted-V-shaped guard, flanged at its inner end and mounted on the handle, and the removable sliding cap fitting the flanges, substantially as specified

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445,636. **ELECTRICAL MEDICAL APPARATUS.** JOSEPHUS C. CHAMBERS, Detroit, Mich. Filed Apr. 21, 1890. Serial No. 348,911. (No model.)



Claim.—1. In an apparatus of the kind described, the combination, with a standard, of a curved arm I, adjustably connected to the standard, cross-arms on the end of the arm, a spring-joint connecting the same, contact-cushions on the cross-arms, and a brace i' below the arm, substantially as described.

2. In an apparatus of the kind described, the combination, with a vertical standard, of an arm J, adjustably secured thereon, a cup on the arm, formed of insulated material, a terminal j^3 in the bottom thereof, a button on the terminal, and means for supplying a current to the terminal, substantially as described.

3. In an apparatus of the kind described, a standard, the horizontal arms H^2 H^3, adjustably secured thereon, contact-cushions adjustably secured on the arms, the curved arm I, having cross-arms yieldingly connected therewith, the arm J, having cross-arms, an electric light on one and an insulated cup on the other cross-arm, and means for supplying an electric current to the several points, substantially as described.

4. In an apparatus of the kind described, the combination, with a battery and induction-coil, of a motor to regulate the impulses, consisting of magnets, a revolving armature, a worm-gear, a gear-wheel having laterally-projecting pins on its sides of varying length, and contact-springs for engaging the projections, substantially as described.

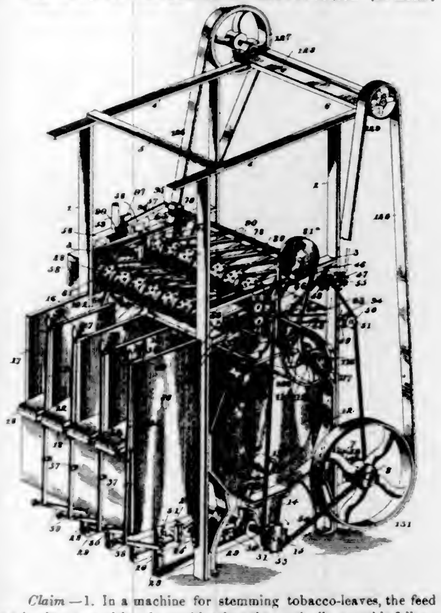
5. In an apparatus of the kind described, the combination, with the standard and arms, of insulated split rings surrounding the standard and supporting the arms, and set-screws for drawing the split ends of the rings together, substantially as described.

6. In an electric medical apparatus, the combination, with the terminals for local application, of an induction-coil consisting of a primary coil in circuit with a battery and a series of secondary coils receiving induced currents from the primary coil, means for regulating the impulses, and switches between the connections of the terminals and respective coils, whereby currents of different strengths may be utilized, substantially as described.

7. In an apparatus of the kind described, the combination, with the terminals for local application, of a primary coil, a battery, one or more secondary coils receiving induced currents from the primary coil, a motor for regulating the impulses, and suitable switches, substantially as described.

8. In an electric medical apparatus, the combination, with the terminals for local application, of an induction-coil consisting of a primary coil in circuit with a battery, and a series of secondary coils receiving induced currents from the primary coil, connections between the primary and secondary coils, and switches between the respective coils and the terminal connections, substantially as described.

445,637. **TOBACCO-STEMMING MACHINE.** ROBERT W. COFFEE, Bedford City, Va. Filed Mar. 13, 1890. Serial No. 344,391. (No model.)



Claim.—1. In a machine for stemming tobacco-leaves, the feed mechanism comprising, in combination, the vertically-movable followers, mechanism for imparting to said followers a slow intermittent movement in an upward direction, supporting-plates hinged to the said followers, and mechanism for vibrating the said supporting-plates at stated intervals, substantially as and for the purpose set forth.

2. In a machine for stemming tobacco, the combination of the feed mechanism having the followers, mechanism for imparting to said followers an intermittent movement in an upward direction, supporting-plates hinged to the upper sides of said followers, springs interposed between said supporting-plates and followers, and mechanism for imparting to said supporting-plates a vibrating movement at stated intervals, substantially as set forth.

3. The feed mechanism comprising, in combination, the followers, mechanism for imparting to said followers an intermittent movement in an upward direction, the supporting-plates hinged to the upper sides of said followers, mechanism for vibrating the said supporting-plates at stated intervals, and a revoluble suction-cylinder mounted above the limit of the upward movement of the vertically-movable followers, substantially as set forth.

4. In a tobacco-stemming machine, the combination, with vertically-movable followers supporting the piles or stacks of tobacco-leaves, of a revoluble suction-cylinder adapted to take the leaves from the said piles, and endless bands encircling and transmitting motion to the said suction-cylinders, substantially as and for the purpose set forth.

5. In a tobacco-stemming machine, the feed mechanism comprising, in combination, the vertically-movable followers, the supporting-plates hinged to the upper front edges of the same, the springs interposed between said supporting-plates and followers, mechanism for feeding said followers intermittingly in an upward direction, mechanism for imparting to the supporting-plates a vibrating movement at stated intervals, a revoluble suction-cylinder arranged above the limit of the upward movement of said followers, and the endless bands encircling said suction-cylinder and serving to transmit rotary motion to the latter, substantially as set forth.

6. In a tobacco-stemming machine, feed mechanism comprising mechanism for feeding the stacks of tobacco-leaves intermittingly in an upward direction, and mechanism for imparting an intermittent reciprocating motion to the said stacks of leaves, substantially as set forth.

7. The combination, with the vertically-movable followers, of the supporting-plates hinged to the front upper edges of the same, the interposed springs, and operating mechanism for holding the supporting-plates lowered against the tension of the springs, substantially as set forth.

8. The combination of a series of independently-movable followers, mechanism for imparting to said followers an intermittent motion in an upward direction, the supporting-plates hinged to said followers, the mechanism for imparting to said supporting-plates a vibratory movement at stated intervals, and mechanism for throwing the feed mechanism out of gear at the upper limit of the movement of said followers and permitting said followers to descend by gravity to their initial position, substantially as and for the purpose set forth.

9. The combination of the vertically-movable followers having the hinged vibrating supporting-plates and hinged stems having rack-bars formed at their lower ends, the revoluble shaft having pinions adapted to engage the said rack-bars, and mechanism for placing the latter into and out of engagement with the said pinions, substantially as and for the purpose set forth.

10. The combination of the vertically-movable followers having the pivoted stems toothed at their lower ends, the revoluble shaft having pinions adapted to engage the said toothed stems, the levers having catches, the partitions having notches to receive said catches, the pivoted rods connecting said levers with the lower ends of the said toothed stems, and springs to hold said toothed stems out of engagement with the operating-pinions, substantially as set forth.

11. The combination of the vertically-movable followers having the hinged toothed stems, the revoluble shaft having pinions engaging said toothed stems, the links connected pivotally to the lower ends of the latter, the rods connecting said links pivotally with a revoluble shaft, disks mounted upon the latter and having peripheral notches, levers connected to the pivoted connecting-rods and located in the paths of said notched disks, supporting-plates hinged to the vertically-movable followers, springs interposed between the latter and said supporting-plates, and pivoted rods or pitmen connecting the latter with the front ends of the levers located in the paths of the notched disks, substantially as and for the purpose set forth.

12. The combination of the vertically-movable followers having the hinged supporting-plates, the interposed springs, a revoluble shaft having notched disks, levers having their rear ends located in the paths of said notched disks, and pitmen connecting the front ends of said levers with the hinged supporting-plates of the vertically-movable followers, substantially as and for the purpose set forth.

13. In a tobacco-stemming machine, a feed mechanism comprising, in combination, a series of compartments separated by vertical partition-plates, followers arranged independently in the said compartments and having downwardly-extending pivoted stems provided with rack-bars at their lower ends, a revoluble shaft having pinions engaging the said rack-bars, links connected pivotally to the lower ends of the latter, a revoluble shaft having peripherally-notched disks, pivoted rods mounted upon said shaft adjacent to said disks and having their front ends connected pivotally with the links at the lower ends of the rack-bars, levers mounted upon said pivoted rods and located in the paths of the peripherally-notched disks, supporting-plates hinged to the upper front edges of the vertically-movable followers, springs arranged below said supporting-plates, pitmen connecting the latter with the levers arranged in the paths of the peripherally notched disks, means for holding the rack-bars in engagement with the operating-pinions, and mechanism for throwing said rack-bars automatically out of engagement with the pinions at the upper limit of the movement of the followers, substantially as and for the purpose set forth.

14. In a tobacco-stemming machine, the combination, with a perforated revoluble suction-cylinder, of a stationary shaft or axle extending longitudinally through the same, radial arms adjustable upon said shaft or axle, and a segmental shield carried by the shaft and adapted to cover a portion of the interior surface of said suction-cylinder, substantially as and for the purpose set forth.

15. In a tobacco-stemming machine, the combination of a suction-box, a revoluble cylinder having one end closed and its open end journaled in one wall of the said suction-box and provided with perforations distributed over its entire surface, a stationary shaft extending longitudinally through said cylinder and forming a support for the closed end of the latter, radial arms mounted adjustably upon the said shaft, and a segmental shield mounted upon said arms and adapted to cover a portion of the interior surface of the cylinder, substantially as and for the purpose set forth.

16. In a tobacco-stemming machine, the combination, with a hollow perforated suction-cylinder having an interiorly-located stationary adjustable shield, of the endless bands encircling and serving to transmit rotary motion to the said cylinder and to detach the tobacco-leaf from said cylinder, substantially as and for the purpose set forth.

17. In a tobacco-stemming machine, the combination, with a revoluble suction-cylinder having an interiorly-located stationary adjustable shield, of a series of endless bands encircling and serving to transmit rotary motion to said suction-cylinder, the endless apron beneath the bands, and a feed mechanism comprising a series of followers having hinged supporting-plates and means for transmitting to said followers an interuittent motion in an upward direction and to said supporting-plates an intermittent vibrating movement, substantially as and for the purpose set forth.

18. In a tobacco-stemming machine, the combination, with the revoluble suction-cylinder and the feed mechanism, of an endless apron arranged below said suction-cylinder, and the endless bands encircling and transmitting rotary movement to the latter, substantially as set forth.

19. In a tobacco-stemming machine, the combination, with the revoluble stemming-cylinder having the transversely-reciprocating holders provided with hooked grasping devices, of a revoluble suction-cylinder arranged above said stemming-cylinder, endless bands encircling and serving to transmit motion to said suction-cylinder, and the endless apron arranged below said bands, substantially as set forth.

20. In a tobacco-stemming machine, the combination, with the revoluble stemming-cylinder having the transversely-reciprocating holders provided with hooked grasping devices, of a revoluble suction-cylinder arranged above said stemming-cylinder, endless bands encircling and serving to transmit motion to said suction-cylinder, an endless apron arranged below the bands, and feed mechanism comprising a revoluble suction-cylinder, endless bands encircling the same, endless aprons arranged below said endless bands, and mechanism for supplying the tobacco-leaves to the first suction-cylinder, substantially as set forth.

21. In a tobacco-stemming machine, the combination of the revoluble stemming-cylinder having the oppositely-reciprocating holders provided with hooked grasping devices, an endless knife or cutter arranged to move in a plane parallel to the axis of said stemming-cylinder, and mechanism for carrying the tobacco-leaves past the latter, substantially in the manner and for the purpose set forth.

22. In a tobacco-stemming machine, the combination, with devices for carrying the tobacco-leaf, of an endless-band knife acting between the stem and the leaf to sever the former from the latter, substantially as set forth.

23. The combination of mechanism for carrying the tobacco-leaf, devices for feeding the leaf to said carrier, and an endless-band knife, substantially as set forth.

24. The combination of mechanism for carrying the tobacco-leaf, mechanism for grasping the stem of the latter, and an endless-band knife acting between the stem and the leaf to sever the former from the latter, substantially as set forth.

25. In a tobacco-stemming machine, the combination of mechanism for carrying the tobacco-leaf, devices for feeding the leaf to said carrier, mechanism for grasping the stem of the leaf, and an endless-band knife acting between the stem and the leaf to sever the former from the latter, substantially as set forth.

26. In a tobacco-stemming machine, the combination of mechanism for feeding and conveying the tobacco-leaves, a revoluble stemming-cylinder having oppositely-reciprocating hooked holders for grasping the stems of the leaves, and an endless knife or cutter arranged to operate in a plane parallel to the axis of said stemming-cylinder and serving to sever the stems from the leaves, substantially as herein set forth.

27. The combination, with the revoluble stemming-cylinder having the oppositely-reciprocating holders provided with hooked devices for grasping the stems of the leaves, of the endless knife, the revoluble suction-cylinder arranged above the said stemming-cylinder, the endless belts encircling and serving to transmit motion to said suction-cylinder, and the segmental shield mounted adjustably within the latter and serving to cover a portion of its perforated surface, substantially as and for the purpose set forth.

28. In a tobacco-stemming machine, the combination, with the revoluble stemming-cylinder, of mechanism for carrying the leaves past the latter, an endless knife or cutter arranged to work in a plane parallel to the axis of said stemming-cylinder, and mechanism for tilting the cutting-edge of said endless knife or cutter to any desired angle with relation to the circumference of the stemming-cylinder, substantially as set forth.

29. In a tobacco-stemming machine, the combination, with the revoluble stemming cylinder having the oppositely-reciprocating holder provided with means for grasping the stems of the tobacco-leaves, of mechanism for carrying the leaves past said stemming-cylinder, the endless knife or cutter arranged to work in a plane parallel to the axis of said stemming-cylinder, and a guide or socket for said endless knife extending longitudinally across the said stemming-cylinder, substantially as set forth.

30. In a tobacco-stemming machine, the combination, with mechanism for carrying or conveying the tobacco-leaves, of an endless knife or cutter arranged to work at right angles to the direction in which the leaves are being conveyed by the carrying mechanism, and mechanism for grasping the stems of the leaves and pulling them in a

direction away from that in which they are being conveyed by the carrying mechanism, substantially as herein set forth.

31. In a machine for stemming tobacco-leaves, the combination of the revoluble stemming-cylinder having oppositely-reciprocating holders provided with hooked devices for grasping the stems of the tobacco-leaves, a revoluble suction-cylinder arranged above the said stemming-cylinder, endless bands encircling the said suction-cylinder and serving to transmit rotary motion to the latter, an endless apron below the bands, and a series of flexible fingers arranged in front of and corresponding to the curvature of the stemming-cylinder and bearing upwardly against the circumference of the suction-cylinder, substantially as and for the purpose set forth.

32. In a tobacco-stemming machine, the combination of a revoluble stemming-cylinder having a series of oppositely-reciprocating holders provided with hooked devices for grasping the stems of the tobacco-leaves, a revoluble suction-cylinder arranged above the said stemming-cylinder, a series of endless bands encircling the said suction-cylinder and serving to transmit rotary motion to the latter, an endless apron arranged beneath the bands, a segmental shield mounted adjustably within and serving to cover a portion of the perforated surface of said suction-cylinder, an endless knife or cutter arranged to work in a plane parallel to the axis of the stemming-cylinder, and a series of flexible fingers arranged in front of and conforming to the curvature of said stemming-cylinder and bearing upwardly against the suction-cylinder above the latter, substantially as and for the purpose set forth.

33. The combination, with the revoluble stemming-cylinder having the oppositely-reciprocating holders provided with grasping devices and the mechanism for feeding the tobacco-leaves past said stemming-cylinder, of the vertically-adjustable brackets attached to the frame of the machine, the spindles journaled in sockets at the outer ends of said brackets, set-screws for retaining the said spindles at any point of adjustment, shafts journaled in suitable bearings at the outer ends of said spindles, the band-wheels mounted upon said shafts, and an endless knife or cutter mounted upon the said band-wheels, substantially as and for the purpose set forth.

34. In a machine for stemming tobacco, the combination, with the revoluble stemming-cylinder having the oppositely-reciprocating holders provided with stem-grasping devices and the leaf-feeding mechanism, of the vertically-adjustable brackets having sockets at their outer ends, the spindles mounted in said sockets, the set-screws to retain said spindles at any desired adjustment, a check-nut mounted upon the threaded shank of one of said spindles, the shafts journaled in suitable bearings at the outer ends of said spindles and having band-wheels, and an endless knife or cutter carried by said wheels, substantially as and for the purpose set forth.

35. The combination of the revoluble stemming-cylinder having the oppositely-reciprocating holders provided with grasping devices, the revoluble suction-cylinder arranged above said stemming-cylinder, the endless bands encircling said suction-cylinder and serving to transmit rotary motion to the latter, an endless discharge-apron arranged below said endless belts, feed mechanism for supplying the tobacco-leaves to the suction-cylinder, arranged above the stemming-cylinder, flexible fingers arranged to bear against and to hold the tobacco-leaves in contact with the said suction-cylinder, and suitable operating mechanism, substantially as and for the purpose herein set forth.

36. In a tobacco-stemming machine, the combination of a revoluble stemming-cylinder having devices for grasping the stems of the tobacco-leaves, a revoluble suction-cylinder arranged above the said stemming-cylinder, endless belts encircling said suction-cylinder and serving to transmit a rotary motion to the latter, an endless discharge-apron arranged below said endless belts, an endless knife or cutter arranged to work in a plane parallel to the axis of the stemming-cylinder, mechanism for feeding the tobacco-leaves to the stemming-cylinder and to the suction-cylinder above the latter, comprising a suction-cylinder, endless belts encircling and transmitting a rotary motion to the latter, an endless conveyer-apron beneath the same, initial feed mechanism comprising a series of vertically-movable followers having hinged supporting-plates and means for imparting to said followers an intermittent movement in an upward direction and to said supporting-plates a vibrating movement at stated intervals, and suitable operating mechanism, all constructed, arranged, and operating substantially as and for the purpose herein shown and specified.

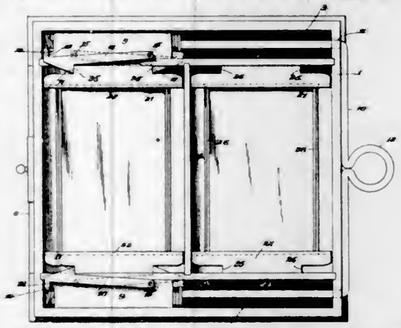
445,638. DRAFT-EQUALIZER. JOSEPH W. GAMBLE, Adair, Iowa. Filed Nov. 1, 1890. Serial No. 370,017. (No model.)

Claim.—1. In the improved draft-evener, the combination of the tongue, the angle-bracket secured to the tongue and having its outer portion provided with a vertical flange and having the shoulders arranged at the ends of the flange, the bell-crank lever having its long arm arranged between the said shoulders, the brace-rod 23, secured to the bracket and connected with the pivot of the bell-crank lever and supporting the same, the bracket-bar, the main whiffletree pivoted to the bracket-bar and connected with the bell-crank lever and having whiffletrees at its ends, substantially as described.

2. In the improved draft-evener, the combination of the tongue, the angle-bracket having its arms bent at 19 and secured to the tongue and provided at its outer end with the shoulders 21, the stationary brace 24, secured to the tongue and the outer end of the bracket, the bell-crank lever fulcrumed on the bracket and having its long arm arranged between the said shoulders 21, the bracket-bar, the main whiffletree pivoted to the bracket-bar at a point beyond its center and having its long arm connected with the short arm of the bell-crank lever and its short arm connected with the long arm of the bell-crank lever, the keeper secured to the tongue and inclosing the main whiffletree, the doubletree 6, secured to the outer end of the main whiffletree, and the doubletree 5, secured to the inner end of the main whiffletree and having one of its singletrees arranged on each side of the tongue, substantially as described.



445,639. PHOTOGRAPH-CABINET. OLAF M. HERBERG, Hendrum, Minn. Filed June 7, 1890. Serial No. 354,585. (No model.)

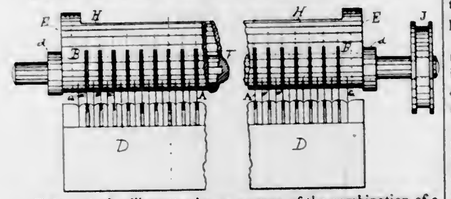


Claim.—1. In a picture-exhibitor, the casing provided with opposite longitudinal compartments and an intermediate subdivided compartment, and a series of picture-carrying frames mounted in each of said compartments, of blocks mounted for reciprocation in the longitudinal compartments, oppositely-disposed spring-pressed latches secured to the tops and bottoms of the blocks, and a bail having its terminals connected to the blocks and extending outside of the casing, substantially as specified.

2. In a picture-exhibitor, the combination, with a rectangular case having partitions longitudinally disposed, forming opposite side compartments, and of a width narrower than the casing, and a central transverse partition subdividing the space between the said partitions, of the opposite blocks mounted for reciprocation in the longitudinal compartments, said blocks being provided at their ends with stops, pivoted latches having shoulders upon their inner sides and oppositely disposed, and further provided at their free ends with L-shaped arms taking in rear of the stops, springs for pressing the latches inwardly, a U-shaped bail having its terminals passed through openings in the end of the casing and connected with the blocks and provided with a hand or finger hold, and the opposite series of frames adapted to receive pictures, each of said frames being provided at its ends with opposite shoulders adapted to be engaged by the latches and its diagonally-opposite corners beveled or cut-away portions, substantially as specified.

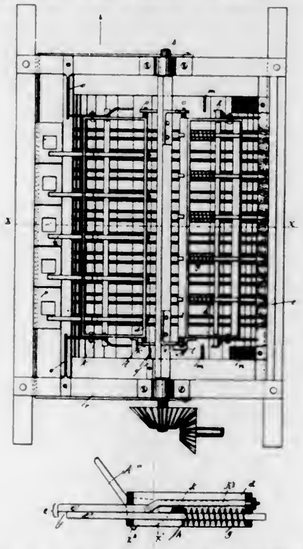
3. In a picture-exhibitor, the combination, with a rectangular case having partitions longitudinally disposed, forming opposite side compartments, of the opposite blocks mounted for reciprocation in the longitudinal compartments, said blocks being provided at their ends with stops, pivoted latches oppositely disposed and provided at their free ends with L-shaped arms taking in rear of the stops, springs for pressing the latches inwardly, a bail having its terminals passed through openings in the end of the casing and connected with the blocks, and the opposite series of frames adapted to receive pictures, each of said frames being provided at its ends with opposite shoulders adapted to be engaged by the latches, substantially as specified.

445,640. CHENILLE-CUTTER BAR. JAMES J. HUGHES, Philadelphia, Pa. Filed June 9, 1890. Serial No. 354,808. (No model.)



Claim.—A chenille-cutter bar consisting of the combination of a series of circular knives, shaft F, a slotted tubular casing, and a corrugated and slotted beam, as shown and described.

445,641. SINGLE-SEED PLANTER. JUDSON B. HURD and HIRAM H. MCLANE, San Antonio, Tex.; said Hurd assignor to said McLane. Filed Mar. 4, 1890. Serial No. 342,676. (No model.)



Claim.—1. In a planter, a seed-box having its length extending in line with the row to be planted, through which a number or series of grasping-jaws may pass in a direction transversely of the course of the implement across the field, as and for the purposes specified.

2. In a planter, a number or series of grasping-jaws arranged in line with each other and adapted to pass through a seed-box transversely of the course of the implement, as and for the purposes specified.

3. In a planter, a seed-box having its length extending in line with the row to be planted and furnished with a number or series of grooves running transversely of the course of the implement, formed to receive grasping-jaws arranged to move transversely through the box, as and for the purposes specified.

4. In a planter, the combination, with the seed-box having a curved or semi-cylindrical bottom, and the grasping-jaws arranged to move transversely through the seed-box, of the brushes arranged in the latter and engaging the sides of the jaws to force the contents of the seed-box into the latter, as set forth.

5. In a planter, two or more groups or sets of grasping-jaws arranged to follow each other across or through the seed-box transversely of the course of the implement and engaging with and following through the grooves formed in the bottom of the seed-box and adapted to receive them, said groups or sets being arranged to occupy adjoining and alternate grooves in their passage through the box, as and for the purposes specified.

6. In a planter having a number or series of grasping-jaws placed in line with each other and adapted to pass in such line through the seed-box, the rod *k*, springs *g*, lever-cams *k' k''*, and pins *h*, *m*, and *o*, adapted and arranged to open and close said jaws, as shown and described, and for the purposes specified.

7. In a planter, the combination of the double series of arms *e*, adapted to pass through the seed-box A transversely of the course of the implement, with the brush or series of brushes *n*, adapted to keep the surplus seed within the box, as shown and described, and for the purposes specified.

8. In a planter having a number or series of grasping-jaws arranged to pass through the seed-box transversely of the course of the implement, the combination of the frame *d*, the angle-iron *l*, and pin *q*, adapted to throw the jaws over the discharge-tubes *p*, as shown and described, and for the purposes specified.

9. In a planter having a number or series of grasping-jaws arranged to pass through the seed-box transversely of the course of the implement, a set of discharge-tubes arranged in line with the course of the implement, adapted to receive the seed from the jaws and discharge the same simultaneously into the furrow, as shown and described, and for the purposes specified.

10. In a planter having a number or series of grasping-jaws arranged to pass through the seed-box transversely of the course of the implement, the combination of the set of discharge-tubes *p* with the slotted frame *r* and fastenings *s*, whereby the tubes may be adjusted to the required distance of the seeds apart, as shown and described, and for the purposes specified.

11. In a planter having a number or series of grasping-jaws arranged to pass through the seed-box transversely of the course of the implement, the combination of the box A, the shaft *b*, and series of arms *e*, comprising the rigid members *e'* and the sliding spring-actuated members *e''*, as and for the purposes specified.

12. In a planter having a number or series of grasping-jaws arranged to pass through the seed-box transversely of the course of the implement, the combination of the seed-box A, shaft *b*, pins *h o m n*, angle-iron *l*, brushes *n* and 2, tubes *p*, frame *r*, fastenings *s*, cam *k'*, rod *k*, oblong frame *d*, arms *e*, arms *e*, comprising the members *e' e''*, jaws *f*, and springs *g*, as and for the purposes specified.

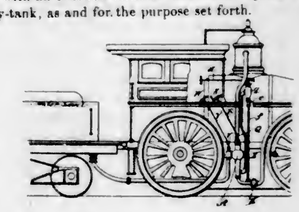
445,642. INJECTOR. LEOPOLD KACZANDER, New York, and ROBERT RUDDY, Mount Vernon, assignors to the Nathan Manufacturing Company, New York, N. Y. Filed Dec. 24, 1890. Serial No. 375,700. (Model.)

Claim.—1. A non-lifting injector with an elevated overflow to retain the water in the supply-tank without the necessity of closing the water valve, substantially as described.

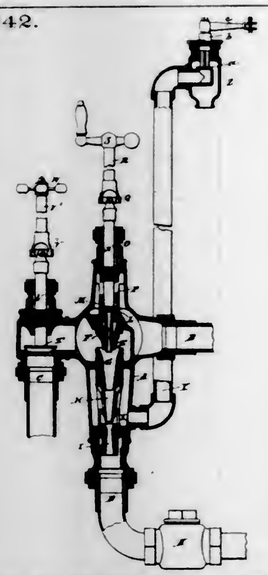
2. A non-lifting injector with a priming-jet, when the overflow of the injector is so situated that the water will not escape through it by gravity, substantially as described.

3. A non-lifting injector with a priming-jet, in combination with an elevated overflow, as and for the purpose set forth.

4. An injector situated below the lowest water-level in the supply-tank, with an overflow situated above the highest water-level in the supply-tank, as and for the purpose set forth.



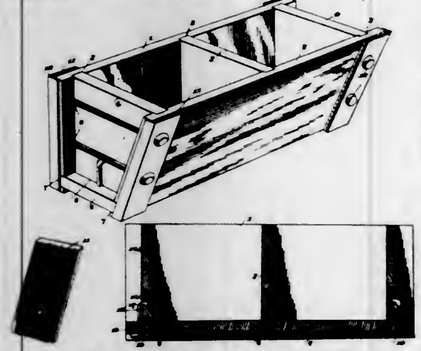
445,642.



5. An injector situated below the lowest water-level in the supply-tank, with an overflow situated above the highest water-level in the supply-tank, the injector and overflow communicating through an external pipe leading from the injector to the elevated overflow, as and for the purpose set forth.

6. An injector with a detached overflow, situated at different levels and communicating with each other through an external pipe leading from the lower level of the injector to the higher level of the overflow, substantially as described.

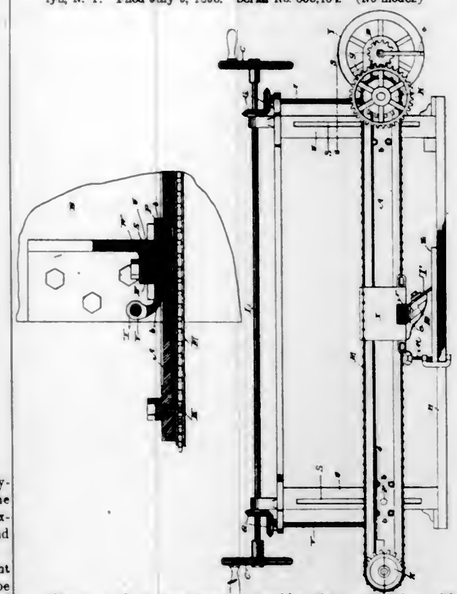
445,643. WASH-TUB. JOSEPH KELLOW, Brooklyn, N. Y. Filed June 3, 1890. Serial No. 354,186. (No model.)



Claim.—1. In a tub of the class described, the combination, with opposite side and end sections, the latter being let into and within the edges of the former, of a series of binding-bolts passing through openings formed in the sides and provided with binding-nuts, and a series of clamping-plates and interposed packings of rubber or other elastic material located between the nuts and heads and the sides, said elastic packings having their faces serrated, substantially as specified.

2. In a tub of the class described, the combination, with the opposite side, end, and bottom sections, suitably connected or jointed, said sides beyond the ends being provided with pairs of opposite openings and the ends with transverse grooves aligning with the openings, of transverse binding-bolts provided with binding-nuts, clamping-plates mounted between the nuts and heads of the bolts and the sides, rubber packings mounted between the plates and the sides, and inverted-L-shaped bolts, one located at each end of the tub, and having their L ends projected into sockets formed in the ends and their lower ends extending through openings formed in the bottoms, securing-plates mounted over the ends of said bolts, and caps mounted on the bolts over the plates, substantially as specified.

445,644. STONE-DRESSING MACHINE. JOSEPH KELLOW, Brooklyn, N. Y. Filed July 9, 1890. Serial No. 358,154. (No model.)



Claim.—1. In a stone-dressing machine, the combination, with the base B and the vertical uprights U, provided with longitudinal slots S, of the beam A, the plates P, the bolts *b*, clamping the plate *g* against the beam, and the fastening-bolt F between said bolts *b*, passing through the beam, the plate, the slot in one upright, and through a washer W, sliding against the rear face of said upright, substantially as described.

2. In a stone-dressing machine, the combination, with the base B, the vertical uprights U, provided with longitudinal slots S, and the vertical screws V, adjacent to said uprights, of the beam A, the plates P, each having a threaded eye I in one end engaging one of said screws, the bolts *b* through each of said plates near its ends clamping it against the beam, and the fastening-bolt F between said bolts *b*, passing through the beam, the plate, the slot in one upright, and through a washer W, sliding against the rear face of said upright, substantially as hereinbefore described.

445,645. GRAIN-SPOUT. JOHN SIMPSON, Minneapolis, Minn., assignor of one-half to Dighton A. Robinson, same place. Filed Feb. 15, 1890. Serial No. 340,655. (No model.)

Claim.—1. A grain-conductor comprising, in combination, an upper spout rotatively secured to a suitable support, an independent lower spout adapted to receive the loose end of the upper spout in any position in which it may be and capable of being rotated about said upper spout as a center, and an independent support mounted upon suitable rolls and supporting said lower spout, substantially as described.

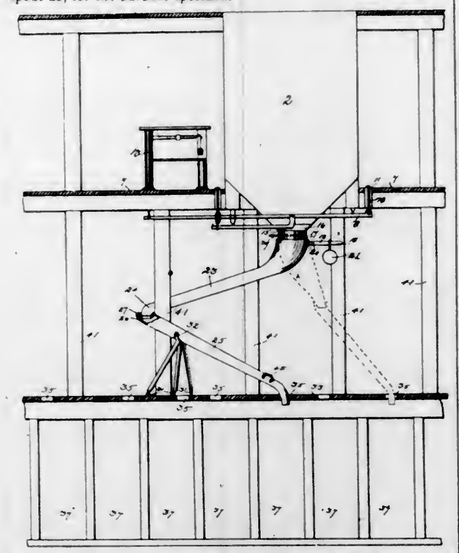
2. The combination, with a scale-hopper, of a counterbalanced rotative spout 23, secured thereto.

3. The combination, with a scale-hopper for weighing grain, of a grain-conductor comprising two spouts, one secured to and adapted to rotate about said scale-hopper, the other adapted to receive the loose end of said first spout and to be rotated about it, and a counterbalancing-weight adapted to hold said first spout out of contact with said second spout when in its normal position, for the purpose specified.

4. The combination, with the scale-hopper, of a counterbalanced rotative spout 23, secured thereto, the independent movable spout 25, adapted to receive the loose end of the spout 23 in any position in which it may be, and a supporting-frame 30, provided with suitable rollers 32, substantially as described.

5. The combination, with the hopper 2, of the casting 15, secured thereto, provided with the annular groove 19, bar 18, secured in said groove and provided with weight 21, and the spout 23, secured to said bar, for the purpose specified.

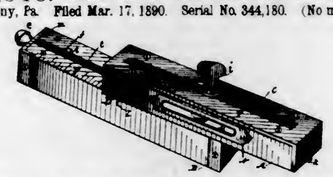
6. The combination, with the spout 23, of the independent movable spout 25, having its upper end enlarged and adapted to receive the spout 23 in any position, the seat 27, secured to the said spout 25, the lower end of said seat being of less diameter than the end of the spout 23, for the purpose specified.



7. The combination, with a scale-hopper, of the casting 15, secured thereto, provided with the annular groove 19, bar 18, carrying weight 21, counterbalanced suspended spout 23, secured to said bar and adapted to rotate in said annular groove, and the spout 25, adapted to receive the loose end of the spout 23, substantially as described, and for the purpose specified.

8. The combination, with the hopper 2, of the casting 15, having groove 19, bar 18, weight 21, spouts 23 and 25, and seat 27, substantially as described, and for the purpose specified.

445,646. CARPENTER'S GAGE. ALEXANDER A. WELSH, Allegheny, Pa. Filed Mar. 17, 1890. Serial No. 344,180. (No model.)



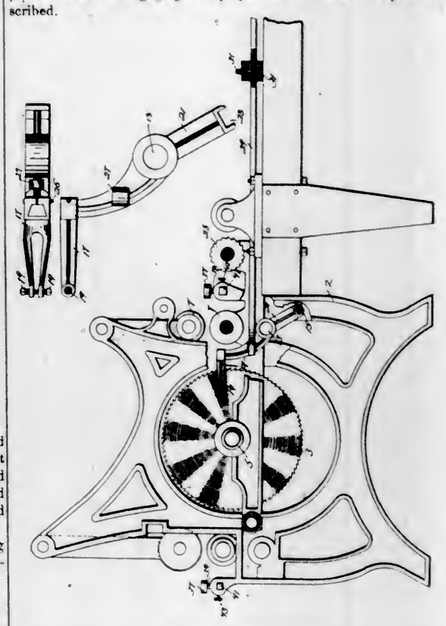
Claim.—A new and improved gage consisting of two rectangular blocks provided with a longitudinal channel therein, a thumb-screw and nut for adjusting the blocks with respect to each other in the direction of their length, a horizontal screw extending lengthwise along the slot of the lower block for adjusting therein a sliding nut, a transverse dovetail nut provided with a screw for moving the same, a tooth on said nut, a downwardly-projecting tooth on the projecting end of the upper block, and a fixed tooth on the opposite end of the lower block.

445,647. GANG-EDGER. FREDERIC N. ARMSTRONG, Minneapolis, Minn., assignor to Smith & Richardson, same place. Filed Nov. 4, 1889. Serial No. 329,256. (No model.)

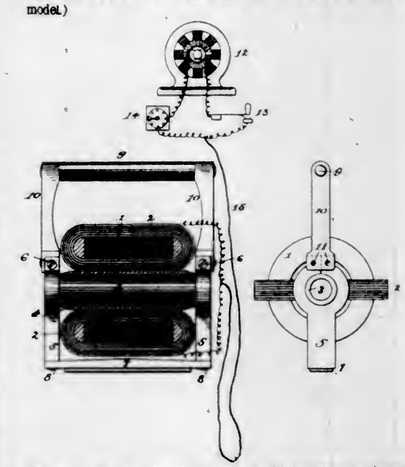
Claim.—1. In a gang-edger, the combination, with the movable saws, of a stationary shaft 13, extending across the machine, the guide-bar arranged below said shaft, the bars 21, mounted upon said shaft 13, each provided with a recess engaging said guide-bar 15, the saw-guides secured to the upper ends of said bars and engaging said saws, and the pivoted levers engaging said bars, substantially as described.

2. The combination, in a gang-edger, with the movable saws, of the stationary shaft 13, extending across the machine, the guide-bar 15, arranged below said shaft, the bars 21, mounted upon said shaft 13, recessed in the lower part of said bars 21, whereby said bars are adapted to engage the said guide-bar 15, the projections 27 upon said bars 21, adapted to engage the forked ends of the bars 29, said bars 21 provided with polygonal ends, and the saw-guide 17, having the threaded pins 19 and provided with polygonal openings adapted to engage said bar 21, said guides 17 having split ends and provided with clamping-bolts passing through said ends, substantially as shown and described.

3. The combination, with the saws arranged to move longitudinally upon the saw-arbor, of the transverse stationary shaft 13, the guide-bar 15, arranged below said shaft, the bars 21, mounted upon said shaft 13 and engaging said guide-bar, the saw-guides mounted upon said bars, the curved projections 27 upon said bars, and the pivoted levers 29, engaging said projections 27, substantially as described.



445,648. APPARATUS FOR ELECTRIC BRANDING. WILLIAM CANNELL, Hartford, Conn. Filed Apr. 8, 1890. Serial No. 347,085. (No model.)



Claim.—1. In an electric brander, a high-resistance branding-plate or brand, being largest in the middle and of gradually-diminishing cross-section toward the opposite ends thereof and having raised letters or other characters in relief thereon, substantially as and for the purpose specified.

2. In an electric brander, an electric transformer having as a portion of its secondary circuit a branding-plate whose cross-section, being greatest at the middle of the plate, diminishes gradually toward the opposite ends of the plate, substantially as and for the purpose specified.

3. A magnetic core and a high-resistance primary coil thereon, in combination with a secondary circuit having a general low resistance and including a branding-plate or brand which has a predetermined variable cross-sectional area, and is provided with raised letters or other characters in relief, substantially as and for the purpose specified.

4. Apparatus for electric branding employing electric current as the heating agent, and consisting of an alternator supplying current of high electro-motive force, in combination with a switch and rheostat and a transformer whose secondary circuit carrying a large volume of electric current includes a branding-plate or brand which has a variable cross-sectional area, and is adapted to be heated uniformly and simultaneously from end to end by that volume of current, substantially as and for the purpose specified.

445,649. **BRUSH.** ROBERT W. HARDIE, Albany, N. Y. Filed July 31, 1890. Serial No. 360,535. (No model.)



Claim.—1. The combination, with a knot of bristles, of a head band having its inner wall inclined upward and outward from the shortest diameter of the head-band, a cap placed upon the top of the bristles, and a handle formed integral with said cap and secured at its shank to a lateral extension formed on the head-band, substantially as described, for the purpose specified.

2. The combination, with a knot of bristles, of a compressible head-band having its inner wall inclined upward and outward from the shortest diameter of the head-band, a cap placed upon the top of the bristles, and a handle formed integral with said cap and secured at its shank to a lateral extension consisting of two overlapping arms formed on the head band, substantially as shown and described.

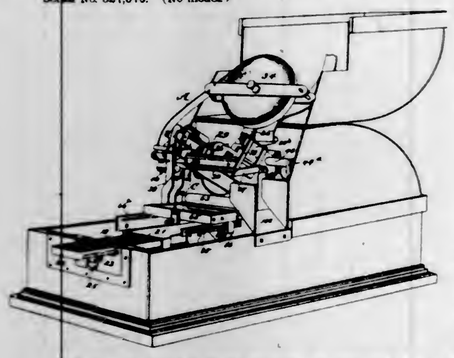
445,650. **MANUFACTURE OF LITHOGRAPHIC PLATES.** OSKAR KINDERMANN, Lindenau, Germany, assignor to Henry Willford, Kingston, England. Filed Sept. 16, 1890. Serial No. 365,165. (No specimens.)

Claim.—1. The process of manufacturing lithographic plates by treating zinc sheets with a solution containing chloride of zinc and tetrachloride of tin.

2. The process of manufacturing lithographic plates by treating zinc sheets with a mixture of chloride of zinc, tetrachloride of tin, nitric acid, hydrochloric acid, and water, in about the proportions specified.

3. The process of manufacturing lithographic plates by first dulling zinc sheets and then brushing them with a mixture of chloride of zinc, tetrachloride of tin, nitric acid, hydrochloric acid, and water, in about the proportions specified.

445,651. **TICKET-PRINTING MACHINE.** GIDEON B. MASSEY, Mamaroneck, New York; Sarah R. Massey and Stanley A. Bryant administrators of said Gideon B. Massey, deceased. Filed Oct. 19, 1889. Serial No. 327,576. (No model.)



Claim.—1. In a ticket-printing machine, the combination, with a series of alphabetical disks carrying gears, of racks engaging said gears, alphabetical slides connected with said racks, and a sliding frame supporting said slides and engaging all of the slides in its inward movements, substantially as described.

2. In a ticket-printing machine, the combination, with a series of alphabetical disks carrying gears, of racks engaging said gears, alphabetical slides connected with said racks and forming shoulders at their inner ends, and a sliding frame having a cross-bar that engages the shoulders of all of said slides in its outward movement, substantially as described.

3. In a ticket-printing machine, the combination, with a series of alphabetical disks carrying gears, of racks engaging said gears, slides connected with said racks, a sliding frame supporting said slides and engaging all of the slides in its inward movements, and a transverse slide that engages all of said slides in its outward movement, substantially as described.

4. In a ticket-printing machine, the combination, with two sets or series of alphabetical disks, of gears carried thereby, racks arranged to engage the gears, and a disk-registering attachment which is common to the two sets or series of disks, substantially as shown and described.

5. In a ticket-printing machine, the combination, with two sets or series of alphabetical disks, of a means for revolving the corresponding disks of each set or series of disks in unison and a disk-registering mechanism that is common to the two sets or series of disks, substantially as described.

6. In a ticket-printing machine, the combination, with two sets of revolving disks, of a pivoted frame carrying a platen and a separate set of web-feeding rolls for each set of disks, said web-feeding rolls being carried by the platen, substantially as described.

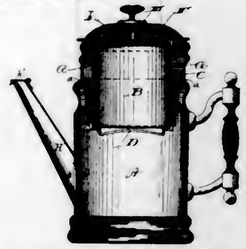
7. In a ticket-printing machine, the combination, with two sets or series of alphabetical disks, of a pivoted platen-frame carrying a platen that acts in conjunction with one set of disks, a set of web-feeding rolls also carried by said frame and arranged in connection with said platen, and a second set of web-feeding rolls carried by the platen-frame and arranged in connection with the second set of disks, one of said second set of feed-rollers forming an impression-roll, substantially as described.

8. The combination, in a ticket-printing machine, of two sets or series of disks and a body-printing plate, a pivoted frame carrying a platen, and a web-feeding mechanism common to both the body-plate and one set of disks, and an impression-roll, and a web-feeding roll also carried by the said frame and arranged in connection with the other set of disks, substantially as described.

9. The combination, in a ticket-printing machine, of two sets or series of disks, a pivoted frame carrying a platen in line with one set of disks and carrying an impression-roller in line with the other set of disks, a separate set of inking-rollers for said disks, reciprocating carriages for said inking-rollers, moving in guideways, an operating-shaft, and lever connections between the shaft and said carriages and between the shaft and platen, substantially as described.

10. In a ticket-printing machine, the combination of two sets or series of disks and a set of web-feeding rolls for each of said series of disks, one of the rolls of one set being geared to one of the rolls of the other set, substantially as described.

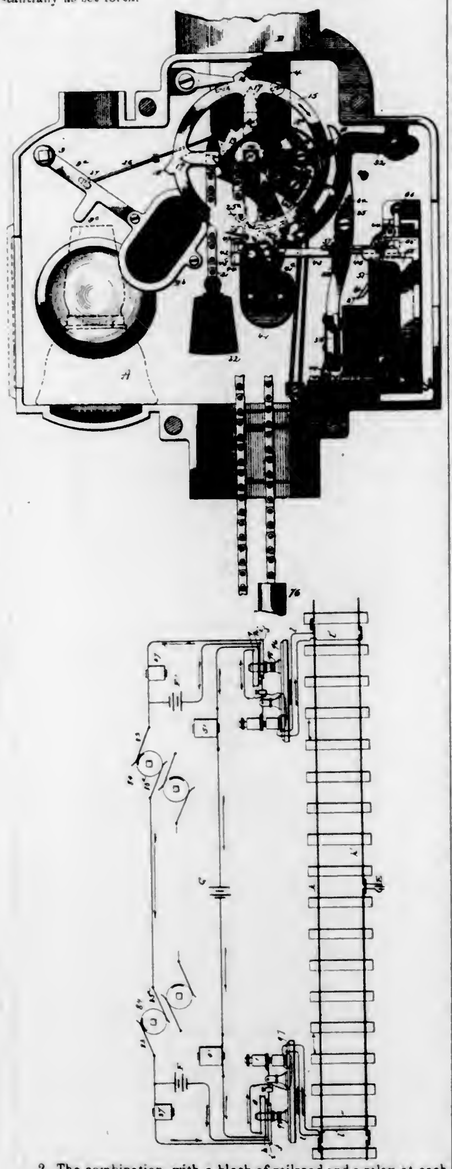
445,652. **COFFEE-POT.** FREDERICK NORTON, New York, N. Y., assignor of one-half to Joseph A. Britton, same place. Filed May 9, 1890. Serial No. 351,124. (No model.)



Claim.—In an apparatus for boiling coffee, the combination of the pot A, the condenser-case C, and the air-tight condenser B, substantially as and for the purposes described.

445,653. **ELECTRIC SEMAPHORE.** FREDERICK STITZEL and CHARLES WEINEDEL, Louisville, Ky., assignors to the American Semaphore Company, same place. Filed Dec. 21, 1889. Serial No. 334,570. (No model.)

Claim.—1. The combination, with a railroad-block, a relay at each end thereof connected in circuit with the track of the block, and a semaphore-operating mechanism at each end of the block connected in electric circuit with contact-points of the relays, of separate electro-magnetic devices in each semaphore for retaining the signals in a position to indicate "caution," and electric circuits connecting said electro-magnetic devices with contact-points of the relays, whereby said electro-magnetic devices of one semaphore will be switched into circuit when the train enters the block from one direction, and the electro-magnetic devices of the other semaphore will be switched into circuit when the train enters the block from the other direction, substantially as set forth.



2. The combination, with a block of railroad and a relay at each end thereof, the relay-magnets being connected with the tracks, one of said tracks being parted at the center of the block, of a battery having its poles connected with the respective rail ends at the point where the rails are parted and semaphores connected in electric circuit with the relays.

3. The combination, with a block of railroad, a relay located at each end thereof in electric circuit with the rails of the track, and signals at each end of the block electrically connected with the relays, of a circuit-closer controlled by each signal device, and electro-magnetic devices in each semaphore and controlled by the relays, said electro-magnetic devices being constructed and arranged to retain the signal at the entrance of the block at "caution" when a train enters the block from either direction, substantially as set forth.

4. In a semaphore, the combination, with a shaft, a signal-blade, and a weighted arm secured to said shaft, of an electro-magnet and a pivoted lever controlled by said magnet, with which the weighted arm is adapted to engage to limit its movement, substantially as set forth.

5. In a semaphore, the combination, with a shaft, a signal-blade, and a weighted arm secured thereto, of an electro-magnet, an arm projecting beyond the poles of said magnet, a pivoted lever adapted to be engaged by the weighted arm when said lever is maintained in a vertical position, an armature on said lever to be attracted by the magnet, and a spring-plate carried by the pivoted lever and adapted to engage the arm which projects beyond the poles of the magnet and prevent the armature from sticking to the magnet, substantially as set forth.

6. The combination, with a railroad-block, a relay at each end thereof connected in electric circuit with the track, and semaphore-magnets connected in electric circuit with relay contact-points, of a circuit-closer carried by each semaphore, electro-magnetic devices for retaining the signal in a position to indicate "caution," and an electric circuit including the relays, electro-magnetic devices, and circuit-closers, substantially as set forth.

7. The combination, with a railroad-block, a relay at each end thereof connected in electric circuit with the tracks of the block, and semaphore-magnets connected in electric circuit with the contact-points of the relays, of a shaft carrying a signal-blade, a circuit-closer connected with said shaft, electro-magnetic devices for limiting the signal-blade in a position to indicate "caution," and electric circuits including the relays, electro-magnetic devices, and circuit-closers, substantially as set forth.

8. The combination, with a railroad-block, a relay at each end thereof connected in electric circuit with the tracks, semaphore-heads each having a light-emanating opening, and semaphore-magnets connected in electric circuit with the contact-points of the relays, of a shaft carrying a signal-blade and a weighted arm, a night-signal connected with the weighted arm and carrying two plates of transparent material of different colors, a circuit-closer connected with said shaft, electro-magnetic devices for limiting the weighted arm to cause the signal-blade and night-signal to indicate "caution," and electric circuits including the relays, electro-magnetic devices, and circuit-closers, substantially as set forth.

9. In a semaphore, the combination, with a shaft carrying signaling devices, a chain passing over said shaft to drive it, a weight on said chain, operating mechanism, and an electro-magnet for controlling said operating mechanism in a normally-closed circuit, of a pivoted weighted arm carrying a pulley over which said drive-chain is adapted to pass, substantially as set forth.

10. In a semaphore, the combination, with a shaft carrying signaling devices, a chain passing over said shaft to drive it, a weight on said chain, operating mechanism, and an electro-magnet for controlling said operating mechanism in a normally-closed circuit, of a circuit-breaker included in said closed circuit and adapted to be operated by the weight when said weight is run down to open the circuit, and a pivoted weighted arm carrying a pulley over which the drive-chain is adapted to pass, substantially as set forth.

11. The combination, with the tracks of a railroad-block, a semaphore at each end thereof having main electro-magnets and electro-magnetic devices for controlling a cautionary signal, and a relay at each end of the block, of a normally-closed circuit including the track, the relay-magnets, and a battery, a second normally-closed circuit including the main semaphore-magnet of each semaphore, the relays, a rail of the track, and a battery, and a third or cautionary normally-open circuit including the above-mentioned electro-magnetic devices of both semaphores, circuit-closers carried by the semaphores, both relays, a rail of the track, and a battery, substantially as set forth.

445,654. **REGULATOR FOR ELECTRICALLY-PROPELLED VEHICLES.** SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Oct. 17, 1890. Serial No. 368,499. (No model.)

Claim.—1. An electric regulator having an operating device or devices insulated from the switching means and provided with a ground connection for said operating device or devices, substantially as described.

2. In combination with the motor of an electrically-propelled vehicle and an electric regulator therefor, a branch to ground for the operating device or devices of said regulator, substantially as described.

3. In combination with an electrical machine or motor and an electrical regulator therefor, a branch of high resistance to ground for the operating device or devices of said regulator, substantially as described.



4. In combination with an electric machine or motor and an electrical regulator therefor, a branch containing a cut-out or fuse and extending to ground for the operating device or devices of said regulator, substantially as described.

5. In combination with an electrical machine or motor and an electrical regulator therefor, a branch of high resistance containing a cut-out or fuse and extending to ground for the operating device or devices of said regulator, substantially as described.

6. An electrical regulator provided with a ground connection for the operating device or devices in the form of a fine fusible wire, substantially as described.

7. An electrical regulator comprising one or more metallic shafts for operating the same, and a branch to ground for protecting the said shafts against leakage, substantially as described.

8. An electrical regulator comprising a reversing-switch and an adjustable rheostat or intensity-regulating means, together with two movable operating devices mechanically connected one with the reversing-switch and the other with the rheostat, and having said devices each insulated from the current to be regulated and each in electrical connection with the ground, substantially as described.

445,655. SHUTTLE FOR SEWING-MACHINES. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed Apr. 10, 1890. Serial No. 347,298. (No model.)



Claim.—1. A rotary sewing-machine shuttle provided with a loop-engaging hook tapered to a point both circumferentially and in the direction of the length of its axis, and having formed on its rear face a rearwardly-projecting boss or hub nearly semicircular in shape, with the periphery of its circular portion concentric with and at a distance from the axis of the shuttle corresponding, or nearly so, to the distance of the inner face of the hook of the shuttle at its root from said axis, and having its rear face oblique to the plane of revolution of the shuttle, with its least projection at or near the root of the shuttle-hook and its greatest projection at or near a point diametrically opposite the root of said hook.

2. In a rotary sewing-machine shuttle, the thread-delivering hole *g*, the grooves *h* and *i*, the rounded boss *j*, projecting from the front face of the shuttle, with its center in line with the axis of the shuttle, and provided with the transverse hole or eye *k*, and the radial slot *l*, extending from the center of the boss *j* to its periphery in one direction only, all combined and arranged to operate substantially as and for the purposes described.

3. The combination, in a sewing-machine rotary shuttle, a bobbin-holding chamber, a hinged door for closing said chamber, a thread-carrying bobbin mounted in said chamber, the thread-delivering orifice *g*, the channels *h* and *i*, formed, respectively, in the periphery and front face of the shuttle-body, and the screw *m*, having a head the two opposite sides of which are slabbed off or otherwise made parallel to each other and so arranged relative to said door and the groove *i* that one corner of said head shall serve to secure said door in a closed position and at the same time another corner of said head shall bridge said groove *i* and serve to retain the thread therein.

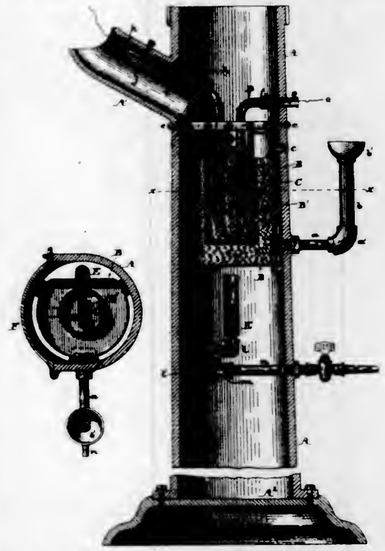
445,656. SHUTTLE FOR SEWING-MACHINES. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed Apr. 10, 1890. Serial No. 347,299. (No model.)

Claim.—1. In combination with a revoluble shuttle-bobbin and a shuttle-case inclosing the same, a slotted stud or pin set in the shuttle-case in a fixed position, a flanged sleeve mounted on said stud and provided with a pin to enter the slot in said stud, so that said sleeve shall be non-revoluble, but movable endwise thereon, and serve as a bearing for said bobbin, a movable collar on said sleeve, a spiral spring between said collar and the flange of said sleeve, and a set-screw fitted in the end of said sleeve and arranged to bear upon the end of said stud.



2. In combination with a shuttle having a circular bobbin-containing chamber and a cover for closing the same, a fixed slotted stud or pin set in the center of said chamber, a flanged sleeve mounted upon said stud and provided with a pin to enter the slot in said stud to prevent revolution of said sleeve thereon, a movable collar on said sleeve, a spring located between said collar and the flange of said sleeve, a bobbin mounted upon said sleeve, a set-screw in the end of said sleeve and arranged to bear upon the end of said slotted stud, and a door or cover for closing the bobbin-containing chamber, having an opening directly opposite the adjusting set-screw, as and for the purposes described.

445,657. THREAD-WAXING DEVICE FOR SEWING-MACHINES. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed July 26, 1890. Serial No. 360,014. (No model.)



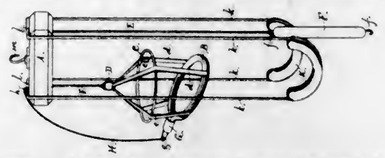
Claim.—1. The combination of the column A, having its lower end closed by the base-plate A^3, water-pot B, and wax-pot C, supported upon ledges projecting from the inner surface of said column, a thread-guiding device within the wax-pot, the gas-burner E, located beneath said water-pot, and the water-supply and gage pipe *a a' b*.

2. The combination of the hollow column A, provided with the oblique branch pipe A', the water-pot B, having one side flat and carrying the wax-pot C, suspended therein, a thread-guiding device in said wax-pot, and the gas-burner E, set in the elbow-fitting *l* and connected, by a swivel-joint eccentric to the axis of the burner, to the fitting *m*, substantially as and for the purposes described.

3. The combination of the column A, provided with a door or doors F in its side, the water-pot B, connected to the column by the water-supply pipe *a* and provided with the steam-vent pipe *c* and the cylindrical inner pot B', the wax-pot C, suspended therein, the U-shaped thread-directing pipe D, open around its lower bend, and the bar *d* for supporting said pipe D.

4. The combination of the column A, provided with the oblique branch pipe A', the wax-pot C and water-pot B B', located within the chamber of said column, a gas-burner located within said column and constructed and arranged to be adjustable to a position beneath said pot or at one side thereof at will, the thread-guiding pipes D *g i*, and the stripper *k*, located at or near the mouth of the pipe A', substantially as shown and described.

445,658. SUSPENSION APPARATUS. ISRAEL BUSHONG, New Holland, Pa. Filed Oct. 31, 1889. Serial No. 328,813. (No model.)



Claim.—1. In a suspension apparatus, the combination of a support for the body, a neck-support, and a weight for upholding the neck-support, substantially as specified.

2. In a suspension apparatus, the combination of a support for the body, a yielding support for the neck, and means for automatically releasing the support from the neck upon the giving way of the body-support, substantially as specified.

3. In a suspension apparatus, the combination, with a support for the body, of a support for the neck, consisting of a band divided into sections, having a hinged connection at one end and separably connected at the other, and a spring for opening the sections about the hinge, substantially as specified.

4. In a suspension apparatus, the combination, with a support for the body, of a support for the neck, having jaws hinged at one end and separably connected together at the other, substantially as specified.

5. The combination, with a head-block, of a support for the body attached thereto, sheaves journaled to the head-block, a rope or cord passing over the sheaves, a neck-support attached to one end of the cord, and a weight secured to the other, substantially as specified.

6. The combination, with a head-block, of a support for the body, a yielding support for the neck, consisting of a band divided into sections having a hinged connection at one end and provided with jaws *b'* at the other, a collar G, adapted to take over the jaws, and a connection between the collar and the head-block, substantially as and for the purpose specified.

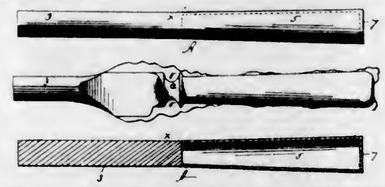
7. The combination, with a head-block having sheaves journaled thereto, of a cord passing over said sheaves, a neck-support attached to one end of the cord and a weight secured to the other, an arm-piece suspended from each side of the head-block, and a connection between the head-block and the neck-support, whereby the latter may be detached from the neck upon the giving way of the arm-pieces, substantially as specified.

8. The combination, with a head-block having sheaves journaled thereto, of a cord passing over said sheaves, a neckband attached to one end of the cord and consisting of sections having a hinged connection at one end and provided with jaws *b'* at the other, a weight secured to the other end of the cord, a collar G, adapted to take over the jaws of the neckband, a connection between the collar G and the head-block, and an arm-piece suspended from each side of the head-block, substantially as and for the purpose specified.

9. The combination, with a head-block provided with sheaves, of a cord passing over said sheaves, a weight secured to one end of said cord, and a ring D connected with the other, a neckband, and straps *d*, passing loosely through the ring D and having their ends fastened to the said neckband, substantially as specified.

10. The combination, with a head-block provided with sheaves, of a cord passing over said sheaves, a weight secured to one end of said cord, and a ring D connected with the other, a neckband, straps *d*, passing loosely through the ring D and having their ends fastened to the said neckband, and an expansion-ring C, interposed between the neckband and the ring D, substantially as specified.

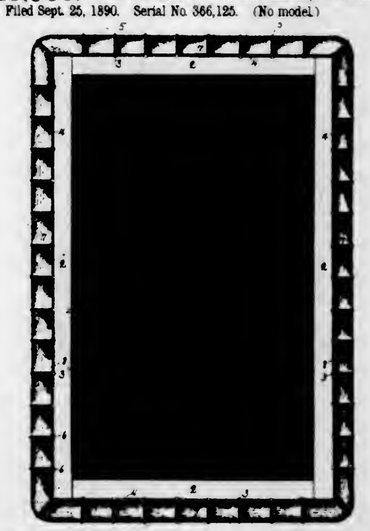
445,659. FORGING-BLANK FOR HOLLOW-HANDLED CUTLERY. WILLIAM H. CHAPIN, Toledo, Ohio. Filed Feb. 26, 1890. Serial No. 341,894. (No model.)



Claim.—1. A forging-blank for the manufacture of hollow-handled cutlery and analogous articles, consisting of a tubular piece of metal of which a handle is subsequently made, having one end integrally closed, and a solid piece of crude metal of which a blade is subsequently made, welded by one end to the open end of said tubular piece, substantially as set forth.

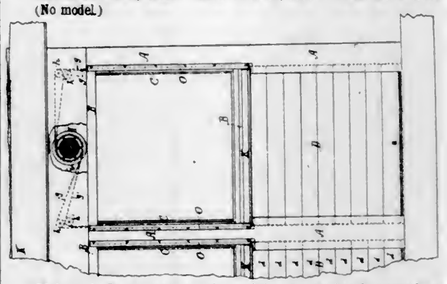
2. A forging-blank for the manufacture of hollow-handled cutlery and analogous articles, consisting of a tubular piece of metal of which a handle is subsequently made, having one end integrally closed and made tapering from its closed end to its open end, and a solid piece of crude metal of which a blade is subsequently made, welded by one end to the open end of said tubular part, substantially as set forth.

445,660. SLATE-FRAME. SOLOMON MARKS, Cincinnati, Ohio. Filed Sept. 25, 1890. Serial No. 366,125. (No model.)



Claim.—A slate-frame having a cushioning, substantially as herein shown and described, which consists of the binding, the cobble-stitching in line with the frame by which the edges of the binding are protected, and the edge-stitching looped over the outer edge of the frame, for securing the binding.

445,661. STREET-CAR. GEORGE MOORE, Boston, and JOSEPH E. PERFLER, Everett, Mass. Filed June 17, 1890. Serial No. 355,744. (No model.)



Claim.—1. In a street-car, the uprights recessed and grooved, as shown, the window-frames hinged to said uprights, extending from end to end of the car, and when closed entering said recesses, said frames having means for locking them when in a vertical or in a raised position, as and for the purpose explained.

2. A street-car provided with the recessed and grooved uprights, the side sections formed of slats and a fabric and upwardly movable therein, and the frames B, extending from end to end of the car and provided with the sashes and deflectors and pivoted to the car, as and for the purpose explained.

3. In a street-car, the combination of the recessed and grooved uprights, the side sections formed of slats and a fabric arranged in and upwardly movable in said uprights, the spring-case I, connected to the sections and to the car, and the window-frames B, hinged to the car and provided with the deflectors, as and for the purpose explained.

4. A street-railway car having that portion of its sides below the windows and between the supporting uprights formed in sections

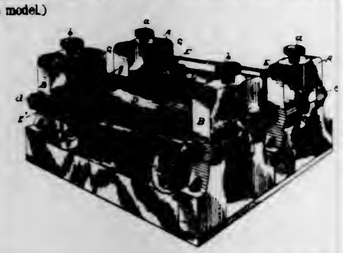
adapted to be elevated and connected to the frame supporting the windows, and with said frame swung upward and sustained in the upper portion of the car, as and for the purpose explained, said frame being applied to the car, substantially as represented.

5. In a street-railway car, the window-frame B, hinged to the car, extending from end to end thereof, and provided with the recessed pieces O, in combination with the spring-cases L, secured to each end of the car and connected by a cord or wire to said frame near its ends, as and for the purpose explained.

6. In a street-railway car, the combination of the sections D, provided with the connection H and catch G, the catch-plate F, the cord or wire *g*, the band *g'*, the guide-sheaves *h h'*, and the spring-case I, all arranged and to operate essentially as and for the purpose explained.

7. In a street-railway car, the window-frame B, extending from end to end of the car and provided with the recessed pieces O, the grooves *l m*, and the deflectors K, said frame being hinged to the car and having means for locking it thereto when in an upright or an inclined position, substantially as described.

445,662. MACHINERY FOR SHAPING IRON OR STEEL AXLES. JOHN T. ROWLEY, Johnstown, Pa. Filed Oct. 23, 1890. Serial No. 369,011. (No model.)



Claim.—1. The process hereinbefore described of rolling or shaping bars of iron or steel or other metal by passing the same between a revolving roll and a concave die, the blank being retained during its passage in a position substantially parallel to the axis of the roll, substantially as described.

2. The combination of a revolving roll and a concave die having its axis parallel to that of the roll, and mechanism, substantially as described, for holding the blank to be operated upon parallel to the axis of the former while it is rotated on its axis and carried through the pass between the roll and die and rotated by the revolution of the roll.

3. The combination, with a roll, of a carrier placed concentrically with the roll and notched or otherwise adapted to receive and hold a blank or bar of metal to be carried around or revolve with the roll while permitting the blank to revolve on its axis, substantially as and for the purposes described.

4. In combination with a revolving roll or former, a concave die, within the cavity of which the roll revolves on its axis, and carriers for holding the blank to be operated upon parallel to the axis of the roll and permitting it to rotate on its axis while traversing the pass between the roll and die, substantially as described.

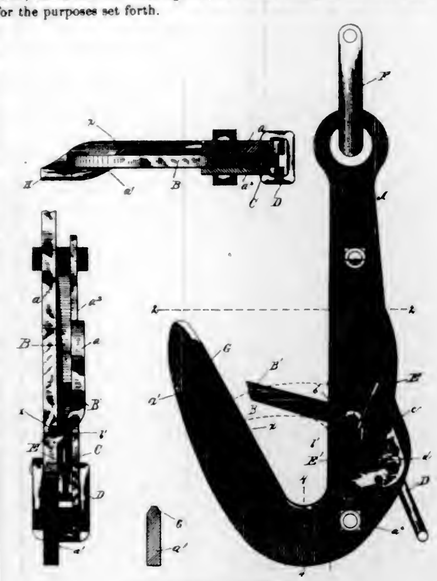
5. In combination with a roll or former, a concave die to receive the roll and having its axis parallel thereto, carriers for holding the blank and carrying it through the pass between the roll and die, and saws adjacent to the carriers to sever from the finished blank that part of the blank which was within the carriers and out of contact with the surface of the roll, substantially as described.

6. The combination of two or more sets of formers, each consisting of a roll and die, with carriers substantially such as described for rolling or shaping bars of metal placed parallel to the axis of the formers, and an inclined table or fore-plate between such sets for the purpose of automatically delivering the blank from one to the other, substantially as and for the purposes described.

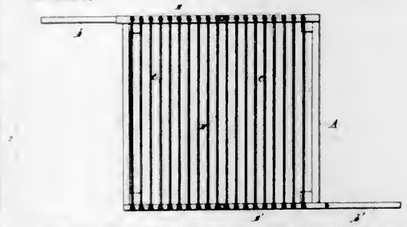
445,663. ANIMAL-GRIP. ELMER A. STILES, Chicago, Ill. Filed Oct. 22, 1890. Serial No. 368,953. (No model.)

Claim.—1. In an animal-grip, the combination, with a V-shaped hook having its short arm laterally curved or offset, of a two-arm latch, substantially right-angled, pivoted at its elbow to the main arm of the hook, a ratchet on the latch, a pawl for engaging the ratchet, a spring for throwing back the latch and controlling the pawl, and a link for releasing the pawl, substantially as described, and for the purpose set forth.

2. In an animal-grip, the combination, with a V-shaped hook, of a two-arm latch, substantially right-angled, pivoted at its elbow to the main arm of the hook, a ratchet on the latch, a pawl for engaging the ratchet, a spring for throwing back the latch and controlling the pawl, and a link for releasing the pawl, substantially as described, and for the purposes set forth.



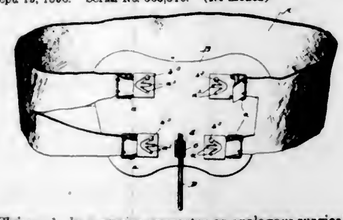
445,664. MACHINE FOR PICKING PEANUTS. WHEELER WATSON, Strong's Station, Miss. Filed Oct. 31, 1890. Serial No. 369,884. (No model.)



Claim.—1. The peanut-picker having the pivoted bars or levers and the rods or wires pivotally connected at their ends to said bars or levers, one of said wires or rods having a depending loop or extension, substantially as and for the purpose described.

2. The peanut-picker comprising the bars or levers pivoted at opposite ends of a table or frame and having handle portions projecting laterally in opposite directions from said table or frame, and the wires or rods pivoted at their ends to the said bars or levers, one of said wires or rods being bent to form the depending loop, as and for the purpose described.

445,665. UTERINE SUPPORTER. PETER YOST, Pittston, Pa. Filed Sept. 19, 1890. Serial No. 365,510. (No model.)



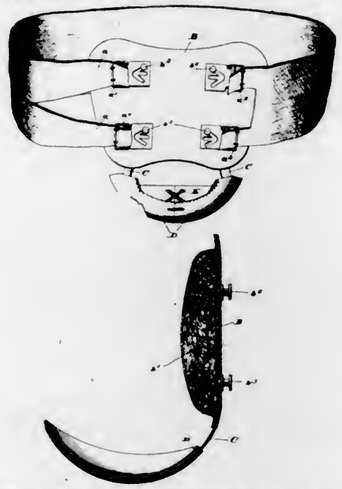
Claim.—1. In a uterine supporter or analogous surgical device, a body-band provided at its ends with buckles having a series of diverging slots, and a pad provided with a series of studs or buttons to be engaged by the slots and adjustably support the pad in place, substantially as described.

2. In a uterine supporter, a body-band, a U-shaped pad, a U-shaped

strengthening-steel within the pad and provided with an eye projecting through the pad, and a uterine supporter swiveled in the eye, substantially as described.

3. In a uterine supporter, a pad, a rod swiveled to said pad and provided with a perforated metallic disk, and a supplemental padded disk formed out of leather and provided with a single central aperture, the same being adapted to be seated in said perforated disk, substantially as described.

445,666. TRUSS. PETER YOST, Pittston, Pa. Filed Sept. 19, 1890. Serial No. 365,511. (No model.)



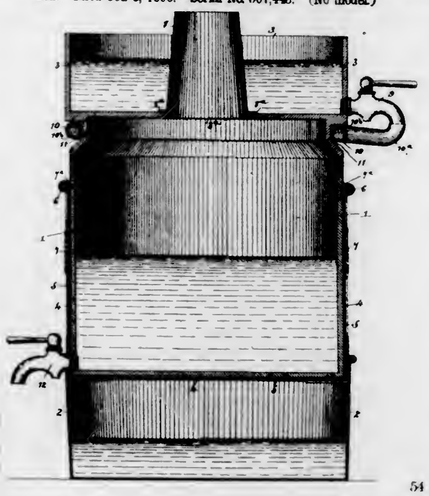
Claim.—1. In a truss, a pad and scrotum-supporting sections connected to said pad by springs secured to the pad, substantially as described.

2. In a truss, a pad, scrotum-supporting sections consisting of two separate curved plates suitably covered, and springs connecting said sections with said pad, substantially as described.

3. In a truss, a pad, scrotum-supporting sections consisting of two separate curved plates suitably covered and provided with eyelets on one edge, through which lacing connects the two sections, and springs connecting the said sections with said pad, substantially as described.

4. In a truss, a pad and scrotum-supporting sections, adjustably secured to each other, attached to said pad, substantially as described.

445,667. WATER-COOLER. ALEXANDER T. BEACHAM, Laredo Tex. Filed Oct. 8, 1890. Serial No. 367,443. (No model.)



Claim.—1. In a water-cooler, the combination of the body or reservoir, a double covering of fabric, means for retaining the covering in place, and the supplemental reservoir arranged above the body or reservoir 1 and forming the cover of the same, and provided with a perforated annular distributing-tube extending around it to supply the said covering with moisture, substantially as described.

2. In a water-cooler, the combination of the reservoir or body 1, a covering of fabric arranged on the outer face of the reservoir or body 1, and the wire frame-work holding the fabric in position and provided at its upper edge with a ring, around which the upper edges of the fabric are secured, substantially as described.

3. In a water-cooler, the combination of the body or reservoir 1, having its outer face covered with fabric, a supplemental reservoir forming a cover for the body or reservoir 1, and a perforated tubular ring communicating with the supplemental reservoir and arranged above the fabric covering of the body or reservoir 1 for keeping the same moist, substantially as described.

4. In a water-cooler, the combination of the body 1, a supplemental reservoir arranged above the body 1 and forming a cover and provided with a spigot 9, and a perforated tubular ring arranged around the supplemental reservoir and provided with a horizontally-projecting tube 10ª, communicating with the mouth of the spigot 9, substantially as described.

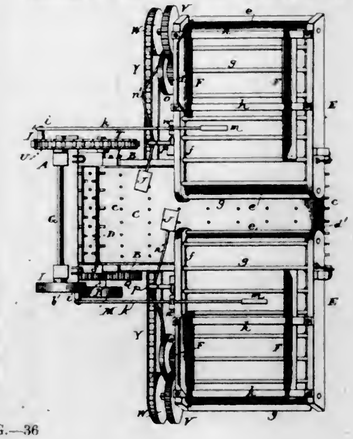
5. In a water-cooler, the combination of the body 1, the supplemental reservoir arranged above the body and provided with a depending flange and forming a cover and having an annular groove 11, the perforated tubular ring arranged in the annular groove and provided with a horizontally-projecting tube 10ª, and the spigot 9, having its mouth communicating with the outer end of the tube, substantially as described.

6. In a water-cooler, the combination of the body having its outer surface covered with fabric, the supplemental reservoir arranged above the body and forming a cover and having a central opening, the tube or escape-pipe 8, having its lower end arranged in the central opening, and means for keeping the fabric wet, substantially as described.

7. In a water-cooler, the combination of the body 1, the pan 2, arranged beneath the body and supporting the same and adapted to receive water dripping therefrom, the fabric covering arranged upon the outer surface of the body 1, the wire frame-work maintaining the fabric in position, the supplemental reservoir 3, forming a cover and provided with a central opening, the escape-pipe 8, having its lower end arranged in the opening, and the tubular ring communicating with the supplemental reservoir and arranged above the fabric covering, substantially as described.

8. In a water-cooler, the combination of the basin or pan 2, the body 1, arranged in the basin or pan and supported thereby, the fabric covering arranged on the outer surface of the sides and bottom of the body and provided with inner and outer portions 4 and 5, the wire frame-work extending over the outer face of the body and maintaining the fabric thereon and extending beneath the bottom of the body and securing the fabric thereto, the supplemental reservoir forming a cover and provided with a central opening, the escape-pipe 8, having its lower end arranged in the central opening, and perforated tubular ring communicating with the supplemental reservoir and arranged above the fabric, substantially as described.

445,668. BAND-CUTTER AND FEEDER. CHARLES W. BOND, Ripyville, Ky. Filed Feb. 25, 1890. Serial No. 341,766. (No model.)



Claim.—1. The combination, with the frame of a band-cutter provided with an adjustable guide, of a carrier for bundles of grain, a shaft and crank-wheel thereon, and a cutter provided with a rod connected with said crank-wheel and extended through said guide, the said rod being provided with a downward curve for giving, in connection with said guide, direction to the movement of the cutter, substantially as and for the purposes described.

2. The combination, with the frame of a feeder provided with an adjustable guide, and a carrier mounted in said frame, of a shaft and crank-wheel thereon, and a rake provided with a rod connected with said crank-wheel and extended through the said guide, said rod being formed with a downward curve or bend and also a lateral bend, for giving, in connection with said guide, direction to the movement of said rake, substantially as set forth and described.

445,669. FARE-REGISTER. THOMAS B. LEE, Toronto, Canada. Filed Feb. 7, 1889. Serial No. 299,079. (No model.)



Claim.—1. The combination of a chamber A', a chamber A^3, having the opening in the top and longitudinal opening in the bottom, a prismatic bottom, one of the sides of which closes said longitudinal opening, the slide A^5, and mechanism connecting said slide and the shaft of said opening, for the purpose set forth.

2. The combination of a chamber A', a chamber A^3, having the opening in the top and the longitudinal opening in the bottom, a prismatic bottom, one of the sides of which closes said longitudinal opening and provided with a pinion, a slide A^5, having the opening provided with shoulders a^{24} and a^{25}, and gearing engaging with the pinion on the shaft of the prismatic bottom and having a spur-wheel in said opening of slide A^5, substantially as described.

3. The combination of a chamber A', a chamber A^3, having an opening in the top and a longitudinal opening in the bottom, a prismatic bottom for closing the longitudinal opening and having a shaft provided with a gear-wheel, spools carrying a strip of paper, the slide A^5, having a marker under said paper, and mechanism operated by the slide for turning the prismatic bottom and moving the paper, for the purpose described.

445,670. CASH REGISTER AND INDICATOR. CHARLES E. LORD, Boston, Mass., assignor to the National Cash Register Company, Dayton, Ohio. Filed May 7, 1853. Serial No. 309,888. (No model.)

Claim.—1. In a cash register and indicator, the combination, with the operating-keys, of a bar arranged when a key is partially operated to move into a position to lock the unoperated keys and to be moved out of such locking position when said key has been fully operated, substantially as and for the purpose described.

2. In a cash register and indicator, the combination, with a series of pivoted operating-keys, of a horizontal bar extending across the same and arranged when a key is partially operated to move into a position to lock the unoperated keys and to be moved out of such locking position after said key has been fully operated, substantially as and for the purpose described.

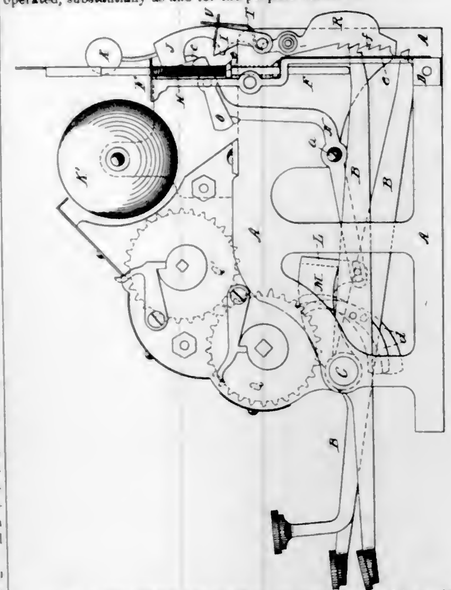
3. In a cash register and indicator, the combination, with the operating-keys, of a bar arranged when a key is partially operated to move over the unoperated keys and lock them from operation, and upon the full operation of said key to move from over and release said unoperated keys, substantially as and for the purpose described.

4. In a cash register and indicator, the combination, with the series of pivoted operating-keys, of a bar extending across the rear of the machine and arranged when a key is partially operated to move over the rear ends of the unoperated keys and lock them from operation, substantially as and for the purpose described.

5. In a cash register and indicator, the combination, with the operating-keys, of a pivotally-supported horizontal bar extending across the keys and arranged when a key is partially operated to swing into a position to lock the unoperated keys from operation and to move out of such position after said key has been fully operated, substantially as and for the purpose described.

6. In a cash register and indicator, the combination, with the operating-keys, of a pivotally-supported horizontal bar extending across the rear of the machine and arranged when a key is partially operated to swing over the ends of the unoperated keys and lock them from operation and to move out of such locking position after the full operation of such key, substantially as and for the purpose described.

7. In a cash register and indicator, the combination, with the operating-keys, of a bar normally tending to move into a position to lock the keys from operation, and a device for holding said bar out of such locking position when the keys are at rest, but arranged to permit it to move into such position whenever any key is partially operated, substantially as and for the purpose described.



8. In a cash register and indicator, the combination, with a series of operating-keys of different values and a registering mechanism actuated thereby to register the values of the respective keys, of a horizontal key-arresting bar extending across the entire series of keys, movable in the plane of movement thereof, and arranged to engage any key of the series when partially operated to prevent it being reset if released and to be disengaged therefrom when said key has been fully operated, whereby a single bar is made to operate as an arrester for all the keys of the series, substantially as described.

9. In a cash register and indicator, the combination, with a series of operating-keys of different values and a registering mechanism actuated thereby to register the values of the respective keys, of a horizontal key-arresting bar extending across the entire series of keys, pivoted on an axis transversely thereof, and arranged to engage any key of the series when partially operated to prevent it being reset if released and to be disengaged therefrom when said key has been fully operated, substantially as and for the purpose described.

10. In a cash register and indicator, the combination, with a series of operating-keys of different values and a registering mechanism actuated thereby to register the values of the respective keys, of a horizontal key-arresting bar extending across the rear ends of the entire series of keys, pivoted on an axis transversely thereof, and arranged to engage any key of the series when partially operated to prevent it being reset if released and to be disengaged therefrom when said key has been fully operated, substantially as and for the purpose described.

11. In a cash register and indicator, the combination, with a series of operating-keys, of a horizontal key-arresting bar extending across the rear ends of the entire series of keys and movable in the plane of movement thereof, and arranged when any key of the series is partially operated to move beneath the end of said key to hold it in its partially-operated position if released, and upon the full operation and release of such key to move from beneath the end thereof to permit it to reset itself, substantially as and for the purpose described.

12. In a cash-register and indicator, the combination, with a series of operating-keys of different values and registering and indicating mechanisms actuated thereby to register and indicate the values of the respective keys, of a horizontal key-arresting bar movable in the plane of movement of the keys and arranged to engage a partially-operated key to prevent it being reset if released and to be disengaged therefrom when said key has been fully operated, substantially as and for the purpose described.

13. In a cash register and indicator, the combination, with the operating-keys, of a combined key-locking and key-arresting bar arranged when a key is partially operated to move into a position to lock the unoperated keys and prevent the resetting of the partially-operated key, substantially as and for the purpose described.

14. In a cash register and indicator, the combination, with the operating-keys, of a bar arranged when a key is partially operated to move over the unoperated keys and beneath the operated key to lock the former from operation and to support the latter in its partially-operated position if released, and upon the full operation and release of such key to move from over the unoperated keys and from beneath the operated key to unlock the former and to permit the latter to reset itself, substantially as and for the purpose described.

15. In a cash register and indicator, the combination, with the operating-keys, of a pivotally-supported horizontal bar arranged when a key is partially operated to move into a position to lock the unoperated keys and prevent the resetting of the partially-operated key, and upon the full operation and release of said key to move out of such position to unlock the unoperated keys and permit the partially-operated key to reset itself, substantially as and for the purpose described.

16. In a cash register and indicator, the combination, with the operating-keys, of a pivotally-supported horizontal bar extending across the rear of the machine and arranged when a key is partially operated to move over the unoperated keys and beneath the operated key to lock the former from operation and to support the latter in its partially-operated position if released, and upon the full operation and release of such key to move from over the unoperated keys and from beneath the operated key to unlock the former and to permit the latter to reset itself, substantially as and for the purpose described.

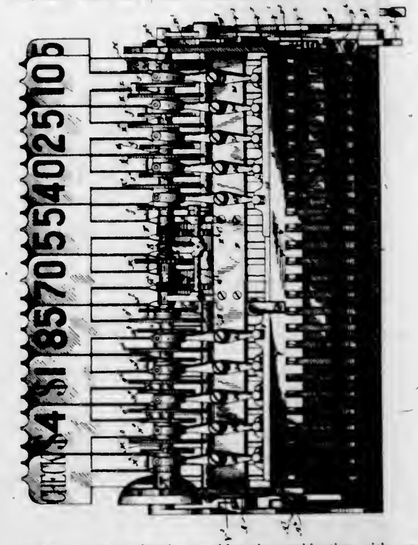
17. In a cash register and indicator, the combination, with a series of operating-keys and a series of tablet-rods and indicating-tablets actuated thereby, a series of registering-wheels, one for each key, and a series of actuating-dogs pivoted one to each key and arranged to engage its corresponding registering-wheel and turn the same one number upon each complete operation of such key, of a horizontal bar extending across the rear of the machine and arranged when a key is partially operated to move beneath the end of said key and hold the same in its partially-operated position if released, and upon the full operation and release of said key to move from beneath the end of said key to permit it to reset itself, whereby when a key is partially operated and released and is then operated to its full extent only one registration will be effected by both the partial and complete operations of such key.

18. In a cash register and indicator, the combination, with a series of operating-keys and a series of tablet-rods and indicating-tablets actuated thereby, a series of registering-wheels, one for each key, and a series of actuating-dogs pivoted one to each key and arranged to engage its corresponding registering-wheel and turn the same one number upon each complete operation of such key, of a pivotally-supported horizontal bar extending across the rear of the machine and arranged when a key is partially operated to move beneath the end of said key and over the ends of the unoperated keys to support the former in its partially-operated position if released and to lock the latter from operation, and upon the full operation and release of the former to move from beneath the end of said key to permit it to reset itself, whereby when a key is partially operated and released and is then operated to its full extent only one registration will be effected by both the partial and complete operation of such key.

19. In a cash register and indicator, the combination, with a series of operating-keys arranged in two banks and provided on their front ends with numbered buttons, a series of tablet-rods and indicating-tablets actuated by said keys, a series of registering-wheels arranged in two horizontal banks, one over the other, and extending across the machine, and a series of actuating-dogs pivoted one to each key and arranged to engage its corresponding registering-wheel in the lower bank and turn the same one number at each complete operation of such key, of a horizontal key-arresting bar pivotally connected to the frame of the machine and extending across the rear thereof, said bar being yieldingly held in its normal position, but actuated upon the operation of any key and arranged when a key is partially operated to swing beneath the end of said key and over the ends of the unoperated keys to support the former in its partially-operated position if released and to lock the latter from operation, and upon the full operation and release of the former to swing back to its normal position to permit said key to reset itself, whereby when a key is partially operated and released and is then operated to its full extent only one registration will be effected by both the partial and complete operation of such key.

20. In a cash register and indicator, the combination, with the series of operating-keys, of the bar R, extending across the entire series of keys, movable in the plane of movement thereon, and arranged to operate substantially in the manner and for the purpose specified.

445,671. CASH REGISTER AND INDICATOR. HUGO COOK, Dayton, Ohio. Filed May 6, 1890. Serial No. 350,731. (No model.)



Claim.—1. In a registering-machine, the combination, with a revoluble shaft, of a detent-support and a toothed escapement-wheel mounted upon and rotating with the shaft and laterally movable thereon toward and from the relatively stationary detent, substantially as described.

2. In a registering-machine, the combination, with a revoluble shaft, of a detent-support mounted upon said shaft, and a toothed escapement-wheel mounted upon and moving with said shaft and laterally movable toward and from the relatively stationary detent-support, substantially as described.

3. In a registering-machine, the combination of a revoluble shaft and detent-wheel mounted loosely thereon, and a toothed escapement-wheel mounted upon and moving with the shaft and laterally movable upon the same toward and from the relatively stationary detent, substantially as described.

4. The combination, with a revoluble shaft and a registering-wheel secured to it, of a detent-support and a toothed escapement-wheel mounted upon and moving with the shaft and laterally movable thereon toward and from the relatively stationary detent-support, substantially as described.

5. In a registering-machine, the combination, with a revoluble shaft, of a toothed escapement-wheel revolving with said shaft and laterally movable thereupon, a series of loosely-mounted detent-wheels, with one of which the before-mentioned escapement-wheel co-operates, a series of escapement-wheels mounted upon the hubs of said detent-wheels and connected thereto so as to revolve therewith, yet capable of independent lateral motion thereupon, and a fixed detent co-operating with the last escapement-wheel of the series, substantially as described.

6. In a registering-machine, the combination, with the revoluble shaft, of a toothed escapement-wheel revolving with said shaft and laterally movable thereupon, a series of loosely-mounted detent-wheels, with one of which said escapement-wheel co-operates, a series of escapement-wheels having different numbers of teeth mounted upon the hubs of said detent-wheels and connected thereto so as to revolve therewith, yet be capable of independent lateral motion thereupon, and a fixed detent co-operating with the last escapement-wheel of the series, substantially as described.

7. In a registering-machine, the combination, with a revoluble shaft, of a toothed escapement-wheel mounted upon said shaft and connected thereto by a spline-and-groove connection, a series of detent-wheels loosely mounted upon said shaft, with one of which said escapement-wheel co-operates, a series of escapement-wheels mounted upon the hubs of said detent-wheels and connected thereto by a spline-and-groove connection, and a relatively-fixed detent co-operating with the last escapement-wheel of the series, substantially as described.

8. In a registering-machine, the combination, with a revoluble shaft, of a registering-wheel mounted thereon, a toothed escapement-wheel also mounted thereon and connected thereto by a spline-and-groove connection, a series of detent-wheels loosely mounted on said shaft, with one of which the said escapement-wheel co-operates, a series of escapement-wheels mounted upon the hubs of said detent-wheels and connected thereto by a spline-and-groove connection, and a relatively-fixed detent co-operating with the last escapement-wheel of the series.

9. In a registering-machine, the combination, with the revoluble shaft and a motor connected therewith, of a registering-wheel mounted upon said shaft, a toothed escapement-wheel also mounted upon said shaft and connected thereto by a spline-and-groove connection, a series of detent-wheels loosely mounted on said shaft, with one of which the said escapement-wheel co-operates, a series of escapement-wheels mounted upon the hubs of said detent-wheels and connected thereto by a spline-and-groove connection, and a relatively-fixed detent co-operating with the last escapement-wheel of the series, substantially as described.

10. In a registering-machine, the combination, with the revoluble shaft of a registering-wheel mounted thereon, a toothed escapement-wheel also mounted thereon and connected thereto by a spline-and-groove connection, a series of detent-wheels loosely mounted on said shaft, with one of which said escapement-wheel co-operates, a series of escapement-wheels mounted upon the hubs of said detent-wheels and connected thereto by a spline-and-groove connection, a relatively-fixed detent co-operating with the last escapement-wheel of the series, a series of finger-keys, and connections between said keys and the several escapement-wheels, whereby upon pressing upon a key a corresponding escapement-wheel will be moved laterally so as to be released from its co-operating detent and permit the shaft and the registering-wheel thereupon to advance, substantially as described.

11. In a registering-machine, the combination of a series of operating-keys, a series of indicators positively operated thereby, a spring-motor controlled by the operating-keys, a register actuated by the motor upon the operation of a key, and a cash-drawer co-operating with the motor to put the same under tension when the drawer is closed.

12. In a registering-machine, the combination, with the revoluble shaft and the detent-wheels and escapement-wheels mounted thereon, as described, of the motor for actuating said shaft, a cash-drawer, and intermediate devices for winding the motor by the movements of the cash-drawer.

13. In a registering-machine, the motor-shaft, the ratchet-wheel on its end, and the vibratory lever carrying the pawl for engaging said ratchet-wheel and projecting in the path of the cash-drawer, in combination with said cash-drawer, whereby the movement of the drawer vibrates the lever and turns the motor-shaft.

14. In a registering-machine, the motor-shaft, the ratchet-wheel on its end, and the vibratory lever carrying the pawl for engaging said ratchet-wheel and projecting in the path of the cash-drawer, in combination with said cash-drawer and with means for retracting the lever when released from the drawer, substantially as described.

15. In a registering-machine, the combination of a series of operating-keys, a series of indicators positively operated thereby, a registering mechanism, a motor controlled by the operating-keys for actuating the same, a cash-drawer, mechanism for winding the motor by the movements of the cash-drawer, and mechanism intermediate the keys and cash-drawer for unlocking said drawer upon the operation of a key, substantially as described.

16. In a registering-machine, the combination of a series of finger-keys, a series of indicators positively operated thereby, a registering mechanism operated by the movement of any one of said keys, a motor controlled by the keys for actuating said registering mechanism, a cash-drawer, mechanism for winding the motor by the movements of the drawer, and mechanism intermediate the keys and drawer for unlocking said drawer upon the operation of a key.

17. In a registering-machine, the combination, with a revoluble shaft and the detent-wheels and escapement-wheels mounted thereon, as described, of the series of finger-keys, the slides operated by said keys, and means, substantially such as described, for communicating the motion of the slides to the escapement-wheel, substantially as described.

18. In a registering-machine, the combination, with the motor, the revoluble shaft actuated thereby, the detent-wheels, escapement-wheels, and registering-wheel mounted on said shaft, as described, of the series of finger-keys, the slides operated thereby, and the connections between the slides and the escapement-wheels, substantially as described.

19. In a registering-machine, the combination of the motor, the revoluble shaft actuated thereby, the detent-wheels, escapement-wheels, and registering-wheels mounted on said shaft, as described, the series of finger-keys, the slides operated thereby, and the connections between the slides and the escapement-wheels, with the cash-drawer and intermediate mechanism for winding the motor by the operation of said drawer, substantially as described.

20. In a registering-machine, the combination of the motor, the revoluble shaft actuated thereby, the detent-wheels, escapement-wheels, and registering-wheel mounted on said shaft, as described, a series of finger-keys, the slides operated thereby, and the connections between the slides and the escapement-wheels, with the cash-drawer, mechanism for releasing the drawer by the operation of a key, and mechanism for winding the motor by the movements of the drawer, substantially as described.

21. In a registering-machine, the combination, with the finger-keys and the slides operated thereby, of a cam for returning the slide or slides to normal position after having been shifted by the finger-keys, substantially as described.

22. In a registering-machine, the combination, with the finger-keys and the slides operated thereby, of a gravitating cam adapted to be lifted by the depression of a key, and upon the return of said key to shift said slides back to normal position, substantially as described.

23. In a registering-machine, the combination, with the motor, the revoluble shaft actuated thereby, the detent-wheels, escapement-wheels, and registering-wheel mounted on said shaft, as described, of the series of finger-keys, the slides operated thereby, the cam for returning the slides, and the connections between the slides and the escapement-wheels, substantially as described.

24. In a registering-machine, the combination, with the motor-shaft having the ratchet-wheel on its end, of the vibratory lever carrying the pawl, the slide to which the lower end of said lever is connected by the pin-and-slot connection, and the guide for said slide, substantially as described.

25. In a registering-machine, the combination, with a relatively stationary detent having two contact-faces, of a revoluble toothed escapement-wheel movable laterally toward and from the said detent, so as to engage one or the other of the contact-faces thereof, substantially as described.

26. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, of an escapement-wheel mounted upon and revolving with the shaft of the dollar-registering mechanism, as described, and a detent shifted by the cent-registering shaft at each complete revolution of the same to permit an advance of the shaft of the dollar-registering mechanism, substantially as described.

27. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, and with the motors for said shafts, of an escapement-wheel mounted upon and revolving with the shaft of the dollar-registering mechanism, as described, and a detent shifted by the shaft of the cent-registering mechanism at each complete revolution of the latter to permit an advance of the shaft of the dollar-registering mechanism, substantially as described.

28. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, of an escapement-wheel mounted upon and revolving with the shaft of the dollar-registering mechanism, a detent for engaging said escapement-wheel, and a cam or groove on the shaft of the cent-registering mechanism for shifting said detent, whereby upon a complete revolution of the shaft of the cent-registering mechanism the detent will be shifted to permit an advance of the shaft of the dollar-registering mechanism, substantially as described.

29. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, of an escapement-wheel mounted upon and revolving with the shaft of the dollar-registering mechanism, a laterally-movable detent having two contact-faces, as described, and a groove or cam on the shaft of the cent-registering mechanism for shifting said detent at each complete revolution of said last-mentioned shaft, so as to release the escapement-wheel from one contact-face of the detent and permit it to engage with the other contact-face of said detent, thereby permitting an advance of the shaft of the dollar-registering mechanism, substantially as described.

30. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, of an escapement-wheel mounted upon and revolving with the shaft of the dollar-registering mechanism, a detent for engaging said escapement-wheel, mounted upon a shifting support, and a bead or projection also mounted on said shifting support and engaging with a right and left spiral groove on the shaft of the cent-registering mechanism, substantially as described.

31. In a registering-machine, the combination, with the shaft of the cent-registering mechanism having the right and left spiral groove, and the shaft of the dollar-registering mechanism provided with the escapement-wheel moving with it, of the detent P, having the contacts $p\ p'$, the sliding rod Q, upon which said detent is mounted, the socket S^4, also on said rod, and the head S^3, working in said socket and engaging with the spiral grooves of the shaft of the cent-registering mechanism, substantially as described.

32. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, of a series of escapement-wheels and a co-operating series of detent-wheels mounted upon the shaft of the dollar-registering mechanism, the finger-keys, and connections for shifting said escapement-wheels, the additional escapement-wheel on the shaft of the dollar-registering mechanism, and the detent for said wheel actuated by the shaft of the cent-registering mechanism at each complete movement of the latter, substantially as described.

33. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism, the series of escapement-wheels and detent-wheels arranged upon said shaft, as described, the finger-keys, and connections for operating said series of cent escapement-wheels, of the shaft of the dollar-registering mechanism, its series of escapement-wheels and co-operating detent-wheels, the finger-keys and connections for operating said series of dollar escapement-wheels, the additional escapement-wheel on the shaft of the dollar-registering mechanism, and the detent for said last-mentioned escapement-wheel, operated by the shaft of the cent-registering mechanism at each complete revolution of the latter, substantially as described.

34. In a registering-machine, the combination, with a revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, and with a motor for said shaft, of an escapement-wheel mounted upon and revolving with the shaft of the dollar-registering mechanism, as described, a detent shifted by the shaft of the cent-registering mechanism at each complete revolution of the latter, and a total-register geared to the shaft of the dollar-registering mechanism, substantially as described.

35. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism and the revoluble shaft of the dollar-registering mechanism, of a series of escapement-wheels and a co-operating series of detent-wheels mounted upon the shaft of the dollar-registering mechanism, the finger-keys, and connections for shifting said escapement-wheels, the additional escapement-wheel on the shaft of the dollar-registering mechanism, the detent for said wheel actuated by the shaft of the cent-registering mechanism at each complete movement of the latter, and a total-register geared to the shaft of the dollar-registering mechanism, substantially as described.

36. In a registering-machine, the combination, with the revoluble shaft of the cent-registering mechanism, a series of escapement and detent wheels arranged upon said shaft, as described, the finger-keys and connections for operating said series of cent escapement-wheels, of the shaft of the dollar-registering mechanism, its series of escapement-wheels and co-operating detent-wheels, finger-keys and connections for operating said series of dollar escapement-wheels, the additional escapement-wheel on the shaft of the dollar-registering mechanism, the detent for said last-mentioned escapement-wheel operated by the shaft of the cent-registering mechanism at each complete revolution of the latter, and the total-register geared to the dollar-shaft, substantially as described.

37. In a registering-machine, the combination, with the upper series of wheels of the total-register, mounted loosely upon a common axis in a fixed support, of the co-operating lower series of wheels mounted upon a shaft in a movable support, and a lock for locking the upper wheels from movement when the lower ones are disengaged from them, substantially as described.

38. In a registering-machine, the combination, with the upper series of wheels of the total-register, mounted loosely upon a common shaft, of the co-operating lower series of wheels and the pivoted frame in which said lower series of wheels are mounted, provided with a locking cross-bar which engages with the upper series of wheels and prevents their displacement when said frame is swung down to throw the two series of wheels out of mesh, substantially as described.

39. In a registering-machine, the combination, with the two series of wheels of the total-register, of the pivoted frame carrying the lower series of said wheels and provided with the locking cross-bar, and the means for adjusting and holding said frame, substantially as described.

40. In a registering-machine, the combination, with the lower series of wheels of the total-register and the pivoted frame in which they are mounted, of the spring-pressed levers, which bear with frictional contact against said wheels when the frame is swung down, and the cross-bar for automatically throwing said levers out of contact with the wheels when the frame is swung up, substantially as described.

41. In a registering-machine, a movable key-arrester provided with a ratchet having upwardly-pointing teeth, in combination with the finger-keys, the transverse bar extending across the keys and provided with a tooth for engaging said ratchet and the cash-drawer, and intermediate connections for holding the said key-arrester out of action when the drawer is closed, substantially as described.

42. In a registering-machine, a movable key-arrester provided with a ratchet having upwardly-pointing teeth, in combination with the finger-keys and the transverse bar extending across the keys and provided with a tooth for engaging said ratchet, the cash-drawer and intermediate connections for holding the key-arrester out of action when the drawer is closed, and means, such as a spring, for throwing the key-arrester into action when the drawer is opened, substantially as described.

43. In a registering-machine, a movable key-arrester provided with a ratchet having upwardly-pointing teeth, in combination with the finger-keys and the transverse bar extending across the keys and provided with a tooth for engaging said ratchet, the cash-drawer and intermediate connections for holding the key-arrester out of action when the drawer is closed, and means, such as a spring, for throwing the key-arrester into action when the drawer is opened, and connections, such as described, for unlocking the drawer upon the depression of the keys, substantially as described.

44. In a registering-machine, the key-arrester provided with the ratchet having upwardly-pointing teeth, and with the second ratchet having downwardly-pointing teeth, of the transverse bar extending across the tops of the keys, provided with teeth co-operating, respectively, with said ratchets, substantially as described.

45. In a registering-machine, the combination, with the key-arrester provided with the ratchet having upwardly-pointing teeth, and with the second ratchet having downwardly-pointing teeth, of the series of finger-keys and the transverse bar extending over the tops of said keys and provided with teeth for engaging, respectively, the said two ratchets, substantially as described.

46. In a registering-machine, the key-arrester provided with the two ratchets, one having upwardly-pointing teeth and the other having downwardly-pointing teeth, as described, of the pivoted transverse bar extending across the tops of the keys and provided with teeth for co-operating, respectively, with the ratchets, and the finger-keys provided with the upward projections, slotted as described, for co-operating with the transverse bar, substantially as described, and for the purpose specified.

47. In a registering-machine, the combination, with the key-arrester having the two ratchets, one with teeth pointing upward and the other with teeth pointing downward, and the transverse bar extending across the tops of the keys and provided with teeth for co-operating with said ratchets, respectively, of the vibrating lever and its connections, and the cash-drawer for holding the key-arrester normally out of action, substantially as described.

48. In a registering-machine, the combination, with the key-arrester having the two ratchets, one with the teeth pointing upward and the other with the teeth pointing downward, and the transverse bar extending across the tops of the keys and provided with teeth for co-operating with said ratchets, respectively, of the vibrating lever and its connections, the cash-drawer for holding the key-arrester normally out of action, and means for swinging the key-arrester forward into action when the drawer is open, substantially as described.

49. In a registering-machine, the combination, with the key-arrester having the two ratchets, one with teeth pointing upward and the other with teeth pointing downward, the transverse bar extending across the tops of the keys and provided with teeth for co-operating with said ratchets, respectively, of the vibrating lever and its connections, the cash-drawer for holding the key-arrester normally out of action, means, such as a spring, for throwing the key-arrester forward into action when the drawer is released, and a finger-key and intermediate connections for releasing the drawer, substantially as described.

50. In a registering-machine, the combination, with the key-arrester having the two ratchets, one with the teeth pointing upward and the other with the teeth pointing downward, of the transverse bar extending across the tops of the keys and provided with teeth for co-operating with said ratchets, respectively, and means, such as a spring, for holding one ratchet in engagement with its co-operating tooth while the transverse bar is moving upward and for advancing the other ratchet into engagement with its co-operating tooth before said transverse bar begins to move downward, substantially as described.

51. In a registering-machine, the combination of a series of operating-keys, indicators operated thereby, a spring-motor controlled by the operating-keys, a register actuated by the motor, and an inwardly and outwardly movable money-drawer co-operating with the spring-motor to put the same under tension when the drawer is closed, substantially as described.

52. In a registering-machine, the combination of a series of operating-keys, indicators operated thereby, a spring-motor controlled by the operating-keys, a register actuated by the motor, an inwardly and outwardly movable money-drawer co-operating with the spring-motor to put the same under tension when the drawer is closed, and a rack and pawl arrester co-operating with the drawer to prevent its being closed after being partially opened until opened a predetermined distance, substantially as described.

53. In a registering-machine, the combination of a cash-drawer, a spring-motor put under tension by the closing of the drawer, a register actuated by said motor, a pawl connected to and moving with the drawer, and a stationary ratchet with which said pawl engages

to prevent the return of the drawer after it begins to move outward, substantially as described.

54. In the herein-described registering-machine, the combination, with the vibratory lever of the motor-winding mechanism, of the drawer, a pawl connected thereto and moved therewith, and a stationary ratchet with which said pawl engages to prevent the return of the drawer after it begins to move outward, substantially as described.

55. In a registering-machine, the combination of a cash-drawer, a spring-motor put under tension by the closing of the drawer, a register actuated by said motor, a pawl connected to and moving with the drawer, and a stationary ratchet with which said pawl engages to prevent the return of the drawer after it begins to move outward, and means for automatically throwing said pawl out of the path of the ratchet after the drawer has moved outward the predetermined distance, thereby permitting the return of the drawer without obstruction, substantially as described.

56. In a registering-machine, the combination of a cash-drawer, a spring-motor put under tension by the closing of the drawer, a register actuated by said motor, a pawl connected to and moving with the drawer, a stationary ratchet with which said pawl engages to prevent the return of the drawer after it begins to move outward, and means for automatically throwing said pawl out of the path of the ratchet after the drawer has moved outward the predetermined distance and for automatically throwing said pawl again in the path of said ratchet after the drawer has been fully closed and before it is again opened, substantially as described.

57. In the herein-described registering-machine, the combination, with the guide having the ratchet-bar on its inner side, and the pawl-carrier having the pivoted pawl and provided with the central recess, of the bar on the drawer provided with the lug for entering the recess of the pawl-carrier, and with the projection for acting upon the pawl to raise and lower the toothed end of the latter, accordingly as the drawer is pulled outward or pushed inward, substantially as described.

58. In a registering-machine, the combination of the check-key Z⁵, the drawer, and intermediate mechanism for unlocking the drawer, with the plunger 39, the pawl carried thereby, and the ratchet-wheel and connected registering-train, substantially as described, and for the purpose specified.

59. In a registering-machine, the combination of a detent and a relatively-rotatable toothed escapement-wheel co-operating therewith, both mounted upon the same axis, and one being laterally movable toward and from the other, substantially as described.

60. In a registering-machine, the combination of a detent and a laterally-movable and relatively-rotatable toothed escapement-wheel co-operating therewith, substantially as described.

61. In a registering-machine, the combination of a laterally-movable revoluble escapement-wheel, a register connected therewith, and a co-operating relatively non-revoluble detent, substantially as described.

62. In a registering-machine, the combination, with a revoluble registering-wheel and a laterally-movable escapement-wheel carried thereby and revolving therewith, of a relatively non-revoluble detent co-operating with the escapement-wheel, substantially as described.

63. In a registering-machine, the combination, with a revoluble shaft, of a detent and a co-operating escapement, both mounted upon the shaft, and one rotating therewith and one laterally movable toward and from the other, substantially as described.

64. In a registering-machine, the combination of a motor, a revoluble shaft driven thereby, a registering-wheel secured upon said shaft, and a detent and co-operating escapement, both mounted upon the shaft, and one rotating therewith and one laterally movable thereon toward and from the other, substantially as described.

65. In a registering-machine, the combination of a motor, a revoluble shaft and registering-wheel driven thereby, an escapement mechanism normally holding said motor in check, and a series of keys of different values for operating the escapement mechanism to release and arrest the motor, substantially as described.

66. In a registering-machine, the combination of a motor, a revoluble shaft and registering-wheel driven thereby, a series of detents and co-operating escapements normally holding said motor in check, and a series of operating-keys for disengaging the escapements from their respective detents to release the motor, substantially as described.

67. In a registering-machine, the combination of a motor, a revoluble shaft and registering-wheel driven thereby, a series of escapement-wheels and a series of co-operating detents mounted upon said shaft, and a non-revoluble detent co-operating with the last escapement-wheel of the series, substantially as described.

68. In a registering-machine, the combination of a motor, a revoluble shaft and registering-wheel driven thereby, a series of laterally-movable escapement-wheels and a series of co-operating detents mounted upon said shaft, a non-revoluble detent co-operating with the last escapement-wheel of the series, and a series of operating-keys connected with the laterally-movable escapement-wheels for disengaging them from their co-operating detents, substantially as described.

69. In a registering-machine, the combination of a motor, a registering-wheel driven thereby, a train of detents and co-operating escapements holding the motor in check, and a single operating-key co-operating with two or more of such escapements and detents, substantially as and for the purpose described.

70. In a registering-machine, a motor, a revoluble shaft and a registering-wheel driven thereby, and two or more detents and co-operating escapements controlling the movement of the motor and combined with a single operating-key, whereby upon operating said single key all of said escapements are disengaged from their co-operating detents, for the purpose described.

71. In a registering-machine, the combination of a motor, a revoluble shaft and registering-wheel driven thereby, a series of detents and co-operating escapements mounted on said shaft, and a single operating-key connected with two or more of the escapements or detents, for the purpose described.

72. In a registering-machine, the combination of a motor, a revoluble shaft and registering-wheel driven thereby, a series of detents and co-operating laterally-movable escapement-wheels mounted upon the shaft, and a series of operating-keys, each connected with two or more of the escapement-wheels, whereby upon operating any one of such keys its connected escapement-wheels are disengaged from their respective detents, for the purpose described.

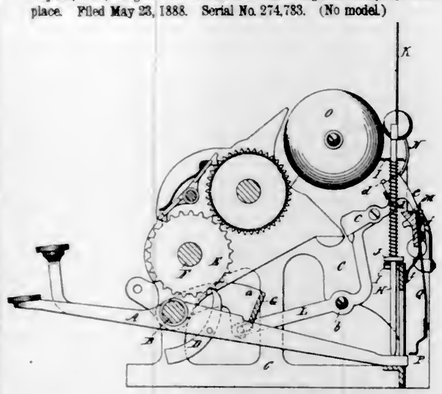
73. In a registering-machine, the combination of two motors, a cent-registering wheel driven by the first and a dollar-registering wheel driven by the second, and a detent and co-operating escapement controlling the movement of the second motor and arranged to be disengaged at predetermined intervals in the movements of the first motor and cent-registering wheel to release the second motor and permit it to turn the dollar-registering wheel, substantially as and for the purpose described.

74. In a registering-machine, the combination of the two motors, the cent-registering wheel driven by the first and the dollar-registering wheel driven by the second, an escapement connected with the second motor, and a co-operating detent disengaged from the escapement at predetermined intervals in the movements of the cent-registering wheel to permit the second motor to turn the dollar-registering wheel, substantially as described.

75. In a registering-machine, the combination of two trains of wheels mounted upon parallel axes and capable of being disengaged from each other, and a lock which automatically locks one train when the other is disengaged from it, substantially as and for the purpose described.

76. In a registering-machine, the combination of the gears 1, 3 4, 6 7, and 9 10, mounted on the shaft T, and the gears 2, 5, and 8, mounted on the parallel shaft T², each meshing with the preceding gear of the upper set and carrying a transfer locking-disk *a*, having a tooth *a'* on its periphery and arranged with its periphery normally engaging two of the teeth of the succeeding gear of the upper set, substantially as and for the purpose described.

445,672. CASH REGISTER AND INDICATOR. CHARLES D. GRIMES, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed May 23, 1888. Serial No. 274,783. (No model.)



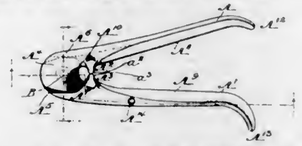
Claim.—1. In a cash register and indicator, the combination, with the registering mechanism, the operating-keys, the pivoted wing, and the tripping mechanism interposed between said keys and wing, of a horizontal key-arresting bar located immediately above and in rear of the rear ends of the keys and secured to the wing by spring-arms, whereby upon partially operating any key the vibration of the wing moves said bar inward beneath the rear end of said key, and whereby upon fully operating said key the resetting of the wing moves said bar outward from beneath the rear end of said key to permit the latter to be reset to its normal position of rest, substantially as and for the purpose described.

2. In a cash register and indicator, the combination, with the registering mechanism, the operating-keys, the pivoted wing, and the tripping mechanism interposed between said keys and wing, of a horizontal key-arresting bar located immediately above and in rear of the rear ends of the keys, secured to the wing by spring-arms and having a lower locking-surface, whereby upon partially operating any key the vibration of the wing moves said bar inward beneath the rear end of said key, and thereby locks all the unoperated keys, and whereby upon fully operating said key the resetting of the wing moves said bar outward from beneath the rear end of said key to permit it to be reset and to unlock the unoperated keys, substantially as and for the purpose described.

3. The combination, with the registering-wheels E, the operating-keys A, pivoted wing M, and the tripping mechanism interposed between said keys and wing, of the key-arresting bar P, secured to the wing M by the arms Q, substantially as and for the purpose described.

4. The combination of the registering-wheels E, the operating-keys A, vibrating frame G, bell-crank lever L, carrying the tripping-dog *c*, wing M, provided with an extension *c*, engaged by said tripping-dog, and key-arresting bar P, secured to the wing M by the spring-arms Q, substantially as and for the purpose described.

445,673. PEN-PULLER. ISAAC W. HEYSINGER, Philadelphia, Pa. Filed Nov. 28, 1890. Serial No. 372,849. (No model.)



Claim.—1. A pen-puller consisting of two arms A A', pivoted together at B, and having jaws A^3 and A^3 between said pivot B and said arms A A' at their free ends, said jaws A^3 and A^3 projecting laterally and adapted to engage with a longitudinal object extended along the said arms and in front of said pivot, substantially as described.

2. In combination with the arm A, having laterally-projecting jaw A^3 and face-plate A^4, the opposite arm A', having projecting jaw A^3 and face-plate A^5, together with the pivoted bearing B, said lateral jaws A^3 and A^3 adapted to engage against each other at the points thereof outside the general plane of said arms and said face-plates, substantially as and for the purposes described.

3. A pen-puller consisting of two arms free at one end and pivoted together at the other and adapted to open in a plane at right angles to said pivot, and a jaw upon each arm between said pivot and the free end thereof, said jaws projecting to the front and overhanging each other and adapted to make contact outside the plane of motion of said arms and said pivot, substantially as described.

4. In a pen-puller, the combination of two arms adapted to be operated by the hand, free at one end and pivoted together at the other, and two clamping-jaws provided with terminal studs rounded and pointed and adapted to engage with the concave and convex sides of a pen when the said arms are compressed together and grasp the same without injury to or distortion of shape of said pen, substantially as described.

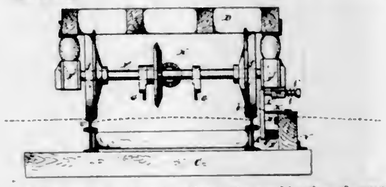
5. As an article of manufacture, a device for extracting pens from pen-holders and for like purposes, consisting of the opposite handles A and A', having curved ends A^{13} and A^{13}, both curved downward, face-plates A^4 and A^5, pivoted together by the cross-pivot B, beveled surface A^{10}, and laterally-projecting opposite jaws A^3 and A^3, having terminal grasping-studs a^3 and a^3, said jaws located between said pivot and said handles, substantially as described.

6. In a pen-puller, the combination of movable arm A, having terminal pivot B, and lateral jaw A^3 between said pivot and the free end of said arm, with the opposite jaw A^3, pivoted at B to said arm A, said jaw A^3 provided with screw-hole A^{14} or similar means for attaching the same to a desk or table, substantially as described.

7. In a pen-puller, the combination of the opposite arms A A', free to be operated by the hand at one end and pivoted together at the other end, said arms having opposite jaws A^3 and A^3 formed integral therewith, said jaws terminating in studs a^3 and a^3, adapted to engage with each other when the said handles are made to approach each other, said studs so constructed as to grasp a pen by its concave and convex upper and lower sides and to permit the said pen to be swung around upon the contact-faces of said studs a^3 and a^3 as upon a pivot without injury to or distortion of said pen and without releasing the grasp upon the same, substantially as and for the purposes described.

8. As an article of manufacture, the pen-puller consisting of the handles A and A', face-plates A^4 and A^5, and clamping-jaws A^3 and A^3, the whole forming two separate parts pivoted together at one end and said pivot B formed integral with one of said parts, the opposite face-plate pierced with the hole A^{12}, said pivot adapted to pass through said hole and be headed up against the opposite side of said opposite face-plate, so as to give free clearance for a pen-holder C when laid along said pen-puller, the pen C^2 extended forward between and adapted to be grasped by said jaws A^3 and A^3, substantially as described.

445,674. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Filed Jan. 14, 1889. Serial No. 296,292. (No model.)



Claim.—1. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle, an electrically-propelled vehicle, and depending collectors to receive electricity from said bared conductors, supported by the axle-box of the vehicle, substantially as and for the purpose specified.

2. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle, an electrically-propelled vehicle, and depending collectors to receive electricity from said bared conductors, supported by the axle-box of the vehicle and arranged upon the outside of the wheels, substantially as and for the purpose specified.

3. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle, an electrically-propelled vehicle, and depending collectors to receive electricity from said bared conductors, supported by the axle-box of the vehicle, arranged upon the outside of the wheels and in line with their tread upon the rails or in a vertical line through the axles, substantially as and for the purpose specified.

4. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and an insulated working-conductor contained within said conduit.

5. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and a positive and negative insulated working-conductor contained within said conduit.

6. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, an insulated working-conductor contained within said conduit, a traveling vehicle, and a current-collecting device arranged outside of the wheel-base of said vehicle and depending into the conduit for making connection with the working-conductor

7. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and positive and negative insulated working-conductors contained within said conduit, a traveling vehicle, and two current-collectors carried thereby and arranged upon the outside of the wheel-base, one in advance of the other, and depending into the conduit for making connection with the working-conductors.

8. The combination of a railway-track with a conduit arranged upon the outside thereof and a working-conductor housed therein and insulated therefrom.

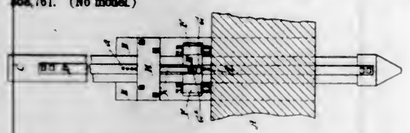
9. The combination of a railway-track with a conduit arranged upon the outside thereof and a working-conductor housed therein and insulated therefrom, and common supporting cross-ties for both the rails and conduit.

10. The combination of a railway, a conduit arranged outside of the track, an insulated working-conductor housed within said conduit, and connections between the track structure and conduit, whereby they are maintained in relatively fixed positions.

11. In an electric railway, the combination of a traveling vehicle, a stationary source of electric supply, a bared working-conductor extending along the path of the vehicle, and a current-collector device of less width than the diameter of the wheel and supported immediately outside of the wheel of the vehicle.

12. The combination of the track-rails of a railway with an electric slotted conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and positive and negative bared conductors contained within the conduit and consisting of longitudinal bars having vertical or substantially vertical faces exposed to a vertical plane extending through the slot.

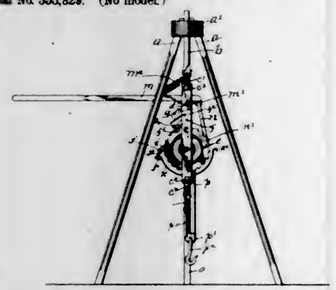
445,675. APPARATUS FOR HOLDING DREDGES IN PLACE. JOHN KENNEDY, Montreal, Canada. Filed July 14, 1890. Serial No. 358,761. (No model.)



Claim.—1. The combination, with the hull of a dredge, of the spud, a vertical strap or straps secured thereon and perforated, a horizontal bar carried on guide-posts and perforated, and a locking device securing strap and bar together, as herein set forth.

2. The combination, with the hull of a dredge, of the spud carrying longitudinally a perforated strap or straps, bar or bars carried in sockets and perforated, and palm having projections fitting into perforations in straps and bars, all as and for the purposes described.

445,676. STUMP-EXTRACTOR. LEVI KRING and JOSIAH BAUGHMAN, Westerville, Ohio; said Baughman assignor, by mesne assignments, to A. W. Kring, Franklin County, Ohio. Filed June 18, 1890. Serial No. 355,829. (No model.)



Claim.—1. In a stump-extractor, the combination, with a tripod *n*, a yoke-frame suspended therefrom, and elevating ratchet-wheels *e*, journaled in said yoke and connected centrally by a central sprocket-hub *f*, of a lever *m*, fulcrumed vertically above said sprocket-hub, and a lever-arm *s*, depending from said lever and engaging, as described, with both the wheels *e*, substantially as specified.

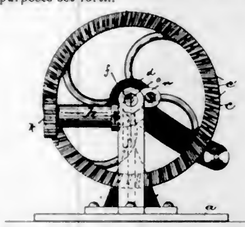
2. In a stump-extractor, the combination, with a tripod *n*, a yoke-frame centrally suspended therefrom, elevating ratchet-wheels *e*, journaled in said yoke and connected centrally by a central sprocket-hub *f*, brake-supporting arms *i*, pivoted, as described, within the yoke, and brake-bars *k*, having end hooks *k'* and jointedly connected with said brake-supporting arms by a link and supported beneath said ratchet-wheels, of a lever *m*, fulcrumed vertically above the hub-sprocket, and arm *s*, depending from said lever-head and adapted to engage, as described, with the teeth of both ratchet-wheels or with both the hooks *k'*, substantially as specified.

3. In a stump-extractor, the combination, with the derrick and a frame-yoke suspended centrally therefrom, of ratchet-wheels journaled within said yoke, a central sprocket-hub connecting said wheels, a chain depending from the yoke-frame and a sprocket-wheel suspended by said chain, the latter leading from said sprocket-wheel to the said sprocket-hub, a suitable hook depending from said suspended sprocket-wheel, a lever fulcrumed vertically above the sprocket-hub, and a ratchet-operating arm depending from said lever-head and engaging both the ratchet-wheels, substantially as described.

445,677. PENCIL-SHARPENING MACHINE. FRANCIS M. LIVINGSTON, Newark, N. J. Filed June 6, 1890. Serial No. 354,506. (No model.)

Claim.—1. The improved filing-machine for sharpening lead-pencils, combining with a file revolving on two axes a bearing revolving on one axis on the face of said file, the center of motion of which is eccentric to the center of movement of said file, substantially as set forth.

2. The improved pencil-sharpener, combining with a file revolving with a carrier on a crank-shaft and also on its own axis, a bearing for the pencil, also revolving on the said carrier and arranged adjacent to the face of said file, whereby the point of the pencil may be interposed between said file and bearing, the center of movement of the bearing being eccentric to the center of movement of the file, substantially as and for the purposes set forth.



3. The improved sharpener herein described, combining therein a bed-plate having an arm *a'*, a crank-shaft and fixed cog-wheel or annular rack arranged on said arm, a carrier arranged on said crank-shaft and provided with bearings for a sleeve *p'*, said sleeve having an inclined longitudinal perforation for a shaft for a sharpening-tool, and the said shaft and a pinion arranged thereon and engaging the annular rack, said carrier being also provided with a bearing between which and the sharpening-tool the said pencil may be inserted, substantially as set forth.

4. In a sharpening device for pencils, &c., the combination of an inclined file, and a bearing provided with a flaring or funnel-shaped recess, arranged and adapted to sharpen the pencil, substantially as set forth.

5. In a sharpening device, a revolving sharpening-tool and a funnel-shaped bearing, substantially as and for the purposes set forth.

6. In a sharpening device, a carrier revolving with a sharpening-tool and bearing *n*, in combination with a post or bearing *p*, arranged in front of said revolving tool and bearing *n*, substantially as and for the purposes set forth.

7. The combination, with a file revolving on its own axis and with its carrier and a bearing *n*, of a stationary bearing *p*, adapted to receive and hold the pencil, substantially as and for the purposes set forth.

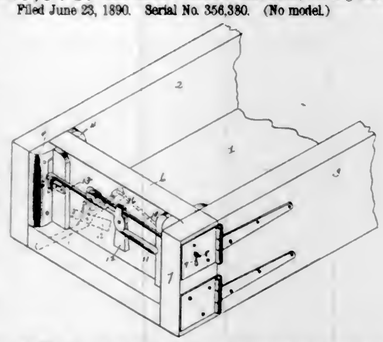
8. In a pencil-sharpening tool, a file having an irregular and roughened surface, whereby the pencil will be given other than a straight bevel or true conical form at the point, substantially as set forth.

9. In a pencil-sharpening tool, the combination, with the revolving carrier *d*, of the shaft *e*, arranged in an adjustable sleeve having an inclined shaft perforation, and a sharpening-tool arranged on said shaft, substantially as set forth.

10. In a pencil-sharpener, the combination, with the revolving carrier and shaft *e*, of a sharpening-file *f*, removably fastened on said shaft, and means for revolving said shaft and carrier, substantially as set forth.

11. In a pencil-sharpener, the combination, with the carrier and revolving sharpening-tool, of the adjustable and removable bearing *r*, substantially as set forth.

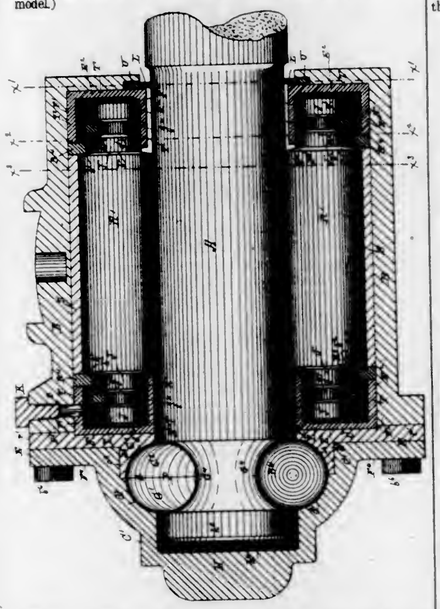
445,678. END-GATE. JAMES P. MARSHALL, Bowling Green, Ohio. Filed June 23, 1890. Serial No. 356,380. (No model.)



Claim.—1. In an end-gate, the combination of a hand-lever, rods carried thereby and connecting with the sides of the wagon, a flange formed on the said lever and adapted to engage one of the rods, and a locking-latch adapted to engage said flange.

2. In an end-gate, the combination, with one of the sides of the wagon, of a swinging section secured thereto carrying an eyebolt, a rod pivoted to the said eyebolt, a hand-lever carried by the said rod, and a rod carried by the hand-lever and adapted to engage a permanent portion of the wagon.

445,679. ROLLER-BEARING. CHARLES D. MENEELY, Albany, and JOHN GIBBONS, West Troy, assignors to the Meneely Hardware Company, West Troy, N. Y. Filed Aug. 28, 1890. Serial No. 363,337. (No model.)



Claim.—1. The combination, with an axle provided with friction-rollers having end journals that are grooved circumferentially, and a separator made with an encircling groove and arranged to run on said journals, and an inner track between each two of said rollers at each end thereof, a ring arranged to encircle said separators, and journals at each end of the latter, substantially as described, of the bearing-box B, made with the interiorly-placed sleeve S, the latter having the same length as the rollers where engaging with the box, a ring R^4, adapted to encircle the interior of said box, so as to abut against the sleeve at each end thereof and therefrom to project inwardly and lap past the ends of the rollers where having a larger diameter than the journals thereon, and the annular track T, made with the flanges F' F^3, constructed and arranged to operate substantially in the manner as and for the purposes set forth.

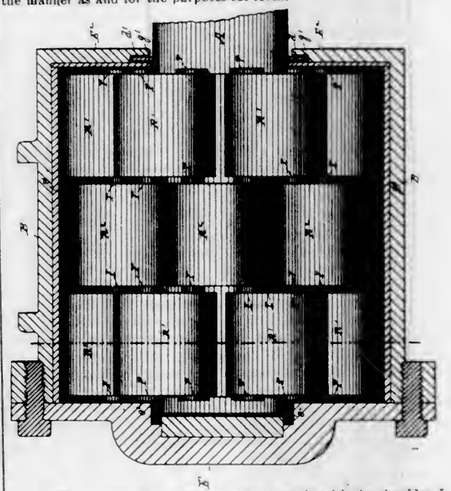
2. The combination, with the bearing-box B, made with the sleeve S, inside track T, rollers R', separators R^4, and rings R^4, of the axle A, made with the annular groove G^4, the cap part C', made with the head H, flange F^4 on its outer face, and the annular recess c^3, annular concavity d^3 on its inner face, and the cap part C^3, made with the rim r', annular shoulder d^5, and annular concavity d^3, substantially in the manner as and for the purposes set forth.

445,680. ROLLER-BEARING. CHARLES D. MENEELY, Albany, N. Y. Filed Sept. 10, 1890. Serial No. 364,525. (No model.)

Claim.—1. The combination, with a bearing-box and axle, of a series of tube-form rollers that in length are shorter than the bearing-box, with said rollers arranged to be in axial alignment with the axle and to break joints or lap past each other at their inner ends, with rods arranged to pass through said rollers to alternatingly interweave or interlock said rollers around the axle between the latter and the bearing-box, substantially in the manner as and for the purposes set forth.

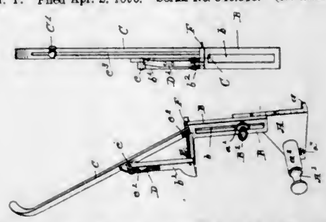
2. The combination, with a bearing-box and axle, of tube-form rollers that in length are shorter than the bearing-box, with said rollers arranged to be in axial alignment with the axle and to break joints at their inner ends, with two rods passing through each of the rollers that are in alignment with each other, and alternatingly through each two of the rollers where breaking joints at the ends of the rollers in alignment with each other in connected series around the axle between the latter and the bearing-box, substantially in the manner as and for the purposes set forth.

3. The combination, with the axle A, made with the shoulder J and the end ring D, of the bearing-box B, made with the sleeve S, the tube-form rollers R' and R^3, arranged between said bearing-box and axle, so as to be in axial alignment with the latter, but to break joints and lap past each other at their ends, and the rods I, arranged to pass through said rollers from end to end of the bearing, substantially in the manner as and for the purposes set forth.



4. The combination, with the axle A, made with the shoulder J, the end ring D, and rings M, of the bearing-box B, made with the sleeve S, the tube-form rollers R' and R^3, arranged between the bearing-box and axle, so as to be in axial alignment with the latter, but placed so as to break joints or lap past each other at their ends, and the rods I, made with the end flanges F and arranged to pass through said rollers from end to end of the bearing, substantially in the manner as and for the purposes set forth.

445,681. CLAPBOARD-HOLDER. BENJAMIN F. MOONEY, Olean, N. Y. Filed Apr. 2, 1890. Serial No. 346,813. (No model.)



Claim.—1. An adjustable gage for clapboards, comprising the parts A B, a suitable awl attached to the former, a marking-arm or rocker pivotally connected to the latter, having a longitudinal groove or slot, a movable marker C, fitting therein, and a spring for holding said arm in its normal position, substantially for the purpose set forth.

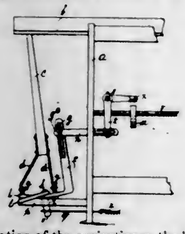
2. An adjustable gage for clapboards, comprising the parts A B, a suitable awl attached to the former, a marking-arm or rocker pivotally connected at a point between its ends nearest its lower end to the part *b'* of the latter, and a spring for holding said arm or rocker in its normal position, substantially for the purpose set forth.

445,682. SHUTTLE-OPERATING MECHANISM FOR LOOMS. SAMUEL TURNER, New Bedford, Mass. Filed July 2, 1890. Serial No. 357,480. (No model.)

Claim.—1. The combination of a picker-stick having a forked lower end with a base having a pivotal motion in the plane of the lay, to which base said fork is pivoted, whereby the upper end of the picker-stick is allowed free motion with the lay, a standard projecting

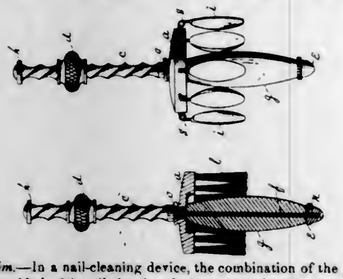
upward from said base and alongside of the picker-stick, adapted to be adjustably connected with the sweep-bar of the loom, whereby a greater or less throw is given to the picker-stick, and means to retract the picker-stick to its normal position, all as shown and described.

2. The combination of the picker-stick *c*, provided with the arms *d d*, the base *i*, provided with standard *f*, having slot *g*, the ears *y y*, to which the arms *d d* are pivoted, the hook *h*, and the projection *k*, having notch *m*, the projection *p*, having mortise *z*, the link *l*, the sweep-bar *n*, provided with wrist-pin adapted to be adjusted in the slot *g*, whereby a greater or less throw is given to the picker-stick, means for operating said sweep-bar, and means to retract the picker-stick to its normal position, all as shown and described.



3. The combination of the projection *p*, the base *i*, pivoted to said projection and provided with the ears *y y*, projection *k*, and standard *f*, having slot *g*, the picker-stick *c*, provided with arms *d d*, pivoted to the ears *y y*, whereby the upper end of the picker-stick is allowed free motion with the lay, the sweep-bar *n*, provided with wrist-pin adapted to be adjusted in the slot *g*, whereby a greater or less throw is given to the picker-stick, means for operating said sweep-bar, and means to retract the picker-stick to its normal position, all as shown and described.

445,683. NAIL BRUSH AND POLISHER. HENRY WEBER, New Bedford, Mass. Filed Apr. 16, 1890. Serial No. 348,281. (No model.)



Claim.—In a nail-cleaning device, the combination of the part *g*, a disk provided with nail-cleaning devices, a standard having a spiral surface made to be removably attached to said disk, and a nut adapted to slide back and forth on said spiral surface, whereby reciprocating rotary motion is imparted to said standard and disk, and means for securing said standard to the part *g*, whereby it may rotate independently of said part *g*, substantially as described.

445,684. PINK DYE. FRITZ BENDER, Mühlheim, Germany, assignor to A. Leonhardt & Co., same place. Filed July 25, 1890. Serial No. 359,916. (No model.) Patented in France Aug. 24, 1889, No. 200,401.

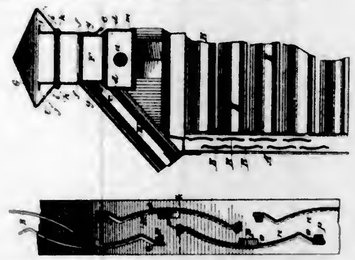
Claim.—1. The herein-described improvement in the art of obtaining pink coloring-matters, consisting in treating tetramethyl or tetraethyl diamidodiphenylmethane oxide with oxidizing agents.

2. The herein-described improvemeot in the art of obtaining pink coloring-matters by treating tetramethyl or tetraethyl amidodioxydiphenylmethane with dehydrating agents in order to produce tetramethyl or tetraethyl diamidodiphenylmethane oxide, and treating the latter with oxidizing agents.

3. The herein-described improvement in the art of obtaining pink coloring-matters by treating dimethyl or diethyl meta-amidophenol with formaldehyde in order to produce tetramethyl or tetraethyl diamidodioxydiphenylmethane, treating the latter with dehydrating agents in order to produce tetramethyl or tetraethyl diamidodiphenylmethane oxide, and treating the latter with oxidizing agents.

4. The basic coloring-matters herein described, consisting of crystals or a crystalline powder dissolving easily in water or spirits, giving a beautiful red solution showing a brilliant yellowish fluorescence and having the properties that its watery solution when treated with soda-lye allow the free base of the coloring-matter to separate in the form of a reddish-violet precipitate, and that when it is dissolved in concentrated sulphuric acid it gives an orange solution, which when diluted with much water turns to bluish red.

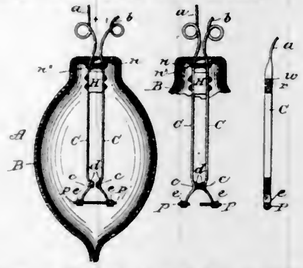
445,685. SKYLIGHT. GEORGE BICKELHAUPT, New York, N. Y. Filed June 21, 1890. Serial No. 356,245. (No model.)



Claim.—1. The hood-support F, constructed with substantially vertical walls in its lower part and having the sides *d* above said lower part bent inwardly to form the rest *e*, also doubled inwardly to form the groove *f*, and beaded at *h* to form a hood-rest, and bent to form a deflector *j*, in combination with the hood G, rafters E, and shield *g*, substantially as described.

2. The frame A, having grooves *n*, shaped like the concavo-convex slats or bars B, and perforations *o*, in combination with the bars or slats B, having the projections *p*, as and for the purposes described.

445,686. CUT-OUT FOR INCANDESCENT LAMPS. TURNER D. BOTTOME, New York, assignor to John B. Tibbits, Hoosick, N. Y. Filed July 25, 1889. Serial No. 318,688. (No model.)



Claim.—1. The combination of the current-wires *a b*, the two bent metallic spring-arms electrically connected to said wires, an insulating-body interposed between and secured to the upper portion of the spring-arms, a metallic projection, as *d*, secured to or forming a part of the spring-arms at their lower adjacent sides and having a straight filament mounted at right angles in their lower ends, as described, and for the purpose set forth.

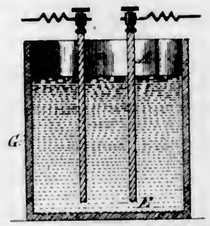
2. The combination, within a hermetically-sealed globe, of two depending spring-arms united to electrical conducting-wires passing through said globe, an insulating-block interposed between the upper adjacent faces of the spring-arms and secured thereto, a straight filament mounted in the lower ends of the said arms to produce a closed circuit, and a surface or projection formed on each of the inner adjacent faces of the lower portion of the arms, substantially as described.

3. An electric cut-out consisting of a straight filament mounted at right angles in two spring-arms having a portion of their inner adjacent faces near the lower ends thereof normally separated by the integrity of the said straight filament and adapted upon the rupture of the filament to keep the circuit closed, substantially as described.

445,687. ASYMMETRICAL ELECTRICAL RESISTANCE. TURNER D. BOTTOME, Hoosick, N. Y. Filed Jan. 28, 1890. Serial No. 338,433. (No model.)

Claim.—1. An asymmetrical conductor consisting of a fluid medium composed of chemical substances, through which an alternating electric current is passed by means of two electrical conducting-electrodes, both being immersed therein, one electrode consisting of an inoxidizable metal or element, the other of a metal that becomes superficially oxidized and deoxidized alternately, substantially as and for the purpose shown and described.

2. An asymmetrical electrical conductor consisting of two dissimilar electrical conducting metals, both inoxidizable while immersed in a chemical conducting medium, one of the metals being subject to changes in its electrical conductance under the influence of electro-chemical action, the other metal being inert, substantially as herein described.



3. An asymmetrical conductor consisting of a chemical conducting medium placed between inoxidizable conducting elements, one of the said elements being inert, the other having the property of having its electrical conductance changed from a low to a high resistance alternately while subjected to the action of an alternating electric current, substantially as described.

4. An asymmetrical conductor consisting of a device for directing alternating electric currents, composed of a fluid chemical conducting medium interposed between a plate of some inert conducting metal or element and a plate of aluminum, as described.

445,688. INCANDESCENT ELECTRIC LAMP. TURNER D. BOTTOME, Hoosick, N. Y. Filed Nov. 8, 1890. Serial No. 370,823. (No model.)

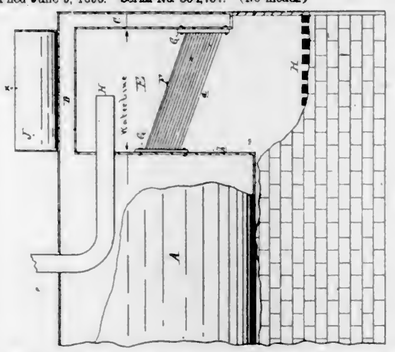


Claim.—1. In the manufacture of incandescent electric lamps, a conductor composed of an alloy of silver, platinum, and nickel for electrically connecting with and hermetically sealing a filament in a glass bulb, substantially as described.

2. In the manufacture of incandescent electric lamps, an electrical conductor composed of an alloy of silver, platinum, and nickel or cobalt in the proportions described.

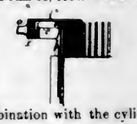
3. In the manufacture of incandescent electric lamps, an infusible non-oxidizable electrical conductor having the same coefficient of expansion as glass, consisting of an alloy of silver, platinum, and nickel or cobalt, as described.

445,689. STEAM-BOILER. RUSSELL BOTTSFORD, Cleveland, Ohio. Filed June 9, 1890. Serial No. 354,757. (No model.)



Claim.—In a steam-boiler, the combination of the main boiler A, provided with side and front water-legs B C, respectively, and inclosing a combustion-chamber having a smoke-outlet H, a series of inclined water-conducting tubes *a*, communicating with the foot of the front water-leg C and with the head *b* of the main water-holding section A of the boiler below the water-line thereof, and a shell J, adapted to embrace the side water-legs and form a magazine for conducting fuel to the grate below, the parts being constructed, arranged, and operating in the manner and for the purposes described.

445,690. CIRCULAR-KNITTING MACHINE. EDWIN R. BRANSON, Philadelphia, Pa. Filed Jan. 18, 1887. Serial No. 224,734. (No model.)



Claim.—1. In combination with the cylinder of a circular-knitting machine, a wheel-support and one or more presser-wheels H H secured thereto at an angle to the cylinder, substantially as and for the purpose specified.

2. In combination with the cylinder of a circular-knitting machine, a wheel-support and one or more presser-wheels H H, made of rubber or other elastic material and secured to the support so as to be at an angle to the cylinder, substantially as and for the purpose specified.

3. In combination with the cylinder of a circular-knitting machine, a wheel-support, presser-wheels H H, secured thereto at an angle to the cylinder, and the stationary web-retaining device F, substantially as and for the purpose specified.

4. The combination, with the needle-cylinder, of a wheel-support, the presser-wheels H H, secured thereto, and the stationary work-retaining device F, with the hinged arm B and the spring D, substantially as and for the purpose specified.

5. The combination, with the needle-cylinder, of a wheel-support, the presser-wheels H H, secured thereto, and stationary work-retaining device F, with the hinged arm B, having the yarn-carrier E and the spring D, substantially as and for the purpose specified.

6. In combination with the needle-cylinder, the segment I, having an upwardly-turned edge i', and an oscillating extensible support for the segment, whereby it is sustained above the cylinder and in position to engage the needle-hooks, all substantially as and for the purpose specified.

7. In combination with the needle-cylinder, the segment I, having an inwardly-extending flange i^3, and an oscillating extensible support for the segment, whereby it is sustained above the cylinder and in position to engage the needle-heads, all substantially as and for the purpose specified.

8. In combination with the needle-cylinder, the segment I, having an upwardly-turned edge i' and an inwardly-extending flange i^3, and an oscillating extensible support for the segment, whereby it is sustained above the cylinder and in position to engage the needle-hooks, all substantially as and for the purpose specified.

9. In combination with the needle-cylinder, the segment I, having an upwardly-extending flange i' and an inwardly-extending flange i^3, an oscillating extensible support for the segment, whereby it is sustained above the cylinder and in position to engage the needle-heads, a spring P, arranged to draw the segment inward, and an adjustable stop M to counteract the said spring, all substantially as and for the purpose specified.

10. The combination, with the driving-shaft of a knitting-machine, of fast and loose pulleys R R', a loose gear-wheel T, and a longitudinally-movable grip or clutch U, all secured upon said shaft, a rack V, engaging gear-wheel T, and an actuating-crank X, connecting with said rack, all substantially as and for the purpose specified.

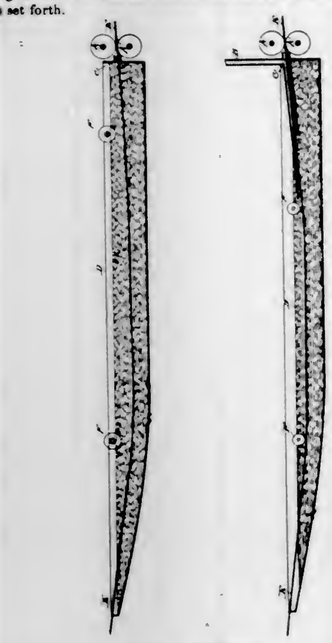
445,691. PROCESS OF AND APPARATUS FOR PRODUCING HOT-ROLLED COPPER FREE FROM OXIDATION. GEORGE W. CUMMINS, Vienna, N. J., assignor, by mesne assignments, of one-half to Margaret A. Coleman, New York, N. Y. Filed June 9, 1890. Serial No. 354,753. (No model.)

Claim.—1. The process of obtaining bright hot-rolled copper, consisting in passing the copper, while still hot, from the last rolls into a body of water, so as to exclude the copper from contact with atmospheric air until sufficiently cooled by the water, substantially as set forth.

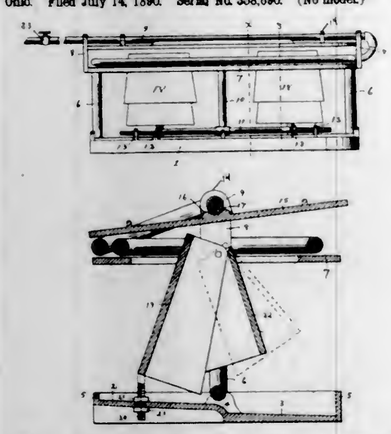
2. In combination with a pair of rolls adapted to hot-roll copper, a water-tank located in relation to said rolls so that a rod, bar, or sheet of hot copper may pass from said rolls into said tank below the surface of the water until cooled below its oxidizing-point in atmospheric air, substantially as set forth.

3. In combination with a pair of rolls adapted to hot-roll copper, a water-tank provided with a passage-way between the same and said rolls, whereby a stream of water is led to and between the rolls as a covering or protecting medium for preventing the oxidation of the copper by atmospheric air, substantially as set forth.

4. In combination with a pair of rolls adapted to hot-roll copper, a water-tank provided with a passage-way between the same and said rolls and having a feed-pipe leading to said passage-way, whereby a stream of water is led to and between the rolls as a covering or protecting medium for the hot copper, substantially as and for the purposes set forth.



445,692. HYDROCARBON-BURNER. BENJAMIN G. DEVOR, Lima, Ohio. Filed July 14, 1890. Serial No. 358,690. (No model.)



Claim.—1. In a hydrocarbon-burner, a concentrating-pan having a double-incline bottom, an open-ended jet-pipe having suitable jet-orifices, said pipe being shorter than the pan and located horizontally over it, and a supply-pipe located above and communicating with the jet-pipe, for the purposes set forth.

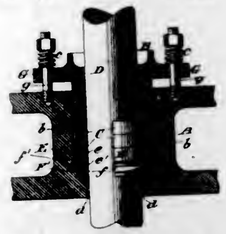
2. In a hydrocarbon-burner, a pan having a double-incline bottom, an open-ended jet-pipe having suitable jet-orifices, said pipe being shorter than the pan and located horizontally over it, valves for closing the ends of the jet-pipe when desired, and a supply-pipe located above and communicating with the jet-pipe, for the purposes set forth.

3. In a hydrocarbon-burner, a concentrating-pan, an open-ended jet-pipe having suitable jet-orifices located horizontally over said pan, a frame supported by the pan, a supply-pipe supported by said frame and communicating with the jet-pipe, a tilting deflector suspended from the supply-pipe, and a mixer located between the jet-pipe and deflector, for the purposes set forth.

4. In a hydrocarbon-burner, a pan having a double-incline bottom, an open-ended jet-pipe having jet-orifices in its upper side, said pipe being shorter than the pan and located over it, a frame supported by the pan, a supply-pipe supported by said frame and communicating with the jet-pipe, a tilting deflector between the supply-pipe and jet-pipe, and an adjustable mixer between the jet-pipe and deflector, as set forth, and for the purposes stated.

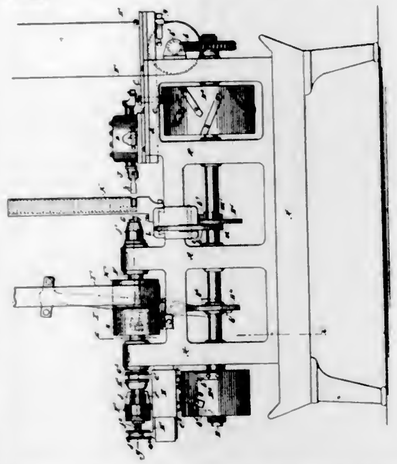
5. In a hydrocarbon-burner, a pan having a double-incline bottom, an open-ended jet-pipe having jet-orifices in its upper side, said pipe being shorter than the pan and located over it, valves for closing the ends of the jet-pipe when desired, a frame supported by the pan, a supply-pipe supported by said frame and communicating with the jet-pipe, a deflector having pivotal connection with the supply-pipe, and an adjustable mixer supported by the pan, all as described, and for the purposes set forth.

445,693. PACKING FOR STUFFING-BOXES. HAMLET E. FORREST, New York, N. Y., assignor to Watson & Stillman, same place. Filed July 25, 1890. Serial No. 359,895. (No model.)



Claim.—The combination, with the stuffing-box, the piston-rod, and the packing, of the valve-ring at the end of the packing, the seat-ring having one face upon which the valve-ring has a sliding engagement, and its opposite face toward the end of the stuffing-box adjacent to the cylinder-head being beveled, so as to recede from its seat as it extends outwardly from the piston-rod and form a space for cement or permanent packing, and its face toward the valve-ring being of substantially the same width as the adjacent face of the valve-ring, the outer margin of its said upper bearing-face being spaced from the inner wall of the stuffing-box, substantially as set forth.

445,694. TURRET-LATHE. WILLIAM L. GROUT and EDWARD L. BOWERS, Orange, Mass. Filed May 24, 1890. Serial No. 353,016. (No model.)



Claim—1. In a magazine-machine for carrying and presenting blanks to shaping tools, the combination, with a chuck and rotating spindle provided with a tight and a loose pulley, of a brake, a belt-shifter provided with a lever for engagement with said brake, and means for operating said belt-shifter, substantially as described, and for the purpose set forth.

2. In a machine for carrying and presenting blanks for shaping, provided with a magazine, gripping device, and chuck, the combination, with a rotating spindle provided with a tight and a loose pulley thereon, of a stop located on said tight pulley, a belt-shifter provided with a lever for engagement with said stop, and means for operating said belt-shifter, substantially as described, and for the purpose set forth.

3. In a magazine-machine, the combination, with a rotating spindle provided with a tight and a loose pulley, of a stop or projection located on said tight pulley, an automatically-vibrating belt-shifter provided with an arm or lever for engaging said stop or projection, and means for automatically vibrating said belt-shifter, substantially as described, and for the purpose set forth.

4. In a machine for carrying and presenting blanks for being shaped, provided with a magazine-gripping device for withdrawing blanks from the magazine, the combination, with a chuck and a rotating spindle provided with a tight and a loose pulley, of a stop supported by said tight pulley, a brake adapted for engagement with said tight pulley, a belt-shifter provided with a stop-lever and a brake-lever, and means for operating said belt-shifter, substantially as described, and for the purpose set forth.

5. In a machine for carrying and presenting blanks for being shaped, provided with a magazine and means for automatically withdrawing the blank therefrom, the combination, with a rotating spindle provided with a tight and a loose pulley, of a brake, a belt-shifter, a brake-lever supported by said belt-shifter and provided with an adjusting-screw for adjusting the action of said brake, and means for operating said belt-shifter, substantially as and for the purpose set forth.

6. In a magazine or other machine, the combination, with a rotating spindle provided with a tight and a loose pulley, of the said loose pulley, being provided with a friction-brake, and means for engaging said tight pulley to check its rotation and thereby the said rotating spindle, substantially as described, and for the purpose set forth.

7. In a magazine or other machine, the combination, with a rotating spindle provided with a tight and a loose pulley, of a friction-brake carried by said loose pulley for engagement with the rotating spindle, a stop or projection located on said tight pulley, and a belt-shifter provided with an arm or lever for engagement with said arm or projection, substantially as described, and for the purpose set forth.

8. In a magazine or other machine, the combination, with a rotating spindle provided with a tight and a loose pulley, of a brake and a belt-shifter provided with an arm or lever for engagement with said brake, substantially as described, and for the purpose set forth.

9. In a magazine or other machine, the combination, with a rotating spindle provided with a tight and a loose pulley, of a stop or projection located on and projecting from said tight pulley, and a belt-shifter provided with an arm or lever for engaging with said stop or projection to stop the rotation of said pulley and supporting rotating spindle, substantially as described, and for the purpose set forth.

10. The combination, with a turret-carriage and supporting-frame, of a spring-bunter or checking device adjustably supported in a fixed position on said carriage or part thereof and adapted to engage with the frame or part thereof to adjust the speed of and stop at the end of its throw the said turret-carriage, substantially as described, and for the purpose set forth.

11. The combination, with a turret-carriage and supporting-frame, of a bunter or checking device supported by said carriage, consisting of a supporting shell or frame and a spring-actuated rod or buffer projecting one end of said shell or frame, substantially as described, and for the purpose set forth.

12. The combination, with a hollow spindle provided with one or more slots, of a chuck or gripping device provided with a counterpart adapted to intersect with said slots, substantially as and for the purpose set forth.

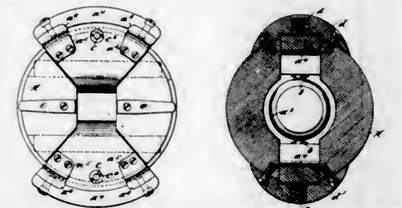
445,695. CHUCK FOR TURNING-LATHES. WILLIAM L. GROUT and EDWARD L. BOWERS, Orange, Mass. Filed May 24, 1890. Serial No. 353,017. (No model.)

Claim.—1. A chuck consisting of a supporting shell or frame, gripping-jaws pivotally supported thereby, provided with yielding or springy arms, and a reciprocating rod or shaft provided with a tapering end adapted to engage the said arms, substantially as and for the purpose set forth.

2. A chuck consisting of a supporting shell or frame, jaws pivotally supported by said shell or frame and provided with spring-actuated pins or arms projecting their face, and a sliding tapering device adapted to engage said jaws, substantially as described, and for the purpose set forth.

3. A chuck consisting of a supporting shell or frame, jaws pivotally supported by said shell or frame and provided with adjusting-screws supported therein, and a sliding tapering device for engaging said adjusting-screws to operate the jaws, substantially as described, and for the purpose set forth.

4. A chuck consisting of a supporting shell or frame, jaws pivotally supported by said shell or frame and provided with detachable plates secured on their engaging surfaces, a reciprocating rod or shaft provided with a tapering end, and springs for engaging with and operating said jaws, substantially as described, and for the purpose set forth.



5. A chuck consisting of a supporting shell or frame provided with springs on the front end thereof, jaws pivotally supported by said shell or frame, a reciprocating tapering device, and springs for opening and closing said jaws, substantially as described, and for the purpose set forth.

6. A chuck consisting of a supporting shell or frame provided with springs on the front end thereof and jaws pivotally supported by said shell or frame, provided with spring-actuated pins or arms projecting their front face, substantially as described, and for the purpose set forth.

7. A chuck consisting of a supporting shell or frame provided with gripping-jaws pivotally supported thereby, a reciprocating rod or shaft provided with a tapering end, and springs for engaging with and operating said jaws, substantially as described, and for the purpose set forth.

8. A chuck consisting of a supporting shell or frame and jaws pivotally supported by said shell or frame, provided with spring-actuated pins or rods projecting the front face thereof, substantially as described, and for the purpose set forth.

9. A chuck consisting of a supporting-frame provided with springs on the front end thereof and gripping-jaws pivotally supported by said supporting-frame, substantially as described, and for the purpose set forth.

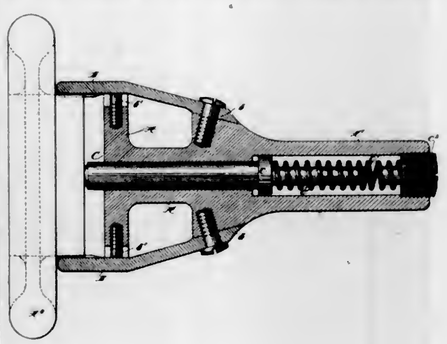
10. A chuck consisting of a supporting-frame provided with jaws pivotally supported thereby, a sliding tapering device, and springs supported in caps or pockets on the said frame for operating said jaws, substantially as described, and for the purpose set forth.

11. A chuck consisting of a supporting-frame provided with jaws pivotally supported thereby, a sliding tapering device, and springs supported in caps or pockets detachably secured to the said frame for engaging with and operating the jaws, substantially as described, and for the purpose set forth.

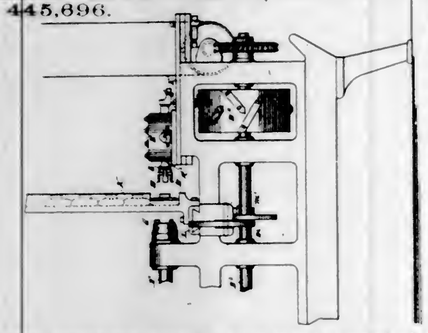
445,696. GRIPPING DEVICE FOR LATHES. WILLIAM L. GROUT and EDWARD L. BOWERS, Orange, Mass. Filed May 24, 1890. Serial No. 353,018. (No model.)

Claim.—1. In combination with a turret and operating mechanism, a gripping device consisting of a supporting-shank provided with jaws attached thereto and a spring-actuated rod or pushing device, arranged substantially as described, and for the purpose set forth.

2. In combination with a turret and operating mechanism, a gripping device consisting of a supporting shank or frame provided with



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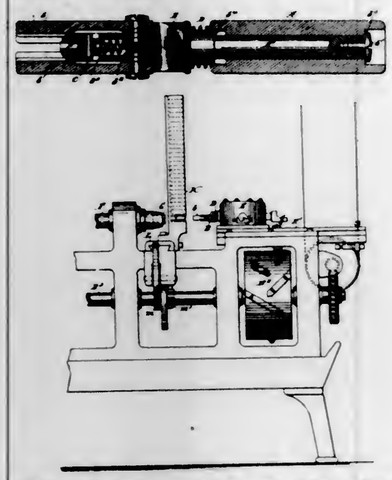


yielding gripping-jaws secured thereto and a spring-actuated rod or pushing device projecting the front end thereof, substantially as described, and for the purpose set forth.

3. In combination with a turret and operating mechanism, a gripping device consisting of a supporting shank or frame provided with gripping-jaws secured thereto, screws for adjusting the free ends of said jaws, and a centrally-located spring-actuated rod or pushing device projecting the front end thereof, substantially as described, and for the purpose set forth.

4. The combination, in a turret-lathe, with the turret and carriage, a chucking device, magazine, and operating mechanism, of a gripping device carried by said turret, consisting of a supporting shank or frame provided with gripping-jaws secured thereto and projecting the front end thereof and a spring-actuated rod or pushing device, arranged substantially as described, and for the purpose set forth.

445,697. GRIPPING DEVICE FOR LATHES. WILLIAM L. GROUT and EDWARD L. BOWERS, Orange, Mass. Filed May 24, 1890. Serial No. 353,019. (No model.)



Claim.—1. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell for attachment with said turret, and a frame or shank provided with gripping-jaws secured thereto and with a stem extending within said supporting-shell, by which said frame or shank is supported, and a spring located between the adjacent ends of said supporting-shell and the frame or shank in a manner whereby the latter is elastically supported in its relation to the former, substantially as described, and for the purpose set forth.

2. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell adapted for attachment with said turret, and a revolving spindle or frame provided with gripping-jaws supported by said supporting-shell at one side of its center, in a manner substantially as described, and for the purpose set forth.

3. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell for attachment with said turret, a frame or shank provided with gripping-jaws secured thereto, a spring-actuated rod or pushing device projecting its front end thereof, and a stem at its rear end projecting within said supporting-shell in a manner to support said frame or shank and the several parts supported thereby and allow the same to rotate, substantially as described, and for the purpose set forth.

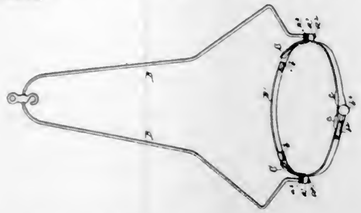
4. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell for attachment with the turret, a frame provided with gripping-jaws secured thereto, a spring-actuated rod or pushing device supported therein and projecting its front end thereof, provided with a projection thereon which extends and operates within a slot in said frame to limit the movement of said rod or pushing device, and a stem located on the rear end of said frame extending within said supporting-shell to support the frame, substantially as described, and for the purpose set forth.

5. The combination, in a turret-lathe, with a chucking device having its opening at one side of its center, and operating mechanism, of a gripping device supported by the turret, consisting of a supporting-shell and a frame provided with jaws secured thereto, supported by said shell at one side of its center by means of a stem located on said frame and extending within said supporting-shell, substantially as described, and for the purpose set forth.

6. The combination, in a turret-lathe, with a rotating chucking device having its opening at one side of its center, and operating mechanism, of a gripping device supported by the turret, consisting of a supporting-shell and a frame provided with jaws secured thereto, supported by said shell at one side of its center by means of a stem located on said frame and extending within said supporting-shell in a manner to allow the frame and jaws secured thereto to rotate, substantially as described, and for the purpose set forth.

7. The combination, in a turret-lathe, with a chucking device having its opening at one side of its center, and operating mechanism, of a gripping device supported by the turret, consisting of a supporting-shell and a frame provided with jaws secured thereto, supported by said shell at one side of its center by means of a stem located on said frame and extending within said supporting-shell, and a spring located between said shell and frame to hold the latter in an elastically-extended position from the former, substantially as described, and for the purpose set forth.

445,698. HANGER OR HARP FOR SUSPENDING LAMPS. CHRISTIAN G. HOERLE, Waterbury, Conn., assignor to Holmes, Booth & Haydens, same place. Filed Mar. 13, 1890. Serial No. 343,748. (No model.)



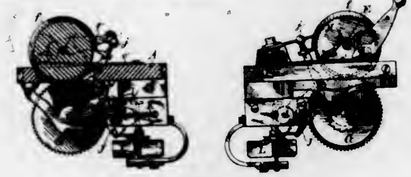
Claim.—1. In a lamp-hanger, a collar having projections to engage below a bead on a lamp-fount, flanges to engage above the bead, said flanges being beveled on their lower surface and having a gradually-increasing projection from the upper edge of the collar, and a spring-actuated latch to engage below a bead on the fount, substantially as specified.

2. In a lamp-hanger, a collar having projections to engage below a bead on a lamp-fount, ribs and flanges to prevent an upward movement of a fount, said flanges being beveled on their lower surface and, having a gradually-increasing projection from the upper edge of the collar, and a spring-actuated latch having a curved lower surface, whereby the latch will be pushed outward when a fount is inserted, substantially as specified.

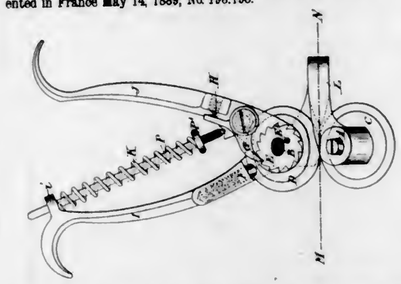
445,699. MUSICAL BOX. ALFRED JUNOD, JULES JACCARD, and PAUL CALAME-JACCARD, Ste. Croix, Switzerland, assignors to Alfred Junod & Co., same place. Filed Oct. 6, 1890. Serial No. 367,203. (No model.) Patented in Switzerland June 9, 1890, No. 2,293.

Claim.—1. In musical boxes, the combination of a cylinder and its journals with the base-plate and open brackets receiving said journals, a spring-barrel beneath the plate, and driving-gears for rotating the cylinder without lifting the same out of its brackets, substantially as and for the purpose specified.

2. In musical boxes, the combination of a cylinder and its journals with the base-plate and open brackets receiving said journals, a spring-barrel beneath the plate, and driving-gears for rotating the cylinder without lifting the same out of its brackets, and the safety covers, substantially as and for the purpose specified.



445,700. SHEARS. JEAN LACHAUME and JOSEPH PASTEYER, Paris, France. Filed May 21, 1890. Serial No. 352,680. (No model.) Patented in France May 14, 1889, No. 198,193.



Claim.—1. In rotary shears, the combination, with a suitable supporting-frame and two rotary cutting blades or disks carried by said frame and adapted to coact in the manner described, of a lever pivoted to the frame and means for imparting a step-by-step rotation to one of the said blades when the lever is operated, in the manner described.

2. In rotary shears, the combination, with the supporting-frame, of the rotary cutting-blade carried by said frame, the operating-lever carrying the spring-controlled pawl, the second rotary cutting-blade carried by the frame, and the ratchet-wheel carried by said second cutting-blade, with which ratchet-wheel said pawl engages, all arranged for co-operation substantially as and for the purpose set forth.

3. In rotary shears, the combination, with the supporting-frame, of a rotary cutting-blade carried thereby, the operating-levers, one of which carries a spring-controlled pawl, a second rotary cutting-blade carried by the frame, a spring-brake carried by the other lever and acting upon the edge of the second cutting-blade, and the ratchet-wheel carried by the latter, with which ratchet-wheel the pawl engages, all said parts being arranged for co-operation substantially as and for the purpose set forth.

4. In rotary shears, the combination, with a suitable supporting-frame and two rotary cutting-blades carried by said frame, said blades having their edges milled or corrugated and adapted to coact in the manner described, of a lever pivoted to the frame, and means for imparting a step-by-step rotation to one of said blades when the lever is operated in the manner described.

5. In rotary shears, the combination, with a suitable supporting frame and two rotary cutting-blades carried by said frame and adapted to coact in the manner described, of a lever pivoted to the frame, means for imparting a step-by-step rotation to the second blade, and a spring-actuated brake adapted to bear upon the latter blade, for the purpose specified.

6. In rotary shears, the combination, with a supporting-frame, an arm or lever rigidly connected with said frame, and a second arm or lever pivoted to the frame, of a rotary cutting blade or disk pivoted to the frame below the pivotal point of the latter lever, a second rotary cutting blade or disk pivoted to the frame above the other blade and adapted to coact therewith in the manner described, a ratchet-wheel mounted rigidly upon the shaft or pivot of said second cutting-blade, a spring-actuated pawl pivoted to the pivoted lever and engaging the teeth of the ratchet-wheel, and a spring arranged intermediate the levers and adapted to normally press said levers apart, as described.

445,701. SOAP HOLDER AND RUBBER. JOHN H. LEE, Norwalk, Conn., assignor to himself and Brainerd W. Mapes, same place, and Charles L. Heins, New York, N. Y. Filed Apr. 29, 1889. Serial No. 309,049. (No model.)

Claim.—1. The combination, in a soap-holder and hand-rubber, of a two-part case adapted to hold a single cake of soap, one part consisting of a band *a* and a projecting convex rubber of wire-cloth *b*, secured together at their edges, the other part consisting of a cover *d*, having an edge or rim *d'* and spring and follower acting to press the cake of soap against the surface of wire-cloth *b*, substantially as set forth.



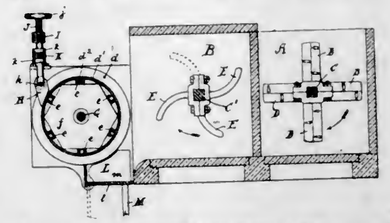
2. A soap-holder and hand-rubber composed of a two-part case adapted to hold a single cake of soap, one part consisting of a band *a* and a projecting convex rubber of wire-cloth *b*, secured together at their edges, the other part consisting of a cover *d*, having a flanged edge or rim *d'*, in combination with a spiral spring *e*, secured at its apex to the under side of the cover, and a plate *f*, against which the base of the spring acts to press the cake of soap against the wire-cloth, substantially as and for the purposes set forth.

445,702. TYPE-CONTAINING CHANNEL. ABBOT A. LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Filed Feb. 16, 1889. Serial No. 300,178. (No model.)



Claim.—As an article of manufacture, a type-containing channel formed of a single piece of sheet metal with side walls *c* and *c'* of different widths, and with one or more longitudinal slots *s* in said side wall or walls immediately adjoining and parallel with the floor or spine of the channel, for the purpose and substantially in the manner described.

445,703. PUG-MILL. WILLIAM A. PARRY, North Cambridge, Mass. Filed Sept. 9, 1890. Serial No. 364,424. (No model.)



Claim.—1. In combination with a pug-mill, a separator consisting of a series of flanged rings mounted upon a shaft, the clay being taken up in the spaces between said rings and removed by scrapers, substantially as set forth.

2. A separator consisting of hexagon plates *f*, mounted upon a shaft, cross-bars *e*, each having a groove *e'*, rings *d*, having a flange *d'* and a small projection d^2, arranged substantially as shown and described.

3. In combination with a separator having a series of flanged rings mounted substantially as described, a series of scrapers H, mounted upon a square bar *h* and capable of adjustment, substantially as shown and described.

4. The scrapers H, mounted upon a square bar *h*, the saddle-shaped frame I, screw J, wheel *j*, and cross-bar K, in combination with a separator consisting of a series of flanged rings, substantially as set forth.

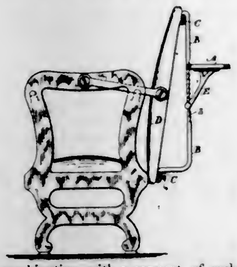
5. In combination with a pug-mill and separator, a stone-receptacle L, the bottom of which is closed by a flap *l*, and side openings *m*, covered by plates, substantially as and for the purposes set forth.

6. A pug-mill divided into two longitudinal compartments, each having a shaft passing through it, upon which are mounted knives and feeders, and a separator in front of said mill, the shafts of which are driven by a train of gear N U V W, cog-wheel S, pinion R, and pulley P, substantially as set forth.

7. A pug-mill consisting of a rectangular receptacle divided into two longitudinal compartments A B by a partition that extends nearly the whole length of said receptacle, each compartment having a shaft passing through it, upon which shafts are mounted knives and feeders arranged so that the clay being fed at one end of the rear compart-

ment A is forced to the other end of said compartment, and thence by the feeders E through the opening A^3 into the compartment B, and and then by the knives forced to the other end of said compartment and out of the mill by the feeders E on the end of said shaft, substantially as shown and described.

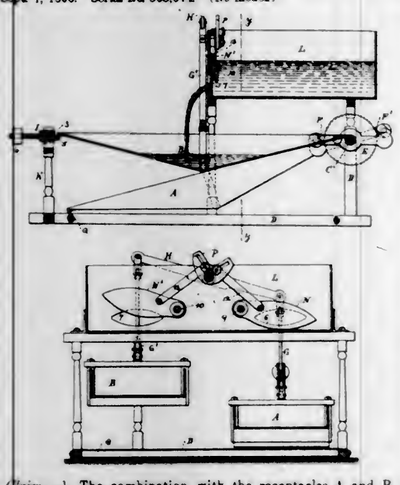
445,704. **MOVABLE TABLE FOR RAILWAY-CARS.** HENRY W. ROSENBAUM, New York, N. Y. Filed May 26, 1890. Serial No. 353,147. (No model.)



Claim.—1. The combination, with a car-seat, of sockets permanently connected to the top and bottom of the back, a movable standard adapted to hook at the top and bottom ends into such sockets, and an adjustable table or similar article supported upon such standard, substantially as set forth.

2. The combination, with a car-seat, of sockets permanently connected to the top and bottom of the back, a movable standard adapted to hook at the top and bottom ends into such sockets and having a bend in the lower portion to bring such standard vertical, or nearly so, and an adjustable table or similar article supported upon such standards, substantially as set forth.

445,705. **WATER-MOTOR.** SAMUEL SMYTH, Ithaca, N. Y. Filed Sept. 1, 1890. Serial No. 363,674. (No model.)

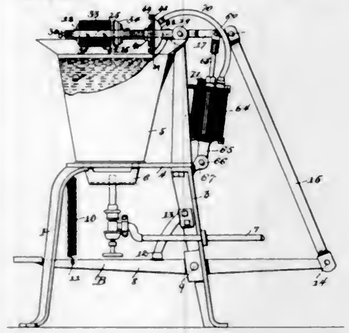


Claim.—1. The combination, with the receptacles A and B, of the shaft C, upon which the receptacles swing as they are raised or lowered, the connecting-lever H and links G G', the ratchet-wheels and pawls for giving to the shaft a rotary movement from the swinging movement of the receptacles and the water-supplying device, and a supporting-latch to each receptacle, substantially as set forth.

2. The combination, with the swinging receptacles A and B, of the links G G' and lever H for connecting the receptacles and elevating the empty receptacle by the downward movement of the full receptacle, the valves or gates to the water-supply openings, the connections to the same from the lever, and latches for holding the respective receptacles while in an elevated position, substantially as set forth.

3. The combination, with the receptacles A and B, of the lever H, the links G G', connecting the ends of the lever to the respective receptacles, the rocker P, connected to and moving with the lever H, the valves or gates, and the connecting-rods adjustably connected to the rocker P for varying the opening and closing of the valves or gates, substantially as set forth.

445,706. **CAN-TESTING MACHINE.** WILLIAM H. H. STEVENSON, Mount Washington, Md. Filed Feb. 10, 1890. Serial No. 339,954. (No model.)



Claim.—1. In combination, a tank, a can-clamp, a carrier therefor, an air-pump, said pump being connected with and operated by said carrier, and a flexible tube connecting said pump with the can-clamp, whereby a can carried by said clamp may be simultaneously immersed in liquid in the tank and supplied with air under pressure, as set forth.

2. In combination, a tank, a can-clamp, a carrier in which said clamp is mounted, an air-pump, a tube connecting it with the clamp, and its piston-rod connecting it with the carrier, whereby the movement of the carrier to immerse the can and clamp in the tank simultaneously operates the air-pump to supply air under pressure to the interior of the can, as set forth.

3. In combination, a tank, a can-clamp, a carrier for the same pivoted to the frame of the machine, a treadle, and a lever connecting the treadle to the can-carrier, as set forth.

4. In combination, a can-clamp, a pivoted carrier in which said clamp is mounted, a treadle connected to the carrier, an air-pump pivoted to the frame, having its piston connected to said pivoted carrier, and a flexible tube connecting the pump with the can-clamp, as set forth.

5. In combination, a tank, a can-carrier pivoted on the frame of the machine, a can-clamp carried thereby, an air-pump connected with said pivoted carrier, and an inward-opening valve in said pump, whereby the movement of the carrier to immerse the can in the tank forces air into the can and the return of the carrier opens said valve to admit air into the pump, as set forth.

6. A clamp consisting of a stationary head, a movable head, and a flexible elastic diaphragm through which pressure is applied to said movable head, as set forth.

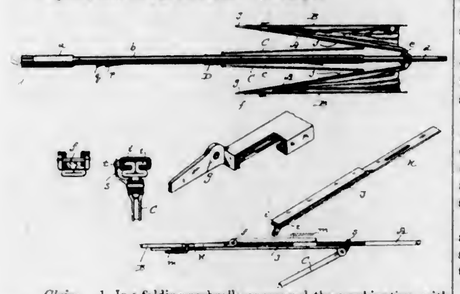
7. The combination, with the main frame and water-tank supported thereby, of the rectangular clamp-carrier frame having a rear extension and pivoted to the main frame, the treadle-lever pivoted to the main frame, the rod or lever connecting the rear arm of the treadle-lever and the rear extension of the carrier-frame, the clamp within the carrier, having a movable head, the cams mounted on the pivoted shaft of the carrier-frame, and the anti-friction rollers mounted on a shaft in said frame bearing on said cams and operating to close up the movable head on the can simultaneously with the depression of the carrier-frame in the tank, as set forth.

8. The combination, with the main frame, treadle-lever, rectangular can-carrier frame pivoted to the main frame, the rod connecting the rear arm of the treadle-lever and rear extension of the carrier-frame, and the tank supported by the main frame below the carrier-frame, of the can-clamp having a rear movable head, the cams on the pivotal shaft of the carrier-frame, the anti-friction rollers bearing on the said cams and operating to move forward the movable head of the clamp when the carrier-frame is depressed, and the air-pump pivoted at its lower end to the main frame, connected by its piston-rod to the rear extension of the carrier-frame, and by a flexible tube to the clamp, by means of which mechanism a single depression of the treadle clamps the can, tilts the carrier-frame in the tank, and drives compressed air in the can, as set forth.

9. The combination of the pivoted carrier-frame, the clamp having a fixed adjustable head and a movable head, the cup-shaped plate movable in ways on the main frame, the diaphragm secured to the front of said plate and forming a chamber therein to receive air from a suitable pump, the tube connecting the diaphragm and movable clamp-head, the spring surrounding said tube and bearing against the main frame to open the clamp, the anti-friction rollers bearing on the cup-shaped plate, and the cams mounted on the pivotal shaft of the carrier-frame and bearing on said rollers, as set forth.

10. The combination, with the carrier-frame, of a fixed clamp-head, a movable clamp-head, the cup-shaped plate and diaphragm forming an air-chamber, the tube connecting the said movable head and diaphragm, the spring surrounding said tube to open the clamp, and the bolt and spring within the air-chamber to limit the front motion of the diaphragm, as set forth.

445,707. **UMBRELLA.** ALFRED WEIGAND, Sheboygan, Wis. Filed Sept. 16, 1889. Serial No. 324,135. (No model.)



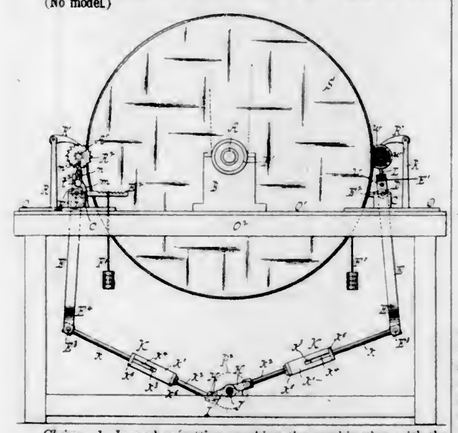
Claim.—1. In a folding umbrella or parasol, the combination, with the hinged ribs, of extension-ribs pivoted to the outer ends of said hinged ribs and slides for locking the rib-joints, pivoted upon the outer ends of the spreaders and working in grooves in the inner sides of the hinged ribs, substantially as described.

2. The combination, with the hinge-ribs having grooves in their inner sides, of extension-ribs pivoted to the outer ends of the hinge-ribs and slides having flanges to work in said grooves and arranged to lock the joints between the ribs, substantially as described.

3. The combination, with the hinge-ribs and the extension-ribs pivoted thereto, of slides for locking the rib-joints and spreaders carrying the slides and having the arms to engage studs upon the hinge-ribs, and thus limit the movement of the slides, substantially as described.

4. The combination, with the hinge-ribs and the extension-slides connected to the outer ends of said hinge-ribs and having the lugs adjacent to their points of connection with the hinge-ribs, of slides working upon the hinge-ribs and having slots to detachably engage said lugs, substantially as described.

445,708. **MACHINE FOR POLISHING GLASSWARE.** HARRY C. WOOD, New Brighton, Pa. Filed Apr. 24, 1890. Serial No. 349,318. (No model.)



Claim.—1. In a glass-cutting machine, the combination, with the wheel, of a shaft mounted on a swinging arm and carrying a chuck and a ratchet, a pawl, a pin projecting from the ratchet, a swinging trigger, a spring-bolt for intercepting the motion of said arm, and means for swinging said arm, substantially as described.

2. In a glass-cutting machine, the combination, with the wheel and a reciprocating chuck, of a pitman for reciprocating said chuck, said pitman consisting of a slotted casing, a rod secured to one end of the casing, and a second rod passing through the other end of the casing and having wings to fit and slide in said slots, substantially as described.

3. In combination with a grinding or polishing wheel, the plate O, having bearings C and shaft D, uprights *m*, spring-bolt *t*, and ratchet and post R' R, the arm E, mounted on shaft D and having hole U and head L, and the shaft A', mounted in head L and carrying a chuck and the ratchet R^3, substantially as described.

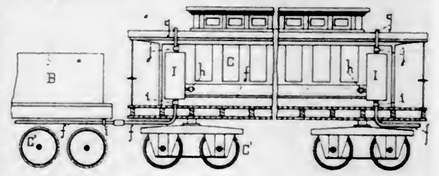
4. In combination with a glass-cutting wheel, a shaft D, sleeve *c*, mounted on said shaft and carrying arms E E' E^3, one of said arms supporting a chuck, another arm carrying an adjustable weight, and the third arm connected to means for swinging it, substantially as described.

5. In combination with the swinging arm E, carrying a chuck and the ratchet R^3, a stationary pawl above the ratchet, pin *m'*, projecting from the side of the ratchet, swinging trigger *n*, and spring-bolt *t*, substantially as described.

6. In a glass-cutting machine, the combination, with the cutting-wheel, of a chuck mounted on a swinging arm, a crank, and a pitman connecting the crank with the swinging arm, said pitman consisting of the slotted casing *k'*, rod *k*, passing through one end of the casing and having wings k^2, and rod k^3, secured to the other end of the casing, substantially as described.

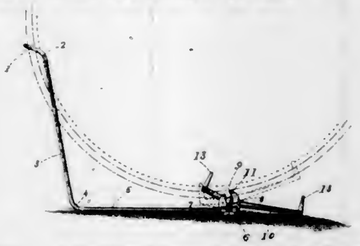
7. In a glass-cutting machine, the combination, with the swinging arm E', of the chuck-carrying head, said head being adjustable on said arm, whereby the chuck may be turned to different angles relatively to the grinder, substantially as described.

445,709. **APPARATUS FOR HEATING RAILWAY-CARS.** JOHN S. ALSTON, Dover, N. J. Filed Aug. 19, 1890. Serial No. 362,414. (No model.)



Claim.—In an apparatus for heating railway-cars, the combination of a heating device in which the air is heated by the products of combustion of a locomotive, a pump, hot-air-conducting pipes provided with regulating-cocks, hot-air reservoirs connecting with the hot-air-conducting pipes, escape-pipes for the hot-air reservoirs, and a petcock for blowing heated air from each hot-air reservoir into its car without waiting for the conducting-pipes to heat sufficiently for the purpose of radiation.

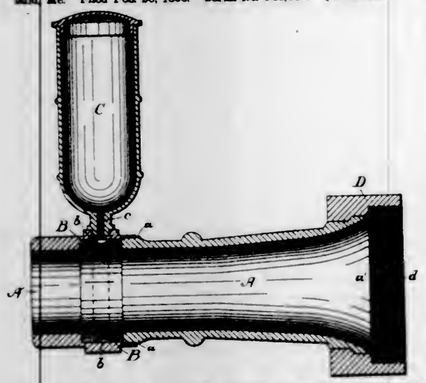
445,710. **BICYCLE-STAND.** EPHRAIM N. BOWEN, Buffalo, N. Y. Filed Apr. 12, 1890. Serial No. 347,676. (No model.)



Claim.—1. A bicycle-stand composed of a transverse floor-piece 6, secured to a stay or holding frame composed of a single piece of rod forming the two base-pieces 5, the upwardly-inclined side pieces 3, and the forwardly-projecting U-shaped portion 1, in combination with a rocker 10, having forked portions 13 located in a line with the U-shaped portion 1 of the stay or holding frame, substantially as and for the purposes described.

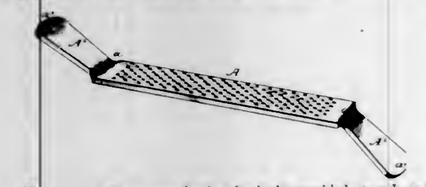
2. In a bicycle-stand, a rocker having journals 11, adapted to fit into journal-bearings in the floor-piece so as to rock back and forth, and having on one pivot a groove or recess 14, so that the pivot may pass down in between the upper ends of the journal-bearing while the floor-piece is raised from the floor and be securely locked in position while the stand rests in its proper position on the floor.

445,711. LUBRICATING DISCHARGE-NOZZLE. OLIVER R. CHASE, Boston, Mass., assignor to the Algonquin Manufacturing Company, Portland, Me. Filed Feb. 20, 1890. Serial No. 341,117. (No model.)



Claim.—A lubricating-nozzle for plastic materials, consisting of a spout provided near its outer end with a porous externally-grooved wooden lubricating-collar held in a recess within said spout, the said collar having an inner opening forming a smooth continuation of the passage through the spout, in combination with a reservoir of alcohol communicating with the groove of the collar, substantially as described

445,712. FILE OR RASP. THOMAS N. DALLIS, Spartanburg, S. C. Filed Dec. 27, 1890. Serial No. 375,929. (No model.)



Claim.—1. A file or rasp having its body provided at each end with a flat extension or handle integral therewith, said flat extension being rounded and broader at its outer end than at the point of connection thereof with said body, substantially as described.

2. A file or rasp having its body provided at each end with a flat extension or handle integral therewith, said flat handles being bent at an angle to said body, substantially as shown and described.

3. A file or rasp having its body provided at one end with a flat extension or handle integral therewith, said extension being rounder and broader at its outer end than at the point of connection thereof with said body and bent at an angle to said body, substantially as described.

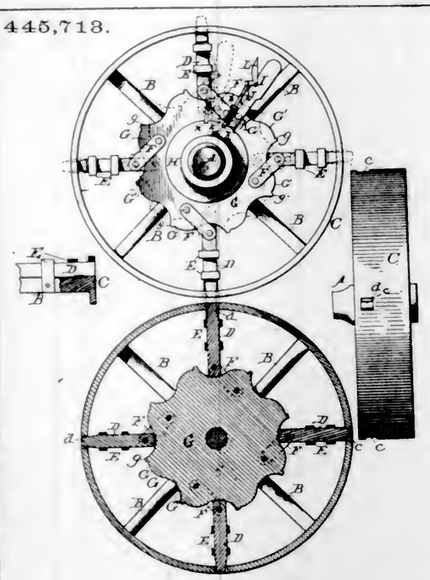
445,713. WHEEL FOR CORN-PLANTERS AND MARKERS. JOHN DE BUTTS, near Centreville, Md. Filed Oct. 7, 1890. Serial No. 367,345. (No model.)

Claim.—1. In combination with a wheel having holes in its periphery, a cam wheel or disk, a series of bars having points capable of protrusion through said openings, and a series of links connecting said bars to said disk, the said parts being arranged to have the inner ends of said bars in contact with said cams when said points are protruded in order that the disk may bear the strain, substantially as set forth

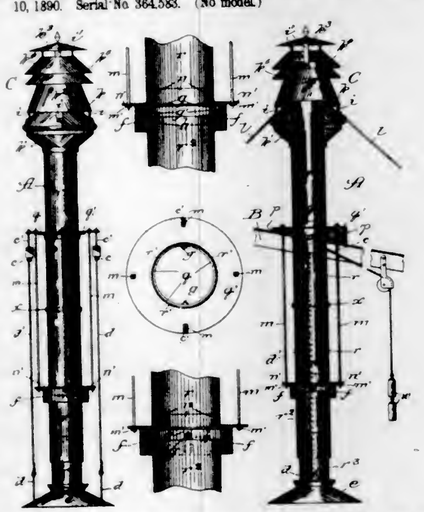
2. In combination with a wheel having openings in its periphery, a series of bars having points arranged to protrude through said openings, a wheel or disk having cams on its periphery in contact with the inner ends of said bars, respectively, and links connecting the said bars to said disk, the inner pivotal point of each link being the center of the circle of which the curvature of the proximate cam forms a part, substantially as set forth.

3. In combination with the wheel and axle, the cam wheel or disk G, mounted freely thereon and having cams G' on its periphery, the handle I, attached to said disk, the radial bars arranged to be acted on by said cams and to protrude through openings in the periphery of the wheel, the links F, arranged in pairs on each side of said disk in the rear of the cams, respectively, and connecting said disk with said bars, a spring-pressed locking-catch attached to said handle, and an attachment of the hub having notches or recesses for engagement with said catch, substantially as set forth.

445,718.



445,714. CHIMNEY. PAUL DICKINSON, Chicago, Ill. Filed Sept. 10, 1890. Serial No. 364,583. (No model.)



Claim.—1. In combination with a roof, a chimney A, formed in connected sections and extending partly above and partly below the roof, the lower portion being pivotally suspended from a pivot below the roof, substantially as described.

2. A chimney A, formed with connected sections r and r', to extend, respectively, below and above a roof B, and a section r^3, pivotally suspended from a pivot below the roof in engagement with the lowermost section r, substantially as and for the purpose set forth.

3. A chimney A, formed with connected sections r and r', to extend, respectively, below and above a roof B, a section r^3, pivotally suspended on the lowermost section r, and a drop-section r^3, having bails d secured to its hood e, and suspended and counterbalanced from the said bails, substantially as described.

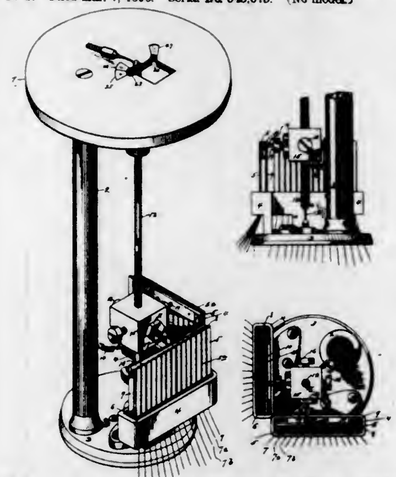
4. A chimney A, formed with sections r and r', to extend, respectively, below and above a roof B, a flanged collar q for supporting the portion extending above the roof, a flanged collar n for sustaining the portion below the roof, and tie-rods m, connecting the said collars from their flanges and holding the sections r together, substantially as described.

5. In a chimney A, the sections r r', fastened together, a section r^3, pivotally supported on the lower section r, a drop-section r^3, suspended to telescope with the section r^3 and counterbalanced, and a ventilator C on the upper end of the chimney, formed with the conical deflectors k k^3 and hood k^3, and the conical deflectors k^4 and k^5 between the hood and deflector k^3, substantially as described.

6. A chimney A, formed with connected sections r and r', to extend, respectively, below and above a roof B, flanged collars q and n, connected by tie-rods m and clamping the sections r between them, lugs g, depending from the collar n, and a section r^3, having a drop-section r^3, supported to telescope with it and provided with lugs h at its upper end pivoted to the lugs g, substantially as described.

7. A chimney comprising, in combination, sections r and r', to extend, respectively, above and below a roof B, a flanged collar q, affording a seat for the part r', a ventilator C on the upper end of the chimney, formed with conical deflectors k k^3 and hood k^3, and the conical deflectors k^4 and k^5 between the hood and deflector k^3, a collar n, provided with a horizontal flange n' and a perpendicular flange f, and sustaining the sections r, tie-rods m, fastening the collars together at their horizontal flanges and clamping the sections r' together, lugs g on the collar n, a section r^3, having at its upper end lugs h, pivoted to the lugs g on the collar n, a drop-section r^3, telescoping with the section r^3 and having bails d secured to its hood e, and cables d', fastened to the bails, passing thence over pulleys c, and provided at their hanging ends with counterbalancing-weights w, the whole being constructed and arranged to operate substantially as described.

445,715. AUTOGRAPHIC TELEGRAPH. HARRY ETHERIDGE, Pittsburg, Pa., assignor to the Writing Telegraph Company, New York, N. Y. Filed Mar. 7, 1890. Serial No. 343,073. (No model.)



Claim.—1. In an autographic telegraph, two series of contacts in which the contacts of each series are separated from each other, two series of resistances, each graded from a maximum to a minimum resistance, and two movable contact-bars, each arranged at an angle to its series of contacts, in combination with a stylus arranged when operated to press against said contact-bars and press the latter against said contacts, substantially as described.

2. In an autographic telegraph, two series of movable contacts in which the contacts of each series are arranged in line with but separated from each other and are movable at right angles to said line, two series of resistances, each graded from a maximum to a minimum resistance, and two movable contact-bars, each arranged at an angle to its series of contacts, in combination with a stylus arranged when operated to press against said contact-bars and press the latter against said contacts, substantially as described.

3. In an autographic telegraph, two series of flexible contacts in which the contacts of each series are separated from each other, and two movable contact-bars, each carried by flexible supports and arranged at an angle to its series of contacts, in combination with a stylus arranged when operated to press against said contact-bars and press the latter against said contacts, substantially as described.

4. In an autographic telegraph-transmitter, a series of contacts connected to flexible supports, insulated from each other and arranged in line with and movable at right angles to said line, in combination with a laterally-movable contact-bar arranged at an angle to said contacts and to press laterally against the same, substantially as described.

5. The combination, with a transmitting-stylus provided with a pressure-block, of two contact-bars carried by flexible supports and arranged to be moved by the operation of said stylus, substantially as described.

6. The combination, with a transmitting-stylus, of a pressure-block secured directly thereto and provided with a pressure-head, a movable contact-bar provided with a projection co-operating with said pressure-head, and a series of electrically separate contacts, substantially as described.

7. The combination, with a transmitting-stylus, a top plate provided with a notched opening and contacts in said notch arranged to co-operate with the stylus-rod, of the stylus-rod arranged to pass through said opening, and a spring for returning the stylus-rod to its normal position in said notch, substantially as described.

8. The combination, with a transmitting-stylus and a top plate provided with a notched opening, of contacts in said notch arranged to co-operate with the stylus-rod, and a stylus-rod arranged to pass through said opening and to be pressed against said contacts in said notch, substantially as described.

9. In an autographic telegraph-transmitter, the combination, with two sets of contacts and connecting means for electrically connecting the contacts of each set, of two sets of resistances, each set arranged to act in parallel arc, and a stylus-rod co-operating with said connecting means, substantially as described.

10. In an autographic telegraph-transmitter, the combination, with two sets of contacts and connecting means for electrically connecting the contacts, of two sets of resistances, each set arranged to act in parallel arc, and two sets of resistances, each set arranged in series, substantially as described.

11. In an autographic telegraph-transmitter, two sets of resistances connected to contacts and each set arranged to act in parallel arc, in combination with two sets of resistances, each set arranged in series, substantially as described.

12. In an autographic telegraph-transmitter, the combination, with two sets of contacts, of two sets of graded resistances, each set arranged to act in parallel arc and graded from a maximum to a minimum resistance, substantially as described.

13. In an autographic telegraph-transmitter, the combination, with two sets of contacts, of two sets of graded resistances, each set arranged to act in parallel arc, and two sets of graded resistances, each set arranged in series, substantially as described.

14. In an autographic telegraph, the combination, with the receiver and transmitter, of two sets of contacts and two sets of graded resistances, each set arranged to act in parallel arc, the lowest resistances of each set arranged nearest the receiver, substantially as described.

15. The combination, with the transmitting-stylus provided with an uninsulated pressure-block and a contact-bar co-operating therewith, of a set of contacts and a set of graded resistances, arranged with the lowest resistance next to the receiver, said contact-bar arranged to make contact with the contact of least resistance last, substantially as described.

445,716. AUTOMATIC SWITCH FOR AUTOGRAPHIC TELEGRAPHS. HARRY ETHERIDGE, Pittsburg, Pa., assignor to the Writing Telegraph Company, New York, N. Y. Filed Oct. 29, 1888. Renewed July 12, 1890. Serial No. 358,475. (No model.)

Claim.—1. In a writing-telegraph, the combination, with a transmitting-stylus electrically connected to ground, of contact-points electrically connected to the line, and shifting means arranged to automatically move and press said stylus against said contact-points, substantially as described.

2. In a writing telegraph, the combination, with a transmitting-stylus electrically connected to ground, of contact-points electrically connected to the line, and a spring arranged to automatically press said stylus against said contact-points, substantially as described.

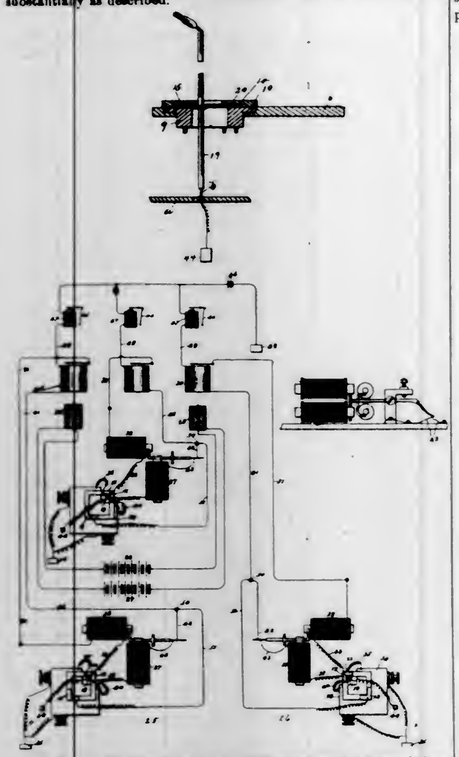
3. In a writing-telegraph, the combination, with a transmitting-stylus electrically connected to ground, of contact-points electrically connected with the receiving and transmitting instruments, and a spring arranged to automatically press said stylus against said contact-points, substantially as described.

4. In a writing-telegraph, the combination, with a transmitting-stylus connected to the base by a spring and electrically connected to ground, of contact-points electrically connected to the line, said spring serving to press the stylus against said contact-points, substantially as described.

5. In a writing-telegraph, the combination, with a transmitting-stylus electrically connected to ground, of a contact-point connected by a line to a central-office annunciator, said stylus being arranged in proximity to said contact-point, so that it can be brought into contact

with the same to close the circuit through the annunciator to drop the shutter, substantially as described.

6. In a writing-telegraph, the combination, with a transmitting-stylus electrically connected to ground, of two contact-points, each connected to both receiver and transmitter, and shifting means arranged to automatically move and press said stylus against said contact-points, substantially as described.



7. In a writing-telegraph, the combination, with a transmitting-stylus electrically connected to ground, of contact-points electrically connected to receiver and transmitter, said receiver being connected to transmitter and through transmitter to ground, and shifting means arranged to automatically move and press said stylus against said contact-points, substantially as described.

8. In a writing-telegraph, the combination, with a transmitter and a receiver, of contact-points in communication with said receiver, an independent contact-point in communication with the main line, and a grounded stylus normally resting against the contact-points communicating with the receiver, thereby normally maintaining the apparatus in condition to receive a message and arranged to be moved against said independent contact-point to momentarily close the circuit through the central-office annunciator-magnet, substantially as described.

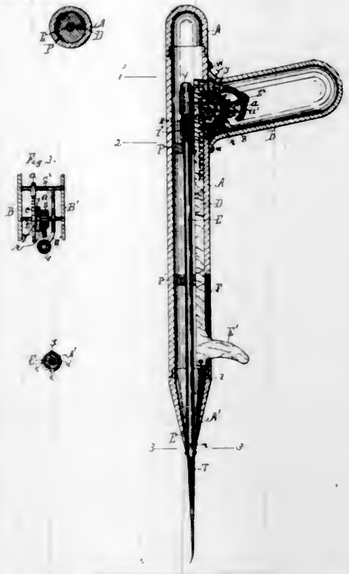
9. The combination, with the transmitter-supporting plate, of the form or block 9, having an opening therein and provided with contact-pieces, as 11, 12, and 13, and a grounded transmitting-stylus, substantially as described.

10. The combination, with block 9, having an opening therein and provided with contact-pieces 11, 12, and 13, of protecting-cap 20 and a grounded transmitting-stylus, substantially as described.

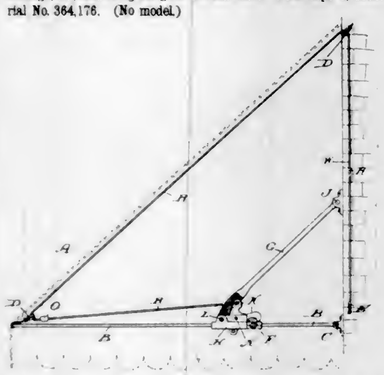
445,717. DENTAL PLUGGER. EDGAR J. GEORGE, Joliet, Ill. Filed July 18, 1890. Serial No. 359,199. (No model.)

Claim.—1. In the dental plugger shown and described, the combination of the reciprocating rack having a trigger extending out through a slot in the side of the case, the pinion for meshing with said rack and fast on its shaft, the scape-wheel adapted to be driven intermittently in one direction by said rack and pinion, the pallet operated by said scape-wheel and provided with a hammer, and the plugger tool or rod seated on a spring and arranged to receive the blows of the hammer, all arranged to operate substantially as and for the purpose set forth.

2. In the dental plugger shown and described, the yieldingly-seated plugger tool or rod, the pivoted hammer for striking said plugger-rod, the pallet and scape-wheel mechanism for operating said hammer, and the reciprocating rack for intermittently driving said scape-wheel and pallet mechanism, substantially as and for the purpose set forth.



445,718. AWNING-BRACE. EDWARD A. KING and ASMUS J. CARR, Chicago, Ill.; said King assignor to said Carr. Filed Sept. 6, 1890. Serial No. 364,176. (No model.)

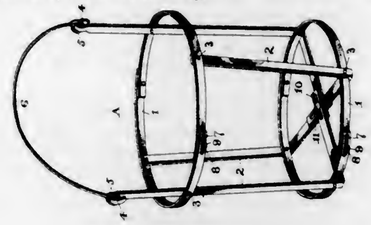


Claim.—1. In an awning-brace, the combination of the rod B, provided with the stop F, and the rod G, having at one end the attaching-hinge J and at the other end the pivoted sleeve H, adapted to reciprocate on the rod B and provided with a pivoted spring-clutch K, adapted to engage the stop F, substantially as set forth.

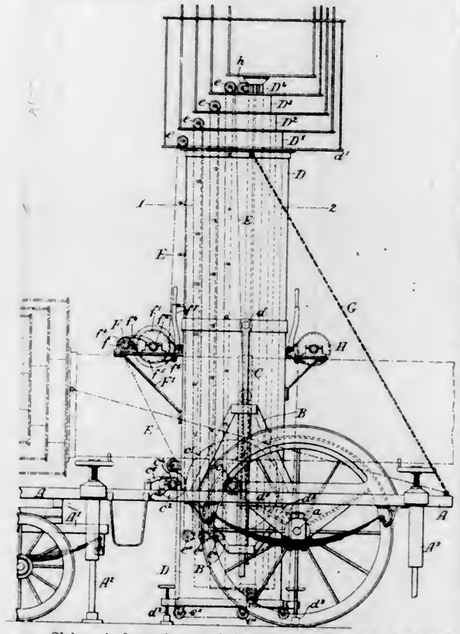
2. In an awning-brace, the combination of the rod B, provided with the stop F, and the rod G, having at one end the attaching-hinge J and at the other end the pivoted sleeve H, adapted to reciprocate on the rod B and provided with the pivoted spring-clutch K, adapted to engage the stop F, all operated by means of a cord R, attached to the clutch K and passing through the dead-eyes D D, all substantially as set forth.

445,719. FRAME FOR SUSPENDING BUCKETS. FREDERICK SCHILLINGER, Toledo, Ohio. Filed Apr. 21, 1890. Serial No. 348,943. (No model.)

Claim.—In a skeleton frame for buckets, the combination of a series of adjustable hoops, adjustable straps connecting the same, and a bail carried by two of the said straps.



445,720. TELESCOPIC SCALING OR FIRE-ESCAPE LADDER. LOUIS SMITTER and PAUL DUHAMEL, Paris, France. Filed Feb. 24, 1890. Serial No. 341,579. (No model.) Patented in Belgium Jan. 23, 1889, No. 84,732; in France Jan. 26, 1889, No. 195,645, and in England Jan. 30, 1889, No. 1,679.



Claim.—1. In a telescopic ladder trunnioned upon a carriage in vertically-moving bearings therein, the combination of a chain or chains passing between the sections of the ladder and connected to the innermost section, guide-pulleys upon each section for guiding said chain or chains, and mechanism for actuating said chain or chains to raise the sections of the ladder, substantially as described.

2. In a telescopic ladder trunnioned upon a carriage in vertically-moving bearings therein, the combination of a chain or chains passing between the sections of the ladder and connected at each end to the innermost section, guide-pulleys on each section for guiding said chain or chains, mechanism for actuating said chain or chains to raise and lower the sections of the ladder, and a brake and connections between said brake and chain or chains for controlling the descent of the sections, substantially as described.

3. A tubular telescopic ladder trunnioned in vertically-moving bearings on a wheel-carriage, the outermost tube of such telescopic ladder carrying on brackets a winch and chain gear for actuating chains which are led over and under guide-pulleys carried by the outer tubes, each of such chains having its extremities made fast to the innermost tube and serving as the chain-wheels are rotated to raise or lower the sliding tubes, as desired.

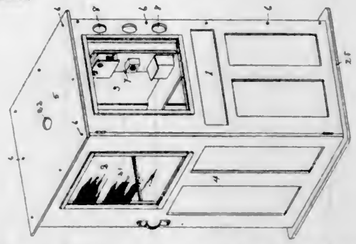
4. In a telescopic ladder, the combination of a carriage upon which the ladder is trunnioned, a rack-bar pivoted to the ladder, a guide upon the carriage for guiding the rack-bar vertically, a pinion journaled in the carriage and engaging said rack-bar, and connections for operating said pinion to raise the ladder from a horizontal to a vertical position, or vice versa, substantially as described.

5. A tubular telescopic ladder mounted on a wheel-carriage and fitted with trunnions and mounted in bearings carried by rack-bars, which slide in vertical guides at the sides of the carriage and are in gear with pinions keyed to a winch-spindle, in combination with guy-chains or their equivalent attached to the upper end of the outermost tube and to the wheel-carriage, as and for the purpose above set forth.

6. In combination with a tubular telescopic ladder mounted on a wheel-carriage and capable of turning in its bearings to permit of its tipping from a vertical to a horizontal position, a divided wheel-axle with jointed coupling-pieces, and a sleeve, constructed as and for the purpose above set forth.

7. In combination with a tubular telescopic ladder mounted in rising and falling bearings fitted to a traveling carriage, the adjustable screws of the main tube, and the screw-jacks of the carriage for fixing the position of the apparatus and relieving the carriage from the weight of its load while the telescopic ladder is in use.

445,721. TELEPHONE BOX OR CABINET. BENJAMIN A. STEVENS, Toledo, Ohio. Filed May 26, 1890. Serial No. 353,206. (No model.)



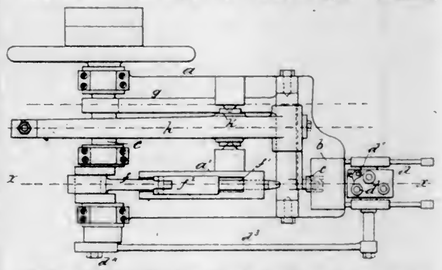
Claim.—1. In a telephone box or cabinet having a series of sound-vents, devices for normally holding the vents open, and mechanism actuated in the use of the cabinet for closing the vents.

2. A telephone box or cabinet having a series of normally-open sound-vents, slides having openings adapted normally to register with the said sound-vents, and mechanism connecting with the said slides to cause them to open or close the said vents.

3. In a telephone box or cabinet having a series of sound-vents and a non-resonant ceiling provided with an air-vent, devices for normally holding the sound-vents open, and mechanism actuated in the use of the cabinet for closing said vents.

4. In a telephone box or cabinet having a series of sound-vents, a non-resonant ceiling or partition, and an insulated base or support, devices for normally holding the sound-vents open, and mechanism actuated in the use of the cabinet for closing said vents.

445,722. NAIL-MAKING MACHINE. JOHN H. THOMPSON, Collinsville, Conn. Filed July 30, 1889. Serial No. 319,234. (No model.)



Claim.—1. In combination with the die-blocks, the wire-feed device, the heading device, and the cutter-levers located at one side of the line of feed of the wire and having the laterally-extending cutting-edges, the driving-shaft *e*, the pitman, and the links connecting the pitman with the cutter-levers, all substantially as described.

2. In combination with the driving mechanism, the cutter-levers mounted on a pivot-bearing, the driving-shaft, the pitman connecting the shaft and the links of the toggle, and the links connecting the pitman and the toggle-levers, said links having provision for lengthwise adjustment, all substantially as described.

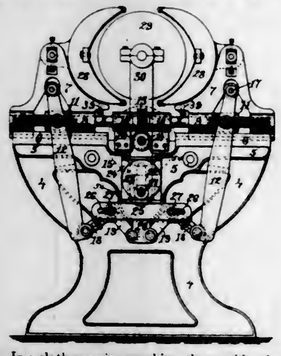
3. In combination with the toggle-levers mounted on pivot-bear-

ings, the driving-shaft, the pitman connecting the driving-shaft with the toggle levers or links, the toggle-levers connecting the pitman and the cutter-levers, and the guide that supports the toggle-levers in a fixed plane, all substantially as described.

4. In a nail-making machine, in combination with the wire-feed device, the fixed die-block, the reciprocating die-block, the die-closing lever *g*, with one end in operative contact with the reciprocating die-block and the other in operative contact with a cam on the cam-shaft, and the cam composed of a removable cam-ring *e*, made of steel and shrunk upon the shaft, and the cam-shaft, all substantially as described.

5. In a nail-making machine, in combination with the wire-feed, the clamping and head-forming dies, the reciprocating plunger operatively connected to the rotating cam-shaft, the die-closing lever with one end in operative connection with the movable part of the head-forming dies and the other with a cam borne on the cam-shaft, and the cam-shaft bearing the operating-cam composed of a renewable cam-ring of hardened steel secured to the shaft by being shrunk thereon, all substantially as described.

445,723. CLOTH-PRESSING MACHINE. GEORGE W. VOELKER, Woonsocket, R. I. Filed July 1, 1890. Serial No. 357,463. (No model.)



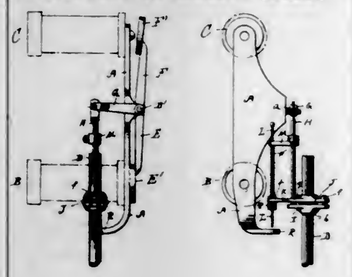
Claim.—1. In a cloth-pressing machine, the combination, with the cylinder 29, the presser-blocks 28, and the standards 4, of the frames 5, provided with ways, the carriages 7, supporting the presser-blocks and having capacity for adjustment to and from the cylinder, the screw-shaft 8, the fulcrum-nut 11, adapted to adjust the fulcrum, the levers 12, and mechanism for operating the levers constructed to press the cloth between the cylinder and presser-blocks, as described

2. In a cloth-pressing machine, the combination, with the cylinder and the presser-blocks and the levers for operating the presser-blocks, of the fulcrums and provisions for the adjustment thereof constructed to adjust the pressure exerted by the levers, as described.

3. The combination, in a cloth-pressing machine, with the cylinder and the presser-blocks, of the carriages 7, having the presser-blocks pivotally secured thereto, the adjusting-screws 39, ways on which the carriages are supported, and mechanism, substantially as described, for operating the presser-blocks, as described.

4. The combination, with the carriages 7, mounted in slides and having the presser-blocks secured thereto, of the screw-shaft 8, the fulcrum-nuts 11, the shaft 14, the worm 16, the worm-gear 13, the levers 12, connected with the carriages, the toggle-jointed levers, the cam 24, the slide 23, and the slotted bar 25, as described.

445,724. ELECTRIC-ARC LAMP. OTIS C. WHITE, Worcester, Mass. Filed Nov. 7, 1889. Serial No. 329,543. (No model.)



Claim.—1. In an electric lamp, the combination, with a carbon-supporting rod, of a clamping device, substantially as described, said clamping device comprising clamping-blocks with their inner surfaces bearing against the carbon-supporting rod and with their outer surfaces forming an angle with said rod, a clamping-ring bearing upon the outer surfaces of said clamping-blocks, and a spring with its tension applied to press said ring against the outer surfaces of said clamping-blocks and cause them to seize the carbon-supporting rod, substantially as described.

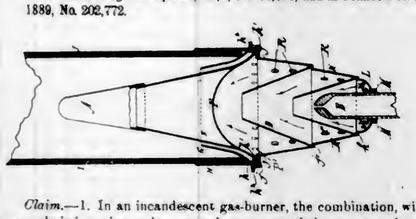
2. In an electric lamp, the combination, with a carbon-supporting rod, of a bar provided with a circular opening, a hinged lever provided with a similar circular opening corresponding with the opening in said bar, said openings forming sockets to receive a ball, a ball formed in sections inclosing the carbon-supporting rod and held in said sockets, and a spring applied to said lever and said bar to press them together and compress the sections of said ball, substantially as described.

3. In an electric lamp, the combination, with a carbon-supporting rod, of a bar provided with a circular opening, a hinged lever provided with a similar circular opening corresponding with the opening in said bar, said openings forming sockets to receive a ball, a ball formed in sections inclosing the carbon-supporting rod and held in said sockets, a spring applied to said lever and said bar to press them together and compress the sections of said ball, and a screw-threaded sleeve held in the frame-work of the mechanism, with its end bearing against said spring, whereby its tension is varied, substantially as described.

4. In an electric lamp, the combination, with the carbon-supporting rod, of clamping-blocks arranged to grasp said rod, a supporting-bar I, by which they are held from movement along said rod, a clamping-ring capable of being moved over the outer surfaces of said clamping-blocks, and a spring with its tension applied to press said ring upon said blocks and compress them around and upon the outer surface of said rod, substantially as described.

5. In an electric lamp, the combination, with a carbon-supporting rod; of clamping-blocks forming the sections of a ball or sphere, two opposing rings inclosing said ball and forming sockets within which the ball is capable of turning, and a spring with its tension applied to bring said rings together and compress the sections of said ball and cause them to seize the sides of the carbon-supporting rod, substantially as described.

445,725. INCANDESCENT GAS-BURNER. JEAN C. O. CHEMIN, Paris, France. Filed Aug. 6, 1890. Serial No. 361,239. (No model.) Patented in Belgium Sept. 20, 1889, No. 87,831, and in France Dec. 24, 1889, No. 202,772.



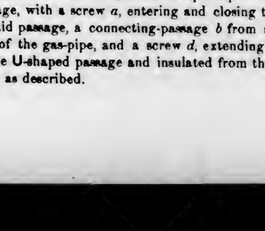
Claim.—1. In an incandescent gas-burner, the combination, with a gas-admission pipe, a burner-casing supported thereupon and provided with a series of offsets or shoulders, and a chimney holder or support arranged at the upper end of the burner-casing, of a series of truncated-cone-shaped tubes arranged within the burner-casing and supported upon the offsets thereof, one above another, a series of air-passages between said tubes and casing, a dome or cap adapted to be heated to incandescence, arranged at the upper end of the uppermost tube, and a suitable chimney arranged upon and supported by its holder, as and for the purpose specified.

2. In an incandescent gas-burner, the combination, with a gas-admission pipe, a burner-casing supported thereupon and provided with a series of offsets or shoulders, and a chimney holder or support arranged at the upper end of the burner-casing, of a series of truncated-cone-shaped tubes arranged within the burner-casing and supported upon the offsets thereof, one above another, a truncated-cone-shaped tube supported within the chimney-holder and surrounding the uppermost of the first-mentioned tubes, a series of air-passages between all of said tubes and the casing, a dome or cap adapted to be heated to incandescence, arranged at the upper end of the said uppermost tube, a suitable chimney arranged upon and supported by its holder, and a series of openings in said holder adapted to supply air to the passage between the uppermost tube carrying the cap and its surrounding tube, whereby to prevent undue heating of the former tube, as and for the purpose specified.

3. In an incandescent gas-burner, the combination, with a suitable gas-admission pipe, of a casing supported thereby, a series of superposed truncated-cone-shaped tubes arranged within said casing, air-passages between said tubes, openings in the casing adapted to admit air to said air-passages, a chimney holder or support carried at the upper end of the casing, openings in said holder for admitting air around the uppermost tube, a ring rotatably mounted upon the chimney-holder and provided with openings adapted to register with the openings therein, and a cap adapted to be heated to incandescence, carried at the upper end of the uppermost tube, all arranged for co-operation, as and for the purpose specified.

4. In an incandescent gas-burner, the combination, with a suitable gas-admission pipe, of the burner-casing supported thereby and having the shape of an inverted truncated cone, the truncated-cone-shaped tubes C D E G, arranged within the said casing, one above the other, forming air-passages between them, the chimney-support H, carried at the upper end of the casing and provided with openings for admitting air between the tubes E G, openings in the casing for admitting air between the tubes C D E and around the gas-admission pipe, the wire-gauze partition F, arranged within the tube E, and the cap A, secured to the upper end of the latter tube, all arranged for co-operation, as and for the purpose specified.

445,726. EXERCISING APPARATUS. WILLIAM L. COOP, Providence, R. I. Filed Sept. 20, 1889. Serial No. 324,517. (No model.)



Claim.—1. A device for resisting the force exerted in a rowing-machine, consisting of a cylinder divided by a partition into two sections, an oar or handle secured to a central shaft provided with two pistons, and adjustable byways, as described.

2. A device for resisting the force exerted in an exercising-machine, consisting of an oar or handle secured to the shaft of an oscillating piston provided with an opening closed automatically when the piston moves in one direction and opening automatically when moving in the opposite direction, a casing in which the piston oscillates, closely fitting the sides of the piston, and byways, as described.

3. A hydraulic device for resisting the force exerted in a rowing-machine, pivotally supported outside its center of gravity to counterbalance or partly counterbalance the oar or handle B.

4. The combination, with the support D, of the box A, pivotally secured, the shaft C, the passages c^4, screw c^4, and openings c^3, and the oar B, as described.

445,727. ELECTRIC GAS-LIGHTING APPARATUS. HENRY H. CUTLER, Newton, Mass. Filed May 6, 1890. Serial No. 350,786. (No model.)

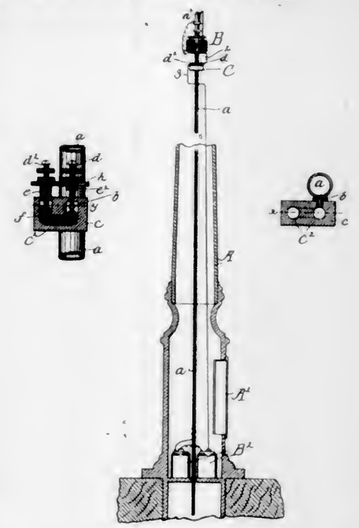
Claim.—1. The combination of a gas-supply pipe provided with a burner and a valve controlling the flow of gas to said burner with an electric circuit-closer having a movable member or contact portion constantly exposed to the pressure of the gas in the main and moving in response to a variation in said pressure from the normal amount, whereby it may be operated to close and open the same by a momentary variation in the pressure in the gas-main, substantially as described.

2. The combination, with a gas-supply pipe provided with a valve and burner, of an electro-magnet for operating said valve and circuit therefor and circuit-closer in said circuit, having a movable member exposed to the pressure of the gas in the pipe and operated by variations in gas-pressure, substantially as described.

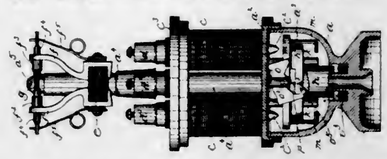
3. The combination, with a gas-supply pipe, of an electric circuit-closer comprising a piece having a U-shaped passage, and a liquid contained in said passage and rising into both branches thereof, a connecting-passage from one branch of said passage above the liquid therein to the exterior of the gas-pipe, and a contact-piece extending into the other passage and co-operating with the liquid therein to change the condition of the electric circuit terminating in said contact-piece when the level of the liquid is changed by a change in pressure in the gas, substantially as described.

4. The combination of the metallic siphon-piece *c*, having a U-shaped passage, with a screw *a*, entering and closing the end of one branch of said passage, a connecting-passage *b* from said branch to the interior of the gas-pipe, and a screw *d*, extending into the other branch of the U-shaped passage and insulated from the siphon-piece, substantially as described.

5. The combination of a gas-supply pipe provided with a burner and a valve controlling the flow of gas to said burner with an electric circuit-closer having a movable member or contact portion constantly exposed to the pressure in the main and moving in response to a variation in said pressure from the normal amount, and an electro-magnet and armature and contact-electrodes operated by said armature in circuit with the said circuit-closer, the said contact being located at the burner for igniting the gas by the sparks produced by the separation of said electrodes, substantially as described.



445,728. ELECTRIC GAS-LIGHTER. HENRY H. CUTLER, Newton, Mass. Filed Mar. 15, 1890. Serial No. 343,991. (No model.)



Claim.—1. In a gas-lighting apparatus, the combination, with the burner-tip, of insulated brackets adjacent to said burner tip provided with guides, a spring-pressed sliding clamp working in said guides, and an incandescent conductor working in said clamps, substantially as and for the purpose described.

2. The combination of an electro-magnet and armature with a valve, a shifting valve-holder, and a lock for the latter, all operated by the said armature, the said lock preventing the said support from shifting except when the armature is moved to operate the lock, valve, and valve-support, substantially as described.

3. The combination of an electro-magnet and armature with a valve, a shifting valve-holder provided with a V-shaped cam, and a spring-arm carried by said armature and co-operating with the said valve-holder to shift the same at alternate movements of said armature, substantially as and for the purpose described.

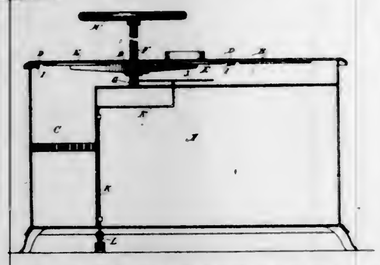
4. The combination of an electro-magnet and armature with a valve, a shifting valve-holder provided with a V-shaped cam, and a spring-arm carried by said armature and co-operating with the said valve-holder to shift the same at alternate movements of said armature, and co-operating locking projections on said shifting valve-holder and armature, whereby the holder is prevented from shifting except when the armature arrives at or near its attracted position, substantially as described.

445,729. STOVE-TOP. PETER HAERST, San Francisco, Cal. Filed Oct. 13, 1890. Serial No. 368,001. (No model.)

Claim.—1. The improvement in stoves, consisting of a rotatable plate let into an opening in the stove-casing and having openings made through it, a shaft upon which the plate is mounted and by which it is rotated, a vertically-moving plate, and an operating-lever for raising

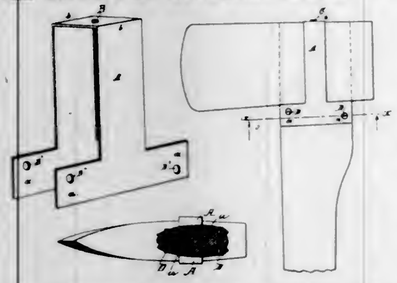
the same to close any one of the openings in the rotatable plate when said opening is brought into alignment therewith, substantially as herein described.

2. In a stove, a top having a large circular opening made through it, a circular disk fitting said opening and having holes made through it for the reception of pots or utensils, a vertical central shaft or spindle to which said disk is secured, a step in which the bottom of the spindle is adapted to turn, and a hand-wheel fixed to the top of the spindle, whereby the disk may be turned so as to bring either of the holes directly above the fire or at a point distant from it, said hand-wheel being located above the utensils and serving as a support for them when removed from the openings in the plate, substantially as herein described.



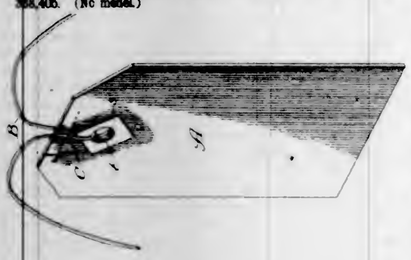
3. In a stove, the top having a large circular opening made through it so as to extend partially above the fire-place, a circular disk fitting said opening and having holes made through it for the reception of pots or utensils, a vertical central shaft to which the disk is fixed, a step in which said shaft turns, and a means for rotating it, guides or rollers upon which the periphery of the disk is supported, and a plate having a standard and a lever whereby it may be raised from below, so as to close any one of the holes in the disk when said hole is brought above the plate by the rotation of the disk, substantially as herein described.

445,730. AX-HELVE FASTENER. HOWARD M. MARTIN, Tacoma, Wash. Filed June 9, 1890. Serial No. 354,806. (No model.)



Claim.—The combination, with an ax and helve or handle extending through the eye of the ax in the usual way, of a strap or band consisting of the body encompassing one edge and both sides of the ax in line with the eye and helve, and having T-heads upon the ends thereof, which press down upon the sides of the helve and butt against the metal of the inner edge or face of the eye of the ax, as set forth.

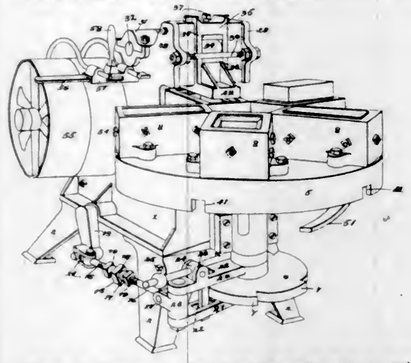
445,731. TAG. ALFRED C. NORTH, Benton Harbor, assignor of one-third to Jerome Eddy, Flint, Mich. Filed Oct. 17, 1890. Serial No. 368,405. (No model.)



Claim.—1. A tag provided with a flexible tying medium passing through an opening in the body portion of the tag, and a fastener extending through the body portion between the said opening and adjacent top edge of the tag and there embracing the tying medium on both sides of the tag, substantially as described.

2. A tag provided toward one end with a re-enforced opening, a tying medium looped through the said opening, and a fastener extending through the body portion of the tag, between the said opening and adjacent top edge, and there embracing the tying medium on both sides of the tag, substantially as described.

445,732. BRICK-PRESS. CARRICK P. OLDHAM, Knoxville, Tenn. Filed Jan. 4, 1890. Serial No. 335,899. (No model.)



Claim.—1. The combination of the rotary die-table, a ratchet-wheel mounted upon the lower end of the shaft carrying the said table, the links mounted loosely upon the said shaft above and below the said ratchet-wheel and having longitudinal slots, the bell-crank lever pivoted in the upper link and adapted to engage the rim of the ratchet-wheel, the adjustable weight upon the horizontal arm of said bell-crank lever, and mechanism for operating the said links, substantially as and for the purpose set forth.

2. The combination of the vertical shaft carrying the rotary die-table and having a ratchet-wheel at its lower end, the longitudinally-slotted links mounted loosely upon said shaft above and below the ratchet-wheel, the bell-crank lever pivoted in the upper link and engaging the rim of the ratchet-wheel, the adjustable weight upon the horizontal arm of said bell-crank lever, a rock-shaft journaled in and connecting the outer ends of the said links, a pitman connected pivotally with said rock-shaft, and suitable operating mechanism, substantially as and for the purpose set forth.

3. The combination of the shaft having the ratchet-wheel, the loosely-jonrnaled links, a rock-shaft connecting the outer ends of said links, and a bell-crank lever pivoted in the upper link and having a weight on its horizontal arm, substantially as set forth.

4. The combination of the vertical shaft carrying a rotary die-table at its upper end and having a ratchet-wheel at its lower end, the links journaled loosely upon said shaft, the bell-crank lever pivoted in the upper link, engaging the said ratchet-wheel and having an adjustable weight on its horizontal arm, the rock-shaft connecting the outer ends of the links and having laterally-extending lugs, a transverse crank-shaft, and a connecting-rod connected pivotally with the lugs of the rock-shaft connecting the oscillating links and connected by a knuckle-joint with a crank upon the outer end of said transverse crank-shaft, substantially as set forth.

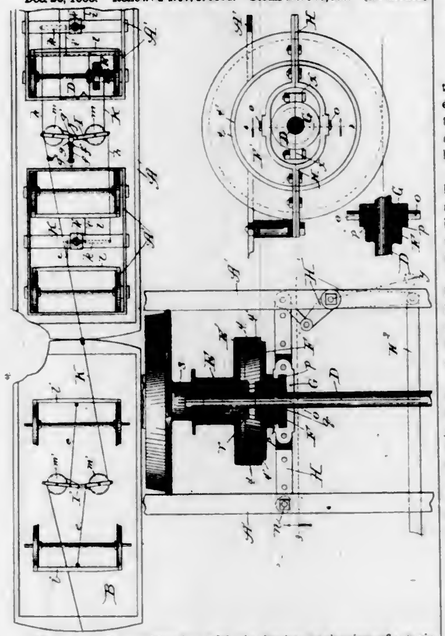
5. The combination of the oscillating links having the bell-crank lever to engage a ratchet-wheel upon the lower end of the vertical shaft carrying the rotary die-table, a transverse shaft having a crank at its outer end, and a compound connecting-rod composed of two parts having right and left hand threaded ends connected by a right and left hand threaded coupling-sleeve, said connecting-rods being connected to the crank-shaft by means of a universal joint and to the oscillating links by means of a rock-shaft journaled in and connecting the outer ends of said links, substantially as set forth.

6. A brick-press comprising the rotary die-table, a ratchet-wheel upon the lower end of the vertical shaft carrying the rotary die-table, the links mounted loosely upon said shaft above and below said ratchet-wheel, the bell-crank lever pivoted in the upper link and engaging the ratchet-wheel, the rock-shaft connecting the outer ends of said links, a compound connecting-rod connecting said rock-shaft with a crank upon the outer end of the crank-shaft, a locking device adapted to engage any one of a series of notches in the rim of the rotary die-table, mechanism for holding the said locking device normally in engagement with the rim of the die-table, and an operating-lever adapted to disengage said locking device, said operating-lever being extended into the path of the crank-shaft, substantially as and for the purpose herein set forth.

7. The rotary die-wheel having the press-boxes, in combination with the vertically-movable bottom dies having downwardly-extending shanks and a permanently-arranged inclined track for the said shanks, said track being provided with a recess in which a frangible plate is detachably mounted, substantially as and for the purpose set forth.

8. In a brick-press, the combination, with the vertically-movable bottom dies, of a dovetailed frangible supporting-plate or break-plate mounted detachably in a suitable dovetailed recess provided for its reception directly below the top die, substantially as and for the purpose set forth.

445,733. CAR-BRAKE. JOSEPH REICHMANN, Chicago, Ill. Filed Dec. 26, 1888. Renewed Nov. 5, 1890. Serial No. 370,406. (No model.)



Claim.—1. In combination with the brake mechanism of a train of cars, a rotary drum held yieldingly against reversal of its rotation, a sheave device on different cars of the train, each having its pulleys supported and movable on opposite sides of a straight line longitudinal of the respective car, and a rope secured at one end to one car of the train and at its opposite end to the drum and passed between its ends directly to and in the same direction around the pulleys of each sheave device and forming an open loop around each pulley, whereby when force is applied to the rope each pulley will be moved by a single length of rope and separation of the train will cause the rope to pay out by rotation of the drum against its yielding resistance and set the brakes, substantially as described.

2. In combination with the brake mechanism of a car, a sheave device, a rotary drum, a rope secured to the drum and extending therefrom around the sheave device and fastened at its free end, and releasing mechanism, substantially as described, for the brakes, substantially as set forth.

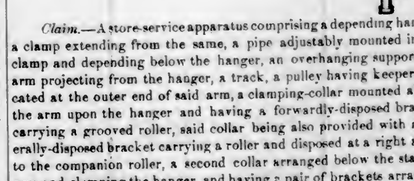
3. In combination with the brake mechanism of a car, a pivotal sheave device I, normally controlled by a spring-actuated rod *f*, an axle D, carrying a drum and a friction-clutch, lever mechanism connected with the clutch to produce and release at will engagement thereof with the drum, and a rope K, secured at one end of the drum and passing thence around the sheave device and fastened at its opposite end, substantially as described.

445,734. COTTON-PLANTER. JAMES D. SCHOFIELD, Rodgers, Tex., assignor to the Ohio Cultivator Company, Bellevue, Ohio. Filed Aug. 9, 1890. Serial No. 361,571. (No model.)

Claim.—1. In a planter, a spring-actuated tongue mounted in a slot in the bottom of the hopper and having a feed-opening, substantially as and for the purpose set forth.

2. In a planter, the combination, with the hopper having a slotted bottom, of a spring-actuated tongue mounted pivotally in said slot and having a feed-opening, and a regulating-slide mounted upon said spring-actuated tongue, substantially as set forth.

3. In a planter, the combination, with the hopper having a slot in the bottom thereof, of a tongue mounted upon a shaft at one end of said slot, and a spring to force the body of said tongue normally in an upward direction, substantially as set forth.



4. In a planter, the combination, with the hopper having a slot in the bottom thereof, of the hinged or pivoted tongue provided at its edges with downwardly-extending flanges, a spring arranged to force the body of said tongue normally in an upward direction, and a pin extending through the flanges to limit the upward movement of the body of the tongue, substantially as set forth.

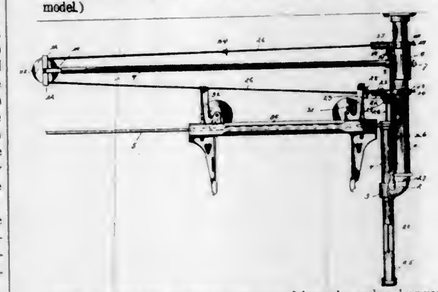
5. In a planter, the combination of the hopper having a slot in the bottom thereof, a shaft journaled at one end of said slot, a tongue mounted upon said slot and having downwardly-extending flanges at its edges, and a spring arranged to force the body of said tongue normally in an upward direction, substantially as and for the purpose set forth.

6. In a planter, the combination of the hopper having a slot in the bottom thereof, the spring-actuated tongue mounted in said slot and having a feed-opening and a regulating-slide, and the revolving shaft receiving motion from the drive-wheel of the machine and having a hub provided with arms engaging the said spring-actuated tongue, substantially as set forth.

7. In a planter, the combination of the hopper having a slot in the bottom thereof, the spring-actuated tongue mounted in said slot and having a feed-opening and a regulating-slide, and a revolving shaft journaled in the hopper and having bent or L-shaped arms engaging the said spring-actuated tongue, substantially as and for the purpose set forth.

8. In a seed-planter, the combination of the hopper having a slot in the bottom thereof, the shaft journaled at one end of said slot and having a spring-actuated tongue provided with a feed-opening, and a regulating-slide having an arm adapted to be secured adjustably to the said shaft, substantially as and for the purpose set forth.

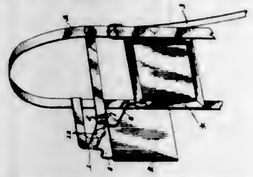
445,735. PARCEL-CARRIER. CHARLES STARR and PAUL KRAZEISE, Louisville, Ky. Filed Sept. 26, 1890. Serial No. 366,272. (No model.)



Claim.—A store-service apparatus comprising a depending hanger, a clamp extending from the same, a pipe adjustably mounted in the clamp and depending below the hanger, an overhanging supporting-arm projecting from the hanger, a track, a pulley having keepers located at the outer end of said arm, a clamping-collar mounted above the arm upon the hanger and having a forwardly-disposed bracket carrying a grooved roller, said collar being also provided with a laterally-disposed bracket carrying a roller and disposed at a right angle to the companion roller, a second collar arranged below the station-arm and clamping the hanger, and having a pair of brackets arranged at a right angle to each other, one being disposed parallel with the track and the other terminating over the said pipe, rollers mounted

in said brackets, a cord passing through the aforesaid guide-rollers, connected at one end to the weight mounted in the pipe and terminating at its opposite end in a hand-pull, a push-block mounted on the cord under the arm, and a stop mounted upon the cord over the arm, substantially as specified.

445,786. WINKER-FORK. EDWARD A. STEPHENS, Fremont, Ind. Filed Sept. 27, 1890. Serial No. 366,352. (No model.)

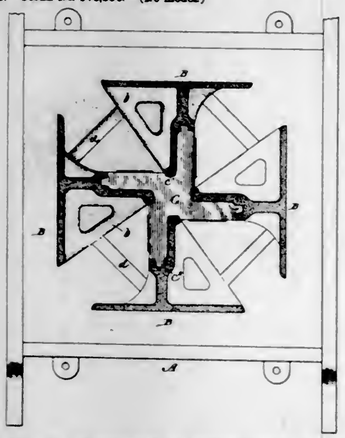


Claim.—1. The combination, with the brow-band of a bridle and a winker or blind, of a winker-brace connected at one end to the winker and at its upper end terminating at and adjustably connected to the brow-band, substantially as specified.

2. The combination, with the brow-band of a bridle and a series of clips provided with hooks mounted therein, of a winker and a brace connected to the winker and provided at its front end with a loop for engaging one of said hooks, substantially as specified.

3. The combination, with the brow-band of a bridle, a hook projecting therefrom, and a blind or winker, of a winker-brace consisting of a central malleable-wire core terminating at its front end in a loop for engaging the hook, and an outer covering of leather, substantially as specified.

445,787. MOLD. THOMAS E. TWIST, Milton, Pa. Filed Nov. 6, 1890. Serial No. 370,530. (No model.)



Claim.—1. In the manufacture of chairs for railroad-rails, the combination of the flask, the mold, and the chill, which consists of a main body portion provided with three or more arms, which extend laterally therefrom and are adapted to form the recesses or seats for the rails in the upper portions of the chairs, substantially as described.

2. In the manufacture of chairs for railroad-rails, the combination of the flask, the mold, and the chill, which consists of a main portion recessed to form the heads of the chairs and having pairs of oppositely-extending arms which terminate in ribs or flanges adapted to form sockets to receive the web of the rail, substantially as described.

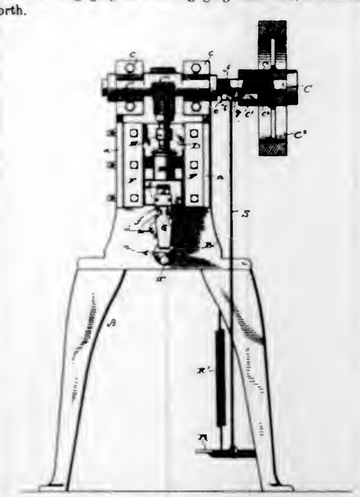
3. In the manufacture of chairs for railroad-rails, a cross-shaped chill-core having its main body portion provided with recesses to form the heads of the chairs and having arms which terminate in ribs or flanges adapted to form sockets to receive the web of the rail, substantially as described.

445,788. DIE FOLDING AND SEAMING MACHINE. FRANCIS A. WALSH, Milwaukee, Wis. Filed Apr. 23, 1889. Serial No. 308,317. (No model.)

Claim.—1. The combination of a reciprocative slide, dies carried thereby, a plunger reciprocative in the slide, dies carried by the plunger in opposition to those first named, and a stop for limiting the travel of the plunger, substantially as set forth.

2. The combination of reciprocative dies, a plunger provided with dies opposed to those first named, and a horn opposed to the plunger, substantially as set forth.

3. The combination of a pair of opposing dies, a groove adjacent to one of the dies for the reception of sealing material, and suitable means for engaging and disengaging said dies, substantially as set forth.



4. The combination of a pair of opposing dies, a reservoir for sealing material, a conduit leading from the reservoir to a point adjacent to one of the dies, and suitable means for engaging and disengaging said dies, substantially as set forth.

5. The combination of a pair of opposing dies, a reservoir for sealing material, a conduit leading from the reservoir to a point adjacent to one of the dies, a regulator for controlling the flow of said material, and suitable means for engaging and disengaging said dies, substantially as set forth.

6. The combination of a pair of opposing dies, a reservoir for sealing material, a conduit leading from the reservoir to a point adjacent to one of the dies, suitable means for keeping the sealing material in a melted state, and a reciprocating mechanism for engaging and disengaging said dies, substantially as set forth.

7. The combination of a reciprocative slide provided with a slot and recessed at each side of the slot, dies fitted in the recesses and projected into said slot, a spring-controlled plunger normally supported by the dies and provided with shoulders in the form of dies opposed to those carried by the slide, and a stop for limiting the travel of the plunger, substantially as set forth.

8. The combination of a reciprocative slide provided with a slot and recessed at each side of the slot, dies fitted in the recesses and projected into said slot, a plunger normally supported by the dies and provided with shoulders in the form of dies, opposed to those carried by the slide, a horn arranged in the path of the plunger, and an anvil carried by said plunger in opposition to the horn, substantially as set forth.

9. The combination of a reciprocative slide provided with a slot and recessed on each side of the slot, dies fitted in the recesses and projected into said slot, a plunger normally supported by the dies and provided with shoulders in the form of dies opposed to those carried by the slide, gage-plates fitted to the plunger, and a stop for limiting the travel of said plunger, substantially as set forth.

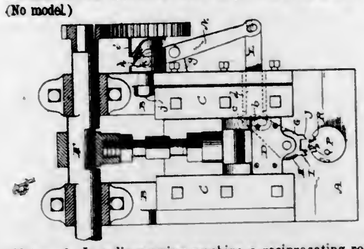
10. The combination of reciprocative dies, a plunger provided with dies opposed to those first named, a horn opposed to the plunger, and spring-controlled gage-pins arranged in the horn, substantially as set forth.

11. The combination of reciprocative dies, a plunger provided with dies opposed to those first named, gage-plates fitted to the plunger, a horn opposed to said plunger, and spring-controlled gage-pins arranged in the horn, substantially as set forth.

12. In a machine for folding single edges of metal sheets preparatory to an interlocking and closing down of opposing folds, a die-point having one face thereof normally at right angles to a sheet to be operated upon and the opposite face of said point beveled in a direction acute to the plane of said sheet, a die-groove corresponding in shape to and in register with the die-point, and suitable means for engaging said point and groove against the sheet, the latter being free to incline toward the non-beveled faces of the die-point and groove when the engagement takes place, whereby a fold is formed parallel to said non-beveled faces of the die-point and groove and at an acute angle to the body of said sheet, substantially as set forth.

13. In a machine for separately folding the meeting edges of metal sheets preparatory to an interlocking and closing down of opposing folds, two die-points arranged in opposite directions to a sheet in position to be operated upon, and two die-grooves in register with said points, one face of each point and groove normally at right angles to the sheet and the opposite face beveled in a direction acute to the plane of said sheet, and suitable means for engaging both points and opposing grooves against the sheet at the same time, whereby right and left folds are simultaneously formed on the same sheet parallel to the non-beveled faces of the points and grooves and at acute angles to the body of said sheet, the latter being free to incline toward said non-beveled faces when the engagement takes place, substantially as set forth.

445,789. DIE-SEAMING MACHINE. FRANCIS A. WALSH, Milwaukee, Wis. Original application filed Apr. 23, 1889, Serial No. 308,317. Divided and this application filed Dec. 2, 1889. Serial No. 332,267. (No model.)



Claim.—1. In a die-seaming machine, a reciprocating rotary adjustable plunger provided with dies, and a horn provided with dies corresponding to those on the plunger, substantially as set forth.

2. In a die-seaming machine, a reciprocating rotary adjustable plunger provided with dies, suitable means for locking the plunger in its adjusted position, and a horn provided with dies corresponding to those on said plunger, substantially as set forth.

3. In a die-seaming machine, a reciprocating slide, a plunger journaled to the slide, dies on the plunger, a lever mechanism for imparting a rotary adjustment to the plunger, and a horn provided with dies corresponding to those on said plunger, substantially as set forth.

4. In a die-seaming machine, a reciprocating slide, a plunger journaled to the slide, dies and arms on the plunger, a sliding bar provided with a slot parallel to the movement of said slide, a lug on the plunger-arm arranged to engage said slot, a pivoted lever connected to the sliding bar, a cam arranged to actuate the lever, and a horn provided with dies corresponding to those on said plunger, substantially as described.

5. In a die-seaming machine, a crank-shaft provided with a pinion, a slide connected to the crank-shaft, a plunger journaled to the slide, dies on the plunger, a gear-wheel arranged to mesh with the crank-shaft pinion, a cam-and-lever mechanism connecting the gear-wheel and plunger, and a horn provided with dies corresponding to those on said plunger, substantially as set forth.

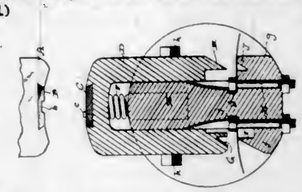
6. In a die-seaming machine, a rotary adjustable device provided with a pair of approximately parallel folding-dies, another pair of folding-dies in direct opposition to those on the rotary adjustable device, and suitable mechanism for reciprocating one pair of said dies, whereby two edges of a sheet-metal blank may be separately folded at one operation of the machine, substantially as set forth.

7. In a die-seaming machine, a rotary adjustable device carrying an anvil and dies, a stationary surface for the impact of the anvil, and dies in the stationary surface corresponding to those on said rotary adjustable device, substantially as set forth.

8. In a die-seaming machine, a drive-shaft, a plunger provided with dies, a stationary surface provided with dies in opposition to those on the plunger, and a timed mechanism connecting the shaft and plunger to shift the latter at each rotation of said shaft, and thereby bring the dies on said plunger in and out of their working position, substantially as set forth.

9. In a die-seaming machine, a pair of single edge-folding dies, a seam-closing surface on a line parallel to the dies, another pair of single edge-folding dies and a seam-closing surface in direct opposition to the dies and seam-closing surface first named, and suitable mechanism for reciprocating one set of dies and a seam-closing surface, whereby two edges of a sheet-metal blank may be separately folded at one operation of the machine and the seam formed by a subsequent union of the folds closed by a second operation of said machine, substantially as set forth.

445,740. DIE-SEAMING MACHINE. FRANCIS A. WALSH, Milwaukee, Wis. Original application filed Apr. 23, 1889, Serial No. 308,317. Divided and this application filed Dec. 2, 1889. Serial No. 332,268. (No model.)



Claim.—1. In a die-seaming machine, a pressure-block, a yielding head arranged to oppose the pressure-block and having furcations terminated in dies, and dies opposed to those on the head, substantially as set forth.

2. In a die-seaming machine, a pressure-block provided with a seam-closing anvil, a yielding head arranged to oppose the pressure-block and having furcations terminated in flanging-dies, and similar dies opposed to those on the head, substantially as set forth.

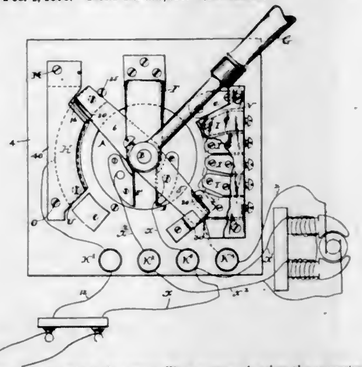
3. In a die-seaming machine, a pressure-block, a yielding head arranged to oppose the pressure-block and having furcations terminated in dies, other dies arranged to oppose those on the head, and gages arranged adjacent to these other dies, substantially as set forth.

4. In a die-seaming machine, a horn provided with lateral extensions having dies therein, a yielding head astraddle of the horn and provided with dies, the latter being opposed to those in the lateral extensions of said horn, and a pressure-block opposed to the head, substantially as set forth.

5. In a die-seaming machine, a horn provided with lateral extensions having dies therein, a spring-controlled head astraddle of the horn and provided with slots, stops on the horn for engagement with the slots, dies on the head opposed to those in the lateral extensions of the horn, and a pressure-block opposed to the head, substantially as set forth.

6. In a die-seaming machine, a horn provided with lateral extensions having dies therein, stems adjustable in these lateral extensions and provided with cam-heads, a yielding head astraddle of the horn and provided with dies, the latter being opposed to those in said lateral extensions of the horn, and a pressure-block opposed to the head, substantially as set forth.

445,741. ELECTRIC-MOTOR SWITCH. FRANKLIN A. WELLER, Boston, Mass., assignor to William S. Hadaway, Jr., trustee, same place. Filed Feb. 1, 1890. Serial No. 338,910. (No model.)



Claim.—1. A switch for controlling motors, having the armature-coils in a branch or shunt circuit comprising a series of resistance contacts in the shunt-circuit, a long contact in the main line to both field and armature coils, an operating-handle, and a pair of contacts thereon moving in unison with but insulated from each other, one controlling the main line to both the field and armature coils and the other the shunt through the armature and resistance coils, said parts being so positioned with relation to each other that the main line shall be established through the field-coils in advance of the establishment of the circuit through the armature-coils, substantially as described.

2. A switch for controlling motors, having the armature-coils in a branch or shunt circuit comprising a pair of pivoted contact-arms insulated from each other, a series of resistance-contacts in the shunt-circuit, with which one arm is adapted to contact, and a contact in the main line to the shunt and field coils, located relatively in advance of the first resistance-contact, whereby the circuit is established through the field-coils in advance of the establishment of the circuit through the shunt-circuit and armature-coils, substantially as described.

3. A switch for controlling a main line and a resistance-shunt circuit in said main line, comprising a pair of yielding switch-arms moving together but insulated from each other, a contact in the main line, and a series of resistance-contacts in the shunt, with which said arms are adapted to co-operate during their movement in one direction, and insulating-plates overlying both the main line and resistance-contacts, upon which the arms are supported during the return movement, substantially as described.

4. A switch for controlling a main line and a resistance-shunt circuit in said main line, comprising a pivoted operating-handle, a pair of switch-arms mounted on said handle and insulated from each other, a pair of contact-springs engaging said switch-arms, respectively, one forming one terminal of the main line, a main-line contact with which the arm engaging with said spring is adapted to co-operate to establish the main line, and a series of resistance-contacts forming one terminal of the shunt-circuit, the opposite terminal being formed by the spring engaging the arm adapted to co-operate with said resistance-terminals, substantially as described.

5. In a switch such as described, the combination, with the pivoted operating-handle having an insulating-hub movable therewith, a pair of independent switch-arms mounted on said hub opposite and out of electrical connection with each other and having the extended hub-flanges and the terminal springs engaging said hub-flanges, the long main-line contact with which one of the arms co-operate, and the series of contacts with which the opposite arm co-operates, whereby a main line and a resistance-shunt in said line may be controlled, substantially as described.

6. In a switch such as described, the combination, with the pivoted operating-handle having an insulating-hub movable therewith, flanges at top and bottom of said hub, and a pair of independent switch-arms having hub-flanges held between said first-mentioned flanges out of electrical connection with each other, and the terminal springs engaging said hub-flanges on the arms, of the long main-line contact with which one of the arms co-operates and the series of contacts with which the opposite arm co-operates, whereby a main line and a resistance-shunt in said line may be controlled, substantially as described.

7. In an electrical switch, the combination, with the pivoted switch-arm and contact with which the same is adapted to co-operate, of the spring insulating-plate overlying and between which and the contact the arm passes, having one of its ends slightly nearer the contact than the other, whereby the arm in its return movement is caused to travel over the plate, substantially as described.

8. In an electrical switch, the combination, with the yielding pivoted switch-arm having the "rolled up" or beveled edge and contact with which the arm is adapted to co-operate, of the insulating-plate overlying and between which and the contact the arm passes, having its rear end beveled and adapted to engage the beveled edge of the arm, whereby the arm is caused to travel over the plate in the return movement, substantially as described.

9. In an electrical switch, the combination, with the yielding switch-arm, the contact with which the arm is adapted to co-operate, and the insulating-plate overlying and between which and the contact the arm passes in its forward movement and over which it passes in the return stroke, of the stop for said arm having the overhanging end for preventing the re-entry of the arm without returning to first position, substantially as described.

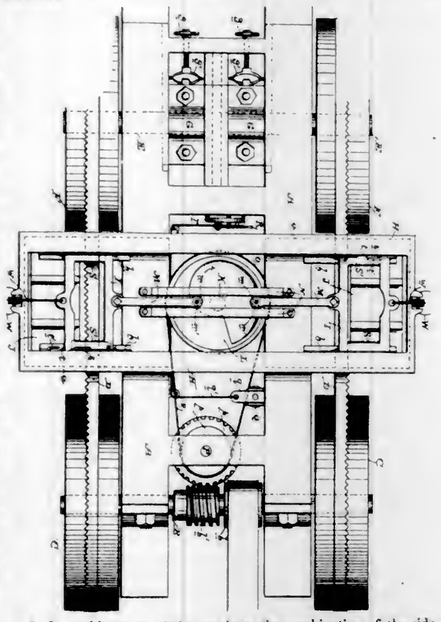
445,742. SHINGLE OR SHAKE MACHINE. CHARLES W. BABCOCK, Crescent City, Cal. Filed July 26, 1890. Serial No. 359,930. (No model.)

Claim.—1. In a shingle or shake machine, the combination of a pair of band-saws, one on each side of the machine, and alternately-reciprocating bolt-carriages, one on each side, and a cam-connection between the carriages, whereby the bolts are cut alternately, substantially as herein described.

2. In a shingle or shake machine, the combination of a pair of band-saws, one on each side of the machine, alternately-reciprocating bolt-carriages, one on each side and adapted to alternately feed their bolts to the saws, whereby a shake is cut from each bolt alternately, and a central feed mechanism comprising a cam and connections for operating the carriages, substantially as herein described.

3. In a shingle or shake machine, the combination of the band-saws, one on each side of the machine, the alternately-reciprocating bolt-carriages, one on each side of the machine, and the means for alternately feeding said carriages, consisting of the central rotating cam and the links from said carriages engaging the cam, substantially as herein described.

4. In a shingle or shake machine, the combination of the band-saws, one on each side, the sliding carriages, one on each side, the means for alternately reciprocating the carriages, consisting of the rotating cam between them, the links from the carriages engaging the cam, and the weights for returning the carriages, substantially as herein described.



5. In a shingle or shake machine, the combination of the side saws, the sliding carriages, one for each saw, the central rotating cam, the links from the carriages engaging the cam, whereby said carriages are alternately fed, the weight for returning the carriages, and the transverse guide-bars for holding the links in place on the cam, substantially as herein described.

6. In a shingle or shake machine, the combination of the band-saws, one on each side, the sliding bolt-carriages, one for each saw, the central rotating cam, the links from the carriages engaging said cam, whereby the carriages are alternately drawn inwardly, the weights for returning the carriages, and the means for rotating the cam, consisting of the shaft on which it is mounted, the drive-shaft and the intervening worm, worm-gear, pulleys, and belt, by which the power of the drive-shaft is transmitted to the cam-shaft, substantially as herein described.

7. In a shingle or shake machine, the combination of the reciprocating bolt-carriages, one on each side of the machine, a centrally-placed cam and connections therefrom for operating the carriages alternately, the pulleys at each side of one end of the machine, the independently-adjustable pulleys, one at each side of the other end of the machine, and the endless-band saws passing over said pulleys, substantially as herein described.

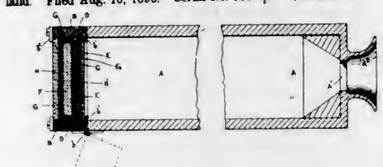
8. In a shingle or shake machine, the combination of the sliding bolt-carriages, one at each side of the machine, the central cam and connections therefrom for operating the carriages alternately, the pulleys mounted at each side of one end of the machine, the pulleys mounted at each side of the other end of the machine, the independent shafts of said last-named pulleys, the independently-sliding boxes in which said shafts are mounted, the set-screws for independently adjusting them, and the intervening springs serving as a cushion, substantially as herein described.

9. In a shingle or shake machine, the combination of the endless-band saws, one on each side, the alternately-reciprocating carriages, the central cam and engaging links of the carriages, whereby the carriages are fed, the power-transmitting belt for operating the cam, the sliding tightener-pulley, affecting said belt, the lever, and the rope or cord connecting the lever with the sliding tightener-pulley, substantially as herein described.

10. In a shingle or shake machine, the bolt-carriage having on one side the fixed toothed dog and on the other side the pivoted toothed dog having an outer flange, in combination with the carriage-track *h*, having an opening and a projecting flange for engaging the flange of the pivoted toothed dog and swinging it to free it from the bolt, substantially as herein described.

11. In a shingle or shake machine, the bolt-carriage having a pivoted toothed dog S', having an outer flange, in combination with the carriage-track *h*, having an opening and a projecting flange for engaging the flange of the pivoted toothed dog and swinging it to free it from the bolt, substantially as herein described.

445,743. ACTINOMETER. EDWARD G. BALLARD, Chester, England. Filed Aug. 18, 1890. Serial No. 362,281. (No model.)



Claim.—1. The method of measuring the relative intensity of the actinic rays of light present at any given time or place or under any conditions, which consists in causing a portion of such rays at a suitable intensity to be viewed in juxtaposition to rays of approximately the same color emitted from a layer of fully-excited luminous material, and in noting the time taken by the said emitted rays to fade to the intensity of the said first-named rays, substantially as described.

2. The method of measuring the relative intensity of the actinic rays of light present at any given time or place or under any conditions, which consists in permitting a portion of the light to pass through a suitably-colored semi-transparent medium for the purpose of separating the actinic rays required and reducing their intensity to a sufficient extent, in viewing such rays in juxtaposition to rays of approximately the same color emitted from a layer of fully-excited luminous material, and in noting the time taken by the said emitted rays to fade from their maximum intensity to that of the said rays of reduced intensity, substantially as described.

3. The method of measuring the relative intensity of the actinic rays reflected from an object or landscape, the said method consisting in first permitting a portion of such actinic rays to enter a darkened chamber through a medium whereby their intensity is reduced sufficiently to give correct results, and in then comparing the intensity of said rays with that of the rays emitted from a gradually-fading luminous surface of the kind described visible within said chamber, substantially as described.

4. The method of ascertaining the proper amount of exposure to be given to a photographic plate at any given time and under any conditions existent thereat, the said method consisting in, first, exposing a layer of luminous material of the kind described to the light until fully excited; second, cutting off the light therefrom; third, noting the time taken for the actinic rays emitted from such excited material to fade from their maximum intensity to that of a portion of the actinic rays reflected from the object to be photographed and viewed at a suitable intensity in juxtaposition to the rays emitted from the luminous material, and, fourth, referring the time so noted to a properly-constructed table on which is set forth the equivalent amount of exposure to be given to the plate, substantially as described.

5. In an apparatus for measuring the relative intensity of actinic rays of light, the combination of a darkened chamber into which such actinic rays enter with a surface of self-luminous material such as described, capable of emitting rays in the dark after exposure of approximately the same color as said actinic rays, substantially as and for the purpose described.

6. In an actinometer, the combination of a darkened chamber having a sighting-orifice at one end, a layer of luminous material of the kind described located at the opposite end of said chamber, a device located beyond said luminous material and adapted to permit only the passage of rays of substantially the same wave-length as those of the luminous material into the interior of the chamber, means whereby such rays may be viewed in juxtaposition to the rays emitted from the luminous material, and means for alternately exposing said material to the light and cutting off the light therefrom, substantially as described.

7. In an actinometer, the combination of a darkened chamber having a sighting-orifice, an opaque layer of luminous material of the kind described arranged opposite said orifice in juxtaposition to a space adapted to permit the entrance of external rays into the chamber, a suitably-colored transparent medium located beyond said space and exposed to the external light, means for reducing the intensity of the rays passing through said space, and a device whereby the luminous material may be alternately exposed to and cut off from the light, substantially as described.

8. In an actinometer, the combination, with a darkened chamber A, having a sighting-orifice A', of a layer E of luminous material opposite said orifice, a backing D for said layer, having a central space *d*, adapted to permit the passage of the external rays, a bluish-colored transparent medium F beyond said space, and a frame B, carrying said medium, backing, and layer and hinged to the chamber A, substantially as described.

9. The combination, with the chamber A, having eye-piece A^3, of the ground-glass plate C, glass backing D, opaque layer of luminous material E, having central opening, as described, blue-glass plate F, and hinged frame B, inclosing said plates, backing, and layer, substantially as described.

10. In an actinometer, the chamber A, having eye-piece A^3, layer of luminous material E, backing D, having unobstructed space *d*, blue-glass plate F, and hinged supporting-frame B, in combination with an adjustable device for reducing the intensity of the rays prior to their passage through such unobstructed space, substantially as described.

11. The combination, with the chamber A, having eye-piece A^3, of the ground-glass plate C, glass backing D, opaque layer of luminous material E, having central opening, as described, blue-glass plate F, variable series of layers of tissue-paper G, glass protecting-plate H, and hinged supporting-frame B, substantially as described.

12. In an actinometer, the combination, with a darkened chamber A, having a sighting-orifice A', of an opaque layer of luminous material of the kind described located opposite said orifice in juxtaposition to a space adapted to permit the passage of the actinic rays into said chamber, whereby said rays may be viewed in juxtaposition to the rays emitted from the luminous material, substantially as and for the purpose described.

13. The combination of the chamber A, eye-piece A^3, backing D, having unobstructed space *d*, and layer of luminous material E, substantially as and for the purpose described.

14. The chamber A, eye-piece A^3, backing D, having unobstructed space *d*, and layer of luminous material E, in combination with an adjustable device for reducing the intensity of the actinic rays prior to their passage through said unobstructed space, substantially as described.

15. The darkened chamber A, having eye-piece A^3, in combination with the ground glass C, luminous layer E, having central opening, backing D, having unobstructed space *d* registering with said opening, layers of tissue-paper G, blue glass F, and protecting-glass H, all superposed within a frame B, hinged to and forming a continuation of said chamber A at the end opposite the eye-piece A^3, substantially as described.

16. In an actinometer, a disk of opaque luminous material of the kind described located within a darkened chamber opposite to a sighting-orifice, and having a central unobstructed space for the passage of the actinic rays into said chamber, substantially as and for the purpose described.

17. In an actinometer, the combination, with a darkened chamber having a sighting-orifice at one end and at the opposite end an unobstructed space for the entrance of the actinic rays, of a blue-colored transparent medium F, located beyond said space, and a strip of tissue-paper G of variable length enwrapping said medium, whereby the actinic rays are separated and their intensity reduced to the required degree, substantially as and for the purposes described.

18. The chamber A, having sighting-orifice A', opaque layer E of luminous gradually-fading material, having a central unobstructed space, blue transparent medium F, translucent medium G, and means for alternately exposing said luminous material to the light and presenting it to the sighting-orifice of the darkened chamber, as described, in combination with a specially-constructed table setting forth the various amounts of photographic exposure corresponding, respectively, with the various readings of the instrument, substantially as described.

19. In an actinometer, the combination of the luminous calcium-sulphide surface, and the blue glass colored by a mixture of oxides of cobalt and copper, and passing rays of almost identically the same wave-length as those emitted from the calcium-sulphide pigment.

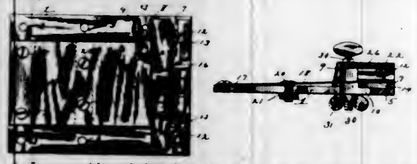
445,744. MACHINE FOR SPLITTING LEATHER STRIPS. WILLARD A. BATES, Princeton, Me. Filed Apr. 9, 1890. Serial No. 347,163. (No model.)

Claim.—1. In a machine of the class described, the bed-plate, the inclined spring-plate 18, and the inclined knife 14, arranged at the free end of the spring-plate and transversely to the same, said knife being provided with a transverse curved angle or crease 16, forming a cutting-shoulder, as set forth.

2. In a machine of the class described, the spring-plate 18 and

devices, substantially as described, for adjusting the same, combined with the knife 14, arranged at the free end of the spring-plate and transversely to the same, and provided adjacent to the center with a transverse curved angle or crease 16, forming a cutting-shoulder, and devices, substantially as described, for longitudinally adjusting the knife, as set forth.

3. In a machine of the class described, the spring-plate 18 and devices, substantially as described, for adjusting the same, combined with the knife 14, arranged at the free end of the spring-plate and transversely to the same, and provided adjacent to the center with a transverse curved angle or crease 16, forming a cutting-shoulder, and devices, substantially as described, for longitudinally adjusting said knife, and the thickness-gage located above the knife and adjustable vertically, as set forth.



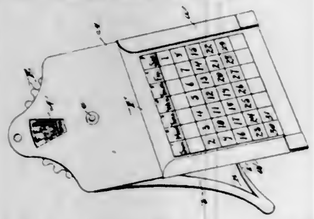
4. In a machine of the class described, the spring-plate 18 and devices, substantially as described, for adjusting the same, said plate being vertically adjustable by means, substantially as described, combined with the knife 14, arranged at the free end of the spring-plate and transversely to the same, and provided adjacent to the center with a transverse curved angle or crease 16, forming a cutting-shoulder, and devices, substantially as described, for longitudinally adjusting the knife, and the thickness-gage located above the knife and adjustable vertically, as set forth.

5. In a machine of the class described, the combination, with a base-plate and a superimposed gage-plate, of an inclined knife located between the two and having its upper or highest end in contact with the gage-plate, said knife being provided at one side of the said point of contact with a transverse crease terminating at the edge of the knife in a cutting-shoulder, substantially as specified.

6. In a machine of the class described, the combination, with a knife provided with a cutting-shoulder, of a thickness-gage located above the knife and having a sight-panel formed therein directly above the shoulder, substantially as specified.

7. In a machine of the class described, the combination, with a base-plate provided with the raised portions 7 and 8, of the knife bent to form a shoulder and provided with screw-receiving openings, screws passing through the ends of the knife and the plate and one of the same through the raised portion 7, the thickness-gage arranged parallel with the knife, the set-screw passing through the raised portion 8 and provided upon the under side of the base-plate with a nut, and the binding-screw passed through the gage and taking in a countersunk recess formed in the raised portion, and the spring-plate connected at the rear end of the plate and provided with adjusting-screws, substantially as specified.

445,745. CALENDAR. ORLANDO C. BLACKMER, Oak Park, Ill. Filed Mar. 6, 1890. Serial No. 342,860. (No model.)

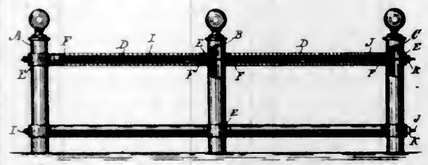


Claim.—1. A calendar comprising, in combination, a suitable backing or support to receive a set of movable cards having indicated thereon the days of the week and the series of numbers 1 to 31, inclusive, to represent the days of the month, and arranged on the cards with the first number of the series under the first day of the week and on the succeeding card-face with said first number under the second day of the week, and so on progressively for each day of the week, and a dial rotatably secured to said backing and having indicated thereon the months of the year, substantially as described.

2. A calendar comprising, in combination, a suitable backing or support to receive a set of movable cards having indicated thereon the days of the week and the series of numbers 1 to 31, inclusive, to represent the days of the month, and arranged on the cards with the first number of the series under the first day of the week and on the succeeding card-face with said first number under the second day of the week, and so on progressively for each day of the week, said backing having a sight-aperture toward the top thereof, and a dial rotatably secured to said backing behind the aperture and having indicated thereon the months of the year, substantially as described.

3. In a calendar, the combination of a backing or support having a bracing-leg on its rear side and a pocket or receptacle on its front side to receive a set of movable cards, a portion of said backing projecting above the card-receptacle and having therein a sight-opening, a set of cards having indicated thereon the series of numbers 1 to 31, inclusive, to represent the days of the week and the days of the month, and arranged on the cards with the first number of the series under the first day of the week and on the succeeding card-face with said first number under the second day of the week, and so on progressively for each day of the week, and a dial rotatably secured on the rear of the backing or support and having indicated thereon the names of the months, substantially as described.

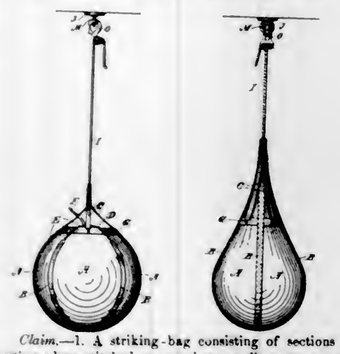
445,746. FENCE. JOHN B. CLAVELAND, Indianapolis, Ind. Filed Sept. 22, 1890. Serial No. 365,734. (No model.)



Claim.—1. In a fence, the combination of end posts and one or more intermediate posts, clips, each consisting of an eye adapted to embrace the post and a projecting dowel having an axial perforation mounted on said post, a series of tubular rails mounted at their ends on said dowels, a tension device mounted on one of said end posts, and a binding-strand made fast to an end post, passing thence longitudinally through said clips and tubular rails and transversely through the posts and secured to the tension device at the other end, all arranged to co-operate substantially as set forth.

2. In a fence, the combination of a pair of transversely-perforated posts, each having a laterally-projecting axially-perforated dowel secured thereto, a tubular rail mounted at each end on said dowels, and a binding-strand passing longitudinally through said tubular rails and dowels and secured at one end to one of said posts and at the other end to a tension device mounted on the other post, whereby said rails, dowels, and posts are bound together, as set forth.

445,747. STRIKING-BAG. HIRAM B. COOK, San Francisco, Cal. Filed June 13, 1890. Serial No. 355,351. (No model.)



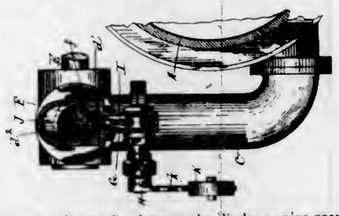
Claim.—1. A striking-bag consisting of sections having their meeting edges stitched or sewed, suspending-straps, one of which is riveted or secured to the central end portion of each of the segments which form the bag, and a re-enforcing segment stitched upon the end of the bag over the ends of the suspending-straps and riveted through them, substantially as herein described.

2. A striking-bag consisting of segments having their meeting edges sewed or stitched, a suspending-strap riveted or secured centrally to the end of each segment, a suspending-cord having its lower end secured between the ends of the suspending-straps, so that the strain will come equally upon each of the straps and segments of the bag, and a re-enforce secured over the ends of the straps, substantially as herein described.

3. A striking-bag consisting of segments having their meeting edges sewed or stitched, a suspending-strap riveted or secured to the center of the end of each of the sections, said straps being brought together and united with a suspending-rope, substantially as herein described.

4. A striking-bag having the suspending-straps united directly with a suspending-cord, in combination with an eyebolt to which the upper end of the cord is connected, the shank of said eyebolt extending vertically through a fixed plate, with a nut or head upon the inner end, whereby the eye is allowed to turn freely and is prevented from swinging from side to side, substantially as herein described.

445,748. DISCHARGE-REGULATOR FOR HYDRAULIC ELEVATORS. RICHARD T. CRANE, Chicago, Ill. Filed Aug. 14, 1890. Serial No. 361,960. (No model.)

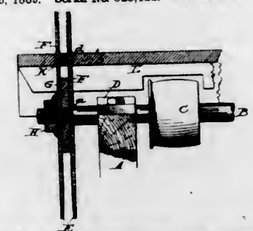


Claim.—1. In a hydraulic elevator, the discharge-pipe provided with a dome-shaped enlargement, in combination with a ball-check arranged in said enlarged space and free to roll back and forth on the bottom of the pipe, and a counterpoise adapted to hold the ball in position against the normal pressure of the discharge, substantially as and for the purposes specified.

2. In a hydraulic elevator, the discharge-pipe D, provided with a dome-shaped enlargement d^2 and a slot d' in the under side thereof, in combination with the ball-check F, arranged to roll on the bottom of said pipe, the hollow bracket G, fastened to the pipe underneath said slot, and the crank-arm I, arranged within said bracket, projecting into the pipe through said slot, and connected to the ball-check, substantially as and for the purposes specified.

3. In a hydraulic elevator, the discharge-pipe D, provided with a dome-shaped enlargement d^2, in combination with the ball-check F, provided with the groove f, the rock-shaft H, provided with crank-arm I, the hooked connecting-rod J, and the counterpoise K on the arm k, fixed on said rock-shaft, substantially as and for the purposes specified.

445,749. SANDPAPERING-MACHINE. ARTHUR K. DEVENPORT, Jackson, Mich., assignor of one-half to S. Heyser & Sons, same place. Filed Sept. 26, 1889. Serial No. 325,122. (No model.)



Claim.—1. In a machine for smoothing wood or the like, the combination of a frame, a work-support, a rotatable arbor, and a flexible smoothing-disk carried by said arbor and free from its outer edge to the central clamp, by which it is made fast to the arbor.

2. In a sandpapering-machine, the combination of a suitable frame, an arbor journaled therein and provided with a wheel through which to receive motion from a suitable source, a flexible abrading-disk made fast at its center to the arbor, but free at its outer edge and arranged to rotate with the arbor, and a guide opposite the working face of the disk to guide the work in passing the same.

3. In a sandpapering-machine, the combination of two flexible abrading-disks, means for rotating said disks, and an intermediate work-support, each disk being centrally supported, but free at its periphery.

4. In combination with a suitable frame, a work-support mounted thereon and adjustable relatively thereto, an arbor mounted in said frame, and a flexible abrading or smoothing disk secured concentrically upon the arbor and having its free edge extended beyond the work-support.

5. In a machine for finishing wood-work and the like, the combination of a flexible disk to act upon one face of the work, a second flexible disk to act upon the opposite face of the work, one disk adjustable toward and from the other, and means for imparting rotation to both of said disks, both of said disks being free at their peripheries.

6. The herein-described machine for dressing wood-work and the like, consisting of a frame, an arbor mounted and rotatable therein, two flexible abrading-disks concentrically secured upon said arbor, but otherwise free, and two supporting-disks also carried by said arbor, one behind each of the abrading-disks.

7. The combination, with frame A and arbor B, of disks E E, supporting-disks F F, and an intermediate supporting-bridge.

8. In combination with frame A, arbor B, free flexible disks E E, and supporting-disks F F, carried by said arbor, spacing-collar G, interposed between the disks E E, substantially as and for the purpose set forth.

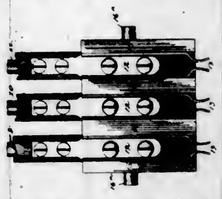
9. In combination with frame A and table L, having slot D, and a work-support or bridge-arbor B and disks E E, carried by the arbor and extending through the slot on opposite sides of the bridge.

445,750. ADJUSTABLE LETTERING DEVICE. LEWIS A. GATES, San Francisco, assignor of one-half to Henry J. Postel, Sacramento, Cal. Filed Mar. 17, 1890. Serial No. 344,218. (No model.)



Claim.—The combination of a frame bounded by four sides and having wires fixed in two of said sides and extending parallel with each other from end to end of the frame, and metallic letters having projecting tongues at the top and bottom only, said tongues being formed integral with the letters and adapted to be bent over the wires, whereby the letters are secured in place and adjusted along the wires, as herein described.

445,751. ELECTRIC-WIRE CONNECTOR. JOHN W. HOFFMAN, Pullman, assignor to the Pullman's Palace Car Company, Chicago, Ill. Filed Aug. 22, 1889. Serial No. 321,575. (No model.)



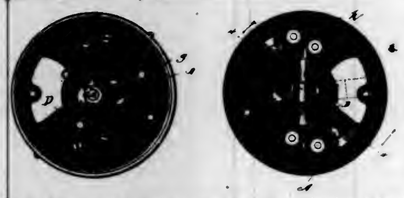
Claim.—1. In means for connecting electric-light wires for railway-trains, the combination, with a plurality of main wires having their ends secured within the hollow of metallic blocks confined within a frame, said blocks having spring contact-plates whose free ends project beyond the ends of the blocks and bend inwardly, of a coupler comprising wires corresponding in number to the main wires and having their ends secured with contacts having wedge-shaped points and hollowed out back of said points, whereby said contacts are adapted to be forced between said plates and to receive the bent ends thereof in their hollows, and a frame confining the ends of the coupler-wires and adapted for telescopic connection with the frame of the main wires, substantially as described.

2. In means for connecting electric wires, the combination, with the main wires having their ends secured to a conducting medium and confined within a frame bearing projecting engaging studs, of a coupler comprising wires whose ends are secured to a conducting medium and confined within a frame provided with spring-plates adapted to embrace the frame securing the ends of the main wires and to engage the studs thereon, whereby to prevent the movement of said frames the one on the other, substantially as described.

445,752. ELECTRIC SWITCH. JOHN W. HOFFMAN, Chicago, Ill., assignor to the Pullman's Palace Car Company, same place. Filed Feb. 4, 1890. Serial No. 339,164. (No model.)

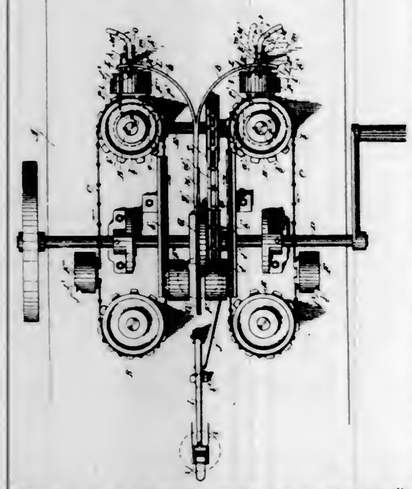
Claim.—1. An electric switch device comprising, in combination,

a pivoted switch-lever whose ends are adapted to engage the respective terminals of an electric circuit and having a projection thereon, a three-armed operating-lever secured on an arbor and having two of its arms adapted to engage the projection of the switch-lever, and a spring having one of its ends secured at a fixed point and the other to the third arm of the lever and arranged to move the latter after it has engaged the switch-lever projection, substantially as described.



2. An electric switch device comprising, in combination, a base-plate to which the respective terminals of an electric circuit are secured, an arbor mounted centrally of the base-plate, a switch-lever loosely mounted on the arbor above the base and having a projection thereon, a three-armed operating-lever secured on the inner end of the arbor and two of whose arms are adapted to engage the projection of the switch-lever, and a spring having one of its ends secured to the base and the other to the third arm of the lever and arranged to move the latter after it has engaged the projection of the switch-lever, substantially as described.

445,753. **FRUIT-PITTING MACHINE.** JAMES T. ISH, San Francisco, Cal. Filed May 7, 1890. Serial No. 350,925. (No model.)



Claim.—1. In a fruit-pitting machine, the opposing traveling carriers having correspondingly-located cups for receiving and holding the fruit between them, substantially as herein described.

2. In a fruit-pitting machine, the endless traveling carriers mounted opposite each other with their adjacent sides traveling in the same direction, said carriers having correspondingly-located cups which receive and hold the fruit between them when they approach each other and travel together, whereby the fruit is advanced, substantially as herein described.

3. In a fruit-pitting machine, the endless opposing carriers having correspondingly-located fruit-holding cups which approach and travel together on the adjacent sides of the carriers, in combination with the sprocket-wheels upon which said carriers are mounted, a driving-shaft, and connections therefrom to the sprocket-wheels for imparting a traveling movement to the carriers, substantially as herein described.

4. In a fruit-pitting machine, the opposing fruit-holding cups having in their open ends the holding-cushions between which the fruit is held, substantially as herein described.

5. In a fruit-pitting machine, the fruit-holding cup having in its open end the concave spiral spring forming a holding-cushion for the fruit, substantially as herein described.

6. In a fruit-pitting machine, a divided holder between the divisions of which the fruit is held, in combination with opposing knives in the plane of the division of the holder and working past each other to divide both the flesh and the pit of the fruit, substantially as herein described.

7. In a fruit-pitting machine, a divided holder between the divisions of which the fruit is held, in combination with a fixed knife and a movable knife working past the fixed knife, both knives being in the plane of the division of the holder, whereby both the flesh and the pit of the fruit are divided, substantially as herein described.

8. In a fruit-pitting machine, a divided holder between the divisions of which the fruit is held, in combination with a fixed knife and a revolving knife working past the fixed knife, said knives being in the plane of the division of the holder, whereby both the flesh and the pit of the fruit are divided, substantially as herein described.

9. In a fruit-pitting machine, a traveling divided or two-part holder consisting of independent parts between which the fruit is held and by which it is advanced, in combination with opposing knives in the path of the fruit and operating past each other in the plane of the division of the holder, whereby both the flesh and the pit of the fruit are divided, substantially as herein described.

10. In a fruit-pitting machine, the opposing traveling fruit-holding cups consisting of independent parts holding and carrying the fruit between them, in combination with the fixed knife in the path of the fruit and the revolving knife working past the fixed knife, whereby both the flesh and pit of the fruit are divided between said knives, substantially as herein described.

11. In a fruit-pitting machine, the opposing traveling carriers and the correspondingly-located cups carried thereby, and between which the fruit is held and advanced, in combination with the fixed knife and the revolving knife working past the fixed knife, said knives operating in the path of the fruit, whereby the flesh and pit of the fruit are divided, substantially as herein described.

12. In a fruit-pitting machine, the frame having the endless traveling carriers mounted upon the sprocket-wheels, the correspondingly-located cups on the carriers for receiving and advancing the fruit, the fixed knife, and the revolving knife, both in the path of the fruit, in combination with the drive-shaft carrying the revolving knife, and connections from said shaft to operate the carriers, substantially as herein described.

13. In a fruit-pitting machine, the combination of the opposing traveling holders, between which the fruit is carried, the knives for dividing its flesh and pit, and the directing-plate beyond the knives, in contact with which the divided flesh and pit travel to the end of the machine, substantially as herein described.

14. In a fruit-pitting machine, the combination of the endless traveling carriers, the fruit-holding cups carried thereby, the knives for dividing the flesh and pit of the fruit, the directing-plate for holding the severed flesh and pit in the cups, and the angled guides for the carriers, substantially as herein described.

15. In a fruit-pitting machine, the opposing traveling carriers and the fruit-holding cups carried thereby, in combination with the swinging arm having the fruit spring holder-strips and adapted to deliver the fruit into and between the opposing cups of the carriers as they approach each other, substantially as herein described.

16. In a fruit-pitting machine, the opposing traveling carriers and the fruit-holding cups carried thereby, in combination with the swinging arm having the spring holder-strips adapted to deliver the fruit into and between the opposing cups, and the means for actuating the swinging arm, consisting of the driving-shaft, a wheel thereon, a pin or stud on the wheel, the link connected with the swinging arm and having a bent free end adapted to be engaged and tripped by the pin or stud, and the spring for returning the arm, substantially as herein described.

17. In a fruit-pitting machine, the nippers for extracting the severed pit from the severed flesh, having the spherically-curved jaws, said nippers being pivoted together and having handle portions, substantially as herein described.

18. In a fruit-pitting machine, the nippers for extracting the severed pit from the severed flesh, having the spherically-curved jaws with prongs, said nippers being pivoted together and having handle portions, substantially as herein described.

19. In a fruit-pitting machine, and in combination with the traveling cups in which the fruit is carried, and knives for severing the flesh and pit of the fruit, the nippers for extracting the severed pits having the spherically-curved jaws, substantially as herein described.

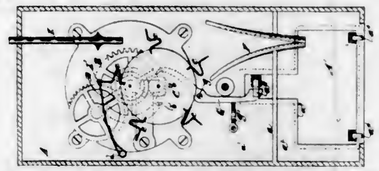
20. In a fruit-pitting machine, and in combination with the traveling cups in which the fruit is carried and knives for dividing the flesh and pit of the fruit, the pit-extracting nippers at the end of the machine, having pivoted jaws and connections with the machine for operating said jaws to close them on the pit and open them again, substantially as herein described.

21. In a fruit-pitting machine having traveling fruit-holders and knives for dividing the flesh and pit of the fruit, the pit-extracting nippers at the end of the machine, having separable jaws adapted to close on the pit and relieve it, and the bent handles M and M', in combination with the swinging fork embracing the handles, whereby the jaws are operated, substantially as herein described.

22. In a fruit-pitting machine, and in combination with the traveling fruit-holders and knives for dividing the flesh and pit of the fruit, the swinging nippers having pivoted curved jaws for closing on the pit, the bent spring-controlled handles M and M', and the means for operating the jaws to engage the pit and for swinging the nippers to extract it, consisting of the swinging fork embracing and working on the handles, substantially as herein described.

23. In a fruit-pitting machine, and in combination with the traveling fruit-holders and knives for dividing the flesh and pit of the fruit, the swinging nippers having pivoted curved jaws for closing on the pit, the bent spring-controlled handles M and M', and the means for operating the jaws to engage the pit and for swinging the nippers to extract it, consisting of the swinging fork embracing and working on the handles, the spring-shank of said fork, the link connected with said shank and having a bent end, and the revolving pin for engaging and tripping the bent end of the link, substantially as herein described.

445,754. **REGISTERING TOY MONEY-BANK.** EDWARD R. IVES and CHARLES A. HOTCHKISS, Bridgeport, Conn., assignors to the Ives, Blakeslee & Williams Company, New York, N. Y. Filed June 28, 1890. Serial No. 357,091. (No model.)



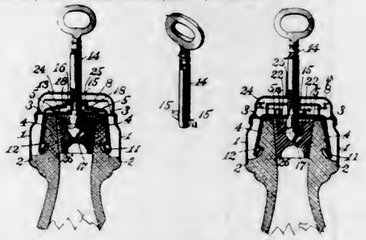
Claim.—1. In a toy bank, the combination of a train of wheels B and the bucket-wheel C, having buckets consisting of strips of metal bent radially outward, then tangentially, and then in the reverse direction, the said wheel being moved by the weight of a coin dropped in a bucket, substantially as specified.

2. In a toy bank, the combination of a train of wheels B and the bucket-wheel C, having buckets consisting of strips of metal bent radially outward, then tangentially, then in the reverse direction, and finally outward in a radial direction, the said wheel being moved by the weight of a coin dropped in a bucket, substantially as specified.

3. In a toy bank, the combination of a train of wheels B, bucket-wheel C, having buckets consisting of strips of metal bent radially outward, then tangentially, then in the reverse direction, and finally outward in a radial direction, and a detent for engaging with the outer radial extremities of the buckets, the said bucket-wheel being moved by the weight of a coin dropped in a bucket, substantially as specified.

4. In a toy money-bank, the combination of a train of wheels B, a wheel rotated by said train of wheels and having buckets constructed to receive and carry a coin, a chute having its inner end terminating in a line with the rotation of the buckets above the bucket-wheel, and a chute arranged below the bucket-wheel and having a flaring mouth adapted to receive a coin from a bucket, substantially as specified.

445,755. **BOTTLE-LOCK.** WILLIAM C. KING, Pittsburg, Pa. Filed Oct. 27, 1890. Serial No. 369,409. (No model.)



Claim.—1. A bottle-lock having in combination a shell adapted to fit the top of the bottle, movable locking-plates mounted on the shell and provided with hooks constructed to pass outside the bottle-neck and engage an external shoulder thereon, and a spring for holding the plates in such position that the hooks will automatically engage said shoulder, substantially as set forth.

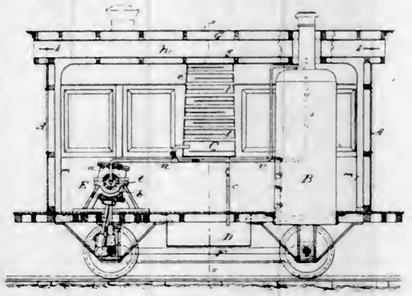
2. A bottle-lock having in combination a shell adapted to fit over the top of the bottle, movable locking-plates consisting of arms arranged at an angle to each other, the arms 4 of each plate projecting down into the shell and provided with hooks, the arms 5 extending radially over the top of the shell, a spring engaging the arms 5, and a key adapted to engage and shift the movable plates so as to move the hooked ends outwardly, substantially as set forth.

3. A bottle-lock having in combination a shell adapted to fit over the top of the bottle, movable locking-plates, consisting of arms 4 and 5, arranged at an angle to each other, the arms 4 projecting down into the shell and provided with hooks, the other arms 5 extending radially toward each other, a spring for holding the hooked ends of the plates inwardly, a box arranged over the arms 5 and provided with a key hole or slot, and a key for engaging the inner ends of the arms and moving the hooked ends of the plates outwardly, substantially as set forth.

4. In a bottle-lock, the combination of a shell adapted to fit over the top of the bottle, movable locking-plates mounted on the shell and provided with hooks adapted to engage a shoulder on the bottle, a spring for shifting said plates, a box provided with a key hole or slot arranged over the inner ends of the movable plates, a cap provided with a key-hole secured to the shell over the box, and a key for shifting the plates against the tension of the spring, substantially as set forth.

5. The combination of a bottle having shoulders 2 and 12 on its neck with a shell fitting over the top of the bottle, its lower edge resting on the shoulder 2, movable locking-plates mounted on the shell and provided with hooks for engaging the shoulder 12, a spring for shifting the plates so as to cause the hooks to engage said shoulder, a cap provided with a key-hole secured to the top of the shell, and a stopper fitting within the bottle and attached to the shell, substantially as set forth.

445,756. **MOTOR FOR STREET-CARS.** THOMAS ROBERTS, Baltimore, Md. Filed Feb. 15, 1890. Serial No. 340,564. (No model.)



Claim.—1. In motors, the condensers C, provided with tubes and diaphragms, as described, and placed on each side of the cab, in combination with the engines, as specified

2. In motors, the condensers C, provided with tubes and diaphragms, as described, and placed on each side of the cab, in combination with the hollow roof provided with an oblong central opening *h* and openings *i* and connected to a feed-tank, substantially as shown and set forth.

3. In motors, the hollow roof provided with an oblong central opening having dampers *k*, in combination with the condensers C, provided with tubes and diaphragms and connected to feed-tanks placed under the floor, all arranged as and for the purpose specified.

4. In motors, the hollow roof provided with central and side openings having dampers, and the condensers C, arranged as shown, in combination with a feed-tank and a pair of oscillating compound engines, all as set forth.

445,757. **GAS-METER.** JOHN STUDHAM, Rochester, and JACOB B. WALLACE, Beaver Falls, assignors to the Metric Metal Company, Beaver Falls, Pa. Filed Aug. 13, 1890. Serial No. 361,910. (No model.)

Claim.—1. In a meter, the combination, with the valve-rod, of a toggle-joint, one of the levers of which actuates the valve-rod, a weight for reversing the toggle, and suitable direct connections between the levers or links of the toggle-joint and a moving part of the meter, substantially as and for the purposes specified.

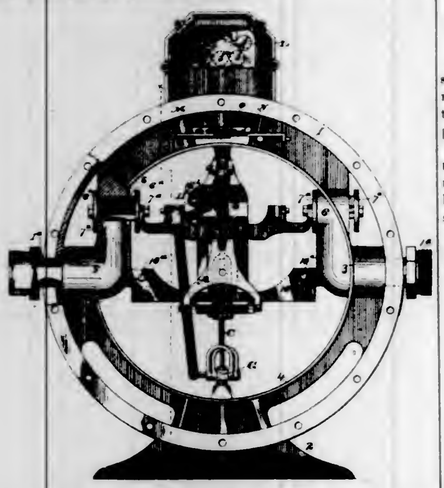
2. In a meter, the combination, with the valve-rod, of a slotted plate or singletree, a toggle mechanism which engages the slotted plate or singletree, a weight for reversing the toggle, and suitable connections between the toggle-joint and a moving part of the meter, substantially as and for the purposes specified.

3. In a meter, the combination, with the valve-rod, of a toggle-joint, one of the levers of which actuates the valve-rod, a vertically-

sliding weight for reversing the toggle, and suitable direct connections between the levers or links of the toggle-joint and a moving part of the meter, substantially as and for the purposes specified.

4. In a meter, the combination, with the valve rod, of a toggle-joint actuated from a moving part of the meter and which acts on the valve-rod, a toggle-reversing weight, and a saddle which is pivoted to the weight and rests on the toggle, substantially as and for the purposes specified.

5. In a meter, the combination, with the valve-rod, of a toggle-post, a toggle-joint pivoted to the toggle-post and connected with a moving part of the meter, and a vertically-sliding weight which rests on the toggle-joint and is guided by the toggle-post, substantially as and for the purposes specified.



6. In a meter, the combination, with a sectional valve-rod, of a slotted singletree or plate pivoted on each of the rod-sections, a toggle mechanism one member of which passes through the slotted plate or singletree, and connections between the toggle mechanism and a moving part of the meter, substantially as and for the purposes specified.

7. In a meter, the combination, with the valve-rod, of a toggle-post provided with guide-pins for the toggle mechanism, toggle mechanism pivoted to the toggle-post and arranged to actuate the valve-rod, a slotted weight which acts on the toggle mechanism and is arranged to slide on the toggle-post, and a guide screw or pin which maintains the relation of the weight to the post, substantially as and for the purposes specified.

8. In a meter, the combination, with the valve-rod, of a toggle-post, toggle mechanism pivoted on said post, a weight sliding on said toggle-post and acting on said toggle mechanism, and a slotted elbow-lever and link directly connected to the toggle-levers for actuating said toggle mechanism from a moving part of the meter, substantially as and for the purposes specified.

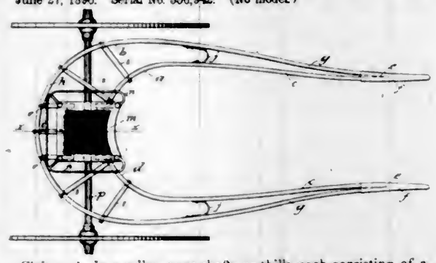
9. In a meter, the combination, with the valve-rod, of a weighted toggle mechanism for reversing the valves, a lazy-toogs movement or pivoted levers connected with the bellows-head and having one arm anchored on a fixed portion of the meter and the other pivoted to a movable block, a guide-post for the movable block, and a rod or pitman which connects the movable block with the toggle mechanism, substantially as and for the purposes specified.

10. In a meter, the combination, with the valve-rod, of toggle mechanism 12 13, sliding weight 14, interposed saddle 15, slotted elbow or crank lever 16, interposed link 17, and means for actuating crank-lever 16 from a moving part of the meter, substantially as and for the purposes specified.

11. In a meter, the combination, with a valve-rod composed of sections 8^a 8^a, of the pivoted slotted plate or singletree 9, toggle mechanism 12 13, sliding weight 14, interposed saddle 15, and means for actuating the toggle mechanism from a moving part of the meter, substantially as and for the purposes specified.

12. In a meter, the combination, with an outer central ring for the support of the shell or case, of an inner central ring for the support of the operative parts of the meter, said inner ring having valve-chambers 6 6 in its upper part, and pockets 5 5, arranged beneath and leading down and away from said valve-chambers, substantially as and for the purposes specified.

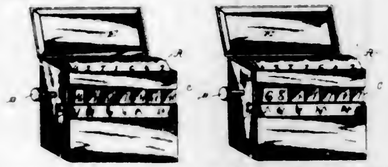
445,758. SULKY. GEORGE E. TRIPP, Stonington, Conn. Filed June 27, 1890. Serial No. 356,942. (No model.)



Claim.—1. In a sulky, truss shafts or thills, each consisting of a single piece forming shaft ends and a connecting bow or arch at the rear end, and one inclosing the other, suitable cross-rods connecting the bowed portions, a seat supported by the latter, and suitable supports between them and the axle-tree, substantially as described.

2. In a sulky, the combination of a pair of truss-rods forming the thills and body portions of the vehicle, cross-braces connecting said rods, and the axle-tree rigidly connected at its opposite ends to said body portion and at its center to the central cross-brace of the same, substantially as and for the purpose described.

445,759. EDUCATIONAL DEVICE. JAMES J. DOFFLEMYER and CHARLES H. WOLFE, Keokuk, Iowa. Filed Jan. 15, 1890. Serial No. 337,007. (No model.)



Claim.—In a device for educational purposes, the combination of a box, a moving surface on which the objects to be learned are written or printed, a series of sliding blocks adapted to be moved through the opening, and a removable strip also adapted to be moved through the opening, substantially as set forth.

445,760. STEAM-GENERATOR. SAMUEL S. FLEMING, Sarversville, Pa. Filed May 14, 1890. Serial No. 351,761. (No model.)



Claim.—1. In a steam-generator, the combination, with a boiler formed of two or more independent and separable sections, of a steam-drum, a receiver communicating with the latter and the boiler, a water-cylinder provided with a feed-water inlet and with a valve for controlling the latter, said cylinder having communication with the receiver, and valves for breaking such communication, substantially as and for the purpose set forth.

2. In a steam-generator, the combination, with a boiler formed of two or more independent and separable sections, of a steam-drum disposed adjacent thereto, a receiver having an inlet-pipe communicating with the top of each of the boiler-sections and return communication with the bottom of the latter, and a pipe connecting the receiver with the steam-drum and adapted to convey steam from the former to the latter, substantially as and for the purpose set forth.

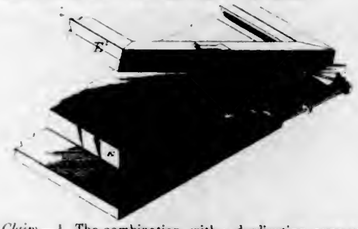
3. In a steam-generator, the combination, with a boiler formed of two or more independent and separable sections, of a receiver having independent communication with the top of each boiler-section, and a water cylinder or cylinders having independent communication with the bottom of each of said boiler-sections and with the receiver, substantially as and for the purpose set forth.

4. In a steam-generator, the combination of a boiler formed of two or more independent sections, a water cylinder or cylinders disposed on a higher plane than the boiler and communicating with the bottom thereof, an auxiliary water-cylinder disposed on a higher plane than said cylinders and having communication therewith, a steam-drum provided with an outlet, and a receiver disposed on a higher plane than the main and auxiliary water-cylinders and having communication therewith and with the boiler and steam-drum, substantially as and for the purpose set forth.

5. In a steam-generator, the combination, with the boiler, main water cylinder or cylinders, receiver, and steam-drum, of an auxiliary water-cylinder connected with the receiver and main water cylinder or cylinders by pipes, valves in said pipes, a feed-water inlet for said auxiliary cylinder, and a valve for closing the same, substantially as set forth.

6. In a steam-generator, the combination of a boiler, a main water cylinder or cylinders disposed above the same and communicating therewith near its bottom, an auxiliary water-cylinder disposed above said cylinder or cylinders and connected therewith by pipes, a valve for closing the latter, said auxiliary cylinder being provided with a feed-water inlet controlled by a valve, a steam-drum provided with an outlet, a receiver communicating with the main water-cylinders and with the auxiliary water-cylinder by pipes, the latter pipes being provided with a valve, a pipe or pipes connecting the boiler with the receiver, and a pipe connecting the latter with the steam-drum, substantially as and for the purpose set forth.

445,761. REGISTER FOR DUPLICATING APPARATUS. FRANK A. HEISS, Port Jervis, assignor to Augustus D. Klaber, New York, N. Y. Filed June 12, 1890. Serial No. 355,207. (No model.)



Claim.—1. The combination, with a duplicating apparatus such as described, of a counting-machine adapted to be operated by the raising and closing of the printing-frame of said duplicating apparatus, said counting device consisting of a double pawl having two oppositely-arranged teeth shaped and arranged as shown and a wheel or wheels adapted to be revolved horizontally by the vertical movement of the pawl.

2. The combination, with a duplicating apparatus, of a counting-machine consisting of a pawl made of a single piece of spring metal, shaped as shown, and a toothed wheel or wheels adapted to be revolved horizontally by the vertical movement of said pawl.

445,762. HEATING AND VENTILATING APPARATUS AND SYSTEM. JAMES A. SKILTON, Brooklyn, N. Y. Filed Nov. 2, 1889. Serial No. 329,039. (No model.)

Claim.—1. The combination, with a radiator consisting of a base and tubes, of a casing or jacket surrounding the tubes, resting upon or supported by the base, and leaving a portion of the base exposed.

2. A radiator having a hollow or chambered base and pipes or tubes connected therewith and supplied therefrom, in combination with an outside casing or jacket resting on or closed by the base and forming a heating-chamber.

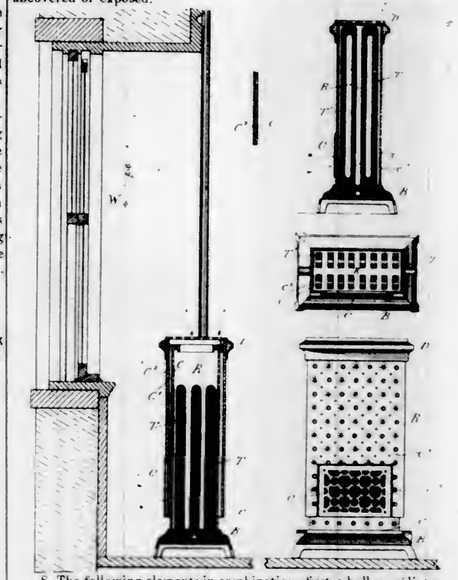
3. A steam or hot-water radiator having a hollow or chambered base for steam or hot water and pipes or tubes connected therewith and supplied therefrom, in combination with an outside case or jacket resting on the base and forming a heating-chamber.

4. A radiator having a hollow or chambered base and pipes or tubes connected therewith and supplied with steam or hot water therefrom, in combination with an outside case or jacket resting on or supported by the base, forming a heating-chamber, and provided with an inlet at or near the bottom for the air of the room.

5. A radiator having a hollow or chambered base and pipes or tubes connected therewith and supplied with steam or hot water therefrom, in combination with an outside case or jacket resting on or supported by the base, forming a heating-chamber, and provided with an inlet at or near the bottom and an outlet at or near the top for the air of the room.

6. A steam or hot-water radiator having a hollow imperforate base and tubes, pipes or channels supplied with steam or hot water therefrom, surrounded by an outside casing or jacket open at top, resting upon or closed by the base at bottom, and forming a heating-chamber into which air is admitted through an opening in the casing or jacket to be heated.

7. The combination, with a radiator consisting of a base and tubes, of a casing or jacket surrounding the tubes, resting upon or supported by the base, provided with an inlet-opening near the bottom and an outlet-opening at the top, and leaving a portion of the base uncovered or exposed.



8. The following elements in combination: first, a hollow radiator-base and upright pipes or tubes; second, a sheet-metal casing resting on the radiator-base, forming a heating-chamber, and, third, a radiator-top resting on or in the radiator-casing, as shown and described.

9. The following elements in combination, a steam or hot-water radiator provided with a hollow imperforate base and an independent top or cover, in combination with an outside jacket or casing resting on or closed at bottom by the base and surrounding the pipes, and tubes or channels connecting therewith, open at top and provided with an opening near the bottom for the admission of air to the heating chamber formed thereby.

10. A steam or hot-water radiator having an imperforate hollow base and double pipes surrounded with a casing or jacket resting on and closed by the base at bottom, forming a heating-chamber open at top to permit escape of heated air, provided with an opening near the bottom of the case to receive the air to be heated, one side and one passage of the pipes being presented to the opening and the other side and passage being masked thereby.

11. A radiator having a hollow or chambered base and pipes or tubes connected therewith and supplied therefrom, in combination with an outside casing or jacket resting on or closed by the base, forming a heating-chamber, and consisting of two sheets of metal with normal air-space between them.

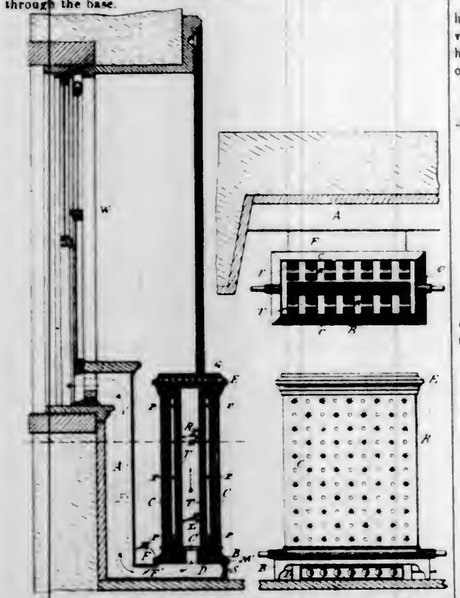
12. A radiator having a hollow or chambered base and pipes or tubes connected therewith and supplied therefrom, in combination with an outside casing or jacket resting on or closed by the base, forming a heating-chamber, and consisting of two sheets of metal, the outer one being stamped or embossed and secured to or upon the inner sheet.

13. A radiator having a hollow or chambered base and pipes or tubes connected therewith and supplied therefrom, in combination with a casing or jacket resting on the base and forming a heating-chamber, and also with an outside casing open at its lower edge and enough larger than the inner casing to leave air-chamber space between the two casings.

445,763. HEATING AND VENTILATING APPARATUS AND SYSTEM. JAMES A. SKILTON, Brooklyn, N. Y. Filed Nov. 2, 1889. Serial No. 329,040. (No model.)

Claim.—1. A steam or hot-water radiator having a perforated hollow base for the passage of air through the same and pipes, tubes, or channels receiving their supply of steam or hot water from the hollow base surrounded with an outside casing or jacket resting upon the base and forming a heating chamber, into which air is admitted through the base.

2. A steam or hot-water radiator having an open or perforated base chambered for steam or hot water and tubes, pipes, or channels supplied with steam or hot water therefrom, provided with an outside casing or jacket around the same, forming a heating-chamber partly closed by the base, and connected with a flue leading from the open air through the base.



3. A steam or hot-water radiator having an open or perforated hollow base and pipes, tubes, or channels receiving their supply of steam or hot water therefrom, provided with a jacket or casing around the radiator, forming a heating-chamber partly closed by the base, and connected with a flue leading from the air of the room into the chamber through the base.

4. A steam or hot-water radiator having an open or perforated base chambered for steam or hot water and pipes, tubes, or channels connected with and supplied therefrom, provided with a casing or jacket around the same, forming a heating-chamber partly closed by the base, and connected with a valved flue leading from the open air through the base.

5. A steam or hot-water radiator having an open or perforated hollow base and pipes, tubes, or channels connecting therewith, provided with an outside jacket or casing around the radiator, forming a heating-chamber partly closed by the base, and connected with a valved flue leading from the air of the room into the chamber through the base.

6. A radiator surrounded by a jacket or casing resting upon a hollow perforated base which is provided with connecting pipes, tubes, or channels, and forming a heating-chamber which receives the air to be heated through the base, in combination with an air-box connected with flues or chambers leading from the outer air, and also from the inner air of the room into and through the base and into the heating-chamber.

7. A steam or hot-water radiator having an open or perforated hollow base and pipes, tubes, or channels connecting with and supplied therefrom, provided with an outside jacket or casing resting upon the base and forming a heating-chamber into which air is admitted through the base by flues or chambers connecting with the outer and inner air, respectively, each of which is provided with independent opening and closing devices.

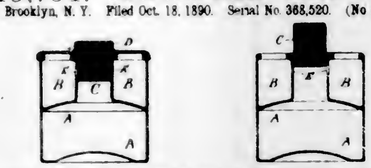
8. A heating-chamber formed by an outside jacket or casing around a radiator, in combination with a perforated hollow radiator base and top or cover, the jacket or casing resting on the base, surrounding the pipes, tubes, or channels connecting therewith, receiving the air to be heated through the base, and delivering it into the room through the top or cover.

9. A steam or hot-water radiator consisting of a hollow or chambered base and double or circulating pipes or tubes connected therewith, surrounded by a jacket or casing resting upon or supported by the base and forming a heating-chamber into which air is admitted through openings or perforations through the base leading into the spaces between the mutually-masking circulating pipes or tubes.

10. The following elements in combination: first, a hollow perforate radiator-base and upright pipes or tubes; second, a sheet-metal casing resting on the radiator-base, forming a heating-chamber, and, third, a radiator-top resting on or in the radiator-casing, as shown and described.

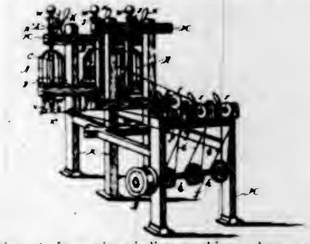
11. A steam or hot-water radiator having an open or perforated hollow base, with pipes, tubes, or channels connecting therewith, provided with an outside jacket or casing around the radiator, forming a heating-chamber partly closed by the base, connected with a valved outlet-opening leading from the chamber into the room.

445,764. INK OR COLOR HOLDER. ALPHONSE V. BENOIT, Brooklyn, N. Y. Filed Oct. 18, 1890. Serial No. 368,520. (No model.)



Claim.—An ink-well provided with a neck and with integral pockets adjacent thereto and with two or more openings in the neck, adapted to be closed and opened by a cork, substantially as described.

445,765. BOBBIN-WINDING MACHINE. JOHN W. EISENHART, York, Pa. Filed July 8, 1890. Serial No. 358,086. (No model.)



Claim.—1. In a wire-winding machine, and in combination, the frame of the machine, an adjustable reel for holding a coil of wire, suitable centers in which this reel revolves, a friction-brake, a tension-roller with a central shaft, said shaft, collars in which the ends of this shaft are free to turn, coil-springs for supporting these collars, brackets and studs for carrying the coil-springs, and devices, substantially as described, for holding and driving the bobbin to be wound with the wire.

2. The herein-described adjustable reel for holding a coil of wire or similar material while it is being unwound, consisting of a spindle adapted to be held between centers, as described, and carrying a base-plate furnished with radial slots and an upper plate, rods the upper ends of which rest upon said upper plate and which pass down through slots in the lower plate and are bent up so as to rest upon said lower plate, plates or washers, and nuts and bolts by means of which said plates or washers may be drawn down so as to secure the rods in place by pinching them between said washers and said base and top plates.

3. In a wire-winding machine, and in combination with the wire-holding reel, the spindle of the reel, and the upper and lower centers which support the spindle, and in which the spindle turns, a friction-washer secured to the lower side of the base-plate of the reel, a flanged collar surrounding the lower center, a bell-crank lever for raising said flanged collar into contact with said friction-washer, and means for operating said bell-crank lever, all substantially as and for the purposes set forth.

4. The combination of the upper center furnished with shoulders, as described, a bracket through the upper end of which said center passes and which guides said center, pawls pivoted to said bracket and adapted normally to engage with the shoulders on the said center, and devices, as described, for withdrawing said pawls from the shoulders on the center and for raising the latter.

5. The combination, with the upper center furnished with shoulders, as described, of the bracket, pawls pivoted to said bracket, springs for throwing said pawls in, a bell-crank lever pivoted to said bracket, one arm of which is bifurcated and spans the center, a collar surrounding said center and carried by said bifurcated arm of the bell-crank, and a pin carried by said center, with which said collar is adapted to engage when raised, all substantially as and for the purposes set forth.

6. In combination with frame K, the brackets *b b'*, carried thereby studs carried by said brackets, the tension-roller, shaft *a*, and the coil-springs and collars for carrying said shaft and tension-roller, all substantially as and for the purposes set forth.

7. In combination with roller B and center *a*, the brackets *b b'*, studs *c c'*, collars *d d'*, and coil-springs *e e'*, secured to said studs and collars, all substantially as and for the purposes set forth.

8. In a wire-winding machine, and as a device for holding and driving the bobbins while being wound, and in combination, an arm the forward end of which is furnished with a bearing, a flanged shaft turning in said bearing, a pin secured at right angles to said arm, a shaft secured in a bearing carried by the frame of the machine and furnished with a head through which said pin passes, a coil-spring surrounding said pin, one end of which is secured to said pin and the other to said shaft, and a spool-driving shaft furnished with a flange and devices for driving the same, all substantially as set forth.

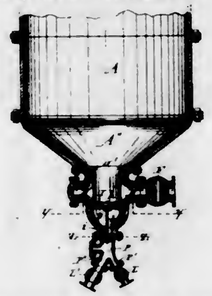
9. In combination with arm *l*, the shaft *m*, adapted to turn in a suitable bearing to allow this arm to be raised to put on or take off a bobbin, a flange upon this shaft, adapted to bear against the bearing, a spring surrounding said shaft and bearing against said bearing and against a collar or nut on said shaft, a pin rigidly connected to said arm *l* and passing down through a bead on said shaft, and a spring for throwing the outer end of said arm inward, all substantially as described and set forth.

445,766. DENTAL THERMAL INSTRUMENT. GEORGE EVANS, New York, N. Y. Filed Nov. 12, 1890. Serial No. 371,195. (No model.)



Claim.—In a dental thermal instrument, the combination of a probe provided with a suitable head in its coupling end, a coupling provided with a counterbored socket or hole adapted to receive and retain the headed end of the probe, and a handle screwed or otherwise fastened in the counterbore of the hole or socket and which bears against the head of the probe and clasps or fastens the head against the counterbore, substantially as specified.

445,767. WOOD-FIBER DIGESTER. WILLARD P. HAWLEY, Watertown, N. Y. Filed Apr. 28, 1890. Serial No. 349,789. (No model.)



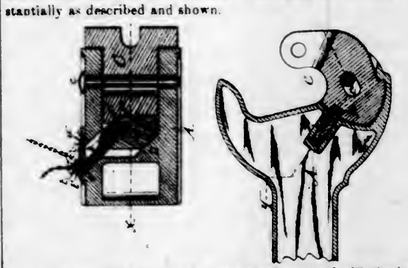
Claim.—The combination, with the digester A, formed with a funnel-shaped base A", of the supplemental chamber D, provided with a blow-off pipe immediately beneath the base A", the screen I beneath the blow-off pipe, the pipe P, connected to the bottom of the chamber D, and a steam-supply pipe P' and acid-supply pipe P" branching from the pipe P, substantially as described.

445,768. CAR-COUPLING. CHARLES O. BARNES and LUCIEN BARNES, Sr., Syracuse, N. Y. Filed Oct. 31, 1890. Serial No. 369,957. (No model.)

Claim.—1. In a twin-jaw coupler, the combination, with the primary knuckle-lock, of a supplemental safety-lock retaining the primary lock in its locking position, as set forth.

2. The combination, with the draw-head, coupling-knuckle pivoted to said draw-head, and the key connected movably vertically to the draw-head and adapted to lock the knuckle in its coupled position, of a latch connected to said key and extending movably longitudinally through the top portion of the draw-head and provided with a locking-shoulder engaging with a shoulder on the draw-head, as set forth.

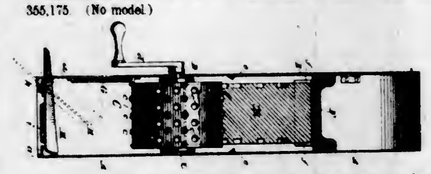
3. In combination with the draw-head formed with the inclined way *l*, knuckle C, pivoted to the draw-head and provided with the notch *n*, and the key *o*, sliding on said way and engaging the notch of the knuckle, the slot *s*, extending through the top portion of the draw-head and inclined rearwardly and terminating with the shoulder *s'*, and the latch *t*, connected to the key *o* and extending through the slot *s* and formed with the shoulder *t'*, engaging the shoulder *s'*, substantially as described and shown.



4. In combination with the draw-head provided with the inclined way *l*, the knuckle C, having the notch *n*, terminating with the inclined abutment *n'* near the top of the knuckle, and the key *o*, having its engaging face elongated correspondingly and terminated with the rearwardly-beveled top portion *o'*, substantially as shown and described.

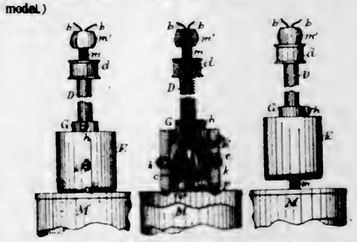
5. In combination with the draw-head provided with the slot *s*, knuckle C, pivoted to the draw-head, and key *o*, adapted to lock said knuckle, the cap *u*, covering the upper end of the slot *s* and seated removably on the draw-head, and the latch *t*, connected at its lower end to the key and at its upper end to the aforesaid cap, substantially as described and shown.

445,769. DEVICE FOR GRATING AND DELIVERING SOAP. GEO S. CHAMBERLIN, New York, N. Y. Filed June 12, 1890. Serial No. 355,175. (No model.)



Claim.—A device for delivering ordinary cake or bar soap in a powdered or granular form, comprising the box A, the grater-drum C, made of sheet metal punched so as to form grating-points and otherwise perforated to allow the escape of the grated material, the winged weight F, and the pivoted tilting shelf H, as set forth.

445,770. METHOD OF ELECTRIC SOLDERING AND CEMENTING CANS. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed Sept. 27, 1890. Serial No. 366,307. (No model.)



Claim.—1. The herein-described improvement in soldering or cementing operations in which heat is employed to heat the soldering or cementing material, consisting in heating the soldering-tool by passing a heating electric current through a conductor in close proximity or contiguous to the tool while it is remote from the work and then moving the tool from said conductor and bringing the tool in contact with the work or the junction of pieces supplied with solder.

2. The herein-described improvement in soldering or cementing operations in which heat is employed to heat the soldering or cementing material, consisting in heating the soldering-tool by passing a heat-

ing electric current through a conductor in contact with or in close proximity to the tool while it is remote from the work, then moving the tool from said conductor, bringing the tool in contact with the work or the junction of pieces supplied with solder, and moving said tool along the junction.

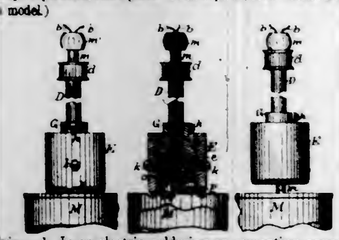
3. The herein-described improvement in soldering or cementing operations in which heat is employed to heat the soldering or cementing material, consisting in heating the soldering-tool by passing a heating electric current through a conductor in contact with or in close proximity to the tool while it is remote from the work, then moving the tool from said conductor, bringing the tool in contact with the work or the junction of the pieces supplied with solder, moving said tool along the junction, removing the tool from the junction, and maintaining pressure upon the parts while they are cooling.

4. The herein-described improvement in soldering or cementing operations in which heat is employed to soften the soldering or cementing material, consisting in suitably electrically heating a rotatable or revolving soldering-tool while it is remote from the work, then bringing the tool and work in contact with each other, and then separating the tool and work from each other and permitting the latter to cool.

5. The herein-described improvement in soldering or cementing operations in which heat is employed to soften the soldering or cementing material, consisting in suitably electrically heating a rotatable or revolving soldering-tool while it is remote from the work, applying pressure to the work to press the parts toward each other, then bringing the tool and work in contact with each other, and then separating the tool and work from each other and permitting the latter to cool under pressure.

6. The herein-described improvement in soldering or cementing operations in which heat is employed to soften the soldering or cementing material, consisting in electrically heating a rotatable or revolving soldering-tool while it is remote from the work by passing an electric current through a heating-conductor, then bringing the tool and work in contact with each other, and then separating the tool and work from each other and permitting the latter to cool.

445,771. APPARATUS FOR SOLDERING AND CEMENTING CANS BY ELECTRICITY. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed Sept. 27, 1890. Serial No. 366,308. (No model.)



Claim.—1. In an electric soldering or cementing apparatus for cans, a movable or rotatable soldering-tool and an electric heating-conductor in close proximity or contiguous to the tool.

2. In an electric soldering or cementing apparatus for cans, a series of separate or independent movable or rotatable soldering-tools and one or more electric heating-conductors in close proximity or contiguous to the tools.

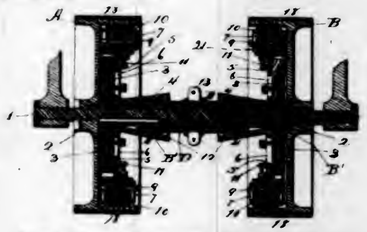
3. In an electric soldering or cementing apparatus for cans, a movable or rotatable soldering-tool, an electric heating-conductor in close proximity or contiguous to the tool, and an independent presser-iron, as and for the purpose described.

4. In an electric soldering or cementing apparatus for cans, a movable or rotatable vertically-reciprocating soldering-tool, an electric heating-conductor in close proximity or contiguous to the tool, and an independent presser-iron, as and for the purpose described.

5. In an electric soldering or cementing apparatus for cans, a series of separate or independent rotatable vertically-reciprocating soldering-tools, one or more electric heating-conductors in close proximity or contiguous to the tools, and a series of independent presser-irons, as and for the purpose described.

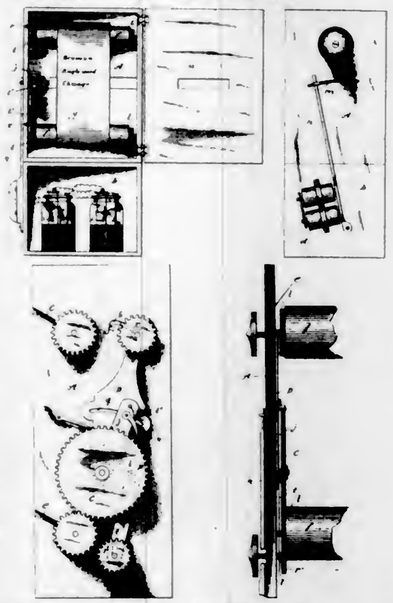
445,772. REVERSING-GEAR FOR CLUTCH-COUPLINGS. ROBERT H. EDWARDS, Wellsborough, Pa. Filed May 9, 1890. Serial No. 351,109. (No model.)

Claim.—1. The combination, with the pulley and its hub mounted loosely upon a shaft, of a sectional sleeve fitting over and flaring outwardly from the shaft and provided with slotted radial arms, guide-pins on the spokes of the pulley, boxes on the outer ends of the arms slotted to receive bolts, friction material inserted into the open ends of the boxes, retaining-bolts through the slots and frictional material adjusting-bolts through the bases of the boxes and bearing against the friction material, another sleeve mounted upon the shaft, a slide upon the latter sleeve provided with tapering ends, and means for moving the slide on the sleeve to force one of the tapered ends into the flaring sectional sleeve.



2. The combination, with the pulley and its hub mounted loosely upon a shaft, of a sectional sleeve fitting over and flaring outwardly from the hub and having grooves 20 in the flaring ends, radial arms upon the sleeve-sections for receiving guide-pins, boxes on the outer ends of the arms and slotted to receive bolts, friction material inserted into the open ends of the boxes, retaining-bolts through the slots and friction material, adjusting-bolts through the bases of the boxes and bearing against the friction material, another sleeve on the shaft, a slide upon the sleeve provided with tapered ends adapted to interlock with the grooves in the sleeve-sections, and means to move the slide upon the sleeve.

445,773. ELECTRICAL STATION-INDICATOR. EDWIN S. ELY, Chicago, Ill., assignor of one-half to John H. S. Quick, same place. Filed May 28, 1890. Serial No. 353,490. (No model.)

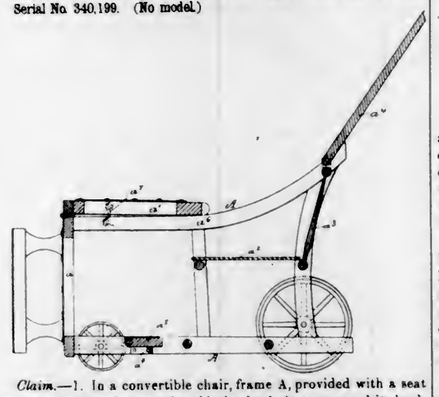


Claim.—1. In an electrical station-indicator, the combination, with a suitable battery and wire connections, of a pair of operating-rolls provided with the gear-wheels, a large or main gear normally engaging one of the roller-gears, the arm *j*, loosely working in connection with said main gear at its axis, a spring-operated pawl engaging said main gear and attached to the arm, an armature connected with said arm, and an electro-magnet adjacent to the armature, substantially as described.

2. In an electrical station-indicator, the combination, with the casing having upper curved slot *s* in its side and the vertical slot at or near the bottom thereof, of the pair of operating-rolls provided with the gear-wheels, the intermediate gear C, normally engaging with one of the roller-gears, the movable plate D, having the arm or branch *p* at its lower end and connecting at its upper end with the axis of a gear *r*, which has its bearing in said curved slot *s* of the casing, and the strip *t*, connecting the branch *p* with the axis of a gear *r'*, having its bearing in said vertical slot of the casing, all designed to operate substantially as and for the purpose described.

3. In an electrical station-indicator, the combination, with a pair of magnets and an armature pivoted adjacent thereto, of the casing having arc slot, the large gear-wheel, the arm for moving said wheel and attached to the upper end of the armature through the slot, a pawl engaging the said gear, a pair of rollers carrying an indicator-ribbon, and a suitable battery and wire connections, substantially as described.

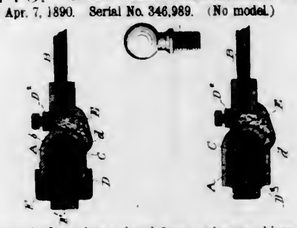
445,774. CONVERTIBLE CHAIR. ERASTUS S. FRENCH, Princeton, assignor to Gilman Waite, Baldwinsville, Mass. Filed Feb. 12, 1890. Serial No. 340,199. (No model.)



Claim.—1. In a convertible chair, frame A, provided with a seat *a* and its back *a'* and a seat a^3 and its back a^3, the seat *a* and its back *a'* being at one end of frame A to serve as a high-chair seat and back, and seat a^3 and its back a^3 being at the other end of frame A to serve as a low-chair seat and back, seat *a* and its back *a'* being independent of and at a distance from seat a^3, and its back a^3 and seat *a* uniting the main pieces of frame A, all substantially as and for the purpose set forth.

2. In a convertible chair, the combination of a supporting-frame A, two seats *a* a^3 supported thereby, one seat being at an angle to the other, and a movable back *a'* for seat *a*, movable back a^3 swinging from its position as a back for seat *a* into position to serve as a guard for seat a^3, and vice versa, substantially as and for the purpose set forth.

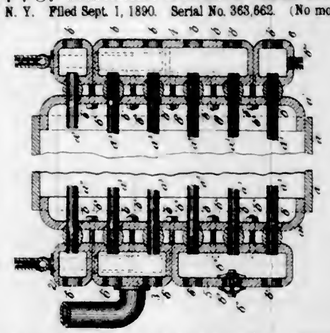
445,775. PITMAN-HEAD. JOEL GARFIELD, Worcester, Mass. Filed Apr. 7, 1890. Serial No. 346,989. (No model.)



Claim.—1. In a pitman-head for mowing machines, the threaded pitman-rod and casing, the latter having a threaded opening to receive said rod and a socket to receive the ball, also having suitable openings to receive the crank-pin and the detachable ball-holding device, also having an oil-chamber extending from in front of the inner end of the rod down under the ball-socket and connected therewith by a suitable outlet, in combination with said ball and crank-pin and the detachable ball-holding device whose inner end fits against the surface of said ball, substantially as and for the purpose set forth.

2. In a pitman-head for mowing-machines, the threaded pitman-rod B and casing A, the latter having a threaded opening to receive said rod and a socket to receive ball C, also having a lateral opening to receive the crank-pin and a longitudinal opening to receive plug D, as well as having an oil-chamber E extending from in front of the end of the rod down under the ball-socket and connected therewith by a suitable outlet *d*, said chamber also having a suitable inlet, in combination with said ball and crank-pin, the plug D, fitted against the ball, and cap F, screwed over the end of the casing against said plug, substantially as and for the purpose set forth.

445,776. EVAPORATING APPARATUS. THOMAS GAUNT, Brooklyn, N. Y. Filed Sept. 1, 1890. Serial No. 363,662. (No model.)

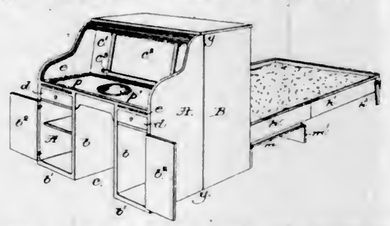


Claim.—1. In an evaporating apparatus, the combination, with an inclosing case, of an evaporating-surface composed of tubes or pipes extended loosely through the opposite ends of the inclosing case, one or more hollow couplings fitted loosely upon the extended ends of the said tubes, and means interposed between the said hollow couplings and the ends of the inclosing case to render the apparatus steam and vacuum tight, substantially as described.

2. In an evaporating apparatus, the combination, with an inclosing case, of an evaporating-surface composed of tubes or pipes extended loosely through the opposite sides or ends of the said case, a liquid-supply located above the said evaporating-tubes within the inclosing case, one or more castings or boxes loosely fitted upon the projecting ends of the said tubes, and means interposed between the said castings or boxes and the ends of the case to render the same steam and vacuum tight, substantially as described.

3. In an evaporating apparatus, the combination, with an inclosing case, of an evaporating-surface composed of horizontal tubes or pipes arranged in vertical rows and extended loosely through the opposite sides or ends of the said case, a liquid-supply located above the said vertical rows of horizontal tubes or pipes, one or more castings or boxes loosely fitted upon the projecting ends of the said tubes or pipes, and a packing upon the extended ends of the tubes or pipes between the said castings or boxes and the ends of the case to render the apparatus steam and vacuum tight, substantially as described.

445,777. FURNITURE. WALTER S. GOODWILLIE, Cambridge, assignor, by direct and mesne assignments, to Charles Dimond, Chelsea, Mass. Filed June 27, 1890. Serial No. 356,934. (No model.)



Claim.—1. The desk composed of back and front portions separable vertically, as described, the front part having a desk-board *d* and pigeon-hole frame and the back part having a roll-top, to thus enable the said desk to be separated, as described.

2. The desk composed of back and front portions separable vertically, as described, the front part having a movable desk-board, a fixed table-board thereunder for the reception of a wash-bowl, and side closets, and the back part having a roll-top, to enable the desk to be separated, as described.

3. The desk composed of back and front portions separable vertically, as described, the front part having a desk-board and a table for the reception of a wash-bowl, and the back part having a folding bed arranged therein, and a roll-top for the front part, substantially as described.

4. The desk composed of front and back portions separable vertically, as described, the front part having a desk-board and the back part having a roll-top, to thus enable the said desk to be separated, as described.

5. The roll-top desk having its back part separable vertically as described, and a space in said back part for the reception of a folding bed-frame, and a hinged two-part back panel to constitute a bed-frame

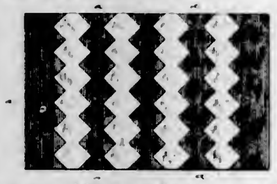
support when open and having spaces for the reception of bedding, the two-part panel closing the back part when the bed is folded, substantially as described.

445,778. HOOF-EXPANDER. MICHAEL HEAGERTY, Baltimore Md. Filed Nov. 25, 1890. Serial No. 372,610. (No model.)



Claim.—A hoof-expander formed of a single piece of spring metal and comprising a pair of diverging arms *a*, each having a lateral prong *b* at its outer end, two toe bends *c* at the converging ends of the arms, and a U-shaped double back bend *d*, connecting said two toe bends and occupying a position between the said arms *a*, as and for the purpose set forth.

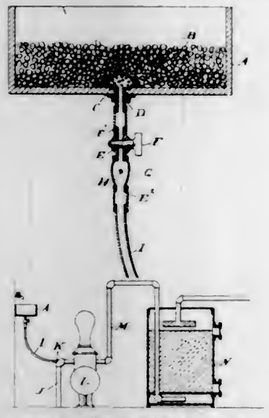
445,779. FLOOR. HENRY HERRMANN, New York, N. Y. Filed May 28, 1890. Serial No. 353,424. (No model.)



Claim.—1. A panel for parquet flooring, composed of a number of serrated strips of different sizes and colors, the edges of said strips being cemented together, each strip forming a series of geometrical figures integral with the strip, substantially as set forth.

2. A panel for parquet flooring, composed of a layer of serrated strips of different sizes and colors, the edges of which strips are cemented together, each strip forming a series of geometrical figures integral with the strip, and a backing of wood secured to said layer of strips, substantially as set forth.

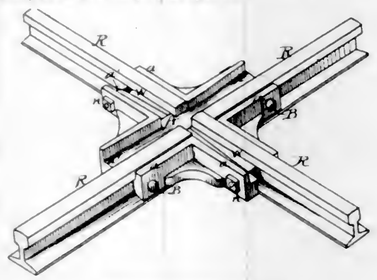
445,780. APPARATUS FOR PURIFYING WATER. THOMAS J. HOYT, Mount Clemens, Mich. Filed Apr. 7, 1890. Serial No. 346,801. (No model.)



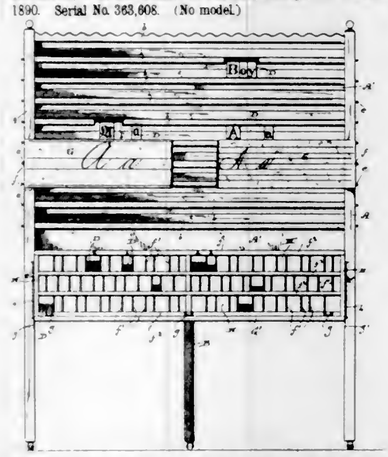
Claim.—In an apparatus for purifying water, the combination, with the suction-pipe of a pump, of a receiver for a reagent, provided at its bottom with a discharge-nipple, a valve, a connection between the same and the nipple, a transparent globe secured directly beneath the valve, a pipe I between the globe and suction-pipe, and a detachable flexible coupling or union between said pipe I and the globe, substantially as described.

445,781. RAILROAD-RAIL CROSSING. JOHN F. HUDEC, Cleveland, Ohio, assignor of one-third to Albert Rolnesk, same place. Filed Mar. 21, 1890. Serial No. 344,693. (No model.)

Claim.—The wedges W W, in combination with the bifurcated branches of the chair, having ribs *a'*, and the rails R R, and the bolts B, constructed and applied for clamping the rails to the chair, substantially as and for the purpose specified.



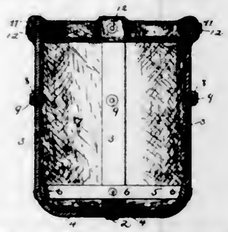
445,782. EDUCATIONAL APPLIANCE. BERNHARD F. E. JAHR, Milwaukee, Wis., and ROBERT H. BOECHER, Chicago, Ill. Filed Sept. 1, 1890. Serial No. 363,608. (No model.)



Claim.—1. An improved appliance for educational purposes, consisting of an easel-shaped frame the front portion of which is provided with cross-pieces for receiving alphabetical characters, in combination with a reversible board removably connected to said frame and provided upon its opposite faces with spacing-lines arranged at different widths apart on the different sides, substantially as set forth.

2. An improved educational appliance consisting of an easel-shaped frame having cross-pieces to receive alphabetical characters and vertical series of pins or nails projecting from the side arms of said frame, in combination with a reversible board having hooks pivoted to its side edges for engagement with said pins or nails, substantially as set forth.

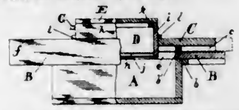
445,783. BASKET. OWEN JENNINGS, Homer, La., assignor to Jennings & Co., same place. Filed Nov. 12, 1890. Serial No. 371,223. (No model.)



Claim.—1. The herein-described basket, the same consisting of flexible ribs intersecting each other at their centers, at which point they are secured, and at some distance from their centers upwardly bent to form vertical ribs, an internal hoop connected to the vertical ribs immediately above their bent portions, an upper external hoop connected to the ends of the vertical ribs, a flexible textile covering for the basket, said covering having its upper end turned inwardly over the upper hoop and connected to itself, and fastening devices passed through the cover, the upper ends of the ribs, and the hoop, substantially as specified.

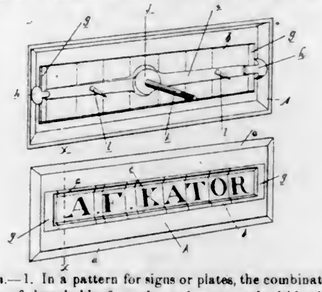
2. The herein-described basket, consisting of a pair of flexible ribs crossing each other at their centers and at a right angle and fastened at their points of crossing, said ribs being upwardly bent at points near their centers and forming a bottom and vertical side ribs, an internal hoop fastened to the ribs immediately above their points of bending, an external hoop encircling the ribs near their upper ends, said ribs being outwardly bent to overlap the hoop, a covering of flexible material inclosing the frame thus formed and having its upper edge bent inwardly over the upper hoop and fastened to itself below said hoop, and an outer hoop encircling the ribs and cover at about the middle of the basket and fastened to the ribs and cover, substantially as specified.

445,784. ASH-SIFTER. JOHN KARLE, Baltimore, Md. Filed Sept. 13, 1890. Serial No. 364,805. (No model.)



Claim.—In an ash-sifter, the combination of an ash-box A, a removable slideway B, resting on the ash-box and provided with an opening *c*, guide-walls *f*, projecting both above and below, and cross-strips *b'* on the upper surface, a slide C to travel in said slideway, having a central opening smaller than the opening in said slideway and provided with runners *c*, an ash-screen case D to fit in the opening in the said slide and having two outside supports *l* on the walls of said screen to rest upon the slide C, a cover to close the said screen-case, and a handle by which motion can be imparted to the slide, as and for the purpose set forth.

445,785. NAME-PLATE PATTERN. JEREMIAH H. KATOR, Detroit, Mich. Filed June 23, 1890. Serial No. 356,386. (No model.)



Claim.—1. In a pattern for signs or plates, the combination, with the frame, of detachable figured panels arranged within the frame, and a locking-bar for the panels, formed with a central boss and suitable pins, substantially as described.

2. In a pattern for signs or plates, the combination, with a rectangular frame having beveled edges, of a series of figured panels formed with raised flanges adjacent to their edges, a locking-bar extending across the frame in the rear of the panels, and lugs on the frame for securing the bar in place, substantially as described.

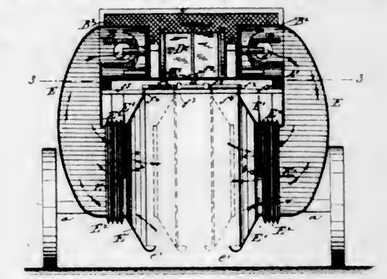
3. A pattern for signs or door-plates, &c., consisting of the frame-plate A, the lugs *h*, the detachable panel provided with raised flanges *e*, the end spaces *g*, the locking-bar *i*, provided with the central boss *j*, and the pin *k* and spurs *l* on said locking-bar, substantially as described.

445,786. COTTON-PICKER. OTTO KRETZSCHMAR, Sharkey, assignor of one-third to E. A. Tewes, Minter City, Miss. Filed May 10, 1890. Serial No. 351,283. (No model.)

Claim.—1. The combination of a yoke-shaped wheeled frame, air-trunks extending downward on opposite sides thereof, laterally-adjustable suction-spouts supported on said frame and having flaring vertical mouths facing inwardly, flexible pipes connecting the outer ends of said spouts with said trunks, and means for producing suction in said trunks, substantially as set forth.

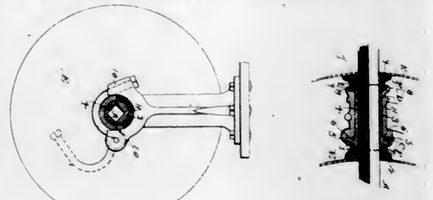
2. The combination of a yoke-shaped wheeled frame, air-trunks extending downward on opposite sides thereof, transverse guide-rods on said frame, suction-spouts adjustable on said guide-rods, flexible pipes connecting the outer ends of said pipes with said trunks, racks attached at their outer ends to said spouts, sleeve-shaped keepers for guiding said racks, and a hand-wheel shaft supported in said frame and provided with a pinion engaging said racks.

3. The combination of a yoke-shaped wheeled frame, air-trunks extending downward on opposite sides thereof, laterally-adjustable suction-spouts supported on said frame and having vertical mouths facing inward, adjustable shutters for regulating the side of said mouths, flexible pipes connecting the outer ends of said spouts with said trunks, and means for producing suction in said trunks.



4. The combination of a yoke-shaped wheeled frame, a wire basket supported thereon, a platform, also supported on said frame, laterally-adjustable suction-spouts depending from said frame and having vertical mouths facing inward, trunks connected at their upper ends with said wire basket and extending downward on opposite sides of the machine, flexible pipes connecting the lower ends of said trunks with said spouts, suction-fans in connection with said trunks, an electric motor on said platform, and mechanism connecting said motor with the fan-shafts for driving the latter, substantially as described.

445,787. DISK HARROW. CHARLES S. RUEF, Dixon, Ill., assignor to the Grand Detour Plow Company, same place. Filed Aug. 28, 1890. Serial No. 363,362. (No model.)



Claim.—1. In a disk harrow, the combination of the hanger B, box C, axle A, washer F, provided with a conical seat 1, and the journal D, constructed in two halves and provided with the conical ends 2, substantially as shown, and for the purpose described.

2. The combination of the box C, suitably seated in the hanger B and provided with the recess 6, and the journal D, provided with exterior flange 5, adapted to conform to said recess 6, substantially as shown, and for the purpose described.

3. In combination with the hanger B, the box C, provided with recess 6 and lip 7, and the journal D, provided with the annular flange 5, substantially as shown, and for the purpose described.

4. In a disk harrow, the combination of the axle A, disks E, washer F, provided with conical seat 1, hanger B, box C, constructed in two halves and provided with conical ends 2, and suitable means for holding said parts in mutual relation, substantially as shown, and for the purpose described.

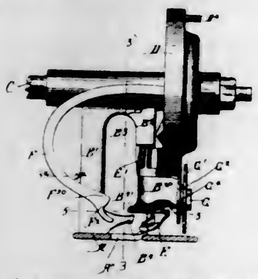
5. In a disk harrow, the combination of the box C, provided with recess 6, segmental extensions 12 and 13, journal D, provided with annular flange 5 and conical ends 2, washer F, provided with conical seat 1, axle A, and retaining-bolt G, substantially as shown, and for the purpose described.

6. In a disk harrow, the combination of the axle A, the box C, constructed in two portions and provided with the recess 6, the journal D, constructed in two portions and provided with external annular flange 5, the hanger B, provided with downward extensions 10, projected below the line of separation of said box and journal, and a suitable retaining-bolt G, substantially as shown, and for the purpose described.

7. In a disk harrow, the combination of a hanger B, box C, axle A, journal D, constructed in two parts adapted to inclose said axle, and a bowed bolt G, hinged at its forward extremity to said hanger in the rear of said axle, substantially as shown, and for the purpose described.

8. In a disk harrow, the combination of the axle A, disks E, washers F, provided with conical seat 1, box C, provided with annular recess 6, journal D, constructed in two portions and provided with conical ends 1 and exterior annular flange 5, the hanger B, provided with the projections 10, and bowed bolt G, hinged at its forward extremity to one side of said projections and adapted at its other end to be removably attached to the rear projection 10, substantially as shown, and for the purpose described.

445,788. CORD-KNOTTER FOR GRAIN-BINDERS. ANDREW STARK, Chicago, Ill. Filed July 3, 1890. Serial No. 357,816. (No model.)



Claim.—1. In combination with the needle, the knotter-bill having its axis at one side of the plane of the needle's movement, and a cord-deflecting device which moves from the side of said plane opposite the knotter-bill across said plane at a position beyond the knotter-bill toward the discharge side to deflect the cord against the knotter-bill shank at said discharge side of the bill, substantially as set forth.

2. In combination with the needle, the knotter-bill having its axis at one side of the plane of the needle's movement, the holder receiving the cord at a point farther from said plane than the knotter-bill axis and on the same side of said plane, a cord-deflecting device operating from the side of said plane opposite the knotter-bill axis across said plane and past the knotter-bill, and cord-receiving notch of the holder to carry the cord to the holder, substantially as set forth.

3. In combination with the needle, the knotter-bill, a fixed finger projecting transversely to the plane of the needle's movement between the path of the needle's eye and the knotter-bill at a point dischargeward from the knotter-bill axis, and a cord-deflecting arm moving across the plane of the needle in a path also located dischargeward from the bill near to said fixed finger to take the cord lodged thereon by the needle in its advance, substantially as set forth.

4. In combination with the needle and the knotter-bill, said knotter-bill having its vibrating jaw freely pivoted to the fixed jaw, the knotter-bill bearing having a cam-surface adapted to engage the heel of said vibrating jaw to open and hold it open during part of its revolution, the jaw being otherwise free from actuation by the mechanism, the fixed finger located dischargeward from the bill's axis and projecting across the plane of the needle's movement between the path of the needle's eye and the bill from that side of said plane toward which the bill points when at rest to receive the cord as the needle recedes and cause it to be lodged on top of the freely-pivoted jaw of the knotter-bill to close the same, substantially as set forth.

5. In combination with the needle and with the knotter-bill located at one side of the plane of the needle's movement, the holder located and operating in a plane substantially parallel to that of the needle's movement and on the opposite side of the knotter-bill axis from the plane of the needle, and a cord-deflecting arm operating across both said planes from the side of the plane of the needle's movement which is opposite the knotter-bill to the side of the plane of the cord-holder movement opposite the knotter-bill, thus carrying the cord onto the bill and into the holder, substantially as set forth.

6. In combination with the needle and the knotter-bill, the holder on the opposite side of the knotter-bill from the plane of the needle's movement, mechanism which rotates the holder to cause it to carry the cord away from the discharge side of the machine, and a fixed knife against which the cord is carried by said movement of the holder, whereby the cord is wrapped around the knotter-bill by the movement of the holder carrying the cord into it up to the moment of cutting, substantially as set forth.

7. In combination with the needle and the cord-holder operating in substantially parallel planes and the knotter-bill between said planes, mechanism which actuates the bill, and mechanism which revolves the holder grainward on the side whereat it carries the cord to the shoe, said mechanism timed to give the holder its said cord-actuating movement while the bill is revolving stubbleward on the side toward the holder, substantially as set forth.

8. In combination with the needle and the knotter-bill and the knotter-actuating cam-wheel revolving in a plane parallel to the path of the needle, the cord-holder actuated directly by said cam-wheel and revolving in a plane substantially parallel to that wheel, substantially as set forth.

9. In combination, substantially as set forth, the cam-wheel, the knotter-bill, a fixed cord-severing knife, and a holder-disk adjacent to the knife and located substantially parallel to the cam-wheel, said cam-wheel having abutments which engage the holder-disk and rotate it in two stages with an interval for each knotting operation, the first to carry the cords to the shoe before they are received between the jaws of the bill, the second to carry the cord in the holder-notches against the knife after the bill has revolved to take in the cords between its jaws.

10. In combination with the holder having two disks, and the cam-wheel having two abutments which engage the disks respectively each once in each revolution of the cam-wheel, the position of said abutments and of their respective engaging points on the disks being so located that said abutments actuate the holder at different times, the actuation of the one ceasing and being followed by an interval of rest of the holder before the actuation of the other commences, substantially as set forth.

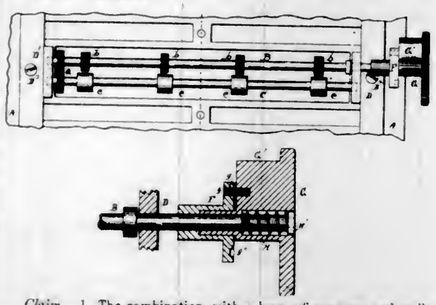
11. In combination with the holder having two disks, the cam-wheel having two abutments which engage the disks respectively each once in each revolution of the cam-wheel, said abutments and their respective points of engagement on the disks being so situated relatively that the actuation caused by one of the abutments is followed by an interval of rest before that caused by the other commences, the knotter-bill, and the mechanism which actuates it, timed to cause the bill to receive the cords between its jaws and accomplish a portion of its rotation after so receiving them in said interval of the movement of the holder, substantially as and for the purpose set forth.

12. In combination with the needle, the knotter-bill, the holder on the opposite side of the knotter-bill from the plane of the needle's movement, and mechanism which moves the holder to carry its cord-notch in its cord-actuating movement substantially to a plane transverse to that of the needle's movement and containing the knotter-bill axis, substantially as set forth.

13. In combination with the needle, the knotter-bill, and the holder on the opposite side of the knotter-bill from the plane of the needle's movement, a cord-severing knife operating to cut the cord at a point in a plane substantially transverse to the plane of the needle's movement and containing the knotter-bill axis, as and for the purpose set forth.

14. In combination with the needle, the knotter-bill, a knife located on the opposite side of the knotter-bill from the plane of the needle's movement and having its cord-cutting point substantially in a plane at right angles to the plane of the needle's movement and containing the knotter-bill axis, and means for carrying the cord away from the discharge side of the machine to the knife, substantially as set forth.

445,789. WICK-TUBE FOR LAMPS OR OIL-STOVES. DAVID L. WHITTINGHAM, Detroit, Mich., assignor to Charles Whittingham and Frank A. Johnson, both of same place. Filed Feb. 24, 1890. Serial No. 341,539. (No model.)



Claim.—1. The combination, with a base, of separate end walls united thereupon and a wick-raiser journaled in said end walls, substantially as set forth.

2. The combination, with a base, of separate end walls united thereupon, a wick-raiser, and bearing-spindle journaled in said walls, said wick-raiser and bearing-spindle geared together inside said end walls, substantially as set forth.

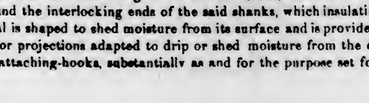
3. The combination, with a base, of separate end walls and a wick-raiser journaled therein, one of said walls having a separable engagement with said base, substantially as set forth.

4. The combination, with a base, of separate end walls united to said base, a wick-raiser journaled in said end walls, and a cap E, independent of and removable from said end walls, substantially as set forth.

5. The combination, with the wick-raiser, of a recessed plate rigidly engaged thereupon and an operating-head, with a shank G', and provided with a stud loosely engaged with the recessed plate, substantially as set forth.

6. The combination, with a base, of a wick-raiser located thereupon, said wick-raiser having, in combination therewith, a recessed plate rigidly secured thereto, and an adjustable operating-head provided with a shank G' and a stud *g* to engage said recessed plate, said operating-head arranged to clear the base when adjusted for that purpose, and vice versa, substantially as described.

445,790. INSULATOR. HENRY D. WINTON, Wellesley, Mass. Filed July 23, 1890. Serial No. 359,659. (No model.)



Claim.—1. The combination, with an electric line or conductor, of an insulator made of glass, porcelain, rubber, or other suitable material, having at its extremities metallic hooks, cross-heads, or other equivalent devices, the shanks of which interlock or interlace and are cast, embedded, or otherwise permanently inclosed within it without establishing a metallic contact, whereby the parts of the line may be dropped below it or carried above or around it, substantially as and for the purpose set forth.

2. The combination, with an electric line or conductor, of an insulator made of glass, porcelain, rubber, or other suitable material, having at its extremities metallic hooks, cross-heads, or equivalent attaching devices, the shanks of which interlock or interlace in said insulator without establishing a metallic contact, and projections for shedding rain or moisture from said attaching-hooks or cross-heads, whereby the electric lines or conductors attached to the insulator may be thoroughly insulated from each other and may be dropped below it or carried above or around it, substantially as and for the purpose described.

3. The combination, with the lines of an electric circuit or electric conductor-support, of an insulator made of glass, porcelain, rubber, or other suitable material, having metallic hooks, cross-heads, or equivalent attaching devices, the shanks of which interlock or interlace and are cast, embedded, or otherwise permanently secured within it without establishing a metallic contact, said hooks or cross-heads being thus re-enforced by each other and separated from each other, and lips or projections formed upon and around the face of the insulator suitable to shed rain or moisture from the attaching ends, whereby the lines or conductors secured thereto may be electrically separated from each other, substantially as and for the purpose set forth.

4. An electric insulator composed of metallic cross-heads or equivalent attaching-pieces, having shanks which interlock or interlace with each other in an insulating material which acts to separate the shanks in part to prevent metallic contact, and drips or projections formed upon the face of the insulator near the point of contact of the wires with the attaching ends, adapted to protect the wires from electric contact with each other by rain or moisture upon the surface, substantially as and for the purpose set forth.

5. An electric insulator composed of metallic cross-heads or equivalent attaching-pieces, having shanks shaped to interlock or interlace and which are interlocked, but separated from each other by a layer of insulated material, as and for the purpose described.

6. An electric insulator composed of metallic cross-heads or equivalent attaching-pieces provided with shanks shaped to interlock or interlace, and which do interlock or interlace, but are separated from each other by a layer of insulating material, and insulating material surrounding the outer surface of the interlocked or interlaced shanks, binding or uniting them together, as and for the purpose described.

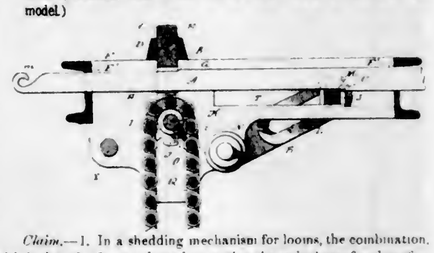
7. An insulator for electric lines or conductors, composed of two hooks or cross-heads conformed to interlock with each other in an insulating material, having shanks which interlock or interlace with each other in an insulating material molded, cast, or otherwise applied around the interlocking ends of the said shanks, which insulating material is shaped to shed moisture from its surface and is provided with lips or projections adapted to drip or shed moisture from the ends of the attaching-hooks, substantially as and for the purpose set forth.

8. An insulator for electric lines or conductors, composed of two hooks or cross-heads having shanks conformed to interlock or interlace with each other and shaped to approximately form the exterior design of the insulator, and a layer of insulating material placed between the two shanks and extended about their exterior, combined substantially as and for the purpose set forth.

9. An insulator for electric lines or conductors, composed of two hooks or cross-heads the shanks of which are conformed or shaped to interlock or interlace with each other and shaped to approximately form the exterior design of the insulator, a layer of rubber or other insulating compound in sheet form placed between the interlocking portions of the shanks of the hooks or cross-heads, a layer of the same material over the exterior of the shanks or metallic hooks or cross-heads, and lips or projections formed of the same material and adapted to drip or otherwise shed rain or moisture from the projecting hooks or cross-heads, substantially as and for the purpose set forth.

10. An insulator for supporting trolley-wires for overhead electric railways, composed of two metallic sections interlinked with each other and separated from each other in an insulating material, and conformed to shed rain or moisture from the metallic sections, one of said sections being conformed for attachment to a supporting or cross wire, the other being formed to receive an attaching-piece adapted to receive and hold a trolley-wire, substantially as and for the purpose set forth.

445,791. SHEDDING MECHANISM FOR LOOMS. CHARLES W. WOLFF, Ansonia, Conn. Filed Dec. 24, 1889. Serial No. 334,851. (No model.)



Claim.—1. In a shedding mechanism for looms, the combination, with jacks, of a frame adapted to receive the ends thereof and confine them to longitudinal reciprocation, a cross-piece extending transversely over the jacks, gravity-locks mounted in the said cross-piece for independent endwise vertical reciprocation therein and resting upon the upper edges of the said jacks, each of the said locks having a locking-shoulder which is engaged by the upper edge of its jack and an unlocking-leg which depends below the lower edge thereof, pattern mechanism adapted to co-operate with the legs of the locks to lift the same, means for lifting the said mechanism against the legs of the locks, a horizontally-reciprocating knife-bar adapted to engage with the lower edges of the jacks, and means for reciprocating the knife-bar, connected with means for lifting the pattern mechanism, substantially as described.

2. In a shedding mechanism for looms, the combination, with jacks, of a frame constructed to confine them to horizontal reciprocation, a series of gravity-locks, constructed and mounted for independent endwise vertical reciprocation and supported upon the upper edges of the jacks, each of the said locks having a locking-shoulder which is engaged by the upper edge of its jack and an unlocking-leg which depends below the lower edge thereof, pattern mechanism adapted to co-operate with the legs of the locks to lift the same, a horizontally-reciprocating knife-bar to engage with the lower edges of the jacks and levers connecting the knife-bar and pattern mechanism and constructed to lift the latter against the unlocking-legs of the locks, which are thus raised to permit the jacks to move forward when the knife-bar is at the limit of its outstroke, substantially as described.

3. In a shedding mechanism for looms, the combination, with jacks, each having a shoulder upon its upper and its lower edge, of a series of gravity-locks constructed and mounted for independent endwise vertical reciprocation, supported upon the upper edges of the jacks and respectively engaged by the shoulders upon the said edges thereof, pattern mechanism located below the jacks and raised to lift the locks to permit the jacks to move forward, a horizontally-reciprocating knife-bar adapted to engage with the shoulders upon the lower faces of the jacks, and means for lifting the pattern mechanism to raise the locks when the bar is at the limit of its outstroke, the shoulders on the jacks being relatively arranged so that when the bar is engaged with the shoulders upon their lower edges and at the limit of its outstroke the shoulders upon their upper edges will be clear of the locks, which are thus left free to be raised, substantially as described.

4. In a shedding mechanism for looms, the combination, with a chain-shaft and a knife-bar, of bell-crank levers connecting the said

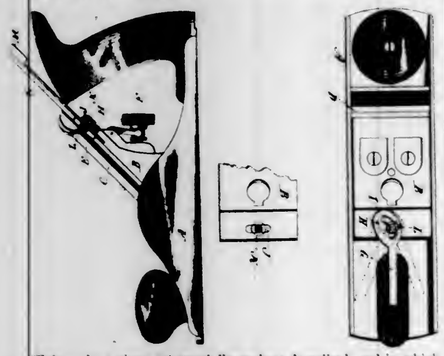
chain-shaft and knife-bar, and having slotted ends through which the same pass to permit the former to have a vertical movement and the latter to have a horizontal movement, substantially as described.

5. In a shedding mechanism for looms, the combination, with jacks, of a frame receiving their ends and confining them to horizontal movement, locks located above the jacks, a pattern-chain having continuous disks, a horizontal knife-bar, levers connecting the chain and bar so that the former will be lifted to co-operate with the locks in changing the pattern when the bar is at the limit of its outstroke, whereby a back and a face pick may be made in the same revolution of the attachment, and means for actuating the knife-bar, substantially as described.

6. In a shedding mechanism for looms, the combination, with jacks, of a frame receiving the ends of the jacks and confining them to horizontal movement, gravity-locks located above the jacks, a horizontal knife-bar mounted in the frame below the jacks, a chain-shaft moving in vertical slots formed in the frame, bell-crank levers connecting the knife-bar and chain-shaft, and power-connections applied to the knife-bar for operating the same and the chain-shaft, substantially as described.

7. In a shedding mechanism for looms, the combination, with jacks, of a frame receiving the ends of the same and confining them to a horizontal movement, gravity-locks located above the jacks, a horizontally-reciprocable knife-bar, a vertically-reciprocable chain-shaft, a pattern-chain running over the same and lifted thereby to lift the locks, slotted bell-crank levers connecting the knife-bar and chain-shaft, a rock shaft journaled in the frame, a bell-crank lever mounted on each end thereof, a pitman connecting each of the said levers with the knife-bar, and an actuating-rod connected with one of the bell-crank levers last mentioned, substantially as described.

445,792. PLANE. GRANVILLE W. WRIGHT, New Haven, Conn., assignor to Sargent & Company, same place. Filed Oct. 6, 1890. Serial No. 367,225. (No model.)



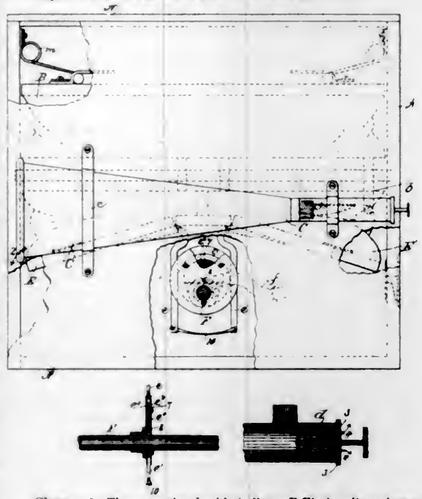
Claim.—In a plane substantially such as described, and in which the plane-iron is secured upon the seat in the stock, the stock constructed with a transverse slot above said seat and in rear of the plane-iron, a lever hung upon the stock in rear of the plane-iron and so as to swing in a plane parallel with the plane-iron and across said transverse slot, the lever constructed with a slot eccentric to the pivot on which it swings, and a slide working in said transverse slot and extending through the said segmental slot of the lever into engagement with the plane-iron, substantially as and for the purpose described.

445,793. PLANE. GRANVILLE W. WRIGHT, New Haven, Conn., assignor to Sargent & Company, same place. Filed Oct. 6, 1890. Serial No. 367,226. (No model.)



Claim.—In a plane in which the stock is constructed with a seat B, upon which the plane-iron D may rest and be secured, the seat provided with a stationary stud H, and constructed with a transverse slot I above said stud, combined with a lever G, hung upon said fixed stud and extending upward in a plane substantially parallel to the plane of the plane-iron, the said lever constructed with a stud J, corresponding to the slot of the plane-iron, and also with a stud K, extending into and so as to move in said transverse slot I, all substantially as and for the purpose described.

445,794. SIGNAL APPARATUS. MICHAEL CAMPBELL, Boston, Mass., assignor of one-half to August H. Wellbrock, same place. Filed July 19, 1890. Serial No. 359,286. (No model.)



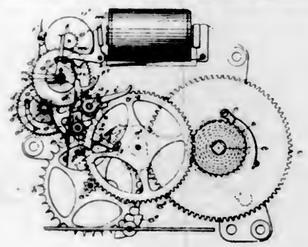
Claim.—1. The case, the double bellows E E', the elbow-levers attached thereto and connected at their lower ends, the eccentric intermediate said levers to actuate them alternately, the shaft F, and the storage-bellows, combined with the horn, substantially as described.

2. The case, the bellows E E', its actuating devices, and the storage-bellows B, combined with the fog-horn having one end perforated, an air-inlet and a cut-off valve in said horn adjacent to the air-inlet and perforated end, movement of the valve beyond the inlet allowing the air to escape through the perforations, and opposite movement of said valve permitting the horn to emit sound, substantially as described.

3. The case, the double bellows E E' and actuating devices, the elbow-levers *e e'*, pivotally attached to said bellows at one end and connected at their lower ends, the actuating-shaft, the self-oiling eccentric fast thereon, composed of the disks, and the ring held between and of less diameter than the disks, the levers *e e'* being extended between said disks on opposite sides of and bearing against the ring, combined with the storage-bellows and the attached horn, substantially as described.

445,795. SUCCESSIVE NON-INTERFERENCE SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed Nov. 22, 1889. Serial No. 331,192. (No model.)

Brief.—When signaling-lever *i* is pulled, block carrying 5 6 7 is turned to throw spring *e* back from controlling-lever *d*. Thereupon spring *e'* throws *d* out of engagement with stop-pin 2 immediately, or as soon as non-interference train assumes the normal position.



Claim.—1. In a signal-box, signaling mechanism and actuating devices therefor, comprising a controlling-lever, signaling-lever, and co-operating parts whereby the signaling mechanism may be set in condition to operate whenever the signaling-lever is operated, combined with a clog which when in one position prevents movement of the controlling-lever and when in its other position permits movement of said controlling-lever, and a non-interference magnet and its armature, the latter controlling the position of said clog, substantially as described.

2. In a signal-box, signaling mechanism and actuating devices therefor, comprising a controlling-lever, signaling-lever, and co-operating parts whereby the signaling mechanism may be set in condition to operate whenever the signaling-lever is operated, combined with a clog which when in one position prevents movement of the controlling-lever and when in its other position permits movement of said controlling-lever, a non-interference magnet and its armature, and a time-train for moving said clog in one direction, its operative connection with said time-train being controlled by said armature, substantially as described.

3. In a signal-box, the signaling mechanism, controlling-lever for it, means for moving the controlling-lever, and a clog arranged to enter the path of movement of the said controlling-lever, combined with a spring for moving said clog in one direction, and a time-train for restoring said clog to its normal position, and a non-interference magnet and its armature, the latter controlling the operative connection of the clog and time-train, substantially as described.

4. In a signal-box, the signaling mechanism, controlling-lever for it, and a clog which when in one position holds the controlling-lever fast and when in its other position permits movement of the controlling-lever, combined with a time-train for moving the clog in one direction and a spring for moving it in the opposite direction, and a non-interference magnet and its armature, the latter controlling the operative connection of the clog with the time-train, substantially as described.

5. In a signal-box, the signaling mechanism, a controlling-lever for it, a clog for said controlling-lever, and a non-interference magnet and its armature, the latter controlling the position of the said clog, combined with a plate for releasing the locking-pressure on the controlling-lever and means, substantially as described, for moving said plate, substantially as and for the purpose set forth.

6. In a signal-box, the signaling mechanism, a controlling-lever for it, and a weak spring for moving said controlling-lever, combined with a strong spring for holding said let-off or controlling-lever in its normal position against the tension of the weak spring and means, substantially as described, for moving said strong spring to relieve the pressure, substantially as set forth.

7. In a signal-box, signaling mechanism and a controlling-lever for it, a spring for moving it in one direction, and another spring for holding it against the tension of the first-named spring, combined with a non-interference clog for said spring-actuated controlling-lever and a time-train for said clog, substantially as described.

8. In a signal-box, signaling mechanism and a spring-actuated controlling-lever for it, combined with a plate for releasing the pressure of said controlling-lever, means, substantially as described, for restoring said plate to its normal position, and a signaling-lever, substantially as described.

9. In a non-interference signal-box, a signaling-train, a controlling-lever for it, and an actuating-spring for the controlling-lever, combined with an independent time-train, which when running holds the controlling-lever against the force of its actuating-spring, and a non-interference magnet and its armature separate from the controlling-lever, controlling the operation of said time-train, substantially as described.

10. In a signal-box, signaling mechanism and a spring-actuating controlling-lever for it, means for holding it against the tension of its actuating-spring and a movable plate by which the controlling-lever is placed under the influence of its actuating-spring to thereby set the signaling mechanism in condition to operate, combined with an independent motor mechanism and means moved by it for restoring the said plate to its normal position after a predetermined length of time, substantially as described.

11. In a signal-box, signaling mechanism, a controlling-lever for it, means for holding the controlling-lever in its normal position, a plate for effecting movement of the said controlling-lever, and a clog for controlling the movement of said controlling-lever, combined with a non-interference train with which the said clog is operatively connected and means, as a pin, for restoring said plate to its normal position after a predetermined length of time, substantially as described.

12. In a signal-box, signaling mechanism, a controlling-lever for it, means for holding the said controlling-lever in its normal position, and the projection 10 on the controlling-lever, combined with the signaling-lever having the projection 9 on it and the plate 5 6, moved by the signaling-lever and restored by the train, substantially as described.

13. In a signal-box, signaling mechanism, a controlling-lever for it, and a spring for holding the controlling-lever in its normal position, combined with the plate 5 6, adapted to remain in whatever position it may be placed, for moving said spring to release the controlling-lever, the signaling-lever for moving the said plate in one direction, and means for restoring said plate to its normal position, substantially as described.

14. In a signal-box, signaling mechanism, a controlling-lever for it, and means for holding the controlling-lever in its normal position, combined with the plate 5 6 7, a signaling-lever for moving it in one direction, that the controlling-lever may assume its abnormal position, a pin carried on one of the moving parts of the train for restoring said plate to its normal position, a non-interference train, magnet, and armature, and a pin carried by said non-interference train for also restoring said plate to its normal position, substantially as described.

15. In a successive non-interference signal-box, a signaling-train, a signaling-lever, an independent time-train, and a non-interference magnet and its armature controlling the operation of said independent train, combined with a controlling-lever having a dog *f*⁶ thereon and interposed between the signaling and independent trains, the dog locking and preventing the independent train from running unnecessarily when the signaling-train is released by the movement of said lever out of engagement therewith, substantially as described.

16. In a signal box, signaling mechanism, a controlling lever for it, and means for holding said controlling-lever in normal position, combined with a plate for effecting movement of said controlling-lever, a pin carried by one of the wheels of the train for restoring said plate to its normal position, and a signaling-lever in the path of movement of which the plate continually lies, substantially as described.

17. In a signal-box, a signaling-train, a controlling-lever which normally holds the train at rest, a spring for moving it to release the train, and a signaling-lever governing the operation of the actuating-spring of the controlling-lever, combined with an independent time-train governing the movement of said controlling-lever to allow the train to operate and a non-interference magnet and its armature for governing the operation of said time-train, substantially as described.

18. In a signal-box, a signaling-train and a signaling-lever for placing it under the control of its main or actuating spring, combined with an independent time-train, an independent controlling-lever for holding the signaling-train after the signaling-lever has been operated, said controlling-lever being governed by said independent time-train, and a non-interference magnet and its armature controlling the operation of said independent time-train, substantially as described.

19. In a signal-box, a signaling-train, a locking-lever for it, and a signaling-lever for placing the signaling-train directly under the control of said locking-lever, combined with an independent time-train controlling the movement of said locking-lever and a non-interference magnet and its armature controlling the return of said independent time-train, substantially as described.

445,796. ELECTRIC VISUAL INDICATOR. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed Mar. 7, 1890. Serial No. 342,950. (No model.)

Brief.—The indicating-drums are held by let-offs a^2 b^2 c^2, controlled by springs 5. The spring against which operating-lever *e* plays is determined by the step on the plate *f*, against which *e* rests. The shaft *f'*, carrying *f*, is turned by a time-train, and is set back by engagement of let-off pins on indicating-drums with arms f^{13} f^{14} f^{15}. The units, tens, and hundreds of the signal are separated in time sufficiently to permit shaft *f'* to turn far enough for *e* to be drawn by a controlling-spring from one step to the next.

Claim.—1. In an electric indicator, two or more indicating-surfaces intermittingly and independently movable and let-offs for said drums, combined with an operating-lever for said let-offs, an electro-magnet for controlling the movement of the said operating-lever, and a reciprocating stepped plate, against the stepped side of which the operating-lever bears, substantially as described.

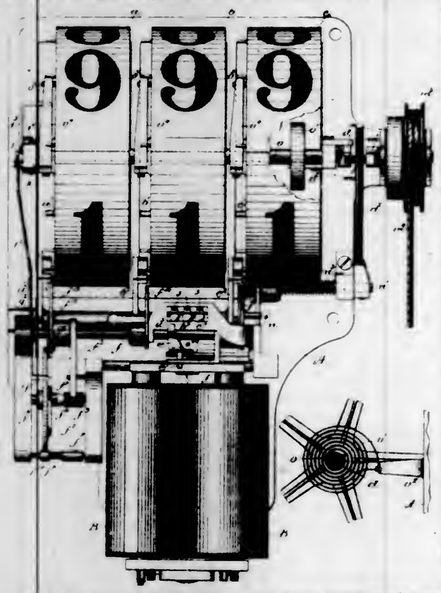
2. In an electric indicator, two or more indicating-surfaces and let-offs for moving them intermittingly, combined with an operating-lever, an electro-magnet for controlling the movement of said operating-lever to move said let-offs, a stepped plate controlling the position of said operating-lever, a time-train for moving said stepped plate, and a spring, as e^3, for moving said operating-lever in engagement with the said stepped plate, substantially as described.

3. In an electric indicator, two or more indicating-surfaces intermittingly and independently movable, combined with an operating-lever, an electro-magnet for effecting its movement, a stepped plate which controls the position of said operating-lever, a time-train for moving said plate in one direction, and means moved by the indicating-surfaces for setting the stepped plate back, substantially as described.

4. In an electric indicator, two or more drums intermittingly and independently movable and let-offs for said drums, combined with an operating-lever for said let-offs, an electro-magnet for controlling the

movement of the operating-lever, a stepped plate and time-train for moving it in one direction, and pins on the said drums for moving said plate back a short distance, substantially as described.

5. In an electric indicator, two or more drums intermittingly and independently movable and let-offs for said drums, combined with an operating-lever for said let-offs, an electro-magnet for controlling the movement of the operating-lever, a stepped plate controlling the position of said operating-lever, a rock-shaft to which it is attached, and arms arranged thereon which are engaged by the drums for moving the stepped plate back a short distance each engagement, and a time-train for moving the stepped plate forward, substantially as described.



6. In an electric indicator, two or more drums intermittingly and independently movable and let-offs for said drums, combined with an operating-lever for said let-offs, an electro-magnet for controlling the movement of the operating-lever, a stepped plate controlling the position of said operating-lever, a rock-shaft to which it is attached, and arms arranged thereon in different radial positions which are engaged by the drums for moving the stepped plate back a short distance each engagement, and a time-train for moving the stepped plate forward, substantially as described.

7. In an electric indicator, two or more indicating-surfaces, let-offs for moving them independently, and an operating lever for said let-offs, combined with a stepped plate the steps of which serve as rests for the operating-lever in its different positions, means, substantially as described, for moving the stepped plate forward, and means, substantially as described, for setting it back when the impulses succeed each other rapidly, substantially as described.

8. In an electric indicator, two or more indicating-surfaces, let-offs for moving them independently, and an operating-lever for said let-offs, combined with a series of stops for holding said operating-lever in its different positions and means controlled by the drum for moving said stops back, substantially as described.

9. In an electric indicator, two or more indicating-surfaces, let-offs for moving them independently, and an operating-lever for said let-offs, combined with a series of stops for holding said operating-lever in its different positions, a series of arms controlled, respectively, by the indicating-surfaces for setting the stops back when the impulses succeed each other rapidly, and a time-train for moving said stops forward, substantially as described.

10. In an electric indicator, two or more circular indicating-drums mounted on a rotary reciprocating shaft, each having on it a series of pins, and let-offs for said indicating-drums, one of the pins of said series being larger in diameter than the others and serving as a limiting-stop for the drums in each direction, substantially as described.

11. In an electric indicator, a series of indicating-surfaces and means for moving them, combined with an operating-lever and a plate, as f, having a series of steps, which serve as rests for the operating-lever in its different positions, substantially as described.

12. In an indicator, two or more indicating-surfaces, springs for moving them, and let-offs, combined with an operating-lever for moving the let-offs, a stepped plate the stepped side of which presents a series of rests for the operating-lever, one rest for each different position of said lever, a time-train, and an electro-magnet, substantially as described.

13. In an indicator, the drums and means for moving them, arms on the shaft for restoring the drums to their normal position, the arm d^{10} on said shaft, the winding-crank and means for rotating it, the operating-lever e, and a time-train which co-operates with the said operating-lever, the arm n^4, rock-shaft n', and arm n^3, all arranged substantially as described.

14. In an electric indicator, two or more indicating-surfaces, let-offs for moving them independently, and an adjusting-lever for said let-offs, combined with a positioning device for holding said operating-lever in its different positions and means controlled by the drums for moving said positioning device back, substantially as described.

15. In an electric indicator, two or more indicating-surfaces, let-offs for moving them independently, and an operating-lever for said let-offs, combined with a positioning device for holding the operating-lever in its different positions, and means for moving said positioning device forward continuously, and means controlled by each indicating-surface for setting it back to keep the operating-lever in operative connection with its corresponding let-off, substantially as described.

16. In an electric visual indicator, two or more indicating-surfaces, let-offs therefor and an operating-lever for said let-offs, means for moving said lever to move the let-offs, and means for transferring said lever from one to the next let-off, and a positioning device for said operating-lever moved in one direction by a time-train and in the opposite direction by the indicating-surface, substantially as described.

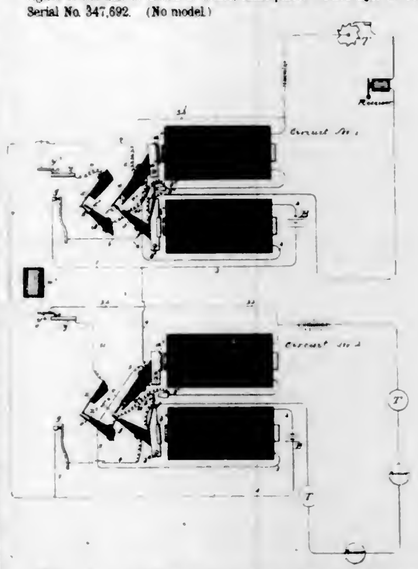
17. In an electric visual indicator, two or more indicating-surfaces, let-offs therefor, and a vibratory and laterally-movable operating-lever, and electro-magnet controlling its vibratory movement, and a time-train, together with the indicating-surfaces controlling its lateral movement, substantially as described.

18. In an electric visual indicator, two or more indicating-surfaces, let-offs therefor, and an operating-lever for said let-offs, each indicating-surface when operating keeping the operating-lever in position to operate it, substantially as described.

19. In an electric visual indicator, two or more indicating-surfaces, let-offs therefor, an operating-lever, and a positioning device for the operating-lever, combined with a time-train for transferring the operating-lever from one to the next let off, the actuating-spring of which is wound by the indicating-surfaces when operating, substantially as described

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445,797. REPEATER. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed Apr. 12, 1890. Serial No. 347,692. (No model.)



Claim.—1. A repeating apparatus comprising two or more main relays, each in a main circuit disconnected from the others, combined with local relays, one corresponding to each main relay, all said local relays being included in the same local circuit, circuit-controllers in said local circuit operated by each main-relay armature, and a shifting contact-actuator controlled by each local-relay armature co-operating with the contacts of the circuit-controller operated by the corresponding main-relay armature without obstructing the movement of main-relay armature, whereby the said movement produces different effects upon the said circuit-controller, according to the position of the local-relay armature and contact-actuator controlled thereby, substantially as and for the purpose described.

2. The combination of two or more main relays, each in a main circuit disconnected from the others, with corresponding local relays, all included in a single circuit, a section of battery corresponding to each local relay and a branch including the corresponding section of battery and the corresponding local-relay magnet, normally-closed circuit-breakers in the circuit of the local relays, one corresponding to each main relay, and circuit-closers for the branches corresponding to the said local relays and their corresponding battery-sections, said circuit-controllers being operated by said main-relay armatures, and shifting contact-actuators controlled by said local-relay armatures co-operating with the contacts operated by the main-relay armatures without obstructing the movement of said main-relay armatures, substantially as and for the purpose described.

3. The combination of two or more main relays, each in a main circuit disconnected from the others, with corresponding local relays, all included in a single circuit, a section of battery corresponding to each local relay and a branch including the corresponding section of battery and the corresponding local-relay magnet, circuit-controllers for the branches corresponding to the said local relays, and an actuating-motor therefor, substantially as described.

4. The combination of two or more main relays, each in a main circuit disconnected from the others, with corresponding local relays, all included in a single circuit, a section of battery corresponding to each local relay and a branch including the corresponding section of battery and the corresponding local-relay magnet, circuit-controllers for the branches corresponding to the said local relays, and an actuating-motor therefor, and a detent for said motor controlled by the said main-relay armature, substantially as described.

5. The combination of two or more main relays, each in a main circuit disconnected from the others, with corresponding local relays, all included in a single circuit, a section of battery corresponding to each local relay and a branch including the corresponding section of battery and the corresponding local-relay magnet, circuit-controllers for the branches corresponding to the said local relays, and an actuating-motor therefor, a detent for said motor, and an electro-magnet controlling the operation of said detent in a circuit controlled by the said main-relay armature, substantially as described.

6. The combination of two or more main relays, each in a main circuit disconnected from the others, with corresponding local relays, all included in a single circuit, a section of battery corresponding to each local relay and a branch including the corresponding section of battery and the corresponding local-relay magnet, circuit-controllers for the branches corresponding to the said local relays and an actuating-motor therefor, a detent for said motor, and detent-motor having a timed engagement with the movable detent member, substantially as described.

7. A repeating apparatus comprising two or more main relays, each in a main circuit disconnected from the others, combined with local relays, one corresponding to each main relay, all said local relays being included in the same local circuit, circuit-controllers in said local circuit operated by each main-relay armature and an engaging portion controlled by each local-relay armature, co-operating with the circuit-controller operated by the corresponding main-relay armature, a visual indicator corresponding to each main circuit, a detent therefor connected and movable with the main-relay armature, and a detent-actuator connected and movable with the local-relay armature, whereby the movement of the main-relay armature releases the indicator when the local-relay armature is in one position, but not when said local-relay armature is in the other position when said movement of the main-relay armature takes place, substantially as described.

8. The combination of the main-relay magnet and armature with a corresponding local-relay magnet and armature controlling the circuit of the said main relay, a circuit-closer carried by the main-relay armature, comprising a pair of contact-springs normally held in one condition by the elasticity of said springs, and an engaging projection for one of said contact-springs carried by the local-relay armature and movable thereby into and out of position to engage the contact-spring carried by the main-relay armature, substantially as and for the purpose set forth.

9. The combination of two or more main relays, each in a main circuit disconnected from the others, with corresponding local relays, all included in a single circuit, a section of battery corresponding to each local relay and a branch including the corresponding section of battery and the corresponding local-relay magnet, and circuit-closers for the branches corresponding to the said local relays and their corresponding battery-sections, said circuit-controllers being operated by said main-relay armatures, and shifting contact-actuators operated by the local-relay armatures without obstructing the movement of the main-relay armatures, substantially as and for the purpose described.

10. The combination of two or more main relays, each in a main circuit disconnected from the others, with corresponding local relays, all included in a single circuit, a section of battery corresponding to each local relay and a branch including the corresponding section of battery and the corresponding local-relay magnet, circuit-controllers in the main circuits operated by the armatures of the local relays and circuit-closers for the branches corresponding to the said local relays and their corresponding battery-sections, said circuit-controllers being operated by said main-relay armatures, and shifting contact-actuators operated by the local-relay armatures co-operating therewith, substantially as and for the purpose described.

11. In a repeating apparatus, a main relay and armature and two circuit-controllers adapted to be operated by it, a second relay and armature and a shifting contact-actuator controlled thereby that co-operates with said circuit-controllers without obstructing the movement of the main-relay armature, whereby when the armature of the second electro-magnet is in one position when the main relay is moved one of said controllers is operated and when in the other position the other of said circuit-controllers is operated, substantially as described

12. A repeating apparatus comprising two or more main relays, each in a main circuit disconnected from the others, and local relays, one corresponding to each main relay in a local circuit, circuit-controllers in said local circuit operated one by each main-relay armature, and shifting contact-actuators operated by the said local-relay armatures controlling the operation of said circuit-closers without obstructing the movement of the main-relay armatures, substantially as described.

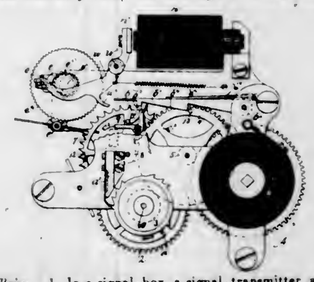
13. A repeating apparatus comprising a number of main relays each in a main circuit independent of the others, and a number of corresponding local relays, combined with branches of said main circuits, each constituting when closed a shunt for the corresponding main relay, and a circuit-closer in said branch operated by said main and local relay armatures, substantially as described.

14. A repeating apparatus comprising a number of main relays, each in a main circuit independent of the others, and a number of corresponding local relays, combined with branches of said main circuits, each constituting when closed a shunt for the corresponding main relay, a circuit-closer in said branch operated by said main and local relay armatures, and a second circuit-closer in said branch operated by a time-motor, substantially as and for the purpose described.

15. A repeating apparatus comprising a number of main relays, each in a main circuit independent of the others, and a number of corresponding local relays, combined with branches of said main circuits, each constituting when closed a shunt for the corresponding main relay, a circuit-closer in said branch operated by said main and local relay armatures, and a second circuit-closer in said branch operated by a time-motor, and an electro-magnet and circuit therefor controlled by said main-relay armature, governing the operation of said time-motor substantially as described.

445,798. SUCCESSIVE NON-INTERFERENCE SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed May 16, 1890. Serial No. 352,029. (No model.)

Brief.—When pull e^2 is lifted, let-off bar b' (carrying b and b^2) drops unless a break in the signaling-circuit has permitted the holder w^2 to be drawn below the end of b'. Pin 13 restores b' after one revolution of the wheel 4. The retarding devices for the different armatures are differently timed, thus making the boxes successive.



Claim.—1. In a signal-box, a signal-transmitter and motor for driving it and a let-off for said motor and means for moving it, combined with a non-interference magnet, its armature movable quickly

in one direction and slowly in the opposite direction, and a holder for the let-off controlled by said armature, substantially as described.

2. In a signal-box, a circuit-controller and motor for driving it, and a let-off for said motor and detent for said let-off, and an actuator for said detent, combined with a non-interference magnet, its armature, and a holder moved by the armature for said let-off, and a retarding device for the armature, substantially as described.

3. In a signal-box, a circuit-changer and motor for driving it, one of the members of which has a projection, a let-off for said motor and means for holding it in engagement with said projection, and means, substantially as described, for restoring said let-off after it has been released, combined with a non-interference magnet, its armature, and a holder controlled by the armature for said let-off, and a retarding device, substantially as described.

4. In a non-interfereoce signal-box, a non-interference magnet and its armature, and a retarding device consisting of a loose pawl-carrier and pivoted pawl thereon, a ratchet-wheel and escapement, and an arm or bar *w*, connected with the said pawl and moved by said armature, substantially as described.

5. In a non-interference signal-box, a non-interference magnet, its armature, and a retarding device therefor, consisting of a ratchet-wheel, pawl-carrier, and pawl pivoted thereon, an arm controlled by the armature and positively moving the pawl in both directions, and an escape-wheel and pallet, substantially as described.

6. In a signal-box, a signaling mechanism and a let-off for it, combined with a movable member for normally holding the said let-off in position to lock the signaling mechanism, a non-interference electro-magnet, its armature, a retarding device, a holder controlled by the armature and acted on by the retarding device for holding the let-off in position to still lock the signaling mechanism after it has been released by said member, and independent means for restoring said let-off to its normal position, substantially as described.

7. In a signal-box, a signaling mechanism and a let-off for it, and a non-interference electro-magnet included in the signaling-circuit, combined with a holder controlled by the armature of said electro-magnet and co-operating with said let-off to catch and hold it after it has been moved to release the train, thereby holding the train in suspension until the line is clear, substantially as described.

8. In a signal-box, a signaling mechanism, a let-off therefor, a non-interference electro-magnet, its armature, and a retarding device, combined with a holder controlled by the armature of said electro-magnet and acted on by the retarding device and co-operating with said let-off to prevent its movement when the signaling-circuit is deranged, and means, substantially as described, for restoring said let-off to its normal position after a signal has been transmitted, substantially as described.

9. In a signal-box, a signaling mechanism, a let-off, and a spring for moving it to release the signaling mechanism, combined with a movable member for normally holding said let-off in position against the tension of its actuating-spring to lock the signaling mechanism, a pin on one of the wheels of the train for moving said let-off into its locking position against the tension of its actuating-spring, and a spring acting on the movable member to throw it into position to support the said let-off when the latter is restored by its restoring-pin, substantially as described.

10. In a signal-box, a signaling-train, a let-off therefor, a spring-actuated movable member for holding said let-off in position to lock the signaling-train, a pull for moving said member against the tension of its actuating-spring to release the let-off, and a pin carried by one of the wheels of the train for moving said let-off into its normal position to lock the train, the actuating-spring of the movable member moving said member into its normal position to support the let-off when the latter has been restored by its restoring-pin, substantially as described.

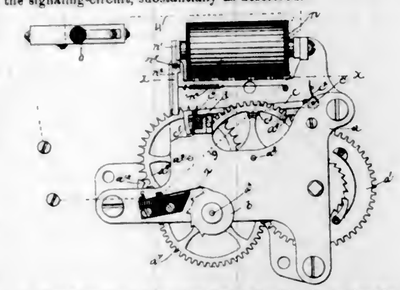
445,799. NON-INTERFERENCE SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed May 29, 1890. Serial No. 353,523. (No model.)

Claim.—1. In a signal-box, the combination, substantially as described, of a signaling-train, a non-interference magnet, its armature, a box-controller governed thereby, and means controlled by the box-door for slightly decreasing the power of said non-interference magnet when said door is open, that it may hold but not attract its armature, substantially as described.

2. In a signal-box, a signaling-train, a non-interference magnet, its armature, and a box-controller governed by the said armature, and a switch connected electrically with one of the coils of said non-interference magnet, which is adapted to disable or render inoperative said coil, substantially as described.

3. In a signal-box, a signaling-train, a non-interference magnet, its armature and box-controller governed by the said armature, and a switch connected electrically with one of the coils of said non-interference magnet, which is adapted to disable or render inoperative said coil, said switch being controlled by the box-door, substantially as described.

4. In a signal-box, a signaling-train, a non-interference magnet comprising two coils n n^6, its armature and armature-carrying lever, and two switches controlled by the box-door, one for including one of the coils in the signaling-circuit and the other for including both coils in the signaling-circuit, substantially as described.



5. In a signal-box, a signaling-train, a locking-lever therefor, and means for moving it against the tension of its holding-spring, combined with a projection c^3 on said locking-lever, and a projection c^4 on one of the wheels of the train, and a projection c^5 on said locking-lever, and pin on one of the wheels of the train engaged by said projection, substantially as described.

6. In a signal-box, a non-interference magnet, its armature, a signaling-train, and a vertically and horizontally movable locking-lever therefor, combined with projections carried by moving parts of the train, with which said locking-lever co-operates, substantially as described.

7. In a signal-box, a signaling-train, a locking-lever, means for holding it in its locking position, and two actuators for said locking-lever, one for placing it in condition to operate and the other to move it to release the train, combined with a box-controller, non-interference magnet, and its armature, substantially as described.

8. In a signal-box, a signaling-train, a locking-lever for it, and a non-interference magnet and its armature, combined with a projection on one of the wheels of the train for holding the locking-lever in its locking position when at rest, and a box-controller governed by the armature of said non-interference magnet for also holding the locking-lever in its locking position when disengaged from said projection and when the armature is retracted, substantially as described.

445,800. SUCCESSIVE NON-INTERFERENCE SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed May 31, 1890. Serial No. 353,845. (No model.)

Brief.—When *c* is pulled, starting-lever *b* is lifted, pressing locking-lever *e* backward through tension of spring *d*, thus rotating shaft *d'* and releasing the train. If the line is in use when *c* is pulled, *e* is locked by engagement of pin e^2 with shoulder e^3 of the armature. When the line is again free, *d* throws *e* back.

Claim.—1. In a signal-box, the motor mechanism, starting-lever, and actuating-lever, combined with the plate having the shoulder 50, and the spring-controlled prop on the starting-lever, said prop when the starting-lever is lifted by the actuating-lever resting on the shoulder and holding the starting-lever in elevated position, substantially as described.

2. In a signal-box, the motor mechanism, starting-lever, and actuating-lever, combined with the shouldered plate and with a spring-controlled prop c^3, normally resting at one side of said shoulder, but resting on the top of the shoulder to hold the starting-lever in elevated position when lifted by the actuating-lever, and a pin on one of the wheels of the train for restoring said prop to its normal position, substantially as described.

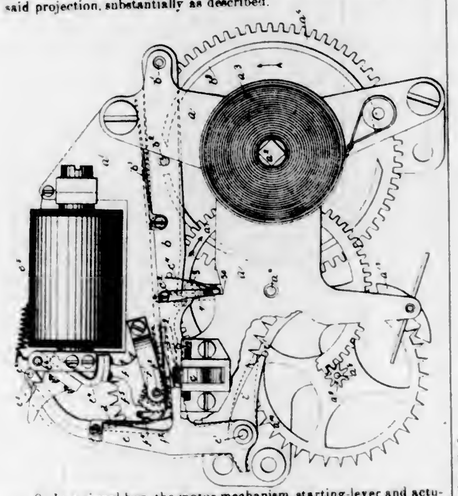
3. In a signal-box, motor mechanism and starting-lever, combined with a prop for said lever and a locking-lever moved by said starting-lever, substantially as described.

4. In a signal-box, motor mechanism and starting-lever, combined with a prop for said lever and a locking-lever moved by and elastically connected with said starting-lever, substantially as described.

5. In a signal-box, a signaling-train, a non-interference magnet, and its armature, combined with a locking-lever for the signaling-train which is restrained from movement by the said armature when the latter is retracted, a spring to exert a tension on said locking-lever, and a lever separate from the armature for moving the spring to effect the movement of the said locking-lever in one direction when not restrained by the said armature, substantially as described.

6. In a signal-box, a signaling-train, a non-interference magnet, its armature, and a locking device moved by the armature, combined with a locking-lever for the signaling-train, with which the locking device moved by the armature co-operates, and an actuating-lever for exerting a tension on the locking-lever by which it is moved when not engaged or as soon as released by the said locking device, substantially as described.

7. In a signal-box, the motor mechanism, starting-lever and actuating-lever, the non-interference magnet, and its armature having the projection c^5, combined with the locking-lever having the spring acted upon by the starting-lever, said locking-lever co-operating with the said projection, substantially as described.



8. In a signal-box, the motor mechanism, starting-lever and actuating-lever, the non-interference magnet, its armature, and the retarding device, substantially as described, therefor, combined with the locking-lever *c*, acted upon by the starting-lever and co-operating with the projection c^5 on the said armature, the arm *i*, and pin *i'*, substantially as described.

9. In a signal-box, the motor mechanism, starting-lever and actuating-lever, the non-interference magnet c^6, and its armature having the locking projection, combined with the locking-lever *c*, the arm *n* thereon, and the spring *d*, substantially as described.

10. In a signal-box, the motor mechanism, starting-lever, and actuating-lever, combined with the non-interference magnet c^6, its armature, the locking projection c^5, the retarding device, the locking-lever, the spring *d*, attached to the said lever and acted upon by the starting-lever, the arm i, and pin *i'*, substantially as described

11. In a signal-box, a motor mechanism, starting-lever having the spring-controlled dog c^3, the actuating-lever for the starting-lever, and the notched plate, combined with the non-interference magnet, its armature, the retarding device, substantially as described, combined with the locking projection on the said armature, and the locking-lever acted upon by the starting-lever and co-operating with the said locking projection, substantially as described.

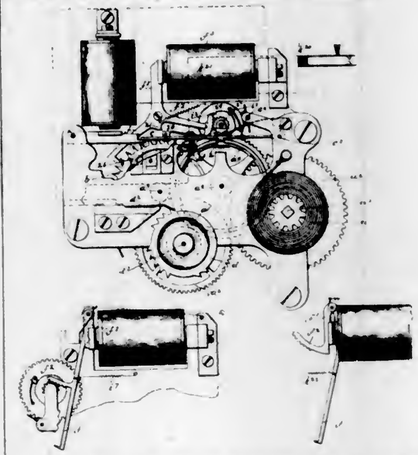
12. In a signal-box, the motor mechanism, starting-lever, the non-interference magnet, and its armature, combined with a three-armed lever, one of the arms of which controls the operation of the motor mechanism, another arm of which is elastic and is engaged by the starting-lever or actuator, and the other arm of which is engaged by a projection moved by the armature of the non-interference magnet, substantially as described.

13. In a signal-box, a motor mechanism, a non-interference magnet and its armature, and a locking-lever for said motor mechanism, controlled by said armature, combined with a starting-lever elastically connected with and to move said locking-lever, and a prop for said starting-lever, substantially as described.

445,801. SUCCESSIVE NON-INTERFERENCE SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed Nov. 14, 1890. Serial No. 371,427. (No model.)

Claim.—1. A successive non-interference signal-box containing the following instrumentalities, viz: a windable signaling mechanism, a non-interference magnet, its armature, means for setting a signal, means for retaining the set signal when the line is in use, and signal-controlling mechanism governed by said armature and constructed and arranged to effect or permit the transmission of a signal on a closure in the signaling-circuit of longer duration than the longest closure in any signal, substantially as set forth.

2. In a signal-box, a signaling mechanism, signaling-lever, and a locking-lever which when moved positively engages and holds the signaling mechanism, combined with an electro-magnet and its armature, movement of which in one direction moves the locking-lever into engagement with the signaling mechanism or train, and a retarding device for the said locking-lever, substantially as described



3. In a signal-box, signaling mechanism and a non-interference electro-magnet, combined with a locking-lever controlled by the armature of the said electro-magnet, and adapted to be moved freely or unrestrained in one direction to lock the signaling mechanism by a change in the condition of the circuit, and a retarding device for the said locking-lever, which is engaged by said lever on its return movement, that the said locking-lever may return to its normal position slowly, substantially as described.

4. In a signal-box, a signaling-train and a locking-lever movable freely or unrestrained in one direction to engage and hold the signaling-train, and a non-interference electro-magnet permitting such movement, combined with a retarding device which is engaged by said locking-lever on its return movement, said retarding device being timed to restrain or retard the said locking-lever a little longer time than is consumed by the longest impulse of the signal wheel, substantially as described.

5. In a signal-box, a signaling-train, signaling-lever, and locking-lever *f* for the signaling-train, combined with the non-interference electro-magnet, its armature-carrying bar, the sector *i*, pinion *i'* ratchet, pawl, and escapement, substantially as described.

6. In a signal-box, the signaling mechanism, combined with a non interference magnet, its armature, and a lever adapted to co-operate with one member of the said signaling mechanism and control its operation, movement of said lever being governed by the armature of said non-interference magnet, and a retarding device for retarding or restraining the movement of said armature in one direction only, substantially as described.

7. In a signal-box, the signaling mechanism and signaling-lever therefor, and a stop, as 2, on one of the members of said signaling mechanism, combined with the non-interference electro-magnet, and the locking-lever *f*, controlled by said electro-magnet, the engaging end of which, when in its abnormal position, enters the path of movement of the said stop 2, but does not contact therewith until the member having the stop has moved a short distance, that the signaling-train may be stopped after it has been started, but before its first impulse has been transmitted, and there held until released by said locking lever *f*, after which it continues to operate and transmit its signal, and a retarding device for retarding the movement of the said locking-lever from its abnormal to its normal position, substantially as described

8. In a signal-box, the signaling mechanism comprising as a co operative part of it a member having a stop and a starting lever, combined with the non-interference electro-magnet, a locking-lever, movement of which is controlled by the armature of the said electro-magnet, said locking-lever when in its abnormal position engaging the aforesaid stop to stop and render inoperative the signaling mechanism after it has been started, and an adjustable retarding device co-operating with the locking-lever on its return movement, substantially as described.

9. In a signal-box, the signaling mechanism, signaling-lever therefor, the non-interference magnet, and its armature, combined with the pivoted three-armed lever, the arms of which radiate from the pivotal point of the said lever, one of which arms carries the said armature, another of which arms serves as a locking arm or lever and engages and locks the signaling-train when moved into its abnormal position, and a retarding device, substantially as described, co-operating with the third arm only on the return movement of the said three-armed lever to its normal position, substantially as described.

10. In a signal-box, the signaling mechanism and signaling-lever, the non-interference magnet, and its armature, combined with the movable stop 20, independent of but moved by the signaling-lever when the latter is lifted, and the projection 21, with which the stop co-operates to hold the armature of the said non-interference magnet in fixed position, substantially as described.

11. In a signal-box, the signaling mechanism and signaling-lever, the non-interference magnet, its armature, and a locking-lever for the signaling mechanism controlled by said armature, combined with the movable stop for the locking-lever, its engagement therewith depending on the position of the armature of the non-interference magnet, substantially as described.

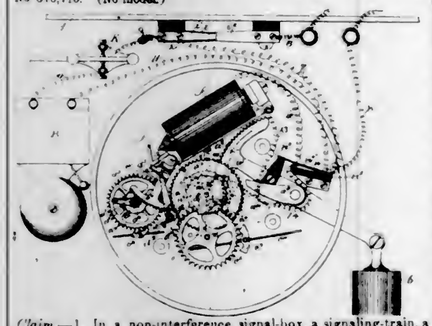
12. In a signal-box, the signaling mechanism and signaling-lever, the non-interference magnet, its armature, and a locking-lever for the signaling mechanism controlled by said armature, combined with a movable stop for the locking-lever, controlled by the armature of the non-interference magnet, substantially as described.

13. In a signal-box, the signaling mechanism and signaling-lever, the non-interference magnet, its armature, and a locking-lever for the signaling mechanism controlled by said armature, combined with a movable stop for the locking-lever independent of but controlled by the signaling-lever, substantially as described.

14. In a fire-alarm system, several boxes connected in circuit and each having a stop on one of its co-operating members, and a non-interference magnet and a locking-lever controlled by the armature thereof, and a differently-timed retarding device co-operating with the locking-lever of each box on its return movement, substantially as described

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445,802. **SUCCESSIVE NON-INTERFERENCE SIGNAL-BOX.** FREDERICK W COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed Oct. 10, 1889. Renewed Jan. 5, 1891. Serial No. 376,713. (No model.)



Claim.—1. In a non-interference signal-box, a signaling-train, a stop-lever for it, a spring for moving said stop-lever to release the train, and a non-interference magnet, combined with a pin on one of the moving parts of the train for holding said stop-lever against the tension of its actuating-spring, and an armature for the non-interference magnet which also holds the said stop-lever against the tension of its actuating-spring when retracted, substantially as described.

2. In a signal-box, a signaling-train, and a stop-lever for it, combined with a restoring and holding pin on one of the moving parts of the train for restoring and holding said stop-lever in position to engage and hold the signaling-train, a non-interference magnet, and its armature controlling the operation of said stop-lever, substantially as described.

3. In a signal-box, a signaling-train, and a stop-lever for it, combined with a restoring and holding pin on one of the moving parts of the train for restoring and holding said stop-lever in position to engage and hold the signaling-train, a signal-lever for moving said pin to release the stop-lever, a non-interference magnet, and its armature controlling the operation of said stop-lever, substantially as described.

4. In a signal-box, a signaling mechanism, and a stop-lever for it, combined with a restorer controlled by the signaling-lever for normally holding said stop-lever in position to engage the signaling mechanism, a non-interference magnet and its armature, and a clog controlled by the said armature and co-operating with said stop-lever, preventing its movement when the said armature is retracted, substantially as described.

5. In a signal-box, a signaling mechanism, combined with a stop-lever, a restorer controlled by the signaling-lever, by which said stop-lever is normally held in position to engage the said signaling mechanism and adapted to be disengaged therefrom by a movement of said signaling-lever, a non-interference clog for the said stop-lever, a non-interference magnet, and its armature controlling said clog, substantially as described.

6. In a signal-box, a motor mechanism, and a non-interference magnet and its armature, combined with a stop-lever, movement of which is determined by the armature of the non-interference magnet, a restorer for normally holding said stop-lever in engagement with said motor mechanism, and a signaling-lever for moving said restorer to disengage said stop-lever, that the latter shall occupy a position permitting the motor mechanism to operate, substantially as described.

7. In a signal-box, a motor mechanism, and a non-interference magnet and its armature, combined with a stop-lever normally held by a restorer controlled by the signaling-lever, in engagement with the motor mechanism, movement of which stop-lever is determined by the position of the armature of the non-interference magnet, and a signaling-lever for releasing the stop-lever that it shall occupy a position permitting the motor mechanism to operate, and a retarding device governing the return movement only of said armature, substantially as described.

8. In a signal-box, the signaling mechanism and stop-lever therefor, combined with a non-interference clog for the said stop-lever, a retarding device therefor, and a non-interference magnet and its armature elastically connected with the said clog, substantially as described.

9. In a signal-box, the signaling mechanism and stop-lever therefor, a restorer, and signaling-lever, combined with a movable clog co-operating with said stop-lever, a retarding device for said clog, a non-interference magnet and its armature connected with the said clog, substantially as described.

10. In a signal-box, the signaling mechanism, and non-interference magnet and its armature, combined with a non-interference clog and a retarding device therefor, and a spring connecting the armature and said non-interference clog, substantially as described.

11. In a signal-box, the signaling mechanism comprising the circuit-wheel, contact-pen, motor, and sector, combined with a stop-lever one arm of which is in engagement with the escapement of the signaling mechanism, another arm of which is in engagement with a restorer controlled by the signaling-lever, and a non-interference clog controlled by a non-interference magnet co-operating with a third arm of said stop-lever, substantially as described.

12. In a signal-box, the non-interference magnet, the signaling mechanism, and signaling-lever, combined with a switch consisting of two pens n n', and the conducting-blocks n^4 n^{4x}, and a conducting-piece carried by the signaling-lever for moving the pens, whereby the signaling mechanism may be first shunted out and thereafter cut out as the signaling-lever resumes its normal position, substantially as described.

13. In a signal-box, the non-interference magnet, circuit-wheel and train, and signaling-lever, combined with a switch for shunting out the non-interference magnet and circuit-wheel and a switch for cutting out said non-interference magnet and circuit-wheel, said switches being operated in succession to first shunt out and thereafter cut out the said non-interference magnet and circuit-wheel, substantially as described.

14. In a signal-box, a motor mechanism, and a non-interference magnet and its armature, combined with a stop-lever normally held in engagement with the motor mechanism, a non-interference clog controlled by the armature of the non-interference magnet, and a retarding device, substantially as described.

15. In a signal-box, a non-interference magnet and a retarding device for the non-interference controlling member of the signaling mechanism, consisting of a sector, pinion, pawl, pawl-engaging arm, pawl-carrying arm, ratchet-wheel, escape-wheel, and pallet, substantially as described.

16. In a signal-box, an actuating-arm operatively connected with the signaling mechanism, and an adjacent movable arm, combined with a catch beveled at each end and pivoted to the said adjacent arm, a spring for normally throwing said catch into engagement with the actuating-arm, a pin for throwing said catch out of engagement with said actuating-arm, and a locking-pin which is engaged by said catch when the arm carrying it is in its normal position and the actuating-arm is in its abnormal position, substantially as described.

17. A magnet and its armature, combined with a part restrained in its movement in one direction but movable freely in its opposite direction, and a coonecting-spring connecting said part with the armature, substantially as described.

18. A magnet, its armature, and a part connected therewith by a spring, combined with a retarding device with which the said part engages when moving in one direction, substantially as described

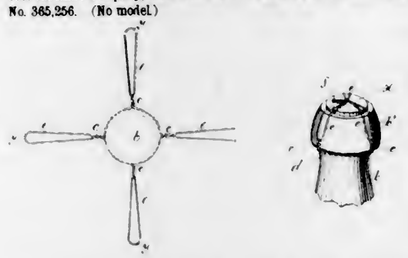
19. A magnet, its armature free to respond to changes in the current, and timed mechanism operated thereby through the medium of a spring when moving in one direction, that the armature may always apply the same relative power to the timed mechanism without regard to the variations of the magnetizing current or of the magnet, and thereby produce uniform time in successive movements of the mechanism, substantially as described.

20. In a signal-box, a non-interference magnet, its armature, a timed retarding device, a stop-lever, and a clog, the armature of the said non-interference magnet when moving in one direction moving the clog to cause the stop-lever to hold the signaling-train inoperative and when moving in the opposite direction to render the stop-lever under the control of the said timed non-interference retarding device, that it may disengage the signaling mechanism after a predetermined time from said last movement of the armature, substantially as described.

21. A magnet, its armature, and retractile spring, as 85, therefor, and a part, as c', located adjacent to said armature, to be moved by it positively in one direction, and a restoring-spring, as 4, for said part, substantially as described.

22. In a signal-box, a signaling mechanism and a stop for it, combined with a restorer for normally holding the said stop-lever in position to lock the signaling mechanism, a non-interference magnet, its armature, a retarding device, and a clog controlled by the armature and acted on by the retarding device for holding the stop-lever in position to still lock the signaling mechanism after it has been released by said restorer, substantially as described.

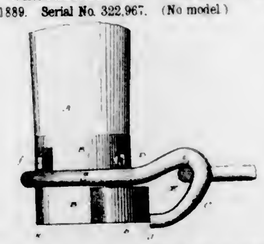
445,803. **METHOD OF APPLYING WIRE CORK-RETAINERS TO BOTTLES.** CHARLES L. CURTIS, Brooklyn, assignor to the N. B. Abbott Machine Company, New York, N. Y. Filed Sept. 17, 1890. Serial No. 365,256. (No model.)



Claim.—1. The herein-described method of applying a wire retainer to the stoppered end of a bottle or the like, which consists in laying three or more wires or lengths of wire about the neck of the bottle and then twisting each two adjacent wires or lengths together at e in a manner to close the wires upon the bottle-neck and form a band d thereabout, having branches e projecting therefrom, substantially as set forth.

2. The herein-described method of applying a wire retainer to the stoppered end of a bottle or the like, which consists in first placing three or more substantially straight wires or lengths of wire against the bottle-neck and tangent thereto, in such a manner that they cross or intersect each other, then simultaneously twisting together each two wires or lengths of wire at the points where they intersect, thus forming the band d and branches e, then bending said branches up over the stopper until they meet on the crown of the same, and then uniting all the wires of all the branches into a single twist, substantially as set forth.

445,804. **WHIFFLETREE-HOOK.** JOHN R. DAVIS, Racine, Wis. Filed Sept. 4, 1889. Serial No. 322,967. (No model.)



Claim.—The combination, with a whiffletree end, of a ferrule fitted thereto having holes in its opposing sides and a lug intermediate of said holes, a continuous flat outer end flush with the whiffletree end, and a shoulder or flange integral with said ferrule, flush with its outer end, and partially surrounding the same, a lug projecting from said shoulder or flange near one end thereof, a ring surrounding said ferrule and bearing against the inner edge of said shoulder or flange and against the said intermediate lug, malleable-iron pins driven through said holes into the said whiffletree end, and a hook integral with said ring having an offset of a size to receive and retain a cockeye, and an inturned end formed flat for engagement with the said shoulder or flange, substantially as set forth

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445,805. **PHOTOGRAPHIC BACKGROUND.** WILLIAM G. ENTEKIN, Philadelphia, Pa. Filed Oct. 21, 1889. Serial No. 327,650. (No model.)



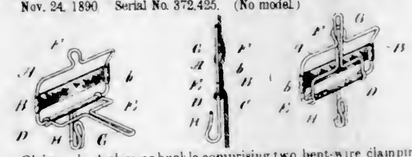
Claim.—1. A photographic background consisting of a strip or sheet without pictorial ornamentation, said sheet being curved forward at the base and extending so far forward from the background as to form a floor-ground upon which the subject may stand, whereby a finished picture may be produced in which there is no meeting line between the background and the floor-ground, substantially as specified.

2. The within-described photographic background, consisting of a suspended flexible sheet without pictorial ornamentation, said sheet being curved forward at the base and extending so far in advance of the background as to form a floor-ground upon which the subject may stand, substantially as specified.

3. The within-described photographic background, consisting of a flexible sheet suspended from a bar at its upper end and having a surplus portion wound upon a roller at the lower end, so that it can be readily extended to form a floor-ground projecting to a greater or less extent in advance of the hanging portion or background, substantially as specified

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445,806. **BUCKLE.** CHARLES H. FARMER, New York, N. Y. Filed Nov. 24, 1890. Serial No. 372,425. (No model.)

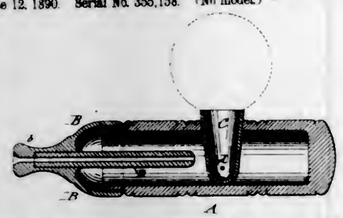


Claim.—1. A clasp or buckle comprising two bent-wire clamping-frames, hinged the one around the other at their lower edges, and an attaching device or hook H for the button-strap ring, connected to the hinged edge of the frame, the upper edge of one frame opposite to said hook having centrally an upwardly and rearwardly bent open loop or bow broader elsewhere than at its neck, and the other frame having a central vertical lever G projecting materially beyond the loop F and formed of a double wire, the folds of which are not in contact, but are adapted to approach each other and spring into the loop F and be held by its contracted neck, said frames having each an intermediate transverse clamping portion bearing upon the web, substantially as set forth.

2. In a wire buckle, the body or frame A, the central serrated cross-strip B, and the bulging open loop F, curving outwardly from the upper edge of said body, in combination with the presser-bar E, encircling at its ends the lower bar of the body A and having a central vertical lever or elongated loop G extending through and beyond the open loop F to serve as an unlocking-lever and formed of doubled wire, the parts of which stand at some distance from each other and are arranged to spring laterally between and engage with the walls of said bulging loop F to lock the frames together, while the inter-

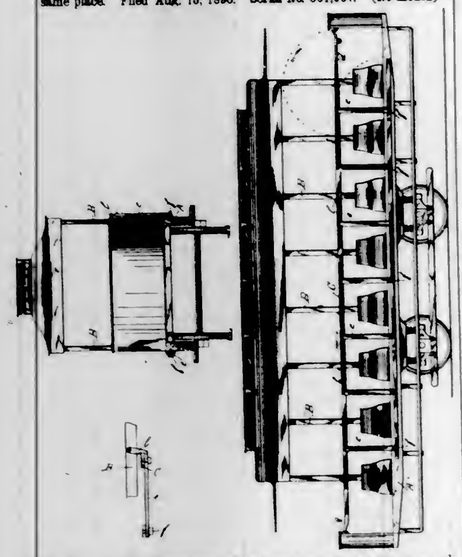
mediate portion of the said presser-bar bears transversely upon the web in front of the cross-strip B, substantially as set forth.

445,807. SOAP-BUBBLE TOY. WILLIAM C. FARRAND, Arlington, N. J., assignor of one-half to Marie Radde, New York, N. Y. Filed June 12, 1890. Serial No. 355,158. (No model.)



Claim.—A soap-bubble toy composed of a reservoir closed at one end and provided with an opening in its side, a hollow cone inserted in the side opening and provided with supply-openings at its inner end or apex, and a detachable cap having a mouth-piece provided with a tubular stem extending from the mouth-piece into the interior of the reservoir, substantially as set forth.

445,808. GUARD FOR EXIT-PASSAGES OF RAILWAY-CARS. JOHN H. FOX, Boston, Mass., assignor of one-half to D. Howard Vincent, same place. Filed Aug. 13, 1890. Serial No. 361,907. (No model.)



Claim.—1. In combination with a railway-car, a gate or guard-rail for its exit-passages, attached thereto by one or more rods pivoted to said rail and to the car below its floor, whereby the guard-rail will be raised by tilting said rods toward a vertical position and lowered by tilting them toward a horizontal position, substantially as described.

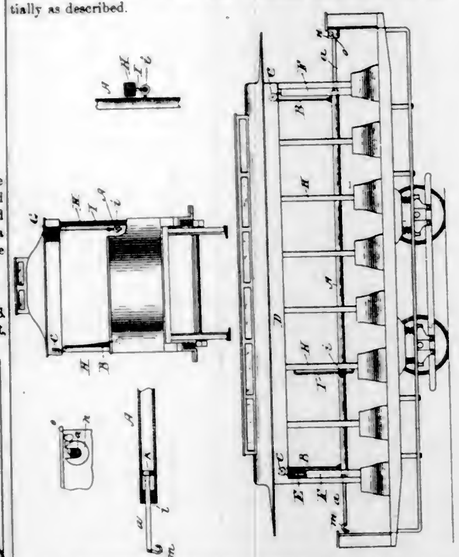
2. In combination with the exit-passage of a railway-car, a gate or guard-rail which is pivoted to one or more supporting-rods pivoted to the frame of the car, whereby tilting said rods in one direction will place the guard-rail in position to guard said passage, and tilting them in the opposite direction will withdraw the guard-rail from said passage, substantially as described.

3. In combination with the exit-passage of a railway-car, a gate or guard-rail which is secured to one or more supporting-rods attached to the frame of the car, whereby said rail can be raised or lowered, and a jointed section at one end of said rail, which may be swung over upon the rail when it is to be moved from its protective position and swung back into continuous line with the rail when it is returned thereto, substantially as described.

445,809. GATE FOR EXIT-PASSAGES OF RAILWAY-CARS. JOHN H. FOX, Boston, Mass. Filed Dec. 1, 1890. Serial No. 373,162. (No model.)

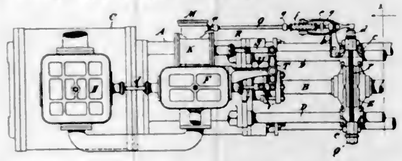
Claim.—1. In combination with the exit-passages of a railway-car, a gate or guard-rail sustained by flexible supports which extend over pulleys upon the car at the upper end of said passages, a catch or hook to hold the guard-rail in its protective position, and counterweights or springs attached to said flexible supports to draw the guard-rail upward when released from the catch, substantially as described.

2. In combination with the exit-passages of a railway-car, a guard-rail provided with telescopic joints, and two or more sustaining-cords connected with said rail and with a counterpoise therefor, substantially as described.



3. In combination with the exit-passages of a railway-car, a gate or guard-rail provided with one or more extensible sections, guides attached to the side of the car to direct the guard-rail to and from its protective position, and a latch to secure the end of each extensible section to a rigid portion of the car, substantially as described.

445,810. VALVE-GEAR. MICHAEL GREENWOOD, Bellevue, Del., assignor to the Hall Steam Pump Company, Plainfield, N. J. Filed Dec. 21, 1889. Serial No. 334,546. (No model.)



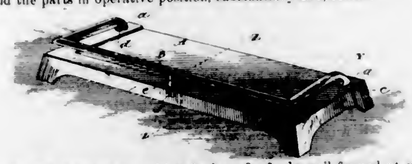
Claim.—The steam-cylinder and steam-chest of a steam-engine and an auxiliary cylinder arranged alongside said steam-cylinder and steam-chest, the three being in three different horizontal planes, the auxiliary cylinder occupying the intermediate plane, in combination with the main valve in said steam-chest and its valve-rod, the main-valve-actuating piston in said auxiliary cylinder and its piston-rod, a fixed bracket on said steam-chest, an angularly-arranged lever fulcrumed nearer one end than the other on a fixed axis in said bracket, a link connecting the short end of said lever with said valve-rod, and a link connecting the long end of said lever with said piston-rod, substantially as set forth.

445,811. FIRE-PLACE FENDER. FRED. W. KEIFEL, Jr., Louisville, Ky., assignor to Edward Scanlan, same place. Filed July 24, 1890. Serial No. 359,740. (No model.)

Claim.—1. The combination, with a fender, of a fender bar or rail detachably connected thereto and provided with an automatically-acting securing device, said parts being designed to be secured in position by the elasticity of the rail, substantially as specified.

2. The combination, with a fender, of a fender-rail detachably connected thereto and provided with an integral unpivoted automatically-acting securing device acting in opposition to the movement of the rail necessary to remove it, said parts being designed to be secured in position by the elasticity of the rail, substantially as specified.

3. The combination, with the fender, of a fender-rail formed at its rear ends with hooks provided with flat surfaces and with a depending stud having a notch, said rail or stud having sufficient resiliency to hold the parts in operative position, substantially as specified.



4. The combination, with a fender, of a fender-rail formed at its rear ends with hooks provided with flat upper faces and with forwardly-extending lugs having flat under faces, and centrally at its front with a depending stud having a notch, said rail or stud having sufficient resiliency to hold the parts in operative position, substantially as and for the purpose specified.

5. As an improved article of manufacture, a fender-rail formed with central depending stud having notch and shoulder and at the rear ends of its parallel portions with hooks having flat upper faces and forwardly-extending lugs having flat under faces and adapted to serve with a fender, said rail or stud having sufficient resiliency to hold the parts in operative position, substantially as and for the purpose specified.

445,812. PATTERN FOR CASTING HOOKS. EDMUND KUHN, Louisville, Ky., assignor to Edward Scanlan, same place. Filed July 31, 1890. Serial No. 360,452. (No model.)



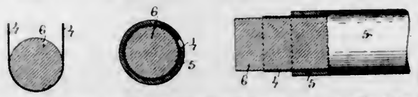
Claim.—The pattern herein described, consisting of a face-piece provided with a hole and with ears having open-ended slots, and a movable portion pivoted between the ears with its hooked portion only designed to move through said hole on the arc of a circle and its pivots detachably held in the open-ended slots, substantially as described.

445,813. SYRINGE. HENRY G. LEISENRING, Wayne, Nebr. Filed Dec. 9, 1890. Serial No. 374,042. (No model.)



Claim.—As an improved article of manufacture, the syringe herein described, consisting of the hard-rubber rectal tip having screw-threaded tapered portion, the hard-rubber vaginal tip having screw-threaded tapered portion engaging the threaded tapered portion of the rectal tip, and having reduced end, the bulb secured to the vaginal tip and comprising in a single piece a firm thick half and a thin flexible half, and a hard-rubber handle C, secured centrally to the flexible half of the bulb, all substantially as shown and described.

445,814. SEAMLESS PLATED WIRE. GEORGE U. MEYER, Providence, R. I. Filed July 1, 1890. Serial No. 357,357. (No specimens.)

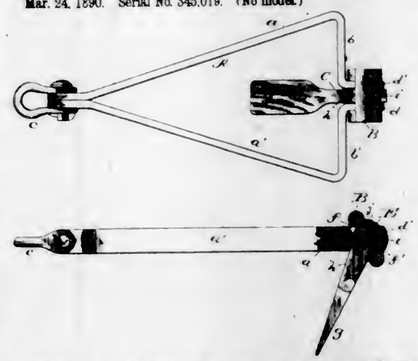


Claim.—The herein-described process of making ingots for seamless wire, the same consisting in bending and drawing aronnd the prepared core a sheet of solder, inserting the solder-covered core into a prepared tube of plating metal, forcing the plating-tube into close contact with the solder-covered core by contracting the diameter of the tube, and then subjecting the so-formed ingot to heat to melt the solder to unite the tube to the core, as described.

445,815. COMPOSITION OF MATTER. ANSEL MOFFATT, Indianapolis, Ind. Filed Nov. 4, 1890. Serial No. 370,260. (No specimens.)

Claim.—The herein-described composition of matter to be used as a plaster or mortar, consisting of cotton-seed ground, or in the form known as cotton-seed meal, linseed-oil cake ground, borax, sand, plaster-of-paris, and water, mixed and compounded in substantially the proportions and manner specified.

445,816. ANCHOR. ALEXANDER MCDOUGALL, Duluth, Minn., assignor to the American Steel Barge Company, of New York. Filed Mar. 24, 1890. Serial No. 345,019. (No model.)

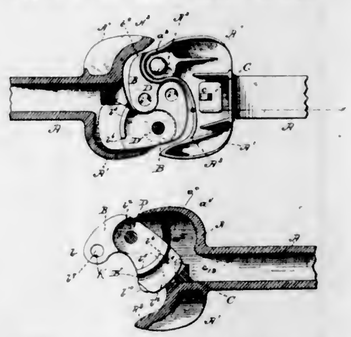


Claim.—1. In an anchor, the combination of a metallic frame-work, a single fluke pivoted to said frame-work, and a link, substantially as described, pivoted so as to surround the shank of said fluke and limit the movements of the same.

2. An improved anchor consisting of a frame-work of a general rectangular shape having cross-pieces *b b'* at its rear end and adapted to engage with the ground, lugs or ears formed by a continuation of these connecting-pieces and extending rearwardly, a single fluke pivoted between these lugs, and a link E, mounted on the pivoting-pin *b* or the fluke and surrounding the shank of the same and adapted to limit the movements of the fluke, substantially as set forth

3. An improved anchor consisting of a metallic frame having lugs *d d'* at its rear end, a single fluke pivoted between said ears and carrying a lug *j*, and a link mounted on the pivoting-pin for the fluke and adapted to limit the movements of the fluke, substantially as set forth.

445,817. CAR-COUPLING. THOMAS L. MCKEEN, New York, N. Y., assignor to the Thurmond Car Coupling Company, of West Virginia. Filed Oct. 25, 1890. Serial No. 369,348. (No model.)



Claim.—1. In a twin-jaw coupler, the combination of a hollow draw-head having ears thereon and a circular recess therein, said recess terminating before reaching the wall of the hollow draw-head, and holes in the said ears for a pivot-pin, with a nose-plate pivoted on the said pin and between the said ears, said nose-plate having a circular lug engaging in the circular recess in the draw-head, substantially as described.

2. In a twin coupler, the combination of a hollow draw-head A', having ears a^3 a^3 thereon, and a recess a^5, forming an arc of a circle whose center is that of the pivot-pin D, said recess terminating in a wall a^6 away from the wall of the hollow coupler, with a nose-plate

B, pivoted on the pin D and engaging in the ears a^3 a^3 of the draw-head A', said nose-plate having curved lug b^5 engaging in the recess a^5, with a shoulder b^6 engaging a^6, substantially as described.

3. In a twin coupler, the combination of a hollow draw-head A', having ears a^3 a^3 thereon, and a recess a^5, forming an arc of a circle whose center is that of a pivot-pin D, said recess terminating in a wall a^4 away from the wall of the hollow coupler, with a nose-plate B, pivoted on the pin D and engaging in the ears a^3 a^3 of the draw-head A', said nose-plate having a curved lug b^5 engaging in the recess a^5, with a shoulder b^6 engaging a^4 and having a hole in the nose, and rounded lips in the said nose for link-and-pin coupling, substantially as described.

4. In a twin-jaw car-coupler, a draw-head having arc-shaped recesses formed in the roof and floor thereof, which terminate at a point removed from the lateral wall of the coupler, in combination with a hook pivoted in the draw-head and provided with arc-shaped flanges which engage in the said recesses, as and for the purposes described.

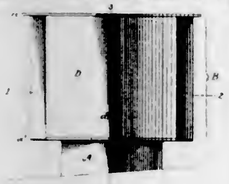
445,818. **SHEAVE.** THOMAS O'NEILL, San Francisco, Cal. Filed Aug. 14, 1889. Serial No. 320,790. (No model.)

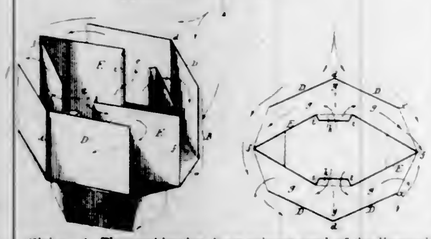


Claim.—1. In a sheave-pulley, the combination of an axle and spokes formed integral therewith and having their extremities recessed, substantially as described, with a rim having inwardly-extending tapered or inclined projections on its inner face which engage and wedge in the recessed ends of the spokes, and thereby bind the rim to the spokes, substantially as described.

2. The herein-described sheave, consisting of the rim having a series of inclined or tapered projections *a* on its inner face, in combination with a hub, the spokes connected thereto and having recesses *b* in their ends adapted to engage the projections *a*, and the bolts *c* for locking the spokes to said projections, all constructed and arranged to operate substantially as and for the purpose specified.

445,819. **EXHAUST-COWL.** RICHARD M. PANCOAST, Camden, N. J. Filed Apr. 21, 1890. Serial No. 348,812. (No model.)





Claim.—1. The combination, in an exhaust-cowl, of the diamond-shaped cowl having exits in the front and rear sides with the outer deflecting-casing comprising front and rear plates shielding said exits and extending only to a point back of the line of the points of the diamond cowl-body and inclined so as to form with the diamond-shaped cowl-body opposite inclined discharge-passages, whereby a current of air directed either against the front or rear plates of the cowl is deflected at an angle across both the discharge ends of the cowl by the deflecting-plates, the ends of the cowl-body thus inducing a draft from the center toward the ends through the discharge-passages, substantially as described.

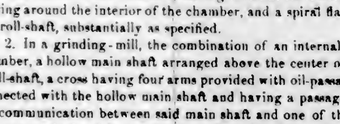
2. The combination of the neck A, plates *a a'*, plates E, forming a diamond-shaped cowl-body having openings *e e*, deflecting-plates D, and flanges projecting inward from the plates E at the openings *e e* said flanges having projecting ribs or beads at their inner edges, substantially as and for the purpose set forth.

3. The combination, in an exhaust-cowl, of the diamond-shaped cowl-body having its long axis in a vertical plane and having exits at the sides of the body, with plates shielding said exits, said cowl-body having at the bottom an opening for the discharge of water and air, substantially as set forth.

4. The combination, in an exhaust-cowl, of the diamond-shaped cowl-body having its long axis in a vertical plane and having openings at the sides of the body, with plates shielding said openings, said cowl-body having openings at the upper and lower sharp ends, and a deflecting-plate situated directly below the upper opening, substantially as and for the purpose set forth.

5. The combination, in an exhaust-cowl, of the vertical plates E, forming a hood diamond-shaped in cross-section and having exits in the front and rear sides, with the outer vertical plates D, shielding said exits and extending only to a point back of the points of the diamond cowl-body and inclined so as to form with the plates comprising said cowl-body opposite inclined discharge-passages, substantially as and for the purpose described.

445,820. **GLOVE-FASTENING.** EUGENE PRINGLE, Gloversville, N. Y., assignor to Madison D. Shipman and Charles E. Bradt, both of De Kalb, Ill. Filed Mar. 20, 1888. Serial No. 267,863. (No model.)



Claim.—1. In a button-head of a separable button, the combination, with the under side piece B, secured within an outer shell and having the flaring portion *b* and the stud-holding lip or lips at the entrance of a stud-receiving tube, which is retained with said under side piece by its flaring portion *b*, of an eyelet which is provided with a flange portion for clamping on the fabric and a tube portion for holding between the flaring portion *b* of the said under side piece and the flaring portion of the stud-receiving tube, substantially as and for the purposes set forth.

2. In a button-head of a separable button, the combination, with the stud-receiving tube C, having a flaring portion and stud-holding lips at its stud-entering end, and the flaring portion *b* of the under side piece B, of the fastening-eyelet D, having its tube portion extended between the flaring portion of said tube and the flaring portion of said under side piece, substantially as and for the purposes set forth.

3. In a separable button, the combination, with the slitted stud-post having a slitted base and the elastic duplex catch having its catching-chins projected outwardly from the slits in stud-post and having base-limbs which are seated in the slits in the base portion of the stud, of pieces G and H, co-operating with the slitted base of the said stud post and the base-limbs of the duplex catch, substantially as and for the purposes set forth.

4. In a separable button, the combination, with an elastic duplex catching-stud having with its base the plate G, provided with the central convex portion *g*, of the eyelet H, secured to the stud-base and the fastening-eyelet I, substantially as and for the purposes set forth.

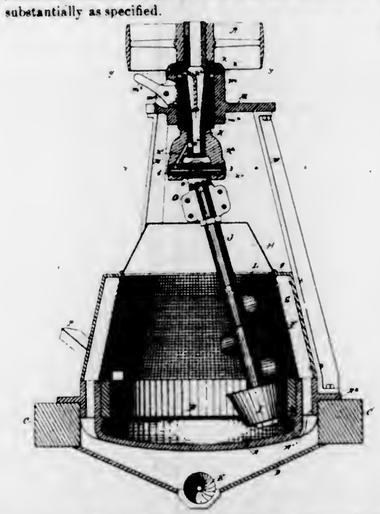
445,821. **GRINDING-MILL.** VIETTS L. RICE, New York, N. Y. Filed July 24, 1890. Serial No. 359,753. (No model.)

Claim.—1. In a grinding-mill, the combination of an internally-circular chamber, a main shaft arranged above the center of the same, a roll-shaft connected by a universal joint with the main shaft in a line with the center of the chamber, having a roll at its lower end for revolving around the interior of the chamber, and a spiral flange around the roll-shaft, substantially as specified.

2. In a grinding-mill, the combination of an internally-circular chamber, a hollow main shaft arranged above the center of the same, a roll-shaft, a cross having four arms provided with oil-passages, a head connected with the hollow main shaft and having a passage establishing communication between said main shaft and one of the arms of the cross, and a head fastened to the roll-shaft and provided with bearings receiving oil from the arms, which fit in said bearings, substantially as specified.

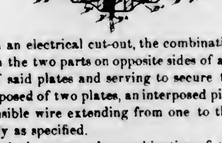
3. In a grinding-mill, the combination of an internally-circular chamber, a main shaft arranged above the same and provided with a lateral flange and a frame comprising a head whereby said flange is supported, and a roll-shaft connected by a universal joint with the main shaft and having a roll at its end, substantially as specified.

4. In a grinding-mill, the combination of an internally-circular chamber, a main shaft arranged above the center of the same and provided with a lateral flange, a frame consisting of a head which supports the flange and legs which are bolted to the head and bolted to a flange extending beyond the said chamber, and a shaft carrying a roll connected to the main shaft in a line with the center of the chamber, substantially as specified.



5. In a grinding-mill, the combination of an internally-circular chamber, a hollow main shaft arranged above the center of the same and provided with a lateral flange, a frame consisting of a head which supports the flange and legs which are bolted to the head and bolted to a flange extending from said chamber, a radial hole k^5 for the escape of oil from the main shaft below the flange, and a shaft working in bearings receiving oil from said hole, carrying a roll and connected by a universal coupling to the main shaft, substantially as specified.

445,822. **ELECTRIC CUT-OUT.** GEORGE A. SCOTT, New York, N. Y., assignor to Sigmund Bergmann, same place. Filed Aug. 13, 1890. Serial No. 361,939. (No model.)



Claim.—1. In an electrical cut-out, the combination of two parts, plates arranged on the two parts on opposite sides of a recess, binding-screws for each of said plates and serving to secure the same, a connecting-piece composed of two plates, an interposed piece of insulating material, and a fusible wire extending from one to the other of said plates, substantially as specified.

2. In an electrical cut-out, the combination of two parts, plates arranged on the two parts on opposite sides of a recess, one of said plates being resilient and free to move in the recess, and a connecting-piece composed of plates *e*, an interposed block *e'*, of insulating material, and a fusible wire e^2, one of the plates of said connecting-piece being bent to form a lip or hand-piece, substantially as specified.

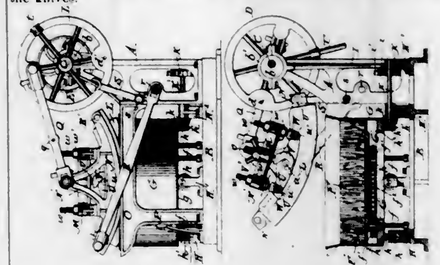
445,823. **MEAT-CHOPPING MACHINE.** JOHN SHEARGREN, Burlington, Iowa. Filed Aug. 26, 1890. Serial No. 363,157. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the chopping-block, the stationary rails or supports, the arc-shaped rockers, the knives, the knife-carrying frame secured directly to the upper faces of the rockers, and means, substantially as described, for imparting oscillation to the rockers and knives.

2. The combination, substantially as hereinbefore set forth, of the chopping-block, the rockers, the knife-carrying frame, and the rods longer than the radius of the rockers and pivoted to the frame and the rockers, whereby a draw or longitudinal movement is given to the knives.

3. The combination, substantially as hereinbefore set forth, of the chopping-block, the rockers, the knives, the knife-carrying frame connected with the rockers, and the crossed rods pivoted to the rockers and the main frame, whereby the knives are held down to their work and given a longitudinal movement or draw relatively to the chopping-block.

4. The combination, substantially as hereinbefore set forth, of the rotating chopping-block, the knife-carrying frames, and the knives, each of which is at a different distance from the center of the chopping-block, means for rotating the block, and mechanism for operating the knives.

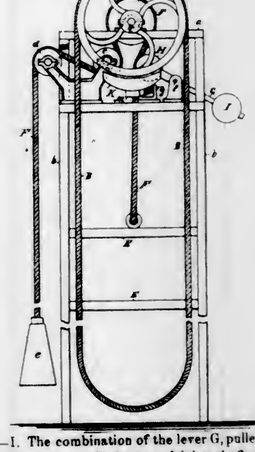


5. The combination, substantially as hereinbefore set forth, of the chopping-block, the knives, their connecting-frame, the main driving-shaft, the crank-wheels, the pitman connecting the crank-wheels with the knife-carrying-frame, devices for connecting the pitman with the rim of a crank-wheel, and the pivoted rods which hold the knives elevated.

6. The combination, substantially as hereinbefore set forth, of the chopping-block, the knife-carrying frame, the knives arranged in pairs, the intermediate connecting-plate between each pair of knives, and the bifurcated hook engaging with the connecting-plate.

7. The combination, substantially as hereinbefore set forth, of the knife-carrying frame, the knives arranged in pairs, the intermediate connecting-plate arranged between each pair of knives and formed with hollow studs on opposite sides of each end and with intermediate oppositely-projecting studs, a bifurcated hook adapted to engage with the intermediate studs and having a screw-threaded shank extending through the knife-connecting frame, the abutment-blocks adapted to engage with the studs at opposite ends of the connecting-plate, and the adjusting-nuts for the shank of the hook and the shanks of the abutment-blocks.

445,824. **DUMB-WAITER.** HORACE A. SMITH, Brooklyn, N. Y. Filed May 31, 1890. Serial No. 353,735. (No model.)



Claim.—1. The combination of the lever G, pulley H, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

2. The combination of the lever G, counterpoise I, pulley H, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

2. The combination of the lever G, pulley H, adjustable on said lever, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

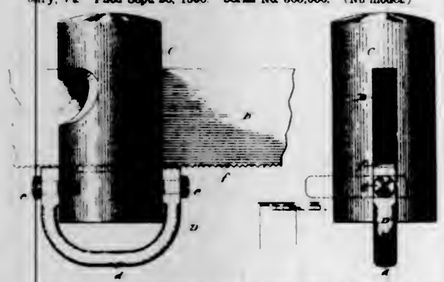
4. The combination of the lever G, counterpoise I, adjustable on said lever, pulley H, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

5. The combination of the lever G, counterpoise I, pulley H, said counterpoise and pulley adjustable on said lever, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

6. The combination of the lever G, having a stud *m*, the pulley H, the lever M, and brake-shoe K with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

7. The combination of the lever G, having a stud *m*, the pulley H, the lever M, the brake-shoe K, and the flange L on the hand-wheel with the car, draft-rope, driving-shaft, draft-pulley, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

445,825. POISE FOR PLATFORM-SCALES. JOHN H. STROMYER, Baltimore, Md., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Filed Sept. 20, 1890. Serial No. 365,606. (No model.)



Claim.—1. The combination, with a scale-beam, of a poise sliding thereon, said poise being provided with an automatically-operated swinging attachment normally holding the poise in position upon the scale-beam, substantially as described.

2. The combination, with a scale-beam, of a poise sliding thereon and a gravity operating swinging attachment pivoted to said poise and normally acting to hold the same in position upon the scale-beam, substantially as described.

3. In combination with a scale-beam, a sliding poise thereon and an attachment pivoted to the poise, the pivot-points thereof being so arranged that movement at right angles to that of the poise is given the attachment, said attachment normally bearing against the scale-beam, substantially as described.

4. In combination with a scale-beam having a notched edge, a sliding poise thereon and an attachment pivoted to the poise to swing in a direction at right angles to the line of movement of the poise, the upper part of said attachment being cam-shaped and normally bearing against the scale-beam, substantially as described.

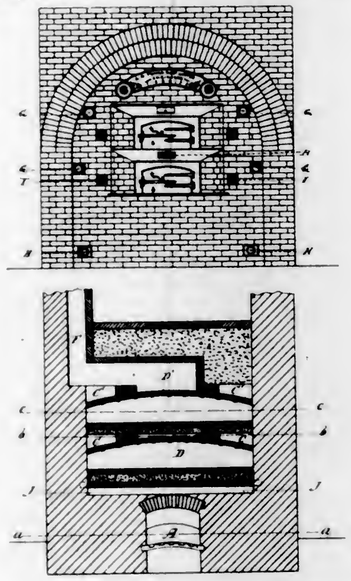
5. In combination with a scale-beam having a notched edge, a poise sliding thereon and an attachment pivoted to said poise provided with notched cam-shaped ends and adapted to bear against the scale-beam, the notches on the attachment registering with those of the beam, substantially as described.

6. In combination with a scale-beam having a notched lower edge, a yoke, as D, and screws pivotally securing said yoke to the poise, the ends of the yoke above the pivot-points being notched to engage the notches in the lower edge of the beam, substantially as described.

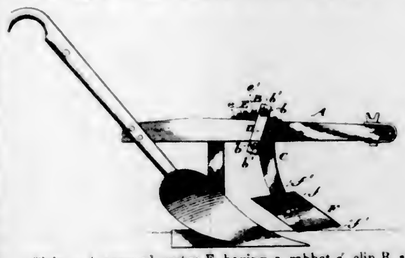
7. As a new article of manufacture, a poise for scale-beams having a swinging yoke secured to it, said yoke serving as a handle to move the poise and adapted to bear against the edge of the scale-beam.

445,826. CONSTRUCTION OF BAKERS' OVENS. GILBERT S. TUSEN, Cardiff, England. Filed May 6, 1890. Serial No. 350,835. (No model.) Patented in England June 4, 1888, No. 8,092, and Dec. 18, 1888, No. 18,443.

Claim.—In a baker's oven, the combination of two or more decks having the furnace-doors at one end and the oven-doors at the other end thereof, with vertical flues at the corners thereof leading upward from the rear end of the furnace, with side passages leading from each of said vertical flues between the top of the lower oven and the bottom of the oven above and separated by a wall from a central return-passage, also situated between the two ovens and receiving the products of combustion from both of said side passages and carrying them to vertical flues over but separated from the first vertical flues, all of said flues having dampers therein, and thence by similar passages under each oven to the top oven, where the products of combustion, emptying into one chamber, flow over the said oven and finally escape into the smoke-stack, and said lower oven having an air-space between the roof of the furnace and the bottom thereof, with an opening for admitting and dampers for regulating the supply of cold air therein, whereby the bottom of said oven is prevented from being overheated, substantially as described.



445,827. COTTON-SCRAPER. JEREMIAH R. WHITE, Midway, Miss. Filed Oct. 7, 1890. Serial No. 367,312. (No model.)



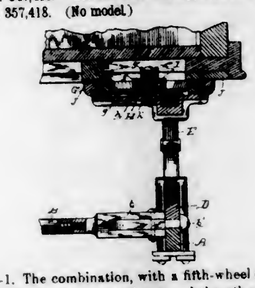
Claim.—A grooved wedge E, having a rabbet *e'*, clip B, a plate D, and a plate D', having the slots *d' d'*, in combination with the standard and plow-beam for the purpose of throwing the points of a scraper up or down, as set forth.

445,828. SEPARATING CROSS-HEAD TIE-WIRES. GEORGE B. BAER, Cloverdale, Cal. Filed Sept. 24, 1890. Serial No. 365,960. (No model.)



Claim.—The described tool for untying or releasing cross-head tie-wires, approximately U-shaped in cross-section, having its forward or operating end provided with arms having forwardly and downwardly inclined upper edges, substantially as set forth.

445,829. WAGON. PERRY BROWN, Sharonville, Ohio, and JOSEPH W. BROWN, Memphis, Tenn. Original application filed Apr. 10, 1890, Serial No. 347,418. Divided and this application filed July 1, 1890. Serial No. 357,418. (No model.)



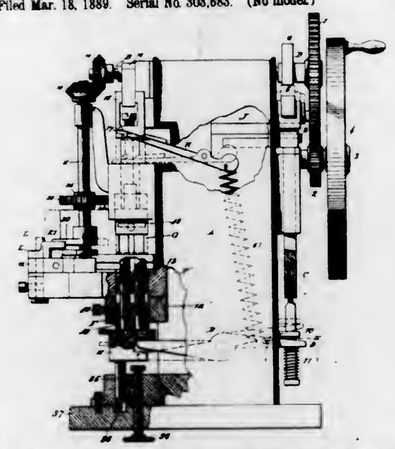
Claim.—1. The combination, with a fifth-wheel composed of two sections G G', one having a cross-bar *g* and the other a cross-bar *g'*, of the transfer-plates H I, removably secured to said cross-bars, substantially as described.

2. A fifth-wheel composed of two sections G G', one section G having a rim fitting inside the inner edge of the other and the section G' having a rim fitting the outside edge of the section G, in combination with the transfer-plates H I, removably attached to the cross-bars on the fifth-wheel sections, substantially as described.

3. The combination, with a wagon-spring and a fifth-wheel having a cross-bar provided with a recess to receive the spring, of a removable transfer-plate bolted over the recess and spring, substantially as described.

4. The combination, in a wagon, of a tubular reach B, a forked end *b*, having one end secured to said reach and the other end perforated, and a coupling *b'*, fitted in and pivotally connected with said forked end and having a neck, with an axle A and block D, set, respectively, under and over the neck of said coupling and fitting said neck, all substantially as shown and described.

445,830. PILL-MACHINE. JAMES R. CLARK, Philadelphia, Pa. Filed Mar. 18, 1889. Serial No. 303,683. (No model.)



Claim.—1. A lower die and a pivoted lever connected therewith at one end, in combination with a sliding rod having a shoulder thereon and attached to the other end of the said lever, a cam engaging with the said rod for lowering the same, and a wheel with a piece thereon adapted to engage with said shoulder for raising said rod, substantially as described.

2. An upper die connected with a sliding head having a roller at its upper end, a driving-shaft with a cam thereon, a lever, and a rising and falling rod with a bar connected therewith and adapted to engage said lever, said parts being combined substantially as described.

3. A swinging pan, in combination with means for operating the same, consisting of a lever connected with said pan, a rotary shaft with cams thereon, a swinging bifurcated piece engaged by said cams, screws on the limbs of said bifurcated piece, and fingers carried by the said piece and adapted to engage the arm of the pan, substantially as and for the purpose set forth.

4. In a pill-making machine, a frame, in combination with a driving-shaft having cams thereon and journaled in said frame, a rising and falling rod guided in said frame and having a segmental shoulder on the side of the head of the rod, a roller on said head, and a train of gearing for operating said driving-shaft, one of the wheels of said train having a segmental piece adapted to engage with said shoulder, substantially as and for the purpose described.

5. A swinging pan or hopper having a discharge-port and provided with vanes, in combination with means, substantially as described, for rotating said vanes and mechanism, substantially as described, connected with said pan for oscillating the same, as set forth.

6. In a pill-making machine, a driving-shaft with cams thereon, a rising and falling rod, an upper die with a vertically-sliding head, the latter having a pin thereon, a lever, and a bar, the latter connected with the said rising and falling rod, said parts being combined substantially as described.

7. In a pill-making machine, a pivoted lever in combination with a carrier having dies thereon, a table, a block below said table, and guides for the dies in said table, substantially as described.

8. In a pill-making machine, the pivoted lever D, the carrier E, with the lower dies F, the table 13, and the block 12 below said table and secured thereto, the said dies having the guides F' at their top vertically guided in the said table, said parts being combined substantially as described.

9. In a pill-making machine, a die formed with a neck, a slotted sliding plate engaging with said neck, and a carrier with flanges thereon, with which said plate is adapted to engage, said parts being combined substantially as described.

10. In a pill-making machine, the vertical rotary shaft K, with the cams 20 thereon, the shaft L', with the swinging bifurcated piece L, having the fingers 21 and the inwardly-projecting screws 22, and the pan M, with the arm 23, said parts being combined substantially as described.

11. In a pill-making machine, the rotary shaft K, with gear-wheel 24, the pan M, with a shaft attached to the top thereof and having the idler 25 thereon, the shaft 27, passing through said pan and having the pinion 26, and the distributing-vanes 28 thereon, said parts being combined substantially as described.

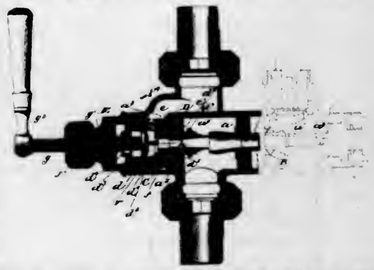
12. In a pill-machine, the pan or hopper M, formed of a top 32 and base 38, the top being at one side of the base or eccentric thereto, and mechanism, substantially as described, connected with said pan for oscillating the same, said parts being combined substantially as stated.

13. In a pill-machine, an oscillating pan with rotary agitating-vanes within the same and a wiper on the outer side thereof, said parts being combined substantially as described.

14. In a pill-machine, an upper die with mechanism, substantially as described, connected with the carrier thereof for raising and lowering the same, a table with a block below the same, a lower die guided in said block, and a swinging hopper with an opening in its base, said parts being combined substantially as described

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445,831. STEAM-INJECTOR. JOHN DESMOND, Bridgeport, Conn., assignor to the Hayden & Derby Manufacturing Company, New York, N. Y. Filed Oct. 11, 1890. Serial No. 367,792. (Model.)



Claim.—1. In a steam-injector for high and low pressure steam, a movable steam-inlet tube having forward and back seats between the steam and vacuum chambers, and a steam-valve having a seat in said inlet-tube and designed to vary the range or degree of the steam-supply in the steam-inlet tube and to secure an increased water-supply, as set forth.

2. In a steam-injector, a movable steam-inlet tube having two seats, against one of which it is automatically held by steam-pressure, said seats being at opposite sides of the wall or diaphragm between the steam and vacuum chambers, as set forth.

3. In a steam-injector having a double-seated wall or diaphragm between the steam and vacuum chambers, the movable steam-inlet tube having double seats designed to engage those of said wall or dia-

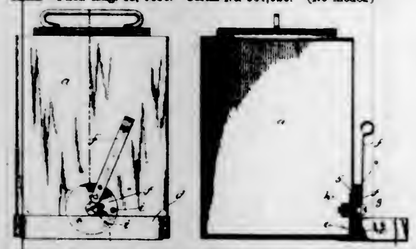
phragm, said tube being automatically held against one of said seats by the steam-pressure and against the other seat when held back, as set forth.

4. A steam-injector for high and low pressure steam, having a movable steam-inlet tube provided with double seats, and a steam-valve for withdrawing said tube, so as to secure a high pressure and an increased water-supply, as set forth.

5. In a steam-injector having the wall or diaphragm, the sleeve or bushing secured therein having double seats, and the movable steam-inlet tube having a shoulder to engage one of said seats and a nut to engage the other of said seats, as set forth.

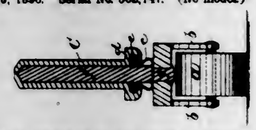
6. In a steam-injector having the wall or diaphragm, the sleeve or bushing secured therein and having a continuous flange at one end, the end plug having a cylindrical extension bearing against said flange and provided with a series of holes or ports, the movable steam-inlet tube designed to be seated against either end of said sleeve or bushing, and the steam-inlet valve located in said steam-inlet tube and designed to retract the same, substantially as set forth.

445,832. **CAN FOR CEMENT.** OSCAR F. DREW, Newburyport, Mass. Filed Aug. 13, 1890. Serial No. 361,926. (No model.)



Claim.—The can *a*, having at its base or lower portion the pan or trough *d* and an elongated outlet arranged to permit the flow of cement from the can into the pan or trough, combined with the valve or gate *f*, having an elastic or yielding inner surface bearing on the side of the can, and provided with an elongated outlet arranged to coincide with the outlet of the can when the valve is turned to a given position, and means for pivotally connecting the valve to the can, and pressing the yielding surface of the valve closely against the can, as set forth.

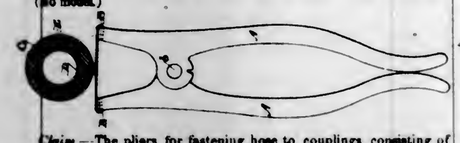
445,833. **CASTER.** GEORGE J. HELMSTAEDTER, Newark, N. J. Filed Aug. 16, 1890. Serial No. 362,147. (No model.)



Claim.—1. The herein-described caster, consisting of the roller and carrier, the shank connected to the carrier, the socket having an enlargement at its lower end, an annular chamber in the enlargement having the opening or outlet of reduced diameter, the flat spring having the arms or catches engaging the reduced opening of the chamber, and means for securing the spring to the spindle.

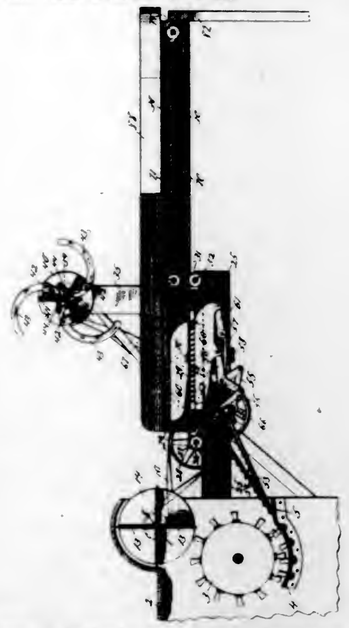
2. The herein-described caster, consisting of the roller and carrier, the shank having the lower end connected to the carrier and reduced to form a shoulder, the socket having a chambered enlargement at its lower end, and a spring fitting on the reduced end of the shank, retained by the shoulder thereof, and having arms or catches engaging the chamber of the enlargement.

445,834. **TOOL FOR FASTENING HOSE TO COUPLINGS.** CHARLES H. HUDSON, Leominster, Mass. Filed Dec. 19, 1888. Serial No. 294,089. (No model.)



Claim.—The pliers for fastening hose to couplings, consisting of the levers having the hinge *b* in their adjacent sides, whereby the lever-jaws are spread apart by the closing together of the handles, said jaws each being provided with a hole located within a distance from its end not exceeding two diameters of ordinary wire, or about three-sixteenths of an inch, for the purpose of insuring a sharp bend in the wire near its ends and securely holding the same until released by spreading the handles.

445,835. **BAND-CUTTER AND FEEDER.** EDWIN B. KARN, Amherst, assignor of one-half to Charles Hamilton, Britain, S. D. Filed Feb. 6, 1890. Serial No. 339,461. (No model.)



Claim.—1. In a band-cutter and feeder, the combination, with the rotating shaft or frame provided with the transverse plates 41, of the pivoted knives 43, carried around with said shaft or frame, and springs acting on said knives to restore them to their normal position when moved therefrom, substantially as and for the purposes set forth.

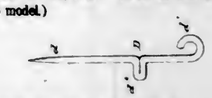
2. In a band-cutter and feeder, the combination, with the rotating shaft or frame provided with the transverse plates 41, of the sickle-shaped knives 43, pivoted upon said plates, and springs to restore said knives to their normal position when removed therefrom, substantially as and for the purposes set forth.

3. The combination, with the frame 25, provided with the bundle-carrying belts extending longitudinally of said frame, of the reciprocating agitators arranged between said belts, and the removable extension 70, adapted to be secured to said frame and provided with the bundle-carrying belts 71, substantially as described.

4. The combination, with the bundle-carrying belts or chains 29, of the reciprocating agitators 60, arranged between said belts, the reciprocating feeders 53 and 54, and the shaft 50, provided with the double cranks connected both with said feeders and said agitators, substantially as described.

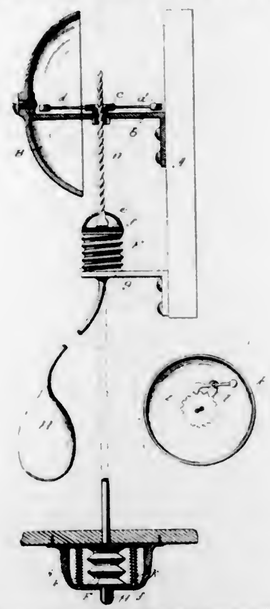
5. The combination, with the thrashing-cylinder, of the revolving beater arranged above said cylinder, the reciprocating agitators, the revolving cutters, and the carrying belts or chains, means for driving said beater, agitators, and cutters from said cylinder, and a friction governor-clutch arranged upon the shaft of said beater and controlling said carrying-chains to bring them into operation with the other parts after said parts have been started, substantially as described.

445,836. **HANGER FOR WIRE LATHING.** GEORGE KELLY, Chicago, Ill. Filed Nov. 25, 1889. Renewed Dec. 22, 1890. Serial No. 375,489. (No model.)



Claim.—A hanger-piece D, consisting of an eye *d'* at one end, a point or points at the other end, and an offset or offsets d^2 at or near its mid-length, essentially as herein described, and for the purpose set forth.

445,837. **PNEUMATIC BELL.** GEORGE F. KINCAID, San Francisco, Cal. Filed Oct. 30, 1889. Renewed Oct. 2, 1890. Serial No. 366,802. (No model.)

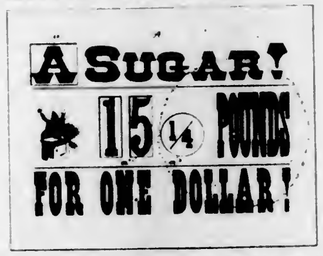


Claim.—1. In combination with a bellows, a nut carrying a hammer or hammers, a bell, and means for supporting the bellows, nut, and bell, a stem threaded in the nut and held upon the bellows, and a connection between the stem and the bellows, all substantially as described.

2. In combination, the bell, the nut carrying a hammer, the bellows, all supported in suitable relation to each other, and a stem threaded to the nut and sustained in operative relation to the bell, said stem being serrated at its lower end and arranged to engage with the bellows, all substantially as described.

3. In combination, the bell, the nut arranged to revolve continuously in one direction, a hammer on the nut, the threaded stem passing through the nut, means for operating the stem longitudinally, and a clutch connection between said stem and operating means, whereby the stem may revolve in returning to normal position, substantially as described.

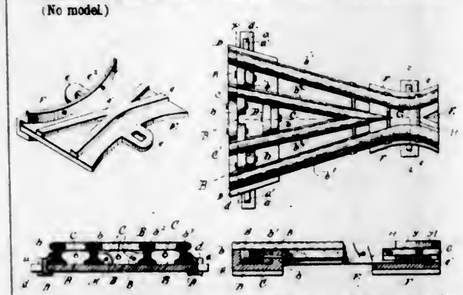
445,838. **CHANGEABLE SIGN.** ALBERT L. LARKIN, Indianapolis, Ind. Filed Feb. 7, 1890. Serial No. 339,606. (No model.)



Claim.—1. A sign or indicator consisting of a card or plate carrying the name of an article of merchandise, a sign or name of a measure of quantity and an indication of value, and having a plurality of perforations and pockets behind the perforations, in combination with interchangeable slides carrying integers, and a revolving disk carrying fractions of numbers, substantially as described.

2. A sign consisting of a card or plate having a plurality of perforations and a plurality of pockets in the rear thereof, in combination with interchangeable slides for indicating quality, interchangeable slides for indicating integers or quantity or amount, and a revolving disk carrying fractions of a unit, substantially as described.

445,839. **RAILWAY-FROG.** GEORGE N. MOATS and CHARLES R. CRAWSHAW, Ironton, Ohio. Filed Nov. 1, 1890. Serial No. 370,023. (No model.)



Claim.—1. A railroad-frog comprising a bed-plate having a series of lugs or buttons and brace-bars rigidly secured thereto, as set forth.

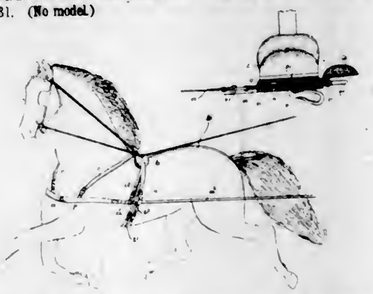
2. A railroad-frog comprising a bed-plate having a series of lugs or buttons provided with holes or openings, brace-bars having coincident holes or openings, and nutted bolts passed through said holes or openings, substantially as set forth.

3. A railroad-frog comprising the bed-plate having slotted ears or lugs, the series of intermediate brace-bars, the outer brace-plates, and the pins inserted through the slots of said ears or lugs, substantially as set forth.

4. A railroad-frog comprising a bed-plate having ridges, a central X-shaped fish-plate, outer brace-plates, and nutted bolts, substantially as set forth.

5. A railroad-frog comprising a bed-plate having slotted ears or lugs and X-shaped ribs or ridges, the central X-shaped fish-plate having raised sides, the outer brace-plates, and the series of nutted bolts, substantially as set forth.

445,840. **HARNESS.** ALFRED ROSS, East Boston, Mass., assignor of one-half to Julius Wessel, same place. Filed Oct. 13, 1890. Serial No. 367,931. (No model.)



Claim.—1. The combination of the saddle having one usual straps 20 21, and a ring attached to the front part of the center of the saddle, the breast plate or strap, the neck-strap *c c*, extending from the forward portion of the breast-strap diagonally backward and upward to the front edge of the upper or central portion of the saddle and secured to the forwardly-projecting ring, and the independent straps *d d*, connecting the ends of the breast-strap to the saddle, as set forth.

2. The combination of the saddle, the breast-plate, the straps *c c*, connected with the forward edge of the saddle at the upper or central portion thereof and extending therefrom diagonally forward and downward to the forward portion of the breast-plate, and a pad secured to the saddle and projecting from the forward edge thereof under the upper ends of the straps *c c* to protect the horse's back from injury by said straps, and the device that connects the same to the saddle, as set forth.

3. In a harness-saddle, the combination of the flexible top piece 6, the pads 7 7, located under said top piece, the flexible piece 8, secured to the upper sides of said pads and attached at its ends to the end portions of the top piece 6, and the belly-straps 20 21, extending downwardly from the saddle, as set forth.

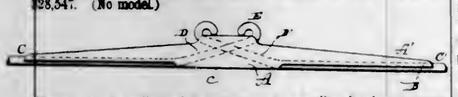
4. In a harness-saddle, the combination of the flexible top piece 6.

the strap 10, extending across the under side of said top piece and secured thereto, said piece having at the front of the saddle a ring or eye for attachment to the breast-plate-supporting straps and at the rear end of the saddle a ring or eye for attachment to a back strap, and the belly-straps 20 21, extending downwardly from the saddle, as set forth.

3. In a harness-saddle, the combination of the flexible top piece 6, the transverse strap attached thereto and having at its ends the eyes 14 and 14 and at its central portion the loop 10', the tug-supporting strap 15, passing through the loop 10' and through slots 18 18 cut in the top piece, pads secured to the top piece below the strap 15, said strap being adapted to slide between the top piece and the pads, and the belly-straps 20 21, extending downwardly from the saddle, as set forth.

4. The improved saddle comprising the flexible top piece 6, the pads located below the top piece and secured thereto, the flexible loop *g*, attached to the central portion of the top piece, the water-hook having a ring engaged with said loop, the loops or strips *k k*, attached to the top piece at opposite sides of the water-hook and projecting partially through slots *l l*, cut in the top piece, and the terret-rings *j j*, engaged with said loops *k k*, as set forth.

445,841. COUPLING FOR THE TROLLEY-WIRES OF ELECTRIC RAILWAYS. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Oct. 29, 1889. Serial No. 328,547. (No model.)



Claim.—1. A trolley-wire connector or coupling having grooves for the reception of the wires, and inclined holes extending through the coupling, in which the ends of the wires are secured, substantially as set forth.

2. The combination, with the two ends of a trolley-wire, of a connector or coupling having grooves for the reception of the wires, a flat bearing-surface between said grooves, and inclined holes extending from the inner ends of the grooves through the coupling, substantially as set forth.

3. The combination, with the two ends of a trolley-wire, of a connector or coupling provided with tapered ends, each having a groove formed on its under side, a flat bearing-surface between the grooves, and inclined holes extending from the inner ends of the grooves through the coupling, substantially as set forth.

4. The combination, with a connector or coupling having grooves and inclined holes for the reception of the trolley-wires, of the two ends of the trolley-wire, each being secured by a bend or loop formed on its extreme end, substantially as set forth.

445,842. HARROW. MARQUIS J. TODD, Corning, assignor to the Pitts Agricultural Works, Buffalo, N. Y. Filed Apr. 21, 1890. Serial No. 348,781. (No model.)



Claim.—1. In a spring-tooth harrow, a clip composed of two sections, one being stationary and the other movable, which latter section is provided with a horizontal seat for a spring harrow-tooth, and a pivot-bolt having a hooked or wedge-shaped end for engaging such tooth and seat and binding the former down on the latter and against the side of said movable section and serving as a pivot for said movable section, substantially as set forth.

2. In a spring tooth harrow, a clip composed of a stationary section and a movable section having on its outer side a horizontal ledge or support forming a seat for the inner end of a harrow-tooth, said ledge having a tapering under side, and a pivot-bolt having a hooked or wedge-shaped end for engaging such tooth and the tapering under side of said ledge or support, whereby the tooth is bound down on its seat and against the side of said movable section and said sections are held firmly together, substantially as set forth.

3. In a spring-tooth harrow, a clip composed of two sections, one being stationary and the other movable, and having intermeshing ratchet-teeth, said movable section being provided with a horizontal seat for a spring harrow-tooth, and a pivot-bolt having a hooked or wedge-shaped end for binding such tooth down on said seat and against the side of said movable section and holding said sections firmly together, substantially as set forth.

4. In a spring-tooth harrow, a clip composed of two parts or sections having intermeshing ratchet-teeth, one of said sections being stationary and the other movable, the latter having on its outer side a lower horizontal ledge or support forming a seat and an upper flange between which a harrow-tooth is disposed, and a pivot-bolt having a hooked end for binding said tooth down on said seat and against said outer side of said movable section and holding said sections firmly together, substantially as set forth.

5. In a spring-tooth harrow, a clip having a movable section provided on its outer side with a horizontal ledge or support having a central groove or depression, the harrow-tooth having a correspondingly-shaped portion fitting said groove or depression, and the pivot-bolt having an outer hooked or wedge-shaped end engaging said tooth and ledge or support, substantially as set forth.

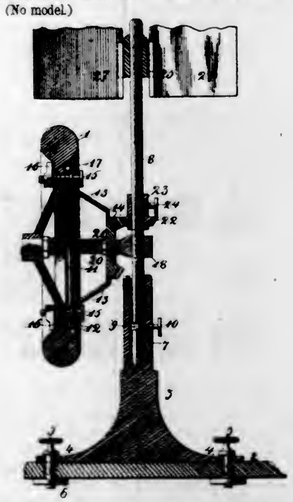
6. As an improvement in harrows, the frame composed of zigzag bars or straps, the clips having each a single stationary section provided with grooves or recesses for said bars, between contiguous angles of which said section is located, a movable section located outside one of said bars where the said stationary section is secured and supporting a harrow-tooth, and a pivot-bolt uniting said sections, substantially as set forth.

7. The herein-described improved harrow, consisting of the frame composed of bars or straps bent into zigzag form and connected together, the clip having a stationary section provided with ratchet-teeth and disposed between contiguous angles of two of said bars or straps, the movable section having corresponding ratchet-teeth and provided with a lower ledge or support and an upper flange parallel therewith, and the pivot-bolt having an outer hooked or wedge-shaped end binding the harrow-tooth against the outer side of said movable section and holding the latter in engagement with said stationary section, substantially as set forth.

8. As an improvement in harrows, the frame composed of zigzag bars or straps having the parallel or contiguous angles of adjoining bars or straps connected together by rivets, stationary sections or bearings located between such angles and having grooves or recesses for said bars or straps, and the spring-teeth pivotally secured to one side of such connection, substantially as set forth.

9. As an improvement in harrows, the frame composed of zigzag bars or straps having the parallel or contiguous angles of adjoining bars or straps connected together, stationary sections or bearings located between such angles and having grooves or recesses on said bars or straps and provided with ratchet-teeth, the movable sections also having ratchet-teeth, the harrow spring-teeth attached to said movable sections, and the pivot-bolts for binding said teeth against the outer sides of said movable sections and securing the latter to said stationary sections or bearings, substantially as set forth.

445,843. FAN ATTACHMENT FOR SEWING-MACHINES. LEOPOLD BERCHER, Fort Smith, Ark. Filed July 23, 1890. Serial No. 359,619. (No model.)

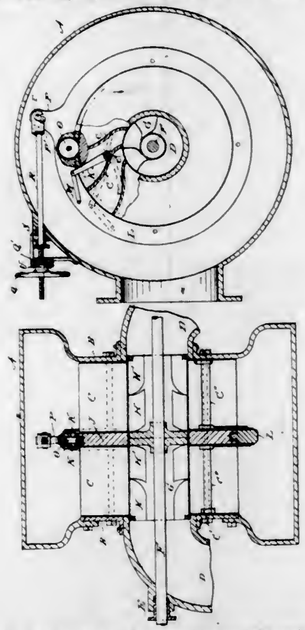


Claim.—1. The combination, with a vertical revolving shaft, of a collar carried by the said shaft and having V-shaped slots upon its periphery, and fan-blades having the lower portion of each of their inner edges bent flat upon itself and contained within the slots in the said collar, the upper portion of each of such edges being rolled back upon itself and rounded, as described.

2. In a fan, the combination, with a sewing-machine having a flanged fly-wheel thereon, of a base having a vertical cavity therein, a shaft stepped in the said base, a disk having perforations in concentric rows therein, bolts passing through perforations of one of the said rows and within the periphery of the fly-wheel, clamps upon the said bolts bearing against the flange of the said fly-wheel, a pinion carried by the said perforated disk, a gear-wheel upon the said shaft engaging the said pinion, and fans carried by the said shaft, as described.

3. In a fan, the combination, with a sewing-machine having a flanged fly-wheel thereon, of a base having a vertical cavity therein, a shaft stepped in the said base, a disk having perforations in concentric rows therein, bolts passing through perforations of one of the said rows and within the periphery of the fly-wheel, clamps upon the said bolts bearing against the flange of the said fly-wheel, a pinion carried by the said perforated disk, a gear-wheel upon the said shaft engaging the said pinion, a collar upon the said shaft having a lug thereon passing through the said pinion, and fans carried by the said shaft, as described.

445,844. WATER-WHEEL. FRANCIS M. BOOKWALTER, Springfield, Ohio. Filed July 29, 1890. Serial No. 360,358. (No model.)



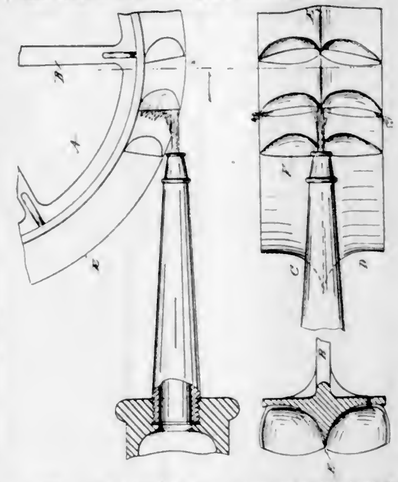
Claim.—1. In a water-wheel, the combination of a casing having an inlet-opening for the water, and draft-tubes having shaft-bearings and secured directly to the sides of said case, each of the said sides being recessed or bent inward in an annulus about said tubes and connected to the outwardly-flared rim portion and adapted to guide the water inward, gates mounted between said recessed annular portions of the sides to receive the water from the rim portion, and mechanism to operate said gates.

2. In a water-wheel, the combination, with a casing having an inlet-opening for the water, and draft-tubes having shaft-bearings and secured directly to the sides of said case, each of the said sides being recessed or bent inward in an annulus about said tubes and connected to the outwardly-flared rim portions of the case to guide the water inward, of an intermediate partition between and supported by said annular portions of the case, gates mounted, respectively, between said partition and said annular sides, a rotatable ring connected to said gates, and an adjusting-rod connected to both series of gates through said ring and extending outside of the case.

3. The combination, with a water-wheel and enclosing case provided with an inlet-opening and outlet-flumes for the water, of an intermediate partition supported in the gate-opening, gates mounted between said partition and the corresponding side of said case, a ring rotatably mounted on said partition and matched with the same by tongue and groove to form a smooth face for the entrance of the water, rollers between said ring and partition, whereby it may be easily rotated, connecting mechanism between the ring and said gates for operating the latter, and adjusting means for said ring, whereby both series of gates are centrally operated by one mechanism.

4. The combination, with a water-wheel and an inclosing case provided with an annular opening and outlet-flumes for the water, of an intermediate partition and side plates, and gates mounted, respectively, between said partition and said side plates, a rotatable ring connected to said gates, and an adjusting-rod connected to both series of gates through said ring and passing outside of the case.

445,845. WATER-WHEEL. FRANK M. BOOKWALTER, Springfield, Ohio. Filed Oct. 2, 1890. Serial No. 366,812. (No model.)



Claim.—1. In a water-wheel of the character described, the combination, with a wheel proper having a water-dividing edge on its periphery and water-receiving buckets secured to the periphery, of a nozzle adapted to project a stream of water against the dividing-edge.

2. In a water-wheel of the character described, the wheel proper having a dividing-edge on its periphery and water-receiving buckets secured to the periphery, with reduced edges adjacent to said dividing-edge, and a nozzle adapted to project a stream of water against said edge, as set forth.

3. In a water-wheel of the character described, the combination, with a wheel proper having a dividing-edge on its periphery and water-receiving buckets secured to said periphery with their outer edge, radially measured, lowest and their edge where the water discharges set farther forward than the water-entering part, of a nozzle adapted to project a stream of water against the dividing-edge and into the said bucket.

4. In a water-wheel of the character described, the combination, with a wheel proper having two concaved surfaces on its periphery and a dividing-edge formed by the apex of said concaves, of buckets fitted into the said concaves and secured and having curved sides and a curved bottom and reduced edges.

445,846. CULTIVATOR. ADDISON W. BUTT, Springfield, Ohio. Filed Aug. 16, 1890. Serial No. 362,153. (No model.)

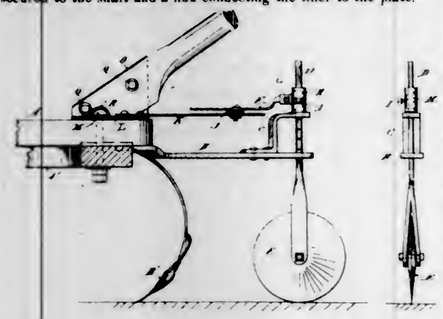
Claim.—1. The combination, with a laterally-swinging beam and cultivator-teeth carried thereby and adapted to be readily moved laterally with the said beam, of a steerer connected to the beam to deflect the beam laterally, a handle, and intermediate devices between the handle and the steerer having the mode of operation described, whereby the beam is deflected in the same direction that the handle is moved by the plowman.

2. The combination, with a laterally-swinging beam, cultivator-teeth carried thereby adapted to be readily moved laterally with said beam, and a handle pivoted to said beam, of a steerer consisting of a pivoted deflector proper connected to said beam and having a lever-arm, and a link-connection between said arm and said handle, whereby a movement of the handle to the right or left will cause the steerer to deflect the beam in the same direction.

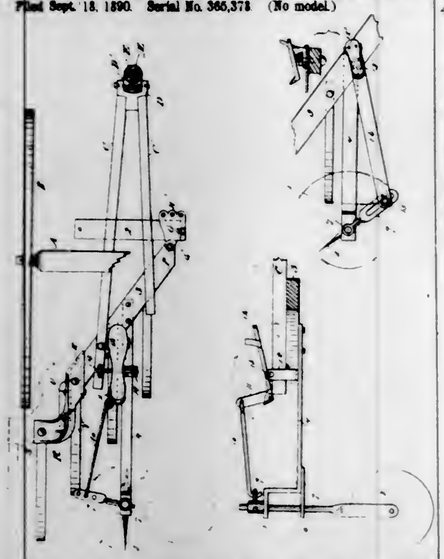
3. The combination, with a laterally-swinging beam or drag-bar,

of a shoe pivotally mounted upon the same, a handle and a plate carried by the shoe, a bar secured to the beam, a shaft mounted in said bar, a tiller mounted on said shaft and connected with the plate carried by the shoe, and a deflector or rudder carried by the shaft.

4. The combination, with a laterally-swinging beam or drag-bar, a shoe pivotally mounted upon the same, a handle and a plate carried by the shoe, a bar secured to the beam, a bifurcated shaft mounted in the bar, and a wheel or disk mounted in the bifurcations, of a tiller secured to the shaft and a link connecting the tiller to the plate.



445,847. CULTIVATOR. ADDISON W. BUTT, Springfield, Ohio. Filed Sept. 18, 1890. Serial No. 365,373. (No model.)



Claim.—1. In a riding-cultivator, the combination, with a gang-beam and a steerer therefor, of an operating mechanism for said steerer, consisting of a foot-piece pivoted to said beam, and intermediate connections between the foot-piece and said steerer, whereby the foot will act only on the steerer through said foot-piece and its connections to deflect the beam to one side or the other.

2. In a riding-cultivator, the combination, with a gang-beam and a steerer therefor, of operating mechanism for said steerer, consisting of a foot-piece pivoted on an axis between its ends to said beam and having an extension on one end, and a link-connection between said extension and said steerer, whereby the oscillation of the foot-piece will actuate said steerer to cause the deflection of said beam.

3. The combination, with a gang carrying a beam, of a coupling-plate G, secured to the beam and having openings for a yoke, a recess and a slot, a bolt fitted to such recess and slot, a nut and washer for the bolt, and a guard or feeder having a shank fitted to the bolt and into the washer and held by the nut.

4. The combination, with a gang having a cross-beam and an oblique beam, of a coupling-plate G, secured to the cross-beam, having openings to receive a yoke, and a lug adapted to lap over the oblique beam, and a bolt to secure said lug to said beam.

5. The combination, with a coupling-plate G, having a vertical part provided with a slot and a recess, of a bolt fitted to the slot with its head in the recess, a washer fitted to the bolt and having a raised edge on the inner face, and a slot in said edge and a guard or fender whose shank is fitted into said slot and over said bolt.

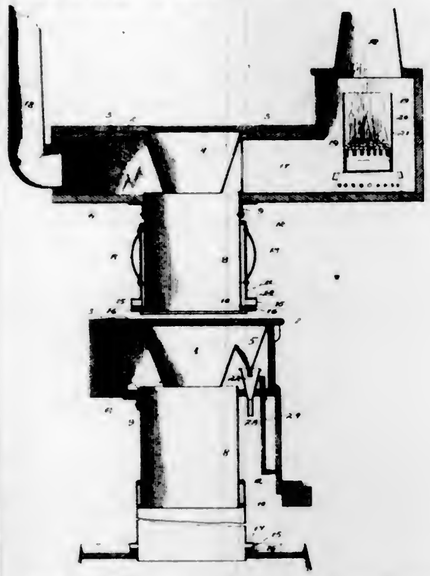
6. In a gang composed of bars, a cross-beam and an oblique beam, teeth secured to said beams, the cross-beam having an opening near its outer end, and one of the outer teeth of the oblique beam being detachable and adapted to be connected to the outer end of the said cross-beam.

7. An attaching-plate for a gang-bar, consisting of an upper forward part *b'*, adapted to embrace said bar, a lower part *c'*, and an intermediate part *d*, having ribs, the said part *c'* being deflected into the line of draft and adapted to receive a tooth secured thereto.

8. A plate or casting R, adapted to be mounted on a gang-beam adjacent to the carrying-wheel, and consisting of an inner part adapted to embrace and be secured to said beam, and an outer rearwardly-projecting part adapted to carry a tooth, whereby the end of the gang-beam and teeth thereon may be swung outward to the side and rear of said wheel without interfering therewith.

9. A plate or casting R, forming an extension to a beam carrying cultivator-teeth, and consisting of a forward part adapted to be fastened together, with a tooth to the rear outer end of said beam adjacent to the carrying-wheel, of a rearward outwardly-extending part adapted to receive and hold the outer tooth of the series, and of a middle part curved inward to give play to said wheel during the outward swing of said gang, whereby the rear teeth may be swung out approximately in line with and to the rear of the carrying-wheel.

445,848. CONSTRUCTION OF PRIVY-VAULTS. THOMAS W CARRICO, San Antonio, Tex., assignor of one-third to Francis A. Carrico and Thomas W. Carrico, both of same place. Filed July 27, 1889. Serial No. 318,985. (No model.)



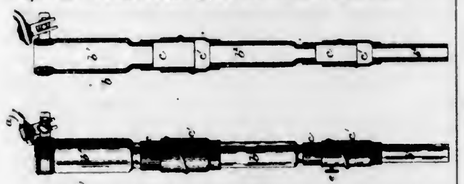
Claim.—1. The combination of a vault or excrement-receptacle, a soil-pipe having a vertically-adjustable sleeve forming a connection between said receptacle and a horizontal partition, and the seat-board arranged above said partition, between which and the seat-board an air space or chamber is thus formed, substantially as and for the purpose set forth.

2. The combination of the seat-board, the horizontal partition, and the soil-pipe with the sleeve adapted to be connected with the trap-door of the vault-floor, substantially as set forth.

445,849. PIPE FOR WIND MUSICAL INSTRUMENTS. AURION V. CHEVERS, Providence, R. I., assignor of three-fourths to Frank Winfield Rockwell and Daniel Russell Brown, same place, and Patrick Joseph McElroy, East Cambridge, Mass. Filed May 10, 1888. Serial No. 273,405. (No model.)

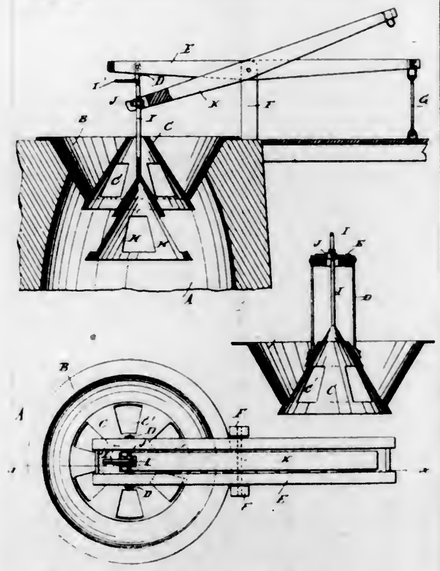
Claim.—1. The combination of a musical sounding-pipe constructed in two or more straight lengths of different and progressively-reduced diameters and an air-pipe coupled to the mouth of said pipe, substantially as described.

2. A musical sounding-pipe constructed in two or more straight lengths of different and progressively-reduced diameters and having tuning-sleeves between said lengths, in combination with an air-pipe coupled to the mouth of said pipe, substantially as described.



3. The combination of a musical sounding-pipe, an air-pipe coupled to it at its mouth, and a tuning-sleeve on the sounding-pipe adjustably secured against longitudinal derangement, substantially as described, whereby the interior capacity of said sounding-pipe may be varied for accurately tuning and then securely maintaining it against such variations in adjustment as would otherwise be liable to occur as a result of the vibrations of the pipe.

445,850. BELL AND HOPPER FOR BLAST-FURNACES. BENJAMIN F. CONNER, Columbia, Pa. Filed Aug. 30, 1890. Serial No. 363,515. (No model.)



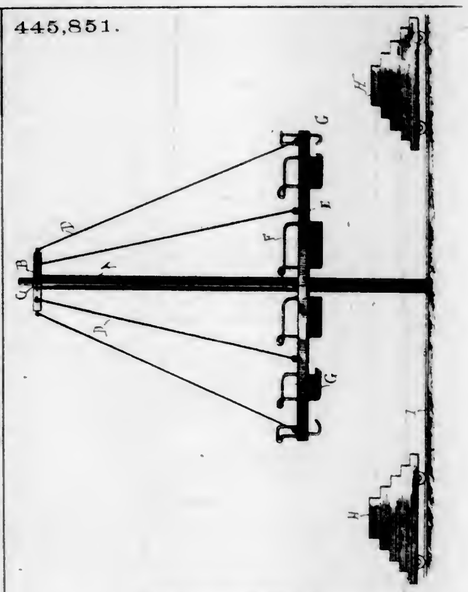
Claim.—1. The combination, with the hopper, of the two bells, one being adapted to fit within the other, which latter is provided with openings, as specified, and means for operating said bells independently, substantially as shown and described.

2. The combination, with a hopper, of two bells, located one within the other and each provided with openings, the inner bell being mounted to turn within the outer bell, so as to register the openings of the said two bells with each other, and means for operating both bells and rotating the inner one, substantially as shown and described.

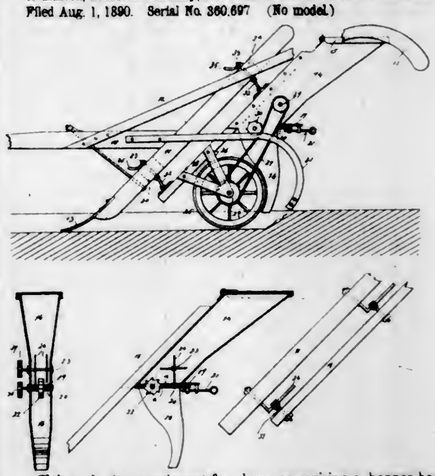
445,851. ROUNDABOUT. WILLIAM H. EASTON, Washington, D. C. Filed Oct. 18, 1890. Serial No. 368,541. (No model.)

Claim.—In a roundabout of the character described, a pivotal support having a collar thereon which is provided with suitable cables depending therefrom, and an annular car having seats and back and foot rests and suspended by said cables on the collar, in combination with double inclined steps H, moving on radial tracks under the car, substantially as described.

445,851.



445,852. PLANTER AND FERTILIZER-DISTRIBUTING ATTACHMENT FOR PLOWS. WASHINGTON S. JONES, Meridian, Miss., assignor to himself, Alonzo A. Dillehay, and John T. O'Ferrall, all of same place. Filed Aug. 1, 1890. Serial No. 360,697. (No model.)



Claim.—1. An attachment for plows, comprising a hopper having a rearwardly and downwardly curved spout, a beam secured to the front of the hopper and extending below the same, said beam being adapted to be secured to a plow-stock, a supporting-wheel between the lower end of the beam and the spout, a feeding device in the hopper, and means for operating the feeding device from the supporting-wheel, substantially as herein shown and described.

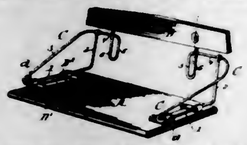
2. An attachment for plows, comprising a hopper having a rearwardly and downwardly curved spout, a beam secured to the front of the hopper, extending below the same, and provided with rearwardly-projecting brackets on said extended portion, said beam being adapted to be secured to a plow-stock, a supporting-wheel journaled in the said brackets, a feed-wheel in the hopper, a stirrer above the feed-wheel, sprocket-wheels on the shafts of the supporting-wheel, feed-wheel, and stirrer, and a chain passing around the sprocket-wheels of the stirrer and supporting-wheel and engaging the sprocket-wheel of the feed-wheel, substantially as described.

3. The combination, with a plow-stock, of a hopper having a downwardly-curved spout, a beam secured to the hopper, means for

adjustably connecting the beam to the plow-stock, a supporting-wheel immediately in front of the spout, said wheel being journaled in brackets projecting from the lower end of the beam, a feeding device in the bottom of the hopper, and intermediate mechanism between the supporting-wheel and feeding device for operating the latter, substantially as herein shown and described.

4. The combination, with a slotted plow-stock, of a hopper having a downwardly-curved spout, a beam secured to the hopper, links pivoted to the beam, eyebolts with which the links engage, passed through the slots of the plow-stock and provided with nuts, a supporting-wheel journaled in brackets projecting from the beam, a feed-wheel in the bottom of the hopper, a stirrer above the feed-wheel, sprocket-wheels on the shafts of the supporting-wheel, feed-wheel, and stirrer, and a chain passing around the sprocket-wheels of the supporting-wheels and stirrer and engaging the sprocket-wheel of the feed-wheel, substantially as herein shown and described.

445,853. **VEHICLE-SEAT.** THOMAS J. KERSTETTER, East Brady, Pa. Filed May 17, 1890. Serial No. 352,251. (No model.)



Claim.—1. A seat-back support formed from a rod of metal bent to form the base part, the side rail, the portion connected with the back, and the upright brace arranged to brace the portion which connects with the back-bar, all substantially as and for the purposes set forth.

2. A seat-back support comprising an upright main-spring portion arranged to support the seat-back, and a re-enforcing spring portion arranged to serve as a stop for engagement by the said upright main-spring portion, all substantially as and for the purposes set forth.

3. A seat-back support comprising the base portion, the upright brace extended from the rear end of such base, and the side-rail portion extended from the front end of the base and connected with the upper end of the upright brace, all substantially as and for the purposes set forth.

4. A seat-back support having a metal rod bent to form the horizontal back portion, the vertical portion bent down from the inner end of said horizontal portion, and the standard-like rod bent upward from the lower end of said downwardly-bent part and extended in front of and across the horizontal portion, all substantially as set forth.

5. A seat-back support having its spring portion formed with horizontal and vertical arms or portions connected by a coil, the vertical arm crossing in front of and approximately at right angles to the horizontal arm, substantially as set forth.

6. A seat-back support formed of a rod of spring metal and bent to provide the side arm and the spring portion for connection with the back-bar, the spring portion being arranged at the rear end of the side arm, all substantially as and for the purposes set forth.

7. A seat-back support formed of a spring-metal rod bent to provide the base part, the upright brace at the rear end of such base part, the side arm extended back from the front end of the base and connected with the upper end of the upright brace, and the horizontal and vertical spring portions connected by a coil, all substantially as and for the purposes set forth.

8. The combination, with the seat and the back supports having base portions, of the clamps consisting of main portions secured to the seat and having hook-like portions to receive the base portions of the back supports, and the cap-plates for securing the base portions in said hooks, the cap-plates being lapped over and upon the hooks, all substantially as and for the purposes set forth.

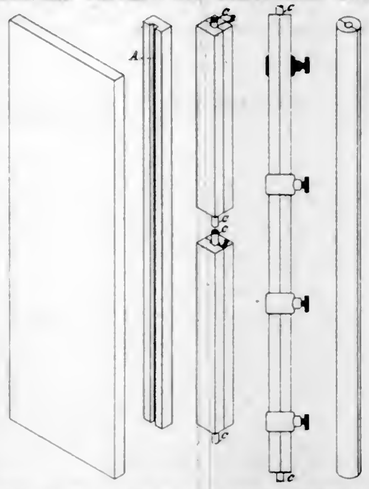
9. The combination of the seat, the back-supports secured to said seat and adjustable back and forth, whereby the back-bar may be set forward or back, and the back-bar connected with and adjustable vertically on its supports, all substantially as and for the purposes set forth.

10. The combination of the seat, the clamps thereon having horizontal eyes and clamp-screws, the back-support having a base portion fitting and adjustable back and forth in said eyes and arranged to be secured by the clamp-screws, and also having vertical spring portions, and the back-bar having openings to receive said spring portions, and clamping-screws for securing the back-bar to the said spring portions, all substantially as and for the purposes set forth.

11. The combination, with the seat and the back-bar, of the back-bar supports formed of spring-metal rods secured to the seat and bent to provide the side arms, and the spring portions connected with the back-bar, all substantially as and for the purposes set forth.

12. The combination, substantially as herein described, of the seat, the clamps, the back-bar supports having base portions held by said clamps, side-arm portions, upright brace portions and horizontal and vertical spring portions connected by a coil, and the back-bar adjustable vertically on the upright spring portions, all substantially as and for the purposes set forth.

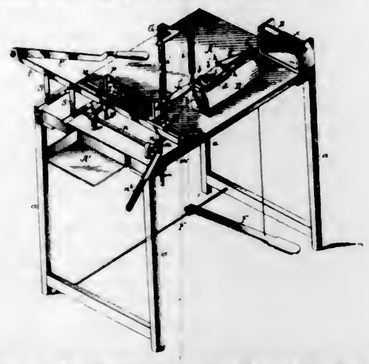
445,854. **METHOD OF MAKING TUBES.** ALVIN LAWRENCE, Lowell, Mass. Filed June 11, 1890. Serial No. 355,044. (No model.)



Claim.—1. The method of making compensation-tubes for clock-pendulums, which consists in forming straight grooves in strips of rolled zinc or other suitable metal, clamping such strips together in pairs with the grooves adjacent to each other, and then applying solder to firmly unite the strips together.

2. The method of making compensation-tubes for clock-pendulums, consisting in taking a rolled sheet of zinc, cutting the same into strips of suitable length and width, forming a straight groove in each strip, clamping the strips together in pairs with the grooved surfaces abutting, thus forming a square tube, placing a suitable mandrel therein, soldering the abutting edges of the strips together, and then finishing the tube to the desired form.

445,855. **BRUSH-DRAWING MACHINE.** WALTER LEWIS, Philadelphia, Pa., assignor of one-half to Edward L. Raborg, Baltimore, Md. Filed May 3, 1890. Serial No. 351,048. (No model.)



Claim.—1. The combination, in a brush-drawing machine, of a block-holder and a hollow needle through which the drawing-wire is passed without confinement, whereby on projecting the needle through an opening in the brush-block a projecting loop of wire will be formed for the reception of the knot of bristles, which loop is not disturbed on the retraction of the needle, substantially as specified.

2. The combination, in a brush-drawing machine, of a block-holder and a hollow needle with a flexible suspending device for said needle, whereby the latter is free to move in all directions in respect to the block, substantially as specified.

3. The combination, in a brush-drawing machine, of a block-holder, a hollow needle, and a spring-support for the latter, substantially as specified.

4. The combination, in a brush-drawing machine, of a block-holder, a hollow needle, a spring-support for the latter, and a retracting-spring therefor, substantially as specified.

5. The combination, in a brush-drawing machine, of a block-holder, a looping-needle, a movable vise for the draw-wire, and a treadle connected to said vise, substantially as specified.

6. The combination, in a brush-drawing machine, of a block-holder, a looping-needle, a movable vise for the draw-wire, a treadle for operating said vise, and a treadle-strap connected to the fixed plate of the vise and having a bearing upon the movable plate of the same, whereby on the depression of the treadle the vise is first closed and then moved bodily on its guides, substantially as specified.

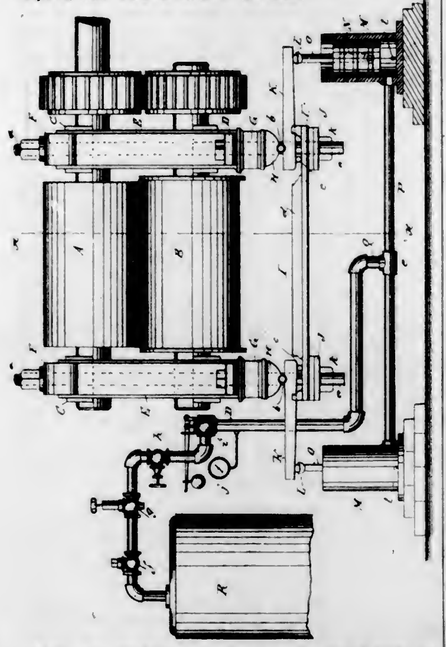
7. The combination, in a brush-drawing machine, of the looping-needle with a brush-block holder consisting of a vertically-adjustable bar and a slide movable transversely thereon and having clamps for the brush-block, substantially as specified.

8. The combination, in a brush-drawing machine, of the looping-needle with a block-carrier having vertical clamps with flanges for embracing the opposite ends of the brush-block, said flanges being adjustable laterally in respect to each other, substantially as specified.

9. The combination, in a brush-drawing machine, of a brush-block holder, means for drawing knots of bristles into the same, a movable carrier for the holder, and a pair of shears mounted beyond the block-holder, but in line with the movement of the same, substantially as specified.

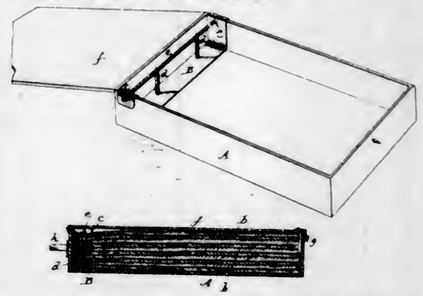
10. The combination of the slide carrying the clamps for the brush-block, a bar on which said slide is mounted, a rock-shaft having arms for acting on said bar to raise and lower the same, depending guided legs on the bar, and a retaining-bolt engaging with the notches in one of said legs to retain the bar in the desired vertical position, substantially as specified.

445,856. **STEAM-PRESSURE REGULATOR FOR CANE-MILLS.** SAMUEL M. MALHIOT and CAMILLE A. LEJEUNE, Albemarle, La. Filed Sept. 23, 1890. Serial No. 365,887. (No model.)



Claim.—The combination, with a lower roll and an upper roll adapted to move vertically in suitable guides and bolts or rods connected with said upper roll and extending downward, as shown, of the plate I, the lever K, fulcrumed on the latter and adapted to act on said rods, the steam cylinders and pistons connected with the longer arms of the levers, a steam-supply pipe, a check-valve, the steam-pressure-regulating valve, and a safety-valve applied to said pipe, as shown and described, to operate as specified.

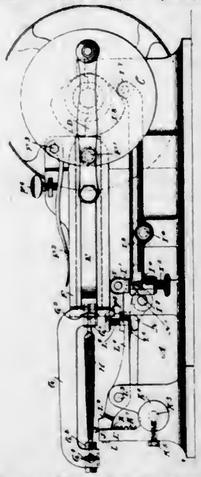
445,857. **SAMPLE-CASE.** HENRY NOER, Chicago, Ill. Filed Sept. 3, 1890. Serial No. 363,814. (No model.)



Claim.—1. In a sample-case, the carrier B, provided with pins *d d*, and having upward-projecting parallel ends *c c* bent over upon themselves at their upper ends to embrace the sides of a box, and having transverse aligned apertures, and the removable rod *e*, extending through the apertures in the ends *b* and their bent-over portions, substantially as set forth.

2. A sample-exhibitor comprising the rectangular box A, having a cover *f*, and the carrier B, resting on the bottom of the box at one end, formed with upward-projecting ends *c c*, bent outward and downward over the upper edges of the sides of the box, the said arms, their bent-over portions, and the sides of the box being provided with aligned apertures, the removable rod crossing the box and resting at its ends in said apertures, and the pins *d d*, substantially as set forth.

445,858. **SAW FILING AND SETTING MACHINE.** WILLIAM H. PARRY, New York, N. Y., assignor to James H. Havens, same place. Filed July 2, 1890. Serial No. 357,492. (No model.)



Claim.—1. In a saw filing and setting machine, the combination, with a pivoted guideway and a slide fitted to slide therein and provided with a file-holder, of a vertically-adjustable friction-roller engaging the said guide, a lever carrying the said friction-roller, and a cam for imparting a swinging motion to said lever, substantially as shown and described.

2. In a saw filing and setting machine, the combination, with a pivoted guideway, of a friction-roller engaging the under side of the said guideway near its free end, a frame in which the said friction-roller is journaled, and a lever mounted to swing and in which the said frame is held vertically adjustable, substantially as shown and described.

3. In a saw filing and setting machine, the combination, with a pivoted guideway, of a friction-roller engaging the under side of the

said guideway near its free end, a frame in which the said friction-roller is journaled, a lever mounted to swing and in which the said frame is held vertically adjustable, and means, substantially as described, for adjusting the said frame in the said lever, as set forth.

4. In a saw filing and setting machine, the combination, with the saw-clamp having a movable and a fixed jaw, of a block carried by the movable jaw and having on its front face a guide-bar to prevent upward movement of the saw, substantially as set forth.

5. In a saw filing and setting machine, the combination, with the saw-clamp having a movable and a fixed jaw, of a block on the movable jaw and a vertically-adjustable guide-bar on the front face of the said block to prevent the saw from moving upward, substantially as set forth.

6. In a saw filing and setting machine, the combination, with the saw-clamp having a movable and a fixed jaw, of a block on the upper end of the movable jaw having a rounded surface at one end, and a feed-lever provided with a pawl to travel on said block and engage the saw-teeth, substantially as set forth.

7. In a saw filing and setting machine, the combination, with the saw-clamp having a fixed and a movable jaw, of a vertically-adjustable seat on the fixed jaw to support the saw, a block carried by the movable jaw and rounded or inclined at one end, a vertically-adjustable guide-bar on the front face of the block, and a feed-lever provided with a pawl traveling on the block to engage the saw-teeth, substantially as set forth.

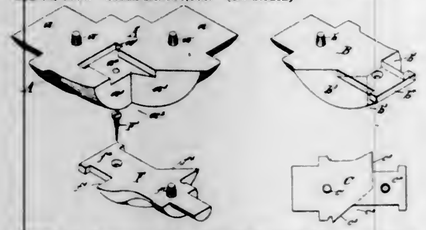
8. In a saw filing and setting machine, the combination, with the saw-clamp having a fixed and a movable jaw, and a vertically-adjustable saw seat or support on the fixed jaw, of a longitudinally-adjustable block on the upper end of the movable jaw, a vertically-adjustable guide-bar on the front face of the said block to prevent upward movement of the saw, and a feed-lever having a pawl traveling along the upper edge of the said block to engage the saw-teeth, substantially as set forth.

9. The combination, with the saw-clamp, of the feed-lever P', provided with a pawl at its front end, a slot P^4 in its rear end, a vertical pivot-stud between its ends, provided with a nut on its lower end, a transverse screw-rod engaging said nut to adjust the lever, the bracket P^5, having a flange to enter slot P^4, a pin P^3, and a cam engaging the said pin, substantially as set forth.

10. In a saw filing and setting machine, the combination, with a feed-lever carrying a pawl and a cam for impartiug a swinging motion to the said lever, of an adjustable stud forming the fulcrum for the said lever and a screw-rod mounted to turn and engaging a nut on the said stud, substantially as shown and described.

11. In a saw-filing machine, a clamping device comprising a fixed jaw, a pivoted jaw provided with a spring on its lower face at its rear end, a pivoted arm N^3, having at one end a cam adapted to engage the said spring to press the said pivoted jaw toward the fixed jaw, a rotary cam, and a spring pressing the rear end of said arm N^3 upward against said rotary cam, substantially as shown and described.

445,859. **PATTERN.** DAVID S. PAUL, Philadelphia, Pa. Filed Oct. 14, 1890. Serial No. 368,098. (No model.)

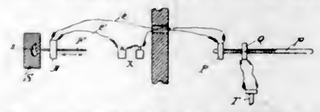


Claim.—1. In patterns for casting specials, the combination of a main section having an angular mortise and a horizontal mortise in the surface adjoining the augular mortise and intersecting the angular mortise, with a removable section provided with an angular abutment fitting into the angular mortise, and a tongue engaging the horizontal mortise, substantially as described.

2. In patterns for casting specials, the combination of a main section having an angular mortise and a horizontal dovetailed or shouldered mortise intersecting the angular mortise, with an interchangeable section for forming the various sizes of outlets, each provided with an angular abutment fitting into the angular mortise, and a dovetailed or shouldered tongue for engaging the horizontal mortise, substantially as shown and described.

3. In patterns for casting specials, the combination of a main section having an angular mortise or rabbet and a horizontal dovetailed or shouldered mortise intersecting the angular mortise, with an interchangeable section for forming the various sizes of outlets, each provided with an angular abutment fitting into the angular mortise, a dovetailed or shouldered tongue for engaging the dovetailed or shouldered mortise, and a single screw for securing the sections and passing through the dovetailed tongue into the permanent section, substantially as set forth.

445,860. **APPARATUS FOR TESTING METAL PIECES.** LOUIS DE PLACE, Angers, France. Filed Nov. 11, 1890. Serial No. 371,085. (No model.) Patented in France Aug. 27, 1888, No. 192,619.



Claim.—1. An instrument for testing metal objects, comprising, in combination, a microphone or telephone-transmitter in an electric circuit, including a coil or helix, a striker in close proximity to said microphone, a secondary coil or helix, and a telephone-receiver in circuit therewith, substantially as described.

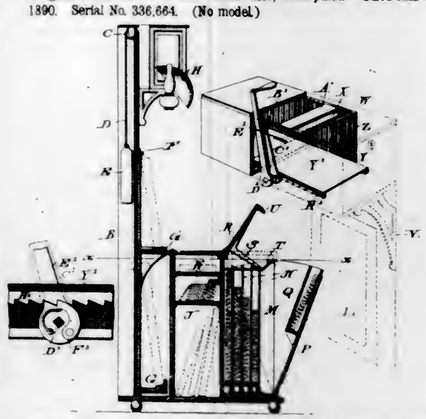
2. The combination of the microphone, the striker, a primary coil in circuit with the microphone, a secondary coil adjustable with reference to the primary coil, and a receiver in circuit with the secondary coil, substantially as described.

3. The combination, with the receiving-telephone and induction-coil, of a microphone in circuit with the primary of said coil, a striker arranged in close proximity to the carbon elements of said microphone, and means, as indicated, for actuating said striker, substantially as described.

4. The combination of the microphone, the striker, a primary helix in circuit with the microphone and mounted on a graduated bar or scale, a secondary helix adjustable on said bar, and a receiver in circuit with the secondary helix, substantially as described.

5. A portable testing-instrument comprising a box or case having several compartments, a microphone and striker, batteries in circuit with the microphone, a receiver or receivers, a scale or graduated bar with a fixed and a movable helix in circuit, respectively, with the microphone and receiver or receivers, and switches and circuit-connections, all arranged in the compartments of said box, substantially as described.

445,861. **CABINET FOR PHOTOGRAPHIC-PLATE HOLDERS, NEGATIVES, AND STOCK.** GEORGE H. RICHARDS, Philadelphia, Pa., assignor of one-half to William Nuneviller, same place. Filed Jan. 11, 1890. Serial No. 336,664. (No model.)



Claim.—1. A photographic cabinet consisting of a cabinet proper at a distance from a rear wall, a vertically-movable shelf supported between said cabinet and wall and adapted to close the opening at the top thereof, and a weighted cord connected with the support of said shelf, substantially as described.

2. A photographic cabinet having a closet with shelves therein, with doors at opposite sides thereof, and a portfolio in connection with said closet, substantially as described.

3. A photographic cabinet having a closet with shelves therein, doors at opposite sides thereof, and a portfolio in connection with said closet having movable leaves and front and top movable covers, substantially as described.

4. A photographic cabinet having a portfolio connected therewith, and a cover which is attached to the outer leaf, whereby the portfolio may be opened and closed by the operation of the cover, substantially as described.

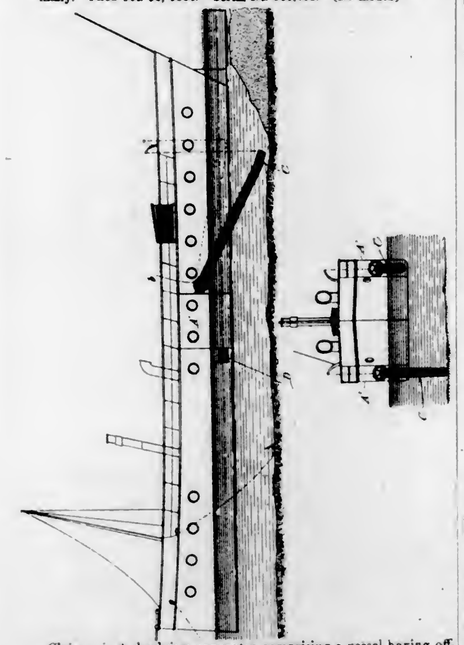
5. A photographic cabinet having a casing in which is mounted a movable bottom and side attached to a rack, and a device for operating said rack, substantially as described.

6. In a photographic cabinet, an inclosing case, a movable bottom and side in said case, the said side being grooved, a rack attached to the said bottom, and a device for operating said rack, substantially as described.

7. In a photographic cabinet, an inclosing case having a top opening therein, and internal movable frame carrying a lid, which is shifted to open and close said opening simultaneously with the adjustment of the said internal frame, substantially as described.

8. A casing having an opening in its top, a lid therefor, and an interior movable rack, in combination with a lever connected with said lid and rack, whereby they may be operated to uncover said opening and advance said rack, substantially as described.

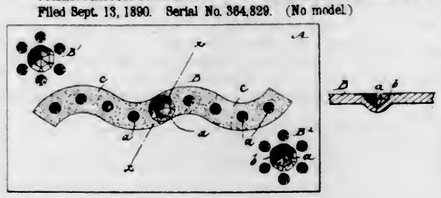
445,862. **DREDGER.** HUGO ROESSLER, Erbach-on-the-Rhine, Germany. Filed Oct. 30, 1890. Serial No. 369,795. (No model.)



Claim.—1. A dredging apparatus comprising a vessel having offsets on opposite sides thereof, pumps located in opposite sides of the vessel and provided with suction and delivery pipes extending through the offsets, and pipes pivotally coupled to the delivery-pipes, substantially as described.

2. A dredging apparatus comprising a vessel having offsets upon opposite sides, centrifugal pumps arranged near the offsets and provided with suction and delivery pipes extending through opposite ends of the offsets, and prolonged pipes having a ball-and-socket connection with the delivery-pipes, substantially as described.

445,863. **DIE FOR ORNAMENTING PAPER, LEATHER, AND OTHER PLASTIC MATERIALS.** WILLIAM SCHUMACHER, Brooklyn, N. Y. Filed Sept. 13, 1890. Serial No. 364,829. (No model.)



Claim.—1. A die for ornamenting card-board, leather, or similar material, formed or provided with polished projections of glass, substantially as shown and described.

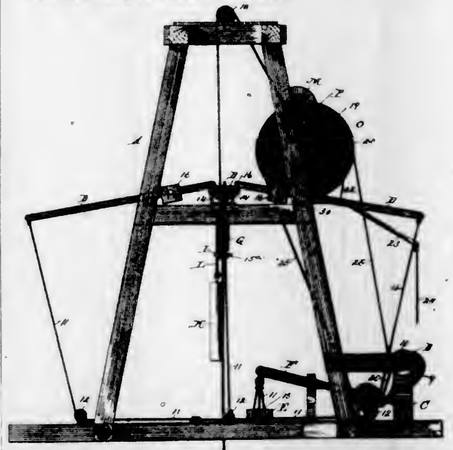
2. A die composed of a suitable body formed with apertures *f* and glass projections *d*, fitted in said apertures, substantially as described.

445,864. **SCREW-PROPELLER.** BENJAMIN F. SPARR and MILLARD F. SPARR, New York, N. Y. Filed July 30, 1890. Serial No. 360,349. (No model.)



Claim.—A screw-propeller consisting of a shaft having a series of spirally-arranged and tapering blades and provided with auxiliary blades at its rear end and in the same plane with the last blade thereof, substantially as described, whereby provision is made for causing the water passing from the screw to distribute its force evenly against the back-water, as set forth.

445,865. **DRILLING-MACHINE.** THOMAS STANLEY, Pueblo, Colo., assignor to the Stanley Drill Power Company, same place. Filed Oct. 22, 1890. Serial No. 368,983. (No model.)



Claim.—1. In an apparatus substantially as described, the combination, with the drill devices, the operating mechanism, and the plurality of levers arranged approximately opposite each other and to converge toward their inner ends, of connections between the inner ends of said levers and the drilling devices, the ropes extended from the outer ends of the said levers and the operating mechanism, and independent guides for the said ropes, whereby they are all properly directed to a common operating mechanism, all substantially as and for the purposes set forth.

2. In an apparatus substantially as described, the combination of the framing, the operating mechanism, the drill-rope, the levers arranged to converge toward their inner ends, the connecting-hanger G, supported on the inner ends of said levers and provided with a ring or opening through which the drill-rope is looped and held, the drill devices connected with the said rope below such hanger, and the ropes connecting the outer ends of the said levers with the operating mechanism, all substantially as and for the purposes set forth.

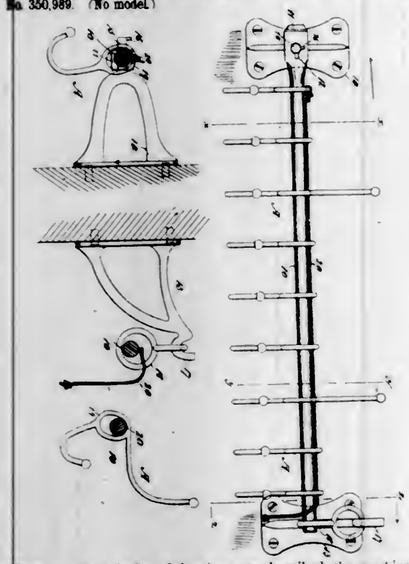
3. In an apparatus substantially as described, the combination of the derrick or support, the drill device, the series of levers having their inner ends arranged to converge and connected at such inner ends with the drill devices, the lever F, the ropes extended between said lever and the outer ends of the converging levers, and guides for said ropes, all substantially as and for the purposes set forth.

4. In an apparatus substantially as described, the combination of the drive-gear wheel, the sand-pump reel having its shaft provided with a pinion movable into and out of mesh with the said gear-wheel, the drill-rope reel, the clutch mechanism by which the drill-rope reel may be keyed to the drive-gear wheel, and a connection between said pinion and clutch mechanism whereby the movement of one will positively effect the movement of the other, all substantially as set forth.

5. The combination, in an apparatus substantially as described, of the drive-gear wheel, the sand-reel having its shaft provided with a pinion movable into and out of mesh with the drive-gear wheel, the drive-rope reel, the clutch having a section fixed with respect to the drive-gear wheel and its other section fixed to the drill-rope reel, and the lever pivoted between its ends and connected at one end with the sand-reel shaft and at its other end with the drill-rope reel, all arranged to operate substantially as described, and for the purposes set forth.

6. In an apparatus substantially as described, the combination of the derrick or support, the drill-rope, the reel and guides for such drill-rope, the plurality of approximately oppositely-arranged levers converging toward their inner ends, a connection-piece suspended on the inner ends of said levers, and devices for securing the drill-rope to the said connection-piece, the drill-rope being extended beyond such connection-piece and supporting the drill devices, all substantially as and for the purposes set forth.

445,866. CLOTHES-HANGER. EMIL SUNDBERG, Eureka, Cal., assignor to Sundberg Brothers, same place. Filed May 8, 1890. Serial No. 350,989. (No model.)



Claim.—1. In a device of the character described, the combination, with supporting-brackets, of a bar which is pivoted at one end and detachable at the other, and a series of hooks adapted to slide on said bar, and a rope for moving them, as specified.

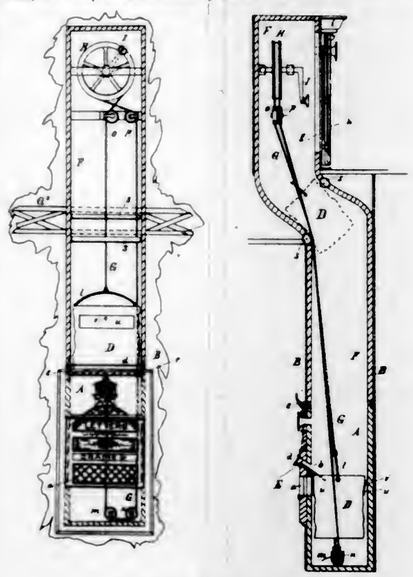
2. In a device of the character described, the combination, with brackets, of a body-bar pivoted upon one bracket, a link attached to the other bracket and supporting the opposite end of the said bar, a series of hooks provided with eyes held to slide upon the body-bar, and a rope attached to the eye of the hook nearest the pivotal point of the bar and passed through the eyes of all the hooks, as and for the purpose specified.

445,867. LETTER-BOX. CHARLES H. VAUSE, New York, N. Y. Filed Feb. 5, 1890. Serial No. 339,362. (No model.)

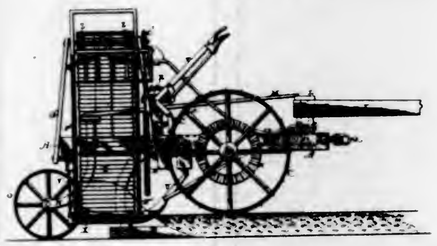
Claim.—1. The combination of a conduit curved through a part of its length, a flexible receptacle, a cord connected to the top and bottom of said receptacle, two pairs of guide-pulleys, one of each pair being located near the axis of the conduit and the other near the side, and two rollers extending across the conduit, one being located at the lower part of the under side of the curve in the conduit and in the path of the cord and receptacle and the other at the upper part of the top of the curve of the conduit in the path of the receptacle, substantially as set forth.

2. A conduit having a part located in or behind a wall and below a partition on the floor above and a part located in or behind said partition, these two parts being connected by a curve situated between the ceiling and floor, and said conduit having doors on opposite sides near its ends, in combination with a receptacle having openings on opposite sides and doors or flaps to close the same and means for raising and lowering the receptacle, substantially as set forth.

3. A conduit having a part located in or behind a wall and below a partition on the floor above and a part located in or behind said partition, these two parts being connected by a curve situated between the ceiling and floor, and said conduit having doors on opposite sides near its ends, in combination with a receptacle and means for raising and lowering the receptacle, substantially as set forth.



445,868. POTATO-DIGGER. CHESTER WRIGHT, Fairfield, Nebr. Filed Mar. 31, 1890. Serial No. 346,063. (No model.)



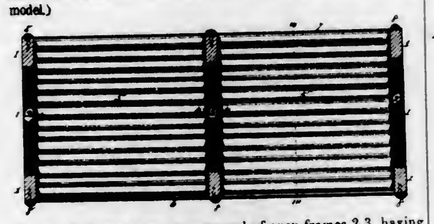
Claim.—1. The combination of the frame, the pivoted tongue, the partially-revolving shaft secured to the tongue and provided with a wheel, the rods or chains M, which cross each other, and the guiding-wheel secured to the rear of the frame, the stem of which wheel is also provided with a wheel and to which the rear ends of the chains or rods are connected, substantially as shown.

2. In a potato-digger, the combination of the main frame, a plow supported thereby, an elevator-runner supported by the frame at one side of the plow, an elevator extending at right angles to the main frame and having its lower end secured to the runner, a support upon the main frame, and a supporting-rod having one end connected to the support and its opposite end to the outer end of the elevator, substantially as shown.

3. In a potato-digger, the combination of the main frame, a plow supported thereby, an elevator-runner supported by the frame at one side of the plow, a shaft journaled in the said runner, the elevator-frame having its inner end secured to the said shaft, a shaft journaled in the outer end of the elevator, the elevator-chain which passes around the said shafts, a support for the outer end of the said elevator-frame, and a mechanism for operating the said elevator-chain, substantially as described.

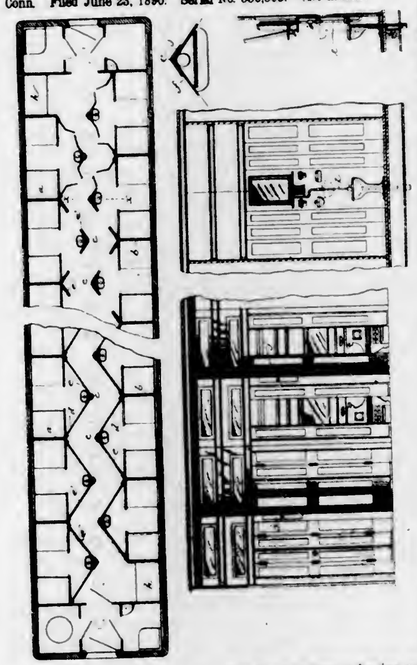
4. An elevator-chain composed of wires which have their ends connected, some of the wires having their centers bent upward, so as to form transverse steps which catch the potatoes, substantially as described.

445,869. PACKING-CASE. HARRY C. YOCUM and MARTIN V. KAGER, St. Louis, Mo. Filed Apr. 23, 1890. Serial No. 349,173. (No model.)



Claim.—A shipping-case constructed of open frames 2 3, having corrugated pieces of veneer 4 applied to them to close the openings, corrugated pieces of veneer 5 6 7, applied to the edges of the frames forming the sides of the case, the grooves of the pieces of veneer on the side next the frames forming air-inlets to the inside of the case, and binding-hoops 8, securing the pieces 5 6 to the frames, all substantially as and for the purpose set forth.

445,870. SLEEPING-CAR. ELBRIDGE G. ALLEN, New Haven, Conn. Filed June 23, 1890. Serial No. 356,395. (No model.)



Claim.—1. In a sleeping-car, a closed compartment having end walls and an inner side wall formed by partitions extending from the end walls at an angle to the line of the car, substantially as described.

2. In a sleeping-car, a closed compartment having end walls and an inner side wall formed by partitions extending from the end walls at an angle to the line of the car, and a lavatory arranged within the compartment in the angle formed at the meeting-point of the partitions, substantially as described.

3. In a sleeping-car, a closed compartment having permanent end walls and an inner side wall formed by partitions extending at an angle from the end walls, with door-openings formed centrally of each partition, substantially as described.

4. In a sleeping-car, a series of closed compartments on one side of the car, with a series of like compartments on the opposite side, the compartments upon one side being diagonally opposite the compartments on the other side and a zigzag passage between, substantially as described.

5. In a sleeping-car, a closed compartment having end walls and an inner side wall formed by partitions extending at an angle to the line of the car, a discharge-hopper arranged in the angle formed by the partitions, a vertically-adjustable basin adapted to fit within the hopper, and a seat to cover the same, substantially as described.

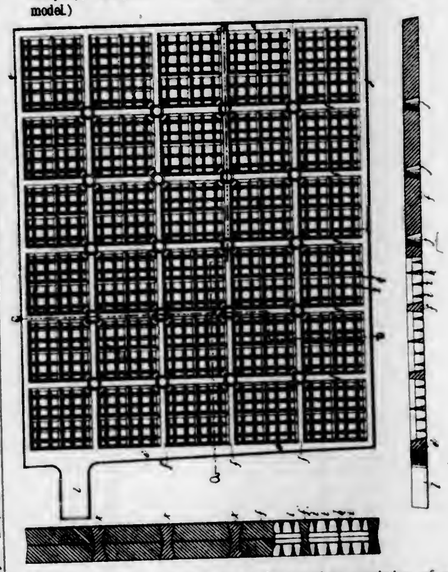
445,871. CULTIVATOR ATTACHMENT. EDWARD S. BAILEY and JAMES M. COONS, Orrick, Mo. Filed Sept. 26, 1890. Serial No. 366,275. (No model.)



Claim.—1. In a cultivator attachment, the combination, with a beam and rigid standard, of a shoe pivotally attached to the lower end of said standard, and a leaf-spring the central portion of which is straight, the end portions bent at obtuse angles to the central portion, the upper end being secured to the under side of the beam, the lower end bearing upon the upper end of the shoe, the edges of the lower portion being bent rearwardly to partially embrace the front side of the shoe, all arranged and adapted to operate substantially as shown and described.

2. In a cultivator attachment, the combination, with a beam and rigid standard, of a shoe pivotally attached to the lower end of said standard, a leaf-spring having a straight central portion, and the end portions bent at obtuse angles to the central portion, the upper end portion being secured to the under side of the beam, the edges of said end portion being bent up around the sides of the beam, the lower end portion bearing upon the upper end of the shoe, the edges of said lower end portion being bent rearwardly to partially embrace the shoe, and an additional leaf-spring secured to the beam beneath the upper end portion and extending along the upper and central portions as far as the lower end portion, substantially as shown and described.

445,872. ELECTRODE FOR SECONDARY BATTERIES. SIDNEY H. BARRETT, Springfield, Mass., assignor to the Barrett Storage Battery Company, same place. Filed Nov. 1, 1890. Serial No. 370,055. (No model.)



Claim.—1. A secondary-battery element-plate consisting of a frame provided with a series of dividing ribs or partitions which are flush with the face of the plate, which divide the frame into a series of openings, and a series of partitions or ribs flush with the outer face of the plate and below the inner face of the plate, which subdivide the above-mentioned openings into a series of lesser openings, substantially as shown.

2. The combination of an outer frame *e*, a series of dividing ribs or partitions *f f'*, a series of intermediate partitions *h*, and a series of intermediate partitions *i*, the latter being of less height than the former, substantially as shown.

3. The combination of a frame *e*, partitions *f f'*, intermediate subdividing-partitions, a series of taper openings *j*, and uniting-rivets *k*, cast therein, substantially as shown.

4. A secondary-battery plate having its portion to which the binding-post is attached tapering, being widest at the post and tapering to the edge of the plate, substantially as shown.

5. The combination of an outer frame *e*, ribs *f* and *f'*, intermediate taper ribs *h*, and subdividing taper ribs *i*, the inner edges of the latter being below the plane of the inner face of the plate and the two former being flush with the face of the plate on both sides, substantially as shown.

445,873. GRATE-SUPPORT. CHARLES L. BEERS, Scranton, Pa. Filed June 7, 1890. Serial No. 354,865. (No model.)

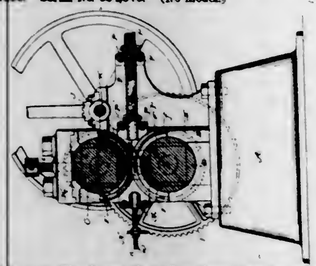


Claim.—1. A grate-support comprising the plate C, formed with apertures *c c*, segmental bosses L, arranged to the outer vertical edges of said apertures *c c*, said bosses formed with offsets *l l*, the hubs D, formed with heads D^3, the plate M, formed with bifurcated ends *m m*, adapted to fit under said heads D^3 and seat in said offsets *l*, and the spring-plate for holding said plate M in position, substantially as shown and described.

2. A grate-support comprising the frame C, formed with the apertures *c' c'*, semicircular bosses F, cast integral with said frame C about the lower half of said apertures, the hubs D', journaled therein, the cap-plate H, formed with semicircular cap-pieces *h*, adapted to fit over said bosses F, and means for holding said plate H in position, substantially as shown and described.

3. An improved grate-support comprising a frame C, formed with apertures *c'*, cast with outwardly-extending semicircular bosses F, the apertured lug C^3, the hubs D', having annular grooves *d* journaled in said apertures, bosses F, the plate H, formed with cap-pieces *h h*, adapted to fit over the bosses and formed with internal ribs h^3, adapted to fit the annular grooves in said hubs D', an aperture h^3, adapted to fit over said lug C^3, and the wedge-key *x* for holding said plate in locked position, substantially as shown and described.

445,874. MACHINE FOR DIE-ROLLING METALS. WILLIAM P. BETTENDORF and JOSEPH W. BETTENDORF, Davenport, Iowa. Filed June 7, 1890. Serial No. 354,576. (No model.)



Claim.—1. The frame, the rollers therein, and gearing for driving the rolls constantly in one direction, in combination with the segmental dies removably secured to the rolls.

2. The co-operating roller-dies, one channeled to receive the other, substantially as described, whereby they are caused to register and prevented from getting out of line.

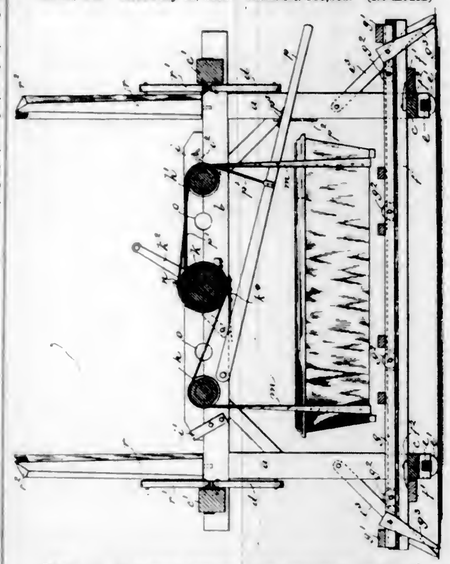
3. In combination with the roller-dies, the front gage-plate to limit the insertion of the blanks between the rolls.

4. In combination with the roller-dies, the front guide-tube and the adjustable gage-plate.

5. In combination with the roller-dies, the rear guide-tube.

6. In combination with the roller-dies, the rear guide-tube movably mounted in supports and yielding devices to hold said tube in position.

445,875. BURIAL APPARATUS. NICHOLAS BRICKELL, Poplar Grove, Ark. Filed May 10, 1890. Serial No. 351,252. (No model.)



Claim.—1. In a burial apparatus, the combination, with a frame adapted to be placed over a grave and provided with parallel tracks near the ground-line, of a separate and independent carriage provided with pivoted handles at its ends and wheels to run on said tracks and forming a bier upon which the coffin may be carried to the grave, the said handles being constructed to be swung down to engage the ground and form stops, substantially as set forth.

2. A burial apparatus comprising a rectangular knockdown frame having lower end cross-pieces *c c*, the parallel tracks or ways *f f*, having connecting cross-pieces *f' f'*, turn-buttons on the pieces *c c* to overlap the cross-pieces *f'* and secure the tracks against displacement, and a carriage to travel on said tracks and forming a bier upon which the coffin may be conveyed to the grave, substantially as set forth.

3. A burial apparatus comprising a knockdown frame having corner-standards provided with square notches in their lower ends, a coffin-lowering mechanism on the upper part of said frame, the square axles to rest in said notches and having their outer projecting ends rounded to receive the removable wheels, and spring bracket-plates e^3, secured at one end to said standards and having apertures in their opposite ends receiving the rounded extremities of said axles to retain the wheels in place and permit of their ready removal, substantially as set forth.

4. A burial apparatus comprising a knockdown frame, the upper edges of the side bars of which are provided with semicircular recesses, the strap *i'*, the bars *i*, having their lower edges provided with semicircular recesses registering with those of the side bars to form the drum and roller-bearings O, said bars at one end projecting into said loops, hooks and eyes securing their opposite ends, the lowering-drum having straps or bands, and the rollers *h h* at opposite sides of the drum, substantially as set forth.

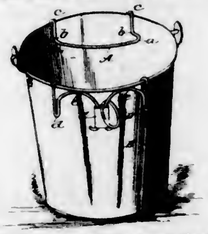
5. In a burial apparatus, a frame having mortises or sockets on its upper side, a lowering mechanism on said frame, and a knockdown canopy-frame consisting in the four standards *r*, having dowels or tenons on their lower ends to enter said mortises or sockets and notches r^3 in their upper ends, sectional hinged inclined rafter-strips r^4, extending loosely through said notches and loosely connected at the apex of the canopy-frame, the prop-bars *t*, pivoted at their upper ends to the outer ends of the end rafter-strips, the horizontal side and end sectional hinged border-rails *u u'*, detachably connected to the outer extremities of the said rafter-strips r^4, and the prop-bars *v'*, pivoted to the ends of the intermediate rafter-strips, the said border-rails having securing devices for a canopy top to cover, substantially as set forth.

445,876. BRUSH-SCRAPER ATTACHMENT FOR PAINT-PAILS. DAVID F. BROWN, Omaha, Nebr., assignor of one-half to Harry F. Brown, same place. Filed Sept. 27, 1890. Serial No. 366,420. (No model.)

Claim.—1. The brush-scraper adapted for attachment to a bucket, the same having an inner scraper portion proper, and the exterior

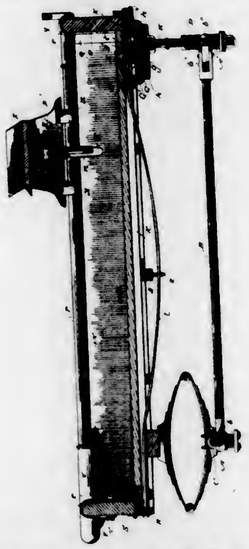
clamping portion having spring-bows *e*, which extend inward and upward to adapt them to engage the rim of a bucket, as shown and described.

2. As an improved article of manufacture, the herein-described guard and brush-scraper, consisting of the inner guard and scraper portion, the hook portion at the ends of same, the arched or bow portions adapted to rest upon the exterior of the vessel, and the sleeve uniting the said bow portions, substantially as shown and described.



3. As an improved article of manufacture, the herein-described guard and brush-scraper, consisting of the central portion A, upon which the brush is scraped, the hook portions *c*, the arched portions *e*, sleeve C, and ring D, all arranged and adapted to operate substantially as shown and described.

445,877. WAGON. PERRY BROWN, Louisville, Ky., and JOSEPH W. BROWN, Memphis, Tenn. Filed Apr. 10, 1890. Serial No. 347,418. (No model.)



Claim.—1. A wagon-body having iron sills K, connected with angle-pieces L and having an upturned flange *k*, forming seats for the sides, substantially as described.

2. A wagon-body having the top of its sides sheathed with irons P, extending down below the top of said sides, its bottom resting on irons K, its sides N set between said irons P and K, and bolts passing through said irons and sides and binding them together, substantially as described.

3. A wagon-body having the corner-irons Q, with ears *q*, substantially as described.

4. The combination, with a wagon-body having its sides sheathed on top with iron, of a seat provided with brackets X', having feet *x*, clasping over the sheathing-iron, substantially as described.

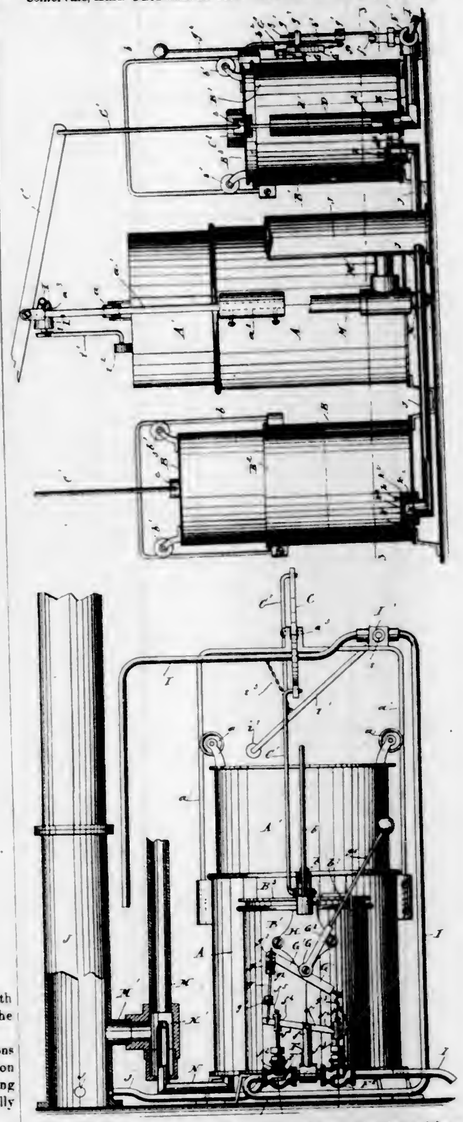
5. The combination, with a wagon-body having its sides sheathed on top with iron and notches in said sides, of a seat provided with a spring-actuated dog adapted to slide under the sheathing-iron and catch in the notches in the sides, substantially as described.

6. The combination of a wagon-body and the tail-gate thereof with a casting U and pivoted dog V, substantially as described.

7. The combination of a wagon-body and the tail-gate thereof with the casting U, dog V, and spring W, substantially as described.

8. The combination of a wagon-body and the tail-gate thereof, provided with the corner-iron T, with the casting U and dog V, substantially as described.

445,878. VENTILATING APPARATUS. GEORGE H. BURROWS, Somerville, Mass. Filed June 26, 1890. Serial No. 356,819. (No model.)



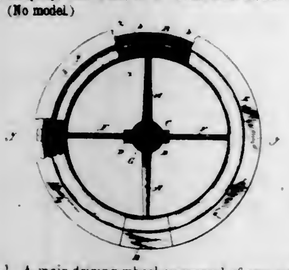
Claim.—1. In a ventilating apparatus, the combination, with an air-reservoir and with suitable pumps adapted to fill the same with air, of an air-supply pipe connected with the pumps, an air-delivery pipe, a smaller pipe connected with the air-reservoir and entering the delivery-pipe, and a pipe connecting with the air-supply pipe and entering the delivery-pipe adjacent to the end of said smaller pipe, substantially as described.

2. In a ventilating apparatus, the combination, with the pump-cylinder B', having a vertical pipe D centrally located therein, and the bell B^3, adapted to move in the bell B' and having connection with a similar cylinder, as described, of the pipe E, opening through the cylinder B and into the pipe D, the cross-pipe F, connecting with said pipe E, the valve F', attached to one end of the cross-pipe and to a water-

supply pipe, the valve F^3, attached to the opposite end of the cross-pipe and to a waste-pipe, the walking-beam f', mounted on the support f, as shown, the vertically-movable valve-pistons f^3, adapted to close the valve-seats and adjustably connected with the walking-beam, the three-armed sleeve G, pivoted on the side of cylinder B', the rod g, connecting one arm of the sleeve with the walking-beam f', said rod having collars g' thereon, the angle-plate g^3, connecting the rod with an arm G', means, as chain g^3 and bent arm b^3, for connecting the opposite arm G' with the bell B^4, and the weighted rod g^4, attached to the sleeve-arm G^3 and adapted to regulate the movement of the sleeve substantially as described.

3. A ventilating apparatus comprising an air-reservoir having a bell, said reservoir being provided with an upwardly-extending U-shaped frame connected by guide-pulleys with the said bell, pump-cylinders located on opposite sides of the reservoir and having vertically-movable bells mounted therein, a walking-beam pivoted on the reservoir-frame and connected with the movable bells of the air-pumps, an air-supply pipe connecting with the air-pump, an air-delivery pipe opening from the reservoir and from the air-supply pipe, a vertically-movable piston mounted in a pipe in one air-pump and connected with the movable bell of the pump, a water-pipe opening into the piston-pipe, inlet and outlet valves connected with said pipe, a lever mechanism for opening and closing the valves by the movement of the pump-bells, a water-supply pipe connected with the inlet-valve, a valve located in the water-supply pipe, and a lever connected with the valve-stem of the water-supply-pipe valve and extending above the bell of the air-reservoir, so that the movement of said bell will regulate the water-supply, substantially as described.

445,879. DRIVING-WHEEL FOR DENTAL ENGINES. JOHN S. CAMPBELL, London, England, assignor to the Carroll Aluminum Manufacturing Company, New York, N. Y. Filed June 13, 1890. Serial No. 355,315. (No model.)



Claim.—1. A main driving-wheel composed of two main rim-segments E E, an intermediate piece composed of a hub C, spokes A, with T ends B, and the locking and strengthening spokes F F, substantially as hereinbefore set forth.

2. A driving-wheel having its rim divided into the large or main segments E E and the two smaller segments B B, the latter formed integral with a central hub C and spokes A A, the hub C and segments E E adapted to receive and to be connected together by locking-spokes F F, substantially as described.

3. A driving-wheel composed of segmental rim-pieces E E, the hub C, spokes A, and T ends B, all united together by locking-spokes F and dowels b, substantially as shown and described.

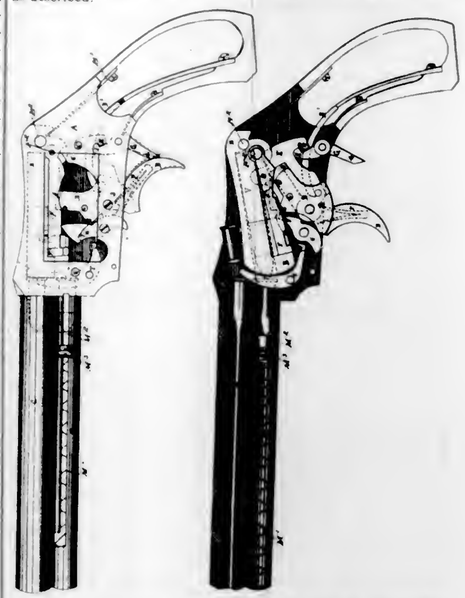
445,880. BREECH-LOADING GUN. JULIEN WARNANT-CRESON, Hodgne-Chératte, Belgium. Filed Apr. 1, 1890. Serial No. 346,150. (No model.) Patented in Belgium Oct. 4, 1889, No. 87,986; in France Feb. 13, 1890, No. 205,765; in England Feb. 17, 1890, No. 2,543; in Germany Feb. 20, 1890, No. 53,995; in Italy Feb. 24, 1890, No. 27,029/154, and in Austria-Hungary Feb. 24, 1890, No. 9,624 and No. 26,712.

Claim.—1. In a magazine fire-arm, a movable breech-block having a cartridge-receiving aperture, a bolt sliding in said aperture to throw the cartridge into the barrel and form an abutment therefor, a locking-bar pivoted to the breech-block to engage said bolt when it is thrown and lock it against retraction, and a firing-pin carried by the said bolt, substantially as described.

2. In a fire-arm, the combination, with a trigger having a spring for returning it to its normal position, of a firing-hammer in the path of and brought to the full-cock by the rearward movement of the upper part of the trigger and released by the rearward movement of the lower part of the trigger, substantially as described.

3. The combination, with a trigger pivoted between its ends and having a spring for returning it to its normal position, of a firing-hammer in the rearward path of the upper end of the trigger and brought to the full-cock thereby, a spring carried by the trigger, engaging the hammer to throw it, and a sear behind the trigger and in the rearward path of its lower end and holding the hammer at full-cock, substantially as described.

4. The combination, in a magazine fire-arm provided with a vertically-movable breech-block having a cartridge-receiving aperture and carrying the firing-pin, of a trigger pivoted between its ends, with its upper end engaging the lower side of the breech-block to throw it upward, a spring for returning the trigger to its normal position, a sear behind the trigger in the path thereof, a firing-hammer in the rearward path of the upper part of the trigger and thrown thereby into engagement with its sear, and a hammer-operating spring carried by the trigger and compressed when the trigger is pulled, substantially as described.



5. The combination, with a magazine-gun provided with an ejecting mechanism, and a swinging breech-block apertured for the cartridge and carrying the firing-pin, of a hammer, a trigger having a spring for returning it to its normal position and simultaneously throwing the hammer rearward to the full-cock, a sear in rear of the trigger and holding the hammer cocked till struck by the trigger, a hammer-operating spring carried by the trigger and engaging the hammer, and a projection on the trigger to operate the ejecting mechanism, substantially as described.

6. In a fire-arm, the combination, with a pivoted trigger and a firing-hammer mounted on the same pivot, of a spring for returning the trigger when released to its normal position, the said hammer projecting into the rearward path of the upper part of the trigger and brought to the full-cock thereby, a sear engaging the hammer when retracted and projecting into the rearward path of the lower part of the trigger, and a hammer-operating spring mounted on the trigger and compressed to throw the hammer by pulling on the trigger substantially as set forth.

7. In a magazine fire-arm, the combination, with a spring-pressed pivoted trigger and a spring held on the same, of a pivoted breech-block adapted to be moved upward by the said trigger, a hammer fulcrumed loosely on the pivot of the said trigger and adapted to pass into the said breech-block by the action of the said spring on the trigger, and a firing-pin held in the said breech-block and adapted to be engaged by the said hammer, substantially as shown and described.

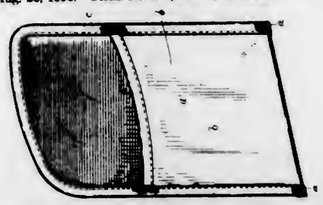
8. In a magazine fire-arm, the combination, with a swinging breech-block provided with a longitudinally-sliding bolt to seat the cartridge and form an abutment therefor, of a trigger pivoted between its ends and engaging the lower side of the breech-block with its upper end to raise it when said end is thrown forward, and a lever pivoted between its ends in front of said trigger and engaging the said bolt with its upper end, said trigger when pulled engaging the upper half of the lever and throwing it and the return movement of the lower half of the trigger striking the lower part of the lever to retract the bolt, substantially as set forth.

9. In a fire-arm, the combination, with the pivoted ejector, of a spring-pressed lever or hammer J, into the path of which the said ejector projects, a detent K for holding said hammer retracted or set, and a trigger for releasing the said detent, substantially as set forth.

10. In a fire-arm, the combination, with the main operating-trigger pivoted between its ends and having a spring for throwing it into normal position, of an ejector pivoted in front of the upper end of the trigger, a pivoted lever or hammer, the front end of which is adapted to operate the said ejector, a pivoted detent engaging the rear end of said lever or hammer to hold it set, a spring bearing at its ends on the said hammer and its detent, and a projection on the upper part of the main trigger to set the said hammer when the trigger is pulled and release the detent when the trigger is returned by the spring to its normal position, substantially as set forth.

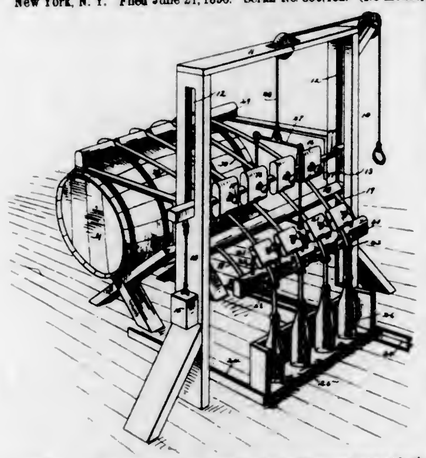
11. The combination, in a magazine-gun having a vertically-swinging longitudinally-apertured breech-block provided with a sliding cartridge-projecting bolt forming an abutment and provided with a firing-pin, of an ejecting mechanism, a trigger having a projection to operate said ejecting mechanism, a spring returning the trigger to its normal position, a lever in front of the trigger to throw the said bolt when the trigger raises the breech-block and retract the bolt when the trigger is released and the block descends, and a hammer brought to the full-cock by the trigger when the latter is released and released by pulling the trigger, substantially as described.

445,881. TOBACCO BAG OR POUCH. WILLIAM J. CUMBIE, Henrico County, assignor of three-fifths to M. Millhiser & Co., Richmond, Va. Filed Aug. 28, 1890. Serial No. 363,243. (No model.)



Claim.—As an improved article of manufacture, a tobacco-bag consisting of a single piece of fabric folded over upon itself at one end to form a pocket, a braid or binding embracing the vertical edges of the main and folded portions of the bag and stitched thereto, this binding terminating at the lower corners of the bag, and double-pointed metallic plates bent transversely and permanently clamped over the lower raw ends of the braid and the body of the bag, the pointed ends of these plates being bent and forced into the interposed braid and bag, substantially as and for the purpose described.

445,882. BOTTLE-FILLING APPARATUS. AMALIA M. DOWALLY, New York, N. Y. Filed June 21, 1890. Serial No. 356,182. (No model.)



Claim.—1. The combination, with a shaft and compressing-blocks carried by the shaft, of an anvil-bar located beneath the blocks, a guide-bar supported from the anvil-bar, and flexible tubes passed between the blocks and anvil-bar and over the guide-bar, substantially as shown and described.

2. In an apparatus of the character described, the combination, with a shaft, compressing-blocks adjustable upon said shaft, and locking devices adapted to fasten the blocks to the shaft, of a movable anvil-bar located beneath the block-shaft, a guide-bar supported by the anvil-bar, adjustable guide devices attached to the guide-bar, and flexible tubes engaging with the blocks, the anvil-bar, the guide-bar, and guide devices, substantially as and for the purpose specified.

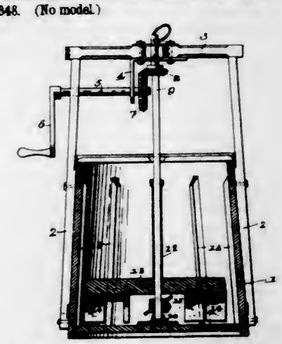
3. In a device of the character described, the combination, with a weighted shaft, compressing-blocks adjustably secured to the said shaft, an anvil-bar located beneath the compressing-blocks, and a lifting device connected with the anvil-bar, of a guide-bar located in front of and below the anvil-bar and connected therewith, guide devices attached to the guide-bar at one side, compressing devices adjustably secured to the upper surface of the guide-bar, and tubes passed between the compressing-blocks and anvil-bar, between the guide-bar and the compressing devices, and through the guide devices, substantially as shown and described.

4. In a device of the character described, the combination, with a shaft, compressing-blocks adjustable upon the said shaft, an anvil-bar located beneath the compressing-blocks capable of movement to and from the same, and a lifting device connected with the anvil-bar, of a guide-bar also connected with the anvil-bar, compressing devices adjustably supported above the guide-bar, and tubes passed between the blocks and the anvil-bar and between the compressing devices and guide-bar, as and for the purpose set forth.

5. In a device of the character described, the combination, with a shaft, compressing-blocks adjustable upon the said shaft, an anvil-bar located beneath the compressing-blocks capable of movement to and from the same, and a lifting device connected with the anvil-bar, of a guide-bar also connected with the anvil-bar, compressing devices adjustably supported above the guide-bar, tubes passed between the blocks and the anvil-bar and between the compressing devices and guide-bar, and apertured plates adapted to bind the tubes together near one end, substantially as and for the purpose specified.

6. In a device of the character described, the combination, with a shaft, compressing-blocks adjustable upon the said shaft, an anvil-bar located beneath the compressing-blocks capable of movement to and from the same, and a lifting device connected with the anvil-bar, of a guide-bar also connected with the anvil-bar, compressing devices adjustably supported above the guide-bar, tubes passed between the blocks and the anvil-bar and between the compressing devices and guide-bar, apertured plates adapted to bind the tubes together near one end, tracks located beneath the guide-bar, and a carriage held to travel upon the tracks, substantially as shown and described.

445,883. CHURN. NOAH EVINGER, Terre Haute, Ind., assignor of one-half to Charles Wood, same place. Filed Sept. 8, 1890. Serial No. 364,348. (No model.)



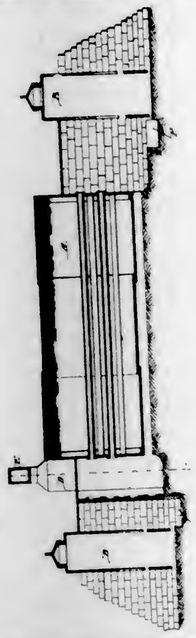
Claim.—In a churn, the combination, with the tub or vessel 1, of the rotatable shaft 9, the sleeve 12, vertically movable upon said shaft, provided with a plate 13 and dashers 14, and the vertically-adjustable agitating-plate 15, secured to said shaft, substantially as described.

445,884. APPARATUS FOR GENERATING STEAM. EDWARD FALES, Philadelphia, Pa. Filed May 27, 1890. Serial No. 353,343. (No model.)

Claim.—1. The method herein described of generating steam in steam-boilers and for other purposes, which consists in dividing the boiler-flues into two vertical divisions and placing furnaces at each end of the boiler, so as to direct the products of combustion from the furnaces into and through the flues formed by the division plate or wall in opposite directions, as set forth.

2. In a steam boiler of the character described, the vertical division plate or wall which divides the boiler into two longitudinal compartments, and furnaces located at each end of the boiler, which project the products of combustion into the tubes on each side of the division-plate and also underneath the boiler, as set forth.

3. In a steam-boiler of the character described, the furnaces located at each end thereof and arranged to project the products of combustion in opposite directions through the flues of the boiler and underneath the same, and a trench or chamber located in the rear of and at the bottom of the furnace to impart to a portion of the products of combustion a reverberatory action or partial hot-air vacuum to increase the draft of the furnaces, as set forth.



445,885. BOOK-HOLDER. BENJAMIN P. FIELD, Babylon, N. Y. Filed Sept. 30, 1890. Serial No. 366,699. (No model.)



Claim.—1. In a book holder or device for holding the leaves of a book open, the combination of a hook made up of a single piece of flat spring metal having sides which are substantially parallel with each other, the ends of said hook being curved so as to project away from each other, one of said hooks being longer than the other, the shorter member having arms B B pivotally attached thereto, so that said arms can be swung horizontally on the pivot, so as to lie at right angles with the spring-hook, substantially as shown, and for the purpose set forth.

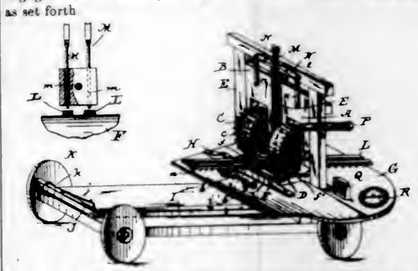
2. As an improved article of manufacture, a book-holder for the purpose set forth, consisting of a spring-clasp A, made of a single piece of flat metal, and arms B, secured thereto by a single pivot, substantially as set forth.

3. A book-holder consisting of a spring-clasp made up of a single piece of metal, bent as shown, the ends being curved in opposite directions, arms B, pivotally secured to the front member of the spring-clasp above and below the same by a rivet, the ends of said arms being bent at their outer ends, substantially as set forth.

445,886. SURVEYING-INSTRUMENT. JOSHUA N. GEE, Pleasant Grove, Va. Filed July 3, 1890. Serial No. 357,644. (Model.)

Claim.—1. In a surveying-instrument, the combination, with the printing-roller F and means for operating the same, of a second printing-roller actuated from the printing-roller F, and a sliding frame for the said second printing-roller, substantially as and for the purpose described.

2. In a measuring-instrument, the combination, with the printing-roller F and the type-bars, of a second printing-roller actuated from the printing-roller F, a sliding frame for the second printing-roller, and a bar, as M, connected with the sliding frame and adapted to engage with and depress the type in said type-bars, and at the same time disengage the said second printing-roller from the roller F, substantially as set forth.

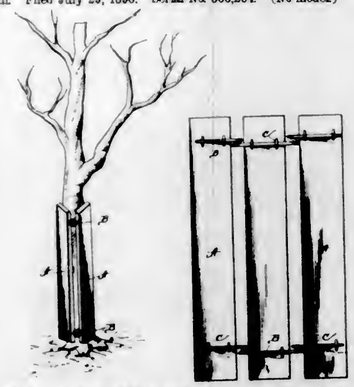


3. In a measuring-instrument, the combination, with the printing-roller F, having gear-wheels *f* and *f'*, of the independent printing-rollers C and D, each provided with gear-wheels which mesh with the gear-wheels *f f'*, sliding frames for the printing-rollers C and D, and means for operating said frame to effect a disengagement between the printing-rollers carried thereby and the gear-wheel on the printing-roller F, substantially as and for the purpose specified.

4. The combination, with the printing-roller F, of a second printing-roller adapted to be operated from the printing-roller F, a sliding frame, and a spring having one end connected with said second printing-roller and having its other end connected with said sliding frame, substantially as set forth.

5. The hereinbefore-specified measuring-instrument, comprising the elements, the printing-roller F, having gear-wheels *f f'* at its ends, the printing-rollers C and D, each having gear-wheels which are in mesh with the gear-wheel on the printing-roller F, the sliding frames having the printing-rollers C and D journaled thereto, the spring for returning the printing-rollers C and D to a normal position when disengaged from the printing-roller F, a spring for holding the sliding frames down under normal position, the type-bars L, the bars M, connected with the sliding frames and having plungers at their lower ends, which are adapted to engage with the type in the type-bars, means for operating the said printing-roller from a moving part of the vehicle, an instrument for determining the sea-level, and an instrument for determining the degrees, substantially as set forth.

445,887. TREE-PROTECTOR. CHARLES F. GERIES, Dudleyville, Ill. Filed July 29, 1890. Serial No. 360,264. (No model.)

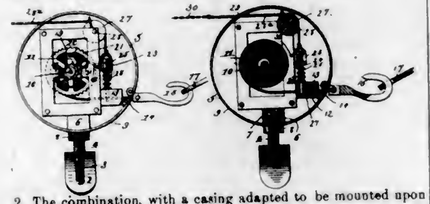


Claim.—In an adjustable tree-protector, the combination, with a plurality of slats provided upon their inner faces with staples, of spring-wires passing through said staples, each of said wires approximating the form of a triangle with its apex open and the angles of its base formed into loops, substantially as set forth.

445,888. CHECKING AND UNCHECKING DEVICE. MICHAEL F. GLYNN, Ashley, Pa. Filed Sept. 17, 1890. Serial No. 365,227. (No model.)

Claim.—1. The combination, with a casing adapted to be mounted upon a harness-saddle, of a shaft mounted in the casing, a spring-rib-

bon wound upon the shaft having one end secured thereto and the opposite end extending through a slot in the casing, a slotted block located in front of the slot for the passage of the spring, a perforated bracket located opposite a perforation formed in the block and in the ribbon, a bolt mounted for reciprocation in the perforations, a spring encircling the same between the block and bracket, a pulley, a cord passed over the pulley, secured at its inner end to the bolt and having its opposite end passed through the casing to the dash of the vehicle, and a check-rein-engaging hook loosely connected to the free end of the ribbon-spring, substantially as specified.

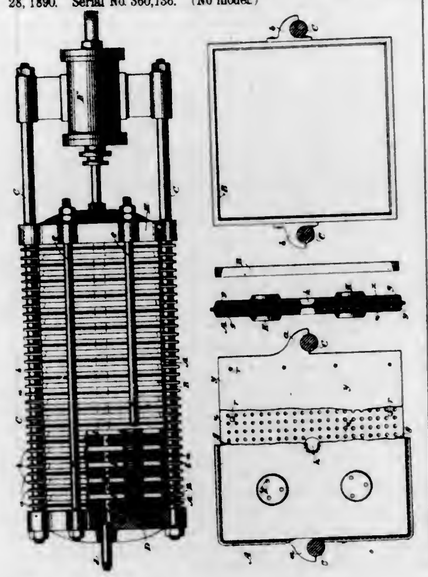


2. The combination, with a casing adapted to be mounted upon a harness-saddle, of a metal frame located in the casing, a winding-shaft journaled in the frame and having one end extending through the casing, a ribbon-spring coiled upon the shaft, secured at one end thereto, a block slotted to receive the opposite end of the spring, which latter is passed through an opening formed in the rear side of the casing and provided with perforations opposite the block, a disk mounted on the shaft, a ratchet mounted on the shaft, a spring-pressed pawl engaging the ratchet, a perforated bracket located opposite a perforation formed in the box, a bolt mounted in the perforations, a spring coiled about the bolt between the perforations, a pulley located in the frame beyond the outer end of the bolt, and a cord or chain connected to said end, passed over the pulley through the casing, and terminating in the vehicle, substantially as specified.

445,889. INCOMBUSTIBLE WASTE FOR LUBRICATING PURPOSES. ROBERT R. GRAY, Baltimore, Md., assignor of one-half to Ferdinand W. Reis, same place. Filed Nov. 28, 1890. Serial No. 372,909. (No specimens.)

Claim.—As an improved article of manufacture, incombustible waste for lubricating purposes composed of cotton or woolen fiber steeped in a mixture of sulphate of ammonia, phosphate of ammonia, sodium tungstate, sal-ammoniac, and phosphate of sodium, and water, and subsequently dried, substantially as set forth.

445,890. PRESSURE-FILTER. PHILANDER R. GRAY and PHILANDER R. GRAY, Jr., Elizabeth, N. J. Filed June 13, 1888. Renewed July 28, 1890. Serial No. 360,136. (No model.)



Claim.—1. The combination of the sections of the filter-plates, the filtering-cloth cover, and the cloth or fibrous gasket *g*, substantially as set forth.

2. The combination of the sections of the filter-plates, the filtering-cloth covers, the cloth or fibrous gaskets *g* on the insides of the covers, and the independent spacing-washers arranged between the plates, substantially as set forth.

3. The combination, with the plates and filtering-covers, of the hubs secured upon the outside of said covers.

4. The combination, with the plates and filtering-cloth covers, of the tapering hubs secured upon the outside of said covers.

5. The combination, substantially as set forth, with the plates, filtering-cloth covers, and separate spacing-washers, of the abutting hubs located between the plates outside of the cloth-covers and within the spacing-washers, for the purpose specified.

445,891. COTTON-SCRAPER. JAMES J. HOBBS, Lagarto, Tex. Filed Oct. 14, 1890. Serial No. 368,135. (No model.)

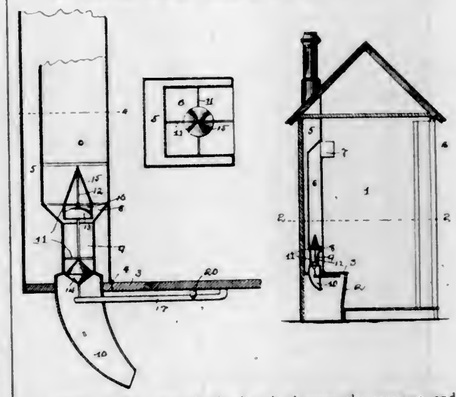


Claim.—1. In a cotton-scraper, the combination of the beams, the cutter secured to their rear ends, the supporting-wheel provided with a hollow hub, the rod which passes through the forward ends of the beams and the hollow hub of the wheel, and the draft-bars, substantially as described.

2. In a cotton-scraper, the combination of the beams, a cutter secured to their rear ends, the supporting-wheel journaled between their front ends, a rod connecting the rear ends of the beams above the cutter, the handles, a rod connecting the upper ends thereof, a bar provided with a series of perforations, a slot through which the said rods pass, and a roller or wheel journaled in the lower end of the bar, substantially as set forth.

3. In a cotton-scraper, the combination of the beams, the cutter secured to their rear ends, a supporting-wheel journaled between their forward ends, a rod passing through the rear ends of the beams above the cutter, the handles, a rod connecting their upper ends, a vertical bar having a roller or wheel journaled in its lower end and provided with openings through which the said rods pass, and sleeves placed upon the rod at each side of the said vertical bar, substantially as shown and described.

445,892. WATER-CLOSET. JOHN M. HOLLOWAY, Santa Barbara, Cal. Filed Sept. 11, 1890. Serial No. 364,640. (No model.)



Claim.—1. The magazine having the hopper, the measure, and the discharge-spout, in combination with the conical deflector having a cylindrical lower end, and a vertically-sliding stem having valves at its upper and lower ends, substantially as set forth.

2. The combination of the magazine having the hopper, the meas-

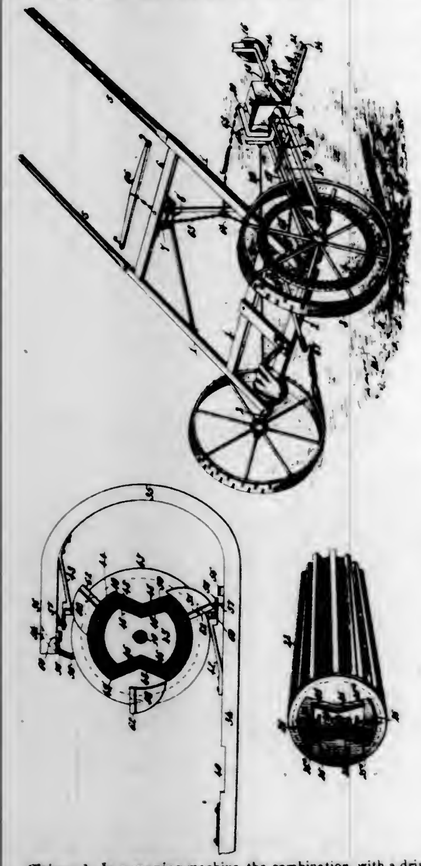
ure, and the discharge-spout, the conical deflector fixed within said magazine and having cylindrical lower end, the vertically-sliding stem having cylindrical and conical valves at its upper and lower ends, respectively, the former moving within the cylindrical lower end of said deflector, the hinged seat, and the connecting rod or lever, substantially as set forth.

445,893. **HOOK FOR WEARING-APPAREL, WINDOW CURTAINS, &c.** HENRY HUTCHINSON and FRANK MADELY, Newcastle-upon-Tyne, assignors to James Clement Newey, Birmingham, England. Filed June 2, 1890. Serial No. 353,912. (No model.) Patented in England Mar. 22, 1889, No. 4,985.



Claim.—A hook for garments and other articles, consisting of a strip of metal having each end portion uniformly curved outward and extended toward the opposite end portion to provide the flat bill 3 and the overhanging elastic tongue 4, having its main body portion in approximately the same plane as the plane of the flattened bill and formed at its free end portion with two reverse beuds 5 and 6, one of which projects outwardly and is adapted to bear against the under side of the bill, while the other bend projects inward to form an entering throatway, substantially as described.

445,894. **MOWING-MACHINE.** JACK W. JAMES, Cuba, Tenn. Filed May 31, 1890. Serial No. 353,784. (No model.)



Claim.—1. In a mowing-machine, the combination, with a drive-wheel, a drive-shaft operated thereby, and a swinging cutter-box rising and falling in a vertical plane, of a cutter-bar guided in the cutter-box and having two opposite reversely-arranged yielding tappets projecting toward each other, and a single cam-wheel located in the cutter-box, rotated by the drive-shaft, and having cam-teeth which alternately act on the opposite reversely-arranged tappets to reciprocate the cutter-bar, substantially as described.

2. In a mowing-machine, the combination, with a drive-wheel, a drive-shaft operated thereby, and a swinging cutter-box rising and falling in a vertical plane, of a single cam-wheel located in the cutter-box and having a series of cam-teeth, and a cutter-bar moving rectilinearly in the cutter-box, having a tappet and provided at its inner end with an upwardly-projecting arch or yoke extending round and overhanging the cam-wheel, moving in a guide in the top portion of the cutter-box, and carrying a pendent tappet arranged reversely to the tappet on the cutter-bar, substantially as described.

3. In a mowing-machine, the combination, with a drive-wheel, a drive-shaft, and a cutter-box, of a cutter-bar having spring yielding tappets and a cam-wheel rotated by the drive-shaft in the cutter-box and having cam-teeth which alternately act on the tappets to reciprocate the cutter-bar in the forward motion of the drive-wheel and pass by the tappets without reciprocating the cutter-bar in the backward motion of the drive-wheel, substantially as described.

4. In a mowing-machine, the combination, with a drive-wheel, a drive-shaft, and a cutter-box, of a cutter-bar having oppositely-arranged tappets provided with reversible wear-plates, and a cam-wheel rotated by the drive-shaft in the cutter-box and having cam-teeth provided with reversible wear-plates, substantially as described.

5. In a mowing-machine, the combination, with a drive-wheel, a drive-shaft, and a cutter-box, of a cutter-bar having spring-tappets, a latch for engaging and holding each tappet in an inoperative position, and cam mechanism actuated by the drive-shaft for alternately acting on the tappets when the latter are disengaged from the latches, substantially as described.

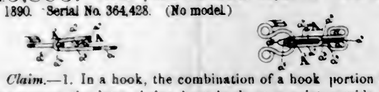
6. In a mowing-machine, the combination, with a cutter-bar having spring yielding tappets, of a drive-shaft and a cam-wheel yieldingly connected with the shaft and having cam-teeth for reciprocating the cutter-bar, substantially as described.

7. In a mowing-machine, the combination, with a cutter-bar having spring yielding tappets, of a cam-wheel having cam-teeth, a drive-shaft for rotating the cam-wheel, a drive-wheel, and a pinion rotated by the drive-wheel and yieldingly connected with the drive-shaft, substantially as described.

8. In a mowing-machine, the combination of the axle, the drive-wheel, the drive-shaft, the swinging frame journaled on the axle, a cutter-box carried by the swinging frame and having an attached finger-bar, a draft-chain connected with the axle, a spring connection between the swinging frame and draft-chain, a cutter-bar, and means for operating the cutter-bar from the drive-shaft, substantially as described.

9. In a mowing-machine, the combination, with the axle, the main drive-wheel thereon, and the cutter-box-carrying frame journaled on the axle outside the wheel and having a brace-bar journaled on the axle inside the wheel, of the ratchet-bar rigidly secured to the axle, and the foot-lever pivoted to the main frame in advance of the ratchet-bar and connected with the brace-bar, substantially as described.

445,895. **HOOK.** JOHN KILLINGER, Wayne, Pa. Filed Sept. 9, 1890. Serial No. 364,428. (No model.)



Claim.—1. In a hook, the combination of a hook portion and a spring-tongue, the latter being bent back at a point outside of or beyond the bend of the former and having therein an offset in close relation with its main or shank portion, substantially as specified.

2. In a hook, the combination of a hook portion formed of substantially parallel side bars and a spring-tongue intermediate said side bars, said tongue being bent back at a point outside of or beyond the bends of the side bars and having therein an offset in close relation with its main or shank portion, substantially as specified.

445,896. **ICE-HARVESTING MACHINE.** FRANK E. KINSMAN, Plainfield, N. J. Filed Mar. 1, 1890. Serial No. 342,229. (No model.)

Claim.—1. The combination of a vehicle, a series of rotatable ice-planers carried thereby, and a motor for driving the vehicle and planers.

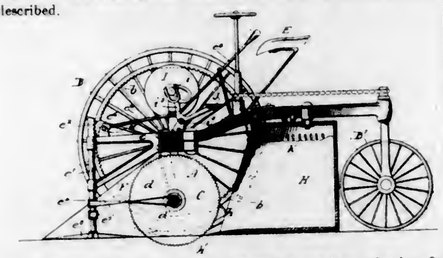
2. The combination of a vehicle having a vertical bearing, an ice-planer having its shaft fitted to said bearing and rotatable in a horizontal plane, and means for driving the vehicle and planer.

3. In an ice-harvesting machine, the combination, with the frame thereof supported on traction-wheels and a motor for propelling the machine, of a series of ice-planers having blades extending in a horizontal plane, substantially as described.

4. In an ice-harvesting machine, the combination, with a series of planers having blades extending and rotatable in a horizontal plane, of spurs carried on the upper surface of the blades and means for rotating said planes, substantially as described.

5. The combination of a vehicle and a motor for propelling it, a series of rotary ice-planers, and means for regulating the depth of cut of the planers.

6. In an ice-cutting machine, the combination of a series of ice-cutters and a series of ice-planers, the latter located ahead of the former and consisting of blades rotating in a horizontal plane, the blades of one cutter intermeshing with the blades of the other, for the purpose described.



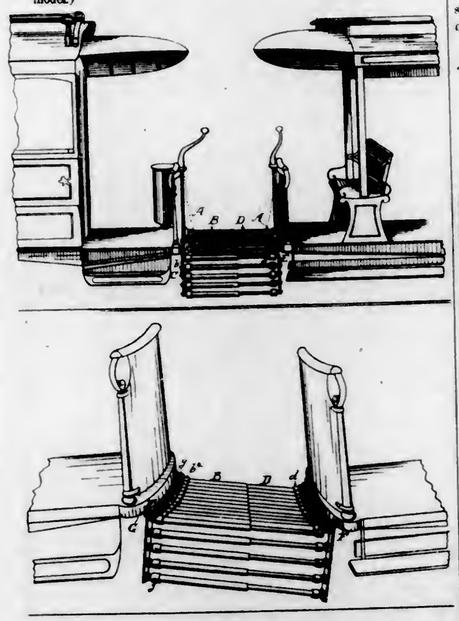
7. The combination, with an ice-cutting machine, of a box for gathering loose snow and ice, said box having a perforated bottom to allow melted products to escape.

8. The combination, with a movable frame, of a box having an open front provided with a scraping-edge, the bottom of the box being perforated to allow water to escape, and means for heating the box, substantially as described.

9. The combination, in an ice-harvesting-machine, of planers for smoothing the ice, a box for gathering loose snow and ice, and deflectors located between the planers and box for guiding the result of the action of the planers into the box, substantially as described.

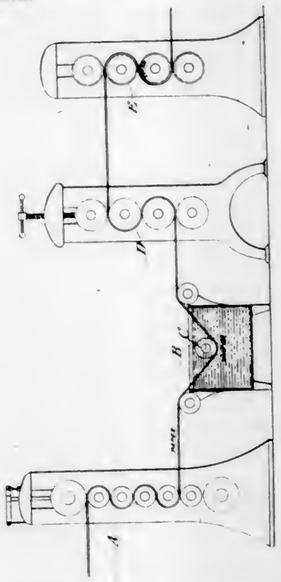
10. In an ice-harvester, the combination, with ice-planing mechanism, of a separate and independent box located behind said mechanism for gathering snow and ice loosened by it, substantially as described.

445,897. **SAFETY-GUARD FOR CARS.** WILLIAM H. LA FOUNTAINE, Cleveland, Ohio. Filed Nov. 14, 1890. Serial No. 371,463. (No model.)



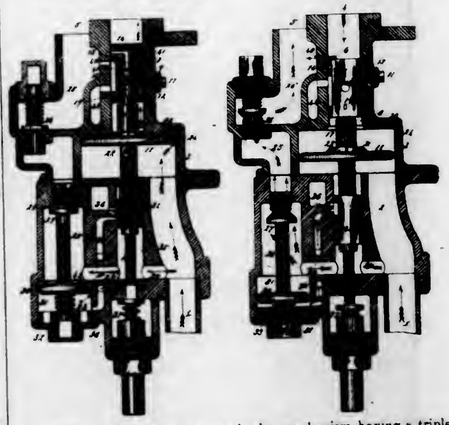
Claim.—In a car-platform guard, the combination, with telescopically-united tubular bars B D, of the open heads *b b*, provided with ears or lugs perforated, and the supporting rods E, the hooks F, and eyes or staples G, arranged to operate substantially as specified.

445,898. **PROCESS OF WATER-FINISHING PAPER.** GEORGE LA MONTE, Bound Brook, N. J. Filed Sept. 6, 1888. Serial No. 284,782. (No specimens.)



Claim.—The herein-described improved process of water-finishing paper without gloss, which consists in first thoroughly saturating the paper with water by passing it through a body of water, then subjecting the wet paper to pressure, and then artificially drying the same in some suitable drying apparatus, substantially as and for the purpose described.

445,899. **AIR-BRAKE.** FRANK LANSBERG, St. Louis, Mo., assignor to the Lansberg Brake Company, same place. Filed May 5, 1890. Serial No. 350,623. (No model.)



Claim.—1. In a fluid-pressure-brake mechanism having a triple valve controlling the admission of air from the train-pipe to the auxiliary reservoir and governing the admission of air from the auxiliary reservoir to the brake-cylinder and also its eduction therefrom, a second valve controlling direct communication between the train-pipe and the brake-cylinder, and a third valve operated by the triple valve for exhausting the air from one side of said second valve when

said triple valve is sufficiently operated, as in emergency stops, and causing said second valve to open communication between the train-pipe and the brake-cylinder by reason of the excess of pressure on its other side, whereby the train-pipe pressure and that of the auxiliary reservoir may both be thrown into the brake-cylinder when the controlling triple valve is sufficiently operated.

2. In an air-brake, the combination, with the train-pipe, brake-cylinder pipe, auxiliary-reservoir pipe, and the triple valve, of a passage leading around the triple valve from the train-pipe to the brake-cylinder pipe, a valve in said passage held to its seat by air-pressure, an exhaust-port for relieving the said air-pressure and allowing said valve to open, and a valve for controlling said exhaust-port adapted to open when the air in the train-pipe is reduced more than is necessary for a service stop, substantially as set forth.

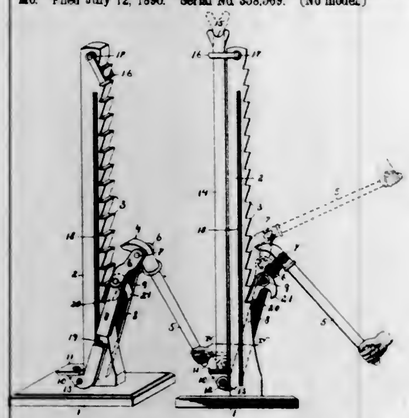
3. In an air-brake, the combination of a train-pipe, a passage 25, forming communication between the train-pipe and the brake-cylinder, a valve in said passage held closed by air-pressure when the train is running and when a service stop is being made, an exhaust-port for releasing the said air-pressure and allowing said valve to open, a valve controlling said exhaust-port and adapted to open when the pressure in the train-pipe is reduced more than is necessary for a service stop, and the triple valve for controlling communication between the train-pipe and auxiliary reservoir and between said reservoir and brake-cylinder, substantially as set forth.

4. In a fluid-pressure-brake mechanism having a triple valve controlling the admission of air from the train-pipe to the auxiliary reservoir, to the brake-cylinder, and also its eduction therefrom, a valve connected with said triple valve and forming a part thereof, another valve controlled thereby, which governs the supply of air directly from the train-pipe to the brake-cylinder when the triple valve is operated for an emergency stop, and a check-valve for preventing back-pressure upon the brake-cylinder through the valve mechanism to the train-pipe, whereby the pressure of air in the auxiliary reservoir and the train-pipe may both be thrown into the brake-cylinder and back-pressure prevented, for the purpose described.

5. In an air-brake, the combination, with the train-pipe, brake-cylinder pipe, auxiliary-reservoir pipe, and the triple valve, of a passage 25, leading around the triple valve from the train-pipe to the brake-cylinder pipe, a valve in said passage 25, held to its seat by air-pressure, an exhaust-port for relieving the said air-pressure and allowing said valve to open, a valve for controlling said exhaust-port adapted to open when the air in the train-pipe is reduced more than is necessary for a service stop, and a check-valve in said passage 25 for preventing backflow, substantially as set forth

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445,900. LIFTING-JACK. WINFIELD S. LIVENGOOD, Kansas City, Mo. Filed July 12, 1890. Serial No. 358,589. (No model.)



Claim.—1. In a lifting-jack, the combination of a notched standard, a lifting-foot, bars on said foot, a lever, and pivoted links for connecting the lever with the bars, substantially as described, and for the purpose set forth.

2. In a lifting-jack, the combination of the notched standard 2, foot 10, roller 12, journaled in said foot, bars 8, connected with the foot, a lever, links 6, pivoted at their upper ends to the lever, pin 9, forming a pivotal connection between the arms 8 and links 6, and a dog 20 on said pin, said dog at times engaging the notches 3 in the standard, substantially as described, and for the purpose set forth.

3. In a lifting-jack, the combination of a notched standard, grooves 18 in the standard, a movable foot, bars 8, connected with the foot, lugs 19 on the bars, a lever, links 6, connecting said bars with the lever, pin 9, dog 20 on said pin, hand-piece on the dog, and forked bar 14, resting on the foot, substantially as described, and for the purpose set forth.

4. In a lifting-jack, the combination of the base 1, standard 2, secured to the base, notches 3 on said standard, foot 10, roller 12 on the foot, lever 5, having an inner end 4, links 6, pivoted to the lever, arms 8, forming a connection between the foot and links 6, supporting-dog 20, bar 14, resting on the foot and having a forked upper end, and a clevis 16 for guiding and holding the upper end of the bar 14, substantially as described, and for the purpose set forth.

445,901. PRINTER'S GALLEY-LOCK. HARRY H. PROCTOR and ANDREW C. MAILER, Depere, Wis. Filed Apr. 14, 1890. Serial No. 347,806. (No model.)

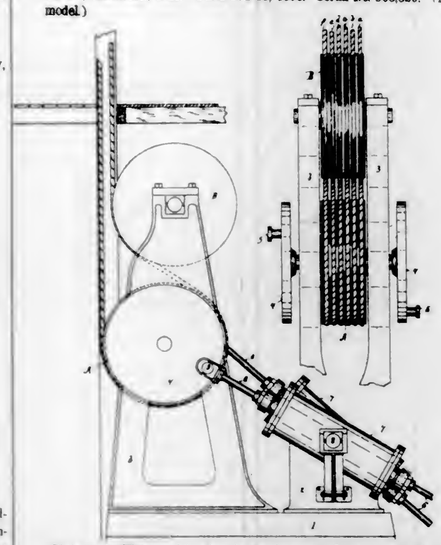


Claim.—1. The combination, with a galley having at one side a lateral orifice and a side-stick in the galley, of a nut rigidly secured to the side of the galley in coincidence with the lateral orifice, a screw engaging the nut and having at its inner end a tenon, a foot-piece disconnected from the side-stick, loosely carried by and adapted to freely oscillate on the tenon to accommodate itself to the face of the side-stick in locking up the type, and a cross-pin on the tenon for retaining the foot-piece loosely thereupon, substantially as described.

2. A galley-lock-up device consisting of a stationary nut, a screw engaging the nut and having at one end a tenon, a foot-piece having a central key-hole slot, and a flexible pin attached to the tenon and with the latter adapted to pass through the key-hole slot to loosely retain the foot-piece in position, substantially as described.

3. A galley-lock-up device consisting of a nut having rigidly attached sheet-metal fingers adapted to pass through an orifice in and be clinched against the side of the galley, the screw engaging the nut and passing between the fingers, and a foot-piece loosely secured to the screw, substantially as described.

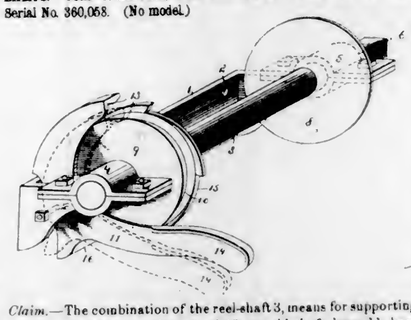
445,902. DRIVING MECHANISM FOR ELEVATORS. HENRY J. REEDY, Cincinnati, Ohio. Filed Oct. 21, 1890. Serial No. 368,829. (No model.)



Claim.—1. The combination, in an elevator, of the car or cab, the hoisting-cable connecting with the car and with a counterbalance-weight, the winding sheave or drum with which the hoisting-cable engages at the bottom of the elevator-shaft, a crank at each side of the hoisting sheave or drum on the shaft thereof, and an engine arranged at the lower end of the elevator-shaft and directly connected with the cranks for rotating the hoisting sheave or drum, and thereby operating the hoisting-cable of the elevator-car, substantially as described.

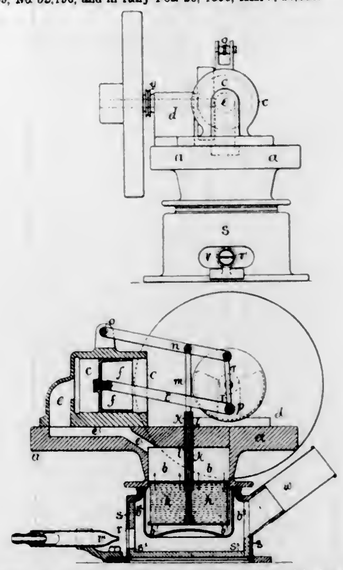
2. The combination, with an elevator-car, a hoisting-cable connected with the car and with a counterbalance-weight, a winding-sheave engaging the cable at the bottom of the elevator-shaft, and a shaft for the sheave, having a crank at each side thereof, of an oscillating duplex engine located at the bottom of the elevator-shaft and having its piston-rods connected, respectively, with the cranks for rotating the sheave and operating the hoisting-cable, substantially as described.

445,903. REEL FOR RAISING AND LOWERING ELECTRIC LAMPS. JOHN T. ROBERTS, Fort Scott, Kans. Filed July 26, 1890. Serial No. 360,058. (No model.)



Claim.—The combination of the reel-shaft 3, means for supporting the same, a brake-wheel, ratchet-wheel 15 on said shaft, lever 11, having a brake-shoe, pawl 16 on the lever, spring 17, having an opening 20, and a pin 19 on the pawl engaging in said opening, substantially as described, and for the purpose set forth.

445,904. HOT-AIR ENGINE. HORACE ROBINSON, Manchester, England. Filed Apr. 25, 1890. Serial No. 349,532. (No model.) Patented in England Jan. 8, 1889, No. 298; in France Oct. 17, 1889, No. 201,391; in Belgium Oct. 17, 1889, No. 88,099; in Germany Nov. 15, 1889, No. 52,196, and in Italy Feb. 26, 1890, XXIV, 27,060.



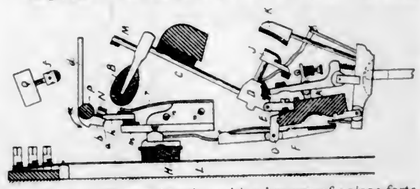
Claim.—1. In an air-engine, the combination, with the air-chamber *b*, of the platform or table *a*, forming an extension of said chamber and adapted to support the working-cylinder and crank-shaft bearings and serve as an absorber and dispenser of heat, substantially as described.

2. In an air-engine, the combination, with the air-chamber *b* and platform *a*, having an aperture *l*, of the working-cylinder and piston, the crank-pin *p*, the lever *n*, connected to the crank-pin by links *r r* on each side, the connecting-rod *t* between the piston and crank-pin, the displacer *h*, having a rod extended through the aperture *l*, and the links *m m* for connecting said rod with the lever *n*, substantially as described.

3. In an air-engine, the combination of the air-chamber *b*, the platform or table *a*, forming an extension of said chamber, and the cylinder *c*, mounted on said platform and having one end open and its other end connected through the port *e* with the air-chamber, substantially as described.

4. In an air-engine, the combination of the casing *s*, having an opening *v* at one end and the chimney *w* at its other end, the burner *u'*, located outside said casing opposite the opening *u*, the air-chamber *b*, the displacer *h*, having a rod *k*, the table or platform *a*, forming an extension of the air-chamber and having an aperture for passage of the displacer-rod, and the working-cylinder, piston, and crank-shaft bearings supported on said table, substantially as described.

445,905. PIANO-FORTE ACTION. AUGUSTE T. ROUSSEAU, Cambridge, Mass. Filed Jan. 19, 1889. Serial No. 296,866. (No model.)



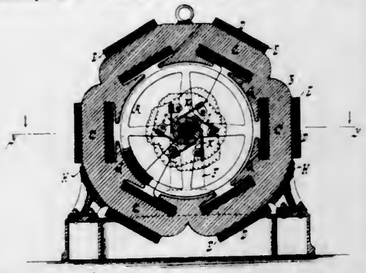
Claim.—1. The combination, with a hammer of a piano-forte action, of a stop or abutment adjustable in itself and independently of the stops or abutments of the other hammers and attached to a suitable support, which support is constructed and arranged to move the stop or abutment into position for the hammer to abut against it, for the purpose specified.

2. The combination, with a hammer of a piano-forte action, provided with a projecting stem or arm from its upper side, of a stop or abutment constructed and arranged to be moved into position for said projecting stem or arm to abut against it, for the purpose specified.

3. The combination, with the hammer of a piano-forte action, provided with a projecting stem or arm, of an adjustable stop or abutment constructed and arranged to be moved into position for said projecting stem or arm to abut against the same, for the purpose specified.

4. The combination, with the hammer of a piano-forte action, provided with a projecting stem or arm, of a rail P, adapted to be swung on its pivots by the pedal of the piano-forte and having an arm *b* and screw-button N, for the purpose specified.

445,906. DYNAMO-ELECTRIC MACHINE. CARL J. SCHWARZE. Brooklyn, N. Y. Filed Oct. 2, 1890. Serial No. 366,807. (No model.)



Claim.—The combination, with the armature A, of a frame B, surrounding said armature and provided with cores C and pole-pieces G, formed integral with each other, the cores C being rectilinear and cylindrical, substantially as described.

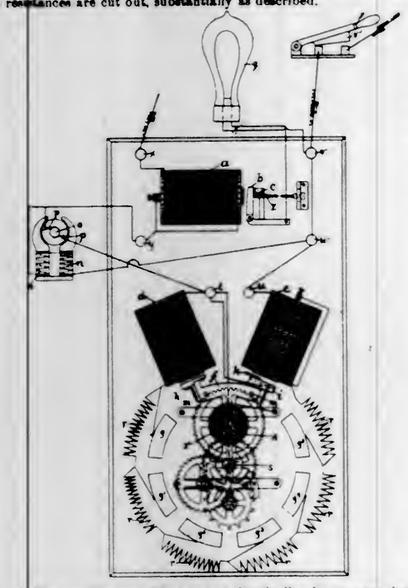
445,907. STARTING DEVICE FOR ELECTRIC MOTORS. EDWARD P. SHARP, Boston, Mass. Filed Mar. 18, 1890. Serial No. 344,402. (No model.)

Claim.—1. In a rheostat or starter for electric motors, the combination of magnet *d* in the line, its armature-releasing latch and stop *h*, the automatically-rotatory contact-arm carrying brushes, a circular series of contact-plates over which said brushes move with resistance-coils connected to said plates, the line-magnet *c*, its circuit-closing armature *i*, and latch *k*, operated by said contact-arm to release said armature *i*, so closing the short circuit, substantially as described.

2. The combination of the line-magnet *d*, its releasing-armature *h*,

the automatically-rotatory contact-arm, its brushes, contact-plates, and resistances, line short-circuiting magnet and armature *e i*, and latch *k*, operated by said contact-arm, substantially as described.

3. The combination of the latch *k*, armature i, magnet *e* in the line, the automatically-rotatory contact-arm, and its series of contact-plates and resistances for the purpose of short-circuiting the current when the resistances are cut out, substantially as described.

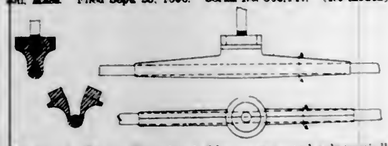


4. The combination of the magnet *d* in the line, its armature latch and stop *h* for releasing and stopping the contact-arm, the automatically-rotatory contact-arm, its contact-plates, plate contact-brushes, resistances, and the circuit-closing armature i, line-magnet *e*, and armature-releasing latch *k*, operated to close the short circuit by the contact-arm, substantially as described.

5. The double-function hand-lever F, provided with contact-plate *v'* and pawl E, in combination with the contact binding-posts for connection to line and rheostat and the winding ratchet-wheel on the barrel or shaft giving motion to the rotatory contact-arm, substantially as described.

6. In a rheostat or starter for electric motors, the combination of an automatically-rotatory contact-arm, a retaining armature-latch *h*, a releasing line-magnet *d*, a circular series of contacts and connected resistances, a short-circuiting latch-holder armature i, and magnet *e* in the line, substantially as described.

445,908. TROLLEY-WIRE HOLDER. EDWARD P. SHARP, Boston, Mass. Filed Sept. 25, 1890. Serial No. 366,147. (No model.)



Claim.—1. The trolley-wire holder constructed substantially as described, viz: having a thin central part extending along the wire, bending upward around and inclosing the wire, and having at each transverse or upwardly-bent extremity a part, each fitted to the other and clamped together, and fitted to receive the attachment connecting it to the insulator or other support.

2. A trolley-wire holder whole at the bottom beneath the wire and on either side, but separable by a single joint at the top to receive the wire, substantially as described.

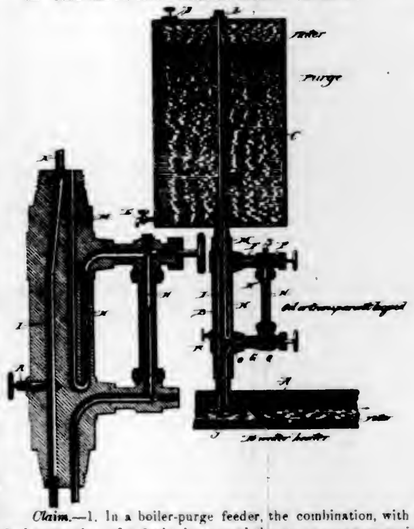
3. A trolley-wire holder wrapping the wire from beneath and having the two transverse extensions bent upward and closed together above the wire and there fastened together and attached to the insulator or other support, substantially as described.

4. The trolley-wire holder having a broad thin part wrapped around the wire from beneath and having the upper ends brought together in cylindrical form with vertical axis and inclosed in a ring and tapped to receive vertically and centrally a screw connecting it to the insulator or other support, substantially as described.

5. The trolley-wire holder having a broad central part made thin, except that it is provided with a rib running lengthwise in respect to the wire and beneath it, said broad thin part being wrapped from beneath with the rib outside and at the bottom upward around and inclosing the wire and having the extremities which are thus brought together at the top fitted and provided with means of attachment to the insulator or other support, substantially as described.

6. The trolley-wire holder having a thin ductile wire-supporting loop beneath and extended along lengthwise the wire and transverse thicker extensions meeting above the wire, and upwardly-turned or angled continuations of the wire socket to receive the angularly-bent ends of the wire which come from opposite directions into the holder and turn upward into said upturned socket continuations, substantially as described.

445,909. BOILER-PURGE FEEDER. NERI E. SHONTZ, Chicago, Ill. Filed Jan. 14, 1890. Serial No. 336,941. (No model.)



Claim.—1. In a boiler-purge feeder, the combination, with the feed-water pipe, of a feed-tube secured thereto, a purge-reservoir attached to said tube, a valved purge-passage in said tube, connecting the lower end of the reservoir and the feed-water pipe, and a sight-tube provided with a transparent liquid filling located between the valves in said passage and constituting a portion of the passage, substantially as described.

2. In a boiler-purge feeder, the combination, with the feed-water pipe, a feed-tube secured thereto, and a purge-reservoir attached to said tube, of a purge-passage opening at its ends, respectively, in said pipe and in the reservoir near the bottom thereof, and a water-passage opening at its ends, respectively, in said pipe and in the reservoir at the top thereof above the purge-line, substantially as described.

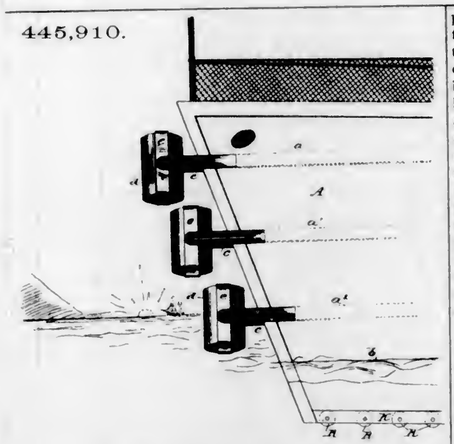
3. In a boiler-purge feeder, the combination, with the feed-water pipe, the feed-tube connected therewith, and the reservoir secured thereto, of a purge-passage opening at its ends, respectively, in said pipe and in the reservoir near the bottom thereof, a sight-tube provided with a transparent liquid filling constituting a portion of said passage, and a water-passage opening at its ends, respectively, in the feed-pipe and in the reservoir at the top thereof above the purge-line, substantially as described.

445,910. ELASTIC FENDER FOR VESSELS. GUSTAVE O. STEIN, Pioche, Nev. Filed June 7, 1890. Serial No. 354,667. (No model.)

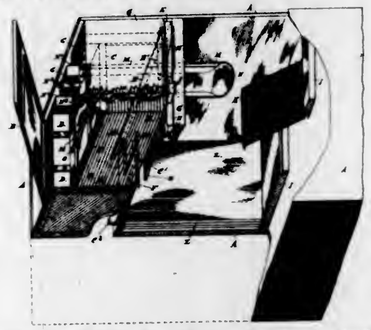
Claim.—A vessel having upon opposite sides of its cut-water horizontal arms projecting in front of the cut-water and bearing a horizontally-pivoted frame containing a vertically-pivoted roller, substantially as shown and described.



445,910.



445,911. PHOTOGRAPHIC APPARATUS. EDWARD V. SWINDEN and JOSEPH EARP, Liverpool, England. Filed July 17, 1888. Serial No. 280,211. (No model.) Patented in England Oct. 13, 1887, No. 13,879; in France Aug. 3, 1888, No. 192,206; in Belgium Aug. 21, 1888, No. 82,956; in Germany Aug. 24, 1888, No. 50,074, and in Austria-Hungary Feb. 22, 1889. No. 35,404 and No. 35,879.



Claim.—1. The herein-described method of removing sensitive plates or films from the primary to the secondary chamber of a photographic camera, consisting in moving said plates forward directly from the primary to the secondary chamber in a nearly vertical position, with the lower edge of each plate when so moved resting upon the floor of said secondary chamber or on the back of a horizontal plate therein, and then tilting forward the plate so delivered and causing it to fall from said vertical position to a horizontal one within said secondary chamber, substantially as described.

2. The herein-described method of removing sensitive plates or films from the primary to the secondary chamber of a photographic camera, consisting in first raising the front plate of said plates, whereby it is disengaged from a stop or curb and falls into the secondary chamber in a nearly vertical position, with the lower edge of such plate resting upon the floor of said secondary chamber or on the back of a plate or film therein, and then tilting forward said plate or film so delivered and causing it to fall from said vertical position to a horizontal one about the said lower edge on which it rests and onto the floor of or the back of the films or plates within said secondary chamber, substantially as described.

3. In a photographic camera, the combination, with a primary chamber adapted to receive and hold a plurality of plates or sensitive films, of a spring-pressed follower C, a curb F, up to or against which the front plate of said plurality of plates is pressed by said follower, and a sliding device *c'*, impinging on the lower edge of said front plate or film and adapted to lift it over said curb, whereby said plate is free to fall vertically to a secondary chamber edgewise, substantially as and for the purposes set forth.

4. In a photographic camera having a primary chamber adapted to receive and hold a series of sensitive plates or films without holders one behind the other, and a secondary chamber disposed in front of the primary chamber and adapted to receive and hold the said plates or films in a horizontal position and having its floor below the level of the floor of the said primary chamber, the combination of front stop or curb against which the front plate of said plates abuts, and whereby it is held in position in said primary chamber, a spring-pressed follower by which said plates are pressed forward and up to said stop or curb, a mechanism operated by hand adapted to act directly on the edge of said front plate or film and disengage it from said stop or curve and remove it from the primary to the secondary chamber, the said disengaging and removing device being adapted to move the plates forward directly from the primary to the secondary chamber, so that said plates fall therein in a nearly vertical position, the lower edge of each plate when so moved resting upon the floor of or on the back of the plates, within said secondary chamber, and said secondary chamber being adapted to allow each of said plates to fall from said vertical position to a horizontal one about the said lower edge on which it rests and onto the floor of or the back of the plates within said secondary chamber, substantially as set forth.

5. In a photographic camera, the combination of a primary chamber adapted to receive and hold a plurality of dry sensitive plates or films Z, a frame E, having parts *c'* and *c²*, by which the front plate is raised over a front stop or curve F and removed from said chamber, a follower C, kept up to the back of the plates by a spring or springs for feeding said plates up to said front stop or curb and within range of the action of the said removing device, and a second chamber disposed in front of the primary chamber and adapted to receive and hold the said plates as they are passed from the said primary chamber after exposure and to hold them in a horizontal position, as described, all substantially as set forth.

6. In a photographic camera in which the plates after "exposure" are passed in succession from one chamber to another, as described, the mechanism herein described for effecting the passage of said plates from the one chamber to the other, said mechanism consisting of a sliding frame E, having toes *c'* for raising the said plates and fingers *c²* for pressing down said plates, a curb F, over and down which the plates are moved, and a spring or springs M, pressing the plates over the said curb, arranged and operating substantially as set forth.

7. In a photographic camera, the combination, with a primary chamber adapted to receive and hold a plurality of sensitive films or plates, of a spring-pressed follower C, a curb F, and a sliding frame having a part *a'* impinging upon the lower edge of the plate to lift it over the curb, and part *c²* drawing said plate down in front of said curb, said frame having a thumb-plate *c³* lying in a recess accessible to the operator, substantially as described.

8. In a photographic camera, the combination, with a follower C, of springs or elastic bands M, caught over lugs N upon the wall of the chamber and over hooks O on the follower, a curb F, stops K upon the camera-box, a frame having toes *c'* and fingers *c²* and thumb-piece *c³*, a secondary or exposing chamber, and a movable shutter between the latter and the lens, substantially as described.

445,912. PRESSER-FOOT FOR SEWING-MACHINES. EDWIN J. TOOF, New Haven, Conn. Filed Nov. 12, 1883. Serial No. 111,598. (Model.)

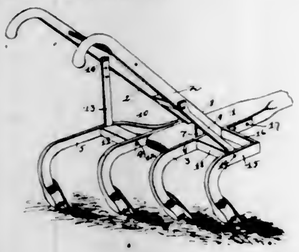


Claim.—A presser-foot for sewing-machines, consisting of a frame, an elastic or yielding sole supported thereby below the same through the medium of a connecting-piece or shank, which latter forms a guide, a supplemental spring-presser C, supported by said frame above the said elastic or yielding sole, and a supporting-shank for connection with a presser-bar, substantially as described, and for the purpose set forth.

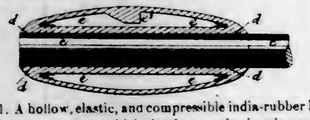
445,913. PLOW. BARNEY C. TROXLER, Greensborough, N. C., assignor of one-half to Arthur G. Wilson, same place. Filed June 7, 1890. Serial No. 354,624. (No model.)

Claim.—In a plow of the class described, the combination, with the main or central beam 1 and the upwardly-diverging handles 2, bolted to opposite sides of said beam, of the central standards 3 and 4, applied to opposite sides of the beam, the latter standard being in rear of the former, the outer or side standards 15 and 5, each bent to form a knee or shoulder and spaced from the central standard and in advance and rear of the same, the space-block 11, interposed between the beams 4 and 5, the vertical brace 13, bolted at its upper end to the left-hand handle and depending and terminating between the block 11

and beam 5, the bolt 12, passing through the standards 4 and 5, the bolt 6, passing through the beams 3, 4, and 5 and through the short brace 7, interposed between the beam 1 and standard 3 and extending up opposite the right-hand handle 2, the bolt connecting the handles and passing through the upper end of the brace 7, the laterally-inclined brace 9, also mounted on said bolt, the block 18, interposed between the standard 15 and the standard 3, and the bolt 19, passing through the lower end of the brace 9, the block 18, the beam 1, and the standard 5, substantially as specified.



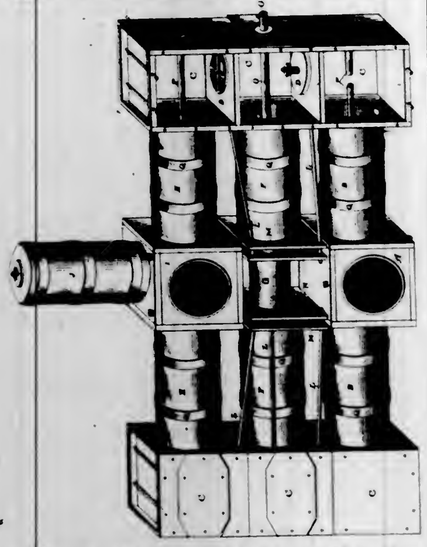
445,914. HANDLE FOR VELOCIPEDES. HENRY WATERSON, Aston, England. Filed July 31, 1890. Serial No. 360,527. (No model.) Patented in France Jan. 28, 1890, No. 203,404.



Claim.—1. A hollow, elastic, and compressible india-rubber handle or grip for a bicycle or other vehicle, having an air-chamber containing confined air to form an air-cushion, said air serving to restore the handle or grip to its normal bulged condition after being compressed by the hand and then released, substantially as described.

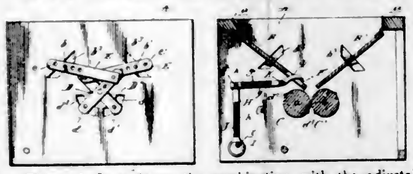
2. A hollow, elastic, and compressible india-rubber handle or grip for a bicycle or other vehicle, having an air-chamber and an air-inlet opening for inflating the handle or grip, so that the confined air forms a cushion and serves to restore the handle or grip to its normal bulged condition after being compressed by the hand and then released, substantially as described.

445,915. DOUBLE-ACTING PUMP. STEWART WHITE, Greensburg, Pa. Filed Oct. 14, 1890. Serial No. 368,106. (No model.)



Claim.—In a pump, the combination of two parallel end boxes, barrels connected with the ends of the boxes and extending inward, inlet and outlet boxes connecting the inner ends of the said barrels, plunger-barrels connecting the centers of the said parallel end boxes, a plunger placed in the plunger-barrels, transverse divisions in the said end boxes between the ends of the said barrels, and valves in the said divisions, substantially as shown, and for the purpose described.

445,916. COTTON-FEEDER. STEPHEN W. WOODBURY, Winchester, N. H. Filed Nov. 22, 1889. Serial No. 331,176. (No model.)



Claim.—1. In a feeder, the combination, with the adjustable doors, of the feed-rollers, and means, as the levers and links, for connecting the said doors and rollers to cause the doors to separate when the rollers approach, and vice versa.

2. The combination, with the doors and the feed-rollers, of the levers having fulcrums between their ends, which ends are connected with the rollers and with the said doors, substantially as and for the purpose described.

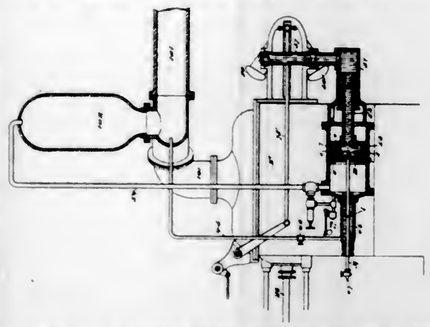
3. The combination, with the doors and rollers, of the levers pivoted between their ends and connected with the rollers, and links adjustably connecting the levers with the doors, substantially as and for the purpose set forth.

4. The combination, with the doors and the feed-rollers, of the crossed levers pivotally supported at their point of intersection, the lower ends of the levers supporting the said rollers, and means, as the links, for adjustably connecting the upper ends of the levers with the said doors, substantially as described.

5. The combination, in a feeder, of an ejecting-finger, an actuating-arm connected with the said finger, a lever connected with the outer end of the said actuating-arm and having an eccentric connection at its lower end with a power-driven shaft, and supports for the said arms and levers, intermediate their ends, which will permit a sliding and tilting movement thereon of the said arm and lever, substantially as set forth.

6. In a feeder, the combination of two actuating-arms, one at or near each end of the feeder, a support intermediate the ends of the arms for the said arms to tilt and slide on, two levers connected at their upper ends with the said arms and having eccentric connection at their lower ends with a power-driven shaft, and a support intermediate the ends of the said levers for them to slide and tilt on, the bar connecting the said actuating-arms at their front ends, and the ejecting-fingers connected with the said arms, substantially as described.

445,917. ACCUMULATOR. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed Oct. 11, 1887. Serial No. 252,008. (No model.)

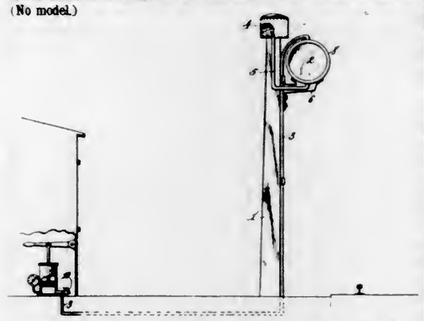


Claim.—1. In a pumping-engine, the combination, with the main steam-cylinder and its piston, of a compensating cylinder or cylinders having a piston or pistons arranged to offer a gradually-decreasing resistance to the piston of the main cylinder during the first part of the stroke and a gradually-increasing assistance during the last part of its stroke, an accumulator connected with the force-main of the engine and transmitting pressure to the compensating cylinder or cylinders, and an adjustable pressure-reducing valve between the accumulator and the force-main, whereby the pressure transmitted to the compensating cylinder or cylinders may be adjusted, substantially as described.

2. The combination, with the accumulator and the pressure-reducing valve, of the safety-valve 79, substantially as described.

3. The combination, with the accumulator and the pressure-reducing valve, of the check-valve 48 in the supply-pipe and opening from the accumulator-cylinder, substantially as described.

445,918. SIGNALING APPARATUS FOR RAILWAYS. JOSEPH M. BROHARD, Clarksburg, W. Va. Filed Oct. 23, 1890. Serial No. 369,114. (No model.)

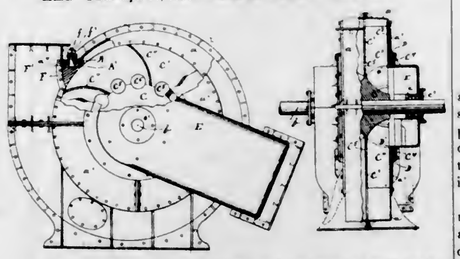


Claim.—1. A railway signaling apparatus consisting of a fixed signal-post arranged beside the track and having a bracket or support, a transparent signal-vessel carried by the bracket or support, a colored-liquid tank supported by the signal-post, a tube connecting the interior of the tank with the interior of the signal-vessel for the flow of the colored liquid from one to the other, and an air-forcing tube or pipe leading to a station beside or near the track for conducting air and causing the colored liquid to flow from the signal-vessel into the tank, substantially as described.

2. A railway signaling apparatus consisting of a fixed signal-post arranged beside the track and having a bracket or support, a transparent signal-vessel carried by the bracket or support, a colored-liquid tank supported by the signal-post above the signal-vessel, a tube connecting the lower portion of the tank with the upper portion of the signal-vessel for the gravitation of the colored liquid from the tank to the signal-vessel, and a tube leading from the top portion of the signal-vessel to a station beside or near the track for conducting air into the top portion of the signal-vessel and thereby expelling the colored liquid therefrom and causing it to flow back into the tank, substantially as described.

3. A railway signaling apparatus consisting of a fixed signal-post arranged beside the track, a pair of separated transparent signal-vessels, supported by the signal-post and adapted to receive between them a lantern or lamp for night illumination, a colored-liquid tank carried by the signal-post, tubes connecting the interior of the signal-vessels with the interior of the tank, and tubes leading to a station beside or near the track for conducting air which causes the colored liquid to flow from the signal-vessels into the tank, and conversely, substantially as described.

445,919. CENTRIFUGAL PUMP. HENRY W. BROWN, Cambridge, Mass. Filed Apr. 17, 1890. Serial No. 348,342. (No model.)



Claim.—1. In a centrifugal pump, the combination, with the fan casing, of the flat side plate d', secured to the casing, the rotary fan having its runner C^3 arranged parallel with and in proximity to the side plate, the ring D, secured to the side plate and having an annular lip D' extending inwardly through the runner to form a closed joint at the inner edge of the latter, and the suction-pipe E, communicating through the ring with the interior of the casing, substantially as described.

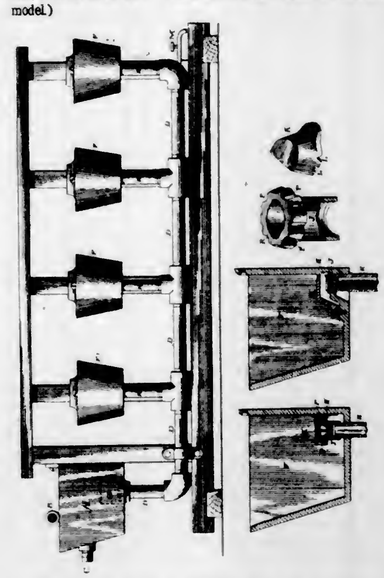
2. In a centrifugal pump, the rotary fan having its runners provided each with an outwardly-extending annular projection adapted to pass through the centrally-perforated casing side, combined with an annular ring secured to the outside of the casing and having an inwardly-projecting lip, substantially as and for the purpose set forth.

3. In a centrifugal pump, the combination, with the casing having opposite center orifices in its sides, of the two suction-pipes extending along the exterior opposite sides of the casing and communicating with the center orifices in the sides thereof, and the rotary fan consisting of a central perforated web provided at its opposite sides with lateral buckets, those at one side being coextensive in size with those at the opposite side and connected at their outer extremities by annular runners, substantially as described.

4. In a centrifugal pump, the combination, with a rotary fan and the casing having the narrow part at the delivery-orifice provided with a transverse guide A, of the cut-off F, detachably joined to the guide by a rib-and-groove connection, bolts and nuts $f\,f''$, securing the cut-off to the guide, and removable cover-plates A^3, covering the openings at the ends of the casing, through which the cut-off is applied, substantially as described.

5. In a centrifugal pump, the combination, with a rotary fan and the casing having the narrow part at the delivery-orifice provided with a transverse guide A, of a cut-off F, detachably connected by a dovetailed rib on one engaging a dovetailed groove in the other, the nuts and bolts $f\,f''$, securing the cut-off to the guide, and the cover-plates a^3, covering the openings at the ends of the casing, substantially as described.

445,920. DEVICE FOR WATERING STOCK. CHARLES E. BUCKLEY, Amenia Union, N. Y. Filed Oct. 17, 1890. Serial No. 368,384. (No model.)

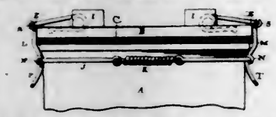


Claim.—1. In a device for watering stock, the combination, with a main reservoir and a distributing-pipe connected therewith, of a series of receptacles connected with the same distributing-pipe, inlet-pipes extending into the receptacles above their bottoms, a cover placed over the upper ends of the inlet-pipes, having a flange depending below the inlets, valves in the inlet-pipes and under the cover, and inlet-openings below the said valves, substantially as specified.

2. In a device for watering stock, the combination, with a main reservoir and a distributing-pipe connected therewith, of a receptacle, an inlet-pipe extending into the receptacle above its bottom, and a cover placed over the upper end of the pipe, having a flange depending below the inlet and inlet-passages, combined for the purpose described.

3. In a device for watering stock, the combination, with a main reservoir and a distributing-pipe connected therewith, of a receptacle, an inlet-pipe extending into and above the bottom of the receptacle having longitudinal grooves, and a cover having a depending flange and which is placed over the inlet-pipe, substantially as shown.

445,921. JAR-COVER. RAMELAS G. BURLINGAME, Hartford, Mich. Filed Aug. 27, 1890. Serial No. 363,235. (No model.)



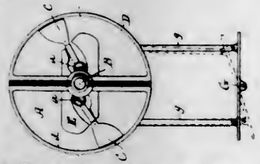
Claim.—1. In a cover-fastening, the combination of the cover, loops applied thereto which have their inner ends formed into springs, a band which passes around the jar, and catches placed upon the band, which engage the outer ends of the said loops, substantially as described.

2. In a jar-cover fastening, the combination of the cover, loops secured thereto consisting of outer doubled portions, coils between their ends, and their inner ends bent to extend parallel with their double ends, a band which passes around the jar, and catches placed upon the band, which engage the outer ends of the loops, substantially as set forth.

3. In a jar-cover fastening, the combination of the cover, loops secured thereto consisting of outer doubled portions, coils between their ends, their inner ends extending substantially parallel with their front ends, and depending projections at their inner ends, a band which passes around the jar, and catches placed upon the band, which engage the outer ends of the loops, substantially as specified.

4. In a jar-fastening, the combination, with the cover having loops applied thereto, which have their inner ends formed into springs, of a band which passes around a jar, a spring placed between its ends, and catches placed upon the main portion of the band, which engage the said loops, substantially as shown and described.

445,922. DEVICE FOR CONVERTING MOTION. WILLIAM E. CANNEY, Downer's Grove, Ill. Filed May 17, 1890. Serial No. 352,134. (No model.)

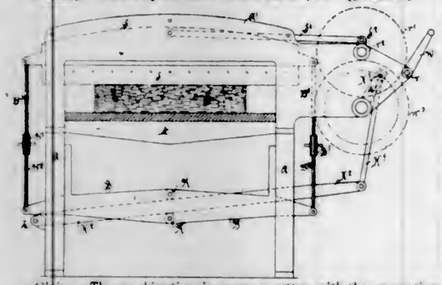


Claim.—1. The combination, with the intermittently-operated plate and the pulley, of the pawls having pivotal connection with the said plate and the independent coupling or yoke concentrically mounted with the pulley and plate and adapted to have an independent motion, and having engagement with the said pawls to effect a simultaneous movement of the pawls, substantially as described.

2. The combination, with the intermittently-operated plate and the pulley, of the pawls pivoted to the said intermittently-operated plate and the coupling or yoke concentrically mounted with the pulley and plate and having an independent motion on its axis, and having notches to receive the shanks of the pawls, substantially as described.

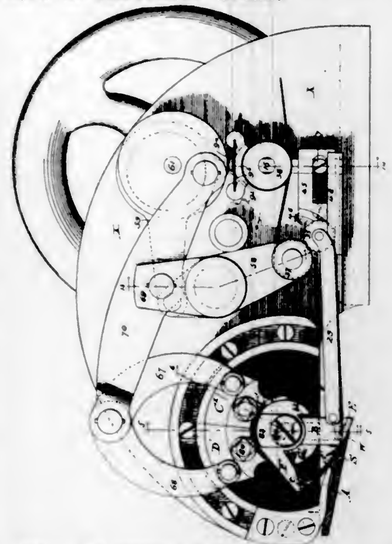
3. The combination of the shaft B, the intermittently-operated plate A, and the pulley D, mounted on the shaft, the pawls pivoted at their inner ends to plate A, and the coupling or yoke E, mounted on shaft B and free to turn thereon, and having notches *e e* at its opposite ends to receive the pawls, substantially as set forth, for the purpose described.

445,923. PAPER-CUTTING MACHINE. LEO CARRER, Dusseldorf, Germany. Filed July 25, 1889. Serial No. 318,674. (No model.)



Claim.—The combination, in a paper-cutter, with the supporting-frame of the machine, a train of wheels journaled in said frame, a crank connected with and revolved by said wheels, a knife, a beam carrying such knife and sliding in said frame, a connecting-rod connecting said knife-beam and said crank, of a crank-pin in one of said wheels, a lever pivoted by one end to said frame, a rod whereby the other end of said lever is connected to the said crank-pin, a slide moving in said frame, rollers upon said slide, connecting it with the said lever, adjustable rods pivotally connecting either end of said slide to said knife-beam, a clamp and table for holding paper while being cut, and means, substantially as specified, for actuating said machine, all substantially as and for the purpose set forth.

445,924. SEWING-MACHINE. FRANK CHASE, Boston, Mass. Filed Sept. 9, 1890. Serial No. 364,452. (No model.)



Claim.—1. The combination, with the stitch-forming mechanism, the channel-gage, and the take-up, of the movable back gage connected to and operated by the take-up, substantially in the manner described, so that said back gage shall be thrust toward the channel-gage at the time the take-up is operating to set the stitch, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the channel-gage, the stitch-forming mechanism, and the movable back gage, of the multiple-purchase take-up consisting of the truck 37 and its vibratory support, the truck 35, and the strap 29, carrying at one end the truck 35 and jointed at the other end to the back gage, substantially as and for the purposes hereinbefore set forth.

3. The combination, substantially as hereinbefore set forth, of the channel-gage, the stitch-forming mechanism, the multiple-purchase take-up, the spring-bed 45, and the movable back gage connected to and operated by the take-up at the time and in the manner substantially as described.

4. The combination, with the oppositely-placed and oscillating needle and awl, of the intermediate whirl placed in the common path of movement of said needle and awl, so that it shall be entered by the same alternately, substantially as and for the purposes hereinbefore set forth.

5. The combination, with the oscillatory needle, its carrier, and actuating mechanism therefor, of the awl, the awl-carrier capable of both oscillatory movement and feed movement in the direction of its axis of oscillation, mechanism for imparting said movements to the awl-carrier, a power-driven whirl, and a whirl-support capable of movement in the same direction with that of the feed movement of the awl, whereby the whirl serves alternately to engage the thread with the needle and to support and stiffen the awl during its feed movement, substantially as and for the purposes hereinbefore set forth.

6. The combination, with the oscillatory needle and awl-carriers having a common center of oscillation, of the driving-lever fulcrumed in a rocking arm intermediate of its ends, the driving-crank connected to one of the ends of said lever, and the two arms jointed to the other end of the said lever and connected each to its appropriate carrier under the arrangement and for joint operation substantially as hereinbefore set forth.

7. The combination of the oscillatory needle, the channel-gage provided with a projection, and the oscillatory loop holder or retarder provided with a projection to engage the projection on the channel-gage at the time the said holder is in its lowest position in order to prevent said holder or retarder from being deflected laterally, substantially as and for the purposes hereinbefore set forth.

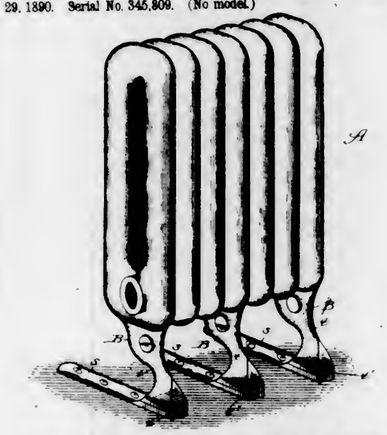
445,925. SEWING-MACHINE. FRANK CHASE, Boston, Mass. Filed Dec. 23, 1890. Serial No. 375,582. (No model.)



Claim.—1. In a stitch-forming mechanism, the combination, with the needle-carrier and needle, the take-up operated to set the stitch at the time the needle is in the goods, the channel gage and the back gage positively forced toward and against the work at the time the stitch is being set, of a needle-support placed in the path of the needle on the side of the work opposite that from which the needle enters and adapted to receive and support at this time the point or front end of the needle against the downward thrust of the back gage upon the work, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the stitch-forming mechanism and the channel-gage, the back gage, and means for pressing the back gage toward the channel-gage at the time the stitch is being set, of an edge gage carried by and spring yielding with respect to the back gage, substantially as and for the purposes hereinbefore set forth

445,926. RADIATOR. GEORGE B. COBB, Chicago, Ill. Filed Mar. 29, 1890. Serial No. 345,809. (No model.)



Claim.—1. A radiator-loop provided with the leg integral with the loop, extending downward to one side of the center of gravity, and a foot extending from said leg to the opposite side of the center of gravity, substantially as described.

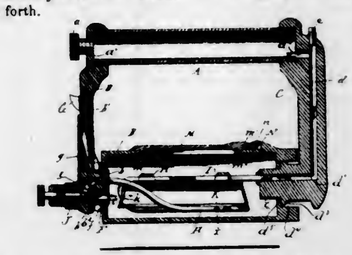
2. A radiator-loop provided with the leg integral with the loop, extending downward to one side of the center of gravity, and a foot separate from the leg and joined thereto, as shown, extending from said leg to the opposite side of the center of gravity, substantially as described.

445,927. SAD-IRON. HERBERT M. COOLEY, Elmo, Kans. Filed May 10, 1889. Serial No. 310,288. (No model.)

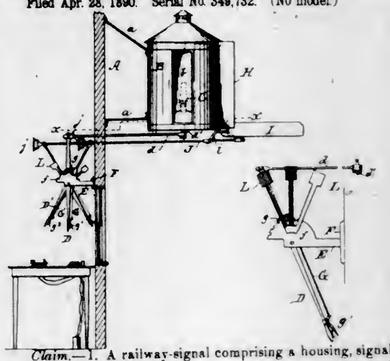
Claim.—1. The combination of the tubular handle, the standard C, having the gudgeon integrally formed on its end, and the standard B, formed with the gudgeon and having the passages *i i'* in the said gudgeon, the iron journaled on the gudgeons of the two standards, the generator consisting of a pipe which has its ends connected with the said gudgeons and which is bent between its ends to form the member I and the coil or fold H, and the burner suspended by loops from the said member I and having the members *h h* of fold H extending along the lower edges of the said burner, substantially as described.

2. The combination, with the handle having depending standards, the iron journaled between the standards, and the generator comprising an upper member I and a lower member H, of the oblong hollow casting ⌓ shape in cross-section, the flat side being down and having flame-openings formed therein, said casting having a gas-entrance in one end and suspended by loops from the member I, substantially as set forth.

3. The combination, with the tubular handle having depending standards at each end and having gudgeons on the said standards, the standard C, having passage *d³ d d'*, and the standard B, having passages *i i'* in the gudgeon *b* thereof, of the valve J, fitted to gudgeon *b*, for regulating the flow of gas or oil through passages *i i'*, the generator deflected between its ends, which ends are fitted in the said gudgeons, the burner supported by the generator and having flame-openings on its under side and having an opening in its end opposite the passage *i'*, and the iron journaled at its ends on the said gudgeons, substantially as set forth.



445,928. BLOCK-SIGNAL. MILEY P. CRAWFORD, Logan, Ohio. Filed Apr. 28, 1890. Serial No. 349,732. (No model.)



Claim.—1. A railway-signal comprising a housing, signal-boards adapted to fold within the housing, an operating-rod J for each board, having a handle at its outer end, a lever connected with said rod J and having a latch, a notched segment having radial arms in sufficient number and of a color to correspond with the signal-boards, whereby on operating the proper lever or rod J and bringing it in the proper position, which is determined by the radial indicating-arms on the said segment, the proper signal may be displayed, substantially as described.

2. The combination, with the housing and the lamp journaled therein, of the crank-pin connected with the lamp and projecting through a curved slot in the said housing, and the rod connected with the said crank-pin for operating the lamp, substantially as described.

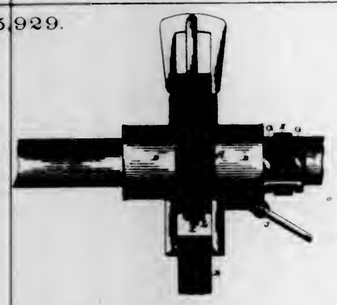
3. The hereinbefore described signal, comprising the housing which is provided with a hood, the lamp journaled in the housing, the operating-lever having connection with a crank-pin provided on the lamp, the indicating-arms, the signal-boards, and the operating-levers connected with the said signal-boards, substantially as described.

445,929. SHAFT-TUG. THOMAS W. DAVIES and GEORGE M. DOWNEY, Dallas, Tex. Filed Sept. 24, 1890. Serial No. 366,013. (No model.)

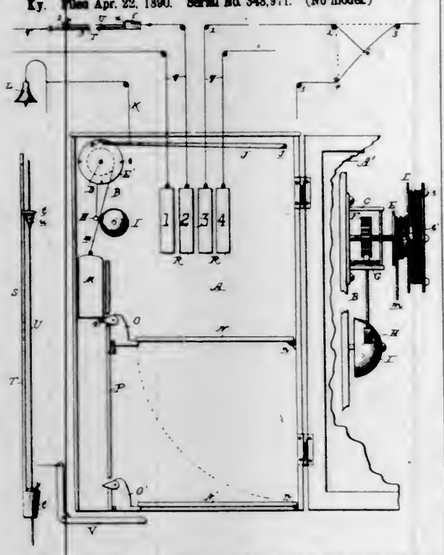
Claim.—1. An attachment for an ordinary tug, consisting of a sleeve of less diameter than the tug, which is adapted to fit the tug closely, and a laterally-extending bolt adapted to pass through the tug, whereby it is rigidly secured within the tug, substantially as described.

2. The combination, with a shaft-tug, of a device to be attached to the shaft for limiting the movement of the tug thereon, consisting of a two-part clamp and a strap which is passed around the two parts and clamps them to the shaft, substantially as shown and described.

445,929.



445,930. AUTOMATIC FIRE-ALARM. JOHN B. DEER, Louisville, Ky. Filed Apr. 22, 1890. Serial No. 348,971. (No model.)



Claim.—1. The combination, with the wires, detectors, and ringing device of a fire-alarm apparatus, of pulleys E E', weight M, and cord *m* for operating said ringing device at different speeds, substantially as described.

2. The combination, with the wires and detectors of a fire-alarm apparatus, of a differential ringer having pulleys E, weight M, and cord *m* for operating said ringer at different speeds in succession, and two stops set in the path of said weight to hold the same at different heights, substantially as described.

3. In a fire-alarm apparatus, the combination, with a bell or gong ringing device operated by a weight, of a detector governing the motion of said weight, provided with two stops adapted and constructed to soften at different degrees of heat, and means, as the triggers O O', for holding said weight at different heights, substantially as described.

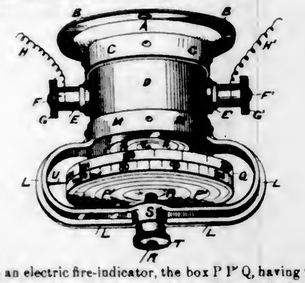
4. The combination, in a fire-alarm apparatus and with the ringing device thereof and a weight for operating the same, of a detector by said weight, and a connection with a fire-alarm box operated through the descent of the weight, substantially as described.

12. The combination, in a fire-alarm apparatus, of a case A, a gong I, a lever J, a bell connected with the lever, and a ringer B, having a series of pins in one of the wheels for operating the lever J continuously until the ringer runs down, substantially as described.

13. The combination, in a fire-alarm apparatus and with a weight suspended from a wire, of a detector connected to said wire and consisting of a holder provided with a conical thimble, and a wire running through the same having a stop inclosed in said thimble, substantially as described.

445,931. ELECTRIC FIRE-INDICATOR. THOMAS R. DOUSE, London, England. Filed Nov. 1, 1890. Serial No. 370,008. (No model.)

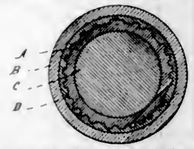
Claim.—1. An electrical fire-indicator consisting of a base carrying a pendent pin or pillar, an insulating-tube having metallic screws, one of which is electrically connected with the pin or pillar, a metallic disk arranged at the lower end of the tube and electrically connected with the other screw, a bridge-piece below the tube, a vertically-movable expansible box having a stud to press the metallic disk against the pin or pillar, and an adjusting device for adjusting the expansible box to different heights, substantially as described.



2. In an electric fire-indicator, the box P P' Q, having two rows of thermometer-markings on the periphery and turnable for raising and lowering in a hoop or inverted bridge L for adjustment to the pointer U and locked by the nut T, as set forth.

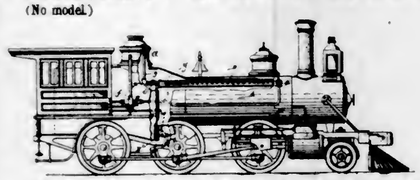
3. In an electrical fire-indicator, the base A, tube D, hoop L, and pointer U therein, in combination with a rotatable and adjustable box having stud V for contact by heat with disk N, and also screw K in threaded boss or hoop L with lock-nut T, as and for the purposes set forth.

445,932. METHOD OF PRODUCING CYLINDRICAL PRINTING-ROLLERS. DANIEL J. MURNANE and FREDERICK W. DROSTEN, St. Louis, Mo. Filed Dec. 13, 1889. Serial No. 333,659. (No model.)



Claim.—The improved method of producing a cylindrical printing-roller herein described, the same consisting in forming a matrix on a single sheet of material whose length is equal to the circumference of the roller to be produced, placing said matrix-face inward into a cylinder whose inner circumference is equal to the length of said matrix, then placing a core or spindle centrally within the matrix, then pouring a suitable composition into the matrix-cylinder, then withdrawing the roller and matrix, and finally removing the matrix from the surface of the roller, substantially as specified.

445,933. FEED-WATER HEATER AND PURIFIER. VIRGIL H. MCCONNELL, Buffalo, N. Y. Filed Sept. 12, 1890. Serial No. 364,755. (No model.)



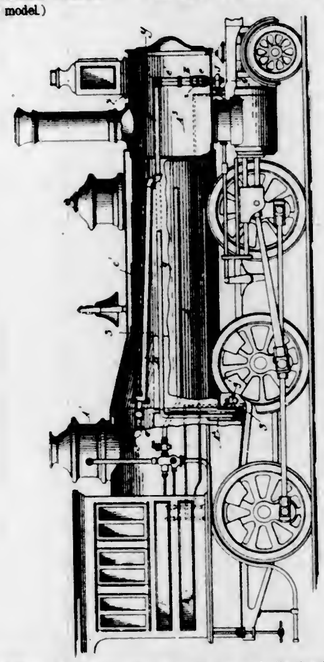
Claim.—1. The combination, with a steam-boiler, of a closed feed-water heater, a steam-supply pipe connected with said heater, a spray device arranged in said heater and connected with the feed-water pipe, whereby the feed-water is delivered into the heater in fine streams, a feed-water-delivery pipe extending from said heater to the lower portion of the boiler with its lower end terminating outside of the boiler and provided near its lower end with a discharge-opening, whereby the feed-water is delivered into the lower portion of the boiler, and a blow-off valve closing the other end of said delivery-pipe outside of the boiler, substantially as set forth.

2. The combination, with a steam-boiler, of a feed-water heater arranged in the boiler and communicating with the steam-space of the boiler, whereby the water in said heater is heated by the steam entering the same, a spray device arranged in said heater, whereby the feed-water is delivered into the heater in a finely-divided state, and a delivery-pipe connected with said water-heater and terminating in the lower portion of the boiler, substantially as set forth.

3. The combination, with a steam-boiler, of a feed-water heater arranged in the boiler and communicating with the steam-space of the boiler, whereby the water in said heater is heated by the steam entering the same, a spray device arranged in said heater, whereby the feed-water is delivered into the heater in a finely-divided state, a feed-water-delivery pipe connected with said heater, extending through the lower portion of the boiler and provided within the boiler with a discharge-orifice for the feed-water, and a blow-off valve arranged in said delivery-pipe beyond said discharge-orifice and on the outside of the boiler, substantially as set forth.

4. The combination, with a boiler having a water-leg provided with a sloping bottom, of a water-heater arranged in the steam-space of the boiler and communicating with the steam-space, a spray-pipe arranged in the heater, whereby the feed-water is delivered into the heater in fine streams, a delivery-pipe connected with said water-heater and provided with a perforated horizontal branch arranged in the water-leg at the foot of its inclined bottom and extending through the shell of the boiler, and a blow-off valve arranged in said branch outside of the boiler, substantially as set forth.

445,934. FEED-WATER HEATER AND PURIFIER. VIRGIL H. MCCONNELL, Buffalo, N. Y. Filed Sept. 29, 1890. Serial No. 366,461. (No model.)



Claim.—1. The combination, with a steam-boiler having a smoke-box, of a water-heating chamber arranged in the steam-space of the boiler and communicating with the steam-space, a settling-chamber arranged in the smoke-box and receiving the hot-water from said heating-chamber, and a pipe whereby the purified water is conducted from the settling-chamber to the boiler, substantially as set forth.

2. The combination, with a steam-boiler having a smoke-box, of a feed-water heater whereby the water is heated to liberate the solid impurities contained in the water, a settling-chamber arranged in the smoke-box connected with said water-heater and provided with a blow-off cock, and a delivery-pipe whereby the purified water is conducted from the settling-chamber to the boiler, substantially as set forth.

3. The combination, with a steam-boiler having a smoke-box, of a vertical settling-chamber arranged in the smoke-box and consisting of a hollow base provided with a descending inlet-pipe and an ascending discharge-pipe, a feed-pipe connected with the descending inlet of the settling-chamber, and a delivery-pipe leading from the ascending outlet thereof to the boiler, substantially as set forth.

4. The combination, with a steam-boiler having a smoke-box, of a vertical settling-chamber arranged in the smoke-box and consisting of a hollow base provided with a descending inlet-pipe, an ascending discharge-pipe, and a strainer arranged in the hollow base which intercepts the solid impurities in the water, a feed-pipe connected with the descending inlet of the settling-chamber, and a delivery-pipe leading from the ascending outlet thereof to the boiler, substantially as set forth.

comprising a holder and a wire or rod held in said holder and having stops of fusible alloy softening at different degrees of heat, and means, as the triggers O O', for holding said weight at different heights, substantially as described.

5. The combination, in a fire-alarm apparatus, of a detector, a weight suspended by a strained wire from the same, and two sets of levers N N', and triggers O O' for retaining said levers, both of said triggers being constructed and arranged to be struck successively by said weight, substantially as described.

6. The combination, in a fire-alarm apparatus, of a detector, an alarm operated by a weight, a trigger supporting said weight, a lever resting on the trigger, a second weight suspended from a strained wire from the detector and released thereby, and arranged to fall on the lever and thus release the weight of the alarm, substantially as described.

7. The combination, in a fire-alarm apparatus, of a detector, an alarm operated by a weight, a trigger supporting said weight, a lever resting on said trigger, another trigger and lever set at a lower plane, and a weight connected to the detector and released thereby, and arranged to operate the levers successively, substantially as described.

8. The combination, in a fire-alarm apparatus and with a suitable detector holding a weight in suspension, of two sets of levers and triggers arranged on different planes, and a ringing device operated by a weight normally held out of operation by the upper trigger, substantially as described.

9. The combination, in a fire-alarm apparatus and with a suitable detector holding a weight in suspension, of two sets of levers and triggers arranged on different planes beneath the weight, and a ringing device normally held out of operation by said triggers and arranged to give different alarms in succession, substantially as described.

10. The combination, in a fire-alarm apparatus and with a suitable detector, of a ringing device operated by a weight hung from a cord wound on pulleys of different diameters to give said ringing device two different speeds, and intermediate connections between the detector and the ringing device, substantially as described.

11. The combination, in a fire-alarm apparatus and with a fusible detector and a weight suspended by a wire from said detector, of two sets of levers and triggers on different horizontal planes to be operated

5. The combination, with a steam-boiler having a smoke-box, of a vertical settling-chamber arrranged in the smoke-box and consisting of a hollow base provided with a descending inlet-pipe, an ascending discharge-pipe, and at its bottom with a blow-off cock, a feed-pipe connected with the descending inlet of the settling-chamber, and a delivery-pipe leading from the ascending outlet thereof to the boiler, substantially as set forth.

6. The combination, with a steam-boiler having a smoke-box, of a vertical settling-chamber arranged in the smoke-box and consisting of a hollow base provided with a descending inlet-pipe, an ascending discharge-pipe, and a horizontal pipe connecting the upper portions of the descending and ascending pipes, a feed-pipe connected with the descending inlet of the settling-chamber, and a delivery-pipe leading from the ascending outlet thereof to the boiler, substantially as set forth.

7. The combination, with a steam-boiler having a smoke-box, of a vertical settling-chamber arranged in the smoke-box and consisting of a hollow base provided with a descending inlet-pipe, an ascending discharge-pipe, and a horizontal pipe connecting the upper portions of the descending and ascending pipes, and shields or deflectors arranged in the upper portions of the inlet and outlet pipes of the settling-chamber, substantially as set forth.

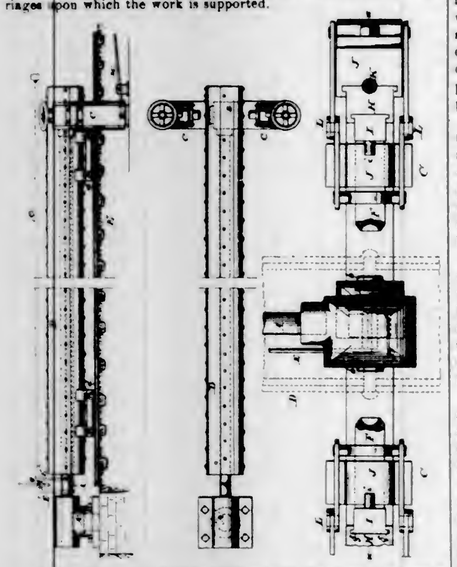
445,935. RIVETING-MACHINE. GEORGE H. PEGRAM, St. Louis, Mo. Filed Oct. 20, 1890. Serial No. 368,701. (No model.)

Claim.—1. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, and an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and respectively adapted to be moved toward the respective anvil-dies.

2. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be respectively moved toward the respective anvil-dies, and a movable support for the work to be riveted

for the purpose of guiding the work between the riveting-machine and the anvil-dies.

3. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be respectively moved toward the respective anvil-dies, and a movable support for the work to be riveted for the purpose of guiding the work between the riveting-machine and the anvil-dies, consisting of a railway and one or more trucks or carriages upon which the work is supported.



4. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be respectively moved toward the respective anvil-dies, and an arm or rod secured at one end to a support and at the other end to the riveting-machine.

5. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be respectively moved toward the respective anvil-dies, an arm or rod secured at one end to a support and at the other end to the riveting-machine, and a railway arranged parallel to the arm or rod for supporting the work which encircles the rod or arm and moving it longitudinally with respect thereto between the riveting-machine and the anvil-dies.

6. In a riveting-machine, the combination of two anvil-dies and an interposed riveting-machine provided with two oppositely-reciprocating riveting-dies arranged in a line between the anvil-dies, and power mechanism for reciprocating said riveting-dies.

7. In a riveting-machine, the combination of two anvil-dies, an interposed riveting-machine provided with two oppositely-reciprocating dies arranged in a line between the anvil-dies, and power devices for reciprocating said riveting-dies, and an arm or shaft supporting at one end the riveting-machine and the other end secured to a support.

8. In a riveting-machine, the combination of two anvil-dies, an interposed riveting-machine provided with two oppositely-reciprocating riveting-dies arranged in a line between the anvil-dies, and power devices for reciprocating said riveting-dies, an arm or shaft supporting at one end the riveting-machine and the other end secured to a support, and guide devices for supporting the work and moving it between the anvil-dies and riveting-machine.

9. In a riveting-machine, the combination of an anvil-die, a riveting-die, power mechanism to reciprocate said riveting-die, an arm or rod supporting the power mechanism for said riveting-die at one end and secured at the other end to a support, and a supporting-guide for the work to be riveted, adapted to move the work parallel to the arm or rod and between the riveting and anvil dies.

10. In a riveting-machine, the combination of an anvil-die, means to reciprocate said anvil-die to or from the work, a lock to lock said anvil-die in position when moved toward the work, a riveting-die, power mechanism to reciprocate said riveting-die, an arm or rod supporting the power mechanism for said riveting-die at one end and secured at the other end to a support, and a supporting-guide for the work to be riveted, adapted to move the work parallel to the arm or rod and between the riveting and anvil dies.

11. In a riveting-machine, the combination of an anvil-die, means to reciprocate said anvil-die to or from the work, a lock to lock said anvil-die in position when moved toward the work, adjusting mechanism for adjusting the locking device, whereby the position of the anvil-die may be accurately adjusted independently of the locking mechanism, a riveting-die, power mechanism to reciprocate said riveting-die, an arm or rod supporting the power mechanism for said riveting-die at one end and secured at the other end to a support, and a supporting-guide for the work to be riveted, adapted to move the work parallel to the arm or rod and between the riveting and anvil dies.

12. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, adjusting devices for adjusting the locking mechanism for accurately adjusting the position of the anvil-dies with reference to the work, and an intermediate riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be moved toward the respective anvil-dies.

13. In a riveting-machine, the combination of two anvil-dies, means to reciprocate said anvil-dies to or from each other, a locking device to lock said anvil-dies when moved toward each other, an intermediate hydraulic riveting-machine having riveting-dies arranged in a line between the two anvil-dies and adapted to be simultaneously moved toward the respective dies, and means to control the operation of the hydraulic mechanism of the riveting-machine, arranged at a distance from the riveting-dies.

14. In a riveting-machine, the combination of two anvil-dies with an interposed riveting-machine having two riveting-dies arranged in a line between the anvil-dies, a support for the riveting-machine permitting work to surround it, and means to support the work and permit its being fed between the anvil and riveting dies.

15. In a riveting-machine, the combination of two oppositely-reciprocating anvil-dies, means to relatively reciprocate said anvil-dies to or from each other, locking devices to hold said anvil-dies against reciprocation when moved toward each other, a riveting-machine interposed between the two anvil-dies and having riveting-dies arranged in line with the anvil-dies, and power mechanism to impart to said riveting-dies a relatively opposite reciprocation.

16. In a riveting-machine, the combination of a riveting-head having riveting-dies facing in opposite directions, two anvil-dies arranged in line with the riveting-dies and pointing in opposite directions, reciprocating heads for said anvil-dies, a thrust-block arranged back of each of the reciprocating heads, and reciprocating locking-blocks adapted to be projected between the thrust-block and the reciprocating heads when the latter are moved toward the riveting-dies.

17. In a riveting-machine, the combination of a riveting-head having riveting-dies facing in opposite directions, two anvil-dies arranged in line with the riveting-dies and pointing in opposite directions, reciprocating heads for said anvil-dies, a thrust-block arranged back of each of the reciprocating heads, reciprocating locking-blocks adapted to be projected between the thrust-block and the reciprocating heads when the latter are moved toward the riveting-dies, and means to adjust the thrust-block to move it to or from the riveting-dies.

18. In a riveting-machine, the combination of a riveting-head having riveting-dies facing in opposite directions, two anvil-dies arranged in line with the riveting-dies and pointing in opposite directions, reciprocating heads for said anvil-dies, a thrust-block arranged back of each of the reciprocating heads, reciprocating locking-blocks adapted to be projected between the thrust-blocks and the reciprocating heads when the latter are moved toward the riveting-dies, and power devices to simultaneously reciprocate the heads and their anvil-dies in opposite directions.

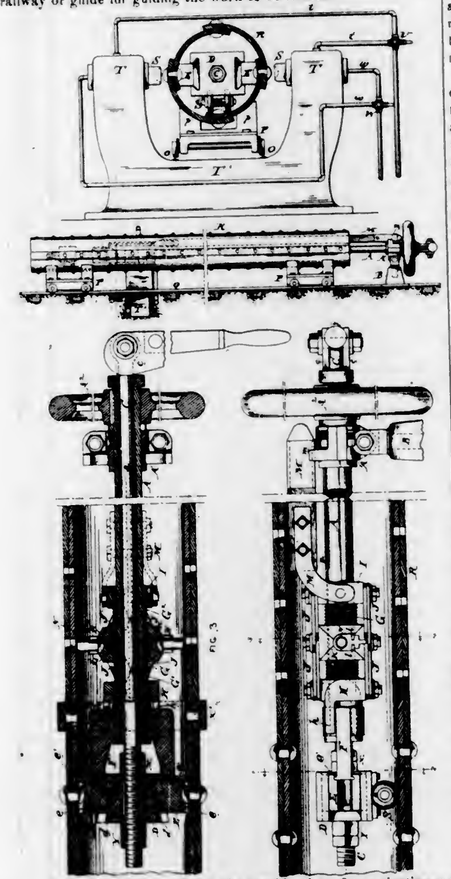
19. In an apparatus for riveting tubes and columns, the combination of rivet-holding or anvil dies arranged external to the tube or column and on opposite sides, with a riveter arranged between the anvil-dies and within the tube or column and adapted to act in conjunction with the anvil-dies.

445,936. RIVETING-MACHINE. GEORGE H. PEGRAM, St. Louis, Mo. Filed Oct. 27, 1890. Serial No. 369,525. (No model.)

Claim.—1. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies pointing toward each other, with two anvil-dies arranged between the riveting-dies and respectively pointing toward the riveting-dies, and a support between the anvil-dies to hold them firmly against the action of the riveting-dies.

2. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies pointing toward each other, with two anvil-dies arranged between the riveting-dies and respectively pointing toward the riveting-dies, a support between the anvil-dies to hold them firmly against the action of the riveting-dies, and an arm or support carrying at one end the anvil-dies and supported at the other end against longitudinal movement.

3. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies pointing toward each other, with two anvil-dies arranged between the riveting-dies and respectively pointing toward the riveting-dies, a support between the anvil-dies to hold them firmly against the action of the riveting-dies, an arm or support carrying at one end the anvil-dies and supported at the other end against longitudinal movement, a railway or guide arranged substantially parallel to the arm or support, and trucks or carriages upon said railway or guide for guiding the work to be riveted.



4. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies pointing toward each other, with two anvil-dies arranged between the riveting-dies and respectively pointing toward the riveting-dies, a support between the anvil-dies to hold them firmly against the action of the riveting-dies, an arm or support carrying at one end the anvil-dies and supported at the other end against longitudinal movement, a railway or guide arranged substantially parallel to the arm or support, trucks or carriages upon said railway or guide for guiding the work to be riveted, and rollers for guide-wheels carried upon the end of the arm or support adapted to rest upon the work to hold said anvil-dies at the proper elevation.

5. In a riveting apparatus, the combination of two riveting-machines having their dies pointing toward each other, with two anvil-dies arranged between the riveting-dies and respectively pointing toward the riveting-dies, an adjustable support between the anvil-dies to hold them firmly against the action of the riveting-dies, and means to adjust said adjustable support for moving the anvil-dies to or from the riveting-dies.

6. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies directed toward and movable to or from each other, with two anvil-dies arranged in a line between the riveting-dies and movable to or from the respective riveting-dies, a support for said anvil-dies for holding them in position between the riveting-dies while permitting the aforesaid movement, an adjustable head adapted to be moved between the anvil-dies to move them to or from the riveting-dies and support them against the thrust of the said riveting-dies, power mechanism to operate said movable head located at a distance therefrom, and connecting devices between said head and power mechanism.

7. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies directed toward and movable to or from each other, with two anvil-dies arranged in a line between the riveting-dies and movable to or from the respective riveting-dies, and a support for said anvil-dies for holding them in position between the riveting-dies while permitting the aforesaid movement, and adapted to be moved for imparting a lateral movement to the anvil-dies with respect to the riveting-machine.

8. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies directed toward and movable to or from each other, a lateral support extending between the riveting-dies, anvil-dies carried on said support and arranged in a line between the riveting-dies, two rivet-holders arranged in the same plane with the anvil-dies and located laterally with respect thereto and upon the support for said anvil-dies, and power mechanism carried upon the support for causing said rivet-holders to be moved to or from each other for the purpose of automatically inserting rivets into the work prior to passing them between the anvil and riveting dies.

9. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies directed toward and movable to or from each other, a lateral support extending between the riveting-dies, anvil-dies carried on said support and arranged in a line between the riveting-dies, two rivet-holders arranged in the same plane with the anvil-dies and located laterally with respect thereto and upon the support for said anvil-dies, power mechanism carried upon the support for causing said rivet-holders to be moved to or from each other for the purpose of automatically inserting rivets into the work prior to passing them between the anvil and riveting dies, and an independent device for moving said rivet-holders longitudinally upon the support with reference to said anvil-dies.

10. In a riveting apparatus, the combination of two riveting-machines having their riveting-dies directed toward and movable to or from each other, a lateral support carrying upon its end anvil-dies arranged between the riveting-dies, laterally-movable rivet-holders also carried by said support, clamping devices for holding the rivets to the holders, and power mechanism for simultaneously moving the two rivet-holders away from each other and automatically releasing the rivets from the clamps and holders.

11. In a riveting apparatus, the combination of two riveting-machines having the riveting-dies directed toward each other, a rotary tube A, a head F, carried upon the end of the tube, and upon which is supported the anvil-dies, anvil-dies E, arranged between the riveting-dies, a wedge-shaped head D, acting upon the adjacent sides of the anvil-dies to move them to or from each other, and a longitudinally-movable shaft C for moving said head D.

12. In a riveting apparatus, the combination of two riveting-machines having the riveting-dies directed toward each other, a rotary tube A, a head F, carried upon the end of the tube, and upon which is supported the anvil-dies, anvil-dies E, arranged between the riveting-dies, a wedge-shaped head D, acting upon the adjacent sides of the anvil-dies to move them to or from each other, a longitudinally-movable shaft C for moving said head D, a sleeve G, having right and left hand screw-threads upon its respective ends, nuts H and I, adapted to said screw-threads, toggles J between said nuts, rivet-holders K, connected to said toggles and laterally movable thereby, a connection between the tube A and sleeve G, whereby the latter may be rotated with the former, and means to hold the rivet-holders against rotation.

13. In a riveting apparatus, the combination of two riveting-machines having the riveting-dies directed toward each other, a rotary tube A, a head F, carried upon the end of the tube upon which is supported the anvil-dies, anvil-dies E, arranged between the riveting-dies, a wedge-shaped head D, acting upon the adjacent sides of the anvil-dies to move them to or from each other, a longitudinally-movable shaft C for moving said head D, a sleeve G, having right and left hand screw-threads upon its respective ends, nuts H and I, adapted to said screw-threads, toggles J between said nuts, rivet-holders K, connected to said toggles and laterally movable thereby, a connection between the tube A and sleeve G, whereby the latter may be rotated with the former, means to hold the rivet-holders against rotation, a sleeve L, having projected arms *l*, loosely supported upon the sleeve G, and rivet-holding clamps N, loosely connected with the arm *l*, for holding the rivets temporarily to the heads K.

14. In an apparatus for riveting tubes and columns, the combi-

nation of a riveting-machine external to the column and acting upon the opposite sides thereof, with anvil-die blocks inside of the tube or column, arranged to transmit the pressure simultaneously through two rivets in line.

15. In an apparatus for riveting tubes and columns, the combination of a riveter external to the tube or column and acting upon the opposite sides thereof, with die-anvils in the line of pressure of said rivet-machine inside of said tube or column, and mechanism for expanding and locking said die-anvils against interposed rivets.

16. In an apparatus for riveting tubes and columns, the combination of a riveting-machine external to the tube or column and acting upon the opposite sides thereof, and a die-anvil inside of the tube or column for transmitting the pressure between the dies of the riveting-machine and through interposed rivets, with mechanism for projecting rivets into the tube to a distance from the end and inserting two rivets simultaneously in the opposite sides of the tube or column.

17. The combination of a riveting-machine with rivet-holders for holding two rivets arranged in line to be simultaneously upset.

18. In an apparatus, the combination of two rivet-holders and power mechanism for imparting to them an opposite relative movement for inserting two rivets from the interior of a column into the sides thereof simultaneously.

445,937. FLEXIBLE ROLL FOR CIGAR-MACHINES. RICHARD A. BRIGHT and WALTER A. PECK, Providence, R. I., said Bright assignor to said Peck. Filed Nov. 25, 1889. Serial No. 331,550. (No model.)



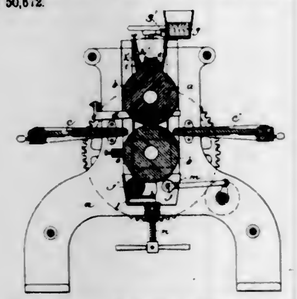
Claim.—1. A flexible spirally-wound wire roll for cigar-machines, made in two tapered sections which are united to each other base to base, substantially as described.

2. A flexible spirally-wound wire roll for cigar-machines, made in two tapered sections which are united to each other base to base, and having a connecting-joint strengthened by an interior coupling, substantially as described.

3. A flexible spirally-wound wire roll for cigar-machines, made in two tapered sections which are united to each other base to base by means of an interior screw-coupling, substantially as described.

4. A flexible spirally-wound wire roll for cigar-machines, made in two tapered sections which are united to each other base to base by means of an interior coupling provided with an exterior collar, substantially as described.

445,938. APPARATUS FOR FINISHING PRINTED SHEETS OF PAPER. GEORGE DUNCAN, Liverpool, and JAMES SALMON, Manchester, England. Filed Dec. 10, 1889. Serial No. 333,300. (No model.) Patented in England July 6, 1888, No. 9,831; in France Mar. 13, 1889, No. 196,679; in Belgium Mar. 14, 1889, No. 85,384, and in Germany Mar. 19, 1889, No. 50,672.

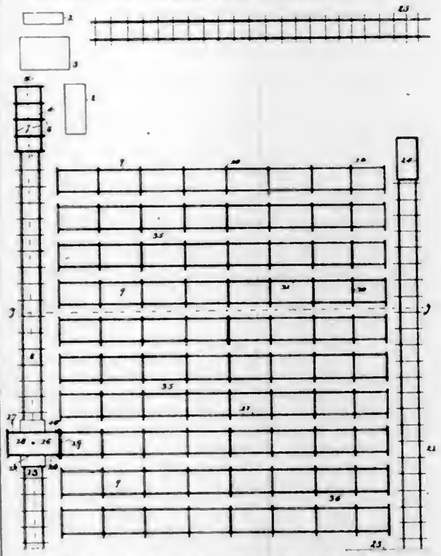


Claim.—1. In apparatus for finishing printed sheets of paper, the combination, with the upper of two finishing-rolls which are arranged one above the other, of a blanket arranged in contact with said roll, a reservoir for supplying a cleansing-liquid to said blanket, and a wiper arranged to press against said upper roll to prevent superfluous moisture from flowing down the roll, substantially as specified.

2. In apparatus for finishing printed sheets of paper, the combination, with the upper of two finishing-rolls which are arranged one above the other, of an endless blanket arranged in contact with said upper roll, rollers for carrying said endless blanket, a perforated block or liquid-distributer arranged over the blanket, and a reservoir provided with a drip-nozzle and arranged to deliver liquid on said perforated block or distributer, substantially as and for the purposes specified.

3. In apparatus for finishing printed sheets of paper, the combination of two finishing-rolls arranged one above the other, a blanket for applying a cleansing-liquid to the upper roll, a reservoir for supplying the blanket, a wiper arranged to press against said upper roll to prevent superfluous moisture from flowing down the roll, a reservoir arranged beneath the lower finishing-roll, and a roller of porous material arranged in the last-named reservoir and in contact with the lower finishing-roll, substantially as and for the purposes specified.

445,939. BRICK-YARD PLANT. THOMAS J. MONK, Gibsland, La. Filed Nov. 7, 1889. Serial No. 329,516. (No model.)



Claim.—1. In a brick-yard plant, a receiving-rack arranged in proximity to the molder's table, and having a vertical series of parallel and approximately horizontal shelves or ledges to receive and support the pallets, substantially as set forth.

2. In a brick-yard plant, the combination, with the receiving-rack, of the tramway-track extending from the discharge end of the same, and the drying-racks arranged at right angles to the said tramway-track, the said receiving-rack and drying-racks being provided with vertical series of parallel shelves or ledges arranged at equal distances apart for the purpose of supporting the pallets, substantially as set forth.

3. In a brick-yard plant, the combination, with the receiving and drying racks having shelves or ledges, of the tramway-track extending from the discharge end of the receiving-rack and passing at right angles to the drying-racks, and the tramway-car having a pivoted platform or turn-table supporting the rack having a series of shelves or ledges corresponding in number and location to those of the receiving and drying racks, substantially as set forth.

4. In a brick-yard plant, the combination of the tramway-track, the drying-racks constructed at right angles thereto and provided at their ends with pivoted catches, and the tramway-car having a pivoted platform or turn-table supporting a rack provided with shelves or ledges corresponding in number and location to those of the drying-racks, substantially as set forth.

5. The herein-described tramway-car, consisting of a base having a central upwardly-extending spindle, a platform or turn-table mounted pivotally upon the said spindle, and a rack constructed upon the said turn-table and provided with a series of ledges or shelves to support the pallets, substantially as set forth.

6. The combination, with the drying-racks, of the tramway-track constructed at right angles to the said racks and built on a downgrade to the kiln, and the tramway-car traveling upon said track and having a pivoted platform or turn-table supporting a rack provided with shelves or ledges to support the pallets, substantially as set forth.

7. In a brick-yard plant, the combination of a receiving-rack, the tramway-track extending on a downgrade from the discharge end of said receiving-rack, the drying-racks built at right angles to the said track and having shelves or ledges inclined downwardly to their discharge ends, the tramway-track constructed at the discharge ends of the drying-racks and built on a downgrade to the brick-kiln, and the tramway-cars having pivoted platforms or turn-tables supporting racks having shelves or ledges to receive the pallets, substantially as set forth.

8. The combination, with the racks having shelves or ledges, of the pallets constructed of slats and provided with flanged wheels or rollers, substantially as set forth.

9. The herein-described brick-pallets, composed of slats the ends of which are connected by strips having bearings or perforations, and the flanged wheels or rollers mounted in the said bearings, substantially as set forth.

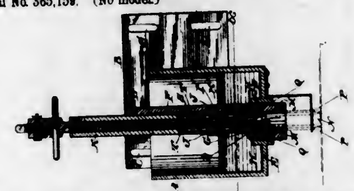
10. The herein-described pallets, provided with latches or catches whereby they may be separably connected, substantially as and for the purpose set forth.

11. In a brick-yard plant, the combination of the receiving-rack and the drying-racks having inclined ledges or shelves, with the tramway-cars having pivoted platforms or turn-tables and supporting racks having shelves or ledges, and the pallets having flanged wheels or rollers, and latches or catches whereby the said pallets may be separably connected, substantially as set forth.

12. A brick-pallet provided with flanged wheels or rollers and having at its front edge a spring latch or catch and at its rear edge a recess to receive the catch of the next adjoining pallet, substantially as set forth.

13. A brick-yard plant comprising the receiving-rack arranged in proximity to the molder's table and having inclined shelves or ledges, the tramway-track extending on a downgrade from the discharge end of the receiving-rack, the drying-racks constructed at right angles to the said track and having inclined shelves or ledges, the tramway-track constructed at right angles to the discharge ends of the drying-racks and built on a downgrade to the kiln, the tramway-cars having pivoted platforms or turn-tables supporting the racks having shelves or ledges, the pivoted catches upon the ends of the receiving and drying racks to hold the racks of the tramway-cars in alignment therewith, and the pallets having flanged wheels or rollers and provided with latches or catches, whereby they may be separably connected, substantially as and for the purpose herein set forth.

445,940. PASTING DEVICE. GEORGE P. SALISBURY, Philadelphia, Pa., assignor to Eugene K. Plumly, same place. Filed Sept. 16, 1890. Serial No. 365,159. (No model.)



Claim.—1. A paste-pot containing a cylinder with an opening in its side and a recessed portion on the inner wall thereof below and extending to said opening, and a plunger working in said cylinder and having a shoulder at the lower portion thereof, said parts being combined substantially as described.

2. A paste-pot having a plunger provided with a shoulder near its lower end, said end being reduced and having a beveled edge, substantially as and for the purpose set forth.

3. A paste-pot having a plunger provided with a sliding lower portion, substantially as and for the purpose set forth.

4. A plunger for a paste-pot, provided with a lower end portion having slotted sides, a pin secured to the main portion of the plunger and passing through said slotted sides, and a coiled spring in a recess in the main portion and bearing against the lower end portion, said parts being combined substantially as described.

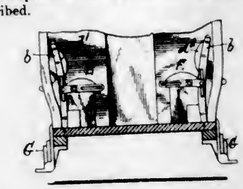
5. A paste-pot having a discharge-tube with a recessed portion, and a reciprocating plunger in said tube, having a spring-controlled sliding lower end, said parts being combined substantially as described.

6. A paste-pot having a discharge-tube with a recessed portion, and a reciprocating plunger in said tube, said plunger having a slotted lower end secured thereto by a pin passing through said slots and provided with a spring bearing against said lower end, said parts being combined substantially as described.

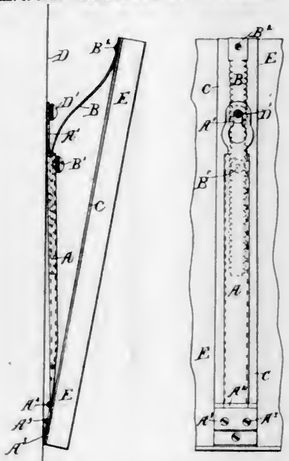
445,941. STREET-CAR. JOHN G. SCHNEIDER, Chicago, Ill., assignor of one-half to Frank Riedle, same place. Filed Nov. 5, 1890. Serial No. 370,367. (No model.)

Claim.—1. A convertible car wherein the panels and windows forming the sides of the structure are adapted to be removed jointly in sections, the seats having adjustable backs and running lengthwise of the car, whereby said seats may be made to face outwardly when the joint panel and window sections are removed and inwardly when the same are replaced, leaving an aisle or passage through the center of the car when in either position, and the folding steps arranged lengthwise of and on the respective sides of the car, substantially as described.

2. In a convertible car as described, the removable joint panel and window sections, the seats running lengthwise of the structure and provided with adjustable backs, which may be turned to face inwardly or outwardly with reference to the removable panel and window sections, one-half of the backs of said seats being removable on a line running through the longitudinal center thereof, as described, and the seats arranged lengthwise of and located at each side of the structure and adapted to fold up when not required for use, substantially as described.



445,942. PICTURE-HANGER. ARCHIBALD SIDDALL, Ryde, assignor of one-half to Edward Josiah Tobin, Sydney, New South Wales. Filed Mar. 5, 1890. Serial No. 342,773. (No model.)



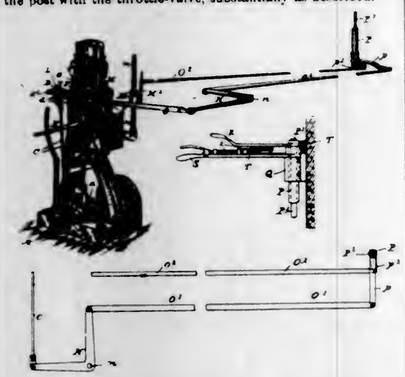
Claim.—1. In a picture-hanger, the combination of a sheath or hollow support provided with a suspension device at one end for suspending the same from the wall, a supporting-plate adapted to be secured to the picture, hinged to the opposite end of the hollow support, and a more or less flexible strip secured to said supporting-plate and adapted for adjustment within the hollow support, as set forth.

2. A picture-hanger consisting of a hollow support A, provided with means for suspending it from a nail or its equivalent, and with a hinge-joint A^2, adapted to be secured to the lower portion of a picture-frame, of the flexible strap or strip B, one end of which is secured to the upper portion of said picture-frame, said strap or strip sliding freely within the hollow support A, and the binding-screw B', adapted to lock the strip in the hollow support, substantially as and for the purposes specified.

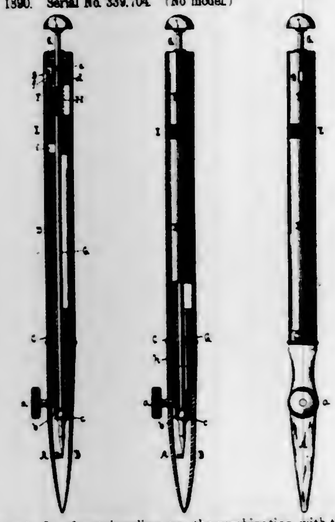
445,943. ENGINE ATTACHMENT. DANIEL R. WOODSUM and FRANK M. WOODSUM, Harrison, Me., assignors of one-third to John E. Robertson, Concord, N. H. Filed Sept. 25, 1889. Serial No. 325,036. (No model.)

Claim.—The combination, with a steam-engine provided with a throttle and reversing mechanism, of a rack in the pilot-house, a hollow shaft through the deck, having a crank upon its lower end and a handle upon its upper end, said handle being provided with a spring-stop to engage with the teeth of the rack, a post through the hollow shaft having a crank on its lower end and a handle upon its upper end,

said handle being provided with a spring-actuated stud for engaging with the smooth portion of the rack, two rods and a lever for connecting the crank on the end of the hollow shaft with the reversing mechanism of the engine, and a rod for connecting the crank on the lower end of the post with the throttle-valve, substantially as described.



445,944. FOUNTAIN RULING-PEN. WILLIAM H. BIERMIER, New York, N. Y., assignor to Edward G. Soltmann, same place. Filed Feb. 8, 1890. Serial No. 339,704. (No model.)



Claim.—1. In a fountain ruling-pen, the combination, with the two pen-blades, of an ink-nozzle projecting downwardly between the pen-blades and provided with an outwardly-facing valve-seat, a tubular ink-reservoir to which the ink-nozzle is attached, and a valve-rod passing through the ink-reservoir and through the ink-nozzle and provided with an outwardly-opening valve and with a projecting ink-guide normally held closed by a spring, substantially as and for the purpose specified.

2. In a fountain ruling-pen, the combination of the pen-blades A and B, the ink-nozzle C, provided with valve-seat *b*, the tubular ink-reservoir D, nipple E, cap F, valve-rod G, with valve *c*, projecting ink-guide K, piston *d*, spring H, and button I, substantially as described.

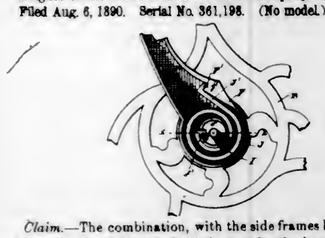
3. In a fountain ruling-pen, the combination, with the reservoir and the ink-valve, of the blades A and B, the blade B having a portion extending parallel, or nearly so, to the motion of the valve, and the valve being located in close proximity to said blade, substantially as described.

445,945. KNIT GARMENT. HATTIE C. BOHNE, Jacksonville, Ill., assignor of one-half to the Bohne Knitting Works, same place. Filed June 23, 1890. Serial No. 356,323. (Specimens.)

Claim.—As a new article of manufacture, a knit garment formed in a single continuous body and having the pockets for the bust formed integral with the body and of a different stitch than the body, substantially as described.



445,946. SCHOOL-DESK SEAT. ALANSON CARY, New York, N. Y., assignor to the Union School Furniture Company, Battle Creek, Mich. Filed Aug. 6, 1890. Serial No. 361,198. (No model.)



Claim.—The combination, with the side frames having projecting studs provided with longitudinal slots and swinging arms pivoted on said studs and each having a recess around the stud in the side opposite the frame and a shoulder or offset at one side of and within said recess, of the convolute springs inserted within the recesses of the arms and surrounding the studs, having their inner ends bent to engage the slots of the studs and their outer ends bent to engage the shoulders at the side of the recesses, the plates slipped on the studs covering the recesses in the arms, and the nuts screwed on said studs to confine the plates and arms thereon, all substantially as specified.

445,947. HAIR-CLIPPING MACHINE. GEORGE H. COATES and EDWARD M. LONG, Worcester, Mass.; said Long assignor to said Coates. Filed Oct. 11, 1886. Serial No. 215,832. (No model.)



Claim.—1. The combination, with a stationary cutting-plate, reciprocating cutting-plate, a fixed handle to which said stationary cutting-plate is attached, and a pivoted handle by which said movable cutting-plate is operated, of a bottom supporting-plate attached to the rigid portion of the machine, said plate having its under surface flush with the under surface of the stationary cutting-plate and extending rearward to form a support for the machine behind the surface of said stationary cutting-plate, substantially as described.

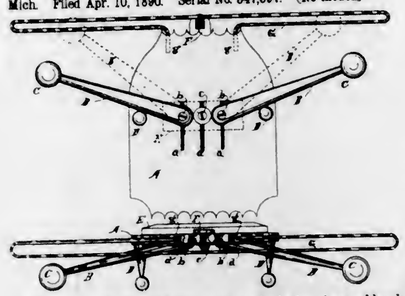
2. The combination, with stationary and movable cutting-plates and fixed and pivoted handles, of a bottom supporting-plate F, attached to the rigid portion of the machine with its under surface flush with the under surface of the stationary cutting-plate and extending rearward from said stationary cutting-plate to form a support for the machine in the operation of cutting, said supporting-plate being curved

with its convex side downward to allow the machine to be rocked and the cutting-edges of the cutting-plates to be raised while engaged in the operation of cutting, substantially as described.

3. The combination, with the stationary and movable cutting-plates and fixed and pivoted handles, of a supporting bottom plate attached to the rigid portion of the machine with its under surface flush with the under surface of the stationary cutting-plate and extending rearward from the stationary cutting-plate to form a support for the machine in the operation of cutting, said supporting-plate being corrugated, substantially as described.

4. The combination, with stationary and movable cutting-plates and fixed and pivoted handles, of the arm c, placed at an acute angle with the pivot of the pivoted handle, whereby the movable cutting-plate is actuated in a plane at an acute angle with the pivot of the pivoted actuating-handle, substantially as described.

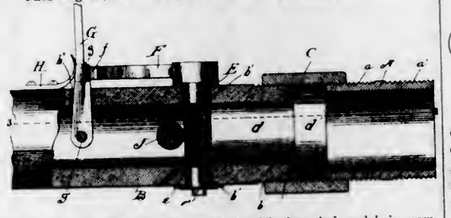
445,948. WARDROBE-HOOK. WALLACE B. COMSTOCK, Allendale, Mich. Filed Apr. 10, 1890. Serial No. 347,397. (No model.)



Claim.—1. The combination, in a wardrobe bracket and book, of a shield-shaped body A, provided with a loop, outwardly-projecting pins D, and longitudinal slots through the body, with an adjustable cleat, and arms pivoted at one end to the cleat and arranged to stand at an acute angle with the surface of the body, substantially as specified.

2. The combination, in a wardrobe bracket and hook, of a shield-shaped body having longitudinal slots for the adjustment of the arms, apertures *g* for the support of a curtain-rod, a loop, a cleat adjustable by means of the screw c and slot *a'*, arms pivoted to the cleat and arranged to stand at acute angles with the surface of the bracket, pins secured to and projecting out at right angles from the bracket and in position to support the arms, and a curtain-support, substantially as specified.

445,949. NIPPLE-HOLDER. CHARLES T. HACKEN, Chicago, Ill. Filed Aug. 22, 1890. Serial No. 362,740. (No model.)



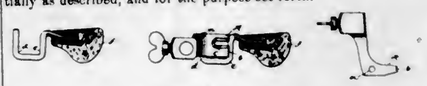
Claim.—1. The tube B, provided with threaded end *b*, in combination with the internally-threaded ring C, the plunger D, fitted in the end of the tube and provided with an enlarged head *d'*, and an oscillating cam E, mounted in the tube and arranged to force the plunger outward against the threaded end of the nipple A when turned into the ring, substantially as and for the purposes specified.

2. The tube B, in combination with the ring C, adapted to receive the threaded end of the nipple A, the plunger D, the cam E, arm F, and spring-lever G, substantially as and for the purposes specified.

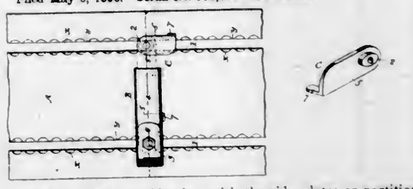
3. The tube B, in combination with the ring C, adapted to receive the threaded end of the nipple A, the plunger D, oscillating cam E, and bracing-pin J, substantially as and for the purposes specified.

445,950. ATTACHMENT-HOLDER FOR SEWING-MACHINES. JOSEPH R. HEBERT, Brooklyn, N. Y., assignor to the Domestic Sewing Machine Company, of Ohio. Filed Mar. 3, 1886. Serial No. 194,406. (No model.)

Claim.—An attachment-holder for sewing-machines, consisting of a presser-foot provided with a transverse hole or opening therein near its heel and with a transverse notch or groove in its toe, in combination with a U-shaped rod or stem of springy metal carrying an attachment adapted to engage with said opening and groove, in a manner substantially as described, and for the purpose set forth.



445,951. SHELF-FASTENING. JAMES W. HINK, Jamestown, N. Y., assignor to the Fenton Metallic Manufacturing Company, same place. Filed May 6, 1890. Serial No. 350,743. (No model.)



Claim.—1. The combination, with the side plates or partitions, each having a series of recesses and shoulders, of the shelf-supports and locking devices connected to the shelf-supports and provided with heads adapted to the transverse diameters of the recesses, substantially as described.

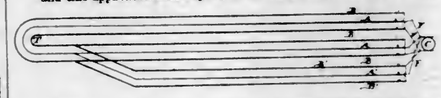
2. A case having sides or partitions A, with vertical slots, recesses, and shoulders, movable shelves B and supports therefor, and locking devices, each having a head adapted to said recesses and adjustably connected to the support, substantially as set forth.

3. The combination, with the slotted and recessed sides or partitions A, of adjustable shelves and locking devices consisting of plates provided with elliptical heads adapted to said slots and recesses, said plate being constructed to rotate to engage and disengage the elliptic heads with the recesses, substantially as set forth.

4. The combination, with an adjustable shelf and with the slotted and recessed sides or partitions, of supports or brackets and plates pivotally connected with said supports or brackets, and each provided with an elliptical head extending into one of the slots and fitting within one of the recesses, substantially as set forth.

5. The combination, with the slotted and recessed plates and shelves and supports thereof, of locking devices provided with elliptical heads 2 and lips 7, for the purpose set forth.

445,952. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Original application filed Sept. 23, 1886, Serial No. 214,309. Divided and this application filed Sept. 4, 1890. Serial No. 363,898. (No model.)



Claim.—1. In an electric railway, the combination of a line-conductor extending along the railway, electrically-propelled cars moving on said railway and receiving current from the conductor, an electric generator for supplying current to said line-conductor, and two or more feeding-conductors connecting one pole of the generator with different distant parts of the line-conductor.

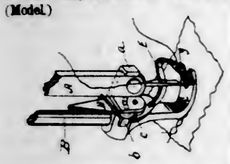
2. In an electric railway in which the rails and earth form a return-circuit, the combination of the rails and a suspended line-conductor with electrically-propelled cars running upon said railway and making a traveling connection with the rails and having an upwardly-extending current-collecting device making a traveling connection with the line-conductor, a generator of electricity, and two or more feeding-conductors leading from the generator to distant portions of the line-conductor.

3. In an electric railway in which the rails and earth form a return-circuit, the combination of the rails and a suspended line-conductor with electrically-propelled cars running upon said railway and making a traveling connection with the rails and provided with an upwardly-extending collector making connection with the line-conductor, a generator of electricity, two or more feeding-conductors leading from the generator to distant portions of the line-conductor, and an electrical connection between the generator and one place along the rails.

4. The combination of a line-conductor extending along a railway, a series of independently electrically-propelled vehicles receiving cur-

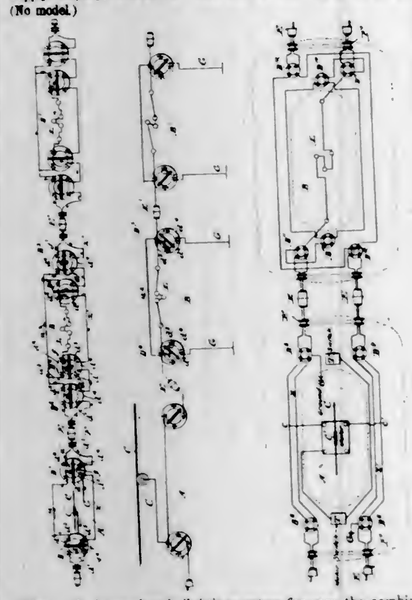
rent therefrom, current-controlling devices on said vehicles to vary the current received from the line-conductor, a generator of electricity, and separate feeding-conductors extending from the generator and connecting with distant portions of the line-conductors.

445,953. **EMBROIDERY ATTACHMENT FOR SEWING-MACHINES.** THOMAS S. HUNTINGTON, New York, N. Y., assignor to the Domestic Sewing Machine Company, of Ohio. Filed Mar. 8, 1886. Serial No. 194,410. (Model.)



Claim.—An embroidery attachment for sewing-machines, consisting of a presser-foot serving as a frame, a pivoted lever and thread-carrier arm, and an actuating device carried by the needle-bar, consisting of the plate *a*, adapted for detachable connection with the needle-bar, and a pivoted actuating-plate *b*, having connection therewith, the latter plate being provided with arms or projections for engagement with said pivoted lever, and an engaging pin or projection adapted to engage with a slot in said pivoted plate *b* to limit the throw thereof, substantially as described, and for the purpose set forth.

445,954. **ELECTRIC CAR-LIGHTING.** LINWOOD F. JORDAN, Somerville, Mass., assignor, by mesne assignments, to the B. G. Electrical Supply Company, Portland, Me. Filed Nov. 16, 1889. Serial No. 330,600. (No model.)



Claim.—1. In an electric-lighting system for cars, the combination, with the motor-circuit and switches controlling it, of an electric-lighting circuit consisting of a main conductor extending through the car and a returning or ground conductor, switches at each end of the car controlling the main conductor, and conductors containing a series of lamps, and switches located at each end of the car controlling the circuit between said conductor and the main conductor, substantially as described.

2. In an electric-lighting system for cars, the combination, with the main conductor extending through the car, the return or ground conductor therefor, a switch at each end of the car controlling the circuits of the main conductor, a conductor including a series of lamps, and a four-point switch at each end of the car between said conductor and the main circuit, each switch being provided with a safety-fuse, substantially as described.

3. A coupler consisting of two like parts, each having a body of a non-conducting material and provided on its exterior surface midway between its ends with a projecting ring of non-conducting material, and each part provided on its ends with a gasket of flexible material extending beyond the end, whereby when the parts are brought together gaskets will bulge out and make a tight joint, substantially as described.

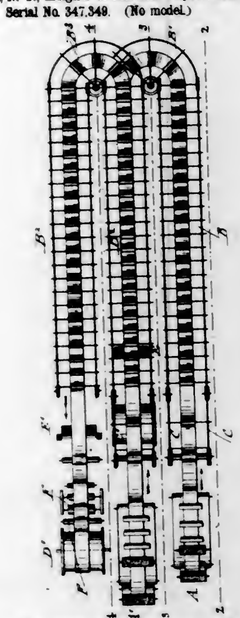
4. In an electric-lighting system for cars, a coupler consisting of two parts, each part having a metallic socket connected with one conductor, a projection entering a recess in said socket, a spring for maintaining said projection in place, and a plug having a recess corresponding to the projection and connected to the other conductor and adapted to fit the corresponding socket, substantially as described.

5. In an electric-lighting system for cars, a coupler consisting of two parts, the body of each of which is of insulating material, a metallic socket connected to one conductor, and a cap fitting the body and having a recess for the end of the socket, substantially as described.

6. In an electric-lighting system for cars, a frame supported at the end of the car and a diaphragm-ring supported by said frame and arranged to support and protect the conductor between the cars, substantially as described.

7. In an electric-lighting system for cars, the combination, with the circuits, of the four-part switch D, having sockets for the conductors fitted in the base of the switch, and plates connected with said sockets, two of the plates being connected with the main circuit, one of the plates being connected to the return-circuit and one of the plates being connected to the main-circuit plate by a fuse, substantially as described.

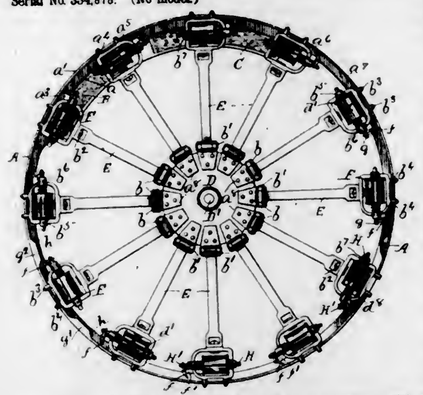
445,955. **APPARATUS FOR COATING PAPER.** JOSEPH KAYSER, New York, N. Y., assignor to Johanna Kayser, same place. Filed Apr. 10, 1890. Serial No. 347,349. (No model.)



Claim.—1. The apparatus herein described for coating paper on both sides by one continuous process, which consists of a primary grounding-machine, a primary drying apparatus, means for transferring the paper from the grounding-machine to said drying apparatus, a second grounding-machine sidewise of the primary grounding-machine, a second drying apparatus arranged above the primary drying apparatus, means for transferring the paper from the second grounding-machine to the second drying apparatus, a reeling-machine sidewise of the secondary grounding-machine, and means for guiding the paper from the second drying apparatus to the reeling-machine, substantially as set forth.

2. The apparatus herein described for coating paper on both sides, which consists of a primary grounding-machine, a primary drying apparatus, means for transferring the paper from the primary grounding-machine to the primary drying apparatus, said drying apparatus occupying the lower half of the height of the room and being arranged with a turn-table for turning the paper, a second grounding-machine located sidewise of the first grounding-machine, a second drying apparatus arranged in the upper half of the height of the room and partly above the primary drying apparatus, means for transferring the paper from the second grounding-machine to the second drying apparatus, said second drying apparatus being also provided with a turn-table for turning the paper, a reeling-machine arranged sidewise of the second grounding-machine, and means for transferring the coated paper from the second drying apparatus to the reeling-machine, substantially as set forth.

445,956. **DIP-SOLDERING MACHINE.** EDWARD G. LAUTERBACK, Chicago, Ill., assignor to Alfred Booth, same place. Filed Dec. 24, 1889. Serial No. 334,878. (No model.)

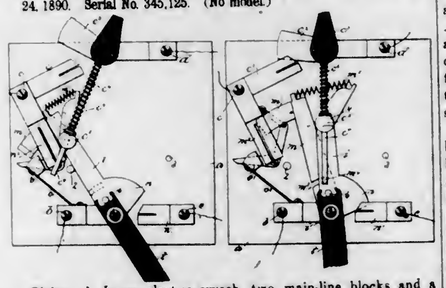


Claim.—1. In a can-soldering machine, the combination, with a circular track having descending and ascending planes, as described, acid and solder baths located along the line of the track, and the central rotating hub, of arms hinged to the hub, can-holding frames swiveled to said arms, and bearing-points on said frames engaging the circular track on opposite sides of the axes of their swivel-joints, whereby the cans are tipped longitudinally by the action of the descending and ascending planes, substantially as described.

2. In a can-soldering machine, the combination, with a circular track having descending and ascending planes, as described, acid and solder baths located along the line of the track, and the central rotating hub, of arms hinged to the hub, can-holding frames swiveled to said arms, said frames having adjustable clamping-plates adapted to engage the ends of the cans and to hold them transversely to the arms to solder their body-seams, and rollers on said frames for traveling on the circular track on the opposite sides of the axes of the swivel-joints of the frames, whereby the cans are tipped longitudinally by the action of the descending and ascending planes, substantially as described.

3. In a can-soldering machine, a clamping head or heads provided with a number of elongated radial openings and the bolts inserted in said openings, said bolts being threaded at one end to receive a fastening-nut and the opposite end terminating in a conical bead which extends inside of the can-body, substantially as described.

445,957. **ELECTRIC SWITCH.** GEORGE R. LEAN, Boston, Mass., assignor to the Bernstein Electric Company, Portland, Me. Filed Mar. 24, 1890. Serial No. 345,125. (No model.)



Claim.—1. In an electric switch, two main-line blocks and a switch between them, two branch-line blocks and a switch between each branch-line block and the main-line blocks, the movable members of the branch-line switches operating in advance of the movable member of the main-line switch at every movement thereof, substantially as described.

2. In an electric switch, two main-line blocks and a switch between them for making and breaking an electric connection, combined with a branch-line block, as *e*, and a switch between it and one of the main-line blocks, the movable members of said switches being elastically connected together, and means for moving said members, substantially as described.

3. In an electric switch, two main-line blocks and a switch between them to make and break an electric connection, combined with two branch-line blocks, and a switch between each branch-line block and the main-line blocks to make and break an electric connection, and two arms carrying the movable members of said switches moving independently in one direction, but simultaneously in the other direction, substantially as described.

4. In an electric switch, two main-line blocks and a switch between them, and an arm, as *m*, carrying the movable member thereof, combined with two branch-line blocks, and a switch between each of said blocks and the main-line blocks, and an arm, as *i*, carrying the movable members of one of said last-named switches, one of said arms engaging and moving the other when moved in one direction, but moving independently when moving in the opposite direction, substantially as described.

5. In an electric switch, two main-line blocks, a contact-pen, and contact-plate between them to make and break an electric connection, combined with two branch-line blocks, and a contact-pen and contact-plate between each of said branch-line blocks and the main-line blocks to make and break electric connection between each of said branch-line blocks and the main-line blocks, and means for moving said contact-plates, substantially as described.

6. In an electric switch, two main-line blocks and a switch between them, two branch-line blocks, and a switch between each branch-line block and the main-line blocks, a spring for moving the movable member of the main-line switch to make and break electric connection, and a hand-lever for moving the movable members of the branch-line switches and extending the operating-spring of the main-line switch, substantially as described.

7. In an electric switch, main-line blocks and a contact-pen between them, a contact-plate, and arm carrying it, combined with branch-line blocks, contact-pens between said blocks and the main-line blocks, contact-plates c^3 and *n*, the arm *i* and rod c^4, connected together, the spring c^5, and the loosely-connected operating-lever *f*, substantially as described.

8. In an electric switch, main-line blocks and a contact-pen between them, a contact-plate, and arm *m* carrying it, combined with branch-line blocks, contact-pens, and contact-plates, the arm *i*, having a pin m^4, and a pin 4 to engage and move the said arm *m*, substantially as described.

9. In an electric switch, two main-line blocks and a switch between them, combined with a branch-line block, as *e*, and a switch between it and one of the main-line blocks, the movable member of the branch-line switch operating in advance of the movable member of the main-line switch at every movement thereof, substantially as described.

445,958. **HOLDER FOR SOAP-POWDER.** FREDERICK J. LOCKWOOD, Bridgeport, Conn., assignor to Frederick S. Fairchild, same place. Filed Sept. 1, 1890. Serial No. 363,677. (No model.)

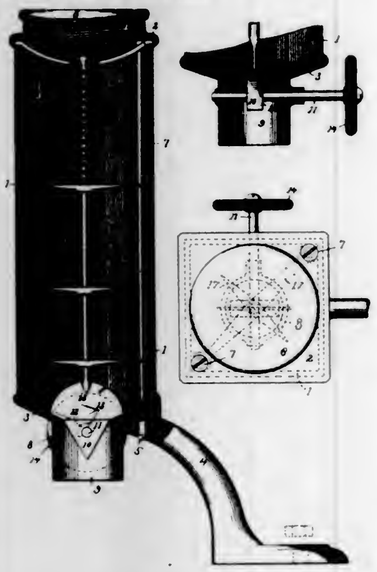
Claim.—1. A soap-powder holder consisting, essentially, of a closed body having an aperture in the bottom, a rotating angular block whose sides just close said aperture, and a spring-actuated plate within the body which bears against the block, so that the block is normally held in position to close the aperture and when rotated against the power of the spring permits the contents to drop out.

2. The body closed at top and bottom and having an aperture 8, and a rotating angular block whose sides just close the aperture, in combination with a rod within the body which is provided with prongs, for the purpose set forth, a plate which bears against the bottom and the block, and a spring acting to force the rod and plate downward, so that the latter will hold the block in position to close the aperture.

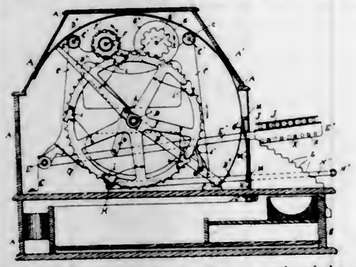
3. The body having an aperture 8 and an angular block mounted loosely on a shaft, said block having a recess in one side, and the shaft having a pin engaging said recess, in combination with a spring-actuated plate within the holder, which bears against the block and the bottom, so that when the block is moved by rotation of the shaft the plate is lifted and the contents are free to drop out until the angle of the block has passed the center, when the spring will operate to force the plate downward, causing the block to close the opening, substantially as described.

4. The body having an opening 8 leading into a nozzle, in combination with a shaft having a pin 13, an angular block mounted loosely on the shaft, whose sides just close the opening, and which is provided

with a recess 12, whose opposite ends are engaged by the pin, a rod within the body carrying a plate engaging the block, as shown, and a spring acting to force the rod and plate downward to throw the block to the closed position and hold it there.



445,959. CASH REGISTER AND INDICATOR. MELVIN N. LOVELL, Erie, Pa., assignor to the Lovell Manufacturing Company, Limited, same place. Filed Mar. 28, 1889. Serial No. 305,055. (No model.)



Claim.—1. In a machine for the purposes mentioned, the combination of a series of setting-levers, one of which is to be used for indicating units, the adjoining lever for tens, the next lever for hundreds, and so on throughout the series, a series of nine keys carried on each of said levers, which are marked consecutively with the nine digits, each of which keys will effect a limitation of the movements of said lever according in degree to the digit on the key used to depress said lever, and an indicator moved by each of said levers, which displays any of the nine digits according to the degree of movement of the lever by which it is actuated.

2. In a machine for the purposes mentioned, the combination of two series of indicator-plates arranged to face from opposite sides of the machine, each of which plates has marked thereon the numerals in successive order, the plates of each series being intended to designate units, tens, hundreds, &c., respectively, in successive order from right to left, as viewed by observers on opposite sides of the machine, and connections connecting the plates of one series with those of like designation in the other series, so that a movement of a given plate of one series will cause the like plate in the other series to move correspondingly, whereby as the plates of one series are moved to indicate a given amount the plates of the other series will be moved to indicate the same amount in like manner.

3. In a machine for the purposes mentioned, the combination of a series of setting-levers, one of which represents units, one tens, another hundreds, and so on throughout the series, a series of nine keys carried on each of said levers, which are marked consecutively with the nine digits, each of which keys will effect a limitation of the movement of said lever according in degree to the digit on the key used to depress said lever, an indicator moved by each of said levers, which displays any of the nine digits according to the degree of movement of the lever by which it is actuated, a pawl-and-ratchet attachment for retaining each of said levers at any degree of depression, and a releasing mechanism for releasing all of said levers simultaneously from the engagement of said retaining attachment.

4. In a machine for the purposes mentioned, the combination of a series of setting-levers which represent, respectively, units, tens, hundreds, &c., a series of keys carried on each of said levers, which represent the digits, each of which keys will effect a limitation of the movement of its lever according to the digit represented thereby, an indicator moved by each of said levers, which displays any of the digits represented by said keys according to the degree of movement of the lever by which it is actuated, a pawl-and-ratchet attachment for retaining each of said levers at any degree of depression, a releasing mechanism for releasing all of said levers simultaneously from the engagement of said retaining attachment, a drawer, a catch for retaining said drawer, and mechanism for releasing said catch which is moved by the mechanism which releases the said setting-levers.

5. In a machine for the purposes mentioned, the combination of two series of indicators, one on each side of the machine, each indicator of each series being intended to indicate units, tens, or hundreds, and so on, according to its position relatively in the series, the arrangement being such that sums indicated on either series shall read properly to an observer facing the same, connections so connecting the indicators of one series with those of the other of like designation that like indicators in both series will move correspondingly and simultaneously, and a series of setting-levers, each of which operates one of the said connected sets of indicators.

6. In a machine for the purposes mentioned, the combination of two series of indicators, one on each side of the machine, each indicator of each series being marked with the numerals in successive order, the numeral displayed by it depending on the degree of movement which may be imparted to the indicator, each of which indicators also being intended to indicate units, or tens, or hundreds, and so on, according to the position relatively in the series, the arrangement being such that sums indicated on either series shall read properly to an observer facing the same, connections so connecting the indicators of one series with those of like designation in the other series that like indicators in both series will move correspondingly and simultaneously, setting-levers for moving each of the thus connected sets of indicators, and a series of keys and catches on each lever for limiting its degree of movement.

7. In a machine for the purposes mentioned, the combination of a series of setting-levers, one of which is to be used for indicating units, the adjoining lever for tens, the next lever for hundreds, and so on, a series of nine keys carried on each of said levers, which are marked consecutively with nine digits, each of which keys will effect a limitation of the movement of said lever according in degree to the digit on the key used to depress said lever, an indicator moved by each of said levers, which displays any of the nine digits according to the degrees of movement of the lever by which it is actuated, a series of registering-wheels which are operated through the action of said indicators, and a series of carrying-gears, each of which effects a one-degree movement of the next higher registering-wheel for every ten degrees of movement of its actuating-gear.

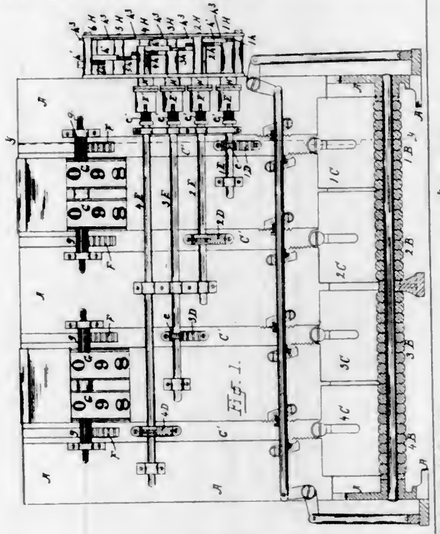
8. In a machine for the purposes mentioned, the combination, with the setting-lever E', having means for limiting the movement gradationally, of a rocking indicator consisting of the curved plates D^3 and D^4, connected together by the web D^5, substantially as and for the purposes set forth.

445,960. CASH REGISTER AND INDICATOR. MELVIN N. LOVELL, Erie, Pa., assignor to the Lovell Manufacturing Company, Limited, same place. Filed June 26, 1890. Serial No. 356,815. (No model.)

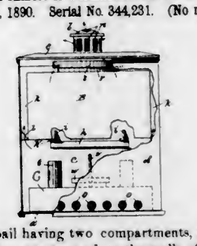
Claim.—1. In a machine of the class herein named, the combination of a series of groups of key-levers, a series of reciprocating racks, each of which is moved by the action of the keys of one of said groups, a series of parallel shafts, each of which is moved rotatively in an opposite direction from the next contiguous shaft by the action of one of said racks, a series of register-shafts, each of which is so connected with one of said parallel shafts as to be moved in one direction only thereby, and gearing on each of said register-shafts, by which as either of said shafts has made a complete revolution the next higher shaft in numerical order will be moved one space.

2. In a machine of the class herein named, the combination of a series of groups of key-levers, a series of reciprocating rack-bars, each of which is moved by the keys of one of said groups more or less, according to which key of said group is operated, a series of indicator-wheels, each of which is moved by one of said rack-bars more or less as said rack-bar is moved, a series of parallel shafts, each of which is moved rotatively in an opposite direction from the next contiguous shaft by the action of one of said rack-bars, a series of register-shafts, each of which is so connected with one of said parallel shafts as to be moved in one direction only thereby, and gearing on each of said register-shafts, by which as either of said shafts has made a complete revolution the next higher shaft in numerical order will be moved one space.

3. In a machine of the class herein named, the combination of a series of groups of key-levers, a series of reciprocating rack-bars, each of which is moved by the keys of one of said groups more or less, according to which key of said group is operated, a series of indicator-wheels, each of which is moved by one of said rack-bars more or less as said rack-bar is moved, a series of parallel shafts, each of which is moved rotatively in an opposite direction from the next contiguous shaft by the action of one of said rack-bars, a series of register-shafts, each of which is so connected with one of said parallel shafts as to be moved in one direction only thereby, and gearing on each of said register-shafts, by which as either of said shafts has made a complete revolution the next higher shaft in numerical order will be moved one space.



445,961. DINNER-PAIL. GEORGE P. MITCHELL, Newark, N. Y., assignor of two-thirds to Charles H. Perkins and Elizabeth W. Smith, same place. Filed Mar. 17, 1890. Serial No. 344,231. (No model.)

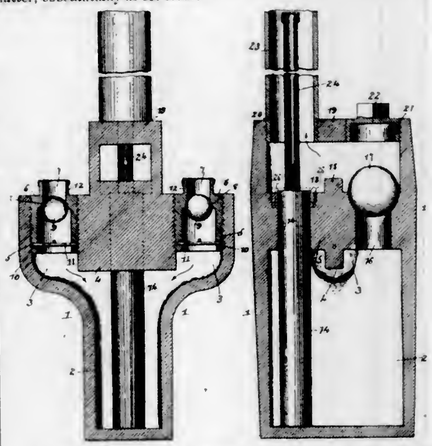


Claim.—A dinner-pail having two compartments, a lamp in one of the compartments, supports secured to the walls of the compartments above the lamp, each consisting of a rectangular plate having an inwardly-projecting lip at each end with a space between them, triangular centering pieces secured to the walls and to the lips, the inclined faces of which extend from the walls downwardly and inwardly nearly to the inner ends of the lips, and a tank upon the projecting portions of the lips, substantially as described.

445,962. PUMP. JAMES P. MONTGOMERY, South Pueblo, assignor of seven-eighths to Lewis L. Marble, William C. Marymee, and John C. Settle, all of Pueblo, Colo. Filed Oct. 14, 1890. Serial No. 368,115. (No model.)

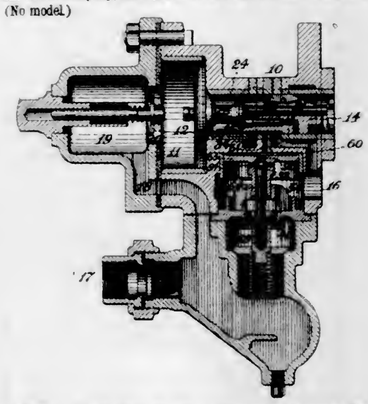
Claim.—1. In a pump, the casing having a chamber provided with a horizontal partition having a downwardly-extending web or wall, the induction-chambers opening into said chamber below said partition and having plugs provided with floating valves, the cylindrical bore formed in the horizontal partition on one side of the central web, an opening formed in the opposite side of said partition and having an upwardly-opening check-valve, and the exit-pipe extending upwardly from the top of the casing, substantially as set forth.

2. In a pump, the casing having a horizontal partition provided with a cylindrical bore and an opening having a seat at its upper end for a check-valve, the induction-chamber opening into said casing below the horizontal partition and provided at their upper ends with screw-threaded plugs having inlet-openings and float-valves closing the latter, the piston or plunger mounted in the cylindrical bore, having the upwardly-extending pump-rod made of tubular or floating material, and the exit-pipe extending upwardly from the top of the casing above the cylindrical bore in the horizontal partition in the latter, substantially as set forth.



3. In a force-pump, the herein-described casing, having a horizontal partition provided with a cylindrical bore and with an opening having a valve-seat at its upper end, a check-valve mounted on said seat, an opening in the top of the casing above said check-valve having a plug, a transverse rib formed upon the upper side of the horizontal partition, the induction-chamber opening into the casing below the horizontal partition and having the floating valves at the upper ends of their inlet openings, the exit-pipe extending upwardly from the top of the casing above the cylindrical bore, the piston or plunger working in the latter, and the plunger-rod extending upwardly through the exit-pipe, said plunger-rod being made tubular or of floating material, substantially as set forth.

445,963. TRIPLE VALVE FOR AUTOMATIC BRAKE MECHANISMS. FRANK MOORE, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Filed Aug. 12, 1890. Serial No. 361,791. (No model.)

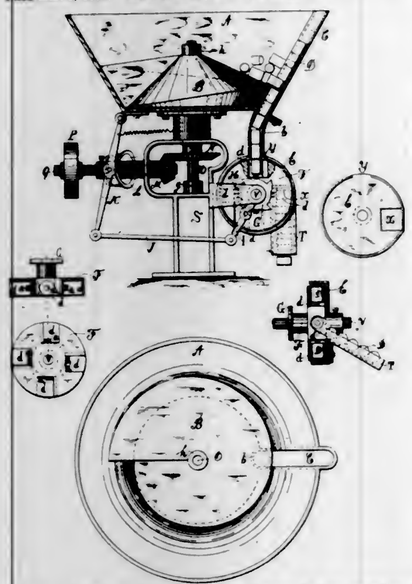


Claim.—1. In a quick-acting triple-valve mechanism, the combination of a supplemental or quick-action piston provided with a discharge-passage, and a valve controlling said passage and fixed upon

the stem of the quick-action supply-valve, which is actuated by the piston, substantially as set forth.

2. In a quick-acting triple-valve mechanism, the combination of a supplemental or quick-action pistou having a central discharge-passage which is open to the supply-passage of the piston and one or more communicating lateral passages open to the brake-cylinder passage, and a valve controlling communication between the central and lateral passages of the piston and adapted to be seated by movement thereof toward the quick-action supply-valve which it actuates, substantially as set forth.

445,964. FEEDING DEVICE. JOHN H. MORRISON, Pawtucket, R. I., assignor of one-half to the Atwood, Crawford Company, same place. Filed Mar. 3, 1890. Serial No. 342,502. (No model.)



Claim.—1. The combination, with a receiver for the reception of spool-blanks or analogous articles, having a channel on its side, of a moving agitator having its top spiral or cam shaped for the purpose of stirring the blanks and constantly covering and uncovering a portion of said channel during its movements, all suitably arranged and supported, substantially as described, and for the purpose set forth.

2. In a feeding device and in combination, a receiver for the reception of spool-blanks or analogous articles, having a channel on its side for the deliverance of said articles, an agitator formed with a spiral or cam shaped top, located within said receiver and covering the bottom thereof, a conducting-pipe for the further deliverance of said articles, a stand for the proper support of the hereinbefore-mentioned mechanism, and means for operating, substantially as described, for the purpose set forth.

3. In a feeding device and in combination, a receiver for the reception of spool-blanks or analogous articles, a channel C, agitator B, connecting-pipe *b*, intermittent rotary carrier F, provided with recesses *d*, fixed case E, chute T, and suitable supporting and operating mechanism, substantially as described.

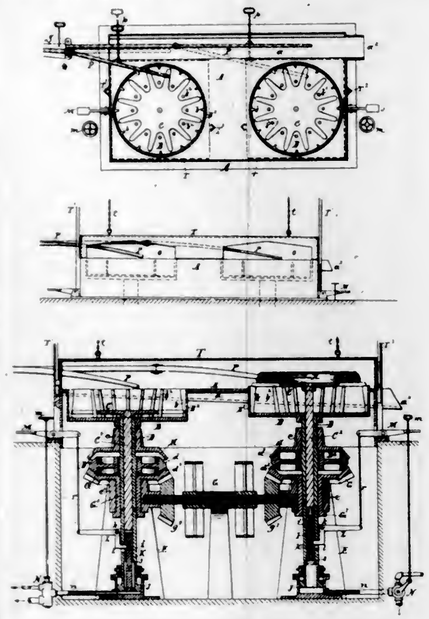
4. The combination, in a feeding device, of receiver A, bearing-channel C, agitator B, stand S, conducting-pipe *b*, intermittent rotating carrier F, provided with recesses for the reception of the blanks, adjusting-screws *a*, ratchet-wheel G, fixed case B, bearing-openings X and Y, and chute T, all supported, arranged, and provided with operating mechanism, substantially as described, and for the purpose set forth.

445,965. MECHANISM FOR COILING WIRE RODS. FRED H. DANIELS, Worcester, Mass. Filed June 26, 1886. Serial No. 206,323. (No model.)

Claim.—1. The combination, with a rod-coiling receptacle having a cylindrical rim provided with a series of upright flanges and an inner series of pins or fingers, of a spider or plate having a series of radial arms extending across the space between said fingers and the outer rim-flanges for supporting the coils of wire rod, substantially as set forth.

2. The combination of the rod-coiling receptacle mounted on the revoluble shaft D, the friction disk or wheel D', fixed on said shaft, the stationary friction-rim H, the revoluble friction rim and gear G, and mechanism for raising and depressing the shaft and friction-wheel, whereby said friction-wheel is brought into contact either with the stationary friction-rim H or with the friction-rim of the gear G, substantially as and for the purpose set forth.

3. The combination, with a rod-coiling receptacle or reel, of a spider or lifting-plate mounted on a central shaft which is supported and reciprocatively movable within the reel-supporting shaft and provided with means for elevating said shaft and plate, substantially as and for the purpose set forth.



4. The combination, with a rod-coiling receptacle or reel having a hollow supporting-shaft carrying a frictional actuating-wheel, and a lifting spider or plate having a shaft extending through and reciprocatively movable within said hollow reel-supporting shaft, of a pressure-cylinder containing a hollow primary piston or plunger acting against said reel-supporting shaft and a secondary piston or plunger acting against the shaft of said spider or plate, for the purposes set forth.

5. The combination, with a reel or coiling receptacle and a spider or lifting plate having supporting-shafts that telescope one with the other, of a lifting mechanism comprising a pressure-cylinder with primary and secondary plungers adapted for acting on the respective shafts, and a catch device for retaining said secondary plunger when in depressed position in relation to said primary plunger, for the purposes set forth.

6. The combination, with the reel-shaft and lifting-spider shaft, of the pressure-cylinder, the hollow primary plunger, the secondary plunger provided with the inclined lug *i*, the locking-lever L, fulcrumed on said primary plunger, with its end *l* extending through an opening into the primary plunger for engagement with said secondary plunger, substantially as set forth.

7. The combination, with a table or platform having a longitudinal channel or trough, of a plurality of revoluble rod-coiling receptacles, a plurality of jointed laterally-adjustable guide-pipes, and mechanism, substantially as described, for stopping and starting the rotative action of said rod-coiling devices, for the purpose set forth.

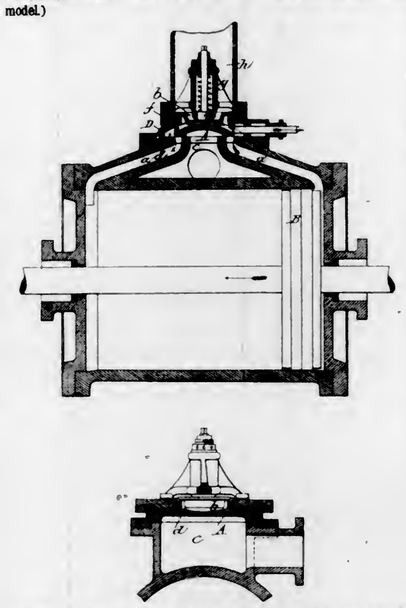
8. The combination of a revoluble rod-coiling receptacle or reel, a stationary table or platform covering the reel-operating mechanism, and a removable hood or guard arranged over and about said reel and supported on said platform, and means for elevating and lowering said hood, substantially as and for the purpose described.

9. The combination, with a rod-coiling receptacle or reel-tub arranged to rotate with the top of its rim substantially level with a horizontal table, floor or platform, of an elevating spider or plate disposed within said tub and adapted for lifting the coil of rod to a position above the level of said floor or platform to facilitate its discharge, substantially as set forth.

10. The combination of the coil-receptacle B, having inwardly-projecting ribs *b*, the series of pins or fingers b^2, and the lifting spider or plate C, having arms that radiate across the space between said fingers and ribs, substantially as and for the purpose set forth.

11. The combination of the rod-coiling receptacle or revoluble reel, the removable guard-hood T, guides T' for retaining said cover in proper relation as it moves to and from the supporting-table, and means for elevating and lowering said cover, substantially as and for the purposes set forth.

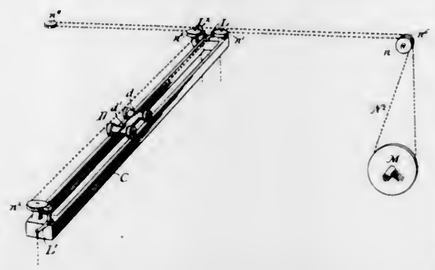
445,966. APPARATUS FOR COMPENSATING THE PRESSURE IN SLIDE-PUMPS FOR AIR AND GASES. ERNST HÜBNER, Halle-on-the-Saale, Germany. Filed June 27, 1887. Serial No. 242,684. (No model.)

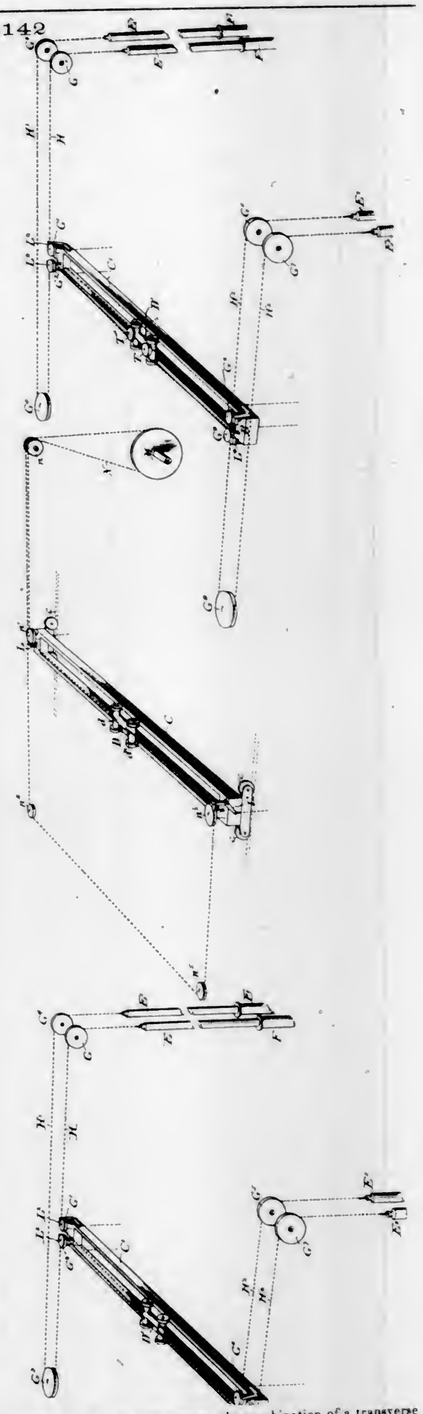


Claim.—The combination of the pump-cylinder and the valve-box having the ports leading to the ends of the cylinder, said valve-box having the outlet-opening in its cover and having the delivery-pipe *h*, with the spring-pressed outwardly-opening valve *g* seated in the opening of the valve-box cover, the piston in the cylinder, and the slide-valve working in the valve-box, substantially as described, and provided with a passage through which fluid may pass from either of its ends to the other, substantially as described.

REISSUES.

11,142. TRAVELING CRANE. WALTER WOOD, Philadelphia, Pa. Filed Sept. 18, 1890. Serial No. 365,423. Original No. 433,157, dated July 29, 1890.





Claim.—1. In a traveling crane, the combination of a transverse bridge adapted to travel on longitudinal ways, a trolley mounted upon said bridge and adapted to travel along the same, actuating mechan-

ism arranged at a point independent of the structure, and actuating-ropes connected with respective ends of said trolley and leading therefrom on each side to the proximate end of the bridge, one of said ropes then leading directly from the bridge to the initial end of the ways, another of said ropes leading to the distant end of the ways, and thence returning in the form of a freely-supported continuous loop to the initial end of the ways and to the actuating mechanism, substantially as set forth.

2. In a traveling crane, the combination of a transverse bridge adapted to travel on longitudinal ways, a trolley mounted upon said bridge and adapted to travel along the same, an actuating-rope connected with each end of said trolley and leading therefrom on each side to the proximate end of the bridge, thence to the respective ends of the line, and thence to an actuating-point, pulleys for said rope arranged at opposite ends of the bridge, brake mechanism for one or more of said bridge-pulleys, and actuating mechanism for said rope, arranged at a point independent of the structure, substantially as set forth.

PHOTO LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Michigan.

KELLEY *v.* YPSILANTI DRESS-STAY MANUFACTURING COMPANY.

Decided November 17, 1890.

1. INJUNCTION—SUITS FOR INFRINGEMENT—ISSUE OF THREATENING CIRCULARS.

A defendant in a patent suit who was the manufacturer of certain articles claimed to be an infringement of plaintiff's patent sought to obtain an order enjoining the prosecution of three suits begun in other districts against its customers, as well as the commencement of new suits, and the sending of letters and circulars to others engaged in the trade threatening prosecution for selling articles made by the defendant. *Held*, first, that the prosecution of suits in other districts should not be enjoined, because such suits were begun before this suit, and because comity demanded that application should be made to the court in which such suits were pending.

2. SAME—IRREPARABLE INJURY.

Held, further, that as the plaintiff might recover substantial damages against the defendant's vendees, in addition to those which he would be entitled to recover against the defendant as manufacturer, the commencement of new suits should not be enjoined unless irreparable injury was threatened to defendant's business, or there was evidence of malice or bad faith on the part of the plaintiff in commencing such suits.

3. SAME.

And *Held*, further, that plaintiff had a right to notify persons using his device of his claim and to call attention to the fact that by selling or using it they were making themselves liable to prosecution, and that an injunction would not be ordered unless the language of his letters or circulars was false, malicious offensive, or opprobrious, or they were used for the willful purpose of inflicting an injury.

ON petition by defendant for an injunction to restrain the commencement and prosecution of suits against its customers and the sending of circulars to others engaged in the trade.

STATEMENT OF THE CASE.

The petition sets forth, in substance, that this suit was brought against the petitioner on the 10th of September, 1890, for the infringement of a patent corset-stay; that petitioner owns property subject to execution in this district of the value of $50,000, and is engaged in the manufacture of dress-stays at Ypsilanti, under a patent to Enoch C. Bowling and another to Elsie M. Smith; that plaintiff has brought three suits for alleged infringement of his patent against customers of petitioner for selling, in the ordinary course of trade, dress-stays made by petitioner, the defense of which suits petitioner is forced to assume—viz., one in the Circuit Court for the Southern District of New York against the firm of Calhoun, Robbins & Co., one in the circuit court of Massachusetts against Coleman, Mead & Co., and one in the circuit court for Illinois against the Storm & Hill Company; that the defendants in these suits are merchants, and have no real interest in the suits, petitioner being the real defendant; that in addition to bringing said suits plaintiff has sought further to intimidate the trade and maliciously to injure and interfere with his business by means of circulars and letters from himself and his counsel addressed to petitioner's customers threatening suit against them, and also in advertising that he will bring suit against any person who sells a dress-stay made in the same manner as petitioner's; that petitioner has filed its answer and is ready to proceed with the trial, and is abundantly responsible for all damages or profits which may be recovered against it. Prayer for an injunction against the prosecution of suits already begun, against the bringing of other suits against petitioner's customers, and against molesting in any way by letters, circulars, oral threats, or otherwise, persons who may buy or sell or deal in petitioner's dress-stays, &c., during the pendency of this suit.

Mr. George H. Lothrop for the petitioner.

Mr. Charles H. Fisk and *Messrs. Broadnax & Bull* for the plaintiff.

BROWN, *J.*:

Defendant seeks in this petition to obtain an injunction for three distinct purposes—viz., to prevent (1) the prosecution of three suits already begun, (2) the commencement of new suits against its customers, and (3) the molesting of others engaged in the trade by letters, circulars, or oral threats. As the legal principles applicable to these three kinds of relief are not precisely the same, we are compelled to give them an independent consideration.

1. Conceding that there are intimations in some of the cases that the court has power to enjoin the prosecution of suits already begun in other districts, (although our attention has not been called to any reported case where an injunction was actually ordered,) we think that this power, if it exists at all, of which we have grave doubt, should not be exercised in this case for the following reasons: First. Because the suits sought to be enjoined were all begun before this suit. While this case may not be exactly within the line of authorities which hold that where jurisdiction has once attached it cannot be taken away by proceedings in another court—a question which frequently arises where property in possession of one court is interfered with by another, or an issue pending in one court is raised in another—still we apprehend that there must be some peculiar reason giving to the court enjoining some superior authority to the other—such, for instance, as the pendency of proceedings under the bankruptcy or limited liability act—to authorize it to reach out its arm and arrest a pending suit of like character in another court. Second. Because we think that comity demands that the application should be made to the court in which the proceedings are pend-

ing. Such court is perfectly competent to give the relief, and would undoubtedly do so upon a proper showing. For this court to assume such power is virtually an attempt to dictate to another court of co-ordinate jurisdiction what it ought to do in a particular case, and would naturally be considered as an offensive intermeddling with its proceedings. Third. As the plaintiff is a non-resident of this district, an injunction, if granted, could only be enforced by staying proceedings in this court or dismissing his bill. He might still elect to proceed in the other courts, which would be under no obligation to take notice of our injunction.

2. With regard to the commencement of new suits, there are undoubtedly authorities which support the contention of the defendant; but most of them seem to be founded upon an impression with regard to the rights of a patentee against infringers which the Supreme Court has held to be erroneous. Thus in *Birdsell* v. *Manufacturing Co.*, (1 Hughes, 64,) where a similar application was made by a defendant who had been sued for manufacturing and selling a patented machine for hulling and thrashing clover, it was held that an injunction should be granted, the court giving as a reason:

That the defendants were thoroughly responsible, and that upon the original suit being carried on to completion, if recovery was made, the complainant would recover in that suit all the profits that defendants had obtained from the wrongful manufacture, and the damages that he had suffered by reason of the wrongful manufacture, and that complainant would therefore be put in the same position as if he had originally sold all the machines; that, this being the case, he ought not to be allowed to interfere with the vendees of defendants while the suit against them was pending.

Yet, in a subsequent case upon the same patent, (*Birdsell* v. *Shaliol*, 112 U. S., 485, 5 Sup. Ct. Rep., 244,) it was held that a decree in favor of a patentee, upon a bill in equity against one person for making and selling a patented machine, was no bar to a subsequent suit by the patentee against another person for afterward using the same machine within the term of the patent; that while a license to make, use, and sell machines gives the licensee the right to do so throughout the term of his patent, and has the effect of wholly releasing them from the monopoly, and discharging all claims of the patentee for their use by anybody, an infringer does not, by paying damages for making and using a machine in infringement of a patent, acquire any right himself to a future use of the machine.

On the contrary, he may, in addition to the payment of damages for past infringement, be restrained by injunction from further use, and, when the whole machine is an infringement of the patent, be ordered to deliver it up to be destroyed.

The court in this case cites with approval the case of *Penn* v. *Bibby*, (L. R., 3 Eq., 308,) in which the chancellor said that—

the patent is a continuing patent, and I do not see why the article should not be followed in every man's hands until the infringement is got rid of. So long as the article is used, there is a continuing damage.

We do not see why the same principle does not apply to one who purchases of the manufacturer for the purpose of reselling to consumers. Indeed, it is difficult to see how this case can be reconciled with the language of the courts in *Spaulding* v. *Page*, (4 Fish. Pat. Cas., 641;) *Gilbert, etc., Co.* v. *Bussing*, (12 Blatchf., 426;) *Perrigo* v. *Spaulding*, (13 Blatchf., 391;) *Booth* v. *Seevers*, (19 O. G., 1140.) So, in *Allis* v. *Stowell*, (16 Fed. Rep., 783,) in which the injunction was denied, it was intimated that—

where a patentee recovers from an infringing manufacturer full damages and profits on account of the infringement, the purchaser from such manufacturer, who is a user of the machine, will be protected in such use against a suit for infringement, as he would be if he were a licensee from the patentee.

In this view of the law it was held that, to prevent a multiplicity of suits, the court might, in a proper case, and on proper showing, require the prosecution of suits between a patentee and a mere user of a patented machine to be suspended, to await the result of the suit between the patentee and the principal infringer from whom the user purchased this machine—a doctrine in which we fully concur, although we think the application should be made to the courts in which these suits are pending. The cases of *Ide* v. *Engine Co.*, (31 Fed. Rep., 901,) and *National Cash Register Co.* v. *Boston Cash Indicator Co.*, (41 Fed. Rep., 51,) seem to have been decided upon the authority of the prior cases, and without the attention of the court being called to the case of *Birdsell* v. *Shaliol*, above cited. Upon the other hand, in *Chemical Works* v. *Hecker*, (11 Blatchf., 552,) it was held by Mr. Justice Blatchford that the court had no jurisdiction of a bill filed by a patentee to assume to regulate the conduct of the plaintiffs by injunction, except as regards the proceedings in the particular suit.

To grant the injunction asked for would be to turn the defendant into the plaintiff and the plaintiff into the defendant, and to administer independent affirmative relief in favor of a party, without his coming into court as an actor, by bill or other pleading containing allegations capable of being put in issue by formal pleading, or of being contested on proofs, and to do so on matters arising *pendente lite*.

See, also, *Asbestos Felting Co.* v. *U. S., &c., Felting Co., &c.*, (13 Blatchf., 453.)

The view we have taken of the case of *Birdsell* v. *Shaliol* seems to be supported by the opinion of Judge Coxe in *Tuttle* v. *Matthews*, (28 Fed. Rep., 98,) in which a similar application for an injunction was denied upon the authority of that case.

There is undoubtedly great force in the argument that a defendant manufacturer, who has agreed to defend suits brought against his customers, and indemnify them against damages obtained by their selling his machines or device, ought not to be vexed by a multiplicity of suits in different parts of the country. But, in view of the case of *Birdsell* v. *Shaliol*, it is not easy to see how the recovery of damages from the defendant for manufacturing and selling would prevent the recovery of other substantial damages from the defendant's vendees for their profits upon reselling the patented articles. If the recovery of damages from the manufacturer does not operate as a license to use the patented article, or, in the language of the Supreme Court in *Bloomer* v. *McQuewan*, (14 How., 549,) to pass it out of the limitation of the monopoly, there would seem to be no reason for enjoining him from prosecuting any one trespassing upon his domain. The risk of being mulcted in costs will ordinarily be sufficient to prevent the patentee from bringing any great number of suits until his patent has been judicially established.

In addition to these considerations, the plaintiff, by an injunction of this kind, might be debarred from the commencement of actions pending an appeal so long as to lose his rights against infringers, since it is well settled that the existence of an injunction does not operate to suspend the running of the statute of limitation. (Wood, Lim., 484.)

There would seem to be, however, no objection to the court in which such actions are brought staying proceedings in them until the validity of plaintiff's patent and the infringement of the defendant have been judicially ascertained in one of the principal suits; and perhaps in an aggravated case of threatened irreparable injury to defendant's business, or if there were any evidence of malice, oppression, or bad faith on the part of the plaintiff, the court might enjoin temporarily the commencement of new suits.

3. With regard to the third branch of this application—viz., the molesting of others engaged in the trade by letters, circulars, and oral threats—it is sufficient to say that even if it be conceded that a court of equity has power upon petition of a defendant to enjoin the plaintiff from publishing libelous statements concerning his business, there would seem to be no good reason why a patentee may not notify persons using his device of his claim, and call attention to the fact that by selling or using it they are making themselves liable to a prosecution. There is undoubtedly authority for holding that if the language of such letters or circulars be false, malicious, offensive, or opprobious, or used for the willful purpose of inflicting an injury, the party is entitled to his remedy by injunction, and this is the extent to which the authorities go. (*Hovey* v. *Rubber Tip Pencil Co.*, 57 N. Y., 119; *Snow* v. *Judson*, 38 Barb., 210; *Emack* v. *Kane*, 34 Fed. Rep., 46; *Croft* v. *Richardson*, 59 How. Pr., 356; *Wren* v. *Weild*, L. R., 4 Q. B., 730.) Upon the other hand, it would seem to be an act of prudence, if not of kindness, upon the part of a patentee to notify the public of his invention, and to warn persons dealing in the article of the consequence of purchasing from others, and in such cases an injunction has been uniformly denied. (*Chase* v. *Tuttle*, 27 Fed. Rep., 110; *Boston Diatite Co.* v. *Florence Manuf'g Co.*, 114 Mass., 69; *Kidd* v. *Horry*, 28 Fed. Rep., 773.) The language of the letters in the present case is perfectly respectful and courteous, and while the circular is a distinct and firm assertion of the patentee's rights, there is nothing in it to which the person receiving it can take a just exception; nor is there anything to indicate that they were not written in good faith and in the belief that the plaintiff had rights under his patents which he was entitled to protect by suit.

The motion for an injunction is therefore denied.

U. S. Circuit Court—Northern District of Illinois.

SEELEY *et al.* v. THE BRUSH ELECTRIC COMPANY *et al.*

Decided January 5, 1891.

1. DAY—BRUSH—ELECTRIC LAMPS.

The first claim of Letters Patent No. 147,827, granted February 24, 1874, to Matthias Day, for an improvement in electric lamps, declared not to be infringed by the defendants' lamp, constructed according to the drawings and specification of Letters Patent No. 219,208, granted September 2, 1879, to Charles F. Brush.

2. CONSTRUCTION OF DAY PATENT.

The first claim of said patent requires that each electrode-holder—that is, the upper and lower holders—shall be arranged to carry at least two carbons or electrodes, and it is necessarily a law of the machine that the same movement to establish the arc and feed the carbons toward each other is imparted to all the carbons at once—that is, the two or more lower carbons move together and alike and the two or more upper carbons move together and alike.

3. THE RESULT OR OPERATION OF THE DAY AND BRUSH LAMPS WIDELY DIFFERENT.

The result or operation of the two lamps held to be widely different; the complainants' lamp burns its carbons by alternate arcs between each pair, necessarily producing a light unsteady and unsatisfactory and varying in intensity, because the increase of distance between the burning carbons causes the light to weaken and finally to form the arc between the other pair of carbons, to repeat the same process of weakening the light until it shifts back to the first pair, and so on, while in defendants' lamp the light burns steadily until the pair of carbons between which it is first produced are wholly consumed, when it shifts to the other pair and consumes those.

4. THE OPERATIVE PARTS OF THE DAY AND BRUSH LAMPS NOT THE SAME.

The Brush lamp held not to contain the elements of the combination contained in the first claim of the patent in suit.

5. SAME.

The defendants' lamp held not to contain two electrode holders, as called for by the first claim of the Day patent, but to contain three electrode-holders, and to show the lower electrode-holder or carbon-holder with sockets for two electrodes, but with no capacity for movement up or down, as all the movements for establishing the arc and feeding are confined to the upper carbons or electrodes, which move independently of each other, entirely unlike the movement of the carbons in the complainants' upper holder.

Mr. John W. Munday, Mr. George P. Barton, Mr. Ephraim Banning, and *Mr. John R. Bennett* for the complainants.

Mr. Henry A. Seymour, Mr. L. L. Leggett, and *Messrs. Offield & Towle* for the defendants.

BLODGETT, *J.*:

In this case complainants seek an injunction and accounting by reason of the alleged infringement by defendants of Patent No. 147,827, granted February 24, 1874, to Matthias Day for an improvement in electric lamps.

The patentee states in the opening paragraph of his specification the difficulties in the art of electric lighting which his device is intended to overcome, as follows:

In the use of electric burners, the following difficulties are found: *First.* Causing the carbons or points to approach automatically with a speed commensurate to waste by the current. A greater or less speed breaks the current and extinguishes the light. *Second.* The waste of the point connected with the carbon pole of the battery is greater than that of the other, and, from various causes, is irregularly so. Hence the carbons must approach at unequal, and at consequently varying, speed in order that the point of light may always be stationary in the focus of the lens or mirror. *Third.* Owing to the rapidity of the waste, electric lights have been of short duration, requiring a constant attendant to replace the carbons, during which time the light is of course extinguished.

He then describes his device as consisting of an arrangement by which the upper and lower electrodes, or carbon-holders, each arranged to carry two or more carbons, are caused by the action of the electric current and in intermediate automatic device to be fed toward each other in such relations that the arc will be established and burn between one pair of carbons for a short interval and then shift to the other pair of carbons, whereby each pair of carbons carried by the carbon-holder will be alternately burned by shifting the arc from one pair to the other pair at short intervals until the carbons of all the pairs carried in the

carbon-holders are consumed. (The term "pair of carbons" meaning the upper and lower carbons, which are arranged so that their points or ends will meet and form the arc between them.)

The carbon-holders are constructed each with two or more sockets in which the carbons or electrodes are held, as the specification says—

preferably arranged in parallel, not touching each other, and those in the upper socket opposite those in the lower—

that is, as I understand the specification, the sockets of each carbon-holder are so arranged as to carry the carbons parallel to each other; but the surfaces of the carbons carried by the holder must not come in contact with each other.

An upper and lower carbon-holder is shown in the patent, each of which carries two carbons, so that the carbons carried by each carbon-holder move together.

Infringement is insisted upon only as to the first claim of the patent, which is—

1. In an electric light, the combination, with each electrode-holder and one electrical circuit, of two or more electrodes, substantially as and for the purposes set forth.

The defenses are—

1. That the defendants do not infringe.

2. That the patent is void for want of patentable novelty.

I do not, under the proof, however, think it necessary to consider any question but that of infringment. It is conceded that this claim requires that each electrode-holder—that is, the upper and lower holders—shall be arranged to carry at least two carbons or electrodes; and it is necessarily a law of the machine that the same movement to establish the arc and feed the carbons toward each other is imparted to all the carbons at once—that is, the two or more lower carbons move together and alike and the two or more upper carbons move together and alike.

The defendants' lamp, which complainants contend infringes their patent, is constructed according to the drawings and specification of Patent No. 219,208, granted September 2, 1879, to Charles F. Brush. It is a double-carbon lamp, the distinctive features of which are that the carbons of each pair are dissimultaneously separated to establish the arc between the pair last separated, and the carbons between which the arc is so established are wholly consumed before the other pair of carbons are brought into circuit and lighted, instead of a light which is alternately changing from one pair of carbons to the other, thus burning the carbons of each pair in alternation as in complainants' lamp, and this result in defendants' lamp is secured by a feeding device actuated by the electric current alone, the lower carbons being stationary and the feeding device acting only upon the upper carbon of the burning pair, the other pair of carbons being held out of the electric circuit until the pair first lighted is consumed.

It will be seen from this brief statement that the result or operation of the two lamps is widely different; that complainants' lamp burns its carbons by alternate arcs between each pair, necessarily producing a light unsteady and unsatisfactory and varying in intensity, because the increase of distance between the burning carbons causes the light to weaken, and finally to form the arc between the other pair of carbons, to repeat the same process of weakening the light until it shifts back to the first pair, and so on, while in defendants' lamp the light burns steadily until the pair of carbons between which it is first produced are wholly consumed, when it shifts to the other pair and consumes those. This statement of the operation of the two lamps would seem to sufficiently indicate that their operative parts cannot be identical; and an inspection of their mechanism seems to show that the defendants' lamp does not contain the elements of the combination contained in the first claim of complainants' patent.

This first claim of the complainants' patent calls for two electrode-holders—that is, a holder for the upper and lower electrodes—and that each holder shall carry two or more electrodes.

Complainants' expert contends that the lower holder in complainants' patent includes the sockets for the electrodes and the means for bringing the electrodes into the electrical current and for moving the electrodes up and down for the purposes of lighting and feeding. The defendants' lamp shows a lower electrode-holder, or carbon-holder with sockets for two electrodes, but with no capacity for movement up or down, as all the movements for establishing the arc and feeding are confined to the upper carbons or electrodes in defendants' lamp, while the upper carbons in the defendants' lamp move independently of each other. I therefore do not find in the defendants' lamp two electrode-holders; but find that the defendants have three electrode-holders, and while externally there is a constructive or mechanical resemblance between the defendants' lower holder and that of the complainant when the respective parts are at rest, yet they are functionally so different that this physical resemblance counts for nothing.

When we come to the upper carbons of the defendants' lamp, I find them each carried by a separate holder arranged in such relations to the other parts of the lamp that each carbon has an independent movement entirely unlike that of the carbons in the complainants' upper holder. The effect of this arrangement is that in the defendants' lamp the upper carbons of the burning pair are fed down as fast as the carbons of that pair are consumed, the carbons of the other pair remaining stationary and out of the circuit during the burning of the first pair, while in the complainants' lamp both the upper and lower carbons of each pair are fed toward each other simultaneously to compensate for the consumption by burning, and the arc changes alternately and at short intervals from one pair of carbons to the other, thus producing a different light from that produced by the defendants' lamp.

In the case of the *Brush Electric Company* v. *Fort Wayne Electric Light Company*, heard before the learned circuit judge of this circuit, the complainant's patent was presented as an anticipation of the defendant's patent now claimed to infringe, and in his opinion the circuit judge said:

Patent No. 147,827, issued to Matthias Day, Jr., February 24, 1874, is relied on as an anticipation of the first, second, and fourth claims of the patent in suit. This defense is based upon a construction of these claims that gives no effect to their concluding restrictive language, which construction, we have seen, is not authorized. The patent in suit describes mechanism which designedly and positively effects a dissimultaneous separation of the carbons, and Professor Barker, the defendant's expert, testified that the Day lamp was not so constructed, and did not so operate. It is true that the Day patent describes a lamp which contains two or more pairs of carbons, but not such a double-carbon lamp as Brush invented * * *

Owing to the constant and frequent shifting of the arc from one pair of carbons to the other in this lamp, it produced an irregular and unsatisfactory light. It was unlike the Brush lamp both in construction and mode of operation.

And in the case of the *Brush Electric Company* v. *The Western Electric & Power Company et al.*, tried in the Northern District of Ohio, before Judges Brown and Ricks, the learned judge (Brown) who delivered the opinion of the court said:

The Day patent, upon which defendants chiefly rely, is an anticipation of the Brush patent. As construed by the complainants' exhibit, it is a single-carbon lamp having two carbons instead of one attached to each carbon-holder, so that in the operation of the lamp both branches of the carbon-holder are raised and lowered simultaneously. While the upper and lower carbons are in contact the current is divided between them, but when separated to form the arc, though the separation of both sets occur at the same instant, owing to the difference in resistance of the carbons, only a single arc is formed. When this arc has burned for a few minutes, the arc will shift to the other pair of carbons, remaining until they are so far consumed as to require additional feeding, when the arc is shifted back to the first pair, and they are thus caused to burn alternately instead of successively, as in the Brush patent.

This alternation is of course owing to the fact that both sets of carbons are separated simultaneously and not in succession, as in the Brush patent, in which one is held in reserve until the first pair is wholly consumed. The Day lamp, however, not only lacks the non-coincidence in the separation of the carbons, which is the prominent feature of the Brush patent, but in practice it never seems to have been a success.

The functions of the electrode-holders of the two lamps are so different and the results of their actions so different that I do not think the electrode-holders of the defendants' lamp can be said to be necessarily the same as those of the complainants' combination. I therefore do not find that the defendants are guilty of infringing the complainants' patent.

The bill is therefore dismissed for want of equity.

U. S. Circuit Court—District of Massachusetts.

CONSOLIDATED SAFETY VALVE COMPANY *v.* CROSBY STEAM GAGE & VALVE COMPANY.

Decided October 7, 1890.

1. DAMAGES FOR INFRINGEMENT.

Defendants who infringed a patented valve by the manufacture of valves commercially worthless but for the infringed invention are liable for the profits realized by them, though the form of their valves is different from those manufactured by complainants.

2. SAME.

Where the valves manufactured by defendants also infringed another later patent, likewise owned by complainants, no injustice is done defendants in acceding to complainants' claim that all profits realized by defendants during the life of the earlier patent were solely due to the invention covered by that patent, especially in view of the fact that defendants contended that the invention embodied in the later patent is worthless; and hence, in an action for the infringement of the earlier patent, it is unnecessary for the master to find how much of defendants' profits are due to the later invention.

3. SAME—ESTOPPEL.

Complainants after contending for and accepting a finding in an action for the infringement of the earlier patent that defendants' profits arising from the manufacture and sale of valves infringing both patents were due solely to the earlier invention cannot be permitted to recover more than nominal damages in an action for the infringement of the later patent alone, brought after the expiration of the earlier one.

Mr. Thomas W. Clarke for the complainants.

Mr. Joshua H. Millett (*Mr. Benjamin F. Thurston*, of counsel) for the defendants.

COLT, *J.*:

These cases now come before the court upon exceptions to the master's report. In No. 1,184 the master finds that the complainants are entitled to recover the sum of $40,344.59 for the profits received by the defendants from the infringement of the Richardson 1866 patent, No. 58,294. In No. 1,199 the master finds that the defendants had made no more than nominal profits from the infringement of the Richardson 1869 patent, No. 85,963.

The main question raised by the defendants' exceptions relates to the method adopted by the master in estimating the profits allowed in case No. 1,184. These suits were originally brought in the circuit court, and decrees were entered dismissing the bills. (7 Fed. Rep., 768.) The Supreme Court upon appeal reversed the decision of the circuit court and remanded the cases to this court with directions to enter decrees sustaining the validity of the Richardson patents, decreeing infringement of both patents and directing an account to be taken of profits as to both patents, and to take such further proceedings as may be proper and not inconsistent with the opinion of the court. (5 Sup. Ct. Rep., 513.) In judging of the correctness of the method pursued by the master in his estimation of defendants' profits, the construction put upon the Richardson 1866 patent and the language used in respect thereto as embodied in the opinion of the court cannot be disregarded. It was clearly the duty of the master in his findings, as it is also the duty of the court at the present time, to give full force and effect to the opinion of the Supreme Court. If the contention of the defendants is sound, that the Supreme Court in their interpretation of the Richardson 1866 patent gave too much prominence to the feature known as the "huddling-chamber with a strictured orifice," it is for them, upon appeal, to obtain some modification of that opinion; but so long as it stands as the opinion of that Court the views therein expressed should be strictly carried out. The position, therefore, taken by the defendants that the complainants are only entitled to nominal damages because, as they say, the Richardson valve of commerce does not contain the huddling-chamber with a strictured orifice, or, in other words, a huddling-chamber with an aperture for the exit of the steam into the open air which is of smaller area than the aperture at the ground-joint, I cannot regard as sound in view of the opinion of the Supreme Court. That Court construed the Richardson patents, and it held that defendants' valve was within those patents, and it gave a broad construction to the Richardson 1866 patent. Upon this point I approve and adopt the conclusions reached by the master in the following language, taken from his report, in considering the accounting in No. 1,184, for the period from February 15, 1879, to September 25, 1883:

I attribute the entire commercial value of the valves manufactured and sold by the defendants to the improvement covered by Richardson's patent of 1866. Richardson's invention, as described and claimed in that patent, revolutionized the art of relieving steam-boilers from steam-pressure rapidly approaching the dangerous point. It made effective for that purpose, rapidly and with comparatively small loss of steam, apparatus, described in other patents, which very nearly embodied Richardson's invention, but did not actually contain it. The Supreme Court, in these cases, has defined this invention, and has declared it to be a vital one, a life-giving principle to structures very nearly approach-

ing but not quite containing an embodiment of Richardson's discovery. It was contended before me that none of the complainants' valves of commerce contained this invention of Richardson, but, upon the whole evidence, with specimens of all the different valves put on the market by the complainants before me, I find that they all contain Richardson's improvement of 1866. The Supreme Court has decided in these cases that the defendants' valves contain this invention, and it is under this decision that the accounting in No. 1,184 is before me. Eliminate this invention from the defendants' valves, and they would be commercially worthless. No substitute for this invention has been suggested to me, and I know of none which the defendants could have used in its place to have made their valves of commercial value. The defendants claim that some of the profits which they have made are due to the peculiar form of their valves, but the form which they used in making their valves was the form in which they clothed the Richardson invention, the life of their valves, and without that life the Crosby form is worthless. The defendants claimed before me that the complainants, in the accounting in No. 1,184, which relates only to the Richardson patent of 1866, should prove specifically the value of the invention secured to them under that patent as used by the defendants, and that, as it was claimed by complainants (and the Supreme Court has so decided) that defendants used, also, Richardson's invention of 1869, the value of the invention secured to the complainants by the 1869 patent must be determined and not made an element in the recovery to be had under the accounting in No. 1,184. I have no means of determining the value of that invention as used by the defendants from February 15, 1879, to September 25, 1883, or of stating in dollars and cents how much of the profits of the defendants during that period is due to that invention. The complainants claimed that during that period all the profits of the defendants were due to the Richardson invention of 1866, and, as the Richardson invention of 1869 belonged also to the complainants, and as the complainants and defendants were respectively the same in each case, (No. 1,184 relating to the said invention of 1866 and No. 1,199 relating to the invention of 1869,) and as the said period from February 15, 1879, to September 25, 1883, was included within the period to be covered by the accounting in each case, no injustice is done the defendants in acceding to the complainants' claim in this regard, and this is especially so in view of the fact that the defendants claimed that the adjustable device as shown in the Richardson patent of 1869 is worthless as such, and that the cost of the Crosby valve is less without the said so-called adjustable ring and is a better and more useful safety appliance.

This disposes of the principal question raised by the defendants' exceptions to the master's report. As for the objection to the findings of the master respecting expenses to be allowed for certain valves destroyed, which forms the subject-matter of the first exception, I think the master was right in the conclusion he reached. The defendants were not charged on valves which were subsequently destroyed, or, if so, they were not charged upon the new valves which replaced them. (See master's note 29, page 44 of master's report.) The master properly disallowed the cost of destroyed valves.

The complainants have filed two exceptions to the master's report in No. 1,184—one relating to cost of patterns allowed to the defendants by the master and the other to the allowance of uncollectible items, &c., in master's Schedule C. I see no sufficient reason to disturb these findings. If there is error in the allowance of any of the items of Schedule C, the suggestion of error was not made to the master in such form as to give the court the benefit of his judgment thereon.

In No. 1,199 the complainants have filed several exceptions. They except to the finding of the master that he had no means of determining, from the evidence before him, what portion of the defendants' profits were attributable to the use of the Richardson patent of 1869, and they further except to the finding of the master that the defendants have made only nominal profits from the infringement of the 1869 patent, and that the complainants have suffered only nominal damages from said infringement. Down to the expiration of the Richardson 1866 patent, or until September 25, 1883, the complainants contended, in the case brought upon that patent, that all the profits of the defendants were due to that patent, and the master so found. If the 1869 patent contributed more than a nominal value to the defendants' infringing valves during the life of the 1866 patent, it was the duty of the complainants to have shown that fact in the suit upon the 1866 patent, and to have allowed a corresponding reduction in the finding of profits in that suit. After contending for and accepting such a finding—that the complainants were entitled to all the profits of the defendants from their infringement of the 1866 patent by the manufacture and sale of valves containing the Richardson inventions of 1866 and 1869—they cannot be permitted, upon a bill of complaint against the same defendants, to recover more than nominal profits or damages for an infringement of the 1869 patent only.

Upon the question of damages the master finds as follows:

> With regard to these claims for damages, I find, upon an examination of the evidence before me, that, if I allow any substantial portion of them, I must allow them in full as claimed. I say "substantial portion" because there are a few dollars that I might, perhaps, allow in No. 1,184 upon special evidence relating to a few items, but beyond a few dollars the claims stand or fall as a whole. I know no justifiable method of scaling them. The evidence in support of these claims comes from Charles A. Moore, the manager of the business of complainants so far as putting valves on the market is concerned, and the evidence against these claims comes from Francis T. Simmons, a salesman of defendants from February, 1878, to May, 1886, and George H. Eager, treasurer of the defendants. The evidence shows that the complainants acquired the Richardson patents February 15, 1879. The defendants were at that time established in the valve business, and sold steam safety-valves in competition with whatever valves were in the market. There were persons and firms to whom they sold their productions, and whom they considered their customers. The complainants in 1879, soon after acquiring the Richardson patents, issued a catalogue giving their prices for safety-valves, but quoted their valves in 1879, to some parties at least, at a large discount from their catalogue prices—in one instance a discount of fifty per cent. The basis of these claims is that the complainants had an established lowest price for their several classes of valves in 1879. I do not think the evidence supports this proposition to the extent that I can find that the prices given in Mr. Moore's tables, and annexed to complainants' charges in damages, are the lowest prices of the complainants in 1879. The complainants went into active competition with all valve producers of every class. Doubtless the defendants were their chief competitors; but I cannot determine from the evidence how much of the reduction in prices which the complainants made from time to time was due to defendants' competition and how much to other causes. Doubtless both parties were trying to hold the market as against each other and as against all other competitors in the business. Under these circumstances a general claim, even accompanied by a specification of items, cannot be maintained upon testimony relating to comparatively few instances, as in this case, and especially where some of the instances are subsequently explained in a manner to materially affect their force as evidence bearing upon the question of damages resulting from direct competition.

The complainants have filed no exception to the finding of the master in No. 1,184 that they have suffered no damages in addition to profits. Upon the whole evidence on this question of damages I think the master was also right in finding that the complainants are entitled to recover in No. 1,199 only nominal damages.

The exceptions in both cases are overruled and the master's report confirmed. So ordered.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 6. TUESDAY, FEBRUARY 10, 1891. PRICE---$5 per year.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Withdrawal of Cases from Issue.

(ORDER No. 629.)

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

C. E. MITCHELL,
Commissioner.

Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., February 3, 1891.

SIR: The Secretary of the Interior has ordered that John C. Bender, of St. Joseph, Mo., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully, E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Notice.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., December 23, 1890.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

C. E. MITCHELL,
Commissioner.

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Issue of February 10, 1891.

Patents	444	No. 445,967 to No. 446,410, inclusive.
Designs	12	No. 20,508 to No. 20,519, inclusive.
Trade-Marks	65	No. 18,951 to No. 19,015, inclusive.
Labels	12	No. 6,436 to No. 6,447, inclusive.
Reissues	2	No. 11,143 to No. 11,144, inclusive.
Total issue	535	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire	2	
Arkansas	3		New Jersey	17	1
California	9	1	New Mexico Terri'ty		
Colorado	1		New York	89	11
Connecticut	14		North Carolina	3	3
Delaware	4		North Dakota	1	
District of Columbia	2		Ohio	24	3
Florida	4		Oklahoma Territory	2	
Georgia	1		Oregon	2	
Idaho			Pennsylvania	37	7
Illinois	51	2	Rhode Island		1
Indian Territory			South Carolina	2	
Indiana	17	1	South Dakota	1	
Iowa	11	2	Tennessee	1	1
Kansas	4		Texas	10	
Kentucky	7		Utah Territory	1	
Louisiana	2		Vermont	2	1
Maine	1		Virginia	4	
Maryland	4	2	Washington		
Massachusetts	42	6	West Virginia		
Michigan	16		Wisconsin	14	
Minnesota	5		U. S. Army		
Mississippi			U. S. Navy		
Missouri	21	4			
Montana			Total to citizens of the United States	427	46
Nebraska	6				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Mexico		
Austria-Hungary			Netherlands		
Belgium	1		Newfoundland		
Bermuda			New South Wales		
Brazil			New Zealand		
Canada	5		Portugal		
Chili			Queensland		
Colombia			Russia		
Cuba		2	Scotland		
Denmark			South Australia		
Ecuador			Spain		
England	9	27	Sweden		
Finland			Switzerland	1	
France	3	2	Victoria		
Germany	10		West Indies		
Hawaii					
Italy			Total to citizens of foreign countries	29	31
Japan					

DESIGNS.

20,508.—SCARF-PIN.—*Edward P. Beach*, Newark, N. J., assignor to *Unger Brothers*, same place. Application filed December 26, 1890. Serial No. 375,862. Term of patent 3½ years.

20,509.—HANDLE FOR SPOONS, &c.—*William B. Jones*, Newburyport, Mass. Application filed December 19, 1890. Serial No. 375,211. Term of patent 7 years.

20,510.—SPOON.—*Walter L. Wilks*, Bridgeport, Conn., assignor to *The Holmes & Edwards Silver Company*, same place. Application filed December 15, 1890. Serial No. 374,815. Term of patent 14 years.

20,511.—BADGE.—*Louis E. Stilz*, Philadelphia, Pa., assignor to *The Supreme Castle of the Order of the Knights of the Golden Eagle*, same place. Application filed January 15, 1891. Serial No. 377,894. Term of patent 14 years.

20,512 and 20,513.—FENCE-STRAND.—*Edgar F. Hathaway*, Hornellsville, N. Y. Applications filed December 26, 1890. Serial Nos. 375,891 and 375,892. Term of patents 14 years.

20,514.—FONT OF PRINTING-TYPE.—*Charles S. Hazlett*, Boone, Iowa, and *John West*, Chicago, Ill., assignors to *Barnhart Brothers & Spindler*, of Illinois. Application filed December 31, 1890. Serial No. 376,400. Term of patent 14 years.

20,515 and 20,516.—FONT OF PRINTING-TYPE.—*Julius Schmohl* and *Ernst Lauschke*, Chicago, Ill., assignors to *Barnhart Brothers & Spindler*, of Illinois. Applications filed December 31, 1890. Serial Nos. 376,406 and 376,407. Term of patents 14 years.

20,517.—BUTTON.—*Ephraim Harrington*, Boston, Mass. Application filed January 17, 1891. Serial No. 378,161. Term of patent 14 years.

20,518.—BROOCH OR SIMILAR ARTICLE.—*Edward P. Beach*, Newark, N. J., assignor to *Unger Brothers*, same place. Application filed December 26, 1890. Serial No. 375,861. Term of patent 3½ years.

20,519.—BOX.—*Webster C. Estes*, Flatbush, N. Y. Application filed January 19, 1891. Serial No. 378,359. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

18,951.—TOILET AND LAUNDRY SOAP.—*Colgate & Co.*, New York, N. Y. Application filed December 23, 1890. Used since December 3, 1890.

"The word 'CENSUS.'"

18,952.—WHISKY.—*George S. Fleming*, Pittsburg, Pa. Application filed December 31, 1890. Used since 1880.

"The representation of a shield having the letters 'J.' 'F,' '&,' and 'S' thereon in the form of a monogram and surmounted by a crown."

18,953.—BEVERAGE CONTAINING GINGER.—*William C. Hickox*, New York, N. Y. Application filed November 14, 1890. Used since April 1, 1890.

"The word 'GINGER-NECTAR.'"

18,954.—LAUNDRY AND TOILET SOAP.—*B. A. Lynde & Son Company*, Warren, Pa. Application filed November 17, 1890. Used since November 3, 1890.

"The words 'GOLDEN ROD.'"

18,955.—WINES AND LIQUORS.—*Metzger & Seligmann*, New York, N. Y. Application filed December 20, 1890. Used since December 1, 1890.

"The representation of two crossed flags and characters 'D. D. & K.'"

18,956.—ALE.—*William Rutledge*, Boston, Mass. Application filed December 3, 1890. Used since January 30, 1861.

"The words 'CALEDONIA ALE.'"

18,957.—LIQUID EXTRACT OF BEEF.—*Charles W. Robison* and *Robert B. Robison*, Pittsburg, Pa. Application filed December 20, 1890. Used since November 15, 1881.

"The words 'BISQUE OF BEEF,' with the representation of an eagle above and a lion on each side."

18,958.—REMEDY FOR NERVOUS DISEASES.—*John Robertson*, Philadelphia, Pa. Application filed November 24, 1890. Used since October 13, 1890.

"The representation of a human figure with the nervous organism exposed in outline thereon."

18,959.—OUTSIDE GARMENT CALLED AN ULSTER.—*The Standard Clothing Company*, Boston, Mass. Application filed December 13, 1890. Used since August 15, 1890.

"The words 'THE KING OF FRIEZE' and the representation of a man wearing an ulster."

18,960.—MINERAL WATER.—*The Panacea Springs and Hotel Company*, Raleigh, N. C. Application filed December 4, 1890. Used since March 1, 1872.

"The word 'PANACEA.'"

18,961.—WHISKY.—*Peter Van Schaack & Sons*, Chicago, Ill. Application filed December 22, 1890. Used since June, 1886.

"The word 'RIALTO.'"

18,962.—CLOTHING FOR MEN AND BOYS.—*Oscher Wilensky*, New York, N. Y. Application filed November 7, 1890. Used since May 1, 1890.

"The words 'EAGLE CLOTHING CO.'"

18,963.—BACON.—*Francis Whittaker & Sons*, St. Louis, Mo., East St. Louis, Ill., and Wichita, Kans. Application filed December 20, 1890. Used since December 1, 1890.

"The word 'SHANDON.'"

18,964.—CIGARS.—*Sebastian Azcano*, Havana, Cuba. Application filed January 10, 1891. Used since 1872.

"The words 'LA FLOR DE LAS FLORES, DE S. A.'"

18,965.—CIGARS.—*Sebastian Azcano*, Havana, Cuba. Application filed January 10, 1891. Used since 1872.

"The words and letters 'FANNY DE F. A.'"

18,966.—TIN AND TERNE PLATES AND BLACK PLATES OF BESSEMER STEEL.—*Alfred Baldwin & Company, Limited*, Panteg, near Newport, England. Application filed January 9, 1891. Used since August 3, 1887.

"The word 'JUBILEE.'"

18,967.—SHEET-IRON, TIN AND TERNE PLATES, AND LEAD-COATED SHEETS.—*E. P. & W. Baldwin*, Wilden, England. Application filed December 29, 1890. Used since 1869.

"The word 'STOUR.'"

18,968.—YEAST CAKES.—*Henninger Bros.*, Havana, Ill. Application filed December 23, 1890. Used since November 1, 1890.

"The portrait of Mrs. Henninger."

18,969.—FRINGES.—*Kampmann & Meyer*, New York, N. Y. Application filed December 23, 1890. Used since December 13, 1890.

"The words 'FEATHER ASENE.'"

18,970.—CIGARS.—*Richman & Peterson*, Newark, N. J. Application filed December 12, 1890. Used since September 1, 1890.

"The words 'CITY HALL.'"

18,971.—BOOTS AND SHOES.—*Rice & Hutchins*, Boston, Mass. Application filed January 13, 1891. Used since January 15, 1890.

"The representation of a boot or shoe resting upon a book."

18,972.—TIN AND TERNE PLATES.—*The Birchgrove Steel Company, Limited*, Swansea, England. Application filed December 29, 1890. Used since December 2, 1886.

"The word 'EMLYN.'"

18,973.—HOOKS FOR MACHINE-BELTING.—*Walter O. Talcott*, Providence, R. I. Application filed December 17, 1890. Used since November, 1889.

"The words 'WILSON BELT-HOOKS.'"

18,974.—BOOTS, SHOES, AND SLIPPERS.—*Melville Woodbury*, Beverly and Boston, Mass. Application filed January 15, 1891. Used since July 1, 1890.

"The word 'MATRON.'"

18,975.—TIN PLATES.—*Webb, Shakspeare & Williams, Limited*, Pontardulais, England. Application filed January 12, 1891. Used since January 1, 1875.

"The word 'ALPHA.'"

18,976.—REMEDY FOR CATARRH AND HAY FEVER.—*Dalrymple, Warner & Co.*, Albany, N. Y. Application filed December 23, 1890. Used since November 10, 1889.

"The portrait of Cornelius Veazie."

18,977.—SPECIES OF WOOD ALCOHOL.—*Hansen & Smith*, Wilmington, N. C. Application filed December 13, 1890. Used since November 28, 1890.

"The word 'SPIRITTINE.'"

18,978.—BAKING-POWDER.—*Frank F. Jaques*, Kansas City, Mo. Application filed December 6, 1890. Used since July, 1890.

"The words 'K. C. BAKING POWDER. 25 OUNCES FOR 25c.'"

18,979.—TIN PLATES.—*Knight & Crowther, Limited*, Cookley Works, county of Stafford, England. Application filed January 12, 1891. Used since January 1, 1840.

"The word 'COOKLEY' and the letter 'K.'"

18,980.—EMBROIDERY MATERIALS, PLUSH AND CHENILLE ORNAMENTS, AND TRIMMINGS FOR UPHOLSTERY.—*Kampmann & Meyer*, New York, N. Y. Application filed December 23, 1890. Used since January 1, 1886.

"The representation of a four-leaved clover."

18,981.—TIN PLATES.—*Phillips, Nunes & Co.*, Dafen, Llanelly, England. Application filed January 12, 1891. Used since January 1, 1860.

"The letters 'P. S. & Co.' and the representation of a crown."

18,982.—BRANDY.—*E. Rémy Martin & Co.*, Rouillac, France. Application filed June 18, 1890. Used since 1882.

"The representation of an imperial cloak looped at opposite sides and surmounted by a crown and a disk represented as partially surrounded by the folds of the cloak."

18,983.—WHISKY.—*Rheinstrom Bros.*, Cincinnati, Ohio. Application filed January 6, 1891. Used since July 1, 1890.

"The words 'JED CLAYTON' and the representation of a log cabin with an old man outside seated upon a barrel and holding up in one hand a glass of spirits."

18,984.—LARD.—*Silberhorn Company*, Sioux City, Iowa, and Chicago, Ill. Application filed December 19, 1890. Used since December 1, 1887.

"The words 'SNOW DRIFT.'"

18,985.—HAMS, SHOULDERS, SIDES, AND BACON.—*Silberhorn Company*, Sioux City, Iowa, and Chicago, Ill. Application filed December 19, 1890. Used since December 1, 1887.

"The word 'MONOGRAM.'"

18,986.—TIN AND TERNE PLATES.—*The Birchgrove Steel Company, Limited*, Swansea, England. Application filed December 29, 1890. Used since January 30, 1886.

"The representation of a crown and the letters 'H. S.'"

18,987.—TIN PLATES.—*Webb, Shakspeare & Williams, Limited*, Pontardulais, England. Application filed January 12, 1891. Used since February 1, 1888.

"The word 'MEUSE.'"

18,988.—TIN PLATES.—*Webb, Shakspeare & Williams, Limited*, Pontardulais, England. Application filed January 12, 1891. Used since November 1, 1874.

"The word 'RHINE.'"

18,989.—TIN PLATES.—*Webb, Shakspeare & Williams, Limited*, Pontardulais, England. Application filed January 12, 1891. Used since December 1, 1874.

"The word 'P'DULAIS.'"

18,990.—TIN-PLATE.—*Webb, Shakspeare & Williams, Limited*, Pontardulais, England. Application filed January 12, 1891. Used since August 1, 1884.

"The word 'MOSELLE.'"

18,991.—TIN PLATES.—*Webb, Shakspeare & Williams, Limited*, Pontardulais, England. Application filed January 12, 1891. Used since November 1, 1874.

"The word 'FALCON.'"

18,992.—TIN PLATES IN SHEETS.—*Daniel Edwards & Co.*, Swansea, England. Application filed December 22, 1890. Used since 1885.

"The letters 'D E' in a diamond-shaped figure."

18,993.—PORCELAIN, CROCKERY, EARTHENWARE, GLASS, AND FAIENCE.—*E. Gérard, Dufraisseix & Morel*, Limoges, France. Application filed December 29, 1890. Used since 1882.

"The letters 'C. F. H.' above the letters 'G. D. M.,' with a line between them."

18,994.—TIN-PLATE.—*Richard Rosser, Son & Co.*, Cilfrew, near Neath, England. Application filed December 22, 1890. Used since 1885.

"The word 'CILFREW.'"

18,995.—TIN-PLATE IN SHEETS.—*Richard Rosser, Son & Co.*, Cilfrew, near Neath, England. Application filed December 22, 1890. Used since 1885.

"The word 'CRYNANT.'"

18,996.—CATSUPS, TABLE-SAUCE, PICKLES, AND RELISHES.—*The Mullen-Blackledge Company*, Indianapolis, Ind. Application filed January 16, 1891. Used since June 15, 1890.

"The word 'COLUMBIA.'"

18,997.—BEER.—*The National Brewing Company*, Baltimore and Baltimore County, Md. Application filed January 17, 1891. Used since February, 1890.

"The words 'EXTRA DRY.'"

18,998.—BEER.—*The National Brewing Company*, Baltimore and Baltimore County, Md. Application filed January 17, 1891. Used since February, 1890.

"The words 'ARMY & NAVY.'"

18,999.—TIN-PLATE IN SHEETS.—*The Port Talbot Tinplate Company, (Limited,)* Port Talbot, England. Application filed December 22, 1890. Used since 1885.

"The word 'GOAT.'"

19,000.—TIN-PLATE IN SHEETS.—*The Port Talbot Tinplate Company, (Limited,)* Port Talbot, England. Application filed December 22, 1890. Used since 1885.

"The letters 'R J' in a diamond-shaped figure."

19,001.—TIN-PLATE IN SHEETS.—*Daniel Whitehouse*, Abercarn, England. Application filed December 22, 1890. Used since 1872.

"The word 'ARRAN.'"

19,002.—TIN-PLATE IN SHEETS.—*Daniel Whitehouse*, Abercarn, England. Application filed December 22, 1890. Used since 1856.

"An open quadrangle."

19,003.—TIN-PLATE IN SHEETS.—*Daniel Whitehouse*, Abercarn, England. Application filed December 22, 1890. Used since 1856.

"The letters 'A. C.'"

19,004.—TIN-PLATE IN SHEETS.—*Daniel Edwards & Co.*, Swansea, England. Application filed December 22, 1890. Used since 1885.

"The word 'IWEN.'"

19,005.—TIN-PLATE IN SHEETS.—*Daniel Edwards & Co.*, Swansea, England. Application filed December 22, 1890. Used since 1885.

"The word 'DANBERT.'"

19,006.—TIN-PLATE IN SHEETS.—*Daniel Edwards & Co.*, Swansea, England. Application filed December 22, 1890. Used since 1885.

"The word 'DERI.'"

19,007.—TIN-PLATE IN SHEETS.—*Daniel Edwards & Co.*, Swansea, England. Application filed December 22, 1890. Used since 1885.

"The word 'ONEN.'"

19,008.—TIN-PLATE IN SHEETS.—*Daniel Edwards & Co.*, Swansea, England. Application filed December 22, 1890. Used since 1885.

"The word 'ACORN.'"

19,009.—LIQUID PREPARATION FOR MEDICINAL PURPOSES.—*Herman M. Johnson*, San Francisco, Cal. Application filed June 20, 1890. Used since September 1, 1889.

"The word 'ELECTROZONE.'"

19,010.—LAGER-BEER.—*Knoxville Brewing Company*, Knoxville, Tenn. Application filed October 25, 1890. Used since May, 1890.

"The representation of a pendent hop-catkin whose stem is crossed by two stalks of barley surmounted by the monogram 'K B Co,' all within a circular band containing the words 'KNOXVILLE BREWING COMPANY, KNOXVILLE, TENN.'"

19,011.—VEST-CHAINS.—*D. C. Percival & Co.*, Boston, Mass. Application filed January 14, 1891. Used since July, 1890.

"The word 'GYMKHANA.'"

19,012.—VEST-CHAINS.—*D. C. Percival & Co.*, Boston, Mass. Application filed January 14, 1891. Used since January, 1887.

"The representation of an anchor."

19,013.—DISINFECTANT AND INSECT-DESTROYER.—*Robert K. Smither*, Buffalo, N. Y. Application filed December 22, 1890. Used since April, 1889.

"The words 'MINERAL CAMPHOR.'"

19,014.—TIN PLATES.—*The Cwmfelin Tinplate Company*, Cwmfelin and Swansea, England. Application filed December 22, 1890. Used since 1880.

"The word 'LILY.'"

19,015.—TIN-PLATE IN SHEETS.—*The Cwmfelin Tinplate Company*, Cwmfelin and Swansea, England. Application filed December 22, 1890. Used since 1880.

"The word 'ARTO.'"

LABELS.

6,436.—Title: "FLEMING'S PURE RYE."—*George S. Fleming*, Pittsburg, Pa. Application filed December 12, 1890. (Trade-Mark Registered.)

6,437.—Title: "DRAWING-BOARD MUCILAGE."—*Charles M. Higgins*, Brooklyn, N. Y. Application filed January 15, 1891.

6,438.—Title: "LONG'S BREAKFAST FLOUR."—*Charles T. Long*, Lebanon, Ohio. Application filed January 15, 1891.

6,439.—Title: "BLENDED LAGER BEER."—*Alfred M. Rickerby*, Brooklyn, N. Y. Application filed January 14, 1891.

6,440.—Title: "MIXED BEER."—*Alfred M. Rickerby*, Brooklyn, N. Y. Application filed January 14, 1891.

6,441.—Title: "JELLY OF ROSES." (For a toilet preparation.)—*A. J. Hoenny*, St. Louis, Mo. Application filed January 16, 1891.

6,442.—Title: "GREENSBORO NURSERIES."—*John A. Young*, Greensborough, N. C. Application filed January 16, 1891.

6,443.—Title: "KIMMEL'S COMBINATION COPYING BOOK."—*William Kimmel*, Cleveland, Ohio. Application filed January 17, 1891.

6,444.—Title: "OINTMENT."—*August Spannhake*, St. Louis, Mo. Application filed January 5, 1891.

6,445.—Title: "JOS. FLEMING & SON." (For spirituous liquors.)—*George S. Fleming*, Pittsburg, Pa. Application filed December 12, 1890.

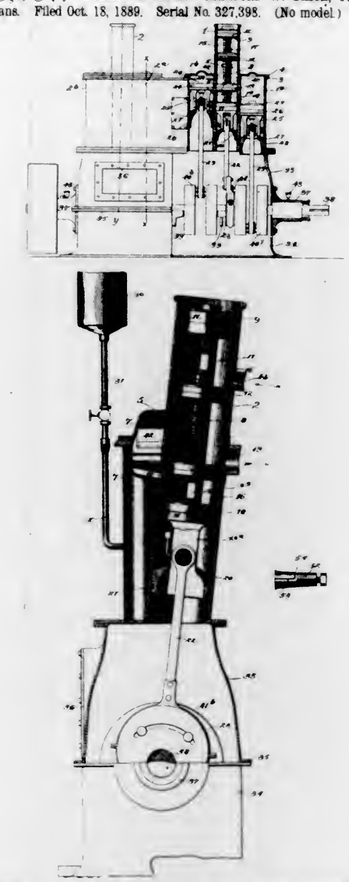
6,446.—Title: "DRY PLUG PURE TOBACCO FOR CHEWING AND SMOKING."—*Charles N. Frame*, Reading, Pa. Application filed January 20, 1891.

6,447.—Title: "THORN'S VEGETABLE COUGH CURE."—*Thorn's Medicine Co.*, Brattleborough, Vt. Application filed January 20, 1891.

PATENTS

GRANTED FEBRUARY 10, 1891.

445,967. **STEAM-ENGINE.** RANSFORD W. BASOM, Pittsburg, Kans. Filed Oct. 18, 1889. Serial No. 327,398. (No model.)



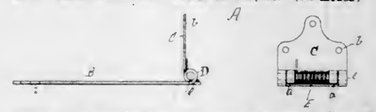
Claim.—1. In a steam-engine, a cylindrical valve-chamber open at both ends, in combination with a hollow or tubular exteriorly-screw-threaded reciprocating valve-stem closed at both ends, four piston-heads interiorly screw-threaded and adjustably mounted, respectively, near the ends and near the center of said valve-stem, ports or openings formed in the latter between the two upper and the two lower piston-heads, respectively, and connecting the upper and lower compartments formed by said piston-heads, exhaust and live steam pipes connected with the valve-chamber to register, respectively, with the central and with one of the communicating chambers formed by the piston-heads upon the valve-stem, and a port connecting the valve-chamber with each of a pair of single-acting cylinders, substantially as and for the purpose set forth.

2. The combination, with a pair of single-acting cylinders closed at their upper ends and having the reciprocating pistons, of the single ports connecting the upper ends of said cylinders with a valve-chamber open at both ends, a valve arranged to reciprocate in said chamber and having a tubular exteriorly-screw-threaded stem and four interiorly-screw-threaded adjustable heads or pistons forming two end compartments that communicate through said tubular stem and a central separate compartment, and the exhaust and live steam pipes connected, respectively, to the said central and to one of the said communicating compartments, substantially as set forth.

3. In a steam-engine, the combination of two pairs of vertical cylinders arranged centrally over a single crank-shaft and having closed upper ends, the reciprocating pistons, the pitmen connecting the pistons of each pair of cylinders with diametrically-opposite cranks, the cranks of the two pairs being disposed at right angles to each other, two cylindrical valve-chambers open at both ends, single ports connecting the upper end of each cylinder with one of said valve-chambers, the reciprocating valves arranged in said valve-chambers and comprising each a tubular stem and four heads or pistons forming two end compartments that communicate through said tubular stem and a central separate compartment, the exhaust and live steam pipes connected, respectively, to the said central and to one of the said communicating compartments, and the pitmen connecting the valves with eccentrics upon the crank-shaft, substantially as set forth.

4. In an engine, the combination, with a cylindrical casing open at both ends, of a reciprocating valve comprising two communicating end compartments and a separate central or intermediate compartment formed by the walls of the casing, and disks or pistons mounted so as to be longitudinally adjustable upon the valve-stem, said casing being provided with suitably-located openings for the admission and escape of steam and for its passage to and from the cylinders, and said valve-stem being provided with a longitudinal opening having ports whereby communication is established between the end compartments, substantially as set forth.

445,968. **SHUTTER-FASTENER.** RICHARD J. BERDAN, Paterson, N. J. Filed Oct. 27, 1890. Serial No. 369,478. (No model.)



Claim.—In combination with two sheet-metal plates B and C, hinged together and of unequal length, said plates having screw-holes *b* and orifice *h*, respectively, a helical spring E, placed on the hinge-pin *c* and between the hinged parts *a a* of said plates B and C, the ends of said spring respectively resting upon said plates, whereby the plate B, when out of action, is automatically restored and held to its most elevated position against the plate C, substantially as shown and set forth.

445,969. **ELECTRIC INSULATOR.** JAMES R. BRANCH, Richmond, Va. Filed May 20, 1890. Serial No. 352,488. (No model.)

Claim.—1. The insulator having the flat base to be secured upon a support and the straight sides or periphery, the inwardly and upwardly extending groove around the periphery of the insulator, forming the downwardly-extending edge a distance above the base of the insulator, and a clip insulated from and securing the conductor onto the top surface of the insulator.

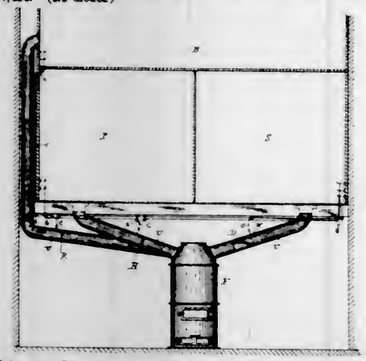
2. The combination of the insulator having the peripheral overhanging edge, the conductor having the section of insulating material thereon, and the clip extending over said conductor and engaging said material and secured on the insulator, as set forth.



3. The combination, with the insulator, of the conductor having a section of insulating material thereon, and the securing-clip having wings secured on the top of said insulator and a portion embracing and longer than the insulating material on the wire, leaving space between its extended ends and the conductor, substantially as described.

4. The combination of the insulator having a peripheral groove forming the overhanging edge, the securing means extending through the insulator from the bottom of the groove, and the conductor secured to the top of the insulator, substantially as described.

445,970. SWITCH-BOARD FOR HEAT-REGULATING SYSTEMS. CHARLES W. BRIEDER, Lincoln, Nebr. Filed Apr. 11, 1890. Serial No. 347,456. (No model.)

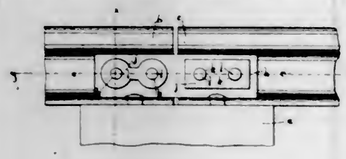


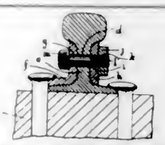
Claim.—1. In a heat-regulating system, the combination, with a common source of heat, flues leading therefrom to several apartments, weighted dampers in said flues near the source of heat, and a cord leading from the heavy edge of each damper to the apartment whose heat it controls, of a chain connected to the end of said cord and having rings in its body, and a switch-board in said apartment having hooks arranged in a vertical line and spaced differently from the spacing of said rings in the chain, as and for the purpose set forth.

2. In a heat-regulating system, the combination, with a common source of heat, flues leading therefrom to several apartments, weighted dampers in said flues near the source of heat, and a cord leading from the heavy edge of each damper to the apartment whose heat it controls, of a switch-board, substantially as described, in each compartment, a second set of cords leading one from each damper to a common apartment, chains connected to said cords and having rings in their bodies, a switch-board in said common apartment having a number of eyes across its face near its lower end, through which said chains and rings pass, and hooks arranged in vertical lines above said eyes, the hooks in each line being farther apart than are said rings, as and for the purpose hereinbefore set forth.

445,971. RAIL-JOINT FASTENING. JAMES R. BURGESS, Port Huron, Mich. Filed May 31, 1890. Serial No. 353,879. (No model.)

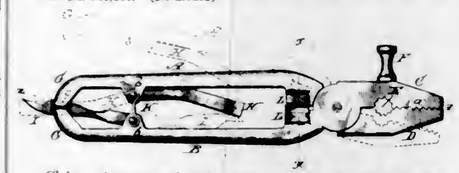
Claim.—In a rail-joint fastening, the combination, with the abutting ends of the rails, each provided with two transverse bolt-openings *d*, the fish-plates *f* and *h* on opposite sides of and overlapping the ends of the rails and provided with bolt-openings, as described, coinciding





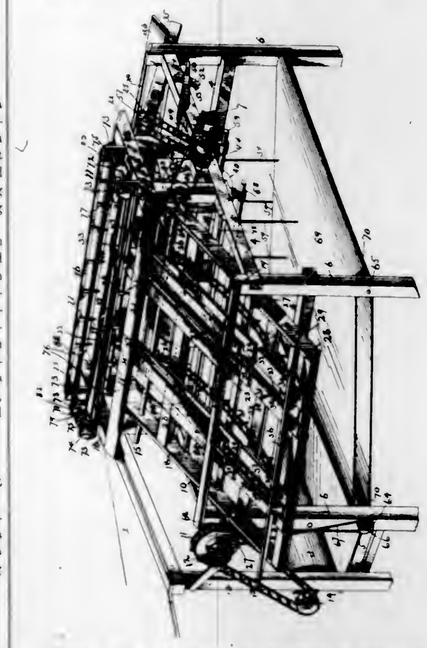
with the bolt-openings *d*, of the twin nut *j*, placed, as shown, outside of one of the fish-plates and having in its end portions the threaded openings *k*, coinciding with the two adjacent openings in the ends of the rails and fish-plates, and the fastening-bolts passed through the said openings in the rails and fish-plates, and having their threaded ends turned into the threaded openings in the nuts, substantially as set forth.

445,972. COMPOUND TOOL. JOHN CALDWELL, Beloit, Wis., assignor of one-half to John Foster, same place. Filed Feb. 26, 1890. Serial No. 341,899. (No model.)



Claim.—A compound tool consisting of the handles A B, terminating at one end with jaws C D, having serrated opening E, to serve as a pipe-wrench, and the hammer-head F upon one of said jaws, and the opposite ends of the handles terminated in recessed holding-jaws G, the tools H I, pivoted to the handles, the cutting-blades L thereon, and suitable means for holding the handles closed, substantially as and for the purpose set forth.

445,973. FEEDER AND BAND-CUTTER. FRANCIS L. CLARK and NICODEMUS GREENLEE, Lee's Summit, Mo. Filed Jan. 31, 1890. Serial No. 338,706. (No model.)



Claim.—1. The combination of an endless carrier adapted to convey the grain to the cylinder of a thrashing-machine, a feeding-cylinder provided with teeth arranged longitudinally above said endless carrier, and inclined endless carriers arranged on opposite sides of the central longitudinal feeding-cylinder and adapted to elevate the grain

and deliver it to the upper side of said feeding-cylinder, substantially as set forth.

2. The combination of an endless carrier adapted to deliver the grain to the cylinder of a thrashing-machine, a feeding-cylinder provided with teeth arranged longitudinally above said endless carrier, the inclined endless carriers arranged on opposite sides of said feeding-cylinder, and the oscillating distributers arranged parallel to and below the said feeding-cylinder, substantially as set forth.

3. The combination of an endless carrier adapted to convey the grain to the cylinder of a thrashing-machine, a feeding-cylinder provided with teeth arranged longitudinally above said endless carrier, inclined endless carriers arranged to convey the grain to said feeding-cylinder, and mechanism to regulate the supply of grain from said inclined carriers to said feeding-cylinder, substantially as set forth.

4. The combination of the feeding-cylinder provided with teeth, the inclined endless carriers, and a rock-shaft having a series of curved arms about concentric with the said feeding-cylinder and adapted to regulate and to cut off the supply of grain from said inclined carriers to said feeding-cylinder, substantially as set forth.

5. The feeding-cylinder comprising the heads or ends mounted upon a suitable shaft, the rock-shafts mounted in said heads and having outwardly-extending teeth, and the cranks upon the projecting ends of said rock-shafts, in combination with the pins arranged on opposite sides of said cranks, and the cam-plate at the ends of the frame of the machine to be engaged by said cranks, substantially as and for the purpose set forth.

6. The combination of the feeding-cylinder provided with teeth, the inclined endless carrier delivering from above said cylinder, the longitudinal braces arranged above said feeding-cylinder, the slotted shields connecting said braces with the upper ends of the inclined guideways of the endless carriers, and the shields connecting one of said longitudinal braces with a longitudinal frame-bar to hold the grain which is being operated upon in contact with the feeding-cylinder, substantially as and for the purpose set forth.

7. The combination, with the feeding-cylinder having the vibrating rock-shafts provided with outwardly-extending teeth, of the inclined endless carriers, the longitudinal braces arranged above the feeding-cylinder, the slotted shields connecting said braces with the upper ends of the inclined guideways of the endless carriers, the curved shields to hold the grain which is being operated upon in contact with the feeding-cylinder, and the rock-shaft arranged parallel to the latter and having curved arms to regulate and cut off the supply of grain from the inclined carriers to the feeding-cylinder, substantially as and for the purpose set forth.

8. The combination, with the frame, of the longitudinally-arranged feeding-cylinder provided with teeth, the inclined guideways, the platforms hinged at the outer sides of the frame, the inclined endless carriers delivering from above upon said cylinder, mounted to run upon shafts journaled, respectively, in the hinged platforms and at the upper ends of the inclined guideways, grooved tracks upon the said inclined guideways to engage the chains of the inclined carriers, and the folding tables at the outer ends of the hinged platforms, substantially as and for the purpose set forth.

9. The combination of the frame having the longitudinal braces, the inclined endless carriers, the slotted shields connecting the upper ends of the guideways of said carriers with the longitudinal braces and adapted to support the bundles of the grain elevated by said endless carriers, and the rods arranged to reciprocate above the said longitudinal braces and having the downwardly-extending knives or band-cutters, substantially as herein set forth.

10. The combination of the endless carrier to convey the grain to the cylinder of the thrashing-machine, the feeding-cylinder provided with teeth and arranged longitudinally above the said endless carrier, the inclined endless carriers adapted to elevate the grain and to deposit it upon the upper side of the feeding-cylinder, and suitable operating mechanism consisting, essentially, of the band-wheels or sprocket-wheels mounted upon the driving-shafts and connected with said driving-shafts by means of friction-clutches, substantially as and for the purpose herein set forth.

11. In a feeder and band-cutter for thrashing-machines, the combination, with the frame, of an endless carrier adapted to convey the grain to the cylinder of the thrashing-machine, a feeding-cylinder arranged longitudinally above said endless carrier and having rock-shafts provided with outwardly-extending teeth, the oscillating rock-shafts having the downwardly-extending arms or distributers, a rock-shaft having curved arms or shields to regulate the supply of grain to the feeding-cylinder, the platforms hinged to the sides of the frame and having the folding tables, the inclined endless carriers adapted to convey the grain to the feeding-cylinder, the reciprocating or vibratory arms or rods having the downwardly-extending band-cutting knives, and suitable operating mechanism, all constructed and arranged substantially as and for the purpose herein shown and specified.

445,974. VEHICLE-SPRING. EUGENE COOK, Kalamazoo, Mich. Filed May 28, 1890. Serial No. 353,415. (No model.)



Claim.—In a vehicle, the combination of the torsion-springs having the outwardly-extending angled ends, the semi-elliptic springs, and the swinging shackles, consisting of the shell-like part open at one side and one end and provided with the pivotal holes in the closed end, the detachable plate provided with the pivot-holes, and the pivotal bolts for clamping said parts together, substantially as set forth.

445,975. ROLL-PAPER HOLDER AND CUTTER. JOHN H. CORNELISON, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed June 7, 1890. Serial No. 354,582. (No model.)



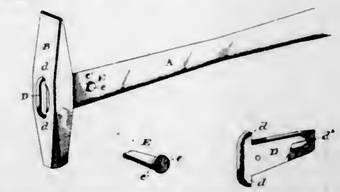
Claim.—1. In a roll-paper holder and cutter, in combination with a suitable base, arms arranged in pairs and pivoted to the base and supporting the roll of paper, links secured to the upper ends of the arms, and a knife to which the upper ends of the links are secured, substantially as set forth.

2. In a roll-paper holder and cutter, the combination of pivoted crossing arms arranged in pairs, a roll of paper supported by the arms, and a knife connected to the arms, whereby as the size of the roll decreases the knife is moved toward the center of the roll by the downward movement of the arms, substantially as set forth.

3. In a roll-paper holder and cutter, the combination of a suitable base, arms pivoted to the base at their lower ends and arranged in crossing pairs, a roll of paper resting on the arms at their crossing-point, a knife resting on the roll of paper, and links pivoted to the knife at their upper ends and to the arms at their lower ends, substantially as set forth.

4. In a roll-paper holder and cutter, the combination of a suitable base, rods or shafts secured by boxes to the base, arms fitting on the rods or shafts and arranged in crossing pairs, a roll of paper resting on the arms at their crossing-point, a knife resting on the roll of paper, and links connecting the knife to the upper ends of the arms, said knife having a double cutting-edge, substantially as and for the purpose set forth.

445,976. DEVICE FOR SECURING TOOL-HANDLES. MICHAEL DAILY, Lebanon, N. H. Filed Sept. 25, 1890. Serial No. 366,066. (No model.)

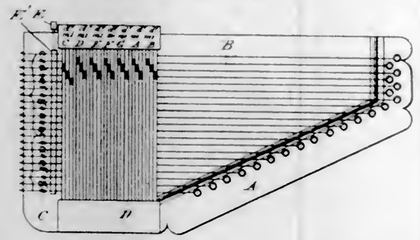


Claim.—The combination, with the hammer-head, the handle provided with a wedge-shaped aperture in its end, the retaining-wedge provided at one of its ends with lateral extensions adapted when the wedge is inserted in the handle to engage the upper face of the hammer-head, and at a point near its opposite end having an oblong aperture, as described, of a locking pin or key having a body portion corresponding in size and form with the opening in the wedge, said pin or key being adapted to be passed through the handle and opening in the wedge, and having its end provided with a recess *d'*, substantially as and for the purpose specified.

445,977. PAD FOR RAPID COPYING. LOUIS NEUHAUS and FELIX P. DAUS, New York, N. Y. Filed Oct. 11, 1890. Serial No. 367,860. (No specimens.)

Claim.—A composition pad usable in rapid copying, composed of a mixture manufactured as follows, by mixing three parts of dry and powdered china-clay No. 1, one part of French powdered chalk, and one-half part of plaster-of-paris, and adding to this mixture, by kneading or otherwise, the composition resulting from mixing three-quarter parts ordinary starch, three-quarter parts dissolved dextrine, one sixty-fourth part of chloride of calcium in the pure crystal, one-sixteenth part of ordinary sugar, and one and one-quarter part of liquid glycerine.

445,978. MUSICAL INSTRUMENT. JOSEPH L. DE GOOD, Detroit, Mich., assignor of one-half to Lucius A. Randall, same place. Filed Sept. 20, 1890. Serial No. 365,582. (No model.)



Claim.—1. The combination, with a stringed instrument, substantially as described, of a group of three pivoted, swinging, and lengthwise-movable dampers corresponding with each of the letters of the scale, said dampers provided with mufflers adapted to damp or muffle all the strings not utilized in producing the corresponding chord, and said dampers corresponding, respectively, to the common chord or chord of one, the dominant seventh, and the relative minor chords, substantially as set forth.

2. The combination, with a stringed instrument, substantially as described, of dampers arranged transversely across its strings, there being a group of three dampers corresponding with each letter of the scale, said dampers in each group provided with a series of mufflers, one for the common chord or chord of one, one for the dominant seventh, and one for the relative minor chords, each said group of three adapted to be shifted longitudinally in a direction across the strings, whereby they are caused to muffle the requisite strings and produce a series of chords a half-step higher, substantially as set forth.

3. The combination, with the strings of the triple groups of dampers D, each said group engaged at their heels to prevent relative longitudinal displacement of its members and engaged by a longitudinal slot-and-pivot connection, whereby they may be shifted longitudinally through a limited distance, and springs or equivalent whereby each member of the group may be independently depressed into contact with the strings and restored again to its position free from the strings, substantially as set forth.

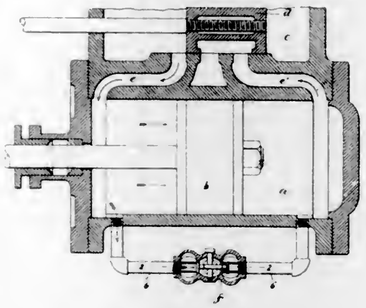
4. The combination, with a stringed instrument, substantially as described, of dampers provided with mufflers arranged transversely across the strings and adapted to muffle the strings out of harmony with the chord to be produced, said damper provided with means whereby it may be shifted longitudinally to produce a chord a half-step different from the chord produced when in its initial position, substantially as set forth.

5. The combination, with a stringed instrument, of the dampers D and a common damper E and means for bringing said last-named damper into action at the will of the operator, substantially as described.

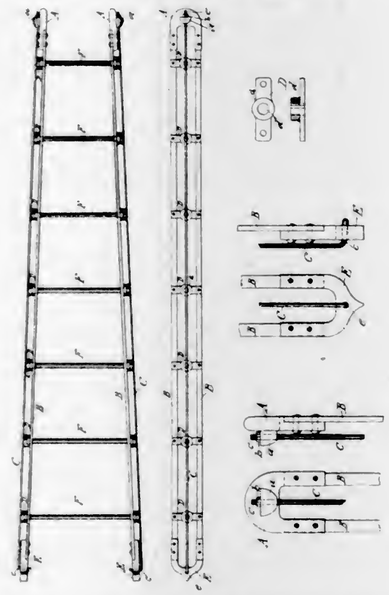
445,979. CYLINDER-COCK. WILLIAM L. DODGE and WILLIAM C. DODGE, Haverhill, Mass.; said William L. Dodge assignor to Orin E. Mickel, same place. Filed June 2, 1890. Serial No. 353,942. (No model.)

Claim.—1. In a cylinder-cock, the combination of the casing *f*, having the receiving-chambers 4 4, the central outlet-chamber 5, connected with the chambers 4 4 by ports or passages 7 7, the guides 13 in the chambers 4 constituting continuations of the passages 7, the valves 9 9 and their connecting-stem 10, and means for limiting the endwise movement of said valves, as set forth.

2. In a cylinder-cock, the combination of the casing *f*, having the receiving-chambers 4 4, the central outlet-chamber 5, connected with the chambers 4 4 by ports or passages 7 7, the guides 13 in the chambers 4, constituting continuations of the passages 7, the valves 9 9 and their connecting-stem 10, said stem having a slot 11 and a fixed stud or pin passing through said slot, the pin and slot being arranged to limit the longitudinal movements of the valves, as set forth.



445,980. LADDER. WILLIAM M. DOLLAR, Heuvelton, N. Y. Filed June 18, 1890. Serial No. 355,828. (No model.)

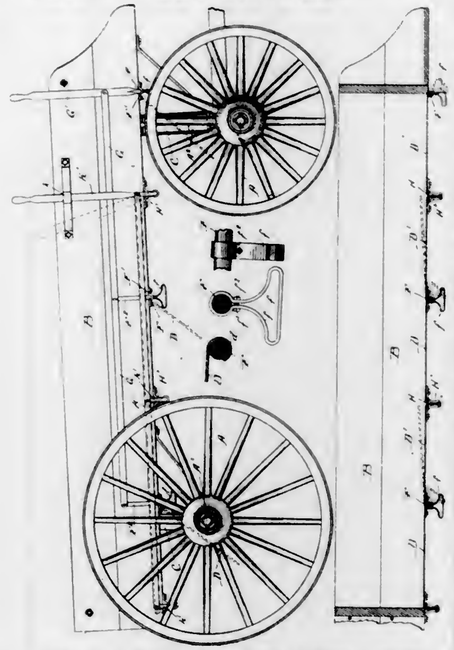


Claim.—1. In a ladder, the combination of long side pieces, spreaders connecting their upper and lower ends, cross-pieces or bridges connecting them at intervals intermediate of said spreaders, rounds supported by said cross-pieces, and truss-rods connecting the spreaders and extending over the centers of the cross-pieces, substantially as and for the purpose set forth.

2. In a ladder, the combination of long side pieces, spreaders connecting their upper and lower ends, cross-pieces or bridges connecting them at intervals intermediate of said spreaders and provided with enlarged centers having perforations extending through them, rounds engaging said perforations and thus supported by the cross-pieces, and truss-rods detachably connected at their opposite ends to the centers of the spreaders and extending over the ends of the rounds, substantially as and for the purposes described.

3. In a ladder, the combination of long side pieces, spreaders connecting their upper and lower ends, cross-pieces or bridges connecting them at intervals between said spreaders, rounds supported by said cross-pieces, truss-rods having hooked lower ends engaging perforations in the lower spreaders, lugs projecting from the upper spreaders through which said truss-rods extend, and nuts on the ends of the latter beyond said lugs, substantially as and for the purpose described.

445,981. DUMPING-WAGON. JAMES T. DOUGINE, Chicago, Ill. Filed Apr. 7, 1890. Serial No. 346,976. (No model.)



Claim.—1. A dumping-wagon having a bottom composed of hinged sections hinged together in pairs, each pair of sections or leaves having a common hinge bolt or shaft, and an oscillating bar for supporting the meeting ends of the sections, said oscillating bar being adapted to rock beneath one section and dump the other, substantially as specified.

2. A dumping-wagon having a bottom composed of hinged sections hinged together in pairs and extending transversely across the wagon-body, each pair of sections or leaves having a common hinge bolt or shaft, the free or meeting ends of the sections being supported upon oscillating bars extending transversely across the wagon-body, substantially as specified.

3. A dumping-wagon having a bottom composed of hinged sections hinged together in pairs, each pair of sections or leaves having a common hinge or bolt, the free or meeting ends of the sections being supported upon oscillating bars, and said oscillating bars having curved webs or faces for the edges of the sections or leaves to rest upon, substantially as specified.

4. A dumping-wagon having a bottom composed of hinged sections hinged together in pairs, each pair of sections or leaves having a common hinge or bolt, the free or meeting ends of the sections being supported upon oscillating bars, and a lever and connecting mechanism for operating said oscillating supporting-bars, substantially as specified.

5. A dumping-wagon having a bottom composed of hinged sections hinged together in pairs, each pair of sections or leaves having a common hinge bolt or shaft, the free or meeting ends of the sections being supported upon oscillating bars, said hinge-shafts having cams or projections adapted to impinge against said sections to raise the same, and a lever and connecting-bar for rocking said hinge-shafts, substantially as specified.

6. A dumping-wagon having a bottom composed of hinged sections hinged together in pairs, each pair of sections or leaves having a common hinge bolt or shaft, the free or meeting ends of the sections being supported upon oscillating bars, said hinge-shafts having cams or projections adapted to impinge against said sections to raise the same, a lever and connecting-bar for rocking said hinge-shafts, and a lever and connecting mechanism for rocking said oscillating supporting-bars, substantially as specified.

7. The combination, in a dump-wagon, of sections D D', hinged together in pairs, with oscillating hinge-shafts F, having operating-arms *f*, secured thereto for raising the sections, and oscillating bars for supporting the free ends of the sections, said oscillating bars being adapted to rock under the alternate sections and dump the remaining sections, substantially as specified.

8. The combination, in a dump-wagon, of a series of hinged sections or leaves with oscillating hinge-shafts having projecting arms or cams secured thereto for raising the hinged sections, and oscillating bars for supporting the free ends of the sections, said oscillating bars being adapted to rock under the alternate sections and dump the remaining sections, substantially as specified.

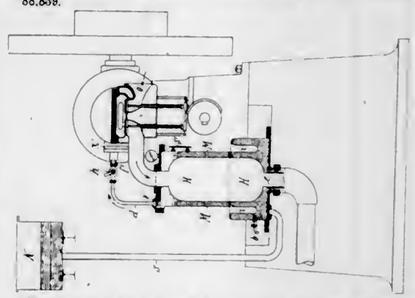
9. The combination, in a dump-wagon, of a series of hinged sections or leaves with oscillating hinge-shafts having projecting arms or cams secured thereto for raising the hinged sections, said projecting arms being made of a loop form encircling said shaft and secured thereto by clamp-bolts, substantially as specified.

10. The combination, in a dump-wagon, of the box-sides B, standards C, by which the box is supported above the axle and bolster, hinged sections D D', and shafts F, having arms or cams *f* for raising the leaves, substantially as specified.

11. The combination, in a dump-wagon, of the box-sides B, standards C, by which the box is supported above the axle and bolster, hinged sections D D', shafts F, having arms or cams *f* for raising the leaves, operating-arms f^3, connecting-bar G, and operating-lever G', substantially as specified.

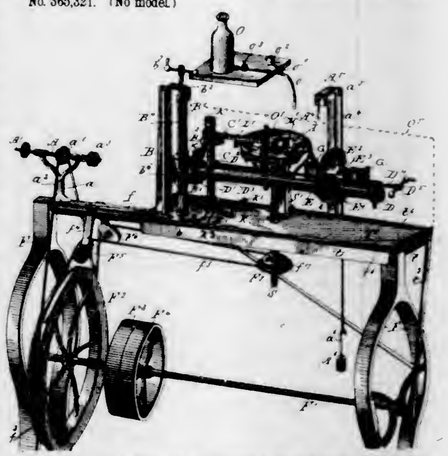
12. The combination of hinge-sections D D', shafts F, having lifting-arms *f* and operating-arms F^3, connecting-bar G, lever G', supporting-bars H, having faces *h* and operating-arms *h'*, connecting-bar K, and dumping-lever K', substantially as specified.

445,982. APPARATUS FOR THE REDUCTION OF PETROLEUM INTO GAS. FRITZ DÜRR, Munich, Germany. Filed Apr. 15, 1890. Serial No. 348,057. (No model.) Patented in Belgium Dec. 31, 1889, No. 88,839.



Claim.—In a gas-engine, the combination of evaporating-vessel M, having annular heating-trough *i*, with tank K, which is placed above vessel M, and a stand-pipe *s*, that connects the tank with the bottom of the vessel, substantially as specified.

445,983. MACHINE FOR CUTTING OR SLICING MINERALS. WILLIAM B. DWIGHT, Poughkeepsie, N. Y. Filed Sept. 18, 1890. Serial No. 365,321. (No model.)



Claim.—1. In a machine for cutting or slicing minerals, the combination of the following instrumentalities: a horizontally-revolvble

discoidal cutter and a work-holder support in the plane of rotation of the cutter and adapted to be adjusted in a right line and in a circle at right angles to said plane of rotation of the cutter, for the purpose set forth.

2. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble discoidal cutter and a work-holder support in the plane of rotation of the cutter, adapted to revolve about vertical and horizontal axes and adjustable along said vertical axis, for the purpose set forth.

3. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble discoidal cutter, a work-holder support in the plane of rotation of the cutter and adapted to be adjusted in a rectilinear and a circular plane at right angles to said plane of rotation of the cutter, and a work-holder connected with and adjustable longitudinally of said support, for the purpose set forth.

4. In a machine for cutting and slicing minerals, the combination, with a cutter, of a work-holder support adapted to be adjusted in a plane at right angles to the plane of motion of the cutter, as well as in a circular plane, and a work-holder connected with and adapted to be adjusted on the support in the plane of motion of the cutter and about its own axis, substantially as set forth.

5. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble discoidal cutter, a work-holder support in the plane of rotation of the cutter and adapted to be adjusted in a right line and in a circle at right angles to the said plane of rotation of the cutter, and a revoluble work-holder connected with and adjustable longitudinally of said support, for the purpose set forth.

6. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble discoidal cutter, a work-holder adapted to revolve about horizontal and vertical axes and adjustable along the latter axis, and a revoluble work-holder connected with and adjustable longitudinally of said support, for the purposes set forth

7. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble discoidal cutter, a vertical revoluble standard, a sleeve adjustable vertically on the standard and provided with a horizontal bearing, a worm-spindle connected with the sleeve, a work-holder support revoluble in the horizontal bearing in the sleeve, and a worm-gear connected with said support and adapted to be revolved by the worm-spindle.

8. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble cutter, a vertical revoluble standard, a vertical revolable adjusting-screw, a sleeve loosely mounted on the standard and having an interiorly-threaded vertical bearing for the adjusting-screw and a horizontal bearing, a worm-spindle connected with the sleeve, a work-holder support revolnble in the horizontal bearing of said sleeve, and a worm-wheel secured to said work-holder support and adapted to be revolved by the worm-spindle, for the purpose set forth.

9. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble discoidal cutter, a vertical revoluble standard, a sleeve adjustable on the standard and provided with a horizontal bearing, a worm-spindle pivotally connected with the sleeve, a work-holder support adapted to revolve in the horizontal bearing of the sleeve, and a worm-wheel secured to said work-holder and adapted to be revolved by the worm-spindle, for the purpose set forth.

10. In a machine for cutting or slicing minerals, the combination, with the work-holder support D, of a vertical revoluble standard, a locking device adapted to lock the standard against revolution, a sleeve-bearing adapted to be adjusted vertically on the standard, a locking device to lock the said bearing against such vertical motion, a worm-gear connected, respectively, with the sleeve-bearing and the support, and a locking device for locking the worm-gear against operation, substantially as and for the purposes specified.

11. In a machine for cutting or slicing minerals, the combination, with the work-holder support D, of a vertical revoluble standard, a locking device adapted to lock the standard against revolution, a sleeve-bearing adapted to be adjusted vertically on the standard, a locking device to lock the said bearing against such vertical motion, a worm-gear connected, respectively, with the sleeve-bearing and the support, and a locking device for locking the worm-gear against operation, the said parts being detachably connected together, substantially as and for the purposes specified.

12. In a machine for cutting or slicing minerals, the combination of the sleeve-bearing B^3, provided with a cylindrical boss, a bearing secured to the periphery of the boss, a worm, and a sleeve-bearing therefor, said sleeve-bearing being provided with a journal adapted to revolve in the bearing on the cylindrical boss, with a worm-wheel adapted to be engaged by the worm, and a work-holder support connected with the worm-wheel, substantially as and for the purposes set forth.

13. In a machine for cutting or slicing minerals, the combination of the work-holder support D and a carriage mounted on and adjustable lengthwise of the support with a work-holder pivotally connected with the carriage and adjusting-gearing for imparting rotary motion to the work-holder, for the purposes set forth.

14. In a machine for cutting or slicing minerals, the combination of the work-holder support D and a carriage mounted on and adjustable lengthwise of the support with a work-holder pivotally connected with the carriage, adjusting-gearing for imparting rotary motion to the work-holder, and a locking device for locking the gearing against operation, for the purposes set forth.

15. In a machine for cutting or slicing minerals, the combination of the work-holder support D with a work-holder, a carriage therefor adapted to be adjusted longitudinally of the support, gearing connected, respectively, with the carriage and the work-holder, and a spring-actuated brake-shoe adapted to engage the periphery of the gear connected with the work-holder and lock the same against revolution, substantially as and for the purposes set forth.

16. In a machine for cutting or slicing minerals, the combination, with the work-holder support D, a carriage mounted on and adjustable vertically of the support, and a worm-spindle having its bearings on the carriage, of a work-holder pivotally connected with the carriage, and a worm-wheel secured to the holder and adapted to be revolved by the worm-spindle, for the purpose set forth.

17. In a machine for cutting or slicing minerals, the combination of a horizontally-revoluble discoidal cutter, a work-holder support in the plane of rotation of the cutter, a carriage mounted on and adjustable lengthwise of the support, and a worm-spindle having its bearings on the carriage with a work-holder adapted to revolve on a horizontal bearing connected with the carriage, and a worm-wheel secured to the holder and adapted to be revolved by the worm-spindle, for the purpose set forth.

18. In a machine for cutting or slicing minerals, the combination, with a horizontally-revoluble discoidal cutter, a work-holder support in the plane of rotation of the cutter and adapted to revolve about vertical and horizontal axes, a carriage mounted on and adjustable lengthwise of the support, and a worm-spindle having its bearings on the carriage, of a work-holder revoluble on a horizontal bearing connected with the carriage, a worm-wheel secured to said holder and adapted to be revolved by the worm-spindle, and a spring-actuated brake adapted to engage the worm-wheel, for the purpose set forth.

19. In a machine for cutting or slicing minerals, the combination of the work-holder support D with a work-holder, a carriage therefor adapted to be adjusted longitudinally of the support, a worm connected with the carriage, a worm-wheel connected with the work-holder and in engagement with said worm for imparting rotary motion to the holder, and a spring-actuated brake-shoe adapted to engage the periphery of said worm-wheel, substantially as and for the purposes set forth.

20. In a machine for cutting or slicing minerals, the means for adjusting the work-holder about its axis, comprising an adjusting-gear, a support having a horizontal journal and a bearing for one element of the adjusting-gear, and a work-holder mounted and revoluble on said journal and provided with a bearing for the other element of the adjusting-gear, as and for the purpose set forth.

21. In a machine for cutting or slicing minerals, the means for adjusting the work-holder about its axis, comprising an adjusting-gear, a support for the work-holder, a detachable bearing for one of the elements of the adjusting-gear, the work-holder, and a bearing detachably connected with the support upon which the holder and the other element of the adjusting-gear are adapted to revolve, as and for the purpose set forth.

22. In a machine for cutting or slicing minerals, the combination of the work-holder support provided with a longitudinal guide-groove V-shaped in section with the work-holder carriage provided with a tubular bearing through which the support passes and a guide and locking-screw working in said bearing and provided with a V-shaped head adapted to engage the groove in the support, substantially as and for the purposes set forth.

23. In a machine for cutting or slicing minerals, the combination of the work-holder carriage provided with a cylindrical boss having an axial screw-threaded bearing with the work-holder plate provided with an axial opening, a journal extending through said opening and having its outer end screw-threaded and screwing into the axial opening of the carriage, a gear-wheel loosely mounted on said journal between the work-holder plate and the carriage, and gearing connected with said carriage and adapted to engage said gear-wheel, substantially as and for the purposes set forth.

24. In a machine for cutting or slicing minerals, the combination of the work-holder carriage provided with a cylindrical boss having an axial screw-threaded bearing and a cylindrical recess formed around said bearing with the work-holder plate provided with an axial opening, a journal having at one end a head and being screw-threaded at the opposite end and screwing into the bearing in the carriage, a gear-wheel secured to the work-holder plate and mounted loosely on the journal and provided with a cylindrical boss adapted to fit the corresponding recess in the carriage, and a driving-gear connected with the carriage and adapted to engage the gear-wheel, substantially as and for the purposes set forth.

25. In a machine for cutting or slicing minerals, the combination, with a horizontally-revoluble discoidal cutter, of a work-holder support in the plane of rotation of the cutter and adapted to be adjusted in said plane and in planes at right angles thereto and a work-holder comprising clamping-jaws adjustable toward and from each other, said work-holder being adjustable on the support and about its own axis.

26. In a machine for cutting or slicing minerals, a work-holder comprising a revoluble support and clamping-jaws having concave clamping-faces provided centrally with an opening g^{16}, connected with and adapted to be adjusted to and from each other on said support, substantially as and for the purposes set forth.

27. In a machine for cutting or slicing minerals, the combination, with the adjustable clamping-jaws of the work-holder, having concave clamping-faces provided with an opening g^{16}, of auxiliary clamping-jaws having a convex back provided with a dowel adapted to enter said opening g^{16}, substantially as and for the purposes set forth.

28. In a machine for cutting or slicing minerals, the combination, with the adjustable steel clamping-jaws of the work-holder, having concave clamping-jaws corrugated vertically and provided with an opening g^{16}, of auxiliary clamping-jaws of a softer material, having a convex back and provided with a dowel adapted to enter said opening g^{16}, substantially as and for the purposes set forth.

29. In a machine for cutting or slicing minerals, the combination, with the adjustable clamping-jaws of the work-holder, provided with an opening g^{16}, of auxiliary clamping-jaws having irregular clamping-faces and provided with a dowel adapted to enter the said opening g^{16}, substantially as and for the purposes set forth.

30. In a machine for cutting or slicing minerals, the combination, with clamping-jaws adapted to be adjusted toward and from each other, of auxiliary clamping-jaws having one of their edges beveled and provided at the opposite end with a triangular block, the beveled edge of one of the auxiliary jaws bearing against the inclined face of the triangular block of the other jaw, whereby when said auxiliary jaws are inserted between the adjustable clamping-jaws the latter as they approach each other will cause the auxiliary jaws to approach each other also, substantially as and for the purposes specified.

31. In a machine for cutting or slicing minerals, the combination, with clamping-jaws adapted to be adjusted toward and from each other, of auxiliary clamping-jaws having one of their edges beveled and provided at the opposite end with a triangular block, the beveled edge of one of the auxiliary jaws bearing against the inclined face of the triangular block of the other jaw, and a loose connection between said beveled edge of one jaw and the triangular block of the other jaw, whereby when said auxiliary jaws are inserted between the adjustable clamping-jaws the latter as they approach each other will cause the auxiliary jaws to approach each other also, substantially as and for the purposes specified.

32. In a machine for cutting or slicing minerals, the work-holder consisting of the carriage E, a supporting-plate provided with a guide-way, clamping-jaws fitted on said guideway, an adjusting screw or screws working in threaded bearings formed on the clamping-jaws, a journal connected with the carriage upon which the supporting-plate for the clamping-jaws is mounted, and gearing, substantially such as described, respectively connected with the carriage and the supporting-plate for the clamping-jaws, all of said parts being detachably connected together, substantially as and for the purposes set forth.

33. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter, of a cutter-guide provided with bearings adapted to revolve on their own axes and about a vertical axis, substantially as and for the purposes set forth.

34. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter, of a cutter-guide provided with rolling bearings adapted to impinge upon both faces of the cutter and to move across said faces as the cutter penetrates the substance being cut, substantially as and for the purposes set forth.

35. In a machine for cutting or slicing minerals, the combination, with a revoluble discoidal cutter, of rolling cutter-guides on opposite faces of said cutter, and a support for said guides, adapted to traverse the cutter and to be adjusted in a plane at right angles thereto, for the purpose set forth.

36. In a machine for cutting or slicing minerals, the combination, with a revoluble discoidal cutter, of rolling cutter-guides on opposite faces of said cutter, and a revoluble support for said guides, adapted to traverse the cutter and to be adjusted in a plane at right angles thereto.

37. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter, of a cutter-guide comprising two curvilinear arms arranged above and below the cutter and provided with rolling bearings adapted to impinge upon the faces of the said cutter, and vertical spindles for said rolling bearings, adapted to revolve in bearings in the curved arms, substantially as and for the purposes set forth.

38. In a machine for cutting or slicing minerals, the combination, with the cutter, of a cutter-guide provided with rolling bearings adapted to impinge upon opposite faces of the cutter, said rolling bearings being adjustable vertically on the guide, substantially as and for the purposes set forth

39. In a machine for cutting or slicing minerals, the combination, with the cutter, of a cutter-guide provided with rolling bearings adapted to impinge upon opposite faces of the cutter, and revoluble spindles for said rolling bearings, adapted to be adjusted vertically on the guide, substantially as and for the purposes specified.

40. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter adapted to revolve in a horizontal plane, of a cutter-guide comprising two supporting-arms adjustable and revoluble on a vertical axis, curvilinear guide-arms pivotally connected with said supporting-arms, and rolling bearings connected with the curvilinear arms and adapted to engage both faces of the cutter, substantially as and for the purposes set forth.

41. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter adapted to revolve in a horizontal plane, of a cutter-guide comprising two supporting-arms adjustable and revoluble on a vertical axis, curvilinear guide-arms pivotally connected with the supporting-arms, and rolling bearings connected with and adapted to be vertically adjusted on said arms, substantially as and for the purposes specified.

42. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter adapted to revolve in a horizontal plane, of a cutter-guide comprising two supporting-arms adjustable and revoluble on a vertical axis, curvilinear guide-arms pivotally connected with the supporting-arms, rolling bearings, and revoluble spindles therefor connected with and adapted to be vertically adjusted on said arms, substantially as and for the purposes specified.

43. In a machine for cutting or slicing minerals, the combination, with a cutter, of an extensible cutter-guide adapted to impinge upon the opposite faces of said cutter, substantially as and for the purposes set forth.

44. In a machine for cutting or slicing minerals, the combination, with the curvilinear guide-arms of the cutter-guide and the rolling bearings connected therewith, of extensible arms pivotally connected with the curvilinear arms and carrying roller-bearings, substantially as and for the purposes set forth.

45. In a machine for cutting or slicing minerals, the combination, with the curvilinear guide-arms of the cutter-guide and the rolling bearings connected therewith, of extensible arms pivotally connected with the curvilinear arms and carrying rolling bearings adapted to be adjusted vertically in said arms, substantially as and for the purposes set forth.

46. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter adapted to revolve in a horizontal plane, of an adjustable cutter-guide adapted to impinge upon the faces of the cutter and to sweep across the same as it penetrates into the material being cut, and a rim-guide adapted to impinge upon both faces of the cutter at the periphery, substantially as and for the purposes set forth.

47. In a machine for cutting or slicing minerals, the combination, with a discoidal cutter adapted to revolve in a horizontal plane, of an adjustable cutter-guide adapted to impinge upon both faces of the cutter and to sweep across the same as it penetrates into the material being cut, and a rim-guide provided with rolling bearings adapted to impinge upon both faces of the cutter at the periphery, substantially as and for the purposes set forth.

48. In a machine for cutting or slicing minerals, the combination, with a gang of discoidal cutters, of a cutter-guide of curvilinear form arranged between two cutters and adapted to be adjusted in a plane at right angles to the cutters and to sweep across the cutter-faces from the periphery to the axis thereof, said cutter-guide being of a thickness substantially equal to the space between two cutters, substantially as and for the purposes set forth.

49. In a machine for cutting or slicing minerals, the combination, with a gang of discoidal cutters and a cutter-guide of curvilinear form arranged between two cutters, of cutter-guides for the end cutters of the gang, provided with rolling bearings arranged to impinge upon the outer faces of said end cutters, substantially as and for the purposes set forth.

50. In a machine for cutting or slicing minerals, the combination, with a gang of discoidal cutters and adjustable guides provided with rolling bearings impinging upon and adapted to traverse the outer face of the end cutters of the gang, of adjustable cutter-guides arranged between the cutters of the gang and having a traversing motion across the faces thereof, for the purpose set forth.

51. In a machine for cutting or slicing minerals, the combination, with a gang of discoidal cutters and adjustable guides provided with rolling bearings impinging upon and adapted to traverse the outer face of the end cutters of the gang, of guides arranged between the cutters of the gang comprising a segmental plate U, having plates U'

secured to its periphery of a thickness equal to the space between the cutters, for the purpose set forth.

52. In a machine for cutting or slicing minerals, the combination, with the cutter or cutters, the horizontal arm L of the cutter-guide, and the work-holder carriage-support D, of a connection between said arm and the support D, substantially as and for the purposes set forth.

53. In a machine for cutting or slicing minerals, the combination, with the cutter or cutters, the horizontal arm L of the cutter-guide, and the work-holder carriage-support D, of an adjustable connection between said arm and the support D, substantially as and for the purposes set forth.

54. In a machine for cutting or slicing minerals, the combination, with a cutter and the work-holder, of a supporting-block for the material to be cut, auxiliary clamping-jaws adapted to co-operate with the jaws of the work-holder to clamp the block, and a glass plate to which the substance to be cut is cemented, adapted to be supported on the block and clamped thereto by the auxiliary clamping-jaws, substantially as and for the purposes set forth.

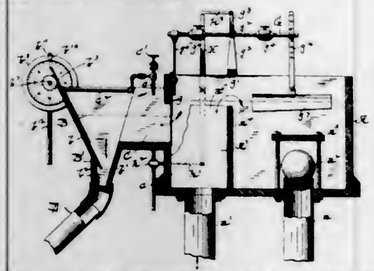
55. In a machine for cutting or slicing minerals, the combination, with the cutter-spindle and its bearing-standard S', provided with bearings s s, of the adjustable collars S^2 S^3 and the sleeve S^4, substantially as and for the purposes set forth.

445,984. SUPPOSITORY. ERNEST G. EBERHARDT, Indianapolis, Ind., assignor to the Eli Lilly & Company, same place. Filed Sept. 13, 1890. Serial No. 364,873. (No specimens.)



Claim.—A suppository provided with a covering or coating of paraffine or an equivalent impervious but fragile material, whereby said suppository is protected and said covering or coating may be easily broken apart and removed, substantially as set forth.

445,985. STUFF-REGULATING APPARATUS FOR PAPER-MACHINES. WILLIAM C. EDWARDS, Holyoke, Mass. Filed Nov. 12, 1889. Serial No. 329,977. (No model.)



Claim.—1. In a stuff-regulating apparatus for paper-machines, the combination, with the stuff-box having the usual inlet and overflow-outlet for the stuff, of a well having converging sides and having at the bottom thereof an outlet-passage and a gate for closing said passage, a conduit leading from said box to said well, and a water-supply pipe leading into said conduit, substantially as and for the purpose set forth.

2. In a stuff-regulating apparatus for paper-machines, the combination with the stuff-box having at one end thereof an overflow-compartment, two of the sides of which are exposed to the passage of the stuff thereover, of a well the sides of which converge toward an outlet-passage at the bottom thereof, a gate movable in ways upon one of the sides of said well for closing said passage at the bottom of the latter, and a conduit leading from the end of said box at which said overflow-compartment is located into said well, arranged and operating substantially as and for the purpose described.

3. In a stuff-regulating apparatus for paper-machines, the combination with the stuff-box having the usual stuff-inlet opening and having in one corner thereof an overflow-compartment, of a well the sides of which taper toward the bottom thereof and two of the opposite sides of which stand at such an angle to each other that the vertical plane of their intersecting point will lie at one side of the center of said well, a gate movable in a plane parallel with one of said oppositely-located sides of the well for governing the outlet-passage from the latter, and a conduit leading from said box to said well, said conduit communicating with the box at a point above the bottom of the latter and between said overflow-compartment and the adjacent side of said box, arranged and operating substantially as set forth.

4. In a stuff-regulating apparatus for paper-machines, the combination, with the stuff-box, of a well located between said box and the paper-machine, said well having its sides tapering toward the bottom thereof, a gate mounted in ways upon one of the sides of said well for closing the outlet-passage from the latter, a rack and pinion for operating said gate, an indicator operatively connected to said rack and pinion for indicating the movement thereof, a conduit connecting said well with said stuff-box, and a water-supply pipe communicating with said conduit, arranged and operating substantially as described.

5. In a stuff-regulating apparatus for paper-machines, the combination, with the stuff-box, of a well the sides of which taper toward the bottom thereof, where they terminate in an outlet-passage from said well, a primary gate movable in a plane parallel with one of the sides of said well for closing said outlet-passage, a conduit leading from said stuff-box to said well, and a secondary gate for closing the entrance to said conduit, substantially as and for the purpose described.

6. The combination, with stuff-box A, having overflow-compartment A', of well B, having tapering sides and outlet-passage b^3 at the bottom thereof, gate B' for closing said passage, conduit C, connecting said stuff-box with said well, water-supply pipe c, communicating with said conduit, and branch pipe c^3, communicating with said well at or near the top thereof, substantially as described.

7. The combination, with well B, having its sides tapering toward the bottom thereof and having an outlet-passage at said bottom, of gate B', mounted in ways upon one of the sides of said well and carrying at its upper end the rack b^3, shaft b^4, mounted in bearings on said well and carrying pinion B^7, which meshes with said rack, said shaft having at one end thereof crank-arm b^4 and at its opposite end arm b^5, carrying finger b^{10}, and graduated disk b^9, secured to one of the bearings of said shaft in position to have its periphery overlapped by said finger b^{10}, arranged and operating substantially as set forth.

8. The combination, with well B, gate B', carrying rack b^3, shaft b^4, carrying pinion b^7 and indicating arm and finger b^5 b^{10}, and graduated disk b^9, of gas-pipe b^{12}, having branch pipe b^{13} connected thereto by means of a swivel-joint and in the plane of the axis of said shaft b^4, said branch pipe at its outer end being connected to the outer end of arm b^5 and carrying burner b^{11}, arranged and operating substantially as described, whereby said burner will be caused to follow the movements of said indicating-finger.

9. The combination, with stuff-box A, conduit C, and well B, having tapering sides, as described, of pump-box E, having conduit E' communicating therewith at or near the top thereof, pump F, and pipe D, leading from said well at the bottom of the latter into said pump-box at or near the bottom of the same, substantially as set forth, whereby both ends of said pipe will be sealed by the stuff in said well and pump-box, respectively.

10. The combination, with stuff-box A, well B, having primary gate B', and conduit C, leading from said box to said well, of secondary gate g, mounted in vertical ways and governing the entrance to said conduit, lever G, mounted upon a horizontal axis and being adjustably connected at one end to said secondary gate, float g^7, constructed to rest upon the surface of the stuff within said box, said float having stem g^4, and means for adjustably connecting said stem to the opposite end of said lever, substantially as and for the purpose described.

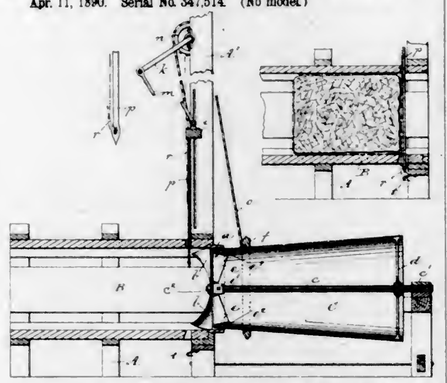
11. The combination, with stuff-box A, having gate g at one end thereof and having bridge-piece g' extending across the top thereof, of bearings g^2, supported upon said bridge-piece, shaft g^3, journaled in said bearings, lever G, mounted at its center upon said shaft and having weights g^4 adjustably mounted thereon, rod g^5, detachably secured to said lever at one end of the latter and at its opposite end being adjustably connected to said gate g, float g^7, consisting of a hollow shell and having the bottom thereof concaved, as described, and stem g^6, pivotally secured to said float at one end and at its opposite end to said lever G, substantially as and for the purpose described.

12. The combination, with stuff-box A and conduit C, leading therefrom at one end thereof, water-supply pipe c, having valve h^3 therein, said pipe communicating with said conduit, shaft g^3, having arm g^8, lever G, and float g^7, connected to said lever, substantially as described, of lever H, pivoted upon said box and being connected at its lower end to the stem of said valve h^3, and link h^5, connecting the upper end of said lever to said arm g^8 of shaft g^3, substantially as and for the purpose set forth.

13. The combination, with stuff-box A, having inlet-pipe a communicating therewith, and having at one end thereof overflow-compartment A', with pipe a', leading from the latter, of well B, having its sides tapering toward the bottom thereof, and having gate B' mounted in ways upon one of said sides, pump-box E, pipe D, leading from the bottom of said well to and into said pump-box, and conduit C, leading from said stuff-box at the end of the latter at which said compartment A' is located into said well, arranged and operating substantially as described.

14. The combination, with stuff-box A, of well B, having the sides b b' thereof disposed at such an angle to each other that if continued said sides would intersect each other at one side of the vertical center of said well, and having said side b deflected near the bottom thereof to a vertical plane, whereby outlet-passage b^3 is formed, gate B', mounted in ways upon said side b, and movable in a plane parallel with the upper portion of the latter, and conduit C, connecting said well with said stuff-box, arranged and operating substantially as and for the purpose described.

445,986. HAY-PRESS. JOHN B. FORESMAN, Foresman, Ind. Filed Apr. 11, 1890. Serial No. 347,514. (No model.)

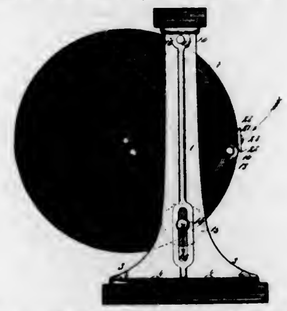


Claim.—1. The combination, with a frame, a baling-chamber, a revoluble feeding-chamber in connection with the baling-chamber, and mechanism to revolve the feeding-chamber on its axis, of a series of inclined radial wings supported between the baling-chamber and feeding-chamber, and independently-revoluble feeding-rollers which are adapted to lie near the edges of the feeding-wings and force material between them into the baling-chamber, substantially as set forth.

2. The combination, with a revoluble feeding-cylinder, a stationary baling-chamber which is aligned with the feeding-cylinder, and radial inclined wing-walls that form feeding-throats between the feeding-cylinder and baling-chamber, of conical feeding-rollers pivotally and radially supported in the feeding-cylinder near the wing-walls, substantially as set forth.

3. The combination, with a horizontal frame, a stationary baling-chamber, a rotary feeding-cylinder having an encircling toothed rim, an upright guide-frame at the junction of the feed-cylinder and horizontal frame, and a transverse revolubly-mounted crank-shaft at the top of the guide-frame, of a sprocket-wheel on the crank-shaft end, a short transverse shaft movably supported on the horizontal frame below the sprocket-wheel, a pinion on this shaft which may engage the toothed rim, a sprocket-wheel on the outer end of this short shaft, a sprocket-chain, a cross-head on the guide-frame below the crank-shaft, a pitman between the shaft and cross-head, two spaced depending needles having eyes near their points and secured to the cross-head, and a wire-supplying device, substantially as set forth.

445,987. ROLL-PAPER HOLDER AND CUTTER. SAMUEL M. FRIEDE, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed June 6, 1888. Serial No. 276,176. (No model.)



Claim.—1. The combination of the supports and the toggle-frames provided with a knife and having bearings for a paper-roll, substantially as and for the purpose set forth.

2. The toggle-frames, the knife they carry, and the gravity-disks at the lower ends of said toggle-frames, substantially as and for the purpose set forth.

3. The main frame, the sectional toggle-frames, the pivotal connection of said toggle-frames to the main frame, the sectional arms of said toggle-frames, and the pivotal coupling of said arms together, substantially as and for the purpose set forth.

4. The supporting-frame, the toggle-frames pivoted to said frame, the double-edge combined knife and tension-plate and screw attachment of said knife to the toggle-frames at one side, the projecting hooks on the opposite side of said toggle-frames, and the roll-bobbin axle they carry, substantially as and for the purpose set forth.

5. The supporting-frame, the toggle-frames pivoted to said frame, the combined double-edge knife and tension-plate secured to one side of said toggle-frames, with the bobbin-axle and axle-bearings secured at the opposite side of said toggle-frames and providing a counterbalance to said pivotal toggle-frames, the gravity-disks at the lower ends of said toggle-frames and the pivot-pin that couples said disks thereto, and the standards of said supporting-frame, provided with elongated slots in which said pivot-pin works, substantially as and for the purpose set forth.

6. A suspended toggle-frame, the axle and bobbin that carry the paper-roll, having bearings attached to said frame, the knife that severs the paper secured to said frame, and the gravity-weight that automatically operates the toggle-frame and the follower-knife that it carries, substantially as and for the purpose set forth.

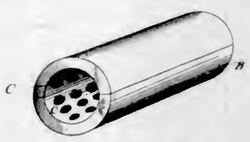
7. A suspended toggle-frame, the main frame to which it is pivoted, the axle and bobbin that carry the paper-roll, the hook-bearings on the toggle-frame that carry said axle, the combined follower-knife and tension-plate attached to said toggle-frame, the gravity-disks on the lower ends of said toggle-frames, and the pivot-pin which couples said disks to said toggle-frame, has suspended bearings therein, and is guided in vertical slots in the standards, arranged to automatically adjust the knife to the roll and form a tension-follower as the roll reduces in diameter, substantially as and for the purpose set forth.

445,988. LUBRICANT BLOCK. WILLIAM FRIEND, New York, N. Y. Filed May 9, 1890. Serial No. 351,161. (No model.)



Claim.—As a new article of manufacture, a lubricant block composed of a mass of permanently-solid lubricant material and a case or envelope of correspondingly permanently-rigid material laterally surrounding and inclosing the solid lubricant, said lubricant mass and its rigid envelope being compressed together into a single integral and permanently-solid block adapted to serve as a lubricant when fixedly seated in a bearing, substantially as specified.

445,989. LUBRICANT LINING FOR FRICTION-BEARINGS. WILLIAM FRIEND, New York, N. Y. Filed May 9, 1890. Serial No. 351,162. (No model.)



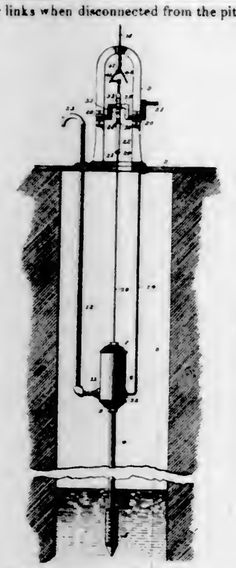
Claim.—As a lubricant lining or surface for friction-bearings, the combination of a desiccated wood plate or block, the pores or interstices of the fibers of which are filled with lime in a finely-powered state, with solid lubricant material fixedly secured in or upon a face of said plate or block, substantially as and for the purpose set forth.

445,990. MECHANISM FOR OPERATING PUMPS. CHARLES A. FROST, Western, Nebr. Filed Oct. 3, 1890. Serial No. 366,920. (No model.)

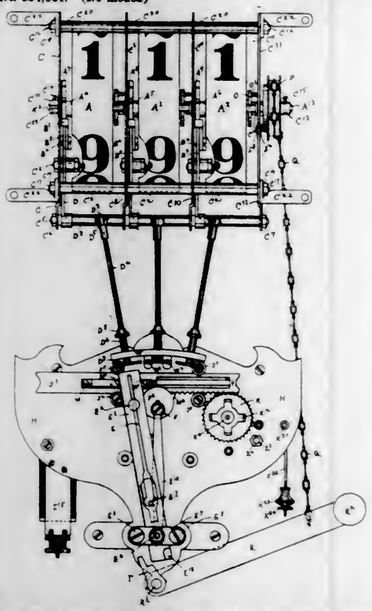
Claim.—1. The combination, with a pitman having an eye at its upper end, of paired flaps or links hinged at the lower end of a vertically-reciprocating rod, one of said flaps carrying a pin adapted to pass through the eye of said pitman and to enter a perforation in the other flap, substantially as and for the purpose set forth.

2. The combination, with a pitman for operating a piston-rod, of a reciprocating rod provided at its lower end with a pair of hinged flaps or links, said flaps or links being provided with means for connecting them with the upper end of said pitman, and a spring for sepa-

rating said flaps or links when disconnected from the pitman, substantially as set forth.



445,991. ELECTRO-MECHANICAL INDICATOR FOR FIRE-ALARM TELEGRAPHS. THOMAS F. GAYNOR, Louisville, Ky., assignor to the Gaynor Electric Company, same place. Filed May 15, 1890. Serial No. 351,881. (No model.)



Claim.—1. In combination with each one of a series of figured drums of an indicator, an escape-wheel, a pivoted pallet-lever having two loosely-pivoted pallets thereon adapted to engage with the escape-wheel, each having a slot in which a corresponding pin in the pallet-lever plays and by which their movement is controlled, and a spring secured to the pallet-lever, adapted to press the pallets toward each other against the escape-wheel, substantially as specified.

2. In combination with each one of a series of figured drums of an indicator, an escape-wheel, a pivoted pallet-lever having two pallets thereon, and a presser-spring secured to a frame-plate of the machine by a screw adjustment therewith and adapted to press upon the pallet-lever so as to bring one of the pallets against the escape-wheel, substantially as described.

3. In combination with the drum of an indicator, an escape-wheel connected therewith, a pivoted pallet-lever having two pallets thereon adapted to engage with the escape-wheel, a pivoted tripping-lever that actuates the pallet-lever, and a trip-rod having a knuckle-jointed connection with the tripping-lever, and also having a nut at its lower end, by means of which its length may be regulated with reference to a push-rod mechanism by which it is to be operated, substantially as specified.

4. In combination with the push-rod of an indicator, a guide-bar having guides for the push-rod and being pivoted at its lower end to the frame-plate of the machine, a pitman connected to the lower end of the push-rod, and a shaft in a train of wheel-work, provided with a crank connection with the pitman and through which motion is imparted to the push-rod whenever the shaft is rotated, substantially as specified.

5. In combination with the push-rod of an indicator, a guide-bar having guides for the push-rod and being pivoted at its lower end to a frame-plate of the machine, a carrier-bar mounted upon the frame-plate of the machine on friction-rollers and provided with a carrier-pin adapted to be loosely connected to the upper end of the guide-bar and having a rack upon its lower edge, a friction-wheel adapted to engage with the rack upon the carrier-bar, and a shaft of a time-train, having a frictional grip upon the friction-wheel by means of a friction-spring secured thereon and adapted to move the push-rod mechanism, substantially as specified.

6. In combination with the push-rod of an indicator, a guide-bar having guides for the push-rod, a carrier-bar movable along its length, connected with the guide-bar and provided with teeth projecting therefrom, and a shaft of a train, provided with a retracting-tooth adapted to engage with the teeth upon the carrier-bar, so as in its rotation to bring the push-rod mechanism in a correct position under the tripping-rods of the indicator, substantially as specified.

7. In combination with the carrier-bar of an indicator having a rack thereon, a friction-wheel which is adapted to engage therewith, a shaft of a time-train, provided with a friction-spring and a nut adjustment, by means of which the shaft has a frictional grip upon the friction-wheel, two wheels in the time-train, each of which has a flange with a notch therein, and a pivoted stop-lever having stop projections that are adapted to play in and out of the notches of the flanged wheels, and thereby control the movement of the train and carrier-bar mechanism, substantially as specified.

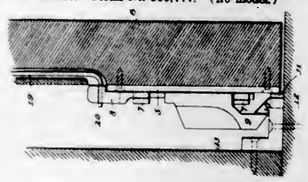
8. In combination with the stop-lever mechanism of an indicator, a rock-bar suspended from pivoted links adapted to trip the stop-lever, and the armature of an electro-magnet connected with the rock-bar, so as to actuate the stop-lever mechanism whenever the armature is vibrated by an electro-magnet, substantially as specified.

9. In combination with the shaft of a push-rod mechanism of an indicator, an escape-lever provided with pallet-feet, a rock-bar laterally movable and provided with a detent adapted to engage with the escape-lever feet, and thereby to control the rotation of the shaft, and an armature connected with the rock-bar, by means of which the vibrations transmitted from an electro-magnet are made to allow the shaft to rotate and thereby actuate the push-rod mechanism, substantially as specified.

10. In combination with the carrier-bar of the push-rod mechanism of an indicator, a rib secured thereto, a pivoted tumbler having a pin projecting therefrom, and through which its movement is controlled by the rib upon the carrier-bar and being provided with a notch, and a lock-lever having a lock-pin adapted to engage with the notch in the tumbler and being connected through a rock-shaft with a rock-bar and armature mechanism and adapted to lock the same, substantially as specified.

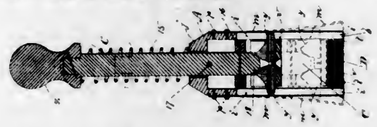
11. In combination with the guide-bar of a push-rod mechanism of an indicator, a restoring-lever adapted to impinge against the end of the guide-bar, a shaft to which the restoring-lever is secured, and a hand-lever connected with the shaft, by which the push-rod mechanism may be restored to its normal position, substantially as specified.

445,992. DOOR-CHECK. FREDERICK L. HABLISTON, Richmond, Va. Filed Oct. 30, 1890. Serial No. 369,777. (No model.)



Claim.—The combination, in a door-check, of a bolt-plate 5, provided with hasps 7, and adapted to be secured to the door, a bolt 8, provided with the offset 9, having a slanted lower end, a slot in its upper end, and fitted to slide vertically in the hasps 7, the catch 10, adapted to be secured to the floor or a partition, a cushion 11, interposed between the said catch and the door, and means for drawing the bolt, substantially as described

445,993. DEVICE FOR MOISTENING AND AFFIXING POSTAGE-STAMPS. WALTER W. HAMILTON, Salem, Mass. Filed Aug. 18, 1890. Serial No. 362,262. (No model.)



Claim.—1. A device for attaching postage-stamps, comprising a box or holder combined with a plunger-block therein, cam-plates fitted to slide on said block, a spring-cushioned plunger-bar for spreading said plates, and springs actuated by said plates for releasing the stamps from said holder, substantially as described

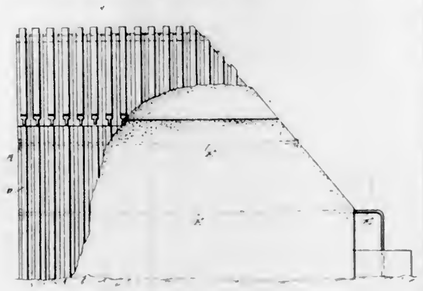
2. In a device of the character described, a box or holder provided with slots in its walls, in combination with flat springs disposed in said slots and having arms projecting into the mouth of said holder, a plunger fitted to slide in the box, and cams for spreading said springs as the plunger descends, substantially as described.

3. In a device of the character described, the combination of a stamp-holder, a plunger for forcing the stamps therefrom, spring-arms detachably retaining the stamps therein, and cams on said plunger for moving said arms to release the stamps, substantially as described.

4. In a device of the character described, the slotted holder provided with the retaining-spring, in combination with a plunger provided with sliding cam-plates fitted to work in said slots, and a spring-cushioned plunger-bar adapted to spread said plates, substantially as and for the purpose set forth.

5. In a device of the character described, the holder A, provided with slots *i* and retaining-springs *m*, in combination with a plunger fitted to slide in said holder, sliding cams on said plunger working in said slots, and a plunger-bar for conjointly actuating the plunger and spreading said cams, substantially as set forth.

445,994. ROOFED CULVERT. WILLIAM D. HARRIS, Ottawa, Ontario, Canada. Filed Nov. 18, 1890. Serial No. 371,802. (No model.) Patented in Canada Dec. 2, 1889, No. 32,981.



Claim.—1. A course or section of a culvert composed of a railway-rail iron, bent, as described, so as to form vertical sides and a gable top, substantially as specified.

2. A culvert composed of vertical sections, each formed of a single piece of material having parallel vertical sides and a gable or slanting top, substantially as specified.

3. A culvert composed of a series of vertical courses or sections bolted together and having an external covering of concrete and an interior coating of tar, substantially as specified.

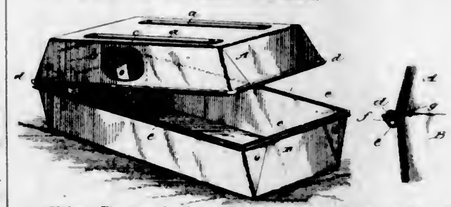
4. A culvert composed of a series of vertical courses or sections formed so as to provide external key-seats and having vertical sides and a gable top and a covering of concrete, substantially as specified.

5. In a culvert, the combination, with a series of courses or sections having side walls and a gable roof, of longitudinal bars taking through the side walls of said sections and underneath the apex of said roof and adapted to fasten them together, and anchor-bars or buttresses taking through or built behind the side walls and serving to anchor or stay said side walls, substantially as and for the purpose specified.

445,995. LINIMENT. PLACIDE HÉBERT, New Iberia, La. Filed Oct. 9, 1890. Serial No. 367,579. (No specimens.)

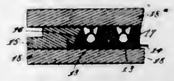
Claim.—The herein-described medicinal compound, consisting of shark-oil, polecat's oil, cascarilla-seed, camphor, alcohol, turpentine, Holland gin, essence of peppermint, and essence of citronella, in the proportions specified

445,996. BAKE-PAN. ANDREW J. IDEN, Milwaukee, Wis. Filed July 14, 1890. Serial No. 358,627. (No model.)



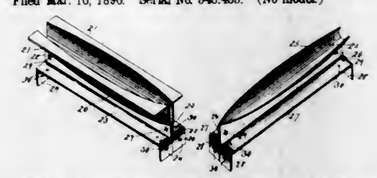
Claim.—The combination, with a pan having at its upper edge a substantially V-shaped trough upon all its sides, the said trough having its inner wall substantially parallel with the main wall of the pan and integral therewith, of a pan hinged thereto at one end and having its edge provided with a head adapted to fit within the said trough and bear thereupon at diametrically-opposite points, substantially as shown and described.

445,997. CIGAR-MOLD. ADOLPH JAENICKE, Davenport, Iowa. Filed Feb. 4, 1890. Serial No. 339,208. (No model.)



Claim.—In cigar-molds, the combination of the board or backing provided with end blocks, the female mold-cups having fins with apertures 13, through which are passed wire supports, said supports being secured at their ends to such end blocks, the plastic material interposed between the mold-cups and end blocks, and the male mold-cups secured to a board, substantially as described.

445,998. CIGAR-MOLD. ADOLPH JAENICKE, Davenport, Iowa. Filed Mar. 10, 1890. Serial No. 343,435. (No model.)



Claim.—In a cigar-mold consisting of male and female cups, each cup constructed in two longitudinal half parts, each part provided with a pendent vertical base and horizontal foot integral with the base, and a pendent vertical end piece integral with each foot, the respective male and female parts secured together at their base, perforations 30 through each foot and end piece, and each female part provided with a horizontal flap 21, substantially as described.

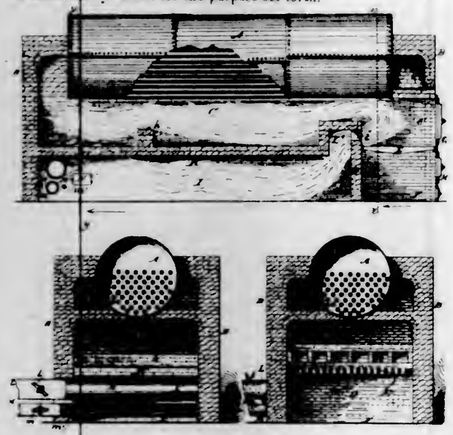
445,999. GAS-FIRED BOILER. EDWARD C. JONES, Boston, Mass. Filed Sept. 22, 1890. Serial No. 365,729. (No model.)

Claim.—1. In a gas-fired furnace, a pair of air and gas supply pipes extended laterally in the combustion-chamber and having tapering vents or burners increasing in size from the supply ends, substantially as and for the purpose set forth.

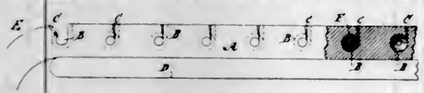
2. In a gas-fired furnace, a combustion-chamber having arranged within it a pair of air and gas supply pipes provided with tapering vents or burners, combined with the vertical conduit I', and horizontal passages *i*, leading to the fire-box of the furnace, substantially as and for the purpose set forth.

3. In a gas-fired furnace, a combustion-chamber having arranged

within it a pair of air and gas supply pipes provided with tapering vents or burners, combined with the vertical conduit I', horizontal passages *i i*, leading to the fire-box, the flame-plate K, interposed between the combustion-chamber and the flue below the boiler, and the bridge *k*, substantially as and for the purpose set forth.

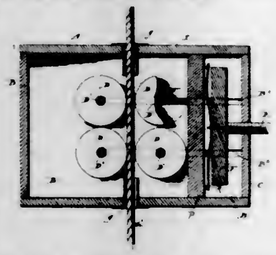


446,000. CIGAR-MOLD. BERNHARD H. MEYER and PAUL HUPPMANN-GERARD, New York, N. Y., assignors of one-third to Frederick A. Ford, same place. Filed Mar. 29, 1890. Serial No. 345,839. (No model.)



Claim.—An elastic cigar-mold plate having a row of mold-cavities arranged side by side, passing through the body thereof from side to side and open at the ends, and the said mold-plate having also a row of slits extending from side to side thereof and severally arranged one to each mold-cavity and extending thereto from the surface of the mold-plate, the said slits being tangential to the line of the molds throughout their entire length, substantially as described.

446,001. FIRE-ESCAPE. GUSTAVE MÜLLER, Madalin, N. Y. Filed Nov. 5, 1890. Serial No. 370,413. (No model.)

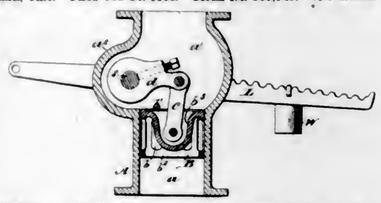


Claim.—1. In a fire-escape apparatus, the combination of the rope, the case having horizontal rollers in sets journaled therein and having openings whereby the rope may be passed vertically through the case and between the rollers, yielding connections between the rollers of each set, and means, substantially as described, whereby the rope may be compressed between the rollers, substantially as and for the purpose specified.

2. The combination of the case having horizontal slots, the axles movable within the slots and carrying rollers, spring connections between the axles, a block carrying arms adapted to bear against the axles, the set-screw in the end of the case, adapted to bear against the block, the dial upon the end of the case, graduated as described, and the indicating-pointer carried by the set-screw above the face of the dial, substantially as and for the purpose described.

3. The combination of the slotted case, the rollers mounted upon axles movable within the slots, the block F, the arms F', carried by the said block and adapted to bear against the axles within the slots in the case, the brake-block P, and the spring R, interposed between the said block and the block F, substantially as described, and for the purpose specified.

446,002. BACK-PRESSURE VALVE. JOHN H. MCGOWAN, Cincinnati, Ohio. Filed Oct. 25, 1890. Serial No. 369,343. (No model.)



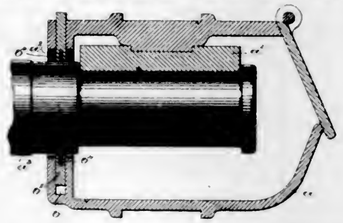
Claim.—1. In a back-pressure valve, a piston-valve, a cylindrical valve-casing provided with an enlargement, an external oscillating valve-lever mediately and operatively connected with the valve and provided with a buffer, and a limiting-abutment against which the buffer engages to determine and regulate the closure of the valve, combined and operating substantially as set forth.

2. The combination of a valve-casing having a cylindrical portion terminating in an enlargement, an inverted-cup piston-valve having side delivery-openings, lever connections for said valve within the casing, a rotating projecting stud, an external weighted valve-lever, and an elastic buffer and abutment limiting the play of the lever and valve, substantially as set forth.

3. In a back-pressure valve, the combination of the casing A, valve B, link *c*, arm *d*, stud *s*, lever L, buffer *m*, and bracket *n*, substantially as set forth.

4. In a back-pressure valve of the character described, the combination of a cylindrical valve-casing, a piston-valve operating in relation to side openings, an external valve-lever mediately connected with said valve, a fixed abutment limiting the movement of the lever, and an adjustable buffer determining the relation of the lever to the abutment and of the valve to its cut-off position, substantially as set forth.

446,003. DUST-GUARD FOR CAR-AXLES. WILLIAM MCKENZIE, Boston, Mass. Filed July 24, 1890. Serial No. 359,744. (No model.)



Claim.—1. A dust-guard consisting of a body provided with a circular opening and having a slot extended part way and into and between the faces of the body from said opening, the ends of the slot intersecting the opening at one side of its transverse diameter, and a rawhide packing rigidly held in the slot and presenting a bearing-surface less than a semicircle, substantially as described.

2. A dust-guard consisting of a body provided with a circular opening and having a crescent-shaped slot extended into the body from said opening, and a crescent-shaped packing in said slot, substantially as described.

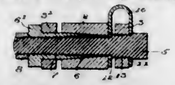
3. A dust-guard consisting of a body provided with a circular opening and having independent oppositely crescent-shaped slots extended into the body from the said opening, and crescent-shaped packing of rawhide in said slots, substantially as described.

446,004. METHOD OF PRODUCING COLORED IMPRESSIONS. ROBERT SCHORR, Würtemberg, Germany. Filed Sept. 18, 1889. Serial No. 324,345. (No specimens.)

Claim.—The herein-described method of producing a multiplication of pictures in their original colors by lithography or book-printing, which consists in photographing the picture, producing therefrom a series of negatives of varying intensity, then producing from these negatives by photography a series of dia-positives of varying intensities, (upon glass,) then touching up the said dia-positives with the color

corresponding to the intensity of the plate, then reducing the dia-positives to negatives by photography, and finally transferring the same upon the lithographic stone or zinc plate and printing one color upon another until the picture is produced in colors, substantially as and for the purposes set forth.

446,005. THILL-COUPLING. ARCHIBALD PAUL, Cohoes, N. Y. Filed May 12, 1890. Serial No. 351,544. (No model.)



Claim.—1. In a thill-coupling, the combination of a clip, a thill-iron having a conical eye therein, the adjustable sleeve fitted in one of the arms of the clip and having the inner conical or tapered end fitted snugly in said thill-iron and the interior screw-threads at its outer end, and a bolt passing through the clip and sleeve, engaging the screw-threads in said sleeve, and having a nut which bears against the outer end of the sleeve, substantially as described.

2. In a thill-coupling, the combination of a clip, a thill-iron having a conical eye therein, a sleeve passing through one of the clips, with its tapered inner end fitting in the eye of the thill-iron and having the interior screw-threads at its outer end, a bolt passing through one arm of the clip and screwed into the threaded end of the sleeve and having the threaded portion 13 near its head, and a spring arranged to straddle an arm of the clip and having a slotted end fitted loosely on the bolt and a threaded eye at its opposite end, into which eye the threaded portion 13 of the bolt is screwed, substantially as described.

446,006. PINLESS CLOTHES-LINE. HERBERT E. PERCIVAL, Oklahoma, Oklahoma Ter., assignor to Edmund Converse, Worcester, Mass. Filed Feb. 20, 1890. Serial No. 341,246. (No model.)

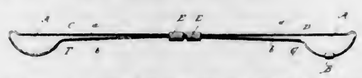


Claim.—1. In a clothes-line composed of a series of links, the within-described link, consisting of a straight wire placed between eyes A A, by which said links are interlinked, said straight wire being coincident with the line of strain when the line is loaded, as described, and a pair of holding-jaws formed by bending the wire forming the link upon and parallel with the said straight section and bending the free ends outwardly in a semicircular form and uniting each of said free ends to the central straight section of the wire, substantially as described.

2. In a clothes-line composed of a series of links, the within-described link, consisting of a straight wire coincident with the line of strain upon the link and provided at its ends with eyes, and a pair of holding-jaws parallel with said straight wire and united thereto next its eyes, the opposite ends of said holding-jaws being bent outwardly in semicircular form to provide openings to receive the clothing and united to the central section of said straight wire, substantially as described.

3. In a clothes-line composed of a series of links, the within-described link provided with the eyes A A at its ends, said eyes being united by two wires, one of said wires placed in a straight line between said eyes and coincident with the line of strain upon the link, and the other of said wires being parallel with said straight wire at *a* and *c*, said parallel sections being united to said straight wire at *e* and *f*, said wire being bent in its central section into an S-shaped form and crossing said straight wire at its center, forming the openings D D upon opposite sides of said straight wire, substantially as described.

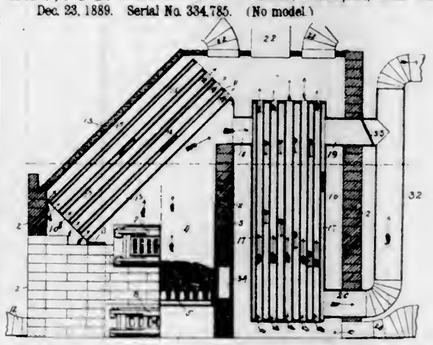
446,007. CLOTHES-LINE. HERBERT E PERCIVAL, Oklahoma, Oklahoma Ter., assignor to Edmund Converse, Worcester, Mass. Filed Mar. 29, 1890. Serial No. 345,906. (No model.)



Claim.—1. A clothes-line composed of a series of links linked together in the form of a chain, each of said links having openings at its ends, through which the clothing to be held is passed, and having said open portions of the link connected by two parallel wires, and a sliding ring placed upon said parallel wires, by which they are held together, substantially as described.

2. A clothes-line provided with longitudinal parallel wires forming the holding-jaws between which the clothing is seized, and a ring placed upon said parallel longitudinal wires and capable of sliding thereon, whereby the wires are pinched closely together, as and for the purpose specified.

446,008. HEATER. FRANK C. PETELER, Minneapolis, Minn. Filed Dec. 23, 1889. Serial No. 334,785. (No model.)



Claim.—1. A heater comprising, in combination, an outer wall or casing, an inner combustion-chamber whose walls constitute the inner wall of an air-chamber 10 between it and the outer casing, an exit-flue extending from the upper part of the combustion-chamber laterally into the air-space at one side of the combustion-chamber, a drum arranged in said air-space, with the upper portion of which said exit-flue communicates, a series of pipes extending vertically through said drum and open at both their upper and lower ends, a smoke-pipe 32, pipes 19 and 20, connecting the upper and lower portions of said drum with said smoke-flue, a damper in said upper pipe, an air-inlet pipe 26, extending through the outer casing at a point below the lower end of said drum, and pipes 22 for the heated air connected with the said air-space above the upper end of said drum, substantially as described.

2. In a heater, the combination, with the outer wall or casing 2, of the combustion-chamber located within said outer casing, with an air-space between the walls of said combustion-chamber and the walls of the casing, inclined air-pipes extending through the combustion-chamber from one side thereof to the other and communicating at both ends with said air-space, an air-inlet flue 12, connected with said air-space below the lower ends of said inclined tube, a drum arranged in said air-space at the side of said combustion-chamber and provided with a series of vertical pipes 16, communicating at both ends with said air-chamber, a smoke-pipe connecting said combustion-chamber with the upper portion of said drum, smoke-pipes connected with the upper and lower portions of said drum, a damper in the upper pipe, an air-inlet pipe connecting with said air-space below said drum, and air-conducting pipes 22, connected with said air-space above said drum and above the upper ends of said inclined tube, substantially as described.

446,009. YELLOW DIE. WILLIAM PFITZINGER, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Oct. 31, 1890. Serial No. 369,948. (Specimens.) Patented in Germany Apr. 28, 1889, No. 53,935, and in France June 7, 1889, No. 198,786.

Claim.—1. The coloring-matter herein described, derived from thioparatoluidine sulpho-acid, and which has the following properties: it is easily soluble in water with a clear greenish-yellow color, turning red on the addition of acetic acid, precipitating as a red powder by adding mineral acid; it is destroyed by concentrated sulphuric acid or boiling diluted mineral acid with development of nitrogen, and it dyes unmordanted cotton a bright greenish yellow in an alkaline soap bath.

2. The process herein described of forming a new coloring-matter by treating the diazo compound of thioparatoluidine sulpho-acid with the sulpho-acid of the same thio derivative of the paratoluidine, substantially as described.

446,010. ROLL-PAPER HOLDER AND CUTTER. CHARLES K. PICKLES, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Dec. 15, 1888. Serial No. 293,746. (No model.)

Claim.—1. The combination of the standards or supports, segments pivoted to the standards, a roll of paper supported by one of the segments, and a knife supported by the other segment, substantially as set forth.

2. The combination of the standards or supports, two pairs of segments pivoted to the standards, one pair having upward extensions to support the roll of paper and the other pair having upward extensions to support the knife, substantially as and for the purpose set forth.



3. The combination of the standards or supports, a pair of segments pivoted to the standards or supports and having extensions 5 supporting the roll of paper, and a pair of segments pivoted to the standards and engaging the first pair of segments and having upwardly-extending arms, and a knife secured to said upwardly-extending arms, substantially as and for the purpose set forth.

4. The combination of two pairs of engaging segments, one of said pair of segments carrying the roll of paper and the other pair carrying the knife, substantially as and for the purpose set forth.

446,011. **ROLL-PAPER HOLDER AND CUTTER.** CHARLES K. PICKLES, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Mar. 11, 1889. Serial No. 302,757. (No model.)



Claim.—1. In combination with the standards having projections 3 and 6, a roll of paper resting on the projections 3, a knife fitting in slots of the projections 6, and wires 13, connecting the roll and knife substantially as and for the purpose set forth.

2. The combination of the standards having slots 10, projections 3 and 6, the roll of paper bearing on the projections 3, a knife fitting in the slots of the projections 6, wires or rods 13, connecting the knife and paper-roll, and pins fitting in the slots 10 and connecting the lower ends of the wires or rods to the standards, substantially as and for the purpose set forth.

3. The combination of the standards, a roll of paper, a knife, and connecting wires or rods, the wires or rods forcing the knife toward the center of the roll as the size of the roll decreases, said wires or rods being operated by the movement of the roll, substantially as and for the purpose set forth.

4. The combination of the base, standards 2, having slots 10, projections 3, and slotted projections 6, arms 13, having eyes 14 and 15, knife 9, and pin 11, the slots and projections 6 being inclined, substantially as and for the purpose set forth.

446,012. **ROLL-PAPER HOLDER AND CUTTER.** CHARLES K. PICKLES, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Mar. 11, 1889. Serial No. 302,758. (No model.)

Claim.—1. The combination of the standards slotted to receive the journals of the roll of paper, pivoted links, arms pivoted to the links, and a knife secured to the arms, the journals resting on the pivoted arms, substantially as and for the purpose set forth.

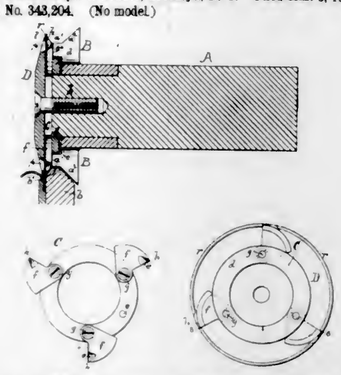
2. The combination of the standards slotted to receive the journals of the roll of paper, arms upon which the roll rests, knife secured to the arms, pivoted links to which the arms are pivoted, and extensions having slot-and-pin connection with the arms, substantially as set forth.



3. The combination of the base, standards slotted to receive the journals of the paper roll, links pivoted to the standards at their lower ends, horizontal arms to which the links are pivoted at their outer ends, a knife secured to the arms, slotted extensions 11 on the standards, and pins 13, secured to the arms and fitting in the slots in the extensions, substantially as and for the purpose set forth.

4. The combination of the base 1, standards 2, having slots 4, and extensions 11, having curved slots 12, links 6, pivoted to the standards at their lower ends, horizontal arms 8, supporting the roll of paper and pivoted to the upper ends of the links, and knife 10, substantially as and for the purpose set forth.

446,013. **ROTARY SOLE-TRIMMER.** WILLIAM POLLEY, Rochester, assignor to himself, Frank E. Rogers and Charles F. Preston, New York, and Joseph T. Bender, Brooklyn, N. Y. Filed Mar. 8, 1890. Serial No. 343,204. (No model.)

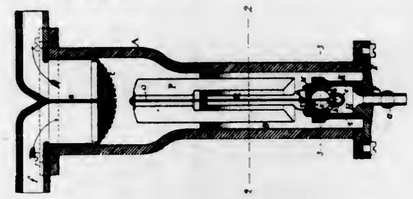


Claim.—1. The combination of the main cutter B, the intermediate cutter C, fitted into its face and provided with independent separately-adjustable knives *f f f*, and the covering-cap D, provided with openings *p p*, which coincide with the cutting-edges of the knives, as herein and shown and described.

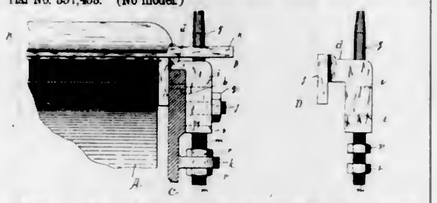
2. The combination of the cutter C, provided with independent separately-adjustable knives *f f*, secured by clamping-screws and movable to different positions, and the cap or cover D, provided with stops *s s* for gaging the forward movement of the knives, as herein shown and described.

446,014. **AUTOMATIC SEPARATOR FOR COMPRESSED-AIR SYSTEMS.** VICTOR POPP, Paris, France, assignor to the Popp Compressed Air and Electric Power Company, Limited. Filed Apr. 7, 1888. Serial No. 269,984. (No model.) Patented in France Nov. 11, 1887, No. 186,823; in England Nov. 18, 1887, Nos. 15,878, 15,878[1], and 15,878[2]; in Germany Dec. 24, 1887, Nos. 47,546 and 44,745; in Belgium May 7, 1888, No. 81,725, and in Italy June 30, 1888, XLVI, 247.

Claim.—A separator for a compressed-air system, consisting of a cylinder A, having in its upper part a vertical deflecting-plate and a transverse screen and terminating at its lower end in a receptacle for the moisture provided with an automatic outlet-valve consisting of a float P, and a counterbalanced valve operated by the float and provided with a screen, through which passes the actuating valve-rod, substantially as described.



446,015. **FLAT-SUPPORTING DEVICE FOR CARDING-MACHINES.** JOHN E. PRIEST, Whitinsville, Mass. Filed July 1, 1890. Serial No. 357,438. (No model.)



Claim.—1. The combination, with the side frame of a carding-engine provided in its edge with a rectangular notch, of a top-flat and a support vertically adjustable in said notch and provided with a spindle passing through an opening in said flat, said flat resting upon said support, substantially as described.

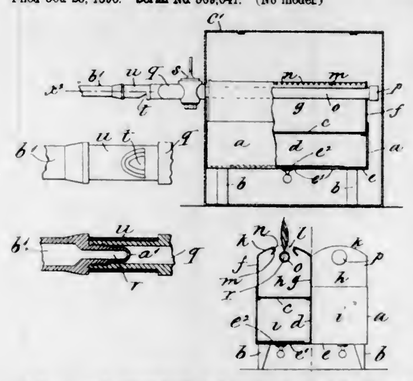
2. In a carding-engine, the support D, comprising the body *d*, fitted to enter a rectangular slot in the side frame and provided with the guard *f*, adapted to engage the top-flat, the spindle *g*, slot *i*, and screw *m*, arranged to operate substantially as described.

3. The combination of the cylinder and top-flat provided with a longitudinally-projecting flange at its end, with the side frame provided with a rectangular notch or opening in its edge, and a support vertically adjustable on said side frame, and provided with a guard adapted to be disposed between the end of the card-clothing and said frame and support said flat, substantially as described.

4. The combination of the side frame C, provided with the rectangular opening *b* and lug *k*, with the top-flat B, provided with the flange *h*, and the support D, vertically adjustable on said side frame and provided with the guard *f* and spindle *g*, substantially as described.

5. The combination of the cylinder A, the top-flat B, having the flange *h*, and the side frame C, having the lug *k* and the rectangular opening *b*, with the support D, adapted to be inserted in said opening and provided with the guard *f*, spindle *g*, screw *m*, and nuts *p*, substantially as and for the purpose set forth.

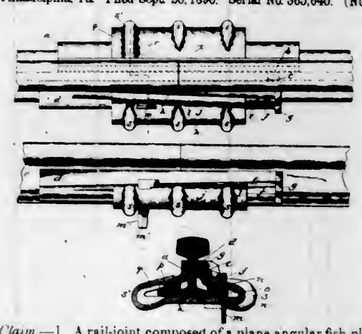
446,016. **GAS OR HYDROCARBON-VAPOR BURNER.** GEORGE ROBERTS, Montreal, assignor of one-half to John Hally, Toronto, Canada. Filed Oct. 23, 1890. Serial No. 369,041. (No model.)



Claim.—1. The combination, in a burner for gas, gasoline, or hydrocarbon vapor, of the casing *a*, having damper or dampers e^3 and openings *e'*, section or sections i, perforated diaphragm c, with a casing *f*, having corresponding sections *h*, each provided with a pipe *o*, having perforations *r*, and each provided with openings *l*, downward-extending ridges *m*, having perforations *n*, the whole constructed and arranged substantially as shown and described.

2. The combination, in a burner for gas, gasoline, or hydrocarbon vapor, of the casing *a*, having damper or dampers e^3 and openings *e'*, section or sections i, perforated diaphragm *c*, with a casing *f*, having corresponding sections *h*, each provided with a pipe *o*, having perforations *r*, and each provided with openings *l*, downward-extending ridges *m*, having perforations *n*, with a branch pipe *q*, having adjustable opening *t* for the admission of air, the whole constructed and arranged to operate substantially as shown and described, for the purposes set forth.

446,017. **PRESSED-STEEL RAIL-JOINT.** CHARLES T. SCHOEN, Philadelphia, Pa. Filed Sept. 20, 1890. Serial No. 365,640. (No model.)



Claim.—1. A rail-joint composed of a plane angular fish-plate and a second angular fish-plate having a horizontal wedge portion *e* and a vertical wedge portion *f*, the said fish-plates being adapted to embrace the web and base of the rails on opposite sides, and a shoe made as a loop, having one side straight to engage the plane fish-plate and the other side provided with two bevels to engage the wedge portions of the other fish-plate, the said several parts being struck up or pressed from flat steel plate, substantially as described.

2. A plane angular fish-plate provided with a lug, combined with a complemental fish-plate and a shoe having an opening or cavity therein to engage the lug on the fish-plate, substantially as and for the purpose described.

3. A shoe for rail-joints, made as a loop having one side straight and the other side constructed with two bevels, and provided with projecting ribs or beads on its bends for stiffening and strengthening the same, the whole struck up or pressed from plate steel or like wrought metal, substantially as set forth.

4. A rail-joint composed of a wedge-like fish-plate having a horizontal wedge portion *e* and a vertical wedge portion *f*, combined with a complemental fish-plate and a shoe fitted to the two and struck up or pressed from steel plate, substantially as and for the purpose described.

5. A wedge-like fish-plate having a horizontal wedge portion *e*, a vertical wedge portion *f*, and the upturned end *g*, struck up in dies from plate metal, preferably steel, substantially as and for the purpose described.

6. A boltless rail-joint composed of a fish-plate having a projection to engage a hole in the web of the rail and another projection to engage the shoe, a wedge-shaped fish-plate, and a shoe to engage the said fish-plates and bind them upon the rails, substantially as described.

7. A rail-joint composed of a plane fish-plate having a lug or dowel to engage a hole or lug in the web of the rail and a second lug or dowel to engage an opening or recess in the shoe, a wedge-shaped fish-plate, a shoe to engage the two fish-plates, a pin passed through the shoe, and a notch in the edge of the wedge-shaped fish-plate, substantially as and for the purpose described.

446,018. **PAINT FROM RESIDUUM OF VEGETABLE OILS.** GEORGE W. SCOLLAY, New York, N. Y. Filed Feb. 1, 1890. Serial No. 338,931. (No specimens.)

Claim.—1. The method of making paint, which consists of treating with an acid a pigment formed by the combination of a metallic base with the residuum or soap stock of vegetable oil, which combines with the metallic base of said pigment, forming a color of superior quality.

2. The method of making paint, which consists of treating soap stock with a metallic salt which combines with said soap stock and

forms an insoluble metallic paint, and of treating said paint with an acid which combines with the metallic base of said paint, forming a color of superior quality.

3. The method of making paint, which consists of treating soap stock with a metallic salt which combines with said soap stock and forms an insoluble metallic paint, and of treating said paint with an acid which combines with the metallic base of said paint, forming a color of superior quality, and of treating said color with a metallic salt to render insoluble the soluble soap formed thereby.

4. The method of making paint, which consists of treating soap stock with a bleaching agent, such as sulphurous acid, then treating the same with a metallic salt which combines with said soap stock and forms an insoluble metallic paint, and treating said paint with an acid which combines with its metallic base, forming a color, and removing the solubles by washing.

5. The process of making paint, which consists in saponifying an acid of the fatty series by the solution of an alkali, treating the resulting soap with a solution of a salt of a heavy metal, and adding to the insoluble soap thus formed an acid to combine with the base of the soap and form a coloring-matter, substantially as described.

446,019. ART OF MAKING PAINT. GEORGE W. SCOLLAY, New York, N. Y. Filed Feb. 7, 1890. Serial No. 339,603. (No specimens.)

Claim.—1. The method of making an improved paint, which consists of treating vegetable oil with alkali and a metallic salt and an acid to form fluid paint, and of subsequently mixing said fluid paint with a solvent and a pigment, and of subsequently removing said solvent and drying said pigment and filler, and subsequently adding oil to dry after the paint is applied.

2. The method of making an improved paint, which consists of treating vegetable oil with alkali and a metallic salt to form paint, then mixing said paint with a pigment, then drying said mixture, then making a fluid paint by adding oil thereto to dry after the paint is applied.

3. The method of making an improved paint, which consists of treating vegetable oil with an alkali and a metallic salt and an acid to form paint, then mixing said paint with a pigment, then drying said mixture, then making a fluid paint by adding oil thereto to dry after the paint is applied.

4. The method of making an improved paint, which consists of mixing with a suitable pigment a filling material and a solvent of said filling material, and of subsequently removing said solvent.

5. The method of making an improved dry paint, which consists of mixing with a suitable pigment a filling material and a solvent of said filling material, and subsequently removing said solvent and drying said pigment and filling material.

6. The method of making an improved paint, which consists of mixing with a suitable pigment a filling material and a solvent of said filling material more volatile than said filling material, and then removing said solvent by distillation.

7. The method of making an improved paint, which consists of mixing with a suitable pigment a fluid filling material, then drying said pigment and filler, and then making a fluid paint by adding oil thereto to dry after the paint is applied.

8. The method of making a dry paint stock or pigment from which a fluid paint may be made by grinding with oil, which consists of mixing with a pigment fluid filling material in quantities not substantially in excess of the absorbing capacity of the pigment and then drying said mixture.

446,020. GUY-ROPE FASTENER. ARTHUR L. SEELBACH, Cleveland, Ohio. Filed Sept. 10, 1890. Serial No. 364,564. (No model.)



Claim.—The fastening for guy-ropes, consisting of the device C, curved as shown, and provided at one end with the eye *a* for attaching the end of rope thereto, and having the upwardly-extending fingers *b c* disposed diagonally opposite each other and the horizontal finger *c* disposed between the same, and the bearings *d f* between the fingers, substantially as and for the purpose set forth.

446,021. MAP-HOLDER. WILLIAM F. SEMPLE, Mount Vernon, Ohio. Filed July 23, 1890. Serial No. 359,597. (No model.)

Claim.—1. A map-holder consisting of two slotted tubes, one within the other, a shaft in the inner tube, and means for removably connecting the parts together, substantially as set forth.

2. A map-holder consisting of two slotted tubes, one revolubly located in the other, a revoluble shaft in the inner tube, and a screw for removably connecting said parts together, substantially as set forth

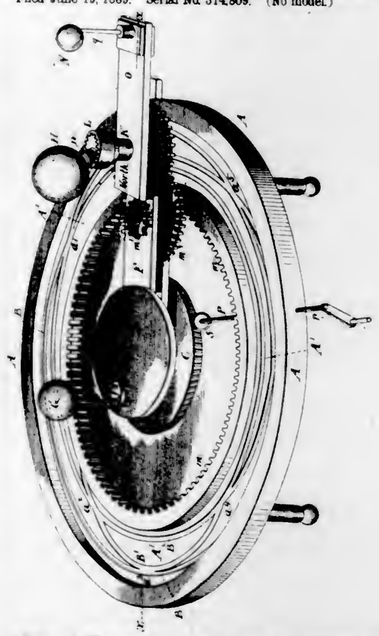


3. A map-holder composed of two slotted tubes, one within the other, and a roll contained within the inner tube and adapted to be drawn through the slots, substantially as set forth.

4. In a map-holder, the combination, with an outer tube, of an inner tube revolubly located in the outer tube, both of said tubes having elongated openings, a collar on the inner tube by means of which to rotate it, a shaft within the inner tube for carrying a map or chart, and a disk on one end of said shaft whereby to rotate it, substantially as set forth.

5. In a map-holder, the combination, with an outer tube having a flanged disk at one end and a perforation through said disk and flange, of an inner tube, both tubes being provided with elongated slots, a shaft in the inner tube and bearing at one end in the perforation in the flanged disk, a disk at the other end of the shaft, and an annular flange or collar of said disk to enter the inner tube and form a bearing for said shaft, substantially as set forth.

446,022. TELLURIAN. WILLIAM H. SHERA, College Corner, Ohio. Filed June 19, 1889. Serial No. 314,809. (No model.)



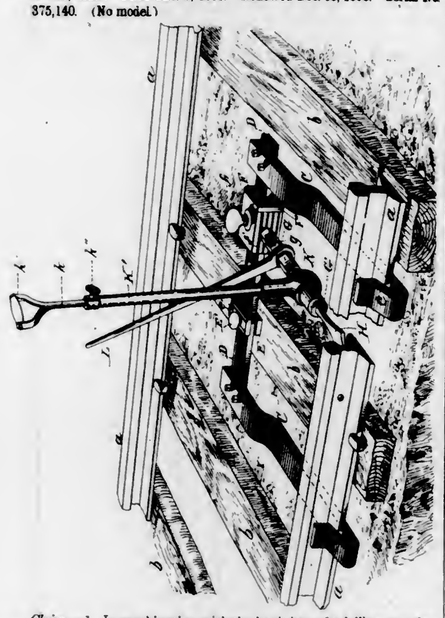
Claim.—1. The combination, with a bed-plate provided with teeth *m*, a sunken track A', and a series of endless grooves which are not parallel, of a central fixed shaft, a wheel C, provided with projection A, a frame F, connected with said central shaft, and the following

mechanism which is carried by said frame: a vertical shaft *i*, with gear-wheels m^3 and *k*, a hollow shaft K, with gears L and *p*, a shaft within shaft K, with a gear-wheel *n*, carried in an inclined position at its upper end, and a circular disk J, secured to its lower end, said disk being provided with projections $o\ o'\ o^3$, substantially as described, for the purposes set forth.

2. The combination, with a bed-plate provided with a series of endless grooves which are not parallel but made to cross one another at different points, of a disk carrying a globe and provided with projections which extend into said endless grooves, and mechanism to impart to said disk a movement along the said grooves, substantially as and for the purposes described.

3. The combination, with the bed-plate A, provided with an endless track A' and endless grooves B B' B^3, of a disk J, with projections $o\ o'\ o^3$, sliding in said grooves, said disk being provided with a vertical shaft, which carries a gear-wheel *n* in an inclined position, a hollow shaft K, which incloses said vertical shaft, said shaft K being provided with a wheel L, which is in position to engage with the gear-wheel *n* substantially as and for the purposes described.

446,023. TRACK-DRILLING DEVICE. BENJAMIN F. SMITH, Somerville, Mass. Filed Mar. 3, 1890. Renewed Dec. 18, 1890. Serial No. 375,140. (No model.)



Claim.—1. In combination with the back bar of a drill-supporting frame, the longitudinally-adjustable back rest having a series of longitudinal grooves *f' f'* and index F', substantially as and for the purpose set forth.

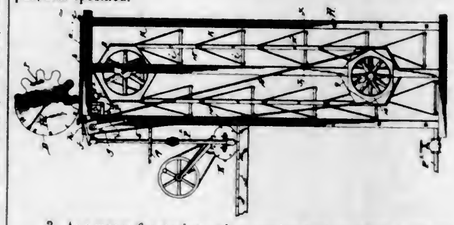
2. In combination with the back bar of a drill-supporting frame, the longitudinally-adjustable clamp E, having a vertical perforation, a tapering foot rest *e'*, adjustable in said perforation, and an adjustable fastening device for regulating the position of said foot-rest relatively to the clamp E, substantially as and for the purpose set forth.

3. The track-drilling device, as described, consisting of the hooked bars C C and rest-bar D, combined with the longitudinally-adjustable back rest F and longitudinally-adjustable clamp E, having the vertically-adjustable tapering supporting-rod *e'*, and means for securing the same, substantially as and for the purpose set forth.

446,024. APPARATUS FOR STORING AND PRESERVING FOOD. LYMAN SMITH, Chicago, Ill., assignor to the Smith Pneumatic Transfer and Storage Company, of West Virginia. Filed May 3, 1890. Serial No. 350,492. (No model.)

Claim.—1. As a means for storing and preserving food products, a tank or box adapted to be hermetically closed, shelves for said box, and endless chains from which said shelves are suspended, suitable chain-pulleys adapted to be revolved, and a rotary exhauster for exhausting the air from and a pipe admitting carbonic-acid gas to the bottom of said box, as and for the purposes specified

2. As a means for storing and preserving food products, a tank or box adapted to be hermetically closed, shelves for said box, and endless chains from which said shelves are suspended, suitable chain-pulleys adapted to be revolved, a lock adapted to lock the pulleys against revolution, and means, substantially such as described, for exhausting the air from and admitting carbonic-acid gas to said box, as and for the purposes specified.



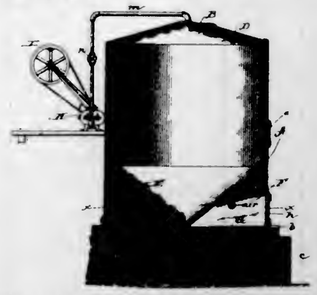
3. As a means for storing and preserving food products, a tank or box adapted to be hermetically closed, shelves for said box, endless chains from which the said shelves are suspended, suitable chain-pulleys adapted to be revolved, in combination with an air-exhauster connected with the box at top, and a carbonic-acid-gas duct connected with said box at bottom, substantially as and for the purposes specified.

4. As a means for storing and preserving food products, a tank or box adapted to be hermetically closed and provided with a door for gaining access thereto, shelves for said box, endless chains from which said shelves are suspended, an indicator controlled by the movements of the shelves and adapted to indicate the position thereof relatively to the door, a lock for locking the chain-pulleys against revolution, and means, substantially such as described, for exhausting the air from and admitting carbonic-acid gas to said box, as and for the purposes specified.

5. As a means for storing and preserving food products, a polygonal tank or box adapted to be hermetically closed, a door located at the upper end thereof, revoluble chain-pulleys arranged within the box at top and bottom, endless chains passing over said pulleys, cross-rods or shafts connected with the chains, shelves suspended from said shafts, an index-wheel adapted to be revolved by the cross-shafts, an index hand or pointer on the shaft of the index-wheel, and a graduated dial on the outside of the box, on which and over which the index is adapted to revolve, and means, substantially such as described, for exhausting the air from and admitting carbonic-acid gas to the box, as and for the purposes specified.

6. The combination, with the polygonal box A, provided with a door at its upper end, chain-pulleys arranged within the box at top and bottom, endless chains passing over said pulleys, cross-shafts connected with said chains, shelves suspended from the cross-shafts, a chain-pulley outside of the box on the lower pulley-shaft, a square pinion at the upper end of the box, an endless chain connecting the square pinion with the outer chain-pulley, and means for revolving the said pinion, of a pinion P, adapted to be revolved by the cross-shafts of the shelves, an index on the shaft of the pinion P, and a graduated dial over which said index is adapted to travel, said index and dial being arranged on the outside of the box at the upper end thereof, substantially as and for the purposes specified.

446,025. APPARATUS FOR STORING AND PRESERVING FOOD. LYMAN SMITH, Chicago, Ill., assignor to the Smith Pneumatic Transfer and Storage Company, of West Virginia. Filed May 3, 1890. Serial No. 350,493. (No model.)



Claim.—1. A storage-tank for food products, consisting of a plate-metal tank adapted to be hermetically closed and provided with suitable gates or doors, in combination with independent air and carbonic-

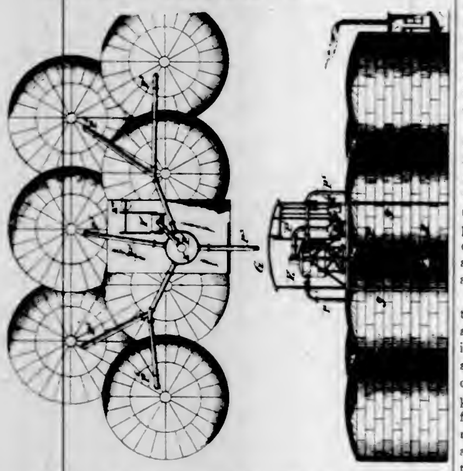
acid-gas conduits having their outlets at or near the bottom of the tank, and an air-exhaust apparatus connected with the tank at top, substantially as and for the purposes specified.

2. A storage-tank for food products, consisting of a plate-metal tank adapted to be hermetically closed, a concrete bottom for said tank having the form of an inverted cone, and a discharge-duct adapted to be hermetically closed, said duct communicating with said bottom, in combination with means, substantially such as described, for admitting air and carbonic-acid gas to the tank at the bottom and exhausting the air at the top, substantially as and for the purposes specified.

3. A storage-tank consisting of a shell having a filling-opening and provided with a concrete bottom within said shell, having a central conical depression and a transverse discharge-duct, substantially as and for the purposes specified.

4. A storage-tank consisting of a shell having a filling-opening and provided with a concrete bottom within said shell, having a central conical depression and a transverse discharge-duct, in combination with an exhaust-pipe at the top of said tank, and an air-inlet pipe and carbonic-acid-gas-inlet pipe at opposite sides of the transverse discharge-duct, substantially as and for the purposes described.

446,026. **PNEUMATIC GRAIN TRANSFER, STORAGE, AND PRESERVATION STATION.** LYMAN SMITH, Chicago, Ill., assignor to the Smith Pneumatic Transfer and Storage Company, of West Virginia. Filed May 3, 1890. Serial No. 350,494. (No model.)



Claim.—1. A landing storage and transfer station for food products, consisting of piers separated by intervening slips, said piers being located at an acute angle to the water-front, railway-tracks upon the piers and parallel to the slips, a railway-track parallel to the water-front and connected with the railway-tracks on the piers, and storage-cells upon the piers, said cells being parallel to the slips and to the water-front, substantially as and for the purposes specified.

2. A storage-station for food products, comprising a plurality of contiguous cells having their interiors separated from each other by intersecting cylindriform partitions, substantially as and for the purposes specified.

3. A storage-station for food products, comprising a plurality of contiguous cells having their interiors separated from each other by intersecting cylindriform partitions, the axial centers of adjacent partitions being equal distances from each other throughout the system, substantially as and for the purposes specified.

4. The combination, with a plate-metal storage tank or tanks having concrete bottoms for such, of a supporting-anchor Z-shaped in cross-section, to one flange of which the tank is riveted, said anchor being in part embedded in the concrete bottom, substantially as and for the purposes specified.

5. A plate-steel storage-tank comprising a cylindrical or substantially cylindrical body, an encompassing topping-angle at the upper end, and an encompassing anchor-plate Z-shaped in cross-section at the lower end, in combination with a dome secured to the topping-angle, arch-girders of angular section for supporting the dome, and an angular crown-plate secured to the arch-girders or rafters and to the dome, substantially as and for the purposes specified.

6. A plate-metal storage-tank comprising a cylindrical or substantially cylindrical body, an encompassing topping-angle at the upper end, and an encompassing anchor-plate Z-shaped in cross-section at the lower end, in combination with a dome secured to the topping-angle, arch-girders or rafters of angular section for supporting the dome, an annular crown-plate secured to the arch-girders or rafters and to the dome, and a vertical stay for supporting the crown-plate, substantially as and for the purposes specified.

7. A storage-station for food products, comprising a plurality of storage-cells composed of mutilated cylinders grouped together and interconnected, so that a portion of one cell will form a corresponding portion of one or more contiguous cells, a valved air-conduit, and a carbonic-acid-gas conduit connected with the tanks at bottom, said carbonic-acid-gas conduit having a valved branch for each of said cells, substantially as and for the purposes specified.

8. A storage-station for food products, comprising a plurality of storage-cells composed of mutilated cylinders grouped together and interconnected so that a portion of one cell will form a corresponding portion of one or more contiguous cells, valved air-conduits connected with the cells at bottom, valved carbonic-acid-gas conduits also connected with the cells at bottom and an exhaust-blower connected with the cells at top, a receiver interposed in the connection between the cells and exhaust-blower, and a transfer-pipe P^3, connected with the receiver, substantially as and for the purposes specified.

9. A storage-station for food products, comprising a group of air-tight storage-cells composed of mutilated cylinders grouped together and interconnected so that a portion of one cell will form a corresponding portion of a plurality of contiguous cells, an exhaust-blower for each set of cells, said sets being composed of a given number of cells, valved conduits connecting the exhaust-blower with each cell at top and air-conduits connected with the cells at bottom, whereby a partial vacuum may be formed in said cells or air drawn therethrough, and a conduit for admitting carbonic-acid gas at the bottom of the cells, substantially as and for the purposes specified.

10. A storage-station for food products, comprising a group of air-tight storage-cells composed of mutilated cylinders grouped together and interconnected so that a portion of one cell will form a corresponding portion of a plurality of contiguous cells, pneumatic transferring appliances for each set of cells, said sets being composed of a given number of cells for transferring the products to or from the same, comprising a receiver, valved conduits connecting the receiver with the cells, a suction and exhaust-blower connected with the receiver, and a conduit for conducting carbonic-acid gas to said cells, substantially as and for the purposes specified.
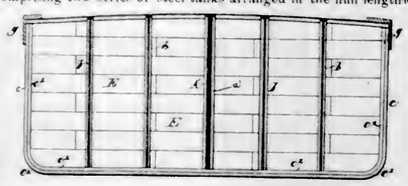
11. A storage-station for food products, comprising a group of air-tight storage-cells composed of mutilated cylinders grouped together and interconnected so that a portion of one cell will form a corresponding portion of a plurality of contiguous cells, pneumatic transferring and automatic weighing appliances for each set of cells (said sets being composed of a given number of cells) for weighing and transferring the products to or from the same, valved conduits connecting the transferring device therewith, an exhaust-blower for operating the pneumatic transfer device, a valved connection between said exhaust-blower and each of the cells, and a conduit for conducting carbonic-acid gas thereto, substantially as and for the purposes specified.

12. A storage-station comprising a group of storage-tanks adapted to be hermetically closed, in combination with a pneumatic transfer mechanism and a motor therefor located above the tanks, and ducts for admitting air and carbonic-acid gas to said tanks at the bottom thereof, substantially as and for the purposes specified.

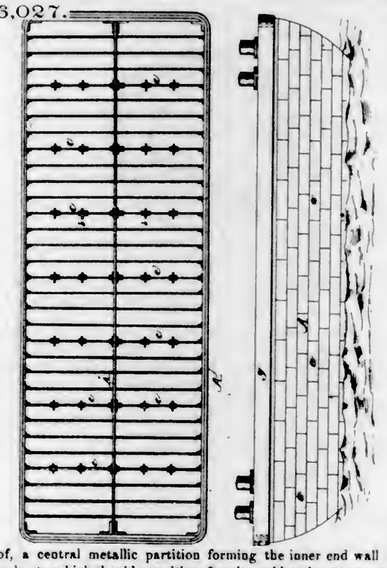
13. A storage-station comprising a group of steel-plate storage-tanks adapted to be hermetically closed, in combination with a pneumatic transfer mechanism such as herein referred to, connected with a plurality of tanks, and a motor for operating the same, said transfer mechanism and motor being located above the tanks and principally supported thereby, substantially as and for the purposes specified.

446,027. **FLOATING GRAIN-SILO.** LYMAN SMITH, Chicago, Ill., assignor to the Smith Pneumatic Transfer and Storage Company, of West Virginia. Filed May 3, 1890. Serial No. 350,495. (No model.)

Claim.—A floating metallic silo or vessel for the storage of grain, comprising two series of steel tanks arranged in the hull lengthwise

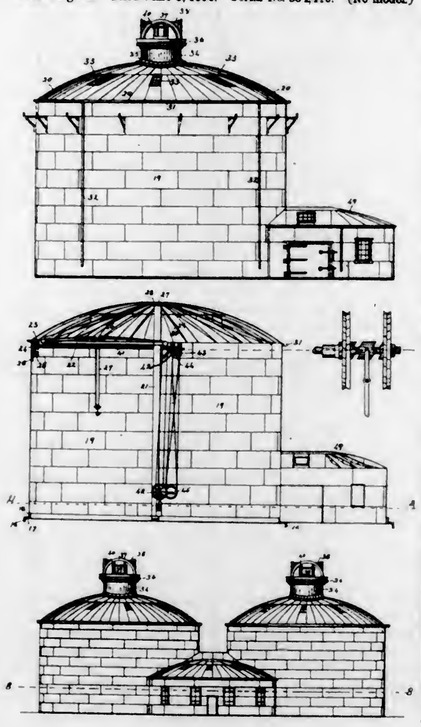


446,027.



thereof, a central metallic partition forming the inner end wall of said tanks, to which the side partitions forming said tanks are secured, spaces formed by the bottom of the said tanks and the true bottom of the vessel, and interposed frames or ribs upon which said tank-bottoms rest, all substantially as and for the purposes hereinbefore set forth.

446,028. **STORAGE OF COTTON.** LYMAN SMITH, Chicago, Ill., assignor to the Smith Pneumatic Transfer and Storage Company, of West Virginia. Filed June 5, 1890. Serial No. 354,416. (No model.)



Claim.—1. A cotton store-house consisting of a vertical shell of general cylindrical contour and provided with a dome or roof of spherical contour, in combination with a central supporting post or mast extending from the foundation to the roof, said mast forming one member of a suitable elevating apparatus, substantially as described.

2. A cotton store-house consisting of a vertical shell having at its bottom portion a Z-bar and a concrete foundation in which said Z-bar is embedded, substantially as described.

3. A cotton store-house consisting of a vertical shell of general cylindrical contour and a dome or roof of spherical contour, in combination with a central mast reaching to the apex of the roof, said mast forming one member of a suitable elevating apparatus and having a cap-piece, the roof-rafters being connected at one end to the cap-piece and at the other end to the upper edge of the shell, substantially as described.

4. A cotton store-house consisting of a vertical cylindrical shell, a spherical dome or roof surmounting said shell, a central mast supporting the roof-rafters, and a ventilator device mounted upon said roof, said ventilator device consisting of a vertical shell supporting two intersecting cylindrical shells, said cylindrical shells having ventilating-openings provided with closing doors, substantially as described.

5. A cotton-storage plant consisting of a plurality of store-houses having a baling and pressing chamber common to all, each store-house having independent entrances and doors, whereby the separate chambers may be completely isolated from each other, substantially as described.

6. A cotton store-house consisting of a vertical shell and a roof surmounting said shell, a central mast carrying a boom, and a runway connected to the interior of the vertical shell and supporting the outer end of the boom, substantially as described.

7. A cotton store-house consisting of a vertical shell and a roof surmounting said shell, a central mast carrying a boom, a runway connected to the interior of the vertical shell and supporting the outer end of the boom, a shaft parallel to the boom and bearing at its outer end a wheel and at its inner end a pulley, and means for operating said pulley, substantially as described.

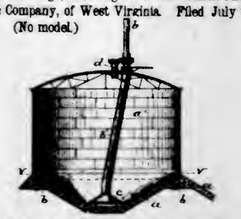
8. A cotton store-house consisting of a vertical shell and a roo surmounting said shell, a central mast carrying a boom, a runway connected to the interior of the vertical shell and supporting the outer end of the boom, a shaft parallel to the boom and bearing at its outer end a wheel and provided at its inner end with two pulleys loose upon the shaft, a friction-clutch for connecting either pulley to the shaft, and a driving-pulley geared to drive one of said pulleys in one direction and the other in an opposite direction, substantially as described.

9. A cotton-storage plant consisting of a series of store-houses whose vertical walls are of general circular contour, said store-houses being connected by walls of reverse curvature, substantially as described.

10. A cotton-storage plant consisting of a series of store-houses whose vertical walls are of general circular contour, said store-houses being connected by walls of reverse curvature, and posts or masts for supporting the roofs of said store-houses at their apexes and at their planes of intersection, substantially as described.

11. A cotton-storage plant consisting of a series of store-houses whose vertical walls are of general circular contour, said store-houses being connected by walls of reverse curvature, posts or masts for supporting the roofs of said store-houses at their apexes and at their planes of intersection, and a second floor or story supported by said posts or masts, substantially as described.

446,029. **PNEUMATIC ELEVATOR AND STORAGE-STATION.** LYMAN SMITH, Chicago, Ill., assignor to the Smith Pneumatic Transfer and Storage Company, of West Virginia. Filed July 22, 1890. Serial No. 359,498. (No model.)



Claim.—1. A structure for the storage of grain, comprising a bottom and a tank having its lower edge embedded in said bottom below the level of the adjacent ground and provided with a lateral flange or Z-bar, for the purpose set forth.

2. A structure for the storage and elevation of grain, comprising an air-tight metallic tank, a bottom therefor, said bottom extending below the level of the adjacent ground, having its sides inclining inwardly and downwardly, and means extending to or substantially to

the bottom of the structure for removing the contents therefrom, as and for the purpose set forth.

3. A structure for the elevation and storage of grain, comprising an air-tight metallic tank, a bottom therefor composed of a plastic composition and having its interior sides inclining inwardly and downwardly and terminating in a horizontal central portion, and means adapted to rest on said central portion for removing the grain, substantially as described.

4. The combination, with an air-tight metallic tank having an inclined bottom, of a grain-pipe, and an incasing air-pipe, said air-pipe extending to near the bottom of the tank, the lower end of which is provided with a hood or mouth-piece secured to said air-pipe and resting on the bottom of tank on supporting-feet, as and for the purpose set forth.

5. The combination, with an air-tight metallic tank, of the main pipe, an inclosing pipe for the latter, said pipes extending into and adjacent to the bottom of said tank, and an adjustable valve above the cover of said tank and carried by the inclosing pipe outside, substantially as described.

6. The combination, with an air-tight metallic tank, of a main pipe extending thereinto, an inclosing pipe also extending thereinto and closed at its upper end, said inclosing pipe being provided with a series of openings at a point outside the tank, and a rotatable band surrounding the inclosing pipe and provided with corresponding openings, whereby air may be conducted to the lower end of the main pipe to cut off the supply of grain thereto or for the purpose of drying and cooling the grain, as the exigencies of the case may require, substantially as and for the purpose described.

7. The combination, with a storage structure, of a grain-pipe incased in an air-pipe, the air-pipe extending below the grain and having a contracted end below the grain-pipe, as and for the purpose set forth.

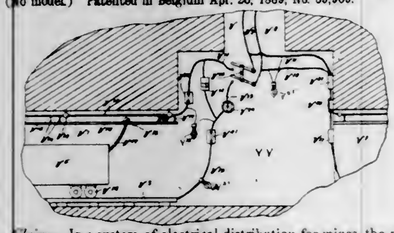
8. The combination, with a storage structure, of a main pipe extending thereinto, a supplemental pipe *d*, also extending a short distance into the tank, and a movable pipe adapted to be shifted so as to register with either of the pipes, as and for the purposes set forth.

9. The method of preserving and storing food products, which consists in inclosing the same within a receptacle, subjecting said receptacle to the refrigerating action of the earth, removing the excessive or surplus moisture from the food products, and then closing the receptacle air-tight, whereby the food products will be maintained in their natural dry condition excluded from the outer air and at a low temperature.

10. The method of preserving and storing food products, which consists in inclosing the same within a receptacle, subjecting said receptacle to the refrigerating action of the earth, removing the excessive surface moisture from the food products, closing the receptacle air-tight, and excluding the light from the food products, substantially as described.

446,030. SYSTEM OF ELECTRICAL DISTRIBUTION FOR MINES.

ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Mining Machine Company, same place. Filed Apr. 1, 1889. Serial No. 305,582. (No model.) Patented in Belgium Apr. 20, 1889, No. 89,909.



Claim.—In a system of electrical distribution for mines, the main conductor leading down the main entries, branch conductors leading down the butt-entries derived from said main conductors, and ammeters located at the junctions thus formed, in combination with machines for both mining and transporting, deriving their energy from the same wires.

446,031. ELECTRIC SWITCH. ELMER A. SPERRY, Chicago, Ill. Filed July 2, 1890. Serial No. 357,519. (No model.)

Claim.—1. In a contact-making device, a flat oscillating or vibrating spring forming one contact secured to the base, having a bent portion near this end and a straight portion near the other end acted upon by a rotating oblong cam, and a flat spring set at an angle thereto forming the other contact.

2. In a contact-making device, two contacting springs, and an oblong cam having flat faces mounted upon a stem protruding upward from the base, in combination with co-operating contacts consisting of springs placed at an angle to said contacting springs, so as to secure a positive rubbing action in making contact.

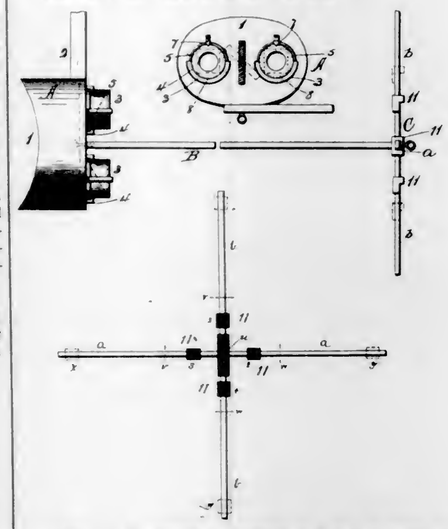


3. In a contact-making device, a rotating cam having dead-points mounted loosely upon a stem and provided with a groove or slot the walls of which are parallel to each other, and a driving-pin the ends of which are bent, connected to the stem, adapted to work in said groove.

4. In a contact-making device, a rotating stem, a cam mounted loosely thereon, a pin in the stem, the end or ends of which are bent so as to be on a tangent, and means on the cam for engaging such pin.

5. A double contact-making device worked by a loose rotating cam, consisting of springs which at all times bear in directly-opposite directions from each other, the cam being located between the springs, which in their operation are all times parallel to each other, and co-operating contacts consisting of flexible springs placed at an angle to the main contact.

446,032. OPTOMETER. CALVIN G. STEVENS, Watertown, N. Y. Filed Apr. 8, 1890. Serial No. 347,092. (No model.)



Claim.—1. An optometer consisting of a hood provided with prism-holders, prisms removably held therein, a screen adjustably connected to the hood between the prisms, arms adjustably mounted at the inner end of the screen, and objects movable and adjustable upon the arms, as set forth.

2. An optometer consisting of a hood provided with prism-holders, prisms removably held therein, a screen adjustably connected to the hood between the prisms, arms adjustably mounted upon the screen and provided with a measuring-scale, and objects mounted upon and adjustable in or out thereon, as set forth.

3. An optometer consisting of a hood provided with prism-holders, prisms removably held therein, a screen adjustably connected to the hood between the prisms, an auxiliary screen mounted adjustably thereon, arms adjustably mounted upon the main screen, a scale upon each arm, and objects movable or adjustable upon the arms, as set forth.

4. An optometer consisting of a hood provided with prism-holders mounted upon the hood adjustably to a scale of degrees, prisms removably held therein, a screen adjustably connected to the hood between the prisms, an auxiliary screen mounted adjustably thereon, arms adjustably mounted upon the main screen, a scale upon each arm, and objects movably adjustable upon the arms, as set forth.

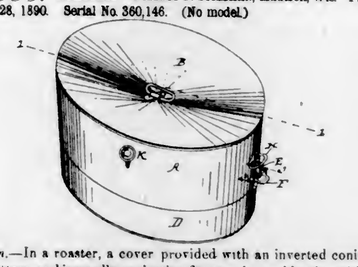
5. An optometer consisting of a hood mounted upon a supporting-bar and provided with prism-holders, prisms removably held therein, a screen adjustably connected to the hood between the prisms, arms adjustably mounted upon the screen, objects movably adjustable upon the arms, a scale upon each arm, and means for leveling the prisms and the object-bars, as set forth.

6. The combination, with the stationary hood carrying removable prisms, of visual objects mounted and adjustable along bars set up at a fixed distance from the prisms, as set forth.

7. An optometer consisting of a hood carrying prisms, a divider, and arms carrying objects adjustable thereon.

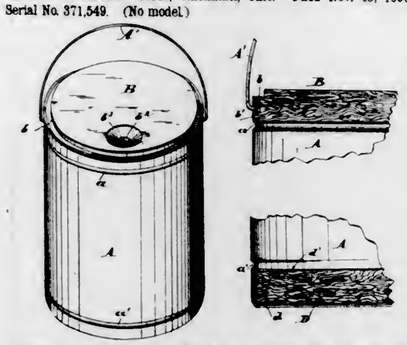
8. An optometer consisting of a hood, prisms removably mounted in the hood, a divider, arms carrying objects adjustable thereon, and scales upon the arms.

446,033. ROASTER. WILLETT D. STILLMAN, Madison, Wis. Filed July 28, 1890. Serial No. 360,146. (No model.)



Claim.—In a roaster, a cover provided with an inverted conical top and bottom, and inwardly-projecting flange *a*, in combination with a lower portion whose bottom is provided with upwardly-projecting supports for the support of the meat-pan, as herein set forth.

446,034. CAN FOR PAINT, &c. CHARLES FERRIS STITES and CHARLES FREDERICK STITES, Cincinnati, Ohio. Filed Nov. 15, 1890. Serial No. 371,549. (No model.)



Claim.—1. A can having a metal body portion and wooden end portions connected thereto, substantially as set forth, and a handle hooked into said body portion, the top cover B, having recesses b' in its outer peripheral surface opposite the points where said handle is hooked into the said body portion of the can, for the purposes set forth.

2. A can having a metal body portion and wooden end portions suitably connected thereto, the cover portion B, having an opening b^2 therein, said opening being reamed out around its upper portion b^3, said cover having in its outer peripheral face the recesses b', in combination with a handle hooked into said body portion opposite said recesses, for the purposes set forth.

3. A can having a metal body A, with an inner top bead *a* and a wooden top or cover B, the latter having the opening b^3 therein, said opening being reamed out or enlarged at b^4, said cover also having the recesses b' in its peripheral face, and a handle A′, hooked into the body A opposite the recesses b' in the cover, as set forth.

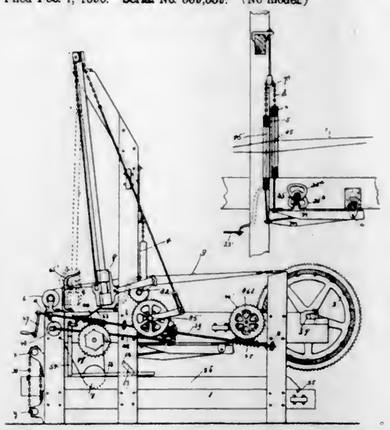
4. A can having a metal body portion A and wooden end portions B and D, the top cover B, having the shouldered offset *b* around its outer top surface, and recesses b' in its peripheral face, the top edge of the metal body being turned down over said offset, in combination with a suitable handle hooked into said body portion opposite the recesses in the face of said cover, for the purposes set forth.

5. A can having a metal body portion and wooden end portions, the top portion B, having the shouldered offset *b*, recesses b', and an opening b^3, the latter being reamed out at b^4, the top edge of the metal being turned down over said offset, in combination with a suitable handle hooked into said body portion opposite said recesses in the cover, for the purposes set forth.

6. A can having a metal body portion A and a wooden bottom D, the peripheral surface of said bottom being surrounded by a metal band *d* and a non-absorbent covering *d′*, extending over the top surface of said wooden bottom and down over the band *d*, said non-absorbent material being packed in between said band and the body of the can, for the purposes set forth.

7. A can having a wooden cover B, with recesses b' in its peripheral face and an opening b^3, reamed out at b^4, and a plug or bung b^4 in said opening, the top of said plug being below the plane of the top of said cover, in combination with a handle hooked into the body of the can opposite said recesses in the cover, for the purposes specified.

446,035. TAKE-UP AND LET-OFF MECHANISM FOR LOOMS FOR WEAVING WIRE. CLARENCE S. STROWBRIDGE, Hamilton, N. Y., assignor to the Hamilton Wire Cloth Company, Limited, same place. Filed Feb. 7, 1890. Serial No. 339,559. (No model.)



Claim.—1. The combination, in a loom, of the loom-frame, the cloth-roller, the guiding-roller, the gravitating frame for straining the warp, pivoted at one end in the loom-frame, the tension-roller secured on the gravitating frame parallel with the cloth-roller, a shaft mounted in stationary bearings above the free end of the gravitating frame, sprocket-wheels rigidly secured to the shaft adjacent to each side of the gravitating frame, pulleys below each of the sprocket-wheels, and an endless chain passing around the sprocket-wheel and pulley at each side and secured to the gravitating frame, substantially as set forth.

2. The combination, in a loom, of the loom-frame, the cloth-roller, the guiding-roller, the gravitating frame for straining the warp, pivoted at one end in the loom-frame, the tension-roller secured on the gravitating frame parallel with the cloth-roller, the shaft mounted in stationary bearings above the free end of the gravitating frame, sprocket-wheels rigidly secured to the shaft adjacent to each side of the gravitating frame, and endless chains passing round each of the sprocket-wheels at each side of and secured to the gravitating frame, as set forth.

3. The combination, in a loom, of the let-off cylinder 2, the cloth-roller 8, the guide-roller, the tension-roller 7, the gravitating frame, the worm-gears 46′ and 48, which operate the let-off cylinder and cloth-roller, respectively, the intermediate gears between gear 46′ and the let-off cylinder, the worms 45 and 46, the shaft 39, on which the worms are mounted, (45 rigidly and 46 loosely,) the clutch for engaging the worm 46, the operative connections of the clutch extending to and operated by the gravitating frame, the gear 40 for driving the shaft 39, the gear for driving the gear 40, the crank for operating the shaft 39 and the connecting-rod 42, and crank for throwing the gear 40 into and out of gear, substantially as set forth.

4. The combination, in a loom, of the let-off cylinder, the cloth-roller, the guide-roller, tension-roller, the gravitating frame, the gears for operating the cloth-roller and let-off, respectively, the worms for operating the let-off cylinder and cloth-roller, the shaft carrying the worms, the one for operating the let-off cylinder being rigidly secured thereon and the one for operating the cloth-roller loosely mounted thereon, the clutch for engaging the worm which operates the cloth-roller, operative connections 52 53 54 56 57 between the clutch and gravitating frame, and the lever 57, pivoted to the frame and lever 56, substantially as set forth.

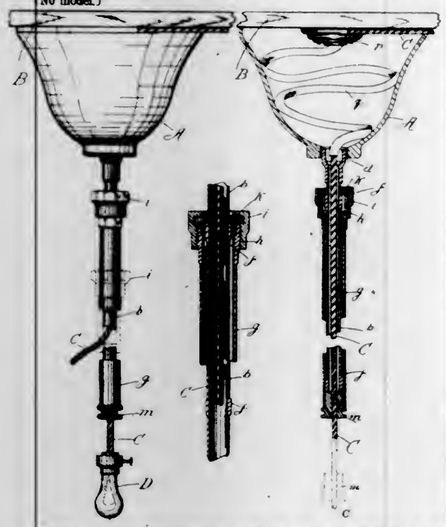
446,036. ANTI-RATTLER FOR THILL-COUPLINGS. ARTHUR H. TERRY, Patchogue, N. Y. Filed Jan. 5, 1889. Serial No. 295,573. (No model.)



Claim.—1. A fulcrum provided with a loop to engage over the forward end of the clip-bar for preventing downward displacement, and provided with the coils or projections *r r'*, adapted to bear against the front of nut under said part of clip-bar for preventing backward displacement, and provided with the transverse ends or axes *x x'* for articulating with the lever L.

2. In an anti-rattling device, substantially as described, the above-described fulcrum, in combination with the lever L, provided with the eyes *d d'* to articulate with the axes *x x'* of the fulcrum, and provided with the transverse ends *f f'* for articulation with a spring or rubber holder, substantially as described.

446,037. EXTENSIBLE BRACKET FOR ELECTRIC LAMPS. JOHAN E. TITUS, Orange, Mass. Filed Mar. 14, 1890. Serial No. 343,871. (No model.)



Claim.—1. The combination of a bell, a fixed tube secured at its inner end in said bell, a sliding tube inclosing said fixed tube, means for holding said sliding tube on said fixed tube, a detachable tubular plug for closing the lower end of said sliding tube, and an insulated electric cable coiled in said bell and extending through said fixed tube and through the tubular plug thereof, said cable being adapted for connection at its upper end with an electric socket and at its lower end with an electric lamp, substantially as described.

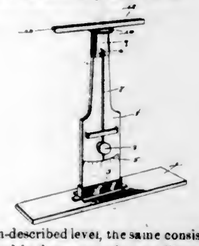
2. In a drop-light chandelier, the combination of a fixed tube provided with external shoulders at intervals, a sliding tube inclosing said fixed tube and screw-threaded at its upper end, a screw-threaded perforated cap adapted to slide on said fixed tube and engaging the screw-threaded upper end of said sliding tube, and a friction-ring interposed between the perforated top of said cap and the upper end of said sliding tube, said friction-ring being adapted to engage said shoulders, and having its tension adjustable by means of said cap, substantially as described.

446,038. LEVEL. STEPHEN J. TOWNSEND, Sumterville, Fla. Filed May 21, 1890. Serial No. 352,658. (No model.)

Claim.—1. The herein-described level, consisting of a base, a standard projecting upwardly from the base at an exact right angle thereto and provided with a curved scale upon one of its faces, a sight-bar mounted upon the upper end of the standard, and a cord suspended from the standard above the center of the scale and provided with a plumb-bob moving over the scale, substantially as specified.

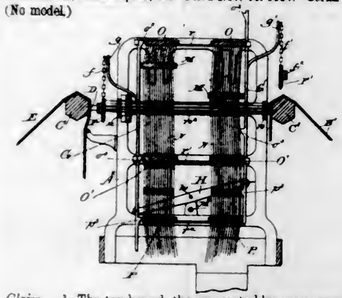
2. The herein-described level, consisting of a base, a standard rising vertically from and at an exact right angle to the base, and a horizontal sight-bar pivotally mounted upon the upper end of the standard, substantially as specified.

3. The herein-described level, the same consisting of a base having a socket, a standard rising from the same and having a curved scale, a cord suspended above the scale and provided with a plumb-bob, and a grooved sight-bar mounted for pivotal movement upon the upper end of the standard, substantially as specified.



4. The herein-described level, the same consisting of a base-board, a standard mortised in the same, and a metallic socket-plate encircling the standard and secured to the same and the base, said standard being provided with a curved scale, a cord suspended above the center of the scale from the upper end of the standard and provided with a plumb-bob adapted to move over the scale, a cap fitted on the upper end of the standard, a circular plate surmounting the cap and provided with a pintle, and a sight-bar mounted for horizontal rotation on the pintle, substantially as described.

446,039. JACQUARD MECHANISM FOR LOOMS. ALEXANDER TURKINGTON, Philadelphia, Pa. Filed Nov. 16, 1887. Serial No. 255,345. (No model.)



Claim.—1. The top board, the connected harness-supporting knot-cords and double-ended needles, the trap-board and the bottom board, through which the said cords are extended, two card-drums arranged one at each end of the said needles, and means for bringing either of the said drums into action at pleasure, combined with means to shift either the top or bottom boards laterally to co-operate with one or the other of the said drums, substantially as described.

2. The combination, with the double-ended needles and two card-drums, one at each end of the said needles, of two spring-boards and means for placing one or the other of the said spring-boards at will at one or the other end of the said needles, to operate substantially as described.

3. The combination, with the piston-rods D and drums C C', of the rock-shaft X, arm Y, connecting said rock-shaft to one of said piston-rods, and means, substantially as described, for giving said rock-shaft a positive motion in either direction, as set forth.

4. The combination, with the harness-supporting cords or tails and Jacquard needles, of a laterally-movable board through which said cords or tails pass and means for moving said board, substantially as described.

5. The combination, with the harness-supporting cords or tails and Jacquard needles and trap-board, of a top and a bottom board and means to move either of said boards laterally, to operate substantially as described.

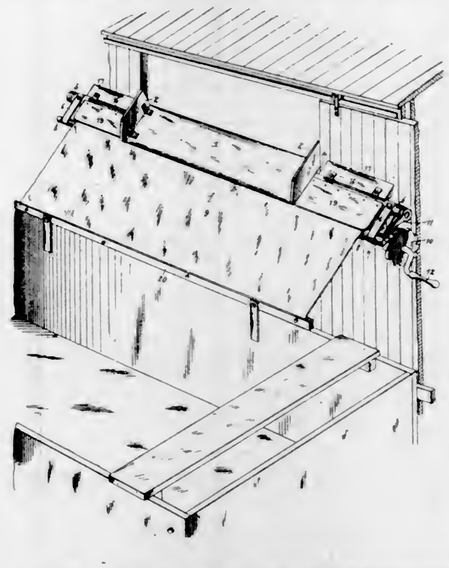
6. The combination, with the two drums C C', the piston-rods upon which said drums are carried, and the rock-shaft X, connected to said piston-rods, of the levers *u u'*, connected to said rock-shaft, the shaft B, the cam S, adapted to move either of said levers alternately, and means for shifting said cam upon its shaft, substantially as described.

7. The combination, with lever K, rocking lever H, connected thereto, carriers G G', attached to said rocking lever, a series of needles, and the spring-boards F F', of the drums C C', the piston-rods carrying said drums, the rock-shaft X, connected to the piston-rods, and means for giving said rock-shaft a positive movement in either direction, accordingly as said lever K is in an elevated or depressed position.

8. The two drums and the double-ended Jacquard needles, each having an elongated eye between its ends, which ends are acted upon by cards carried by the said drums, and guides, as described, for both ends of said needles, combined with wires 13 and 14 to co-operate with the said eyes, as and for the purposes set forth.

9. The top boards O O, the harness-supporting cords or tails suspended therefrom, and a trap or lifting board, combined with double-ended Jacquard needles, two card-drums arranged one at each end of the said needles, means for bringing either of the said drums into action at pleasure, and spring-boards to co-operate with one or the other of said drums, substantially as described.

446,040. GRAIN-APRON. JOSEPH E. VANHORN, Henderson Station, Ill. Filed May 15, 1890. Serial No. 351,948. (No model.)



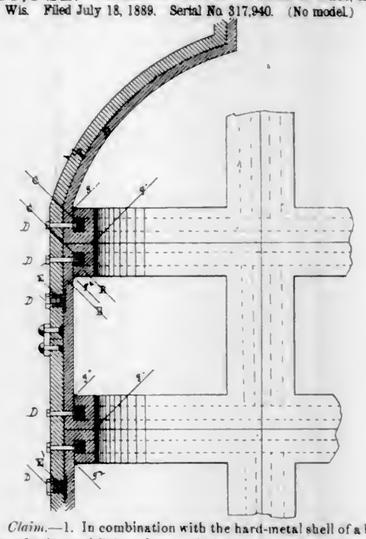
Claim.—1. In a grain-apron, the combination of a board provided on its under side with hooks for the attachment of the device to the grain-door of the car, a bar or brace secured to the under side of said board and extended beyond the same at each end, arms or brackets extending downwardly from said extensions, a shaft journaled in said arms or brackets, and the flexible apron wound upon said shaft and provided at its lower edge with clamping-strips having arms or brackets by means of which it may be attached to the side-board of the wagon-body, substantially as set forth.

2. The combination of a board provided with hooks on its under side, a bar or brace secured to the under side of said board and having extensions at both ends, arms extending downwardly from said brackets, a shaft journaled in said arms, the apron wound upon said shaft, the ratchet-wheel at the end of the latter engaging a suitable pivoted pawl, a crank mounted at the end of said shaft, and the wings hinged at the ends of the base-board, substantially as set forth.

3. In a grain-apron, the combination of the board provided with hooks on its under side for the attachment to the grain-door of a car, the wings or flanges hinged at the ends of said board, and the bar or brace secured upon the under side of said board and having brackets projecting beyond the latter, said brackets being provided at their upper edges with guide-rods and plates hinged upon said guide-rods and longitudinally adjustable thereon, substantially as and for the purpose herein set forth.

4. In a grain-apron, the combination of the board provided with hooks on its under side, the hinged wings at the ends of said board, the bar or brace secured upon the under side of the latter and having downwardly-extending brackets, the shaft journaled in said brackets, the apron wound upon said shaft and provided at its lower edge with clamping-strips having downwardly-extending arms, the longitudinally-adjustable hinged plates mounted upon the extensions or brackets of the brace having the arms to which the winding-shaft is journaled, and the guard-plates secured to said extensions and extended over the upper edge of the apron, substantially as set forth.

446,041. PAPER-PULP BOILER. SOLOMON R. WAGG, Appleton, Wis. Filed July 18, 1889. Serial No. 317,940. (No model.)



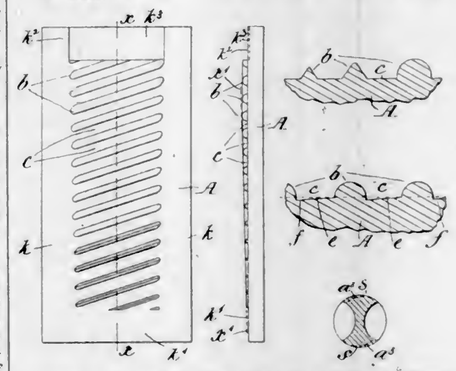
Claim.—1. In combination with the hard-metal shell of a boiler, a series of soft-metal lining-plates and hard-metal bars inside the lining-plates parallel with the edges thereof, said bars being covered by the inturned edges of the lining-plates, as described, and securing-bolts passing through the shell into said bars, substantially as described.

2. The combination, with a hard-metal boiler-shell, of a series of soft-metal lining-plates inside said shell, the edges of said plates being turned over and soldered, as described, sustaining-bars inside the soft-metal linings, but covered by the inturned edges of the plates thereof, and securing-bolts entering these bars from outside the shell.

3. The combination, with the hard-metal shell of a boiler, of a soft-metal lining-plate, a hard-metal re-enforce sunk into the lining-plate flush with the lining at the margin, but having a projecting boss in the direction of the shell, and a fastening-bolt passing through the shell and engaging a screw-thread in said boss, substantially as described.

4. In combination with the shell of a boiler, a soft-metal lining-sheet held at the edges by hard-metal strips covered by the inturned edges of the sheets, as described, hard-metal re-enforce plates sunk into the soft-metal sheets, as described, and fastening-bolts entering the hard-metal strips and re-enforce plates from outside the shell of the boiler, substantially as described.

446,042. APPARATUS FOR FORMING SPIRALS. HENRY H. WARREN, Massena, N. Y. Filed Oct. 10, 1890. Serial No. 367,735. (No model.)

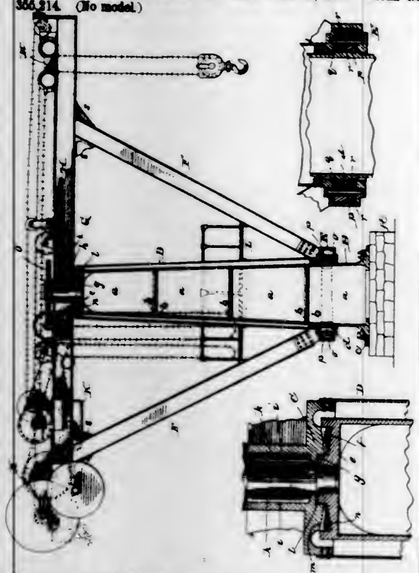


Claim.—1. In dies for rolling and swaging spirals, the combination of a pair of dies moving in parallel or approximately parallel planes, each of which is provided with parallel ridges *b* of increasing

height and size, configurated as described, the whole substantially as set forth.

2. In dies for rolling and swaging spirals, the combination of the dies A A, provided with ridges *b* and arranged to act together, substantially as described, for rolling and swaging spirals, with the spaces intervening between said ridges provided with inclined surfaces, substantially as described.

446,043. COUNTERBALANCED JIB-CRANE. PETER L. WEIMER and ASA A. WEIMER, Lebanon, Pa. Filed June 12, 1890. Serial No. 355,214. (No model.)



Claim.—1. A metallic pillar for a crane having a raised portion near its lower end, in combination with a revoluble plate-metal casing supported by the pillar and having an annular casting secured to its lower end, a jib supported by the pillar and the casing, and braces between the jib and said casting, substantially as described.

2. A metallic pillar for a crane having a concentric bearing near the lower end, in combination with a plate-metal casing supported by the pillar and having a casting attached to the upper end, which casting rests upon the pillar, and an annular casting at the bottom which rests upon the concentric bearing on the pillar, a horizontal jib, and braces on opposite sides of the pillar between the jib and the casting at the lower end of the casing, substantially as described.

3. A metallic pillar for a crane having an upper section provided with a head in which is formed a seat or recess, and a vertical pin secured to said head, in combination with a metallic casing having a casting at its upper end, in which is a seat, an annular chamber surrounding the pin, and horizontal and vertical friction-rolls, substantially as described.

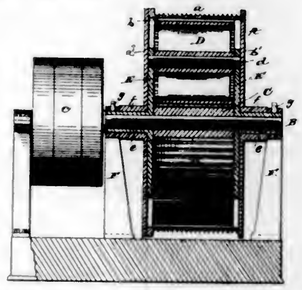
4. A counterbalanced jib-crane having a trolley on one end of a horizontal jib and hoisting mechanism on the opposite end, in combination with a weight movable upon the jib between the hoisting mechanism and the supporting-pillar of the crane, substantially as described.

5. A counterbalanced jib-crane in which both arms of the jib are in the same horizontal plane, a trolley on the long arm of said jib, and a hoisting, traversing, and rotating mechanism on the short arm of the jib, all combined to operate substantially as described.

6. A counterbalanced jib-crane in which both arms of the jib are in the same horizontal plane and the jib supported on the top of a pillar, a trolley on the long arm of the jib, and a hoisting, traversing, and rotating mechanism on the short arm, in combination with a movable weight on said short arm, substantially as described.

7. A counterbalanced jib-crane having arms of unequal length and in the same horizontal plane, in combination with a trolley, hoisting chain or cable, and fall-block supported upon the long arm of the jib, a hoisting mechanism supported upon the short arm and counterbalancing the long arm, the trolley, hoisting chain or cable, and fall-block, and a weight movable upon the short arm between the hoisting mechanism and the pillar of the crane to counterbalance the weights raised by the crane, substantially as described.

446,044. HOISTING-DRUM FOR ELEVATORS. PETER L. WEIMER and ASA A. WEIMER, Lebanon, Pa. Filed June 12, 1890. Serial No. 355,215. (No model.)

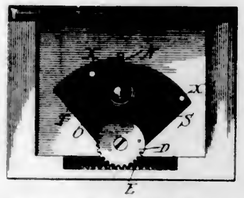


Claim.—1. A hoisting-drum having an external grooved surface to receive a rope or cable, an internal circumferential gear of substantially the length of the drum, and heads closing the drum, in combination with a main shaft supporting the drum, a pinion of substantially the length of the drum and secured to said shaft, and an idle-wheel interposed between the drum and the pinion and supported at both its ends upon disks or spiders secured against revolving with the drum or shaft.

2. A hoisting-drum having an internal circumferential gear of a length nearly equal to the width of the drum, a shaft having a pinion secured thereto, and an idle-wheel between the pinion and the gearing, in combination with disks or spiders supporting the idle-wheel and having hubs extending through the ends of the drum and secured against revolving with the drum or the shaft, substantially as described.

3. A hoisting-drum having heads provided with hubs supported to revolve upon a shaft and having internal circumferential gear-teeth the length of the drum, in combination with a pinion secured to the shaft and having gear-teeth the length of the teeth on the drum, and an interposed idle-wheel between the pinion and the drum and supported upon a fixed shaft secured to disks or spiders within the drum and secured to the main shaft, substantially as described.

446,045. PHOTOGRAPHIC CAMERA. FRANK WHITNEY, Chicago, Ill. Filed Aug. 12, 1889. Serial No. 320,547. (No model.)



Claim.—1. In a photographic camera, the negative-plates numbered to correspond with the numbers on the registering-paper, and means for operating them in unison, substantially as described.

2. In a photographic camera, the shutter-plates S and T and the time-stop N, in combination with the segments D and E, substantially as described.

3. A shoulder-strap pivoted to the camera-box, provided with the covering-pad B, substantially as described.

4. The segments D and E, lever F, and releasing-spring G, for operating the shutter, as described.

5. In a camera provided with the revolving magazine, the shield H, substantially as described.

6. The disk of revolving magazine for negative-plates, provided with cam L and spring-stop K, substantially as described.

7. In a camera, the opening J, the registering-paper I, and covering-pad B, substantially as and for the purpose described.

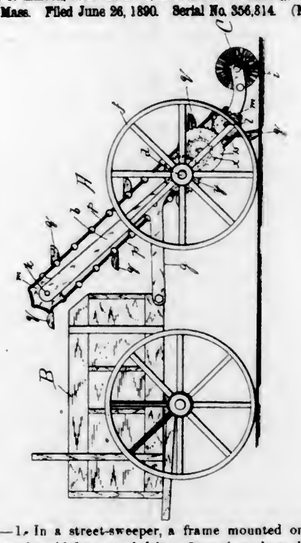
8. The numbered negative-plate, Fig. 10, the shutter device, and the covering-pad B, substantially as described.

9. The disk M of a revolving negative-magazine, provided with the cam L, and the spring-stop K, operating to move the lever F and securely lock the same, substantially as described.

10. The spring G, with button V, operating to release the shutter device, and the revolving magazine, substantially as described.

11. In a camera, the pivoted segment E, lever F, and spring Y, in combination with shutter-plates, substantially as described.

446,046. STREET-SWEEPER. ALCIBIADES J. WHITTIER, Chelsea, assignor to himself, Jesse M. Gove, and Robert C. Fanning, both of East Boston, Mass. Filed June 26, 1890. Serial No. 356,814. (No model.)



Claim.—1. In a street-sweeper, a frame mounted on wheels, a rotary sweeper in said frame and driven from the axle, endless chains mounted on wheels in said frame and bearing a series of buckets, and mechanism actuated by the axle for intermittently moving said buckets, substantially as described.

2. In a street-sweeper, the combination of a frame mounted on an axle and provided with arms for attaching it to a cart, a rotary brush driven from said axle, shafts in said frame bearing sprocket wheels and chains, one of said shafts being intermittently rotated by a sector-gear driven by the axle, and buckets on said chains, arranged to operate substantially as described.

3. In a street-sweeper, a series of traveling buckets intermittently driven by the sweeper axle or wheels and adapted to receive sweepings from a rotary brush, substantially as described.

4. The frame A, mounted on wheels *f*, in combination with the brush C, the chains *p*, traveling in said frame and bearing buckets *q*, and mechanism driven by the wheel-axle for conjointly rotating said brush and intermittently actuating said chains, substantially as described.

446,047. VENDING-MACHINE. CHARLES L. WICKHAM, Utica, N. Y., assignor of one-half to Hugh White, same place. Filed Aug. 4, 1890. Serial No. 360,914. (No model.)



Claim.—1. The combination, in a vending-machine, of a drum or disk having pockets to receive the article to be vended, a case inclosing the drum or disk, an opening in the case, opposite which the pockets are successively presented, a latch-piece or cover adapted to close the opening, and the connection between the drum or disk and latch-piece, whereby the disk is moved forward by the operation of the latch-piece, substantially as set forth.

2. The combination, in a vending-machine, of a drum or disk having pockets to receive the articles to be vended, a casing inclosing the drum and having an opening at which the pockets are successively presented, a slot for the passage of the coin, and a latch-piece or cover adapted to close the opening in the casing and having a portion adapted to close the coin passage-way when the latch-piece is operated, substantially as set forth.

3. In a vending-machine, the combination of a drum or disk having pockets, a casing having an opening opposite which the pockets are successively presented, a coin passage-way, a latch-piece adapted to close the opening in the casing and to close the coin passage-way when the latch-piece is operated, and tumblers operating to secure the latch-piece except when operated by the coin, substantially as set forth.

4. The combination, in a vending-machine, of a drum or disk having pockets, a casing inclosing the drum having an opening opposite which the pockets are successively presented, a latch-piece or cover adapted to close the opening in the casing, tumblers connecting with the latch-piece and operating to secure it except when they are operated by a coin in the coin passage-way, substantially as set forth.

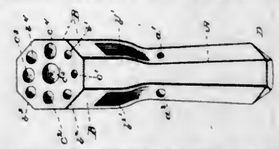
5. The combination, in a vending-machine, of a drum or disk having pockets, a casing inclosing the drum having an opening opposite which the pockets are successively presented, a swinging latch-piece adapted to close the opening, a coin passage-way, tumblers operating to secure the latch-piece and projecting into the coin passage-way, and a pawl or connection between the latch-piece and drum, substantially as set forth.

6. The combination, in a vending-machine, of a drum or disk having pockets, a casing inclosing the drum and having an opening opposite which the pockets are successively presented, a coin passage-way across which a portion of the latch-piece is adapted to be projected as it is operated, the tumblers for securing the latch-piece, a connecting-pawl between the drum and latch-piece, and a pawl pivoted in the casing and engaging the drum and having an arm projecting into the coin passage-way, substantially as set forth.

7. The combination, in a vending-machine, of a vending mechanism, an inclosing casing and receiving-drawer, a hinged cover for the casing having a projection adapted to engage inclined faces provided on the drawer and operate the drawer, substantially as set forth.

8. The combination, in a vending machine, of a disk or drum provided with pockets, an inclosing casing, a slot or opening in the casing, opposite which the pockets are successively presented, a cover for the opening, pivoted in the case, a coin passage-way across which a portion of the cover or connecting part is adapted to be projected as the cover is opened, a tumbler connecting with the cover projecting into the passage-way and operating to secure the cover, a pawl pivoted in the casing and engaging the drum and having an arm projecting into the coin passage-way below the tumblers, and pawl pivoted to the cover and operating the drum, and a receiving-drawer in the casing, to which the coin passage-way leads, all combined substantially as set forth.

446,048. RIVET-SET. WILLIAM A. WILSON, Nacogdoches, Tex. Filed Oct. 22, 1890. Serial No. 368,898. (No model.)



Claim.—1. A rivet-set composed of a steel body having a handle or tang for hand or machine use and a plurality of graduated holes, and a plurality of graduated cavities in the lower face, substantially as described.

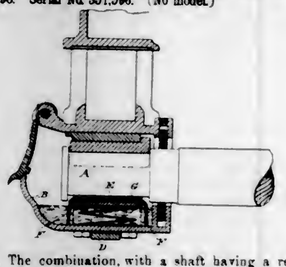
2. A rivet-set composed of a polygonal-shaped steel body having a handle or tang for hand or machine use and a plurality of graduated holes, and a plurality of graduated cavities set symmetrically in the flat lower face, substantially as described.

3. In a rivet-set having a polygonal-shaped steel body, the combination of a flat face perforated with a plurality of holes and indented with a plurality of cavities symmetrically arranged in the said face with a countersunk rivet-gage above and corresponding to each hole, substantially as described.

4. In a rivet-set having a polygonal-shaped steel body, the combination of a flat face indented with a plurality of cavities and perforated with a plurality of holes, said holes and cavities being symmetrically arranged in the said face, and said holes being cylindrical for a short distance, then opening into truncated conical chambers, and then into U-shaped open slots with a countersunk rivet-gage above each rectangular slot and corresponding to each hole, substantially as described.

5. In a rivet-set having an octagonal-shaped curved steel body with tapering shank and head, the combination of a flat face indented with a plurality of cavities and perforated with a plurality of holes, said holes and cavities being symmetrically arranged in the said face, and said holes being cylindrical for a short distance, then opening into truncated conical chambers, and then into U-shaped open slots with a countersunk rivet-gage above each rectangular slot and corresponding to each hole, substantially as described.

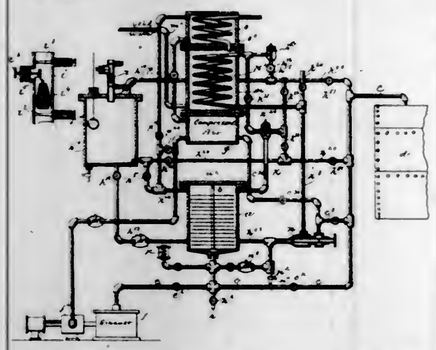
446,049. LUBRICATOR. JOSEPH WOOD, Red Bank, N. J. Filed May 13, 1890. Serial No. 351,596. (No model.)



Claim.—1. The combination, with a shaft having a receptacle beneath the bearing for containing oil, of a lubricating device in said receptacle, comprising one or more wicks of cotton or other suitable material fastened to a flat support of a material such as wood, which is a good conductor of oil, so as to present a flat, smooth, and even surface to the shaft or axle to be lubricated, and held against the axle by the pressure of a spring or spiral coil or other suitable means, substantially as described.

2. A lubricating device adapted to be placed in an oil-receptacle beneath the journal-bearing of a shaft, said device comprising, in combination, the following elements: a flat support, one or more wicks secured thereon so as to present an even flat surface on top of the support, a sheet of wire-gauze or perforated sheet metal placed over the wick or wicks, and a spring or similar means for pressing the lubricator against the shaft, substantially as described.

446,050. APPARATUS FOR DYEING STRAW GOODS, &c. JAMES A. YOUNG, Mansfield, assignor, by mesne assignments, to the Young Coloring Company, Boston, Mass. Filed Apr. 21, 1890. Serial No. 348,940. (No model.)



Claim.—1. In dyeing apparatus, the combination, with a tight-closed dye-chamber having an inlet at the bottom and an outlet in the top thereof, of means for injecting through said inlet steam or heated air into the body of the dye-liquid to keep the same in ebullition under pressure in said chamber, and a pressure-valve controlling the outlet for permitting the escape at a predetermined pressure of steam or other gaseous fluid which may gather in the top of said chamber above the liquor, whereby the dye-liquor in the chamber is kept in continual ebullition or agitation under pressure, but without bodily movement into, through, and out of said chamber, and a condenser communicating on the one hand with the pressure-valve and on the other hand with the injector, substantially as and for the purposes hereinbefore set forth.

2. In dyeing apparatus, the combination of a tight-closed dye-chamber having an inlet at the bottom and an outlet at the top thereof, means for injecting through said inlet steam into the body of the dye-liquid, a pressure-valve controlling the outlet for permitting the escape of steam, a condenser communicating on the one hand with the pressure-valve and on the other hand with the injector, and a valve or cock controlled discharge-passage, such as L^{23}, whereby fluid in excess of that required to maintain the proper level of dye-liquor in the dye-chamber may be discharged from the apparatus, substantially as and for the purposes hereinbefore set forth.

3. A dyeing apparatus comprising, in combination with one and the same tight-closed dye-chamber, the preparing-chamber and the compressed-air reservoir communicating through valve or cock controlled pipes with the upper part of said dye-chamber, the pressure-valve controlling an outlet in the top of the dye-chamber, the injector communicating with an inlet in the bottom of the dye-chamber, the condenser communicating on the one hand with the pressure-valve and on the other hand with the condenser, the exhaust *f*, and the pressure-valve *r*, connected by a valve or cock controlled pipe with the inlet in the bottom of the dye-chamber, all under the arrangement and for operation substantially as and for the purposes hereinbefore set forth.

4. The combination, with a preparing-chamber provided with an inlet-passage, of two valves inclosing a chamber between them in said inlet-passage, a foraminous cage working through said passage, and a raising and lowering device for said cage, substantially as described.

5. The combination of the tight dyeing-chamber and the frame or support for the material to be dyed therein with an air-compressor and ducts for introducing compressed air into the upper part of said chamber and an outlet-duct at the lower part of said chamber provided with a pressure-valve, substantially as and for the purpose described.

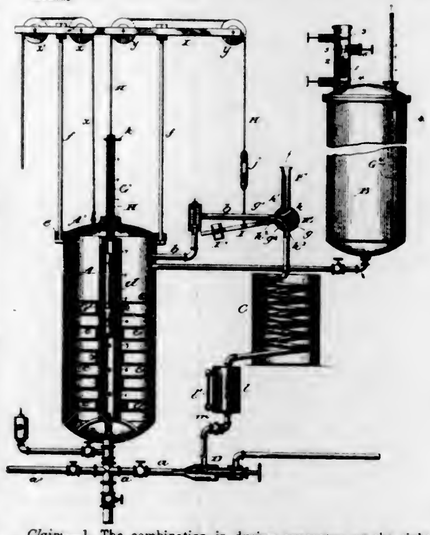
6. The dye-chamber provided with an overhanging flange around its open end and a lateral recess below said flange, combined with the laterally-movable cover working in said recess and adapted to seat against the under side of said flange to close the cylinder, substantially as described.

7. The dye-cylinder provided with an overhanging flange around its open end and a lateral recess below said flange, combined with the laterally-movable cover working in the said recess and adapted to seat against the under side of the said flange to close the cylinder, and cams provided with operating-handles outside the cylinder for seating and unseating the cover, substantially as described.

8. The dye-cylinder provided with an overhanging flange around its open end and a lateral recess below the said flange, combined with the laterally-movable cover working in the said recess and adapted to seat against the under side of said flange to close the cylinder, and a rack and pinion for moving the said cover laterally into and out from the said recess, substantially as described.

9. A supporting-frame for goods to be dyed, comprising a central stem and foraminous shelves, between which the goods to be dyed are placed, each pair of shelves between which goods are placed being separated from adjoining pairs by clear spaces to afford an unobstructed body of dyeing-liquor at various levels in the dyeing-chamber and between the several layers of goods, substantially as and for the purposes hereinbefore set forth.

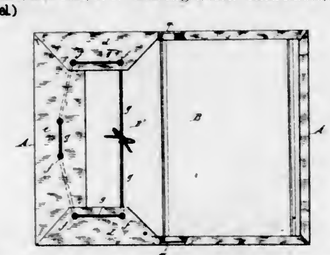
446,051. APPARATUS FOR DYEING STRAW GOODS, &c. JAMES A. YOUNG, Boston, Mass., assignor of one-half to E. B. Seaver and A. Seaver, same place. Filed Dec. 13, 1890. Serial No. 375,112. (No model.)



Claim.—1. The combination, in dyeing apparatus, of the tight dye-chamber provided at bottom with a steam-inlet and at the top with a steam-outlet, the pressure-valve controlling the steam-outlet, the condenser, the injector, the water-supply pipe connected to the injector, the cock for regulating the flow of water of condensation to the injector, the float contained in the die-chamber, adapted to rise and fall with the level of the liquid in said chamber and provided with a stem projecting through the top of said chamber, and adjustable connections between said float-stem and cock, whereby as the float rises and falls the cock will be operated to cut off or open, as the case may be, the water-supply to the injector, and thus preserve a substantially constant strength of dye-liquid in the dye-chamber, substantially as and for the purposes hereinbefore set forth.

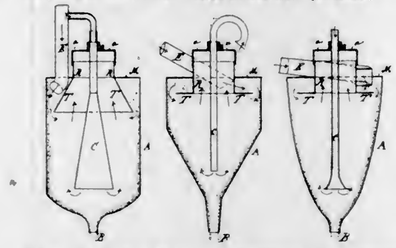
2. In dyeing apparatus, the combination of the dye-chamber provided with steam-inlet below and steam-outlet above, the pressure-valve controlling said outlet, the injector, the condenser, the overflow or discharge passage, the cock whereby the steam-outlet from the dye-chamber is put in communication either with the said discharge or with the condenser, and the float connected to and adapted to operate and control said cock, the combination being and acting substantially as hereinbefore set forth.

446,052. BOOK-PROTECTOR. JOSEPH M. BECKER and ALEXANDRE SAGGESE, New York, N. Y. Filed Aug. 6, 1890. Serial No. 361,159. (No model.)



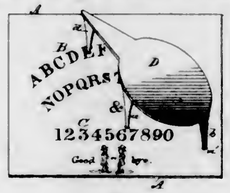
Claim.—A book-protector consisting of a blank of canvas, paper, or other suitable material having flaps *d d* and *e*, said flaps being provided with eyelets and adapted to be bent over to inclose a book-cover, in combination with ribbons or tapes passing through said eyelets and knotted together at their ends, substantially as set forth.

446,053. DUST-COLLECTOR. HANS BITTINGER, Brunswick, Germany. Filed Oct. 27, 1890. Serial No. 369,459. (No model.)



Claim.—In a dust-collector, the combination, with a separating-drum provided with a dust-outlet at its small end, of the cover therefor having two openings, an inlet-pipe entering one of said openings obliquely to said drum, an air-escape pipe passing through the other of said openings and provided with the annular deflector at its lower end, and the additional air-inlet pipe passing centrally into the drum through the air-escape pipe, substantially as described.

446,054. TOY OR GAME. ELIJAH J. BOND, Baltimore, Md., assignor to Charles W. Kennard and William H. A. Maupin, both of same place. Filed May 28, 1890. Serial No. 353,410. (No model.)



Claim.—1. The game apparatus herein described, consisting of a board having the alphabet and numerals and certain signs and figures, arranged as shown, in combination with a table provided with legs and a pointer and operated by the hand, in the manner and for the purpose set forth.

2. In a game apparatus, the combination of the board A, having the alphabet B, the numerals C, the words "Yes" and "No," and signs and figures, with the table D, having legs *a b c d*, and elongation E, forming the pointer, all constructed and arranged as shown and described.

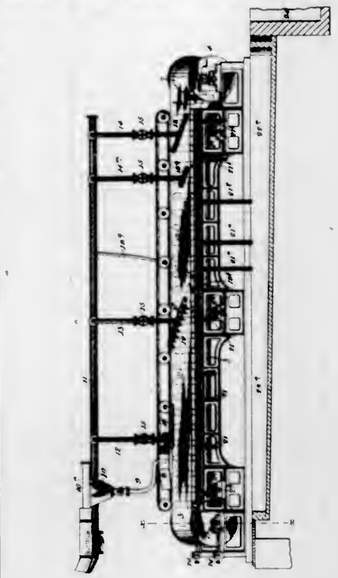
3. In a game apparatus, a table consisting of a disk supported on four legs, one of which is arranged on an elongated projection, serving as an index, substantially as shown and set forth.

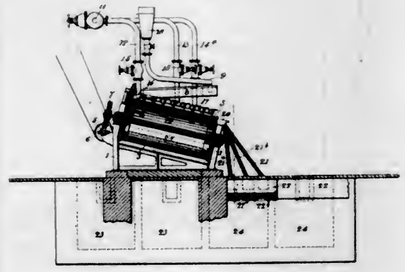
4. A board for a game apparatus, of rectangular shape, having the letters of the alphabet in two semicircular rows, the numerals underneath in a straight line, near the bottom two human figures, the upper corners provided with a full and crescent moon with the words "Yes" and "No" below them, all as specified.

446,055. ORE-CONCENTRATOR. MARCELIN CASTELNAU, Paris, France. Filed Nov. 5, 1890. Serial No. 370,379. (No model.)

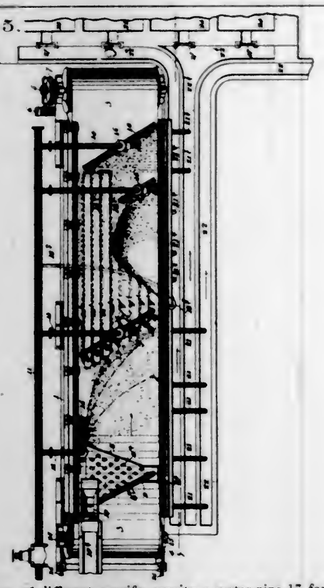
Claim.—1. In an ore-concentrator of the class having an endless traveling belt placed at an angle in the direction of its width, the combination, with said belt, of a water-pipe placed at its forward end in the direction of its length for separating the material into parabolic arcs of different specific gravity and two or more water-pipes placed at angles to same, the jets from which project the material of said arcs into horizontal bands or ribbons, with means for separately collecting the different grades of material, substantially as described.

2. In an ore-concentrator of the class having an endless traveling belt placed at an angle in the direction of its width, the combination, with said belt, of a water-pipe 16 for separating the material into





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parabolic arcs of different specific gravity, a water-pipe 17 for projecting the material into horizontal bands or ribbons, a water-pipe 18 for washing off the richest ore or float metal, a water-pipe 18^a for washing off the medium quality, a supplemental jet for removing any heavy particles from the medium quality and causing it to join the rest of the heavy particles, and a collecting-trough 20 and pipes from same for conveying the different qualities into separate troughs, substantially as described.

446,056. OSCILLATING VALVE FOR STEAM-ENGINES. JOSEPH CREEK, Beardstown, Ill. Filed Dec. 12, 1889. Serial No. 333,426. (No model.)

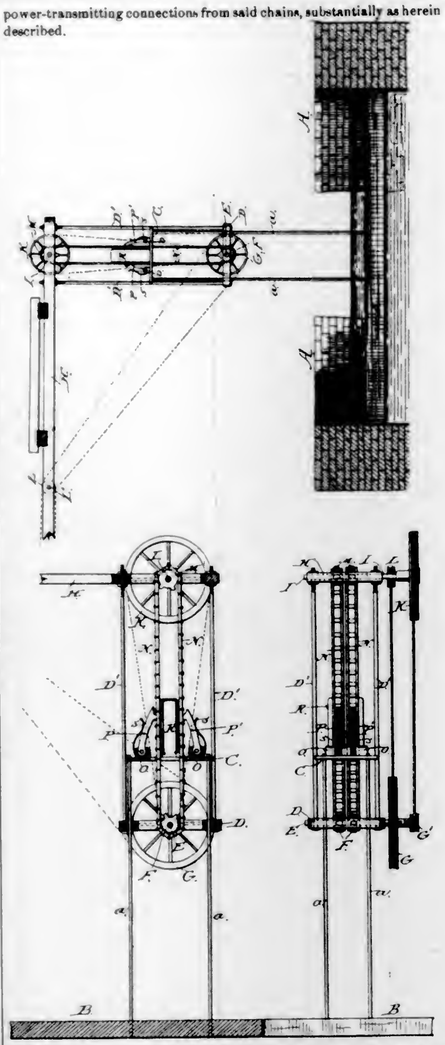


Claim.—1. In an oscillating balanced valve, the combination of a cylindrical tubular shell or casing open at both ends and having longitudinal slots 7, 7^a, and 8, forming the steam and exhaust ports, the cylindrical tubular valve 10, seated in said casing and having the steam-ports 13, and provided in its outer side with a recess 12, forming an exhaust-passage, and an arm or stem 15, extending from said valve through a transverse slot 16 in the shell or casing, substantially as and for the purpose set forth.

2. The combination, with the steam-chest having the transverse cylindrical bore closed at its inner end and the steam and exhaust ports, of the cylindrical tubular shell or valve-casing seated in said bore, having a collar or annular flange near its outer end and provided with steam and exhaust ports and with a transverse slot near its outer end, and the tubular cylindrical oscillating valve seated in the said shell or casing and having the steam-ports, the exterior exhaust-passage, and an arm or arms extending radially through the transverse slot in the shell or casing, substantially as and for the purpose herein shown and specified.

446,057. TIDE-MOTOR. GEORGE M. COPELAND, Brockton, Mass. Filed July 15, 1890. Serial No. 358,820. (No model.)

Claim.—1. A tide-motor comprising a vertically-moving float, a guide therefor, the endless chains, a double series of pawls carried by the float and engaging the chains for imparting a continuous movement thereto in one direction during both movements of the tide, and power-transmitting connections from said chains, substantially as herein described.



2. In a tide-motor, the combination of the rising-and-falling float provided with a double series of alternately-acting pawls, shafts having sprocket-wheels, endless chains passing around said wheels and having their links engaged by said pawls to start the chains in motion as the float rises and falls, and power-transmitting devices comprising pulleys of varying sizes for communicating power to the machine or device to be driven, substantially as herein described.

3. A tide-motor comprising a rising-and-falling float, a plurality of double-acting spring-actuated pawls carried thereby, endless chains adjacent to said pawls, whereby the latter may engage said chains to start them in motion as the float moves in one direction and to continue the motion in the same direction when the float moves in a reverse direction, and power-transmitting devices from said chains to the machine to be driven, substantially as herein described.

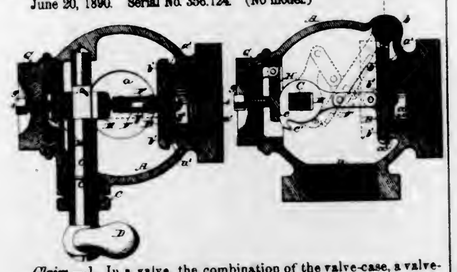
4. In a tide-motor, the combination of a rising-and-falling float provided with a platform C, the double series of pivotally-secured double-acting pawls carried by the platform and having springs bearing against them, shafts mounted in fixed supports, a plurality of chains engaged by the pawls on opposite sides, whereby a continuous movement is given the chains during both the rise and fall of the float, and pulleys of varying sizes for transmitting power from the motor to the machine to be driven, substantially as herein described.

5. A tide-motor consisting of a float, a platform above the float and connected to it by means of rods, whereby the float and platform move together, a plural series of pawls pivotally secured to said platform, a guide-post rising from said platform, shafts above and below the platform, endless chains passing around sprocket-wheels on said shaft and having their links engaged by said pawls, springs for holding the pawls against said chains, and power-transmitting pulleys from said chains to the machine to be driven, substantially as herein described.

446,058. COUGH REMEDY. WILLIAM J. COREY, Georgetown, Del. Filed Aug. 8, 1890. Serial No. 361,446. (No specimens.)

Claim.—A remedy for coughs and colds and pulmonary diseases and the like, consisting of hops, mullein, hoarhound, wild-cherry-root bark, wild-poplar bark, pipsissewa-tops, comfrey-root, conquering tom, (*Gentiana Andrewsii, Griseb.*) granulated sugar, pure apple-vinegar, saltpeter, and pure pine-tar, as set forth.

446,059. VALVE. WILLIAM H. CRAWFORD, Oshkosh, Wis. Filed June 20, 1890. Serial No. 356,124. (No model.)



Claim.—1. In a valve, the combination of the valve-case, a valve-disk hinged to said case so as to swing to and from its seat, a spindle projecting through the valve-case, and a toggle-lever consisting of an arm on said spindle within the valve-chamber and a link connecting it directly with the valve-disk, said arm being adjustable in the direction of its length on said spindle to take up wear and cause the valve-disk to be properly seated, substantially as and for the purposes set forth.

2. In a valve, the combination of the valve-case, a valve-disk, a spindle projecting through the valve-case, a toggle-lever consisting of an arm capable of longitudinal movement on said spindle and of a link connecting it with the valve-disk, and a bearing-piece with which the hub of said arm engages in closing the valve, substantially as and for the purposes set forth.

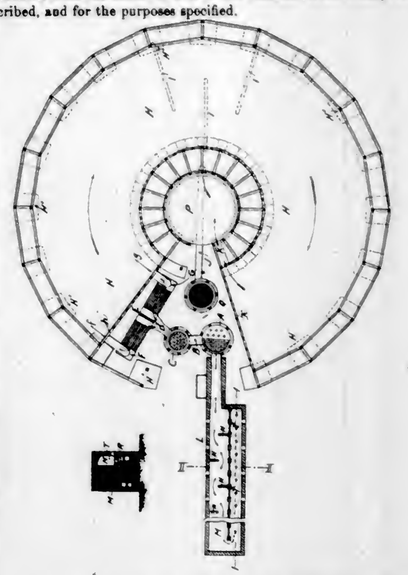
3. In a valve, the combination of the valve-case provided with a suitable seat, a valve hinged therein at one side of said seat, so as to swing against the same and close the adjacent opening, a spindle projecting through the valve-case and provided on the outside with a suitable handle and on the inside with an arm capable of play in the direction of its length on said spindle and linked to said valve, and an adjustable bearing-piece held against said arm by an adjusting-screw which projects outside of the valve-case, substantially as and for the purposes set forth.

4. In a valve, the combination of the valve-case provided with a suitable seat, a valve having a loose hinged connection with the inside of said case at one side of said seat, a spindle passing through the valve-case and provided on the outside with a suitable handle and on the inside with an arm capable of movement thereon in the direction of its length and linked to the valve, an adjustable bearing-piece held in engagement with the hub of said arm, which is rounded to permit of its being turned against the same, and an adjusting-screw by which said bearing-piece is advanced to take up wear on the valve and its seat, substantially as and for the purposes set forth.

5. In a valve, the combination of the valve-case, a valve-disk, a spindle projecting through the valve-case, a toggle-lever consisting of an arm on said spindle, having a squared or flattened hub, and of a link connecting said arm with the valve-disk, and a relatively fixed bearing against which the squared or flattened portion of said hub abuts when the toggle-lever is straightened in closing the valve, substantially as and for the purposes set forth.

446,060. APPARATUS FOR MAKING SULPHURIC ACID. EMILE DELPLACE and JULES DELPLACE, Aubervilliers, France. Filed May 5, 1890. Serial No. 350,621. (No model.) Patented in France Mar. 22, 1890, No. 204,462.

Claim.—1. In apparatus for the manufacture of sulphuric acid, an annular leaden chamber provided with two gas-inlets at unequal distances from the center or axis of the chamber, substantially as described, and for the purposes specified.

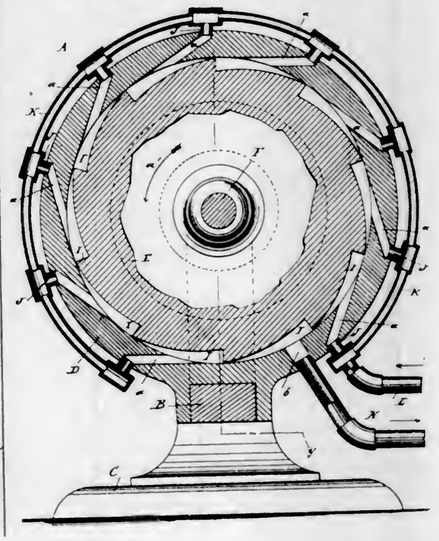


2. In apparatus for the manufacture of sulphuric acid, a leaden chamber having the shape of a circular ring with a sector cut out, the said chamber being provided at one end with two gas-inlets at unequal distances from the center and at the other end with a gas-outlet, substantially as described, and for the purposes specified.

3. In apparatus for the manufacture of sulphuric acid, an annular leaden chamber provided with distributing-pipes leading from the upper part to the lower part of the chamber along the inner or outer wall, substantially as described, and for the purposes specified.

4. In apparatus for the manufacture of sulphuric acid, the combination of annular leaden chamber H with concentrating-tower A, denitrifying-column C, collector D, and directing-chamber E, substantially as described.

446,061. ROTARY ENGINE. LABAN J. EVEREST, Omaha, Nebr., assignor of one-fourth to Henry C. Betterman, same place. Filed May 17, 1890. Serial No. 352,200. (No model.)

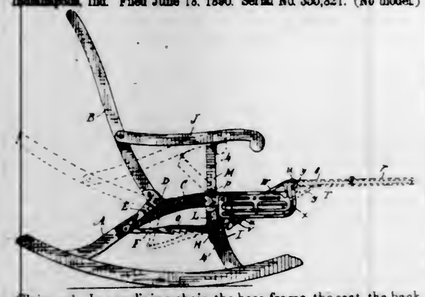


Claim.—1. In a rotary engine, the combination of a ring-shaped cylinder having an annular recess and provided with a series of angularly-arranged inlet-ports leading from said recess and an exhaust-port between two inlet-ports and adjacent to the first of the series of said ports, a steam-passage communicating with each inlet-port, said passage having one end closed and its other end connected with the inlet-pipe, and a wheel-shaped piston mounted to turn in the cylinder and provided on its periphery with a series of pockets corresponding in number with the number of inlet-ports, substantially as herein shown and described.

2. In a steam-engine, the combination of the ring-shaped cylinder D, having an annular recess D', the inclined inlet-ports *a*, and the exhaust-port *b* between two of the said inlet-ports, the pipe K, having one end closed and connected at the other end with the inlet-pipe, the branch pipes J, connecting the pipe K with the ports *a*, and the wheel-shaped piston E, provided with the buckets I on its periphery, substantially as herein shown and described.

3. In a rotary engine, the combination of a ring-shaped cylinder D, having an annular recess D', the inclined ports *a*, and the exhaust-port *b*, the pipe K, having one end connected to the inlet-pipe, the branch pipes J, connecting the pipe K with the ports *a*, the wheel-shaped piston E, provided with the buckets I on its periphery, and the packing-rings O, bearing against the face of the piston, substantially as herein shown and described.

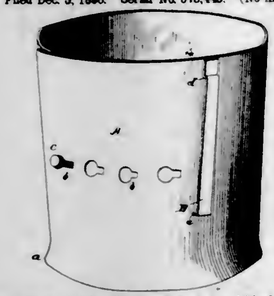
446,062. RECLINING-CHAIR. WILLIAM GRATKOWSKY, North Indianapolis, Ind. Filed June 18, 1890. Serial No. 355,821. (No model.)



Claim.—1. In a reclining-chair, the base frame, the seat, the back hinged thereto, the bracket secured to the back and projecting below the hinge, the slotted ratchet-bar pivoted to the bracket and projecting forward under the seat and engaging the base-frame, the bar L, arranged to slide vertically on the base-frame and having the studs N and *p*, the standard M, pivoted to bar L, and the arm-rest hinged to the standard and pivoted to the back, all combined and arranged to co-operate substantially as set forth.

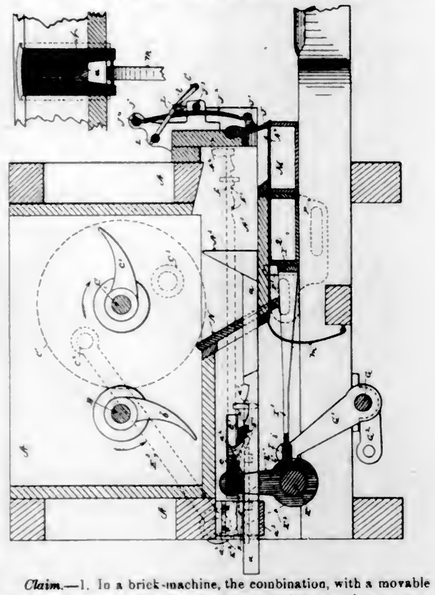
2. In a reclining-chair, the seat, a pair of plates secured to opposite edges of the seat and each having a slot *x*, eye *y*, and studs *t* and *z*, and the leg-rest consisting of a pair of jointed brackets, each having a pin *w* and arm *v*, and the pieces *r* and *s*, secured between said brackets, all combined and arranged to co-operate as and for the purpose set forth.

446,063. SHOE-EXPANDER. GUSTAF E. HADLUND, Council Bluffs, Iowa. Filed Dec. 3, 1890. Serial No. 373,445. (No model.)



Claim.—As an article of manufacture, a cobbler's shoe-expander and gore-holder consisting of an elongated tapering sleeve or cuff provided with the slots near one edge, the headed stud rigidly secured to the other edge of the cuff, and the spring-retainers arranged exteriorly on the cuff, on opposite sides thereof, each retainer having the offset portion rigidly united to the cuff at the enlarged end thereof and the biting-edge extending inwardly toward the sleeve or cuff, substantially as and for the purpose described.

446,064. BRICK-MACHINE. COLLIER V. HENKEWAY, Wellington, Ohio. Filed Apr. 21, 1890. Serial No. 348,835. (No model.)



Claim.—1. In a brick-machine, the combination, with a movable head adapted to operate in a compression-box, of an actuating-arm connected with such head and having a V-shaped section, a spring-actuated packing-plate having a slot the end wall whereof is V-shaped and adapted to engage such V-shaped arm, substantially as set forth.

2. The combination, with rock-arms having attached a bail-shaped dog, such dog having a lateral pin or projecting member, a sliding plate, and incline adapted to engage and lift the dog, of a ratchet-bar having teeth for engaging the point of the dog and having a lug for engaging the rear of the dog, and the sliding plate having means for adjusting it endwise to lift the dog at different points of its throw, substantially as set forth.

3. The combination, with crank-wrist bearing a roller, of an oscillating lever and pitman connected therewith and operating in the same plane with the roller, such lever having a cam-shaped end and the pitman having a toe adapted alternately to engage such roller, whereby reverse movements are imparted to the lever and pitman, substantially as set forth.

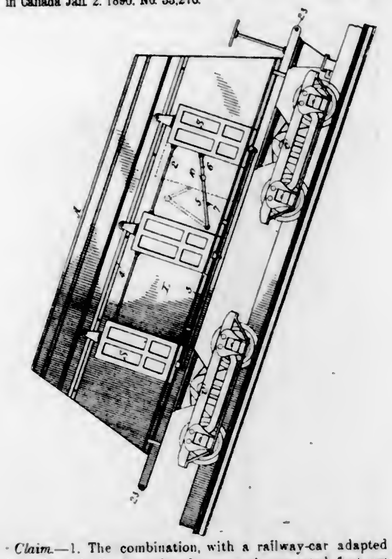
4. The combination, with a series of strike-off doors, of a series of springs pivotally secured to the doors, bars bearing against the front and rear of the spring to give tension thereto, the springs being adapted to slide endwise on such tension-bars in opening and closing the respective doors, substantially as set forth.

5. The combination, with a series of strike-off doors and connected springs, substantially as indicated, each spring bearing a toe or projecting member, of a spring-actuated bail adapted to engage in common such toes, the bail acting in the direction to depress the toes and connected springs, and thereby close the doors, substantially as set forth.

6. The combination, with strike-off doors and connected springs bearing toes, substantially as indicated, of a bail adapted to engage in common such toes, such bail being provided with a handle for operating the same, and a spring detachably connected with such handle, such spring acting in the direction to close and open strike-off doors, substantially as set forth.

7. The combination, with strike-off doors and connected springs provided with toes, substantially as indicated, of a primary bail adapted to bear upon such toes, and a secondary bail mounted and adapted to slide endwise on the primary bail, such secondary bail being adapted to hook under an opposing toe for opening a door by operating the primary bail, substantially as set forth.

446,065. RAILWAY-CAR. BENJAMIN S. HENNING, New York, N. Y. Filed May 17, 1890. Serial No. 352,132. (No model.) Patented in France Aug. 12, 1889, No. 200,163; in England Aug. 14, 1889, No. 12,828; in Belgium Aug. 31, 1889, No. 87,350; in Italy Oct. 3, 1889, No. 288, and in Canada Jan. 2, 1890, No. 33,270.



Claim.—1. The combination, with a railway-car adapted to a horizontal and inclined track, of seats and connected foot-rests suspended within the car and arranged to swing into horizontal position when the car is on an inclined portion of the track, substantially as described.

2. The combination, in a railway-car, of a casing or frame supported by the wheels, and one or more swinging compartments or sections pivoted within said frame and arranged to swing into horizontal position when the car is on an inclined track, substantially as described.

3. The combination, in a railway-car, of a frame, one or more sections or compartments pivoted within said frame, and a brake device for retarding the movements of the sections, substantially as described.

4. A railway-car having two longitudinally and laterally unyielding side couplings upon either end, said couplings being attached directly to the car-body and constructed to allow the two car-frames to assume different vertical angles to each other, substantially as described.

5. In a railway-car, the curved bumpers extending across the ends of the cars, and connecting coupling means, substantially as described.

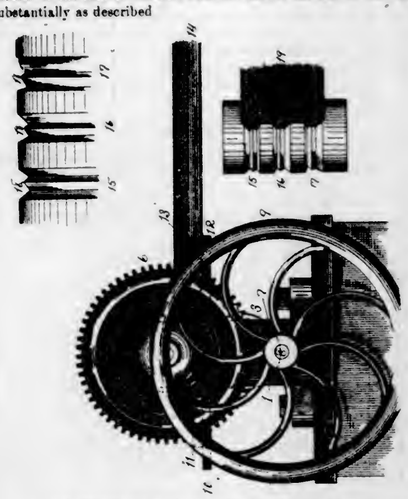
446,066. MACHINE FOR FORMING HORSESHOE-BLANKS. WILLIAM J. KENT, St. Paul, Minn. Filed Oct. 28, 1890. Serial No. 369,629. (No model.)

Claim.—1. In a machine for forming horseshoe-blanks, the combination of the upright standards, rolls mounted in bearings in said standards, means for operating said rolls, one of said rolls being provided with a series of grooves or passes, a table mounted upon the front of said standards on a level with the meeting-point of the rolls, and a guide-plate having a series of passes therein corresponding in relative position and width with the said roll-grooves and located upon said table, substantially as and for the purpose herein specified.

2. In a machine for forming horseshoe-blanks, the combination of the upright standards, rolls mounted in bearings in said standards, means for operating said rolls, one of said rolls being provided with a series of grooves or passes, tables attached to said standards in front and rear of said rolls and substantially in a plane tangential to said rolls at their meeting-point, and guides forming a series of passes corresponding in relative position and width with said grooves, secured to said tables, substantially as and for the purpose herein specified.

3. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls having a smooth cylindrical surface and the other provided with the grooves 15, 16, and 17, substantially as and for the purpose herein described.

4. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, the section of the side of said groove adapted to form the outer edge of the shoe-blank being in a straight line varying from about forty-five degrees nearly to a perpendicular to the face of the roll from the first to the last of the series, substantially as described

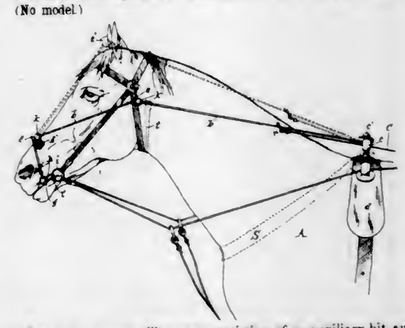


5. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, the said grooves having an intermediate ridge whose position varies from a substantially middle point in the first to a position nearer the side forming the outer edge of the shoe in the last of the series, substantially as described.

6. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, an intermediate rectangular ridge the position of whose apex varies from a substantially middle point in the first to a position nearer the side forming the outer edge of the shoe in the last of the series, substantially as described.

7. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, the section of the part of the groove adapted to form the inner part of the shoe varying from a straight line at an angle of about forty-five degrees to an outward curve lying substantially at an angle of thirty degrees to the face of the roll, substantially as described.

446,067. CONTROLLING-GEAR FOR DRAFT-HORSES. ROBERT S. KINKEAD, Lexington, Ky. Filed Nov. 16, 1889. Serial No. 330,566. (No model.)

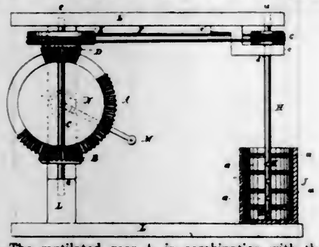


Claim.—1. A controlling-gear consisting of an auxiliary bit, an independent rein attached thereto, nose and head guides for said rein, and a pivoted lever on the vehicle having a friction-pulley around which the independent rein runs before it is attached to the wagon-body, substantially as described.

2. In a controlling-gear of the character described, the combination of a checkrein, a water-hook ring, a button thereon over which the checkrein is engaged, a friction-roller engaged in the bight of the checkrein behind the water-hook ring, and a connecting-rein engaged with the roller and extending back to the vehicle, substantially as described.

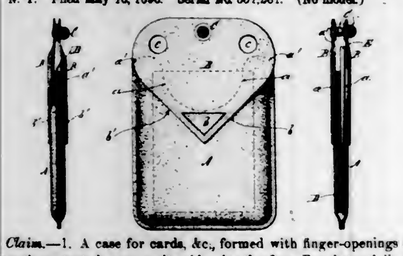
3. In a controlling-gear of the character described, the combination of a slotted plate adapted to be attached to the bottom of the vehicle, a guide-roll mounted thereon, a lever fulcrumed upon said plate and operating through the slot, a pivoted roll carried at the end of the lever, and a connecting-rein secured at one end to said plate and passing thence around said roll at the end of the lever and forward ultimately to and connected with a bit in the mouth of the animal, substantially as set forth.

446,068. DEVICE FOR OPERATING CHURNS. WILLIAM J. KNOX, Richland, Mo. Filed May 7, 1890. Serial No. 350,943. (No model.)



Claim.—The mutilated gear A, in combination with the gear-wheels B and D, shaft C, pulley E, cord F, shaft H, pulley G, and means for communicating motion to the wheel A, constructed and operating as hereinbefore set forth.

446,069. CARD OR TICKET CASE. ABBOT A. LOW, Brooklyn, N. Y. Filed May 10, 1890. Serial No. 351,231. (No model.)



Claim.—1. A case for cards, &c., formed with finger-openings at its mouth protected on opposite sides by the flaps B, substantially in the manner and for the purpose set forth.

2. A case for cards, &c., formed with the finger-openings *a a* and with the bifurcated loose flexible horns *a' a'* at its open end, substantially in the manner and for the purpose described.

3. A case for cards, &c., formed with the side flaps B at its open end, substantially in the manner and for the purpose set forth.

4. A case for cards, &c., formed with the side flaps B secured centrally to the sides of the case, said flaps having converging edges *b b*, for the purpose and substantially in the manner set forth.

5. A case for cards, &c., formed with the side flaps B B, having the finger perforations *c c*, for the purpose and substantially in the manner set forth.

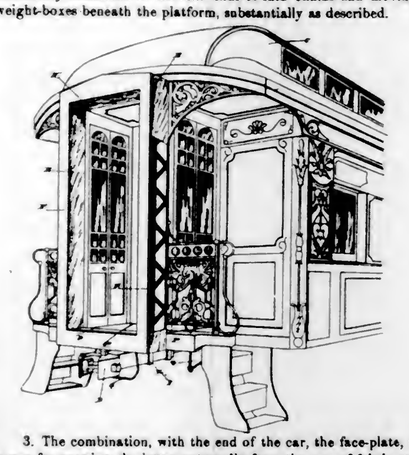
6. The combination of a case or receptacle A for holding cards, tickets, &c., and a removable wedge-shaped plate E, arranged and operating in conjunction with each other, substantially in the manner and for the purpose set forth.

7. The combination, in a case or receptacle A for holding cards, tickets, &c., of flaps B B and snap-fastening C, for the purpose and substantially in the manner set forth.

446,070. RAILWAY-CAR. HENRY MARSHAL, Lincoln, Nebr. Filed Oct. 23, 1890. Serial No. 369,062. (No model.)

Claim.—1. In a car, the combination, with the face-plate and the upper and lower plungers pivotally connected thereto, of a car-body within which the upper plungers slide and beneath whose platform the lower plungers move, pulleys carried by said body, chains extending forwardly from the plungers over the outer pulleys, and thence rearwardly and over the inner pulleys, and weights attached to the ends of the chains, the lower weights being heavier than the upper, whereby the face-plate serves as a buffer for the end of the car, substantially as described.

2. In a car, the combination, with the draw-head, springs supporting the same, and a yoke mounted on the draw-head and having upwardly-extending arms, of a face-plate, plungers pivotally connected thereto and extending beneath the platform, the bodies of said plungers being enlarged and provided with openings loosely embracing the arms of said yoke, rings on said plungers in rear of their enlarged portions, chains leading from said rings forwardly over wheels and thence rearwardly over other wheels carried by said car, and weights detachably connected to the rear ends of said chains and moving in weight-boxes beneath the platform, substantially as described.



3. The combination, with the end of the car, the face-plate, and means for pressing the latter outwardly from the car, of fabric strips at the inner and outer edges of said face-plate, connecting it with the end of the car and extending from the platform at one side over the upper end of the face-plate to the platform at the other side, and elastic tapes inside each fabric strip, extending in zigzag lines between the end of the car and the face-plate, substantially as described.

4. The combination, with the end of a car provided with a hole, a face-plate beyond said car end, a double bellows connecting the car end and face-plate, and a plunger having a reduced outer end extending through said hole and pivotally connected to the face-plate, of a weight moving within the frame-work of the car, and a chain leading from said weight over pulleys carried by the car and backwardly to the rear end of said plunger, whereby the latter is pressed normally forward, as and for the purpose set forth.

5. In a car, the combination, with the platform, the face-plate, and means for pressing its upper end forwardly, of plungers connected pivotally to the lower end of said face-plate and extending beneath the platform, means for pressing said plungers forwardly with a greater force than the upper end of the face-plate is pressed forwardly, and a semi-elliptical spring connected at its center to the lower end of said face-plate and having notched ends which straddle said plungers and bear against the end of said platform, as and for the purpose hereinbefore set forth.

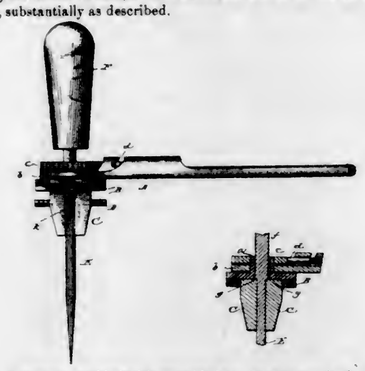
446,071. PERMUTATION-LOCK. JAMES B. MILLER, Kent, Ohio. Filed May 29, 1890. Serial No. 353,570. (No model.)



Claim.—In permutation-locks of the variety indicated, the combination, with a bolt, a vibrating lever, and a cam-bearing disk, of a bolt-shifter and a spindle having end movement and adapted to actuate the cam-disk or the bolt-shifter, according to the position of the spindle, substantially as set forth.

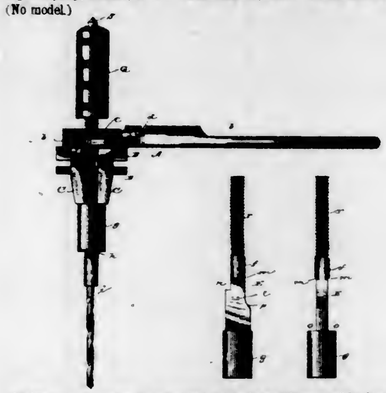
446,072. COMBINED RATCHET-WRENCH AND SCREW-DRIVER. CHARLES H. MYERS, Phelps, assignor, by mesne assignments, to the Keystone Manufacturing Company, Buffalo, N. Y. Filed Nov. 14, 1889. Serial No. 330,359. (No model.)

Claim.—1. A wrench provided with movable jaws, an aperture in the head of the wrench, and a ratchet, in combination with a screw-driver bit having a cylindrical shank and flattened sides to be engaged by the jaws of the wrench, and a detachable handle for the shank of the bit, substantially as described.



2. A wrench provided with movable jaws, an aperture in the head of the wrench, and a ratchet, in combination with a screw-driver bit having a cylindrical shank, flattened sides and shoulders to be engaged by the wrench, and a detachable handle provided with a socket in which the shank of the bit revolves, substantially as described.

446,073. RATCHET WRENCH AND DRILL. CHARLES H. MYERS, Phelps, assignor, by mesne assignments, to the Keystone Manufacturing Company, Buffalo, N. Y. Filed June 23, 1890. Serial No. 356,459. (No model.)



Claim.—1. A wrench provided with laterally-movable jaws, an aperture in the head of the wrench, and a ratchet, in combination with a drill-holder engaged by the jaws of the wrench and having a feed mechanism on one end, substantially as described.

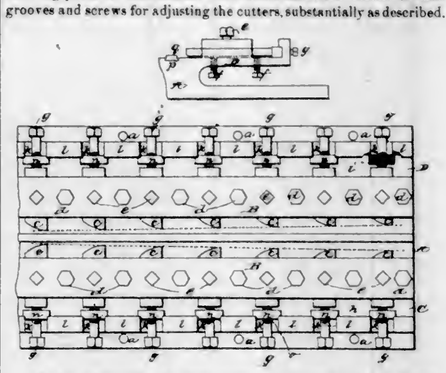
2. A wrench provided with laterally-movable jaws, an aperture in the head of the wrench, and a ratchet, in combination with a drill-holder in the head of the wrench and having a flattened portion with which the jaws of the wrench engage, and a screw-feed, substantially as described.

3. A wrench provided with laterally-movable jaws, an aperture in the head of the wrench, and a ratchet, in combination with a drill-holder in the head of the wrench and having a flattened portion and shoulders with which the jaws of the wrench engage, and a screw-feed, substantially as described.

446,074. ATTACHMENT FOR METAL-PLANERS. CHARLES H. MYERS, Phelps, assignor, by mesne assignments, to the Keystone Manufacturing Company, Buffalo, N. Y. Filed June 21, 1890. Serial No. 358,362. (No model.)

Claim.—1. An attachment for metal-planers, consisting of a cast-metal frame constructed to be detachably secured to a planer-bed and provided with a series of recesses, and graduated cutters in said recesses, in combination with devices for adjusting the cutters vertically and horizontally, and a guide for engaging the article wrought upon, substantially as described.

2. An attachment for metal-planers, consisting of a cast-metal frame provided with lateral extensions having recesses, longitudinal grooves and slots, graduated cutters in said recesses, and a detachable covering-plate, in combination with screw-threaded blocks in said grooves and screws for adjusting the cutters, substantially as described.

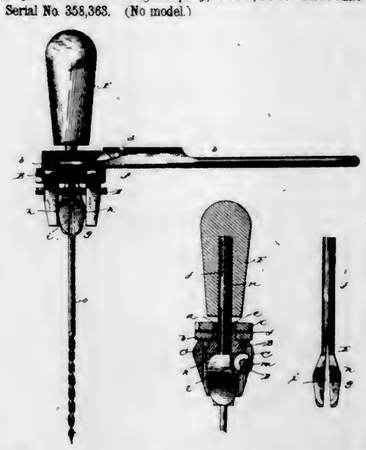


3. An attachment for metal-planers, consisting of a cast-metal frame constructed to be detachably secured to a planer-bed and provided with series of recesses on opposite sides of the frame, and graduated cutters in said recesses, in combination with screws for adjusting the cutters vertically and horizontally, and a gnide between the opposite cutters for engaging the article wrought upon, substantially as described.

4. An attachment for metal-planers, consisting of a cast-metal frame provided with series of recesses on opposite sides of the frame, graduated cutters in said recesses, a detachable covering-plate, and a longitudinal guide between the series of cutters, in combination with screws for adjusting the cutters, substantially as described.

5. An attachment for metal-planers, consisting of a cast-metal frame provided with series of oppositely-arranged recesses, graduated cutters in said recesses, and an interchangeable longitudinal guide between the cutters, in combination with horizontal screws and blocks in grooves in the extensions of the frame for adjusting the cutters horizontally, and screws for adjusting them vertically, substantially as described.

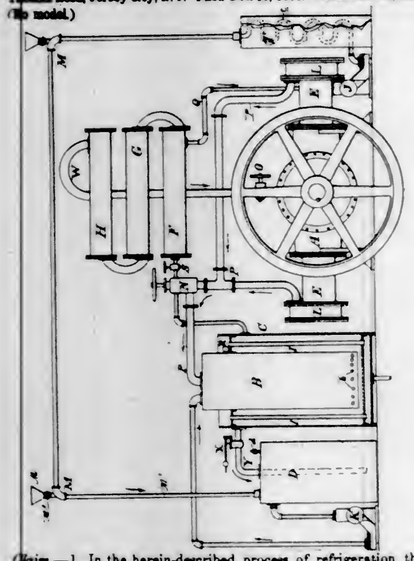
446,075. COMBINED RATCHET-WRENCH AND BORING-BIT. CHARLES H. MYERS, Phelps, assignor, by mesne assignments, to the Keystone Manufacturing Company, Buffalo, N. Y. Filed June 21, 1890. Serial No. 358,363. (No model.)



Claim.—1. A wrench provided with laterally-movable jaws and an aperture in the head of the wrench, in combination with a boring-bit holder having a cylindrical shank, a split head the sides of which are in planes coincident with the movable jaws of the wrench, and a detachable handle for the bit-holder, substantially as described.

2. A wrench provided with laterally-movable jaws and an aperture in the head of the wrench, in combination with a boring-bit holder having a cylindrical shank, an enlarged split head the sides of which are in planes coincident with the movable jaws of the wrench, a shoulder, and a detachable handle for the bit-holder, substantially as described.

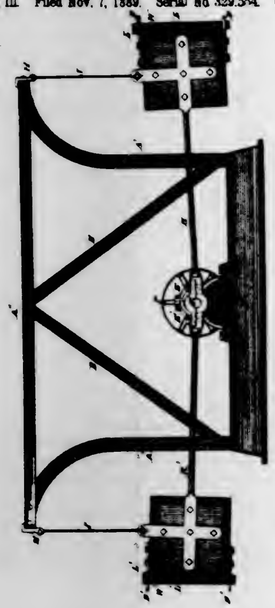
446,076. PROCESS OF ICE-MAKING AND REFRIGERATING. THOMAS ROSE, Jersey City, N. J. Filed Dec. 10, 1888. Serial No. 293,150. (No model.)



Claim.—1. In the herein-described process of refrigeration, the mode of preparing supersaturated hydrate of ammonia, the same consisting in forcing the ammoniacal gas eliminated from a supersaturated solution of ammonia by expansion during the refrigerating operation into a saturated solution of ammonia left after the elimination of the gas therefrom, substantially as specified.

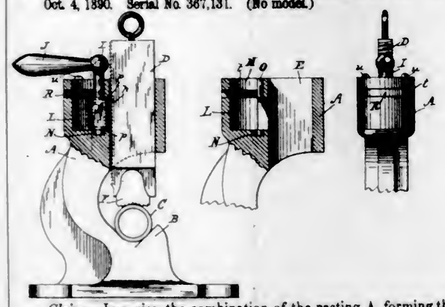
2. The herein-described process of refrigeration, the same consisting in forcing the ammoniacal gas eliminated from a supersaturated solution of ammonia during the refrigerating operation into the saturated solution of ammonia left after the elimination of the ammonia-gas during such refrigerating operation and regulating the amount of supersaturation by the pressure of the unabsorbed gas, substantially as specified.

446,077. MACHINE FOR LIQUIDIZING MILK. GEORGE ROTH, Highland, Ill. Filed Nov. 7, 1889. Serial No. 329,554. (No model.)



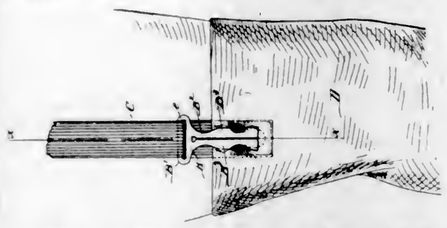
Claim.—A machine for liquidizing canned milk, consisting of a frame, two chests adapted to hold a quantity of canned milk in cans suspended in said frame, a rock-shaft journaled in said frame and provided with rocking devices arranged to move opposite to each other at the same time, and connecting-rods separately connecting said two chests with said rocking devices on the rock-shaft, all operating to rapidly move said chests and their contents back and forth in opposite directions at the same time, for the purposes set forth.

446,078. PIPE-VISE. ROSWELL R. ROOSE, Indianapolis, Ind. Filed Oct. 4, 1890. Serial No. 367,131. (No model.)



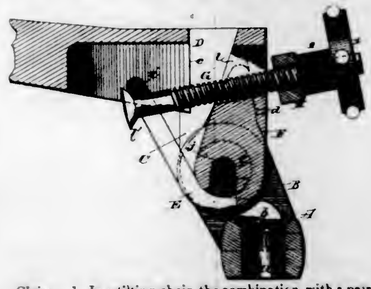
Claim.—In a vise, the combination of the casting A, forming the body and fixed jaw of the vise and having chamber L, bearings N and O, and slot *t* formed therein, the toothed bar arranged to slide longitudinally in said body, the mutilated screw mounted in said bearings and arranged to engage said bar, and the plate L, having the bearing *s*, all arranged to co-operate as shown and described.

446,079. GARMENT-SUPPORTER. SPURGEON C. SCANTLEBURY, Eastport, Me. Filed Mar. 26, 1890. Serial No. 345,325. (No model.)



Claim.—A garment-supporter constructed of a plate A, having the slot *a* and opening *a'* therein, and having the studs *b* projecting therefrom, and the key B, having slotted head B', neck B², and spring members B³, substantially as described.

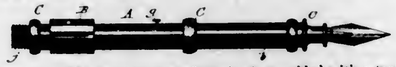
446,080. TILTING-CHAIR. WILLIAM SCHRAGE, Sheboygan, Wis. Filed July 28, 1890. Serial No. 360,155. (No model.)



Claim.—1. In a tilting-chair, the combination, with a pair of members hinged together and a bolt or rod connecting these members, one member provided with stops and the other with projecting arms adapted to engage the stops, of a spring encircling the bolt or rod and provided with an elongated portion, a screw connected with the elongated portion of the spring and extending in the direction of the stops, and means for drawing the elongated portion of the spring in the direction of the stops, whereby the tension of the spring is increased, substantially as set forth.

2. In a tilting device for a chair, the combination, with an upper and a lower casting hinged together, of a spring immovably connected with the lower casting and provided at its center with a forwardly-projecting loop, an arm projecting from the upper casting into the spring and provided with an elongated slot, a screw-rod passing through said slot and loosely connected with the loop of the spring, a collar loosely encircling the screw-rod and provided with lugs adapted to bear against the arm on the upper casting, and an adjusting-wheel on the screw-rod, substantially as set forth.

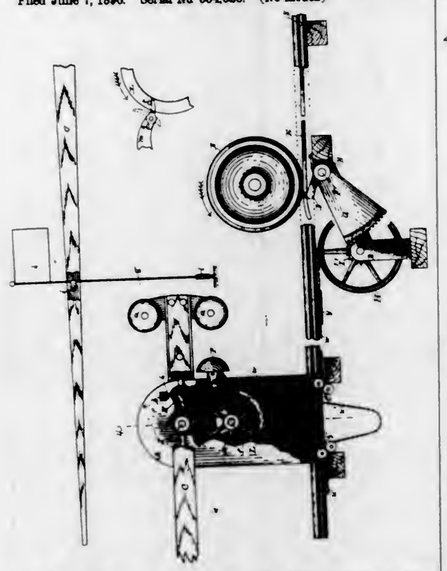
446,081. FOUNTAIN-FEED FOR MOISTENING AND SEALING DEVICES. PHILIP J. SCHREIBER, Dayton, Ohio. Filed Feb. 25, 1890. Serial No. 341,777. (Model.)



Claim.—1. The combination of a tube A, provided with a tank D, disk *h*, hollow tube E, with lips or jaws *f f*, loose ring *k*, and pin *g*, substantially as and for the purpose set forth.

2. The combination of a tube A, provided with a tank D, disk *h*, hollow tube E, having lips *f f*, loose ring *k*, pin *g*, and attachment B, with pen and pencil holder, substantially as and for the purpose set forth.

446,082. RAILWAY-CROSSING GATE. FRANK M. SPAULDING, Kalamazoo, Mich., assignor of one-half to Frank C. Balch, same place. Filed June 7, 1890. Serial No. 354,628. (No model.)



Claim.—1. The combination of a rail of the track, a tread-bar pivoted at one end to said rail, a rock-shaft having a crank pivotally attached to said bar, a sheave, a chain or cable attached at one end to said sheave, an axle upon which said sheave is loosely mounted, gear-connections between the axle and the rock-shaft, a second shaft bearing a cushioning-spring, a sheave loose upon said shaft, the other end of the chain being attached to said sheave, an axle above the second shaft, the gate attached to said axle, and gear-connections between the second shaft and axle, substantially as set forth.

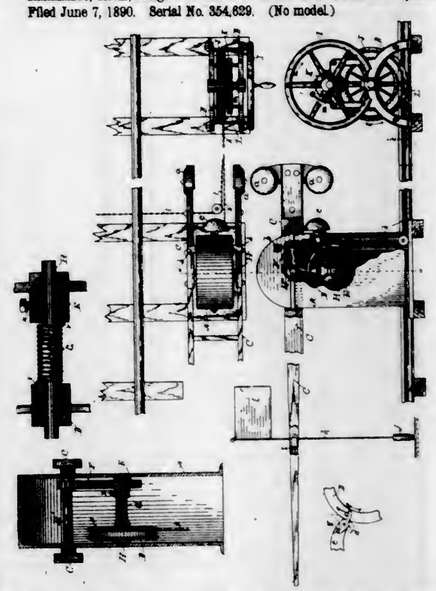
2. The combination of a rail of the track, a tread-bar pivoted at one end to said rail, a rock-shaft having a crank pivotally attached to said bar, a sheave, a chain or cable attached at one end to said sheave, an axle upon which said sheave is loosely mounted, a cushioning-spring upon said axle, gear-connections between the axle and the rock-shaft, a second shaft bearing a cushioning-spring, a sheave loose upon said shaft, the other end of the chain being attached to said sheave, an axle above the second shaft, the gate attached to said axle, and gear-connections between the second shaft and axle, substantially as set forth.

3. The combination of a rail of the track, a tread-bar pivoted at one end to said rail, a rock-shaft having a crank pivotally attached to said bar, a sheave, a chain or cable attached at one end to said sheave, an axle upon which said sheave is loosely mounted, a cushioning-spring upon said axle, gear-connections between the axle and the rock-shaft, a second shaft bearing a cushioning-spring, a sheave loose upon said shaft, the other end of the chain being attached to said sheave, an axle above the second shaft, the gate attached to said axle, gear-connections between the second shaft and axle, a case housing the latter-named shaft, axle, and their connections, and in which case said shaft and axle have bearings, the bell mounted upon said case and provided with the pivoted clapper-lever, the projections on said lever and sheave, and the dog pivoted to said lever, substantially as set forth.

4. In a railway-crossing gate, the combination of a spring-supported tread-bar adapted to be borne down by the wheels of the train, a shaft, a sheave loosely mounted thereon, a gear rigidly attached thereto, a cushioning-spring between them attached at the ends to said sheave and gear, said tread-bar being operatively connected with the axle of the sheave, a gate adapted to swing up and down across a street or track, a sheave operatively connected with said gate by suitable mechanisms, and a chain or cable attached at the ends to the sheave, substantially as set forth.

5. In a railway-crossing gate, the combination of a spring-supported tread-bar adapted to be borne down by the wheels of the train, a shaft, a sheave loosely mounted thereon, a gear rigidly attached thereto, a cushioning-spring between them attached at its ends to said sheave and gear, said tread-bar being operatively connected by means of a rock-shaft provided with a crank and segmental gear with the axle of the sheave, a gate adapted to swing up and down across a street or track, a sheave operatively connected with said gate by suitable mechanisms, and a chain or cable attached at its ends to the sheave, substantially as set forth.

446,083. RAILWAY-CROSSING GATE. FRANK M. SPAULDING, Kalamazoo, Mich., assignor of one-half to Frank C. Balch, same place. Filed June 7, 1890. Serial No. 354,629. (No model.)

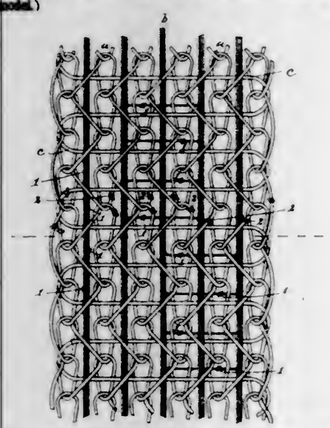


Claim.—1. The combination of the case, an axle having bearings in the upper end of said case, the gate attached to said axle, a shaft having bearings in the case below the axle, a sheave loose upon said shaft, gears connecting the shaft and axle, the gear of the shaft being rigidly attached thereto, a cushioning-spring between the gear and sheave attached at its ends to said gear and sheave, a gear-connected crank-wheel and sheave, and a chain or cable attached at the ends to the sheave, substantially as set forth.

2. The combination of the case, an axle having bearings in the upper end of said case, the gate attached to said axle, a shaft having bearings in the case below the axle, a sheave loose upon said shaft, gears connecting the shaft and axle, the gear of the shaft being rigidly attached thereto, a cushioning-spring between the gear and sheave

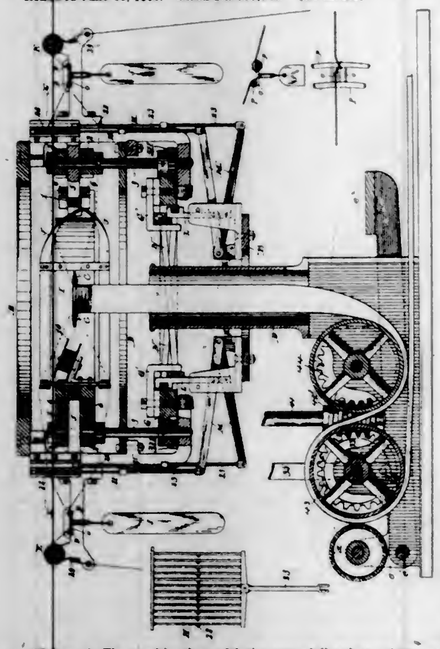
attached at its ends to said gear and sheave, a chain or cable attached to said sheave, and suitable mechanisms for drawing on said cable by hand-power, substantially as set forth.

446,084. METHOD OF JOINING KNIT BELTS. BENJAMIN L. STOWE, Brooklyn, assignor to himself and J. Van D. Reed, New York, N. Y. Filed Apr. 6, 1886. Renewed May 24, 1890. Serial No. 352,997. (No model.)



Claim.—The method of joining two ends or pieces of knitted fabric, consisting in unraveling the two ends, joining them together by longitudinal strands or their specified equivalent, and then restoring the knitting sufficiently to join together the stitches of the two ends and tying together the meeting ends of corresponding threads, substantially as hereinbefore set forth.

446,085. CIRCULAR LOOM, &c. BENJAMIN L. STOWE, Brooklyn, assignor to J. Van D. Reed, New York, N. Y. Filed Nov. 30, 1887. Renewed June 13, 1890. Serial No. 355,346. (No model.)



Claim.—1. The combination, with the warp-delivering and tension mechanism and shed-forming mechanism, of one or more rotary segmental shuttles provided with weft controlling and delivering devices and with forming-packers fixed to the shuttle-bodies, so to be capable of rotary movement only, constructed to entirely encircle the fabric at the weaving-point, except at the warp passage or passages 7, and arranged and operating both to determine the size or diameter of the fabric and to beat up the work, and means for operating the shuttles, as and for the purposes hereinbefore set forth.

2. The combination, with the warp-delivering and tension mechanism and shed-forming mechanism and mechanism for taking up or drawing away the fabric as it is woven, of one or more rotary segmental shuttles provided with weft controlling and delivering devices and with forming-packers fixed to the shuttle-bodies, so as to be capable of rotary movement only, constructed to entirely encircle the fabric at the weaving-point, except at the warp passage or passages 7, and arranged and operating both to determine the size or diameter of the fabric and to beat up the work, and means for operating said shuttles, as and for the purposes hereinbefore set forth.

3. The segmental shuttle-body and means for rotating the same in one plane only, in combination with the separator 13 and the forming-packer C, fixed immovably to said shuttle-body, as and for the purposes hereinbefore set forth.

4. One or more rotating segmental shuttles provided with weft controlling and delivering devices and with forming-packers fixed to the shuttle-bodies, so as to be capable of rotary movement only, constructed to entirely encircle the fabric, except at the warp passage or passages 7, and arranged and operating both to determine the size of the fabric and to beat up the work, and mechanism for operating said shuttles, in combination with warp delivering and tension mechanism, vertically-moving warp-shed harnesses encircling the loom-frame and arranged in sections consisting each of a pair of harnesses, and mechanism arranged and operating to reciprocate each pair alternately in opposite directions at the proper times to form the warp-shed, substantially as and for the purposes hereinbefore set forth.

5. The segmental shuttle-body provided with the grooves 1 and 4 4, in combination with the supporting or guiding arms 5, provided with anti-friction rolls to enter said grooves, substantially as and for the purposes hereinbefore set forth.

6. The segmental shuttle-body provided with grooves 1 and 4 4 and with racks or gear-teeth on the two portions of its external face above and below said groove 1, in combination with the supporting-arms 5, provided with anti-friction rolls to enter said grooves, and the driving-shafts provided each with a pair of pinions 2 to engage said racks, as and for the purposes hereinbefore set forth.

7. The combination, with the shuttle-body, of the tension-disk carried by said shuttle-body, the sliding tension-plate bodily movable to and from said disk and provided with openings through which the weft is threaded, means for supporting and guiding said plate, and a spring whereby the plate is pressed toward or against the disk, substantially as and for the purposes hereinbefore set forth.

8. The combination, with the shuttle-body, of the tension-disk carried thereby, the tension-plate movable to and from said disk and provided with openings through which the weft is threaded, means for supporting and guiding said plate, a spring whereby the plate is pressed toward or against the disk, and tension-pins connected to and moving with the tension-plate, substantially as and for the purposes hereinbefore set forth.

9. The rotating gear-ring and the inner and outer annular harness-operating rails attached to and moving with the same and placed so that they shall be in different planes, except where their paths cross, as described, in combination with harness-operating rods provided with heads to engage said rails, substantially as and for the purposes hereinbefore set forth.

10. The combination of the warp-harnesses, the harness-levers, the rotary gear-ring provided with inner and outer annular harness-operating rails N, and the harness-operating rods L, engaging said rails and connected to the harness-levers, the combination being and acting substantially as hereinbefore set forth.

11. The herein-described warp-tension, consisting of the rods *p p*, cross-pins *o*, and weights *s*, under the arrangement and for operation substantially as hereinbefore set forth.

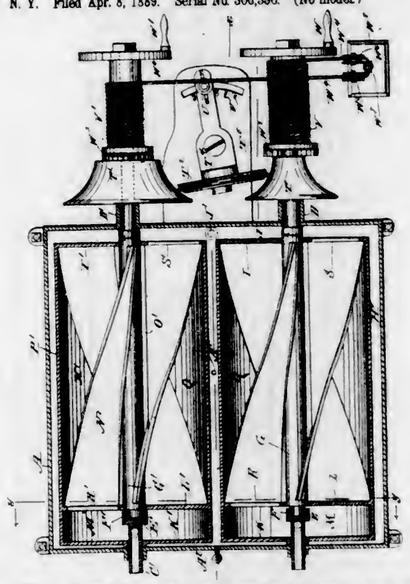
12. The warp delivering and operating mechanism encircling the loom and divided into sections, consisting each of an evener-roll, an individual warp-tension, a pair of harnesses, harness-levers, and harness-operating rods, in combination with the rotating gear-ring provided with inner and outer harness-operating rails common to all the sections, substantially as and for the purposes hereinbefore set forth.

13. The combination of the take-up reel, the ratchet-wheel *i*, fast upon the axle of the wheel, the worm-wheel *j*, loose upon said axle and provided with a pawl to engage the ratchet-wheel, the worm *k'*, the longitudinally-movable worm-shaft *k*, the driving-pulley l^2, loose on said shaft, the disk *n*, and the spring *l*, these parts being constructed and arranged for joint operation as hereinbefore set forth.

14. The measuring device comprising the screw-threaded revolving stem 30, the set-nuts 31 32, the threaded disk 33, provided with crank-handle 34, and the rod 35, engaged by said handle and operated thereby at the time and in the manner substantially as hereinbefore set forth.

15. In combination with the weaving mechanism and the take-up drums, the power-driven rubber-tube delivery-rolls 43 44, arranged over or nearly over the center of the loom above the weaving-point, under the arrangement and for operation substantially as hereinbefore set forth.

446,086. GAS-MIXING MACHINE. JOSIAS TAYLER, New York, N. Y. Filed Apr. 8, 1889. Serial No. 306,330. (No model.)



Claim.—A gas-mixing machine comprising a closed water and mixing chamber having separate gas-inlets and a gas-outlet, separate cylindrical conveyer-drums mounted to revolve in said chamber and adapted to be immersed to their longitudinal axes, said drums being each formed with an end compartment connected with the respective gas-inlet, and a plurality of longitudinal spiral compartments, each having approximately radial openings at each end about one hundred and eighty degrees apart, and means for revolving both drums at a predetermined relative speed, substantially as specified.

446,087. PHOSPHATE AND PROCESS OF MAKING THE SAME. JOSEPH VAN RUYMBEKE, Chicago, Ill., assignor of one-half to William F. Jobbins, same place. Filed Sept. 30, 1889. Serial No. 325,595. (Specimens.)

Claim.—1. The process of making iron and alumina acid phosphate by first treating it with sulphuric acid and then heating it at a temperature of from 400° to 800° Fahrenheit until the acid phosphate contained therein is converted into metaphosphate, usually indicated by the product assuming a gray color, as specified.

2. As a new article of manufacture, an iron and alumina metaphosphate mixed with an iron and alumina sulphate, substantially as specified.

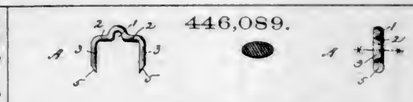
446,088. NITROGENOUS FERTILIZER. JOSEPH VAN RUYMBEKE, Chicago, Ill., assignor to the National Chemical and Fertilizer Company, same place. Filed Oct. 17, 1890. Serial No. 368,374. (No specimens.)

Claim.—A fertilizing material consisting of stick and a soluble salt of iron or alumina made basic by the addition of lime thereto, substantially as and for the purpose set forth.

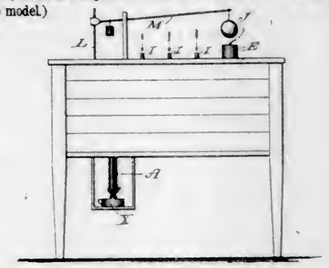
446,089. BUTTON-FASTENER. JOHN H. VINTON, Boston, Mass., assignor to the Heaton-Peninsular Button Fastener Company, of Providence, R. I. Filed Feb. 26, 1890. Serial No. 341,818. (No model.)

Claim.—The button-fastener herein described, made from wire elliptical in cross-section, consisting of the loop 1, bearing-surfaces 2, and prongs 3 3, provided with sheared and rounded ends 5 5, as specified.

446,089.

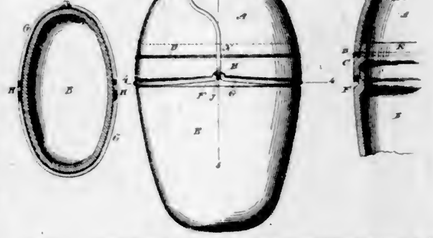


446,090. INCUBATOR. CLAYTON VON CULIN and EVERETT VON CULIN, Delaware City, Del. Filed June 2, 1890. Serial No. 354,070. (No model.)



Claim.—An incubator consisting of a hatching-chamber and a heater, hot-air pipes located at eccentrically-opposite corners of the incubator and having short pipes connecting them with the hatching-chamber, a discharge-pipe to which the said hot-air pipes are connected and having an outlet, a valve controlling said outlet, a thermostat controlling said valve, located on a level with the eggs in the hatching chamber, and small tubes connecting the hatching-chamber with the outer air, all substantially as and for the purpose set forth.

446,091. NURSING-BOTTLE. CLYDE C. BALSTON and JOSEPH W. ROSE, Brooklyn, N. Y., assignors to the Health Nursing Bottle Company, same place. Filed June 20, 1890. Serial No. 356,111. (No model.)



Claim.—1. The bottle consisting of the separable sections A B, united on a transverse line, the section A having the neck M, combined with the wire band passing around one of the sections and forming loops H, the clamp I, hinged at its lower end to said loops and having at its upper portion the loop L, passing around the neck M of the bottle and having a bearing upon the upper section thereof at the base of said neck, substantially as set forth.

2. The bottle consisting of the separable sections A B, the former being provided with the neck M, combined with the wire clamping device consisting of the two arms hinged at their lower end to the section B, and connected at their upper portion by the loop L, passing around the neck of the bottle and bearing upon the upper surface thereof at the base of said neck, substantially as and for the purposes set forth.

3. The bottle consisting of the separable sections united on a transverse line, the lower section being provided with the continuous groove F, combined with the band of wire G, fitting within said groove, and the wire clamp I, hinged to said band G at opposite sides of the bottle and thence extending upward first to one side of the vertical center of the bottle and then to the opposite side of said center, where the thumb-pieces K are provided, said thumb-pieces being connected by the loop L, passing around the neck of the bottle, substantially as set forth.

4. The bottle consisting of the separable sections A B, united on a transverse line, the section B being provided with the continuous groove F, which is wider at opposite sides of the bottle, combined with the band of wire G, secured within said groove and adapted to be allowed a movement within the wider parts thereof at opposite sides

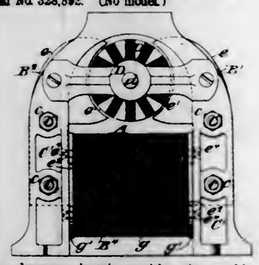
of the bottle, and the clamping device I, hinged to said band of wire G at opposite sides of the bottle and consisting of the arms N O, thumb-pieces K, and connecting-loop L, substantially as set forth.

5. The bottle consisting of the separable sections A B, united on a transverse line, the section B having the continuous groove F, combined with the band of wire G, secured within said groove and provided with the bearings H, and the clamping device I, consisting of the arms N O, having hooks J at their lower ends to engage said bearings and being provided at their upper portion with the connecting-loop L, passing around the neck of the bottle, substantially as set forth.

6. The bottle consisting of the separable sections A B, united on a transverse line and provided with the packing D at their point of union, combined with the clamping device I, hinged to the lower section and consisting of the arms N O, the thumb-pieces K, and connecting-loop L, the said clamping device being adapted to be moved upon and close around the neck of the upper section of the bottle, substantially as set forth.

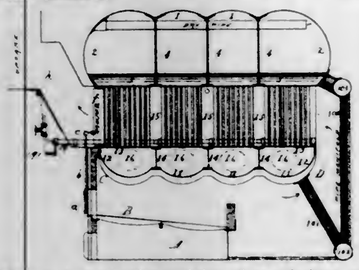
7. The bottle consisting of the separable sections united on a transverse line and provided with the packing at their point of union, said bottle being elliptical in cross-section, combined with the clamping device I, hinged at opposite sides of the lower section and consisting of the upwardly-extending arms N O and connecting-loop L, the upper portion of the arms N O, with the loop L, having a bearing upon the upper section A of the bottle at the base of its neck M, substantially as set forth.

446,092. DYNAMO-ELECTRIC MACHINE AND ELECTRIC MOTOR. EDWARD K. BROWN, Brooklyn, N. Y., assignor, by direct and mesne assignments, to himself and George Phillips, same place. Filed Nov. 1, 1889. Serial No. 328,892. (No model.)



Claim.—In a dynamo-electric machine, the combination of a coil and two similar sections composed of lamine of substantially the same form, each of which sections constitutes a pole-piece and part of a core, the parts of the two sections constituting the core being received within the opposite ends of the coil, substantially as set forth.

446,093. STEAM-BOILER. NATHAN B. CLARK, Washington, D. C., and FRANK B. KIPP, Baltimore, Md. Filed Dec. 6, 1888. Serial No. 292,853. (No model.)



Claim.—1. A steam-boiler consisting of an arched top member and an arched bottom member connected by a water-trunk and having ties connecting the top plate and bottom plate passing through said trunk.

2. A steam-boiler consisting of a top member and bottom member and a central water-trunk of less width extending lengthwise of the boiler, whereby chambers for water-tubes are supplied at each side of the central trunk.

3. The combination, in a steam-boiler, of a top member and a bottom member, a water-trunk extending lengthwise of the boiler and of less width than the top and bottom members, water-tubes connecting the members at each side of said trunk, and inclosing-plates at the sides of the water-tube chamber, substantially as described.

4. In a steam-boiler of the character described, a top member having inclined bottom plates, a bottom member, and a connecting water-trunk of less width than said members extending lengthwise of the boiler, all in combination, substantially as described.

5. In a steam-boiler, the top member, the water trunk of less width connected centrally thereto and extending lengthwise of the boiler, and the bottom member composed of arches inclined toward the center, so that the greatest depression is under said water-trunk, substantially as described.

6. In a steam-boiler of the character described, a top member composed of arches, as described, a water-trunk of less width connected thereto, and a bottom member composed of connected arches extending transversely of the boiler, said bottom arches having manholes outside the casing, substantially as described.

7. In combination with the plates forming the shell of a boiler member, a pair of tie-plates secured at opposite sides and extending in different directions along the shell, said plates having proximate surfaces secured together, substantially as described.

8. In a steam-boiler of the character described, the combination, with the top plate 1, of an angle-plate having its base secured to said plate, and the plate 3, having an angle-plate secured thereto with its base at about a right angle with the first-mentioned angle-plate, the two plates extending into proximity and secured together, substantially as described.

9. In a steam-boiler, the combination of the arched plates constituting the shell and tie-plates connecting the same, said tie-plates being braced and strengthened by angle-irons, substantially as shown and described.

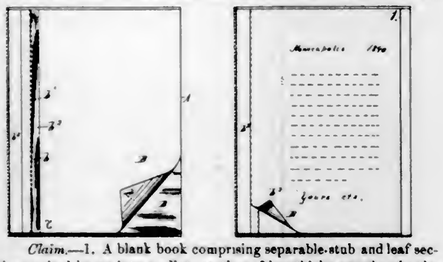
10. In combination with the water-tubes of a boiler, a movable steam-pipe in proximity to said tubes and a perforated branch pipe connected to said movable pipe, substantially as described.

446,094. WEFT-FORK FOR LOOMS. PHILLIPP EISLING, Norwich, Conn. Filed Nov. 18, 1889. Serial No. 330,641. (No model.)



Claim.—A filling-fork of the class referred to having the body portion provided with a rib extending along its top and a grooved weight adjustable thereon, as set forth, and means for clamping said weight in desired position.

446,095. BLANK BOOK FOR TYPE-WRITERS. JAMES H. FITZGERALD, Langford, S. D., assignor of one-fourth to James Barron, Minneapolis, Minn. Filed Mar. 4, 1890. Serial No. 342,592. (No model.)



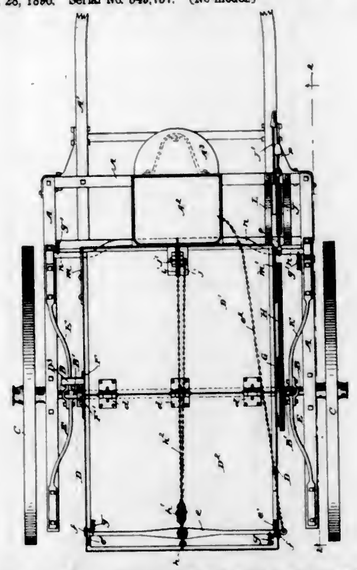
Claim.—1. A blank book comprising separable-stub and leaf sections united by an intermediate section of less thickness, whereby the leaf may be separated from the stub by dividing the reduced section and be reattached by overlapping the reduced margins to form a continuous leaf of uniform size.

2. A blank book comprising separable stub and leaf sections united by an intermediate section of less thickness, perforated on its center line and provided with a layer of adhesive material on one side of the perforated line, substantially as and for the purpose specified.

3. A blank book for type-writers, consisting of a series of leaves or pages, each reduced in thickness near its inner edge and having a layer of gum adjacent to its reduced portion, substantially as and for the purpose set forth.

4. A blank book for type-writers, having a portion reduced in thickness adjacent to its stub and provided with a line of perforations and with a gummed edge adjacent to said line, substantially as set forth.

446,096. DUMPING-CART. TIMOTHY FLANIGAN, Chicago, Ill. Filed Apr. 28, 1890. Serial No. 349,737. (No model.)



Claim.—1. The combination, with the frame A, of the crank-axles B, clamps or boxes securing the sides of the frame to the lower axle-cranks and provided with arms a', longitudinally-extending braces E', secured to the lower faces of the sides of the frame and connected between their ends with arms a', the upper braces E, secured at their ends to the sides of the frame and clamped between their ends to the vertical members of said cranks, and the cart-body mounted on the inwardly-projecting upper cranks B', substantially as set forth.

2. The combination of the wheeled frame having the driver's seat at its front end and the closed dumping-body mounted on the frame in rear of the seat and provided with a door, a locking mechanism therefor, and a connection leading from said lock to the driver's seat, substantially as set forth.

3. The combination, with the wheeled frame having a driver's seat at its forward end and a dumping-body in rear thereof, of gearing for rotating the body on its axis, and a lever mounted adjacent to the driver's seat for operating said gearing to dump the body, substantially as set forth.

4. The combination, with the wheeled frame having the driver's seat on its frout end and a closed dumping-body in rear thereof provided with a hinged cover and locking device therefor, of gearing for dumping the body, provided with an operating-lever extending up alongside of the driver's seat, and means for releasing and raising the cover from the driver's seat, substantially as set forth.

5. The combination, with the wheeled frame, the driver's seat at the front end, the closed dumping-body having a vertically-swinging cover D^3, opposite catches f f, and a spring-actuated centrally-pivoted locking-bar engaging said catches, of a flexible connection leading from said bar to the forward end of the frame in reach of the driver, the chain for operating the said cover from the driver's seat, and guide-pulleys therefor, substantially as set forth.

6. The combination, with the wheeled frame having a driver's seat at its forward end and a dumping-body in rear thereof, of a locking-bar securing the body at its forward end to the frame to prevent it from dumping, a treadle pivoted in reach of the driver's foot, and a connection between said treadle and the locking-bar, substantially as set forth.

7. The combination, with the cart-body having opposite side openings, of the separable flanges, recessed on their inner faces, provided with packing k, and entering the said opposite openings to receive the axles and form a tight joint, substantially as set forth.

8. The combination of a cart-body having opposite side openings, a two-part sprocket-wheel bolted to one side of the body and having flanges G' on its two parts entering one of said openings and provided with a packing k, and a two-part plate F, bolted to the opposite side of the cart and having flanges F' entering the opening therein and provided with a packing k, the said flanges F' G' forming bearings for the axles supporting the said body, substantially as set forth.

9. The combination, with the body D, pivoted upon the axle B, as shown, of means, as sprocket-wheel G, chain H, sprocket-wheel J, and lever J', for operating said body, substantially as described.

10. The combination, with the sprocket-wheel J, mounted in a suitable supporting-frame and connected with the body D, as shown, of the cover L, having perforations therein, and means, as pins l', for fixing the position of the sprocket-wheel, substantially as shown and described.

446,097. PIANO-DAMPER. JOHN W. GRANGER, New York, N. Y. Filed Sept. 5, 1890. Serial No. 364,026. (No model.)



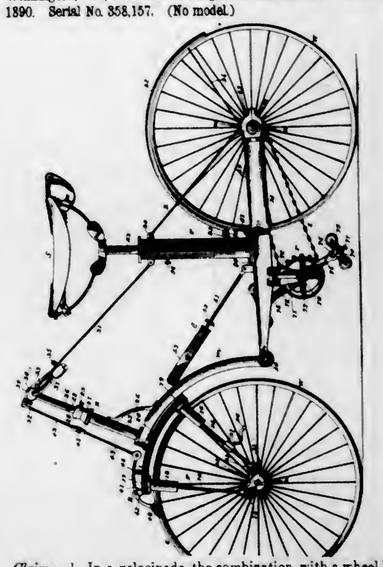
Claim.—1. A piano-damper having a mortised block a and a divided stud c engaging such block, substantially as specified.

2. The combination of head a' and mortised block a with divided stud c, engaging said block, and with a set-screw e within the stud, substantially as specified.

3. The combination of head a' and mortised block a with divided stud c, having perforation c^3, and with set-screw e, substantially as specified.

4. The combination of head a' and mortised block a with divided stud c, having a pair of corrugated shanks c' and perforation c^3, and with set-screw e, substantially as specified.

446,098. BICYCLE. WILLIAM E. HIBBERT and ALFRED MANUEL, Wilmington, Del.; said Manuel assignor to said Hibbert. Filed July 9, 1890. Serial No. 358,157. (No model.)



Claim.—1. In a velocipede, the combination, with a wheel having lugs on its hub, of a sprocket-wheel fitting said hub and having notches engagiug said lugs, an endless chain passing over said sprocket-wheel, and propelling devices for driving said chain, substantially as described.

2. In a velocipede, the combination, with a wheel and a shaft therethrough, of plates having holes passing over the ends of said shaft, wedge-shaped pins inserted through said shaft outside said plates, and rods pivoted to the ends of each plate and connected to the frame of the velocipede, substantially as described.

3. In a velocipede, the combination, with the frame, a head turning therein, and a curved arm centrally connected to said head, of cross-bars attached to the ends of said arm and extending to each side thereof, sockets carried at the ends of said bars and having reduced lower ends, headed rods inserted in said sockets and connected at their lower ends with the bearings of the steering-wheel, and expansion-springs within said sockets between the heads of said rods and the closed upper ends of the sockets, substantially as described.

4. In a velocipede, the combination, with the frame, a head turniug therein, and a curved arm centrally connected to said head, of cross-bars attached to the ends of said arm, extending to each side thereof, and having threaded holes in their ends, sockets having re-

duced, closed, and threaded upper ends, seated in the holes in said bars, and also having reduced lower ends, rods having headed upper ends seated in said sockets, expansion-springs within said sockets between their closed upper ends and the heads on said rods, and plates on each side of the steering-wheel, to whose ends the lower ends of said rods are pivotally connected and to whose center the bearing of said wheel is attached, substantially as described.

5. In a velocipede, the combination, with the steering-wheel, the front fork carrying the same and having an upward extension provided with a joint below the handle-bar, and the frame within which said extension is pivoted, of a joint in the frame dividing it into front and rear members, and a rod connecting the upper end of said extension with the rear member of the frame, the whole operating substantially as described.

6. In a velocipede, the combination, with the handle-bar, the head, the front fork, and the steering-wheel, of the brake-lever located above said handle-bar and centrally pivoted thereto and the brake connected to said lever and adapted to be applied thereby to said steering-wheel, substantially as described.

7. In a velocipede, the combination, with the steering-wheel, the fork carrying the same, comprising a curved arm over said wheel and rods connecting its ends with the bearings of the wheel, the head rising from the center of said curved arm, and the handle-bar carried by said head, of a brake-arm centrally pivoted to the front end of said curved arm and having a brake-shoe at its front end, a spring between its rear end and said curved arm, a brake-lever pivoted to said handle-bar, and connections between said lever and brake-arm, the whole operating substantially as described.

8. In a Safety bicycle, the combination, with the front and rear wheels and the frame connecting them, said frame comprising a front and rear member pivotally connected, of a spring-connection between said members above their pivot, the same comprising a rod pivoted to one member and having its other end reduced, a tube pivoted to the other member, into which said reduced end extends, an expansive spring between the inner end of said tube and the shoulder on said rod, and nuts on said rod limiting its movement in both directions, substantially as described.

9. The herein-described spring-connection, the same comprising a rod having a reduced and threaded end, a tube having a reduced and shouldered interior, into the larger end of which tube said rod projects, an expansion-spring surrounding said rod between the shoulder thereon and that within the tube, a nut on said reduced end of the rod above the shoulder in the tube, and an expansive spring between said nut and the smaller end of the tube, as and for the purpose set forth.

10. In a Safety bicycle, the combination, with the front and rear wheels and the frame connecting them, said frame comprising a front and rear member pivotally connected, of a rod pivoted to said rear member and having a reduced upper end provided with threads, an open-top tube pivoted to said front member and having a reduced and shouldered interior, into the larger end of which tube said rod projects, an expansive spring surrounding said rod between the shoulder thereon and that within the tube, a nut on said reduced end of the rod above the shoulder in the tube, an expansive spring between said nut and the upper end of the tube, and a binding-nut on the body of the rod below the lower end of the tube, the whole adapted for use substantially as described.

11. In a Safety bicycle, the combination, with the front and rear wheels and the frame connecting them, said frame comprising a front and rear member pivotally connected, of the herein-described spring-connection, the same comprising a rod having a reduced and threaded end, a tube having a reduced and shouldered interior, into the larger end of which tube said rod projects, an expansive spring surrounding said rod between the shoulder thereon and that within the tube, a nut on said reduced end of the rod above the shoulder in the tube, an expansive spring between said nut and the smaller end of the tube, and rubber washers next each end of both springs, as and for the purpose set forth.

12. In a velocipede, the combination, with the bifurcated frame, the ends of whose arms carry split boxes, and set-screws for drawing said split boxes together, of split bearings within said boxes, screws holding said bearings therein, a shaft journaled in said bearings, and a wheel on said shaft, substantially as described.

13. The herein-described journal-box, the same comprising a shaft carrying a wheel and having reduced threaded ends, washers on said ends, cup-shaped rubber sand-bands over said washers also on said ends, nuts screwed onto and projecting beyond said ends, and plugs screwed into the open outer ends of the nuts, substantially as described.

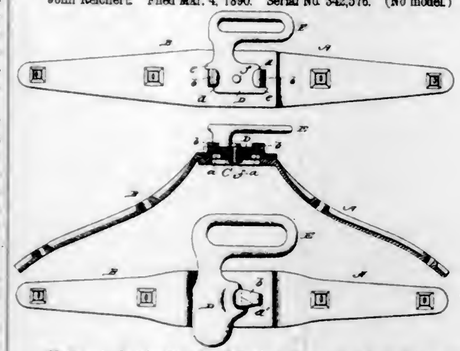
14. The herein-described velocipede-crank having a transverse slot near its outer end, a pedal-pin secured within said slot, and a screw passing into the end of the crank and impinging against said pin, as and for the purpose set forth.

15. In a velocipede, the combination, with the frame, of a tube secured to and rising therefrom, said tube having a slot in its rear side, a rod sliding within said tube and having depressions in its rear side, a collar on said rod, a set-screw in said collar whose point takes into said depressions and whose head extends through said slot, a coiled spring within the tube around said rod between the lower end of the tube and the lower side of the collar, and a seat carried on the upper end of said rod, all substantially as described.

16. In a Safety bicycle, the combination, with the frame, the seat-tube mounted thereon, a spring within said tube, and a collar carried by the upper end of said spring and also within said tube, of a rod moving within said spring and extending from the upper end of said seat-tube, a seat on said rod, and means for adjusting said collar on the rod, substantially as described.

17. In a Safety bicycle, the combination, with the front fork composed of diverging rods at each side of the wheel connecting its bearings with a curved arm carried by the head, of foot-rests adjustably mounted on the rearmost of said rods and set-screws therein impinging against the rods, as and for the purpose hereinbefore set forth.

446,099. **HORSE-COLLAR FASTENING.** BERNT M. JOHNSON and JOHN REICHERT, Racine, Wis., said Bernt M. Johnson assignor to said John Reichert. Filed Mar. 4, 1890. Serial No. 342,576. (No model.)

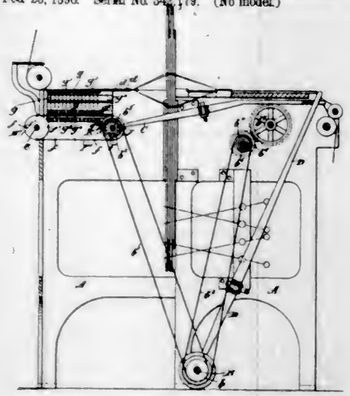


Claim.—1. In a horse-collar fastening, the combination of the two sections having the overlapping portions, one of said sections having slots and the other section having hooks adapted to enter said slots, and a locking-plate pivoted between the slots and adapted to engage both hooks and secure the sections together, substantially as specified.

2. In a horse-collar fastening, the combination of the two sections adapted to overlap each other, the under section carrying a hook, the upper section provided with a slot to receive said hook, and the locking-plate D, pivoted on the upper section and adapted to engage the hook protruding from the slot, substantially as specified.

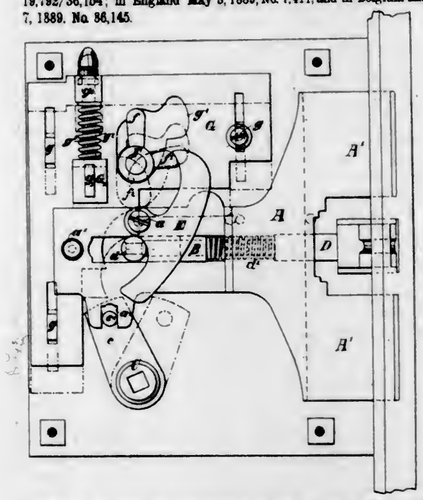
3. The combination of the two sections, one of which is provided with the two slots, and the bearing between the same and the other section having the two hooks to enter said slot, and the locking-plate pivoted on said bearing and having engaging portions *o*, stop-shoulders *e*, and the loop E, substantially as specified.

446,100. **WARP STOP-MOTION FOR LOOMS.** CHARLES I. KANE, New York, N. Y., assignor to Alonzo L. Kane, Milwaukee, Wis. Filed Feb. 28, 1890. Serial No. 342,179. (No model.)



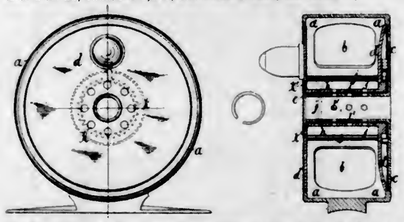
Claim.—In a stop-motion, the combination of the shaft b^8, pulley b^9, having a clutch member b^2 loose on the shaft, and a member b^{10}, having a sliding connection with the shaft, the wheels E E', chains F F', provided with the cross bars or slats *f*, guides g^3 g^4, wires *g*, and levers C D, substantially as specified.

446,101. **LOCK.** HEINRICH LUDWIG, Schweinfurt, Germany. Filed Jan. 15, 1890. Serial No. 336,992. (No model.) Patented in Germany Dec. 15, 1888, No. 48,201; in Austria-Hungary Apr. 15, 1889, No. 19,792/36,154; in England May 3, 1889, No. 7,411, and in Belgium May 7, 1889, No. 86,145.



Claim.—In a lock, the combination of the rocking pin F, provided with two wards *f* and *f'*, the tumbler consisting of a bed-plate *g* and the stop-bolt G', the double-arm lever E, acting upon the arm *d* of the latch D, the bolt A, provided with the bifurcated heads A' and A^2, the hub C, the spiral spring g^2, pressing down the stop-bolt G', the spiral spring *d'*, resting upon a projection of the latch D, and the pin a', entering by the pressure of a spring a^4 the cavity a^3, as described.

446,102. **FISHING-REEL.** JOHN B. MOSCROP, Urmston, England. Filed Oct. 29, 1889. Serial No. 328,553. (No model.) Patented in England Feb. 29, 1888, No. 2,900, and June 4, 1888, No. 8,122.



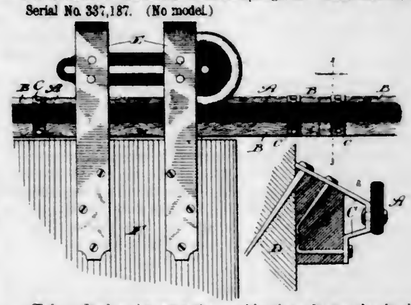
Claim.—1. In a fishing-reel, the combination, with the frame provided with an open side and a tubular axis projecting from its closed side, of the reel provided with a hub journaled upon the said axis, the flanges at each end of the hub, a series of bars for the line to be wound on supported between the said flanges, and air-holes communicating with the air-space between the said bars and the reel-hub for ventilating the coiled line, substantially as shown and described.

2. The combination, with the frame provided with a central axis and a groove around the said axis, of a reel provided with a hub having an internal groove arranged opposite to the said groove in the axis, and a spring-ring inserted in the said meeting grooves, substantially as and for the purpose set forth.

3. The combination, with the frame provided with a tubular axis, of a reel journaled on said axis, the friction-disks bearing against the frame and the reel, respectively, and a spring inside the said axis for coupling said disks, substantially as and for the purpose set forth.

4. The combination, with the frame provided with a tubular axis, of a reel journaled on said axis, the friction-disk *j*, secured to the end of the axis and bearing against the flange of the reel, the spring bearing one end engaging with spiral grooves formed in a projection on disk *j*, the nut *p*, having spiral grooves engaging with the other end of said spring, and the revoluble friction-disk *k*, bearing against the frame and provided with a screw for engaging with said nut and adjusting the tension of the spring, substantially as and for the purpose set forth.

446,103. **TRACK FOR DOOR-HANGERS.** ALFRED L. SCRANTON and ALFRED H. SCRANTON, Western Springs, Ill. Filed Jan. 17, 1890. Serial No. 337,187. (No model.)



Claim.—In door-hangers, the combination of a wooden back extending out beyond the plane of its support, whereby its lower edge may in use overhang and protect the top of the door, a door-hanger track having the plane of its lower edge higher than the plane of the lower edge of the wooden back and the top of the door, whereby a horizontal space may in use be interposed between the top of the door and the lower edge of the hanger-track, and brackets between the wooden back and the hanger-track, supporting the track and holding it out from the back to afford a vertical space between them, whereby dirt or snow falling into the vertical space between the track and the back may pass out through the horizontal space between the lower edge of the track and the top of the door, substantially as described.

446,104. **ELECTRODE FOR SECONDARY BATTERIES.** MARMADUKE M. M. SLATTERY, Fort Wayne, Ind., assignor to the Fort Wayne Electric Light Company, same place. Filed Apr. 6, 1889. Serial No. 306,247. (No model.)

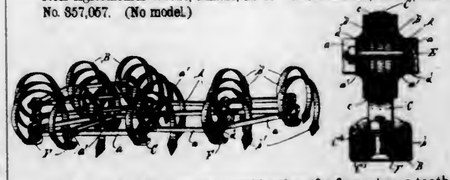
Claim.—1. An electrode for secondary batteries formed of finely-divided pure copper compressed into a coherent mass.

2. In combination with one electrode and an alkaline solution in a secondary cell, a second electrode formed of compressed finely-divided electrically-reduced pure copper.

3. An electrode for secondary batteries composed of pure copper powder compressed into desired form.

4. In a secondary battery, a porous copper electrode consisting of fine copper powder strongly compressed into a coherent body, an alkaline solution, and another electrode of zinc, iron, or other metal.

446,105. **HARROW.** MARQUIS J. TODD, Corning, assignor to the Pitts Agricultural Works, Buffalo, N. Y. Filed June 28, 1890. Serial No. 357,067. (No model.)



Claim.—1. In a harrow, the combination of a frame-bar, a tooth-support having one extremity pivotally supported on said frame-bar and the other extremity extended downwardly beneath the frame-bar and adapted to rest upon the ground for forming a support for the frame, and a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support and the other extremity bent upwardly and then downwardly beneath the lower extremity of said support, whereby the depth of cut is regulated, substantially as and for the purpose specified.

2. In a harrow, the combination of a frame composed of zigzag frame-bars, a tooth-support having one extremity pivotally supported between contiguous angles of adjoining frame-bars and the other extremity extended downwardly beneath the frame-bars and adapted to rest upon the ground for forming a support for the frame, and a spring-tooth formed of greater width than the upper extremity of said tooth-

support, and having one extremity secured to said downwardly-extending extremity of the tooth-support and the other extremity bent upwardly and then downwardly beneath the lower extremity of said support, whereby the depth of cut is regulated, substantially as described and shown.

3. In a harrow, the combination of a frame-bar, a tooth-support having one extremity pivotally supported on said frame-bar and the other extremity extended downwardly beneath the frame-bar and adapted to rest upon the ground for forming a support for the frame, a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support, and a clip-plate beneath said extremity of the tooth for preventing wear thereupon, substantially as specified.

4. In a harrow, the combination of a frame composed of zigzag frame-bars, a tooth-support having one extremity pivotally supported between contiguous angles of adjoining frame-bars and the other extremity extended downwardly beneath the frame-bars and adapted to rest upon the ground for forming a support for the frame, a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support and the other extremity bent upwardly and then downwardly beneath the lower extremity of said support, whereby the depth of cut is regulated, and a clip-plate beneath said former extremity of the tooth, substantially as and for the purpose described.

5. In a harrow, the combination of a frame-bar, a pair of clip-plates having one face supported on said bar, a tooth-support having one extremity supported on the opposite face of said clip-plate and having its opposite extremity extending downwardly beneath said frame-bar and adapted to rest upon the ground for forming a support for the frame, and a spring harrow-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support and the other extremity bent upwardly and then downwardly beneath the lower extremity of said support, whereby the depth of cut is regulated, substantially as and for the purpose specified.

6. In a harrow, the combination of a frame-bar, a pair of clip-plates having one face supported on said bar, a tooth-support having one extremity supported on the opposite face of said clip-plate and having its opposite extremity extending downwardly beneath said frame-bar and adapted to rest upon the ground for forming a support for the frame, a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support, and a clip-plate beneath said extremity of the tooth for preventing wear thereupon, substantially as set forth.

7. In a harrow, the combination of a frame-bar composed of zigzag frame-bars, clip-plates between the contiguous angles of adjoining frame-bars and supported thereon, a tooth-support having one extremity pivotally supported by said clip-plates and the other extremity extended downwardly beneath the frame-bars and adapted to rest upon the ground for forming a support for the frame, and a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support and the other extremity bent upwardly and then downwardly beneath the lower extremity of said support, whereby the depth of cut is regulated, substantially as described.

8. In a harrow, the combination of a frame-bar composed of zigzag frame-bars, clip-plates between the contiguous angles of adjoining frame-bars and supported thereon, a tooth-support having one extremity pivotally supported by said clip-plates and the other extremity extended downwardly beneath the frame-bars and adapted to rest upon the ground for forming a support for the frame, a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support, and a clip-plate beneath said extremity of the tooth, substantially as specified.

9. In a harrow, the combination of a frame-bar, a pair of clip-plates having one face secured to said frame-bar, an annular bearing upon the other face of said clip-plate, a tooth-support having one extremity provided with an annular bearing for engaging the annular bearing of the clip-plate and having its opposite extremity extended downwardly beneath the frame-bar and adapted to rest upon the ground for forming a support for the frame, a bolt for securing said tooth-support to said clip-plate, and a spring-tooth secured to the lower extremity of said tooth-support, substantially as described.

10. In a harrow, the combination of a frame-bar, a tooth-support having one extremity pivoted on said frame-bar and the other extended beneath the frame-bar and formed with a lower engaging-face disposed in a curved plane, and a tooth having one extremity secured to said face and the other bent upwardly and then downwardly beneath said face, substantially as described.

11. In a harrow, the combination of a frame-bar, a tooth-support having one extremity pivotally supported on said frame-bar and the other extremity extended downwardly beneath the same for forming a support for the frame, a lower engaging-face on said projecting extremity of the tooth-support, a tooth having one extremity secured to said lower engaging-face and the other bent downwardly beneath the same, and a clip-plate secured beneath the former extremity of the tooth and formed with its lower face disposed in a curved plane, substantially as specified.

12. In a harrow, the combination of a frame-bar, a tooth-support having one extremity pivotally supported on said frame-bar and the other extremity extended downwardly beneath the same for forming a support for the frame, a lower engaging-face on the lower extremity of the tooth-support, an opening in the tooth-support above said face, a tooth mounted upon the engaging-face, and a clamp for securing said tooth to the support, said clamp having its upper extremity mounted in said opening in the tooth-support, substantially as set forth.

13. In a harrow, the combination of a frame-bar, a pair of clip-plates supported on the frame-bar, an annular tongue provided upon the adjacent face of one of said plates, a tooth-support having an annular ring for engaging said tongue, a bolt for securing together said tooth-support and plates, and a spring-tooth secured to said tooth-support, substantially as described.

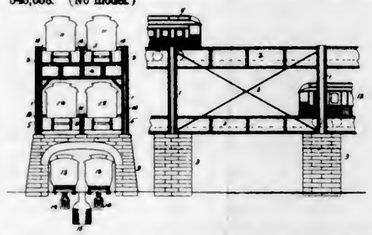
14. In a harrow, the combination of zigzag frame-bars, clip-plates between the contiguous angles of adjoining frame-bars and secured thereto, an annular tongue provided upon the adjacent faces of said plates, a tooth-support having an annular ring for engaging said tongues, a bolt for securing said tooth-support to said plates, and a spring-tooth secured to said tooth-support, substantially as specified.

15. In a harrow, the combination of zigzag frame-bars, clip-plates between the contiguous angles of adjoining frame-bars, annular bearings provided on the adjacent faces of said clip-plates, a tooth-support having one extremity provided with an annular bearing for engaging the bearings upon the clip-plate, and having its opposite extremity extended downwardly beneath said frame-bars, a bolt for securing said tooth-support to said plate, and a spring-tooth secured to the lower extremity of said tooth-support, substantially as set forth.

16. In a harrow, the combination of zigzag frame-bars, clip-plates between the contiguous angles of adjoining frame-bars, annular bearings provided on the adjacent faces of said clip-plates, a tooth-support having one extremity provided with an annular bearing for engaging the bearings upon the clip-plate, and having its opposite extremity extended downward beneath said frame-bars, a bolt for securing said tooth-support to said plate, a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support, and a clip-plate beneath said extremity of the tooth, substantially as and for the purpose described.

17. In a harrow, the combination of zigzag frame-bars, clip-plates between the contiguous angles of adjoining frame-bars, annular bearings provided on the adjacent faces of said clip-plates, a tooth-support having one extremity provided with an annular bearing for engaging the bearings upon the clip-plates, and having its opposite extremity extended downwardly beneath said frame-bars, a bolt for securing said tooth-support to said plates, a shoulder provided on the lower extremity of said tooth-support, a spring-tooth having one extremity secured to said downwardly-extending extremity of the tooth-support, a clip-plate beneath said tooth, and a shoulder on said clip-plate for engaging the shoulder of the tooth-support and preventing end motion of said clip-plate, substantially as and for the purpose set forth.

446,106. RAILWAY. EDWARD WEGMANN, Jr., New York, N. Y., and CHARLES J. BATES, Englewood, N. J. Filed Mar. 7, 1890. Serial No. 343,088. (No model.)

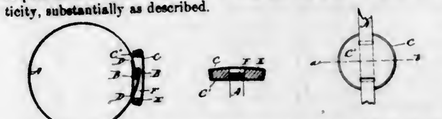


Claim.—1. A railway-line provided with guard-beams at about the level of the car-sills to prevent derailment and upsetting of the cars.

2. The combination, substantially as set forth, of the posts 1, the girders 2 and 3, the girders 5 and 6, and guard-beams 16.

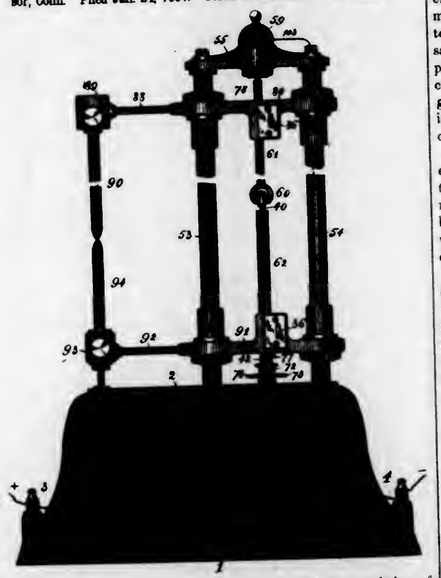
446,107. CAR-SEAL. CLARENCE L. WHEELER, Marion, Ind., assignor of one-half to Jay Willard Clark, same place. Filed June 2, 1890. Serial No. 353,975. (No model.)

Claim.—1. In a car-seal, the combination, with a strap provided at each end with an elastic metallic hook, of a disk or button composed of two cups secured together so as to leave a space between them, one of said cups constructed with two slots through which the respective hooks of the strap may be introduced, and with a recess between the cups in line with said slots and in width corresponding substantially to the width of said slots, the said hooks being adapted to pass each other within the said recess and engaged by their elasticity, substantially as described.



2. In a car-seal, the combination, with a strap provided at each end with an elastic metallic hook, of a disk or button composed of two cups secured together, and a recessed filling located within the said button or disk, one cup of which is provided with two slots in line with said recess and through which the respective hooks of the strap may be introduced and slid past each other, after which they expand and lock, substantially as described.

446,108. ELECTRIC-ARC LAMP. RICHARD H. MATHER, Windsor, Conn. Filed Jan. 24, 1887. Serial No. 225,288. (No model.)



Claim.—1. In an electric-arc lamp, a rotary sleeve consisting of two parts which are provided with radiating pins or arms and are united by a joint allowing independent rotation of said parts, in combination with a locking-sleeve which surrounds said rotary sleeve and is adapted to engage said pins, substantially as and for the purpose specified.

2. In an electric-arc lamp, a rotary feeding-rod and a surrounding sleeve consisting of two parts which are united by a joint allowing independent rotation of said parts, in combination with mechanism for locking said parts together, substantially as and for the purpose specified.

3. In an electric-arc lamp, a rotary feeding-rod, a surrounding sleeve consisting of two parts which are susceptible of independent rotation, and mechanism for locking said parts together, in combination with carbon-carrying mechanism which is adapted to engage said rod and sleeve, substantially as and for the purpose specified.

4. In an electric-arc lamp, a feeding-rod, a surrounding sleeve composed of two independently-rotatable parts, one of which is fastened to said rod, mechanism for locking said parts together, and an electric motor which is adapted to rotate said rod and sleeve, in combination with carbon-carriers which engage the same, substantially as and for the purpose specified.

5. In an electric-arc lamp, a rotary feeding-rod which is provided with a screw-thread, a surrounding sleeve consisting of two independently-rotatable parts, one of said parts being provided with a screw-thread and the other of said parts being fastened to said rod, mechanism for locking said parts together, an electric motor, and a worm and worm-wheel, whereby said motor engages said sleeve, in combination with carbon-carriers engaging said rod and sleeve by means of said threads, substantially as and for the purpose specified.

6. In an electric-arc lamp, two carbon-carrying slides, an electric motor which is provided with a worm, a feeding-rod which is provided with a screw-thread, engaging one of said slides, and a sleeve which is located upon said feeding-rod and is provided with a worm-wheel engaging said worm and with a screw-thread engaging the other of said slides, in combination with an electro-magnet and intermediate lifting mechanism between said electro-magnet and said feeding-rod, substantially as and for the purpose specified.

7. In an electric-arc lamp, two movable carbon-carriers, a reversible electric motor having two field-magnet helices, an electric switch having one of its points connected to the field-magnet circuit on one side of said helices and having a second point connected to said circuit on the other side of said helices, and a connection from said switch to said circuit at a point between said helices, said connection containing the armature of said motor, in combination with an electro-magnet actuating said switch and intermediate driving mechanism between the armature-shaft of said motor and said carriers, substantially as and for the purpose specified.

8. In an electric-arc lamp, two carbon-carrying slides, a reversible electric motor, a feeding-rod which engages one of said slides by means of a screw-thread, a feeding-rod sleeve which engages said motor by means of a worm and worm-wheel and engages the other of said slides by means of a screw-thread, in combination with a three-point pole-changer having two helices which are located in shunt-circuits about the carbons of said lamp and an electro-magnet which engages said feeding-rod by means of intermediate lifting mechanism and is provided with circuit-breaking mechanism which is applied to one of said shunt-circuits, substantially as and for the purpose specified.

9. In an electric-arc lamp, two carbon-carrying slides, a reversible electric motor, intermediate converting mechanism whereby said motor engages said slides, a three-point pole-changer controlling said motor and having two helices located in shunt-circuits about the carbons of said lamp, in combination with a lifting-magnet which is provided with a circuit-breaking mechanism applied to one of said shunt-circuits, substantially as and for the purpose specified.

10. In an electric-arc lamp, two carbon-carrying slides, an electric motor which is provided with a worm, a feeding-rod which is provided with a screw-thread engaging one of said slides, and a feeding-rod sleeve which is provided with a worm-wheel engaging said worm and with a screw-thread engaging the other of said slides, in combination with an electro-magnet which is provided with lifting mechanism and with circuit-breaking mechanism, substantially as and for the purpose specified.

11. Upon the feeding-rod of a focusing electric-arc lamp, a sleeve formed of two independently-rotatable parts which are provided with pins radiating therefrom, in combination with a locking-sleeve which is provided with slots for the accommodation of said pins, substantially as and for the purpose specified.

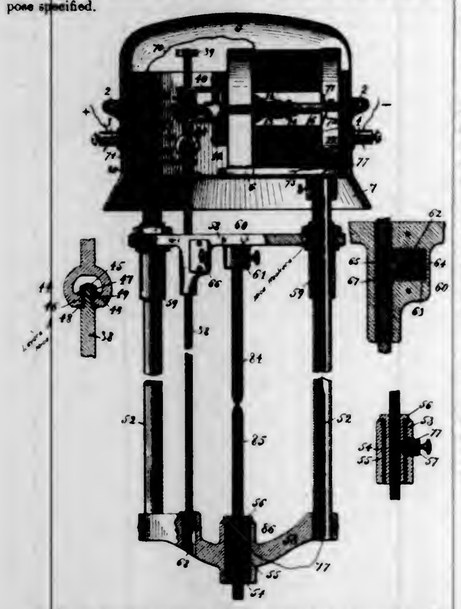
446,109. ARC LIGHT. RICHARD H. MATHER, Windsor, Conn. Filed Oct. 11, 1886. Renewed Oct. 27, 1890. Serial No. 369,398. (No model.)

Claim.—1. In an electric-arc lamp, a movable carbon-carrier, a reversible electric motor whose field-magnet is excited by two helices in series and whose armature is located in a derived circuit, and a compound switch having separate connections with said armature and with the field-magnet circuit upon opposite sides of the field-magnet, in combination with mechanism for transmitting motion from said armature to said carrier, substantially as and for the purpose specified.

2. In an electric-arc lamp, a carbon-carrying slide, a rotary electric motor whose field-magnet is excited by two helices arranged in series, a two-point switch having one of its points connected to the circuit on one side of said helices and having the other of said points connected to the circuit on the other side of said helices, and a connection from the switch to the circuit containing said helices at a point between the latter, said connection containing the armature of said motor, in combination with mechanism which is adapted to convert the rotary motion of said armature into rectilinear motion of said slide, substantially as and for the purpose specified.

3. In an electric-arc lamp, a carbon-carrier, a reversible rotary motor having two field-magnet helices, and an electro-magnet and an armature thereof provided with suitable contacts and connections whereby the armature of said motor is connected in series with one and in parallel with the other of said helices or in parallel with the former and in series with the latter of said helices or is disconnected from both, according as the armature of said electro-magnet is moved to a predetermined limit in one direction or in the other direction, or is not moved to such limit, in combination with mechanism which is

adapted to convert the rotary motion of the armature of said motor into rectilinear motion of said carrier, substantially as and for the purpose specified.



4. In an electric-arc lamp, a feeding-rod which is provided with a screw-thread and an engagement-pin, in combination with a carbon-carrier which engages said thread, and a wheel having a slotted hub which engages said pin, substantially as and for the purpose specified.

5. In an electric-arc lamp, a sliding yoke which has two sleeves joined and held rigidly parallel by an intermediate cross-piece which is insulated from each of said sleeves and is provided with a carbon-holder and with mechanism for engaging a feeding-rod, substantially as and for the purpose specified.

6. In an electric-arc lamp, a reversible rotary motor, a feeding-rod which is provided with a screw-thread, intermediate gearing whereby said motor constantly engages said feeding-rod, and a lifting-magnet which is applied to said feeding-rod, in combination with a sliding yoke having two sleeves joined and held rigidly parallel by an intermediate cross-piece which is insulated from each of said sleeves and is provided with a carbon-holder and with a spring-seated engagement-block for engaging said feeding-rod by means of said screw-thread, substantially as and for the purpose specified.

7. In an electric-arc lamp, a four-contact switch whose actuating-magnet is wound with two helices arranged in parallel with each other and with the carbons of the lamp, substantially as and for the purpose specified.

8. In an electric-arc lamp, a rotary feeding-rod which is divided into two parts by means of an insulating-joint, in combination with rotating mechanism which engages one of said parts and carbon-carrying mechanism and an electric brush which are in contact with the other of said parts, substantially as and for the purpose specified.

9. In an electric-arc lamp, a pair of carbons, a stationary carbon-holder, a movable carbon-carrier, a reversible electric motor, a feeding-rod which has a screw-thread engaging said carrier, intermediate gearing whereby said motor engages said rod, a four-contact switch whose actuating-magnet is wound with two helices arranged in parallel with each other and with said carbons, a lifting-magnet, and a switch operated thereby, which opens and closes the circuit-connection of one of said helices, in combination with a lever engaging said feeding-rod and the armature of said lifting-magnet, substantially as and for the purpose specified.

10. In an electric-arc lamp, carbon-carrying mechanism, a reversible electric motor actuating said mechanism, and a three-point switch having two helices which are located in separate shunts about the carbons of said lamp, in combination with a main-circuit lifting-magnet provided with circuit-breaking mechanism which is applied to one of said shunts, substantially as and for the purpose specified.

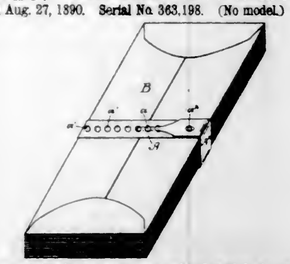
11. In an electric-arc lamp, carbon-moving mechanism, a reversible motor working said mechanism, a three-point switch controlling said motor and having two helices, one of said helices being composed of fine wire and located in a constantly-closed shunt-circuit about the carbons of the lamp, and the other of said helices being composed of coarse wire and located in a shunt-circuit about said carbons, in combination with a lifting-magnet provided with circuit-closing mechanism which is applied to the last-mentioned shunt-circuit, substantially as and for the purpose specified.

12. In an electric-arc lamp, a movable carbon-carrier, an electric motor whose field-magnet is excited by two helices in series and whose armature is located in a derived circuit, and gear mechanism engaging said armature and said carrier, in combination with a four-contact switch whose actuating-magnet is wound with two helices severally arranged in parallel with the carbons of the lamp, substantially as and for the purpose specified.

13. In an electric-arc lamp, a movable carbon-carrier, a reversible electric motor whose field-magnet helices are arranged in series and whose armature is located in a branch circuit connecting with the field-magnet circuit at a point between said helices, and a three-point switch having two helices which are located in separate shunts about the carbons of the lamp, in combination with a circuit-breaking mechanism which is applied to one of said shunts, substantially as and for the purpose specified.

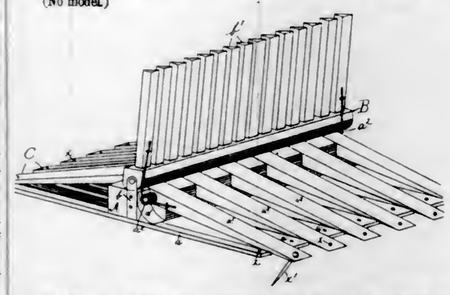
14. In an electric-arc lamp, a movable carbon-carrier, an electric motor whose field-magnet helices are arranged in series and whose armature is located in a branch circuit connecting with the field-magnet circuit at a point between said helices, and a compound switch controlling said motor and having two helices which are located in separately-derived circuits about the carbons of the lamp, in combination with a lifting-magnet and a circuit-breaking mechanism which is applied to one of said derived circuits, substantially as and for the purpose specified.

446,110. BINDING-STRAP. LEVI L. TOWER, Somerville, Mass. Filed Aug. 27, 1890. Serial No. 363,198. (No model.)



Claim.—A binding-strap one end of which is provided with a series of holes, while the other is provided with a tongue adapted to enter one of said holes, and a hook back of said tongue adapted to engage at the same time with another of said holes, whereby the strap is doubly clasped, substantially as described.

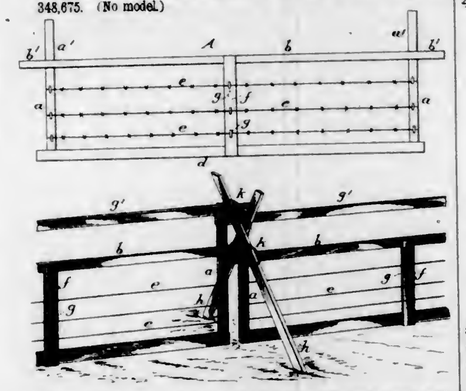
446,111. FLOOD-FENCE. DANIEL E. CASSELMAN and ELISHA H. FLETCHER, Evening Shade, Ark. Filed Oct. 14, 1890. Serial No. 368,116. (No model.)



Claim.—1. A flood-fence consisting of the cross-tie A, having the recesses a', the comb B, pivoted on the top of said cross-tie, springs a^3, seated in said recesses, as shown, and holding said comb in an upright position, stringers a and braces a^2, holding said cross-tie in place, and upstream-braces C, secured to said cross-tie and having their upper edges flush with the side of the comb when the same is pressed down, substantially as shown and described, and for the purposes set forth.

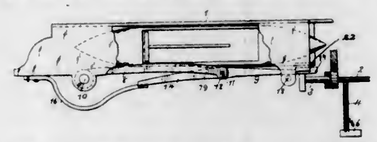
2. The combination of the stringers a, cross-tie A, secured to said stringers and having the end recesses a', downstream-braces a^3, secured to said cross-tie, coil-springs a^3, seated in said recess, as shown, arms b, secured to each end of said cross-tie, comb B, pivoted in said arms and having the front edges of its teeth beveled, upstream-braces C, secured to said cross-tie so that their upper edges are flush with the side of said comb when the same is pressed down, substantially as shown and described, and for the purposes set forth.

446,112. PORTABLE FARM-FENCE. ALEXANDER E. CLAUSSEN and ADONIRAM J. JONES, Scottville, Ill. Filed Apr. 19, 1890. Serial No. 348,675. (No model.)



Claim.—The independent panels of a portable fence made with only the top rail extended horizontally beyond the end battens, and each end batten arranged perpendicularly to extend upward at a' a', in combination with the cross-stake supports, the tie-wires, and the riders g', as shown and described.

446,113. SHUTTLE-BINDER FOR LOOMS. JOHN W. DAVIS, Janesville, Wis. Filed May 3, 1890. Serial No. 350,462. (No model.)



Claim.—1. The combination, with a shuttle-box, of a binder composed of an arm hinged in said shuttle-box and provided at its inner end with lugs or flanges and a member hinged between said lugs or flanges carried by and moving with the said arm and having an outwardly-extending arm provided at its outer end with a recess, and the holding-spring having a bearing in said recess for its free end, substantially as set forth.

2. The herein-described shuttle-binder, composed of the members 8 and 9, the former being provided with the recess 13 and longitudinal groove 19 and the latter having the flanges 17 and outwardly-extending arm 14, provided with the recess 15, said parts or members being hinged together, substantially as and for the purpose herein set forth.

446,114. PAN LIFTER AND TURNER. JOHN ERICSON, Sabine Pass, Tex. Filed Aug. 13, 1890. Serial No. 361,857. (No model.)



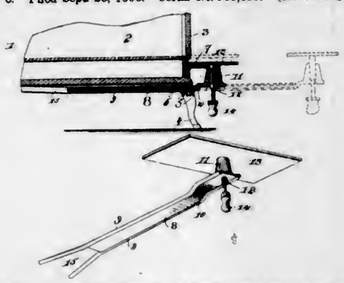
Claim.—1. A plate-lifter comprising the handle, the curved plate 3, secured to one end of the handle and adapted to engage a plate or receptacle and provided with the flange projecting inward to engage the interior of the rim, substantially as described.

2. A plate-lifter comprising the handle, the curved plate 3, secured to one end of the handle and provided at its upper edge with the integral flange projecting inward and arranged to engage the interior of the rim of a vessel, substantially as described.

3. A plate-lifter comprising the handle and the plate 3, rigidly secured to the handle and having in its edge the curved recess 6, and the slot 7, forming a mouth to the recess 6 and adapted to engage the rim of a pan, substantially as described.

4. A plate-lifter comprising the handle, the curved plate 3, secured to the end of the handle and provided at its upper edge with the integral flange projecting inward to engage the rim of a vessel, and the curved recesses 6 at the ends of the plate, for the purpose set forth.

446,115. SHELF FOR STOVES. ALBERT A. GASTON, Charlotte, N. C. Filed Sept. 20, 1890. Serial No. 365,655. (No model.)



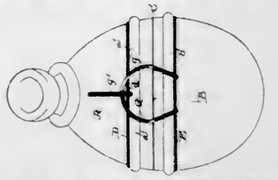
Claim.—1. The combination, with a stove having an oven and a slot located below the oven, of an arm mounted in the slot and taking under the bottom of the stove, and a shelf pivoted upon the outer end of the arm, substantially as specified.

2. The combination, with a stove having an oven and below the same and its bottom a longitudinal slot, of an arm mounted loosely in the slot and terminating under the bottom of the stove and provided at its front end with a bearing-opening, a spindle mounted in the opening and longer than the bearing, a shelf mounted on the spindle, and a knob secured to the under side of the spindle, substantially as specified.

3. The combination, with a stove and its oven, of a pair of bars located below the bottom of the stove and combining therewith to form a slot, a ledge secured to the stove above the slot, an arm having a shoulder near its front end loosely mounted in the slot and having its rear end bifurcated and diverged to form supports and at its front end provided with a bearing-collar, a spindle mounted loosely in the collar, a shelf mounted on the upper end of the spindle, and a knob secured to the lower end of the same, substantially as specified.

4. As an attachment to stoves, the arm loosely supported and adapted to reciprocate below the oven, and a shelf pivoted upon the outer end of the arm and also movable vertically independent of the arm, substantially as described.

446,116. NURSING-BOTTLE. JOHN E. MONROE, Worcester, Mass. Filed May 22, 1890. Serial No. 352,741. (No model.)



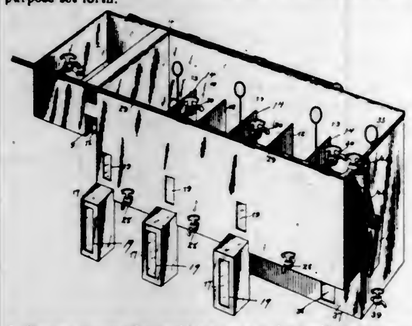
Claim.—1. In a nursing-bottle, the combination of the parts A and B, having in their meeting edges a close joint, with the encircling wires D, retained in place by the bead a', the encircling wire E, retained in place by the bead b', and the hinge F, and fastening G, substantially as and for the purpose described.

2. A nursing-bottle composed of two parts A B, having beads a' b^3, the encircling wires D E, retained in place by the beads, the hinge F, composed of parts f f', connected to the wires, respectively, and the fastening G, composed of the looped wire g, connected to wire E, and the clasp g', attached to wire D and engaging looped wire g, as set forth.

446,117. PROCESS OF AND APPARATUS FOR PURIFYING GREASE. GEORGE RACE, Norwich, N. Y. Filed May 13, 1890. Serial No. 351,607. (No model.)

Claim.—1. A process of purifying grease, which consists in floating it while in a liquid state over a current or currents of water running in the opposite direction and forcing successively jets of steam

and air through the water and liquid grease, substantially as and for the purpose set forth.



2. In an apparatus for purifying grease, the purifying-compartment having the sub-compartments, each divided by a vertical partition into two separate chambers, one of which is provided with a well or sink, all of said compartments being provided with bottom chambers having perforated top plates, in combination with means for supplying steam to the said bottom chamber and water to the chamber of each sub-compartment which is not provided with a well, the several separating-partitions being provided with openings for the passage of the material to be purified and water, substantially as set forth.

3. In an apparatus for purifying grease, the purifying-compartment having partitions and an end wall provided with openings for the passage or overflow of its contents, said openings being arranged at a distance above the bottom, in combination with the gates arranged to slide between flanges extending below said openings to permit the contents to flow through said openings over the upper edges of the gates, substantially as set forth.

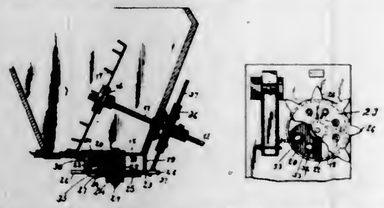
4. In a device of the class described, the tank or purifying-compartment having a bottom compartment composed of a series of perforated strips or plates suitably connected and having downward-extending flanges secured to the bottom plate of the tank, said flanges being provided with openings registering with each other, and the valved pipes for supplying steam under pressure to the said bottom compartment, substantially as set forth.

5. In an apparatus for purifying grease, the combination, with the purifying-compartment having a series of sub-compartments, of the settling wells or sinks projected from the front wall of each sub-compartment, substantially as set forth.

6. In an apparatus for purifying grease, the sub-compartments having bottom chambers with perforated top plates and valved steam-supply pipes, in combination with the settling wells or sinks projected from the front walls of said sub-compartments, substantially as set forth.

7. In an apparatus for purifying grease, the combination of the receiving-tank, the purifying-compartment, and the cooling-tank, said purifying-tank being subdivided as herein described, the settling wells or sinks in one of the chambers of each sub-compartment, means for supplying water to the other chamber of each sub-compartment, bottom chambers arranged under each sub-compartment and having perforated top plates, means for supplying steam under pressure to the bottom chamber of each sub-compartment, and means whereby air under pressure can be forced into the bottom chamber of the last sub-compartment or the one most distant from the receiving-tank, substantially as and for the purpose herein set forth.

446,118. CORN-PLANTER. JAMES D. SCHOFIELD, Rogers, Tex., assignor to the Ohio Cultivator Company, Bellevue, Ohio. Filed Aug. 9, 1890. Serial No. 361,570. (No model.)



Claim.—1. In a seed-planter having a rotary seed-plate, the combination, with the latter, of loose spherical weights or balls arranged concentrically with the axis of said seed-disk and serving, respectively, to cut off and to eject the seed from the seed-cups, and springs resting loosely on top of balls to force them in a downward direction, substantially as set forth.

2. In a seed-planter having a rotating seed-disk, the combination, with the latter, of a block having vertical sockets aligning with the seed-cups in said disk, the balls mounted loosely in said sockets and engaging the seed-cups and serving, respectively, to cut off and to eject the seed from said seed-cups, and springs arranged to force the said balls in a downward direction, substantially as and for the purpose set forth.

3. In a seed-planter, the combination of the hopper, the bottom of which is provided with a circular opening having a downwardly-extending annular flange and a central bushing, the rotating seed-plate mounted upon the latter, the bottom plate having a collar extending into the bushing, the connecting-bolt, the sockets arranged above the seed-plate, the balls mounted in said sockets, and a spring arranged above one of said balls or valves, substantially as and for the purpose set forth.

4. In a seed-planter, the combination of the hopper, the bottom of which is provided with a circular opening, a downwardly-extending annular flange, and a central bushing, the seed-plate journaled upon the latter, the bottom plate having a peripheral notch and provided with a collar engaging the central bushing, the connecting-bolt, the sockets arranged above the rotating seed-plate, and the balls mounted in said sockets, substantially as and for the purpose set forth.

5. In a seed-planter, the combination of the hopper, the intermittently-rotating seed-plate having a circumferential series of perforations or seed-cups, the segmental plate secured to the bottom of the hopper and having a radial arm, the segmental block arranged below said plate and above the seed-plate and having vertical cylindrical sockets, the balls mounted in said sockets, and the spring arranged in one of said sockets above the ball, all arranged and operating substantially as and for the purpose herein set forth.

446,119. ANIMAL-TRAP. GEORGE R. SMITH, Buffalo, Mo. Filed Oct. 2, 1890. Serial No. 366,877. (No model.)

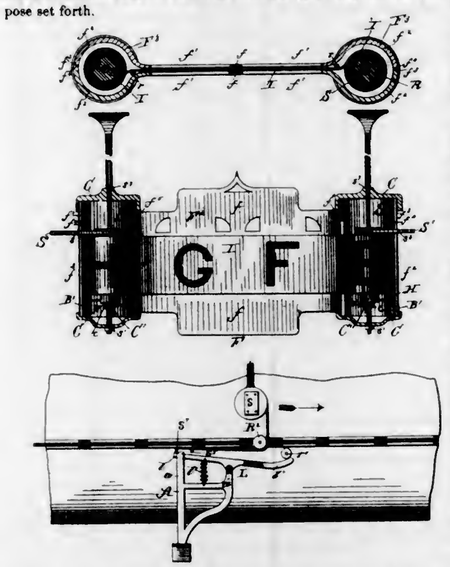


Claim.—1. In an animal-trap, the combination of the frame comprising the rectangular base, the similarly-shaped top portion and the round standards rising from the base at the corners thereof, the rectangular follower provided with a central opening, the bars connected with a follower by cords, the springs arranged on the standards and interposed between the follower and the top portion, the trigger pivoted to the top portion and provided with a recess and having extending outward from it the rod 23, the cords secured to the outer end of the rod and provided with a hook arranged in the central openings of the follower, and the bar 16, secured to the top portion by a cord and arranged to engage the follower-bars and the recess of a trigger, substantially as described.

2. In an animal-trap, the combination of the frame comprising the rectangular base provided near its outer edge with the upwardly-extending flange, the rectangular top portion provided with oppositely-disposed recesses and having cleats secured to its upper face and the standards connecting the base and the top portion, the follower provided with openings and arranged on the standards and having a depending flange arranged near its edges and adapted to engage the flange of the base, the spring arranged on the standards and interposed between the follower and the top portion, the follower-bars 10, connected with the follower by cords, the trigger pivotally mounted in the slot of the top portion and having a recess and provided with the outwardly-extending rod, the cords 25, provided with a hook 26, and the transverse bar arranged to engage the follower-bars and the trigger, substantially as described.

446,120. STATION-INDICATOR. FRANK S. WILSON, New York, N. Y. Filed July 29, 1890. Serial No. 360,300. (No model.)

Claim.—1. A street-car indicator comprising two housings connected by open-work webs arranged to form between them a narrow slot or passage, a hanger-rod extending into each housing, a roller mounted on each hanger, and an indicator-strip having the streets or stations marked on both faces in the same order and adapted to have motion from one roller to the other between said webs, for the purpose set forth.



2. A street-car indicator comprising a frame composed of two cylinders connected together by open-work webs arranged to form between them a narrow slot or passage, and a hanger-rod extending into each of said cylinders, in combination with a roller mounted on each of said hangers, and a transparent indicator-strip having the streets or stations marked thereon and adapted to have motion between the webs from one roller to the other, for the purpose set forth.

3. A street or station indicator comprising a frame composed of two housings provided with bearings and connected by open-work webs, hangers for suspending the frame centrally of a car, a movable roller mounted on the bearings of each housing, and an indicator-strip connected with and adapted to be moved by said rollers between the connecting-webs and having the streets or stations marked thereon on both faces in the same order, substantially as and for the purpose set forth.

4. A street or station indicator comprising a frame composed of two sections consisting of two semi-cylinders connected together by an open-work web, said parts being arranged so that when the sections are united the frame will have a cylindrical housing at each end connected by a narrow passage formed by and between the webs, a hanger-rod extending through each housing, a roller movable on each of said rods, and an indicator-strip having the streets or stations marked thereon on both faces in the same order, said strip being connected with and adapted to be moved by said rollers between the connecting-webs, substantially as and for the purpose set forth.

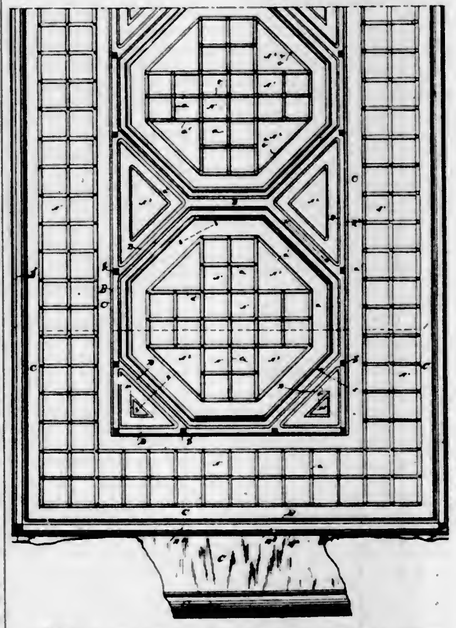
5. A street or station indicator and mechanism for operating the same, consisting of a frame provided with hangers for suspending the same centrally of a car from the roof thereof and with openings front and back in register with each other at each end of the frame, and an indicator-strip having the streets or stations marked thereon on both faces in the same order, said strip being connected with and adapted to be moved by said rollers between and across the openings, a ratchet-wheel secured to the roller, a pawl held normally out of engagement with the ratchet and having independent motion about the same, a pull connected with the pawl and operating to move it into engagement with the ratchet and revolve the roll, and a return-spring for returning the pull and pawl to their normal positions, as set forth.

6. A street or station indicator and mechanism for operating the same, consisting of a frame provided with hangers for suspending the same centrally of a car from the roof thereof and with openings front and back in register with each other at each end of the frame, and an indicator-strip having the streets or stations marked thereon on both faces in the same order, said strip being connected with and adapted to be moved by said rollers between and across the openings, a ratchet-wheel secured to the roller, a pawl held normally out of engagement with the ratchet-wheel and having independent motion about the same, a pull connected with and adapted to move the pawl into engagement with the ratchet, said pull extending out of the car, a return-spring operating to return the pawl and pull to their normal position independently of the roller, and a tripping device secured to the car, in combination with a catch in the path of the pull, and a tripping-lever in the path of the tripping device operating to release the pull from the catch, substantially as and for the purpose set forth.

7. A street or station indicator comprising an indicator-strip having the streets or stations marked thereon on both faces in the same order, a frame adapted to be suspended centrally of the car from the roof thereof and having openings arranged to simultaneously display the indices on both faces of the strip, means for imparting motion to the strip, comprising a vertical winding-roller at each end of the frame for imparting lateral motion to the strip, a ratchet-wheel secured to said roller, the said ratchets being arranged with their teeth in reverse directions, a pawl for each of said ratchets, held normally out of engagement with the teeth thereof, a spring-barrel to which said pawl is pivoted and which has independent motion on the roller-journal, and a pull on the spring-barrel, connected with the pawl for imparting motion to said barrel and for bringing the pawl into engagement with its ratchet, substantially as and for the purposes specified.

8. The combination, with a car, of a street or station indicator comprising an indicator-strip having the streets or stations marked on both faces in the same order, a frame adapted to be suspended centrally of the car from the roof thereof and having openings arranged to simultaneously display the indices on both faces of the strip, a vertical revoluble roller at each end of the frame for imparting lateral motion to the strip, a pawl-and-ratchet mechanism for imparting motion to the rollers, a pull having a catch-plate at its free end, adapted to impart motion to the pawl-and-ratchet mechanism, said catch-plate lying outside of the car, and a return-spring for returning the pawl and pull to their normal position independently of the roller, in combination with a fixed stop in the path of the catch-plate and adapted to engage the same, a detent-lever adapted to disengage the catch-plate from the fixed stop, and a tripping device secured to the car to trip the detent, substantially as and for the purpose described.

446,121. METALLIC CEILING. WILLIAM R. KINNEAR, Columbus, Ohio. Filed Mar. 28, 1890. Serial No. 345,786. (No model.)



Claim.—1. In a metallic ceiling such as described, the combination of stiles for dividing the ceiling into panels, centers for the panels, composed of separate plates of standard sizes the edges of which are connected, and variable stiling interposed between the said stiles and

center for varying the dimensions of the panels, substantially as described.

2. In a metallic ceiling such as described, the combination of stiles for dividing the ceiling into panels, centers for the panels, composed of separate plates provided with side margins adapted to lap and form panel-moldings and suitable fastenings driven through the lapped margins, and variable stiling interposed between the said stiles and centers, substantially as described.

3. In a metallic ceiling such as described, the combination of stiles for dividing the ceiling into panels, centers for the panels, composed of separate plates of different shapes adapted to be combined to form regular aggregate designs and provided with side margins adapted to lap and form panel-moldings to receive fastenings, and variable stilings interposed between the stiles and center for varying the dimensions of the panels, substantially as described.

4. In a metallic ceiling such as described, the combination of stiles for dividing the ceiling into panels, and centers attached to the said stiles for filling in the panels thus formed, consisting of two or more separate plates of different shapes adapted to be combined to form regular aggregate designs and provided with side margins adapted to lap those of the adjoining plates to form panel-moldings, and suitable fastenings for securing the said plates in position, substantially as described.

5. In a metallic ceiling such as described, the combination of stiles for dividing the ceiling into panels, and centers attached to the said stiles for filling in the panels thus formed, consisting of two series of plates, the one series being quadrilateral and the other triangular, adapted to be arranged to form regular aggregate designs and provided with side margins adapted to lap those of the adjoining plates to form panel-mouldings, and suitable fastenings for securing the said plates in position, substantially as described.

6. In a metallic ceiling such as described, and in the stiles for dividing the same into panels, the combination of independent stile-moldings to form the opposite sides of the stiles and having side margins entering into the construction of the face of the stile, and suitable fastenings for securing them in position, substantially as described.

7. In a metallic ceiling such as described, and in the stiles for dividing the same into panels, the combination of independent stile-moldings to form the opposite sides of the stile and having side margins, stile-facings interposed between the said margins and lapped with the same, and fastenings for securing the lapped portions, substantially as described.

8. In a metallic ceiling such as described, and in the stiles for dividing the same into panels, the combination of independent stile-moldings to form the opposite sides of the stiles and having side margins, stile-facings interposed between the said margins and provided with side extensions to receive the said margins of the stile-moldings and adapted to be diminished to make the stiles narrower, as desired, and fastenings for securing the lapped margins together, substantially as described.

9. In a metallic ceiling such as described, and in the stiles for dividing the same into panels, the combination of independent stile-moldings to form the opposite sides of the stile and having side margins, stile-facings of a general level interposed between the said margins and the edges of which are lapped with the said margins of the stile-moldings, and fastenings for securing the said margins and stile-facings together, substantially as described.

10. In a metallic ceiling such as described, the combination of the stiles for dividing the same into panels, and an independent miter shaped to form a single corner of the junction of the stiles, substantially as described.

11. In a metallic ceiling such as described, the combination of the stiles for dividing the same into panels, independent miters for each corner of the junction, each being provided with side margins to lap those of the adjoining miters, and fastenings for securing the said margins together, substantially as described.

12. In a metallic ceiling such as described, the combination of the stiles for dividing the same into panels, an independent miter shaped to form a single corner of the junction of the stiles, and a rosette attached to the miter at the center of the junctions, substantially as described.

13. In a metallic ceiling such as described, the combination of the quadrilateral plates A′ and the triangular plates A^3, both being provided with side margins adapted to overlap and form raised moldings *a*, with suitable fastenings passing through the lapped margins for securing the plates in position, substantially as described.

14. In a metallic ceiling such as described, the combination of the plates A′ and A^3 to form aggregate designs, and provided with side margins adapted to overlap and form panel-moldings *a*, with stiling extending between the said aggregate designs and lapped with the outer margins of outer plates, and suitable fastenings for securing all the parts in contact together, substantially as described.

15. In a metallic ceiling such as described, the combination of the plates A′ and A^3 to form aggregate designs and provided with side margins adapted to overlap and form panel-moldings *a*, and stiles connected to and surrounding the said designs to emphasize the same, substantially as described.

16. In a metallic ceiling such as described, the combination of the plates A′ and A^3 to form aggregate designs, and provided with side margins adapted to overlap and form panel-moldings *a*, and stiles B, connected to and surrounding the said designs, consisting of the stile-moldings B′ and B^3, provided with lapped side margins b' b^3 entering into the construction of the face of the stile, with suitable fastenings for securing the same together, substantially as described.

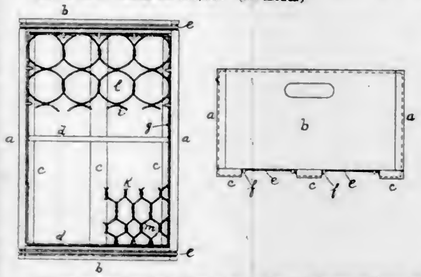
17. In a metallic ceiling such as described, the combination of the plates A′ and A^3 to form aggregate designs, and provided with side margins adapted to overlap and form panel-moldings *a*, and stiles B, connected to and surrounding the said designs, consisting of the stile-moldings B′ and B^3, provided with side margins b' and b^3, and stile-facings B^3, interposed between the stile-moldings and lapped with the said margins, substantially as described.

18. In a metallic ceiling such as described, the combination of the plates A′ and A^3 to form aggregate designs, and provided with side margins adapted to overlap and form panel-moldings *a*, stiles B, surrounding the said designs, and variable stiling C interposed between the said stiles and design, for varying the dimensions of the panels, substantially as described.

19. In a metallic ceiling such as described, the combination of the plates A′ and A^3 to form aggregate designs, and provided with side margins adapted to overlap and form panel-moldings *a*, stiles B, surrounding the said designs, consisting of the stile-moldings B′ and B^3, provided with the lapped side margins b' and b^3 entering into the construction of the face of the stile, with suitable fastenings for securing the same together, and variable stiling C interposed between the said stiles and designs, for varying the dimensions of the panels, substantially as described.

20. In a metallic ceiling such as described, the combination of the plates A′ and A^3 to form aggregate designs, and provided with side margins adapted to overlap and form panel-moldings *a*, stiles B, surrounding the said designs, consisting of the stile-moldings B′ and B^3, provided with side margins b' and b^3, and stile-facings B^3 interposed between the stile-moldings and lapped with the said margins, and variable stiling interposed between the said stiles and designs, for varying the dimensions of the panels, substantially as described.

446,122. BOTTLE-CASE. CLAUD E. MARLOW, Colorado, Tex. Filed Aug. 4, 1890. Serial No. 360,855. (No model.)

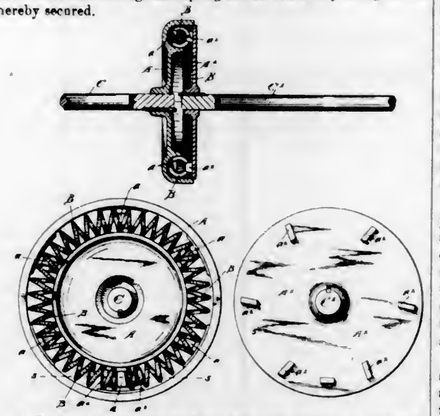


Claim.—In a bottle-holding case or box, the combination, with inner encircling horizontal wires, of body and neck holding diaphragms constructed of metal bands or wires woven around the encircling wires and woven or twisted together to form circular supports for the bodies and necks of the bottles, substantially as described and set forth.

446,123. SHAFT-COUPLING. GEORGE C. PYLE, Indianapolis, Ind., assignor to the National Electric Head Light Company, same place. Filed Jan. 21, 1890. Renewed Jan. 8, 1891. Serial No. 377,108. (No model.)

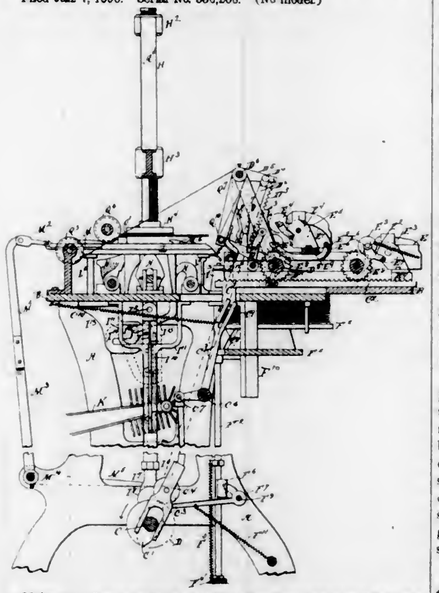
Claim.—1. The combination, in a shaft-coupling, of a coupling-half having an annular groove and a peripheral rim extending out beyond the other portions of said coupling-half, a second coupling-half adapted to fit within said peripheral rim, a continuous spiral spring laid within said groove between said two coupling-halves, and lugs extending out toward each other from said two coupling-halves and engaging with the coils of said spring, substantially as set forth.

2. The combination of two sections of shafting C and C′, arranged in line with each other, a coupling-half A, mounted upon one of said sections and provided with an annular groove and a peripheral rim extending beyond the other parts thereof, with lugs in the bottom of said groove, a second coupling-half A′, secured to the other half-section, the same being in the form of a flat plate of a diameter adapted to fit within the peripheral rim of the other coupling-half and provided with lugs projecting toward the lugs on the other coupling-half, and a spring interposed between said two coupling-halves with which said lugs will engage, whereby one section of the shaft may be driven from the other section through said spring and an elastic or yielding motion thereby secured.



3. The combination of a shaft-coupling composed of two coupling-halves, one of which has an annular groove with lugs in the bottom of said groove, a continuous spiral spring laid in said groove and extending throughout its length, two of said lugs being bent outwardly over the coils of said spring and thereby holding it in position, and the second coupling-half adapted to fit into the first coupling-half and also provided with lugs which engage with the coils of said spring, substantially as shown and described.

446,124. ENVELOPE-MACHINE. EMANUEL RAU, Brooklyn, assignor to the Emanuel Rau Manufacturing Company, New York, N. Y. Filed Jan. 7, 1890. Serial No. 336,208. (No model.)



Claim.—1. In an envelope-machine, the combination of the main frame, the table F′, on which envelope-blanks are carried, vertical rods mounted in bearings in the main frame and to which the table is secured, springs connected to said rods, which hold them elevated and tend to lift them, brake-shoes engaging with the rods and adapted to move toward and from them, a lever-arm connected with the shoes, and a cam revolved by the main driving mechanism, which engages intermittently with the lever-arm.

2. The combination, in an envelope-machine, of the main frame, the blank-carrying table, the vertical rods to which the table is secured, springs connected with the rods which hold the table in an elevated position and tend to lift it, brake-shoes engaging with the vertical rods and adapted to move toward and from them, a lever-arm to which the brake-shoes are connected, a spring tending to hold the lever-arm in such position as to hold the shoes against the vertical rods, and a cam carried aroond with the driving mechanism and adapted to intermittently operate the lever to disengage the brake-shoes from the rods.

3. In an envelope-machine, a drying-frame or carrier, in combination with an envelope-delivery box located and secured beneath the machine-table and arranged to receive folded envelopes directly from said drying-frame or carrier and provided with a back plate hinged to said delivery-box, and a spring and pivoted double lever adapted to take against the hinged plate and vibrate it at each revolution of the main shaft, all combined substantially as specified.

4. In an envelope-machine, the combination, with the foundation-plate of the folding mechanism, of an arm provided with a cam-roll attached to and arranged beneath said plate, a plate provided with a cam-slot in which said roller moves, located below the table of the machine, an upward-and-downward-moving rod pivoted to said foundation-plate, and a cam mechanism for reciprocating said rod, located upon the main shaft beneath, all combined and operating to tilt said foundation-plate positively and discharge one envelope from said plate at each revolution of said shaft, substantially as specified.

5. The combination, with the foundation-plate of the folding mechanism of an envelope-machine and tilting mechanism, of the clasps arranged to hold an envelope firmly on said plate after it has been folded and to release said envelope after the foundation-plate has been tilted over to discharge it, and tripping-pieces attached to the machine-table, substantially as specified.

6. The combination, with a gum-box of an envelope-machine, of the reciprocating gumming-roll and a gum-transferring roll secured to said gum-box by pivoted arms and provided with a pendent lug or arm located in the path of the reciprocating gumming-roll and arranged to be thrown against said gumming-roll by the horizontal travel of the same and against the gum-feeding roll in said trough by the action of a spring, all combined and operating substantially as specified.

7. In an envelope-machine, gumming-rolls geared upon their ends and connected together by links, in combination with a rack located upon the table of the machine, the pivoted forked rod C^4, provided with a cam-roll C^8, secured to said rod and arranged to receive reciprocating motion from a cam located on the main shaft, connected to said rack by the forked lever C^9, and a pin whereby the pivoted rack is caused to reciprocate, substantially as specified.

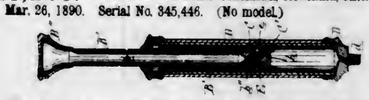
8. In an envelope-machine, gumming-rolls secured together at their ends with a connecting link or links adapted to slide back and forth in a guide or guides upon the machine-table for the purpose of receiving gum from gum-transferring rolls and transferring it to envelope-blanks located on a table beneath, and all combined substantially as specified.

9. In an envelope-machine, rolls for transferring gum to the gumming-rolls, secured together by reciprocating links at their ends, and gears secured to the ends of said rolls, resting on and adapted to be revolved by a reciprocatory rack beneath, all combined substantially as specified.

10. In an envelope-machine, the combination, with geared and guided gumming-rolls and actuating mechanism from the main shaft by which reciprocatory motion is given to said rolls, of a reciprocating rack beneath said rolls and adapted to rotate said rolls by the movements of the said rack, substantially as specified.

11. In an envelope-machine, the combination, with reciprocating geared and guided gumming-rolls adapted to be revolved intermittently on a reciprocating rack beneath by the reciprocation of said rack and by a system of lever-arms on shaft D^6, located above the bed-plate of the machine, and all receiving motion from the main shaft of the machine, of a grooved driving-pulley and cord pendent from said lever-shaft, and a loose pulley centrally located upon the shaft of one of the said gumming-rolls and operating, in connection with the said grooved driving-pulley, for receiving the envelope-blank from the gumming-rolls and transferring it to the carrier-plate, substantially as specified.

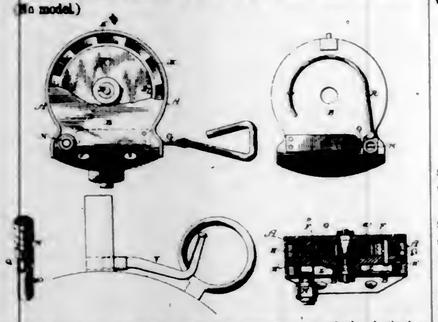
446,125. SYRINGE. EDWARD SCHIRNER, Cleveland, Ohio. Filed Mar. 26, 1890. Serial No. 345,446. (No model.)



Claim.—In a syringe, the combination of a hollow piston-rod B′, provided at its inner end with a reduced extension *b*, having a central

bore *b'* communicating with lateral openings *b''*, two expansible packing-rings C C, a central nut E between said packing-rings and provided with holes communicating with the openings *b''*, and a retaining-nut E', the parts being constructed and arranged in the manner and for the purpose set forth.

446,126. **HORSE-CHECKING DEVICE.** OLIN N. WARDWELL and CARRIE A. WHITE, Jamaica, Vt. Filed Aug. 19, 1890. Serial No. 362,428. (No model.)



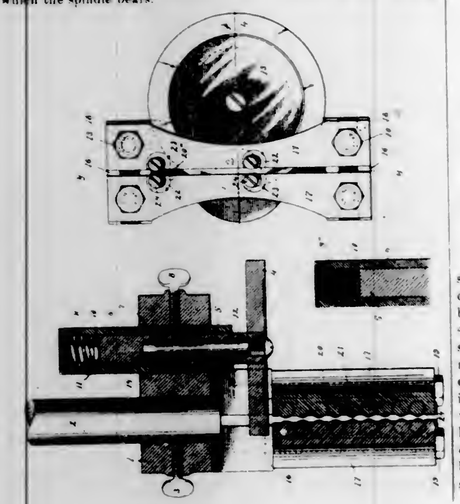
Claim.—1. In a check-hook, the combination of the inclosing case, the spring-actuated drum journaled therein and having ratchet-teeth, a spring which engages the said ratchet, the check-strap which is secured to and passes around the drum, an endwise-moving rod which passes through the said case and having a projection on its inner end which engages the spring, and a recess outside of the projection which engages the casing, the rod adapted to be operated by one of the reins, for the purpose set forth.

2. In a check-hook, the combination, with the inclosing case, of the spring-actuated drum journaled within the casing and having a ratchet, flanges upon its edges, and a recess or depression in its periphery between the flanges, a strap having a loop formed upon its inner end which is placed in the depression, and a pin which passes through the drum and the loop, a spring which engages the ratchet-drum, and means for operating the spring, combined substantially as shown and described.

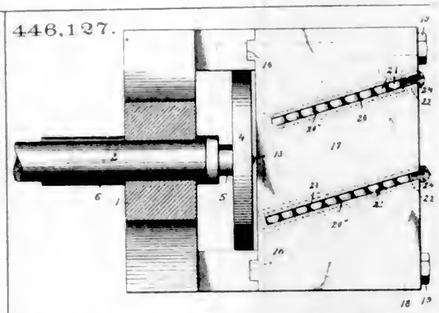
446,127. **BAND-SAW GUIDE.** CHARLES R. WRIGHT, Waterbury, Conn. Filed Sept. 29, 1890. Serial No. 366,446. (No model.)

Claim.—1. A saw-guide consisting, essentially, of a body, a disk capable of rotation by contact of the saw with the face thereof, and a yielding support for said disk which permits the latter to move inward when pressure is applied to the saw.

2. In a band-saw guide, the disk having a spindle and a socket to receive said spindle, in combination with a yielding support against which the spindle bears.



446,127.



3. In a band-saw guide, the disk having a spindle, an adjustable socket to receive said spindle, and a yielding support at the base of the socket.

4. In a band-saw guide, the combination, with the disk having a spindle, of a socket to receive the spindle, and a yielding support consisting of a block and a coil-spring secured thereto and bearing against the base of the socket.

5. A disk for band-saw guides, having a spindle with a groove in its side and an oil-reservoir which is closed upon the face of the disk and leads into the groove on the side of the spindle

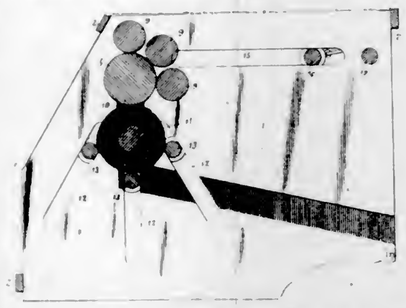
6. A disk for saw-guides, having a spindle with a tapering groove in one side extending nearly to its inner end, and an oil-reservoir leading inward from the face of the disk, then to the periphery of the spindle, where it opens into the groove, and a screw in the face of the disk which closes the reservoir.

7. A side bearing for band-saw guides, having a socket 20, a slot leading into said socket, and a series of balls within the socket and extending outward through the slot, to serve as a bearing for the saw

8. A side bearing for band-saw guides, having sockets 20, and slots leading into said sockets, and within the sockets slotted tubes, said tubes containing balls which extend through the slots and serve as bearings for the saw.

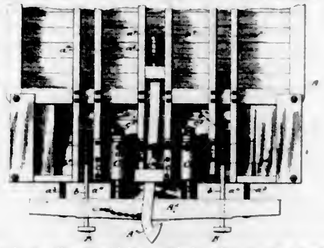
9. A side bearing for band-saw guides, having inwardly and downwardly inclined sockets, slots leading into said sockets, and within the sockets slotted tubes, series of balls within said tubes which project outward through the slots, and screws at the outer ends of the tubes which hold the balls in place.

446,128. **BALING-PRESS.** JUNIUS W. BROWN, Russellville, Ark., assignor of one-half to J. W. Wells, same place. Filed July 12, 1890. Serial No. 358,562. (No model.)



Claim.—In a baling-press, the combination, with the opposite sides 1, provided with the opposite bearings 3, the series of bearing-openings 8, arranged concentric to the bearing 3 and the radiating bearing-slots 12, and the vertical recesses or ways 10, of the main shaft 4, having the pulleys 6 and 7 and main compressing-roll 5, the series of secondary rolls 9, mounted in the bearing-openings 8, the binding-rollers 13, mounted in the slots and provided with pulleys 14, the bale-core mounted in the ways 10, the transverse tension-shaft 16, mounted in longitudinal slots 15 and having pulleys 17 at each end, the transverse shaft 19, having pulleys 20, the cable 21, passing over the pulleys and provided with weights 24, the links 22, connected to the cables and introdnced over the pulley 17, and the opposite endless belts 18, passing around the pulleys 6, 14, and 17, substantially as specified

446,129. **SAFETY-PLATFORM FOR RAILWAY-CARS.** SPENCER L. DAVIS, Chicago, Ill. Filed May 1, 1890. Serial No. 350,158. (No model.)



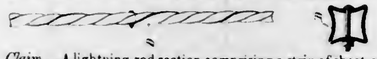
Claim.—1. A railway-vehicle provided with one or more cylinders containing an elastic fluid under pressure, and a two-part platform, one portion of said platform being connected with the piston rod or rods of said cylinder or cylinders and being held by said rods at a remove from the fixed portion of the said platform.

2. A railway-vehicle provided with one or more cylinders containing an elastic fluid under pressure, a suitable relief-valve connected to each cylinder, and an inlet-pipe connecting the said cylinder or cylinders with a source of fluid-supply, in combination with a two-part platform, the outer portion thereof being secured to the piston rod or rods of said cylinder or cylinders and movable therewith, said movable part being held by said rods at a remove from the fixed portion of the platform, substantially as described.

3. The combination, with a railway-vehicle provided with one or more cylinders containing an elastic fluid under pressure, each of said cylinders having a suitable relief-valve, a two-part platform, the outer portion thereof being connected with the piston rod or rods of the cylinder or cylinders and being movable therewith, supports for said movable portion of said platform sustained in suitable bearings on the vehicle, said supports being movable longitudinally in said bearings, and an inlet-pipe connecting the cylinder or cylinders with a source of fluid-supply, substantially as described.

4. The combination of a railway-vehicle provided with a two-part platform, the outer portion of which is separated from the fixed portion and is sustained from the vehicle by movable supports, with one or more cylinders secured to said vehicle containing an elastic fluid under pressure and connected to and adapted to act upon the said movable portion of said platform, and one or more spring-actuated buffers secured to the vehicle, having their ends projecting from the vehicle at a point beyond the outer edge of the said movable portion of the platform, substantially as described.

446,130. **LIGHTNING-ROD.** GEORGE W. DOWNEY, Hyattsville, Md. Filed Oct. 15, 1890. Serial No. 368,235. (No model.)



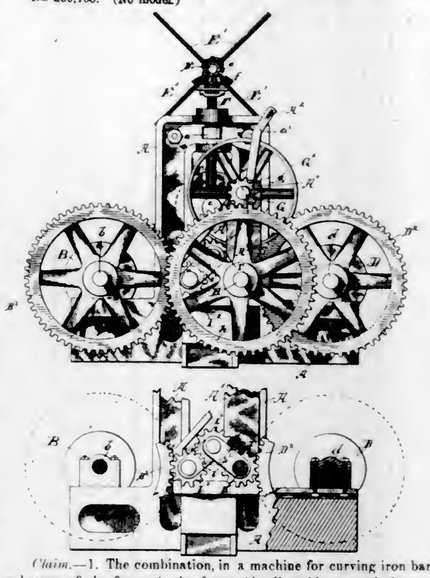
Claim.—A lightning-rod section comprising a strip of sheet-copper angularly bent and twisted into spiral form and having corrugations between said angles and a small space between the adjacent edges of the said strip of metal, substantially as specified.

446,131. **FIRE-ARMOR.** WILLIAM H. FINN and JAMES PAPPA, Oswego, N. Y. Filed Feb. 27, 1890. Serial No. 342,011. (No model.)



Claim.—A fireman's suit consisting of a jacket having a head-piece upon its upper end, said head-piece being provided with a window closed by some transparent material, a mouth-opening provided with a valve for the purpose of allowing the foul air to escape, a flexible tube C, entering the armor from the under side and terminating therein, and means for forcing air into the armor, said tube C having multiple branch tubes connected thereto just outside of the armor, each of said tubes being provided with a mask or head-piece adapted to be placed over the head of the person found in a suffocating condition, substantially as described, for the purposes as set forth.

446,132. **MACHINE FOR CURVING IRON BARS OR BEAMS.** BENJAMIN F. HAUGH, Indianapolis, Ind. Filed Sept. 22, 1888. Serial No. 286,105. (No model.)

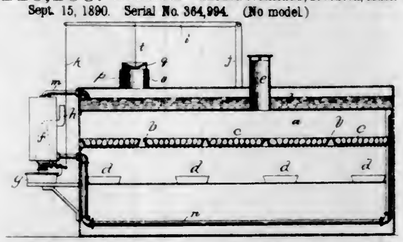


Claim.—1. The combination, in a machine for curving iron bars or beams, of the frame A, the frame A', adjustably secured thereon, the several sets of operating-rolls adjustably arranged in said frame A, and the driving mechanism geared to the shafts thereof and mounted on the adjustable frame A', substantially as set forth.

2. The combination, in a machine for curving iron bars or beams, of the frame A, the operating-rolls B B', C C, and D D', arranged in pairs and adjustably mounted on their shafts, said shafts supported in bearing adjustably mounted on said frame A, the frame A', adjustably mounted on said frame A, and the driving mechanism mounted on said frame A' and geared to the operating-rolls, substantially as set forth.

3. The combination, in a machine for curving or varying the curvature of iron bars, of three sets of rolls and a train of gearing for driving the same, consisting of spur gear-wheels upon the shafts of the end rolls, three intermediate spur-pinions, and toggle-links upon which the central one of said pinions is mounted, substantially as shown and described.

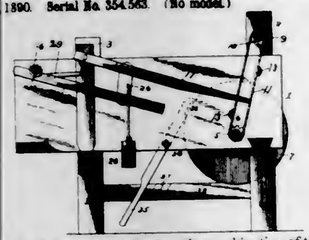
446,133. **INCUBATOR.** ARTHUR P. HAZARD, Brockton, Mass. Filed Sept. 15, 1890. Serial No. 364,994. (No model.)



Claim.—As a means for actuating the flame-regulating lever of incubators, the combination, with the water-heating chamber, of a tube provided with an annular chamber and communicating with the water-

chamber, and an inverted cup arranged in liquid in the said chamber, the inner surface of the closed end of the cup being of concave form, and connections between the said cup and lever, as set forth.

446,134. **MOTOR.** JAMES R. G. HUFFMAN, Beardsley, Kans. Filed June 7, 1890. Serial No. 354,563. (No model.)

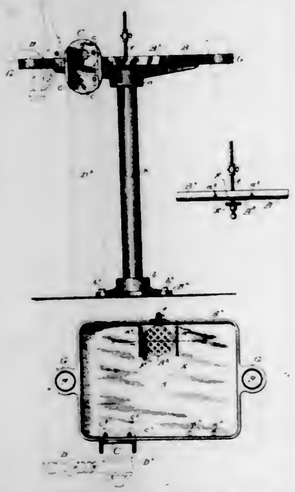


Claim.—1. In a mechanical motor, the combination of the endless belts or aprons carrying the lifters, the primary shaft, the power-shaft, a series of levers arranged to be lifted at suitable intervals by the lifters on the endless belts, and mechanism intermediate of the levers and the power-shaft for driving the same continuously in one direction at each descent of each lever, substantially as described.

2. In a mechanical motor, the combination of the endless chains or belts having the alternately-disposed lifters, the primary and idle shafts, the power-shaft having the ratchets, the weighted levers arranged in the path of the lifters, to be raised at suitable intervals by the same, and the pawl-carriers connected with the levers and having the pawls arranged to rotate the ratchets at the descent of each lever, substantially as described.

3. In a mechanical motor, the combination of the primary shaft, the idle-shaft, the endless belts or aprons encompassing said shafts and having the alternately-disposed lifters, the power-shaft having the ratchet-wheels, the weighted levers fulcrumed on a common bar or rod and having the free ends arranged in the path of the lifters, the pawl-carriers connected to the levers and having the pawls engaging the ratchet-wheels, and the counter-shaft geared to the power-shaft, substantially as described.

446,135. **SHOE-MAKER'S BENCH.** GEORGE W. LUDLOW, Chicago, Ill. Filed July 3, 1890. Serial No. 357,804. (No model.)



Claim.—1. As an improved article of manufacture, a shoe-maker's bench or table made entirely of metal and provided with a flat top plate having a raised edge or marginal flange and provided at its edge with a vertical plate adapted for the attachment of a shoe-maker's jack, and a metal standard attached to said top plate for supporting the same.

2. As an improved article of manufacture, a shoe-maker's bench or table made entirely of metal and provided with a flat top plate having a raised edge or marginal flange and provided at its edge with a vertical plate adapted for the attachment of a shoe-maker's jack, said flat top plate having also a hole or aperture through which the heat from a gas-burner or other heating device placed below the same is adapted to pass, and a metal standard attached to said top plate, substantially as described.

3. As an improved article of manufacture, a shoe-maker's bench or table made entirely of metal and provided with a flat top plate having a raised edge or marginal flange and provided at its edge with a vertical plate adapted for the attachment of a shoe-maker's jack, said flat top plate having also a hole or aperture through which the heat from a gas-burner or other heating device placed below the same is adapted to pass, said table being provided with elevated tool-supports adjacent to said hole or aperture, and a metal standard attached to the said top plate for supporting the same, substantially as described.

4. As an improved article of manufacture, a shoe-maker's bench or table made entirely of metal and having a flat top plate provided with a raised edge or marginal flange and provided at its edge with a vertical plate adapted for the attachment of a shoemaker's jack, said flat top plate being provided also with a hole or aperture through which the heat from a gas-burner or other heating device placed below the same is adapted to pass, said table being provided with a perforated guard or grating extending over said hole or aperture, and a metal standard attached to said top plate for supporting the latter, substantially as described.

446,136. **OILER.** FRANK P. NOERA, Malden, Mass. Filed Nov 11, 1890. Serial No. 371,023. (No model.)



Claim.—In an oil-can, the combination, with a body provided with a solid bottom and a discharge-nozzle and a vent-tube or pipe extended through the top of the body at one side of said nozzle to near the bottom of the can at its opposite side, of a valve *c* to normally close the projecting outer end of the tube, a lever *c'*, pivoted to an upright c^3 and connected to the valve, and a spring to act on the lever to close the valve, substantially as described.

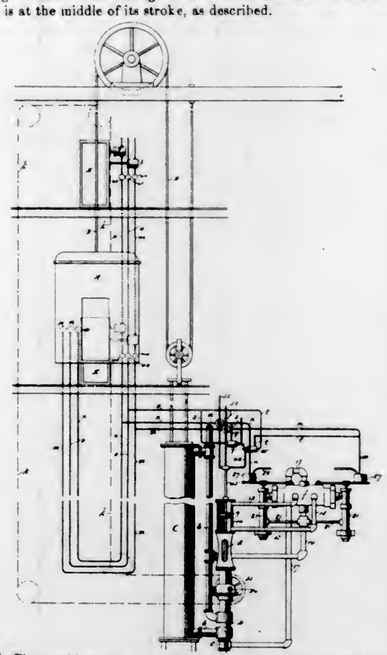
446,137. **ELEVATOR.** CHARLES E. ONGLEY, New York, N. Y., assignor to the Hydraulic Elevator Company, of Illinois. Filed Aug. 24, 1888. Serial No. 283,606. (No model.)

Claim.—1. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of an auxiliary cylinder, piston, and valve for operating the main valve, a primary cylinder, piston, and valve for operating the auxiliary valve, an expansible sack for operating the primary valve, and a pneumatic pipe connecting said sack with a bulb, substantially as described.

2. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of an auxiliary cylinder, piston, and valves for operating the main valve, primary cylinders, pistons, and valves for operating the auxiliary valves, expansible sacks for operating the primary valves, and pneumatic pipes connecting said sacks with bulbs, substantially as described.

3. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of pneumatic pipes through which the movement of the main valve in opposite directions is controlled by air-pressure, and valves 48, controlling said pipes and operated by a moving part of the elevator mechanism to allow the air to escape from the respective pipes as the main valve reaches the limit of its working movement in opposite directions, substantially as described.

4. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of a pneumatic pipe having branches for controlling the movements of the main valve in opposite directions by air-pressure, valves controlling said branches and operated by a part of the mechanism moving in harmony with the main valve, and said valves opening communication through one of said branches when the main valve is near the end of its stroke and closing communication through both of said branches when the main valve is at the middle of its stroke, as described.

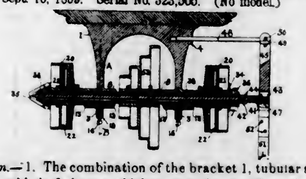


5. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of a pneumatic pipe through which the movement of the main valve is controlled by air-pressure, valves 55, controlling said pipes and having an escape-opening, and doors of the elevator-shaft in operative connection with said valves 55 to open said escapes by the opening of the doors and close said escapes by the closing of the doors, as described.

6. The combination, with an elevator-car, its motor, and the main valve for controlling the movement of the motor, of an auxiliary cylinder and piston for operating the main valve, an auxiliary valve for controlling the same and having an open exhaust in free communication at all times with an end of the auxiliary cylinder, an expansible sack for actuating the auxiliary valve, a pneumatic pipe connecting the said sack with a collapsible bulb, and a rope *k*, connected to operate the main valve from the car, as described.

7. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of an auxiliary cylinder and piston for operating the main valve, auxiliary valves for controlling the same so set that the exhaust-passages from the auxiliary cylinder are open in all positions of the valve, in order to allow the water to pass out of the auxiliary cylinder and permit the auxiliary piston to be moved in either direction, expansible sacks for actuating the respective auxiliary valves, pneumatic pipes connecting said sacks with collapsible bulbs, and a rope *k*, connected to operate the main valve from the car, substantially as described.

446,138. **COUNTER-SHAFT.** ALBERT D. PENTZ, Elizabeth, N. J. Filed Sept. 10, 1889. Serial No. 323,506. (No model.)



Claim.—1. The combination of the bracket 1, tubular shaft 6, rod 38 within said shaft, levers which meet and cover the end of said rod, boxes 8, and the described friction-clutch embracing a driven pulley, as 20, the driving-pulley 53, and the shipper, all operating as an intermediate means to receive, control, and deliver power.

2. In combination, in a friction-clutch in which the driving-surfaces are annular planes, a shipper-rod, levers which meet and cover the ends of such shipper-rod when free, and which are forced apart and locked by the introduction of said shipper-rod between them, the bracket 1, the boxes 8, and the shaft 6.

3. The combination of a shaft, as 6, a screw, as 7, a collet, as 36, and a clamp, as 39 40, to secure said collet firmly to the shaft, said parts operating as means to adjust one driving-surface of a friction-clutch to the other.

4. The bracket 1, the arm 48, the joint 49 and 50, the shipper 45, and the described friction-clutch mounted between the box 8 and the end of the shaft 6.

5. The combination of the hub 4 on the bracket 1, the screw 5, the arm 48, and the shipper 45, attached to said arm, as set forth.

6. The combination, with a counter-shaft, of a friction-clutch arranged entirely outside the hanger and detachable from the shaft without disturbing the shaft or boxes, and another similar clutch similarly arranged on the other end of the shaft and outside the other hanger.

7. The friction-clutch composed of, first, a hollow shaft containing a rod that has an independent longitudinal motion; second, a wheel loosely fitted to said shaft; third, suitable levers acting on said wheel and pivoted on the shaft at a point where motion received from the said rod will force said wheel to move in a direction parallel to length of the shaft, and, fourth, an annular flange rigidly attached to said shaft in a position to receive the thrust of the wheel on a similar annular flange upon the said wheel.

8. The combination of the rod 38 with suitable guides, the extension 41, having the mortise 43 and the groove 47, the shipper 45, the levers 35, the wheel 20, and the flange 30.

9. The combination of a hollow shaft suitably mounted, a rod occupying its center and suitably arranged to convey motion from a shipper at one end outside the shaft through the entire shaft, operating to attach and detach the surfaces of a friction-clutch.

10. A friction-clutch composed of a flange, as 30, attached to the shaft, a pulley, as 20, loose on shaft, having a friction-surface to oppose a similar surface on the said flange and conical surfaces to receive suitable levers, levers, as 35, suitably mounted and adjustable in the direction of the length of the shaft, and a shipper-rod, as 38, operating said clutch-levers by inclines and receiving its motion from a pendent shipper-lever.

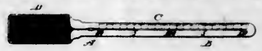
446,139. **FASTENING.** WILLIAM S. RICHARDSON, Boston, Mass. Filed Apr. 3, 1890. Serial No. 346,432. (No model.)



Claim.—1. As an improved article of manufacture, a fastening having a tubular shank in which is formed one or more short shallow indentations transversely arranged on said shank, as and for the purposes described.

2. The combination of a tubular rivet having a flange at one end and one or more short inward folds transversely arranged in said shank and upon the same transverse line as the inward folds and developed by them, one or more short outward folds transversely arranged in said shank, with a flanged ball, button, or cap-piece surrounding the shank of the rivet and held thereon by the said short transverse outward extending fold or folds of the shank, as and for the purposes described.

446,140. **CLINICAL THERMOMETER.** JOHN WALL, Connersville, Ind. Filed Apr. 12, 1890. Serial No. 347,638. (No model.)

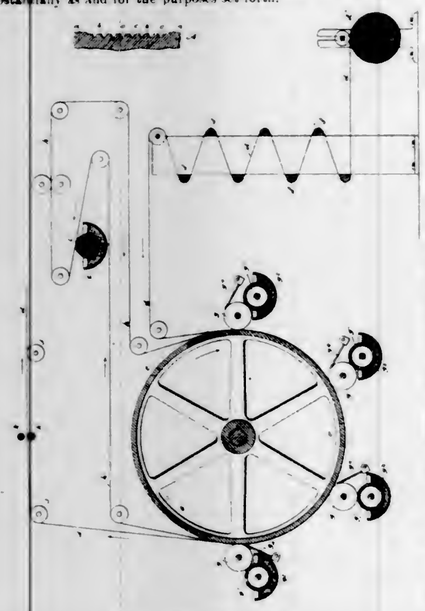


Claim.—As a new article of manufacture, a thermometer having a thin flat bulb with parallel faces, substantially as set forth.

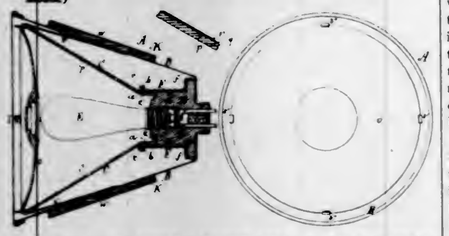
446,141. **PROCESS OF MANUFACTURING FIGURED PILE CARPETS.** JAMES DUNLAP, Philadelphia, Pa. Filed May 10, 1890. Serial No. 351,216. (No model.)

Claim.—1. The method of manufacturing patterned tapestry, velvet, or other pile carpet, which consists in first weaving the pile fabric, then disposing the masses or bodies of coloring-matter called for by the pattern or design in thin pellicled layers or sheets, then forcing the same in that form on and into the pile by heavy perpendicular pressure, and then applying steam to the pile or fabric, substantially as and for the purposes set forth.

2. The method of manufacturing patterned tapestry, velvet, or other pile carpet, which consists in first weaving the pile fabric, then disposing the masses or bodies of coloring-matter called for by the pattern or design in thin layers or sheets, then forcing the same on and into the pile by heavy perpendicular pressure, then blowing free steam forcibly on and into the fabric, then partially drying the fabric, and then subjecting it to the continued action of steam in a steam-room, substantially as and for the purposes set forth.



446,142. ELECTRIC SIGNAL AND SEARCH-LIGHT LANTERN. GEORGE W. MARTIN, Somerville, Mass., assignor of one-half to Josiah Knight, same place. Filed Feb. 28, 1890. Serial No. 342,137. (No model.)

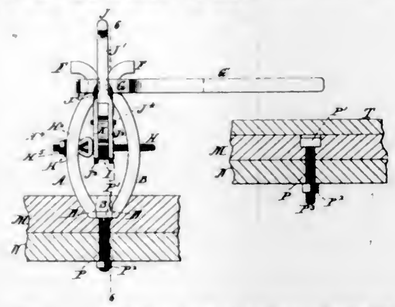


Claim.—1. In a lantern, a tapering body C, having at its smaller end a flange and screw-threaded neck and at the larger end a concavo-convex front *o*, provided with a lens, all in one piece of glass, combined with a screw-threaded metal sleeve, a socket, and an electric lamp, said socket supporting the lamp and adapted to connect to said sleeve, essentially as shown and set forth, the tapering exterior of the body being covered with a reflecting material, the latter covered with protective coating, as explained.

2. In a lantern, a tapering body C, having at its smaller end a flange and screw-threaded neck and at its larger end a concavo-convex front *o*, all in one piece of glass, combined with a screw-threaded metal sleeve, a socket, and an electric lamp, said socket supporting the lamp and adapted to connect to said sleeve, the tapering exterior of the body being covered by a reflecting material, the latter covered by a protective coating, as explained.

3. The lantern consisting of the tapering body C, having a flange and neck at its smaller end and a concavo-convex front at its larger end, all of one piece of glass, the metal screw-threaded sleeve connected thereto, the socket connected to the sleeve, the electric lamp secured to the socket, and the exterior casing B, applied to the said body essentially as shown.

446,143. WRENCH. JOHN MATTAN, Cincinnati, Ohio. Filed Sept. 9, 1889. Serial No. 323,337. (No model.)



Claim.—1. In a wrench, the jaws A B, each having its front end portion concave and terminating in a sharp edge, each of the jaws being provided near its rear end with the outward projection F, the curved ends E E being embraced by the link or coupling G, and a device for approximating and separating said jaws, said last-named device being located between the ends D D of the jaws and the said link or coupling, substantially as and for the purposes specified.

2. In a wrench, the jaws A B, each having its front end portion concave and terminating in a sharp edge, each of the jaws being provided near its rear end with the outward projection F, the curved ends E E being embraced by a link or coupling G, rigidly united to a lever G', substantially as and for the purposes specified.

3. In a wrench, the combination of the two jaws, each in a separate piece, provided at one end with concave edges and at the other end provided with anvil-heads, each head being connected to the main part of the jaw by a neck, the jaws being held together in the vicinity of the anvils by a loop connected to a handle and centrally united by a screw-shank, one of the jaws being provided with the enlarged flared opening A', through which passes the said screw-shank, substantially as and for the purposes specified.

4. A wrench having curved jaws A B, the concave portions of whose front ends face each other and terminate in an edge, each of the jaws being provided near its rear end with a neck E and the projecting anvil portion F, the jaws being united together at the neck by a coupling G, rigidly united to the lever G' and centrally united by a screw-shank H, swivel H^3, shank H^3, and nut H^3, substantially as and for the purposes specified.

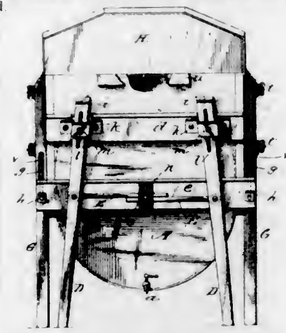
5. A wrench having curved jaws A B, the concave portions of whose front ends face each other and terminate in an edge, each of the jaws being provided near its rear end with a neck E and projecting anvil portion F, the jaws being embraced and united together at the neck by a link-coupling G, rigidly united to the handle G' and centrally united by a screw-shank H, triangular swivel H^3, shank H^3, and nut H^3, the jaw A being furnished with a slit enlarged in the direction of the length of the jaw and receiving a portion of the triangular swivel H^3, substantially as and for the purposes specified.

6. A wrench having curved jaws A B, the concave portions of whose front ends face each other and terminate in an edge, each of the jaws being provided near its rear end with a neck E and projecting anvil portion F, the jaws being united together at the neck by a link-coupling G, rigidly united to the handle G' and centrally united by a screw-shank H, triangular swivel H^3, shank H^3, and nut H^3, the jaw A being furnished with a slit enlarged in the direction of the length of the jaw and receiving a portion of the triangular swivel H^3 and provided with the ratchet-wheel I, fixed to screw-shank H, and with lever J pivoted thereon, and pawl or keeper K for engagement with the ratchet, substantially as and for the purposes specified.

446,144. WASHING-MACHINE. JUNI SCHRIB, McGregor, Tex. Filed June 30, 1890. Serial No. 357,275. (No model.)

Claim.—1. In a washing-machine, a suds-box provided with an automatically sliding or gravitating rubbing-head adapted to be rotated within the box, in combination with the legs for supporting the box, one pair of said legs having both a vertical and lateral adjustment, substantially as and for the purpose set forth.

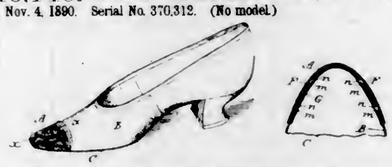
2. In a washing-machine, a suds-box provided with an automatically sliding or gravitating rubbing-head adapted to be rotated within the suds-box, in combination with the legs for supporting said box, one pair of said legs having elongated slots at their upper ends, thumb-screws and guides for holding them in their vertically-adjusted position, and horizontal brace-rods engaging with a bracket and held thereto by thumb-screw to retain the legs in their lateral adjustment, said rods being connected to the legs, substantially as and for the purpose specified.



446,145. ROOFING-PAPER. HENRY CUNNINGHAM, Batchtown, Ill. Filed Dec. 9, 1890. Serial No. 374,081. (No specimens.)

Claim.—As a new article of manufacture, a roofing-paper having a coating of linseed-oil and charcoal, for the purpose described.

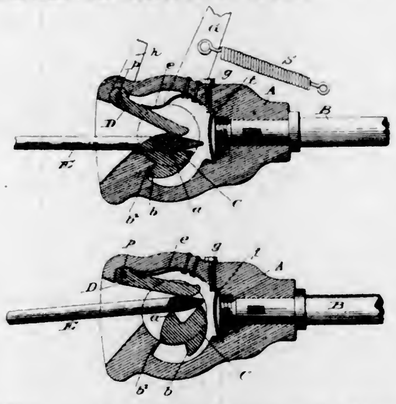
446,146. SHOE-TIP. ADOLPH HANSEN, Brooklyn, N. Y. Filed Nov. 4, 1890. Serial No. 370,312. (No model.)



Claim.—1. The combination, in a detachable tip for boots, shoes, or slippers, of an outer shell or casing conforming to the upper of the toe and having inwardly-projecting offsets, and a separable locking plate or strip conforming to the inner face of the tip and recessed or perforated to engage said offsets and adapted to be applied within the shoe, substantially in the manner and for the purpose herein set forth.

2. The combination, with a boot, shoe, or slipper, of a tip or covering-plate for the toe having offsets upon its inner side projecting through perforations in the toe, and a locking-plate fitted within the toe to engage the inwardly-projecting offsets, substantially in the manner and for the purpose herein set forth.

446,147. CAR-COUPLING. WILLIAM JOHNSON, Penn Yan, N. Y. Filed June 21, 1890. Serial No. 356,240. (No model.)



Claim.—1. In a car-coupling, the described rotatable draw-hook or pin *a*, the point or end of which is at or near the center of rotation, and the body of which extends outward from the said center, and which is adapted to receive the pulling strain thereon between the said center of rotation and the periphery of the supporting-shaft or body C, as and for the purpose specified.

2. In a car-coupling, the combination of the described rotatable shaft C, adapted to be fitted to the buffer or draw-head A, and the draw-hook or pin *a*, one side of said draw-hook or pin being adapted to form an incline or guide to the coupling-link, as and for the purpose specified.

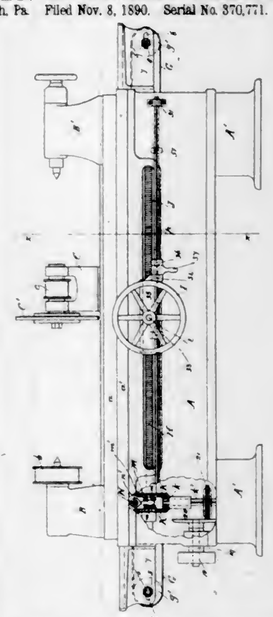
3. The described rotatable shaft C, draw-hook *a*, and stop *b*, formed integral and adapted to be fitted to the buffer or draw-head of a car-coupling and to be operated therein, as and for the purpose specified.

4. In a car-coupling, the buffer or draw-head A, perforated as described, provided with upward and downward inclined mouth-planes, one of which is fixed and the other movable, as described, and the shoulder b^3, in combination with the described rotatable draw-hook *a*, shaft C, and stop *b*, as and for the purpose specified.

5. In a car-coupling, the combination of the described buffer or draw-head A, perforated as described, the described draw-hook *a*, rotatable, as described, the coupling-link E, adapted to engage with the said rotatable draw-hook, the pivoted mouth-plate or casting D, and the springs *e* and *f*, as and for the purpose specified.

6. In a car-coupling adapted to couple cars automatically, the combination of the described buffer or draw-head A, perforated as described, the described shaft C, draw-hook *a*, and stop *b*, rotatable as described, the coupling-link E, adapted to engage with the said rotatable draw-hook *a*, as described, the pivoted mouth-plate D, adapted to operate as described, the pivot-shaft P, the springs *e* and *f*, the screw *g*, the shaft *o*, the levers G G', the spring S, and draw-bar B, as and for the purpose specified.

446,148. GRINDING-MACHINE. ABRAHAM B. LANDIS, Waynesborough, Pa. Filed Nov. 8, 1890. Serial No. 370,771. (No model.)



Claim.—1. The combination, with the bed provided with a longitudinal guide, of a sliding carriage for supporting the grinding-head, and a flexible guard secured to the carriage and extending over the whole length of the guide.

2. The combination, with the bed provided with a longitudinal guide and raised ledges at each side of the guide, of a sliding carriage provided with a flange bearing on the said guide between the ledges and adapted to support the grinding-head, and a flexible guard secured to the carriage and extending over the whole length of the guide with its sides resting on the said ledges, whereby the said guard is prevented from coming in contact with the guide.

3. The combination, with the bed provided with a longitudinal guide, of a sliding carriage for supporting the grinding-head, the longitudinally-adjustable pulleys journaled at the ends of the bed, and a flexible guard passing around the said pulleys and extending over the guide with its ends secured to the carriage.

4. The combination, with the bed and the sliding carriage for supporting the grinding-head, of a traversing device, such as a revolu-

ble screw located at the rear of the bed and adapted to move the carriage, a sliding hand-wheel at the front of the bed, a second traversing device, such as a revoluble screw, for moving the hand-wheel longitudinally, and intermediate driving mechanism positively connecting the two said traversing devices, the two said traversing devices being adapted to traverse the carriage and the hand-wheel with equal speed, whereby the hand-wheel and the carriage may preserve the same relative position with regard to each other, substantially as set forth.

5. The combination, with the bed provided with a longitudinal slot in front, of the sliding carriage for supporting the grinding-head, a screw journaled at the front of the machine, intermediate driving mechanism operatively connecting the said screw with the carriage, a sleeve sliding in the said slot and provided with a screw-threaded hole engaging with the said screw, a cross-shaft journaled in the said sleeve and provided with a hand-wheel outside the bed, a beveled toothed wheel splined to the said screw, and a beveled toothed wheel secured on the end of the cross-shaft, whereby the said screw may be revolved to move the hand-wheel and the carriage simultaneously along the bed.

6. The combination, with the bed provided with a longitudinal slot in front, of the screw journaled in the bed behind the slot, the sleeve sliding in the said slot and provided with a screw-threaded hole in its rear end for engaging with the said screw, a guide inside the bed for supporting the rear end of the sleeve, a cross-shaft journaled in the sleeve, the hand-wheel and the beveled toothed pinion secured on the said shaft, and the beveled toothed pinion splined to the said screw and sliding longitudinally with the said sleeve, substantially as and for the purpose set forth.

7. The combination, with the bed provided with a longitudinal slot in front, of the carriage for supporting the grinding-head and provided with a nut, the screw at the rear of the bed engaging with the said nut, a similar screw at the front of the bed behind the said slot, driving mechanism positively connecting the two said screws and causing them to revolve simultaneously, the sleeve sliding in the said slot and engaging with the said screw behind it, the cross-shaft journaled in the said sleeve, the hand-wheel and the beveled toothed pinion secured on the said shaft, and the beveled toothed pinion splined to the said screw at the front of the bed and moving longitudinally with the sleeve, substantially as and for the purpose set forth.

8. The combination, with the central clutch splined on the front traverse-screw, of the cross-shaft provided with an arm engaging with a groove in the said clutch, and a second arm *n*, also secured on the said shaft, the oscillating tappet provided with a working-groove loosely engaging with the end of the arm *n*, the V-shaped wheel on the said tappet, the spring-actuated bolt provided with a sharp pointed head engaging with the said wheel, and a longitudinally-movable rod supporting the said tappet and provided with collars near each end of the said tappet, substantially as and for the purpose set forth.

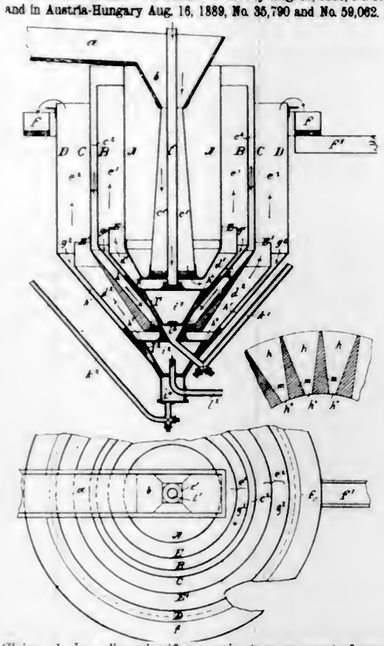
9. The combination, with the pivoted arm *n* for operating the reversing-clutch, of the oscillating rod provided with a handle, the tappet splined to the said rod and provided with the narrow stop-groove, the inclined guide-groove, and the working and clearance grooves around its periphery, and a stationary projection engaging with the said inclined guide-groove, whereby the arm *n* may be held in its central position by the stop-groove and moved in either direction by oscillating the tappet, substantially as and for the purpose set forth.

10. The combination, with the pivoted arm *n* for operating the reversing-clutch, of the oscillating rod, a handle splined to the said rod, the traversing plate provided with lugs for moving the handle along the rod and keeping it near the hand traverse-wheel, the tappet also splined to the said rod and provided with the narrow stop-groove, the inclined guide-groove, and the working and clearance grooves around its periphery, and a stationary projection engaging with the said inclined guide-groove, substantially as and for the purpose set forth.

11. The combination, with the pivoted arm *n* for operating the reversing-clutch, of the oscillating rod provided with a handle, the collars on the rod, the traversing plate provided with lugs for striking the said collars at the ends of the traverse, the tappet splined to the said rod and provided with the narrow stop-groove, the inclined guide-groove, and the working and clearance grooves around its periphery, a stationary projection engaging with the said inclined guide-groove, the V-shaped wheel on the tappet, the spring-actuated bolt provided with a sharp pointed head engaging with the said wheel, and the collars secured to the said rod near the ends of the tappet, substantially as and for the purpose set forth.

12. The combination, with the pivoted arm *n* for effecting the reversal of the traversing mechanism, of a single rod supported at the front of the machine and provided with a projecting handle, a tappet provided with grooves of peculiar form and operatively connected with the said rod and with the arm *n*, substantially as set forth, a stationary stop, and an automatic shooting-bolt also operatively connected with the said tappet, whereby the operations of stopping, starting, and reversing are effected by oscillating the said rod and moving it longitudinally, according to the desired direction of traverse, substantially as and for the purpose set forth.

446,149. SIZING APPARATUS FOR SLIME, &c. CARL A. E. MEINECKE, Clausthal, Prussia, Germany. Filed Oct. 29, 1890. Serial No. 369,753. (No model.) Patented in Germany Aug. 29, 1888, No. 47,025, and in Austria-Hungary Aug. 16, 1889, No. 35,790 and No. 59,062.



Claim.—1. In a slime-classifier, a series (two or more) of concentric vessels provided with conical ends and forming annular channels for the passage of the mixed ore and water, a central inlet-pipe, and a series of conical partitions forming the sediment-pockets, chambers, and passages for the discharge of the class or classes, substantially as described.

2. In a slime-classifier, a series of concentric vessels provided with conical ends and forming channels for the passage of the mixed ore and water, a central inlet-pipe, a series of interpolated conical partitions forming the sediment-pockets, sediment-chambers, and passages for the mixed ore and water, and induction-pipes for the introduction of clear water, substantially as described.

3. In a slime-classifier, a series of concentric vessels provided with conical ends and forming channels for the passage of the mixed ore and water, a central inlet-pipe, a series of conical partitions forming the sediment-pockets, sediment-chambers, and passages for the mixed ore and water, induction-pipes for the introduction of clear water, and an overflow, substantially as described.

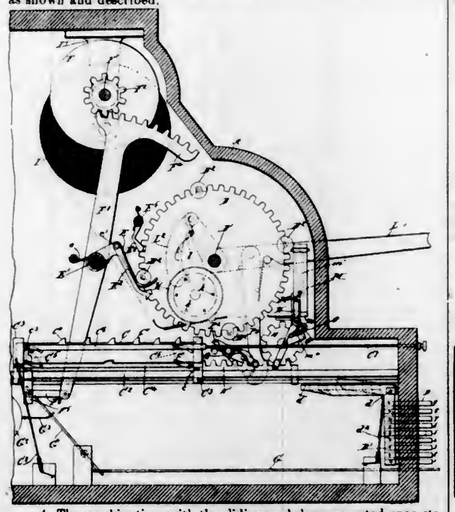
4. In an apparatus of the character specified, a series of concentric vessels having conical ends and forming a channel for the passage of the mixed ore and water, an inlet-pipe for introducing the water to the central part of the apparatus, and a partition, as E, and cone I′, forming with the vessels the channel *d* and passage *h*, substantially as described.

446,150. CASH REGISTER AND INDICATOR. BENJAMIN MOSER, Brooklyn, N. Y. Filed Dec. 2, 1889. Serial No. 332,192. (No model.)

Claim.—1. The combination, with the numbering or adding wheels having figured teeth divided into four groups and each of said wheels provided with carrying-buttons, of the sliding toothed bar for turning the wheels, mounted upon stationary bars and provided with spring-arms, substantially as described.

2. In combination with the sliding rack-bars for moving the numbering or adding wheels, the hinged links, the cross-pins bearing upon inclined faces on the bars, and the yokes connected with the links for moving the bars vertically, substantially as shown and described.

3. The sliding rack-bars for moving the numbering or adding wheels, the same being combined with links and yokes, as explained, and with friction-rollers running upon a stationary rod, substantially as shown and described.



4. The combination, with the sliding rack-bars mounted upon stationary bars, of the stems or buttons projecting through the front of the casing, the hinged angle-arms connected with said stems or buttons, and the stops or blocks carried by said arms to limit the outward movement of the rack-bars, substantially as described.

5. The combination, with the numbering or adding wheels provided with carrying-buttons, and the indicator-wheels, of the axled arcs actuating the indicator-wheels, and the bell-crank levers mounted upon the axles of said arcs and engaging with the buttons on said adding-wheels, substantially as described.

6. The combination, with the numbering or adding wheels provided with carrying-buttons, and the indicator-wheels, of the axled arcs actuating the indicator-wheels, and the bell-crank levers mounted upon the axles of said arcs and engaging with said carrying-buttons, and the pawls hinged to said bell-crank levers and engaging with the teeth of the said wheels, substantially as described.

7. The combination, with the numbering or adding wheels provided with carrying-buttons, the axled arcs, bell-crank levers, and pawls mounted on said levers, of a shaft carrying spring-actuated pawls engaging with the teeth of the said wheels, substantially as described.

8. The combination, with the numbering or adding wheels provided with carrying-buttons, indicator-wheels, the axled arcs, bell-crank levers, and pawls mounted on said levers, of a shaft carrying spring-actuated pawls engaging with the teeth of said wheels, and a stop-arm located on the last of said wheels and adapted to bear against said shaft, substantially as described.

9. The combination, with the numbering or adding wheels provided with carrying-buttons, the axled arcs, bell-crank levers, and pawls mounted on said levers, of the hand-rod G and pivoted rods G′, connected with said hand-rod and with the axled arcs, substantially as described.

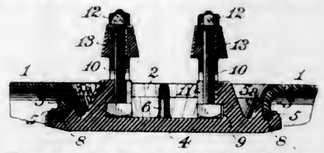
10. The combination, with the register-wheels and the rack-bars H′, of the yokes H^3, connected with said bars, and the sliding bars C, substantially as described.

11. The combination, with the cash-indicator wheels, of the paper strip, the feed-wheel K, having projections *k*, the pivoted lever L, having arm L^3, adapted to engage with said projections, the spring *l*, and mechanism whereby the same number that appears on the indicator-wheel is printed on the strip, substantially as described.

12. The combination, with the cash-indicator wheels, the paper strip, the pressure-wheel K, having projections *k*, of the lever L, having hinged portion or arm L^3, bar M′, block, and cutting-knife, the bar M, spring *m*′, projection m^3, pin m^4, and mechanism whereby the same number that appears on the indicator-wheel is printed on the paper strip, substantially as described.

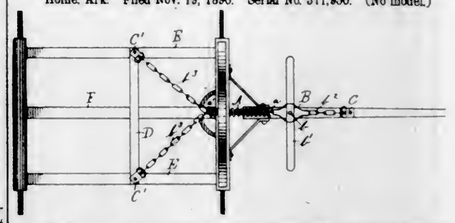
446,151. MAN-HOLE COVER. ROBERT MUNROE, Allegheny, Pa. Filed Oct. 16, 1890. Serial No. 368,312. (No model.)

Claim.—1. A man-hole cover having a circumferential groove adapted to receive a flange surrounding a man-hole opening, and provided with a flange at the inner side of said groove of contour similar thereto and of sufficient depth to fit against the man-hole opening flange from its face to or near its turn, substantially as set forth.



2. The combination of a metal sheet having a flange turned upon it around a man-hole opening, and a cover provided with a circumferential groove receiving the flange of the sheet, and a flange at the inner side of said groove fitting against the flange of the sheet to or near the turn thereof, substantially as set forth.

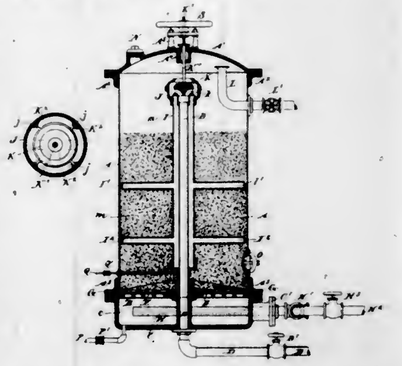
446,152. TONGUE-SUPPORT. WILLIAM D. NAPIER, Mountain Home, Ark. Filed Nov. 19, 1890. Serial No. 371,950. (No model.)



Claim.—1. In combination with a running-gear, a tongue-support consisting of a coil-spring A, having attaching-arms to either end, link B, enlarged at its middle, its rear end attached to the front end of said spring and its front end attached to the tongue, chains b^2, their front ends secured to the rear end of said spring and their rear ends to either end of the cross-bar D, and cross-bar D, secured to the running-gear.

2. In combination with a running-gear, a tongue-support consisting of the spring A, having the arms *a* and *a*′, enlarged link B, its rear end linked in the front end of the arm *a*, said link made wide at its middle, so as not to interfere with the bolt *b*, chain b^2, its rear end attached to link B and its front end secured in hook C, hook C, secured to the tongue, chains b^2, their front ends secured to the rear end of the arm *a*′ and their rear ends secured in the hooks C, hooks C, secured to each end of the cross-bar D, and cross-bar D, secured to the running-gear of the vehicle, substantially as shown and described, and for the purposes set forth.

446,153. FILTER. JOHN S. ROAKE, Brooklyn, N. Y. Filed May 24, 1888. Serial No. 274,886. (No model.)



Claim.—1. In a filter having the casing A, pipe D, inducting the water into the upper portion, and pipe H^3, discharging the water from below a strainer near the bottom, in combination with each other and with the perforated pipes I′ I^3, immersed in the filtering material and connecting pipe I for supplying water thereto, and provision, as the cock D′, for admitting water through the perforations to rise through the loose filtering material, and with the discharge-passage L and controlling means L′, delivering water from the upper portion of the casing, arranged to serve in washing the filtering material by an up-

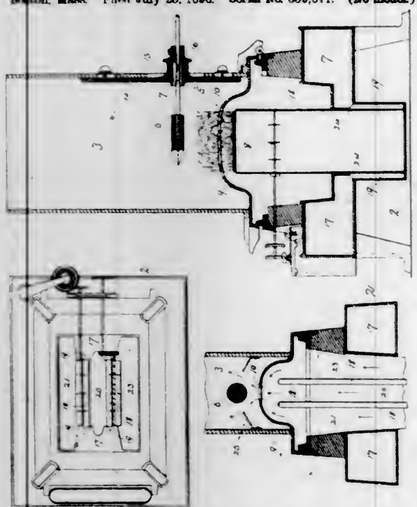
ward current through the mass at intervals, substantially as herein specified.

2. In a water-filter, the single chamber-case A and filtering material therein, in combination with the stationary wash-pipe I, arranged centrally within the case and having two or more perforated tiers of branch pipes I' I^2, the pipe D, arranged concentrically within the pipe I for inducting the water into the upper portion of the case, and the eduction-pipe L, leading from the top of the case and arranged to produce an upward current first in the upper portion and afterward in the main body of the filtering material *m*, substantially as herein specified.

3. In a filter, the valve K and its operating means S, in combination with the casing J, having seats both above and below, and with the pipes D and I, arranged to serve substantially as herein specified.

4. In a filter, the filtering-chamber, the delivery-chamber *c*, separated therefrom by a perforated diaphragm, and a perforated strainer supported thereon, combined with the central pipe D and the surrounding pipe I, having perforated lateral branches I' and I^2, and the perforated pipe H, arranged within the delivery-chamber, elevated above the bottom thereof and adapted to withdraw the water without inducing an appreciable current, as herein specified.

446,154. HEATING SOLDERING-IRONS. FAYETTE S. ROBINSON, Boston, Mass. Filed July 25, 1890. Serial No. 359,871. (No model.)



Claim.—1. In a soldering-iron heater, the combination, with the lamp-base and chimney-flue having means for supporting a soldering-iron, of the cone having the single-flame aperture and wick-tubes arranged below said cone out of line vertically with said aperture and on opposite sides thereof, substantially as and for the purposes set forth.

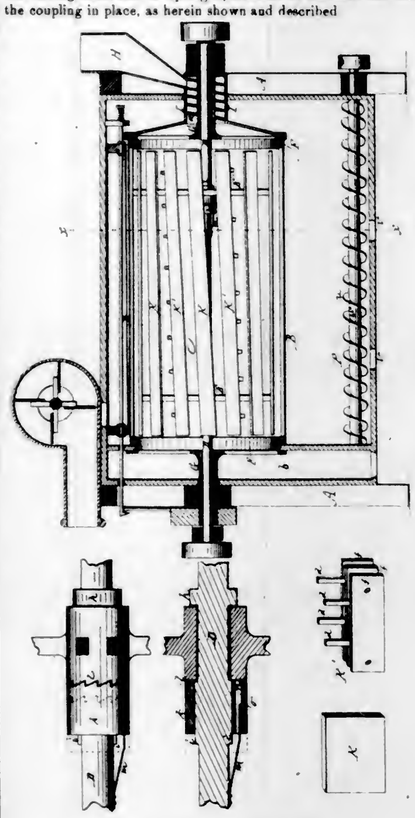
2. In a soldering-iron heater, the combination, with the chimney-flue provided with the vertically-adjustable soldering-iron holder, of the metallic cone having the single-flame aperture, and the wick-tubes arranged below said cone out of line vertically with said aperture and on opposite sides thereof, substantially as and for the purposes set forth.

3. A lamp-base, the chimney-flue provided with a soldering-iron holder, the oil-reservoir having a central chamber, and the wick-tubes extending vertically therethrough and dividing it into air-flues, combined with oil-ducts leading from the reservoir to the said wick-tubes, and a directing-cone having a single-flame aperture centrally located with respect to the said wick-tubes, the latter being below said cone but out of line vertically with said aperture, substantially as described.

4. In a soldering-iron heater, the combination, with a lamp-base and a chimney-flue having means for holding a soldering-iron, of a heat-directing cone having a single-flame aperture, inclined deflectors 25, arranged above said aperture within the flue, and wick-tubes arranged below said apertnre but out of line vertically therewith, substantially as described.

446,155. FLOUR-BOLT. CHARLES A. SCHIED, Rochester, N. Y. Filed Nov. 26, 1890. Serial No. 372,722. (No model.)

Claim.—The combination, with the beater C, consisting of one stationary and one turning head and connecting-slats, of the coupling *k*, sliding on the shaft D, provided with teeth that engage with teeth of the turning head, and the spring *m*, attached to the shaft and locking the coupling in place, as herein shown and described



446,156. WHIFFLETREE. WILLIAM H. SHOLL, Hobart, Ind. Filed Oct. 24, 1890. Serial No. 369,236. (No model.)



Claim.—1. A doubletree consisting of two members formed from sheet metal and provided on their exterior surface with longitudinal swells or ribs, which produce correspooding depressions on the opposite sides, substantially as described.

2. A doubletree consisting of two members formed from sheet metal and having exterior swells or ribs and corresponding depressions or hollows on the opposite sides, and the tube-plates secured to the respective members, substantially as described.

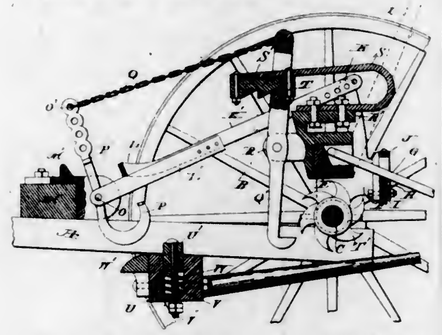
3. In a combined doubletree and singletree, each consisting of two members formed from sheet metal, the tube-plates secured to the respective ends of the doubletree members, the flanged spool or post inserted between the members comprising the singletree, and the connecting pivot-bolt, substantially as described.

4. The combination, with a doubletree and singletree, each consisting of two members formed from sheet metal, of the pivot-connecting bolt and the strip of packing interposed between the adjacent surfaces of the double and single tree, substantially as described.

5. The combination, with a doubletree and singletree, each consisting of two members formed from sheet metal, of the tube-plates secured to the respective ends of the doubletree members, the flanged spool or post inserted between the members comprising the singletree, the connecting pivot-bolts passing therethrough, and the caps engaging with the tube-plates and covering the ends of the pivot-bolt, substantially as described.

6. A tubular singletree consisting of two members formed from sheet metal and riveted together at the ends, and the spool or post inserted between said members at their longitudinal center, substantially as described.

446,157. HAY-RAKE. ALBERT L. SLAGER and GEORGE E. LINN, Springfield, Ohio, assignors to the G. S. Foos Company, same place. Filed Aug. 23, 1890. Serial No. 362,890. (No model.)



Claim.—1. In a hay-rake, the combination, with a revoluble axle, a ratchet carried thereby, and a rake-head pivotally connected with the axle, of a thill-frame connected with the axle, locking devices consisting of a link and a locking-bar pivoted together and to the thill-frame and the rake-head, respectively, a pawl and detent carried by the rake-head, the detent engaging with the pawl continuously, except at the end of the forward throw of the rake-head, a foot-lever adapted to unlock the locking devices and connected with the pawl for securing simultaneous action, and devices to arrest the pawl and to throw the detent out of engagement with it.

2. In a hay-rake, the combination, with the axle, the rake-head, and locking devices to lock the head in operative position, of a pivoted pawl carried by the head, a detent engaging with the pawl, a ratchet carried by the axle and adapted to be engaged by the pawl, a tripping device adapted to unlock the locking devices and connected with said pawl, a stop for the pawl, and a device to throw the detent out of engagement with the pawl.

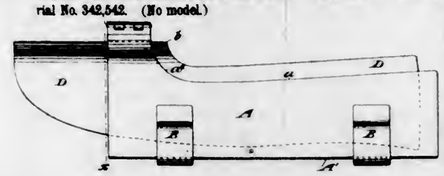
3. In a hay-rake, the combination, with a revoluble axle, of a rake-head supported thereby, a ratchet-wheel on the axle, a pawl pivotally mounted upon the rake-head at the forward side thereof and having a slot with a shoulder, and a spring-detent secured to the rake-head projected through said slot and having teeth to engage with the pawl and adapted to hold it in and out of engagement with the ratchet.

4. In a rake, the combination, with a revoluble axle, of a ratchet-wheel and rake-head carried thereby, a pawl carried by the rake-head, a detent adapted to hold the pawl in and out of engagement with the ratchet-wheel, suitable devices to arrest the pawl and to throw the detent out of engagement therewith, a tripping device to throw the pawl into engagement with the ratchet-wheel, and a lock to lock the rake-head in operative position.

5. In a hay-rake, the combination, with a revoluble axle, of a ratchet-wheel, a rake-head, a pawl pivoted to the rake-head and having a shoulder, a spring-detent carried by the rake-head and having teeth to engage said shoulder to hold the pawl in and out of engagement with the ratchet-wheel, devices to arrest the pawl and throw the detent out of engagement therewith, a foot-lever connected to the pawl, and a lock for the rake-head adapted to be operated by the foot-lever.

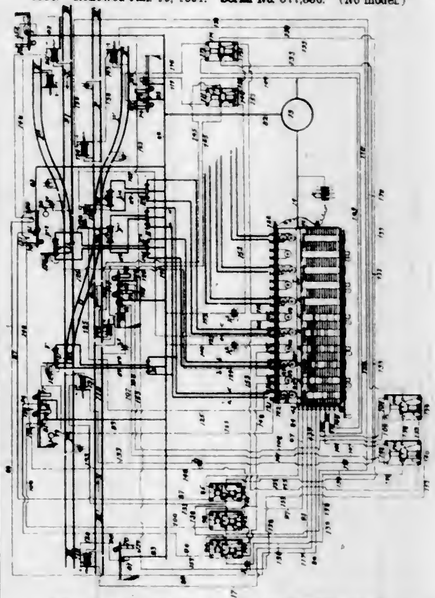
6. In a rake, the combination, with the rake-head carrying a pivoted pawl, of a stop for such pawl, a spring to actuate the stop against the pawl, a spring-detent engaging with the pawl, and a curved surface adapted to throw the detent out of engagement with the pawl.

446,158. CLAMP FOR HOLDING VAMPS AND QUARTERS FOR SHOES. EDWIN B. STIMPSON, Brooklyn, N. Y. Filed Mar. 4, 1890. Serial No. 342,542. (No model.)



Claim.—A clamp for shoe vamps and quarters, consisting of two jaws hinged together and having their inner edges of the same conformation and arranged to rest parallel with and in proximity to each other, the said inner edges forming a guide for the purposes of pinking and ornamenting, and a securing device for holding the jaws together, substantially as set forth.

446,159. SWITCH AND SIGNAL APPARATUS. GEORGE WESTINGHOUSE, Jr., and JENS G. SCHREUDER, Pittsburg, Pa. Filed Mar. 19, 1888. Renewed Jan. 10, 1891. Serial No. 377,336. (No model.)



Claim.—1. The combination of a fluid-pressure motor for reversing the switch or other part or appliance connected with a track and provided with a fluid-pressure-controlled valve mechanism, a supply-and-exhaust valve mechanism controlling the motor-valve and constructed to retain fluid-pressure on one side or the other of the motor-valve in accordance with the position of the switch, an electrically-controlled mechanism for locking the supply-and-exhaust valve mechanism during the operation of the fluid-pressure motors, and a normally-open electric circuit for controlling the locking mechanism, such circuit being closed to lock the supply-and-exhaust valve mechanism during the movements of the switch mechanisms, substantially as set forth.

2. The combination of a series of two or more fluid-pressure motors for reversing a series of two or more switches or other parts or appliances connected with a track and provided with fluid-pressure-controlled valve mechanisms, a supply-and-exhaust valve mechanism for controlling the motor-valves, a series of two or more electrically-controlled mechanisms for locking the supply-and-exhaust valve mechanism during the operation of the fluid-pressure motors, and a series of two or more electric circuits for controlling the locking mechanisms, each electric circuit being controlled through the moving parts of one of the switch mechanisms.

3. The combination of a fluid-pressure motor for reversing the switch and provided with a fluid-pressure-controlled valve mechanism, a supply-and-exhaust valve mechanism controlling the motor-valve and constructed to retain fluid-pressure on one side or the other of the motor-valve in accordance with the position of the switch, an electrically-controlled mechanism for locking the supply-and-exhaust valve mechanism during the operation of the fluid-pressure motor, and an electric circuit for controlling the locking mechanism, such electric circuit being controlled by the switch-locking mechanism, substantially as set forth.

4. The combination of fluid-pressure motors for shifting the signals, electric circuits controlling the signal mechanisms, such circuits being dependent upon make-and-brake mechanisms, one for each signal mechanism, operated by the switch-controlling mechanisms, and locking mechanisms operated by the signal-controlling mechanisms to lock the switch-controlling mechanisms, substantially as set forth.

5. The combination of a slotted quadrant provided with locking-pins and an electrically-controlled latch engaging with the pin, substantially as set forth.

6. The combination of a rotating-valve mechanism, a roller provided with insulated metallic bands extending partially around said roller, and an insulating bed having metallic strips divided into sections attached thereto, said sections being provided at their ends with contact points or springs constructed to engage the bands on both sides of the rollers when the latter have been properly adjusted, substantially as set forth.

7. The combination of an insulating-bed having metallic strips divided into sections attached thereto, said sections being provided at their ends with contact points or springs, a series of two or more rotating rollers formed of insulating material arranged between the contact points or springs, and metallic bands passing partially around said rollers and so located thereon as to engage with the contact points or springs in certain predetermined positions of two or more of the rollers, thereby forming a metallic circuit across the bed, substantially as set forth.

8. The combination of rotating rollers formed of insulating material, in any desired number, having metallic bands thereon for making and breaking circuits by rotation of the rollers, and metallic strips in line with said bands and provided with contact springs or points, some or all such strips having electric connection through the bands of a part only of the rollers, substantially as set forth.

9. The combination of a switch, a switch-shifting mechanism, a hand-operated mechanism controlling the switch-shifting mechanism, an electrically-controlled signal-shifting mechanism, an electric circuit controlling the signal-shifting mechanism, a metallic strip divided into sections provided at their ends with contact points or springs, the end sections being connected with the signal-circuit, and rotating rollers provided with bands for engagement with the contact-points in certain predetermined positions of the rollers, one of said rollers being operated by the switch-controlling mechanism and the other by a hand-lever, substantially as set forth.

10. The combination of a series of miniature tracks arranged in correspondence with the system of tracks controlled by the machine, a series of movable sections arranged in correspondence with the switches of such track system, and connections from such movable sections to the switch-controlling mechanism, whereby said movable sections are shifted simultaneously and in correspondence with the switch-controlling mechanism, substantially as set forth.

11. The combination of a series of miniature tracks arranged in correspondence with the system of tracks controlled by the machine and a series of movable sections arranged in correspondence with the switches of said track system, said sections being arranged in pairs, each pair being connected to a spring-lever which at normal tension holds the sections in position indicating unlocked switch, and movable points connected to the switch-controlling mechanism for shifting said lever, substantially as set forth.

12. The combination of a series of electrically-controlled disks having numbers or other marks indicating certain lines of track, provided with a projecting plate, an electric-track circuit controlling the movements of said disks in one direction, said circuit being controlled by the passage of trains over an insulated track-section forming part of said circuit, fluid-pressure pipes provided with nozzles so arranged that fluid-pressure escaping from said nozzles will impinge upon the projecting plates of the disks and return the same to normal, and a valve controlling the escape of fluid-pressure from said nozzles, substantially as set forth.

13. The combination of electrically-controlled mechanisms for shifting the home and distant signals, electric circuits controlling the signal mechanisms, make-and-break mechanisms, each controlling one of the signal-circuits, and a circuit-breaker included in the electric circuit controlling the distant signal and controlled by the home-signal, substantially as set forth.

14. The combination of electrically-controlled mechanisms for operating the distant signal, an electric circuit controlling such mechanism, a make-and-break mechanism controlling such circuit, a circuit-breaker included in the signal-circuit, and a track-circuit controlling the circuit-breaker, whereby the passage of the train onto the track-circuit will shift the distant signal to "danger," substantially as set forth.

15. The combination of electrically-controlled mechanisms for shifting the home and distant signals, electric circuits controlling the signal mechanisms, make-and-break mechanisms, each controlling one of the signal-circuits, an electrically-controlled circuit-breaker included in the circuit controlling the distant signal, a track-circuit controlling the circuit-breaker, and a circuit-breaker operated by the home-signal and controlling the track-circuit, substantially as set forth.

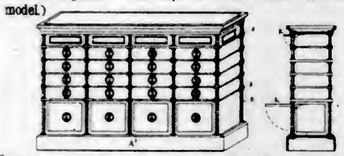
16. The combination of a lever 15, for operating the valve mechanism controlling the switch, a lever controlling the signal-circuits, a longitudinally-movable bar operated by the signal-lever and provided with notches on its upper edge, and a pivoted dog normally resting in the notch in the movable bar and having its free end adapted to engage the lever 15 when the dog is raised from the notch by the movement of the bars, substantially as set forth.

17. The combination, with a rotating valve mechanism, of a slotted quadrant moving with said valve mechanism and provided with a locking-pin and notch, an electrically-controlled latch adapted to engage the notch, and a spring-tongue connected to the latch and adapted to engage the pin in the slot of the quadrant, substantially as set forth.

18. The combination, with a slotted quadrant having locking-stops located within the slot, of an electrically-controlled latch adapted to engage said stops, a lever for operating the quadrant, provided with spring-actuated pin or pawl, and shoulders or stops formed on the front plate of the machine, substantially as set forth

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446,160. CABINET FOR FILING PAPERS, &c. SAMUEL G. BROWNE, London, England. Filed Sept. 24, 1889. Serial No. 324,874. (No model.)

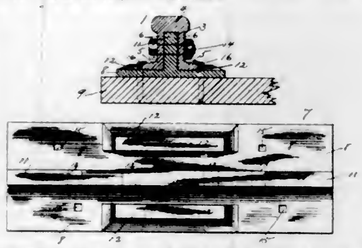


Claim.—1. A filing-cabinet or article of furniture having shelves kept at suitable distances apart by metal standards having grooves or slots to receive the panels or pieces forming sides and back, said standards being provided with slotted ferrules or plates bored to suit tie-rod, tie-rods passing through said standards and through holes in the shelves, grooves in the shelves to receive the panels, and sockets or nuts by which any number of superposed shelves may be tightened up by the tie-rod or released for packing, the whole being made so that the cabinet may be enlarged or diminished at pleasure, substantially as described.

2. In a filing-cabinet or article of furniture having flap-doors, the combined hinge and spring consisting of a piece of flat spring one end turned round so as to form a socket through which the hinge-pin on the flap-door is passed, the other end of the spring being secured to the shelf, substantially as described.

3. In a filing-cabinet having compartments formed as above described by movable standards and tie-rods, a file-case having a holder consisting of one or more tubes to receive index-leaves secured by a screw passing through said tube, in combination with a clip consisting of two or more radial arms formed from a bent wire or otherwise, the piece connecting the two arms being passed round a bar or bars curved and shaped so that a transverse movement radiates the arms, causing them to clip or release documents placed between the index-leaves, substantially as described.

446,161. RAILWAY-TRACK. LIBBEUS CHILSON, Worcester, Mass., assignor, by direct and mesne assignments, to William R. Kendall, Andrew W. Hunt, and Milton L. Fay, all of same place. Filed Aug. 11, 1890. Serial No. 361,717. (No model.)

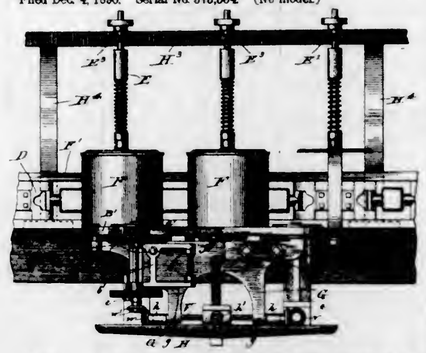


Claim.—1. As an improved article of manufacture, a rail coupling or chair having its base or bed 8 of sufficient length to extend over the ends of two ties, a central longitudinal rib made integral with said base and extending up therefrom for the purpose stated, and provided with elongated holes 13, and the projections or shoulders 12, extending upon opposite sides of the central rib 11, for the purpose stated, substantially as set forth.

2. In a rail-joint, the combination, with the contiguous ends of two rails having vertical slots 3 therein, of a rail coupling or chair 7, consisting of the base or bed 8, having a central longitudinal rib 11 made integral therewith and adapted to extend into the vertical slots 3, and the elongated holes 13 in said rib, and the projections or shoulders

12 on the base part, for the purpose stated, and bolts 14, all combined together substantially as set forth.

446,162. CAN-SOLDERING MACHINE. ARNOLD D. COLEMAN, Chicago, Ill., assignor of one-half to Jonathan O. Armour, same place. Filed Dec. 4, 1890. Serial No. 373,534. (No model.)

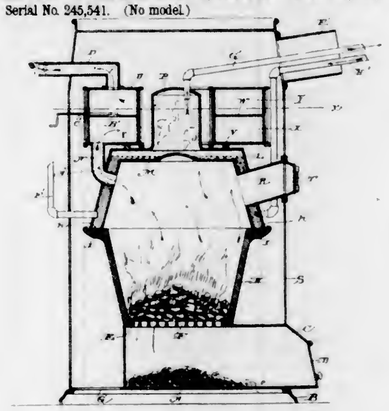


Claim.—1. In a can-soldering machine, a wiper consisting of a swinging frame pivoted to a horizontal shaft, a vertical shaft having its bearings in said frame and actuated by said horizontal shaft through suitable gears, a pulley mounted on said vertical shaft, an adjustable idler-pulley, wiping material carried on said pulleys, with means for holding said material in contact with the cans to be wiped, and a trough adjustably secured to the table supporting said machine, with suitable devices for adjustably securing said trough to said swinging frame, substantially as shown and described.

2. In a can-soldering machine, the combination of a wiper having a swinging frame, pulleys for carrying said wiping material, with means for actuating said pulleys, suitable devices for holding said material in contact with the cans to be wiped and having a trough adjustably secured to the table, devices for adjustably securing said trough to said frame, with a carrying-chain provided with suitable devices for clamping the can endwise, a guiding-way for said chain, and means for revolving the cans and the clamps holding them while passing the wiper, said wiping material and cans revolving in opposite directions during said passage, substantially as shown and described.

3. In a can-soldering machine, a wiper having the frame G, pivoted to the horizontal shaft V, a vertical shaft W, pulley O, mounted on said shaft, auxiliary pulley a', mounted on swinging brackets b, adjustable idler-pulley O', wiping-cloth N, supporting-piece M, trough H, adjustably secured to the frame or table A of the machine, coiled spring I, and bolt K for adjustably securing said frame G to the trough H, in combination with the chain D, provided with revoluble clamping devices for clamping the cans F endwise, the guiding-way F', and means for revolving the cans and clamps holding them when passing the wiper, substantially as shown and described.

446,163. COMBINED HOT-AIR, STEAM, AND HOT-WATER HEATER. WILLIAM H. DENSLOW, Ulster, Pa. Filed July 28, 1887. Serial No. 245,541. (No model.)

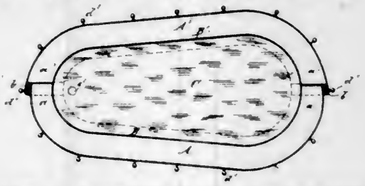


Claim.—1. The combination of the outer shell or casing S, having the base-plate provided with openings G for the admission of air, the fire-pot arranged in the lower side of the casing and having the upwardly-projecting flange I at its upper edge, the steam-boiler resting on the upper side of the said flange I and having the central upwardly-projecting steam-dome P, the annular radiator surrounding the steam-dome and supported by and upon the steam-boiler, the pipe A', extending downward from the radiator through the steam-boiler to the combustion-chamber, and the pipe D', leading from the radiator, substantially as specified.

2. In a heater, the combination of the outer shell or casing S, having the base-plate provided with air-inlet openings G, the fire-pot arranged in the casing S, the boiler arranged above the fire-pot and having the steam-dome P, the annular radiator encircling the steam-dome, out of contact therewith and arranged above the boiler, the said radiator having lower and upper chambers and provided with a damper B' and the openings Z between the said chambers, the smoke-pipe A', extending from the combustion-chamber to a point in the lower chamber of the radiator below the damper B', and the smoke-pipe D', extending from the upper chamber of the radiator above the said damper through the casing S, substantially as specified.

3. In combination with the fire-pot, the steam-boiler supported thereby and having a convex crown which is arranged directly above the fire-pot, the steam-dome formed by contracting the steam-boiler at the top on a line with the fire-pot, the heat-radiator encircling the steam-dome above the boiler but out of contact with the dome, the tortuous passage in the radiator, and the smoke-flue connecting the radiator with the fire-pot, the pipe D', leading from the heat-radiator, and the pipes G' F', leading from the steam-dome and the lower part of the steam-boiler, respectively, as set forth.

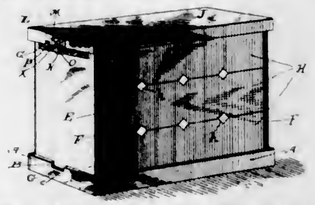
446,164. SEPARABLE BATH-TUB. MARIE DORLLE, New York, N. Y. Filed Nov. 10, 1890. Serial No. 370,846. (No model.)



Claim.—1. A separable bathing-tub consisting of detachable wall-sections having devices by which the meeting edges of the same are connected with each other and inwardly-extending flanges near their lower edges, and a detachable bottom plate supported by the said flanges of the wall-sections, substantially as set forth.

2. A separable bathing-tub consisting of detachable wall-sections with inwardly-extending flanges near their lower edges, and a detachable bottom plate supported by said flanges of the wall-sections, in combination with a detachable lining of rubber or other water-proof material having means by which the same is fastened to the upper edges of the wall-sections, substantially as set forth.

446,165. CRATE. ELIE H. FLORY, Abbeville, La., assignor of one-half to Moses Fischer, same place. Filed Aug. 27, 1890. Serial No. 363,201. (No model.)



Claim.—1. The combination, with the body of the box having folding ends, of the cover provided at its ends with a depending lip K, fitting into a recess in the body of the box beneath said lip, and with an independent fastening device comprising a hook hinged to the cover to swing outwardly and having an inwardly-bent end to fit under a portion of the box, substantially as set forth.

2. The combination, with the body of the box having folding ends, of the cover provided at its ends with a depending lip K, fitting into a recess in the body of the box beneath said lip, an independent fastening device comprising a hook hinged to the cover to swing outwardly and having an inwardly-bent end to fit under a portion of the box, a

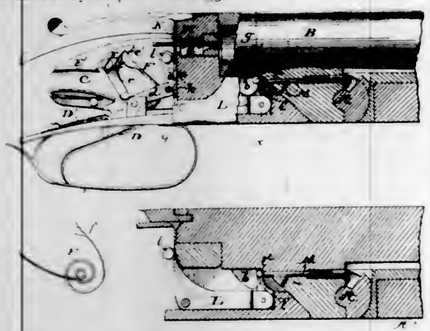
locking-finger bearing against said hook to hold it in a locked position, and the lips P, depending from the ends of the cover and bearing against a portion of the body of the box below the cover to guard against endwise movement of the cover, substantially as described.

3. The combination, with the body of the box having folding ends and the cover, of the fastening device for securing the cover and body together, said device composed of the metal frame having a hook hinged thereto, with a portion thereof fitting in an opening of said frame, and a finger pivoted to said frame and bearing against said hook to lock it in position, substantially as and for the purposes set forth.

4. A carrier-tray composed of the bottom piece, the side and end strips, one of said strips having an opening formed in its end to receive a portion of the meeting end of the other strip, and both strips provided at their ends with metallic plates folded to lie upon opposite sides of the strips and form loops registering with each other, and a connecting-pin passing through said registering loops and having its lower end bent outwardly and then downwardly and bearing in the bottom piece of the tray, whereby the side strips are brought along the edge of the bottom piece, while the bearing-point of the connecting-pin is brought in from the edges the distance of the outwardly-bent portion of the pin, substantially as and for the purposes set forth.

446,165. SAFETY DEVICE FOR BREECH-LOADING GUNS. FRANK A. HOLLENBECK, Batavia, N. Y. Filed June 18, 1890. Serial No. 355,854. (No model.)

Brief.—The firing-pin is normally in a position such that it cannot be struck by the hammer, but is brought into operative relation to the hammer by the pull of the trigger.



Claim.—1. In a fire-arm, the combination, with the breech-block, of a firing-pin movably located therein, impelling devices therefor adapted to apply the force of the same to the rear end of the firing-pin, and a movable part connected with the trigger and located in a plane between the breech-block and said impelling devices for putting said impelling devices and firing pin into and out of operative relation, substantially as described.

2. In a fire-arm, the combination, with the breech-block, of a firing-pin located in a recess therein, impelling devices therefor adapted to directly engage the rear end of said pin, and a movable part connected with the trigger, located in a plane between the breech-block and impelling devices for putting the impelling devices and firing-pin into and out of operative relations, substantially as described.

3. In a fire-arm, the combination, with the breech-block, of a firing-pin movably located therein, impelling devices therefor adapted to engage the rear end of the said pin, and a slide connected with the trigger and adapted to move in a fixed plane transversely of the said pin, said slide being located at the rear of the breech-block and adapted to put the impelling devices and firing-pin into and out of operative relation, substantially as described.

4. In a fire-arm, the combination, with the breech-block, of a firing-pin located in a recess in said block, impelling devices therefor adapted to move the said pin by force applied to the rear end of the same, and a movable part connected with the trigger and adapted to move in a fixed plane over the recess, said movable part being located at the rear of the breech-block and adapted to put the impelling devices and the firing-pin into and out of operative relation, substantially as described.

5. In a fire-arm, the combination, with the breech-block, of a firing-pin located in a recess therein, impelling devices for said firing-pin adapted to move the same by applying the force thereof to the rear end of the said pin, and a slide connected with the trigger and firing-pin and adapted to throw the firing-pin into and out of operative relation with its impelling devices, said slide being located at the rear of the breech-block and moving over the rear end of the recess in the breech-block, substantially as described.

6. In a fire-arm, the combination, with a breech-block and a firing-pin located in a recess therein, of a movable part operatively connected with the trigger and engaging said firing-pin, but separate therefrom, for throwing the said firing-pin into and out of operative relation with its impelling devices, substantially as described.

7. In a fire-arm, the combination, with the breech-block and a firing-pin located in a recess therein, of impelling devices adapted to impel the firing-pin by applying force to the rear end of the same, a slide connected with the trigger and engaging the firing-pin, but separate therefrom, and a spring holding the firing-pin normally out of operative relation with its impelling devices, whereby movement of the trigger to release the impelling devices brings the pin into operative relation to discharge the gun, substantially as described.

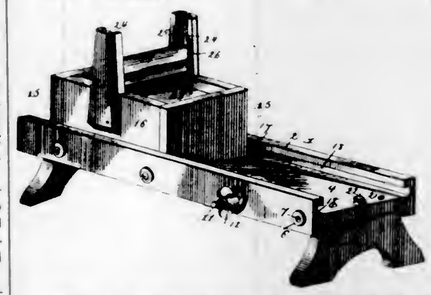
8. In a fire-arm, the combination, with the firing-pin, of the forward support for the same, consisting of a bearing having an aperture adjacent to the cartridge closely fitting said pin, said aperture being of increased area at the rear of said bearing, and a movable support for the firing-pin in rear of said bearing, substantially as described.

9. In a fire-arm, the combination, with the firing-pin, of a forward bearing for the same, holding the forward end of the firing-pin in a fixed transverse relation with the cartridge, but permitting a movement of the rear end of said firing-pin, a slide supporting said pin in rear of said bearing, and an operative connection between said slide and the trigger, substantially as described.

10. In a breech-loading fire-arm, the combination, with the stock and barrels pivoted thereto, having hooked lugs, of a single cocking-lever, a link pivoted to the forward end of the cocking-lever and having a cross-bar engaging the hooked lugs of the gun-barrels, the rod holding the cross-bar in engagement with the hooked lugs, and its retracting-spring, the retaining-screw, and fore-end, substantially as described.

11. In a fire-arm, the combination, with the firing-pins, of impelling devices therefor, consisting of springs adapted to directly engage the firing-pins, the pivoted barrels having the hooked lugs, a single cocking-lever directly engaging said springs, the link and its cross-bar, and means for holding the cross-bar in engagement with the hooked lugs, substantially as described.

446,167. VEGETABLE-CUTTER. AUGUSTUS G. KYLE and EDWARD J. KYLE, Newville, Pa., assignors to S. C. Wagner, B. F. Emrich, and R. H. Sollenberger, all of same place. Filed Aug. 4, 1890. Serial No. 360,977. (No model.)



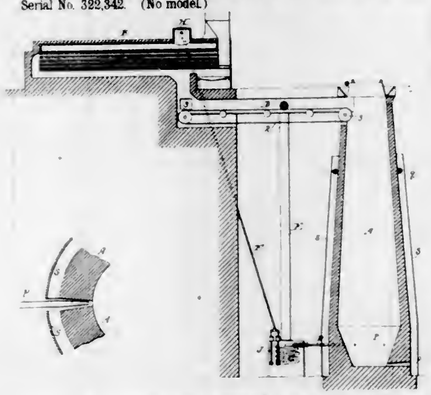
Claim.—1. In a vegetable-cutter, the combination of the sliding box, the frame consisting of the sides and the bottom composed of the stationary section, and the section 4, having one end provided with a knife and the other end hinged and provided with a vertical projection 22, forming a stop for the said box, and the legs at one end of the cutter rigidly secured to the hinged section 4 and moving therewith, substantially as described.

2. The combination, in a vegetable-cutter, of the frame comprising the sides and the bottom composed of the stationary section, and the section 4, having one end hinged between the sides and arranged slightly higher than the stationary section and having the other end carrying a knife, the legs arranged at the ends of the frame and rigidly secured to the hinged section of the bottom and being carried by the same, and the stop 22, arranged at the outer end of the hinged section and being formed by a projection, substantially as described.

3. In a vegetable-cutter, the combination of the frame comprising the sides and the bottom, having a hinged section carrying a knife and provided at its lower face with a transverse groove, the regulating-rod passing through the sides of the frame and provided with a thumb-nut and being adapted to be arranged in the groove, and the buttons pivoted to the hinged section to secure the rod in the groove, substantially as described.

4. In a vegetable-cutter, the combination of the frame carrying a knife and the sliding box carrying the blade 20 and provided with the recesses 23, the arms or standards provided with grooves forming a continuation of the recesses, the follower-block arranged within the box and provided with a handle arranged between the standards and having tenoned ends arranged in the grooves and recesses, and having its entire upper edge rounded and provided with grooves to form a handle, substantially as described.

446,168. BLAST-FURNACE. SIDNEY PARKER, Chicago, Ill., assignor of two-thirds to W. O. Osgood, same place. Filed Aug. 29, 1889. Serial No. 322,342. (No model.)



Claim.—The combination of a furnace with an independent steam-generator, and a conduit connecting the top of the furnace with the flues of the steam-generator, and steam-pipes leading from the steam-generator to a superheater and from the superheater to the tuyeres of the furnace, and a smoke-stack communicating with the superheater and with the conduit, substantially as set forth.

446,169. IRONING-BOARD. AUGUST SOMMERFELD, St. Louis, Mo. Filed Oct. 27, 1888. Renewed Jan. 9, 1891. Serial No. 377,272. (No model.)



Claim.—The combination, with the ironing-board having the beveled or inclined edges, of the springs D, secured under the board, the hooks C, attached to the springs, and the cover having the stiffening wires or flange B at its sides, adapted to be engaged by the hooks, substantially as described.

446,170. GRINDING AND POLISHING MACHINE. BARTON E. SPERRY, Batavia, Ill. Filed Feb. 20, 1890. Serial No. 341,166. (No model.)

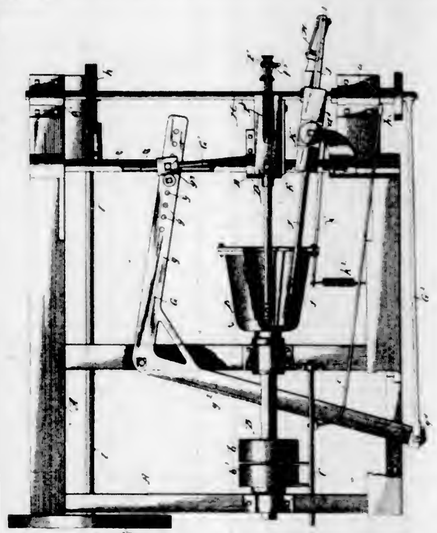
Claim.—1. The revolving shaft B, on which the vessel is mounted, in combination with a central polishing-stock, a sliding carrier on which said stock is mounted and movable laterally thereto, a side polishing-stock arranged to operate upon the side of the vessel and sliding lengthwise, and an oscillating carrier in which said stock is mounted, substantially as and for the purposes specified.

2. The revolving shaft B, which carries the vessel, in combination with the sliding carrier D, the end bars *a*, on which said carrier is mounted and on which it is free to slide, and the polishing-stock E, mounted on said slide and extending inward to the bottom of the vessel, substantially as and for the purposes specified.

3. The carrier D, mounted on ways on which it is free to slide, in combination with the central polishing-stock E, mounted on said carrier, the bell-crank lever G, link-rod G', pitman G^3, and crank-wheel *h*, substantially as and for the purposes specified.

4. The sliding carrier D, in combination with the stock-holder D', mounted thereon, the central polisher-stock E passing through said holder and adjustable lengthwise therein, and the yielding lever F for holding the polisher up to the bottom of the vessel, substantially as and for the purposes specified.

5. The stock-holder D', provided with an opening *d*, running through it lengthwise and widening from the front to the rear end of the holder, in combination with the central polisher-stock E, passing through said opening in the holder, the spring d^2, and the clamping-block d^3 on said spring and passing through an opening d^4 in the holder to rest upon the stock, substantially as and for the purposes specified.



6. The holder D', in combination with the central polisher E, mounted therein and provided with a pin e' near its outer end, the lever F, provided with a slot *f*, the rod F', receiving the lower end of the lever, the spring f^2, and a fastening device for securing the upper end of the lever in any adjustment desired, substantially as and for the purposes specified.

7. The side polisher-stock J, in combination with an oscillating carrier K, in which said stock is mounted and which is itself mounted on vertical pivots, and a yielding retainer arranged to hold the inner end of the stock against the inclined side of the vessel, substantially as and for the purposes specified.

8. The oscillating carrier K, mounted on vertical pivots, in combination with the side polisher-stock J, mounted to slide back and forth in said carrier, the arm k', and the spring k^3, substantially as and for the purposes specified.

9. The oscillating carrier K, in combination with the side polisher-stock J, mounted to slide freely lengthwise in said carrier, the vibrating lever L, connected at its upper end to said stock, the cam k^2 on the shaft H, and the weight O, substantially as and for the purposes specified.

10. The oscillating carrier K, in combination with the side polisher-stock J, mounted to slide back and forth in said carrier, the lever L, adjustably pivoted at its lower end, the link-bar N, connected by swivel-joints respectively to the stock J and lever L, the cam k^2, and the weight O, substantially as and for the purposes specified.

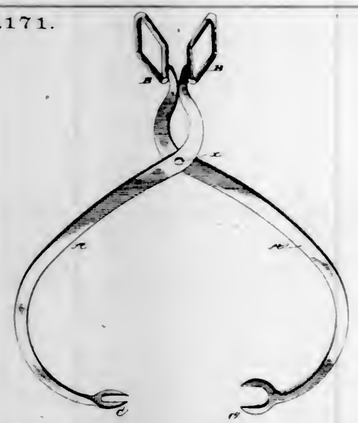
11. The oscillating carrier K, mounted on vertical pivots, in combination with the side polisher-stock J, mounted to slide therein, the arm k', retaining-spring k^3, vibrating lever L, cam k^2, and weight O, substantially as and for the purposes specified.

12. The driven shaft H, provided with the crank-wheel *h* and cam k^2, in combination with the bell-crank lever G, sliding carrier D, central polisher-stock E, mounted on said carrier, vibrating lever L, oscillating carrier K, and side polisher-stock J, mounted to slide back and forth in said carrier, whereby the required reciprocatory movements of both stocks are produced by the same shaft, substantially as and for the purposes specified.

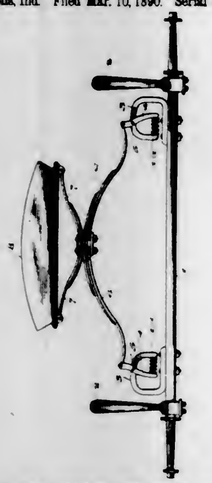
446,171. ICE-TONGS. JACOB BRINKERHOFF, Auburn, N. Y. Filed Oct. 7, 1890. Serial No. 367,362. (No model.)

Claim.—Ice-tongs consisting of two arms pivoted together, the lower end of each arm being provided with two points held from rotation, the plane of the line of the points of one arm intersecting the plane of the line of the points of the other arm, for the purpose set forth.

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446,172. VEHICLE. GEORGE W. COONSE and OTTO E. HARRIS, Indianapolis, Ind. Filed Mar. 10, 1890. Serial No. 343,238. (No model.)



Claim.—1. In a vehicle, a main spring connected to the seat or body above and below to the upper ends of arms pivoted to hangers supported upon the axle, and a coiled spring connected to the lower ends of such pivoted arms and also to the lower end of the hanger, whereby the latter is compressed by the load of the main spring, all combined substantially as shown and described.

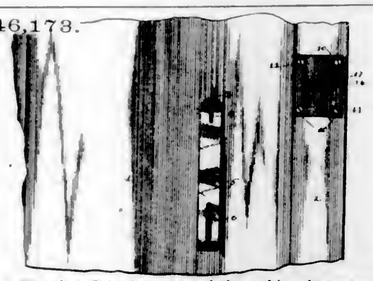
2. In a road-cart or other vehicle, a main spring connected to the seat or body above and below to the upper ends of arms pivoted to hangers supported upon the axle, and coiled springs connected to the lower ends of such pivoted arms and also to the upper end of the hanger, whereby such spring is adapted to be compressed by the load of the main spring, all combined substantially as shown and described.

446,173. HASP AND STAPLE. CHARLES HANCOCK, Philipsburg, Pa. Filed Apr. 25, 1890. Renewed Jan. 17, 1891. Serial No. 378,069. (No model.)

Claim.—1. A staple-plate provided with opposite slots and adapted to be secured to a door-jamb, a staple having its terminals passed through and loosely fitting the slots and movable therein, and devices for preventing their withdrawing therefrom, substantially as specified.

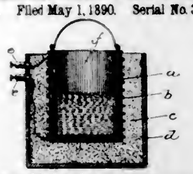


446,173.



2. The plate 8, having a central slot and loosely mounted in a recess of the jamb, a securing-plate 9, located in front of the plate 8 and provided with opposite slots 17, a staple having its terminals inserted through the slots 17 and secured to the plate 8, and a screw passed through the plate 9 and the slot of the plate 8, substantially as specified.

446,174. ELECTRIC COOKING APPARATUS. JEREMIAH O'MEARA, New York, N. Y. Filed May 1, 1890. Serial No. 350,136. (No model.)

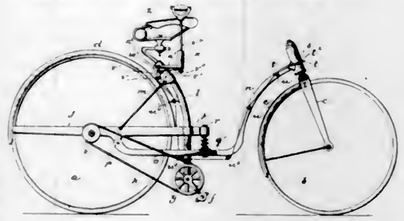


Claim.—1. A portable heating apparatus comprising an enameled vessel, a heating-coil of German-silver or other electrically-conductive wires surrounding the said enameled vessel externally, and an external electrically non-conductive casing surrounding the wires, substantially as described.

2. A portable heating apparatus comprising a case or jacket, an enameled vessel, and interposed electric conductors arranged externally of the enameled vessel, substantially as described, whereby the said apparatus may be used with an electric or other heating agent, or both, as set forth.

3. A portable heating apparatus comprising an enameled vessel, a heating-coil of German-silver or other electrically-conductive wire supported upon and by the said enameled vessel, and an external insulating-casing, substantially as described.

446,175. BICYCLE. WILLIAM SCANTLEBURY, Rockaway, N. J. Filed May 28, 1890. Serial No. 353,429. (No model.)



Claim.—1. In a bicycle or other like vehicle, a divided frame one portion of which is supported upon the axle of the rear wheel and supports the saddle or seat and the other portion is connected with the front wheel and is forked and extends beneath and is pivoted to the first-named portion, and a spring interposed between the two, substantially as and for the purpose described.

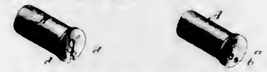
2. In a bicycle or other like vehicle, the combination of a frame supported upon the axle of one wheel, a seat-post secured in said frame, oblique braces interposed between the frame and post, a backbone forked and extended beneath and pivoted to the said frame and connected with the front wheel, a spring interposed between the frame and backbone, and a connector, substantially as and for the purpose described.

3. In a bicycle or other vehicle, a frame on the steering-wheel, combined with a steering-post pivoted to the said frame, rests for the said steering-post on said frame, and springs impelling the said post toward the said rests, substantially as and for the purpose described

4. The combination, with the seat-post, of an arm x', extending laterally from each side of the post, supporting-handles for operating the steering mechanism and the brake, and a bracket connecting the said arm and post, substantially as described.

5. In a bicycle or like vehicle having a steering-handle arranged at the seat, the combination of the steering-wheel, a rock-shaft on the seat-post, chains connecting the steering-wheel and rock-shaft, and a crank connection between the rock-shaft and the handle, substantially as and for the purpose described.

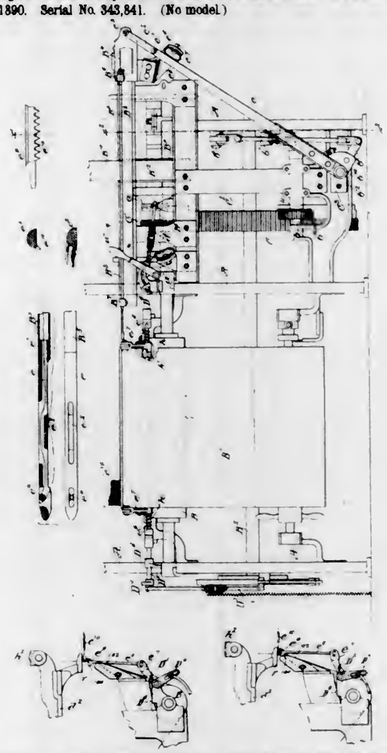
446,176. CYLINDER-LOCK. JOHN H. SHAW, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Dec. 8, 1890. Serial No. 373,911. (No model.)



Claim.—1. In a cylinder-lock in which the cylinder is constructed with a longitudinally flat key-hole, the key-hole constructed with one or more longitudinal undercut grooves upon its sides, combined with guards of corresponding shape set in said grooves, substantially as described.

2. In a cylinder-lock in which the cylinder is constructed with a longitudinal flat key-hole, the key-hole constructed with one or more longitudinal recesses in its sides, the said recesses being somewhat more than half a circle in transverse section, combined with guards of corresponding but of substantially full cylindrical shape set into said recesses in the said cylinder, substantially as described.

446,177. LOOM FOR WEAVING TUFTED FABRICS. HORACE WYMAN, Worcester, Mass., and FRANK S. WEBB, Bridgeport, Conn., assignors to the Crompton Loom Works, Worcester, Mass. Filed Mar. 14, 1890. Serial No. 343,841. (No model.)



Claim.—1. The tuft-yarn nipper, combined with the reed to clamp the tuft-yarn while bent about the weft and before the tuft-yarn is cut off, substantially as described.

2. The tuft-yarn nipper having a series of teeth to enter spaces between the warp-threads and act on the tuft-yarns near their free ends to keep the said ends above the warp-threads, substantially as described.

3. The tuft-yarn nipper, the arms with which it is jointed, the rock-shaft, and springs between the arms and rock-shaft, to operate substantially as described

4. A weft-carrier, the carriage to which it is attached, and a guide for the carriage, combined with a pivoted lever and a link connected thereto and to the said carriage, the sum of the length of the lever and link being just equal to the distance between the pivotal point of the said lever and the point where the said link is jointed to the said carriage when the carriage is in its extreme outward position, whereby rebounding of the carriage is obviated, substantially as described.

5. A weft-carrier, the carriage to which it is attached, and a guide for the carriage, combined with a pivoted lever and a link connected thereto and to the said carriage, the sum of the length of the lever and link being just equal to the distance between the pivotal point of the said lever and the point where the said link is jointed to the said carriage when the carriage is in its extreme outward position, whereby rebounding of the carriage is obviated, and with a stop or cushion to arrest the outward movement of the picker-stick, substantially as described.

6. The weft-carrier, the carriage to which it is attached, a guide for the carriage, the link, the lever c, the elbow-lever b^3, the shaft b, means to rotate the same intermittingly, and connections between the said shaft and elbow-lever, substantially as described.

7. The power-shaft, a pinion thereon, the gear rotated continuously by the said pinion and having teeth entirely about its periphery at one side to be engaged by the said pinion, a series of teeth C^5, a series of blank spaces C^6 between the said teeth C^5, and flanges 4, combined with a shaft b, having a partial gear thereon, and a locking-plate, to operate substantially as described.

8. The shaft b, means for rotating it intermittingly, the adjustable link b^4, the lever b^5, link b^7, and lever b^8, combined with the lever c, link c^3, and carriage B^4 and its attached needle B^5, to operate substantially as described.

9. The tuft-yarn nipper or clamping-bar having a heel 100, combined with a cam, substantially as described, to act against the said heel and lift the said nipper, as and for the purpose set forth.

10. The lever c and the elbow-lever b^3, combined with a locking device, whereby the said lever c may be left at rest when desired.

11. The tuft-nipper bar and the rock-shaft D^3, arms c^7, and springs to normally push the tuft-nipper toward the reed, combined with stops attached to said rock-shaft to control the extent of movement of the said tuft-nipper toward the reed, substantially as described.

12. The tuft-nipper bar and the rock-shaft D^3, arms c^7, and springs to normally push the tuft-nipper toward the reed, combined with stops attached to said rock-shaft to control the extent of movement of the said tuft-nipper toward the reed, and with means to adjust the stress of the said springs, substantially as described.

446,178. BULLET-MOLD. JOHN H. BARLOW, New Haven, Conn. Filed July 5, 1890. Serial No. 357,789. (No model.)



Claim.—1. In a bullet-mold, the combination, with the complementary parts of the mold, of the plug connected to one of the parts, as described, and a supplemental plug secured to said first-named plug and adapted to move longitudinally within the mold-cavity, substantially as set forth.

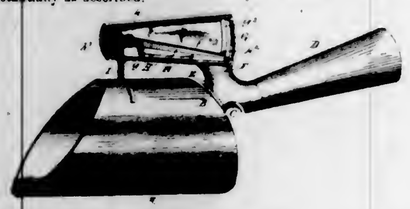
2. In a bullet-mold, the combination, with the complementary parts and the base-plug, of the screw 8, threaded through said plug, and the plug 9, secured upon said screw and movable by means thereof longitudinally of the mold-cavity, substantially as described, whereby the capacity of said cavity is varied

446,179. WEIGHING-SCOOP. LEWELEN BARTLETT, Yates Center, Kans. Filed Apr. 12, 1890. Serial No. 347,648. (No model.)

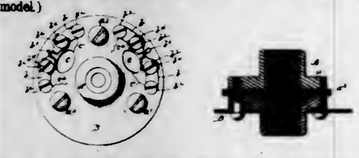
Claim.—1. A weighing-scoop comprising a scoop having a finger-piece placed at an angle thereto on the rear end, a support attached near the center on top of the scoop extending up into the casing, having lateral lugs near its upper end, a scale-beam pivoted in the casing having a bifurcated end, in which rests the lugs on the support, the beam having its other end extending through an opening in the casing and formed into an indicator, and a spring for normally holding the indicator in its lower position, substantially as described.

2. A weighing-scoop comprising the handle having an inclined

abutment on its inner end, a casing secured to an upward extension of the handle, a support having a scoop secured to its lower end, said scoop having a finger-piece on its rear end, and mechanism in the casing for supporting the scoop and indicating the weight of the contents, substantially as described.

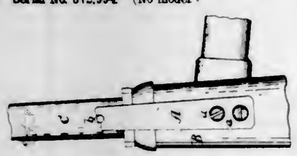


446,180. INSULATING COUPLING-BLOCK AND CUT-OUT. SIGMUND BERGMANN and CHARLES J. KLEIN, New York, N. Y.; said Klein assignor to said Bergmann. Filed Mar. 11, 1890. Serial No. 343,536. (No model.)



Claim.—In a coupling-block and cut-out, the combination of a section having a tubular boss to engage a pipe, another section having a tubular boss to engage a fixture, insulating material between said sections, a disk of insulating material having a central opening to pass over the boss of the last-named section, the said disk extending laterally beyond said sections and having openings for the passage of main wires outside of the sections, screws passing through the disk and sections securing the parts together, pairs of connecting-plates secured to the disk on its outer side, binding-posts on the plates, and fusible wires, substantially as specified.

446,181. BICYCLE. SETH A. BROWN, Buffalo, N. Y. Filed Nov. 29, 1890. Serial No. 372,994. (No model.)



Claim.—1. The elastic or spring strip A, rigidly secured at one end to one member of a bicycle steering joint or swivel and having at the other end a slot *f*, engaging or locking with a pin *b*, placed in the other member of said joint or swivel.

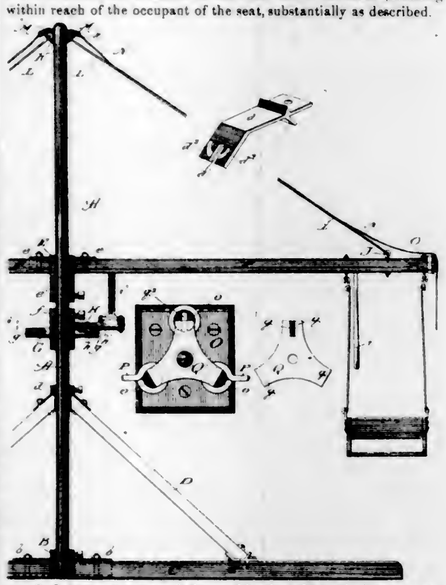
2. A lock for the steering gear or joint of bicycles, consisting of a single elastic or spring strip A, rigidly fastened at one end to one member of the steering joint or swivel and having at the other end means for locking or engaging with the other member of said joint or swivel.

3. A lock for the steering-gear of bicycles, having a curved recess to fit the tube or stem E of the front-wheel fork of bicycles and a hole *e* to receive the bolt I, fastened thereon by the nut H, and provided at the other end with any suitable means for locking or engaging with the frame-bar F.

4. A lock for the steering-gear of bicycles, consisting of the elastic strip A, having at one end a curved recess *i* to fit the stem E, a hole *e* to receive the bolt I, fastened thereon by the nut H, and provided at the other end with a notch *f*, which engages with a pin *b* in the frame-bar F, for the purpose specified.

446,182. ROUNDABOUT. JACOB FRUEH, Chicago, Ill. Filed May 1, 1890. Serial No. 350,146. (No model.)

Claim.—1. In a merry-go-round, the combination of a vertical center post, supporting-arms rotatably mounted thereon, seats arranged on the supporting-arms, a clutch-wheel non-rotatably mounted on the center post and provided with a smooth or untoothed rim, a clutch-bar rotatably mounted on the center post, a clutch comprising two opposing members arranged on the clutch-bar on opposite sides of the clutch-wheel rim and engaging the clutch-wheel on the opposite sides of its smooth and untoothed rim and permitting the clutch-bar to move in one direction and preventing it from moving in the other, a rock-shaft journaled on one of the supporting-arms, a crank and link on the inner end of the shaft connected together by a joint permitting free movement and connecting the shaft to the clutch-bar by a joint permitting free movement, and a handle on the outer end of the shaft extending within reach of the occupant of the seat, substantially as described.

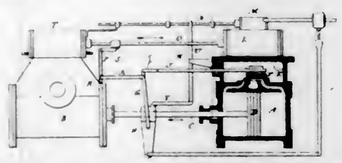


2. In a merry-go-round, the combination of a vertical center post, a removable cap thereon, supporting-arms arranged on a removable collar, ground-pieces radiating from the center post, braces connecting the ground-pieces and the center post, slotted connecting-pieces interposed between the ends of the braces and the point of connection between the braces and the ground-pieces and center post and provided with ridges to retain bolt-heads, and bolts passing through the slots of the connecting-pieces and the braces with their heads behind the ridges and permitting them to be detached upon loosening, but without removing the bolts, substantially as described.

3. In a merry-go-round, the combination of a vertical center post, supporting-arms rotatably mounted thereon, seats arranged on the supporting-arms, end pieces on the supporting-arms, provided with outwardly-extending studs, rods extending from the studs of one end piece to the studs of another, and a fastening-plate preventing the rods from slipping over the ends of the studs, substantially as described.

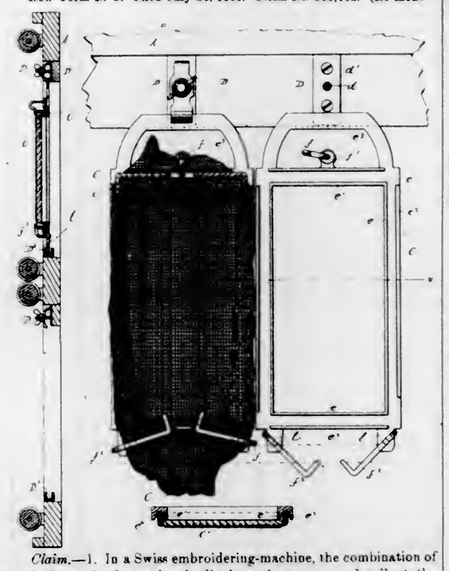
4. In a merry-go-round, the combination of a vertical center post, supporting-arms rotatably mounted thereon, seats arranged on the supporting-arms, a rotatable cap on the top of the center post provided with a slotted rim, a ring supported on the cap above the rim, and rods extending from the ring through the slots in the rim of the cap to or near the outer ends of the supporting-arms, strengthening them and preventing sagging, substantially as described.

446,183. METHOD OF GOVERNING THE MOVEMENTS OF PISTONS IN STEAM-ENGINES. EBENEZER HILL, South Norwalk, Conn. Filed Oct. 31, 1887. Serial No. 253,806. (No model.)



Claim.—The method of utilizing the force of inertia in a steam-engine, which consists in automatically imparting to the moving parts a velocity during the first part of the stroke greater than the average of the entire stroke and automatically reducing the velocity of the parts below that average during the last part of the stroke, substantially as described.

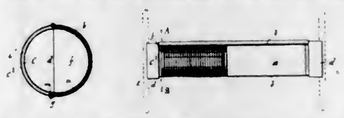
446,184. EMBROIDERING-MACHINE. HENRY HOCHREUTENER, New York, N. Y. Filed July 26, 1890. Serial No. 360,112. (No model.)



Claim.—1. In a Swiss embroidering-machine, the combination of a main frame having a longitudinal opening, a grooved rail at the bottom of said opening, spring-clamps on the main frame near the top of said opening, and fabric-holding frames having lugs at their lower ends engaging said grooved rail and extensions at their upper ends engaging said spring-clamps, substantially as set forth.

2. A fabric-holding frame for embroidering-machines, consisting of a skeleton frame provided with flanges at its inner and outer edges and with extensions at its upper and lower ends for attachment to the tambour-frame, a retaining-frame adapted to fit between the flanges of the skeleton frame for clamping the fabric, and latching devices at the upper and lower ends of the skeleton frame for holding the retaining-frame thereon, substantially as set forth.

446,185. COIN HOLDER AND PACKAGE. JACOB HOCK, Deggendorf, Germany. Filed Oct. 29, 1890. Serial No. 369,753. (No model.) Patented in Belgium May 12, 1890, No. 91,604; in Italy June 30, 1890, XXIV, 28,075, LV, 154, and in Switzerland July 29, 1890, No. 2,469.



Claim.—1. In a coin-receptacle, the combination, with a semi-cylindrical section having heads provided with circular grooves in the inner surface, of a section surrounding said headed section and having its end guided in said grooves, substantially as set forth.

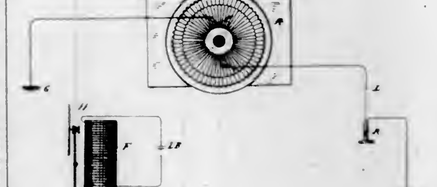
2. In a coin-receptacle, the combination, with a semi-cylindrical section, of circular heads secured to the ends of the same, which heads are each provided on the outer surfaces with a transverse shoulder and on the inner surfaces with circular heads, and a semi-cylindrical section mounted to turn on the above-mentioned headed section and having its ends guided in grooves of the inner surfaces of the heads, substantially as set forth.

3. In a coin-receptacle, the combination, with a semi-cylindrical section, of circular heads secured on the ends of the same and provided in the inner surfaces with circular guide-grooves, a semi-cylindrical section mounted to turn on the above-mentioned section and having its ends guided in grooves in the heads, and a fixed semi-cylindrical projection on the inner surface of each head, substantially as set forth.

4. The combination, with a fixed cylindrical section having end heads, of a projection within said semi-cylindrical section on the inner surface of each head, and a semi-cylindrical section mounted to turn on and close the above-mentioned semi-cylindrical-headed section, substantially as set forth.

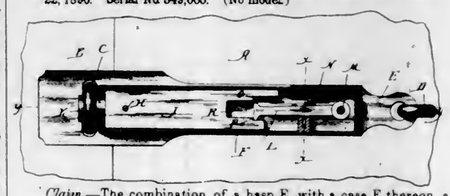
5. In a coin-receptacle, the combination, with a semi-cylindrical section having heads, of an additional semi-cylindrical section mounted to turn on the headed section, and means for locking the sections together when in closed position, substantially as set forth.

446,186. BELT. HENRY LECK, New York, N. Y., assignor of one-half to Samuel Bretzfield, same place. Filed Oct. 29, 1890. Serial No. 369,678. (No model.)



Claim.—The combination, with a belt provided at one end with a hook and at the other end with a series of apertures adapted to receive said hook, of a sliding loop surrounding both ends of the belt, a fastening device on the outer surface of the belt on that end of the belt provided with the apertures, a flap or wing fastened to that part of the belt provided with the apertures a distance from the free end of the belt equal to the length of the said flap, and a fastening device on the inner surface of said flap at the swinging end thereof, which fastening device is adapted to engage the fastening device on the face of the belt, the above-mentioned loop being arranged between the hook adapted to pass through the apertures and the fastening device on the end of the belt, substantially as set forth.

446,187. HASP-LOCK. WILLIAM R. MORSE, Chicago, Ill. Filed Apr. 22, 1890. Serial No. 349,005. (No model.)



Claim.—The combination of a hasp E, with a case F thereon, a bolt J in such case having a slot R, and shoulders O P on both sides of the slot on one end thereof, and a series of pivoted tumblers L L L, shaped as shown, and springs N N to actuate them, adapted, when suitably affected by the key, to free the bolt from the tumblers, which otherwise engage one or the other of the shoulders, a slot G in the case, a handle H on the bolt and projecting through the slot, and a key-hole in said case, and the staples C and D, all substantially as shown, and for the purpose described.

446,188. TELEPHONE TRANSMISSION. JAMES W. MCDONOUGH, New York, N. Y. Filed Aug. 28, 1885. Serial No. 175,544. (No model.)

Claim.—1. The herein-described method of transmitting sounds electrically, consisting in producing changes in the intensity of a mag-

netic field corresponding to the character of the sound-vibrations, revolving a magneto-electric armature in said field by any suitable power, and delivering the variable currents as produced to a suitable receiving-instrument.

2. The herein-described method of transmitting sound electrically, consisting in producing changes in the intensity of an electric armature revolving in a magnetic field by any suitable power in correspondence with the changes in the intensity of the vibrations of the sound to be transmitted, and delivering the variable currents thus produced to a suitable receiving-instrument.

3. The herein-described method of transmitting sound electrically, consisting in automatically changing the magnetic condition of a dynamo or magneto electric machine in accordance with the changes of intensity of the sound waves or vibrations to be transmitted, while at the same time driving the machine by any suitable external power, and delivering the electric vibrations thus produced in a circuit of the machine directly or indirectly to a suitable receiver.

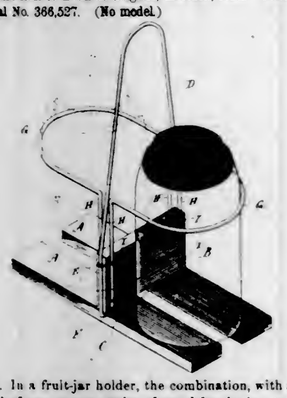
446,189. HOLLOW WHEEL-RIM. ALBERT H. OVERMAN, Springfield, assignor to the Overman Wheel Company, Chicopee Falls, Mass. Filed Dec. 24, 1889. Serial No. 334,855. (No model.)



Claim.—1. A hollow wheel-rim formed from a single piece of sheet metal and having its body portion and its bed each containing one of the edges thereof, the said edges being shaped to be united below the edge of one edge of the rim, substantially as described.

2. A hollow wheel-rim formed from a single piece of sheet metal and having its body portion and its bed each containing one of the edges thereof, the edge in the body portion being shaped to form a seat located below the edge of one edge of the rim for the edge contained in the tread to rest upon, substantially as described.

446,190. FRUIT-JAR HOLDER. HENRY A. POST, Middletown, assignor of one-half to Evan E. Hughes, Meriden, Conn. Filed Sept. 29, 1890. Serial No. 366,527. (No model.)



Claim.—1. In a fruit-jar holder, the combination, with a wooden body composed of one or more strips of wood for the jars to rest upon and an upright transverse partition attached thereto midway of the length thereof, of a long vertical handle having its ends secured to the said body and two retaining-loops respectively located on opposite sides of the said partition and having their ends secured to the body, substantially as described.

2. In a fruit-jar holder, the combination, with a body composed of one or more strips of wood and an upright transverse partition attached thereto midway the length thereof, of a vertical handle consisting of a long loop of wire having its ends secured to the edges of the said upright and two retaining-loops respectively located on opposite sides of the partition and each having its open end terminating in two upright legs, which are slipped through staples projecting from the adjacent sides of the partition, substantially as described.

446,191. DECORATING SHEET METAL FOR CEILINGS, &c. EDUARD POTTMANN, Schweim, Germany. Filed Apr. 24, 1890. Serial No. 349,372. (No specimens.) Patented in France Oct. 19, 1889, No. 201,435, and in Belgium Dec. 6, 1889, No. 88,748.

Claim.—The process herein described of making enameled sheet-metal articles, which consists in transferring an adhesive size containing a coloring-matter to surfaces to be enameled, then spreading pulverized porcelain colors or enamels over the sized surfaces, and finally burning the articles until the colored size is consumed and the enamel fixed upon the tile, substantially as set forth.

446,192. CYLINDER-LOCK. HENRY B. SARGENT and ALBERT A. PAGE, New Haven, Conn., assignors to The Sargent & Company, same place. Filed Dec. 8, 1890. Serial No. 373,947. (No model.)



Claim.—1. In a cylinder-lock, the cylinder constructed with two independent series of tumblers, the said series being parallel with each other and longitudinal of the cylinder, the tumblers of one series varying in length from the tumblers of the other series, a single series of spring-pins arranged in the case and adapted to engage the cylinder when the keys are removed, each pin of the series extending transversely over corresponding tumblers of both the said series, and so that each pin may be operated by one tumbler of either series, combined with two independent keys, one key adapted to operate upon one series of tumblers and not upon the other and the other key adapted to operate upon the second series of tumblers and not upon the first, substantially as described.

2. In a cylinder-lock, the combination of the cylinder, two parallel series of tumblers arranged therein, the tumblers of one series varying in length from that of the tumblers of the other series, a series of pins arranged transversely across the case, each of said pins corresponding to one pin in both the said series, the said pins constructed as three connected cylinders and the recesses for the said pins made of a shape corresponding to said three connected cylinders, and springs arranged upon said pins, the tendency of which is to force said pins into engagement with the cylinder, combined with two keys, one of which is adapted to operate upon one series of tumblers and not upon the other and the other key adapted to operate upon the said other series of tumblers and not upon the one, but both series of tumblers arranged to operate alike upon the said pins, substantially as described.

446,193. WOVEN-WIRE MATTRESS. WILLIAM S. SEYMOUR, Philadelphia, Pa., assignor to Elmer H. Grey, same place. Filed Nov. 24, 1888. Serial No. 291,745. (No model.)



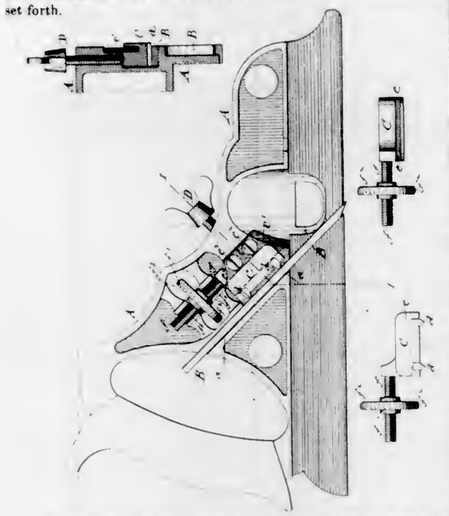
Claim.—A woven-wire mattress consisting of an assemblage of perpendicular springs and a woven-wire fabric covering the top, bottom, and sides of said springs, the terminal coils of the springs engaging with the fabric at top and bottom, substantially as described.

446,194. BENCH-PLANE. JACOB SIEGLEY, Wilkes-Barré, Pa. Filed May 23, 1890. Serial No. 352,944. (No model.)

Claim.—1. The combination, with the stock, of a bench-plane, said stock having an inclined recess, a cutting tool or bit in said recess, a clamping-block having hardened edges bearing on said bit, and means for adjusting said steel block and bit, substantially as set forth.

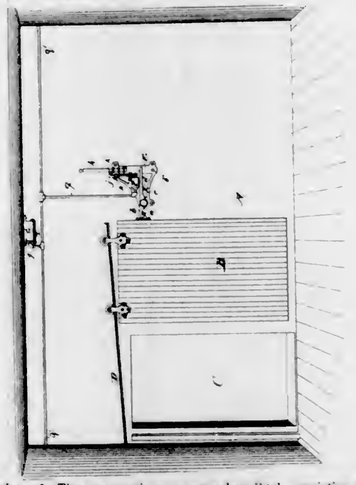
2. The combination, with a stock having an inclined recess, of a cutting tool or bit seated in said recess, a clamping-block having hardened edges bearing on said bit, a wing-screw pressing on the top of the block for clamping it to the bit, and means for adjusting said block and bit, substantially as set forth.

3. The combination, with a stock having an inclined recess, of a cutting tool or bit seated in said recess, a clamping-block having hardened edges at the bottom and a longitudinal guide-groove in its top, a steel plate attached to the stock and extending into said top groove, a wing-screw pressing in the top of the block for clamping the same to the bit, and means for adjusting the steel block and bit, substantially as set forth.



4. The combination, with a stock having an inclined recess, of a cutting tool or bit seated in said recess, a clamping-block having transverse hardened edges at its bottom and a longitudinal groove in its top part, a fixed guide-plate extending into said groove, a threaded shank attached to the clamping-block and set into recesses of the stock, and an adjusting screw-nut engaging said shank and located in an opening of the stock, substantially as set forth.

446,195. PNEUMATIC APPARATUS FOR OPERATING DOORS. CHARLES A. TUCKER, East Orange, N. J. Filed Apr. 26, 1890. Serial No. 349,593. (No model.)



Claim.—1. The pneumatic apparatus described, consisting of an air-chamber provided with a suitable device, including a detent of fusible alloy, to expel the air from such chamber automatically into a suitable pipe, in combination with a corresponding air-chamber communicating with such pipe and having a projectible part adapted to be displaced by such expelled air, substantially as described.

2. In a pneumatic device adapted to expel the air from a suitable chamber, a forwarding part to reduce the air-space, a suitable mechanism, as the spring *v*, to project such forwarding part automatically when free to act, and a detent, consisting of fusible alloy, to hold such mechanism in check, substantially as described.

3. In a pneumatic apparatus, an air-chamber, as G, having a suitable outlet and provided with a disk *u* and spring *v*, in combination with a suitable catch, as the lever I, adapted to be held in place by a detent of fusible alloy, as the pin *y*, substantially as described.

4. In a pneumatic apparatus, an air-chamber provided with a piston adapted to actuate a locking device and a suitable pipe extending from such air-chamber and connecting the same with a corresponding air-chamber provided with a device adapted to expel the air therefrom and held in check by a detent of sensitive material adapted to be released by change of temperature, substantially as described.

5. In a pneumatic apparatus, an air-chamber with a suitable outlet, a movable part adapted to contract the air-space in such air-chamber and expel the air therefrom, a mechanism, as the spring *v*, adapted to operate such movable part automatically when free to act, and a check for such mechanism, embracing a detent of fusible alloy, substantially as described.

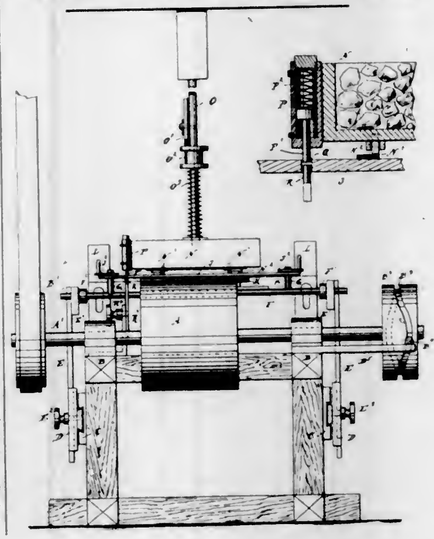
6. In a pneumatic apparatus, an air-chamber with a suitable outlet, a movable part adapted to contract the air-space in such air-chamber and expel the air therefrom, a mechanism adapted to operate such movable part automatically when free to act, and a check for such mechanism embracing a detent of fusible alloy, in combination with an air-chamber having a suitable inlet, a movable part adapted to enlarge the air-space in such chamber, and a suitable pipe connecting such outlet and inlet, substantially as described.

7. In a pneumatic apparatus, a suitable air-chamber, as F, one part of which consists of a piston, as *o*, and its rod *p*, a weight-support *j*, adapted to be operated by such piston, a movable weight, as *h*, disposed in the path of such support and adapted to be sustained thereby, and a catch, as *b*, disposed in the path of such weight and adapted to receive the impact of the same when free to act, in combination with a suitable device to force air into such chamber and thereby to move such piston, substantially as described.

8. In a device such as described, a frame, as E, adapted to be attached to a wall provided with suitable guides adapted to receive a movable weight, a support for such weight, and a catch adapted to engage with a detent on a door projecting into the path of such weight, in combination with an air-chamber, as F, provided with a piston *o* and rod *p*, substantially as described.

9. In a pneumatic apparatus such as described, a locking device, as the suspended weight *h*, an upset for the same, consisting of a suitable support, as *j*, and a door-catch, as *b*, disposed in the path of such weight, and an air-chamber having a movable part adapted to be displaced pneumatically and thereby to actuate such upset, in combination with another air-chamber connected therewith and provided with an air-expelling portion embracing a detent of fusible alloy and disposed to actuate such movable part automatically, substantially as described.

446,196. GLASS-BEVELING MACHINE. PETER WIEDERER, Stapleton, N. Y. Filed May 1, 1890. Serial No. 350,183. (No model.)



Claim.—1. In a glass-beveling machine, the combination, with an abrading-wheel, of a support for the pane of glass, a presser-bar for pressing an edge of the pane of glass upon the abrading-wheel, a latch on the presser-bar, and a fixed trigger for operating said latch, substantially as set forth.

2. In a glass-beveling machine, the combination, with an abrading-wheel, of a clamping-plate for holding the pane of glass to be beveled, which clamping-plate is provided with an aperture, a presser-bar resting on said plate and having a latch-pin projecting into said aperture, and a trigger-pin projecting from the frame of the machine into the aperture in the plate, substantially as set forth.

3. In a glass-beveling machine, the combination, with an abrading-wheel, of vertically and horizontally adjustable standards, a glass-pane support on the standards and additional adjustable standards, and a bar on said additional standards for supporting that edge of the glass opposite the one being acted upon by the abrading-wheel, substantially as set forth.

4. In a glass-beveling machine, the combination, with an abrading-wheel, of a glass-support and a presser-bar adapted to act on the pane of glass and provided on its under side with rollers, substantially as set forth.

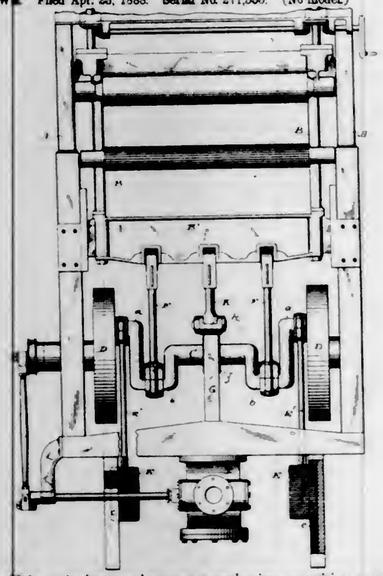
5. In a glass-beveling machine, the combination, with an abrading-wheel, of a glass-support, a glass-clamping plate having rails on its upper surface, and a presser-bar provided on its under side with rollers adapted to run on said glass-clamping plate, substantially as set forth.

6. In a glass-beveling machine, the combination, with an abrading-wheel, of a glass-support, a presser-bar having a latch-pin, and a vertically and laterally adjustable trigger-pin on the frame, adapted to act on said latch-pin on the presser-bar, substantially as set forth.

7. In a glass-beveling machine, the combination, with an abrading-wheel, of a presser-bar, a swinging rod from which the presser-bar is suspended, a spring resting on the presser-bar, and means for increasing the pressure of said spring, substantially as set forth.

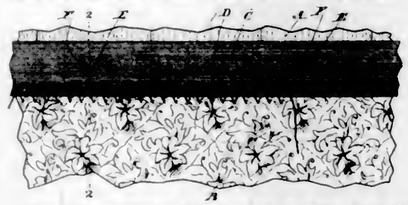
8. In a glass-beveling machine, the combination, with an abrading-wheel, of a presser-bar, a swinging rod from which the presser-bar is suspended, a spring resting on the presser-bar, a sliding sleeve on the rod, resting on said spring, and a cam-lever for pressing the sliding sleeve downward, substantially as set forth.

446,197. GANG-SAW MILL. THEODORE S. WILKIN, Milwaukee, Wis. Filed Apr. 23, 1888. Serial No. 271,555. (No model.)



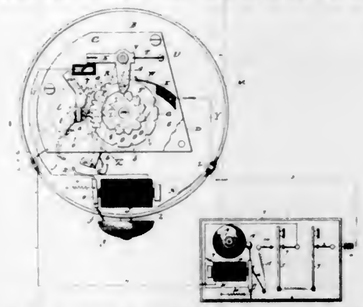
Claim.—An improved gang-saw mechanism comprising a vertical rectangular frame, a sash arranged to reciprocate vertically in the upper part of said frame, a crank-shaft journaled horizontally in the lower part of the frame, a pair of vertical connecting-rods journaled at their upper ends to the lower girt of the sash and at opposite sides of the middle thereof and at their lower ends to corresponding crank-sections of the crank-shaft, a pair of counter-weights working at the extreme opposite sides of the frame, and a pair of connecting-rods journaled at their lower ends to the weights and connected at their upper ends to the corresponding parts of the crank-shaft, substantially as described.

446,198. CARPET-FASTENER. AUGUSTIN V. WISKOCIL, Milwaukee, Wis. Filed May 15, 1890. Serial No. 351,912. (No model.)



Claim.—In combination with a carpet, a leather strap placed alongside of and secured permanently to the edge of the carpet in such manner that the strap abuts against but does not overlap the carpet, the strap being provided with elongated slots at a distance apart parallel to the adjoining edge of the carpet, and hooks having straight shanks inserted vertically and revolubly in the strap, which hooks have horizontally-turned heads on one side of the shanks of such lengths as just to pass through the slots in the leather and adapted to be turned at right angles thereto, substantially as described.

446,199. MULTIPLE CALL-BOX. FRANK B. WOOD, New York, N. Y., assignor to the Brewer & Smith Visual Signal Company, New Haven, Conn. Filed Jan. 6, 1890. Serial No. 336,084. (No model.)



Claim.—1. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to engage therewith, a magnet, a bell operated thereby, and a switch co-operating with the signal-wheel and arranged in such relation thereto that the rotation of the wheel in preparing to make a call operates the switch to shunt the line-circuit through the magnet and its signaling or opposite rotation to switch the magnet out of line, whereby the bell is sounded in preparing to make a call if there is a circuit over the line, substantially as described.

2. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to engage therewith, a magnet, a bell operated thereby, a notched switching-hub rotating in unison with the wheel, which, with the hub, is rotated in preparing to make a call, an oscillating finger adapted to engage with the said hub, and a switch operated by the said finger and connecting the wheel and magnet electrically, the said finger being arranged in such relation to the hub as to operate the switch in shunting the line-circuit through the magnet in preparing to make a call, substantially as described.

3. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to be engaged therewith, a magnet, a bell operated thereby, a notched switching-hub rotating in unison with the signal-wheel, a switch-finger adapted to engage with the notches of the said hub, so as to be moved thereby, a switch partaking of the movements of the said finger, a switch-block with which the switch is engaged in one of the shunted positions of the said finger, electrical connection between the said block and the magnet, and means for rotating both the signal-wheel and switching-hub in preparing to make a call, the switch-finger being arranged in such relation to the hub as to operate the switch in shunting the line-circuit through the magnet in preparing to make a call, whereby the line-circuit is not broken when the signal-wheel is being rotated preparatory to making a call, but alternately shunted, substantially as described.

4. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to be engaged therewith, a magnet, a bell operated thereby, a notched switching-hub arranged to rotate in unison with the wheel, a switch-finger adapted to be engaged with the notches of the said hub, a switch partaking of the movements of the said finger, electrical connection between the magnet and the switch, a spring co-operating with the said finger and exerting a constant tendency to engage it with the notches in the hub, and means for rotating the wheel and hub together in preparing to make a call, the finger and hub being relatively arranged so as to shunt the line-circuit through the magnet in the preliminary rotation of the hub and wheel, substantially as described.

5. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to engage therewith, a magnet, a bell operated thereby, a switch co-operating with the wheel and arranged in such relation thereto as to shunt the line-circuit through the wheel in preparing to make a call, a stop-arm rotating with the wheel, a secondary switch brought into action by the said arm for preparing the box to receive a return-signal, and means for rotating the wheel in preparing to make a call, substantially as described.

6. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to be engaged therewith, a magnet, a notched switching-hub rotating in unison with the wheel, a switch-finger adapted to be engaged with the notches of the said hub which shifts it, a switch partaking of the movements of the said finger, a stop-arm rotating in unison with the signal-wheel, a secondary switch operated by the stop-arm in preparing the box to receive a return-signal, and connections between the said switches and the magnet, substantially as set forth.

7. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to be engaged therewith, a notched switching-hub rotating in unison with the said wheel, a switch-finger adapted to be engaged with the notches of the hub which shifts it, a switch partaking of the movements of the said finger, a stop-lever also partaking of the movements of the said finger, a magnet provided with an armature, a train provided with an escapement-pallet, and a locking mechanism parts of which are carried by the said stop-lever, armature, and escapement-pallet and brought into operation for locking the train by the energization of the magnet and the attraction of the armature thereof thereto, substantially as set fortn.

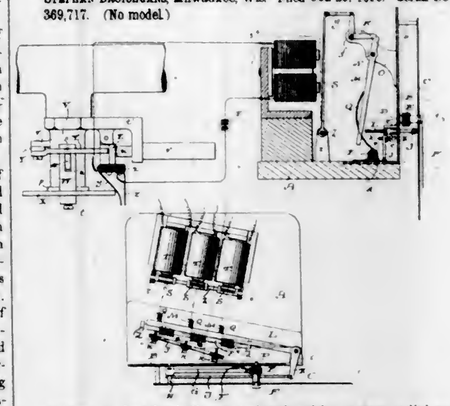
8. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to be engaged therewith, a notched switching-hub rotating in unison with the said wheel, a switch-finger adapted to be engaged with the notches of the hub which shifts it, a switch partaking of the movements of the said finger, a stop-lever also partaking of the movements of the said finger, a magnet provided with an armature, a train provided with an escapement-pallet, a pivotal shoe mounted in the lower end of the stop-lever, and two locking-fingers respectively carried by the escapement-pallet and by the magnet-armature, the said shoe and stop-fingers forming a locking mechanism which is brought into action for locking the train when the said magnet is energized, substantially as set forth.

9. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to be engaged therewith, a switching-hub rotating in unison with the wheel and provided with a plane surface and with a series of switching-notches corresponding to the signal-notches in the signal-wheel, the notch at one end of the series of notches in the switching-hub being made more open than the others, a switch-finger adapted to engage with the switching-hub and the notches therein and dropping readily into the said open notch thereof, a switch partaking of the movements of the said finger, and a magnet and connection between the switch and the magnet, the circuit through the line being shunted through the magnet from the circuit-breaker when the signal-wheel is operated preparatory to making a call, substantially as set forth.

10. A multiple call-box having a signal-wheel provided with a long return-signal notch located at one end of its number-notches, a secondary switch brought into action by the box just before the same is stopped, and a locking mechanism for arresting the train of the box, controlled by the said secondary switch, in combination with a central-station apparatus having a magnet, a single-point key for making a prolonged interruption of the current through the magnet, and a double-point key for making an intermittent or vibratory interruption of the current, substantially as set forth.

11. In a multiple call-box, the combination, with a signal-wheel, of a circuit-breaker adapted to be engaged therewith, a switching-hub having its periphery notched to correspond to the signal-notches in the said wheel, a switch-finger mounted upon an arbor journaled in the frame-plates of the box and adapted to be engaged with the notches in the said hub, a switch also mounted upon the said arbor, a switch-block located for engagement with the said switch when the switch-finger is shifted by the hub, a magnet having its armature provided with a stop-finger, connection between the said switch-block and magnet, a stop-lever also secured to the said arbor and provided at its lower end with a transverse shoe, a train the escapement-pallet whereof is provided with a stop-finger which co-operates with the said shoe and the stop-finger of the armature in locking the train, a stop-arm rotating in unison with the signal-wheel, and a secondary switch adapted to engage with the switch-block before mentioned and brought into action by the said stop-arm just before the same acts to stop the wheel, substantially as set forth.

446,200. FIRE INDICATOR AND EXTINGUISHING SYSTEM. STEPHAN BROICHGANS, Milwaukee, Wis. Filed Oct. 29, 1890. Serial No. 369,717. (No model.)



Claim.—1. In a fire indicator and extinguisher system, a dial and pointer, the latter having its arbor provided with a pinion, a bell-crank provided with a rack in mesh with the pinion, a pivoted lever having an arm linked to the bell-crank, a series of spring-controlled fingers opposed to the lever, electrically-actuated latches for engagement with the fingers, and a stop arranged to limit the movement of each of said fingers, substantially as set forth.

2. In a fire indicator and extinguisher system, a dial and pointer, the latter having its arbor provided with a pinion, a spring-controlled bell-crank provided with a rack in mesh with the pinion, a pivoted lever having an arm linked to the bell-crank, a series of spring-controlled fingers opposed to the lever, electrically-actuated latches for engagement with the fingers, and a stop arranged to limit the movement of each of said fingers, substantially as set forth.

3. In a fire indicator and extinguisher system, a dial and pointer, the latter having its arbor provided with a pinion, a bell-crank provided with a rack in mesh with the pinion, a pivoted lever having an arm linked to the bell-crank, a series of spring-controlled fingers opposed to the lever, bell-crank latches for the fingers in opposition to the springs controlling the latter, armatures linked to the latches, electro-magnets in circuit with an electric battery and opposed to the armatures, and a distant thermally-actuated circuit-closing mechanism in circuit with each electro-magnet, substantially as set forth.

4. In a fire indicator and extinguisher system, a water-discharge pipe provided with lateral guide-lugs, a yoke provided with slots engaging the lugs, a closure for the pipe adjustable on the yoke, pivoted arms curved around opposite sides of said pipe and provided with lugs engaging the yoke-slots above the pipe-lugs, a pivoted wedge-block opposed to the free ends of the arms, and a thermostat for actuating said wedge-block, substantially as set forth.

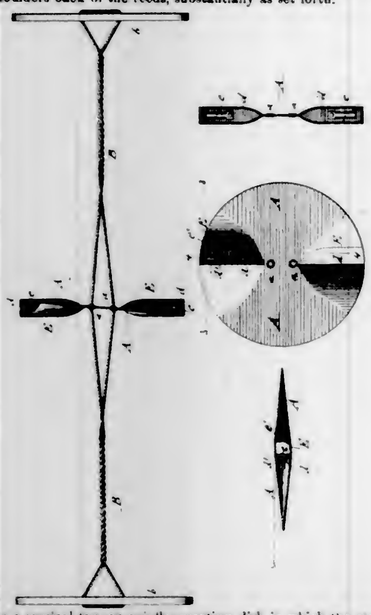
5. In a fire indicator and extinguisher system, a water-discharge pipe provided with lateral guide-lugs, a yoke provided with slots engaging the lugs, a closure for the pipe adjustable on the yoke, pivoted arms curved around opposite sides of said pipe and provided with lugs engaging the yoke-slots above the pipe-lugs, a pivoted wedge-block opposed to the free ends of the arms, a thermostat for actuating the wedge-block, an electric circuit having terminals carried by said wedge-block in opposition to the pipe-closure and normally out of contact, and an electrically-controlled indicator mechanism in circuit with the aforesaid wedge-block, substantially as set forth.

446,201. MUSICAL TOY. AUGUSTUS L. BROWN, New York, N. Y., assignor of one-half to John L. Brill, same place. Filed Nov. 4, 1890. Serial No. 370,268. (No model.)

Claim.—1. A musical toy composed of an axially-rotating disk provided with radial shoulders or offsets, reeds applied to openings of said shoulders or offsets, and reed-casings back of said reeds and having air-openings, substantially as set forth.

2. A musical toy composed of an axially-rotating disk formed with radial shoulders or offsets made integral with the disk, said

shoulders being provided with openings, reeds attached to said shoulders, and reed-casings having openings for the air and being attached to the shoulders back of the reeds, substantially as set forth.



3. In a musical toy, an axially-rotating disk in which the reeds are arranged radially to said disks in offsets that are arranged at right angles to the body of the disk, substantially as set forth.

446,202. **FOUNTAIN-PEN FILLER.** FRANCIS C. BROWN, New Brighton, N. Y., assignor to Marie Brown, same place. Filed Oct. 10, 1890. Serial No. 367,684. (No model.)



Claim.—The combination, in a flanged bottle-stopper A, having formed thereon and made integral therewith an air-bulb B, with the perforated core E, embraced by said stopper A, and with the tube D, held in place by said core E between the same and the external stopper A, all arranged substantially as herein shown and described.

446,203. **VEHICLE-SPRING SUPPORT.** JOHN S. COCHENHOUR and NOAH T. RENY, Olney, Ill., assignors to the Olney Vehicle Spring Support Manufacturing Company, same place. Filed June 13, 1890. Serial No. 355,336. (No model.)



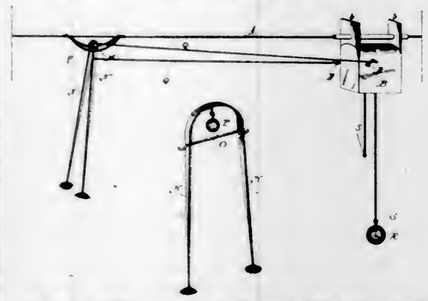
Claim.—1. In a vehicle-spring support, the combination, with a spiral spring having at its opposite ends the outwardly-turned extensions or hooks *b' b'*, of a pair of holder-sockets or annular cases C C, having transverse holes *b b* for the reception of said extensions or hooks, and the plane inner faces of their bottoms constructed at an inclination or gradually-increasing height or thickness in a circular line or path beginning and ending at said holes *b*, whereby a firm and suitable seat is provided at both ends of said spring which registers or corresponds in pitch with the pitch on which the spring is coiled, substantially as herein set forth.

2. In a vehicle-spring support, a plane-faced filling and seating ring or washer constructed of gradually-increasing thickness or inclined upwardly, beginning with the thinnest end or point *a* and terminating with the heaviest end or point *a'*, having a suitable space or opening between said ends *a* and *a'* for the accommodation of an outwardly-turned extension *b'* on the contained spiral spring and adapted to fit within a holder cup or socket, substantially as and for the purpose specified.

3. In a vehicle-spring support, the spiral spring B, having its opposite ends *b' b'* turned or bent outwardly at right angles with its body without disturbing the pitch on which it is coiled, substantially as and for the purpose specified.

4. The combination, with an elliptical spring, of the internal auxiliary spiral spring B and the holder sockets or cups C C, the latter having transverse holes *b b* and the plane inner faces of their bottoms constructed on an incline beginning and ending at said transverse holes in a circular line or path to form suitable receptacles and seats or bearings, respectively, for the opposite ends and extensions *b'* of said auxiliary spring, substantially in the manner and for the purpose herein set forth.

446,204. **AUTOMATIC FAN.** THOMAS R. EVANS, Society Hill, S. C. Filed Nov. 5, 1890. Serial No. 370,422. (No model.)



Claim.—1. The combination of a supporting-wire, a casing or box suspended thereby, operating mechanism within said box, a loop-guide having its ends secured to the supporting-wire, a brush having a central band forming depending arms which pass through the loop-guide and are pivoted thereto, and wires for connecting said brush to the operating mechanism, substantially as set forth.

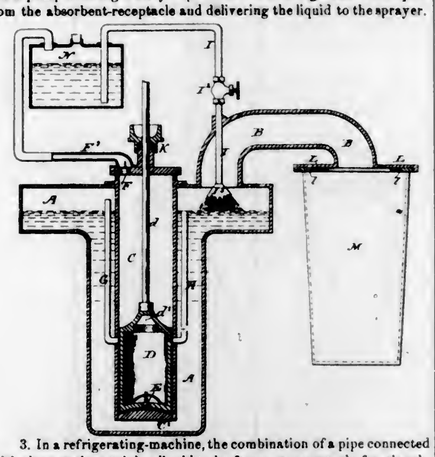
2. The combination of a supporting-wire, a casing or box suspended thereby, operating mechanism within said box, a loop-guide having its ends secured to the supporting-wire, a brush having a central bend forming depending arms, said arms adapted to pass through the loop-guide, the wire forming said brush gradually tapering toward the ends, a transverse supporting wire or rod passing through the arms of the brush and provided with hooked ends adapted to engage the opposite sides of the loops, a weight suspended from the central bend of the brush, and wires for connecting the brush with the operating mechanism, substantially as set forth.

3. The combination of a supporting-wire, a brush suitably connected thereto, so as to have a free swinging motion, a casing or box suspended from the supporting-wire, a lower shaft journaled in said casing, carrying a central gear-wheel and drums upon each side of said wheel, an operating-cord attached to each drum and adapted to be simultaneously wound and unwound thereon, said cords having their free ends provided with a small weight, gearing in said casing or box meshing with the cog of the lower shaft, wires connecting the gearing with the brush, and an interchangeable weight for attachment to the operating-cords, substantially as set forth.

446,205. **ICE-MACHINE.** EDWARD J. HARDY, Brooklyn, N. Y. Filed Sept. 12, 1890. Serial No. 364,727. (No model.)

Claim.—1. In a refrigerating-machine, the combination of a pipe connected with the vessel containing liquid to be frozen, a receptacle connected to said pipe and containing absorbent liquid acting as a seal, and a pump exhausting the freezing-vessel and drawing the liquid from the absorbent-vessel.

2. In a refrigerating-machine, the combination of a pipe connected with the vessel containing liquid to be frozen, a sprayer in said pipe, a receptacle connected to said pipe and containing absorbent liquid, and a pump drawing watery vapor from the freezing-vessel and liquid from the absorbent-receptacle and delivering the liquid to the sprayer.

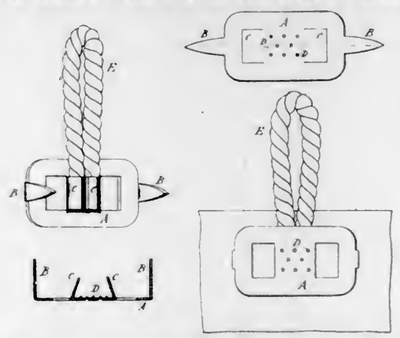


3. In a refrigerating-machine, the combination of a pipe connected with the vessel containing liquid to be frozen, a receptacle for absorbent liquid, as sulphuric acid, connected to said pipe, and a pump in said liquid, drawing from the receptacle and the water-freezing vessel.

4. In a refrigerating-machine operated by vacuum and an acid absorber of watery vapor, the combination of an acid-vessel, a pump partly inclosed in said vessel, and pipes inclosed within said vessel and having one end entering into the pump, whereby air and acid are led simultaneously into the pump, substantially as described.

5. In a refrigerating-machine, the combination of a receiving-vessel having attached thereto pipes to lead therein air, watery vapors, and an absorbent acid for said vapors, with a pump-cylinder having pipes entering its sides to lead therein the air, watery vapors, and the acid from the receiving-vessel, an exit-pipe, an acid-holding vessel or carboy, and a piston within the cylinder, whereby the acid used as a vapor absorbent is also used to liquid-seal the valves and piston of the pump.

446,206. **SUSPENSION-LOOP AND CLAMP.** PHILANDER A. HARRIS, Paterson, N. J. Filed Oct. 23, 1890. Serial No. 369,030. (No model.)

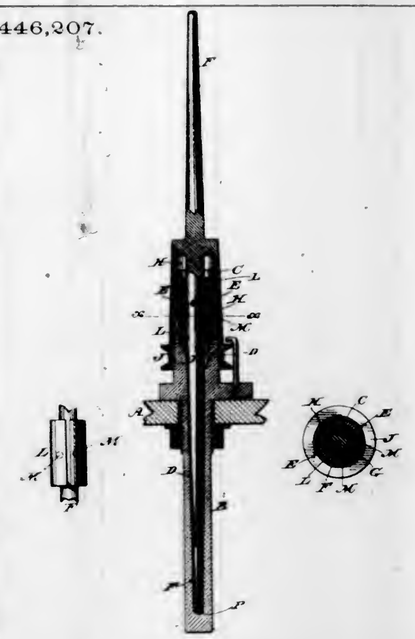


Claim.—As an improved article of manufacture, a suspending device comprising the cord E and the plate A, having punctures D, pointed arms M, and lips C, all in substantially the same line, said lips being cut from the body A in line with the arms B, leaving apertures into which the points of said arms B may be turned, all substantially as shown and described.

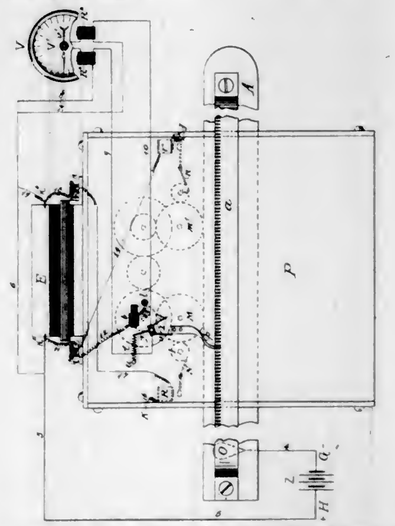
446,207. **SUPPORT FOR SPINNING-SPINDLES.** JOSEPH W. PARKIN, Philadelphia, Pa. Filed May 21, 1888. Serial No. 274,618. (No model.)

Claim.—A spindle, in combination with cup B, with extended chamber, the anti-friction rollers resting freely on the base of said chamber, the split bushing L between said rollers and the wall of the cup, and a screw M working in the wall of the cup and adapted to bear against the end of the split bushing, substantially as described.

446,207.



446,208. **AUTOMATIC WEIGHING-SCALE AND INDICATOR.** ADOLPH B. RÖVER, Binghamton, N. Y. Filed Sept. 27, 1890. Serial No. 366,323. (No model.)



Claim.—1. A pivoted balance-beam, in combination with a poise traveling thereon, said poise having two independent and oppositely-acting spring-motors for moving said poise in opposite directions, one of said motors being idle when the other is in operation, substantially as set forth.

2. A pivoted balance-beam and a poise traveling thereon, said poise having two independent and oppositely-acting spring-motors for moving said poise in opposite directions, one of said motors being idle when the other is in operation, in combination with locking devices for locking said motors, and means controlled by the movements of said balance-beam for unlocking said motors, substantially as set forth.

3. A pivoted balance-beam and a poise traveling thereon, said poise having two independent and oppositely-acting spring-motors for moving said poise in opposite directions, one of said motors being idle when the other is in operation, in combination with two locking-pawls which normally lock said motors, two electro-magnets for withdrawing said pawls, respectively, and releasing said motors, and two normally-open electric circuits inclosing said magnets, respectively, one of said circuits being closed when the balance-beam is tipped above its level position and the other of said circuits being closed when the balance-beam is tipped below its level position, substantially as set forth.

4. A balance-beam and a poise traveling thereon, in combination with a receptacle partaking of the movements of the balance-beam, said receptacle containing a conductive liquid, and electrodes carried by said receptacle, which are immersed in and withdrawn from said conductive liquid by the movements of said balance-beam, substantially as set forth.

5. A balance-beam and a poise traveling thereon, said poise having two independent and oppositely-acting spring-motors for moving said poise in opposite directions, one of said motors being idle when the other is in operation, two locking-pawls which normally lock said motors, and two electro-magnets for withdrawing said pawls, respectively, and releasing said motors, in combination with a receptacle mounted on said poise and containing an electric conductive liquid, and two electrodes at each end of said receptacle, said electrodes having the following characteristics: (*a*) the two electrodes at one end of said receptacle constitute the two terminals of an electric circuit which includes an electric generator and one of said electro-magnets; (*b*) the two electrodes at the other end of said receptacle constitute the two terminals of an electric circuit which includes an electric generator and the other of said electro-magnets; (*c*) when said balance-beam is in equilibrium none of said electrodes are in electrical communication with said conductive liquid; (*d*) when said balance-beam is tipped in one direction the two electrodes at one end of the said receptacle are both brought into electrical communication with said conductive liquid, and (*e*) when said balance-beam is tipped in the opposite direction the two electrodes at the other end of said receptacle are brought into electric communication with said conductive fluid, substantially as set forth.

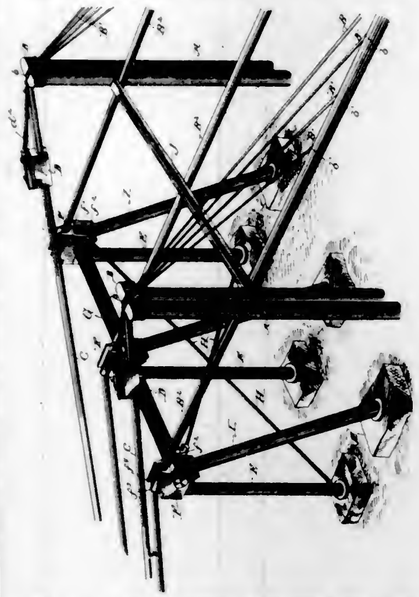
6. The traveling poise which opens and closes an electric circuit for each unit of distance that it travels, in combination with an electric indicator having a controlling-magnet in the circuit controlled by said poise, substantially as set forth.

7. The reciprocating poise which opens and closes an electric circuit for each unit of distance that it travels in either direction, in combination with an electric indicator having two oppositely-acting controlling electro-magnets, one of which is in the electric circuit controlled by said poise when said poise is moving in one direction, and the other of which is in said electric circuit when said poise is moving in the opposite direction, substantially as set forth.

8. The balance-beam, the bar *a*, attached thereto, divided into electro conductive and non-conductive sections representing units of weight, the reciprocating poise which moves back and forth on said beam, and an electrical contact or brush carried by said poise which comes successively in contact with said sections, said brush and said conductive sections constituting the terminals of an electric circuit which includes an electric generator, an electric indicator having two oppositely-acting controlling electro-magnets, and a circuit-changer which brings one of said electro-magnets into circuit with said brush and generater when said poise is traveling in one direction, and which brings the other of said electro-magnets into circuit with said brush and generator when said poise is traveling in the opposite direction, substantially as set forth.

9. The balance-beam, the bar *a*, attached thereto, divided into electro conductive and non-conductive sections representing units of weight, the reciprocating poise which moves back and forth on said beam, an electrical contact or brush *p*, carried by said poise which comes successively into contact with said sections, an electric generator, an electro-magnet *b*, carried by the poise, a receptacle carried by said poise and containing an electro-conductive fluid, two electrodes mounted on said receptacle, which constitute the two terminals of an electric circuit including said generator, one of said electrodes being connected with one pole of the generator by electric conductors, and the other electrode being connected with the opposite pole of said generator by electric circuit-connections which include said electro-magnet *b*, and both of said electrodes being normally out of electrical communication with said conductive liquid, but adapted to be immersed therein when said beam tips in one direction, in combination with a circuit-changer having an operating-arm *y*, constituting the armature of said magnet *b*, means (such as a spring) for retracting said arm from said magnet, and said circuit-changer having two electrodes, one of which is brought into electric communication with said brush *p* when said arm *y* is acted upon by said magnet *b*, and the other of which electrodes is brought into electric communication with said brush when said arm *y* is acted upon by the force opposing said magnet, and an electric indicator having two oppositely-acting controlling electro-magnets connected in multiple with said generator, one of said magnets being connected with one electrode of said circuit-changer and the other of said magnets being connected with the other electrode of said circuit-changer, substantially as set forth.

446,209. **SUSPENSION-BRIDGE.** EDWIN E. RUNYON, Pilot Point, Tex. Filed Aug. 23, 1890. Serial No. 362,885. (No model.)



Claim.—1. A bridge consisting of end piers, pillars of greater height than said end piers, floor-cables supported in castings on said end piers, separated main cables supported on cap-pieces on the tall pillars, back-stays secured to said cap-pieces, and blocks on said back-stays, around the upper end of which are secured the separated main cables, substantially as described.

2. In a suspension-bridge, the combination, with the separated main cables and floor-cables, of metallic pillars rigidly secured to anchors, brace-posts placed at an angle to said pillars, cap-pieces consisting of two sections each, the lower section having depending flanges to afford connection with the pillar and brace-post, the upper section having upwardly-extending flanges to hold the floor-cable, a bolt passing through said sections, extending over the side, and formed into a hook, a guy-rope attached to said hook, and a horizontal beam secured between the upper and lower sections, substantially as described.

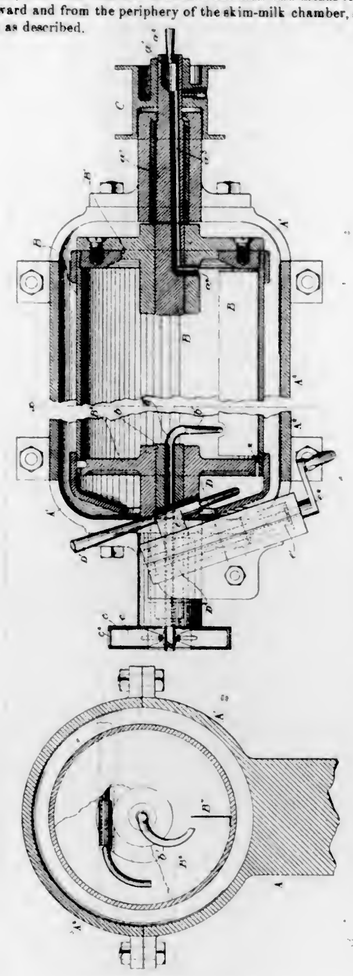
3. In a suspension-bridge, the combination, with the pillars, brace-posts, and horizontal beam, all secured by a cap-piece formed in two sections, of pillars extending higher than said horizontal beam, having their ends connected by a cap-piece, a stay secured to said cap-piece, a clamp on said stay having a groove around three sides near its upper edge, a removable block in the lower portion of said clamp, bolts passing through said block, stay, and clamp to rigidly hold said clamp in position, and severed main cables passing through a groove in the cap-piece and around said clamp and each secured to itself, substantially as described.

446,210. **CREAMING-MACHINE.** AUGUSTUS RUSS and MARY J. WESTON, Boston, Mass., executor and executrix of David M. Weston, deceased. Filed June 9, 1890. Serial No. 354,849. (No model.)

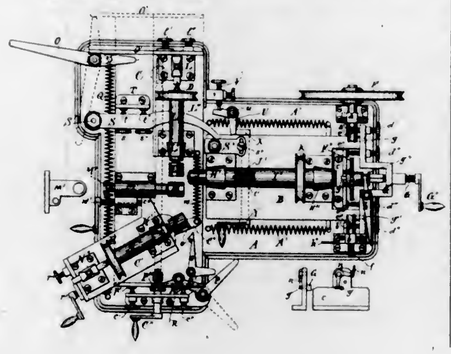
Claim.—1. An organized creaming-machine containing a rotating cylinder and a cream-skimming device rotated therewith, but at a slower speed, substantially as described.

2. A horizontally-supported rotating cylinder to contain milk, combined with a cream-skimmer traveling therewith, but at a slower speed, and with a drag to control the difference in speed between the cylinder and skimmer, substantially as described.

3. The rotating cylinder having hollow journals, a skimmer rotating at a slower speed than the said cylinder and mounted loosely with relation to one of the said journals to take the cream out through the said journal, combined with the skim-milk skimmer and means to adjust it toward and from the periphery of the skim-milk chamber, substantially as described.



446,211. **PIVOT-LATHE.** JAKOB SCHWEIZER, Zurich, assignor to Muller & Schweizer, Tolothwin, Switzerland. Filed Oct. 6, 1890. Serial No. 367,195. (No model.)



Claim.—1. The improved pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., on arbors or moving parts used in watches, clocks, musical boxes, and other like mechanism having its parts constructed, arranged, combined, and operating substantially as hereinbefore described and shown.

2. In a pivot-lathe for the class of work set forth, the combination of the carriage B, carrying the work, and the carriage C, carrying the several tools for acting successively on the said work, substantially as described.

3. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the combination of the screw-spindle G with the worm-wheel $F^{\times}$ and the worm F, driven by gearing, substantially as described.

4. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the combination of the coupling-box $g^{\times}$ with the lever *h* and the bolt $h^{\times}$, substantially as described and shown.

5. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the combination, with the pin *g*, of the spindle G, with the automatic disengaging arrangement *n*, substantially as and for the purpose described.

6. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the hollow spindle I', with tube I^2, interior spindle I, clutch J, key J', and nut $I^{\times}$, substantially as described and shown, and for the purpose specified.

7. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the combination of the carriage C with the cutting-tool L', substantially as described.

8. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the combination of the carriage C with the cutting-tool N, substantially as described.

9. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the combination of the carriage C with the burnisher M, substantially as described.

10. The combination, in a lathe for turning and polishing pivots, of a rotating chuck for holding the article, mechanism, substantially as specified, for moving the same axially and progressively, turning and polishing tools and their supporting-heads, and mechanism for moving the same progressively toward the axis of rotation of the article operated upon, substantially as specified.

11. The combination, in a lathe for turning and polishing pivots and similar articles, of a rotary chuck for the article, a moving bed for supporting the same, a turning-tool and a polishing-tool, automatic mechanism, substantially as specified, for moving the parts successively, and stopping mechanism for disconnecting the power as the operation is completed, substantially as specified.

12. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the lever S, in combination with the stop T of the carriage C and the plate $S^{\times}$ of the carriage B, substantially as described, and for the purpose specified.

13. In a pivot-lathe for forming and polishing cylindrical parts, short rods, shoulders, bevels, &c., the combination of the stop X with the bent lever U, pivoted to the carriage B, and with the screw V, carried by the carriage C, substantially as described, and for the purpose indicated.

446,212. **HEAT-REGULATING APPARATUS.** GEORGE L. SHOREY, Lynn, Mass. Filed Apr. 28, 1890. Serial No. 349,796. (No model.)

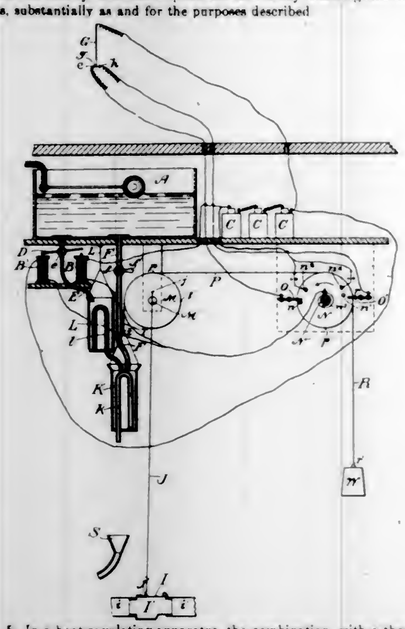
Claim.—1. In a heat-regulating apparatus, the combination, with a source of fluid-pressure provided with a valve, of two electric circuits alternately opening said valve, a thermostat alternately closing said circuits, and an independent circuit operated by suitable hydraulic mechanism to close said valve between the openings thereof, all constructed, arranged, and operating substantially as and for the purposes described.

2. In a heat-regulating apparatus, the combination, with a circuit-closing thermostat, of a supply-pipe provided with a valve operated through said circuit by the movement of said thermostat, a movable balancing-vessel K, provided with a siphon and emptied thereby when the water from said pipe overflows said siphon, and a balanced damper operated by the removal of said water, substantially as described.

3. In a heat-regulating apparatus, the combination, with a movable balancing-vessel K, of a damper opened and closed by the movement of said vessel, a supply-vessel L, provided with a siphon, whereby the amount of water to be supplied for the movement of the balancing-vessel is adjusted, and a suitably-controlled source of fluid-pressure for supplying said vessel L, substantially as described.

4. In a heat-regulating apparatus, the combination, with a thermostat, of an electro-magnet and two circuits, both connected therewith, a supply-pipe and valve in position to be operated by either of said circuits through said magnet, and a damper-operating water-

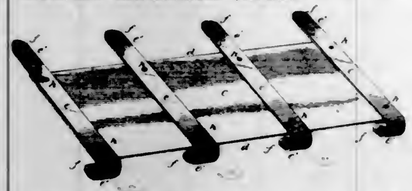
holder alternately filled and emptied and alternately breaking said circuits, substantially as and for the purposes described



5. In a heat-regulating apparatus, the combination, with a thermostat, of an electro-magnet and two circuits, both connected therewith, a supply-pipe and a valve in position to be opened by either of said circuits through said magnet, a damper-operating water-holder alternately filled and emptied and alternately breaking said circuits, a third electric circuit, and a valve-closing magnet, all arranged and operating substantially as and for the purposes described.

6. In a heat-regulating apparatus, a variable damper-operating weight consisting of a movable balanced liquid-receiving vessel provided with a siphon, in combination with a source of fluid-pressure, substantially as described.

446,213. STAIR-PAD. TIMOTHY S. SPERRY, Flatbush, N. Y. Filed Oct. 31, 1890. Serial No. 369,930. (No model.)



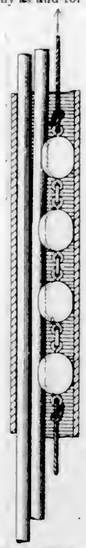
Claim.—1. An inelastic stair-pad base provided with flexible metal-strip tongues, substantially as described, whereby the pad may be secured in position by said tongues, which when bent over the edge of said base serve as hooks over and engaging with the nose of the stair-tread.

2. A stair-pad consisting of a fabric casing inclosing an elastic filling, and a straw-board having metal strips secured thereto cross-wise, projecting beyond its opposite edges, and having holes in their ends, substantially as described, for the purpose stated.

446,214. METHOD OF LAYING ELECTRIC CABLES. CHARLES H. WILSON, Chicago, Ill. Filed Sept. 19, 1889. Renewed Jan. 5, 1891. Serial No. 376,710. (No model.)

Claim.—1. The combination, with an underground conduit, of blocks or wedges adapted to be drawn through said conduit to arrange the cables within said conduit with respect to one another to permit of the drawing in or removal of one cable after another without injury to the cables or undue friction or obstruction, substantially as and for the purpose specified.

2. The method of placing several cables in an underground conduit, which consists in drawing in one cable, then passing a block or wedge through the conduit, and thereby forcing the cable to one side, and afterward drawing in the second cable, the same block or wedge preceding the second cable, and thereby making a second passage through the conduit, the other cable or cables being then drawn in and arranged in place, blocks of suitable size being drawn through as in the first instance, whereby undue friction and all obstructions and injury are prevented, substantially as and for the purpose specified.

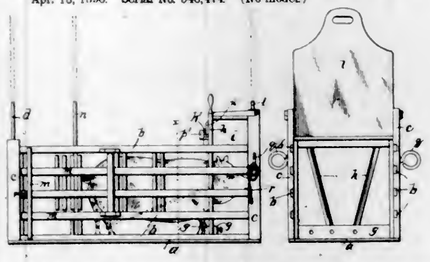


3. A linked wedge, each of the blocks or links thereof being hollowed out to conform to the shape of the cables, said linked wedge being adapted to be drawn through a conduit containing cables to arrange the cables in position within the conduit, substantially as and for the purpose specified.

4. A linked wedge consisting of blocks gradually increasing in size and hollowed out to conform to the shape of the cables, said linked wedge being adapted to be drawn through a conduit to bring the cables into position, substantially as and for the purpose specified.

5. A duct containing cables partially filling the same, and a movable wedge corresponding in size to the margin or space remaining in the duct, said wedge being combined with said duct, substantially as and for the purpose specified.

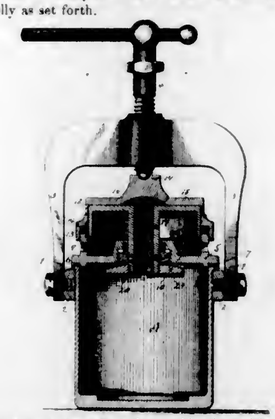
446,215. HOG-TRAP. NICHOLAS C. BADER, Marita, Ohio. Filed Apr. 18, 1890. Serial No. 348,474. (No model.)



Claim.—In a hog-trap, the combination, with a frame provided with guideways on its inner side and having a door in one side near the rear end, of detachable door-slides in the guideways, clamping lever-arms, and a screw eye or head at the front end on the same side as the door near the rear end and adapted to receive and retain one end of a rope, substantially as described.

446,216. VULCANIZING APPARATUS. RICHARD W. BARNEY, Hornellsville, N. Y. Filed Apr. 7, 1890. Serial No. 346,967. (No model.)

Claim.—1. In a vulcanizing apparatus, the combination, with a receptacle, a cover, a cap loosely seated on the cover, and a piston passing through the cover with its head resting in the space between the cover and cap, of a bail connected with the receptacle and having a screw or other device adapted to turn in the bail and bear upon the cap, substantially as set forth.

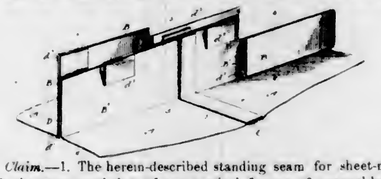


2. In a vulcanizing apparatus, the combination, with a receptacle having an annular boss at or near its open end, a band encircling the receptacle beneath the boss, and a bail hinged to this band and having a screw therein, of a cover fitted on the top of the receptacle, a cap loosely seated on the cover and having a centrally-located bearing for the screw, and which is held down by the screw, and a piston fitted inside the cover and cap, substantially as set forth.

3. In a vulcanizing apparatus, the combination, with a receptacle, a bail having hinged connection with the receptacle, and a screw in the bail, of a cover fitted on the upper edge of the receptacle and having a steam-tight joint formed between them, a cap loosely mounted on this cover, against which the screw is turned, and a piston fitted inside the cover and cap and having a hollow stem which extends through the hole in the center of the cover, and packing around the head and stem of the piston, substantially as set forth.

4. The combination, with a receptacle having an annular boss at or near its upper or open end, a band encircling the receptacle beneath the boss, and a bail hinged to this band and provided with a screw for forcing the parts of the vulcanizing apparatus together, of a cover having an offset on its lower edge, with a packing therein adapted to form a steam-tight joint between the cover and receptacle, a cylinder on this cover, a cap loosely mounted on the cover, which forms a continuation of the cylinder and has a packing between it and the cover, a piston fitted within the space formed between the cap and cover, said piston having a hollow stem, a packing around the stem, and a follower for retaining the packing, substantially as set forth.

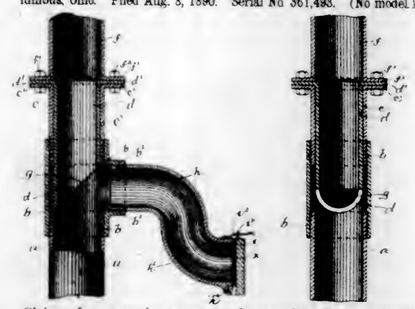
446,217. SHEET-METAL ROOFING. JOSEPH L. DICKELMAN, Forest, Ohio. Filed Sept. 20, 1890. Serial No. 365,584. (No model.)



Claim.—1. The herein-described standing seam for sheet-metal roofs, the same consisting of two vertical flanges of unequal height provided upon the adjacent edges of two connecting-sheets, the upper edge of the higher flange being folded to contact with the upper edge of the lower flange, and the uncompleted seam thus produced folded upon itself through its vertical center, substantially as shown and described.

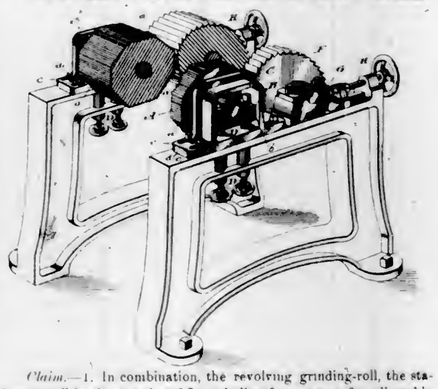
2. The herein-described standing seam for sheet-metal roofs, the same consisting of two vertical flanges of unequal height provided upon the adjacent edges of two connecting-sheets, a cleat having tongues d^3 d^3 interposed between the flanges and having said tongues folded over the edges of the flanges, as described, the upper edge of the higher flange being folded to contact with the upper edge of the lower flange, and the uncompleted seam thus produced folded upon itself through its vertical center, substantially as described.

446,218. SCREEN FOR GAS-PIPES. HENRY S. HALLWOOD, Columbus, Ohio. Filed Aug. 8, 1890. Serial No. 361,493. (No model.)



Claim.—In a screening apparatus for gas-pipes, the combination, with the pipes c and a, T-coupling b, connecting said pipes, and detachable internal screen-pipe d, entering pipe c and projecting within said T-coupling, and an inclined screen g, covering the beveled inner end of the screen-pipe, of an outlet-pipe h, communicating with the coupling b, and a door i, adapted to close the outer end of said pipe h, substantially as described.

446,219. GRINDING-MILL. JAMES JONES and ALDRED J. JONES, Thorold, Canada. Filed June 5, 1890. Serial No. 354,378. (No model.)



Claim.—1. In combination, the revolving grinding-roll, the stationary roll having a series of flat grinding-faces, means for adjustably holding the stationary roll so that it may be adjusted on its axis to present different grinding-faces to the grinding-roll, the said rolls being adjustable to vary their vertical relation and their distance apart, whereby different faces of the stationary roll may be brought into action and different parts of the said faces, substantially as described.

2. In combination, the revoluble grinding-roll, the stationary roll, the main frame, the open frames C adjustable thereon to and from the revolving roll, and the bearing-boxes B, adjustable vertically within the frames C and upon the inner faces of the vertical sides, substantially as described.

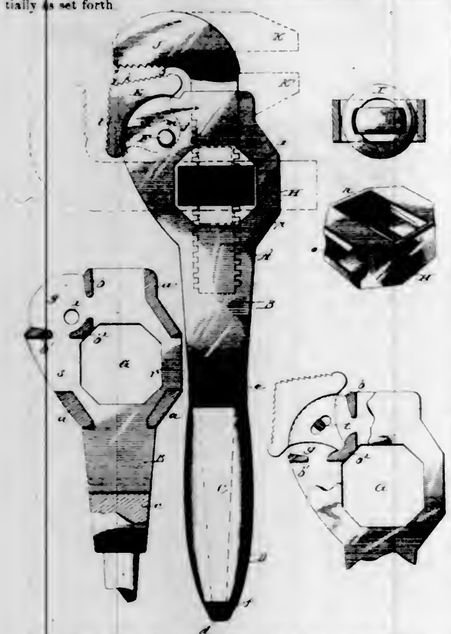
446,220. WRENCH. PHINEAS W. LOWNES, Orlando, Fla. Filed Apr. 25, 1890. Renewed Jan. 3, 1891. Serial No. 376,620. (No model.)

Claim.—1. In a wrench, the combination, with a body having an opening at its top, openings in its sides, a transverse opening, the sides or walls of the latter being angular, and a jaw attached to said body and having teeth on its upper and outer faces, of an adjustable carrier or box shaped to fit the transverse angular opening in the body of the wrench, a movable jaw, and a nut located in the carrier and engaging the movable jaw, substantially as set forth.

2. In a wrench, the combination, with a body having an opening in its top and openings in its sides, and a jaw attached to said body and having an upper and an outer face, of an adjustable carrier having an angular periphery and located in a correspondingly-shaped opening in the body of the wrench, an interiorly-threaded nut in said carrier, and a movable jaw detachably and adjustably located in the carrier, whereby provision is made for causing the movable jaw to work with either face of the pivoted jaw, substantially as set forth.

3. In a wrench, the combination, with a body having an opening in its top and openings in its sides, and a jaw pivoted to said body and

having an upper and an outer face, of a detachable carrier inserted in the body of the wrench and having its periphery made up of a series of straight edges, a threaded nut in said carrier, and a sliding jaw having a stem adapted to pass through said carrier and nut, substantially as set forth.

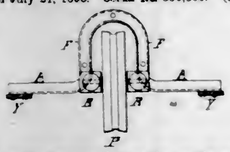


4. In a wrench, the combination, with a body composed of two plates secured together by means of spacing-blocks, of a jaw having an upper and an outer face and a shank, said shank being adapted to enter between the plates composing the body, a pin for pivotally connecting said jaw with the body of the wrench, a box or carrier having straight edges inserted in correspondingly-shaped openings in the plates, a nut in said box, and a jaw having a shank adapted to pass through said box and nut and operate with either face of the pivoted jaw, substantially as set forth.

5. In a wrench, the combination, with a body having openings in its top and sides and an angular opening in its body, and a jaw attached to said body, having an outer and an upper face, of an angular detachable carrier adapted to enter the angular opening in the body of the wrench, a threaded nut in said carrier, and a sliding jaw having a stem adapted to pass through said carrier, substantially as set forth.

6. In a wrench, the combination, with a body having a longitudinal socket, stops or spacing-blocks on opposite sides of the outer end of said socket and forming the end walls thereof, a transverse socket, stops or spacing-blocks on opposite sides of the transverse socket and forming the end walls thereof, the said stops or spacing-blocks adapted to prevent lateral or swinging movement of the movable jaw, and a carrier seated in an opening or recess located at the juncture of the longitudinal and transverse sockets, of a movable jaw and a nut seated in a recess in the carrier and engaging the stem or shank of the movable jaw, substantially as set forth.

446,221. **CABLE STREET-RAILWAY.** LEWIS M. CLEMENT, Oakland, Cal. Filed July 21, 1890. Serial No. 359,839. (No model.)



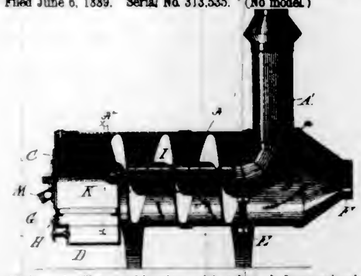
Claim.—1. In cable street-railways, the carrier-pulley frame F, having the open end E, substantially as described, and for the purpose set forth.

2. In cable street-railways, the carrier-pulley P, in combination with a pulley-frame F, having one end open, for the purpose set forth.

3. In cable street-railways, the yoke-frame F, with its open end E and provided with the pulley-axle-box sockets B B, for the purpose described.

4. In cable street-railways, the pulley-frame F, having the open end E and box-sockets B B, in combination with the carrier-pulley P, substantially as described, and for the purposes set forth.

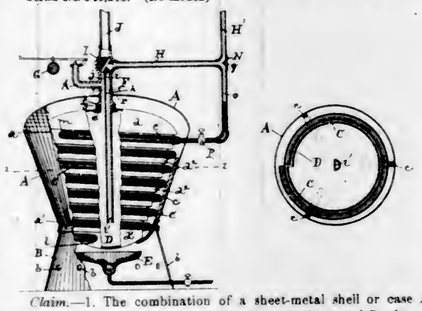
446,222. **HOT-AIR FURNACE.** PETER C. HOYT, Watseka, Ill. Filed June 6, 1889. Serial No. 313,535. (No model.)



Claim.—1. The combination, with a hot-air furnace having a fire-chamber arranged therein and a radiating-cylinder connecting said chamber with a smoke-pipe, of the cylinder arranged within the radiating-cylinder, provided with a spiral flange upon its exterior extending to the wall of said radiating-cylinder and adapted to be readily removed and replaced therein, substantially as and for the purpose specified.

2. The combination, with the outer cylinder having a closed fire-chamber arranged therein and provided with an air-induction opening at one end and a discharge at the other end, of the radiating-cylinder connecting the fire-chamber with the smoke-pipe and provided upon its exterior with a spiral flange, whereby the cold air is retarded about the same and the spiral flange arranged within the radiating-cylinder, whereby the heat is retarded and the radiation increased, said flange within the radiating-cylinder being adapted to be readily removed and replaced, whereby the said cylinder may be cleaned of soot and the like, substantially as and for the purpose specified.

446,223. **STEAM GENERATOR AND PLUSHER.** WILLIAM C. KOETTNER and EDWIN C. LIVINGSTON, Baltimore, Md. Filed Apr. 1, 1890. Serial No. 346,213. (No model.)



Claim.—1. The combination of a sheet-metal shell or case A, which is tapering, being largest at the top, a boiler-vessel D, also tapering and fitted within the said shell, a pipe coiled outside of and fitted close to the exterior of said tapered boiler, with one end connected thereto near the bottom and the other end near the top, a pipe at the top of the boiler for the outlet of steam, a pipe opening into the boiler near the bottom for the outlet of hot water, and a cock to control the said steam and hot water.

2. The combination of a sheet-metal shell or case A, which is tapering, being largest at the top, a boiler-vessel D, also tapering and largest at the top and having spiral steps in its wall, and a pipe coiled outside of the boiler, with a coil in each groove that is formed by the said spiral steps and the ends of the coiled pipe connected with the boiler.

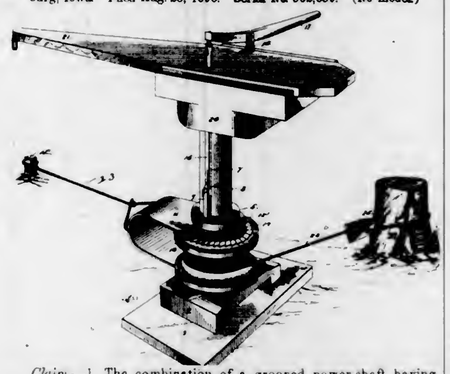
3. The combination of a boiler, a pipe connected with the top of the boiler and having a longitudinal division which forms two passages *i j*, one of which projects down into the boiler to near the bottom and the other opens into the boiler at the top, a supply-pipe H, connected with the two-passage pipe at the outer end of the said lon-

gitudinal division, a three-way cock I in the said pipe at the intersection of the branch pipe, and a delivery-pipe J, connected outside of said cock.

4. The combination of a boiler, a pipe connected with the top of the boiler and having a longitudinal division which forms two passages *i j*, one of which projects down into the boiler to near the bottom and the other opens into the boiler at the top, a supply-pipe H, connected with the two-passage pipe at the outer end of the said longitudinal division, a three-way cock I in the said pipe at the intersection of the branch pipe, a delivery-pipe J, connected outside of said cock, a branch pipe *o*, connecting the supply-pipe and the boiler at a point which shall determine the high-water line, and a three-way cock *p* in the branch pipe.

5. The combination of a boiler, a pipe connected with the top of the boiler and having a longitudinal division which forms two passages *i j*, one of which projects down into the boiler to near the bottom and the other opens into the boiler at the top, a supply-pipe H, connected with the two-passage pipe at the outer end of the said longitudinal division, a three-way cock I in the said pipe at the intersection of the branch pipe, a delivery-pipe J, connected outside of said cock, a T-joint attached to the supply-pipe and having an internal V-shaped guide *q*, which points directly toward the end or bore thereof, a branch pipe *o*, connecting the said T-joint and the upper part of the boiler, and a cock in the branch pipe.

446,224. **STUMP-EXTRACTOR.** BENJAMIN MONTROSS, Millersburg, Iowa. Filed Aug. 23, 1890. Serial No. 362,859. (No model.)



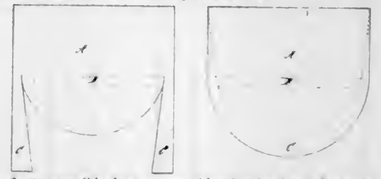
Claim.—1. The combination of a grooved power-shaft having rigid collars, a winding-drum fitted loosely on the shaft between said collars and provided with the interior, key way or ways, an anchor-clevis fitted loosely on the collars of the shaft, a movable key 9, fitted in the groove in the power-shaft and adapted to fit in one of the key-ways of the winding-drum, and a lever linked to the movable key for withdrawing the same from engagement with the winding-drum, substantially as described.

2. The combination of a grooved power-shaft provided with the rigid collars, a winding-drum fitted loosely on said shaft between the collars and provided with the notches or teeth, an anchor-clevis fitted loosely on the shaft and having the pawl adapted to engage the notches or teeth of the winding-drum, the movable key, and a sweep attached to the power-shaft, substantially as described.

3. The combination of a base, a main bearing thereon, a vertical power-shaft stepped in said bearing and provided with the longitudinal key way or seat and the grooved collars, a winding-drum loosely fitted on the shaft between the collars and provided with a series of interior key ways or seats and the notches or teeth in one of its faces, the movable key fitted in the longitudinal way or seat of the power-shaft, the cap mounted on said shaft, the operating-lever fulcrumed on the cap and linked to the movable key, the sweep rigidly connected to said cap, the anchor-clevis connected loosely to the power-shaft and having the locking-pawl adapted to engage the notches or teeth on the winding-drum, and the pulling rope or chain attached to the drum, for the purpose described, substantially as set forth.

446,225. **DUST-PAN.** CHARLES L. BELLAMY, Arlington, N. J. Filed Nov. 22, 1889. Serial No. 331,187. (No model.)

Claim.—1. A reversible dust-pan stamped from a single piece of metal and consisting of a flat front portion having an upturned rim on each side thereof, a sloping portion at the back in a different plane from the front portion and connected to the rear of the front portion by a vertical strip, and the rim extending around such inclined portion, whereby the pan is provided on one side with a flat front dust-receiving portion and on the other with an inclined front and dust-receptacle in the rear, substantially as described.



2. A reversible dust-pan one side of which has a flat portion and a sloping portion and the other side a sloping portion terminating at a receptacle having a surrounding rim, vertical pointed spurs being fixed near the back of the pan and projecting from both sides thereof, substantially as shown and described.

3. A dust-pan in which is comprised a body made of a single piece of metal, one side having a flat portion and a sloping portion and the other side a sloping portion and a dust-receptacle, a rim upon three sides of the body formed integral therewith, double-pointed spurs fixed to the back of the pan, and a manipulating-handle, the whole combined and arranged, substantially as shown and described.

446,226. **TIME-ALARM FOR CULINARY PURPOSES.** WILLIAM E. GROVES, Boston, Mass. Filed Dec. 3, 1889. Serial No. 332,413. (No model.)



Claim.—1. An alarm mechanism provided with a stop, brake, or slide adapted to engage automatically with the periphery of the balance-wheel to stop its movement when the alarm has sounded and to be moved in a tangent therefrom by the operator, the latter movement serving to release and start the balance-wheel and to impart tension to the alarm-spring, substantially as set forth.

2. The case A, with a suitably-actuated train of gearing, the indicator-hand C, alarm devices D E, and alarm-spring K, in combination with the curved slide H, connected to a lever protruding through the case, whereby the slide may be disengaged from the periphery of the balance-wheel by the operator and engaged therewith by the action of the alarm-spring, substantially as set forth.

3. In an alarm device, the hand or indicator adapted to be rotated by the operator in setting and to be carried forward by the driving-spring, in combination with an alarm device having one unvarying sounding-point, and with gearing adapted to speed the movement of the hand toward said point, substantially as set forth.

446,227. **COMBINED STREET-CAR FENDER AND BRAKE.** GEO. T. HALL, Monrovia, assignor of one-half to E. F. Spence, Los Angeles, Cal. Filed Aug. 9, 1890. Serial No. 361,546. (No model.)

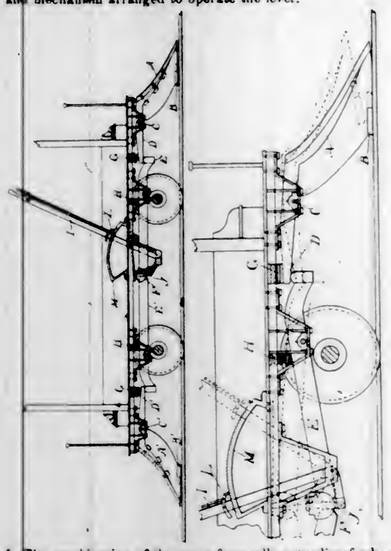
Claim.—1. The combination of the car, a forwardly-extending fender provided with the arm and with the rail-engaging brake-shoes and pivoted to the car to allow vertical movement of such fender and shoes, and mechanism arranged to engage such arm to operate the fender vertically, as and for the purpose set forth.

2. The combination of the car, a forwardly-extending fender provided with the rigid arm and pivoted to the car to allow vertical movement of such fender, and mechanism arranged to engage such arm to operate the fender, substantially as and for the purpose set forth.

3. The combination of the car, the fenders pivoted thereto, one at each end thereof, and respectively provided with the brake-shoes and the rigid arm, and mechanism arranged to engage such arms, substantially as and for the purpose set forth.

4. The combination of the car, a forwardly-extending fender piv-

oted to the car and provided with the arm, the balancing-spring arranged to engage the arm, the pivoted lever arranged to engage the arm, and mechanism arranged to operate the lever.



5. The combination of the car, a forwardly-extending fender pivoted to the car and provided with the arm, the balance-spring arranged to engage the arm, the pivoted lever arranged to engage the rear ends of the arm, and the presser-bar arranged to engage the pivoted lever, the hand-lever, and intermediate connections connecting the hand-lever and presser-bar.

446,228. RAILWAY CATTLE-GUARD. JAMES T. HALL, Chicago, Ill. Filed May 29, 1890. Serial No. 353,660. (No model.)



Claim.—1. In a surface cattle-guard, the gratings formed of guard-rails having a base and an upwardly-extending metallic flange of a separate piece, substantially as described.

2. In a railway surface cattle-guard, gratings formed of wooden guard-rails, each having an upwardly-extending metallic flange supported its entire length upon said guard-rail, substantially as described.

3. In a railway surface cattle-guard, gratings formed of guard-rails, each having an upwardly-extending metallic flange secured in position by means of flanges, such as *g*, and bolts *h*, substantially as described.

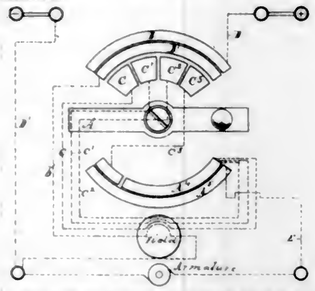
4. In a railway surface cattle-guard, the thimble I, having apertured foot *d*, said foot forming means for securing the guard-sections in the track, substantially as described.

5. In a railway surface cattle-guard, the thimble I, having web *b*, aperture *c*, and foot *d*, apertured to receive a spike, substantially as described.

6. In a surface cattle guard, the gratings formed of wooden guard-rails, combined with a metallic guard-strip secured on the top thereof, substantially as described.

446,229. REGULATOR FOR ELECTRIC MOTORS. LANDER S. HARRIS, Detroit, Mich. Filed Aug. 30, 1890. Serial No. 363,508. (No model.)

Claim.—1. An electric motor for constant-potential circuits, having its field-magnets wound with a shunt-circuit over the field-magnets alone and its armature wound with another shunt-circuit over the armature alone, and in connection therewith independent circuits in parallel are with each other, of different grades of wire, passing over the field-magnets and directing their current thence over the armature-circuit, with switch mechanism for bringing said latter shunt-circuits successively into and out of action as the machine is being started, substantially as described.

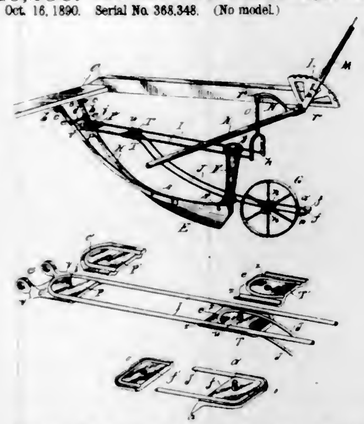


2. An electric motor for constant-potential circuits, said motor having its field magnets provided with a shunt-circuit for the field-magnets alone and its armature provided with a shunt-circuit for the armature alone, and in connection therewith independent windings of different grades of wire upon the field-magnets and adapted to direct the currents thence over the armature-circuit, and in connection therewith switch mechanism adapted to first throw the current onto the first-named field-circuit, and while thus maintained throughout to direct the current successively through each of the independent windings, and finally cut out all said independent windings and leave the armature with current only through its first-named circuit, substantially as described.

3. An electric motor for constant-potential circuits, having its field magnets provided, as described, with a direct shunt-circuit *b'*, also with the parallel-arc circuits *c c' c²*, each in series with the armature-circuit and with the circuit *c²*, adapted to complete a direct circuit through the armature after the parallel-arc circuits are cut out of action, and switch mechanism for governing the admission of current through said circuits, substantially as described.

4. An electric motor for constant-potential circuits, having its field-magnets provided with a direct shunt-circuit *b'*, the armature provided with a direct circuit *c²* E, and a series of graded wires *c c' c²*, each constituting an independent circuit in parallel with the others over the field-magnets and in series with the armature-circuit, substantially as described.

446,230. GRAIN-DRILL. WILL F. HOYT, Dowagiac, Mich. Filed Oct. 16, 1890. Serial No. 368,348. (No model.)



Claim.—1. In combination with the transporting-wheels and frame, the hopper, shoe, and draft-rods, the latter having a pivotal connection with the frame, the clamping-plates having a pivotal connection with the draft-rods, the spring-metal pressure-rods attached to said plates, said rods extending rearwardly of the hopper, the forked arm coupled to said rods, and means for raising and lowering said arm, substantially as specified.

2. In combination with a frame of a grain-drill, the hopper having a flange at the upper end, the shoe attached to the hopper, the curved draft-rods leading from the shoe and having a pivotal connection with the frame of the machine, a swinging head located between

the upper ends of the draft-rods, spring-metal rods attached to the swinging head, said rods extending back of the hopper and below the flange thereof, said spring-metal rods being coupled to an arm, said arm having means for raising and lowering it, and means for locking the parts, for the purposes set forth.

3. In combination with the frame, hopper, shoe, and draft-rods, the plates pivotally attached between the upper portions of said draft-rods, said plates having the horizontal shoulders, said shoulders bearing upon the draft-rods, the spring-metal rods attached to said plates and passing rearward of and on opposite faces of the hopper, and means for applying pressure to the rear ends of said spring-metal rods, for the purpose specified.

4. In a grain-drill, the combination of the wheels and main frame, of a hopper, shoe, and draft-rods having a pivotal connection with the frame, means for applying spring-pressure to the shoe, comprising the pressure-rods having their forward ends coupled to the draft-rods and a lever at the rear ends, a wheel traveling in the path of the shoe, and spring-metal rods coupling said wheel and its journal-bearing with the spring-pressure rods, substantially as indicated.

5. In a seed-drill having a hopper, shoe, and draft-rods, the hopper having a projection on its periphery at the top, plates pivoted between the upper end portions of the draft-rods, spring-metal rods clamped between said plates, means for raising and lowering the rear ends of said rods, and a wheel traveling in the rear of the shoe, said wheel having a spring-pressure connection with the spring-metal rods leading from the draft-rods.

6. In combination with the hopper, shoe, and draft-rods, the plates pivoted between the draft-rods, the spring I, clamped between said plates and extending rearward of the hopper, means for raising and lowering the rear ends of said spring, the wheel in the rear of the shoe, the plates T T', mounted on the spring I, and the doubled spring-metal rod J, having one end clamped between the plates T T' and having on the opposite ends the scraper-plates *f f'*, for the purposes specified.

446,231. TOBACCO-STRINGER. BENJAMIN S. KEARNEY, Franklinton, N. C., assignor of one-half to Needham Y. Gulley, same place. Filed May 17, 1890. Serial No. 352,130. (Model.)

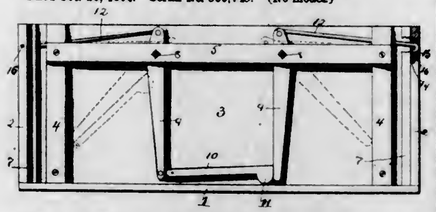


Claim.—1. The combination of the guide-plates arranged to clamp a stringing-needle and having projecting portions 9 and 10, whereby the guide-plates are rendered capable of having one end brought together to spread the opposite end, and the springs securing the guide-plates together, substantially as described.

2. The combination of the guide-plates having their ends oppositely-curved and providing flaring mouths and having a central opening 8 and adapted to hold a stringing-needle, and the springs secured to the plates, substantially as described.

3. The combination of the guide-plates provided with the groove to receive a stringing-needle and having oppositely-curved ends forming flaring mouths, and the curved recesses 7, forming a central opening 8, the spring 13, secured to the sides of the plates and being curved and forming a rounded end to the frame, and the spring 14, similarly secured to the plates and bent to form a square rear end, substantially as described.

446,232. WAGON END-GATE. BENJAMIN S. KEARNEY, Franklinton, N. C., assignor of one-half to Needham Y. Gulley, same place. Filed Oct. 29, 1890. Serial No. 369,745. (No model.)



Claim.—1. In combination with the end-gate, the herein-described locking mechanism for the end-gate, comprising a pair of levers pivoted to the end-gate, rods pivoted to the upper ends of the levers and provided with hooks or catches at their outer ends, staples or pins extending across openings in the sides of the body and adapted to be engaged by said hooks or catches, and a bar hinged to one of the levers and arranged to engage the other lever for locking said rods, substantially as set forth.

2. The combination, with an end-gate, of the levers 9, pivoted to the end-gate, the rods connected to the upper ends of the levers 9 and arranged to engage the body of a wagon, and the bar 10, hinged to the lower end of one of the levers and arranged to engage the other lever, substantially as described.

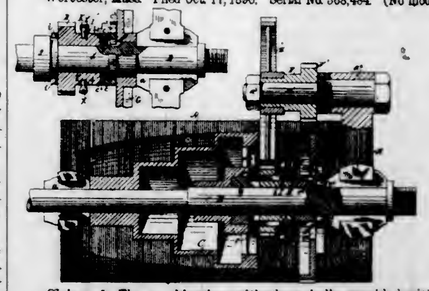
3. In combination with the end-gate, the herein-described locking mechanism for the end-gate, comprising a pair of levers pivoted to the end-gate, rods pivoted to the levers and provided with hooks or catches at their outer ends, staples or pins extending across openings in the sides of the body and adapted to be engaged by said hooks or catches, and a pivoted lock-bar between the lower ends of said levers, substantially as set forth.

4. In combination with the end-gate, the herein-described locking mechanism for the end-gate, comprising a pair of levers pivoted to the end-gates, rods pivoted to the levers and provided with hooks or catches at their outer ends, staples or pins extending across openings in the sides of the body and adapted to be engaged by said hooks or catches, and a lock-bar pivoted to the lower end of one of said levers and adapted to engage the lower end of the other of said levers, substantially as set forth.

5. In combination with the end-gate, the herein-described locking mechanism for the end-gate, comprising a pair of levers pivoted to the end-gate, rods pivoted to the levers and provided with hooks or catches at their outer ends, staples or pins extending across openings in the sides of the body and adapted to be engaged by said hooks or catches, and a lock-bar pivoted to the lower end of one of said levers and provided at its outer end with a head adapted to engage the other of said levers and to rest upon the floor of the body, substantially as set forth.

6. In combination with the end-gate, the herein-described locking mechanism, comprising a pair of levers pivoted to the end-gate, rods pivoted to the levers, means for securing the outer ends of the rods to the sides of the vehicle, and a pivoted lock-bar between the levers, substantially as set forth.

446,233. BACK-GEARING MECHANISM. BENJAMIN G. LUTHER, Worcester, Mass. Filed Oct. 17, 1890. Serial No. 368,484. (No model.)



Claim.—1. The combination, with the spindle provided with a notch adapted to be engaged by a driving-dog, of the cone-pulley provided with a spring-actuated driving-dog having an engaging tooth which is adapted to enter the notch of the spindle, and the movable spur which is adapted to engage with the dog to cause the withdrawal of its tooth from driving engagement with the notch to driving engagement with the spur, substantially as described.

2. The combination, with the spindle provided with a notch adapted to be engaged in both directions by a driving-dog, of the cone-pulley provided with a spring-actuated driving-dog having an engaging tooth which is adapted to enter the notch of the spindle and cause the movement of the same in either direction, and a movable spur which is adapted to engage with the dog from either direction to cause the withdrawal of its tooth from driving engagement with the notch to driving engagement with the spur, substantially as described.

3. The combination, with the spindle provided with a notch adapted to be engaged by a driving-dog, of the cone-pulley provided with a spring-actuated driving-dog adapted for engagement with the notch to cause the rotation of the spindle, and the loose pinion which holds a spur adapted for engagement with the dog to cause the withdrawal of its tooth from driving engagement with the notch of the spindle to driving engagement with the spur to cause the rotation of the pinion, substantially as described.

4. The combination, with the cone-pulley and the gear, which are arranged loosely upon the spindle and each provided with a spring-

actuated driving-dog, and the spindle provided with notches adapted to be engaged by the driving-dogs of the cone-pulley and gear, of the loose pinion which holds a spur adapted for engagement with the dog of the cone-pulley to cause the withdrawal of its tooth from driving engagement with its notch to driving engagement with the spur of the pinion, the intermediate gears which connect the pinion and the loose gear, and means for effecting the engagement and disengagement of the driving-dog of the gear in timely relation to the disengagement and engagement of the driving-dog of the cone-pulley, substantially as described.

5. The combination, with the gear carrying a spring-actuated driving-dog, of the spindle provided with a notch which is adapted to be engaged by the tooth of the dog, so as to be capable of rotation in either direction by the said dog, substantially as described.

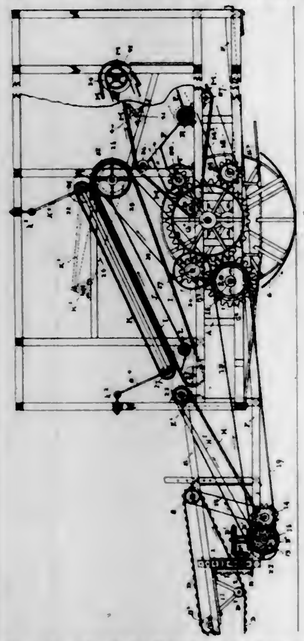
6. The combination, with the loose gear carrying a spring-actuated driving-dog, and the spindle provided with a notch which is adapted to be engaged by the tooth of the dog, of means, substantially as described, whereby the dog can be raised out of the notch of the spindle, as set forth.

7. The combination, with the spindle, of the pinion, the loose gear, the intermediate gears, and the fixed standard adapted to support the pinion and gear from bearing directly upon the spindle, substantially as described.

8. The combination, with the spindle, of the cone-pulley having a spring-actuated dog, a notched collar on the spindle, adapted to be engaged by the tooth of said dog, a sliding spur for raising said dog out of engagement with the notches of the collar into engagement with the spur, the pinion, the intermediate gears, the loose gear upon the spindle, its spring-actuated driving-dog having a tooth adapted to engage with a notch in the spindle, a slide whereby said dog is disengaged from its notch, and means, substantially as described, whereby the said slide and the sliding spur are moved simultaneously, for the purpose set forth.

9. The combination, with the spindle provided with engaging notches and the cone-pulley, of the spring-actuated driving-dogs having yielding rings upon their pivots, which will allow both of said dogs to come firmly into engagement with the notches of the spindles, substantially as described.

446,234. **THRASHING-MACHINE.** EDWIN MCDONALD, Willow, Cal. Filed Oct. 11, 1889. Serial No. 326,713. (No model.)

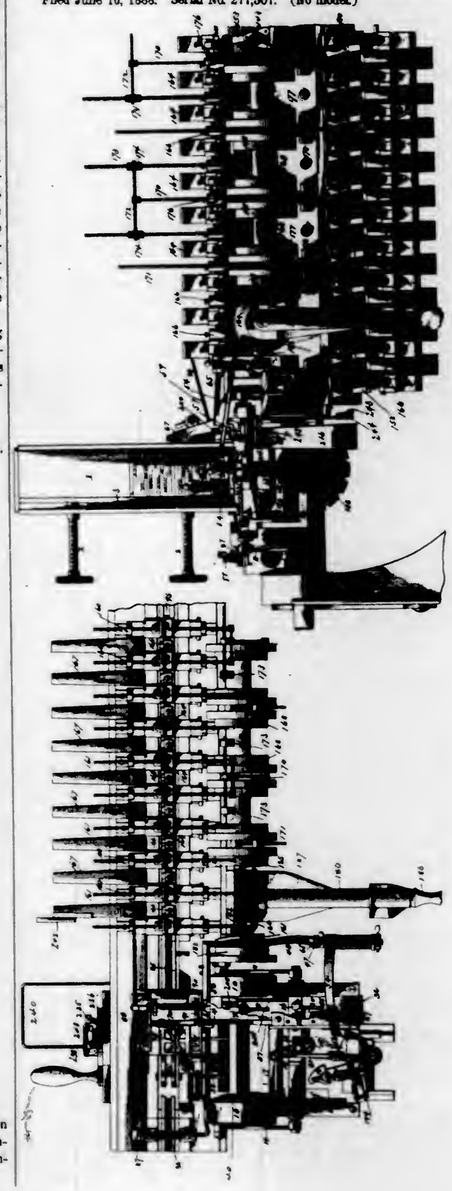


Claim.—1. In a harvesting-machine, an endless traveling apron formed of hinged or jointed bars, with channels intersecting one another, and apertures through the bars at the intersections of said channels, substantially as described.

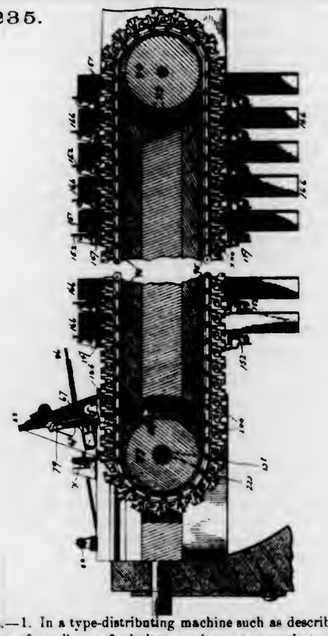
2. In a thrashing-machine, the combination of an endless traveling surface I, having perforations and set in an inclined position, and an endless traveling surface K, shorter than the thrashing-surface, mounted over said thrashing-surface, having a vibratory motion in the direction of its travel, with the stationary bottom J and conveyer L, as set forth.

3. In a thrashing machine, a separator-shoe formed of an endless traveling apron composed of bars with channels and perforations, as described, in combination with pulleys 34, 35, 36, and 37, for holding said shoe in the manner described, and with the fan R and stationary inclined grain-board P, located within the shoe, as set forth.

446,235. **TYPE-DISTRIBUTING MACHINE.** JOHN PATTEN, New York, N. Y., assignor of one-half to Edward D. Onion, Baltimore, Md. Filed June 16, 1888. Serial No. 277,307. (No model.)



446,235.



Claim.—1. In a type-distributing machine such as described, the combination of a galley, a feed-plate moving transversely to the column of type held in the said galley for extracting the lines of the said column therefrom successively, a latch interposed between the driving mechanism of the machine and said feed-plate, a feed-bar moving in a plane intersecting the ends of the said lines and extracting the type singly therefrom, a side feed for advancing the said lines so as to place the succeeding type in the path of the said feed-bar, and an arm moving in unison with the said side feed for operating the said latch to interpose it between the said driving mechanism of the machine and feed-plate, substantially as set forth.

2. In a type-distributing machine such as described, the combination of a galley, a feed-plate moving transversely to the column of type held in the said galley for extracting successively the lines of the said column therefrom, a latch interposed between the driving mechanism of the machine and said feed-plate, a side feed for advancing the said lines so as to place the succeeding type in the path of a feed-bar, an arm for interposing the said latch between the driving mechanism and the said feed-plate, and intermediate connections consisting of an arm pivotally mounted upon the machine and connected to a side feed by means of a link, a spring to force the said side feed toward the path of a feed-bar, and the said feed-bar moving so as to intersect the end of the said lines and to extract the type singly therefrom, substantially as set forth.

3. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a reciprocating driving mechanism, substantially as described, for operating the said feed-bar, and a yielding connection between the same, substantially as set forth.

4. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a reciprocating driving mechanism, substantially as described, for operating the said feed-bar, an arm attached to the said reciprocating mechanism and grasping the said feed-bar, and a spring for retaining the said feed-bar in the grasp of the said arm, substantially as set forth.

5. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a reciprocating driving mechanism, substantially as described, extending over the feed-bar for operating the same, an arm pivotally attached to the one and grasping the other of the said reciprocating mechanism and feed-bar, and a spring for retaining the said arm in its normal position, substantially as set forth.

6. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a pin extending from the side of the said feed-bar, a reciprocating driving mechanism, substantially as described, extending over the said feed-bar for operating the same, an arm pivotally attached to the said reciprocating mechanism and passing behind the pin on the said feed-bar, and a spring for retaining the said arm pressed against the back of the said pin, substantially as set forth.

7. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a reciprocating driving mechanism for operating the said feed-bar, a gage for limiting the advance of the said type, and an elastic attachment in the line of operation of the said feed-bar to relieve the strain upon the said gage, substantially as set forth.

8. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a driving mechanism, substantially as described, extending over and operating the said feed-bar, an arm pivotally attached to the one and grasping the other of the said driving mechanism and feed-bar, a spring for retaining the said arm in the position in which it grasps the said bar for relieving any strain upon the said feed-bar, and a gage for limiting the advance of the said type placed in the path of the said feed-bar, substantially as set forth.

9. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a driving mechanism, substantially as described, for operating the said feed-bar, and a transferring mechanism, substantially as described, for receiving the type as they are advanced by the said feed-bar and delivering them to the carrying mechanism, and a gage for limiting the advance of the said type into the said transferring mechanism, substantially as set forth.

10. In a type-distributing machine such as described, the combination of a feed-bar for advancing the separate type toward the carrying mechanism, a driving mechanism, substantially as described, for operating the said feed-bar, a carrying mechanism, substantially as described, for receiving and conveying the said type to their destinations, and a gage for limiting the advance of the type into the said carrying mechanism, substantially as set forth.

11. In a type-distributing machine such as described, the combination of a reciprocating cross bar connected to a driving mechanism, a feed-plate for separating the succeeding lines from the galley of the machine, and a latch interposed between the said cross-bar and the feed-plate, substantially as set forth.

12. In a type-distributing machine such as described, the combination, with a latch for connecting the mechanism for separating the succeeding lines from the galley and the driving mechanism of the machine, which consists of two arms and a spring connecting the same and tending to draw them together, of a latch for interposing itself in the path of one of the said arms when drawn back to prevent its return, substantially as set forth.

13. In a type-distributing machine such as described, a latch for connecting the mechanism for separating the succeeding lines from the galley and the driving mechanism of the machine, which consists of two arms pivotally mounted on either the said mechanism for separating the lines or the said driving mechanism, a spring connecting the said arms tending to draw them together, and a spring for rotating them jointly, and a latch for interposing itself in the path of one of the said arms when drawn back for preventing its return, substantially as set forth.

14. In a type-distributing machine such as described, a latch for connecting the mechanism for separating the succeeding lines from the galley and the driving mechanism of the machine, which consists in the combination of two arms, two collars, the one encompassing the other and each rigidly attached to one of the said arms, a spring coiled about the outer of the said collars and attached to the inner and tending to draw the said arms together, a pin upon which the said collars are mounted, and a spring coiled upon the said pin and attached to the said collars for rotating them jointly, substantially as set forth.

15. In a type-distributing machine such as described, the combination of a feed-plate for separating the succeeding lines from the column of type being distributed, a reciprocating driving mechanism, substantially as described, for operating the said feed-plate, a projection or catch, a latch for engaging therewith for connecting the said feed-plate and reciprocating driving mechanism, which consists of two arms and a spring connecting the same and tending to draw them together, a latch for interposing itself in the path of one of the said arms when drawn back to prevent its return, and a latch for releasing the said arm by depressing the end of the said interposed latch after each of the said lines of the column of type have been separated, substantially as set forth.

16. In a type-distributing machine such as described, the combination of a feed-plate for separating the succeeding lines from a column of type being distributed, a reciprocating mechanism, substantially as described, for operating the said feed-plate, a projection or catch, a latch engaging therewith for connecting the said feed-plate and reciprocating mechanism, which consists of two arms and a spring connecting the same and tending to draw them together, a latch for interposing itself in the path of one of the said arms when drawn back to

prevent its return, a latch for releasing the said arms by disengaging the said interposed latch after each of the said lines of the said column of type has been separated, and a spring for disconnecting the said feed-plate and driving mechanism by forcing the latch out of engagement, substantially as set forth.

17. In a type-distributing machine, such as described, the combination of a reciprocating cross-bar connected to the driving mechanism of the machine, a feed-plate moving transversely to the column of type being distributed for separating the succeeding lines therefrom, a projection or catch, a latch engaging therewith for connecting the said cross-bar and feed-plate, which consists of two arms pivotally mounted upon the said feed-plate, and a spring connecting the said arms and tending to draw them together, a latch for interposing itself in the path of one of the said arms when drawn back, and a lever connected to the side feed for moving the said arm back, operating in unison with the said side feed, substantially as set forth.

18. In a type-distributing machine such as described, the combination of a reciprocating cross-bar connected to the driving mechanism of the machine, a feed-plate moving transversely to the column of type being distributed for separating the succeeding lines therefrom, a projection or catch, a latch engaging therewith for connecting the said cross-bar and feed-plate, which consists of two arms pivotally mounted upon the said feed-plate, and a spring connecting the said arms tending to draw them together, a latch for interposing itself in the path of one of the said arms when drawn back, a side feed for advancing the succeeding type of each line for delivery to the carrying mechanism, an arm for setting the said latch so that it will connect the said cross-bar and feed-plate, and intermediate connections between the said side feed and arm for causing them to operate in unison, substantially as set forth.

19. In a type-distributing machine such as described, the combination of a reciprocating cross-bar connected to the driving mechanism of the machine, a feed-plate for extracting the succeeding lines from the column of type being distributed, a latch and co-operating catch for connecting the said cross-bar and feed-plate, a side feed for advancing the succeeding type of each line for delivery to the carrying mechanism, an arm for setting the said latch by being forced against it by the said cross-bar, so that the said latch will connect the said cross-bar and feed-plate, a guide-bar for retaining the said arm in the path of the said cross-bar, and intermediate connections between the said side feed and arm for causing them to operate in unison, substantially as set forth.

20. In a type-distributing machine such as described, the combination of a reciprocating cross-bar connected to the driving mechanism of the machine, a feed-plate for separating the succeeding lines from the column of type being distributed, a latch and co-operating catch for connecting the said cross-bar and feed-plate, a side feed for advancing the succeeding type of each line for delivery to the carrying mechanism, an arm for setting the said latch by being forced against it by the said cross-bar, so that the said latch will connect the said cross-bar and feed-plate, a guide-bar for retaining the said arm in the path of the said cross-bar, a flange for guiding the said arm to the said latch, and intermediate connections between the said side feed and arm for causing them to operate in unison, substantially as set forth.

21. In a type-distributing machine such as described, the combination of a reciprocating cross-bar connected to the driving mechanism of the machine, a feed-plate for separating the succeeding lines from the column of type being distributed, a latch and co-operating catch for connecting the said cross-bar and feed-plate, a side feed for advancing the succeeding type of each line to the carrying mechanism, an arm for setting the said latch by being forced against it by the said cross-bar, so that the said latch will connect the said cross-bar and feed-plate, a guide-bar for retaining the said arm in the path of the said cross-bar, intermediate connections between the said side feed and arm for causing them to operate in unison, a latch for retaining the said arm and side feed when the said latch has been set, and mechanism for releasing the said arm and side feed operating in unison with the said feed-plate, substantially as set forth

22. In a type-distributing machine such as described, the combination of a reciprocating cross-bar connected to the driving mechanism, a feed-plate for separating the succeeding lines from the column of type being distributed, a latch and co-operating catch for connecting the said cross-bar and feed-plate, a side feed for advancing the succeeding type of each line for delivery to the carrying mechanism, an arm for setting the said latch by being forced against it by the said cross-bar to connect the said cross-bar and feed-plate, a guide-bar for retaining the said arm in the path of the said cross-bar, a flange for guiding the said arm when the same has been forced back by the said cross-bar, and mechanism for releasing the said arm operating in unison with the said feed-plate, substantially as set forth.

23. In a type-distributing machine such as described, the combination of a reciprocating cross-bar connected to the driving mechanism, a feed-plate for separating the succeeding lines from a column of type being distributed, a latch and co-operating catch for connecting the said cross-bar and feed-plate, an arm for setting the said latch by being forced against it by the said cross-bar to connect the said cross-bar and feed-plate, a guide-bar for retaining the said arm in the path of the said cross-bar, a latch for retaining the said arm when the same has been forced back by the said cross-bar, a rod resting under the said arm, and a device connected to the said feed-plate for raising the said rod, substantially as set forth.

24. In a type-distributing machine such as described, the combination of a feed-plate for extracting the succeeding lines from the column of type being distributed, and a retaining device provided with a shoulder to pass behind the lines as they are delivered by the said feed-plate to prevent the return of any of the said type, substantially as set forth.

25. In a type-distributing machine such as described, the combination of a feed-plate for extracting the succeeding lines from the column of type being distributed, a retaining device provided with a shoulder to pass behind the lines as they are delivered by the said feed-plate to prevent the adherence of any of the said type to the said feed-plate upon the return of the same, and a side feed for advancing the succeeding type of the said lines for delivery to the carrying mechanism, substantially as set forth.

26. In a type-distributing machine such as described, the combination of a feed-plate for extracting the succeeding lines from the column of type being distributed, a retaining device provided with a shoulder to pass behind and rest upon the line to prevent the return of any of the said type with the said feed-plate and pieing of the line by the pressure of the side feed, a side feed for advancing the succeeding type for delivery to the carrying mechanism, and a feed-bar operating in a plane intersecting the end of the said lines for separating the type singly therefrom, substantially as set forth.

27. In a type-distributing machine such as described, a feed-bar operating in a plane intersecting the ends of the lines being distributed, said feed-bar being channeled at the end next the said lines to present to the same a thin operating-surface while preserving the strength of the said feed-bar, substantially as set forth.

28. In a type-distributing machine, the combination, with the feeding and constantly-moving carrying mechanisms, substantially as described, of the interposed transferring mechanism delivering type from the feeding to the carrying mechanism and moving in unison with the latter while delivering thereto, substantially as described.

29. In a type-distributing machine such as described, provided with mechanism for separating the type singly from a column being distributed, the combination, with the feed-bar for advancing the type when separated, of jaws placed in the path of the said feed-bar for receiving the type from the said feed-bar and delivering them to a carrying mechanism independently of the action of the said feed-bar, substantially as set forth.

30. In a type-distributing machine such as described, the combination of a mechanism for separating the type singly from a line being distributed, a feed-bar for advancing the said type when so separated, jaws for receiving the said type from the feed-bar and delivering them to a carrying mechanism, and a gage for limiting the advance of the said type between the said jaws, substantially as set forth.

31. In a type-distributing machine such as described, the combination of a mechanism for separating the type singly from a line being distributed, a feed-bar for advancing the said type when so separated, jaws for receiving the said type from the feed-bar and delivering them to a carrying mechanism, a gage for regulating the advance of the said type, and a spring connection placed in the path of the said gage to relieve the shock and accommodate varying lengths of type, substantially as set forth.

32. In a type-distributing machine such as described, the combination of a separating mechanism, a carrying mechanism, and an interposed transferring mechanism, consisting of jaws for receiving the separate type from the separating mechanism, and thrusting-feet for expelling the same therefrom into the carrying mechanism, substantially as described.

33. In a type-distributing machine such as described, the combination of a separating mechanism, a carrying mechanism, and an interposed transferring mechanism consisting of jaws for receiving separate type from the separating mechanism, a spring for retaining the said jaws in contact to hold the type, and thrusting-feet for expelling the said type into the carrying mechanism, substantially as set forth.

34. In a type-distributing machine such as described, the combination of a separating mechanism, a carrying mechanism, and an interposed transferring mechanism consisting of jaws for receiving separate type from the separating mechanism, flared guides attached to the said jaws in the path of the type, a spring for retaining the said jaws in contact to hold the type, and thrusting-feet for expelling the said type into the carrying mechanism, substantially as set forth.

35. In a type-distributing machine such as described, the combination of a transferring mechanism provided with jaws for receiving the separate type, thrusting-feet for expelling the said type connected to the driving mechanism of the machine, whereby motion is imparted to the said thrusting-feet, and a feeding mechanism for advancing the type singly to the said transferring mechanism and connected to the driving mechanism of the machine to operate in harmony with the thrusting-feet of the said transferring mechanism, substantially as described.

36. In a type-distributing machine, substantially as described, the combination, with the carrying mechanism for distributing the individual type, of a movable transferring mechanism for delivering type thereto while in motion, provided with independently-movable thrusting-feet engaging the type to discharge them while the transferring mechanism is in motion, substantially as described.

37. In a type-distributing machine such as described, the combination, with the carrying mechanism for distributing the individual type, of a movable transferring mechanism for delivering type thereto while in motion, and intermittingly-moving thrusting-feet engaging the type in the transferring mechanism to discharge them by successive impulses, substantially as described.

38. In a type-distributing machine such as described, the combination of transferring-jaws for receiving and delivering the separate type to a carrying mechanism, a carrying mechanism for conveying the said type to their destination, and a presser-foot for adjusting the said type in the said carrying mechanism by pressing the parts to a level, substantially as set forth.

39. In a type-distributing machine such as described, the combination of transferring-jaws for receiving and delivering the separate type to a carrying mechanism, expelling-feet resting against the type, a feed mechanism for advancing the separate type to the said transferring-jaws, a wheel connected to the said mechanism for advancing the type, pins set in the periphery of the said wheel, and intermediate connections between the said wheel and the expelling-feet of the transferring-jaws extending into the path of the said pins for causing the said transferring-jaws to deliver the type to the said carrying mechanism by forcing the expelling-feet against the type, substantially as set forth.

40. In a type-distributing machine such as described, the combination of transferring-jaws for receiving and delivering the separate type to a carrying mechanism, expelling-feet resting against the type, a feed mechanism for advancing the separate type, a wheel connected to the said mechanism for advancing the said type, pins set diagonally across the periphery of the said wheel, and intermediate connections between the said wheel and the expelling-feet of the transferring-jaws extending into the path of the said pins for causing the said transferring mechanism to deliver the type to the said carrying mechanism by successive impulses upon the said expelling-feet by the displacement of the parts by the said pins, substantially as set forth.

41. In a type-distributing machine such as described, the combination of transferring-jaws provided with expelling-feet resting against the type for receiving and delivering the said type to a carrying mechanism, a feed mechanism for advancing the separate type to the said carrying mechanism, a wheel connected to the said mechanism for advancing the said type, projections extending diagonally across the periphery of the said wheel, and intermediate connections between the said wheel and the thrusting-feet of the transferring-jaws extending into the path of the said projections for causing the said transferring-jaws to deliver the type to the said carrying mechanism by forcing the said expelling-feet against the type, substantially as set forth.

42. In a type-distributing machine such as described, the combination of transferring-jaws provided with thrusting-feet resting against the type for receiving and delivering the separate type to a carrying mechanism, a feed mechanism for advancing the said type to the transferring-jaws, a wheel connected to the said mechanism for advancing the type, projections on the said wheel, a shaft extending diagonally across the path of the said projections, a spring for retaining the said shaft in the path of the said projections, and intermediate connections between the said shaft and the thrusting-feet of the transferring-jaws for causing the said transferring-jaws to deliver the type to the said carrying mechanism by forcing the said thrusting-feet against the type, substantially as set forth.

43. In a type-distributing machine such as described, the combination of a mechanism for advancing singly the type to be distributed, mechanism for receiving and holding the said type, thrusting-feet for expelling the said type from the said mechanism, a wheel connected to the said mechanism for advancing the said type, projections in the said wheel, and intermediate connections between the said wheel and thrusting-feet extending into the path of the said projections for operating the said thrusting-feet, substantially as set forth.

44. In a type-distributing machine such as described, the combination of a mechanism for advancing singly the type to be distributed, mechanism for receiving the said type, thrusting-feet for expelling the said type from the said mechanism for receiving them, a wheel connected to the said mechanism for advancing the type, projections mounted diagonally across the periphery of the said wheel, a snaft extending into the path of the said projections, and intermediate connections between the said shaft and thrusting-feet, substantially as set forth.

45. In a type-distributing mechanism, the combination, with the feeding mechanism for advancing the type to be distributed singly and the carrying mechanism for conveying the type to their destination, of interposed transferring-jaws movable in the line of the carrying mechanism, whereby the necessity of stopping the same to receive a type is avoided, substantially as described.

46. In a type-distributing machine, the combination, with the feeding mechanism for advancing the type to be distributed singly and the carrying mechanism for conveying the type to their destination, of interposed pivoted transferring-jaws movable in the line of the carrying mechanism, and a spring for holding said jaws forward, substantially as described.

47. In a type-distributing machine such as described, the combination of a feeding mechanism for advancing singly the type to be distributed, a carrying mechanism for receiving and conveying the said type to their destination, and an interposed transferring mechanism consisting of movable holding-jaws for receiving the said type from the said feeding mechanism and delivering them to a carrying mechanism while in motion, substantially as described.

48. In a type-distributing machine, the combination, with the carrying and distributing mechanism, substantially as described, for distributing the individual type, of a transferring mechanism, substantially as described, moving in unison with the carrying mechanism for receiving the type from the line being distributed and transferring the same to the carrying mechanism while in motion, substantially as described.

49. In a type-distributing machine, the combination, with a continuously-moving carrying mechanism, substantially as described, for delivering the individual type to their receivers, of an intermittingly-movable transferring mechanism, substantially as described, moving therewith while delivering type thereto while in motion, and a feed for advancing the type to the transferring mechanism while the same is stationary, substantially as described.

50. In a type-distributing machine, the combination, with a continuously-moving carrying mechanism, substantially as described, for delivering the individual type to the receivers, of a reciprocating transferring mechanism, substantially as described, for delivering type to the carrying mechanism while moving in one direction, and a feeding mechanism, substantially as described, timed to feed the type to the transferring mechanism while the same is stationary, as set forth.

51. In a type-distributing machine, the combination, with a moving carrying mechanism for conveying the type to their individual receivers and a feed mechanism, for advancing the type, of a movable transferring mechanism, substantially as described, having a projection thereon and a movable jaw on the carrying mechanism engaging said projection and moving the transferring mechanism with the carrying mechanism while the transfer of type is being made, substantially as described.

52. In a type-distributing machine such as described, the combination of a movable transferring mechanism for receiving and delivering separate type to a carrying mechanism, the said carrying mechanism for conveying the separate type to their destination, and a movable jaw upon one of the said mechanisms for interposing itself in the path of the other, and a foot for resetting the said jaw to allow the said mechanisms to operate independently, substantially as set forth.

53. In a type-distributing machine such as described, the combination of a transferring mechanism for receiving and delivering the separate type to a carrying mechanism having a projection thereon, a carrying mechanism for conveying the said type to their destination, having a jaw upon the chambers thereof extensible into the path of the said projection, and a device for depressing the said jaw into the path of the carrying mechanism to allow the said transferring mechanism to operate independently, substantially as set forth.

54. In a type-distributing machine such as described, the combination of a transferring mechanism for receiving and delivering separate type to a carrying mechanism, the said carrying mechanism for conveying the type to their destination, a projection upon the said transferring mechanism, a jaw upon the chamber of the said carrying mechanism extensible into the path of the said projection, and thrusting-feet mounted in the said transferring mechanism for depressing the said jaw to allow the said mechanisms to operate independently, and intermediate connections between the said thrusting-feet and driving mechanism of the machine for depressing the said feet, substantially as set forth.

55. In a type-distributing machine such as described, the combination of a feed for advancing separate type, a movable transferring mechanism receiving the type thus advanced by the said feed, a movable carrying mechanism operating across the exit of the said transferring mechanism and adapted to receive and carry the type to their

separate destinations, cam surfaces or deflectors placed in the path of the carrying mechanism for raising the same to engage the said transferring mechanism or type held therein while the type is being delivered from the transferring mechanism to the carrying mechanism, and deflectors to disengage the said carrying mechanism from the transferring mechanism, after the type has been so delivered, by depressing the carrying mechanism out of the line of engagement, substantially as described.

56. In a type-distributing machine such as described, the combination of a carrying mechanism composed of distinct chambers in which are provided jaws to receive the separate type, a spring to cause the said jaws to retain a pressure upon the type in the said chambers, a lever for opening the said jaws connected to them and extending beyond the said chambers, an obstruction placed in the path of the said lever to cause it to operate the said jaws, a transferring mechanism to receive the separated type and deliver them between the said jaws when opened by the said lever, and a feed mechanism to separate the type from the column and deliver them to the said transferring mechanism, substantially as set forth.

57. In a type-distributing machine such as described, the combination of a carrying mechanism composed of distinct chambers in which are provided jaws to receive the separate type, a spring to cause the said jaws to retain a pressure upon the type in the said chambers, a lever connected to the said jaws and extending beyond the said chambers for opening the said jaws, a cam placed in the path of the said lever to cause it to open the said jaws while the type is being partly delivered between them, a transferring mechanism to receive the separated type and deliver them by degrees, substantially as set forth, whereby the type are grasped by the said jaws before being fully delivered by the said transferring mechanism.

58. In a type-distributing machine such as described the combination of the carrying mechanism composed of distinct chambers in which are provided jaws to receive the separate type, the one of which is extensible into the path of a transferring mechanism, a spring to cause the said jaws to retain a pressure upon the type, a lever connected to the said jaws and extending beyond the said chambers for opening the former of the said jaws, an obstruction placed in the path of the said lever to cause it to operate the said jaws, cams placed in the path of the said extensible jaw for extending the same into the path of the said transferring mechanism, a transferring mechanism for delivering the type separately to the said jaws, and connections between the jaws, transferring mechanism, and lever, substantially as set forth.

59. In a type-distributing machine such as described, the combination of a carrying mechanism composed of distinct chambers, in which are provided jaws to receive the separate type and one of which is extensible into the path of a transferring mechanism, a spring to cause the said jaws to retain a pressure upon the type, a lever connected to the said jaws and extending beyond the said chambers for opening the said jaws, an obstruction placed in the path of the said lever to cause it to operate the said jaws, cams placed in the path of the said extensible jaw for extending the same into the path of the said transferring mechanism, a transferring mechanism for delivering type separately to the said jaws, presser-feet for forcing the type and extensible jaw to a level of the upper surface of the carrying mechanism after being delivered, and connections between said extensible jaw and transferring mechanism for causing the lever to operate in harmony to keep the type under pressure while being transferred, substantially as set forth.

60. In a type-distributing machine such as described, the combination, with the feed mechanism, substantially as described, for advancing the type singly from a line being distributed, and a carrying mechanism, substantially as described, for conveying the individual type to their destinations, of a driving mechanism for said carrying mechanism, and a pair of eccentric cog-wheels interposed between said driving and carrying mechanisms, whereby an alternately fast and slow motion is given the latter, substantially as described.

61. In a type-distributing machine such as described, the combination of a feed mechanism for advancing the type singly from the column being distributed, a carrying mechanism for receiving the same and conveying them to their destinations, an eccentric cog-wheel mounted upon the driving-shaft of the said feed mechanism, a corresponding eccentric cog-wheel geared with the first, a beveled pinion mounted upon the shaft of the eccentric cog-wheel last mentioned, and a chain of regular gears for transmitting the movement of the said pinion to the drive-wheel of the carrying mechanism, substantially as set forth.

62. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, a channel for guiding the said carrying mechanism, wheels in the said channel for guiding and propelling the said carrying mechanism, and flanges passing through the said channel and rounded so as to extend over the said wheels and guide the said carrying mechanism into the said channel, substantially as set forth.

63. In a type-distributing machine such as described, a channel for guiding the carrying mechanism for conveying the type to their destinations, consisting of small sections secured rigidly upon the frame of the machine, so as to form the said channel with unbroken wall, substantially as described, whereby the length of the said channel may be reduced or enlarged.

64. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having an elevator for raising the type held in the said carrying mechanism above the surface thereof, a channel for guiding the said carrying mechanism, plates extending across the said channel next the said carrying mechanism having individual distinguishing marks corresponding to some one denomination of type being distributed, and mechanism placed in the path of the said elevator for causing the same to raise the type above the surface of the carrying mechanism, substantially as set forth.

65. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having elevators for raising the type held in the said carrying mechanism above the surface thereof, a channel for guiding the said carrying mechanism, plates extending across the said channel having projections of varied arrangement next the said carrying mechanism, and cams placed in the path of the said elevators for causing the same to raise the type above the surface of the said carrying mechanism, substantially as set forth.

66. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having elevators for raising the type held in the said carrying mechanism above the surface thereof, a channel for guiding the said carrying mechanism, plates extending across the said channel having projections of varied arrangements next the said carrying mechanism, cams placed in the path of the said elevators for causing the same to raise the type above the surface of the said carrying mechanism, and a spring for allowing the parts to yield when an obstruction prevents the said type from rising, substantially as set forth.

67. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having elevators for raising the type held in the said carrying mechanism above the surface thereof, a channel for guiding the said carrying mechanism, plates extending across the said channel having projections of varied arrangements corresponding to the arrangement of slots in some one denomination of type being distributed, spring inclines placed in the path of the said elevators for causing them to raise the type above the surface of the said carrying mechanism against the said plates extending across the channel, and a device for interposing itself under the said elevators for retaining the said type in the raised position, substantially as set forth.

68. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having elevators for raising the type held in the said carrying mechanism above the surface thereof, a channel for guiding the said carrying mechanism, plates extending across the said channel, having projections of varied combinations corresponding to an arrangement of slots upon some one denomination of type being distributed, a cam placed in the path of the said elevators for causing them to raise the type above the surface of the said carrying mechanism, a device for interposing itself under the said elevators for retaining the said type in the raised position, and a trigger connected to the said device for retaining the type in raised position placed so as to be tripped by the type when raised above the projections on the said plate, substantially as set forth.

69. In a type-distributing machine such as described, the combination of a carrying mechanism provided with distinct chambers, having elevators mounted in the said chambers for raising the said type above the surface of the same, the ends of which extend beyond the said chambers, a channel for guiding the said carrying mechanism provided with grooves to receive the ends of the said elevators, cams extending into the said grooves for raising the said elevators, and springs connected to the said cams for allowing the same to yield when an obstruction prevents the said elevators from rising, substantially as set forth.

70. In a type-distributing machine such as described, the combination of a carrying mechanism provided with distinct chambers, having elevators mounted in the said chambers for raising the said type above the surface of the same, the ends of which extend beyond the said chambers, a channel for guiding the said carrying mechanism provided with grooves to receive the ends of the said elevators, cams extending into the said grooves for raising the said elevators, plates extending across the said channel directly above the said cams and provided upon their surface next the said carrying mechanism with projections of varied arrangements, and a spring attached to the said cams to allow the same to yield when the type held in the said chambers are prevented from rising, substantially as set forth.

71. In a type-distributing machine such as described, the combination of a carrying mechanism provided with distinct chambers, having elevators mounted in the said chambers for raising the said type above the surface of the same, a channel for guiding the said carrying mechanism, cams extending into the path of the said elevators for raising the same and causing them to expel the type above the surface of the said carrying mechanism, plates extending across the said channel directly above the said cams, runners parallel to the said channel and corresponding in their lateral arrangement to the arrangement of the slots in some one denomination of type being distributed, and a spring attached to the said cams to allow the same to yield when the type held in the said chambers are prevented from rising, substantially as set forth.

72. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having elevators for raising them above its surface, cams for raising the said elevators, and an ejector moving transversely across the said carrying mechanism close to the surface thereof for expelling the type from the said carrying mechanism when raised above the surface of the same, substantially as set forth.

73. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having elevators for raising them above its surface, cams for raising the said elevators, devices for retaining them so raised while being extracted, and an ejector moving transversely across the said carrying mechanism close to the surface thereof for expelling the type from the said carrying mechanism when raised above the surface of the same, substantially as set forth.

74. In a type-distributing machine such as described, the combination of a carrying mechanism provided with distinct chambers for receiving and conveying the type to their destinations, a channel for guiding the said carrying mechanism, plates extending across the said channel having projections upon the surface next the said carrying mechanism corresponding to an arrangement of slots in some one denomination of type being distributed, elevators for protruding the type out of the chambers of the said carrying mechanism, and an ejector moving transversely across the said carrying mechanism between the said plates for expelling the type when raised out of the said carrying mechanism against the said plates, substantially as set forth.

75. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, having elevators for protruding the type from the said carrying mechanism, laterally-moving extractors for extracting the type from the said carrying mechanism when so protruded, passing over the said carrying mechanism, and a driving mechanism having a variable movement for imparting an alternately fast and slow movement to the said extracting mechanism timed with and connected to the carrying mechanism so as to pass over each succeeding type carried by the same, substantially as set forth.

76. In a type-distributing machine such as described, the combination of a carrying mechanism for receiving and conveying the type to their destinations, elevators for protruding the type from the said carrying mechanism, laterally-moving extractors for extracting the said type from the carrying mechanism when protruded passing over the said carrying mechanism, and a driving mechanism having a variable movement for imparting to the said carrying mechanism an alternately fast and slow movement timed with and connected to the extracting mechanism so as to present a type-chamber for each operation of the same, substantially as set forth.

77. In a type-distributing machine such as described and in the extracting mechanism thereof, the combination of the reciprocating planer for extracting the type from the carrying mechanism, a rod connected pivotally at the one end to a drive-wheel and at the other to a guide-rod, a drive-wheel, and a suitable sliding connection between the said planer mounted upon the rod attached to the drive-wheel and between the mountings of the same, substantially as set forth.

78. In a type-distributing machine such as described and in the extracting mechanism thereof, the combination of a reciprocating planer for extracting the type from the carrying mechanism, a drive-wheel, and a lever fulcrumed between the said planer and drive-wheel and provided with a sliding connection to each, substantially as set forth.

79. In a type-distributing machine such as described and in the extracting mechanism thereof, the combination of a mechanism for protruding the type from the carrying mechanism, an arm connected to the mechanism for being interposed in the path of the extracting-plunger when the said mechanism is operated, a reciprocating plunger for extracting the type when protruded by the said mechanism, and a spring-buffer attached to the said plunger and placed in the path of the said arm for resetting the same, substantially as set forth.

80. In a type-distributing machine such as described and in the extracting mechanism thereof, the combination of a mechanism for protruding the type from the carrying mechanism, an arm connected to the mechanism for protruding the type for being interposed in the path of an extracting-plunger when the said mechanism is operated, a trigger connected to the said arm and actuating the same placed so as to be operated by the mechanism for sorting the type, and a plunger for extracting the type when protruded by the said mechanism and for resetting the said mechanism, substantially as set forth.

81. In a type-distributing machine such as described, the combination of a feed-plate moving transversely to the column of type being distributed for separating the succeeding lines therefrom, a reciprocating driving mechanism for actuating the said feed-plate, and a spring interposed between said plate and driving mechanism which allows the said plate to yield when the strain on any of the parts reaches a predetermined tension, substantially as set forth.

82. In a type-distributing machine such as described, the combination of a feed-plate moving transversely to a column of type being distributed for extracting the succeeding lines therefrom, a driving mechanism for operating the said feed-plate, a latch for being interposed between the said driving mechanism and feed-plate, and a spring for retaining the said latch in position, substantially as set forth.

83. In a type-distributing machine such as described, the combination of a feed-plate moving transversely to a column of type being distributed for extracting the succeeding lines therefrom, a driving mechanism for operating the said feed-plate, a latch provided with a head pivotally attached thereto for being interposed between the said feed-plate and driving mechanism, a shaft for retaining the said head in position, and a spring for retaining the said shaft in its normal position, substantially as set forth.

84. In a type-distributing machine such as described, the combination of a feed-plate moving transversely to a column of type being distributed for extracting the succeeding lines therefrom, a driving mechanism for operating the said feed-plate, and a latch for being interposed between the said feed-plate and driving mechanism, which consists in the combination of a head pivotally attached to the arm of the said latch for being interposed between the said feed-plate and driving mechanism, a shaft pivotally mounted in the said latch and provided with a pin extending behind the said head to retain it in position, a lever for maintaining the said shaft in such a position as to prevent the said pivotal head from escaping from between the said feed-plate and guiding mechanism, and a spring for retaining the said lever in position, substantially as set forth.

85. In a type-distributing machine such as described, the combination of a side feed for advancing the succeeding type of the separate lines into the path of a feed-bar for extracting them therefrom, and a latch pivotally mounted so as to extend into the path of the said side feed for preventing the same advancing when unaccompanied by a line of type, substantially as set forth.

86. In a type-distributing machine such as described, the combination of a feed-plate moving transversely to the column being distributed for extracting the succeeding lines therefrom, a side feed for advancing the said lines into the path of a feed-bar for extracting the succeeding type therefrom, and a latch provided with a double-beveled face extending toward the said feed-plate and path of the feed-bar and pivotally mounted so as to extend into the path of the said feed-bar for preventing the same advancing when unaccompanied by a line of type, substantially as set forth.

87. In a type-distributing machine such as described and in the transferring mechanism thereof, the combination of thrusting-feet mounted in the said mechanism for expelling the type therefrom, and gearing connected to the driving mechanism of the machine for operating the same, and a spring-connector interposed in said gearing for relieving the strain, substantially as described.

88. In a type-distributing machine such as described and in the transferring mechanism thereof, the combination of thrusting-feet mounted in the said mechanism for expelling the type therefrom, and the gearing consisting of a bent shaft extending obliquely across the periphery of one of the driving-wheels of the feeding mechanism, the said driving-wheel, pins set obliquely across the same and at varying intervals, a rod in separate parts connecting the said shaft and thrusting-feet, and a spiral spring for holding the said parts of the rod together, substantially as set forth.

89. In a type-distributing machine such as described, the combination of a feeding mechanism for advancing the type singly, a movable transferring mechanism for receiving and delivering the type to a carrying mechanism adapted to move with the same while so delivering, and a latch lying in the path of and rocked by the frame of the said transferring mechanism and extending into the path of the driving mechanism when the latch is rotated by the movement of the said transferring mechanism, substantially as set forth.

90. In a type-distributing machine such as described, the combination of a feed mechanism for advancing the type singly, a transferring mechanism for receiving and delivering the type to a carrying mechanism and adapted to move with the same while so delivering,

a latch lying in the path of and rocked by the frame of the said transferring mechanism and provided with a spring extending into a cam-shaped groove in the side of a driving-wheel of the driving mechanism of the machine, and a head for being interposed in the path of the driving mechanism when the said spring is forced in the said groove, substantially as set forth.

91. In a type-distributing machine such as described, the combination of a feeding mechanism for advancing the type singly, a transferring mechanism for receiving and delivering the said type to a carrying mechanism, a latch lying in the path of and rocked by the frame of the said transferring mechanism for being interposed in the path of the driving mechanism of the machine, and a buffer-spring attached to the said latch to take up the strain upon the same when brought into operation, substantially as set forth.

92. In a type-distributing machine such as described, the combination of a feeding mechanism for advancing the type toward the carrying mechanism singly, a driving-wheel of the said feeding mechanism, a pawl pivotally attached to the said wheel, a drum secured to a sleeve on the driving-shaft and provided with a notch corresponding to the said pawl resting against the said driving-wheel, and a spring for retaining the said pawl in the said notch, substantially as described.

93. In a type-distributing machine such as described and in the driving mechanism thereof, the combination of a general driving-shaft of the machine, a collar rigidly attached to the said shaft having an inclined face, a sleeve mounted upon the said shaft and provided next to the said collar with a face corresponding to the face upon the same, and a spring for forcing the two faces together, substantially as set forth.

94. In a type-distributing machine such as described and in the carrying mechanism thereof, the combination of a driving-shaft connected to the general driving mechanism, a sleeve mounted upon the said shaft, the driving-wheel of the said carrying mechanism rigidly attached to the said sleeve, and a spring-connection between the said sleeve and shaft for allowing the same to operate independently upon reaching a predetermined tension, substantially as set forth.

95. In a type-distributing machine such as described and in the carrying mechanism thereof, the combination of a driving-shaft connected to the general driving mechanism, a sleeve mounted upon the said shaft, the driving-wheel of the said carrying mechanism rigidly attached to the said sleeve, a disk rigidly attached to the said sleeve provided with a notch in its surface, and a latch attached to the one of the said driving-shaft and disk and engaging the other, substantially as set forth.

96. In a type-distributing machine such as described and in the carrying mechanism thereof, the combination of a driving-shaft connected to the general driving mechanism, a sleeve mounted upon the said shaft, the driving-wheel of the said carrying mechanism rigidly attached to the said sleeve, a disk rigidly attached to the said sleeve and provided with a notch in its surface, a latch attached to the said driving-shaft for engaging the said notch, a finger pivotally mounted in the frame of the said latch provided with a pin extending from the side of the same, a spring for depressing the said finger, a double lever mounted pivotally in the frame of the said latch and provided with long and short arms, the former extending under the said pin in the side of the finger and the latter over the end of the lever, substantially as set forth.

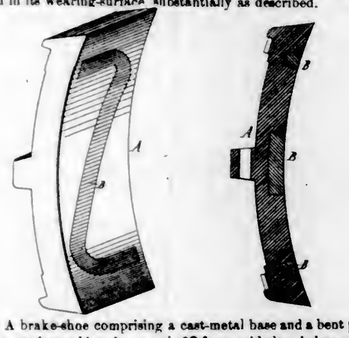
97. In a type-distributing machine substantially such as described, the combination of a feeding mechanism for advancing the type singly from the column being distributed, a carrying mechanism receiving the type from said feeding mechanism, a latch co-operating with and held out of engagement by said carrying mechanism when in motion and intersecting the path of the feeding mechanism when not held out of engagement, whereby the feeding mechanism is arrested by the stopping of the carrying mechanism, substantially as described.

98. In a type-distributing machine substantially such as described, the combination of a feed-bar for delivering the type singly, said bar having a notch therein, and the carrying mechanism operating in harmony with said feed-bar, and a movable rod controlling the carrying mechanism and intersecting the path of the said feed-bar and engaging the notch therein when the bar and carrying mechanism are not operating in harmony, substantially as described.

99. In a type-distributing machine, the combination, with the carrying mechanism for conveying the type to their individual receivers and a transferring mechanism, substantially as described, having thrusting-feet thereon connected to the driving mechanism, of a movable jaw connecting the carrying and transferring mechanisms while the type are being delivered from one to the other and adapted to be moved out of engagement by the thrusting-feet, substantially as described.

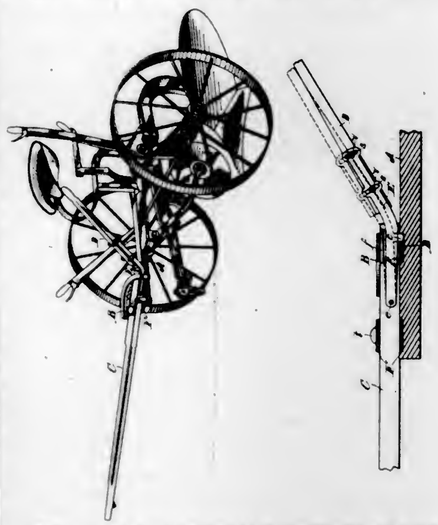
446,236. RAILWAY BRAKE-SHOE. PATRICK REILLY, Lima, Ohio. Filed Apr. 9, 1890. Serial No. 347,197. (No model.)

Claim.—1. A brake-shoe strengthened by the brace-bar of S form, of wrought-iron, steel, or malleable iron, applied and held within a depression in its wearing-surface substantially as described.



2. A brake-shoe comprising a cast-metal base and a bent piece of tying or staying and bracing metal of S form, said piece being wrought-iron, steel, or malleable iron, and the said basis metal being cast upon it, substantially as described.

446,237. TONGUE ATTACHMENT. OSCAR J. SNYDER, Shoup, Mich. Filed July 19, 1890. Serial No. 359,328. (No model.)

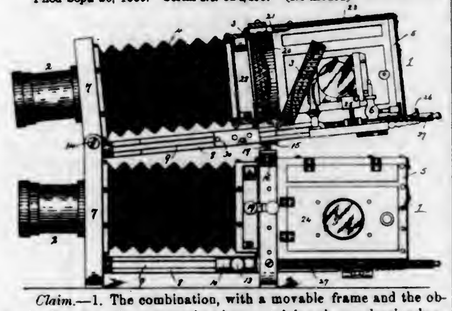


Claim.—1. In a tongue attachment, the combination of the rigid tongue-section, the swinging tongue-section pivotally coupled thereto, the rack mounted on said rigid section, and the actuating-lever pivoted to the rear end of said swinging section, swinging therewith and adapted to engage with the notches of the rack, substantially as specified.

2. In a tongue attachment, the combination of the tongue composed of a rigid section and a swinging section pivotally connected, the rack mounted on said rigid section, the actuating-lever, and the coupling-arms pivotally connecting said lever to the rear end of said swinging section, said arms having means of independent vertical adjustment on said lever and each arm having a tooth adapted to engage with said rack, substantially as specified.

3. In a tongue attachment, the combination of the tongue composed of a rigid section and a swinging section, the clevis secured to the rigid section and pivotally coupling the swinging section thereto, the segment-rack mounted on said rigid section, said rack composed of two parallel plates standing in a vertical line with each other and secured together at their ends, the rear end of said swinging section lying between the plates of the rack and adapted to travel between the adjacent faces thereof, and the actuating-lever pivotally connected to the rear end of the swinging section and having means of engagement with the rack, substantially as specified.

446,238. STEREOPTICON. ALBERT T. THOMPSON, Boston, Mass. Filed Sept. 20, 1889. Serial No. 324,499. (No model.)



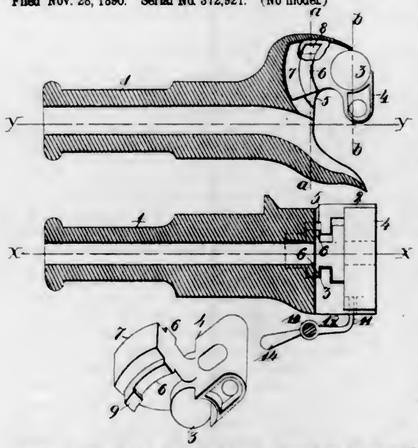
Claim.—1. The combination, with a movable frame and the objective-lens, a stationary gas-chamber containing the condensing-lens, and the bellows which interconnect the frame and chamber, of a slide-aperture transversely of the lantern, and the adjusting-screw in alignment with said aperture to actuate the slide-carrier, substantially as described.

2. In combination with the gas-chamber of a stereopticon, a condensing-lens composed of two parts, one secured in its cell, which is stationary within the said chamber, the other and rear part mounted in a separate cell, hinged and adapted to swing away from the stationary half of the condenser, substantially as herein stated.

3. In a stereopticon, two or more lanterns arranged in vertical series and hinged together at their front ends, as at 14, each lantern being provided with a bellows, lenses, and a gas-chamber, in combination with a series of adjusting-screws 17, arranged between their front ends and the rear ends of said lanterns, each screw 17 bearing against a lug 16 on the lantern below it and engaging with a lug 15 of the lantern immediately above it to lift or lower the rear part of the latter, substantially as set forth.

4. In a stereopticon, the sliding frame 7 with the objective-lens, the fixed gas-chamber 5 with the condensing-lens, and the interconnecting bellows 4, combined with the parallel extension-arms 8, slotted at 9 and secured to said frame, and the mechanism for controlling endwise movement of the objective-frame, consisting of the T-shaped block 10 with lateral studs 30, the flat plate 12 to receive said studs, and the transverse clamping-screw 13, substantially as set forth and described.

446,239. CAR-COUPLING. WILLIAM J. WALKER, St. Louis, Mo. Filed Nov. 26, 1890. Serial No. 372,921. (No model.)



Claim.—1. The herein-described hook, adapted to be movably connected to the draw-head, and a lug formed integrally therewith for entering the depression in the draw-head for locking the same, substantially as described.

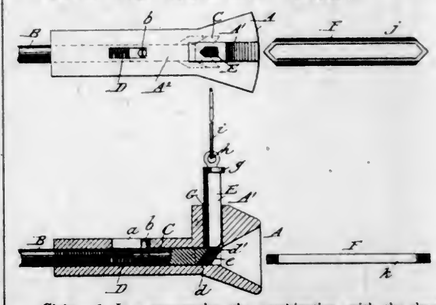
2. The herein-described hook, adapted to be movably connected to the draw-head, curvilinear projections formed upon the upper and lower surfaces thereof, and a lug formed upon the lower of said projections for entering a corresponding depression formed in the draw-head, substantially as described.

3. The herein-described car-coupling, having curvilinear grooves formed in the head portion thereof, a hook provided with curvilinear flanges or projections adapted to move within said curvilinear grooves, and a lug formed upon the surface of the said hook for entering a corresponding depression in the draw-bar, substantially as described.

4. In a car-coupling, the combination of the draw-bar, the curvilinear grooves formed in the head portion thereof, the rotating hook provided with curvilinear projections adapted to move in said grooves, and a lug formed integrally with said hook for entering the corresponding depression in the draw-head, substantially as described.

5. In the class of car-couplings herein described, the combination of a draw-bar, a hook adapted to rotate therein and connected within the head portion thereof, a lug formed integrally with the said hook, a depression formed in the said draw-head for receiving the said lug, and means whereby the said hook is bodily elevated for releasing it from its locked position, substantially as described.

446,240. CAR-COUPLING. GILES W. WELLER, Baker City, Oreg. Filed July 14, 1890. Serial No. 358,607. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head, of a coupling-pin having its front face and part of its sides square in cross-section, the back face and part of its sides beveled and a flange near the top for supporting the pin when coupled, a plunger or other supporting device for supporting the pin, consisting of a rod having at one end a perforation or slot adapted to contain a pin or other device for controlling the horizontal movement of the plunger and at the other end a doubly-inclined supporting-face, said plunger being operated by means of a coiled spring located between the inner end of the draw-bolt and the perforated end of the plunger, together with the connecting-link, substantially as described.

2. In a car-coupler, the combination, with the draw-head, of the coupling-pin having its front face and sides at right angles to each other, the back portion beveled, and a flange near the top for supporting the pin when coupled, the plunger, and connecting-link, substantially as described.

3. A coupling-link for railway-cars, having a rounded or half-oval shaped outside face, a flat inside face, and angular or wedge shaped ends, substantially as described.

4. A coupling-link for railway-cars, having the rounded outside face *j*, the flat inside face *k*, and the wedge-shaped ends, substantially as described.

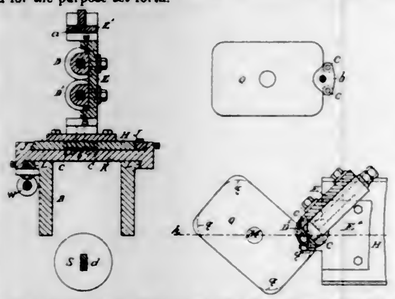
5. In a car-coupler, the combination, with the draw-head A, having the integral upwardly-projecting portion A′, for supporting the pin when coupled, and the slot *a*, of the plunger located within the draw-head, consisting of the horizontal rod C, having at one end the perforation or slot *c*, adapted to contain a pin *b*, working in the slot *a*, and at the other end the doubly-inclined supporting portion having flat upper face *d*′ and flat lower face *d* and inclined faces *e e*, and a spiral spring D, located between the inner ends of the draw-bolt and plunger, together with the coupling-pin and connecting-link, all substantially as shown and described.

6. In a car-coupler, the combination, with the draw-head, of the pin E, having its front face and sides at right angles to each other and the back face beveled, as shown, the supporting-flange *g*, loop or ring *h*, to which a handle or other suitable device, as *i*, may be connected, and the cut-away portion *b*, together with the pin-supporting plunger, spiral spring, and connecting-link, substantially as described.

446,241. MACHINE FOR CUTTING SHEET METAL. CHARLES WILLIS, Birmingham, England, assignor to J. H. Hopkins & Sons, Limited, same place. Filed Sept. 30, 1890. Serial No. 366,634. (No model.)

Claim.—1. In a machine for cutting or shearing sheet metal and the like, the combination, with the rotating spindle provided with a holder for the material to be cut, of the rotating shaper, the sliding

frame in which the cutter-frame is mounted, the said cutter-frame mounted on pivots, the rotating disk cutters mounted on the cutter-frame, and the pair of bearing-studs carried by the cutter-frame and arranged to bear constantly on the edge of the shaper, substantially as and for the purpose set forth.



2. In a machine for cutting or shearing sheet metal and the like, the combination, with the rotating spindle provided with a holder for the material to be cut, of the rotating shaper, the sliding frame, the cutter-frame pivotally mounted in the sliding frame and its pivotal axis coinciding with the cutting-point, the rotary cutters mounted in the cutter-frame, the pair of studs carried by the pivoted cutter-frame and arranged to bear on the edge of the shaper, and means, substantially as described, for keeping the said studs pressed up to the shaper with a yielding pressure, substantially as set forth.

446,242. ROLLING WINDOW-SCREEN. LEWIS T. WILSON, St. Louis, Mo. Filed Sept. 8, 1890. Serial No. 364,242. (No model.)



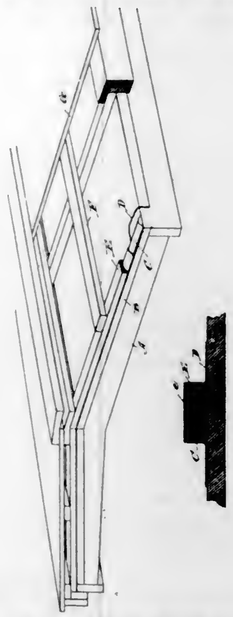
Claim.—The combination of a flexible window-screen having recesses in the opposite ends of the lower cross-bar thereof, a window-frame having guide-grooves in which said screen is adapted to slide, said grooves being enlarged at their lower ends, lugs secured in the guides and adapted to be engaged by said recesses, and springs normally bearing on said lugs, but adapted to press the cross-bar thereupon when it is at its lowest point, substantially as described.

446,243. LOUNGE. ROBERT S. WRIGHT, Boston, Mass. Filed May 26, 1890. Serial No. 353,233. (No model.)



Claim.—In a couch or lounge, the horizontal main frame A, having continuous side rails extending from end to end of the structure and terminating in downward and outwardly curved legs which support the frame at a constant height, and the toothed rack-bars D D, fixed upon the depending ends of said rails at the head end of the frame, in combination with the adjustable head-section B, having its side rails hinged to the main frame between the downwardly-bent ends of the side rails and above said rack-bars, and with the bail-shaped brace hinged to said head-section and adapted to rest its horizontal foot portion in the several notches of the rack-bars or on the carpet at the foot of the lounge-legs, substantially as and for the purpose set forth.

446,244. CAR-ROOFING. ARNOLD W. ZIMMERMAN, Washington Heights, Ill., assignor of one-half to F. W. Bird & Son, Walpole, Mass. Filed June 13, 1890. Serial No. 355,344. (No model.)

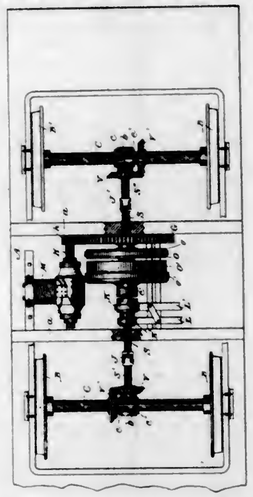


Claim.—1. The herein-described improvement in car-roofing, comprising, in combination with the sheathing-strips secured thereon and extending from the edge of the roof to the comb or ridge, a lining of paper or like flexible material secured over said strips by fastenings passed through the lining at its elevated portion and into the strips, and cap-pieces extending also from the edges of the roof to the comb, having grooves in their lower faces and adapted to fit closely upon the strips and cover the fastenings, and purlins secured upon the cap-pieces to support the outer roof-covering, substantially as described.

2. The herein-described improvement in car-roofing, comprising, in combination with the sheathing, rounded strips secured thereon and extending from the edge of the roof to the comb or ridge, a lining of paper or like flexible material secured over said strips by fastenings passed through the lining at its elevated portion and into the strips, and cap-pieces extending also from the edges of the roof to the comb, having grooves in their lower faces and adapted to fit closely upon the rounded strips and cover the fastenings, and purlins secured upon the cap-pieces to support the outer roof-covering, substantially as described.

3. The herein-described improvement in car-roofing, comprising, in combination with the sheathing, rounded strips secured thereon and extending from the edge of the roof to the comb or ridge, a lining of paper or like flexible material, said lining consisting of continuous sheets, each adapted to cover one side of the car-roof from the edge thereof to the comb or ridge and secured over said strips by fastenings passed through the lining at its elevated portion and into the strips, and cap-pieces extending also from the edges of the roof to the comb, having grooves in their lower faces and adapted to fit closely upon the rounded strips and cover the fastenings, and purlins secured upon the cap-pieces to support the outer roof-covering, substantially as described.

446,245. ELECTRIC LOCOMOTIVE. GEORGE R. BALDWIN, Montreal, Canada. Filed July 17, 1890. Serial No. 359,011. (No model.)

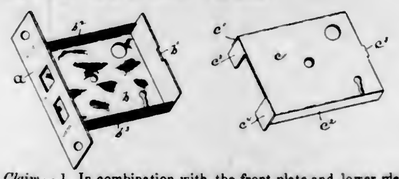


Claim.—1. In a traction apparatus, the combination of the motor-truck, the motor rigidly attached thereto, the main driving-shaft geared to said motor and mounted in bearings on the motor-truck, two pairs of traction-wheels keyed on their respective axles and supporting the motor-truck, boxes mounted and rotatable on said axles, flexible extensions to the main driving-shaft having their inner ends connected to said main shaft by universal joints and their outer ends stepped in the above-mentioned rotatable boxes, and gearing connecting said flexible shaft-extensions to the axles of the traction-wheels, together with the reversing-gear in the line of connections from the motor to the main driving-shaft, substantially as described.

2. In a traction apparatus, the combination of the motor-truck, traction-wheels supporting the same, a main driving-shaft having flexibly-jointed extensions whose free ends are stepped in boxes rotatable on the axles of said wheels, said jointed shaft forming a direct connection between said axles and being geared thereto, an electric motor rigidly attached to said truck, and intermediate gearing connecting said main driving-shaft with the armature-shaft of said motor, substantially as described.

3. In a traction apparatus, the combination of the truck, traction-wheels supporting the same, a main driving-shaft having flexibly-jointed extensions whose free ends are stepped in boxes rotatably secured on the axles of said wheels, said jointed shaft forming a direct connection between said axles and being geared thereto, an electric motor rigidly attached to said truck and having its armature-shaft in gear with said main driving-shaft, and suitable reversing mechanism arranged on said main driving-shaft, substantially as described.

446,246. LOCK-CASE. CHARLES H. BEEBE, Norwich, Conn. Filed July 2, 1890. Serial No. 357,572. (No model.)

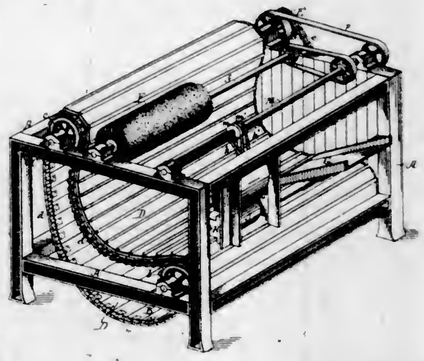


Claim.—1. In combination with the front plate and lower plate of a lock-case, a cap-plate having inturned wings c^3 c^4 at its front end adapted to enter between the sides and abut the bottom of said lower plate, substantially as described, and for the object stated.

2. In combination with the front plate of a lock, a lower plate attached thereto, having its rear end upturned and having sides of less height, as set forth, a cap-plate having both turned edges to engage the side walls of the lower plate, and inturned wings c^3 c^4, adapted to enter between the sides and abut the bottom of said lower plate, substantially as and for the object specified.

3. A lock-case consisting of a front plate having attached thereto a lower plate with upturned notched rear end equal in height to the thickness of the lock and with sides of less height, as set forth, in combination with a cap-plate having its rear end formed with a lip to enter said notch, its sides bent downwardly to engage the sides of the lower plate and having its front end formed with wings c^4 c^4, that enter between the sides and abut the bottom of the lower plate, all substantially as described, and for the objects stated.

446,247. TOBACCO-SPRAYING MACHINE. JOHN T. CARTER, North Danville, assignor to the Carter Machine Company, Danville, Va. Filed June 13, 1890. Serial No. 355,322. (No model.)



Claim.—1. The combination of the agitating device with an atomizing device, the same consisting of a tank, a rotated liquid-raising roller therein, a scraping-blade adapted to gather a quantity of the liquid from said roller, and a brush-roll adapted to project the liquid from said blade, substantially as specified.

2. The combination, with an agitating device, of an atomizing device, the same consisting of a tank, a water-raising roller therein, and a rotated brush adapted to bear against the surface of the roller and to discharge the film of water carried thereby, substantially as specified.

3. The combination, with an agitating device, of an atomizer consisting of a liquid-gathering roller, a brush-roller adapted to project the liquid therefrom, and an adjustable blade adapted to regulate the thickness of the film of liquid carried by the liquid-gathering roll, substantially as specified.

4. The combination, in a tobacco-treating machine, of an atomizer with an agitating device, the same consisting of a belt adapted to carry the tobacco, and devices for guiding said belt into the form of a partial cylinder, substantially as described.

5. The combination, in a tobacco-treating machine, of an atomizer with an agitating device comprising a covered slatted belt guided to the form of a partial cylinder, the surplus covering being made to assume the form of ribs, substantially as specified.

6. The combination, in a tobacco-treating machine, of an atomizer with an agitating device comprising a slatted belt curved to the form of a partial cylinder, and a brush rotated in contact with said belt to clean the same, substantially as specified.

7. The combination, in a tobacco-treating machine, of an atomizer with an agitating device comprising a slatted belt in the form of a partial cylinder, link belts at the opposite edges of said slatted belt, sprocket-wheels adapted to guide said link-belts, and a tobacco-feeding device, substantially as specified.

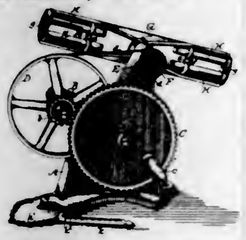
8. The combination, in a tobacco-treating machine, of the frame, longitudinal shafts mounted in bearings on said frame, a slack agitating-belt passing around said shafts, with an atomizer and a feed-chute situated in front of said belt, substantially as and for the purpose set forth.

446,248. MILK TESTING AND SEPARATING MACHINE. DYER COOPER, Philadelphia, Pa. Filed July 16, 1888. Serial No. 280,111. (No model.)

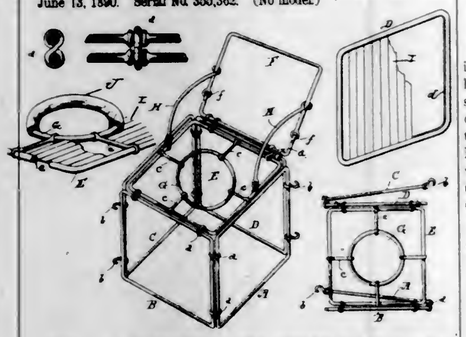
Claim.—1. The combination, in a milk testing or separating machine, of the frame, an open-armed spider mounted on said frame, and mechanism, substantially as described, for driving the spider, said spider having sockets with yielding seats therein, cross-heads *e* on the spider, having pockets, glass tubes adapted to the sockets and pockets, and an elastic fastening passing transversely across the tubes, substantially as set forth.

2. The combination of the testing-tubes with the spider having

arms with pockets for said tubes and elastic retainers for holding the tubes in the pockets, substantially as described.



446,249. CHAIR. JULIA W. CRAIG, San Francisco, Cal. Filed June 13, 1890. Serial No. 355,362. (No model.)



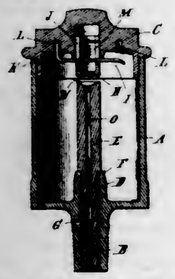
Claim.—1. A nursery folding chair composed of four pivotally-connected flaps or frames constituting its lower portion, a similar horizontal frame forming the seat, said frame pivotally connected with the lower frames, a central ring, and arms connecting the central ring with the side pieces of the seat-frame, substantially as set forth.

2. A nursery folding chair composed of four open frames or flaps constituting its lower portion, double links fitting in grooves formed in two of the adjacent vertical side pieces of the lower frames, so as to form pivotal connections, and double hooks engaging the grooves in the other adjacent vertical side pieces of the lower frames, a horizontal seat-frame, and double links for connecting the same with the lower frames, substantially as set forth.

3. A nursery folding chair having its lower portion, seat, and back composed of a series of open pivotally-connected frames, said frames having their side pieces provided with mortises, in combination with panels fitting in said mortises, substantially as set forth.

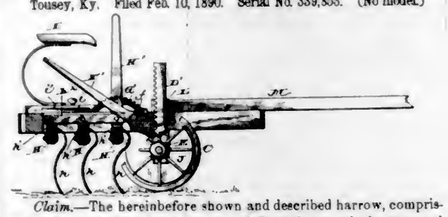
4. A nursery folding chair comprising a lower portion composed of separate flaps or frames hinged and hooked together, a centrally-apertured seat hinged to the top thereof, a chair-back hinged to said lower portion and seat, and arm-rests adapted to hold said back in position, substantially as set forth.

446,250. OIL-CUP. WILLIAM A. DOWNES, Detroit, Mich., assignor to the Pemberthy Injector Company, same place. Filed Apr. 3, 1890. Serial No. 346,457. (No model.)



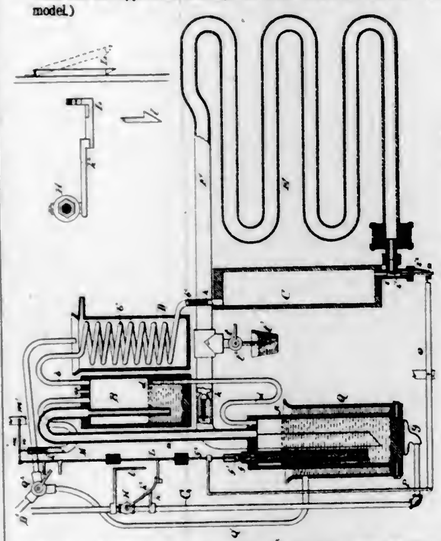
Claim.—In an oil-cup of the kind described, the combination, with the casing and depending nipple and flange integral therewith, having an opening therein, and a plunger having a central opening and a reduced portion of smaller diameter than the opening in the casing and nipple, of a cap having a screw-threaded central opening and openings equidistant from the said opening, a bifurcated screw-threaded stop in said central opening, and a spring-actuated latch I in said bifurcation, adapted to be inserted in the openings around the center, substantially as described.

446,251. HARROW. ALVEY C. DOWNEY and ALECK H. GREEN, Tousey, Ky. Filed Feb. 10, 1890. Serial No. 339,853. (No model.)



Claim.—The hereinbefore shown and described harrow, comprising the frame A A' B B', the hangers E E, having vertical ways, and having the cutting-disks mounted on a shaft which is journaled in the said hangers, a cleaner for removing the trash from between the cutting-disks, adjustable pivoted tooth-bars in the rear of the cutting-disks, the toothed standards D D', adapted to slide in the ways in the hangers E E and having spindles at their lower ends on which the supporting-wheels C C are mounted, and the toothed segment-levers F F' for vertically adjusting the standards D D' independently of each other, substantially as described.

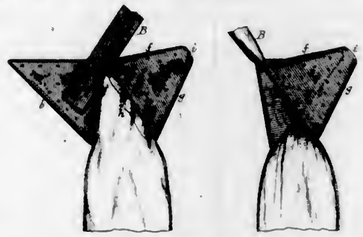
446,252. FREEZING APPARATUS. JACOB ERNY, ZACH T. SUBERS, and WILLIAM HOOS, Philadelphia, Pa., assignors to the International Freezing and Refrigerating Machine Company of New Jersey, same place. Original application filed Jan. 3, 1890, Serial No. 335,796. Divided and this application filed Apr. 28, 1890. Serial No. 349,712. (No model.)



Claim 1. In a refrigerating apparatus, the combination of the following features, to wit: a vessel to contain aqua-ammonia provided with a heater and a water-circulating cooler, with means for bringing the heater and cooler alternately into action, a drying-vessel located above and in communication with the first-named vessel, with a return-pipe leading to said vessel, a condensing coil in communication with the gas-drying vessel and provided with a water-circulating cooler, a receptacle for liquefied gas in communication with the condensing-coil, a freezing-coil, and a return-pipe leading therefrom to the evaporating-vessel, substantially as and for the purpose described.

2. In a refrigerating apparatus, the combination, with a heating and evaporating vessel, the condensing-vessel, freezing-coil, a branch pipe leading from the condensing-vessel to the freezing-coil and provided with a valve, and the other vessels and pipes of a complete freezing system, of an automatic heat-regulator and suitable devices operatively connected to said regulator and comprising a system of levers coupling or connecting said heat-regulator to said valve for automatically closing and opening the communication between the condenser and freezing-coil accordingly as the heat is raised and lowered, substantially as described.

446,253. NECKSCARF. LOUIS ESCHNER, Philadelphia, Pa. Filed Oct. 9, 1890. Serial No. 367,556. (No model.)



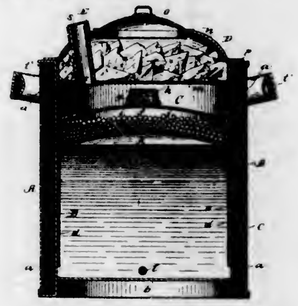
Claim.—1. A neckscarf consisting of a strip of fabric having at the rear a diagonal upward fold and between the same and the front of the strip a downward fold with depending tab or apron, the upper portion of the strip adjacent to said folds being folded rearwardly and laterally, so as to enter the tapering pocket formed at the rear of the scarf-head by the upward and downward folds of the strip, in combination with a neckband separate from but detachably secured to said strip at one of the upper corners of the scarf-head, substantially as specified.

2. A neckscarf consisting of a strip of fabric having at the rear a diagonal upward fold and between the same and the front of the strip a downward fold with depending tab or apron, the upper end of the strip being folded rearwardly and laterally, so as to enter the pocket formed at the rear of the scarf-head by the upward and downward folds, and all of said folds being free or unstitched, in combination with a hollow core contained within said head and having at the upper outer corner an opening corresponding with one of the openings in the rear pocket on the head, and a neckband projecting from the opposite upper corner of said head, substantially as specified.

3. A neckscarf consisting of a strip of fabric having at the rear a diagonal upward fold and between the same and the front of the strip a downward fold with depending tab or apron, the upper end of the strip being folded rearwardly and laterally, so as to enter the pocket formed at the rear of the scarf-head by said upward and downward folds, and all of said folds being free or unstitched, in combination with a hollow core inserted into the head of the scarf and having at the top a folded flap forming a support for the top fold of said head, substantially as specified.

4. A neckscarf consisting of a strip of fabric having adjacent to one end a diagonal upward fold and a downward fold forming one depending tab or apron of the scarf, said strip also having at the rear adjacent to said folded end a second diagonal upward fold, and between the same and the front of the strip a downward fold with second depending tab or apron, the tapering projection formed by the first-folded end of the strip being tucked laterally into the tapering pocket formed at the rear of the scarf-head by said second upward and downward folds, substantially as specified.

446,254. CAN FOR REFRIGERATING AND TRANSPORTING MILK. PHILIP M. FORRESTER, Sunbury, Pa. Filed Aug. 12, 1890. Serial No. 361,774. (No model.)

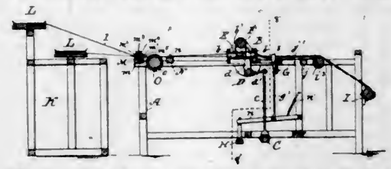


Claim.—1. The combination, with a can for transporting milk, having double walls, the outer wall of which is perforated, and vertical guiding-strips secured to the inner surface of the inner wall, of a gravitating float or follower consisting of a cylindrical vessel having vertical grooves in its periphery, a solid imperforate concave bottom, and a suitable removable weight or weights within said vessel, substantially as described.

2. The combination, with a can for transporting milk, having double walls, the outer of said walls being formed with perforations, of a refrigerating-lid consisting of a cylindrical receptacle having a flange on its periphery and a closed top, a tube having its ends covered by wire-cloth extending through the top and bottom of said receptacle, and a weighted float or follower adapted to fit within and rest on the surface of the contents of the can, substantially as described.

3. The combination, with a can having an air-chamber between its walls, the outer of said walls being formed with openings, and a gravitating float or follower consisting of a cylindrical vessel having a concave solid imperforate bottom, a screw-threaded opening in its top, a cap therefor, and shot or other metal ballast for said vessel, of a refrigerating-lid for said can, consisting of a cylindrical receptacle having a flange on its periphery, a top having an opening therein, a cover for said opening, a tube extending through the bottom and top of said receptacle, having its lower end covered with wire-cloth, and a cap having one end covered with wire-cloth, adapted to fit the upper end of said tube, substantially as described.

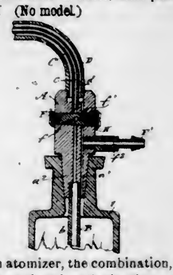
446,255. SLAT-AND-WIRE-FENCING MACHINE. REUBEN HOOVER, Boone, Iowa. Filed Sept. 3, 1890. Serial No. 363,800. (No model.)



Claim.—1. In a fence-machine, the combination, with the head provided with the wire-twisting mechanism and having the picket-supporting bar b^3 and the stop b^4 at the end of the said bar b^3, and means for moving the said head horizontally, of the spacers 8 in front of and independent of the said head, and means for operating the said spacers to project them in and out of the path of the completed fence, substantially as and for the purpose described.

2. In a fence-machine, the combination of the wire-twisting mechanism, the tension device M, having guides m^5, the beam N, parallel with the tension device M and having guides n, which correspond with the guides m^5, the shaft O between the tension device M and the beam N, and the metal bands o on the shaft O, having the ridges o' in line with the guides m^5 and n, substantially as described, for the purpose specified.

446,256. ATOMIZER. EDWARD T. KASSEL, New York, N. Y., assignor of one-half to Charles E. Riker, same place. Filed Apr. 2, 1890. Serial No. 346,295. (No model.)



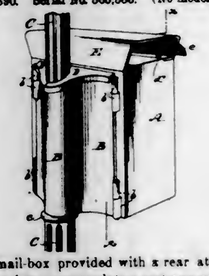
Claim.—1. In an atomizer, the combination, with a body or head-piece having two independent lengthwise through-and-through liquid and air passages, of a plug-valve fitted to the head-piece and having two transverse passages adapted to open and close the head-piece passages, two discharge-tubes connected at one end of the head-piece and communicating, respectively, with its liquid and air passages, a liquid-feed tube connected to the other end of the head-piece and communicating with its liquid-passage, and an air-forcing device communicating with the air-passages of the head-piece and valve, substantially as described.

2. In an atomizer, the combination, with a body or head-piece having two independent lengthwise through-and-through liquid and air passages, of a plug-valve having two transverse passages adapted

to register, respectively, with the liquid and air passages of the head-piece, said valve also having an independent air-supply passage to which an air-forcing device may be connected, substantially as described.

3. In an atomizer, the combination, with a body or head-piece having independent liquid and air passages, of a plug-valve having transverse passages adapted to register with said head-piece passages and a U-shaped thumb-piece held to the valve for actuating it by the hand holding the liquid-vessel, substantially as described.

446,257. **STREET LETTER-BOX.** IRA G. LANE, New York, N. Y. Filed Aug. 28, 1890. Serial No. 363,333. (No model.)



Claim.—1. A mail-box provided with a rear attaching and supporting plate concaved to accommodate a post-support between it and the body of the box, substantially as described.

2. A mail-box provided with a rear attaching and supporting plate concaved to accommodate a post-support between it and the body of the box, and a cap-plate or cover fitted to the box and rear plate and around the post-support, substantially as described.

3. A mail-box provided with a top hood forming a weather-guarded newspaper or package compartment on the box, said hood having an auxiliary apron shielding the box drop-lid and adjacent opening, substantially as described.

4. A mail-box having a hinged drop-lid provided with a swinging tray, combined with a relatively stationary rod or resistance piece on the box-body, substantially as described, whereby as the drop-lid is opened the tray will be swung upward to receive mail-matter and on closing the lid the tray will fall to drop the matter within the box, substantially as described.

5. A mail-box fitted at its discharge-opening with two right-angularly disposed hinged doors coupled together for simultaneous operation, substantially as described.

6. A mail-box fitted at its discharge-opening with two hinged doors, one door having slots and the other door having pins entering the slots and causing simultaneous operation of the doors, substantially as described.

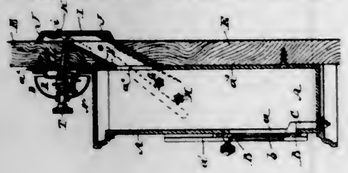
7. A mail-box fitted at its discharge-opening formed partly in its front and partly in its bottom, with front and bottom doors at said opening, one door having slots and the other having pins entering the slots for operating the doors simultaneously, substantially as described.

8. A mail-box having a discharge-opening at its front and bottom walls and provided with doors adapted to close said opening, and having inwardly-extending end guards, the guards of one door having slots and the guards of the other door having pins entering said slots for operating both doors simultaneously, substantially as described.

9. A mail-box fitted at its discharge-opening with two hinged doors provided with inwardly-projecting end guard-plates engaging each other for simultaneous operation of the doors, combined with guards fixed to the interior of the box and covering the end guards of the closed doors, substantially as described.

10. A mail-box provided with a discharge-opening formed partly in its front and partly in its bottom, combined with front and bottom doors coupled together for simultaneous operation, and a chute at the rear lower corner of the box delivering the mail-matter as the doors are opened, substantially as described.

446,258. **HOUSE-DOOR LETTER-BOX.** IRA G. LANE, New York, N. Y. Filed Sept. 9, 1890. Serial No. 364,420. (No model.)



Claim.—1. A letter or mail box provided with one or more roller-guards journaled near the mail-inlet opening, substantially as described.

2. A letter or mail box provided with one or more circumferentially-corrugated or star-shaped roller-guards near the mail-inlet opening, substantially as described.

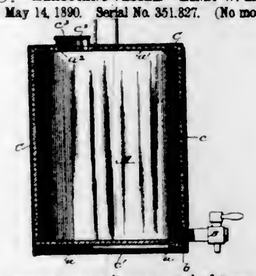
3. The combination, with a letter or mail box, of an alarm device provided with a presser-plate which when pushed trips the alarm into action, combined with a drop-lid fitted to the wall or support through which the mail enters the box, and a rod interposed between the drop-lid and the alarm-presser plate, substantially as described, whereby as the drop-lid is opened the alarm will be sounded, as and for the purposes set forth.

4. A letter-box provided with an attached alarm device forming a part of the structure and provided with a presser-plate which when pushed trips the alarm into action, combined with a drop-lid fitted to the wall or support through which the mail enters the box, and a rod interposed between the drop and alarm-presser plate and causing sounding of the alarm as the drop-lid is opened, substantially as described.

5. A letter-box attached to a wall or support through which the mail enters the box and provided near the mail-inlet opening with one or more rod or roller guards, combined with a drop-lid device on the box-support, an alarm device at or on the box, and connections between the drop-lid and alarm device to sound the alarm when the drop-lid is opened, substantially as described, whereby the rod or roller guards and the alarm will co-operate to prevent abstraction of mail from the box at the drop-lid opening, as set forth.

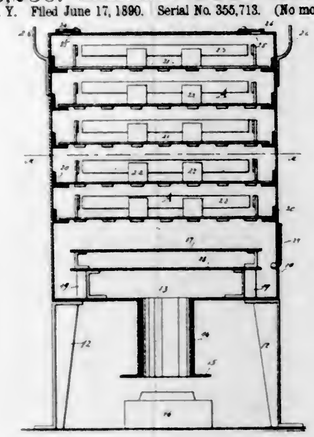
6. In a letter or mail drop alarm device, the combination, with a door or wall support, of a frame J, a spring-closed lid I, hinged thereto, a rod held to the lid and extending inward, and an alarm device D, comprising a gong N, hammer M, escapement and wheel O P, gearing R, spring S, a lever U, normally engaging the hammer to drop it, and a presser-plate *d*, operating the trip-lever U and operative by the drop-lid, substantially as described.

446,259. **MEASURING-VESSEL.** HENRY W. LAUM, Englewood, Ill. Filed May 14, 1890. Serial No. 351,827. (No model.)



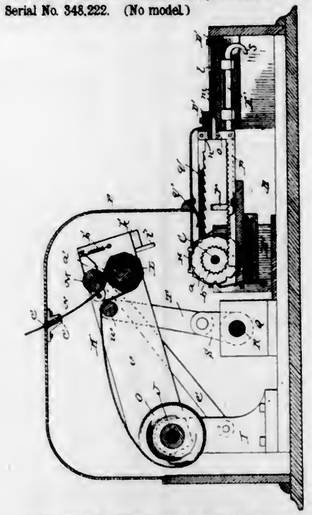
Claim.—A measuring-vessel constructed of transparent material and having knob-like enlargements upon the under side of the bottom, upon which the vessel rests, and a faucet inserted horizontally in the said vessel and one of the enlargements in such a manner that the lower surface of the bore is flush with the upper side of the bottom of the vessel, substantially as shown and described.

446,260. **CLOTHES-DRIER.** MARY L. W. MARTINOT, New York, N. Y. Filed June 17, 1890. Serial No. 355,713. (No model.)



Claim.—A drier consisting in the square drying-chamber having an open side, a door therefor, a heat-flue in its bottom, outlets in its top, and parallel slideways on its inner side walls, and clothes-holding trays, each formed of interlaced slats 21, series of vertical spaced brackets 22, projecting from the said slats near the margins of the tray-bottom, and separate and independent bars 23, connecting the upper ends of the brackets, the extremities of either set of slats being adapted to rest on the slideways regardless of which end of the tray is inserted, substantially as set forth.

446,261. **APPARATUS FOR PRINTING AND ADDING NUMBERS.** SARAH R. MASSEY and STANLEY A. BRYANT, Mamaroneck, N. Y., administrators of the estate of G. B. Massey, deceased. Filed Apr. 16, 1890. Serial No. 348,222. (No model.)



Claim.—1. In a total-adding machine, the combination of two series of number-wheels, one series being provided with carrying mechanism, spur-wheels attached to one series, ratchet-wheels applied to the other series, series of rack-bars constructed to engage the spur-wheels, series of ratchet-bars constructed to engage the ratchet-wheels, and perforated sliding bars connected with the rack and ratchet bars, substantially as specified.

2. The combination, with the rack and ratchet bars and the perforated sliding bars, of an auxiliary sliding bar provided with a finger for returning all of the bars and one series of the wheels to zero, substantially as specified.

3. The combination, in a total-adding machine, of a series of index number-wheels, a series of totalizing number-wheels mounted independently of the index-wheels, and operating-slides having each one member engaging an index-wheel and the other member engaging a totalizing-wheel, substantially as described.

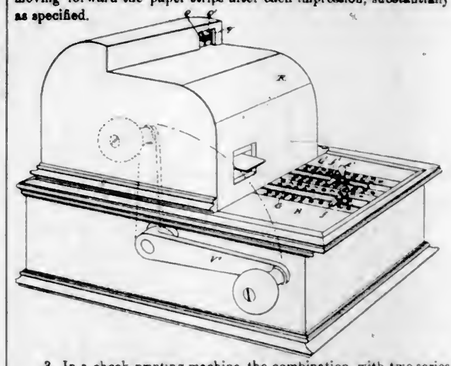
4. The combination, in a total-adding machine, of a series of total-adding wheels having normally a forward movement only, a second series of adding-wheels having a return movement after each forward movement, and a printing mechanism for both of said series, substantially as described.

5. In a total-adding machine, the combination of two series of figure-wheels arranged to rotate in opposite directions, one series being returnable by rack-and-pinion mechanism, the other series being constructed for forward motion only, carrying mechanism attached to the forwardly-moving series of wheels, and registering-springs for causing the figure-wheels to register and for preventing the accidental turning of the same, substantially as specified.

446,262. **CASH-REGISTER AND CHECK MACHINE.** SARAH R. MASSEY and STANLEY A. BRYANT, Mamaroneck, N. Y., administrators of the estate of Gideon B. Massey, deceased. Filed Apr. 29, 1890. Serial No. 350,226. (No model.)

Claim.—1. In a check-printing machine, the combination of two sets of number-wheels, the numerals of one set being arranged in an order the reverse of that of the other set, two bars for actuating the number-wheels, paper-feeding mechanism for each set of wheels, and mechanism for producing impressions upon the permanent record-strip and upon the check-strip, substantially as specified.

2. In a check-printing machine, the combination of two series of number-wheels oppositely arranged with respect to each other, one wheel of each series being attached permanently to a shaft, the other wheel of each series being attached permanently to a sleeve carried on the shaft, means, substantially as described, for printing from the wheels, pinions carried by one wheel of each series, operating-racks engaging said pinions, and automatic paper-feeding mechanism for moving forward the paper strips after each impression, substantially as specified.



3. In a check-printing machine, the combination, with two series of number-wheels oppositely arranged with respect to each other, of registering mechanism for causing the wheels to register, printing mechanism and paper-feeding mechanism for each set of wheels, and locking mechanism for holding the wheels during the operation of printing, said locking mechanism being adapted to be tripped by the printing mechanism, substantially as specified.

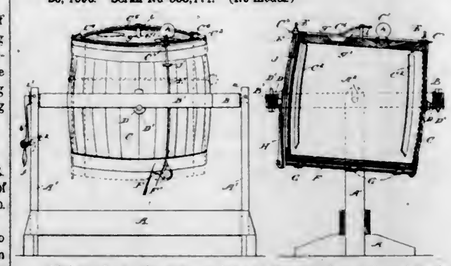
4. In a check-printing machine, the combination of the shaft B, the number-wheels C C′, mounted permanently thereon, the sleeve D, mounted loosely on the shaft between the number-wheels C C′ and carrying the number-wheels E E′, the pinions *b b′*, attached to the number-wheels E′ C′, and the bars G G′, provided with racks *c c′*, for operating the number-wheels C C′ E E′, substantially as specified.

5. In a check-printing machine, the combination, with the number-wheels C C′ E E′, the shaft B, and sleeve D, by which they are carried, of the sprocket-wheels F F′, the endless chains *m n*, the sprocket-wheels O P, the wheels M M′, pulleys *p p′*, and the endless numbered belts Q Q′, substantially as specified.

6. In a check-printing machine, the combination of two series of number-wheels oppositely arranged with respect to each other, the frame U, provided with the adjustable platen d^3, the feed-roller h^3, the spring-pressed pressure-roller i^3, the ratchet-wheel o^3, the spur-wheel o^4, pinion o^5, the bar q^2, carrying the stud p^3, for engaging the ratchet-wheel o^3, the angled lever r^3, pivoted to the frame U, and the connecting-link n^3, pivoted to the lever r^3 and to an ear projecting from the base of the machine, substantially as specified.

7. The combination, with a series of rotating number-wheels, of spring-acted locking-levers normally out of engagement with said wheels, operating-levers for said locking-levers, a platen arranged in connection with said wheels, and a shaft and connections, including a connecting-rod having a projection for engaging the operating-levers of the locking-levers, substantially as described.

446,263. **CHURN.** JAMES MCBRIDE, Bavington, Pa. Filed May 26, 1890. Serial No. 353,171. (No model.)



Claim.—1. A churn comprising a frame, a hoop pivoted in the frame and provided with a crank, a body pivoted in the hoop at right angles to the hoop-pivots, and a catch for locking the crank and hoop, substantially as described.

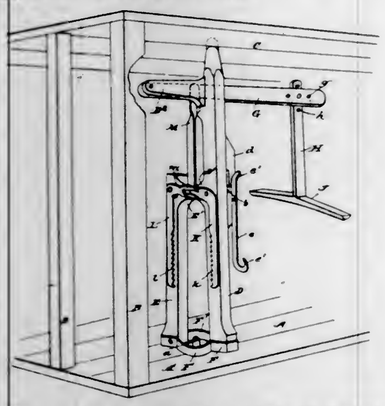
2. A churn consisting, essentially, of a frame, a hoop having flattened ends pivoted in the frame, a crank fixed to one of the hoop-pivots and provided with a vertically-swinging handle having an arm connected therewith and adapted to engage a recess of the standards and fix the position of the hoop, and a cylindrical body pivoted in the hoop at right angles with the hoop-pivots, substantially as described.

3. In a churn, the combination, with the standards A', having a revoluble churn-body mounted therein, and one of the said standards having a recess A^3, of the crank *b*, connected with the churn-body, as shown, and provided with recesses *b'* and a short shaft *d*, having a suitable nut thereon, the spring-actuated sleeve c, having lugs *c'* to engage the recesses *b'* and an arm c^2 to engage the recess A^3, and a suitable handle *f*, fixed to the sleeve, by means of which the same may be moved, substantially as described.

4. In a churn, the combination, with the body and a cover having projecting slotted ears, of a rod mounted transversely on the churn-bottom, said rod having one end provided with a lever and having cams, as shown, and binding-rods adapted to engage the ears and having perforated lower ends to inclose the cams, substantially as described.

5. The combination, with the churn-body, of a cover having upon its upper side an annular strip having laterally-extending ears, a spring-brace extending across the cover and pressing upon said strip, a rod mounted upon the churn-bottom, said rod having one end provided with a lever and having cams near the ends, as shown, and binding-rods adapted to engage the slotted ears and having perforated lower ends to inclose the cams, substantially as described.

446,264. STANCHION. JAMES MCBRIDE, Bavington, Pa. Filed May 26, 1890. Serial No. 353,172. (Model.)



Claim.—1. A stanchion consisting, essentially, of a vertical post mounted loosely upon a floor and extending to a support, a vertical locking-standard arranged adjacent thereto, plates fixed to the foot of the post and pivoted to the foot of the standard, a stop fixed to the floor and projecting between the plates, and a detachable lever mechanism for locking the top of the standard to the post, substantially as described.

2. A stanchion consisting, essentially, of a vertical post mounted loosely between a floor and a support, a vertical locking-standard arranged adjacent thereto, curved plates fixed to the foot of the post and pivoted to the foot of the locking-standard, a stop fixed to the floor and projecting between the plates, a cross-bar pivoted to the upper portion of the locking-standard and extending through a keeper on the post, and a lever pivoted to the cross-bar and adapted to operate the same, substantially as described.

3. The combination, with a stanchion comprising two vertical posts or standards, of angular plates pivoted thereon, provided with inwardly-projecting teeth and inwardly-extending upper ends pivotally connected together, a lever pivoted above the plates and connected with the inner ends thereof by a rod, and a depending rod attached to the rear end of the lever and having at its lower end a transverse arm, substantially as described, and for the purpose set forth.

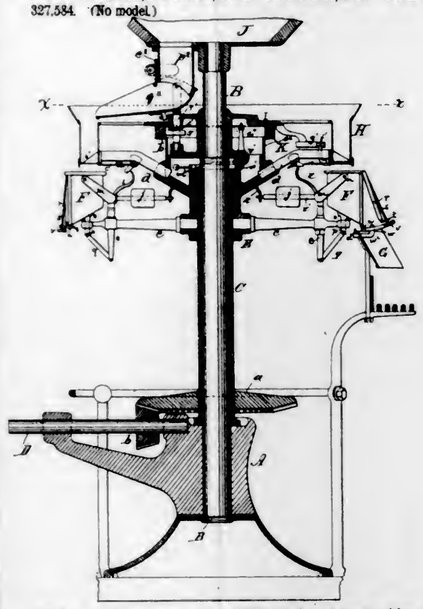
4. The combination, with the post D and standard E, adapted to swing outwardly, as shown, of the angle-plates K and L, pivoted to the post and standard and provided with inwardly-projecting teeth and inwardly-extending upper ends, the end of the plate L being slotted, as shown, the rod M, pivoted to the plates by the pin *m*, the lever G, pivoted above the plates and having the rod M pivoted thereto, and the rod H, pivoted to the lever G and provided with the transverse arm J, substantially as shown and described.

5. The combination, with the post D, having the keeper *d* thereon, and the locking-standard E, pivoted to the post, of the cross-bar *b*, pivoted to the standard and provided with the bent end *b'*, and the lever *e*, pivoted to the cross-bar and having the curved end e^2 and hooked end *e'*, substantially as described.

446,265. WALL AND CEILING POLISH. THOMAS J. NEAVITT, Austin, Tex. Filed Sept. 20, 1890. Serial No. 365,687. (No specimens.)

Claim.—The water-proof polish herein described, composed of white spirits of turpentine, light-colored mastic, and light-colored sandarac in equal quantities, oil of lavendar, powdered glass, and white oil of poppy, in substantially the proportions set forth.

446,266. AUTOMATIC WEIGHING AND PACKING MACHINE. JOHN A. OSTENBERG, Des Moines, Iowa. Filed Oct. 19, 1889. Serial No. 327,584. (No model.)



Claim.—1. In an automatic weighing and packing machine, the combination of a quick-closing feed-controlling shutter and feed-spout, shaking mechanism connected with the shutter and adapted to shake the spout while the shutter is opened, a circular traveling scale-box provided with a discharge-door, and means, substantially as described, for automatically opening and closing the said door and for moving the scale-box in a circular path.

2. In an automatic weighing and packing machine, the combination of the arm *c*, the bar *e*, the bar *h*, provided with arms *m*, the weighted arm *i*, the circular traveling scale-box F, provided with an inclined bottom and hinged side *r*, the bar *p*, the link *q*, and means for moving the scale-box in a circular path, substantially as specified.

3. The combination, with the circular traveling scale-box F, provided with the hinged side *r*, of the bar *s*, the catch *t*, attached to the said bar, the stud *u* for engagement with the said catch *t*, the stud *a'* for disengaging the catch, and means, substantially as described, for closing and fastening the hinged side *r* and for carrying the scale-box in a circular path.

4. In an automatic weighing and packing machine, the combination of the circular traveling scale-box F, provided with the hinged side *r*, the rod *s*, the catch *t* and roller *v*, carried by the said rod, and the cam *g'*, supported in the path of the roller *f'*, substantially as specified.

5. In an automatic weighing and packing machine, the combination of the scale provided with the circular traveling box F, the hopper H, arranged to discharge into the scale-box, the shutter *c'*, the arm *d'*, attached to the shutter and provided with the roller *f'*, and the cam *g'*, substantially as specified.

6. The combination, with the shutter-carrying lever *d'* and the scale-arm *i*, of the spring-catch *i'*, the triangular bar *f'*, provided with the arm *k'*, and the finger *l*, attached to the scale-arm and adapted to trip the catch *i'*, substantially as specified.

7. The combination, with the feeding-spouts q' q^3, of shaking mechanism consisting of the rock-shafts *r'*, angled levers *s'*, the notched rim K, and controlling mechanism, substantially as specified.

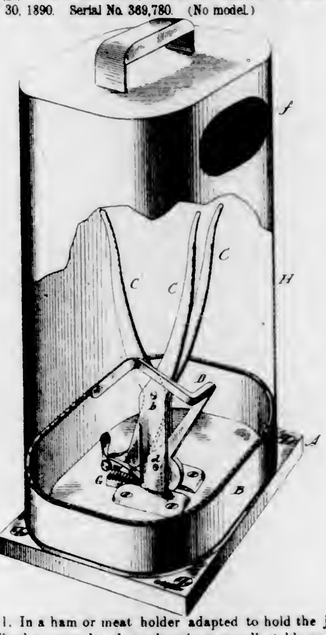
8. In an automatic weighing and packing machine, the combination of the toothed ring K, the angled lever *s'*, the shafts *r'*, the shaking-spouts q' q^3, and means, substantially as described, for bringing the angled levers *s'* into engagement with the toothed ring.

9. In an automatic weighing and packing machine, the combination, with the shaking-spouts q' q^3, of the shafts *r'*, the levers *s'*, springs *t'*, placed on the shafts *r'*, the angled levers *w'*, connecting-rods a^3, curved bars *m'*, rods *l'*, the arms *d'*, provided with rollers *f'*, and the cams *g'*, substantially as specified.

446,267. PROCESS OF TREATING STASSFURT SALTS. BERNHARD PFEIFFER, Stassfurt, assignor to the Chemische Fabrik Buckau, Magdeburg, Germany. Filed June 28, 1890. Serial No. 357,092. (No specimens.)

Claim.—The process of treating potassic raw salts, characterized by treating these salts with sulphuric acid and by mixing the sulphates thus obtained with milk of lime, the gypsum thus formed and the magnesia being then separated by filtering from the resulting solution of the alkaline sulphate, and the latter being converted by mixing the same with sulphide of barium into a solution of sulphide of alkali and treated in a concentrated condition with carbonic acid, whereby the separation of the bicarbonate of potassium and of bicarbonate of sodium is effected, owing to the different degree of their solubility in water, and potash is obtained from the bicarbonate of potassium by roasting and soda from the bicarbonate of sodium by calcination, substantially as set forth.

446,268. MEAT-HOLDER. ROBERT W. RANDLE, Portland, Ind. Filed Oct. 30, 1890. Serial No. 369,780. (No model.)



Claim.—1. In a ham or meat holder adapted to hold the joint while being sliced or carved and at other times, an adjustable upright hand or clamp composed of arms or fingers set tapering or flaring outward in an upright direction and adapted to firmly hold the joint by its smaller end within it, substantially as specified.

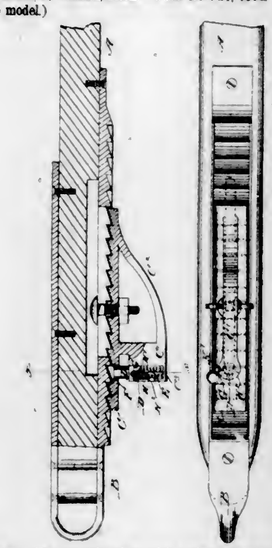
2. In a ham or meat holder, the combination, with a series of upright fixed clamping arms or fingers, of a pivoted and adjustable clamping arm or finger, a lever for closing the latter toward the fixed arms or fingers, and a catch for holding the same when so closed, essentially as set forth.

3. In a a ham or meat holder, the combination, with an adjustable artificial clamping-hand composed of a series of upright fingers or arms and means for closing the same on the joint, of an attached pan at the base of said hand, substantially as and for the purposes specified.

4. In a ham or meat holder, the combination, with an adjustable clamping-hand composed of a series of upright fingers or arms, means for closing the same on the joint, and an attached base-pan, of a removable cover inclosing the whole and provided with a ventilating-screen, essentially as and for the purposes herein set forth.

5. In a ham or meat holder, the combination of the pan B, the upright stationary fingers or arms C C, mounted thereon and attached thereto, the pivoted and adjustable finger or arm C', the lever D, the pawl E, and the rack G, essentially as shown and described.

446,269. SAFETY ATTACHMENT FOR VEHICLE-POLES. HENRY W. ROBERTS, Duncan, Mich. Filed Nov. 21, 1890. Serial No. 372,156. (No model.)



Claim.—The combination, with a plate attached to the under side of a vehicle-pole and having a vertical post C, constructed with a socket having a lengthwise slot and lateral notch, of the spring-pressed sliding bolt D, having a lateral handle for moving and locking it, as shown and described.

446,270. WAISTBAND. FREDERICK SPITZ, New York, N. Y., assignor to the Hercules Waist Band Company, same place. Filed Nov. 19, 1890. Serial No. 371,928. (No model.)



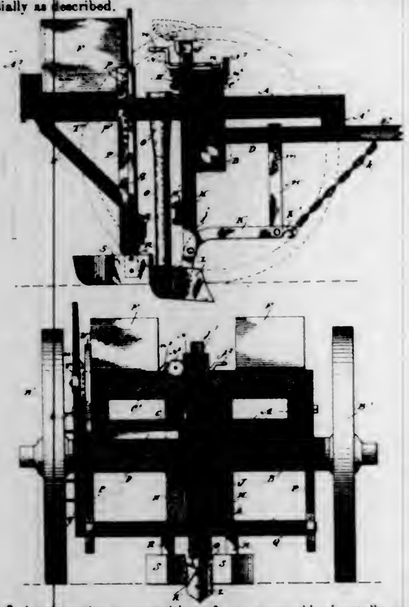
Claim.—As a new article of manufacture, a strip of fabric of indefinite length formed at intervals at about the middle with eyelets and provided with independent elastic loops secured to the back of the strip at one side of the eyelets and passed through said eyelets to the front of the strip, the free and fastened ends of the loops projecting approximately an equal distance in opposite directions on opposite sides of the strip, whereby provision is made for winding the strip into a roll, as set forth.

446,271. POTATO-PLANTER. FERDINAND STORCK, Buena Vista, Colo. Filed Sept. 11, 1890. Serial No. 364,612. (No model.)

Claim.—1. A frame mounted on wheels, a vertically-adjustable standard secured to the frame, a plow on the standard, an adjustable brace for the plow, a seed-tube connected with the plow, and adjustable covering-plows in the rear of the main plow, substantially as described.

2. In a potato-planter, the combination, with the main plow having a seed-tube connecting therewith, of the vertically-adjustable standard, the curved plow-beam pivoted in the standard and having its lower end fixed to the plow, and the vertically-adjustable strip extending

from the front end of the plow-beam through the vehicle-tongue, substantially as described.



3. A potato-planter comprising a frame mounted horizontally upon a vehicle-axle, a vertically-adjustable standard mounted in the frame and provided with a slotted lower end, a curved plow-beam pivoted in the standard, a plow fixed to the lower end of the plow-beam, a dropping-tube mounted in the frame and extending to the rear of the plow, a vertically-adjustable strip pivoted to the front end of the plow-beam and extending through the vehicle-tongue, and a chain attached to the front end of the plow-beam and to the vehicle-tongue, substantially as described.

4. A potato-planter comprising a frame mounted horizontally upon a vehicle-axle, a vertical frame fixed to the horizontal frame, a vertically-adjustable standard sliding in the vertical frame, a curved plow-beam pivoted in the lower end of the standard, a plow fixed to the lower end of the plow-beam, a dropping-tube supported in the main frame and extending to the rear of the plow, adjustable connections between the front end of the plow-beam and the vehicle-tongue, and covering-plows arranged in the rear and on each side of the main plow, substantially as described.

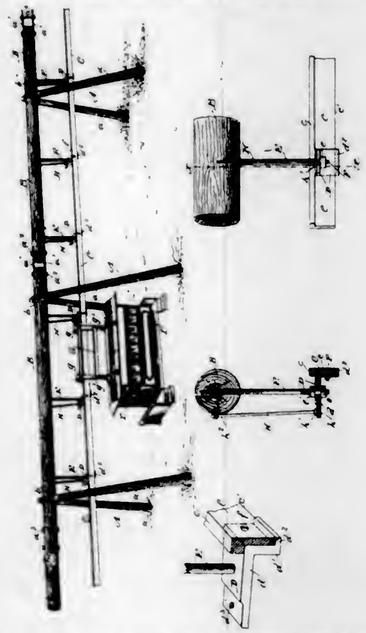
5. In a potato-planter, the combination, with the horizontal and vertical frames, of the standard adapted to slide in the vertical frame and having its lower end connected with the main plow, as shown, the rack on the standard, the horizontal crank-shaft arranged adjacent to the standard and provided with a pinion meshing with the rack, a ratchet to hold the shaft and standard from moving in one direction, and the pin adapted to be placed in holes in the standard to prevent it from moving in the opposite direction, substantially as described.

6. In a potato-planter, the combination, with the vertically-adjustable standard and the curved plow-beam pivoted in the lower end thereof, said plow-beam having its lower end fixed to a plow and its forward end formed into a hook, of a vertical strip pivoted to the front end of the plow-beam, said strip being provided with a series of holes and arranged to extend through the vehicle-tongue, a pin for the holes, and a chain connecting the hook of the plow-beam with the vehicle-tongue, substantially as described.

7. In a potato-planter, the combination, with the vertically-adjustable standards on the sides of the horizontal frame, of the rocker-shaft pivoted in the lower end of the standards, the covering-plows supported from the shaft, a lever fixed to one end of the shaft and extending upwardly by the main frame, and a rack for holding the lever in position, substantially as described.

446,272. **ELEVATED RAILROAD.** JOHN N. VALLEY, Jersey City, N. J. Filed Aug. 7, 1890. Serial No. 361,307. (No model.)

Claim.—1. In an elevated railroad, the combination, with an elevated stringer, of hangers held thereto, chair-plates sustained by the hangers, a rail supported by the chair-plates, and braces between the chair-plates and the stringer, substantially as described, whereby the braces will steady the chair-plates and counterbalance the load-weight on the rail and prevent tipping of the rail, as set forth.



2. In an elevated railroad, the combination, with an elevated stringer and sustaining-struts therefor consisting of two downwardly-diverging posts held at their upper parts to the stringer, of hangers held to the stringer, chair-plates sustained by the hangers, a rail supported by the chair-plates, and braces between the chair-plates and the stringer, substantially as described, whereby the braces will steady the chair-plates and counterbalance the load-weight on the rail and prevent tipping of the rail and the car or trolley traveling on the rail will run between the diverging posts of the struts, as set forth.

3. In an elevated railroad, the combination, with an elevated stringer, of headed hangers held thereto, chair-plates held abont centrally to the hangers, a rail held at one end of the chair-plates, and braces between the other ends of the chair-plates and the stringer, substantially as described.

4. In an elevated railroad, the combination, with an elevated stringer and hangers held thereto, of independent chair-plates on the hangers, provided with a pendent flange and a projecting rib or bearing at the lower part of said flange, and a rail fastened to the chair-plate flanges and resting on their lower ribs or bearings and having a head portion bearing upon the chair-plates, substantially as described.

5. In an elevated railroad, the combination, with an elevated stringer and hangers held thereto, of chair-plates on the hangers, provided with a pendent flange and a projecting rib or bearing at the lower part of said flange, a rail fastened to the chair-plate flanges and resting on their lower ribs or bearings, and braces between the chair-plates and stringer, substantially as described.

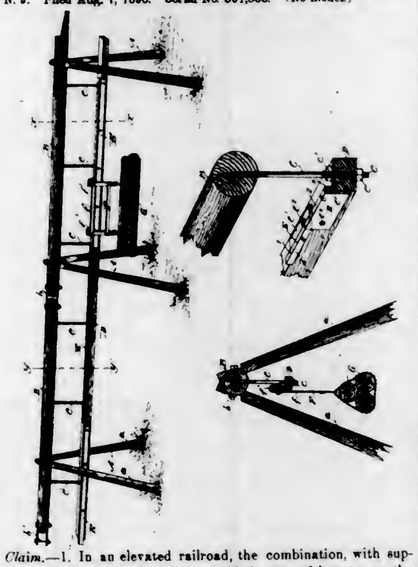
6. In an elevated railroad, the combination, with an elevated stringer and hangers held thereto, of chair-plates on the hangers, provided with a pendent flange and a projecting rib or bearing at the lower part of said flange, a rail fastened to the chair-plate flanges and having a head portion overlapping the chair-plates, and braces between the chair-plates and stringer, substantially as described.

7. In an elevated railroad, the combination, with an elevated stringer and hangers held thereto, of chair-plates on the hangers, provided with a pendent flange and a projecting rib or bearing at the lower part of said flange, a rail fastened to the chair-plate flange and having a head portion overlapping the chair-plates, and said rail resting also on the lower projecting ribs or bearings of the chair-plates, and braces between the chair-plates and stringer, substantially as described.

8. In an elevated railroad, the combination, with struts A, formed with downwardly-diverging posts *a a*, and a stringer B, sustained by the struts, of headed hangers E *e* on the stringers, chair-plates I on the hangers, a rail C on the chair-plates, and braces between the chair-plates and stringer, substantially as described.

9. In an elevated railroad, the combination, with struts, a stringer sustained thereby, hangers on the stringer, chair-plates on the hangers, and a rail on the chair-plates, of braces H, having a lower extremity *h* entering a hole in the chair-plates, and provided with a lower shoulder or collar *h'*, resting on the chair-plates, and also having an inbent spike-head *h*³ entering the stringer, substantially as described.

446,273. **ELEVATED RAILROAD.** JOHN N. VALLEY, Jersey City, N. J. Filed Aug. 7, 1890. Serial No. 361,308. (No model.)



Claim.—1. In an elevated railroad, the combination, with supporting struts or posts and a stringer held thereto, of hangers on the stringers, provided with screw-threaded lower ends, a sleeper on the hangers, and adjustable nuts or collars on the hangers below the sleeper, substantially as described.

2. In an elevated railroad, the combination, with supporting struts or posts and a stringer held thereto, of hangers screwed into the stringer and having screw-threaded lower ends, a sleeper on the hangers, and adjustable nuts or collars on the hangers below the sleeper, substantially as described.

3. In an elevated railroad, the combination, with downwardly-divergent struts A and a stringer B thereon, of hangers C on the stringer, a sleeper D on the hangers, nuts or collars *c* on the hangers below the sleeper, and a track-rail on the sleeper, substantially as described.

4. In an elevated railroad, the combination, with a longitudinal sleeper, of track-rail sections having heads which overhang or project at one side of their flange, said rail-sections being laid both at the top and front faces of the sleeper, substantially as described, for the purposes set forth.

5. In an elevated railroad, the combination, with a longitudinal sleeper or support, of track-rail sections laid both at the top and front faces of the sleeper, substantially as set forth.

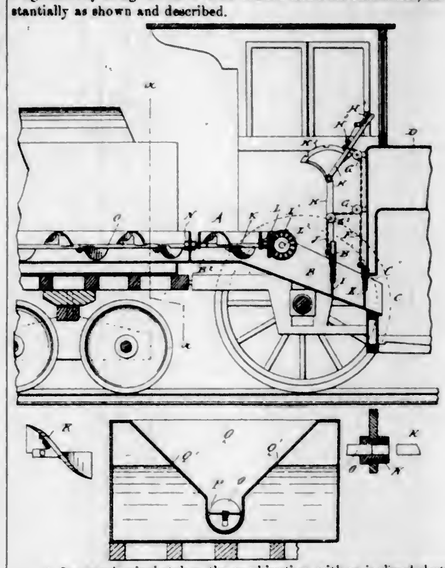
446,274. **MECHANICAL STOKER.** JOHN B. WARD, Minneapolis, Minn. Filed May 15, 1890. Serial No. 351,913. (No model.)

Claim.—1. In a mechanical stoker, the combination, with an inclined chute provided with two gates arranged one in front of the other, of a feed-screw discharging into the upper end of the said chute, substantially as shown and described.

2. In a mechanical stoker, the combination, with an inclined chute leading into the fire-box, of two vertically-reciprocating gates arranged one in front of the other in the said chute, one of the said gates closing the opening leading to the fire-box, and a lever common to both gates, substantially as shown and described.

3. In a mechanical stoker, the combination, with an inclined chute leading into the fire-box, of two gates arranged one in front of the other in the said chute, one of the said gates closing the opening leading to the fire-box, and means, substantially as described, for simultaneously raising or lowering the said gates, as set forth.

4. In a mechanical stoker, a feed-screw having wings adjustable longitudinally along the screw-shaft toward and from each other, substantially as shown and described.



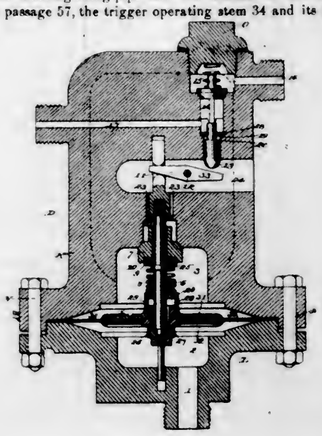
5. In a mechanical stoker, the combination, with an inclined chute having a horizontal extension, of a feed-screw operating in the said horizontal extension and provided with adjustable wings of half-turns, substantially as shown and described.

6. The combination, with a locomotive having a tender the inner side walls of which incline downward and inward, terminating in a longitudinal channel, of a feed-screw working in said channel, and an inclined chute leading to the door of the fire-box above the grate-bars and receiving coal from said screw, substantially as set forth.

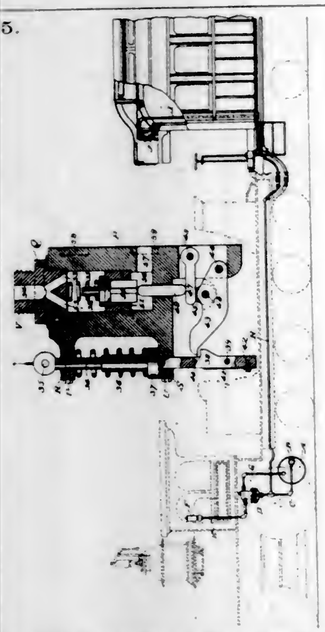
7. The combination, with a locomotive having an inclined chute leading to the fire-box and provided with a horizontal section at its upper end, and a feed-screw working in said section, of a tender having a channel registering with said chute-section and provided with a longitudinal screw, and a coupling uniting the adjacent ends of the two screw-sections, substantially as set forth.

446,275. **AIR SIGNALING APPARATUS.** GEORGE R. WILLIAMS, Portland, Oreg. Filed Jan. 14, 1890. Serial No. 336,879. (No model.)

Claim.—1. In an air signaling apparatus, the combination, with the whistling or signaling valve, of the conductor's valve comprising a case having passages 54 57, valve 50 therein, spring 55, which holds valve 50 to its seat and closes the communication between the passage 54 to the train-signaling pipe and the exhaust to the atmosphere through passage 57, the trigger operating stem 34 and its spring 36,



446,275.



catch 38 and its spring 41, and with levers 43 47 and pin 49, or other suitable connections between trigger device and valve 50 to automatically limit the exhaust from train-signaling pipe 54 when the conductor pulls the signaling-cord attached to stem 34 at 35, substantially as shown and described.

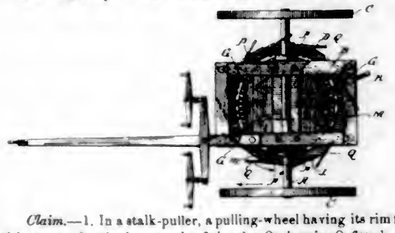
2. In an air signaling apparatus, the combination, with the whistling or signaling valve, of the conductor's valve comprising a valve normally seated and severing the communication between the train-signaling pipe and the atmosphere, with a trigger device for operating said valve to automatically limit the exhaust from the train-signaling pipe to the atmosphere when said valve is opened by pulling the signaling-cord, substantially as shown and described.

3. The combination, in an air signaling apparatus, with the whistling or signal-sounding valve, of a conductor's signaling-valve having an inlet for compressed air, an outlet to the atmosphere, and a valve controlling communication between said inlet and outlet and provided with an operating-lever, an operating-stem provided with a pivoted trigger, into the path of which the said lever normally projects, the said trigger being constructed to release the lever when the stem moves in one direction and in the return movement of the stem to be swung outwardly by the end of the lever and again snap under it, substantially as set forth.

4. In an air signaling apparatus, the combination, with the conductor's valve, of a whistling-valve comprising a casing, the diaphragm 5, held within the casing, the chamber 2 at one end of said diaphragm in communication with the train-signaling pipe, the supplemental chamber or reservoir 3 at the opposite side of the casing, the passages 27, 28, and 29 between chambers 2 and 3, the spring 8, the stem 6, and check-valve 7, closing passages 23 to atmosphere, with valve 14, normally held to its seat by spring 15, to sever the communication between the main reservoir through passage 16 and the whistle through passage 17, and connections between stem of diaphragm 5 and valve 14 for the purpose of forcing open valve 14 and allowing the main-reservoir pressure to flow into passage 17 and sound the signaling-whistle coincidently with a sufficient reduction of pressure in train-signaling pipe 1, caused by opening said conductor's valve, substantially as shown and described.

5. In an air signaling apparatus, the combination, with the conductor's valve, of a whistling-valve comprising a casing, the diaphragm 5, held within the casing and provided with a stem, the chamber 2 at one side of the diaphragm in communication with the signaling-pipe, which is fed from the main reservoir, the supplemental chamber or reservoir 3 at the opposite side of the diaphragm, having communication only with the signaling-pipe and the atmosphere, the passages 27, 28, and 29 between chambers 2 and 3, the spring 8, the check-valve 7, the passages or grooves 23, leading from chamber 3 to atmosphere, the check-valve 14, its operating-pin 13 in line with said stem, spring 15, passage 16 from main air-reservoir, and passage 17 to whistle controlled by said check-valve, substantially as shown and described.

446,276. COTTON-STALK PULLER. LEWIS L. WOMACK, Zephyr, Tex. Filed Sept. 2, 1890. Serial No. 363,797. (No model.)



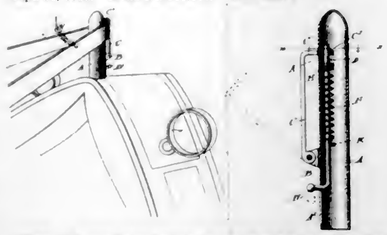
Claim.—1. In a stalk-puller, a pulling-wheel having its rim formed with seats *p* for the inner ends of the pins Q, the pins Q, fitted at their inner ends in said seats and projecting at their outer ends at a tangent, and the fastenings by which to secure the pins to the wheel, substantially as and for the purposes set forth.

2. In a stalk-puller, the combination of the axle and main frame, the pulling-wheel having its rim provided with tangentially-projected pins, and means for revolving said wheel as the puller advances over the ground, the pulling-wheel being turned to move rearwardly on its side, engaging the row as the puller advances, all substantially as and for the purposes set forth.

3. In a stalk-puller, the combination of the shaft H, having perforations *k*, the pulling-wheel N, dished upward toward the center, fitted at the center on the shaft H, and provided at its rim with pins Q, and the pins L, by which the wheel N may be secured at different heights, all substantially as and for the purposes set forth.

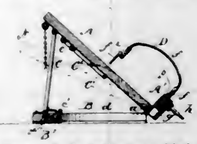
4. In a machine substantially as described, a pulling-wheel provided at its rim with tangentially-projected pulling-pins, substantially as set forth.

446,277. CHECK-HOOK. KARL G. BARRIS, Madison, Wis. Filed Sept. 30, 1890. Serial No. 366,677. (No model.)



Claim.—A check-rein-holder consisting in a round vertical tube A, having an aperture on its rear side near its upper end, a bolt on the inner side of the tube operating across said opening, and a vertical arm C, pivoted at its lower end to the rear side of the tube and having its upper end projecting inward, as at C', through said aperture into the path of the bolt, a space being formed between the arm C and the tube to permit the rein to freely slide across the tube, and the rein being adapted to be slid upward off the tube without being drawn back when said arm is swung rearward, substantially as set forth.

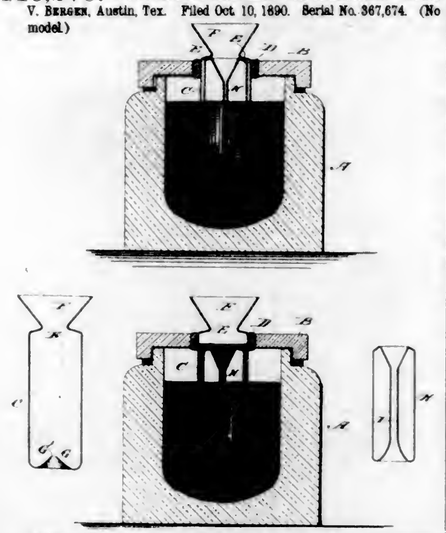
446,278. ADJUSTABLE BOOK REST OR SUPPORT. CHARLES W. BECANNON, New York, N. Y. Filed Feb. 11, 1890. Serial No. 340,062. (No model.)



Claim.—1. The support A, formed or provided with the flange or ledge A' and provided with the hinged foot-piece B, having a holder *c'*, in combination with the triangular bails C C' C², of different sizes, hinged to the back of the support, substantially as described.

2. The support A, having a flange or cleat A', formed with a socket in which is fitted a collar *p*, in combination with the leaf-holder comprising the spring-bow *f*, bolt *f'* at one end thereof, and the side spring-arms *f*² *f*², swiveled to the upper end of the said bow, substantially as described.

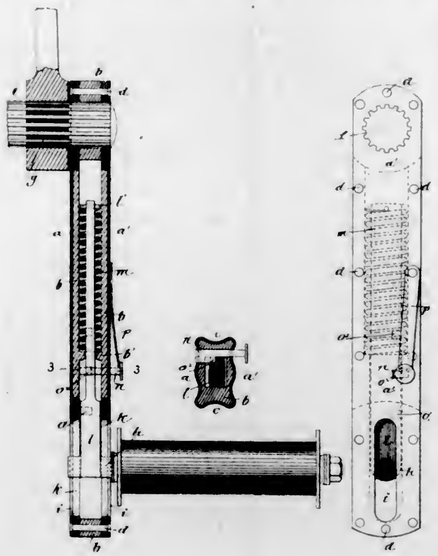
446,279. FOUNTAIN ATTACHMENT FOR INKSTANDS. JAMES V. BERGEN, Austin, Tex. Filed Oct. 10, 1890. Serial No. 367,674. (No model.)



Claim.—1. An attachment for inkstands, comprising the tubular vessel C, having an integral bottom G, provided with a small aperture G', the upper end of the vessel being contracted, as at E, and terminating in the integral funnel F, and the hollow float H, held within the vessel and of greater diameter than said contracted portion E and having a central vertical opening I, substantially as set forth.

2. An inkstand comprising the stand A, the centrally-apertured cover B, the flexible ring D in said aperture, the vessel C, held by said ring, provided with small aperture G', contracted neck E, funnel F above said ring, and the hollow float H, having a central vertical aperture, substantially as set forth.

446,280. CRANK FOR BICYCLES. WILLIAM BLAKELY, Bournemouth West, England. Filed July 1, 1890. Serial No. 357,409. (No model.)



Claim.—1. The herein-described construction of crank-arms of a shell formed of stamped steel plates clamped upon a wood core, as specified.

2. An improved crank-arm formed of a core and an external shell of sheet metal and provided with a notched eye, substantially as described.

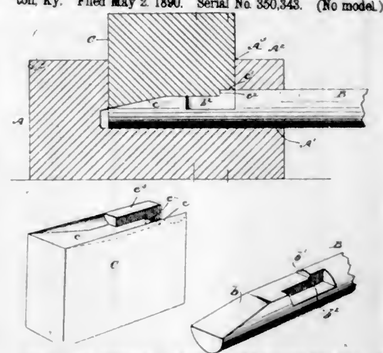
3. Fluting the axle-journals and filling the flutes with agate or other hard material, as specified.

4. The combination, with a fluted axle, of a crank formed of a core and a sheet-metal shell and provided with an eye notched to correspond with the flutes of the axle, substantially as herein shown and described.

5. The combination of a hollow crank-arm, a bar to which the pedal is connected, fitted to slide in the crank-arm, a spring for drawing the bar into the crank-arm, and a spring-pressed bolt engaging the bar to lock it in position in the said crank-arm, substantially as described.

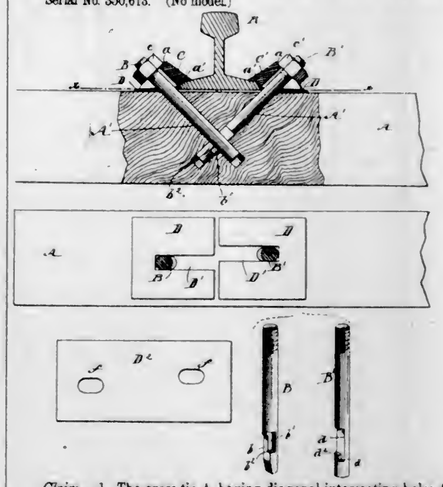
6. The combination, with a hollow crank-arm having its lower end slotted, of a bar to which the pedal is connected, fitted to slide in the crank-arm and having its lower end projecting into the slot thereof, a spring surrounding the bar in the crank-arm, and a spring-pressed bolt for engaging the bar to lock it in position in the crank-arm, substantially as described.

446,281. DIE FOR MAKING BOLTS. THOMAS J. BOSS, Lexington, Ky. Filed May 2, 1890. Serial No. 350,343. (No model.)



Claim.—The mandrel C, formed with a sloping surface *c*, recess *c'*, and projection *c*², to be used in connection with a die formed with a seat for the blank and an aperture for the mandrel, substantially as described.

446,282. COMBINED SUPPORT AND FASTENING FOR RAILWAY-RAILS. THOMAS J. BUSH, Lexington, Ky. Filed May 5, 1890. Serial No. 350,613. (No model.)

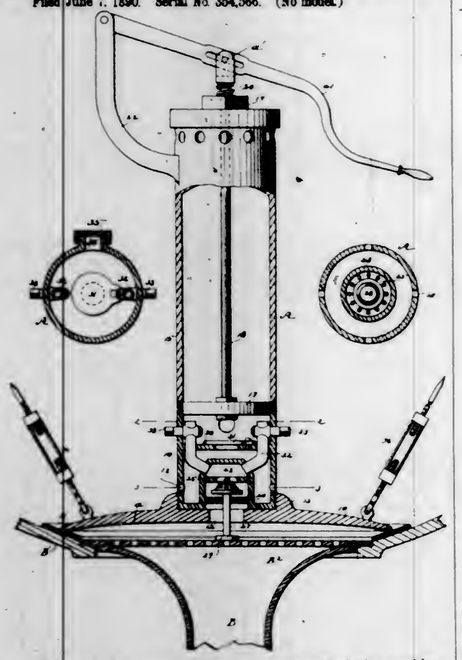


Claim.—1. The cross-tie A, having diagonal intersecting holes A' A', and the bolts B B', fitted in said holes and interlocked at their in-

ner ends and provided with screw-nuts at their outer ends, in combination with the rail R, clamps C C', formed with sloping surfaces *a*, and the clamp plate or plates formed with offset elongated openings to receive the diagonal bolts, substantially as described.

2. The cross-tie having diagonal intersecting holes, in combination with the rail, the diagonal interlocking bolts, and the chafe-plates D, formed with open slots D' to fit upon the bolts, substantially as described.

446,283. FORCE-PUMP. FREDERICK F. DANAHER, Brooklyn, N. Y. Filed June 7, 1890. Serial No. 354,566. (No model.)



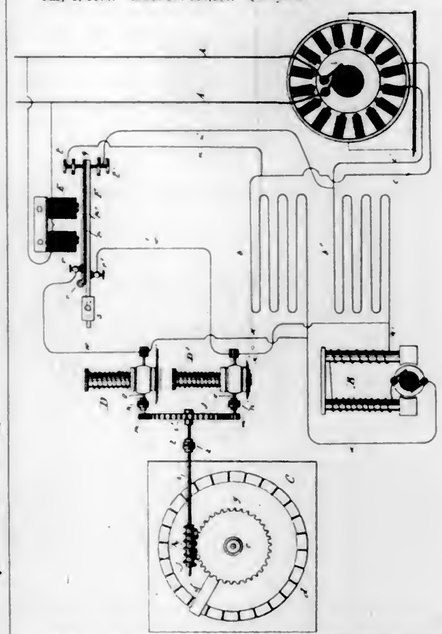
Claim.—1. In a pump of the character described, the combination, with a cup-base having a central opening, a body attached to the base surrounding the opening, and a piston held to slide in the body, of a chamber formed in the lower portion of the body, provided with an apertured bottom located over the opening of the base, and a transverse partition having an opening therein, a valve held to slide in the chamber between the bottom and the partition, a diaphragm located in the body above the chamber, provided with a valved opening, and tubes passed downward through the diaphragm and into the interior chamber of the body, as and for the purpose specified.

2. In a device of the character described, the combination, with a cup-base provided with a marginal flexible packing and a central opening, a hollow body attached to the base above the opening, provided with apertures near the base, a piston held to slide in said body, and a chamber formed within the body, provided with a perforated bottom located above the opening of the base, and a transverse partition above the bottom provided with an opening, of a valve capable of closing the opening in the partition, a diaphragm horizontally located within the body above the chamber, provided with a central opening, and a leaf-valve closing said opening, and pipes passed downward through the diaphragm into the chamber above the partition therein, as and for the purpose specified.

3. The combination, with a cup-shaped base provided with a central opening, a hollow body attached to said base over the opening, provided with apertures near its bottom and a nipple upon the exterior having communication with the interior, a chamber formed within the bottom of the body, provided with an apertured floor, and a horizontal partition above the floor having an opening produced therein, of a valve located within the chamber between its floor and the partition, a diaphragm located within the body above the chamber, provided with an opening, a valve adapted to lift upward covering the opening in the diaphragm and pipes passed downward through the diaphragm into the chamber, and valves located in the said pipes above the diaphragm, as and for the purpose specified.

4. In a device of the character described, a base having a dished under face provided with a central opening, a marginal gasket, means for attachment to a pump, and clamping devices attached to its outer face, as and for the purpose specified.

446,284. AUTOMATIC POTENTIAL REGULATOR FOR ELECTRIC CURRENTS. ALVIRUS 'LOMZO ELLIS, Kansas City, Mo. Filed July 3, 1890. Serial No. 357,595. (No model.)



Claim.—In an automatic potential-regulator for electric currents, the combination of the high-resistance magnet E, the armature F, formed of the plates *p p'*, the contact-screws *t t'*, the motors D D', provided with pinions *m m'*, the spur-wheel *j*, the shafts *i i'*, provided with the insulating-coupling *k*, the worm *h*, the potential-controlling device C, furnished with the segments *d d'*, the spindle *e*, the worm-wheel *g*, and the electric-circuit connections, substantially as specified.

446,285. DISINFECTING PAVING COMPOSITION. JOHN FOTTRELL, New York, N. Y., assignor to C. Robinson Griggs, Samuel Tebbutt, and Alexander Curtus, all of same place. Filed Feb. 25, 1890. Serial No. 341,707. (No specimens.) Patented in England May 28, 1884. No. 8,317.

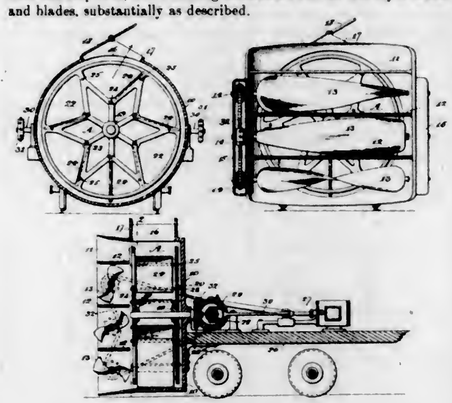
Claim.—The herein-described composition of matter for paving, the same consisting of Portland or other cement and carbolic acid, combined in the proportions stated.

446,286. SNOW-PLOW. ARTHUR GARDINER, Terrace, Utah. Filed Aug. 1, 1890. Serial No. 360,651. (No model.)

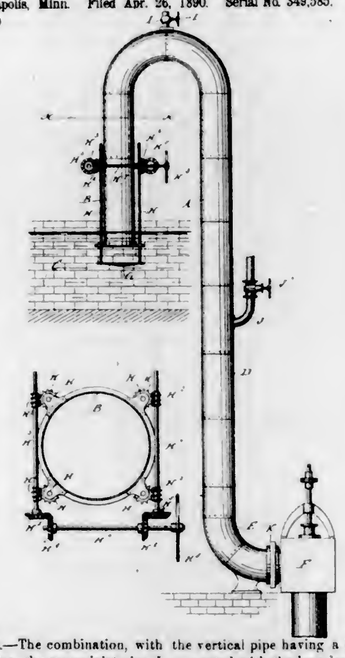
Claim.—1. In a snow-plow, the combination, with a casing having one open flaring outer end, of horizontal partitions located in the said flaring end, and twisted blades journaled in the casing between the said partitions, as and for the purpose specified.

2. In a snow-plow, the combination, with a casing provided with one open outwardly-flaring end, an exit-opening at the top, and partitions horizontally located in the flaring end of the casing, of twisted blades pivoted between the partitions, and a conveyer-wheel held to revolve at the rear of the partitions and twisted blades, the said wheel being provided with openings in its outer face, and a series of hinged paddles, as and for the purpose specified.

3. In a snow-plow, the combination, with a circular casing having one end enlarged and flaring and provided in its top with a hood, the ends of which hood are inclined, and a lid hinged upon said hood, of partitions horizontally located in the flaring ends of the casing, the outer edges whereof are sharp, twisted blades pivoted between the partitions, a conveyer-wheel held to revolve at the rear of the partitions and twisted blades, provided with openings in its outer face, stop-rods concentrically arranged near the periphery, and paddles hinged between the faces of the wheel between the hub thereof and the stop-rods, the upper ends of which paddles are adapted to engage with the stop-rods, and a driving mechanism for the conveyer-wheel and blades, substantially as described.



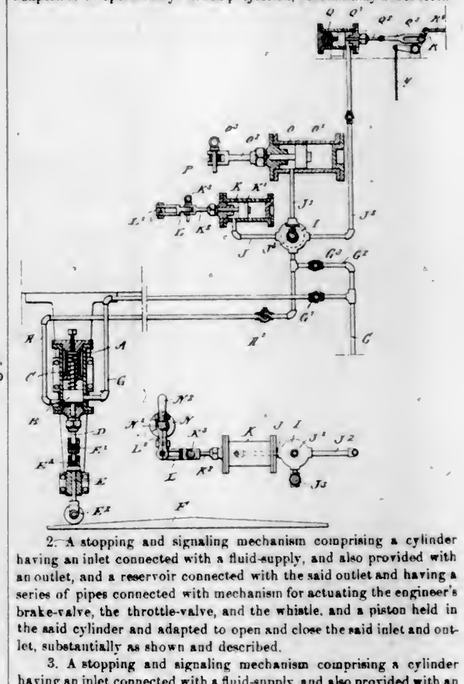
446,287. WATER-CONDUCTOR FOR TURBINES. JOHN GRAHAM, Minneapolis, Minn. Filed Apr. 26, 1890. Serial No. 349,585. (No model.)



Claim.—The combination, with the vertical pipe having a long and short leg, the water-inlet pipe J, connected with the long leg between its ends, and the valved vent I, of the horizontal valve G under the open lower end of the short leg, vertical parallel screw-rods H, mounted in bearings on the sides of said short leg and carrying the said valve, pinions H' on the screw-threaded portions of said rods, parallel transverse shafts H⁴, having worms H² meshing into said pinions, bevel-gears H⁵ on said shafts, the operating-shaft H⁷, having bevel-gears H⁶ meshing into the gears H⁵, the gate K at the lower or discharge end of the long leg, and the turbine F, into which said lower end discharges, substantially as set forth.

446,288. STOPPING AND SIGNALING MECHANISM FOR LOCOMOTIVES. JAMES C. GROSS, Scranton, Pa. Filed Sept. 9, 1890. Serial No. 364,430. (No model.)

Claim.—1. The combination, with the cylinder A, having inlet and outlet pipes G H at its lower end, a piston B, closing the adjacent ends of said pipes and provided with a piston-rod D, extending down through the lower end of the cylinder, and the spring C in the cylinder and holding the piston down, of the rod E below and in vertical alignment with the rod D, a cup-like socket on the upper end of rod E receiving the lower end of rod D, but disconnected therefrom, and a spring E', pressing rod E downward, the lower end of the rod E being adapted to be operated by a track projection, substantially as set forth



2. A stopping and signaling mechanism comprising a cylinder having an inlet connected with a fluid-supply, and also provided with an outlet, and a reservoir connected with the said outlet and having a series of pipes connected with mechanism for actuating the engineer's brake-valve, the throttle-valve, and the whistle, and a piston held in the said cylinder and adapted to open and close the said inlet and outlet, substantially as shown and described.

3. A stopping and signaling mechanism comprising a cylinder having an inlet connected with a fluid-supply, and also provided with an outlet, and a reservoir connected with the said outlet and having a series of pipes connected with mechanism for actuating the engineer's brake-valve, the throttle-valve, and the whistle, a piston held in the said cylinder and adapted to open and close the said inlet and outlet, and an auxiliary rail for actuating the said piston, substantially as shown and described.

4. In a stopping and signaling mechanism, the combination, with a cylinder provided with an inlet and connected with a fluid-supply, and also provided with an outlet, of a spring-pressed piston held in the said cylinder and controlling the said inlet and outlet, an auxiliary rail for actuating the said piston to connect the said inlet with the outlet, a fluid-reservoir into which opens the said outlet, and a cylinder connected with the said reservoir and containing a piston connected with the engineer's brake-valve, substantially as shown and described.

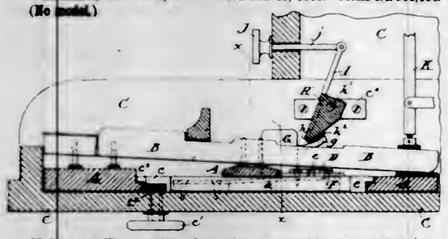
5. In a mechanism of the character described, the combination, with a cylinder provided with an inlet and outlet for the motive fluid, and a spring-seated piston in said cylinder closing said openings and having a piston operated from a track projection, of a second cylinder connected with the outlet of the first-named cylinder, and having a piston provided with a rod and a slotted operating-link to form a loose connection between said rod and the part which it is to operate to permit said part to be also operated independently of said second piston, substantially as set forth.

6. The combination, with a cylinder having an inlet and outlet and a piston or valve operated by a track projection and controlling said inlet and outlet, and a second cylinder having a fluid-operated piston connected with the part to be operated, of a pipe H, connecting said cylinders and having a check-valve H', a fluid-supply pipe G, leading to the first-named cylinder and provided with a valve G', and the pipe G³ connecting pipe G with pipe H' above its check-valve, whereby by closing valve G' and opening valve G³ the fluid may pass directly to the second cylinder to operate its piston, substantially as set forth.

7. In a stopping mechanism, the combination, with a cylinder connected with a fluid-supply, of a piston operating in the said cylin-

der, a piston-rod connected with the said piston, a slotted link connected by a removable pin with the said piston-rod, and an arm adapted to be clamped onto the stem of the engineer's valve and pivotally connected with the said link, substantially as shown and described.

446,289. **TRANSPOSING KEY-BOARD INSTRUMENT.** ANDERS HOLMSTROM, New York, N. Y. Filed Oct. 15, 1890. Serial No. 368,163. (No model.)



Claim.—1. The combination, with a movable transposing key-board, of a latch device comprising an apertured plate on the key-board and a relatively stationary spring-actuated plate having a pin adapted to the apertures of the key-board plate, substantially as described.

2. The combination, with a movable transposing key-board, of a latch device comprising an apertured plate on the key-board, a relatively stationary spring-actuated plate having a pin adapted to the apertures of the key-board plate, and lever and pull-rod connections operating the spring-actuated plate, substantially as described.

3. The combination, with a movable transposing key-board, of a latch device comprising an apertured plate D *d* on the key-board, a re-enforcing apertured plate F *f* on the instrument-frame next the plate D, and a spring-actuated plate E, having a locking-pin *e* adapted to the apertures *d f* of the plates D F, and means for operating the plate E to withdraw its pin *e* from the apertures *d f*, substantially as described.

4. The combination, with a movable transposing key-board, of an apertured plate D *d* thereon, a spring latch-plate E, having a pin *e* adapted to the apertures *d* of the plate D, a stem or arm *g* on the spring plate, and lever and pull-rod connections H I J, actuating the latch, substantially as described.

5. The combination, with a movable transposing key-board, of an adjustable retainer for the keys, substantially as described, whereby the keys will be held against depression at the front and lifting at the rear and the action will be protected from injury as the key-board is adjusted, as set forth.

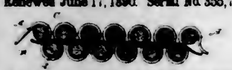
6. The combination, with the movable key-board of a musical instrument, of an adjustable transverse bar ranging along or next the keys and retaining them against depression when adjusted to one position and allowing free depression of the keys when adjusted to another position, substantially as described.

7. The combination, with the movable key-board of a musical instrument, of a transverse rocking retainer bar or plate H, ranging along or next the keys, a rod I on said bar, and a pull key or button J, fitted in the instrument-case and linked to said rod, substantially as described.

8. The combination, with a movable transposing key-board, of a latch device therefor and a retainer preventing depression of the keys, relatively arranged substantially as described, whereby as the retainer is adjusted to hold the keys the key-board will be simultaneously unlatched to allow adjustment of it, as set forth.

9. The combination, with the key-board of a musical instrument, of a latch device D *d* E *e* for the key-board, said latch-plate E *e* carrying a stem *g*, a rocking retainer H for the keys adapted to said stem, and pull connections I J to the retainer, all arranged for operation substantially as described, for the purposes set forth.

446,290. **CARPET.** JOHN W. PRIESTLEY, Philadelphia, Pa. Filed May 29, 1889. Renewed June 17, 1890. Serial No. 355,715. (Specimens.)



Claim.—1. A ribbed woven carpet fabric presenting the same pattern on both faces and having pattern-dyed body-warps, which form the pattern, surrounding party-colored filling-wefts, substantially as described.

2. A double-faced ribbed carpet fabric having the like pattern substantially on both faces, having pattern-dyed body-warps, which form the pattern, and are all of them carried alternately above and below the successive party-colored filling-wefts, substantially as described.

3. A double-faced ribbed carpet fabric having party-colored filling-wefts and pattern-dyed body-warps, the said body-warps, which form the pattern, being carried alternately above and below the successive party-colored filling-wefts, and a binder-warp, substantially as described.

4. A double-faced ribbed carpet fabric having pattern-dyed body-warps, which form the pattern, all of them carried alternately above and below the successive party-colored filling-wefts, and binder-warp passing on the side of each party-colored filling-weft opposite to that on which are the body-warps, substantially as described.

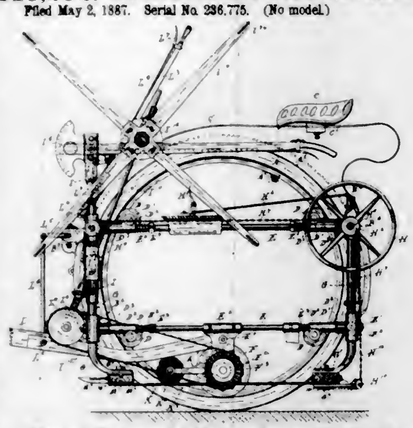
446,291. **WRENCH.** WILLIAM J. PUGH, Muscatine, Iowa. Filed Aug. 9, 1890. Serial No. 361,532. (No model.)



Claim.—1. The wrench having the head containing the nut-clamping jaws and comprising the circular sections provided with opposite circular grooves, one section having a ratchet or toothed peripheral flange of less diameter than said head, and the handle having its shank provided at its lower side edges with flanges and in its outer sides with recesses or grooves and carrying spring-pressed pawls, and the notched ring engaging said pawls, substantially as set forth.

2. The wrench consisting of the sectional circular head having a fixed jaw and in its sections opposite circular grooves, one of said sections having a ratchet or toothed flange of less diameter than said head, the movable or sliding jaw arranged in a slot in the head and worked by a screw having a milled disk or wheel, and the handle carrying spring-pressed pawls and having its shank provided at the lower side edges with flanges and in its outer sides with grooves or recesses, and the notched ring arranged on a cylindrical portion of said shank and engaging the inner ends of said pawls, substantially as specified.

446,292. **HARVESTING-MACHINE.** AMOS RANK, Sr., Salem, Ohio. Filed May 2, 1887. Serial No. 236,775. (No model.)



Claim.—1. In an annular driving and supporting wheel for harvesters, the combination of the series of bent wooden fellies, each felly being in a single piece and bolted or riveted together side by side, as set forth, the central stiffening and trussing flat metal plate-ring inserted

and clamped between the two central fellies, forming an inwardly-projecting flange, and the inside bands of steel or iron, one being placed on each side of the flange, forming a smooth continuous metal track for the friction gear-wheel and the friction-rollers to run on, substantially as shown and described.

2. In an annular driving and supporting wheel for harvesters, the combination of the series of bent wooden fellies, each felly being in a single piece and bolted or riveted together side by side, as set forth, the central stiffening and trussing flat metal plate-ring inserted and clamped between the two central fellies, the inside steel or iron track-bands, one being placed on each side of the flange, and the outside steel or iron tire, substantially as shown and described.

3. In an annular driving and supporting wheel for harvesters, the combination of the series of bent wooden fellies, each felly being in a single piece and bolted or riveted together side by side, as set forth, the central stiffening and trussing flat metal plate-ring inserted and clamped between the two central fellies, the inside steel or iron track-bands, one being placed on each side of the flange, the outside steel or iron tire, and the metal spuds cast on or riveted to the tire, substantially as shown and described.

4. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, and the two-part frictional sustaining-rollers mounted on shafts running in movable bearings arranged on the side bars of said main frame, substantially as shown and described.

5. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the two-part frictional sustaining-rollers mounted in movable bearings arranged on the side bars of said main frame, and the two-part main friction-wheel mounted on a shaft hung in adjustable bearings attached to the lower side bars of said main frame, substantially as shown and described.

6. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the main friction-wheel, and the revolving cleaner made to revolve in the opposite direction to that of the friction-wheel and in advance of the same, substantially as shown and described.

7. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the main friction-wheel, the frictional sustaining-rollers, and the revolving cleaner, substantially as shown and described.

8. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the main friction-wheel mounted on a shaft running in hanger-bearings attached to the lower side bars of said main frame, the frictional sustaining-rollers mounted on a shaft running in movable bearings placed on the side bars of said main frame, and the coiled springs placed on said side bars between the stops and the sliding bearings, substantially as shown and described.

9. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the main friction-wheel, the friction-wheel shaft, the hanger-bearings for the same attached to the lower side bars of said main frame, the revolving cleaner moving in advance of said main friction-wheel, the friction sustaining-rollers, the friction-roller shafts, the movable bearings for the same, the rubber or leather washers back of said bearings, and the coiled springs pressing against said last-named bearings to keep the friction-rollers in constant contact with the inside bands of said driving-wheel, substantially as shown and described.

10. In a harvesting-machine, the combination of the grain-wheel attached to the sliding sleeve moving up and down on the vertical guide, constructed as set forth, and the cranked rod screwed into the sliding sleeve to raise and lower the outer end of the grain-platform independently of the inner end of the same, substantially as shown and described.

11. In a harvesting-machine, the combination of the grain-wheel, the sliding sleeve, the vertical guide, the cranked rod threaded at its forward end and working in the sliding sleeve to wind up the grain-wheel chain, and the locking-sleeve on the rear end of the cranked rod to keep it from turning and to hold the grain-wheel in its adjusted position, substantially as shown and described.

12. In a harvesting-machine, the combination of the hand-wheel and its ratchet, pawl, and treadle, the chains connected with the standards bolted to the inside of the grain-platform, the chain running to the outer end of the grain-platform, the grain-wheel, the grain-wheel slide, the vertical guide, the cranked rod, and the locking-sleeve on said rod, substantially as shown and described.

13. The main frame of a harvesting-machine, consisting of the two cast-metal end pieces conforming somewhat to the form of the driving-wheel at each side thereof and having horizontal sockets cast or cored in each corner of the same and the four horizontal parallel steel or iron side bars threaded at one or both ends and screwed or bolted into the sockets of said end pieces, substantially as shown and described.

14. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged as set forth, the arched steel seat-support having its ends inserted into the sockets of the cast-metal end pieces of the main frame, the adjustable seat mounted thereon, the foot-platform resting upon the upper side bars of the main frame, and the housing covering the top of the driving-wheel, substantially as shown and described.

15. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged as set forth, the hanger-bearings for the main friction-wheel, mounted on or bolted to the lower side bars of the main frame, and the tongue-irons pivoted to the hanger-bearings outside of the wheel at their rear ends and rigidly bolted to the tongue on each side thereof at their forward ends, substantially as shown and described.

16. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged as set forth, the hinged tongue pivoted to the hanger-bearings mounted on the lower side bars of the main frame, and the tilting rock-shaft mounted in ears cast on the front end piece of the main frame, one arm connected by an iron strap with the tongue and the other arm fastened to the lower end of a hand-lever and provided with a suitable ratchet and hand-trigger by means of which the main frame and cutting apparatus may be rocked or tilted, substantially as shown and described.

17. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame, the reel-post mounted on the vertically-adjustable standard bolted at its lower end to the finger-bar, the reel-post brace with its sliding sleeve, and the brace extending from the front vertical standard to the finger-bar, substantially as shown and described.

18. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame, the vertically-adjustable standards, the reel-post, the reel-post brace, the finger-bar, the vertical standard-brace, the hand-lever for moving the reel-post on its pivot, the hand-wheel, and the chains running from the hand-wheel to the standards to raise and lower the standards, and through them the reel-post, substantially as shown and described.

19. In a harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged as set forth and having vertical sockets at the four corners thereof on the grain side of the machine, the adjustable vertical standards working up and down through the sockets and fastened at their lower ends to the finger-bar and adjustable grain-platform, the reel-post pivoted to the front standard, the vibrating hand-lever pivoted at its front end to the top of the reel-post, and the overhanging reel mounted on the reel-shaft running in a pipe-bearing bolted to the hand-lever back of its connection with the post, substantially as shown and described.

20. In a harvesting-machine, the combination of the reel-post pivoted at its lower end to the vertically-adjustable standard, the vibrating hand-lever pivoted to the top of the reel-post, the overhanging reel and reel-shaft mounted on the hand-lever, the reel-post brace, with its sliding sleeve, working on the post, and the standard-brace, substantially as shown and described.

21. In a harvesting-machine, the combination of the reel-post pivoted at its lower end to the vertically-adjustable standard, the vibrating hand-lever pivoted to the top of the reel-post, the overhanging reel and reel-shaft mounted on the hand-lever, the reel-post brace with its sliding sleeve working on the post, the standard-brace, the bell-crank lever mounted on the hand-lever just back of the post, the notched segmental castings and spring-bolts working with the same at the top and bottom of the post, the hand-trigger, and the single wire rod running from the hand-trigger to the bell-crank lever to actuate the bell-crank lever, and through it to release both spring-bolts to adjust the reel, substantially as shown and described.

22. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged as set forth, the main friction-wheel, the friction-wheel shaft running in hanger-bearings adjustably mounted on the lower side bars of the main frame, the bevel-wheel on the inner end of said shaft, the crank-shaft and its hanger-bearings, the bevel-pinion and the clutches

on said shaft connecting with the cutting mechanism and the conveying mechanism, and the long spring-steel shipper-rod connected with the clutches at its lower end and extending to the upper rear part of the main frame alongside of the driver's seat to throw the cutting apparatus in and out of gear, substantially as shown and described.

23. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the adjustable grain-platform, the platform-carrier, the hinged elevator, the binding-platform, and the mechanism for gaveling and binding the grain while passing through said wheel and frame, substantially as shown and described.

24. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the vertically-adjustable grain-platform, the platform-carrier, the hinged elevator, the hinged binding-platform, and the mechanism for raising and lowering the grain-platform and moving the elevator and binding-platform on their hinges at the same time, substantially as shown and described.

25. In a self-binding harvesting-machine, the combination of the annular driving and supporting-wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the adjustable grain-platform, the platform-carrier, the hinged elevator, the hinged binding-platform, the overhanging reel, and the mechanism for adjusting the several parts, substantially as shown and described.

26. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the main friction gear-wheel, the friction-rollers, the vertically-adjustable grain-platform, the platform-carrier, the finger-bar cleaner, the hinged elevator, the binding-platform hinged to move around the gaveling and binding-gearing, the overhanging reel, the mechanism for raising and lowering the grain-platform, the mechanism for adjusting the reel, and the mechanism for rocking or tilting the machine, substantially as shown and described.

27. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the friction-rollers, the friction gear-wheel, the gear-wheel shaft, the bevel gear-wheel on the outer end of said shaft for driving the binding-gear, the lower binding-gear shaft, the bevel-pinion on said shaft, the sprocket-wheel on the front end of said shaft, and the sprocket-chain connecting with and driving the upper binding-gear shaft located immediately under and connected with the hinged binding-platform, said platform extending through the open space in said driving and supporting wheel, substantially as shown and described.

28. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the main friction gear-wheel mounted on the shaft running in movable hanger-bearings on the lower side bars of the main frame, the bevel gear-wheel on the outer end of the gear-wheel shaft, the lower binding-gear shaft, the bevel-pinion and connected clutches on said shaft, and the long spring-steel shipper-rod pivoted to the lower part of the rear end piece of the main frame and its upper end extending up in rear of the binding-platform alongside of the driver's seat to throw the gaveling and binding mechanism into and out of action, substantially as shown and described.

29. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the binding-platform located in the open space in said wheel and being hinged at both ends, so as to be self-adjusting when the cutting apparatus is raised or lowered, and the butter on said binding-platform operated from the upper shaft of the lower elevator, substantially as shown and described

30. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged to surround the wheel, as set forth, so as to provide a wide clear space for the passage of the grain through said wheel and frame, the double-hinged binding-platform, the endless-belt butter, the hinged elevator, the platform-carrier, the finger-bar cleaner, the packers, the discharging-arms, the binding-gear frame, the binder-gearing, and the suspending arms or straps hinged around the upper right-hand side bar of the main frame, substantially as shown and described.

31. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame, the vertically-adjustable grain-platform, the adjustable grain-wheel, the finger-bar cleaner, the platform-carrier, the hinged elevator, the double-hinged binding-platform, the butter, the hinged binding-gear frame, the binder-gearing, the packers, the overhanging reel, the reel-lever, the hand-wheel, the hoisting-chains, the grain-wheel crank-rod, the main friction gear-wheel, the revolving cleaner, the friction-rollers, the coiled springs working therewith, the hinged tongue, the rocking lever, the crank-shaft, the crank-shaft lever, the lower binding-gear shaft, the binding-gear lever, the sprocket-wheels and sprocket-chain for running the binder-gearing, the sprocket-wheels and sprocket-chain for running the carrier-elevator, &c., the driver's adjustable seat, the driver's foot-platform, and the housing covering the top of the main driving-wheel, substantially as shown and described.

32. In a self-binding harvesting-machine, the combination of the pipe-sleeve having the retaining-arms attached thereto mounted on the upper right-hand side bar of the main frame, the binder-gearing, and the hinged arms connecting said pipe-sleeve with the binding-gear frame, substantially as shown and described.

33. In a self-binding harvesting-machine, the combination of the long spring-steel shipper-rods, the clutches on the crank-shaft connecting with the cutting mechanism and the conveying mechanism, and the clutches on the lower binding-gear shaft connecting with the binding mechanism and the racks or ratcheted plates on the upper part of the rear end piece of the main frame, substantially as shown and described.

34. In a self-binding harvesting-machine, the combination of the endless sprocket-chain for driving the platform-carrier, the two elevator-carriers, and the gaveling, binding, and discharging mechanism, the sprocket-wheels driven by the chain, the clutches connecting with the two loose sprocket-wheels, and the long spring-steel shipper-rods arranged and operating to throw the mechanism on both sides of the machine into or out of action, substantially as shown and described.

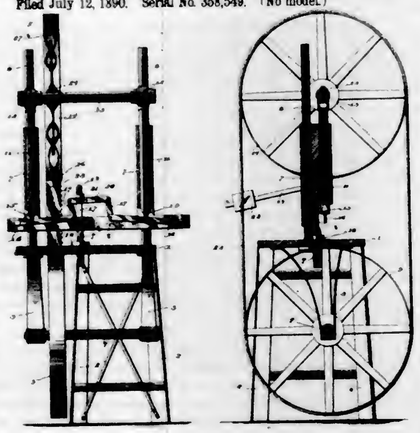
35. In a self-binding harvesting-machine, the combination of the adjustable grain-platform, the endless platform-carrier, the hinged elevator, and the double-hinged binding-table, substantially as shown and described.

36. In a self-binding harvesting-machine, the combination of the adjustable grain-platform, the endless platform-carrier, the finger-bar cleaner, the hinged elevator, and the double-hinged binding-table, substantially as shown and described.

37. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged as set forth, the adjustable grain-platform, the endless platform-carrier, the finger-bar cleaner, the hinged elevator, and the double-hinged binding-table, substantially as shown and described.

38. In a self-binding harvesting-machine, the combination of the annular driving and supporting wheel, the main frame constructed and arranged as set forth, the adjustable grain-platform and cutting apparatus, the overhanging reel, the finger-bar cleaner, the platform-carrier, the hinged elevator, and the double-hinged binding-table, substantially as shown and described.

446,293. BAND-SAW MILL. EPHRAIM S. RICHARDS, Marion, Ind. Filed July 12, 1890. Serial No. 358,549. (No model.)



446,293.



Claim.—1. The band-wheels having spokes provided with elliptical slits or openings at right angles to the axes of said wheels, substantially as and for the purpose set forth.

2. In a band-saw mill, the combination of the platform, the columns or uprights mounted upon the same, the vertically-sliding boxes mounted on said uprights, the rods mounted to slide vertically in said boxes and having hinged bearings at their upper ends, the shafts journaled in said hinged bearings, the levers supporting the vertically-sliding rods, and the links and connecting-rod connecting said supporting-levers with a weighted lever, substantially as and for the purpose set forth.

3. In a band-saw mill, the combination of the base or platform having hangers or brackets and the shaft journaled in the latter, the columns or uprights, the boxes mounted slidingly upon said columns and connected by a bar or brace having a downwardly-extending screw-threaded stem extending through the platform and provided with a check-nut, the rods mounted to slide vertically in said boxes, the levers hinged to the transverse brace and supporting the lower ends of said rods, the links and rods connecting the inner ends of said supporting-levers with a weighted lever, the boxes hinged at the upper ends of the vertically-sliding rods, the shaft journaled in said boxes, the wheels or pulleys mounted upon the upper and lower shafts and having spokes provided with elliptical openings, and the band-saw mounted upon said wheels or pulleys, substantially as and for the purpose set forth.

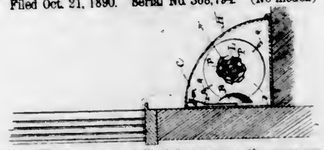
446,294. METHOD OF PREPARING WATER-PROOF MATERIAL. HARRY A. SCHLESINGER, London, England, assignor to Thomas Christy, same place. Filed Aug. 14, 1890. Serial No. 362,008. (Specimens.) Patented in England Sept. 27, 1888, No. 13,917, and in France Oct. 17, 1888, No. 193,601.

Claim.—1. The method of preparing a water-proof material, which consists in first saturating or treating a fibrous fabric with a solution of animal glue or its equivalent; second, rendering the gelatinous matter insoluble; third, washing the treated material, and, fourth, subjecting the treated material to a bath of glycerine, substantially as specified.

2. The method of preparing a water-proof material, which consists in saturating or treating a fibrous fabric with a gelatinous composition of animal glue or its equivalent, glycerine, and a chromic salt, and then drying the material, substantially as specified.

3. A water-proof material consisting of a fibrous fabric saturated with animal glue, glycerine, and a chromic salt, substantially as described.

446,295. FIRE-ESCAPE. FRIEDRICH SCHNELL, Sr., Fort Madison, Iowa. Filed Oct. 21, 1890. Serial No. 368,794. (No model.)



Claim.—1. The herein-described fire-escape, the same comprising a quadri-cylindrical casing C, whose curved face H is hinged thereto, a longitudinal shaft L, journaled in the ends of said casing, a crank K upon one end of said shaft, a ladder connected to said shaft and adapted to be wound thereon, and a cushion Z, connected at one end to and inside said casing and adapted to pass over the window-sill, as and for the purpose set forth.

2. The combination, with a casing, a hinged cover thereto, and a cam carried by said cover, of a bell having a spring-actuated clapper and a lever pivoted to the casing, connected at one end to said clapper and having an enlargement at its other end adapted to be struck by said cam, all as and for the purpose set forth.

3. The combination, with a casing, a shaft journaled therein, a disk on said shaft, clappers projecting from said disk, and a ladder wound on the shaft, of a cover hinged to said casing, a cam on said cover extending into the casing, a spring-actuated clapper pivotally mounted on a base, a bell supported on said base and in line with the clappers on the disk, and a lever pivoted to the casing, connected at one end to said spring-actuated clapper and having an enlargement at its other end standing normally in the path of said cam, all as and for the purpose hereinbefore set forth.

446,296. CENTER-BEARING PLATE FOR CARS. CHARLES T. SCHOEN, Pittsburg, Pa. Filed Dec. 10, 1890. Serial No. 374,236. (No model.)

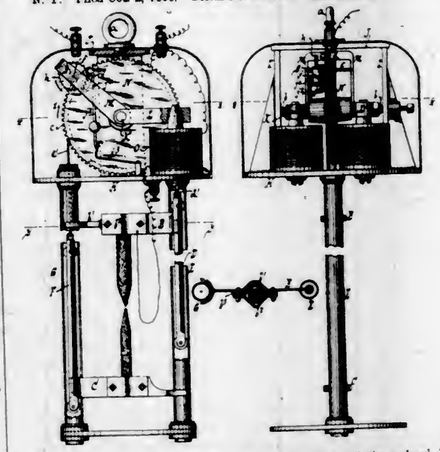


Claim.—1. Center-bearing plates for railway-cars, consisting of an upper or body plate having a flat-ended projection and a lower or truck plate having a flat-bottomed socket constructed with a surrounding annular rib to receive the flat-ended projection, said plates being constructed of plate metal, preferably steel, struck up or pressed to shape, substantially as described.

2. Center-bearing plates for railway-cars, consisting of an upper or body plate having a flat-ended projection and laterally-extended re-enforcing ribs, and a lower or truck plate having a flat-bottomed annular rib to receive the flat-ended projection, said plates being constructed of plate metal, preferably steel, struck up or pressed to shape, substantially as described.

3. Center-bearing plates for railway-cars, one of which is constructed with a flat-ended projection and the other with a flat-bottomed socket constructed with a surrounding annular rib to receive the flat-ended projection, said plates being struck up or pressed from plate metal, preferably steel, substantially as described.

446,297. ELECTRIC-ARC LAMP. CARL J. SCHWARZE, Brooklyn, N. Y. Filed Oct. 2, 1890. Serial No. 366,808. (No model.)

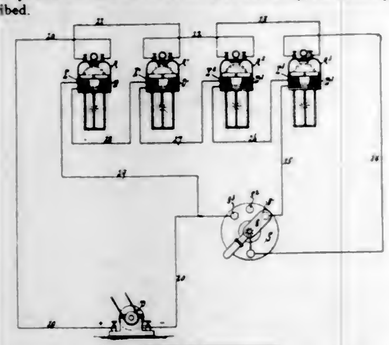


Claim.—In an electric lamp, the combination of the wheel N mounted loosely on the shaft K, the toothed rim c, formed on said wheel, the independent cords d' d^2 engaging opposite sides of the wheel and winding and unwinding in reverse directions, the carbon-holders B C, suspended, respectively, by the said independent cords, the electro-magnet O, the armature-lever L, mounted firmly on the shaft K, the arm or yoke M, extending from the armature-levers and turning with the shaft, the ratchet-wheel h, and pinion g, mounted in said arm or yoke, the anchor j, the pendulum j^3, pivoted to the arm or yoke, the spring j^3, acting to stop the motion of the pendulum when the armature is released from the magnet, and suitable electric connections for the electro-magnet and the carbon-holders, substantially as described.

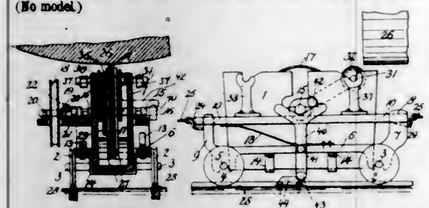
446,298. ARC-LIGHT SYSTEM. CARL J. SCHWARZE, Brooklyn, N. Y. Filed Oct. 9, 1890. Serial No. 367,542. (No model.)

Claim.—1. In an electric-arc lamp, the combination, with the magnet for automatically maintaining the normal arc when the lamp is burning, of an opposing magnet for changing the normal arc of the lamp, a switch for throwing the opposing magnet in and out of the circuit, and suitable connections with a dynamo-machine or other source of electricity, substantially as described.

2. The combination, with a number of lamps connected in series and with the magnets in each lamp for automatically maintaining the normal arcs when the lamps are burning, of opposing magnets for changing the normal arc in each lamp, a switch for throwing all the opposing magnets in or out of the circuit, and suitable connections with a dynamo-machine or other source of electricity, substantially as described.



446,299. APPARATUS FOR PRINTING CARPET-YARNS. WILLIAM SHAW, New York, N. Y. Filed Nov. 3, 1890. Serial No. 370,218. (No model.)



Claim.—1. In an apparatus for printing carpet-yarns, the combination of the drum carrying the yarn, a wheel for applying liquid coloring-matter to such yarn, and a wheel moving over the coloring-matter so deposited and held against the yarn by a spring, substantially as set forth.

2. In an apparatus for printing carpet-yarns, the combination of the drum carrying the yarn, a wheel for applying liquid coloring-matter to such yarn, and a brush connected with the axle of such wheel and held against the coloring-matter deposited on the yarn, substantially as set forth.

3. In an apparatus for printing carpet-yarns, the combination of the drum carrying the yarn, a wheel for applying liquid coloring-matter to such yarn, and a revolving brush-wheel held against the coloring-matter deposited on the yarn and having its axle supported by a frame containing bearings for the axle of the distributing-wheel, substantially as set forth.

4. In an apparatus for printing carpet-yarns, the combination of the drum carrying the yarn, a wheel for applying liquid coloring-matter to such yarn, a box containing such coloring-matter, and a revolving brush-wheel held against the coloring-matter on the yarn and placed within the box containing the coloring-matter, substantially as specified.

5. In an apparatus for printing carpet-yarns, the combination of a drum carrying the yarn, a wheel for applying liquid coloring-matter to such yarn, a box containing such coloring-matter, and a revolving brush-wheel held against the coloring-matter deposited on the yarn, and a blade for freeing such brush-wheel of coloring-matter taken up by it, substantially as set forth.

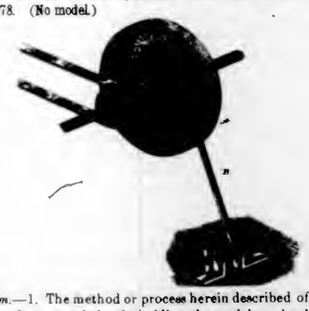
6. In an apparatus for printing carpet-yarns, the combination of a drum carrying the yarn, and a wheel for applying liquid coloring-matter to such yarn, and a wheel for forcing such coloring-matter into the yarn, substantially as set forth.

7. In an apparatus for printing carpet-yarns, the combination of a drum carrying the yarn, a wheel for applying liquid coloring-matter to such yarn, and a wheel for forcing such coloring-matter into the yarn, and having its bearings in a hinged frame for the purpose of placing the latter wheel alternately on opposite sides of the first-named wheel, substantially as set forth.

8. In an apparatus for printing carpet-yarns, the combination of a drum carrying the yarn, a wheel for applying liquid coloring-matter to such yarn, a wheel for forcing such coloring-matter into the yarn, a carriage for guiding said wheels, and axle-bearings for the last-named wheel supported by said carriage and placed forward and backward of the first-named wheel, substantially as set forth.

9. In an apparatus for printing carpet-yarns, the combination of a drum carrying the yarn, a carriage supporting the axle of the distributing-wheel and containing bearings for the axle of a brush-wheel forward and backward of the axle of the distributing-wheel, an arm connecting the axles of the distributing-wheel and of the brush-wheel, a projection, as 42, on such arm, a Y-shaped lever attached to the carriage and engaging such projection, and an abutment, as 44, for tripping such lever and thereby reversing the position of the brush-wheel with reference to the distributing-wheel, substantially as set forth

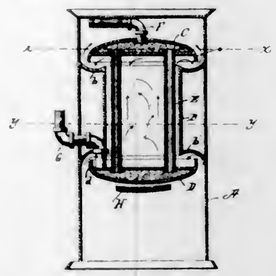
446,300. METHOD OF DECORATING METALLIC SURFACES. ORREN M. SMITH, Philadelphia, Pa. Filed Aug. 21, 1890. Serial No. 362,678. (No model.)



Claim.—1. The method or process herein described of decorating metallic surfaces, consisting in holding the article to be decorated in yielding contact with a revolving indenting-wheel, so that said article is given a vibratory and rotary motion by said indenting-wheel, for the purpose set forth.

2. In combination with an indenting-wheel, a yielding holder adapted to hold an article in contact with the surface of said wheel, so that the article is given a rotary and a vibratory movement, substantially as set forth.

446,301. WATER-HEATER. THOMAS E. SPENCER, Toronto, Canada, assignor to Catherine E. Spencer, same place. Filed June 27, 1890. Serial No. 356,981. (No model.)

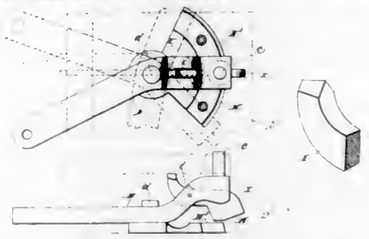


Claim.—1. In a heater for gas-stoves, the combination of an outer casing, upper and lower water-chambers, pipes for connecting the same, and a cylindrical deflector surrounding the connecting-pipes, said deflector connected at its top and bottom within the outer casing, forming a closed annular chamber, substantially as set forth.

2. In a heater for gas-stoves, the combination of an outer casing, upper and lower water-chambers, pipes for connecting the same, and a cylindrical deflector surrounding the connecting-pipes, said deflector provided at its upper and lower ends, respectively, with concave and convex flanges connecting the same with the outer casing, substantially as set forth.

3. In a water-heater for gas-stoves, the combination of an outer casing, an inner deflecting-casing provided at its upper and lower ends with concave and convex flanges respectively connecting the same with the outer casing, upper and lower water-chambers provided with projecting vertical flanges, tubular pipes connecting the same, a flow-pipe fitted to the upper chamber, a supply-pipe entering the lower water-chamber, and a burner, substantially as set forth.

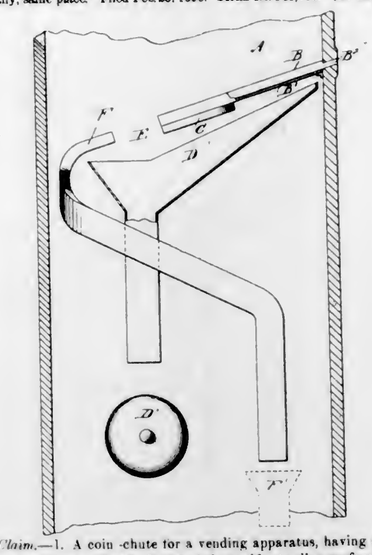
446,302. GATE. ROBERT S. TAYLOR, Zellwood, Fla. Filed Aug. 26, 1890. Serial No. 363,127. (No model.)



Claim.—1. In a gate-operating device, the lower hinge having its eye engaging a pintle formed on a crank-piece or angle-iron pivotally secured to the bed piece or sill, the washer placed beneath said crank-piece or angle-iron, and the gravity-catch engaging or impinging against said washer, substantially as described.

2. In a gate-operating device, the combination, with a trip or lever, of the crank-piece or angle-iron provided with a pintle which engages the eye of the lower gate-hinge, the bracket or washer, and the gravity-catch engaging or impinging against the said bracket or washer, substantially as described.

446,303. COIN-CHUTE FOR VENDING-MACHINES. CHARLES H. THOMPSON, Detroit, Mich., assignor to the Automatic Cigar Seller Company, same place. Filed Feb. 25, 1890. Serial No. 341,718. (No model.)



Claim.—1. A coin-chute for a vending apparatus, having a stationary retarding-surface and a trap below said retarding-surface, substantially as shown and described.

2. A coin-chute having therein a downwardly-diverging slot, substantially as shown and described.

3. A coin-chute having a lead surface and a trap below the lead surface, substantially as and for the purposes set forth.

4. A coin-chute having a soft-metal sliding surface and a trap below the same, substantially as and for the purposes set forth.

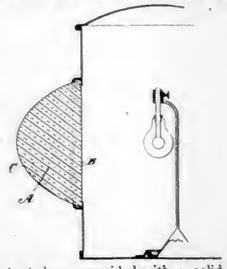
5. The combination, with a coin-chute having therein a trap and a stationary retarding-surface above said trap, of a magnet beneath said retarding-surface, substantially as described.

6. In combination with a coin-chute having therein a trap, a funnel below the trap, and a bell below the discharge-opening of the funnel, substantially as shown and described.

7. In combination with a coin-chute B, having therein a slot B' and the retarding-surface L, the trap E, chute F, funnel D, and bell D', substantially as shown and described.

8. A coin-chute made in two stationary parts with an intervening space, the upper part having its bearing-surface formed of a substance which retards in varying degrees the movement of different metals thereon.

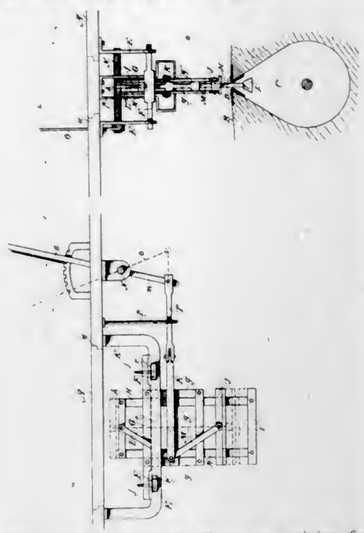
446,304. LENS FOR SIGNAL OR OTHER LAMPS. JAMES THORNE and EBENEZER B. BURR, Loudon, England; said Burr assignor to said Thorne. Original application filed July 2, 1888, Serial No. 278,744. Divided and this application filed Jan. 26, 1889. Serial No. 297,642. (Model.) Patented in England Feb. 12, 1887, No. 2,262; in Belgium Apr. 30, 1888, No. 81,377, and in France June 8, 1888, No. 189,824.



Claim.—1. A lamp provided with a solid lens, one surface of which is flat or plane and the other surface of which is a paraboloid, substantially as described.

2. A lamp having no reflector and provided with a solid lens of plano-parabolic form which will project the light in one approximately parallel beam, substantially as described.

446,305. BRAKE FOR CABLE CARS. JAMES F. WAITE, San Francisco, Cal., assignor of one-half to William Hollis, same place. Filed June 5, 1890. Serial No. 354,387. (No model.)



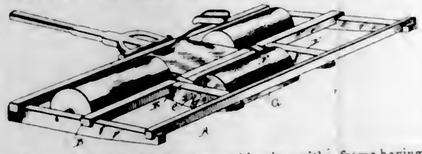
Claim.—1. A brake for cable-railway cars, consisting of a carrying-frame, vertically-movable bars H, mounted in said frame and passing through the tube or tunnel slot, a brake-bar secured to the lower ends of said bars and lying under the slot-rails, an independently vertically-movable brake-bar mounted on the bars H and lying above the slot-rails, and the mechanism for moving the brake-bars toward each other to bind the slot-rails between them and separating them to relieve said rails, consisting of the slide-bar K, the links L, connecting said slide-bar with bars H, and the links M, connecting it with the upper brake-bar, substantially as herein described.

2. A brake for cable-railway cars, consisting of a carrying-frame, vertically-movable bars H, mounted in said frame and passing through the tube or tunnel slot, a brake-bar secured to the lower ends of said bars and lying under the slot-rails, an independently vertically-movable brake-bar mounted on the bars H and lying above the slot-rails, and the mechanism for moving the brakes toward each other to bind the slot-rails between them and separating them to relieve said rails,

consisting of the slide-bar K, the links L, connecting said slide-bar with bars H, and the links M, connecting it with the upper brake-bar, the rock-shaft N, having the operating-lever O and the crank-arm *n*, and the link P, connecting said crank-arm with the slide-bar K, substantially as herein described.

3. A brake for cable-railway cars, consisting of the depending frame E, the longitudinally-sliding hanger mounted in one end of the frame and having a forward-and-back movement, and the longitudinally-sliding hanger mounted at the other end of the frame, the carrying-frame suspended from the hangers, the vertically-movable side bars H, mounted in the frame and having a top bar, said side bars passing down through the tube or tunnel slot, the brake-bar secured to the lower ends of bars H and lying under the slot-rails, the independently vertically-movable brake-bar mounted on the side bars and lying above the slot-rails, and the mechanism for moving the brake-bars toward each other to bind the slot-rails between them and to move them apart to relieve said rails, consisting of the slide-bar K, the links L and M, connecting said bar with the top bar of bars H and with the upper brake-bar, respectively, the rock-shaft N, having the operating-lever O and crank-arm *n*, and the link P, connecting said crank-arm with the slide-bar K, substantially as herein described.

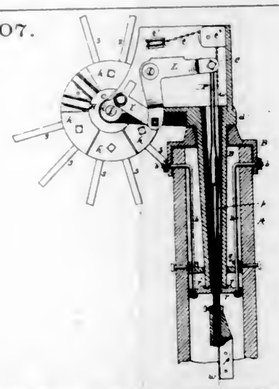
446,306. LAND-ROLLER. WILLIAM R. WALKER, Sabula, Iowa. Filed June 23, 1890. Serial No. 356,460. (No model.)



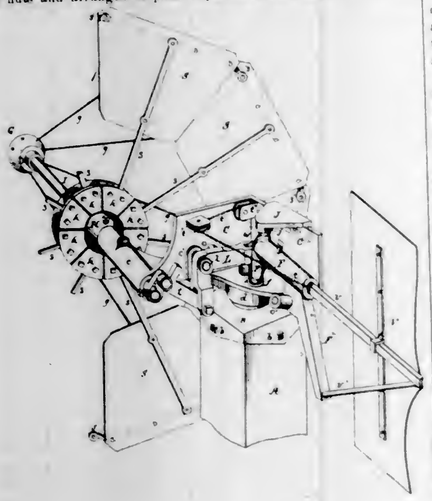
Claim.—1. In a land-roller, the combination, with a frame having bars E formed with vertical guide-slots, of the swinging frame G, hinged at its front to the main frame, and the roller mounted in the said swinging frame and having the ends of its axles extended through the guide-slots of the fixed bars E, substantially as set forth.

2. In a land-roller, the combination of the rigid frame A, B, C, and E, the bars E having the vertical guide-slots *e*, the rollers D, mounted in the front part of said frame, the swinging frame G, hinged at its front within the rigid frame, and the roller F, mounted in the hinged frame and having the ends of its axles extended through the guide-slots *e* of the fixed bars E, substantially as set forth.

446,307. WINDMILL. CHARLES O. WEIDMAN, Montville, Ohio. Filed Nov. 14, 1888. Serial No. 290,359. (No model.)



Claim.—1. The combination, in a windmill, of a head with a depending spindle, a hollow post, a cap having a central opening to hold said spindle, a plate to form a step for said spindle, and bolts bent at substantially a right angle, their ends provided with screw-threads and nuts and arranged to pass, respectively, through said cap and plate to retain said cap on said post, sustain said plate, and regulate its distance below said cap, substantially as shown and described.



2. The combination, with the revoluble head of a windmill having a fixed bearing for the lower end of the vane-pivot, of an adjustable bracket having an under bearing for the upper end of said pivot to regulate its inclination, and means, as a bolt, for uniting said bracket and head, substantially as shown and described.

3. The combination, in a windmill, of a revoluble head with a vertical wall, a bell-crank pivoted on a pin projecting from said wall to communicate motion from the wind-wheel to the pump-rod and having a boss to engage said wall, and a pivoted vane arranged to swing toward said bell-crank, having a buffer to engage said bell-crank and force it toward said wall, substantially as shown and described.

446,308. DUMPING-WAGON. WILLIAM E. WELCH, Bushton, Ill. Filed Nov. 20, 1890. Serial No. 372,025. (No model.)



Claim.—1. The combination, with the running-gear of a wagon constructed substantially as shown, of a body adapted to slide thereon and be inclined so as to dump its load and levers F, pivotally secured to the movable body and provided with knuckle-joints, substantially as set forth.

2. The combination, in a dumping-wagon having a body adapted to slide upon the running-gear and tilt thereon, of pivoted levers secured to the body and provided with hinge-joints for permitting the outward swing of said levers and knuckle-joints below the hinge-joints, substantially as shown, and for the purpose set forth.

3. In combination with the running-gear of a vehicle, a body adapted to slide thereon, levers F, pivotally connected to said body and provided with hinge-joints to permit them to swing outwardly, knuckle-joints near their lower ends, and flexible connections secured to said levers and to the running-gear of the vehicle, substantially as set forth.

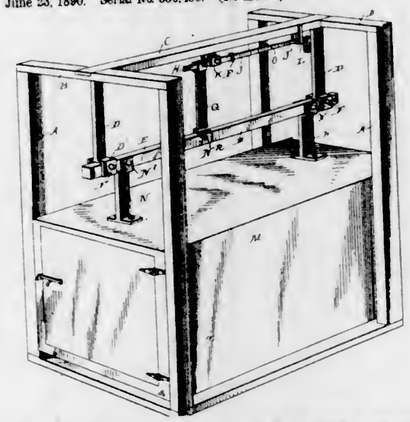
4. The combination, with the running-gear of a vehicle having a body adapted to slide and tilt thereon, of pivoted bars carried by the body, and chains connected to said bars and to the running-gear, said bars having knuckle-joints, substantially as shown.

5. The combination, in a dumping-wagon constructed substantially as shown, of levers F, pivotally secured to the body and provided with knuckle-joints, whereby the body will be moved upon the running-gear when the lower ends of said levers contact with the ground, and chains connecting the levers at or above the knuckle-joints with the running-gear of the vehicle, so that they will bend upon the forward movement of the running-gear when the body is in an inclined position, substantially as shown, and for the purpose set forth.

6. The combination, in a dumping-wagon carrying pivoted levers F, of a flexible connection *h*, attached to one of said levers and passed through guides to the opposite side of the wagon, whereby the pivoted lever to which the flexible connection is attached can be elevated from the opposite side of the wagon, substantially as set forth.

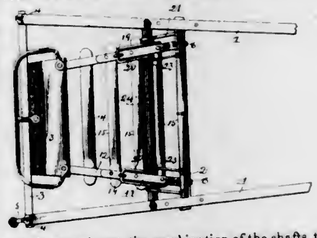
7. The combination, in a dumping-wagon constructed substantially as shown, of the levers F, sliding bar for holding the same in position, and angle-irons for preventing their outward movement when elevated, substantially as and for the purpose set forth.

446,309. WEIGHING-SCALE. JOHN P. WEST, Osgood, Mo. Filed June 23, 1890. Serial No. 356,458. (No model.)



Claim.—The combination, in a scale, of the end posts A, the connecting cross-bars B, the top beam C, supported at its ends on the center of the cross-bars B, and having the hangers D and bearing K, the pivoted supporting-beams E, the pivoted weighing-beam J, the connecting-hanger G, the receptacle M, and its connecting-hangers N, substantially as set forth.

446,310. ROAD-CART. FRED WEYANDT, Jr., Dunmore, Pa. Filed Nov. 6, 1890. Serial No. 370,502. (No model.)

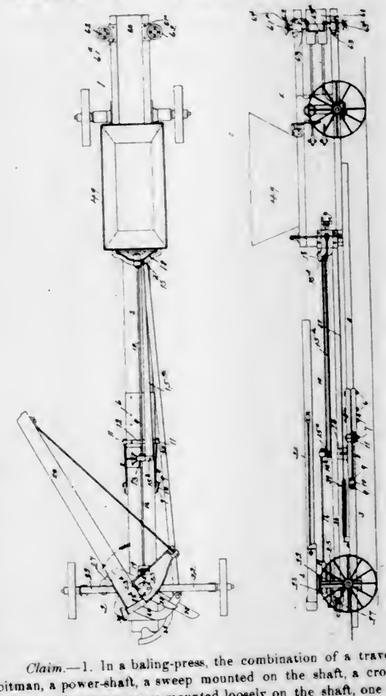


Claim.—1. In a road-cart, the combination of the shafts, the cross-bar 2, connecting the shafts and provided near its end with clips, the side bars 12, carrying the seat and having their forward ends hinged to the clip, the foot-board having its rear end secured to the side bars 12 and the front end hinged to the clips, and the springs coiled around the cross-bar and connected to the side bars 12, substantially as described.

2. In a road-cart, the combination of the shafts, the cross-bar 2, provided with clips having depending ears, the side bars 12, carrying the seat and having their front ends provided with plates, hinged to the rear of said clip, the foot-board having the rear ends of its bars 16 secured to the side bars and hinged to the clips, and the springs, each constructed of a single piece of metal, attached to the side bars and provided with coils and having its ends secured to the cross-bar 2, substantially as described.

3. In a road-cart, the combination of the shafts, the cross-bar 2, the clips arranged near the ends of the cross-bar and provided with depending ears, the coupling-bolts 18, the side bars 12, supporting the seat, the plates secured to the front end of the side bars 12 and having their front ends provided with eyes and hinged to the clips by said coupling-bolts, the foot-board composed of transverse slats, and the bars 16, having their rear ends secured to the side bars 12 and their front ends provided with eyes and secured to the coupling-bolts, the springs, each constructed of a single piece of metal doubled on itself and attached at its bend to the side bars 12, and provided with coils and having its ends secured to the cross-bar, and the bar 24, passing through the coils of the springs and arranged beneath the side bars 12 and secured to the shafts, substantially as described.

446,311. BALING-PRESS. HENRY L. WHITMAN, St. Louis, Mo. Filed Dec. 24, 1889. Serial No. 334,903. (No model.)



Claim.—1. In a baling-press, the combination of a traverser, a pitman, a power-shaft, a sweep mounted on the shaft, a cross-head united to the sweep, arms mounted loosely on the shaft, one of said arms being adapted to bear against the outer end of the pitman, a trip secured to the other of said arms and adapted to be engaged by the cross-head, a pivoted link secured to the pitman and to the frame, and means for operating the trip, whereby the arms are disengaged from the cross-head when the traverser has reached the limit of its inward movement, substantially as specified.

2. In a baling-press, the combination of a traverser, a pitman, a power-shaft, a sweep mounted on the shaft, a cross-head united to the sweep, arms mounted loosely on the shaft, one of said arms being adapted to bear against the outer end of the pitman, a pivoted link secured to the pitman and to the frame, a pivoted and spring-actuated trip mounted on the other of said arms, and a cam for forcing the trip out of engagement with the cross-head, substantially as and for the purpose set forth.

3. In a baling-press, the combination of a traverser, a pitman, a power-shaft, a sweep mounted on the power-shaft, a cross-head united to the sweep, arms mounted on the shaft, one of which is adapted to bear against the outer end of the pitman, a block pivoted to one of the arms and provided with a friction-roller to receive the cross-head, a cam for moving the trip out of engagement with the cross-head, and a link connecting the outer end of the pitman to a pivot located outside of the power-shaft, substantially as and for the purpose set forth.

4. In a baling-press, the combination of a traverser, a pitman, a power-shaft, a sweep located on the power-shaft, a cross-head united to the sweep, arms located on the power-shaft, one of which is adapted to bear against the outer end of the pitman, a trip located on one of the arms, a cam for throwing the trip out of engagement with the cross-head, a pivoted link connected to the outer end of the pitman and to the frame, a track 43, and a roller secured to the link and bearing on the track, substantially as and for the purpose set forth.

5. In a baling-press, the combination of the baling-chamber provided with a traverser, a pitman, a power mechanism for operating the traverser and pitman, and a connection between the baling-chamber and power end of the press, consisting of a sectional beam and a

connecting device for the beam, consisting of the lower plate 4, the upper plate 5, rods 8, a standard 13, and rods 14 and 15, secured to and extending from the standard, substantially as and for the purpose set forth.

6. In a baling-press, the combination of a chamber provided with a feed-hopper, a traverser having a shoulder 51, means for operating the traverser, a hinged flap 46, having a shoulder 50, and a chain 48 between the flap and the outside of the feed-hopper of the press, substantially as and for the purpose set forth.

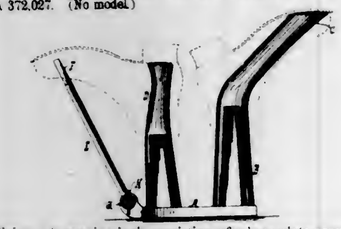
7. In a baling-press, the combination of a baling-chamber, a traverser, friction-blocks 52, pivoted to the press, pivoted rods 54, hinged to the press, and sectional connecting-rod 55, supported on the rods and provided with sleeve 56 and springs 57, substantially as and for the purpose set forth.

8. In a baling-press, the combination of the friction-plates 60, having yokes 63ᵇ, shafts 70, having wheels 62, sleeves on the shafts provided with eccentrics 63, and springs 64, placed between the eccentrics and the plates 60, substantially as and for the purpose set forth.

9. In a baling-press, the combination of the baling-chamber, a power device, a sectional beam for uniting the baling-chamber to the power device, and means for joining the sectional beam, consisting of the lower plate 4, upper plate 5, strap 12, brace-rods 8, and clips 10, substantially as and for the purpose set forth.

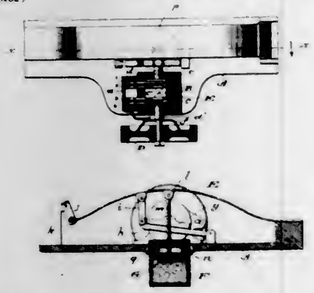
10. In a baling-press, the combination of a traverser, a pitman, a pivoted link 40, connected to the pitman and to the frame, and a power device consisting of an arm 25 and a cross-head and trip for moving the arm, said parts being so arranged that the outer end of the arm will bear against the end of the pitman when the traverser is in its outer position and the point of bearing will approach the center of the arm as the traverser advances, substantially as and for the purpose set forth.

446,312. **PEGGING-JACK.** JOHAN J. WIKLE, West Hoboken, N. J., assignor to John K. Krieg, New York, N. Y. Filed Nov. 20, 1890. Serial No. 372,027. (No model.)



Claim.—A pegging-jack consisting of a base-plate provided with a heel-rest and a projecting ear, a screw-threaded pivot-bolt carried by the ear, a swinging toe-rest having its lower end journaled and turning upon the screw-threaded bolt, and a screw-clamp nut engaging the bolt to clamp the toe-rest immovably between the nut and the ear which carries the pivot-bolt, substantially as described.

446,313. **ELECTRIC SIGNAL SYSTEM FOR RAILROADS.** EDGAR C. WILEY, Bristol, Tenn. Filed Nov. 13, 1890. Serial No. 371,336. (No model.)



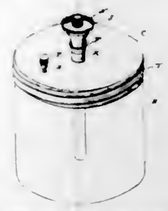
Claim.—1. In a circuit-closing device for railway systems, the combination of the commutator-cylinder and contact-brushes, a block located on one of the journals of said cylinder, a pivoted arm *h* below said block to latch it, and a curved spring connected with said arm *h* and adapted to be depressed by the car-wheel to release said block and permit the cylinder to be turned, substantially as set forth.

2. In a circuit-closing device for electric signals for railroads, the combination, with the commutator-cylinder and contact-brushes, of a block located on one of the journals of the cylinder, a pivoted latch-arm engaging said block and a curved spring connected to said latch-arm, a piston-rod pivotally depending from said spring and connected with a piston in the cylinder containing oil, and a valve *q*, playing loosely on the rod at the upper side of said piston, substantially as set forth.

3. In a circuit-closing device for electric signals for railroads, the combination, with the commutator-cylinder and contact-brushes, of a block located on one of the journals of said cylinder, a pivoted latch-arm engaging said block and a curved spring connected to said latch-arm, a pivotally-suspended dash-pot located below said spring and containing oil, and a piston, together with a piston-rod connected with said piston and pivotally attached to the leaf-spring, substantially as set forth.

4. In a circuit-closing device for electric signals for railroads, the combination of the commutator-cylinder and contact-brushes, a block *g*, located on one of the journals of said cylinder for limiting its rotation, together with a wheel located on the other journal, and a spring-plate *f*, interposed between said wheel and journal to rotate together to the limit of the rotation of the cylinder and thereafter to permit the wheel to slip on the journal, substantially as set forth.

446,314. **EJECTING BOTTLE-CAP.** GEORGE P. YULE, Clinton, Iowa, assignor of one-half to Reed F. Strong, same place. Filed June 5, 1890. Serial No. 354,361. (No model.)



Claim.—1. In a vessel for liquids, the combination, with the body and the cover closing the same and provided with two holes, of the diaphragm inserted between said body and cover, a threaded socket and an air-tube through said diaphragm projecting loosely through said holes, a cap screwed on said tube and having a number of holes through it, a plug for closing the upper end of the air-inlet, and a discharge-tube tube screwed into said socket, substantially as described.

2. In a vessel for liquids, the combination, with the body and the cover closing the same and provided with two holes, of a diaphragm inserted between said body and cover, a threaded socket and an air-tube through said diaphragm projecting loosely through said holes, a cap screwed on said tube for closing the upper end of the air-inlet, and a discharge-tube screwed into said socket and depending into the liquid, substantially as described.

3. In a vessel for liquids, the combination, with the body and the cover closing the same and provided with two holes, of a diaphragm inserted between said body and cover, a threaded socket and an air-tube through said diaphragm projecting loosely through said holes, and a downwardly-extending funnel screwed into said socket and depending into the liquid, the interior of said funnel being tapered, substantially as described.

446,315. **SLEEPING-CAR.** ELBRIDGE G. ALLEN, New Haven, Conn. Filed Sept. 30, 1890. Serial No. 366,640½. (No model.)

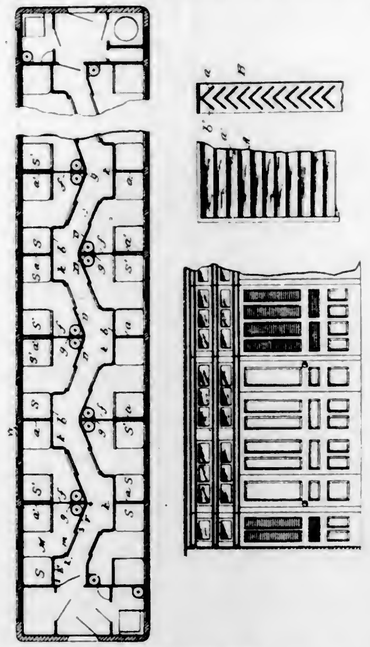
Claim.—1. The double apartment composed of communicating sections, said apartment having oblique walls extending from each end to the center and forming projections and dividing it from the passage, substantially as described.

2. A series of double apartments on one side of a car, having oblique walls extending from the ends of the said apartments to the centers and forming projections, combined with a like series on the opposite side, the projection of the passage-walls of said apartments alternating, substantially as described.

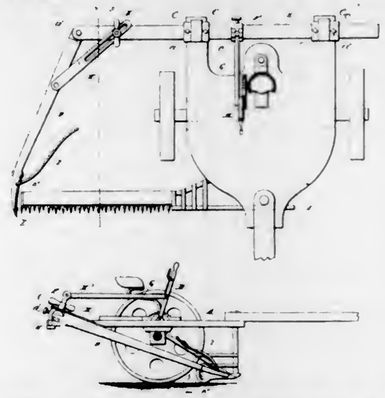
3. In combination, the seats S′ S′, facing in opposite directions and divided by a wall, and seats S S, one facing each of the seats S′ S′, and oblique walls separating said seats from the passage and forming a projection opposite the seats S′ S′, all substantially as described.

4. The double compartments having fixed end walls, oblique passage-walls forming a projection at the junction of the sections of said compartments, and a door between said sections.

5. The double apartments having at their permanently closed or narrow ends the parallel walls and the oblique walls extending from said parallel walls forming a central projection, substantially as described.



446,316. **DIVIDER ATTACHMENT FOR MOWERS.** MARK ANTHONY, San Francisco, Cal. Filed June 21, 1890. Serial No. 356,242. (No model.)



Claim.—1. The combination, with the mower-frame, of the horizontally-adjustable rock-shaft having the adjusting-collars c and the set-screws *d* and the divider-arm pivoted to the said rock-shaft, substantially as specified.

2. The combination, with the mower-frame, of the rock-shaft, the divider-blade, the slotted strap K, the thumb-screw K′, and the handle H and its connections F and G, whereby said divider may be vertically and horizontally adjusted, substantially as specified.

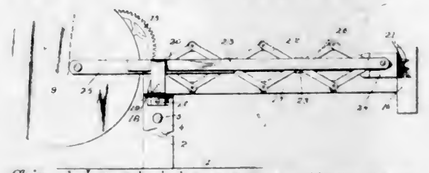
446,317. **SPLIT LINK.** WESLEY E. BAILEY, Detroit, Mich. Filed Oct. 18, 1890. Serial No. 368,539. (No model.)

Claim.—1. The split link having its sections each provided with an opening in one side and on the other side with a reduced axial portion, and obliquely split or beveled toward its ends or said opening, in combination with the transverse coupling or connecting-piece having bearings in or at its ends for said axial portions of the link-sections, substantially as specified.



2. In a split link, the sections thereof axially pivoted together by a transverse coupling having at its ends the oppositely-turned hooks or eyes having bearings for the reduced axial portions of said sections, said sections also having their obliquely split or beveled surfaces provided with interlocking oppositely-beveled lugs and recesses or sockets, substantially as specified.

446,318. **MECHANICAL MOVEMENT.** GEORGE W. BAKER, Colmeneil, Tex. Filed Sept. 20, 1890. Serial No. 365,659. (Model.)



Claim.—1. In a mechanical movement, the combination of an upright, the pivoted support mounted on the upright, the wheel 9, the pitman 25, connected therewith, means for rotating the wheel 9, lazy-tongs connected with said pitman 25, the guide 21 for the lazy-tongs, and the rediprocating carrier operated by said lazy-tongs, substantially as described.

2. In a mechanical movement, the combination of an upright, the pivoted support mounted on the upright and adapted to assume a horizontal or a vertical position, the carrier arranged to reciprocate on the support, and means for reciprocating the carrier, substantially as described.

3. In a mechanical movement, the combination of an upright, the support 4, pivoted to the upright, the wheel 9, means for operating the wheel 9, the lazy-tongs, the pitman connecting the wheel and the lazy-tongs, the guide for the lazy-tongs, and a bracket projecting from the pivoted support 4 and provided with a guide-socket for the reciprocating bar, substantially as described.

4. In a mechanical movement, the combination of an upright, the support 4, pivoted to the upright, the wheel 9, the lazy-tongs, the pitman connecting the lazy-tongs and the wheel, a support for one end of the lazy-tongs, a sliding head at the other end of the lazy-tongs, a guide on which the head slides, and a reciprocating bar secured to the sliding head, substantially as described.

5. In a mechanical movement, the combination of an upright, the pivoted support mounted on the upright, the wheel 9, the lazy-tongs, the pitman connecting the wheel and the lazy-tongs, the sliding blocks at the intersections of the tongs, a sliding head at one end of the lazy-tongs, and a reciprocating bar secured to the sliding head, substantially as described.

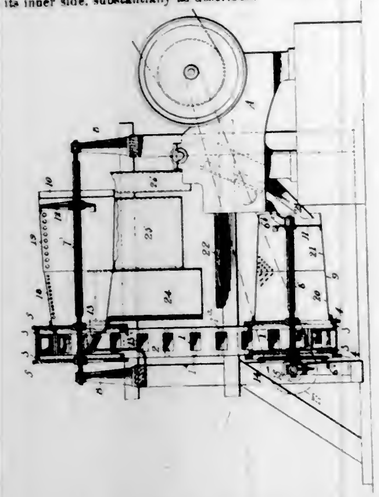
6. In a mechanical movement, the combination of an upright, the pivoted support mounted on the upright, a wheel 9, means for operating the wheel, the lazy-tongs, a pitman connecting the wheel and the lazy-tongs, a bracket from the pivoted support and provided with two extensions, to one of which one end of the lazy-tongs is connected, and a reciprocating bar carried by the other end of the lazy-tongs, the other of said extensions being provided with a socket to receive the said reciprocating bar, substantially as described.

446,319. **ELEVATOR AND SCREEN FOR CRUSHING-MACHINES.** WILLIAM H. BAXTER, Leeds, England. Filed Oct. 14, 1890. Serial No. 368,136. (No model.) Patented in England Dec. 24, 1885, No. 15,837.

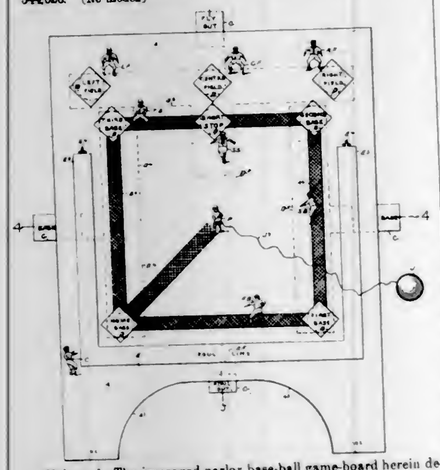
Claim.—1. In combination, the shafts 6 and 7, the pulleys 4, placed at a distance apart on the shaft 6 and having flanges projecting inward, a similar pair of pulleys 5 5 on the shaft 7, a carrier-belt having buckets on its inner side adapted to pass between the pairs of pulleys, and having also the projecting edges extending laterally beyond the buckets and bearing upon the flanges of the pulleys, substantially as described.

2. In combination, a feed-screen on a rotating shaft, a receiving-screen on a separate shaft, and means for conveying the material from the feed-screen to the receiving-screen and for rotating the latter, con-

sisting of pairs of pulleys 4 5 on the screen-shafts, and a belt extending between and engaging the pulleys, said belt having elevating-buckets on its inner side, substantially as described.



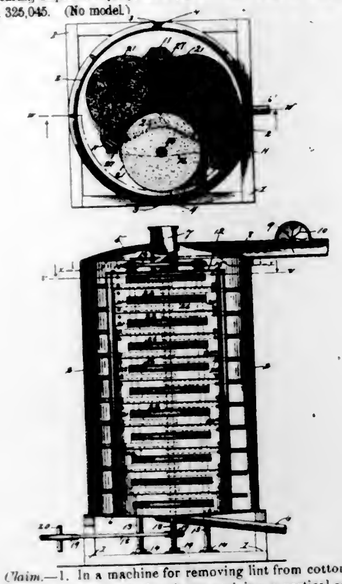
446,320. GAME-BOARD. ADOLPH G. BROWN, New York, and JAMES P. CROSBY, Flatbush, N. Y. Filed Mar. 15, 1890. Serial No. 344,028. (No model.)



Claim.—1. The improved parlor base-ball game-board herein described, the same consisting of a game-board A in representation of a base-ball field, target-blocks D, one at each base and at other determined positions of said field and severally adapted for movement toward and away from the board, in one direction against and in the other with elastic pressure, tablets G, severally held on the board and adapted to be covered and uncovered, and connections of tablets and targets severally adapted for the engagement and disengagement of its tablet and target and for the automatic uncovering of the tablets from a movement of the blocks against the elastic pressure thereon, substantially as described, for the purpose specified.

2. The improved parlor base-ball game-board herein described, the same consisting of a game-board A in representation of a base-ball field, target-blocks D, one at each base and at other determined positions of said field and severally extending through the thickness of the board, flaps severally carrying a target block or blocks and hinged on and held with an elastic pressure against the game-board at its rear side, tablets G, severally held on the board and adapted to be covered and uncovered, and connections of tablets and flaps severally consisting of guideways G^2 for the tablets, engaging and disengaging arms H H^2 on each tablet and each flap, and springs adapted to act on the tablets, all substantially as described, for the purpose specified.

446,321. MACHINE FOR REMOVING LINT FROM COTTON-SEED. OWEN T. BUGG, Newark, N. J., assignor to the American Manufacturing Export Company, same place. Filed Sept. 25, 1889. Serial No. 325,045. (No model.)



Claim.—1. In a machine for removing lint from cotton-seed, the combination, with a vertical casing containing a vertical seed-retaining chamber which is formed with openings or slots in its sides, of a vertical series of overlapping revolving abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

2. In a machine for removing lint from cotton-seed, the combination, with a vertical casing containing a vertical seed-retaining chamber which is substantially triangular in shape and formed with openings or slots in its sides, of a series of vertically and triangularly arranged overlapping abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

3. In a machine for removing lint from cotton-seed, the combination, with a vertical casing and a vertical separately-secured series of ribs mounted therein and formed with openings or slots, of a vertical series of overlapping revolving abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

4. In a machine for removing lint from cotton-seed, the combination, with a vertical casing and a vertical triangularly-arranged series of uprights, of a series of curved and triangularly-arranged ribs secured to said uprights and formed with openings or slots, and a series of vertically and triangularly arranged overlapping abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

5. In a machine for removing lint from cotton-seed, the combination, with a vertical casing, a vertical triangularly-arranged series of uprights, and a triangular securing-plate at their upper ends, of a series of curved and triangularly-arranged ribs secured to said uprights and formed with openings or slots, and a series of vertically and triangularly arranged overlapping abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

6. In a machine for removing lint from cotton-seed, the combination, with a vertical casing and a vertical triangularly-arranged series of uprights, of a series of curved and triangularly-arranged ribs which are removably secured to said uprights and formed with rectangular openings or slots, and a series of vertically and triangularly arranged overlapping abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

7. In a machine for removing lint from cotton-seed, the combination, with a vertical two-part casing, devices for removably securing its parts together, the vertically-arranged uprights, and the curved ribs, of means for removably securing said ribs to said uprights, substantially as described.

8. In a machine for removing lint from cotton-seed, a rectangularly-shaped rib formed with a rectangular opening or slot and curved or bent to an angle, substantially as described.

9. In a machine for removing lint from cotton-seed, a rectangularly-shaped rib formed with a rectangular opening or slot and curved or bent to an angle, in combination with a horizontally-arranged and revolving abrasive disk which projects into said opening or slot, substantially as described.

10. In a machine for removing lint from cotton-seed, the combination, with a vertical casing containing a vertical seed-retaining chamber which is formed with openings or slots in its walls, of a vertical series of overlapping abrasive disks which revolve in said openings or slots, and a suction-fan communicating with the top of said casing, substantially as and for the purpose described.

11. In a machine for removing lint from cotton-seed, the combination, with a vertical casing provided with interiorly-concaved top and bottom plates having, respectively, a hopper and a discharge-pipe, a suction-pipe and fan, and containing a vertical seed-retaining chamber which is formed with openings or slots in its walls, of a vertical series of overlapping abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

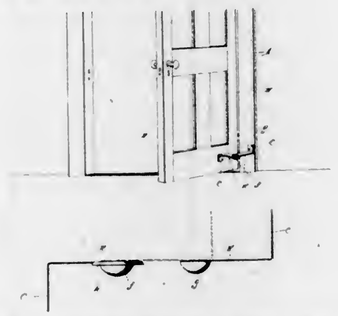
12. In a machine for removing lint from cotton-seed, the combination, with a vertical casing containing a vertical seed-retaining chamber which is formed with openings or slots in its walls, of three triangularly-arranged vertical shafts provided with overlapping abrasive disks which revolve in said openings or slots, and means for revolving said shafts and disks in the same direction, substantially as described.

13. In a machine for removing lint from cotton-seed, the combination, with a vertical casing containing a vertical seed-retaining chamber which is formed with openings or slots in its walls, of three triangularly-arranged vertical shafts provided with overlapping abrasive disks which revolve in said openings or slots, and means for revolving said shafts and disks in the same direction, said means consisting of a power-shaft having its pulley arranged on a line beneath the casing, an endless belt, a pulley upon the lower portion of one of the vertical shafts, three pulleys upon the upper ends of said shafts, and an endless belt connecting the same, substantially as described.

14. In a machine for removing lint from cotton-seed, the combination, with a triangularly-arranged series of ribs formed with rectangular openings or slots and provided near their outer ends with small vertically-arranged plates, of a series of overlapping abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

15. In a machine for removing lint from cotton-seed, the combination, with a casing, uprights secured therein, and a series of triangularly-arranged curved ribs secured to said uprights, formed with rectangular openings or slots and provided near their outer ends with small vertically-arranged plates, of a series of overlapping abrasive disks which revolve in said openings or slots, substantially as and for the purpose described.

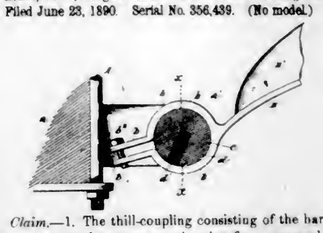
446,322. DOOR-CHECK. LEE E. CALDWELL, Elvaston, Ill. Filed Oct. 18, 1890. Serial No. 368,546. (No model.)



Claim.—1. A door-check comprising two elastic angular pieces of metal secured, respectively, to the door and jamb and provided at their outer meeting extremities with concavo-convex locking ends, substantially as specified.

2. A door-check comprising the angular check-pieces A and B, having perforated bases C and concavo-convex locking ends, one of said ends being provided around its convexity with an annular oval bead or rim *h* for adapting it to receive the convexity of the opposite check-piece B, substantially as shown and described.

446,323. THILL-COUPLING. CLARENCE E. CARPENTER, Horseheads, N. Y., assignor of one-third to John M. Vangorden, same place. Filed June 23, 1890. Serial No. 356,439. (No model.)



Claim.—1. The thill-coupling consisting of the bar having one of its ends bifurcated to serve as a bearing for a recessed cylinder supporting a rectangular cross-bar in said recess, said arms being secured together at their ends by means of a bolt for tightening said arms to compensate wear of the thill, substantially as shown and described.

2. A thill-coupling consisting of the bifurcated draw-bar having inclosed therein the beveled cylinder, said draw-bar having the flanges bent over said cylinder, substantially as shown and described.

3. The thill-coupling consisting of the bifurcated draw-bar having inclosed therein the beveled end cylinder, over which ends flanges of the draw-bar are bent, said cylinder being slotted or recessed for reception of a rectangular cross-bar, substantially as shown and described.

446,324. COMBINED NUT AND PIPE WRENCH. DANIEL H. CARPENTER, Orlando, Fla. Filed Oct. 7, 1890. Serial No. 367,359. (No model.)



Claim.—1. A wrench having a jaw provided with a transverse notch or groove having a salient edge to bite and engage the surface of an object to be moved, combined with an opposing rest which is eccentric relatively to the jaw and between which and the said jaw the object is grasped, substantially as described.

2. A wrench having a jaw provided with a transverse notch or groove of sufficient size and depth to receive within itself an angle or corner of an object to be moved and having its salient edges in engagement with the sides of such angle or corner at a considerable distance from it, combined with a rest for an opposed side of such object, substantially as described.

3. A wrench having a fixed jaw provided with a transverse notch or groove, combined with an adjustable eccentric in an opposing jaw or rest, substantially as described.

4. A wrench having a fixed jaw provided with a transverse notch or groove, combined with an opposing movable jaw comprising a cam having a mutilated pinion which engages a toothed rack on the bar of the fixed jaw, substantially as described.

5. A wrench having a fixed jaw provided with a toothed rack, combined with a movable jaw constructed with a cam which has a mutilated pinion to engage said toothed rack, substantially as described.

6. In a wrench, a movable jaw having a cam, a spring to return it to operative position, a mutilated pinion, and a yoke supporting the cam and its appurtenances, combined with a toothed rack on the wrench-bar, substantially as described.

7. In a wrench, a jaw freely fitted to the wrench-bar and having movement lengthwise of the wrench-bar, and provided with a gripping-surface, such as a cam, moving with the jaw, and also having an independent movement, by means of which it may be engaged with and disengaged from the object being acted upon and at the same time move the jaw bodily toward and from the said object, substantially as described.

446,325. GATE. FRANCIS C. CASH, Lynn, Mass., assignor of one-half to Charles B. Lord, same place. Filed Apr. 2, 1890. Serial No. 346,255. (No model.)

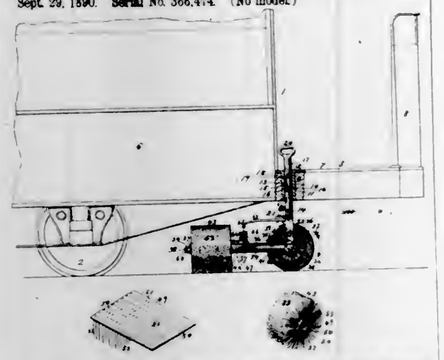
Claim.—1. A railway-gate consisting of a main section pivoted on a standard or post, an extension-arm hinged to the end of the main section, and an operating-connection extending between the standard or post and the outer end of the extension-arm, whereby the power

required to extend the arm is reduced to a minimum and the whole strengthened and sustained longitudinally, substantially as described



2. A railway-gate consisting of a main section pivoted in a standard or post, an extension-arm hinged at the lower edge of its inner end to the lower edge of the outer end of the main section with ends abutting when the gate is extended, and an operating-connection extending between the standard and the outer end of the extension-arm, the abutting faces of the two sections above the hinge sustaining the sections against lateral strain, while the operating connection extending to the outer end of the arm sustains said arm longitudinally, substantially as described.

446,326. OSCILLATING CAR-TRACK CLEANER. JOSEPH E. CHAMBERS, St. Louis, Mo., assignor, by direct and mesne assignments, to the St. Louis Car Track Cleaner Company, East St. Louis, Ill. Filed Sept. 29, 1890. Serial No. 366,474. (No model.)



Claim.—1. In a track-cleaner for railways, a drag-frame secured to the foremost end of the car in front of the wheels, and the rotary brush mounted on said frame, substantially as and for the purpose set forth.

2. In a track-cleaner for railways, the combination of the traveler-wheel 22, the bevel-gear drive operated by said traveler-wheel, and the rotary brush driven thereby, substantially as and for the purpose set forth.

3. In a track-cleaner for railways, the combination of the pendent pivoted splice-shaft, the journal-bearing frame carried by said splice-shaft, the traveler-wheel whose journal runs in said bearing-frame, the bifurcated drag-frame having bearings on said journal, the brush-shaft having bearings in said drag-frame, the rotary brush on said shaft, and the bevel-gear drive-connection that carries the movement from the traveler-wheel to the rotary brush, substantially as and for the purpose set forth.

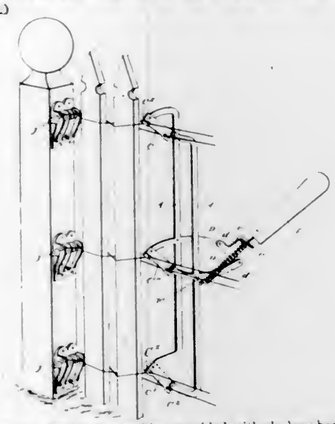
4. In a track-cleaner for railways, the combination of the traveler-wheel, the sectional pivoted splice-shaft, the journal-bearing frame carried by said splice-shaft, the journal of said traveler-wheel that said splice-shaft carries, the bifurcated drag-frame having bearings on the journal of said traveler-wheel, the brush-shaft 38, having bearings in said drag-frame, the rotary brush mounted on said shaft, and the ratchet-faced collars 44 and 57 that lock the attachment of the brush to its mount on the shaft 38, substantially as and for the purpose set forth.

5. In a track-cleaner, the combination of the tube-socket 10, embedded in the front platform of a car, the lower section 14 of the operating splice-shaft, having the center tongue 15, the upper section 17 of the said operating-shaft having the bifurcated tongues 16, the pins that pivotally connect said tongues together, the journal-bearing frame that said sectional shaft carries, the traveler-wheel and its journal carried by said journal-bearer frame, the bifurcated drag-frame having bearings on the journal of said traveler-wheel, the brush-shaft and rotary brush mounted thereon, carried by said drag-frame, and the bevel drive-gear that transfers movement from said traveler-wheel journal to said brush-shaft, the said sectional splice-shaft being arranged to be elevated in said socket-tube and bend over at its splice-joint to lock the brush and traveler-wheel at their elevation out of operative position, and to be straightened at said joint and lowered through said socket-tube to bring said brush and wheel into their operative position, substantially as and for the purpose set forth.

6. In a track-cleaner, the combination of the tubular socket 10, the pivoted operating splice-shaft that works in said socket, the bearing-frame suspended from said shaft, the traveler-wheel whose journal works in said frame, the bifurcated drag-frame 34, the rotary brush 43, carried by said frame, the said combined elements being arranged to oscillate and turn around to reverse position of the brush immediately on the reverse movement of the cars, substantially as and for the purpose set forth.

7. In a track-cleaner for railways, the combination of the tubular socket 10, the pivoted operating splice-shaft that works in said socket, the bearing-frame suspended from said shaft, the traveler-wheel whose journal works in said frame, the drag-frame 34, the rotary brush 43, carried by said frame, the spring-bearer straps 61 and 62, that project rearward from the crotch of the bearer-frame, and the spiral spring 64, that connects from said strap 62 to said drag-frame, substantially as and for the purpose set forth.

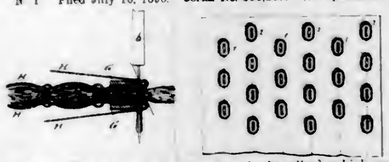
446,327. FENCE-MACHINE. GEORGE J. CLINE and JOSEPH R. DETWILER, Goshen, Ind. Filed Oct. 23, 1890. Serial No. 369,082. (No model.)



Claim.—1. The fence-machine provided with the bars having the curved arms, the slotted crossers pivoted at their ends to the ends of said arms, and the hand-lever having the ends of its cross-bar pivoted to additional arms at about the middle of said bars, substantially as set forth.

2. The fence-machine provided with the bars having the curved arms, the slotted crossers pivoted at their ends to the ends of said arms, the hand-lever having the ends of its cross-bar pivoted to additional arms at about the middle of said bars, and the spring connected to said lever and one of said bars, substantially as set forth.

446,328. METHOD OF QUILTING. DAVID H. COLES, Brooklyn, N. Y. Filed July 10, 1890. Serial No. 358,255. (No specimens.)



Claim.—The method of quilting herein described, which consists in feeding two cloths or fabrics to a meeting-point, doubling each of said cloths or fabrics over upon itself, doubling or looping one of the stitch-forming threads and passing said doubled-thread through the bights of the fabrics, then passing a second stitch-forming thread through the loop of the first-mentioned thread, and then drawing a single strand of each of the stitch-forming threads in between the fabrics along the intervals between the stitches, so as to entirely conceal the threads along said intervals, substantially as described.

446,329. LAWN-MOWER. HENRY H. DILLE and ELWOOD W. MCGUIRE, Richmond, Ind., assignors to the Dille & McGuire Manufacturing Company, same place. Filed Feb. 20, 1888. Serial No. 264,554. (No model.)



Claim.—1. In a lawn-mower, the main frame, including all the parts for holding the side plates in place, made in one piece and carrying the stationary cutter, in combination with the side plates, and adjustable connections between such plates and the frame, whereby the frame sides and plates are firmly fastened together, substantially as and for the purpose specified.

2. In combination with the side plates, the revolving cutter and the shaft thereof supported from the side plates, the main frame, including all the frame parts for joining and holding the plates, the cutter on the frame, and adjustable connections between the side plates and frame, adapted to connect the plates and frame sides firmly together, while allowing the frame to be adjusted to regulate the position of the cutter thereon with relation to the revolving cutter, substantially as and for the purpose shown.

3. In combination with the two side plates and the main frame for connecting them, pivoted to the plates, bolts for connecting the plates with the frame sides, passing through enlarged holes in such sides, and other bolts extending from the frame sides out through slots in the side plates, substantially as and for the purpose specified.

4. In combination with the side plates, the rotary cutter, and the shaft thereof, journaled on the side plates, the main frame consisting of the front and rear bars and the two side bars rigidly connecting the ends of the other bars, pivotal connections between the side bars and the side plates, and bolt-and-slot connections between the side bars and plates, adapted to fasten the side bars to the respective side plates, while allowing adjustment of the main frame on its pivots and the stationary cutter on the frame, substantially as and for the purpose shown.

5. In combination with the side plates and the main frame, consisting of the front and rear and the two side bars rigidly connected together, pivotal connections between the side bars and side plates, bolts on the side bars at points between the ends of such bars engaging slots in the side plates, nuts on said bolts, the rotary cutter having its shaft journaled in the side plates, and the stationary cutter carried by the frame, substantially as and for the purpose set forth.

6. In combination with the side plates and the main frame, consisting of the forward and rear bars and the two side bars rigidly connected with the other bars, pivoted connections between the side bars of the frame and the side plates, bolt-and-slot connections connecting each side bar at two points with the side plates, so that the frame can be adjusted on its pivot and fixed at any adjustment, the stationary cutter on the frame, and the rotary cutter having its shaft journaled on the side plates, substantially as and for the purpose described.

7. In combination with the side plates and the frame, screws tapped through portions of the side plates and oppositely-inclined bearing-surfaces on opposite sides of the frame engaged by the screw, substantially as and for the purpose specified.

8. In combination with the side plates and the frame, screws tapped through portions of the opposite sides of the frame and a bearing-surface on each side plate, such bearing-surfaces being inclined in opposite directions and engaged by the screws on the frame sides, substantially as and for the purpose shown.

9. In combination with the side plates and the cutter-carrying frame, adjusting-screws on the side plates and the cutter-carrying frame and inclined bearing-surfaces on the frame and the side plates respectively engaged by the screws, so as to hold the frame sides and side plates together, the bearing-surface on each plate being inclined in the same direction as the adjoining bearing-surface on the frame, substantially as and for the purpose set forth.

10. In combination with the cutter-carrying frame and the side plates, inwardly-inclined bearing-surfaces on the frame and plates, the adjusting-screws on the side plates engaging the inwardly-inclined surfaces on the frame, and the screws on the frame engaging the inwardly-inclined bearing-surfaces on the side plates, substantially as and for the purpose described.

11. In combination with the side plates and the main frame pivoted thereto, bolt-and-slot connections between the frame and the plates to allow relative adjustment of the same on their pivotal connections, set-screws on the side plates and frame sides, and inwardly-inclined bearing-surfaces on the plates and frame sides engaged by the screws on the frame sides and plates, respectively, substantially as and for the purpose specified.

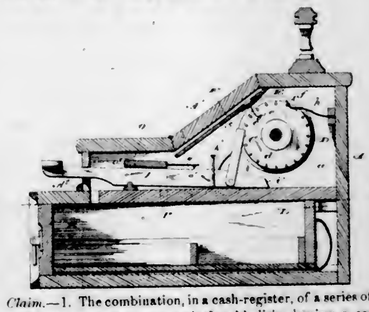
12. In a lawn-mower, in combination with the frame carrying the cutter, the revolving cutter, and the side plates carrying the revolving cutter-shaft and attached to the frame sides by attachment allowing of adjustment of the frame to raise and lower the cutter thereon, screws tapped down through portions of the side plates, inclined bearing-surfaces on the frame sides engaged by such screws, screws tapped down through portions of the frame sides, and bearing-surfaces on the side plates inclined in the same direction as the bearing-surfaces on the frame sides and engaged by the screws on such side, substantially as and for the purpose shown.

13. In combination with the rotary shaft and the journal-bearing therefor, a clearer in contact with a portion only of the shaft's circumference and engaging the shaft-surface next to the bearing, substantially as and for the purpose specified.

14. In combination with the rotary shaft and the journal-bearing therefor, the clearer consisting of a projection on the bearing in contact with a portion only of the shaft's circumference and engaging the shaft-surface from the bearing outward, substantially as and for the purpose shown.

15. As a means for preventing the collection of grass and dirt on the cutter-shaft of a lawn-mower near its bearing, in combination with the cutter-shaft and the journal-bearing therefor, the shaft-clearer consisting of a stationary piece situated at one side of the bearing and concaved to fit the shaft closely and of such size as to extend only partly around the same, substantially as and for the purpose specified.

446,330. CASH-REGISTER. CLINTON H. DRURY, Hartford, Ohio. Filed May 27, 1890. Serial No. 353,300. (No model.)



Claim.—1. The combination, in a cash-register, of a series of disks mounted loosely upon a common shaft, said disks having a series of lateral pins corresponding as to numbers with numerals on the periphery of the disk, radial pins adapted to engage with star-wheels for registering the number of rotations of the disks, and keys and pawls for operating the disks one step on each depression of the key, substantially as set forth.

2. The combination, in a cash register or recording apparatus, of

a series of disks loosely mounted on a common shaft and provided with a series of laterally-projecting pins corresponding with the numerals on the face of the disks, pivoted keys carrying pawls which engage with the lateral pins for moving the disks forward, and springs *h* for holding the same against backward movement, substantially as set forth.

3. The combination, in a cash register or recorder, of a casing A, having a shaft, a series of disks mounted on said shaft, intermediate blocks carried by said shaft, a series of laterally-projecting pins fixed upon said disks, pawls adapted to engage therewith and pivoted to the inner ends of the keys, means for operating the disks when the keys are depressed, and guide for preventing the lateral movement of the keys, substantially as set forth.

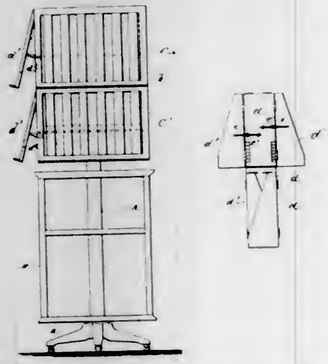
4. The combination, in a cash-register having a series of disks, operating-keys, and radial pins *f*, of a board sustained above the disks and having openings through which the numerals on the periphery of the disks will be visible, and five-pointed star-wheels E, pivoted to the board F adjacent to the openings therein, so that said star-wheels will be rotated one point upon each rotation of the disks, substantially as set forth.

5. The combination, in a cash-register, of a drawer provided on its rear end with a bell, a spring bell-hammer the end of which projects below the lower edge of the drawer, a bail for preventing a rearward movement of said bell-hammer, and an inclined block *l*, secured to the frame so that the bell-hammer will engage therewith, substantially as shown, and for the purpose set forth.

6. The combination, in a cash-register, of numbered disks, horizontal pivoted keys carrying pawls to actuate said disks, drawer and ejecting-spring, together with a transverse pivoted board above said keys in the rear of their fulcrum and having limiting-spring *o* engaging stop *o'*, together with arm P, depending from board O and engaging a recess in the drawer, substantially as set forth.

7. The combination, in a cash-register having disks with laterally-projecting pins *e*, of a key carrying a pawl *i*, which engages with said pins to move the disks one point when the exposed end of key is depressed, the inner ends of said keys extending beneath said disks and their pins and being beveled to contact with the laterally-projecting pins and serve as a lock to prevent further rotation of the disks, substantially as set forth.

446,331. ADJUSTABLE BOOK-STAND. AUGUST H. EDGREN, Lincoln, Nebr. Filed Aug. 25, 1890. Serial No. 362,932. (No model.)



Claim.—The book-rack comprising the central upright or standard, the lower book-case B and the upper frame *b*, revoluble on said standard, the racks C, hinged to opposite sides of the upper end of said upper frame, the racks C', hinged to opposite sides of its intermediate portion, the racks *d*, hinged to the ends thereof, the vertically-sliding extensions C^3, connected to the racks C, the side wings or extensions hinged to the sides of the rack *d* and adapted to close against the sides thereof and engaged by supporting-bolts projecting therefrom, and the props *c* and d^2 for supporting, respectively, the racks C C' and *d*, substantially as specified.

446,332. ROLL-PAPER HOLDER AND CUTTER. LEO EHRLICH, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed June 30, 1888. Serial No. 278,609. (No model.)

Claim.—The combination of a suitable support, a roll of paper, inclined arms, and a sliding perforated knife fitting on the arms, substantially as and for the purpose set forth.

446,332.



446,333. TOY GUN. CHARLES A. ELLIS, East Gloucester, Mass. assignor of one-half to Ozro F. Dagle, same place. Filed Sept. 24, 1890. Serial No. 366,033. (No model.)



Claim.—1. The combination, in a toy gun or pistol, of a spring-actuated sliding block, a pivoted trigger with which said block engages, and a missile-retainer pivotally secured to the front portion of the stock in advance of the sliding block when retracted, substantially as set forth.

2. In a toy gun or pistol, the combination of the slotted stock, a spring-actuated sliding block adapted to be held retracted by a trigger, a missile-retainer pivoted to the stock, as shown, and provided with a depending portion with which a spring for actuating the sliding block engages, and a spring secured to the missile-retainer to move the same in an opposite direction from that moved by the spring which actuates the sliding block, for the purpose set forth.

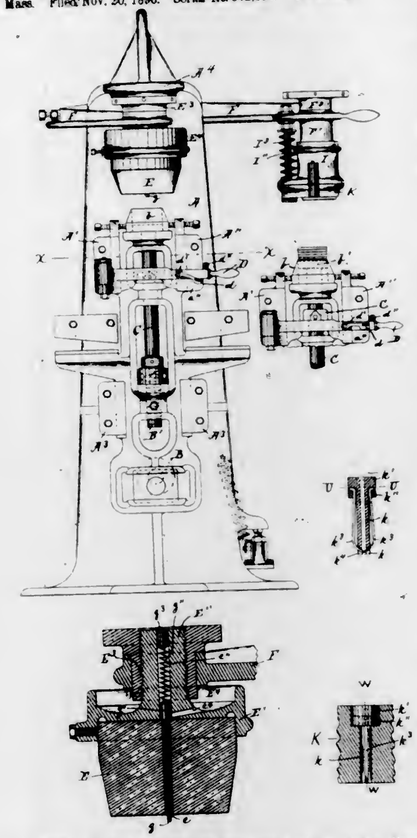
3. The combination, in a toy gun, of the stock and handle, a missile-retainer pivoted to the stock, an elastic band connected with the stock and with said retainer, and a projector-block operated by said strip and having a hammer *p*, together with a cap-anvil, located on the forward portion of the stock adjacent to the retainer, substantially as set forth.

4. The combination, in a toy gun or pistol, of a stock having a longitudinal slot, a block secured movably therein, said block being provided with a forwardly-projecting rod, a depending catch for engagement with the trigger, an upwardly-extended portion for retracting the block, and a trigger pivoted to the stock and provided with portions *u* and *v*, with which the catch portion of the block engages for the purpose of setting the trigger and retaining the block.

5. The combination, in a toy gun, of the slotted stock having an upper anvil provided with lower longitudinal perforation, a projector-block sliding in said slot and having forwardly-extending rod *m* and hammer *p*, and a rear trigger-engaging portion, together with a trigger and projecting means, substantially as set forth.

6. The combination, in a toy gun, of the sliding block having hammer *p* and its projecting means, of an anvil having vertical slot to form members *n o*, the latter having a longitudinal perforation for the passage of the hammer, substantially as set forth.

446,334. HEEL-MAKING MACHINE. WILLIAM J. FAHNLEY and EUGENE H. TAYLOR, Lynn, assignors to John Q. A. Whittemore, Boston, Mass. Filed Nov. 20, 1890. Serial No. 372,057. (No model.)



Claim.—1. In a heel-making machine, a reciprocating die-carrier and heel-die, and a heel-extractor rod adapted to pass through the latter and having a collar or projection, combined with a movable gate or lever adapted to arrest the downward motion of the said extractor-rod when the heel is being expelled from the heel-die, substantially as described.

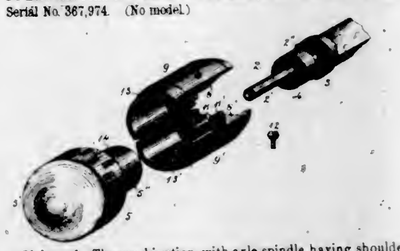
2. In a heel-making machine, a reciprocating die-carrier and heel-die secured to it, and a heel-extractor rod carried by said carrier and adapted to move upward independently of the latter and having a collar or projection, combined with a pivoted gate or lever having a latch or locking device for normally holding it out of operative position, and a spring for moving it into operative position when released, substantially as specified.

3. In a heel-making machine, the herein-described pasting device, consisting of a vertically-perforated cutter-block having secured to its upper end a paste-receptacle, and a channel connecting the latter with the cutter-block perforation, combined with a valve for closing the paste-delivery, said valve having a stem extending through the cutter-block perforation and adapted to be raised by the heel-lifts as they are being died out, substantially as and for the purpose set forth.

4. In a heel-making machine, a reciprocating nail-die combined with the nailing device, as described, consisting of a spindle or support carrying a driver-block having the rigidly-secured drivers *h h' h'*, a vertically-yielding sleeve or guide I, and the pivoted loader K, having a series of nail-tubes provided with the yielding nail-loaders k^3 k^3, substantially as and for the purpose set forth.

5. In a heel-making machine, the combination, with a spindle or support carrying a driver-block having nail-drivers, of a vertically-yielding sleeve or guide I, a loader K, yielding with the sleeve or guide, a driver-tube *k*, having notches or recesses k^4 k^4 at its lower end, the annular rest-ring k'', and the laterally-yielding spring-dies k^3 k^3, secured in their upper ends to said ring k'' and having their lower ends adapted to project through said recesses k^4, substantially as and for the purpose set forth.

446,335. DEVICE FOR SECURING WHEELS TO AXLES. LAFAYETTE FARIS, Pricetown, Ohio, assignor of one-half to Thomas W. De Hass and John H. Gossett, both of same place. Filed Oct. 13, 1890. Serial No. 367,974. (No model.)



Claim.—1. The combination, with axle-spindle having shoulder 3 and collar 4, of hub 5, having sockets 14, the two-part hinged clamping-shell 9 9' 10, having the semi-annular interior flanges 8 8', that engage between said shoulder and collar of the spindle, lugs 13 13', that engage in sockets 14 14' in the hub, and a fastening screw or bolt 12.

2. The combination, with the hinged two-part fastening-clamp 9 9' 10, of the fastening-screw 12, which penetrates the hub proper, as set forth.

3. The combination, with collared axle-spindle and socketed hub, of the two-part hinged clamping-shell having the spring 15, as and for the purpose stated.

446,336. MATCH-BOX AND HOLDING-FRAME THEREFOR. JOSEPH FORSHAW, St. Louis, Mo. Filed Aug. 5, 1889. Serial No. 319,813. (No model.)



Claim.—1. In a match-box holder, the combination of a rear end frame 1, having opening 2, front end frame 3, having opening 4, and angle-strips 5, connecting the corners of said frames with an inclosed match-box 6, having the sliding tray 7, substantially as and for the purposes described.

2. In a match-box holder, the combination of a rear end frame 1, having opening 2, front end frame 3, having opening 4, angle-strips 5, connecting the corners of said frames, and ignition material located in the side of said holder intermediate the angle-strips, substantially as and for the purposes described.

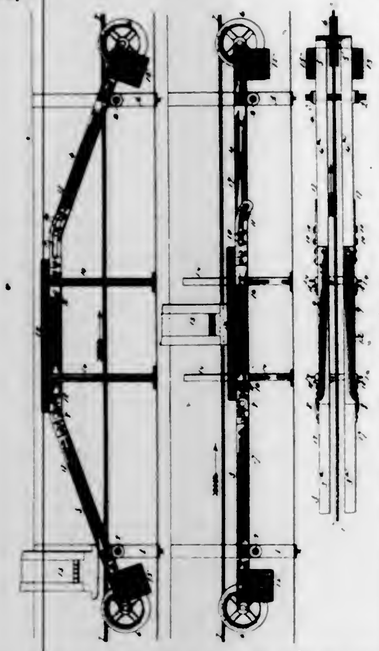
3. A match-box holder of skeleton form, consisting of two end frames corresponding to the cross-section of the box to be protected, and angle-strips connecting the corners of said frames, one of said end frames having inwardly-projecting flanges, substantially as and for the purposes described.

446,337. AUTOMATIC CABLE-LIFTER. JOHN B. FRENCH, St. Louis, Mo. Filed Oct. 27, 1890. Serial No. 369,476. (No model.)

Claim.—1. The combination, in a device for lifting cables, of the two levers 3 and 4, each bearing a grooved pulley 6 at one end and at the other end connected to the horizontal bars 9, substantially as set forth

2. The combination, in a device for lifting cables, of the two levers 3 and 4, each bearing a grooved pulley 6 at one end, and the bars 9, hinged at one end to the lever 3 and having slip-joint connection at the other end with the lever 4, substantially as set forth.

3. The combination, in a device for lifting cables, of the two levers 3 and 4, and the bars 9, hinged at 8 to the lever 3, carrying at one end the pulley 6 and connected at the other end to the lever 4 by parts having slots 11 and by studs 10 on the bars 9 and lever 4, respectively.



4. The combination, in a device for lifting cables and applying the grip thereto, of the two levers 3 and 4, carrying at one end the pulleys 6, adapted to support the cable, the horizontal bars 9, connected to the end of the levers opposite to the pulleys, the inclined bars 12, adapted to close the jaws of the grip, and the guides 14, all substantially as and for the purpose set forth.

446,338. CUTTING-TABLE FOR BRICK OR TILE MACHINES. JAMES A. FREY and FREDERICK R. FREY, Bucyrus, Ohio, assignors to the Frey-Sheckler Company, same place. Filed Sept. 13, 1890. Serial No. 364,826. (No model.)

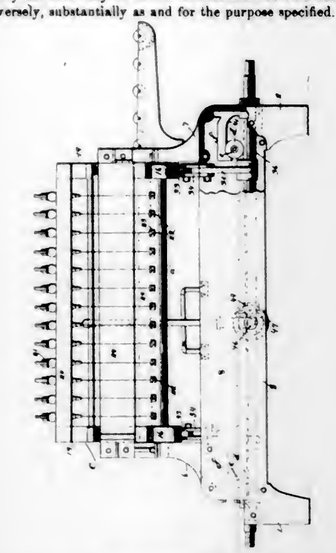
Claim.—1. In a brick and tile cutting table, the combination of a stationary bed-frame having track-rails on its sides, a table-frame mounted on the bed-frame and having a longitudinal movement thereon, a wire cutting-frame provided with a platen and movable transversely across the table-frame, and a lever to move the wire cutting-frame and the table-frame, substantially as described.

2. In a brick and tile cutting table, the combination of a stationary bed-frame having track-pieces on its sides, an endwise-movable table-frame formed with flanges at its ends on the inner face of the side pieces of the frame, carrying-rollers arranged under the flanges and on the track-pieces, rollers at the top of the table-frame, a wire cutting-frame mounted on the rollers and provided with a platen, a brick-board adjacent to the platen on the wire cutting-frame, a side abutting plate, and an end abutting plate, all substantially as described.

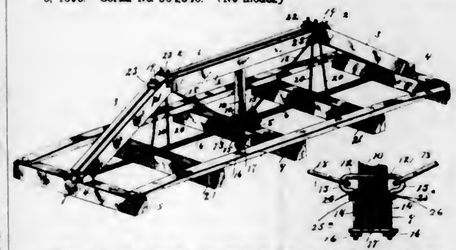
3. In a brick and tile cutting table, the combination of an endwise-reciprocating frame having rollers 15 16 journaled in elongated boxes, a wire cutting-frame having roller-races to take the rollers of the frame, and a lever to move the table, substantially as described.

4. In a brick and tile cutting table, the combination of the bed-frame, a table-frame mounted on rollers and having a limited longitudinal movement, a transversely-reciprocating wire cutting-frame, and a side abutting plate formed with vertical apertures having vertical slots opening through the face into the apertures, substantially as and for the purpose specified.

5. In a brick and tile cutting table, the combination of a bed-frame, a table-frame mounted on rollers to have an endwise movement on the bed-frame, a wire cutting-frame mounted to move transversely across the table-frame, a shaft in the table-frame having lever-connection to the wire cutting-frame and having a bevel-gear, a journal having a gear to engage the bevel-gear on the shaft, and a lever on the journal whereby the table may be moved endwise and the wire cutting-frame transversely, substantially as and for the purpose specified.



446,339. BRIDGE. MILTON C. FRITS, La Harpe, Ill. Filed Sept. 8, 1890. Serial No. 364,346. (No model.)



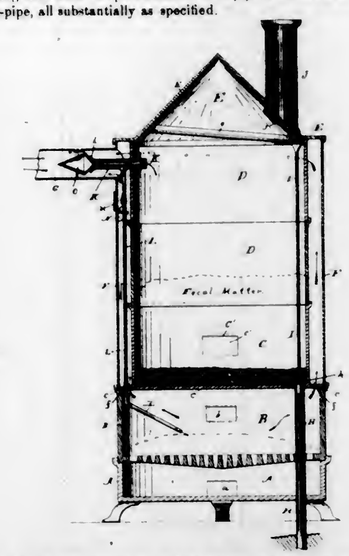
Claim.—1. In a bridge, the combination, with the notched truss-beams, the notched struts, the vertical rods, and the floor-supports, of the horizontal rods connected with the shoes and with a link, an upright, a clip having loops connected with said upright and with one of the floor-supports, and diagonal brace-rods connected with the struts and with the loops of the clips, substantially as described.

2. In a bridge, the combination, with the notched truss-beams, the notched struts, the vertical rods, and the floor-supports, of the horizontal rods connected with the shoes and with a link, an upright having a rounded shoe secured to its lower end, a clip connected with said upright and with one of the floor-supports, diagonal brace-rods connected with the struts and with the clips, and a notched plate resting upon said floor-support with which the shoe on the upright engages, substantially as described.

446,340. VENTILATED CREMATORY-CLOSET. WINFIELD L. FULLER, Walker, Kans. Filed Apr. 2, 1890. Serial No. 346,345. (No model.)

Claim.—1. A furnace for burning refuse matters, comprising a fire-chamber section, a fecal-matter receptacle built up of cast-metal rings, and a cover closing the top thereof, the soil-pipe entering the receptacle through said cover, a tight casing inclosing said receptacle and forming a cylindrical flue leading from the combustion-chamber, the fine-pipe communicating with said casing, and the short pipe entering said flue-pipe and communicating with the fecal-matter receptacle, all substantially as set forth.

2. A furnace for burning fecal matters, consisting of a fire-chamber, a fecal-matter receptacle superimposed on the fire-chamber, but not communicating therewith, a soil-pipe entering the top of said receptacle, and a drain-pipe leading therefrom, in combination with a metallic casing inclosing the fecal-matter receptacle and supported on the fire-chamber section, the flue-pipe connected therewith, the pipe leading from said receptacle into the flue-pipe, and the drain-pipe and drip-pipe, all substantially as specified.

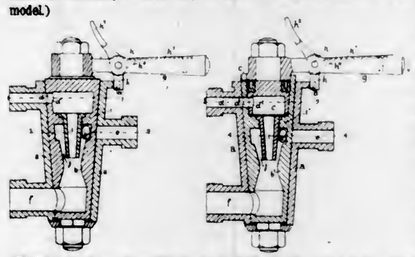


3. The combination of the fecal-matter receptacle having a conical top interiorly flanged to form a drain for water of condensation, a drain-pipe for fluids only leading from said receptacle, the tube conducting water of condensation from the top into said drain-pipe, and the soil-pipe connected with said receptacle, all substantially as set forth.

4. The combination of the fecal-matter receptacle having a conical top flanged on its inner side to form a drain, with the soil-pipe entering said top, having its lower end channeled, and the tube for conducting water from said drain and channel into a drain-pipe, substantially as specified.

5. The combination of the ash-pit and fire-chamber sections, the sections superimposed thereon, forming the fecal-matter receptacle, and the conical top closing said receptacle, having a flange on its under surface forming a drain for water of condensation, and the soil-pipe entering said top, and the fluid-draining tubes and pipes, with the casing inclosing said receptacle and communicating with the fire-chamber, a draft-pipe leading from said casing, and a vent-pipe leading from the receptacle into the draft-pipe, having a bell-mouth, and a conical deflector in the draft-tube, all constructed and arranged substantially as and for the purpose specified.

446,341. COCK FOR MIXING GAS AND AIR. RICHARD GOEHDE, Hanover, Germany. Filed July 28, 1890. Serial No. 360,138. (No model.)



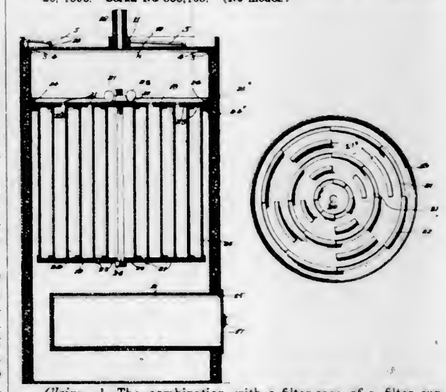
Claim.—1. A cock consisting of a shell *a* and a plug *b*, the shell having two lateral induction branches *d e* and the plug *b* having two lateral induction-orifices *d' e'*, adapted to register with the respective branches *d e*, the branch *d* and the orifice *d'* having such relative peripheral width and the orifices *d' e'* being so arranged relatively to the branches *d e* that when the plug is turned for opening the cock communication will first be established between the branch *d* and the orifice *d* while the branch *e* and the orifice *e'* are still out of register with each other, and that on turning the plug farther the orifice *e'* will be put in communication with the branch *e* while orifice *d'* remains open to branch *d*, substantially as described.

2. A cock consisting of a shell *a* and two plugs *b' c*, the shell having two lateral induction branches *d e*, the plug *b'* having the induction-orifices *d' e'*, adapted to register with the respective branches *d e*, the branch *d* and the orifice *d'* having such relative peripheral width and the orifices *d' e'* being so arranged relatively to the branches *d e* that the branch *e* and orifice *e'* may be brought into and out of register with each other without disturbing the communication between the branch *d* and orifice *d'*, and the plug *c* being inserted into the plug *b'* and having an orifice d^3, adapted to register with the orifice *d'* and a tappet *c'*, while the plug *b'* is provided with two shoulders b^3 b^3, being in the path of and co-operating with the said tappet, substantially as specified.

3. A cock consisting of a shell *a*, having the lateral-induction branches *d e*, and a plug having the induction-orifices *d' e'*, the transverse partition-wall *i'*, and an inside nozzle *i*, seated in the partition-wall, communicating with the orifice *d'*, and forming with the wall of the plug the annular channel *j*, which communicates with the orifice *e'*, substantially as described.

4. In a cock, the combination, with the shell and a plug, of a disengageable spring-controlled latch connected to one of the said parts and a stop formed on the other part in such position that by the co-operation of the latch and the stop the plug will during its rotation be stopped at a certain point of its course, and that subsequent to the disengagement of the latch it may be turned farther, substantially as specified.

446,342. FILTER. HENRY GOODACRE, Lexington, Ky. Filed May 26, 1890. Serial No. 353,163. (No model.)



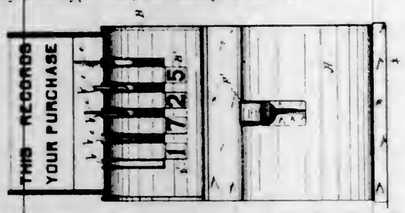
Claim.—1. The combination, with a filter-case, of a filter supported therein, the same comprising opposite disks, a series of filtering-partitions forming a series of filtering-compartments, the upper disk being perforated opposite the upper end of each alternate compartment and the lower disk perforated opposite the lower end of each intermediate compartment, and means for connecting said disks, substantially as specified.

2. The combination, with a filter-case, of a filter mounted therein, the same comprising upper and lower perforated disks, a series of cylindrical and graduated filtering-cylinders arranged between the plates and spaced apart to form a series of annular filtering-compartments, the upper disk being perforated opposite the upper end of each alternate compartment and the lower disk perforated opposite the lower end of each intermediate compartment, and a binding-bolt passed through the center of the two disks and the central cylinder, substantially as specified.

3. The herein-described filtering medium adapted for suspension within the filter-case, the same consisting of upper and lower disks, each having several concentric series of alternating flanges and slots, those of the lower disk being arranged out of vertical alignment with those of the upper disk, a series of packing-rings mounted between said series, cylindrical filtering-sections mounted between opposite rings of the two disks, a binding-bolt connecting the two disks, and a binding-nut mounted on the end of the bolt, substantially as specified.

446,343. CASH INDICATOR AND REGISTER. JAMES F. GOODRIDGE, Boston, Mass. Filed July 10, 1890. Serial No. 358,238. (No model.)

Claim.—1. In a cash indicator and register, the combination of an independently-adjustable indicator and type-wheel having locking pins or projections, a swinging locking-lever adapted to move independent of any motion of the wheel and having an attached ribbon-pressing platen and a locking-tooth, which latter normally stands in engagement with a pair of the locking-pins, and inking device and ribbon-feeding mechanism actuated by the locking-lever when the latter is swung to move its locking-tooth and platen away from the periphery of the type-wheel, substantially as described.



2. In a cash indicator and register, the combination of an independently-adjustable indicator and type wheel having a handle for turning it and provided with lateral locking pins or projections, a pivoted wheel-locking lever adapted to swing independent of any motion of the type-wheel and having at one side of its pivot a ribbon-pressing platen and a locking-tooth, which latter normally stands in engagement with a pair of the locking-pins until the lever is depressed to move the platen and tooth in a direction away from the periphery of the type-wheel, an inking device, and ribbon-feeding mechanism, substantially as described.

3. In a cash indicator and register, the combination of a case having an arched slotted cover, a series of independently-adjustable indicator and type wheels, each having locking-pins, and a handle for each wheel extending through the arched cover for turning the wheel, a swinging yoke-lever adapted to move independent of any motion of the type-wheels and having a ribbon-pressing platen and a series of locking-teeth, which latter normally stand in engagement with the locking-pins until the lever is depressed to move its platen away from the type-wheel, an inking device, and ribbon-feeding mechanism, substantially as described.

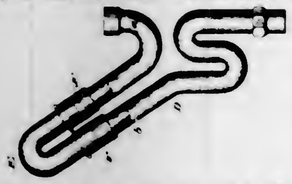
4. In a cash indicator and register, the combination of a series of indicator and type wheels, each having lateral locking pins or projections and a handle by which to turn it, a pivoted lever adapted to swing independent of any motion of the indicator and type wheels, and having a series of locking-teeth which normally engage the locking pins or projections on the wheels and carrying a platen or pressure-bar to press a ribbon against the wheels, inking devices, and ribbon-feeding mechanism, substantially as described.

5. In a cash indicator and register, the combination of a series of indicator and type wheels, each having a handle by which to turn it, inking devices, ribbon-feeding rolls, one of which is provided with a ratchet-wheel, and a pivoted wheel-locking lever adapted to swing independent of any movement of the indicator and type-carrying wheels, having at one side of its pivot a pawl to engage the ratchet-wheel and carrying at the opposite side of the pivot a platen or pressure-bar to press the ribbon against the type-wheels, substantially as described.

446,344. **LUBRICATING-OIL.** ROBERT R. GRAF, Baltimore, Md., assignor of one-half to Ferdinand W. Reis, same place. Filed Nov. 28, 1890. Serial No. 372,910. (No specimens.)

Claim.—A fire-proof lubricating-oil consisting of a mixture of an ordinary lubricating-oil with sodium tungstate, sulphate of ammonia, phosphate of ammonia, sal-ammoniac, and monocarbonate of soda, in about the proportions substantially as specified.

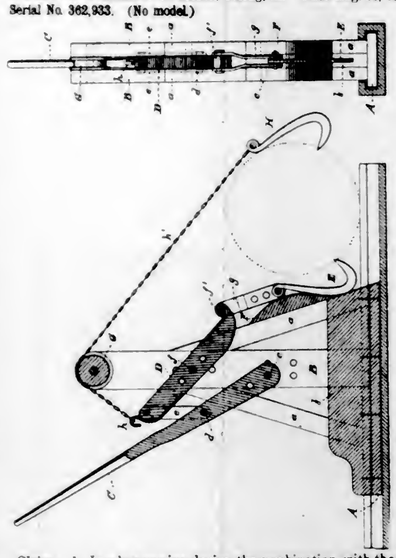
446,345. **DISCHARGE-PIPE FOR URINALS.** LAWRENCE J. GRIFFIN, Barre, Vt. Filed Nov. 20, 1890. Serial No. 372,009. (No model.)



Claim.—1. A discharge-pipe for urinals and the like, provided with a siphon near each end and an adjustable substantially U-shaped piece between the ends and forming a part of the upper siphon, substantially as specified.

2. A discharge-pipe for urinals and the like, consisting of two portions, each formed with a trap or siphon and parallel inclined portions, and a third member substantially U-shaped and adjustably connected with the parallel upper inclined ends of the two first-mentioned portions, substantially as shown and described.

446,346. **LOG-TURNER FOR SAW-MILL CARRIAGES.** WILLIAM C. HALL and WILLIAM U. SWEETSER, Oblong, Ill. Filed Aug. 26, 1890. Serial No. 362,933. (No model.)



Claim.—1. In a log-moving device, the combination, with the two pivoted link-connected levers, of the stirrup pivoted to the forward end of the upper of said levers, the cant-hook adjustably pivoted in the stirrup, and the block secured to the forward braces of the frame for holding the hook in engagement, substantially as described.

2. The log-rolling device for saw-mills, comprising the base working in ways connected with the carriage of the mill, the uprights mounted in said base, the adjustable link-connected levers pivoted between said uprights, a stirrup pivoted to the forward end of the upper of said levers, the cant-hook adjustably pivoted in the stirrup, the block secured to the forward braces of the frame for holding said hook in engagement, and the hook connected to the opposite end of said lever, substantially as specified.

3. In a log-moving device, the combination, with the supports, of the link-connected levers pivoted therein, the forward end of one of said levers having a cant-hook pivotally connected thereto and the opposite end having a flexible connection with a second cant-hook, whereby by the operation of the lower lever the log may be rolled either toward or away from the operator, substantially as specified.

4. In a log-moving device, the combination, with the supporting-frame, of the levers pivoted therein one above the other, a link connecting the rear end of the upper lever to the intermediate portion of the lower, and the cant-hook connected to each end of said upper lever and adapted to exert a force in opposite directions, substantially as specified.

5. In a log-moving device, the combination, with the base and the two uprights mounted thereon, their braces, and the pulley mounted between their upper ends, of the adjustable pivoted link-connected levers, one of said levers connected at its rear end with a cable or rope passing over the pulley mounted between the uprights and connected at its free end to a cant-hook, substantially as described.

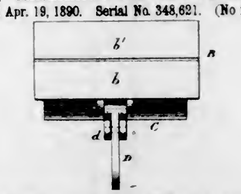
446,347. **VEHICLE-HUB.** JOEL T. HART, Foster, Mo. Filed June 30, 1890. Serial No. 357,250. (No model.)

Claim.—1. The combination, with the threaded box, the portion B, formed with spoke-sockets, the V-shaped portions *b*, forming said spoke-sockets, being of less length than the width of the tenon end of the spoke, and the spokes each provided with a socket, of the washer loosely sleeved upon the box and formed upon its inner face with projections engaging the sockets of the spokes, and the cap threaded on the box and bearing against the washer, substantially as specified.



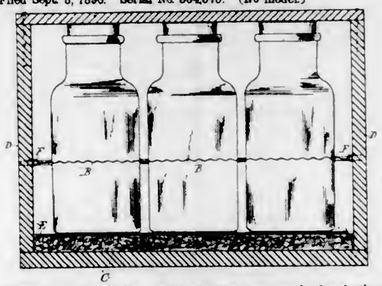
2. The combination, with the box provided with right and left threads, of the portion B, threaded on the box and formed with spoke-sockets, the washer loosely sleeved upon the box and formed with projections to engage sockets in the spokes, and the threaded cap bearing against the washer, substantially as and for the purpose specified.

446,348. **BLACKSMITH'S VISE.** ARTHUR K. HATHAWAY, Axtell, Nebr. Filed Apr. 19, 1890. Serial No. 348,621. (No model.)



Claim.—The combination, with the sliding jaw *b* of a blacksmith's vise, of the lever D, fulcrumed at *d*, pivoted to the back of said jaw at *d'* and provided with the hook d^2 at its lower end, the bar E, pivoted to the post A at one end and carrying between prongs e' e' a roll *e*, which engages said hook d^2, the rod F, and the treadle G, said rod being end-pivoted to bar E and treadle G, as and for the purpose set forth.

446,349. **BOTTLE-CASE.** SAMUEL E. HYNDMAN, Cincinnati, Ohio. Filed Sept. 8, 1890. Serial No. 364,375. (No model.)



Claim.—1. A rack for packing-boxes, composed of a single marginal wire of large size and provided with corrugated transverse wires of smaller size arranged in pairs mutually interlocking at their intersections and forming adjustable openings or meshes adapted to engage the bottles and prevent their contact with each other, substantially as specified.

2. In a packing-box, as described, the horizontally-disposed wire rack A, its marginal wire made of a single piece of large size and provided with meshing-wires B of smaller size, combined with the staples F, which straddle the marginal wire and hold the rack in a horizontal position.

446,350. **LENS FOR ILLUMINATING-TILES.** PETER H. JACKSON, San Francisco, Cal. Filed Oct. 27, 1890. Serial No. 369,516. (No model.)

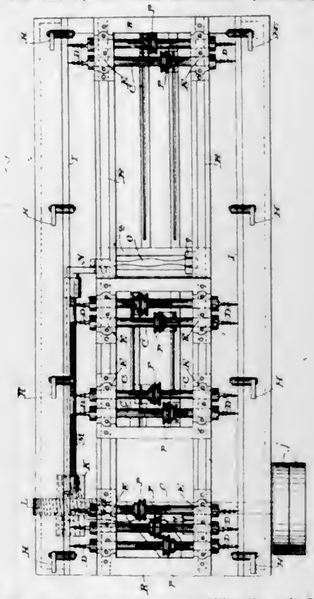


Claim.—In an illuminating-tile, the lenses fitted in the tile-frame, each of said lenses having its bottom and top light-surfaces of about equal area, and a peripheral frustuminal extension around its lower portion and projecting beyond the light area of the lens, the bottom of said extension resting on a base in the tile-frame and forming a support for the lens, said lens having also formed around its upper portion above the frustuminal extension an encircling ring, and the filling-in material between the lenses, substantially as herein described.

446,351. **ALUMINUM ALLOY.** JOHN A. JEANÇON, Newport, Ky. Filed Mar. 20, 1890. Serial No. 344,675. (Specimens.)

Claim.—A bronze or alloy of copper, aluminum, and manganese in about the proportions of seventy-five to eighty-five per cent. of copper, twelve to twenty-five per cent. of aluminum, and two to five per cent. manganese, substantially as set forth.

446,352. **BORING-MACHINE.** AMMI M. JEWELL, San Francisco, Cal. Filed June 24, 1890. Serial No. 356,552. (No model.)



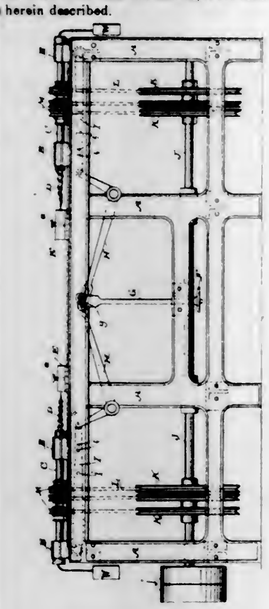
Claim.—1. A boring-machine comprising the main frame having seats on each side for the work, the laterally-moving carriage on said frame, the power-shaft, the links O, connecting with said carriage, the gearing between the opposite ends of the links and the power-shaft, whereby the carriage is moved, the shaft on said carriage having adjustable bearings, and the reversed augers in the ends of the shafts, substantially as herein described.

2. A boring-machine consisting of the main frame having the seats on each side for the work, the vibrating carriage mounted upon said frame, the shafts mounted upon the carriage and having the reversed augers at their ends, the means for vibrating the carriage, consisting of the power-shaft having the worm, the longitudinal shaft having the worm-gear and cranks, and the links connecting the cranks with the vibrating carriage, and the means for rotating the auger-shafts, consisting of the counter-shafts, the belts by which the counter-shafts are driven, the feathered pulleys on the auger-shafts, and the belts from the power and counter shafts to said feathered pulleys, substantially as herein described.

446,353. **BORING-MACHINE.** AMMI M. JEWELL, San Francisco, Cal. Filed June 24, 1890. Serial No. 356,553. (No model.)

Claim.—An improved boring-machine consisting of the main frame, the sliding carriages at the opposite ends of the frame and movable toward and from each other, the shafts mounted in the carriages in the direction of the length of the machine and having augers on their inner ends, the stops or guide-bars at the central portion of the machine, having screws by which they are adjustably held, a single power-shaft with pulleys thereon connected by belts with pulleys on the auger-shafts, whereby the latter are rotated, a treadle F, a rod extending upwardly therefrom, the levers H, slotted at their inner ends upon a pin on said rod, the links I, connected with the short arms of the levers and having holes formed therein, adapting said links I to be

connected at different points with the short arms of the levers, and the weights W, connected with the carriages for returning them, substantially as herein described.



446,354. BICYCLE. JOHN H. KANE, North Adams, Mass. Filed Sept. 12, 1890. Serial No. 364,715. (No model.)

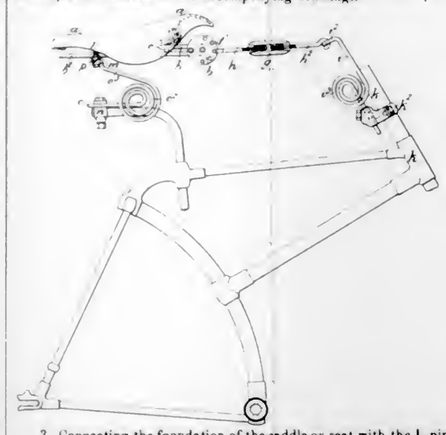


Claim.—In a bicycle, the combination of the mud-guard N, provided with a journal box or bearing l at the intersection of said mud-guard with the backbone P, the backbone P, the fork K, connecting said backbone with the driving-wheel G, the bearings J upon the inner side and near the rear end of the fork K, the horizontal shaft D, located in said bearings and having the bevel-wheels C and E upon the ends thereof, the propelling-crank B, having the bearings W at the base of the fork of the backbone and provided with the bevel wheel A, the driving-wheel G, mounted upon the axle H in the center of the forks K L M, and the steering-wheel O, all substantially as described, and for the purpose set forth.

446,355. BICYCLE-SEAT. JAMES A. LAMPLUGH, Birmingham, England. Filed Oct. 21, 1890. Serial No. 368,823. (No model.)

Claim.—1. The combination, in a saddle for bicycles and similar vehicles, of a wire or rod frame or foundation having an upright bracket connected with its forward end, and a tension-hook adjustable lengthwise the bracket and having a rigidly-attached plate at its front end, to which the saddle leather or cover is secured, substantially as described.

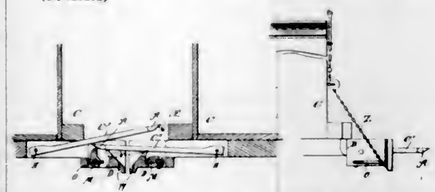
2. Connecting the front of the foundation of the saddle or seat with the steering-post, or a socket through which the steering-post passes, by means of a compound rod capable of being virtually lengthened or shortened by a swiveling link or its equivalent, one end of the said compound rod being hooked to a spring, preferably of the kind described and represented, carried by the steering-post or socket, and the other end being hooked in one of a series of holes made in a disk carried by and rigidly fixed to the front of the foundation of the saddle, the several parts being constructed and arranged as hereinbefore described, and illustrated in the accompanying drawings.



3. Connecting the foundation of the saddle or seat with the L-pin on the frame of the bicycle or velocipede by means of a spring, made preferably of a strong wire or rod bent at its middle, parallel coils being formed in the doubled parts of the said spring, the bent or middle part of the said spring being connected to the sliding socket on the L-pin of the bicycle or velocipede, and the ends of the said spring being formed into hooks or eyes through which screw-pins pass, the said screw-pins taking into screwed holes in a cross-bar carried by eyebolts sliding or adjustable on the parallel arms of the wire foundation, as hereinbefore described, and illustrated in the accompanying drawings.

4. The combination, with the steering-post socket and the L-pin on the frame of a bicycle or other wheel, of an adjustable frame with which the leather or other seat is engaged, a convoluted spring connecting the front end of the adjustable frame with the steering-post socket, and a convoluted spring connecting the rear end of the adjustable frame with the L-pin, substantially as described.

446,356. CAR-COUPLING. WILLIAM I. LANKFORD and JOHN E. LANKFORD, Bedford City, Va. Filed Oct. 2, 1890. Serial No. 366,878. (No model.)



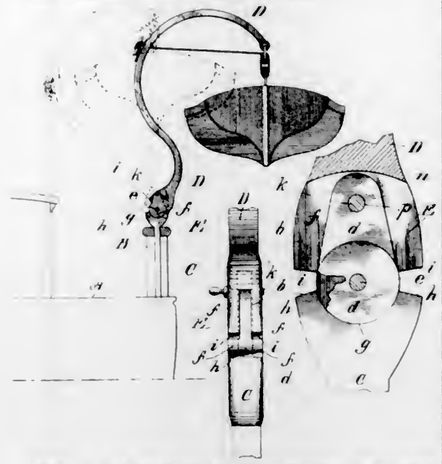
Claim.—1. In a car-coupling, the combination, with the draw-head having a web provided with an inclined front face and a notch through its body, of a coupling-bar mounted on a horizontal pivot in said draw-head in rear of the web and resting normally in said notch, substantially as described.

2. In a car-coupling, the combination, with the open-topped draw-head D and the rearwardly-inclined web W therein, having a notch N in its upper edge, of the connecting-bar C, mounted on a horizontal pivot through the draw-head in rear of said web and resting normally in the notch therein, and a laterally-enlarged head A at the front end of said bar, having a beveled under front end, as and for the purpose set forth.

3. In a car-coupling, the combination, with a draw-head having a web provided with a notch in its upper edge, of a link having a head at one end for engagement with said notch and an eye at its other end standing in a horizontal plane, as set forth.

4. In a car-coupling, the combination, with a draw-head having an inclined web provided with a notch and a coupling-bar mounted on a horizontal pivot in said draw-head in rear of the web and resting normally in said notch, the free end of said bar having a laterally-enlarged head, of a link L, having an eye at one end and a head A at the other end, and an inclined face F upon said link between its ends, each and all substantially as and for the purpose hereinbefore set forth.

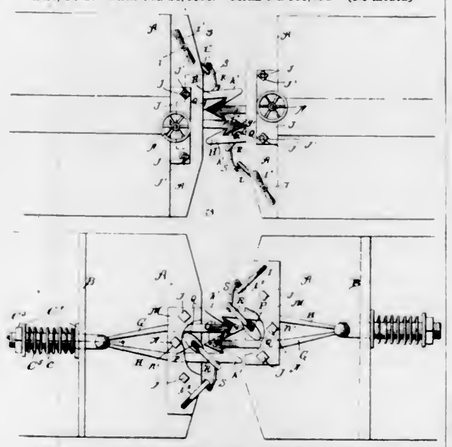
446,357. DAVIT FOR BOATS. GEORGE F. LAWLEY, Boston, Mass. Filed Oct. 6, 1890. Serial No. 367,266. (No model.)



Claim.—1. In a boat-davit, a davit-arm hinged to its supporting bolt or base by means of a rule-joint E, the members of which are provided on the inner and outer sides with shoulders *h i*, the lower shoulders *h* being adapted to receive a direct downward pressure produced by the weight of the suspended boat, substantially as described.

2. In a boat-davit, the vertical supporting-bolt C, provided with a tongue *d* and shoulders *h h* on opposite sides of the same, said tongue having an extension *n* provided with a hole *p*, combined with the davit-arm D, having its lower end slotted to form cheeks, between which is pivoted the tongue *d*, said cheeks having shoulders *i i* on opposite sides adapted to contact with and exert a direct downward pressure upon the shoulders *h h*, and the pin *k*, adapted to pass through holes in the cheeks *f f* and engage the extension *n* of the tongue *d* to lock the davit-arm in place, substantially as set forth

446,358. CAR-COUPLING. PHILANDER H. LEWIS, Standard's Corners, N. Y. Filed Oct. 21, 1890. Serial No. 368,784. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head consisting of two hooked spring-arms, of a shaft between said arms, a spreader mounted upon said shaft, a crank at the lower end of the latter, and means for turning the said crank, substantially as set forth.

2. In a car-coupling, the combination, with a draw-head consisting of two hooked spring-arms, of a shaft between said arms, a spreader mounted upon said shaft, a crank at the lower end of the latter, a hand-shaft provided with a crank, and a link connecting the ends of said cranks, substantially as set forth.

3. In a car-coupling, the herein-described draw-head, consisting of a single piece of metal bent to form a loop at its inner end, and forwardly-extending spring-arms provided, respectively, with a hooked and an arrow head, substantially as and for the purpose set forth.

4. In a car-coupling, the combination of a longitudinally-sliding spring-actuated stem having a clip or clevis at its front end, the draw-head consisting of a single piece of metal bent to form a loop at its inner end, and forwardly-extending spring-arms provided, respectively, with a hooked and an arrow head, and a bolt passing through the loop at the inner end of the draw-head and connecting the latter with the clip or clevis of the longitudinally-sliding stem, substantially as set forth.

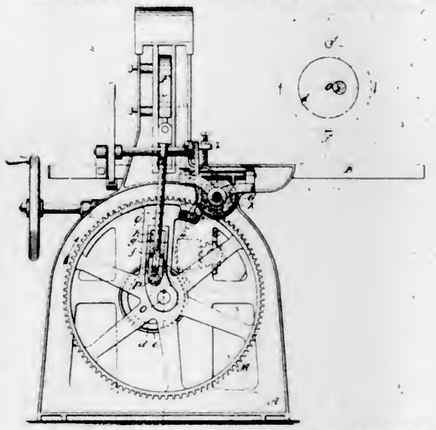
5. In a car-coupling, the combination, with a draw-head consisting of a single piece of metal bent to form the forwardly-extending spring-arms having a hooked and arrow head, of adjusting devices for raising and lowering the front end of the said draw-head, substantially as and for the purpose set forth.

6. In a car-coupling, the combination of the draw-head having the spring-arms provided, respectively, with a hooked and an arrow head, the plates L and M, between which the draw-head passes, the guide-bolts passing vertically through the said plates, and a vertical operating-shaft mounted in and vertically adjustable with the said plates, substantially as and for the purpose set forth.

7. In a car-coupling, the combination of the draw-head, the plates L and M, between which the draw-head passes, the vertical guide-bolts extending through the said plates, and a vertically-adjustable screw-threaded rod or shaft mounted in a stationary nut extending through the said plates and provided at its lower end with a head supporting the plates M, substantially as set forth.

8. In a car-coupling, the combination of the draw-head, having the forwardly-extending spring-arms provided with a hooked and arrow head, the plates L and M, between which the draw-head passes, the vertical guide-bolts extending through said plates, a screw-threaded vertical rod or shaft mounted in a stationary nut extending through said plates and provided at its lower end with a head supporting the plate M, a hand-shaft vertically adjustable with the plate M and having a crank at its lower end, a shaft mounted vertically between the spring-arms of the draw-head and having a spreader located between said arms and a crank at its lower end, and a link connecting the said cranks, substantially as and for the purpose herein specified.

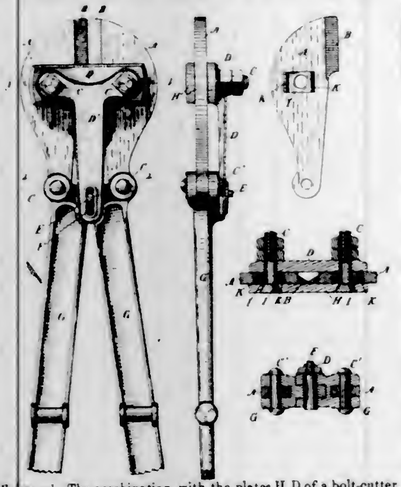
446,359. PAPER-CUTTER. ALEXANDER MALM, New York, N. Y., assignor to Theodore W. Sheridan, Brooklyn, N. Y., and Charles E. Sheridan, Orange, N. J. Filed Oct. 23, 1890. Serial No. 369,099. (No model.)



Claim.—1. In a paper-cutter, the combination, with a cutter or blade and a shaft O, of an eccentric, a pin or connection *f*, carried by the shaft about the eccentric, and a pitman connecting the pin and cutter, substantially as described.

2. In a paper-cutter, the combination, with a cutter, a shaft, an eccentric, and a pin or connection *f*, carried by the shaft about the eccentric, of a pitman for connecting the pin and cutter, and a carrier or disk for connecting the pin and the shaft O, said carrier having a suitable guideway *h* for the pin or connection, substantially as described.

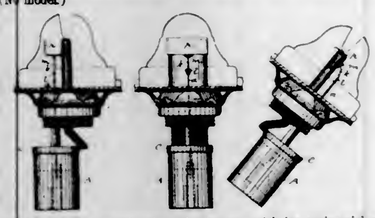
446,360. BOLT OR ROD CUTTER. EDWARD A. MUNSON, Grand Rapids, Mich. Filed Dec. 21, 1888. Serial No. 294,315. (No model.)



Claim.—1. The combination, with the plates H D of a bolt-cutter, of a cutting-jaw provided with a transverse slot, an adjustable angular journal-bearing or block located in said slot, and the pivot C, passing through an opening in the block, substantially as described.

2. In combination with the plates H D of a bolt-cutter, a cutting-jaw provided with a transverse slot, an angular journal-bearing or block located in said slot, the pivot C, passing through the opening in the block, and shims for adjusting the position of the block, substantially as described.

446,361. EXTINGUISHING DEVICE FOR LAMPS. DÉMÉTRE MINGOULETZ, Brussels, Belgium. Filed May 22, 1890. Serial No. 352,702. (No model.)



Claim.—1. In combination, the burner with its extinguisher and screw-threaded shank for attachment to the lamp-body, the weight and spring for operating the extinguisher, a casing for said weight and spring connected to the under side of the screw-threaded shank of the burner and depending therefrom, and the connecting-spindle, from the weight to the extinguisher, substantially as described.

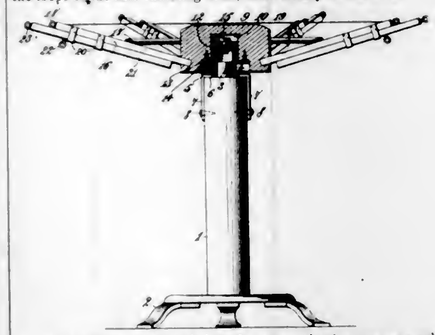
2. In combination, the burner, the extinguisher, the casing having the spring, and the weight having a spindle connection to the extinguisher, the said casing being joined to the shank of the burner by a connection of reduced diameter, substantially as described.

3. In combination, the round burner with its extinguisher, the annular casing surrounding the wick-tube, the annular weight within the casing, the spring acting upon the weight, and the connection between the weight and the extinguisher, substantially as described.

4. In combination, the burner, the extinguisher *z*, having a stem with rack-teeth, the operating means having the connections *a* with rack-teeth, and the pinion *q*, operating between the connections *a* and the toothed stem, substantially as described.

446,362. CLOTHES-DRIER. WILLIAM A. NEWMAN, Blue Creek, Ohio. Filed Nov. 13, 1890. Serial No. 371,325. (No model.)

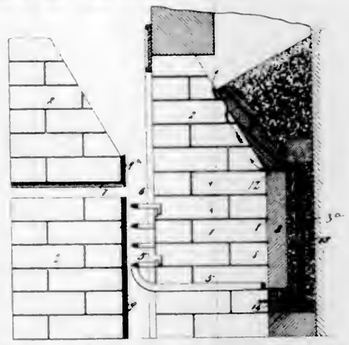
Claim.—1. A clothes-drier consisting of a support having a tenon, a rotary mortised hub arranged on the tenon and provided with radiating arms rigidly fixed in the mortises and inclining upwardly from the hub, and provided with attached loops and hooks or eyes at their outer ends supporting a surrounding clothes-line, a metallic ring rigidly secured to the upwardly-inclined arms at a point remote from the hub and serving to brace the arms against lateral and downward strains, and sliding arm-sections provided with hooks and sliding in the loops of the said radiating arms, substantially as described.



2. A clothes-drier consisting of a support having a tenon, a cylindrical boxing fitting the tenon and rigidly secured to the support, a rotary hub provided with radiating arms, a hollow boxing rigidly secured in the hub and setting over the cylindrical boxing on the support, and a pivot-bolt connecting the centers of the upper ends of the two boxings to prevent their separation one from the other while permitting the hub to freely rotate, substantially as described.

3. A clothes-drier consisting of a support having a tenon, a shouldered cylindrical boxing fitting the tenon and having depending arms rigidly secured to the support, a rotary hub provided with radiating arms, a hollow boxing arranged in the hub setting over the boxing on the tenon and having a lateral flange rigidly attached to the hub, and a pivot-bolt permanently connecting the centers of the two boxings at their upper ends to prevent their separation while permitting the hub to freely rotate, substantially as described.

446,363. FIRE-PLACE. JOSEPH P. O'BRIEN, St. Louis, Mo. Filed Apr. 30, 1890. Serial No. 350,047. (No model.)

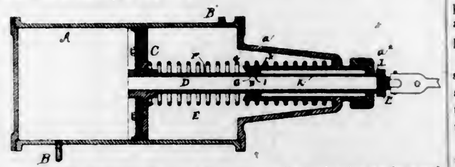


Claim.—1. A fire-place lining consisting of the lower side walls 1, having beveled shoulders 7ª at their upper ends and vertical bevels 9, the upper side walls 2, having beveled lower edges 7 and vertical bevels 9ª, the lower back part 3, fitting the vertical bevels of the side walls and having beveled top, and the inclined back part 4, fitting the upper side walls and having beveled lower edge fitting the beveled top of the lower back part, substantially as described.

2. The combination, with the rear wall 3ª, having vertical flues 13, of the side walls 1 2, the back part 3, formed with horizontally-arranged flues 14, and beveled top formed with the lower portions of converging horizontally-arranged openings 12, and the inclined back part 4, having beveled lower edge formed with the upper portions of the converging horizontally-arranged openings 12, substantially as described.

446,364. ROD-PACKING. EDWARD F. PEACOCK, Philadelphia, Pa. Filed June 27, 1890. Serial No. 356,986. (No model.)

Claim.—1. The combination, with a narrow cylinder having an internal seat at its inner end, of a rod passing through the same and having an abutment, a valve resting against the abutment and adapted to bear upon the seat, and means for clamping the valve to the abutment, substantially as described.



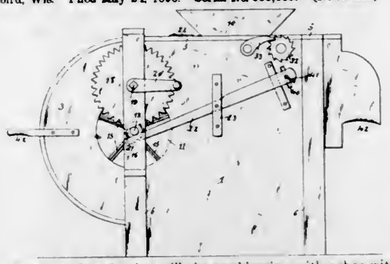
2. The combination, with a narrow cylinder having an internal seat at its inner end, of a rod passing through the same and having an abutment, a valve resting against the abutment and adapted to bear against the seat, a cupped washer above the valve, a washer between the valve and the cup, and means for clamping them to the abutment, substantially as described.

3. The combination, with the cylinder A, having the narrow cylinder A′, of the piston C, the rod D, having an abutment thereon, the valve G and washer H, one being of yielding and the other of unyielding material, the cupped washer I, and the sleeve K, substantially as described.

4. The combination, with the cylinder A, having the head *a*, of the cylinder A′, provided with the seat *a′*, the piston C and rod D, the latter having an abutment, the valve G, the cup I, the sleeve K, and the lock-nuts L L′, substantially as described.

5. The combination, with the cylinder A, of the head *a*, provided with a pocket, the cylinder A′, centrally arranged in said pocket and having a seat *a′* at its inner end, the piston C, rod D, sleeve F, surrounding the rod, valve G, washer H, cup I, sleeve K, clamping the valve, washer, and cup against the end of the sleeve F, and the lock-nuts L L′, substantially as described.

446,365. FANNING-MILL. JOHN PELSER and JOHN WEREL, Humbird, Wis. Filed May 24, 1890. Serial No. 353,089. (No model.)



Claim.—1. In a fanning-mill, the combination, with a shoe within the casing, a spring carried by said casing, and a cord connecting said spring with one edge of the shoe, of a fan, a lever driven from said fan and moving vertically, and a cord connecting said lever with the other edge of the shoe, all substantially as described.

2 In a fanning-mill, the combination, with a shoe within the casing, a spring carried by said casing, and a cord connecting said spring with one edge of the shoe, of a rotary fan having a cam on its shaft, a centrally-pivoted lever whose lower end is struck by said cam, and a cord connecting the upper end of said lever with the other edge of the shoe, all substantially as hereinbefore described.

446,366. ROLL-PAPER HOLDER AND CUTTER. CHARLES K. PICKLES, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed June 7, 1890. Serial No. 354,630. (No model.)

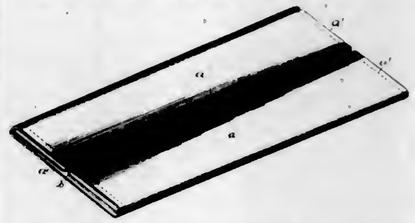


Claim.—1. In a roll-paper holder and cutter, the combination of suitable standards, a knife secured to the standards, a roll of paper, links pivoted to the standards and supporting the roll of paper, and double-acting springs, arranged and operating substantially as and for the purpose set forth.

2. In a roll-paper holder and cutter, the combination of suitable standards, a knife secured to the standards, links pivoted to the standards and supporting the roll of paper, and springs having a tendency to hold the roll of paper from the knife against its gravity, substantially as and for the purpose set forth.

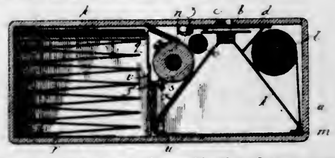
3. In a roll-paper holder and cutter, the combination of suitable standards, a knife secured to the standards, links pivoted to the standards and supporting the roll of paper, and springs secured to the standards and to the links and which act against the gravity of the roll of paper when it is full, and which also act to lift the roll of paper against its gravity as it becomes reduced, substantially as and for the purpose set forth.

446,367. SHIRT-CUFF. WILLIAM E. SIMONDS, Canton, Conn. Filed Dec. 10, 1890. Serial No. 374,196. (No model.)



Claim.—A cuff of uniform thickness throughout, comprising three or more plies of fabric, the ravel ends of the fabric being inside of the outer plies and all the plies united face to face, all substantially as described, and for the purposes set forth.

446,368. PHOTOGRAPHIC CAMERA. CHARLES WHITNEY, Chicago, Ill. Filed Aug. 20, 1889. Serial No. 321,421. (No model.) Patented in Italy Apr. 29, 1890, No. 27,256/333; in Canada July 2, 1890, No. 34,607, and in France July 17, 1890, No. 204,797.



Claim.—1. In a camera, the combination of case *a*, compartment *k*, feed-roller *n*, knife *q*, and the negative-ribbon *i*, substantially as described.

2. In a camera, the combination of case *a*, compartment *k*, adapted to form the two compartments, one for the negative coil and the other for the feed-roller, and the knife *q*, substantially as described.

3. In a camera, the combination of the case *a*, compartment *k*, knife *q*, and compartment *p*, substantially as described.

4. In a camera, the combination of the negative-ribbon, the feed-roller, the knife or shear, and means for operating the same, substantially as described.

5. In a camera, the knife forced into position by a friction feed-roller for severing the negative-ribbon, in combination with the said feed-roller, substantially as described.

6. In a camera, the rotating shutter adapted both to be set and tripped by a single pressure on the actuating-rod, substantially as described.

7. In a camera, the combination of a roll of negative-ribbon, the V-shaped frame, a friction feed-roller, and a receptacle for exposed plates, substantially as described.

8. In a camera, the combination of the roll of negative-ribbon, the friction feed-roller with friction-pressure between them for holding the ribbon straight, and the knife or shear for cutting the ribbon, substantially as described.

9. In a camera, the combination of a roll of negative-ribbon, the V-shaped frame, the feed-roller, the knife, and means for operating the knife, substantially as described.

10. In a camera, the combination of a lens, a shutter, and negative-ribbon, knife, and a friction-feed, substantially as described.

11. In a camera, case *a* and compartment *k*, adapted to form a

triangular inside compartment open at its base, with a lens in its apex, thus in shape conforming to the angle of the rays of light through the lens, and the compartments each side of the apex of compartment *k*, adapted for storing and handling negative-plates, substantially as described.

12. In a camera, the combination, with the lens, of a roll of negative-ribbon on one side of the lens, a feed-roller on the other side of the lens, means for revolving said feed-roller, and a rigid surface adjacent to said roller, whereby the ribbon is fed between the roller and the rigid surface adjacent thereto and caused to advance by friction, substantially as described.

13. In a camera, the case *a*, having the triangular compartments, the middle compartment providing the exposure-compartment, in combination with a roll of negative-ribbon and a feed-roller in opposite triangular compartments on either side of the apex of the exposure-compartment, substantially as described.

446,369. **PHOTOGRAPHIC CAMERA.** CHARLES WHITNEY, Chicago, Ill. Filed Aug. 20, 1889. Serial No. 321,422. (No model.) Patented in Italy Apr. 29, 1890, No. 27,256/333; in Canada July 2, 1890, No. 34,607, and in France July 17, 1890, No. 204,797



Claim.—1. In a camera, the combination of a roll-holder and the outside telescopic cylinders of an opera or field glass, adapted to form spools for supporting and operating negative-plates, substantially as described.

2. In a camera, the combination of opera or field glass cylinders with both the eyeglasses and the object-glasses arranged in proper manner for use as an opera or field glass, the compartment formed by frame B, and the negative-plate compartments formed by case A and frame B, substantially as described.

3. In a camera, the combination of the outside case A, the inside compartment B, of a triangular or V-shaped form, and the two compartments formed by case A and frame B for storing and handling negative-plates, substantially as described.

4. In a camera, the combination of case A, peep-hole I, the V-shaped compartment with a lens in the apex, and the opera or field glass cylinders, substantially as described.

5. In a camera, the shutter-plates L and L', operated by the rod N and the springs O and O', the latch P, and trip T, or their equivalents, substantially as described.

6. In a camera, the combination of case A, colored-glass peep-hole I, the consecutively-numbered plates J, and the revolving cylinders D and D', substantially as described.

7. The combination of the opera-glasses, the negative-ribbon J, lens K, and a shutter, substantially as described.

8. In a camera, the combination, with a lens, of a shutter, a depressible button V, and a connection between the shutter and button, whereby a pressure upon the button causes the shutter both to load and trip, substantially as described.

9. In a camera, the combination of the perforated negative-ribbon, the peep-hole I, case A, and the compartment formed by frame B, substantially as described.

10. In combination with a shutter and a lens, the perforated and numbered transparent negative-ribbon, substantially as described.

11. In a camera, the combination, substantially as described, of the telescopic cylinders with their object-glasses and eyeglasses, the transparent negative-ribbon, the V-shaped frame, and a lens and shutter.

12. The case A, V-shaped frame B, spools C and D, and the examining-glass I.

13. The cover A', the case A, and the V-shaped frame, in combination with the opera-glasses, substantially as and for the purpose described.

14. In a photographic camera, the V-shaped frame or compartment with the lens at the apex of said frame and the negative-ribbon across the base of said frame with separate compartment or compartments each side of the apex of said frame for storing and handling the negative-ribbon, substantially as and for the purposes described.

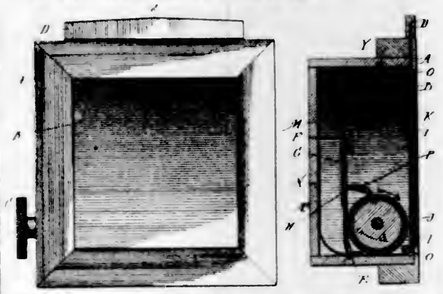
15. In a photographic camera, the combination, with the V-shaped frame or compartment, of the case A, which combination makes two light-tight compartments, one inside of the V-shaped frame, through which the exposure is made, and the other at each side of the apex of said frame for holding the rolls of negative-ribbon, substantially as and for the purpose described.

16. The combination, with a pair of opera or field glasses, of a photographic camera, the cylinder of said opera or field glasses providing rolls for the reception of negative-ribbon, substantially as described.

17. In a camera, a sliding shutter adapted to set or load and trip simultaneously and means for tripping the shutter for making an exposure, in combination with a lens for photographic purposes, substantially as described.

18. A photographic camera, in combination with an opera or field glass with the outside telescopic cylinders affording spools for supporting and operating flexible negative-ribbons, containing the triangular compartment open at its base, having the lens at its apex and storage-compartments each side said apex, and provided with a shutter mechanism actuated to perform all its functions through a single pressure on its spring-controlling rod, substantially as described.

446,370. **PHOTOGRAPHIC-PLATE HOLDER.** CHARLES WHITNEY, Chicago, Ill. Filed Sept. 7, 1889. Serial No. 323,332. (No model.) Patented in Italy Apr. 29, 1890, No. 27,256/333; in Canada July 2, 1890, No. 34,607, and in France July 17, 1890, No. 204,797.



Claim.—1. A camera attachment carrying a loose coil of negative-ribbon and a friction feed-roller adapted to feed the negative-ribbon by pressure against the frame A, substantially as described.

2. The combination of a plate-holder box, containing a separate compartment for the exposed plates, and a receptacle for a coil of negative-ribbon, a feed-roller and knife for cutting the ribbon, and means for operating the same, substantially as described.

3. The combination, in a plate-holder for cameras, of a coil of negative-ribbon, a friction feed-roller and knife or shear for cutting the negative-ribbon, substantially as and for the purpose described.

4. In a plate-holder for cameras, a friction feed-roller adapted to engage the surface of one side of the negative-ribbon, the opposite side of said ribbon being supported by a rigid wall, said feed-roller being also adapted for measuring the necessary amount of negative-ribbon for each exposure, in combination with compartment M and knife E, substantially as described.

5. A plate-holder attachment for cameras, containing a friction feed-roller and means for operating a knife or shear for cutting the ribbon at proper intervals when one, two, or more revolutions are required for each plate, substantially as described.

6. In a plate-holder attachment for cameras, a loose coil of negative-ribbon and a friction feed-roller, with suitable friction between the feed-roller and the negative coil to hold it in proper position, in combination with knife E and slotted tube K, substantially as described.

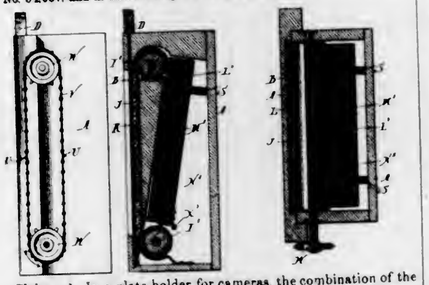
7. A plate-holder attachment for cameras, containing a loose coil of negative-ribbon and means for shearing or cutting the same at proper intervals, substantially as described.

8. In a roll-holder for cameras, the slotted tube K and the coil of negative-ribbon L, in combination with the friction feed-roller co-operating with the wall of the device to feed the ribbon, substantially as described.

9. In a roll-holder for cameras, the slotted tube K, made attachable and detachable and held in position by the bar Y, and containing a loose coil of negative-ribbon, in combination with the knife or shear E and compartment N, substantially as described.

10. In a camera, the attachable and detachable slotted tube K and a loose coil of negative-ribbon properly sensitized contained in said tube, and a tongue-and-groove connection between the tube and case, whereby the tube may be readily inserted into and removed from the case without disturbing the remaining operative parts of the camera, substantially as described

446,371. **PHOTOGRAPHIC-PLATE HOLDER.** CHARLES WHITNEY, Chicago, Ill. Filed Feb. 3, 1890. Serial No. 339,046. (No model.) Patented in Italy Apr. 29, 1890, No. 27,256/333; in Canada July 2, 1890, No. 34,607, and in France July 17, 1890, No. 204,797.



Claim.—1. In a plate-holder for cameras, the combination of the magazine of plates, the block J, the feed-rollers I', and the glass-support R, substantially as described.

2. In a plate-holder attachment for cameras, the chain X, with index-points U U and pulleys W W, arranged for keeping the feed-rollers in unison and designating the distance of length of travel for each plate, substantially as described.

3. In a plate-holder for cameras, the combination of the feed-rollers I', the pulleys W, and the chain V, substantially as described.

4. In a photographic-plate holder for cameras, the friction-rollers I' I', one adapted to force the plate into position for exposure and the other adapted to force it into the space N, in combination with the chain V and the pulleys W, substantially as described.

446,372. **PHOTOGRAPHIC CAMERA.** CHARLES WHITNEY, Chicago, Ill. Filed Feb. 3, 1890. Serial No. 339,090. (No model.) Patented in Italy Apr. 29, 1890, No. 27,256/333; in Canada July 2, 1890, No. 34,607, and in France July 17, 1890, No. 204,797.



Claim.—1. A photographic-camera box of book form constructed with telescopic joints and a flexible V-shaped compartment, through which the exposure is made, substantially as described.

2. A photographic-camera box composed of the covers A and B, the telescopic frame C and D, and the spring-stop M, substantially as described.

3. A photographic camera in a box or book form constructed with covers A and B and telescopic frame C and D with the inner light-tight compartment, substantially as described.

4. In a photographic camera, the telescopic box, the flexible funnel-shaped light-tight compartment, and the separate compartments each side the lens for storing the negative-ribbon, substantially as described.

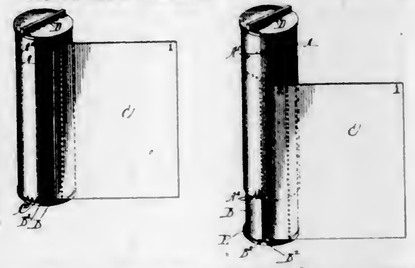
5. In a camera, a flexible V or funnel shaped compartment with a lens at the apex and the negative-ribbon across the base, with the storage-compartments each side of the apex of said frame, and the cover A, holding the negative-ribbon straight, substantially as described.

6. A photographic camera constructed in book form when closed, provided with a telescopic frame with attachable and detachable covers, and means for holding the frame in place when drawn out, substantially as described.

7. In a photographic camera, the slotted tube H, the flexible frame L, the negative-ribbon I, and the winding-post N, substantially as described.

8. In a photographic camera using the negatives in ribbon form, the connecting link or strap J, the post N, and means for attaching the end of the ribbon to the strap, comprising a hook-shaped fastener K, having a single lap, whereby when the connection is made the fastening is a plain lap-seam joint, substantially as described.

446,373. **SUPPLY-CASE FOR ROLL-HOLDERS IN PHOTOGRAPHIC CAMERAS.** CHARLES WHITNEY, Chicago, Ill. Filed May 17, 1890. Serial No. 352,230. (No model.)



Claim.—1. A supply-case for roll-holder cameras, comprising, in combination, two telescoping tubes A B, provided with longitudinally-extending slots and adapted to rotate one within the other, substantially as described.

2. A supply-case for roll-holder cameras, comprising, in combination, two telescoping tubes A B, provided with longitudinally-extending slots and adapted to rotate one within the other, and caps upon the outer ends of the tubes, substantially as described.

3. A supply-case adapted for attaching and detaching in a roll-holder camera, composed of case A and case B, with their slots adapted to produce a friction tension on the negative-ribbon, substantially as described.

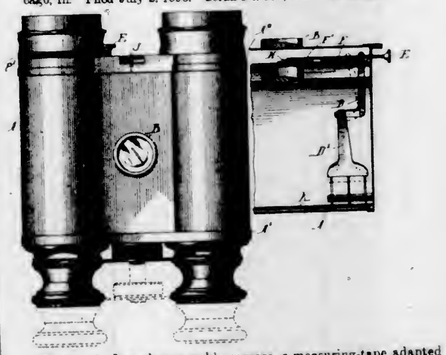
4. A supply-case for roll-holder cameras, composed of two slotted tubes, each capped at one end, one adapted to slide inside the other, the cap on the inside tube provided with a groove to receive the open end of the outside tube, substantially as described.

5. A supply-case for roll-holder cameras, provided with means for making it attachable and detachable to the same, composed of two hollow slotted tubes, one adapted to revolve within the other, for producing a friction-tension and a light-tight case, substantially as described.

6. As a new article of manufacture, the within-described supply-case for roll-holder cameras, consisting of a case A and case B, adapted to contain a coil of sensitized negative-ribbon, substantially as described.

7. As a new article of manufacture, a cylindrical light-tight supply-case for sensitized negative-ribbon, comprising, in combination, a longitudinally-slotted tube adapted to contain a coil of sensitized negative-ribbon, and also adapted to rotate inside of a longitudinally-slotted tube, said slots adapted to pass each other for producing a light-tight case and a friction-tension, substantially as described.

446,374. **PHOTOGRAPHIC CAMERA.** CHARLES WHITNEY, Chicago, Ill. Filed July 2, 1890. Serial No. 357,551. (No model.)



Claim.—1. In a photographic camera, a measuring-tape adapted for indicating the position of the negative-ribbon, in combination with a binocular telescope or field-glass, the outside cylinders of which are adapted to wind the negative-ribbon and the tape, substantially as described.

2. In a photographic camera, the indicating-tape and the winding-posts, in combination with the negative-ribbon and a puncturing device, the latter adapted to be operated by the shutter-lever, substantially as described.

5. In a photographic camera, an indicating-tape adapted to travel in unison with the negative-ribbon, in combination with the cup-shaped compartments and the negative-ribbon compartments, substantially as described.

6. In a photographic camera adapted for the use of negatives in ribbon form, a puncturing device adapted to operate by the movement of the shutter-controlling rod, substantially as described.

7. In a photographic camera, the combination of the coil of negative-ribbon, the puncturing-needles, and the designating-tape, substantially as described.

8. In a photographic camera adapted for using negative-plates in ribbon form, the combination of the tape J, a puncturing device, and the connecting-strap L, substantially as described.

9. In a photographic camera, the combination of a sliding shutter-plate and a pivoted oscillating shutter-plate cover, said cover adapted to engage the shutter-plate and cover its aperture while said aperture passes the lens-opening, substantially as described.

10. In a photographic camera, a sliding shutter-plate, in combination with a pivoted oscillating cover-plate latched thereto, said cover-plate adapted to disengage said shutter-plate by pressure on the controlling-rod F and to re-engage said shutter-plate by spring H", substantially as described.

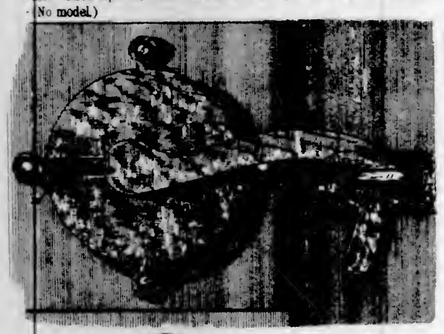
11. In a photographic camera, the storage-compartments for negative-ribbon, adapted to encircle the tubes of a binocular telescope or field-glass, in combination with a measuring device and a perforating device, substantially as described.

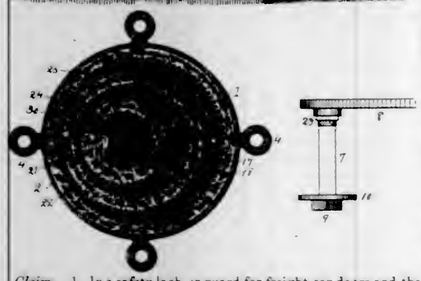
12. In a photographic camera, the combination of a straight sliding shutter-plate and a pivoted oscillating cover-plate and means for latching them together and unlatching them, substantially as described.

13. In a photographic camera, the combination as follows: a winding-post, a connecting-strap, a perforator, and a designating-tape, substantially as described.

14. In a photographic camera, the combination of a ratchet-wheel and pawl, with the telescopic cylinder of a field-glass adapted for use both as a winding-post and a field-glass, substantially as described.

446,375. LOCK. GEORGE W. WOOLEY, St. Paul, Minn., assignor of one-half, by mesne assignments, to John Z. Roraback, Kansas City, Mo. Filed Apr. 13, 1889. Renewed Jan. 19, 1891. Serial No. 378,214. (No model.)





Claim.—1. In a safety lock or guard for freight-car doors and the like, the combination of registering mechanism comprising a series of intermeshing annular ratchets eccentrically mounted, a pawl for actuating one of said annular ratchets, and a bolt mounted upon a spindle connected with said pawl for actuating the same by raising said bolt and turning said spindle, substantially as and for the purpose herein specified.

2. In a safety lock or guard, the combination of registering mechanism consisting of a series of intermeshing annular ratchets having outer and inner teeth and eccentrically mounted one within another by means of an annular flange formed upon the under side thereof and working in a similar annular groove-bearing formed in the base-plate of the lock, a pawl for actuating one of said ratchets, and a hook-bolt mounted upon a spindle connected with said pawl for actuating the same by the lifting of said bolt, substantially as and for the purpose herein specified.

3. In a safety lock or guard for freight-car doors and the like, the combination of registering mechanism consisting of a series of intermeshing annular ratchets eccentrically mounted, a hook-bolt carrying a spindle passing within the inner circumference of one or more of said annular ratchets, and a gravity-actuated pawl mounted upon an angular portion of said spindle and adapted to slide thereon and turn therewith in position to engage with one of said ratchets when said bolt is lifted, substantially as and for the purpose herein specified.

4. In a safety lock or guard for freight-car doors and the like, the combination of registering mechanism consisting of a series of intermeshing annular ratchets eccentrically and rotatively mounted one within another, a hook-bolt attached to a spindle carrying a pawl adapted to actuate one of said ratchets when said bolt is lifted, a notched plate upon said spindle, and a tumbler-latch adapted to engage with the notch in said plate when the bolt is lowered, substantially as and for the purpose herein specified.

5. In a safety lock or guard for freight-car doors and the like, the combination of registering mechanism consisting of a series of numbered or lettered intermeshing annular ratchets eccentrically and rotatively mounted one within another, a hook-bolt mounted upon a spindle carrying a pawl adapted to actuate the inner of said ratchets when said bolt is lifted, a notched plate upon said spindle and turning therewith, a gravity-actuated latch in position to engage with the notch in said plate when the bolt is lowered and prevent the lifting of the same, and a casing inclosing said registering and locking devices and having apertures therein to afford communication therewith, substantially as and for the purpose herein specified.

6. In a safety lock or guard for freight-car doors and the like, the combination of registering mechanism, a hook-bolt mounted upon a spindle carrying a pawl for actuating the registering mechanism, a notched plate mounted upon said spindle, a latch or tumbler pivotally mounted in position to engage with the notch in said plate when the bolt is lowered to prevent the lifting of the same, casing inclosing said registering and locking devices and having an aperture opposite said latch to afford communication therewith for the purpose of lifting the same, and a seal-receptacle surrounding said aperture and having its entrance in position to be closed by said bolt when lowered, whereby access can be had to said latch only by destroying said seal, substantially as set forth.

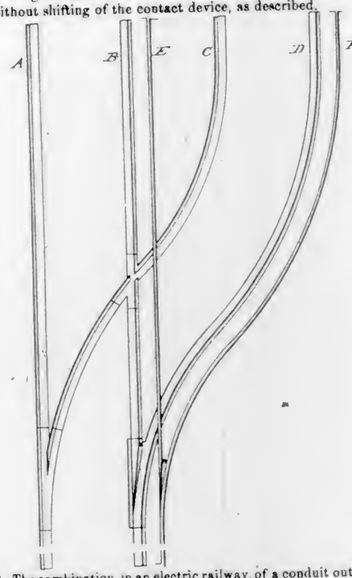
7. In a safety lock or guard for freight-car doors and the like, a bolt mounted upon a spindle passing through the case of said lock, a notched plate upon said spindle, a latch or tumbler pivotally mounted in position to engage with the notch in said plate when the bolt is lowered to prevent the lifting of the same, a casing inclosing said locking device, affording a bearing for said spindle, and having an aperture therein furnishing communication with said latch for the purpose of releasing the same, and a seal-receptacle surrounding said aperture and having its entrance in position to be closed by said bolt when locked, substantially as and for the purpose herein specified.

8. In a safety lock or guard, the combination, with the bolt, of registering mechanism consisting of a series of numbered or lettered annular ratchets eccentrically mounted one within another, a pawl carried by said bolt in position to engage with one of said ratchets and operate the same with the movement of the bolt in unlocking and to ride over the ratchet without engagement on the reverse movement of the bolt, and a casing inclosing said registering mechanism having an aperture therein in position to disclose one character upon each of the said ratchets as the same are brought before it by the rotary movement of the ratchets, substantially as set forth.

9. In a safety lock or guard, the combination of the bolt, a pawl carried by said bolt, and registering mechanism comprising a series of intermeshing annular ratchets eccentrically mounted one within another in position to be actuated by the engagement with one of said ratchets of the said pawl by the movement of the bolt in the operation of unlocking, each of said ratchets having characters thereupon so spaced with relation to the distance moved over by the respective ratchets at each complete unlocking movement of the bolt that characters upon the several ratchets are brought into line at a predetermined point, substantially as set forth.

446,376. ELECTRIC RAILWAY AND CONTACT DEVICE THEREFOR. EDWARD M. BENTLEY, New York, N. Y. Filed Sept. 20, 1888. Serial No. 285,935. (No model.)

Claim.—1. The combination, in an electric railway, of two converging tracks uniting in a single track at a switch, with conduits containing supply-conductors for the respective tracks joining into one at a point near the switch, and both placed without and on the same side of their respective tracks, with their slots a uniform distance from the corresponding track-rails, so as to permit a vehicle to travel on either track without shifting of the contact device, as described.



2. The combination, in an electric railway, of a conduit outside the railway-track and a contact device adapted to ride upon the conduit and having a lateral flexible connection with the vehicle.

3. A contact device adapted to ride upon a conduit and having a contact-piece bearing on the upper side of the inclosed conductor, the contact device being held down upon the conduit independently of the contact-piece.

4. The combination, in an electric railway, of a conduit containing a supply-conductor, and a contact device adapted to ride along the conduit, having a lateral flexible connection with the vehicle holding the contact device down in operative position and provided with contact-pieces bearing on the upper surface of the supply-conductor.

5. The combination, in an electric railway, of a conduit, an inclosed supply-conductor, and a contact device adapted to ride on the conduit and bearing downwardly upon the supply-conductor, with a spring holding the contact device down upon the conduit.

6. The combination, in an electric railway, of a vehicle and a contact device adapted to ride on the outside of the conduit and held down thereon by its mechanical connection with the vehicle, and provided with contact-pieces adapted to ride on the upper part of the supply-conductor.

7. The combination, in an electric railway, of a contact device adapted to ride along the conduit and in engagement with a supply-conductor housed therein, a vehicle to which it is attached, and a spring connection between the vehicle and contact device pressing the latter down upon the conduit.

8. The combination, in an electric railway, of a vehicle, a contact device adapted to ride along the conduit, with a connecting-rod pivoted both to the vehicle and to the contact device and allowing free lateral movement, but tending to hold the contact device down in its operative position.

9. The combination, in an electric railway, of a conduit, an inclosed supply-conductor, and a contact device bearing downwardly upon the conductor and having a shank extending up through the slot, with a spring connected to the vehicle and the shank, and pressing the contact device downward.

10. The combination, in an electric railway, of a conduit, an inclosed supply-conductor, and a contact device for engagement with the conductor, free to move up and down through the slot, with a spring-arm joining the contact device to the vehicle and tending to hold the contact device in its operative position relative to the conductor.

11. The combination, in an electric railway, of a conduit, an inclosed conductor, and a contact device, with a spring-arm pressing upon the contact device and extending lengthwise of the vehicle, and a jointed attachment for the arm, permitting lateral movement of the contact device.

12. The combination, in an electric railway, of a conduit inclosing the supply-conductor, with a plow-shank extending into the conduit, and a plurality of contact-pieces independently pivoted to the shank upon transverse axes and all engaging a single supply-conductor, substantially as set forth.

13. The combination, in an electric railway, of the conduit, the conductor, and the contact-plow consisting of the insulated conducting-core and a contact-piece pivoted thereto on a transverse axis.

14. The combination, in an electric railway, of the conduit, supply-conductor, and contact-plow consisting of the insulated conducting-core and a contact-piece extending rearwardly therefrom and trailing along the conductor.

15. The combination, in an electric railway, of the conduit, the supply-conductor, and the contact-plow consisting of the insulated conducting-core and a plurality of independent contact-pieces connected directly thereto for engagement with the supply-conductor.

16. The combination, in an electric railway, of the conduit and the supply-conductor, supported substantially in line with the slot, with the plow consisting of the insulated conducting-core and a contact-piece pivoted to the core and in engagement with the conductor.

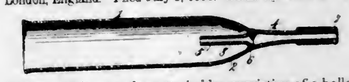
17. The combination of the conduit and the insulated conducting-core wholly inside the conduit and in circuit with the supply-conductor, with a conductor leading from said core outside of the conduit.

18. In a plow for electric railways, the insulated conducting-core having a plurality of contact devices at its lower end and a single conducting-connection extending from its upper end.

19. The combination of the main frame G, sliding along on the outside of the conduit, with an insulating-panel and conductor inclosed in said panel traveling in circuit with the supply-conductor.

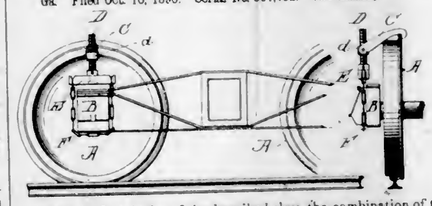
20. The combination of a contact device traveling along the outside of a conduit containing the supply-conductor of an electric railway, and comprising a metallic frame having guards or projections taking the wear against the slot, an insulating-panel in the said frame, and an insulated conductor protected by the panel and traveling in circuit with the supply-conductor.

446,377. CIGAR OR CIGARETTE HOLDER. EBENEZER B. BURR, London, England. Filed July 5, 1890. Serial No. 357,823. (No model.)



Claim.—A cigar or cigarette holder consisting of a hollow holder-body having a contracted extremity, and a tube permanently joined intermediate its ends to the contracted extremity of the holder-body and having one end projecting longitudinally to form a mouth-piece and the other end extending centrally within the holder-body to provide a nicotine-collecting chamber, substantially as described.

446,378. RAILWAY-TRUCK JACK. JOHN C. CARBINE, Atlanta, Ga. Filed Oct. 10, 1890. Serial No. 367,732. (No model.)



Claim.—In a device of the described class, the combination of the grapple C, provided with a bifurcated end, the nut *d*, carried between said bifurcated ends, the screw D, passing through the said nut *d*, the cross-bar E, swiveled to the lower end of the said screw, and the chain F, attached to the said cross-bar, substantially as and for the purpose specified.

446,379. FRUIT AND VEGETABLE CUTTER. CHARLES H. DANA, West Lebanon, N. H. Filed Dec. 10, 1890. Serial No. 374,215. (No model.)

Claim.—1. In a fruit and vegetable cutter, the combination, with a frame or holder, of two corrugated plates arranged at different levels, one in front of the other, one of said plates forming a cutter and the other a guide or rest for the article to be cut, and the adjacent ends of said plates being so arranged with respect to each other as to form throats or openings between them through which said fruit or vegetable passes as it is cut by the corrugated edges of the cutter-plate, substantially as set forth.

2. A fruit and vegetable cutter consisting of a frame or holder having two corrugated plates, one forming a cutter and the other a rest or guide for the article to be cut, said plates being placed one in front of the other with the bottoms of the grooves of the cutting-plate in line and on a level with the tops of the ribs or corrugations of the guide-plate, forming a series of openings or throats between the adjacent ends of said plates, whereby the fruit or vegetable as it passes through said throats is cut into narrow strips or pieces of a shape in cross-section corresponding to that of the openings or throats between the ends of said corrugated plates, substantially as described.



446,380. CRUPPER-FASTENING.

GEORGE H. DAVIS, Laconia, N. Y., assignor of one-half to S. H. Barlow, same place. Filed Aug. 4, 1890. Serial No. 360,885. (No model.)



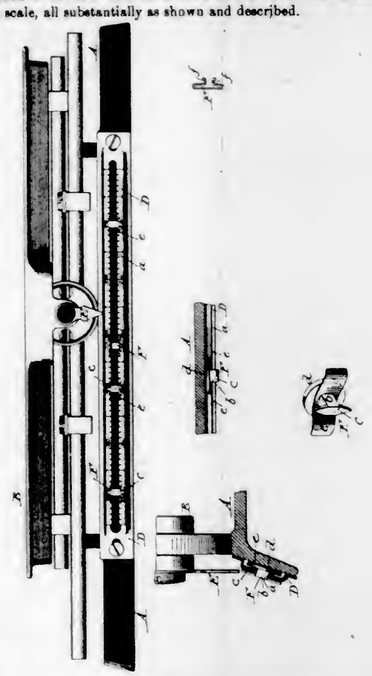
Claim.—A crupper-fastening device consisting of the parts A and B, having their edges turned up and corrugated at right angles to the length of the clamp, and provided with an eye 4 in one end thereof, substantially as described, for the purposes as set forth.

446,381. TYPE-WRITING MACHINE.

WALTER S. DODGE, Washington, D. C., assignor to the Remington Standard Type-Writer and Manufacturing Company, New York, N. Y. Filed May 14, 1890. Serial No. 351,749. (No model.)

Claim.—1. In a type-writing machine, the combination, with a main frame, of a traveling paper-carriage provided with a pointer or indicator E, a longitudinally-slotted scale D, secured directly to the main frame to act in conjunction with the indicator, said scale being struck up or indented to form a pocket, as shown, and a series of buttons F, mounted in the slot and adjustable with reference thereto, all substantially as shown and described.

2. In a type-writing machine, the combination, with a main frame, of a traveling paper-carriage, a pointer or indicator E, a scale D to act in conjunction with the pointer, and a series of adjustable buttons F, applied to the scale and detachable therefrom without dismounting the scale, all substantially as shown and described.



446,382. COMPOSITION FOR PLASTERING.

REUBEN G. FARNHAM, Elbridge, assignor of one-half to Charles M. Warner, Jordan, N. Y. Filed Nov. 25, 1889. Serial No. 331,527. (No specimens.)

Claim.—The herein-described composition for plastering, the same being composed of jute, Portland cement, and marl, combined with the Portland cement in excess of the jute and the marl in excess of the Portland cement, in substantially the proportions herein specified.

446,383. HEELING-MACHINE.

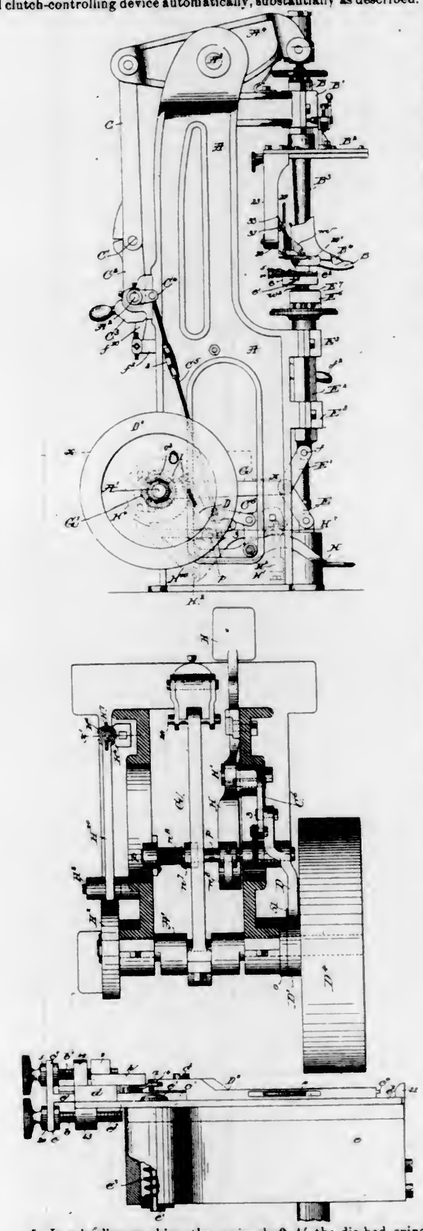
CHARLES W. GLIDDEN, Lynn, and ALVIN D. ELLIOTT, Lawrence, assignors to James W. Brooks, trustee, Cambridge, Mass. Filed Jan. 31, 1889. Serial No. 298,192. (No model.)

Claim.—1. In a heeling-machine, the following instrumentalities, viz: a last-holding slide, its last, means to place the last in different horizontal planes for the operation of nailing the heel to the shoe and then attaching the top lift to the heel, a nail-box, an automatically-operated swing-plate having an attached top-lift holder, nail-drivers, a die-bed spindle to actuate the drivers, a rotating shaft, connections between it and the die-bed spindle, a continuously-moving driving-wheel to rotate the said shaft intermittingly, a clutch between the said driving-wheel and shaft, and a clutch-controlling device and means to operate it at stated intervals, substantially as described, whereby the rotating of the clutch and shaft are stopped as the said shaft completes two rotations, the heel being nailed to the shoe and the top lift being blinded thereon between the commencement of the first rotation of the shaft and the completion of the second rotation thereof, substantially as described.

2. In a heeling-machine, the die-bed spindle, its nail-box, the drivers, the swing-plate, its attached top-lift holders, the toggle-joint, the shaft having the crank G', the link G, the normally-loose driving-wheel, the interposed clutch, and the clutch-controlling device, combined with the rock-shaft and connecting devices between it and the said clutch-controlling device to operate it automatically, whereby the clutch-controlling lever is made to arrest the clutch and release the wheel only after each two rotations of the said shaft and two ascents and descents of the die-bed spindle, substantially as described.

3. In a heeling-machine, a shaft, the clutch, the clutch-controlling device, the rocker-shaft *p*, having a cam, a spring to turn the said rocker-shaft in one direction, and the treadle to turn the rocker-shaft in the opposite direction, substantially as described.

4. In a heeling-machine, the main shaft A', the die-bed spindle, a connecting-link between the said spindle and shaft, a wheel D^4, normally loose on the said shaft, a clutch, and a clutch-controlling device, combined with a treadle to move the said clutch-controlling device in one direction to start the rotation of the said shaft, and with a shaft, as A^3, link C^8, and lever C^4, actuated by the said shaft to operate the said clutch-controlling device automatically, substantially as described.



5. In a heeling-machine, the main shaft A', the die-bed spindle, a connecting-link between the said spindle and shaft, a wheel D^4, normally loose on the said shaft, a clutch, and a clutch-controlling device, combined with a treadle to move the said clutch-controlling device in one direction to start the rotation of the said shaft, and with a shaft, as A^3, link C^8, and lever C^4, actuated by the said shaft to operate the said clutch-controlling device automatically, and with a brake-wheel and brake-lever, substantially as described.

6. In a heeling-machine, the top lift or swing-plate and pivoted lever-arms, combined with a plate carrying the fulcra of the said arms, and with arm-links and a slide-block *h* to engage and turn the said arms positively for a like distance in opposite directions, substantially as described.

7. In a heeling-machine, the top lift or swing-plate, combined with top-lift-holding arms having projections to serve as gages for the breast end of the top lift and having other gages to act against the side edges of the top lift between its breast and rear part, substantially as described, and with arm-turning devices by which to turn the said arms positively and equally in opposite directions, to operate substantially as described.

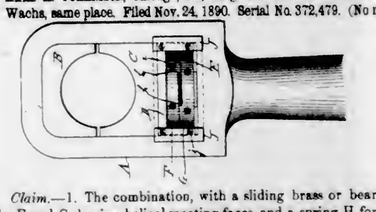
8. In a heeling-machine, the nail-box, the top lift or swing-plate, and the pivoted lever-arms, combined with a plate carrying the fulcra of the said arms, links, and a slide-block to engage and turn the said arms positively for a like distance in opposite directions, and with an adjusting device to adjust the relative positions of the arms longitudinally, substantially as described.

9. In a heeling-machine, the slide-bar 29 and the clamp carried by it, combined with the slide 28, the rock-shaft 31, and its attached dog having a roll *n'* to act against and hold the said slide-bar frictionally, substantially as described.

10. In a heeling-machine, the nail-box, the swing-plate pivoted with relation thereto and pivoted holding-arms movable upon and with the swing-plate to hold a top lift, combined with a catch connected to the nail-box and adapted to engage and hold the said swing-plate in place while the latter is in position for binding a top lift, substantially as described.

446,384. AUTOMATICALLY-COMPENSATING JOURNAL-BOX.

KARL A. JOHANSSON, Chicago, Ill., assignor of one-half to Edward H. Wachs, same place. Filed Nov. 24, 1890. Serial No. 372,479. (No model.)



Claim.—1. The combination, with a sliding brass or bearing, of disks F and G, having helical meeting faces, and a spring H for rotating such disks in opposite directions, tending to increase their joint width, substantially as set forth.

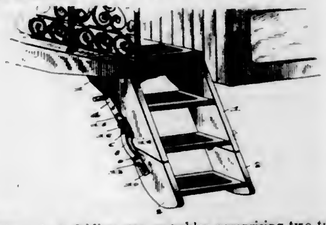
2. The combination, with the solid frame of the kind specified and with one rigid and one movable brass or bearing fitted therein, of disks F and G, inserted behind the movable brass or bearing and having helical meeting faces, and a spring inserted in a central recess between such disks, exerting its force to rotate such disks in opposite directions, and thereby tending to increase their joint width, substantially as and for the purpose set forth.

3. The combination, with head or box A, rigid brass B, and movable brass C, of plates D and E, disks F and G, having helical meeting faces, and spring H, all constructed and arranged substantially as set forth.

4. The combination, with head or box A, rigid brass B, and movable brass C, of plates D and E, disks F and G, connected by a pin *f* and having helical meeting faces, spring H, inserted in recesses between such disks, and plate I and strips J, secured against the sides of plate D, all constructed and arranged substantially as described, to operate as specified.

446,385. FOLDING STEP.

JOHN S. JORDAN and JAMES E. ELLER, Indianapolis, Ind.; said Eller assignor to William McGinnis, same place. Filed Dec. 17, 1890. Serial No. 375,081. (No model.)



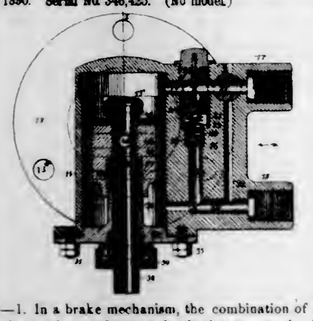
Claim.—1. A folding step or ladder comprising two tubular sections hinged together in the rear, a lever pivoted to the upper section, a corresponding lever slotted at its lower end and adapted to move be-

neath a pin connected to the lower section, these levers connected by curved links pivoted to each, whereby the movement of the upper lever operates to fold or open the sections, the curved links acting as braces to lock the parts when opened in line, substantially as shown and described.

2. A folding step comprising two similar sections hinged together in the rear, a lever pivoted to the upper section, a similar lever provided with a slot having a locking-offset at the top and adapted to move along the line of its slot beneath a headed pin in the lower section, curved braces pivoted to and connecting such levers above and below, and a locking-plate connected to the upper curved brace, having a spring-pin for entering a notch in the upper lever, the sides of the step-frame connected by a rod passing through them, its squared ends entering an opening on one side in the lower brace and on the opposite side in a lock-plate provided with a similar offset or slot, whereby the action of the lever is transmitted through the frame to lock the lower section of the steps on both sides simultaneously, substantially as shown and described.

3. A folding step comprising an operating-lever pivoted to the upper section, a similar lever slotted at its lower end to move beneath the head of a pin driven into the lower section, the upper and lower levers connected by curved braces, a rod passing through the sides of the upper section behind the hinge, its end squared to prevent its independent revolution, a lock-plate on the opposite side of the frame connected to such rod and provided with a slot for traversing a pin driven into the lower section, and offsets provided in the slots of such plate and of the opposite lever, whereby the movement of the upper lever operates to lock both sides of the device when the lower section is let down, all combined substantially as shown and described.

446,386. AUTOMATIC BRAKE MECHANISM. WILLIAM R. KING, New York, N. Y., assignor to James Heron Crosman, same place. Filed Apr. 3, 1890. Serial No. 346,425. (No model.)



Claim.—1. In a brake mechanism, the combination of a valve-cylinder having a piston-valve, a main air-pipe communicating with said cylinder near one end, an auxiliary air-reservoir communicating with said cylinder near the opposite end, a brake-cylinder communicating with said valve-cylinder between the air-pipe and auxiliary-reservoir ports, and a by-pass outside of said cylinder and extending between said air-pipe and said reservoir, the aforesaid parts being constructed and operating so that when air is admitted into said valve-cylinder said piston assumes a position to close the port communicating with the brake-cylinder, and thereby causes the air-current to pass wholly through the by-pass from the air-pipe to the reservoir.

2. In a brake mechanism, the combination of a valve-cylinder having a piston-valve, a main air-pipe communicating with said cylinder near one end, an auxiliary air-reservoir communicating with said cylinder near the opposite end, a brake-cylinder communicating with said valve-cylinder between the air-pipe and auxiliary-reservoir ports, and a by-pass outside of said cylinder and extending between said air-pipe and said reservoir, the aforesaid parts being constructed and operating so that when air is admitted to said valve-cylinder from said air-pipe said piston assumes a position to close the port between the valve-cylinder and brake-cylinder, and thereafter when air is allowed to escape from said air-pipe said piston assumes a position to open communication between said valve-cylinder and said brake-cylinder.

3. In a brake mechanism, the combination of a valve-cylinder and piston-valve therein, a main air-pipe and an auxiliary reservoir communicating with said valve-cylinder near opposite ends thereof, a brake-cylinder communicating with said valve-cylinder between the air-pipe and reservoir-ports, a by-pass outside of said cylinder and extending between said pipe and said reservoir, and a check-valve arranged in said by-pass and held to its seat by a spring constructed to yield and so allow the valve to open only at a determinate pressure, the aforesaid parts being constructed and arranged so that when air is admitted to said valve-cylinder said piston therein first closes communication between said cylinder and brake-cylinder, and then the accumulated pressure, acting on said check-valve in said by-pass, overcomes the opposing spring-pressure, so lifting said valve and establishing communication between the air-pipe and reservoir.

4. In a brake mechanism, the combination of a main air-pipe, an auxiliary reservoir, a brake-cylinder, a by-pass outside of said cylinder and extending between said air-pipe and said reservoir, a check-valve in said by-pass, and a triple valve having a piston, the aforesaid parts being constructed and arranged so that when air is admitted to said triple valve from said air-pipe said piston assumes a position to close communication between said valve and said brake-cylinder and establish communication through said by-pass between said air-pipe and said reservoir, and thereafter when air is allowed to escape from said air-pipe said piston assumes a position to open communication between said triple valve, said brake-cylinder, and said reservoir, and said check-valve closes said by-pass and so cuts off communication between said reservoir and said air-pipe.

5. In a brake mechanism, the combination of a main air-pipe, an auxiliary reservoir, a brake-cylinder, a by-pass between said air-pipe and said reservoir, a check-valve in said by-pass, and a triple valve having a piston, the aforesaid parts being constructed and arranged so that when air is admitted to said triple valve from said air-pipe said check-valve closes said by-pass and said piston assumes a position to open communication between said brake-cylinder and the atmosphere.

6. The combination, in a triple-valve device, of a case or chest, a piston working in a chamber therein, a port or passage communicating with said chamber and with an air-brake cylinder, and a hollow piston-rod open at one end to the atmosphere, there being a transverse aperture through said piston and rod, the said piston working in said chamber to bring said aperture into and out of coincidence with said port or passage.

7. The combination, in a triple-valve device, of a case or chest, a piston working in a chamber therein, a port or passage communicating with said chamber and with an air-brake cylinder, and a hollow piston-rod open at one end to the atmosphere, there being a transverse aperture through said piston and rod, the said piston governing the opening of said port or passage into said chamber, and also governing the opening of said transverse aperture into said hollow rod.

8. The combination, in a triple-valve device, of a case or chest, a piston working in a cylindrical chamber therein, passages communicating, respectively, with an air-pipe and an air-reservoir and entering said cylinder respectively above and below said piston, a by-pass outside of said cylinder and extending between said passages, and a check-valve arranged in said by-pass and provided with a spring whereby it is normally held in a closed position.

9. The combination, in a triple-valve device, of a case or chest, a piston working in a cylindrical chamber therein, passages communicating, respectively, with an air-pipe and an air-reservoir and entering said cylinder respectively above and below said piston, a passage communicating with a brake-cylinder and entering said valve-cylinder about midway its length, a by-pass outside of said cylinder extending between the passages leading to the air-pipe and air-reservoir, and a check-valve arranged in said by-pass and provided with a spring whereby it is normally held in closed position.

10. The combination, in a triple-valve device, of a case or chest, a piston working in a cylindrical chamber therein, passages communicating, respectively, with an air-pipe and an air-reservoir and entering said main cylinder respectively above and below said piston, a by-pass extending between said passages, and a check-valve arranged in said by-pass and having a seat above and a seat below and held against its upper seat by the action of a spring, the aforesaid parts being so operated and arranged that on a certain air-pressure being exerted upon said check-valve through said air-pipe the said valve is lifted or moved away from its upper seat to allow said air to pass through said by-pass, and so that on a certain increased pressure in said air-pipe said valve is moved over against its lower seat, thereby closing said by-pass.

11. The combination, in a triple-valve device, of the case or chest 11, containing the chamber 14 and piston 37 therein, the ports or passages 15, 19, and 20, communicating with said chamber, the by-pass 28, extending between passages 19 and 20 and disposed wholly outside of the chamber 14, containing the valve-chamber 21, the valve 24 in said chamber, and means for normally holding said valve in position to close said by-pass.

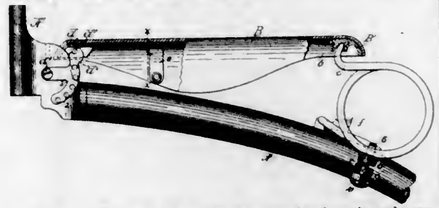
12. The combination, in a triple-valve device, of the case or chest 11, containing the chamber 14 and piston 37 therein, the ports or passages 15, 19, and 20, communicating with said chamber, the by-pass 28, containing the valve-chamber 21, hollow removable plug 22, entering said chamber, and the valve 24 in said chamber 21, having its seats respectively against the end of said plug and the bottom of said chamber.

13. The combination, in a triple-valve device, of the case or chest 11, containing the chamber 14 and piston 37 therein, the hollow piston-rod 38, open at one end to the atmosphere, there being a transverse aperture through said piston and rod, the ports or passages 15, 19, and 20, communicating with said chamber, the by-pass 28, and the check-valve 24 in said by-pass.

14. The combination, in a triple-valve device, of a case or chest 11, containing the chamber 14 and piston 37 therein, the ports or passages 19 and 20, communicating with said chamber near the ends thereof, the passage 32, extending between said passages 19 and 20, and the two-way cock 31 in passages 19 and 32.

15. The combination, in a triple-valve device, of the case or chest 11, containing the chamber 14, and piston 37 therein, the ports or passages 19 and 20, communicating with said chamber, the by-pass 28, valve-chamber 21 in said by-pass, valve 24 in said chamber, and two annular valve-seats projecting into said chamber respectively above and below said valve.

446,387. VELOCIPEDE-SADDLE. JOSEPH A. LITTLE, Lawrence, Mass., assignor of one-half to Eugene A. Dodge, same place. Filed July 1, 1890. Serial No. 357,341. (No model.)



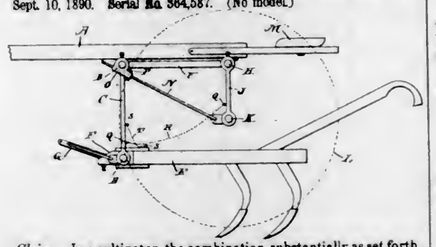
Claim.—1. The neck, the saddle, its pommel and cantle, and a segmental pommel-support pivoted to the neck, an adjusting and locking pin for said support, and the looped spring, combined with clips 8 9, the eyebolts extended through and connecting the clips, the innermost loops of the spring being extended through and adjusted with relation to the eyes of said bolts, adjusting-nuts for the opposite ends of the bolts, and a notched wedge to co-operate with the loop of the spring and lock it in adjusted position, substantially as described.

2. The saddle and the neck, combined with the adjustable saddle-support made as two three-armed levers, one of which is pivoted to each side of the neck by one arm, and a detachable locking and adjusting device co-operating with the downturned end of one of the other arms of each lever and adapted to engage the neck between them, substantially as described.

3. The neck, the saddle, its pommel and cantle, a spring, and a segmental pommel-support pivoted to the neck, combined with an adjusting and locking pin for the pommel-support and a notched locking-wedge for the spring, substantially as described.

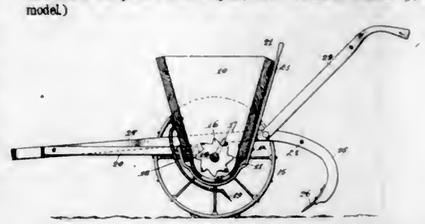
4. The neck, the saddle, and a cross-pin *d'* at the pommel of said saddle, combined with the adjustable segmental pommel-support consisting of two three-armed levers located at opposite sides of and pivoted to the neck by one arm of each, a notch in the upper arm of each lever, into which enters and bears the cross-pin *d'*, and a detachable locking and adjusting device co-operating with the downturned end of one of the other arms of each lever and adapted to rest upon the upper side of the neck between said arms, substantially as described.

446,388. BALANCED CULTIVATOR. JOHN M. W. LONG, Hamilton, Ohio, assignor to the Long & Allstatter Company, same place. Filed Sept. 10, 1890. Serial No. 364,587. (No model.)



Claim.—In a cultivator, the combination, substantially as set forth, of a tongue, a pair of parallel arch-bars mounted thereon, suspenders articulated to the front arch-bar, cultivators with their beams articulated to the lower ends of the suspenders, standards articulated to the rear arch-bar, implement-wheels journaled on axles at the bases of the standards, and braces adjustably connected to the front arch-bar and to the bases of the standards.

446,389. COMBINED PLOW AND FERTILIZER-DISTRIBUTER. SILAMON MCLEAN, Mineral Springs, S. C., assignor of one-half to Brown McCallum, same place. Filed May 23, 1890. Serial No. 352,895. (No model.)



Claim.—1. The combination, with the fertilizer-hopper having a curved bottom provided with an outlet, of the lever 21, pivoted to the outside of the hopper to swing laterally and having a lower curved portion embracing the curved bottom of the hopper and crossing its outlet, and means for holding said lever in any desired position, substantially as set forth.

2. The combination, with the hopper having a curved bottom provided with an outlet, of a curved spreader-table 18, projecting under the hopper and inclined at its inner edge, of a lever 21, having a lower curved portion pivoted to the hopper and working laterally in the space above the table 18, and means for locking the upper end of the lever, substantially as set forth.

3. In a machine of the character described, the combination, with a downwardly-tapering hopper having an opening in its bottom, a spring-table attached to one side of the hopper and extending downward beneath the opening therein, and a cut-off lever pivoted to the hopper and capable of sliding laterally beneath the opening between it and the table, of an axle journaled in the hopper, drive-wheels secured to the extremities of said axle, and a feed-wheel secured to the axle within the hopper over the opening, the teeth of which feed-wheel are alternately laterally bent in opposite directions, substantially as shown and described.

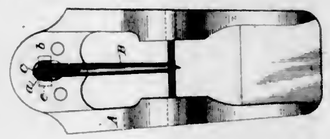
4. In a machine of the character described, the combination, with a tapering hopper having a cylindrical bottom and an opening in said bottom, a spring-table attached to one side of the hopper and extending beneath the opening in the bottom, the lower end of said table being downwardly inclined, and a cut-off lever pivoted to the hopper capable of sliding over the opening between said hopper and the table, of an axle journaled in the hopper, drive-wheels secured to the extremities of the said axle, a feed-wheel attached to the axle within the hopper, the teeth whereof are alternately twisted in opposite directions, and stirrer-fingers radiating from the axle within the hopper in opposite directions, as and for the purpose specified.

5. In a machine of the character described, the combination, with a fertilizer-distributing hopper, an axle journaled in the hopper, drive-wheels secured upon the ends of the axle, an agitator attached to the axle within the hopper, and a tongue projected from the forward portion of said hopper, of an essentially yoke-shaped plow-frame detachably pivoted to the forward end of the hopper-tongue, the members of which frame are carried rearward, one at each side of the hopper, over the axle and downwardly and forwardly curved, plow-blades attached to the curved extremities of the members of the plow-frame, and handles also attached to the said members, substantially as shown and described, whereby the weight of the material to be distributed is sustained entirely by the distributer and the plows are free to be moved up or down, as specified.

6. In a fertilizer-distributer, a stirring-wheel or agitator formed of a disk having its periphery notched to form teeth, said teeth being bent outward alternately in opposite directions, substantially as set forth.

446,390. SHAFT-TUG. GEORGE C. PAINE, Boston, Mass., assignor of one-half to Joseph S. Healy, same place. Filed Mar. 1, 1890. Serial No. 342,314. (No model.)

Claim.—1. The buckle comprising the side and end bars, the intermediate cross-bar, and the bent tongue B, pivoted to the under side of the upper cross-bar, the free end of which rests upon the upper side of the intermediate bar, substantially as described.

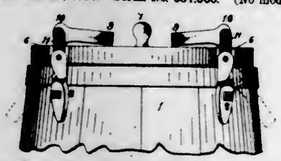


446,390.



2. A buckle comprising the rectangular frame centrally depressed, with a bar in the centrally-depressed post adapted to receive a turn loop and provided with the right-angular tongue pivoted to the under side of the upper bar of the frame and held in place by the plate *c*, said plate secured by rivets or otherwise, the loose end of said tongue resting against the upper side of said central bar, substantially as described.

446,391. CHURN-CLOSURE. SAMUEL D. PALMER, Rockford, Ill., assignor of two-thirds to Henry H. Palmer and George R. King, same place. Filed Jan. 21, 1890. Serial No. 337,580. (No model.)



Claim.—1. The combination of a churn, a removable head, and a pair of bails pivoted to the churn, said bails provided with engaging parts which contact with the removable head when such bails are swung into either the inward or the outward position, and thereby hold the head in place, substantially as set forth.

2. The combination of a churn, a removable head, a ring-head, and a pair of bails pivoted to the churn, said bails provided with engaging parts which contact with the removable head when such bails are swung into either the inward or the outward position, and thereby hold the head in place, substantially as set forth.

3. The combination of a churn, a removable head, and a pair of bails pivoted to the churn, each end of the bails provided with two oppositely-arranged cams, substantially as set forth.

4. The combination of a churn, a removable head, a ring-head, and a pair of bails pivoted to the churn, each end of the bails provided with two oppositely-arranged cams, substantially as set forth.

5. The combination of a churn, a removable head, and a pair of bails pivoted to the churn, each end of the bails provided with two cams oppositely arranged, of unequal size, substantially as set forth.

6. The combination of a churn, a removable head, a ring-head, and a pair of bails pivoted to the churn, each end of the bails provided with two cams oppositely arranged, of unequal size, substantially as set forth.

7. The combination of a churn, a removable head having peripheral projections, a ring-head, and a pair of bails pivoted to the churn, each end of the bails provided with two cams oppositely arranged, which engage the peripheral projections of the removable head, thereby holding it in position, substantially as set forth.

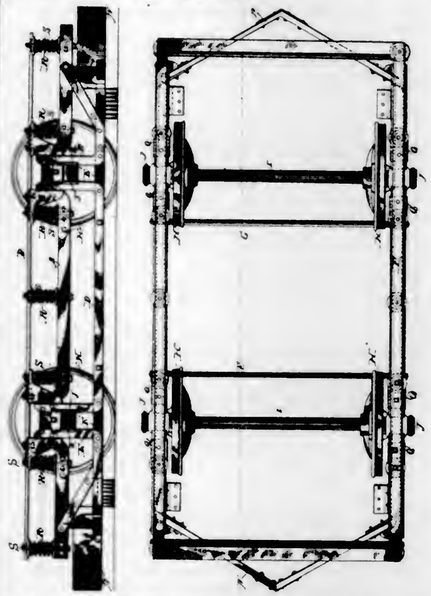
8. The combination of a churn, a removable head, and a pair of bails having a linked connection with the churn, said bails provided with engaging parts which contact with the removable head when such bails are swung into either the inward or the outward position, and thereby hold the head in place, substantially as set forth.

446,392. CAR-TRUCK. HUBERT F. PROBERT, Three Rivers, Mich. Filed Aug. 15, 1890. Serial No. 362,092. (No model.)

Claim.—1. In a street-car truck, the combination, with its wheels and their axles, of side frames and bars D and E, secured thereto and bent so as to form spaces for the bearings of the axles, substantially as set forth.

2. In a car-truck, the combination, with its frame, wheels, and axles, of vertical pockets in the frame, adapted to receive the bearings of the axles, and bars detachably secured to the sides of the pockets for closing them, whereby ready means for securing and detaching the frame from the wheels, axles, or bearings is provided, substantially as set forth.

3. In a car-truck, the combination, with the main frame, of a body-frame carried thereon, the main frame being provided with bars D and E, secured to it and bent so as to form ways, and brackets upon the body-supporting frame, adapted to move vertically upon said ways and to otherwise hold the body-supporting frame in fixed relations to the main frame, substantially as set forth.



4. In a car-truck, the combination, with the main frame, of a yieldingly-supported body-supporting frame adapted to be carried thereon, the ways upon the main frame, and brackets upon the body-supporting frame, adapted to travel upon the ways and while restraining motion in every other direction to permit free vertical motion of the body-supporting frame upon the main frame, substantially as set forth.

446,393. BLACKING-BRUSH. WILLIAM J. SCOTT, Albany, N. Y., assignor to Helen M. Scott and Martha J. Scott, both of same place. Filed June 20, 1890. Serial No. 356,094. (No model.)



Claim.—1. The combination of a casing, a dauber-brush normally retained in an intruded position within said casing, a spring for retracting said dauber-brush into said casing, and an operating-lever for protruding said dauber-brush from said casing, as and for the purpose specified.

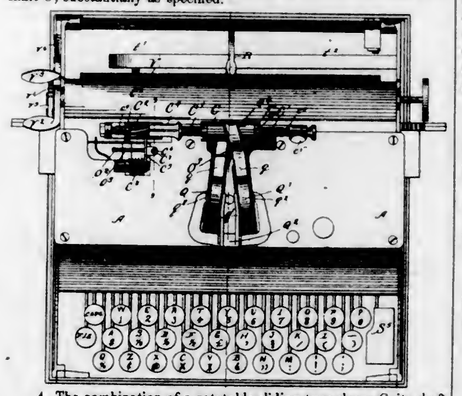
2. The combination of a casing, a dauber brush normally retained in an intruded position within said casing, a spring for retracting said dauber-brush into said casing, an operating-lever for protruding said dauber-brush from said casing, and an adjustable screw whereby the movement of said lever may be regulated, as and for the purpose specified.

446,394. TYPE-WRITING MACHINE. SAMUEL J. SEIFRIED, Chicago, Ill., assignor to the Munson Type Writer Company, same place. Filed Aug. 26, 1889. Serial No. 321,974. (No model.)

Claim.—1. The combination, with a rotatable sliding type-sleeve, of a series of stop-pins for limiting the longitudinal and radial movement of said type-sleeve, said type-sleeve having a series of registering notches on its end for engaging said stop-pins, substantially as specified.

2. The combination of a type-sleeve shaft with a rotatable sliding type-sleeve mounted to slide on said shaft and having an annular groove, a vibrating lever for sliding the same, having a pin for engaging the groove, the key-lever and connecting mechanism for sliding and rotating said type-sleeve by the movement of one and the same key-lever, substantially as specified.

3. The combination of a rotatable sliding type-sleeve C, its rotatable shaft C', and a rotatable sliding spiral gear C^3 for rotating said shaft C', substantially as specified.



4. The combination of a rotatable sliding type-sleeve C, its shaft C', slotted guide C^4, sliding spiral gear C^3, and guide C^5, substantially as specified.

5. The combination of a rotatable sliding type-sleeve, its shaft C', slotted guide C^4, spiral gear C^3, guide C^5, and vibrating lever K, adapted to move said spiral gear in either direction, substantially as specified.

6. The combination, with a rotatable sliding type-sleeve adapted to slide in either direction, of a vibrating lever N, having cams *n n*, and a pair of levers J J, connected with and operated by the key-levers, and having projections or rollers for engaging said cams *n n* for operating said sleeve, substantially as specified.

7. The combination, with the sliding type-sleeve C, of lever N, having cams *n n* and furnished with forks or branches n^2 n^3, levers J J, and returning treadle or lever M, having bar *m*, adapted to engage said arm n^3, and thus return the type-sleeve to its normal position longitudinally, substantially as specified.

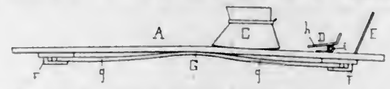
8. The combination, with a sliding and rotatable type-sleeve, of a series of stop or registering pins with which said type-sleeve is adapted to engage directly to register its radial and longitudinal position, substantially as specified.

9. The combination of type-sleeve C, having registering notches at its ends, with stop-pins D, lever N, having cams *n n*, levers J J, and a returning-treadle M, for simultaneously returning said lever N, stop-pins D, and levers J to position, substantially as specified.

10. The combination of type-sleeve C, its shaft C', slotted guide C^4, spiral gear C^3, guide C^5, lever K, having arms *k* k^3, and treadle M, having arms adapted to engage said arms *k* k^3 and restore the type-sleeve to its normal position radially, substantially as specified.

11. The combination, with type-sleeve C, of sliding rotatable spiral gear C^3, segment-gear C^6, and a key-lever connected with said segment-gear, for bringing a different case of type into position for operation, substantially as specified.

446,395. SPRING FOR BUCKBOARDS. WILLIAM H. SPARKS, Camden, N. J. Filed Feb. 25, 1890. Serial No. 341,773. (No model.)

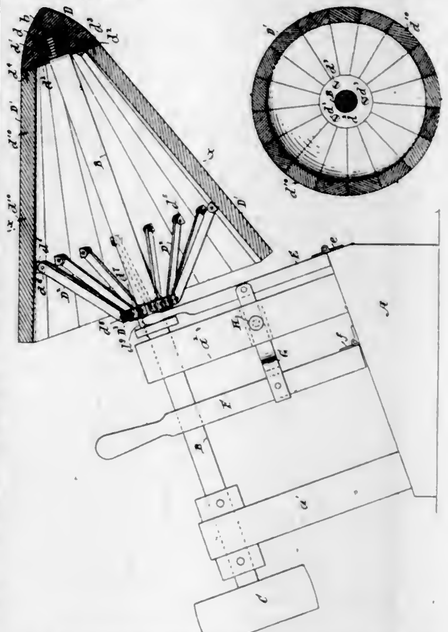


Claim.—A buckboard A, provided with a spring-brace G, composed of spring side lengths *g* and transverse torsional ends *e* in connections F, for the purpose shown and described.

446,396. EXPANSIBLE CONE FOR HAT-MAKING MACHINES. FRANK M. STARR, Danbury, Conn., assignor of one-half to Charles H. Merritt, same place. Filed May 24, 1890. Serial No. 352,990. (No model.)

Claim.—1. The combination of a rotary shaft, mechanism substantially such as described for rotating said shaft, a head-piece flaring from the center outwardly and rearwardly, a number of slats or rods having a swinging connection at one end with said head and extending longitudinally from said head, so as to be substantially flush therewith, and means substantially such as described for moving the slats or rods transversely toward and away from the rotary shaft, substantially as specified.

2. The combination, with a rotary shaft and mechanism substantially such as described for rotating the shaft, of a head-piece on the shaft flaring from its center rearwardly and outwardly, a number of slats or rods arranged closely together and hinged at one end to said head and serving to extend its form longitudinally, a runner on the shaft, and braces connected to the slats or rods and to the said runner, substantially as specified.



3. The combination of a rotary shaft and a number of slats or rods connected thereto at one end, so as to be free to swing laterally, a number of braces connected to said slats or rods near their other ends, a runner or traveler fitted to slide on said shaft and connected to said braces, a lever for shifting said runner or traveler, and a lever connected by a link to the first-named lever, substantially as specified.

4. The combination of a rotary shaft and a number of slats or rods connected thereto at one end, so as to be free to swing laterally, a number of braces connected to said slats or rods near their other ends, a runner or traveler fitted to slide on said shaft and connected to said braces, a lever engaging with said runner or traveler, a lever having a link connection with the first-named lever, and a lock for holding the lever in position, substantially as specified.

5. The combination of a rotary shaft, a head-piece secured thereto, a number of slats or rods and a ring of leather or like material fastened near the inner edge to the head-piece and near the outer edge to the slats or rods, a sliding collar or runner, and braces connected to said slats or rods and collar, substantially as specified.

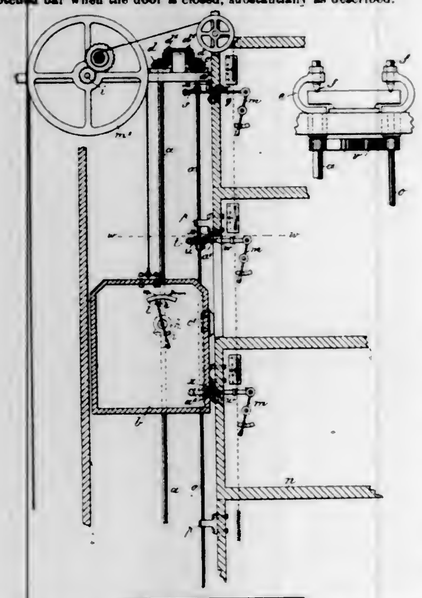
446,397. ELEVATOR. AUGUST SUNDH, Yonkers, N. Y., assignor of one-half to Ernest Boening, same place. Filed Mar. 28, 1890. Serial No. 345,675. (No model.)

Claim.—1. The combination, with the elevator-car, of the shaft for working the controlling-valve suspended in the elevator-way from an anti-friction support at the upper end and independently of intermediate bearings along the elevator-way, the working-lever pivoted to the inside of the car, and the bevel-wheels mounted on the car and gearing said lever and shaft together, one of said wheels sliding along the shaft, substantially as described.

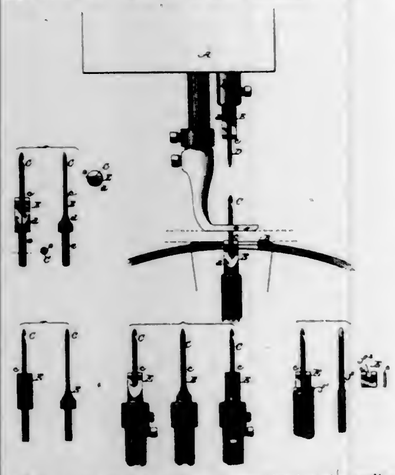
2. The combination, with the elevator-car, of the shaft for working the controlling-valve suspended in the elevator-way and geared with the conductor's working-lever in said car, the intermediate shaft also arranged in the elevator-way and geared with the valve-working shaft, and a working-lever in each story geared with said intermediate shaft and through it with the valve-controlling shaft, substantially as described.

3. The combination, with the working-lever mechanism for shifting the valve-controlling rod, of the safety-stop consisting of the

notched rod or bar connecting the working-lever with the intermediate shaft, the stop-latch, and the inclined flange on the door of the elevator-way, said stop-latch being automatically detachable from the notched bar when the door is closed, substantially as described.



446,398. SEWING-MACHINE. CEPHAS E. WHEELER, Hopkinton, Mass., assignor to the Campbell Machine Company, Pawtucket, R. I. Filed June 13, 1885. Serial No. 168,605. (No model.)

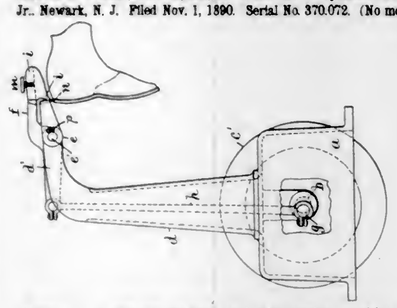


Claim.—1. In a sewing-machine, the combination of a needle and a positively-operated reciprocating and rigidly-carried scoring-tool having a scoring-edge which is coincident with the axis of the needle and with the center of the feed-line, substantially as described, whereby while the machine is stitching the fabric will be progressively scored on the stitch-line for enabling the thread to be embedded or housed on the stitch-line, as set forth.

2. In a sewing-machine, the combination, with a reciprocating needle-bar and its needle, of a scoring-tool also mounted on and rigidly carried by said bar and having a scoring-edge which is coincident with the axis of the needle and with the center of the feed-line, substantially as described.

3. The combination of a needle-bar, a sewing-machine needle, and a scoring-tool rigidly mounted on said bar and having a tubular shank for the reception of the shank of the needle, the edge of the scoring-tool being in line with the axis of the needle, substantially as described.

446,399. HEEL-SEAT-FORMING AND EDGE-SETTING MACHINE. MARCUS L. WRIGHT, Newton, assignor of one-half to Lysander Wright, Jr., Newark, N. J. Filed Nov. 1, 1890. Serial No. 370,072. (No model.)
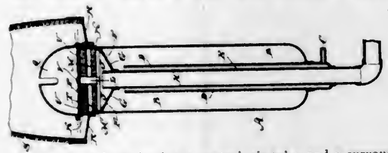


Claim.—1. A heel-seat-forming and edge-setting machine comprising the former *i* and means for vibrating the same, and the supporter *n*, adapted to enter the seam between the sole and upper of the shoe and held stationary adjacent to the path of the former to sustain the shoe when pressed against the same by the operator.

2. A heel-seat-forming and edge-setting machine comprising the carrier and means for vibrating the same, the former *i*, having a dovetail groove fitted adjustably to the carrier and clamped thereon by means of a set-screw, and the stationary supporter *n*, adapted to enter the seam between the sole and upper of the shoe and located adjacent to the path of the former.

3. A heel-seat-forming and edge-setting machine consisting in a suitable bed, the column *d*, having the lever *f* pivoted thereon by the pin *c'*, the wedge-shaped supporter *n*, pivoted adjustably upon such pin, the former *i*, secured detachably upon the said lever adjacent to the supporter, and means for vibrating the lever *f*, as and for the purpose set forth.

446,400. LAMP. WILLIAM A. WRIGHT, Centreton, N. J., assignor of two-thirds to Theodore H. Camp, Brooklyn, and William H. Chandler, New York, N. Y. Filed May 5, 1890. Serial No. 350,639. (No model.)



Claim.—1. A lamp having a central air-tube and a surrounding oil-chamber, a covering-plate for said chamber having openings therein, an upper chamber with filtering-block, and a head with openings therein secured to the upper end of the body of the lamp, said parts being combined substantially as described.

2. A lamp having a central air-tube and a surrounding oil-chamber with an inner partition, a covering-plate for said chamber having openings therein, an upper chamber with filtering-stone, a head with an inner flange having openings therein and an outer rimmed flange, and a slotted cap, said parts being combined substantially as described.

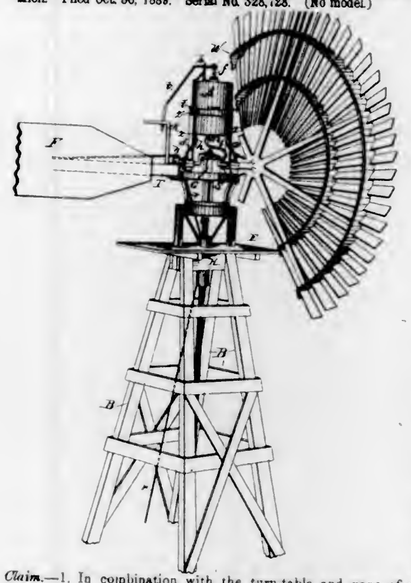
3. A lamp having an upper and a lower oil-chamber, an air-tube leading into said upper chamber, a head with openings therein, a filtering-block, and a slotted cap on said head, said parts being combined substantially as described.

4. In a lamp, a filtering-stone with a vertical opening therein, in combination with a head having openings therein, and an oil-chamber, substantially as described.

5. A lamp having a filtering-stone provided with a vertical opening, and radial passages communicating with said vertical opening, in combination with an oil-chamber, substantially as and for the purpose set forth.

6. A lamp having an oil-chamber with an inner partition, a central air-tube, a covering-plate for said oil-chamber provided with openings, an upper oil-chamber communicating with the first-mentioned oil-chamber, a head with openings therein, a filtering-stone in said upper chamber and having a vertical opening therein, said head having an inner flange with openings therein, and a slotted cap, said parts being combined substantially as described.

446,401. DEVICE FOR OILING WINDMILLS. WILLIAM R. WRIGHT, La Grange, assignor of one-half to Roscoe B. Wheeler, Detroit, Mich. Filed Oct. 30, 1889. Serial No. 328,728. (No model.)



Claim.—1. In combination with the turn-table and vane of a windmill, an oil-supply vessel mounted on the turn-table, a discharge-port in said vessel, a valve to close said port, a stem leading from said valve, an operating-lever coupled to said stem, a supply-pipe leading from the discharge-port of the tank, and an arm mounted on the vane of the mill, whereby the swinging of the vane will actuate the valve of the supply-tank, substantially as and for the purposes specified.

2. In combination with the turn-table and vane of a windmill, an oil-supply tank mounted on said turn-table and adapted to turn therewith, a discharge-port in said tank, a series of tubes communicating with the discharge of the supply-tank, a valve to close the discharge of the tank, and mechanism, substantially as set forth, to operate the valve by the action of the vane.

3. In combination with the turn-table and drive-shaft of a windmill, an oil-supply tank attached to the turn-table and adapted to turn therewith, a discharge-port in the bottom of said tank, a flexible pipe communicating with the discharge of the tank and adapted to be coupled to the crank-coupling of the drive-shaft, a valve to close the discharge of the supply-tank, and mechanism to operate the valve leading therefrom to a point below the turn-table of the mill, substantially as specified.

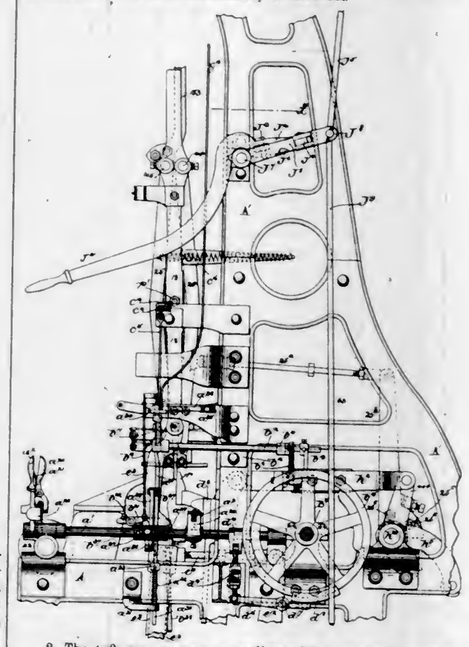
4. In combination with the turn-table of a windmill and the vane thereof, an oil-supply tank attached to the turn-table thereof, a discharge-port in the tank, an inclined platform located below the discharge-port to receive the oil, a series of tubes leading from said incline, a valve to close the discharge-port of the tank, a stem attached to the valve and passing out of the tank, a spring to close the valve, a lever coupled to the stem, the opposite end of said lever adapted to engage with the vane of the mill, as and for the purposes set forth.

5. An oiling device consisting of a supply-tank having in the center of its bottom a discharge-port, a conical platform located below the discharge-port, its apex being located vertically below the discharge of the tank, there being a series of openings in the base of the conical platform, tubes leading from said openings, a valve over the discharge-port, a valve-rod, and an operating-lever coupled to the valve-rod, substantially as specified.

6. In combination with the tank having a discharge-port, a valve to close said port, a stem passing from said valve out of the tank, an operating-lever coupled to said stem, an inclined platform located below the discharge-port, said platform having a series of openings through its lower plane, and a series of tubes communicating with said openings, as and for the purposes specified.

446,402. LOOM FOR WEAVING TUFTED PILE FABRICS. HORACE WYMAN and JOHN A. CLARK, Worcester, Mass., assignors to the Crompton Loom Works, same place. Filed May 6, 1890. Serial No. 350,774. (No model.)

Claim.—1. The tuft-yarn carriers or needles having nibs combined with the nib-board having a series of bars or rods to support the said carriers or needles which are to be used in the production of the row of tufts then to be made, substantially as described



2. The tuft-yarn carriers or needles and the pocketed carriages having projections f^6, combined with tracks parallel to the length of the carriages, and upon which the said projections rest in the sliding movement of the carriages, substantially as described.

3. The lifting-frame, its attached stands having notched bars f^4, and the thin track-plates H^4, set into the notches and engaging the said bars, combined with the pocketed carriages having projections to rest and slide on the said track-plates between the said bars, substantially as described.

4. The arms 25 25×, arranged in pairs, and the broad evener-plates 146 146× connecting them, combined with the bars f^4, their supports, tracks, pocketed carriages thereon, and tuft-yarn carriers or needles therein, the said eveners being wide enough to extend under the pockets of the carriages and stand below the tuft-yarn carriers or needles, which are not to be used in the row of tufts then to be made, substantially as described.

5. The arms 25 and the evener 146 connecting them, frames *p*, having stops f^3, a spring normally to draw the said arms toward the said stops, the arms 25×, the evener 146× connecting them, and means to swing the arms 25× positively, combined with pocketed carriages and supports therefor, and the carriage-evener connected with the arms 25×, to operate substantially as described.

6. The arms 25 and the evener 146 connecting them, frames *p*, having stops f^3, a spring normally to draw the said arms toward the said stops, the arms 25×, the evener 146× connecting them, and means to swing the arms 25× positively, combined with the tracks, their supports, pocketed carriages, and tuft-yarn carriers or needles therein, the evener 146× being moved positively to push all the dropped needles forward toward the cloth-making point and against the evener 146, the latter, after the said carriers or needles are in line, traveling in unison with the evener 146× during its further forward movement, substantially as described.

7. The evener-carrying arms 25, having the extensions 153, the springs 147, the evener-carrying arms 25×, means to actuate the same, the tuft-yarn carriers or needles, the pocketed carriages and shaft *a'*, combined with stop-motion mechanism located between the said extensions and the said shaft and actuated by the said extensions to stop the loom when two tuft-yarn carriers or needles are dropped from below one and the same carriage when the eveners are separated, substantially as described.

8. The lift-frame 18 and its attached stands *p*, having wings provided with projections 150 and with stops f^3, combined with the

evener-carrying levers 25, and pawls carried thereby to engage the said projections and hold the said arms and evener forward, substantially as described.

9. The top hook-board and the bottom hook-board and the Jacquard needles, combined with the series of hooks and the hook-locking board, to operate substantially as described.

10. The top hook-board having the bars 100, the hooks G, their attached tail-cords, and carriers *c*, combined with the hook-locking board having bars to act upon the series of hooks and keep in engagement with the said bars the hooks connected to the carriers not to be used, substantially as described.

11. The top board having the bars or griffs 100, the series of hooks G, adapted to be engaged by the said bars, a series of tuft-yarn carriers connected to the said hooks, a hook-locking board having bars 110 to act upon part of the hooks G, combined with an independent bar 110×, and means to actuate it independently of the bars 110, whereby one row of hooks may be kept from engagement with the bars 100 of the top board as when one row of tuft-carrying needles connected to said hooks are to be operated independently of the other rows to form a border, substantially as described.

12. The top board having the bars or griffs 100, the series of hooks G, adapted to be engaged by the said bars, a series of tuft-yarn carriers connected to the said hooks, and a hook-locking board having bars 110 to act upon part of the hooks G, combined with an independent bar 110× and means to actuate it independently of the bars 110, whereby one row of hooks may be kept from engagement with the bars 100 of the top board, as when one row of tuft-carrying needles connected to said hooks are to be operated independently of the other rows to form a border, substantially as described.

13. The top hook-board having bars to be engaged by the hooks, the bottom hook-board having a series of bars, the series of hooks having eyes at their lower extremity and shoulders 163 above said eyes, and a guide portion, substantially as described, above said shoulders, the shoulders being extended laterally away from the said eyes, combined with the hook-guide board to prevent the hooks from being twisted or turned aside, substantially as described.

14. The top hook-board combined with the hook-locking board having bars 110, the pivoted arms supporting it, the rock-shaft 107, connections between it and the said locking-board, and means to actuate the said rock-shaft, substantially as described.

15. The top hook-board and the hook-locking board suspended below it, and means to actuate it, combined with the rock-shaft 137, the bar 110×, connected to the said rock-shaft, and means to actuate it, as described.

16. The top hook-board, the hook-guide board, and the bottom hook-board having concaved or recessed bars 164, combined with the series of hooks having shoulders between their upper ends 135 and their eyes *i* to enter the recesses of the said bars, substantially as described.

17. A series of hooks, their connected tail-cords, a top board having a series of griffs or blades to engage the said hooks, and an independently-acting locking-bar and means to support and operate the same to cause the hooks acted upon by it to be retained in engagement with one of the said griffs or blades, as desired, substantially as described.

18. The top board, the series of hooks, the bottom hook-board, the tail-cords, the guide-board H′ for the tail-cords, the nib-board, the series of tuft-yarn carriers or needles, and the lifting-frame, including bars 18 and slide bars or rods E^3, jointed together substantially in line with the guide-board H′, the latter and the nib-board being carried by the parts 18 of the lifting-frame, whereby wear on the tail-cords and guide-boards is prevented during the swinging movement of the lifting-frame, substantially as described.

19. The evener-bar 25, having the extension 153, the lifting-frame, the arm c^{28}, carried thereby and adapted to be acted upon by the said extension, combined with the shaft c^{30}, lever c^{31}, the arms c^{19}, the leg c^{16}, having a shoulder or projection to be engaged by the said arm, the block a^{34}, and a vibrator to engage the lower end of the said leg when the latter is dropped, substantially as described.

20. The sliding block a^{34}, the leg c^{16}, guided therein, and holding means to keep the said leg elevated above the lower side of the said block except when two tuft-yarn carriers or needles are dropped into operative position below one pocketed carriage, combined with a vibrator, the swing-frame 18, the evener-frame 25 and the extension 153 carried by it, the arm c^{28}, and means between it and the devices for holding up the said leg to effect the release of the said leg, substantially as and for the purpose described.

21. The sliding block a^{34} and the leg b^{18}, guided thereby and having its end kept above the under side of the said block as long as the selvage-shuttle thread is being properly delivered, combined with the vibrator b^{17}, the rock-shaft b^{20}, to which the said leg is operatively joined, the thread-controller b^{35}, and intermediate connections between it and the said rock-shaft, to operate substantially as described.

22. The sliding block a^{34}, having an opening for the reception of one or more legs and having a hole at or near its inner end, and the vibrator b^{17}, combined with the locking-rod a^{30}, the rock-shaft a', and connections between it and the said rod, to operate substantially as described.

23. The sliding block a^{34}, the rod a^{30}, the shaft a', and connections between the said rod and shaft, combined with the brake-wheel, the lever d^{16}, and connections between it and the said shaft, to operate substantially as described.

24. The block a^{34} to guide the stop-motion legs, and the shaft b^{13}, having the arm b^{13}, and the vibrator b^{17}, combined with the wheel b^{15}, having a cam projection to act on the said arm and rock the said shaft, to operate substantially as described.

25. The Jacquard cylinder G^3, the rods J, the rock-shaft J^1, its attached arms, the rods J^5 J^9, lever 64, and cam F^{13}, combined with the radius-bars J^8 J^8 and the hand-lever J^{14}, having a finger J^{15} to lock the two radius-bars together or to disconnect one from the other to enable the rock-shaft to be actuated through the lever 64 or by the hand-lever while the loom is at rest, substantially as described.

26. The lower hook-board F, the arms F^8, connections between the said arms and the said hook-board, the rock-shaft F^7, the link F^6, the lever 43, and cam to move it, combined with the hand-lever F^{10}, to operate substantially as described.

27. The combination, with the selvage-shuttle race, of the selvage-shuttle-thread controller b^{35}, a cam, and intermediate devices to move the thread-controller in one direction, of a spring b^{75} to move it in the opposite direction, substantially as described.

28. The selvage-shuttle race and the selvage-shuttle-thread controller b^{35}, combined with the rock-shaft b^{20} and intermediate connections, substantially as described.

29. The combination, with cutters to cut the tuft-yarns and leave loops thereof in the fabric, of a cloth-lifting board and operating means therefor to automatically lift the cloth into a predetermined position preparatory to cutting off the tuft-yarn, for the purposes set forth, substantially as described.

30. The cutter-carrying levers K^7 K^8, having a common center of vibration, and their attached blades, combined with means to vibrate both the said levers toward and from each other, substantially as described.

31. The cutter-carrying levers K^7 K^8, pivots K^5, means to move the said levers, and arms K^3 for holding the said pivots, combined with means to adjust the said arms, substantially as described.

32. The cutter-carrying levers K^7 K^8, pivots K^5, and arms K^3, holding the said pivots, combined with means to adjust the said arms and with means to adjust the cutter K^9 on the levers K^7, substantially as described.

33. The tuft-yarn carriers, pocketed carriages in which they are guided, means to support and operate the said carriages, a jacquard to control the selection of the said needles, and a cloth-lifting device, combined with levers K^7 K^8, having cutters or blades, and with means to vibrate said levers, substantially as described.

34. The tuft-yarn needle having a yarn-receiving eye 400 and made hollow or tubular from at or near said eye to its lower end and provided with one or more yarn-detaining devices, substantially as described.

35. The levers 25 and 25×, arranged in pairs, their connecting-springs 147, and the broad evener-plates 146 and 146×, combined with the pocketed carriages, frame 18, and connected stands and tracks, and tuft-yarn carriers or needles in said carriages, the said eveners being wide enough to extend under the pockets and stand below the said carriers or needles, which are not to be used in the row of tufts then to be made, substantially as described.

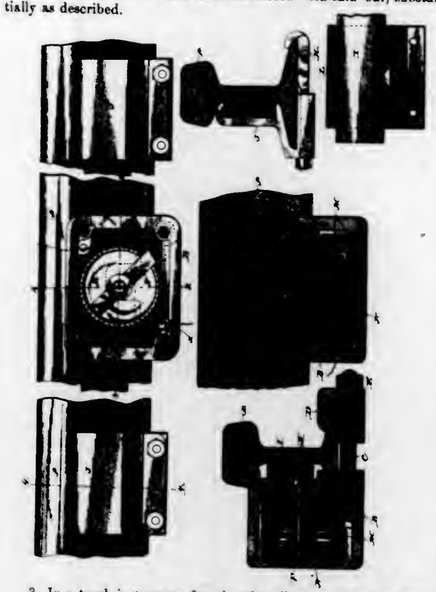
36. A series of tuft-yarn carrying needles having their yarn-receiving eyes 400 arranged at different distances from their lower ends and made tubular from the said eyes to their lower ends, to thereby prevent the rubbing together of the tuft-yarns while the said tuft-yarn carriers are being moved or selected, substantially as described.

37. The herein-described tuft-yarn carrier, having a tubular portion to receive the tuft-yarns and provided at its interior with projections to produce friction upon the tuft-yarn, and with points, as 152, to enter the tuft-yarn, the said points being directed toward the delivery end of the said tuft-yarn carrier, substantially as described.

446,403. TRACK-INSTRUMENT FOR RAILWAY-SIGNALS. MARLON S. COMLY, Chicago, Ill. Filed June 5, 1890. Serial No. 354,309. (No model.)

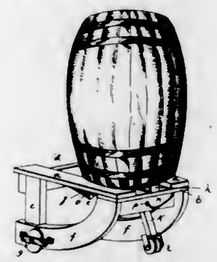
Claim.—1. In a track-instrument for electric railway-signals, the combination, with the rail and a track-instrument secured thereto, of a bar rigidly secured at both ends to the rail and connected with the track-instrument, so as to operate said instrument by the movement of one of said members relative to the other, substantially as described.

2. In a track-instrument for electric railway-signals, the combination, with the rail, a track-instrument secured thereto, and circuit making and breaking devices carried by said instrument, of a bar rigidly secured at its ends, respectively, to said rail at each side of the instrument, a rock-shaft for operating the circuit making and breaking devices, and a crank on said shaft connected with said bar, substantially as described.



3. In a track-instrument for electric railway-signals, the combination, with the rail and a bar secured thereto at its ends, respectively, of a track-instrument secured to the rail between the ends of said bar, the rock-shaft thereof, a crank connecting one end of said shaft with the bar and a ratchet-wheel loosely mounted on said shaft, a crank-pawl fixed upon and operated by said shaft and in turn engaging and operating the ratchet-wheel, and spring contact-plates also engaging the teeth of said wheel, substantially as described.

446,404. TILTING BARREL STAND AND TRUCK. ROWLAND K. CURTIS, Wabash, Ind., assignor of one-half to Charles H. Lawton. Filed Oct. 30, 1890. Serial No. 369,841. (No model.)



Claim.—1. In a barrel stand or truck, the combination of top beams and end pieces, the bottom beams curved forwardly and upwardly, supporting-wheels at the rear ends of said bottom beams, and the swinging support for the front end of the truck, substantially as described.

2. In a barrel-stand, the combination of the top side beams, the end cross-bars, the shoe on the upper side of the front cross-bar, the vertical posts on which the rear ends of said beams are mounted, and the two bottom fulcrum-beams at their rear ends secured to the lower ends of said posts and curving forwardly and upwardly to the under side of said front end piece, as set forth.

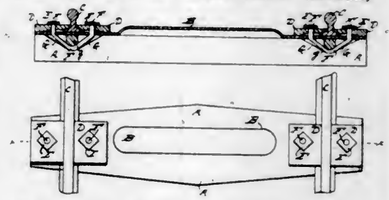
3. A tilting stand or truck having the variable fulcrum-points when operating to raise or lower the load, and the front and rear supporting-wheels, the front wheel or wheels being carried by a swinging or movable support, so that they can be swung out of the way and the truck can be tilted to receive and lift the load, substantially as described.

4. A stand or truck having longitudinal top beams, longitudinal bottom beams curved forwardly and upwardly, wheels at the rear ends of said bottom beams, and the shoe at the front upper side of the truck and the swinging support for the front end of the truck, substantially as described.

5. The tilting wheeled stand or truck having variable fulcrum-points when operating to raise or lower the load, and the swinging standard having a wheel or wheels to support the front end of the truck, and a spring so arranged that when the truck is tilted forwardly to lift the load the standard yieldingly springs back out of the way and when the truck reaches the horizontal position it springs forward and supports the same.

6. The stand or truck having the fulcrum-beams, each provided with a supporting-wheel on both sides of its rear end, and the swinging support for the front end of said stand or truck, substantially as described.

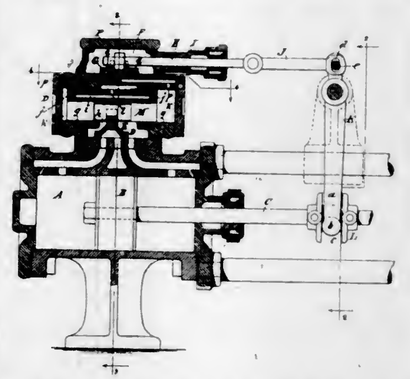
446,405. METALLIC TIE FOR RAILWAYS. ELDERSLEY D. DE CLEMENTS, Detroit, assignor of one-half to Henry P. Glover, Ypsilanti, Mich. Filed Oct. 21, 1890. Serial No. 368,839. (No model.)



Claim.—1. A metallic railway-tie consisting of a U-shaped piece of sheet metal wider in the center than at its ends, substantially as and for the purposes set forth.

2. The combination, with tie A, of a rail C, block G, staple F, blocks D, and fish-plate M, formed integral with block D, substantially as shown and described.

446,406. VALVE-GEAR. MICHAEL GREENWOOD, Bellevue, Del., assignor to the Hall Steam Pump Company, of Plainfield, N. J. Filed Dec. 20, 1889. Renewed Jan. 20, 1891. Serial No. 378,456. (No model.)



Claim.—1. A valve-seat having a central exhaust-port and two live-steam ports on each side of said exhaust-port, in combination with a slide-valve having two transverse ports near its opposite ends, said ports extending in opposite directions from the longitudinal axis of said valve, the longitudinal distance between said ports being substantially equal to the extent of the travel of the valve, and each port being long enough to reach from said exhaust-port to one of said live-steam ports, substantially as set forth.

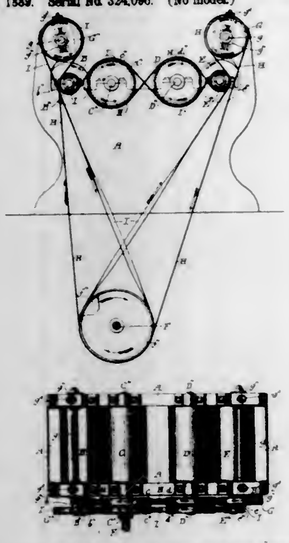
2. The main valve of a steam-cylinder, a balanced actuating-piston therefor having a longitudinally-extending duct in constant communication with the live steam and communicating at opposite ends with balancing spaces or chambers at the respective ends of the piston, in combination with a valve-seat having a central exhaust-port and two live-steam ports on each side of said exhaust-port, said two live

ports communicating with said balancing spaces or chambers, respectively, and an auxiliary slide-valve having two transverse ports near its opposite ends, said ports extending in opposite directions from the longitudinal axis of said auxiliary valve, the longitudinal distance between said ports being substantially equal to the extent of the travel of said auxiliary valve, and each port being long enough to reach from said exhaust-port to said live-steam port, substantially as set forth.

3. The main valve of a steam-cylinder and a balanced actuating-piston therefor having a longitudinally-extending duct in constant communication with the live steam, said duct having contracted ports at opposite ends of the piston communicating with spaces or chambers at the respective ends of the piston, in combination with a valve-seat having a central exhaust-port and two live-steam ports on each side of said exhaust-port, said two live ports communicating with said balancing spaces or chambers, respectively, and a constantly-moving auxiliary slide-valve having two transverse ports near its opposite ends, said ports extending in opposite directions from the longitudinal axis of said auxiliary valve, the longitudinal distance between said ports being substantially equal to the extent of the travel of said auxiliary valve, and each port being long enough to reach from said exhaust-port to one of said live-steam ports, substantially as set forth.

4. The steam-actuated main valve of a steam-cylinder, the reciprocating piston, and the piston-rod, in combination with a constantly-moving auxiliary valve which controls the movement of said main valve, said constantly-moving valve being mechanically connected with said piston-rod so as to move in unison therewith, substantially as set forth.

446,407. BELT-GEARING. MILES MASTERS, Sheffield, Ill. Filed Sept. 16 1889. Serial No. 324,096. (No model.)

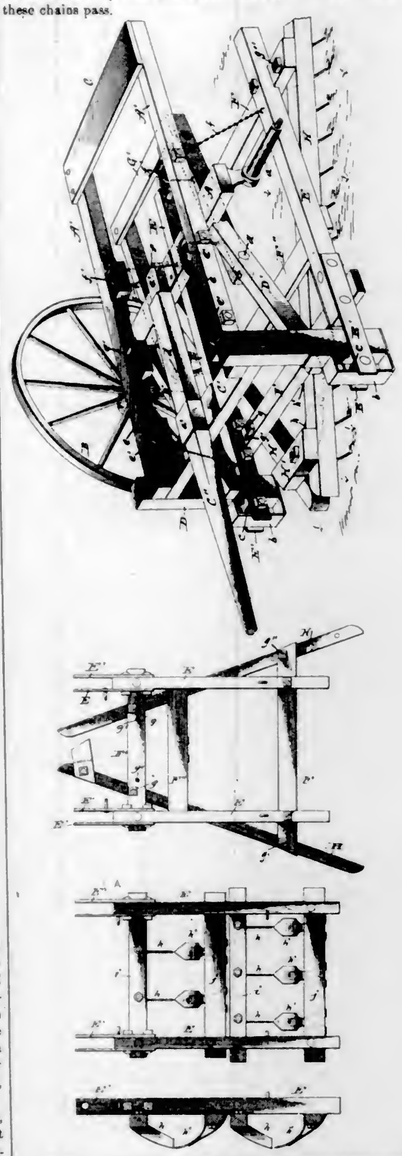


Claim.—1. A device for transmitting power by means of belts and pulleys, consisting of a driven pulley, a driving-pulley, one or more idlers, and two belts, both of which pass over the driven pulley and which engage the driving-pulley and the idler or idlers, said driving-pulley and the idlers being arranged a part on one side and a part on the other side of a straight line passing through the center of the driven pulley, and the belts being arranged to approach the driven pulley from opposite sides of said line, whereby each driving-belt may engage one-half or more of the circumference of the driven pulley, substantially as described.

2. A belt-gear for roller-mills, consisting of four driven pulleys, two driving-pulleys attached to the same shaft, two idlers located at the side of the driven pulleys opposite to that at which the driving-pulleys are located, and straight and cross belts trained over said driving and driven pulleys and idlers, substantially as described.

446,408. SULKY HARROW AND PULVERIZER. CHARLES D. ROBERTS, Fairfield, assignor to Anna M. Roberts, Wayne County, Ill. Filed Aug. 28, 1890. Serial No. 363,258. (No model.)

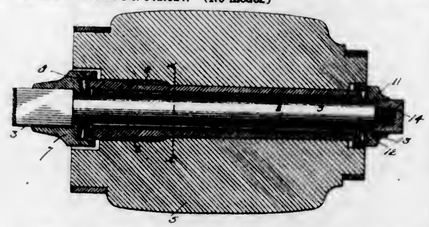
Claim.—1. The combination of a frame mounted upon wheels, vertical beams D D depending from the forward end of the frame and braced by braces D' D', vertical boxes *b b*, secured to the lower ends of the said depending beams, a frame E E, provided with rollers at its forward ends adapted to work in the boxes *b b*, cultivating means attached to this frame E, a pivoted frame G G, pivoted to the main frame, chains *f f*, connecting the rear ends of the frame E E to the said pivoted frame, chains *e e*, connecting the forward ends of the frame E E to the pivoted frame, and rollers upon the frame, over which these chains pass.



2. The combination of a frame mounted upon transporting-wheels, a tongue secured to this frame, vertical braced beams D D depending from the forward end of the said frame, metallic straps *b b*, secured to the front lower sides of the said depending beams, rearwardly-extending draft-beams E E, provided with metallic plates on the opposite sides of their forward ends, these plates embracing the lower ends of the said depending beams and having rollers journaled between them, these rollers working in the elongated boxes formed by the metallic straps and bearing upon the vertical front sides of the depending beams, and means for harrowing and pulverizing the soil, these means being carried by the said draft-beams, substantially as described.

3. The combination of a draft-frame having hangers D and boxes *b*, the draft-beams E E, having rollers *c*, the transverse connecting-beams F and F', the rearwardly-diverging toothed harrow-beams carried by the said frame, bolts *g' g''*, pivotally securing the rear ends of the said toothed beams to the transverse beam F, and removable bolts *g g*, connecting the forward part of the harrow-beams to the forward transverse beam F', this beam F' being provided with an extra set of bolt-holes *g' g'*, whereby the front ends of the harrow may be separated when desired.

446,409. ANTI-FRICTION HUB. CHARLES J. APPLEQUIST, Ellendale, N. D., assignor of one-half to Nels T. Holte, same place. Filed Nov. 25, 1890. Serial No. 372,627. (No model.)



Claim.—1. In an anti-friction hub or bearing, the journal-box adapted to receive the stationary or movable shaft and the longitudinal friction-rolls between said shaft and the inner surface of said box, with the cone-shaped friction-rolls provided in the cups, said cups being fixed on said shaft against rotation thereon and adapted to limit the lateral play of said journal-box or of the said shaft upon one another, respectively, substantially as shown and described.

2. The combination of the journal-box adapted to rotate upon a suitable shaft through the medium of friction-rolls, with containing-cups secured to said shaft and provided with cone-shaped rollers revolving in an annular groove therein, said rollers adapted to engage with the annular end of said journal-box when the said journal-box is thrust longitudinally upon the said shaft into said cup, whereby the friction between the end of the journal-box and the limiting-stop to which the said containing-cup corresponds is lessened.

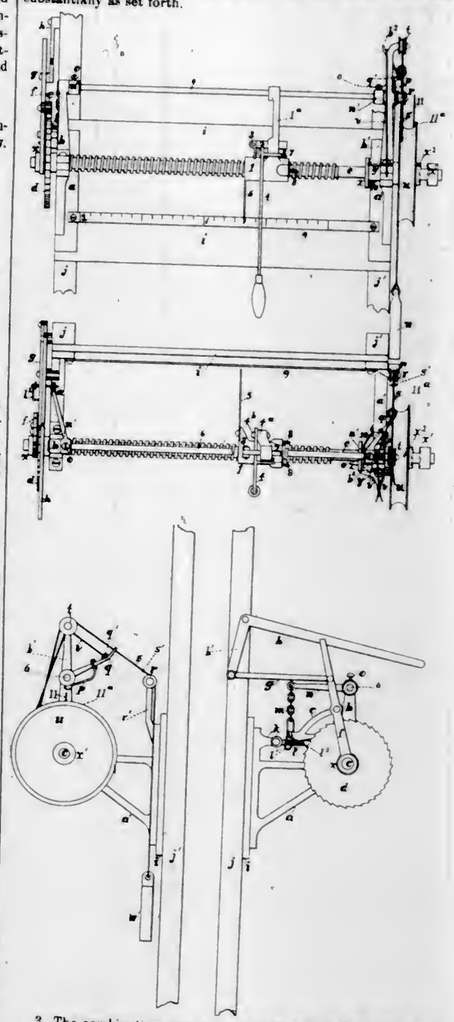
3. The combination of a friction-roll cup adapted to be secured to a shaft or axle and provided with conical-shaped rollers in an annular groove or seat therein, said rollers being of such number as to just fill said annular groove and being loosely held therein by the flanged sleeve provided upon the inner surface of the opening through which the shaft enters, said sleeve being held in place by turned-down points provided upon the other end thereof upon the shoulder of the larger opening provided in the outer end of said cup for the accommodation of the large portion of said shaft or axle, substantially as and for the purpose specified.

4. The combination, in an anti-friction bearing, of the limiting-cups 7 and 11 provided upon the shaft 3, the friction-rolls 2, and the journal-box 4, with the conical-shaped rolls 8, provided in annular grooves in said limiting-cups and adapted to be held therein by the flanged sleeves 9 and 12 of said cups 7 and 11, and means for securing the cup 7 to the shaft 3 and for removably securing the cup 11 to the same, said journal-box 4 being somewhat shorter than the distance between the rolls in the boxes 7 and 11 and adapted to engage therewith, thereby lessening the friction tending to oppose the revolution of the said box 4 or the shaft 3, respectively, when the shaft is moved longitudinally in or upon the said box, substantially as shown and described.

446,410. APPLIANCE FOR REGULATING THE ACTION OF WINDMILL-PUMPS. ANDREW O. MELAAS, Door Creek, Wis. Filed Sept. 13, 1890. Serial No. 364,827. (No model.)

Claim.—1. In a regulating apparatus for pump-motors, the combination of a revoluble screw-shaft, a pawl-and-ratchet mechanism located at one end of said shaft and actuated by the motor, a carriage actuated by the screw-shaft so as to move longitudinally thereof, a clutch mechanism located at the opposite end of the screw-shaft and moved into engagement by the carriage, and a connection between the clutch mechanism and the motor operating to arrest the latter, substantially as set forth.

2. In a regulating apparatus for pump-motors, the combination of a screw-shaft, a carriage actuated by said shaft to move longitudinally thereon, a pawl-and-ratchet mechanism at one end of said shaft, a separable clutch mechanism at the opposite end of said shaft and actuated by the carriage, a rocking guide-shaft controlling the movement of the carriage, an arm at one end of said guide-shaft operatively connected to the pawl mechanism, an arm at the opposite end of the shaft, and a flexible connection attached to the clutch mechanism and operating upon the last-named arm to rock the guide-shaft and release the pawl mechanism from engagement with the ratchet mechanism, substantially as set forth.



3. The combination, with a screw-shaft and its actuating pawl-and-ratchet mechanism, of a carriage carrying a spring-pressed finger engaging the thread of said shaft and carrying also a lever engaging the pawl-carrier and operating to lift the pawl out of operative position, substantially as set forth.

4. The combination of a screw-shaft, a ratchet-disk carried thereby, a pawl and click loosely connected together and engaging said disk, and a lifting-arm connected by a flexible connection to said pawls, substantially as set forth.

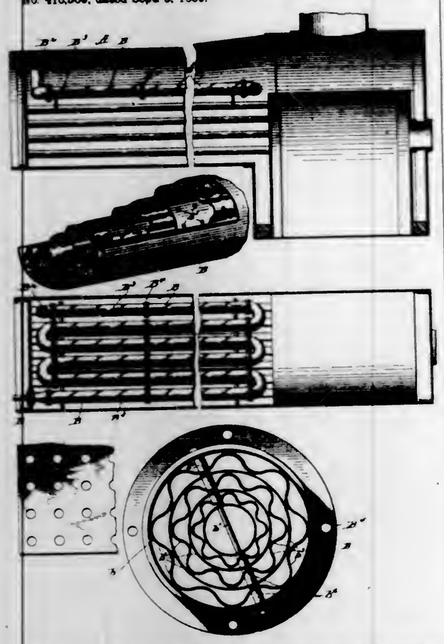
5. The combination of a screw-shaft, a pawl-and-ratchet mechanism at one end of said shaft, a vibrating lever carrying one of said pawls, an actuating-lever operatively engaged by the motor, and a link connecting the vibrating and actuating levers with each other, substantially as set forth.

6. The combination of a screw-shaft, a clutch mechanism at one end of said shaft, a carriage actuated by the shaft and engaging one member of the clutch mechanism, a catch for holding the clutch members in engagement, and a spring for separating said clutch members, substantially as set forth.

7. The combination of a screw-shaft, a pawl-and-ratchet mechanism at one end thereof, an arm carried by a separate shaft and operatively connected to the pawl mechanism, a second arm carried by the said separate shaft, and a pull-cord connected to said arm and operating to rotate the shaft, and thus automatically release the pawl mechanism from the ratchet mechanism.

REISSUES.

11,143. WATER-PURIFIER AND SCALE-ARRESTER. BENJAMIN F. FIELD, Chicago, Ill., assignor to the Field Patent Water Purifier Company, same place. Filed Jan. 9, 1891. Serial No. 377,298. Original No. 410,509, dated Sept. 3, 1889.



Claim.—1. The combination, with a steam-boiler, of a conduit B, located within the boiler, connected to the feed-water pipe, and having a discharge pipe or orifice within the boiler above the water-line and communicating with the steam-space, said conduit being provided with a series of tubes arranged within and extending longitudinally thereof, substantially as described.

2. The combination, with a steam-boiler and a conduit B, horizontally disposed within the boiler and connected to the feed-pipe at one end and provided with a discharge-pipe at the opposite end above the water-line, of a series of corrugated tubes open at both ends and contained one within another, said tubes being longitudinally disposed within the conduit B, substantially as described.

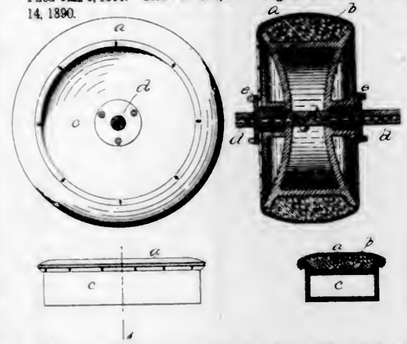
3. In combination with a steam-boiler and the feed-pipe thereof, a conduit B, connected to the feed-pipe and provided with a discharge above the water-line, said conduit being composed of a series of separate pipes or sections detachably secured together and one or more of said sections provided with a series of open-ended corrugated tubes held in position within and longitudinally of the section by a transverse bolt, with spacing devices for holding the several tubes separated, substantially as and for the purpose set forth.

4. The combination, substantially as described, with the boiler and feed-pipe, of the sectional conduit B, composed of a series of outer pipes or sections provided with non-scaling surfaces and a series of removable internal tubes or plates composed of materials, such as iron or steel, for which the scale-forming materials contained in the water manifest an affinity, as and for the purpose set forth.

5. The combination, with a steam-boiler and with the feed-water pipe, of a conduit B, provided with a discharge-pipe opening with the boiler, said conduit being composed of an outer tube and a series of inner tubes arranged one with another and disposed longitudinally of the outer tube, said inner tubes being open at both ends and perforated, as and for the purpose set forth.

6. In a conduit for conveying and heating the water and delivering the latter into a boiler, an outer tube and a series of inner tubes arranged one with another, said inner tubes being composed of corrugated and perforated plates open at both ends and held in place within the outer tube, and a transverse bolt passing through all of the tubes, with devices interposed between the inner tubes to hold them apart, substantially as and for the purpose set forth.

11,144. BLACKING AND BURNISHING BOOTS OR SHOES. WILLIAM W. CROOKER, Lynn, Mass., assignor to John F. Swain, same place. Filed Jan. 9, 1891. Serial No. 377,291. Original No. 438,470, dated Oct. 14, 1890.



Claim.—1. The improvement in the art of polishing and finishing sole and heel edges and other parts of boots or shoes, which consists in dyeing the said parts or surfaces black and treating the said surfaces with wax or other resinous or water-proof compound and polishing the same by contact with a rapidly-moving yielding surface, substantially as described.

2. The combination of a movable chamber *c*, adapted to receive steam, a yielding bed *b* in contact with said chamber, and a flexible facing *a*, supported by said bed, as set forth.

PHOTO-LITH. NORRIS PETERS WASHINGTON D.C.

ANNUAL REPORT

OF THE

COMMISSIONER OF PATENTS

TO CONGRESS,

FOR THE YEAR ENDING DECEMBER 31, 1890.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., January 31, 1891.

To the Senate and House of Representatives of the United States of America in Congress assembled:

It is provided by section 494 of the Revised Statutes that—

the Commissioner of Patents shall lay before Congress in the month of January, annually, a report giving a detailed statement of all moneys received for patents, for copies of records or drawings, or from any other source whatever; a detailed statement of all expenditures for contingent and miscellaneous expenses; a list of all patents which were granted during the preceding year, designating under proper heads the subjects of such patents; an alphabetical list of all the patentees, with their places of residence; a list of all patents which have been extended during the year, and such other information of the condition of the Patent Office as may be useful to Congress or the public.

The history of this bureau for the past year has been, so far as relates to the amount of business successfully transacted, one of continued growth and prosperity. The aggregate number of applications for patents and for the registration of trade-marks and labels has exceeded that of any preceding year in the history of the Patent Office, and the number of patents granted and trade-marks and labels registered has correspondingly increased. This increase is due partly to the natural growth and expansion of the industries of the country, accompanied by a corresponding increase in the products of inventive genius, and is partly due to special efforts on the part of the entire force employed to prevent the work from falling into arrears, as a result of added burdens thereby imposed. At the same time the conditions under which the work has been done have remained practically the same. There has been no increase in room whatever, and no substantial increase in the force employed.

THE NEED OF ADDITIONAL ROOM.

The first need of the Patent Office is additional room. During the past year the utmost effort and ingenuity have been rendered necessary in order to find space even for copies of patents as they have been produced from week to week. The income from these copies during the past year has been upward of $60,000. They have been stored in various parts of the building, upon different floors, in different halls and corridors, and only by the most careful systemization is a searcher, however experienced, enabled to know in what hall, corridor, or cranny he must look in order to find a particular patent. During the past year the Office has been compelled to appropriate to other uses one of the rooms occupied by inventors and their attorneys for the purpose of inspecting their pending applications, and the consequence is that the remaining room, which has only 23 feet square of floor-space, is overcrowded and every day occupied by more than thirty persons at a time. An effort is now being made to restore to the inventors and their attorneys the use of the other room formerly occupied by them. This will be accomplished, if at all, by walling off a space in the already-crowded model halls. The Scientific Library, containing about 60,000 volumes, is crowded into disconnected rooms and galleries, appropriated from one of the model halls. The rooms of the examining divisions are overcrowded; some of them are unhealthy at best; others are rendered unhealthy by their crowded condition. From all parts of the Office arises a daily demand for additional room, which cannot be supplied, but which must, nevertheless, be supplied if the Patent Office is to do its work at all. It is nearly ten years since my predecessors directed attention to this imperative need. Not a report has been made to Congress during the intervening decade which did not dwell upon the necessity for additional room, and with increasing emphasis from year to year. Meanwhile the amount of work annually transacted has nearly doubled; meanwhile the records and copies have vastly accumulated; meanwhile the number of rooms and the extent of space occupied by the Patent Office have become gradually less and less. During the last six years the patrons of the Patent Office have paid into the Treasury over a million of dollars in excess of every expenditure of every kind, either by the Patent Office or by the Department of the Interior for the benefit of the Patent Office. The net income of the present year is greater than it was during the year before. Last year it was greater than during the prior year. The inventors of the country cannot understand why their money is taken while adequate facilities are denied. The policy of making the Patent Office a permanent source of revenue—a bureau of taxation for the general purposes of the Government—has never been advocated, so far as I know, by any one. The time will soon arrive when it will be impossible to discharge the functions of this bureau unless some provision is made to afford relief for its overcrowded condition; and I earnestly request that that relief may be afforded.

OFFICIAL GAZETTE.

The present edition of the OFFICIAL GAZETTE consists of 7,000 copies, of which 2,953 copies are furnished

to subscribers, at five dollars per year, and 3,576 copies are distributed to public libraries, members of Congress, and public officers in accordance with the provisions of the act of Congress of May 18, 1872. Of the remaining copies a large portion are sold and delivered in miscellaneous numbers, the special orders for miscellaneous copies aggregating nearly 5,000 during the last calendar year. The necessity of reproducing the numbers from January to July after the first edition of 6,500 copies had been exhausted increased the expense of photolithographing the OFFICIAL GAZETTE over that of the previous year; but the contract for the fiscal year ending June 30, 1891, entitles the Office to 7,000 copies at the same aggregate price at which 6,500 copies had been furnished heretofore. The contract was made with the Norris Peters Company, which succeeded to the photolithographic business built up and managed by Norris Peters.

Unquestionably this work should be done by the Patent Office; but with the present room, force, and facilities it is impracticable.

The acts appropriating money for the photolithographing have for several years contained the following provision:

> Said photolithographing or otherwise producing plates and copies referred to in this and the preceding paragraph to be done under the supervision of the Commissioner of Patents and in the city of Washington, if it can there be done at reasonable rates.

Under this provision in the last appropriation act the photolithographic work of the Patent Office for the present fiscal year has been contracted for in accordance with the practice which has prevailed for many years. The prices are the same as paid during previous years, excepting that, as I have stated, 7,000 copies are furnished at the same aggregate price which has heretofore been paid for 6,500 copies. This reduction was believed to be due the Office as a reasonable recognition of the advantage derived by the contractors from the corresponding increase of work in preparing drawings for patents and copies. No claim has been made to me, or to my knowledge by any competitor or expert, that the rates paid are not reasonable within the meaning and intention of the act making provision therefor.

INCREASE IN FORCE.

The work of the Office requires a larger number of examiners, with a slight increase also in the clerical force. The examining divisions at present are thirty in number. This has been the case since July 1, 1888. The number of applications filed during the year 1888 was 35,797. During the year 1889 the number was 40,575; for 1890 the number of applications, exclusive of applications for the registration of trade-marks and labels, was 41,048. Not only has the number of applications increased one-seventh since the number of examining divisions was fixed at thirty, but new classes of invented articles have come into being, thereby creating a necessity for new examining divisions. In my opinion there should be at the very least two new examining divisions, with a complete corps of examiners, clerks, copyists, and laborers for such divisions, and such a further increase of force as would be rendered necessary in order to conduct the augmented operations of the other divisions of the Office.

I am deeply impressed with the fact that the pace kept up in the Patent Office now, as in all recent years, is inconsistent with that high degree of care in conducting examinations which the patent system calls for. The Government undertakes on behalf of the inventor not only to give him a patent, if his improvement is new and useful, but to conduct a painstaking examination in order to ascertain what the fact may be in that regard. The search for anticipatory devices and processes should continue until a moral certainty is reached that further search would be unavailing. A patent should evidence such painstaking care in examination that upon its face it should warrant a preliminary injunction, and there can be but little doubt that the continuance of the "American" examination system depends upon so conducting examinations into the novelty of alleged inventions as to make the seal of the Patent Office create a powerful if not a conclusive presumption that the patent is valid. I am aware that after the most exhaustive examination there would still remain a margin of possibility that an anticipatory device or description has been overlooked. No examiner can possibly be aware of all that has been done which has not found a place in patents or in printed publications; but in this age of printing and publicity there is no reason why an examination should not be made sufficiently careful and exhaustive to afford a practical guarantee that the patent granted is a valid patent. I look forward to the day when a sufficient portion of the surplus funds paid into the Patent Office will be withheld from the Treasury to afford the amplest facilities for prosecuting the work of examination until the presumption that the field of research is exhausted shall amount to a moral certainty.

LABORATORY.

The Patent Office still awaits a suitable laboratory. The great number of applications for patents relating to metallurgical, chemical, and electrical inventions renders it necessary that a completely-equipped laboratory should be at the services of Examiners and applicants for patents. At present the Examiners are compelled to determine questions by the exercise of judgment, based upon general information, which everywhere else than in the Patent Office are determined by practical test and experiment. Complaints are not infrequent that applications are unduly delayed when the only method of adequately determining whether a patent should be granted—to wit, the method of experiment and test—is not available. An inconsiderable sum would secure the necessary apparatus and appliances. What is needed is suitable room or rooms, and the merest fragment of the surplus fund which the inventors have paid into the Office during the current year would be sufficient to equip a laboratory that would meet every requirement.

SALARIES.

The salary of the Assistant Commissioner of Patents is $3,000 per annum. It is less than that of either of the Deputy Commissioners of Pensions or than that of the Assistant Commissioner of the General Land Office. His duties require the highest legal and scientific ability. Owing to the large number of appeals which come before the head of the Office in a judicial capacity, the Assistant Commissioner is daily called upon to hear and decide important controversies, involving large pecuniary interests, as well as to assist in all the processes of executive management. In the absence of the Commissioner the entire management of the bureau devolves upon him. No officer of the Government discharging such important duties is so inadequately paid.

The salaries of the Examiners-in-Chief and principal Examiners are also inadequate. The present salary of the principal Examiners was fixed in 1848. A sum which was compensatory forty years ago is not a just equivalent for the same services now. Aside from the fact that all salaries have been increased on account of the increased cost of living, the present Examiners of the Patent Office do far more and better work than formerly. Owing to the wonderful progress in every art, they are required to be much more learned; they are experts in their several departments of scientific thought and acquisition; they are learned in the law, and as heads of divisions they are called upon to exercise administrative ability. What I have said of principal Examiners is true in proportionate degree of the assistant Examiners. The Patent Office cannot expect to maintain an examining corps of the highest order of ability unless the salaries are made commensurate with the services rendered.

In this bureau there are seventy-six employés classed as copyists receiving a salary of $720 per annum. Prior to the last appropriation act these copyists were known as "skilled laborers," although their duties were for the most part clerical. In June, 1888, these skilled laborers were brought within the classified service by Executive order. Since that time all vacancies in such grade have been filled through the Civil Service Commission in the methods prescribed by law. At the present time one-half of the seventy-six copyists have passed the civil service examination. As the matter now stands there is a disposition on the part of the copyists receiving this salary to seek transfers to other bureaus in which for the same services the compensation is $900 per annum. Not only is this the case, but difficulty is experienced in filling vacancies when they occur in this grade. A considerable number of persons who have been certified for appointment during the past year have declined to accept their appointments, upon the ground that the compensation is not sufficient and is less than that paid for equivalent services in other bureaus. When it is remembered that these copyists are engaged in transcribing patents, assignments, and other important documents and papers, and that a high degree of care and intelligence is required therefor, it will be conceded that this discrimination against the employés of the Patent Office is unjust in principle and unwise as matter of policy.

MODEL ROOM.

The model halls contain about 154,000 models. The number added during the past year was 535. The present practice of the Office dispenses with models excepting when required by the Commissioner. The work of repairing models, which was abruptly suspended during 1886, has been resumed in earnest during the past year, and is now progressing as rapidly as the available force for that purpose will permit. There are 25,000 models which require repairing to a greater or less extent. The models contained in the model halls are not only of great interest to the public at large, who evince their interest by visiting them daily in large numbers, but they are of almost inestimable advantage to the examiners by enabling them to conduct their investigations expeditiously. A considerable per cent. of the applications for patents received from day to day are found to be met and anticipated by the contents of the model cases. I regard it as nothing less than a public calamity that the Office was several years ago compelled to suspend the reception of models, excepting in special instances, for want of space in which to store and exhibit them. A public gallery containing specimens of all the inventions of the past ten years would furnish an exhibition of industrial growth of marvelous interest and value, and would be of vast assistance to inventors and examiners in enabling them to readily ascertain whether inventions for which protection is sought have been patented previously. I venture to express the hope that the time will come when models will again be required in connection with all applications, and that when that time arrives an effort will also be put forth to obtain specimens of the more important inventions which have been patented during the intervening period.

SCIENTIFIC LIBRARY.

A vast amount of work has been done in the Scientific Library during the past year in arranging and indexing books and patents. This library at present consists of 59,856 volumes. During the past year 1,713 volumes have been added. During the calendar year the amount expended for books and for the transportation of publications ($2,670.86) has been distributed as follows:

Periodicals and foreign serials	$659 99
Law books and non-technical books for use of examiners	299 20
Technical works	1,004 22
Law books for law library	108 70
Transportation	598 65

The exchange of the OFFICIAL GAZETTE authorized by Congress in the last appropriation act has resulted in a practical increase in the fund available for the purchase of books.

ABRIDGMENT OF PATENTS.

In my report to Congress for the calendar year 1889 I dwelt at some length upon the desirability of a classified abridgment of patents, and called attention to the fact that such work was begun about ten years ago, Congress having made an appropriation of $10,000 for that purpose. No subsequent appropriation was made, however, so that nothing further has been done, and no money has been available for the publication of the digest even as far as completed. In the report referred to the advantages of such a digest were summed up in the following language:

> In the first place, it would be of the greatest value in facilitating the labors of this Office by lessening the work of examiners, and, excepting as the number of applications should greatly increase in the future, would permit of a decrease in the number of the force. It would also be the means of preventing the granting of worthless patents through the failure to discover apt references—a failure which must result in a certain small percentage of cases so long as Examiners are deprived of the most efficient means of conducting their investigations. It would enable the patrons of the Office to prepare their cases intelligently, and by enabling them to readily ascertain the state of the art pertaining

to a supposed new invention would, in a vast number of cases, cause the withholding of applications which now take up the time of Examiners to no useful purpose. It would to a very great extent transfer the work of examination from the Patent Office to the offices of attorneys, and thus afford great relief in the present overburdened condition of the examining divisions. It would enable patentees and manufacturers to definitely understand the extent of their rights as secured by patents, and by disseminating knowledge of what has been done in all the various arts would prevent inventors from traversing the ground occupied by predecessors in their noble pursuit. It would be remunerative to the Government, because such a digest would meet with a ready sale among inventors and manufacturers, and the entire cost of its preparation and publication would soon be reimbursed. And finally it is indispensable if the United States would keep pace with other nations in whatever pertains to the development of its patent system.

LEGISLATION.

Date of Letters Patent, Section 4885.

Section 4885 of the Revised Statutes provides that—

every patent shall bear date as of a day not later than six months from the time at which it was passed and allowed, and notice thereof was sent to the applicant or his agent; and if the final fee is not paid within that period the patent shall be withheld.

This section of the law permits an inventor to wait six months after the allowance of his application and after notice sent before paying the final fee, and yet it requires that the patent shall bear date not later than six months from the sending of such notice of allowance. The Office can do nothing toward preparing the Letters Patent until the final fee is paid, after which payment between two and three weeks must elapse before the patent is fully prepared for signature. In order to issue the patent upon the day of its date it has long been the practice of the Office to send a second notice of allowance in cases where the fee is paid so late that the patent cannot be ready for signature within the six months prescribed by law. This practice seems to be the only practicable one; but it certainly does not commend the statute which makes it necessary. I recommend such an alteration of this section as will remedy the defect which has been pointed out. One remedy which has been suggested is to require all patents to be granted as of the day on which the application was allowed and the patentee notified, six months being allowed for the payment of the final fee, as heretofore. Another method is to provide that the patent shall bear date not later than seven months after the allowance of the application and the sending of the notice. The latter method, which is perhaps the preferable one, would permit the Office to begin preparing the patent for signature after the payment of the final fee in all cases, and would also afford sufficient time to permit the issues for a given week to bear date the same day, in accordance with the present practice. It would probably be unwise to shorten the period for paying the final fee, as the present practice of making payment within six months has become so firmly established that numerous forfeitures would inevitably result from requiring the fee to be paid during a shorter period.

Trade-Marks.

Trade marks are now registered when used in foreign commerce and in commerce with the Indian tribes. The question of registering trade-marks used in interstate commerce is presented in a new aspect by the adhesion of the United States to the International Union for the Protection of Industrial Property. Article 6 of the convention acceded to provides:

Every trade or commercial mark regularly deposited in the country of origin shall be admitted to deposit and so protected in all the other countries of the union.

Additional legislation would seem to be required to enable citizens of the United States to lay a basis for registration abroad by first effecting domestic registration when their trade-marks are used in commerce among the States, and also to enable aliens to secure by appropriate Congressional action the benefit of the treaty stipulations. Again, section 7 of the act to reduce the revenue and equalize duties on imports and for other purposes, approved October 1, 1890, provides that no article of imported merchandise which shall copy or simulate the name or trade-mark of any domestic manufacture or manufacturer shall be admitted to entry at any custom-house of the United States, and that any domestic manufacturer who has adopted trade-marks may require his name and residence and a description of his trade-marks to be recorded in books which shall be kept for that purpose in the Department of the Treasury, &c. No provision seems to be made in said act for determining whether the manufacturer registering the mark is the owner thereof, or for determining to which one of two or more persons or parties claiming the same mark the title thereof belongs. Under the law as it now exists the Commissioner of Patents is clothed with power to settle such questions *prima facie* for all the purposes of registration, and suitable statutory provisions and rules prescribed by departmental authority regulate the methods of procedure to be followed. It would seem to be the part of wisdom to extend the authority of the Commissioner so as to include the registration of trade-marks used in interstate commerce in some manner consistent with the law already providing for registration in the Treasury Department. Such legislation would enable the Department of the Treasury to have the benefit of the investigations and conclusions of the Patent Office, and would at the same time provide a single system of registration and a single place for registration for all trade-marks employed in connection with any department of commerce within the regulative power of Congress.

Charge for Certified Copies of Printed Matter.

There should be a law authorizing the Commissioner to furnish certified copies of printed patents at the same rates as are now charged for uncertified printed copies of patents, with the additional fee prescribed by law for the official certificate. As the law now stands ten cents per hundred words must be charged for a certified copy of a printed patent, although the same patent could be furnished unaccompanied by a certificate for the maximum price of twenty-five cents no matter how many words it might contain.

Limitation of Patents.

Attention is again respectfully directed to the existing law which provides that patents granted for inventions which have been patented in a foreign country shall be so limited as to expire at the same time with the foreign patent. The attention of Congress has been directed to this subject in all or nearly all the reports of Commissioners of Patents in recent years. No adequate reason can be given why an American patentee should pay the penalty of having

the term of his patent shortened because he has elected to patent his invention abroad. The practical difficulties of administering the present law in this bureau are very great. It is manifestly impossible to certainly ascertain whether or not a patent has been granted in foreign countries prior to the very day on which the American patent is to issue. Again, the American inventor is often compelled to forego the benefits designed to result from the International Union for the Protection of Industrial Property by the necessity of applying for a foreign patent before his patent can be granted in due course in this country. He must apply in foreign countries within seven months from the date when he files his application in this country or he loses the benefit of the period of priority conferred upon citizens and subjects of nations which are parties to the Union; but in many cases the American patent cannot be granted until the expiration of a longer period than seven months from the date of filing the application. In such a case the patentee must consent to have his American term shortened or, as I have already stated, forego the benefits of the period of priority as against subjects of other nations which he might otherwise enjoy.

Interference Proceedings.

Section 4904 of the Revised Statutes requires that when an application is made for a patent which in the opinion of the Commissioner would interfere with any pending application, or with any unexpired patent, he shall institute proceedings to determine the question of priority of invention. The statute evidently contemplates a single proceeding, resulting in the grant of a patent to the prevailing party, unless such party has already received his patent. It not infrequently happens, however, that when the successful party is about to go out with his patent a stranger to the previous proceedings files an application, and as the law now stands a second interference is instituted with all its prolixity of procedure, thereby detaining the first applicant for still another period of controversy, and unduly postponing the time when the true inventor shall come into the enjoyment of his rights, and also the time when seventeen years later the public shall be entitled to enter into the unrestricted use and enjoyment of the new art or manufacture. I am sorry to add that it is currently believed that in some cases new parties enter the field not so much to obtain a patent for themselves as to obstruct and postpone the rights of meritorious inventors. In my opinion a law providing that a party prevailing upon the first proceeding shall be permitted to take his patent, and that subsequent applicants shall contest priority with a patentee instead of with an applicant, would be found to constitute a practical remedy for some of the incidental evils of the system as it at present exists.

Refundment of Moneys Paid by Mistake.

For many years it has been the practice of the Patent Office to refund moneys paid by actual mistake, such as a payment in excess, or when not required by law, or by neglect or misinformation on the part of the Office. This practice is based upon a rule established by the Commissioner of Patents with the approval of the Secretary of the Interior under authority conferred by section 483 of the Revised Statutes. The amount refunded during the past year was $13,394.45. It is found in practice that the course prescribed by the rule is the only one adapted to the transaction of the business of the Office. The fees paid, although amounting to a considerable sum in the aggregate, consist, for the most part, of very small items. Practically speaking, refundments must be made by the Commissioner of Patents, or not at all, in the great majority of instances. I am satisfied that this course of business in respect of refundments of moneys, which is found to be necessary, should stand upon a more satisfactory basis than an Office rule. I know of no reason why a statute should not be enacted directly authorizing the Commissioner to make refundments out of any moneys in his hands in all cases where payments made have been by actual mistake, such as payments in excess, or when not required by law, or by neglect or misinformation on the part of the Office. By no possibility could detriment result if such a law were enacted. Under the system of accounts now employed the accounts of the Patent Office are thoroughly examined every month by expert officials of the Treasury Department; and the Commissioner, the Chief Clerk, and the Financial Clerk are all bonded officers.

THE CONFERENCE AT MADRID.

In my last annual report I directed attention to the conference at Madrid of the members of the International Union for the Protection of Industrial Property, then about to be held in April, 1890. It was pointed out that there was reason to believe that the "period of priority" accorded to inventors for "depositing" their inventions or applications in other countries than their own was agreed upon without taking into full consideration the peculiar feature of the American patent system, which requires a careful examination after the application has been filed and before a patent is granted. At the same time I expressed the opinion that the United States should be represented at the conference by delegates learned in matters pertaining to the American law of patents and trade-marks, in order that through the efforts of such delegates a change might, if possible, be effected which would make the treaty subserve the needs of American inventors seeking patents in foreign countries. As a means of accomplishing this result it was suggested that Article 4 of the final protocol might ultimately be so amended as to make the seven months' right of priority run from the date of publication of the patent first applied for instead of from the date of the application itself.

In accordance with these suggestions an act was passed authorizing the Secretary of State to appoint delegates, and Examiner F. A. Seely, of this Office, and Mr. Francis Forbes, of New York, were appointed. These delegates, acting in conjunction with the United States Minister at Madrid, represented the United States at said conference, and although well-directed efforts, prosecuted with zeal and ability, were put forth by them they were not able to bring about the result anticipated.

CENTENNIAL CELEBRATION.

The first American patent law went into effect on

the 10th day of April, 1790; the hundredth year dating from that event has therefore terminated. It is in contemplation, however, to celebrate the beginning of the second century of the patent system. The movement in the direction of such a celebration originated outside of official circles, and had its origin in the recognition of the influence, both beneficent and marvelous, which the patent system has exerted. The century ending in 1890 had seen more of material progress than many preceding centuries had witnessed. During the same period of one hundred years the American patent system had been in being, and along with other systems in other countries, most of them of more recent origin, had stimulated and protected inventions and inventors. It was impossible to overlook the coincidence or to disregard the lesson thereby suggested. It was impossible that the vast human interest which invests everything pertaining to the Patent Office should not obtain expression, and it would have excited an unbounded surprise if the opportunity afforded had not been seized upon. It is now too early to forecast and announce in detail the exercises that will take place, but the time selected is the 8th of April, 1891, and the two succeeding days. There is every reason to expect that the celebration will be worthy of the occasion and of the transcendent importance to the American people of their patent system.

BUSINESS OF THE PATENT OFFICE.

The following statements exhibit in detail the business received and transacted by the Office during the last calendar year. In general it may be stated that the total number of applications received, including mechanical applications, designs, and reissues, and excluding applications for the registration of trade-marks and labels, was 41,048; that the total number of patents granted, including mechanical patents, designs, and reissues, was 26,292; that the total number of registrations was 1,719; that the total receipts were $1,340,373.66, and that the total expenditures were $1,099,297.74, leaving a surplus of $241,074.92 to be turned into the Treasury of the United States, making a total balance in the Treasury to the credit of the Patent fund of $3,872,745.24.

RECEIPTS.

Detailed statement of all moneys received for patents, for copies of records or drawings, or from any source whatever.

Applications:		
Cash received		$1,152,891 54
Cash refunded		4,998 00
Net cash		1,147,893 54
Certificates of deposit		51,910 00
Total cash and certificates		1,199,803 54
Copies:		
Cash received		106,453 62
Cash refunded		4,676 64
Net cash		101,776 98
Certificates of deposit		748 50
Total cash and certificates		102,525 48
Recording assignments:		
Cash received		22,818 38
Cash refunded		1,230 16
Net cash		21,587 92
Certificates of deposit		250 00
Total cash and certificates		21,837 92
Subscription to Official Gazette:		
Cash received		13,467 57
Cash refunded		83 35
Net cash		13,384 22
Certificates of deposit		84 50
Total cash and certificates		13,468 72
Registration of labels:		
Cash received		4,993 00
Cash refunded		2,406 00
Net cash		2,587 00
Certificates of deposit		150 00
Total cash and certificates		2,737 00
Aggregates.		
Cash received		$1,300,624 11
Cash refunded		13,394 45
Net cash		1,287,229 66
Certificates of deposit		53,143 00
Total cash and certificates		1,340,372 66

EXPENDITURES.

Amount expended by this Office under the several appropriations from January 1, 1890, to December 31, 1890.

Salaries	$657,505 15
Official Gazette	61,439 20
Photolithographing	95,063 80
Scientific library	1,954 43
Transportation of publications to foreign governments	410 40
Total	816,372 98

*Approximate amount reported by the Department of the Interior as expended on account of this Office from January 1, 1890, to December 31, 1890.**

Stationery	$9,368 45
Postage on foreign matter	1,361 20
Printing and binding	241,743 86
Watch force	16,600 00
Furniture	7,592 42
Carpets	512 17
Ice	550 76
Telephones	469 10
Washing towels	120 78
Sundries	4,606 02
Total	282,924 76
Aggregate amount of expenditures	1,099,297 74

RECEIPTS OVER EXPENDITURES.

Total receipts	$1,340,372 66
Total expenditures	1,099,297 74
Receipts over expenditures	241,074 92

Statement of balance in the Treasury of the United States on account of the patent fund.

Amount to the credit of the fund January 1, 1890	$3,631,670 32
Amount of receipts during the year 1890	1,340,372 66
Total	4,972,042 98
Deduct expenditures for the year 1890	1,099,297 74
Balance January 1, 1891	3,872,745 24

SUMMARY OF THE BUSINESS OF THE PATENT OFFICE.

Number of applications for patents for inventions	39,881
Number of applications for patents for designs	1,046
Number of applications for reissues of patents	118
Total number of applications	41,048
Number of caveats filed	2,311
Number of applications for registration of trade-marks	1,687
Number of applications for registration of labels	875
Number of disclaimers filed	5
Number of appeals on the merits	1,330
Total	6,208
Total number of applications, &c., requiring investigation and action	47,256
Number of patents issued, including designs	26,208
Number of patents reissued	84
Total	26,292
Number of trade-marks registered	1,415
Number of labels registered	304
Total	1,719
Number of patents expired during the year	11,616
Number of patents withheld for non-payment of final fees	3,559

*A literal compliance with the provisions of the statute requiring "a detailed statement of all expenditures for contingent and miscellaneous expenses" is not possible, for the reason that the contingent fund for the several bureaus of this Department was consolidated by the act of March 3, 1883, and hence no part of that fund is disbursed by the Patent Office, and I am furnished only with an approximate sum expended on behalf of the Patent Office.

The following tables exhibit the business of the Patent Office during the year 1890:

PATENTS ISSUED.

Patents issued to citizens of the United States, with the ratio of population to each patent granted.

States and Territories.	Patents and designs.	One to every—
Alabama	103	14,689
Arizona Territory	14	4,258
Arkansas	95	11,875
California	640	1,887
Colorado	184	2,240
Connecticut	937	796
Delaware	51	3,303
District of Columbia	235	980
Florida	51	7,674
Georgia	165	11,135
Idaho	12	7,032
Illinois	2,152	1,778
Indian Territory	8	
Indiana	670	3,572
Iowa	437	4,375
Kansas	352	4,054
Kentucky	252	7,375
Louisiana	137	8,164
Maine	192	3,443
Maryland	297	3,509
Massachusetts	2,096	1,068
Michigan	980	2,136
Minnesota	379	3,434
Mississippi	55	23,447
Missouri	809	3,311
Montana	53	2,493
Nebraska	225	4,706
Nevada	12	3,813
New Hampshire	172	2,189
New Jersey	1,112	1,299
New Mexico Territory	16	9,599
New York	4,585	1,808
North Carolina	74	21,864
North Dakota	40	4,567
Ohio	1,702	2,084
Oklahoma Territory	4	15,438
Oregon	82	3,326
Pennsylvania	2,611	1,999
Rhode Island	273	1,265
South Carolina	75	15,348
South Dakota	59	5,573
Tennessee	180	9,819
Texas	303	7,258
Utah Territory	30	6,930
Vermont	101	3,291
Virginia	177	9,355
Washington	64	5,459
West Virginia	95	8,029
Wisconsin	634	2,660
Wyoming	8	7,588
United States Army	9	
United States Navy	9	
Total	24,103	

Patents granted to citizens of foreign countries.

Argentine Republic	3
Austria-Hungary	71
Belgium	18
Brazil	2
Canada	371
Chili	2
Colombia	1
Cuba	11
Denmark	8
England	721
France	178
Germany	452
Hawaii	4
India	1
Ireland	21
Italy	6
Japan	2
Mexico	14
Netherlands	6
Newfoundland	3
New South Wales	17
New Zealand	7
Norway	3
Portugal	1
Queensland	1
Roumania	2
Russia	12
Scotland	40
South Africa	1
South Australia	5
Spain	7
Sweden	32
Switzerland	56
Turkey	1
Venezuela	3
Victoria	19
West Indies	3
Total	2,105

The following tables present a comparative statement of the business of the Patent Office since the enactment of the statute of 1836 and exhibit in detail the business of the Office during the last calendar year:

Comparative statement of the business of the Office from 1837 to 1890, inclusive.

Year.	Applications.	Caveats filed.	Patents and reissues.	Cash received.	Cash expended.	Surplus.
1837			436	$29,289 08	$33,506 98	
1838			520	42,123 54	37,402 10	$4,721 44
1839			325	37,260 00	34,543 51	2,716 49
1840	735	228	473	38,056 51	39,020 67	
1841	847	312	495	40,413 01	52,699 87	
1842	761	391	547	36,505 68	31,241 48	5,264 20
1843	819	315	510	35,315 81	30,776 96	4,538 85
1844	1,045	380	495	42,509 26	36,344 73	6,264 53
1845	1,246	452	501	51,076 14	39,395 65	11,680 49
1846	1,272	448	638	50,264 16	46,158 71	4,105 45
1847	1,531	553	560	63,111 19	41,878 35	21,232 84
1848	1,628	607	652	67,576 69	58,905 84	8,670 85
1849	1,955	595	1,068	80,752 98	77,716 44	3,036 54
1850	2,193	602	993	86,927 05	80,100 95	6,816 10
1851	2,258	760	872	95,738 61	86,916 93	8,821 68
1852	2,639	996	1,019	112,056 34	95,916 91	16,739 43
1853	2,673	901	961	121,527 45	132,809 83	
1854	3,328	868	1,844	163,789 84	167,146 32	
1855	4,435	906	2,012	216,459 35	179,540 33	36,919 02
1856	4,960	1,024	2,506	192,588 02	199,931 02	
1857	4,771	1,010	2,896	196,132 01	211,582 09	
1858	5,364	934	3,695	203,716 16	193,193 74	10,522 42
1859	6,225	1,007	4,504	245,942 15	210,278 41	35,663 74
1860	7,053	1,084	4,778	256,352 59	252,820 80	3,531 79
1861	4,643	700	3,329	137,354 44	221,491 91	
1862	5,038	824	3,532	215,754 99	182,810 39	32,944 60
1863	6,014	787	4,184	195,593 20	189,414 14	6,179 15
1864	6,932	1,003	5,095	240,919 78	229,868 00	11,051 98
1865	10,664	1,337	6,616	348,791 84	274,199 34	74,592 50
1866	15,260	2,723	9,458	495,665 38	361,724 28	133,941 10
1867	21,276	3,597	13,026	646,581 92	639,263 32	7,318 60
1868	20,420	3,705	13,410	681,505 86	628,679 77	52,826 09
1869	19,271	3,624	13,997	693,145 81	486,430 78	206,715 03
1870	19,171	3,273	13,333	669,456 76	557,149 19	112,307 57
1871	19,472	3,366	13,056	678,716 46	560,595 08	118,121 38
1872	18,246	3,090	13,613	699,726 39	665,591 36	34,135 03
1873	20,414	3,248	12,864	703,191 77	691,178 98	12,012 79
1874	21,602	3,181	13,599	738,278 17	679,288 41	58,989 76
1875	21,638	3,094	14,837	743,453 36	721,057 71	21,795 65
1876	21,425	2,697	15,595	757,987 65	652,542 60	105,445 05
1877	20,308	2,809	14,187	732,342 85	613,152 62	119,190 23
1878	20,260	2,755	13,444	725,375 55	593,082 89	132,292 66
1879	20,059	2,620	13,213	708,931 47	529,938 97	174,992 50
1880	23,012	2,490	13,947	749,685 32	538,865 17	210,820 15
1881	26,059	2,406	16,584	853,665 89	645,173 28	248,492 61
1882	31,582	2,553	19,397	1,009,219 45	683,867 67	325,351 78
1883	35,577	2,741	22,383	1,146,240 00	675,234 86	471,005 14
1884	35,600	2,582	20,413	1,075,798 80	970,579 76	105,219 04
1885	35,717	2,532	24,223	1,188,008 15	1,024,378 85	163,710 30
1886	35,968	2,513	22,508	1,154,551 40	992,508 40	162,047 95
1887	35,613	2,632	21,477	1,144,509 60	994,472 22	150,037 38
1888	35,797	2,251	20,420	1,118,576 10	973,108 78	145,407 32
1889	40,575	2,481	24,158	1,281,728 05	1,052,955 96	228,772 09
1890	41,048	2,311	26,292	1,340,372 66	1,099,297 74	241,094 72

Statement showing the number of the first patent, Design patent, and reissued patent, and the number of the first certificate of registration of a Trade-Mark and a Label issued in each calendar year since July 28, 1836, when the present series of numbers of Letters Patent commenced; together with the total number of each issued during the year.

[The number of patents granted prior to the commencement of this series of numbering (July 28, 1836) was 9,957.]

Year.	Number of first patent and certificate issued in each calendar year.					Number of patents and certificates of registration issued during each calendar year.						
	Patents.	Designs.	Reissues.	Trade-Marks.	Labels.	Patents.	Designs.	Reissues.	Total patents.	Trade-Marks.	Labels.	Total certificates.
1836 (July 28)	1					109						
1837	110					436						
1838	546		1			515		6				
1839	1,061		7			404		13				
1840	1,465		20			458		10				
1841	1,923		30			490		6				
1842	2,413		36			488		13				
1843	2,901	1	49			494	14	11	519			
1844	3,395	15	60			477	12	7	496			
1845	3,872	25	67			476	17	11	504			
1846	4,348	44	78			566	59	13	638			
1847	4,914	108	91			495	60	14	569			
1848	5,469	163	105			583	46	23	652			
1849	5,992	209	128			989	49	30	1,068			
1850	6,981	258	158			884	83	26	993			
1851	7,865	341	184			757	90	25	872			
1852	8,622	431	209			890	109	20	1,019			
1853	9,512	540	220			840	85	36	961			
1854	10,358	626	258			1,759	57	28	1,844			
1855	12,117	683	296			1,891	70	51	2,012			
1856	14,008	753	337			2,316	107	83	2,506			
1857	16,324	860	420			2,686	113	97	2,896			
1858	19,010	973	517			3,467	142	126	3,695			
1859	22,477	1,075	643			4,165	108	231	4,504			
1860	26,642	1,183	874			4,363	183	232	4,778			
1861	31,005	1,366	1,106			3,040	142	147	3,529			
1862	34,045	1,508	1,253			3,221	195	116	3,532			
1863	37,206	1,703	1,393			3,781	176	227	4,184			
1864	41,047	1,879	1,596			4,638	139	248	5,025			
1865	45,685	2,018	1,844			6,099	221	296	6,616			
1866	51,784	2,239	2,140			8,874	204	200	9,458			
1867	60,658	2,533	2,430			12,301	325	400	13,026			
1868	72,959	2,858	2,830			12,544	446	420	13,410			
1869	85,503	3,304	3,250			12,957	506	534	13,997			
1870	98,460	3,810	3,784	1		12,157	737	439	13,333	121		121
1871	110,617	4,347	4,223	122		11,687	905	464	13,056	486		486
1872	122,304	5,442	4,987	608		12,200	884	529	13,613	491		491
1873	134,504	6,336	5,216	1,069		11,616	747	501	12,864	492		492
1874	146,120	7,083	5,717	1,501	1	12,230	886	483	13,599	559	232	791
1875	158,350	7,969	6,200	2,150	233	13,291	915	631	14,837	1,138	232	1,370
1876	171,641	8,884	6,831	3,288	465	14,172	802	621	15,595	959	472	1,431
1877	185,813	9,696	7,452	4,247	937	12,920	699	568	14,187	1,216	392	1,608
1878	198,733	10,385	8,020	5,463	1,329	12,345	590	509	13,444	1,455	492	1,947
1879	211,078	10,975	8,529	6,918	1,821	12,133	592	488	13,213	872	355	1,227
1880	223,211	11,567	9,017	7,790	2,176	12,926	515	506	13,947	349	203	552
1881	236,137	12,082	9,523	8,139	2,379	15,548	565	471	16,584	896	392	1,038
1882	251,685	12,647	9,994	8,973	2,581	18,135	891	271	19,297	947	304	1,251
1883	269,820	13,508	10,265	9,920	2,885	21,196	1,020	107	22,323	902	906	1,808
1884	291,016	14,528	10,432	10,822	3,791	19,147	1,150	116	20,413	1,021	513	1,534
1885	310,163	15,678	10,548	11,843	4,304	23,331	772	129	24,233	1,007	391	1,458
1886	333,491	16,451	10,677	12,940	4,695	21,797	595	116	22,508	1,029	378	1,407
1887	355,291	17,046	10,793	13,939	5,073	20,429	949	99	21,477	1,133	380	1,513
1888	375,730	17,965	10,892	15,072	5,453	19,585	835	86	20,506	1,059	327	1,386
1889	395,305	18,830	10,978	16,131	5,780	23,360	723	75	24,158	1,229	319	1,548
1890	418,665	19,553	11,053	17,360	6,009	25,322	886	84	26,292	1,415	304	1,719
1891	443,987	20,439	11,137	18,775	6,403	.....	.....	.....	.....	.....	.....	.....

Herewith accompanying this report are lists of indexes, arranged in yearly form, of all patents granted during the calendar year 1890, properly classified under subjects of invention, and alphabetical lists of all patentees, with their places of residence. No patents were extended during the year.

Very respectfully, your obedient servant,

C. E. MITCHELL,
Commissioner.

NEW ZEALAND

PATENTS, DESIGNS, AND TRADE-MARKS.

(FIRST ANNUAL REPORT OF THE REGISTRAR FOR 1890.)

(*Presented to both Houses of the General Assembly pursuant to Section 128 of "The Patents, Designs, and Trade-Marks Act, 1889."*)

As the Act came into force only on the 1st January last, this report is necessarily limited to six months so far as the working of the present Act is concerned. The Act of 1889 supercedes the Patents Act of 1883 and its amendments, and the Trade-marks Act of 1866 with its amending Act of 1882, and is practically the same as the Imperial Patents, Designs, and Trade-marks Act of 1883, as amended by subsequent statutes. The differences, which are few and mostly unimportant, are only such as were required by the different conditions of this colony. It is hoped that the other colonies will follow the example of New Zealand, and thus make the patent laws of the Empire uniform throughout it.

2. Under the Imperial Act opposition to the grant of Letters Patent is restricted to three grounds, but in this colony there is no such restriction, and more costly litigation in the Supreme Court is thus avoided.

3. On the coming into force of the Act, the Colonial Secretary, who was Registrar of Trade-marks under the repealed Trade-marks Acts, handed over to me the books and documents connected with the registration of trade-marks prior to the 1st January last.

4. The change in the law both as regards patents and trade-marks, involving an almost entirely new system, with new forms and books, could not, of course, be adopted without considerable labour and some occasional delays; but the main difficulties have now been overcome, and the Act is working smoothly. I obtained from the London Patent Office specimens of books and forms in use there, and adapted them with some modifications which my experience led me to consider desirable.

5. The Regulations made under the Act have also been adapted from those in force in England. Copies of these Regulations have, in accordance with the Act, been presented to Parliament. They appear to give satisfaction to the persons concerned.

6. Although copies of the Act and Regulations have been extensively circulated through this and the other colonies and Great Britain, a great deal of correspondence in the office has been, and is still, caused by the ignorance on the part of some applicants of the existence of a new Act, and by the neglect of others to study the requirements of the Act and Regulations before forwarding their applications.

7. It may be interesting to refer here to some of the differences between the old laws and the new, and how they are working:—

(*a.*) To guard inventors against incompetent persons styling themselves "patent agents," and causing serious loss and trouble to those who employ them, no person is allowed so to call himself unless he has been duly registered as a patent agent. Up to date, one layman in Wellington and one in Christchurch have passed the required examination and been registered, and eight solicitors practising in Wellington have also been registered.

(*b.*) The present Act allows for the deposit of a provisional specification of an invention, to be kept secret pending the perfection of the invention and the deposit of a complete specification; but this privilege has not as yet been taken advantage of to the extent anticipated. Probably more will avail themselves of this provision as it becomes better known. Attached is a return showing the number of provisional specifications and the number of complete specifications lodged in the first instance during the last six months.

(*c.*) The designation of the officer administering the Act has been changed from Patent Officer to Registrar of Patents, Designs, and Trade-marks. Under the previous Patent Acts there was no appeal from the decision of the Patent Officer in any matter coming before him. Now there is a power of appeal on several points to the Supreme Court. While I am glad that there is power to appeal, and think it quite right that there should be, it is nevertheless a source of satisfaction to me that not one appeal has as yet been made from any decision given by me.

(*d.*) Under the repealed Acts Letters of Registration were issued for patents granted elsewhere. There were disadvantages connected with that system, which was not in force anywhere else, and to secure uniformity it has not been continued in the new Act.

(*e.*) Rgistration of designs is a new feature of the present law; but as yet only four designs have been registered. These are under classes 1, 10, 12.

(*f.*) Trade-marks are not now registered until two months after the application has been gazetted, during which time objections may be lodged, and then for only fourteen years.

8. The Judges of the Supreme Court have been invited to make rules, under section 117 of the Act, for regulating proceedings in Court on applications, and proceedings in appeals; but no such rules have as yet been published.

9. Application having been made to the Home Government, Her Majesty has been pleased, by Order in Council, to apply section 103 of the Imperial Patents, Designs, and Trade-marks Act to New Zealand, thus giving to any application in this colony for Letters Patent, or for registration of a design or trade-mark, a priority in Great Britain over other applications of a later date. Similar provision is given in the colony to persons first applying in England for protection. It would be well if the other colonies would make a similar arrangement between themselves and this colony for the mutual protection of inventors and others.

10. The growing business of the department will soon necessitate more ample office accommodation, the present room being indeed already inadequate for the proper discharge of the duties of the staff and the suitable convenience of the public in making searches and transacting business. The large and increasing Patent Office library is away from the office, being at present stored in an upper room in the Colonial Museum. It would be a boon to both the public and the department if sufficient and adjacent rooms could be provided to accommodate the officers, the public, and the library, and with space for models.

The library contains 2,052 volumes of specifications and other publications received from England, the colonies, the United States, &c., and is of great value for reference by those who desire to avoid applying for protection for inventions which have been already patented. From two hundred to two hundred and fifty persons have made use of the library during the last twelve months.

11. Up to 1879, inclusive, specifications and plans accompanying applications for Letters Patent were printed in yearly volumes, and published at comparatively low prices; but, as the sales were few, and retrenchment was the order of the day, the practice was discontinued, and since then only an annual list of applications has been published. Persons requiring to study the specifications, &c., have thus been compelled to do so at the Patent Office, or to pay for manuscript copies specially made for them. If authority were given for the publication, at a small price, separately, of every specification as soon as lodged (as is done in England), the demand would be greater, and the benefit to the public would be considerable. On this subject the Commissioner of Patents in the United States says in one of his reports, "The inventive genius of one is stimulated and encouraged by seeing the results of the ingenuity of others. One man makes an important invention, and obtains Letters Patent therefor. If a correct knowledge of this patent can soon be placed in the possession of five hundred other ingenious men many valuable improvements will be suggested and patented, and the public will obtain a comparatively perfect machine in place of the crude and less perfect production that may have come from the hands of the first inventor." Commenting on this, the Registrar of Patents, &c., in Queensland, says, "This is no doubt true, and consequently the publication of the records leads to large increase in the business and receipts of the office, and in this way makes up for the expense which such publication entails on the Government." I venture to agree with them.

12. It cannot be too widely known that the Patent Office takes no responsibility as to the novelty of an alleged invention, but leaves the applicant for a patent to search and judge for himself. The Act empowers the Registrar to refuse to receive an application if he knows that the alleged invention is not new, but it does not require him to ascertain that fact. To make the search necessary for such a purpose would involve a costly staff of examiners, far beyond what the colony is prepared to pay, and would necessitate the examination of not only the specifications lodged in the New Zealand office, but also of copies of those deposited in the English, American, Canadian, Australian, and other Patent Offices. The examination system in vogue in the United States, &c., does not and cannot guarantee inventors against taking out useless patents, or the validity of patents when granted, and is therefore only a partial protection. There appears to be a growing feeling that the system is worse than useless, and should be abolished. The *English Mechanic*, the *New York World*, and the *Scientific American* all urge reform in this direction. In the United States 48 per cent. of the applications are refused, and in Queensland, where the system exists, but only imperfectly, owing to the lack of a proper library, only 12 per cent. are refused, caus-

ing complaint of perfunctory examination. In short, either such an examination by the office should be most thorough and complete, or it should be left severely alone. At present the duty in this respect of the Registrar here is confined to ascertaining that the application and other documents comply with the requirements of the Act and Regulations.

13. It is well known that the number of applications for patents in New Zealand is abnormally large in proportion to the population, and of course many of such applications are from outside the colony; but it will probably be of interest to many to learn that the number of applications made in the London office from this colony exceeds those from any other British colony and possession excepting Victoria, Canada, and India, and also, with only six exceptions, exceeds those from every Foreign State.

14. As the *New Zealand Gazette* is the only journal in which particulars of applications for Letters Patent and registration of trade-marks, and other matters connected with the Patent Office, are published, and it has not an extensive circulation amongst those likely to be interested in or benefited by such publication, I think it worthy of consideration whether the time has not arrived for the issue of a weekly or fortnightly supplement to be devoted solely to Patent Office notices, and to be supplied separately to any who may choose to subscribe specially for it. Later on this will probably develop into a separate Patent Office Journal similar to those published in England, Canada, and the United States.

15. A new Copyright Act, such as was introduced into Parliament last session, is, I submit, required as a companion to the Patents, Designs, and Trade-marks Act.

16. An appendix to this report contains the following returns: (A.) Statement of all fees, salaries, allowances, and other money received and paid under the Act. (B.) List of staff of Office. (C.) Number of applications for patents, and of patents granted, under Acts now repealed. (D.) Number of applications for patents accepted under Act of 1889. (E.) Nature of Letters Patent and Letters of Registration applied for during 1889. (F.) Number of trade-marks registered in each year up to 31st December, 1889, under Acts repealed. (G.) Number of applications to register trade-marks under Act of 1889, from 1st January to 30th June, 1890, and number registered. (H.) List of applications for patents during 1889. (I.) List of applications for patents lapsed after publication of list for 1888. (J.) List of Letters Patent lapsed through non-payment of renewal fee from 1st June, 1889, to 30th April, 1890.

C. J. A. HASELDEN,
Registrar of Patents, Designs, and Trade-marks.

PATENT OFFICE, *Wellington, 8th July*, 1890.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

VOL. 54—No. 7. TUESDAY, FEBRUARY 17, 1891. PRICE—$5 per year.

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Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Changes in Classification.

(ORDER NO. 665.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., February 10, 1891.

It is hereby directed that sub-class Chandeliers, Class 67, "Lamps and Gas Fittings," Division XXX, be changed to *Gas-Chandeliers*.

Sub-class Railway signals, Class 177, Electric signaling, Division XVI, is changed as follows:

Electric signaling—
Railway,
Block,
Block systems,
Cab,
Sectional rail,
Sectional rail,
Track-instruments.

C. E. MITCHELL,
Commissioner.

Issue of February 17, 1891.

Patents	433	No. 446,411 to No. 446,843,	inclusive.
Designs	6	No. 20,520 to No. 20,525,	inclusive.
Trade-Marks	44	No. 19,016 to No. 19,059,	inclusive.
Labels	13	No. 6,448 to No. 6,460,	inclusive.
Reissues	2	No. 11,145 to No. 11,146,	inclusive.
Total issue	498		

To citizens of the United States: Patents and Designs—411; Trade-Marks and Labels—47.
To citizens of foreign countries: Patents and Designs—28; Trade-Marks and Labels—10

DESIGNS.

20,520.—WATER-CLOSET BOWL.—*William S. Cooper*, Philadelphia, Pa. Application filed January 5, 1891. Serial No. 376,792. Term of patent 14 years.

20,521.—DISHES.—*Emile Gérard*, Limoges, France. Application filed January 19, 1891. Serial No. 378,488. Term of patent 7 years.

20,522.—FAMILY-ALTAR.—*Howard B. Hallock*, Chicago, Ill., assignor to *M. G. Bowen* and *R. N. Kirk*, both of same place. Application filed January 12, 1891. Serial No. 377,546. Term of patent 3½ years.

20,523.—FLOWER-POT.—*Theodore S. Balsley*, Detroit, Mich. Application filed January 6, 1891. Serial No. 376,933. Term of patent 7 years.

20,524.—ADVERTISING CARD.—*Alfred Hopcraft*, New York, N. Y. Application filed January 7, 1891. Serial No. 377,036. Term of patent 3½ years.

20,525.—CURLING STONE.—*Wendelin Karl*, Buffalo, N. Y. Application filed December 22, 1890. Serial No. 375,508. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

19,016.—REMEDY FOR LUNG TROUBLES AND NERVOUS DISEASES.—*Bell Medicine Co.*, St. Louis, Mo. Application filed November 24, 1890. Used since November 1, 1890.
"The words 'DR. BELL'S NERVINE' and the pictorial representation of a bell."

19,017.—MEAL FOR LIVE STOCK.—*Bowker Fertilizer Company*, Boston, Mass. Application filed January 5, 1891. Used since October 1, 1890.
"The words 'BEEF-MEAL' and the representation of a beef."

19,018.—HATS.—*Walter T. Bowers*, Saco, Me. Application filed October 29, 1890. Used since September 21, 1890.
"The word 'CALENDAR.'"

19,019.—AUTOMATIC CUT-OFF ENGINES.—*Ball Engine Company*, Erie, Pa. Application filed January 19, 1891. Used since 1883.
"The word 'BALL.'"

19,020.—CEMENT.—*Dickinson Bros. & King*, Chicago, Ill. Application filed January 12, 1891. Used since January 2, 1887.
"The word 'EMPIRE.'"

19,021.—CHEWING-GUM.—*Royal Remedy and Extract Company*, Dayton, Ohio. Application filed December 26, 1890. Used since November 7, 1890.
"The words 'MERRY BELL.'"

19,022.—ARTIFICIAL TEETH.—*Henry D. Justi*, Philadelphia, Pa. Application filed January 14, 1891. Used since December 17, 1890.
"The representation of a globe."

19,023.—OPERA, MARINE, AND FIELD GLASSES AND LENSES.—*D. C. Percival & Co.*, Boston, Mass. Application filed January 14, 1891. Used since January, 1878.
"The words 'LE MIEUX.'"

19,024.—COMPOUND FOR REFINING, PURIFYING, AND MELLOWING SPIRITUOUS LIQUORS.—*Wm. & P. Thompson*, New York, N. Y., and Dublin, Ireland. Application filed January 28, 1890. Used since 1886.
"The words 'PRUNE WINE.'"

19,025.—TIN PLATES, TERNE PLATES, AND TIN TAGGERS.—*Old Castle Iron and Tinplate Company, Limited*, Llanelly, England. Application filed January 21, 1891. Used since January 1, 1867.
"The word 'BURRY.'"

19,026.—TIN PLATES, TERNE PLATES, AND TIN TAGGERS.—*Old Castle Iron and Tinplate Company, Limited*, Llanelly, England. Application filed January 21, 1891. Used since January 1, 1867.
"The word 'KILLEY.'"

19,027.—TIN PLATES, TERNE PLATES, AND TIN TAGGERS.—*Old Castle Iron and Tinplate Company, Limited*, Llanelly, England. Application filed January 21, 1891. Used since September 1, 1883.
"The word 'CASTELL.'"

19,028.—TIN PLATES, TERNE PLATES, AND TIN TAGGERS.—*Old Castle Iron and Tinplate Company, Limited*, Llanelly, England. Application filed January 21, 1891. Used since January 1, 1867.
"The word 'STRADEY.'"

19,029.—TIN PLATES, TERNE PLATES, AND TIN TAGGERS.—*Old Castle Iron and Tinplate Company, Limited*, Llanelly, England. Application filed January 21, 1891. Used since January 1, 1875.
"The letters 'O. C.'"

19,039.—CONFECTION-LOZENGES.—*Chase and Company Corporation*, Boston, Mass. Application filed June 24, 1890. Used since 1880.
"The word 'CHASE,' the last four letters being wholly or partly contained within the letter 'C.'"

19,040.—REMEDY FOR CHOLERA AND OTHER STOMACH COMPLAINTS.—*Hayward & Bro.*, Easton, Md. Application filed November 21, 1890. Used since 1888.
"The words 'WHITE'S CHOLERA MIXTURE' in connection with the picture of a camel laden with boxes."

19,042.—SALVE.—*George E. Hoffman*, Cressona, Pa. Application filed January 21, 1891. Used since January 1, 1886.
"The words 'THURSTON SALVE.'"

19,043.—REMEDY FOR DISEASES OF THE BLOOD, LIVER, AND KIDNEYS.—*Theodore Kemink*, Grand Rapids, Mich. Application filed January 20, 1891. Used since October 28, 1890.
"The word 'ORIOLE' and the representation of a bird."

19,044.—VAGINAL SUPPOSITORIES.—*Emerson B. Lambert*, Port Jervis, N. Y. Application filed January 5, 1891. Used since November 15, 1890.
"The word 'LOCALINE.'"

19,045.—COUGH MEDICINE.—*George A. Moore*, St. John, Canada. Application filed December 31, 1890. Used since July 1, 1890.
"The word 'HACKNOMORE.'"

19,046.—REMEDY FOR THROAT AND LUNG DISEASES.—*Nonantum Worsted Company*, Newton and Boston, Mass. Application filed January 14, 1891. Used since September, 1890.
"The word 'CRYSTALLIO.'"

19,047.—LINE OF PROPRIETARY MEDICINES.—*Thomas Paine*, Dallas, Tex. Application filed December 27, 1890. Used since 1872.
"A diamond-shaped figure having its lower lines heavily shaded and inclosing or surrounding the monogram comprised of the letters 'T. W. & SON,' with the abbreviation 'Dr.' above it."

19,048.—HEADACHE REMEDY.—*William H. Sweeting and Sherman C. Sweeting*, Savannah, N. Y. Application filed January 3, 1891. Used since October 1, 1890.
"The words 'FLAG SALT.'"

19,049.—REMEDY FOR INDIGESTION.—*Assimilene Manufacturing Co.*, Hillsdale, Mich. Application filed January 14, 1891. Used since April 1, 1890.
"The word 'ASSIMILENE.'"

19,040.—OUTER CLOTHING AND OVERCOATS.—*Bierman, Heidelberg & Co.*, New York, N. Y. Application filed October 28, 1890. Used since January, 1890.
"The words 'THE EUREKA WATER PROOF AND STORM PROOF GARMENTS. MADE ONLY BY BIERMAN, HEIDELBERG & CO., NEW YORK.'"

19,041.—ACCORDIONS.—*Eugen Kalbe*, Berlin, Germany. Application filed July 28, 1890. Used since May 25, 1882.
"A band extending obliquely across a label and the word 'IMPERIAL.'"

19,042.—PATTERNS FOR CUTTING GARMENTS.—*Pembroke C. Perkins*, Pittsburg, Pa. Application filed November 12, 1890. Used since January, 1888.
"The words 'THE TRUE.'"

19,043.—ANTIPYRETICS.—The firm of *J. D. Riedel*, Berlin, Germany. Application filed January 5, 1891. Used since December, 1889.
"The word 'SALIPYRIN.'"

19,044.—WATCH MOVEMENTS AND CASES.—*Byron L. Strasburger & Co.*, New York, N. Y. Application filed January 20, 1891. Used since April 15, 1875.
"The letters and word 'P. H. DORET' and the representation of a Maltese cross."

19,045.—WATCH MOVEMENTS AND CASES.—*Byron L. Strasburger & Co.*, New York, N. Y. Application filed January 20, 1891. Used since April 15, 1875.
"The words and letter 'R. LANIER, GENEVA,' and the representation of an arrow."

19,046.—WATCH CASES AND MOVEMENTS.—*Byron L. Strasburger & Co.*, New York, N. Y. Application filed January 20, 1891. Used since July, 1888.
"The words 'ATTLEBORO WATCH COMPANY.'"

19,047.—WATCH CASES AND MOVEMENTS.—*Byron L. Strasburger & Co.*, New York, N. Y. Application filed January 20, 1891. Used since July, 1888.
"The words 'HARTFORD WATCH CO.'"

19,048.—COD LIVER OIL.—*Olaf Wasboe*, New York, N. Y. Application filed November 11, 1890. Used since September 1, 1887.
"The representation of a red flag divided into quarters by the intersection of a vertical and horizontal blue line and having its upper left-hand corner again likewise subdivided by a gilt line crossing a blue one."

19,049.—IRON, STEEL, AND MANUFACTURES THEREOF.—*Carpenter Steel Company*, New York, N. Y. Application filed January 6, 1891. Used since January 1, 1890.
"The letter 'C' and an eagle and shield arranged within the letter."

19,050.—SILESIA.—*A. G. Hyde & Sons*, New York, N. Y. Application filed September 24, 1890. Used since January, 1884.
"The word 'BERLIN.'"

19,051.—TRACING-CLOTH.—*Ritchie & Eason*, Manchester, England. Application filed January 12, 1891. Usedsince December, 1883.
"The representation of a hand and cross and the word 'STANDARD.'"

19,052.—MEN'S SHIRTS.—*Sigmund Deutsch*, Philadelphia, Pa. Application filed January 23, 1891. Used since January 6, 1891.
"The words 'NEW CENTURY.'"

19,053.—PICKLED FRUITS AND VEGETABLES.—*Gedney Pickle Company*, Omaha, Nebr. Application filed January 20, 1891. Used since December 1, 1890.
"The representation of an encircled female head surrounded with the words 'COLUMBIA BRAND.'"

19,054.—HATS AND CAPS.—*Gate City Hat Company* Omaha, Nebr. Application filed January 21, 1891. Used since January 15, 1884.
"The words 'GATE CITY' and the initial-letters 'G. C.'"

19,055.—PERFORATED BUCKSKIN UNDERWEAR.—*Dewitt C. Hall*, New York, N. Y. Application filed January 13, 1890. Used since 1872.
"The representation of a man clad in perforated underclothing."

19,056.—INSECT-POWDER.—*Charles M. Schmidt*, Buffalo, N. Y. Application filed December 22, 1890. Used since October 10, 1888.
"The word 'WORLD'S.'"

19,057.—TIN-PLATE IN SHEETS.—*The Port Talbot Tinplate Company, Limited*, Port Talbot, England. Application filed December 22, 1890. Used since 1885.
"The letters 'D R D.'"

19,058.—CARTRIDGE SHELLS AND WADS.—*The Creedmoor Cartridge Company*, New Portage, Ohio. Application filed January 15, 1891. Used since October 1, 1890.
"The word 'SPECIAL' and the letters 'N. P. L.'"

19,059.—CRACKERS AND BISCUIT.—*George Young*, Utica, N. Y. Application filed January 23, 1891. Used since September, 1885.
"The words 'PALACE GEM.'"

LABELS.

6,448.—Title: "NERVINE."—*Bell Medicine Co.*, St. Louis, Mo. Application filed November 24, 1890. (Trade-Mark Registered.)

6,449.—Title: "COMPOUND TOLU AND LUNGWORT COUGH SYRUP."—*Walter Price*, Westerly, R. I. Application filed January 22, 1891.

6,450.—Title: "BUTTERED BAKING POWDER."—*Alexander H. Peloubet* and *James L. Tobin*, New York, N. Y. Application filed November 12, 1890.

6,451.—Title: "SELF OPENER." (For satchels.)—*Mayer & Ruehlmann*, Philadelphia, Pa. Application filed January 22, 1891.

6,452.—Title: "MEDICATED AND FREE FROM ALL IMPURITIES, FOR SHAVING AND SHAMPOOING, FRAGRANT AND REFRESHING." (For soap.)—*The Arnicarboline Co.*, Milwaukee, Wis. Application filed September 9, 1890. (Trade-Mark Registered.)

6,453.—Title: "MEDICATED FRAGRANT AND REFRESHING." (For soap.)—*The Arnicarboline Co.*, Milwaukee, Wis. Application filed September 9, 1890. (Trade-Mark Registered.)

6,454.—Title: "MINERAL AND VEGETABLE COMBINATION." (For burning purposes.)—*Charles W. Rooksby*, Philadelphia, Pa. Application filed January 23, 1891.

6,455.—Title: "WADLEIGH'S KIDNEY REMEDY."—*F. R. Wadleigh*, Alton, N. H. Application filed January 22, 1891.

6,456.—Title: "MRS. CHARLOTTE BERGMAN'S BACILLUS DESTROYER AND LUNG RESTORER."—*Charlotte Bergman*, Brooklyn, N. Y. Application filed December 23, 1890.

6,457.—Title: "SUNDHETS-SALT." (For medical purposes.)—*A. Osterholm & Co.*, New York, N. Y. Application filed January 24, 1891.

6,458.—Title: "CONDAY'S EXPORT EXTRACT OF WILD CHERRY."—*Paul Conday*, Pittsburg, Pa. Application filed January 27, 1891.

6,459.—Title: "LITZENBERG'S HORSE LINIMENT."—*William Litzenberg*, Chillicothe, Mo. Application filed January 27, 1891.

6,460.—Title: "MIXED PICKLES."—*Gedney Pickle Company*, Omaha, Nebr. Application filed January 20, 1891.

DISCLAIMER.

11,208.—*George Woffenden*, Newtown, Conn. DESIGN FOR A RUBBER MAT. Patent dated May 27, 1879. Disclaimer filed February 6, 1891, by the assignee, *The New York Belting and Packing Company*.

Enters its disclaimer to that part of the claim in said specification which is in the following words, to wit:

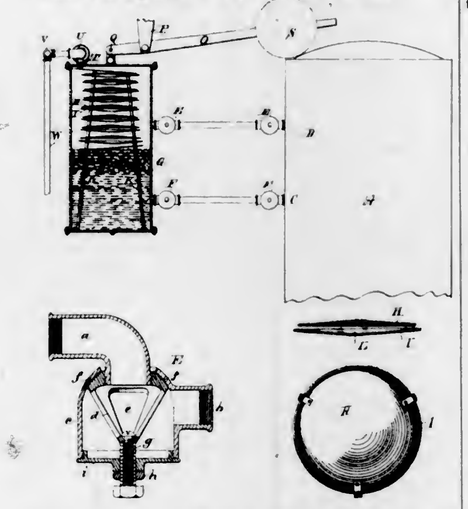
"1. A design for a rubber mat, consisting of corrugations, depressions, or ridges in parallel lines, combined or arranged relatively, substantially as described, to produce variegated kaleidoscopic moiré, stereoscopic, or similar effects, substantially as set forth."

Further, "to that portion of the specification contained in the following words, which almost immediately precede the claims in said specification, viz: 'in concentric circles.'"

PATENTS

GRANTED FEBRUARY 17, 1891.

446,411. BOILER-FEEDER. JOSIAH AUSTIN, near East Liberty, Ohio. Filed Aug. 15, 1887. Serial No. 247,034. (No model.)



Claim.—1. In a water-feeder, the balanced cylinder G, having the series of removable concave and convex plates mounted on legs K, as and for the purpose set forth.

2. The combination, with the balanced feeder G, stop-cock V, boiler A, and water-pipe C, of the steam-pipe D, opening into the boiler just above the water-line, as and for the purpose set forth.

3. The combination, with the boiler A and cock V on the hydrant-pipe, of the balanced feeder G, located between the hydrant-pipe and boiler, as and for the purpose set forth.

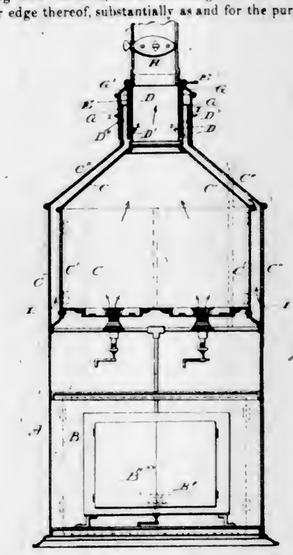
446,412. CATARRH REMEDY. LORENZO D. BAILOR, Geneva, Nebr. Filed Oct. 28, 1890. Serial No. 369,542. (No specimens.)

Claim.—A medical compound to be used as a spray for bronchial affections, composed of listerine, carbolic acid, spirits of peppermint, muriate of cocaine, hydrochlorate of berberine, and pure water, mixed together in substantially the proportions specified.

446,413. COOKING AND HEATING STOVE. JAMES BAKER, St. Louis, Mo. Filed May 27, 1890. Serial No. 353,350. (No model.)

Claim.—1. In a heating and cooking stove, a double-walled chamber in which the articles to be cooked or heated are adapted to be placed to form an air-space between the walls, an escape-flue leading therefrom having an air-space surrounding the same and forming a continuation of the main air-space opening near the bottom of the chamber, and register-openings in the escape-flue and the outer wall surrounding the same, substantially as described, whereby the air from the space may be directed either into the chimney or to the apartment, as set forth.

2. In a heating and cooking stove, a double-walled chamber forming an air-space, a flue leading from the chamber surrounded by an air-space forming a continuation of the air-space surrounding the chamber, register-openings in the flue and in the surrounding wall thereof, a damper located in the flue above the openings, and openings connecting with the air-space surrounding the chamber located near the lower edge thereof, substantially as and for the purpose set forth.



446,414. TYPE-BAR AND METHOD OF MANUFACTURING THE SAME. WALTER BAKER, Ilion, assignor to the Remington Standard Type-Writer Manufacturing Company, New York, N. Y. Filed Oct. 29, 1889. Serial No. 328,552. (No model.)



Claim.—1. The herein-described method of manufacturing type-bars, which consists in first cutting from a flat sheet or strip of metal a blank having the outlines of the finished bar, and then, without intermediate bending of the blank, compressing the same between dies having recessed faces of the same contour as the blank and having raised portions within the recessed faces corresponding to the reduced portions of the finished bar, whereby the metal is caused to flow from the reduced portions outward and to fill out the raised portions of the bar.

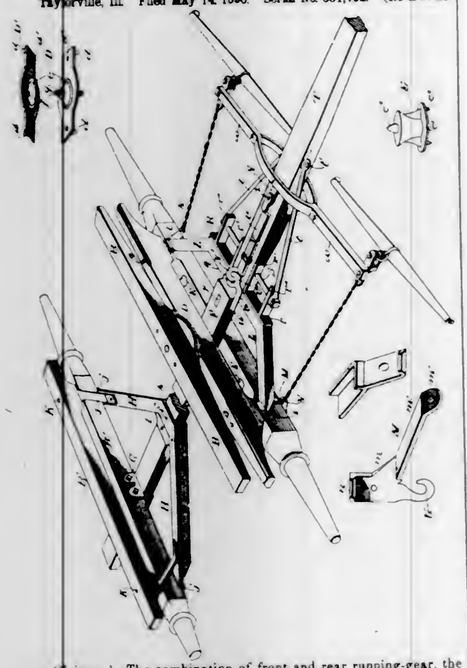
2. The method of manufacturing type-bars, which consists in cutting from a flat sheet or strip of metal a blank having the outline of the finished bar and subjecting said blank to pressure between dies having raised portions conforming in general contour to the outlines of the rear portion of the blank, but of less extent, whereby the blank is compressed by such raised portions and the metal thereby displaced is caused to flow outward and form a raised rim about the recessed portion.

3. The blank for type-writer bars, comprising the body A and tail portion *b*, extending laterally from the body A, as shown.

4. A type-bar having a flattened tail portion *b*, recessed with recessed faces, and a raised rim *c*.

5. A type-bar consisting of a main body having a boss *a* at its forward end, a flattened tail *b* at the opposite end, a rim *c*, bordering said tail portion, and bosses *d* and *e* to receive pivot or joint pins.

446,415. VEHICLE RUNNING-GEAR. SHERMAN E. BAUGHMAN, Taylorville, Ill. Filed May 14, 1890. Serial No. 351,762. (No model.)



Claim.—1. The combination of front and rear running-gear, the reach supported beneath the rear axle and above the front one, the tongue-hounds, the tongue pivoted thereto, a swinging bail secured in the end of said reach and extending in front of the same, and pivotal connections between said bail and the tongue, substantially as and for the purpose described.

2. The combination of front and rear running-gear, the reach supported beneath the rear axle and upon the front one, the tongue-hounds, the tongue pivoted thereto, a bail hung in the end of the reach and extending in front of the same, and a coupling-bar attached to the tongue and having a hook on its rear end engaging said bail, substantially as described.

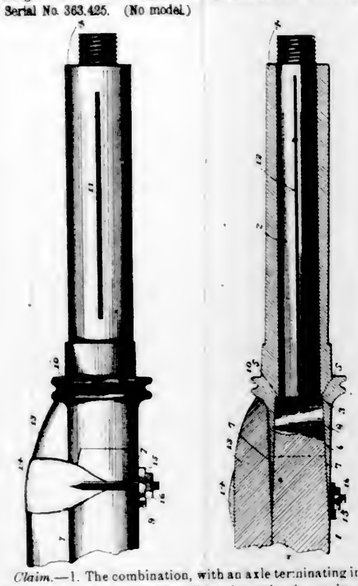
3. The combination of front and rear running-gear, the reach supported beneath the rear axle and upon the front one, the tongue-hounds, the tongue pivoted thereto, a swinging bail secured in the end of the reach, extending in front of the same, and a coupling-bar lying along the upper surface of the tongue and provided with a hook at its rear end engaging said bail and at its opposite front end connected to the doubletree, substantially as and for the purpose described.

4. In vehicle running-gear, the combination of tongue-hounds having a straight connecting portion, the reach extending over the latter, and a projection from said reach extending under it, substantially as and for the purpose described.

5. In vehicle running-gear, the combination of angle-metal tongue-hounds, the reach projecting over the connecting straight portion between them, and an angular plate fixed in said reach and extending beneath said straight portion, substantially as and for the purpose described.

6. The combination of front and rear running-gear, the reach connecting them and supported beneath the rear axle and above the front one, tongue-hounds connected by a straight portion over which said reach projects, a plate secured to the latter and extending beneath said straight connecting portion, a bail secured in the end of the reach, the tongue pivoted to the hounds, and pivotal connections between said bail and bar, substantially as and for the purpose described.

446,416. VEHICLE-AXLE. OSCAR W. BEACH, Fort Morgan, Colo., assignor of one-half to James P. Curry, same place. Filed Aug. 29, 1890. Serial No. 363,425. (No model.)



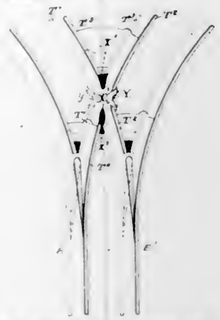
Claim.—1. The combination, with an axle terminating in a spindle, of a skein snugly fitting the spindle and terminating at its rear end in a square socket snugly fitting the axle, an axle-bed mounted upon the axle and overlapping the skein, and a clip embracing the axle skein and bed, substantially as specified.

2. The combination, with a square axle terminating in a spindle, of a skein fitting the spindle and terminating in its inner end in a tapered square socket fitting the axle, the upper and lower walls of the socket being extended beyond the side walls thereof and the lower wall provided with a transverse rib, an axle-bed mounted on the axle and overlapping the skein, a clip embracing the bed, axle, and skein, a tie-plate connecting the ends of the clip and located in rear of the rib, and nuts threaded on the ends of the clip below the plate, substantially as specified.

3. The combination, with an axle having its end reduced to form a spindle, of an axle-skein fitting the spindle and the axle, said skein being provided with a superficial enlargement near its rear end thicker at its top than at its bottom and in front of the enlargement made thicker at its bottom than at its top, substantially as specified

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446,417. CONDUIT ELECTRIC RAILWAY. EDWARD M. BENTLEY, New York, N. Y. Original application filed Oct. 13, 1887, Serial No. 252,268. Divided and this application filed May 18, 1888. Serial No. 274,346. (No model.)



Claim.—1. The combination of a double-track conduit system of electric railways, a housed main-line conductor pertaining to each track, and a branching-line conductor switching from one of said main-line conductors and crossing the other, and a break in said switching-conductor to allow the free passage of the contact device along the main line, as set forth.

2. The combination of a double-track system of electric railways, an inclosed main conductor for each track, switches E E' for the said conductors, respectively, and a crossing at the junction of the branch lines permitting the passage of a contact device along either branch track.

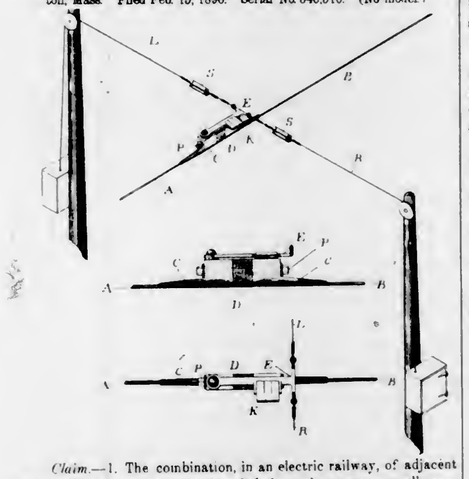
3. The combination, in a crossing for a two-wire system of electric railways, of the converging sets of conductors and a metallic extension-piece connected to conductors of like polarity and insulated from the conductors of opposite polarity, against which the contact device bears when passing the crossing.

4. The combination, in a crossing for a two-wire system of electric railways, with four converging sets of conductors radiating from the crossing, of the insulated extension-pieces forming prolongations in the path of travel of the contact device and diminishing the break between opposite sets of conductors.

5. The combination, in a crossing for a two-wire system of electric railways, of the converging sets of conductors $T' T'$ and $T^3 T^3$, electrically connected by conducting extension-pieces, against which the contact devices are adapted to bear, and the corresponding sets of conductors $T^2 T^2$ and $T^4 T^4$, insulated from each other at their inner ends.

6. The combination, in an electric railway, of line-conductors and an extension-piece at the crossing-point, against which the contact device bears, shaped to divert the same out of its normal path of travel and away from the conductor being crossed.

446,418. ELECTRIC-LINE SWITCH. EDWARD M. BENTLEY, Boston, Mass. Filed Feb. 15, 1890. Serial No. 340,510. (No model.)



Claim.—1. The combination, in an electric railway, of adjacent sections of a line-conductor suspended above the street, normally connected together electrically to form one of the branches of a two-wire circuit between which the motors are in multiple arc, and a switch pivoted upon the upper side of one section, out of the path of travel of the contact device and permanently in circuit therewith, and adapted to make and break contact with the other section, as described.

2. The combination, with a sectional suspended line-conductor for an electric railway, having enlarged conducting-offsets upon the ends of adjacent sections thereof, of a switch pivoted upon one of said offsets and adapted to swing into and out of engagement with the other offset, for the purpose described.

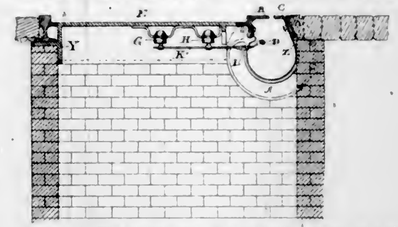
3. The combination, with a suspended line-conductor for an electric railway, divided into insulated sections, of a manually-operated switch normally connecting two sections of the conductor, and an operating cord or wire connected thereto and extending to the side of the street to a convenient operating point.

4. The combination, with adjacent sections of line-conductor, of an offset on the end of each conductor, intervening insulating material between the two offsets, an insulating-bolt, and a switch bridging the insulating material and connecting the two offsets.

5. The combination, with a suspended line-conductor divided into sections, of an offset on the end of each section, insulating material between the two offsets, a switch pivoted to one offset and adapted to connect with the other, and an operating device for the switch extending to the side of the street.

6. The combination, with a suspended line-conductor forming a substantially continuous bearing-surface for a traveling contact device, of a switch out of the path of travel of the contact device, joining two adjacent sections thereof electrically, and an operating cord or wire extending from said switch to a side post and there provided with an operating-extension reaching down along the post to a convenient position.

446,419. ELECTRIC-RAILWAY CONDUIT. EDWARD M. BENTLEY, Boston, Mass. Filed Apr. 9, 1890. Serial No. 347,161. (No model.)



Claim.—1. The combination, in an electric railway, of a slotted conduit for the supply-conductor, a series of catch-pits along the said conduit, insulators in said catch-pits, and connections therefrom to the said conductor, by means of which it is supported.

2. The combination, with the supply-conductor of an electric railway, of an inclosing conduit, catch-pits placed at intervals along the conduit, insulators within the catch-pits, and connections from the said insulators firmly attached to the said conductor, whereby the expansion and contraction of the conductor are substantially taken up by the variation in sag between the points of support.

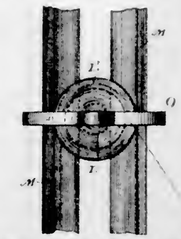
3. The combination, with a supply-conductor for an electric railway, of an inclosing conduit therefor, catch-pits placed at intervals along the said conduit, insulators in the said catch-pits, and transverse connections from the said insulators into the conduit from which the said supply-conductor is supported.

4. The combination, with a supply-conductor for an electric railway, of a slotted conduit therefor, catch-pits along said conduit, and insulators for the said supply-conductor supported in separate compartments in the said catch-pits.

5. The combination, in an electric railway, of a conduit outside the track-rails, pits in the space between the track-rails, an insulated conductor in the conduit, and insulating-supports therefor extending out transversely from the pits beneath the track-rails, as set forth.

6. The combination, in an electric railway, of a conduit, an insulated conductor therein, pits at intervals along the conduit, an insulator suspended from the roof or cover of the pit, and a supporting-rod between conductor and insulator, as set forth.

446,420. CONTACT DEVICE FOR ELECTRIC RAILWAYS. EDWARD M. BENTLEY, Boston, Mass. Filed July 11, 1890. Serial No. 358,412. (No model.)



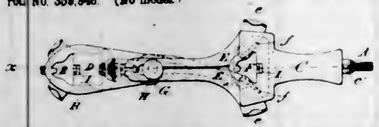
Claim.—1. The combination, with a transverse guide, of a contact device connected with said guide by a traveler having both transverse and rotary movements relatively to the guide.

2. The combination, with a contact device adapted to extend into a slotted conduit, of a transverse guide and a head or traveler for said contact device engaging with said guide by means of a neck, permitting both lateral and rotary movements of the traveler and contact device.

3. The combination, with a transverse guide, of a contact device for an electric railway, adapted to extend into a slotted conduit and having a traveling head having combined rotary and transverse movements relatively to the guide.

4. The combination, with a transverse guide having a longitudinal opening, of the contact device having a neck free to rotate in said opening and having also a vertical bearing upon said guide, permitting both rotary and transverse movements.

446,421. **SKATE.** STEPHEN S. BLACK, Pasadena, Cal., assignor of one-half to Edward A. Cochran, same place. Filed July 24, 1890. Serial No. 359,846. (No model.)



Claim.—1. The eccentric-lever G, provided with projection *g'*, adapted to work on center pin H against the heels *e'* and *e'* of sole-clamps E and E, substantially as described.

2. The detachable guide-plate F, provided with forwardly-converging curved slots *f* and *f*, substantially as indicated.

3. The keys I I, each provided with a notch in its lower extremity, as and for the purpose described.

4. The combination, with the pistol-shaped sole-clamps, of the notched turned-down pieces or heels *e' e'*, the said turned-down pieces *e' e'* engaging with the eccentric-lever G, as and for the purpose indicated.

5. The combination of the center pin H with the stud *h*, the same engaging with a plate-connecting rod J.

6. A connecting rod or plate J, provided with holes *a' a' a'*, adapted to stud *h*, for adjusting heel and sole clamps, and attached to a moving heel-clamp B, substantially as indicated.

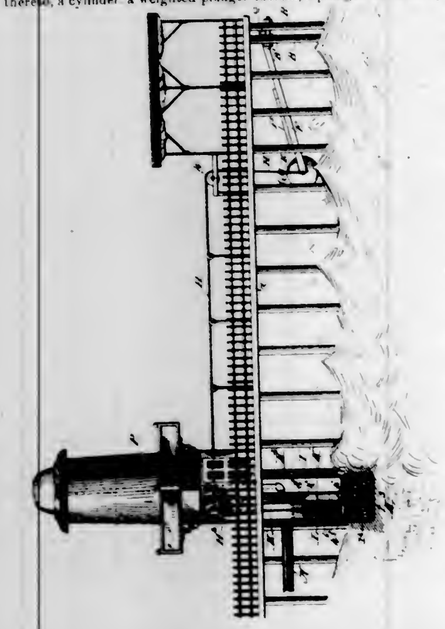
7. The combination of a skate-runner with the recess-slots *x x*, adapted to receive the webs *w w* and keys I I, in combination with the sole-clamps E E, with turned-down heels *e' e'*, adapted to receive lever G and adjustably secured by center pin H, in combination with stud *h*, the same being adapted to holes *a' a' a'* in connecting-plate J, substantially as described and illustrated.

8. The sliding fenestrated heel-clamp B, provided with a notched turned-down nib *b'* and adapted to move between the heel-plate D and runner A, as and for the purpose indicated.

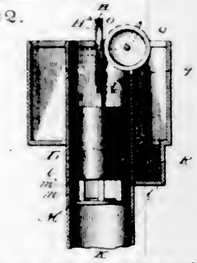
9. The combination of the sliding heel-clamp B, moving under heel-plate D, with the adjusting perforated connecting-plate J, said adjusting-plate J being adaptable to stud H, thereby adjustably connecting the sole and heel clamps, the same being in combination with the eccentric-lever G, as and for the purpose specified.

446,422. **TIDE AND WAVE POWER APPARATUS.** NATHAN O. BOND, Fairfax Court-House, Va., assignor of one-half to Frederick W. Pratt, Washington, D. C. Filed June 27, 1890. Serial No. 356,924.

Claim.—1. In an apparatus of the kind described, the combination, with a frame and its supports, of an elliptical float attached thereto, a cylinder, a weighted plunger therein, a plunger actuated by



446,422.



said plunger, and a connection between the float and the weighted plunger, substantially as described.

2. The combination, with the supporting-piles, of a frame having diverging side bars, a rock-shaft supported by the piles to which the frame is hinged, a float journaled in the frame between the side bars, and a cable connected with the float, substantially as described.

3. The combination, with the float and means for retaining the same in place, of a casing having its lower end buried in the sand and perforated, cylinders in the casing, a weighted plunger in one of the cylinders, a connection between the plunger and float, and a plunger in the other cylinder operated by the other plunger, substantially as described.

4. The combination, with the float, of a weighted plunger, a plunger operated by said plunger, and a removable weight for the weighted plunger, substantially as described.

5. The combination, with a float, of a plunger actuated thereby, having a changeable weight thereon, and means for varying the weight, substantially as described.

6. The combination, with the float, of a casing, a cylinder in the casing, a plunger in the cylinder, having a receptacle thereon, a storage-compartment, and a weight arranged to be transferred from the storage-compartment into the receptacle on the plunger, substantially as described.

7. The combination, with the plunger, a pulley above the same, a storage-compartment, and a chain passing over the pulley, whereby the chain may be transferred from the compartment to the plunger, substantially as described.

8. The combination, with a float, of the cylinders, a weighted plunger in one cylinder, a grooved pulley, a plunger in the other cylinder, a webbed connection between the two plungers passing over the pulley, and a cable between the float and the weighted plunger, substantially as described.

9. The combination, with the float, of a casing having its lower end perforated and incased in wire-netting and buried in the sand, plungers in the casing, a connection between the float and one of the plungers, and a tank above the casing, substantially as described.

10. The combination, with a float, of a plunger having a receptacle thereon and removable weights in the receptacle, substantially as described.

11. The combination, with the rocking bar and its support, of the piles engaging the same near its center, side bars diverging inwardly from the shaft, and an elliptical hollow float secured in the side bars, substantially as described.

446,423. **RAILWAY-CAR.** JOHN A. BRILL, Philadelphia, Pa. Filed Nov. 14, 1890. Serial No. 371,447. (No model.)

Claim.—1. A railway-car having separate passenger-compartments and an intervening vestibule-platform, said intervening platform being located a step below the car-flooring, and a foot-plate secured to and located a step below said platform, substantially as described.

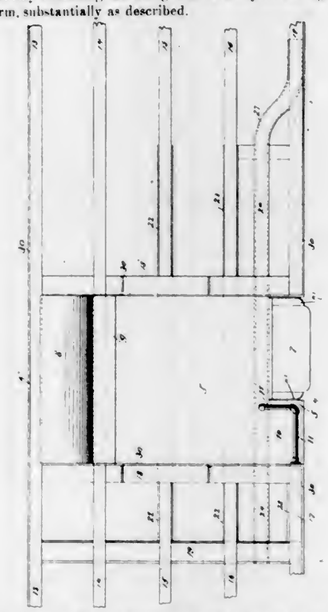
2. A railway-car having separate passenger-compartments and an intervening vestibule-platform, the rear portion of said platform being raised a step up, substantially as described.

3. A railway-car having separate passenger-compartments and an intervening vestibule-platform, the rear portion of said platform being raised a step up and provided with a seat, substantially as described.

4. A railway-car having separate passenger-compartments and an intervening vestibule-platform having a permanently-closed side and an open side and windows in said closed side, substantially as described.

5. A railway-car having separate passenger-compartments and an intervening vestibule-platform, the rear portion of said intervening platform being flush with the car-flooring and the forward portion a step below the said rear portion, substantially as described.

6. A railway-car having separate opposing passenger-compartments, an intervening platform a step below the car-flooring, a foot-plate secured to one corner of a portion of said platform and extending inwardly and from a compartment toward the opposing compartment, and an inclosure for a guard located at the opposite corner and occupying the remaining frontage of the platform, said inclosure having an inwardly-extending rail along the inwardly-extending edge of the platform, substantially as described.



7. A railway-car having separate passenger-compartments, an intervening vestibule-platform, said intervening platform being located a step below the car-flooring, and an inclosure for a guard located at one corner of the forward end of said platform substantially as described.

8. A car having opposing compartments and a platform between them, said platform being located a step below the car-flooring, a foot-plate placed a step below the platform and extending from one of the compartments along the frontage of the platform, and an inclosure for a guard extending from about the edge of the foot-plate to the opposite compartment, substantially as described.

9. A car having separate passenger-compartments 2 and 3 and an intervening vestibule-platform 4, a portion of said platform extending inwardly from its outer edge, as at 5', and longitudinally from one of the compartments, a foot-plate 7, suspended within said inwardly-extending portion and supported by the hangers 7' a step below the platform, and an inclosure 10, occupying substantially the remaining frontage of the platform, circumscribed by the longitudinal and inwardly-extending rail 11, substantially as described.

10. A railway-car having separate passenger-compartments and an intervening vestibule-platform, the forward end of said platform having an inclosure for a guard at one corner, a cut-away portion at the other corner, and a foot-plate secured to the platform in front of the cut-away portion and substantially within the forward edge of said intervening platform, substantially as described.

11. A railway-car having separate passenger-compartments and an intervening vestibule-platform, one end or section of said platform being flush with the car-flooring, the other end or section being depressed a step below, a foot-plate located at one corner of the depressed section and a step below it, and an inclosure for a guard located at the opposite corner of the depressed section, substantially as described.

12. A railway-car the transverse and longitudinal sills of which are so arranged as to leave an aperture wherein a depressed platform may be located, and trussing for said platform and car, comprising the transverse channel-beam 25, and longitudinal channel-beams 22 23 24, secured to the channel-beam 25 at one end and to the longitudinal sills at the other, substantially as described.

13. A railway-car the transverse and longitudinal sills of which are so arranged as to leave an aperture wherein a depressed platform may be located, and a trussing for the said platform and car, comprising the transverse channel-beam 25, longitudinal channel-beams 24 28, the said channel-beam 28 being secured to the channel-beam 25 and one of the transverse sills and extending into said aperture, and a channel-beam 24 secured to the longitudinal sill 17 at one end and to the channel-beam 25 at the other, the said beams 24 28 being so arranged in relation to each other that the free space 5' is left, substantially as described.

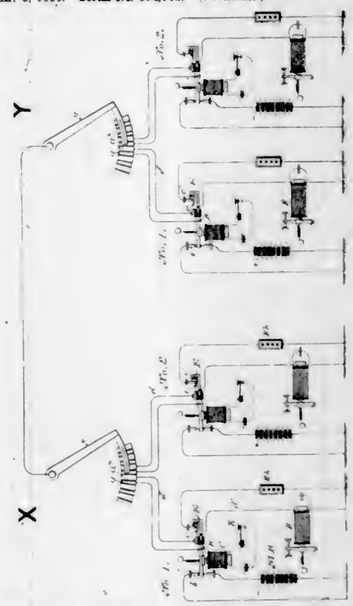
14. A railway-car having separate compartments and an intervening platform located between such compartments, with a system of trussing comprising longitudinal sills 18, which define the width of the platform, longitudinal sills 13 and 14, which support that part of the platform which is flush with the flooring of the car-body, and channel-beams 22, 24, 25, and 28, supporting the depressed portion of the platform, substantially as described.

15. A railway-car having separate passenger-compartments, an intervening platform located between such compartments, a portion of the platform at the closed side being flush with the car-flooring and the remaining portion of the platform being located a step below the car-floor, and a system of trussing adapted to support and strengthen the car-flooring at this point, which comprises longitudinal sills passing under that part of the platform which is flush with the car-flooring and the car-flooring itself, the remaining longitudinal sills ending at the point where the sides of the platform are defined, and trusses suitably secured and located sufficiently below the said longitudinal sills of the car to permit the flooring of the platform to be placed upon it and still be a step below the car-flooring proper, substantially as described.

16. A railway-car the transverse and longitudinal sills of which are so arranged as to leave an aperture wherein a depressed platform may be located, and means for depressing the said platform below the car-flooring, comprising the longitudinal sills 15 16 17, having enlarged sections 29 on one side of the aperture and the transverse sill 19 and channel-beam 25 at the other side, substantially as described.

17. A railway-car the transverse and longitudinal sills of which are so arranged as to leave an aperture wherein a depressed platform may be located, and means for depressing the said platform below the car-flooring, comprising the longitudinal sills 15 16 17, having enlarged sections 29 29' on each side of the aperture, substantially as described.

446,424. **TELEGRAPHY.** ROBERT G. BROWN, Brooklyn, assignor to the Standard Multiplex Telegraph Company, New York, N. Y. Filed Mar. 6, 1886. Serial No. 194,302. (No model.)



Claim.—1. In a synchronous telegraph, the combination of a pair of trailers, one at each end of a main line, a pair of adjoining segments at each end of said line, over which the trailers pass, respectively, the first of each of said segments being connected to earth through the back stop of a transmitter and to a battery through the front contact of said transmitter, in combination with a receiving-relay connected to each of the second of said segments, substantially as described.

2. In a synchronous telegraph, the combination of a trailer at each end of a main line and sets of segments arranged in successive pairs,

the first segments of each of said pairs being connected normally to earth through the back contact-stop of a transmitter, the front contact-stop adapted to be connected with a transmitting-battery, and a receiving-instrument connected to the second of each pair of segments with a normally-open shunt around the receiver, including a rheostat, substantially as described.

3. The combination, in a synchronous telegraph, of a traveling circuit-completer, a pair of adjoining contacts connected with an operator's instruments, the first of said contacts being normally connected to the earth, a transmitting-battery with which said contact may be put in connection when disconnected from the earth, and a receiving-relay which is normally in connection with the second of said contacts.

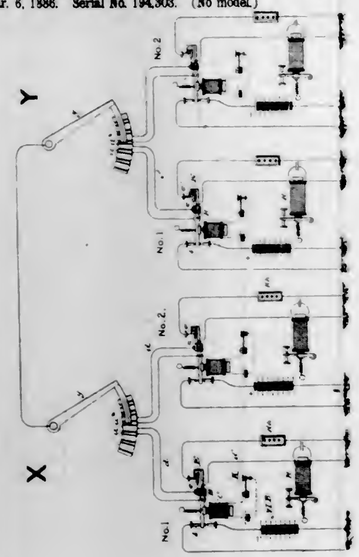
4. The combination, in a synchronous telegraph, of a traveling circuit-completer, a pair of adjoining contacts connected with an operator's instruments, the first of said contacts being normally connected to the earth, a transmitting-battery with which said contact may be put in connection when disconnected from the earth, a receiving-relay which is normally in connection with the second of said contacts, and electrical connections whereby the relay is disconnected from said second contact and the contact put to earth when the transmitting-battery is sent to line through the first of said contacts.

5. In a synchronous telegraph, the combination of a traveling circuit-completer, a pair of adjoining contacts connected with an operator's instruments, an armature with which the first of said contacts is connected, an earth connection against which said armature normally rests, a transmitting-key for disconnecting the armature from the ground and connecting it with a transmitting-battery, a relay normally connected with the second of said contacts, and electrical contacts and connections whereby the relay is disconnected from the second contact and said contact put to earth after the armature has been disconnected from the earth and before it has been connected with the transmitting-battery.

6. The combination of a main line, synchronously-traveling circuit-completers at each end of the main line, a contact at one end of the line, through which a current from a transmitting-battery may be sent to line at the will of the transmitting operator, and a receiving-contact at the other end of the line, with which the corresponding operator's receiving-relay is connected, the latter contact occupying a position relatively in advance of the position of the battery-contact at the other station, for the purpose set forth.

7. The combination of a main line, synchronously-actuated circuit-completers at each end of the line, corresponding pairs of adjoining contacts at each end of the line, connected with corresponding operator's instruments, the first contact of each pair at each station being normally connected to the earth, the second contact in each pair at each station being normally connected with a receiving-relay, and a transmitting battery or batteries at each station from which transmitting impulses of electricity may be sent into the line through the first contacts in said pairs.

446,425. TELEGRAPHY. ROBERT G. BROWN, Brooklyn, assignor to the Standard Multiplex Telegraph Company, New York, N. Y. Filed Mar. 6, 1886. Serial No. 194,303. (No model.)



Claim.—The described method of transmitting messages in either direction at will over a single main line connecting two or more multiplex synchronous telegraphic apparatus, consisting in causing the transmitted impulses to be set up over the line while the receiver is disconnected therefrom, and receiving said impulses through the receiver while the transmitting-generator is disconnected therefrom, substantially as described.

446,426. WATER OR AIR CYLINDER. WILLIAM J. O. BRYON, Jr., New York, N. Y. Filed July 27, 1889. Serial No. 318,966. (No model.)



Claim.—1. A cylinder provided with a piston having two series of openings therein arranged parallel, or nearly so, with the line of the piston-rod, one set of which is adapted to be closed, substantially as described, by a covering or valve, and the other series left uncovered, substantially as and for the purpose set forth.

2. A cylinder provided with a piston having two series of openings therein arranged parallel, or nearly so, with the line of the piston-rod, a valve, and an adjusting device whereby the force to be overcome by the piston is regulated, substantially as described, and for the purpose set forth.

446,427. METHOD OF MANUFACTURING SHEET-METAL SIGNS. RICHARD A. BUSCH, Dresden, Germany. Filed Apr. 8, 1890. Serial No. 347,142. (No model.) Patented in England Nov. 8, 1889, No. 17,832.



Claim.—The method of producing embossed relief-letters, designs or representations of objects on sheet metal, consisting in separately forming the different parts of the design and attaching them to a ground plate and in forming a hard and solid punch by means of a mold taken from said ground plate with its parts of the design, said punch working in combination with a matrix formed by fastening a sheet of strong pasteboard from which the design is suitably cut out to a second sheet of pasteboard for the purpose of providing the sheet metal with sharply-embossed pattern, as described.

446,428. CONTACT-TROLLEY FOR ELECTRIC RAILWAYS. JAMES B. CAHOON and ISAAC F. BAKER, Lynn, Mass., assignors to the Thomson-Houston Electric Company, of Connecticut. Filed July 3, 1890. Serial No. 357,655. (No model.)



Claim.—1. In a contact device for engagement with a suspended electric line-conductor, the combination of an upwardly-extending trolley arm or pole, with an automatically-detachable contact-maker carried thereby, as described.

2. The combination, with a rearwardly and upwardly extending trolley-arm, of a contact-maker for engaging the under side of the line-conductor secured to the outer end of the said arm by a slip-joint, so that when the contact-maker becomes caught it may be automatically detached from the arm, as described.

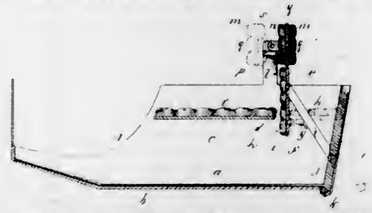
3. In a contact device for electric railways, the combination of the arm and contact-maker detachably connected thereto, with a guard for holding the contact-maker when automatically disconnected from its normal attachment to the arm, as described.

4. The combination, with the upwardly-extending trolley-arm, of a frame in which is journaled the trolley-wheel, connected to the outer end of the arm by a slip-joint, and the chain or equivalent flexible guard attached to the said arm and frame, respectively, as described.

5. The combination of the upwardly-extending trolley-pole with the automatically-separable contact device and the flexible connection of conducting material between the pole and contact device.

6. The combination of an upwardly-extending trolley-arm, an automatically-separable trolley, a flexible connection between the trolley and trolley-arm, and means for preventing the trolley from rotating on the arm.

446,429. SHIFTING-SEAT CARRIAGE. JOSEPH T. CLARKSON, Amesbury, Mass. Filed Mar. 29, 1890. Serial No. 345,853. (No model.)



Claim.—1. In combination with a vehicle-seat, an adjustable back having a short arm extended outward from the plane of the back and pivoted between the center and one edge of the seat, whereby the reversing of the back varies the depth from front to rear of the seat without reversing the same, substantially as specified.

2. In combination, a non-reversible carriage-seat and a reversible back supported near one edge of the seat and arranged to vary the depth of the seat as the back may be reversed, substantially as specified.

3. The combination, with non-reversible seat *c*, of reversible back *m*, having short arms *s*, pivots *n*, arranged between the front and rear edges of the seat and at one side of the fore and aft center thereof, whereby the reversal of the back in either direction will not reverse the seat, but will vary the depth from front to rear thereof, substantially as specified.

4. The combination of a front seat, an elevated back for said seat, and a rear seat arranged to be turned up and form a continuation downward of said elevated back from thence to said front seat, substantially as specified.

5. The combination, with front seat *c*, of rear seat *e*, hinged at a point in rear of its front edge and so that when turned down it forms with seat *c* a continuous plane, and when turned up to serve as a back for the front seat its edge extends below the top of the front seat and space is provided between the top of *c* and rear edge of *c* for the thickness of the cushion of seat *c*, substantially as specified.

6. The combination of front seat *c*, its reversible back *m*, the hinged rear seat *e*, tail-board *j*, and a connection between the same and said rear seat, substantially as specified.

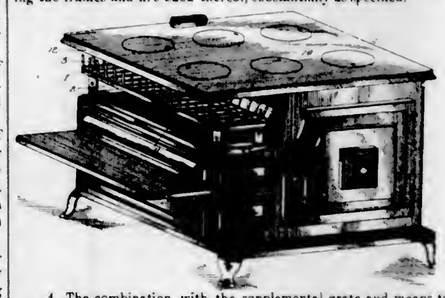
7. The combination, with back *m*, supported above the seats, of rear seat *e*, hinged and arranged to be turned up beneath said back to co-operate therewith in forming a full-height back, and the hinged tail-board pivotally connected with and arranged to actuate said rear seat, substantially as specified.

446,430. ATTACHMENT FOR COOKING-STOVES. MOSES N. COLE, Wellington, Kans. Filed June 13, 1890. Serial No. 355,297. (No model.)

Claim.—1. The combination, with the supplemental grate-frame having bolt-openings, of oblong grate-supporting frames provided at their upper ends and side portions with bolt-holes adapted to register with bolt-holes formed in the grate, and bolts for insertion in the holes, substantially as specified.

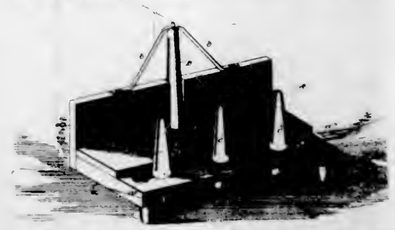
2. The herein-described grate attachment, consisting of an oblong frame, a series of transverse grate-bars the extremities of which are upwardly bent, and a series of short bars forming a continuation of the bent ends of the transverse bars and secured to the end bars of the grate-frame, substantially as specified.

3. The combination, with the fire-box, of a pair of supporting-frames, a grate mounted thereon, and a pair of spacing-bolts connecting the frames and fire back thereof, substantially as specified.



4. The combination, with the supplemental grate and means for supporting the same within a fire-box and above the grate thereof, of an imperforate pan mounted upon the supplemental grate, substantially as specified.

446,431. MITER-BOX. RICHARD B. CURRIER, Almont, Mich., assignor of one-half to Curtis S. Currier, same place. Filed June 7, 1890. Serial No. 354,594. (No model.)

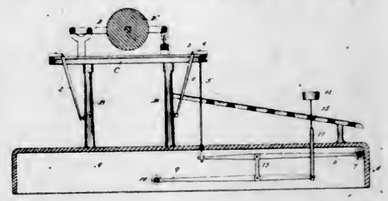


Claim.—1. In a miter-box, the combination of the box proper, the fixed front posts slotted from the top downward that the saw may be lowered therein, and the rear post of greater height sustained by vertical axes at its top and bottom and provided with a vertical slot terminating below its upper end, whereby the saw-blade may be retained and guided when lifted from the front posts.

2. In a miter-box, the box proper provided with a longitudinal vertical slot having an enlargement a^3, in combination with the post having neck *c* and head *c'*, and the slotted wedge applied astride of the neck between the head and the bottom of the box.

3. In a miter-box, the box having the rear wall with a vertical opening therein, in combination with the vertically-slotted post seated in said opening, the lower journal of the post seated in a bottom bearing, the upper journal of the post, and the arm or brace *b'*, attached to the box and passing over the upper end of the post to sustain the same.

446,432. TYPE-WRITING MACHINE. HENRY E. CURTIS, Springfield, Mass., assignor to the Yost Writing Machine Company, New York, N. Y. Filed June 4, 1888. Serial No. 275,973. (No model.)

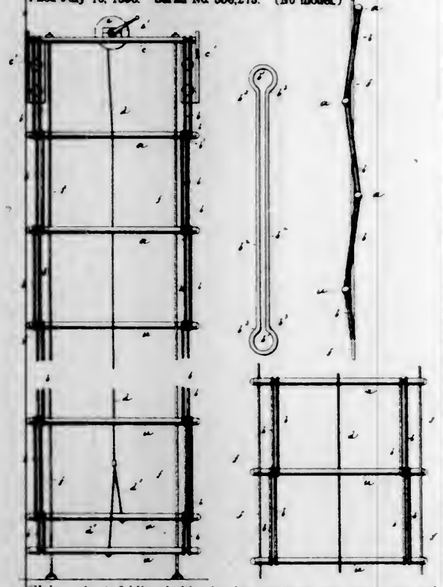


Claim.—1. In a type-writing machine, the key-lever 6, pivoted below and at the front of the key-board, the key-lever 9, pivoted below the lever 6 and at the rear of the key-board, the connecting-link 13 uniting said levers between their pivots or fulcrums, a finger-key connected to the lever 9, a type-carrier, and a rod connecting the type-carrier with the lever 6, as set forth.

2. In a type-writing machine, the combination of the transverse fulcrum-rods 7 and 10, the levers 6 and 9 thereon and pointing in opposite directions, the link 13, connecting a pair of said levers, the type-carriers, a connecting-rod joining one of the type-carriers with one of the levers 6, and a finger-key for each of the levers 9, as set forth.

3. In a type-writing machine, the combination of the transverse rods 7 and 10, the levers 6 and 9, the link 13, the slotted finger-key support, the connecting-rod, and the type-bar, substantially as and for the purpose set forth.

446,433. **FOLDING LADDER.** JULIUS A. DALUMI, New York, N. Y. Filed July 10, 1890. Serial No. 358,273. (No model.)

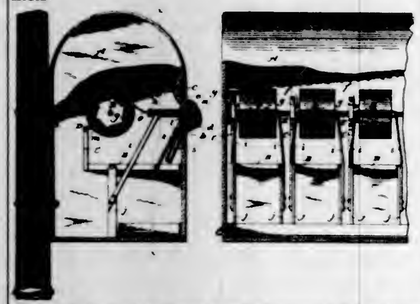


Claim.—1. A folding ladder having uprights that are composed of closed or endless links, each link being provided with eyes at the ends, and a pair of shanks between the eyes, substantially as specified.

2. The combination of a folding ladder with a chain *d*, attached to the lowermost rung and passing up in front and behind alternate rungs, and with a windlass, to which the upper end of the chain is fastened, substantially as specified.

3. The combination of a folding ladder with vertical wires *f*, rigidly secured at their upper and lower ends and passing in front of and behind alternate rungs, substantially as specified.

446,434. **POSTAGE-STAMP-VENDING APPARATUS.** LESLIE S. DARR, New York, N. Y. Filed July 15, 1890. Serial No. 358,867. (No model.)



Claim.—1. In a postage-stamp-vending apparatus, the combination of a tray adapted to be tilted by the weight of a coin, a roll of postage-stamps, a pawl and ratchet for operating the roll through the action of the tray, a guide for the passage of the stamps, and a support for said guide extending from the support for the tray, substantially as described.

2. In a postage-stamp-vending apparatus, the combination of a tray adapted to be tilted by the weight of a coin, a roll of postage-stamps, an inclosing box or casing having slots for the passage of the stamps and entrance of the coin, a guide for the stamps, a slide for closing the guide, and a pawl and ratchet for operating the roll, both of which are operated through the action of the tray.

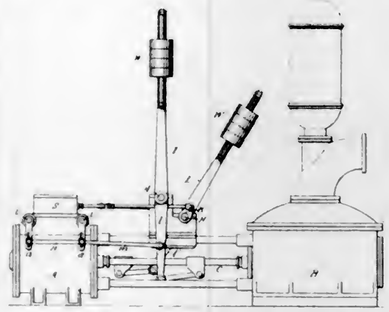
3. In a postage-stamp-vending apparatus, the combination, with a tray adapted to be tilted by the weight of a coin and an inclosing box or casing having a slot for the passage of the stamps, of a slide moving across such opening and operated through the action of the tray, substantially as described.

4. In a postage-stamp-vending apparatus, the combination, with a suitable box having slots for the entrance of a coin and the outward passage of stamps, of the roll of postage-stamps, the guide therefor coinciding with the stamp-slot, the tilting tray, the hinged pawl and ratchet, and the slide for closing the stamp-guide, substantially as described.

5. In a postage-stamp-vending apparatus, the inclosing box or casing having the sets of stamp and coin slots *a b* and the longitudinal curved depression or gutter *c*, in combination with separate lids closing over said slots and adapted to turn upwardly into the gutter, substantially as shown, and for the purpose described.

6. In a postage-stamp-vending apparatus, the combination, with the box or casing having the sets of slots *a b* and gutter *c*, of the plates secured intermediate of said sets of slots and the separate lids working between said plates and turning upwardly into the gutter *c*, substantially as described.

446,435. **DIRECT-ACTING PUMPING-ENGINE.** LUIGI D'AURIA, Philadelphia, Pa., assignor of one-half to Henry Martyn Robert, same place. Filed Feb. 7, 1888. Serial No. 263,304. (No model.)



Claim.—1. The within-described art or method of regulating the mean piston speed in a direct-acting non-rotative steam-expanding pumping-engine, which consists in adding to the requisite reciprocating parts a supplemental reciprocating weight, which, with the weight of the requisite reciprocating parts, is so proportioned in relation to the accelerative work, as herein defined, as so to control the accelerated and retarded motion of the engine that concussion and spasmodic action shall be avoided.

2. A direct-acting non-rotative steam-expanding pumping-engine adapted to work under steam expansion sufficient to produce an accelerative work, as herein defined, exceeding four per cent. of the total work absorbed by the pump in a single stroke, and provided with an additional reciprocating weight, which, when in motion with the requisite working parts, will produce an accelerated mean weight in pounds, as herein defined, greater than the quotient obtained by dividing the total work in foot pounds absorbed by the pump in a single stroke by the square of the mean piston speed in feet per second.

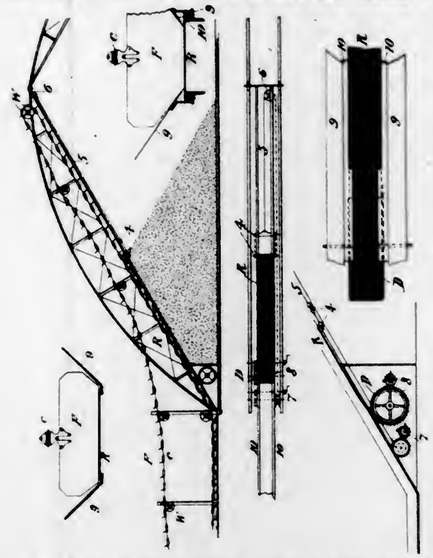
3. In combination with a direct-acting non-rotative steam-expanding pumping-engine, an additional reciprocating weight or weights connected to and oscillating with the reciprocating parts of the pumping-engine and adapted to control the accelerated and retarded motion of the engine, thereby preventing concussion and spasmodic action, substantially as and for the purpose set forth.

4. In combination with a direct-acting non-rotative steam-expanding pumping-engine, an additional reciprocating weight or weights, as W W', fixed or adjustable upon the arms L and L', oscillating with and connected to the valve-operating arms *l* and *l'*, as shown, and for the purpose specified.

446,436. **CONVEYER-TROUGH BOTTOM.** JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Naugatuck, Conn. Filed May 12, 1890. Serial No. 351,539. (No model.)

Claim.—1. In a conveyer-trough, a sheet-metal bottom adjustable longitudinally to vary the location of the discharge-opening, substantially as set forth.

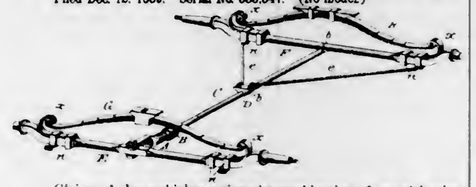
2. In a storage-conveyer, a flexible sheet-metal bottom adjustable longitudinally to vary the discharge-point as the pile accumulates.



3. An adjustable conveyer-bottom composed of sheets of flexible metal provided with depressions in the sheets at the joints to protect the rivets or bolts from wear, substantially as described.

4. A longitudinally-adjustable conveyer-trough bottom provided with a shifting discharge-chute, as and for the purpose described.

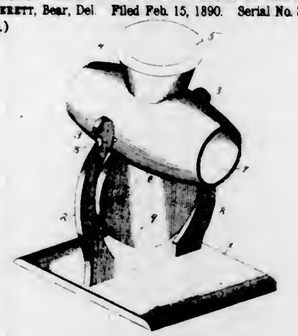
446,437. **VEHICLE-GEARING.** JOHN L. DOLSON, Charlotte, Mich. Filed Dec. 12, 1889. Serial No. 333,547. (No model.)



Claim.—1. In a vehicle-gearing, the combination of a reach having its forward end swiveled, a grip D, secured to said reach and having the sharp projections *o o* to bite or grip into the reach, and the braces *e e*, secured to the grip D and rear axle, substantially as described.

2. In a vehicle-gear, the combination of a reach C, having the spindle *l*, the dished clip B, having rubber washer *a* in the dished portion and an opening for the spindle *l*, the swivel A, having jaws *s s*, by which it is secured to the axle by a king-bolt, and a longitudinal opening for the spindle, which is held in place by a nut located between the jaws *s s*, substantially as described.

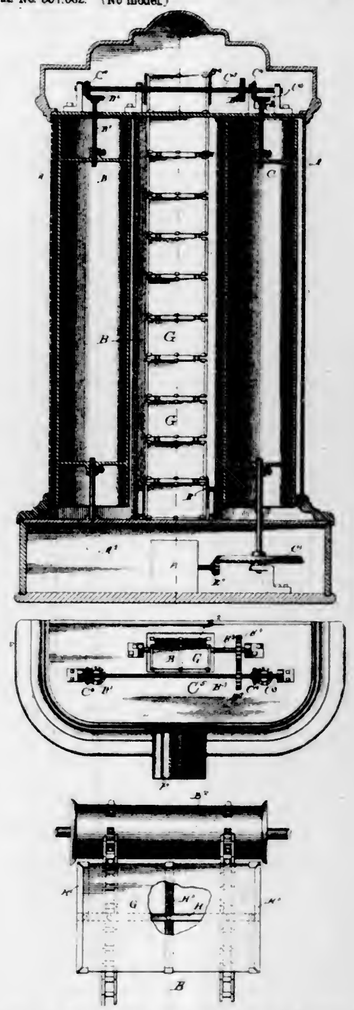
446,438. **CHANGE-RECEIVER.** GEORGE EDWARDS and CHARLES D. EVERETT, Bear, Del. Filed Feb. 15, 1890. Serial No. 340,619. (No model.)



Claim.—1. A change-receiver comprising the base, the standards rising from the base, the receptacle pivoted between the upper ends of the standards, so as to oscillate back and forth, and the pendulum depending from the receptacle and fitting between the standards and adapted to be pushed to either side to tilt the receptacle, substantially as described.

2. A change-receiver comprising the frame, the barrel-shaped receptacle having open ends 7 and provided with a flaring mouth 5 and being pivotally mounted in the frame, and the pendulum depending from the lower side of the receptacle and being adapted to be pushed aside to tilt the receptacle, substantially as described.

446,439. **CARD-EXHIBITING DEVICE.** JOSEPH W. FAWKES, Sr., and JOSEPH W. FAWKES, Jr., Burbank, Cal. Filed June 28, 1890. Serial No. 357,062. (No model.)



Claim.—1. The combination of the endless belt B, means for supporting said belt, the cylinders C and D, located at opposite sides of said belt and in a plane substantially parallel to the faces of said belt, and driving mechanism arranged in suitable relation to said belt and cylinders, substantially as shown and described.

2. The combination of the endless belt B, means for supporting said belt, the cylinders C and D, located at opposite sides of said belt and in a plane substantially parallel to the faces of said belt, and the case A, surrounding said belt and cylinders, substantially as shown and described.

2. The combination of the endless belt B, extending around rollers B′ and B², and the cylinders C and D, located at opposite sides of said belt and in a plane substantially parallel to the faces of said belt, a case A, surrounding said belt and cylinders, and a motor E, located within said case and in communication with said belt and cylinders, substantially as shown and described.

4. The combination of the endless belt B, extending around rollers B′ and B², and cylinders C and D, located at opposite sides of said belt, a case A, surrounding said belt and cylinders, said belt and one of said cylinders being geared to the other of said cylinders, and means for imparting motion to one of said cylinders, substantially as shown and described.

5. The combination of the endless belt B, extending around rollers B′ and B², and cylinders C and D, located at opposite sides of said belt, a case A, surrounding said belt and cylinders, said belt and one of said cylinders being geared to the other of said cylinders, and a motor E driving one of said cylinders, substantially as shown and described.

6. In a card-exhibiting apparatus, the combination of the case A and the four members—to wit, belt B, a roller B² for supporting said belt, and cylinders C and D—located within said case at the sides of said belt, said roller and cylinder being geared to each other, substantially as shown and described.

7. In a card-exhibiting apparatus, the combination of the case A, the four members—to wit, belt B, roller B² for supporting said belt, and cylinders C and D—located within said case at opposite side of said belt, said roller and cylinder being geared to each other, and a motor located within said case and connected with one of said members, substantially as shown and described.

8. In a card-exhibiting apparatus, the combination of the case A, rotary cylinders C and D, located within said case, an endless belt located between said cylinders, and a roller for supporting said belt, said case having a glass wall in front of said cylinders and a magnifying-glass in front of said belt, substantially as shown and described.

9. In a card-exhibiting apparatus, the combination of the case A, rotary cylinders C and D, located within said case, an endless belt located between said cylinders and a roller for supporting said belt, said case having a glass wall in front of said cylinders and a magnifying-glass in front of said belt, and a motor located within said case below and connected with said belt and cylinders, substantially as shown and described.

10. In a card-exhibiting apparatus, the combination of the case A, rollers B′ and B², belt B, extending around said rollers, gear B⁴ upon the axle B³ of the roller B², cylinders C and D, located on opposite sides of the belt B, gear C³ on the cylinder C, gear D′ on the cylinder D, shaft C², supporting the gear C³, meshing into the gear D′, the gear C⁴, meshing into the gear C³, and means for imparting motion to the train of mechanism composed of the parts mentioned, substantially as shown and described.

11. In a card-exhibiting apparatus, the combination of the case A, rollers B′ and B², belt B, extending around said rollers, gear B⁴ upon the axle B³ of the roller B², cylinders C and D, located on opposite sides of the belt B, gear C³ on the cylinder C, gear D′ on the cylinder D, shaft C², supporting the gear C³, meshing into the gear D′, the gear C⁴, meshing into the gear C³, and a motor located within the lower portion of the case to impart motion to the train of parts mentioned, substantially as shown and described.

12. In a card-exhibiting apparatus, the combination, with a card-carrying belt, of a card-receiving frame secured to said belt only along the middle line of said frame, which is at right angles to the length of said belt, and means for supporting and driving said belt, substantially as shown and described.

13. In a card-exhibiting apparatus, the combination, with a card-carrying belt, of a bar H, applied and secured transversely to said belt, and card-holding bars H′, applied over said bar H, substantially as shown and described.

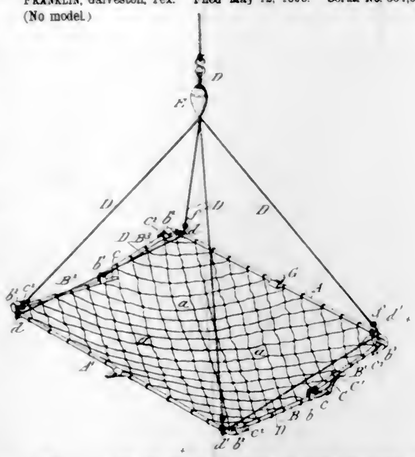
14. In a card-exhibiting apparatus, the combination, with a card-carrying belt, of a bar H, applied and secured transversely to said belt, bars H′, crossing and secured to said bar H at right angles, the outer of said bars H³ having their ends and outer sides turned toward the bar H, and the intermediate bars H′ having their ends turned toward the bar H, substantially as shown and described.

15. An endless card-carrying belt composed of a pair of sprocket-chains, a card-receiving frame secured to said belt only along the middle line of said frame, which is at right angles to the length of said belt, and means for supporting and driving said belt, substantially as shown and described.

16. An endless card-carrying belt composed of a pair of sprocket-chains, bars H, applied and secured transversely to said sprocket-chains, and bars H′, crossing and secured to said bar H and having turned edges for engaging the edges of the cards, substantially as shown and described.

17. In a card-exhibiting apparatus, the combination of an endless belt B, means for supporting said belt, cylinders C and D, located at opposite sides of said belt, means for driving said belt and cylinders, a case A, surrounding said belt and cylinders and having ordinary glass in front of said cylinders, and a magnifying-glass and sight-obstructing glass in front of said belt, substantially as shown and described.

446,440. **NET FOR CRABBING AND FISHING.** ROBERT M. FRANKLIN, Galveston, Tex. Filed May 12, 1890. Serial No. 351,386. (No model.)



Claim.—1. A net for fishing, crabbing, or other analogous uses, comprising suitable lowering, spreading, and folding means, netting, side bars having horizontal angular end extensions and loose-joint connections, and end bars, each formed of two parts united by a loose-joint connection and also connected at their extremities to the side bars by the loose-joint connections of said side bars, and one part of each of the side bars formed with a stop connection, all substantially as and for the purpose described.

2. The combination of the jointed end bars, set trigger connected to one part of one of the jointed end bars, the trigger-catch attached to the other part of the said jointed end bar, and the netting and side bars, substantially as described.

3. The combination of the jointed end bars, set trigger connected to one part of one of the jointed end bars, the trigger-catch attached to the other part of the said jointed end bar, the netting, the side bars, guiding-eyes near the corners of the net, and the cords passed through said eyes and across the ends of the net and united centrally over the net to a suspending-cord, substantially as described.

4. The combination of the folding net, cords passed across the ends of the same and provided with stops, and the float or buoy, substantially as and for the purpose described.

5. A net-frame provided with jointed end bars, which are jointed to the side bars, the joints in the end bars being at right angles to the joints by which they are connected to the side bars, and said joints constructed and arranged substantially as and for the purpose described.

6. The combination of the jointed end bars, broad-surfaced set and releasing trigger-plate connected to one part of one of the jointed end bars, the trigger-catch attached to the other part of the said jointed end bar, and the netting and side bars, substantially as described.

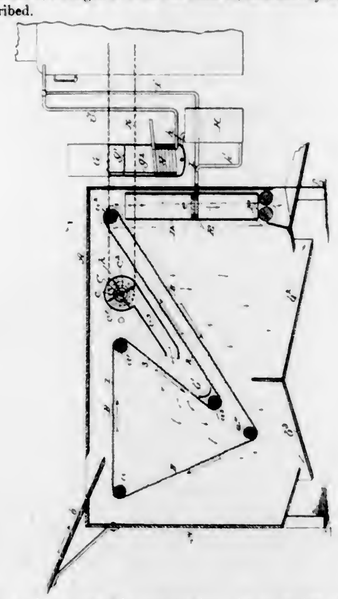
446,441. **APPARATUS FOR CASING TOBACCO.** JOHN C. FROST, Statesville, N. C. Filed Apr. 16, 1890. Serial No. 348,261. (No model.)

Claim.—1. In a tobacco-caser, the casing-cylinder having a perforated coil pipe or pipes arranged within the same for spraying the casing solution upon the leaves as they pass through the cylinder, substantially as shown and described.

2. In a tobacco-caser, the combination, with a movable endless belt, of the rollers a, a', a^2, a^3, and a^4, around which the belt passes, the rollers a, a', and a^3 being arranged in horizontal alignment, the roller a^2 being arranged below the said rollers, and a blowing device arranged adjacent to the belt between the rollers a' and a^3, substantially as shown and described.

3. In a tobacco-caser, the combination, with a movable endless belt of foraminous structure, an air-blower arranged adjacent to said belt, a casing-cylinder arranged beneath the delivery end of said belt, and a pipe in said cylinder for spraying the casing solution, substantially as shown and described.

4. The combination, with the endless belt, of the rollers a, a', a^2, a^3, and a^4, the rollers a, a', and a^3 being in horizontal alignment, the rollers a^2 and a^4 being below the said rollers a, a', and a^3, the belt passing over the rollers a, a', and a^3 and under the rollers a^2 and a^4, and the shield b', arranged to cover the roller a^2, substantially as shown and described.



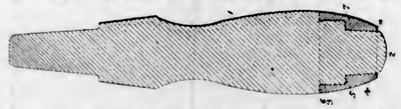
5. In a tobacco-caser, the combination, with an endless belt constructed and arranged as described, of a blower adjacent to said belt, a casing-cylinder having perforated pipes arranged within the same, adapted to spray the solution upon the leaves, and the injector connected with the said pipes to spray the liquid, substantially as and for the purpose set forth.

6. The combination, with the casing-cylinder, of the perforated pipes arranged therein, steam and liquid supply pipes connected with said pipes, and the pressing-rollers arranged at the lower end of the cylinder, substantially as shown and described.

7. The combination, with a licorice-cooking receptacle, of the coil-pipes arranged in the lower part of the same, the rod extending upward from said coil, and the licorice-rest secured to said rod, substantially as shown and described.

8. The combination, with a casing-cylinder having the perforated coils arranged within the same, the licorice-cooking receptacle, reservoir-tank connected with the said receptacle, a pipe connecting the reservoir and coils within the casing-cylinder, a steam-pipe connected with the said connecting-pipe, and an injector arranged at the juncture of the steam and connecting pipes, substantially as and for the purpose set forth.

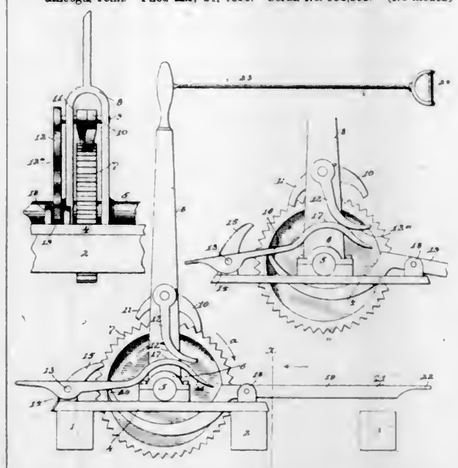
446,442. **HANDLE FOR CHISELS.** WALTER H. GAGE, West Fitchburg, Mass. Filed Aug. 14, 1890. Serial No. 361,970. (No model.)



Claim.—1. The herein-described handle having the annular recesses 3 and 4, forming the shoulders 5 and 6, and having the upper convexed end and the metal ferrule or cap open throughout its length and slightly shorter than from the lower shoulder to the upper end of the handle, whereby the convex butt 2 projects beyond the metal cap, and having an internal reduced portion 8, forming the intermediate shoulder 7, fitting and abutting against the shoulder 5 of the handle, substantially as specified.

2. The herein-described wooden handle having a convexed butt provided with the lower and upper recesses 3 and 4, the latter smaller than the former and the two forming the shoulders 5 and 6, and the metal cap or ferrule open throughout its length and slightly shorter than the distance from the shoulder 6 to the extreme convexed end, whereby the convex butt 2 projects beyond the metal cap, and provided with the reduced portion 8 and shoulder 7, said reduced portion being slightly tapered to agree with the taper of the reduced portion 4 of the handle, substantially as specified.

446,443. **SAW-MILL SET-WORKS.** WILLIAM J. GLADISH, Chattanooga, Tenn. Filed May 21, 1890. Serial No. 352,593. (No model.)



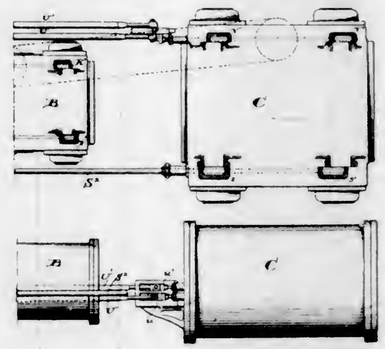
Claim.—1. The combination of a shaft 5, a ratchet-wheel 7, retaining-pawl 15, shaft 13, and lever 16, having the inclined or cam surface 17, with a lever 8, having pawls 10 11, and lever 12, connected with the pawls 10 11 and having an inclined or cam surface adapted to be operated by the inclined or cam surface of lever 16, substantially as and for the purpose described.

2. The combination of a lever 8, having pawls 10 11, and a lever 12, connected thereto and having an inclined or cam surface, a shaft 5, a ratchet-wheel 7 upon the same, with a retaining-pawl 15, a lever 16, connected thereto and having an inclined surface 17, and a lever 19 to operate the lever 16, substantially as and for the purpose described.

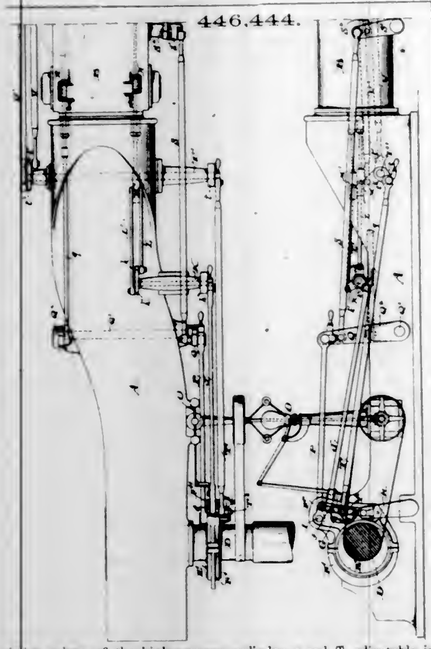
3. In a saw-mill set-works, the combination of the lever 19, the lever 16, having inclined surface 17, the pawl 15, suitably connected to lever 16, with the lever 12, having inclined surface 12^a, adapted to be operated upon by the surface 17 of the lever 16, lever 8, pawls 10 11, carried by lever 8 and arranged to control a ratchet-wheel, said lever 12 being connected to pawls 10 11, substantially as and for the purpose described.

446,444. **LINK-MOTION FOR COMPOUND ENGINES.** WILLIAM E. GOOD and CARL O. LINDROTH, Philadelphia, Pa., assignors to the Southwark Foundry and Machine Company, same place. Filed Nov. 20, 1890. Serial No. 371,984. (No model.)

Claim.—1. In combination with a compound engine, a link, as F F′, having a slot f, and a supplemental slot g, as described, a rod J, automatically adjustable in slot f and arranged to actuate the ad-



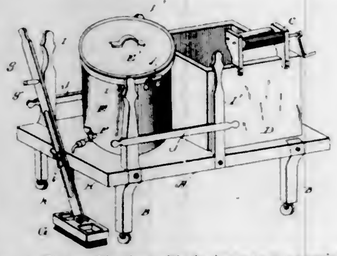
446,444.



mission-valves of the high-pressure cylinder, a rod T, adjustable in slot *g*, and arranged to actuate the admission-valves of the low-pressure cylinder, and a rod or rods P, also connected with link F F' and arranged to actuate the exhaust-valves of the cylinders.

2. In combination with a compound engine, a link, as F F', having a slot *f*, and a supplemental slot *g*, as described, a rod J, automatically adjustable in slot *f* and arranged to actuate the admission-valves of the high-pressure cylinder, a rod T, adjustable in slot *g* and arranged to actuate the admission-valves of the low-pressure cylinder, means for adjusting rod T in slot *g*, as described, and a rod or rods P, also connected with link F F' and arranged to actuate the exhaust-valves of the cylinders.

446,445. **FLOOR-WASHING MACHINE.** LIZZIE GRAHAM, Portland, Oreg. Filed May 24, 1890. Serial No. 353,055. (No model.)

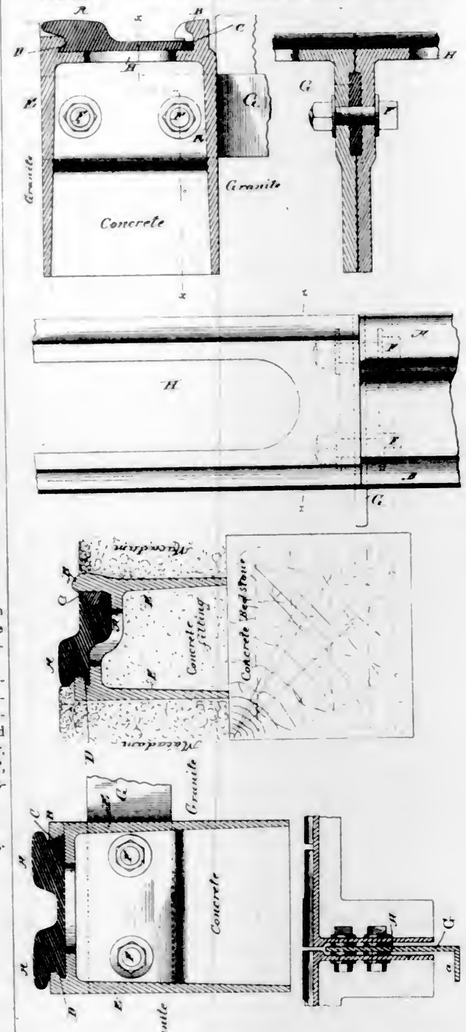


Claim.—1. The combination, with the hot-water reservoir of the herein-described scrubbing-machine, of the scrubbing-brush provided with the open top forming soap-receptacles, the operating-handles, and the connecting water-pipe, substantially as herein set forth.

2. In a floor-scrubbing machine, the combination, with the movable platform, of the vertically-adjustable operating-lever and the scrubbing-brush, substantially as set forth.

3. In a floor-scrubbing machine, the combination of a movable frame, a vertically-operating lever provided with a longitudinal slot, a thumb-screw passing through said slot into the end of the frame, a hot-water reservoir placed upon the movable frame, a scrubbing-brush pivotally secured to the lower end of the operating-lever, said brush provided with top soap-receptacles, and a water-pipe leading from the hot-water reservoir, so as to discharge the water into the soap-receptacles of the brush, substantially as set forth.

446,446. **STREET-RAILWAY TRACK.** THEODORE G. GRIBBLE, Yonkers, N. Y. Filed Nov. 8, 1890. Serial No. 370,813. (No model.)



Claim.—1. The combination of a railway-rail with a continuous longitudinal open-bottomed metallic support having also openings in its top, as set forth, said box acting also as a mold for the forming of the upper portion of the concrete structure.

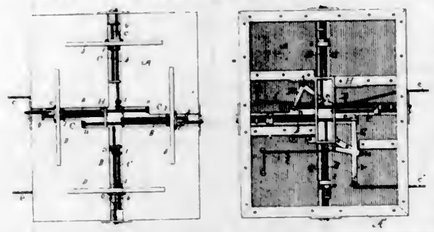
2. The combination, with the railway-rail, of the longitudinal support provided with the dovetail flanges and key-seats and the wedges, as set forth.

3. The combination, with the longitudinal support provided with dovetail flanges, of a rail having a flat base, a double tread on its upper side, and dovetail flanges to engage the support, as set forth.

4. The combination, with the concrete foundation, of open-bottomed box-shaped longitudinal supports and their attachments so embedded in the concrete that the latter shall hold the supports firmly down and in position without the use of bolts or similar fastenings, as set forth.

5. The method of constructing the rail-support of a railway, which consists in laying a longitudinal bed of concrete or other analogous material, laying thereupon the hollow girder, and then filling the interior thereof with concrete or the like material, the same cementing with the lower bed thereof, as set forth.

446,447. **PAPER-JOGGER.** RUSSELL A. HART, Battle Creek, Mich. Filed Sept. 19, 1890. Serial No. 365,521. (No model.)



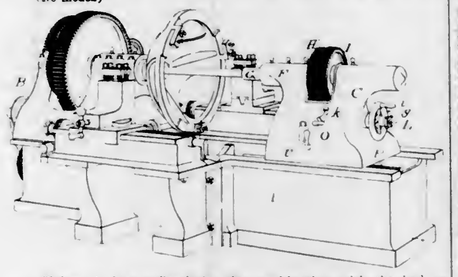
Claim.—1. In a paper-jogger of the class described, a table having longitudinal and transverse channels, sliding and fixed rods in said channels, uprights on said sliding rods, and lugs on said fixed rods, in combination with angularly-adjustable evener bars or leaves pivoted on said uprights, each of said bars or leaves having depending arms, one of which engages a shoulder on one of said uprights and the other of which engages one of said lugs, and means for reciprocating said sliding rods.

2. In combination, a paper-receiving table or platform having longitudinal and transverse channels, the fixed rods provided with movable and adjustable lugs, the adjacent parallel sliding rods carrying movable supports, angularly-adjustable pivoted paper-evener bars or leaves adapted to automatic movement by the reciprocating engagement of the leaves with the adjustable lugs of the fixed rods, and means for reciprocating said sliding rods.

3. In a paper-jogger of the class described, a table having longitudinal and transverse channels, sliding and fixed rods in each of said channels, a movable upright on each of said sliding rods, and a lug on each of said fixed rods, in combination with an evener bar or leaf pivoted to each of said uprights and formed with depending arms, one of which engages a shoulder on said upright and the other the lug of the adjacent fixed rod, a set-screw in each of said evener bars or leaves, and means for reciprocating said sliding rods.

4. In a paper-jogger of the class described, a table having longitudinal and transverse channels, a sliding rod in each of said channels, and two pairs of swinging evener bars or leaves connected with and operated by said sliding rods, in combination with a bell-crank lever for each pair of sliding rods and connected thereto and to a moving part of the press, substantially as described, whereby the two pairs of evener bars or leaves may be operated together or separately, as specified.

446,448. **PULLEY-LATHE.** MICAJAH C. HENLEY and PETER SHELLENBACK, Richmond, Ind. Filed Sept. 20, 1890. Serial No. 365,654. (No model.)



Claim.—1. In a pulley-lathe, the combination, with the bed or frame, of the fixed head-stock, the tail-stock movable upon the bed, a power mechanism, substantially such as shown and described, receiving motion from a driven part of the lathe for moving the tail-stock backward and forward and for actuating the tool-arbor mounted in the tail-stock, and manually-operated devices, substantially such as shown and described, for throwing either the tail-stock feed mechanism or the tool-arbor mechanism, or both, into or out of action, as desired.

2. In a pulley-lathe, the combination, with the bed or frame, of the fixed head-stock, the movable tail-stock carrying the tool-arbor, and a power-feed mechanism for the tail-stock independent of the arbor-actuating mechanism.

3. In a pulley-lathe, the combination, with the movable tail-stock carrying the tool-arbor, of a single driven shaft, such as D, and intermediate connections between the rotatable shaft and the tail-stock and arbor for communicating motion thereto.

4. In a pulley-lathe, the combination, with the tail-stock, of a rotatable tool-arbor journaled therein, and means, substantially such as shown, for rotating said arbor and for moving it longitudinally.

5. In a pulley-lathe, the combination, with the tail-stock, of a rotatable and longitudinally-movable tool-arbor, a driving-shaft D, provided with a gear-wheel E, and intermediate connections, substantially such as shown, between the arbor and gear-wheel for imparting both a longitudinal and rotary motion to the arbor.

6. In combination with the tail-stock and the tool-arbor, a gear-wheel H for moving the arbor longitudinally, a gear-wheel I for rotating the arbor, gears J K, engaging the gears H I, and means for locking the gears J K together and imparting motion thereto.

7. In combination with the tail-stock and the tool-arbor, gear-wheels H and I, adapted to rotate and to advance and recede the arbor, gears J K, engaging the wheels H I, a driven shaft D, provided with a gear-wheel E, an idler N, and means for throwing the idler into and out of operative position between the gears E and K.

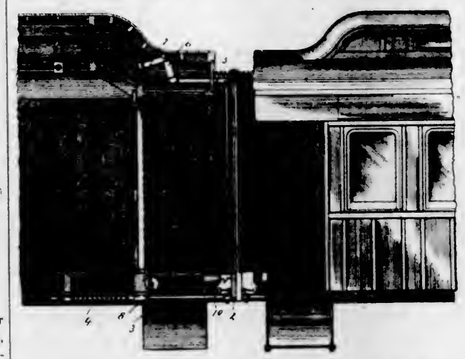
8. In combination with the tail-stock, the tool-arbor, threaded and slotted as shown, gear-wheels H and I, provided, respectively, with a threaded hub and a key, gears J K, mounted upon a shaft L and engaging the wheels H I, means for moving the shaft lengthwise and locking the wheels J K together, an arm swinging concentrically about shaft L and provided with an idler-pinion to mesh with the gear K, a handle secured to the pivoted arm, and a latch or dog for holding the handle in position.

9. In combination with the tail-stock, tool-arbor, and gears H I, the sleeves M and *k*, mounted in the tail-stock, a shaft L, mounted within the sleeve N and carrying at its outer end a thumb-nut, a hand-wheel between the nut and the outer end of the sleeve having a sliding connection with the shaft, a gear-wheel K, mounted loosely upon the shaft and having a friction-face, and a gear J, rigidly secured upon the shaft and provided with a friction-face to engage the corresponding face of wheel K.

10. In combination with the tail-stock having the perforated lugs, the fixed screw-shaft, the frame R, hung upon the shaft and provided with a handle and with gears S and T, a gear-nut Q, engaging the gears S T, and means for imparting motion to either of the gears S T at will.

11. In combination with the tail-stock provided with perforated lugs, the threaded shaft passing freely through the lugs, a frame R, hung loosely upon the shaft and provided with gears S T and gear-nut Q, a driven shaft D, provided with a gear E, a gear-wheel N, meshing with gear E, and means for rocking the frame R so as to throw the gears S T into and out of gear alternately with the gears N and E.

446,449. **RAILWAY-CAR.** HENRY F. HEUER, Chicago, Ill. Filed Sept. 22, 1890. Serial No. 365,788. (No model.)



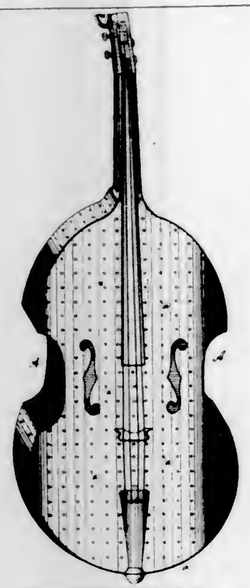
Claim.—1. The combination of the meeting plate 1 2, the bar 5, the bell-crank 6, and the cord and pulley 7 8 or their described equivalents, substantially as set forth.

2. The combination of the meeting plate, the bar 5, the bell-crank 6, the cord and pulley or their described equivalents, and the turn-buckle 10, substantially as set forth.

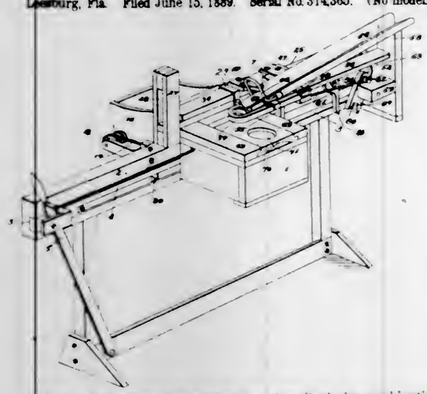
446,450. **VIOLIN.** HERRMAN HEYDER, Reichthal, Germany. Filed Oct. 8, 1890. Serial No. 367,414. (No model.)

Claim.—A violin or similar musical instrument having perforations in its body and a glue filling within the perforations, substantially as specified.

446,450.



446,451. MACHINE FOR WRAPPING ORANGES. THOMAS HIATT, Leesburg, Fla. Filed June 15, 1889. Serial No. 314,365. (No model.)



Claim.—1. In a machine of the class described, the combination of a guide-bar, a longitudinally-movable slide having a laterally-projecting stud extending through a slot in the said guide-bar, a shaft journaled upon the outer side of the said guide-bar and provided with a spirally-coiled rib extending completely once around the said shaft and adapted to be engaged by the said spur, and the paper-feeding mechanism comprising, essentially, the shafts 17 and 22 and bands 21, all arranged and operating substantially as set forth.

2. In a machine of the class described, the combination of a guide-bar, a longitudinally-movable slide having a spur extending through a slot in the said guide-bar, a longitudinal shaft journaled to the outer side of said guide-bar and having a spirally-coiled rib, a straight longitudinal rib at the front end of said spirally-coiled rib, a short diagonal rib at the rear end of the latter, and the paper-feeding mechanism comprising, essentially, the shafts 17 and 22 and bands 21, all arranged and operating substantially as set forth.

3. The combination of a guide-bar, a longitudinally-movable slide having a spur extending through a slot in the said guide-bar, a longitudinal shaft journaled to the side of the latter and having a spirally-coiled rib extending through its entire length, a short straight longitudinal rib at the front end of said spirally-coiled rib and a short diagonal rib at the rear end of the latter, a box or hopper secured to the outer side of the guide-bar, shafts journaled in the latter, three or more endless bands connecting the said shafts, an operating-band connecting cone-pulleys mounted upon one of said shafts and upon the end of the ribbed shaft, and a pressure-roller, all arranged and operating substantially in the manner and for the purpose herein set forth.

4. In a machine for wrapping oranges, the herein-described paper-feeding mechanism, comprising a box or hopper, shafts suitably journaled in the same, an inclined endless web composed of bands connecting the said shafts and adapted to support a roll of paper suitably mounted to bear against the said web at the upper end of the latter, and suitable operating mechanism, substantially as set forth.

5. The combination, with a machine for wrapping oranges, of a paper-feeding device comprising a series of inclined endless bands adapted to support a paper roll, mechanism for intermittingly operating the said endless bands, and a pressure-roller arranged to bear against the said endless bands at the upper end of the same, substantially as and for the purpose herein set forth

6. The combination of the guide-bar, the longitudinally-movable slide, a presser-bar connected pivotally to the said guide-bar, the cutter-bar arranged to slide longitudinally upon the said presser-bar, mechanism for operating the presser-bar and cutter-bar from the longitudinally-movable slide, and mechanism for feeding a paper roll intermittently between the said presser-bar and the guide-bar, substantially as and for the purpose set forth.

7. In a machine of the class described, the combination, with mechanism for intermittently feeding a roll of paper, of a reciprocating cutter-bar having a plurality of knives or cutters for severing sheets from the said roll, whereby such sheets may be severed by a movement of the cutter-bar of less extent than the width of the roll, substantially as set forth.

8. The combination of a longitudinal guide-bar, a pivoted presser-bar, a reciprocating cutter-bar mounted to slide upon the said presser-bar and having knives or cutters extending downwardly through a slot in the latter, mechanism for operating the said presser-bar and cutter-bar, and mechanism for feeding a paper strip between the said presser-bar and the guide-bar, substantially as herein set forth and specified

9. The combination of the longitudinal guide-bar, the pivoted presser-bar having a wedge-shaped stop at its rear end, the longitudinally-reciprocating cutter-bar having a laterally-extending arm, and a longitudinal reciprocating slide having an upwardly-extending arm provided with a laterally-extending bracket to engage the arm of the cutter-bar, substantially as set forth.

10. The combination of the longitudinal guide-bar, the presser-bar mounted pivotally upon the same, the cutter-bar arranged to slide longitudinally upon the said presser-bar and having laterally-extending arms, and a longitudinally-reciprocating slide having an upwardly-extending arm adapted to engage the laterally-extending arms of the cutter-bar, substantially in the manner and for the purpose set forth.

11. In a machine for wrapping oranges, the combination of the longitudinal guide-bar, the presser-bar mounted pivotally upon the same, a disk or cam mounted pivotally upon the guide-bar, a link or pivoted rod connecting the said cam with the presser-bar, a longitudinally-reciprocating slide adapted to engage a lug extending radially from the said cam, and mechanism for feeding a paper roll between the presser-bar and the guide-bar and for cutting or severing the paper, substantially as set forth.

12. The combination of the longitudinal guide-bar, the pivoted presser-bar having the longitudinally-reciprocating cutter-bar, a cam or disk pivoted to the side of the guide-bar, a pivoted link or rod connecting said cam with the presser-bar, a cam pivoted to the side of the guide-bar and having a downwardly-extending arm, a pivoted link or rod connecting the two cams, and the longitudinally-reciprocating slide having a block adapted to engage the said cams, substantially as herein set forth.

13. The combination of the guide-bar, the presser-bar mounted pivotally upon the same and carrying the longitudinally-reciprocating cutter-bar, a cam mounted pivotally upon the side of the guide-bar and having a radially-extending lug, a link or pivoted rod connecting the said cam with the presser-bar, a stud extending laterally from the guide-bar and forming a stop for the radially-extending lug or the cam, and the longitudinally-reciprocating slide having a block adapted to engage the said lug, substantially as herein set forth.

14. The combination of the longitudinal guide-bar, the presser-bar mounted pivotally upon the same and having the longitudinally-reciprocating cutter-bar, the cam pivoted upon the side of the guide-bar and connected with the presser-bar by the pivoted link, a spring-pawl pivoted to the side of the guide-bar and adapted to engage a notch formed in the rim of the said cam and having a downwardly-extending arm, and a longitudinally-reciprocating slide having a block adapted to engage the arm of the said pawl and a lug extending radially from the said cam, substantially as set forth.

15. The combination of the longitudinal guide-bar, the pivoted longitudinally-slotted presser-bar provided on its under side with a rubber strip or cushion, the longitudinally-reciprocating cutter-bar mounted upon the said presser-bar and having cutters extending through the slot in the latter and into a longitudinal groove in the guide-bar, a vertically-slotted arm forming a guide for the outer end of the presser-bar, and mechanism for operating the latter and the cutter-bar, substantially in the manner and for the purpose set forth.

16. The combination of the guide-bar, the pivoted presser-bar having a wedge-shaped stop at its rear end, the longitudinally-reciprocating cutter-bar having laterally-extending arms and provided with knives or cutters extending through a slot in the presser-bar, the arms extending laterally from the cutter-bar, the longitudinally-reciprocating slide provided at its rear end with a block having an upwardly-extending arm provided with a laterally-extending bracket, a cam pivoted to the side of the guide-bar and having a notch and a radially-extending lug, a link connecting the said cam with the pivoted presser-bar, a spring-pawl arranged to engage the notch in the rim of the cam and having a downwardly-extending arm adapted to be engaged by the reciprocating slide, a cam mounted pivotally upon the side of the guide-bar and having a downwardly-extending arm lying in the path of the reciprocating slide, and a link connecting the said cams, all combined and arranged to operate in conjunction with the paper-feeding mechanism and an orange-wrapping machine substantially in the manner and for the purpose set forth.

17. The combination of the inclined trough or hopper, a horizontal bar arranged below the same and projecting slightly in front thereof, and a U-shaped yoke mounted to reciprocate longitudinally upon the said horizontal board, substantially in the manner and for the purpose set forth.

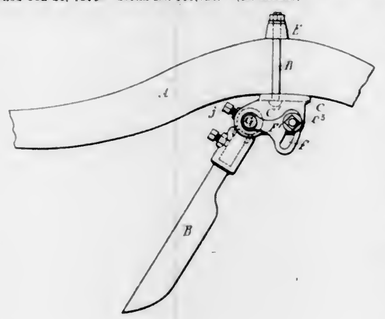
18. The combination of the inclined trough or hopper, the bail mounted pivotally at the discharge end of the same, the longitudinally-reciprocating U-shaped yoke having upwardly-extending studs adapted to bear against the under side of the said bail, and mechanism for imparting an intermittent reciprocating motion to the said U-shaped yoke, substantially as and for the purpose herein set forth.

19. The combination of the inclined trough or hopper, the horizontal bar arranged below the same, the longitudinally-reciprocating U-shaped yoke having upwardly-extending lugs or studs, the bail mounted pivotally at the discharge end of the hopper, and a spring arranged to move the said U-shaped yoke normally in a rearward direction toward the discharge end of the hopper, substantially as and for the purpose set forth.

20. The combination of the guide-bar, the longitudinally-reciprocating slide having a block provided with a laterally-extending stud, the inclined trough or bopper having the bail mounted pivotally at its discharge end, the horizontal bar arranged below the said bopper and projecting slightly in front of the latter, the U-shaped yoke arranged to slide upon said horizontal board and having upwardly-extending studs bearing against the under side of the pivoted bail, a lever pivoted to a bracket suitably attached to the rear end of the guide-bar and having at its lower end a notch adapted to engage the stud projecting laterally from the longitudinally-reciprocating slide, a link or rod connecting the upper end of said lever with the U-shaped yoke, and a spring arranged to force the latter normally into a rearward direction, substantially as herein set forth.

21. The combination of the wrapper-box, the transversely-movable slide, a vertical rock-shaft having at its upper end an arm provided with an upwardly-extending stud working in a groove in the under side of said slide, a spring-pawl mounted in the wrapper-box and having an upwardly-extending stud engaging a slotted arm extending from the lower end of the rock-shaft, and the longitudinally-reciprocating slide provided with a notch adapted to engage the free end of the said spring-pawl, substantially as herein set forth

446,452. COLTER-HOLDER FOR PLOWS. EDGAR M. HICKMAN, Albion, Mich., assignor to the Gale Manufacturing Company, same place. Filed Oct. 29, 1890. Serial No. 369,726. (No model.)

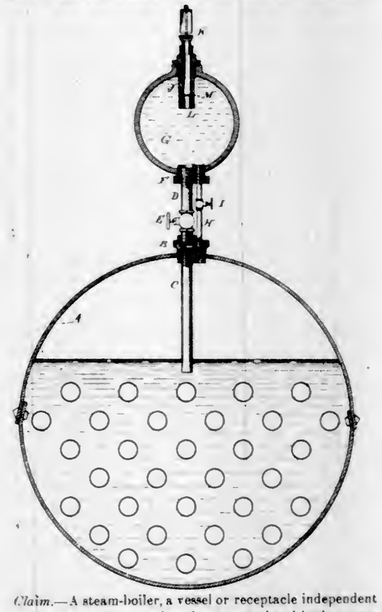


Claim.—1. A colter-holder for plows, consisting of a plate C, an axially-rotatable sleeve F, suspended by the plate in a horizontal plane, means for locking the sleeve in position when axially rotated to the desired position, and a colter-carrying arm J, connected by a spline with the sleeve and adjustable along the length thereof, substantially as described.

2. In a colter-holder for plows, the combination, with the beam, of the plate C, attached thereto, the sleeve F, supported by the plate and provided with an arm F', the end of said arm being adjustable vertically, and the arm J, engaged on said sleeve by the spline *f*, but adjustable lengthwise on the sleeve, substantially as described.

3. A colter-holder for plows, consisting of a plate C, having pendent flanges C', a horizontal bolt G, supported by the flanges, a horizontal sleeve F, rotatable axially on the bolt and provided with means for locking it in a fixed position, and a colter-carrying arm J, connected by a spline with the sleeve and adjustable along the length thereof, substantially as described.

446,453. LOW-WATER ALARM. HENRY L. HILDRETH, Saginaw, Mich. Filed Aug. 16, 1890. Serial No. 362,155. (No model.)



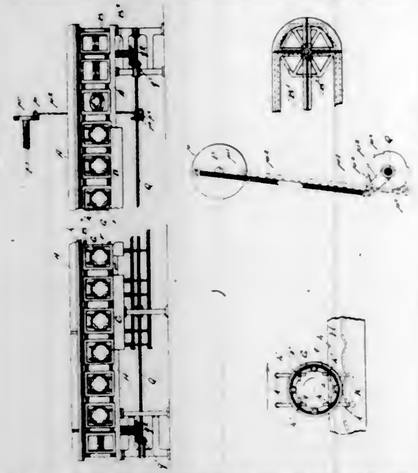
Claim.—A steam-boiler, a vessel or receptacle independent of the steam-boiler, a pipe connecting the receptacle with the steam-boiler below the normal level thereof, a valve in said pipe, a steam-pipe connecting the interior of the receptacle with the steam-space of the boiler, a steam-valve in said steam-pipe, a removable tubular part detachably secured to the receptacle or vessel and projecting into the interior of the same, an alarm or steam whistle carried upon the outer end of said tubular part, a fusible-metal piece carried upon the inner end of the tubular part and in the opening of the tube, and a detachable clamping-piece adapted to detachably clamp the fusible-metal piece in the tubular piece and expose it to the action of the contents of the receptacle or vessel, whereby the operativeness of said fusible-metal piece may be tested and its holding portions may be readily removed for substituting a new fusible-metal piece in place of a defective one.

446,454. CAN-SOLDERING MACHINE. JOHN G. HODGSON, Maywood, Ill., assignor to Edwin Norton, same place, and Oliver W. Norton, Chicago, Ill. Filed Oct. 2, 1890. Serial No. 366,799. (No model.)

Claim.—1. In a machine for soldering angular or irregular-shaped cans, the combination, with a solder bath, of an intermittently-moving can-carrier and a revolving up-and-down bodily-reciprocating can-holder mounted on said carrier for rolling the can through said bath, substantially as specified.

2. In a machine for soldering angular or irregular-shaped cans, the combination, with a solder bath, of an intermittently-moving can-carrier and a revolving up-and-down bodily-reciprocating can-holder mounted on said carrier for rolling the can through said bath, and a

stationary cam or track engaging said can-holder for giving it its up-and-down bodily-reciprocating movement, substantially as specified.



3. In a machine for soldering angular or irregular-shaped cans, the combination of a solder bath with an intermittently-moving can-carrier, a series of revolving can-holders mounted thereon, and a stationary track engaging said can-holders for giving the can its rolling or revolving movement, substantially as specified.

4. In a machine for soldering angular or irregular-shaped cans, the combination of a solder bath with an intermittently-moving can-carrier and a series of inclined revolving pivotal up-and-down reciprocating can-holders mounted on said carrier for rolling the cans through said bath, and a stationary cam or track engaging said can-holders for giving them their up-and-down bodily-reciprocating movement, substantially as specified.

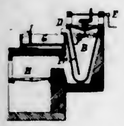
5. In a machine for soldering angular or irregular-shaped cans, the combination, with a solder bath, of an intermittingly-moving can-carrier, revolving up-and-down bodily-reciprocating can-holders mounted on said carrier, and a cam or track for revolving said can on its axis intermittently as the carrier is intermittently moved forward, and a second cam or track engaging said can-holder for giving said can-holder its up-and-down reciprocating movement as it rolls through said bath, substantially as specified.

6. The combination, with a solder bath, of an intermittently-moving can-carrier, an inclined up-and down can-holder mounted on said carrier for equally immersing the seam of an angular or irregular-shaped can in said bath as the can revolves, a cam or device engaging said can-holder for reciprocating the same up and down as it revolves, and mechanism for imparting an intermittent movement to said carrier, substantially as specified.

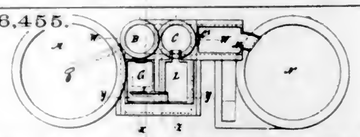
7. In a machine for soldering angular or irregular-shaped cans, the combination, with a solder bath, of an intermittently-moving can-carrier and a revolving up-and-down bodily-reciprocating can-holder mounted on said carrier for rolling the can through said bath, and mechanism for imparting an intermittent movement to said carrier, substantially as specified.

8. In a machine for soldering angular or irregular-shaped cans, the combination, with a solder bath, of an intermittently-moving can-carrier and a revolving up-and-down bodily-reciprocating can-holder mounted on said carrier for rolling the can through said bath, and a stationary cam or track engaging said can-holder for giving it its up-and-down bodily-reciprocating movement, and mechanism for imparting an intermittent movement to said carrier, substantially as specified.

446,455. APPARATUS FOR DESILVERIZING LEAD. FRIEDRICH E. L. HONOLD, Binsfeldhammer, near Stolberg, Germany. Filed Sept. 8, 1890. Serial No. 364,314. (No model.) Patented in Germany May 28, 1890, No. 54,690.

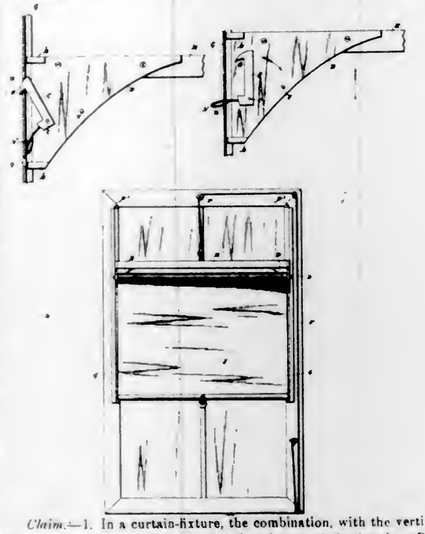


446,455.



Claim.—The combination of pot B, having channel B', pot C, having channel C', a pair of communicating pans G L, connecting the pots B C, and an additional pan M and pot N, communicating with pot C, substantially as specified.

446,456. WINDOW-SHADE. RICHARD W. JONES and HENRI C. WEBER, Nashville, Tenn. Filed Dec. 28, 1889. Serial No. 335,226. (No model.)



Claim.—1. In a curtain-fixture, the combination, with the vertical guides along the sides of the window-frame, of the brackets B, carrying the shade-roller and shade, the cross-bar R, rigidly connecting said brackets, the cord D for raising and lowering the said cross-bar, and tumbling catches, substantially as described, for automatically engaging and disengaging the guides at any desired height, as set forth.

2. In a curtain-fixture, the vertical guides G, having holes H and located along the vertical sides of the window-frame, in combination with the connected brackets B, supporting the shade, lugs *b* on said brackets loosely engaging the grooves in said guides, and catches C, pivoted to said brackets and adapted to be automatically thrown into and out of engagement with said holes H when the brackets are raised and lowered, substantially as and in the manner set forth.

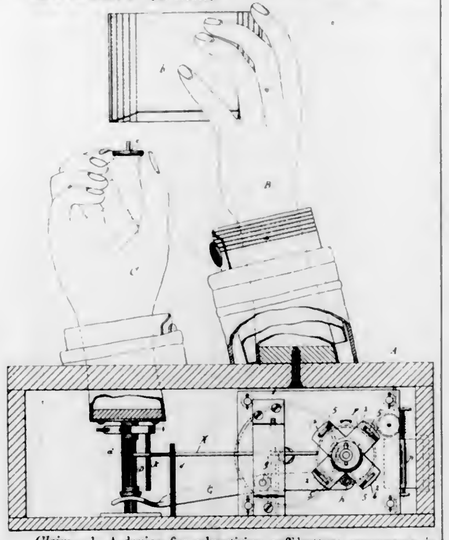
3. The vertical guides G, having holes H, in combination with the brackets B, sliding in said guide, and the catch C, said catch comprising a body portion pivoted to the bracket and a spring-arm projecting from said body portion approximately at right angles thereto, whereby the free end of the body portion will engage the guide when the bracket is rising and the free end of the arm will engage the guide when the bracket is descending, substantially as and for the purpose set forth.

4. The grooved guide G, having holes H at regular intervals throughout its length, in combination with the bracket B, sliding in said guide, and with the catch C, the latter comprising a body portion pivoted at one end to the bracket at *c* and having its free end hooked, as at O, and a spring-arm N, projecting from the body approximately at right angles thereto, the hook O and the end of the spring-arm N being a distance apart less or greater than the distance of two of said holes H, as and for the purpose set forth.

5. In a curtain-fixture, the shade S, the connected brackets B supporting said shade, a cord D for raising and lowering said brackets and shade bodily, and catches C, of approximately L shape, having hooks *o* at the ends of their upper arms and pivoted at their angles to said brackets, in combination with grooved guides G, extending along the vertical sides of the window-frame and provided with holes H at regular distances apart, the uppermost hole being so located as to just

engage the lower arm of the catches when the device is raised to its uppermost position and the lowermost hole to engage the same arm when the device is dropped to its lowermost position, such engagements, as well as engagements with intermediate holes, effecting the throwing of the catches into different positions, substantially as and for the purpose described.

446,457. ADVERTISING APPARATUS. HENRI LIORET, Paris, France, assignor to Oesheimer Brothers, same place. Filed Sept. 4, 1890. Serial No. 363,934. (No model.)



Claim.—1. A device for advertising cuff-buttons, comprising, in combination, a hand or support holding a cuff, a second hand or support holding a button in line with the button-hole of the cuff, said hand being movable in the direction of said button-hole and also movable in such manner as to secure the button therein, and mechanism, substantially as indicated, for imparting to said hand the described motions, as set forth.

2. In an advertising apparatus of the character specified, the combination, with a support in the form of a hand holding a cuff, of another hand holding a button and loosely mounted on a rod, a prime motor, and connections, such as cams and levers, between the motor and movable hand for imparting thereto the motions necessary to effect the insertion of the button into and its withdrawal from the button-hole of the cuff, substantially as described.

3. The combination of a hand holding a cuff-button and loosely mounted on its support, so as to be capable of reciprocating longitudinally and also of oscillating axially, two levers connected with said hand and adapted, respectively, to reciprocate and to oscillate the same, and a series of cams acting successively upon said levers, substantially as described.

446,458. CEMENT FOR JOINING THE ENDS OF DRIVING-BELTS. CARL LÖCHERT, Berlin, Germany. Filed Sept. 15, 1890. Serial No. 365,082. (No specimens.)

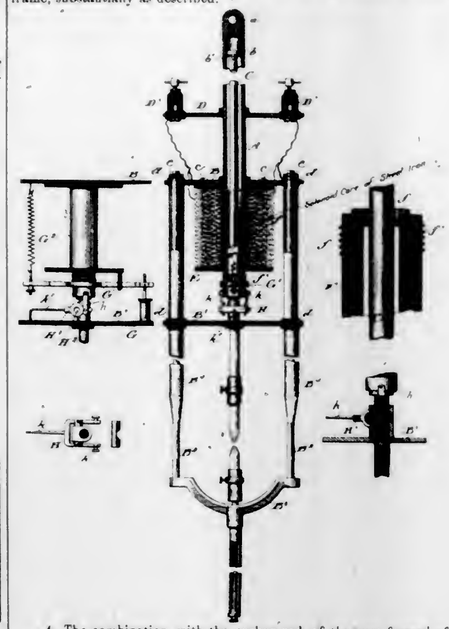
Claim.—A mastic or cement for joining straps or driving-belts, consisting of a mixture of glue, vinegar-spirit, alum, spirits of turpentine, shellac, and chromate of potassium, substantially as specified.

446,459. ELECTRIC-ARC LAMP. JOHN A. MOSHER, Abilene, Kans., assignor to the Mosher Arc Lamp Company, same place. Filed July 8, 1890. Serial No. 358,073. (No model.)

Claim.—1. The combination, with the tube and the carbon rod or holder having a piston-head working therein, of the metal disk carrying the main binding-posts and movable on the tube, substantially as described.

2. The combination, with the tube and the carbon rod or holder provided with a piston-head movable in said tube, of the disk extending around the tube and the solenoid depending from and secured to said disk, and the magnet-core movable on and guided by the carbon rod or holder, and the metal disk carrying the main binding-posts and movable on the tube, substantially as described.

3. The combination, with the movable core, the stationary disk B', and the movable metal disk carrying the main binding-posts, of the frame swung from the core, the transverse grip-pin carried by said frame, the carbon-holder, and the trip-lever attached to said frame, substantially as described.

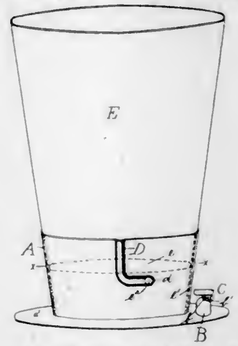


4. The combination, with the carbon-rod, of the core formed of laminated iron and bushings movable on the carbon-rod, substantially as described.

5. The combination, with the carbon-rod, of the core formed of laminated iron and bushings movable on the carbon-rod, and a grip carried by said core, substantially as described

6. The combination, with the carbon-rod, of the core formed of laminated iron and bushings movable on the carbon-rod, and a rotatable grip carried by said core and provided with a horizontal trip arm or lever, substantially as described.

446,460. FLOWER-POT. HARRISON H. MCELHINEY, Nebraska City, Nebr. Filed May 27, 1890. Serial No. 353,359. (No model.)

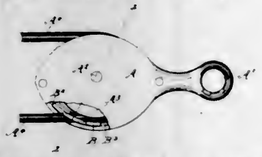


Claim.—1. The combination of the base A, having the bottom *a* and broad flange *a'*, elevation B, stamped up in said flange, provided with a perforation *b* and slot *b'*, thumb-screw C, having the neck *c* and enlarged threaded end *c'*, and cup E, fitting into said base, substantially as shown and described, and for the purposes set forth.

2. A flower-pot consisting of the base A, having the flanges *a'*, L-shaped side grooves D, cup E, having the side points *e*[2] working in

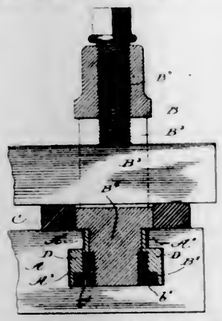
the side grooves, perforated bottom *c* and lower flange *c'*, resting on the bottom of said base, elevation B, stamped up in said flange *a'*, having the perforation and slot *b* and *b'*, and thumb-screw having the neck *c* and enlarged threaded end *c'*, substantially as shown and described, and for the purposes set forth.

446,461. PULLEY-BLOCK. JOHN C. MCNAMARA, Troy, N. Y. Filed Oct. 3, 1890. Serial No. 367,431. (No model.)



Claim.—The combination, with a pulley and a guard-plate perforated to receive the pulley-cord, of a pulley-case having plate-supporting grooves on the inner sides of the case-walls, whereby the guard-plate is movably supported across the periphery of the pulley in such grooves, substantially as described.

446,462. TOOL-POST. AUGUSTUS NEWELL, Chicago, Ill. Filed May 17, 1890. Serial No. 352,226. (No model.)



Claim.—1. The combination, with a tool-post having a neck B^4, of a foot-block surrounding said neck and of proper dimensions to fit into the channel of the post-block of a lathe or similar machine and having in its lower portion a recess, and a separable foot applied to the lower portion of said neck within said foot-block, substantially as shown and described.

2. The combination, with a tool-post having a neck B^4, of a foot-block surrounding said neck and of proper dimensions to fit into the channel of the post-block of a lathe or similar machine and having in its lower portion a recess, and a foot threaded to the lower portion of said neck within said foot-block, said foot having in its lower face wrench-sockets b^3, substantially as shown and described.

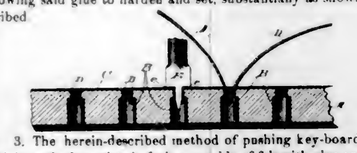
3. The combination, with a tool-post having a neck B^4, of a foot-block surrounding said neck and having an upward extension and being of proper dimensions to fit into and fill transversely the channel of the post-block of a lathe or similar machine and having in its lower portion a recess, and a separable foot applied to the lower portion of said neck within said foot-block, substantially as shown and described.

4. The combination, with a tool-post having a neck B^4, and a foot-block surrounding said neck and having an upward extension and being of proper dimensions to fit into and transversely fill the channel of a post-block of a lathe or similar machine, and having in its lower portion a recess, and a foot threaded to the lower portion of said neck within said foot-block, said foot having in its lower face wrench-sockets b^3, substantially as shown and described.

446,463. METHOD OF BUSHING KEY-BOARD MORTISES. AUGUSTUS NEWELL, Chicago, Ill. Filed Sept. 22, 1890. Serial No. 365,825. (No model.)

Claim.—1. The herein-described method of bushing key-board mortises, which method consists in facing one side of felt with glue and allowing said glue to dry, then softening said glue with heat accompanied by moisture and applying said felt to the walls of the mortises with said glue against said walls, and allowing said glue to harden and set, substantially as shown and described.

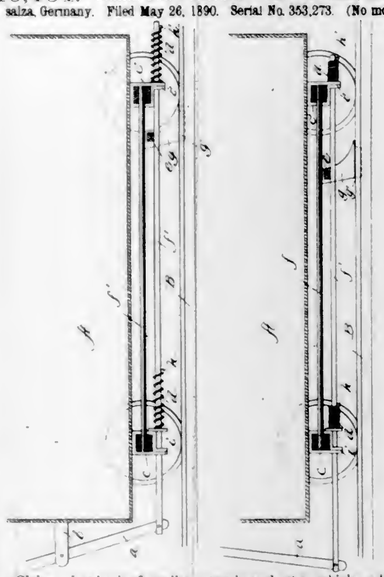
2. The herein-described method of bushing key-board mortises, which method consists in facing one side of felt with glue and allowing said glue to dry, then softening said glue with steam and applying said felt to the walls of the mortises with said glue against said walls, and allowing said glue to harden and set, substantially as shown and described.



3. The herein-described method of pushing key-board mortises, which method consists in facing one side of felt with glue and allowing said glue to dry, then softening said glue with heat accompanied by moisture and applying said felt to the walls of the mortises with said glue against said walls under pressure and heat not accompanied by moisture, and allowing said glue to harden and set, substantially as shown and described.

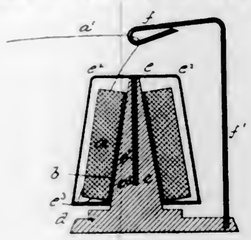
4. The herein-described method of pushing key-board mortises, which method consists in facing one side of felt with glue and allowing said glue to dry, then softening said glue with steam and applying said felt to the walls of the mortises with said glue against said walls under pressure and heat not accompanied by moisture, and allowing said glue to harden and set, substantially as shown and described.

446,464. BRAKE FOR VEHICLES. CARL NITTINGER, Langensalza, Germany. Filed May 26, 1890. Serial No. 353,273. (No model.)



Claim.—In a brake for railway-trucks and other vehicles, a brake-rod arranged beneath the vehicle and carrying at the extremity of a pair of arms brake blocks or shoes adapted to press against the periphery of the wheels of the vehicles and upon the surface of the rails, all mounted and operating substantially as described.

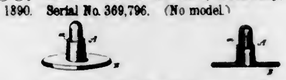
446,465. THREAD-UNWINDER FOR SEWING-MACHINES. MARO V. PALMER, Willimantic, assignor to the Willimantic Linen Company, Hartford, Conn. Filed Feb. 23, 1888. Serial No. 264,951. (No model.)



Claim.—1. In combination with the post *c*, fixed on a base or support and having a central opening for the reception of the unwinder-stem, the unwinder *e*, having a stem *e'* projecting downward from the crosswise arms on the upper part of the unwinder, and also an annular base e^2, located near the bottom of the post and below the normal position of the under part of a mass of thread when the latter is supported on the post, all substantially as described.

2. In combination with the central post *c*, rising from a base *d*, a thread-guide *f*, supported above the upper end of the base, the central opening in the base to receive the stem of the unwinder, the unwinder *e*, having a pivotal stem *e'*, arms e^3, that branch from the central stem and turn downward at the sides and connected with an annular base *e*, the said unwinder being loosely supported in the hole in the post, and the annular base of the unwinder lying near the level of the bottom of the mass of thread supported on the post, all substantially as described.

446,466. RIVET. IRVING G. PLATT, Waterbury, Conn. Filed Oct. 30, 1890. Serial No. 369,796. (No model.)



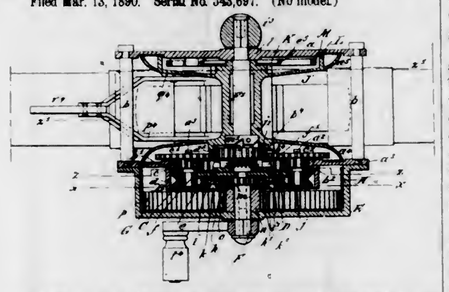
Claim.—1. A rivet constructed with a tapering shank, in combination with a disk or other article fitting on said rivet and having an opening therein of larger diameter than that of the piercing end of the rivet and smaller than that of the flanged end of the rivet.

2. A rivet constructed with a shank and having a washer or other article secured thereon, one end of said shank being formed into a head or upset containing a certain and definite amount of stock, said shank having a second shoulder formed thereon and of a size dependent upon the thickness of the material through which said rivet is passed.

3. A rivet constructed with a shank having a shoulder formed thereon, a head or upset formed on the end of said shank containing a certain and definite amount of material, and a lower head or shoulder of a size dependent upon the thickness of the material through which said rivet is passed.

4. A rivet constructed with a tapering shank A, having a flange B formed on one end thereof, and a shoulder *a*, as and for the purpose set forth.

446,467. FISHING-REEL. ELBERT B. PORTER, Penn Yan, N. Y. Filed Mar. 13, 1890. Serial No. 343,697. (No model.)



Claim.—1. In a fishing-reel, the combination of the shaft F', the reel J, loosely mounted on the shaft, the sleeve F on the shaft outside of the reel, the pinion *m* on the inner end of the sleeve, a handle on the outer end of the sleeve, a spring, and gearing between the spring and reel and operated by the pinion of the sleeve, substantially as described.

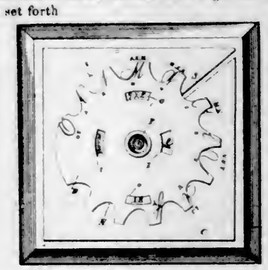
2. In a fishing-reel, the combination of the spring-pressed driving-pinion *d'*, provided with the beveled teeth *d'*, the shaft F', a collar fixed to the shaft F' and provided with beveled teeth *m'*, and the milled head i^3, secured to the shaft F', substantially as specified.

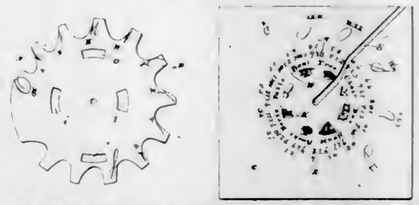
3. In a fishing-reel, the combination, with the shaft F', provided with a toothed collar *m'*, and the reel J mounted loosely thereon, of the sleeve F on the shaft outside of the reel, the pinion *m* on the inner end of the sleeve, a spring-actuated train of gearing operated by the said pinion, the spring-pressed pinion *d'*, provided with teeth engaging the teeth of the collar *m'*, and the head i^3 on the end of the shaft opposite the sleeve, substantially as described.

4. In a fishing-reel, the combination, with the reel J, provided with the brake-rim L, of the C-shaped spring M, the ring j^4, provided with the cam-lugs h^4 l^3, and means, substantially as described, for moving the ring j^4.

446,468. EDUCATIONAL APPLIANCE. JOHN H. REED, Lancaster, Wis. Filed May 27, 1890. Serial No. 353,307. (No model.)

Claim.—1. The herein-described educational appliance, the same comprising a base, disks each detachably pivoted at and above the center of said base, and charts detachably mounted upon said base and marked with characters and portions of letters around their centers, each disk having openings through which certain of said characters are visible simultaneously with certain others, and also having complementary portions of letters marked at its edge, the whole adapted to operate as set forth.





2. The herein-described educational appliance, the same comprising a base, disks each detachably pivoted at and above the center of said base, and charts marked with characters and portions of letters around their centers, each chart having a radial slot adapted to pass over said pivot and each disk having openings through which certain of said characters are visible simultaneously with certain others, and also having complementary portions of letters marked at its edge, the characters, words, and portions of letters on the charts and their corresponding disks progressing from simple instruction to the higher grades thereof, as set forth.

3. In an educational appliance, the combination, with the base B and the disk D, centrally pivoted to and above said base, said disk having notches N in its edge, with portions of letters marked alongside thereof and openings I *i* and O *o* at different distances from the pivot, of the chart C, removably inserted between the base and disk, said chart having marked thereon complementary portions of letters adapted to register with those on the disk, and pictures and names and examples and answers respectively adapted to register simultaneously with the openings in said disk, all substantially as and for the purpose set forth.

4. In an educational appliance, the combination, with the base B and the disk D, centrally pivoted to and above said base, said disk having openings I *i* and O *o* at different distances from the pivot, of the chart C, removably inserted between the base and disk, said chart having marked thereon pictures and names and examples and answers respectively adapted to register simultaneously with the openings in said disk, all substantially as and for the purpose set forth.

5. In an educational appliance, the combination, with the base B and the disk D, centrally pivoted to and above said base, said disk having notches N in its edge, with portions of letters marked alongside thereof, of the chart C, removably inserted between the base and disk, said chart having marked thereon complementary portions of letters adapted to register with those on the disks, all substantially as and for the purpose set forth.

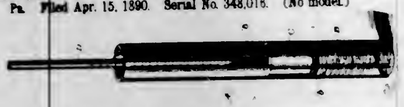
6. In an educational appliance, the combination, with the base B and the disk D, centrally pivoted to and above said base, said disk having an opening I at one side of its center and a similar opening *i* diametrically opposite thereto, but more remote from the center, of the chart C between the base and disk, said chart being provided with a ring of pictures K, each registering with the inner opening I, and with a larger ring of words W, each registering with the outer opening *i*, the word exposed simultaneously with the picture being descriptive thereof, substantially as described.

7. In an educational appliance, the combination, with the base B and the disk D, centrally pivoted to and above the same, said disk having an opening O at one side of its center and a similar opening *o* diametrically opposite thereto, but more remote from the center, of the chart C between the base and disk, said chart being provided with

a ring of problems A, each registering with the inner opening O, and with a larger ring of results R, each registering with the outer opening o, the result exposed simultaneously with the problem being the answer thereto, substantially as described.

8. In an educational appliance, the combination, with the base B and the disk D, centrally pivoted to and above the same, said disk being smaller in diameter than the base, provided with notches N in its edge, marked on one side thereof with portions of letters, and printed below such notches with the letters of which those portions are parts, of the chart C between the disk and base and the same size as the latter, said chart being marked with the complementary portions of the letters on the disk and printed outside with the letters of which those portions are parts, substantially as described.

446,469. MILK-TESTING DEVICE. ALBAN H. REID, Philadelphia, Pa. Filed Apr. 15, 1890. Serial No. 348,016. (No model.)

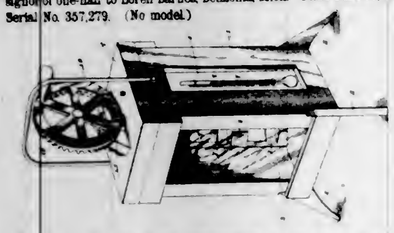


Claim.—1. The test-tube or holder B, in combination with the plunger C and the transparent tube D, fixed to the plunger and provided with graduations, whereby the contents of the holder may be caused to rise in the transparent tube and its volume permitted to be read in connection with the graduations thereon.

2. The transparent tube or holder B, in combination with the plunger C and the graduated transparent tube D fixed thereto

3. In a milk-testing device, the test-tube or holder B, in combination with the plunger having its lower end recessed from near its outer edge, and the tube fixed to said plunger and communicating with the recessed end through a restricted opening, whereby the contents of the holder will, on pressure being applied to the plunger, act to force its sides into intimate contact with the holder, thereby preventing the escape of the contents around the plunger.

446,470. CHURN. ALBERT C. RICHARDSON, South Frankfort, assignor of one-half to Loren Barnes, Benzonia, Mich. Filed June 30, 1890. Serial No. 357,279. (No model.)



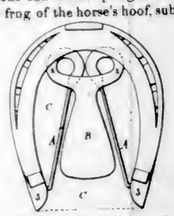
Claim.—1. In a churn, the combination of the body, the dasher-shaft having its lower portion provided with a series of dasher-blades, means for operating the dasher-shaft and the adjustable dashers, comprising the rods oppositely disposed and provided with blades arranged in the intervals formed by the blades of the dasher-shaft, and having their lower ends journaled in the bottom of the body and having their upper ends journaled in the cover and projecting above the same and adapted to be turned to adjust the blades with relation to the blades of the dasher, substantially as described.

2. In a churn, the combination of the body, the dasher shaft having its lower portion provided with a series of dasher-blades and its upper portion provided with a spiral groove, means for operating the dasher-shaft, the adjustable dashers comprising the rods oppositely disposed and provided with blades arranged in the intervals formed by the blades of the dasher-shaft, said rods having their lower ends journaled in the bottom of the churn and having their upper ends journaled in the cover and projecting above the same and adapted to be turned to adjust the blades, and the plate supported above the uppermost blades of the said rods and provided with perforations, substantially as described.

446,471. HOOF-EXPANDER AND FROG-DEVELOPER FOR HORSES. DAVID ROSENOR, Jr., New York, N. Y. Filed July 2, 1889. Serial No. 316,327. (No model.)

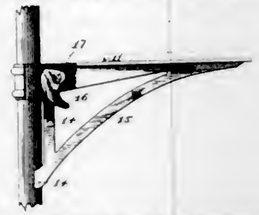
Claim.—1. The combination, with the spring hoof-expander, of a frog developer and protector connected with and receiving its support from the hoof-expander, substantially as set forth.

2. The combination, with the spring hoof-expander, of a frog-protector connected at one end to the spring hoof-expander and adapted to extend below the frog of the horse's hoof, substantially as set forth



3. A spring hoof-expander and frog-developer formed of metal, the frog-developer being united with the coils at the ends of the springs forming the hoof-expander, substantially as set forth.

446,472. ADJUSTABLE SHELVING. BENJAMIN F. ROBERTS, Fremont, Nebr., assignor to the National Shelving Company, same place. Filed Dec. 18, 1889. Serial No. 334,170. (No model.)



Claim.—1. In adjustable shelving, the combination of a vertical standard adapted for carrying a shelf-supporting bracket, an anchor-arm extended outward from said standard and having an eye at one end to receive the standard and a hook or jaw at its other end to engage a wall or other surface, and a grooved key fitted on the anchor-arm, for the purpose described, substantially as set forth.

2. In adjustable shelving, the combination of a smooth-faced imperforate standard, a horizontal shelf support or bracket having at its inner end a projecting arm or jaw which fits closely around the standard, said bracket extending outwardly from said standard and lying substantially at right angles thereto, and a clamp carried by the shelf support or bracket at the inner end thereof and arranged at one side of the arm or jaw to forcibly bind against the standard, for the purpose described, substantially as set forth.

3. In adjustable shelving, the combination of a smooth standard, a shelf support or bracket extending outwardly from the standard and having a projecting jaw or arm and a bearing, the jaw bearing against one side of the standard and the bearing resting against the reverse side of the standard, and a clamp carried by the support or bracket and arranged to positively bind on the standard, whereby the shelf-support is rigidly held on the standard and can be adjusted at any desired elevation thereon, substantially as and for the purpose described

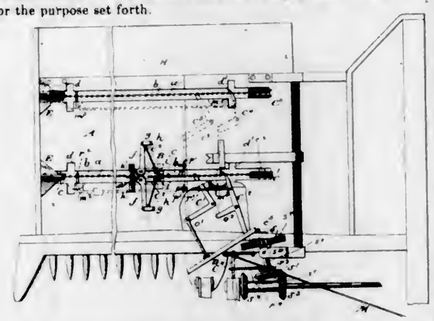
4. In adjustable shelving, the combination of a smooth standard and a shelf support or bracket extending outwardly from said standard substantially at right angles thereto, said shelf-support having a rearward-extending jaw or hook which is fitted around the standard, and a bearing arranged below the hook or jaw and resting against the front of the standard, for the purpose described, substantially as set forth.

5. In adjustable shelving, the combination of a smooth-faced standard, a recessed or slotted support or bracket provided with a jaw and with a depending bearing arranged to bear against the rear and front sides of said standard, as described, and a cam-faced clamp pivoted in the slot or recess of the support or bracket above the depending bearing and adapted to bind on the standard, as and for the purpose described.

446,473. GRAIN-CONVEYER FOR BINDERS, &c. GEORGE SCHUBERT, Walnut Springs, Tex. Filed May 5, 1888. Serial No. 272,904. (No model.)

Claim.—1. In a grain-conveyer, the combination, with the platform A, having a slot b and parallel walls m^3 m^4 on the sides thereof, one of said walls being provided with a recess m^3, of the conveyer-block B, moving between said walls, an arm f, mounted on a vertical pivot in said block, and an arm n^4, rigidly connected to the pivot of said arm f and having a friction-roller o at its free end, adapted to engage said recess, as and for the purpose set forth.

2. In a grain-conveyer, the combination, with the platform A, having a slot b and parallel walls m^3 m^4 on the sides thereof, one of said walls being provided with a recess m^3, of the conveyer-block B, moving between said walls, arms f, mounted on vertical pivots in said block, intermeshing toothed segments c^2 at the inner ends of said arms, and an arm n^4, rigidly connected to the pivot of one of said arms and having a friction-roller o at its free end, adapted to engage said recess, as and for the purpose set forth.



3. In a grain-conveyer, the combination, with the platform A, having a slot b, with parallel side walls m^3 m^4, and the conveyer-block B, moving between said walls, of the arms f, mounted on vertical pivots in said block, intermeshing segments c^2 at the inner ends of said arms, means, substantially as described, for throwing said arms outwardly at the proper time, extensions g, hinged to the outer ends of said arms, and rods h, linked at their ends to said extensions and to the block B, all as and for the purpose set forth.

4. In a grain-conveyer, the combination, with the slotted platform A, the conveyer-block B, moving in the slot therein, the arms f, mounted on vertical pivots in said block, and means for operating said blocks, of the wedge-shaped piece E, mounted upon the platform A at the end of the slot therein and adapted to separate the outer ends of said arms f, as and for the purpose set forth.

5. In a grain-conveyer, the combination, with the platform A, a slot b therein, provided with side tracks having openings d d' through the platform at the opposite ends of said tracks, and the conveyer-block B, moving on said tracks, of the lever C, pivoted in said block and having a curved lower portion, a cross-piece m' at the end of said curved portion, and friction-rollers h' on the extremities of said cross-piece, moving on said tracks and adapted to pass through said openings, as and for the purpose set forth.

6. In a grain-conveyer, the combination, with the platform A, a slot b therein, provided with side tracks having openings d d' through the platform at the opposite ends of said tracks, and the conveyer-block B, moving on said tracks and having a slot m in its body, of the lever C, pivoted in said slot m and having a curved lower portion, the cross-piece m' at the end of said curved portion, its ends moving on said tracks and adapted to pass through said openings, an extension n, pivoted between its ends to the end of said lever C, and a rod n', pivotally connecting the end of said extension with the conveyer-block, all as and for the purpose set forth.

7. In a grain-conveyer, the combination, with the platform A, having the slot b, with overhanging side walls, the latter having notches d near the ends of the slot, of the endless chain a, moving in said slot and having an upwardly-curved link projecting through it, the conveyer-block B in the chain adjacent said link, the lever C, pivoted in said block, and the cross-piece m' at one end of said lever, passing through said notches and standing within said link when raised, substantially as described.

8. In a grain-conveyer, the combination of the platform A, having a slot b, parallel walls m^3 m^4 at the sides thereof, one of said walls being provided with a recess m^3, and tracks on the inner faces of said wall, with the conveyer-block B, having friction-rollers n^3 moving upon said tracks, the arms f, mounted on vertical pivots in said block and having intermeshing toothed segments c^2 at their inner ends, extensions g, hinged to the outer ends of said arms and linked to the block, means, substantially as described, for throwing said arms outward, with the lever C pivoted in said block, an extension n, pivoted to said lever and adapted to be thrown upward thereby, and means, substantially as described, for operating said lever, all as and for the purpose set forth.

9. In a grain-conveyer, the combination, with the slotted platform A and the conveyer-block B, moving in the slot therein, of the lever C^2, pivoted to said platform with its free end in the path of said block, the upright pivoted lever C^3, linked to the other end of said lever C^2, the lever C^4, keyed on a shaft p and having one end connected with the upper end of the upright lever C^3, the arm p^4, fast on said shaft p, the shaft c^6, driving endless chains a for moving said block B and having a gear c^5, the gear s in constant mesh with said gear c^5, mechanism for driving said gear s in either direction, reversing devices for said mechanism, substantially as described, connected with said arm p^4, and the draw-rod M, connected to the upper end of said lever C^4, for operating said reversing devices manually from a remote point, all as and for the purpose set forth.

10. In a grain-conveyer, the combination, with the slotted platform A and the conveyer-block B, moving in the slot therein, of the lever C^2, pivoted on said platform with its free end in the path of said block, the upright pivoted lever C^3, linked to the other end of said lever C^2, the lever C^4, keyed on a shaft p and having one end connected with the upper end of the upright lever C^3, the arm p^4, fast on said shaft p, the shaft c^6, driving endless chains a for moving said block B and having a gear c^5, the gear s in constant mesh with said gear c^5, mechanism for driving said gear s in either direction, reversing devices for said mechanism, substantially as described, connected with said arm p^4, all as and for the purpose set forth.

11. In a grain-conveyer, the combination, with the slotted platform A and the conveyer-block B, moving in the slot therein, of the lever C^2, pivoted to said platform with its free end in the path of said block, the upright pivoted lever C^3, linked to the other end of said lever C^2, the lever C^4, keyed on a shaft p and having one end connected with the upper end of the upright lever C^3, the arm p^4, fast on said shaft p, the shaft c^6, driving endless chains a for moving said block and having a gear c^5, the gear s in constant mesh with said gear c^5, the sleeve s^2, surrounding the shaft s' of said gear s and pivoted midway of its length, a beveled gear s' on the other end of said shaft s', adapted to mesh with either of the gears s^3 s^4 on the main driving-shaft, and an arm r^3, having a stationary pivot at one end and linked at its other end to the free end of said arm p^4, the sleeve s^2 passing through said pivoted arm r^3, and the whole operating substantially as hereinbefore set forth.

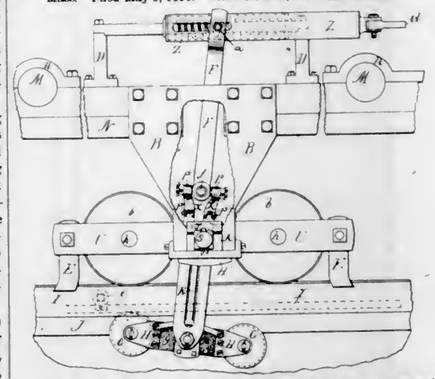
446,474. TOP-PROP FOR CARRIAGES. ANSON SEARLS, Newark, N. J., assignor to the Searls-Randall Company, same place. Filed Apr. 19, 1889. Serial No. 307,767. (No model.)

Claim.—1. The combination of standard A, provided with two or more cast tapering grooves a, with the washer G, having corresponding prongs c, holding the washer free from the standard, as and for the purpose set forth.

2. The standard A and plate E, in combination with the collar B, having a center thread e, and slot F, as and for the purpose set forth.

3. The combination of a prop A and E with two or more longitudinal grooves a cast therein, the washer G, with prongs c, and collar B, constructed with thread and slot, as and for the purpose set forth.

446,475. ELECTRIC RAILWAY. NICHOLAS SEIBERT, Malden, Mass. Filed May 5, 1890. Serial No. 350,643. (No model.)



Claim.—1. In electric railways, a main truck, in combination with a supplemental wheeled frame suspended therefrom, and a roller-bear-

ing between the main and supplemental frames, whereby the latter may have an independent lateral movement, substantially as herein described.

2. In electric railways, the slotted housing or subway having a main conductor fixed within it, and a main-truck frame, in combination with a supplemental wheeled truck mounted upon the slotted housing, a roller-bearing betweeo the main and supplemental truck frames, whereby the former may have a lateral movement on the latter, an arm carried by said main frame and provided with contacts adapted to be alternately brought into engagement with the main conductor, and a conductor leading to the motor on the car, substantially as herein described.

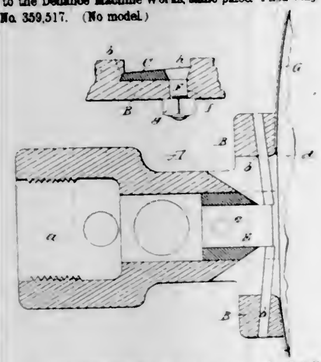
3. In electric railways, the slotted housing or subway having a main conductor fixed therein, and a main-truck frame, in combination with a supplemental wheeled frame below the main-truck frame, the rollers r, interposed between the main and supplemental truck frames, whereby the former may have lateral movement, a vertical arm carried by the main-truck frame and having the contact-rollers adapted to alternately engage the conductor, and the spaced plates forming guides for the movements of the arm, substantially as herein described.

4. In electric railways, the slotted housing or subway having a main conductor fixed therein, and the main-truck frame, in combination with a two-part vertical arm carried by the main-truck frame and having contact devices at its lower end, a supplemental wheeled frame, and a roller-bearing between the main and supplemental frames, whereby the main-truck frame and upper end of the contact-arm may move laterally independent of the supplemental frame and lower portion of the arm, substantially as herein described.

5. In electric railways, the combination of the slotted housing or subway, the main-truck frame having the arms B, the boxes A, mounted in said arms, a supplemental wheeled frame, a roller-bearing between the boxes and main-truck frame, the two-part arm F, the interposed casting or bracket X, to which the two parts of said arm are pivotally connected, the guides H for the lower portion of the arm F, and the contact devices on the lower end of the arm adapted to engage a main conductor in the housing or subway, substantially as herein described.

6. In electric railways, the slotted housing with its main conductor, a main-truck frame adapted to move laterally, a supplemental wheeled frame, and complementary contact devices, in combination with the arm F, formed in two parts, and the casting or bracket X, interposed between and pivotally secured to the adjoining ends of the two parts of the arm, substantially as herein described.

446,476. **CUTTER-HEAD.** CHARLES SEYMOUR, Defiance, Ohio, assignor to the Defiance Machine Works, same place. Filed July 22, 1890. Serial No. 359,517. (No model.)



Claim.—1. The combination, with a cutter-head, of sliding blocks in said head, cutting-knives connected with these blocks, and a bushing for the reception of the end of the spoke, substantially as set forth.

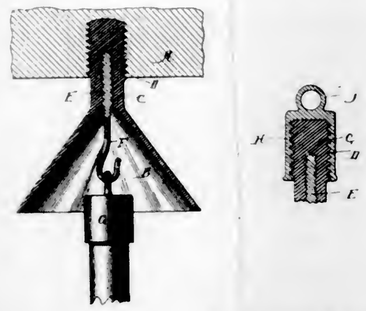
2. In a cutter-head, the combination, with a shank having an annular flange at its forward end, of sliding blocks in said flange, cutting-knives secured to said sliding blocks, and a bushing for the reception of the end of the spoke, substantially as set forth.

3. In a cutter-head, the combination, with a shank having an annular flange at its forward end, of cutting-knives adjustably secured to said flange, and a bushing removably connected with the forward end of the shank, substantially as set forth.

4. In a cutter-head, the combination, with a shank having an annular flange provided with grooves or sockets, of sliding blocks in said grooves or sockets, headed bolts passing through the annular flange and adapted to engage the sliding blocks, nuts on said bolts, and cutting-knives secured to the sliding blocks, substantially as set forth.

5. In a cutter-head, the combination, with a shank having an annular flange, of cutting-knives adjustably secured to said flange, a removable bushing, and a saw secured to the annular flange, substantially as set forth.

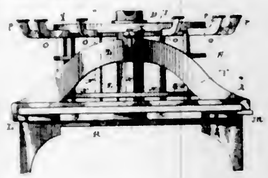
446,477. **MOISTURE-PROTECTION HOOD FOR LAMPS.** ANDREW SHILLINGLAW, Chicago, Ill. Filed May 22, 1890. Serial No. 352,769. (No model.)



Claim.—1. In a moisture-hood for electric lamps, the combination of an inverted funnel over the lamp with an enlarged screw-threaded portion thereon and a suspending cap screw-threaded and adapted to receive such portion and to engage a suspending hook.

2. In a moisture-hood for electric lamps, the combination of an inverted funnel over the lamp with an elarged portion thereon, and a suspending cap adapted to receive such portion and to engage a suspending hook, and a screw-hook cast in such enlarged portion of the hood, adapted to receive the lamp.

446,478. **CHECK-PUNCH.** THOMAS A. SHORT, Edgerton, S. D. Filed Mar. 28, 1890. Serial No. 345,740. (No model.)



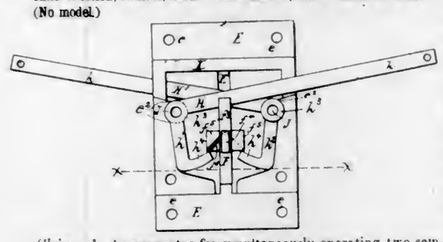
Claim.—1. In a check-punch, the combination, with a frame journaled upon a support, punches in said frame, a table carrying said support, and a table-plate secured to said table, of a scale upon said table-plate extending longitudinally thereof, a guide upon said table-plate, having a turned-over end adapted to engage one end of said plate and a beveled button on its other end adapted to pass beneath the other end of said plate for adjusting said guide forward and back thereon and for holding it in any position, as and for the purpose set forth.

2. The combination, with the frame, punches carried thereby, and the table having the table-plate, of the guide having a turned-over end adapted to engage one end of said plate and a beveled button on the other end adapted to pass beneath the other end of the table-plate, as and for the purpose described.

3. The combination, with the punch-frame having a series of vertical guide-openings near its periphery, a hub within said frame, and a notched plate secured to said hub, of the punches moving in said guide-openings, the levers pivoted thereto and their inner ends seated in said notched plate, pins through said inner ends resting upon said plate at either side of the notches, a disk above said inner ends, and a securing-nut above said disk, substantially as described.

4. The combination, with the punch-frame having a series of vertical guide-openings near its periphery, a hub within said frame, and a notched plate secured to said hub, of the punches moving in said guide-openings, the levers pivoted thereto and their inner ends seated in said notched plate, pins through said inner ends resting upon said plate at either side of the notches, a disk above said inner ends, an annular flange on said disk having notches within which said levers are seated, springs for holding the levers normally in said notches, and a securing-nut above said disk, substantially as described.

446,479. **APPARATUS FOR OPERATING SEMAPHORES.** NATHAN J. SMITH, Pontiac, Mich. Filed Mar. 14, 1890. Serial No. 343,911. (No model.)

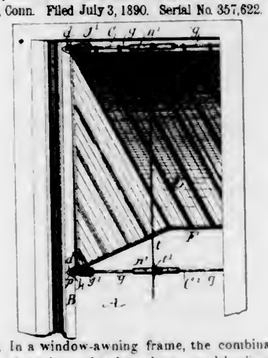


Claim.—1. An apparatus for simultaneously operating two semaphore-signals, consisting of two bell-crank levers, each having its long arm connected with a semaphore, an actuating block or plunger disengaged from but adapted to move in contact with the short arms of said levers, and means connecting said block with the switch mechanism, whereby the movement which shifts the rails is communicated to and caused to shift said block, substantially as described.

2. An apparatus for simultaneously operating two semaphore-signals, consisting of two bell-crank levers, each having a long arm connected with the semaphore, and an actuating block or plunger disconnected from but adapted to move between and in contact with their short arms, said block adapted to move horizontally and engaged with a thrust-rod connected directly with the switch mechanism, whereby the movement which shifts the rails is communicated as a direct horizontal thrust, causing a like movement of the block or plunger, substantially as described.

3. The combination, with the bell-crank levers, each connected with the semaphore, of an actuating block or plunger disconnected from but adapted to move between and in contact with the short arms of the levers, and means connected with the switch mechanism, whereby the movement of the switch is communicated as a thrust to said block or plunger, said block adapted by its impact against the short arms to move the semaphores while thus in contact, and constructed and adapted on its return movement to move freely beyond the position it attains when the semaphores have reached their vertical position, substantially as and for the purposes described.

446,480. **WINDOW-AWNING FRAME.** CHARLES W. STEBBINS, New Haven, Conn. Filed July 3, 1890. Serial No. 357,622. (No model.)



Claim.—1. In a window-awning frame, the combination of the upper and lower fastening-rods adapted to extend horizontally across the window-opening, each comprising a pair of rods or sections hinged together to form a "toggle-joint" and provided with holding points or spurs at their ends for engaging the jambs, an awning-hoop hinged or pivotally connected to the lower rod, and an awning attached to the said hoop and upper fastening-rod.

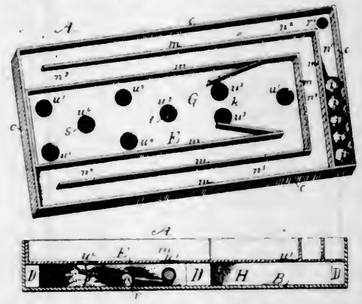
2. In awnings for windows, the combination of the upper and lower fastening-rods adapted to extend horizontally across the window-opening, each comprising a pair of rods or sections hinged together to form a toggle-joint and provided with longitudinally-adjustable holding-pieces at their ends having points or spurs for engaging the jambs, an awning-hoop hinged or pivotally connected to the lower rod, and an awning attached to the said hoop and upper fastening-rod.

3. In a window-awning, the combination of the upper and lower fastening-rods adapted to extend horizontally across the window-opening, each made up of a pair of rods or toggle-sections hinged together to form a toggle-joint, the holding-pieces screwed on the ends of the rods, and thereby adapted to be longitudinally adjusted thereon and provided with the holding points or spurs for engaging the jambs, the locking-sleeves fitted upon the rods and adapted to be moved over the joints thereof to hold the toggle-sections securely in alignment, an awning-hoop hinged on the lower rod, and an awning secured to the said hoop and upper fastening-rod.

4. In a window-awning, the combination of the upper and lower fastening-rods adapted to extend horizontally across the window-opening, each made up of a pair of rods or toggle-sections hinged together to form a toggle-joint, the holding-pieces screwed on the ends of the rods and thereby adapted to be longitudinally adjusted thereon and having the holding points or spurs for engaging the jambs, locking means for securing the toggle-joint with its sections in alignment and preventing buckling action thereof, an awning-hoop made up of the side sections f'', hinged to the lower fastening-rod, the separate transverse sections f^3, coupled or detachably connected to the ends of the side sections, and an awning secured to the said hoop and the upper fastening-rod, substantially as specified.

5. In a window-awning, the combination of the upper and lower fastening-rods adapted to extend horizontally across the window-opening, each made up of the toggle-sections *g g*, hinged together and screw-threaded at their outer ends, the sleeves f' f', screwed upon the rods, the holding-plates *d d*, attached to the outer ends of the sleeves and provided with the jamb-engaging spurs *d'*, the locking-sleeves *n'*, adapted to cover and lock the toggle-joints of the rods, an awning-hoop hinged on the lower rod, and an awning attached to the upper fastening-rod and the said awning-hoop, substantially in the manner and for the purpose specified.

446,481. **GAME.** CHARLES W. STEBBINS, New Haven, Conn. Filed July 17, 1890. Serial No. 359,037. (No model.)



Claim.—1. In game apparatus, the combination, with a series of spherical rollers, of a case having an angular or winding passage, a detent depression or aperture in the said passage, an inclosure with which the said passage communicates, a hole or pocket in the floor of the said inclosure opposite the entrance of the said passage, a hole or pocket of maximum count, and a series of holes or pockets arranged around and guarding the said port, all the said holes being adapted to receive the said rollers, as and for the purpose specified.

2. In combination, the case A, the removable bottom therein forming upper and lower compartments, vertical walls arranged on the said bottom providing an angular or winding passage, and an inclosure G with which said passage communicates, the said removable bottom having a series of holes or ports therein within the said inclosure and opening through into the said lower compartment beneath them, and a detent depression in the said passage, and a series of spherical rollers adapted to be rolled through the said angular passage and deposited through the said ports into the compartment beneath, substantially as specified.

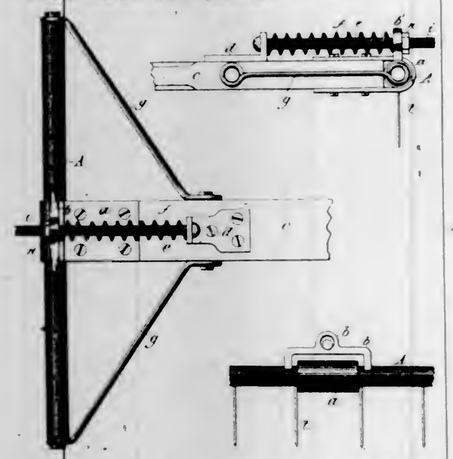
3. In game apparatus, the combination of the case having a partition or bottom dividing it into upper and lower compartments and vertical walls arranged on the said partition to form a continuous passage, having a series of right angles and return-bends therein, and an inclosure or compartment into which the said passage opens, the floor of the said inclosure having a group or series of holes or ports opening into the lower compartment from the inclosure, and a narrow bridge *k*, having a pitfall u^5 on each side thereof and separating the inclosure into parts communicating only by the said bridge, and the series of spherical rollers adapted to be rolled through the said passage into the said inclosure and deposited through the said holes into the compartment beneath, substantially in the manner and for the purpose specified.

4. In a game, the combination of the box or case A, a partition E, separating the case into an upper space and lower compartment, walls separating the said upper space into the continuous angular passage *n'*

n^2 n^3 n^4 n^5 n^6 and the inclosure G, a detent depression r in the said continuous passage, the holes u' within the said inclosure, a narrow bridge k, leading to the body of the inclosure and having a pitfall u^2 on each side thereof, and a group of holes within said main part of the inclosure adapted to represent different counts or values, all the said holes opening into the lower compartment, and a series of spherical rollers adapted to be rolled along said angular passage and deposited through said holes, substantially in the manner and for the purpose specified.

5. In a game, the combination of the box or case A, a partition E, separating the case into an upper space and lower compartment, walls separating the said upper space into the continuous angular passage n' n^2 n^3 n^4 n^5 n^6 and the inclosure G, the holes u' within the said inclosure, holes u^2, forming a narrow bridge to the body or main part of the inclosure, and a group of holes within said main part of the inclosure adapted to represent different counts or values, all the said holes opening into the lower compartment, a balance-beam pivoted in the lower compartment with its ends respectively under holes in the body of the inclosure, one end of the said beam carrying a plate and the other an indicator or counter-weight and a series of spherical rollers, all arranged substantially in the manner and for the purpose specified.

446,482. **RAKE.** SHELDON SWOPE, Terre Haute, Ind. Filed Oct. 3, 1890. Serial No. 367,031. (No model.)



Claim.—In a rake, the combination of the rake-head A, furnished with teeth t t, the metal strap or loop a, the bridge or staple b, with the guide-ring b', the rod c, having the thread i cut upon one end and bearing there the set-nut n, said rod being supported by the angle-plate d, the spring f, the braces g g, and the handle or pole c, all substantially as described, and for the purpose set forth.

446,483. **ELECTRIC-RAILWAY CONDUCTOR.** ELIHU THOMSON, Lynn, Mass. Filed Mar. 22, 1890. Serial No. 344,938. (No model.)

Claim.—1. The combination, in an electric railway, of a main conductor having an insulating-covering and suspended above the roadway, and a bare contact-conductor placed beneath the said main conductor and carried by supports therefrom at points intermediate between the supports of the main conductor.

2. The combination, with a main supply-conductor for an electric railway, having an insulating-covering and suspended above the roadway by insulating-supports, of a bare contact-conductor placed beneath the said main conductor and supported therefrom by means of conducting attachments placed at points intermediate between the supports of the said main conductor.

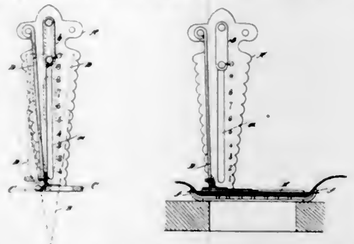
3. The combination, in an electric railway, of a series of transverse supporting-wires, a main insulated conductor suspended therefrom by insulating-supports, and a bare contact-conductor connected by means of attachments to the said main conductor at points intermediate between the supports of said main conductor.

4. The combination, in an electric railway, of two insulated supply-conductors suspended above the roadway, and a bare contact-conductor suspended in a symmetrical position below the two supply-conductors and supported therefrom.

5. The combination, in an electric railway, of two main supply-conductors supported above the roadway, and a bare contact-conductor suspended in asymmetrical position between the two main conductors and electrically connected by attachments thereto at points intermediate between the supports of the said main conductor.



446,484. **BUTTON-HOLE CUTTER.** EDWIN J. TOOF, New Haven, Conn. Filed June 26, 1889. Serial No. 315,666. (No model.)



Claim.—1. A button-hole-cutting apparatus consisting of a cutting-blade operating vertically within a case, the lower end of the latter provided with a foot and an adjustable guiding device in which said foot operates, adapted to operate in conjunction with a cloth-holder to guide and support the cutting apparatus, substantially as set forth.

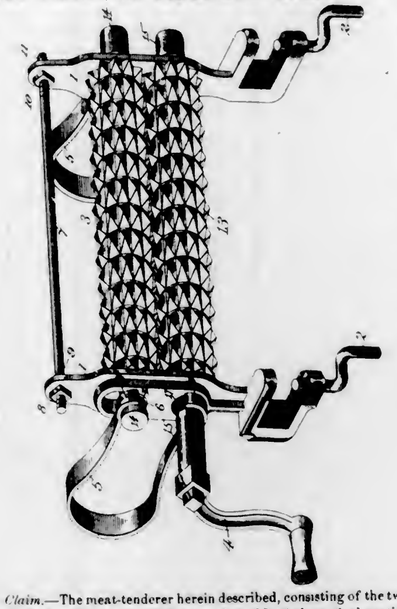
2. A button-hole-cutting apparatus consisting of a vertically-operating cutting-blade supported within a case or casement provided with a foot and guiding device, and a graduated scale located on said casement, adapted to act in conjunction with a cloth-holder, in a manner substantially as described, and for the purpose set forth.

3. The combination, with a a cloth-holding apparatus or guide adapted for use in button-hole stitching, provided with a central opening therein, of a cutting-blade, and a casement provided with a foot, and a guide for the latter adapted to rest and slide upon said cloth-holding apparatus, in a manner substantially as specified, and for the purpose set forth.

4. A button-hole-cutting apparatus consisting of a cloth-holding device provided with a central opening, and means for fastening the same to the material within which the button-hole is to be formed, and a cutting-blade adapted to operate vertically within a case or casement provided with a graduated scale on the face thereof, whereby the desired length of button-hole is determined, a foot, and a guide adapted to rest and slide upon said cloth-holder, through which the said cutting-blade operates, substantially as and for the purpose set forth.

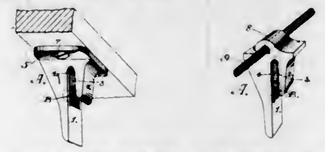
5. The combination, with a table or other support provided with a holding-plate having a roughened surface and slitted opening, of a cloth-holding device adapted to unite with and be held in place by said holding-plate, and a cutting-blade supported in a suitable frame provided with a foot and guide, for the purpose set forth, adapted to operate in conjunction with said holders and plate, substantially as and for the purpose set forth.

446,485. **STEAK-POUNDER.** WILLIAM H. TYSON, Coffeyville, Kans. Filed Oct. 5, 1889. Serial No. 326,153. (No model.)



Claim.—The meat-tenderer herein described, consisting of the two standards having jaws at their lower ends and in their vertical portion provided with vertical slots, the tie-bar connecting the upper ends of the standards and provided with jam-nuts, the roughened rollers journaled in the standards, one extended to receive a crank-handle and the other journaled in the aforementioned slot and each formed with an annular groove at each end outside the standards, and the U-shaped springs, each having its arms free of the other and the ends bent to embrace the shafts of the rollers and to rest in the grooves thereof, substantially as set forth.

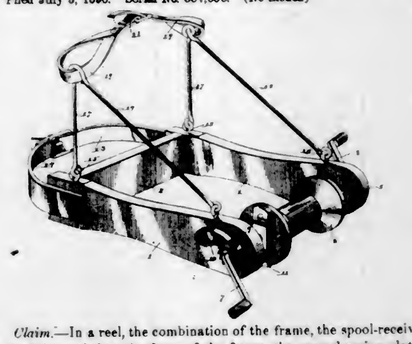
446,486. **BRACKET FOR HOLDING PAPER IN A SUSPENDED POSITION.** FRANK VAN BENTHUYSEN, Albany, N. Y. Filed June 16, 1890. Serial No. 355,633. (No model.)



Claim.—1. In a bracket or hanger of the character herein described, the combination of a body-piece provided with a pendent flange and a pendent arm whose adjacent faces form the opposite walls of a groove or passage, said pendent arm containing a channel-way whose one side is open into said groove and whose opposite side inclines downwardly toward said groove, and a rolling weight placed loosely in said channel-way, as and for the purpose herein specified.

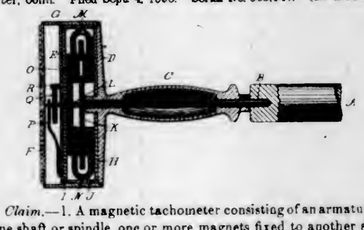
2. In a bracket or hanger of the character herein described, the combination of a body-piece provided with a pendent flange and a pendent arm whose adjacent faces form the opposite walls of a groove or passage, said pendent arm containing a channel-way having one side open to said groove and the opposite side inclining downwardly toward said groove, a rolling weight placed loosely in said channel-way, and the means herein described for securing the body-piece in position, whereby the opening for inserting said weight in the body-piece is closed, substantially as specified.

446,487. **WIRE-REEL.** ELIAS A. VANNATTA, Juniata, Nebr. Filed July 5, 1890. Serial No. 357,850. (No model.)



Claim.—In a reel, the combination of the frame, the spool-receiving shaft journaled at the front of the frame, the curved spring-plate 12, secured to the cross-piece 2 and adapted to receive the front of the body of an operator and to form a cushion therefor, the straps 13 and 14, designed to encircle the body, the looped straps 19, and the rods connecting the looped straps to the frame, substantially as described.

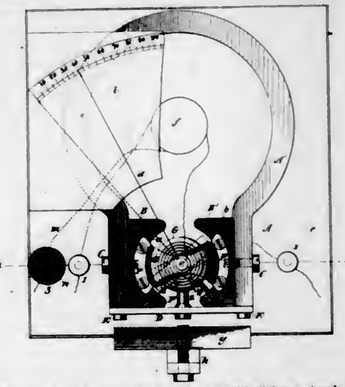
446,488. **MAGNETIC TACHOMETER.** JOHN WARING, Manchester, Conn. Filed Sept. 4, 1890. Serial No. 363,947. (No model.)



Claim.—1. A magnetic tachometer consisting of an armature fixed to one shaft or spindle, one or more magnets fixed to another shaft or spindle, and a spring or its equivalent so constructed and placed as to resist the tendency of the armature and the magnet or magnets to revolve together.

2. The combination of the shaft B, the disk K, the magnets M and N, the spindle L, and the spring Q, all substantially as described.

446,489. **ELECTRICAL MEASURING-INSTRUMENT.** EDWARD WESTON, Newark, N. J., assignor to the Weston Electrical Instrument Company, same place. Filed Mar. 17, 1888. Serial No. 267,474. (No model.)



Claim.—1. A means of producing a field of force, (such as a magnet,) a movable body in said field, and a continuous mass of diamagnetic metal also in said field and connected to and operating to retard or oppose the motion of said movable body, substantially as described.

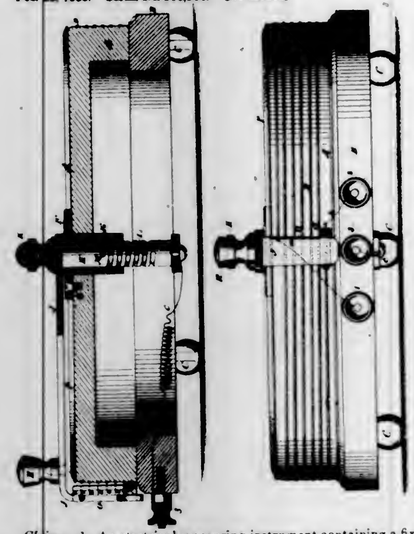
2. A means of producing a field of force, (such as a magnet,) a continuous mass of diamagnetic metal, and an electrical conductor in loop

or coil form, the said conductor and mass being united and movably supported in said field of force and the said mass operating to retard or or oppose the motion of said conductor.

3. A permanent magnet, a movable body, and a continuous mass of diamagnetic metal supported and movable in said field and connected to and operating to retard or oppose the motion of said movable body, substantially as described.

4. A permanent magnet, a paramagnetic body, and a continuous body of diamagnetic metal, the said bodies being united and movably supported in the field of force of said magnet and the said diamagnetic body operating to retard or oppose the motion of said paramagnetic body, substantially as described.

446,490. **RHEOSTAT.** EDWARD WESTON, Newark, N. J. Filed Feb. 28, 1889. Serial No. 301,501. (No model.)



Claim.—1. An electrical measuring-instrument containing a fixed cylindrical support of non-conducting material, a fixed conductor disposed spirally upon the periphery of said cylinder, a conducting-body, and means for moving said conducting-body along the length of and in contact with said conductor, substantially as described.

2. An electrical measuring-instrument containing a fixed spiral conductor, a conducting-body, and means for moving said body along the length of and in contact with said conductor, and circuit-connections communicating, respectively, with the ends of said spiral conductor and with said movable body, substantially as described.

3. An electrical measuring-instrument containing a spiral conductor, a movable conducting-body in contact with and traversing said conductor, and a fixed index-scale disposed concentrically with said spiral conductor in proximity to said movable body and showing the extent of movement of said body in arc, substantially as described.

4. An electrical measuring-instrument containing a spiral conductor, a movable conducting-body in contact with and traversing said conductor, and an index-scale disposed transversely, the turns of said conductor moving coincidently with said movable body and showing the extent of movement of said movable body along said spiral, substantially as described.

5. An electrical measuring-instrument containing a cylindrical support, a conductor spirally disposed upon the periphery thereof, an arm disposed in proximity to said periphery parallel to the axis of said cylinder and movable both in the direction of said axis and in a circular path around said periphery, and a body of conducting material supported by said arm in contact with said spiral conductor, substantially as described.

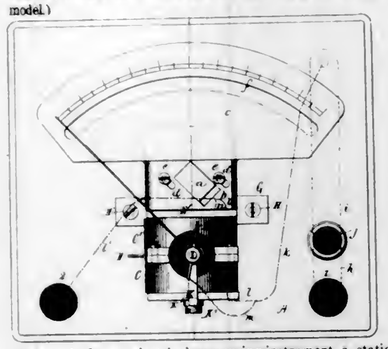
6. An electrical measuring-instrument containing a cylindrical support, a conductor spirally disposed upon the periphery thereof, an arm disposed in proximity to said periphery parallel to the axis of said cylinder and movable both in the direction of said axis and in a circular path around said periphery, a body of conducting material supported by said arm in contact with said spiral conductor, and a scale upon said arm marked in divisions respectively proportional to the pitch of said spiral conductor and having its edge parallel to the axis of said support, substantially as described.

7. An electrical measuring-instrument containing a cylindrical support, a conductor spirally disposed upon the periphery thereof, a rotary shaft or rod having its axis coincident with the axis of said cylinder, the said shaft being movable longitudinally in the direction of its axis, an arm extending radially from said shaft over one of the circular faces of said cylinder and downward in proximity to the periphery of said cylinder, a conducting-body supported by said arm in contact with said spiral conductor, and an index-scale upon said cylinder-face, substantially as described.

8. An electrical measuring-instrument containing a cylindrical support, a conductor spirally disposed upon the periphery thereof, a rotary shaft, a rod having its axis coincident with the axis of said cylinder, the said shaft being threaded and turning in a fixed nut, an arm extending from said shaft, and a conducting-body supported by said arm in contact with said spiral conductor, the pitch of the thread upon said shaft being equal to the pitch of the spiral conductor, substantially as described.

9. The combination of the drum or cylinder A, the spiral conductor D on the periphery thereof, threaded shaft H, nut E, concentrically disposed in and with said cylinder, arm J upon said shaft H, brush N, and circuit-connections, substantially as described.

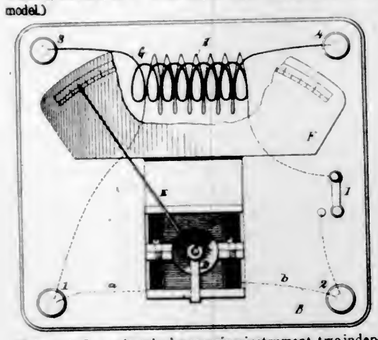
446,491. **ELECTRICAL MEASURING-INSTRUMENT.** EDWARD WESTON, Newark, N. J. Filed May 12, 1890. Serial No. 351,527. (No model.)



Claim.—1. In an electrical measuring-instrument, a stationary coil of flat or sheet metal, a vibrating or oscillating coil on diametral pivots in the field of force of said stationary coil, a spring opposing the movement of said vibrating coil, a fixed scale, and an index or pointer actuated by said vibrating coil over said scale, said coils being electrically connected in multiple arc.

2. In an electrical measuring-instrument, the spool or bobbin B, strips C C coiled thereon, a pivoted coil O within said spool and having its pivots extending through the walls thereof and between said strips C C, supports for said pivots, and opposed springs S, said strips and coil O being electrically connected in multiple arc.

446,492. **ELECTRICAL MEASURING-INSTRUMENT.** EDWARD WESTON, Newark, N. J. Filed July 1, 1890. Serial No. 357,334. (No model.)



Claim.—1. In an electrical measuring-instrument, two independent means of producing a field of force and a conductor extending in inductive relatioo to both fields and having a portion of its length movable in one of them

2. In an electrical measuring-instrument, two independent means of producing a field of force, a conductor extending in inductive relation to both fields and having a portion of its length movable in one of them, and means for determining the extent of movement of said conductor.

3. In an electrical measuring-instrument, a means of producing a field of force, a conductor in inductive relation to said field and so producing a second field, and a movable conductor in inductive relation to said second field.

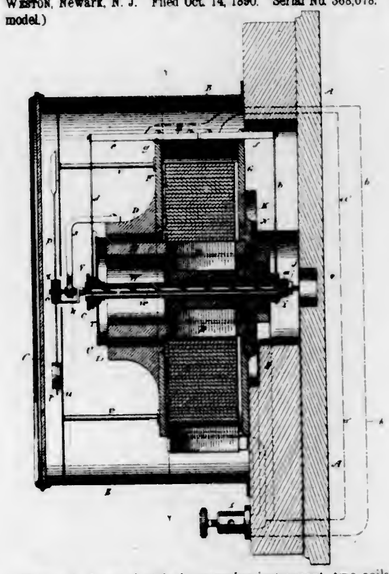
4. In an electrical measuring-instrument, a means of producing a field of force and a conductor in inductive relation to said field and so producing a second field, in which second field a movable portion of said conductor is inductively disposed.

5. The combination, in an electrical measuring-instrument, of a primary conductor, a secondary conductor, and two coils, the said coils being in the secondary circuit and one coil movable in the field of force of the other.

6. The combination, in an electrical measuring-instrument, of a primary conductor, a secondary conductor, two coils, one of said coils movable in the field of force of the other, both of said coils being in the secondary circuit, and means for indicating the extent of movement of said movable coil.

7. The combination, in an electrical measuring-instrument, of a primary conductor, a secondary conductor, a fixed coil, a movable coil in the field of said fixed coil, both of said coils being in the secondary circuit, a circuit-breaker, and means for indicating the extent of movement of said movable coil.

446,493. **ELECTRICAL MEASURING-INSTRUMENT.** EDWARD WESTON, Newark, N. J. Filed Oct. 14, 1890. Serial No. 368,078. (No model.)



Claim.—1. In an electrical measuring-instrument, two coils having their longitudinal axes in prolongation, one of said coils being supported in inductive proximity to and moving in the direction of its axis with reference to the other coil, a vibrating index-needle, and means for transforming the axial bodily movement of said movable coil into vibratory movement of said index.

2. In an electrical measuring-instrument, two coils having their longitudinal axes in prolongation, one of said coils being provided with an elastic or resilient support and held in inductive proximity to and moving in the direction of its axis with reference to the other coil, a vibrating index, and means for transforming the axial bodily movement of said movable coil into vibratory movement of said index.

3. In an electrical measuring-instrument, a fixed coil, a movable coil provided with a resilient or elastic support, the said coils having their longitudinal axes in prolongation, a vibrating index, and a spiral spring extending between said movable coil and said index and operating to transform the axial bodily movement of said coil into vibratory movement of said index.

4. In an electrical measuring-instrument, a fixed coil, a movable coil provided with a resilient or elastic support, the said coils having their longitudinal axes in prolongation, a vibrating index, a spiral spring extending between said movable coil and said index and operating to transform the axial bodily movement of said coil into vibratory movement of said index, and means for adjusting the initial tension of said spiral spring.

5. In an electrical measuring-instrument, a fixed coil, a longitudinally-movable spring-supported tubular core therein, a coil supported on said core and in inductive proximity to said first coil, a spiral spring connected to said core at one end thereof and extending through said core, and a vibratory index communicating with said spring, the aforesaid parts being constructed and arranged so that longitudinal movement of the movable coil communicated to said core causes an expansion or contraction of said spiral spring and a consequent vibration thereby of said index.

6. In an electrical measuring-instrument, and in combinstion with a moving body therein, the extent of movement of which is to be indicated, a spiral spring, a yoke or stirrup, a fixed pivot-support for said yoke, and an index, the said spring being secured at one end to one arm of said yoke and at the other end to said body, the said yoke receiving and being pivoted upon said fixed support and the said index being actuated by the other arm of said yoke.

7. In an electrical measuring-instrument, the combination of a fixed coil, a spring-supported tube within said coil, a second coil in inductive proximity to said first coil and supported by said tube, a yoke or stirrup pivoted upon a fixed support received between its arms, a spiral spring secured to one arm of said yoke extending into and secured within said tube, means for adjusting the tension of said spring, and an index carried by the other arm of said yoke.

8. In an electrical measuring-instrument, an electro-magnet having concentric annular poles, a movable support extending axially through said magnet, and a coil carried by said support and disposed in the annular space between said poles.

9. In an electrical measuring-instrument, an electro-magnet having concentric annular poles, a fixed coil in the annular space between said poles, and a conductor within the inner pole and electrically connected to a terminal of said coil.

10. In an electrical measuring-instrument, an electro-magnet having concentric annular poles, a fixed coil in the annular space between said poles, and a tubular sleeve of conducting material within the inner pole, the said sleeve being electrically connected to a terminal of said coil.

11. In an electrical measuring-instrument, an electro-magnet having concentric annular poles, a fixed coil and a movable coil having their longitudinal axes in prolongation and disposed in the annular space between said poles, a tubular sleeve of conducting material within the inner pole and electrically connected to said fixed coil, and a movable support extending axially through said sleeve and carrying said movable coil.

12. In an electrical measuring-instrument, a hollow cylindrical magnet, one pole of said magnet being annular in form, concentric with said ring, and projecting from one face thereof, and the other pole being also concentric with said ring and extending from the opposite face thereof and into said annular pole-piece.

13. In an electrical measuring-instrument, a hollow cylindrical magnet, one pole of said magnet being annular in form, concentric with said ring, and projecting from one face thereof, and the other pole-piece being also concentric with said ring and extending from the opposite face thereof axially through said ring and into said annular pole-piece, in combination with a coil disposed within the hollow magnet and inclosing the inner pole-piece.

14. In an electrical measuring-instrument, a hollow cylindrical magnet having projecting from one face annular pole-pieces, one of which extends axially through said magnet and is surrounded by the other, in combination with a coil within said hollow cylinder and surrounding the inner pole-piece, and a core within said inner pole-piece receiving a terminal of said coil.

15. In an electrical measuring-instrument, a magnet having the annular faces F G, periphery H between said faces, hollow pole-piece D, extending from face F, and pole-piece E, extending from face G and into pole-piece D.

16. In an electrical measuring-instrument, in combination with a magnet having the annular faces F G, periphery H, pole-pieces D E, the inclosed fixed coil P, and the movable coil U, received in the annular space between said pole-pieces.

17. In an electrical measuring-instrument, in combination with a magnet having the annular faces F G, periphery H, and pole-pieces D E, the inclosed fixed coil P, the core M, receiving a terminal of said coil, the tube W, passing through said core and supported by the springs *d b*, and the coil U, supported on said tube W and received in the annular space between said pole-pieces D E.

18. In an electrical measuring-instrument, in combination with a moving body, the yoke *k*, supported upon the pivot-block *r* by the pivot-pins *n o* passing through its arms, in combination with an index

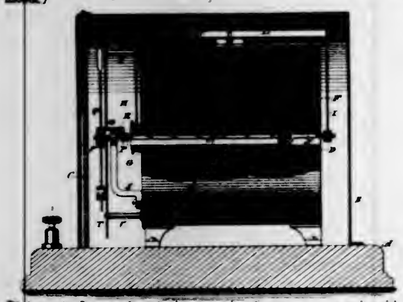
p, carried by one arm, and a spiral spring *w*, connected to the other arm and to said moving body.

19. In an electrical measuring-instrument, in combination with a cylindrical magnet having the faces F G, periphery H, and pole-pieces D E, the inclosed fixed coil P, the core M, receiving a terminal of said coil, the tube W, passing through said core and supported by the springs *d b*, the coil U, supported on said tube W and received in the annular space between said pole-pieces D E, the pivoted yoke *k*, the spiral spring *w*, connecting said yoke and said tube W, and the index *p*, carried by said yoke.

20. In combination with an electrical measuring-instrument containing a movable coil, the suspension-bars E' F', secured to the said instrument and disposed in a plane passing transversely through the longitudinal axis of said coil.

21. In combination with an electrical measuring-instrument containing a movable coil, the flexible suspension-bars E' F', disposed in a plane passing transversely through the longitudinal axis of said coil, transverse connecting-bar G', of insulating material, and the fixed brackets H' I'.

446,494. **ELECTRICAL MEASURING-INSTRUMENT.** EDWARD WESTON, Newark, N. J. Filed Oct. 16, 1890. Serial No. 368,277. (No model.)



Claim.—1. In an electrical measuring-instrument, a solenoid, a movable armature therein, a vibrating index, mechanism for transforming the axial bodily movement of said armature into vibratory movement of said index, and means independent of said transforming mechanism for supporting said armature.

2. In an electrical measuring-instrument, a solenoid, a movable armature horizontally disposed and independently supported therein, a vibrating index, and mechanism for transforming the axial bodily movement of said armature into vibratory movement of said index.

3. In an electrical measuring-instrument, a solenoid, a movable armature therein, a vibrating index, mechanism for transforming the axial bodily movement of said armature into vibratory movement of said index, and an independent spring-support for said armature.

4. In an electrical measuring-instrument, a solenoid, a tubular movable armature supported therein, an independent support for said armature, a vibrating index, and a spiral spring secured within said armature and communicating with said index, the said spring operating to transform the axial bodily movement of said armature into vibratory movement of said index.

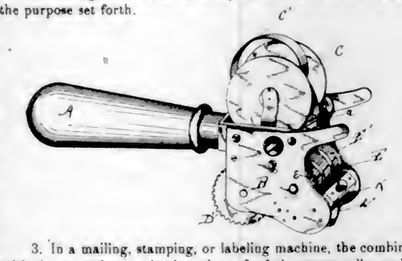
5. In an electrical measuring-instrument, a solenoid, a tubular movable armature supported therein, an independent support for said armature, a vibratory index, a spiral spring secured within said armature and communicating with said index, and means for adjusting the tension of said spring, the said spring operating to transform the axial bodily movement of said armature into vibratory movement of said index.

6. In an electrical measuring-instrument, the combination of a solenoid, a spring-supported tubular armature within the same, a yoke or stirrup pivoted upon a fixed support received between its arms and extending into and secured within said armature, means for adjusting the tension of said spring, and an index actuated by said yoke.

446,495. **MAILING-MACHINE.** SIDNEY B. WHITESIDE, San Francisco, Cal. Filed Dec. 5, 1889. Serial No. 332,686. (No model.)

Claim.—1. In a mailing, stamping, or labeling machine, the combination, with the outer casing thereof, of the operating mechanism for carrying the stamp, water-reservoir, and the felt roller adapted to contact with the bibulous bottom of the water-reservoir for the purpose of receiving moisture and automatically moistening the stamp or label during the passage thereof through the machine, the sponge A, and the main roller D, whereby the stamp or label is placed in position, substantially as set forth and described.

2. In a mailing, stamping, or labeling machine, the combination, with the operating mechanism thereof, of the stamp-roller located above and adapted to contact with the stationary drum, the frame for holding said roller in position, the spring secured to the casing and adapted to bear upon the roller-frame for the purpose of maintaining the stamp-roller tightly against the surface of the stationary drum and the closed portion of the revolving open-work sleeve, and the open-work revolving sleeve and stationary drum, substantially as and for the purpose set forth.



3. In a mailing, stamping, or labeling machine, the combination, with the operating mechanism thereof, of the stamp-roller and movable frame, revolving open-work sleeve working upon the stationary drum and feeding at fixed intervals, stamp cutter or separator located below the stamp-roller frame, the moistening-roller for automatically moistening the stamp during its travel through the machine, and the stationary drum, substantially as and for the purpose described.

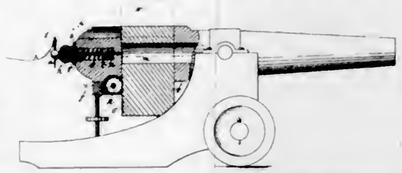
4. In a stamping, mailing, or labeling machine, the combination, with the operating mechanism thereof, of the stamp-roller, stationary drum, and revolving open-work sleeve working thereon and adapted to grasp and carry the stamp between the arms of the guides during the downward movement of the solid portion of said sleeve and with the said guides, substantially as and for the purpose set forth and described.

5. In a mailing, stamping, or labeling machine, the combination, with the main or driving roller, of the stationary drum, rotating open-work sleeve operating thereon, guide-roller, felt roller, the guides having bearing in the metallic sides of the outer frame and resting within the guideways formed in the said rollers, and the gear mechanism for imparting motion, substantially as shown and described.

6. The combination, in a mailing, stamping, or labeling machine, of the outer frame thereof, operating mechanism located therein, water-reservoir pivoted therein, spring for holding the reservoir in contact with the moistening-roller, the moistening-roller for receiving and imparting moisture to the stamp during its passage between the felt and guide roller, and the guides, the guide-roller, and felt roller, substantially as and for the purpose specified.

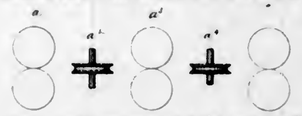
7. The combination, in a mailing, stamping, or labeling machine, of the rotating and carrying open-work sleeve, stationary drum upon which the said sleeve works, stamp-roller, and the cutter or separator for cutting apart the stamps during travel, substantially as and for the purpose set forth.

446,496. **BREECH-LOADING ORDNANCE.** FRANK H. WILES, Newport, R. I. Filed Apr. 28, 1890. Serial No. 349,762. (No model.)



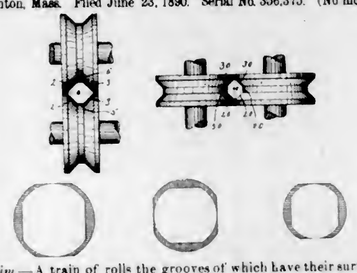
Claim.—In breech-loading ordnance, the combination of a gun having an opening through its breech at right angles with the bore, a breech-block provided with an opening adapted to receive and contain the cartridge while it is fired and having a rack in one of its sides adapted to engage with the teeth of a pinion which is journaled on the gun, whereby the breech-block is moved sufficiently to receive a cartridge, and having a depression in one of its sides adapted to receive the end of a pin projecting from the inside of the opening in the breech of the gun, whereby the movement of the breech-block in said opening is limited, and provided in its rear face with a groove reaching from the bore of said breech-block to the bottom of the same, a bar pivoted in said groove, its upper end adapted to lie under the rim of the cartridge and its lower end provided with an incline adapted to strike the rear face of the opening in the breech of the gun when the breech-block is moved to insert a cartridge and thus retract the cartridge-shell, and means to explode the cartridge, all as set forth.

446,497. **METHOD OF ROLLING WIRE.** HENRY A. WILLIAMS, Taunton, Mass. Filed June 23, 1890. Serial No. 356,374. (No model.)



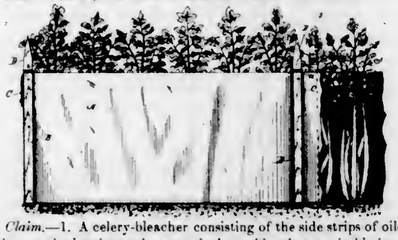
Claim.—That improvement in the art or method of rolling wire which consists in subjecting all the parts of the surface acted upon at a given pass to substantially uniform pressure and displacing substantially equal amounts of metal at all points acted upon by the rolls, substantially as and for the purpose described.

446,498. **ROLL FOR ROLLING WIRE.** HENRY A. WILLIAMS, Taunton, Mass. Filed June 23, 1890. Serial No. 356,375. (No model.)



Claim.—A train of rolls the grooves of which have their surfaces substantially parallel throughout the train, the bottom of the grooves in each pair terminating in a flattened or truncated portion, whereby the width of the space included between the pair of rolls is less measured between the bottoms of the grooves than the width at the tops of the grooves, the width between the bottoms of the grooves of a given pair being equal to the width at the tops of the grooves in the next following pair, substantially as and for the purpose described.

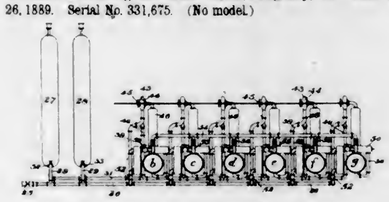
446,499. **CELERY-BLEACHER.** JONATHAN WILSON, Kalamazoo, Mich. Filed Sept. 29, 1890. Serial No. 366,541. (No model.)



Claim.—1. A celery-bleacher consisting of the side strips of oiled parchment, the lapping-stakes attached to said strips at suitable intervals, and the tie-strings looped around and attached to the tops of said stakes, substantially as set forth.

2. A celery-bleacher consisting of the side strips of oiled parchment, the lapping-stakes attached to said strips at suitable intervals, said stakes being provided with the slots, and the tie-string looped around the top of said stakes and caught in the slots, substantially as set forth.

446,500. **APPARATUS FOR VULCANIZING WOOD.** JAMES P. WITHEROW, Pittsburg, and GRAM CURTIS, Allegheny, Pa. Filed Nov. 26, 1889. Serial No. 331,675. (No model.)



Claim.—1. In apparatus for treating wood, the combination of a series of two or more retorts or chambers, a stove or stoves, an air-compressor, all connected in a single system or plant, and said retorts being provided with valves by which any of them may be cut out from the system, and separate fans or blowers for each retort or chamber for maintaining a circulation of air therethrough, substantially as and for the purposes described.

2. In apparatus for treating wood, the combination, with the retort or chamber and an air-compressor and air-heater, of an air-conducting pipe entering the retort or chamber at or near one end and extending therein to the other end, and a second pipe leading from the first-named end of the cylinder, substantially as described and set forth.

3. The combination of the retort or chamber, the air-compressor, and stove or stoves, a delivery-pipe leading from the stove to the retort or chamber, a return-pipe leading to the stove, and valve-controlled return-connections between the retort and the return-pipe of the heater and between the retort and the delivery-pipe of the stove or stoves, and means for maintaining the air-circulation, whereby the air may be caused to circulate through the stove and retort directly, or a part or all of the air-current may be short-circuited to exclude the stove, substantially as and for the purposes described.

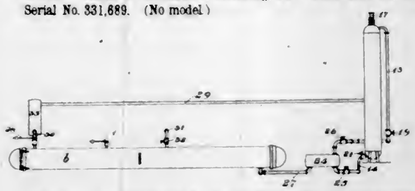
4. The combination of the retort or chamber, the air-compressor, and stove or stoves, a delivery-pipe leading from the stove to the retort or chamber, a return-pipe leading to the stove, a return-pipe leading from the retort or chamber, a branched connection connecting the same with the retort or chamber and with the heater, and a switch-valve in said branched connection, substantially as and for the purposes described.

5. The combination, with a series of two or more retorts or chambers, of an air-compressor and stove or stoves, a delivery-pipe and a return-pipe leading to and from the stove or stoves, valve-controlled branch pipes connecting the delivery-pipe with the retorts or chambers, and branch return-pipes connecting the retorts or chambers with the stove return-pipe and also with the retort or chamber, whereby the air may be caused to circulate through the stove and the retorts or chambers directly, or a part or all of the air may be short-circuited through one or more of the retorts to exclude the stove or stoves, substantially as and for the purposes described.

6. In apparatus for treating wood, the combination, with a retort or chamber, a stove or stoves, air-compressor, and pipes connecting the same in a system, of a drier-chamber adapted to contain moisture-absorbing material, substantially as and for the purposes described.

7. In apparatus for treating wood, the combination, with a retort or chamber, of circulating-pipes by which air is led thereto and drawn therefrom, and sampling-chambers interposed both in the supply and delivery pipes, substantially as and for the purposes described.

446,501. **PROCESS OF AND APPARATUS FOR VULCANIZING WOOD.** JAMES P. WITHEROW, Pittsburg, Pa. Filed Nov. 26, 1889. Serial No. 331,689. (No model.)



Claim.—1. In apparatus for vulcanizing wood, the combination of an air-compressor, a retort or chamber, two or more stoves having combustion-chambers and flues or passages heated by internal combustion, pipes connecting the said flues or passages of the stoves with the retort or chamber, and valves by which the stoves may be connected or disconnected therefrom and may be used alternately, the compressed air passing through the heated flues or passages of one stove while the products of internal combustion may be passing through the corresponding flues or passages of the other, and vice versa, substantially as and for the purposes described.

2. In the art of vulcanizing wood, the improvement consisting in compressing air, heating it by passing it through a stove, introducing it in a heated state and under compression into a retort or retorts containing the wood, and maintaining a circulation through the retort or retorts of fresh supplies of hot compressed air by affording a regulated outlet from the retort or retorts to the atmosphere, substantially as and for the purposes described.

3. In apparatus for vulcanizing wood, the combination of a stove or stoves, an air compressor or compressors, two or more retorts or chambers, and separate pressure-regulated valves for each retort, whereby by adjustment of the valves the pressure in the retorts may

be regulated independently, substantially as and for the purposes described.

4. In apparatus for vulcanizing wood, the combination, with a series of two or more retorts or chambers, of a stove or stoves, an air-compressor, a direct connection or pipe between the air-compressor and the retorts or chambers, a second connection between them by way of the stove or stoves, and valves controlling the entrance of said connections to the retorts or chambers, whereby the supplies of hot and cold air thereto may be regulated independently, substantially as and for the purposes described.

5. In apparatus for vulcanizing wood, the combination, with a retort or retorts, a stove or stoves, and an air-compressor, of a connection or pipe between the air-compressor and the retort or retorts, a second connection between them by way of the stove or stoves, and an interposed common mixing-chamber for each retort, substantially as and for the purposes described.

6. In apparatus for vulcanizing wood, the combination, with an air-compressor, of a retort having an external metal shell and an interior brick lining, a heating-stove interposed between the retort and the compressor, and pipes connecting the same, substantially as and for the purposes described.

7. In apparatus for vulcanizing wood, the combination of an air-compressor, a retort or chamber, two or more stoves having combustion-chambers and brick flues or passages heated by internal combustion, pipes connecting the said flues or passages of the stove with the retort or chamber, and valves by which the stoves may be connected or disconnected therefrom and may be used alternately, the compressed air passing through the heated flues or passages of one stove while the products of internal combustion may be passing through the corresponding flues or passages of the other, and vice versa, substantially as and for the purposes described.

8. The combination, with the air-compressor, of a stove having a flue or passage heated by internal combustion, a stack-flue and valve for said stove, a cylinder and piston connected with said stack-flue, and pipes leading to the cylinder and connected with the air-compressor for the purpose of operating said valve, substantially as and for the purposes described.

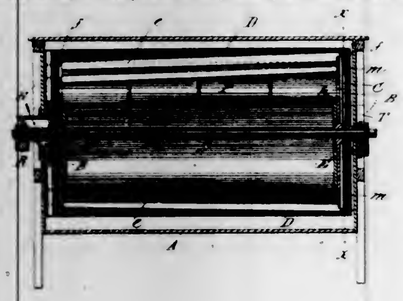
9. In apparatus for vulcanizing wood, the combination of an air-compressor, a retort or chamber adapted to contain the wood to be vulcanized, a stove having a combustion-chamber with flues or passages heated by internal combustion and stack or exit passage, pipes connecting said flues or passages with the retort or chamber and with the air-compressor, and valves controlling the communication of the stove with the retort or chamber and controlling the stack or exit passage, whereby the stove may be used alternately, the products of combustion passing through and heating the flues at one period and the compressed air passing through them to the retort at another period, substantially as and for the purposes described.

446,502. COMPOSITION OF MATTER FOR CABLE-FILLING. EDWARD G. WRIGHT, Kansas City, Mo. Filed July 29, 1890. Serial No. 360,325. (No specimens.)

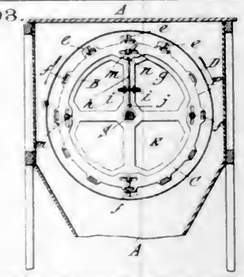
Claim.—The herein-described composition of matter to be used for coating or filling wire cable, consisting of crude petroleum, tallow, gypsum, whiting, pine tar, and paraffine-wax, in the proportions specified.

446,503. FLOUR-BOLT. LESLIE L. ZIEGLER, Cincinnati, Ohio. Filed June 19, 1890. Serial No. 356,030. (No model.)

Claim.—1. In a flour-bolt having an inner cylinder and a series of longitudinal beaters or elevator-cups mounted thereon, the combination, with the cylinder B, of the annular rim C, movably secured thereto, and the series of elevator-cups, said rim fitted to engage the ends of the elevator-cups to simultaneously shift the same laterally over the surface of the cylinder to vary their spiral trend across the



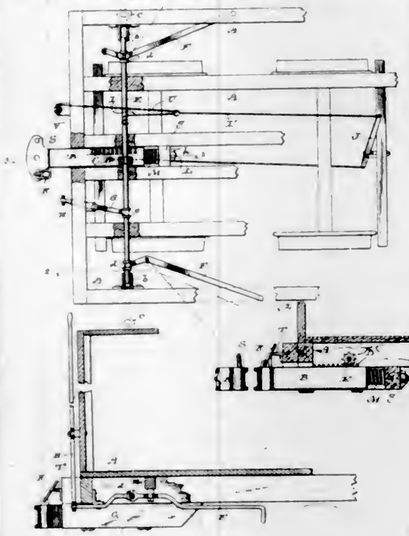
446,503.



cylinder at pleasure, substantially as shown and described, and for the purpose specified.

2. In a flour-bolt having an inner cylinder and a series of elevator-cups mounted thereon and movably secured thereto at one end, as shown, the combination, with the end of the cylinder B, of the spring-bar *h* and the adjustable ring C, securing the extended ends of the elevator-cups *e*, said spring actuating the said annular ring C to regulate and control the lateral movement of the elevator-cups over the surface of the cylinder automatically, substantially as shown and described, and for the purpose specified.

446,504. CAR-BRAKE. LEONARD G. ARNOLD, Menasha, Wis. Filed July 28, 1890. Serial No. 360,197. (No model.)



Claim.—1. A draw-bar provided with a rack, a laterally-adjustable shaft, a pinion fast on the shaft to come in and out of mesh with the rack, and a brake-lever flexibly connected to said shaft, substantially as set forth.

2. A spring-controlled draw-bar provided with a rack, a laterally-adjustable shaft, a pinion fast on the shaft to come in and out of mesh with the rack, and a brake-lever flexibly connected to said shaft, substantially as set forth.

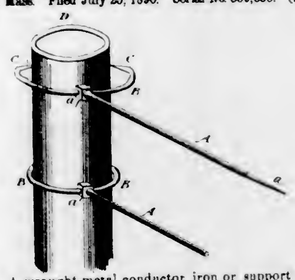
3. A draw-bar provided with a rack, a laterally-adjustable shaft, levers connected to the shaft, a pinion fast on the same to come in and out of mesh with the rack, and a brake-lever flexibly connected to said shaft, substantially as set forth.

4. A spring-controlled draw-bar provided with a rack, a laterally-adjustable shaft, a pinion fast on the shaft to come in and out of mesh with the rack, a ratchet-wheel fitted to said shaft to rotate therewith without interference with the adjustment thereof, a detent for the ratchet-wheel, a hand-wheel screw-threaded to one end of the shaft and loosely connected with said ratchet-wheel, and a device for locking the hand-wheel and shaft, substantially as set forth.

446,505. COMPOSITION FOR COMBUSTIBLE BRIQUETS. HAYDN M. BAKER, Brooklyn, N. Y. Filed Mar. 18, 1890. Serial No. 344,394. (No specimens.)

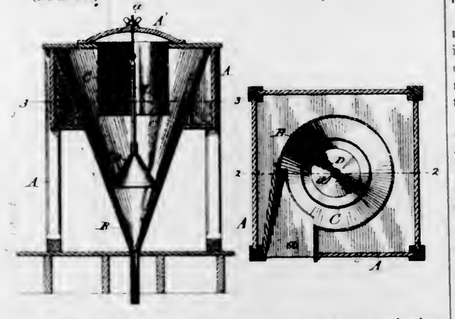
Claim.—The composition of matter described, consisting of finely-divided organic waste, a di or tri silicate of sodium in aqueous solution and of a specific gravity from 30° to 65° Baumé, and an alkaline nitrate or its described equivalent, substantially as described.

446,506. WATER-CONDUCTOR IRON. GEORGE O. BARBOUR, Rockland, Mass. Filed July 25, 1890. Serial No. 359,853. (No model.)



Claim.—A wrought-metal conductor iron or support formed of two parts A B, the pointed drive-shank A being welded to the middle of the grip B, and the grip B being provided with pointed right-angled ends C C, adapted to bite on the conductor, whereby the conductor may be held, as shown and described.

446,507. DUST-COLLECTOR. EUGENE BRETNEY, Indianapolis, Ind., assignor, by mesne assignments, to the Cockle Separator Manufacturing Company, Milwaukee, Wis. Filed May 20, 1887. Serial No. 238,851. (No model.)



Claim.—1. A dust-collector consisting, essentially, of a casing having an air-inlet, a tubular guard inside said casing, and a cone, also inside said casing below said tubular guard and air-inlet, whereby interfering air-currents are prevented below said cone, substantially as set forth.

2. The combination, in a dust-collector, of the casing, the deflector having a downwardly-inclined top surface, and a jointed rod on which said deflector is suspended, substantially as set forth.

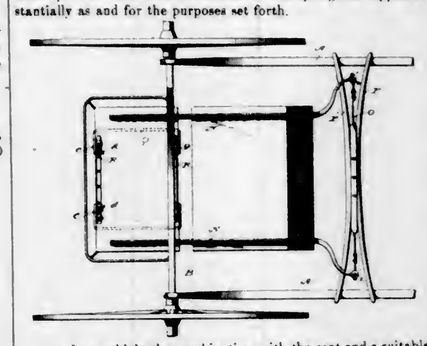
3. In a dust-collector, the combination of the frame-work A, the casing B, the tubular guard C, the cone deflector D, and the jointed rod upon which said deflector is mounted, substantially as set forth.

446,508. ROAD-CART. STEPHEN E. BURKE, Edon, Ohio, assignor of one-half to Lewis W. Johnson, same place. Filed May 7, 1889. Serial No. 309,906. (No model.)

Claim.—1. The combination, with the seat, of a supporting-spring therefor formed with sockets at its ends, and hangers suspended from a suitable support and passed through openings in said sockets and having balls fitting in the sockets, substantially as and for the purposes set forth.

2. The combination, with the seat and its supporting-spring, of a support formed with a socket having an opening therein, and a hanger connected with said spring and passed through the opening in said support and provided with a ball fitting in the socket of said support, substantially as and for the purposes set forth.

3. The combination, with the seat and its supporting-spring formed with sockets having slots in their sides, of supports formed with sockets having slots in their sides, and hangers provided with balls at different points, which fit in the sockets of said spring and supports, substantially as and for the purposes set forth.



4. In a vehicle, the combination, with the seat and a suitable support, of a hanger reduced in diameter at various points and provided with a series of balls at points to lengthen or shorten the hanger, and sockets for the reception of said balls and formed with side slots for the entrance and withdrawal of said hangers at their reduced portions, substantially as and for the purposes set forth.

5. In a two-wheeled vehicle, the combination, with a seat and seat-bars, of a spring supported from the cross-bar, having portions thereof lying in different planes, so as to give a combined lateral and vertical movement, and the seat-bars pivoted to said spring, substantially as set forth.

6. The combination, with the seat and seat-bars, of a flattened transverse spring supported between the thills and having portions thereof lying in different planes, as set forth, and both portions extending horizontally and having the front ends of the seat-bars connected thereto, substantially as described.

7. In a two-wheeled vehicle, the combination of the spring connected to the cross-bar of the shafts and having portions thereof lying in different planes, the foot-rests or seat-bars having their forward ends connected to the outer ends of said spring, and the seat having connected to it the rear ends of the foot-rests and itself supported upon the spring carried by the axle, substantially as set forth.

8. The combination of the transverse spring, the seat-bars hinged to the opposite ends of said spring, the seat, a spring for supporting the seat, provided with sockets having openings therein, supports provided with sockets having openings therein, and hangers passed through the openings in said sockets and having balls lying in the sockets, substantially as described.

9. The combination, with the seat and the transverse spring supported between the thills, of the seat-bars connected with said seat and by spherical ends to the ends of said transverse spring, and spherical washers on said transverse spring, bearing against the opposite sides of the spherical ends of said seat-bars, substantially as described.

10. The combination, with the seat and the transverse spring, of the seat-bars, and a ball-and-socket connection between the said spring and seat-bars, substantially as and for the purposes set forth.

11. The vehicle-seat, in combination with an auxiliary rail connected to said seat between its side rails, adapted to be raised and lowered to regulate the width of the seat between its side rails, substantially as and for the purposes set forth.

12. The vehicle-seat formed with depressions to receive a folding rail, in combination with the auxiliary rail connected with said seat to be raised and lowered to regulate the width of the seat and adapted to lie in said depressions formed in the seat, substantially as and for the purposes set forth.

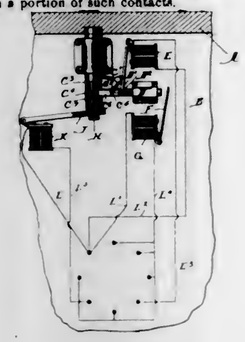
13. The combination, with the seat and its folding auxiliary rail to regulate the width of the seat, of a spring to act on said rail to hold it in its raised or lowered position, substantially as and for the purposes set forth.

14. The combination, with the box to be set into a recess in the seat, of the folding auxiliary rail pivoted in said box, substantially as and for the purposes set forth.

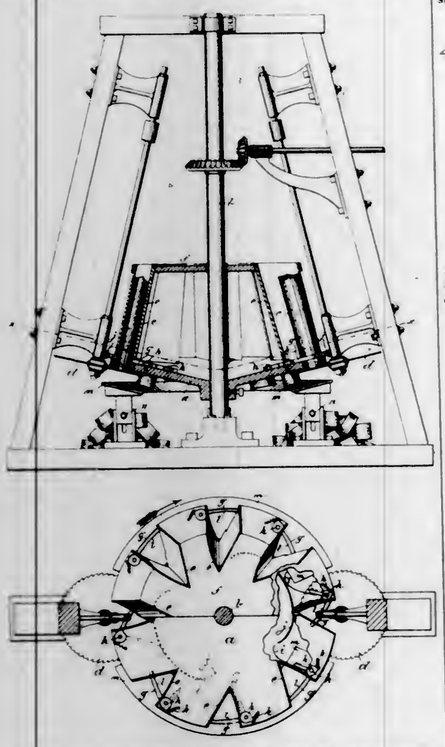
446,509. ELECTRIC LOCK. EDWARD J. COLBY, Chicago, Ill. Filed May 6, 1890. Serial No. 350,813. (No model.)

Claim.—The combination of a safe with a bolt secured in the lid thereof, a maguet and armature adapted to lock the bolt when in position, a series of contacts and conductors, a portion of which contacts only are in circuit with the magnet, a second magnet whose armature is opposed to that of the first and which is connected with a portion of such contacts, and a third magnet whose armature is con-

nected with the bolt and adapted to retract the same, which magnet is connected with a portion of such contacts.



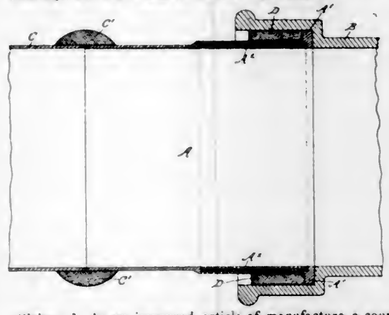
446,510. WOOD-SAWING MACHINE. GEORGE L. CUMMINGS, New York, N. Y. Filed Feb. 10, 1890. Serial No. 339,780. (No model.)



Claim.—1. The combination, with the saw and the stationary gage-table, of the rotating feed-table, the vertical angular wood-holding troughs extending upward from the table suitably for holding the wood upright, the clamping-levers ranging across the open sides of the troughs and adapted to clamp the wood in the angles thereof, and the cam and springs for actuating the levers, substantially as described.

2. The combination, with the saw and the stationary gage table, of the rotating feed-table, the vertical angular wood-holding troughs extending upward from the table suitably for holding the wood upright, the clamping-levers ranging across the open sides of the troughs and having a spring-arm for applying the clamping force and a retracting-spring for releasing the wood, and the clamping-lever-actuating cam, substantially as described.

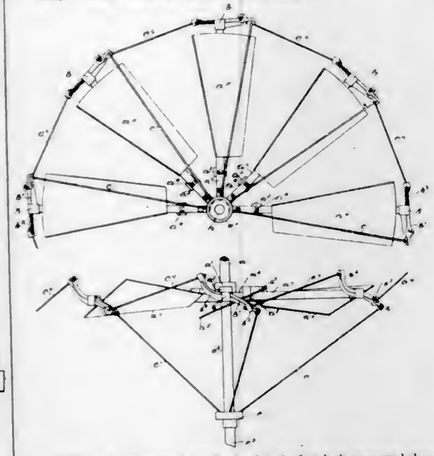
446,511. PIPE-COUPLING NIPPLE. JAMES W. DALY, Troy, N. Y. Filed Sept. 15, 1890. Serial No. 364,940. (No model.)



Claim.—1. As an improved article of manufacture, a coupling-nipple consisting of a sleeve of comparatively hard metal inclosed within the nipple-shell, formed of soft metal, cast upon such sleeve, substantially as described.

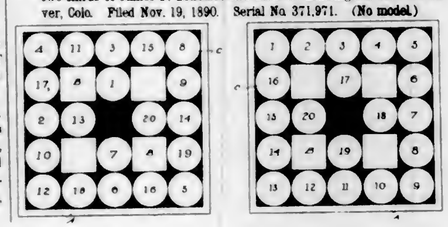
2. A coupling-nipple consisting of a metallic sleeve having a tinned surface inclosed within the nipple-shell, formed of soft metal, cast upon such sleeve, substantially as described.

446,512. WINDMILL. EDWARD A. DANA, Fairhaven, Mass. Filed May 1, 1886. Serial No. 200,818. (No model.)



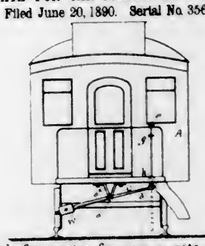
Claim.—In a vertical wind-wheel, a shaft, a hub mounted thereon and having a series of substantially vertical arms a^2, and a series of fan blades or sails pivotally secured thereto, combined with stay-holders b, having arms b' b^3, extended on opposite sides of the sail and mounted upon the ends of the sail-arms a^4, and with stay-rods c, secured at one end to a hub on the shaft and connected at the other end to the arm b' of the stay-holders b in front and at one side of the arms a^4, and with rim-rods connecting the arms b' and b^3, respectively, of adjacent stay-holders b', whereby twisting effect produced by the stay-rods c is counteracted, substantially as described.

446,513. PUZZLE. THORNTON A. FRAZER, Highlands, assignor of two-thirds to James F. Benedict and Glen W. Huntington, both of Denver, Colo. Filed Nov. 19, 1890. Serial No. 371,971. (No model.)



Claim.—The combination, with a square box, of twenty movable blocks substantially of uniform size, said blocks being numbered consecutively from 1 to 20, the box being five blocks square on its interior and provided with four stationary blank blocks so placed that a movable block may be placed between each two stationary blocks and also between each stationary block and the adjacent rim of the box, substantially as and for the purpose set forth.

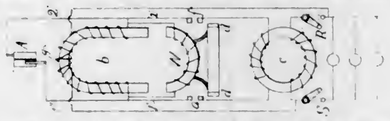
446,514. GATE FOR CAR-PLATFORMS. SAMUEL B. FULLER, Pawtucket, R. I. Filed June 20, 1890. Serial No. 356,156. (No model.)



Claim.—1. In platform-gates for cars, a gate vertically sliding upon guide-rails a a, secured upon the car-platform, provided beneath said platform with a lever D, loosely secured to the rail of said gate, said lever being pivoted beneath said platform and provided with a weight W at its free end, all substantially as described.

2. In platform-gates for cars, the combination of a gate B, provided with lugs c c, loosely mounted upon guide-rails a a, vertically sliding upon the same, the guiding-pulley f, the lever D, pivoted to the frame d and provided with the weight W at its free end, the catch for locking said gate, and a car-platform, all substantially as described.

446,515. ELECTRO-MAGNETIC CUT-OUT. LUDWIG GUTMANN, Pittsburg, Pa. Filed Feb. 4, 1890. Serial No. 339,175. (No model.)



Claim.—1. In a system of electrical distribution, the combination of an electric generator, a main or supply circuit connected therewith, a translating device, such as a converter, whose primary or energizing coils are connected with said main circuit, an electro-magnetic cut-out interposed between the translating device and the main or supply circuit, and a secondary coil for said translating device in electric connection with a winding on said cut-out, for the purpose described.

2. In combination with the primary and secondary coils of an electric converter, a circuit-controller having two independent windings, one of which is in electric connection with the secondary coil of the said translating device, for the purpose described.

3. In a system of electrical distribution, the combination of an electric generator, a main line in circuit therewith, two converters whose primary coils are in circuit with said main line and whose secondary coils are in circuit with each other and with translating devices, such as lamps, a circuit-controller, such as a cut-out, in circuit with the primary coil of each converter, and automatic means, such as a magnet, located in circuit with the secondary coils of each converter, for opening and closing said cut-outs alternately, according to the amount of current in said secondary coil or coils.

4. In a system of electrical distribution, the combination of an electrical generator, two converters in circuit therewith, translating devices in circuit with the secondary of both converters, and means for automatically excluding and including the primary coil of the one converter with respect to the generator according to the amount of current in the secondary circuit of said converter, said means consisting of a double electric cut-out or circuit-breaking armature having two cut-outs whose coil is in circuit with the secondary coils of both converters, and in which the two cut-outs are respectively in circuit with the primary coils of both converters.

5. In a system of electrical distribution, the combination of an electrical generator of alternating, pulsating, or intermittent electric currents, a main line in circuit therewith and including the primary coil of an electric converter, translating devices, such as, for instance, electric lamps, in circuit with the secondary coil of said converter, an auxiliary converter whose primary coil is in circuit with said main line and whose secondary coil is in circuit with said lamps, a cut-out in circuit with the primary coil of each converter, and automatic means for opening said cut-out in the auxiliary converter and closing that in the said first converter upon a predetermined increase of current in the secondary coil of said auxiliary converter.

6. In a system of electrical distribution, the combination of a generator of alternating, pulsating, or intermittent currents, main lines in circuit therewith, including translating devices, such as converters, domestic or supply lines forming secondary circuits for said translating devices, an automatic circuit-controller interposed between translating devices and supply-circuit, having two or more windings independent of one another, and having one of its windings in electric connection with the secondary circuit of said translating devices, for the purpose described.

7. In a system of electrical distribution, the combination of a generator of alternating, pulsating, or intermittent currents, main lines in circuit therewith, translating devices, such as converters, in electric connection with said main lines, an electro-magnetic cut-out provided with two or more independent windings adapted to temporarily connect said translating devices to the main line, and having one of its windings forming a part of one of the circuits of the translating devices, for the purpose described.

446,516. DOOR-HANGER. EPHRAIM A. HALDEMAN, Chicago, Ill. Filed Sept. 3, 1888. Serial No. 284,503. (No model.)



Claim.—1. A door-hanger consisting of suspending-arms in pairs, each pair swinging from its own fixed pivotal point and connected at their free ends with a movable object, whereby the object, as a door, may be slid back and forth in a straight line of travel without changing the points of attachment of the suspending-arms, substantially as and for the purpose described.

2. A door-hanger consisting of suspending-arms in pairs, the arms of each pair swinging from a pivot common to both arms of the pair, and a pivotally-connected radial link which limits and regulates the movements of the arms in a straight plane, substantially as and for the purposes specified.

3. A door-hanger consisting of two pairs of suspending-arms, each pair at the upper end swinging from a pivot, and each pair radiating from its pivotal point and attached at the lower end to a movable object, and connected with each other and the movable object by a radial link and a series of links, whereby the arms move simultaneously and in a straight plane, substantially as and for the purpose described.

4. In a door-hanger, the combination, with two pairs of similar arms, each pair connected at the upper end to a fixed pivotal point forming suspending-arms in pairs and connected at their lower ends one with the other and with a movable object, whereby the plane of the movement is always horizontal, substantially as and for the purpose described.

5. A door-hanger consisting of primary suspending-arms in pairs, each pair swinging from a fixed pivotal point and each pair pivotally

connected with a compensating parallelogram formed of pivoted links, pivoted auxiliary links, pivoted supplemental links, and fixed pivotal points for the parallelogram and supplemental links, substantially as and for the purpose specified.

6. A door-hanger consisting of suspending-arms in pairs, each pair swinging from a fixed pivotal point, and a series of links connected one with the other and with the suspending-arms by pivots and swinging from a stationary pivot on a door, and a radial link connecting the series of links with one pair of suspending-arms for carrying the door in a straight horizontal plane in opening and closing, substantially as specified.

7. The combination, in a door-hanger, of two pairs of suspending-arms, each pair swinging from a fixed pivotal point, with a series of links pivotally connected one with the other and with the suspending-arms and swinging from pivotal points on the door, and a short radial arm between the series of links and the suspending-arms and swinging from the pivot of one pair of arms, substantially as and for the purpose specified.

8. A door-hanger consisting of a movable support carrying fixed pivots, arms in pairs, each pair swinging from a fixed pivot of the movable support, and pivoted connecting-links between the suspending-arms and the door, substantially as and for the purpose specified.

9. The arms a a' and pivotal point a'', in combination with the links c d d' e and pivots f'', f^3, f^4, and f^5, substantially as and for the purpose specified.

10. The arms a a', pivot a'', arm b, and pivot b^2, in combination with the links c c' d e and pivots f'', f^3, f^4, and f^5, substantially as and for the purpose specified.

11. The arms a a', pivot a'', arms b b' b'', and pivot b^2, in combination with the links c c' d e d' d'' c'' e', and pivots f'', f^3, f^4, f^5, f^6, and f^7, substantially as and for the purpose described.

12. A movable support carrying a door, in combination with a sliding bar, and links connecting the support with the door-frame and with the sliding bar, for moving the door into and out of its opening, substantially as specified.

13. A movable support carrying a hanger for a door, in combination with a movable bar, and connecting-links between the movable bar and the support and the door-frame and the support, substantially as and for the purposes specified.

14. The support G, connected with a door-frame by links j, in combination with the sliding bar H and connecting-links k, substantially as and for the purpose specified.

15. The support G and links j, in combination with the sliding bar H, with rack h, links k, pinion J, and stem J', substantially as and for the purpose specified.

16. The support G, links j, sliding bar H, and links k, in combination with the door C, arms a a' b b' b'', pivots a'' b^2, and a series of links pivotally connected with the arms and with the door C, substantially as and for the purpose specified.

17. The movable support G and lug l, having a notch l', in combination with the door C and guide-strip D, substantially as and for the purpose specified.

18. The movable support G and plates m, having the groove m', in combination with the door C and guide-pins m'', substantially as and for the purpose specified.

19. The sliding support G, in combination with the door C, plates m, with grooves m' and pins m'', and the lug n, with a notch n', substantially as and for the purposes specified.

20. The door C, guide-strips D and E, lugs n, each having a notch n' and lugs o, each having a notch o', in combination with the arms a a' b b' b'', pivots a'' b^2, links c c' c'' d d' d'' e e', and pivots f', f^3, f^4, f^5, f^6, and f^7, substantially as and for the purposes specified.

21. The combination, in a door-hanger, of a compensating parallelogram formed of links pivoted one to the other and interposed between a door and suspending-arms in pairs, a door, and suspending-arms in pairs, each pair swinging from a fixed pivotal point, substantially as and for the purpose specified.

22. The combination, in a door-hanger, of a compensating parallelogram formed of links pivoted one to the other and to the door, auxiliary links pivoted to the parallelogram, and supplemental links pivoted to the auxiliary links and to the door, substantially as and for the purpose specified.

23. The combination, in a door-hanger, of pivoted swinging arms, a compensating parallelogram formed of links pivoted one to the other and to the door, auxiliary links pivoted to the parallelogram, and supplemental links pivoted to the auxiliary links and to the door, substantially as and for the purpose specified.

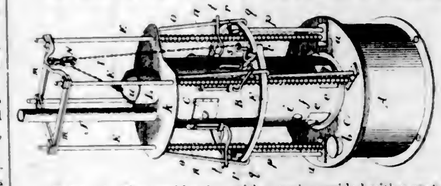
24. A door-hanger consisting of a series of four long arms or links a a' b' b'', suspended from a support by pivots and carrying the series of shorter links c d d' e and d' d'' c'' e', pivotally connected one to the other and connected to the support by a link b, substantially as and for the purpose described.

25. In a door-hanger, the combination of long arms or links a a' b' b'' and the short link b, carrying the series of links c d c' e d' d'' c'' e and the plate f and operating to cause the movement of any point or points in said plate to be in straight parallel lines, substantially as and for the purpose specified.

26. The combination, in a door-hanger, of four long arms or links suspended in pairs by pivots from a support, a series of short links pivotally connected with each other and the said long arms or links and with the said support at the pivotal point of the lower pair of long arms or links and interposed between the door and the support, substantially as and for the purpose specified.

27. The combination, in a door-hanger, of the support G and the door-plate f, attached to the door and connected by the interposing arms and links a a', suspended and radiating from said support by means of a pivot a'', and links of corresponding length b' b'', suspended and radiating from the support by means of the pivot b^2, said upper pair of arms a a' having their lower ends connected by links c' d, and said lower pair b' b'' having their lower ends connected by links c'' d'', said corresponding upper and lower pairs connected by links d c' and door-plate f, and said upper system a a', d c', and d c', connected by links c e and pivots f'' and f^3, and to the said support by link b and pivots f^3 and b^2, substantially as and for the purpose specified.

446,517. STOVE FOR HEATING CARS. ROBERT F. HARRIS, East Sharon, Pa. Filed June 14, 1890. Serial No. 355,480. (No model.)



Claim.—1. The combination, with a tank provided with a central opening in the top, of a stove in position in said opening, a series of removable jointed braces adapted to support said stove, a band connected with and extending about said braces, the extremities of said band being detachably connected, and a series of springs adapted to draw said stove downward, substantially as and for the purposes described.

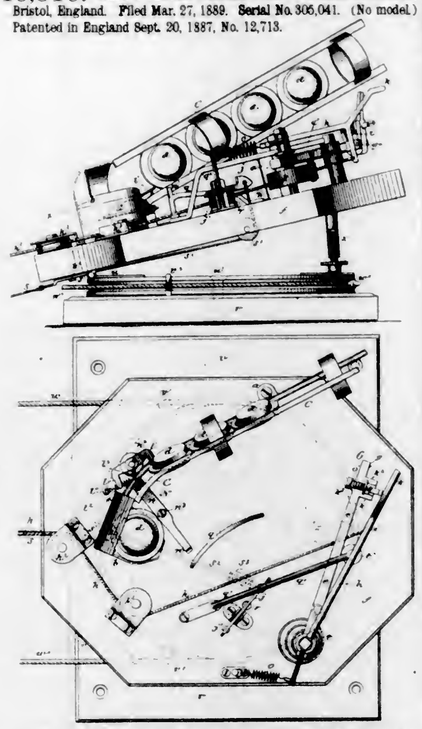
2. The combination, with the tank provided with a central opening, of a stove B, provided with flanges at its top and bottom and draft-openings, guide-rods with springs thereon, a series of jointed rods o p, adapted to support the stove in its raised position, a band F, connected with said rods and provided with a securing-pin v, and a weight loosely mounted in a vessel on said stove and provided with a chain which is passed over a pulley and connected with said securing-pin, substantially as and for the purposes described.

446,518. INDIA-RUBBER WATER-BAG. ALBERT A. HESSER, Schuylkill Haven, Pa. Filed Nov. 28, 1888. Serial No. 292,164. (No model.)



Claim.—A water-bag of triangular or wedge shape, formed with filling-opening E and side folds deepest where united to end piece D and vanishing near meeting edge of the two sides, and also with a fold in the flat end D, thus permitting the bag when filled to stand upon said end D and to lie flat when empty, all as and for the purpose described.

446,519. SELF-FEEDING TARGET-TRAP. GEORGE H. HOCKEY, Bristol, England. Filed Mar. 27, 1889. Serial No. 305,041. (No model.) Patented in England Sept. 20, 1887, No. 12,713.



Claim.—1. In a target-thrower, the combination, with a magazine, of a pivoted throwing-arm provided at its free end with a jaw for receiving and retaining a target, and a cocking-bar for swinging said throwing-arm and opening said jaw, substantially as set forth.

2. In a target-thrower, the combination, with a magazine, of a spring-actuated throwing-arm provided at its free end with a jaw for receiving and retaining a target, a cocking-bar adapted to open said jaw, and a pawl for holding said throwing-arm in its set or cocked position.

3. In a target-thrower, the combination, with a pivoted throwing-arm provided at its free end with a spring-actuated jaw, of a pivoted cocking-bar having its free end arranged to bear against and open said jaw, a spring-actuated pawl for holding or retaining the said throwing-arm in its set or cocked position, and springs secured to said throwing-arm and cocking-bar for returning them to their normal positions.

4. In a target-thrower, the combination, with a magazine, of a pivoted throwing-arm provided at one end with a jaw, a cocking-bar, a pawl for holding the throwing-arm in its set or cocked position, and a stop located near said magazine for delivering the targets to said throwing-arm one at a time, substantially as set forth.

5. A target-thrower constructed with a magazine or chute consisting of two grooved rails, one above the other, in which grooves the targets travel and are retained in their upright position, and a receptacle into which said grooved rails lead and into which the targets drop into a horizontal position from said rails, substantially as described.

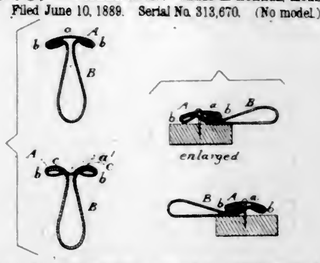
6. In a target-thrower, the combination, with a magazine or chute leading into a receptacle at its lower end, of a throwing-arm having a jaw formed on its free end adapted to move toward and grasp the target located in said receptacle, the cocking-bar h, adapted to operate said jaw and move said throwing-arm, the pawl j, located below said throwing-arm when the latter is in position to receive a target, and the check located beside said magazine for the purpose of controlling the exit of the targets from said magazine, substantially as set forth.

7. A target-thrower constructed with a throwing-arm e, pivoted at one end to the base f and having secured at its opposite end the lower jaw g', the latter being extended and formed into the finger or tail-piece g^3, which latter has the spring o' bearing against it for holding said lower jaw in its closed position.

8. In a target-thrower, the combination, with a throwing-arm, of a spring-actuated pawl for holding the latter in its cocked position, a slotted link s', and a pin t^3, passing through the slot in the link and into the base, and a connecting device between the pawl and said link, substantially as described.

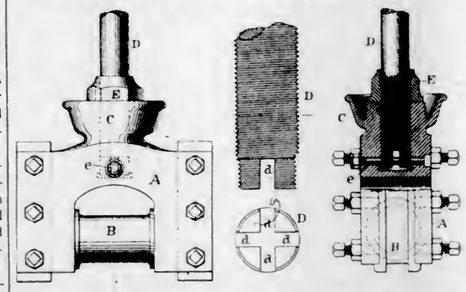
9. In a target-thrower, the combination of a table v, having pivoted thereon a turn-table w', carrying the base of the thrower and fitted with cords w and w', passing through guides v' and v^3, whereby the base or stand carrying the thrower can be moved on its axes to the right or left by an operator holding the free ends of said cords, substantially as hereinbefore described.

446,520. WEATHER-STRIP. JAMES H. HUMMEL, Mount Vernon, N. Y. Filed June 10, 1889. Serial No. 313,670. (No model.)



Claim.—As a weather-strip, an arched metallic base having its edges turned or bent inward, combined with an elastic body having the form of a loop with its edges turned or bent outward in opposite directions, the respective outwardly-turned edges of the elastic body extending and being clamped between the main body of the arched metallic base and its respective inwardly-turned edges, the construction being such that only one thickness of elastic body is clamped between the main body of the metallic base and each of its inwardly-turned edges, substantially as specified.

446,521. DEVICE FOR FASTENING ADJUSTABLY PISTON-RODS OR OTHER RODS TO THEIR CROSS-HEADS. JEAN HUNDEBURTH, New York, N. Y. Filed Sept. 1, 1890. Serial No. 363,651. (No model.)



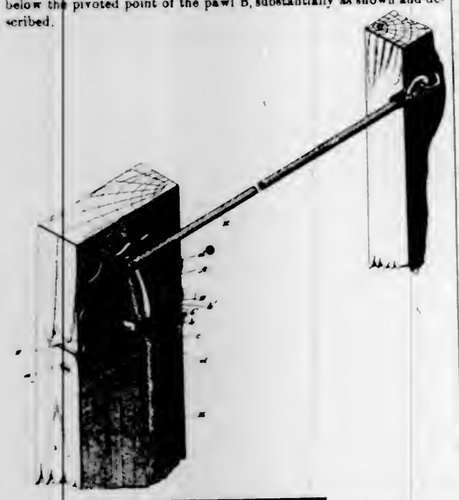
Claim.—1. A locking device for adjustable rods, consisting of a rod slotted or slitted and having a threaded end, in combination with a part having a correspondingly-threaded socket or opening into which said rod is screwed, the part having such socket being provided with an opening transversely to the same, and a bolt or key passed through said opening and through said slotted portion of the rod, substantially as and for the purpose set forth.

2. In locking devices for piston-rods, the combination of a rod having a threaded end and transverse slots or grooves, a cross-head having a threaded socket or opening into which said rod is screwed, said cross-head being also provided with an opening transversely to its threaded socket, and a bolt or pin passed through the opening in said cross-head and through one of the slots or openings in the piston-rod, whereby said rod may be adjusted and secured, substantially as set forth.

446,522. CLOTHES-LINE HOLDER. JOHN HUTH and GEORGE REX, Canton, Ohio. Filed Nov. 20, 1889. Serial No. 331,000. (No model.)

Claim.—The combination of the supporting-plate A, provided with the flange or side extension a, the pawl B, pivotally attached to the plate A and provided with the extension c and the groove d^3, the locking-post D, provided with the groove d', and the stop-pin b, located

below the pivoted point of the pawl B, substantially as shown and described.

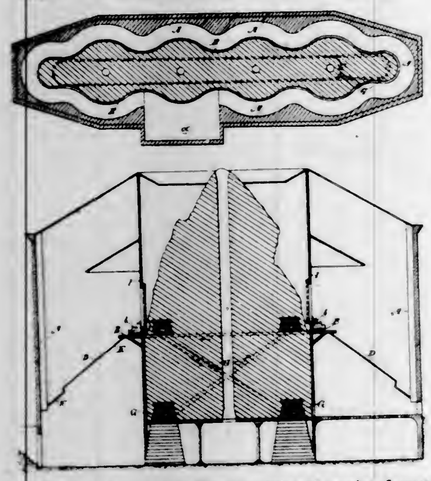


446,523. **STAPLE.** HERBERT H. JESTER, Boulder, Colo. Filed Oct. 6, 1890. Serial No. 367,241. (No model.)



Claim.—A staple having oppositely-sharpened legs 2 2, a swelled head 4, connected said legs, a stem 5, secured to said head, and a head 4, formed on said stem, substantially as described.

446,524. **PANORAMIC DEVICE.** EZRA W. KEELER, San Francisco, Cal. Filed June 18, 1890. Serial No. 355,892. (No model.)



Claim.—1. A panoramic device consisting of a series of curved arcs with pictorial representations displayed thereon, a track corresponding in curvature with the arcs, and cars or platforms movable upon said track, so as to pass the views successively, substantially as herein described.

2. A panoramic device consisting of a series of arcs forming continuous and independent surfaces with pictorial representations displayed thereon, a track fixed upon interior or exterior lines with relation to the views and having a curvature concentric with that of the arcs, so as to maintain a constant distance therefrom, and cars or platforms movable upon said track, so that a proper visual angle to the pictures is obtained, substantially as herein described.

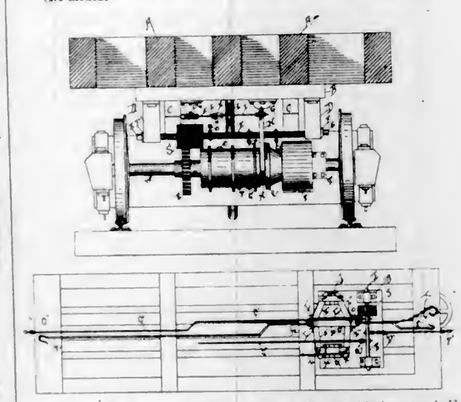
3. A panoramic device consisting of a series of curved arcs forming continuous and independent surfaces with pictorial representations displayed thereon, a track corresponding in curvature and concentric with said arcs, cars or platforms movable upon said track, and a protecting hood or roof supported above the pictures and the line of the track, substantially as herein described.

4. A panoramic device consisting of walls forming a series of independent concave arcs with pictorial representations displayed thereon, a central or interior structure in form of a mountain with rocks and trees, an intermediate track skirting said mountain with curves concentric with the pictorial surfaces, and cars or platforms movable upon said track and adapted to convey spectators, substantially as herein described.

5. A panoramic device consisting of walls forming a series of independent concave arcs with pictorial representations displayed thereon, a central interior structure in form of a mountain with rocks and trees thereon, a tunnel or tunnels traversing the interior of said structure, with tracks and cars for the transportation of passengers, a track skirting the outer sides of the mountain in curves concentric with those of the pictorial surfaces, and cars or platforms adapted to convey passengers and movable upon said tracks, substantially as herein described.

6. The exterior walls having pictures suspended upon them, a central mountainous structure, a line of tracks intermediate between the central structure and the outer walls, and a roof or roofs covering the space above the tracks and the room containing the pictures, in combination with movable walls or partitions extending from the roof between the track and the interior structure and constructed to be opened or closed, substantially as herein described

446,525. **AUTOMATIC CAR-BRAKE AND BRAKE-GOVERNOR.** BENJAMIN KELLOGG, Peoria, Ill. Filed Jan. 2, 1890. Serial No. 335,717. (No model.)



Claim.—1. In combination, in a car-brake, the friction-clutch U T, the cog-wheel R, the cog-wheel S, the reel-shaft E, the collars F F, the hangers D D, and the chains, rods, and chains O P Q O″ P″ Q″, all substantially as set forth herein.

2. In combination, in a car-brake, the friction-disk clutch U T, the cog-wheel R, the cog-wheel S, the reel-shaft E, the collars F F, the hangers D D, and the chains, rods, and chains O P Q O″ P″ Q″, Fig. 1, all substantially as set forth and described herein.

3. In combination, in a car-brake, the friction-clutch T U, the clutch-arm binged hanger H G *c*, the rigid hanger J, the broken levers I I′ I″ I‴, the bolts *a b*, *a′ b′*, and *v v′*, the angle-irons L, the link K, and the rods M M′, with the hooks and chains thereto attached, all substantially as set forth and described herein.

4. In combination, in a car-brake, the friction-disk clutch T U, the clutch-arm binged hanger H G *c*, the rigid hanger J; the broken levers I I′ I″ I‴, the bolts *a b*, *a′ b′*, and *v v′*, the angle-irons L, the link K, and the rods M M′, with the hooks and chains thereto attached, Fig. 1, all substantially as set forth and described herein.

5. In combination, in a car-brake, the friction-clutch T U, Fig. 1, the chains O′ P′ Q′, and the rods O″ P″ Q″, with the chains attached thereto, all substantially as set forth and described herein.

6. In combination, in a car-brake, the friction-disk clutch T U, the chains O′ P′ Q′, the rods O″ P″ Q″, and the chains thereto attached, all substantially as set forth and described herein.

7. A car-brake consisting of the mechanism herein shown, being the bracket J, the levers I I′ I″ I‴, the hinged clutch-arm hanger G H *c*, the bolts *a b a′ b′*, the angle-irons L, the rods M M′, with the hooks and chains thereto attached, the friction or disk clutch T U, the cog-wheels R S, the reel-shaft E, the collars F F, the hangers D D, the chains O P Q, and the rods and chains O″ P″ Q″, all substantially as set forth herein.

8. A car-brake consisting of the mechanism shown herein, being the bracket J, the levers I I′ I″ I‴, the hinged clutch-arm hanger G H *c*, the bolts *a b a′ b′*, the angle-irons L L, the rods M M′, with the hooks and chains attached thereto, the friction or disk clutch T U and the chains O P Q thereto attached, and the chains O″ P″ Q″, with the chains attached thereto, all substantially as hereinbefore set forth.

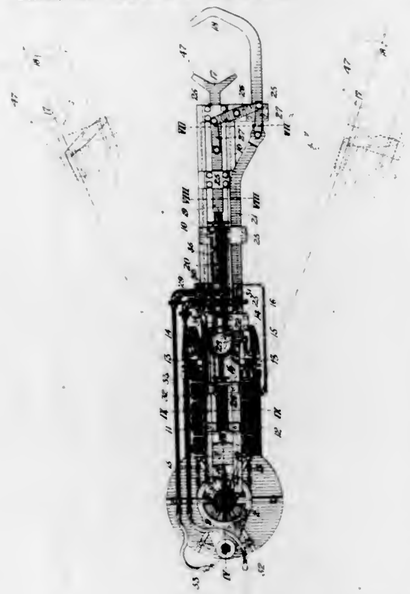
9. In the herein-described car-brake, the collar *x*, the spring *y*, and the guide-block *z*, as shown in Fig. 10, all as and for the uses and purposes hereinbefore set forth.

10. In the herein-described car-brake, the spring Z, Fig. 2, in combination with the hanger H H, for the use and purpose hereinbefore set forth.

11. An automatic brake governor consisting of the double piston *l*, the bent arm *f*, with set-screw and having the valve thereto attached, the vertical acting rod, with the valve thereto attached, the lever *h*, the fulcrum-bracket *i*, and the rod *j*, attached to and working in combination with the car-trucks, substantially as herein set forth.

12. The governor-valve consisting of the metal rings *o p*, the collar *q*, the rubber ring *n*, and the threaded nut *r*, combined and operating substantially as herein set forth.

446,526. **MILL APPLIANCE.** JULIAN KENNEDY, Latrobe, Pa. Filed Dec. 30, 1889. Serial No. 335,359. (No model.)



Claim.—1. In apparatus for gripping and conveying metal pieces, the combination of a movable carrier or jib, oppositely-movable grippers mounted thereon and having opposite angular faces shaped to afford an angular cavity for receiving and centering an interposed metal piece, a motor which actuates the grippers, and connecting mechanism by which the grippers are connected and caused to move to an equal extent, substantially as and for the purposes described.

2. In apparatus for gripping and conveying metal pieces, the combination of longitudinally-acting shanks having horizontal gripping-jaws, and a motor which causes the jaws to approach and diverge, substantially as and for the purposes described.

3. In apparatus for gripping and conveying metal pieces, the combination of a horizontally-movable jib and gripping-shanks mounted thereon and having jaws projecting horizontally therefrom and open at one side, whereby by horizontal motion of the jib the metal piece may be inclosed between the jaws, substantially as and for the purposes described.

4. In apparatus for gripping and conveying metal pieces, the combination of longitudinally-movable shanks having horizontal angular gripping-jaws, a motor by which the shanks are moved longitudinally, and connecting mechanism by which the grippers are connected and caused to move simultaneously to an equal extent, substantially as and for the purposes described.

5. The combination, with the jib, of grippers carried thereby and power-driven plungers by which the gripper-jaws are individually moved, substantially as and for the purposes described.

6. The combination, with the jib, of grippers carried thereby and a hydraulic cylinder having oppositely-projecting plungers connected with the gripper-jaws, substantially as and for the purposes described.

7. The combination, with the jib, of grippers carried thereby, a hydraulic cylinder having oppositely-projecting plungers connected with the gripper-jaws, mechanism connecting the jaws and causing them to move symmetrically, and a retracting-cylinder for opening the jaws, substantially as and for the purposes described.

8. In apparatus for gripping and conveying metal pieces, the combination of longitudinally-movable shanks having horizontal gripping-jaws provided with oppositely-projected spurs by which the piece may be grasped pivotally to permit it to swing into a vertical position, substantially as and for the purposes described.

9. The combination of the vertically and radially movable jib, a motor carried thereby and connected with a place of attachment vertically movable with the jib, but otherwise stationary, whereby by operation of a motor the jib may be swung on its axis, substantially as and for the purposes described.

10. The combination, in a crane, of an upright cylinder and plunger, one of which is vertically movable and rotary, of a jib projecting from the vertically-movable part, a mast also projecting vertically therefrom, and a top steadiment through which the mast is movable longitudinally and in which it is rotatory, substantially as and for the purposes described.

11. In a crane, the combination of the vertically and radially movable jib and mast, an upright guide-post, a vertically-movable guide-block mounted on the post and secured to the mast, permitting rotation on its vertical axis, and turning cylinders mounted on the jib and having flexible connections with the guide-block, substantially as and for the purposes described.

12. In a crane, the combination of the vertically and radially movable jib and mast, an upright guide-post, a vertically-movable guide-block mounted on the post and secured to the mast, permitting rotation on its vertical axis, and turning cylinders mounted on the jib and having flexible connections with a sheave-shaped portion of the guide-block, substantially as and for the purposes described.

13. The combination of the vertically and radially movable jib having grippers thereon, cylinders for raising and swinging the jib and operating the grippers, and valves carried by the jib and controlling said cylinders, substantially as and for the purposes described.

14. In apparatus for gripping and conveying metal pieces, the combination, with a radially and horizontally movable jib, of a motor fixed to the jib and carried thereby, metal grippers also carried by the jib and connected with the motor, by which they are moved in opposite directions to or from each other, and mechanism connecting the grippers and causing them to move simultaneously to an equal extent, whereby in every position of the grippers the central point between their jaws and the central point of the piece grasped thereby shall be constant relatively to the jib, substantially as and for the purposes described.

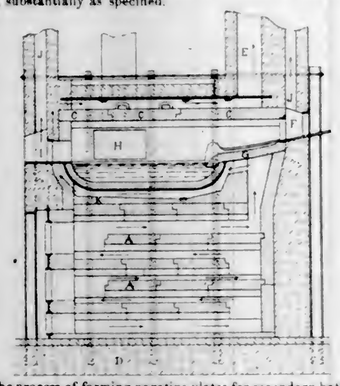
15. In a crane, the combination of a vertically-movable jib, a cylinder by which the jib is raised, a mast movable vertically with the jib, and a top bearing or steadiment through which the mast is movable vertically and in which it is rotatory, substantially as and for the purposes described.

446,527. **SECONDARY BATTERY.** ARTHUR M. F. LAURENT-CÉLY, Paris, France, and ILLIUS A. TIMMIS, London, England. Filed Apr. 8, 1890. Serial No. 347,111. (No model.)

Claim.—1. The process of forming material for secondary-battery plates, consisting in fusing or melting chloride of lead, adding metallic zinc thereto, and subsequently running the mass into a large receiver and allowing the impurities of the mixture to fall to the bottom of receiver, substantially as specified.

2. The process of forming positive plates for secondary batteries, consisting in fusing or melting chloride of lead, adding metallic zinc to said chloride of lead, forming the mass in suitable molds, and subsequently washing the formed plates in concentrated hydrochloric acid, substantially as specified.

3. The process of forming positive plates for secondary batteries, consisting in first fusing or melting chloride of lead and metallic zinc, then forming the same in suitable molds, then washing the formed plates in concentrated hydrochloric acid, then reducing the plates to litharge, and then forming a frame-work of antimonious lead around the plates, substantially as specified.

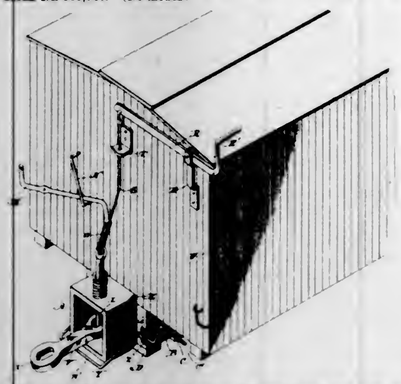


4. The process of forming negative plates for secondary batteries, consisting in first fusing or melting chloride of lead, then adding metallic zinc thereto, then forming the same in suitable molds, then washing the formed plates in concentrated hydrochloric acid, then forming a frame-work of antimonious lead around the plates, and subsequently reducing the plates to cellular lead, substantially as specified.

5. The process of forming plates for secondary batteries, consisting in fusing or melting chloride of lead and metallic zinc, pouring the mass into a receiver lined with or made of a refractory material faced with a protecting stratum of ordinary lead, and subsequently pouring the mixture into a suitable mold and washing the material thus formed in concentrated hydrochloric acid, substantially as specified.

6. The process of forming plates for secondary batteries, consisting in fusing or melting chloride of lead and metallic zinc, then forming said mass into plates, and subsequently coupling the plates in sets and in short-circuit in a vat containing a solution of water and hydrochloric acid, substantially as specified.

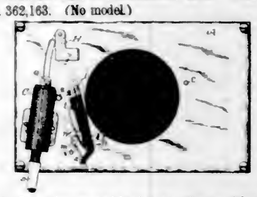
446,528. CAR-COUPLING. BENJAMIN T. LAWS, Valden, Miss., assignor of one-half to A. B. Fullilove, same place. Filed Sept. 23, 1890. Serial No. 365,916. (No model.)



Claim.—1. The car having the pair of plates B and the cross-bars D, connecting them on their lower sides, in combination with the draw-head having the rib C, arranged between the bars D, and the shoulder E, bearing against the end of the car, the buffer F in the draw-head, having the stem G, a plate G' bolted to the inner end of the draw-head and forming a guide for them, the caps H, bolted to the inner end of the latter, the buffer-spring I on the said stem, the coupling-link, and the pin, substantially as described.

2. The car having the draw-head, the coupling-pin, the levers M and R, pivoted near opposite sides of the car, said lever R being near the top of the car and having the pedal R' at its lower end, the chain U, attached to said lever for the purpose set forth, and the link O and rod S, connecting the levers M R to the coupling-pin, respectively, all arranged and adapted to operate substantially as described.

446,529. PHOTOGRAPHIC SHUTTER. GARRETT W. LOW and WILLIAM SHAKESPEARE, Jr., Kalamazoo, Mich. Filed Aug. 16, 1890. Serial No. 362,163. (No model.)



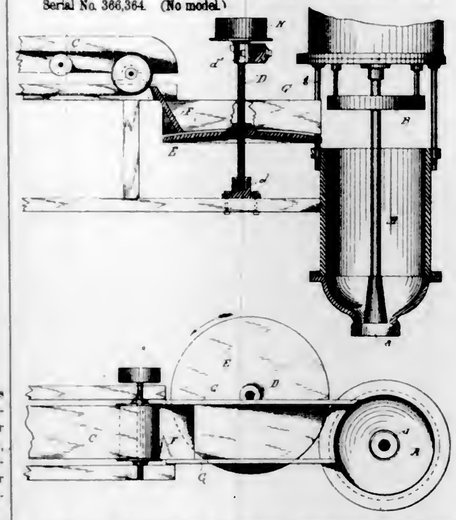
Claim.—1. In a photographic shutter, the combination of the two slides, a centrally-pivoted double lever attached to and adapted to open the slides during its oscillation in one direction and to close them during its oscillation in the opposite direction, a pivoted lever-plate connected with and adapted during its movement in one direction to impart both of the oscillating movements to the double lever, and means for operating the lever-plate, substantially as set forth.

2. In a photographic shutter, the combination of the centrally-pivoted double lever having the end projections and the projections each side of its pivot, the pivoted lever-plate, the pivoted dog connecting with a projection of said lever-plate and with the projection which is on the double lever, said lever-plate being also provided with an extension adapted to engage one of the side projections of said double lever during the lateral swing of the lever-plate, and the slides or shutters forming a cam engagement with the end projections of the double lever, substantially as set forth.

3. In a photographic shutter, the combination of the slides, the double lever for operating them, the pivoted lever-plate, the pivoted dog joined to the double lever and having a shoulder in position to be engaged by a projection of the lever-plate, and a projection on the case adapted to trip the dog and disengage said projection, substantially as set forth.

4. In a photographic shutter, the combination of the slides, the lever-plate having the pin to engage the dog, the pivoted double lever having the pin for engaging with the lever-plate, said lever-plate provided with the extension for engaging the pin of said double lever, and the pivoted dog forming a connecting-link between the double lever and lever-plate and adapted to trip, as stated, substantially as set forth.

446,530. APPARATUS FOR DELIVERING CLAY TO SEWER-PIPE PRESSES. ELIJAH T. MAPEL, Alameda, Cal. Filed Sept. 27, 1890. Serial No. 366,364. (No model.)



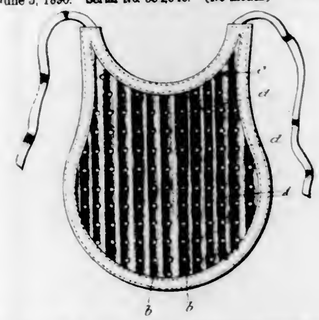
Claim.—1. An apparatus for delivering clay to sewer-pipe presses, consisting of a vertical shaft, a downwardly-curved wheel mounted thereon, and means to rotate the same, substantially as set forth.

2. An apparatus for delivering clay to sewer-pipe presses, comprising a rotatable downwardly-curved wheel, a chute thereabove, and guides to confine the clay dumped upon said wheel, so as to compel its escape in one direction, substantially as set forth.

3. The combination, with a sewer-pipe press, of a conveyer and an intermediate downwardly-curved wheel adapted to transmit the clay from said conveyer to said press by centrifugal force, substantially as set forth.

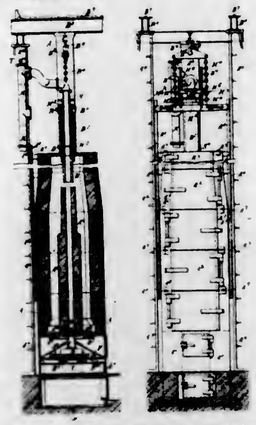
4. In an apparatus for delivering clay to sewer-pipe presses, the combination of a conveyer, a chute thereunder a rotatable downwardly-curved wheel below said chute, and guides running from each side of said chute across the face of said wheel, substantially as set forth.

446,531. CHEST-PROTECTOR. BURR T. MASON, Phœnix, N. Y. Filed June 5, 1890. Serial No. 354,340. (No model.)



Claim.—A chest-protector, as a new article of manufacture, constructed of paper and provided with corrugations and openings in that portion of the corrugations coming next to the body, substantially as described, for the purposes as set forth.

446,532. PROCESS OF AND APPARATUS FOR HARDENING ORDNANCE. HIRAM S. MAXIM, London, England. Filed June 17, 1889. Serial No. 314,654. (No model.) Patented in England Sept. 20, 1888, No. 13,624; in France Feb. 13, 1889, No. 195,070; in Belgium Feb. 15, 1889, No. 84,735; in Austria-Hungary Mar. 20, 1889, No. 4,996; in Spain Apr. 1, 1889, No. 9,142; in Italy Apr. 23, 1889, No. 24,799, and in Germany Sept. 7, 1889, No. 48,506.



Claim.—1. The herein-described method of hardening or tempering heavy guns or ordnance, consisting in first heating the gun while rotating it about its longitudinal axis and then cooling the same from the interior by very rapidly forcing into and through it, by means of compressed air, a volume of the cooling medium larger than is required to fill the bore of the gun, and then maintaining a slower circulation of the said cooling medium through the gun while the exterior of the said gun is subjected to heat, for the purpose above specified.

2. The combination, with the furnace composed of easily-detachable sections, as above described, and means for supporting a gun therein, of an inlet-pipe for introducing a cooling medium into the gun and a discharge-pipe for the same provided with branches at distances apart corresponding to the length of the sections of the furnace, substantially as set forth.

3. The combination, with the furnace, of a hollow turn-table provided with a hollow vertical spindle for supporting a gun in the said furnace, a pipe extending through a stuffing-box in the said turn-table for the supply of the cooling medium to the bore of the gun, a tube adapted to be secured at its lower end to the upper end of the gun, and a pipe extending through a stuffing-box at the upper end of the said tube for the discharge of the cooling medium, substantially as and for the purposes set forth.

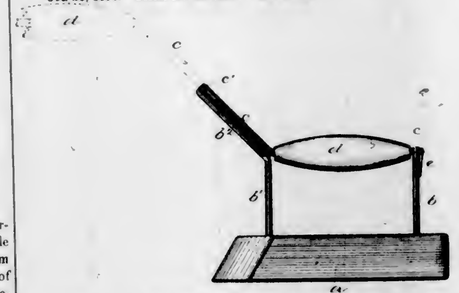
4. The combination, with the furnace, of an accumulator for containing the cooling medium and compressed air for forcing the same through the bore of the gun, a hollow turn-table provided with a hollow vertical spindle for supporting the gun in the said furnace, a pipe connected with the said tank or accumulator and extending through a stuffing-box in the said turn-table, a tube adapted to be secured at its lower end to the upper end of the gun, and a pipe extending through a stuffing-box at the upper end of the said tube for the discharge of the cooling medium, substantially as and for the purposes set forth.

5. The combination, with the furnace, of an accumulator for containing the cooling medium and compressed air for forcing the same through the bore of the gun, a pump connected with the said accumulator for maintaining the flow of the cooling medium through the gun, a hollow turn-table provided with a hollow vertical spindle for supporting the gun in the said furnace, a pipe connected with the said tank or accumulator and extending through a stuffing-box in the said turn-table, a tube adapted to be secured at its lower end to the upper end of the gun, and a pipe extending through a stuffing-box at the upper end of the said tube for the discharge of the cooling medium, substantially as and for the purposes set forth.

6. The combination, with the furnace, of an accumulator for containing the cooling medium and compressed air for forcing the same through the bore of the gun, a pump connected with the said accumulator for maintaining the flow of the cooling medium through the gun, a hollow turn-table provided with a hollow vertical spindle for supporting the gun in the said furnace, a pipe connected with the said tank or accumulator and extending through a stuffing box in the said turn-table, a tube adapted to be secured at its lower end to the upper end of the gun, and a pipe extending through a stuffing-box at the upper end of the said tube for the discharge of the cooling medium, and an apparatus for cooling the liquid after its passage through the barrel, substantially as and for the purposes set forth.

7. The combination of the furnace composed of easily-detachable sections A A, arranged one above another and provided with doors A^3, the hollow turn-table D, provided with the hollow vertical spindle C, for supporting a gun in the said furnace, the pipe G, extending through a stuffing-box in the said turn-table for the introduction of the cooling medium into the bore of the gun, the socket B', adapted to be secured to the upper end of the gun, the tube B^3, attached to the said socket, the pipe H, extending through a stuffing-box at the upper end of the said tube for the discharge of the cooling medium, a pipe K, provided with branches K', at distances apart corresponding to the length of the sections of the furnaces, and the pipe J, for connecting the pipe H with one or other of the said branches K', substantially as and for the purposes set forth.

446,533. SAD-IRON. DANIEL H. MURPHY, Hartford, Conn. Filed Oct. 28, 1890. Serial No. 369,553. (No model.)

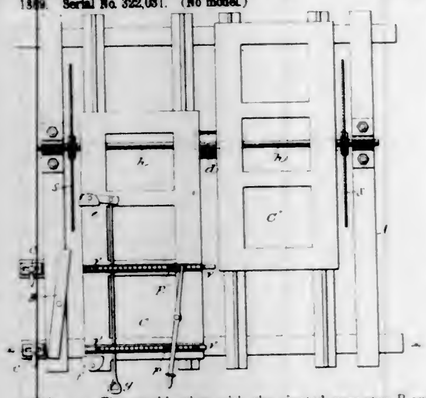


Claim.—1. A sad-iron consisting of a base having handle-supports, one of which is provided with an outward extension, and a handle hinged to the end of the extended support and adapted to swing into or out of engagement with the other support, substantially as specified.

2. A sad-iron consisting of a base having handle-supports, one of

which is provided with an outward extension, a handle hinged to the end of the extended support and adapted to swing into or out of engagement with the other support, and a spring-catch adapted to hold the free end of the handle in engagement with its support, substantially as specified

446,534. SHINGLE AND PICKET SAWING MACHINE. JOHN B. NOLIN and MATTHEW G. YOUNG, New Pittsburg, Ohio. Filed Aug. 26, 1889. Serial No. 322,031. (No model.)

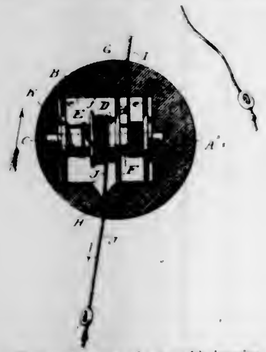


Claim.—1. The combination, with the pivoted gage-stop B and carriage C, of the dogs *v*, the dogs provided with ratchets and operated alternately by means of pawls *p* upon a common lever, substantially as shown.

2. The combination, with the pivoted gage-stop B and alternating feed-dogs *v*, of the pivoted end stops *e f*, substantially as shown, and for the purpose specified.

3. In a shingle and picket machine constructed as shown and described, the combination, with the two saws *s s* upon a common shaft, of two carriages C C, located adjacent to the saws, respectively, and operated independently of each other, substantially as shown, and for the purpose specified.

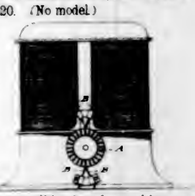
446,535. PUZZLE-BALL. ALBERT A. OUTERBRIDGE, Philadelphia, Pa. Filed Dec. 20, 1889. Serial No. 334,399. (No model.)



Claim.—1. The combination of a movable housing, a differential drum consisting of two distinct portions of similar diameter and a third portion of a different diameter, and a pair of cords connected with different portions of said drum, respectively, and adjusted so as to be wound in opposite directions thereon, said cords being suitably arranged to pass freely through the housing, and one of said cords being arranged with such relation to two differential portions of said drum as to be capable of being wound on either of said portions at will, substantially as set forth.

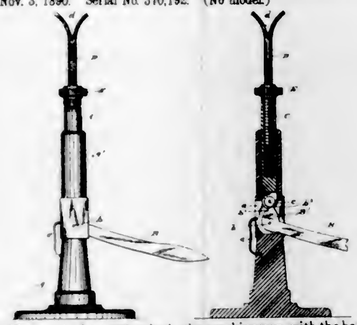
2. The combination of a movable housing, a differential drum journaled therein, said drum having two distinct portions of similar diameter and a third portion of a different diameter, separating flanges between said portions, one of said separating flanges being of comparatively slight depth, and a pair of cords respectively connected with different portions of said drum and adjusted so as to be wound in opposite directions and to pass freely through the housing on opposite sides, the entrance and passage of one of said cords being so arranged with reference to said low flange as to permit said cord to be thrown over it and coiled on portions of the drum on either side thereof at the will of the operator, and the entrance and passage of the other cord being so arranged as to permit it to coil only on the remaining portion of the drum, substantially as set forth.

446,536. COMMUTATOR AND BRUSH. HORACE F. PARSHALL, Baltimore, Md., assignor to the Wenstrom Consolidated Dynamo and Motor Company of Baltimore City, same place. Filed July 30, 1890. Serial No. 360,420. (No model.)



Claim.—In a reversible electric machine or motor, a commutator provided with bars or sections connected with the wires of the armature, in combination with a pair of brushes arranged thereon, with opposite inclinations, and making sliding contact with the same bar or section of the commutator.

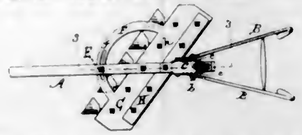
446,537. LIFTING-JACK. CHARLES R. PIGGINS, Racine, Wis. Filed Nov. 3, 1890. Serial No. 370,192. (No model.)



Claim.—1. In a lifting-jack, the combination, with the base having the cylindrical or tubular standard and the cam-lever pivoted therein, of the divided lifting stem or fork, consisting of the tubular lower part C, provided in its lower end with a friction-roller, the screw-threaded upper part D, and the nut E thereon for adjusting it, all substantially as described.

2. The combination, in a lifting-jack, of the tubular standard A', the notched cam on the lever pivoted in said standard, the divided stem, the tubular lower portion thereof having its lower end provided with a friction-roller resting on said cam, and the spring-latch for engaging said notched cam and locking it in its normal position, substantially as described.

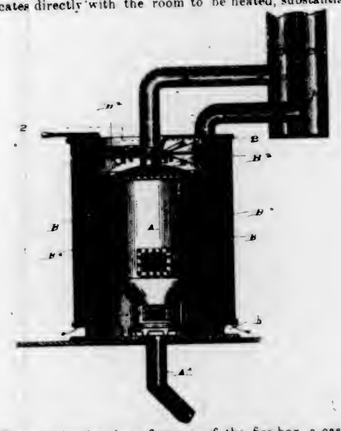
446,538. CULTIVATOR. JAMES R. G. REEVES, McComb, Miss. Filed Sept. 26, 1890. Serial No. 366,261. (No model.)



Claim.—The combination of the shares and their standards, the main plate G, to which the standards are pivoted, such plate having the slots in the rear of the pivots of the standards, the beam A, the strip H, pivoted to the beam, and bolts passing through the slots and securing the rear ends of the standards to the strip H, as set forth.

446,539. FURNACE. JOSEPH S. ROBERTS, Indianapolis, Ind. Filed June 24, 1890. Serial No. 356,525. (No model.)

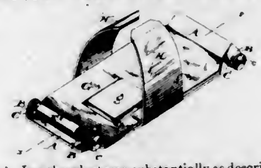
Claim.—1. The combination, in a furnace, of the fire-box surrounded by a casing composed of two walls with a space between them, the inner wall extending to the bottom of the furnace and the outer wall being provided with openings communicating with the outer air, a ventilating-flue connected with the top of the chamber formed by the space between the two walls, and valves provided in the top of the chamber inclosed by the inner wall, which chamber communicates directly with the room to be heated, substantially as set forth.



2. The combination, in a furnace, of the fire-box, a casing surrounding said fire-box, composed of two walls with a space between them, the outer wall being provided with air-inlet openings, and the chamber inclosed by the inner wall being provided with a top having a series of valves, a portion of said valves communicating with the room in which the furnace is located and a portion with the chamber formed between the two walls of the casing, and the ventilating-flue communicating with said chamber, substantially as set forth.

3. The combination, in a furnace, of the fire-box and the double-walled casing inclosing the same, the top of the chamber in said casing being provided with a series of valves, a portion of which communicate with the room and a portion with the chamber between the two walls, which portion is connected to the operating mechanism to be operated reversely from those communicating with the room, substantially as set forth.

446,540. THUMB-STAMP. WILLIAM A. SMITH, Philadelphia, Pa. Filed Sept. 11, 1890. Serial No. 364,692. (No model.)



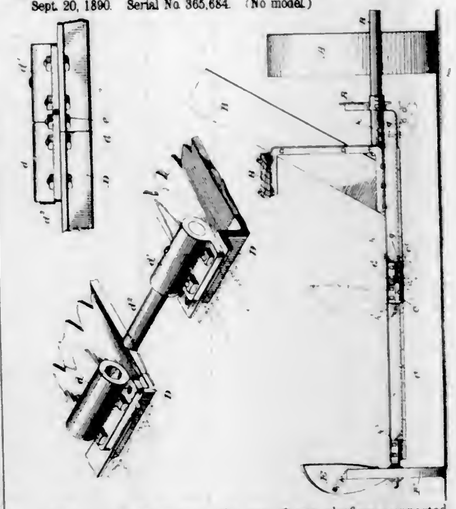
Claim.—1. In a thumb-stamp substantially as described, the combination of the plate A with backwardly-extending independent or unconnected sheet-metal plates H H, adapted to extend over the thumb and hold the plate to it.

2. A thumb-stamp consisting of a plate adapted to rest upon the ball of the thumb and having means, as described, for securing it to the thumb, in combination with a stamp F, secured directly or indirectly to the plate, so as to project beneath its face, ribbon-rolls, as C C, journaled at the ends of the plate, one lying beneath the thumb at the back of the plate and the other lying at the front end of the plate and at a higher level than the back roll, and an inking-ribbon secured upon said rolls and extending over the face of the stamp F, all substantially as and for the purpose specified.

3. A thumb-stamp consisting of a plate adapted to rest upon the ball of the thumb and having means, as described, for securing it to the thumb, in combination with a stamp F, secured directly or indirectly to the plate, so as to project beneath its face, ribbon-rolls, as C C, journaled at the ends of the plate, a protecting-plate D, secured to the lateral edges of the main plate and having a recess, as *d*, formed in it, through which the stamp extends, and an ink-ribbon secured to said rolls and passing between the main plate and the plate D and over the face of the stamp, all substantially as and for the purpose specified.

4. A thumb-stamp consisting of a plate A, adapted to rest upon the ball of the thumb and having means, as described, to secure it to the thumb, said plate being recessed, as at *a*, in combination with a flexible plate G, having a portion *g* extending over recess *a*, a protecting-plate D, recessed at *d* to correspond with plate A, said protecting-plate being secured to the lateral edges of plate A, ribbon-rolls C C, secured to the ends of plate A, a stamp F, secured to flexible plate G at *g* and extending through recesses *a* and *d*, and an ink-ribbon F, secured to rolls C and extending between plates A and D and over stamp F, all substantially as and for the purpose specified.

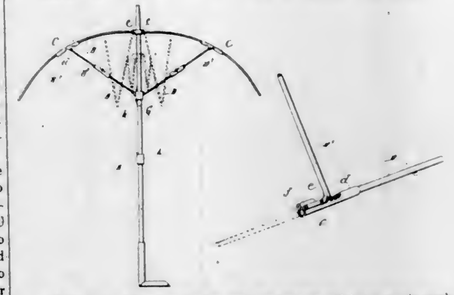
446,541. HARVESTER. JOHN F. STEWARD, Chicago, Ill. Filed Sept. 20, 1890. Serial No. 365,684. (No model.)



Claim.—1. In a harvester, the main-frame platform supported upon the main supporting-wheel and upon the grain-wheel, the platform made in two parts, one portion permanently secured to the grain-wheel and the other supported upon the main wheel, the said parts of the platform so spliced together as to form in effect a rigid platform, yet adapted to be separated and the grain-end portion of the platform moved toward the stubble-end portion of the machine, and the width of the latter thus reduced and the said platforms resecured, the one lapping over, substantially as described.

2. In a harvester, the main supporting-wheel and main frame mounted thereon, a short platform secured thereto, the grain-wheel having the outer portion of the grain-receiving platform bolted thereto, splicing couplings, as dowel-pins and sockets, securing the said two parts of the platform, and the said outer portion of the platform adapted to be received beneath the stubble portion of the said platform and there secured, substantially as described.

446,542. UMBRELLA OR PARASOL. CHRISTOPHER J. SWART, Goshen, Ind. Filed Oct. 18, 1890. Serial No. 368,554. (No model.)

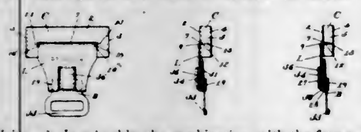


Claim.—1. An umbrella having its braces and bows made each in two sections, one of said sections of each brace and bow being

hinged and the other rigidly secured to a metallic coupling, said coupling having a frictional clasp, whereby the umbrella is adapted to be held open and folded alternately, substantially as shown and described.

2. In a folding umbrella, the combination, with the coupling C, having the frictional clasps *f*, lugs *e*, and fold *d*, of the bow and brace sections B' D', pivoted to said lugs and adapted to engage said clasps, of the rib and bow sections B D, rigidly secured in said fold of the sliding sleeve G and the handle, substantially as specified.

446,543. SUSPENDER-BUCKLE. JUSTUS A. TRAUT, New Britain, Conn. Filed Sept. 20, 1890. Serial No. 365,604. (No model.)



Claim.—1. In a buckle, the combination, with the frame, of the lever-plate pivotally supported in the frame and having in the rearwardly-bent lower end thereof a slide-receiving opening, catches on the lever-plate at said opening, guide-slots in the lever-plate extending to said opening, and a spring-provided slide formed to enter said opening and guide-slots and engage said catches.

2. In a buckle, the combination, with a frame or web-case having the continuous transverse pivot-slot to receive the lever and having at one end of said slot a lateral notch substantially at right angles thereto, of the lever having the pivot-notches in the edges thereof and bent on the line of said notches to form the inwardly-projecting end, said inwardly-projecting end being extended to form ears adapted for engaging under the frame at the ends of said slot, one of said ears being malleable and adapted to be bent, as set forth, for insertion through said notch, whereby the frame and lever may be assembled.

3. In a buckle, the combination, with the frame having the continuous transverse pivot-slot and having a notch substantially at right angles thereto at one side of one end of said slot, of the lever having the notches 16 and 18 and the projecting ears 11 and 13 on the inwardly-projecting end of said lever, one of said ears being adapted to be bent for insertion through said notch and afterward straightened to its original and working position, whereby the lever may be placed in working position by the bending of only one of said ears.

4. In a buckle, the combination, with a buckle-plate bent backward at its lower end and having therein a slide-receiving opening joining guide-slots formed in the plate on either side of a guide-bar, of a guide-bar and a slide-plate having the middle part thereof forward of its side parts, whereby on sliding said slide-plate into place said middle part comes forward of the guide-bar, while said side parts pass back of the buckle-plate, the slide plate being guided to place by sliding in said slots, substantially as described.

5. In a buckle, the combination, with the buckle-plate having the slide-receiving opening and the catches, and having guide-slots extending upward from said opening, and having between them a guide-bar, of the two-leaved spring-slide having in one leaf thereof a transverse slot and below the slot shaped to form a box for engaging the guide-bar.

6. In a buckle, the combination, substantially as described, with the frame and with the two-leaved spring-slide, of the lever-plate pivotally connected to the frame and slotted, substantially as described, said plate being bent, as set forth, on the lines *e e* and *d d*, and having the guiding-edges, the slide-engaging catches, and the upwardly-extending guard back of the slide.

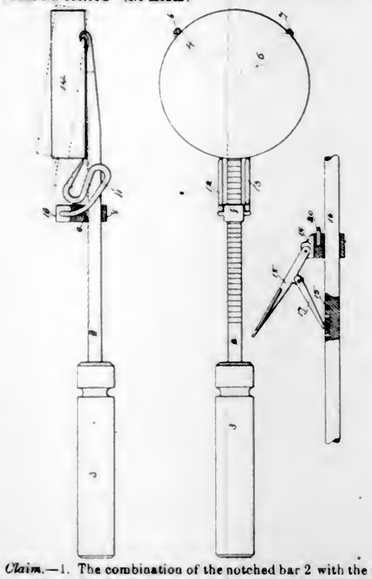
7. In a buckle, the combination, with the strap-carrying slide having the spring thereof slotted at 35 and the part below said slot thrown forward, as set forth, of the lever-plate having the slide-receiving opening, the guide-slots formed in the plate above the opening, and the slide-engaging catches at the lower end of the guide-slots, said spring part below said slot 35 constituting a push-button for disengaging the spring from the catches, substantially as described.

446,544. BATTERY COMPOUND. WILLIAM WRIGHT, New York, N. Y., assignor to the Wright's Denver and San Francisco Electric Light Company, of Colorado. Filed May 12, 1890. Serial No. 351,528. (No specimens.)

Claim.—1. As a new product for charging batteries, an electrolyte containing a salt of aluminium or other aluminium compound treated with sulphuric acid and bichromate of soda, substantially as described.

2. The combination of positive and negative battery elements with an electrolyte containing a salt of aluminium or other aluminium compound used in connection with bichromate of soda, substantially as described.

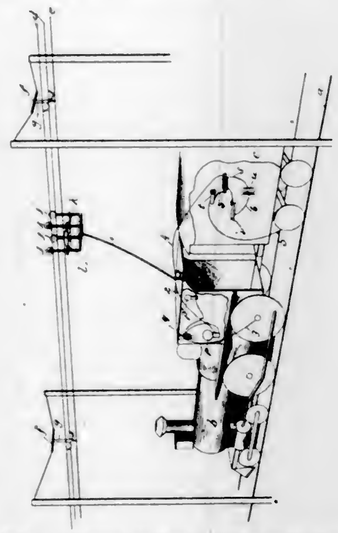
446,545. HOLDER. WILLIAM E. BLODGETT, Faribault, assignor of one-half to Isaac A. Barnes, Minneapolis, Minn. Filed July 25, 1890. Serial No. 359,884. (No model.)



Claim.—1. The combination of the notched bar 2 with the forked ends 4 and 5, provided with the hooked ends 7 and 6, the block 10, the bent wire 11, having the spring portions 12 and 13, pivoted on said block, and the handle 3, substantially as described.

2. The combination, with the bar provided with the hooked ends, of the oppositely-located toggle-locking device arranged to engage notches in said bar and the object to be held, substantially as described.

446,546. ELECTRIC RAILWAY-SIGNAL. WILLIAM S. COOK and MOSES C. COOK, South Omaha, Nebr. Filed Nov. 15, 1889. Serial No. 330,414. (No model.)



Claim.—1. A system of railway signaling and telegraphy consisting of a pair of overhead parallel signal-conductors, each signal-conductor being broken into sections, the sections of the two conductors overlapping, as set forth, a continuous overhead telegraph-wire parallel with said signal-wires, the hangers supporting said series of wires, each hanger supporting and insulating the three conductors from each other, a vehicle, a trolley traveling therewith having separate insulated contacts running on said signal-conductors and supporting the trolley and an insulated contact engaging the telegraph-wire, separate circuits from the contacts engaging each conductor to the vehicle, signaling devices in the circuits from the signal-conductors, and telegraphing devices in the circuit from the telegraph-wire, as set forth.

2. In a system of railway signaling, the pair of parallel overhead insulated conductors broken into overlapping sections, hangers for supporting said conductors, a traveling vehicle having a trolley traveling on said conductors, the contacts traveling on the two conductors being insulated from each other, separate circuits from the contacts on the two conductors grounded through the vehicles, each circuit having a separate alarm, and a source or sources of electricity in the vehicle for said circuits, substantially as described.

3. In an electric railway-signal, the combination of the two parallel signal line-conductors in substantially the same horizontal plane, the continuous telegraph line-wire parallel with and in a plane below and centrally between said signal-conductors, and the hangers supporting said wires, each hanger having two lateral arms to which the signal-conductors are secured and from which they are insulated and a central downwardly-extending arm to which the telegraph line-wire is secured and from which it is insulated, whereby all three conductors are insulated from each other.

4. In an electric railway-signal, the combination, with the two parallel overhead insulated signal-conductors, the single continuous telegraph line-wire, and the hangers supporting said wires and to which they are secured and insulated from each other, of a vehicle, a trolley drawn thereby, and consisting of a U-shaped frame carrying separate contacts traveling on said signal-wires and supporting the trolley therefrom, a contact held yieldingly bearing up against the telegraph-wire, and separate circuits for said contacts, substantially as described.

5. In railway-car telegraphy, the combination of the dead line-wire extending along the track, a traveling vehicle having a contact electrically engaging said wire, a main circuit in and grounded through said vehicle and including said contact, a microphone or like receiving-instrument in the vehicle included directly in the main circuit, an induction-coil in the vehicle, the primary of said coil being included directly in said main circuit, a normally-open local circuit in said vehicle directly including the secondary of said coil, a source of electricity in said local circuit, and a telegraph transmitting-instrument directly in said local circuit, substantially as described.

6. In a system of railway signaling, the combination of a pair of insulated separate parallel signal-conductors extending along the track and broken into overlapping sections, as set forth, a continuous insulated telegraph line-wire extending along the track, a traveling vehicle having a contact device having separate contacts insulated from each other and traveling on said signal and telegraph conductors, separate circuits from each contact grounded through the vehicle, signaling devices and a source of electricity in the vehicle in said signaling-circuits, and telegraphing devices in the vehicle in the telegraph-circuit.

7. In an electric railroad-signal, a railroad-switch, a line-conductor extending down the main track, a line-conductor extending down the side track, a normally-open circuit-closer connected with the main-line conductor to ground the same when the switch is out of continuity with the main track, and another closer connected with the side-track conductor to ground the same when the switch is out of continuity with the side track, said closers comprising stationary contacts and the switch-rails, as set forth.

8. In an electric railway-signal, the combination of a switch in the main track, a pair of separate insulated signal line-conductors extending along the main track, and stationary contacts on opposite sides of the switch, connected, respectively, with said conductors and arranged, substantially as set forth, to respectively ground said conductors when the switch is thrown in opposite directions from continuity with the main track.

9. The combination of the three parallel separate triangularly-arranged conductors, a trolley traveling thereon and having rollers running on the upper conductors, and a central roller bearing upwardly against the under side of the central conductor, substantially as described.

10. The combination, with a switch and a pointed contact secured thereto and in electric connection therewith, of a forked contact rigidly secured beside the switch and insulated from the ground and electrically connected with a signal-conductor, arranged substantially as set forth.

11. In an electric railway-signal, a rail carrying a normally-open circuit-closer consisting of a contact electrically secured to the rail and a movable contact electrically connected to a line-conductor, one of said contacts being forked and the other pointed, as and for the purpose set forth.

12. In a railroad signaling system, the combination of a main line of conductors, a side-track line of conductors, hangers carrying the same, depending from a single support, and a switch in the main line of conductors, carried by a hanger sliding on said support to place the conductors of the switch into continuation with the side-track or main-track conductors, substantially as described.

13. In an electric system of signaling for railways, the combination of a main line of conductors and a side line branching therefrom, said conductors consisting of signal-conductors and a telegraph line-wire, a support from which hangers are suspended, carrying the ends of said conductors, a metal strip on the said support, connected electrically with all the telegraph line-wires, and a switch consisting of a series of conductors adapted to be placed in continuation with the main line or the side line, and a hanger carrying the same, sliding on said support, and having means to electrically connect its line telegraph-wire with said strip, substantially as described.

14. In an electric railway-signal, a normally-open circuit-closer connected with a signal-conductor and extending along the main track to ground the same, and located beside a side-track rail at the junction of side and main tracks to be engaged and held closed by a wheel on the side track, substantially as described.

15. The combination with two series of intersecting conductors, the conductors being in different planes, of the crossing therefor, comprising a suspended frame, an outer set of hangers to which the radiating sets of conductors are secured, a corresponding set of inner hangers, and the guiding and supporting wires connecting the inner hangers and corresponding to the conductors, the inner and outer hangers being a distance apart to admit the passage of the trolleys.

16. A normally-open circuit-closer at one end of a bridge, in combination with a connection extending along the bridge and secured to the movable contact of said closer, and provided with a weight secured to its opposite end and normally upheld near the center of the bridge, substantially as described.

17. In an electric railway-signal, a signal-conductor extending along the track, in combination with a normally-open circuit-closer in a box beside the track and connected electrically with said conductor, and a fence or the like along the track, connected with the movable contact of said closer and arranged so that when said fence is forced toward or onto the track the closer will be closed, substantially as described.

18. In an electric railroad-signal, the combination of a bridge and its draw, the overhead signal-conductors extending along the bridge up to each end of the draw, the overhead telegraph line-wire continuous across the bridge by being extended above or below the draw, the draw being provided with overhead wires corresponding to said telegraph and signal conductors to guide and support the trolleys across the same, spring-contacts connected with the ground, and projections on the draw to throw said springs from contact with the signal-conductors when the draw is closed and allow them to ground said conductors when the draw is open, substantially as described.

19. A rail, in combination with a stationary contact-point secured to and in communication with the same, and a horizontal swinging plate at one end hinged to said rail and at its free end carrying a contact to engage the stationary contact when the plate is forced in by a car-wheel, substantially as described.

20. In an electric railroad-signal, a normally-open circuit-closer, in combination with a movable bar carrying the movable contact of the closer, secured to said bar in electrical communication therewith and held against a rail by a spring, so as to be pressed out by the flange of a passing wheel and close the circuit-closer, the stationary contact of the closer being formed by two branching arms insulated from the ground and secured beside said bar opposite the contact carried thereby.

21. In an electric railway-signal, an insulated signal line-conductor extending along the track, a vehicle on the track having a circuit containing signaling devices in electrical connection with said line-conductor, a source of electricity, a normally-open circuit-closer at one end of the bridge, having one of its contacts electrically connected with said line-conductor, and a connection from its movable contact extending along the bridge and arranged to close the circuit-closer when the bridge is destroyed, as and for the purpose set forth.

22. In an electric railway-signal, the combination of a bridge or trestle-work, a box or platform at or near the center of the bridge, a pair of separate weights upheld by said platform, a pair of normally-open circuit-closers respectively located at opposite ends of the bridge, circuits therefor, and flexible connections from each weight to the movable contact of a circuit-closer, substantially as described.

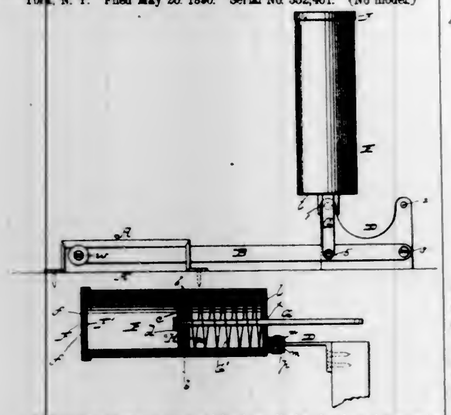
446,547. PIPE-WRENCH. WILLIAM E. GOODBOW and HOMER R. MARGASON, Columbus, Ind. Filed July 31, 1890. Serial No. 360,445. (No model.)

Claim.—In a pipe-wrench, the combination of two jaws, the faces of which are opposingly curved to fit the pipe, the main jaw being provided with a mortise or slot and having notches arranged alongside

said mortise or slot, the other being curved and passing through said mortise or slot and provided with gudgeons which engage in said notches, and a spring fixedly secured to the first and extending out over the second, the formation being such that said second jaw will be held up into position by the pressure of said spring, said several parts being arranged and operating substantially as set forth.

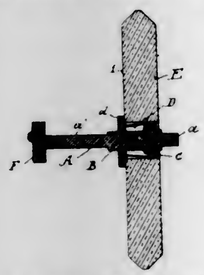


446,548. **DOOR CHECK AND CLOSER.** JOHN E. MELLOR, New York, N. Y. Filed May 20, 1890. Serial No. 352,461. (No model.)



Claim.—The combination, with the cylinder having the attaching-lugs and the projecting piston-rod, spring, and piston-head, of the standard having interchangeable attaching-lugs, the reversible metal bar provided with a friction-wheel and detachably pivoted to the standard and to the projecting piston-rod, and the angular guide-bracket for engaging the friction-wheel on said metal bar, substantially as specified.

446,549. **DISK-CARBON HOLDER FOR ELECTRIC LAMPS.** EDWIN C. RUSSELL, Boston, Mass. Filed May 14, 1890. Serial No. 351,805. (No model.)



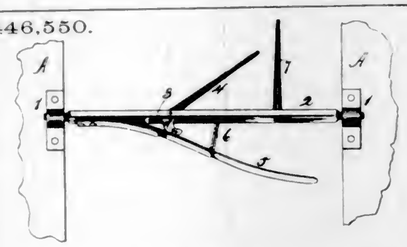
Claim.—1. A disk-carbon holder consisting of a spindle having a screw-thread and a conical enlargement at the inner end and a pinion at the outer end, in combination with a split thimble connected to a screw-threaded collar, substantially as set forth.

2. A disk-carbon holder consisting of a spindle A, having a screw-threaded enlargement B and a conical enlargement C at its inner end and a pinion F at its outer end, in combination with a split thimble D, the flange *d* of which is provided with a screw-threaded hole *e*, that fits onto the screw B, substantially as set forth.

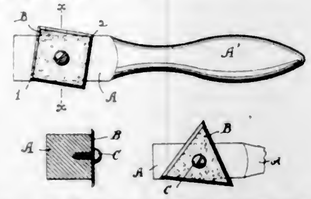
446,550. **DEVICE FOR CATCHING MAIL-BAGS.** EUGENE M. VAN HOESEN, Preble, N. Y. Filed Oct. 27, 1890. Serial No. 369,457. (No model.)

Claim.—The combination, with the cross-bar and the spring-arm secured thereto, of a cam-lever engaging with the spring, and a hinged sectional brace hinged to the cross-bar and spring-arm.

446,550.



446,551. **KNIFE OR SCISSORS SHARPENER.** FRANCIS W. CHAMBERLAIN, Bridgewater, Mass. Filed Aug. 19, 1890. Serial No. 362,372. (No model.)



Claim.—1. A knife-sharpener consisting of a plate of steel having beveled edges and secured by a screw to a square block of wood or other suitable material provided with a handle, substantially as shown and described.

2. A knife-sharpener consisting of the block A, having a handle A', and the steel plate B, secured thereto by screw C, the plate being larger and set on an angle to the block, substantially as shown and described.

446,552. **GAME APPARATUS.** FRANK COLE, New York, N. Y. Filed Aug. 25, 1890. Serial No. 363,012. (No model.)



Claim.—1. In a game apparatus, a target having figures hinged thereto at the hips, said figures having jointed legs and the feet resting upon pedals to which a reciprocating movement is imparted, substantially as and for the purposes set forth.

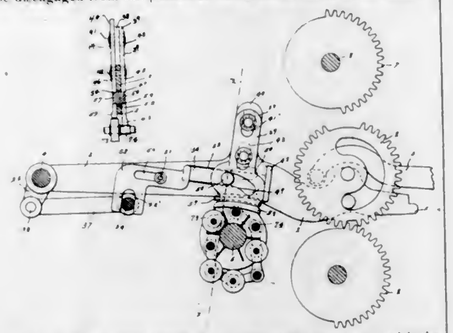
2. In a game apparatus, the base A, pedals F, hinged thereto, shaft G, and cams H, mounted thereon for operating the pedals, in combination with figures C D, having jointed legs and hinged to the back B, substantially as shown and described.

3. In a game apparatus, the base A and back B, a ladder E and figure E' secured thereto and the ladder hinged to the back B, figures C D, hinged to the back B and having jointed legs, and means for imparting motion to the legs to give the appearance of dancing, substantially as set forth.

446,553. **HARNESS-MOTION FOR LOOMS.** GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed June 19, 1890. Serial No. 355,947. (No model.)

Claim.—1. In the harness-motion of a loom, the combination, with a vibrator-lever carrying movable runs supported thereon for engaging alternately two sets of pattern indicators or surfaces, of means for operating said runs to cause them to engage their respective pattern-surfaces at the proper time, substantially as set forth.

2. In the harness-motion of a loom, the combination, with the cylinder-gears, the vibrator-gear, and two pattern-surfaces, of a vibrator-lever, two movable surfaces or runs on said lever adapted to engage alternately their respective pattern-surfaces at the proper time, and means for operating said runs to cause them to engage with or be disengaged from the pattern-surfaces, substantially as set forth.



3. In the harness-motion of a loom, the combination, with the upper and lower cylinder-gears, the vibrator-gear, and two pattern-surfaces, of a vibrator-lever provided with movable surfaces or runs, said surfaces adapted to engage alternately said pattern-surfaces at the proper time, for the purpose stated, substantially as set forth.

4. In the harness-motion of a loom, the combination, with cylinder-gears, the vibrator-gear, the vibrator-lever, and the pattern-surfaces, of movable runs or surfaces supported on the vibrator-lever and adapted to engage alternately their respective pattern-surfaces at the proper time, and means for operating said runs to cause them to be engaged with or be disengaged from the pattern-surfaces, for the purpose stated, substantially as set forth.

5. In the harness-motion of a loom, the combination, with the vibrator-lever, the pattern-surfaces, and movable runs supported on said vibrator-lever and adapted to engage alternately their respective pattern-surfaces at the proper time, of means for operating said runs, consisting of a slide, intermediate connections to the vibrator heel-pin, the vibrator heel-pin, and mechanism connected with the vibrator heel-pin to cause the same to have a rocking motion and to move the slide in one direction or the other to move the runs on the vibrator-lever, substantially as set forth.

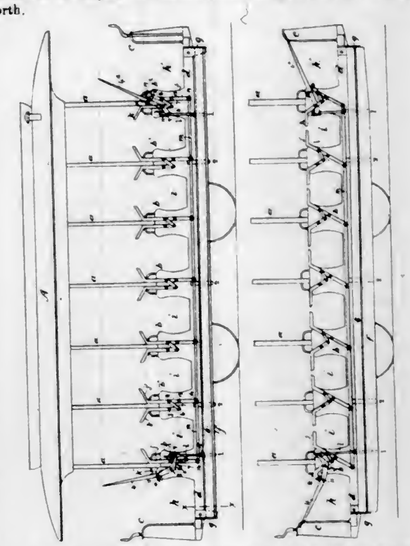
6. In a loom, the combination, with the pattern-surfaces and a vibrator-lever carrying movable runs thereon, adapted to engage alternately their respective pattern-surfaces at the proper time, of the indicating mechanism and intermediate connections between said indicating mechanism and movable runs on the vibrator-lever for operating said runs, substantially as set forth.

7. In the harness-motion of a loom, the combination, with the vibrator-gear, the cylinder-gears, a pinion on a shaft of one of said gears, a gear meshing with said pinion, a connector leading from a crank-pin on said gear and carrying a double pawl pivoted thereon, a spring engaging said pawl carried on a lever, and said lever and means for operating said lever, of a ratchet supported on the vibrator heel-pin, and said vibrator heel-pin, a connector leading from said ratchet to a rod or bar, and said rod or bar, a second connector leading from a radial arm on the vibrator heel-pin to said rod or bar, and said radial arm, and a slide connected with said rod or bar and carried on a vibrator-lever, said slide connected with and adapted to operate the movable runs on said vibrator-lever, and said vibrator-lever and movable runs, substantially as set forth.

8. In the harness-motion of a loom, the combination, with a vibrator-lever, movable runs supported thereon, and a slide connected with said runs and with a rod or bar, and said rod or bar, a connector leading from said rod or bar to a radial arm on the vibrator heel-pin, and said radial arm, and vibrator heel-pin, a second connector leading from said rod or bar to a ratchet on said vibrator heel-pin, and said ratchet, of a connector carrying a double pawl thereon for engaging the ratchet on the vibrator heel-pin, and means for operating said connector, substantially as set forth.

446,554. **PASSENGER-CAR.** CHARLES A. PRESTON, Cambridge, assignor of three-fourths to Geo. Willis Pierce, trustee, Boston, Mass. Filed Aug. 16, 1890. Serial No. 362,158. (No model.)

Claim.—1. The combination, with an open car, of movable gates connected as a series along the side of the car and movable simultaneously to open and close the entrances, operating-levers connected with the series of gates at the ends of the car, whereby the gates may be moved simultaneously, a hinged foot-board extending lengthwise of the car below the floor thereof, and connections between said foot-board and the gate-operating devices, whereby the foot-board is turned to its inoperative position when the gates are closed, as set forth.



2. The combination, with a car having seats extending across the same, with entrances thereto from the sides of the car, and foot-boards extending the entire length of the car, of a rod extending lengthwise of the car below the floor-level and at one side thereof, levers at each end of the car adapted to operate the said rod, arms pivoted to the ends of the seats of the car and adapted when in one position to close the entrances between said seats, and when in another position to remain in line with the ends of said seats, leaving said entrance open, and connections between said arms and the said rod, whereby the arms are operated by said rod, as set forth.

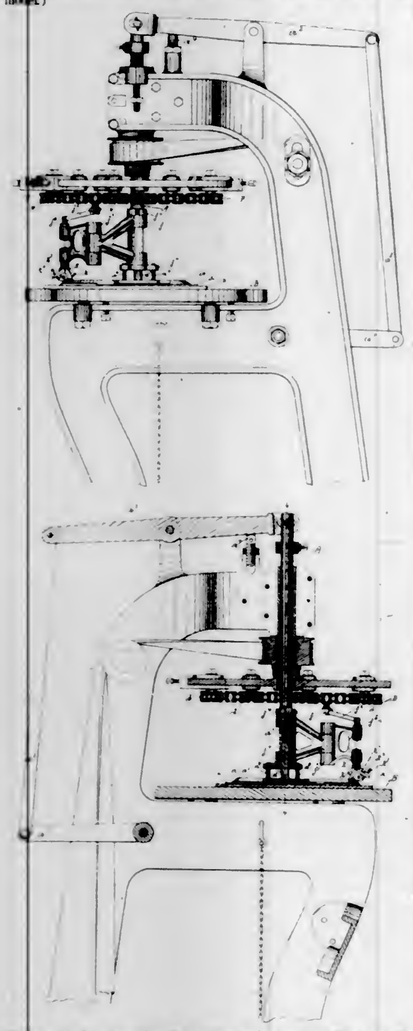
3. The combination, with a car having seats across the same, with entrances thereto from the sides of the car, of bars or gates adapted to close or open said entrances, a rod extending lengthwise of the car below the floor-level and at one side thereof, levers at each end of the car adapted to operate the said rod, foot-boards extending the entire length of the car, said foot-boards being hinged at their outer edges to the outer edge of a bracket projecting from the car below the floor-level thereof, and connections between the inner edges of said foot-boards and the said end levers, whereby said foot-boards are moved from a horizontal to a substantially vertical position after the said bars or gates have been moved to close the entrances to the said car, as set forth.

4. The combination, with a car having seats extending across the same, with entrances thereto from the sides of the car, of a rod extending lengthwise of the car below the floor-level and at one side thereof, levers at each end of the car adapted to operate the said rod, arms pivoted to the ends of the said seats and adapted when in one position to close the entrances therebetween and when in another position to be in line with said seats and to leave said entrances unobstructed, foot-boards extending the entire length of the car and hinged at their outer edge to a bracket projecting outwardly from the car below the floor-level thereof, and connections between the said arms and the said rod and between the said foot-boards and the said end levers, whereby the arms may be moved from their inoperative position to the position they occupy in closing the entrances to the car and the foot-boards may be moved from a horizontal to a substantially vertical or inoperative position, as set forth.

5. The combination, with a car having seats extending across the same, with entrances thereto from the sides of the car, of a rod *m*, extending lengthwise of the car, levers at each end of the car by which said rod may be moved, the bars or levers 8, pivoted to the ends of the seats and having their lower ends attached to said rod *m*, the bars or levers 3, pivoted to the ends of said seats, the bars 7, connecting the lower ends of the bars 3 with the bars 8, the foot-boards *f*, the brackets *g g*, to which the outer edges of the foot-boards *f* are hinged, the guard boards *e*, to which the inner edges of the foot-boards are hinged, the levers *l*, connecting the said guard-boards with the said

lever 4 at one end of the car and the lever 4ª at the other end of the car, and suitable connections between said levers and the rod *m*, whereby either of said levers is adapted to move the said rod and, through the described connections, operate the entrance-closing bars 3 and S and the foot-board *f*, so as to cause the bars to close or leave unobstructed the said entrances and to cause the foot-boards to take their inoperative or operative position, as set forth.

446,555. MACHINE FOR CUTTING SOLES, &c. ALLISON M. STICKNEY, Medford, assignor to the Wellman Sole Cutting Machine Company, Boston, Mass. Filed Nov. 6, 1890. Serial No. 370,566. (No model.)



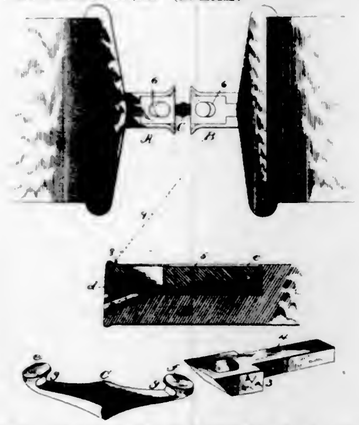
Claim.—1. In a machine for cutting soles and the like, a knife-block, in combination with three arms f f' f^2 and a driving-chain, the outer arm being connected with the driving-chain and the inner arm revolving about a fixed axis, all substantially as described.

2. In combination, a knife-block, a pattern provided with a guide-ledge a^4, a guide-roll carried by the knife-block, arms f f' f^2, and a driving-chain, all substantially as described.

3. In a machine for cutting soles and the like, a knife and a lengthwise-driven chain, in combination with two pairs of wheels near the shank, one of each pair being within and one of each pair without the driven chain and giving the shank curves, substantially as described.

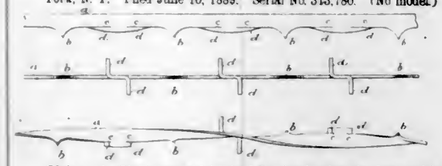
4. In a machine for cutting soles and the like, form *a*, auxiliary stud a^3, and spring a^7, in combination with main stud A and a knife-holder carried by main stud A to permit the clamping-surface of form *a* to vary as the thickness of the stock varies with relation to the knife carried by the knife-holder, substantially as and for the purpose set forth.

446,556. CAR-COUPLING. JOHN R. WEAVER, Waynesborough, Tenn., assignor of one-half to Jonathan Morris, same place. Filed Aug. 6, 1890. Serial No. 361,209. (No model.)



Claim.—In a car-coupling, the combination of a draw-head having the flared sides and the inclined grooved bottom, the swinging plate pivoted in the draw-head and having the rounded slot and the beveled end, and the coupling-bar adapted to enter the guide-groove in the bottom of the draw-head and having the lug or projection to enter the slot in the swinging plate, substantially as described.

446,557. BARBED METALLIC FENCING. THOMAS V. ALLIS, New York, N. Y. Filed June 10, 1889. Serial No. 313,780. (No model.)



Claim.—1. The improved barbed fencing having the integral laterally-projecting barbs *d* intermediately to the integral Λ-shaped barbs *b*, projecting in the plane of the strip and from the same edge, the spaces between the barbs being greater than the width of the Λ-shaped barbs at the base, substantially as described.

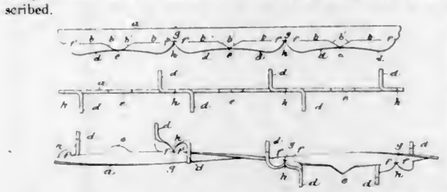
2. The improved barbed fencing consisting of a plain flat strip having pairs or couples of laterally-projecting barbs at intervals along one edge, and points intermediate to said pairs or couples projecting from the same edge in the plane of the strip, the spaces between the barbs being greater than the width of the Λ-shaped barbs at the base, substantially as described.

3. The improved barbed fencing having the integral laterally-projecting barbs *d* intermediately to the integral Λ-shaped barbs *b*, projecting in the plane of the strip and from the same edge, said strip being twisted, the spaces between the barbs being greater than the width of the Λ-shaped barbs at the base, substantially as described.

4. The improved barbed fencing-strip having the integral Λ-shaped barbs projecting in the plane of the strip, and laterally-projecting barbs on the same edge in the order of two of said laterally-projecting barbs to one of the said Λ-shaped barbs, the spaces between the barbs being greater than the width of the Λ-shaped barbs at the base, substantially as described.

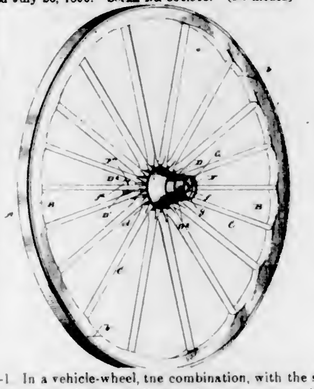
446,558. BARBED METALLIC FENCING. THOMAS V. ALLIS, New York, N. Y. Filed June 10, 1889. Serial No. 313,782. (No model.)

Claim.—1. The improved barbed fencing consisting of a plain flat strip having pairs or couples of laterally-projecting barbs at intervals along one edge and points intermediate to said pairs or couples of barbs projecting from the same edge in the plane of the strip and being notched between the bases of the barbs, substantially as described.



2. The improved barbed fencing consisting of a plain flat strip having pairs or couples of laterally-projecting barbs at intervals along one edge and points intermediate to said pairs or couples of barbs projecting from the same edge in the plane of the strip and being notched between the bases of the barbs, also slitted at the bottoms of the notches, and also twisted, substantially as described.

446,559. VEHICLE-WHEEL. RICHARD E. JEFFERY, Grass Valley, Cal. Filed July 20, 1890. Serial No. 356,315. (No model.)



Claim.—1. In a vehicle-wheel, the combination, with the spokes, of a sectional hub formed of two hollow sections, a core extending entirely through said sections and provided with a retaining-cap adapted to bind the parts together and secure the spokes, said core being exteriorly screw-threaded, and an interiorly-threaded conical sleeve working upon the core within the hub and adapted to engage the ends of the spokes, substantially as and for the purpose set forth.

2. In a vehicle-wheel, the combination, with a hollow hub and the spokes projecting therein, the hub being provided at each end with an interior annular shoulder, of a single exteriorly-threaded core projecting entirely through said hub and provided at one end with an integral circular plate having a rearwardly-extending unshouldered peripheral flange fitting within the adjacent end of the hub and abutting against the shoulder therein, a retaining-cap fitting within the opposite end of the hub and binding against the shoulder therein, and an interiorly-threaded conical sleeve working upon the core within the hub and adapted to adjust the spokes, substantially as and for the purpose set forth.

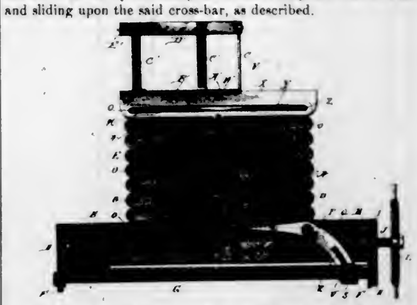
3. In a vehicle-wheel, the combination, with the spokes, of a hub formed of two sections comprising two circular plates provided with inwardly-projecting lugs, the lugs of one plate having each an extension projecting over the opposing lug of the other plate, said lugs forming conjunctively ribs fitting between the spokes, and a retaining-core and cap therefor for securing the sections of the hub together, substantially as set forth.

4. In a vehicle-wheel, the combination, with the tire provided with a hollowed or concave inner face, of the felly provided with a rounded or convex periphery adapted to fit within the latter and formed of two or more sections having their abutting ends beveled, the spokes, and the hub provided with means for tightening the wheel, substantially as set forth

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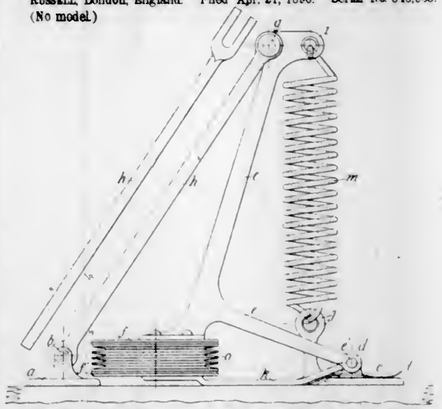
446,560. AERIAL LADDER FOR FIREMEN AND OTHERS. DAVID L. OSBORN, Kansas City, Mo., assignor of two-thirds to David G. Blair and Emerson S. Northup, both of same place. Filed Sept. 19, 1890. Serial No. 365,479. (No model.)

Claim.—1. The combination, with a frame-work, of a worm-bar supported therein, a cross-bar mounted upon the said worm-bar, a pair of levers having their forward ends pivoted in the said frame-work and extending rearwardly therefrom, and a pair of levers pivoted to the said rearwardly-extending levers and having their rear end slotted and sliding upon the said cross-bar, as described.



2. The combination, with a slotted frame-work, of a worm-bar supported therein, a cross-bar mounted upon the said worm-bar and having rounded ends, a pair of levers having their forward ends pivoted in the said frame-work and extending rearwardly therefrom, and a pair of levers pivoted to the said rearwardly-extending levers and having slotted curved rear ends, the slots therein sliding upon the rounded ends of the said cross-bar, and projections from the sides of the said rearwardly-extending curved levers sliding in the slots in the said frame, as described.

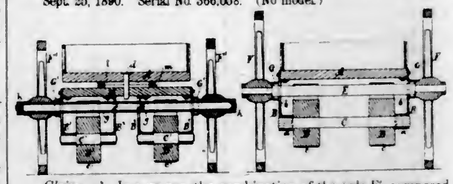
446,561. COMBINED DOOR CHECK AND SPRING. NORMAN SCOTT-RUSSELL, London, England. Filed Apr. 21, 1890. Serial No. 348,895. (No model.)



Claim.—1. The combination of the two brackets *a* and *c*, one fixed on the door and one on the door-framing, with the rod *h*, lever *e*, spiral spring *m*, bellows *o*, lever *k*, and springs *l*, for the purpose of closing a door silently, all substantially as set forth.

2. The combination, with the bell-crank lever *e*, provided with a forked end pivotally attached to the door and a projecting plate at its middle part for bearing against the bellows, of the rod *h*, pivotally connecting the free end of the said lever with the door-frame, the spring *m*, secured at one end to the free end of the said lever and at the other end to the door between the forked portion of the said lever, and the flexible bellows adapted to be compressed by the said projecting plate before the closing of the door is completely effected, substantially as set forth.

446,562. WAGON. WILLIAM C. MURPHY, Salem, Mass. Filed Sept. 25, 1890. Serial No. 366,058. (No model.)



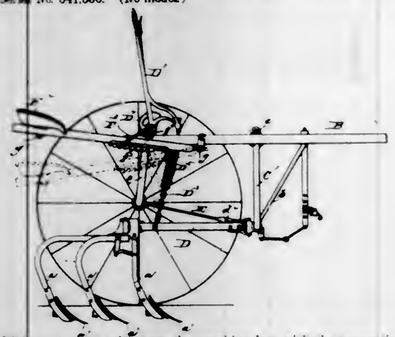
Claim.—1. In a wagon, the combination of the axle E', composed of a shaft *f* and two sleeves *g*, adapted to turn on said shaft, the wheels

F', fixed to said sleeves, the shafts C', having drums or pulleys fixed or keyed thereto and supported in bearings in depending hangers, and the bands for transmitting motion from the sleeves of the axle to the pulleys D' and shafts C', substantially as and for the purpose described.

2. A wagon provided with hangers, the shafts C C', supported therein and provided with pulleys D D', respectively, the axles E E', and the wagon-wheels fixed to said axles, as described, the bands *c c'* for transmitting motion from said axles to the shafts, and the connecting-rods F G' and the platform H, adapted to swivel with relation to the body, substantially as set forth

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446,563. CULTIVATOR. FRANK R. PACKHAM, Springfield, Ohio, assignor to the Superior Drill Company, same place. Filed Feb. 21, 1890. Serial No. 341,330. (No model.)



Claim.—1. In a cultivator, the combination, with the supporting-wheels and a main supporting-yoke, of a tongue pivotally secured to said yoke, an adjustable connecting-link connected to said tongue and adapted to hold said tongue normally in a fixed angular position with reference to said yoke, and means for adjusting said link to change said tongue to different angular positions with reference to said yoke to properly distribute the weight upon the driving-wheels, substantially as specified.

2. The combination, with the driving-wheels, the main supporting-yoke, and a tongue pivotally connected to said yoke, of a beam-supporting yoke or hanger connected rigidly to said tongue, and an adjustable connection between said main supporting-yoke and said beam support or hanger, substantially as specified.

3. The combination, with the main supporting-yoke pivotally connected to the tongue and a beam support or hanger C', rigidly connected to said tongue, of the adjustable connecting-link E, substantially as and for the purpose specified.

4. The combination, with a main supporting-yoke, the carrying-wheels, and a tongue pivotally connected to said yoke, of a beam support or hanger rigidly connected to said tongue, a connecting-link extending from said main supporting-yoke to said hanger, and an offset connecting-piece attached to said beam support or hanger and adjustably connected to said link, substantially as specified.

5. The combination, in a cultivator, with the main supporting-yoke and a tongue, of a seat-supporting beam depending from said yoke and a yielding connection between the inner end of said beam and the tongue, substantially as specified.

6. The combination, in a cultivator, with a bifurcated tongue, as described, of a backwardly-extending seat-support, a U-shaped hanger adapted to form a fulcrum therefor, and a U-shaped connecting-piece of resilient material adapted to connect the forward end of said seat-support to the tongue, substantially as specified.

7. The combination, in a cultivator, with a tongue or frame, of a seat-support having a ratchet piece or segment, a hanger adapted to engage with said ratchet and suspend the same from said tongue or frame, and a resilient connection between the inner end of said supporting-piece and the tongue or frame, substantially as specified.

8. The combination, with a yoke C and tongue B, of the seat-support F', adjustable hanger F^3, adapted to hook over said yoke and engage with ratchets on said seat-support, and a resilient U-shaped connecting-piece F, substantially as specified.

9. The combination, with the bifurcated tongue, of the sleeve and connecting-bolt extending between the forks thereof, a backwardly-extending seat-support suspended between said forks, and a U-shaped resilient connecting-piece adapted to hook over said sleeve, substantially as specified.

10. In a cultivator, a seat-supporting beam formed of pipe reduced at one end and connected to a resilient U-shaped connecting-piece, a U-shaped hanger having hook-shaped ends adapted to suspend said seat-support, and means for connecting said U-shaped piece to the frame or tongue, substantially as specified.

11. The combination, with an adjustable seat-support, as described, of a main supporting-yoke and a tongue pivoted thereto, an adjustable connecting-link between said yoke and tongue adapted to normally hold said tongue in a fixed angular position with reference to said yoke, and means for varying the length of the link to change the angular position of said tongue and yoke, and thus compensate for the varying weight upon said seat-support, substantially as specified.

12. The combination, with the beam and lifting-lever, of a flexible connection and a spring attached at each end to said flexible connection, and a rigid link connected at each end to said flexible connection and to said spring, said link being longer than the normal length of said spring, substantially as specified.

13. The combination, with a chain, of a spring connected at each end to the links of said chain and a single link of greater length than the normal length of said spring, said link passing through said spring and attached at each end to said chain, substantially as specified.

14. The combination, with a pivoted lever and its ratchet-stand, of an adjustable gage adapted to engage with the teeth in said stand, said gage being extended to the center of said ratchet-stand and provided with a slotted opening which engages over a projection at the pivoted center of said lever, substantially as specified.

446,564. CLASP. SHERMAN B. BACON, Waterbury, Conn., assignor of one-half to Charles M. Upson. Filed Aug. 16, 1890. Serial No. 362,174. (No model.)



Claim.—1. The combination, in a garment-clasp of the character described, of the base-piece 1, tongue 2, projecting therefrom in the manner substantially as shown, and means, substantially as shown, on said base-piece and tongue to engage with the fabric, slide 3, having opening 9 therein to admit the tongue, projecting ends 10 of said slide, formed in the manner substantially as shown, to engage with the base-piece, said slide arranged to be moved thereon, the upraised bar 4 of said slide engaging the upper surface of the tongue, closing the same in its forward movement, the bar 5 of said slide engaging with the under side of said tongue to raise or uplift said tongue when such slide is moved in the opposite direction and retain it in such raised position, substantially as set forth.

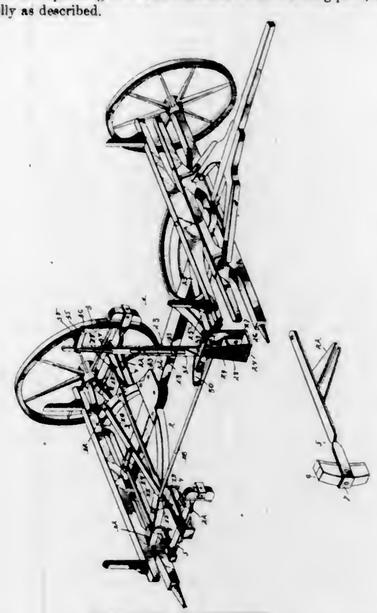
2. In a garment-clasp of the character described, the slide 3, constructed of one piece of metal in the manner substantially as shown, consisting of the projecting ends 10, said ends arranged, substantially as shown, to engage with the base-piece of the clasp, said slide having opening 9 to admit the tongue of the base-piece, projecting lip 14, said lip bent at right angles to the body of the slide, that the opening 9 may be parallel with said body portion, thereby forming the bars 4 and 5 to engage alternately with the upper and lower surface of the tongue of the base-piece, as set forth.

3. The combination, in a garment-clasp of the character described, of the base-piece 1, tongue 2, projecting therefrom, retaining-points on said base-piece and tongue, substantially as shown, to engage with the fabric, slide 3, made of one piece of metal, having ends or projections 10, formed substantially as shown, to engage the base-piece, said slide having opening 9 to admit the tongue of the base-piece, said opening arranged parallel with the base-piece and the movement of the slide, bars 4 and 5 of said slide, such bars engaging alternately with the upper and lower surface of the tongue in the forward and backward movement of said slide, raising and depressing said tongue, as shown, with projection 6 on said tongue, engaging with the slide, locking the same when closed, all substantially as shown and set forth.

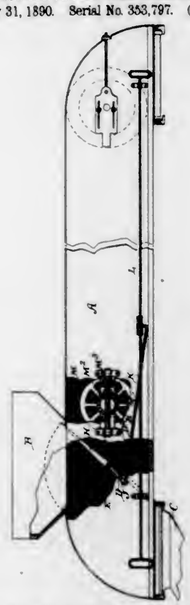
446,565. WAGON-BRAKE. OWEN T. BAKER, Fort Worth, Tex., assignor of one-half to T. E. Stanley and C. D. Gulley, both of same place. Filed Aug. 30, 1890. Serial No. 363,484. (No model.)

Claim.—1. In a brake, the combination of the bracket consisting of the diverging arm and the depending U-shaped portions arranged at the apex of the arm, the segmental rack-plate, and the lever pivoted to one of the arms and being bent at 28 and extending along the opposite arm and provided with a sliding pawl arranged to engage the segmental plate, substantially as described.

2. The combination, in a bracket having the depending U-shaped portions, the segmental rack-plate secured to the outer arm, the operating-lever pivoted to the bracket and provided with headed pins, and the projection arranged at its upper end, of the sliding pawl having a longitudinal slot and arranged on the lever and adapted to be engaged by the headed pins, and the angle-lever pivoted to the projection of the operating-lever and connected with the sliding pawl, substantially as described.

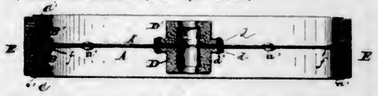


446,566. GRAIN-CONVEYER. JOHN B. BARTHOLOMEW, Des Moines, Iowa. Filed May 31, 1890. Serial No. 353,797. (No model.)



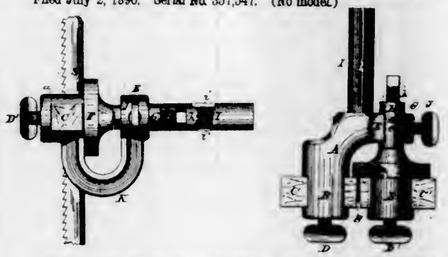
Claim.—The combination, with the conductor of a grain-conveyer, of a partition secured to and rising from the bottom of said conductor and also extending transversely of said conductor, the two sides of said partition being inclined toward each other and meeting at an angle, forming an apex approximately at the center of the bottom opening of the hopper, a cut-off gate extending transversely of the conductor, pivoted adjacent to the said apex of the partition, and means by which the said gate may be operated from either end of the conveyer to cut off or admit grain in two different directions, said gate, together with the centrally-located partition, providing direct guideways or planes for the grain from the hopper to either the discharge-opening or conveyer-apron, as set forth.

446,567. PULLEY. TIMOTHY GINGRAS, Buffalo, N. Y. Filed Nov. 17, 1890. Serial No. 371,673. (No model.)



Claim.—The improved pulley herein described and shown, consisting of two web-sections, each having an outwardly-extending rim-section and an outer flange, the web-sections being provided with a series of perforations *f* and the flanges with perforations *e*, rivets *e'*, passed through the web-sections, hub-sections at the center of the web-sections, provided with annular flanges *d*, rivets *d'*, passed through the flanges *d* and the web-sections, a covering-ring composed of strips of leather cemented together and forged upon the rim-sections, rivets passing through the said covering-ring and the perforations *e*, and the balance-weight secured in one of the perforations *f*, as specified.

446,568. BAND-SAW GUIDE. ANTHONY HETTEL, Rochester, N. Y. Filed July 2, 1890. Serial No. 357,547. (No model.)

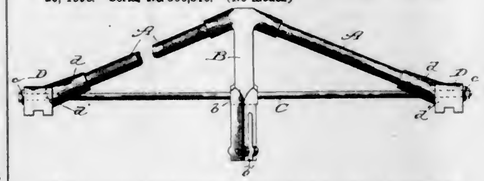


Claim.—1. As an improved article of manufacture, a band-saw guide consisting of the body A, having the boss B, socket E, with the yoke K and boss B', and the shank I, the disk-wheel F, having the journal *f*, the sleeve G, having the adjusting-screw H, and the two guide-pieces C C', as and for the object stated.

2. In an improved band-saw guide, the combination, with the body having the open socket E and set-screw J, of the sleeve G, having the set-screw H, and the guide-wheel F, having the journal *f*, revolving within said sleeve and bearing against the end of said set-screw, as and for the purpose stated.

3. The improved band-saw guide hereinbefore described, consisting of a body having on one end an angular socket provided with a set-screw, a curved middle portion terminating in an open socket having a set-screw, and a shank projecting rearwardly from said curved portion, said open socket having a U-shaped bracket terminating in an angular socket in line with the similar socket on the body and provided with a set-screw, side guides within said angular sockets, a tubular sleeve within the open socket having an adjusting-screw, as described, and a guide-wheel having a journal rotating within said sleeve and adapted to pass into the open socket by the slotted opening therein, as and for the object stated.

446,569. CAR-BRAKE. JOHN PLAYER, Topeka, Kans. Filed Sept. 29, 1890. Serial No. 366,516. (No model.)



Claim.—1. In a brake-beam, a brake-head D, having a socket *d* integral therewith and extending laterally at an angle thereto, substantially as described.

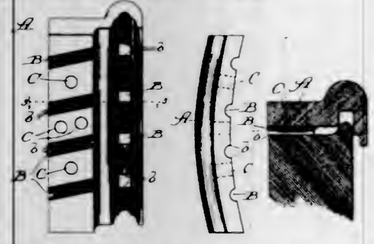
2. In a brake-beam, the combination of the compression members A, the T-shaped strut B, the combined brake-heads and sockets D, and the truss-rod *c*, passing through the strut, compression members, and brake-heads, and secured by nuts *c* or other suitable means, substantially as described.

3. In a brake-beam, a strut B, cored to receive the compression members and truss-rod and extending beyond such rod to receive the brake-lever, substantially as described.

4. In a brake-beam, the combination of compression members A, combined brake-heads and sockets D, a strut B, and a truss-rod C, the strut extending beyond the truss-rod to support the brake-lever, substantially as described.

5. In a brake-beam, the combination of compression members A, made of angle-iron, combined brake-heads and sockets D, a strut B, and a truss-rod passing through the strut and brake-heads and between the legs of the compression members, whereby any cutting of such members is avoided, substantially as described.

446,570. BRAKE-SHOE. JOHN PLAYER, Topeka, Kans. Filed Sept. 29, 1890. Serial No. 366,517. (No model.)

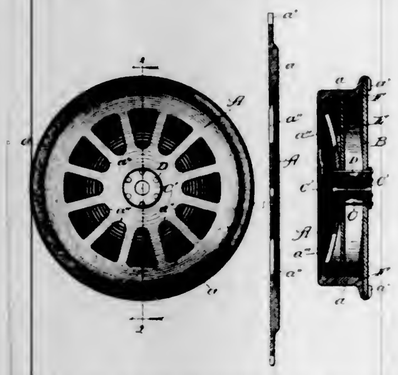


Claim.—1. A brake-shoe A, the face whereof is so formed as to contact only with the outer edge of the flange and that part of the tread not in contact with the track, such face being chilled throughout its entire surface and having grooves B, forming cutting-edges *b*, adapted to act upon the wheel and maintain its even surface, substantially as described.

2. A brake-shoe A, having a chilled face contacting with such parts of the wheel as are not worn in use, and having grooves B and holes C in such face forming cutting-edges to act upon the surface of the wheel and compensate for the unequal wearing thereof, substantially as described.

3. A brake-shoe provided with chilled cutting-edges *b*, adapted to act upon the parts of the wheel not worn in use, webs *d*, and blocks D D, acting to increase the friction and prevent too great wearing of the wheel, substantially as described.

446,571. CAR-WHEEL. JOHN PLAYER, Topeka, Kans. Filed Oct. 7, 1890. Serial No. 367,319. (No model.)

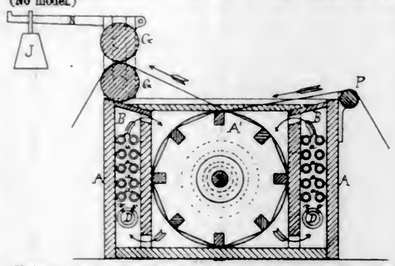


Claim.—1. In a car-wheel, the combination of a part A, having a thickened portion *a*, forming the tread of the wheel, and a disk B, secured thereto, substantially as described.

2. A car-wheel comprising a part A, having a thickened portion *a*, forming the tread of the wheel, a disk B, secured therein, and a hub C C', substantially as described.

3. A car-wheel comprising the part A, having a thickened portion *a*, forming the tread of the wheel, the disk B, secured thereto, a hub C C, and a supplemental strengthening-disk E, substantially as described.

446,572. DYEING-VAT. JOSIAH K. PROCTOR and WILLIAM B. KEEPER, Philadelphia, Pa. Filed Nov. 10, 1890. Serial No. 370,837. (No model.)



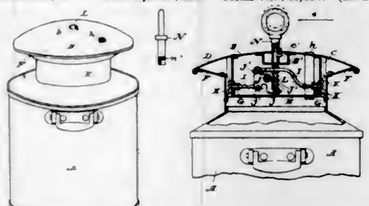
Claim.—1. A dye-vat having side compartments provided with openings communicating with the vat at top and bottom and heating-pipes located in said compartments, in combination with a revolving reel, substantially as set forth.

2. A dye-vat having side compartments provided with openings communicating with the vat at top and bottom and air-pipes located in said compartments, in combination with a revolving reel, substantially as set forth.

3. A dye-vat having side compartments provided with openings communicating with the vat at top and bottom, in combination with a revolving and side-moving reel, substantially as set forth.

4. A dye-vat having side compartments provided with openings communicating with the vat at top and bottom, in combination with a revolving reel and a pair of squeeze-rollers, substantially as set forth.

446,573. MILK-CAN. JOHN DE ST. LEGIER and GEORGE DAVIS, Hicksville, N. Y. Filed Apr. 14, 1890. Serial No. 348,437. (No model.)



Claim.—1. In a milk-can, the cover or lid B, having inclosed hinged bolts, a key-plate, and a locking mechanism, substantially as shown and described, in combination with a ratchet which is a part of or secured to the cover encircling neck of said can and working together to lock the lid to the can, substantially as described.

2. In a milk-can, the lid B, provided with a cap or bottom H, soldered to its rim C, a plate M, pivoted to the bottom H and to laterally-projecting arms or pawls extending through the rim of the lid and engaging in a ratchet secured to the cover encircling neck of the can, and means for operating said plates, substantially as and for the purpose shown and described.

3. The locking-pawls I I, attached to mechanism for operating the same and inclosed within the cover or lid of a milk-can, in combination with the corrugated neck of said can, as and for the purposes shown and described.

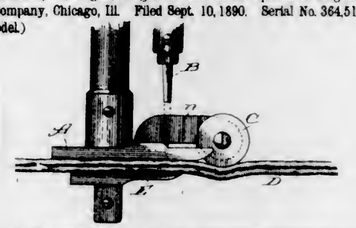
4. The lid or cover B with inclosed locking mechanism, said lid having a key-hole or opening *b*, as shown, in combination with a key provided with a spur or projection c to catch on the outside of the lid, substantially as shown and described.

446,574. MEDICINE-DROPPER. THOMAS C. WEEKS, Baltimore, Md. Filed Dec. 18, 1890. Serial No. 375,107. (No model.)



Claim.—The medicine-dropper consisting of a thin disk having an annular flat portion and a central depression and adapted to rest upon the upper surface of the mouth of the bottle and having a groove passing transversely across the under side thereof, said groove being tapered to and terminating in the exterior flat portion, the depression being adapted to receive a finger and also to centrally locate the dropper in the mouth of the bottle, and the tapered groove being adapted to convey fluid to the flat portion and permit the formation thereon of standard drops, substantially as set forth.

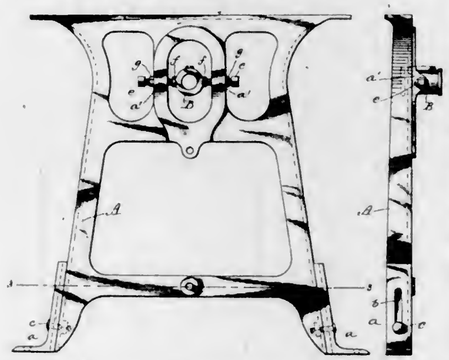
446,575. PRESSER-FOOT FOR SEWING-MACHINES. RUSSEL G. WOODWARD, Waukegan, assignor to the Union Special Sewing Machine Company, Chicago, Ill. Filed Sept. 10, 1890. Serial No. 364,510. (No model.)



Claim.—1. In a sewing-machine, the combination, with the presser-foot, feed, and reciprocating needle, of a compressor-roller rigidly supported to revolve on its axis on the presser-foot forward of the needle and feed-dog and permanently extending at its periphery below the plane of the bearing-surface of the presser-foot, substantially as and for the purpose set forth.

2. In combination, a sewing-machine presser-foot A, grooved longitudinally on its under side, a reciprocating needle B, a compressor unyieldingly supported on the presser-foot forward of the needle and permanently extending at its bearing-edge below the plane of the bearing-surface of the presser-foot, and a feed E, having teeth *m*, substantially as and for the purpose set forth.

446,576. SHAFT-BEARING TABLE-LEG. SATTERLEE ARNOLD, Montclair, N. J., assignor to Anna M. Arnold, same place. Filed Oct. 21, 1890. Serial No. 368,841. (No model.)



Claim.—1. A table-leg provided with a horizontally-adjustable shaft-bearing and having at the opposite sides of its bifurcated base independent vertically-adjustable feet, which may be raised and lowered as required, whereby the said bearing may be adjusted laterally and vertically to bring it into alignment, and whereby also the table may be leveled or caused to set firmly on an uneven floor.

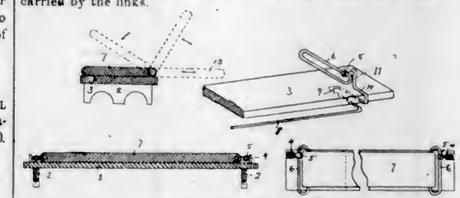
2. A table-leg provided with a horizontally-adjustable shaft-bearing and having at its opposite sides independent vertically-adjustable feet, the shanks of which have rib-and-groove connections with the lower parts of said leg, combined with securing-bolts for attaching said feet in place.

446,577. KNEELING-BENCH. CHARLES ARNOLDI, Berwick, Ohio. Filed July 28, 1890. Serial No. 360,226. (No model.)

Claim.—1. The combination, with a bench, of standards mounted thereon, links having a sliding connection therewith, and a cushion carried by said links.

2. The combination, with a bench, of a supporting-frame mounted thereon, swiveled eyebolts carried thereby, links engaging the eyebolts, and a cushion carried by the links.

3. The combination, with a bench, of a combined hat-rack and supporting-frame, sliding links carried by the frame, and a cushion carried by the links.



446,578. BASKET-HAMPER. ALFRED P. BOBLINGER, St. Louis, Mo. Filed July 16, 1890. Serial No. 358,880. (No model.)



Claim.—1. A basket consisting of horizontal upper, lower, and intermediate rods, the said intermediate rods having holes bored therethrough and the said upper and lower rods having holes bored therein but not extending therethrough, upright bars passing through the holes in the intermediate rods and having their ends contained in the holes in the upper and lower rods, forming side panels, upright corner-posts having holes in their sides, the said holes receiving the horizontal rods of both the contiguous sides, and a top and bottom, each composed of parallel side bars 13 and transverse intermediate and end bars 14, having their ends contained within holes in the said side bars, and a series of rods passing through holes in the intermediate transverse bars and having their ends secured in holes in the transverse end bars, the said parallel side bars of the bottom having their ends contained within holes in two opposite lower horizontal rods, one of the transverse end bars of the top being pivoted to one of the upper horizontal rods by screw-eyes, through which the said upper rod passes, as described.

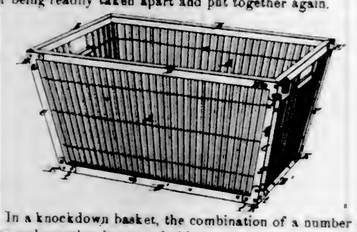
2. A basket consisting of horizontal upper, lower, and intermediate rods having holes bored therethrough, and the said upper and lower rods having holes bored therein but not extending therethrough, upright bars passing through the holes in the intermediate rods and having their ends contained in the holes in the upper and lower rods, forming side panels, upright corner-posts having holes in their sides, the said holes receiving the horizontal rods of both the contiguous sides, and a bottom composed of parallel side bars 13 and transverse intermediate end bars 14, having their ends contained within holes in the said side bars, and of a series of rods passing through holes in the intermediate transverse bars and having their ends secured in the holes in the transverse end bars, the said parallel side bars of the bottom having their ends contained within holes in the two opposite lower horizontal rods, as described.

446,579. BASKET-HAMPER. LEWIS A. BROWN, St. Louis, Mo., assignor to Alfred P. Bohlinger and William C. Backof, same place. Filed Apr. 9, 1890. Serial No. 347,285. (No model.)

Claim.—1. To form the wall or body of a basket, the combination of a number of sections, each consisting of a series of slats A, one or more ties *a*, horizontal bars B and B', having openings *b*, and vertical bars C, substantially as described.

2. In a knockdown basket, the combination of a number of sec-

tions to form the wall or body of a basket, each consisting of a series of slats A, one or more ties *a*, horizontal bars B and B', having openings or recesses *b*, vertical bars C, the bottom F, and any suitable means for securing the sections and bottom together that will permit of their being readily taken apart and put together again.



3. In a knockdown basket, the combination of a number of sections secured together in any suitable manner to form the basket wall or body, each consisting of a series of slots A, one or more ties *a*, horizontal bars B and B', having openings *b*, vertical bars C, the angle-plates E, screws *f*, the bottom F, removably secured in place in any suitable manner, and the cover G, all substantially as described.

4. The combination, for a cover, of the front and back bars *i* and *i'* and the end pieces *j* and *j'*, the center piece *k*, a top consisting of a series of slats *l*, wired together in any suitable manner, recesses in the end pieces *j* and *j'*, and the strips *m*, which bind the slats to the center piece K, all substantially as described.

5. In a knockdown basket, the combination of a number of sections, each consisting of a series of slats secured together in any suitable manner by wire ties, a frame consisting of horizontal and vertical bars, the ends of the series of slats being secured in any opposite bars and the ends of the wire ties in the remaining bars of each section, substantially as described, and a bottom, all removably secured together and all substantially as described.

6. In a knockdown basket, the combination of a number of sections, each section consisting of a series of slats A, one or more ties *a* to secure the slats together, horizontal bars B and B', having openings *b* to receive the ends of the slats A, vertical bars C to unite the horizontal bars together to hold the slats in place in the openings *b*, having beveled outer edges or sides D for uniting the several sections composing the walls of the basket, as required, and having openings *c* for the ends of the slats to pass through and grooves *d* to receive the ends of the ties after they have been brought through the openings *c*, staples *e* to hold the ends of the ties in place in the grooves *d*, angle-plates E, screws *f* and *g* to secure the sections removably together, the bottom F, and the screws *h* to secure the bottom removably in place, all substantially as described.

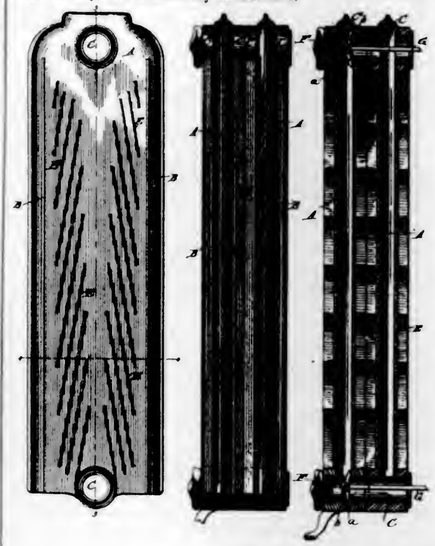
7. A knockdown basket consisting of a bottom and side walls, each side wall consisting of a series of slats A, one or more ties *a* to secure the slats together, horizontal bars B and B', and vertical bars C, with suitable openings in any two opposite bars to receive the ends of the slats, with the horizontal bars secured by their ends to the ends of the vertical bars when the slats are in place in the openings in the two opposite bars containing such openings, with the ends of the ties secured through, in, or to the remaining opposite bars to give firmness in the frame to the panel formed by the slats and ties, and with the vertical bars having their outer sides or edges D beveled to join, as required, the beveled sides or edges of other like side walls to form the whole wall or body of the basket, the said side walls being secured together by angle-plates of any suitable material passing around the corners, all substantially as described.

446,580. RADIATOR. ARTHUR H. FOWLER, Buffalo, N. Y. Filed May 31, 1890. Serial No. 353,888. (No model.)

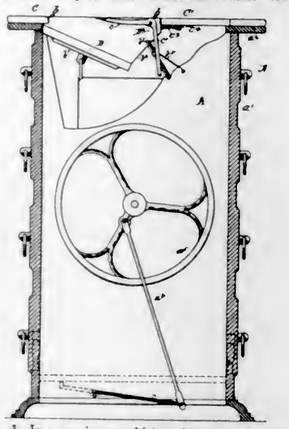
Claim.—1. A radiator composed of hollow sections forming air-spaces between them with said air-spaces divided into a central passage-way increasing in width toward the upper end and side passage-ways of decreasing width toward the upper end, and air-ducts inclined toward the center as they rise and communicating at their lower ends with the side passages and at their upper ends with the central passage, substantially as and for the purpose described.

2. A radiator composed of hollow sections having vertical abutting flanges at their outer edges forming closed air-spaces between, with said air-spaces divided into a central passage-way of increasing width toward its upper end and side passage-ways of decreasing width toward the upper end, and intermediate air-ducts inclined toward the center as they rise and communicating at their lower ends with the side passages and at their upper ends with the central passage, substantially as shown and described.

3. A hollow radiator-section having two series of inclined flanges formed upon its sides, with the upper ends of these flanges inclined inwardly and with the two series separated a greater distance from each other as they rise, substantially as described.



446,581. SEWING-MACHINE CABINET. AMOS F. GERALD, Fairfield, Me. Filed July 13, 1889. Serial No. 317,401. (No model.)



Claim.—1. In a sewing-machine cabinet, the combination, with the top having the opening, of the swinging platform within said opening, a spring-controlled brace engaging with the platform to hold it in its upward position, and a pivoted lever for throwing the brace out of engagement with the platform, substantially as specified.

2. In a sewing-machine cabinet, the combination, with the standards and the top having the opening, of the swinging platform within said opening, a spring-controlled brace pivoted to the standards and engaging with the platform, a pivoted lever having one of its ends extending above the platform and its other end engaging with the brace, and leaves attached to the platform, substantially as specified.

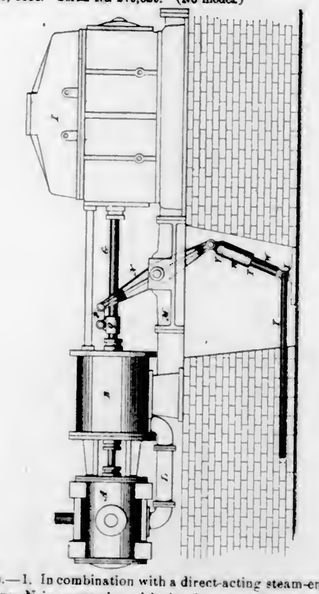
3. In a sewing-machine cabinet, the combination, with the cabinet-top having an opening and a platform hinged to one of the sides of said opening, of a leaf hinged to one side of the platform, and a spring attached to the platform and bearing in guides on the leaf, whereby said leaf is turned outwardly when the platform is raised, substantially as specified.

4. In a sewing-machine cabinet, the combination, with the standards, of the pivoted shelf between the standards, constructed to cover the treadle and to serve as a shelf when the treadle is not in use, substantially as specified.

5. In a sewing-machine cabinet, the combination, with the standards, the bed having the opening, and the cover pivoted to said bed, of the swinging platform having the inclined portion, the spring-controlled brace engaging therewith, and a pivoted trip-lever for operating said brace, substantially as specified.

6. In a sewing-machine cabinet, the combination, with the swinging platform and the leaf hinged thereto, of a spring secured to the platform and guides on the leaf engaging over an extended portion of the spring, substantially as specified.

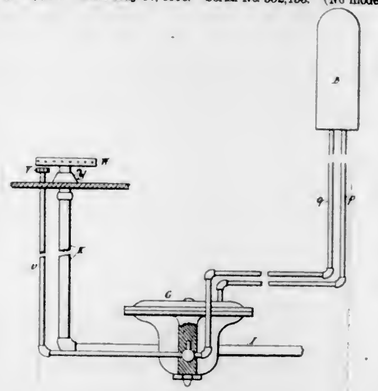
446,582. DIRECT-ACTING STEAM-ENGINE. JOHN A. GROSHON, New York, assignor of one-half to John Lockwood, Jamaica, N. Y. Filed July 5, 1888. Serial No. 279,029. (No model.)



Claim.—1. In combination with a direct-acting steam-engine, the rocking lever N, in connection with the piston-rod of same, the hollow telescopic lever T, pipe Y, and accumulator in connection with said pipe, substantially as and for the purposes set forth.

2. In combination with a direct-acting steam-engine, the accumulator Z, provided with the piston having two diameters, the pipe Y, leading from said accumulator, and the hollow telescopic lever consisting of sheets V W, the lower section being in communication with said pipe and the upper section being pivoted to the rocking lever N, substantially as and for the purposes set forth.

446,583. THERMOSTATIC REGULATOR. EDWIN C. MERRILL, Allegheny, Pa. Filed May 17, 1890. Serial No. 352,133. (No model.)



Claim.—1. A thermostatic regulating device adapted to be placed in the room of a building whose temperature is to be regulated, said device comprising a base on which is mounted the expansible arm or arms, the controlling-valve actuated thereby, and an indicator and diaphragm actuated by pressure in the pipe controlled by said valve, combined with a face-plate covering said parts and provided with a thermometer and with a slot through which the finger of said indicator projects, substantially as described.

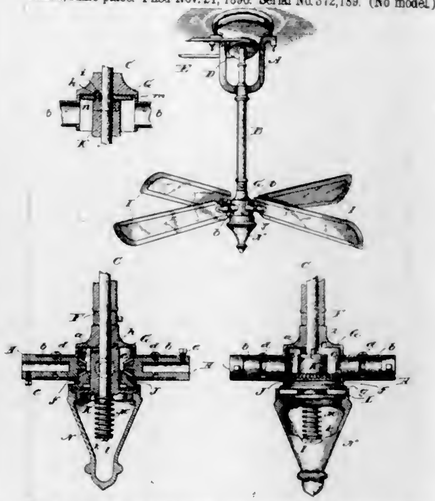
2. The combination, with the regulating-valve in the main pipe actuated by pressure on a supporting-diaphragm, a pipe leading from the main inlet around said diaphragm, a valve in said pipe for regulating the pressure therein, and an indicator actuated by the pressure in said pipe, whereby the condition of the main valve is shown at the secondary valve, substantially as described.

3. The combination of the main valve, the secondary valve controlling the pressure of the fluid operating said main valve, and the visual signal or indicator also controlled by the said secondary valve, substantially as described.

4. The combination of the main valve regulating the amount of gas supplied to a furnace, the secondary valve controlling the pressure of the fluid operating said main valve, the thermostat connected with and operating the secondary valve, a direct and return pipe for the secondary valve, a movable device, such as a diaphragm, in a chamber communicating with the direct pipe, and an indicator actuated by said movable device, substantially as described.

5. The combination, with the regulating-valve in the main pipe and its diaphragm, of a small gas-conduit containing a controlling-valve, said conduit leading from the main inlet through and around said diaphragm and returning to a passage or channel which conducts gas from the main pipe to a constant jet or lighter, substantially as described.

446,584. FAN ATTACHMENT. GEORGE S. NICKUM, Dayton, Ohio, assignor to himself and William R. Anderson, James A. Smith, and E. C. James, same place. Filed Nov. 21, 1890. Serial No. 372,189. (No model.)



Claim.—1. In a fan attachment, the combination, with the rotating fan-shaft, of the hub journaled thereon and provided with journaled fan-spindles having pinions upon their inner ends, a gear journaled in the hub meshing with said pinions and having on its opposite side a clutch-face, a sleeve free to slide on the fan-shaft and having at its end within the hub means for locking it both to the fan-shaft and the fan-hub, said sleeve also having a clutch-face to engage the clutch-face on the gear and a grasping-handle for said sleeve, substantially as described.

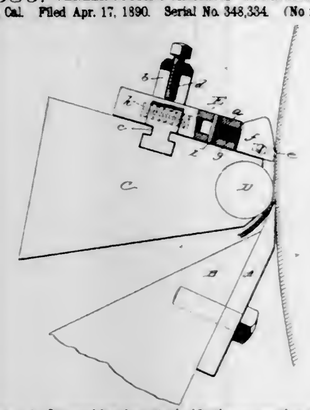
2. In a fan attachment, the combination, with the rotating fan-shaft, of the hub journaled thereon and provided with journaled fan-spindles having pinions upon their inner ends, a gear journaled in the hub meshing with said pinions and having on its opposite side a clutch-face, a sleeve free to slide on the fan-shaft, having at its end within the hub a groove to engage a locking-pin on the fan-shaft and having a projecting pin to engage a socket in the hub, said sleeve also having a clutch-face to engage the clutch-face on the gear and a grasping-handle for said sleeve, substantially as described.

3. In a fan attachment, the combination, with the rotating fan-

shaft, of the fan-hub journaled thereon and provided with journaled fan-spindles having pinions upon their inner ends, a gear journaled in the hub meshing with said pinions, and having on its opposite side a clutch-face, a sleeve free to slide on the fan-shaft, having at its end within the hub a groove to engage a locking-pin on the fan-shaft and having a projecting pin to engage a socket in the hub, said sleeve also having a clutch-face to engage the clutch-face on the gear, a spring for said sleeve tending to force the same into the hub, and a combined drip-cup and grasping-handle for said sleeve, substantially as described.

4. The combination and arrangement of the fan-shaft C, hollow hub G, journaled thereon and provided with radial sockets *b*, fan-spindle H, having pinions *c* on their inner ends within the hub, the gear J, meshing with said pinions, journaled in the hub, and having on its opposite side a clutch-face, the sleeve K, free to slide on the fan-shaft and having at its end within the hub the groove *j* to engage the pin *a* upon the fan-shaft and the pin *h* to engage the socket *i* in the hub, the clutch L, carried by the sleeve K and arranged to engage the clutch on gear J, the spring M, and the drip-cup N, substantially as and for the purpose described.

446,585. VENEER-CUTTING MACHINE. EDWIN DENSMORE, Coronado, Cal. Filed Apr. 17, 1890. Serial No. 348,334. (No model.)

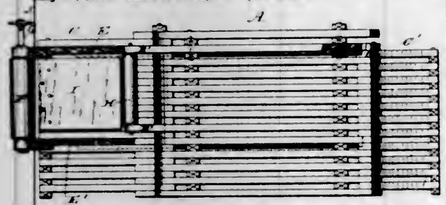


Claim.—1. In combination, the knife, the supporting frame-work movable toward the log, the casing carried by said frame-work, a scorer-support having sliding movement in said casing, and a spring within the casing for forcing the support outward, substantially as described.

2. In combination, the knife, the movable supporting frame-work, a scorer, a casing *a*, carrying the said scorer on its front end, means for keeping the scorer pressed constantly outward, the said casing being adjustable on the frame-work independent thereof, both longitudinally and laterally, substantially as described.

3. In combination, the knife, the frame-work, the casing *a*, adjustable laterally and longitudinally and provided with a socket, the head *f*, having a shank fitted thereto, the spring for forcing the head outward, and the scorer-blade carried by the head, substantially as described.

446,586. PIER-PROTECTOR. AGNEW MOORE, Missoula, Mont. Filed May 16, 1890. Serial No. 352,061. (No model.)

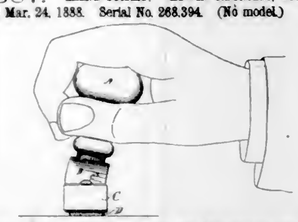


Claim.—1. A pier-protector comprising a vertical roller journaled at the apex of the pier, and rollers journaled at the sides of the pier, substantially as shown and described.

2. A pier-protector comprising a vertical roller journaled at the apex of the pier, side rollers journaled at the sides of the pier, and a plate arranged angularly between the front and side rollers at each side of the pier, substantially as shown and described.

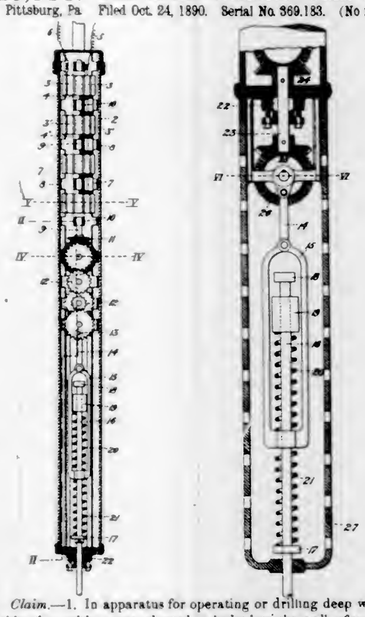
3. A pier-protector comprising two longitudinal beams adapted to be secured in the pier and projecting beyond the apex of the latter, and a roller arranged vertically and journaled in projecting ends of the said beams in front of the apex of the pier, substantially as shown and described.

446,587. HAND-STAMP. EDWIN REYNOLDS, Providence, R. I. Filed Mar. 24, 1888. Serial No. 268,394. (No model.)



Claim.—The combination, with the flexible bow-spring provided with openings at its opposite ends and the handle attached to the middle portion of the said spring, of a die-plate provided with the projecting studs, which are loosely held in the said openings of the spring, whereby the handle may be held to one side at an angle with the die-plate by causing the torsion of the spring, substantially as described.

446,588. WELL-DRILLING APPARATUS. WESLEY WEBBER, Pittsburg, Pa. Filed Oct. 24, 1890. Serial No. 369,183. (No model.)



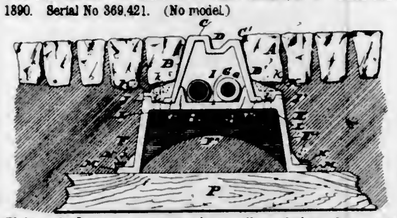
Claim.—1. In apparatus for operating or drilling deep wells, the combination, with a case adapted to be let into the well, of a series of electric motors arranged therein in tandem, and a common power-transmitting shaft, which extends longitudinally of the case and is fixed to the armatures of the motors, whereby motion of the armatures is transmitted directly to the shaft, substantially as and for the purposes described.

2. In apparatus for drilling or operating deep wells, the combination of a case adapted to be let into the well, an electric motor contained in the case, a rotary shaft driven by the motor and projecting outside the case, and mechanism situate outside the case and connected with the shaft and adapted to transfer the rotary motion thereof into a reciprocating motion, substantially as and for the purposes described.

3. In apparatus for drilling or operating deep wells, the combination of a case adapted to be let into the well, a motor contained in the case, a rod connected with the motor and reciprocated thereby, and a sliding jar-section connected with the rod, substantially as and for the purposes described.

4. In apparatus for drilling or operating deep wells, the combination of a case adapted to be let into the well, a motor contained in the case, a rod connected with the motor and reciprocated thereby, a link having a sliding connection and adapted to form a jar, and a spring acting on the rod and link, substantially as and for the purposes described.

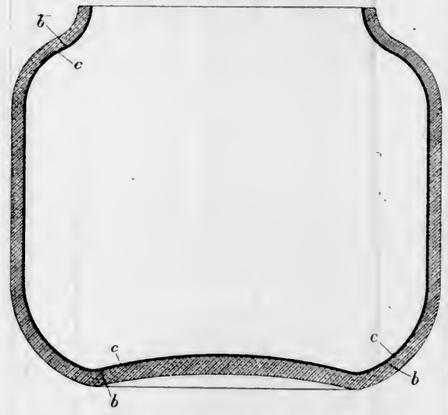
446,589. RAIL FOR STREET-RAILWAY SERVICE AND CHAIR FOR THE SAME. WILLIAM H. WRIGHT, Buffalo, N. Y. Filed Oct. 27, 1890. Serial No. 369,421. (No model.)



Claim.—1. In a street-car track, a rail consisting of a substantially U-shaped body having a head, a groove, and a train adjoining said groove, and convergingly-arranged webs B B′, provided with feet *b b′*, said rail being supported upon chairs having a top plate G, provided with projections J J′ on its outer edge, inclined projections H H′ engaging the webs B B′ on their inner side, clamps K, bearing with their outer ends upon the projections J J′, and with their slightly-inclined portions upon the feet *b b′* and the outer sides of said webs, and bolts L passing through said top plate and the clamps, as and for the object stated.

2. In a street-car track, a substantially U-shaped rail having laterally-projecting feet, as described, supported upon a chair E, consisting of the top plate G, the convergingly-arranged standards F F′, the flanges M on said standards, the projections J J′, the inclined projections H H′, all located on the top surface of the top plate G, the clamps K, bearing with their outer ends upon the projections J J′ and with their inner inclined portions upon the feet *b b′* and the sides of the webs B B′, and the bolts L, passing through the said top plate and the clamps, as and for the object set forth.

446,590. GLASSWARE. XAVER ZGRAGGEN, Martin's Ferry, Ohio. Filed June 23, 1890. Serial No. 356,424. (Specimens.)



Claim.—As a new article of manufacture, a hollow article of glassware whose interior surface is lined with a compound metallic coating consisting of a chemically-deposited metal film next to the glass, and an electro-deposit of metal which backs and protects said film, substantially as and for the purposes described.

446,591. INKSTAND. CHARLES E. BLUE, Wellsburg, W. Va. Filed Dec. 13, 1890. Serial No. 374,615. (No model.)

Claim.—1. In an inkstand, the combination of an ink-well, a plunger movable within the well and having a vertical ink-passage, and a packing-ring encircling the plunger and bearing against the inner wall of the ink-well, substantially as and for the purposes described.

2. In an inkstand, the combination of an ink-well, a plunger movable within the well and having a vertical ink-passage, and a packing-ring encircling an inclined peripheral seat on the plunger and bearing against the inner wall of the ink-well, substantially as and for the purposes described.



446,592. PIPE-WRENCH. THOMAS J. DUNCAN and DENNIS MCMANUS, Leadville, Colo. Filed July 1, 1890. Serial No. 357,339. (No model.)



Claim.—1. A pipe-wrench consisting of a handle having an integral horizontally-disposed jaw, a horizontally-disposed movable jaw having a vertical arm normally sliding against or adjacent to the handle, a slot in said arm having a rack formed in one wall thereof, plates embracing the movable arm and stationary jaw and pivoted to the said jaw, and a dog carried by the plates engaging the rack

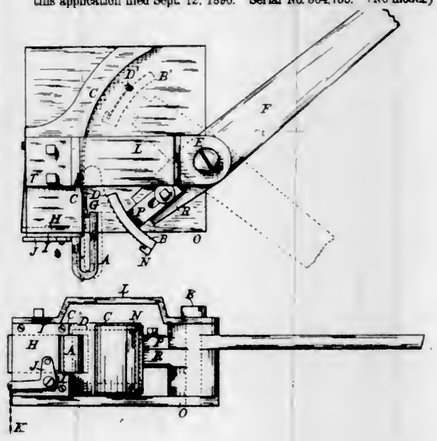
2. A pipe-wrench consisting of the handle having a horizontal jaw, a movable jaw formed with a slotted arm, plates pivoted to the stationary jaw, and a dog carried by the plates fitting in the slot of the arm connecting the movable and stationary jaw and retaining the parts in adjusted positions.

446,593. CHAIN-FASTENING. BENJAMIN S. FREEMAN, Jr., Attleborough Falls, Mass. Filed Apr. 14, 1890. Serial No. 347,860. (No model.)



Claim.—A chain-clasp formed in two parts, one part being provided with the lip and a projecting post at right angles therewith having a head, and the other with a recess adapted to receive the lip, and with means for frictionally engaging and holding the head of the post, substantially as described.

446,594. MACHINE FOR SOFTENING LEATHER. NATHANIEL GILLARD, Rochester, N. Y., assignor to Curtis & Wheeler, same place. Original application filed Dec. 24, 1888, Serial No. 294,448. Divided and this application filed Sept. 12, 1890. Serial No. 364,738. (No model.)



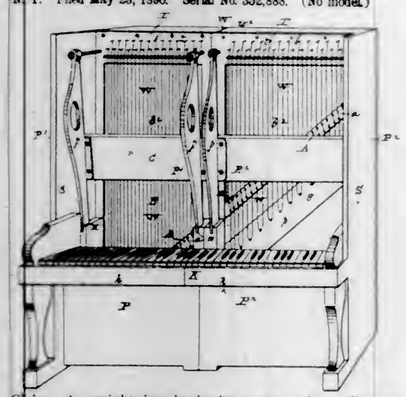
Claim.—1. The combination, with the bed C, provided with clamp A, of the reciprocating presser B and ledge N, substantially as described.

2. The combination, with the base O, of the curved bed C, provided with clamp A, the reciprocating presser B, pivot E, and lever F, substantially as described.

3. The combination of the bed C with the reciprocating presser B, each being provided with a leather-holding device and the presser adapted to move past the holding device on the bed, substantially as set forth.

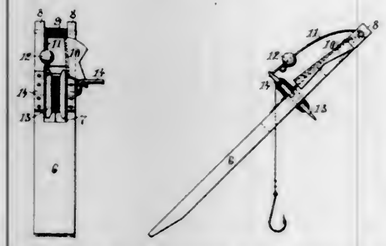
4. The combination of the bed C, provided with a clamp arranged to receive and protect a material part of the leather, with a presser B, provided with a leather-holding device and adapted to pass to and fro past the clamp, substantially as set forth.

446,595. **UPRIGHT PIANO.** HENRY L. GREYWACK, West Troy, N. Y. Filed May 23, 1890. Serial No. 352,888. (No model.)



Claim.—An upright piano having its wrest-board, sounding-board, bridge, key-board, bank, action mechanism, and iron frame divided vertically in two parts, with each of the iron frame parts provided with brackets to support the action mechanism, and the said divided parts constructed and arranged to connect substantially in the manner as and for the purposes set forth.

446,596. **TILT-UP FOR FISHING.** OWEN HACKETT, Lymansville, R. I. Filed Oct. 3, 1890. Serial No. 367,394. (No model.)

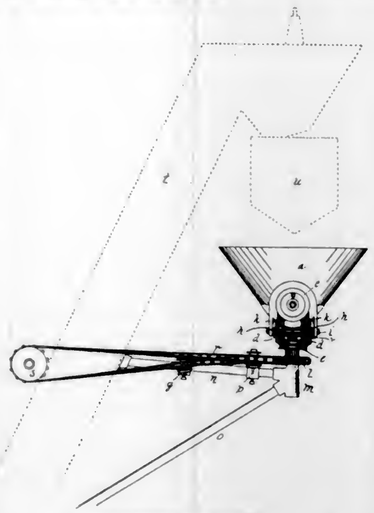


Claim.—In a tilt-up, the combination, with the standard 6, having the rectangular opening 7, and the reel 13, revoluble therein on the axle 14, of the spring 9, pivotally secured between the projecting arms 8 8, furnished with the signal-arm 10, and weighted spring-arm 11, adapted to interlock with the notch 15 on the reel-arm, as described.

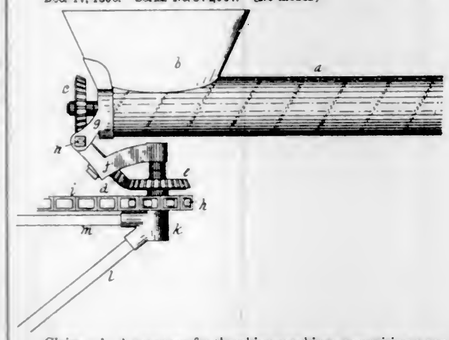
446,597. **CONVEYER.** CHARLES J. HARTLEY, Decatur, Ill., assignor of two-thirds to John K. Warren and Bradford K. Durfee, same place. Filed Dec. 26, 1889. Serial No. 334,996. (No model.)

Claim.—1. In conveyers, the combination of the conveyer-pipe having a revoluble spiral, the driven wheel on the shaft of the spiral, the pivot-pin supporting the conveyer-pipes, the drive-wheel on the pin, the idlers, and the link belt connecting the wheel on the pin, with the wheel on the conveyer-shaft, as set forth.

2. In conveyers, the combination of pivot-pin *f*, having rest *g* and arms *h*, conveyer *b*, having the revoluble spiral and connecting pivotally with arms *h*, wheel *c* on the conveyer-shaft, idlers *d*, wheel *e* on the pin, and link belt *r*, connecting the wheel of the pin with the wheel of the conveyer-shaft, as set forth.



446,598. **CONVEYER FOR THRASHING-MACHINES.** CHARLES J. HARTLEY, Decatur, Ill., assignor of two-thirds to John K. Warren and Bradford K. Durfee, same place. Filed Dec. 26, 1889. Renewed Dec. 17, 1890. Serial No. 374,967. (No model.)



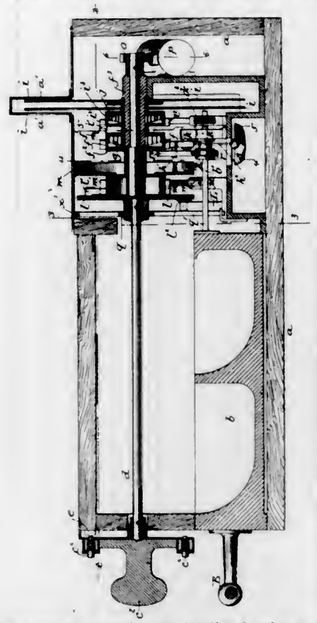
Claim.—1. A conveyer for thrashing-machines, comprising a conveyer-worm in a cylinder having a vertical pivot and a horizontal pivot, and a set of obliquely-arranged gear-wheels extending from the vertical pivot to the worm-shaft, as set forth.

2. In combination, pivot *o*, carrying frame *f*, frame *g*, pivoted at *n* to frame *f* and carrying spiral conveyer *a* and gear-wheels *e d c* on pin *o*, frame *f*, and the worm-shaft, respectively, the pivot *n* being in line with the conjunction of wheels *c* and *d*, as set forth.

446,599. **CASH REGISTER AND INDICATOR.** BRUCE JOHNSTON, Croydon, England. Filed July 28, 1890. Serial No. 360,252. (No model.) Patented in England June 1, 1888, No. 8,047.

Claim.—1. The means for indicating to the customer the amount to be placed in the till, viz: the combination of parts consisting of the handle c^3, turning the axis *d*, the tooth *f'*, fast with the axis acting against a corresponding tooth on the indicating-disk *i*, the said indicating-disk *i*, the pawl *k* and tooth i^3, which retain the indicating-disk, the part b^3 on the drawer, which withdraws the pawl *k* when the drawer is opened, and the spring *j*, which brings the tooth i^3 in contact with *f'* when the disks are free, the whole so arranged, substantially as described, that the indicating-disk either before or when the drawer is opened assumes a position corresponding to that of the handle and retains this position while the drawer is closed and until it is reopened.

2. The means for locking and unlocking the till-drawer, viz: the combination of parts consisting of the stem *b'* on the drawer, the spring-bolt *q*, having a tongue engaging with the stem *b'*, the handle c^3, and axes *d*, and the notched disks *l* on the axes and turning with them, the pins q^3 on the bolt entering the notches in the disks and pressed back by them when either of the axes is turned away from its zero-point, but returning with the bolt and allowing the bolt to engage when the drawer is closed and the axes have returned to the zero position.



3. The means for retaining the handles c^3 and axes *d* while the drawer is opened and until the drawer is again closed and then causing them to return to the zero positions, viz: the combination of parts consisting of the ratchet-teeth *f* on the axes, the pawls *h*, engaging with these teeth, the sliding bar *r*, which is moved as the drawer is closed, the stem *b'* on the drawer, which imparts this movement, the projections r^3 on the bar *r*, which serve to displace the pawls *h*, the springs *g*, which then bring back the axes, the fingers h^3 on the pawls *h*, and the notched flanges f^2 on the ratchets *f*, which serve to prevent the return of the pawls until the axes are home to the zero positions, and the gate-piece *r'* on the bar *r*, which by yielding when the drawer is opened releases the stem *b'* without any movement of the bar *r* and pawls *h*.

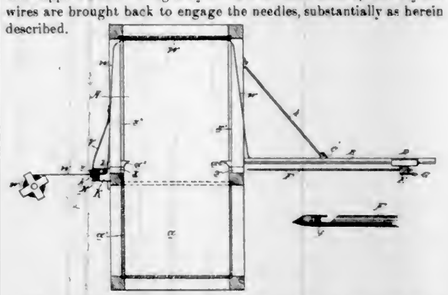
4. The means for keeping a continuous reckoning, viz: the combination of parts consisting of the axes *d*, the handles c^3, by which they are turned in one direction, the springs *g*, by which the axes are caused to return, the pawls *l*, by which the axes turn the ratchets *m'* and counting-wheels *m*, the said ratchets and wheels, and the pins m^3 on the wheels *m*, and the levers *n*, by which each wheel *m* as it completes its rotation moves the next wheel a tooth forward.

5. The combination, in a money-till and cash-registering apparatus, of the casing, a series of handles, their axes, counting-wheels geared with the axes and revolved thereby, indicating-disks also geared with the axes and operated thereby, a stem connected with the drawer, a bolt engaging therewith, a pin carried around with the axes of the handles and operating said bolt, pawls engaging with teeth connected with the indicating-disks, a bar on which the pawls are mounted, and a slotted finger secured to the money-drawer for operating the pawl-carrying-bar.

446,600. **WIRING ATTACHMENT FOR BALING-PRESSES.** JOHN H. KRUSE, Portland, Oreg. Filed Apr. 29, 1890. Serial No. 349,957. (No model.)

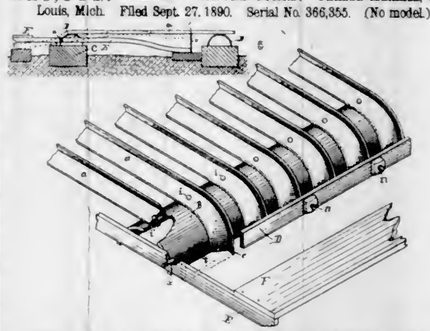
Claim.—1. In a wiring attachment for baling-presses, the combination of a vertically-movable bar for the wires at one side of the press, a reciprocating cross-head at the opposite side, having needles adapted to traverse the baling-chamber, and a support for holding the bar up, said support being in the path of one of the needles and being forced from under the bar by its contact with the needle, substantially as herein described.

2. In a wiring attachment for baling-presses, the combination of a movable support for the wires on one side of the press, a reciprocating cross-head or frame carrying needles on the other side of the press, said needles being adapted to traverse the baling-chamber, levers connected with the movable support and operated by the reciprocating frame to move the support and wires, and a spring-catch for holding said support and relieving it by contact with the needles, whereby the wires are brought back to engage the needles, substantially as herein described.



3. In a wiring attachment for baling-presses, the combination of the vertically-movable bar on one side of the press, having holes for the wire and guide-pulleys, the reciprocating cross-head E, having the needles F, with hooked ends adapted to traverse the baling-chamber, levers L, operated by the reciprocating cross-head for raising the bar H with its wires, and the spring V for holding the bar up and for relieving it by contact with the needles, whereby the wires are dropped down into the hooked ends of the needles, substantially as herein described.

446,601. **RAILWAY CATTLE-GUARD.** PARKER MERRILL, St. Louis, Mich. Filed Sept. 27, 1890. Serial No. 366,355. (No model.)

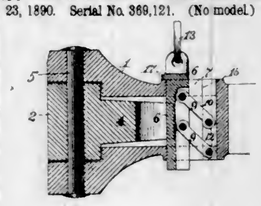


Claim.—1. In a cattle-guard, the combination of T-bars elevated above the ties and lying upon their sides with two or more transverse beams that rest upon the ties, said T-bars resting upon and secured to the upper surface of said transverse beams, substantially as set forth.

2. In a cattle-guard, the combination of elevated guard-bars that are bent down at their ends to the tie with the spike-plate D, clamped against their ends, substantially as set forth.

3. In a cattle-guard, the combination of guard-bars elevated above the ties with a fulcrumed bridge or platform located at the approach to the guard, levers supporting the said bridge at their front ends, the rear ends of which levers are carried laterally beneath the guard-rails, and upward projections attached to the part of said levers beneath said guard-rails, whereby if an animal approaching the guard should step upon the platform the latter would trip and the projections would be thrown up as signals of warning, substantially as set forth.

446,602. **CAR-COUPLING.** WILLIAM MCCONWAY, Pittsburg, Pa. Filed Oct. 23, 1890. Serial No. 369,121. (No model.)



Claim.—1. The combination, in a car-coupler, of a swinging hook and a vertical locking-bar which is pivotally connected to the coupler-head so as to be capable of vertical and backward motion, while retaining its vertical position in its unlocking movement, substantially as set forth.

2. The combination, in a car-coupler, of a coupling-hook and a locking-pin pivotally connected to a fixed portion of the coupler and adapted by its connection with the coupler to be moved in a vertical plane backward and upward from the locking position and automatically returned to the locking position by gravity when released, said pin being always in a vertical position, substantially as set forth.

3. The combination, in a car-coupler, of a coupling-hook and a locking-pin which is connected to the coupler by means of one or more links in such a manner that any backward motion of the locking-pin from locking position produces a corresponding upward motion, substantially as set forth.

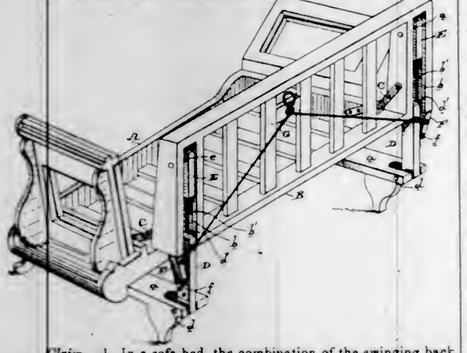
4. The combination, in a car-coupler, of a coupling-hook, a locking-pin for holding the coupling-hook in the coupled position, and links connecting the locking-pin to the coupler-head in such a manner that the locking-pin is constrained to move in a vertical plane, substantially as set forth.

5. The combination, in a car-coupler, of a pivoted coupling-hook, a locking-pin for locking the coupling-hook in the coupled position, and a link-connection between the locking-pin and the coupler-head by which the locking-pin is constrained to move in a vertical plane and to retain at all times a vertical position, substantially as set forth.

6. The combination, in a car-coupler, of a coupling-hook, a locking-pin for engaging with a part of the hook to lock it in the coupled position, and a link-connection between the locking-pin and the coupler-head, adapted to guide the locking-pin and so arranged that when the locking-pin has been moved from the locking position and released it is always in a position to be returned to the locking position by gravity, substantially as set forth.

7. The combination, in a car-coupler, of a pivoted coupling-hook, a locking-pin with straight vertical sides and a vertical slot in which the pin is swung by a link-connection which connects it to the coupler-head, substantially as set forth.

446,603. SOFA-BED. ANDREW G. PHILLIPS, San Francisco, Cal. Filed Aug. 25, 1890. Serial No. 363,030. (No model.)



Claim.—1. In a sofa-bed, the combination of the swinging back having the end recesses, the bars D, pivoted to the seat-frame fitting in said recesses, and the swinging cleats carried by the bars and adapted to enter said recesses and to fit their upper ends under and to be removed from the lower ends of the back to lock and relieve said back, substantially as herein described.

2. In a sofa-bed, the combination of the swinging back having the end recesses, the bars D, pivoted to the seat-frame and adapted to slide in said recesses, the swinging cleats, also adapted to enter said recesses and hinged to said bars for locking and relieving said back, springs between the bars and cleats for throwing said cleats out, and a cord for drawing them in, substantially as herein described.

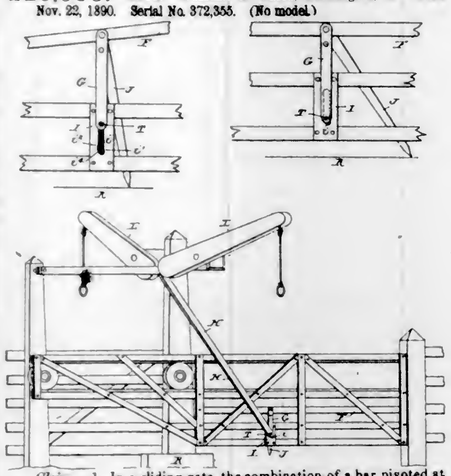
3. In a sofa-bed, the combination of the swinging back having the end recesses with interior side grooves, the bars D, pivoted to the seat-frame and having their upper ends seated in said recesses and adjustably connected therewith by pins traveling in their grooves, the swinging locking-cleats carried by the bars for locking and relieving the back, and the pivoted gravity-legs in the upper ends of said recesses adapted to be held by bars D, substantially as herein described.

4. In a sofa-bed, the combination of the seat-frame having the leg-extensions, the swinging back having the end recesses with interior side grooves, the bars D, pivoted to the leg-extensions and fitting in the grooved recesses by means of a sliding connection, the gravity-legs in the upper ends of the recesses, the cleats hinged to the bars D, the springs for throwing the upper ends of said cleats outwardly under the ends of the back, and the cord for drawing them inwardly, substantially as herein described.

446,604. COMPOSITION OF MATTER FOR RESTRAINING THE SETTING OF PLASTER COMPOUNDS. EDWARD WATSON, Grand Rapids, Mich. Filed Dec. 29, 1890. Serial No. 376,102. (No specimens.)

Claim.—The herein-described composition of matter for restraining the setting of plaster, consisting, essentially, of a leguminous substance, such as peas, beans, lentils, &c., slaked lime, carbonate of soda, an alkaline earth or a salt of an alkaline earth, or a salt of a caustic alkali, substantially as shown by the specification, and for the purpose specified.

446,605. GATE. WILLIAM R. WHITE, Bloomington, Ill. Filed Nov. 22, 1890. Serial No. 372,355. (No model.)



Claim.—1. In a sliding gate, the combination of a bar pivoted at one end, normally held vertical, and free to swing to either side upon its pivot with a block arranged to engage the free end of the bar when the gate is in its central position, substantially as described.

2. In a sliding gate, the combination, with the pendent bar pivotally connected at its upper end to the gate, of the block arranged in the path of the lower end of said bar, substantially as described.

3. In a sliding gate, the combination, with the swinging strip, of the pendent bar, connections between said strip and bar, and the block arranged in the path of the lower end of said bar, substantially as described.

4. In a sliding gate, the combination of the swinging strip, the connecting-arm, the latch-bar, the pendent bar, and the block arranged in the path of the lower end of said pendent bar, substantially as described.

5. The combination, with a gate and a bearing R near the center thereof, of a pivoted bar hung to normally make contact with the bearing, and means for reciprocating the pivoted end of the bar when its opposite end is on the bearing to shift the gate, substantially as set forth.

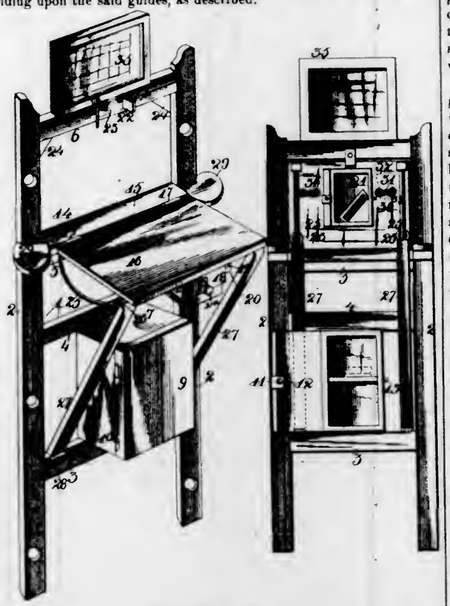
6. In a sliding gate, the combination, with the swinging strip, the pendent bar, and connections between said strip and bar, of a slotted guide-plate attached to the gate, and the block arranged in the path of the pendent bar, substantially as described.

7. The combination, with the swinging strip, the pendent bar, and connections between said strip and bar, of the guide-plate having the shoulders i' and i^2 on either side of the slot i, and the block R, substantially as described.

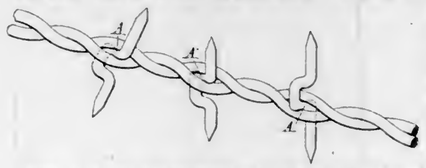
8. In a gate of the class described, the guide-plate having the slot i, shoulders i' i^2, and the terminal clips i^3, substantially as described.

446,606. COMBINED DRESSER AND WRITING-DESK. JOHN T. BENTLEY, St. Louis, Mo. Filed Sept. 19, 1890. Serial No. 365,454. (No model.)

Claim.—The combination, with a supporting-frame, of a leaf hinged thereto and adapted to swing upward into a vertical position and downward into a horizontal position, semi-elliptical wire guides upon the bottom of the said leaf, and supporting-strips hinged to the said frame below the said leaf and having eyes upon their upper ends sliding upon the said guides, as described.



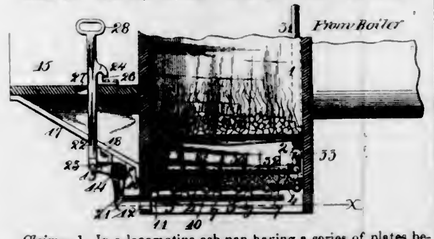
446,607. BARBED WIRE FOR FENCES. JOHN W. BLAKE, Marshall, Minn. Filed July 8, 1889. Serial No. 316,879. (No model.)



Claim.—1. A barb with substantially a U-shaped or loop-formed central portion and adapted to be held transversely between the strands of a cable-laid wire, the part clasped being elliptical in cross-section, the said barb having its projecting parts parallel to the minor axis of the ellipse and also adapted to yield to pressure as well as to return to its normal position when relieved, substantially as described.

2. In combination with a cable-laid wire, a barb having a U-shaped or loop-formed central portion and adapted to be held transversely between the strands of the cable, the part clasped being elliptical in cross-section, the said barb having its projecting parts parallel to the minor axis of the ellipse and adapted to yield to pressure as well as to return to its normal position when relieved, substantially as described.

446,608. LOCOMOTIVE ASH-PAN. EDMUND M. FITZGERALD, St. Louis, Mo. Filed Sept. 15, 1890. Serial No. 365,053. (No model.)



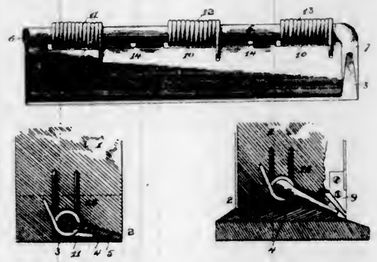
Claim.—1. In a locomotive ash-pan having a series of plates below the grate-bars of the fire-box, the combination of stiffening-bars secured to the said plates near one edge thereof and having their ends contained in bearings in the said ash-box, a rod connected to the said plates near the said bar, a transverse shaft having an arm thereon, pivoted to the said connecting-bar and having an arm thereon pivoted to the lower end of an operating-bar, a vertical operating-bar having a downwardly-extending lip upon one of its sides, and a catch upon which the said lip is adapted to rest, as described.

2. In a locomotive ash-pan having a series of plates below the grate-bars of the fire-box, the combination of stiffening-bars contained within each of the said plates near one edge thereof and having their ends contained in bearings in the ash-pan, each of the said plates consisting of a single piece of sheet metal bent around and under the said bar and bent backward upon and over the said bar, the end of the upper layer being bent down and under the end of the lower layer, a rod connected to the said plates near the edge thereof opposite the said bar, a transverse shaft having an arm thereon pivoted to the said connecting-bar and having an arm thereon pivoted to the lower end of an operating-bar, a vertical operating-bar having downwardly-extending lips upon one of its sides, and a catch upon which one of the said lips is adapted to rest, as described.

3. In a locomotive ash-pan having a series of hinged plates below the grate-bars of the fire-box, a perforated pipe connected with the boiler, a valve in the said pipe, a projection upon one of the said hinged plates, an arm having its one end rigidly connected with the said valve and its opposite end slotted, the slot therein sliding upon the projection upon the plate, and means for moving the said plates, as described.

4. In a locomotive ash-pan having a series of plates below the grate-bars of the fire-box, the combination of stiffening-bars secured to the said plates near one edge thereof and having their ends contained in bearings in the said ash-box, a perforated pipe connected with the boiler, a valve in the said pipe, a projection upon one of the said hinged plates, an arm having its one end rigidly connecting with the said valve and its opposite end slotted, the slot therein sliding upon the projection upon the plate, means for moving the said plates, as rods connected to the said plates near the edge thereof opposite the said bar, a transverse shaft having an arm thereon pivoted to the said connecting-bar and having an arm thereon pivoted to the lower end of an operating-bar, a vertical operating-bar having downwardly-extending lips upon one of its sides, and a catch upon which the said lips are adapted to rest, as described.

446,609. WEATHER-STRIP. JOSEPH H. MCINTIRE, Galion, Ohio. Filed May 23, 1890. Serial No. 352,884. (No model.)

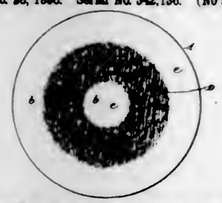


Claim.—1. As a new article of manufacture, the herein-described weather-strip, comprising a flat metallic strip or plate and the enlarged rib or flange integral with the plate and arranged centrally in relation thereto, said flange extending along one of the longitudinal edges of said plate and across one end thereof, for the purpose specified, substantially as set forth.

2. In a weather-strip, a flat strip or plate having the central integral rib or flange along one of its longitudinal and transverse edges and the slots formed in the plate or strip and arranged within said rib or flange, combined with the staples for supporting the flat plate within a recess in a door and the coiled springs fitted around the rib or flange and passing through the slots in the plate, substantially as described.

3. In a weather-strip, a flat plate having a rib or flange along one of its longitudinal and transverse edges and the slots and perforations formed in the plate or strip and arranged within the rib at the longitudinal edge, the rib or flange along the transverse edge being beveled, as described, combined with the staples which pass through the perforations, the springs coiled around the rib or flange and fitting in the slots of the plate, and the fixed stop having the beveled edge to contact with the corresponding end of the rib on the transverse edge of the plate, substantially as described.

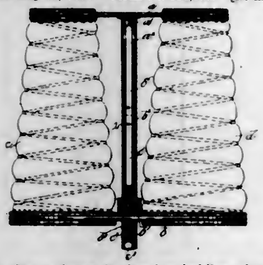
446,610. MEDICINAL PLASTER. JOSEPH H. OSGOOD, Peabody, Mass. Filed Feb. 28, 1890. Serial No. 342,136. (No specimens.)



Claim.—1. A medicinal plaster composed of a backing-piece surfaced with an adhesive material and having such surface, except that portion which is to cling to the person, covered with a fleece or layer of medicated cotton, wool, or equivalent fiber held to the backing by such adhesive material, substantially as shown and described.

2. A medicinal plaster composed of a medicated backing-piece surfaced with an adhesive material and having such surface, except that portion which is to cling to the person, covered with a fleece or layer of medicated cotton, wool, or equivalent fiber held to the backing by such adhesive material, substantially as shown and described.

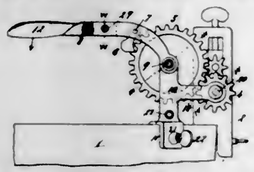
446,611. OPERA-GLASSES. CHARLES A. PERKINS and WILLIAM H. H. NORCROSS, Boston, Mass., assignors to George H. Eaton & Co., same place. Filed May 15, 1890. Serial No. 351,906. (No model.)



Claim.—1. Opera-glasses having lens-holding plates and a connecting medium for such plates, one of such lens-holding plates having a socket a' to receive the connecting medium, which socket is provided with a shouldered notch a^3, combined with a spring-latch b^3 on the connecting medium adapted to be engaged with and disengaged from the said shouldered notch, substantially as described.

2. Two lens-holding plates, one of which is provided with a serrated faced dog, combined with a connecting-bar having a spring-acting serrated faced bar, as c', to co-operate with the said serrated faced dog, substantially as described.

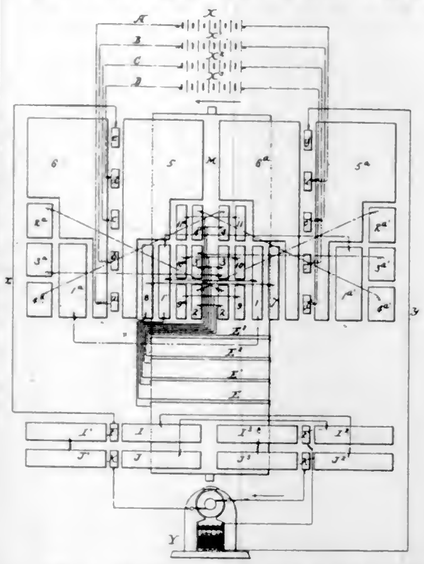
446,612. CLOTHES-WRINGER. MICHAEL A. PIGOTT, St. Louis, Mo. Filed July 9, 1889. Serial No. 316,930. (No model.)



Claim.—1. The combination, with a clothes-wringer having a laterally-projecting shaft and means for clamping it to a support, of an independent frame adapted to be clamped upon the same support as the wringer, a pinion 4, mounted upon the projecting shaft of the wringer and pivoted in the independent frame, a cog-wheel 5, pivoted in the independent frame and engaging the pinion on the projecting shaft, a lever pivoted to the independent frame, and a pawl carried by the said lever adapted to engage the cog-wheel, substantially as and for the purposes set forth.

2. In a clothes-wringer, the combination of the operating mechanism and a frame in which it is mounted, said frame consisting of two members, each member having an opposing shoulder, one shoulder having cross-ribs engaging complementary grooves in the other shoulder, and a fastening passing through the shoulders to secure the members together, substantially as and for the purpose set forth.

446,613. CONTROLLING-SWITCH FOR ELECTRIC RAILWAYS. FRANK B. RAE, Detroit, Mich., assignor to the Detroit Electrical Works, same place. Filed Aug. 22, 1890. Serial No. 362,763. (No model.)



Claim.—1. The combination, with the battery-cells arranged in groups and the motor connected with those cells, of an interposed controlling-switch provided with contacts and brushes, substantially as described, and resistance-coils connected with the contacts, whereby the groups of battery-cells may be arranged in various relations, and the resistance device interposed between the groups to prevent short-circuiting, substantially in the manner hereinbefore set forth.

2. The combination, with the battery-cells arranged in groups and the motor connected to the cells, of an interposed controlling-switch having contact-plates and brushes arranged substantially as described, and resistance-coils also arranged on the switch and connected with the contact-plates, whereby the groups of cells may be variously connected without danger of short-circuiting, substantially in the manner described.

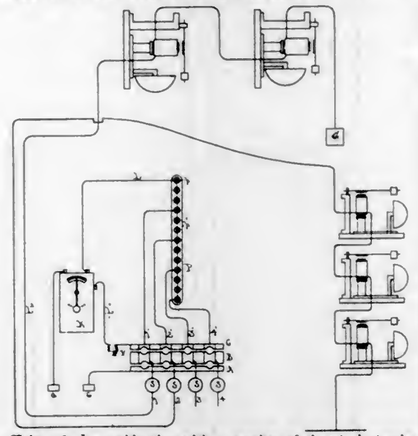
3. The combination, with the battery-cells arranged in groups and the motor connected to the cells, of an interposed controlling-switch having contact-plates and brushes arranged substantially as described, resistance devices also mounted on said switch and connected to the plates, and a current-reversing device also mounted on the switch, whereby the groups of cells may be connected up in various relations and directed through the motor in the desired direction and short-circuiting prevented, substantially in the manner described.

4. The combination, with the battery-cells arranged in groups and the motor connected to the cells, of an interposed controlling-switch consisting of a cylinder of insulated material, brushes arranged on opposite sides of the cylinder, complementary plates of conducting material mounted on the cylinder, and resistance-coils also mounted on the switch and connected to conducting-plates, substantially as described.

5. The combination, with the battery-cells arranged in groups and the motor connected therewith, of an interposed controlling-switch consisting of a cylinder covered with insulating material, complementary contact-plates mounted thereon, brushes connected with the terminals of the circuits, arranged on opposite sides of the switch, resistance-coils mounted on the cylinder connected to contact-plates, and circuit-reversing plates also mounted on the cylinder, substantially as described.

6. The combination, with the battery-cells arranged in groups and the motor connected therewith, of an interposed controlling-switch consisting of a cylinder having mounted thereon complemetary contact-plates, the said plates consisting, essentially, of four large plates having one straight side and the other side stepped, the large contact-plates arranged adjacent to said steps and connected to the small complementary plates similarly arranged, resistance-coils connected to the small plates, and brushes connected to the terminals of the circuits as arranged on opposite sides of the switch, substantially as described.

446,614. TELEPHONE-CALL. DAVID H. RICE, Lowell, Mass., assignor to the Currier Telephone Bell Company, of Massachusetts. Filed Oct. 15, 1881. Serial No. 43,846. (No model.)
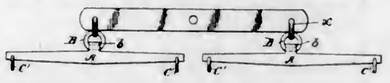


Claim.—1. In combination with a number of electrical circuits provided with individual call-bells thereon adapted to be operated by synchronous pulsations of electricity, the corresponding lines 1′ 2′, &c., adapted to connect each circuit with a different number of cells of electric battery, and a vibrating calling mechanism adapted to transmit synchronous pulsations of electricity to ring one or more of said bells, substantially as described.

2. The combination of the plates 1^b 2^b, &c., with the metal strip c and the corresponding insulated plates 1^a 2^a, &c., and two or more electrical circuits connected to plates 1^b 2^b, &c., forming a switch mechanism, substantially as described.

3. In combination with an electric circuit leading through the caller l, having a vibrating armature adapted to transmit synchronous pulsations of the electric current over the circuit, and one or more vibrating alarm-strikers on the latter and battery, a switch mechanism and an independent ground-connection 1″, having on it the magnet of the drop-button call, constructed and arranged substantially as described.

4. In combination with the vibrating circuit-breaker l by suitable intermediate connecting mechanism, two main electrical circuits, each provided with a magnet and vibrating striker adapted to be operated by said circuit-breaker and vibrating in the same time as the striker of the other circuit, substantially as described.

446,615. WHIFFLETREE. NELS P. STEFFENSON, Winchester, Wis. Filed Nov. 14, 1890. Serial No. 371,409. (No model.)



Claim.—1. In a neck-yoke or whiffletree, the combination of a hollow metallic bar having a central projection integral therewith, provided with an eye extending lengthwise of the bar, through which is passed a ring, substantially as shown.

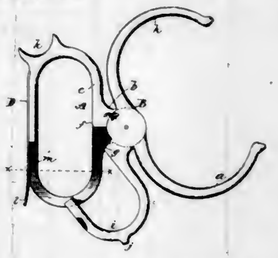
2. In a neck-yoke or whiffletree, the combination of a hollow metallic bar with a central ring passing through an eye in a projection integral with the bar.

3. A neck-yoke or whiffletree consisting of a tubular rolled metallic bar, a ring passing through an eye in a central projection integral with the bar, and rings or hooks at each end of the bar, substantially as shown, for the purposes specified.

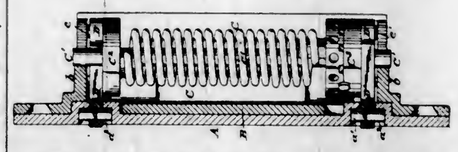
446,616. POLICE-NIPPERS. MERTON S. THOMAS, Pulteney, N. Y. Filed Dec. 3, 1890. Serial No. 373,435. (No model.)

Claim.—1. A police-nippers composed of the part A, with nipper-jaw shank and hand-loop with portion removed, and the part B, pivoted to the part A and formed with half hand-loop, also of half thickness and arranged to complete the contour of the hand-loop of the part A, and a spring locking-plate on the hand-loop of the part A and arranged to engage the free end of the half-loop of the part B, substantially as specified.

2. The police-nippers described, composed of the part A, having nipper-jaw, halved-out shank, and hand-loop with finger-hold, and upon one side of one half reduced in thickness substantially one-half, the part B, having nipper-jaw, halved-out shank, and half hand-loop in thickness corresponding to the half thick part of the hand-loop of the part A and formed with toat to receive the thumb, and the spring locking-plate secured to the hand-loop of the part A and arranged to engage the free end of the loop portion of the part B, substantially as shown and described.



446,617. SPRING-HINGE. GEORGE W. AMOS, Chicago, Ill., assignor to Sidney S. Miles, same place. Filed Dec. 26, 1889. Serial No. 335,004. (No model.)



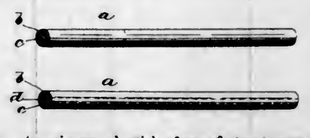
Claim.—1. A spring-hinge comprising, in combination, two or more leaves or members pivoted together, a torsion-spring supported in one of the hinge members midway the transverse width thereof, a disk or hub for the spring having a crank or wrist pin, and an eye or draw bar extending from said wrist-pin to a pivot pin or stud located on the opposite hinge member midway of its width, substantially as set forth.

2. A spring-hinge comprising, in combination, two or more leaves or members pivoted together, a torsion-spring supported in one of the hinge members midway the transverse width thereof, top and bottom disks for the spring having crank or wrist pins, and a pair of eye or draw bars pivoted to the opposite hinge member midway of its width and connected to the wrist-pins at opposite sides of the axis of their disks, whereby the spring will have tension imparted to it simultaneously from each end in the operation of the hinge, substantially as set forth.

3. In a spring-hinge, the combination, with two or more leaves pivoted together, of an eye or draw bar connected to one hinge member by a journal-pin and semicircular socket at the back of said member, a torsion-spring attached to the opposite hinge member, and a disk or hub for the same, having a crank or wrist pin to receive the end of the eye or draw bar, substantially as set forth.

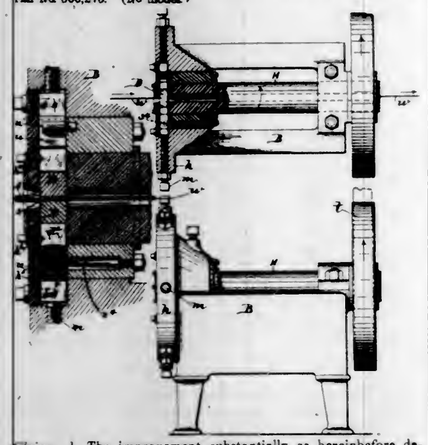
4. In a spring-hinge of the type herein described, the combination of the stationary and movable hinge members hinged together by duplicate studs, and open-sided sockets at their side edges, with thimbles or collars surrounding the studs and embraced by the open-sided sockets, substantially as and for the purpose set forth.

446,618. SEAMLESS COMPOUND GOLD AND SILVER WIRE. LEVI L. BURDON, Providence, R. I., assignor to the Burdon Seamless Filled Wire Company, same place. Filed July 22, 1890. Serial No. 359,479. (No specimens.)



Claim.—As an improved article of manufacture, a compound wire consisting of a seamless exterior surface of fine metal, as gold, and an interior portion c of silver, united to said exterior portion.

446,619. MANNER OF PRODUCING SEAMLESS COMPOUND WIRE. LEVI L. BURDON, Providence, R. I., assignor to the Burdon Seamless Filled Wire Company, same place. Filed July 29, 1890. Serial No. 360,273. (No model.)



Claim.—1. The improvement, substantially as hereinbefore described, in the reduction by cold-working of compound ingots to rods or wire, the same consisting in repeatedly subjecting the suitably-prepared ingot to a squeezing or swaging operation, which acts to gradually reduce it from circumference to center, and at the same time attenuating the ingot until the desired size is attained.

2. The improvement, substantially as hereinbefore described, in the reduction by cold-working of compound ingots to rods or wire, the same consisting in repeatedly subjecting the prepared ingot to a squeezing or swaging operation, which acts to gradually and uniformly reduce it from circumference to center and at the same time elongating it, and next successively passing the prepared rod thus reduced through drawing mechanism which still further elongates it and gives to the wire the desired form and size cross-sectionally.

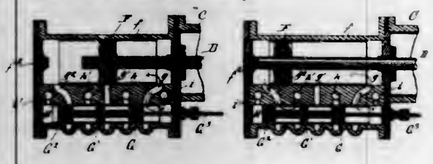
3. The improvement hereinbefore described in the manufacture of seamless compound wire, the same consisting in first producing a seamless exterior shell of alloyed fine metal, or even a seamless compound tube; next introducing a suitable metallic core into said shell, then uniting the core and shell, thereby forming the ingot; next repeatedly subjecting the suitably-prepared ingot to a squeezing or swaging operation, which acts to gradually and uniformly reduce it from circumference to center and at the same time elongating it, and finally subjecting the reduced ingot to drawing mechanism, which acts to still further elongate it and gives to the seamless wire thus produced the desired form and size cross-sectionally.

446,620. HYDRAULIC ELEVATOR. THOMAS W. EATON, Chicago, Ill., assignor to the Eaton & Prince Company, same place. Filed Sept. 20, 1889. Serial No. 324,563. (No model.)

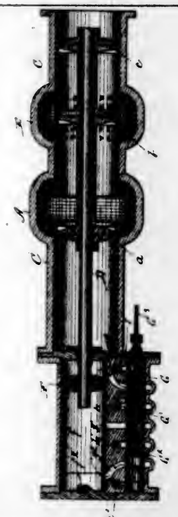
Claim.—1. In a hydraulic elevator, the combination, with the main valve, of the piston F for moving said valve and the auxiliary valve and water-passages g g' g^2, inlets i i', and discharge-ports h and h', substantially as specified.

2. The combination, with the main valve and its actuating-piston F, of the auxiliary valve having three heads for controlling the water acting upon said piston, the three water-passages connecting the piston-chamber with the valve-chamber, and suitable water-inlets and suitable water-outlets leading to and from the latter chamber, substantially as specified.

3. The combination, with the piston F and and its chamber, of a valve for controlling the water acting upon said piston, suitable passages connecting the valve-chamber with the ends of the piston-chamber, and a central passage between said chambers, adapted to be closed by the piston, substantially as specified.

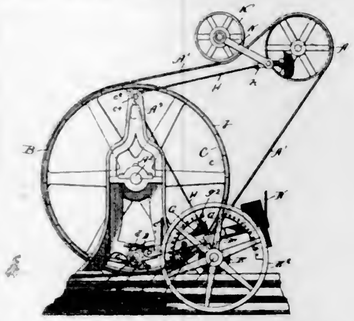


446,620.



4. The combination of the piston F and its cylinder with the controlling-valve and its cylinder, said cylinders being connected by suitable passages, one of which is a central passage adapted to be closed by the piston, substantially as specified.

446,621. BRAKE FOR ELEVATORS. THOMAS W. EATON, Chicago, Ill., assignor to the Eaton & Prince Company, same place. Filed Apr. 25, 1890. Serial No. 349,467. (No model.)



Claim.—1. The combination, in an elevator, of a driving-belt, brake-wheel, and brake with a weighted brake-operating lever, a cam-shaft, a cam-lever operated by said cam, and an intermediate lever pivoted to said cam-lever for normally supporting said brake-lever, a movable weight or device normally supported by said driving-belt, and a connection from said intermediate lever arranged in the path of said belt-supported weight, so that the brake will be operated in case of accident, substantially as specified.

2. The combination, with a brake-wheel and brake, of the brake-lever D, cam-lever F, intermediate lever G, brake-operating cam E, driving-belt A', line H, and movable or swinging weight K', substantially as specified.

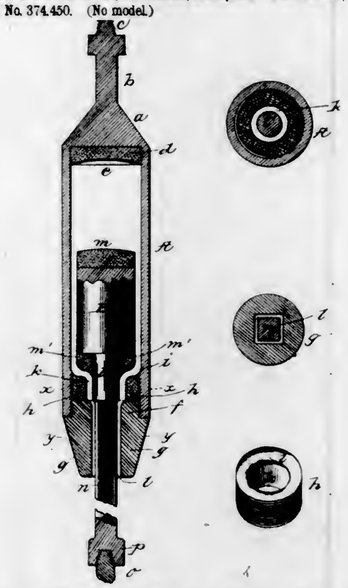
3. The combination, with a brake-wheel and brake, of the brake-lever D, cam-lever F, intermediate lever G, brake-operating cam E, driving-belt A', line H, and movable or swinging weight K', said lever D having a projection d^2 and said intermediate lever G having a lip or projection g', engaging said projection d^2, substantially as specified.

4. The combination, with a brake-wheel B, having rim b, of an interior-fitting brake C, an operating-lever D, having arms d, connected by pivoted links c' with the ends of said interior brake C, cam-lever F, and intermediate lever G, substantially as specified.

5. The combination of a brake-wheel, brake, brake-lever, and connecting-links with a cam and cam-lever F and intermediate lever G and mechanism for automatically operating said lever G in case of accident, substantially as specified.

6. The combination, with the interior brake C, of the supporting-block c^3, mounted upon a stationary support and acting to sustain the brake when it is not in operation, substantially as set forth.

446,622. DRILL-JAR. FRANCIS A. FLANEGIN, Washington, D. C., assignor of one-half to David C. Reinohl, same place. Filed Dec. 12, 1890. Serial No. 374,450. (No model.)



Claim.—1. A drill-jar consisting of a cylinder having a closed upper end and an opening in the lower end, in combination with a loosely-fitting plunger in the cylinder and having a rod passing loosely through the opening in the cylinder to admit of free lateral movement of the plunger in the cylinder, and suitable means for connecting with a sinker-bar and an auger-stem.

2. A drill-jar consisting of a cylinder having a closed upper end and an opening in the lower end, in combination with a loosely-fitting plunger in the cylinder, a rod passing loosely through said opening to admit of free lateral movement of the plunger in the cylinder, and buffers for both ends of the plunger.

3. A drill-jar consisting of a cylinder having a closed upper end and an angular opening in the lower end and a buffer at each end of the cylinder, in combination with a plunger fitting loosely in the cylinder, and an angular rod passing through the opening in the cylinder.

4. A drill-jar consisting of a cylinder having one end formed integral with the cylinder and the opposite end open, in combination with a sleeve provided with an angular opening and secured in the cylinder, a plunger having free lateral motion in the cylinder, and buffers at both ends of the cylinder.

5. A drill-jar consisting of a cylinder having buffers at each end provided with concave impact-surfaces and an opening in one end, in combination with a plunger fitting loosely in said cylinder and provided with buffers having convex impact-surfaces, and a rod passing loosely through the opening in the cylinder.

6. A drill-jar consisting of a cylinder having a buffer at each end and a cylindrical opening in the lower buffer, in combination with a plunger fitting loosely in said cylinder and having a buffer at each end, and a rod provided with a cylindrical portion adjacent to the plunger and an angular portion extending through the cylinder.

446,623. ELECTRIC SWITCH. GEORGE R. LEAN, Boston, Mass., assignor to the Bernstein Electric Company, Portland, Me. Filed May 12, 1890. Serial No. 351,505. (No model.)

Claim.—1. In an electric switch, a switch-arm pivoted at d', a plate, as e, arranged on said pivot d', a pin, as 6, secured to said plate and adapted to bear against and move the switch-arm, a spring, as 5, a loosely-supported rod, as 3, and an operating member for moving said plate e a short distance, compressing the spring 5, and moving the pin 6 away from contact with the switch-arm at one side of the center into engagement therewith at the opposite side of the center, that said pin 6 may be moved by the spring 5 to move the switch-arm, substantially as described.



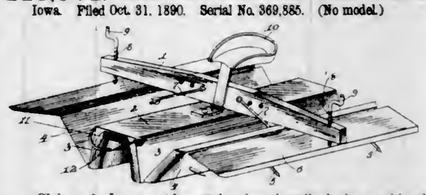
2. In an electric switch, a switch-arm and contact-blocks therefor, springs for moving said switch-arm, and means for compressing said springs, combined with a locking device for the switch-arm, consisting of a rod, as 4, its inner end normally in the path of movement of the switch-arm, a support therefor independent of the switch-arm, and means for moving said support in advance of the switch-arm to remove the rod 4 from the locking position, substantially as described.

3. In an electric switch, a switch-arm pivoted at d' and conducting-blocks therefor, springs for moving said switch-arm, and means for compressing said springs, combined with a stud 20 and a rod 4, loosely connected to said stud, which contacts with the side of and prevents an independent movement of the switch-arm where said rod is at one or the other side of the pivot d', a support for said rod 4 independent of the switch-arm, and means for moving it in advance thereof, substantially as described.

4. In an electric switch, the line-wire blocks and conducting-blocks and conducting-plates between them, as described, and a switch-arm having conducting portions at the end, combined with the plates e e', having pins 6 7, for moving the switch-arm, and pins 8 9, a block f, having the segmental flange f', located between said pins 8 9, and the springs 5, arranged on loosely-supported rods, as and for the purpose described.

5. In an electric switch, a switch-arm pivoted at d', a plate, as e, arranged on said pivot d', a pin, as 6, secured to said plate and adapted to bear against and move the switch-arm, a spring, as 5, a loosely-supported rod, as 3, and an operating member for moving said plate e a short distance, compressing the spring 5, and moving the pin 6 away from contact with the switch-arm at one side of the center into engagement therewith at the opposite side of the center, that said pin 6 may be moved by the spring 5 to move the switch-arm, pins 8 and 9, and the handle f, arranged on the pivot d' and having a segmental flange f', adapted to work between the pins 8 9, substantially as described.

446,624. HARROW AND CULTIVATOR. ROBERT LYONS, Petro, Iowa. Filed Oct. 31, 1890. Serial No. 369,885. (No model.)



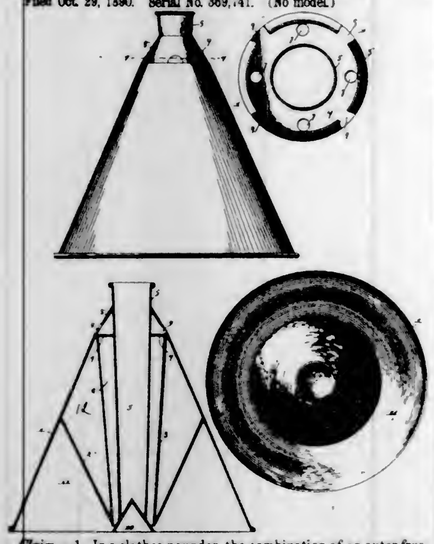
Claim.—1. In a machine of the class described, the combination of a longitudinal frame-beam having downwardly-extending flanges and provided with a cross-bar on its upper side, the leaves hinged at the lower edges of said flanges and having teeth on their under sides, the braces connecting said leaves adjustably with the cross-bar, the supplemental leaves hinged at the outer edges of the main leaves and having teeth on their under sides, and the adjusting-screws mounted vertically in the outer ends of the cross-bar and adapted to bear against the upper sides of the supplemental leaves near the outer edges of the latter, substantially as and for the purpose set forth.

2. In a machine of the class described, the combination of the longitudinal frame-beam having downwardly-extending outwardly-flaring flanges and provided with a cross-bar on its upper side, the leaves hinged at the lower edges of said flanges and having the supplemental leaves hinged at their outer edges, the braces and screws for the adjustment of the said leaves and supplemental leaves, the teeth extending downwardly from the leaves, and the clevis at the front end of the frame, all arranged and operating substantially as set forth.

3. In a machine of the class described, the longitudinal frame-beam having the downwardly-extending flanges and the hinged leaves and supplemental leaves, all beveled at their front ends, in combination with the cross-bar, the adjustable braces, and the adjusting-screws

mounted vertically in the outer ends of the cross-bar, all combined and operating substantially in the manner and for the purpose herein set forth.

446,625. CLOTHES-POUNDER. FRANK E. MIGHELL, Aurora, Ill. Filed Oct. 29, 1890. Serial No. 369,741. (No model.)



Claim.—1. In a clothes-pounder, the combination of an outer frustum-shaped shell, an inner inverted frustum-shaped or funnel-shaped shell having its upper edge secured to the inner side of the outer shell about midway of the height of the latter, a tapering tube connecting the upper end of the outer with the lower end of the inner shell, and a handle-socket located within and suitably connected to the said tapering tube, between which and the handle-socket an annular air-passage is formed, having openings at its upper end in the annular flange connecting said handle-socket with the tapering tube, substantially as set forth.

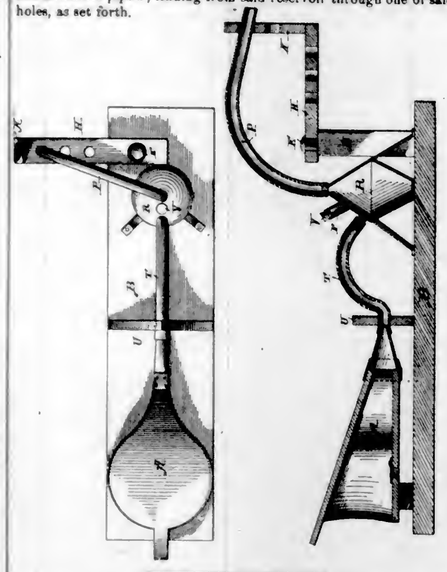
2. In a clothes-pounder, the combination of the frustum-shaped outer shell, the funnel-shaped inner shell secured to the inside of said outer shell, the tapering tube connecting the upper edge of the outer with the lower edge of the inner shell, the handle-socket arranged within and suitably connected with said tapering tube, and the conical shell at the lower end of the handle-socket extended beyond the lower end of the air-passage between the handle-socket and the tapering tube, substantially as set forth.

3. In a clothes-pounder, the combination of the outer frustum-shaped shell, the inner funnel-shaped shell having its upper edge secured to the inside of the outer shell, a tube connecting the upper edge of the outer with the lower edge of the inner shell and having an inwardly-extending flange at its outer edge, the handle-socket secured to said flange and having a conical shell at its lower end, and a conical brace connecting said handle-socket with the upper edge of the outer shell, said brace and annular flange being provided with perforations alternating with each other, substantially as and for the purpose set forth.

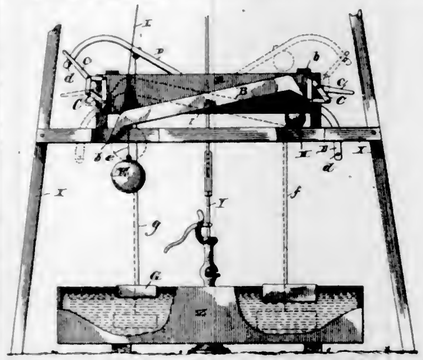
446,626. INSECT-POWDER DISTRIBUTER. LEONIDAS A. PRESTON, Cheapside, Tex. Filed Sept. 13, 1890. Serial No. 364,884. (No model.)

Claim.—1. The herein-described insecticide-distributer, the same comprising a base B, a bellows A, mounted thereon, an insecticide-reservoir R, also mounted thereon, and having a filling-orifice F, whose upper end is closed by a cork V, a tube connecting the bellows with the reservoir, an upright standard S on the front end of the reservoir, having a reduced upper end E, a horizontal arm H, pivotally mounted on said reduced end, a bracket K at the outer end of said arm, having a number of holes therethrough, and a flexible pipe P, leading from said reservoir through one of said holes, as hereinbefore set forth.

2. The herein-described insecticide-distributer, the same comprising a base B, a bellows A, mounted thereon, an insecticide-reservoir R R, also mounted thereon, a tube connecting the bellows with the reservoir, an upright standard S on the front end of the reservoir, a horizontal arm H, pivotally mounted on said standard, a bracket K at the outer end of said arm, having a number of holes therethrough, and a flexible pipe P, leading from said reservoir through one of said holes, as set forth.



446,627. WINDMILL-REGULATOR. CLARENCE SILVESTER and WINFRED SILVESTER, Windom, Kans. Filed Oct. 11, 1890. Serial No. 367,775. (No model.)



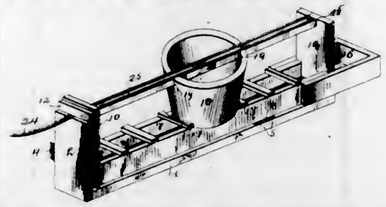
Claim.—1. In a windmill-regulator, the combination, with the centrally-pivoted beam, a weight depending from one end thereof, the wind-wheel regulator-wire being attached to this end, and a float heavier than said weight, connected to the other end of said beam and being located in the tank, of catches automatically engaging the extremities of said beam when in either of its extreme positions, a smaller float in the tank, and connections, substantially as described, between the catches and said smaller float for tripping the catch at the heavy end of the beam when the water rises and at its other end when the water falls to a certain point, as set forth.

2. In a windmill-regulator, the combination, with a centrally-pivoted bar, a weight near one end thereof, a float heavier than said weight, connected to the other end of said bar and being located in the tank, and catches tripped by the extremities of said bar when it oscillates upon its pivot, of a beam to which the regulating-wire is connected, said beam being centrally pivoted and its extremities alternately engaged by said catches, a weight E, connected to the beam below the regulator-wire, and a float F, heavier than said weight, connected to the other end of said beam and operating in the tank Z, as set forth.

3. In a windmill-regulator, the combination, with a windmill-frame X, the box A, carried thereby, the bolt I through the box, the beam B, having extremities *b*, and the bar D, centrally pivoted on said bolt, weights E and H, connected, respectively, to one end of said beam and bar, and the regulating-wire L, connected to the weighted end of the beam, of the floats F and G within the tank, the former being heavier than the weight on the beam and being connected to the light end thereof and the latter being heavier than the weight on the bar and also being connected to its light end, catches C at the ends of said box, automatically engaging the extremities *b* of the beam when raised and having outwardly-extending arms *c*, and laterally-projecting pins *d* at the extremities of said bar, adapted to engage the arms of and to trip said catches when such extremities rise, all as and for the purpose hereinbefore set forth.

4. In a windmill-regulator, the combination, with the regulator proper, catches engaging the same, and a regulator-wire leading from said regulator to the wind-wheel, of a pivoted bar having pins engaging said catches, a weight at one end of said bar, and a cord leading from the other end of said bar and provided with a float in the tank which is heavier than said weight, substantially as hereinbefore set forth.

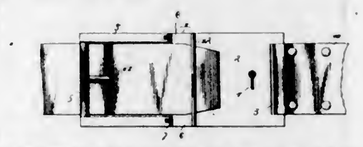
446,628. WATERING-TROUGH. MARTIN N. BROUSE, Billingsville, Ind. Filed Nov. 18, 1890. Serial No. 371,849. (No model.)



Claim.—1. The combination, with the base terminating at one end in a vertical wall, of a trough fulcrumed upon the base and terminating at one end in a vertical wall extending above that of the base, provided with an opening and a transverse beveled rib above the same and over the upper end of the vertical wall of the base, a source of supply, a flexible pipe leading from the same between the rib and the end of the vertical wall of the base and to the opening under the rib, a tank supported upon the trough at that side of the fulcrum of the latter at which is located the supply-pipe, said tank being provided with an overflow, and weights located at the opposite end of the trough, substantially as specified.

2. The combination, with the base 1, having the end wall 2, the vertical guide 3 at the inner side of the same, the transverse ribs 5, and fulcrum-pin 6, of the trough 3, having the end wall 10, provided with the opening 11 and above the same with a beveled rib 12, taking over the end wall of the base, the opposite end wall of the trough, the fulcrum-rib upon the under side of the trough fitting loosely between the ribs 5 and having a central recess for the reception of the pin 6 of the base, the weighted frame 16 at the rear end of the trough, the recessed vertical wall at that end, the tank 18, having opposite recesses and an overflow perforation, the grooved conductor seated in the recesses of the tank in the recess of one wall and the opening of the other of the trough, the supply, and the flexible pipe leading from the same to the conductor, substantially as specified.

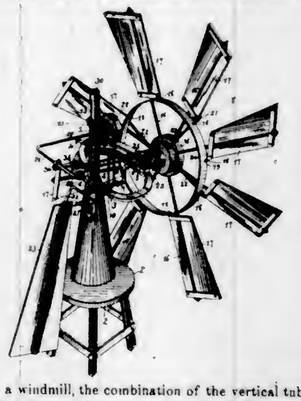
446,629. BUCKLE. LOUIS R. CHAZAL, Charleston, S. C., assignor of one-half to Philip E. Chazal, same place. Filed Nov. 12, 1890. Serial No. 371,214. (No model.)



Claim.—The herein-described buckle, consisting of the lock-case provided with a lock mechanism and with a reciprocating bolt mounted in the front end of the same, said case having at its rear end a transverse strap-receiving slot and at its front end a pair of forwardly-disposed arms, and a U-shaped bail having its terminals hinged to the arms and provided at its ends with an opening for the reception of the end of the bolt, substantially as specified.

446,630. WINDMILL. WILLIAM M. CRAIG, Santa Ynez, Cal. Filed July 1, 1890. Serial No. 357,405. (No model.)

Claim.—1. In a windmill, the combination of the vertical tube rotatively mounted in a tower, the curved or elliptical frame secured thereto, the U-shaped brace centrally secured to the vertical tube and having its ends secured to and supporting the frame, the crank-shaft mounted on the frame and having its crank centrally arranged in the frame, and the pitman having one end connected to the crank and being composed of the rods having their upper ends bent horizontally and connected with a lift-rod, substantially as described.



2. In a windmill, the combination of the vertical tube rotatively mounted in a tower and provided with a longitudinal slot 13, the circular frame secured to the tube, the crank-shaft mounted in the frame and having its crank centrally arranged therein, the wheel, the rock-shaft having its arm connected with and operating the blades of the wheel, the weighted lever arranged at one end of the rock-shaft, and the vane depending from the other end of the rock-shaft, substantially as described.

3. In a windmill, the combination of the vertical tube rotatively mounted in a tower, the circular frame secured to the vertical tube, the crank-shaft mounted on the frame and having its crank centrally arranged therein, the wind-wheel, the brackets 35, provided with bearings and extending laterally from the circular frame, the rock-shaft arranged at right angles to the crank-shaft and journaled in the brackets and provided intermediate of its ends with the loop 27 and having at one end a weighted lever arranged parallel with the crank-shaft and provided at its other end with the depending vane, and the operating-rods 25, connecting the rock-shaft with the wheel, substantially as described.

4. In a windmill, the combination of the vertical tube rotatively mounted in a tower and provided with a longitudinal slot 13, the circular frame secured to the tube and provided with bearings, the crank-shaft journaled in the bearings and having its crank centrally arranged in the frame, the pitman having one end secured to the crank and being composed of the rods having their upper ends bent laterally, the transverse rod 12, operating in the slot 13 and connecting the ends of the pitman and being connected with a lift-rod, the wheel arranged at one end of the crank-shaft, the brackets 35, secured to the frame and extending laterally therefrom and being provided with bearings, the rock-shaft mounted in the brackets and provided intermediate of its ends with the loop 27 and having at one end the weighted lever and at the other end the depending vane, and the operating-rods connecting the rock-shaft with the wind-wheel, substantially as described.

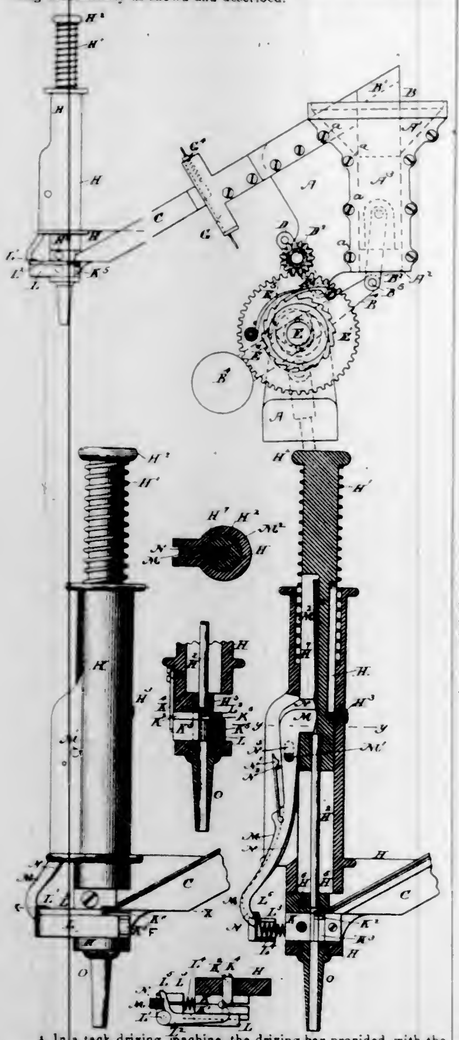
446,631. TACK-DRIVING MACHINE. JOSEPH E. CRISP, Somerville, and GEORGE W. COPELAND, Malden, assignors, by mesne assignments, to Daniel T. Copeland, Malden, Mass. Filed Nov. 4, 1890. Serial No. 370,291. (No model.)

Claim.—1. In a tack-driving machine of the class described, tack-arranging mechanism consisting of a hopper with a slotted bottom and a tack-chute, in combination with a narrow elevator-slide having an inclined groove deeper than the length of the tack used in its upper end and suitable operating mechanism by which said slide is reciprocated from the point of delivery into the chute to a point wholly below the bottom of the hopper, substantially as described, and for the purposes set forth.

2. In a tack-driving machine of the class described, the combination of the elevator-slide B, the connection B^3, the counterbalanced lever B^4, and operating mechanism, substantially as described.

3. In a tack-driving machine of the class described, tack-driving and tack-elevating mechanism, substantially as set forth, and means for operating the elevating mechanism, consisting of suitable clock mechanism, in combination with devices and suitable connecting mech-

anism by which said clock mechanism may be set in motion, all operating substantially as shown and described.



4. In a tack-driving machine, the driving-bar provided with the groove H^1, and the lever N, having the widened end, in combination with the slide L, carrying the tack-feed, all operating substantially as shown and described.

5. In a tack-driving machine, the combination of the sliding and swinging lever N and operating mechanism with the arm L^3 of the feed-pawl L^2, whereby the operating-point of said pawl is swung clear of the shank of the first tack in the feedway, substantially as shown and described.

6. In combination with a tack-driving machine, a throat composed of the parts K and K' and the spring-operated inclined gates K^2 and K^3, which bear upon the shank of the tacks above and below the place engaged by the feed-pawl and cause the tacks to be fed squarely into the throat when said gates close and complete the circle of the throat, substantially as shown and described.

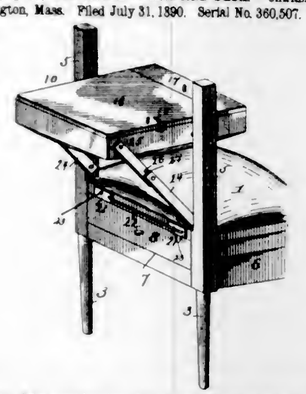
7. In combination with a tack-driving machine, the spring-operated slide L, mounted on the outer part of the throat K' and carrying the spring-operated feed-pawl L^2, all operating as shown and described.

8. In combination with a tack-driving machine, a removable incline, as M^3, for operating the feeding-levers M and N and the tack-feeding devices, substantially as shown and described.

9. In combination with a tack-driving machine, the incline M^3 the lever M, and the spring-operated slide L, provided with the feed-pawl L^2, all operating substantially as described.

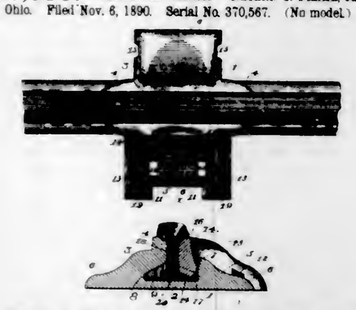
10. In combination with a tack-driving machine, the slotted lever N, provided with the double-acting spring-dog N', for actiug, in combination with the pin N^2, to retain said lever at the ends of the slot, substantially as shown and described.

446,632. COMBINED CHAIR AND DESK. CHARLES H. EASTE, Arlington, Mass. Filed July 31, 1890. Serial No. 360,507. (No model.)



Claim.—The combination, with a chair-frame comprising a pair of rear vertical standards, of a combined writing-desk and back pivoted between the standards, the opposite pairs of pivoted brace-sections pivoted at their ends to the combined back and desk and to the chair-frame, means for locking said sections in alignment, and the turn-buttons pivoted to the rear end of the frame and adapted to overlap the lower end of the combined back and desk, substantially as specified.

446,633. RAILROAD-CHAIR. NATHAN T. FRAME, Jamestown, Ohio. Filed Nov. 6, 1890. Serial No. 370,567. (No model.)

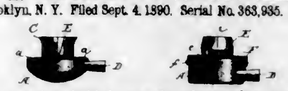


Claim.—1. The combination, with a railroad-chair, of a base-plate having a brace on one end thereof and a shoulder upon its opposite end, a block of a greater height than the distance between the flange and the head of the rail contained between the said brace and shoulder, a fork upon the outer surface of the said block extending outward and downward therefrom to below the lower surface of the said plate, and a rail between the said shoulder and block, as described.

2. The combination, in a railroad-chair, of a base-plate having a brace on one end thereof and a shoulder upon its opposite end, a block of a greater height than the distance between the flange and the head of the rail contained between the said shoulder and the web of the rail and having forks extending from the outer surface thereof and a lug upon its lower surface, and rails having their contiguous ends contained between the said brace and shoulder, the ends of the flanges upon one side of the rail being cut away to receive the said lug, as described.

3. The combination, in a railroad-chair, of a base-plate having a brace on one end thereof and having a reduced opposite end and a shoulder thereon, a block of a greater height than the distance between the flange and the head of the rails contained between the said shoulder and the web of the rails and having forks extending from the outer surface thereof, the said forks being upon the opposite sides of the reduced end of the said base-plate and extending to the lower surface of the base-plate, a lug upon the lower surface of the block, and rails having their contiguous ends contained between the said brace and shoulder, the ends of the flanges upon one side of the rails being cut away to receive the said lug, as described.

446,634. DETACHABLE BOTTOM FOR PIPES. WILLIAM L. HEINEKEN, Brooklyn, N. Y. Filed Sept. 4, 1890. Serial No. 363,935. (No model.)



Claim.—1. A detachable bottom for tobacco-pipes, provided with a receptacle for the reception of the nicotine and having spring-flanges to engage the interior of the bowl of the pipe, substantially as described.

2. A detachable bottom for tobacco-pipes, provided with a receptacle for the reception of of the nicotine and having spring-flanges to engage the interior of the bowl of the pipe and a button supported on the bottom within the flanges, substantially as described.

3. A detachable bottom for tobacco-pipes, consisting of two parts detachably secured together, one part forming a receptacle for the nicotine and having a socket for the stem, the other part being provided with spring-flanges to engage the interior of the bowl of the pipe and carrying a perforated button within the flanges, substantially as described.

4. In a detachable bottom for tobacco-pipes, a metallic receptacle having a hole punched in its side and provided with a socket-piece for the stem fitting said hole and secured by the ragged edges thereof, substantially as described.

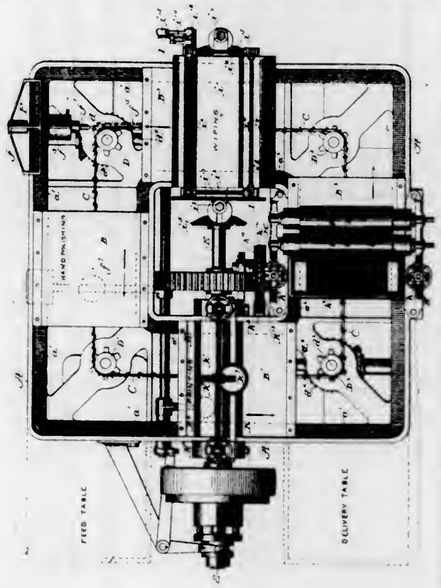
5. A detachable bottom for tobacco-pipes, having a receptacle for the nicotine and a socket-piece for the stem, provided with spring-flanges fitting the interior of the bowl of the pipe and an inwardly-projecting rib at the base of the flange for supporting the perforated button within the flanges, substantially as described.

446,635. PLATE-PRINTING PRESS. GEORGE C. HOWARD, Wallingford, Pa. Filed Apr. 19, 1887. Serial No. 235,412. (No model.)

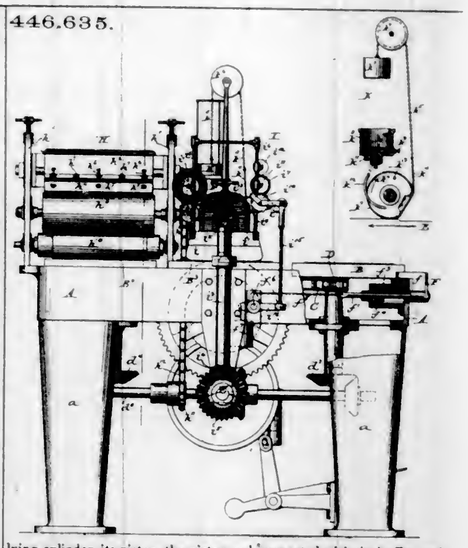
Claim.—1. In a plate-press, and in combination with a bed moving in a right-angular path, a sliding buffer mounted in the path of the bed to check its motion in one direction and aid in guiding it in another, and means, substantially as shown, giving a yielding support to the buffer, so that it may retreat bodily under the impact of the bed.

2. In combination with a main frame or guide and a bed moving in an angular path thereover, a buffer mounted in the path of the bed to arrest its motion preparatory to its change of direction, and a weight urging the buffer toward the advancing bed.

3. In combination with the traveling bed and the track adapted to guide the same in an angular course, the yielding buffer, the underlying cylinder, its piston, the piston-rod connected with the buffer, and the retracting weight.



446,635.



4. In a plate-press, and in combination with a plate-supporting bed movable in a rectangular path, an endless driving-chain, pulleys around which the chain is carried, and an arm equal in length to the radius of the pulleys, extended from the chain and pivoted at its end to the bed, whereby the pivotal connection of the arm to the bed is caused to coincide with the axis of the pulley and to serve as a center of motion for the arm as the latter passes around the pulley preparatory to a change in the course of the bed.

5. In a plate-press, the traveling bed, the endless driving-chain connected thereto, the chain-sustaining pulleys located at the corners of a rectangle to carry the chain and bed in a rectangular path, a driving-shaft, and intermediate gear connecting said shaft with the two chain-pulleys at diagonally-opposite corners of the rectangle, as described and shown.

6. In a plate-printing press, a traveling plate-sustaining bed and a pad or pressure-frame located immediately over the path of the bed, in combination with a long cloth or blanket extending beneath the pad to wipe the plate, winding-rolls whereon the ends of the blanket are wound, and a driving-roll acting against the blanket wound upon one of the winding-rolls and acting to drive the same by its friction thereon.

7. In combination with the wiping-blanket, the winding-roll i^{11}, the driving-roll i^{10}, the lever-pawl and ratchet-wheel for turning the driving-roll, the movable buffer in the path of the bed, and connections, substantially as shown, for transmitting motion from the buffer to the ratchet-lever, whereby the advance of the blanket is effected by the action of the bed upon the buffer.

8. In combination with the wiping-blanket, the two rolls whereon its ends are wound, the two rolls underlying the winding-rolls and in frictional contact with the blanket wound thereon, and the belt and pulleys connecting said underlying rolls, as shown.

9. In a plate-press, and in combination with the D-roll and a bed traveling therеunder, the blanket attached to the roll, the weight to unwind the blanket, and the dash-pot k^9 to aid in checking the momentum of the weight.

10. In a plate-press, a traveling bed, a D-roll above the same, a blanket attached at one end to said roll, a weight connected to said blanket and tending to unwind the same, with a suitable projection, as k^{12}, and the spring-brake acting in connection therewith to check the roll in its backward rotation.

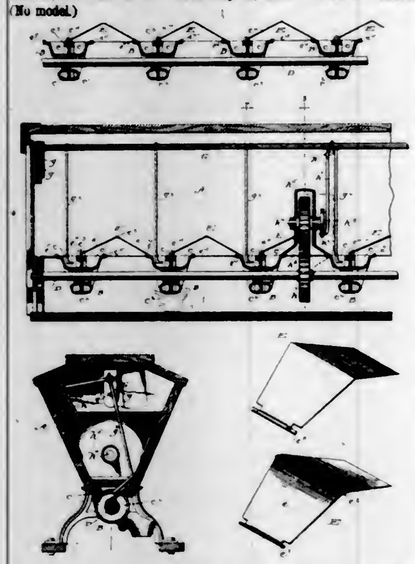
11. In a plate-press, and in combination with a traveling bed and an impression-roll thereover, the blanket secured at one end to said roll, the weighted cord attached to the free end of the blanket and carried over a sustaining-pulley, and a dash pot or cup located in the path of the descending weight and in position to receive the same.

12. In combination with the D-roll and the vertically-moving weight connected thereto to turn it backward, the dash-pot having a vertically-movable bottom to limit the descent of the weight and determine the stopping-point of the roll.

13. In a plate-printing press, the rectangular frame formed in one piece with the tracks a' a^3 therein, in combination with the flanged

tubular shaft-bearings passed vertically through the frame and bolted thereto.

446,636. GRAIN-DRILL. GEORGE W. KIRKPATRICK and EDSON J. CORSER, Macedon, N. Y. Filed July 23, 1890. Serial No. 359,644. (No model.)



Claim.—1. In combination with the seed-hopper and the feed-cups and wheels thereunder, the rock-shaft mounted in the hopper directly over the cups and provided with arms extending downward into the cups adjacent to the wheels, whereby their ends are given a substantially horizontal position within the cups.

2. In combination with the hopper, feed-cups, and feed-wheels, the elevated rock-shaft and its depending fingers having their ends projected downward into the feed-cups and bent laterally toward the feed-wheels, whereby they are adapted the better to dislodge the grains and cause the delivery of the same into the wheels.

3. In combination with the hopper, the feed-cups, the feed-wheels, and the rotary shaft carrying seed-wheels, the elevated rock-shaft provided with depending arms g^3 and arm A, the crank-wheel and pitman for operating said shaft, the two gears connecting the same with the feeder-shaft, and the housing or casing k^3, located within the hopper and inclosing the gear, as shown.

4. In combination with a hopper and a series of duplex feeders, substantially as shown, a series of reversible plates or wickets, substantially as shown, each covering one side of a feeder and the space between said feeder and the next, whereby the wickets are adapted to render either side of the feeders inactive at will and also to conduct the grain directly into the operative side.

5. In combination with a hopper having inclined sides, and the series of duplex feed-cups thereunder, the metallic reversible wickets jointed to the feed-cups and extending each from the center of one cup to the side of the next, said wickets elevated at the middle and fitting at the edges against the hopper-walls.

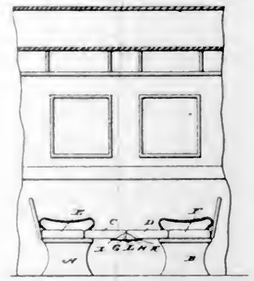
6. A wicket for use in grain-drills, consisting of the two leaves formed and jointed together, substantially as shown.

446,637. BERTH-SUPPORT FOR SLEEPING-CAR SEATS. JOHN C. MORRISON, St. Louis, Mo. Filed June 27, 1890. Serial No. 357,007. (No model.)

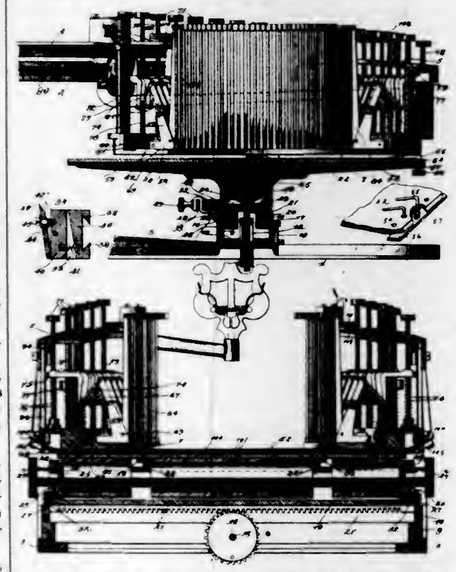
Claim.—1. A seat-cushion provided with a corner-casting having a projecting keeper, in combination with a seat-cushion having a corner-casting provided with a lip adapted to engage the keeper of the opposing casting, substantially as specified.

2. A berth-supporter comprising a corner-casting provided with a keeper and secured to the outer corner of a seat-cushion, in combination with a corner-casting provided with an engaging-lip and secured to the outer corner of an opposing seat-cushion, substantially as specified.

3. In a sleeping-berth of the character described, a corner-casting provided with a keeper and secured to a seat-cushion, in combination with a corner provided with a locking-lip and secured to an opposing seat-cushion, as set forth.



446,638. TYPE-WRITING MACHINE. JESSE W. PIERCE, Belton, Tex. Filed Oct. 9, 1889. Serial No. 326,442. (No model.)



Claim.—1. The combination of the base-plate 35, having a rib 37, the sliding block having a groove engaging said rib, the vibrating plate carried by said block, and the fixed tooth and the loose tooth secured to the said plate, as set forth.

2. The combination of the block 36, the vibrating plate carried by said block, the spring 41, arranged between the block and the lower end of the plate, and the fixed tooth and the loose tooth secured to said plate, as set forth.

3. The combination of the supporting-frame, the carriage mounted thereon and carrying a ratchet-bar, the spacing device on the frame, consisting, essentially, of a sliding block and pawls carried thereby and adapted to engage the ratchet-bar on the carriage, the circular series of keys in the upper portion of the frame, the rock-shaft journaled in the rear end of the frame and having a depending vibrating arm at its center, the pitman connecting said arm with the sliding block, the spring secured to said arm and the frame, and the spacing-lever projecting forward from the rock-shaft and having a spacing-ring adapted to be depressed by the keys, as set forth.

4. The plate 46, provided at its lower edge with a rearwardly-projecting arm 50, having notches 51 in its upper face, in combination with the space-lever and a spring 85, having a loop 86, adjustably connecting said space-lever with said notches, as set forth.

5. The combination of the box or carriage, the feed-roller mounted therein and provided with ratchet-disks at its ends, the levers pivoted in the ends of the box and provided on their upper edges with the teeth or projections adapted to engage the ratchet-disk, and the springs arranged between the bottom of the box and the lower edge of the lever, as set forth.

6. The combination of the carriage, the feed-plate mounted thereon, and the feed-roller mounted in sliding bearings in the carriage and in frictional contact with the under side of the feed-plate, as set forth.

7. The combination of the carriage, the feed-plate mounted thereon, the sliding journal-boxes in the end of the carriage, the feed-roller journaled in the said boxes and in frictional contact with the under side of the feed-plate, and the springs arranged between the bottom of the carriage and the under side of the journal-boxes, as set forth.

8. The ribbon-supporting device consisting of parallel strips or bars provided at their centers with vertical openings, in combination with means, substantially as described, for moving said bars laterally after each stroke of a key, as set forth.

9. The combination of the vibrating plates, the parallel strips connecting said plates, the inking-ribbon moving through said plates and between said strips, and mechanism for vibrating said plates, as set forth.

10. The combination of the frame, the vibrating plates mounted on the sides of the same, the spacing-lever, and the angle-lever fulcrumed on the frame and having its opposite ends respectively connected to the spacing-lever and the vibrating plate, as set forth.

11. The combination of the frame, the vibrating plates mounted thereon, the slots 105, the pulleys on the plates adjacent to said slots, the guides 103 on the plates, and mechanism for vibrating the plates, as set forth.

12. The combination of the frame, the brackets 87, secured thereto, the ribbon-reels mounted in said brackets and having ratchet-disks on their sides, the spacing-lever, the pawl carried by said lever and engaging the ratchet-disks of the ribbon-reels, and the detents mounted on the hangers and adapted to throw the pawl out of engagement with the ratchet-disk, as set forth.

13. The combination, with the ribbon-reel and the pawl to actuate the same, of the detent having its end acting on the pawl and provided with a projection adapted to engage the ribbon-reel, as set forth.

14. The combination of the vertically-disposed type-bars arranged in a circular series and provided at their lower ends with segmental gears, the keys arranged around the type-bars, and the levers between the keys and the type-bar and having their inner ends provided with segmental gears engaging the gears on the type-bars and having their outer ends connected with the keys, as set forth.

15. The combination of the type-bars, the keys, the brackets secured to the keys, the centrally-pivoted levers connected to the type-bars at one end, and the links connecting the other ends of said levers with said brackets, as set forth.

16. The combination of the circular series of type-bars, the double circular series of keys, the spacing-ring between the shanks of the keys in said two series, the brackets adjustably secured to the keys and adapted to impinge on said ring, the springs on the key-shanks below said brackets, the levers actuating the type-bars, and links connecting said levers with said brackets, as set forth.

17. The combination of the hangers having integral standards rising from their upper edges, the type-bars fulcrumed in the hangers and having segmental gears at their ends, the levers pivoted between the upper ends of the standards and provided with segmental gears engaging the gears on the type-bars, the vertically-sliding keys, and links connecting said keys with the outer arms of the levers, as set forth.

18. The combination of the carriage-support having ribs on its inner sides provided with horizontal circular recesses in their sides opening into their upper edges, the rollers arranged in said recesses and projecting slightly above the said edges, and the screws secured in the ribs and having their shanks forming the journals of the rollers and their heads fitting said openings and bearing against the rollers, as set forth.

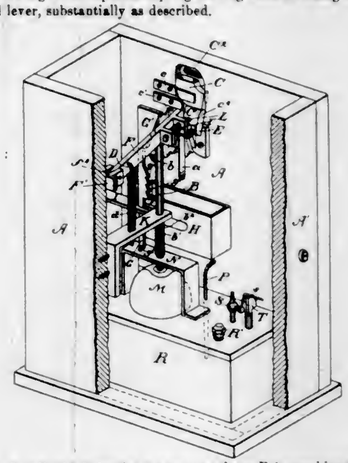
19. The combination of the feed-plate, the fingers mounted therein, the bar connecting the lower end of the fingers, and the springs arranged around the fingers between the plate and the bar, as set forth.

446,639. COIN-OPERATED PERFUMING APPARATUS. HORACE M. WILSON, Cambridge, assignor of one-half to W. B. H. Dowse, Newton, Mass. Filed Apr. 7, 1890. Serial No. 346,868. (No model.)

Claim.—1. In a liquid-delivering apparatus, a liquid-receptacle provided with a discharge-tube and a flexible bulb, in combination with a sliding rod operating said bulb, and a lever provided with a coin-operated locking-latch, constructed and arranged substantially as described.

2. In a coin-operated apparatus, a handle-lever provided with a sliding spring locking-latch, in combination with a coin-guiding trough, a coin-bolding bracket connected with said lever, and a stationary locking projection engaging with the latch, arranged whereby when a coin is introduced the lever may be unlocked, substantially as described.

3. In a coin-operated apparatus, a lever provided with a handle F^9 and having a coin-operated spring locking-latch L sliding in lugs f on said lever, substantially as described.



4. In a liquid-delivering apparatus, a lever F, in combination with a bulb-operating sliding rod provided with a projection b, a pivoted arm G, surmounted by a cam engaging with said lever, the said arm being provided with teeth g, engaging with said projection, and springs counteracting said lever-rod and arm, arranged and operating substantially as and for the purposes described.

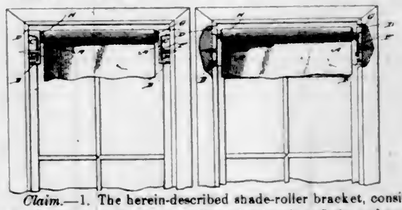
5. In a liquid-delivering apparatus, the combination, with a liquid-receptacle provided with a flexible bulb and having a rotary regulating-valve, of a sliding rod operating said bulb, and a lever operating said rod, constructed and arranged substantially as and for the purposes described.

6. In a coin-operated apparatus, a lever provided with a sliding coin-operated spring locking-latch, substantially as described.

7. In a coin-operated apparatus, the combination, with a lever having a sliding coin-operated locking-latch, of a stationary locking projection E, engaging with said latch, substantially as and for the purposes described.

8. In a liquid delivering apparatus, the combination, with a rotary regulating-valve provided with the arm s, of a notched plate T, traversed by said arm, arranged and operating substantially as and for the purposes described.

446,640. SHADE-ROLLER BRACKET. THOMAS J. DENNIS, Newark, N. J. Filed Apr. 15, 1890. Serial No. 347,940. (No model.)



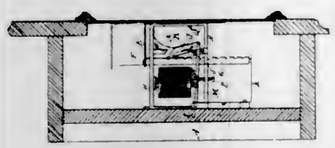
Claim.—1. The herein-described shade-roller bracket, consisting of the flat plate A, the rearwardly-projecting lugs C, formed near its upper end upon opposite sides, said lugs having the barbed or pointed ends D, the rearwardly-bent portion B at the lower end of the plate, the screw-holes F, and the slot H, located intermediate the lugs, the upper portion of which slot is inclined to form a stop and retain the journal of the shade-roller in place, as described.

2. In combination with a window-frame, the herein-described shade-roller bracket, consisting of the flat plate A, secured between the guide-strips of the window-frame, said plate being provided near its upper end with the rearwardly-projecting lugs C, the rearwardly-bent portion B at the lower end of the plate, said portion serving as a stop against which the upper edge of the sash abuts when the latter is raised, the screw-holes F in said plate, and the slot H, located intermediate the lugs, the upper portion of which slot is inclined to form a stop and retain the journal of the shade-roller in place, as described.

3. The herein-described shade-roller bracket, consisting of two rectangular flat plates having bearings for the journals of the shade-roller, having their lower ends formed with horizontally-disposed lugs

and at their upper provided with lugs having their ends reduced to form barbs or points, said plates being arranged in the guide of the window-frame, the horizontally-disposed lugs at the lower ends thereof forming stops or abutments for the sash to prevent the shade-roller from being displaced, and the barbs on the lugs at the upper ends of the plates being driven in the window-frame, substantially as described.

446,641. **ANNUNCIATOR.** JOHN H. ELFERING, New Haven, Conn., assignor of one-third to S. Harrison Wagner, same place. Filed Apr. 24 1890. Serial No. 349,276. (No model.)



Claim.—1. In a hotel-annunciator, the combination, with an annunciator-magnet, of a vertically-movable want-slide, a vertically-movable rack having the slide connected with it, a lifting-pawl operated by the armature-lever of the magnet, a retaining-pawl for holding the rack in its lifted position, and a stop located above the lifting-pawl which engages with it and prevents the rack from being moved more than one step upward at a time, substantially as described.

2. In a hotel-annunciator, the combination, with an annunciator-magnet, of a vertically-movable want-slide, a vertically-movable rack having the slide connected with it, a lifting-pawl operated by the armature-lever of the magnet, a retaining-pawl located between the rack and the lifting-pawl, an unlocking-pin carried by the said retaining-pawl, and a restoring-rod adapted to engage with the said pin and throw both pawls temporarily away from the rack to permit the same to drop, substantially as described.

3. In a hotel-annunciator, the combination, with an annunciator-magnet, of a slotted armature-lever therefor, a vertically-movable want-slide, a vertically-movable rack having the slide connected with it, a lifting-pawl pivoted in the outer end of the slot in the said lever and engaged with the rack, a retaining-pawl passing through the inner end of the slot in the lever and engaging with the said rack, and means operating through the retaining-pawl for temporarily disengaging both pawls from the rack to permit the same to drop to its normal position, substantially as described.

4. In a hotel-annunciator, the combination, with an annunciator-magnet, of a want-carrier, movable operating mechanism connecting the magnet and carrier, whereby the latter is operated by the energization of the former, a shunt including a bell, and a contact-finger in circuit with the bell and engaged by the said movable operating mechanism when the same is in its normal position, whereby upon the first energization of the magnet the current divides and operates the bell which is then cut out of circuit by the movement of the said mechanism away from the said contact-finger, substantially as described.

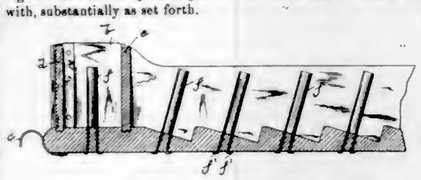
5. In a hotel-annunciator, the combination, with an annunciator-magnet, of a want-carrier, a vertically-movable rack having the want-carrier connected with it, step-by-step mechanism operated by the magnet for lifting the rack, a bell, and a contact-finger in circuit with the bell and engaged by the rack when the same is in its normal position, whereby the bell is cut out of circuit after the first upward movement of the rack which is thus disengaged from the spring, so that the bell is sounded but once, substantially as described.

6. In a hotel-annunciator, the combination, with an annunciator-magnet, of a vertically-movable want-slide, a vertically-movable rack having the slide connected with it, a lifting-pawl operated by the armature-lever of the magnet, a retaining-pawl for holding the rack in its lifted position, a bell, and a contact-spring in circuit with the bell and engaged by the rack when the same is in its normal position, but disengaged therefrom when the rack makes its first upward movement, substantially as set forth.

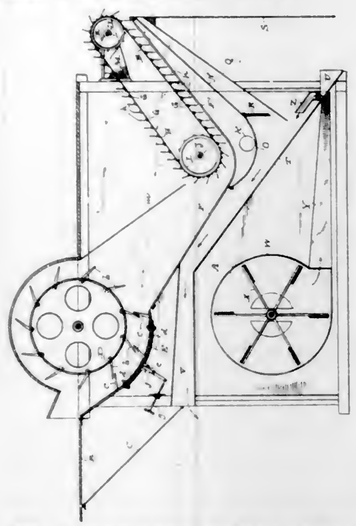
446,642. **SHOW-CASE FOR SPOOL-THREAD.** CHARLES E. GOULD, Northampton, assignor to the Florence Machine Company, Florence, Mass. Filed June 5, 1890. Serial No. 354,314. (No model.)

Claim.—1. In a show-case for spool-thread, the combination, with the drawer or compartment *b*, of a series of tubular pins *f*, having one or more prongs *f'*, adapted to be driven through the bottom of said drawer or compartment and bent laterally to hold said pins in position, substantially as set forth.

2. The spool-holding pin for show-cases herein described, consisting of a metallic tube *f*, having at one end the prongs *f'* integral therewith, substantially as set forth.



446,643. **THRASHING-MACHINE.** AXEL R. GUSTAFSON, Ashland, Wis., assignor of one-fourth to William F. Anderson, Negaunee, Mich. Filed Mar. 7, 1890. Serial No. 342,951. (No model.)



Claim.—1. In a thrashing-machine, a fan and its casing, two wind-trunks that diverge from a common center and extend forward from the casing, a transverse spout having its extremities connected to the outer ends of the wind-trunks, an inclined delivery-board arranged in a line parallel to the blast from the spout, and a flue leading from the upper end of said board outside the casing of the machine, substantially as set forth.

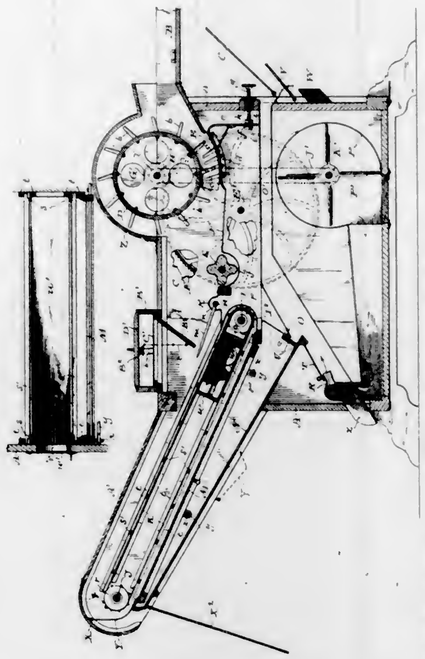
2. In a thrashing-machine, a fan and its casing, two wind-trunks that diverge from a common center and extend forward from the casing, a transverse spout connected at its extremities to the outer ends of the wind-trunks, an inclined delivery-board arranged in a line parallel to the blast from the spout, a flue leading from the upper end of the board outside of the machine, a riddle arranged above said board, a flue leading from one of said wind-trunks to a point above the riddle, and an opening in the machine-casing opposite the mouth of the latter flue, substantially as set forth.

3. In a thrashing-machine, an inclined slat-bottom provided with an extension inclined in a direction opposite thereto, a thrashing mechanism arranged adjacent to the upper end of the slat-bottom, an endless straw-carrier arranged above the extension of said slat-bottom, a screen and riddle arranged to receive the grain that falls through the carrier and said extension of the slat-bottom, a chute arranged below the screen, an inclined delivery-board arranged to receive the thrashed grain, and a fan for separating the chaff from said grain, substantially as set forth.

446,644. **THRASHING-MACHINE.** AXEL R. GUSTAFSON, Ashland, Wis., assignor of one-fourth to William F. Anderson, Negaunee, Mich. Filed Apr. 3, 1890. Serial No. 346,428. (No model.)

Claim.—1. In a thrashing-machine, the combination of a toothed cylinder, a toothed segmental plate arranged on guides in opposition to the cylinder, an arm depending from the plate and provided with the slot *f*, the bearing *h*, the screw *g*, arranged in said bearing to extend through said slot in the arm, and the set-nuts *i i*, arranged on said screw to oppose said arm on opposite sides, substantially as set forth.

2. In a thrashing-machine, the combination of a toothed cylinder, a toothed segmental plate opposed to the cylinder, a straw-carrier, a horizontal partition extended from said plate to the straw-carrier, a corrugated roller arranged in a concave portion of said partition, and an agitator having the arms thereof extended through a slotted convex portion of said partition, substantially as set forth.



3. In a thrashing-machine, an endless and perforated straw-carrier, a transverse and diagonal partition extended from side to side of the machine-casing within the straw-carrier, a screen supported between the partitions, and openings in said casing adjacent to an end of each partition, substantially as set forth.

4. In a thrashing-machine, the combination of an endless and perforated straw-carrier, a chute arranged below the same, a blast-flue having an opening therein to receive the lower end of the chute, a gate for said opening, and a door that forms part of the blast-flue below said chute, substantially as set forth.

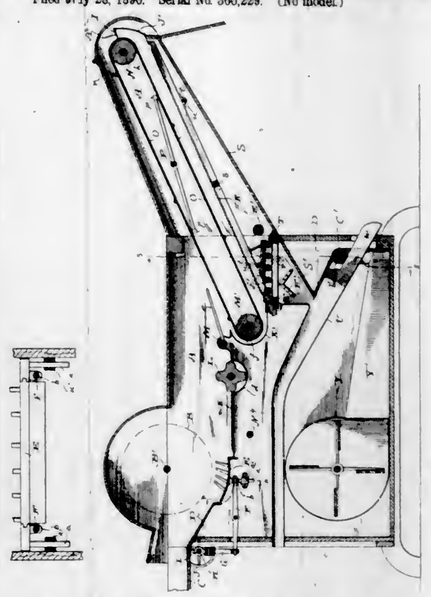
5. In a thrashing-machine, the combination of the machine-casing provided with an inlet in the top for grain, a perforated endless straw-carrier, a detachable plate for closing the straw-discharge, a chute arranged below the straw-carrier, and a blast-flue provided with an opening for the lower end of the chute, substantially as set forth.

6. In a thrashing-machine, the combination of the machine-casing, a perforated endless straw-carrier, a detachable plate for closing the straw-discharge, a chute arranged below the straw-carrier, a blast-flue provided with an opening for the lower end of the chute, a hopper in the machine-casing above said straw-carrier, and a vibratory sieve arranged within the hopper, substantially as set forth.

7. In a thrashing-machine, the combination of a perforated endless straw-carrier, a detachable plate for closing the straw-discharge, a chute arranged below the straw-carrier, a blast-flue provided with an opening for the lower end of the chute, a hopper in the machine-casing above said straw-carrier, a vibratory sieve arranged within the hopper, and stirrers arranged just above the mesh of the sieve, substantially as set forth.

8. In a thrashing-machine, the combination of a perforated endless straw-carrier, a detachable plate for closing the straw-discharge, a chute arranged below the straw-carrier, a blast-flue provided with an opening for the lower end of the chute, a hopper in the machine-casing above said straw-carrier, a sieve arranged in the hopper, and a hinged cant-board adjustably suspended below the sieve, substantially as set forth.

446,645. **THRASHING-MACHINE.** AXEL R. GUSTAFSON, Ashland, Wis., assignor of one-fourth to William F. Anderson, Negaunee, Mich. Filed July 28, 1890. Serial No. 360,229. (No model.)



Claim.—1. The combination, with the thrashing-cylinder and a concave eccentric thereto, of levers having their inner ends connected to the concave, a shaft, shackles laterally adjustable on the shaft, and links connecting the shackles and outer ends of the levers, substantially as set forth.

2. The combination, with suitable rollers and a driving-gear, of a straw-carrier mounted on said rollers and having a base of leather or analogous material, slitted at regular intervals while in a dry state, the slits breaking joints with each other, and afterward dampened, stretched, dried, and joined at its ends, substantially as set forth.

3. The combination, with suitable rollers and a driving-gear, of a straw-carrier mounted on said rollers and having a base comprising a sheet of leather or analogous material, slitted at regular intervals while in a dry state, the slits breaking joints with each other, and afterward dampened, stretched, dried, and joined at its ends, and tapes secured to the edges of said material, substantially as set forth.

4. The combination, with suitable rollers and driving-gear, of a straw-carrier mounted on said rollers and having a base comprising a sheet of leather or analogous material, slitted at regular intervals while in a dry state, the slits breaking joints with each other, and afterward dampened, stretched, dried, and joined at its ends, tapes secured to the edges of said material, and transverse strips having their ends secured to said sheet, substantially as set forth.

5. The combination of an endless straw-carrier, a transverse shaft arranged between the inner sides of the same, knockers carried by the shaft, a screen loose on transverse guides below the straw-carrier, the bell-crank Q, having one arm thereof connected to the screen, a crank on one end of the knocker-shaft, the link *r*, secured to the crank, the link *q*, adjustably connected to the one *r*, and the eccentric *y*, having the link-and-ring connection *x* with the other arm of the bell-crank and link *q*, substantially as set forth.

6. The combination of a straw-carrier, a vibratory screen parallel thereto, a chute arranged below the screen, a frame suspended from the lower end of said screen adjacent to the chute, and riddles serially arranged in the frame, substantially as set forth.

7. The combination of a straw-carrier, a vibratory screen parallel thereto, a chute arranged below the screen, a frame suspended from the lower end of said screen adjacent to the chute, riddles serially arranged in the frame, the flue U, having an opening therein for said chute, a fan and its case, a bifurcated wind-trunk leading from the fan-case, and a transverse spout connected at its ends to the furcations of the wind-trunk and having its discharge into said flue below the riddles, substantially as set forth.

8. The combination of vibratory riddles, a chute arranged below the riddles, the flue U, having an opening therein for the chute, a fan

and its case, a wind-trunk leading from the fan-case, the flue D', connected to the wind-trunk, the box D^3, communicating with the latter flue and provided with a row of perforations to sweep the surface of the uppermost riddle, and the outlet *d* opposite said box, substantially as set forth.

9. The combination of vibratory riddles, a chute arranged below the same, the flue U, having an opening therein for the chute, a fan and its case, a wind-trunk leading from the fan-case, the flue D', connected to the wind-trunk, the perforated box D^3, communicating with the latter flue above the riddles, and the gate *f*, arranged adjacent to the perforations, substantially as set forth.

10. The combination of vibratory riddles, a chute arranged below the same, the flue U, having an opening therein for the chute, a fan and its case, a wind-trunk leading from the fan-case, the perforated box D^3, communicating with the latter flue above the riddles, the outlet *d*, opposite said box, and the flap *e*, adjustable on the uppermost riddle adjacent to said outlet, substantially as set forth.

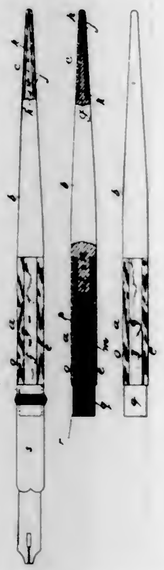
11. The combination of an endless straw-carrier, a vibratory screen arranged beneath the same, riddles supported by the screen and movable therewith, a wind-flue having its discharge over the riddles, an outlet opposite the discharge, and a branch of said flue arranged to discharge under the screen, substantially as set forth.

12. The combination of vibratory riddles, a chute arranged beneath the same, the flue U, having an opening therein for the chute, a fan and its case, a bifurcated wind-trunk leading from the fan-case, a transverse spout connected at its ends to the furcations of the wind-trunk and having a discharge into said flue, and the deflector F, arranged between said chute and riddles, substantially as set forth.

13. The combination, with the thrashing-cylinder, of a concave eccentric thereto and provided with depending pins, guides engaging the pins, levers connected to the concave, and suitable means for adjusting the levers, substantially as set forth.

14. The combination of the straw-carrier, a spring-controlled gate arranged to impinge against the same at the rear of the machine, and a shield arranged below the gate, substantially as set forth.

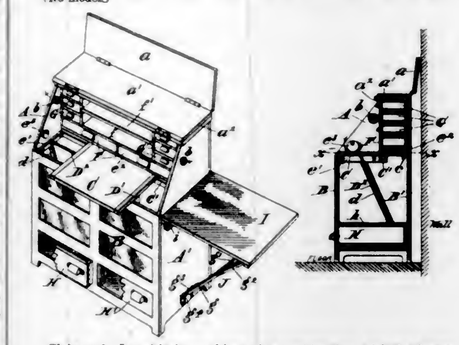
446,646. PEN-HOLDER. FREDERICK J. KALDENBERG, Tarrytown, N. Y. Filed Apr. 12, 1890. Serial No. 347,713. (No model.)



Claim.—1. In a pen-holder, a solid piece or section provided with a prolonged and reduced end, and a tube secured thereon and covered with narrow slabs, the said tube projecting beyond the slabs and fitted with an outside ring or band, as set forth.

2. The herein-described pen-holder, consisting of the main or solid piece having the reduced end and the long tapering end, slabs or pieces secured on said tapering end, a tube fitting on the other reduced end, and slabs or pieces covering said tube.

446,647. KITCHEN-CABINET. JOHN RANKIN and THOMAS V. RANKIN, Williamsdale, Ohio. Filed May 12, 1890. Serial No. 351,435. (No model.)



Claim.—1. In a kitchen-cabinet, the combination, with the frame A A' B B', having a suitable bottom, of a longitudinal grooved bar C', having the two pairs of notches *c'* and c^2, respectively, bread-board C, having at its rear edge the vertical pins or stops *c c*, which engage said grooved and notched bar, and a top bar or partition c^3, the whole being constructed and arranged in such a manner that said bread-board may be moved both inwardly and outwardly and reciprocated longitudinally, and also firmly held in its extended position for use by means of said grooved bar C', which latter forms both a back-stop and support for the rear end of said bread-board, substantially as herein set forth.

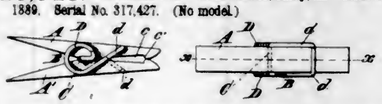
2. In a kitchen-cabinet, the combination of the frame A A' B B', having a suitable top and bottom, bread-board C, having vertical pins *c c*, guide-bar C', having the two pairs of transverse notches or passages *c'* and c^2, respectively, brace-bar c^3, and vertical partitions D D' D^3 D^3, dividing the chamber beneath said bread-board and bars into bins, substantially as herein set forth.

3. In a kitchen-cabinet, the combination, with the frame A A' B B', having a suitable bottom and longitudinal vertically-spaced bars C' and c^3, of a single horizontal strip *c'* on each of the inner faces of the two end walls A A', and a long inwardly and outwardly sliding covering board or table E, having stops *c c* on its bottom at its rear edge, substantially as herein set forth.

4. In a kitchen-cabinet, the combination, with frame A A' B B', having a suitable bottom, and guide and brace bars C' and c^3, of covering board or table E, having stops *c c* on its bottom, horizontal strips *c' c'* on the inner faces of the end walls A A', and eccentrics c^5 on the said inner faces of said end walls, substantially as and for the purpose specified.

5. The combination, with a kitchen-cabinet, of a detachable hinged drop-leaf I, hinge-sockets *i i*, folding brace or standard J, composed of two pivotally-connected sections *g* and *g' g²* and spring-controlled latch or lock K g^3, and a hinge-socket g^4, all the parts being arranged, constructed, and adapted to operate substantially as herein set forth.

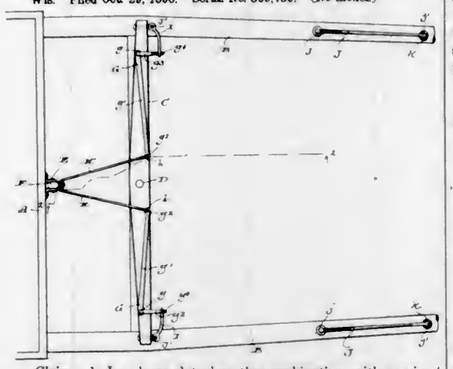
446,648. CLOTHES-PIN. JOHN SCHMID, Olney, Ill. Filed July 13, 1889. Serial No. 317,427. (No model.)



Claim.—1. In a clothes-pin, the combination, with two flat clamping-bars fulcrumed at a point intermediate their ends, of a coupling and pressure device consisting of a single piece of wire having a straight central portion of the same length as the width of the bars and having its ends bent at right angles thereto and each formed into a circular spring of a diameter substantially the same as the thickness of the pin and having the straight portion for a center, the portion of the wire beyond said springs being extended at a tangent thereto, and each portion having its end bent inward and engaging with the outer surface of the bars parallel with the straight portion, substantially as described.

2. A coupling and pressure device for uniting the clamping-bars of a clothes-pin, consisting of a single piece of resilient wire having a straight central portion of the same length as the width of the bars to be united, and having its ends bent at right angles thereto and each formed into a circular spring of a diameter substantially the same as the thickness of the bars and having the straight portion for a center, the portion of said wire beyond said springs being extended at a tangent thereto, and each extended portion having its end bent inwardly parallel with the other and with the straight central portion to engage with the outer surface of the bars, substantially as described.

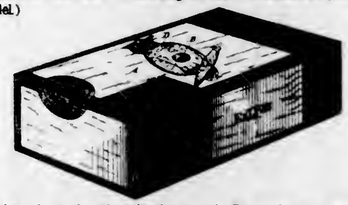
446,649. HORSE-DETACHER. FRANCIS J. SHEPHARD, Concord, Wis. Filed Oct. 29, 1890. Serial No. 369,739. (No model.)



Claim.—1. In a horse-detacher, the combination, with a pair of hinged trace-pins designed to receive the cockeyes of the traces, and a pair of pivoted bell-crank levers having eyes to receive the free ends of the trace-pins, of a hand-lever pivoted upon the vehicle-body and attached at its lower end to the inner ends of the bell crank levers, substantially as described.

2. In a horse-detacher, the combination, with a pair of hinged trace-pins designed to receive the cockeyes of the traces, of a pair of pivoted bell-crank levers having eyes to receive the free ends of the trace-pins, a bent rod having the ends thereof in engagement with the inner ends of the bell-crank levers, and a hand-lever pivoted upon the vehicle-body and attached at its lower end to the bend of the said rod, substantially as set forth.

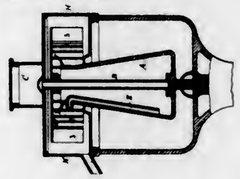
446,650. MEANS FOR MARKING CIGAR-BOXES. CHARLES H. STORM, New York, N. Y. Filed Aug. 22, 1890. Serial No 362,752. (No model.)



Claim.—1. A cigar-box having a coin B attached by cement C so that it cannot be removed without destroying the box, all substantially as herein specified.

2. A cigar-box or analogous package containing cigars or analogous articles, having on its exterior a brand D, adapted to show plainly if it has been mutilated, and a coin B, sunk into the box within the area covered by the brand and arranged to serve as a part of the distinctive mark, the coin being held in place by a coating of glue or cement C, so that it cannot be removed without destroying the box, all substantially as herein specified.

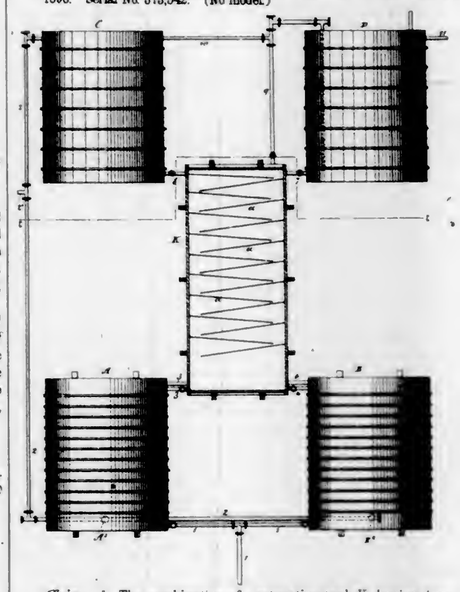
446,651. EXTRACTOR-CHURN. ADOLPH WAHLIN and CARL J. LUNDSTRÖM, Stockholm, Sweden, and THOMAS COLLIER, Winchester, N. H., assignors to R. Duncan Harris, New York, N. Y. Filed Jan. 20, 1890. Serial No. 337,422. (No model.)



Claim.—1. The combination, with a centrifugal separating-vessel having skim-milk and cream deliveries and a surrounding stationary vessel, of butter-accumulators within such vessel and adjacent to the cream-delivery, and upon the surface of which accumulators the butter particles strike as they are thrown off centrifugally and adhere sufficiently for the skim-milk to separate, substantially as set forth.

2. The combination, with a centrifugal separating-vessel having cream and skim-milk deliveries, of a butter-accumulator adjacent to the cream-delivery and composed of a range of plates against which the butter particles are thrown from the separator, and a support for such accumulator, around which the accumulator revolves by the impact of the butter particles and skim-milk, substantially as set forth.

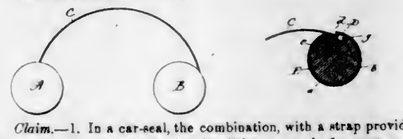
446,652. APPARATUS FOR MAKING SULPHITE LYE. ALEXANDER WENDLER and JULIUS SPIRO, Watertown, N. Y. Filed Dec. 4, 1890. Serial No. 373,542. (No model.)



Claim.—1. The combination of a saturating-tank K, having drip-shelves *a a*, with the lower vats A B, gas-supply-pipe entering said vats, weak-lye pipe 2, leading from said vats, upper weak-lye-supply pipe 8, vat C, communicating with pipes 2 and 8, with the top of tank K, and lime-water-supply pipe 7 to the upper part of tank K, as described.

2. The elevated vats C D, combined with the saturating-tank K, having drip-shelves *a a* and connecting-pipes at its upper end leading to said vats, and with the lower vats A B, pipes connecting them with the lower part of the tank K and with the gas-supply pipe 1, leading into the vats A B, and with the pipe 2, connecting the lower vats A B with the elevated vat C, substantially as herein shown and described.

446,653. CAR-SEAL. CLARENCE L. WHEELER, Marion, Ind., assignor of one-half to Jay Willard Clark, same place. Filed June 2, 1890. Serial No. 353,976. (No model.)



Claim.—1. In a car-seal, the combination, with a strap provided at one end with an elastic hook, of a disk composed of an outer cup and an inner cup, the two cups set together, their open sides toward each other and so as to form a space between the two, the flange of the outer cup having a transverse slot formed therein and the flange of the inner cup cut to form an inwardly-projecting tongue in line with said slot of the outer cup, the said tongue being adapted to engage the spring-hook of the strap as it is forced through said slot and beyond the end of the tongue, substantially as described.

3. In a car-seal, the combination, with a strap provided at one end with an elastic hook, of a disk composed of an outer cup and an inner cup, the two cups set together, the open sides toward each other, the flange of the outer closed around the flange of the inner, the flange of the outer cup having a transverse slot formed therein and the flange of the inner cup cut to form an inwardly-projecting tongue in line with said slot through the flange of the outer cup, and a stop within the inner cup distant from the point of said tongue corresponding to the length of the hook, and whereby when the hook is introduced through the said slot onto said tongue the said hook will expand after it escapes from the tongue and so as to engage therewith, substantially as described.

5. In a car-seal, the combination, with a strap provided at one end with an elastic hook, of a disk composed of an outer cup, an inner cup, and a filling located within the inner cup, the flange of the said outer cup having a transverse slot formed in it and that of the inner cup being cut to form an inwardly-projecting tongue, and the filling being notched to provide a clearing-space for the tongue and stop for the hook when introduced into the inner cup, the said cups and filling being arranged so as to bring the said slot, tongue, and notch into practical alignment, whereby when the hook is introduced through the slot into the inner cup it expands and engages with the tongue, from which it cannot thereafter be disengaged, except by destroying the seal, substantially as described.

446,654. COMPOUND FOR PAVING, ROOFING, AND BUILDING PURPOSES. HENRY F. WILLIAMS, San Francisco, Cal. Filed Oct. 23, 1890. Serial No. 369,093. (No specimens.)

Claim.—1. A compound consisting of a combination of asphalt and refined lard or lard-oil, substantially as herein set forth.

2. A roofing, paving, and building compound consisting of a combination of refined asphalt, refined lard or lard-oil, and infusorial earth, substantially as herein set forth.

446,655. ELECTRIC-CONDUCTOR CONNECTION. HEINRICH ARLD, Nuremberg, Germany. Filed Sept. 15, 1890. Serial No. 365,015. (No model.) Patented in Germany Aug. 11, 1889, No. 51,706; in France Nov. 19, 1889, No. 202,021; in Belgium Jan. 28, 1890, No. 89,319; in Italy Apr. 28, 1890, No. 27,227; in Austria-Hungary Apr. 27, 1890, No. 5,150 and No. 16,865, and in Switzerland Mar. 8, 1890, No. 1,966.

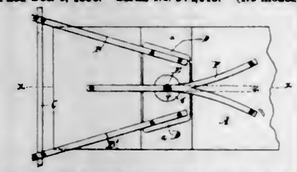


Claim.—1. In a terminal or binding-post, the combination, with a socket having apertures through which wires can be passed, of a tapering plug in said socket and means for drawing said plug into the socket, substantially as set forth.

2. In a terminal or binding-post, the combination, with a tapering socket having apertures through which wires can be passed, of a tapering plug in said socket, a screw projecting from the bottom of said plug through the bottom of the socket, and a nut on said screw, substantially as set forth.

3. In a terminal or binding-post, the combination, with a tapering socket provided with apertures and a top recess for receiving wires, of a tapering plug in said socket, which plug is also provided with a top recess, and means for drawing the plug into the socket, substantially as set forth.

446,656. SPRING-GEAR FOR VEHICLES. GEORGE E. BARTHOLOMEW, Cincinnati, Ohio, assignor of one-half to Edward R. Edwards, same place. Filed Dec. 9, 1890. Serial No. 374,015. (No model.)



Claim.—1. In a spring-gear for coupling the front axle to the body, the combination of the spring-bar D, pivoted underneath the body back of its front end, a brace to hold the spring-bar to the body and relieve the king-bolt from strain, and springs secured to the spring-bar and front axle, substantially as shown and described.

2. In a spring-gear for coupling the front axle to the body, the combination of the spring-bar D, pivoted underneath the body back of its front end, a brace to hold the spring-bar to the body and relieve the king-bolt from strain, and the quarter-elliptic springs B, having their heavy ends rigidly secured to the spring-bar and their light ends clipped to the front axle, substantially as shown and described.

3. The combination, substantially as hereinbefore set forth, of the body A, having cross-bar *a*, the spring-bar D, pivoted under said bar *a*, the brace passing transversely across the spring-bar and having its ends secured to the wagon-bottom, the king-bolt E, passing through the bars and brace, and the springs secured to the spring-bar and front axle, substantially as shown and described.

4. The combination of the body having cross-bar *a*, the axles, the spring-bar D, the flanged sleeve, the king-bolt E, the bar D, pivoted to the bar *a*, the brace secured to the body and crossing the spring-bar to hold it against the bar *a* and relieve the king-bolt, and the springs coupling the spring-bar and front axle, substantially as shown and described.

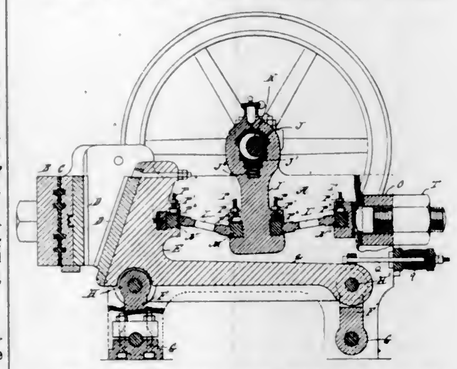
446,657. PERMUTATION-LOCK. JACOB BAUM, Cincinnati, Ohio. Filed Sept. 15, 1890. Serial No. 364,935. (No model.)



Claim.—1. The combination, in a permutation-lock, of a cylindrical box or safe A, having a series of projecting lugs G G', and a separable cover B, having a longitudinal slot F and a seat C for a set of ring-tumblers D E, which tumblers have annular grooves *d e* on their inner surfaces, said grooves being interrupted at *d' e'* to clear said lugs G G' when said tumblers are turned and the combination restored, substantially as herein described.

2. In combination with a money box or safe composed of two separable cylindrical sections, a series of ring-tumblers having interrupted grooves on their inner surfaces, which grooved tumblers revolve around one of said cylindrical sections and engage with lugs or pins adjustably secured to the other section and projecting outwardly therefrom, for the purpose described.

446,658. ORE OR ROCK BREAKER. CHARLES G. BUCHANAN, Rockaway, N. J. Filed Oct. 26, 1886. Serial No. 217,284. (No model.)

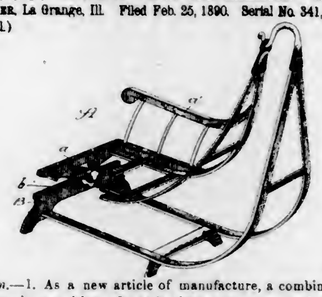


Claim.—1. The combination, with a supporting-frame having a fixed jaw, of a movable jaw provided with a horizontal extension, vertical links beneath the same, having their lower ends pivoted to the frame and their upper ends to the lower side of said movable jaw and extension, and mechanism for horizontally reciprocating said jaw, substantially as described.

2. The combination, with a supporting-frame having a fixed jaw, of a movable jaw having a horizontal extension, a vertical link F, pivoted at one end to the under side of the jaw and at its other end to the legs of the frame, a link F', also pivoted to the legs of the frame and to the extension of the movable jaw, and mechanism for reciprocating said movable jaw, substantially as described.

3. The combination, with a supporting-frame having a fixed jaw, of the movable jaw E, having an extension *e*, the vertical links F F, one pivoted immediately beneath the jaw, the other to the extension *e*, and both to the legs of the frame, and mechanism for giving horizontal motion to said movable jaw, substantially as described.

446,659. COMBINED CHAIR AND HAMMOCK. WILLIAM I. BUNKER, La Grange, Ill. Filed Feb. 25, 1890. Serial No. 341,662. (No model.)



Claim.—1. As a new article of manufacture, a combined chair and hammock comprising a frame having a seat at one end, a support under the seat holding it in substantially fixed position longitudinally, an extension projecting from the seat, and means for supporting the extension at its outer end, whereby it may have a swinging motion, substantially as described.

2. As a new article of manufacture, a combined chair and hammock comprising a frame having a seat at one end, a support under the seat holding it in substantially fixed position longitudinally, an extension projecting from the seat, and means for supporting the extension at its outer end from a point on a different plane from the seat, whereby it may have a swinging motion, substantially as described.

3. As a new article of manufacture, a combined chair and hammock comprising a frame having a seat at one end and a rocker under the seat, forming the chair portion, and a back extending from the seat, forming the hammock portion, and means for supporting the hammock portion, substantially as described.

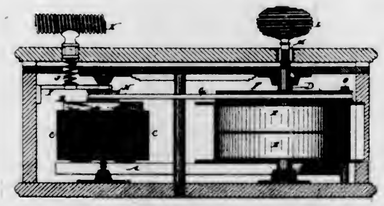
4. As a new article of manufacture, a combined chair and hammock comprising a frame having a seat at one end, forming the chair portion, and a back extending from the seat, forming the hammock portion, the seat being provided with a rocker on its under side, a base having a rail or surface adapted to receive and support the rocker, and means for connecting the rocker and base together, and the hammock portion being provided with means for supporting its outer end, substantially as described.

5. As a new article of manufacture, a combined chair and hammock comprising a frame having a seat at one end, forming the chair portion, and a back extending from the seat, forming the hammock portion, the seat being provided with a rocker on its under side, a base having a rail or surface adapted to receive and support the rocker, a spring or springs for connecting the rocker and base together, and means for securing the spring or springs to the rocker and base, and the hammock portion being provided with means for supporting its outer end, substantially as described.

446,660. CARBON FOR ELECTRIC LAMPS. WILLIAM H. BURNS, Los Angeles, Cal. Filed July 26, 1890. Serial No. 360,092. (No specimens.)

Claim.—The within-described carbon for electrical purposes, composed approximately of ninety parts of triturated purified maltha coke and ten parts of semi-liquid purified maltha thoroughly incorporated therewith, substantially as set forth.

446,661. MAGNETO-ELECTRIC MACHINE. GEORGE P. CLARKE, New York, N. Y. Filed Aug. 23, 1890. Serial No. 362,842. (No model.)



Claim.—The electrical casket described, having, in combination with the inclosing case, the main shaft, actuating spring or springs, connected armature, magnet, circuit-breaker, and a permanent hand-electrode K, the removable hand-electrode L, electrically but loosely connected to the driving-shaft, all adapted to serve as herein specified.

446,662. METHOD OF CULTIVATING FRUIT-TREES. THOMAS CRAKES, Mishawaka, Ind. Filed Aug. 8, 1890. Serial No. 361,440. (No model.)



Claim.—1. The herein-described method of cultivating fruit-trees, consisting in planting the trees in rows with the roots of the trees unconfined but caused to grow in a plane transversely of the line of the row and in such proximity to each other that when the trees are lowered in the line of the row the foliage of one tree will overlie the roots of the adjoining and succeeding tree in the row, substantially as and for the purpose set forth.

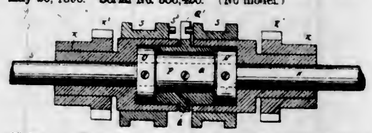
2. The herein-described method of cultivating fruit-trees, consisting in planting the trees in rows in such manner that their roots will lie in vertical planes or fan form transversely to the line of the rows, and in such proximity that when one tree is lowered in the line of the row its foliage will overlie the roots and trunk of the adjoining tree in the same row, raising the trees and sustaining them by stays during the fruiting season and lowering and covering them during the winter season, substantially as described.

446,663. METHOD OF MAKING PAPER TUBING. HARMER DENNEY, Brooklyn, N. Y. Filed May 12, 1890. Serial No. 351,392. (No model.)



Claim.—The method of making paper tubes, consisting in providing the paper strips used for making the tubes with longitudinal cuts extending the entire length of the strips, bending said strips transversely to form a tubular layer, and applying said layers one upon the other and cementing the layers together to form a tube, substantially as herein shown and described.

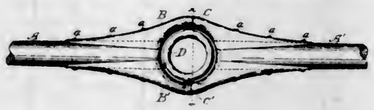
446,664. CLUTCH. HARMER DENNEY, Brooklyn, N. Y. Filed May 28, 1890. Serial No. 353,420. (No model.)



Claim.—1. The combination, with a shaft or spindle, of an eccentric fixed on the same, a reversed eccentric mounted loosely on the eccentric fixed on the shaft and having a projection, two sleeves mounted loosely on the shaft or spindle, means for rotating the sleeves in opposite directions, and sliding collars keyed on said sleeves and having pins projecting toward each other, the projection on the loose eccentric being between said sliding collars, substantially as set forth.

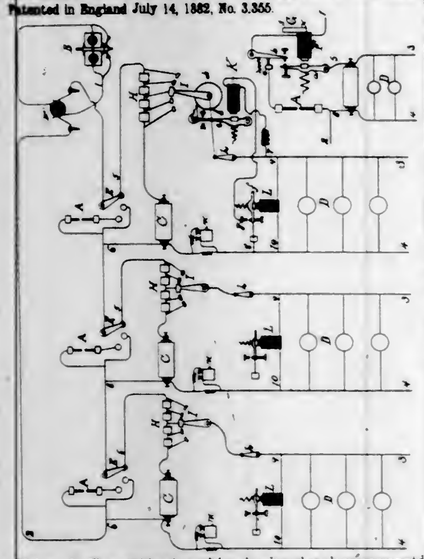
2. The combination, with a spindle, of a fixed eccentric on the same, a reversed eccentric mounted loosely on the eccentric fixed on the spindle and having a projection, two sleeves on the spindle at opposite sides of the eccentrics, means for turning the outer eccentric to bind on either one of said sleeves, and means for rotating said sleeves in opposite directions, substantially as set forth.

446,665. NECK-YOKE. HARDENBURGH DE WITT, Owasco, N. Y. Filed June 30, 1890. Serial No. 357,174. (No model.)



Claim.—In a neck-yoke, the centers B B', provided with bearings C C and flanged ends with curved interior surfaces, in combination with the journaled ring D and the end pieces A A'.

446,666. **SYSTEM OF ELECTRIC LIGHTING.** THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed June 26, 1882. Serial No. 65,233. (No model.) Patented in England July 14, 1882, No. 3,355.



Claim.—1. The combination, with a circuit and arc lamps arranged for connection in series therein, of secondary batteries charged from such circuit, and incandescing electric lamps worked from the secondary batteries, switches for cutting in the secondary batteries and cutting out the arc lamps, or vice versa, and electro-magnets connected with the main circuit for controlling the said switches, and means for controlling said magnets, substantially as set forth.

2. The combination, with a circuit and arc lamps arranged for connection in series therein, of secondary batteries charged from such circuit, and polarized electric magnetic switches for completing the circuit through the arc lamps or secondary batteries, as desired, substantially as set forth.

3. The combination, with a circuit and arc lamps arranged for connection in series therein, of secondary batteries charged from such circuit, polarized electric magnetic switches in the line for completing the circuit through the arc lamps or secondary batteries, incandescing electric lamps worked from the secondary batteries, and means for making and breaking the incandescing-lamp circuits, substantially as set forth.

4. The combination, with a circuit and arc lamps arranged for connection in series therein, of secondary batteries charged from such circuit, and a polarized switch for completing the circuit through the arc lamps or secondary batteries, according to the direction of the current, substantially as set forth.

5. In a system of electric lighting, the combination, with an electrical generator, of incandescing electric lamps, an intermediate secondary battery charged from the generator and discharged through the lamps, and means for maintaining a practically constant electro-motive force in the discharging-circuit of the secondary battery, substantially as set forth.

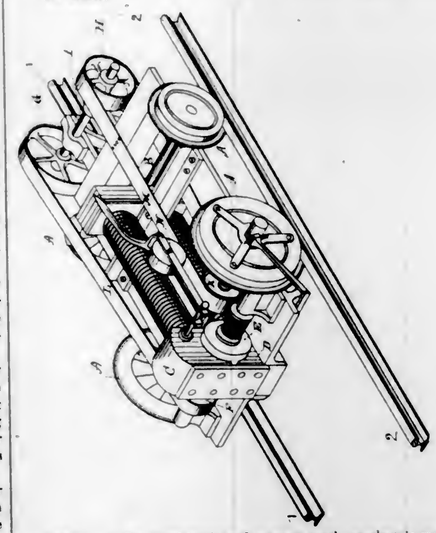
6. In a system of electric lighting, the combination, with an electrical generator, of incandescing electric lamps arranged in multiple arc, an intermediate secondary battery charged from the generator and discharging through the lamps, means for maintaining a practically constant electro-motive force in the discharging-circuit of the secondary battery, and an electro-magnet in a multiple-arc circuit controlling or operating said means, substantially as set forth.

7. In a system of electric lighting, the combination, with a circuit having a current of high tension, of secondary batteries charged in series in said circuit and discharging separately through the lamps, extra secondary cells in the circuit of each secondary battery, and means for throwing such extra cells into circuit to maintain a practically constant electro-motive force, substantially as set forth.

8. The improved system of distributing electricity, involving the combination of the following elements, viz: a main circuit having translating devices, secondary batteries through which the current of the main circuit is thrown when the translating devices of the main circuit are cut out of circuit, consumption-circuits supplied from the secondary batteries when such secondary batteries are disconnected from the main circuit, a switch-magnet directly in the main line for connecting and disconnecting the secondary batteries with and from the main and consumption circuits, and means for making and breaking the circuits of all the translating devices, whereby the current in the main circuit and that stored up in the secondary batteries can be used simultaneously to work lamps or other translating devices, substantially as set forth.

9. The improved system of distributing electricity, involving the combination of the following elements, viz: a main circuit having translating devices arranged in series, and requiring a current of high tension, separate consumption-circuits having translating devices arranged in multiple arc and requiring a current of lower tension, secondary batteries charged in series from the main circuit and discharging through the separate consumption-circuits, means for connecting the secondary batteries in series in the main circuit and disconnecting them therefrom and simultaneously breaking and making the circuits of the translating devices in such main circuit, and means for making and breaking the connection between the secondary batteries and their individual consumption-circuits, the translating devices in the main and separate circuits being worked simultaneously, substantially as set forth.

446,667. **LOCOMOTIVE FOR ELECTRIC RAILWAYS.** THOMAS A. EDISON, Menlo Park, N. J. Filed Aug. 7, 1882. Serial No. 68,602. (No model.)

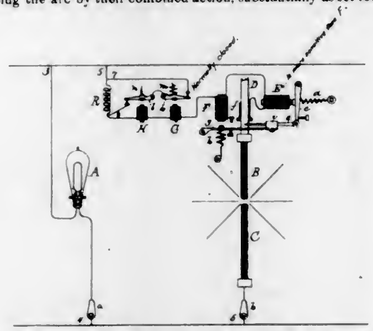


Claim.—1. The combination of a car or truck, an electric motor mounted thereon, a counter-shaft having pulleys, a taut belt from the armature-shaft to said counter-shaft and a loose belt from said counter-shaft to a car-axle, and a belt-tightener for the latter belt, substantially as described.

2. The combination of a car or truck, an electric motor mounted thereon, a counter-shaft having pulleys, a taut belt from the armature-shaft to said counter-shaft and a loose belt from said counter-shaft to a car-axle, and a swinging belt-tightener for the latter belt, substantially as described.

446,668. **ELECTRIC-ARC LIGHT.** THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 7, 1882. Serial No. 68,651. (No model.) Patented in England Aug. 19, 1882, No. 3,976; in Belgium Jan. 3, 1883, No. 60,002; in Italy Jan. 27, 1883, No. 15,096, and in France Apr. 16, 1883, No. 148,852.

Claim.—1. The combination, with the electrodes of an arc lamp, of two electro-magnets or solenoids acting one to lift and the other to lock the upper electrode, such locking magnet or solenoid being more sensitive than the lifting magnet or solenoid, and both said magnets or solenoids being located in series with the electrodes of the lamp and controlling the arc by their combined action, substantially as set forth.

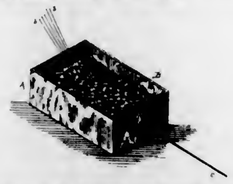


2. The combination, with an arc lamp adapted to be located in a multiple-arc circuit, of a magnet in series with the lamp, an armature for the magnet adjusted to maintain a definite position while the arc is of the desired length and to move when the carbons come together, thus increasing the flow of current, a circuit-controller operated by said magnet, and a resistance made effective in series with said lamp by the circuit-controller, substantially as described.

3. The combination, with an arc lamp located in a multiple-arc circuit, of a resistance in the lamp-circuit, and two electro-magnets, also in the lamp-circuit, having armature-levers closing a shunt around such resistance at their back and front contacts, respectively, substantially as set forth.

4. The combination, with an arc lamp located or adapted to be located in a multiple-arc circuit, of two magnets in series with the lamp, an armature for each magnet, one armature operating on an increase and another on a decrease of current, and a resistance made effective in the multiple-arc circuit by movement of either armature, substantially as described.

446,669. **MANUFACTURE OF FILAMENTS FOR INCANDESCENT ELECTRIC LAMPS.** THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Mar. 16, 1883. Serial No. 88,359. (No model.)



Claim.—1. A filament for forming the flexible carbon incandescing conductor of an electric lamp, having a number of fine filaments welded together by a binding agent consisting of a viscous carbonizable gum, substantially as set forth.

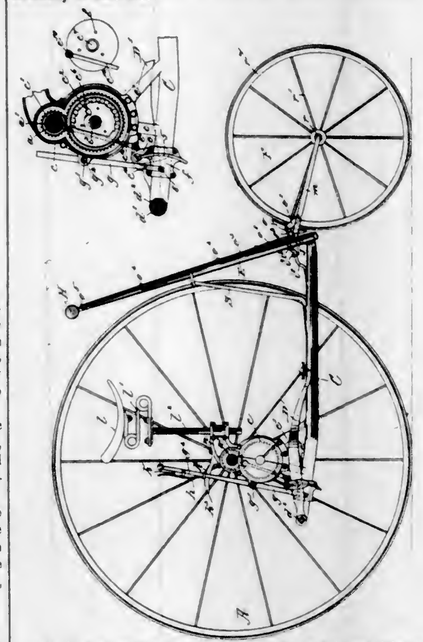
2. The method of manufacturing incandescing conductors for electric lamps, consisting in uniting by a binding agent consisting of a viscous carbonizing gum a number of carbonizable filaments, and then carbonizing the whole, substantially as set forth.

3. The method of manufacturing incandescing conductors for electric lamps, which consists in massing a number of carbonizable filaments together, then drawing them simultaneously through a binding agent consisting of a viscous carbonizable substance and a forming-die, and then carbonizing them, substantially as set forth.

446,670. **TRICYCLE.** STERLING ELLIOTT, Newton, Mass., assignor, by mesne assignments, to the Sterling Cycle Company, Kittery, Me. Filed May 25, 1886. Serial No. 203,216. (No model.) Patented in England Sept. 15, 1886, No. 11,727, Oct. 18, 1886, No 13,273, Dec. 17, 1886, No. 16,584, and Apr. 30, 1887, No. 6,304; in France Oct. 22, 1886, No. 179,183; in Belgium Oct. 23, 1886, No. 74,946, and in Germany Jan. 4, 1887, No. 40,387.

Claim.—1. In a velocipede, the main shaft or axle and drive-wheels carried thereby, combined with intermeshing toothed gears for rotating the main shaft and reciprocating ratchet-toothed disks for imparting a continuous rotation to the gears, substantially as described.

2. In a velocipede, the main rotating shaft or axle and drive-wheels carried thereby, and a clutch mechanism, substantially as described, for rotating said main shaft, a pair of reciprocating cranks, pitmen, pedal-levers for operating the clutch mechanism, and slide-blocks upon the pedal-levers, to which the pitmen are connected, substantially as described.



3. In a velocipede, a main rotating shaft or axle and drive-wheels carried thereby, a pinion c', mounted upon the main shaft or axle, and a flanged toothed gear c^2 for driving the said pinion c', combined with a pair of reciprocating ratchet-toothed disks, a series of rollers for rotating the flanged toothed gear continuously, and a pair of cranks for operating the ratchet-toothed disks, substantially as described.

4. In a velocipede, the main rotating shaft or axle and drive-wheels carried thereby, and a clutch mechanism for rotating the main shaft or axle, combined with a pair of pedal-levers and slide-blocks mounted upon said pedal-levers, connected with the clutch mechanism, and a master-block mounted upon the frame to change the position of the slide-block, substantially as described.

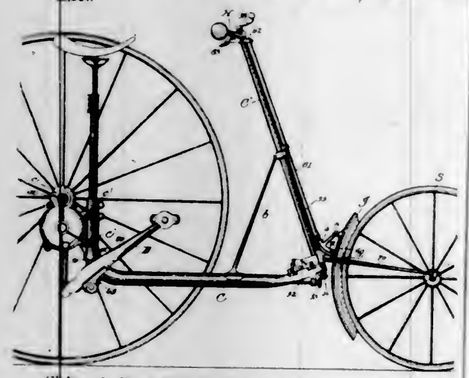
5. In a velocipede, the main rotating shaft or axle and drive-wheels carried thereby, a clutch mechanism, substantially as described, for rotating the main shaft or axle, and a pair of reciprocating cranks, combined with a pair of pedal-levers and slide-blocks mounted upon said pedal-levers, to which the cranks are connected, a master-block mounted upon the frame to change the position of the slide-blocks, and means, substantially as described, for positively moving the master-block and locking the same in any desired position, substantially as described.

6. In a velocipede, the main rotating shaft or axle and drive-wheels carried thereby, and clutch mechanism, substantially as described, for rotating the main shaft or axle, combined with a pair of reciprocating cranks and pitmen, a pair of pedal-levers, slide-blocks mounted thereon, and pivoted gripping-levers carried by the slide-blocks, to which the pitmen are connected, substantially as described.

7. In a velocipede, the main rotating shaft or axle and drive-wheels carried thereby, the clutch mechanism, substantially as described, for rotating the main shaft, the reciprocating cranks, pitmen, pedal-levers and slide-blocks mounted upon the pedal-levers, to which the pitmen are connected, and guide-pins projecting from the slide-blocks, combined with a master-block mounted on the frame or bar C and having curved ribs or guides upon each side, and a pivoted hand-rod connected with the movable block, by which the latter is moved back and forth upon the frame or bar, to thereby increase or diminish the power required to operate the pedal-levers, substantially as described.

8. In a velocipede, the main rotating shaft or axle, consisting of the tubular rod a, having its internal diameter reduced at or near its end, as described, and a rod a', having the tapering portions, as described, and a check-nut a^4, all substantially as described.

446,671. TRICYCLE. STERLING ELLIOTT, Newton, Mass. Filed Apr. 26, 1887. Serial No. 236,151. (No model.) Patented in England Sept. 15, 1886, No. 11,727, Oct. 18, 1886, No. 13,273, Dec. 17, 1886, No. 16,584, and Apr. 30, 1887, No. 6,304; in France Oct. 22, 1886, No. 179,183; in Belgium Oct. 23, 1886, No. 74,946, and in Germany Jan. 4, 1887, No. 40,387.



Claim.—1. In a velocipede, the main axle and clutch mechanism for rotating it, combined with the driving mechanism consisting of the pedal-levers having variable fulcra.

2. In a velocipede, the combination, substantially as described, of the main axle and clutch mechanism for rotating it, the pedal-levers having variable fulcra, and devices for adjusting the variable fulcra.

3. The shaft or axle and means for rotating it and the pedal-levers for operating said means, combined with fulcra for the pedal-levers, having curved surfaces over which the said pedal-levers rock.

4. In a velocipede, the main axle and clutch mechanism for rotating it and the pedal-levers for operating the clutch mechanism, combined with fulcra for the pedal-levers and with means for adjusting the said fulcra, the said adjustable devices being operable by the hand of the rider in proximity to the handle-bar, substantially as described.

5. In a velocipede, the main axle and clutch mechanism for rotating it and the pedal-levers for operating the clutch mechanism, combined with variable fulcra for the pedal-levers, and a casing, as 43, in which the pedal-levers move when moving tangentially upon the movable fulcra, substantially as described.

6. In a velocipede, the main axle and clutch mechanism for rotating it, combined with reciprocating disks operated by the driving mechanism for operating the clutch mechanism, and the springs 26 for controlling the movement of the reciprocating disks, one end of each spring being attached to the reciprocating disk c^3 and the other end to the adjustable collar 25, substantially as described.

7. In a velocipede, the main axle and clutch mechanism for rotating it, combined with the reciprocating disks for operating the clutch mechanism, the driving mechanism therefor, the springs 26, controlling the movement of the said disk, and a rotatable collar 25, for varying the tension of the springs 26, substantially as described.

8. In a velocipede, the main axle and clutch mechanism for rotating it, combined with the reciprocating disks for operating the clutch mechanism, the springs 26, controlling the movement of the said disks, and a rotatable collar 25, for varying the tension of the springs 26, and a locking device for the rotatable collar, substantially as described.

9. In a velocipede, a tubular frame C and a rearwardly-inclined upright frame C', combined with the shell-like frame or casing *c*, in which the main axle has its bearings, the brace-rod *b*, and the rearwardly-extended handle-bars H, substantially as described.

10. In a velocipede, the steering-wheel and its fork, combined with the rod *r*, having the tapering portion r^3 and fastened to the steering-fork, the tapering plug r^4, and the two conical or tapering caps r^5 r^6, secured to the hub of the steering-wheel, in which the tapering portion r^3 of the rod and the tapering plug r^4 snugly fit, substantially as described.

11. In a velocipede, the steering-wheel and the fork carrying it and the mud-guard *g*, combined with the pivoted brake-shoe, the pivoted lever carrying it, the rod 61 for moving the pivoted lever, and the operating-lever 62 for moving the rod 61, substantially as described.

12. In a velocipede, the yielding rotating seat-support and the tilting saddle-support and seat, combined with a locking device to lock the rotating seat-support, substantially as described.

13. In a velocipede, the seat-support and the saddle-support composed of the single curved portion l^4 and straight top piece *l*, combined with a seat mounted upon the said top piece, substantially as described.

14. In a velocipede, the seat-support slitted at its upper end and recessed, combined with a saddle-support, its curved portion entering the recess at the upper end of the seat-support, and the transverse clamping-bolt l^{13} for locking the saddle-support in any desired position, substantially as described.

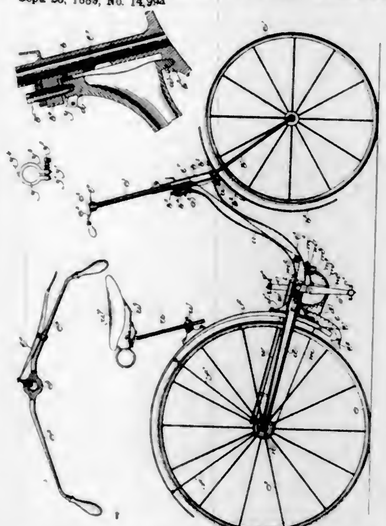
15. The pedal-levers, combined with two limiting-stops located above the levers and adapted to engage the said levers at each side of their fulcra, substantially as and for the purpose described.

16. In a velocipede, two limiting-stops for each pedal-lever, combined with the pedal-levers, each having on one side two inclined or angular surfaces to co-operate, respectively, with or engage the limiting-stops, substantially as described.

17. In a velocipede, two limiting-stops for each pedal-lever, located above and at each side of their fulcra, combined with the pedal-levers, each having upon one side two inclined or angular parallel surfaces to co-operate with the said stops, the point of junction of the two surfaces being between the limiting-stops, and to operate substantially as described.

18. In a velocipede, the main axle and clutch mechanism for rotating it and the pedals D, combined with the pitmen d^{13}, provided at each end with eyes 27 30, and felt packing 28 31, contained in recesses cut in the eyes for a portion of their length, substantially as and for the purpose set forth.

446,672. VELOCIPEDE. STERLING ELLIOTT, Newton, Mass. Filed June 12, 1889. Serial No. 314,040. (No model.) Patented in England Sept. 23, 1889, No. 14,994.



Claim.—1. In a velocipede, the combination, with a metallic main frame or connecting-bar for torsional strength, of wooden bars at its rear end to constitute a fork for the rear or driving wheel, and a wooden guard also attached to its rear end, supporting the seat, said wooden bars and guard affording elasticity, substantially as described.

2. In a velocipede, the tubular frame *a*, wooden guard *f*, bars *d*, and brace-rods *f'*, combined with the bar or axle *n* and the collars *i'* for said axle, substantially as and for the purposes specified.

3. In a velocipede, the pedal composed of the frame recessed for the arm or wrist-pin o^3 and having an annular flange o^3, a screw o^4, entering the pin o^3, the head of which is concealed in the annular flange, and a dust-protector o^5, secured to the said annular flange, substantially as described.

4. In a velocipede, a seat-post and frame-support for the seat and pivotally connected with the post, combined with adjusting-screws u^4, passing through the frame and bearing against the post at opposite sides for tilting said seat on its pivot and holding it in tilted position, substantially as described.

5. In a velocipede, the seat-post and tilting seat-frame, combined with two independent spring-arms u^5 u^6, each of which has at its rear end an outwardly-extended arm, as u^7, a frame or holder u^8, supported by said arms, a block u^9, supported by the springs u^5 u^6 at the forward end, a projection u^{10}, and a holder u^{12}, held on said projection u^{10}, and the cover, substantially as described.

6. In a velocipede, a seat-post, a tilting seat-frame, horizontally-adjustable springs u^5 u^6 on said tilting seat-frame, a holder u^8, supported on the rear ends of said springs u^5 u^6, a block u^9, supported on the forward ends of said springs u^5 u^6, an adjusting-screw u^{10}, passing through it to present a projection at its forward end, and a socketed block u^{12}, held on said adjusting-screw u^{10}, and the cover, substantially as described.

7. In a velocipede, a seat-post, a tilting seat-frame thereon, seat-supporting springs, a block at the forward end having a projecting portion, as u^{10}, and a socketed-holder u^{12} on said projection capable of universal movement thereon, and a cover, substantially as described.

8. The seat-frame and cover or seat secured to its rear end by fastenings, said cover or seat being contracted at its front end by the removal of a gore, so that as the edges of said contracted portions are united a pocket is formed to receive the front end of the frame, substantially as described.

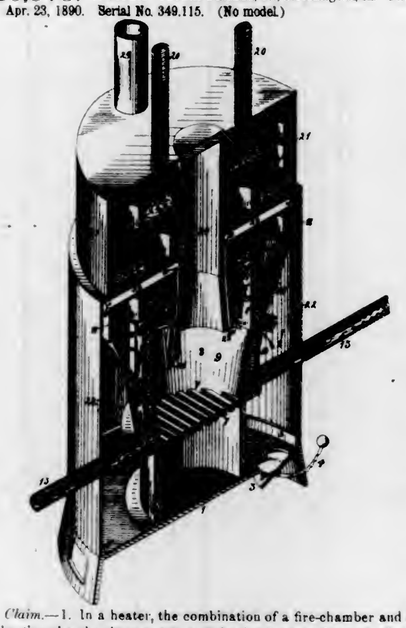
9. In a velocipede, the frame and steering-wheel, combined with a collar or ring turning frictionally on the frame and engaging the steering frame or wheel, substantially as described.

10. In a velocipede, the frame and steering-wheel, combined with a collar or ring turning frictionally on the frame and engaging the steering frame or wheel, and means, substantially as described, for adjusting the tension of said ring on the frame, substantially as described.

11. In a velocipede, the main frame and steering-frame, combined with a movable or adjustable friction device for the steering-frame, comprising a collar the tension of which on the frame is adjusted by means of a spring, substantially as described.

12. In a velocipede, the main frame and steering-frame, combined with a movable or adjustable friction device for the steering-frame, and means for preventing its rotation with relation to the main frame, substantially as described.

446,673. HEATER. THOMAS FARMER, Jr., Bloomington, Ill. Filed Apr. 23, 1890. Serial No. 349,115. (No model.)



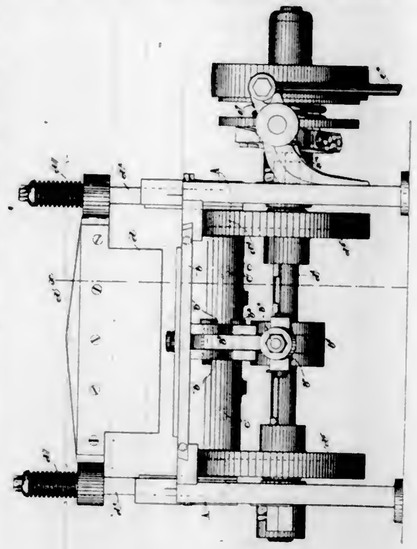
Claim.—1. In a heater, the combination of a fire-chamber and a combustion-chamber in separate parts having inner and outer walls, a central space therebetween, the walls of the combustion-chamber being slotted to permit of the escape of the products of combustion, substantially as set forth.

2. In a heater, the combination of a fire-chamber and a combustion-chamber removably united, each of said chambers composed of two walls, the space formed by the walls of the fire-chamber having a communication with the space in the combustion-chamber, said spaces having inlet and outlet openings and the walls of said combustion-chamber being slotted to permit the escape of the products of combustion, substantially as set forth.

3. In a heater, the combination of a fire-chamber and a combustion-chamber, the meeting surfaces of said chambers provided with openings which permit of the passage of air into the combustion-chamber, and the walls of said combustion-chamber being slotted to permit the escape of the products of combustion, substantially as set forth.

4. In a heater, the combination of a fire-chamber and a combustion-chamber, the meeting surfaces of said chambers provided with openings which permit of the passage of air into and at the edge of combustion-chamber, with a pipe or pipes communicating with the external air and discharging on top of fire, thus creating two currents of air, through which all the products of combustion must pass before leaving combustion-chamber, substantially as set forth.

446,674. UPPER-MACHINE. CLARENCE H. FARRINGTON, Milford, Mass. Filed July 24, 1890. Serial No. 359,725. (No model.)



Claim.—1. In a machine of the kind described, the combination of the vertically-movable blade *d*, the bed-plate formed by the stationary plate *a* and movable plate *b*, springs as *a'*, interposed between them to normally present an open groove or space beneath said blade, and means, substantially as described, for moving said plate *b* toward the plate *a*, as and for the purpose set forth.

2. A movable blade and a bed-plate composed of two parts, one of which is movable with relation to the other, and an adjustable cam and a lever co-operating therewith for moving the movable portion of said bed-plate, substantially as described.

3. The movable blade and bed-plate composed of a stationary part *a* and a movable part *b*, combined with a lever b^3, pivoted at b^4 and connected to said movable plate *b*, and the cam for moving said lever, substantially as described.

4. A movable blade and a bed-plate composed of two parts, one of which is movable with relation to the other, a lever for said movable member bearing a yielding block and friction-roller, and a cam for said lever, substantially as described.

5. The vertically-movable blade and bed-plate composed of two parts, one of which is movable with relation to the other and normally separated to present an open groove or space beneath the blade, the lever b^3 for said movable member and means for adjusting its length, and a cam for said lever, substantially as described.

6. In a machine of the kind described, the combination of the following instrumentalities, viz: a rising and falling blade and a bed-plate consisting of two parts, one of which is movable with relation to the other and normally separated from each other to present a groove or space between them, a cam for the movable member of the bed-plate, a rotary shaft, a friction-clutch, and treadle.

7. In a machine of the kind described, the combination of the following instrumentalities, viz: the vertically-movable blade *d*, the bed-plate consisting of two parts, one of which is movable with relation to the other and normally separated from each other to present a groove or space between them, a rotary shaft, a cam on it for moving said blade *d*, and another cam on it for moving the movable member of the bed-plate, all substantially as described.

446,675. CURTAIN-FIXTURE. ALBERT S. GLIDDEN, Lake Village, N. H. Filed Apr. 19, 1890. Serial No. 348,603. (No model.)



Claim.—1. The herein-described improved curtain-fixture, comprising the base-plate having a longitudinal slot formed therein, and provided with parallel side flanges, the curtain-supporting brackets adjustable on said base-plate and having a base provided with bent ends hugging said side flanges and a hole, a slide-piece A, secured against said base-plate and fitted between said side flanges, and the screw working in said hole and engaging said slide-piece, substantially as set forth.

2. The herein-described improved curtain-fixture, comprising the base-plate having a slot and an angular portion at one end provided with screw-holes and also having parallel side flanges, the curtain-supporting bracket having a base provided with bent ends hugging said side flanges and having a hole formed therein, the slide-piece A, fitting between said side flanges, and the screw working in said hole and engaging said slide-piece, as set forth.

446,676. TYPE-WRITING MACHINE. BERNARD GRANVILLE, Chicago, Ill. Filed June 7, 1888. Serial No. 276,323. (No model.)

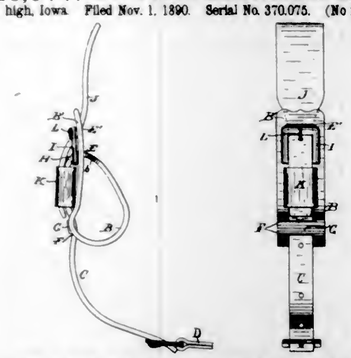


Claim.—1. In a type-writer, and in combination, a laterally-movable carriage under constant stress tending to move it to the right and provided with a ratchet-bar, an actuating-pawl arranged to operate on said ratchet-bar to feed the carriage to the left, a rocking frame connected to said pawl for operating the same and releasing it from the ratchet-bar, two holding-pawls, one normally in and the other normally out of connection with the teeth of said ratchet-bar, a cam-lever, as F, arranged to act on said pawls to permit the carriage to move to the right step by step when the actuating-pawl is released, and a key-lever and connections therefrom to the said cam-lever, all substantially as described.

2. In a type-writer, and in combination, a laterally-movable carriage under constant stress tending to move it to the right and provided with a ratchet-bar, an actuating-pawl arranged to operate on said ratchet-bar to feed the carriage to the left, a rocking frame connected to said pawl for operating the same and releasing it from the ratchet-bar, two holding-pawls, one normally in and the other normally out of connection with the teeth of said ratchet-bar, a cam-lever, as F, arranged to act on said pawls to permit the carriage to move to the right step by step when the actuating-pawl is released, a key-lever and connections therefrom to the said cam-lever, a cam-lever, as G, arranged to act on the holding-pawl, and a key-lever and connections therefrom to the cam-lever G, all substantially as described.

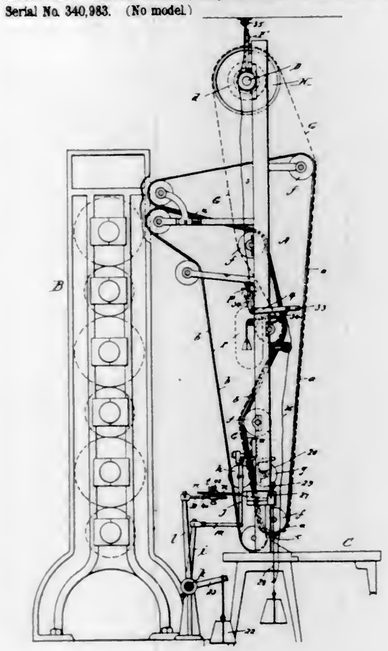
3. In combination with the paper-cylinder of a type-writer, a spring for turning said cylinder, an escapement-wheel connected with said cylinder and having two or more rows of teeth differently spaced on its periphery, an escapement-lever, laterally-movable and laterally-operating adjusting mechanism for said escapement-lever, a key-lever and frame for rocking the escapement-lever, and intermediate mechanism connecting said key-lever to said frame, all substantially as described.

446,677. TUG. ERNEST A. HALL and ARTHUR H. HAMILTON, Lehigh, Iowa. Filed Nov. 1, 1890. Serial No. 370,075. (No model.)



Claim.—A shaft-tug comprising a strap having a slot and an aperture for a buckle-tongue and a reduced end which is passed through the said slot and forms a shaft-loop, and the buckle secured to said reduced end on the outer side of the loop by having its tongue inserted through the said aperture, whereby it prevents the withdrawal of the reduced end, in the manner and for the purpose set forth.

446,678. AUTOMATIC STOP MECHANISM FOR PAPER-FEEDING MACHINES. LUCIUS HARLOW, Holyoke, Mass. Filed Feb. 19, 1890. Serial No. 340,983. (No model.)

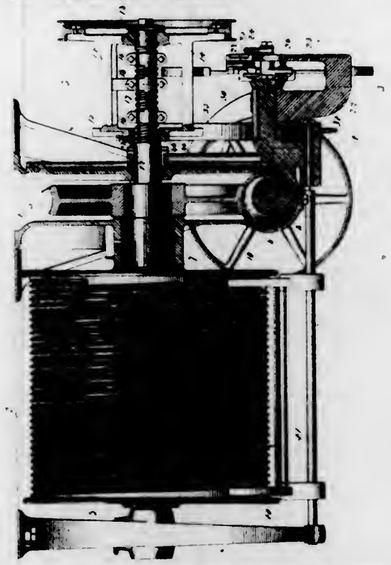


Claim.—1. The combination, with the power-shipping device of a paper-feeder, of a pair of paper-bearing rolls, one thereof having provided therefor a movable bearing-support, a slide-pawl and connections between same and said movable roll-support, whereby from the vibration of said movable roll-support a movement may be imparted to said pawl, a slide-rod, and mechanism intervening between same and said power-shipping device, said pawl constituting a temporary obstruction to the movement of said rod, and all whereby on the freedom of and movement of said rod through the mechanism connected thereto and intervening between same and said power-shipping device the latter will be operated, for the purpose set forth.

2. The combination, with a power-shipping device of a paper-feeding machine, of a pair of rolls arranged in the plane of the feed of the paper, and a lever suitably pivotally hung constituting the support for one of said rolls, whereby it is movable toward and from its fellow, a rock-shaft provided with a radial arm which is connected to said lever, a suitable part, as the block 25, provided with a guiding-hole 26, a slide-rod 27, movable in and through said hole, another radial arm on said rock-shaft having connected thereto a sliding pawl which is guided to move across and away from said guide-hole and to serve as a stop against the free passage of said slide-rod, a weight-carrying cord attached to said power-shipping device, and a movable device for maintaining said weight in a suitably elevated position, a connection by one portion thereof engaged to said movable weight-supporting device and by another portion connected to said slide-rod, all whereby through the primary action of an undue paper thickness on said movable roll, on the resultant movement of said slide-pawl to permit the passage thereby of said slide-rod, the latter will through its connection with the supports for the weight insure a movement thereof to free said weight to its normal action upon the shipping device.

3. In a stop mechanism for paper-feeding machines, the combination, with the rock-shaft, of the pair of paper-bearing rolls, one thereof having provided therefor a movable bearing-support, a slide-pawl receiving its movement from the vibration of said movable roll-support and formed extensible or longitudinally adjustable, and a slide-rod having a connection through intervening devices with the power-shipping device of the feeding-machine, said pawl constituting a temporary obstruction to the movement of said rod, as and for the purpose set forth.

446,679. ELEVATOR. THADDEUS W. HEERMANS, Chicago, Ill., assignor to the Crane Elevator Company, of Illinois. Filed Aug. 19, 1890. Serial No. 362,423. (No model.)



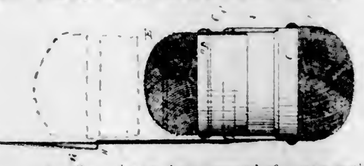
Claim.—1. The combination, with an elevator, of a drum-shaft projecting beyond the supporting-bearing and threaded as to a portion of its length, a shifting-wheel mounted thereon and having arms extending parallel with said shaft, a cam-plate at the opposite end of said arms, a nut fitted to the threaded portion of said shaft and connected to one of said arms by a projecting spur, clamps fitted to said shaft on each side of said nut, slides operating the belts by which the elevator is driven, a vibratable disk connected to said slides by links and operated by said cam-plate through link and lever connections, a clutch upon said drum-shaft operated by a tilting apron beneath the drum and adapted to make connection with said cam-plate when the arm is tilted by contact with the slack cable, a lever operating upon the face of said cam-plate, a brake adapted to act upon the tight pulley, and connections from the said brake to the last named lever, all combined substantially as described, whereby the shifting mechanism may be operated by hand by the slacking of the hoisting-cable or by the cage reaching the limit of its travel, the brake being automatically applied whenever the shifting mechanism is brought in a position to stop the elevator.

2. The combination, in an elevator operated by belts, of a belt shifting device consisting of slides operating the belt-guides, a vibratable disk or plate, and links pivoted at one end to said slides and at the other to said plate, so as to lie both on one side of the center of vibration of said plate when in central position and to vibrate past the center of said plate, alternatively, as the latter is vibrated to one side or the other of its central position, substantially as described.

3. The combination, with the shifting devices of a belt-driven elevator, of a cam-plate 15, having a cam-face 31, provided with a central depression 31^a and outer cavities 31^b, a lever 33, whose end is maintained in contact with said face by a weight; a brake 37, acting upon the tight pulley 9, and a rod and lever 35 36, connecting said brake and the lever 33, substantially as described.

4. The combination, with the shifting devices of a belt-driven elevator, of a cam-plate 15, having a cam-face 31, provided with a central depression 31^a and outer cavities 31^b, a lever 33, whose end is maintained in contact with said face by a weight, a link 19 pivoted to said cam-plate and to a rocker 21, said rocker having an arm 22 and an upward extension thereof 23, links 24 25, pivoted to said plate 23 and to belt-shifting slides 26 27, all combined substantially as described, whereby the shifting mechanism is brought to its central position automatically unless the belts are fully shifted to put the elevator in motion in one direction or the other.

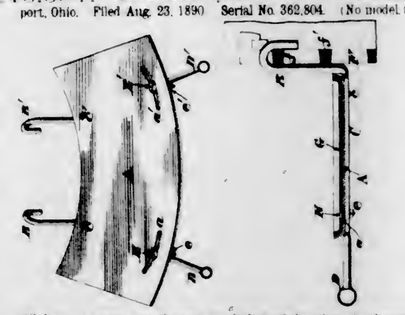
446,680. COFFEE OR TEA STRAINER. HENRY HENNIG, Paterson, N. J. Filed Sept. 19, 1890. Serial No. 365,492. (No model.)



Claim.—1. A coffee or tea strainer composed of a main section having a wire-netting hood or cap, a sliding or telescoping section in the main section, and a cover-section fitting on the outer end of the sliding or telescoping section and also having a wire hood or cap, substantially as set forth.

2. A coffee or tea strainer composed of a main section having a wire-netting hood or cap, a sliding or telescoping section in the main section, a cover-section fitting on the outer end of the sliding or telescoping section, also having a wire hood or cap, and a handle-rod secured to said strainer and provided with a spring-arm adapted to catch on the edge of an aperture in the cover of the tea or coffee pot, substantially as set forth.

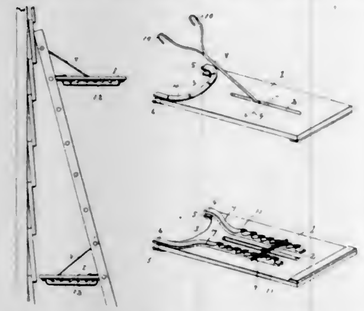
446,681. GRATE ATTACHMENT. OLIVER C. HOLDEN, Higginsport, Ohio. Filed Aug. 23, 1890. Serial No. 362,804. (No model.)



Claim.—A grate attachment consisting of the plate A, pivoted at $c\,c'$ to supporting-bars C C, and having slots $a\,a'$, concentric with said

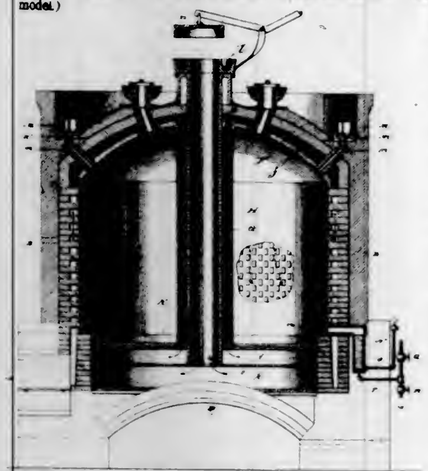
pivots, said bars being provided with integral hooks B B', integral handles D D', projecting in front of said plate, and fastenings E e E' e', all as herein described.

446,682. **ADJUSTABLE BRACKET FOR SCAFFOLDING.** MONROE P. HOLMES, Toledo, Ohio. Filed Nov. 3, 1890. Serial No. 370,166. (No model.)



Claim.—A bracket for scaffolding, comprising a base-board formed with a slot through the body thereof and projections upon the end, retaining devices upon the under side of the base-board, and a hanger passed through the slot, having a T-head adapted to engage with the retaining devices and an end portion formed with hooks.

446,683. **METHOD OF COLORING CLAY-WARE.** GUSTAV HOTTINGER, Chicago, Ill. Filed Sept. 2, 1890. Serial No. 363,770. (No model.)



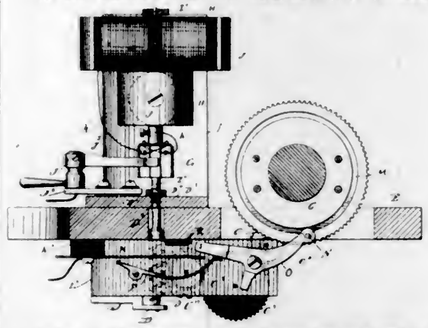
Claim.—1. The herein-described method of tinting or coloring clay-ware, which consists in introducing into the kiln after the burning of the ware is completed a coloring agent in a liquid form and in the presence of a moistened atmosphere.

2. In means for tinting or coloring clay-ware, the combination, with the kiln wherein the ware is burned or baked, of a reservoir to contain a liquid coloring agent and communicating by a valve-controlled passage with the interior of the kiln, and means for supplying steam to the interior of the kiln.

3. In means for tinting or coloring clay-ware, the combination, with the kiln wherein the ware is burned or baked, of one or more reservoirs located above the top of the kiln and communicating with the interior thereof by a valve-controlled passage whereby to discharge a liquid coloring agent into the kiln, and a water-chamber exterior to the kiln and communicating with the interior thereof by a passage leading from the top of the chamber, substantially as described.

4. In means for tinting or coloring clay-ware, the combination, with the kiln wherein the ware is burned or baked, of one or more reservoirs located above the top of the kiln and communicating with the interior thereof by a valve-controlled passage whereby to discharge a liquid coloring agent into the kiln, and a water-chamber exterior to the kiln and communicating with the interior by a passage leading from the top of the chamber, substantially as described.

446,684. **ELECTRIC MUSIC-BOX.** CHARLES A. HUSSEY, New York, N. Y., assignor to M. J. Paillard & Co., same place. Filed Dec. 29, 1888. Renewed Nov. 25, 1890. Serial No. 372,579. (No model.)



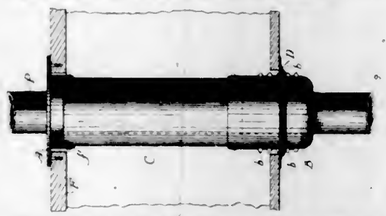
Claim.—1. The combination, with a music-box comb and a pin-cylinder, of an electromotor for rotating the pin-cylinder, a lever controlled by one of the moving parts of the music-box mechanism and serving to operate a circuit breaker or closer, and a cam acting on said lever, substantially as set forth.

2. The combination, with a music-box comb and pin-cylinder, of an electromotor for rotating the pin-cylinder, a contact-spring in circuit with one pole of the battery, a pivoted lever adjacent to said contact-spring and controlled by one of the rotating parts of the music-box mechanism, and a cam for pressing said lever against the above-mentioned contact-spring, said lever being in circuit with the battery, substantially as set forth.

3. The combination, with a comb and pin-cylinder, of gearing for operating the said pin-cylinder, a worm connected with said gearing and provided with a shoulder near its upper end, and a transverse pin on that part above the shoulder, a motor-spindle having a bore in its lower end and notches in the sides of said bore for receiving the upper end of the worm-spindle, and the pins on the same, substantially as set forth.

4. The combination, with a comb and pin-cylinder, of gearing for rotating said pin-cylinder, a worm connected with said gearing, an armature detachably connected with said worm, and field-magnets between which said armature can rotate, substantially as set forth.

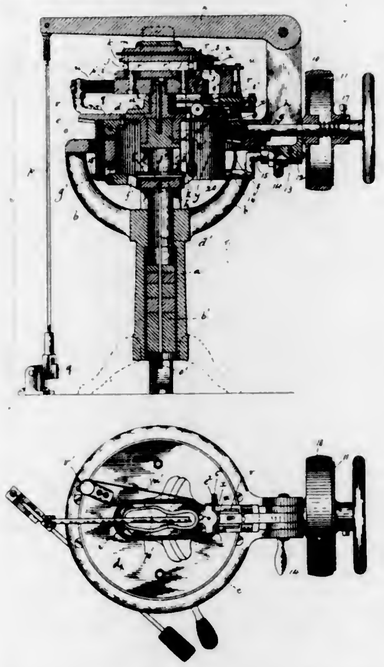
446,685. **STEAM-PIPE SLEEVE.** THEODORE JACOBS, Chicago, Ill. Filed Aug. 23, 1890. Serial No. 362,827. (No model.)



Claim.—The herein-described steam-pipe sleeve, consisting of the combination of the floor-collar A, having the serrated inner edge *e*, the ceiling-collar B, having the serrated inner edge *e'*, the cylinder C, loosely surrounding the pipe, and the adjustable ceiling-ring D, having the notches *d d*, sliding on over the studs *b b*, all substantially as shown and described.

446,686. **SOLE-ROUNDING MACHINE.** GIDEON JULIAN, Boston, Mass., assignor of one-half to S. M. Fay, same place. Filed July 5, 1890. Serial No. 357,768. (No model.)

Claim.—1. In a sole-trimming machine, the combination of a rotary bed or table, a fixed clamp-holder above the same, a sole-clamp attached to said holder, a movable top clamp and means for raising and depressing the same, a base-plate having a direct pivotal connection with the bed at one point and an indirect movable connection with the bed at another point, a knife-carrier movable on guides on said base-plate, means for applying yielding inward pressure to the knife-carrier, and a knife-holder pivoted to the carrier and arranged to bear against the sole-clamp, the direct pivotal connection and indirect movable connection of the bed to the base-plate giving the knife-holder a varying movement, as set forth.



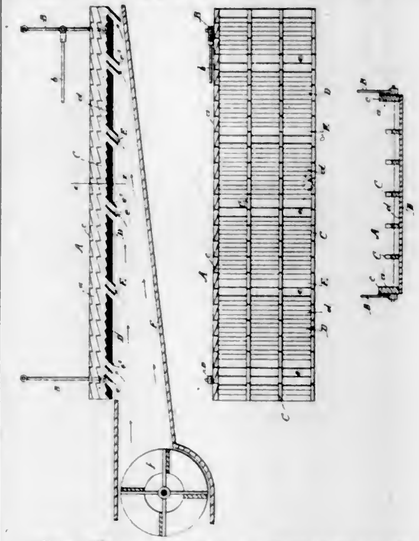
2. In a sole-trimming machine, the combination of a rotary bed or table, a fixed clamp-holder above the same, a sole-clamp attached to said holder, a movable top clamp and means for raising and depressing the same, a base-plate, a pivot *y*, directly connecting the base-plate to the bed or table, a block movable on guides on the base-plate, a belt supported by pulleys on the clamp-holder, devices, substantially as described, connecting said belt with the block on the base-plate, a strap connecting the belt with the rotary bed or table, a knife-carrier movable on the guides on the base-plate, means, substantially as described, for applying a yielding inward pressure to the knife-carrier, and a knife-holder pivoted to the carrier and arranged to bear against the sole-clamp, as set forth.

3. The combination of the fixed sole-clamp, the knife-carrier adapted to travel around the clamp, the knife-holder pivoted to said carrier and provided with the knife *r*, and two rollers *z z* on said holder, arranged to rotate on different centers and to bear simultaneously on the margin of the clamp, whereby the knife-holder is given an elongated bearing on the clamp, as set forth.

4. The combination of the rotary bed or table, the base-plate pivotally connected thereto, the knife-carrier movable on guides on the base-plate, the fixed tubular supporting-standard, the weights suspended within said standard, the lever pivotally connected with the bed or table at one end and with the knife carrier at the other end, a ring pivoted to said lever and adapted to rotate on the standard, a ring verticaliy movable on said standard without rotating thereon and bearing on the rotatable ring, and a cross-bar pivoted to the non-rotating ring and engaged with the weights, said cross-bar being movable in vertical slots in the standard, as set forth.

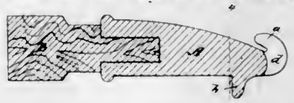
5. The combination, with the base-plate and the knife and knife-carrier movable in guides thereon, of the rotary bed or table having the flange 18, the latter having the opening 19, the rock-shaft having a crank 16 bearing on said flange and adapted to drop through said opening, the shaft having the fixed clutch-pulley and the loose friction-pulley, and connections, substantially as described, between the rock-shaft and loose pulley, whereby the loose pulley is engaged with the clutch-pulley when the crank of the rock-shaft is on the flange and disengaged when said crank is in the opening in said flange, as set forth.

446,687. **SCREEN.** FRANK F. LANDIS, Waynesborough, Pa. Filed Sept. 15, 1890. Serial No. 365,076. (No model.)



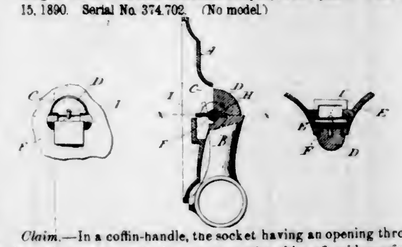
Claim.—The combination, with a vibrating screen provided with a bottom surface consisting of a series of sections of imperforate material provided with cross-grooves and a series of sections of inclined slats, the said sections being arranged alternately, of the longitudinal ratchet-bars for causing the material to travel over the screen, and a blower for forcing a uniform blast upwardly between all the said slats of the screen, substantially as set forth.

446,688. **WIRE-TIGHTENER.** EDWIN F. MILLER, Williamsburg, Mass. Filed June 9, 1890. Serial No. 354,704. (No model.)



Claim.—An implement for stretching or straining up barb-wire in the construction of barb-wire fences, consisting of a working-head having a suitable handle and provided a. its extremity with the hook *a*, which has an extension laterally and sharply toward the handle end of the implement, whereby the V-shaped barb-rest is formed at the base of said hook, there being in the extremity of said head the transverse groove or slot *d*, having a rounded base, as shown, for the disposition and rest therein and thereon of the portion of the wire next forward of an engaged barb, said slot having the diverging walls, as shown, and said head having on its side opposite the hook the laterally-extended shoulder *b*, as set forth.

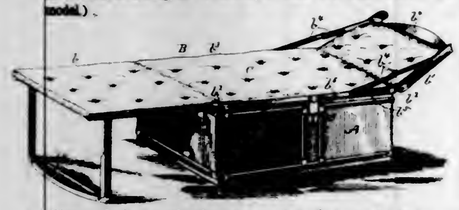
446,689. **COFFIN-HANDLE.** OLIVER MCCARTHY, Meriden, Conn., assignor to the Meriden Britannia Company, same place. Filed Dec. 15, 1890. Serial No. 374,702. (No model.)



Claim.—In a coffin-handle, the socket having an opening through its front, forming two cheeks upon opposite sides of said opening, a pintle across said opening loosely resting in its seats in said cheeks, the pintle having a hole diametrically through it, combined with a handle

the head of which extends between said cheeks and onto said pintle, the head of the arm constructed with a projecting wire pin corresponding to the said hole through the pintle, substantially as described.

446,690. **COMBINED TRUNK AND FOLDING BED.** ANDREW M. NELSON, Galesburg, Ill. Filed July 5, 1889. Serial No. 316,530. (No model.)



Claim.—1. In combination, the trunk-body A, the lid B, hinged thereto and formed in sections b b' b^2, the section b^2 hinged to the body A, the sections b b' hinged to the section b^2, and a support b^3, hinged to the section b as a support, substantially as and for the purpose specified.

2. In combination, the trunk-body A, the lid B, hinged thereto and formed in sections b b' b^2, the section b^2 hinged to the body A, the sections b b' hinged to the section b^2, a support b^3, hinged to the section b, and folding links b^4, connecting the sections b^2 and b', substantially as and for the purpose specified.

3. In combination, the trunk-body A, the lid B, hinged thereto and formed in sections b b' b^2, the section b^2 hinged to the body A, the sections b b' hinged to the section b^2, and a support for the section b', consisting of folding links b^4, hinged to section b' and b^2, substantially as and for the purpose specified.

446,691. **TWINE-HOLDER.** RICHARD O. NOTTINGHAM, Norfolk, Va. Filed Sept. 25, 1890. Serial No. 366,061. (No model.)



Claim.—1. A cord-holder consisting of a case having an elongated compartment adapted to receive a plurality of balls of twine, an elongated weight-compartment beside the said twine-compartment, and a door which gives access to both of the said compartments, there being an aperture for the passage of the twine through the partition between the two compartments, substantially as described.

2. A cord-holder consisting of a case provided with a plurality of elongated twine-compartments arranged side by side, and a like number of weight-compartments arranged by the side of the twine-compartments, the sides of the case being hinged to form doors, whereby access is had to the said compartments, substantially as described.

446,692. **VEHICLE-WHEEL.** ALBERT H. OVERMAN, Springfield, Mass., assignor to the Overman Wheel Company, Hartford, Conn. Filed Nov. 17, 1890. Serial No. 371,661. (No model.)



Claim.—1. The combination, with a rubber tire having a continuous interior air-space, of a hollow rim communicating with such space and forming an auxiliary air-chamber, substantially as specified.

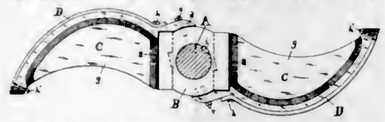
2. The combination, with a rubber tire having an interior air-space, of a hollow rim communicating with such space, and an automatic air-pump mounted in the rim for pumping air into it and into the tire, substantially as described.

3. The combination, with an arch-shaped rubber tire, of a hollow rim having retaining-flanges and a perforated tread, and an automatic air-pump mounted in the rim for pumping air into it and the tire, substantially as described.

4. The combination, with an arch-shaped rubber tire, of a hollow rim having retaining-flanges and a perforated tread, an automatic air-pump mounted in the rim and consisting of a cylinder provided with inlet and outlet valves, and a piston arranged to be operated by the tire when the same is inwardly displaced, substantially as described.

5. The combination, with a rubber tire arch-shaped in cross-section and having a continuous interior air-space, of a hollow rim communicating with such space and forming an auxiliary air-chamber and constructed with two annular seats extending transversely under the sides of the tire which take an edgewise bearing upon them, substantially as set forth.

446,693. **CAM FOR STAMP-MILLS.** ALEXANDER RAMAGE, Idaho Springs, Colo. Filed Nov. 8, 1890. Serial No. 370,731. (No model.)



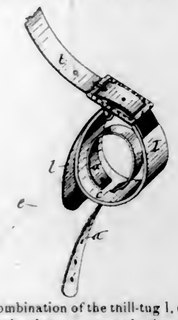
Claim.—1. In a cam for stamp-mills or other machines, the combination of the hub B, provided with a dovetail groove b, a cam-arm C, having a slide-shank c to enter the said dovetail groove b of the hub, and means to fasten the arm, as and for the purpose set forth.

2. In a cam for stamp-mills or other machines, the combination of the hub B, provided with a dovetail groove b, a cam-arm C, having a slide-shank c to enter the said dovetail groove b of the hub, and an arm d, projecting from the cam-arm and fastened to the hub, as and for the purpose set forth.

3. In a cam for stamp-mills or other machines, the combination of the hub B, provided with a dovetail groove b, a cam-arm C, having a slide-shank c to enter the said dovetail groove b of the hub, said slide-shank having on its edge a notch or shoulder for the reception of a piece of wood or other material, and an arm d, projecting from the cam-arm and extending to and upon the hub and fastened thereto.

4. The combination of the driving-shaft, a hub secured on the shaft and having two parallel faces, each provided with a dovetail groove b at right angles to the shaft, cam-arms C, each having a slide-shank c to enter the said dovetail grooves of the hub, and means to fasten the arms, as and for the purpose set forth.

446,694. **THILL-TUG.** DUNCAN M. SCHELL, Castleton, Vt. Filed Sept. 15, 1890. Serial No. 364,996. (No model.)

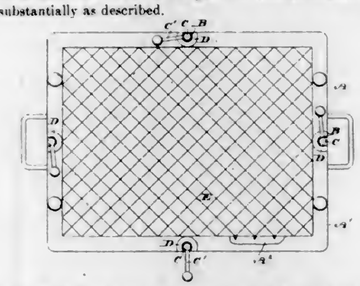


Claim.—1. The combination of the thill-tug l, consisting of a complete loop and having the slot c transversely through its bottom portion, and the strap a, secured at one end to the bottom portion of the interior of the said thill-tug and passing with its free end through the slot c and adapted to be connected to the girth of the harness, substantially as and for the purpose set forth.

2. The combination of the thill-tug provided with the slot c, the strap a, secured at one end to the interior of said thill-tug and passing with its free end through the slot c and adapted to be connected to the girth of the harness, and the safety-loop l, attached to the thill-tug at its side adjacent to the horse, substantially as and for the purpose specified.

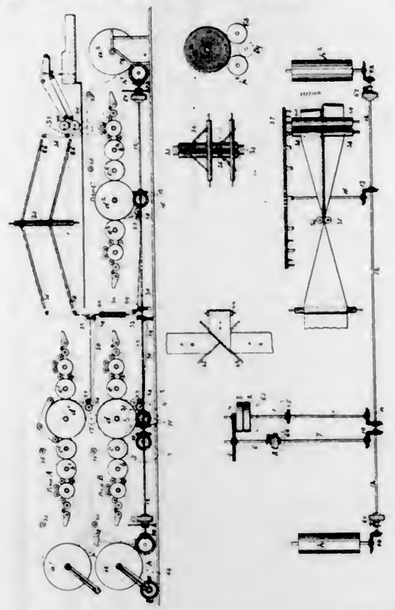
446,695. **FRAME FOR HOLDING STEREOTYPE-MOLDS.** HERRMANN SCHIMANSKY and LUDWIG PASSELT, Berlin, Germany, assignors to Morwitz & Co., Philadelphia, Pa. Filed May 14, 1887. Serial No. 238,173. (No model.) Patented in Germany Dec. 1, 1882, No. 22,755, and in England May 2, 1883, No. 2,231.

Claim.—1. A device for the purpose named, consisting of detachable sections, one of which has a bed and bolts secured thereto, the said bolts having handles, as described, the other section having openings with slotted outer walls and flanges with annular inclined upper faces, substantially as described.



2. A device for the purpose named, consisting of detachable sections, one of which has bolts and handles secured to the sides thereof, and provided with a reticulated bed, the other section having openings in its sides with slotted outer walls and flanges with inclined upper faces, said parts being combined substantially as described.

446,696. **WEB-PRINTING PRESS.** WALTER SCOTT, Plainfield, N. J. Filed July 16, 1889. Serial No. 317,719. (No model.)



Claim.—1. The combination, with the printing mechanism and its main driving-shaft, of a pulley fast on said shaft, a second pulley loose on such shaft and gearing, and a second shaft connected with and driven by such second pulley for driving the press in the same direction but at a slower speed when the belt is shifted to the second pulley, and a clutch to disconnect the mechanism for the second pulley, substantially as set forth.

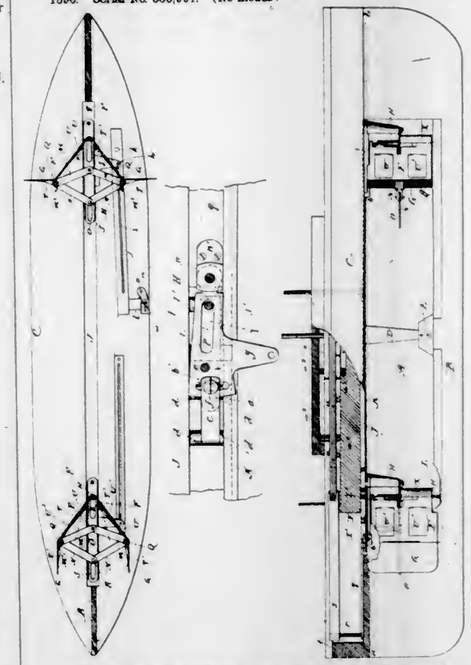
2. The combination, with the printing-presses B and C in the same plane, or nearly so, with each other, of the connecting-shaft 12 and gearing 11 and 13 for connecting the driving-shafts of the respective presses, the rolls h h^3, against which the respective rolls a a^3 of paper rest, and the gearings 20 and 22 for connecting the shaft 12 to the respective rollers h h^3 and driving such rolls at a less surface speed than that of the printing-cylinders, substantially as set forth.

3. The printing-presses A B C, the press A being above the press B and the press C in the same plane as the press B, the roll of paper a' for the press A being above the roll of paper a for the press B, and the roll of paper a^2 for the press C being at the end of the press distant from the press B, so that the webs from the presses B and C pass toward each other and are delivered together or along with the web from the press A, in combination with the gear 17 for connecting the presses A and B, the shaft 12 and gearing for connecting the presses B and C, a folder that is common to all three presses and folds the web or webs longitudinally, and a cutter for separating the folded web or webs, substantially as set forth.

4. The combination, with the printing mechanism, of a driving-roller upon which the roll of paper rests, mechanism for driving such roller at a slightly-less surface speed than the speed of the printing-cylinder to insure a proper tension on the web as it passes through the press, arms for the axis of the roll of paper, and a cross-shaft for such arms at one side of and parallel to the driving-roll, substantially as specified.

5. The combination, with the driving-shaft in the printing-press, of two pulleys on such driving-shaft, one of which is fast thereon, the other is loose, a pinion connected with the loose pulley and gearing, and a friction-clutch between the pinion and the press for driving the press at a slower speed, substantially as specified.

446,697. **PROPELLER.** OTTO SEEMÜLLER, New Haven, Conn., assignor of one-half to Louis W. Widmann, same place. Filed July 16, 1890. Serial No. 358,961. (No model.)



Claim.—1. The combination, with two or more paddles, each having two wings hinged at their forward ends to an upright shaft common to them both, of means for simultaneously moving them toward and away from each other, substantially as described.

2. The combination, with two or more paddles having hinged wings and a steering-plate, means for simultaneously moving them toward and away from each other, and connections with their steering-plates, whereby they may be shifted transversely for steering, substantially as described.

3. The combination, with a vessel having a long longitudinal opening formed in its keel, of two or more paddles located in the said opening and each having two wings hinged at their forward ends to an upright shaft common to them both, and means attached to the paddles for simultaneously moving them toward and away from each other in the said opening, their wings being alternately opened and closed, substantially as described.

4. The combination, with a vessel having a long longitudinal opening formed in its keel, of two paddles located in the said opening and each having two wings hinged at their forward ends to an upright shaft common to them both, mechanism mounted in the hull of the vessel and including a slide for each paddle, and a reversible shaft

with which the slides are connected for simultaneously moving the paddles toward and away from each other, substantially as described.

5. The combination, with a vessel having a long longitudinal opening formed in its keel, of two paddles located in the said opening, slides connected with the said paddles, levers arranged on the plan of lazy-tongs connected with the slides, cams located centrally to the said levers and connected with them so as to simultaneously extend and contract them on each side of them, and a reversible shaft for operating the cams, substantially as described.

6. The combination, with a vessel having a long longitudinal opening formed in its keel, of two paddles located in the said opening, two driven slides mounted in the hull of the vessel and having the respective paddles connected with their inner ends, two driving-slides having their outer ends connected with the corresponding ends of the driven slides, a series of levers arranged on the plan of lazy-tongs and having their opposite ends connected with the inner ends of the driving-slides, cams having segmental slots located centrally to the series of levers and connected with the same by fulcra pins thereof, and a reversible shaft for operating the cams, substantially as described.

7. In a paddle, the combination, with two hinged wings, each composed of a forward and a rear section, the former being hinged to an upright shaft common to them both and the latter diverging from each other, of means for limiting the opening and closing action of the said sections, and springs arranged to exert a constant tendency to force the wings into their open positions, substantially as described.

8. In a paddle, the combination, with two hinged wings, each composed of a forward and a rear section, the former being hinged to an upright shaft common to them both and the latter diverging from each other, of horizontal levers located between and uniting the forward sections of the wings, and a horizontal bearing-plate located between the wings for supporting the levers, substantially as described.

9. The combination, with two or more paddles, each consisting of two hinged wings, each wing composed of a forward and a rear section, the forward section of the wings being hinged to an upright shaft common to them both and their rear sections being diverged from each other, of an upright stanchion, a horizontal steering-plate and a horizontal bearing-plate for each paddle, the said plates being pivoted at their forward ends to the stanchion and provided with slots to receive the said upright shaft, means connected with the steering-plate for shifting it in a horizontal plane, and operating mechanism carrying the stanchions and constructed to move the paddles simultaneously toward and away from each other, substantially as described.

10. The combination, with operating mechanism, of a vertical stanchion connected therewith, horizontal slotted steering and bearing plates respectively connected to the upper and lower ends of the stanchion, a movable shaft extending through the slots in the said plates, a reciprocatable carrier for the said shaft, two paddle-wings hinged to the said shaft at their forward ends, a stay-rod connecting the steering and bearing plates, levers combined with the bearing-plate, stay-rod for limiting the opening and closing action of the forward sections of the wings, and a carrier for the outer end of the steering-plate which is transversely movable, substantially as described.

11. The combination, with two hinged paddle-wings, of a steering-plate with which they are connected, provided with a lateral arm, and a series of levers connecting the said arm with a steering-shaft, whereby the plate is moved transversely to the normal path of the paddle-wings which are secured with it, substantially as described.

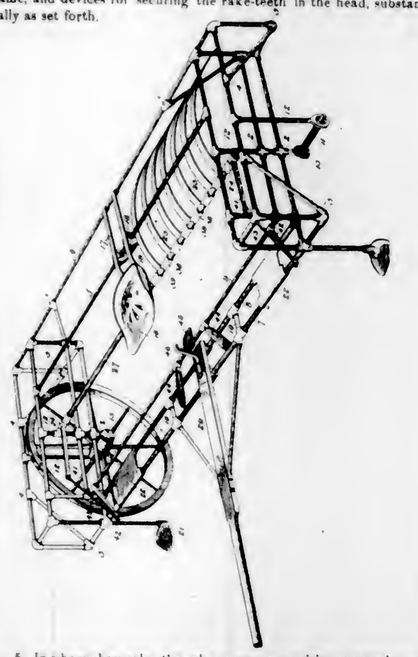
446,698. HORSE HAY-RAKE. THOMAS J. THORP, Chicago, Ill., assignor of one-third to D. J. Brannen, Flagstaff, Ariz. Filed Oct. 4, 1890. Serial No. 367,115. (No model.)

Claim.—1. In a horse hay-rake, the wheels provided each with a separate axle and end frames, one on each side of each wheel, connected by transverse tubes or members located at the top and rear above the rake and also connected by the tubes at the front and bottom in a plane below the rake-head, said end frames being each supported upon an axle, substantially as set forth.

2. In a horse hay-rake, the wheels provided each with a separate axle and frames connected by transverse tubes or members located at the top and rear and also connected by the tubes at the front and bottom, said end frames being each supported upon an axle, a seat supported upon the upper transverse tubes, and a tongue supported on the lower transverse tubes of said main frame, substantially as set forth.

3. In a horse hay-rake, the wheels having short axles, the frame supported upon said axles and extending above the axles, the shaft or rake-head having each end pivotally connected to the frame above the axles, a rod located below the rake-head and in front thereof and near the front of the wheels, arms rigidly joined to said rod, arms in like manner joined to the rotatable rake-head, and a connecting-rod loosely connecting the outer ends of said arms, substantially as set forth.

4. In a horse hay-rake, the wheels having short axles, the frame supported upon said axles, the shaft or rake-head having its main part 27 coupled with the hubs, said hubs provided with bearings in the frame, and devices for securing the rake-teeth in the head, substantially as set forth.

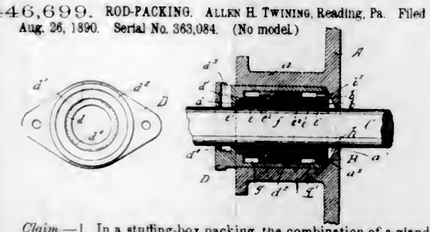


5. In a horse hay-rake, the rake proper, comprising the teeth, and the head composed of the slotted tube 27, the heads 24 24, the plugs, and the rings or sleeves 38, the heads having a pivotal connection with the rake-frame, and the several parts being secured and arranged substantially as set forth.

6. In a horse hay-rake, the short axles 11, provided with the head 13 and having a screw-threaded end, the sleeves 14, and the securing-nut, in combination with the rake-frame having the uprights 12, substantially as set forth.

7. The notched spring-bar 46, treadle-plate 45, fixed on the journaled rod 9, the rake-head, and the arms and rod connecting said head to rod 9, all combined substantially as set forth.

446,699. ROD-PACKING. ALLEN H. TWINING, Reading, Pa. Filed Aug. 26, 1890. Serial No. 363,084. (No model.)



Claim.—1. In a stuffing-box packing, the combination of a gland D, a collar B, compressible packing-rings *e e*, and a partition-collar *f*, all arranged to form annular steam-chambers *g* and *g'* outside the packing-rings and communicating with each other and with the steam-cylinder, each of said packing-rings having annular bearings at both ends against seats, as *d d'*, formed in steps in said gland and in said collars B and *f*, and the collar *f* being free to move endwise with said rings, substantially as and for the purpose set forth.

2. The combination, with a cylinder-head stuffing-box, of a collar B, formed with annular seats *b* and *b'* and steam-inlets b^2, a gland D, having its inner face abutting against said collar and formed with annular seats *d* and *d'*, compressible packing-rings *e e*, having end bearings on said annular seats, and a partition-ring *f* within said gland located between said rings and forming corresponding annular seats therefor, said partition-ring having grooves *f'*, connecting the annular steam-chambers surrounding said rings and being free to move longitudinally in said gland, all substantially as and for the purpose set forth.

3. The combination, with an engine stuffing-box, of a gland D and collar B, fitted therein, and compressible packing-rings *e e* and partition-collar *f*, inclosed by said gland, said collar *f* being free to move endwise with said rings and all arranged to form annular steam-chambers outside the packing-rings and communicating with each other and with the steam-cylinder, substantially as set forth.

446,700. STOVE-DAMPER-OPERATING DEVICE. CHARLES F. WALTHER, Buffalo, N. Y., assignor to Sherman S. Jewett & Co., same place. Filed Nov. 21, 1890. Serial No. 372,204. (No model.)



Claim.—1. In a stove, the combination, with the door having a lock or latch and the direct-draft damper, of the connecting mechanism between the lock or latch and the damper, whereby the latter is opened by the moving of the lock or latch prior to the opening of the door, substantially as shown and described.

2. In a stove, the combination, with the door having a lock or latch and the direct-draft damper, of a sliding bar having connection with the door lock or latch and with the damper, whereby when the former is moved to unlock the door the damper is opened, substantially as shown and described.

3. In a stove, the combination, with the door having a lock and a direct damper, of the connection mechanism between the lock and the damper, the connection with the damper being detachable, whereby when the lock is moved to unlock the door the damper is opened and when the door is opened the connection with the damper is broken, substantially as shown and described.

4. In a stove, the combination of the door having a turn-buckle and lock, the latter being provided with an arm 3, the direct-draft damper having an arm 9, and the sliding bar 4, secured to the door and having a recess in which the arm 3 moves to reciprocate the bar as the lock is moved and having an extended portion which engages with the arm 9 of the draft-damper, substantially as shown and described.

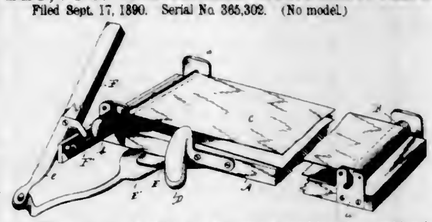
446,701. GAME-COUNTER. CHARLES ZIMMERLING, Philadelphia, Pa. Filed Mar. 21, 1890. Serial No. 344,794. (No model.)



Claim.—1. A game-counter consisting of a single plate or board having trump, game, and point indicators thereon, each in the form of segments of concentric circles, two of the segments being on opposite ends of the board, and the other segment on the side and between the other segments, and a single pointer for each segment pivoted between the center of its circle and its segment, said parts being combined substantially as described.

2. A game-counter consisting of a single plate or board having trump, game, and point indicators thereon and in the form of segments of concentric circles, and a single crimped pointer for each indicator pivoted between its segments and the center of its circle, each pointer having its path of travel outside of and free from the path of travel of the others, said parts being combined substantially as described.

446,702. MAILING-MACHINE. GEORGE B. BAER, Cloverdale, Cal. Filed Sept. 17, 1890. Serial No. 365,302. (No model.)

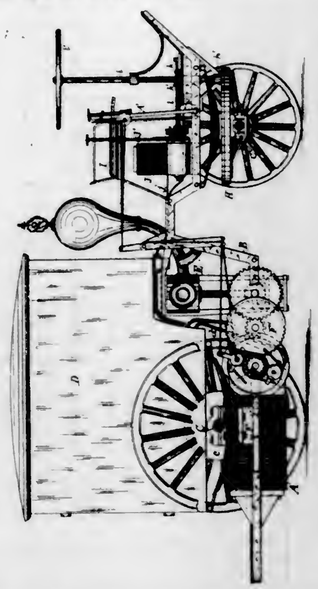


Claim.—1. In a mailing or addressing machine, the combination of a base or frame having operating-rollers journaled in opposite ends thereof, a front piece having one end extending laterally from the frame, a cutting-knife pivotally secured to said extended end, a transverse plate extending beneath the frame, having its inner end pivoted thereto and its outer end pivotally connected with the cutting-knife, and a longitudinal spring secured beneath the frame and having its free end bearing upon the transverse plate, substantially as set forth.

2. In a mailing-machine, the combination, with the frame thereof, of the operating-rollers secured therein, endless belt passing around said rollers, thumb-roll secured to the forward roller, handle attached to the machine, shoe-plate pivotally secured beneath said frame, having the reduced outer portion, metallic spring located beneath the frame and adapted to bear upon the shoe-plate, cutting-knife pivotally secured to the end of the front piece or bar, and the rod for connecting the knife with the outer end of the shoe-plate, substantially as and for the purpose set forth and described.

3. In a mailing-machine of the herein-described character, the combination, with the frame thereof, of the front piece or bar F', secured to the front thereof, cutting-knife pivotally secured to the end of said front bar, metallic shoe-plate pivotally secured beneath the frame of the machine, said plate having its upper face slightly concaved and the reduced outer portion, rod connecting the knife with the outer end of the shoe-plate, and the metallic spring attached to the under side of the frame and adapted to bear upon the upper concaved face of the shoe-plate, substantially as and for the purpose set forth and described.

446,703. ELECTRIC FIRE-ENGINE. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed July 7, 1890. Serial No. 357,979. (No model.)



Claim —1. The combination of a vehicle having a motor mounted thereon, a battery carried upon or moving with said vehicle, an electric circuit on the vehicle for supplying current from said battery

to the motor, a pump carried upon the vehicle, and means to connect said motor either with the axle or wheels of the vehicle or with the pump, as desired.

2. The combination of an electrically-propelled vehicle having an electric motor mechanically connected with the axle or wheels thereof, a supply-circuit on the vehicle connected to the motor, a pump carried upon the vehicle, and means to detach said motor from the axle or wheels and to connect said motor with the pump.

3. The combination, in an electrically-propelled vehicle, of an electric motor, a mechanical connection between said motor and axle, a compensating gear in said connection connected with the wheels carried by the axle to permit of their relative movement, and an electric-supply circuit on the vehicle connected to the motor.

4. The combination of a vehicle, an electric motor supported thereon and carried entirely beneath the back axle, and means whereby the motor can propel the vehicle or drive a pump carried thereon.

5. In a portable fire-engine, the combination of a wheeled vehicle, an electric-supply circuit, an electric motor on the vehicle in the circuit, a double-acting reciprocating piston-pump supported upon the frame of the vehicle, and suitable gearing connecting the motor with the pump.

6. The combination, with an electrically-propelled vehicle, of a supply-circuit, an electric motor on said vehicle connected with the circuit, and a steering mechanism for one of the axles mechanically connected with the said motor.

7. In a portable fire-engine, the combination of a wheeled carriage, a secondary battery supported mostly by the back axle or wheels of the carriage, an electric motor, electric connections between the battery and motor, a pump mounted on the frame of the carriage, and a suitable mechanical connection between the said motor and pump.

8. The combination, in an electrically-propelled vehicle, of a battery carried upon or moving with said vehicle, an electric motor, an electric circuit on the vehicle for supplying current from said battery to the motor, and a steering apparatus for the vehicle operated by the said motor.

9. The combination of a wheeled vehicle, an electric motor supported thereon and carried entirely beneath the back axle, a receptacle above said axle containing a battery, an electric circuit on the vehicle including the battery and motor, and suitable connections or gearing between the motor and said axle.

10. The combination, with a wheeled vehicle, of an electric motor supported and carried thereon, a receptacle containing a secondary battery carried upon said vehicle, one of said elements being carried above the back axle and the other entirely beneath said axle, and suitable devices whereby the motor can operate the wheels of said axle.

11. The combination, with a wheeled vehicle, an electric motor supported and carried thereon, and a receptacle containing a secondary battery carried upon said vehicle, one of said elements being carried above the back axle and the other entirely beneath said axle, of a pump carried upon said vehicle and mechanically connected with the motor.

12. The combination, with a vehicle, of an electric-supply circuit on the vehicle, a motor connected with the supply-circuit and mechanically connected with the vehicle to propel it, a second electric motor carried on the vehicle and connected with the supply-circuit, and means to steer the vehicle, connected with and operated by the said second motor.

13. The combination, with an electrically-propelled vehicle, of an electric motor, a pump upon said vehicle, means for mechanically connecting the motor with the pump, and an electric steering apparatus on the vehicle to steer the latter.

14. The combination, with an electrically-propelled vehicle, of a pump carried upon said vehicle and means to connect the propelling-motor with said pump to operate the same and to disconnect said motor from the vehicle, so that the latter will be at rest during the operation of the said pump.

15. The combination of an electrically-propelled vehicle, a pump carried upon the vehicle, an electric motor mounted upon the vehicle, and suitable means whereby said motor is connected to the pump or the driving mechanism of the vehicle to propel the same or to drive the pump.

16. The combination, with the axle of a vehicle pivoted in the center, of an electric motor supported upon the frame of the vehicle and flexibly connected with the said axle to cramp it in either direction to steer the vehicle.

17. The combination of an electrically-propelled vehicle having an electric motor mechanically connected with the axle or wheels thereof, a supply-circuit on the vehicle connected to the motor, a pump carried upon the vehicle, and means to detach said motor from the axle or wheels and to simultaneously connect said motor with the pump.

18. In a portable fire-engine, the combination of a wheeled vehicle, an electric-supply circuit, a double-acting reciprocating piston-pump supported in a vertical or nearly vertical position between the axles of the vehicle, an electric motor in the supply-circuit on the vehicle, and suitable means whereby said motor is connected to the pump or the driving mechanism of the vehicle to propel the same or to drive the pump.

19. The combination, with the axle of a vehicle pivoted in the center, of an electric motor supported upon the frame of the vehicle and connected with the said axle to cramp it in either direction to steer the vehicle.

20. The combination, in an electrically-propelled vehicle, of an electric motor mounted on the vehicle, an axle, wheels on said axle adapted to be turned independently of each other or with different degrees of speed, and suitable connections between the motor and the wheels to permit of the relative movement of said wheels.

21. The combination, in an electrically-propelled vehicle, of an electric motor mounted on the vehicle, a compensating gear suitably connected to two of the wheels of the vehicle, and suitable mechanical connections or gearing between the said compensating gear and motor to permit of the relative movement of said wheels, for the purpose described.

22. The combination of a wheeled vehicle, an electric motor supported thereon and carried entirely below the line of the axis of the wheels, means whereby the motor can propel the vehicle, and a body or receptacle above but in close proximity to the axle.

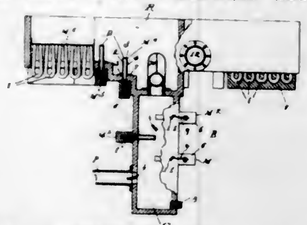
23. The combination of a wheeled vehicle, an electric motor supported thereon and carried entirely below the line of the axis of the wheels, a receptacle above said line of axis containing a battery, an electric circuit on the vehicle including the battery and motor, and a suitable connection or gearing between the motor and the said axle.

24. The combination, with a wheeled vehicle, of an electric motor supported and carried thereon, a receptacle containing a secondary battery carried upon said vehicle, one of said elements being carried above the back axle and the other entirely beneath said axle, a pump mounted on the vehicle, and suitable devices whereby the motor can propel the vehicle or drive the pump.

25. The combination, in an electrically-propelled vehicle, of an electric motor mounted thereon, a mechanical connection between said motor and two wheels on opposite sides of the vehicle, means or devices in said connection to permit of the relative movement of the said wheels, and an electric-supply circuit on the vehicle connected to the motor.

26. In a portable fire-engine, the combination of a wheeled carriage, a receptacle supported upon the carriage, a secondary battery within the receptacle, an electric motor on the carriage, electric connections between the battery and the motor, a pump mounted on the frame of the carriage, and a suitable mechanical connection between the said motor and pump.

446,704. MAGNETIC PULP-SEPARATOR. WILLIAM C. EDWARDS, Holyoke, Mass., assignor, by direct and mesne assignments, of one-half to Roswell M. Fairfield, same place, and Oscar S. Greenleaf, Springfield, Mass. Filed Sept. 29, 1890. Serial No. 366,492. (No model.)



Claim.—1. In a pulp-separator, the combination, with a separator-trough, of the settling-box below and connected at the upper part thereof with said trough, the supply-pipe entering said box near the lower end thereof, and cross-bars arranged alternately on opposite sides of said box above the supply-pipe, one or more of said cross-bars being magnetic.

2. In a pulp-separator, the combination, with the separator-trough, of the magnet-case set on and crosswise of the bottom of the trough, and one or more magnets standing with their poles in said case, whereby the magnet-provided case constitutes a magnetic riffle.

3. In a pulp-separator, the combination, with the separator-trough, of a hollow magnet-case standing in and crosswise of the trough over an opening therein and extending entirely across the trough, and a magnet removably fixed in said case, whereby the magnet-provided case constitutes a magnetic riffle and the magnet may be removed and replaced while the separator is in use.

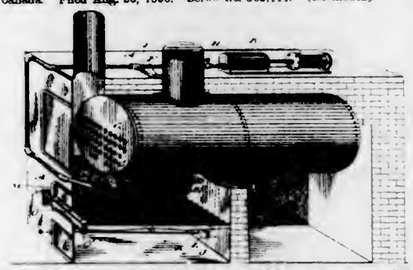
4. In a pulp-separator, the combination, substantially as described, with the separator-trough having the receiving-chamber, of means delivering the pulp to said chamber at the lower part thereof, and successive magnetic riffles set at successive elevations, respectively.

5. In a pulp-separator, the combination, with the separator-trough, of a series of riffles, substantially as described, made shorter than the width of the trough and set alternately against opposite sides of the trough, whereby the pulp-current is given a serpentine direction.

6. In a pulp-separator, the combination, with a trough in which one part is located crosswise to a preceding part, of magnetic riffles set crosswise to each other adjacent to the junction of said parts, whereby the current is abruptly changed and the pulp intermingled against the riffle-surfaces.

7. In a pulp-separator, the combination, with the hollow riffle, of magnets set in a magnet-carrier, substantially as described, and means locking said carrier to the separator, with the magnets projecting from the carrier into said riffle.

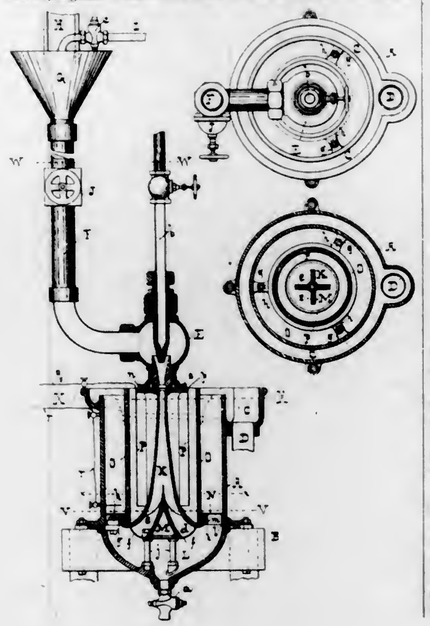
446,705. STEAM-BOILER FURNACE. JOHN T. ELLIS, Toronto, Canada. Filed Aug. 26, 1890. Serial No. 363,111. (No model.)



Claim.—1. An air-pipe connected to a force-pump and provided with a fish-tail outlet extending into the front of a furnace, in combination with a steam-pipe located within the air-pipe and connected at one end to the steam-boiler and having on its other end a branched outlet, substantially as and for the purpose specified.

2. A furnace-door provided with a pivoted latch having a small water-tank fixed to it, one on either side of its pivot and connected together at their bottoms, in combination with a catch having an inwardly-slanting slot to receive the latch.

446,706. AMALGAMATING APPARATUS. THOMAS GEMMELL, London, England. Filed Dec. 12, 1889. Serial No. 333,468. (No model.)



Claim.—In an amalgamator, a mercury-holding vessel, a pipe extending within the said vessel to near its bottom to convey ore from a point exterior of the vessel to a point below the contained mercury, the lower end of said pipe being flaring and upwardly turned, a porous cell supported by the upturned portion of said pipe, and an electrolyte and an anode in the porous cell, combined with an electric generator and wires leading from the opposite poles of the generator to the anode and the mercury, substantially as specified.

446,707. ELASTIC BRAID OR WEB. BURKARD GOODMAN, New York, N. Y. Filed June 16, 1890. Serial No. 355,624. (No model.)

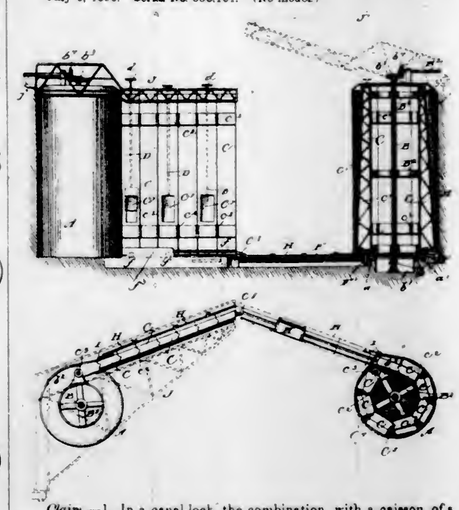


Claim.—1. An elastic fabric composed of braiding or binding threads and longitudinal or warp threads, wherein the warp-threads are separated by plaited or interlocked portions of the fabric, providing perforations, and an edge elastic binding having a braided covering interlaced with the plaited or interlocked portions of the aforesaid fabric, substantially as described.

2. An elastic braid or web having an elastic body comprising elastic longitudinal warp-threads and a binding with openings or interstices therein, and an elastic edge re-enforce having elastic warp-threads inclosed by a closely-braided covering attached to the binding of said elastic body, substantially as described.

3. The combination, with an elastic body having ventilating-openings therein, of a closely-braided edge-binding attached to said body and inclosing elastic warp-threads, substantially as described.

446,708. CANAL-LOCK. HENRY C. HARRISON, Potomac, Md. Filed July 8, 1890. Serial No. 358,101. (No model.)



Claim.—1. In a canal-lock, the combination, with a caisson, of a flexible gate adapted to be drawn within said caisson, substantially as specified.

2. In a canal-lock, the combination, with a caisson, of a hinged sectional gate adapted to be wound upon a shaft within said caisson, substantially as specified.

3. In a canal-lock, the combination, with a caisson, of a flexible gate composed of hinged interlocking sections adapted to be wound within said caisson, substantially as specified.

4. An improved lock-gate formed of hinged interlocking sections, substantially as shown and described.

5. In a canal-lock, the combination, with the caisson formed with tapered outlets, of a flexible gate having its inner section tapered to conform to the taper of said opening, substantially as specified.

6. In a canal-lock, the combination, with the caisson, of a flexible gate adapted to be wound therein and an automatically-closing gate to the entrance of the caisson, substantially as specified.

7. In a canal-lock, the combination, with the caisson and the movable gates, of the lower hinged gates, substantially as and for the purpose specified.

8. In a canal-lock, the combination, with the caisson and the movable gates and the guide for the lower end thereof, of the hinged gates adapted to automatically close the guideway as the gates are opened, substantially as specified.

9. In a canal-lock, the combination, with the caisson, the gates, and the guideway, of the hinged lower gate and the nose upon the movable gate, substantially as and for the purpose specified.

10. In a canal-lock, the combination, with the caisson and the movable gates, of the hinged lower gates in overlapping sections, substantially as specified.

11. In a canal-lock, the combination, with the caisson and the movable gates, of the lower hinged gates in overlapping independently-moving sections, substantially as specified.

12. In a canal-lock, the combination, with the caisson and the movable gates, of the lower hinged gates in overlapping independently-movable sections and the nose upon the forward end of the gate, substantially as specified.

13. In a canal-lock, the combination, with the caisson and the vertical shaft, of the wheels on said shaft and the flexible gate secured to said wheels, substantially as and for the purpose specified.

14. In a canal-lock, the combination, with the caisson, the vertical shaft, and the wheels thereon formed with lugs, of the gates in hinged interlocking sections, the inner one of which is pivotally connected to said lugs, substantially as specified.

15. In a canal-lock, the combination, with the caisson and the vertical shaft, of the wheels thereon, the gate, the horizontal screw, and connections between said shaft, screw, and gate, substantially as specified.

16. In a canal-lock, the combination, with the caisson, vertical shaft, and the wheels thereon, of the flexible gate connected with said wheels, the horizontal screw to which the gate is attached, and the beveled pinion on the screw and shaft, substantially as and for the purpose specified.

17. In a canal-lock, the combination, with the caisson, the vertical shaft, the flexible gate connected therewith, and the horizontal screw, of the nut secured to the gate and engaging the screw, and connections, substantially as described, between the shaft and screw, as and for the purpose specified.

18. In a canal-lock, the combination, with the caisson, vertical shaft, the wheels thereon, flexible gate pivotally connected with said wheel, and the screw, of the beveled pinion on the screw, beveled pinion on the shaft meshing therewith, and the nut secured to the lower edge of the gate and engaged by the screw, substantially as specified.

19. The combination, with the casing F^3, having the vertical extension provided with inward projection, of the movable gate provided with corresponding depressions to engage said projection, substantially as and for the purpose specified.

20. The combination, with the gate and the nut secured thereto, of the casing, the screw arranged therein and engaging the nut, and the anti-friction rollers on the gate traveling on the upper face of the casing, substantially as described.

21. The combination, with the movable gate, of the pivoted bridge adapted to serve as a guide to the upper end of the gate, substantially as specified.

22. An improved lock-gate formed in hinged interlocking sections, some of which are provided with sluiceways controlled by adjustable valves.

446,709. CANOPY-TOP. JOHN KOHL, Mason, Ohio. Filed Oct. 15, 1890. Serial No. 368,199. (No model.)

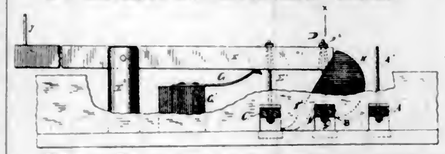


Claim.—1. A vehicle-top provided with a curtain-receiving groove and a removable plug for the outer end of the groove, said plug having spread ends, substantially as and for the purpose specified.

2. A vehicle-top having its surrounding top strip provided with a portion of a groove and its finishing-strip provided upon its inner face with the complement of the groove, the adjacent faces of the two parts being cut away below the groove to form a passage-way from the groove downward for the reception of the curtain, substantially as specified.

3. A vehicle-top having the outer face of its top surrounding strip formed with a portion of a groove and its finishing-strip formed upon its inner face with the complement of the groove, the grooves upon two sides being closed at one end by the strip at right angles thereto, substantially as specified.

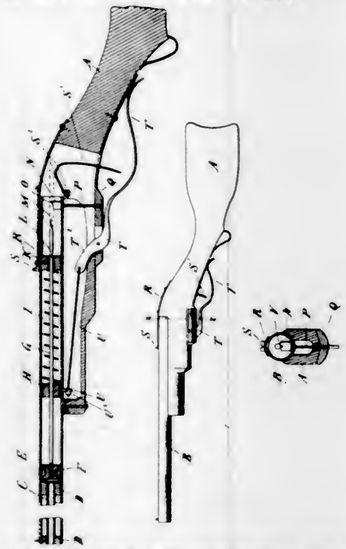
446,710. PEDAL FOR PIANOS. HENRY MALLEBRE, New York, N. Y. Filed Aug. 25, 1890. Serial No. 362,968. (No model.)



Claim.—1. The combination, with a pedal, of a pivoted and weighted latch arranged above said pedal and provided with a laterally-extending arm, and a second pedal located sidewise of the first pedal and adapted to engage said arm, substantially as set forth.

2. The combination, with two pedals, of a locking-lever for one pedal, a pivoted lever, and rods extending upward from both pedals through said lever for operating the lever from either pedal, substantially as set forth.

446,711. SPRING AIR-GUN. HIRAM H. PASSAGE, Plymouth, Mich. Filed June 9, 1890. Serial No. 354,831. (No model.)



Claim.—1. In a spring air-gun, the combination, with the barrel and the spring-actuated piston and its rod, of a detent in said rod and bearing with which said detent engages and the trigger for disengaging said detent, substantially as described.

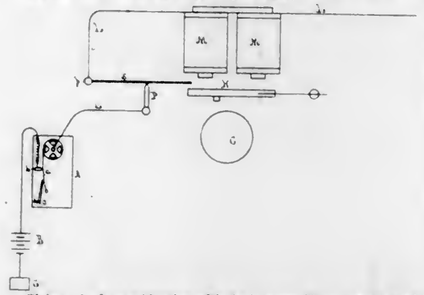
2. In a spring air-gun, the combination, with the barrel, the spring-actuated piston, and its rod, of the block H, secured centrally of said rod, the spring I, the stationary block K, forming a guide for said rod, the detent on said rod, the stationary bearing N, and the trigger, substantially as described.

3. In a spring air-gun, the combination, with the spring-actuated piston and its rod, of the inclined bearing M, the detent L, the bearing N, having the inclined face O, and the trigger, substantially as described.

4. In a spring air-gun, the combination, with the barrel of a piston and its rod having a beveled end and a notch in its under side, of a movable block rigid on said rod, having an extension on its under side, a lever on the under side of the stock connected to said extension by a link, a stationary block having a central opening for the passage of the rod, a spring surrounding the rod and interposed between the stationary and movable blocks, a catch in the lower part of the barrel for engaging with the notch in the rod and holding the spring in its compressed state, and means for disengaging said rod, substantially as described.

5. In a spring air-gun, the combination, with the stock, barrel, and spring-actuated piston-rod in the barrel having a beveled end, of a catch having a threaded end passing through the barrel adjacent to its rear end and into the stock for uniting the barrel and stock, its upper end formed with inclined upper face having a groove or kerf therein and located directly in the path of the rod, substantially as described.

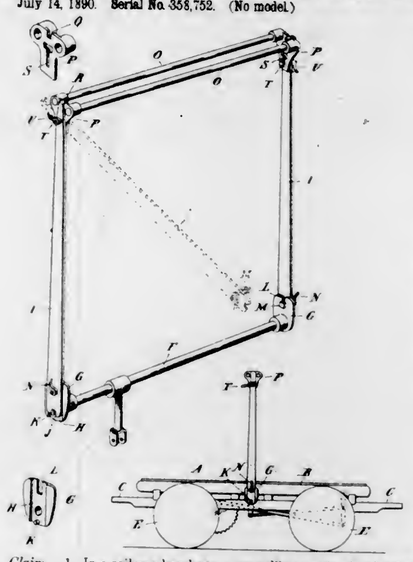
446,712. ELECTRIC CALL-BELL. DAVID H. RICK, Lowell, Mass., assignor to the Currier Telephone Bell Company, of Massachusetts. Filed Nov. 16, 1881. Serial No. 45,956. (No model.)



Claim.—1. In combination with the hammer H, co-operating with means which vibrate it by a broken or undulatory current sent from a distant station on the line, and its magnet, an automatic mechanism operated by the hammer and producing a broken or vibratory electric current through the magnet, substantially as described.

2. In combination with the circuit-breaker *a*, the hammer H, the magnet M, and the spring S, substantially as described.

446,713. HAND-CAR. CYRUS ROBERTS, Three Rivers, Mich. Filed July 14, 1890. Serial No. 358,752. (No model.)



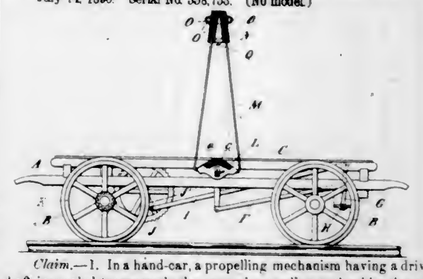
Claim.—1. In a railway hand-car, a propelling mechanism having an oscillating drive-shaft journaled transversely the car and extending to the sides thereof, two side levers engaging the ends of said drive-shaft for actuating the same, a handle secured to the upper ends of said side bars, and means for disconnecting said side levers from the drive-shaft and handle, whereby each lever may be independently detached from the drive-shaft and supported on the end of the handle-bar, substantially as described.

2. In a railway hand-car, a propelling mechanism having an oscillating drive-shaft journaled transversely the car and extending to the sides thereof, two propelling side levers detachably engaging the ends of said drive-shaft, one or more handle-bars connecting the upper ends of the side levers, two brackets in which the outer ends of said handle bar or bars are secured, and the clamping-bolts securing the side levers to said brackets and forming a pivotal connection on which the side levers may be folded out of the way, substantially as described.

3. In a railway hand-car, a propelling mechanism having an oscillating drive-shaft journaled transversely the car and extending the to sides thereof, the brackets secured to the ends of the drive-shaft, the propelling side levers engaging said brackets and provided with clamping-bolts detachably securing said side levers to the brackets, the handle-bars connecting the upper ends of the side levers, the brackets in which the ends of the handle-bars are secured, and the clamping-bolts and means for detachably securing the upper ends of the side levers to said brackets, said clamping bolts forming a pivotal connection for folding the side levers out of the way independently of each other, substantially as described

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446,714. HAND-CAR. CYRUS ROBERTS, Three Rivers, Mich. Filed July 14, 1890. Serial No. 358,753. (No model.)



Claim.—1. In a hand-car, a propelling mechanism having a drive-shaft journaled transversely the car and extending to the sides thereof, two upwardly-extending levers detachably secured to the ends of the drive-shaft, and a cross-bar to which the upper ends of said levers are hinged, substantially as described.

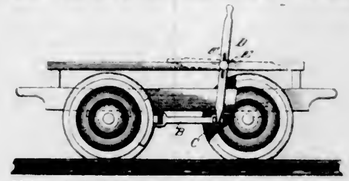
2. In a hand-car, the combination, with the frame and drive-shaft, of the yoke-shaped lever M, the brackets N, to which said lever is hinged, and the plate R, secured to the drive-shaft and provided with means for detachably clamping the lower end of said lever upon its outer face free to be swung outwardly, substantially as described

3. In a hand-car, the combination, with the frame and drive-shaft, of the actuating-levers M, the brackets N, the cross-bars O, and the brace P, substantially as described.

4. In a hand-car, a platform, an oscillating propelling-shaft extending to the sides thereof, and two propelling-levers detachably secured at their lower ends to the ends of the oscillating shaft and hinged at their upper ends to brackets in which the ends of a connecting cross-bar are secured, said brackets having dependent flanges which engage with the upper ends of the levers, substantially as described

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446,715. HAND-CAR BRAKE. CYRUS ROBERTS, Three Rivers, Mich. Filed July 26, 1890. Serial No. 359,971. (No model.)



Claim.—1. In brake mechanism for hand-cars, substantially as described, a brake-lever pivotally secured to the side of the car, and means for disengaging said brake-lever from its brake mechanism and folding it to the side of the car, substantially as described.
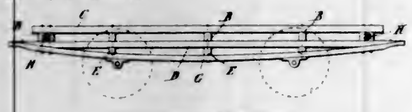
2. In brake mechanism for hand-cars, the brake-lever D, having a pivotal sliding connection on the side of the car, substantially as described.

446,716. HAND-CAR. CYRUS ROBERTS, Three Rivers, Mich. Filed Aug. 9, 1890. Serial No. 361,596. (No model.)

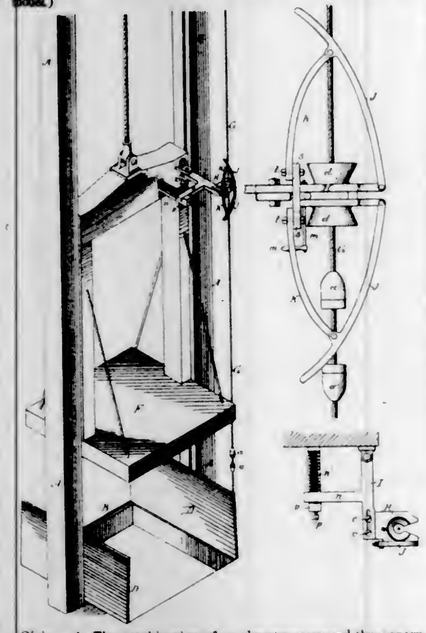
Claim.—1. In a railway hand-car, a car-body composed of longitudinal bars and cross-bars bolted together at the points of intersections to form a frame and supporting a flooring, the sides of said frame constituting vertical trusses, each composed of three longitudinal bars engaging between them the ends of the cross-bars, the lower one of said longitudinal bars being curved upwardly from the center toward the ends and connected to the ends of the central longitudinal bar, and transverse trusses at the ends, substantially as described.

2. In a railway hand-car, a car-body composed of longitudinal

bars and cross-bars bolted together at their points of intersections to form a frame and supporting a flooring, said frame comprising a series of longitudinal truss-bars bent upwardly from the center to the ends on the under side of said frame, and transverse trusses at the ends, substantially as described.



446,717. CONTROLLING DEVICE FOR ELEVATORS. JACOB J. SEELAR, Philadelphia, Pa. Filed Apr. 14, 1890. Serial No. 347,840. (No model.)



Claim.—1. The combination of an elevator-cage and the governing rope or cord located beyond the limits of the elevator-well with a device for clutching said cord, and a laterally-movable carrier for said clutching device on the cage, whereby the clutch can be caused to swing from the said rope and clear the successive floors and their safety-doors, substantially as specified.

2. The combination of the elevator-cage and the governing rope or cord with the clutching device mounted upon the cage, so as to be free to yield laterally, and a guard or shield for effecting the inward movement of the clutching device as it passes successive floors, substantially as specified.

3. The combination of the elevator-cage, the controlling rope or cord, the clutching device free to move laterally on the cage, the guard or shield for effecting the inward movement of said device, and a spring for moving the same outward, substantially as specified.

4. The combination of the elevator-cage, the controlling cord or rope, and a clutching device carried by an arm pivoted to the cage, so that said device can be thrown inward or outward or in a direction from and toward the rope, substantially as specified.

5. The combination of the elevator-cage, the governing cord or rope, the clutching device therefor, and a carrier for said device, having portions adjustable longitudinally and laterally to adapt the clutch to the varying position of the governing cord or rope, substantially as specified.

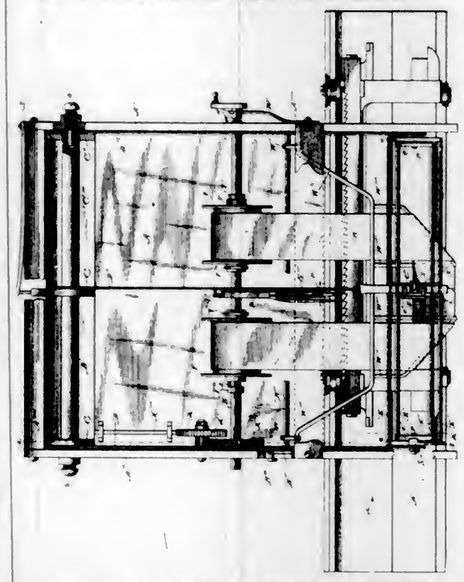
6. The combination of the cage, the governing cord or rope, the clutching device, the movable arm carrying the same, and the guard or shield composed of pivoted bars with adjustable braces, substantially as specified.

446,718. CHURN-DASHER. ISAAC F. STERLING, Marlin, Tex. Filed Sept. 16, 1890. Serial No. 365,164. (No model.)

Claim.—The combination, in a churn-dasher, of a handle, a spiral-bladed head journaled thereon, means, substantially as described, for engaging the head with the handle in its descent and for setting the head free to revolve when ascending, the said blades forming a complete circle at their outer ends and curved inward on their radial edges, forming free vertical openings, substantially as described, whereby the cream at the circumference is pressed toward the center in spiral streams during the descent of the dasher-head and partially thrown away from center during its ascent.



446,719. TYPE-WRITING MACHINE. DANIEL C. STOVER, Freeport, Ill. Filed Mar. 15, 1889. Serial No. 303,395. (No model.)



Claim.—1. In a machine of the class described, the combination, with two independently-oscillating frames having a combined bodily movement, of a type-block supported by one of said frames and susceptible of oscillation in two planes, the oscillation of one of said frames being adapted to swing the type-block in one of its planes of oscillation, the oscillation of the other of said frames being adapted to swing the type-block in its other plane of oscillation, and the combined bodily movement of the two frames being adapted to impart a corresponding bodily movement to the type-block.

2. In a machine of the class described, the combination, with a type-block susceptible of oscillation in two planes, of two independently-oscillating frames adapted by their oscillation to swing the type-block in its respective planes of oscillation and an oscillating lever having its free end in contact with one of said frames, the oscillation of said lever being adapted to oscillate said frames, respectively, through angles fixed by the form of that portion of the lever impinging upon the frames, substantially as and for the purpose set forth.

3. In a machine of the class described, the combination, with a type-block formed with type upon its face and susceptible of oscillation in two planes and of an oscillatory bodily movement, of a series of swinging key-levers, bodily movable oscillatory frames supported in the path of said key-levers and adapted to be struck upon one side by any descending lever, thereby oscillated till the opposite side also meets the lever and then moved on bodily with the lever, and means for transmitting the motions of the frames to the type-block, substantially as and for the purpose set forth.

4. The combination, with a series of swinging key-levers, of two frames supported in the paths of the levers and adapted to be struck by any descending lever and oscillated till the lower face of the lever meets both sides of the frame and then to be moved bodily with the lever, and a type-block and connections transmitting to the type-block

both the oscillatory and the bodily movements of the frames, the type upon said block being so placed that one of them shall be in the line in which it is desired to print when the oscillation produced by any lever is complete.

5. In a machine of the class described, the combination, with a type-block susceptible of oscillation in two planes, of two frames connected with said type-block and oscillating independently upon an axis susceptible of bodily movement, means for oscillating said frames, respectively, through any desired relative angles and for imparting bodily movement to the common axis of said frames, and a segment formed with suitably-spaced notches and pins attached to said frames, respectively, and adapted to be brought into engagement with the notches in said segment by the bodily movement of the axis of the frames and to form definite limits of the various degrees of oscillation of said frames, substantially as and for the purpose set forth.

6. The combination, with the frames E E' E^2 E^3, pivoted on a common horizontal axis susceptible of vertical oscillatory movement, of the type-block G, pivoted to the frame E E' and connected with the frame E^2 E^3 by the swivel-rods *k* and a series of type-levers whose free ends rest upon said frames, the depression of the free end of each of the levers being adapted to oscillate the two frames through predetermined angles, respectively, and to depress the common axis of the two frames, and a fixed segment I^3, formed with suitably-spaced notches and arms I I', attached to the frames, respectively, and provided with pins adapted to engage the notches in the segment when the axis of the frame is pressed downward sufficiently, substantially as and for the purpose set forth.

7. In a paper-feeding mechanism for type-writing machines, the combination, with a paper-supporting roller, of a second roller pressed against the first by a spring or other yielding force and formed with longitudinal ridges separated by spaces corresponding to the spacing of the lines which it is desired to print, gears connecting the two rollers and insuring their reverse rotation, and means, substantially as shown and described, for rotating one of said rollers in either direction, substantially as and for the purpose set forth.

8. In a machine of the class described, the combination, with the reciprocally-moving carriage, of a frame pivoted to the carriage and oscillating transversely with reference to the path of motion thereof, a paper-supporting roller journaled in said frame, the grooved roller pressed against said paper-carrying roller by a spring or other yielding force and having its grooves of a width corresponding to the spaces desired between the lines to be printed, means for insuring the reverse rotation of said rollers, and means, substantially as shown and described, for rotating one of said rollers in either direction, substantially as and for the purpose set forth.

9. In a machine of the class described, the combination, with a suitable bed and a carriage moving reciprocally thereon, of a frame pivoted to said carriage and adapted to oscillate in the direction transverse to the line of motion thereof, a paper-supporting roller journaled to said frame and provided with a knob whereby it may be rotated, a grooved roller pressed against said plain roller by a spring and connected with it by gears, insuring their reverse rotation, a ratchet-bar pivoted to the carriage and adapted to be thrown into or out of engagement with a pawl mounted on the base of the machine, and a lever attached to one end of said ratchet-bar and extending across the knob attached to said paper-supporting roller, whereby the free end of said lever may be pressed toward said knob by the operator for the purpose of disengaging said ratchet-bar from the pawl and rendering the carriage free to move in either direction without interruption, substantially as and for the purpose set forth.

10. The combination, with the carriage-frame H H', provided with suitably-supported rollers, of the swinging frame pivoted to the carriage and made up of the end pieces Q Q and paper-guide Q', connecting the said end pieces, the roller Q^1, journaled to said end pieces, the roller Q^2, journaled in the swinging supports *q'*, pressed against the roller Q^1 by springs S^5 and provided with grooves substantially equal to the space between the lines to be printed, the paper-clasp *u'*, having arms *u*, pivoted to the oscillating frame, and springs S^6, adapted to hold said paper-clasp either in or out of contact with the roller Q^2, substantially as and for the purpose set forth.

11. In a type-writing machine, the combination, with two suitably-mounted ribbon-spools and means for rotating one of them, of ribbon-supporting rods fixed alongside and oblique to the normal path of the ribbon extended from the spools, whereby the ribbon passing around the oblique rods and in contact with it may be changed in direction, substantially as set forth.

12. In a type-writing machine, the combination, with two ribbon-spools mounted on the same shaft and a ribbon having its ends attached to said spools, respectively, of means for imparting intermittent rotation to said shaft, means for connecting one of said spools with said shaft and insuring its rotation therewith, and a frame adapted to support a portion of the ribbon intermediate between said spools and to change its course at two different points in its passage from one spool to the other, substantially as and for the purpose set forth.

13. In a type-writing machine, the combination, with a suitable printing mechanism, of a shaft journaled in the frame of the machine, two ribbon-spools mounted on said shaft, means for connecting either of said spools with the shaft, means connecting said printing mechanism with said shaft, whereby each movement of the printing mechanism shall impart a limited rotation to the shaft, and a frame supporting a portion of the ribbon between said spools and changing the course at two points in its passage from one spool to the other.

14. The combination, with the longitudinally-movable shaft B', of the spools V, loosely mounted on the shaft, the hubs V' V^2, rigidly mounted on the shaft and adapted to be separately thrown into engagement with the corresponding spools by the longitudinal movement of the shaft, and the frame adapted to support and guide the central portion of the ribbon and provided with wires W^2, having oblique members adapted to change the direction of the ribbon at two points in its course from one spool to the other, substantially as and for the purpose set forth.

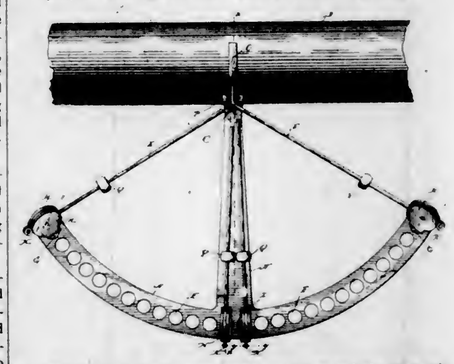
15. The combination, with the shaft B', the spools loosely mounted thereon, and means for connecting said spools alternately with the shaft, of the ribbon R, having its ends attached to said spools, an adjustable frame lying in front of said spools and shaft and supporting and guiding the central portion of said ribbon, and means, substantially as shown and described, for varying the distance of said frame from said shaft and for securing it in any desired position, substantially as and for the purpose set forth.

16. The combination, with the shaft B', the spools loosely mounted thereon, and means for connecting said spools alternately with the shaft, of the shaft B^3, the links W', lever B^2, and set-screws B^4, rigidly fastened to said shaft, and the frame W^3 W^4, pivoted to the free ends of said links W' and extending forward therefrom, the wires W^2 of the frame being adapted to support and change the course of the ribbon at points between the spools, and the links W', lever B^2, and set-screws B^4 being adapted to vary the distance of the swinging frame from the shaft B' and to secure it in any given position.

17. The combination, with the shaft B, the arms D D' D^2, pivoted on said shaft and rigidly connected to form a frame, and a printing mechanism attached to the front end of said frame and adapted to be operated by the depression thereof, of the shaft B', the spools loosely mounted on said shaft and adapted to be alternately connected therewith, the ribbon having its ends fastened to said spools, the frame supporting and guiding the central portion of said ribbon, and means, substantially as shown and described, connecting the arms D D' D^2 with said shaft B', whereby the reciprocal movement of said arms imparts intermittent rotation to said shaft B' and winds said ribbon upon one of said spools and unwinds it from the other, substantially as and for the purpose set forth.

18. The combination, with the main frame of the machine, the shaft B, journaled therein, the hubs C C' C^2, journaled on said shaft and connected by the plates C^3, and the arms D D' D^2, attached to said hubs and forming therewith an oscillating frame, of the oscillating frames E E' E^2 E^3, pivoted to the front ends of said arms, the oscillating type-block supported by said oscillating frames, the type-levers pivoted on said shaft B and having their free ends supported by the frames E E' E^2 E^3, and the spring S, pressing against a projection *c* on the plate C^3 and pressing upward the free ends of the arms D D' D^2 and the free ends of the type-levers, substantially as and for the purpose set forth.

446,720. TYPE-WRITING MACHINE. DANIEL C. STOVER, Freeport, Ill. Filed June 27, 1889. Serial No. 315,756. (No model.)



Claim.—1. A series of type-arms hinged, respectively, upon suitable supports in the arc of a circle to swing to a common point, the

several axes of motion being placed at successively-increasing angles with reference to the plane of the circle.

2. The combination, with the circular segment and the type-arm supports revolubly mounted therein and having progressively-increasing opposite inclination upon each side of the middle of the segment, of the type arms hinged to said supports, respectively, and swinging to a common point.

3. The combination, with the circular segment and the differently-inclined type-arm supports revolubly mounted therein, and the type-arms hinged, respectively, to said supports to swing in planes passing through the several axes of the supports and the center of curvature of the segment and all bent at said center into the same fixed line, of the rigid arm N, projecting from the segment and having the forked end f to receive said bent arms as they descend, substantially as set forth.

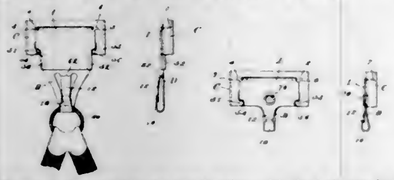
4. In combination, a series of type-arms hinged to swing to a common point, and disks fixed, respectively, to each arm in position to impinge upon the disks mounted upon the adjacent arms when both move together through conflicting parts of their paths, whereby adjacent arms are separated and allowed to pass each other.

5. In combination, a series of type-arms hinged upon distinct axes to swing to a common point, each having its hinge-axis itself mounted in a support revoluble in a different plane, and springs offering, respectively, yielding resistance to the rotation of said supports, whereby each type-arm may swing in different planes and be automatically returned to one of those planes when the force removing it therefrom ceases to act.

6. In combination, the circular segment, the variously-inclined type-arm bearings or supports revolubly mounted therein and having one side flattened and recessed, the flat springs pressing said flattened sides, respectively, and provided with the bent ends entering the recesses therein, and the type-arms hinged, respectively, to said bearings and swinging to a common point.

7. In combination, the circular segment, the revoluble type-arm supports mounted therein, the series of type-arms hinged to said supports, respectively, each upon an independent axis, and the notched rigid arms adapted to receive each type-arm as it descends, and to insure to all a vertical direction as they pass to the bottom of the notch, substantially as set forth.

446,721. **SUSPENDER-BUCKLE.** JUSTUS A. TRAUT, New Britain, Conn. Filed Aug. 16, 1890. Serial No. 362,235. (No model.)



Claim.—1. In a buckle, the combination, with the web-case having the oppositely-disposed catches, and the swinging lever-plate, of a shiftable strap-carrying lock-plate carried on the lever-plate and having catches arranged to engage the web-case catches on shifting the lock-plate in one direction and to disengage the same on shifting said plate in the other direction.

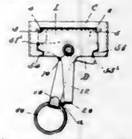
2. In a buckle, the combination, with the web-case and the swinging lever-plate, of the sliding strap-carrying lock-plate carried on the lever-plate and having catches arranged to engage and disengage the web-case on the sliding of the lock-plate when the lever-plate is closed.

3. In a buckle, the combination, with the web-case and with the lever-plate pivotally connected thereto, of the sliding lever locking-plate constructed for movement longitudinally of the web-case, stops limiting said movement, and catches on the lock-plate engaging and disengaging the web-case on the sliding of the lock-plate when the lever-plate is closed.

4. In a buckle, the combination, with a web-case having the oppositely-disposed catches 51 53, of the lever supported in the web-case and having the slide-guides 50 52, and the strap-carrying plate fitted to slide in said guides and having catches arranged to engage and disengage said web-case catches on the downward and upward movements, respectively, of said plate.

446,722. **SUSPENDER-BUCKLE.** JUSTUS A. TRAUT, New Britain, Conn. Filed Aug. 16, 1890. Serial No. 362,236. (No model.)

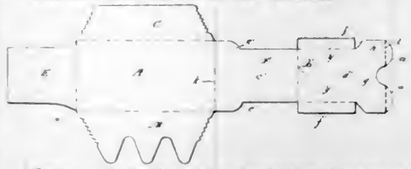
Claim.—1. In a buckle, the combination, with the web-case having the oppositely-disposed catches, and with the swinging lever-plate, of a pivotally-shiftable strap-carrying lock-plate carried on the lever-plate and having catches arranged to engage the web-case catches on turning the lock-plate in one direction and to disengage the same on turning said plate in the other direction.



2. In a buckle, the combination, with the web-case and with the lever-plate having the projecting arm, of the shifting lever-locking plate having a strap-carrying hook standing contiguous to said arm when the lever-plate is locked and passing clear thereof when the lever-plate is unlocked, whereby the cast-off when on the hook is locked and unlocked on the locking and unlocking of the lever-plate.

3. In a buckle, the combination, with the web-case having the oppositely-disposed catches 54 56, of the lever-plate pivotally supported in the web-case, and the strap-carrying lever-locking plate pivotally supported on the lever-plate and having the oppositely-disposed arms 51′ 53′ constructed to pass into engagement with said catches when shifting the lock-plate into its central position after the lever is closed.

446,723. **ENVELOPE.** GEORGE N. WALTER, Evansville, W. Va. Filed Oct. 9, 1890. Serial No. 367,544. (No model.)



Claim.—1. An envelope for the transmission of registered mail-matter, formed from a single piece of material and having a main body A, side flaps B and C, an end flap E, and an end flap F, which latter flap is folded about midway of its length upon itself and has marginal shallow flaps *f* folded upon the section *c* of said end flap, and also having lateral projections *h*, a recess *g*, and the tongues *a*, all adapted to serve substantially as and for the purpose specified.

2. An envelope formed from a single piece of material and having the main body A, side flaps B and C, an end flap E, and an end flap F, which latter flap is folded about midway of its length upon itself and has marginal shallow flaps *f* folded upon the section *c* of said end flap, substantially as described.

446,724. **COTTON-GIN RIB.** ISAAC T. WASHBURN, Sing Sing, N. Y. Filed May 10, 1890. Serial No. 351,318. (No model.)

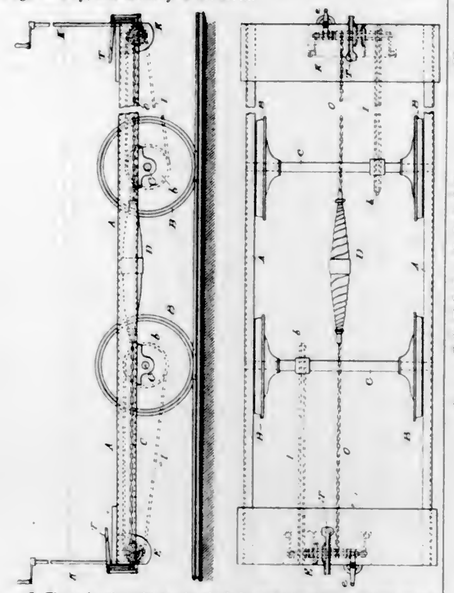


Claim.—A cotton-gin rib having the entire upper face of the stem plain and the sides smooth and at right angles to the top face of the stem, and a broad flange 12 of the same thickness throughout as the body of the rib, substantially as described.

446,725. **CAR-STARTER.** AUGUST WILKE, Brunswick, Germany. Filed Dec. 2, 1890. Serial No. 373,308. (No model.)

Claim.—1. A wheeled vehicle and a rotatable shaft capable of longitudinal movement, said shaft being connected to the wheels of said vehicle, so that said shaft rotates when the vehicle moves, in combination with a power-storing mechanism which acts by expansion and contraction, two gear-wheels, one of which is connected with said power-storing mechanism, intermediate reversing mechanism connecting said gear-wheels, whereby said wheels rotate in opposite directions, and clutch mechanisms between said gear-wheels and said shaft, whereby when said shaft is moved longitudinally in one direction it is connected with one of said gear-wheels and when moved in the opposite direction it is connected with the other of said gear-wheels, substantially as set forth.

2. A rotatable shaft capable of a longitudinal movement, two gear-wheels geared together so as to rotate in opposite directions, and clutch mechanisms between said gear-wheels and said shaft, whereby when said shaft is moved in one direction it is connected with one of said gear-wheels and when moved in the opposite direction it is connected with the other of said gear-wheels, in combination with a brake-pulley carried by one of said gear-wheels, and a brake co-operating with said pulley to lock said gear-wheels when said shaft is being moved longitudinally, substantially as set forth.



3. The axle of a vehicle, the shaft G, capable of longitudinal movement, sprocket-wheels on said axle and shaft, respectively, a chain I, connecting said sprocket-wheels, a clutch member *k* on the sprocket-wheel on said shaft, a collar J on said shaft having a clutch member *n*, and mechanism co-operating with said collar to move said shaft longitudinally in either direction, in combination with power-storing mechanism which acts by expansion and contraction, two bevel gear-wheels M and N, having clutch members *j m*, which co-operate with said clutch members *k* and *n*, respectively, an intermediate bevel-pinion P, which meshes with both of said wheels M and N at all times, and a chain O, connecting said wheel N with said power-storing mechanism, substantially as set forth.

4. A power-storing mechanism consisting of a spring capable of longitudinal expansion and contraction, said spring being composed of a plurality of elastic buffers placed end to end, substantially as set forth.

5. A power-storing mechanism consisting of a spring capable of longitudinal expansion and contraction, said spring being composed of a plurality of elastic rubber buffers placed end to end, and each buffer at each end fitting into a dished metallic plate, substantially as set forth.

6. The spring 20 and the tube 21, having slots 27, an eye 22 at one end and a collar 23 at the opposite end, against which one end of said spring seats, in combination with a rod 24 within said tube, said rod having an eye 25 at one end and a cross-pin 26 at the other end, which extends through said slots 27, and against which the opposite end of said spring seats, substantially as set forth.

7. A vehicle equipped with two transferring mechanisms E E, one at each end of the car, in combination with a spring capable of longitudinal expansion and contraction, and two draft-rods extending longitudinally through said spring and movable in opposite directions, each of said rods having a projecting portion, against which one of the ends of said spring seats, said draft-rods being connected, respectively, to said transferring mechanisms, substantially as set forth.

446,726. **BABY-CARRIAGE.** ARCHIBALD A. ALLARDYCE, Toronto, Canada. Filed June 25, 1890. Serial No. 356,695. (No model.)

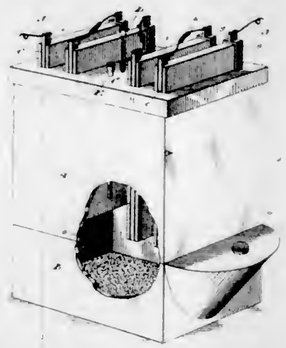
Claim.—1. A baby-carriage having its body made in two parts A B, loosely connected by links C, each of which has its opposite end pivotally connected to the opposite parts of the carriage, whereby the bottom of the seat part A may rest against the open end of the part B, substantially as described



2. A baby-carriage having side bars F and its body made in two parts A B, loosely connected by links C, each of which has its opposite ends pivotally connected to the opposite parts of the carriage, whereby the bottom of the seat part A may rest against the open end of the part B and its back against the part F, substantially as described.

3. The body of a baby-carriage divided into two parts A B, connected together by the links C, the portion B, supported by the springs E and I, carried, respectively, on the side bars F and cross-bars J, in combination with the handle K, hinged to the side bars F and provided with the hinged brace L, arranged to be detachably connected to the side bars F, substantially as and for the purpose specified.

446,727. **PYRO-CHEMICAL BATTERY.** JOHN BLAIR, North Orillia, and ALEXANDER G. HUNTER, Dundalk, Ontario, Canada. Filed June 25, 1890. Serial No. 356,684. (No model.)



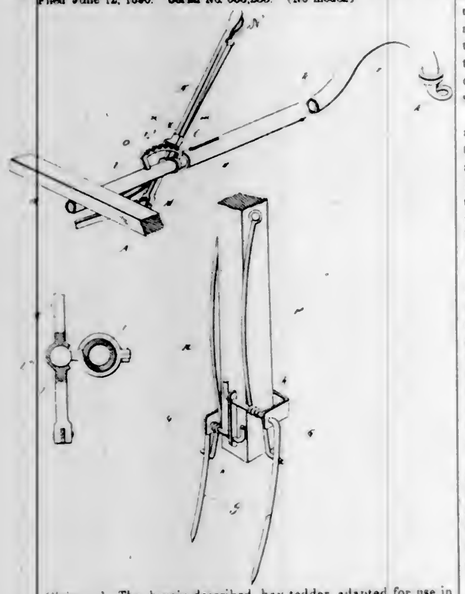
Claim.—1. In a pyro-chemical battery, a cell communicating with a gas-charger charged with materials in which a chemical transfer of elements is caused by the application of heat and a gas evolved capable of acting on an iron plate, and one or more composite plates fixed in said cell, each formed of an iron plate separated from two carbon plates by prepared septa or partitions and clamped together, the ascending gas generating by means of said composite plate or plates and connecting-wires a current of electricity, substantially as described and specified.

2. In the cell A of a pyro-chemical battery, the combination of an iron plate *c*, partitions *d*, and carbon plates *e*, clamped together to form the composite plate C and operated to produce a current of electricity, substantially as described and specified.

3. In a pyro-chemical battery, a gas-charger B, adapted to contain a mixture in the proportion of eight ounces of chloride of sodium, three ounces of sulphuric acid, and four ounces of water chemically combined by the application of heat so as to evolve hydrochloric-acid gas or any equivalent mixture capable of producing chlorine or a gas which acts on iron, in combination with a cell A, communicating with said gas-charger B and containing a composite plate C or a series thereof arranged and operated to produce a flow of electricity, substantially as described and specified.

4. In a cell A of pyro-chemical battery, the composite plate C or a series thereof adapted to store the gas or charge evolved from the gas-charger B, and to produce, when desired, a flow of electricity without the aid of heat, substantially as described and specified.

446,728. HAY-TEDDER. CHARLES H. BOWMAN, Alliance, Ohio. Filed June 12, 1890. Serial No. 355,255. (No model.)



Claim.—1. The herein-described hay-tedder adapted for use in connection with a mowing-machine and having its tongue provided with the upwardly bent or curved forward end and formed of the telescopic sections, and the stop limiting the telescopic movement of said sections, substantially as described.

2. In a hay-tedder, the combination, with the hinged fork-bars pivotally secured to the main frame and secured to the crank-shaft, of the forks having the independent tines, each provided with a horizontally-bent arm engaging bearings in brackets connected to the fork-bar, and the spring coiled around each bent arm one of its ends secured to the fork-bar and the other bearing against the rear of the tine, substantially as described.

3. In a hay-tedder, the combination, with a tongue formed in adjustable sections, of a lever mounted upon said tongue, said lever having a spring connection with the frame for tilting the fork-bars and a link or rod connection with the driving-pinion, whereby the said pinion may be thrown into and out of gear, substantially as described.

4. In a hay-tedder, the lever K, having the universal joint I, I', and the connections M and P between the fork-frame and driving-pinion, respectively, whereby a vertical movement of the said lever will tilt the fork-frame and a horizontal movement of the same will throw said pinion out of gear, substantially as described.

5. The herein-described fork for hay-tedders, having the independent tines, each provided with a horizontally-bent arm engaging bearings in brackets connected to the fork-bar, and the spring coiled around each bent arm, one of its ends secured to the fork-bar and the other bearing against the rear of the tine, substantially as described.

446,729. COMBINED FURNITURE AND EXTENSION-BEDSTEAD. JOHN BRAEUEL, Cleveland, Ohio. Filed Mar. 31, 1890. Serial No. 346,117. (No model.)



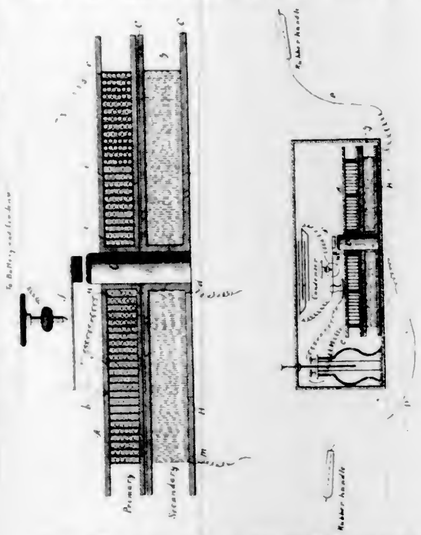
Claim.—1. In a combined bed and furniture stand, a main hollow frame, as A, and the extensible bed-sections, in combination with a mattress, a permanent mattress-support, a pulley located within the main frame, and a cord secured at one end to the frame of the mattress-support, extending along the under side of the mattress, around the end thereof to and around said pulley, and having its free end accessible to the operator, all substantially as and for the purposes specified.

2. In a combined bed and furniture stand, a main hollow frame, as A, having a platform A' and a stop *a*, and the telescopic sliding sections B B', said sections B having longitudinal grooves and provided at their rear ends with projections engaging said stops *a*, said sections B' sliding within said sections B and having pins engaging the grooves thereof, and a stop projecting from one of said sections and engaging the other for securing said sections when opened, all arranged, combined, and operating substantially as shown, and for the purposes set forth.

3. As an improved article of manufacture, a combined bedstead and bureau or like article of furniture, consisting of a main frame, as A, having its upper portion formed with drawers and its lower portion open, a platform A' within said open portion, a stop, as *a*, also within said open portion at the forward end thereof, the sliding telescopic bed-sections B and B', said sections B supported on said platform A' and having projections engaging said stops *a*, an end board secured to the outer ends of said section B' and closing the opening in the frame A when the article is not in use as a bed, and means projecting from one of said sections to the other for securing the same when opened, all substantially as shown and described.

4. As an improved article of manufacture, a combined bed and furniture stand consisting of a main frame having its upper portion formed with drawers and its lower end formed open, telescopic bed-sections received by said open part of the main frame when not in use, a pliable permanent mattress-support consisting of bands of pliable material secured to transverse rigid end strips, and helical springs suspending said mattress-support, all substantially as shown and described.

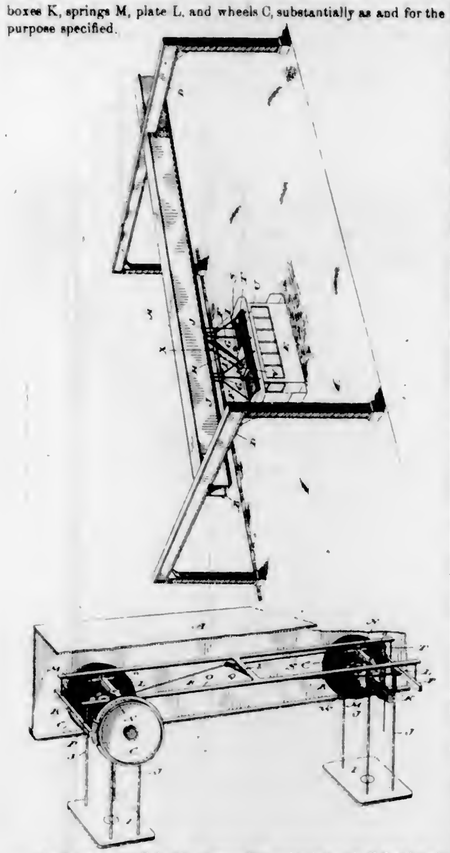
446,730. INDUCTION-COIL. FRED H. BROWN, Chicago, Ill. Filed July 21, 1890. Serial No. 359,459. (No model.)



Claim.—The induction-coil comprising the flat spools arranged end to end on the core, and wound, respectively, with the primary and secondary wires, the strips of iron being interposed between the layers or coils of the primary, and the rheotome or break-piece arranged to vibrate over the core and in circuit with the condenser and primary, substantially as described.

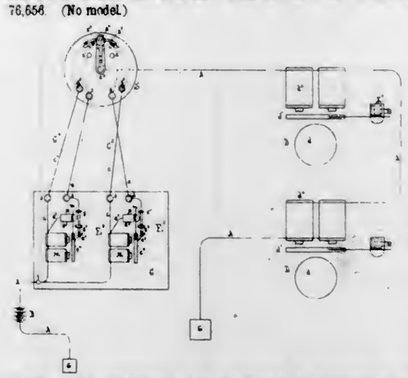
446,731. STREET-CAR SERVICE. THOMAS H. J. CRUISE, Toronto, Canada. Filed Aug. 26, 1890. Serial No. 363,137. (No model.)

Claim.—1. A street-car E, having upwardly-projecting rods F fixed to it, each set of rods being connected together by a plate G, which is pivoted on a plate I, in combination with the rods J, bearing-boxes K, springs M, plate L, wheels C, cross-bar N, and frame O, substantially as and for the purpose specified.



2. A street-car E, having upwardly-projecting rods F fixed to it, each set of rods being connected together by a plate G, which is pivoted on a plate I, in combination with the rods J, bearing-boxes K, springs M, plate L, wheels C, cross-bar N, and frame O, substantially as and for the purpose specified.

446,732. SYSTEM OF ELECTRIC CALLS. JACOB B. CURRIER and DAVID H. RICE, Lowell, Mass. Filed Nov. 13, 1882. Serial No. 76,656. (No model.)



Claim.—1. In combination with the magnet M, connected to the battery and ground at one pole, the circuit-breaker E^3 and the shunt-circuit C^3 around the latter, both connected to the opposite pole of the magnet, substantially as described.

2. The combination, with the battery B, of two magnets M M respectively connected to the same at one pole thereof, and two circuit breakers E^3, and two shunt-circuits around the latter respectively connected to the other pole of said magnets, substantially as described.

3. In combination with the circuit-breaker E^3 and its magnet M in the main circuit A, and the corresponding magnet d^3 and its alarm-striker d', also in said circuit, the shunt-circuit C^3 from the magnet M around the circuit-breaker to a ground connection, substantially as described.

4. In combination with two circuit-breakers E^3 E^3 and their magnets M in the main circuit, vibrating in substantially different times, and the respectively corresponding vibrating alarm-strikers d' d' and their magnets d^3 d^3, also in the main circuit, two shunt-circuits C^3 C^3, leading, respectively, from the magnet M M and around the circuit-breakers to a ground connection, substantially as described.

5. The combination, upon a single base-board, of the magnets M M and their circuit-breakers and screw-cups 1 and 2 2, and electrical circuits connecting said screw-cups 1 and 2 2 through said magnets and circuit-breakers, respectively, with the screw-cups 3 3, and shunt-lines c c, respectively connecting them with said magnets, the whole being organized into a complete calling-machine, substantially as described.

6. In combination upon a single base-board, the shunt-circuit screw-cups c^3 c^3 and their contacts c^3 c^3, the main-circuit screw-cups *z z* and their contacts *z' z'*, and the movable bar s^3, provided with means of connection with the main circuit A and adapted to be brought into electrical connection with said respective contacts, the whole being organized into a complete switch-board mechanism S, substantially as described.

7. The combination, in the switch board S, of the contact *s'*, connected with the circuit-breaker and its magnet M in the main circuit, and the contact c^3, connected with said magnet in the shunt-circuit C^3, with the single circuit A and suitable mechanism for connecting and disconnecting said contacts from the latter, substantially as described.

8. The combination, in the switch-board S, of two or more contacts *s' s'*, connected with their respective circuit-breakers and magnets M M in the main circuit, two or more contacts c^3 c^3, connected, respectively, with said magnets in the shunt-circuits C^3 C^3, with the main single circuit A and suitable mechanism for connecting and disconnecting said contacts from the latter, substantially as described.

9. The combination of a main circuit containing a magnet M and its circuit-breaker therein, with a shunt-circuit leading from said magnet around said circuit-breaker to the main circuit or ground and provided with a key for closing said shunt-circuit, substantially as described.

10. The combination of the magnet M, connected to battery B and its ground at one pole of the circuit-breaker E^3, and the shunt-circuit C^3, connected to the opposite pole of the magnet, and the main circuit A and grounded line s^4, substantially as described.

11. The combination, in a switch-board, of the bar s^3, the key s^5 and the contacts s' c^3, placed within the path of the bar and key, respectively, substantially as described.

12. The combination of the bar s^3, the key s^5, and the contacts s', c^3, and s^3, arranged within the path of said bar and key, respectively, substantially as described.

13. The combination of the swinging bar s^3 and key s^5 with the contact s', adapted to make electrical contact with said bar, and the contact c^3, adapted to make electrical contact with said key, substantially as described.

14. The combination of the bar s^3, the circuit A, the contact s' the key s^5, and the contact c^3, substantially as described.

15. The combination of the bar s^3, the circuit A, the contact s' the key s^5, the contact c^3, and the contact s^3, substantially as described.

16. The combination, with the swinging bar s^3 and the key s^5, mounted thereon and moving therewith, of the contacts s' and c^3, substantially as described.

17. The combination, with the swinging bar s^3 and the key s^5, mounted thereon and moving therewith, of the contact s', the contact c^3, and the contact s^3, substantially as described.

18. In combination with the vibrating governing-reed *m* of the circuit-breaker, the reverse spring c^4 c^4, and its rigid electrical contact-point against which it makes and breaks the circuit, substantially as described.

19. In combination with the magnet M and vibrating reed and armature *m* c^4, the reverse contact-spring c^4 c^4 and its rigid contact-point against which it makes and breaks the circuit, substantially as described.

20. In combination with the vibrating governing-reed *m*, the reverse contact-springs joined together at one end of each, respectively, and arranged and located with relation to their electrical contact breaking-point against which they impinge, so as to come in contact therewith in moving past it and so as to diminish their tension against

reed *m* toward the extreme ends of the beat of the latter, substantially as described.

21. In combination with the circuit-breaker reed *m*, which governs the make and break of the electric circuit, the contact-breaking spring placed with its make-and-break contact at the edge thereof, substantially as described.

22. In combination with the circuit-breaker reed *m*, the contact-breaking spring mounted at the edge thereof and nearly opposite to its center of motion, substantially as described.

23. In combination with the magnet M, the reed *m*, and armature c^4 the electrical make-and-break contact-spring mounted upon the edge of said armature and projecting above the same, substantially as described.

24. The combination of the vibrating reed *m*, and the reverse springs joined together at both ends and arranged to meet their electrical contact-point against which they make and break the circuit by the movement of the armature, substantially as described.

25. In the reed-clip c^3, in combination with the grasping and holding jaw n^4 and the lower jaw n', the traveling jaw n^5, substantially as described.

26. In combination with the stationary holding-jaws n' n^4, the traveling jaw n^5 and its guideway n^2, substantially as described.

27. In combination with the stationary holding-jaws n' n^4, the traveling jaw n^5, provided with the screw-threaded shanks n^7 and the correspondingly-threaded hole n^4, substantially as described.

28. In combination with the clamping-screws n^3 n^7 and holding-jaws n' n^4, the circular cap n^2 and the circular traveling jaw n^5, substantially as described.

29. In combination with the post n', supporting the reed *m*, the bracket *f*, supporting the contact-screw c', substantially as described.

30. In combination with the pivoted adjustable base Y of the circuit-breaker, the curved slot *y'*, and clamping-screw y^2, sustaining the base on opposite sides of the post n', substantially as described.

31. In combination with the clip n^3 and the jaw n', the rotary jaw n^6 substantially as described.

32. The combination, with the reed *m*, of the jaw n' and adjustable jaw n^5, the contact-breaking spring c^4, and the point of screw c', against which it makes and breaks the electric contact, substantially as described.

33. The combination, with the reed *m*, of the jaw n' and adjustable jaw n^5, the contact-breaking spring c^4, and the adjusting-screw c', carrying the contact-breaking point, substantially as described.

34. The combination of the contact-spring c^4 c^5 with its make-and-break point of screw c', arranged and adjusted relatively to each other substantially as described—that is to say, so that its electrical contact, when made by the movement of the armature upon which it is mounted, shall begin upon c^4 nearest to the end at which parts c^4 c^5 are joined and move along said spring away from said end, substantially as described.

35. In an electrical-circuit breaker, the combination of a main spring *m*, an elliptical-shaped contact-breaking spring formed of members c^4 c^5, and a non-elastic electrical contact-point engaging with the latter to make and break the circuit by the vibration of the main spring, substantially as described.

36. In combination with the circuit-breaker E^3, provided with the reverse electrical contact-breaking spring c^4 c^5, the circuit A and the corresponding vibrating striker d' and magnet d^3, substantially as described.

37. In combination with two circuit-breakers E^3 E^5, provided with electrical contact-breaking springs c^4 c^5, respectively, the circuit A and the corresponding vibrating strikers d' d' and their respective magnets d^3 d^3, substantially as described.

38. In combination with the circuit-breaker E^4, provided with the post n', the clip n^3, and the adjusting-jaw n^5, the circuit A and the corresponding magnet d^3 and spring-striker d', provided with the like post n', clip n^3, and adjusting-jaw n^5, substantially as described.

39. In combination with the circuit-breaker E^4, having its electrical contact-breaking spring c^4 placed on the edge of its reed *m*, the circuit A and the corresponding magnet d^3 and vibrating striker d', substantially as described.

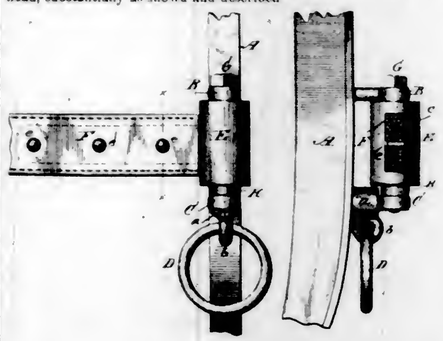
40. In combination with two circuit-breakers E^3 E^4, having their respective contact-breaking springs c^4 c^4 placed at the edge of their reeds *m m*, the circuit A and the corresponding magnets d^3 d^3 and vibrating strikers d' d', substantially as described.

41. In combination with the reed *m*, the jaws n^4 n', held by the clamping-screws n^3 n^7 on each side of the reed, and the adjustable jaw n^5, substantially as described

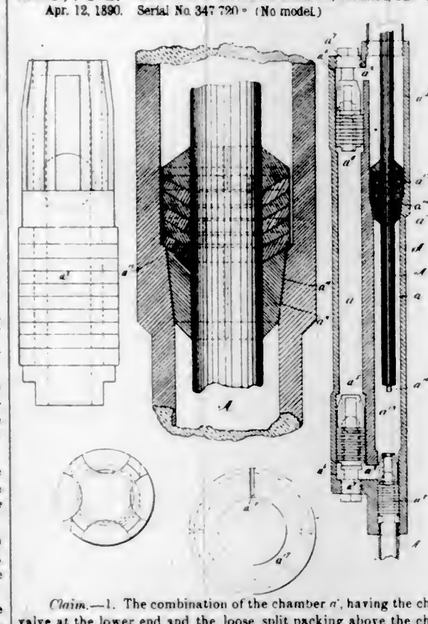
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446,733. HAME-TUG. HENRY J. DENNIS, North Adams, Mass. Filed Aug. 22, 1890. Serial No. 362,746. (No model.)

Claim.—A hame provided with lateral eyebolts B C, in combination with the coupling-head E, having central hole, the pin G, held in said eyebolts, a lateral shank *c*, and at its lower end a central bearing-flange H, of less diameter than the head, said shank adapted to receive the trace of two layers of material surrounding the shank and secured thereto, with the inner ends of said layers terminating at the head, substantially as shown and described



446,734. OIL-PUMP. ROBERT S. EDMONDS, Bradford, Pa. Filed Apr. 12, 1890. Serial No. 347,720. (No model.)



Claim.—1. The combination of the chamber a', having the check-valve at the lower end and the loose split packing above the check-valve, the plunger-rod passing through said packing, and the chamber *a*, having passages a^3 and a^5, respectively above and below said packing and provided with suitable checks to prevent the return of the oil to chamber a', substantially as described.

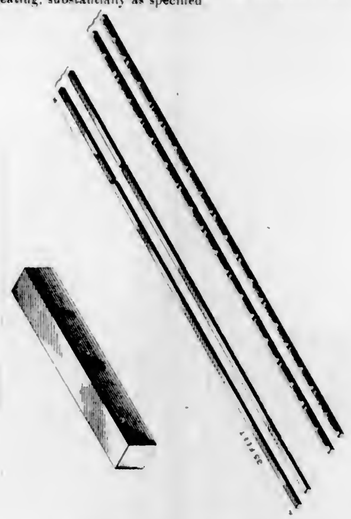
2. The combination of the chamber a', having the inlet and outlet openings provided with suitable checks, the plunger-rod, and the split-disk packing held in contact with the plunger-rod by the weight of the oil above the packing, substantially as described

3. The combination of a pump-barrel having screw-threaded opening, and a valve having the stem a^6, provided with a solid nut for closing the opening in the barrel.

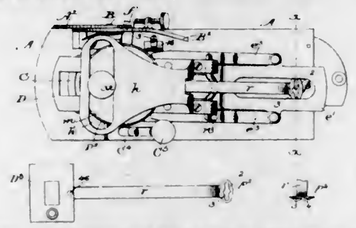
446,735. MANUFACTURE OF CREASED BARS FOR HORSE-SHOE-BLANKS. WILLIAM EYNON and WILLIAM SEAMAN, Wilmington, Del. Filed Sept. 29, 1890. Serial No. 366,514. (No model.)

Claim.—The mode herein described of making creased bars for horseshoe-blanks, said mode consisting in first rolling a plain finished bar of double the length of the required creased bar, then severing said plain bar and creasing the sections of the same independently but

simultaneously, the whole series of operations being performed without reheating, substantially as specified



446,736. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. ELMER FLETCHER, Needham, Mass., assignor to the Eyelet Button Hole Attachment Company, Portland, Me. Filed Mar. 7, 1890. Serial No. 342,948. (No model.)



Claim.—1. The button-hole-attachment foot-plate, combined with the slotted stripper-plate carried by and rising and falling in unison with the said foot-plate and having its under side close to the upper side of the material, but not resting thereon, to thus retard the free movement of the material with the foot-plate in the length of the button-hole, the said stripper-plate preventing the rising needle from lifting the material to shorten the loops and skip stitches, substantially as described.

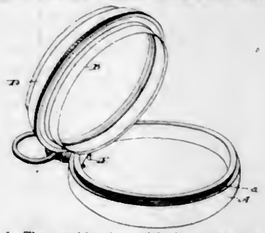
2. The base-plate A, the cloth-clamp having a foot-plate, as c', slotted along its inner edges, the bridge-plate, the arm *r*, connected to the base-plate, and the stripper-plate p^3, located close to the upper side of the material and slotted, as described, and sustained in the slot of the foot-plate, as described, to rise and fall and vibrate in unison with it, combined with means to move the said clamp longitudinally, the stripper-plate being restrained from motion therewith in the direction of the length of the slot in the foot-plate, substantially as described.

3. The base-plate, the stud, the washer, means to hold it in place, the cam-wheel D^3, the cloth-clamp, and intermediate devices actuated by the said cam to move the cloth-clamp longitudinally, combined with means to rotate the said cam and with dogs to prevent reverse rotation of the said cam, substantially as described.

4. In a button-hole attachment, the herein-described stripper-plate, provided with a slot having two of its diagonally-opposite sides or walls inclined from the longitudinal axis of the slot toward the transverse axis of the said slot, substantially as described.

5. In a button-hole attachment, the herein-described stripper-plate, provided with a slot having two of its diagonally-opposite sides or walls inclined from the longitudinal axis of the slot toward the transverse axis of the said slot, and having the under side of the said walls beveled or inclined upward toward the transverse axis of the slot, substantially as described.

446,737. WATCH-CASE. EDWARD F. HEFFERNAN, Toronto, Ontario, Canada. Filed Apr. 19, 1889. Serial No. 307,794. (No model.)



Claim.—1. The combination, with the center of a watch-case, of a rim hinged to the said center and having the back or bezel connected to said rim by screw-threads formed on said back or bezel and rim, substantially as described.

2. The combination, with the center of a watch-case having a screw cut on it, of a screwed rim hinged to the center and a back or bezel screwed to engage with the screws on the ring and center, substantially as and for the purpose specified.

3. A watch-case hinge formed by one or more pins pivoted on the back, bezel, or rim, and constructed to move longitudinally in holes made in the center, substantially as and for the purpose specified.

4. In a watch-case having its back or bezel screwed to the center by means of a screwed joint, a rim connected to the back or bezel and having a thread cut on it to correspond with and form a continuation of the thread which forms a screw-joint, in combination with a hinge designed to connect the screwed ring with the center, substantially as and for the purpose specified.

5. A rim B, having a thread *b* cut on it to correspond with and form a continuation of the thread *a* on the center A, and a hinge to connect it with the said center A, in combination with a bezel or back D, having a thread cut on it to engage with the threads *a* and *b*, substantially as and for the purpose specified.

446,738. APPARATUS FOR THE MANUFACTURE OF CURVED LINOTYPE-BARS. EDWARD A. HENKLE and JOSEPH C. FOWLER, Washington, D. C. Filed Apr. 15, 1890. Serial No. 348,018. (No model.)



Claim.—1. In an apparatus for the manufacture of a curved linotype-bar or line of type, a casting-chamber having concentric or curved parallel walls for forming the outer face and inner or seating edge of the type-bar, the outer or concave wall of said chamber consisting of a series of matrix-blocks having opposite contacting faces which diverge in lines radiating from the center of the concentric walls, the type-matrices being formed upon the narrower edges of said blocks, substantially as described.

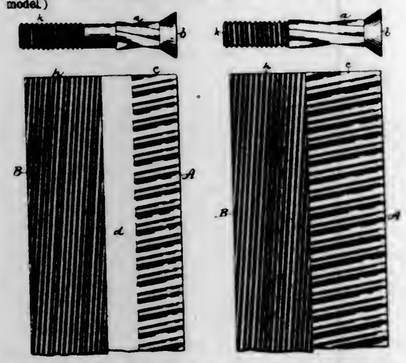
2. In an apparatus for the manufacture of a curved type-bar or line of type, a casting-chamber having concentric walls, the outer or concave wall forming the convex face of the type-bar being composed of a series of matrix-blocks 1, having diverging sides 2, and type-matrices 3, the end walls of said chamber being formed in lines radiating from the center on which the concentric walls are formed, substantially as described.

3. In an apparatus for the manufacture of a curved type-bar or line of type, the combination, with a series of matrix-blocks 1, having contacting faces 2, diverging in lines radiating from a common center and provided with type-matrices upon their narrower edges, of a curved convex wall concentric with the face formed by the series of matrix-blocks and provided with openings for the entrance of the melted type-metal, substantially as described.

4. In an apparatus for the manufacture of a curved type-bar or

line of type, the combination, with a series of matrix-blocks 1, having contacting faces 2, diverging in lines drawn from a common center, the type-matrices being formed upon the narrower edges of said blocks, of a concentric convex wall having openings for the molten type-metal and one or more pattern-blocks having dovetailed ribs lying in transverse grooves in the convex wall and provided with dovetailed tenons projecting above the wall, and two end walls coinciding with lines drawn from the common center, substantially as described.

446,739. **MANUFACTURE OF BOLTS OR PINS.** HORACE K. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed Oct. 30, 1890. Serial No. 369,791. (No model.)

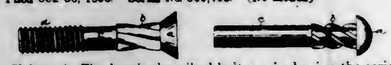


Claim.—1. That improvement in the manufacture of bolts or pins which consists in simultaneously rolling the screw-threads and circumferential enlargement-ribs in dies, said threads and ribs both extending around the bolt on lines non-parallel to its axis, substantially as described, and for the purpose specified.

2. That improvement in the manufacture of bolts or headed pins which consists of rolling circumferential enlargement-ribs extending somewhat transversely to the axis of said bolts in dies on the body of the pin or bolt, substantially as described, and for the purpose specified.

3. The improved compound die herein shown and described, consisting of a grooved portion for rolling the thread and a grooved portion, with grooves out of parallel to a right-angular transverse line through said dies, for rolling the circumferential enlargement-ribs extending somewhat transversely to the axis of said bolts, the same being arranged side by side for simultaneously rolling said thread and enlargement-ribs, substantially as described, and for the purpose specified.

446,740. **BOLT OR PIN.** HORACE K. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed Oct. 30, 1890. Serial No. 369,792. (No model.)

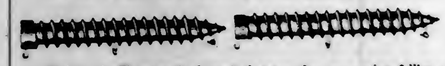


Claim.—1. The herein-described bolt or pin, having the series of rolled circumferential enlargement-ribs *b* extending somewhat transversely to its axis, substantially as described, and for the purpose specified.

2. The herein-described bolt or headed pin, having at a point between the inside of its head and end a series of rolled circumferential enlargement-ribs extending somewhat transversely to its axis, substantially as described, and for the purpose specified.

3. The herein-described bolt or pin, having a series of circumferential enlargement-ribs *b* extending somewhat transversely to its axis at one portion and a rolled screw-thread at another portion, substantially as described, and for the purpose specified.

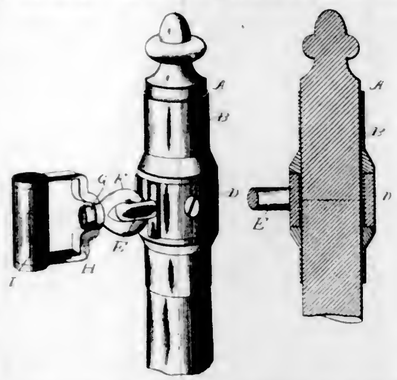
446,741. **FELLY-SCREW.** HORACE K. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed Dec. 8, 1890. Serial No. 373,880. (No model.)



Claim.—1. The herein-described screw for preventing fellies or analogous articles from splitting, consisting of a threaded body and head end, said head end being of less lateral projection than the highest part of the thread, substantially as described, and for the purpose specified.

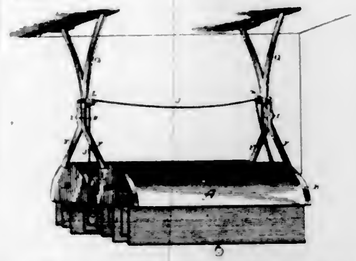
2. The herein-described screw for preventing fellies or analogous articles from splitting, consisting of a threaded body, gimlet-point, and head end, said head end being of no greater lateral projection than the highest part of the thread, substantially as described, and for the purpose specified.

446,742. **NECK-YOKE.** JOHN KLEPPINGER and WILLIAM H. MEAD, Rockville, Md. Filed Jan. 7, 1890. Serial No. 336,184. (No model.)



Claim.—The combination, with a neck-yoke bar, of the sleeve B, divided transversely to form the inner and outer members, having each an annular ring or shoulder C, the ring D, fitting around the meeting ends of the sleeve-sections between the parallel annular shoulders C and having the eye E, the loop F, hung in said eye and having the extended end G, and the ring-frame H, swiveled on the loop end G and having the roller I journaled in its outer end, substantially as set forth.

446,743. **WINDOW-SHADE OR MAP EXHIBITOR.** JOHN W. MEYER, Rock Island, Ill. Filed Aug. 19, 1890. Serial No. 362,405. (No model.)



Claim.—1. In an exhibitor composed of a cylinder which is divided into sections which are loosely connected together, suspending devices connected at one end to the sections and at their opposite ends to a support, substantially as shown.

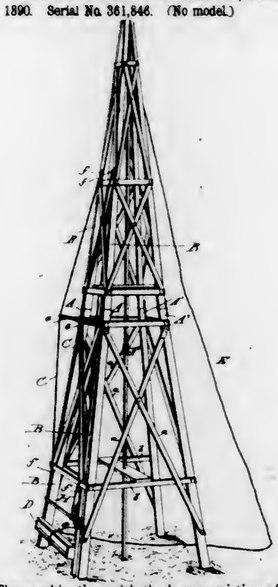
2. An exhibitor composed of a cylinder which is divided into sections which are hinged together, and rods which are pivoted to a support at their upper ends and engage each other and their lower ends diverging and connected to the sections, substantially as described.

3. In an exhibitor composed of a cylinder which is divided into sections which are hinged together, suspending rods connected at their upper ends to a support, at their lower ends to the sections, and provided with locks, substantially as set forth.

4. In an exhibitor, the combination of a support, a cylinder divided into sections which are hinged together, and operating-cords connected to the sections for opening and closing them, substantially as described.

5. In an exhibitor, the combination of a support provided with cord-guides, a cylinder divided into sections which are hinged together, suspending devices connected at one end to the sections and at their opposite ends to the said support, and operating-cords which are secured to the sections and pass over the said guides, substantially as set forth.

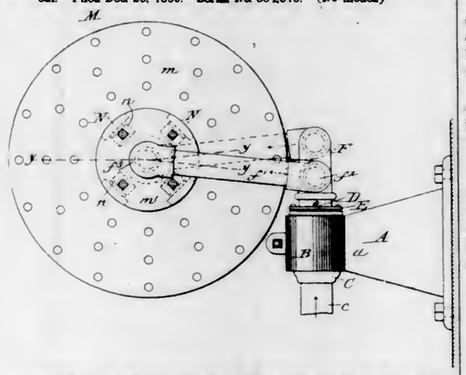
446,744. **WINDMILL-TOWER.** HEBER ROBINSON, Wankon, Iowa. Filed Aug. 12, 1890. Serial No. 361,846. (No model.)



Claim.—1. The combination, with the base consisting of the corner uprights, braced as shown, of a superstructure hinged thereto and provided with trussed beams B B, which are adapted to lie between the uprights A of the base, and a locking-lever for connecting said beams to the base, substantially as set forth.

2. In a windmill-derrick, the combination of a base having uprights A A, connected to each other on their inner sides, and a superstructure hinged to the uprights A′ and provided with trussed beams B B, said trussed beams carrying at their lower ends a locking-lever, the parts being organized so that the ends of the beams forming the superstructure will sit directly upon the ends of the uprights forming the base, and the lower or extended ends of the trussed beams B B lie within the uprights A A, substantially as set forth.

446,745. **HOSE-REEL.** WILLIAM T. Y. SCHENCK, San Francisco, Cal. Filed Dec. 20, 1889. Serial No. 334,373. (No model.)



Claim.—1. The combination of the aligned water-tubes G, the T-shaped coupling-piece mounted and turning on said tubes, the hose connected to the middle arm of the coupling-piece, and the reel mounted and turning on the tube-sections G, substantially as specified.

2. The combination, with the stand-pipe and the tubular system into which said pipe discharges, and which consists of the tubes *f f* and facing aligned tubes G, of the T-shaped coupling-piece mounted and rotatable on the tubes G, the reel mounted and rotatable on said tubes, and the hose attached to the middle arm of the T-shaped coupling-piece.

3. The combination, with the stand-pipe, the supported stuffing-box thereabove, the tube D, fitting and rotatable in said stuffing-box, and the system of tubing connected to the said tube and consisting of the tubes *f f* and aligned facing tubes G, of the T-shaped coupling-piece mounted and turning on the tubes G, the reel mounted and turning on said tubes, and the hose attached to the middle arm of the T-shaped coupling-piece.

4. The combination of the stand-pipe, the T-shaped coupling-piece F, having one lateral arm bent upward and again outward, so that it is higher than the opposite lateral arm, the aligned pipe-sections G, and the side pipe-sections *f′*, connecting the respective lateral arms of the T-shaped coupling-piece with the outer ends of the corresponding pipe-sections G, substantially as specified.

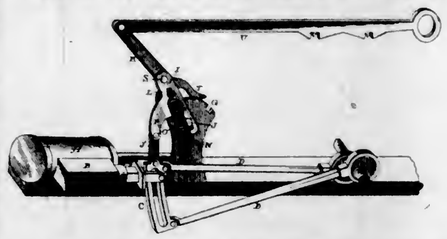
5. The combination, with the stand-pipe, the T-shaped coupling-piece, the pipe-sections *f f′*, and coupling-pieces *f³ f⁸*, of the pipe-sections G, having their facing ends connected by bars *g′* and provided at their opposite ends with rectangular rabbets *g²*, the brace-rod *f⁶*, the nuts *f⁷*, and the reel mounted on the pipe-sections G, substantially as specified.

6. The combination of a bracket A, secured to the wall of a building, a T-shaped coupling-piece carried by said bracket, and the reel mounted on said coupling-piece, said reel and coupling-piece being adapted to be rotated toward either side, substantially as and for the purpose specified.

7. In a swinging hose-reel, the pivotally-connected reel-carrying bracket having a hollow head communicating with the water-supply and a hollow arm communicating with the said head and the reel-hub.

8. In a swinging hose-reel, the combination of the pivotally-connected bracket having a hollow head communicating with the water-supply and a hollow arm communicating with said head, and a reel journaled in the bracket-arms and having a hollow hub communicating with the hollow arm of the bracket.

446,746. **REVERSING-GEAR FOR STEAM-ENGINES.** CHARLES SWAN, Corry, Pa. Filed Nov. 15, 1890. Serial No. 371,537. (Model.)



Claim.—1. The combination of the quadrant upon which the operating-lever is pivoted and to which the connecting-rod for making connection with the link is pivoted within the lever R, having its lower end provided with prongs, and the hand-rod U, connected to the lower end of the lever, substantially as shown.

2. The combination of the quadrant, an endwise-moving spring-actuated lever pivoted thereon and provided with a catch for engaging with the quadrant, a connecting-rod and the link for shifting the valve with the lever R, pivoted near its lower end, and the hand-rod U, substantially as described.

3. In a reversing-gear for a steam-engine, the combination of a pivoted vibrating lever and the hand-rod which is connected thereto with a spring-actuated endwise-moving lever and the quadrant upon which the spring-actuated lever is pivoted, the spring-actuated lever being connected to the link which shifts the valves, and provided with a catch for locking it in position, substantially as specified.

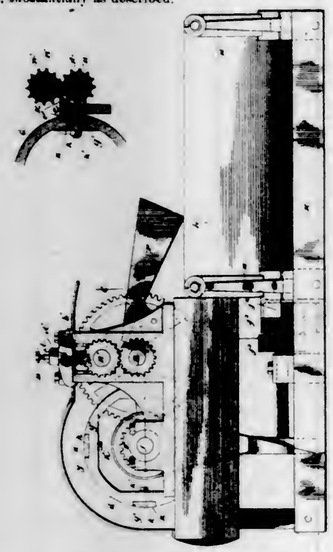
446,747. **CORN-HUSKING AND FODDER-CUTTING MACHINE.** JOSIAH A. WEBBER, Brooklyn, N. Y. Filed Aug. 14, 1889. Serial No. 320,718. (No model.)

Claim.—1. In a cutter, the revolving cutter-heads G, provided with the flanges *g* and recesses *g′*, in which are secured, tangentially, knives or cutters K, formed from blocks or bars having parallel edges, the cutting-edge of the knives being oblique to secure a shearing cut, the bevel of the knife-edge being on the inside and the corners of the cutting-edge being within the recess and against the wall thereof, so as to be guarded thereby as the knives revolve, substantially as described.

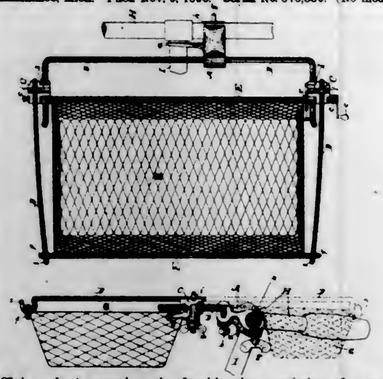
2. In a corn-husking machine, a pair of lever-arms connected by a side piece or guard and pivoted to the bed of the machine and having in their shorter arms bearings for one of the pairs of corn-husking

rollers, said lever-arm and side piece of metal in one piece, with one or more pairs of metal husking-rollers with alternate concave and convex sections lengthwise of the rollers, substantially as described.

3. In a corn-husking machine, a pair of lever-arms connected by a side piece or guard and pivoted to the frame or bed of the machine and having in their shorter arms bearings for one of the pairs of corn-husking rollers, said lever-arm and side piece being cast or made in one piece, substantially as described.



446,748. PARCEL-CARRIER FOR BICYCLES. MAURICE E. BLOOD, Kalamazoo, Mich. Filed Nov. 6, 1890. Serial No. 370,559. (No model.)



Claim.—1. A parcel-carrier for bicycles, consisting of a square or nearly square frame projecting from the handle-bar or handle-bar post of a bicycle, and a bag hanging down from the said frame and attached at its upper edges to the said frame in such a manner as to make a square opening to the bag, substantially as and for the purposes specified.

2. A parcel-carrier for bicycles, the receptacle being made of netting and of a form to have a bottom and sides rising up all around the bottom to form a square opening at the top, the upper edges of the net being supported by a frame which projects from the handle-bar or handle-bar post of the bicycle, substantially as and for the purposes specified.

3. In a parcel-carrier for bicycles, the receptacle being a bag having a windlass to support its rear upper edge and a rod running parallel with the windlass to support its front upper edge, the windlass adapted to roll the bag around itself and draw the front rod up close to and along the side of itself when the bag is rolled up, substantially as and for the purposes specified.

4. A parcel-carrier for bicycles, made to be secured to the handle-bar or handle-bar post of a bicycle, the receptacle being made in the form of a bag and adapted to be set either in front or at the rear of the bicycle handle-bar, substantially as and for the purposes specified.

5. In combination with a parcel-carrier for bicycles to be secured to the handle-bar of a bicycle, a stop or projection *a*, resting against the handle-bar post to prevent the carrier from turning on the handle-bar and dropping down, substantially as and for the purposes specified.

6. A parcel-carrier for bicycles, the receptacle being made in the form of a bag, in combination with side supports D D, bail B, casting A, thumb-screw *g*, and stop *a*, substantially as specified.

7. A parcel-carrier for bicycles, the receptacle being made in the form of a bag, in combination with the side supports D D, adapted to be set to project out forward from the handle-bar to the rear of the handle-bar or to lie parallel with the handle-bar, substantially as and for the purposes specified.

8. In a parcel-carrier for bicycles, secured to the handle-bar or handle-bar post of a bicycle, the receptacle being in the form of a bag, the combination of the grooved side blocks C C, side supports D D, and eyebolts *i i*, substantially as and for the purposes specified.

9. In a parcel-carrier secured to the handle-bar or handle-bar post of a bicycle, the receptacle being made in the form of a bag, a casting A, bail B, side blocks C C, side supports D D, and bag G, all arranged and adapted for use substantially as and for the purposes specified.

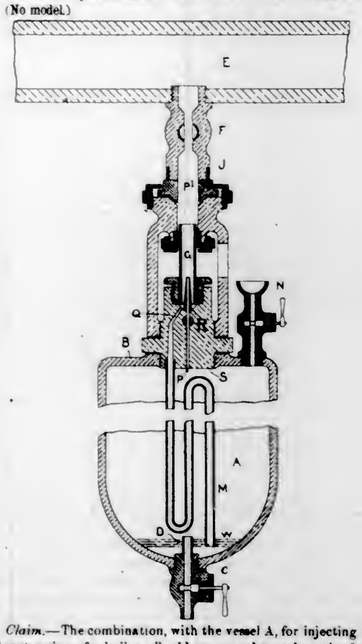
10. In a parcel-carrier secured to the handle-bar or handle-bar post of a bicycle, the casting A, bail B, side blocks C C, side supports D D, windlass E, and bag G, all arranged and adapted to be used substantially as and for the purposes specified.

11. In a parcel-carrier secured to the handle-bar of a bicycle, the casting A, bail B, side blocks C C, side supports D D, windlass E, front rod F, and bag G, all arranged and adapted for use substantially as and for the purposes specified.

12. In a parcel-carrier for bicycles, the receptacle being made in the form of a bag, a windlass or roller E, in combination with a bail B, having its outer ends projecting forward of the windlass to receive the ends of the rod F, substantially as and for the purpose specified.

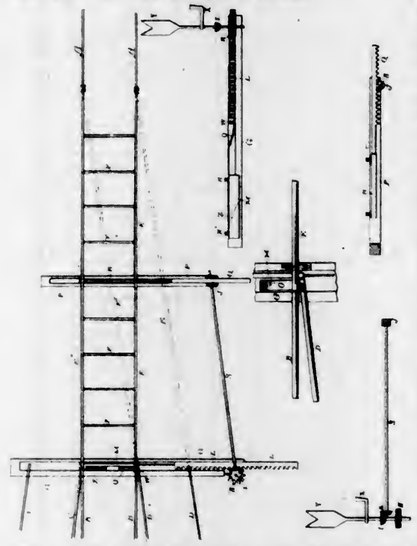
13. A parcel-carrier for bicycles, made to be secured to the handle-bar or handle-bar post of a bicycle, adapted to be rolled up and folded together to lie close to and parallel with the handle-bar, substantially as and for the purposes specified.

446,749. AUTOMATIC VISIBLE-FEED INJECTOR. ROBERT GOODBODY, Upton, Ireland. Filed Feb. 28, 1890. Serial No. 342,073. (No model.)



Claim.—The combination, with the vessel A, for injecting into the feed-water pipe of a boiler a liquid compound to reduce the formation of scale, and a vertical tubular connection between the upper end of said vessel and the feed-pipe, of the branch connection Q placed beneath the lower end of said vertical tubular connection, and the doubly-bent pipe M, located in said vessel and communicating with the lower end of said branch, substantially as shown and described.

446,750. RAILROAD-SWITCH. MARTIN HYNES, Hamilton, Minn. Filed Oct. 14, 1890. Serial No. 368,139. (No model.)

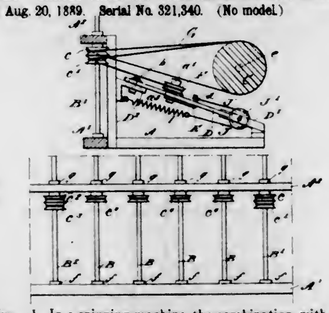


Claim.—1. The combination of the switch-rails, suitable head-blocks upon which the rails are supported, clutch-bars to which the rails are secured, and an operating mechanism whereby the motive power for moving the rails is applied to them both at their free end and at their center, substantially as shown.

2. The combination of the switch-rails, the head-blocks upon which the rails move, clutch-bars to which the rails are secured, rack-bars secured to the clutch-bars, a vertical operating-lever provided with operating-wheels, and the shaft provided with pinions, substantially as described.

3. The combination of the switch-rails, one of which is shorter than the other, the rails of the side track, the head-block G, the clutch-bar provided with an inclined plane or wedge, the rack-bar, the lever for moving the clutch-bar, and the short section of the rail W, which is pivoted to the head-block, substantially as specified.

446,751. SPINDLE-DRIVING DEVICE FOR SPINNING-MACHINES. SAMUEL JAMES and JEREMIAH K. SANDERS, Lebanon, Mo. Filed Aug. 20, 1889. Serial No. 321,340. (No model.)



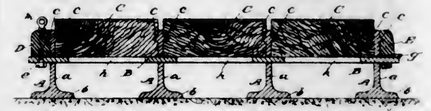
Claim.—1. In a spinning-machine, the combination, with a frame, a cylindrical roller, a series of spindles comprising a section, and loosely secured on the frame, a whirl having two grooves mounted on each end spindle of the section, and a single-grooved whirl attached to each intermediate spindle of the section, of an endless belt which engages with a half-turn the double and single grooves of the whirls on the end and intermediate spindles and alternately with the cylindrical roller, substantially as set forth.

2. In a spinning-machine, the combination, with a frame, a sliding tension device, a cylindrical roller, a series of revoluble spindles comprising a section and mounted on the frame, a double-grooved whirl for each end spindle of the section, and a single-grooved whirl for each intermediate spindle in the section, of an endless belt alternately engaged with the cylindrical roller and the whirls of the spindles and also with the sliding tension device, substantially as set forth.

3. In a banding and tension device for spinning-machines, the combination, with a frame, a cylindrical roller, a series of spindles, each having an attached grooved whirl, and an endless belt, of an automatic tension-regulating device comprising an extensible guideway, a sliding block adapted to travel on the guideway, a loose whirl mounted on a fixed stud-bolt attached to the sliding block, an automatic oiler for the loose whirl, a spiral spring which is attached to the frame and also to the sliding block by a flexible connection, and a pulley over which said connection passes, substantially as set forth.

4. In a band-tensioning device for spinning-machines, the combination of a slotted bar, a block arranged upon said bar and having a portion that works in the slot, a bolt passing through said block and bar, a spring connected with said block, and an idler-pulley mounted on the spindle of the bolt, substantially as specified.

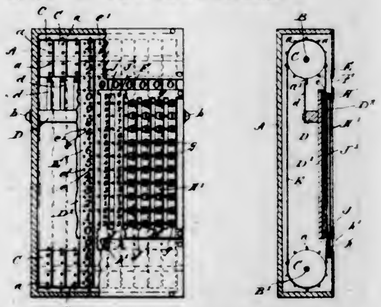
446,752. SIDEWALK. JULIUS F. JAQUET, Milwaukee, Wis., and WILLIAM MCAUSLAN, Brooklyn, N. Y. Filed Nov. 8, 1890. Serial No. 370,782. (No model.)



Claim.—1. A sidewalk composed of similar bracket-stands, each similarly apertured sidewise and provided with enlarged bases and lateral tongues on opposite sides above the apertures, elongated sills which slide in the apertures of the bracket-stands, tread-pieces having parallel edges which are located intermediately of the bracket-stands on the sills and adapted to interlock with the tongues on the bracket-stands, an abutment-block on one end of each sill, and clamping-blocks which hold the tread-pieces and bracket-stands clamped against the abutment-blocks, substantially as set forth.

2. In a sidewalk, the combination, with a series of similar bracket-stands laterally apertured to receive flat elongated sills and a series of elongated and perforated sills, of a series of tread-pieces located on the sills between the bracket-stands and interlocked with tongues that oppositely project from the sides of the bracket-stands, an abutment-block secured on one end of each sill, sliding clamping-blocks on the opposite ends of said sills, and tapering keys that are adapted to bind the clamping-blocks on the sills, substantially as set forth.

446,753. ADDING-MACHINE. ERI F. JEWETT, Newtown, Ohio, assignor, by mesne assignments, to Percy L. Jewett, same place. Filed Apr. 23, 1890. Serial No. 349,068. (No model.)



Claim.—1. An adding-machine consisting, essentially, of a case having a transverse slot therein and having two horizontal shafts fixed therein, pin-pulleys mounted on said shafts so that the pulleys on the upper and lower shafts will align, endless tapes extending over said pulleys, having series of digits and ciphers thereon, a vertically-movable card having longitudinal slots therein, said card being arranged between the tapes and the front plate of the case and having a double

series of digits arranged oppositely thereon between each of the slots in the card, and a longitudinally-slotted plate fixed to the front of the case, so as to cover the card, said plate having ten holes between each pair of slots, through which the digits on the card may be seen, substantially as described.

2. In an adding-machine, the combination, with a case having a slot and a series of tapes having numerals consecutively produced thereon, of a card having two series of numerals oppositely and alternately produced thereon, and an apertured plate, all arranged for operation substantially as set forth.

3. In an adding-machine, the combination, with a case having a slot, a series of endless tapes having numerals produced consecutively thereon, and a slotted and apertured plate, of a slotted card having two series of oppositely and alternately arranged numerals produced thereon, all arranged for operation substantially as set forth.

4. In an adding-machine, the combination, with a case having a slot, a series of endless tapes having numerals produced consecutively thereon and provided with a series of apertures, and pulleys having projecting pins adapted to engage the tape-apertures, of an adjustable slotted card having two series of oppositely and alternately arranged numerals produced thereon, and a slotted and apertured plate, all arranged for operation substantially as set forth.

5. In an adding-machine, the combination, with a case having a slot, a series of endless tapes having numerals produced consecutively thereon and provided with a series of apertures, and sets of pulleys having projecting pins, one of which on one pulley of each set is longer than the others, of an adjustable slotted card having two series of oppositely and alternately arranged numerals produced thereon, a slotted and apertured plate, and an alarm in the path of said long pin, all arranged for operation substantially as set forth.

6. In an adding-machine, the combination, with a case having a slot, a series of endless tapes having numerals produced consecutively thereon and provided with a series of apertures, and means for operating the tapes, and sets of pulleys having projecting pins, one of which on one pulley of each set is longer than the others, of an adjustable slotted card having two series of oppositely and alternately arranged numerals produced thereon, two of which—one of each series—occupy the space of a numeral on the tapes, and the slots of which are in line with the operating means of the tapes, a slotted and apertured plate the apertures of which align transversely the operating means of the tapes and the slots of which align the slots in the card, and an alarm in the path of the long pin aforesaid, all arranged for operation substantially as set forth.

7. In an adding-machine, the combination, with the tape-carrying pulleys having projecting pins in their faces, with one pin in one pulley longer than the rest, of metal tongues arranged to engage said long pin at each revolution of the pulleys, substantially as set forth.

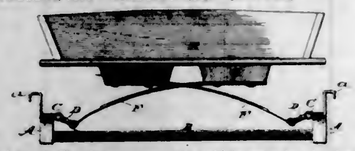
8. The combination, with a longitudinally-movable slotted card having the nine digits and cipher arranged oppositely thereon between the slots, of a slotted plate to cover the card, said plate having holes between the slots, in which each series of digits on the card may be made to appear, substantially as described, and for the purpose specified.

9. An adding-machine consisting, essentially, of a case A, having a slot F and shafts B B′ therein, the pulleys C, mounted on the shafts and having pins *a a′*, the tapes E, having perforations *e* and *e′* and having three or more series of digits and ciphers thereon, the card J, having slots *j* and having opposite series of digits and ciphers, as shown, and the plate H, having slots *f* and holes *g* therein, substantially as described.

10. The combination, with the case A, having slots F and A′, the shafts B and B′, the pulleys C thereon, and the tapes E upon said pulleys, of the card J, having the slots *j* and oppositely-arranged digits and ciphers, as shown, and having a perforation *h*, by means of which it is moved, and the plate H, having slots *f* and holes *g* therein, substantially as described.

11. The combination, with the case A and tapes E, arranged within the case as shown, of the bar D and grooved table or plate D′, substantially as described.

446,754. VEHICLE-SEAT. JAMES M. JOHNSON, Arneckeville, Tex. Filed Dec. 16, 1890. Serial No. 374,866. (No model.)

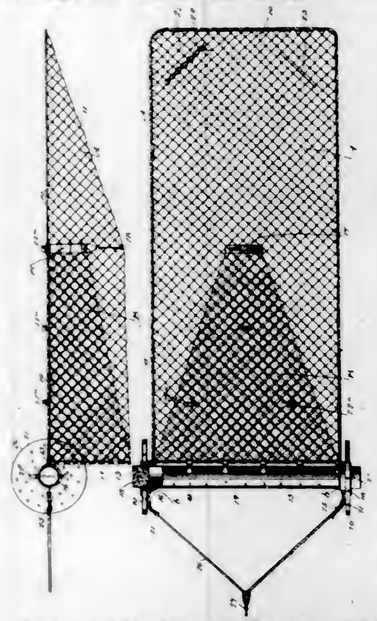


Claim.—1. The improvement in vehicle-seats herein described, comprising the shafts, each having two equal and similarly-projected cranks, the springs connected at their outer ends with the said cranks and extended inwardly therefrom past the middle of the seat and connected therewith, and the seat proper, all substantially as set forth.

2. The improved vehicle-seat comprising the seat proper, the blocks secured to the under side of such seat and arranged in pairs on opposite sides of the middle of the seat proper, the shafts having each two equal and similar cranks, and the springs secured at their outer ends to the cranks, extended thence inward past the middle of the seat, and secured to the blocks below the seat, all substantially as set forth.

3. The improved vehicle-seat herein described, consisting of the seat proper, provided on its under side with blocks G, the supporting-frame formed with side bars and the bar extended between and rigidly connecting the said side bars, the side bars being provided with hooks to engage the wagon-body and with bearings for the shafts, the shafts journaled to said side bars and provided each with two cranks, arranged one in front and the other in rear of the connecting-bar of the supporting-frame, and the springs secured at their outer ends to the cranks, extended thence inward and secured at their inner ends to the blocks below the seat proper, all substantially as and for the purposes set forth.

446,755. FISH-NET. LARENCE A. JOHNSON, San Francisco, Cal. Filed Aug. 1, 1890. Serial No. 360,700. (No model.)



Claim.—1. In a fish-net, the combination, with an outer net having a substantially flat upper surface and a full lower surface and a weighted mouth, the full lower surface being tapered from a point near the center upward in the direction of the flat upper surface, of an inner essentially conical trap-net, the enlarged end of which trap-net is secured to the mouth of the main net, while the inner or contracted end is provided with an opening and is attached to the upper face of the main net, substantially as shown and described.

2. In a fish-net, the combination, with a spar or boom and wheels mounted to revolve thereon, of a net of bag-like form having the upper edge of its mouth attached to the spar or boom and the portion below the boom or spar weighted, substantially as described.

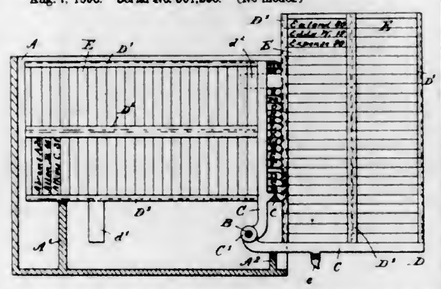
3. In a fish-net, the combination, with a hollow boom or spar provided with hollow whirls near its ends, of a net the upper portion of the mouth of which is attached to the spar and the lower portion weighted, and an essentially conical inner trap-net attached to the mouth of the main net and having its inner contracted end provided with an opening and supported from the top of the main net, as and for the purpose set forth.

4. In a fish-net, the combination, with a tubular boom or spar, a jack-stay attached to the same, and hollow whirls mounted to revolve upon the spar, of a net the upper surface of which is practically flat and the lower portion full, the upper edge of the mouth of the said net being attached to the jack-stay and its lower edge weighted, and an inner conical trap-net secured at its mouth to the mouth of the main net and provided with an opening in its inner or contracted end, and means for attaching the inner to the outer net and floating the upper portion of both nets, substantially as and for the purpose specified.

5. In a fish-net, the combination, with a tubular apertured boom or spar, a jack-stay secured to the said boom, and hollow apertured whirls mounted to revolve upon the boom, of a net the upper surface of which is practically flat and the lower portion full, the upper edge of the mouth of the said net being attached to the jack-stay and its lower edge weighted, and an inner conical trap-net secured at its mouth to the mouth of the main net and provided with an opening at its inner or contracted end, and means for attaching the inner to the outer net and floating the upper portion of both nets, substantially as and for the purpose specified.

6. As an improved article of manufacture, a net provided with an essentially flat upper surface and a full lower surface tapered away from the mouth, the said flat upper surface being provided with slot-like openings the walls of which are laced together, substantially as and for the purpose specified.

446,756. INDEX. WILLIAM A. JUDGE, Santa Barbara, Cal. Filed Aug. 7, 1890. Serial No. 361,290. (No model.)



Claim.—1. An index comprising a case open at its top and at one end, a rod extending transversely through the lower corner of the case near the open end, and a series of sheets pivoted upon the rod at their lower outer corners and each provided on its outer vertical edge with a laterally-extending ear, the said ears being arranged in different horizontal planes, substantially as set forth.

2. An index comprising a case open at its top and at one end, the series of sheets pivoted at their lower outer corners in the case at the lower end of the open side thereof and each having on its lower edge a guide projection *d′* and on its outer vertical edge a lateral ear, the ears being arranged in different horizontal planes, substantially as set forth.

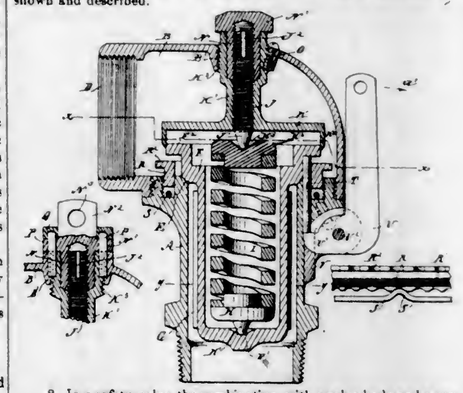
3. An index comprising a case open at its top and at one end, the inner transverse support A′, the lower outer support A^2, the transverse rod between the two supports, and the sheets mounted at their lower outer corners on said rod and provided with ears on their outer vertical edges arranged in step-like order, the lower edges of the sheets being adapted to normally rest on the projection A′ and their vertical edges to rest on the support A^2 when the sheets are swung up, substantially as set forth.

4. The combination, with the casing open at its top and at one end, of the bars C, pivoted therein and having horizontally-extending grooved bars or strips D′ to receive the slips between them and provided with ears *e* on their outer vertical edges, substantially as set forth.

5. The combination, with the casing open at its top and at one end and provided with the rod B, of the vertical bars C, curved inward at their lower ends and apertured to receive said rod, the ears *e* on the outer vertical edges of said bars, and the horizontal grooved strips D′, projecting from said bars and adapted to receive the slips, substantially as set forth.

446,757. SAFETY-VALVE. SEBASTUS B. KUNKLE, Fort Wayne, Ind., assignor to himself and William D. Bostwick, same place. Filed Sept. 22, 1890. Serial No. 365,819. (No model.)

Claim.—1. In a safety-valve of the class hereinbefore indicated, the combination, with the valve-body and the semi-spherical or hood-shaped cap B, secured thereto and having a side outlet, of the cup-shaped valve seated in said body, the helical spring contained in the latter, the vertically-adjustable flanged disk K, having the vertical tubular extension or hub K′, which screws through the rounded top of said cap, and the tension-adjusting screw working in said hub, as shown and described.



2. In a safety-valve, the combination, with a valve-body and a cap secured thereto, of a cup shaped valve held in the said valve-body, a spring pressing on the said valve, a flanged cap screwing in the said valve-body cap and engaging with its flange the upper end of the said valve, and a set-screw screwing in the said flanged cap and connected with the said spring to regulate the tension of the latter, substantially as shown and described.

3. In a safety-valve, the combination, with a valve-body and a cap secured thereto, of a cup-shaped valve held in the said valve-body, a spring pressing on the said valve, a flanged cap screwing in the said valve-body cap and engaging with its flange the upper end of the said valve, a set-screw screwing in the said flanged cap and connected with the said spring to regulate the tension of the latter, and a cylindrical key provided on its inside with a lug adapted to engage a groove in the said screw to turn the latter, substantially as shown and described.

4. In a safety-valve, the combination, with a screw for regulating the tension of the spring, of a disk in which screws the said screw, a cap in which screws the hub of the said disk, a lock-nut screwing on the said screw and provided with a head and a lug projecting therefrom and adapted to be engaged by a padlock, pins passing through the said nut-head into the said hub and cap, and a collar held on top of the said nut-head and provided on its under side with recesses engaging the upper ends of the said pins, substantially as shown and described.

446,758. DUMPING-CAR AND OPERATING MECHANISM THEREFOR. JOHN LAWSON, Michigamme, Mich. Filed Aug. 27, 1890. Serial No. 363,165. (No model.)

Claim.—1. The combination, with the downwardly-inclined main rails, the upwardly-inclined rails parallel with the main rails at the lower end of the main incline and terminating in hooks, and a checking mechanism between the main rails, of a dump-car traveling on the main rails and having outer wheels to engage the upwardly-inclined rails, and a depending projection to engage the checking mechanism before the car reaches said upwardly-inclined rails, substantially as set forth.

2. The combination, with the downwardly-inclined main tracks, the upwardly-inclined rails parallel with the lower end of the main track and terminating in hooks, and the car checking and returning mechanism having an operating-hook projecting between the main rails, of a car traveling on the main track and having outer wheels to ride up the upwardly-inclined rails, and a depending projection or staple to engage and be automatically disengaged from said hook, substantially as set forth.

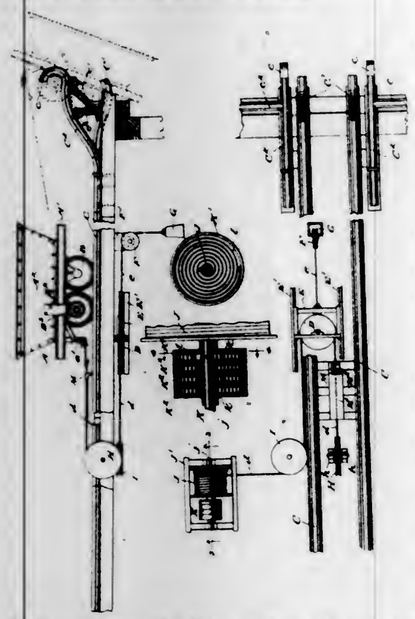
3. A dumping-car having an axle projecting through the main wheels and provided at each end with smaller wheels to engage an inclined track, and angle-plates fixed to the body so as to extend outwardly above the smaller wheels to engage the hooks at the end of the track, substantially as described.

4. A car-dump consisting in the main rails curved downward and upward, as at C′, and the upwardly-inclined parallel rails C^3, curved upward and inward above parts C′ to form hooks *c*, substantially as set forth.

5. The combination, with the main rails and inclined rails having their ends formed into hooks, of a car having one of its axles projected and provided with small wheels aligning the inclined rails, and angle-plates fixed to the car-sides to extend above the small wheels, substantially as described.

6. The combination, with a dumping-car mounted upon a suitable track and provided with a depending staple, of a support fixed be-

tween the track-rails, a detachable hook adapted to rest in the support and engage the staple of the car, and a rope fixed to the hook, a suitable pulley over which the rope passes, and a counterbalance to which the rope is secured, substantially as described.



7. The combination, with a dumping-car having a depending staple thereon, of a support mounted between the car-track rails, a detachable hook mounted in the support and adapted to engage the car-staple, a sliding weighted frame mounted adjacent to the car-tracks, a pulley pivoted centrally beneath the car-tracks, a pulley pivoted horizontally adjacent to the car-tracks, a drum mounted upon a spring-pressed shaft, and a rope fixed to the drum and extending over the above pulleys, the free end of the rope being attached to the hook, substantially as described.

8. The combination, with the slotted support fixed between the track-rails and provided with an inclined portion and inwardly-extending flanges, of the hook adapted to engage the car-staple, said hook having depending lugs to engage the support, as shown, and a suitable counter-balance connected with the hook, substantially as described.

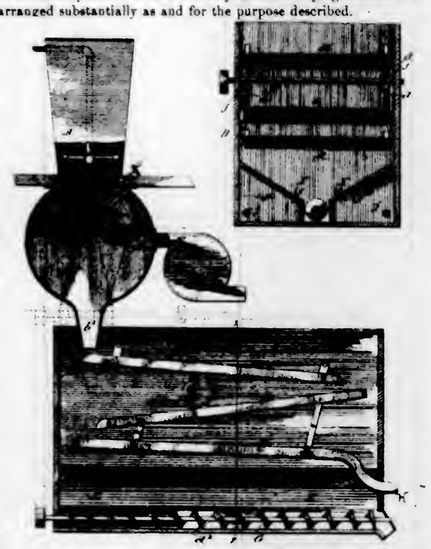
9. The combination, with the main rails having depressed curves C, and the upwardly-inclined parallel rails, hooked at c, of the car having front and rear axles provided with wheels traveling on the main rails, the smaller outer wheels on the rear axle to travel up said inclined rails, and the curved plates B^3, projecting outward from the car over the said smaller wheels and rotating in the said hooks c when the car dumps, the forward main wheels resting at this time in the curved portion C of the main rails, substantially as set forth.

446,759. MEANS FOR MANUFACTURING HOMINY-FLAKES OR CORN-FLAKES. JEREMIAH H. LITTLE, Yellow Springs, Ohio. Filed Sept. 27, 1890. Serial No. 366,402. (No model.)

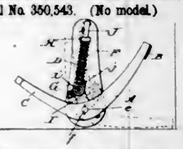
Claim.—1. In an apparatus for the manufacture of hominy-flakes, the combination of the cooking-vessel A, formed with a discharge-outlet, the crushing-rolls B B, located to receive the cooked particles from the vessel A, a casing surrounding such rolls, formed with a discharge-outlet, and a suction device connected with such casing, arranged to draw off the vapor as it exudes from the particles when crushed by the rolls B, substantially as and for the purpose described.

2. The combination of the cooking-vessel A, the crushing-rolls B, the casing C, the drying-chamber D, provided with a series of shaking-screens and a trough-like bottom, and means for forcing a hot-air blast upward into such chamber, substantially as and for the purpose described.

3. The combination, with the cooking-vessel A, the drying-chamber D, located below the same, the crushing-rolls, and the casing C, disposed between said chamber and vessel, of a suction device arranged to draw off the vaporized moisture as the same exudes from the crushed particles and before they enter the drying-chamber D, all arranged substantially as and for the purpose described.



446,760. DOOR-CHECK. JOHN H. MINIX, Eaton, Ohio. Filed May 3, 1890. Serial No. 350,543. (No model.)



Claim.—The improved door-stop, substantially as herein described and shown, consisting of the frame-plate F, having near one end the guide H, and provided near its opposite or lower end with the outwardly-projected stud *f*, the bar E, having centrally an opening *e*, fitting on the stud *f*, whereby the bar is pivoted on the said stud and is held thereby from upward or downward displacement at its pivotal point, the said bar being provided at one end with a cushion B and at its other end with a projection for engagement by the foot, a lever-arm I, projected upward from said bar E, the rod J, extended at its upper end through guide H and having its lower end pivotally connected at *i* with the upper end of lever I and provided with a shoulder *j*, and the spring D, fitted on rod J and bearing between the guide H and the shoulder *j*, all substantially as and for the purposes set forth.

446,761. BRACKET. GEORGE R. NAPIS, Brooklyn, N. Y. Filed Sept. 4, 1890. Serial No. 363,915. (No model.)

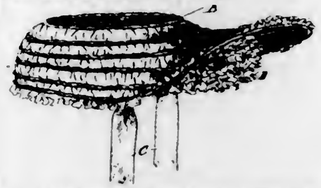


Claim.—1. The combination, with a pole, of a sleeve parted lengthwise and fitted to turn on the said pole, a pivot-pin held in the said sleeve, and an arm having an inclined slot through which passes the said pivot-pin, the said arm being adapted to engage the said pole with its inner straight edge and to turn on the said pivot-pin, substantially as shown and described.

2. The combination, with a pole, of a sleeve parted lengthwise and fitted to turn on the said pole, a pivot-pin held in the said sleeve, and an arm having an inclined slot through which passes the said pivot-pin, the said arm being adapted to engage the said pole with its inner straigbt edge and to turn on the said pivot-pin, and a socket formed on the said arm and supporting a stick, substantially as shown and described.

3. The combination, with a pole, of a sleeve parted lengthwise and mounted to turn on the said pole, a pivot-pin held on the said sleeve, a staple secured on the said pole and holding the said sleeve in place, and an arm having an inclined slot through which passes the said pivot-pin, the inner side of the arm being adapted to engage the said pole with its inner edge or to turn on the said pivot-pin, substantially as shown and described.

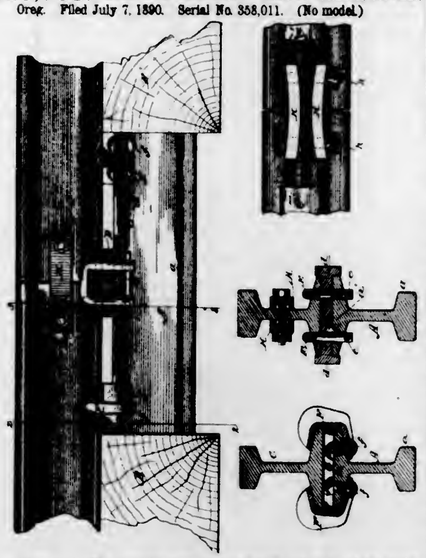
446,762. HEAD-COVERING. SIMON TUCH, New York, N. Y. Filed Dec. 2, 1890. Serial No. 373,313. (No model.)



Claim.—1. As a new article of manufacture, a head-covering comprising a cap-like body, and an outer covering having pliable stays and extending over the top and part of the sides of the body and secured thereto, a portion of the said covering projecting outward away from the side of the body, and adapted by reason of its pliable stays to be flared or bent to vary the appearance of the article, substantially as set forth.

2. As a new article of manufacture, a head-covering comprising a cap-like body provided on one side with an ornament, of a disk-like outer covering secured centrally to the top of the body and around its sides to the ornament, and flared outward over said ornament, said outer covering having a series of pocket-like welts and pliable stays within said welts to permit of varying the appearance of the article, substantially as set forth.

446,763. RAILROAD-RAIL JOINT. JOHN B. WALKER, Corvallis, Oreg. Filed July 7, 1890. Serial No. 358,011. (No model.)



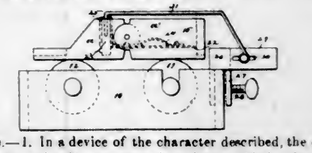
Claim.—1. The combination, with abutting rail ends, of the girder placed beneath the same and having clips that embrace the rail-flanges, and bolts passing through the latter and said girder for locking them together, as shown and described.

2. The combination, with the rails and the T-shaped joint-piece or girder arranged beneath the rail ends and having upwardly-projecting end clips F, which embrace the rail-flanges, of the detachable central seat D, resting on said girder and having vertical lips *d* along its lateral edges, as shown and described.

3. The combination, with the joint-piece or girder and abutting rail ends, of a detachable seat for the latter, having lateral flanges abutting the rail-flanges and curved, as described, to give it a certain degree of elasticity, as shown and described.

4. The combination of the curved fish-plates, the girder having end clips, the central seat, and side lips or flanges, and the U-bolts, all as shown and described, for the purpose specified.

446,764. TEST-TRAM OR LEVELING DEVICE FOR LEVELING OR TRAMMING ROLLS. JOSEPH P. ADAMS, Ozark, Mo. Filed Apr. 1, 1890. Serial No. 346,149. (No model.)



Claim.—1. In a device of the character described, the combination, with a rear leveling or tramming plate, a side bar in one piece secured to one end of the plate, and a sectional side bar secured to the other end of the leveling or tramming plate, the outer section whereof is capable of vertical movement, of a front leveling-bar secured at one end to the forward extremity of the one-piece side bar, the said leveling-bar being constructed of such a length that its free end will closely approach the outer end of the movable section of the sectional side bar, substantially as shown and described.

2. In a device of the character described, the combination, with a rear leveling or tramming plate, a side bar in one piece secured to one end of the plate, and having a level in its upper surface and a sectional side bar secured to the other end of the leveling or tramming plate, the outer section whereof is capable of vertical movement, of a front leveling-bar secured at one end to the forward extremity of the one-piece side bar, the said leveling-bar being provided with a glass in its upper surface and constructed of such a length that its free end will closely approach the outer end of the movable section of the sectional side bar, substantially as shown and described.

3. In a device of the character described, the combination, with a rear leveling or tramming plate, a side bar in one piece secured to one end of the plate, having a level in its upper surface, and a sectional side bar secured to the other end of the leveling or tramming plate, the outer section whereof is capable of vertical movement, of a front leveling-bar secured at one end to the forward extremity of the one-piece side bar, the said leveling-bar being provided with a glass in its upper surface and constructed of such a length that its free end will closely approach the outer end of the movable section of the sectional side bar, an intermediate cross-bar uniting the one-piece side bar and the rear section of the sectional side bar, and a dust-plate adapted to cover the space between the side bars, the front leveling-bar, and intermediate cross-bar, the said dust-plate being removably secured to the device, substantially as shown and described.

4. In a device of the character described, the combination, with a rear leveling or tramming plate, a side bar constructed in one piece, provided near its forward end with a level glass and integral with one end of the leveling-plate, a shorter side bar integral with the opposite end of the plate and provided with a hinged extension, a cross-bar uniting the fixed side bars, and a front or leveling bar detachably secured at one end to the forward extremity of the one-piece side bar, the free end of which leveling-bar is made to closely approach the outer end of the hinged side section, of a dust-plate attached to the intermediate cross-bar and covering the space between the side bars, the intermediate cross-bar, and the front or leveling bar, a bracket-bar adapted to be attached to the frame of the rolls, and clamping-bars adjustably secured to the bracket-bar and removably attached to the intermediate cross-bar, substantially as shown and described, and for the purpose specified.

5. The combination, with a tram for leveling and tramming grinding-rolls, of a frame adapted to be attached to the frame of the rolls and provided with backwardly-extending adjustable bars adapted to engage the intermediate cross-bar of the tram, substantially as shown and described.

446,765. SOLDERING-TOOL. EDWIN L. BARBER, Henrietta, Tex. Filed July 12, 1890. Serial No. 358,585. (No model.)

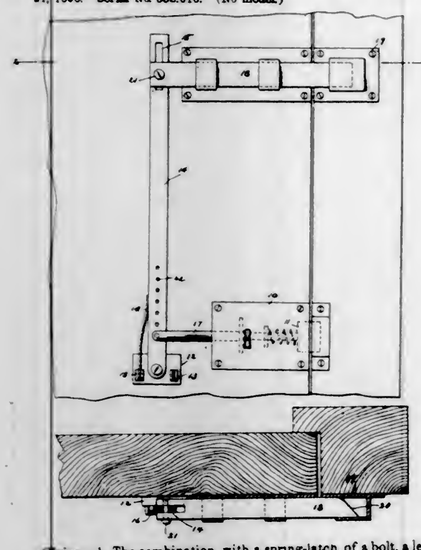
Claim.—1. The combination, with the sleeve P, having an interiorly-threaded upper end and a transverse slot adjacent thereto, the copper soldering-point secured in said end and having recesses *a* around

its base to form passages between it and the sleeve, of the burner-tube D within the sleeve and having a transverse head c adjacent to said slot and the base of the soldering-point and provided with flame-openings, a gasoline-reservoir, and a valved passage communicating therewith and discharging into the said tube, substantially as described.



2. The combination, with the sleeve or casing and the soldering-point, of the burner-tube having a head provided with flame-passages, a reservoir, a pipe leading therefrom and coiled spirally around the tube from its upper end downward, and a passage leading from the lower end of the pipe and having a valved opening discharging into the said tube, substantially as described.

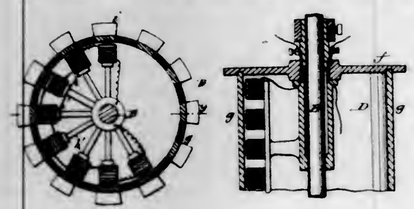
446,766. LATCH. JOHN BRADLEY, Philadelphia, Pa. Filed May 21, 1890. Serial No. 352,610. (No model.)



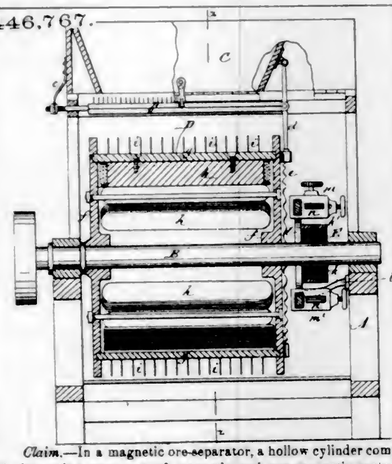
Claim.—1. The combination, with a spring-latch, of a bolt, a lever-bar pivoted at one end near the rear end of the latch and having its other end connected to the bolt, and a trip-rod pivoted to the lever-bar between its pivot and connection with the bolt and adapted for engagement with the rear end of the bolt of the latch, substantially as described.

2. The combination, with a spring-latch and a bolt above or below the latch, of a plate at the rear of the latch-casing, a lever-bar having one end pivoted to the plate and its other end slotted and connected to the bolt by a pin or its equivalent, a spring secured to the plate and having its free end engaging the lever-bar, and a trip-rod pivoted to the lever-bar between its pivot and connection with the bolt and projecting into the rear end of the latch-casing, substantially as herein shown and described.

446,767. MAGNETIC ORE-SEPARATOR. CHARLES G. BUCHANAN, New York, N. Y. Filed Feb. 25, 1890. Serial No. 341,710. (No model.)

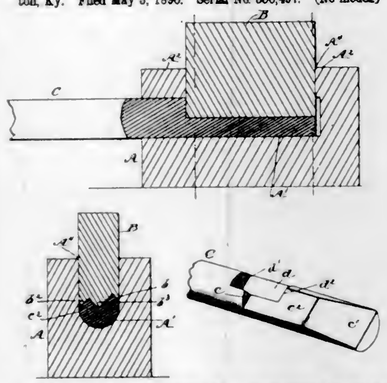


446,767.



Claim.—In a magnetic ore-separator, a hollow cylinder composed of alternating segments of magnetic and non-magnetic material, a series of electro-magnets arranged to polarize the magnetic portions of the cylinder, and means for reversing the polarity of the electro-magnets, substantially as specified.

446,768. DIE FOR MAKING BOLTS. THOMAS J. BUSH, Lexington, Ky. Filed May 3, 1890. Serial No. 350,497. (No model.)



Claim.—The mandrel formed with the projected flat surfaces b' b^3 and cut away to form the clearance b, and formed with the central angular projection b^3 at one end of the mandrel, the same to be used jointly with the die A, formed with a seat A′ for the blank and an aperture A^4 for the mandrel, substantially as described.

446,769. DENTISTRY. JOSEPH W. CLOWES, New York, N. Y. Filed Nov. 1, 1890. Serial No. 370,006. (No model.)

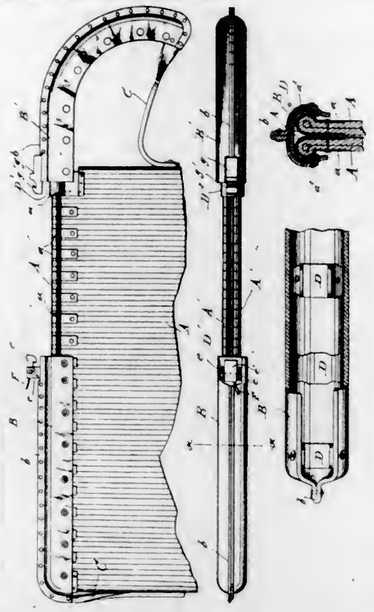


Claim.—1. That improvement in the art of dentistry which consists in combining with the teeth suitable plastic fillings which are extended between the teeth and are molded upon the gums, substantially as herein shown and described.

2. The combination, with connected plastic fillings inserted in two or more teeth, of a strengthening-bar inserted in the teeth and inclosed in the plastic filling, substantially as specified.

3. The combination, with fillings inserted in cavities in adjacent teeth, of a connective body of plastic material formed integrally with the fillings molded upon the gums and carved in imitation of teeth, substantially as specified.

446,770. MAIL-BAG FASTENING. STEWART K. DAVIS, AUGUST F. STOCKLEY, and WILLIAM I. BARNETT, Buena Vista, Colo. Filed July 8, 1890. Serial No. 358,029. (No model.)



Claim.—1. The combination, with a mail-bag having its upper edges doubled to form rolls, of sliding sleeves embracing the rolls and adapted to be locked together, substantially as described.

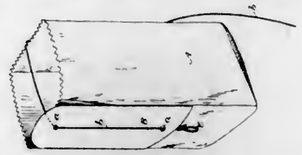
2. The combination, with a mail-bag having its upper edges formed into rolls, of sliding sleeves embracing the rolls, said sleeves having their inner ends provided with interlocking hooks and their outer ends connected with the bag by a flexible strip, substantially as described.

3. The combination, with a mail-bag having its upper edges formed into rolls strengthened by metal clasps, of sliding sleeves mounted on the rolls, said sleeves having their outer ends flexibly connected with the bag, their inner ends provided with suitable catches, and having metal strengthening-ribs fastened therein, substantially as described.

4. The combination, with a mail-bag having its upper edges formed into rolls, of sleeves adapted to slide on the rolls, said sleeves having suitable catches at their abutting ends and having longitudinal ribs thereon formed by doubling and fastening the material of the sleeve, substantially as described.

5. In a mail-bag fastening, the combination of two sleeves adapted to slide on the united upper edges of the bag, the abutting ends of the sleeves being provided with suitable catches and with ribs extending one into the other, substantially as described.

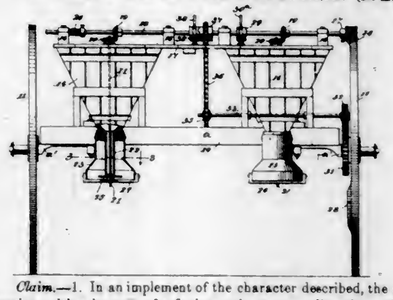
446,771. PAPER BAG. CHARLES W. FISHEL and FRANK E. SWEET, Carbondale, Colo. Filed Sept. 23, 1890. Serial No. 365,903. (No model.)



Claim.—1. A bag provided with a flap having apertures near its ends and with a cord secured to the bag at the fixed end of the flap and passed through the apertures of the said flap, substantially as described.

2. The combination of the bag A, the apron B, provided with holes *a a* and attached to the bag at one end, and a looped string *b*, secured at one end to the bag and passing through the holes of the apron, substantially as specified.

446,772. POISON OR FERTILIZER DISTRIBUTER. CHARLES K. FOSTER, Iola, Wis. Filed Nov. 1, 1890. Serial No. 370,041. (No model.)



Claim.—1. In an implement of the character described, the combination, with a hopper, of a flaring casing surrounding the outlet of the hopper, and a rotary disk within the casing below the hopper-outlet, as and for the purpose specified.

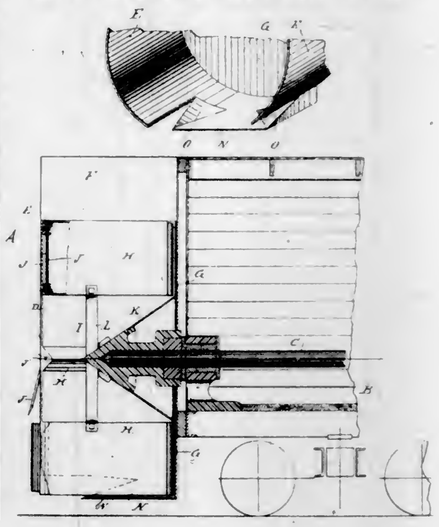
2. In an implement of the character described, the combination, with a hopper and an attached outlet-tube, of a flaring casing surrounding the tube, a rotary disk within the casing beneath the tube, and an intermittent driving mechanism connected with the disk, as and for the purpose specified.

3. In an implement of the character described, the combination, with a hopper and a shifting shaft above the hopper, of a flaring casing attached to the hopper surrounding the outlet, a shaft passed through the hopper, a gear-connection between the shifting shaft and hopper, and a disk secured to the hopper-shaft below the outlet of said hopper, as and for the purpose specified.

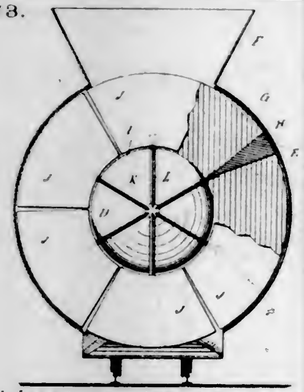
4. In an implement of the character described, the combination, with the hopper, an outlet-tube secured thereto, a casing surrounding the tube, and a rotary disk within the casing beneath the tube, of a laterally-shifting shaft, a wheel provided with cam-faces adapted to engage with the shaft, a driving mechanism connected with the shifting shaft, and a connection between the said shaft and the said disk, as and for the purpose specified.

5. In an implement of the character described, the combination, with the supporting-wheels of the implement, one of which is provided with cam-surfaces, a hopper, a flaring casing surrounding the hopper, a shaft journaled in the hopper and casing, and a disk secured to the shaft beneath the hopper-outlet, of a line-shaft capable of endwise movement and adapted for engagement with said cam-surfaces, a gear-connection between the line-shaft and the hopper-shaft, and a driving mechanism connected with the line-shaft, substantially as shown and described.

446,773. ROTARY SNOW-PLOW. JOHN W. HAUGHAWOUT, Omaha Nebr., assignor to the Leslie Brothers Manufacturing Company, Paterson, N. J. Filed May 21, 1890. Serial No. 352,605. (No model.)



446,773.



Claim.—1. In a rotary snow-plow, a wheel comprising a back plate mounted to turn, a series of paddles extending radially and at right angles from the front face of the said back plate, the apexes of the paddles terminating near the center of the back plate and arranged parallel to the axis of the wheel, so as to form a central space on the face of the said back plate, and a cone secured with its base centrally on the face of the said back plate and extending freely into the said central space, substantially as shown and described.

2. In a rotary snow-plow, the combination, with a casing, of a wheel mounted to turn therein and comprising a back plate, a series of paddles extending radially and at right angles from the front face of the said back plate, the apexes of the paddles terminating near the center of the back plate and arranged parallel to the axis of the wheel, so as to form a central space on the face of the said back plate, and a cone secured with its base centrally on the face of the said back plate and extending freely into the said central space, substantially as shown and described.

3. In a rotary snow-plow, a wheel comprising a back plate mounted to turn, a series of paddles extending radially and at right angles from the front face of the said back plate and terminating near the center of the back plate to form a central space in the wheel, and reversible cutters held on the front ends of the said paddles, substantially as shown and described.

4. In a rotary snow-plow, a wheel comprising a circular back plate mounted to turn, a series of wedge-shaped paddles extending radially and at right angles from the face of the said back plate, the apexes of the paddles terminating near the center of the back plate, so as to form a central space in the wheel, and reversible cutters held on the front ends of the said paddles, substantially as shown and described.

5. In a rotary snow-plow, a wheel comprising a back plate mounted to turn, a series of paddles extending radially and at right angles from the front face of the said back plate and terminating near the center of the said back plate to form a central space in the wheel, a cone secured with its base centrally on the face of the said back plate and extending into the said central space, and reversible cutters held on the front ends of the said paddles, substantially as shown and described.

6. In a rotary snow-plow, a wheel comprising a circular back plate mounted to turn, a series of wedge-shaped paddles extending radially and at right angles from the face of the said back plate, the apexes of the paddles terminating near the center of the back plate, so as to form a central space in the wheel, and radially-arranged cutters connecting with the apexes of the said wedge-shaped paddles and located at or near the middle of the same, substantially as shown and described.

7. In a rotary snow-plow, a wheel comprising a back plate mounted to turn, a series of paddles extending radially and at right angles from the front face of the said back plate and terminating near the center of the back plate to form a central space in the wheel, a cone secured with its base centrally on the face of the said back plate and extending into the said central space, and radially-arranged cutters extending from near the apex of the said cone to the apexes of the said wedge-shaped cutters, substantially as shown and described.

8. In a rotary snow-plow, a circular casing open in the front and cut out at the bottom of its rim, and a horizontal bottom arranged below the cut-out part of the rim, substantially as described, so as to deliver the snow near the ground to the rear of the casing, as set forth.

9. In a rotary snow-plow, a circular casing open in the front and cut out at the bottom of its rim, a horizontal bottom arranged below the cut-out part of the rim, substantially as described, so as to deliver the snow near the ground to the rear of the casing, and gussets arranged in the sides of the said bottom and leading up at their inner ends to the cut-out part of the rim, substantially as shown and described.

446,774. FOLDING CUP. HOBART R. HAYNES, Westminster, Mass. Filed Nov. 20, 1890. Serial No. 372,050. (No model.)



Claim.—1. A folding cup consisting of a series of leaves in the shape of spherical lunes hinged together at their ends and overlapping one another, substantially as shown and described.

2. A folding cup comprising a series of leaves formed in the shape of spherical lunes and overlapping one another, and pivots for connecting the ends of the several leaves with each other, substantially as shown and described.

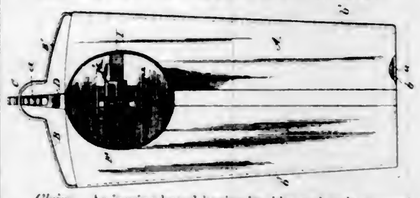
446,775. ROOFING MATERIAL. JOSEPH N. HOPPER, Pawnee City, Nebr. Filed Oct. 14, 1890. Serial No. 368,104. (No specimens.)



Claim.—1. A roofing material composed of a layer of reticulated net or webbing having its interstices or meshes filled with and retaining a plastic compound, combined with an adhering layer or backing of fibrous material, substantially as shown and described.

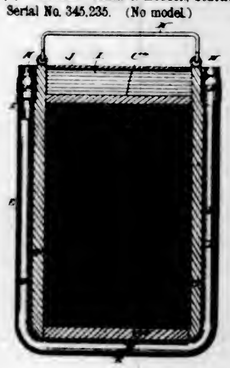
2. A roofing material composed of a layer of woven wire having its interstices or meshes filled with and retaining a plastic compound, combined with a layer or backing of fibrous material, also coated with the same plastic filling compound and pressed into adhering union with the woven-wire layer, substantially as shown and described.

446,776. IRONING-BOARD. SCHOOLER C. HORN, Bladensburg, Ohio. Filed Nov. 3, 1890. Serial No. 370,235. (No model.)



Claim.—An ironing-board having its sides and ends grooved, and the clamp provided with a top cross-bar and having its side and lower cross-bars fitted to the edge groove of the board, combined with the spring secured to the board and having notches for engagement by the top cross-bar of the clamp, substantially as set forth.

446,777. SLATE. EMMA C. HUDSON, Seattle, Wash. Filed Mar. 25, 1890. Serial No. 345,235. (No model.)



Claim.—1. In a slate, the combination, with a slate-frame provided with grooves in the outer edges of its sides and bottom, of a V-shaped tube fitted into the said grooves and adapted to be filled with water, substantially as shown and described.

2. In a slate, a tube secured in the slate-frame, adapted to be filled with water, and provided at its ends with sponge-receptacles communicating with the tube, substantially as shown and described.

3. In a slate, a tube adapted to be secured in the slate-frame and adapted to be filled with water, sponge-receptacles formed at the ends of the said tube and communicating therewith, and a cap for closing the mouth of each of the said receptacles, substantially as shown and described.

4. In a slate, a tube adapted to be secured in the slate-frame and adapted to be filled with water, sponge-receptacles formed at the ends of the said tube, a cap for closing the mouth of each of the said receptacles, and a perforated bottom held in each of the said receptacles, substantially as shown and described.

5. In a slate, the combination, with a slate-frame provided in the outer edges of its sides and bottom with grooves, of a tube fitted in the said grooves, a sponge-receptacle formed at each end of the said tube and communicating therewith, and a cap for closing the said sponge-receptacle, substantially as shown and described.

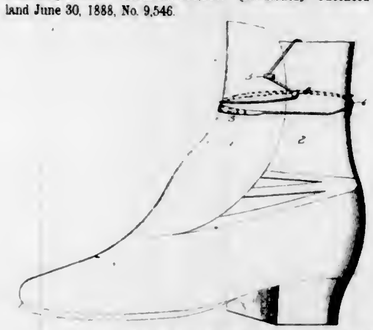
6. In a slate, the combination, with a slate-frame provided in the outer edges of its sides and bottom with grooves, of a tube fitted in the said grooves, a sponge-receptacle formed at each end of the said tube, a cap for closing the said sponge-receptacle, and a perforated bottom held in the said sponge-receptacle, substantially as shown and described.

7. As a new article of manufacture, a slate provided with a tube embedded in the sides and bottom of its frame, said tube being provided with sponge-holders, a box or compartment in the top of the frame and having a lid, and a handle pivoted to the said top, as set forth.

446,778. PERSPIRATION-POWDER. SARAH G. HULL, Oklahoma, Oklahoma. Filed Nov. 18, 1890. Serial No. 371,833. (No specimens.)

Claim.—The deodorizing composition for topical application to the human body, which consists of quinine and finely-pulverized burnt alum, in about the proportions of twenty grains of the former to eight ounces of the latter, substantially as specified.

446,779. SHOE-FASTENING. FREDERICK JENNER, Yeovil, England, assignor to Edward John Lucas and Harry Jenner, Johnstown, N. Y. Filed Aug. 7, 1890. Serial No. 361,267. (No model.) Patented in England June 30, 1888, No. 9,546.



Claim.—The combination, with a shoe, of a strap or cord secured to one of the flaps thereof, a lacing-stud secured to the other flap, a retaining or fastening device secured to the flap, to which the strap or cord is attached, and a loop secured to the back of the shoe, substantially as described.

446,780. CAR-ROOF. CURTIS M. JENNINGS, St. Louis, Mo. Filed Aug. 30, 1890. Serial No. 363,490. (No model.)



Claim.—1. In a car-roof, the combination of the sheets united at their sides by means of joints consisting of double bends forming a rib and a nailing-flange on one of the sheets, a single bend forming a flange on the other sheet, and a cap covering said rib and flange and riveted thereto, substantially as shown and described.

2. A car-roof consisting of sheets united at their sides by joints consisting of double bends in one of the sheets, forming a rib and a nailing-flange, a single bend in the other sheet, forming a flange fitting against said rib, a cap covering said flange and rib and riveted thereto, and such sheets being further united at their ends by joints consisting of double bends in one of the sheets, forming a rib and a nailing-flange, and a double bend in the other sheet, forming a rib covering the rib having a nailing-flange, substantially as set forth.

3. In a car-roof, the combination of the sheets united at their sides and ends by suitable joints, and caps covering the corners of the sheets and bolted to the framing of the car-roof, said caps having grooves to receive the joints of said sheets, and projections between the grooves, which rest upon said sheets and having flat upper surfaces to support the running-board, substantially as set forth.

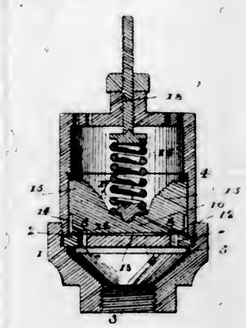
4. In a car-roof, the combination of the sheets having joints at their sides and ends and caps for covering the corners of the sheets, part of said caps being perforated for the passage of bolts by which the running-board is secured to the car, and the remainder of said caps having downwardly-projecting stems by which they are clamped upon the sheets, and all of said caps having grooves to receive the joints of the sheets, substantially as and for the purpose set forth.

446,781. TENON FOR BLIND-SLATS. ANTON KNEIP, Maspeth, N. Y. Filed Aug. 21, 1890. Serial No. 362,631. (No model.)



Claim.—A sheet-metal tubular tenon formed integral with a pair of oppositely-arranged arms, one of which is provided with a slot and the other with a prong or tongue-piece on its extremity arranged approximately at right angles to such arm to pass through the blind-slat and enter into interlocking engagement with the opposite arm of the tenon, substantially as shown and described.

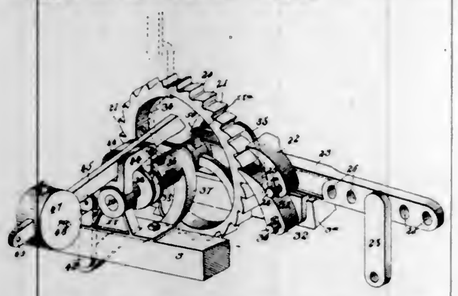
446,782. SAFETY-VALVE. JOHN LOFTUS, Albany, N. Y., assignor of one-half to Ezra W. Smith, same place. Filed Sept. 8, 1890. Serial No. 364,339. (No model.)



Claim.—1. In a safety-valve, the combination, with the base and casing, of a disk having an annular opening and two upwardly-projecting flanges on each side thereof, forming valve-seats, the valve having corresponding downwardly-projecting flanges corresponding with the flanges in the disk and having holes or openings at one side of the center and upwardly-projecting radial wings, a screw-rod passing through the end of the casing, and a coiled spring interposed between the valve and said rod, substantially as described.

2. In a safety-valve, the combination, with the base having screw-threaded upper end and an annular shoulder, the casing connected with said base, closed at its top, and provided with a number of escape-openings, the disk having annular opening, upwardly-projecting annular flanges, and connecting-ribs, said disk being confined between the shoulder in the base and the end of the casing, of the valve having the annular downwardly-extending flanges seated upon the flanges of the disk, a series of holes at one side of the center thereof and upwardly-projecting radial wings, the regulating-screw, the coiled spring, and the washers against which the ends of the spring bear, substantially as described.

448,783. WIND-WHEEL. JOHN M. LOWE, Butler, Ind. Filed Sept. 19, 1890. Serial No. 365,487. (No model.)



Claim.—1. In a regulator for windmills, the combination, with a ratchet-wheel provided with a portion of a flange on one side of its periphery, a shaft on which the wheel is mounted, and devices controlled by said wheel for automatically throwing the windmill out of gear, of a pawl adapted to engage one of the ratchet-teeth when the wheel is at rest midway between the ends of said flange portion, a horizontal lever fulcrumed on said shaft and adapted for connection at its outer end with the pump-rod, and a pawl pivoted to said lever and adapted to rest upon said flanged portion, substantially as and for the purpose set forth.

2. In a windmill-regulator, the combination of a shaft, a ratchet-wheel mounted loosely thereon, means for turning said wheel, a lug projecting from one side of the periphery of said wheel, a sliding sleeve on the shaft provided with a lever having a pivoted link at its outer end adapted for connection with the wire for throwing the windmill into and out of gear, and a trip-lever adapted to slide the sleeve on its shaft, thus throwing aforesaid lever out of engagement with said lug, substantially as set forth.

3. In a windmill-regulator, the combination of a shaft, a wheel mounted loosely on said shaft and provided with a lug on one side of its periphery, a sliding sleeve on said shaft provided with a groove at one end and a lever at the other end adapted for connection with the wire that throws the windmill into and out of gear and engaged by said lug, and a trip-lever provided with a projection for engagement in said groove, substantially as set forth.

4. In a windmill-regulator, the combination of a shaft, a wheel mounted loosely on said shaft and provided with a lug on one side of its periphery, a sliding sleeve on said shaft provided with circumferential flanges at one end, forming a groove between them, and a lever at the other end adapted to be connected with the wire that throws the windmill into and out of gear and engaged by said lug, and a trip-lever provided with a pendent projection for engagement with the groove between said flanges, substantially as set forth.

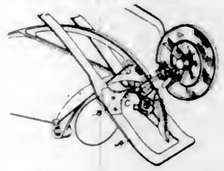
5. In a windmill-regulator, the combination of a shaft, a ratchet-wheel mounted loosely on said shaft, means for turning said ratchet-wheel, a sliding sleeve on said shaft, a lever projecting from said sleeve and adapted to be moved by said wheel, a trip-lever, means in connection therewith for sliding said sleeve on its shaft, and a stop on the wheel adapted to engage the inner end of said trip-lever, substantially as and for the purpose set forth.

6. In a windmill-regulator, the combination of a shaft, a wheel mounted loosely on said shaft and provided with a lug on one side of its periphery, a sliding sleeve on said shaft provided with a groove at one end and a lever at the other end adapted for connection with a wire which throws the windmill into and out of gear and engaged by said lug, a pivoted trip-lever having a projection received by said groove, and a stop on one side of the wheel adapted to engage the inner end of the trip-lever, substantially as set forth.

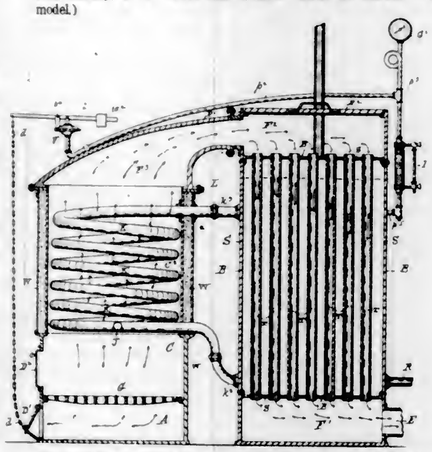
7. In a windmill-regulator, the combination of a ratchet-wheel, a shaft on which it is mounted, and devices controlled by the wheel for automatically throwing the windmill out of gear, said ratchet-wheel having a weighted portion and a blank portion or flange, a horizontal lever adapted for connection with the pump-rod, and a pawl turned by the lever adapted to rest upon said blank portion; all substantially as and for the purpose set forth.

446,784. GRAIN-BINDER. GEORGE A. LOWRY, Des Moines, Iowa, assignor to the Alliance Twine Company, same place. Filed June 9, 1890. Serial No. 354,817. (No model.)

Claim.—In a grain-binder, the combination of the knotting mechanism, the rotating disk, and the needle-bar with the breast-plate provided with a projecting finger and a spring secured to the opposite side of the needle-slot from that from which the finger projects and bearing upon the side of such finger nearest the knotting mechanism, substantially as and for the purpose set forth.



446,785. STEAM-BOILER. JOHN MACCORMACK and HARRY L. VAN ZILE, Albany, N. Y. Filed Mar. 6, 1890. Serial No. 342,852. (No model.)



Claim.—The combination, with a boiler having vertical descending flues, a bottom flue provided with an exit and connecting with the lower ends of said vertical flues, and a top flue connecting with the upper ends thereof, of a fire-chamber provided with a top flue connecting with the top flue of the boiler, a helically-coiled pipe arranged within said fire-chamber, with the lower end of said coil connecting with the boiler near its bottom, and the upper end of said coil connecting with the top of said boiler below its water-line, substantially in the manner as and for the purposes set forth.

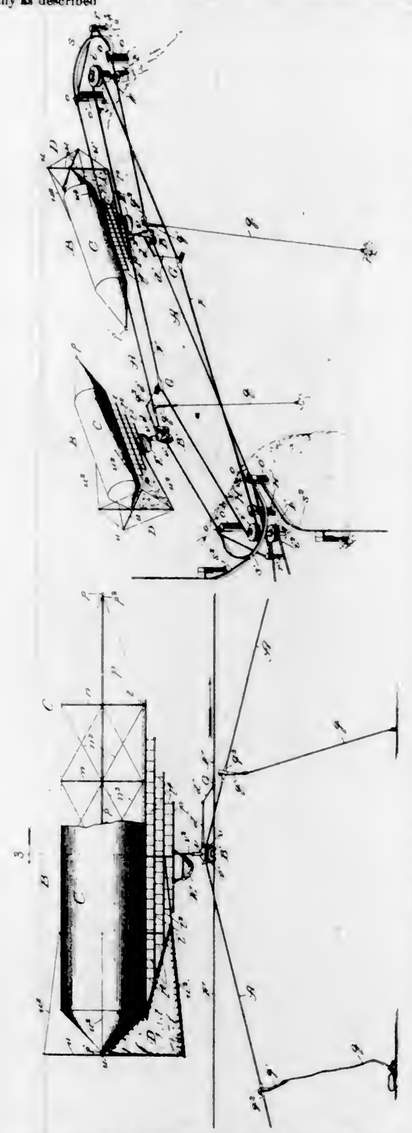
446,786. METHOD OF AND APPARATUS FOR TRANSPORTATION. PATRICK E. MCDONNELL, Chicago, Ill., assignor of one-half to L. H. Wilson, same place. Filed Sept. 25, 1890. Serial No. 366,102. (No model.)

Claim.—1. In an apparatus for transporting a load, the combination of an anchored guide-cable A, extending along the course of transportation, and a balloon B, having a cylindrical body provided with tapering ends and having a swiveled connection with and movably confined upon the guide-cable and adapted to have applied to it the load to be transported, substantially as described.

2. In an apparatus for transporting a load, the combination of an anchored guide-cable A, extending along the course of transportation, and a balloon B, having a cylindrical body and tapering ends and provided with keels D at one end, the balloon being movably confined upon the guide-cable and adapted to have applied to it the load to be transported, substantially as described.

3. In an apparatus for transporting a load, the combination of an anchored guide-cable A and an endless traveling cable F, extending along the course of transportation, a balloon B, formed with a cylindrical body provided with tapering ends and adapted to have applied to it the load to be transported and attached to the cable F, and a carriage B′, suspended from the balloon and engaging the guide-cable and a swivel-joint in the suspending medium of the carriage, substantially as described.

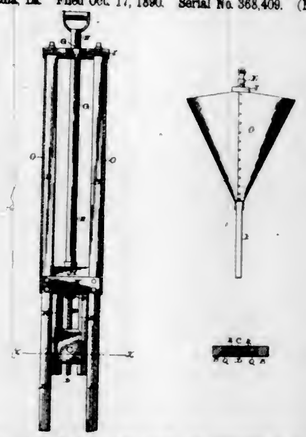
4. In an apparatus for transporting a load, the combination of an endless slack-anchored guide-cable A, having switches near opposite ends, and an endless traveling cable F, extending along the course of transportation, a balloon B, adapted to have applied to it the load to be transported and separably attached to the cable F, and a carriage B′, suspended from the balloon and engaging the guide-cable, substantially as described.



5. In an apparatus for transporting a load, the combination of an endless slack guide-cable A and an endless traveling cable F, extending along the course of transportation, guy-ropes q, having at their free ends arms q', terminating in sleeves q^3, surrounding the guide-cable, a standard H′, having a head H, through which the cable F passes, posts o' near opposite ends of the course, and having heads o, through which the cable A passes, switches s and s' between posts o', a balloon B, adapted to have applied to it the load to be transported, a grip G, separably connecting the balloon with the cable F, and a carriage B′, suspended from the balloon and engaging the guide-cable, substantially as described.

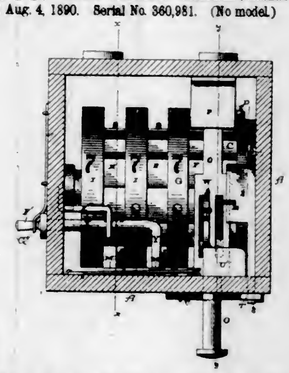
6. An apparatus for transporting a load, comprising, in combination, an endless slack guide-cable A and an endless traveling cable F, extending along the course of transportation, pulleys i and i' at opposite ends of the cable F, around which the said cable passes, and one of which is geared with the driving power, a standard H′, having a head H, through which the traveling cable passes, and provided with a slot h, contracted toward its longitudinal center, guy-ropes q, having at their free ends arms q', terminating in sleeves q^3, surrounding the guide-cable, posts o' near opposite ends of the course and having heads o, through which the cable A passes, switches s and s' between posts o', a balloon B, adapted to have applied to it the load to be transported, a carriage B′, swiveled to a rod v^3, depending from the balloon and engaging the guide-rope, and a grip G, suspended from the carriage and comprising jaws h' to clamp the cable F on hinged arms g and g', controlled by a spring f, confined between them, links e' and e^3 at the outer ends of the arms, a lever e, pivotally connected with the links at their free ends, and a stop e^3 on the arm g' to be engaged by the lever, the whole being constructed and arranged to operate substantially as described.

446,787. HAND FERTILIZER-DISTRIBUTER. JOHN G. MCKETHAN, Arcadia, La. Filed Oct. 17, 1890. Serial No. 368,409. (No model.)



Claim.—In a fertilizer-distributer, the combination of a supporting-frame consisting of two vertical posts having guides near their lower ends, a block sliding between the guides, having a vertical screw-threaded aperture, a vertically-moving rod placed between the posts, having a handle at its upper end and a screw-threaded lower portion which passes through the said block, a block stationarily secured to the said rod above the first said block, whereby the lower block can be adjusted in relation to the upper block by revolving the said rod, and a hopper secured to the posts, substantially as shown and described.

446,788. GRAIN-REGISTER. JOSEPH H. PEACHEY, Allensville, Pa. Filed Aug. 4, 1890. Serial No. 360,981. (No model.)



Claim.—1. In a register, the combination, with two ratchet-wheels, of a reciprocating push-rod having two pawls which engage the said wheels, rods secured at one end to the pawls and having their opposite ends bent laterally, and a vertically-moving rod which engages the upper bent end of the said rods for the purpose of disengaging them from the wheels, substantially as set forth.

2. The combination of the two ratchet-wheels C F, placed

by side, the wheel C being provided with a flange D, having projections E, with a push-rod, two dogs loosely connected to the rod for operating the ratchet-wheels C F, with a vertically-moving slide which is operated by the projections E on the flange D, and which is provided with an arm W at its upper end for raising one of the dogs out of contact with the wheel F at every other movement of the push-rod, substantially as specified.

3. The combination of two ratchet-wheels C F, the flange D, provided with projections E, the partially-moving slide U, provided with a shoulder V and the arm W, the push-rod provided with two pivoted dogs having rods or handles connected to them, and a lever S, substantially as shown.

4. In a register, the combination of a series of ratchet-wheels side by side, and a revolving and endwise-moving rod which extends across and outside of the peripheries of the wheels, the said rod having its inner end bent laterally, whereby its inner end can be placed opposite either wheel and made to engage the teeth thereof, when revolved, for the purpose of setting the machine, substantially as described.

446,789. LOCK. ROBERT L. REED, Washington, D. C. Filed Apr. 24, 1890. Serial No. 349,286. (Model.)



Claim.—1. In a lock, the combination, with a bolt or bolts and devices for locking same, of a combined key and knob rigidly connected together and provided with a projection for removably holding the key in the lock, the said projection being arranged in such relation to the wards of the key and to the opening in the lock-case for the key as to prevent the withdrawal of the key without throwing the bolt or bolts to a locked position, substantially as set forth.

2. In a lock, the combination, with a cylinder having a recessed flange at one end and a barrel in said cylinder, a flange on one end of said barrel having recesses to align with the recesses of the flange of the cylinder, of a combined handle and key having ears to enter said recesses and pass behind the flange of the cylinder, substantially as set forth.

3. In a lock, the combination, with a cylinder, of a barrel in said cylinder having sockets, pins in said sockets, a receptacle having perforations adapted to register with the socket in the barrel, pins in the perforations of the receptacle, springs bearing on said pins, links pivotally connected to the barrel, and bolts pivotally connected to the links, substantially as set forth.

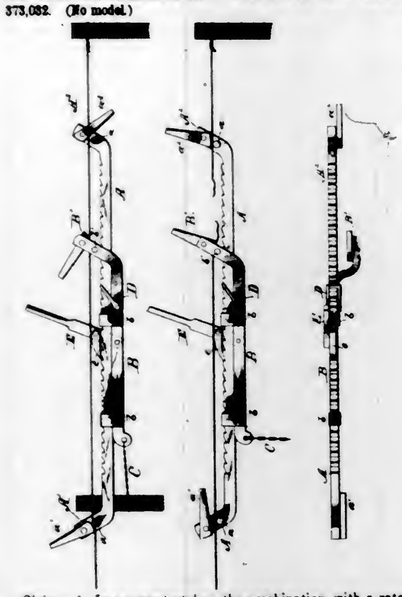
4. In a lock, the combination, with a disk, means for actuating same, and legs projecting outwardly from said disks, of links loosely mounted on the legs, the said links having shoulders adapted to engage and limit the rotation of the disk in one direction and with flat sides which engage and limit rotation of the disk in the opposite direction, and bolts secured to and actuated by said links, substantially as set forth.

5. In a lock, the combination, with a disk, of links having a sliding pivotal connection with the disk and the bolts connected with the free ends of the links, the said links overlapping each other and having engaging surfaces for limiting the rotation of the disk in both directions, substantially as set forth.

6. A combined key and knob rigidly connected together and provided with a projection for removably holding the key in the lock, substantially as set forth.

7. In a lock, the combination, with a barrel, of pins on one end thereof, links having elongated slots adapted to receive said pins, pins at or near the opposite ends of said links, and bolts having perforations to receive said last-mentioned pins, substantially as set forth.

446,790. WIRE-STRETCHER. MATHIAS J. RIDDER and VALENTINE HARTMANN, Germantown, Nebr. Filed Nov. 29, 1890. Serial No. 373,032. (No model.)



Claim.—1. In a wire-stretcher, the combination, with a ratchet-bar having upturned ends which carry means for securing the wire thereto, of a sliding bar carrying a lever and pawl and a locking-bail, one end of said sliding bar being upturned and provided with wire-clamping means, the opposite end having a flexible connection for securing the same to a post, substantially as set forth.

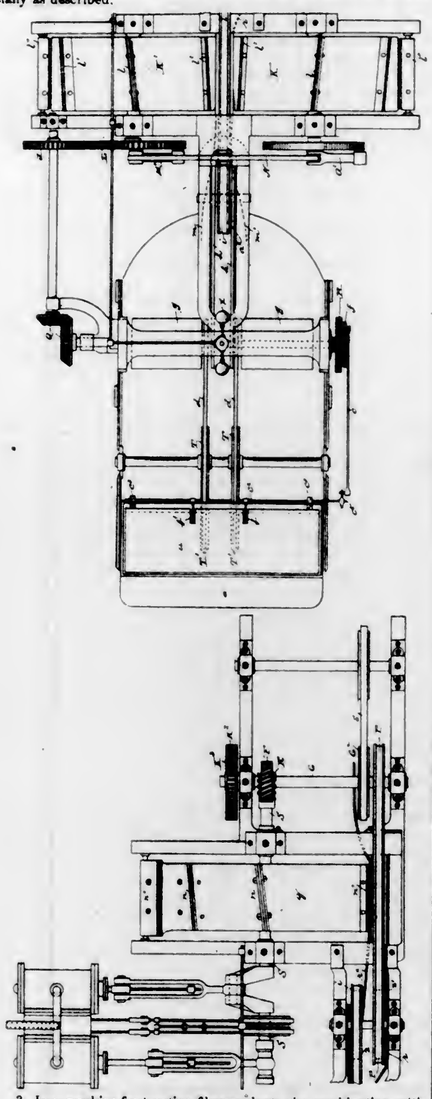
2. The combination, in a wire-stretcher, of a bar A, having ratchet-teeth and upturned ends with offsets, and cams located above said offsets, and a sliding bar secured to the ratchet-bar by means of loops and provided with a locking-bail, with a pivoted lever carrying a pawl for engaging the ratchet-teeth, and with wire-clamping means upon its upturned end, the opposite end thereof being adapted to be secured to a post, substantially as set forth.

3. In a wire-fence tightener, the combination of a bar A, having a series of ratchet-teeth with flattened points and upturned ends A' and A^3, having offsets, above which are pivoted cam-levers, with a sliding bar B, having loops b b, which embrace the bar A, a lever carrying a pawl e, a bail D, adapted to engage the ratchet-teeth, the said sliding bar being provided with an upturned end having an offset b', and clamp-lever B', substantially as set forth.

446,791. MACHINE FOR DISINTEGRATING FIBROUS PLANTS. José I. RODRIGUES, Washington, D. C., administrator of Demetrio Prieto, deceased. Filed Feb 26, 1890. Serial No. 341,893. (No model.)

Claim.—1. In a machine for treating fibrous plants, a hopper provided with an apron adjusted by a set-screw, in combination with spurs for regulating the feed of the material and mechanism for operating the said spurs, substantially as described

2. In a machine for treating fibrous plants, the combination, with a hopper provided with an adjustable apron, of spurs for regulating the feed of the material, and mechanism for operating the said spurs, endless belts d d', arranged in vertical pairs to carry the material to the rollers, and rollers for pressing and crushing the material, substantially as described.



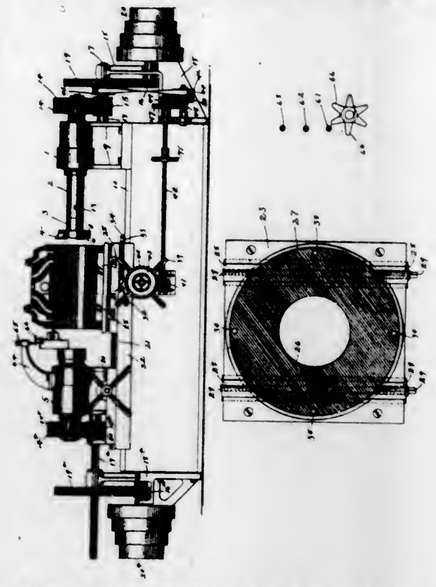
3. In a machine for treating fibrous plants, the combination, with the corrugated endless belts i i', running on suitable sprocket-wheels, of the cylinders K K', placed directly opposite each other and provided with knives and combs or brushes for scraping the material, substantially as described.

4. In a machine for treating fibrous plants, the combination, with the corrugated endless belts i i', running on suitable sprocket-wheels, of cylinders K K', placed directly opposite each other and provided with knives and combs or brushes, and concave saddle-plates j j', substantially as described.

5. In a machine for treating fibrous plants, the combination of the double cylinders K K' and the single cylinder q with the single shaft S, the walking-beam N, and pitmen O' and M' for actuating said cylinders, substantially as described

6. In a machine for treating fibrous plants, the combination, with a hopper provided with an adjustable apron, of spurs to regulate the feed-carrying belts d d' and h h' to pass the material along, rollers or crushers g g', endless corrugated carrying-belts i i' and P P', running on suitable sprocket-wheels, guides or fenders m m' and r r', concave saddle-plates j j' and o, and cylinders K K' and q, all arranged substantially as shown.

446,792. BORING-MACHINE. WILLIAM SCHWANHÄUSSER, Brooklyn, assignor to William A. Perry and Charles C. Worthington, New York, N. Y. Filed Mar. 14, 1890. Serial No. 343,875. (No model.)



Claim.—1. The combination, in a boring-machine, of a movable table, a stationary head-stock at one end of the machine having one or more boring-spindles, cutter-heads, and cutters, a movable head-stock at the opposite end of the machine having a corresponding number of facing-spindles, cutter-heads, and cutters, mechanism for driving said boring and facing spindles, and mechanism for advancing said table and movable head-stock toward the boring spindle or spindles, substantially as described.

2. The combination, in a boring-machine, of a sliding work-supporting carriage and a sliding facing head-stock and spindle, said head-stock having a movement with said carriage as the latter moves, substantially as described.

3. The combination, in a boring-machine, of a sliding work-supporting carriage and a sliding facing head-stock having a movement with said carriage as the latter moves, and having also a movement independently thereof for the adjustment of its spindle to or from the work, substantially as described.

4. The combination, in a boring-machine, of a stationary boring head-stock and spindle, a movable facing head-stock and spindle, cutters for both of said spindles, a work-supporting table between said spindles, driving mechanism for each of said spindles, and mechanism for advancing said table and facing head-stock simultaneously toward the boring-spindle as the boring operation progresses, substantially as described.

5. The combination, in a boring-machine, of a stationary boring head-stock and spindle, a movable facing head-stock and spindle, cutters for both of said spindles, a work-supporting table between said spindles, means for adjusting said table with relation to said boring-spindle, means for adjusting said facing-spindle with relation to said table, means for rotating said spindles, and mechanism for advancing said table and facing head-stock simultaneously toward the boring-spindle as the boring operation progresses, substantially as described.

6. The combination, in a boring-machine, of a stationary head-stock and boring-spindle, a work-supporting carriage having a sliding connection to the bed-plate of the machine, a facing head-stock and spindle carried by said carriage, and means for rotating said boring and facing spindles, substantially as described.

7. The combination, in a boring-machine, of a stationary head-stock and boring-spindle and means for rotating said spindle, a work-supporting carriage having a sliding connection to the bed-plate of the machine, a facing head-stock and spindle carried by but adjustable on said carriage, and means for rotating said boring and facing spindles, substantially as described.

8. The combination, in a boring-machine, of a work-supporting table and a facing head-stock provided with a plurality of spindles operating simultaneously, said head-stock having a sliding connection to the frame of the machine, whereby all of its spindles are simultaneously adjusted to or from the work, substantially as described.

9. The combination, in a boring-machine, of a sliding work-supporting table and a sliding facing head-stock provided with a plurality of spindles operating simultaneously, said head-stock having a movement with said table as the latter moves, and also a movement independently thereof, whereby all of its spindles are simultaneously adjusted to or from the work, substantially as described.

10. The combination, in a boring-machine, of a sliding work-supporting carriage and a facing head-stock mounted thereon so as to move therewith, said head-stock being provided with a plurality of facing-spindles operating simultaneously and having a sliding connection to said carriage, whereby all of its spindles are simultaneously adjusted to or from the work, substantially as described.

11. The combination, in a boring-machine, of a boring head-stock, a carriage 21, having a sliding connection to the bed-plate of the machine, a facing head-stock and its spindle having a sliding connection to said carriage, means for adjusting said carriage and facing head-stock simultaneously, and means for adjusting said head-stock independently of said carriage, substantially as described.

12. The combination, in a boring-machine, of a boring head-stock, a carriage 21, having a sliding connection to the bed-plate of the machine, the work-supporting platen 26, having a revoluble connection to said carriage, a facing head-stock and its spindle having a sliding connection to said carriage, means for adjusting said carriage and facing head-stock simultaneously, and means for adjusting said head-stock independently of said carriage, substantially as described.

13. The combination, in a boring-machine, with a boring-spindle and cutters, of the carriage 21, having a sliding connection to the bed-plate thereof, the platen 26, having a revoluble connection to said carriage, means for locking said platen to the carriage, and means for advancing said carriage and platen toward the boring-spindle to feed the work as the boring operation progresses, substantially as described.

14. The combination, in a boring-machine, of a work-supporting table consisting of two members, one of which is revoluble with relation to the other, openings at predetermined points in one member, and a spring-pressed pin in the other member for entering said openings to automatically arrest the rotation of the revoluble member, substantially as described.

15. The combination, in a boring-machine, of a work-supporting table consisting of two members, one of which is revoluble with relation to the other, openings at predetermined points in one member, a spring-pressed pin in the other member for entering said openings to automatically arrest the rotation of the revoluble member, and a rod 33 for withdrawing said pin from the openings to permit the rotation of the revoluble member, substantially as described.

16. The combination, in a boring-machine, of a table and a work-supporting platen revoluble thereon, openings 30 at predetermined points in one member, and a spring-pressed pin 31 in the other member for entering said openings to automatically arrest the rotation of the revoluble member, substantially as described.

17. The combination, in a boring-machine, of a table and a work-supporting platen revoluble thereon, openings 30 at predetermined points in one member, a spring-pressed pin 31 in the other member for entering said openings to automatically arrest the rotation of the revoluble member, and a rod 33 for withdrawing said pin from the openings to permit the rotation of the revoluble member, substantially as described.

18. The combination, in a boring-machine, of a boring-spindle and its cutter, the revoluble work-supporting platen 26, screw-threaded rods 29, and nuts 28, carried by said rods for locking said platen to its rest, substantially as described.

19. The combination, in a boring-machine, with a plurality of facing-cutters and feeding devices therefor, of an adjuster and connections between said adjuster and feeding devices whereby upon the movement of said adjuster the different feeding devices are simultaneously thrown into or out of operation, substantially as described.

20. The combination, in a boring-machine, with a plurality of facing-cutters and feeding devices therefor, of an adjuster and connections between said adjuster and feeding devices whereby upon the movement of said adjuster the extent of feed of the different cutters is simultaneously adjusted, substantially as described.

21. The combination, in a boring-machine, with a plurality of facing-cutters and feeding devices therefor, of a plurality of feeders for each of said feeding devices for engaging and operating the same, and an adjuster engaging the different feeders, whereby upon the movement of said adjuster two or more of the feeders of each cutter are simultaneously adjusted to position to vary the extent of feed of the cutters, substantially as described.

22. The combination, in a boring-machine, with a facing-cutter and feeding device therefor, of a plurality of feeders for said feeding device, and an adjuster engaging the different feeders, whereby upon the movement of said adjuster two or more of said feeders are simultaneously adjusted to position to vary the extent of the feed of the cutter, substantially as described.

23. The combination, in a boring-machine, with a facing-cutter and feeding device therefor, of a feeder for engaging and operating said feeding device, said feeder being adjustable to different positions with relation to said feeding device to reverse the direction of feed of the cutters, substantially as described.

24. The combination, in a boring-machine, with a plurality of rotating facing spindles and cutters and feeding devices therefor, of an adjuster and connections between said adjuster and feeding devices whereby upon the movement of said adjuster the different feeding devices are simultaneously thrown into or out of operation, substantially as described.

25. The combination, in a boring-machine, with a plurality of rotating feeding spindles and cutters and feeding devices therefor, of an adjuster and connections between said adjuster and feeding devices whereby upon the movement of said adjuster the extent of feed of the different feeding devices is simultaneously adjusted, substantially as described.

26. The combination, in a boring-machine, with a plurality of facing spindles and cutters and feeding devices therefor, of a plurality of feeders for each of said feeding devices for engaging and operating the same, and an adjuster engaging the different feeders, whereby upon the movement of said adjuster two or more of the feeders of each cutter are simultaneously adjusted to position to vary the extent of feed of the cutters, substantially as described.

27. The combination, in a boring-machine, with a rotating facing-spindle and its cutter and feeding devices therefor, of a plurality of feeders for engaging and operating said feeding device, and an adjuster engaging the different feeders whereby upon the movement of said adjuster two or more of said feeders are simultaneously adjusted to position to vary the extent of feed of the cutter, substantially as described.

28. The combination, in a boring-machine, with a plurality of rotating facing spindles and cutters and feeding devices therefor, of a feeder for each of said feeding devices for engaging and operating the same, and a cam-rod engaging the different feeders, whereby upon the movement of said rod the feeders of the different feeding devices are simultaneously adjusted to or out of operative position, substantially as described.

29. The combination, in a boring-machine, with a plurality of rotating facing spindles and cutters and feeding devices therefor, of a plurality of feeders for each of said feeding devices for engaging and operating the same, and a cam-rod engaging the different feeders, whereby upon the movement of said rod two or more of the feeders of each of said feeding devices are simultaneously adjusted to position to vary the extent of feed of the cutters, substantially as described.

30. The combination, in a boring-machine, with a rotating facing-spindle and its cutter and feeding devices, of a feeder for engaging and operating said feeding devices, said feeder being adjustable to different positions with relation to said feeding devices to reverse the direction of feed of the cutter, substantially as described.

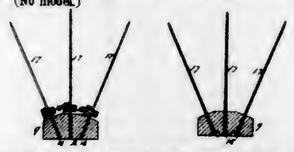
31. The combination, with a rotary cutter-head and head-stock, of the cutter 8, slide 56, feeding-screw 57, one or more pins 61, &c., and means for moving said pin or pins into or out of position for engagement with the head of the screw, substantially as described.

32. The combination, with a rotary head and head-stock, of the cutter 8, slide 56, feeding-screw 57, one or more pins 61, &c., and a cam-faced sliding rod for moving said pin or pins into or out of position for engagement with the head of the screw, substantially as described.

33. The combination, with the cutter-carrying screw 57, of the pin-carrying arm 64, said arm being adjustable to opposite sides of the axis of rotation of the screw, so as to change the direction of movement of said screw and its cutter, substantially as described.

34. The combination, in a boring-machine, of a boring-spindle at one end thereof and a facing-spindle at the opposite end, consisting of a hollow sleeve 6, rotating in its head-stock, a removable rod 74, passing through said sleeve and adapted to be connected to and form an extension of the boring-spindle, and a boring-tool adapted to be moved along said rod and to be keyed thereto in adjusted positions for operating upon cylinders of varying lengths, substantially as described.

446,793. STOCK-GUARD FOR RAILWAYS. SAMUEL L. SHELLENBERGER, South McAlester, Ind. Ter. Filed May 31, 1890. Serial No. 353,848. (No model.)



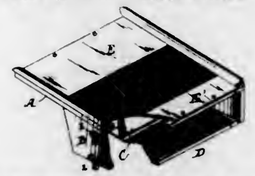
Claim.—1. In a cattle-guard for railways, &c., the combination of the guard-rails 9, and the guard-spikes whose lower extremities are seated in said rails, and which spikes are provided with an integral coil above said seat, substantially as and for the purpose set forth.

2. In a cattle-guard for railways, &c., the combination of the guard-rails 9 and the divergent spring-spikes 17, secured in and surmounting said guard-rails, arranged to stand guard over the rail-track, substantially as and for the purpose set forth.

3. In a cattle-guard for railways, &c., the combination of the fence that incloses and guards the track laterally, the ties that carry the track-rails, the guard-rails 9, secured to said ties, some of said rails being provided with bevel-faces on each side and such of them as are contiguous to said track-rails, and said lateral fence having vertical sides next said parts and bevel outer sides, and the divergent spring-spikes secured in said rails and that guard the entrance to the track between said lateral fence, substantially as and for the purpose set forth.

4. In a cattle-guard for railways, &c., the combination of the fence that guards the approach to the track laterally, the guard-rails that run parallel with the track-rails, and the pointed spring guard-spikes secured in said guard-rails, the said spring guard-spikes having respectively an upright and divergent presentation to guard the surface of the track from the intrusion of stock, substantially as and for the purpose set forth.

446,794. GRAIN-SEPARATING APPARATUS. LEVI A. SIMONS, Omaha, Nebr. Filed Sept. 17, 1890. Serial No. 365,228. (No model.)



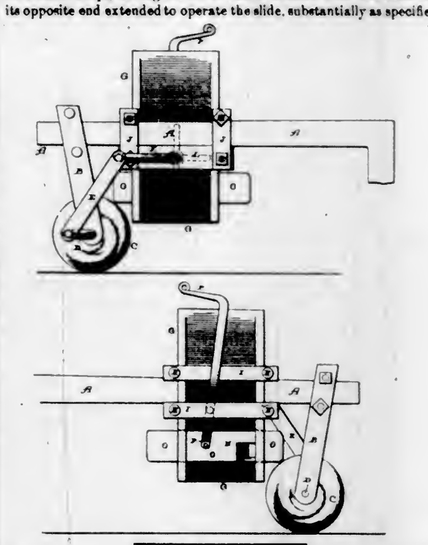
Claim.—The hereinbefore shown and described grain-separator, composed of the frame A, having metal plates E and E', and having the wire-cloth E^3, intermediate of the metal plates E and E', the trapezoidal boards B B, depending from the lower rear side of the frame A, the tilting screen D below the frame, the binding-screws 2 2, passing through the boards B B and forming pivots for the screen D to tilt on, the rotatable wind-deflector C between the screen D and the plate E', and the binding-screw 1 1 for the wind-deflector to turn on and for holding it in the required position, substantially as described.

446,795. FERTILIZER-DISTRIBUTER. JOHN H. SMITH and JAMES E. SMITH, Buford, Ala. Filed Sept. 5, 1890. Serial No. 363,997. (No model.)

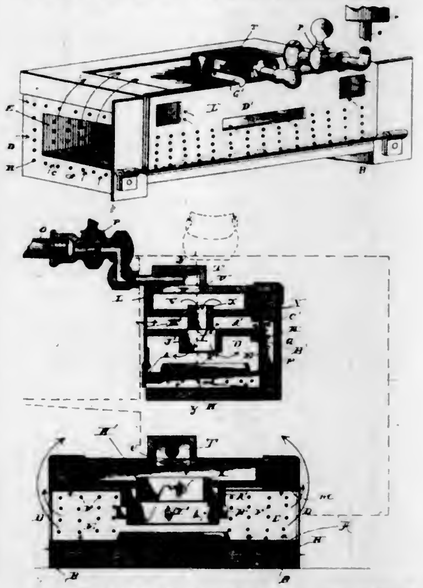
Claim.—1. In a fertilizer-distributer adapted to be attached to a plow-beam consisting of a standard, a wheel journaled therein having a crank-shaft, the box secured to one side of the beam, a stirrer in the bottom of the box having a shaft extending through one side and provided with a crank, a rod connecting the stirrer-crank and the wheel-crank, the box having an opening in its lower opposite side from the stirrer-crank, a slide for closing the opening, a vertical lever pivoted between its ends above the said slide, the lower end of the lever being connected with the slide, and its upper end extended to be operated, substantially as shown and described.

2. In a fertilizer-distributer adapted to be attached to a plow-beam, the combination of the box having an opening in its lower end, a stirrer having a crank, a standard clamped to the beam at its upper end, a wheel journaled in its lower end having a crank-shaft, a rod connecting the stirrer and the crank-shaft, the horizontal strips I, which engage the outer side of the box, the vertical strips J, which engage the opposite side of the beam, and the bolts which pass through the strips for clamping the box to the beam, substantially as set forth.

3. In a fertilizer-distributer, the combination of the box having an opening in its lower end, a slide which closes the said opening, a standard, a wheel journaled in the lower end of the standard having a crank-shaft, a stirrer in the box having a crank, a rod connecting the stirrer and the crank-shaft, the horizontal strips which engage the outer side of the box, strips at the opposite side of the beam, the bolts which pass through the strips, and a lever pivoted upon one of the horizontal strips, having its lower end connected with the slide and its opposite end extended to operate the slide, substantially as specified.



446,796. DEVICE FOR BURNING CRUDE PETROLEUM. LUTHER C. SNELL, Detroit, Mich., assignor to the Liquid Supply Company, Olean, N. Y. Filed July 25, 1890. Serial No. 359,857. (No model.)



Claim.—1. A device for burning crude petroleum, consisting of the combination of a casing, one wall of which is hollow, an evaporating-pan within the casing, above the combustion-chamber, and provided with a downwardly-extending outlet opening into the combustion-chamber, an air-flue communicating with the outside air through one of the walls of the casing at one end and with the hollow wall of the casing at the other end, and the middle of the flue communicating

with the combustion-chamber at the outlet of the evaporating-pan, the casing being provided with an outlet for the escape of the gases, &c.

2. A device for burning crude petroleum, consisting of the combination of a casing, one wall of which is hollow, the inner side of which hollow portion is perforated, an evaporating-pan within the casing, above the combustion-chamber, the outlet of which is downward and communicating with the combustion-chamber, a flue communicating with the combustion-chamber at the outlet of the evaporating-pan, and tubes above the outlet of the casing, the bottoms of which are perforated, each of the said tubes communicating with the outside air through one wall of the casing at one end and with the hollow portion of the casing at the other end.

3. A device for burning crude petroleum, consisting of a casing having a depending flange around its bottom and having one of its walls hollow, the bottom of the casing, the flange, and the inner side of the hollow portion of the casing being perforated, and an evaporating pan within the casing, above the combustion chamber, the outlet of which is downward and communicates with the combustion-chamber.

4. A device for burning crude petroleum, consisting of the combination of a casing, one wall of which is hollow, the inner side of the hollow wall being provided with an opening near its middle and an opening at the upper corner of each end, a hinged door upon the opposite side of the casing, provided with a central opening and an opening at each of its upper corners, an evaporating-pan within the casing, an air-flue secured to the bottom of the pan, the ends of which communicate with the central opening in the side and in the door of the casing and its middle with the outlet of the evaporating-pan, and a flue at each end of the casing communicating at their ends with the upper portions.

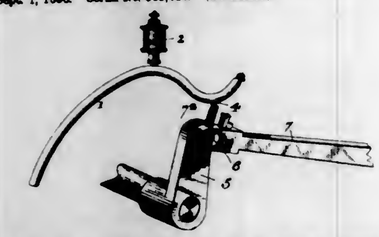
5. A device for burning crude petroleum, consisting of the combination of a casing, one wall of which is hollow and provided with an opening, a flange upon the inner side of the hollow casing and below the lower edge of the opening, an evaporating-pan within the casing, an air-inlet flue upon the bottom of the pan, the rear end of which rests upon the flange on the hollow wall and communicates with the opening, a hook upon the opposite side of the casing and adapted to engage with and support the evaporating-pan, and an air-flue communicating with the hollow wall of the casing, there being an air-outlet for the escape of the vapor and air.

6. A device for burning crude petroleum, consisting of the combination of a casing, an evaporating-pan within the casing, having a flange which projects above the inner surface of the bottom of the pan and below the lower surface and having an opening in the bottom, an air-flue secured to the bottom of the pan and having a hole in its bottom, said hole registering with the outlet of the pan, and a flange around said hole, said casing being provided with outlets for the escape of vapor and air.

7. A device for burning crude petroleum, consisting of the combination of a casing, an evaporating-pan removably secured at its rear end to one side of the casing and provided with a projection upon the opposite end, a catch upon the side of the casing adapted to engage with the projection, and a flange secured to the top of the casing near the opposite wall, adapted to engage with the inner wall of the evaporating-pan.

8. A device for burning crude petroleum, consisting of the combination of a casing having an opening at its top, a removable evaporating-pan within the casing, having a central opening and having an upwardly-projecting rim around the opening of the pan, an oil-pipe leading into the casing and opening to one side of the opening in the pan, and a drip-pan below the opening.

446,797. MEANS FOR SUPPLYING LUBRICATING-OIL TO MOVING PARTS OF ENGINES. DAVID R. STILES, Ottawa, Kans. Filed Sept. 1, 1890. Serial No. 363,727. (No model.)



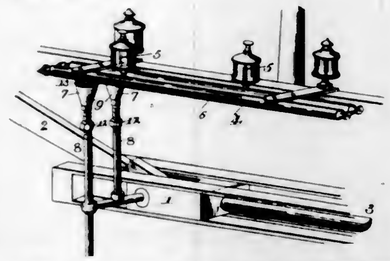
Claim.—1. The combination, with a stationary oil-receptacle, of a conveying-tube carried by a moving part of an engine, said tube being provided with a gathering-knife and a sigzag oil-passage communicating with the part to be lubricated, substantially as described.

2. The combination, with a stationary oil-receptacle, of a conveying-tube carried by a moving part of an engine, said tube having a beveled end, upwardly-projecting grooved flanges, a groove closed at one end communicating with an oil passage, and a gathering-knife located in said grooved flange, substantially as described.

3. The combination, with a stationary oil-receptacle, of a conveying-tube having a beveled end carried by a moving part of an engine, said tube having upwardly-projecting grooved flanges, a groove closed at its lower end, an oil-passage communicating with said groove, a gathering-knife located in said grooved flanges, and a supplemental knife located above said first-mentioned knife, substantially as described.

4. The combination, with a stationary oil-receptacle having an oil-cup, an oil-passage, and an escape-opening, of a conveying-tube carried by a moving part of an engine, said tube having upwardly-projecting grooved flanges, a groove closed at one end, an oil-passage communicating with said groove, a gathering-knife located in said grooved flanges, and a supplemental knife located above the first-mentioned knife, substantially as described.

446,798. MEANS FOR SUPPLYING OIL TO MOVING PARTS OF ENGINES. DAVID R. STILES, Ottawa, Kans. Filed Sept. 1, 1890. Serial No. 363,728. (No model.)



Claim.—1. The combination, with a stationary oil-tube provided with a series of perforations on the under side thereof, of a conducting-tube located on the reciprocating part of an engine, said tube having gathering-knives, and a funnel, and openings for the passage of the oil to the interior of said tube, substantially as described.

2. The combination, with a stationary oil-tube provided with a series of perforations on the under side thereof, of a conducting-tube located on the reciprocating part of an engine, said tube having gathering-knives, a funnel with an inwardly-projecting annular flange, and openings for the passage of oil to the interior of said tube, substantially as described.

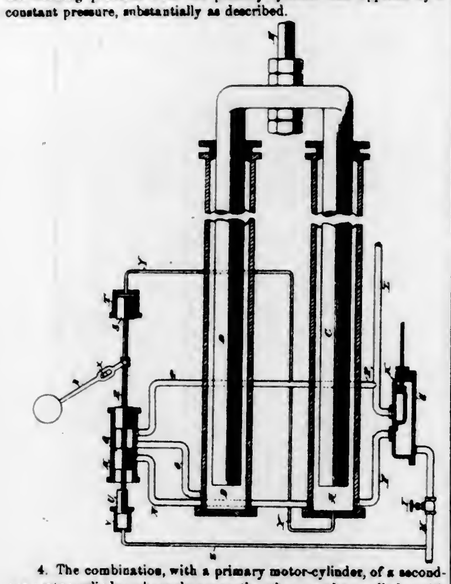
3. The combination, with a stationary oil-tube having a series of perforations on the under side thereof, of a conveying-tube located on the reciprocating part of an engine, said tube having oppositely-projecting gathering-knives, an adjustable funnel with an inwardly-projecting annular flange, and openings for the passage of the oil to the interior of said tube, substantially as described.

446,799. APPARATUS FOR REGULATING HYDRAULIC POWER. ROBERT H. THORPE, London, England. Filed Aug. 19, 1890. Serial No. 362,384. (No model.) Patented in England June 10, 1890, No. 8,961.

Claim.—1. The combination, with primary and secondary motor-cylinders, of an automatically-operated valve opening communication between the primary and secondary cylinders and closing communication between the secondary cylinder and exhaust in one position and closing communication between the primary and secondary cylinders and opening communication between the secondary cylinder and exhaust in another position, said valve being moved in one direction by the working pressure from the primary cylinder and in the other direction by a constant pressure, substantially as described.

2. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, and an automatically-operated valve opening communication through one or the other of said channels and closing communication through the other channel in its respective positions, said valve being moved in one direction by the working pressure from the primary cylinder and in the other by a constant pressure, substantially as described.

3. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, and a piston for actuating said valve, said piston being acted upon on one side by the working pressure from the primary cylinder and opposed by a constant pressure, substantially as described.



4. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, a piston for actuating said valve acted upon on one side by the working pressure from the primary cylinder, and a weighted lever connected to the valve and opposing its movement by the piston, substantially as described.

5. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, and two pistons controlling the movement of said valve, one of said pistons being acted upon by the working pressure from the primary cylinder and the other by a constant pressure, substantially as described.

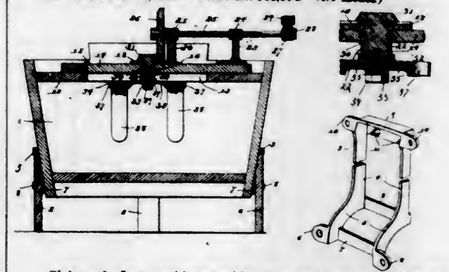
6. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, two pistons controlling the movement of said valve, one of said pistons being acted upon by the working pressure from the primary cylinder and the other by a constant pressure, and a weighted lever connected to the valve and opposing its movement by the piston operated from the primary cylinder, substantially as described.

7. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, and two pistons of different sizes controlling the movement of the valve, one piston being acted upon by the working pressure from the primary cylinder and the other by the pressure from the main, substantially as described.

8. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, two pistons of different sizes controlling the movement of the valve, the larger piston being acted upon by the working pressure from the primary cylinder and the smaller by the pressure from the main, and a weighted lever connected to the valve and opposing its movement by the larger piston, substantially as described.

9. The combination, with the primary and secondary motor-cylinders, of the valve-chamber M, channels connecting the valve-chamber with the primary and secondary cylinders and the exhaust, a valve controlling said channels, piston U in cylinder V for moving the valve in one direction, piston S in cylinder T for moving the valve in the opposite direction, said cylinders communicating, respectively, with the main and primary cylinders, and a weighted lever W, connected to the valve and opposing its movement by piston S, substantially as described.

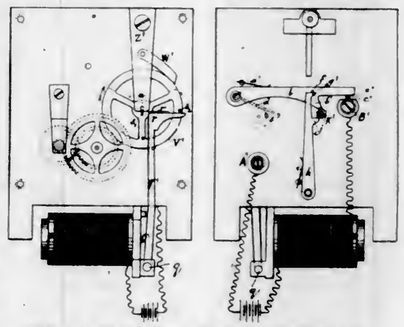
446,800. WASHING-MACHINE. EDWARD E. URANGER, Nazareth, Pa. Filed Oct. 17, 1890. Serial No. 368,394. (No model.)



Claim.—1. In a washing-machine, the combination, with the side wall thereof, of the herein-described leg-casting, consisting of the opposite vertical side bars 4, the lower ends of which are inwardly curved, as at 5, the keeper-bars 7 and 8, arranged out of alignment and connecting the side bars at and above their lower ends, the socket 9, located at the upper end of the casting and having the upper and outer closed sides, the latter upon its inner surface having the spurs 11, the opposite pairs of perforated lugs 6 and 10, secured to the wall of the tub, and the legs inserted between the keepers and side bars and having their upper ends terminating in the socket and engaged by the spurs thereof, substantially as specified.

2. In a washing-machine, the combination, with the lid thereof having an opening, of a gear-supporting casting mounted therein and provided with a depending hollow stud, a master-gear, and means for operating the same supported above the base, a short shaft having a small pinion at its upper end engaged by said gear mounted in the stud and terminating immediately below the stud, at which point it is reduced to form a bored interiorly and exteriorly threaded tenon, a rubbing-head comprising radiating arms, a central opening for the reception of the tenon, provided with an annular bearing-flange for the support of the shaft and outside of the same with an annular flange encircling the lower end of the stud of the casting, and a screw inserted through the tenon and having its head taking under the rubbing-head, substantially as specified.

446,801. ELECTRIC REGULATING-CLOCK. DIDIER VAN DE PLASSCHE and GUSTAVE VAN DE PLASSCHE, Courtral, Belgium. Filed May 21, 1889. Serial No. 311,586. (No model.) Patented in Belgium Feb. 4, 1885, No. 67,750; in Germany Apr. 13, 1885, No. 34,064; in France June 29, 1885, No. 169,834, and in England July 14, 1885, No. 8,538.



Claim.—1. In an electric clock, the combination of a magnet with an electric circuit adapted to excite the regular intervals of time, an unequally-weighted fly- a horizontal axle and adapted to act on the clock- ing-lever connected with the armature of t adapted to give to the fly-wheel at every an impulse sufficient for an entire rev adapted to consume any excess of e tially as described, and for the pur

2. In an electric clock, the an electric circuit adapted to vals of time, an unequally- axle and adapted to act nected with the armatur to the fly-wheel at every cient for an entire revoluti

and seat, right- ided with short arm

with the combustion-chamber at the outlet of the evaporating-pan, the casing being provided with an outlet for the escape of the gases, &c.

2. A device for burning crude petroleum, consisting of the combination of a casing, one wall of which is hollow, the inner side of which hollow portion is perforated, an evaporating-pan within the casing, above the combustion-chamber, the outlet of which is downward and communicating with the combustion-chamber, a flue communicating with the combustion-chamber at the outlet of the evaporating-pan, and tubes above the outlet of the casing, the bottoms of which are perforated, each of the said tubes communicating with the outside air through one wall of the casing at one end and with the hollow portion of the casing at the other end.

3. A device for burning crude petroleum, consisting of a casing having a depending flange around its bottom and having one of its walls hollow, the bottom of the casing, the flange, and the inner side of the hollow portion of the casing being perforated, and an evaporating pan within the casing, above the combustion chamber, the outlet of which is downward and communicates with the combustion-chamber.

4. A device for burning crude petroleum, consisting of the combination of a casing, one wall of which is hollow, the inner side of the hollow wall being provided with an opening near its middle and an opening at the upper corner of each end, a hinged door upon the opposite side of the casing, provided with a central opening and an opening at each of its upper corners, an evaporating-pan within the casing, an air-flue secured to the bottom of the pan, the ends of which communicate with the central opening in the side and in the door of the casing and its middle with the outlet of the evaporating-pan, and a flue at each end of the casing communicating at their ends with the upper portions.

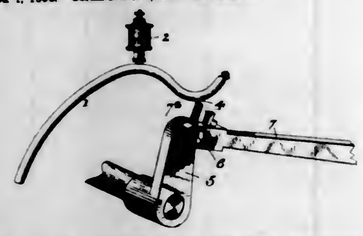
5. A device for burning crude petroleum, consisting of the combination of a casing, one wall of which is hollow and provided with an opening, a flange upon the inner side of the hollow casing and below the lower edge of the opening, an evaporating-pan within the casing, an air-inlet flue upon the bottom of the pan, the rear end of which rests upon the flange on the hollow wall and communicates with the opening, a hook upon the opposite side of the casing and adapted to engage with and support the evaporating-pan, and an air-flue communicating with the hollow wall of the casing, there being an air-outlet for the escape of the vapor and air.

6. A device for burning crude petroleum, consisting of the combination of a casing, an evaporating-pan within the casing, having a flange which projects above the inner surface of the bottom of the pan and below the lower surface and having an opening in the bottom, an air-flue secured to the bottom of the pan and having a hole in its bottom, said hole registering with the outlet of the pan, and a flange around said hole, said casing being provided with outlets for the escape of vapor and air.

7. A device for burning crude petroleum, consisting of the combination of a casing, an evaporating-pan removably secured at its rear end to one side of the casing and provided with a projection upon the opposite end, a catch upon the side of the casing adapted to engage with the projection, and a flange secured to the top of the casing near the opposite wall, adapted to engage with the inner wall of the evaporating-pan.

8. A device for burning crude petroleum, consisting of the combination of a casing having an opening at its top, a removable evaporating-pan within the casing, having a central opening and having an upwardly-projecting rim around the opening of the pan, an oil-pipe leading into the casing and opening to one side of the opening in the pan, and a drip-pan below the opening.

446,797. MEANS FOR SUPPLYING LUBRICATING-OIL TO MOVING PARTS OF ENGINES. DAVID R. STILES, Ottawa, Kans. Filed Sept. 1, 1890. Serial No. 363,727. (No model.)



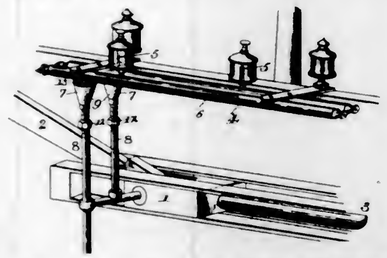
Claim.—1. The combination, with a stationary oil-receptacle, of a conveying-tube carried by a moving part of an engine, said tube being provided with a gathering-knife and a zigzag oil-passage communicating with the part to be lubricated, substantially as described.

2. The combination, with a stationary oil-receptacle, of a conveying-tube carried by a moving part of an engine, said tube having a beveled end, upwardly-projecting grooved flanges, a groove closed at one end communicating with an oil passage, and a gathering-knife located in said grooved flange, substantially as described.

3. The combination, with a stationary oil-receptacle, of a conveying-tube having a beveled end carried by a moving part of an engine, said tube having upwardly-projecting grooved flanges, a groove closed at its lower end, an oil-passage communicating with said groove, a gathering-knife located in said grooved flanges, and a supplemental knife located above said first-mentioned knife, substantially as described.

4. The combination, with a stationary oil-receptacle having an oil-cup, an oil-passage, and an escape-opening, of a conveying-tube carried by a moving part of an engine, said tube having upwardly-projecting grooved flanges, a groove closed at one end, an oil-passage communicating with said groove, a gathering-knife located in said grooved flanges, and a supplemental knife located above the first-mentioned knife, substantially as described.

446,798. MEANS FOR SUPPLYING OIL TO MOVING PARTS OF ENGINES. DAVID R. STILES, Ottawa, Kans. Filed Sept. 1, 1890. Serial No. 363,728. (No model.)



Claim.—1. The combination, with a stationary oil-tube provided with a series of perforations on the under side thereof, of a conducting-tube located on the reciprocating part of an engine, said tube having gathering-knives, and a funnel, and openings for the passage of the oil to the interior of said tube, substantially as described.

2. The combination, with a stationary oil-tube provided with a series of perforations on the under side thereof, of a conducting-tube located on the reciprocating part of an engine, said tube having gathering-knives, a funnel with an inwardly-projecting annular flange, and openings for the passage of oil to the interior of said tube, substantially as described.

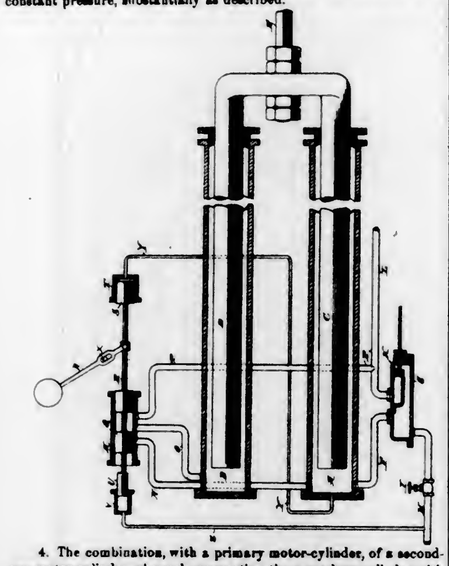
3. The combination, with a stationary oil-tube having a series of perforations on the under side thereof, of a conveying-tube located on the reciprocating part of an engine, said tube having oppositely-projecting gathering-knives, an adjustable funnel with an inwardly-projecting annular flange, and openings for the passage of the oil to the interior of said tube, substantially as described.

446,799. APPARATUS FOR REGULATING HYDRAULIC POWER. ROBERT H. THORPE, London, England. Filed Aug. 19, 1890. Serial No. 362,384. (No model.) Patented in England June 10, 1890, No. 8,961.

Claim.—1. The combination, with primary and secondary motor-cylinders, of an automatically-operated valve opening communication between the primary and secondary cylinders and closing communication between the secondary cylinder and exhaust in one position and closing communication between the primary and secondary cylinders and opening communication between the secondary cylinder and exhaust in another position, said valve being moved in one direction by the working pressure from the primary cylinder and in the other direction by a constant pressure, substantially as described.

2. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, and an automatically-operated valve opening communication through one or the other of said channels and closing communication through the other channel in its respective positions, said valve being moved in one direction by the working pressure from the primary cylinder and in the other by a constant pressure, substantially as described.

3. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, and a piston for actuating said valve acted upon on one side by the working pressure from the primary cylinder, and opposed by a constant pressure, substantially as described.



4. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, a piston for actuating said valve acted upon on one side by the working pressure from the primary cylinder, and a weighted lever connected to the valve and opposing its movement by the piston, substantially as described.

5. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, and two pistons controlling the movement of said valve, one of said pistons being acted upon by the working pressure from the primary cylinder and the other by a constant pressure, substantially as described.

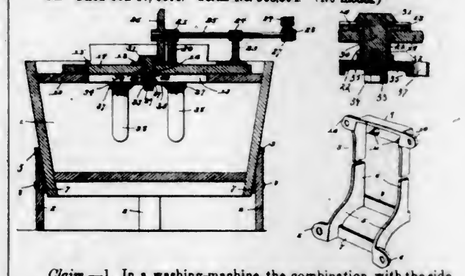
6. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, two pistons controlling the movement of said valve, one of said pistons being acted upon by the working pressure from the primary cylinder and the other by a constant pressure, and a weighted lever connected to the valve and opposing its movement by the piston operated from the primary cylinder, substantially as described.

7. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connecting the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, and two pistons of different sizes controlling the movement of the valve, one piston being acted upon by the working pressure from the primary cylinder and the other by the pressure from the main, substantially as described.

8. The combination, with a primary motor-cylinder, of a secondary motor-cylinder, channels connectiug the secondary cylinder with the primary cylinder and with the exhaust, an automatically-operated valve controlling communication through said channels, two pistons of different sizes controlling the movement of the valve, the larger piston being acted upon by the working pressure from the primary cylinder and the smaller by the pressure from the main, and a weighted lever connected to the valve and opposing its movement by the larger piston, substantially as described.

9. The combination, with the primary and secondary motor-cylinders, of the valve-chamber M, channels connecting the valve-chamber with the primary and secondary cylinders and the exhaust, a valve controlling said channels, piston U in cylinder V for moving the valve in one direction, piston S in cylinder T for moving the valve in the opposite direction, said cylinders communicating, respectively, with the main and primary cylinders, and a weighted lever W, connected to the valve and opposing its movement by piston S, substantially as described.

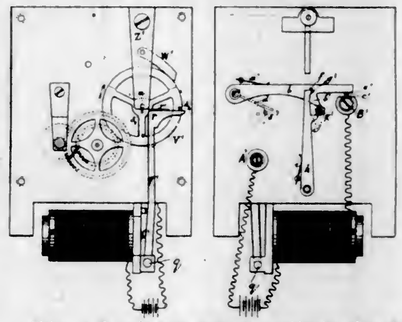
446,800. WASHING-MACHINE. EDWARD E. URANGST, Nazareth, Pa. Filed Oct. 17, 1890. Serial No. 368,394. (No model.)



Claim.—1. In a washing-machine, the combination, with the side wall thereof, of the herein-described leg-casting, consisting of the opposite vertical side bars 4, the lower ends of which are inwardly curved, as at 5, the keeper-bars 7 and 8, arranged out of alignment and connecting the side bars at and above their lower ends, the socket 9, located at the upper end of the casting and having the upper and outer closed sides, the latter upon its inner surface having the spurs 11, the opposite pairs of perforated lugs 6 and 10, secured to the wall of the tub, and the legs inserted between the keepers and side bars and having their upper ends terminating in the socket and engaged by the spurs thereof, substantially as specified.

2. In a washing-machine, the combination, with the lid thereof having an opening, of a gear-supporting casting mounted therein and provided with a depending hollow stud, a master-gear, and means for operating the same supported above the base, a short shaft having a small pinion at its upper end engaged by said gear mounted in the stud and terminating immediately below the stud, at which point it is reduced to form a bored interiorly and exteriorly threaded tenon, a rubbing-head comprising radiating arms, a central opening for the reception of the tenon, provided with an annular bearing-flange for the support of the shaft and outside of the same with an annular flange encircling the lower end of the stud of the casting, and a screw inserted through the tenon and having its head taking under the rubbing-head, substantially as specified.

446,801. ELECTRIC REGULATING-CLOCK. DÉSIRÉ VAN DE PLASSCHE and GUSTAVE VAN DE PLASSCHE, Courtral, Belgium. Filed May 21, 1889. Serial No. 311,586. (No model.) Patented in Belgium Feb. 4, 1885, No. 67,750; in Germany Apr. 13, 1885, No. 34,064; in France June 29, 1885, No. 169,834, and in England July 14, 1885, No. 8,538.



Claim.—1. In an electric clock, the combination of an electro-magnet with an electric circuit adapted to excite the said magnet at regular intervals of time, an unequally-weighted fly-wheel mounted on a horizontal axle and adapted to act on the clock mechanism, a striking-lever connected with the armature of the electro-magnet and adapted to give to the fly-wheel at every attraction of the armature an impulse sufficient for an entire revolution, and a brake device adapted to consume any excess of energy of the fly-wheel, substantially as described, and for the purpose specified.

2. In an electric clock, the combination of an electro-magnet with an electric circuit adapted to excite the said magnet at regular intervals of time, an unequally-weighted fly-wheel mounted on a horizontal axle and adapted to act on the clock mechanism, a striking-lever connected with the armature of the electro-magnet and adapted to give to the fly-wheel at every attraction of the armature an impulse sufficient for an entire revolution, a brake device adapted to consume any

excess of energy of the fly-wheel, and a check-lever or detent adapted to prevent the fly-wheel from turning back, substantially as described, and for the purpose specified.

3. In an electric clock, the combination of an electro-magnet with an electric circuit controlling the said magnet, a circuit-closer controlled by the going-work of the clock and adapted to close the circuit at constant intervals of time, an unequally-weighted fly-wheel connected with the clock-motor and adapted to wind the same between given limits at every turn of the fly-wheel, a striking-lever connected with the armature of the electro-magnet and adapted to give to the fly-wheel at every attraction of the armature an impulse sufficient for an entire revolution, a brake device adapted to consume any excess of energy of the fly-wheel, and a circuit-breaker adapted to be worked by the fly-wheel so as to interrupt the electric circuit after the fly-wheel has traveled a given distance, substantially as described, and for the purpose specified.

4. The combination, with a clock-work, of an electric circuit comprising an electro-magnet, a circuit-closer connected with the going-work of the clock and controlled by the same so as to close the said circuit at given intervals of time, an unequally-weighed fly-wheel connected with the clock-spring and adapted to wind the same within given limits during its forward motion, a lever connected with the armature of the said electro-magnet and adapted to give to the fly-wheel at every attraction of the armature an impulse at least sufficient for an entire revolution of the fly-wheel, a circuit-breaker adapted to be controlled by the fly-wheel so as to interrupt the circuit of the electro-magnet at every time when the fly-wheel has turned a given distance or angle from its starting position, a check-lever adapted to prevent the fly-wheel from turning back, and a brake device adapted to prevent the fly-wheel from turning too far, substantially as described, and for the purpose specified.

5. The combination of a clock-work with an electric circuit, an electro-magnet controlled by the said circuit, an armature-lever adapted to be attracted by the said magnet and carrying at its free end a brake-spring, an unequally-weighted fly-wheel connected with the going-work of the clock and adapted to wind the mainspring, the said fly-wheel being adapted to receive an impulse from the armature-lever sufficient at least for an entire revolution of the fly-wheel and to meet the said brake-spring after a given travel of the fly-wheel, so as to prevent the latter from making more than one revolution, substantially as described, and for the purpose specified.

6. The combination of a clock-work with an electric circuit, an electro-magnet controlled by the said circuit, an armature-lever adapted to be attracted by the said magnet and carrying at its free end a brake-spring, an unequally-weighted fly-wheel connected with the going-work of the clock and adapted to wind the mainspring within given limits, the said fly-wheel being adapted to receive an impulse from the armature-lever sufficient at least for an entire revolution of the fly-wheel and to meet the said brake-spring after a given travel of the fly-wheel, so as to prevent the latter from making more than one revolution, and a pawl or detent to prevent the fly-wheel from turning backward, substantially as described.

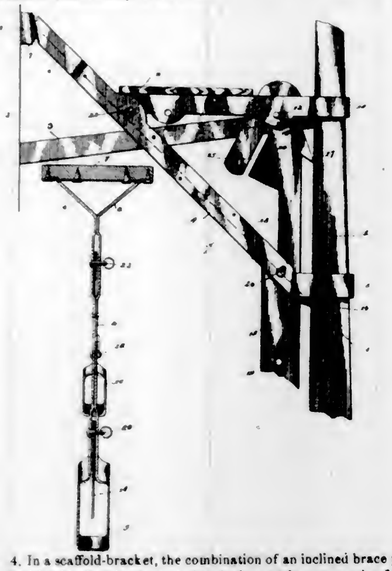
7. In an electric clock, the combination, with the electric circuit, of an electro-magnet and a pair of contacts included in the said circuit, a contact-lever carrying the movable contact and adapted to press the same against the fixed contact, an auxiliary lever adapted to keep the contact-lever away from the fixed contact, a ratchet-wheel connected with the going-work of the clock and controlling the position of the said levers, and a fly-wheel mechanism adapted to be worked by the said electro-magnet and to remove the contact-lever from the fixed contact after the fly-wheel has traveled a given distance, substantially as described, and for the purpose specified.

446,802. SCAFFOLD-BRACKET. SIMON VAN VLIET, Rutherford, N. J. Filed Sept. 11, 1890. Serial No. 364,632. (No model.)

Claim.—1. In a scaffold-bracket, the combination of an inclined brace, a floor-support pivoted thereto, loops at the outer ends of said brace and floor-support for the attachment of a post of the scaffold, an upright connecting the front ends of said brace and floor-support and provided with a tooth, and means for projecting said tooth into engagement with a scaffold, substantially as and for the purpose set forth.

2. In a scaffold-bracket, the combinatioo of an inclined brace, a floor-support pivoted thereto, said brace and floor-support being provided with loops for the attachment of a post of the scaffold, an upright pivoted to the lower end of said brace and provided with a tooth at its front edge, and means at the upper end of said upright whereby its tooth is caused to project into said scaffold, substantially as set forth.

3. In a scaffold-bracket, the combination of an inclined brace, a floor-support pivoted thereto, loops at the outer ends of said brace and floor-support for the attachment of a post of the scaffold, an upright pivoted at its lower end to the lower end of said brace and provided with a tooth, a pin at the outer end of the floor-support, and means engaged thereby whereby said tooth is caused to project into the scaffold substantially as set forth.



4. In a scaffold-bracket, the combination of an inclined brace provided with a block at its upper end and a loop at its outer end, a floor-support pivoted to said brace and provided with a loop at its outer end, an upright pivoted to the lower end of said brace and provided with inclined teeth at its front edge, and means at the upper end of said upright whereby its teeth are caused to project into said scaffold, substantially as set forth.

5. In a scaffold-bracket, the combination of an inclined brace, a floor-support pivoted thereto, means at the outer ends of said brace and floor-support for engaging a post of the scaffold, an upright pivoted to said brace and provided with a tooth at its front edge and an inclined slot at its upper end, and a pin at the outer end of said floor-support adapted to engage in said slot, substantially as and for the purpose set forth.

6. In a scaffold-bracket, the combination of an inclined brace, a floor-support pivoted thereto, an upright connecting the front ends of said brace and floor-support and provided with a tooth, means for projecting said tooth into engagement with a post of a scaffold, and means at the outer ends of said brace and floor-support for engagement with said post, substantially as set forth.

446,803. MOWING-MACHINE-KNIFE GRINDER. JAMES W. WATSON, Achor, Ohio. Filed Mar. 7, 1890. Serial No. 343,009. (No model.)

Claim.—1. A mowing-machine grinder consisting of a lower bar adapted to engage the points of a mowing-machine finger-bar, a separate rock-bar above the same, a clamp secured to the lower bar and adapted to pass under and engage the rear of the finger-bar and hold the grinder firmly thereto, abrasive blocks secured to said rock-bar, and a lock secured to the lower bar, and a lock-lever secured to the rock-bar, whereby the rock-bar, with its attached abrasive blocks, may be tipped at any angle and held in position, substantially as described.

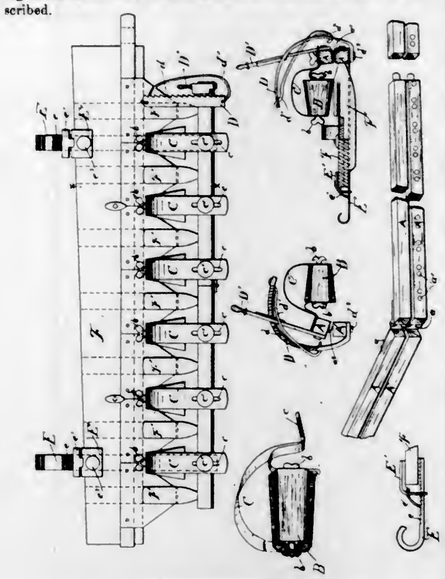
2. The combination, in a mower-grinder, of a bar adapted to engage the fingers of a finger-bar, a rock-bar secured to the same, a clamp adapted to engage the mower finger-bar, and a lock adapted to hold said rock-bar at any desired angle, substantially as described.

3. The combination, in a mower-grinder, of a rock-bar, abrasive blocks having beveled grinding-faces, and springs adapted to hold said blocks and be adjustably fixed to said rock-bar, substantially as described.

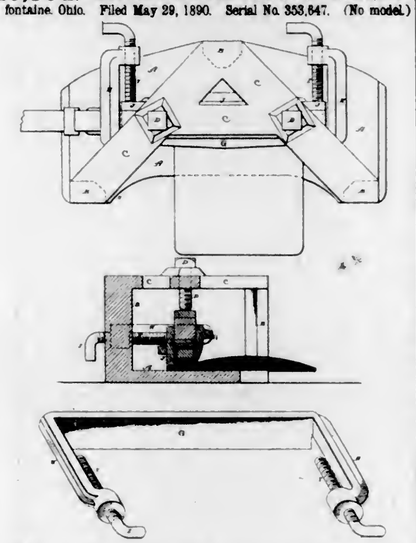
4. In a mower-grinder, a bar made in sections adapted to be secured together, a rock-bar made in corresponding sections and attached thereto, and abrasive blocks secured to said rock-bar, substantially as described.

5. In a mower-grinder, the combination of a rocking bar, a supporting-spring laterally adjustable upon said rocking bar, and an abrasive block vertically adjustable in the free end of said supporting-

spring, with means described for tilting said rocking bar and depressing the abrasive block into contact with the mower-knives, as described.



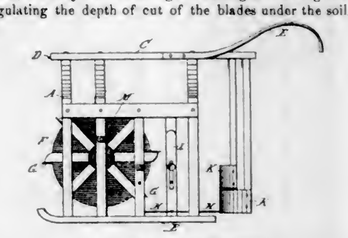
446,804. HARNESS-LOOP PRESS. AUGUSTUS C. WOOLMAN, Bellefontaine, Ohio. Filed May 29, 1890. Serial No. 353,647. (No model.)



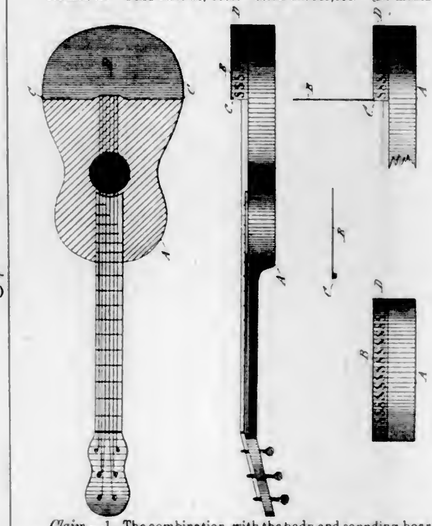
Claim.—In a harness-loop press, the combination, with a frame consisting of a base-plate, a vertical support at the center of one edge, a vertical support at the corners of the opposite edge of said base-plate, cross-bars connected to their upper ends, and screws passed through the said bars between their ends, of a U-shaped clamping-frame having screws which extend parallel with the ends of the clamp, and a clamping-plate against which the inner ends of the screws bear, whereby the frame is especially adapted to receive the U-shaped clamping-frame, substantially as described.

446,805. CANE-SCRAPER. JOSEPH F. AUCOIN, Plattenville, La. Filed July 5, 1890. Serial No. 357,895. (No model.)

Claim.—In a cane-scraper such as described, a wheel placed within a frame, with adjustable bearings for raising or lowering the same in such a manner as to regulate the depth of cut of the blades, in combination with knives attached to said frame and adjusted in rear of the wheel, with adjustable bearings for raising or lowering the knives and regulating the depth of cut of the blades under the soil, as set forth.



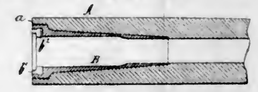
446,806. ARM-REST FOR GUITARS. JOSEPH ARENCIBIAS, New Orleans, La. Filed June 28, 1889. Serial No. 315,888. (No model.)



Claim.—1. The combination, with the body and sounding-board of a stringed instrument, of the vertically-disposed perforated rim partially encircling the same at its rear end and the arm-rest secured to said rim above the strings of the instrument, substantially as specified.

2. The combination, with the body of a guitar or similar instrument having the perforated rim partially encircling the same at its rear end, of the arm-rest secured by a hinge to the ends of said rim and adapted to rest upon the same, substantially as specified.

446,807. MACHINE-GUN. ROBERT H. ARMIT, London, England, assignor of one-half to Thomas McCulloch, same place. Filed Mar. 13, 1888. Serial No. 267,077. (No model.) Patented in England Nov. 25, 1885, No. 14,482; in France Feb. 2, 1886, No. 173,922; in Germany Feb. 2, 1886, No. 36,351; in Belgium Feb. 9, 1886, No. 71,907; in Italy Feb. 9, 1886, and in Austria-Hungary May 29, 1888.

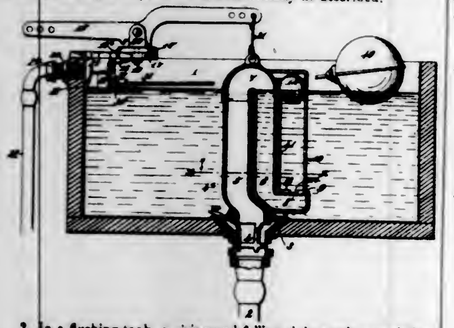


Claim.—The combination, with a gun-barrel, of a false chamber or bushing provided with an intermittent or divided screw and with notches and recesses for the reception of a key, substantially as described.

446,808. SIPHON-VALVE FLUSHING APPARATUS FOR WATER-CLOSETS. CHARLES A. BLESSING, Philadelphia, Pa. Filed Sept. 3, 1889. Serial No. 322,863. (No model.)

Claim.—1. In a flushing-tank, the combination, with a valve-seat, of a rising-and-falling siphon-valve having at the foot of its short arm

a lateral hollow extension supporting vertical guide-wires, which at their upper ends are bent horizontally and secured to the siphon-valve, a float-valve moving against the siphon-valve and the said wires, and means for raising the siphon-valve, substantially as described.



3. In a flushing-tank, a rising-and-falling siphon-valve consisting of two sections having the end of one attached directly to the end of the other and at the foot of the short arm a lateral hollow extension, the apertured top wall of which supports vertical guide-wires having their upper ends bent horizontally and secured to the siphon-valve, and a float-valve moving against the siphon-valve and the said wires, substantially as described.

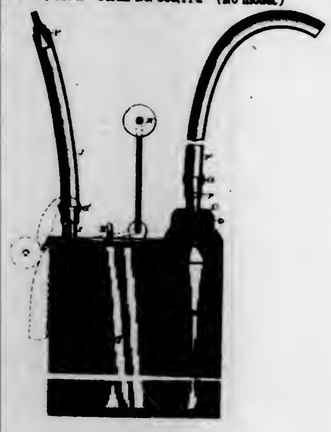
3. In a flushing-tank, the combination, with a valve-seat, of a siphon-valve carrying a seating-ring and having at the foot of one branch an inlet-opening, and a float-valve closing said opening as the water sinks in the tank, the siphon-valve being provided with an air inlet of small size, substantially as described.

4. In a flushing-tank, the combination, with a valve-seat, of a siphon-valve having an extension at the foot of one arm or branch, said extension provided with an inlet-opening on its upper face, having a valve seat or flange surrounding said opening and provided with one or more channels, a float-valve rising and falling in a cage on said extension, and means for raising the siphon-valve, substantially as described.

5. In a flushing-tank, the combination, with a valve-seat, of a siphon-valve having an extension at the foot of one arm or branch, said extension provided with an inlet-opening surrounded by a flange having one or more channels, a float-valve rising and falling with the water in a cage on said extension, and an air-inlet entering the siphon and having a graduated adjustable air-valve end, substantially as described.

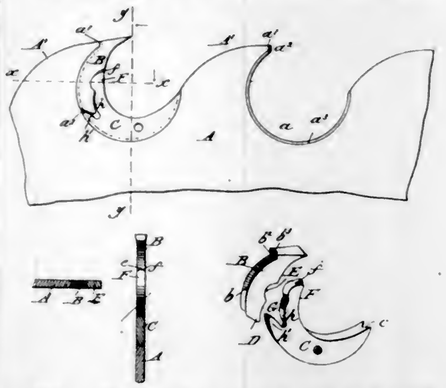
6. In a flushing-tank, the combination, with a valve-seat, of a siphon-valve having an extension at the foot of its shorter arm or branch, said extension provided with an inlet-opening surrounded by a flange having one or more channels, an elastic float-valve rising and falling in a cage on the extension, an air-tube entering the latter and rising above the normal water-level, and a screw beveled off on two opposite sides and tapped into the open end of said air-tube, substantially as described.

446,809. OIL-CAN. LEWIS S. BOMBAKER, Waynesburg, Ohio. Filed Oct. 14, 1890. Serial No. 368,114. (No model.)



Claim.—In an oil-can, the combination of the can having an outlet-tube, an air-inlet tube at the upper end of the can, a roll formed upon the upper edge of the cam, and a bail constructed to swing into opposition to the roll, and thereby compress the inlet-tube, the parts combined to operate in the manner shown and described.

446,810. SAW-TOOTH. WILLIAM R. BROOKE, Trenton, N. J., assignor to the American Saw Company, same place. Filed Sept. 25, 1890. Serial No. 366,121. (No model.)



Claim.—1. The combination, with the saw-plate having a recess and a tongued shoulder at the outer end of said recess and at an angle thereto, of a saw-tooth having a grooved angular shoulder bearing against the aforesaid tongued shoulder at the outer end of the recess, and the locking-plate having a tongued lug at its upper end adapted to engage a suitable groove on the front edge of the tooth, there being a recess in the locking-plate, into which the foot of the tooth enters loosely without touching, substantially as described.

2. The combination, with the saw-plate A, having recess *a*, with a V-tongue, and an angular shoulder *a'*, with the right-angled tongue, of the tooth B, having a grooved angular shoulder b^3, which engages the tongued shoulder *a'*, and having the plain-faced foot D and the curved recess E, with the right-angled groove, and the locking-plate C, having the rearwardly-curved upper end, provided with a right-angled lug that enters the grooved recess on the front edge of the tooth, and having a plain-faced recess within which the plain-faced foot on the tooth loosely lies without touching, substantially as described.

3. The combination, with the saw-plate A, having recess *a*, and angular shoulder *a'*, having right-angled tongue a^3, the tooth B, having an angular shoulder b^3, provided with the right-angled groove b^2 and a right-angled front groove *e*, and the locking-plate having lugs *f* at its upper end that enter the groove *e*, substantially as described.

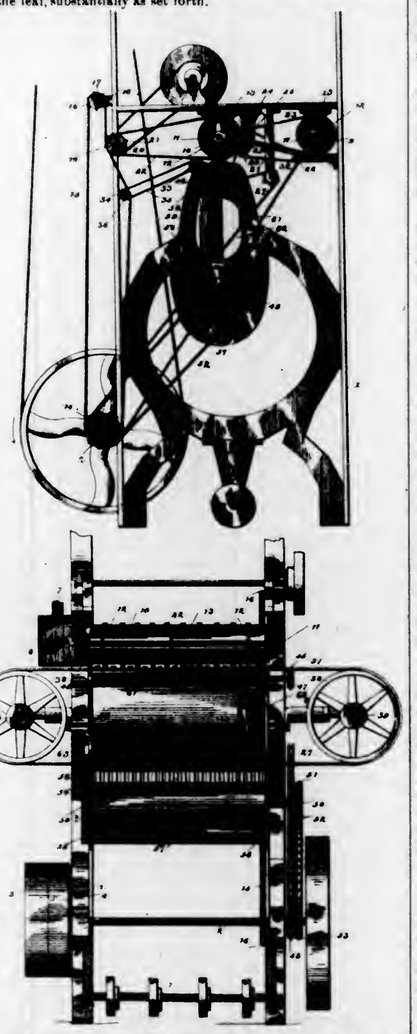
4. The combination of the saw-plate A, having recess *a*, and provided with the V-shaped tongue a^2, and the shoulder *a'*, having tongue a^3, the tooth B, having the convex rear edge provided with groove *b*, and shoulder b^3, having groove b^2, said tooth having plain-faced foot D and front recess E, grooved at *e*, and the locking-plate C, having the lower edge grooved at *e*, and having the rearwardly-curved upper end F, formed with lug *f*, and likewise the recess *a*, all the parts being combined substantially as described.

446,811. MACHINE FOR REMOVING STEMS FROM TOBACCO-LEAVES. ROBERT W. COFFER, Bedford City, Va. Filed Aug. 20, 1890. Serial No. 362,523. (No model.)

Claim.—1. In a tobacco-stemming machine, the stem-guiding mechanism consisting of a series of endless bands or wires mounted upon suitable rollers and adapted to engage opposite sides of the stems, in combination with leaf-carrying mechanism and means for severing the stems from the leaf, substantially as set forth.

2. In a tobacco-stemming machine, the stem-guiding device comprising a series of endless resilient bands or wires mounted upon suitable rollers and adapted to engage opposite sides of the stems, in combination with leaf-carrying mechanism and means for severing the stems from the leaf, substantially as set forth.

3. In a tobacco-stemming machine, the stem-guiding device comprising a series of endless bands or wires mounted upon suitable rollers, in combination with rollers arranged outside the said endless bands or wires and pressing them against the supporting-rollers, suitable driving mechanism, leaf-carrying mechanism, and means for severing the stems from the leaf, substantially as set forth.



4. In a tobacco-stemming machine, the stem-guiding mechanism comprising a series of endless resilient bands or wires mounted upon suitable rollers, in combination with a series of guide-rollers arranged approximately in the form of an ellipse and bearing against the outsides of said bands or wires, leaf-carrying mechanism, and means for severing the stem from the leaf, substantially as set forth.

5. In a tobacco-stemming machine, the stem-guiding device comprising a series of endless resilient bands or wires mounted upon suitable supporting-rollers, in combination with rollers arranged to press the said bands or wires into frictional contact with the supporting-rollers, the guide-rollers arranged to bear against the outside of the resilient bands or wires, suitable driving mechanism, leaf-carrying mechanism, and means for severing the stem from the leaf, substantially as set forth.

6. In a tobacco-stemming machine, the endless resilient stem-guiding bands or wires mounted upon suitable supporting-rollers, in combination with the casing arranged between the supporting-rollers, the guide-rollers arranged to bear against the outside of the bands or wires, suitable driving mechanism therefor, leaf-carrying mechanism, and means for severing the stem from the leaf, substantially as set forth.

7. In a tobacco-stemming machine, the endless resilient stem-guiding wires mounted upon suitable supporting-rollers, in combination with the guide-rollers arranged to bear against the outside of said resilient wires, thereby forcing the slack portion of the latter in an upward direction above the upper supporting-roller, leaf-carrying mechanism, and means for severing the stem from the leaf, substantially as set forth.

8. In a tobacco-stemming machine, the combination, with the endless resilient guide-wires, the supporting-rollers, the stem-receiving casing arranged between said supporting-rollers, guide-rollers bearing against the outside of the endless resilient wires, rollers arranged to press the resilient wires into frictional contact with the supporting-rollers, and suitable operating mechanism, of leaf-carrying mechanism and means for severing the stem from the leaf, substantially as set forth.

9. In a tobacco-stemming machine, the combination of the endless resilient guide-wires, the supporting-rollers, the guide-rollers arranged to bear against the outside of the resilient wires and to force the slack of the latter in an upward direction above the upper supporting-roller, the endless knife or cutter, and leaf-carrying mechanism, substantially as set forth.

10. In a tobacco-stemming machine, the combination of leaf-carrying mechanism, endless resilient stem-guiding bands or wires mounted upon suitable supporting-rollers and serving to guide the stems and to force the leaves into contact with the carrying mechanism, and a knife or cutter adapted to sever the stems from the leaves, substantially as set forth.

11. In a tobacco-stemming machine, the combination of the leaf-carrying mechanism, the endless resilient stem-guiding bands or wires mounted upon suitable supporting-rollers, the guide-rollers arranged to bear against the outside of bands or wires and to force the slack of the same in an upward direction above the upper supporting-roller and into contact with the leaf-carrying mechanism, the endless knife or cutter, and suitable operating mechanism, substantially as set forth.

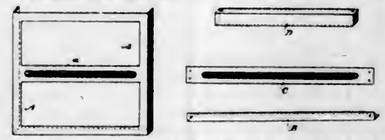
12. In a tobacco-stemming machine, the combination of the leaf-carrying mechanism having the revolving perforated suction-cylinders, the endless resilient stem-guiding bands or wires mounted upon suitable supporting-rollers, the guide-rollers arranged to bear against the outside of said resilient bands or wires and to force the slack of the latter in an upward direction above the upper supporting-roller and into contact with a revolving suction-cylinder, the rollers arranged to press the resilient bands or wires into frictional contact with the supporting-rollers, suitable driving mechanism, and an endless knife or cutter located under the upper portion of the stem-guiding bands, substantially as set forth.

13. In a tobacco-stemming machine, the combination of the leaf-carrying mechanism, the endless resilient stem-guiding bands or wires mounted upon suitable supporting-rollers, the transverse approximately elliptical casing inclosed by said endless bands or wires and having at its upper end a slot to accommodate the upper supporting-roller and to admit the stems, the guide-rollers arranged to bear against the outside of said bands or wires, and the transversely-arranged endless knife or cutter, the upper portion of which is arranged above the upper supporting-roller in the bight or slack of the endless resilient bands or wires, substantially as set forth.

14. In a tobacco-stemming machine, the combination of the endless resilient stem-guiding bands or wires, the supporting-rollers, the guide-rollers, the leaf-carrying mechanism, the endless knife or cutter, the stem-receiving casing open at one end and connected at its opposite end with a blast-fan, and the deflector arranged near one end of said casing, substantially as set forth.

15. In a tobacco-stemming machine, the combination of the supporting-rollers, the endless resilient bands or wires, the guide-rollers bearing against the outside of said bands or wires, a roller geared to the lower supporting-roller and pressing the said bands or wires into frictional contact therewith, the leaf-carrying mechanism, the endless knife or cutter, and suitable driving mechanism, substantially as set forth.

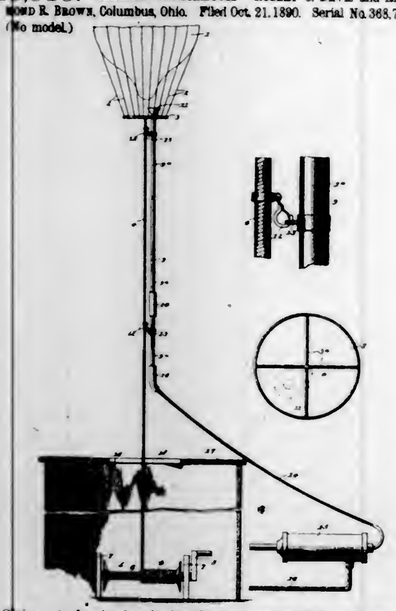
446,812. TRUNK. JOHN S. DAGGETT, Brooklyn, assignor of one-half to William Courtenay, New York, N. Y. Filed Feb. 19, 1890. Serial No. 340,984. (No model.)



Claim.—A trunk having its sides, ends, top, and bottom held together and its corners and edges guarded by a frame constructed, essentially, of but three patterns—that is to say, the flanged end pieces A of the body of the trunk, the end pieces D of the cover, also having flanges, one of which when the trunk is closed comes outside of and

incloses the top of the end of the body of the trunk, and the angular strips B, fitting into the flanges of the opposite end pieces, which they connect and hold together, substantially as and for the purposes specified.

446,813. **AERIAL VENTILATOR.** ROBERT C. DAVIS and RICHMOND R. BROWN, Columbus, Ohio. Filed Oct. 21, 1890. Serial No. 368,782. (No model.)



Claim.—1. In the herein-described apparatus, the combination, with a balloon and a cable for holding it, of an air-conduit leading from said balloon to the ground, and loose connections between the cable and the air-conduit, substantially as and for the purpose set forth.

2. In the herein-described apparatus, the combination, with a balloon and a cable for holding it, of an air-conduit composed of a series of tubular sections provided with flexible couplings, and loose connections between each section of the conduit and the cable, substantially as and for the purpose set forth.

3. In the herein-described apparatus, the combination, with a balloon and a cable for holding it, of an air-conduit consisting of a number of flexibly-jointed sections, substantially as and for the purpose set forth.

446,814. **MACHINERY FOR HANDLING COAL.** JAMES M. DODGE, Philadelphia, Pa. Filed Nov. 14, 1890. Serial No. 371,455. (No model.)

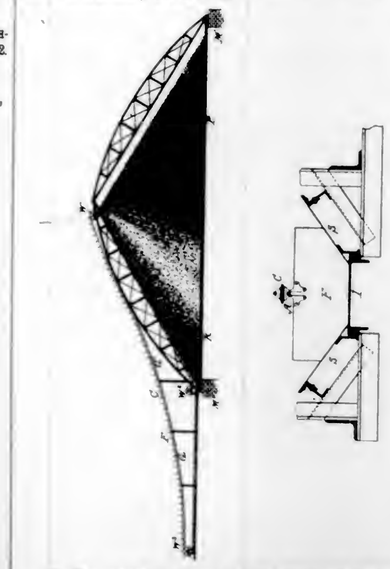
Claim.—1. In an apparatus for piling coal or analogous material, a sheer structure composed of legs arranged in respect to each other at or about the angle of repose of the material to be piled, and also arranged to span the pile to be formed, with a continuous forward-feed conveyer carried by said sheer structure and adapted to form the pile under the sheers, substantially as described.

2. In an apparatus for piling coal or analogous material, a conveyer-support inclined at or about the angle of repose of the material to be piled, and fixed in this position, and an endless conveyer traveling on said support and provided with flights, the lower run of the conveyer being the elevating one, substantially as set forth.

3. The combination of a conveyer-support extending upward at or about the angle of repose of the material to be piled, a movable bottom for varying the point of discharge, and a continuous forward-feed conveyer for carrying the material up the inclined plane to the said discharge-point, substantially as and for the purposes described.

4. In an apparatus for piling coal or analogous material, a stationary sheer structure composed of legs fixed in respect to each other at or about the angle of repose of the material to be piled, and also arranged to span the pile to be formed, masonry supports upon which the lower ends of the legs are fixed, and a continuous forward-feed conveyer carried by said sheer structure and adapted to form the pile under the sheers, substantially as described.

5. The combination of an inclined supporting structure with a continuous forward-feed conveyer supported throughout the length of its elevating portion by said structure, the latter having an open bottom to permit of the discharge of material from the elevating portion of the conveyer at advancing points throughout the length of the supporter, substantially as described.



6. The combination of the inclined supporting structure having side bearing-plates throughout its length and open at its center for the free discharge of material, with a continuous forward-feed conveyer supported by the side plates throughout the length of its elevating portion, substantially as described.

7. The combination of an inclined supporting structure having side plates and movable bottom with a continuous forward-feed conveyer adapted to be supported throughout the length of its elevating portion by said structure, substantially as set forth.

8. The combination of the sheers composed of legs inclined at or about the natural angle of repose of the material to be piled, and joined at their upper ends, with a conveyer arranged to carry the material to be piled up one of said legs, and means for connecting the lower parts of the legs together, substantially as set forth.

9. The combination of the sheers having legs inclined at or about the natural angle of repose of the material to be piled, and joined at their upper ends, an inclined plane on one of said legs, and a continuous forward-feed conveyer for carrying the material on this incline plane to a point of discharge, substantially as set forth.

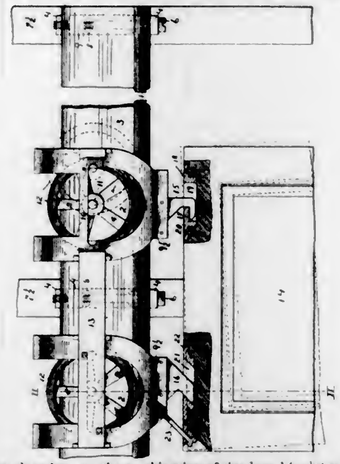
10. The combination of the sheers composed of legs inclined at or about the natural angle of repose of the material to be piled, a wheel at or about the junction of the two legs, a wheel at the base of one of said legs, an endless-chain conveyer, flights thereon, and a guide supported by the leg for the return run of the endless chain, substantially as specified.

446,815. **PROCESS OF MAKING ALKALINE PHOSPHATES.** CHARLES GLASER, Baltimore, Md., assignor to the American Phosphate and Chemical Company, same place. Filed Nov. 15, 1890. Serial No. 371,595. (No specimens.)

Claim.—The process for the manufacture of pure phosphates of the alkalies from crude commercial phosphoric acid by the following successive stages, viz: first, decomposing the salt of an alkali and an acid volatile at higher temperature by fusing same with crude commercial phosphoric acid in excess of an amount required to form a pyrophosphate; secondly, dissolving the fused mass in water and boiling till conversion of meta and pyro phosphoric acid is effected, thirdly, treating with the carbonate of an alkali (or free alkali) till alkaline reaction is obtained, and finally separating the solution from insoluble impurities and obtaining from the former the pure salts by crystallization or otherwise, all substantially as described above.

446,816. **DOOR-HANGER.** SAMUEL W. HEIGHST and OETTING G. HEIGHST, Kansas City, Mo. Filed Apr. 12, 1890. Serial No. 347,701. (No model.)

Claim.—1. In a door-hanger, the combination of the track 1, adjustable bracket 3, to which the track is secured, stationary bracket 7, having a screw-threaded portion 9, and a bolt 6, engaging the screw-threaded portion 9, said bolt also engaging the bracket 3, whereby said bracket may be held at a fixed point or may be raised or lowered at will, substantially as described, and for the purpose set forth.

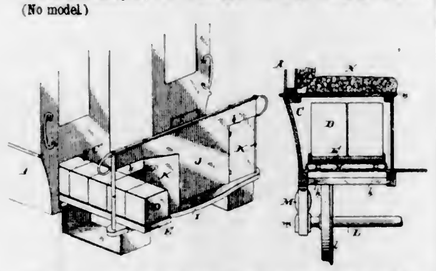


2. In a door-hanger, the combination of the door 14, plates 18 22 in said door, plate 18, having an extension 20, and plate 22, having a bearing-surface formed at an acute angle, hanger-frames 9¼, hooks 15 16 on said hanger-frames, hook 15, having an extension 17 formed at a right angle to the body of the hook, and hook 16, formed at an acute angle, substantially as described, and for the purpose set forth.

3. In a door-hanger, the combination, with the door 14, the independent hanger-frames 9¼, having rigid lower ends, and suitable means for moving the door on the hangers for adjustment, of the bracing guard-plate 13, rigidly connected to the hangers 9¼ and maintaining them in fixed relation, substantially as described.

4. In a door-hanger, the combination of the independent hanger-frames 9¼, pulleys 12 on which the hanger-frames rest, and independent means for securing the respective hanger-frames to the door, one of said frames being secured at a fixed point and the other being adjustable, whereby the vertical position of the door may be maintained by the adjustment of one hanger only, substantially in the manner set forth.

446,817. **ELECTRICALLY-PROPELLED CAR.** RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Mar. 14, 1889. Serial No. 303,198. (No model.)



Claim.—1. A car having longitudinally-arranged seats, end dashers, openings in one of the car-body ends and in the dasher adjacent thereto in line with the spaces below said seats, and doors or covers for said openings in the car end and dasher for effecting the transfer of storage-batteries to and from the car, substantially as set forth.

2. A car having longitudinally-arranged seats, end dashers, openings in one of the car-body ends and in the dasher adjacent thereto in line with the spaces below the seats, and doors or covers for the openings in said car-body end and dasher, in combination with a removable platform or plank E, substantially as set forth.

3. A car having end platforms, dashers thereon, longitudinally-arranged seats with spaces between the seats and the car-floor, and openings in one end of the car and in one of the dashers in line with said seat-spaces for effecting transfer of storage-batteries to and from said seat-spaces across the end platform, substantially as set forth.

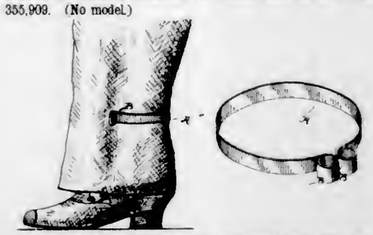
4. A car having openings in one of its ends, removable doors or covers therefor, and removable or hinged dasher-sections in line with said doors, substantially as set forth.

5. A car having longitudinally-arranged seats, end dashers, guideways on the floor below said seats, and openings in one end of the car and in one of the dashers in line with the space below the seats, in combination with movable planks or platforms E, adapted to said guideways, substantially as set forth.

446,818. **MARINE PAINT.** JOHN N. LONGDEN, New York, N. Y. Filed July 17, 1889. Serial No. 317,963. (No specimens.)

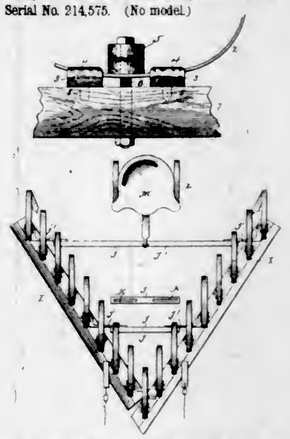
Claim.—The process of manufacturing anti-fouling paint, which consists in incorporating moist precipitated copper with a paint-vehicle and stirring the mixture at a temperature sufficiently high to drive off the water, substantially as set forth.

446,819. **GARMENT-PROTECTOR.** OTTO F. OSTERGREN and ALEXANDER K. SCHAAP, Richmond, Va. Filed June 18, 1890. Serial No. 355,909. (No model.)



Claim.—As an improved article of manufacture, the herein-described device for riders' use, consisting of the curved contractile clasp of flat spring metal protected at the ends, as shown, for clasping and holding garments in place around the limbs of the wearer, substantially as set forth.

446,820. **HARROW.** DE WANE B. SMITH, Utica, assignor, by mesne assignments, to Warren M. Brinkerhoff, Auburn, N. Y. Filed Sept. 25, 1886. Serial No. 214,575. (No model.)



Claim.—1. In a harrow or cultivator, the combination, with the frame thereof, of a tooth-seat composed of projecting supports, one in advance of the other, with an open space between and a spring-tooth supported thereby and spanning said space, and a binder to hold said tooth in engagement with said supports, substantially as described.

2. In a harrow, the combination, with a frame, of a tooth-seat having vertical walls and an open space between the same, a flat spring-tooth supported by said walls, and a binder to hold the tooth in position, substantially as described.

3. In a harrow, the combination, with a draft-bar, of a channel tooth-seat having its walls placed vertically, a tooth mounted on the plain edges of said walls, and a binder to hold said tooth firmly in such position, substantially as described.

4. In a harrow, the combination, with a draft-bar, of a channel

tooth-seat having its walls placed vertically, a tooth mounted on the plain edges of said walls, and a clip extending over said tooth and confined by the body portion of said bar, substantially as described.

5. The combination, with the frame of a spring-tooth harrow, of a tooth-seat consisting of projections located on the frame at different points in the line of draft, one point in advance of the other, with a concavity between them, a curved spring flat harrow-tooth engaging the outer portions of the projections and held thereby out of contact with the surface or surfaces between them, said tooth extending beyond the seat on the front and rear of the same, and a binder engaging a curved portion of the tooth between the said projections, substantially as described.

6. The combination, with the frame of a spring-tooth harrow, of a tooth-seat mounted on the frame and having as parts of the same tooth-engaging projections located at different points in the line of draft, one point in advance of the other, with a concavity between them, said seat having integral projections engaging the frame of the harrow, a curved flat spring harrow-tooth engaging the outer portions of the said projections and held thereby out of contact with the surface or surfaces between them, said tooth extending front and rear beyond said seat, and a binder engaging a curved portion of the tooth between the projections of the seat, substantially as described.

7. The combination, with a spring-tooth-harrow frame, of a tooth-seat having as parts of the same front and rear parallel walls having a concavity between them, projections for engaging the edges of the tooth extending beyond the tops of said walls, a curved flat spring harrow-tooth engaging the top portions of said walls between said projections and extending front and rear of said walls, and an adjustable binder engaging a curved portion of the tooth between said walls, substantially as described.

8. In a harrow, devices for holding a curved flat spring-tooth, consisting of a seat and binder, the said seat having front and rear parallel walls with a concavity between them forming a tooth-seat, in combination with a curved flat spring-tooth engaging the top portions of said walls and held thereby out of contact with the surface or surfaces between them, the said binder having its tooth-engaging surface of less extent lengthwise of the tooth than the space between the said walls and engaging a curved portion of the tooth intermediate the walls, whereby a portion of the tooth is left free from engagement between said binder and each of the walls of the seat, substantially as described.

9. In a spring-tooth harrow, the tooth-holding devices having as parts of the same two parallel walls extending vertically from the horizontal portion of the frame, forming a tooth-seat and a concavity between them, each wall being of substantially uniform thickness, and a binder adapted to engage the tooth between said walls, in combination with a curved flat spring-tooth having a curved portion engaged by said walls and binder, substantially as described.

10. In a harrow, devices for holding a curved spring-tooth, consisting of a tooth seat and binder, the said seat having front and rear parallel projections with a concavity between them, forming a tooth-seat, open between the tooth and the harrow-frame, in combination with a flat curved tooth mounted on said projection, and an adjustable binder engaging the inner curved portion of the tooth and holding said tooth firmly against the outer portions of said projections, substantially as described.

11. In a harrow, tooth-holding devices consisting of a seat and a vertically-adjustable binder, in combination with a spring harrow-tooth, the said seat having downwardly-extending integral projections penetrating the frame, and the binder holding the tooth and seat rigidly to said frame, substantially as described.

12. The herein-described harrow-frame bar extending in an angular direction to the line of draft and having a horizontal portion, and an upwardly-inclining portion forward of the same and provided with a wearing-rib, substantially as described.

13. The combination, with a harrow-frame having draft-bars extending angularly to the line of draft and inclining upwardly on their front edges, of adjustable tooth-clips mounted on the upper sides of said bars, substantially as described.

14. The combination, with a harrow-frame having draft-bars extending angularly to the line of draft, said bars being provided with a transverse upward incline toward the front of the harrow, of open tooth-clips with adjustable binders mounted on said bars, substantially as described.

15. The combination, with a harrow-frame having draft-bars extending angularly to the line of draft, of adjustable tooth-clips mounted on the upper side of said frame, said draft-bars between said clips having a concavity on their upper sides, substantially as described.

16. The combination, with a harrow-frame having draft-bars extending angularly to the line of draft, said bars provided with a transverse upward incline toward the front of the harrow, of adjustable tooth-clips mounted on the upper side of said bars below the highest portions of the same, substantially as described.

17. In a harrow, the combination, with the draft-bars extending angularly to the line of draft, having portions of their transverse extent lying in substantially a horizontal direction, of cross-bars secured to such horizontal portions, said draft-bars being provided between the cross-bars and forward of a horizontal portion with upwardly-inclined portions, substantially as described.

18. In a harrow, the combination, with draft-bars having a concavity on their upper surface and a convex lower surface provided with a wearing-rib, of a tooth-clip mounted on the upper side of the frame having portions engaging the lower side of the draft-bars in rear of the wearing-rib, substantially as described.

19. The combination of the tilting and adjustable V-shaped frame, each side bar of the frame having a continuous row of curved spring-teeth rigidly held on the tilting and adjustable side bars, the points of the teeth falling inside and below the side bars, the cross-bar, the angle-irons rigidly held to the side bars of the frame with semicircular slot and lip with bolt for engaging the slot and the cross-bar and the hinge at the front, substantially as set forth, for the purposes stated.

20. The combination, in the V-shaped frame, of the lower outer edge beveled or inclined, the frame having one or more cross-bars, a continuous row of curved spring-teeth mounted on the side bars of the frame, the point of the teeth falling inside and below the side bars, and means for fastening the teeth to the side bars.

21. The combination, in an A-shaped harrow-frame, of the hinge, the cross-bar, the angle-irons rigidly held to the cross-bar, with their ends provided with a circular slot, and a projecting lip projecting under the cross-bar of the pivotal point, and the bolts passing through the semicircular slots and engaging the cross-bar at its ends, whereby the cut of the teeth is regulated by the adjustment of the frame, substantially as set forth.

22. The combination, with a harrow-frame having draft-bars extending angularly to the line of draft, of tooth-engaging projections located on the frame at different points, one in advance of the other, in the line of draft, with a recess between them, a curved spring-tooth engaging said projections, and a binder engaging the tooth between said projections, substantially as described.

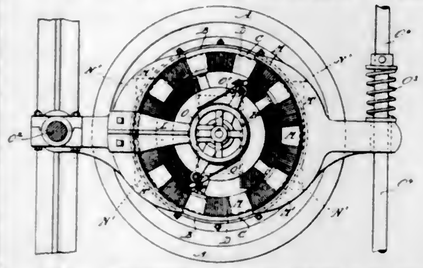
23. A tooth-seat having separably-arranged parallel bearing-surfaces provided with a flange or projection for engaging the lateral edge of the tooth, a curved tooth, and a binder for securing the tooth on the bearing-surface, substantially as described.

24. Tooth-holding devices comprising parallel separable bearing-surfaces for engaging one side of the tooth, shoulders for engaging the edges of the tooth, and a binder, in combination with a curved spring-tooth, substantially as described.

25. A frame of a harrow having a portion of the bar inclined upward and forward in the direction of the line of draft and a portion substantially horizontal, in combination with mechanism, substantially as set forth, for tilting the bars and holding them rigidly when tilted, substantially as described.

26. In a harrow-frame having bars elongated in cross-section inclining upward and forward in the direction of the line of draft, the front hinged, and the cross-bars composed of adjustably-connected sections, whereby the tooth-bars may be tilted and held rigidly, substantially as described.

446,821. ELECTRIC LOCOMOTIVE. EBEN M. BOYNTON, West Newbury, Mass. Filed Oct. 17, 1890. Serial No. 368,457. (No model.)



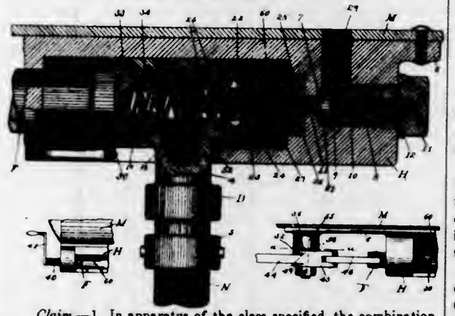
Claim.—1. The combination, with the armature of an electric motor fastened on a driving-shaft, of one part of a friction-clutch rotating with the driving-shaft and engaging with the other part of the friction-clutch fastened on a driving-wheel mounted concentrically with but free from the shaft, substantially as herein shown and described.

2. The combination, with the armature of an electric motor fastened on the driving-shaft, of one part of a friction-clutch rotating with the driving-shaft, and means for bringing the same in engagement with the other part of the friction-clutch fastened on the driving-wheel mounted concentrically with but free from the shaft, substantially as herein shown and described.

3. The combination, with the armature of an electric motor fastened on the driving-shaft, of one or more friction-plates rotating with the driving-shaft and engaging with other friction-plates fastened on the driving-wheel mounted concentrically with but free from the shaft, substantially as herein shown and described.

4. The combination, with the armature of an electric motor fastened on the driving-shaft, of one or more friction-plates rotating with the driving-shaft, and means for bringing the same in engagement with the other friction-plates fastened on a driving-wheel mounted concentrically with but free from the shaft, substantially as herein shown and described.

446,822. APPARATUS FOR SUPPLYING COMPRESSED AIR TO PNEUMATIC MOTORS. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed Mar. 7, 1889. Renewed Jan. 12, 1891. Serial No. 377,427. (No model.)



Claim.—1. In apparatus of the class specified, the combination, with a tank having a receiver-head, substantially as described, of a supply-pipe, a delivery-head on said pipe, said delivery-head having a valve opened by a projecting stem, and the receiver-head having a plunger operating said delivery-head to open said valve, substantially as described.

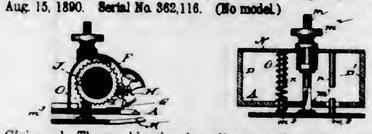
2. In apparatus of the class specified, the combination of the receiver-head having the plunger, the passage normally closed by a check-valve, and the delivery-head having a valve adapted to be opened by a stem driven by said plunger against the receiver-head at said passage, substantially as described.

3. The combination of the valve-body 4, having seat 32, the spring-actuated valve 18, having a hollow stem and openings thereinto, said stem projecting outside of said body, as set forth, and a receiver-head having a socket adapted to receive said stem and furnished with means for operating said valve by pressure thereon, substantially as described.

4. The combination of the valve-body 4, having seat 32, valve 18, having stem 21 and openings 25, the packing around said stem, and spring 19, substantially as described.

5. In apparatus of the class specified, the combination of the receiver-head, the delivery head or valve, the plunger, the lever and link operating said plunger, and the stops limiting the movement of said lever, substantially as described.

446,823. CLIPPER. NICHOLAS TACOOSE, Birmingham, Ala. Filed Aug. 15, 1890. Serial No. 362,116. (No model.)



Claim.—1. The combination, in a clipper, of the stationary comb, the cover, the removable adjustable comb, the screw-threaded rod and its nut bearing in said cover, the springs and the pins, the latter projecting, respectively, from said cover and from said removable comb, and arranged end to end and bearing on said springs intermediately of said stationary and removable combs, substantially as specified.

2. The combination of the stationary comb, the cover, the removable comb, the graduated screw-threaded rod and its nut, said rod being connected to the removable comb and having the angular portion passing through a corresponding opening in the main comb, and said nut having a sleeve connection with said cover, adapting it to turn therein and to engage the screw-thread of said rod, substantially as set forth.

446,824. VENTILATOR. MIRON G. TOMLEY, Englewood, Ill., assignor to Armena Patrick, same place. Filed Aug. 14, 1890. Serial No. 361,985. (No model.)



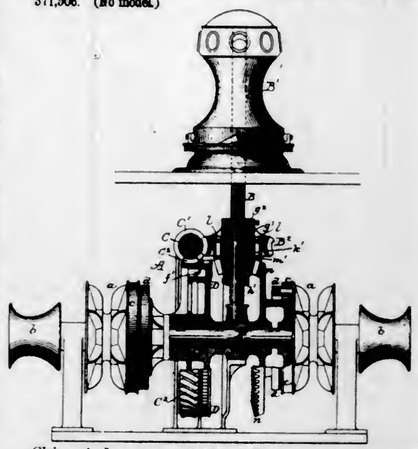
Claim.—1. The face-plate combined with the hinged dampers hinged to swing in the same direction, and the handle on the outer damper provided with means for engaging the inner damper, substantially as and for the purpose specified.

2. The face-plate provided with openings and inwardly-extending flanges, combined with the hinged dampers, one working between the flanges and the other adapted to rest, when closed, against the inner edge of the lower flange, and both hinged at their upper ends to swing in the same direction, and means for operating both dampers simultaneously, as set forth.

3. The combination, with the face-plate having flanges, of the double-hooked staple or hook depending from the upper flange, and the dampers hinged upon said hooks and arranged to swing inward in the same direction, as set forth.

4. The combination, with the face-plate and the dampers hinged thereto and means for simultaneously operating them, of the outlet upon a higher plane than the inlet and provided with a shielded tube or tubes with outlet upon the lower side, substantially as specified.

446,825. COMBINED SHIP'S WINDLASS AND CAPSTAN. EDWIN H. WHITNEY, East Providence, R. I. Filed Nov. 15, 1890. Serial No. 371,506. (No model.)



Claim.—1. In a combined ship windlass and capstan, the combination, substantially as hereinbefore described, of a main worm-shaft adapted to be driven in either direction by its reversible engines, a windlass-shaft a capstan-shaft which is detachably geared to said main shaft and also to the windlass-shaft, a worm-gear engaged by the main worm-shaft, a driving-head fixed on the windlass-shaft, and block-keys for detachably coupling said driving-head and worm-gear, whereby the windlass may be driven either backwardly or forwardly and with or without operating the capstan-shaft.

2. In a combined ship windlass and capstan, the combination, substantially as hereinbefore described, of a main worm-shaft adapted to

be driven in either direction by its engines, and a windlass-shaft and a capstan-shaft, each having its own worm-gear and its own driving-head and both provided with block-key couplings, whereby the windlass and the capstan may be separately or simultaneously rotated either forwardly or backwardly according to the direction in which the main shaft is driven.

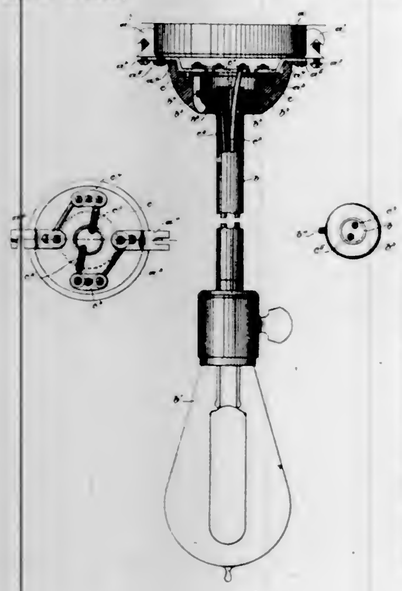
3. In a combined ship windlass and capstan, the combination, substantially as hereinbefore described, of a main driving-shaft carrying a single worm, a windlass-shaft, a capstan-shaft, and two worm-gears respectively carried by the shafts of the capstan and windlass and meshing at right angles to each other with the worm on the driving-shaft.

4. In a combined ship windlass and capstan, the combination, substantially as hereinbefore described, of a main worm adapted to be reversibly driven by its engine, a capstan-shaft, a worm-gear meshing with said worm and detachably coupled to the capstan-shaft by means of block-key connections, a beveled pinion carried on and detachably keyed to said capstan-shaft, and a windlass-shaft having a beveled gear fixed thereon and meshing with said pinion, whereby the windlass may be driven at low speed either backwardly or forwardly by the main shaft or by way of the capstan when the worm-gear on its shaft is disconnected therefrom.

5. In a combined ship windlass and capstan, the combination, substantially as hereinbefore described, of a main shaft carrying a single driving-worm, a windlass-shaft, a worm-gear detachably coupled to the windlass-shaft and engaging with said worm, a capstan-shaft, and a worm-gear detachably connected to the capstan-shaft and also engaging with said driving-worm, whereby power may be separately communicated from the one main driving-worm to the capstan or to the windlass, or to both, simultaneously.
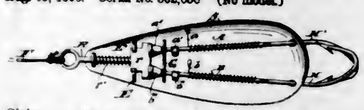
6. In a combined ship windlass and capstan, the combination, substantially as hereinbefore described, of a main shaft having a driving-worm adapted to be reversibly driven by its engines, a windlass-shaft, a capstan-shaft, a worm-gear meshing with the driving-worm and detachably coupled to the capstan-shaft by means of block-key connections, a beveled pinion on the capstan-shaft detachably connected thereto by means of block-key connections, a beveled gear meshing with said pinion and fixed upon the windlass-shaft, and a worm-gear meshing with the driving-worm and detachably coupled with the windlass-shaft by means of block-key connections, whereby the main shaft may drive the windlass and the capstan at different speeds, separately or together and forwardly or backwardly, and also whereby the capstan and the windlass may be disconnected from the main shaft and the windlass operated either forwardly or backwardly by rotating the capstan-shaft by way of the capstan.

446,826. DETACHABLE CEILING BLOCK OR BRACKET FOR ELECTRIC LAMPS. HERBERT C. WIRT, Boston, Mass., assignor of one-half to James L. Kimball, same place. Filed Oct. 29, 1889. Serial No. 328,549. (No model.)



Claim.—The combination, with a base and a cap or rosette detachably secured thereto and provided with an opening b^3, of a bracket b, extended up into said opening and provided with a ball or collar b^4, an incandescent lamp secured to the opposite end of the bracket, an insulated support c' within the cap above the opening b^3 and provided with terminals, and branch wires connected to the lamps and extended through the bracket and secured to said terminals, substantially as described.

446,827. FISH-HOOK. MARCUS M. CASE, Jr., Watkins, N. Y. Filed Aug. 15, 1890. Serial No. 362,050. (No model.)



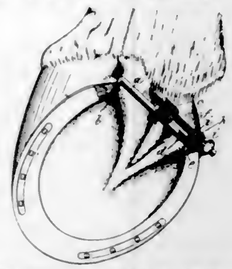
Claim.—1. The combination, with a spoon, of one or more hooks provided with springs tending to throw them into positions oblique to the plane of the spoon, each hook being provided with a slotted head adapted to engage with the draw-plate, which is thrown out of engagement by a pull upon the line, as shown and described.

2. The combination, with the spoon S, of one or more hooks H, each provided with a spring A, tending to throw the hook into action, a slotted head b'', adapted to engage with a draw-plate r, and a lug b', adapted to control the throw of the hook and of the draw-plate r and line F, whereby the said draw-plate is disengaged from the slotted heads of the hooks, as set forth.

3. In an artificial bait, the combination, with the spoon S, provided with the guide E E', adapted to retain the draw-plate in position, and the bearing G, in which the hooks rotate, of the hook H, provided with the spring A, tending to throw it into action, the slotted head b'', adapted to engage with the draw-plate r, and the lug b', controlling the throw of the hook, as and for the purposes described.

4. In an artificial bait, the combination of the spoon S, provided with the guide E E', adapted to retain the draw-plate in position, and the bearing G, in which the hooks rotate, with the hook H, provided with the spring A, tending to throw it into action, the slotted head b'', adapted to engage with the draw-plate r, and the lug b', controlling the throw of the hook and the said draw-plate r, provided with the spring r', adapted to keep it in engagement with the slotted heads of the hooks, as set forth.

446,828. HOOF-EXPANDER. GEORGE T. CHAPMAN, White Plains, assignor of one-half to Wm. Harvey Merritt, New York, N. Y. Filed Mar. 19, 1890. Serial No. 344,454. (No model.)



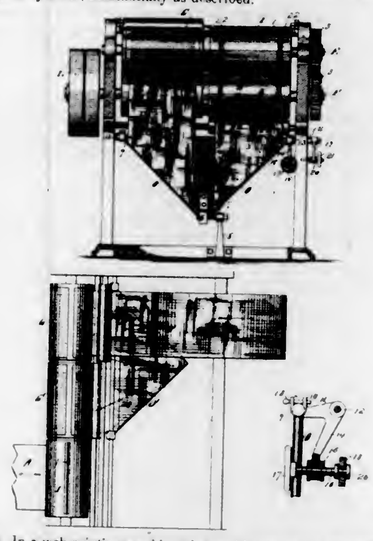
Claim.—The combination, with the bar having the prong b at one end, the slot in the opposite end portion, and the screw-tapped lug on one side, of the movable prong having the notches for receiving the members of the slotted bar, and the notch in the end opposite the prong for the adjusting-screw, also the adjusting-screw, said screw having the collars embracing the sides of the movable prong, all substantially as described.

446,829. WEB-PRINTING MACHINE. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed June 19, 1890. Serial No. 356,001. (No model.)

Claim.—1. In a web-printing machine, the combination, with the type and impression cylinders, of a web-turner and a pair of cutting or perforating rolls the axis of one of which is in line with the axis of the type or impression cylinder, substantially as described.

2. In a web-printing machine, the combination, with the type and impression cylinders, of a web-turner and a pair of cutting or perforating rolls the axes of which are in line with the axes of the type and impression cylinders, substantially as described.

3. In a web-printing machine, the combination, with the type and impression cylinders, of a web-turner and a pair of cutting or perforating rolls, one of which is carried by the shaft of the type or impression cylinder, substantially as described.



4. In a web-printing machine, the combination, with the type and impression cylinders, of a web-turner and a pair of cutting or perforating rolls carried by the shafts of the type and impression cylinders, substantially as described.

5. In a web-printing machine, the combination, with a pair of printing and perfecting type and impression cylinders and a web-turner for transferring the web for the perfecting impression, of a pair of cutting or perforating rolls having their axes in line with the axes of the type and impression cylinders, and a web-turner for transferring the web to the cutting-rolls, substantially as described.

6. In a web-printing machine, the combination, with a pair of printing and perfecting type and impression cylinders and a web-turner for transferring the web for the perfecting impression, of a pair of cutting or perforating rolls carried by the shafts of the type and impression cylinders, and a web-turner for transferring the web to the cutting-rolls, substantially as described.

7. The combination, with a web-turner, of a rock-shaft provided with arms on which the turner is supported, means for rocking said shaft for raising or lowering the turner, and means for shifting said shaft longitudinally to adjust the turner sidewise, substantially as described.

8. The combination, with a web-turner, of a rock-shaft provided with arms by which the turner is supported, means for rocking said shaft for raising or lowering the turner, means for shifting said shaft longitudinally to adjust the turner sidewise, and means for securing the turner against swinging movement while permitting the vertical and sidewise movement, substantially as described.

9. The combination, with the web-turner O, of rock-shaft 12, having arms 11, on which the turner is supported, arm 14 on said rock-shaft, and screw 16, mounted in the frame and engaging said arm to rock the shaft, substantially as described.

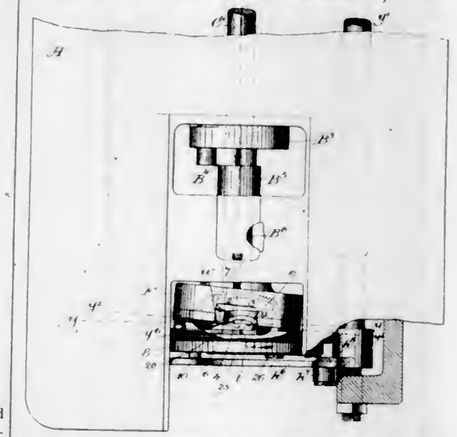
10. The combination, with the web-turner O, of rock-shaft 12, having arms 11, on which the turner is supported, arm 14 on said rock-shaft, screw 16, mounted in the frame and engaging said arm to rock the shaft, and fork 6 and shaft 7, securing the turner against swinging movement, substantially as described.

11. The combination, with the web-turner O, of rock-shaft 12, having arms 11, on which the turner is supported, said rock-shaft being mounted to slide transversely of the frame, arm 14 on said rock-shaft, screw 16, mounted in the frame to slide sidewise while held from longitudinal movement and engaging arm 14 to rock the shaft, and screw 21, entering the frame and carried by said rock-shaft for moving the shaft endwise, substantially as described.

12. The combination, with the web-turner O, of rock-shaft 12, having arms 11, on which the turner is supported, said rock-shaft being mounted to slide transversely of the frame, arm 14 on said rock-shaft, screw 16, mounted in the frame to slide sidewise while held from longitudinal movement and engaging arm 14 to rock the shaft, screw 21 entering the frame and carried by said rock-shaft for moving the shaft endwise, and fork 6 and shaft 7 for preventing swinging movement of the turner, substantially as described.

13. The combination, with a web-turner, of a rock-shaft provided with arms on which the turner is supported, and means for rocking said shaft for adjusting the turner, substantially as described.

446,830. SEWING-MACHINE. WILBUR F. DIAL, Bridgeport, Conn., assignor to The Wheeler & Wilson Manufacturing Company, same place. Filed Jan. 8, 1890. Serial No. 336,275. (No model.)



Claim.—1. In a sewing-machine for simultaneously sewing parallel seams, the following instrumentalities, viz: a needle-bar containing two eye-pointed needles set in a line diagonally with relation to the feed and to the length of the main shaft of the machine, means to move the needle-bar, a take-up for the threads carried by the said needles, a loop-taker, a loop-taker guide arranged in a vertical plane oblique to a horizontal line drawn at right angles to the main shaft and to a horizontal line drawn longitudinally through the feed, a bobbin and bobbin-case, a feeding device to feed the material at right angles to the main shaft, a main shaft, a loop-taker driver, and means to actuate the said loop-taker driver and loop-taker from the main shaft, whereby the loop-taker is moved in a circular path in a vertical plane oblique to a horizontal line drawn at right angles to the main shaft and to a horizontal line drawn longitudinally through the feed, substantially as described.

2. In a sewing-machine for simultaneously sewing parallel seams, the following instrumentalities, viz: a needle-bar containing two eye-pointed needles set in a line diagonally with relation to the feed and to the length of the main shaft of the machine, means to move the needle-bar, a take-up for the threads carried by the said needles, a loop-taker, a loop-taker guide arranged in a vertical plane oblique to a horizontal line drawn at right angles to the main shaft and to a horizontal line drawn longitudinally through the feed, a bobbin and bobbin-case, a feeding device to feed the material at right angles to the main shaft, a main shaft, a loop-taker driver, and means to actuate the said loop-taker driver at a variable speed from the main shaft, whereby the loop-taker is moved in a circular path in a vertical plane oblique to a horizontal line drawn at right angles to the main shaft and to a horizontal line drawn longitudinally through the feed, substantially as described.

3. In a sewing-machine for simultaneously sewing parallel seams, the following instrumentalities, viz: a needle-bar containing two eye-pointed needles set in a line diagonally with relation to the feed and to the length of the main shaft of the machine, means to move the needle-bar, a take-up for the threads carried by the said needles, a loop-taker, a loop-taker guide arranged in a vertical plane oblique to a horizontal line drawn at right angles to the main shaft and to a horizontal line drawn longitudinally through the feed, a bobbin and bobbin-case, a feeding device to feed the material at right angles to the main shaft, a main shaft, a loop-taker driver, a circularly-moving deflector to act upon and deflect one or both of said needles, as described, and means to actuate the said loop-taker driver and loop-taker from the main shaft, whereby the loop-taker is moved in a circular path in a vertical plane oblique to a horizontal line drawn at right angles to the main shaft and to a horizontal line drawn longitudinally through the feed, substantially as described.

4. The loop-taker, the loop-taker driver, and the bobbin-case, combined with the adjustable portion secured to the said driver and arranged to act on the bobbin-thread and pull from the bobbin a supply of bobbin-thread for the next stitch, substantially as described.

446,831. ELECTRIC HEATER. THOMAS J. DONOVAN, Chicago, Ill., assignor to Walter G Goodrich, same place. Filed Jan. 20, 1890. Serial No. 337,453. (No model.)

Claim.—1. The combination of a boiler or other fluid-reservoir, an electrically-heated substance inclosed in an envelope from which the air has been exhausted, and a removable carrier for such envelope normally inserted in the boiler or reservoir, substantially as shown and described.

2. The combination of a boiler or other fluid-reservoir and one or more detachable carriers for electric heaters, which are designed to be placed in such reservoir, substantially as shown and described.

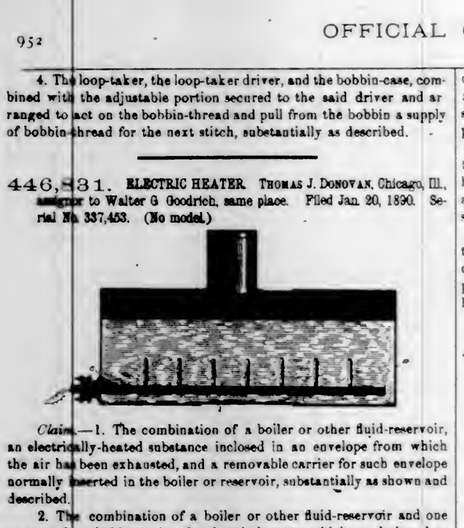
3. The combination of a fluid-reservoir and one or more carriers having depressions or compartments for containing electric heaters, substantially as shown and described.

4. The combination of a fluid-reservoir with one or more carriers and electric heaters pivoted therein, substantially as shown and described.

5. The combination of a fluid-reservoir with one or more carriers having separate compartments for electric heaters and the circuit-wires, substantially as shown and described.

6. The combination of a fluid-reservoir with one or more carriers, electric heaters pivoted thereon, and operating mechanism for manipulating such pivoted heaters, substantially as shown and described.

446,832. ATTACHMENT FOR AUTOMATICALLY ADVANCING THE KNEES OF SAW-MILLS. JOHN T. FARROW, Newport, assignor of one-half to Thomas Elwood Livezey, Covington, Ky. Filed July 7, 1890. Serial No. 357,984. (No model.)

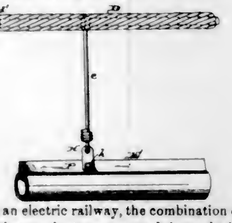


Claim.—1. The attachment for advancing automatically and intermittently the knees of saw-mills, consisting of a lever pivoted to and traveling with the carriage, a ratchet-wheel secured near the pivotal point of the lever, a pawl kept in contact with said ratchet-wheel by means of a spring, a trigger hinged to the lower end of the lever, a stationary and vertically-adjustable device secured within the path of the trigger, suitable gear connection to transmit the motion of said ratchet-wheel onto the screw-shaft of the knee, and an adjustable stop against which the lever is held by means of a spring, all for the purpose shown and described.

2. In combination with the knees of a saw-mill, a lever pivoted on the carriage, connecting-gear between the lever and knees, a trigger hinged to the lever, an adjustable device in the path of said lever, and an adjustable stop against which the lever is held by a spring, substantially as shown and described.

3. In combination with the knees of a saw-mill, a lever pivoted on the carriage, connecting-gear between the lever and knees, a hinged device fastened to the bed-piece and held in upright position in the path of the lever, and an adjustable stop against which the lever is held by a spring, substantially as described.

446,833. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Original application filed Mar. 16, 1888, Serial No. 267,367. Divided and this application filed Nov. 24, 1890. Serial No. 372,522. (No model.)



Claim.—1. In an electric railway, the combination of a suspended cable with a working-conductor supported by and electrically connected to it at intervals along its length, a traveling vehicle, a motor to propel said vehicle, and a contact device making a traveling connection with the working-conductor to supply electric current to the motor.

2. In an electric railway, the combination of supporting-posts, an electric-supply cable supported thereby, and a straight or horizontal working-conductor suspended from said cable by electrical connections at intervals in its length.

3. In an electric railway, the combination of a suspended cable and supporting-posts therefor arranged at a distance apart, with a working-conductor connected to it at intervals along its length and at one or more places between the successive posts, a railway parallel with the working-conductor, an electrically-propelled vehicle, and a traveling electric connection between the vehicle and working-conductor.

4. The combination of posts B, having cross-arms *b b*, castings C, resting upon said cross-arms, supporting-cable D, resting upon said castings, a working-conductor, and suspending connections between the cable and working-conductor.

5. The combination of the cable D, formed with a center of one metal and a covering of twisted wires of another metal, combining strength in the one and conductivity in the other, a working-conductor, and an electrical and mechanical connection between said cable and working-conductor.

446,834. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Original application filed June 4, 1889, Serial No. 313,095. Divided and this application filed Nov. 24, 1890. Serial No. 372,524. (No model.)



Claim.—1. In an electric railway, the combination of two sets of working-conductors for two railway-tracks in which the said conductors of similar polarity connect and are adapted to receive a current-collecting device of a car traveling on either railway, whereby the said current-collecting device may run from the conductors of one railway to the conductors of the other railway, an electric generator, electric connections connecting the positive pole of the generator with the positive conductors of the two railways at a distance from their connection and the negative pole with the negative conductors, and an electrically-propelled vehicle having a current-collecting device adapted to travel in connection with the conductors of either track.

2. In an electric railway, the combination of two railway-tracks connecting with each other, so that an electrically-propelled vehicle

may run from one track to the other, and each of which railways is supplied with a suspended conductor extending along the railway and connecting, so that a current-collecting device upon the traveling vehicle may pass from one suspended conductor to the other, an electric generator having its positive pole connected by separate conductors with the two line-conductors of the two connecting railways, and a traveling car adapted to run over one railway to the other, provided with an upwardly-extending contact device for making a traveling connection with the suspended conductor for supplying current to a motor on the car.

3. In an electric railway, the combination of two sections of track connected at a distant point by means of a curved section, whereby a car may travel along one track around the curve and back upon the other track, a line-conductor insulated from the track extending along the two sections of railway and curved portion thereof in a continuous manner, an electric generator, and an electrical connection between the positive pole of the generator and the conductor arranged along the railways at two distant points from the curved portion and from each other.

4. In an electric railway, the combination of two main pairs of working-conductors and two generators to supply electricity thereto, having their poles of one polarity coupled together and to the two main-line conductors of like polarity, and the remaining similar poles of the two generators connected, respectively, with the two other line-conductors.

5. In an electric railway, the combination of two main pairs of working-conductors having their distant ends of similar polarity connected together to form a loop, and two generators to supply electricity thereto, having their poles of one polarity coupled together and to the two main-line conductors of like polarity at their other end, and the remaining similar poles of the two generators connected, respectively, with the two other line-conductors.

6. In an electric railway, the combination of a line-conductor extending along said railway, electrically-propelled cars receiving current from said line-conductor, two or more independent generators of electricity, and independent connecting feeding-conductors between said generators and different distantly-located parts of the line-conductor.

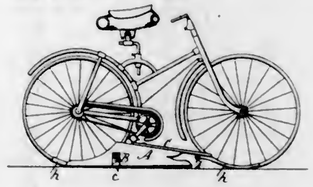
7. In a railway, a continuous line-conductor extending along said railway, in combination with an electrically-propelled car receiving current from said line-conductor, two or more generators of electricity located at a central station, and independent feeding-conductors extending from similar poles of said generators to distant portions of the same continuous line-conductor.

8. In an electric railway using the rails as a return-circuit, the combination of the rails, a suspended line-conductor extending along the railway, but insulated from the rails, traveling electrically-propelled cars making electrical connection with the rails and having an upwardly-extending current-collector making connection with the suspended line-conductor, two or more generators of electricity, and feeding-circuits connecting one of the poles of the generators with the rails and the other poles with distant portions of the line-conductor.

9. In an electric railway using the rails as a return-circuit, the combination of the rails, a suspended line-conductor extending parallel with the rails, but insulated therefrom, traveling electrically-propelled cars making electrical connection with the rails and line-conductor, two or more generators of electricity located at a central station, and feeding-circuits connecting one of the poles of the generators with the rails and the other poles with distant portions of the line-conductors.

10. The combination of an electric working-conductor extending along a railway from which current is delivered to the car through a collecting device, a series of independently electrically-propelled vehicles directly receiving current therefrom, current-controlling devices on said vehicles to vary the current received from the line-conductor, two or more generators of electricity, and separate feeding-conductors extending from similar poles of the generators and connecting with distant portions of the electric working-conductors.

446,835. BICYCLE-SUPPORT. JOHN W. KENNEDY, Rochester, N. Y., assignor of one-half to Francis L. Hughes, same place. Filed July 5, 1890. Serial No. 357,718. (No model.)

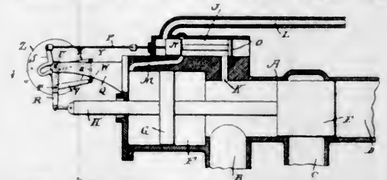


Claim.—1. The bicycle-stand herein described, consisting of the block A and cross-piece B, provided with spurs *c c*, whereby the stand can be tilted, the block having grooves *a b* to receive the wheels, as shown and described, and for the purpose specified

2. The combination, with the stand consisting of the grooved block A and cross-piece B, of the arm C, attached to the top of the block and provided with the notch *f* at its outer end, as shown and described, and for the purpose specified.

3. The combination, with the stand consisting of block A, cross-piece B, and arm C, of the troughs or linings *h h*, attached at opposite ends, as shown and described, and for the purpose specified.

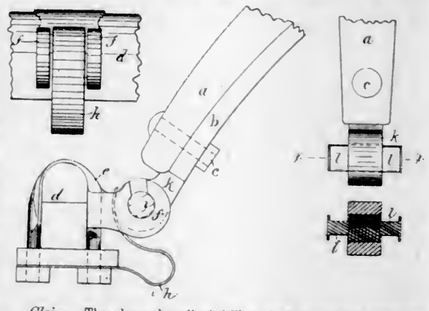
446,836. HYDRAULIC VALVE-GEAR. EDWIN S. MATTHEWS, Cincinnati, Ohio. Filed Sept. 15, 1890. Serial No. 364,964. (No model.)



Claim.—1. The combination of the main valve, its actuating-motor, the pilot-valve adapted to control this motor, a primary lever suitably fulcrumed and connected to a moving part of the motor, and a secondary lever fulcrumed on the primary lever and connected to the pilot-valve, substantially as described.

2. The combination of the main valve, its actuating-motor, the pilot-valve adapted to control this motor, a primary lever suitably fulcrumed and connected to a moving part of the motor, a secondary lever fulcrumed on the primary lever and connected to the pilot-valve, and means for adjusting the secondary lever to correspond with the required movement of the pilot-valve to control the motor, substantially as described.

446,837. THILL-COUPLING. WILLIAM A. MCNEAL, Bath, Me., assignor of two-thirds to Henry M. Hartleb and Charles Cheltra, both of same place. Filed Oct. 25, 1890. Serial No. 369,359. (No model.)



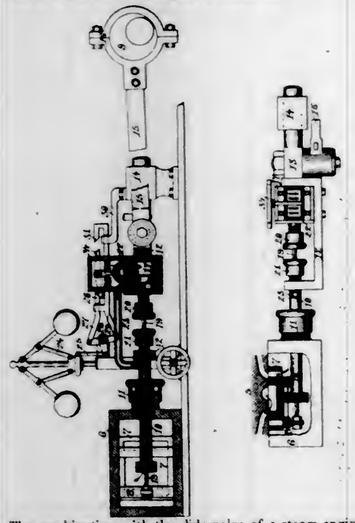
Claim.—The above-described thill or shaft coupling, consisting of the shaft-iron, the pin or rod having the screw-threaded connection with the said shaft-iron and provided upon each side of the latter with opposite parallel surfaces and at its ends with disk-shaped portions, the axle-clip having the slotted openings adapted to receive the parallel surfaced portions of said pin or rod, and the spring held to said axle-clip and curved upward and engaging said shaft-iron, substantially as set forth.

446,838. STEAM-ENGINE. ALEXANDER MCPHERSON, Oxford, Canada, assignor of one-half to Hutchison & Huestis, Providence, R. I. Filed Nov. 5, 1890. Serial No. 370,387. (No model.)

Claim.—1. In a steam-engine, the combination, with the main valve controlling the admission of steam to the cylinder, of a cut-off valve, an auxiliary engine the piston-rod of which is secured to the cut-off valve, a valve regulating the admission of steam to the auxiliary engine, a double-ended tappet-lever connected with and operating the valve of the auxiliary engine, and mechanism intermediate the engine-governor and the tappet-lever, as described.

2. In a steam-engine, the combination, with the rod or stem connected with the valve controlling the admission and the exhaust of the steam, of an auxiliary steam-engine secured to and moving with the

valve rod or stem, a cut-off valve operated by the auxiliary engine, and mechanism, substantially as described, for controlling the admission of steam to the auxiliary engine, as described.



3. The combination, with the slide-valve of a steam-engine, of a tubular valve rod or stem, an auxiliary steam-engine secured to and carried by the valve-rod, a cut-off valve connected with the piston of the auxiliary steam-engine and operated by the same, a governor, and mechanism, substantially as described, intermediate the governor and the cylinder of the auxiliary engine, constructed to regulate the admission of steam to the auxiliary engine, as described.

4. The combination, with the ports of a steam-engine and the valve 7, of the tubular valve-stem 10, the cut-off valve 8, the auxiliary engine, the piston 18, the rod 19, secured to the piston 18, and the cut-off valve 8, the steam-chest 22 of the auxiliary engine, the connecting-pipe 23, a centrifugal governor, and the valve-operating mechanism intermediate the auxiliary engine and the governor, as described.

5. In a steam-engine, the combination, with the steam-ports of the engine-cylinder, the valve 7 and cut-off valve 8, and an auxiliary engine secured to and moving with the stem or rod of the main valve and connected with and operating the cut-off valve, of the governor 24, the slide-rods 27 and 29, and the tappet-lever 35, constructed to regulate the speed of the engine, as described.

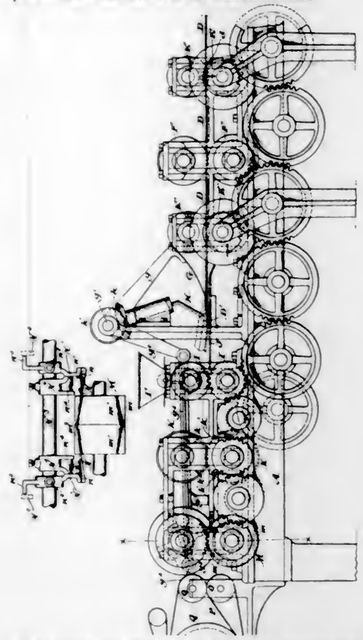
446,839. PAPER-BAG MACHINE. WILLIAM H. PATTERSON, Cleveland, Ohio, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Jan. 11, 1890. Serial No. 336,623. (No model.)

Claim.—1. In a paper-bag machine, the combination of an angular former-plate D', arranged to lie on the inside of the under ply of a bellows-folded bag-blank, with a tucker G, operating to define the line on which the diamond is opened, and fingers H, arranged to engage the upper ply of the blank beneath its inwardly-folded edge, and operated by mechanism which gives them a backward sweep, all substantially as described.

2. In a paper-bag machine, the combination of an angular former-plate D', arranged to lie on the inside of the under ply of a bellows-folded bag-blank, with creasing-rolls F F, arranged to crease the end of the blank on the lines on which it folds to form the points of the diamond when opened up, a tucker G, operating to define the line on which the diamond is opened, and fingers H, arranged to engage the upper ply of the blank beneath its inwardly-folded edge, and operated by mechanism which gives them a backward sweep, all substantially as described, and so as to spread out the diamond.

3. In a paper-bag machine, the combination of a reciprocating angular former-plate D', arranged to lie on the inside of the under ply of a bellows-folded bag-blank, with a tucker G, operating to define the line on which the diamond is opened, and fingers H, arranged to engage the upper ply of the blank beneath its inwardly-folded edge, and operated by mechanism which gives them a backward sweep, all substantially as described, and so as to spread out the diamond.

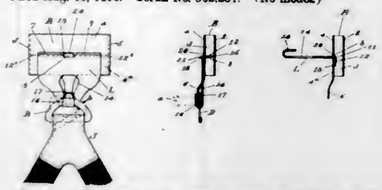
4. In a paper-bag machine, the combination of mechanism for forming a bellows-folded tube, a tongue extending from said mechanism, rolls F F, arranged to crease the bellows-folded blank on the lines on which the paper folds to form the points of the diamond when opened out and at the corners where said folds terminate, said rolls being arranged to operate on the blank on each side of the tongue aforesaid, and mechanism situated at the end of said tongue, arranged to fold back the end of the tube, so that a diamond fold will be formed thereon with parallel side folds between the creased corners.



5. In a paper-bag machine, the device for turning down the back flap of the diamond fold, consisting of a roll M, having a segment m' m' in the form of conical segments set base to base in the center of the roll, and a segment m, of cylindrical form, in combination with fingers N, secured on pivoted arms, and a shaft N^2 and cams N^3, arranged to actuate said arms and fingers, all substantially as and for the purpose specified.

6. In a paper-bag machine, the device for folding down the flaps of a diamond-folded bag-blank, consisting of creasing-rolls K K, arranged to crease the diamond on the lines on which the said flaps are folded down, an angular plate L, acting to turn down the front flap, and the device for turning down the back flap of the diamond fold, consisting of a roll M, having a segment m' m' in the form of conical segments set base to base in the center of the roll, and a segment m, of cylindrical form, in combination with fingers N, secured on pivoted arms, and a shaft N^2 and cams N^3, arranged to actuate said arms and fingers, all substantially as and for the purpose specified.

446,840. SUSPENDERS. FRANCIS H. RICHARDS, Hartford, assignor to the Traut & Hine Manufacturing Company, New Britain, Conn. Filed Aug. 16, 1890. Serial No. 362,231. (No model.)



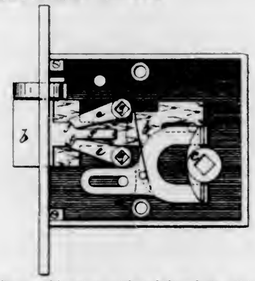
Claim.—1. In a buckle, the combination, with a buckle-frame having a pivot-slot, substantially as described, of the bent lever-plate pivotally supported at the bend thereof in said slot and having therein a mortise at the bend of said plate in said slot, and a stop formed on the frame at one side of the slot and projecting thereinto, whereby the lever-plate is locked in place by said stop engaging the lever-plate mortise.

2. In a buckle, the combination of the tubular buckle-frame having the lever-plate pivot-slot and having a stop projecting into said slot from one side thereof, the part of the buckle-frame carrying said stop being of spring metal adapted to be sprung out of the normal plane thereof, and the lever-plate passing through said pivot-slot and having a bend therein, the lever-plate being widened within the buckle-frame to form in part the lever-plate pivot and having a mortise at the bend thereof for engaging said buckle-frame stop, whereby the pivotal connection of the lever-plate is completed, and whereby the buckle-frame and lever-plate may be assembled by the method described.

3. In a buckle, the combination of the buckle-frame having the buckle-plate pivotally carried thereby and having a depending arm, said buckle-plate having an opening corresponding to said arm and having a hook below the end of said arm and projecting above the same, and the cast-off ring having its sides narrower than the space between the hook and the end of the buckle-frame arm and having the upper portion of its rim wider than said space, whereby said widened part of the cast-off ring may be inserted between the lever-plate and buckle-plate arm for locking the lever-plate closed.

4. In a buckle, the combination, with the buckle-frame having the pivot-slot and a downwardly-projecting arm, and having a stop, substantially as described, in said slot, of the lever-plate pivoted in said slot and engaging said stop, whereby said lever-plate is held in place, said lever-plate having an opening for said projecting arm and below said opening a hook, substantially as described, and the cast-off ring for locking the lever-plate closed by engaging between said plate and arm above said hook.

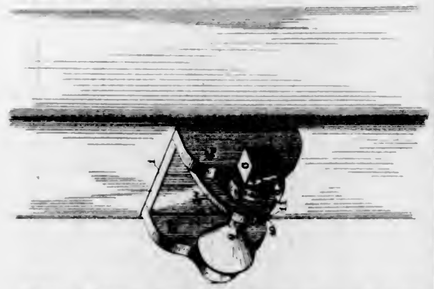
446,841. LATCH. JOHN SCHADE, Brooklyn, N. Y., assignor to the Hopkins & Dickinson Manufacturing Company, same place. Filed Aug. 30, 1890. Serial No. 363,519. (No model.)



Claim.—1. The combination, with a sliding bolt, of dogs e e, independent of one another, arranged on hubs e' for hand pieces or knobs, and a single spring bearing on both of said hubs for holding the said keepers in position, substantially as set forth.

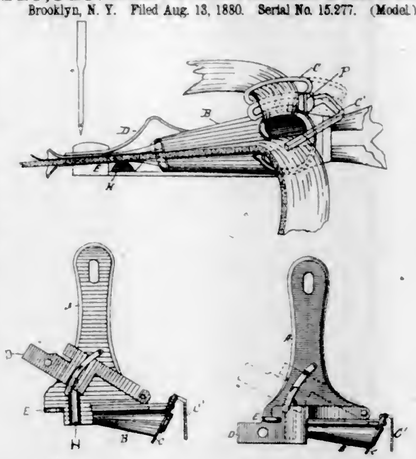
2. The combination of the case a, bolt b, having shoulders f f, and partition g', formed thereon, independent dogs or keepers e e, arranged at opposite sides of said bolt on hubs e' e', having angular perforations g g, and a knob-hub c for operating the bolt to draw the same from holding position, substantially as and for the purposes set forth.

446,842. TENSION DEVICE. JOHN A. SPARKS and WALTER S. BROWN, Eminence, Ky.; said Sparks assignor to said Brown. Filed Sept. 15, 1890. Serial No. 365,084. (No model.)



Claim.—In a tension device, the combination of a base-plate provided with lugs, one of said lugs having a circular bearing and the other having a vertically-arranged open bearing, a spool having axial journals, one of which is received by the circular bearing, the other being in the form of a circular enlargement journaled in the open bearing, a ratchet-disk on the spool bearing against the inner side of one of the lugs around the open bearing, and a detent extending outward over the teeth of the ratchet-disk and arranged adjacent to and spanning the open bearing at the inner side thereof and having a tooth to engage the teeth of the ratchet-disk, said detent being arranged to retain the spool in the bearings when the tension on the wire is slackened, substantially as set forth.

446,843. BINDER FOR SEWING-MACHINES. EDWARD H. CRAIGE, Brooklyn, N. Y. Filed Aug. 13, 1890. Serial No. 15,277. (Model.)



Claim.—1. A binding attachment for sewing-machines, consisting of a scroll channel-way, a crescent-shaped guide located outside of the channel-way in the said scroll-binder, and a spring-presser pivoted to the attaching-plate, and a guard or arm overhanging and engaging with said presser, substantially as and for the purpose set forth.

2. A binding attachment for sewing-machines, consisting of an attaching-plate, a double scroll-guideway, an adjustable crescent-shaped guide located outside of the channel-way, as described, with which the double scroll-guide is provided, a spring-presser, an arm F, and an elevation for guiding the lower strip above the cloth-plate of the sewing-machine, substantially as set forth.

3. An attachment for sewing-machines adapted to hem and bind, consisting of an attaching-plate, a double scroll-guide, an adjustable crescent-shaped guide located outside of the line of the channel-way with which the latter is provided, a slitted spring-presser hinged to said plate, an overhanging guard or arm, and a vertically-arranged projecting device serving to maintain said presser in operative position, substantially as described, and for the purpose set forth.

REISSUES.

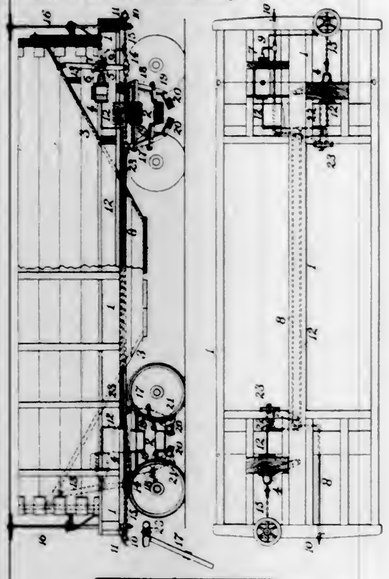
11,145. AIR-BRAKE. RICHARD W. BAYLEY, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Filed Jan. 13, 1891. Serial No. 377,677. Original No. 412,695, dated Oct. 8, 1889.

Claim.—1. The combination of a brake-cylinder fixed to a car-body above and adjacent to one of its trucks, a main air or brake pipe, an auxiliary reservoir and a triple valve connected with the brake-pipe and brake-cylinder, a brake-cylinder lever coupled to the car-body above the brake-cylinder and to the piston-rod of said cylinder, and draft-connections coupling the free end of the brake-cylinder lever to a brake-lever of the adjoining truck, substantially as set forth.

2. The combination of two brake-cylinders, each fixed to a car-body above and adjacent to one of its trucks, a main air or brake pipe, an auxiliary reservoir and triple valve connected with the brake-pipe and with each of the brake-cylinders, two brake-cylinder levers, each coupled to the car-body above one of the brake-cylinders and to the piston-rod of said cylinder, and draft-connections coupling the free ends of the brake-cylinder levers to the brake-levers of the adjoining truck, substantially as set forth.

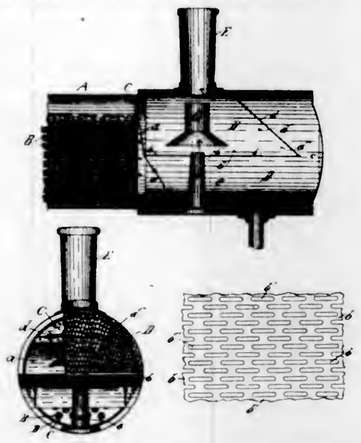
3. The combination of two brake-cylinders, each fixed to a car-body above and adjacent to one of its trucks, a main air or brake pipe, an auxiliary reservoir and triple valve connected with the brake-pipe and with each of the brake-cylinders, two brake-cylinder levers,

each coupled to the car-body above one of the brake-cylinders and to the piston-rod of said cylinder, and chains, each connecting the lower end of one of the brake-cylinder levers to one of the brake-levers of the adjacent truck and passing around a guide on the opposite brake-lever of said truck, substantially as set forth.



11,146. SPARK-ARRESTER FOR LOCOMOTIVES. EDWARD B. GRIGGS, North Platte, Nebr., assignor of one-half to W. John Harris, St. Louis, Mo. Filed May 13, 1890. Serial No. 351,704. Original No. 422,586, dated Mar. 4, 1890.

Claim.—1. In a locomotive-engine, the combination, with the smoke-box and induction-pipe, of a horizontal screen which terminates forward of the induction-pipe, and a transverse forwardly and downwardly inclined screen located in front of the smoke-stack and which meets the horizontal screen at an angle, whereby the cinders are arrested in the upper chamber and kept in motion on the inclined screen, substantially as and for the purposes described.



2. In a locomotive-engine, the combination, in the smoke-box, of a baffle-plate *a*, a horizontal perforated screen *b*, an induction-pipe G, and an inclined perforated screen *d*, the said screens *b d* being arranged to divide the smoke-box into lower and upper spark-arresting chambers communicating with each other by a space or opening *c* with jet pipes or nozzles *e*, admitting steam from the blast-pipe to said chamber, substantially as shown, and for the purpose described.

3. In a locomotive-engine, the combination, with the smoke-box and induction-pipe, of a baffle-plate and a transverse forwardly and downwardly inclined screen located above and in advance of the induction-pipe and terminating short of the forward portion of the smoke-box, whereby the cinders are arrested in the upper chamber and kept in motion on the inclined screen, substantially as and for the purposes described.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISION OF SECRETARY OF INTERIOR.

REJECTED APPLICATION FOR REGISTRATION OF TRADE-MARK—REPAYMENT OF FEES.

There is no authority for the repayment of fees paid in Trade-Mark cases where registration is refused.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., January 28, 1891.

SIR: Referring to the request of Mr. Henry A. Thayer, of Peoria, Ill., for a return of a fee of twenty-five dollars paid in his (rejected) application for registration of a Trade-Mark for yeast, No. 30,860, filed June 19, 1890, and your report thereon of November 25, 1890, setting forth your reasons for refusing to comply with such request, I transmit herewith for your information and guidance a copy of an opinion of the Assistant Attorney-General for the Interior Department, dated January 17, 1891, to whom the matter was referred, in which he reaches the conclusion that there is no authority either in the law or the regulations of your Office under which the refundment of the money paid by Mr. Thayer can be made.

Very respectfully,

GEO. CHANDLER,
First Assistant Secretary.

To the Commissioner of Patents.

DEPARTMENT OF THE INTERIOR,
OFFICE ASSISTANT ATTORNEY-GENERAL,
Washington, D. C., January 17, 1891.

SIR: In response to your request for an opinion as to whether an applicant for registration of a Trade-Mark, who has paid the fee required by law, is entitled to refundment of the same where the application is rejected, and generally as to the legality of the practice of the Patent Office in refusing to refund fees paid in Trade-Mark cases where registration is refused, I would respectfully submit the following:

The act of March 3, 1881, (21 Stat., 502,) provides that owners of Trade-Marks may obtain registration thereof by complying with certain requirements therein specified, being:

First. By causing to be recorded in the Patent Office a statement specifying the name, &c., of the party, the class of merchandise, and a description of the Trade-Mark, &c.

Second. By paying into the Treasury of the United States the sum of twenty-five dollars and complying with such regulations as may be prescribed by the Commissioner of Patents.

Thayer filed his application under this statute and paid the prescribed fee. The application for registration was refused because identical with other registered or known Trade-Marks. Thayer thereupon demanded the return of the money paid by him, which demand was refused upon the ground that the law—

makes no provision for the return of said fee or any portion thereof in case registration be refused.

The Commissioner of Patents in his report to you of November 25, 1890, states that the present practice (adhered to in this instance) as to fees has existed ever since the enactment of said act of March 3, 1881.

The act in question makes no provision for repayment of money paid thereunder. The only provision I find for the repayment of money paid for fees accruing at the Patent Office is comprised in section 4936, Revised Statutes, which reads as follows:

The Treasurer of the United States is authorized to pay back any sum or sums of money to any person who has through mistake paid the same into the Treasury, or to any receiver or depositary, to the credit of the Treasury, as for fees accruing at the Patent Office, upon a certificate thereof being made to the Treasurer by the Commissioner of Patents.

The Rules of Practice of the Patent Office relating to repayments read as follows:

Money paid by actual mistake, such as a payment in excess, or when not required by law, or by neglect or misinformation on the part of the Office, will be refunded; but a mere change of purpose after the payment of money, as when a party desires to withdraw his application for a patent or for the registration of a Trade-Mark, or to withdraw an appeal, will not entitle a party to demand such a return.

I find no authority in either the law or regulations authorizing the repayment of money paid as was the amount here in question. Without express authority such repayment can not in my opinion be made.

The papers submitted are herewith returned.

Very respectfully,

GEO. H. SHIELDS,
Assistant Attorney-General.

To the Honorable the Secretary of the Interior.

COMMISSIONER'S DECISIONS.

CHRISTIE *v.* SEYBOLD.

Decided February 10, 1891.

1. PRIORITY OF INVENTION—DILIGENCE.

If the first person to conceive would prevail in a contest of priority over his rival, who has first reduced the invention to practice, he must show that he was using reasonable diligence in adapting and perfecting the invention at the time when his competitor entered the field. He must show that his diligence antedates the inceptive invention of his rival if he would prevail over him, and he must show that his diligence extends back to his own conception if he would carry his invention back to the date of that conception.

2. SAME—SAME.

Where in an interference proceeding it appeared that the senior party was the first to conceive and disclose the invention, but did nothing whatever toward adapting and perfecting the invention until six months after the time when the junior party entered the field without adequate excuse for his inaction, the junior party having meanwhile reduced the invention to practice also, *Held* that the junior party was the first inventor.

APPEAL from Examiners-in-Chief,

PRESSES.

Application of William H. Christie filed June 7, 1889, No. 313,514. Application of Charles Seybold filed June 6, 1889, No. 313,343.

Messrs. Wood & Boyd and *Mr. J. L. Norris* for Christie.

Messrs. Strehli & Hill for Seybold.

MITCHELL, *Commissioner:*

The issue in this controversy is as follows:

In a power-press, a platen detachably connected with the power-driving mechanism and provided with a balancing-weight.

The Examiner of Interferences and the Examiners-in-Chief agree that Seybold was the first to conceive and disclose the invention and that Christie was the first to reduce the invention to practice. The Examiner of Interferences adjudicates priority to Christie upon the ground that Seybold did not follow up his conception with reasonable diligence in adapting and perfecting his invention. The Examiners-in-Chief reverse the decision of the Examiner of Interferences, holding that Seybold's diligence was sufficient to entitle him to a judgment of priority.

The date of Seybold's conception was January, 1886. The earliest date that can be ascribed to Christie is April, 1888, and the date of his reduction to practice is June or July, 1888.

The Examiners-in-Chief say:

Up to the 8th of April, 1888, the date of conception by Christie, Seybold was under no obligation to do anything, and any delay previous to that time is not to be considered. Yet, if he was called upon to excuse delay when no other inventor was in the field, the reason given for delay—that he had not *then* the necessary machines—would be sufficient.

His considerable inactivity was confined to the time from April 8, 1888, until October, 1888, when he began working drawings, which were completed October 15, 1888. After this time he moved rapidly and energetically to the commercial introduction of his invention. His only inactive period during Christie's period of invention was a few days more than six months. This is not an unreasonable delay.

It is manifest that the decision of this case depends upon the question whether Seybold exercised proper diligence in following up his conception of the invention. In determining this question it is to be borne in mind that he did nothing whatever until after Christie came into the field, and that he remained inactive until six months after that date, when, in October, 1888, he began making working drawings. As appears from the foregoing extract, the theory upon which the decision below proceeds is that Seybold was under no obligation to do anything prior to the date of Christie's conception, and that six months of inactivity thereafter did not constitute an unreasonable delay.

Bearing in mind that Christie proceeded with diligence from a conception in April, 1888, down to the reduction to practice in June or July of the same year, the questions to be determined are whether or not Seybold was bound to any diligence prior to the time when Christie entered the field, and, if not, whether he was entitled to six months of subsequent inactivity without impairing his right as against his competitor.

These questions are distinctly raised by the reasons of appeal, one of which is that the board erred in finding that Seybold was using reasonable diligence in adapting and perfecting his invention, while another takes issue with the proposition that he gave sufficient reasons for his delay.

The present law in respect to diligence grew out of the act of 1836. Prior to the enactment of the statute of 1836 relating to patents the inventor who first reduced the invention to practice in a working form was held to be the first inventor. (*Bedford* v. *Hunt*, 1 Mason, 302.) In *Reed* v. *Cutter et al.* (1 Story, 599) this rule was held to be qualified by the fifteenth section of the act of 1836.

This case of *Reed* v. *Cutter*, *supra*, seems to have been the first case in which the fifteenth section of the act of 1836 received judicial interpretation. The patent chiefly involved in that suit was granted November 19, 1833. At the trial evidence was offered tending to show that the improvement claimed in the patent had been invented and reduced to practice by another person in 1828, and that such person had made several machines embodying the improvement before the date of plaintiff's patent. It was suggested by the counsel for plaintiff that there was evidence tending to rebut the foregoing evidence, and the question was raised as to the degree of use and publicity of a prior invention which would operate, in point of law, to defeat a *bona fide* original invention which had been patented. The court said, with reference to the words "was using reasonable diligence in adapting and perfecting the same."

These latter words are copied from the fifteenth section of the act of 1836, chapter 357, and constitute a qualification of the preceding language of that section, so that an inventor, who has first actually perfected his invention, will not be deemed to have surreptitiously or unjustly obtained a patent for that which was in fact first invented by another, unless the latter was at the time using reasonable diligence in adapting and perfecting the same.

The qualification thus referred to by the learned judge has been repeated in subsequent revisions of the statutes, and is now to be found, unchanged in legal effect, in section 4920 of the Revised Statutes.

In disposing of the present case an attempt will be made to ascertain the true rule from the decided cases and to apply that rule to the facts of the present case.

In *Ransom* v. *Mayor of New York* (1 Fish., 252) Hall, J., charged the jury as follows:

If the plaintiffs did not use reasonable diligence to perfect the invention patented, after the idea of it was first conceived, and in the meantime other persons not only conceived the idea, but perfected the invention and practically applied it to public use before the invention of the plaintiffs had been so far perfected that it could be applied to practical use, the plaintiffs' patent is void, because they were not the first and original inventors of the thing patented.

The facts upon which the jury awarded damages to plaintiffs do not appear. It is to be noticed that the above instruction seems to call for diligence "after the idea of it was first conceived." It does not state when it should begin, except from inference.

In *Johnson* v. *Root* (1 Fish., 369) the date of the patent in suit was March, 1854. The application was made in March, 1853. The defendant proved a use of the invention as early as 1852. The plaintiff, in order to carry his invention to a date prior to that of defendant, relied upon a caveat of 1848, which was illustrated by the model made in that same year. It was not contended that anything was done by the defendant between the autumn of 1848 and the use by him in 1852, except what was shown by the caveat and the making of the model of 1848. The question whether plaintiff had perfected his invention, and, if he had not perfected it, whether he used reasonable diligence, was considered. Sprague, J., in instructing the jury, said:

If, gentlemen, the invention was perfected, as I have already said, or, if not perfected, if Mr. Johnson used reasonable diligence to perfect it, then he had a right to have it incorporated into his patent, and to supersede those that had intervened between his first invention or discovery and the subsequent taking out of his patent. If he had not perfected it, and did not use due diligence to carry it into effect, and, in the meantime, before he got his patent, somebody else had invented and used and incorporated into a practical useful machine that mode of feeding, then he could not by subsequent patent appropriate to himself what was thus embraced in the former machine, between his *caveat* and the obtaining of his patent.

In *Phelps et al.* v. *Brown et al.* (1 Fish., 479) it appears that a patent was granted to plaintiffs as assignees of the inventor, Camp, January 9, 1855. Camp filed a caveat in the Patent Office January 16, 1854. Minard filed a caveat April 17, 1854. Camp filed his application in November, 1854, but no notice was given to Minard of its pendency, and the patent issued to Camp January 9, 1855. A patent issued to Minard April, 1856, for the same invention. There was proof tending to show that Camp had made his invention as early as 1848, and reduced to practice in January, 1854, and that Minard made his discovery as early as 1847, and reduced to practice in October, 1854.

On behalf of the defendant it was claimed that Minard was—

the first discoverer and inventor of the combination, and that, although he might not, at the time of the application by Camp for a patent, have given any particular shape to his discovery, yet, that when said application was made Minard was the first discoverer and inventor, and that while he was using reasonable diligence in adapting and perfecting his invention Camp unjustly obtained a patent for the same.

The court, Ingersoll, J., charged the jury that if Minard had succeeded in establishing this claim and ground of defense the plaintiffs must fail of recovery. The jury found a verdict for defendants, and plaintiffs moved for a new trial, which was denied by Judge Nelson.

In *Cox* v. *Griggs* (2 Fish., 174) plaintiff's patent issued in August, 1859. The defendant's proof to rebut plaintiff's priority consisted in making a model in 1853 and experimenting with a wooden model in 1857. The defendant did not reduce to actual practice; he obtained a patent in November, 1859. On the part of the plaintiff there was evidence that in 1855 and 1856 he was making drawings and a model of the invention; that he explained the same to his son in 1857, and in December, 1858, made a model and castings, and reduced to practice in the winter and spring of 1859.

Drummond, J., charging the jury, said:

It is the right and privilege of a party, when an idea enters his mind in the essential form of invention—inasmuch as most inventions are the result of experiment, trial, and effort, and few of them are worked out by mere will—to perfect by experiment and reasonable diligence his original idea, so as not to be deprived of the fruit of his skill and labor by a prior patent, if he is the first inventor. But there must be what we would consider reasonable diligence, looking at all the facts of the case. The defendants do not explain their delay from 1853 to 1857, when nothing was done, and the models were not reduced to practice. It is necessary, in order to prevent a man from having the benefit of his patent, that another person should first have discovered the thing and reduced it to actual practice. It is not pretended by the defendants that they reduced to actual practice the crude model of 1853.

The jury found a verdict for plaintiff.

In *White* v. *Allen* (2 Fish., 440) the plaintiff's patent issued April 3, 1855. It appeared that plaintiff admitted that in June, 1853, a patent was granted in Belgium for the same invention as that embodied in the claim of patent in suit. The court said that unless the complainants could show that the invention embodied in the patent in suit was made and reduced to practice prior to June, 1853, the date of the foreign patent, they could not prevail, and the burden of proof was shifted on them to establish these facts. The court, Clifford, J., held that the patentee made the invention in controversy and reduced it to practice "as early as the fall of 1849 or the fore part of the year 1850;" that the delay of patentee in applying for a patent was excusable, and that plaintiff was entitled to an account. The court said (page 454:)

Federal courts have everywhere held that an inventor who has first actually perfected his invention will not, if he has exercised good faith, be deemed to have surreptitiously or unjustly obtained a patent for that which was in fact first invented by another, unless the latter was at the time using due diligence in adapting and perfecting what he had accomplished; and it was expressly held in *Ransom* v. *The Mayor of New York*, per Hall, J., (vol. I, p. 252.) that if a person does not use due diligence in perfecting his invention after he has conceived the idea, and another conceives the same idea and perfects it and secures his patent and applies it to use, the latter will be considered as the original and first inventor, and that a patent granted to the former will be void. See *Reed* v. *Cutter*, 1 Story C. C., 590.

In *Reeves* v. *Keystone Bridge Co.* (5 Fish., 456) the ptaent in suit was dated June 17, 1862. The defendant contended that in 1860 Linville and Piper illustrated the invention by sketches and afterward, in 1865, obtained a patent for the same. It appeared that these sketches were laid aside and subsequently lost, and—

in fact, that nothing beyond the making of the sketches was done to embody or carry out the alleged invention until the patent was applied for.

The court, McKennan, J., held that Linville and Piper had not "perfected and adapted" the invention in 1860, and that by reason of their long-continued remissness they had lost any inchoate right they might have had to priority. The question in the case was, could the sketches of 1860 carry back the date of invention to the time when it was made and thus defeat plaintiff's patent? The court, in the opinion, said as follows, (p. 462:)

A patentee whose patent is assailed upon the ground of want of novelty may show by sketches and drawings the date of his inceptive invention, and if he has exercised reasonable diligence in "perfecting and adapting" it and in applying for his patent its protection will be carried back to such date; and in a race of diligence between rival inventors the one who first perfects an invention and embodies it in a distinct form is entitled to priority; but can this be accorded to one who has conceived the idea of an invention and has sketched it on paper, but has done nothing more in reference to it for a period of five years, as against the patent of an independent though subsequent inventor? Reasonable diligence in "perfecting and adapting" the invention is essential to the efficacy of such a claim. This is the express condition prescribed by section 15 of the patent act of 1835, as held by Mr. Justice Story in *Reed* v. *Cutter*, 1 Story, 590. Independent of this provision he is entitled to priority of right to a patent who first reduces his invention to a fixed positive form adapted to practical use. Unless, therefore, the speculations of Linville and Piper in 1860 had attained the perfection of a completed and patentable invention their inaction until 1865 would clearly deprive them of the benefit of section 15.

In *Draper* v. *Potomska Mills Corporation* (3 Ban. & Ard., 214) the court, Shepley, J., came to the conclusion that Draper was entitled, upon the evidence, to a date of invention as early as May 13, 1871, at which time he made drawings which exhibited a matured and perfected invention in the mind of the inventor, there being no unreasonable delay or want of diligence in perfecting and adapting the invention and applying for a patent. He reduced to practice January 19, 1872. The court said:

Illustrated drawings of conceived ideas do not constitute an invention, and unless they are followed up by a seasonable observance of the requirements of the patent laws they can have no effect upon a subsequently-granted patent to another; but a patentee whose patent is assailed upon the ground of want of novelty may show by sketches and drawings the date of his inceptive invention, and if he has exercised reasonable diligence in perfecting and adapting it and in applying for his patent, its protection

will be carried back to such date. *Reeves* v. *The Keystone Bridge Company*, 1 Off. Gaz., 460.

In *Kneeland* v. *Sheriff* (5 Ban. & Ard., 482) the evidence showed that Kneeland conceived the invention in 1863; that he described it partially to different persons afterward; that he made sketches and had a drawing of it made in the summer of 1864; that he reduced it to practice prior to applying for patent, which he did February 27, 1865. Davis, alleged by defendant to be the prior inventor, did not carry his date of conception back of September, 1864. He reduced to practice during the year 1865. The court, McKennan, J., after citing *Reeves* v. *Keystone Bridge Co.*, *supra*, held as follows:

Kneeland's inceptive invention was the earliest and he was diligent in perfecting and adapting it and in applying for his patent. He is, therefore, prior in right to Davis.

In *Electric Railroad Signal Co.* v. *Hall Railroad Signal Co.* (6 Fed. Rep., 603) the facts showed that Pope, plaintiff's assignor, conceived of the invention about November 6, 1872, and without making any efforts to reduce it to practice applied for a patent May 15, 1873, which was granted July 1, 1873. Hall conceived of the invention about December 21, 1872, and reduced it to practice in April, 1873. The learned court said as follows:

The plaintiffs rely upon the qualification of the rule that he is the first inventor who has first actually perfected the invention, the qualification being that if the one first to conceive of the invention was at the time using reasonable diligence in adapting and perfecting the same, he is recognized as the first inventor, although the second to conceive may have been the first to reduce to practice. It is also true that the determination of the fact of diligence is not to be reached by comparison of the diligence of the two inventors. If Pope was reasonably diligent in perfecting his idea, it does not matter that Hall was exceedingly diligent and made more rapid advances. The plaintiffs' position is that Pope had mentally worked out his invention by the first week of November, 1872; that Hall had reached the same result in the latter part of December, 1872; that Pope applied for his patent on May 15, 1873, and that there was no laches in this respect. All this is true; and if, meanwhile, he had been engaged in efforts to perfect his invention, his right to the patent could not be assailed on the ground that another was the first inventor.

In *Detroit Lubricator Manfg. Co.* v. *Renchard* (9 Fed. Rep., 293) the patent in suit was granted to Parshall, May 22, 1877. The Court, Mr. Justice Matthews, said:

The defendants exhibit a drawing made by J. V. Renchard, which bears date August 10, 1876, and which, it is testified by him, was made on that day, and by others that he showed it to them about that time. This antedates Parshall's application, but it fails to supersede his patent for the reason that it seems well established in evidence that Renchard did not at that time prosecute the matter beyond the mere drawing. The drawing seems to exhibit a perfect machine in all its parts, and sufficiently to show the combination forming the subject of the present controversy, particularly the metallic oil-cup, the siphon-tube carrying the condensed water into the glass indicator, and the two chambers, condensing and oil, closely and directly united. Nevertheless, it is clearly proven that the defendants did not, in fact, construct an indicator in this form, and reduce it to actual use, until after it had been successfully accomplished by Parshall, nor until after the date of his patent. This mere drawing, therefore, cannot be allowed to have the effect of depriving Parshall of his title of being the first and original inventor.

In *Pennsylvania Diamond-Drill Co.* v. *Simpson et al.* (29 Fep. Rep., 288) the patent in suit was granted to Robert Allison, August 1, 1882, on an application filed May 4, 1882. Allison conceived of the invention as early as 1870, and made rough sketches, but no model or machine, and did not do anything to put his invention into practical form. He did not apply for a patent until many months after Ball and Case made the device and obtained a patent, and then only at the solicitation of the plaintiff, the assignee of a prior patent. Ball and Case applied for patent in August, 1881 on the same invention.

Acheson, J., said:

After completing their invention, Ball and Case were prompt to apply for Letters Patent, and, by the Sullivan Machine Company, their assignee, were commendably diligent in furnishing the public with machines equipped with the device. As against the Ball and Case patents, then, will the law adjudge priority of invention to Allison? The answer is not doubtful under the authorities. In a race of diligence between two independent inventors he who has first perfected and adapted the invention to actual use is entitled to the patent. *Agnew* v. *Jordan*, 7 Wall., 583; *Whitely* v. *Swayne*, Id., 685. Here Allison, it would seem, was the first to conceive the invention; but mere conception, which is not seasonably followed by some practical step, counts for nothing as against a subsequent independent inventor, who, having complied with the patent laws, has obtained the patent. It would indeed be a strange perversion of the purpose of the patent laws if one who had conceived of a new device, and proceeded so far as to embody it in rough sketches, or even in finished drawings, could there stop, and yet hold that field of invention against all comers for a period of twelve years. The law does not so reward supineness. Hence, in *Reeves* v. *Keystone Bridge Co.*, 5 Fish, 456, 463, Judge McKennan declared the established rule to be "that illustrative drawings of conceived ideas do not constitute an invention, and that, unless they are followed up by a seasonable observance of the requirements of the patent laws, they can have no effect upon a subsequently-granted patent to another." And this principle was enforced by Mr. Justice Matthews in the more recent case of *Detroit Lubricator Manuf'g. Co.* v. *Renchard*, 9 Fed. Rep., 293, although the antedating drawing there exhibited a perfect machine in all its parts.

In *Hubel* v. *Tucker* (28 Fed. Rep., 132) Taylor, who was Hubel's assignee, and Tucker both held patents. The bill prayed that the Tucker patent might be declared void, on the ground that it interfered with the patent previously granted to Taylor. The court, Shipman, J., held that—

Tucker first conceived of the invention, nd, with reasonable diligence, reduced it to practice before the publication of Taylor's patent.

The question was whether Tucker lost his right to the fruit of his invention on account of delay in applying for his patent. The court held that Taylor having reduced his invention to practice with reasonable diligence was entitled to be considered the first inventor, although there was some delay in applying for Letters Patent.

In *McCormick Harvesting Machine Co.* v. *Minneapolis Harvester Works* (42 Fed. Rep., 152) suit was brought to obtain a patent. The parties were respectively the assignees of Jewell and Appleby. Jewell conceived the invention not earlier than September, 1879, and filed his application April 23, 1880. Appleby conceived as early as June, 1879, had patterns made in July or August, 1880, a machine being finished not later than August 15, 1880. The court, Nelson, J., said:

He who first conceives and gives expression to the idea of an invention in such clear and intelligible manner that a person skilled in the business could construct the thing, is entitled to a patent, provided he uses reasonable diligence in perfecting it.

In the recent case of *Wright* v. *Postel* (43 Fed. Rep., 603) the court, Butler, J., held that the plaintiff had failed in diligence, and said:

One who desires a patent must be vigilant in reducing his invention to practical form and applying for letters. The patent laws are intended for the benefit of the public, as well as of patentees. They are designed to stimulate invention for the common advantage. It is, therefore, the duty of inventors to use reasonable diligence in reducing their conceptions to practice and applying for patents. They cannot neglect it without danger to their rights.

In *Mayhew* v. *Wardwell* (C. D., 1869, 5) it appeared that Mayhew reduced to practice in the latter part of 1867, several months after Wardwell had reduced to practice. Mayhew had had the idea in his mind for a considerable time prior to invention by Wardwell. The Commissioner held that Wardwell was the prior inventor and said:

There is high authority for the doctrine that he who first perfects a machine and makes it capable of useful operation is entitled to a patent and is the real inventor, though others may previously have had the idea and made some experiments toward putting it in practice.

This doctrine, announced by Judge Story, in *Washburn* v. *Gould*, (3 Story, 133,) seems specially applicable to a case like the present, where he who first conceives the idea of the invention neglects to use reasonable diligence to perfect the same and adapt it to practical use.

In *Duchemin* v. *Richardson and Stein* (C. D., 1870, 31) Commissioner Fisher said:

Undoubtedly where two men have hit upon the same idea and are both diligently engaged in experimenting or in perfecting their inventions, it is proper to go back to the very beginning of the invention, to its first embodiment in any form, to determine which of them is prior in point of time. But where one of the parties has been negligent, or has not perfected the invention at all, or the other party has not only perfected but has patented his device, then the rule as administered in the courts should prevail, and no evidence of priority should be received that falls short of a reduction to practice in working mechanism. (*Cahoon* v. *Ring*, 1 Fisher, 397; 1 Clifford, 592.)

In *Disston* v. *Emerson* (C. D., 1871, 162) it appeared that Disston made a sketch of the invention in December, 1866, and on February 22, 1867, made an exhibit embracing the invention in controversy, but never put it to any practical test, and did not file his application for patent until February 28, 1868, more than one year after the completion of said exhibit. Emerson filed his application April 12, 1867, and his patent was granted July 16, 1867. Commissioner Leggett, in awarding priority to Emerson, said:

When two independent inventors are struggling to perfect and patent their invention, and both come to the Office at or nearly the same time, it is the duty of the Office to protect the man who first conceived and described his invention, if he has pursued it with due diligence, although by poverty, or sickness, or other uncontrollable cause he may be last in producing a practical working machine and last in the Office.

In *Edison* v. *Foote* and *Randall* (C. D., 1871, 80) it appeared that Foote and Randall conceived the invention December 10, 1869, filed their application June 8, 1870, and obtained a patent July 5, 1870. Edison filed his application May 27, 1870. He did not conceive the invention until the early part of 1870. Commissioner Leggett said:

Invention is not the work of the hands, but of the brain. The man that first conceived the complete idea of the improvement and gave evidence of the completeness of the idea by representing it on paper, or by clear and undisputed oral explanation, is the first inventor, and to avail himself of the rights of priority the law only requires that he shall use due diligence in embodying his idea in a practical working machine. The sketch need not be a "working drawing." The conception may be complete, while further investigation, and perhaps experiment, may be necessary in order to embody the idea in a useful physical form. I think priority clearly belongs in this case to Foote and Randall.

In *Tingley* v. *Carpenter* (C. D., 1871, 236) Carpenter conceived of the invention in the summer of 1869. June 3, 1870, he filed a caveat describing the invention. Carpenter filed his application August 15, 1870. Tingley filed his application August 11, 1870. Tingley did not conceive until the latter part of March, 1870, before which time Carpenter had castings made for his machine. Tingley reduced to practice in July, 1870. The case was decided in favor of Carpenter, the Commissioner saying:

The first inventor is and should be entitled, under the law, to a reasonable time, to be judged of according to the circumstances of the particular case, in which to perfect his invention without impairing his claim to priority. If he is using reasonable diligence he will not lose his right. If an inventor has fully worked out the idea and demonstrated it in some fixed form, and shows by his conduct that he intends to pursue it to a patent and practical use, the law favors his having ample time to improve, adapt, perfect, and test his invention before obliging him to come to the Patent Office.

In *Morse* v. *Clark* (1 O. G., 275) Morse filed his application March 29, 1871, and Clark filed his application April 10, 1871. Clark conceived not earlier than February 22, 1871, had patterns made on the 24th, and on the 25th dies were cast from the patterns. Morse made a model of full size the last of November, 1869. Commissioner Leggett said:

If an inventor delays to put his invention into practical use for a time so long as to give evidence of a want of due diligence, and in the meantime another independent inventor invents the device and puts it into use, the original inventor may lose his rights; but the question of "due diligence" can scarcely find a foothold in the short space of four months between Morse's invention and the filing of his application. The evidence shows that he was an employé; that he was not entire master of his own time; that other inventions and applications necessarily engaged much of his attention; but, still, he was in the Office two weeks ahead of his competitor.

In *Chapman* v. *Candee* and *Taylor* (2 O. G., 245) Candee and Taylor filed their application September 24, 1868, and their patent issued February 2, 1869. They took no testimony. Their date of invention was therefore the date of the filing of their application. Chapman filed his application December 9, 1870. It was held by Commissioner Leggett that Chapman must show, in order to prevail—

either that he was the first to conceive the idea of the invention and the mode of putting it into practice, and used reasonable diligence in adapting and perfecting it, or that he actually perfected and reduced the invention to practice prior to the date of the application of Candee and Taylor.

In *Smith* v. *Barter* (7 O. G., 1) it appeared that Barter's patent issued April 9, 1872. Smith's application involved in the interference was filed May 20, 1872. A caveat had previously been filed by him October 23, 1871. Smith reduced to practice in June or early July, 1871. Barter claimed to have conceived of the invention in August, 1870, and the first machine was built and put in operation in December, 1871. Commissioner Thacher said, in commenting upon Barter's claim that he was the first to conceive the invention—

But, if the evidence was entirely conclusive in favor of Barter on this point, I should hesitate to award priority to him. No principle is better established than that the first inventor is he who first reduces the invention to practical form by embodying it in a machine capable of useful operation, modified, it is true, by the proviso that if the first to conceive the invention is second in reduction to practice, his right to the invention shall not be destroyed if he was using due diligence in perfecting it.

In *Millward* v. *Barnes and Barnes* (11 O. G., 1060) Millward conceived of the invention in December, 1873, made working drawings in 1874, and a model in April, 1876. He filed his application May 15, 1876. He did not build a machine or test the operativeness of his device. Barnes and Barnes reduced to practice in January, 1876, filed their application on March 8, 1876, and their patent issued March 21, 1876. The Commissioner assumed that they were the second to conceive. Commissioner Spear said:

Respecting the matter of diligence, as bearing upon the question of priority, I do not regard it as comparative, or, as it is sometimes termed, a "race of diligence," where one was first to conceive and the other to reduce to practice. If the second to conceive is the first to reduce to practice his claim is founded upon that fact and derives no support whatever from previous efforts, and whether he has been more or less diligent from the time of the conception of his invention to its maturity he stands in exactly the same position. The fact that being an original inventor he did actually first reduce the invention to practice is all that we are to look for, or that he can base his claim to priority upon. Not so, however, with the one first to conceive. He must show affirmatively that he was reasonably diligent from the time of his conception of his invention until its completion. His diligence is not to be compared with that of his competitor, but must stand as an independent fact. It is for him to show that, under the circumstances, he used reasonable diligence, in order that he may connect the two events, conception and completion, and so establish a superior title to the invention. Diligence is thus made one of the elements necessary to his title as prior inventor, and without it his title would be defective and could not prevail as against one claiming under the title of the first to reduce to practice.

In none of the cited court cases, which include all or nearly all in which the question of diligence has

been discussed in connection with priority of invention, do I find any intimation that the diligence of the first person to conceive need not antedate the inceptive invention of the person first to reduce to practice in order to enable the former to prevail. Nor do I find any support for such a doctrine in the decisions of the Commissioners which have been cited.

The case of *Packard* v. *Sanford* (16 O. G., 1182) announces a different doctrine. In that case the Commissioner said:

> A race of diligence between two inventors never begins until the date of the later conception. The obligation to diligence on the part of the first to conceive does not exist until the day of the later conception, which cannot give to that obligation a constructive existence relating back to the earlier conception.

Again:

> But even if Packard's invention had not been reduced to practice before the date of Sandford's conception of the device, there would have been no obligation of diligence resting upon Packard prior to that date. That obligation would have reached from the date of Sandford's conception, not backward into the past, but forward into the future.

In *Etches et al.* v. *Prescott* (17 O. G., 267) the same Commissioner said:

> The race of diligence begins with the later conception. It began in this case in June, 1875. From that time until October 26, 1875, the date of his reduction to practice, Prescott seems to me to have been reasonably diligent in the prosecution of his invention and must be regarded as the prior inventor.

It should be stated that June, 1875, was the date when Etches and Wilson conceived the invention.

In other more recent cases in the Office the same doctrine has found recognition, and in *Lorraine* v. *Thurmond*, (51 O. G., 1781,) decided by the present Commissioner, the case of *Packard* v. *Sanford*, *supra*, was recognized as an authority upon the question of diligence. The precise question now under consideration did not arise upon the facts of that case, because the diligence of the person first to conceive antedated the conception of his competitor. The same case came up upon motion for rehearing, (52 O. G., 1949,) the decision containing the following language:

> Lorraine set up conception of the invention in February, 1888. At that time Thurmond, who had been diligent previously, was actively engaged in preparing to file his application for patent, having already finished working drawings of his invention. There can be no doubt that he exercised reasonable diligence.

A review of all the cases in connection with the language of the statute satisfies me that if the first person to conceive would prevail over his rival, who has first reduced the invention to practice, he must show that he was using reasonable diligence in adapting and perfecting the invention when his competitor entered the field. He must show that his diligence antedates the inceptive invention of his rival if he would prevail over him, and he must show that his diligence extends back to his own conception if he would carry his invention back to the date of that conception. Cases exist where the first person to conceive is not entitled to be accredited with diligence extending back to his actual date of conception. In such cases it is probably only material to inquire whether the diligence which the statute calls for antedates the inceptive invention of the person first to reduce to practice. But it is material and necessary that the diligence antedate the independent conception of the rival inventor, as otherwise no injustice would be done by recognizing the case as coming within the general rule that the first to reduce to practice is the first inventor.

In his work on patents, section 386, Professor Robinson says that it appears both upon principle and upon the presumption out of which the rule itself arises that the diligence required by the first conceiver relates to the entire period between his conception and reduction to practice, and that in default of this the second conceiver, if the first reducer, is entitled to patent. A statement which appears to somewhat qualify the foregoing is found in section 961, which seems to imply that it is only necessary that the diligence of the person first to conceive should antedate his rival's conception in order to enable the former to prevail. Both statements referred to are clearly inconsistent with the doctrine of *Packard* v. *Sanford*, *supra*.

In the present case Seybold took no steps whatever from January, 1886, the date of his conception, to the 8th of April, 1888, when his rival entered the field. Nor did he do anything until the subsequent October, Christie meanwhile having not only conceived but reduced to practice. It is claimed that this delay to act was not an unreasonable one. As was held in *Ecaubert* v. *Hofmann* (52 O. G., 2107)—

> reasonable diligence is established by satisfactory proof of affirmative action and, within limits, by excuses for inaction.

But the case would be a very exceptional one in which the excuse for inaction was sufficient to justify entire absence of effort during the whole period preceding a rival's inceptive invention, during the whole period of his inventive act, and for a considerable period thereafter.

The excuse offered by Seybold, who is a machinist, is that he did not have proper tools in his shop at the time for building a press embodying his invention. His proofs contain no suggestion of lack of means, and during the two years prior to March, 1889, he built—

> numbering-machines, perforators, cutting machines, index-cutters, pasting-machines, gluing-machines, wood-staining machines, graining-machines, polishing-machines, sandpapering-machines, and general repair work.

If he did not have the necessary tools to build a press containing the special device here in controversy, he certainly might have put forth efforts to have it, or some part of it, built elsewhere. There was nothing specially complicated in the invention, and it is impossible to reach the conclusion that he was reasonably diligent, within the statute, either by reason of what he did or of his proffered excuses for his failure to do anything.

I have not overlooked the contention that Keck is the actual inventor of Christie's machine; but I agree with the majority of the Examiners-in-Chief that the case turns upon the question whether Seybold exercised reasonable diligence in adapting and perfecting his invention, and in accordance with the views hereinbefore set forth decide the case in favor of Christie.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 8. TUESDAY, FEBRUARY 24, 1891. PRICE---$5 per year.

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Daniels v. Morgan	1113
Shinn v. McElroy	1115
DECISIONS OF THE U. S. COURTS—	
Foster v. Crossin *et al.*	1115
International Tooth Crown Company v. Carmichael	1116
CONDITION OF WORK IN EXAMINING DIVISIONS WEEK ENDING FEBRUARY 17, 1891	Last page.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Issue of February 24, 1891.

Patents	441—No. 446,844 to No. 447,284,	inclusive.
Designs	9—No. 20,526 to No. 20,534,	inclusive.
Trade-Marks	43—No. 19,060 to No. 19,102,	inclusive.
Labels	4—No. 6,461 to No. 6,464,	inclusive.
Reissues	None.	
Total issue	497	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	4	.....	Nevada	.....	.....
Arizona Territory	.....	.....	New Hampshire	3	.....
Arkansas	2	.....	New Jersey	18	2
California	14	.....	New Mexico Territory	.....	.....
Colorado	2	.....	New York	76	13
Connecticut	15	1	North Carolina	2	.....
Delaware	1	.....	North Dakota	1	.....
District of Columbia	2	.....	Ohio	33	.....
Florida	.....	.....	Oklahoma Territory	.....	.....
Georgia	5	.....	Oregon	1	1
Idaho	.....	.....	Pennsylvania	47	2
Illinois	35	1	Rhode Island	4	1
Indian Territory	.....	.....	South Carolina	.....	.....
Indiana	12	1	South Dakota	.....	.....
Iowa	7	.....	Tennessee	3	.....
Kansas	4	.....	Texas	6	1
Kentucky	2	3	Utah Territory	.....	.....
Louisiana	2	.....	Vermont	2	.....
Maine	2	.....	Virginia	9	.....
Maryland	4	3	Washington	.....	.....
Massachusetts	47	5	West Virginia	3	.....
Michigan	9	.....	Wisconsin	8	.....
Minnesota	8	.....	U. S. Army	.....	.....
Mississippi	.....	.....	U. S. Navy	.....	.....
Missouri	13	2			
Montana	.....	.....	Total to citizens of the United States	410	36
Nebraska	4	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Mexico	.....	.....
Austria-Hungary	.....	.....	Netherlands	.....	1
Belgium	.....	1	Newfoundland	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	New Zealand	.....	.....
Canada	3	.....	Portugal	.....	.....
Chili	.....	.....	Queensland	.....	.....
Colombia	.....	.....	Russia	.....	.....
Cuba	1	.....	Scotland	1	.....
Denmark	.....	.....	South Australia	.....	.....
Ecuador	.....	.....	Spain	.....	.....
England	12	6	Sweden	2	.....
Finland	.....	.....	Switzerland	.....	.....
France	7	.....	Victoria	.....	.....
Germany	13	3	West Indies	.....	.....
Hawaii	.....	.....			
Ireland	1	.....	Total to citizens of foreign countries	40	11
Japan	.....	.....			

DESIGNS.

20,526.—MATCH-SAFE.—*Lelia Zeb Anderson*, Philadelphia, Pa. Application filed January 24, 1891. Serial No. 378,980. Term of patent 7 years.

20,527.—BOTTLE.—*John W. Nicholson*, Philadelphia, Pa., assignor to *James Whitall*, same place, *John Mickle*, Millville, N. J., *C. Albert Tatum*, New York, N. Y., *John M. Whitall* and *John W. Nicholson*, both of Philadelphia, Pa., and *Francis M. Underhill*, New York, N. Y. Application filed October 27, 1890. Serial No. 369,511. Term of patent 14 years.

20,528.—BADGE.—*Demas L. Auld*, Columbus, Ohio. Application filed October 18, 1890. Serial No. 368,717. Term of patent 7 years.

20,529.—OBSERVATORY.—*Emil Eitel*, Chicago, Ill. Application filed January 14, 1891. Serial No. 377,777. Term of patent 3½ years.

20,530.—HOSE-REEL BRACKET.—*Stephen J. Meeker*, Newark, N. J. Application filed July 10, 1890. Serial No. 358,354. Term of patent 14 years.

20,531.—ROOFING-PLATE.—*Longley Lewis Sagendorph*, Philadelphia, Pa., assignor of one-half to *Charles N. Harder*, Philmont, N. Y. Application filed January 21, 1891. Serial No. 378,598. Term of patent 14 years.

20,532.—MATCH OR ASH RECEIVER.—*Henry L. Leibe*, Newark, N. J. Application filed January 20, 1891. Serial No. 378,478. Term of patent 3½ years.

20,533 and 20,534.—FLOWER-FRAME.—*Nicholas Steffens*, New York, N. Y. Applications filed January 31, 1891. Serial Nos. 379,821 and 379,822. Term of patents 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

19,060.—REFINED PETROLEUM.—*Arkell & Douglas*, New York, N. Y. Application filed January 6, 1891. Used since November 15, 1890.

"The words 'LUXENE' and 'THE NEW LIGHT.'"

19,061.—BUTTON-FASTENERS.—*Anchor Button Fastener Company*, New York, N. Y. Application filed January 17, 1891. Used since January, 1875.

"The word 'ANCHOR.'"

19,062.—NEEDLES AND FISH-HOOKS.—*William Edwin Compton*, Redditch, England. Application filed January 8, 1891. Used since 1889.

"The representation of a windmill."

19,063.—WRENCHES, SCREW-DRIVERS, TACK-PULLERS, AND SIMILAR TOOLS.—*Capitol Manufacturing Company*, Chicago, Ill. Application filed January 2, 1891. Used since September 15, 1890.
"The word 'HERCULES.'"

19,064.—AMMONIA PREPARATIONS FOR MEDICAL PURPOSES.—*Chemische Fabrik auf Aktien*, (*vorm. E. Schering.*) Berlin, Germany. Application filed October 10, 1890. Used since September 12, 1890.
"The word 'SPERMIN.'"

19,065.—PLUSHES.—*Contrexeville Manufacturing Company*, Manville, R. I., and New York, N. Y. Application filed January 10, 1891. Used since January 1, 1888.
"The word 'NORMANDIE.'"

19,066.—PIPES, TOBACCO AND SNUFF BOXES, MATCH-SAFES, CIGAR AND CIGARETTE HOLDERS, CIGAR CASES, AND TOBACCO POUCHES.—*William Demuth & Co.*, New York, N. Y. Application filed January 3, 1891. Used since December 29, 1890.
"The word 'MASCOT.'"

19,067.—CIGARS AND TOBACCO.—*George Frank Davenport*, Boston, Mass. Application filed January 8, 1891. Used since November 29, 1890.
"The words 'ANNIE PIXLEY.'"

19,068.—ILLUMINATING-OIL.—*John Ellis & Co.*, New York, N. Y. Application filed December 1, 1890. Used since July 9, 1890.
"The words 'TIP TOP.'"

19,069.—GOODS OF WOOL, WORSTED, OR HAIR.—*W. & H. Foster*, Limited, Denholme Mills, near Bradford, England. Application filed January 21, 1891. Used since 1870.
"Two triangles crossing each other in connection with the letters 'W' and 'H F.'"

19,070.—HOT-WATER HEATERS.—*Gurney Hot Water Heater Company*, Boston, Mass. Application filed January 22, 1891. Used since January 1, 1891.
"The words 'DOUBLE CROWN.'"

19,071.—CORDIALS.—*Hulskamp, Zoon & Molyn*, Rotterdam, Netherlands. Application filed January 19, 1891. Used since January, 1887.
"The representation of an old man with a wine-glass upraised."

19,072.—BAKING-POWDER.—*Enos F. Jones Chemical Company*, Jersey City, N. J., and New York, N. Y. Application filed January 21, 1891. Used since December 1, 1890.
"The words 'SEA MOSS.'"

19,073.—COTTON-SEED OIL.—*Mario Liebman*, Brooklyn, N. Y. Application filed January 10, 1891. Used since January, 1889.
"The words 'TROYAN CITY OIL COMPANY.'"

19,074.—HARROWS AND PULVERIZERS.—*D. S. Morgan & Company*, Brockport, N. Y. Application filed January 10, 1891. Used since December 18, 1889.
"The word 'SPADING.'"

19,075.—WHISKY.—*James E. Pepper & Co.*, Lexington, Ky. Application filed January 20, 1891. Used since 1884.
"The words 'OLD LEXINGTON.'"

19,076.—WHISKY.—*James E. Pepper & Co.*, Lexington, Ky. Application filed January 20, 1891. Used since 1880.
"The words 'HENRY CLAY.'"

19,077.—CERTAIN NAMED REMEDIES.—*Catharine A. Purtle*, Erie, Pa. Application filed October 25, 1890. Used since May, 1890.
"The word 'JANNOCK.'"

19,078.—HOSE, BELTING, AND PACKING FOR MACHINERY.—*Revere Rubber Company*, Boston, Mass. Application filed January 22, 1891. Used since December 1, 1890.
"A monogram composed of the capital letters 'V Z.'"

19,079.—WATCH MOVEMENTS AND CASES.—*Byron L. Strasburger & Co.*, New York, N. Y. Application filed January 24, 1891. Used since March 10, 1889.
"The word 'SILVEREX.'"

19,080.—FABRICS OF COTTON, WOOL, OR MIXED COTTON AND WOOL.—*Smith, Hogg & Gardner*, New York, N. Y., and Boston, Mass. Application filed January 9, 1891. Used since December 1, 1890.
"The word 'BROWNIE.'"

19,081.—CHEMICALS FOR INCREASING THE COMBUSTION OF FUEL.—*Standard Coal and Fuel Company*, Boston, Mass. Application filed January 8, 1891. Used since October 30, 1890.
"The word 'KEN-KOM.'"

19,082.—STOVE-POLISH.—*Jennie R. Stoeckel*, New York, N. Y. Application filed January 7, 1891. Used since August 1, 1890.
"The representation of a pansy flower."

19,083.—ARTICLES TREATED OR COATED WITH LITHO-CARBON.—*Ira Taylor*, New York, N. Y. Application filed October 1, 1890. Used since August, 1890.
"The words 'LITHO CARBONIZED' in connection with the representation of an eagle's head."

19,084.—HATS AND CAPS.—*Jules Vimenet*, Brussels, Belgium. Application filed November 24, 1890. Used since July 1, 1890.
"The representation of a shield surmounted by a crown and having on it an heraldic ensign of a rampant lion; below it a small crown from which is suspended a Greek cross or pendant; beneath this and crossing back of the pendant a branch, ancient implements crossing each other back of the whole and observable at the corners of the shield, and beneath the shield the words 'L'UNION FAIT LA FORCE,' all associated with the fac-simile signature of 'J. VIMENET.'"

19,085.—WHISKY.—*Edwin Walters*, Baltimore, Md. Application filed January 22, 1891. Used since 1851.
"The word 'BAKER'S.'"

19,086.—CEMENT AND PLASTER.—*Silicon Wall Plaster and Manufacturing Company*, Kansas City, Mo. Application filed October 4, 1890. Used since March 20, 1890.
"The representation of a four-leaf clover and the word 'SILICON.'"

19,087.—FACE-POWDERS AND PREPARED CHALK.—*Andrew S. Stiegerwald*, Philadelphia, Pa. Application filed May 29, 1890. Used since March 1, 1890.
"The words 'ACTRESSES' FAVORITE.'"

19,088.—CHEWING-GUM.—*Adams & Sons*, Brooklyn, N. Y. Application filed January 26, 1891. Used since January 1, 1891.
"The word 'BO-KAY.'"

19,089.—TIN PLATES, TERNE PLATES, AND BLACK PLATES.—*Alfred Baldwin & Company*, Limited, Panteg, near Newport, England. Application filed January 9, 1891. Used since February 1, 1887.
"The word 'BUTLER.'"

19,090.—FEATHER DUSTERS.—*Charles Fisher*, Louisville, Ky. Application filed January 29 1891. Used since January 15, 1891.
"The representation of a fish."

19,091.—CUTLERY FOR HOUSEHOLD USE.—*Landers, Frary & Clark*, New Britain, Conn. Application filed January 8, 1891. Used since 1888.
"The words 'CUTLERS TO THE AMERICAN PEOPLE.'"

19,092.—PALE ORANGE BITTERS.—*John Henry Membrey*, London, England. Application filed January 13, 1891. Used since 1859.
"The representation of a red lion with the name 'PALE ORANGE BITTERS' and the fac-simile signature in red of 'FIELD, SON & CO.'"

19,093.—CORSETS, WAISTS, AND SHOULDER-BRACES.—*Emma J. Swartwout*, Newark, N. J. Application filed January 13, 1891. Used since November, 1887.
"The word 'DIRECTOIRE.'"

19,094.—PERFUMERY, SOAPS, WASHES, AND LOTIONS.—*William S. Thomson*, London, England. Application filed January 27, 1891. Used since May 3, 1890.
"The word 'KARILPA.'"

19,095.—ENAMELED SHEET-METAL WARE.—*Johann Baumann's Wittwe*, Amberg, Germany. Application filed October 3, 1890. Used since June 7, 1880.
"The representation of a jug and an heraldic lion resting thereon."

19,096.—SHEET-IRON AND STEEL, AND LEAD-COATED AND TIN PLATES, TERNE PLATES, AND TAGGERS.—*E. P. & W. Baldwin*, Wilden, England. Application filed December 29, 1890. Used since 1854.
"The word 'WILDEN.'"

19,097.—LINIMENTS FOR THE CURE OF RHEUMATISM, NEURALGIA, GOUT, AND SIMILAR AILMENTS.—*John H. Blume & Co.*, Walhalla, Tex. Application filed October 28, 1890. Used since August, 1890.
"The word 'CHEROKEE.'"

19,098.—PENCILS, PEN-HOLDERS, AND CASES, ERASERS, LEADS, SLATES, CHALKS, AND SIMILAR STATIONERY.—*Johann Faber*, Nuremberg, Germany. Application filed November 13, 1890. Used since August 2, 1879.
"The representation of a St. Andrew's cross and the name 'JOHANN FABER.'"

19,099.—ARTICLES MADE WHOLLY OR PARTLY OF SILVER.—*Daniel Low*, Salem, Mass. Application filed January 5, 1891. Used since July 1, 1890.
"The pictorial representation of a witch-like female figure."

19,100.—CIGARS.—*Julius D. Meyer*, Portland, Oreg. Application filed November 17, 1890. Used since July 1, 1875.
"The letters 'J D M' in the form of a monogram."

19,101.—SUPPOSITORIES FOR FEMALE DISEASES.—*Victor Medical Association*, South Bend, Ind. Application filed December 9, 1890. Used since January 15, 1887.
"The words 'WILD OLIVE & MYRTLE TONIC' and the representation of a lion's head."

19,102.—FRESH AND CURED BEEF, HOG, AND SHEEP PRODUCTS, INCLUDING LARD.—*Francis Whittaker & Sons*, St. Louis, Mo., East St. Louis, Ill., and Wichita, Kans. Application filed December 29, 1890. Used since December 15, 1890.
"The representation of a star and the letters 'F' and 'W.'"

LABELS.

6,461.—Title: "GOLDEN COLORED PURE RYE WHISKEY."—*Isaac Dannenberg*, Baltimore, Md. Application filed November 15, 1890.

6,462.—Title: "THE PERFECT FIRE KINDLER."—*Eldridge R. Faulkner*, Baltimore, Md. Application filed January 28, 1891.

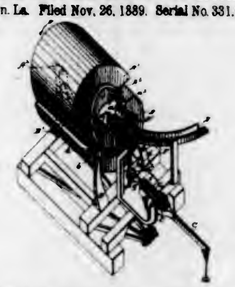
6,463.—Title: "THE OIL THAT LUBRICATES MOST."—*The Vacuum Oil Company*, Rochester, N. Y. Application filed January 30, 1891.

6,464.—Title: "THE OIL THAT LUBRICATES BEST."—*The Vacuum Oil Company*, Rochester, N. Y. Application filed January 30, 1891.

PATENTS

GRANTED FEBRUARY 24, 1891.

446,844. **WEIGHING APPARATUS FOR LIQUIDS.** JOHN P. BALDWIN, Baldwin, La. Filed Nov. 26, 1889. Serial No. 331,640. (Model.)



Claim.—1. In weighing apparatus, the combination, with weigh-scale, and rotating containers mounted on such scale, such containers having an axis in common, of vibrating feed-spout and mechanism, substantially as indicated, for automatically shifting such feed-spout to alternately discharge into the respective containers, substantially as set forth.

2. In weighing apparatus, the combination, with scale-beam and a vibrating spout, of a trigger pivotally connected with the scale-beam, with the free end of the said trigger approximately in line with the fulcrum of the scale-beam and connected with the spout, whereby the tilting of the scale-beam springs the trigger and allows the spout to vibrate, substantially as set forth.

3. The combination, with weigh-scale, scale-beam, and trigger mounted on the scale-beam, substantially as indicated, of revolving containers mounted on the weigh-scale, vibrating feed-spout, lugs connected with the containers for shifting the spout in one direction, and a spring for reversing the spout, such spout being operatively connected with the trigger of the scale-beam, whereby the spout is held against the action of the spring, substantially as set forth.

446,845. **ARTIFICIAL FUEL.** ISIDORE C. BANDMAN, Atlanta, Ga. Filed June 21, 1890. Serial No. 356,252. (No specimens.)

Claim.—An artificial fuel composed of fragments of coal or other similar solid fuel cemented into a block by means of an inflammable compound composed of rosin, sawdust, and black or peroxide of manganese, as set forth.

446,846. **THERMOSTAT.** ADOLPH M. BARRON, Kansas City, Mo. Filed Sept. 19, 1890. Serial No. 365,530. (No model.)

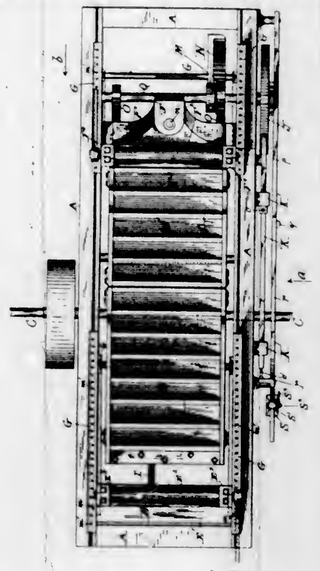


Claim.—1. In a thermostatic circuit-controlling device, the combination of an insulating-block having a recessed under surface, a disk sensitive to variations of temperature contained in the said recess, two binding-screws on the said base, a cross-bar below the said disk, having a contact-point thereon normally in contact with the said disk and connected with one of the said binding-posts, and a metallic casting in the said block, having a contact-point projecting from its base within the said recess and connected with the said binding-screw, the said disk being connected with the opposite binding-post, as described.

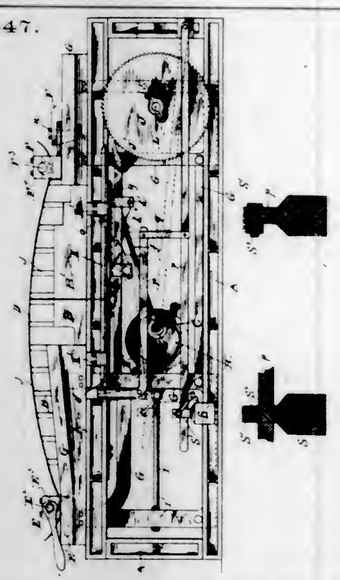
2. In a thermostatic circuit-controlling device, the combination of an insulating base-block having a recessed under surface, a disk sensitive to variations in temperature within the said recess, a bolt passing through the said disk and the base-block, a binding-post upon the said block, and a strip connecting the said bolt and binding-post, a cross-bar spanning the said recess below the said disk and having a contact-point in its upper surface normally in contact therewith, a screw passing through one end of the said bar and insulated therefrom and extending into the said binding-post, a casting within the said block, having a contact-post projecting from its bottom over the said disk, a screw passing through the other end of the said bar and through the block, and a binding-point mounted thereon and connected with the said casting, as described.

446,847. **LEATHER-STRETCHING MACHINE.** HENRY R. BERRENS, Worcester, Mass., assignor to Arthur M. Taft, same place. Filed Mar. 5, 1890. Serial No. 342,713. (No model.)

Claim.—1. A leather-stretching machine comprising, in combination, the following elements: a stationary frame secured to the main frame and a slide-frame fitted to slide longitudinally in said main frame, said frames being arranged end to end lengthwise of the machine and each having a series of transverse blades projecting upward therefrom, over which the leather may be rubbed, mechanism for holding the leather by its ends in contact with the top edges of said transverse blades and for pulling said leather back and forth with short reciprocating movements in a taut condition and with a strong down pressure against said blades, mechanism for feeding forward the slide-frame aforesaid with short intermittent movements and for holding the same against back action, mechanism for feeding forward the device to which the front end of the leather is fastened with short in-



446,847.



termittent movements, also for preventing back action thereof, mechanism for controlling the speed and duration of the last-described forward feed movement, and suitable supports for the various operating parts, whereby the leather may be properly stretched by a continuous and automatic operation, substantially as set forth.

2. In a leather-stretching machine, the combination, with the main supporting-frame and its actuating-eccentric operatively connected therewith, of a longitudinally-reciprocating carriage fitted to slide in said frame, having suitable slide-blocks mounted on each end thereof, upon which are in turn mounted clamp devices for holding the ends of the leather to be stretched, the transverse racking-blades over which the leather is rubbed, and mechanism connected with one of the slide-blocks for feeding it forward to stretch the leather, substantially as set forth.

3. In a leather-stretching machine, the combination, with the main supporting-frame, of a longitudinally-reciprocating carriage fitted to slide in said frame and having clamp devices at each end for holding the ends of the leather to be stretched, a stationary frame secured to the main frame, and a slide-frame arranged end to end lengthwise of the machine, and each having a series of transverse blades projecting up therefrom, said slide-frame being fitted to slide longitudinally in said main frame and having short intermittent forward movements imparted to it, substantially as set forth.

4. In a leather-stretching machine, the combination of the main frame with the stationary frame B, secured thereto, and the slide-frame B', fitted to slide longitudinally therein, and having means for moving the same forward with short intermittent movements, said frames B B' being arranged end to end lengthwise of the machine and each provided with a series of transverse blades *j*, substantially as set forth.

5. In a leather-stretching machine, the combination of the main frame with the frame B', fitted to slide longitudinally in said main frame and having notches or teeth *g* upon its under side, the eccentric *e* on shaft C and its connections with the slide-frame, said shaft and a suitable spring-pawl for preventing back action of said slide-frame, substantially as and for the purpose set forth.

6. In a leather-stretching machine, the combination of the main frame with the carriage G, fitted to slide longitudinally therein and having the clamp devices E F at each end thereof for holding the ends of the leather, the eccentric H on shaft C and its connections with said carriage, said shaft, the stationary frame B, and frame B', having short intermittent forward movements, said frames being arranged end to end lengthwise of the machine and each having a series of transverse blades *j*, substantially as and for the purpose set forth.

7. In a leather-stretching machine, the combination of frame A, carriage G, fitted to slide longitudinally therein and having reciprocating movements imparted to it from an eccentric on the main shaft through suitable connections, the adjustable slide, clamp device E, mounted on the rear end of the carriage, the adjustable swivel slide-clamp device F, mounted on the forward end of said carriage and having a rack P upon its under side, and slide-rod K on the main frame, operatively connected with said rack *p*, substantially as and for the purpose set forth.

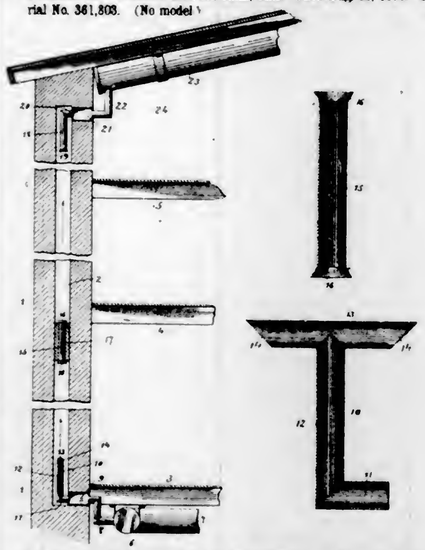
8. In a leather-stretching machine, the main frame A, frame B, secured thereto, and frame B', fitted to slide in said main frame, also having short intermittent forward movements imparted thereto from an eccentric on the main shaft through suitable connections and held against back action by a suitable stationary spring-pawl, in combination with carriage G, fitted to slide longitudinally in frame A and having reciprocating movement imparted to it from an eccentric on the main shaft through suitable connections, the adjustable slide-clamp device E, mounted on the rear end of the carriage, the adjustable swivel slide-clamp device F, mounted on the forward end of said carriage and having a rack *p* upon its under side, and slide-rod K on frame A, operatively connected with said rack, substantially as and for the purposes set forth.

9. In a leather-stretching machine, the combination of the adjustable block F', fitted to slide longitudinally in carriage G and having the swivel-clamp mounted thereon, also having a rack P upon its under side, with the segment-gears O N and pinion M, shafts Q L, fitted to turn in suitable bearings in carriage G, ratchet-wheel J, its spring-pawl, and slide-rod K on the main frame, substantially as and for the purpose set forth.

10. In a leather-stretching machine, the ratchet-wheel J, mounted on carriage G, having a suitable holding-pawl and operatively connected with a clamp device F, substantially as described, in combination with the adjustable slide-rod K, having a suitable stop, and weight S, operatively connected with said rod, substantially as and for the purpose set forth.

11. In a leather-stretching machine, the combination of the weight S, having an upturned flange provided with a longitudinal opening to receive its supporting lever *p* and with a transverse opening to receive an eccentric-bolt S^2, with said lever and eccentric-bolt, the latter being provided with means for turning the same, substantially as and for the purpose set forth.

446,848. **HEATING AND VENTILATING THE WALLS OF BUILDINGS.** WILLIAM BENNER, Tiffin, Ohio. Filed Aug. 12, 1890. Serial No. 361,803. (No model.)



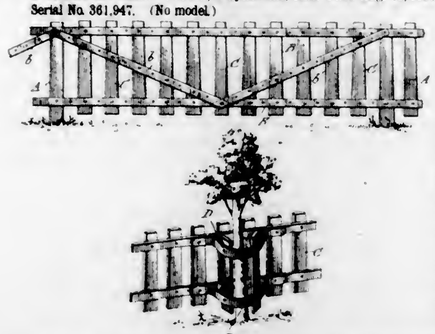
Claim.—1. An improved means for ventilating and heating buildings and preventing dampness therein, consisting of the wall 1, having the central opening 2, the rectangular boxes secured in the wall, and the angular pipes communicating with the boxes and arranged within and upon the outside of the wall and communicating with the cellar and attic of a building, substantially as described.

2. An improved means or system of ventilating and heating, consisting of the hollow wall, the rectangular boxes secured in the wall, the angular pipes arranged within the opening of the wall and upon the outside of the latter, and the tube 15, arranged in the solid portion 17, substantially as described.

3. An improved system of ventilating or heating, comprising the wall 1, provided with the central opening 2, the rectangular boxes 9 and 21, secured to the elbow 8, leading from the cellar to the box 9, and the angular pipe 10, communicating with the box 9 and arranged within the opening 2 and provided at its upper end with a T-shaped hood 13, having openings 14 upon opposite sides of the pipe, substantially as described.

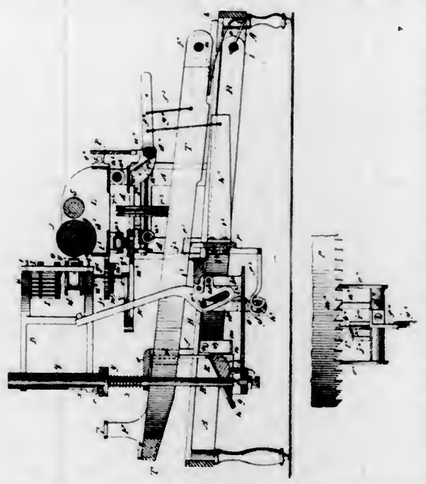
4. An improved system of ventilating and heating, comprising the wall 1, having the central opening 2, the rectangular box 9, arranged at the bottom of the wall and communicating with the opening 2 and the cellar, the rectangular box 21, arranged at the top of the wall, the angular pipe 18, arranged within the opening and communicating with the box 21, and the angular pipe 22, arranged upon the outside of the wall and within the attic and communicating with the box 21 and the pipe or flue 23, substantially as described.

446,849. **COMBINED FENCE AND TREE-PROTECTOR.** GEORGE E. BLAINE and PHILIP T. SOUTH, Waynesville, Ohio. Filed Aug. 13, 1890. Serial No. 361,947. (No model.)



Claim.—In a picket fence and tree-protector, the combination, with the posts A A', of two or more perforated metal straps B B', made fast to the posts, brace-straps *b b'*, secured to the center of the lower strap B' and a picket C, and also to the posts A A', pickets C, secured to straps and braces, and the guard D D', made fast to the straps and pickets C, substantially as and for the purpose set forth.

446,850. **TYPE-WRITING MACHINE.** THEODORE F. BOURNE, Clifton, N. Y. Filed Jan. 21, 1890. Serial No. 337,611. (No model.)



Claim.—1. A vertical shaft adapted to actuate a type-carrier and a bar or lever secured to said shaft and extending at about right angles to said shaft and projecting on opposite sides of said shaft, said bar or lever having an inclined face on one side, combined with a series of pins or projections for moving said bar or lever by riding on its inclined face, said series of pins or projections extending in a substantially straight line substantially parallel with said bar or lever, substantially as described.

2. A shaft or support and a bar or lever secured to said shaft and having an inclined face on one side, combined with a series of substantially parallel levers extending at right angles to the inclined bar or lever, said levers having pins or projections adapted to ride on the inclined face of said bar or lever to turn the latter more or less on its pivot, said pins or projections extending in a line substantially parallel with said bar or lever, substantially as described.

3. A vertical shaft adapted to actuate a type-carrier, and a bar or lever carried by said shaft and projecting from opposite sides thereof and at about right angles thereto, said bar or lever having one side inclined, combined with a series of substantially parallel levers extending over said inclined bar or lever, and the pins or projections *f* on said levers extending about parallel to said shaft and adapted to be depressed upon the inclined side of said bar or lever to turn the latter on its pivot, said pins or projections extending in a line substantially parallel with said lever, substantially as described.

4. A shaft or support and a bar or lever secured to said support and having one side inclined, and a series of holes or apertures in said bar or lever at varying distances from said shaft, combined with a series of pins or projections, one for each of said holes, and adapted to ride on said inclined side of said bar or lever to actuate it and to pass into or through their respective holes or apertures to arrest said bar or lever and hold it stationary, substantially as described.

5. A shaft and a type-carrier supported thereby and a bar or lever having an inclined face on one side for actuating said shaft, combined with a series of levers having pins or projections placed in a line substantially parallel with said bar or lever to ride on said incline to actuate the bar or lever, and thereby the type-carrier, and with a series of holes in the inclined face of said bar or lever to receive said pins for arresting the movement of said bar or lever and for holding it stationary, said holes being arranged in the arc of a circle to regulate the amount of movement of the bar or lever for each pin, substantially as described.

6. A shaft for supporting a type-carrier, and a bar or lever E, having an inclined face, combined with a series of pins or projections *f* for actuating said bar, and with means, substantially as described, for carrying said pins, said pins being interposed between their support and said bar, whereby after said bar has been turned said supports may have further movement without engaging said bar, substantially as specified.

7. A shaft for supporting a type-carrier and a bar or lever E for turning said shaft, said bar or lever having one side inclined, combined with a series of pins or projections to ride on the inclined side of the bar or lever E for actuating said bar or lever, and means, substantially as described, connected to said bar or lever for holding it in its normal position and for releasing it to permit it to be turned, substantially as described.

8. A type-carrier and means, substantially as described, for supporting the same, and a bar or lever E, having one side inclined, for actuating said type-carrier, combined with a series of pins or projections for riding on said inclined side of said bar or lever for actuating said bar or lever, means, substantially as described, for arresting its motion and holding it stationary, and with means, substantially as described, connected to said bar or lever for holding it in its normal position and for releasing the same to permit it to be turned, substantially as described.

9. The pivoted bar or lever E, having an inclined face, apertures *g*, and ledge *h* at said apertures, combined with pins or the like *f* for riding on said bar and for passing through said apertures to lock the bar or lever E, said ledge guiding the pin into the aperture, substantially as described.

10. The pivoted bar or lever E and means, substantially as described, for turning it, combined with the lever H and with connections intermediate said lever H and the bar or lever E for holding the lever E stationary and releasing the same, substantially as described.

11. The pivoted bar or lever E, having the pivoted dogs *n* at its ends, and means, substantially as described, for turning it, combined with the levers H, having the stop-pieces *m*, against which said dogs abut, all arranged for operation substantially as herein shown and described.

12. The bar or lever E, having an inclined face, its shaft or support, and the pivoted dogs *n* on the ends of said bar, combined with the levers F, having pins or projections *f*, the levers H, actuated by the levers F, stop-pieces *m* on said levers H, against which said dogs *n* abut, and springs for returning the bar to its normal position, substantially as described.

13. The shaft B and means, substantially as described, for turning it, combined with the levers F, levers H, and cross-bar *p*, connecting said levers H and adapted to be actuated by the levers F to depress the levers H, and means, substantially as described, between the

bar or lever E and the levers H for holding and arresting the inclined bar or lever E, substantially as specified.

14. The shaft B, bar or lever E, levers F, and pins or projections, combined with the levers H, cross-bar *p*, rock-shaft *l*, connected to the levers H, stop-pieces *m*, and dogs *n*, substantially as described.

15. The type-carrier D, combined with the parallel bars I, supported on said carrier, each having independent lateral movement bodily, and with type G, carried on said bar one above the other, whereby either type can be impressed by the lateral movement of said bars, substantially as described.

16. The type-carrier D, having the pins *t*, combined with the parallel bars I, having apertures *v*, that receive said pins, whereby said bars are supported on said type-carrier D to have movement on said pins, substantially as described.

17. The type-carrier D, having pins *t*, and the parallel bars I, hung on said pins and carrying types G and having independent lateral movement, combined with a hammer for actuating said bars and type, substantially as described.

18. A pivoted hammer, combined with a spring-actuated arm or bar for pressing against said hammer, and means, substantially as described, for shifting the point of application to the hammer of said arm or bar on opposite sides of the fulcrum of said hammer to throw the hammer in opposite directions, substantially as specified.

19. A pivoted hammer having a slot or groove that extends on opposite sides of said pivot, combined with a spring-pressed bail or arm for engaging said slot, and means, substantially as described, for moving said arm or bail on opposite sides of said pivot, whereby when the pressure is exerted on the hammer on one side of said pivot the outer end of said hammer will be moved in one direction and when the pressure is exerted on the opposite side of said pivot the outer end of the hammer will be moved in the opposite direction, substantially as described.

20. The hammer N, having a pivot a^3, and a slot or groove d^3, that extends both above and below said pivot, combined with a bail or arm O to engage said slot or groove d^3, and a spring for exerting a pressure on said bail or arm, and means, substantially as described, for raising and lowering said bail or arm, substantially as described.

21. The hammer N, pivot a^3, and slot or groove d^3, combined with the bail or arm O to engage said slot or groove d^3, a support f^3 for said bail or arm, cross-bar *p*, a spring for said bail or arm, and means, substantially as described, for supporting and actuating said cross-bar, as specified.

22. The hammer N, pivot a^3, and slot or groove d^3, combined with the bail or arm O to engage said slot, support f^3 for said bail or arm, and a spring that presses at one end against the bail or arm and that is carried by said bail or by its support, and means, substantially as described, for raising and lowering said bail or arm, substantially as specified.

23. The hammer N, pivot a^3, and slot or groove d^3, combined with the adjustable support f^3, bail or arm O, and spring g^3, substantially as described.

24. The hammer N, pivot a^3, and slot or groove d^3, combined with the bail or arm O, support f^3, to which said bail or arm is pivoted, spring g^3, coiled around part of said bail and pressing at one end only against said bail, substantially as described.

25. The hammer N and means, substantially as described, for actuating it, combined with the dog i^3 and cross-bar *p*, whereby the dog i^3 prevents the hammer being thrown until the cross-bar *p* is sufficiently lowered, as specified.

26. The hammer N, combined with the dog i^3, cross-bar *p*, and adjustable projection j^3, substantially as described.

27. The pivoted bar V, uprights g^5 at opposite sides of its pivot, spools h^5, and gears j^5, combined with the rack P and paper-carriage L, all arranged for operating substantially as described.

28. The pivoted bar V and uprights g^5, carried on opposite sides of its pivot, combined with the spools h^5 on said uprights and ribbon U, said ribbon passing over one side of one spool and over the opposite side of the other spool, whereby both spools are turned in one direction and the ribbon wound in opposite directions, substantially as described.

29. The lever F^3, combined with the type-carrier D, tube *q*, swiveled plate *y*, connection *z* between said plate and lever, shaft B, and spring *x*, substantially as described.

30. The rack P, pivoted, as at o^4, on the carriage L, so as to rotate on its longitudinal axis, crank p^4, rod q^4, and lever R, combined with dogs to engage said rack to feed it along, said rack being moved in a line substantially parallel to the feeding movement of said dogs to disengage it from the dogs, substantially as described.

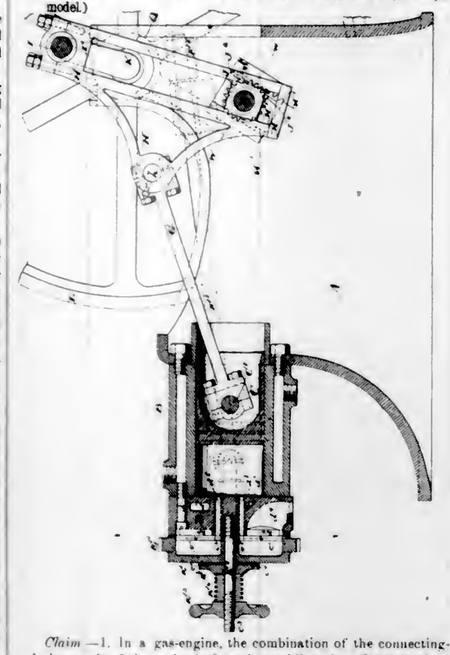
31. The rack P, pivoted to the carriage L, as at o^4, crank p^4, rod q^4, and lever R, combined with the spring t^4, stop n^4, and with dogs to engage the rack P, substantially as described.

32. The roller J, ratchet w^4, dog v^4, and lever R, combined with the rack P, pivoted to the carriage L, as at o^4, crank p^4, rod q^4, and dogs to engage with the rack P, whereby as the lever R is moved to turn the roller J the rack P will be turned on its pivot o^4 to release it from the dogs, substantially as described.

33. The rollers J S, guide b^5 below the roller J, and guides b^5 on the front side of the roller J, all combined together, substantially as described

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446,851. GAS-ENGINE. BARTON H. COFFEY, Philadelphia, Pa. Filed Jan. 27, 1890. Renewed Dec. 1, 1890. Serial No. 373,128. (No model.)



Claim.—1. In a gas-engine, the combination of the connecting-rod, the crank of the main shaft, and a guiding-pivot J', with a link H, pivoted to the connecting-rod and crank at fixed points and to the pivot J' by means of a slot H', formed in said link, all substantially as and for the purpose specified.

2. In a gas-engine, the combination of the connecting-rod, the crank of the main shaft, and a movable guiding-pivot J', with a link H, pivoted to the connecting-rod and crank at fixed points and to the pivot J' by means of a slot H' formed in said link, all substantially as and for the purpose specified.

3. In a gas-engine, the combination of the connecting-rod, the crank of the main shaft, and a movable guiding-pivot J', with a link H, pivoted to the connecting-rod and crank at fixed points and to the pivot J' by means of a slot H' formed in said link, a governor and mechanism connecting said governor, and the movable guide-pivot arranged to change its position as the load of the engine varies.

4. In a gas-engine, the combination of the connecting-rod, the crank on the main shaft, a guiding-pivot shaft J', having gear-wheels J^3 attached to it, racks M', engaging gear-wheels J^3, mechanism for rotating shaft J' and its gears J^3 to change its position on the racks, and a slotted link H, pivoted to the connecting-rod and crank at fixed points and to the shaft J' by means of its slot, all substantially as and for the purpose specified.

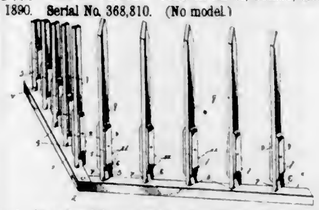
5. In a gas-engine, the combination of the connecting-rod, the crank on the main shaft, a guiding-pivot shaft J', having gear-wheels J^3 attached to it, racks M', engaging gear-wheels J^3, mechanism for rotating shaft J' and its gears J^3 to change its position on the racks, a governor connected with and controlling the movement of said mechanism, and a slotted link H, pivoted to the connecting-rod and crank at fixed points and to the shaft J' by means of its slot, all substantially as and for the purpose specified.

6. In a gas-engine having the slotted link H and movable pivot J', as described, and a shaft N', actuated by the governor, the combination of the worm N, mounted on shaft N' and connected with it by feather n^3, the movable extension n^3 of said worm having shoulder n^4, and worm-wheel J^4 on shaft J', all substantially as and for the purpose specified

7. In a gas-engine, the combination of the cylinder end plate D, having induction-ports d^6, exhaust-ports d^7 d^7, air-ports d^8 d^8, and gas-port d^9, arranged substantially as specified, and a rotating valve E, having openings *e e*, chambers *e' e'*, and passage e^3.

8. In a gas-engine, the combination of the cylinder end plate D, having induction-ports d^6, exhaust-ports d^7 d^7, air-ports d^8 d^8, gas-port d^9, and ignition-port d^{10}, with passage d^{11}, arranged substantially as specified, and a rotating valve E, having openings *e e*, chambers *e' e'*, and passage e^3.

446,852. FLOOD-FENCE. JOHN A. DAVIS, Buffalo, Mo. Filed Oct. 21, 1890. Serial No. 368,810. (No model.)



Claim.—1. In a flood-fence, the combination of a supporting-sill, posts thereon, independent pickets pivoted to said posts, and a break-pin sustaining each picket normally in upright position, substantially as and for the purpose set forth.

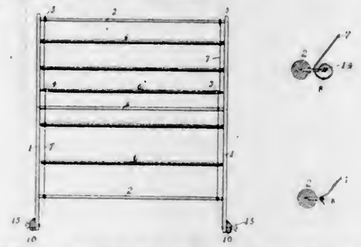
2. In a flood-fence, the combination of a supporting-sill, posts thereon having tenons at one side fitting in sockets in the sill, said posts also having in rear of said tenons shoulders resting on the sill, independent pickets pivotally connected to said posts forward of the shoulders, and break-pins through the posts behind the pickets, substantially as described.

3. In a flood-fence, the combination of a sill, posts supported by the sill, cheek-pieces pivoted at each side of the posts, said posts being wider than said cheek-pieces and being provided with a series of perforations in rear thereof, one or more break-pins in said perforations, and independent pickets fixed between said cheek-pieces, substantially as and for the purpose set forth.

4. In a flood-fence, the combination of a sill, posts provided with tenons seated in sockets in said sill, cheek-pieces pivoted at each side of said posts, said posts being of greater width than said cheek-pieces and being provided with perforations in rear thereof, break-pins inserted in said perforations, and independent pickets fixed between said cheek-pieces, the lower ends of said pickets and the upper ends of said posts being correspondingly beveled, substantially as and for the purpose set forth.

5. In a flood-fence, the combination, with a supporting-sill and independent pickets projecting therefrom at intervals, of breakable pins for retaining said pickets in vertical position in an ordinary current, but permitting them to move in and by the force of a swift current, substantially as hereinbefore described.

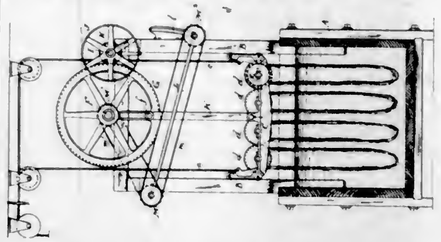
446,853. CLOTHES-DRIER. JAMES DEGELLEKE, Sodus, N. Y., assignor of one-half to William Degelleke, Jr., same place. Filed June 26, 1890. Serial No. 356,781. (No model.)



Claim.—1. The clothes-drier consisting of the main frame having the standards and cross-bars, the drying-frames hinged to the upper cross-bar of the main frame and adjustably supported on the lower cross-bar, and the feet or sills adjustably secured to the standards by means of bolts passing through slots in the standards, whereby all the parts can be arranged in or near the lengthwise central plane of the standards, substantially as set forth.

2. In a clothes-drier, the main frame having standards and cross-bars and a two-paneled drying-frame, one panel being hinged to the upper cross-bar and the other supported on the hooks formed at the foot of the side rods of the lower panel of the drying-frame, which engage staples and are adapted either to rest thereon or be pushed down through the same, as desired, whereby the panels can be supported at an angle to each other or dropped into the same vertical plane, in combination with the wires 7, having stops 9 and an adjustable rod 6, whereby said rod can be moved up on the wires to permit the operation specified, substantially as set forth.

446,854. DYEING-MACHINE. JOSEPH P. DELAHUNTY, West Pittston, Pa. Filed Apr. 15, 1890. Serial No. 347,983. (No model.)



Claim.—1. In a dyeing-machine, the combination of a dye-vat, a reciprocating yarn-supporting roller, intermittingly-operating mechanism for raising and lowering said roller, and means whereby the operation of said mechanism for raising and lowering the rollers is interrupted after each raising and lowering operation.

2. In a dyeing-machine, the combination of a dye-vat, a reciprocating yarn-supporting roller, intermittingly-operating mechanism for raising and lowering said roller, means whereby the operation of said mechanism for raising and lowering the rollers is interrupted after each raising and lowering operation, and mechanical devices to rotate said roller when in its raised position.

3. In a dyeing-machine, the combination, with a dye-vat, of one or more yarn-supporting rollers arranged above the vat and movable to and from the liquid therein, mechanical devices to raise and lower said rollers, a power-shaft, a clutch to connect and disconnect said power-shaft, the devices for raising and lowering the rollers, and a cam for operating the clutch.

4. The combination of a dye-vat, a roller movable to and from the liquid in the vat, upon which the skeins of yarn are placed, a traveling sprocket-chain, and a sprocket-wheel on the roller adapted to be brought in connection with the sprocket-chain when said roller is moved away from the liquid in the dye-vat.

5. The combination of a dye-vat, a roller movable to and from the liquor in the dye-vat, a moving sprocket-chain supported with provision for vertical displacement, and a sprocket-wheel carried upon the roller and adapted to come into contact with the sprocket-chain when the roller is raised or moved away from the liquid in the dye-vat.

6. The combination of a dye-vat, a vertically-movable carriage at each end of the vat, two or more rollers supported by said carriages, gearing between the said rollers, so as to rotate with adjacent rollers in opposite directions, power mechanism for raising and lowering the carriages and their rollers, and means, substantially as set out, to rotate the rollers when in their raised position.

7. In a dyeing-machine, the combination, with a dye-vat, of one or more yarn-supporting rollers arranged above the vat and movable to and from the liquid therein, mechanical devices to raise and lower said rollers, a power-shaft, a clutch to connect and disconnect said power-shaft, the devices for raising and lowering the rollers, a cam for operating the clutch, and power-transmitting connections between the power-shaft and cam.

8. In a dyeing-machine, the combination of a dye-vat, carriages for supporting a series of rollers above the vat, rollers supported by said carriages, a power-shaft arranged above the vat, cranks carried by said shaft, links connecting the cranks and carriages, and guides for the carriages while they are being raised and lowered.

9. The combination of a dye-vat, carriages for supporting rollers, a series of yarn-supporting rollers arranged parallel with respect to each other, gearing between the several rollers to cause them to rotate simultaneously, the adjacent rollers rotating in opposite directions, power mechanism for raising and lowering said rollers, and means for rotating said rollers when in their raised positions.

446,855. COOKING-RACK. WILLIAM EARLE, Boston, Mass. Filed Oct. 24, 1890. Serial No. 369,176. (No model.)

Claim.—1. A cooking-rack mounted upon pivoted supports having legs of unequal lengths, whereby the rack may be held at different heights, as specified.

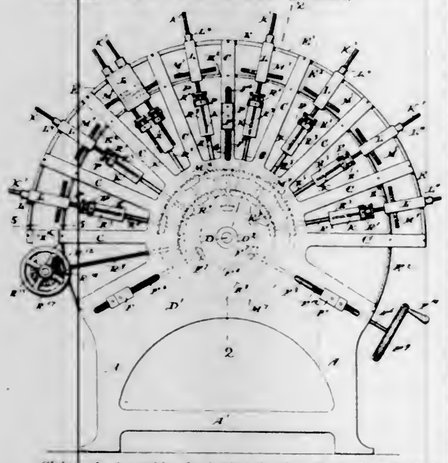
2. A cooking-rack constructed with jointed ends and mounted upon reversible supports, whereby the rack may be changed from a level to a V-shaped form, as and for the purposes specified.



3. A cooking-rack composed of two pairs of end pieces B and B' and B^2 and B^3, united by a series of horizontal rods, each pair being formed to interlock, as described, and both pivotally connected by the central rod C, and all mounted upon pivotal supports H, as specified.

4. In combination, the rack composed of the jointed end pieces B and their connecting-rods, the pivotal supports H, and the locking-slide L, whereby two of the long legs of the supports upon one end of the rack may be locked together under the rack, as and for the purposes specified.

446,856. MACHINE FOR DRILLING THE TIRES AND FELLIES OF WHEELS OF ROAD-VEHICLES. JOSEPH FASER, Cincinnati, Ohio. Filed June 12, 1890. Serial No. 355,252. (No model.)



Claim.—1. A machine for boring the rims of wheels, a frame D, and central gear-wheel F^6, and the pinions F^7 F^7 F^7 engaging therewith, each of said pinions, screw-shafts F^4 F^4 F^4, each shaft engaging a screw-threaded clamp F, each guideway, screw-shaft fixed to its adjacent one of the pinions F^7, the screw-shafts pointing toward the center of the machine, and the mouth of each clamp having inclined sides, substantially as and for the purposes specified.

2. A machine for boring the rims of wheels, a frame D, and central gear-wheel F^6, and the pinions F^7 F^7 F^7 engaging therewith, each of said pinions, screw-shafts F^4 F^4 F^4, each shaft engaging a screw-threaded clamp F, guideway, each screw-shaft fixed to its adjacent one of the pinions F^7, the screw-shafts pointing toward the center of the machine, and the mouth of each clamp having inclined sides, one of the shafts being provided with the hand-whel F^9 F^{10}, substantially as and for the purposes specified.

3. In a machine for boring the rims of wheels, a frame D and screw-shafts F^4, each pointing toward a common center D, slots F^{12} in the frame, each slot serving as a guideway for a clamp F, each clamp F provided with inclined jaws and engaging the screw-shaft, pinions F^7, each fixed to its shafts F^4 and each engaging the gear-wheel F^6, concentric with the center D, and means, substantially as described, for rotating a shaft F^4, substantially as and for the purposes specified.

4. In a machine for boring the rims of wheels, the radial drills and shafts, each rotated by its pinion receiving power from a suitable source, and the drill-shaft sliding through said pinion, and means, substantially as described, for advancing said drill toward the center D and retracting it therefrom, substantially as and for the purposes specified.

5. In a machine for boring the rims of wheels, the radial drills and shafts, each rotated by its pinion receiving power from a suitable source, and the drill-shaft sliding through said pinion, and collar P, connected to said drill-shaft, and carriage R; connected to said shaft, and screw-shaft R^5, engaging a female screw of the carriage and rotated by suitable means, substantially as and for the purposes specified.

6. In a machine for boring the rims of wheels, the radial drills and shafts, each rotated by its pinion receiving power from a suitable source, and the drill-shaft sliding through said pinion, and collar P, connected to said drill-shaft, and carriage R, connected to said shaft, and screw-shaft R^5, engaging a female screw of the carriage, and pinion R^7 on said shaft R^5, and gear-wheel R^8, engaging the pinions R^7 and rotating the same, substantially as and for the purposes specified.

7. In a machine for boring the rims of wheels, the radial drills and shafts, each rotated by its pinion receiving power from a suitable source, and the drill-shaft sliding through said pinion, and collar P, connected to said drill-shaft, and carriage R, connected to said shaft, and screw-shaft R^5, engaging a female screw of the carriage, a pinion F^7, engaging said gear-wheel R^8 and fixed to shaft R^9, provided with pinion R^{13}, pinion R^{13}, engaging said pinion R^{13}, shaft R^{14}, carrying said pinion R^{13}, and crank-wheel R^{17}, fixed on shaft R^{14}, substantially as and for the purposes specified.

8. In a boring-machine, the radial drill-shafts K, each radial drill having a pinion M engaging a pinion M' on shaft M^2, pinion M^4, fixed on the lower end of said shaft M^2, engaging gear-wheel M^7, substantially as and for the purposes specified.

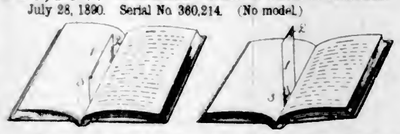
9. In a machine for boring the rims of wheels, the radial drill-shafts K, each radial drill-shaft being provided with a frame L, fixed to the frame, the drill-shaft passing through the said frame, and the pinion M, fixed to said shaft within said frame, gear M', having shaft M^2 journaled in journal M^3 and journal M^3, and carrying gear-wheel M^4, meshing with gear-wheel M^7, substantially as and for the purposes specified.

10. In a boring-machine, the radial drills, each having stationary frame L, and a pinion M, located on the radial drill-shaft, gear M', engaging therewith and mounted on shaft M^2, journaled in journal-bearing M^3, and carrying gear-wheel connected to the source of power, and carriage R, connected to detent on the drill-shaft and engaging the screw-shaft R^5, journaled at its upper end in journal-bearing R^3, and clamp F, engaging the screw-shaft F^4, journaled at its upper end in bearing F^{12}, and the bearing M^3, and the bearing R^3 and the bearing F^{12} and plate L^2 of the frame L being in one piece and fixed to the main frame of the machine, substantially as and for the purposes specified.

11. In a boring-machine, the frame having the hub H and the second axle or extension H', shaft M^{12}, entering therein, hollow shaft M^4, the gear-wheel F^6 for moving the clamps being journaled on the axle H, and the gear-wheel R^8 for advancing and retracting the drills being located on the axle H', and the gear-wheel M^7 for rotating the drills fixed on the hollow axle M^4, connected to power-wheel M^5 and turning on shaft M^{12}, substantially as and for the purposes specified.

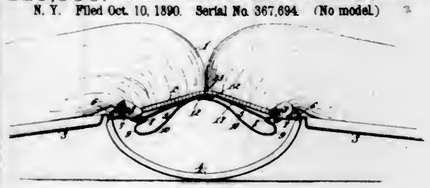
12. The radial drill-shaft having the recess K^3, provided with slotted openings K^2, and drill N, received into said recess, and collar P, having recess P', and set-screw P^2, bearing against the drill-shaft K and securing the collar, drill-shaft, and drill together, substantially as and for the purposes specified.

446,857. BOOK-MARK. AUSTIN S. FISKE, St. Paul, Minn. Filed July 28, 1890. Serial No. 360,214. (No model.)



Claim.—A book-mark consisting of a rectangular body of thin material, having pointers or indexes formed, secured, or impressed thereupon at non-adjacent corners and pointing outwardly in directions at right angles to each other, substantially as and for the purpose herein specified.

446,858. SPRING-BACK BOOK. ADDISON C. FLETCHER, New York, N. Y. Filed Oct. 10, 1890. Serial No. 367,694. (No model.)



Claim.—1. The combination, with a bound volume, of independent elastic sustaining-plates interposed between the spring-back and the backing, said plates being provided with hooks or shoulders having extended straight edges and adapted to hook over the edges of the backing, substantially as described.

2. The combination, with a bound volume, of elastic sustaining-plates arranged between the spring-back and the backing, said plates being provided with hooks or shoulders having straight extended edges engaging the edges of the backing and having their free edges lapped one upon the other and lying against said backing, lugs being formed upon the ends of said plates and at right angles thereto, or substantially so, to prevent longitudinal displacement, substantially as described.

3. The combination, with a bound volume, of sustaining elastic plates having hooks or shoulders provided with straight extended edges engaging the edges of the backing, against which the free overlapping edges of said plates rest, each of the latter being provided with slots or openings to permit the passage of the binding tapes or strips, substantially as described.

4. The combination, with a bound volume, of two similar sustaining-plates having straight-edged extended shoulders adapted to hook over the edges of the backing while their free overlapping edges sustain said backing, and a series of elastic tapes secured at their ends to said plates and lying between the same and the backing, substantially as described.

5. The combination, with a bound volume, of elastic sustaining-plates, each having a straight-edged extended shoulder adapted to hook over one edge of the backing, said shoulder forming part of a flat longitudinal strip, from which the plate is curved backward and then toward the center of the backing, against which the overlapping edges of both plates rest, said plates being provided with slots or openings at the angles of their shoulders to permit the passage of the binding tapes or strings, and elastic tapes secured at their ends to the respective plates and lying under suitable tension between the said plates and the backing, substantially as described.

6. The combination, with a bound volume, of elastic sustaining-plates, each formed in two parts, one of said parts being of elastic metal, while the other part is of inelastic material, the two being united, substantially as described.

7. The combination, with a bound volume, of elastic sustaining-plates consisting of inelastic portions provided with shoulders hooking over the edges of the backing and having lugs upon their ends preventing longitudinal displacement, said parts being united with elastic plates by means of tongues on the former passing through slots in the latter, said elastic plates being lapped at their free edges which rest against the backing, and elastic tapes connected with the inelastic parts and lying between the same and the backing, substantially as described.

8. The combination, with a bound volume, of independent elastic sustaining-plates interposed between the backing and the spring-back of the volume, said plates being provided with hooks or shoulders having extended straight edges adapted to engage the edges of the backing, while their free overlapping edges rest against said backing, and a wear-plate formed in one or more parts and interposed between the backing and the sustaining-plate adjacent thereto, substantially as described.

446,859. PRESSED-STEEL BEAM. SAMSON FOX, Leeds, England, assignor to the Fox Solid Pressed Steel Company, Chicago, Ill. Filed Dec. 4, 1890. Serial No. 373,598. (No model.)



Claim.—1. A channel-beam having closed forged ends formed without weld by pressure from the beam itself, substantially as described.

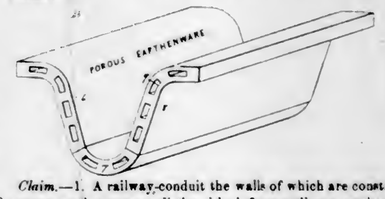
2. A channel-beam having closed forged ends in a plane at or substantially at right angles to the back of the beam, the opening of the end projecting beyond the open edges of the beam, substantially as described.

446,860. COVERING FOR STEAM OR HOT-WATER PIPES. CHARLES C. GILMAN, Eldora, Iowa. Filed June 10, 1889. Serial No. 313,667. (No model.)



Claim.—A steam or hot-water pipe provided with a covering consisting of burned porous earthenware having incorporated therein an incombustible fibrous mineral substance, said covering being united to the pipe by a layer of cement, substantially as described.

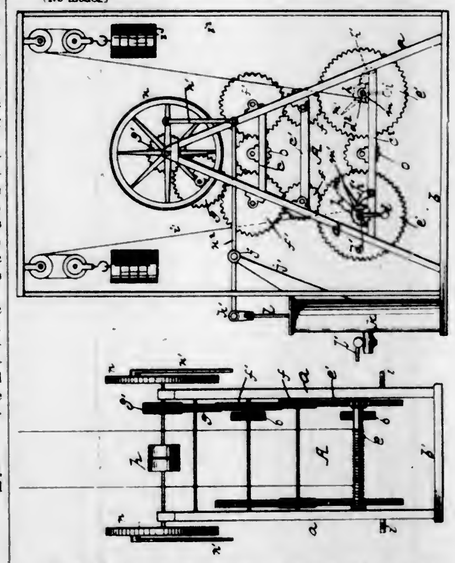
446,861. UNDERGROUND RAILWAY-CONDUIT. CHARLES C. GILMAN, Eldora, Iowa. Filed June 18, 1890. Serial No. 355,843. (No model.)



Claim.—1. A railway-conduit the walls of which are constructed of porous earthenware as distinguished from ordinary earthenware, substantially as described.

2. A railway-conduit constructed of iron yokes of the form of the conduit, and of similarly-formed sections of porous earthenware as distinguished from ordinary earthenware placed in line with said yokes, substantially as described.

446,862. POWER-MACHINE. MYRON GLASSBROOK and NICHOLAS EMMER, Williamston, Mich. Filed Oct. 30, 1890. Serial No. 369,769. (No model.)



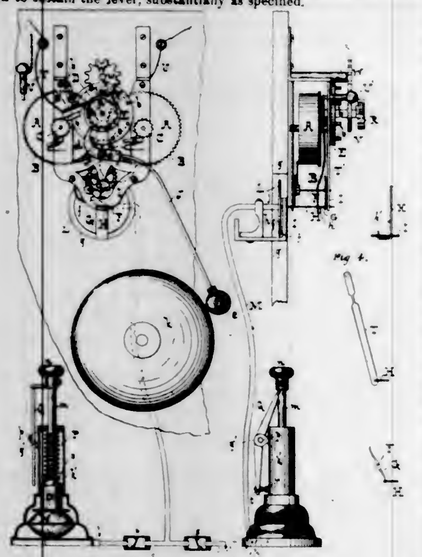
Claim.—In a power-machine, the combination of the main gear-wheels mounted in the frame, a train of gear-wheels arranged upon the transverse shafts, the auxiliary train of gearing, the intermediate gear-wheels *o o*, adapted to be connected with or disconnected from the other gears, the levers *m' m'*, the drums on the lower transverse shafts, ropes, and weights, the whole adapted to operate as and for the purpose set forth.

446,863. PNEUMATIC FIRE-ALARM. ALBERT GOLDSTEIN, Baltimore, Md. Filed Apr. 7, 1890. Serial No. 346,876. (No model.)

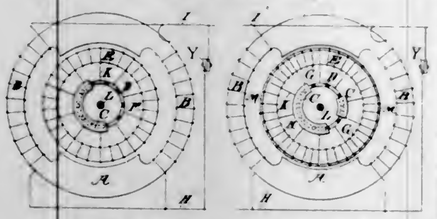
Claim.—1. In combination with a striking mechanism, a revolving arm, a movable stop with which said arm engages, a diaphragm connected to said stop, a collapsible air-holder, a pipe connecting the diaphragm with the air-holder, a device adapted to compress the air-holder, and a fusible metallic loop to hold the compressor from the air-holder, substantially as described.

2. The air-compressing device, which consists of the hollow air-ball, a casing for the ball, a plunger in the said casing, a stem leading from the plunger, a spring to compress the ball, a button on the stem.

a lever to support the plunger when the stem is extended, and fusible link to sustain the lever, substantially as specified.



446,864. ELECTRIC MOTOR. LUDWIG GUTMANN, Pittsburg, Pa. Filed Sept. 18, 1890. Serial No. 365,372. (No model.)



Claim.—1. The combination, with the field-magnets of an electric motor, of an armature-having its armature-coils permanently closed upon themselves, a commutator having its plates connected with different points in the length of the armature-coils, and a brush applied to and in electrical contact with contiguous commutator-plates.

2. The combination, with the field-magnets of an electric motor, of an armature having its armature-coils permanently closed upon themselves, a commutator having its plates connected with different points in the length of the armature-coils, and a brush short-circuiting less than half of the armature-coils, the coils thus short-circuited being contiguous to one another.

3. The combination, with the field-magnets of an electric motor, of an armature having two independent sets of armature-coils placed alternately to one another and each permanently included in a closed circuit, a commutator having its plates connected with different points in the length of the armature-coils, and a brush short-circuiting less than half of the armature-coils.

4. An alternating-current motor consisting of one or more field-magnets in circuit with a generator, a rotating armature whose winding is closed upon itself, and means, such as a brush, for close-circuiting successive armature-coils each upon itself.

5. An alternating-current motor consisting of field electro-magnets included in one circuit, a rotating armature provided with one or more subdivided windings closed upon themselves, a commutator having its plates connected with different points in the length of said winding or windings, and brushes each normally close-circuiting successive subdivided windings each upon itself.

6. An alternating-current motor comprising a rotating armature provided with one or more subdivided windings, a commutator having its plates connected with different points in the length of said winding or windings, one or more brushes normally closing successive subdivided windings each upon itself, and field electro-magnets included in circuits independent of that of the armature and having several separate windings.

7. In an element for construction of electro-magnets, the combination, with a pole-piece provided with a recess S, of a one-sided extension adapted to receive the magnet-winding, and a lug or projection P, forming the extremity of said extension.

8. In a core for electro-magnets, the combination of two or more core structures mechanically and electrically united, each structure consisting of a pole-piece provided with a recess on one side and an extension on the other, and a lug forming the extremity of said extension, adapted to be retained in the recess of the neighboring structure.

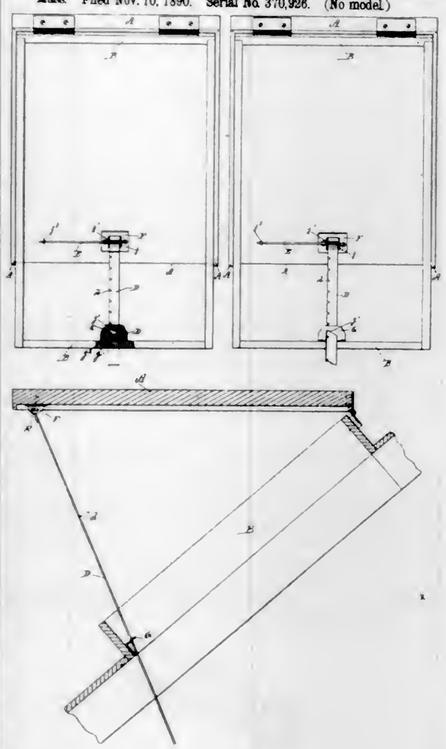
9. In an electric motor, the combination of an armature having two or more separately-closed armature-windings, a commutator having its contact-plates connected with two or more of said windings, one or more brushes in contact with said commutator, and field electro-magnets having an energizing-circuit and normally-closed secondary circuits.

10. An alternating-current motor comprising primary and secondary field electro-magnets, an armature whose winding is subdivided and having one or more closed circuits, a commutator whose plates are connected to said subdivisions, and one or more brushes normally and constantly connecting successive commutator-plates.

11. An alternating-current induction-motor comprising a two or more pole field electro-magnet, energizing-windings for said electro-magnet supplied from a single source of generation, an armature having two or more subdivided windings, contact-terminals connected to said subdivided windings, and a brush in contact with terminals of said windings for including all the sub-coils of one winding in two or more closed circuits.

12. An alternating-current electric motor comprising a two or more pole field electro-magnet whose winding is energized by a single source of electricity, an armature having two or more subdivided windings angularly displaced the one from the other, contact-terminals connected to said subdivided windings, and one or more brushes in contact with terminals of both windings for simultaneously close-circuiting sub-coils of said two or more windings

446,865. TRANSOM-LIFTER. GEORGE W. HAMILTON, Boston, Mass. Filed Nov. 10, 1890. Serial No. 370,926. (No model.)



Claim.—1. The combination, with the coupling-clip having forward projections with tapering perforations, the shaft-iron having a corresponding tapering perforation, the thimbles, the tapering pin, the subsidiary clip, and the spring on the pin, as and for the purpose set forth.

2. In combination, the central vertical shaft with handle in reach of the driver, the horizontal disk on said shaft, the vertical pin in said disk, the tapering coupling-pin, the subsidiary clip, the coupling-clip and shaft-iron with tapering perforations, the three thimbles, and the spring around the coupling-pin, as and for the purpose set forth.

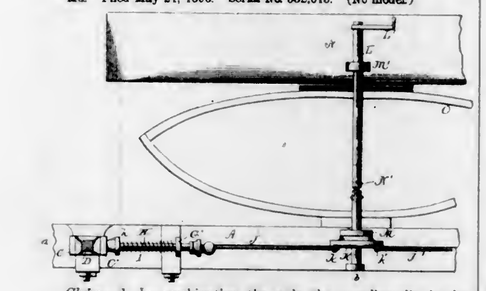
3. In combination with the axle, the clip or plate M thereon, the body N, the plate M′, and the shaft L, having universal joint N′, as set forth.

4. In combination, the axle, the shaft-clips, the spring-actuated pins, the disk K, connected thereto by means of pins *k k′* and rods or cords J J′, the axle, the wagon-body, the wagon-spring, and the shaft L, attached to the axle and body and provided with universal joint to compensate for the movement of the body relative to the axle, as set forth.

Claim.—1. In a skylight and scuttle lifter and fastener, a lifting-bar hinged at one end in such a manner as to allow the bar to partially turn on edge against spring-pressure, the free end of the bar passing through a locking-plate having a slot, which forms a guide in which the lifting-bar slides when partially turned against the pressure of the spring, the bar having a series of openings, which are forced by the spring into engagement with a stop on the locking-plate when the sliding of the bar brings one of the openings in line with the stop and the bar is allowed to yield to the spring-pressure, substantially as described.

2. In a skylight or scuttle lifter and fastener, the combination of a lifting-bar pivoted at one end to a spring-pintle, the pintle passing through a guide-slot, which allows a lateral movement of the pintle intermediate of the ends, the free end of the lifting-bar passing through a slotted locking-plate attached to the frame, the slot being of such form as to allow the lifting-bar to slide when given a slight turn or rocking movement on one side against the pressure of the spring-pintle, the lifting-bar having a series of notches or holes, and the locking-plate having a catch with which the holes or notches of the lifting-bar are forced to engage by the pressure of the spring when the sliding of the bar brings one of the holes or notches against the catch, substantially as described

446,866. HORSE-DETACHER. JESSE M. HARDEN, Reisterstown, Md. Filed May 21, 1890. Serial No. 352,615. (No model.)



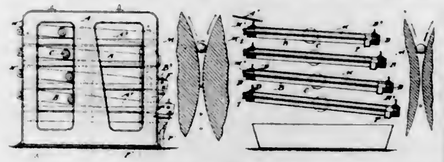
Claim.—1. In combination, the axle, the coupling-clip having forward projections with tapering perforations, the shaft-iron having a corresponding tapering perforation, the thimbles, the tapering pin, the subsidiary clip, and the spring on the pin, as and for the purpose set forth.

2. In combination, the central vertical shaft with handle in reach of the driver, the horizontal disk on said shaft, the vertical pin in said disk, the tapering coupling-pin, the subsidiary clip, the coupling-clip and shaft-iron with tapering perforations, the three thimbles, and the spring around the coupling-pin, as and for the purpose set forth.

3. In combination with the axle, the clip or plate M thereon, the body N, the plate M′, and the shaft L, having universal joint N′, as set forth.

4. In combination, the axle, the shaft-clips, the spring-actuated pins, the disk K, connected thereto by means of pins *k k′* and rods or cords J J′, the axle, the wagon-body, the wagon-spring, and the shaft L, attached to the axle and body and provided with universal joint to compensate for the movement of the body relative to the axle, as set forth.

446,867. MACHINE FOR SCREENING SHOT. GEORGE T. HARING, Brooklyn, N. Y. Filed Sept. 30, 1890. Serial No. 366,636. (No model.)

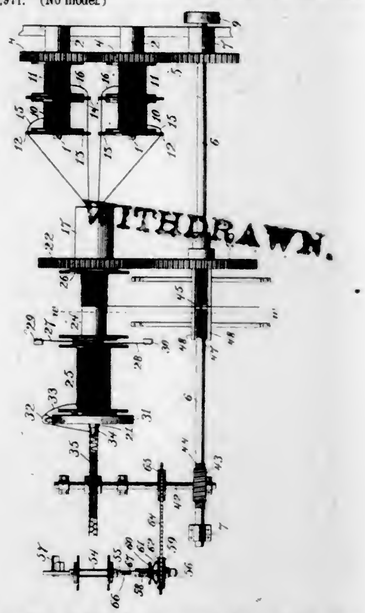


Claim.—1. In a machine for screening shot, two or more inclined revolving rollers having contracted diameters at the lower ends adapted to discharge the small size or sizes downward through the spaces between the main bodies of such rollers and to retain and convey laterally the larger sizes, in combination with provisions for supplying the shot above such rollers, provisions for leading away the larger sizes, and with the disks N for arresting their end movement, all substantially as herein specified.

2. In a machine for screening shot, two or more inclined revolving rollers adapted to discharge the small size or sizes downward through the spaces between them and to retain and convey away laterally the large size or sizes, in combination with gearing, as the right-and-left driving-screw L and right-and-left worm-wheels M′ for so revolving the rollers that one shall always tend to lift the shot, and with the tilting frames B, carrying said rollers, and provisions, as the screws F, for varying the inclination, substantially as herein specified.

3. In a machine for screening shot, two or more inclined revolving rollers adapted to discharge the small size or sizes downward through the spaces between them and to retain and convey away laterally the larger size or sizes, the tilting frames B, carrying the rollers and connected gearing for driving them, mounted on centers C, with provisions, as the screws F, for varying the inclination, the boxes D, spacing-blocks E, binders B^3, and pinching-screws F′, combined and arranged to serve as herein specified.

446,868. MACHINE FOR MAKING WIRE-FENCE STRANDS. EDGAR F. HATHAWAY, Hornellsville, N. Y. Filed Dec. 27, 1890. Serial No. 375,971. (No model.)



Claim.—1. In a machine for the manufacture of wire-fence strands, the combination of a holder or head for the passage of longitudinal wires, reels for carrying such wires, twister-arms receiving the wires from the reels and operating to twist pairs of the wires together, a spool or reel carrying the transverse or filling wire and through which the pairs of spirally-twisted wires pass lengthwise, a rotating wire-carrier for laying the filling-wire around the pairs of spirally-twisted wires, and means for moving the latter lengthwise through the spool or reel which carries the filling-wire, substantially as described.

2. The combination, with mechanism for spirally twisting the wires, of a sleeve or tubular piece through which the pairs of twisted wires move lengthwise, a detachable spool or reel mounted on the sleeve or tubular piece and adapted to carry the transverse or filling wire, and means for laying the filling-wire around the pairs of twisted wires, substantially as described.

3. The combination, with mechanism for spirally twisting the wires, of a spool or reel adapted for the passage of the spirally-twisted wires lengthwise therethrough and serving to carry the transverse or filling wire, and a rotating device for laying the filling-wire around the spirally-twisted wires in a zigzag pathway, substantially as described.

4. The combination, with mechanism for spirally twisting the wires, of a sleeve or tubular piece through which the spirally-twisted wires move lengthwise, a spool or reel carrying the transverse or filling wire and adapted to be removed from and replaced on the sleeve or tubular piece, a rotating device for laying the filling-wire around the spirally-twisted wires, and means for moving the spirally-twisted

wires lengthwise through the sleeve or tubular piece, substantially as described.

5. The combination of a head or holder through which the horizontal wires pass, a core-piece for holding the wires separated, a spool or reel carrying the filling-wire surrounding the horizontal wires and removable from and replaceable without cutting or disturbing such wires, and a rotating wire-carrier for laying the filling-wire around the horizontal wires at the point where the latter are held separated by the core-piece, substantially as described.

6. The combination of a head or holder through which the horizontal wires pass, a rotating sleeve receiving the wires from the head or holder, a spool or reel carrying the filling-wire, journaled on the sleeve and removable from and replaceable on such sleeve, a rotating wire-carrier for laying the filling-wire around the horizontal wires, and means for moving the latter lengthwise through the head or holder and the rotating sleeve, substantially as described.

7. The combination, with a head or holder through which horizontal wires pass, of a rotating sleeve or tubular piece, interchangeable spools or reels journaled on the sleeve or tubular piece and one of which is rotated by the latter, a rotating wire-carrier for laying the filling-wire carried by the other spool or reel, and a wire-guide moving back and forth in a rectilinear path for laying the supply of filling-wire upon the spool or reel which is rotated by the sleeve or tubular piece, substantially as described.

8. The combination, with a head or holder through which the horizontal wires pass, of a spool or reel carrying the filling-wire, a rotating wire-carrier for laying the filling-wire around the horizontal wires, a pair of rolls which gather and compress the filling-wire and draw the horizontal wires lengthwise, and a take-up mechanism for reeling the completed article, substantially as described.

9. The combination of a rotating sleeve or tubular piece through which the horizontal wires pass, a detachable spool or reel journaled on the sleeve or tubular piece and serving to carry the filling-wire, a rotating wire-carrier operated by the sleeve for laying the filling-wire around the horizontal wires, and compressing-rollers which act to compress the filling-wire and draw the horizontal wires lengthwise through the sleeve or tubular piece, substantially as described.

10. The combination, with a main drive-shaft, of a head or holder through which the horizontal wires pass, a rotating sleeve geared to the main drive-shaft, a spool or reel journaled on the sleeve or tubular piece and serving to carry the filling-wire, a rotating wire-carrier operated by the sleeve or tubular piece and serving to lay the filling-wire around the horizontal wires, and compressing and wire pulling or drawing rolls driven by a gear connection with the main drive-shaft, substantially as described.

11. The combination, with a main drive-shaft, of a head or holder through which pass the horizontal wires, a rotating sleeve geared to the main drive-shaft, a spool or reel journaled on the sleeve or tubular piece and serving to carry the filling-wire, a rotating wire-carrier operated by the sleeve or tubular piece and serving to lay the filling-wire around the horizontal wires, compressing and wire pulling or drawing rolls driven by gear connection with the main drive-shaft, and a rotating and lengthwise-moving reel for taking up the completed fence-strand, substantially as described.

12. The combination of a head or holder through which the horizontal wires pass, a rotating sleeve or tubular piece receiving the wires from the head or holder, a main drive-shaft in gear with the sleeve or tubular piece, a spool or reel detachably journaled on the sleeve or tubular piece and serving to carry the filling-wire, a rotating wire-carrier operated by the sleeve or tubular piece for laying the filling-wire around the horizontal wires, compressing-rolls operating to compress the filling-wire and move the horizontal wires through the sleeve or tubular piece, a suitable gear connection between the main drive-shaft and the shaft of one of the compressing-rolls, and a rotating and lengthwise-movable reel-shaft carrying a take-up reel and geared to a compressing-roll shaft, substantially as described.

13. In a machine for making wire-fence strands, the combination of a sleeve or tubular piece through which the wires are moved lengthwise, a wire-carrying spool or reel journaled upon and constructed, substantially as described, to be removed from and replaced on the sleeve or tubular piece without cutting or disturbing the wires moving through the latter, and means for laying the wire from the spool or reel around the wires passing through the sleeve or tubular piece.

14. The combination of a pair of arbors or shafts, each provided with a rotating sleeve having radial twister-arms, a pair of wire-reels journaled on the sleeve, a head or holder through which the wires are moved lengthwise while such wires are twisted by the twister-arms, and a rotating wire-carrier for laying a filling-wire around the spirally-twisted wires as the latter move lengthwise, substantially as described.

15. The combination of a pair of arbors or shafts, each provided with a rotating sleeve having radial twister-arms, a pair of wire-reels journaled on the sleeve, a head or holder through which the wires are moved lengthwise while such wires are twisted by the twister-arms, a rotating wire-carrier for laying a filling-wire around the twisted wires, and take-up mechanism for reeling the completed fence-strand, substantially as described.

16. The combination of a pair of arbors or shafts, each carrying a rotary sleeve having radial twister-arms, wire-reels journaled on the sleeve, a head or holder through which the wires from the reels are moved lengthwise, a spool or reel for carrying a filling-wire, a rotating wire-carrier for laying the filling-wire around the wires which move lengthwise through the head or holder, and compressing and wire-pulling rolls, substantially as described.

17. The combination of a pair of arbors or shafts, each carrying a rotary sleeve having radial twister-arms, wire-reels journaled on the sleeve, a head or holder through which the wires from the reels are moved lengthwise, a spool or reel for carrying a filling-wire, a rotating wire-carrier for laying the filling-wire around the wires which move lengthwise through the head or holder, and a take-up reel-shaft carrying a reel, substantially as described.

18. The combination of a head or holder through which the wires move lengthwise, a sleeve or tubular piece receiving the wires from the head or holder, a spool or reel journaled on the sleeve or tubular piece and serving to carry a filling-wire, a rotating wire-carrier for laying the filling-wire around the wires which move through the sleeve or tubular piece, compressing and wire-pulling rolls, a reel-shaft carrying a reel, and a gear connection between one of the compressing-roll shafts and the reel-shaft, substantially as described.

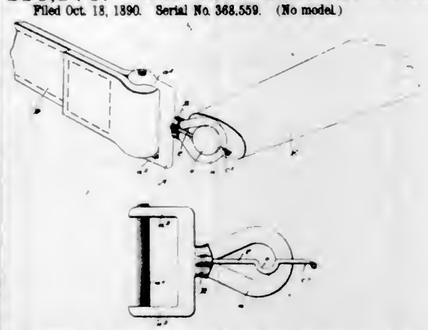
19. The combination of a sleeve or tubular piece through which the wires move lengthwise, a spool or reel journaled on the sleeve or tubular piece and serving to carry a filling-wire, a rotating wire-carrier for laying the filling-wire around the wires which move lengthwise through the sleeve or tubular piece, compressing-rolls which serve to draw or pull the wires through the sleeve or tubular piece, a reel-shaft carrying a reel and provided with a sprocket-wheel, a friction connection between the sprocket-wheel and the reel-shaft, and a chain connection between the sprocket-wheel and one of the compressing-roll shafts, substantially as described.

446,869. TIRE-TIGHTENER. LANSING P. HEWITT and SAMUEL W. BURNGE, Turner, Kans. Filed Sept. 1, 1890. Serial No. 363,660. (No model.)



Claim.—In a tire-tightener, the blocks E, of substantially the contour of the felly, recesses in the outer ends of the blocks which are adapted to receive the ends of the felly, projections on the inclined inner ends of the blocks, so located as to be out of alignment with each other, a central block of wedge shape adapted to enter the opening between the blocks E and to force the same apart, grooves in the faces of the central block next adjacent to the side blocks and adapted to register with the projections on said blocks, and a central aperture in the wedge-shaped block to receive a bolt passing through the same and through the tire, whereby the wedge is forced into position, substantially as described.

446,870. COCKEYE. MELROSE M. KILLINGER, Battle Creek, Neor. Filed Oct. 18, 1890. Serial No. 368,559. (No model.)

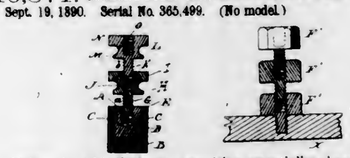


Claim.—1. In a cockeye, a spring secured diametrically across the eye and provided with a central depression being adapted to engage the button of a whiffletree, substantially as described.

2. In a cockeye, a clamp secured on the neck of the same between the eye and trace-attaching portion, and a spring rigidly secured to said clamp and passing diametrically across the eye, substantially as described.

3. In a cockeye, a removable clamp secured on the neck of the same between the eye and trace-attaching portion, and a spring provided with a central depression rigidly secured to said clamp and passing diametrically across the eye and partially around the button of a whiffletree, substantially as described.

446,871. BINDING-POST. CHARLES A. LIEB, New York, N. Y. Filed Sept. 19, 1890. Serial No. 365,499. (No model.)



Claim.—1. A binding-post comprising, essentially, a base-plug having a metallic central part provided with a threaded hole and an exterior layer of insulating material, and a binding-screw having a threaded stem adapted to screw into the hole in the metallic part of the base-plug, substantially as set forth.

2. A binding-post having an insulated base-plug provided with a threaded hole and a binding-screw provided with a threaded spindle adapted to screw into the hole in the base-plug, and also a threaded hole in the center of its head only adapted to receive the threaded spindle of another binding-screw, substantially as set forth.

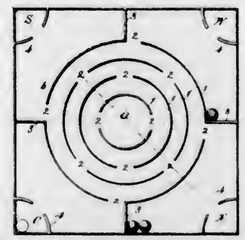
3. An interchangeable multiple binding-post comprising, essentially, an insulated base-plug provided with a threaded hole in its upper part and a plurality of binding-screws superposed thereon, the spindle of the first of which enters the hole in the base-plug and the spindles of succeeding ones entering the threaded holes in the heads of those immediately below, all the spindles and all the holes being of the same size, substantially as set forth.

4. A binding-post comprising a plurality of binding-screws superposed upon each other, the upper one or ones having spindles which thread into holes in the heads only of the ones below, substantially as set forth.

5. An interchangeable multiple binding-post comprising, essentially, a plurality of binding-screws, each having a threaded spindle and a threaded hole in its head, all the spindles and all the holes being of the same size, substantially as set forth.

6. A binding-screw having a threaded spindle and a threaded hole in its head, the hole and spindle being of the same size, substantially as set forth.

446,872. PUZZLE. ZACHARIAH F. LIGHTNER, Carpenter, Del. Filed Mar. 12, 1890. Serial No. 343,684. (No model.)

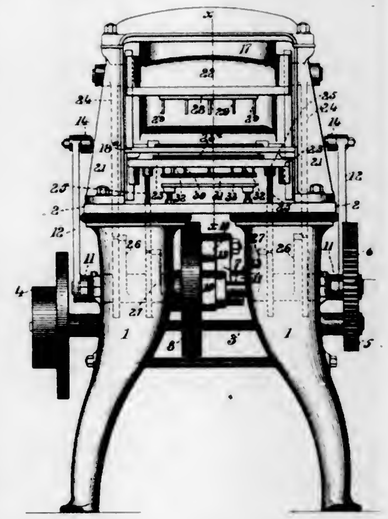


Claim.—The combination of the box, upright strips forming a labyrinth in the center of the box, the cover concealing the labyrinth only, marbles, and the compartments in the four corners of the box separated from each other and each communicating with the interior of the labyrinth, together forming a puzzle, as described in the foregoing specification.

446,873. MACHINE FOR MOLDING SEPARATOR-PLUGS FOR BATTERY ELEMENTS. ALBERT F. MADDEN, Newark, N. J., assignor, by mesne assignments, to John M. Pendleton, New Brighton, N. Y. Filed Mar. 17, 1890. Serial No. 344,134. (No model.)

Claim.—1. In a machine of the character described, the combination, with the two co-operating dies adapted to form the plug-heads, of a perforated loader-plate, means for filling the same, and further means for projecting said plate between the dies for the discharge of its contents, substantially as set forth.

2. In a machine of the character described, the combination, with two sets of co-operating molding-dies having their faces conformed to the shape of the plug-heads to be produced, of a movable loader-plate, a suitable receptacle, as the kettle, opening against and adapted to discharge into said loader-plate, means for forcibly ejecting the contents of the kettle, mechanism for operating the loader-plate into position for discharge, and further mechanism for securing the proper movement of the dies.



3. In a machine of the character described, the combination, with the perforated loader-plate and means for filling the holes with the material to be worked, of a pair of forming-dies and means for projecting one of said dies through the loader-plate, whereby the contents of said plate is positively discharged, substantially as specified.

4. In a machine for molding separator-plugs for battery elements, the combination, with the open-bottomed kettle, of the reciprocating loader-plate having movement beneath said kettle, the two sets of molding-dies arranged one above the other, means, as described, for projecting the loader-plate forward into the field of operation of the molding-dies, and further means for the actuation of said dies toward and from each other, as set forth.

5. The combination, in a machine of the character described, with the kettle, the reciprocating loader-plate, and the upper die-plate and dies, of the platen, the lower dies loose therein and secured at their lower ends to the die-plates suspended from the platen, and the ejector-table arranged beneath the die-plate last referred to, substantially as set forth.

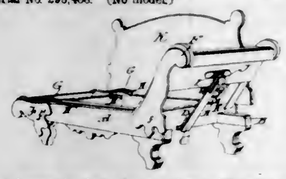
6. In a machine of the character described, the combination, with the kettle, of a perforated loader-plate having movement across the bottom of the kettle, means for reciprocating said loader-plate, and two sets of co-operating dies adapted to remove the plastic material from the loader-plate and to form the same upon the grid to be plugged, substantially as set forth.

7. In a machine of the character described, the combination, with the kettle, of the loader-plate having one end thereof provided with openings corresponding to the plugs to be made and having its rear end imperforate, means, as described, for moving said plate across the open end of the receptacle, a support having perforations corresponding to those in the loader-plate and over which said plate may slide, and suitable dies adapted to discharge the loader-plate and to form the plugs upon the grid, substantially as set forth.

8. In a machine for molding separator-plugs for battery elements, the combination, with the kettle adapted to contain a supply of material, of the perforated loader-plate having movement across said kettle for receiving the material, a pair of dies, one at either side of said plate, means for operating said dies through said plate for the discharge of the contents of the latter, and means for reciprocating said plate, substantially as set forth.

9. The combination, with the kettle, of the loader-plate perforate as to one end and imperforate as to the other, a pair of dies having operative movement through and at right angles to said loader-plate, and suitable mechanism for imparting alternate movement to the plate and to the dies, substantially as set forth.

443,874. LOUNGE. CHARLES MEE, Cortland, N. Y. Filed Feb. 1, 1889. Serial No. 298,408. (No model.)

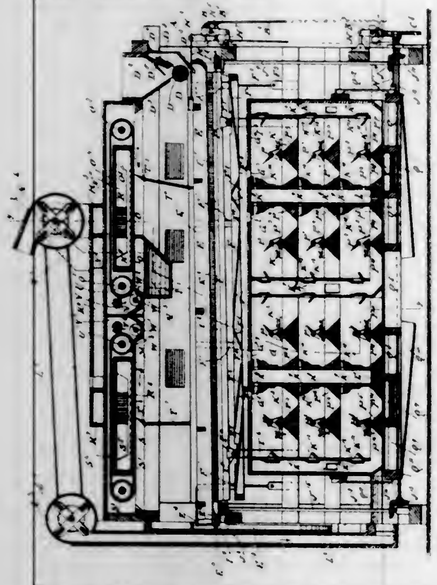


Claim.—A lounge having a frame proper with end and side rails, the side rails recessed at their ends and having a head-rest resting in the recess and connected by hinges to the frame proper, said rest having an outer facing which laps past the joint at the front of the frame, and a brace hinged to the frame and having a roughened facing which engages a roughened washer on the head-rest and is adjustable to hold the head-rest at different angles by a clamp-screw, all substantially as described.

446,875. COMPOUND OF IODINE WITH THYMOL. JOSEF MESSINGER and GEORG VORTMANN, Aix-la-Chapelle, Germany, assignors, by mesne assignments, to Edward N. Dickerson, New York, N. Y. Filed Feb. 5, 1890. Serial No. 339,320. (Specimens.) Patented in Germany Mar. 9, 1889, No. 49,739, and in England Mar. 23, 1889, No. 5,079.

Claim.—The new iodine substitution product of thymol, which is an amorphous odorless powder of a brown-red color, insoluble in water and alkali and difficultly soluble in alcohol, more easy in ether, and easily in oil, melting at about 110° centigrade under decomposition, substantially as described.

446,876. MIDDLINGS-PURIFIER AND DUST-COLLECTOR. FERDINAND C. MILLER and JOHN H. WALKER, Oregon City, Oreg. Filed Mar 19, 1890. Serial No. 344,443. (No model.)



Claim.—1. In a middlings-purifier and dust-collector, the combination, with the frame and a screen mounted to swing, of an arm adapted to be engaged by an eccentric, a link pivoted to the lower end of the arm and to the frame, a second arm adjustably secured to the first arm, and a link pivoted to the upper end of the second arm and to the screen, substantially as described.

2. In a middlings-purifier and dust-collector, a vibrating attachment comprising a shaft having an eccentric, an arm engaged by the said eccentric and having teeth, a link pivotally connected with the said arm, and a second arm having teeth in mesh with the teeth of the first-named arm, said arms being bolted together, substantially as shown and described.

3. In a middlings-purifier and dust-collector, the combination, with a frame, of a bolting-cloth having a welt at its sides, beams provided with rabbets having recesses, recessed strips fitting and secured in the rabbets of the beams, and bolts engaging said beams for adjusting them, substantially as described.

4. In a middlings-purifier and dust-collector, the combination, with a frame, of vertically-adjustable beams at the sides of the frame, a bolting-cloth having one end secured to one end of the frame and its edges secured to said beams, a bar secured to the other end of the cloth, and screws for adjusting said bar, substantially as shown and described.

5. In a middlings-purifier and dust-collector, a screen comprising a frame, a bolting-cloth stretched on the under side of the said frame, side beams provided with rabbets and strips for fastening the sides of the said bolting-cloth, screw-rods screwing into the said beams and mounted to turn on the said frame for raising and lowering the said beams, and buttons or hooks for fastening one end of the said bolting-cloth to the head of the said frame, and an adjustable bar held on the foot of the said frame and on which the lower end of the said bolting-cloth is secured, substantially as shown and described.

6. In a middlings-purifier and dust-collector, the combination, with transversely-extending adjustable guideways, of shoes fitted to slide on the said guideways, a longitudinally-extending beam supported on the shoes, a brush secured on the top of the said beam, and means, substantially as described, for imparting an intermittent transverse motion to the said beam, as set forth.

7. In a middlings-purifier and dust-collector, the combination, with two horizontal sprocket-chains mounted to travel, and each provided with a vertical pin, of a brush-beam carrying a brush and provided with bent arms, each having a lug and a shoulder adapted to be engaged by the vertical pins of the said sprocket-chains, substantially as shown and described.

8. In a middlings-purifier and dust-collector, the combination, with a screen and adjustable guideways extending transversely under the screen, of a longitudinal brush-beam provided with a shoe at each end fitting upon the guideways, and with arms, each having a lug and a shoulder, endless chains provided with pins, and means for operating said chains, substantially as described.

9. In a middlings-purifier and dust-collector, the combination of a frame provided with a series of compartments and suction and blast channels communicating with said compartments, suction and blast fans, channels connecting the fans respectively with the suction and blast channels, a vibrating screen above the compartments, and a dust-collector above the vibrating screen and having an endless traveling cloth passing through one of the suction-channels, substantially as herein shown and described.

10. In a middlings-purifier and dust-collector, the combination of a frame provided with a series of compartments and suction and blast channels between the compartments and communicating therewith, suction and blast fans, channels connecting with the blast-channels at their lower ends and leading to the blast-fan, a channel connected with the the suction-channels and with other channels leading to the suction-fan, a dust-collector having an endless traveling cloth passing through one of the suction-channels, and a vibrating screen below the dust-collector, substantially as herein shown and described.

11. In a middlings-purifier, a frame provided with a series of compartments provided with a series of hoppers and pivoted valves, and vertical suction and blast channels having valved openings leading to the compartments opposite the valves of said compartments, the suction-channels being at the end and middle of the frame and the blast-channels between the suction channels, substantially as herein shown and described.

12. In a middlings-purifier, a frame having the compartments K, K′, K², and K³, provided with the central triangular beams P² P⁴ P³, the beveled beams P⁵ opposite the central beams and forming with them a series of hoppers, and the valves P P′ P³, above the said beams P² P⁴ P³, the suction-channels K⁴ K⁵ K⁷, and the blast-channels K⁶ K⁸ between the suction-channels, the said channels being provided with valved openings leading into the compartments, substantially as herein shown and described.

13. In a middlings-purifier, the combination, with a vibrating frame having a bolting-cloth of different mesh-section and a series of hoppers below the same, of a series of compartments K K′ K² K³, receiving the graded middlings from the said hoppers, and each provided with a series of hoppers and valves, one above the other, suction-channels K⁴ K⁵ K⁷, blast-channels K⁶ K⁸ between the suction-channels, said channels being provided with openings leading into the compartments, and a suction and blast fan connected, respectively, with the said channels, substantially as herein shown and described.

14. A middlings-purifier and dust-collector, consisting of a vibrating frame having a bolting-cloth of different mesh-section, a series of hoppers below the frame, a series of compartments below the hoppers, each having a series of hoppers and valves arranged one above the other, a series of suction and blast channels provided with valved openings leading into the compartments, a series of chutes below the hoppers of the compartments, suction and blast fans connected with the suction and blast channels, respectively, and a dust-collector above the vibrating frame and comprising a traveling cloth and a suction-fan, substantially as herein shown and described.

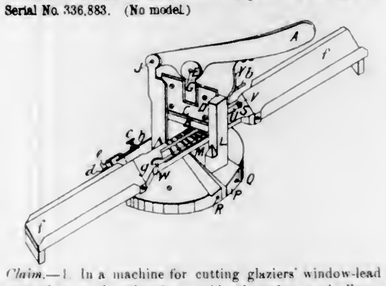
15. In a middlings-purifier and dust-collector, the combination, with a vibrating screen, of one, two, or more dust-collectors arranged over the said screen, and each comprising a suction-fan, an endless traveling cloth, the air passing through the traveling cloth, while the fluffy fiber of the middlings on the said screen adheres to the said cloth and is carried along by the same, and transversely-extending loosely-swinging screens arranged between the said endless cloth and the top of the screen, substantially as shown and described.

16. In a middlings-purifier and dust-collector, the combination of a dust-collector cloth provided with strips on its inner surface and a table between rollers of the said cloth, and provided with longitudinal grooves to receive the strips of the cloth, substantially as and for the purpose set forth.

446,877. COMPOSITION FOR COATING BRICKS. JOHN MILLER, Cincinnati, Ohio, assignor of one-half to Joseph G. Obermeyre, same place. Filed July 25, 1890. Serial No. 359,925. (No specimens.)

Claim.—The herein-described paint compound composed of beeswax, paraffine, and an alcoholic solution of shellac, in the proportions specified.

446,878. MACHINE FOR CUTTING GLAZIERS' WINDOW LEAD. WILLIAM C. MINNS, Great Yarmouth, England. Filed Jan. 14, 1890. Serial No. 336,883. (No model.)

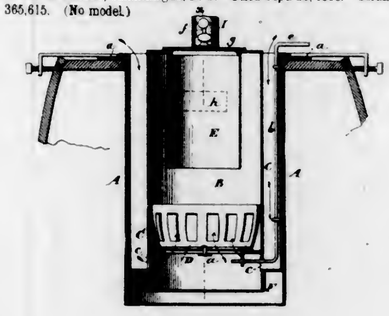


Claim.—1. In a machine for cutting glaziers' window-lead into proper sections or lengths, the combination of a vertically-moving knife, supports for said knife, a frame for said supports or standards, a quadrant over which said frame moves, fixed and movable plates, substantially as described, having radial slots, and means for operating said knife, substantially as and for the purposes hereinbefore set forth.

2. In a machine for cutting glaziers' window-lead into required sections or lengths, the combination of a suitable frame, a cutting-knife supported upon said frame, means for operating said knife, a fixed plate, and a movable plate, each having slots radial with the center, around which the cutting-knife revolves, substantially as set forth.

3. In a machine for cutting glaziers' window-lead into proper sections or lengths, the combination of suitable frame moving over a quadrant, a guillotine-knife, grooved standards fixed to said frame for said knife to move up and down in, a lever adapted to operate said knife, and fixed and movable plates T U, having slots radial with the pivot of the said movable frame, substantially as and for the purposes hereinbefore set forth.

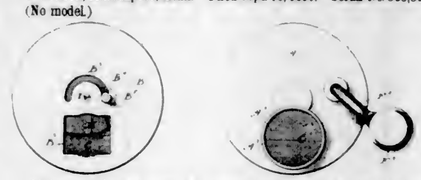
446,879. FEED-COOKING STOVE. ALFORD L. MONTAGUE and HIRAM S. BAILEY, Canandaigua, N. Y. Filed Sept. 20, 1890. Serial No. 365,615. (No model.)



Claim.—1. In feed-cooking stoves, the inner removable casing B and the two top open air-flues C C, connected therewith at the bottom by the openings *c c*, in combination with the grate D, arranged above said openings *c*, as and for the purpose described.

2. In feed-cooking stoves, the outer case A, having the smoke-pipe I, in combination with the removable inner case B above the bottom of case A and provided with opposite holes *h h′* above the fire-pot, for the purpose set forth.

446,880. SHUTTER FOR PHOTOGRAPHIC CAMERAS. HENRY B. NORTON, Minneapolis, Minn. Filed Sept. 18, 1890. Serial No. 365,390. (No model.)



Claim.—1. In a shutter for photographic cameras, the combination, with the shutter proper and mechanism for operating the same, of mechanism for regulating the admission of light so as to allow a longer time exposure to the lower than to the upper portion of the lens, and the disk having lobes of irregular and different forms, substantially as and for the purpose specified.

2. In a shutter for photographic cameras, mechanism, substantially as described, embodying an eccentrically-arranged supplemental shutter for regulating the width of the lens-opening upon a line corresponding with the axis of the shutter, substantially as shown and described, and for the purpose set forth.

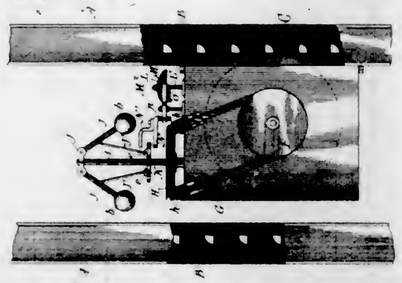
3. In a shutter for photographic cameras, the combination, with the shutter proper, of an eccentrically-arranged supplemental shutter carried by the shutter proper and adapted to be adjusted thereon to limit the width of the lens-opening upon a line corresponding with the axis of the shutter, substantially as described.

4. The combination, with the front and rear plates A and B, provided with openings, as described, the disk C, pivoted between said plates and provided with spring-actuating mechanism, and devices for releasing and regulating the movement of the disk, of an irregular heart-shaped shield carried by the disk and adapted to be adjusted thereon to regulate the vertical width of the lens-opening, substantially as and for the purpose specified.

5. In a shutter for photographic cameras, the combination, with the shutter proper and its actuating and releasing mechanism, of an irregular shield or plate adapted to regulate the size and form of the lens-opening and prevent the formation of lines upon the face of the negative, substantially as described.

6. In a photographic-camera shutter, the combination, with the front and rear plates, the rotatable shutter interposed between the plates, and the irregular shield or plate, of mechanism, substantially as specified, for regulating the speed of the shutter, substantially as and for the purpose specified.

446,881. ALARM-BELL FOR GRAIN-ELEVATORS, &c. GEORGE W. NYE, Chicago, Ill. Filed Dec. 13, 1889. Serial No. 333,594. (No model.)

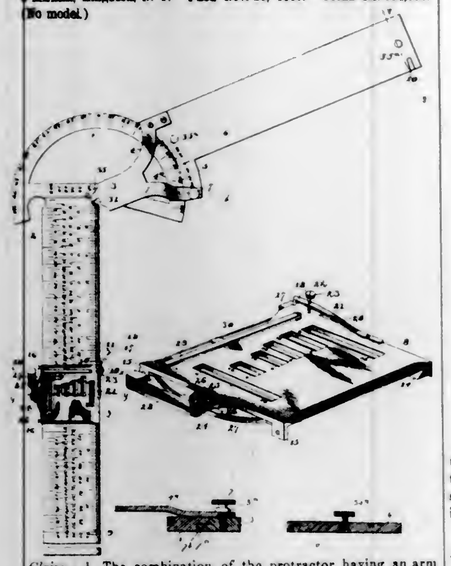


Claim.—1. The combination, with an elevator-leg provided with an opening, of an elevator-belt running in said leg, a friction drive-wheel extending through said opening and bearing against said belt, a spindle operated from said drive-wheel, a ball-governor on said spindle, and an alarm-bell arranged to be sounded by a rising and falling collar or disk forming part of said governor, whereby the elevator-belt itself is utilized to sound an alarm when it is not properly working.

2. The combination, with an elevator-leg provided with an opening, of an elevator-belt running in said leg, a box or support E, attached to said leg, a drive-wheel C, suitably journaled in said box or support and arranged to project through said opening into contact with said belt, a spindle I, mounted on said box or support and operated from said drive-wheel, a ball-governor on said spindle, and an alarm-bell arranged to be sounded by a rising and falling collar or disk forming part of said governor, substantially as set forth.

3. An alarm attachment for indicating irregularity in the speed of the endless belt in an elevator-leg, said attachment consisting of a drive-wheel bearing against and operated by said endless belt and communicating motion through an endless cord and horizontal pulley to a spindle operating a ball-governor having a rising and falling rotary disk or collar with projections thereon, said projections being varied in shape or arrangement to engage with a bell-ringing lever, substantially as described.

446,882. SURVEYOR'S PLOTTING-INSTRUMENT. PATRICK O'MARRA, Kingston, N. Y. Filed Nov. 29, 1889. Serial No. 331,850. (No model.)



Claim.—1. The combination of the protractor having an arm graduated, as herein described, and provided with a straight-edge radial to said protractor, the indicator-slide having the verniers registering with the scales upon the graduated arm, and the transversely-sliding pointer and the vernier pivoted centrally to the protractor and having a straight-edge radial to the latter, substantially as set forth.

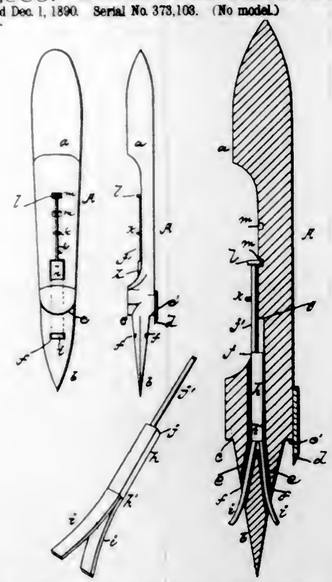
2. The combination, with the protractor having the graduated arm, of the indicator-slide having a perforation contiguous to the straight-edge of said arm, the spring carrying the needle-point registering with said perforation, the set-screw extending through said spring and bearing against the slide, the clamp to secure the indicator-slide in position upon the graduated arm, and the vernier connected pivotally to the protractor and having the straight-edge radial to the latter, substantially as set forth.

3. The combination, with the protractor having the graduated arm provided with a straight-edge radial to said protractor and having the central recess, of the vernier-plate having an annularly-grooved stud to engage said recess, said stud being provided with an angular recess, the inner corner of which is central to the protractor, the pivoted arm having a segmental recess to engage the annular groove of said stud and having a recess provided with beveled edges, a headed stud mounted upon the protractor and adapted to engage said flanged recess, and the arm extending from the vernier and having the straight-edge parallel to the protractor, substantially as and for the purpose herein set forth.

4. The combination, with a graduated arm or straight-edge, of an indicator-slide having the verniers arranged to register with the scales of said arm or straight-edge, said slide being provided with a perforation contiguous to the edge, a spring carrying a needle-point registering with said perforation, a set-screw extending through said spring and bearing against the slide, and a clamp to secure the indicator-slide in position upon the graduated arm, substantially as and for the purpose set forth.

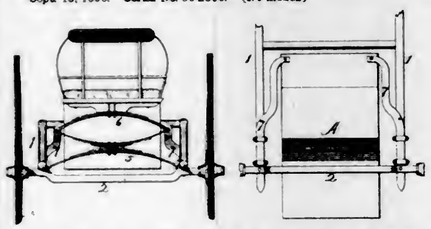
5. In a plotting-instrument, the combination of a protractor having a radial graduated arm with a vernier pivoted centrally to said protractor and having an outwardly-extending arm which is radial to said protractor, and set-screws extending vertically through the said arm and having needle-points at their lower ends, substantially as and for the purpose herein set forth.

446,883. CAN-OPENER. SAMUEL E. PALMER, Cranberry, Pa. Filed Dec. 1, 1890. Serial No. 373,103. (No model.)



Claim.—The can-opener described, consisting of the handle portion, the end for insertion in a can, having the shoulders and cutter, the slideway and slide provided with the fingers, the rod secured to said slide, and means, substantially as described, for holding said rod in position.

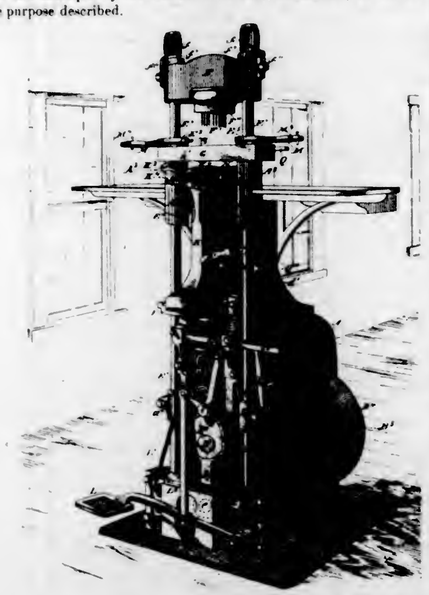
446,884. ROAD-CART. WILLIAM L. PIKE, Groton, N. Y. Filed Sept. 13, 1890. Serial No. 364,806. (No model.)



Claim.—In a road-cart, an axle, shafts secured thereto, half-elliptic spring connected to the axle, a full elliptic spring mounted thereon, a spring-bar upon the latter, and a body mounted upon said bar, in combination with springs secured to the under side of the shafts, thence extending forward parallel with the body, and then bent inward to bring their front ends beneath the front of the body.

446,885. HEEL-NAILING MACHINE. JOSEPH H. POPE, Brockton, Mass., assignor to the American Heeling Machine Company, same place. Filed Aug. 18, 1890. Serial No. 362,273. (No model.)

Claim.—1. In a heel-nailing machine, the combination of a main frame, a perforated die-block, a reciprocating nail-driver block, a jack, a jack-support, means for raising the jack-support and advancing the nail-driver block toward the jack, a pair of oscillating cams journaled, respectively, on the jack-support and a fixed part of the main frame and each provided with a cam-surface and a surface which is concentric with the axis of the cam, and means for oscillating the cams as the nail-driver block advances to first bring the cam-surfaces into contact and subsequently the concentric surfaces, substantially as and for the purpose described.



2. In a heel-nailing machine, the combination, with a main frame, a stationary perforated die-block, a reciprocating nail-driver block, vertically-movable rods for actuating the nail-driver block, a jack, a jack-support, and means for raising the jack-support and jack, of a pair of oscillating cams journaled, respectively, on the main frame and the jack-support and having connections with the vertically-movable rods for placing an increased pressure on the jack as the nail-driver block advances to drive the nails, substantially as described.

3. In a heel-nailing machine, the combination, with a main frame, a stationary perforated die-block, a reciprocating nail-driver block, vertically-movable rods for actuating the nail-driver block, a jack, a jack-support, and treadle mechanism for raising the jack-support, of two rocking shafts or pins journaled, respectively, in the jack-support and the main frame and provided with cams, levers connected with the rocking shafts or pins, and links connecting the levers with the vertically-movable rods for causing the cams to raise the jack-support and thereby place an increased pressure on the jack as the nail-driver block advances to drive the nails, substantially as described.

4. In a heel nailing machine, the combination of a main frame, a stationary perforated die-block, a reciprocating nail-driver block, a sliding jack having a pivoted metal last provided with an adjustable toe-piece, a jack-support provided with a jack-screw having a pinion, a horizontally-reciprocating rack engaging the pinion, and treadle mechanism connected with the rack for reciprocating the same to raise and lower the jack, substantially as described.

5. In a heel-nailing machine, the combination of a main frame, a stationary perforated die-block, a reciprocating nail-driver block, a sliding jack, a jack-support provided with a jack-screw having a pinion, a horizontally-reciprocating rack engaging the pinion, and a treadle mechanism connected with the rack to reciprocate the same for raising and lowering the jack, substantially as described.

6. In a heel-nailing machine, the combination of a main frame, a stationary perforated die-block, a reciprocating nail-driver block, a sliding jack, a jack-support having a jack-screw provided with a pinion, a horizontally-reciprocating rack engaging the pinion, a treadle mechanism connected with the rack for reciprocating the same to raise and lower the jack, and a pair of oscillating cams having their cam-surfaces brought into superficial contact as the nail-driver block advances for placing an increased pressure on the jack as the nails are driven, substantially as described.

7. In a heel-nailing machine, the combination, with the main frame having a bearing a^7, the stationary perforated die-block, and the reciprocating nail-driver block, of the forked shoe or counter gage N, having a screw-threaded spindle n arranged in the bearing on the main frame, and the screw-nut n', engaging the spindle for adjusting the gage and holding it fixed in its adjusted position, substantially as described.

8. In a heel-nailing machine, the combination, with the expansive top-piece clamps P^w, of the spanker-plate P^3, the screw-threaded spindle P^5, on which the spanker-plate is movable horizontally back and forth in a right line, and the nut P^4 for adjusting the spanker-plate on the screw-spindle, substantially as described.

9. In a heel-nailing machine, the combination of the pivoted horizontally-swinging nail-loading frame M, the sliding nail-rest shield M^3, a spring m^3 acting on the nail-rest shield, a spring-pressed locking device for holding the nail-rest shield against the tension of the spring, and a trigger m^4, for releasing the locking device, substantially as described.

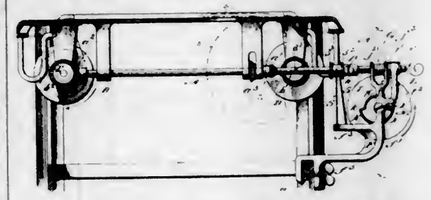
10. In a heel-nailing machine, the combination, with a main frame, a stationary perforated die-block, a reciprocating nail-driver block, driving mechanism for operating the nail-driver block, a jack, a jack-screw having a pinion, a rack engaging the pinion and having a groove or recess, and a treadle mechanism connected with the rack, of a starting-lever for the driving mechanism and a vertical rod connected with and moved downward by the starting-lever for causing the lower end of said rod to enter the groove or recess in the rack after the jack has been raised, substantially as described.

11. In a heel-nailing machine, the combination, with a main frame having a locking projection, a stationary perforated die-block, a reciprocating nail-driver block, a jack, means for raising the jack, and driving mechanism for operating the nail-driver block, of the swinging nail-loader having a slot, a horizontally-sliding bar having a recess and a projection adapted to enter the slot of the loader, a starting-lever for driving the mechanism, a spring-pressed arm adapted to strike the locking projection on the main frame, and a rod connected with the spring-pressed arm and adapted to enter the recess in the horizontally-sliding bar, substantially as described.

12. In a heel-nailing machine, the combination, with a main frame, a stationary perforated die-block, a reciprocating nail-driver block, a jack, means for raising the jack, and driving mechanism for the nail-driver block, of a swinging nail-loader having a slot, a stationary guide having a spring-pressed pin, and a horizontally-sliding bar having a stop-pin and a locking-recess to receive the spring-pressed pin on the stationary guide, substantially as described.

13. In a heel-nailing machine, the combination, with a die-block and a nail-driver block, of a vertically-movable jack support or block having guides, a horizontally-reciprocating rack moving in said guides and rising and falling with the jack support or block, a jack, a jack-screw having a pinion engaging the rack, a treadle, a pivoted bell-crank lever, a link connecting the lever with the treadle, and a link connecting said lever with the rack for reciprocating the latter to raise and lower the jack-support and jack, substantially as described.

446,886. RIBBON-FEED-REVERSING MECHANISM FOR TYPE WRITING MACHINES. JOSHUA PUSEY, Lima, Pa. Filed Nov. 16, 1889. Serial No. 330,541. (No model.)



Claim.—1. The combination, with the supporting-frame and the spools or drums mounted thereon, of a longitudinal bar arranged with near relation to said spools or drums, devices on said bar adapted alternately to engage and rotate the shafts of said spools or drums, a cam adapted to act upon said bar, and mechanism adapted to operate the said cam independently of said shafts, whereby the cam will shift the bar at predetermined intervals, and the devices thereon will be actuated at each of said intervals to reverse the direction of rotation of the spools or drums alternately, substantially as described.

2. The combination, with the spools or drums and mechanism for independently rotating the same, of a shaft or bar carrying gears adapted to engage with said mechanism, a worm upon said shaft in which the latter is adapted to slide, a cam-wheel connected with the shaft and gearing with said worm, together with mechanism for driving said shaft, its worm, and the cam-wheel, whereby, as the shaft, its worm, and the cam-wheel rotate, the shaft is shifted at predetermined intervals, and the gears thereon are actuated to reverse the direction of rotation of the spools or drums alternately, substantially as described

3. The combination, with the spools and mechanism for rotating the same, of a shaft or bar carrying gears adapted to engage with said mechanism, a cam-wheel connected with said shaft and provided with the channels *k'*, mechanism for driving said cam, and a pressure device acting against said shaft, whereby, as the cam rotates, the shaft is reciprocated by the action of said cam and pressure device at the predetermined intervals, and the gears on the shaft are thereupon actuated to reverse the direction of rotation of the spools alternately, substantially as described.

4. The combination, with the spools or drums and mechanism for rotating the same, of a shaft or bar carrying devices adapted to engage with said mechanism, a cam-wheel connected with said shaft and provided with the straight channels *k'*, the spring or springs adapted to bear against shoulders on said shaft, together with mechanism for driving said cam, whereby, as the cam rotates, the shaft is reciprocated by the action of said cam and spring or springs at the predetermined intervals, and the devices on the shaft are thereupon actuated to reverse the direction of rotation of the ribbon-spools alternately, substantially as described.

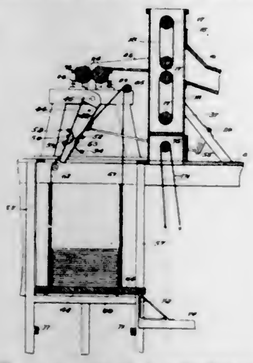
5. In a mechanism for reversing the direction of movements of the ribbons of type-writing and analogous machines, the combination of the sliding shaft adapted to be rotated from the main source of power, the gears *a' a²* thereon, the ribbon-spools provided with the gears *b' b²*, the worm on said shaft, the supporting-bracket, the wheel I, provided with the cam and the channels *k'*, the arm L, pivoted on said shaft and having the stud engaging with said cam and channels, together with the springs or spring whose free ends bear against the shoulders on said shaft, all constructed and adapted to operate substantially as and for the purpose described.

6. The ribbon-reversing attachment adapted to be applied to type-writing machines of the character mentioned, consisting of the combination of the bracket F, provided with the arm *f'*, means, substantially as shown, for securing said arm to the frame of the type-writer, the sliding shaft A A, journaled on said bracket and adapted to be secured to the end of the shaft A of the type-writer, the wheel I, pivoted on the bracket and provided with the cam K, with channels *k'*, the arm L, pivoted on the shaft A A and having the stud M, engaging with said cam and channels, the worm upon shaft A A, engaging with the cam-wheel, together with the spring secured to said bracket, having its free end bearing against shoulders on said shaft, substantially as and for the purpose described.

446,887. PREPARING FOOD FROM MILK-CURD. ALBERT W. REINSTRÖM, Malhammar, assignor to the Aktiebolaget Lactoserin, (Lactoserin Company, Limited,) Stockholm, Sweden. Filed Dec. 3, 1889. Serial No. 332,469. (No specimens.)

Claim.—The mode of preparing a food or ingredients in food for people or domestic animals, consisting in separating milk by coagulation into its constituents—caseine and whey—then evaporating a greater or smaller part of this whey separately, and when reduced in volume adding and mixing the same well with the caseine that is kept in readiness, and, finally, during continued evaporation reducing the whole to dryness and into a pulverized form, substantially as described.

446,888. APPARATUS FOR BALING COTTON. HENRY REMBERT, Willis, assignor to the Rembert Roller Compress Company, Galveston, Tex. Filed June 10, 1890. Serial No. 354,882. (No model.)



Claim.—1. The combination of two compressing-rolls mounted in unyielding bearings and normally in contact, or practically so, feeding devices for the rolls, with a baling mechanism arranged to receive the compressed fiber from said rolls, and devices intermediate the rolls and baling mechanism for transferring the compressed sheet of fiber, substantially as specified.

2. In mechanism of the class described, the combination, with a pair of bat-compressing rolls, of a swinging lapping-frame arranged under the rolls, a vertically-movable receiver located under the lapper, and mechanism for rotating the rolls for swinging the frame and for lowering the receiver, substantially as specified.

3. In a mechanism of the class described, the combination, with a pair of compressing-rolls, of a swinging lapper-frame, mechanism for operating the rolls and lapper, and a pair of parallel vertically-hanging guides carried by the lapper, substantially as specified.

4. In a mechanism of the class described, a pivoted lapper, the same consisting of an upper frame adapted to be pivoted to a suitable support, and an opposite series of depending rods spaced apart, the series converging toward each other and forming a reduced delivery end, substantially as specified.

5. In a mechanism of the class described, a lapper comprising an oblong frame terminating in opposite perforated end ears, opposite series of depending rods spaced apart, said series converging to form a reduced delivery end, a frame encircling the series, the end bars of each series being provided with bearing-ears, transverse rods pivoted in ears, and opposite series of semicircular curved guide-bars projecting from the transverse bars into the lapper and having their lower extremities projecting from the lapper, said guide-bars alternating with the depending bars of the lapper and being connected outside of said latter bars by a transverse connecting-bar, substantially as specified.

6. In a mechanism of the class described, the combination, with a pair of compressing-rolls, means for operating the same, and a swinging lapper arranged under the rolls and means for operating the lapper, of a carriage located under said lapper and adapted for lateral movement, and a baling-press located in the path of the carriage, substantially as specified.

7. In a mechanism of the class described, the combination, with a pair of compressing-rolls, a swinging lapper arranged thereunder, and mechanism for operating the two, of a vertically and longitudinally reciprocating bale-carriage, a baling-press located in the longitudinal path of the carriage, and mechanism for raising and lowering the carriage and reciprocating the same longitudinally, substantially as specified.

8. In a mechanism of the class described, the combination, with a pair of compressing-rolls, a lapper arranged thereunder, and mechanism for operating the two, of a frame-work arranged under the lapper, opposite pairs of vertical guides, guide-blocks mounted in the guides, a windlass arranged above the guides, opposite cables secured intermediate their ends to the windlass and at their ends to the blocks, a carriage adapted for connection with the blocks and to be raised and lowered by the cables, and means for liberating the carriage from the blocks when in their lowered position, substantially as specified.

9. In a mechanism of the class described, the combination, with a pair of compressing-rolls, a swinging lapper, and means for operating the two, of a frame-work arranged below the lapper, tracks mounted thereon, a baling-press having its baling-chamber located at the ends of the tracks, opposite vertical guides extending above and below the tracks, reciprocating blocks provided with hooks mounted in the guides, a windlass located above the blocks, opposite ropes or cables connected intermediate their ends to the windlass and having their terminals connected with the blocks, a carriage provided with opposite studs for engaging the hooks of the blocks and adapted to be supported thereby and lowered upon the track, and means for reciprocating said carriage into the baling-press, substantially as specified.

10. In a mechanism of the class described, the combination, with a frame-work having a track, a bed mounted for vertical movement in the frame-work and adapted for reciprocation on the track, and a baling-press located at one end of the track, of a reciprocating bar located under the frame-work and adapted for removable connection with the carriage when the latter is in its lowered position upon the track, and mechanism for reciprocating said bar so as to advance the carriage along the track into the baling-press and withdraw the same from said press, substantially as specified.

11. In a mechanism of the class described, the combination, with the frame-work provided with opposite track-rails, the baling-press located at the end of the track, and the carriage mounted for longitudinal movement on the track, of a transverse shaft having a twin pulley, a crank-shaft arranged at one side thereof and having a single pulley, a reciprocating bar mounted above the transverse shaft and adapted for connection with the carriage, and a cable or rope mounted over the single pulley and having its terminals passed in opposite directions each around one of the twin pulleys and connected to opposite ends of the bar, substantially as specified.

12. In a mechanism of the class described, the combination, with a supporting-table having an opening, opposite standards arranged at each end of the opening, a pair of rolls mounted in the standards above the opening, and a lapper pivoted below the opening, of a pulley

mounted on the shaft of one of the rollers, a transverse shaft having a pulley, a belt connecting the two, a pulley mounted on the shaft of the roll, a crank-shaft located at one side of the roll, a pulley mounted on said shaft, and a belt connecting the lapper with the crank of the crank-shaft, substantially as specified.

13. The combination, with a condenser, a pair of compressing-rolls arranged at one side thereof, a conveyer leading from the condenser to said rolls, a vibrating lapper suspended under the rolls, a vertically and longitudinally reciprocating carriage mounted under the lapper, and a bale-press located at one side of the carriage, of mechanism for operating the condenser, rolls and lapper for raising and lowering the carriage and for reciprocating the same, substantially as specified.

14. The combination, with a swinging lapping-frame, of an automatic guide consisting of a pair of sections pivoted to the opposite sides of the folding frame and adapted to swing in unison with each other, as and for the purpose set forth.

15. The combination, with a swinging folding frame having its sides composed of a series of vertical separated bars or rods, of a guide consisting of two sections pivotally connected at their upper ends to the opposite slotted sides of the folding frame, each of said sections consisting of curved bars working in the spaces between the slots of the said frame, as and for the purpose described.

16. In mechanism of the class described, the combination, with a pair of rigidly-mounted bat-compressing rollers and a cotton-receiver thereunder, of a pivoted swinging lapping mechanism supported for movement between the rolls and receiver, and means for operating the rolls and operating the lapper, substantially as specified.

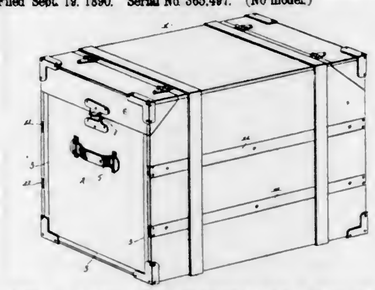
446,889. INKER FOR RUBBER-STAMP PADS. GEORGE J. B. RODWELL, Toronto, Canada, assignor to the Rodwell Manufacturing Company, same place. Filed Apr. 11, 1890. Serial No. 347,485. (No model.)



Claim.—1. An ink-can provided with a stopper having a hole through it and an annular groove in its top, and a ring of felt or other porous material set into the groove in said stopper, arranged to leave the hole uncovered, substantially as and for the purpose specified.

2. An ink-can having a spring-bottom and provided with a stopper having a hole through it and an annular groove in its top, and a ring of felt or other porous material set into the groove in said stopper, arranged to leave the hole uncovered, substantially as and for the purpose specified.

446,890. TRUNK. WILLIAM G. RUSSELL, Jr., Winchester, Va. Filed Sept. 19, 1890. Serial No. 365,497. (No model.)



Claim.—1. A trunk two of the opposite walls of which are provided at corresponding ends with vertical grooves, a wall mounted for sliding in the same, a fixed cover terminating short of the removable wall, and a lid hinged to the cover and adapted to overlap the removable wall, substantially as specified.

2. A trunk provided at the ends of its opposite side walls with vertical grooves and having its upper or top wall terminating short of the ends of the trunk and provided with hinged lids, opposite end walls rabbeted to fit within the grooves and adapted to be inclosed by the lids, a series of frames secured within the trunk, and a series of removable trays mounted on the frames, substantially as specified.

3. A trunk provided with a removable wall, a series of trays located within the trunk, and frames for supporting the trays, said frames consisting of a series of transverse strips, the ends of which are bent and riveted to the walls of the trunk and to opposite re-enforcing strips secured outside the trunk, and a series of slide-strips securing the transverse strips, substantially as specified.

4. A trunk having its side walls near its ends provided with grooves and its upper or top wall terminating short of the ends of the trunk and provided with hinged lids, removable end walls rabbeted to fit within the grooves in the side walls and adapted to be inclosed by the lids, and a series of removable trays mounted within the trunk, substantially as specified.

446,891. METHOD OF PRODUCING INTENSE LIGHT BY MAGNESIUM OR OTHER GLOWING MATERIALS. JOHANN W. C. C. SCHIEM, Berlin, Germany. Filed May 22, 1890. Serial No. 352,809. (No model.)



Claim.—1. The method of producing intense light for photographic or other purposes, consisting in mixing luminiferous substance or substances—such as powder or magnesium or equivalent material—with a current of gas prior to the arrival of the gas at the mouth of the burner, and diffusing said luminiferous material and expelling the mixture from the burner by the pressure of the gas proper, substantially as and for the purpose specified.

2. The method of producing intermittent or flash light, consisting in mixing luminiferous materials with a current of gas or other combustible vapor prior to such current reaching the mouth of the burner, diffusing them and conducting the mixture to the burner or flame by means of a pressure produced by a gas or vapor compression device, which is in communicating connection with the burner-tube, the whole combined and operating substantially as illustrated and described.

446,892. ALIZARINE DERIVATIVE. ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Oct. 31, 1890. Serial No. 369,978. (No specimens.)

Claim.—1. The process of producing a new alizarine derivative by oxidizing alizarine bordeaux (tetraoxyanthraquinone) in sulphuric-acid solution with oxidizing agents, such as manganese or arsenic acid, then boiling, filtering, and washing, and subsequently dissolving the precipitate in hot diluted alkali and filtering and precipitating the coloring-matter with acid, substantially as described.

2. As a new product, the coloring-matter herein described, which forms a red-brown paste, or dried a brown powder, derived from alizarine, insoluble in water, easily soluble in soda-lye with blue color tinged with violet, dissolves in concentrated sulphuric acid with a pure blue, the solution showing a beautiful fluorescence, and in glacial acetic acid or alcohol it dissolves with a more yellowish or bluish-red color of moss-green fluorescence and crystallizes from it in beautiful dark or blackish-brown glittering needles.

446,893. ALIZARINE DERIVATIVE. ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Oct. 31, 1890. Serial No. 369,979. (No specimens.)

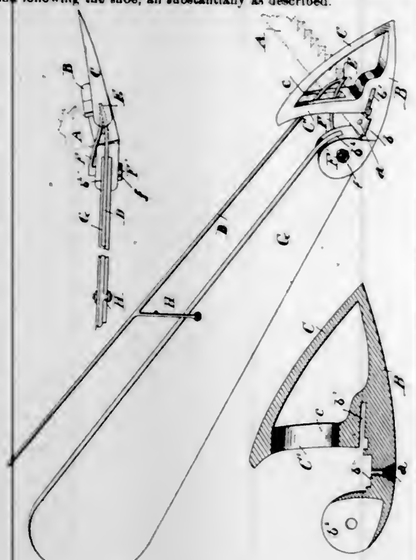
Claim.—1. The process for producing the coloring-matter herein described by oxidizing alizarine with fuming sulphuric acid, which process consists in treating dried alizarine (dioxyanthraquinone) with large quantities of fuming sulphuric acid of a high percentage of anhydride at a low temperature, pouring the melt on ice, and filtering the intermediate product, the yellowish-brown deposit formed, dissolving the same in soda-lye, and adding diluted mineral acid to the boiling solution, from which the coloring-matter is precipitated.

2. The coloring-matter hereinbefore described, derived from alizarine, which is a yellowish-red paste insoluble in water, easily soluble in soda-lye and in concentrated sulphuric acid with a blue-violet color, and crystallizing from glacial acetic acid or nitro-benzole in garnet-red needles which do not melt at 280° centigrade; it has the following composition: $C_{14}H_8O_4$.

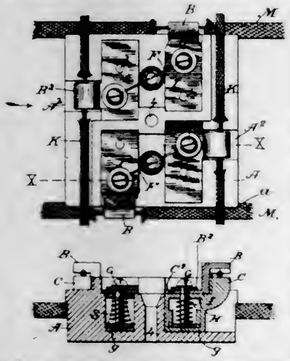
446,894. DIVIDER FOR MOWING-MACHINES. FRED. J. J. SCHUETT, Saginaw, Mich. Filed Sept. 8, 1890. Serial No. 364,276. (No model.)

Claim.—In a mowing-machine, the combination of a shoe attached to and supporting the free end of the finger-bar, with a shield protecting the forward end of the divider carried on the shoe, the divider

supported by the shoe and track-board, and the track-board attached to and following the shoe, all substantially as described.



446,895. FUSE-BLOCK. ALBERT P. SEYMOUR, Syracuse, N. Y. Filed July 26, 1889. Serial No. 318,748. (No model.)



Claim.—1. In a clamp or connecting device for electric conductors, the combination, with a screw and nut therefor, of two perforated clamp-blocks or pieces of metal between the head of the screw and nut, and a spiral spring encircling the stem of the screw, as and for the purpose described.

2. The combination, with the perforated clamping-blocks having clamp-jaws, of a clamp-screw passing through the perforation, a nut guided on one of said blocks, and a spiral spring applied to the screw between the nut and the perforation.

3. The combination, with the movable clamp-block, of the screw, the nut, the spiral spring, and the fixed clamp-block provided with a guide for the nut.

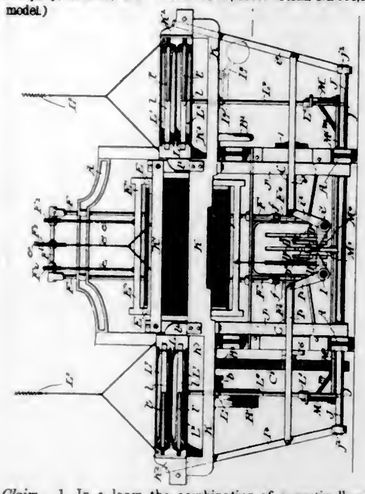
4. The combination, substantially as described, of a clamping-screw for holding the parts which clamp the conductor together, a movable guided nut on such screw held against turning, and a spiral take-up spring between the screw and nut and encircling the stem or barrel of the screw, as and for the purpose described.

5. In a combined fuse and conductor clamp, the combination of the clamping-screw, a movable guided nut on such screw held against turning, a spiral take-up spring through which the stem of the screw passes, and extensions from the fuse-clamping devices provided with clamping-jaws for the electric conductor, as and for the purpose described.

6. The combination, with the perforated clamp-blocks having the clamp-jaws, of a screw passing freely through the perforations, a guided nut on the screw, and a spiral spring between the nut and the lower clamp-block, as and for the purpose described.

7. The combination, with the perforated clamp plates or blocks having lateral extensions formed as jaws, of a screw passing through the perforations in the plates, a guided nut at one end of the screw, a spiral spring on the screw, and a washer between the head of the screw and the top plate.

446,896. LOOM FOR WEAVING CHENILLE FABRICS. ALEXANDER SINCLAIR, Birmingham, assignor to the Royal Axminster Carpet Company, Camden, N. J. Filed Jan. 28, 1890. Serial No. 338,389. (No model.)



Claim.—1. In a loom, the combination of a vertically-movable heddle-supporting frame, two warp-thread heddles connected by cords or chains passing over and supported upon said frame, the said heddles being connected to have a relatively reciprocating motion as well as a conjoint upward and downward motion with the supporting-frame, a third heddle supported independently of the heddle-supporting frame and constructed to move up and down independently thereof, and mechanism for actuating the said heddles and heddle-frame, substantially as described.

2. In a loom, movable double shuttle-boxes arranged at each end of the lay, a pick-lever at each end of the lay, mechanism for actuating first one and then the other pick-lever consecutively, independent mechanism for actuating first one and then the other picker-staff, alternately arranged to act intermediately between each two pairs of consecutive strokes given by the mechanism first aforesaid, and mechanism for actuating the shuttle-boxes, arranged to bring one box of each in front of the picker-staffs during each alternate consecutive double stroke and to bring the other boxes to similar operative position at each intermediate single stroke of the pick-levers.

3. In a loom, the combination of two heddles sustaining warp-threads, supporting mechanism for said heddles, arranged, as described, to permit them to move up and down reciprocally and also together, a third heddle for supporting binder-threads, supported and operated independently of the warp-thread heddles, mechanism arranged to elevate and depress the heddles, as described, double movable shuttle-boxes at each end of the lay, mechanism for elevating and depressing said boxes, arranged to operate in connection with the heddle-actuating mechanism, as described, pick-levers, mechanism for actuating the same alternately after each reciprocal movement of the warp-thread heddles, and mechanism for actuating the same alternately after each simultaneous depression of said heddles.

4. In a loom, the combination of two heddles sustaining warp-threads, supporting mechanism for said heddles, arranged, as described, to permit them to move up and down reciprocally and also together, a third heddle for supporting binder-threads supported and operated independently of the warp-thread heddles, mechanism arranged to elevate and depress the heddles, as described, double movable shuttle-boxes at each end of the lay, mechanism for moving and adjusting said boxes, arranged to operate in connection with the heddle-actuating mechanism, as described, pick-levers, mechanism for actuating the same alternately after each reciprocal movement of the warp-thread heddles, mechanism for actuating the same alternately after each simultaneous depression of said heddles, reeds, mechanism arranged to actuate the reeds after each pick, a carpet-roll, and take-up mechanism arranged to act on the roll after each of two consecutive picks and to remain inactive after the third.

5. In a loom, the combination of two heddles sustaining warp-threads, supporting mechanism for said heddles, arranged, as described, to permit them to move up and down reciprocally and also together, a third heddle for supporting binder-threads, supported and operated independently of the warp-thread heddles, mechanism arranged to elevate and depress the heddles, as described, double movable shuttle-boxes at each end of the lay, mechanism for moving and adjusting said boxes, arranged to operate in connection with the heddle-actuating mechanism, as described, pick-levers, mechanism for actuating the same alternately after each reciprocal movement of the warp-thread heddles, mechanism for actuating the same alternately after each simultaneous depression of said heddles, reeds, mechanism arranged to actuate the reeds after each pick, a carpet-roll, take-up mechanism arranged to act on the roll after each of two consecutive picks and to remain inactive after the third, the driving-shaft, a driving-pulley journaled on said shaft, a clutch connecting said shaft and pulley, and clutch-releasing mechanism arranged to act after each third pick and before the stroke of the reeds following it.

6. In a loom, a heddle-supporting frame F F', in combination with a cam 5, arranged to elevate and depress said frame at regular intervals, warp-thread heddles E' E², connected by a chain or chains c', passing over the frame, a binder-thread heddle E, supported independently of frame F F', cams 2, 3, and 4, arranged as described, and means for transmitting motion connecting said cams with the heddles, as described, cam 2, acting to depress heddle E' and elevate heddle E², cam 3 acting simultaneously with cam 5 to simultaneously depress heddles E' E² as the frame F F' falls, and cam 4 acting to depress heddle E and to depress heddle E² and elevate heddle E', all in the order specified.

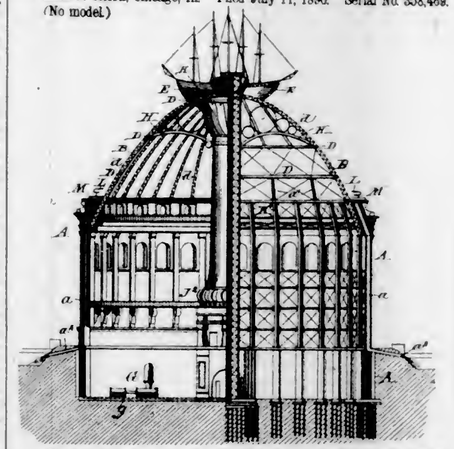
7. In a loom, the combination, with the lay, of double shuttle-boxes movable with reference to the shuttle-race, pick-levers arranged to act on the shuttle in the boxes registering with the race, means to elevate the shuttle-boxes, and a cam 3 to depress the same, independent mechanism for transmitting motion to each of the pick-levers, cams 3^a and 3^b, connected with cam 3, as specified, so as to act on the pick-lever-operating mechanism after cam 3 has changed the position of the shuttle-boxes, and cam-shifting mechanism arranged, as described, to bring said cams 3^a and 3^b into action alternately, one after each action of cam 3.

8. In a loom, the combination, with the lay, of double shuttle-boxes movable with reference to the shuttle-race, pick-levers arranged to act on the shuttles in the boxes registering with the race, means to elevate the shuttle-boxes and a cam 3 to depress the same, independent mechanism for transmitting motion to each of the pick-levers, cams 3^a and 3^b, connected with cam 3, as specified, so as to act on the pick-lever-operating mechanism after cam 3 has changed the position of the shuttle-boxes, cam-shifting mechanism arranged, as described, to bring said cams 3^a and 3^b into action alternately, one after each action of cam 3, cams 2^a and 4^a, arranged, as specified, to act on the mechanism for transmitting motion to the pick-levers and so as to operate the said levers alternately and consecutively between each action of cam 3 upon the mechanism for actuating the double shuttle-boxes, heddles E' E², arranged to carry warp-threads, supporting mechanism arranged, as described, to permit said heddles to move reciprocally and also together, cams 2 and 4, arranged, as described, to give reciprocating motion to said heddles and to act only when cam 3 is out of operation and the shuttle-boxes in normal position, a binder-thread heddle E, connections to said heddle whereby it is depressed by cam 4, and mechanism connecting cam 3 with the heddles E' E², as described, so as to depress them both when the shuttle-boxes are shifted, reeds and mechanism for actuating the same after each pick, take-up mechanism, a cam 1, arranged to actuate the same after two consecutive picks and to remain inactive after the third pick made when cam 3 is in operation, a driving-shaft, a driving-pulley journaled thereon, a clutch securing the driving-pulley to the shaft, clutch-releasing mechanism, and a cam 6, arranged to actuate such mechanism after each pick made when cam 3 is in operation.

9. In a loom, the combination, with the lay, of double shuttle-boxes movable with reference to the shuttle-race, pick-levers arranged to act on the shuttle in the boxes registering with the race, means to elevate the shuttle-boxes and a cam 3 to depress the same, independent mechanism for transmitting motion to each of the pick-levers, cams 3^a and 3^b, connected with cam 3, as specified, so as to act on the pick-lever-operating mechanism after cam 3 has changed the position of the shuttle-boxes, cam-shifting mechanism arranged, as described, to bring said cams 3^a and 3^b into action alternately, one after each action of cams 3, cam 2^a and 4^a, arranged, as specified, to act on the mechanism for transmitting motion to the pick-levers and so as to operate the said levers alternately and consecutively between each action of cam 3 upon the mechanism for actuating the double shuttle-boxes, heddles E' E², arranged to carry warp-threads, supporting mechanism arranged, as described, to permit said heddles to move reciprocally and also together, cams 2 and 4, arranged, as described, to give reciprocating motion to said heddles and to act only when cam 3 is out of operation and the shuttle-boxes are in normal-position, a binder-thread heddle E, connections to said heddle, whereby it is depressed by cam 4, and mechanism connecting cam 3 with the heddles, as described, so as to depress them both when the shuttle-boxes are shifted.

10. In a loom, the combination, with the lay, of double shuttle-boxes adjustable with reference to the shuttle-race, pick-levers arranged to act on the shuttle in the boxes registering with the race, means to elevate the shuttle-boxes and a cam 3 to depress the same, independent mechanism for transmitting motion to each of the pick-levers, cams 3^a and 3^b, connected with cam 3, as specified, so as to act on the pick-lever-operating mechanism after cam 3 has changed the position of the shuttle-boxes, cam-shifting mechanism arranged, as described, to bring said cams 3^a and 3^b into action alternately, one after each action of cam 3, cams 2^a and 4^a, arranged, as specified, to act on the mechanism for transmitting motion to the pick-levers and so as to operate the said levers alternately and consecutively between each action of cam 3 upon the mechanism for actuating the double shuttle-boxes, heddles E' E², arranged to carry warp-threads, supporting mechanism arranged, as described, to permit said heddles to move reciprocally and also together, cams 2 and 4, arranged, as described, to give reciprocating motion to said heddles and to act only when cam 3 is out of operation and the shuttle-boxes in normal position, a binder-thread heddle E, connections to said heddle whereby it is depressed by cam 4, and mechanism connecting cam 3 with the heddles E' E², as described, so as to depress them both when the shuttle-boxes are shifted, reeds and mechanism for actuating the same after each pick, take-up mechanism, a cam 1, arranged to actuate the same after two consecutive picks and to remain inactive after the third pick made when cam 3 is in operation, a driving-shaft, a driving-pulley journaled thereon, a clutch securing the driving-pulley to the shaft, clutch-releasing mechanism, and a cam 6, arranged to actuate such mechanism after each pick made when cam 3 is in operation.

446,897. COMBINED BUILDING AND WATER-TOWER. WILLIAM F. SMITH, Chicago, Ill. Filed July 11, 1890. Serial No. 358,469. (No model.)



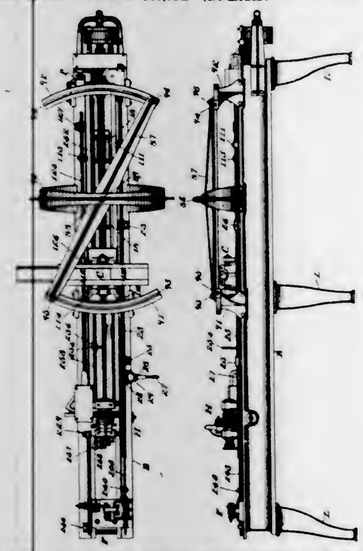
Claim.—1. In a combined building and water-tower, vertical pipes forming a portion of the walls of the building, such pipes adapted to convey water up or down therein, a vertical pipe in the center of the building, a dome resting upon the walls and upon the central vertical pipe, circular pipes extending horizontally around the dome, pipes extending from the horizontal circular pipes to the outer surface of the

dome, and other pipes connecting with the vertical central pipe and with some of the vertical pipes in the wall of the building, whereby water may be forced through such last-named vertical pipes out upon the outer surface of the dome, and extending over the surface of the dome be collected in the other of the vertical pipes in the wall of the building, and passing through such last-named vertical pipes be conveyed from the base of the dome and from the building, substantially as described.

2. In a combined building and water-tower, vertical pipes forming a portion of the walls of the building, such pipes adapted to convey water up or down therein, a like vertical pipe in the center of the building, a dome resting upon the wall and upon the central vertical pipe of the building, such dome being composed of plates of glass supported in a frame, and such frame having horizontal rings above the outer surface of the glass extending around the dome, circular pipes extending horizontally around the dome and having discharge-pipes extending therefrom to the outer surface of the dome, and also having connecting-pipes extending to the vertical pipe in the center of the building and to some of the vertical pipes in the wall of the building, pumps connecting with such vertical pipes, and a collecting-shield for guiding water from the base of the dome into the other vertical pipes in the wall of the building, whereby water may be forced upon the outer surface of the dome, extend over such dome to the base thereof, and be viewed from within the building through the glass portion of the dome as it flows over it, and be conveyed from the building through some of the vertical pipes in the wall of the building, substantially as described.

3. In a combined building and water-tower, vertical pipes adapted to form supply and waste-water pipes forming a portion of the walls of the building, vertical supply-pipes in the center of the building, a dome resting upon the walls of the building and upon the central pipe, structures resting upon the dome representing a portion of the hull of sailing-vessels, circular pipes extending horizontally around the dome and having discharge-pipes extending therefrom to the outer surface of the dome, and also having supply-pipes extending to the vertical supply-pipes, and pumps connected to the vertical supply-pipes, whereby water may be forced upon the outer surface of the dome, extend over such dome to the base thereof, and be conveyed therefrom, and thereby an appearance may be given such structures similar to the appearance of sailing-vessels floating upon water, substantially as described.

446,898. RIFLING-MACHINE. CHARLES W. SPONSEL, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Oct. 28, 1890. Serial No. 369,604. (No model.)



Claim.—1. In a rifling-machine, the combination, with the barrel-carrying spindle and with the carriage having a rifling-rod carrying rifling-cutters and a feed-pin for said cutters, of feed mechanism located for driving said pin and constructed and connected to be retreated on the movement of the carriage beyond its normal forward stroke.

2. In a rifling-machine, the combination, with the reciprocating rifling-rod having cutters and a feed-pin, substantially as described, of a pin-driving feed mechanism having a feed-slide connected to be retreated on the movement of the rifling-rod beyond its normal forward stroke.

3. In a rifling-machine, the combination, with the reciprocating rifling-rod having cutters and a feed-pin, substantially as described, of a pin-driving feed-screw carried by a carrier constructed and connected to be retreated on the movement of the rifling-rod beyond its normal forward stroke.

4. In a rifling-machine, the combination, with the reciprocating rifling-rod having a feed-pin projecting from the forward end thereof, of the feed-screw carried by a slide movable longitudinally of the machine, said slide being connected, substantially as described, to be retreated on the movement of the rifling-rod beyond its normal forward stroke.

5. In a rifling-machine, the combination, with the slide carrying the pin-driving feed-screw, of a stop limiting the movement of said slide toward the rifling-rod, and a spring normally holding the slide to said stop, whereby the slide is permitted to retreat, as set forth, and the feed-pin is actuated by said spring through the slide and feed-screw.

6. In a rifling-machine, the combination, with the feed-slide, of the feed-screw carrier shiftable thereon and carrying the feed-screw, and means for locking and unlocking said carrier, whereby the feed-screw may be shifted out of its working position, substantially as set forth.

7. In a rifling-machine, the combination, with the carriage having a rifling-rod, substantially as described, provided with a feed-pin, of means for carrying the rifle-barrel, the feed-slide carrying feed mechanism, substantially as described, and a rod carrying adjustable stops intermediate to the carriage and feed-slide, whereby the feed-slide may be retreated on the movement of the carriage beyond its normal forward stroke.

8. In a rifling-machine, the combination, with the feed-slide carrying a feed-screw, of means, substantially as described, for actuating said feed-slide to retreat the feed-screw, a ratchet-wheel operating the feed-screw, the pawl located for engaging the ratchet-wheel during the retreating movement of the feed-screw, and means for actuating said pawl.

9. In a rifling-machine, the combination, in the feed apparatus thereof, of a supplementary bed adjustable longitudinally of the machine, the feed-slide supported on said bed for retreating movement, a feed-screw carried on said slide, and a feed-screw-actuating pawl carried by pawl-actuating means, substantially as described, supported on said bed.

10. In a rifling-machine, the combination, with the barrel-carrying spindle, of means, substantially as described, for intermittently rotating said spindle, the carriage, and the cutter-provided rifling-rod carried thereby, said rod having a feed-pin for feeding out the cutters, a feed-screw located in the path of said feed-pin, a ratchet and pawl for engaging the feed-screw, one or more feed-cams carried on the barrel-carrying spindle, and connections actuating the feed-screw ratchet from said cams, whereby the feed-screw is advanced toward the carriage on the rotation of the spindle.

11. In a rifling-machine, the combination, with a barrel-carrying spindle, of a disk arranged to have a rotary reciprocating movement on said spindle, an index-plate fixed on the spindle, a ratchet-wheel fixed on the spindle, a lock-bolt for said plate, means for rotating said disk through a fixed arc, and a ratchet-plate carrying one pawl for revolving said spindle and a cam-pawl for lifting said bolt, said cam-plate being constructed for attachment to the rotary reciprocating disk in successive positions corresponding to different numbers of divisions in the index-plate.

12. In a rifling-machine, the combination, with the barrel-carrying spindle, of the pinion 144 and means for imparting a rotary reciprocating motion to the said pinion through a fixed arc, the ratchet-wheel and index-plate fixed on said spindle, the lock-bolt engaging the index-plate, a spring normally holding the lock-bolt in engagement with the index-plate, and pawls, substantially as described, adjustably fixed on said pinion and arranged to first lift the lock-bolt and then engage the ratchet-wheel for turning the spindle.

13. In a rifling-machine, the combination, with the barrel-carrying spindle and with means, substantially as described, for locking the barrel in said spindle, the bore of the spindle being larger than the diameter of the barrel, of the thimble 187, fitted to slide in the spindle and to engage the barrel by the tapering part thereof, as set forth.

14. In a rifling-machine, the combination, with the barrel-carrying spindle and with the pinion adapted to run thereon and provided with spindle-actuating pawls, of the index-plate and ratchet-wheel fixed on the spindle and adapted, substantially as described, to be actuated by said pawls, the rack 133, the cam-slide 124, arranged to slide lengthwise of the spindle and crosswise of the rack, said slide having

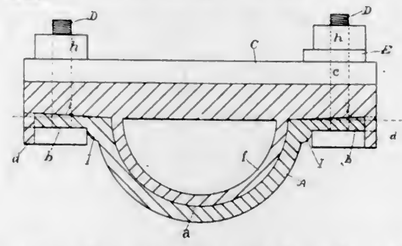
therein a cam-groove, and means, substantially as described, for actuating said pinion through said rack from said cam-groove.

15. In a rifling-machine, the combination, with the carriage having the rifling-rod provided with cutters and a feed-pin, of the barrel-carrying spindle located forward of the carriage and having means for holding the barrel to be rifled, the cam-slide connected, substantially as described, for intermittently actuating said spindle, connections actuating said cam-slide from the carriage as the carriage approaches the ends of its stroke, feed-cams carried on the spindle, feed apparatus located forward of the barrel-carrying spindle in position for contacting with the feed-pin at the forward end of the carriage movement, a ratchet and pawl for operating the feed-screw toward the carriage, and the rock-shaft connected, substantially as described, to be actuated from said feed-cams on the spindle and to actuate said pawl, whereby the feed-screw is advanced by connections from the carriage through the barrel-carrying mechanism.

16. In a rifling-machine, the combination, with a main bed and with driving mechanism at one end thereof, of the carriage actuated from said mechanism to have a reciprocating movement on the main bed, barrel-carrying mechanism forward of the carriage, means for rotating the barrel-carrying spindle of said mechanism through connections with the carriage, feed mechanism forward of the barrel-carrying mechanism and having the feed-screw supported on a retreating slide, and a reciprocating rod connected to be actuated from the carriage and to actuate the reversing apparatus of the driving mechanism, said rod having a stop located thereon to retreat the feed-slide when the carriage goes beyond its normal forward stroke.

17. In a rifling-machine, the combination, with a feed-screw, substantially as described, and with a ratchet-wheel arranged for advancing said screw, of the adjustable stop on the screw for limiting its advancing movement by engaging said ratchet-wheel, the plunger having a pawl engaging said ratchet-wheel, a spring arranged to actuate the plunger for turning said wheel, said plunger being provided with a stop for limiting its forward movement, and a reciprocating arm connected and arranged to retract the plunger.

446,899. METALLIC RAILWAY TIE AND CHAIR. HARLAN P. SWEET, Los Angeles, Cal. Filed May 17, 1890. Serial No. 352,185. (No model.)



Claim.—1. The railway-road-bed drain-tie formed of a rolled metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending along the sides of such channel and having their upper faces inclined from their outer edges downward to the channel, substantially as and for the purpose set forth.

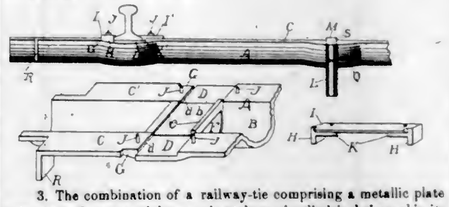
2. The combination of the tie formed of a metallic plate crimped to form an axially approximately semi-cylindrical channel in its upper face, with lateral flanges extending along the sides of such channel and provided with the gains *e*, and the chair having the rail-channel in its top, the downwardly-extending edge plates *d*, arranged to fit the gains, and the semi-cylindrical brace-plate *f*, conforming in cross-section to the cross-section of the channel and projecting downward from the under face of the chair.

3. A tie substantially such as described, having each of the junctions of its flanges with the channel provided on the inside angle with a thickened portion.

446,900. METALLIC ROAD-BED DRAIN AND SAFETY TIE. HARLAN P. SWEET, Los Angeles, Cal. Filed Sept. 19, 1890. Serial No. 365,560. (No model.)

Claim.—1. A railway-tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with the thickened and depressed seats arranged, respectively, to receive and sustain the rails.

2. The combination of a railway-tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with rail-securing gains in such flanges and with the thickened and depressed seats arranged, respectively, to receive and sustain the rails, the inside clips, the outside clips provided with lugs arranged to fit into the rail-securing gains, and means for securing the clips to the tie.



3. The combination of a railway-tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with means to prevent the lateral movement of the rail on such tie, the anchor-plate fitted beneath the tie transverse thereto, and means for securing the anchor-plate to the tie.

4. The combination of a railway-tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with means to prevent the lateral movement of the rail on such tie, and with the stirrup-securing gains, the anchor-plate fitted beneath the tie transverse thereto and provided with the stirrup-receiving sockets, the stirrup provided with legs, and the dowels.

5. The combination of the tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with rail-seats in such flanges, the clips provided with the gage-ribs, and means for securing the clips to the tie.

6. The combination of a railway-tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with the thickened and depressed rail-seats and the thickened anchor-seat, the anchor-plate fitted beneath the tie transverse thereto, means for securing the rails to the tie, and means for securing the anchor-plate to the tie.

7. The combination of a railway-tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with means for preventing the lateral movement of the rail on the tie, the semi-cylindrical top-grooved strengthening-chair, and means for securing the rail to the tie.

8. A railway-tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and having the ends of such flanges bent down to form the anchor-plates, substantially as set forth.

9. The combination of a tie comprising a metallic plate having a longitudinal channel in its upper face with lateral flanges extending, respectively, along the sides of such channel and provided with the rail-seats in the top faces of such flanges, the clips provided with the end lugs, and means for securing the clips to the plate.

10. The combination of a tie comprising a metallic plate crimped to form an axial approximately semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with the gains G, the clips provided with the end lugs H, and means for securing the clips to the tie.

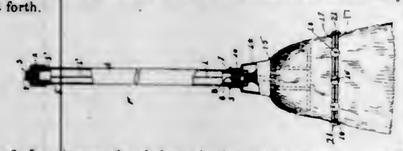
11. The combination of a tie comprising a metallic plate having an axial channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with the gains in the edges of such flanges, the clips provided with end lugs arranged to fit in such gains, and means for securing the clips to the plate.

12. The combination of the rail, the tie comprising a metallic plate crimped to form a semi-cylindrical channel in its upper face, with lateral flanges extending, respectively, along the sides of such channel and provided with depressed rail-seats in such flanges to sustain the rails, the rigid flat-topped semi-cylindrical strengthening-chair arranged to fit in the channel of the tie with its top flush with such rail-seats, and means for securing the rail to the tie.

446,901. BROOM. THOMAS J. THORP, Chicago, Ill., assignor of one-third to Charles J. Barnes, same place. Filed July 9, 1890. Serial No. 358,221. (No model.)

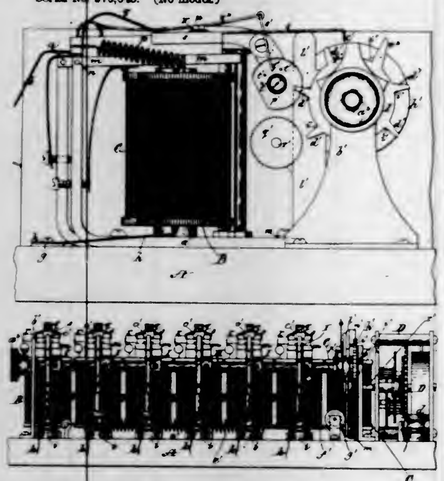
Claim.—1. A tubular broom-handle made of elastic material and

having interior plugs at each end provided with projections engaging holes in said handle, a cap surrounding the upper end and engaged with the plug, and a flaring thimble surrounding the opposite end, adapted to cover the upper end of the broom fiber, substantially as set forth.



2. In a broom, the skeleton having the transverse outwardly-curved bars, the intermediate connecting-bars 12, and arms 11, in combination with a tubular handle provided with a plug secured therein and secured to the arms 11 of the skeleton, the latter being concealed within and supporting the broom and having a part of the same between its transverse members, substantially as set forth.

446,902. AUTOMATIC CUT-OUT. JACOB P. TIRRELL, Boston, Mass., assignor to Horace A. Pinkham, Philadelphia, Pa. Filed June 4, 1888. Serial No. 276,043. (No model.)



Claim.—1. The combination of an electric circuit having one or more branch circuits, each provided with gas-lighting devices or other means for making and breaking the circuit, an electro-magnet having connected with its armature a movable switch or circuit-breaker adapted to cut out said branch circuit, an electro-magnet included in the main circuit, a clock-work mechanism adapted to be set in motion and controlled by the armature of the electro-magnet in the main circuit, a spring-actuated shaft H, provided with toothed wheels I, the escapement-wheel h' on the shaft H, the escapement-lever l', a gear p', mounted on an arm secured to the armature a of the electro-magnet C and having a pin or projection v', adapted to actuate the escapement-lever, a gear q' upon one of the arbors of the clock-work mechanism, with which said gear p' is normally out of contact and is brought into engagement when the armature of the magnet C is attracted, whereby the escapement is operated to release the shaft H, and a spring i^2 for returning the gear p' to its normal position when thrown out of engagement with the gear q' by the withdrawal of the armature of the electro-magnet C, substantially as set forth.

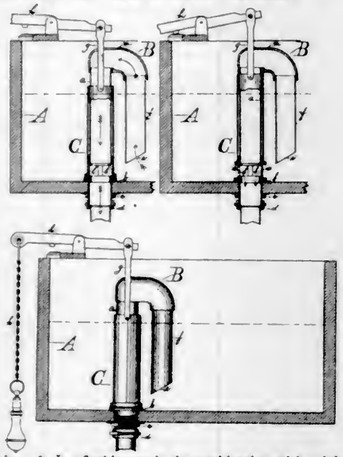
2. The combination, with the electro-magnet C and its armature a and the escapement-lever l' and escapement-wheel h' on the shaft H, of the gear p', mounted on an arm n', secured to said armature and adapted to be rotated by engagement with a gear on one of the arbors of the clock-work mechanism when brought into contact therewith by the attraction of the armature, said gear p' having a pin or projection v' for moving the escapement-lever, and a series of holes l' for the reception of the hooked end of a spring-arm s', whereby the said spring-arm can be adjusted to vary the normal position of the pin v' with respect to the escapement-lever l' to cause the same to be moved sufficiently to release the escapement-wheel after the clock-work has remained continuously in action for a longer or shorter period of time, substantially as set forth.

3. The combination, with an electric circuit having one or more branch circuits, each provided with gas-lighting devices or other means for making and breaking the circuit, of an electro-magnet B, having an armature m pivoted to one of its poles and carrying an insulating-block p, a switch or circuit-breaker s, sliding on said insulating-block and having a slot t and screw-pin u passing through said slot into the armature, a contact-spring q, normally in contact with the sliding switch, and a device adapted to engage with and move said switch when its armature is attracted, all operating substantially in the manner and for the purpose set forth.

4. The combination, with an electric circuit having one or more branch circuits, each provided with gas-lighting devices or other means for making and breaking the circuit, of an electro-magnet B, having an armature m pivoted to one of its poles and carrying an insulating-block p, a switch or circuit-breaker s, sliding on said insulating-block and having a slot t and screw-pin u passing through said slot into the armature, a contact-spring q, normally in contact with the sliding switch, and a shaft H, carrying a toothed wheel I, adapted to engage with and move said switch when its armature is attracted, all operating substantially in the manner and for the purpose set forth.

5. The combination, with the electro-magnets B and the switches or circuit-breakers s, adapted to slide upon insulating-blocks p on their armatures m, of the shaft H and its toothed wheels I, said wheels being each provided with an elongated tooth adapted to return the sliding switch in line therewith to its normal position on the backward rotation of the shaft H, substantially as set forth.

446,903. FLUSHING-TANK. JAMES TOTHAM, New Haven, Conn. Filed Sept. 8, 1890. Serial No. 364,306. (No model.)



Claim.—1. In a flushing-tank, the combination, with a siphon having apertures in its long leg and provided with an outwardly-projecting flange which serves to support the siphon and as a valve-seat, of a tubular valve which operates to open and close said apertures, substantially as shown.

2. In a flushing-tank, the combination, with a siphon having apertures in its long leg and provided with a valve-seat, of a tubular valve surrounding said long leg and adapted to open and close said apertures, substantially as shown.

3. In a flushing-tank, the combination, with the long leg of a siphon formed in sections, one of which is provided with apertures, of a valve-seat clamped between said sections and serving as a seat for a tubular valve which opens and closes said apertures, substantially as shown.

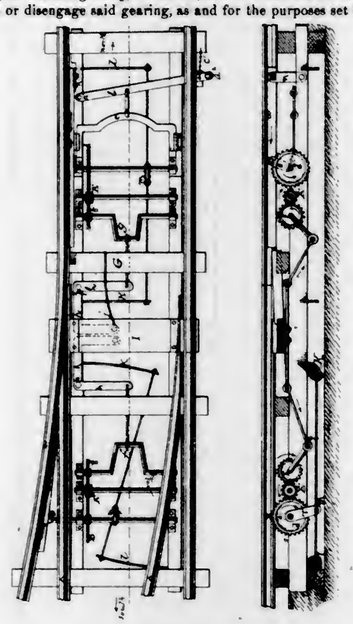
4. In a flushing-tank, the combination, with the long leg of a siphon having valve-openings near the bottom of the tank, of a tubular valve adapted to open and close said openings, said valve extending above the high-water mark in the tank, substantially as shown

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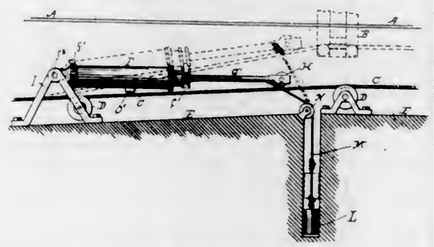
446,904. APPLIANCE FOR MOVING RAILROAD-SWITCHES. LURIA WASHINGTON and WILLIAM H. ROBERTS, Coal Creek, Tenn. Filed Oct. 7, 1890. Serial No. 367,368. (No model.)

Claim.—1. The combination, with the rail a, connected with the axle of the cog-wheel d to operate the same, of the frame c, in which said axle is mounted, and the lever b to actuate said frame, substantially as set forth.

2. The combination of the switch-rails, their tie-bar 1, the connecting-levers and gearing, the rail a, and the movable frame c, to engage or disengage said gearing, as and for the purposes set forth.



446,905. CABLE RAILWAY. GEORGE C. WATRISS and CHARLES J. KAIGHIN, San Francisco, Cal. Filed Sept. 26, 1889. Serial No. 325,191. (No model.)



Claim.—1. In a cable railway, the combination of a traction-cable, a grip therefor, and a pivotally-mounted bumper for said grip, substantially as set forth.

2. In a cable railway, the combination of a traction-cable, a grip therefor, and a pivotally-mounted elastic bumper for said grip, substantially as set forth.

3. In a cable railway, the combination of a subway, a traction-cable therein, a cable-carrying grip, and a safety-bumper pivotally mounted in said subway and adapted to stop said grip, substantially as set forth.

4. In a cable railway, the combination of a subway, a traction-cable therein, a cable-carrying grip, and an elastic grip-stopping mechanism pivotally mounted in said subway, substantially as set forth.

5. In a cable railway, the combination of a traction-cable, a grip therefor, a pivotally-mounted cylinder containing an elastic medium, and a compressing-piston adapted to stop said grip by the resistance of said medium, substantially as set forth.

6. In a cable railway, the combination of a traction-cable, a grip therefor, a pivotally-mounted air-cylinder, and a compressing-piston adapted to stop said grip by the resistance of the air within said cylinder, substantially as set forth.

7. In a cable railway, the combination of a traction-cable, a grip therefor, a pivotally-mounted air-cylinder, a piston adapted to stop said grip in compressing the air within said cylinder, and means to return said piston, substantially as set forth.

8. In a cable railway, the combination of a subway, a traction-cable therein, a cable-carrying grip, an air-cylinder pivotally mounted in said subway, a piston adapted to stop said grip in compressing the air within said cylinder, and a weight to withdraw said piston, substantially as set forth.

9. In a cable railway, the combination of a traction-cable, a grip therefor, a pivotally-mounted air-cylinder, a piston in said cylinder, a loosely-packed stuffing-box at the free end of the same, and a piston-rod fitted in said box and adapted to stop said grip in compressing the air behind said piston, substantially as set forth.

10. In a cable railway, the combination of a traction-cable, a grip therefor, an air-cylinder, a piston in said cylinder, and a piston-rod provided with a forked or concaved end adapted to encounter and arrest said grip, substantially as set forth.

11. In a cable railway, the combination of a traction-cable, a cable-carrying grip, an air-cylinder, a piston in said cylinder, a piston-rod, a frame integral with the outer end of said rod, and a roller within said frame to prevent friction between said rod and cable, substantially as and for the purpose described.

12. In a cable railway, the combination of a traction-cable, a grip therefor, a pivotally-mounted safety-bumper for said grip, and means to normally keep said bumper out of contact with said cable, substantially as set forth.

13. In a cable railway, the combination of a traction-cable, a grip therefor, a pivotally-mounted air-cylinder, a piston in said cylinder, a piston-rod adapted to stop said grip by working said piston, and means to normally keep said rod out of contact with said cable, substantially as set forth.

14. In a cable railway, the combination of a subway, a traction-cable therein, a cable-carrying grip, a pivotally-mounted air-cylinder fitted as a safety-bumper for said grip, and bars across said subway adapted to normally keep said bumper out of contact with said cable, substantially as set forth.

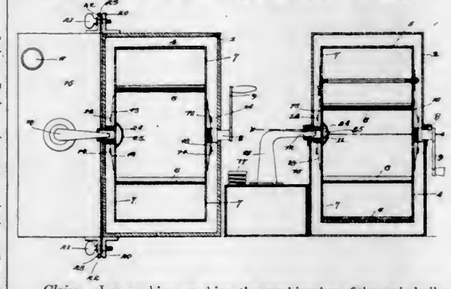
15. In a cable railway, the combination of a traction-cable, a grip therefor, an air-cylinder provided with a passage serving as an air inlet and outlet, a cock to control said passage, and a piston adapted to stop said grip by compressing the air within said cylinder, substantially as and for the purposes set forth.

16. In a cable railway, the combination of a traction-cable, a grip therefor, an air-cylinder, a piston adapted to stop said grip by compressing the air in said cylinder, a weight to withdraw said piston, and a spring-actuated valve to let air into said cylinder upon the return of said piston, substantially as set forth.

17. In a cable railway, the combination of a traction-cable, a grip therefor, an air-cylinder provided with a passage serving as an air inlet and outlet, a piston adapted to stop said grip by compressing the air within said cylinder, means to withdraw said piston, and an inwardly-opening valve to supplement said passage, substantially as set forth.

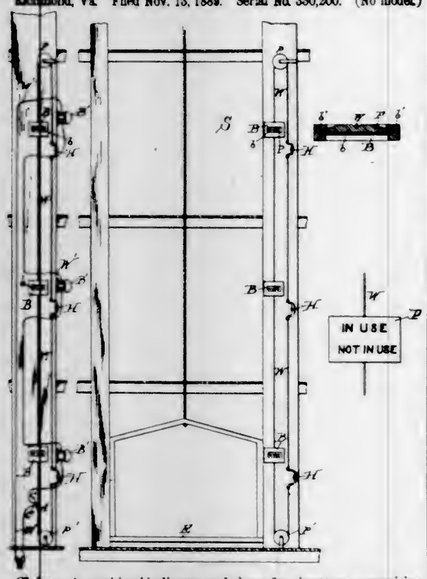
18. In a cable railway, the combination of a traction-cable, a grip therefor, an air-cylinder adapted as a safety-bumper for said grip, lugs at the rear end of said cylinder, a transverse spindle engaging said lugs, and a support for said spindle, substantially as described.

446,906. WASHING-MACHINE. GEORGE W. WHEATLY, Harrodsburg, Ky. Filed Jan. 25, 1890. Serial No. 338,096. (No model.)



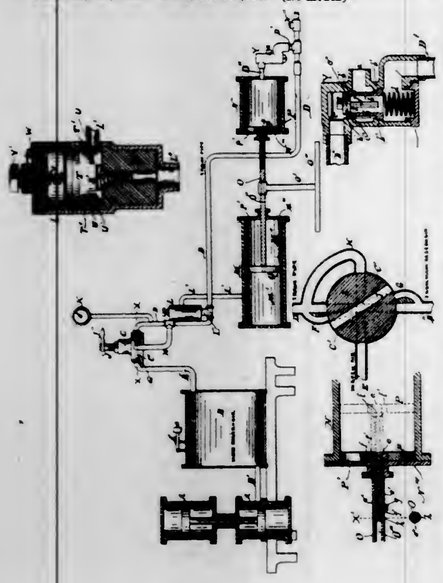
Claim.—In a washing-machine, the combination of the main boiler having the plates 20, provided with screw-threaded perforations, the revoluble drum or cylinder mounted in said boiler and having a tubular trunnion, the supplementary boiler having the perforated plates or lugs 23, the set-screws 21, and the tapering L-shaped steam-pipe extending from the supplementary boiler into the tubular trunnion of the drum or cylinder mounted in the main boiler, all arranged as described, whereby by tightening the set-screws the boilers may be drawn together to effect a steam-tight joint between the steam-pipe and the tubular trunnion, as set forth.

446,907. INDICATOR FOR ELEVATORS. EDWARD WHITLOCK, Richmond, Va. Filed Nov. 13, 1889. Serial No. 330,200. (No model.)



Claim.—A combined indicator and alarm for elevators, comprising a stationary indicator-box on each floor, said box being provided with a slot in its front face and endless wire, a supporting-pulley therefor at top and bottom of the elevator-shaft, an indicator-plate for each floor, attached to said wire and having a limited motion in opposite directions within its stationary box, an electric circuit, an alarm mechanism for each floor interposed in said circuit, and a circuit-closer controlled by the movements of the endless wire and adapted to close and interrupt the electric circuit, said wire being so arranged relatively to the elevator-shaft as to be operated from the cage or platform thereof, substantially as and for the purposes specified.

446,908. AIR-BRAKE. ANDREW J. WISNER, Philadelphia, Pa. Filed May 31, 1890. Serial No. 353,728. (No model.)



Claim.—1. In an air-brake system, the combination of main air-reservoir B, engineer's valve C, with its pipe connections, substantially as shown, combined car-reservoir and brake-cylinder M, provided with piston Q, brake-cylinder N, provided with pipe connection D' D'', with train-pipe D, pipe L' from chamber M' of the car-reservoir M to train-pipe D, regulator-valve L, located on pipe L', whereby about the same pressure can be maintained in the chamber M', and the said chamber can be recharged from time to time while the brakes are on, the contiguous ends of said cylinders M and N, which are pierced by piston-rod O, being open or provided with openings to permit the free egress and ingress of air behind the pistons, substantially as described.

2. In an air-brake system, the regulator-valve L, located on pipe L' between the auxiliary car-reservoir and the train-pipe D, said valve being constructed with an outer cylinder or shell, inner vertically-movable cylinder R, provided with an upper chamber T, the side walls of which are pierced with openings U', cylinder R being also pierced vertically and centrally, the check-valve S, setting in the opening and its head resting on the edge of metal surrounding said opening, spring V, graduated to bear with a desired pressure on the top wall of the chamber T, an annular space U being left between the side walls of chamber T and the outer shell of the valve L, said pipe L' letting into said annular chamber, all combined and operating substantially as and for the purpose described.

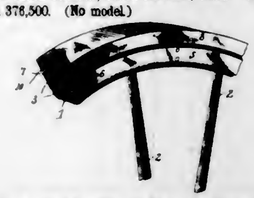
3. In an air-brake system, the regulating-valve *e*, with its stem or gudgeon *e'* in hollow piston-stem O, its head being located in the middle of piston P and restrained by mechanism *g g'* from being thrown too far forward, said gudgeon being provided with groove *e''* and piston P being provided with opening *f*, whereby when valve *e* is thrown forward groove *e''* connects with opening *f* and permits air to escape from behind the piston through said groove, opening *h* in piston-stem O to permit the air to escape to the atmosphere or outer air, said last-named opening being so disposed as only to be uncovered when valve *e* is opened to aperture *f*, all combined and operating substantially as described.

446,909. MOP PAIL AND WRINGER. ELIZA A. WOOD, Easton, N. Y. Filed Jan. 30, 1890. Serial No. 338,627. (Model.)



Claim.—The mop pail and wringer having held in its upper end a fixed roller, in combination with the spring-metal plate-like levers with their broad surfaces presented in the direction of the application of the pressure, the upper ends thereof carrying a roller arranged in the upper part of the pail and their lower ends pivoted upon studs of brackets secured to the pail-body, the arcuate foot-lever having its ends secured to said levers above their pivoting-studs and itself connected by a spring to one of said levers, and the additional spring coiled around a stud projecting from the pail-body and having the upper end of its straight portion connected to one of said levers, substantially as specified.

446,910. VEHICLE-WHEEL. EGBERT WOOLSON, Brooklyn, N. Y., assignor to Alden Solmans, South Norwalk, Conn. Filed Jan. 2, 1891. Serial No. 376,500. (No model.)



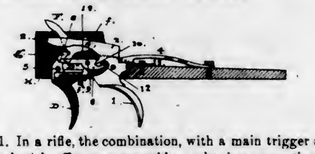
Claim.—1. A vehicle-wheel having a felly provided with shoulders on its outer periphery, side pieces having inward projections, the lower faces of which bear against the shoulders and the inner faces against the felly above the shoulders, the peripheries of said side pieces inclining from their inner faces downward and outward, a cushion tire resting upon the felly between said projections, and a tire resting upon the cushion tire and having on its inner periphery projections thickest at their outer edges, the inner faces of which incline from the outer edges upward and inward, leaving spaces between the peripheries of the side pieces and the projections on the tire on opposite sides of the cushion tire.

2. A vehicle-wheel consisting of a felly having shoulders 3, side pieces having projections resting on said shoulders and inclines on their peripheries, a cushion tire resting on the felly between said projections, and a tire resting on the cushion tire and having a rib engaging said cushion tire, and projections on its inner periphery made thickest at their outer edges, substantially as described.

446,911. PROCESS OF MANUFACTURING PORTLAND CEMENT. HENRY C. BAUM, Denver, Colo., assignor of one-half to John H. Ferguson, same place. Filed June 2, 1890. Serial No. 354,019. (No specimens.)

Claim.—In the manufacture of Portland cement, the process of uniting the wet marl with quicklime, (CaO,) whereby the mixture through the resulting chemical reaction is rendered perfectly dry preparatory to grinding, substantially as described.

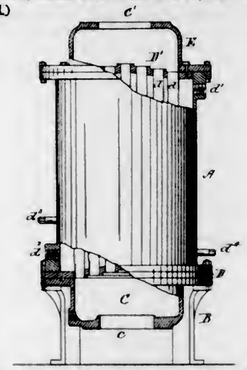
446,912. SET-TRIGGER. OTTO A. BRENER, San Francisco, Cal. Filed June 4, 1890. Serial No. 354,272. (No model.)



Claim.—1. In a rifle, the combination, with a main trigger and a sear, of a main knock-off to operate said sear, having connection with the main trigger, as described, a second knock-off and second trigger connected thereto, and a toggle-lever having bearings upon the second knock-off and main trigger, as set forth.

2. In a rifle, the combination of a main trigger and knock-off operated thereby, a catch-piece pivoted on the block of the main trigger, a toggle-lever having one end engaged by said catch, a second knock-off having engagement with the opposite end of the toggle-lever, a second trigger connected to the second knock-off, and a spring pressing upon the said knock-off back of its pivot, as set forth.

446,913. FEED-WATER HEATER AND CONDENSER. JOHN F. FIFE, Medford, assignor to the Wainwright Manufacturing Company of Massachusetts, Boston, Mass. Filed June 27, 1890. Serial No. 357,000. (No model.)

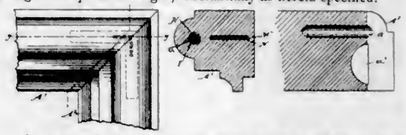


Claim.—1. The feed-water heater or condenser above described, consisting of two tube-plates, both of which are concavo-convex in shape, in combination with a series of tubes surrounded by a suitable shell, as set forth.

2. The feed-water heater or condenser above described, consisting of a pair of concavo-convex tube-plates of substantially the kind described, a series of tubes of the same length, and a shell surrounding said tubes and tube-plates, as set forth, the surface of each tube-plate where it forms the entrance to a tube being in a plane at right angles to the axis of the tube, as set forth.

446,914. MEANS FOR JOINING WOOD. EDWIN J. FLETCHER, New York, N. Y. Filed Dec. 5, 1889. Serial No. 332,682. (No model.)

Claim.—1. The flat compound joining-pieces described, having a surface of wood or analogous material adapted to be glued joined to a core of iron or analogous material less adapted to be glued, but giving the required strength, substantially as herein specified.



2. An angular key or joining-piece having a surface of wood or analogous material adapted to be glued and an open-work core of iron or other strong material, the surface and the core being previously joined by cement taking hold through the opening, adapted to serve in securing together pieces $A' A^2$ in angular positions, substantially as herein specified.

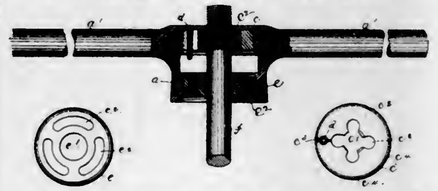
3. A wood-joint composed of two pieces $A' A^2$, united at an angle by glue or analogous cement, in combination with each other and with a previously-made angular joining-piece of compound structure having a core of metal and a surface of material adapted to be glued or cemented thereon, all substantially as herein specified.

4. The flat thin open-work key having a core of metal faced with wood or analogous material adapted to be glued, the surface material being previously joined to the core by cement taking hold through the opening, as herein specified.

5. The concealed joint described, having two pieces of wood applied together, with the matching face of each scored by a circular-saw or analogous tool to make a thin incision extending along only a portion of the joint, in combination with each other and with a corresponding thin key of slightly less extent, and having a surface adapted to be glued inserted in such scores and secured by gluing or cementing, as herein specified.

6. The two different joining-pieces, the first flat and matching in thin recesses, as saw-kerfs, the other approximately round and matching in approximately round holes, each joined angularly and having a metal core and a previously-cemented surface of wood or analogous material adapted to be glued, in combination with each other and with the pieces $A' A^2$ joined thereby, all arranged to serve substantially as herein specified.

446,915. DIE-STOCK AND DIE. JAMES S. FLETCHER, Rogers Park, Ill. Filed May 3, 1890. Serial No. 350,460. (No model.)



Claim.—1. In combination with a die-stock provided with a hub having a conical hole through it, a conical die concentric with the conical wall of said hole, substantially as specified.

2. In combination with a die-stock provided with a hub having a conical and screw-threaded hole through it, an exteriorly-screw-threaded conical die concentric with the conical wall of said hole and adapted to fit the threads of said hub, substantially as specified.

3. In combination with a die-stock provided with a hub having a screw-threaded hole through it, an exteriorly-threaded conical and adjustable die concentric with the wall of said hole and adapted to fit the threads of said hub, substantially as specified.

4. In combination with a die-stock provided with a hub having a conical and screw-threaded hole through it, an exteriorly-threaded conical and adjustable die adapted to be set to different gages by means of a slotted and yielding die, and a wedge acting on the ends of said slotted die, substantially as specified.

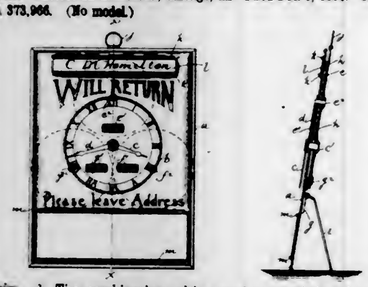
5. In combination with a conical die cut by a slot, provided with a wedge and adapted to cut varying gages, a die-stock having a hub provided with a conical hole adapted to receive said die, substantially as specified.

6. In combination with a conical die cut by a slot, provided with a wedge and adapted to cut varying gages, and a conical guide provided with a central hole adapted to freely pass a bolt, a die-stock provided with a hub having a conical hole concentric with the conical periphery of said die and adapted to receive said die and guide, substantially as specified.

7. In combination with a conical die cut by a slot, provided with a wedge and adapted to cut varying gages, and a conical guide pro-

vided with a central hole adapted to freely pass a bolt, and slots to pass the chips cut by said die, a die-stock provided with a hub having a conical hole adapted to receive said die and guide, substantially as specified.

446,916. COMBINED PERPETUAL CALENDAR AND TIME-CARD. CASSIUS M. HAMILTON, Chicago, Ill. Filed Dec. 8, 1890. Serial No. 373,966. (No model.)

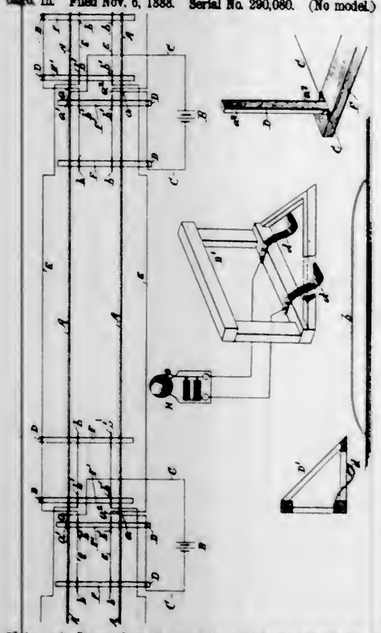


Claim.—1. The combination, with a card or metal sheet having perforations therein to show calendar names and numbers, of a series of rotary disks bearing said calendar names and numbers secured to the back of said card, and a spring in operative proximity to said disks for placing the same under frictional tension, substantially as shown and described

2. The combination, with a card or metal sheet having perforations therein through which to display calendar names and numbers, of a clock-dial, clock-hands pivoted thereon, a series of rotary disks bearing said calendar names and numbers pivotally secured to the back of said card, and a spring-plate in operative connection with the pivotal points of bearing of said bands and disks, respectively, said plate being dished, as shown, whereby its compression in securing it in position tends to produce a frictional tension of said springs and hands, respectively, substantially as shown and described.

3. The combination, with the plate *a*, having perforations *e f g* therein of the clock-dial *b*, clock-hands, rotary disks *e f g*, and the spring *h*, substantially as shown and described.

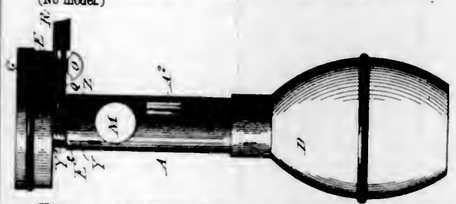
446,917. ELECTRIC RAILWAY-SIGNAL. EARL T. HARVEY, Chicago, Ill. Filed Nov. 6, 1888. Serial No. 290,080. (No model.)



Claim.—1. In an electric signal for railways wherein the road is divided into independent electric signal-sections, the combination, with the track-rails at one end of a section, of the battery-wires connected to the broken and insulated ends of said rails, the circuit-wires connected to the rails at the opposite end of the section and returning to the battery end, and the contact signal-plates located at each end of a section and electrically connected with reference to each other, substantially as and for the purpose set forth.

2. In an electric signal for railways wherein the road is divided into sections, as described, the combination, with a track-section insulated from the joining sections, of an electric battery, the wires connecting the battery with the track-rails at one end, the contact-plates located at each end of the section, the circuit-wires connecting the track-rails and the series of contact-plates with reference to each other, and the circuit-closing keys attached to a locomotive and adapted to have contact with the series of plates when passing over the same, whereby a safety-signal is sounded if the roadway is clear, substantially as and for the purpose set forth.

446,918. SELF-LOADING MAGNESIUM FLASH-LAMP. DAVID H. HOUSTON, Hunter, N. D. Filed Apr. 21, 1890. Serial No. 348,914. (No model.)



Claim.—1. In a magnesium flash-lamp for photographic purposes, the combination of the powder-magazine A, the cylinder V, and the revolving valve K.

2. In combination with a magnesium flash-lamp, the passage W, the cone-shaped powder-holder V', the cylinder V, the revolving valve K, and the hollow revolving valve-stem J.

3. With a magnesium-lamp, the combination of the stationary valve L, the revolving valve K, and the hollow revolving valve-stem J.

4. With a magnesium-lamp, the powder-magazine A, the rib I, the arm H, and the stationary hollow tube C.

5. With a magnesium-lamp, the combination of the cock M, the aperture N, the powder-magazine A, the cylinder V, and an air-passage W, having its inlet higher than its outlet.

6. With a magnesium-lamp, the combination of the powder-magazine A, the powder-holding cylinder V, a valve K, the cone-shaped powder-holder V', and an air-passage W.

7. In combination with a magnesium-lamp, the air-passage W, the cone-shaped powder-holder V', the powder-cylinder V, and a rubber bulb placed over the lower end of the powder-magazine A.

8. In combination with a magnesium-lamp, the wick-trough T, the air-pan F, with air-holes in the outer circle of the bottom of said air-pan, the cylinder B, the cone-bottom U, and the hollow tube J, passing down through the powder-magazine A and connecting with a piston-head K in the powder-cylinder V.

9. In combination with a magnesium-lamp, the outside cover G, the inside cover S, and the revolving cylinder B, said cylinder adapted to revolve from the point shown at Y to the point shown at Z.

10. In combination with a magnesium-lamp, the valve K, the hollow valve-stem J, and the cylinder B, adjusted to slide up and down in the top of the powder-magazine A.

11. In combination with a magnesium-lamp, the powder-magazine A and the window A^3, fitted with a transparent covering.

12. In combination with a magnesium-lamp, the rubber bulb D, the powder-magazine A, and two index-points Y and Z.

13. In combination with a magnesium-lamp, a powder-magazine having an aperture in its outside covered with a transparent material.

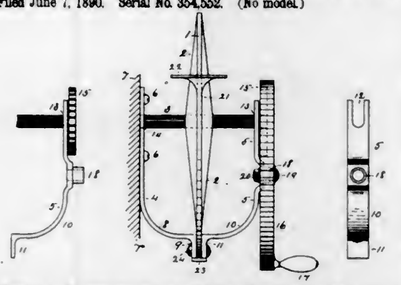
446,919. BLASTING-FUSE. DAVID R. JAMES, San Francisco, Cal. Filed Apr. 19, 1890. Serial No. 348,732. (No model.)



Claim.—1. In an igniting device for fuses, the combination, with the fuse, of an open-ended shell or cap containing combustible material, said fuse entering the cap at one end, while the combustible material partially projects at the other end, whereby the device may be ignited, substantially as described.

2. The herein-described igniting device for fuses, consisting of a hollow shell or tube containing cotton permeated with a solution of saltpeter, sulphur, and charcoal, substantially as described.

446,920. GRINDSTONE. JOHN B. KIBLER, Minneapolis, Minn. Filed June 7, 1890. Serial No. 354,552. (No model.)



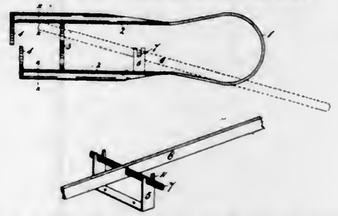
Claim.—1. In combination with a grinding-wheel, a shaft carrying a pinion, a gear-wheel for turning it, a frame composed of two detachable parts, one providing an end bearing for the shaft and adapted to be secured to a wall and the other providing bearings for the shaft and the gear-wheel, substantially as set forth.

2. In combination with a grinding-wheel, a shaft therefor carrying a pinion, an internally-geared wheel for turning it, a tool-rest, and a frame for supporting said parts, composed of two portions, one of which is adapted to be secured in a wall and provides an end bearing for the shaft, and the other of which provides a spindle for the gear-wheel and a slotted bearing for the shaft, the two being bolted together to clamp and support the tool, substantially as set forth.

3. A grinding-wheel-supporting frame composed of two parts, having flanges for uniting them, and a tool-rest adapted to be clamped between said flanges to support it, substantially as set forth.

4. In combination, the grinding-wheel having beveled sides, the shaft, pinion, and internally-geared wheel for turning them, the tool-rest, and the frame for connecting and supporting said parts, made separable in the manner set forth.

446,921. ANIMAL-TRAP SETTER. ALWIN MAUL, Pine Grove, Colo. Filed June 9, 1890. Serial No. 354,634. (No model.)



Claim.—The combination, with an animal-trap, of a device for setting the same, said device consisting of a lever provided with a suitable fulcrum and a support for the fulcrum, said support resting upon the lower arm of the trap, while one arm of the lever engages the upper arm of the trap, whereby the jaws are sprung apart preparatory to inserting the trigger, substantially as described.

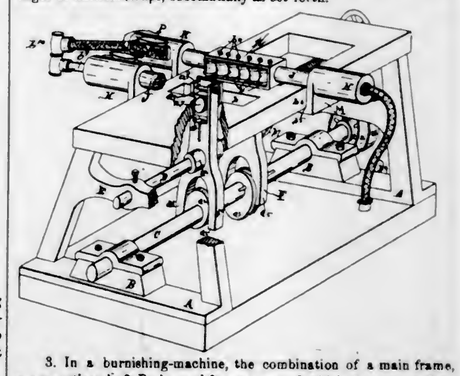
446,922. FIRE-PROOF PAINT. ISAAC L. MERRELL, San Francisco, Cal. Filed Sept. 24, 1890. Serial No. 366,014. (No specimens.)

Claim.—The herein-described composition of matter to be used as paint, consisting of aluminum, asbestus, soapstone, silicate of soda, magnesia, mica, fire-proof clay, lime-water, and a cohesive liquid, such as glue in solution, with or without suitable coloring matter or substance, substantially as set forth.

446,928. BURNISHING-MACHINE. CHARLES W. MILLER, Canton, Ohio. Filed Aug. 11, 1890. Serial No. 361,634. (No model.)

Claim.—1. In a burnishing-machine, the combination of the oppositely-sliding sets of burnishing-tools, steam-pipes upon which each set of said tools slides to heat the same, means for moving one set toward and away from the other set, and a flexible connection for the ends of said pipes, whereby one set of tools may be moved toward or away from the other set without interfering with the circulation of steam within said pipes.

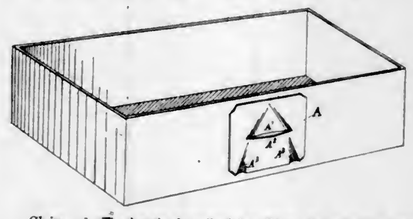
2. The combination, in a burnishing-machine, of a carrier adapted to hold a burnishing-tool, said carriers and tools to vibrate face to face in opposite directions, a slide to support said carrier, and means to vibrate said carrier and burnishers to simultaneously burnish both edges of harness-straps, substantially as set forth.



3. In a burnishing-machine, the combination of a main frame, a supporting-shaft D, journal-frames, one of which is supported to slide upon said shaft and each provided with guide portions to embrace the sides of the supporting-frame and with sleeves H, steam-pipes secured in said sleeves, burnisher-boxes mounted to slide upon said pipes, burnishers secured within said boxes, sway-bars mounted upon said supporting-rod and connected to said boxes to reciprocate them in opposite directions, means for sliding one of the journal-frames, and means for rocking the sway-bars in opposite directions, substantially as set forth.

4. The combination, in a burnishing-machine, of a burnisher-carrier adapted to be supported and vibrated on a heating-pipe, and a burnishing-iron having one of its ends formed to burnish the edge of a harness-strap, the other end bifurcated to embrace the heating-pipe, substantially as described, and for the purpose set forth.

446,924. BOX-LIFTER. FRANKLIN P. MORRISON, Big Skin Creek, W. Va. Filed Oct. 16, 1890. Serial No. 368,344. (No model.)



Claim.—1. The herein-described box-lifter, the same comprising a securing-plate having the part above a lateral slit made therein struck upward, so as to form an inverted socket.

2. The herein-described box-lifter, the same comprising a securing-plate having the part above a lateral slit made therein struck upward, so as to form an inverted socket, said plate being provided with a series of securing-spurs.

3. The herein-described box-lifter, the same comprising a securing-plate having the part above a lateral slit made therein struck upward, so as to form an inverted socket, and having two guide-ridges A^4 struck upward from the lower part of said plate.

4. The herein-described box-lifter, the same comprising a securing-plate having the part above the lateral slit made therein struck upward, so as to form an inverted socket having two guide-ridges, substantially as shown, and provided with a series of securing-spurs.

446,925. CASH REGISTER AND INDICATOR. WILLIAM C. MCGILL, Washington, D. C. Filed Apr. 5, 1890. Serial No. 347,117. (No model.)

Claim.—1. In a cash register and indicator, the combination of indicating and registering mechanisms, a rock-shaft connected by suitable means therewith and adapted to operate them when moved in either direction, and a series of key-levers moving the rock-shaft through predetermined angles, substantially as described.

2. In a cash register and indicator, the combination of a rock-shaft and the disk F, loosely journaled thereon and provided with the

fingers f^2 f^3, adapted to communicate different definite amounts of motion to the indicating apparatus by means of suitable intermediate devices, substantially as described.



3. In a cash register and indicator, a rock-shaft, a disk F, journaled thereon and having fingers adapted to operate the indicator mechanism by proper intermediate devices, and a disk L, secured to the shaft and adapted to partially rotate it through the motion of key-levers, communicated by means of lugs on its upper edge, substantially as described.

4. In a cash register and indicator, a rock-shaft communicating motion by suitable means to appropriate registering and indicating devices and receiving motion from a series of key-levers reciprocating in slots limiting their play from a central position, whereby the shaft may be turned different definitely-limited amounts in either direction by each key-lever, substantially as described.

5. In a cash register and indicator, an indicator-plate having two tablets for figures, the one above the other, in combination with a journaled arm R, an arm P, and fingers f^2 f^3, all co-operating to transmit motion thereto from a rock-shaft E, substantially as described.

6. In a cash register and indicator, the combination of an indicator-plate having two tablets o o', a lever R, having the arms r and r' and the projecting lug r^3, adapted to engage the spring T at either notch t t', the arm P, the fingers f^2 f^3, the rock-shaft E, and the key-lever H, whereby the backward rotation of the shaft will expose to view one tablet and its forward rotation the other tablet, substantially as described.

7. In a cash register and indicator, a series of key-levers H H, adapted to turn the rock-shaft E, connected by suitable devices to indicating and registering mechanisms through partial revolutions in either direction from a normal central position limited by the slots I I, the key-levers being maintained in their normal position by the spring K, substantially as described.

8. In a cash register and indicator, in combination with a registering dial or dials, an arm V, having on its outer end a shoulder v^2 and a spring 30 and carrying a pawl W, whereby the pawl will return to the same point of engagement on the registering-dial after being lifted out of contact therewith, substantially as described.

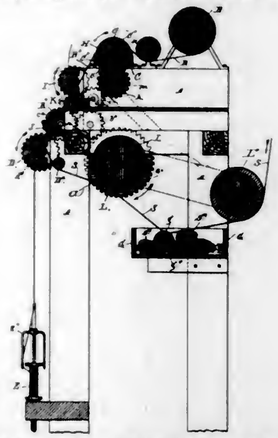
9. In a cash register and indicator, in combination with a registering dial or dials, an arm V, attached to a rock-shaft E, having a squared end whereon bear springs M M, having on its outer end a shoulder v^2 and a spring 30 and provided with a pawl W, whereby the arm is caused to resume its horizontal position and the disengaged pawl its former point of engagement after a movement of the shaft, substantially as described.

10. In a cash register and indicator, in combination with a series of levers R, adapted to project the indicator-plates O, a horizontal bar journaled beneath and formed with the lip C^6, and the lug c^5, arranged to raise the ends r of the levers by the opening of the drawer E^5, thus dropping the indicator-plates, substantially as described.

11. In a cash register and indicator, a horizontal journaled bar arranged beneath the inner ends of a series of lever-arms R R and having an upwardly-projecting lip and a downwardly-projecting trigger-catch c^6, having the notch C^6, adapted to engage the spring F^6, all in combination with a cash-drawer, whereby the opening of the drawer will raise the ends of the lever-arms to a normal position and engage the spring F^6 with the notch, and the depression of any lever-arm will release the spring F^6 and allow the drawer to be closed, substantially as described.

446,926. MACHINE FOR MAKING COMPOUND PAPER AND JUTE TWINE. JAMES W. PERKINS, San José, Cal. Filed Dec. 6, 1889. Serial No. 333,536. (No model.)

Claim.—1. In a machine for making combination paper and fiber twine or cord, a paper-cutting device adapted to produce a number of continuous strips of paper from a ribbon or wide strip, in combination with thread-guiding bars and twisters, substantially as described.



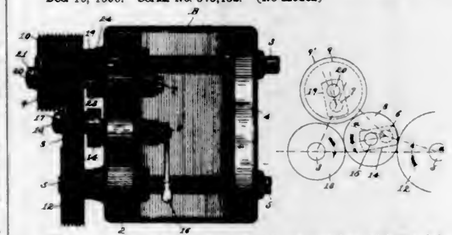
2. In a machine for making combination paper and fiber twine or cord, the combination of a paper-cutting device adapted to separate a ribbon or continuous strip of paper into narrow strips, paper-guiding rollers, thread-guiding bars or rolls, twisters, and a moistening device placed for operation back of the bars and adapted to moisten the thread or yarn before it is twisted with the paper, substantially as described.

3. In a machine for making paper and fiber combination twine or cord, rotating cutting-disks and a stationary shield with a curved paper-carrying surface having slits for the cutting-disks, as described, in combination with thread-guiding and paper-guiding rollers, bars, or rolls, and twisting devices, as set forth.

4. In a machine for making combination twine of paper and fibrous material, the combination, with the paper-slitting and yarn-supplying devices, of a bar D, over which both the yarn and paper pass, and the twisting devices, as set forth.

5. A machine for the manufacture of combination twine or cordage from paper and fiber, consisting, essentially, of a paper-cutting device adapted to produce continuous strips from a ribbon or wide strip of paper, a yarn feeding or supply device, means by which the yarn is dampened, a set of twisters, and a set of bars placed for operation at the point where the paper and yarn are spun or twisted together, combined for operation as set forth.

446,927. FRICTIONAL REVERSING-GEARING. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed Dec. 18, 1890. Serial No. 375,152. (No model.)



Claim.—1. In reversing-gearing, the combination, with the driving and driven wheels, of the first intermediate wheel movably supported to be shifted in one direction into engagement with the driven wheel and to be shifted in the opposite direction into engagement with both the driving and driven wheels, and a second intermediate wheel movably supported, substantially as described, to be shifted on and by the first-named movement of the first intermediate wheel into engagement with the driving-wheel, whereby power may be transmitted from the driving-wheel to the driven wheel through one intermediate or through two intermediates.

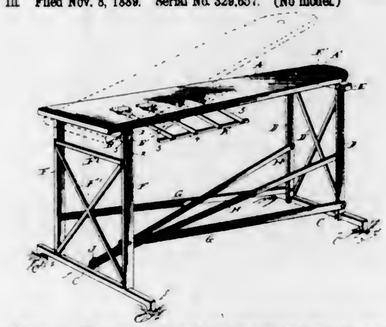
2. In reversing-gearing, the combination, with the driving and driven wheels, of the first intermediate wheel carried on a crank, whereby it may be thrown into engagement with the driven wheel only or into engagement with both the driving and driven wheels, and the second intermediate wheel carried by a second crank supported to be actuated through its intermediate wheel from the first intermediate wheel, substantially as set forth.

3. In reversing-gearing, the combination, with the grooved driving and driven wheels, of the first and second intermediate wheels, means, substantially as described, movably supporting said intermediate wheels, the second intermediate wheel having two grooved faces, one for engaging the driving-wheel and the other for engaging the first intermediate wheel, substantially as described.

4. In reversing-gearing, the combination, with a suitable frame-work carrying the driving and driven shafts, of the driving-wheel on the driving-shaft and the driven wheel on the driven shaft, the crank-shafts 6 and 7, supported in said frame-work and carrying the first intermediate and second intermediate wheels, respectively, and means for operating said crank-shaft 6.

5. In reversing-gearing, the combination, with driving and driven wheels, substantially as described, of the first and second intermediate wheels, said second intermediate wheel being movably supported upon the crank 19, the stop-pin limiting said crank movement in one direction, and a spring normally holding said crank against said stop-pin.

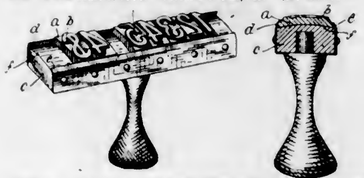
446,928. IRONING-TABLE. GEORGE R. RICHARDSON, Earlville, Ill. Filed Nov. 8, 1889. Serial No. 329,657. (No model.)



Claim.—1. The combination of the detachable board A, provided with journals B', standards F, provided with slots 1 and saw-kerf 2, standards D, and cross-braces G and H, substantially as shown, and for the purpose described.

2. The combination of the board A, provided with journals B' and a hole A', standards F, provided with slot 1 and kerf 2, standards D, cross-braces G and H, and board-support E, provided with pin E', substantially as shown, and for the purpose described.

446,929. PRINTING DEVICE. HENRY P. ROCKEY, Indianapolis, Ind. Filed Mar. 5, 1890. Serial No. 342,745. (No model.)



Claim.—As a new article of manufacture, a type having an elastic base whose ends are beveled from the top downward and outward, one of said ends being beveled at a more acute angle than the other, substantially as and for the purpose set forth.

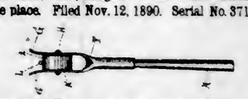
446,930. STEREOTYPE-MOLD. CHARLES SEARS, Chicago, Ill. Filed July 5, 1888. Serial No. 279,042. (No model.)



Claim.—1. The single-line stereotype wood mold-block herein described, having type-impressions on its end surface formed by compressing the fibers of the wood in the direction of their length, the thickness or width of said block being equal to the width of one line of the type-impressions made therein, so that said mold-blocks may be set up in a form, the same as ordinary type, substantially as specified.

2. The matrix or mold for casting stereotype-plates, consisting of a series of separate detachable wood blocks each a single line wide, capable of division between words and syllables and having smooth parallel sides, so that they may be secured together in a form, and having type-impressions formed upon the end fibers of the wood by compressing the fibers in the direction of their length, substantially as specified.

446,931. TROLLEY FOR ELECTRIC RAILWAYS. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Nov. 12, 1890. Serial No. 371,169. (No model.)



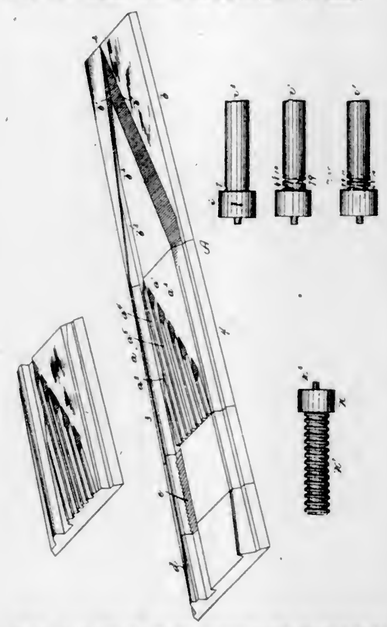
Claim.—1. A trolley or traveler provided with a contact-roller with a cylindrical periphery, and ears or guards projecting alongside said roller beyond its periphery, substantially as described.

2. A pole-trolley comprising, in combination with a spring-pressed pole, a contact-roller with a cylindrical periphery, and ears or guards projecting beyond said periphery, substantially as described.

3. In an electric trolley, the combination of a pole with a trolley-head detachably mounted thereon and composed of a contact-roller, brackets on which the roller is journaled, provided with a part for securing the head to the pole, and ears or guards constituting extensions of said brackets and projecting beyond the periphery of said roller, substantially as described.

4. A separable head for a trolley-pole, comprising a contact-roller with a cylindrical periphery, brackets on which the said roller is journaled, provided with a part, such as a socket, for detachably securing the head on the trolley-pole, and ears or guards constituting extensions of said brackets and projecting beyond the periphery of the roller, substantially as described.

446,932. METHOD OF AND APPARATUS FOR MAKING SCREW-THREADED ROLLED FORGINGS. GEORGE F. SIMONDS, Fitchburg, Mass. Filed Aug. 21, 1890. Serial No. 362,597. (No model.)



Claim.—1. A pair of oppositely-moving dies for forging screw-threads in metal blanks, the said dies having substantially parallel working-faces, each provided with a number of indenting-ridges inclined to the line of movement of the die, and the ridge at one side being the longest and the successive ridges from that side having their leading ends at greater and greater distances from the forward or leading end of the die, substantially as described.

2. A pair of oppositely-moving dies for forging screw-threads, said

dies having substantially parallel working-faces provided with indenting-ridges inclined to the line of movement of the die, and which commence to operate in succession upon the blank to form successive portions of the groove between the threads.

3. Dies for forging screw-threads in metal blanks, the said dies having a number of ridges inclined to the line of movement of the die, the ridge at one side being the longest, and the successive ridges from that side being shorter or beginning at greater and greater distances from the forward or leading end of the die, and the leading ends of the said ridges being inclined to the base of the die, substantially as described.

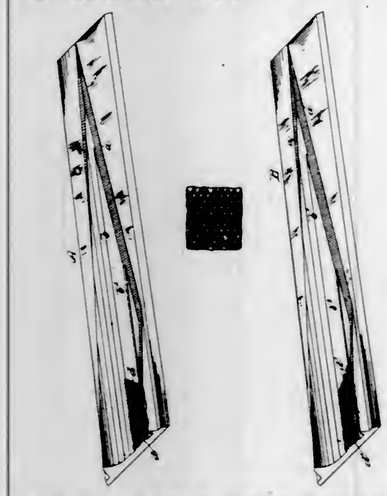
4. Dies for forging screw-threads in metal blanks, the said dies having a number of ridges inclined to the line of movement of the die, the ridges at one side being the longest, and the successive ridges from said side being shorter or terminating at a greater and greater distance from the forward or leading end of the die, and the leading ends of the said ridges being provided with corrugations, substantially as and for the purpose set forth.

5. The herein-described improvement in the art or method of screw-threading metal forgings, which consists in indenting the blank at opposite sides to the full depth of the thread-groove, rotating the said blank and extending the indentations or grooves spirally around the same until one meets the other, which is at the same time advanced half-way around the blank, and continuing to indent the blank at new points as it rotates and extending the indentations or grooves, substantially as described.

6. The herein-described method of forging screw-threads by rolling a blank between oppositely-moving dies provided with series of indenting-ridges which are forced in succession into the metal to form a groove around a half-circumference of the blank.

7. The method of forging screws and bolts, consisting in reducing the blank to the required shape and size and forming the thread in one operation.

446,933. DEVICE FOR KNURLING THE SURFACES OF METAL ARTICLES. GEORGE F. SIMONDS, Fitchburg, Mass. Filed Aug. 25, 1890. Serial No. 362,975. (No model.)

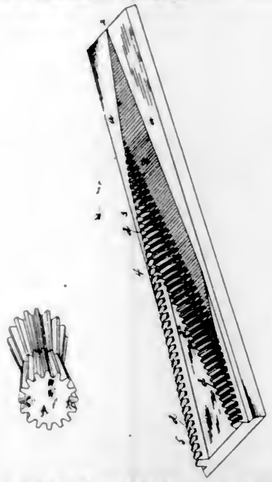


Claim.—1. A pair of dies for knurling the surfaces of metal articles, each of which has a series of ridges lying in a different direction with relation to the path of movement of the dies from the ridges of the opposite die, as set forth, whereby the ridges of each die make a separate series of grooves in the same portion of the surface of the article which intersect one another, substantially as and for the purpose described.

2. Dies for forming metal forgings and corrugating portions of the surface thereof, the said dies having raised working portions that have inclined spreading and reducing surfaces and a forming-surface between them, said forming-surfaces being provided with ridges for corrugating or grooving the surface of the article, substantially as described.

3. The herein-described method of knurling the surfaces of metal articles by rolling them between dies which indent the said surfaces simultaneously at opposite places and produce intersecting grooves progressively around the surfaces.

446,934. MAKING ROLLED FORGINGS NON-CIRCULAR IN CROSS-SECTION. GEORGE F. SIMONDS, Fitchburg, Mass. Filed Aug. 25, 1890. Serial No. 362,976. (No model.)

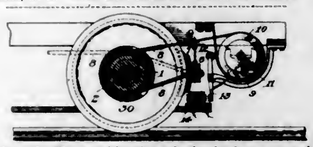


Claim.—1. Dies for forming forgings non-circular in cross-section, the said dies having raised working portions that have inclined spreading and reducing surfacesand a forming-surface between them having elevations and depressions, substantially as described.

2. That improvement in the art of making non-cylindrical forgings from cylindrical blanks which consists in indenting or depressing portions of the blank about its periphery and gradually crowding or spreading the metal thus displaced lengthwise of the blank until the desired cross-sectional shape is imparted to any desired length of the blank, substantially as described.

3. The method herein described of making rolled metal forgings non-circular in cross-section by acting upon a bar so as to cause it to rotate and at each rotation to indent portions of the bar around its periphery, crowding and spreading the metal axially, and compressing it to the desired shape, substantially as described.

446,935. BRAKE-ACTUATING DEVICE. ROSWELL T. SMITH, Nashua, N. H. Filed Nov. 18, 1890. Serial No. 371,852. (No model.)



Claim.—1. The combination of a brake-bar, a rotating drum, as 2, a flexible connector attached to said bar and passed loosely about said drum, whereby said drum normally may rotate freely without affecting said connector, and means to exert a pull upon the free end of said connector to increase the friction between the same and the drum, substantially as described.

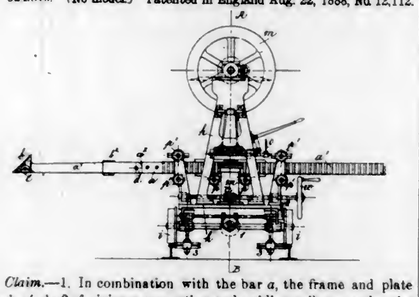
2. The combination of a brake-bar, a rotating drum, a flexible resilient connector attached to said bar and passed about said drum, and means to exert a pull upon the free end of said connector, substantially as described.

3. The combination of a brake-bar, a rotating drum, a flexible connector attached to said bar and passed about said drum, a second connector attached to the free end of said first-named connector, a rotating wheel, and means for bringing said second connector into contact with said wheel, substantially as described.

4. The combination of a brake-bar, a rotating drum, a flexible connector attached to said bar and passed about said drum, a ratcheted bar to which the free end of said connector is attached, a rotating toothed wheel, and means to cause the engagement of said bar with said wheel, substantially as described.

5. The combination of a brake-bar, a rotating drum, a flexible connector attached to said bar and passed about said drum, a ratcheted bar to which the free end of said connector is attached, a rotating toothed wheel, and a magnet to draw the bar into engagement with said wheel, substantially as described.

446,936. APPARATUS FOR EXTRACTING COKE FROM OVENS. THOMAS SMITH, Chapeltown, England. Filed Sept. 24, 1889. Serial No. 324,879. (No model.) Patented in England Aug. 22, 1888, No. 12,112.

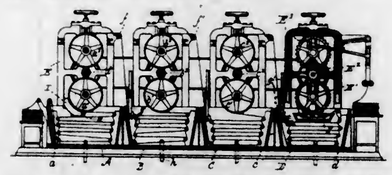


Claim.—1. In combination with the bar *a*, the frame and plate *b*, rack *a'*, shaft *f*, pinion *e*, supporting and guiding rollers *p* and *r*, the rollers *p'*, and the means for turning the bar, rack, and frame and plate *b* round the central shaft *f*, substantially as and for the purpose described, and shown in the drawings.

2. The bar *a*, provided with independently-movable part a^3, carrying terminal plate *b*, in combination with the rack *a'* and the plates a^3, between which the movable part of said bar is pivoted, a sleeve which may be slipped on the joint between said bar and movable part a^3 to hold them rigid or off from said joint to allow the bending of said movable part, a pinion gearing with said rack to guide the same, and devices for supporting and rotating said pinion, substantially as set forth.

3. In combination with the bar *a*, frame and plate *b*, rack *a'*, central shaft *f*, pinion *e*, rollers *p*, *r*, and *p'*, and means for turning the bar, rack, and frame and plate round the central shaft *f*, the carriage running upon rails and carrying the entire apparatus, and the means for propelling the carriage in either direction along the rails, substantially as and for the purpose described, and shown in the drawings.

446,937. CLOTH SCOURING, RINSING, AND PURIFYING MACHINE. JOSEPH W. STEELBROOKE, Woonsocket, R. I. Filed Nov. 13, 1890. Serial No. 371,342. (No model.)

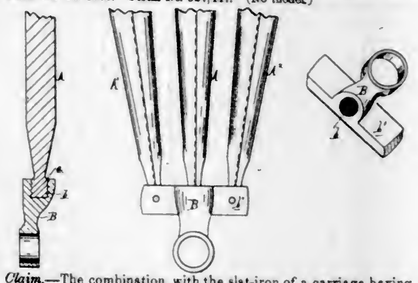


Claim.—1. In a cloth-cleansing machine, the combination, with a series of vats, each of which is provided with a series of guide-rolls, of three pressure or squeezing rolls arranged above each vat, a driving-shaft H, and positive interconnections between said shaft and all of said squeezing-rolls, whereby the latter are caused to rotate in unison, the first vat of the trough having a discharge-pipe, and the last vat of the said series having a shower-pipe discharging into said vat and a non-discharging open-topped bath-holder, substantially as described.

2. In a cloth-cleansing machine, the combination, with the vat A, provided with the open trough or receiver I, having a pipe *e*, which discharges outside of the said vat, the vat D, having the shower-pipe *g'*, and the non-discharging open-topped bath-holder J, having guide-rolls *j*, and the intermediate vats B and C, all of said vats being provided internally with guide-rolls, of a series of three pressure or squeezing rolls—two large ones and an intermediate small one—arranged above each vat, said intermediate rolls being the driving-rolls and being geared to the others, the driving-shaft H, and positive interconnections to cause all of the said squeezing-rolls to rotate in unison, substantially as set forth.

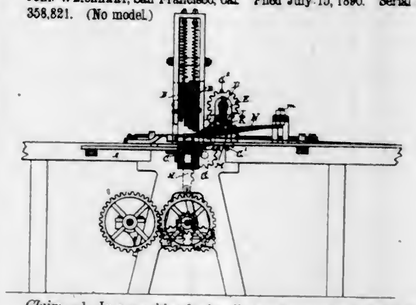
3. In a cloth-cleansing machine, the combination, with the vat A, provided with the open trough or receiver I, having a pipe *e*, which discharges outside of said vat, the vat D, having the shower-pipe *g'*, and the non-discharging open-topped bath-holder J, having guide-rolls *j*, and the intermediate vats B and C, all of said vats being provided internally with guide-rolls, of a series of three pressure or squeezing rolls—two large ones and an intermediate small one—arranged above each vat, said intermediate rolls being the driving-rolls and being geared to the others, the driving-shaft H, the sprocket-wheels F', F^2, and F^3 on the shafts of the said driving-rolls, and the driving-chains G', G^2, and G^3, substantially as set forth.

446,938. CARRIAGE-BOW. ISAAC N. TOPLIFF, Cleveland, Ohio. Filed Oct. 18, 1889. Serial No. 327,447. (No model.)



Claim.—The combination, with the slat-iron of a carriage having a central screw-threaded socket and lateral extensions, the faces of the extensions and the central portion of the socket at one side being in a common plane, of the main bow screw-threaded at its end and secured in said socket, and the side bows pivoted to the faces of the extension at the side in the same plane with the side of the socket, substantially as described.

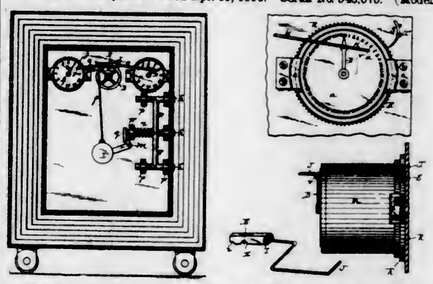
446,939. MACHINE FOR FORMING SHEET-METAL LATHING. JOHN WEICHHART, San Francisco, Cal. Filed July 15, 1890. Serial No. 358,821. (No model.)



Claim.—1. In a machine for bending or corrugating sheet metal, the combination, with a suitable table and corrugating-dies, of a rock-shaft having intermittent movement with respect to the operations of the corrugating-dies, and oscillating fingers or pawls on said rock-shaft adapted to engage the last-formed bend or corrugation in the sheet and having a length of stroke proportioned to the width of corrugation to be produced, substantially as hereinbefore set forth.

2. In a machine for bending or corrugating metal, a feeding attachment consisting of the rock-shaft D, oscillating feed-fingers K K, adapted to engage directly with the corrugations of the sheet being operated on, the rigid stop-bars N, and the spring-pressers M, arranged for operation substantially as set forth.

446,940. SAFE-BOLT-RETRACTING DEVICE. FRANCIS M. WILLIAMS, Brownsville, Pa., assignor of one-half to R. R. Bulger and W. H. Bulger, same place. Filed Apr. 15, 1890. Serial No. 348,075. (Model.)

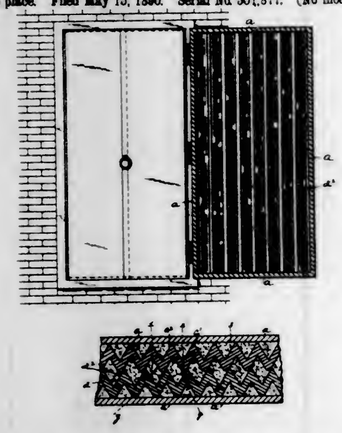


Claim.—1. In a time-safe-bolt-retracting device, the combination of a solid door, two time-pieces suitably secured on the inner side thereof, a balance-wheel intermediate said time-pieces, having a cog-pin on the side thereof, levers H and F, suitably pivoted between said

time-pieces near said balance-wheel, the outer ends thereof projecting toward said time-pieces and terminating in a jog or inwardly-projecting arm, the inner end of said lever H having on its lower surface a notch adapted to fit the cog-pin on the side of said balance-wheel, a counterpoise pivoted upon an arm secured thereto, said arm having a lip, said counterpoise being secured to said balance-wheel by a rod, and the locking-bolts, the inner end of the center one of which is surrounded by a spring and provided with a downwardly-projecting head, substantially as and for the purpose herein set forth.

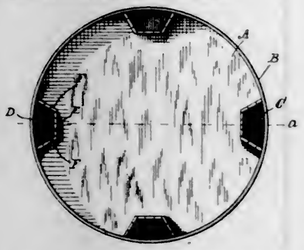
2. In a time-safe-bolt-retracting device, the combination of a solid door, two time-pieces, a ratchet-wheel and pawl to prevent premature rotation of the same, a balance-wheel intermediate said time-pieces and having a cog-pin on the side thereof, levers H and F, suitably pivoted between said time-pieces near said balance-wheel, the outer ends of said levers terminating in an inwardly-projecting arm adapted to strike or come in contact with the hands of said time-pieces, the inner end of said lever H having on its lower surface a notch adapted to fit the cog-pin on the side of said balance-wheel, and a counterpoise pivoted upon an arm secured thereto, said arm having a lip, and said counterpoise being secured to said balance-wheel by a rod and sliding bolts, the inner end of the center one of which is surrounded by a spring and provided with a downwardly-projecting head, substantially as and for the purposes herein set forth.

446,941. **ARMOR FOR SAFES.** FRANCIS M. WILLIAMS, Brownsville, Pa., assignor of one-half to R. R. Bulger and W. H. Bulger, both of same place. Filed May 15, 1890. Serial No. 351,877. (No model.)



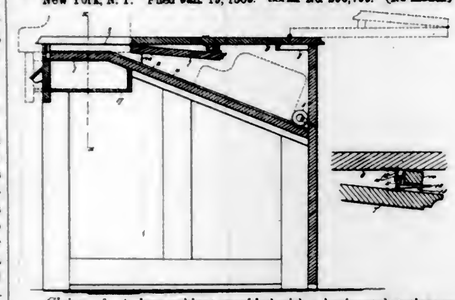
Claim.—In armor for safes, the combination of the outer and inner walls of safe-casing and the intermediate walls formed of plates having serrated surfaces, and arranged one behind the other in such manner that the serrations of one are staggered with reference to those of the other, substantially as and for the purposes herein set forth.

446,942. **GAME-BOARD.** JAMES WOOD, Thorntown, Ind. Filed Oct. 29, 1890. Serial No. 369,734. (No model.)



Claim.—In a game-board, the circular board having a raised rim and at opposite sides of its periphery a pair of pockets, each formed by the perforated partition E, arranged at right angles to a radial line passing through the center of the board, and the oppositely-inclined perforated partitions F F, arranged to connect said partition E and said rim, as set forth.

446,943. **TYPE-WRITER DROP-CABINET.** WILLIAM C. BEHRENS, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,799. (No model.)



Claim.—1. A drop-cabinet provided with a horizontal stationary platform arranged below the top of the cabinet and extended to accommodate and support the type-writer in position for use, substantially as described.

2. In a drop-cabinet, the combination of a platform arranged below the top of the cabinet and extended to accommodate and support the type-writer in position for use, with an inclined bottom joining the platform, for dropping and raising the type-writer thereon and for supporting the same when not in use, substantially as described.

3. In a drop-cabinet, the combination of a horizontal stationary platform arranged below the top of the cabinet and extended to accommodate and support the type-writer in position for use, with an inclined bottom joining the horizontal platform for dropping and raising the type-writer thereon and for supporting the same when not in use, substantially as described.

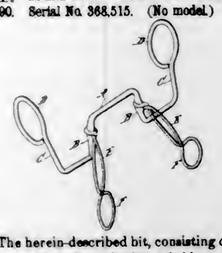
4. In a drop-cabinet, the combination of a platform arranged below the top of the cabinet and extended to accommodate and support the type-writer in position for use, with an inclined bottom joining the platform for dropping and raising the type-writer thereon and for supporting the same when not in use, and guides for the type-writer on the platform and bottom, substantially as described.

5. In a drop-cabinet, the combination of a horizontal stationary platform arranged below the top of the cabinet and extended to accommodate and support the type-writer in position for use, with an inclined bottom joining the horizontal platform for dropping and raising the type-writer thereon and for supporting the same when not in use, and guides for the type-writer on the platform and bottom, substantially as described.

6. In a drop-cabinet, a lid constructed in two parts, hinged together so that the front part folds under the rear part, combined with rest-blocks to support the folded lid, substantially as described.

7. In a drop-cabinet, a lid constructed in two parts and so hinged together that the front part folds under the rear part, combined with a catch for locking the two parts together, said catch being provided with a handle arranged to be accessible from the outside, whereby the two parts of the lid may be readily disengaged from each other, substantially as described.

446,944. **BRIDLE-BIT.** MICHAEL J. DALY, Granton, N. J. Filed Oct. 13, 1890. Serial No. 368,515. (No model.)

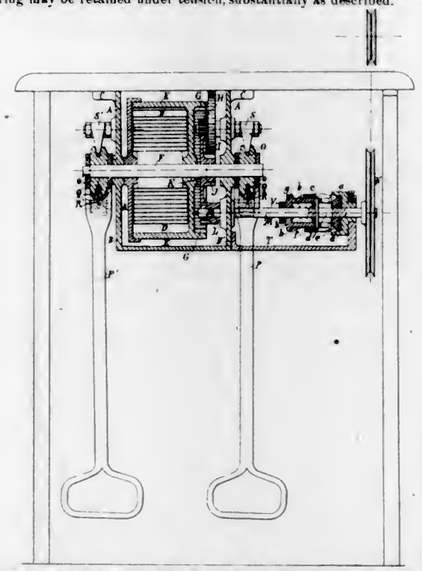


Claim.—The herein-described bit, consisting of the bit-bar having its intermediate portion formed with a bridge, arch, or curb and its ends provided with rings to receive the bit-retaining straps, and the side pieces having their inner portions or ends twisted around the sides of the curb and their outer ends formed with rings to receive the curb-straps.

446,945. **MOTOR.** LOUIS ETHARD, Paris, France. Filed Oct. 9, 1890. Serial No. 367,541. (No model.) Patented in France Mar. 14, 1890, No. 204,345.

Claim.—1. In a mechanism such as described, the combination, with the box or casing, the spring-shaft journaled therein, the stirrup

pivoted on the end of the shaft, the friction-clutch uniting the shaft and stirrup, and the retaining-pawls to prevent the backward movement of the shaft, of the spring, the spring drum or casing, the drive-shaft rotated by the spring, and the brake for said shaft, whereby the spring may be retained under tension, substantially as described.



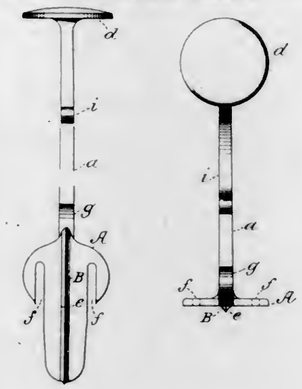
2. In a mechanism such as described, the combination, with the driving-shaft having the slot *d*, of a cup *a*, socket *b*, pin *c*, disk *e*, sleeve *f*, springs *g* and *h*, and brake-lever V, substantially as described.

3. In a mechanism such as described, the combination, with the brake-lever, of a pawl *m*, inclined plane *n*, having recess or notch *o*, and pin or stud *p*, substantially as described.

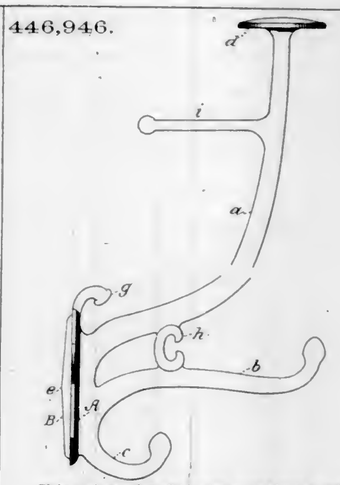
4. In a mechanism such as described, the combination, with the box, the shaft journaled therein, the spring connected at one end to the shaft, and the stirrups having clutch connections with the shaft, of the spring drum or casing to which the outer end of the spring is connected, having the overhanging internally-toothed flange, the train of gears driven from said flange, the drive-shaft rotated by a gear in said train, the pulley, and the brake on the drive-shaft, substantially as described.

5. In a mechanism such as described, the combination, with the casing or box having the extension at one end thereof, the spring-shaft journaled in the box or casing, and the drive-shaft journaled in the end extension, of the stirrups having clutch connections with the spring-shaft, the spring, the spring drum or casing, and the train of gearing connecting the drum and drive-shaft, substantially as described.

446,946. **HOOK.** ROBERT INGAL and JOSEPH INGAL, Chicago, Ill. Filed Mar. 26, 1890. Serial No. 345,454. (No model.)

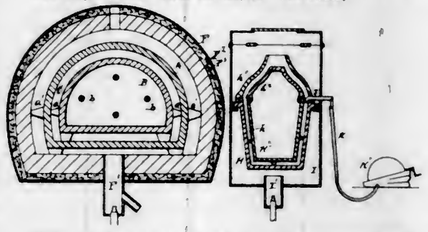


446,946.



Claim.—A metal wall-bracket comprising the base-plate A, the same having at its rear part a raised rib B, with a sharp point *e*, and having slots *f f*, and provided with a curved hook *g*, said base-plate having on its front part branching hooks *a b c*, the main hook *a* being provided with an arm *i*, disk *d*, and brace *h*, all combined and arranged substantially as shown, and for the purpose set forth.

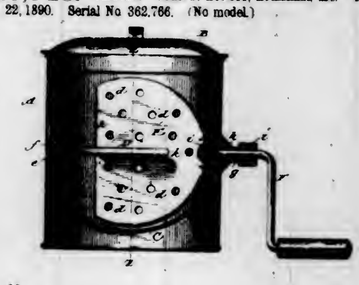
446,947. **MUFFLE-FURNACE.** CHARLES H. LAND, Detroit, Mich. Filed Aug. 31, 1889. Serial No. 322,542. (No model.)



Claim.—1. In an apparatus for controlling chemical effects, the combination, with the furnace, of an outer receptacle located therein and spaced therefrom, an inner receptacle located within the outer receptacle and spaced therefrom to form an air or gas space, said air or gas space having an inlet and outlet, means for conveying to said space air, gas, or vapor, and a burner or heating means communicating with the space formed between the furnace and outer receptacle.

2. In an apparatus for controlling chemical effects, the combination, with the furnace, of an outer receptacle located therein and spaced therefrom, an inner receptacle located within the outer receptacle and spaced therefrom to form an air or gas space communicating with the inner receptacle and provided with an inlet, means for conveying to said space air, gas, or vapor, and a burner or heating means communicating with the space formed between the furnace and the outer receptacle.

446,948. **CHURN.** JOHN P. LYNOTT, Louisiana, Mo. Filed Aug. 22, 1890. Serial No. 362,766. (No model.)



Claim.—In a churn, the cylinder thereof having a trough-shaped bottom C, whereby upright walls *c* at the ends of the trough are presented to the cream when churning, in combination with the dasher adapted to revolve in a direction transversely to the length of the trough-shaped bottom, and consisting of two perforated segmental-shaped blades arranged at right angles to each other upon a horizontal shaft, with their curved portions upon the outside and the straight portions or edges upon the center of the churn-cylinder whereby the cream is more thoroughly agitated, substantially as and for the purpose set forth.

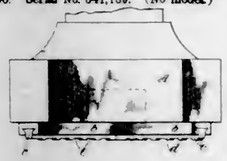
446,949. MILK-CAN. JAMES E. MORRISON, Urbana, Ill. Filed May 5, 1890. Serial No. 350,624. (No model.)

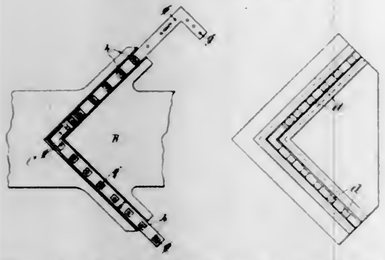


Claim.—1. The combination of the cover having an opening in it, a strainer secured thereto over said opening, and an inverted conical deflector secured to the cover below and around said opening, with a cap on the lower end of the deflector, having an opening in it, a cylinder attached to and depending from said cap, and a hollow conical valve having notches in its base loosely confined in said cylinder and adapted to close the opening in the cap, substantially as specified.

2. The combination of the cover having an opening in it closed by a metallic strainer and an inverted conical deflector secured to the cover below the strainer, with the cap removably secured to the lower end of the deflector and having a central opening, a cylinder secured to and depending from said cap, the cloth and its confining-collar, and the hollow conical valve confined in the cylinder and having notches in its base, for the purpose and substantially as specified.

446,950. PROCESS OF AND APPARATUS FOR STRAIGHTENING CARRIAGE CORNER-IRONS. EDWARD C. PORTER, New Haven, Conn. Filed Feb. 20, 1890. Serial No. 341,189. (No model.)

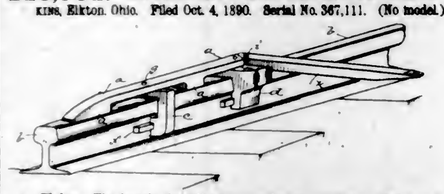




Claim.—1. A die for straightening carriage corner-irons, having its face narrower than the width of said irons and of an outline corresponding thereto and interrupted in the line of its length, in manner substantially as specified.

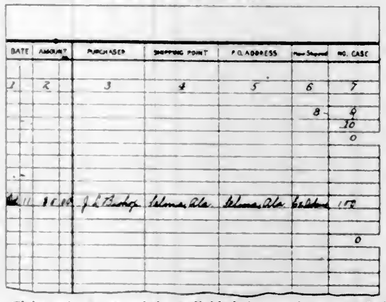
2. The herein-described method of straightening carriage corner-irons, the same consisting in producing short and narrow indentations therein adjacent to the screw-holes by striking the iron while held in a clamping device with a die having a narrow interrupted surface adapted to act upon the iron at said specified points only, substantially as specified.

446,951. CAR-REPLACER. JOSEPH W. REYBOLDS and PETER PERKINS, Elkton, Ohio. Filed Oct. 4, 1890. Serial No. 367,111. (No model.)



Claim.—The herein-described car-replacer, consisting of the casting *a*, the two clamps *c d*, pivotally connected to the under side of the same and provided with wedges to secure the said clamps and casting to the rail, and the bar *k*, detachably pivoted to one of the clamps *d* and projecting downward, whereby a temporary track is formed for replacing derailed cars, substantially as described.

446,952. REGISTER-SHEET. ELIAS J. RICHARD, Selma, Ala. Filed Nov. 10, 1890. Serial No. 370,939. (No specimens.)



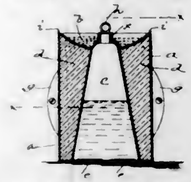
Claim.—1. A record-sheet divided into columns to facilitate making entries and having one of the columns divided into a number of detachable sections, substantially as shown and described.

2. A record-sheet divided into columns to facilitate the making of entries and having the column next the edge of the sheet divided into a number of detachable sections, one for each entry-space, substantially as shown and described.

3. A record-sheet for use by shippers of bottled goods in returnable cases, having a series of vertical columns with the following words at the heads thereof, to wit: "Date," "Purchaser," "To whom shipped," "Shipping-point," "Amount," "No. of bottles lost or broken," "No. of case," and "No. of case," the last column next the edge of the leaf being divided into a number of separable sections, one for each entry-space, substantially as shown and described

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446,953. VAPORIZER. JESSE P. ROBERT, Pittsburg, Pa. Filed Nov. 7, 1890. Serial No. 370,596. (No model.)

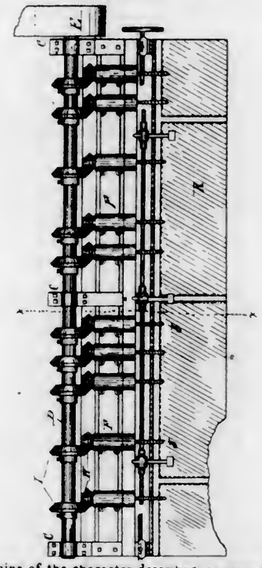


Claim.—The herein-described device for vaporizing disinfectants, consisting of the vessel *a*, having centrally located therein a chamber *c*, provided with the openings *e*, leading from said chamber *c* into the vessel *a*, the fibrous filling *d*, the perforated top *b*, screw-cap *f*, and suitable means for attaching the device to the wall of a room.

446,954. DOWELING-MACHINE. JOHN B. SHENGLE, Cleveland, Ohio, assignor to McAllister & Dall, same place. Filed Mar. 11, 1890. Serial No. 343,538. (No model.)

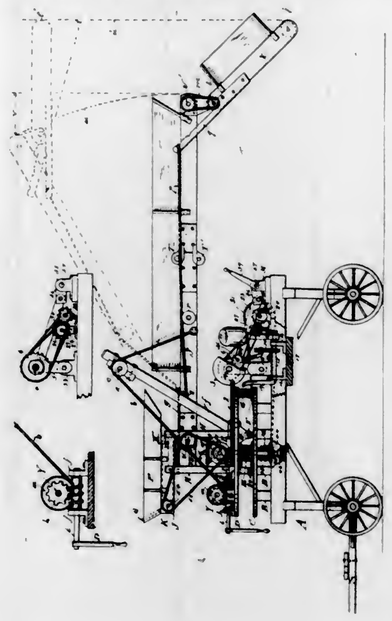
Claim.—1. In combination with the table of a doweling-machine, a series of castings adjustable in the longitudinal direction of said table, vertically-adjustable rods carried by said adjustable castings, a rock-shaft passing through the upper ends of said vertically-adjustable rods and carrying a series of bifurcated castings, which engage with

clamps pivotally secured to the said rod, the parts being so constructed and arranged as to depress the said clamps upon the work being operated upon as the said shaft is partially rotated, substantially as described.



2. In a machine of the character described, a supporting-bed B, provided with adjustable sliding boxes F, bit-stocks G, journaled in said sliding boxes, pinions H and I, and driving-shaft D, in combination with adjustable clamps F', adapted to be simultaneously actuated by means of a rock-shaft C, the parts being constructed, arranged, and operating substantially in the manner and for the purposes described.

446,955. STRAW-STACKER. JOSHUA M. SMITH, Springfield, assignor of one-half to Charles F. Wolf, Moorefield, Ohio. Filed Mar. 18, 1890. Serial No. 344,439. (No model.)



Claim.—1. The combination, with a toothed master-wheel in a straw-stacker, of swinging mechanism consisting of a shaft adjustably mounted near said master-wheel, means to adjust it to and from the same, a worm carried by said shaft and adapted to engage said wheel, sprockets loosely and revolubly mounted on said shaft and having clutch-teeth on their opposing faces, a double-faced clutch slidingly mounted on said shaft so as to revolve therewith, situated between the said sprocket-wheels and adapted to engage with each alternately, and means to effect said alternate engagement, a driving-shaft, and intermediate mechanism between it and said sprocket-wheels adapted to revolve one of them in one direction and the other in the opposite direction.

2. In the swinging mechanism of a straw-stacker, the combination, with a master-wheel and standards pivoted at their lower ends so that their upper ends may be moved to and from the master-wheel, means to cause said movement, a shaft mounted in said upper ends, and a worm mounted on said shaft and adapted to engage said master-wheel, of a pair of sprocket-wheels loosely mounted on said shaft and adapted to turn in opposite directions, a clutch to engage said sprocket-wheels alternately, driving means to actuate said wheels, and tripping mechanism to cause said engagement of the clutch and sprocket-wheels.

3. In a straw-stacker, the combination, with a toothed master-wheel, of pivoted adjustable standards, driving mechanism carried by said standards, a crank-shaft adjacent to said standards, and links for connecting said standards to the said crank-shaft to effect said adjustment.

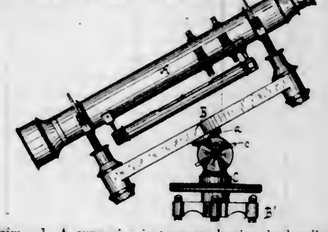
4. In a straw-stacker, the combination, with the carrier-frame proper, of an extension attachment consisting, essentially, of a section of the said frame proper, a carrier for said frame proper, and a carrier for the said extension attachment, intergeared one with the other, and an adjustable connection having a fixed length extending from said attachment to a relatively fixed part of the machine at a point eccentric to the foot of the carrier-frame proper, adapted to simultaneously and automatically operate said attachment, whereby the straw may be delivered from the end of said attachment in a substantially vertical plane whatever the elevation of the carrier-frame proper.

5. In a straw-stacker, the combination, with a carrier-frame proper, of an extension attachment pivoted near the outer end of said carrier-frame and consisting, essentially, of a section of the carrier-frame, an arm secured to the inner end of said attachment, and a rope of a fixed length fastened to said arm and to a stationary part at a point eccentric to the pivot of the carrier-frame proper, whereby the said attachment may be automatically extended when the carrier-frame is elevated.

6. In a straw-stacker, the combination, with a master wheel, an intergearing worm and its shaft, loose sprocket-wheels having opposing clutch-faces and a double-faced sliding clutch on the said shaft, a pivoted yoke, a rock-shaft having a weight and an operating-arm adapted to be engaged by a projection on the master-wheel, and a rod connecting the pivoted yoke to the shaft through a sliding connection, whereby the weight in moving from one position to the other may not at first affect said yoke, but will actuate it suddenly at the completion of its movement.

7. In a straw-stacker, the combination, with a toothed master-wheel, of swinging mechanism consisting of a shaft adjustable at both ends to and from the said master-wheel, pivoted brackets for said shaft to so adjust it, a worm on said shaft adapted to mesh with said master-wheel, driving mechanism therefor, and a clutch to connect and disconnect said worm and its driving mechanism.

446,956. LEVELING-INSTRUMENT. EDWARD G. SOLTMANN, New York, N. Y., and HANS E. GRABAU, Hoboken, N. J. Filed June 6, 1890. Serial No. 354,452. (No model.)



Claim.—1. A surveying-instrument having its leveling-bar connected with the leveling-head by a hinged joint permitting the free movement of the telescope, in combination with a thumb-screw or equivalent device applied to the joint for retaining the telescope at the desired angle, and means for holding the telescope at right angles to the vertical center of the instrument, substantially as described.

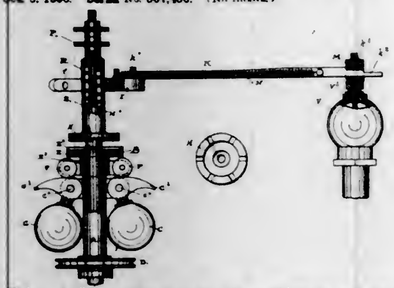
2. A surveying-instrument having a hinged connection between the leveling-bar and the leveling-head, and a pin adapted to pass through the parts of the hinge to hold the telescope at right angles to the vertical center of the instrument, substantially as described.

3. In a surveying-instrument, a device for securing the instrument to the stand or tripod, consisting of a conical hub, a conical socket formed in the tripod-head, and a fastening device engaging with the wall of the hub for pressing the same against the wall of the socket, substantially as described.

4. In a surveying-instrument, a device for securing the instrument to the stand or tripod, consisting of a conical hub provided with a circumferential groove, a conical socket formed in the tripod-head, and a fastening device engaging with the grooved portion of the hub, substantially as and for the purpose set forth.

5. In a surveying-instrument, a device for securing the instrument to the stand or tripod, consisting of a conical hub, an eccentric conical socket formed in the tripod-head, and a fastening device engaging the wall of the hub, substantially as and for the purpose set forth.

446,957. ENGINE-GOVERNOR. EDGAR THOMPSON, San Francisco, Cal., assignor to the Pacific Gas Engine Company, of California. Filed Oct. 8, 1890. Serial No. 367,456. (No model.)



Claim.—1. In an engine-governor, the combination of a continuously-driven sleeve carrying centrifugal arms, a friction-disk adapted to rotate continuously with and to be moved vertically by the angular movement of the centrifugal arms, a friction-disk mounted over the continuously-driven disk and turned by frictional contact therewith, and a valve-controlling slide-bar which is connected to said upper disk and by the rotary movement of said part is set in position between the valve-stem and a fixed point, substantially as described.

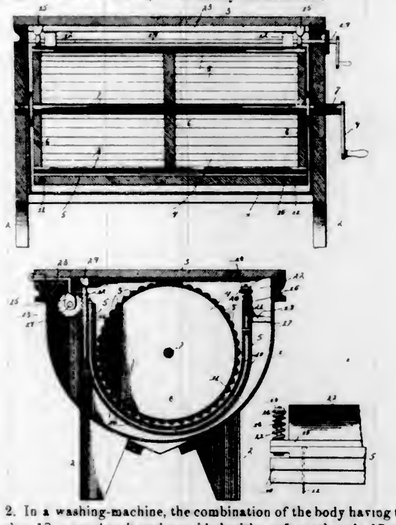
2. In an engine-govenor, a driven sleeve having continuous rotation upon a fixed post, centrifugal arms carried by said sleeve, having cam-toes, a loosely-turning friction-disk resting on the toes and having vertical movement on the fixed post, a friction-disk mounted loosely upon the post over the continuously-driven disk and adapted to be locked to the driven disk by frictional contact and having partial rotation given to it by such contact, and a longitudinally-movable slide-bar attached to said upper disk, having steps or parts of varying thickness at the outer end, in combination with the stem of a valve to be controlled, having a yoke to take the end of the slide, as described.

3. In an engine-governor, the combination of the continuously-driven sleeve or part carrying centrifugal arms, a sliding and rotating friction-disk having a standing rim and adapted to be driven by the sleeve and to be moved longitudinally by the angular movement of the centrifugal arms, a second disk fitting within the rim of the continuously-driven disk and by the vertical movement of that part caused to engage frictional contact, and a slide-bar or part having connection with said upper disk thereof with the stem of the valve to be controlled and adapted by its angular movement to vary the vertical movement of the valve-stem, as set forth.

4. In an engine-governor having a continuously-driven friction-disk to which vertical movement is given by the angular movement of the centrifugal arms carried by said disk or a connected part, and a second friction-disk having rotative movement when coupled to the continuously-driven disk, the combination, with said second disk, of the coil-spring, adjustable arm, valve-controlling slide-bar, and spring, substantially as described, for operation as set forth.

446,958. WASHING-MACHINE. GEORGE P. WALTER, Brownwood, Tex., assignor of one-half to William H. Flesher, same place. Filed Sept. 18, 1890. Serial No. 365,416. (No model.)

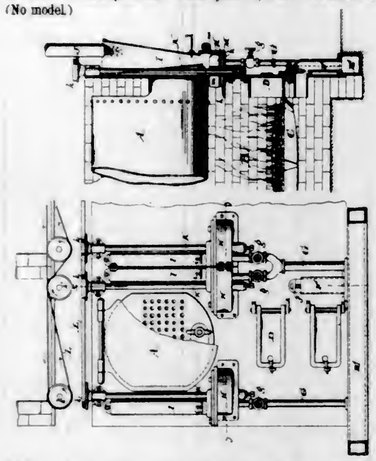
Claim.—1. In a washing-machine, the combination of the body, the rotary rubbing-cylinder, the cross-bars 18, secured to the body, the stationary rubber having one end provided with rods passing through the cross-bars and provided with heads, the spiral spring arranged on the rods and interposed between the cross-bar and the heads and forming cushions, the rack-bars 12, secured to the other end of the stationary rubber, the shaft 14, and the pinion mounted on the shaft and meshing with the rack-bars, substantially as described.



2. In a washing-machine, the combination of the body having the cross-bar 18 secured to it and provided with perforated ends 17, the rotary rubbing-cylinder mounted on the shaft and comprising the disks and the slats secured to the peripheries of the disks, the stationary rubber consisting of a series of slats flexibly connected by wires and provided at one end with the rods 16, having heads and provided at its other end with rack-bars, the spiral spring mounted on the said rod 16 and interposed between the heads of the same and the said cross-bar, the shaft 14, and the pinion mounted on the shaft and meshing with the rack-bars, substantially as described.

3. In a washing-machine, the combination of the body, the rotary rubbing-cylinder, the stationary rubber having one end provided with rods, the spiral spring arranged on the rods, the rack-bars 12, secured to the other end of the stationary rubber, and gearing engaging the rack-bars for raising or lowering the rubber, substantially as described.

446,959. DEVICE FOR FEEDING BOILER-FURNACES. GEORGE W. WOOD, Philadelphia, Pa. Filed June 11, 1890. Serial No. 355,089. (No model.)

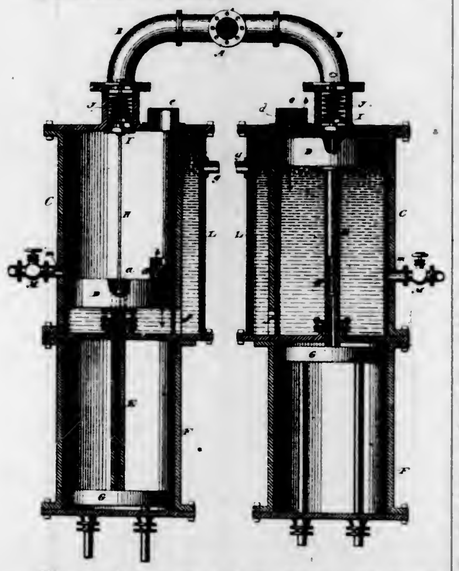


Claim.—1. In combination with a boiler-furnace, one or more chambers H, situated at or near the top thereof, a chute, as I, adapted for feeding culm or similar material into said chamber, a rotating disk M, supported in said chamber above the bottom thereof, and having blades *m m*, &c., extending from its upper surface, and an air-blast pipe, as G, entering chamber H beneath the disk M, all substantially as described, and so that the culm is carried into the fire-box by the combined action of the disk M and the layer of air entering the furnace beneath said disk.

2. In combination with a boiler-furnace, one or more chambers H, situated at or near the top thereof, a chute, as I, adapted for feeding culm or similar material into said chamber, a rotating disk M, supported in said chamber above the bottom thereof and having blades *m m*, &c., extending from its upper surface, and an air-blast pipe, a branch thereof entering the furnace beneath the grate and a second branch entering chamber H beneath disk M, all substantially as and for the purpose specified.

3. In combination with a boiler-furnace, chambers H H, situated near the top and at each side thereof, chutes adapted for feeding culm or similar material, leading into said chamber, disks M, having blades *m m*, &c., secured in each chamber above the bottom thereof, mechanism adapted to rotate said disks in opposite directions, and an air-blast pipe connecting with each chamber H beneath the disks M, all substantially as and for the purpose specified.

446,960. VACUUM-PUMP. ADOLPH BORNHOLDT, Brooklyn, N. Y., assignor of one-third to Joseph Glatz, same place. Filed Mar. 18, 1890. Serial No. 344,282. (No model.)



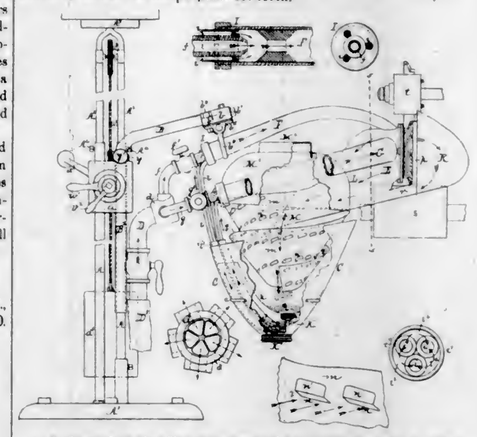
Claim.—1. The combination of the vacuum-cylinder provided with an induction-valve, the piston connected with the stem of said valve so as to operate the same positively, said piston being provided with a discharge-valve, and the water-reservoir communicating with said cylinder on the side of the piston opposite to the induction-valve, substantially as described.

2. The vacuum-cylinder having an induction-valve and reciprocating piston connected with said valve and provided with a discharge-valve, in combination with the water-reservoir communicating with the cylinder near the end opposite to the induction-valve, and with the spray-supply pipe located at a point above the piston when the latter is in its lowest position, substantially as described.

3. The vacuum-cylinder C, having induction-valve I, valve-stem H, and jet-pipe *m*, combined with the piston D, having discharge-valve *b*, said piston being frictionally connected with the stem H of the valve I, which is opened and closed by said stem, and with means, such as the spring J, for reseating valve I when the piston passes the mouth of jet-pipe *m*, substantially as described.

446,961. APPARATUS FOR FINISHING OR CLEANING SURFACES. ANDREW BRYCE, Pittsburg, assignor of one-half to John A. McConnell, Allegheny, Pa. Filed June 26, 1890. Serial No. 356,788. (No model.)

Claim.—1. In surface-abrading apparatus, the combination of the mouth-piece through which the abrading material is projected and a series of blast-pipes communicating with the mouth-piece at different angles thereto and close to the mouth thereof, so as to project the several streams at different angles through said mouth-piece, substantially as and for the purposes set forth.



2. In surface-abrading apparatus, the combination of a mouth-piece through which the abrading material is projected and a series of blast-pipes communicating therewith, said mouth-piece having a ring extending inwardly to form the mouth thereof, substantially as and for the purposes set forth.

3. In surface-abrading apparatus, the combination of the mouth-piece, a series of blast-pipes communicating therewith, and a hollow nose-piece opposite the mouth-piece to receive the sand passing through the mouth and return it to the apparatus, substantially as and for the purposes set forth.

4. In surface-abrading apparatus, the combination of a mouth-piece through which the material is to be projected, blast-pipes communicating therewith, a return-pipe leading from the mouth-piece, and a separator and collector into which the return-pipe opens, substantially as and for the purposes set forth.

5. In surface-abrading apparatus, the combination of a mouth-piece, blast-pipes communicating therewith, a return-pipe extending from the mouth-piece, a separator and collector into which the return-pipe opens, and a hollow nose extending in front of the mouth-piece and having a return-passage leading therefrom and opening into the return-pipe, substantially as and for the purposes set forth.

6. In surface-abrading apparatus, the combination of the mouth-piece, blast-pipes communicating therewith, a guide rigid with and extending in front of the mouth-piece, and feeding apparatus for carrying the material past the mouth-piece, substantially as and for the purposes set forth.

7. In surface-abrading apparatus, the combination of the mouth-piece, a guideway over which the material to be operated on is fed, a blast-pipe communicating with the mouth-piece at an angle to the course of the material fed thereto, and a blast-pipe communicating with the mouth-piece in line with the course of the material fed thereto, substantially as and for the purposes set forth.

8. In surface-abrading apparatus, the combination of a mouth-piece, blast-pipes communicating therewith, a return-pipe leading from the mouth-piece, and a collector with which said return-pipe communicates, said collector being formed of a hollow cone, substantially as and for the purposes set forth.

9. In surface-abrading apparatus, the combination of a mouth-piece, blast-pipes communicating therewith, a return-pipe leading from the mouth-piece, and a collector with which said return-pipe communicates, said collector being formed of a hollow cone and a cover extending over the same and having an outlet in the upper end thereof, substantially as and for the purposes set forth.

10. In surface-abrading apparatus, the combination of a mouth-piece, blast-pipes communicating therewith, a return-pipe, and a collector with which said return-pipe communicates, said collector being formed of a spirally-laid plate, forming a spiral cone, the spirals forming separate conical chambers having spaces between them at their larger ends for the escape of the air, substantially as and for the purposes set forth.

11. A surface-abrading apparatus having a return-pipe opening into a collector, said collector being formed of a cone provided with

a series of inclined deflecting-lips arranged spirally therein, substantially as and for the purposes set forth.

12. A surface-abrading apparatus having a return-pipe opening into a collector, said collector being formed of a cone provided with a series of inclined deflecting-lips arranged spirally therein and having openings above the lips, substantially as and for the purposes set forth.

13. A surface-abrading apparatus having a return-pipe opening into a spiral cone, the spirals thereof forming separate chambers having spaces between them for the escape of the air, and said spirals being provided with a series of inclined deflecting-lips, substantially as and for the purposes set forth.

14. A surface-abrading apparatus having a return-pipe and a collector into which it opens, said collector being formed of an inverted hollow cone and a funnel-shaped case inclosing the lower part of the cone, substantially as and for the purposes set forth.

15. A surface-abrading apparatus having a return-pipe and a collector into which it opens, said collector being formed of an inverted hollow cone and a funnel-shaped case inclosing the lower part of the cone, said funnel-shaped case being provided with a reservoir for the collection of the abrading materials at the base thereof, substantially as and for the purposes set forth.

16. A surface-abrading apparatus having a return-pipe and a collector into which it opens, said collector being formed of an inverted hollow cone and a funnel-shaped case inclosing the lower part of the cone, said funnel-shaped case being provided with a reservoir for the collection of sand at the base thereof and having a cup-shaped partition above said reservoir and below the cone provided with an opening in the base thereof communicating with the reservoir, substantially as and for the purposes set forth.

17. In surface-abrading apparatus, the combination of the mouth-piece, a sand-blast pipe communicating therewith, an injector at the entrance of said sand-blast pipe, an air-pipe communicating centrally with the injector, and sand-feeding pipes communicating with the space in said injector around the air-pipe, substantially as and for the purposes set forth.

18. In surface-abrading apparatus, a mouth-piece having a sand-blast pipe communicating therewith, said sand-blast pipe having an injector at the entrance thereof with which an air-pressure pipe communicates, a series of sand-feeding pipes communicating with the injectors, and a sand-reservoir at the base of the sand-feeding pipes, substantially as and for the purposes set forth.

19. In surface-abrading apparatus, a mouth-piece having a sand-blast pipe communicating therewith, said sand-blast pipe having an injector at the entrance thereof with which an air-blast pipe communicates, a series of sand-feeding pipes communicating with the injector, and a sand-reservoir at the base of the sand-feeding pipes, said sand-feeding pipes being arranged in a group and having a tube surrounding the lower portion of said pipes, substantially as and for the purposes set forth.

20. In surface-abrading apparatus, the combination of a supporting-frame, a crane extending out therefrom, a surface-abrading apparatus having a mouth-piece and a blast-pipe leading thereto, and a universal-joint connection between said crane and the abrading apparatus to provide for the movement of the apparatus over the surface to be abraded, substantially as and for the purposes set forth.

21. In surface-abrading apparatus, the combination of a supporting-frame and the abrading apparatus hung therefrom, the crane and the abrading apparatus being connected by the universal joint *b*, formed of the sleeve b^3, mounted on the shaft *b'*, and the turn-plate b^4, swiveled to the sleeve by bolt b^5 and having the swinging loop b^6 depending therefrom, substantially as and for the purposes set forth.

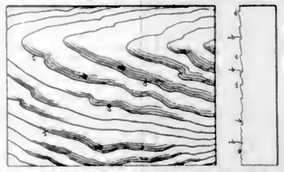
22. In surface-abrading apparatus, the combination of hollow vertical standards A A, bars A^3 A^3, entering the same, a clamp engaging with the standards, a crane supported in said clamp, and abrading apparatus hung from said crane, substantially as and for the purposes set forth.

23. The combination of the standards A A, the clamping-blocks *a'*, the shaft *u*, extending through the same and having the head u^3, provided with the threaded socket u^2, the nut *u'*, the bolt *v*, screwing into the socket u^2 and having a cylindrical body, the clamping-block *a*, mounted on the bolt *v*, and the crane B, clamped by the blocks *a*, substantially as and for the purposes set forth.

24. The combination of the standards A A, the clamping-blocks *a'*, the shaft *u*, extending through the same and having the head u^3, provided with the threaded socket u^2, the nut *u'*, the bolt *v*, screwing into the socket u^2 and having a cylindrical body, the clamping-block *a*, mounted on the bolt *v*, the handle *w'*, secured to the bolt *v*, the nut *w*, screwing onto the bolt *v*, and the crane B, clamped by the blocks *a*, substantially as and for the purposes set forth.

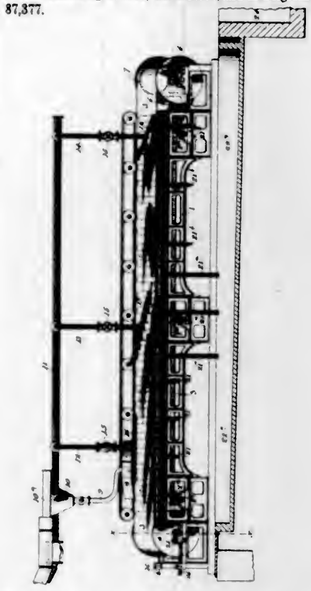
446,962. **FINISHING WOOD SURFACES.** ANDREW BRYCE, Pittsburg, assignor of one-half to John A. McConnell, Allegheny, Pa. Filed June 26, 1890. Serial No. 356,782. (No model.)

Claim.—1. The herein-described method of finishing wood surfaces, consisting in removing the soft or pithy portions of the wood surface, leaving the grain or fiber thereof raised in relief above the body thereof, substantially as and for the purposes set forth.



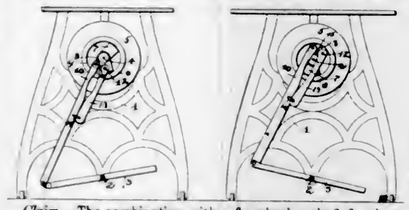
2. As a new article of manufacture, a wood body having the pithy portion of the surface thereof removed, and having the grain or fiber extending in relief above the body of the wood, substantially as and for the purposes set forth.

446,963. **ORE-CONCENTRATOR.** MARCELIN CASTELNAU, Paris, France. Filed Apr. 10, 1890. Serial No. 347,373. (No model.) Patented in France Aug. 6, 1889, No. 200,016, and in Belgium Aug. 14, 1889, No. 87,377.



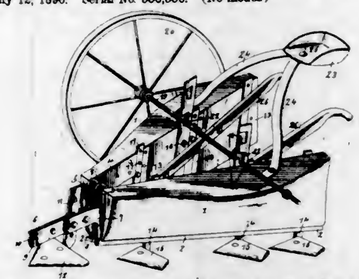
Claim.—In an ore-concentrator, the combination, with the frame and laterally-inclined endless belt, of means for driving the belt, means for supplying ore thereto, and the water-main arranged above the belt and provided with adjustable T-shaped branches and valves for regulating the supply of water to each branch, substantially as described.

446,964. **SEWING-MACHINE MOTOR.** FRANCIS L. CLARK, Lee's Summit, Mo. Filed June 27, 1890. Serial No. 356,964. (No model.)



Claim.—The combination, with a fly-wheel, a shaft for the same, and a collar arranged at one side of the wheel and concentric with the shaft, of a pair of clutch-levers, one of which is extended at one side of its pivot and both of which are loosely mounted on the shaft, a connecting-rod pivoted to the extension of one of said levers and means for operating the rod, a shorter connecting-rod pivoted to the companion lever and hinged to the first-mentioned rod, and a stop or buffer arranged at the upper end of the first-mentioned connecting-rod and adapted for contact with the opposite rod, thereby limiting the separation of the clutch-levers, substantially as specified.

446,965. **PLOW.** THOMAS G. EASON, Junction City, Tex. Filed July 12, 1890. Serial No. 358,558. (No model.)



Claim.—1. The combination of the mold-boards or frame-beams, the strips or shares at the lower inner edges of the same provided at their front ends with eyes 3, the hinge-plates 4, secured at the upper front corners of the mold-boards and provided with eyes 5, the clevis 6, having eyes 7 7, the pintles 8 8, and the shank 11, mounted adjustably between plates 9 10, of which the clevis is composed, and having the subsoiler 12, substantially as and for the purpose set forth.

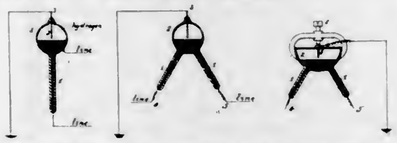
2. The combination of the mold-boards or frame-beams, the shares at the lower inner edges of the same, the hinge-strips at their upper inner corners, the clevis forming a connecting joint, and the plow or subsoiler secured to a shank attached adjustably to said clevis, substantially as set forth.

3. The combination of the mold-boards or frame-beams hinged together at their front ends and having shares at their lower inner edges, the vertically-adjustable shanks mounted upon the inner sides of said mold-boards and carrying plows or subsoilers at their lower ends, the transverse shaft or axle carrying supporting-wheels, and means for connecting the frame-beams or mold-boards adjustably with said shaft or axle, substantially as set forth.

4. The combination of the mold-boards or frame-beams hinged at their front ends, the cleats upon the inner sides of said mold-boards, forming bearings for the vertically-adjustable plow-carrying standards and having L-shaped notches at their upper ends, the grooved or notched shaft or axle having the supporting-wheels, the connecting-wedges, and the seat-supports, connected pivotally with the frame-beams and having their upper ends connected with each other and with the seat by a single pivot, substantially as set forth.

5. A plow or cultivator comprising, in combination, a pair of frame-beams or mold-boards hinged at their front ends to a clevis having a vertically-adjustable shank carrying a subsoiler, shares at the lower edges of said mold-boards, vertically-adjustable shanks upon the inner edges of said mold-boards, carrying plows or subsoilers at their lower ends, a shaft or axle mounted adjustably in bearings upon the said frame-beams, and the pivoted seat-supports carrying a pivoted seat, substantially as herein set forth.

446,966. **CUT-OUT.** STEPHEN D. FIELD, Stockbridge, Mass., assignor of one-half to Phoebus H. Alexander, New York, N. Y. Filed May 28, 1890. Serial No. 353,453. (No model.)



Claim.—1. A potential cut-out for electric circuits, consisting of an inclosed fluid-conductor, such as mercury, connected to the circuit, a grounded terminal adjacent to such conductor, and an interposed gaseous body of relatively higher conductivity than air.

2. A potential cut-out for electric circuits, consisting of a sealed tube containing a column of conducting-fluid connected to the circuit, a grounded terminal adjacent to such conductor, and an interposed gaseous body of relatively higher conductivity than air.

3. A potential cut-out for electric circuits, consisting of a sealed tube containing a column of mercury connected to the circuit, a grounded terminal adjacent to the end of the mercury column, and an interposed gaseous body of relatively higher conductivity than air.

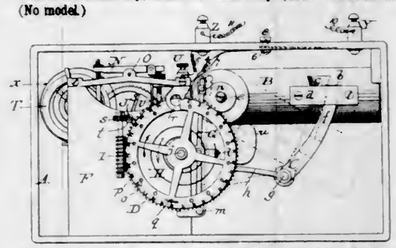
4. A potential cut-out for electric circuits, consisting of a sealed tube containing a column of mercury connected to the circuit, a grounded terminal adjacent to the end of the mercury column, and an interposed gaseous body of hydrogen gas.

5. A potential cut-out for electric circuits, consisting of a tube containing a body of conducting-fluid connected to the circuit and a grounded terminal adjacent to said body of fluid and having means of adjustment to and from the same, and an interposed gaseous conductor.

6. A potential cut-out comprising a tube containing a fluid conductor and provided with terminals for insertion in an electric circuit, and an auxiliary conductor for connection with earth within sparking distance of the main conductor, whereby upon a definite increase of potential an earth is established and the main circuit opened by the volatilization of the fluid-conductor.

7. In a system of electrical distribution, the combination, with a high-potential or primary circuit, a low-potential or secondary circuit, and an interposed converter, of a cut-out in the secondary circuit, a normally-open ground established by said cut-out on abnormal rise of potential, and a fluid-conductor for opening the secondary circuit by volatilization under the ground discharge and restoring the circuit to its normal condition upon return to the normal flow of current.

446,967. **ELECTRIC TIME-LOCK.** MALON I. FLOWERS, Springfield, Mo., assignor of two-thirds to James E. Jones and C. W. Price, both of Oklahoma City, Oklahoma. Filed May 5, 1890. Serial No. 350,609. (No model.)



Claim.—1. In combination with a check-bolt, a dog for engaging said bolt, a time wheel or dial for actuating the dog, means for rotating the wheel or dial, and connections, substantially such as shown, for throwing the wheel out of engagement with its actuating mechanism.

2. The combination, with the check-bolt, dog, and time-wheel, arranged substantially as shown, of means for actuating the wheel and intermediate connections between the bolt and the axle of the wheel, whereby when the bolt is released the wheel is disconnected from its actuating mechanism.

3. The combination, with bolt B and dog C, of a wheel D, means for rotating the wheel and thereby actuating the dog, a stop *r*, a set-pin *q*, carried by the wheel, a spring secured to the wheel, and means for releasing the wheel.

4. The combination, with the bolt B and dog C, of a wheel D, adapted to release the dog, a sliding block E, upon which said wheel is journaled, a lever connecting the bolt and block, and a worm for imparting motion to the wheel, all substantially as shown.

5. In combination with the bolt B, a dog C, wheel E, and connections substantially such as shown, the knob provided with an arm or eccentric adapted to raise the bolt and throw the wheel into engagement with its operating mechanism.

6. In combination with pivoted bolt B, having shoulder *b*, a groove *c*, concentric with its pivot, and the pivoted dog C, comprising two arms *f* and *h*.

7. In an electric time-lock, the combination, with a bolt, dog, and time-wheel, arranged and operating substantially as shown, of an electric motor for imparting a continuous motion in one direction to the wheel and a switch adapted to momentarily complete the circuit and put the motor in motion.

8. In an electric time-lock, the combination, with a bolt, dog, and time-wheel, of an electro-magnet and its armature, arms V and W, provided with contact-points 1 2, means for actuating one of the arms V, actuated by the magnet, wire *z*, connecting the windings of the magnet with the arm V, wires 3 and *y*, extending, respectively, from the arm W and the magnet to binding-posts X and U, and wires 4 and 5, extending from the posts X and U to a battery.

9. In an electric time-lock, the combination, with the dial or time-wheel and the driven shaft F for imparting motion thereto, of a ratchet-wheel S, secured to the shaft, a rock-shaft O, levers N Q, secured thereto, a pawl R, carried by one end of lever Q, to engage wheel S, a balance-wheel T, arms V W, provided with suitable con-

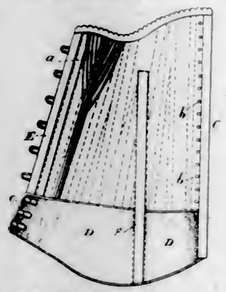
tact-points, a pin *w*, carried by the balance-wheel, to engage the forked end of lever Q and also to actuate the arm V, an electro-magnet, an armature therefor connected with one end of lever N, a spring P, connected with the opposite end of the lever, a battery, and suitable connections.

10. In an electric time-lock, the combination, with the time-wheel or dial D, of an electric motor for imparting motion thereto, a normally-open circuit in which said motor is included, and an exciting-circuit provided with a switch.

11. In combination with casing A, having opening *a*, bolt B, dog C, and time-wheel D, an electric motor for imparting motion to the wheel.

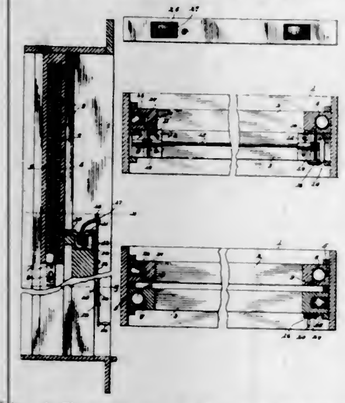
12. In an electric time-lock, the combination, with a bolt, dog, and time-wheel arranged to operate substantially as shown, of an electric motor for imparting a continuous motion in one direction to the time-wheel, and means without the lock-case for completing the circuit and putting the motor in motion.

446,968. CORSET. EDWARD C. FOSTER, Ludington, Mich. Filed Nov. 22, 1890. Serial No. 372,310. (No model.)



Claim.—A corset having front and rear steels and an elastic band along its entire lower edge, the front steels terminating at the band and the rear steels extending across the band to its lower edge, and a vertically-disposed stay F, located between said front and rear steels and extending across the band, as set forth.

446,969. SASH-FASTENER. CHARLES A. FRISBIE, Stanberry, Mo. Filed Oct. 23, 1890. Serial No. 369,053. (No model.)

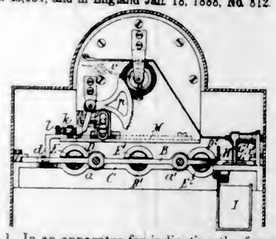


Claim.—1. The combination, in a window, of the upper sash provided with series of perforations 9, the lower sash, the sliding bolts mounted on the upper edge of the lower sash and arranged to engage the said perforations, the rock-shaft journaled on the upper edge of the lower sash and connected with the sliding bolts, and the vertically-sliding bar connected to and operating the rock-shaft, substantially as described.

2. The combination, in a window, of the upper sash provided with perforations, the lower sash, the bearing-plates secured to the upper edge of the lower sash, the bolts sliding in the bearing-plates and arranged to engage the said perforations, the rock-shaft journaled in the said plates and connected with the sliding bolts, the cam pivoted to the lower sash and arranged to engage the casing of the window, and the vertically-sliding bar connected with the rock-shaft and the cam, substantially as and for the purpose described.

3. In a window, the combination of the upper sash provided with perforations, the lower sash, the bolts sliding on the lower sash and arranged to engage the perforations, the rock-shaft journaled on the lower sash and connected to the sliding bolts, the cam pivoted to the lower sash and arranged to engage the casing and provided with the pin 24, and the vertically-sliding bar connected with the rock-shaft and provided with the upwardly-extending projection having the inclined slot to receive the said pin, substantially as described.

446,970. COIN-CONTROLLED MACHINE FOR INDICATING THE FORCE OF A BLOW OR PRESSURE. ADOLPH J. C. GRAF, Hamburg, Germany, assignor to Charles Arthur Barrett and Alfred Barrett, both of London, England. Filed Oct. 28, 1890. Serial No. 369,556. (No model.) Patented in Germany Dec. 2, 1887, No. 43,724, and July 27, 1888, No. 45,937, and in England Jan. 18, 1888, No. 812.



Claim.—1. In an apparatus for indicating the force of a blow or other pressure in exchange for a given coin, the combination, with the movable slide B and with the springs D D' D², upon which it acts, of the fixed plate C, having a notch *c* therein, the bell-crank lever G G', engaging with such notch, and a movable holder for the inserted coin actuated by said slide, the combination serving, as described, to deposit the coin within the case or to deliver it outside the same.

2. In an apparatus for indicating the force of a blow or other pressure in exchange for a given coin, the combination of the angle-lever G G', which is adapted to unlock the slide B, acting upon a spring D D' D², with the balance I, provided with the bifurcated arm H, substantially as and for the purpose specified.

3. The combination of the movable slide B, provided with a handle A, the pistons E E' E², and the aperture *h* with the springs D D' D², the locking device consisting of the bell-crank lever G G', engaging with the notch *e* of the fixed plate C, and the coin-conducting device consisting of the balance I, engaging with the arms *q q'* and with the notches *b b'* of the slide B, all substantially as and for the purpose set forth.

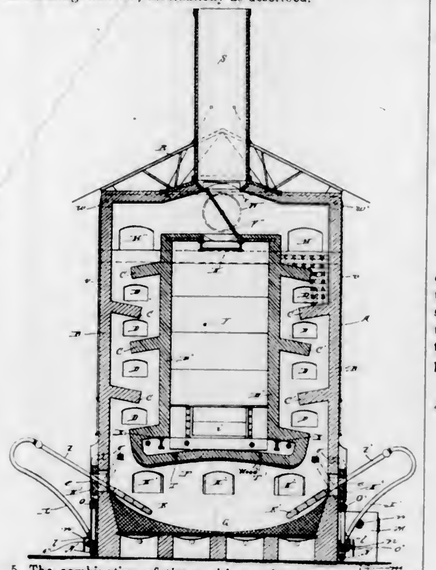
446,971. ROASTING AND SMELTING FURNACE. WILLIAM HECKERT, WILLIAM J. THOMAS, and FRANK L. HECKERT, Findlay, Ohio. Filed May 13, 1890. Serial No. 351,623. (No model.)

Claim.—1. The combination of the two roasting and regenerating chambers, the smelting-chamber which is below said roasting-chambers and which connects the lower portions of the latter, the hot-air chamber arranged between the roasting-chambers and provided with the air-inlet and the discharge or inlet to the conduits connecting the same with the roasting-chambers, the stack and conduits which connect the upper portions of the roasting-chambers with the inlet from the hot-air chamber and the stack, together with suitable valve mechanism controlling the said conduits, and the fuel-inlets at either end of the smelting-chamber, substantially as described.

2. The combination of the two vertical roasting and regenerating chambers which have shelves arranged therein, the smelting-chamber which is below said roasting-chambers and which connects the lower portions of the same, the air-inlet, the stack, and the two conduits, each of which connects the upper portion of one of the roasting-chambers with either the air-inlet or the stack, the reversible valve by which said alternate connections are made, and the fuel-inlets at each end of the smelting-chamber, substantially as described.

3. The combination of the two vertical roasting and regenerating chambers which have shelves arranged therein, doors affording openings to said roasting-chambers before each of said shelves, the smelting-chamber which is below said roasting-chambers and connects the lower portions of the same, the air-inlet, the stack, and the two conduits, each of which connects the upper portion of one of the roasting-chambers with either the air-inlet or the stack, the reversible valve by which said alternate connections are made, and the fuel-inlets at either end of the smelting-chamber, substantially as described.

4. The combination of the two vertical roasting and regenerating chambers which have shelves arranged therein, the hot-air chamber between said roasting-chambers, the smelting-chamber which is below said roasting-chambers and connects the lower portions of the same, the air-inlet from the hot-blast oven, the stack, and the conduits, each of which connects the upper portion of one of the roasting-chambers with either the air-inlet or the stack, the reversible valve by which said alternate connections are made, and the fuel-inlets at either end of the smelting-chamber, substantially as described.

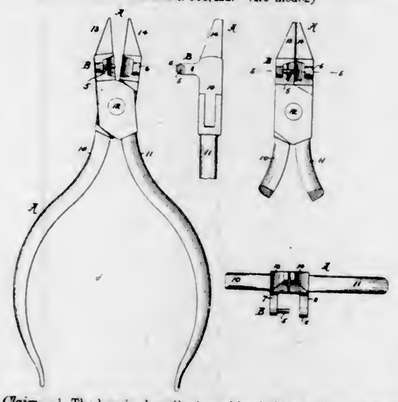


5. The combination of the smelting and refining chamber, the pipes which lead into said chamber, provided at their outer ends with hose-connections, air and gas supply pipes connected with said hose, valves which control said pipes, and a meter connected with the gas-supply pipe, substantially as described.

6. The combination of the smelting and refining chamber, the pipes which lead into said chamber, provided at their outer ends with hose-connections, air and gas supply pipes connected with said hose, valves which control said pipes, and a meter connected with the gas-supply, together with the fuel-supply pipes which discharge into said chamber, substantially as described.

7. In combination with the arched roof of a furnace-chamber, thin layers of combustible material built into said roof and arranged normal to the curve of the arch, substantially as described.

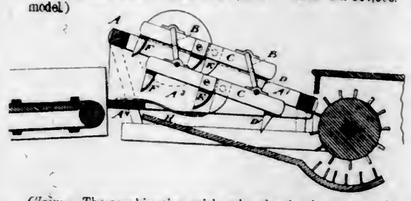
446,972. PLIERS. LUCIEN HUGONIOT-TISSOT, Montecheroux, France. Filed Oct. 17, 1890. Serial No. 368,422. (No model.)



Claim.—1. The herein-described combined pliers and joint-starter, the same consisting of a pair of hinged members having jaws at one end and a pin carried by one member and a perforated abutment carried by the other member of the two.

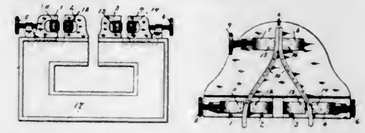
2. The herein-described combined pliers and joint-starter, the same consisting of two members pivoted together and having at their upper ends jaws, and a pair of arms projecting from the sides of the vertical face of the members, one arm carrying a pin and the other a perforated abutment in line with the pin.

446,973. BAND-CUTTER AND FEEDER. WILLIAM G. HUNTINGTON, Pipestone, Minn. Filed Oct. 4, 1890. Serial No. 367,068. (No model.)



Claim.—The combination, with a thrasher having the usual spiked cylinder, spiked concave, and feed-platform, of the frame A, the metallic prongs H H, arranged at an incline on said platform, the correspondingly-cranked shafts B B in bearings of said frame, the longitudinal bars C, carried by said crank-shafts, and the feeders D, curved cutters E, and knives F, arranged on said longitudinal bars, as and for the purpose set forth.

446,974. METHOD OF AND APPARATUS FOR ELECTRIC WELDING. HERMANN LEMP and LOUIS M. SCHMIDT, Lynn, Mass., assignors to the Thomson Electric Welding Company, of Maine. Filed July 23, 1890. Serial No. 359,618. (No model.)



Claim.—1. The herein-described method of forming longitudinal metal joints by a soldering, cementing, or welding operation, consisting in feeding the pieces to be joined through suitable pressure or other devices while properly arranged so as to be pressed together by said devices and passing a heating electric current through the material in a longitudinal direction before it reaches the pressure or other welding devices.

2. The herein-described improved method of soldering, cementing, or welding strips, bars, or rods of metal side by side, consisting in feeding the same through suitable pressure-rolls while lapped upon one another in proper manner to be pressed together by said rolls and at the same time passing a heating electric current through said strips, bars, or rods in a longitudinal direction between the point of pressure and another point or points removed therefrom in the direction from which the metal is being fed.

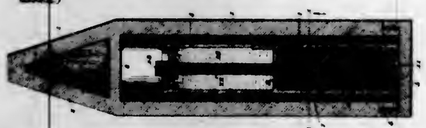
3. The herein-described improvement in uniting strips, bars, or rods of metal longitudinally, consisting in feeding them while lapped upon one another between suitable pressure-rolls or devices arranged to squeeze or force them together and at the same time passing a heating electric current longitudinally through such pieces at parts thereof between the point of pressure and points removed therefrom in the direction from which the material is being fed.

4. In an electric soldering or welding apparatus, the combination, substantially such as described, of two pairs of pressure-rolls 13 14 11 12, arranged in line with one another so that the material may be fed through them from one pair to the other, said pairs of rolls forming, respectively, opposite terminals or electrodes of a source of heating-current.

5. The combination, substantially such as described, with a transformer secondary adapted to deliver currents of large volume for heating purposes, of two pairs of rolls or pressure devices mounted on the terminals of said secondary in line with one another, so that strips, bars, or pieces of metal to be united may be fed through such pair of rolls from one to the other.

6. The combination, with a transformer secondary adapted to deliver current of large volume, of pressure-rolls mounted on one terminal of such secondary, and contact devices mounted on the other terminal in line with the first, so that the material may be fed longitudinally through the contact devices and between the pressure-rolls, as and for the purpose described.

446,975. EXPLOSIVE PROJECTILE FOR ORDNANCE. JAMES J. MOORE, Merryville, La. Filed Apr. 10, 1890. Serial No. 347,391. (No model.)



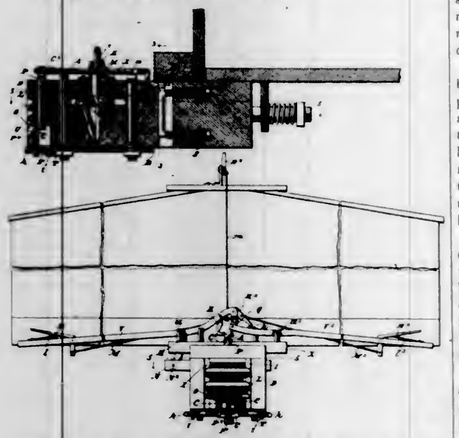
Claim.—1. The combination, with a cylindrical tubular shell having a transverse partition or diaphragm and provided at its butt-end with a removable screw-threaded cap, of the interiorly-located holding-springs and an explosive cartridge mounted in said shell, held by the said springs, and having a transverse partition subdividing it into separate chambers or compartments, substantially as set forth.

2. As an improvement in explosive projectiles for ordnance, the combination, with a tubular shell having a transverse partition or diaphragm, a removable cap, and interior holding-springs, of a cartridge consisting of a tubular shell having a transverse partition, inflammable liquid and explosive material stored, respectively, in the front and rear compartments of the cartridge, a tubular nipple extending from the rear compartment through and beyond the front compartment of said cartridge, and a percussion-cap upon the projecting front end of said nipple, substantially as set forth.

3. The combination, with an explosive shell for ordnance, of an explosive cartridge mounted in said shell and having front and rear compartments containing, respectively, inflammable liquid and explosive material, and a nipple extending through the chamber containing the inflammable liquid and having a percussion-cap, substantially as and for the purpose set forth.

4. The cartridge for explosive projectiles, consisting of a tubular shell having a transverse partition, a nipple extending through the front chamber, and plugs in the sides of the said shell, through which access may be had to the compartment of the latter, substantially as and for the purpose set forth.

446,976. CAR-COUPLING. JOHN E. MULLINS, Magnolia, Ark. Filed Nov. 4, 1890. Serial No. 370,322. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head provided with inward projections on the opposite sides of its mouth and a number of lips moving vertically in said mouth, with their ends shaped to as to fit said projections, of a link-operating plate also moving vertically in said mouth, a yoke passing through the bottom of the draw-head and connected with said plate, springs bearing the latter normally upward, a transverse rod mounted beneath the draw-head and having handles on its ends, and a finger secured to said rod and passing through said yoke, the whole operating substantially as and for the purpose set forth.

2. In a car-coupling, the combination, with the longitudinally-moving block having a slot through its body, an arm pivoted to said block, a pin depending from the front end of said arm, and a spring pressing the rear end of the arm normally upward, of a tooth depending from said arm, a transverse bar passing through the slot in said block and upon which said tooth rests when the block is forward, and means for raising said arm, as and for the purpose set forth.

3. In a car-coupling the combination, with the longitudinally-moving block having a slot through its body, an arm pivoted to said block and having a depending tooth provided with a rounded front face, a spring pressing said arm normally upward, and a pin depending from the front end of the arm, of a transverse bar passing through the slot in said block and having a notch embracing said tooth, leaf-springs bearing said bar normally forward, and means for raising the arm, as and for the purpose set forth.

4. In a car-coupling, the combination, with the longitndinally-moving block, an arm pivoted thereto and having a bifurcation in its front end, and means for raising and means for lowering said arm, of a pin whose head engages said bifurcation and whose body depends therefrom in front of said block, and a coiled spring on said arm in rear of the pin, as and for the purpose set forth.

5. In a car-coupling, the combination, with the draw-head having guiding-lips in its mouth and a vertical hole through its body, of a forwardly spring-pressed block moving in said draw-head, a pin moving in said hole, an arm connected at one end to the block and at the other end to the head of the pin, and means for raising and means for lowering said arm, as and for the purpose set forth.

6. In a car-coupling, the combination, with the draw-head, a block therein, and means for moving it longitudinally, of a pin moving vertically through the draw-head, an arm connected thereto and pivoted to the block, means for raising said arm, and means for holding it raised when the block is forward, the whole operating substantially as described.

7. In a car-coupling, the combination, with the coupling-pin, a longitudinal arm connected at one end thereto and at the other end with a portion of the draw-head, and a spring bearing said arm normally downward, of catches having points at their lower ends adapted to pass beneath said arm, levers to which the upper ends of said catches are pivoted, said levers being mounted npon studs supported by the draw-head and extending transversely beyond the same, and L-shaped handles at the outer ends of said levers connected by pitmen with said catches, the whole operating substantially as described.

8. In a car-coupling, the combination, with the coupling-pin, a longitudinal arm connected at one end thereto and at the other end to a block moving in the draw-head, and a spring bearing said arm normally downward, of catches adapted to pass beneath said arm, levers to which said catches are pivoted, said levers extending laterally from the draw-head, handles at the outer ends of said levers connected by pitmen with the catches, and means for holding said arm raised when the block is forward, the whole operating substantially as described.

9. In a car-coupling, the combination, with the draw-head, a block moving longitudinally therein and provided with a slot, an arm pivoted to said block, a spring pressing said arm normally downward, a pin carried by said arm and standing in front of the block, and a tooth on the arm extending downwardly across said slot, of a pivoted lever, a catch connected thereto and adapted to engage said arm for raising the latter, a bar passing through the draw-head and through the slot in said block, springs pressing said bar normally forward beneath said tooth, and an elbow-lever carried by said catch-operating lever and adapted to move said bar, as and for the purpose described.

10. In a car-coupling, the combination, with the draw-head, the coupling-pin, and an arm connecting them, of a cross-bar, levers pivoted to studs near the outer ends thereof, the inner end of one lever being bent upwardly over said arm, a link pivotally connecting the inner ends of said levers, catches pivoted to the bent lever and having inwardly-bent tips adapted to pass beneath said arm, handles pivoted to the outer ends of said levers, and pitmen connecting said handles with the catches, the whole operating substantially as described.

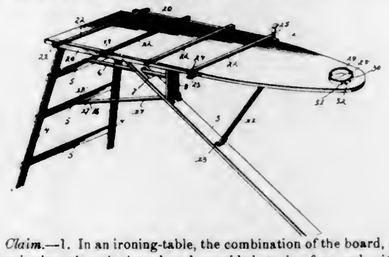
11. In a car-coupling, the combination, with the draw-head, the coupling-pin, and a pivoted arm sustaining the latter, of a pivoted lever, an L-shaped catch pivoted to the inner end thereof and having a point at its lower end adapted to pass beneath said arm, a second pivoted lever, a handle connected thereto, a pitman extending from said handle to said catch, an operating-lever pivotally mounted upon the top of the car, and a pitman extending from one end of this lever downwardly and connected to the horizontal arm of said catch, the whole operating as set forth.

12. In a car-coupling, the combination, with the draw-head, the coupling-pin, and a pivoted arm sustaining the latter, of a cross-bar, levers pivoted to studs near the outer ends thereof, the inner end of one of said levers being bent upwardly over said arm, a link pivotally connecting the inner ends of said levers, a straight catch and an L-shaped catch pivoted to the bent lever and having inwardly-bent tips adapted to pass beneath said arm, L-shaped handles pivoted to the outer ends of said levers, pitmen connecting said handles with the catches, an operating-lever pivotally mounted on the top of the car, and a pitman extending from one end of said lever downwardly and connected to the horizontal arm of said L-shaped catch, the whole operating substantially as described.

13. In a car-coupling, the combination, with the draw-head, the coupling-pin, and a pivoted arm sustaining the latter, of a lever pivotally supported by the draw-head and carrying a catch at its inner end, means for throwing the point of the catch beneath said arm, an operating-lever pivotally mounted upon the top of the car, and a pitman connecting this lever with the catch and adapted to move the latter bodily, the whole operating substantially as described.

14. In a car-coupling, the combination, with the draw-head, the longitudinally-moving block therein, an arm pivoted to said block and carrying a coupling-pin adapted to pass in front of the block, and means for sustaining said arm when raised, but releasing it when the block moves to the rear, of operating-levers extending to the sides of the car, an operating-lever at the top of the car, and catches connected to said levers and having inwardly-bent tips adapted to engage beneath said arm, as and for the purpose hereinbefore set forth.

446,977. IRONING-TABLE. ELIAS W. NOTHSTINE, Dundee, Mo. Filed Aug. 28, 1890. Serial No. 363,259. (No model.)



Claim.—1. In an ironing-table, the combination of the board, and the rack pivoted to the board and provided at its free end with a clamping-bar and adapted to be arranged at an angle to the board for holding clothes and to be folded down on the board to clamp a shirt, substantially as described.

2. In an ironing-table, the combination of the board, the rack comprising the side bars pivoted to the side edges of the board and adapted to be arranged parallel therewith, the cross-pieces connecting the side bars, the pin projecting beyond one of the side bars, and the clamping-bar having one of its ends loosely connected with the rack and provided at its other end with a strap to engage the pin, substantially as described.

3. In an ironing-table, the combination of the board, the rack having its side bars pivoted to the side edges of the board and adapted to be arranged along the same, the pin projecting from one side of the free end of the rack, the clamping-bar having one of its ends linked to the rack and provided at its other end with a strap adapted to engage the said pin, and the bracing-block centrally secured to the clamping-bar, substantially as described.

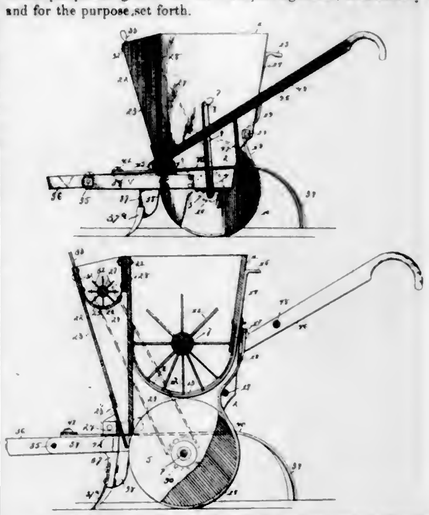
4. The combination, with an ironing-board, of the collar-band holder comprising the segmental block secured to the board, and the hoop having one end provided with a series of perforations and its other end secured to said block, which is provided on its outer face with a stationary projecting pin arranged to be engaged by the perforations, substantially as described.

446,978. COMBINED COTTON-SEED PLANTER AND FERTILIZER-DISTRIBUTER. JAMES M. ORR, East Point, Ga. Filed Oct. 29, 1890. Serial No. 369,683. (No model.)

Claim.—1. In a machine of the class described, the combination of the hopper having downwardly-extending flanges, the transverse shaft or axle mounted in bearings at the lower end of said flanges and having an annularly-grooved transporting-wheel accommodated between the latter, a rock-shaft mounted in the hopper and having radial arms and agitators, and a pitman connecting the crank upon said shafts to the crank at one end of the axle, substantially as set forth.

2. In a machine of the class described, the combination of the hopper having a curved slotted bottom and provided with downwardly-extending flanges, the shaft journaled at the lower ends of said flanges, the annularly-grooved transporting-wheel mounted upon said shaft, a lever pivoted to the rear side of the hopper, and an elastic rod pivoted to said lever and having a downwardly-extending curved end resting in the groove of the transporting-wheel and extending forwardly nearly under the axle of the latter, substantially as set forth.

3. In a machine of the class described, the combination of the hopper having downwardly-extending flanges, the axle journaled at the lower ends of the said flanges, the transporting-wheel having a peripheral groove, a lever pivoted to the rear side of the hopper and having its free end mounted adjustably in one of a series of notches, and a curved elastic rod pivoted to said lever and having its free end mounted in the peripheral groove of the transporting-wheel, substantially as and for the purpose set forth.



4. In a machine of the class described, the combination of the hopper having downwardly-extending flanges, the axle journaled at the lower ends of said flanges, the transporting-wheel having a peripheral groove, a lever pivoted to the rear side of the hopper and having its free end mounted adjustably in one of a series of notches, a curved elastic rod pivoted to said lever and having its free end mounted in the peripheral groove of the transporting-wheel, and a bolt connecting the flanges, extending downwardly from the hopper, and fitted in a forwardly-curved portion of the said elastic rod, substantially as and for the purpose set forth.

5. In a machine of the class described, the combination of the hopper having downwardly-extending flanges, the axles journaled at the lower ends of said flanges and carrying the transporting-wheel, the supplemental hopper mounted upon the front side of the main hopper and having a revolving feed-shaft provided with spirally-arranged fingers, a rock-shaft mounted in the main hopper and having radial feed-arms and agitators, means, substantially as described, for transmitting motion from the transporting-wheel to the feed mechanism in both hoppers, the beam having a furrow-opener, coverers, and handles, and straps extending forwardly from the flanges of the main hopper and connected with said beam by a single transverse pivotal bolt, substantially as and for the purpose set forth.

6. In a machine of the class described, the combination of the beam, the hopper having forwardly-extending straps connected pivotally with said beam, the shank or standard mounted upon the latter and having rearwardly-extending flanges fitted between the straps extending forwardly from the hopper, and the coverers connected pivotally to the beam by means of a single vertical bolt and connected adjustably with a transverse strap mounted upon the rear end of the beam, substantially as and for the purpose set forth.

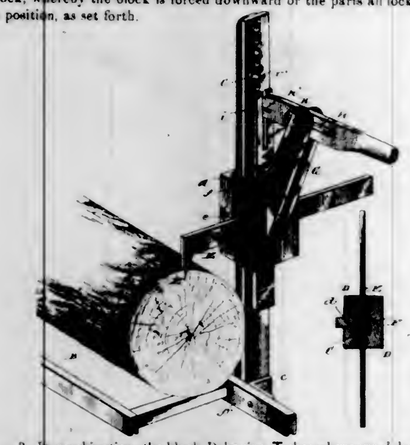
7. The combination of the beam, the standards having the furrow-opener and provided with the rearwardly-extending flanges, the transverse strap secured upon the rear end of the beam and having upwardly-extending lugs, the furrow-openers connected pivotally with the other side of the beam and having bolts connected adjustably with the transverse strap upon the latter, the handles having their lower ends connected with the upturned lugs of said strap and connected by suitable braces with the coverers, and the hopper having the transporting-wheel and seeding mechanism, said hopper being provided with forwardly-extending straps connected pivotally with the beam by means of a transverse bolt, substantially as and for the purpose set forth.

446,979. SAW-MILL DOG. WILLIAM A. PANNEBAKER, East Waterford, Pa. Filed Aug. 5, 1890. Serial No. 361,487. (No model.)

Claim.—1. In combination, the upright, the block sliding vertically thereon, the dog sliding horizontally in the block, the wedge in a vertical slot in the block, and the sliding pivoted lever engaging the wedge and upright in the manner set forth.

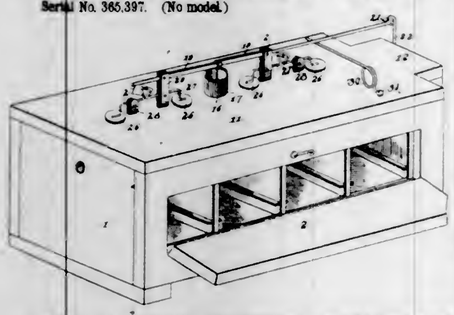
2. A saw-mill dog having an upright and a vertically-sliding block or head carrying a horizontally-adjustable dog and vertically-adjustable wedge, in combination with a single operating-lever pivoted to the

block, whereby the block is forced downward or the parts all locked in position, as set forth.



3. In combination, the block D, having T-shaped groove *d*, horizontal slot *e*, vertical slot *f*, and bars G, the upright C in groove *d* the hook-bar E in horizontal slot *e*, the wedge-bar F in slot *f*, the lever H, having slots *h h'*, and point I, pivoted to bars G and wedge-bar F by pins *g* and *i*, all constructed and operating as set forth.

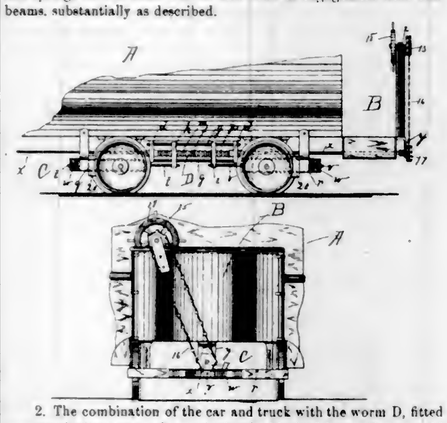
446,980. INCUBATOR. SAMUEL H. PETRO, Darlington, Ind., assignor of one-half to Wilson Hunt, same place. Filed Sept. 18, 1890. Serial No. 365,397. (No model.)



Claim.—In an incubator, the combination, with the outer casing having a series of chambers and a burner located at the end of the same, of a water-tank mounted in the upper end of the casing and terminating at one end in a hot-air box in which the chimney of the lamp terminates, and provided with a pipe passing through the tank and communicating with the hot-air box, an opening formed in the roof of the casing, a pipe extending from the tank through the opening, a pair of smaller openings formed in the roof of the casing at each side of said larger opening, tubes passing through the tank and communicating with the chambers or compartments of the incubator and passing through the smaller openings of the roof of the casing, a pair of fulcrumed standards located between each pair of smaller openings, cranked levers mounted upon each standard and each terminating in a disk normally covering one of the smaller openings, a pair of levers fulcrumed upon the inner standards before mentioned, loosely connected at their inner ends with the float and having their outer ends bearing upon the cranked levers, one of said long levers having its outer end bent upon itself to form a loop, an arm extending from the wick-operating bar of the burner, a rod loosely connecting the outer end of the arm with the loop of the before-mentioned lever, and a spring secured to the roof of the casing and terminating under the rear end of one of the levers, substantially as specified.

446,981. CAR-BRAKE. ANTHONY B. POOL and JOSEPH J. BEALS, Boston, Mass. Filed June 26, 1890. Serial No. 356,753. (No model.)

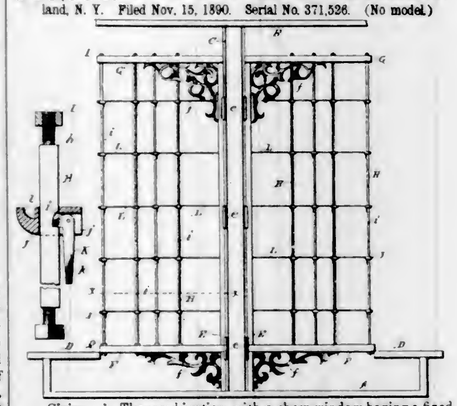
Claim.—1. In a car-brake, a right and left hand worm fitted to rotate on the car-body, mechanism for actuating said worm from the car-platform, blocks fitted to travel in opposite directions on said worm, rods respectively connecting said blocks with the brake-beams, and springs on the outer ends of said rods in engagement with said beams, substantially as described.



2. The combination of the car and truck with the worm D, fitted to rotate in hangers on the car-body, the blocks *h i*, traveling on said worm, the rods *l v*, connecting said worm with the brake-beams springs on the outer end of said rods in engagement with said beams and means, substantially as described, for rotating said worm.

3. The combination of the car with the worm D, fitted to rotate thereon, the block *h i*, traveling on said worm, the rods *l v*, connecting said blocks with the brake-beam, and the sprockets 17, mounted on said worm and connected by chains with a handle-sprocket on the car-dasher, substantially as described.

446,982. SHOW-RACK FOR WINDOWS. JAMES E. BRIGGS, Cortland, N. Y. Filed Nov. 15, 1890. Serial No. 371,526. (No model.)



Claim.—1. The combination, with a show-window having a fixed floor provided with a recess, of a supporting-post and a show-stand formed of two sections hinged to said post, said sections covering the recess in the floor of the window and overlapping the edges formed by the recess, substantially as described.

2. In a show-stand for windows, the combination of a supporting-post and a show-stand in two sections hinged to the post, each section consisting of a solid bottom, a top formed of a series of horizontal bars, a series of standards secured to the solid bottom and the horizontal bars, a series of adjustable holders on the standards, and a series of concentric rods supported by the holders, substantially as described.

3. In a show-stand for windows, the combination, with a standard having a series of notches, one wall of each notch being inclined upward and outward, of a holder adapted to slide on the standard and provided with a recess, and a pawl pivoted in said recess and adapted to engage the notches in the standard, substantially as specified.

4. In a show-stand for windows, the combination of a series of standards, each standard having a series of notches, and each notch a wall inclined upward and outward, of a series of adjustable sliding holders on each standard, each holder being recessed and having a pawl pivoted in said recess to engage the notches on the standard, and having also a depression and a series of rods supported by the holders and resting in said depressions, substantially as described.

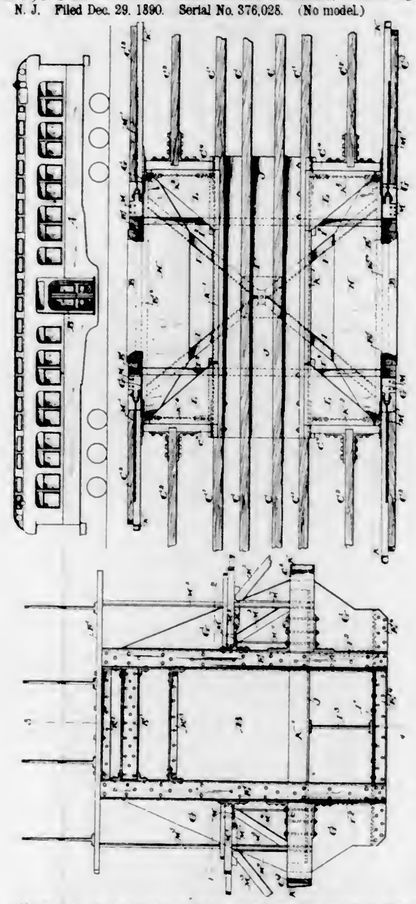
446,983. CHEMICAL RETTING AND UNGUMMING OF TEXTILE FIBERS. CHARLES DE LA ROCHE, Paris, France, assignor of one-fourth to Francis Irsch, New York, N. Y. Filed May 31, 1890. Serial No. 353,854. (No specimens.) Patented in France May 17, 1890, No. 192,551.

Claim.—1. The process of disintegrating vegetable fibrous substances, which consists in saturating them with soapy water, then subjecting them to a solution of a decomposing-salt, whereby fatty acids are formed, dissolving the gummy resinous matter in the body of the fibers, and then using a solution of an alkali, whereby the fatty acids are saponified, substantially as described.

2. The method of disintegrating fibrous plants, which consists in boiling in a soap solution, then adding ammonium chloride and continuing the boiling, and subsequently subjecting the material to a solution of an alkali, substantially as described.

3. The method of disintegrating fibrous plants, which consists in boiling in a soap solution, then adding ammonium chloride and continuing the boiling, and subsequently subjecting the material to a solution of an alkali, and then washing with borated water, substantially as described.

446,984. RAILWAY-CAR. LESLIE P. FARMER, South Orange, N. J. Filed Dec. 29, 1890. Serial No. 376,028. (No model.)



Claim.—1. In a railway-car having its outer longitudinal sills, as C^3 and C^3 interrupted for the admission of a door and steps, as described, an iron frame, as E E E' E^4, secured between and to the ends of the outer sill-sections C^3, in combination with brace-plates, as G G, secured to the upright members of said frame and extending back along the sills C^3, to which they are also secured, substantially as and for the purpose specified.

2. In a railway-car having its outer longitudinal sills, as C^3 and C^3, interrupted for the admission of a door and steps, as described, an iron frame, as E E E' E^4, having its lower member E^4 extending out beyond the upright members secured between and to the ends of the outer sill-sections C^3, in combination with brace-plates, as G G, secured to the upright members of said frame and extending back along the sills C^3, to which and to the projecting ends of E^4 they are also secured, substantially as and for the purpose specified.

3. In a railway-car having its outer longitudinal sills, as C^3 C^3, interrupted, as described, for the admission of a door and steps, an iron frame, as E E E' E^4, secured between the sections of the outer sill, brace-plates, as G, secured to the frame and to the outer sill-sections, substantially as described, sills, as C^4, extending transversely from sill-sections C^3 to a continuous longitudinal sill, as C, to support the ends of the inner intersected sill-sections, as C^3 C^3, and stiffening-plates, as L, secured to sills C^4 and C, all substantially as and for the purpose specified.

4. In a railway-car having its outer longitudinal sills, as C^3 C^3, interrupted, as described, for the admission of a door and steps, iron frames, as E E E' E^4, secured opposite to each other between and to the outer intersected sills, in combination with plates, as H, secured to the lower members of the frames and projecting horizontally inward, and cross-braces I I, &c., secured to the ends of plates H, all substantially as and for the purpose specified.

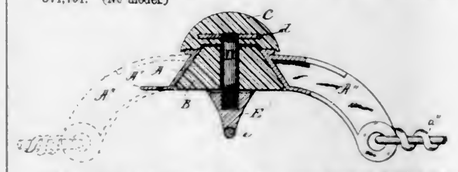
5. In a railway-car having its outer longitudinal sills, as C^3 C^3, interrupted, as described, for the admission of a door and steps, iron frames, as E E E' E^4, secured opposite to each other between and to the outer intersected sills, in combination with plates, as H, secured to the lower members of the frames and projecting horizontally inward, cross-braces I I, &c., secured to the ends of plates H, and a stay-rod, as I^3, securing the intersecting center of braces I I, &c., to the car-body, all substantially as and for the purpose specified.

6. In a railway-car having its outer longitudinal sills, as C^3 C^3, interrupted, as described, for the admission of a door and steps, iron frames, as E E E' E^4, secured opposite to each other between and to the outer intersected sills, in combination with stays, as I^3, extending upward from the bottom of the frames to the car-body, to which they are secured, all substantially as and for the purpose specified.

7. In a railway-car having its outer longitudinal sills, as C^3 C^3, interrupted, as described, for the admission of a door and steps, iron frames, as E E E' E^4, secured opposite to each other between and to the outer intersected sills, in combination with continuous sills, as C C, re-enforced by angle-bars K', a connecting-plate J, and transverse braces I^4, secured to the frames and plate J, all substantially as and for the purpose specified.

8. In a railway-car having its outer longitudinal sills, as C^3 C^3, interrupted, as described, for the admission of a door and steps, iron frames, as E E E' E^4, secured opposite to each other between and to the outer intersected sills, in combination with continuous sills, as C C, re-enforced by angle-bars K', a connecting-plate J, cross-braces I I, uniting the frames, a rod I^3, extending from the intersection of the cross-braces to plate J, and transverse braces I^3, secured to the frames and plate J, all substantially as and for the purpose specified.

446,985. TROLLEY-WIRE HANGER. CHARLES H. MACLOSKIE and WILLIAM E. BAKER, Boston, Mass. Filed Nov. 18, 1890. Serial No. 371,791. (No model.)



Claim.—1. In a trolley-wire hanger, a conical case A, having one or more arms A'', and a conical insulating-block B, secured within said conical case, substantially as and for the purpose set forth.

2. In a trolley-wire hanger, a conical case A, having an annular flange A' and one or more arms A'', combined with a conical insulating-block B, secured within said conical case, substantially as and for the purpose set forth.

3. In a trolley-wire hanger, a conical case A, having an annular flange A' and conical insulating-block B, secured within said case, combined with the insulating-cap C, having screw-threaded spindle D, and the screw-tureaded trolley-wire-supporting ear E, substantially as and for the purpose set forth.

446,986. METHOD OF MANUFACTURING CHILLED-IRON GLOBULES. BENJAMIN C. TILGHMAN and RICHARD A. TILGHMAN, Philadelphia, Pa. Filed Mar. 17, 1890. Serial No. 344,232. (No specimens.)

Claim.—1. The described method of manufacturing chilled-iron

globules with bright metallic surfaces, which consists in atomizing melted metal in a non-oxidizing atmosphere, chilling the resulting globules by immersion in water, and subsequently drying them under conditions which preclude the formation of rust.

2. The described method of manufacturing chilled-iron globules with bright metallic surfaces, which consists in atomizing melted metal in a non-oxidizing atmosphere, chilling the resulting globules by immersion in water, removing the globules from the water and wetting them with a saturated solution of lime or its equivalent, and then drying them.

3. The described method of manufacturing chilled-iron globules with bright metallic surfaces, which consists in atomizing melted metal, chilling the resulting globules by immersion in water, removing the globules from the water and wetting them with a saturated solution of lime or its equivalent, and then drying them.

446,987. METHOD OF MANUFACTURING CHILLED-IRON GLOBULES. BENJAMIN C. TILGHMAN and RICHARD A. TILGHMAN, Philadelphia, Pa. Filed Mar. 17, 1890. Serial No. 344,233. (No specimens.)

Claim.—1. The described method of manufacturing chilled-iron globules, which consists in atomizing melted metal, chilling the globules in water, and then drying them in a non-oxidizing atmosphere.

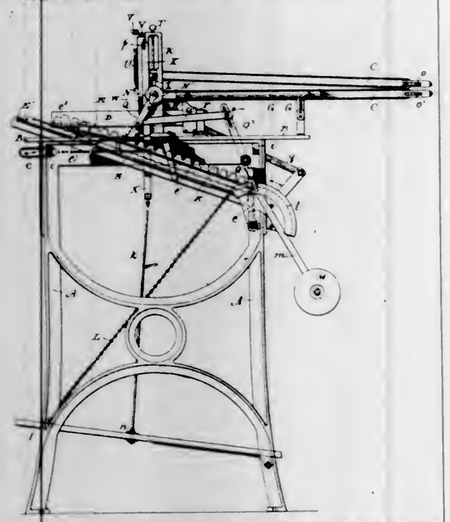
2. The described method of manufacturing chilled-iron globules, which consists in atomizing melted metal in a non-oxidizing atmosphere, chilling the globules in water, and then drying them in a non-oxidizing atmosphere.

446,988. CHILLED-IRON GLOBULE. BENJAMIN C. TILGHMAN and RICHARD A. TILGHMAN, Philadelphia, Pa. Filed Mar. 17, 1890. Serial No. 344,234. (Specimens.)

Claim.—1. As a new article of manufacture, a chilled-iron globule having an unpolished but chilled and hardened bright unoxidized metallic surface.

2. As a new article of manufacture, a chilled-iron globule having an unpolished but chilled and hardened bright unoxidized metallic surface with a protecting film of lime deposited upon it.

446,989. CIGAR-BUNCHING MACHINE. GEORGE L. WESTMAN and JOSEPH DELARUE, Richmond, Va. Filed Nov. 15, 1889. Serial No. 330,267. (No model.)



Claim.—1. In a cigar-bunching machine, the combination of the frame having belt-supporting rollers, the upper one being adapted to be elevated, the feeding-belts arranged upon the rollers, the packer arranged to have its contents dumped upon the lower feed-belt, a reciprocating cutter, the vertically-moving receiving-box, the follower in said box, the sliding shutter, and means, substantially as described, for opening and closing the shutter.

2. The combination of the packer, suitable feeding-belts, a reciprocating cutter, the vertically-moving receiving-box having a vertically-sliding bottom or shutter guided in its side slots, and means for elevating the box and for operating the shutter, the apron, and the bunching-roller, as set forth.

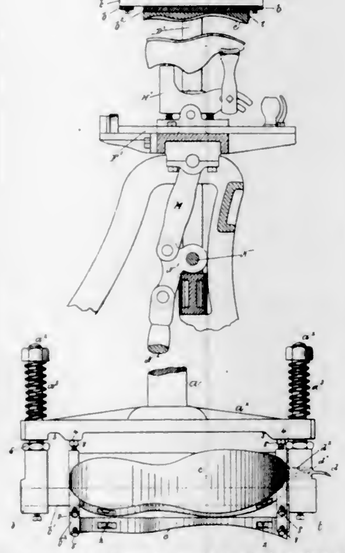
3. The combination of the packer having a sliding cover, the device conforming in cross-section to the contour of a cigar, suitable feed-belts, the upper one being carried by a pivoted frame, a cutter at the inner end of the feed-belts, a vertically-sliding receiving-box having an independent and vertically-sliding bottom or shutter, a follower, a slide arranged as set forth, and suitable bunch-rolling mechanism.

4. A receiving-box for a cigar-machine, arranged to slide vertically after receiving its charge, consisting, essentially, of three principal parts, constituting the receptacle, the side parts provided with vertical and curved guide-slots, a jointed sliding bottom arranged in the slide-slots, in combination with means for elevating the box and independent and separate means for opening and closing the bottom, as set forth.

5. The combination of the vertically-reciprocating receiving-box U, having the independent sliding bottom U', the parts *u* of which are jointed and adapted to slide in the curved guide-slots of the box, the follower in the box, means for elevating the box, means for opening and closing the bottom, a rolling-apron, a reciprocating bunching-roller, and a mold E, arranged as described.

6. The combination of the feed-belts arranged on frames C C', the former being vertically adjustable and articulated, a packer having a sliding cover and of a contour in cross-section to that of a cigar, a vertically-sliding cutter, the vertically-sliding receiving-box U, having a sliding bottom U', a follower in the box, a slide for closing the open side of the box, means for elevating the box and opening and closing the bottom independently thereof, the apron, a bunching-roller, and the mold, as set forth.

446,990. BEATING-OUT MACHINE. GEORGE H. COGSWELL, Bradford, Mass. Filed Dec. 1, 1890. Serial No. 373,174. (No model.)



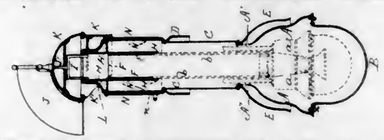
Claim.—1. In a beating-out machine, a jack, a plate $a^{\times}$, having bearings, and a rod b', mounted thereon, a rotatable carrier having two or more form-plates and mounted on said rod, and a locking device to retain the form-plate firmly in position with that arc of the plate which is to be used opposite the jack, combined with a jack, the carrier being and operating substantially as described.

2. In a beating-out machine-jack, the plate $a^{\times}$, having the projections 4 and recesses 3, the bearing-rods, and shaft b' therein, combined with a rotatable form-carrier having regulating-screw stops to operate substantially as described.

3. In a beating-out machine-jack, the plate $a^{\times}$, having the projections 4 and recesses 3, the bearing-rods, and shaft b' therein, combined with a rotatable form-carrier having regulating-screw stops, and with a locking device to engage and hold the said carrier, to operate substantially as described

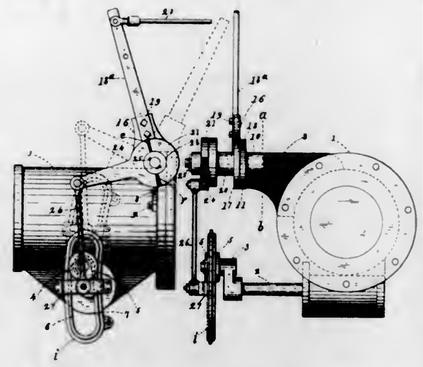
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446,991. LANTERN FOR REGENERATIVE GAS-LAMPS. LESLIE A. COOPER, Boston, Mass., assignor of one-half to Fiske, Coleman & Co., same place. Filed Sept. 1, 1890. Serial No. 363,699. (No model.)



Claim.—In a lantern for regenerative gas-lamps, the combination of the telescopic chimney comprising the parts F H, telescopically arranged, as shown, and the telescopic casing comprising the parts N N', telescopically arranged, as shown, and portion L, whereby the device is vertically adjustable on the chimney and casing for the purpose of regulating the draft, substantially as set forth.

446,992. REVERSING-GEAR FOR STEAM-ENGINES. CHILLON M. FARRAR, Buffalo, N. Y. Filed Nov. 3, 1890. Serial No. 370,137. (No model.)



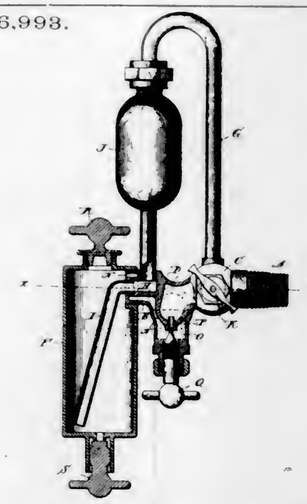
Claim.—1. In a reversing-gear for engines, a reversing-arm having a projecting semicircular portion 21, provided with ends *f* and a depressed surface 22, pivoted to a supporting-pin on the engine, in combination with an arm connected by a connecting-rod with the link and provided with portions *e*, a hub 23, and mounted on the same supporting-pin connected to the engine, substantially as and for the purposes described.

2. In a reversing-gear for engines, a reversing-arm pivoted on a pin secured to a support on the engine, having an opening 12, a projecting portion 18 on one side of the reversing-arm, projecting into the opening 12, and at the opposite side a circular portion having a semicircular projecting portion 21 with end portions *f* and a depressed portion 22, in combination with an arm 24, provided with portions *e* and mounted on the same pin in the depressed portion 22, so as to leave a slight opening between the parts *e* and *f*, and a connecting-rod connecting the arm 24 with the link, substantially as and for the purposes described.

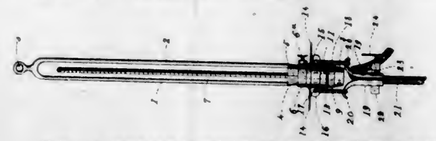
446,993. SIGHT-FEED LUBRICATOR. EDMUND LUNKENHEIMER, Cincinnati, Ohio, assignor to the Lunkenheimer Brass Manufacturing Company, same place. Filed July 31, 1890. Serial No. 360,458. (No model.)

Claim.—In an ascending sight-feed lubricator, the combination, with the oil-reservoir, of the connection A, valve-chamber C, sight-chamber D, and shank E, cast in a single piece and provided with the passages H and N, the condensing-pipe G, connected at one end with the valve-chamber C and at its other with the passage H, and the valve K, controlling both the admission of steam to the pipe G and delivery of oil from the sight-chamber D, substantially as described.

446,993.

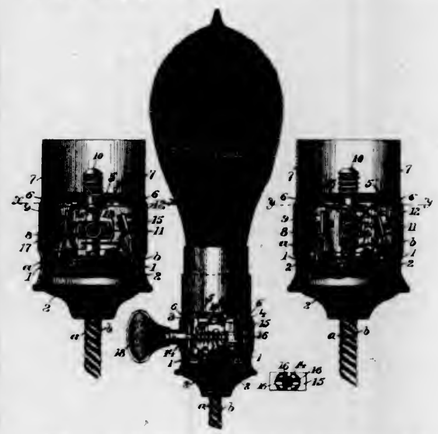


446,994. TEMPER-SCREW. LEWIS D. MASON, Buffalo, N. Y. Filed Feb. 28, 1890. Serial No. 342,147. (No model.)



Claim.—A temper-screw consisting of a suspending frame, a screw 7, provided with an enlarged head 8 and adapted to screw up or down in said frame, in combination with a suspending swivel above the head, turning arms 14 above the swivel, an upper and lower bearing-ring, each having a circular concave bearing-seat, and a series of balls interposed between the two, said rings and balls being located between the swivel and the head of the rod, substantially as described.

446,995. SOCKET FOR INCANDESCENT ELECTRIC LAMPS. JOHN M. OKFORD, Bridgeport, Conn. Filed Nov. 18, 1890. Serial No. 371,830. (No model.)



Claim.—1. In an electric-lamp socket, the combination, with a suitable base, of two pillars, one having an angular face, a key-shaft journaled between said pillars and having rotative and longitudinal movement in its bearings, a notched block adapted to engage the angular face of the pillar, a spring for determining such engagement, and

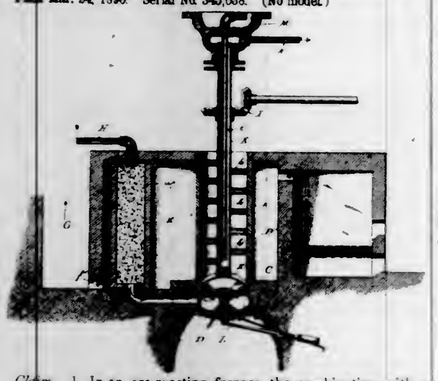
a spring-terminal with which said block may engage, substantially as set forth.

2. The combination, with the terminals, one of which bears a contact-spring, of the vertical pillars having electrical connection with one end of the lamp filament, whereof one pillar is provided with an angular face, the rotative and longitudinally-movable key-shaft having bearings in said pillars and spring-actuated in one direction, and the oblong circuit-closer carried by said shaft and adapted to make contact with the spring, substantially as described.

3. The combination, in a socket for incandescent electric lamps, with a suitable insulating base, of a terminal standard having a projection adapted to make contact with one end of the filament, a pair of pillars supporting a conductive ring surrounding but out of contact with the said projection and adapted to connect with the other end of the filament, a rotative and longitudinally-movable key-shaft journaled between said pillars and spring-actuated in the direction of its length, a notched block carried by said key-shaft and engaging one of the pillars, and a terminal bearing a contact-spring, with which latter the circuit-closing block may engage, substantially as described.

4. In a socket for incandescent lamps, the combination, with the base, of the vertical pillars bearing a conductive ring adapted to make contact with one extremity of the filament and a standard secured to said base and having means for making contact with the other extremity of the filament, said standard projecting freely up within and through the ring and insulated therefrom solely by the air-space between them, substantially as and for the purpose set forth.

446,996. **ORE-ROASTING FURNACE.** GEORGE N. PHELPS, Brooklyn, assignor of one-half to Howard S. Nyman, New Brighton, N. Y. Filed Mar. 24, 1890. Serial No. 345,088. (No model.)



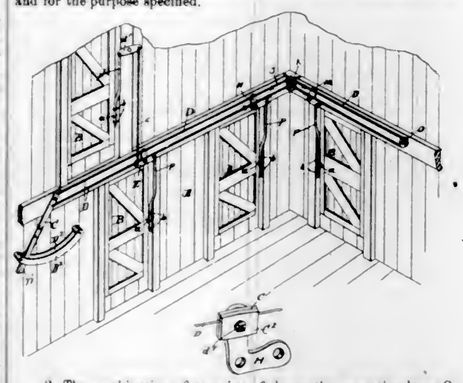
Claim.—1. In an ore-roasting furnace, the combination, with a retort, of a pit, a chamber located between the bottom of the retort and the pit and opening into the retort and pit, a double valve having an apertured upper portion and closing the top and bottom of the chamber beneath the retort, and a superheater connected by an air-supply pipe with the chamber beneath the retort, the superheater and retort being located in an oven connected at its top with a furnace and at its bottom with a chimney, substantially as shown and described.

2. In an ore-roasting furnace, a substantially vertical retort inclosed in an oven connected at its top with a furnace and at its bottom with a chimney, a pit, a hot-air chamber located beneath the retort and opening into the retort and pit, means for supplying hot air to the hot-air chamber, and a double valve having an upper apertured portion which closes the bottom of the retort and a lower portion which closes the opening between the hot-air chamber and pit, substantially as shown and described.

3. An ore-roasting furnace consisting of a substantially vertical retort inclosed in an oven connected at its top with a furnace and at its bottom with a chimney, a hollow stirring device located in the retort and having water supply and discharge pipes, a superheater inclosed in the oven, a hot-air chamber located beneath the retort, an air-supply pipe connecting the superheater with the hot-air chamber, a pit located beneath the hot-air chamber, and a double valve having an apertured upper portion closing the bottom of the retort and top of the hot-air chamber and a lower portion closing the bottom of the hot-air chamber and the top of the pit, substantially as shown and described.

446,997. **BOLT.** FREEMAN STROH and MILTON J. MCINTOSH, Navarre, Ohio. Filed Nov. 19, 1890. Serial No. 371,955. (No model.)

Claim.—1. In a multiple lock, the combination of a series of doors, the operating-lever C, the wires D, the bell-cranks E, H, and M, the staples *a* and *b*, and the sliding bolts or bars P, substantially as and for the purpose specified.



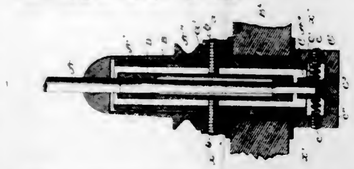
2. The combination of a series of doors, the operating-lever C, provided with the spring D', the bars D^2 and D^3, the wires D, the clamping-block C', provided with the post or thimble d^3, the clamping-block C^2, the clamping-bolts d^4, the sliding bolts or bars P, the staples *a* and *b*, and the bell-cranks E, H, and M, substantially as and for the purpose specified.

3. The combination of a series of doors and series of bell-cranks, the connecting-rod *c*, the rock-bar *d*, the sliding bolt P', the wires D, the grooved pulleys K and O, and an operating-lever C, substantially as and for the purpose specified.

446,998. **MAKING PHOSPHATIC FERTILIZERS.** JOSEPH VAN RUYMBEKE, Chicago, Ill., assignor of one-half to William F. Jobbins, same place. Filed Sept. 30, 1889. Renewed Dec. 20, 1890. Serial No. 375,310. (Specimens.)

Claim.—The process described of first taking iron and alumina phosphate, pulverizing the same, mixing it with muriate of potash, or preferably low-grade sulphate of potash, treating the mixture with sulphuric acid, and then subjecting it to heat until the acid phosphate contained is converted into metaphosphate, substantially as specified.

446,999. **SUPPORT FOR SPINNING-SPINDLES.** ROLLIN WHITE, Lowell, assignor to William F. Draper, Hopedale, Mass. Filed May 12, 1888. Serial No. 273,745. (No model.)

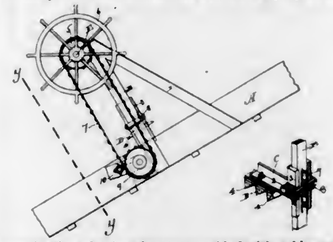


Claim.—The spindle having an attached sleeve, an outside supporting case or shell surrounded by the sleeve and adapted to be mounted on a rail, a lateral bearing for that part of the spindle within the sleeve, and an independent lateral bearing for the spindle near its lower extremity, and radially-arranged adjusting-screws to adjust both said bearings laterally with the spindle, combined with a series of springs arranged between some of the said adjustable screws and one of the said lateral bearings, to operate substantially as described.

447,000. **APPARATUS FOR PLANING AND CORRUGATING ICE.** GEORGE A. BIRCH, East Greenbush, N. Y. Filed Sept. 16, 1890. Serial No. 365,121. (No model.)

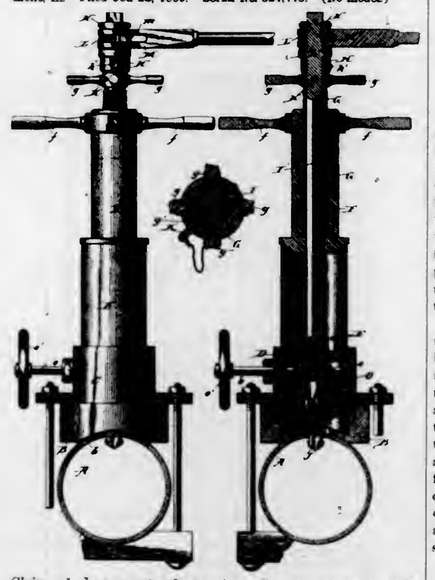
Claim.—1. The combination of a cutter-head and a cutter formed of a metallic plate having its foremost edge beveled upwardly and rearwardly, its upper surface being plane and its lower surface provided with a series of parallel corrugations running from its foremost to its rearmost edge, said cutter being secured to the under side of said cutter-head without anything intervening between the cutter and the cake of ice on which it operates, as herein specified.

2. The combination of an ice-elevator, a cutter-head having a perpendicular adjustment on said elevator, and a cutter secured to the lower face of said cutter-head, said cutter being provided with a series of parallel corrugations extending from the foremost to the rearmost edge of its lower face and being arranged in such relation to the plane of said elevator that its rearmost edge will be slightly elevated from a line parallel to the plane of the elevator, as and for the purpose herein specified.



3. The combination of an ice-elevator provided with guides erected perpendicularly thereon, a cutter-head fitted to slide on said guides and having a cutter secured thereto, an operating-shaft provided with sprocket-wheels, and endless chains carried by said sprocket-wheels and by adjustable sprocket-wheels fixed to the string-pieces of the ice-elevator, said endless chains being connected to said cutter-head, whereby the latter may be adjusted and retained at any desired elevation in respect to the plane of said elevator, as and for the purpose herein specified.

447,001. **MACHINE FOR TAPPING MAINS.** JOHN BRANKEY, Lemont, Ill. Filed Oct. 22, 1889. Serial No. 327,775. (No model.)



Claim.—1. In a machine for tapping mains, the tubular head F, internally threaded, in combination with the feed-tube G, externally threaded to fit the head F, the drill-rod I, inserted in the feed-tube and provided with a collar i just above the upper end of the latter and extending over the same, and the screw-cap H, secured upon the upper end of the feed-tube and fitting upon the upper face of the collar on the drill-rod, whereby the latter is secured to the feed-tube so as to be moved both up and down by the movement of said tube, substantially as and for the purposes specified.

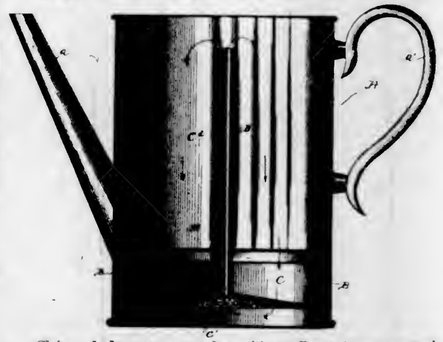
2. In a machine for tapping mains, the tubular head F, internally threaded at a pitch the same as the threads on the tap, in combination with the feed-tube G, externally threaded at the same pitch to fit said head, and provided with a lever for rotating it, and a device whereby the said tube and drill-rod may be connected and disconnected at pleasure, whereby the drill-rod may be either rotated independently of the feed-tube or connected thereto and rotated with said tube, substantially as and for the purposes specified.

3. The tubular head F, internally threaded, in combination with the feed-tube G, externally threaded, the drill-rod I, tap J, threaded at a pitch the same as the feed-tube, and the pin K, adapted to pass through suitable apertures in said tube and rod, whereby they may be fastened together or disconnected at will, substantially as and for the purposes specified.

4. In a machine for tapping mains, the tubular section C, internally threaded at its upper end, in combination with the threaded ring D, fitted to the interior thereof, and the upper tubular section E, threaded at its lower end and provided with an inwardly-projecting flange *e*, whereby it is seated on the said ring, substantially as and for the purposes specified.

5. The tubular section C, in combination with the threaded ring D, the upper tubular section E, and the valve O, adapted to be closed upon the under side of said ring, substantially as and for the purposes specified.

447,002. **APPARATUS FOR MAKING COFFEE.** FLORA L. BROWN, Chicago, Ill. Filed July 2, 1890. Serial No. 357,560. (No model.)



Claim.—1. In an apparatus for making coffee, an inner receptacle adapted to hold ground coffee-berries and to fit into an outer receptacle, such inner receptacle being composed of a sheet-metal ring one edge of which is adapted to rest upon the upper surface of the bottom of the outer receptacle, a partition attached to the ring a short distance from the lower edge thereof and extending therefrom inward to a vertical pipe which passes through such partition and is secured therein, such partition having perforations therein and forming the bottom of the coffee-berry receptacle, and a cover, also composed of perforated metal, adapted to rest upon the upper edge of the metal ring and to have such vertical pipe extend through it and upward in the liquid in the outer receptacle, all substantially as described.

2. In an apparatus for making coffee, the combination of an outer receptacle adapted to hold liquid with an inner receptacle adapted to hold ground coffee-berries, such inner receptacle fitting into the outer receptacle and composed of a sheet-metal ring, one edge of which rests upon the upper surface of the bottom of the outer receptacle, a cone-shaped partition attached to the ring a short distance from the lower edge thereof and extending therefrom upward and inward to a vertical pipe which passes through such cone-shaped partition and is secured therein, such partition having perforations therein and forming the bottom of the coffee-berry receptacle, and a cover, also composed of perforated metal, adapted to rest upon the upper edge of the metal ring and to have such vertical pipe extend through it and to near the top of the outer receptacle, all substantially as described.

447,003. **FINISHER-PRESS.** JOHN H. MCGOWAN, Cincinnati, Ohio. Filed Mar. 18, 1889. Serial No. 303,653. (No model.)

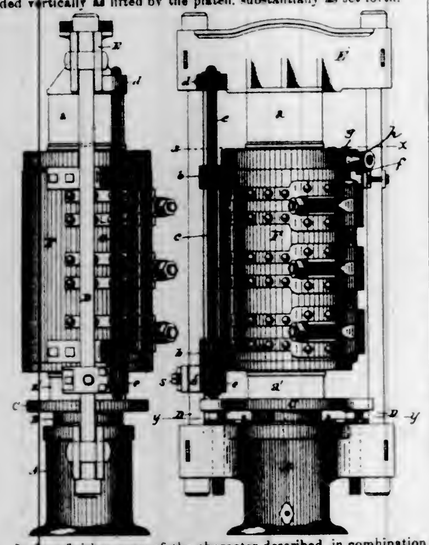
Claim.—1. In a hydraulic press, the combination of the press-frame, a sinker-block attached to the head-bar of the frame, a finisher-casing open at both ends and pivotally secured in parallel relations with and movable vertically in the axis of the ram, and a ram extended into a platen and arranged to elevate the finisher around the upper sinker-block, substantially as set forth.

2. In a hydraulic press, the combination of the press-frame and operative parts, an open-ended finisher pivotally secured in parallel relations with and free to move vertically in the general axis of the ram movement, and an adjustable stop for supporting the finisher at its lower limit of movement, substantially as set forth.

3. In a press of the character described, a vertically-pivoted finisher swinging into and out of the general axis of the press movement, an adjustable supporting-shelf upon the press-frame in the horizontal path of the finisher, and a gage-plate on the finisher engaging said adjustable supporting-shelf to guide and hold the finisher in proper position axially in relation to the sinker-blocks, substantially as set forth.

4. In a finisher-press, in combination with the ram, press-frame,

and sinker-block, a finisher provided with side loops, a fixed pintle embraced by said loops, upon and by which the finisher is held and permitted to swing horizontally and permitted to be moved and guided vertically as lifted by the platen, substantially as set forth.



5. In a finisher-press of the character described, in combination with the presser-frame, the pintle-bar and the finisher carried pivotally thereon, the supporting-lug *c*, clamped adjustably to the side bar and forming a holding-socket for the pintle-bar, and an adjustable bearing for the finisher, substantially as set forth.

6. In a finisher-press of the character described, in combination with the press-frame, pintle-bar and finisher carried pivotally thereon, a gage-plate carried upon the finisher, and a corresponding supporting shelf or plate adjustably secured to the standard, substantially as and for the purpose set forth.

7. The combination, in a finisher-press of the character described, of the finisher pivotally hung to swing into and out of the axis of press movement, a guide-stop upon the finisher, and the opposite standard against which said guide-stop impinges to limit its swinging movement and retain the same in proper axial relations with the sinker-block and ram and align the finisher with the sinker-block, substantially as set forth.

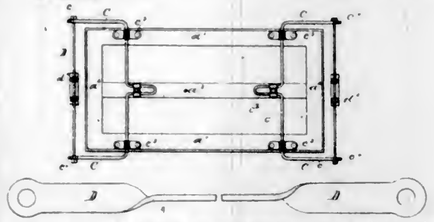
447,004. AUTOMATIC SPRINKLER. AUGUSTUS F. NAGLE, Chicago, Ill., assignor to the Nagle Automatic Sprinkler Company, same place. Filed Oct. 11, 1890. Serial No. 367,812. (No model.)



Claim.—1. In an automatic sprinkler, the closing-cap, in combination with the retaining-lever, the open fastening-link E, the arm *a'*, and the retaining-plates F G, soldered to the link and having a bearing at the upper portion of the said arm, substantially as and for the purposes specified.

2. In an automatic sprinkler, the retaining-lever D, in combination with the open link E, provided with offsetting seats *e*, the arm *a'*, provided with the seat *a⁴*, the fastening-plate F, provided with the recess *f* at its lower end, the plate G, having a knife-edge bearing at its upper and lower ends, the former in a plane within that of the latter, and both plates soldered to the link, substantially as and for the purposes specified.

447,005. VEHICLE-SPRING. DAVID M. FARRY and THOMAS H. FARRY, Indianapolis, Ind. Filed Apr. 25, 1889. Serial No. 308,608. (No model.)



Claim.—1. In a vehicle, the combination, with a torsion or other spring C, secured directly or indirectly to the body, of the supporting and compensating spring D, having a horizontally-flat portion at its center, whereby it is secured to the head-block or axle, and vertically-flat end portions secured to the ends of the spring or springs C, all constructed and arranged whereby said spring D may yield vertically at its center and horizontally at its ends, substantially as described.

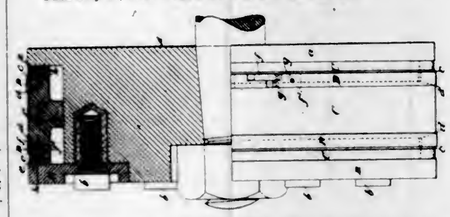
2. In a vehicle, the vehicle-body and vertically-yielding springs secured thereto, in combination with vertically and horizontally resilient springs secured at their central portions to a part of the running-gear of the vehicle and at their ends to said vertically-yielding springs.

447,006. PERCH FOR BIRD-CAGES. JOHN F. SWEENEY, San Francisco, Cal. Filed Mar. 4, 1890. Serial No. 342,612. (No model.)



Claim.—A perch for bird-cages, supported from the side or sides of the cage, a coating of fish-glue, and a compound of fine sharp sand and red pepper applied to and secured upon the perch by means of the glue, substantially as herein described.

447,007. PISTON-PACKING. WALTER CHRISTIE, New York, N. Y. Filed May 27, 1890. Serial No. 353,290. (No model.)

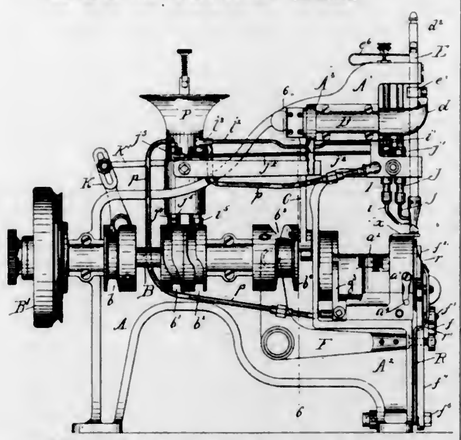


Claim.—1. The combination, with the flanged piston-head, a follower fitted thereto, and a bull-ring arranged between the flange of the piston-head and the follower and having a beveled shoulder, of an expanding packing-ring surrounding the bull-ring and having a beveled face conforming to the beveled shoulder of the bull-ring and interposed between the said shoulder and follower or flanged piston-head, and a series of coil-springs arranged at intervals in the circumference of the packing-ring directly between the said ring and the follower or flange of the piston-head, substantially as herein described.

2. The combination, with the flanged piston-head, a follower fitted thereto, and a bull-ring having in its circumference a groove of which one side is beveled and the opposite side contains a series of holes open to one side of the exterior of the said ring, of an expanding packing-ring contained within and conforming to said groove in the bull-ring, and a series of spiral springs arranged in the said holes and each abutting at one end against the packing-ring and at the other end against the follower or flange of the piston-head, substantially as herein set forth.

3. The combination, with the flanged piston-head, a follower fitted thereto, and a bull-ring having two beveled shoulders presented in opposite directions, of two expanding bevel-faced packing-rings applied one outside of each of said shoulders, and spiral springs abutting directly against said packing-rings and against the follower and flange of the piston-head, substantially as herein described.

447,008. SEWING-MACHINE. HENRY H. CUMMINGS, Malden, assignor to the Davis-Moore Sewing Machine Company, Boston, Mass. Filed Mar. 26, 1890. Serial No. 345,432. (No model.)



Claim.—1. In a wax-thread sewing-machine, the combination, with the frame A, forked at its forward end to form the branches A A², having a work-receiving space between them, of the driving-shaft B, journaled in the rear portion of the said frame about midway vertically thereof and provided with the cams *b b' b² b³*, the rotating shuttle-operating shaft *c²* forward of the said driving-shaft and connected therewith to receive a differential rotary movement therefrom, as described, the needle-bar and its needle, the bell-crank lever F, actuated by the said cam *b²* and serving to operate said needle-bar, the take-up lever N, the lever K, operated by the said cam *b*, the connecting-rod K' between the said lever K and the take-up lever, the vibrating thread-carrier *j*, the vibrating thread-measurer *i*, and connections between the said cams *b'* and *b³* and the thread-carrier and thread-measurer, substantially as described.

2. The combination, with the driving-shaft B, having the disk *b⁴*, of the bell-crank lever C, pivoted to said disk and having its shorter arm provided with a pin *c*, the shuttle-operating shaft *c²*, having the disk *c³*, provided with the slot *c'*, entered by the said pin *c*, the rock-shaft D, having the rear arm *d*, to which the longer arm of said bell-crank lever is attached, and the forward arm *d'*, and the awl-bar *d²*, operatively connected with the said bar *d'*.

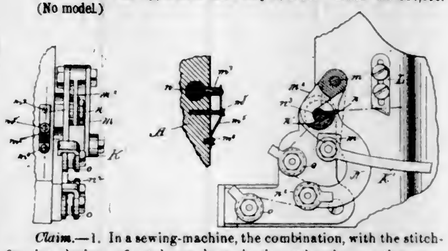
3. The combination, with the driving-shaft B, having the cam *b²*, of the bell-crank needle-bar-operating lever F, the vertical arm of which is provided with a stud entering the groove of said cam, the lever *f⁴*, the needle-bar constructed to slide vertically in said lever, a link having universal-joint connections with said needle-bar and lever, the rock-shaft *g⁴*, having arms *g⁵* and *g⁶*, the grooved cam for operating said rock-shaft, and connections between the said arm *g⁵* and said lever *f⁴*, whereby the latter is vibrated to impart horizontal or feeding movements to said needle-bar.

4. The combination, with the lever *f⁴*, having the rack *f⁵*, of the needle-bar sliding vertically in said lever, the cross-bar or block H, the regulating sleeve or shaft *h*, supported by said block or cross-bar and having a toothed portion engaging said rack, a turning head or handle, and a stud or slide, and the rock-shaft *g⁴*, having a slotted arm engaging said stud or slide.

5. The combination, with the shaft *c³*, having the cam-grooved disk *g'*, of the lever *f⁴*, the needle-bar sliding vertically therein, the rock-shaft *g⁴*, having arms *g⁵* and *g⁶*, and the cross-bar or block H, connected with said arm *g⁶* and vertically adjustable on said lever *f⁴*.

6. The combination, with the needle and shuttle and their operating mechanisms, of the vertical rock-shaft I, having the thread-measurer arm *i* and operating-arm *i'*, the connecting-rod *i²*, the vertical shaft *i⁴*, having arms *i⁵* and *i⁶*, to the former of which said rod is attached and the latter of which has a stud or roller *i⁷*, the grooved cam *b³*, entered by said stud or roller, and the shaft B, carrying said cam.

447,009. TAKE-UP FOR SEWING-MACHINES. HENRY H. CUMMINGS, Malden, assignor to the Davis-Moore Sewing Machine Company, Boston, Mass. Original application filed Mar. 26, 1890, Serial No. 345,432. Divided and this application filed July 3, 1890. Serial No. 357,635. (No model.)



Claim.—1. In a sewing-machine, the combination, with the stitch-forming devices, of a take-up lever having a bearing portion over which the thread passes, and an operating-lever, as *m*, serving to impart take-up movements to said take-up lever, said operating-lever being provided with an arm or portion arranged to press upon and clamp the thread at said bearing portion and through such pressure to operate the take-up lever, whereby the greater the resistance on the thread and the harder the pull of the take-up the tighter the thread will be clamped.

2. In a sewing-machine, the combination, with the stitch-forming devices thereof, of a take-up lever having rigid therewith a fulcrum pin or shaft, and being also provided with a bearing portion over which the thread passes, a friction device for the said fulcrum pin or shaft, and an operating-lever, as *m*, having an arm or portion arranged to press upon the thread at said bearing portion and through such pressure to operate the take-up lever.

3. The combination, with the stitch-forming mechanism of a sewing-machine, of a take-up lever pivoted between its ends, and thus having two arms, one of which serves to take up the loops of thread and the other of which carries a pin, said take-up lever having a bearing portion over which the thread passes, and an operating-lever pivoted on said pin carried by the take-up lever and having an arm or portion to press upon and clamp the thread at said bearing portion, and by such pressure to operate the said take-up lever, said operating-lever extending from said pin beyond the fulcrum of the take-up lever, and means for actuating said operating-lever.

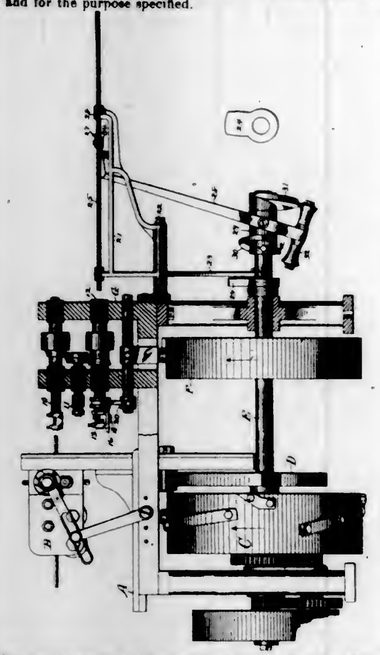
4. The combination, with the stitch-forming mechanism of a sewing-machine and the frame thereof, of the take-up lever N, having between its ends the pivot pin or shaft *n*, rigid with said lever and journaled in said frame, said take-up lever having at its upper end the pin *m'* and near its fulcrum the bearing portion *n'*, over which the thread passes, the operating-lever *m*, pivoted on said pin *m'* and having rigid therewith the arm *m²*, the free end of which is arranged to press upon said bearing portion and through such pressure to operate the take-up lever, and means for actuating said operating-lever.

5. The combination, with the stitch-forming mechanism of a sewing-machine and the frame thereof, of the take-up lever N, having between its ends the pivot pin or shaft *n*, rigid with said lever and journaled in said frame, said take-up lever having at its upper end the pin *m'* and near its fulcrum the bearing portion *n'*, over which the thread passes, a friction device for preventing free movement of the said pin or shaft *n*, the operating-lever *m*, pivoted on said pin *m'* and having rigid therewith the arm *m²*, the free end of which is arranged to press upon said bearing portion and through such pressure to operate the take-up lever, and means for actuating said operating-lever.

447,010. SLOTTING ATTACHMENT FOR SCREW-MACHINES. ARTHUR H. EDDY, Hartford, assignor of one-half to Christopher M. Spencer, Windsor, Conn. Filed Oct. 2, 1890. Serial No. 366,898. (No model.)

Claim.—1. The combination of the slide 25, the T-lever 28, and the cams 30 and 31, arranged to act alternately on the head or cross-arm of the T-lever for reciprocating said slide, substantially as described, and for the purpose specified.

2. The combination of the swinging frame 21, the slide 25, mounted in said frame, the T-lever 28, the cams 30 and 31 for acting thereon, and the cam 24 for moving said frame, substantially as described, and for the purpose specified.



3. The combination of the swinging frame 21, the cam 24, the slide 25, mounted in said frame, the T-lever 28, the cams 30 and 31 for acting thereon, the hollow spindle 12 of a screw-machine, and the saw 37, arranged by the side of said spindle, substantially as described, and for the purpose specified.

4. The combination of the hollow spindle 12, its reciprocating cutting-off tool, the reciprocating slide 25, and mechanism for operating said slide for presenting it to the screw within said spindle, substantially as described, and for the purpose specified.

5. The combination of the slide 25, the T-lever 28, connected to said slide, the cam 30, having the tail *a*, and the cam 31, having the depression *b* and following rise or projection *c*, substantially as described, and for the purpose specified.

6. The combination of the swinging frame 21, the slide 25, mounted therein, and mechanism for reciprocating said slide and for rocking said swing-frame, substantially as described, and for the purpose specified.

7. The combination of the spindle 12 of a screw-machine, within which the screw is cut from the stock, the revolving cutter 37, set to one side of said spindle, the swinging frame 21, the slide 25, mounted therein, and mechanism for reciprocating said slide and rocking said frame to present the slide first to the spindle and then to the saw, substantially as described, and for the purpose specified.

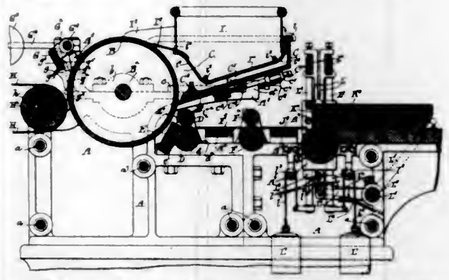
8. The combination of the spindle of a screw-machine, within which the screw is cut from the stock, the slide 25, mounted in a suitable frame, the knockout 26, provided with a lug 27 for engaging said frame, and mechanism for reciprocating said slide, substantially as described, and for the purpose specified.

447,011. BOWLING-BALL. STEPHEN S. HARMAN, New York, N. Y. Filed Dec. 31, 1890. Serial No. 376,334. (No model.)



Claim.—A bowling ball the socket or sockets of which are provided with linings or internal cushions of soft elastic material, as india-rubber, substantially as herein described.

447,012. GLUE-APPLYING MACHINE. MARK D. KNOWLTON and CHARLES F. PEASE, Chicago, Ill.; said Pease assignor to William C. Ritchie, same place. Filed Mar. 16, 1888. Serial No. 267,323. (No model.)



Claim.—1. The combination, with a revolving roller and means for feeding and carrying sheets to be operated upon against the surface of the said roller, of a glue-tank discharging by gravity upon the surface of the said roller, a scraper acting upon the surface of said roller, and a strainer receiving the substance from said scraper and discharging it into the said tank, substantially as described.

2. The combination, with the roller B and tank C, of the box or frame I, provided with a perforated bottom, and a scraper attached to one side of said box and acting upon the roller, said box or frame being sustained within the said tank, substantially as described.

3. The combination, with the roller B and tank C, of the box or frame I, provided with a perforated bottom, a scraper attached to one side of said box or frame and acting on the roller, and deflecting plates or wipers located at the sides of the scraper and fitted to the ends of the roller for directing the material upon the latter inwardly to the scraper, substantially as described.

4. The combination, with the bar G, provided with a longitudinal groove and transverse grooves or notches, of fingers *g*, provided with prongs engaging the said longitudinal groove and with prongs engaging the side of the bar opposite the groove, substantially as described.

5. A pasting or gluing machine comprising means, substantially as described, for applying paste or glue to paper sheets, an elastic feed-roller, a gate located in contact with the same, a presser acting in opposition to the roller, a vertically-movable bar sustaining the presser, vertically-movable rods sustaining said bar, clutch-blocks mounted upon the rods, and means connected with said clutch-blocks for actuating the same to depress the bar and presser, substantially as described.

6. The combination, with a pasting or gluing roller, means for feeding adhesive substance thereto, and means for directing sheets against and into contact with the said roller, of a series of fingers for separating adhering sheets from the roller, said fingers being provided with concave inner edges resting in contact with the surface of the roller and with oblique end surfaces forming angles both with the said concave inner edges and with the opposite or outer edges of said fingers, substantially as described.

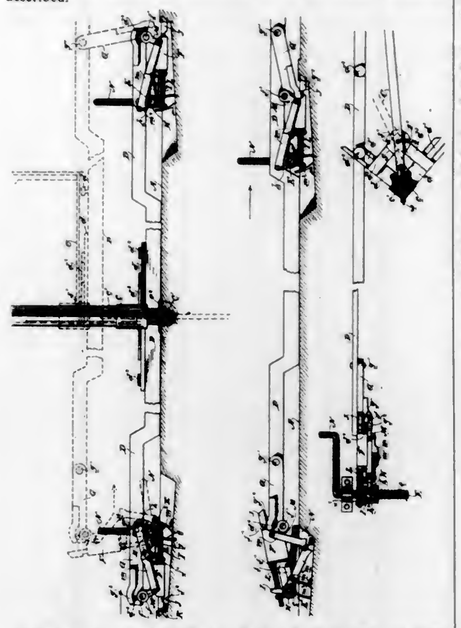
447,013. GATE. JOHN F. A. MILLERICK, San Francisco, Cal. Filed July 10, 1890. Serial No. 358,342. (No model.)

Claim.—1. In combination with the gate having the axially and vertically movable standard *c*, the swinging bar D in the roadway, and arms fixed to the standard connecting said bar with the standard of the gate, whereby the standard is raised and turned axially to free the gate and swing it, substantially as herein described.

2. In combination with the gate having the axially and vertically movable standard with a hollow lower end and the fixed standard *c'*, over which the lower end of the gate-standard is fitted and moves, the swinging bar D and arms secured to the gate-standard and connecting the same with the bar, substantially as herein described.

3. In combination with the gate having the vertically and axially movable standard, the swinging bar D, having the fixed pins or studs d^3, and the arms *d*, connected with the gate-standard and freely slotted over the pins or studs of the bar, substantially as herein described.

4. In combination with the gate having the vertically and axially movable standard, the swinging bar D, and connections between the bar and the standard, the means for operating the bar D, consisting of the rock-shafts E and the toggle-levers, one member of which is connected with the rock-shaft and the other with the bar, substantially as herein described.



5. In combination with the gate having the vertically and axially movable standard, the swinging bar D, and connections between the bar and standard, the means for operating the bar D, consisting of the rock-shafts, the toggle-levers, one member of which is pivoted upon the shafts and the other to the bar, the contact-pins d^4 of the bar under which the joints of the toggle-levers work, and a connection between the shafts and the lower members of the toggle-levers, whereby the latter are operated by the turning of the former, substantially as herein described.

6. In combination with the gate having the vertically and axially movable standard, the swinging bar D, and connections between the bar and the standard, the means for operating the bar D, consisting of the rock-shafts E, the members F and G of the toggle-levers, pivoted to the shafts and to the swinging bar, respectively, the contact-pins of the bar operated by the toggle-levers, the spring-controlled locking-bars J, engaging fixed sockets and having shouldered heads for limiting their retraction, the bell-crank levers connected with the locking-bars, and the catch-arms I on the shafts, adapted to engage the bell-crank levers, substantially as herein described.

7. In combination with the gate having the vertically and axially movable standard, the swinging bar D, and connections between the bar and standard, the means for operating the bar D, consisting of the rock-shafts E, the pivoted toggle-levers connecting the shafts with the bar, the contact-lugs g^4 on the upper members of the toggle-levers, the contact-arms M, adapted to come in contact with said lugs, and the jointed levers *m*, connecting the contact-arms with the rock-shafts, substantially as herein described.

8. In combination with the gate having the vertically and axially movable standard, the swinging bar D, and connections between the bar and standard, the means for operating the bar D, consisting of the spring-controlled rock-shafts E, the toggle-levers, the lower members of which are pivoted on the rock-shafts, and the upper members are pivoted to the ends of the bar, the contact-pins d^4 on the bar operated by the joint of the toggle-levers, the spring-controlled sliding lock-bars J, carried by the lower members of the toggle-levers and adapted to engage fixed sockets, said lock-bars having shouldered heads for limiting their retraction, the bell-crank levers for operating the lock-bars, the catch-arms I on the shafts for operating the bell-crank levers, the contact-lugs g^4 on the upper members of the toggle-levers, the contact-arms M, operating against the lugs, and the jointed levers *m*, connecting the contact-arms with the rock-shaft, substantially as herein described.

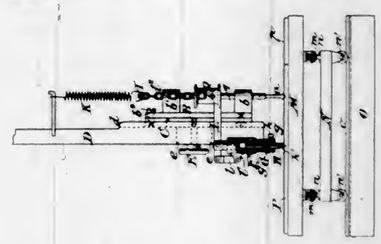
9. In a gate, and in combination with the swinging bar D for operating it, the rock-shafts E, and connections therefrom to the bar, whereby the latter is operated, the swinging cranks in the roadway, and the endless chains and pulleys by which the movement of the cranks is transmitted to the rock-shafts, substantially as herein described.

10. The swinging gate, in combination with the arm S, having a notched end, the spring-controlled pawl-bar carried by the gate and adapted to engage the notched end of the arm for holding the gate open, and the lever and connections for releasing the pawl-bar, substantially as herein described.

11. In combination with the swinging gate, the spring-controlled latch, and the lever and connections for operating the latch, the fixed arm S, with a notched head, the spring-controlled pawl-bar carried by the gate for engaging said head, and the link connecting the lever with the pawl-bar, substantially as herein described.

12. The combination of the gate having a vertically and axially movable standard at one end, with which it rises and turns, the swinging bar D for raising and turning the standard, the arm S, projecting from the standard to which the gate is hinged, and a pivot for said gate below, whereby said gate can turn independently of the standard, substantially as herein described.

447,014. MACHINE FOR DRILLING TO PATTERN. PAUL PRYIBIL, New York, N. Y. Filed Dec. 31, 1890. Serial No. 376,342. (No model.)



Claim.—1. In a machine for boring or drilling, the combination, with the drill or cutter and means for operating it, of a pattern corresponding to the work to be done, and a guide-pin bearing a predetermined relation to the cutter and adapted to engage the different points of the pattern and thereby determine the position of the cutter relative to the work, substantially as set forth.

2. The combination, with a drill or cutter, means for operating it, and a suitable support for it, of a guide-pin having a predetermined position relative to the cutter, and a pattern and work-support, the said work-support being free to move in different directions to bring any point in the pattern beneath the guide-pin, substantially as set forth.

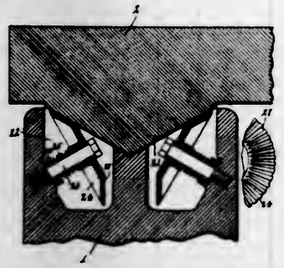
3. The combination, with the drill or cutter, means for operating it, and a guide-pin having a position predetermined with respect to the cutter, of a pattern and work supporting table mounted upon rollers and free to move in one direction upon a track, and a sub-table upon which said track is supported, the said sub-table being free to move upon a track in a direction at right angles to the movement of the first-named table, substantially as set forth.

4. The combination, with a suitable support, a vertically-sliding plate secured thereto, and a laterally-tilting plate pivoted to the vertically-sliding plate, of a drill or cutter and its holder mounted in suitable bearings attached to said tilting plate, a laterally-adjustable arm or bracket secured to the support, a vertically-movable guide-pin mounted in said arm or bracket, a pattern and work support, and means for adjusting the pattern and work support to bring the pattern into the desired position relative to the guide-pin, substantially as set forth.

5. The combination, with a suitable support, a drill or cutter, and its holder mounted in said support and having a limited longitudinal movement, of a supporting-arm secured to said drill-support, a vertically-yielding guide-pin mounted in said arm, a lever for operating said pin, and an operating-lever common to the drill-spindle and pin-operating lever for simultaneously operating the drill and pin, substantially as set forth.

6. The combination, with the drill or cutter, its spindle, and the support in which the spindle is mounted, of a supporting-arm fixed in lateral adjustment with respect to the spindle-support, a guide-pin secured in yielding adjustment to the arm and provided with a conical end, a pattern provided with holes adapted to receive the conical end of the guide-pin, and a support for the pattern free to move in different directions with respect to the guide-pin to bring any one of the holes of the pattern into alignment with the guide-pin, substantially as set forth.

447,015. LUBRICATING DEVICE. GEORGE T. REISS, Hamilton, Ohio, assignor to the Niles Tool Works, same place. Filed June 16, 1890. Serial No. 355,596. (No model.)



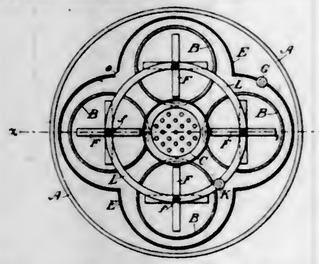
Claim.—1. In a lubricator, the combination, substantially as set forth, of a bed provided with inclined way-surfaces and with oil-recesses in those surfaces, a platen engaging such way-surfaces, a journal-pin disposed across each of said recesses and substantially at right angles to such inclined way-surfaces, and a disk upon each of said journal-pins and engaging the platen with its face.

2. In a lubricator, the combination, substantially as set forth, of a bed provided with inclined way-surfaces and with oil-recesses in those surfaces, a platen engaging such inclined way-surfaces, a journal-pin disposed across each of said recesses substantially at right angles to such inclined way-surfaces, and a disk upon each of said journal-pins and having a radially-grooved face engaging the platen.

3. In a lubricator, the combination, substantially as set forth, of a bed having two way-surfaces in different planes and having separate recesses in those surfaces, a platen engaging said way-surfaces, and independent rotary lubricators disposed in said recesses with their axes in dissimilar planes.

4. In a lubricator, the combination, substantially as set forth, of a bed provided with horizontal and inclined way-surfaces and with recesses in the inclined way-surfaces and extended into the horizontal surfaces, a journal-pin disposed across each of said recesses and extensions thereof, a collar on each of said journal-pins in the extensions of the recesses, a disk upon each of said journal-pins with its hub contiguous to said collar and with its face engaging the inclined way-surfaces of the platen, and a spring upon each journal-pin urging the disk toward its collar.

447,016. GALVANIC BATTERY. MARTIN W. ROBINSON, Medford, Mass., assignor to the Vulcan Electric Company, Kittery, Me. Filed June 6, 1890. Serial No. 354,482. (No model.)



Claim.—1. A bath for one element of a battery, containing a chromate, bichromate, or chromic acid, in combination with a bath for the opposite element, consisting of sulphate of copper, substantially as described.

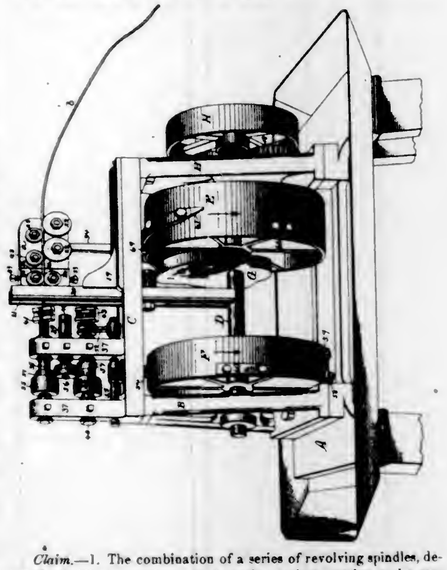
2. In a battery, the combination, with the positive element immersed in a bath containing sal-ammoniac and either a chromate, a bichromate, or chromic acid, of the negative element immersed in a bath consisting of sulphate of copper, substantially as described.

3. The bath for the positive element of a battery, consisting of bisulphate of mercury, muriatic acid, sal-ammoniac, and either a chromate, a bichromate, or chromic acid, in combination with the bath for the negative element, consisting of sulphate of copper, substantially as described.

4. A compound battery-cell consisting of the combination, with an outer jar or vessel, of a single negative element and two or more porous cups contained in said jar, a separate positive element contained in each of said cups, and suitable baths for positive and negative elements, substantially as described.

5. A compound battery-cell consisting of the combination, with a single outer jar containing a single negative element and bath, of two or more separate porous cups contained in said jar, separate positive elements cruciform in transverse section contained in said porous cups, with suitable baths, and a ring connecting said positive elements, constructed and arranged substantially as described.

447,017. SCREW-MACHINE. CHRISTOPHER M. SPENCER, Windsor, assignor of one-half to Arthur H. Eddy, Hartford, Conn. Filed Sept. 26, 1890. Serial No. 366,133. (No model.)



Claim.—1. The combination of a series of revolving spindles, devices for holding a continuous rod or wire against rotation, and a carriage upon which said devices are mounted for presenting said rod or wire successively to said spindles, substantially as described, and for the purpose specified.

2. The combination of a series of revolving spindles, devices for holding the work, a reciprocating slide or carriage upon which said devices are mounted, moving in the same plane as the axis of the several spindles, and a cam G, having concentric faces corresponding to the positions of said spindles for moving said slide and successively stopping it with the work in alignment with the respective spindles, substantially as described, and for the purpose specified.

3. The combination of a series of revolving spindles, a principal carriage 19, moving longitudinally to and from said spindles, a supplementary carriage having work-holding devices and mounted on said principal carriage to move transversely to said spindles, and mechanism for reciprocating said carriage, substantially as described, and for the purpose specified.

4. The combination of a series of revolving spindles, a principal carriage, a supplementary carriage reciprocating thereon, the cam-wheel for reciprocating said principal carriage, having cams corresponding to the respective spindles, and the cam for the supplementary carriage, having steps and concentric faces corresponding to the positions of said spindles, substantially as described, and for the purpose specified.

5. The combination of a reciprocating carriage, the feed-rollers mounted thereon, mechanism for reciprocating said carriage, the lever 32, having ratchet and pawl for moving the feed-rollers, and the link 34, pivotally secured to said lever and the bed of the machine, substantially as described, and for the purpose specified.

6. The combination of a series of revolving spindles and a reciprocating carriage moving transversely to said spindles with the straightening-rollers and feed mounted on said carriage, substantially as described, and for the purpose specified.

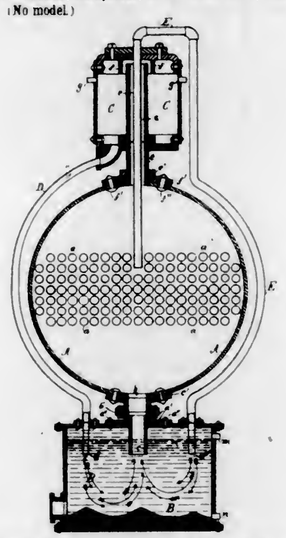
7. The combination of the spindles 38 40, the spindle 39, arranged between them and having a degree of longitudinal movement, a driving-wheel on said middle spindle, and frictional devices on opposite sides of said driving-wheel for connecting it with either spindle for revolving in different directions, substantially as described, and for the pose specified.

8. The combination of the spindle 40, head 43, the tool-carriage 45, sliding transversely in said head, the cam 44, moving longitudinally in said head, and mechanism for operating said cam, substantially as described, and for the purpose specified.

9. The combination of the spindle 40, head 43, sliding tool-carriage 45, cam 44, having shipping-sleeve 51, the shipping-fork 52, shaft 53, having projection 54, and the cam-wheel F, substantially as described, and for the purpose specified.

10. The combination of a series of spindles, the head 43 on one of said spindles having sliding tool-carriage and cam, the shaft D, cam-wheel F, mechanism operatively connecting said cam-wheel and cam of the sliding tool-carriage in the head 43, the principal and supplemental carriages bearing work-holding devices, the cam-wheel E, and cam G, substantially as described, and for the purpose specified.

447,018. FEED-WATER PURIFIER. EDWARD S. TITUS and FREDERICK W. WERNER, Hempstead, N. Y. Filed Oct. 7, 1890. Serial No. 367,374. (No model.)



Claim.—1. The combination, with a steam-boiler, of the chamber B, placed below the same and communicating therewith by a passage *b*, the chamber C, placed above said boiler, the pipe D, extending from the bottom of the chamber C and communicating with the tank B, the pipe E, extending from the interior of the boiler through the chamber C and thence to the tank B, and a tube which provides a passage *c* from the boiler to the chamber C, concentric with the inner portion of the pipe E, the whole arranged substantially as and for the purpose herein set forth.

2 The combination, with a steam-boiler, of the chamber B, placed below the same and communicating therewith by a passage *b*, the chamber C, placed above said boiler, the pipe D, extending from the bottom of the chamber C and communicating with the chamber B, the pipe *d*, extending downward from the top of the tank into the interior thereof, the pipe E, extending from the interior of the boiler through the chamber C and thence to the chamber B, and a tube which provides a passage *c* from the boiler to the chamber C, concentric with the inner portion of the pipe E, the whole arranged substantially as and for the purpose herein set forth.

447,019. CLUTCH MECHANISM. SAMUEL K. WHITE, Chicago Ill. Filed June 28, 1890. Serial No. 357,138. (No model.)



Claim.—1. A clutch comprising driving and driven members, movable parts upon said driving and driven members adapted to automatically interlock with each other, and means for moving one of said parts to disengage it from the other part, substantially as described.

2. A clutch comprising driving and driven members, movable parts upon said driving and driven members adapted to automatically interlock with each other, a stationary annular bearing-surface located in position to hold one of said parts interlocked with the other part, said annular surface being provided with a notch allowing the movement of the part which engages the same in a direction to disengage it from the other part, and a movable part acting on the said part which acts against said annular surface to hold it out of said notch, substantially as described.

3. A clutch comprising driving and driven members, spring-actuated parts upon said driving and driven members adapted to interlock with each other, a stationary annular surface against which one of said parts bears, said annular surface being provided with a notch or recess adapted to allow the movement of said part which bears on said annular surface in a direction to disengage it from the other part, and a movable block constructed to fill said notch, substantially as described.

4. A clutch comprising driving and driven members, interlocking spring-actuated parts upon said driving and driven members, and a movable part engaging one of said spring-actuated parts to move it into the path of the other spring-actuated part, substantially as described.

5. A clutch comprising driving and driven members, spring-actuated parts upon said driving and driven members, one of said parts being located in the path of the other and provided with a notch adapted to engage said other part and an inclined surface adjacent to the notch, and a movable part acting upon one of said spring-actuated parts for disengaging it from the other spring-actuated part, substantially as described.

6. A clutch comprising a stationary part having a bearing-aperture and a slot in one side of said bearing-aperture, driving and driven members mounted upon said stationary part, one of said members being slotted, a spring-actuated dog pivoted in the slot in said member and having a laterally-projecting arm outside of said slot, said dog being adapted to enter the slot in said stationary part, a spring-actuated detent on the other clutch member, located in the path of the said arm, and a movable part acting upon said dog for moving it into the path of said detent, substantially as described.

7. A clutch comprising a stationary part having a bearing-aperture, a slot in one side of said bearing-aperture, driving and driven members upon said stationary part, a spring-actuated dog on one of said members adapted to enter said slot and to engage the other member when disengaged therefrom, a groove in said stationary part communicating with said slot, and a sliding rod located in said groove and bearing at one end against said dog, substantially as described.

8. A clutch comprising a stationary part having a bearing-aperture, a slot in one side of said bearing-aperture, driving and driven members upon said stationary part, a spring-actuated dog on one of said members, said dog being provided with an inclined or cam surface adapted to enter said slot and to engage the other member when disengaged therefrom, a groove in said stationary part communicating with said slot, and a sliding rod located in said groove and bearing at one end against the inclined surface upon said dog, substantially as described.

9. A clutch comprising a stationary part, driving and driven members upon said stationary part, sprig-actuated parts upon said driving and driven members adapted to interlock with each other, a sliding rod in engagement with one of said spring-actuated parts, a pin on said rod, and a cam-plate engaged with and actuating said pin, substantially as described.

447,020. BERTH AND SEAT FOR SHIPS OR RAILWAY-CARS. JAMES G. W. ALDRIDGE, Southampton, England. Filed Jan. 29, 1890. Serial No. 338,442. (No model.) Patented in England Aug. 29, 1888, No. 12,449; in France Apr. 23, 1889, No. 197,661; in Belgium June 1, 1889, No. 86,473, and in Canada Sept. 16, 1889, No. 32,261.

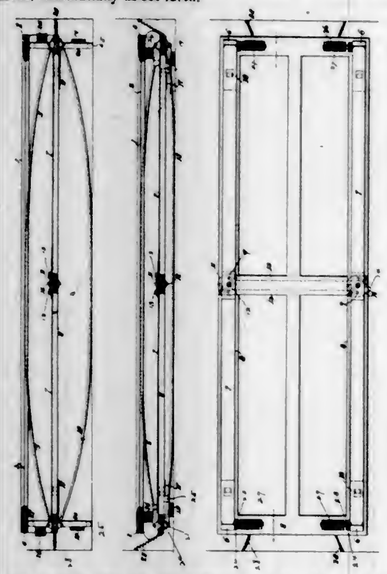
Claim.—1. A berth or seat consisting of a top frame supported on arch-shaped springs, and shoes engaging the ends of said springs and adjustable toward and from each other, substantially as described.

2. In a berth or seat, the combination of a top frame, a skeleton frame supporting said top frame, and arched springs 15 and brushes 19, supporting the skeleton frame, substantially as set forth.

3. In a berth or seat, the combination of a top frame, arched springs supporting said frame, shoes engaging the ends of said springs, and cams connected with said shoes and adapted to adjust them to raise or lower the seat, substantially as set forth.

4. In a berth or seat, the combination of a top frame, arched springs supporting said frame, shoes engaging the ends of said springs, and cams connected with said shoes and adapted to adjust them to raise or lower the seat, a skeleton frame carrying said shoes and ad-

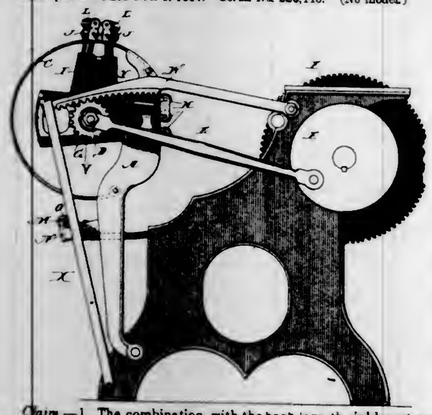
justing means, inverted arched springs, shoes engaging the ends of the latter and supporting said skeleton frame, and means for adjusting the latter shoes, substantially as set forth.



5. In a berth or seat, the combination of a top frame, arched springs supporting the same, adjustable shoes engaging the ends of said springs, hinged blocks adapted to steady said frame and provided with elastic material on their ends and with brushes on their sides, pinions on the axes of said brushes, and racks engaging said pinions and connected with and operated by said shoes, substantially as set forth.

6. In a berth or seat, the combination of a frame, arched supporting-springs, and sliding shoes engaging the ends of the latter, hinged blocks adapted to support the ends of said frame, and connections between said blocks and shoes for turning the former when the latter are moved longitudinally, substantially as set forth.

447,021. INKING DEVICE FOR PRINTING-PRESSES. HENRY F. BECHMAN, Chicago, Ill., assignor to the Schniedewend & Lee Company, same place. Filed Feb. 1, 1887. Serial No. 226,115. (No model.)



Claim.—1. The combination, with the back legs, the inking-plate, the oscillating frames, the supplemental frames rigidly secured to and projecting at an angle from said oscillating frames, and the inking and distributing rollers journaled in said frames, respectively, of the fixed rack, the cross-shaft, the gear mounted thereon and meshing with said rack, and the pitman supported by said cross-shaft, substantially as described.

2. In an inking device for printing-presses, the main frame, the back legs, an inking-plate having a curved flat surface secured to said back legs, the oscillating frame, and distributing-roller mounted in said frame, in combination with the ink-well secured to said back legs, the well-roller, the movable transfer-roller, a cam-lever for actuating said transfer-roller, and a pin or projection on the main frame engaging and actuating said lever, substantially as described.

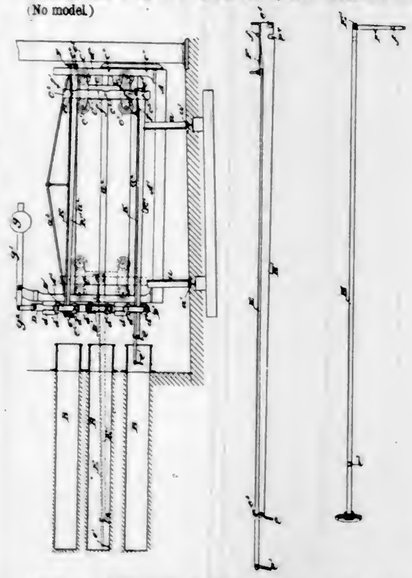
3. In an inking device for printing-presses, the main frame, the back legs, an inking-plate having a curved flat surface secured to said back legs, the oscillating frame and distributing-roller mounted in said frame, in combination with the ink-well secured to said back legs, the well-roller, the movable transfer-roller, a ratchet-wheel mounted on the spindle of the well-roller, a cam-lever having a pawl pivoted thereto for simultaneously actuating the well and transfer rollers, and a pin or projection on the main frame for engaging and actuating said lever, substantially as described.

4. In an inking device for printing-presses, the main frame, the back legs, the cross-shaft thereof, an inking-plate secured to the back legs, the surface of which is concentric to the axis of said shaft, the oscillating frame loosely journaled on said shaft carrying type-inking rollers, and the supplemental frame carrying distributing-rollers, in combination with a stationary segmental rack secured to the oscillating frame engaging and actuated by said rack during the vibrations of the back legs, substantially as described.

5. In an inking device for printing-presses, the combination, with the vibrating back legs, the oscillating frames pivoted thereon and carried thereby, type-inking rollers mounted on said frames, and means for oscillating said frames, of a curved inking-plate secured to and carried by said back legs, the surface of which is concentric to the axis of the oscillating frames and in the path of travel of said rollers, substantially as described.

6. In an inking device for printing-presses, the combination, with the vibrating back legs, the oscillating frames pivoted thereon and carried thereby, supplemental frames rigidly secured to and projecting at an angle from said oscillating frames, type inking and distributing rollers journaled in said frames, respectively, of an inking-plate secured to and carried by the back legs, the surface of which is concentric to the axis of the oscillating frame and in the path of travel of all of said rollers, substantially as described.

447,022. GAS-RETORT-DISCHARGING APPARATUS. GASTON A. BRONDER, New York, N. Y. Filed Mar 6, 1890. Serial No. 342,870. (No model.)



Claim.—1. In apparatus for discharging gas-retorts, the combination, with a track, of a carriage mounted on the track and an extensible and contractible rake having a removable engagement with the carriage for moving it forward and backward with the carriage or not, at pleasure, substantially as set forth.

2. In apparatus for discharging gas-retorts, the combination, with a track, of a carriage mounted on the track and an extensible and contractible rake composed of two parts, each provided with a rake-head, one of the parts having a longitudinally-sliding engagement with the other part, said parts being controlled in their movements by the movement of the carriage, substantially as set forth.

3. In apparatus for discharging gas-retorts, the combination, with a track, of a carriage mounted on the track, an extensible and contractible rake composed of two rake-sections, one of the sections having a longitudinally-sliding movement upon the other section, the rake having a removable connection with the carriage, and stops located in position to engage one of the rake-sections and limit its longitudinal movement relatively to the other section, substantially as set forth.

4. In apparatus for discharging gas-retorts, the combination, with a track, of a carriage mounted thereon, an extensible and contractible rake having a removable connection with the carriage and consisting of two rake-sections, one of the sections having a limited longitudinally-sliding movement relatively to the other section, and a swinging arm upon one of the rake-sections for causing it to be slid upon the other section, substantially as set forth.

5. In apparatus for discharging gas-retorts, the combination, with a track and a carriage mounted thereon, of a reciprocating rake under the control of the carriage and a guide for directing the rake, said guide consisting of a pair of rollers in position to engage the opposite sides of the rake-handles, a permanent guide-bar in position to prevent the rake from displacement at one side between the rollers, a swinging bar having a movement into and out of position to keep the rake from displacement at the opposite side between the rollers, and means for locking the swinging bar in position, substantially as set forth.

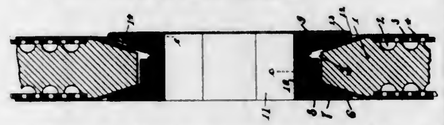
447,023. ELECTRO-HEATING APPARATUS. CHARLES E. CARPENTER, Minneapolis, Minn. Filed Sept. 27, 1890. Serial No. 366,400. (No model.)



Claim.—1. In an electro-heating apparatus, the combination, with the heated surface-plate and the resistance, of a coating of enamel or its equivalent securing the resistance to, but insulating it from, said plate, substantially as and for the purpose described.

2. In an electro-heating apparatus, the combination, with the plate to be heated and the resistance, of a coating of adhesive enamel or its equivalent for securing the resistance to, but insulating it from, said plate, substantially as described.

447,024. FILTER-PRESS. ZORESTER B. COES and GEORGE T. REISS, Hamilton, Ohio, assignors to the Niles Tool Works, same place. Filed Nov. 3, 1890. Serial No. 370,228. (No model.)



Claim.—1. In a filter-press, the combination, substantially as set forth, of a clamp-flange provided with a threaded and non-circular hub adapted to engage a non-circular plate-opening, a rotary clamp-flange provided with a threaded hub to engage the first-mentioned clamp-flange and having provision to receive a wrench by which it may be turned, and a lining loosely disposed upon the hub and against the inner face of said rotary clamp-flange.

2. In a filter-press, the combination, substantially as set forth, of a clamp-flange provided with a threaded and non-circular hub adapted to engage a non-circular plate-opening, a rotary clamp-flange provided with a threaded hub to engage the first-mentioned clamp-flange and having provision to receive a wrench by which it may be turned, and a lining loosely disposed upon the hub and against the inner face of said rotary clamp-flange, and provided with perforations through its face.

3. In a filter-press, the combination, substantially as set forth, of a clamp-flange provided with a threaded and non-circular hub adapted to engage a non-circular plate-opening, a rotary clamp-flange provided with a threaded hub to engage the first-mentioned clamp-flange and having provision to receive a wrench by which it may be turned, and a lining loosely disposed upon the hub and against the inner face of said rotary clamp-flange, the periphery of said lining being turned over the periphery of said rotary flange.

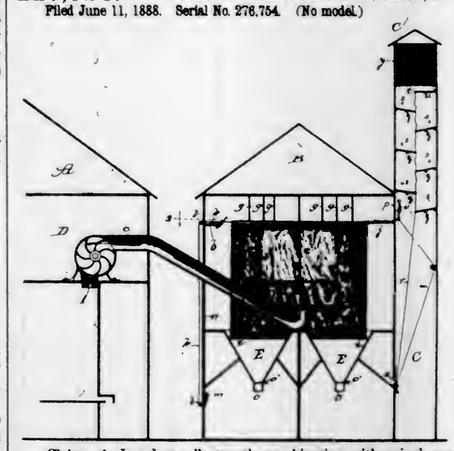
447,025. PLASTER SLAB. ROBERT R. COURSEN, Newark, N. J. Filed Mar. 27, 1890. Serial No. 345,479. (No model.)



Claim.—1. A perforated plaster slab for walls of buildings, having a series of wires through the center thereof with apertures or perforations registering with the perforations in the slab and formed therein by means of coils or turns for the reception of nails for fastening said slabs to said walls, as described, for the purposes set forth.

2. A perforated plaster slab for walls of buildings, having a series of wires arranged parallel with one another through the center thereof longitudinally with perforations formed thereon and a series of perforations through the slab coinciding with those on the wires, as described, for the purposes set forth.

447,026. DUST-COLLECTOR. JOHN K. HALLOWELL, Camden, N. J. Filed June 11, 1888. Serial No. 276,754. (No model.)



Claim.—1. In a dust-collector, the combination, with an inclosure A, of an exhaust-fan D, communicating with the said inclosure, an inclosure B, containing a series of hoppers E, dividing it into an upper sifting-chamber provided with an escape-outlet and a lower collecting-chamber into which the hoppers lead, a conduit *c*, leading from the exhaust-fan into the sifting-chamber above the plane of the hoppers and discharging therein in an upward direction, and a series of cloth-covered frames *f*, suspended in the sifting-chamber over the mouth of the conduit *c*, substantially as described.

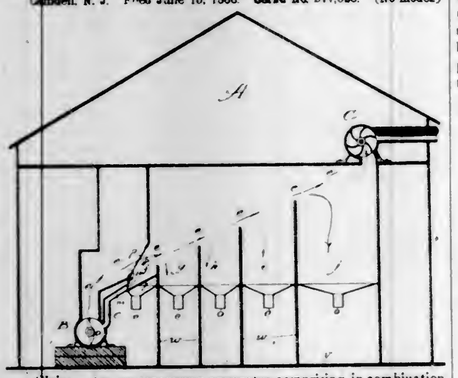
2. In a dust-collector, the combination, with an inclosure A, of an exhaust-fan D, communicating with the said inclosure, an inclosure B, containing a series of hoppers E, dividing it into an upper sifting-chamber and a lower collecting-chamber into which the hoppers lead, a conduit *c*, leading from the exhaust-fan into the sifting-chamber above the plane of the hoppers and discharging therein in an upward direction, a series of cloth-covered connected frames *f*, suspended in the sifting-chamber over the mouth of the conduit *c*, and a tower C, communicating with the sifting-chamber and containing a top screen *t*, substantially as described.

3. In a dust-collector, the combination, with an inclosure A, of an exhaust-fan D, an inclosure B, containing a series of hoppers E, dividing it into an upper chamber and a lower collecting-chamber into which the hoppers lead, a conduit *c*, bent upward at its discharge end, a cone *d*, suspended over the discharge end of the conduit, and the concentric series of filtering-cloths *k*, graduated in length, substantially as and for the purpose set forth.

4. A dust-collector comprising, in combination with an inclosure A, an exhaust-fan D, communicating with the said inclosure, an inclosure B, containing hoppers E, dividing it into an upper sifting-chamber and a lower collecting-chamber, a conduit *c*, leading from the exhaust-fan into the sifting-chamber near its base and discharging therein in an upward direction, a series of connected cloth-covered spring-controlled frames *f*, suspended in the sifting-chamber over the mouth of the conduit *c*, one or more bumpers for the frames, a cone *d*, suspended in inverted position over the mouth of the conduit, and a screen-covered tower C, communicating through a screen-covered opening with the sifting-chamber and containing a knocker *u* and

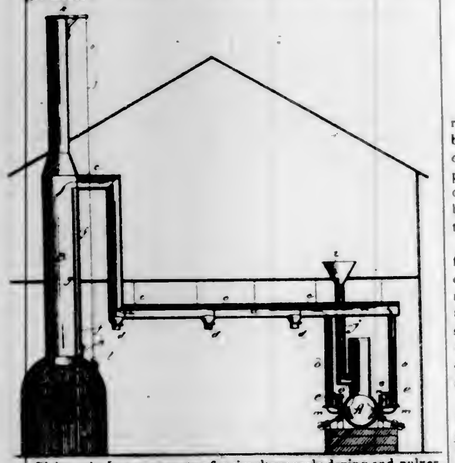
alternating hinged shelves connected together and with the knocker, and a knocker *v* for the said screen-covered opening, the whole being constructed and arranged to operate substantially as described.

447,027. **ORE-SEPARATING APPARATUS.** JOHN K. HALLOWELL, Camden, N. J. Filed June 13, 1888. Serial No. 277,023. (No model.)



Claim.—An ore-separating apparatus comprising, in combination with an inclosure A, a pulverizer B, having an air-inlet passage *c* and communicating through an opening covered by a screen *p* with a compartment containing receptacles having their defining partitions extended successively higher from the pulverizer to define a gradually-rising plane, an exhaust-fan C, communicating with the said compartment near the upper end of the inclined plane, a false bottom *l* in the lowermost receptacle, a return-passage *m*, leading into the pulverizer through its air-inlet *c*, and a valve *n* for the passage *m*, substantially as and for the purpose set forth

447,028. **ORE DRYING AND PULVERIZING APPARATUS.** JOHN K. HALLOWELL, Camden, N. J. Filed June 13, 1888. Serial No. 277,024. (No model.)



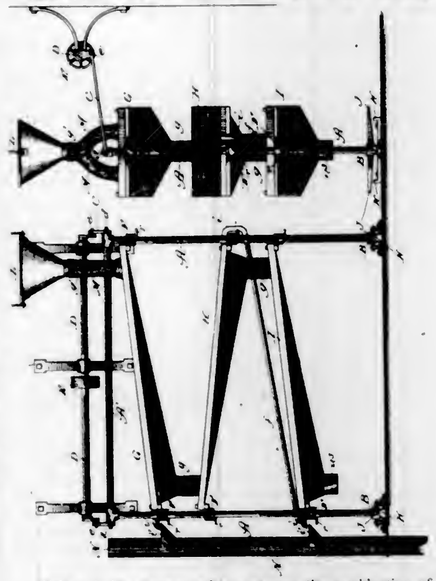
Claim.—1. In an apparatus for simultaneously drying and pulverizing triturable material, the combination of a pulverizing-machine A, a furnace having a chimney B, and a conduit *a*, connecting the pulverizing-machine with the chimney and containing one or more pockets *d* and screens *c*, substantially as described.

2. In an apparatus for simultaneously drying and pulverizing triturable material, the combination of a pulverizing-machine A, a furnace having a chimney B, provided with a false partition *g*, forming a passage *f*, open near its base, a conduit *a*, connecting the pulverizing-machine with the chimney and provided with one or more pockets *d*, and screens *c* in the conduit near its communication with the chimney and near each of said pockets, substantially as described.

3. In a machine for simultaneously drying and pulverizing triturable material, the combination of a pulverizing-machine A, having controllable air-inlets *e*, a furnace having a chimney B, and a conduit *a*, leading from the chimney and having branches *b* leading into the pulverizing-machine, substantially as described.

4. In a machine for simultaneously drying and pulverizing triturable material, the combination of a pulverizing-machine A, having controllable air-inlets *e*, a furnace having a chimney B, provided with a false partition *g*, forming a passage *f*, open near its base, a damper *k* at the upper end of the chimney, a conduit *a*, leading from the chimney and provided with the pockets *d* and internal screens *c*, and branches *b*, leading from the conduit into the pulverizing-machine and provided with dampers *m*, the whole being constructed and arranged to operate substantially as described.

447,029. **CONCENTRATING APPARATUS.** JOHN K. HALLOWELL, Camden, N. J. Filed June 14, 1888. Serial No. 277,132. (No model.)



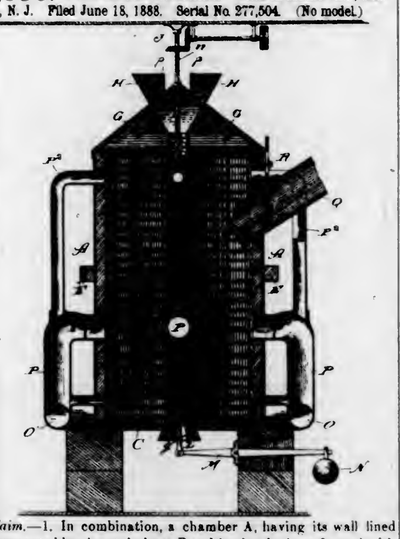
Claim.—1. In a concentrating apparatus, the combination of a rocking frame formed with uprights A, pivotally supported at their bases and each provided with supporting-arms F, and intercommunicating covered screens adapted to discharge from their ends and supported to extend one above the other lengthwise between the uprights on the arms F, to be rocked laterally in the planes of the arcs described by the rocking uprights, and inclining successively in opposite directions, substantially as described.

2. In a concentrating apparatus, the combination of a rocking frame comprising uprights A, pivotally supported at their bases and connected together toward their upper ends, a crank-shaft D, connected with the frame and provided with means for connecting it with the driving-power, supporting-arms F, and stop-arms J on the uprights, stops K at the bases of the uprights for the arms J, and intercommunicating inclosed screens supported to extend between the uprights on the arms F and inclining successively in opposite directions, substantially as described.

3. In a concentrating apparatus, the combination of a rocking frame supporting screens one above the other and inclining successively in opposite directions, and each formed with a frame *m*, having woven wire *l* stretched upon it and provided with a substantially synclinal or trough-shaped inclined bottom U, having an outlet u^3, a plate O at one end of the screen, and a plate O′ at the opposite end terminating in a spout *i*, and a cover *h*, having an inlet-opening *h′*, substantially as described.

4. A concentrating apparatus comprising, in combination, a frame formed of uprights A, pivotally supported at their bases and sustained against falling and connected together toward their upper ends, arms F, adjustably supported on the uprights, a crank-shaft D, connected with the said frame and provided with means for gearing it to the driving-power, a receptacle N, screens G H I, supported on the arms to extend lengthwise between the uprights, one below the other, and inclined successively in opposite directions, and to be rocked laterally in the plane of the arcs described by the rocking uprights, and each comprising a frame *m*, having woven wire *l* stretched upon it, increasing in the fineness of its mesh from the uppermost to the lowermost screen, a substantially synclinal or trough-shaped slanting bottom U, having an outlet u^3, a plate O at one end and a plate O′ at its opposite end terminating in a spout *i*, leading into the said receptacle, and a cover *h*, provided with an inlet-opening *h′*, flexible conduits *g*, respectively connecting the screen G from its outlet u^3 with the screen H at the opening *h′* in its cover and the screen H from its outlet u^3 with the screen I at the opening *h′* in its cover, and a hopper L, flexibly connected with the uppermost screen at its opening *h*, the whole being constructed and arranged to operate substantially as described.

447,030. **PULVERIZING-MACHINE.** JOHN K. HALLOWELL, Camden, N. J. Filed June 18, 1888. Serial No. 277,504. (No model.)



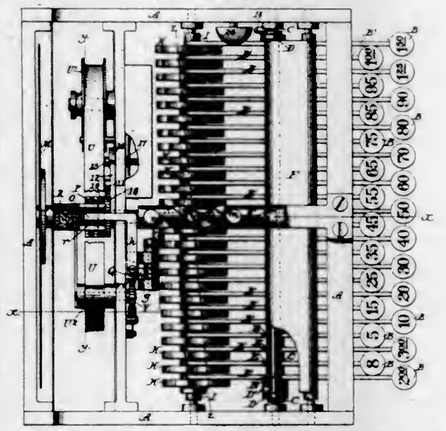
Claim.—1. In combination, a chamber A, having its wall lined with corrugated hard-metal plates B and having its base formed with V-shaped sections *r*, secured by a base-frame D and affording the opening *q*, a pyramidal cover G, adapted to seat a hopper, an air-pipe O, having branches leading into the chamber through its wall, a cone-valve K, protruding at its apex through the opening *q* into the chamber and provided with a stem L, a lever M, fulcrumed between its extremities and pivotally connected at one side of its fulcrum with the stem L, and a weight N, supported on the lever at the opposite side of its fulcrum, the whole being constructed and arranged to operate substantially as described.

2. In combination, a chamber A, having its wall lined with corrugated hard-metal plates B and having its base formed with V-shaped sections *r*, secured by a base frame D and affording the opeuing *q*, external binding-bars E, internal bracing-bars F near the upper end of the chamber, a pyramidal cover G, adapted to seat a hopper, an air-pipe O, having branches leading into the chamber through its walls and flush at their mouths with the inner surfaces of the said walls, a cone-valve K, protruding at its apex through the opening *q* into the chamber and provided with a stem L, a lever M, fulcrumed between its extremities and pivotally connected at one side of its fulcrum with the stem L, and a weight N, adjustably supported on the lever at the opposite side of its fulcrum, the whole being constructed and arranged to operate substantially as described.

447,031. **CASH INDICATOR AND RECORDER.** CHARLES KRUSE, New York, and CARL W. WEISS, Brooklyn, N. Y. Filed Sept. 26, 1889. Serial No. 325,157. (No model.)

Claim.—1. The combination, with the printing mechanism in a cash-recording machine, of two independent type-carriers, a clock actuating automatically one of the type-carriers to indicate time, a manual device actuating the other type-carrier to indicate different values, and a recording-strip actuated automatically by said manual device and moving over both type-carriers to receive an imprint from each, substantially in the manner and for the purpose herein set forth.

2. The combination, in a cash-recording device with its cash-recording type-wheel and its printing and feed mechanisms, substantially as herein described, of a time-recording type-wheel mounted to produce an imprint simultaneously with the imprint from the cash-recording wheel upon the same strip, a clock, a rotating spindle actuated by the clock-work, a cam upon said spindle, a swinging pawl actuated by said cam in its revolution, and a ratchet-wheel engaged by said pawl and connected with the time-recording wheel, substantially in the manner and for the purpose herein set forth.



3. The combination, in a cash-recorder, of an indicator, a cash printing wheel controlled by the indicator, a time-printing wheel controlled by a clock, a single recording-strip adapted to receive an imprint from both the cash and time wheels, and feed mechanism operated by the movements of the recording mechanism, substantially in the manner and for the purpose herein set forth.

4. The combination, in a cash-recorder, of a set of keys having different values, a cash-recording type-carrier actuated and adjusted mediately by said keys, a time-recording type-carrier, a clock mediately actuating and adjusting the same, a recording-strip adapted to receive an imprint from both type-carriers, feed mechanism actuated by the movement of each key to move the recording-strip, and printing mechanism actuated automatically at each movement of the feed mechanism to produce an impression upon the recording-strip simultaneously from both type-carriers, substantially in the manner and for the purpose herein set forth.

5. The combination, in a cash recording or indicating machine, of a rock-shaft, a helically-slotted shaft mounted to rotate transversely to the axis of said rock-shaft, an arm carried by the rock-shaft to oscillate with it and project into engagement with the helical slot in the rotating shaft, a series of duplicate open cams differentially adjusted upon said rock-shaft and secured to it, and a series of oscillating key-levers each made to engage at its inner end the curved inner face of one of said cams, whereby the oscillation of either key-lever will produce an oscillation of the cam and its shaft and a corresponding movement of the arm carried by the shaft to produce a movement of the slotted rotating shaft engaged thereby, substantially in the manner and for the purpose herein set forth.

6. The combination, in a cash-machine, with its cash-drawer A′, of a series of key-levers B′ B′, a rock-shaft C, upon which said levers are loosely pivoted, a parallel rod D′, carried by said shaft upon radial arms D D to contact with the several levers and be moved by either, an arm D^2, projecting from said shaft to oscillate with it, a pivoted lever W, engaging the arm D^2 to be oscillated by it, and a lug or catch *n′*, projecting from the drawer to normally engage and be locked by said lever when the drawer is closed and be freed from said engagement by the oscillation of the lever W, substantially in the manner and for the purpose herein set forth.

7. The combination, in a cash-machine, of the series of key-levers B′ B′, the rock-shaft C, upon which they are loosely pivoted, the hinged dog F, adapted when free to lock automatically the entire series of keys, and the parallel rod D′, carried by the shaft C, to engage the dog F and move it clear of the levers when the keys are all at rest, and which is released from the dog to free it when the shaft is rocked by the movement of any one key, substantially in the manner and for the purpose herein set forth.

8. The combination, in a cash-machine, of the series of key-levers B′ B′, the rock-shaft C, upon which they are loosely pivoted, the dog F, adapted to engage and lock the entire series of keys when in their normal position, the rod D′, carried by the shaft C, to engage the dog and free it from engagement with said key-levers unless the shaft be rocked by the movement of a key, the arm D^2, projecting from said shaft C, the pivoted lever W, engaging said arm D^2 to hold it when swung forward by the play of a key, the cash-drawer A′, and the lug

n' upon the said drawer actuating said lever W when the drawer is opened, to release the arm D^3, and thereby unlock the keys, substantially in the manner and for the purpose herein set forth.

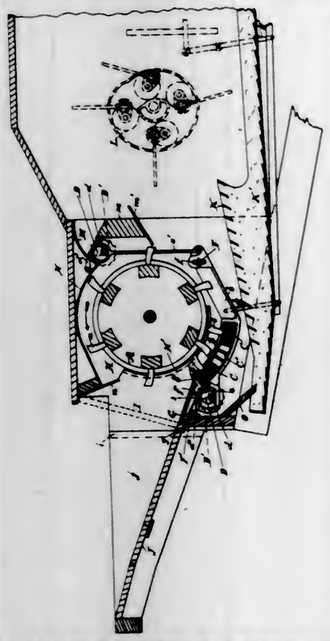
9. The combination, in a cash-recorder, with the cash-recording type-carrier, the recording-strip led over the same to receive an imprint therefrom, and the interposed inking device, of the feed mechanism moving said strip, the reciprocating bar actuating said feed mechanism, the rock-shaft actuating mediately by its oscillation said reciprocating bar and having arms extending radially from either end thereof, a parallel rod connecting said arms, and a series of key-levers pivoted loosely upon the rock-shaft and made to severally engage said parallel rod when a key is depressed, whereby the depression of a key is made to feed the recording-strip forward, substantially in the manner and for the purpose herein set forth.

10. The combination, in a cash-recorder, substantially as described, with its cash-recording type-carrier, its actuating-keys, the inking device, the recording-strip led over the type on the type-carrier, the feed mechanism moving said strip, and the reciprocating bar actuating said feed mechanism, substantially in manner as described, of the hammer carried by said reciprocating bar to drop at each movement thereof upon the type and produce an imprint therefrom upon the recording-strip, substantially in the manner and for the purpose herein set forth.

11. The combination of a rock-shaft, a helically-slotted shaft mounted to rotate transversely to the axis of said rock-shaft, a wheel carried by said rotating shaft and bearing a series of peripheral characters, an arm carried by the rock-shaft to engage the helical slot in the rotating shaft, and means for actuating the rock-shaft, substantially in the manner and for the purpose herein set forth.

12. A type-carrier for indicating or printing letters, figures, or characters denoting time and controlled by a clock or time-piece, in combination with a type-carrier for indicating or printing numbers to indicate cash payments and controlled by a series of keys having different values, and a recording-strip carried over both type-carriers to receive an impression from each, the movement of which is produced by the action of the printing or impression mechanism, substantially in the manner and for the purpose herein set forth.

447,032. THRASHING-MACHINE. FRANK F. LANDIS, Waynesborough, Pa. Filed Sept. 15, 1890. Serial No. 365,075. (No model.)



Claim.—1. In a thrashing-machine, the combination, with the concave provided with toothed bars and having apertures in the front ends of its sides, of a transverse shaft provided with cams adapted to be turned to raise or lower the front of the concave, a similar transverse shaft provided with cams and operatively connected to the rear of the concave, and a stop for preventing the concave from being moved longitudinally, substantially as set forth.

2. In a thrashing-machine, the combination, with a revoluble toothed cylinder, of a concave provided with toothed bars and having apertures in the front ends of its sides, the revoluble cams working in the said apertures, the revoluble cams at the rear of the cylinder, the connecting-rods pivotally connecting the rear ends of the said sides with the last said cams, and a stop for preventing the longitudinal motion of the concave and permitting it to be adjusted vertically, substantially as set forth.

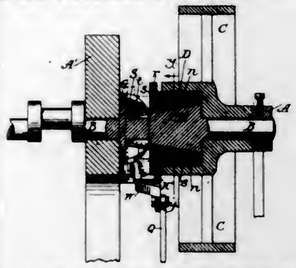
3. In a thrashing-machine, the combination, with a vertically-adjustable concave provided with rounded projections at its front end, of a round-topped support secured to the end of the machine-casing, and a perforated plate resting upon the said rounded surfaces in front of the concave and provided with hook-shaped lugs engaging with the said projections and adapted to adjust itself to the vertical adjustments of the concave, substantially as set forth.

4. In a thrashing-machine, the combination, with a revoluble toothed cylinder, of a cylinder-chamber provided with side plates having inwardly-projecting curved flanges H' and upwardly and outwardly flaring hopper throat-plates I, the bottom plate G, provided with a ledge at its front end, the hopper provided with upwardly-flaring sides joining onto the said throat-plates, and an inclined bottom provided with a loose portion resting in the said ledge and adapted to be raised to close the feeding-opening of the machine, substantially as set forth.

5. In a thrashing-machine, the combination, with a revoluble toothed cylinder, of the toothed concave below the front portion of the cylinder, the grain-deflector secured in the upper part of the cylinder-chamber behind the cylinder, a curved guide-plate extending from the said grain-deflector over the top of the cylinder and thence forward at a tangent, and the downwardly and rearwardly inclined dirt and wind deflector secured across the cylinder-chamber in front of the end of the said guide-plate, substantially as and for the purpose set forth.

6. In a thrashing-machine, the combination, with a revoluble toothed cylinder, of a cylinder-chamber provided with side plates, the curved flanges projecting inwardly over the front portion of the cylinder, substantially at a right angle to the side plates, and the hopper throat-plates projecting from the inner edges of the said flanges in front of the cylinder and flaring outwardly toward the hopper and also upwardly in a vertical direction, whereby the side portions of the material are compressed by the double convergence of the throat-plates and fed into the cylinder without obstruction, substantially as set forth.

447,033. CLUTCH. WILLIAM A. MURPHY, Brooklyn, N. Y. Filed Dec. 10, 1890. Serial No. 374,174. (No model.)



Claim.—1. The combination, with a revoluble shaft having a radial enlargement, of a driving-wheel turning loosely upon the shaft next to said enlargement and having a recessed hub or concentric collar adapted to overlap and encircle said enlargement, one or more wedge-shaped keys fitted to slide longitudinally in longitudinally-inclined seats formed radially in the enlarged portion of the shaft to engage inwardly-projecting ribs on the inner periphery of the encircling portion of the hub, a spring-seated pin projecting from the outer end of each key to bear against an opposed offset or collar on the shaft, and means, substantially as described, for retracting the clutch-key against the stress of its spring-actuated pin, substantially in the manner and for the purpose herein set forth.

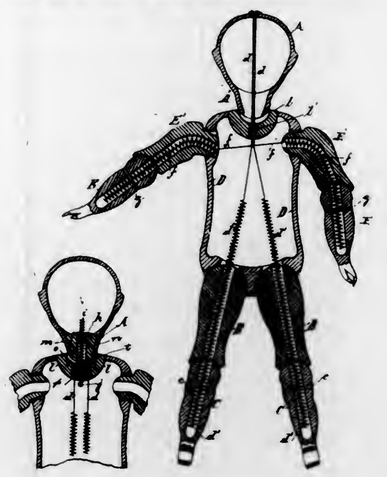
2. The combination, with a revoluble shaft having a radial enlargement, of a driving-wheel turning loosely upon the shaft next to said enlargement and having a recessed hub or concentric collar adapted to overlap and encircle said enlargement, one or more wedge-shaped keys fitted to slide longitudinally in longitudinally-inclined seats formed radially in the enlarged portion of the shaft to engage inwardly-projecting ribs on the inner periphery of the encircling portion of the hub, a spring-seated pin projecting from the outer end of each key to bear against an opposed offset or collar on the shaft, and a pivoted lever having a wedge-shaped head adapted to be swung into engagement with the outer end of the key to force it outward against the stress of its spring as the shaft is rotated, substantially in the manner and for the purpose herein set forth.

3. The combination, with the revoluble shaft, the driving-pulley revolving loosely thereon, and the enlargement of the shaft encircled by the hub of the pulley, of the longitudinally-sliding inclined keys fitted radially on said enlargement to move into engagement with the inner face of said hub, wedges carried by retracting-levers to engage said keys and force them outwardly to free them from engagement with the hub, springs to carry them inward, and a treadle actuating said retracting-levers, substantially in the manner and for the purpose herein set forth.

4. The combination, with the revoluble shaft, the driving-pulley revolving loosely thereon, and the enlargement of the shaft encircled by the hub of the pulley, of the longitudinally-sliding inclined keys fitted radially in said enlargement to move into engagement with the inner face of said hub, wedges carried by retracting-levers to engage said keys and force them outwardly to free them from engagement with the hub, springs to carry them inward, a treadle actuating said retracting-levers, and cams fixed in position to engage the outer end of the keys and force them inward as the shaft revolves, substantially in the manner and for the purpose herein set forth.

5. The combination, with a revoluble shaft and a driving-pulley revolving loosely thereon and having a recessed hub or concentric collar projecting laterally therefrom, of radial inclined-faced clutch-keys sliding longitudinally in inclined ways formed upon the shaft into engagement with radial lugs within the concentric collar projecting from the pulley, and means, substantially as described, for producing a longitudinal movement of said clutch-keys, substantially in the manner and for the purpose herein set forth.

447,034. DOLL. ALBERT PULVERMACHER, Sonneberg, Germany. Filed Sept. 29, 1890. Serial No. 366,484. (No model.)

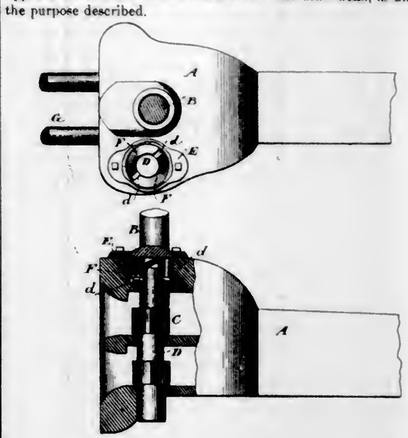


Claim.—1. In a toy, the combination of two hollow detachable parts with a pin extending across the cavity of one of said parts, and a spiral spring engaging said pin and connected to the other part, substantially as set forth.

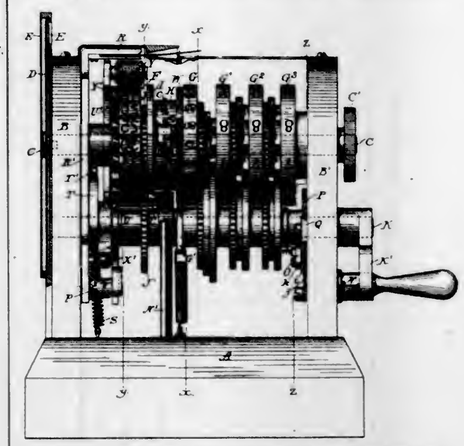
2. A doll or similar toy consisting of hollow detachable jointed parts, in combination with pins and spiral springs normally inclosed in the cavities of said toy, the said pins and springs engaging to apply tension to said springs and thereby tighten said parts together when the parts provided with said pins are turned, substantially as set forth.

447,035. CAR-COUPLING. CLAYTON WEEKS and JOHN R. BUSH, Hobart, N. Y. Filed Nov. 15, 1890. Serial No. 371,590. (No model.)

Claim.—In a car-coupling where the pin and link are employed, the combination, with the draw-head, drop-pin, and arm C for supporting said pin, of a spindle D, loose in the draw-head, attached to said arm C and provided near the top with the opposite arms *d d*, and the opposite cams F F made on the inside of the draw-head, as and for the purpose described.



447,036. CASH INDICATING, RECORDING, AND REGISTERING MACHINE. CARL W. WEISS, New York, N. Y., assignor of one-half to Charles Kruse, same place. Filed Feb. 19, 1890. Serial No. 341,016. (No model.)



Claim.—1. The combination, in a cash-registering machine, of an indicating device to exhibit the amount of each cash payment, an adding mechanism, a carriage geared to the adding mechanism to actuate the same by its movement in one direction, a reciprocating pawl traveling in a path parallel with the carriage, a device for moving said pawl independently of the carriage, a series of clutch-pins corresponding in number with the figures on the indicating device and which are mounted to play in the carriage, and an indicating device moving said pins severally in correspondence with the amount exhibited by said device into position for engagement by the pawl in its movement, whereby the carriage and the adding mechanism geared thereto are actuated by the pawl, substantially in the manner and for the purpose herein set forth.

2. The combination, in an indicating and registering machine, of an indicating mechanism and indicator and operating device therefor, one or more registering-wheels, a reciprocating driving mechanism therefor, a series of interposed clutch-pins numbered to correspond with the indicator and severally moved by the operation of the indicating mechanism each into position to couple the driving and registering mechanism at a point corresponding with the figure indicated, and thereby determine the movement of the registering-wheels, and disengaging mechanism to uncouple the same at the end of each forward stroke of the driving mechanism, substantially in the manner and for the purpose herein set forth.

3. The combination, with the driving mechanism, the indicator,

the indicating mechanism, and the adding mechanism in a cash-registering machine, of a series of clutches, as *c c c*, moving in unison with and connected to the adding mechanism as a means for actuating the same and severally adapted to be engaged by an independent driving mechanism, and a device, as *d*, actuated by the indicating mechanism to move severally and independently and to hold each clutch in correspondence with a like position of the indicator and in position to be engaged by the driving mechanism, substantially in the manner and for the purpose herein set forth.

4. The combination, in an indicating and registering mechanism, of an indicating mechanism and movable indicator, an operating-wheel therefor, one or more registering-wheels and a reciprocating driving-wheel mounted loosely on the same spindle with the indicator, a series of radial clutch-pins mounted to revolve loosely about said spindle in proximity to the driving-wheel and numbered to correspond with the indicator, a fixed lug on the spindle adapted to move the clutch-pins severally into operative position each in correspondence with the figure indicated, a coupling device on the driving-wheel to engage the operative clutch-pin as the driving-wheel moves forward, and disengaging mechanism to release it at the end of said movement, substantially in the manner and for the purpose herein set forth.

5. The combination, in a cash indicating and registering machine, of a rotating shaft, an indicating device actuated thereby, an adding mechanism including a wheel mounted to revolve loosely upon said shaft, an annular concentric flange or carriage revolving with said wheel, a series of clutch-pins corresponding with the figures on the indicating device and mounted to play radially through the periphery of said carriage, a lug upon the shaft made to register with said clutch-pins and to carry them severally outward when brought into engagement therewith, a reciprocating pawl mounted to revolve about the shaft on which the indicator is mounted, a crank-shaft mounted parallel with said indicator-shaft and geared to said pawl to produce its revolution, and a stop limiting the rotation of the crank-shaft to a single revolution in either direction, substantially in the manner and for the purpose herein set forth.

6. The combination, in a cash indicating and registering machine, of a rotating shaft, an indicating device actuated thereby, an adding mechanism including a wheel mounted to revolve loosely upon said shaft, an annular concentric flange or carriage revolving with said wheel, a series of clutch-pins corresponding with the figures on the indicating device and mounted to play radially through the periphery of said carriage, springs retracting said clutch-pins, a lug upon the shaft made to register with and engage said clutch-pins, a wheel mounted to revolve loosely upon the shaft adjacent to the carriage and having a re-entrant recess in its periphery, a pawl pivoted to the side of said wheel to overhang and rest upon the carriage and glide over its periphery, a crank-shaft mounted parallel with the shaft upon which the indicator is mounted and geared to the wheel on which the pawl is mounted, an arm pivoted on said crank-shaft with a frictional bearing thereon and carried thereby against the periphery of the wheel carrying the pawl and into contact with the face of the carriage, and a stop to arrest said arm when it swings outward, substantially in the manner and for the purpose herein set forth.

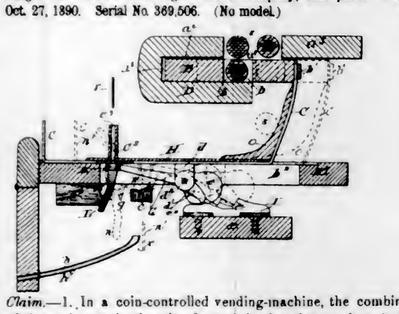
7. The combination, substantially as and for the purpose herein set forth, of a rotating shaft, as K, an arm pivoted upon said shaft to swing loosely thereon, as L, a friction device, as *e*, interposed between the arm and shaft, and an extraneous stop, whereby the arm partakes of the movement of the shaft in either direction until arrested by an extraneous stop without preventing by its arrest the continued movement of the shaft independently thereof.

8. The combination of the rotating shaft carrying the indicating mechanism, the wheel in an adding mechanism revolving loosely upon said shaft, the parallel crank-shaft, the stop, the arm pivoted loosely upon said crank-shaft to swing in one direction into engagement with said wheel and in the other with the stop, and the friction device interposed between the arm and its pivotal shaft, whereby the arm will partake of the movements of the shaft until brought into engagement with the wheel or stop and the shaft be allowed to continue its movement independently thereof, substantially in the manner and for the purpose herein set forth.

9. The combination, with the indicating device and the rotating shaft actuating the same, in a cash registering and recording machine, and with a type-wheel fixed to said shaft, of a parallel reciprocating crank-shaft, a stop therefor, a spring-actuated slide mounted vertically adjacent to the type-wheel, a platen carried by said slide into contact with the type-wheel, a cam on the crank-shaft actuating the slide to lift the platen from the type-wheel when the crank is in its first or normal position, a toothed wheel fixed to the shaft, a dog pivoted to the shaft to swing into engagement with said toothed wheel, and a lug on the slide engaging the dog, whereby the dog is locked and a movement of the indicating-shaft prevented when the crank is moved from its first position, substantially in the manner and for the purpose herein set forth.

10. The combination, in a cash indicating, recording, and registering machine, of a rotating shaft, a type or printing wheel fixed thereon, an indicating device actuated thereby, a loose wheel upon said shaft, adding mechanism geared thereto, an annular concentric flange or carriage revolving therewith, a series of clutch-pins corresponding with the figures on the indicating device and mounted to play radially through the periphery of said carriage, springs retracting said clutch-pins, a lug upon the shaft made to register with said clutch-pins and to carry them severally outward when brought into engagement therewith, a reciprocating pawl mounted to revolve about the indicating-shaft, a crank-shaft mounted parallel with the indicating-shaft and geared to said pawl to produce its revolution, a stop limiting the rotation of the crank-shaft to a single revolution in either direction, a vertical spring-actuated slide mounted adjacent to the printing-wheel, a platen carried automatically by said slide into contact with the type-wheel, and a cam upon the crank-shaft engaging the slide to lift the platen from the type, substantially in the manner and for the purpose herein set forth.

447,037. **VENDING-MACHINE.** ORRIN A. WHEELER, Chicago, Ill., assignor to the American Cigar Vender Company, same place. Filed Oct. 27, 1890. Serial No. 369,506. (No model.)



Claim.—1. In a coin-controlled vending-machine, the combination of the casing A, having the floor a^3, having the opening a^4, the floors D and E, said floor E having the opening b^3, the piece C, having the slot c^3, the regulating-slide B, having the opening *b* and catch *b'*, the lever G, fulcrumed to the piece C and having the lug c^3, arm K, having the slot *f*, pawl *d*, trigger L, having the arm *l*, the piece *c*, secured to the floor E, and the ratchet I, having the teeth *e*, all constructed, arranged, and operating substantially as and for the purpose set forth.

2. In a coin-controlled vending-machine, the combination of the casing A, having the floor a^3, provided with the opening a^4, the floors D and E, said floor E having the opening b^3, the pieces *c*, F, and *g*, with the piece C, having the slot c^3, the regulating-slide B, having one opening *b* and catch *b'*, the lever G, fulcrumed to the piece C and having the lug c^3, and arm K, having the slot *f*, the pawl *d*, trigger L, having the arm *l*, the ratchet I, having the teeth *e*, and the chute *h*, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

3. In a coin-controlled vending-machine, the combination of the casing A, having the floor a^3, provided with the opening a^4, the floors D and E, said floor E having the opening b^3, the pieces *c* and F, the piece C, having the slot c^3, the regulating-slide B, having one opening *b* and catch *b'*, the lever G, fulcrumed to the piece C and having the lug c^3, arm K, and slot *f*, the latter having the V-shaped end, the pawl *d*, trigger L, provided with the arm *l*, having the V-shaped end, and the ratchet I, having the teeth *e*, all constructed, arranged, and operating substantially as and for the purpose set forth.

4. In a coin-controlled vending-machine, the combination of the case A, having the floor a^3, provided with the opening a^4, the floors D and E, said floor E having the opening b^3, the pieces *c*, F, and *g*, the piece C, having the slot c^3, the regulating-slide B, having one opening *b* and catch *b'*, the lever G, fulcrumed to the piece C and having the lug c^3, and arm K, having the V-shaped end f^2, the pawl *d*, the trigger L, having the V-shaped end f^3, the ratchet I, having the teeth *e*, the chute *h*, and the plate H, having the slotted tube c^3, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

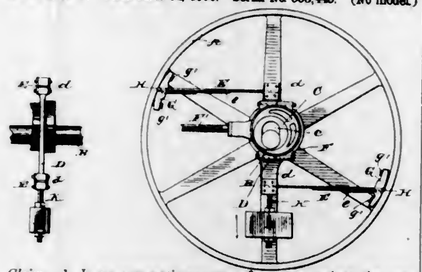
447,038. **POSITIVE SHUTTLE-MOTION FOR LOOMS.** JOSIAH W. BABCOCK, San Diego, Cal. Filed Oct. 11, 1889. Serial No. 326,745. (No model.)

Claim.—1. The combination of hollow shuttle-carriers having apertures *k* in their upper sides, the centrally-pivoted spring-actuated hooks having locking-pawls B formed at the extremities of their rear ends, and a shuttle recessed at the extremities of its free ends to form shoulders *j*, substantially as set forth.



2. The combination of the hollow shuttle-carriers having upon their inner ends the casings *a*, the hooks *b*, pivoted at the point *e* on the hollow casings and formed at their rear ends with the locking-pawls B, adapted to project down through openings *k* in the casings and carriers, the spiral springs *d*, and the shuttle recessed at the extremities of its free ends to form locking-shoulders *j*, substantially as set forth.

447,039. **GOVERNOR FOR STEAM-ENGINES.** ERNEST S. BOWEN, Auburn, N. Y. Filed June 14, 1890. Serial No. 355,443. (No model.)



Claim.—1. In an automatic governor for steam-engines, the combination, with the driving-shaft and the wheel mounted thereon, of a movable eccentric for actuating a slide-valve, the weight connected thereto, and springs forming the sole connection between said eccentric and wheel, said eccentric being adapted to move bodily in a direction in line with the tension of said springs, substantially as described.

2. In an automatic governor for steam-engines, the combination, with the driving-shaft and the wheel mounted thereon and adapted to turn therewith, of a movable eccentric for actuating a slide-valve, having a slot engaging said shaft, a weight secured to said eccentric, and springs forming the sole connection between said eccentric and the wheel, said slot being arranged in line with the tension of said springs, substantially as described.

3. In an automatic governor for steam-engines, the combination, with the driving-shaft and wheel, of a movable eccentric provided with a slot engaging said shaft, a weighted arm secured to said eccentric, and springs forming the sole connection between the eccentric and wheel and extending at right angles to said weighted arm, said slot extending in line with said weighted arm, substantially as described.

4. In an automatic governor for steam-engines, the combination, with the driving-wheel, the movable eccentric hub for actuating the slide-valve, provided with a weight, springs connected rigidly with said hub, the adjustable blocks rigidly engaging said springs, and means for securing said blocks adjustably to said wheel, substantially as described.

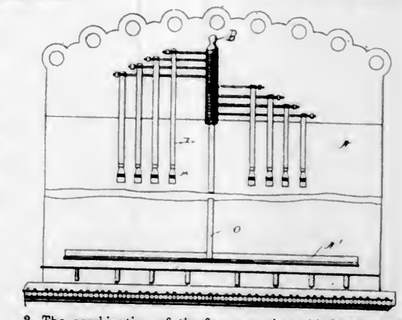
5. In an automatic governor for steam-engines, the combination, with the driving-wheel, of the movable eccentric hub for actuating the slide-valve, provided with a weight, springs rigidly connected to said hub, the adjustable rocking blocks having recesses to receive the ends of said springs, the wedges for securing said springs in said blocks, and means for adjustably securing the said blocks to the rim of the wheel, substantially as described.

6. In an automatic governor for steam-engines, the combination, with the driving-wheel, of the movable eccentric for actuating the slide-valve, provided with a weight, the springs rigidly connected to the said hub, the adjustable blocks having recesses to receive said springs, and the spring-wedges for securing said springs in said recesses and re-enforcing said springs, substantially as described.

7. In an automatic governor for steam-engines, the combination, with the driving-wheel, of the movable eccentric for actuating the slide-valve, the weight attached thereto, the springs rigidly connected to said eccentric, the adjustable blocks for engaging said springs, means for securing said blocks adjustably to the rim of the wheel, and the rocker interposed between the block and wheel, substantially as described.

447,040. **MUSIC-LEAF TURNER.** EDGAR W. BURNHAM, San Diego, Cal. Filed June 12, 1890. Serial No. 355,163. (No model.)

Claim.—1. In a music-leaf turner, the combination of the frame A, the horizontally-sliding bars D, supported thereon, the vertical shaft B, the series of grooved spools C, mounted thereon and having the arms K, the flexible straps L, having the end clasps, the cords I, secured at their opposite ends to the sliding bars and passing around the grooved spools, and the centrally-pivoted operating-rods G, having their upper ends pivotally connected to the sliding bars, substantially as set forth.



2. The combination of the frame A, the guide-brackets E, the sliding bars D, formed with the end slots, the bearing-pins F, on which the sliding bars rest, the vertical shaft B, the series of grooved spools C, mounted thereon and having the arms K, the flexible straps L, having the end clasps, the cords I, secured at their opposite ends to the sliding bars and passing around and secured to the grooved spools, and the centrally-pivoted operating-rods G, having their slotted upper ends pivoted to the sliding bars, substantially as set forth.

3. In a music-leaf turner, the combination, with the movable spools C, of the arms D, secured thereto at their inner ends and formed at their outer threaded ends with the open slots *k*, the threaded rings K', screwing on the slotted threaded ends of the arms, and the adjustable flexible straps L, having the spring-clasps at their lower ends, substantially as set forth.

4. The combination of the frame A, the guide-brackets E, the sliding bars D, formed with the end slots D', the bearing-pins F, the vertical shaft B, the series of grooved spools C, mounted thereon and having the arms K, the adjustable flexible straps L, having the end clasps, the cords I, secured at their opposite ends to the sliding bars and passing around and secured to the grooved pulleys, the centrally-pivoted operating-rods G, having their slotted upper ends pivoted to the sliding bars, and the outer cover N, having the music-rest N' and the music-retaining strap O, substantially as set forth.

447,041. **GRAPE TRIMMING AND PACKING TABLE.** JAMES H. EDINGTON, Eddytown, N. Y. Filed Oct. 14, 1890. Serial No. 368,132. (No model.)



Claim.—1. The improved grape trimming and packing table herein described, in which is combined an upright standard supported by horizontal arms having downwardly-projecting legs, a top with an adjustable rim pivoted to revolve horizontally upon the top of said standard, the collar C, with projecting loops, and the rods D, adjustably secured within the loops of the collar, substantially as described.

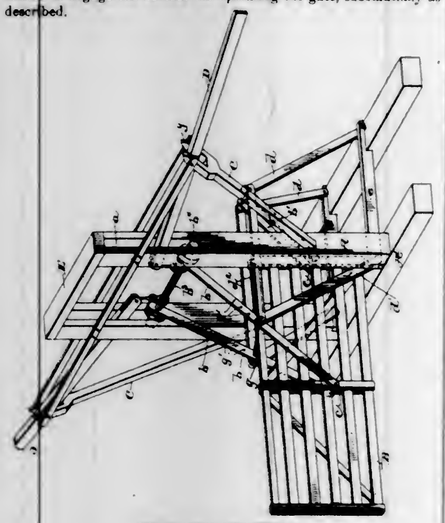
2. The improved grape-trimming table consisting of a central standard having the shoulder H, a top with a vertically-projecting rim and arranged to revolve horizontally upon said standard, in combination with the collar C upon the shoulder H of the standard, having projecting loops, and the brace-rods D of the top, said rods having vertical adjustment within the loops of the collar, substantially as described.

3. In a grape trimming and packing table consisting of a vertically-supported standard and a table arranged to revolve upon said standard and having combined therewith the bracing-rods D, with notches *t* in them, the collar C, with loops *s* and corresponding points *y*, and wedge *v*, substantially as described.

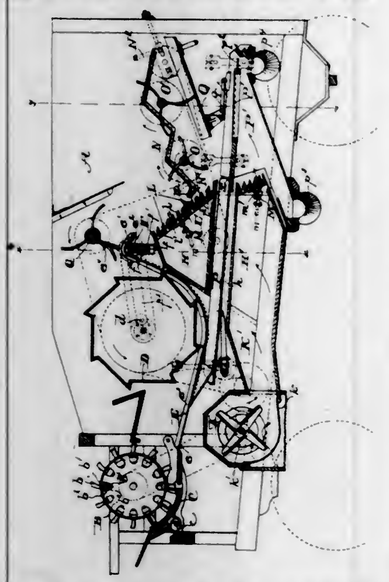
447,042. **GATE.** CHARLES H. FIDLER, Monroe, Wis., assignor of one-half to A. K. Rood, same place. Filed Sept. 10, 1890. Serial No. 364,547. (No model.)

Claim.—The combination, with the lifting and moving frame, consisting of the vertically-disposed levers d d^2, connected to the cross-bars d^3 d^4 by horizontal pivots *g*, of a gate suspended in said frame by

the supporting-arms *b b'*, said arms being pivotally connected to said gate substantially midway between its upper and lower edges and engaging said horizontal pivots, one of said supporting-arms being extended to engage the devices for operating the gate, substantially as described.



447,043. **THRASHING-MACHINE.** GEORGE FRICK, Waynesborough, Pa. Filed Sept. 30, 1890. Serial No. 366,658. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the straw-propelling drum, the apron, and the spring supporting one end of the same.

2. The combination, substantially as hereinbefore set forth, with the straw-propelling drum, of the apron, pivoted at one end and a revolving knocker-shaft engaging the apron adjacent to the other end.

3. The combination, substantially as hereinbefore set forth, of the straw-propelling drum, the apron pivoted at one end, a knocker-shaft supporting its opposite end, and springs supporting said shaft.

4. The combination, substantially as hereinbefore set forth, of the straw-propelling drum, the apron pivoted at one end, the knocker-shaft supporting its opposite end, links supporting said knocker-shaft, sprocket-wheels and chain, and springs supporting the outer ends of said links and knocker-shaft.

5. The combination, substantially as hereinbefore set forth, of the apron having its rear end curved upward to nearly a vertical position, a propelling-drum engaging the straw on the curved portion of the apron, and the beater located above the discharge end of the apron for engaging the forward side of the straw as it leaves the apron.

6. The herein-described thrashing-machine, comprising among its members an air-chamber provided with a series of fixed slats having the outer ends inclined, a series of movable slats provided with deflectors extending into the spaces between the fixed slats, means for adjusting the movable slats with respect to the fixed slats, and air-forcing devices for supplying air to said chamber.

7. In a thrashing-machine, the combination, with the shoe and the straw-bottom, of an air-chamber having a series of discharge-apertures of small area discharging below the shoe and another air-chamber having a series of discharge-apertures of small area located in close relation to said straw-bottom, part of said apertures discharging above and part below said straw-bottom, and an air-forcing device for supplying air under pressure to said chambers, substantially as described.

8. The combination, substantially as hereinbefore set forth, with the cylinder of a thrashing-machine, of a tooth and tooth-securing means comprising a non-metallic cone-shaped block surrounding the shank of the tooth, the cap engaging the same, and the securing-nut.

9. The combination, substantially as hereinbefore set forth, with the cylinder of a thrashing-machine, of a tooth and tooth-securing means comprising a non-metallic cone-shaped block surrounding the shank of the tooth and engaging the interior face of the cylinder, the cap engaging said block having a concave portion, and a securing-nut having a convex portion engaging the concave portion of the cap.

10. In a thrashing-machine, the combination, with the shoe and the straw-bottom, of an air-chamber having a series of discharge-apertures of small area discharging below the shoe, and another air-chamber having a series of apertures of small area located in close relation to said straw-bottom, part of said apertures discharging above and part below said straw-bottom, a grain-bottom located between said air-chambers for conveying grain to the shoe, and an air-forcing device for supplying air under pressure to said air-chambers, substantially as described.

11. A thrashing-machine comprising among its members a perforated apron adapted to receive material from the thrashing-cylinder, two air-chambers located in different horizontal planes, the shoe, a grain-bottom passing between said air-chamber and adapted to receive grain from the perforated apron and convey it to the shoe, and a common air-forcing device connected with both of said air-chambers, substantially as described.

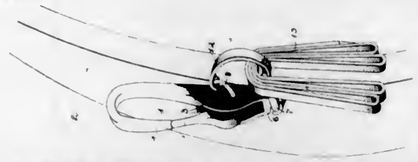
12. The combination, substantially as hereinbefore set forth, of the apron having its rear end curved upward, a propelling-drum engaging the straw on the curved portion of the apron, a beater above the discharge end of the apron adapted to engage the forward side of the straw with a nearly horizontal stroke, an air-chamber located beneath the discharge end of the apron, said air-chamber discharging rearwardly into the material as it falls from the beater, and an air-forcing device for supplying air to said chamber.

13. In a thrashing-machine, the combination, with the shoe, of a straw-bottom located above the same, an apron discharging upon the straw-bottom, an air-chamber having a series of apertures of small area discharging beneath the shoe, another air-chamber having a series of apertures of small area, part of said apertures discharging between the apron and straw-bottom and part discharging between said straw-bottom and shoe, and an air-forcing device for supplying air under pressure to said air-chambers, substantially as described.

14. In a thrashing-machine, the combination, with the grain-bottom, the shoe, the straw-bottom located above the shoe, and a perforated apron having a part located above the grain-bottom and discharging onto the straw-bottom, of an air-chamber located beneath the grain-bottom and having a series of apertures of small area discharging beneath the shoe, another air-chamber located above the grain-bottom having a series of apertures of small area, part of said apertures discharging between said apron and straw-bottom and part discharging between said straw-bottom and shoe, and an air-forcing device for supplying air under pressure to said air-chambers, substantially as described.

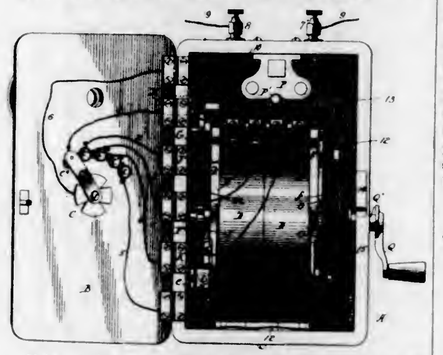
447,044. **REIN-SUPPORTING RING FOR HARNESS.** MATTHEW C. GAMBLE, Stanton, Nebr. Filed May 24, 1890. Serial No. 353,045. (No model.)

Claim.—1. The herein-described rein-support, consisting of a hook, the same providing a rein-guiding eye adapted to be secured to a hame or other portion of a harness, a supplemental hook projecting from one side of the body of the hook, and a short curved strap pivoted to the shank of the hook at its lower end and having its free end provided with a perforation for taking over the hook, substantially as specified.



2. The herein-described rein-guide, consisting of a snap-hook terminating at one end in an eye, a ring swiveled therein, a strap buckled in the ring, having a perforation near its free end, and a rigid hook projecting laterally from the snap-hook and adapted to receive the eye of the strap, said strap being designed to receive the coils of the rein, substantially as specified.

447,045. **MAGNETO-ELECTRIC SIGNAL DEVICE.** NOEL B. GINOCHIO, New York, N. Y., assignor of one-half to Elias M. Greene, same place. Filed May 9, 1890. Serial No. 351,178. (No model.)



Claim.—1. In a magneto-signal device, the combination, with the generator and driving-shaft therefor, of a series of circuit-controllers connected to said driving-shaft and a stop device for said driving-shaft controlled by the circuit-controllers, substantially as described.

2. In a magneto-signal device, the combination, with the generator and driving-shaft therefor, of a series of circuit-controllers connected to said driving-shaft, a stop device for said driving-shaft, devices connected with the circuit-controllers controlling said stop, and a pawl and ratchet preventing the backward turning of the driving-shaft, substantially as described.

3. In a magneto-signal device, the combination, with the generator and driving-shaft therefor, of circuit-controllers connected to said shaft, a stop device for said shaft controlled by the circuit-controllers, and a releasing device for releasing the said stop, substantially as described.

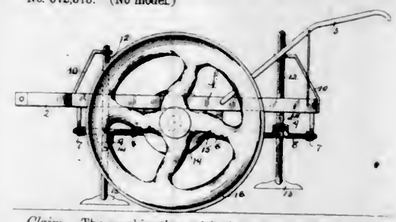
4. In a magneto-signal device, the combination, with the generator, of a driving-shaft therefor provided with a disk having cut-away portions, a circuit-controlling shaft also provided with a disk, and an arm provided with a detent engaging the driving-shaft disk and with a wheel engaging the circuit-controlling disk, substantially as described.

5. In a magneto-signal device, the combination, with the generator and the driving-shaft therefor having a disk provided with cut-away portions, of a circuit-controlling shaft provided with a disk having a slot, a pivoted arm having a detent engaging the driving-shaft disk, a wheel engaging the circuit-controlling disk, and a spring surrounding the arm and bearing on the wheel, substantially as described.

6. In a magneto-signal device, the combination, with the generator and circuit-controllers, of brushes connecting the circuit-controllers, a switch having a series of contacts connected with the brushes, and another contact connected with the frame of the machine, whereby a continuous or predetermined interrupted signal can be sent over the line by adjusting the switch, substantially as described.

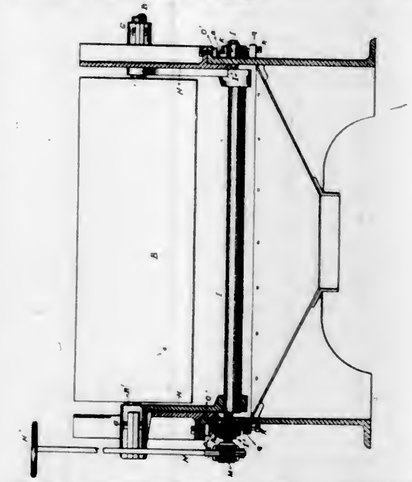
7. In a magneto-signal device, the combination, with the generator, of a shaft driven thereby, a series of circuit-controlling disks mounted on the shaft, each circuit-controller being arranged to first send a preliminary signal and then an individual signal at each revolution of the disk, contact-brushes for the disks, circuits connected to said brushes, a circuit connected with the generator and with a switch, said switch being adapted to be connected to any one of the circuits of the circuit-controlling disks, and a stop device for the generator, controlled by the shaft carrying the circuit-controlling disks, whereby by moving the switch and rotating the generator any desired controlling-disk may be rotated through one complete revolution and operated to first send a preliminary signal and then a specific individual signal, substantially as described.

447,046. **COTTON-CHOPPER.** STEPHEN S. KENT, WILLIAM G. BOLER, and WILLIAM W. KENT, Macon, Ga. Filed Nov. 24, 1890. Serial No. 372,513. (No model.)



Claim.—The combination, with the rectangular frame having the transverse bars 5 and the end bars 4, the depending bearing-hangers 6 and 7, secured to the transverse and the end bars, the shaft 8, journaled in the hangers and provided near its ends with oppositely-disposed cranks, the upwardly and inwardly bent standards 10, perforated at their upper ends above the cranks, the rigid hoe-handles 12, mounted for reciprocation and vibration in the perforations of the standards, the clip 14, connecting the handles to the cranks, and the hoes connected to the handles, of the axle journaled in the frame, the ground-wheels thereof, the large pinion mounted on the axle and the small pinion mounted upon the crank-shaft and engaged and driven by the large pinion, substantially as specified.

447,047. **WOOD-POLISHING MACHINE.** JAMES L. PERRY, Watertown, assignor to the Berlin Machine Works, Beloit, Wis. Filed Mar. 31, 1888. Serial No. 269,108. (No model.)



Claim.—1. In combination with the main frame constructed with a lug A', recessed to receive the bearing D of a feed-roll, the roll and its bearing D, having a T-formed groove in its face, and a headed bolt E, having its head received in said groove and its body threaded and tapped through the lug, so that it may be turned by force applied to its outer end, substantially as set forth.

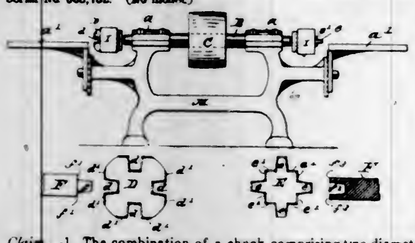
2. In combination with the main frame constructed with a lug A', recessed to receive the bearing D of a feed-roll, the roll and its bearing D, having a T-formed groove in its face, a headed bolt E, having its head received in such groove and its body threaded and tapped through the lug, so that it may be turned by force applied to its outer end, and a set-screw F for securing the said bolt and connected parts in place, substantially as set forth.

3. In combination with the sand-cylinder B, boxes G, standards H, and eccentric shaft I, supporting the same, an independently and

vertically adjustable box K, carrying one of the journals of said shaft, substantially as set forth.

4. In combination with the sand-cylinder B, boxes G, standards A, and eccentric shaft I, supporting the same, a swinging box K, carrying a journal of said shaft, and the bolts O and R for independently adjusting the boxes and ends of the shaft, substantially as set forth.

447,048. **PLUG AND SOCKET CUTTER AND CHUCK FOR THE SAME.** NATHAN P. STEVENS, Concord, N. H. Filed Sept. 22, 1890. Serial No. 365,752. (No model.)

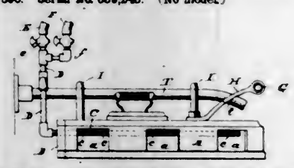


Claim.—1. The combination of a chuck comprising two diametrically-divided jaws, an exterior ring or collar rigidly fixed to one of said jaws, and reversible cutters stamped by a die from sheet metal, the diameter of which equals the interior of said collar, and a set-screw threaded to said collar for clamping said cutter between the jaws.

2. The pieces D E, stamped from sheet metal, provided with two or more cutters arranged diametrically opposite, combined with a chuck divided diametrically and provided with an exterior collar and set-screw threaded therein for clamping the cutter between said jaws.

3. The pieces D E, stamped from sheet metal, provided with two or more cutters arranged diametrically opposite, combined with a chuck divided diametrically and provided with an exterior collar and set-screw threaded therein for clamping the cutter between said jaws, and a vertically-adjustable guide-rest having a V-groove therein formed horizontally and in line with the lathe-spindle for supporting and centering the carbons.

447,049. **SMOOTHING-IRON.** JOHN H. TOOF, Concord, N. H. Filed Feb. 5, 1890. Serial No. 339,945. (No model.)



Claim.—The combination, with an arm extending horizontally and rigidly attached to a wall or fixed support, the outer end of said arm curving slightly downward, as shown, of a smoothing-iron, a suitable handle-bar located at a point near and above the pointed end of said iron, and metallic loops adapted to engage said horizontal supporting-arm, substantially as described.

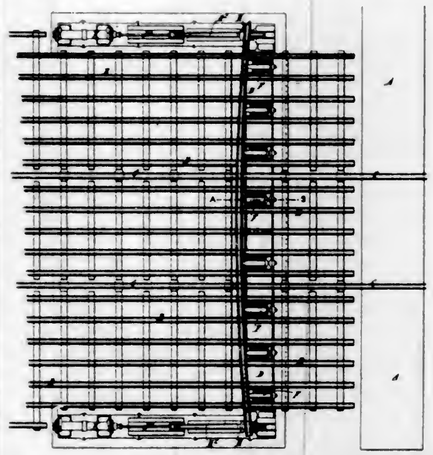
447,050. **TUG.** ORION A. CRABBS and SYLVESTER EMENS, Dayton, Ohio. Filed Nov. 15, 1890. Serial No. 371,495. (No model.)



Claim.—1. In a thill-tug, the combination, with the hereindescribed frame, cast of malleable iron and provided at its upper end with a downwardly-extending longitudinally-slotted leaf and provided in its lower portion with recesses, of the balls or rollers seated in said recesses and having laterally-extending spindles, substantially as and for the purpose set forth.

2. In a thill-tag, the combination, with a suitable frame provided with recesses or bearings, of the ball-shaped rollers provided with laterally-extending spindles mounted in said bearings, and means for retaining the said rollers in position, substantially as and for the purpose set forth.

447,051. **APPARATUS FOR CAMBERING RAILS.** JAMES DUFFIELD, Ashfield, England. Filed Aug. 15, 1890. Serial No. 362,052. (No model.)



Claim.—1. The combination, in a rail-cambering machine, substantially as hereinbefore set forth, of a hot-bed, stops so constructed and arranged as automatically to rise behind the rail after it has passed laterally over them to act as abutments therefor, rams which thrust the rail against the stops to bend it, and means for actuating the ram.

2. The combination, in a rail-cambering machine, substantially as hereinbefore set forth, of a hot-bed, counterpoised stops pivoted below its upper surface and so constructed and arranged as normally to project above it to be automatically depressed below said surface by the passage of the rail laterally thereover and to rise again behind the rail to act as abutments therefor, rams which thrust the rail against the stops to bend it, and means for actuating the rams.

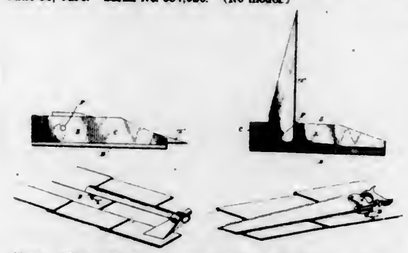
3. The combination, in a rail-cambering machine, substantially as hereinbefore set forth, of a hot-bed, stops so constructed and arranged as automatically to rise behind the rail after it has passed laterally thereover, to act as abutments therefor, rams so constructed and arranged as to thrust the rail against the stops to bend it and then to sink below the bed to permit the bent rail to pass over them, and means for actuating the rams.

4. The combination, in a rail-cambering machine, substantially as hereinbefore set forth, of a hot-bed, counterpoised stops thereon so constructed and arranged as normally to project above it, to be automatically depressed by the passage of the rail over them, and to rise again behind the rail to act as abutments therefor, rams which thrust the rail against the stops to bend it, guides inclined relatively to the hot-bed and engaging the rams, so as alternately to lift the rams above it to press the rail and to lower them below it to allow the rail to traverse the bed, and means for actuating the rams.

5. The rail-cambering machine hereinbefore described, consisting of the combination, substantially as hereinbefore set forth, of a hot-bed of parallel longitudinal rails, a transverse series of counterpoised automatically-yielding stops so constructed and arranged as normally to project above the hot-bed, to be automatically depressed by the passage of the rail laterally over them, and to rise again behind the rail to act as abutments therefor, rams so constructed and arranged as to thrust the rail against the stops to bend it, guides inclined relatively to the hot-bed, so as alternately to lift the rams above it to act upon the rail and to lower them below it to allow the rail to traverse the bed, and means for actuating the rams.

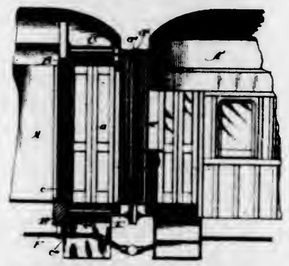
6. The combination, substantially as hereinbefore set forth, of a hot-bed, stops so constructed and arranged as automatically to rise behind the rail after it has passed laterally over them to act as abutments therefor, rams which thrust the rails against the stops, means for actuating the rams, and an adjusting-arm which regulates the extent of the forward movement of the rams, thereby adapting them to act simultaneously upon several rails.

447,052. **TOOL-HANDLE ATTACHMENT.** ENOCH W. FANT, WILLIAM R. ANDERSON, and SAMUEL W. RICHARD, Franklin, W. Va. Filed June 30, 1890. Serial No. 357,926. (No model.)



Claim.—The combination, with a tool of an attachment secured to the lower side thereof near one end, the said attachment comprising a base B, a socket S thereon, having one closed end C, a pointed tooth T, having a squared butt mounted on a pivot P within said socket and striking said closed end when the tooth is raised, and a leaf-spring L, secured in the outer end of said socket, with its free end bearing upwardly against said tooth, the open end of the socket standing toward the opposite end of the tool, and the whole adapted for use substantially as and for the purpose hereinbefore set forth.

447,053. **RAILWAY-CAR.** WILLIAM W. GREEN, Chicago, Ill. Filed Oct. 25, 1890. Serial No. 369,283. (No model.)



Claim.—1. The combination, in a car-vestibule, of a chafing-plate, a receptacle provided with means for supplying its interior with compressed air at a constant and limited pressure, an escape-valve leading from said receptacle and adapted to permit air to pass therefrom whenever the pressure therein exceeds a predetermined maximum, and a connecting device between the chafing-plate and the receptacle, adapted to transmit the pressure of the air in the latter to the chafing-plate, substantially as described.

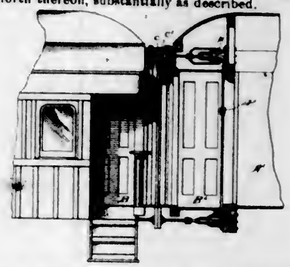
2. In a railway-car, the combination, with the train-pipe of the air-brake, of a receptacle for compressed air, a connecting-pipe between said receptacle and the train-pipe, a reducing-valve interposed in said connecting-pipe, a chafing-plate, a connecting device adapted to transmit the pressure of the air in the receptacle to the chafing-plate, and an escape-valve leading from the receptacle and adapted to allow the air to escape when the pressure exceeds a predetermined maximum, substantially as described.

3. In a railway-car, the combination, with the train-pipe of the air-brake, of a receptacle for compressed air, a connecting-pipe between said receptacle and the train-pipe, a limiting reducing-valve interposed in said connecting-pipe, a chafing-plate, a connecting device between said chafing-plate and the receptacle, adapted to apply the pressure of the air therein to the chafing-plate, and an escape-valve leading from said receptacle and adapted to permit air to discharge whenever the pressure exceeds a predetermined maximum, substantially as described.

4. In a railway-car, the combination, with the train-pipe of the air-brake, of a receptacle for compressed air, a connecting-pipe between said receptacle and the train-pipe, a limiting reducing-valve interposed in said connecting-pipe, a chafing-plate, a connecting device adapted to apply the pressure of the air in the receptacle to the chafing-plate, an escape-valve adapted to discharge air from the receptacle whenever the pressure therein exceeds a predetermined maximum, and a pet-cock for discharging the air from said receptacle by hand, substantially as described.

447,054. **RAILWAY-CAR.** WILLIAM W. GREEN, Chicago, Ill. Filed Dec. 15, 1890. Serial No. 374,799. (No model.)

Claim.—1. In a car-vestibule, the combination, with two plates secured, respectively, to the rigid frame of a car and to a chafing-plate, of an intermediate plate or of intermediate plates supported in close contact with the first-mentioned plates, but being free to slide back and forth thereon, substantially as described.



2. In a car-vestibule, the combination of a series of plates sliding upon one another, and a series of levers pivoted to each other and to said plates and supported from the frame of a car, substantially as described.

3. In a car-vestibule, the combination of two plates D D', with outwardly-turned adjacent edges, and a third plate E, arranged outside of the first two in contact with their edges and having its own edges turned inward against their outer surfaces, all of said plates being supported, so that the plates D and D' may approach each other or separate, substantially as described.

4. In a car-vestibule, the combination of three plates sliding upon one another and carried by a series of levers, pivoted substantially as shown, and supported by a bar G, rigid with the car, substantially as described.

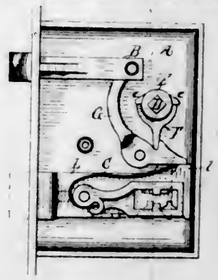
5. In a car-vestibule, a suitable inclosure rigid with the car and provided with means for removing the air therefrom, a movable abutment arranged to sustain the pressure of the atmosphere upon one side and whatever pressure may exist within said inclosure upon the other, and a connection between said abutment, and a chafing-plate adapted to apply the excess of pressure of the atmosphere over that within the inclosure to the chafing-plate, substantially as described.

6. In a car-vestibule, the combination, with a car and a chafing-plate, of an inclosure provided with means for creating a partial vacuum, a valve connecting the interior of said inclosure with the external air, adapted when in operation to preserve a slightly less pressure within the inclosure and provided with means for locking it out of action, a movable abutment arranged to sustain the pressure of the atmosphere upon one side and that within the inclosure upon the other, and a connection between said abutment and the chafing-plate, adapted to apply the excess of the atmospheric pressure to crowd the chafing-plate away from the car, substantially as described.

7. In a car-vestibule, the combination, with a car and a chafing-plate, of a cylinder rigid with the car, having a piston mounted therein and open at one end to the atmosphere, a connection between said piston and the chafing-plate, and means operated by the motion of the car for creating a partial vacuum within the closed end of the cylinder, substantially as described.

8. The combination, with a car and a chafing-plate, of a cylinder H, rigid with the car, an air-pump mounted adjacent to the cylinder and adapted to remove air therefrom, a rod K, jointed to the chafing-plate, a piston I within the cylinder, and connections between said rod, said piston, and the air-pump, whereby all are operated together, substantially as described.

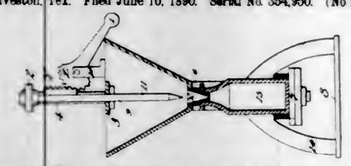
447,055. **LATCH.** GERMAN J. MATSON and JOHN V. PHILLIPS, New Buffalo, Mich. Filed Mar. 21, 1890. Serial No. 344,830. (Model.)



Claim.—1. The combination, with the case, the latch-bolt, the handle D, and lever G, forming a part of the connection between the handle and the latch-bolt, of the key-bolt L, bearing a shoulder *l*, properly located to obstruct the oscillation of the lever when the bolt L is thrown, but to escape said lever when the bolt is withdrawn, substantially as described.

2. In a knob-latch, the combination of the sliding latch-bolt B, the case, the handle D, capable of rotation and oscillation in the vertically-elongated holes *a* of the case, and the collar E, yoke F, and lever G, substantially as described.

447,056. **BOTTLE-FILLING MACHINE.** WILLIAM H. BALDINGER, Galveston, Tex. Filed June 10, 1890. Serial No. 354,950. (No model.)

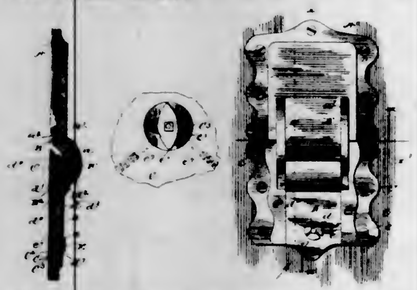


Claim.—1. The combination, in a bottle-filling machine, with a suitable reservoir having a number of vertically-disposed discharging-nozzles, of valves controlling said nozzles, a platform adapted to move to and from the nozzles and connected with the valves to actuate them in its movement, and a lever by which the platform and valves are operated conjointly, whereby the valves are automatically opened as the platform approaches the nozzles and are closed as it recedes therefrom, substantially in the manner and for the purpose herein set forth.

2. The combination, in a bottle-filling machine, with the tank and its vertically-disposed conical nozzles, of the vertically-moving conical valves entering said nozzles from above the cross-head connecting them, the operative lever, and the segment-gear connecting the lever with the cross-head, whereby the valves are opened and closed in unison by a movement of the lever, substantially in the manner and for the purpose herein set forth.

3. The combination, in a bottle-filling machine, of a tank or reservoir, conical discharge-nozzles communicating therewith, rods terminating in conical valves mounted to drop vertically into the upper ends of the nozzles to close them, a cross-head connecting the valve-rods above the tank, a platform suspended from the cross-head under the nozzles, and vibrating levers pivoted above the tank at each end thereof, coupled at their outer ends by a connecting-bar to move in unison and geared by toothed segments at their inner ends each with a vertical rack-bar carried by the cross-head, whereby a movement of the arms operating to elevate the platform will open the valves, and vice versa, substantially in the manner and for the purpose herein set forth.

447,057. **TRUNK-LOCK.** JOHN G. KRIEGER, Washington, D. C., assignor, by direct and mesne assignments, to Geo. G. Schroeder, Levi P. Wright, and Charles Newbold, all of same place. Filed Nov. 12, 1890. Serial No. 371,202. (No model.)



Claim.—1. The combination, with a face-plate, of curved arms having their ends bent backward and their upper ends pivoted to said face plate, a locking-plate having a cross-bar extending over its upper end and under the said arms, a leaf pivoted to the lower ends of the said arms, the upper end of the said leaf being contained under the said cross-bar, and means for securing the lower end of the leaf and locking-plate together, as described.

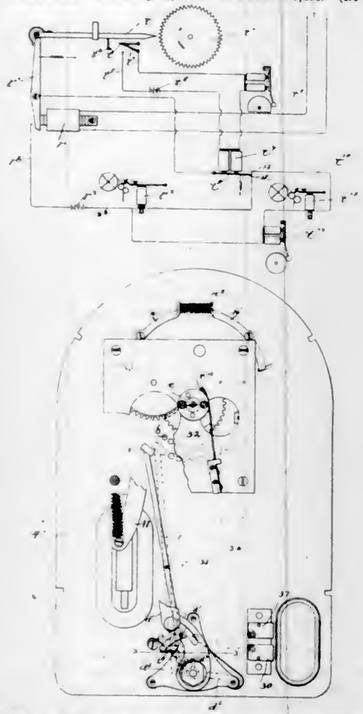
2. The combination, with a face-plate having a central lip, of arms having one end pivoted to the said plate, a locking-plate having a cross-bar upon its upper end and below the said lip, a leaf pivoted to the said arms and having a channel in its end adapted to engage under the said cross-bar, and means for securing the lower end of the leaf and locking-plate together, as described.

3. The combination, with a rotary barrel having a V-shaped slot therein, of spring-actuated pins engaging the ends of the said slots, a locking-plate having an elongated opening therein, and wings upon the said barrel, as described.

4. The combination, with a face-plate having a central downwardly-projecting lip and slots upon the sides thereof, and having a groove in its rear surface communicating with the ends of the said slots, of two opposite arms having their upper ends contained within the said slots, a cross-head carried in the said groove and connecting the upper ends of the said arms, a cross-head connecting the lower inwardly-curved ends of the said arms, a leaf having a covered slot therein which receives the lower cross-head, and having a forwardly-opening channel in its upper end, a locking-plate having vertical ridges and a cross-bar at the top of the said ridges, and means for securing the lower end of the said leaf and locking-plate together, as described.

5. The combination, with a face-plate having a transverse groove in its rear face, of arms, a cross-head connecting the upper ends of the said arms and contained in the said transverse groove, a locking-plate having a cross-bar upon its upper end, a leaf composed of two plates, one of the said plates having a channel upon its outer face at its upper end and a channel in its rear face below the said channel in its outer face, and the remaining plate serving as a cover for the said channel in the rear face of the said plate, and a cross-head connecting the lower ends of the said arms and contained in the said channel in the rear face of the said forward plate of the leaf, the said cross-head and arms being made integral, and means for securing the lower end of the leaf and locking-plate together, as described.

447,058. **POLICE SIGNALING APPARATUS.** BERNICE J. NOYES, Boston, Mass. Filed July 28, 1887. Serial No. 245,498. (No model.)



Claim.—1. The combination of the following instrumentalities, viz: a main electric circuit, a signal-transmitter for said circuit constructed and arranged to transmit, in conjunction with the signal, a differentiating impulse, as an impulse of long duration, a receiving-instrument controlled by the main circuit, an indicating-signal, a switch controlled by the differentiating impulse for governing the operation of said indicating-signal, and another receiving-instrument controlled by the main circuit, but rendered operative by the afore said switch, substantially as described.

2. The combination of the following instrumentalities, viz: a main electric circuit, a signal-transmitter for said circuit constructed and arranged to transmit signals by impulses of short duration preceded by or followed by an impulse of long duration, a receiving-instrument controlled by the main circuit, an indicating-signal, a switch controlling the operation of said indicating-signal and responsive to the impulses of long duration, and another receiving-instrument rendered operative by said switch and thereafter controlled by the main circuit, substantially as described.

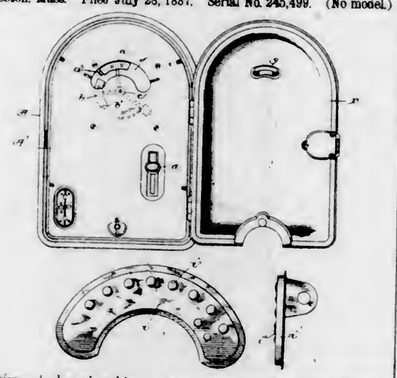
3. A signal-box containing a multiple-signal-transmitting device combined with a receiving-relay connected in circuit with the said transmitting device, the message-receiving instrument r^4, included in a local circuit controlled by said relay, the branch wire l^{10}, connected to said local circuit between said message-receiving instrument and the local battery, the message-receiving instrument l^{12} in said branch wire, and a switch for cutting out the message-receiving instrument r^4 and cutting in the message-receiving instrument l^{12}, substantially as described.

4. A signal-box containing a rotating circuit-changing device, and a permanent and a removable signal-controlling device for the circuit-changing device, the latter being moved by the box-door, combined with another removable signal-controlling device contained within the box, but which can be reached from the exterior of the box to be interposed upon occasions, substantially as described.

5. A signal-box containing a rotating circuit-changer or pen, and a permanent and also a removable signal-controller therefor, the latter being moved by the box-door, combined with another removable controller, and a key which, when inserted and turned, interposes the said removable circuit-controller and also actuates the signaling mechanism, substantially as described.

6. In a signal-box, a permanent signal-transmitting device for transmitting a signal indicating the locality of the box, a variable signal-transmitting device the control of which is removable and interchangeable with other boxes, and an actuating-pull therefor, accessible and operative by keys inserted from the outside of the box, combined with another signal-transmitting device, a co-operative part of which is removable, and an arm accessible from the exterior of the box for interposing said co-operative part, substantially as described.

447,059. **POLICE SIGNALING APPARATUS.** BERNICE J. NOYES, Boston, Mass. Filed July 28, 1887. Serial No. 245,499. (No model.)



Claim.—1. In a signal-box, one or more rotating circuit-changing devices, combined with a number of detachable plates, each carrying characteristic contact devices and constituting circuit-controlling devices which co-operate with the circuit-changing devices to effect the transmission of a variable signal, substantially as described.

2. In a signal-box, one or more rotatable signaling-keys, combined with a permanent series of studs or projections lying in the path of movement of the said keys and with a number of detachable plates, each carrying characteristic contact devices and constituting controlling devices adapted to co-operate with one or all of said keys, substantially as described.

3. In a signal-box, a shaft carrying two circuit-pens at different distances from its axis, combined with a permanent controller and a number of detachable plates, each having two concentrically arranged signaling-surfaces thereon, with which the circuit-pens co-operate, substantially as described.

4. In a signal-box, two circuit-changing devices fixed to a shaft at a different distance from its axis, combined with a permanent controlling device and with a removable plate having two concentrically-arranged signal-controlling surfaces thereon, with which the circuit-changing devices co-operate, substantially as described.

5. In a signal-box, one or more movable circuit-pens, combined with a permanent controller to co-operate therewith and effect the transmission of the box-number and with a removable controller fixed to the door of the box, the latter controller operating with the circuit-pens when the box-door is closed to effect the transmission of a different signal, substantially as described.

6. In a signal-box having a face-plate with an opening, one or more circuit-changing devices fixed to a rotatable shaft to rotate back of the face-plate, combined with a removable plate *i* to enter the opening in the face-plate when the box-door is opened and carrying characteristic contact devices which co-operate with the circuit-changing devices, and a signal-controlling device, as the stud *g*, on the box-door, registering with the opening in the face-plate and entering the said opening when the box-door is closed to also co-operate with said circuit-changing devices, substantially as described.

7. The combination, substantially as described, of a signal-box constructed and arranged to transmit different signals by changes in the current of different duration with a register at a main station and an electric circuit connecting them, a bell included in a branch wire with the register, and a switch, controlled by impulses of long duration, for including the said bell in the circuit with the register to audibly respond to a portion only of the signal—as the box-number, for instance—substantially as described.

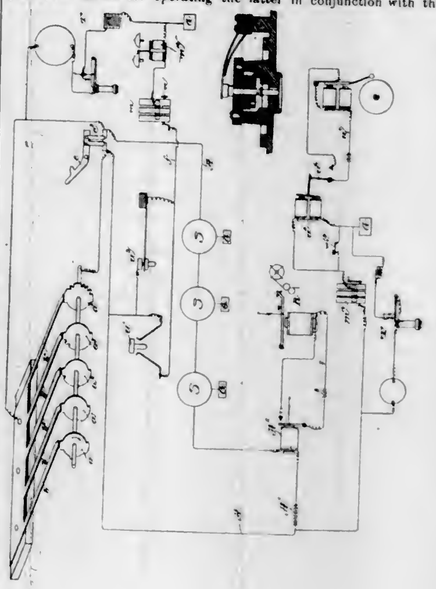
8. The combination, substantially as described, with one or more signal-boxes and a register at a receiving-station and an electric circuit connecting them, of a bell included in a branch wire with the register, a switch for including the said bell in the circuit with the register, and an electro-magnet for removing it, the circuit of said electro-magnet being controlled by the receiving-magnet in the main circuit, substantially as described.

9. A signal-box containing a permanent signal-transmitting device, combined with a variable-signal-transmitting device, a co-operative part of which is removable and interchangeable with other boxes, and a like co-operative part of which is attached to and connected with the door and removed only to permit the insertion of said interchangeable co-operative part, substantially as described.

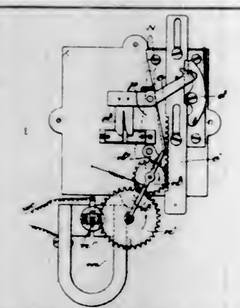
10. In a signal-box, a single circuit-changer comprising two contact members and a permanent or invariable controller consisting of contact devices to indicate the box-number, combined with the number of detachable controllers, each carrying characteristic contact devices, substantially as described.

447,060. **MUNICIPAL SIGNAL APPARATUS.** BERNICE J. NOYES, Boston, Mass. Filed Sept. 14, 1888. Serial No. 285,354. (No model.)

Claim.—1. The combination, with a signal-box containing a multiple-signal transmitter and an instrument for sending alternating impulses, and means for operating the latter in conjunction with the



447,060.



former on some signals but not others, of a circuit including a battery, a message-recording instrument, the operating-magnet of which is responsive to the changes in said battery-circuit caused by the multiple-signal transmitter, and a polarized signal-receiving instrument also connected in said battery-circuit and responsive to the alternating impulses, substantially as described.

2. The combination, with a signal-box containing a multiple-signal transmitter and an instrument for sending alternating impulses, and means for operating the latter in conjunction with the former on some signals but not others, of a circuit including a battery, a message-recording instrument, the operating-magnet of which is responsive to the changes in said battery-circuit caused by the multiple-signal transmitter, a polarized relay connected in said circuit and responsive to the alternating impulses, a local circuit and bell therein, and a circuit-closer controlled by the armature of said polarized relay, substantially as described.

3. In a municipal telegraph system comprising a main and several sub-stations connected by a circuit including a battery, a multiple-signal transmitter at the sub-stations having as a co-operative part of it a pointer for placing the transmitter in condition for transmitting different signals, an actuating-pull for the transmitter, a magneto-electric generator also at the sub-station, operated by the actuating-pull, and means, substantially as described, for operatively connecting and disconnecting the said magneto-electric generator and actuating-pull, whereby the said generator may be operated to accompany some of the signals and not others, combined with a message-recording instrument at the main station, and also a polarized signal-receiving instrument responsive to the impulses produced by the magneto-electric generator, substantially as described.

4. In a signal-box, a multiple-signal transmitter and an actuating-pull therefor, combined with a magneto-electric generator which is operatively connected with and disconnected from the actuating-pull at will, substantially as described.

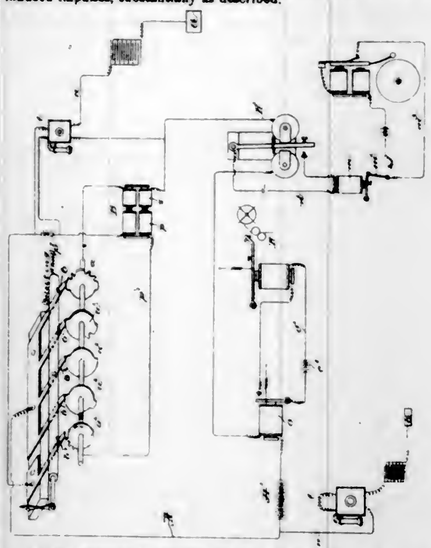
5. In a signal-box, a multiple-signal transmitter having as a co-operative part of it a pointer normally concealed by a door, a hand-operative actuating-pull for the transmitter accessible when the door is open, and an outside key which operates said actuating-pull, combined with a magneto-electric generator operated by the said actuating-pull, substantially as described.

6. In a signal-box, the multiple-signal transmitter having as a co-operative part of it a pointer normally concealed by a door, a hand-operative actuating-pull for the transmitter accessible when the door is open, and an outside key which operates said actuating-pull, combined with the magneto-electric generator, and means, substantially as described, controlled by the pointer for connecting and disconnecting the said generator with the actuating member of the transmitter, substantially as described.

447,061. MUNICIPAL SIGNAL APPARATUS. BERNICE J. NOYES, Boston, Mass. Filed Sept. 14, 1888. Serial No. 285,355. (No model.)

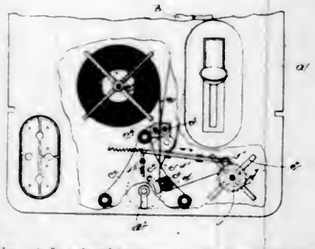
Claim.—1. In a municipal telegraph system, a main station and several sub-stations connected by an electric circuit, multiple-signal transmitters at the sub-stations, and signal-receivers at the main station, combined with an inductorium one of the coils of which is included in the main signaling-circuit and the other coil in a battery-circuit, a circuit-changer for said battery-circuit, which operates automatically in conjunction with some signals and not others, and a polarized receiving-instrument at the main or central station responsive to the induced impulses, substantially as described.

2. In a municipal telegraph system, a main station and several sub-stations connected by an electric circuit, a multiple-signal transmitter at the sub-stations comprising a series of signal-wheels and a series of pens, and a signal-receiving apparatus at the main station responsive to the changes in the condition of the main circuit produced by said multiple-signal transmitter, combined with an inductorium one of the coils of which is included in a main circuit and the other in a local-battery circuit, a circuit-wheel a^4, fixed to and insulated from the rest of the shaft carrying the signal-wheels, the pen d^5, and the polarized receiving-instrument at the main station responsive to the induced impulses, substantially as described.



3. In a municipal telegraph system, a main station and several sub-stations connected by an electric circuit, a multiple-signal transmitter at the sub-station, and a signal-receiving apparatus at the main station responsive to the changes in the condition of the circuit produced by said multiple-signal transmitter, combined with an inductorium at each sub-station, one of the coils of which is included in said circuit and the other coil in an independent battery-circuit, a circuit-changer for making and breaking said independent battery-circuit which is operated automatically in conjunction with some signals but not others, and a polarized signal-receiving apparatus at the main station responsive to the induced impulses, substantially as described.

447,062. SIGNAL-BOX. BERNICE J. NOYES, Boston, Mass. Filed Sept. 11, 1889. Renewed Dec. 5, 1890. Serial No. 373,642. (No model.)



Claim.—1. In a signal-box containing a signal-transmitter adapted to be operated by a key inserted through a key-hole, the combination, with the key formed to print, impress, or emboss a character indicating a number or equivalent by which the key is known, of a piece of material upon which the said character is printed or embossed, substantially as described.

2. In a signal-box containing a signal-transmitter, the combination, with a key adapted to turn in an alarm and formed to indicate a number or character by which it is known, of a movable piece of material upon which the said number or character is indicated, leaving a permanent record, substantially as described.

3. In a signal-box containing a signal-transmitter, the combination, with a key adapted to turn in an alarm and having projections formed on it indicating its number or equivalent by which it is known, of a piece of material marked, impressed, or embossed by said projections, substantially as described.

4. In a signal-box containing a signal-transmitter, the combination, with the key adapted to turn in an alarm and formed to mark, impress, or emboss a piece of material to indicate its number or equivalent by which it is known, of a feeding device for the said material, substantially as described.

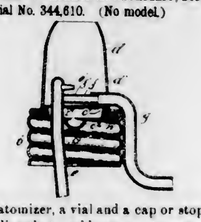
5. In a signal-box containing a signal-transmitter, a key adapted to turn in an alarm the bit of which has formed on it several projections, a strip of paper or equivalent adapted to be marked, impressed, or embossed by said projections, and a feeding device for the said paper, substantially as and for the purposes set forth.

447,063. PROCESS OF MAKING ARTIFICIAL CRYOLITE. ENGELBERT RICHTERS, Aarau, Germany. Filed Nov. 7, 1890. Serial No. 370,670. (No specimens.) Patented in Germany Sept. 19, 1889, No. 53,045.

Claim.—1. The herein-described process of utilizing the gaseous silicic fluoride obtained in treating fluorine containing phosphates with sulphuric acid, which consists in converting said silicic fluoride by means of water into a solution of hydrofluosilicic acid and subjecting the thus-obtained solution to the action of alumina hydrate and a caustic alkali or an alkali carbonate, so that a mixture of artificial cryolite and silicic acid is obtained, substantially as set forth.

2. The herein-described process of utilizing the gaseous silicic fluoride obtained in treating fluorine containing phosphates with sulphuric acid, which consists in converting said silicic fluoride by means of water into a solution of hydrofluosilicic acid, subjecting the thus-obtained solution to the action of the alumina hydrate and a caustic alkali or an alkali carbonate, so as to form artificial cryolite and silicic acid, and then separating said cryolite by filtration from the silicic acid, substantially as set forth.

447,064. ATOMIZER. ASAHEL M. SHURTLEFF, Boston, Mass. Filed Mar. 20, 1890. Serial No. 344,610. (No model.)



Claim.—1. In an atomizer, a vial and a cap or stopper, combined with a nozzle secured directly to said cap or stopper and adapted to be applied in the nostrils and in open communication with the interior of said vial, a liquid-tube extending down into the vial, atomizing-orifices contained within said nozzle, and an air-tube provided with an air-forcing device, all constructed and arranged to operate substantially as described.

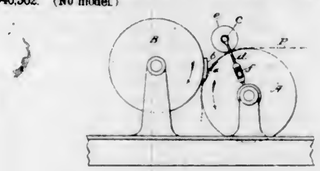
2. In an atomizer, a vial and cap or stopper therefor having its top formed with a seat for the nozzle, combined with a liquid and air tube, atomizing-orifices in said tubes, and a nozzle fitting said seat, substantially as described.

3. In an atomizer, a vial and cap or stopper therefor, a liquid and air tube, and atomizing-orifices located above the cap or stopper, combined with a nozzle provided with a small hole at one side opposite one of the atomizing-orifices, substantially as and for the purpose specified.

4. In an atomizer, a vial, and a cap or stopper therefor, a liquid-tube, and liquid-orifice, combined with an air-tube comprising a short tube, as *f*, secured to said liquid-tube and having an air-orifice *f'*, suitably located, a bent tube attached to said short tube *f*, and a nozzle, substantially as described.

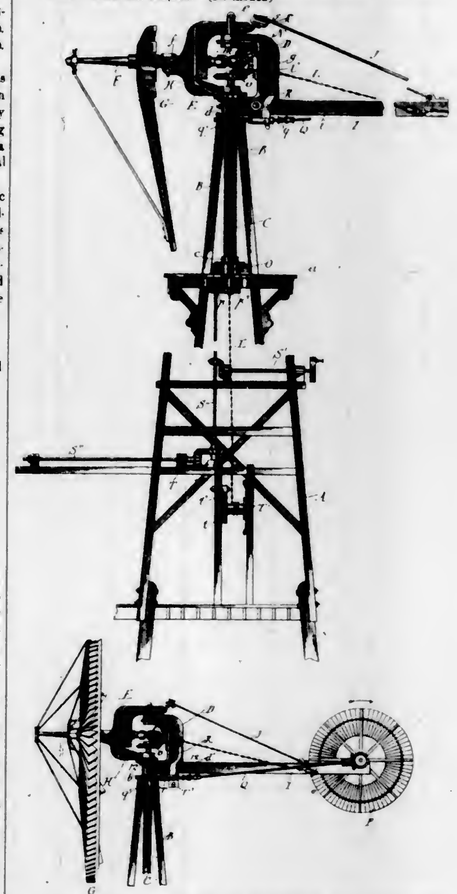
5. In an atomizer, a vial, a cap or stopper therefor, having a top *c*, with a well i^{10}, combined with the washer *n*, placed between the side walls of the cap or stopper and the well, substantially as described.

447,065. MACHINE FOR MAKING TUBULAR BAG-BLANKS. JAMES ARKELL, Canajoharie, N. Y. Filed Feb. 15, 1890. Serial No. 340,502. (No model.)



Claim.—The combination, with the pair of drawing-rolls which also operate to sever the web of material into separate bag-blanks, of the device which by direct coaction, as explained, with that one of said rolls onto the periphery of which the material first passes prevents any recession of the leading end of the material relatively to said roll-periphery after the severance of the material, substantially as and for the purpose hereinbefore set forth.

447,066. WIND-ENGINE. MARK C. CHAPMAN, Aurora, Ill., assignor to himself and Matthew T. Chapman, same place. Filed Jan. 5, 1889. Serial No. 295,594. (No model.)



Claim.—1. In a wind-engine, the combination, with a wind-wheel shaft and its supporting-bracket, of a second bracket on which said wind-wheel bracket is pivoted, an auxiliary shaft on said second bracket, a device for communicating rotary motion from the wind-wheel shaft to the auxiliary shaft, a bevel gear-wheel *m* on said auxiliary shaft, a vertical shaft O, provided with a bevel gear-wheel *o*, and a rudder-staff secured to said second bracket, substantially as specified.

2. In a wind-engine, the combination, with a wind-wheel shaft and its supporting-bracket, of a second bracket on which said wind-wheel bracket is pivoted, an auxiliary shaft on said second bracket, a device for communicating rotary motion from the wind-wheel shaft to the auxiliary shaft, a bevel gear-wheel *m* on said auxiliary shaft, a vertical shaft O, provided with a bevel gear-wheel *o*, a rudder-staff pivoted to said second bracket to swing in a vertical plane, and a supporting-rod J, connected to said rudder-staff and to said wind-wheel bracket, substantially as specified.

3. In a wind-engine, the combination, with a wind-wheel shaft and its supporting-bracket, of a second bracket on which said wind-wheel

bracket is pivoted, an auxiliary shaft on said second bracket, a device for communicating rotary motion from the wind-wheel shaft to the auxiliary shaft, a bevel gear-wheel *m* on said auxiliary shaft, a vertical shaft O, provided with a bevel gear-wheel *o*, a rudder-staff secured to said second bracket, and a geared cap and a worm for holding the rudder in rear of the mast, substantially as specified.

4. In a wind-engine, the combination, with a wind-wheel shaft and its supporting-bracket, of a second bracket on which said wind-wheel bracket is pivoted, an auxiliary shaft on said second bracket, a device for communicating rotary motion from the wind-wheel shaft to the auxiliary shaft, a bevel gear-wheel *m* on said auxiliary shaft, a vertical shaft O, provided with a bevel gear-wheel *o*, a rudder-staff secured to said second bracket, a rudder wind-wheel supported on said staff, a derrick having a geared cap, and gearing between said rudder wind-wheel and said cap, substantially as specified.

5. In a wind-engine, the combination, with a wind-wheel shaft and its supporting-bracket, of a second bracket to which said wind-wheel bracket is pivoted, an auxiliary shaft on said second bracket, a device for communicating rotary motion from the wind-wheel shaft to the auxiliary shaft, a bevel gear-wheel *m* on said auxiliary shaft, a vertical shaft O, provided with a bevel gear-wheel *o*, a rudder-staff pivoted to said second bracket to swing in a vertical plane, a rudder wind-wheel supported on said rudder-staff, a rod J, connected to said rudder-staff and said wind-wheel bracket, a derrick having a geared cap, a worm adapted to engage with said geared cap, a connecting-rod Q, gearing for rotating said rod Q from the rudder wind-wheel, and a universal coupling *q*, substantially as specified.

6. In a wind-engine, a tube C and bracket D, secured thereto and carrying a rudder, in combination with a bracket E, pivoted to the bracket D by a pivot *e* at its upper arm and pivotally supported at its lower arm on the lower arm of the bracket D, a wind-wheel and shaft carried by said bracket E, and a rod J, pivoted to the bracket E at a short distance from the pivot *e* and to the rudder, substantially as specified.

7. In a wind-engine, a mast B, tube C, bracket D, carrying the rudder and an auxiliary shaft M, bracket E, pivoted on said bracket D, shaft F on said bracket E, and universal coupling N, in combination with a shaft O and bevel-wheels *m*, substantially as specified.

8. In a wind-engine, a mast having a cap *b*, provided with gear-teeth, in combination with a rudder-staff pivotally supported on said mast, a rudder wind-wheel, a worm-gear *q'*, meshing with said cap *b*, and a connecting-rod for communicating motion from the rudder-wheel to the worm-gear and having a universal coupling *q*, substantially as specified.

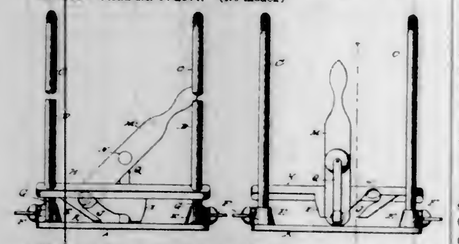
9. In a wind-engine, a mast having a cap *b*, provided with gear-teeth, a rudder-staff and its support, and a rudder wind-wheel, in combination with a connecting-rod having a gearing *q'*, a lever R, which supports the rod, and a chain L, adapted to throw the gear *q'* in or out of gear with the cap *b*, substantially as specified.

10. In a wind-engine, a mast B, having a cap *b*, provided with gear-teeth, in combination with a rudder-staff pivotally mounted therein and adapted to swing vertically in its support, a rudder-vane, a connecting-rod Q, universal coupling *q*, shaft F, and gearing *q'*, substantially as and for the purpose specified.

11. In a wind-engine, a rudder wind-wheel and mechanism for turning the rudder in rear of the mast by the rotation of the rudder wind-wheel, in combination with a chain L, a lever, and mechanism for throwing the turning-gear out of mesh, substantially as and for the purpose specified.

12. In a wind-engine, a mast B, cap *b*, having gear-teeth, rudder-staff I, wind-wheel P, and connecting-rod Q, having gearing *q'*, in combination with the lever R, supporting said rod Q, weight *r'*, pulley *l'*, and pull-chain L, substantially as and for the purpose specified.

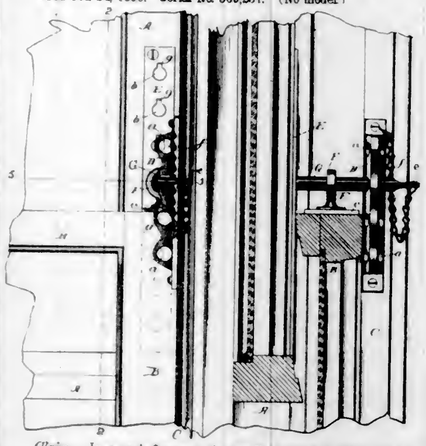
447,067. PAPER-FILE. ALBERT B. DICK, Chicago, Ill. Filed Dec. 16, 1890. Serial No. 374,877. (No model.)



Claim.—1. In a double-arch paper-file, the combination, with movable sections completing the arches of the file, of a cross-bar connecting said sections, a swinging lever, and a cam-connection between said lever and cross-bar, substantially as set forth.

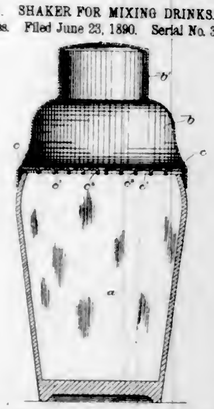
2. In a double-arch paper-file, the combination, with movable sections completing the arches of the file, of a cross-bar connecting said movable sections, a cam-groove J in said cross-bar, a swinging lever M, and a friction-roller K, carried by said swinging lever entering said cam-groove J, substantially as set forth.

447,068. SASH-FASTENER. WILLIAM E. DIXON, Chicago, Ill. Filed Oct. 24, 1890. Serial No. 369,257. (No model.)



Claim.—In a sash-fastener, the eye F, secured rigidly to the lower sash of a window, in combination with the locking-bolt G, having a lug or projection *d* on its inner end, an apertured plate E, secured to one side rail of the upper sash to receive and hold the end of the bolt G and its lug or projection *d*, and the apertured plate D, secured to the window-casing, substantially as and for the purpose specified.

447,069. SHAKER FOR MIXING DRINKS. CLARENCE W. FOX, Saugus, Mass. Filed June 23, 1890. Serial No. 356,356. (No model.)

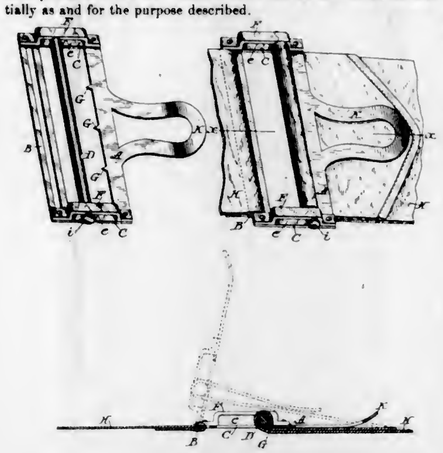


Claim.—In a shaker of the kind described, the vessel *a*, the cup *b*, having the cutting and straining plate *c* attached to it at its lower end and having an outlet at its upper end, and a closing-cap for said outlet, substantially as described.

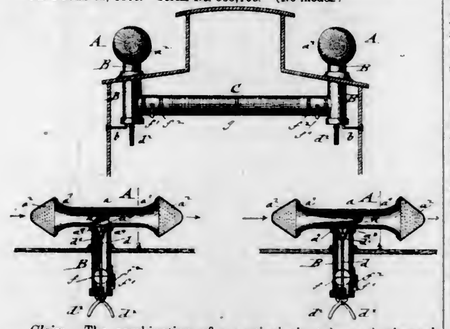
447,070. BUCKLE. ROBERT G. HENRY, Waterbury, Conn., assignor to the Consolidated Safety Pin Company, Bloomfield, N. J. Filed Jan. 25, 1890. Serial No. 338,045. (No model.)

Claim.—The combination, in a roller-buckle, with the frame constructed of the parallel cross-bars A and B, connected by the side bars C C, the front one of said cross-bars having a toothed or serrated edge, of the lever K, projecting from the front bar, the longitudinal ways *e e*, formed upon the side bars above the outer face thereof, and the roller D, having its ends fitted movably in said ways, so as to travel

parallel with the face of the frame on the outer side thereof, said cross-bar A and roller D, arranged as described, constituting the two jaws of a clamp for clamping a belt or strap between them, and to have their pressure on the belt relieved when the bar A is lifted, substantially as and for the purpose described.

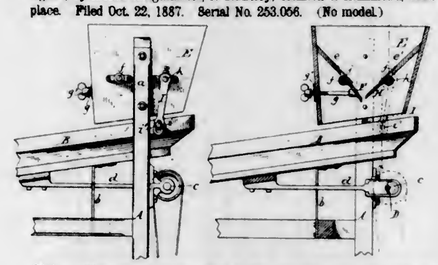


447,071. CAR-VENTILATOR. GEORGE HOGG, New York, N. Y. Filed June 12, 1890. Serial No. 355,168. (No model.)



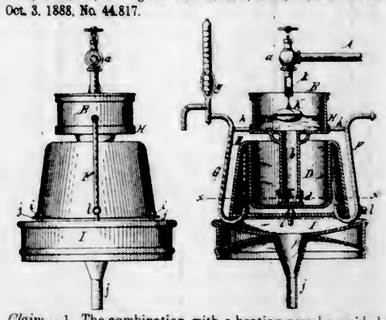
Claim.—The combination of a vertical air-tube, a horizontal ejector-tube mounted on the upper end of said vertical air-tube and adapted to swivel thereon, said ejector-tube having flaring mouths at its opposite ends, a jet-tube or hood and a side opening opposite said vertical tube, a spindle passing through said vertical tube and connected to the ejector-tube, and cam-levers pivoted to the lower end of the spindle for turning and locking the ejector-tube.

447,072. FEED DEVICE FOR GRAIN-CLEANING MACHINES, ROLLER-MILLS, &c. WILLIAM W. HUNTLEY, Silver Creek, N. Y., assignor, by mesne assignments, to Huntley, Crunson & Hammond, same place. Filed Oct. 22, 1887. Serial No. 253,056. (No model.)



Claim.—The combination, with a feed-hopper provided with inclined stationary feed-boards *e e'*, of an adjustable feed-gate F, pivoted below the lower edge of the stationary feed-board *e*, a vertically-oscillating feed-board H, secured to a horizontal rock-shaft *f*, arranged below the stationary feed-board *e'*, the feed-gate F and feed-board H, facing each other and forming continuations of the stationary feed-boards *e e'*, an adjusting-screw *g*, supporting the lower end of the feed-gate F, whereby the latter can be adjusted on its pivot for contracting or enlarging the throat of the hopper, and an actuating-arm I, secured to one end of the rock-shaft *f*, for imparting to the feed-board H a vertically-oscillating movement, substantially as set forth.

447,073. MILK-HEATER. JOHAN L. JÖNSSON, Stockholm, Sweden, assignor to the Aktiebolaget Separator, same place. Filed May 12, 1890. Serial No. 351,379. (No model.) Patented in Sweden Dec. 21, 1887, No. 1,373; in England Mar. 4, 1888, No. 3,976, and in Germany Oct. 3, 1888, No. 44,817.



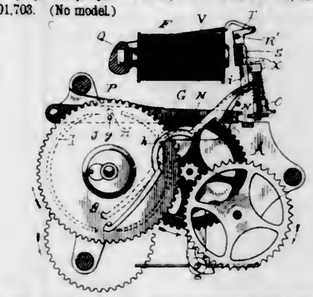
Claim.—1. The combination, with a heating-vessel provided with a surrounding heating-jacket and having an open top, over which the liquid passes from the vessel upon the outer surface of the heating-jacket, of a feeder which delivers the liquid to be heated into the vessel, whereby the liquid which has become heated in the vessel is further heated in flowing over the outer surface of the heating-jacket, substantially as set forth.

2. The combination, with a heating-vessel provided with a surrounding heating-jacket and having an open top, over which the liquid passes from the vessel upon the outer surface of the heating-jacket, of a collar arranged with its closed bottom on the bottom of the heating-vessel and provided with slots in its side, and a slotted feed-pipe entering said collar, whereby the admission of the liquid to the vessel and its flow over the outer surface can be regulated by turning the feed-pipe in said collar, substantially as set forth.

3. The combination, with the jacketed heating-vessel having an open top, over which the liquid flows upon the outer surface of the vessel, and provided with a slotted collar on its bottom, of a removable feed-cup provided with a slotted pipe, which rests loosely in said slotted collar, and a receiving-pan upon which the jacketed vessel rests loosely, substantially as set forth.

4. The combination, with the heating-vessel having its sides and bottom surrounded by a water-jacket, of a steam-supply pipe connected with said jacket, and an overflow-pipe opening in the upper portion of the water-space, descending through the bottom of the jacket, and ascending outside of the same, substantially as set forth.

447,074. NON-INTERFERENCE FIRE-ALARM SIGNAL-BOX. WILLIAM H. KIRNAN, Brooklyn, assignor to the Gamewell Fire-Alarm Telegraph Company, New York, N. Y. Filed Mar. 1, 1889. Serial No. 301,703. (No model.)



Claim.—1. In an electric signal-transmitter, the combination, with circuit making and breaking signaling mechanism, a motor for operating such mechanism, and a maguet in the signaling circuit, of a han-

dle for starting the motor, a mechanical disabling device for the starting-handle, an armature for said magnet, carrying and directly moving the disabling device, and a resetting device operated by the motor and moved thereby at the conclusion of a signal, substantially as set forth.

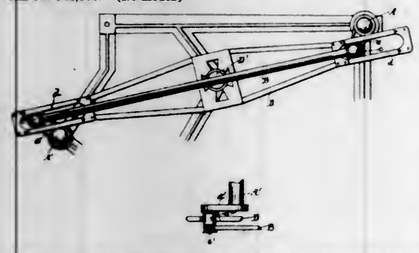
2. In an electric signal-transmitter, the combination, with circuit making and breaking signaling mechanism, a motor for operating the same, and a magnet in the signaling-circuit, of a detent for said motor, a handle for moving said detent to start the motor, a device intermediate between said detent and said handle, through which the handle acts upon the detent, an armature for said magnet, carrying and directly moving said intermediate device, and a resetting device operated by the motor and moved thereby at the end of a signal, substantially as set forth.

3. In an electric signal-transmitter, the combination, with circuit making and breaking signaling mechanism, a motor for operating the same, a magnet in the signaling-circuit, and a movable armature for said magnet, of a detent for the motor, an intermediate piece carried by the armature in position to move said detent when the armature is in the field of the magnet, a handle for moving said intermediate piece, and a part carried by the armature and adapted to engage a moving part of the motor for restoring said piece to its intermediate position, substantially as set forth.

4. In an electric signal-transmitter, the combination, with circuit making and breaking signaling mechanism, a motor for operating the same, employing a revolving wheel, a magnet in the signaling-circuit, and a rocking armature for said magnet, of a handle for starting the motor, disabling mechanism for the starting device carried by the armature, and a pin on a wheel of the motor, arranged to engage said armature to restore said disabling device to operative position at the close of a signal, substantially as set forth.

5. In an electric signal-transmitter, the combination, with the rotary signal-wheel, the spring and train of gearing for operating said wheel, the magnet in the signaling-circuit, and the rocking armature for the said magnet, of the lever controlling the movement of said gearing, the handle for raising said lever, the pin carried by said armature and having a head adapted to come between said handle and said lever, the arm extending from said armature, and a pin on a wheel of the train, adapted to engage said arm to restore the armature to the field of the magnet, substantially as set forth.

447,075. MECHANICAL MOVEMENT. KENTON C. KUNKLE, Lebanon, Ohio, assignor of seven-tenths to John A. Bone, Walter S. Dilatush, and Allen A. Kunkle, all of same place. Filed Nov. 25, 1890. Serial No. 372,590. (No model.)



Claim.—1. The combination, with a pair of cranks and a connecting rod or pitman, of a pivoted sway-bar having longitudinal slots in its ends set over the pins of said cranks, as set forth.

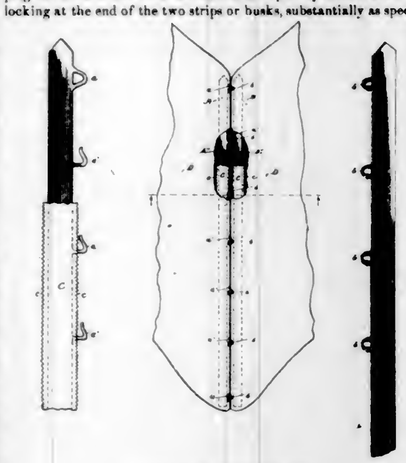
2. The combination, with a pair of cranks and a connecting rod or pitman, of a framed sway-bar centrally pivoted and having slots in its ends to ride over the pins of said cranks, as set forth.

3. A sway-bar for overcoming dead-centers, consisting of a bar centrally pivoted and having slotted ends to ride over cranks or wrist-pins, as set forth.

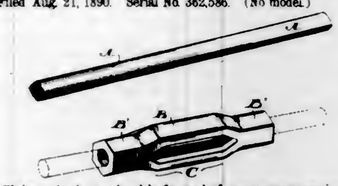
4. The combination, with a pair of cranks having anti-friction rollers on their pins and a pitman connecting said crank-pins, of a sway-bar centrally pivoted and provided with slots in its ends riding over the rollers on said crank-pins, as set forth.

447,076. GARMENT-FASTENING. JOHANNA LEONTIN, Chicago, Ill. Filed Jan. 14, 1890. Serial No. 336,953. (No model.)

Claim.—The combination of two fastening strips or busks, one having a series of upwardly-open hooks on the strip or busk, with the point of each hook turned toward the edge of the strip or busk to form a locking-bend, and the other provided with a series of hooks opening crosswise of the strip or busk, the two series of hooks interlocking by a hook of one series receiving and engaging by overlapping the hook of the other series, and a loop or eye and a hook interlocking at the end of the two strips or busks, substantially as specified.



447,077. TURN-BUCKLE. WILLIAM B. MIDDLETON, Lebanon, Pa. Filed Aug. 21, 1890. Serial No. 362,586. (No model.)



Claim.—1. A turn-buckle formed of counterpart sections the head portions of which are as to their abutting faces butt-welded together, substantially as set forth.

2. A turn-buckle formed of counterpart sections, which sections are manufactured by rolling as opposed to drop forging, and the head portions of which are as to their abutting faces butt-welded together, substantially as set forth.

3. The method of making a turn-buckle which consists in rolling a blank of metal to semi-cylindric or semi-polygonal form, in then forming in said semi-cylindric blank one or at stated intervals a series of depressions, in then dividing the blank so provided with a series of depressions intermediately between said depressions, and in then taking two of the divided portions of the blank and placing them together and uniting the abutting edges of the undepressed portions of said divided parts by butt-welding them together, substantially as set forth.

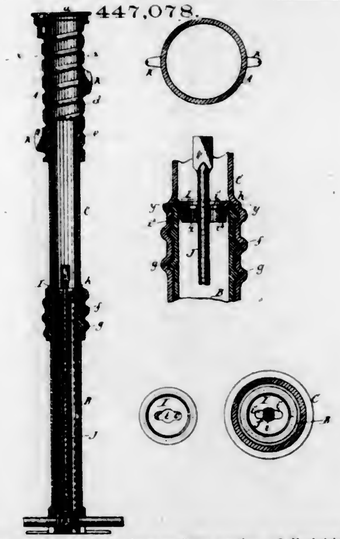
4. The method of making turn-buckle blanks in readiness to be united by pairs to form turn-buckles, each of which blanks embodies a turn-buckle arm and the two semi-cylindric halves of the turn buckle heads, which consists in rolling a series of said completed blanks in or from a single bar and in dividing said bar at the proper points to sever said blanks from each other, substantially as set forth.

447,078. STOP-COCK BOX FOR WATER AND GAS PIPES. AMOS W. MORGAN, Buffalo, N. Y. Filed June 20, 1887. Serial No. 241,818. (No model.)

Claim.—In a stop-cock box, the combination, with a lower stationary section provided at its upper end with an external screw-thread and an upper adjustable section having an internal screw-thread extending its entire length, of an intermediate section provided at its lower end with an internal screw-thread which is adapted to engage with the external screw-thread on the upper end of the lower section and with an external screw-thread at its upper end which is adapted to engage with the internal screw-thread of the adjustable top section, the external screw-threads at the upper end of the lower section and intermediate section being of uniform pitch and the internal screw-

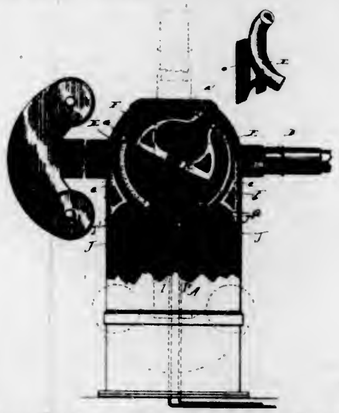


447,078.



thread at the lower end of the intermediate section of diminishing pitch, substantially as set forth.

447,079. MOTOR FOR RAILWAY-GATES. ALEXANDER J. McDONALD and ROBERT B. BRENT, Chicago, Ill., assignors to the Pneumatic Power and Railroad Gate Company, same place. Filed Oct. 27, 1888. Serial No. 289,323. (No model.)

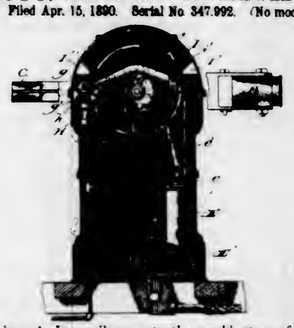


Claim.—1. The herein-described means for operating the swinging arms of railway-gates by compressed air, comprising, in combination with the gate-arm secured to a rock-shaft having a sector secured thereon, curved power-cylinders located within the gate-post concentrically to the rock-shaft and having ports at their respective ends for the admission of air, pistons reciprocating within the cylinders, curved piston-rods connected, respectively, to the pistons of the cylinders and to the ends of the sector, an air-pump exterior to the gate-post, and pipes communicating with the pump and with the ports of the cylinders, whereby the pistons of both cylinders are made simultaneously effective to move the gate in either direction, substantially as described.

2. In combination with a motor for railway-gates, &c., a lock therefor, comprising a cylinder to which a fluid under pressure is admitted, a piston-rod reciprocating therein, a pivoted dog or latch adapted to be actuated by the piston-rod, and a ratchet secured to the rock-shaft, substantially as described.

3. The combination, with the arm of a railway-crossing gate, of a pulley on its shaft, and a dog normally engaging with said pulley to lock the arm in its raised position.

447,080. RAILWAY-GATE. ALEXANDER J. McDONALD, Chicago, Ill. Filed Apr. 15, 1890. Serial No. 347,992. (No model.)

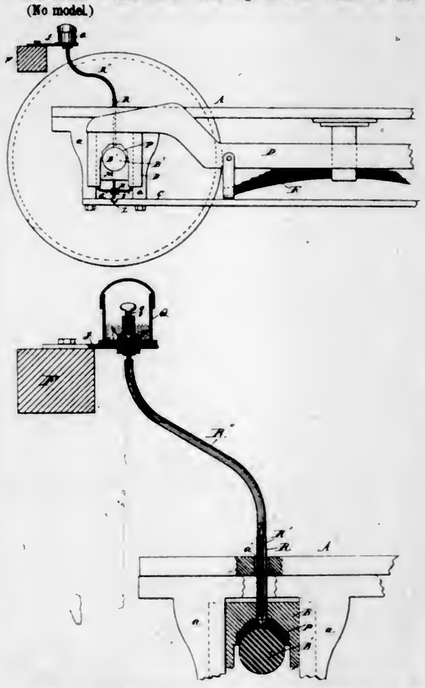


Claim.—1. In a railway-gate, the combination of a toothed segment G, an arm G', engaging therewith, a hook *g*, engaging with the arm to lock the same, and means for raising such hook and arm, substantially as described.

2. In a railway-gate, the combination of a double quadrant D', a double-headed bolt i, mounted therein, springs i' on each bolt, and blocks I', against which the bolt strikes as the quadrant is rocked in one direction or the other, substantially as described.

3. In a railway-gate, the combination of a yoke J, an arm B, swinging therein, and a pin *j'*, passing through the yoke and arm, holding the arm as it is raised or lowered, but breaking when sufficient force is applied to the arm, whereby the latter is allowed to swing around and kept from breaking, substantially as described.

447,081. LUBRICATOR FOR LOCOMOTIVE-TRUCKS. WILLIAM McILVOSE, Winona, Minn. Filed Aug. 22, 1890. Serial No. 362,709. (No model.)



Claim.—1. The combination, with an oil-box provided with recesses, of yokes spring-seated in said recesses, and an oil-cellar supported by said yokes.

2. The combination, with the spring-seated yokes and the oil-cellar supported thereby, of a tension device for adjusting the spring-pressure

3. The combination, with the spring-seated yokes and the oil-cellar supported thereby, of a securing device for holding the cellar to the yoke against lateral displacement.

4. The combination, with a recessed body, of spring-seated yokes movable in said recesses, and combined spring-seats and yoke-guides for holding the yokes in position.

5. The combination, with a recessed body, of yokes having springs on their stems mounted in said recesses, and removable forked pins adapted to removably secure the yokes in position and serve as a seat for the springs.

6. The combination, with the spring-seated yokes, of the removable oil-cellar provided with recesses on its under surface in line with the cross-bars of the yokes, and combined tension and cellar securing devices consisting of thumb-screws mounted on the yokes and having chisel-shaped ends fitting said recesses.

7. The combination, with the spring-seated yokes provided with nut-seats on the upper surface of their cross-bars, of nuts fitting said seats, and hand-screws working through said nuts, substantially as described.

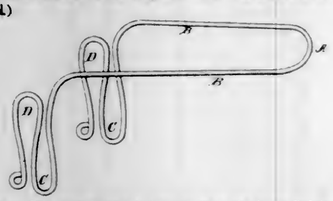
8. The combination, with the oil-cellar and spring-seated yokes, of a cross-bar and hand screw for retracting the yokes against the spring-pressure to permit removal of the cellar.

9. The combination, with a base-bar connecting the pendent ends of the oil-box seat, of the recessed oil-box, the spring-seated yokes mounted in said recesses, the oil-cellar, the thumb-screws mounted in the yokes and supporting the cellar, provided with hooks on their lower ends, a cross-bar engageable with said hooks, and a hand-screw in said cross-bar adapted to bear against said base-bar as a base of resistance for drawing down the yokes and freeing the cellar, substantially as described.

10. A lubricator for engine-trucks, comprising an automatically-adjustable oil cellar, an oil-cup located on some relatively-fixed and accessible support, an outer rigid section of supply-pipe fixed to the journal-box, an inner rigid section of supply-pipe telescoping within said outer section, and a flexible section connecting said inner section with the oil-cup, substantially as described.

11. A lubricator for engine-trucks and similar bearings, comprising an outer open-ended tube fixed to the oil-box directly over the brass and supported free and independent of the truck-frame, a smaller tube telescoping within the outer tube and having its delivery end in proximity to the journal, and a flexible tube attached to the outer end of the smaller tube and leading to a supply of oil, substantially as and for the purpose described.

447,082. COVER FOR SUGAR-BUCKETS. HENRY H. REYMER, Bellefontaine, Ohio. Filed Aug. 23, 1890. Serial No. 362,884. (No model.)



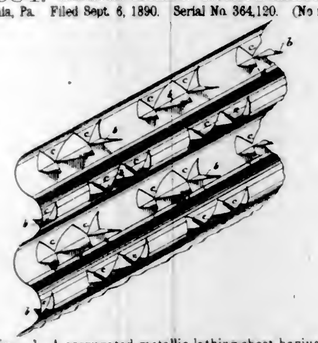
Claim.—The spring-wire A, bent to form the loops B C D, in combination with the bucket-cover E, having the pocket H to receive the loop B, as and for the purpose set forth.

447,083. DEVICE FOR DISPOSING OF SURPLUS WATER IMPOUNDED IN RESERVOIRS. EVELYN P. ROBERTS, Sing Sing, N. Y. Filed Nov. 8, 1890. Serial No. 370,781. (No model.)



Claim.—The combination of a main dam extending transversely across a valley, with a side spill connected therewith and extending up the valley at an angle to the main dam, and having an overflow-lip below the level of the top of the main dam, the said side spill being provided with a lateral channel for the escape of the water delivering below the main dam, substantially as described.

447,084. METALLIC LATHING. LONGLEY L. SAGENDORPH, Philadelphia, Pa. Filed Sept. 6, 1890. Serial No. 364,120. (No model.)



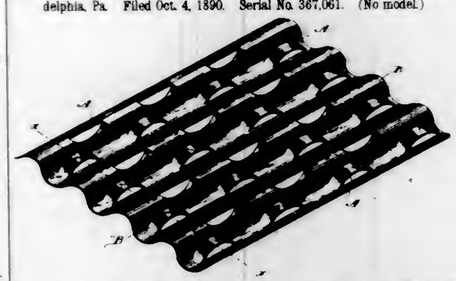
Claim.—1. A corrugated metallic lathing-sheet having the teeth *b* and *c* cut and formed in the apex of each corrugation, said teeth *b* being bent inward, as shown, and for the purposes set forth.

2. A corrugated lathing-sheet having the teeth *b* and *c* formed in the apex of each corrugation, the teeth *b* being bent inward, and the teeth *c* on the same curvilinear line as the corrugations, as and for the purposes set forth.

3. A metallic lathing-sheet corrugated throughout, and apertures in the apex of each corrugation, one side of each aperture having a zigzag outline formed by the overlapping teeth *c*, the surplus metal between said teeth being turned inward at the opposite side of said aperture, as and for the purposes set forth

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447,085. METALLIC LATHING. LONGLEY L. SAGENDORPH, Philadelphia, Pa. Filed Oct. 4, 1890. Serial No. 367,061. (No model.)



Claim.—1. A corrugated lathing-sheet having loops cut and forced outward from the concave surface of each corrugation, as and for the purposes specified.

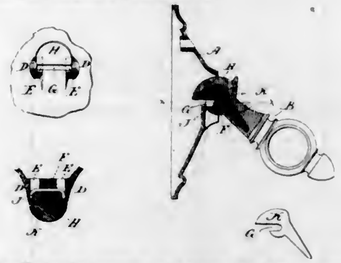
2. A corrugated metallic lathing-sheet having loops cut and forced outward in opposite directions in alternate corrugations, said loops at their end portions being integral with the body of the sheet, as set forth.

3. A corrugated lathing-sheet having loops or retaining portions cut and forced outward from the concave surface of each corrugation, the apex of each loop or portion terminating below the apex of the adjacent convex corrugations, substantially as set forth.

4. A corrugated lathing-sheet having loops cut and rounded outward from the concave surface of each corrugation, integral therewith and at right angles thereto, as shown and set forth.

447,086. COFFIN-HANDLE. EDWARD R. SARGENT and WILLIAM E. STEVENS, New Haven, Conn., assignors to the Sargent & Company, same place. Filed Nov. 21, 1890. Serial No. 372,152. (No model.)

Claim.—1. In a coffin-handle having an arm hung upon a pivot in a socket, the socket constructed with cheeks between which the pivot end of the arm is introduced, the said cheeks constructed with grooves opening to the rear side of the socket and extending inward to the position required for the pivot, and the pivot end of the arm also constructed with a groove opening from the rear and corresponding to the said grooves in the cheeks, combined with a pivot introduced from the rear into the grooves of the cheeks and corresponding groove of the arm, substantially as described.



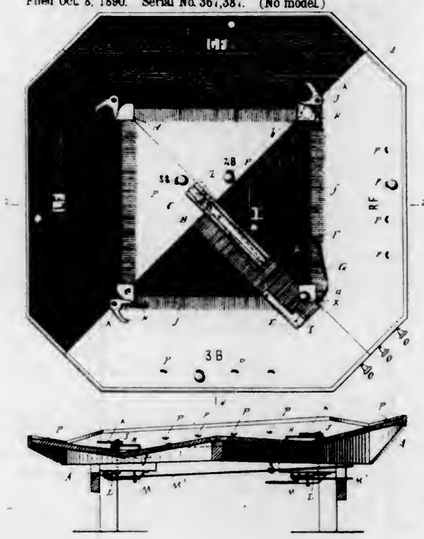
2. In a coffin handle consisting of a socket and an arm pivoted therein, the socket constructed with cheeks between which the pivot portion of the arm is introduced, the cheeks and the arm constructed with corresponding grooves opening from the rear, and a U-shaped pivot corresponding in diameter substantially to the width of the said grooves, the grooves in the cheeks each constructed at its bottom with a recess corresponding to the lugs or bent ends of the pivot, and into which the said bent ends may project when the pivot is in place, substantially as and for the purpose described.

3. In a coffin-handle consisting of a socket and an arm hung therein, the socket constructed with cheeks between which the corresponding portion of the arm is introduced to receive the pivot, the cheeks and arm constructed with corresponding grooves opening to the rear, and a pivot introduced into said grooves from the rear and so as to form an axis upon which the arm may turn, the arm constructed with a hard-metal body or bearing-piece at the pivot end, and through which the said groove of the arm extends, substantially as and for the purpose described.

447,087. PROCESS OF PRINTING IN COLORS. WILLIAM SCHUMACHER, Brooklyn, N. Y., assignor of one-half to Louis Rahmer, same place. Filed Sept. 8, 1890. Serial No. 364,334. (No specimens.)

Claim.—The process herein described of printing in colors, which consists in reproducing the different colors of the picture in wash-tints by means of lithographic ink or crayon on the surface of as many separate transfer-sheets as there are colors to be printed, then transferring the several wash-tints from the transfer-sheets to separate printing stones or plates having grained surfaces, and then printing the different colors from said printing-surfaces in register to correspond with the colors of the original picture, substantially as described.

447,088. GAME-BOARD. JOHN W. SUTTON, New York, N. Y. Filed Oct. 8, 1890. Serial No. 367,387. (No model.)



Claim.—1. A game-board for playing base-ball, having a diamond and a track along the edges of the diamond, the entire track being inclined and the end being lower than the beginning, substantially as set forth.

2. A game-board for playing base-ball, having a diamond and an inclined track along the edges of the diamond, the game-board being inclined upward, outward, and inward from the edges of the track along the diamond, substantially as set forth.

3. A game-board for playing base-ball, having a diamond and a track along the edges of the diamond, the entire track being inclined and the end being lower than the beginning, and a track extending from the middle of the diamond to that corner representing the batter's position, substantially as set forth.

4. The combination, with a game-board having a diamond and a track along the edges of the diamond, the entire track being inclined and the end being lower than the beginning, of a track extending from the center of the diamond to the corner representing the batter's position, and a pivoted chute at the inner end of said latter track, substantially as set forth.

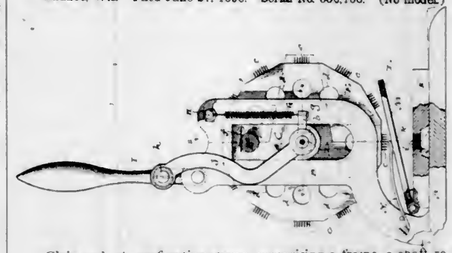
5. The combination, with a game-board having a diamond and an inclined track along the edges of the diamond, of a track extending from the center of the diamond toward that corner representing the pitcher's position, a pivoted chute on the inner end of said track, and guards at each side of the outer end of said track, substantially as set forth.

6. The combination, with a game-board having a diamond and an inclined track along the edges of the same, of a track extending from the center of the diamond toward the batter's position, a pivoted chute on the inner end of said track, two guards extending from the batter's position in the direction toward the first-base corner of the diamond, and a guard at that side of the batter's position toward the corner representing the third base, substantially as set forth.

7. The combination, with a game-board having a diamond and a track along the edges of the same, of a swinging fork at each corner representing a base and means for swinging said forks, substantially as set forth.

8. The combination, with a game-board having a diamond and a track along the edges of the same, of a rocking vertical shaft at each corner representing a base, a fork on the upper end of each shaft, a spring acting on the lower end of each shaft, a crank on the lower end of each shaft, and cords extending from one corner of the game-board to the several cranks and serving to rock the shafts, substantially as set forth.

447,089. PERFORATING-STAMP. ADOLPH VON BRANDIS, Milwaukee, Wis. Filed June 21, 1890. Serial No. 356,180. (No model.)



Claim.—1. A perforating-stamp comprising a frame, a shaft reciprocative therein, a series of plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form abitrary characters, suitable means for locking the plates in their adjusted position, and a bed-plate provided with rows of perforations parallel in longitudinal and transverse directions, substantially as described.

2. A perforating-stamp comprising a frame, a shaft reciprocative therein, a series of plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form arbitrary characters, suitable means for locking the plates in their adjusted position, a bed-plate provided with rows of perforations parallel in longitudinal and transverse directions, and a frisket hinged to the bed-plate and also provided with perforations corresponding to those in the bed-plate, substantially as described.

3. A perforating-stamp comprising a frame, a shaft reciprocative therein, a series of plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form arbitrary characters, suitable means for locking the plates in their adjusted position, a bed-plate provided with rows of perforations parallel in longitudinal and transverse directions, a perforated frisket hinged to the bed-plate and also provided with perforations corresponding to those in said bed-plate, and springs arranged to impinge against the frisket, substantially as described.

4. A perforating-stamp comprising a frame, apertured blocks reciprocative therein, a shaft fitted to the blocks, a series of apertured plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form arbitrary characters, a rod for insertion in registering apertures of the blocks and plates, and a bed-plate provided with rows of perforations parallel in longitudinal and transverse directions, substantially as described.

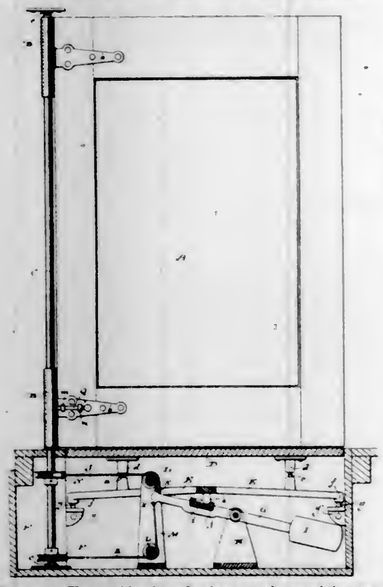
5. A perforating-stamp comprising a frame, apertured blocks reciprocative therein, a shaft fitted to the blocks, a series of apertured plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form arbitrary characters, a rod for insertion in registering apertures of the blocks and plates, a latch on the frame for engagement with the rod, and a perforated support for the material to be operated upon, substantially as described.

6. A perforating-stamp comprising a frame, apertured sliding blocks arranged therein, a shaft fitted to the blocks, a series of apertured plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form arbitrary characters, a rod for insertion in registering apertures of the blocks and plates, a latch on the frame for engagement with the rod, a lever trunnioned to said frame and linked to said shaft, and a perforated support for the material to be operated upon, substantially as described.

7. A perforating-stamp comprising a base provided with slotted standards, blocks reciprocative in the standard-slots, a spring-controlled shaft fitted to the blocks, a series of apertured plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form arbitrary characters, a rod for insertion in the registering apertures of said blocks and plates, a latch on the frame for engagement with the rod, a perforated bed-plate supported on the frame-base, and a perforated friskt hinged to the bed-plate, substantially as described.

8. A perforating-stamp comprising a base provided with the slotted standards B, the blocks C, loosely arranged in the standard-slots, a shaft fitted in the blocks and provided with arms *g*, the brace H, uniting said standards at their upper ends, the springs G, connecting the shaft-arms and said brace, plates rotarily adjustable on the shaft and provided at intervals with pins arranged to form arbitrary characters, a perforated support for the material to be operated upon, and a lever mechanism for reciprocating said blocks, substantially as set forth.

447,090. **DOOR-OPERATING DEVICE.** ADOLPH VON BRANDIS and HERMAN DAVIDSON, Milwaukee, Wis.; said Von Brandis assignor to said Davidson. Filed July 28, 1890. Serial No. 360,202. (No model.)



Claim.—1. The combination of a door, a rod secured thereto and arranged in bearings, a lever flexibly connected to the rod, suitable means for automatically returning the lever to its normal position after a movement therefrom, other levers opposed to the first, and a platform mounted on these latter levers in the passage to said door, substantially as set forth.

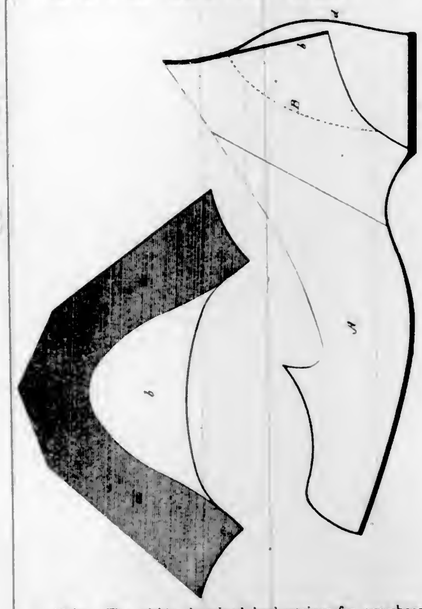
2. The combination of a door, a rod secured thereto and arranged in bearings, a weighted lever flexibly connected to the rod, other levers opposed to the first, and a platform mounted on these latter levers in the passage to said door, substantially as set forth.

3. The combination of a door, a rod secured thereto and arranged in bearings, pulleys on the rod, a lever, flexible devices connected to the lever and arranged to wind in opposite directions on the pulleys, suitable means for automatically returning said lever to its normal position after movement therefrom, other levers opposed to the first, and a platform supported on these latter levers in the passage to said door, substantially as set forth.

4. The combination of a door provided with sleeves, a rod engaging the sleeves and arranged in bearings, a bolt for locking the door and rod together, pulleys arranged on the rod, a counterweighted-lever mechanism arranged in the passage to the door, a platform supported by the lever mechanism, and flexible devices extended in opposite directions from the lever mechanism and connected to said pulleys, substantially as set forth.

5. The combination of a door, a rod secured thereto and arranged in bearings, the weighted lever G, flexibly connected to the rod and provided with the lugs *j*, the triangular levers E, having their base ends arranged on suitable brackets and their apexes supported on said lugs, and a platform mounted on these latter levers in the passage to said door, substantially as set forth.

447,091. **OVERSHOE.** WILLIAM F. WAHL, Atlantic City, N. J. Filed Dec. 13, 1890. Serial No. 374,538. (No model.)

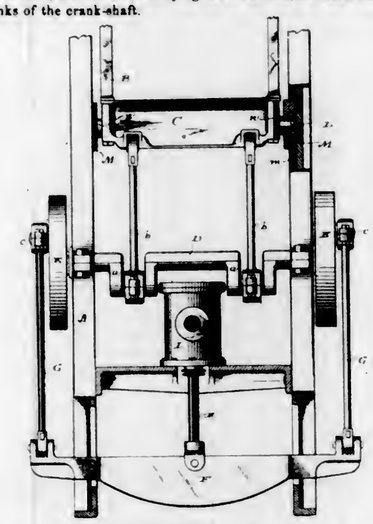


Claim.—The within-described heel-retainer for overshoes, the same consisting of a strip applied to the interior of the shoe at both sides and extending therefrom across the heel, said strip being secured to the sides of the shoe at its front edges and to the upper portion of the heel at its upper edge, and having a depending unattached elastic portion adapted to expand into the heel portion of the shoe, substantially as specified.

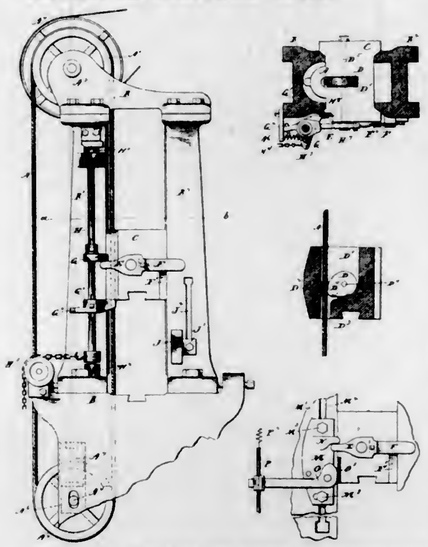
447,092. **GANG-SAW MILL.** THEODORE S. WILKIN, Milwaukee, Wis. Filed Jan. 26, 1889. Serial No. 297,595. (No model.)

Claim.—1. The combination, in a gang-saw mill, of a sash and crank-shaft, inside connections between the cranks of the shaft and sash, eccentrics carried by the crank-shaft on the outside of the frame, a piston and its cylinder, a cross-head connected at each of its ends with one of the eccentrics, and a piston-rod connecting the piston to the cross-head, substantially as described.

2. The combination, in a gang-saw mill, of a downwardly-acting piston, a cross-head suspended therefrom, and eccentrics linked to the cross-head, a crank-shaft carrying the eccentrics, and sash linked to cranks of the crank-shaft.



447,093. **DROP-HAMMER.** ARTHUR WILKIN, Middletown, Conn. Filed July 26, 1890. Serial No. 360,019. (No model.)



Claim.—1. In a free-falling drop-hammer, the combination, with the ram thereof, of coupling mechanism carried thereby, an endless traveling flexible power connection the ascending side whereof has the ram connected with and disconnected from it by the said mechanism, and means for actuating the said mechanism thereto, substantially as described.

2. In a free-falling drop-hammer, the combination, with the ram thereof, of a spring-actuated gripping-cam located therein, an endless traveling flexible power connection the ascending side whereof passes through the ram in range of the said cam, and means for actuating the cam to release its grip upon the flexible connection for holding it in its retired position and for releasing it to permit it to grip the said connection, substantially as described.

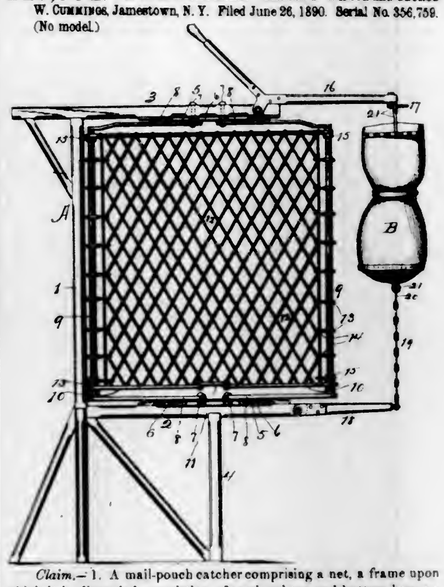
3. In a free-falling drop-hammer, the combination, with the ram thereof, of a spring-actuated gripping-cam located therein, a horizontal rock-shaft journaled in the ram and carrying the said cam, an endless traveling flexible power connection the ascending side whereof passes through the ram in range of the said cam, a tripping-arm and a spring locking-arm attached to the said shaft, and means for respectively engaging the said arms to retire the cam and lock it in its retired position and to unlock it, substantially as described.

4. In a drop-hammer, the combination, with the ram thereof, of means for raising the same, and a cam-faced lever arranged to have its cam-face engage with the ram to support the same in its suspended position, substantially as described.

5. In a drop-hammer, the combination, with the ram thereof, of means for raising the same, a pivotal cam-faced lever adapted to have its cam-face engage with the ram to support the same in its suspended position, and a vertically-adjustable carrier for the said lever, substantially as described.

6. In a free-falling drop-hammer, the combination, with the ram thereof, of coupling mechanism carried by the ram, an endless traveling flexible power connection the ascending side whereof is connected with and disconnected from the said mechanism, and a vertically-adjustable block carrying a tripping-finger and a cam-faced ram-supporting lever, substantially as described.

447,094. **MAIL-BAG CATCHER.** CLIFTON B. WINSOR and GEORGE W. CUMMINGS, Jamestown, N. Y. Filed June 26, 1890. Serial No. 356,759. (No model.)



Claim.—1. A mail-pouch catcher comprising a net, a frame upon which it is distended, consisting of sectional top and bottom bars secured upon vertical sides pivotally mounted in the lower frame-bars, and means for supporting the frame.

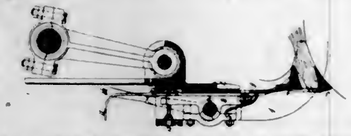
2. A mail-pouch catcher comprising a net, a supporting-frame consisting of sectional top and bottom bars secured upon vertical sides pivotally mounted in the lower frame-bars, friction-springs bearing against the upper and lower frame-bars, and means for supporting the frame.

3. A mail-pouch catcher comprising a net, a supporting-frame consisting of sectional top and bottom bars secured upon vertical sides pivotally mounted in the lower frame-bars, springs bearing frictionally against the upper and lower frame-bars, circles mounted above and below and in engagement with the upper and lower frame-bars, respectively, and means for supporting the frame.

447,095. **MACHINE FOR CUTTING TOBACCO AND OTHER SUBSTANCES.** HEINRICH WINTERWERBER, Offenbach, near Frankfort, Germany, assignor to Ferdinand Flinsch Machine Building Co., same place. Filed Sept. 11, 1889. Serial No. 323,793. (No model.) Patented in Germany Dec. 11, 1888, No. 48,987.

Claim.—1. In a machine for cutting tobacco, &c., the combination, with the movable knife-carrier having bearings, of a knife removable from said carrier, a shaft mounted eccentrically in the bearings on the carrier, clamping-blocks mounted to turn on said shaft and bear-

ing against the knife, and means for turning said shaft, substantially as described.



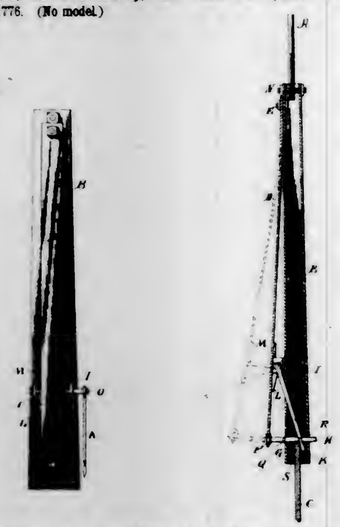
2. In a machine for cutting tobacco, &c., the combination, with the movable knife-carrier having a transverse rib, of a knife removable from said carrier and having arms formed with lugs to embrace said rib and with handles for disengaging said lugs from the rib and removing the knife, and means for holding the knife to the carrier and the lugs in engagement with the rib, substantially as described.

3. In a machine for cutting tobacco, &c., the combination, with the movable knife-carrier having a transverse rib, of a knife removable from said carrier and having arms formed with lugs to embrace said rib and with screw-bearings, pivotal knife-clamping blocks on the knife-carrier, and adjusting-screws working in the clamping-blocks against said screw-bearings, substantially as described.

4. In a machine for cutting tobacco, &c., the combination, with the movable knife-carrier having bearings, of an eccentrically-mounted shaft turning in said bearings, pivotal knife-clamping blocks on the said shaft, and adjusting-screws on the said clamping-blocks acting on the knife, substantially as described.

5. In a machine for cutting tobacco, &c., the combination, with a knife-carrier having a rib, of a knife, arms having lugs to embrace said rib, and set-screws passing through slots, securing the arms adjustably to the knife, substantially as described.

447,096. **PUMP ATTACHMENT FOR WINDMILLS.** URIEL YODER, near West Liberty, Ohio. Filed Oct. 11, 1890. Serial No. 367,776. (No model.)



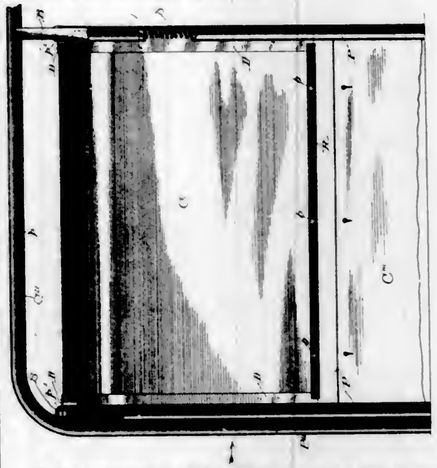
Claim.—1. In an attachment for coupling the sucker-rod of a pump and the shaft of a windmill, the piece B, the spring D, pin H the cam-piece L, and lever K, as and for the purpose set forth.

2. The attaching-piece B, the spring D, the jointed pin H, playing through holes Q R S in piece B and sucker-rod C, the cam-piece L, and lever K, as and for the purpose set forth.

447,097. **VEHICLE-TOP.** CHARLES F. ZOLLER and LEONARD S. BURROWS, Foreston, Ill. Filed Sept. 12, 1890. Serial No. 364,767. (No model.)

Claim.—1. The combination, with the slotted tubular posts and curtains sliding in the slots and provided with the terminal rods, of locks mounted upon said rods and adapted to wedge into said slots to lock the curtains in position.

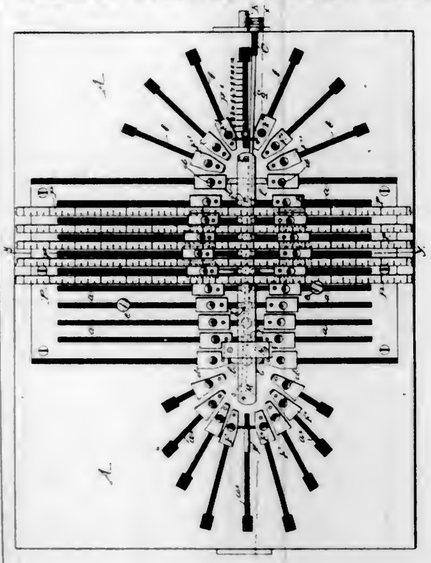
2. The combination of the posts P P, having the extensions *p p* joined to the posts by integrally-formed curves, and formed with slots *s*, of the curtain C, the blades D D, fastened to the side edges of the curtain and sliding in the slot *s*, and the coiled springs S, embracing the edges of the blades D D and holding them in position in the slots in the posts, whereby the blades and curtain are secured against lateral movement, but are free to move longitudinally in the post, substantially as and for the purpose set forth.



3. The combination, in a carriage-top, of a series of pairs of posts secured in place on different sides of the top and provided with lateral extensions lying in different horizontal planes above the top, and a series of curtains, each supported by one of said pairs of posts and adapted to slide longitudinally in the same, and their extensions, whereby the various curtains may be raised or lowered independently and when raised may lie in different horizontal planes in the upper part of the top, substantially as and for the purpose set forth.

4. The combination, with the slotted tubular posts, of the metal-edged curtain sliding upward in said slots to pass out of use, the spring-coils within the posts and engaging the edges of the curtain, a supplementary curtain below the first and adapted to be lowered when not in use, and means for detachably securing the upper edge of the supplementary curtain to the lower edge of the curtain first named.

447,098. **FOOT-MEASURING MACHINE.** ABRAHAM S. ADLER, Baltimore, Md. Filed Apr. 12, 1890. Serial No. 347,671. (No model.)



Claim.—1. In a foot-measuring machine, the combination, with a bed-plate, of independent pins movable thereon at the toe portion and a flexible connection surrounding said pins, whereby they are bound together.

2. In a foot-measuring machine, a bed-plate, in combination with independent pins movable thereon at the heel portion of the machine and a continuous spring surrounding said pins and causing them to move together.

3. In a foot-measuring machine, a bed-plate having laterally-moving blocks provided with pins and fingers, in combination with radially-moving blocks at the heel and toe portions of the machine and continuous springs surrounding the heel and toe block, substantially as described.

4. In a foot-measuring machine, a bed-plate having laterally-moving side pins and radially-moving end pins, in combination with springs connecting opposite side pins in pairs and other springs surrounding the heel and toe pins in series.

5. In a foot-measuring machine, a bed-plate having laterally and radially moving blocks provided with pins and fingers, in combination with springs connecting opposite side blocks in pairs and other springs passing through openings in the radially-moving blocks, whereby said blocks move together in series, substantially as described.

6. In a foot-measuring machine, a bed-plate having laterally-moving pins mounted thereon, in combination with the plate C, divided longitudinally into sections *g* and *h*, rods connected with the sections of the plate for moving them outward in opposite directions, and springs connected with the pins for drawing said sections together.

7. In a foot-measuring machine, the bed-plate and the laterally and radially moving blocks provided with pins and fingers, in combination with springs connecting the laterally-moving blocks in pairs and other springs connecting the radially-moving blocks in series, a two-part plate C, having rods for drawing them apart, and set-screws for holding the plate open, substantially as described.

8. In a foot-measuring machine, the bed-plate, the laterally and radially moving blocks, and springs connecting them, in combination with the divided plate C, having a V-shaped opening, rods connected to the sections of the plate, a V-shaped plate within said opening, and a screw having nuts near opposite ends provided with heel and toe pieces, one of said nuts being connected with and moving the V-shaped plate, substantially as described.

9. In a foot-measuring machine, the bed-plate, the laterally and radially moving blocks, and continuous springs surrounding the radially-moving blocks, in combination with a screw having nuts traveling thereon to expand the springs, whereby the blocks are moved radially, substantially as described.

10. In a foot-measuring machine, a bed-plate slotted transversely and radially and blocks mounted to slide in said slots and provided with pins and fingers, in combination with a plate C, whose outer edges approximate the shape of the human foot, said plate being divided longitudinally into sections, and slide-rods for moving the sections in opposite directions, substantially as described.

11. In a foot-measuring machine, a bed-plate and sliding blocks with pins and fingers, in combination with a spring-plate having straps for taking the instep measurement, said plate being connected with a screw-rod for curving it upward under the hollow of the foot.

12. In a foot-measuring machine, a bed-plate having sliding blocks provided with pins and fingers, in combination with the spring-plate secured rigidly at one end only, a flexible strap secured to the free end of said plate, a screw-rod for arching the spring-plate under the hollow of the foot, and measuring-straps extending transversely across the spring-plate between the fingers, substantially as described.

447,099. **VELOCIPEDE.** FRANK ARCHER and ARTHUR S. BOWLEY, London, England, assignors to the Overman Wheel Company, Chicopee Falls, Mass. Filed Dec. 15, 1890. Serial No. 374,721. (No model.) Patented in England May 8, 1889, No. 7,734.



Claim.—1. In a velocipede, a main frame consisting of a rim and tensional devices or stays connected therewith on the suspension principle, substantially as described.

2. In a velocipede, a main frame consisting of a rim, a central hub, and spokes radiating from the hub to the rim to stiffen the same, substantially as described.

3. In a velocipede, a main frame consisting of two rims converging at their forward ends and spread apart at their rear ends to admit a wheel between them, and tensional devices connected with the said rims on the suspension principle, substantially as described.

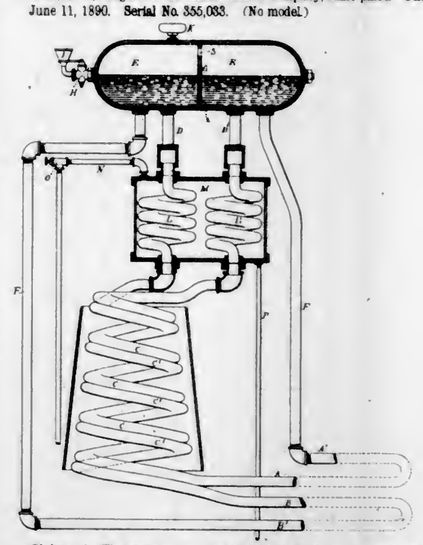
4. In a velocipede, a main frame comprising two rims converging at their forward ends and spread apart at their rear ends to admit a wheel between them, a hub common to both rims, and spokes radiating from the said hub to both rims for stiffening them, substantially as described.

5. In a velocipede, a main frame comprising two elliptical rims converging at their forward ends and joined to a tube and spread apart at their rear ends to receive a wheel between them, tensional devices connected with them on the suspension principle, and means for attaching a saddle, a rear wheel-axle, and a crank-shaft to them, substantially as described.

6. In a velocipede, a main frame comprising two elliptical rims converging at their forward ends and spread apart at their rear ends, tensional devices or stays applied to them on the suspension principle, and transverse straps or bridges joining them, substantially as described.

7. A velocipede-frame having two bowed rims converging at their forward ends for attachment to the steering-head and diverging at their rear ends to receive the wheel between them, and stays for bracing the said rims, the ends of which are separated vertically where they join the steering-head, substantially as described.

447,100. **CAR-HEATING APPARATUS.** WILLIAM C. BAKER, New York, N. Y., assignor to the Baker Heater Company, same place. Filed June 11, 1890. Serial No. 355,033. (No model.)



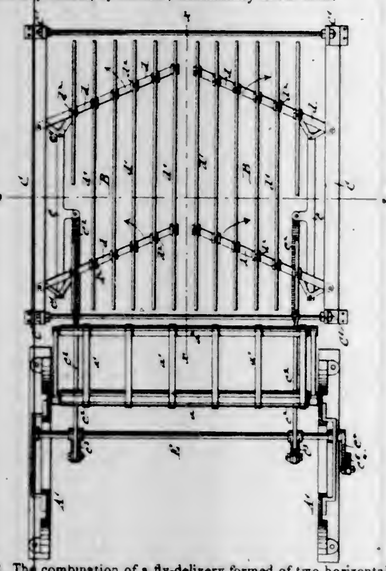
Claim.—1. The combination, in a heating apparatus, of two separate systems of pipes or radiators containing circulating water, two separate coils in the fire-chamber, two expansion-vessels connected below the water-line, a supply-cock and safety-vent, and connections between the expansion-vessels and the coils and between the expansion-vessels and the systems of circulating radiator-pipes, substantially as set forth.

2. The expansion-vessel for car-heating apparatus having a partition and openings therein above and below the water-line, substantially as specified.

3. The combination, in car-heating apparatus, of two systems of pipes or radiators for circulating water, an expansion-vessel divided into two parts and having connecting openings above and below the water-line, and supply-cock and safety-vent, two coils in one fire-chamber, connections from the expansion-vessel to the upper ends of the coils and to the systems of heating-pipes and connections from the other ends of the systems of heating-pipes to the lower ends of the coils in the fire-chamber, substantially as set forth.

447,101. **FLY-DELIVERY FOR BRONZING OR OTHER MACHINES.** ALBERT N. BUCHANAN, Brooklyn, N. Y. Filed July 5, 1890. Serial No. 357,755. (No model.)

Claim.—1. A fly-delivery formed of two horizontally-swinging and laterally-folding fly-sections, substantially as set forth.



2. The combination of a fly-delivery formed of two horizontally-swinging and folding fly-sections, a cam on the cylinder-shaft of the bronzing or other machine, and intermediate mechanism, substantially as described, between said cam and the fly-sections for imparting horizontally-reciprocating motion to the fly-sections, so that they drop the sheets between the folded-up fly-sections, substantially as set forth.

3. The combination of a fly-delivery formed of two horizontal fly-sections pivoted to the fixed longitudinal side rails, said fly-sections being formed of swinging arms and longitudinal rods applied by pivoted keepers to the arms, an actuating-cam on the shaft of the main cylinder of a bronzing or other machine, and intermediate lever mechanism for transmitting the motion of the cam to the fly-section, substantially as set forth.

4. The combination, with horizontal fly-sections, each formed of swinging arms and parallel longitudinal rods applied by pivoted keepers to said arms, of pivot-rods connecting the swinging arms of the fly-sections, a rock-shaft, rods connecting said pivot-rods with cranks on said rock-shaft, a slotted arm on said rock-shaft, a spring-actuated and vertically-guided rod connected to said arm, and a cam on the shaft of the main cylinder of a bronzing or other machine, said cam engaging the vertically-guided rod and operating thereby the fly-sections, substantially as set forth.

5. A fly-delivery composed of two folding fly-sections pivoted to fixed side rails and formed of pivoted arms and longitudinal parallel rods applied by pivoted keepers to said arms, substantially as set forth.

447,102. GATE FOR CAR-PLATFORMS. GUSTAV C. BUSHMAN, Chicago, Ill., assignor to the Pullman's Palace Car Company, same place. Filed Feb. 21, 1890. Serial No. 341,291. (No model.)



Claim.—1. A gate for railway-car platforms, comprising, in combination, a hinge-post at one side of the opening to be guarded, a swinging post parallel thereto, diagonal gate-bars pivotally connected to said posts, and a sectional top rail whose sections have their inner ends hinged together and their outer ends pivotally connected to the posts, substantially as described.

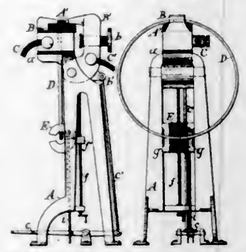
2. A gate for railway-car platforms, comprising, in combination, a hinge-post mounted at one side of the opening to be guarded, a swinging post parallel thereto, diagonal gate-bars pivotally connected to said posts, and a sectional top rail whose sections have their inner ends hinged together and their outer ends pivotally connected to the posts, said rail-sections being U-shaped in cross-section, whereby to embrace the upper ends of the gate-bars, substantially as described.

447,103. TOBACCO-POUCH. WILLIAM J. CUSHEN, Richmond, Va., assignor of three-fifths to M. Millhiser & Co., same place. Filed Oct. 11, 1890. Serial No. 367,764. (No model.)



Claim.—A tobacco-pouch having its rear upper edge extended to form a flap, a hook attached to the end of this flap, a vertical series of independent eyelets secured in the face of the pouch for the reception of the hook, and a lining secured to the interior of the pouch over the eyelets, as and for the purposes described.

447,104. ELECTRIC-WELDING APPARATUS. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed Nov. 1, 1890. Serial No. 370,060. (No model.)



Claim.—1. In an electric-welding apparatus, the combination of a clamp adapted to compress the work laterally and having one jaw insulated from the other, terminals of an electric circuit connected to said jaws, grooves in the inner faces of said jaws transverse to the line of movement of the movable jaw, and suitable means to apply lateral pressure to the work with said clamp.

2. In an electric-welding apparatus, the combination of a clamp adapted to compress the work laterally and having one jaw insulated from the other, a table or support for the work between but beneath the jaws, terminals of an electric circuit connected to said jaws, and suitable means to apply lateral pressure to the work with said clamp.

3. In an electric-welding apparatus, the combination of a clamp adapted to compress the work laterally and having one jaw insulated from the other, terminals of an electric circuit connected to said jaws, suitable means to apply lateral pressure to the work with said clamp, grooves in the inner faces of said jaws transverse to the line of movement of the movable jaw, and a stop to limit the movement of one of the jaws.

4. In an electric-welding apparatus, the combination of a clamp adapted to compress the work laterally and having one jaw insulated from the other, terminals of an electric circuit connected to said jaws, suitable means to apply lateral pressure to the work with said clamp, and an adjustable stop to limit the movement of one of the jaws.

5. In an electric-welding apparatus, the combination of a clamp adapted to compress the work laterally and having one jaw insulated from the other, terminals of an electric circuit connected to said jaws.

suitable means to apply lateral pressure to the work with said clamp, and an automatic adjustable cut-out or short-circuiting device, for the purpose described.

6. The combination, with an electric lap-joint-welding apparatus, of stops for limiting the length of the lap.

7. The combination, with an electric lap-joint-welding apparatus, of adjustable stops for limiting the length of the lap.

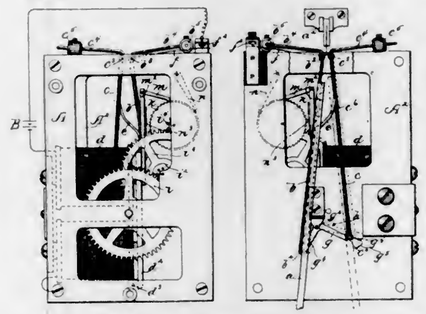
8. In a ring or hoop welding apparatus, a counter-electro-motive-force device supported on the frame of the welding apparatus and adapted to be moved toward and from the pressure devices to accommodate different sizes or diameters of hoops.

9. In a ring or hoop welding apparatus, a counter-electro-motive-force device supported on the frame of the welding apparatus, and means to automatically operate or open and close said device.

10. In a ring or hoop welding apparatus, a counter-electro-motive-force device supported on the frame of the welding apparatus, and means to automatically operate or open and close said device simultaneously with the movement of the pressure devices.

11. In a ring or hoop welding apparatus, a counter-electro-motive-force device supported on the frame of the welding apparatus, and a treadle to operate or open and close said device.

447,105. INDEPENDENT ELECTRIC CLOCK. WALTER J. DUDLEY, Everett, Mass. Filed Oct. 18, 1890. Serial No. 368,592. (No model.)



Claim.—1. The combination of the time-measuring vibrator with the impelling-lever and its restoring electro-magnet and armature, a detent for supporting said impelling-lever after being raised and released by said magnet, and the second lever pivoted independently of said impelling-lever and co-operating with said detent, substantially as described.

2. The combination of the pendulum-impelling device and actuating electro-magnet therefor with the circuit-closing lever fulcrumed near the point of oscillation of the pendulum and provided with a projection to be engaged by the pendulum-rod, and a spring-arm connected with said lever constituting one member of the circuit-closer in the circuit of said electro-magnet, substantially as described.

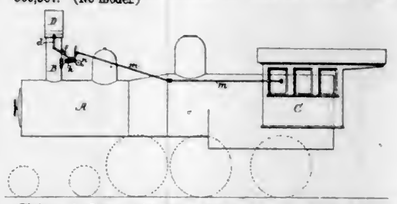
3. The combination of the impelling-lever with the electro-magnet and armature provided with an arm for engaging said lever and the detent having a spring engaging portion with a shoulder to engage said impelling-lever when set by the electro-magnet, substantially as described.

4. The combination of the time-measuring vibrator with an electro-magnet and circuit-closer therefor operated by said vibrator, the train of wheel-work and the actuating ratchet-wheel thereof, the armature for said electro-magnet, provided with a pawl for engaging the teeth of said ratchet, and a cushioning-spring that engages the periphery of said ratchet-wheel to limit the ratchet-actuating movement of the armature, substantially as described.

5. The combination of the time-measuring vibrator with the circuit-closing lever engaged and operated thereby, a spring-arm connected therewith provided with a laterally-projecting contact-piece, and a co-operating stationary contact-piece engaged thereby, the said laterally-projecting contact and spring being proportioned to one another, as set forth, whereby the contact rocks without sliding on the co-operating contact-surface as the tension of the spring varies, substantially as described.

6. The combination of the pendulum with an impelling-lever and a circuit-closing lever, each pivoted independently of the other near the point of oscillation of the pendulum, an electro-magnet co-operating with the said impelling-lever, and a detent for the lock, which latter is engaged and operated by the circuit-closing lever, substantially as described.

447,106. EXTENSION SMOKE-STACK FOR LOCOMOTIVES. HENRY D. DUNBAR, North Hartland, Vt. Filed Oct. 27, 1890. Serial No. 369,387. (No model.)



Claim.—1. The combination of the permanent stack of a locomotive with a sliding stack consisting of a light sheet-metal cylinder open and unstiffened at the top, but having at the lower end a stiffening or strengthening ring sliding upon the permanent stack, and external devices for raising and lowering the sliding stack, substantially as specified.

2. The combination of the permanent stack having an external ring at the top with the sliding stack opened and unstiffened at the top, but having an internal ring at the bottom, and external devices for raising and lowering said sliding stack, the two rings serving as stops to limit the upward movement, substantially as specified.

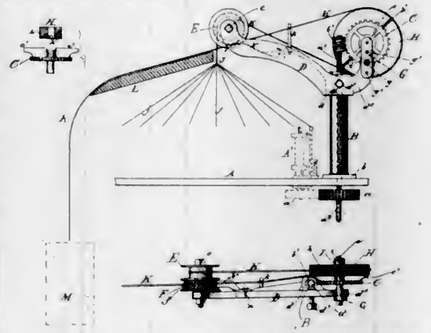
3. The combination of the permanent stack, the sliding stack mounted thereon, and raising and lowering mechanism, one of the elements of which is an operating-rod extending back to the cab of the engine, whereby the sliding stack can be readily raised or lowered from said cab, substantially as specified.

4. The combination of the permanent stack, the sliding stack mounted thereon, counterbalanced arms connected to said sliding stack, and means for vibrating said arms, so as to raise and lower the sliding stack, substantially as specified.

5. The combination of the permanent stack, the sliding stack mounted thereon, a bracket secured to the permanent stack and projecting rearwardly therefrom, a rock-shaft mounted on said bracket and having arms connected to the sliding stack, and an arm provided with an operating-rod leading back to the cab of the engine, substantially as specified.

447,107. TAKE-UP FOR BRAIDING-MACHINES. PER J. A. FORNANDER, Brooklyn, N. Y. Filed June 28, 1884. Serial No. 136,209. (No model.)

Brief.—Those take-up rolls which are to be rough are covered with rubber or burred tin.



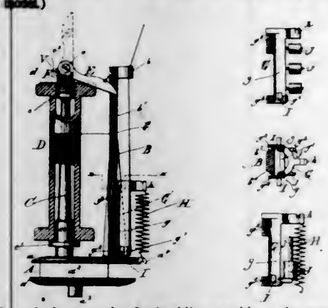
Claim.—1. The combination, with the take-up-carrying arm D, the supporting-standard B, shaft a^3, worm b', worm-wheel C, and take-up wheel H, of the bar G, having a series of bolt-holes adapted for carrying the stud e of the take-up wheel H, the said bar being adjustably secured upon the said arm D by the bolt g to support wheels C of different sizes in gear with the said worm, substantially as and for the purpose set forth.

2. The combination of the supporting-standard and arm, shaft a^3, worm b', and the worm-wheel C, provided across its side with a web or rib c', with an exchangeable wheel H, having a cross-groove h' to receive the said web, and means, substantially as described, for temporarily retaining the said web in the said groove, for the purpose set forth.

3. The combination of a take-up wheel H with a receiving-wheel E and a delivery-wheel F, the said wheels E F revolving together and having respectively smaller and larger diameters and smooth and coarse surfaces, and with the shaft a^3, worm b', and wheel C, means

being provided to keep the cord in contact with the delivery-wheel F for the purpose of keeping the cord taut, substantially as specified.

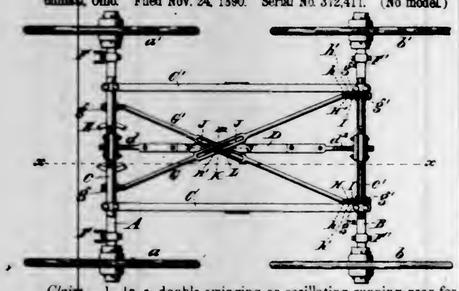
447,108. CARRIER FOR BRAIDING-MACHINES. PER J. A. FORSANDER, Brooklyn, N. Y. Filed June 28, 1884. Serial No. 136,210. (No model.)



Claim.—1. In a carrier for braiding-machines, the combination, with the spool-post C and pawl E, the said pawl being hinged or pivoted to the spool-post C and adapted to engage the teeth of the ratchet *d* and to be placed in vertical line with the spool-post for the purposes stated, of the spring F, attached to the said spool-post and to the butt-end of the said pawl, and tending to retain the latter in either of the said positions, substantially as specified.

2. In a braiding-carrier, the slide-weight G, provided with pins *j*, in combination with removable weights J, substantially as and for the purpose set forth.

447,109. RUNNING-GEAR FOR VEHICLES. EDWARD PUNK, Cincinnati, Ohio. Filed Nov. 24, 1890. Serial No. 372,411. (No model.)



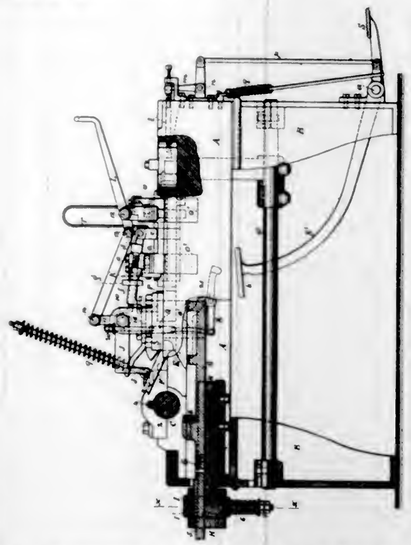
Claim.—1. In a double swinging or oscillating running-gear for vehicles, the combination, with the fore and hind swinging gears, of a pair of diagonally arranged and crossed rods or stays having pivotal connections at their opposite ends with the said fore and hind gears and longitudinal slots at their centers, an upright crank-pin or eccentric pivotally mounted on the perch intermediate its ends and engaging the slots in said crossed stays, and an elastic cushion surmounted by a fastening and regulating nut on said crank-pin immediately above and in intimate contact with said stays, the whole being adapted to operate so that said stays shall connect said oscillating gears and cause them to move or swing in unison in the desired direction and all rattle or noise incident to their use obviated, substantially as herein set forth.

2. In a double swinging or oscillating running-gear for vehicles, the combination, with the fore and hind swinging gears and a pair of crossed stays or rods connecting them, so that they shall move or oscillate on their king-bolts in unison, of a link or knuckle-joint at one end of each of said rods, said rods being pivotally connected at both ends to laterally-adjustable clips on said front and hind gears, and said links being provided at one of their ends for connecting the adjacent gear, whereby a take-up device for any lost motion or strain is supplied and provision made for a greater or less length of reach, substantially as and for the purpose herein set forth.

3. The combination, with the diagonally-arranged connecting stay or stays and the clip tie or ties, of a link or knuckle having a lip or wing adapted to engage said clip tie or ties and form a stop for the inward movement of said link, substantially as and for the purpose herein set forth.

447,110. BOLT-MACHINE. CHARLES HALL and CHARLES E. HALL, New York, N. Y. Filed May 5, 1890. Serial No. 350,591. (No model.)

Claim.—1. In a bolt-heading machine, the combination, with the hinged toggle, the tappet, the moving head-block, and device for raising the hinged toggle, of the lever for depressing the hinged toggle, a hand-lever upon a rigid fulcrum, and a connection therefrom to the lever that acts upon the hinged toggle, the parts being arranged substantially as specified, so that the concussion from the hinged toggle is received upon the stationary fulcrum of the hand-lever, substantially as set forth.



2. The combination, with the hinged toggle F, the spring for raising the same, and the driving-shaft C and key-tappet 4, of the lever J for acting upon such hinged toggle, the hand-lever L and its rigid pivot 12, and the link K, extending from the hand-lever L to the lever J, the parts being arranged, substantially as specified, so that the concussion of the hinged toggle F upon the lever J is received upon the rigid pivot 12, substantially as set forth.

3. The combination, with the driving-shaft, the key-tappet, the head-block, and the hinged toggle, of the return-slide G, having a wedge-shaped surface, a yoke-piece, and a spring for pressing the yoke-piece against the wedge-surface of the return-slide, substantially as and for the purposes set forth.

4. The combination, with the ram, the head-block and the header, and means for giving motion to the head-block, of a wedge within the head-block and acting between the same and the header, a spring for moving the wedge in one direction, and a treadle and lever for moving the wedge in the other direction, substantially as and for the purposes set forth.

5. The combination, with the head-block and means for reciprocating the same, of the ram and die for heading a bolt, a swinging latch connected with the ram, and a latch upon the head-block for drawing back the ram and its die to separate the latter from the head of the bolt, substantially as set forth.

6. The combination, with the head-block and means for moving the same, of a ram and die, a screw-rod and joint upon the ram, a latch-nut upon said screw-rod, and a latch upon the head-block, whereby the ram and die are drawn back for separating the die from the bolt-head, substantially as set forth.

7. The combination, in a bolt-machine, with the ram and die for forming the head, of the holding-jaws, a slide-bar for giving motion to the holding-jaws, and a wedge or its equivalent, and a hand-connection under the control of the workman for regulating the action of the slide-bar in giving more or less motion to the holding-jaws, substantially as set forth.

8. The combination, with the ram and die in a bolt-machine, of the holding-jaws M N, the slide-bar U for giving motion to the holding-jaw N, and a wedge W, intervening between the slide-bar U and the frame of the machine for varying the action of the slide-bar U upon the moving holding-jaw, substantially as set forth.

9. The combination, with the slide-bar U, of the wedge V within a recess in the frame and adjacent to the slide-bar, a moving wedge W, treadle and connections for moving such wedge, and the holding-jaws M N for the bolt-shank, substantially as set forth.

10. The combination, in a bolt-machine, with the holding-jaws, of the slide-bar U, the roller 24, moving with such slide-bar, and the pinion and rack for giving motion to the roller as it moves in contact with the end portion of the moving holding-jaw, substantially as set forth.

11. The combination, with a heading-die in a bolt-forming machine and the holding-dies for grasping the rod, of mechanism acting upon the holding-jaws for lessening the pressure of the holding-jaws upon the rod during the last stroke of the heading-dies and allowing the bolt to slide through them, substantially as set forth.

12. The combination, with the driving-shaft, the key-tappet, hinged toggle, and head-block, of the return-slide G, the base H, supporting the same, the yoke-piece, and a spring for pressing the yoke-piece against the return-slide and applying to the same the required friction, substantially as set forth.

13. The combination, in a bolt-machine, with the holding-jaws, of the slide-bar U, the roller 24, moving with such slide-bar and having gear-teeth upon one end and a rack for giving motion to the roller and causing it to roll with the end portion of the moving holding-jaw, substantially as set forth.

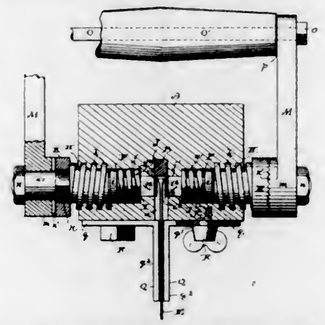
14. The method herein specified of forming bolt-heads and removing the fin, consisting in feeding into the machine a heated rod, grasping the rod, upsetting the metal to form the head by one or more blows of the heading-die, partially rotating the rod and the head to bring the fin of the metal adjacent to the smooth portion of the holding-dies, and partly releasing the pressure upon the holding-dies and against the heading-die in order that the bolt may be partly slid through the holding-dies in removing the fin and the pressure of the heading-die may not produce another fin, substantially as set forth.

15. The method herein specified of forming bolt-heads, consisting in feeding into a machine a heated rod, grasping the rod and upsetting the metal to form the head by two or more blows of the heading-die, and partly lessening the movement of the heading-die during its last stroke to lessen the pressure of such heading-die in the finishing operation, substantially as set forth.

16. In a machine for heading bolts, the combination, with a heading-die and the holding-dies, of means, substantially as specified, for lessening the pressure of the holding-dies and for lessening the pressure of the heading-die upon the head of the bolt during the last blow upon such bolt, substantially as set forth.

17. In a bolt-making machine, the combination, with the dies for grasping the rod and the heading-die, of mechanism, substantially as specified, for lessening the movement of the heading-die during its last stroke upon the bolt-head in the finishing operation, substantially as specified.

447,111. SAW-SWAGE. DEMPSEY B. HANSON, Milwaukee, Wis. Filed June 17, 1890. Serial No. 355,705. (No model.)

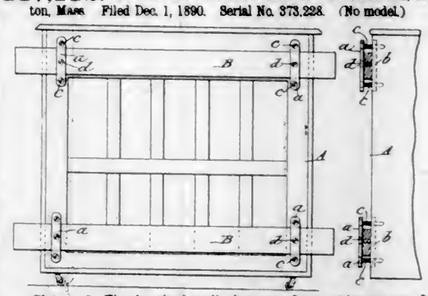


Claim.—1. In a saw-swage, oppositely-moving screws for actuating the swage-dies, connected levers for revolving the screws, serrated collars on the screws, and serrations on the hubs of the levers for engagement with those of the collars, substantially as set forth.

2. An improved saw-swage comprising a longitudinally-slotted block or frame and a bar secured longitudinally within said slot by end nuts and having on its under side a shoulder or stop to engage the saw-teeth, substantially as set forth.

3. An improved saw-swage comprising a longitudinally-slotted block or frame having two oppositely-disposed sockets or channels at right angles to the slot and of greater diameter at their outer than at their inner portions, the outer portions of said sockets being internally screw-threaded, oppositely-disposed dies located in the smaller portions of the sockets, spiral retracting-springs surrounding the dies within said smaller portions of the sockets, externally-threaded die-forcing screws located in the larger portions of the sockets, and actuating-levers operatively connected together, substantially as set forth.

447,112. DEVICE FOR PACKING PIANOS. WILLIAM HAY, Boston, Mass. Filed Dec. 1, 1890. Serial No. 373,228. (No model.)



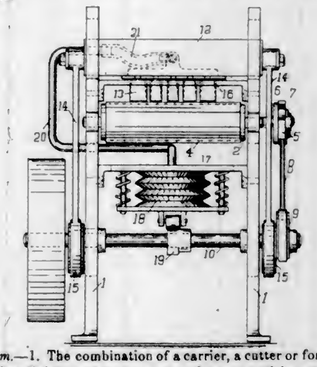
Claim.—1. The herein-described means for packing pianos for shipment, consisting of one or more plates connected permanently to the piano-frame and one or more plates located on the first-mentioned plates and connected thereto by screws, and a packing-board adapted to be securely held between the said outer and inner plates whenever the piano is to be packed.

2. In a device for packing pianos, the combination of pairs of plates located at suitable points on the back of the piano-frame, the inner members of each pair being permanently secured to the frame and provided with screw-holes which receive the screws belonging to the outer members of the pair, and packing-boards adapted to be held by the pairs of plates, which act thereon as clamps, substantially as described.

3. In a device for packing pianos for shipment, the combination of four plates permanently secured to the piano-back near the four corners thereof, four other plates located on the first four and removably connected thereto by suitable screws, said outer plates being adapted to rest closely on the inner plates at ordinary times, but adapted, also, to be removed from the inner plates and clamped down closely upon packing-boards, which pass between the inner and outer plates when the piano is to be packed for shipment, substantially as described.

4. The combination of the four plates *b*, set in mortises in the piano-back near the corners thereof, the four plates *a*, located on the inner plates and removably connected thereto by screws *c*, and the packing-boards B B, adapted to be held between the outer and inner plates when the piano is to be packed for shipment, substantially as described.

447,113. CRACKER-CUTTING MACHINE. WOLCOTT A. HULL, New York, N. Y. Filed Sept. 29, 1890. Serial No. 366,425. (No model.)



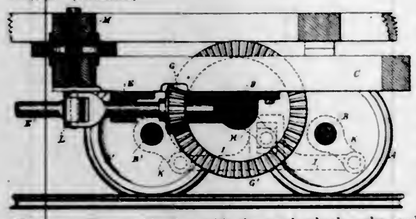
Claim.—1. The combination of a carrier, a cutter or former operating with sufficient pressure to cut or form an article presented by the carrier, a gas-duct communicating with said cutter or former, and means whereby after the cutting or forming of such article a gas-blast will be caused to pass through said duct to effect the detachment of the article from the cutter or former, substantially as specified.

2. The combination, with a support for material, of a cutter or former movable to bear upon said support, a duct through which a gas-blast is furnished to the same, and means whereby after the cutting or forming of such article a gas-blast will be caused to pass through

said duct to effect the detachment of formed material from the cutter or former, substantially as specified.

3. The combination of a carrier, a cutter or former operating with sufficient pressure to cut or form an article presented by the carrier, a gas-duct communicating with said cutter or former, a pump communicating with the said duct, and means for operating the pump to produce a gas-blast at the cutter or former after the cutting or forming operation to effect the detachment of the cut or shaped article from the cutter or former, substantially as specified.

447,114. DRIVING MECHANISM FOR CAR-TRUCKS. CHARLES W. HUNT, West New Brighton, N. Y. Filed Oct. 31, 1890. Serial No. 369,947. (No model.)



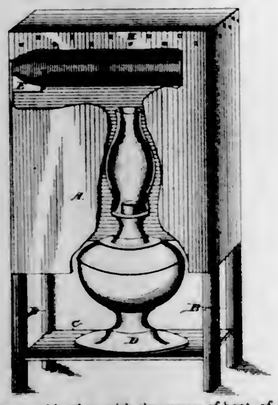
Claim.—1. The combination, with the truck-wheels, axles, and frame, of a cross-shaft upon the truck-frame, parallel to but in a higher plane than the axles of the wheels, crank connections for giving motion from the cross-shaft to the axles and wheels, a horizontal driving-shaft passing across and above one of the axles, and gearing for connecting the driving-shaft and the cross-shaft, substantially as set forth.

2. The combination, with the car-wheels, axles, and truck-frame, of the cross-shaft parallel to but in a higher plane than the axles, cranks and connections between the cross-shaft and the axles, a driving-shaft in line with the cross-shaft and passing above one of the axles, gearing for connecting the driving-shaft and the cross-shaft, and a universal joint in the driving-shaft beneath and in line with the king-bolt of the truck, substantially as set forth.

3. The combination, with the car-wheels, axles, and truck-frame, of a cross-shaft at one end of the truck-frame, parallel to and higher than the axles, cranks and connections to the axles, a longitudinal driving-shaft passing above the axles and provided with a universal joint in line with the king-bolt of the truck, and gearing between the driving-shaft and cross-shaft, substantially as set forth.

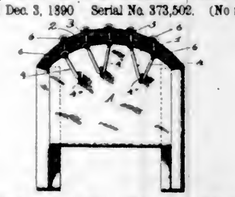
4. The combination, with the car-body truck and king-bolt, of a motor connected to the car-body, a shaft driven by the motor, gearing from said shaft to the car-wheels, and a universal joint in the shaft and in line with the king-bolt, substantially as specified.

447,115. HEATING DEVICE. HARLEY INGERSOLL, Lansing, Mich. Filed May 24, 1890. Serial No. 352,974. (No model.)



Claim.—The combination, with the source of heat, of a heating-drum surmounting the same and a regularly-wound loosely-compacted mass of continuous strips of metal located within the drum above the source of heat and adapted for the passage of the products of combustion through it, substantially as and for the purpose specified.

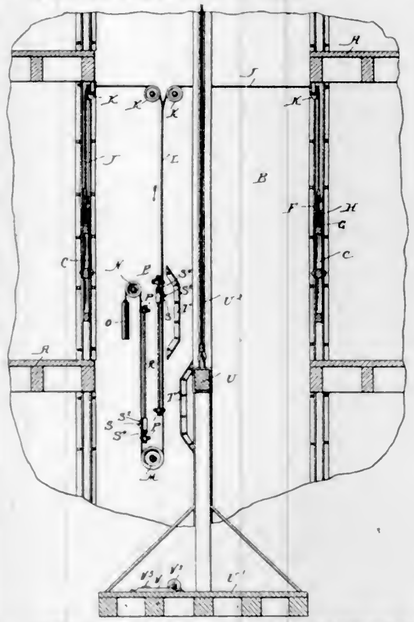
447,116. BOOT OR SHOE CLEANER. CLAUS JOHNSON, Aurelia, Iowa. Filed Dec. 3, 1890. Serial No. 373,502. (No model.)



Claim.—1. The boot or shoe cleaner composed of a rectangular box having ends thereto arched and provided with grooves, an arched center piece secured across the middle top portion of the side pieces, and a continuous wire or strand laid back and forth in the grooves of the frame and secured to the ends thereto, substantially as and for the purpose specified.

2. The boot or shoe cleaner herein described, having a rectangular frame having ends formed with arched upper edges, an arched center piece secured across between the side pieces and said ends, and center pieces being formed with grooves, the scraping-surface consisting of wires laid back and forth in the grooves and staples secured on the wires at the places where they cross the arches of the ends and middle pieces, substantially as and for the purpose specified.

447,117. ELEVATOR. WILLIAM H. JONES, Chicago, Ill. Filed Sept. 15, 1890. Serial No. 365,035. (No model.)



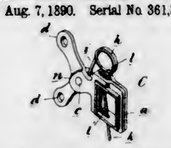
Claim.—1. In an elevator, the combination of a gate with a suspending rope arranged over sheaves, so as to have parallel strands within the shaft, and with a counterbalancing-weight, guide-rods parallel to such strands, catches free to move on such guide-rods, but secured to the rope, oppositely-directed cam-blocks at top and bottom of such guide-rods, and a movable plate on the elevator-car, adapted to be moved by the cam-blocks, so as to engage one or the other of the catches, and thus operate the gate as the elevator-car passes.

2. The combination of an elevator-car provided with a longitudinally-movable plate having a roller at one end and a side projection at the other, stationary cams located at the side of the elevator-well, an elevator-gate, and an operating-rope provided with catches connected to the gate, the cams being adapted to move the slide upon the upward or downward passage of the car to engage the catches and automatically raise the gate, all substantially as described.

3. In a device for operating elevator-gates, a catch consisting of a spring-actuated pivoted projecting part and a body having two

longitudinal apertures, a rope from the gate, which passes through one of these apertures, a fixed guide-rod which passes through the other, and a device to secure the catch to the rope, so that the same can move up or down on the rod, but not on the rope.

447,118. PILLOW-SHAM HOLDER. WILLIAM L. PREVERS, Detroit, Mich. Filed Aug. 7, 1890. Serial No. 361,383. (No model.)



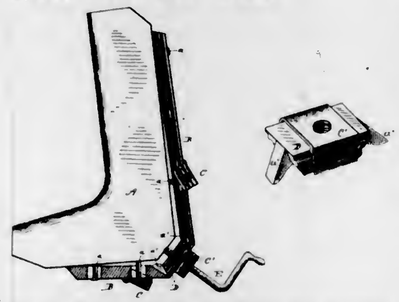
Claim.—1. In a pillow-sham holder, brackets formed of two pieces, securing-arms integral therewith, and a spring clamped between the arms, its free end guided in apertures at the top and bottom of the bracket, substantially as described.

2. The combination, with the pillow-sham holder, of a bracket formed of two pieces, securing-arms integral therewith extending in line with the meeting faces of the two pieces, and a spring having one end clamped between the pieces and its other end guided in apertures at the top and bottom of the bracket, substantially as described.

3. In a pillow-sham holder, the combination of two like halves consisting of the socketed body *a*, having apertures *f* and *l* therein, the inclined extensions *b*, having the offset *n* formed in each, and a spring *h*, secured in the aperture *f*, having its vertical free end guided in the aperture *l*, substantially as described.

4. In a pillow-sham holder, a bracket consisting of two like halves having apertures *f* and *l* formed between said halves, being secured together and forming a socketed head *a*, the inclined extensions *b*, the rivet *c* for securing them together, the spring *h*, having the vertical portions *i k* engaging in said apertures, the offset *n* in the extensions, and the aperture *d*, the parts being arranged to operate substantially as described.

447,119. CRIMPING-BOARD. GEORGE E. SHAW, Berlin, Wis. Filed July 3, 1890. Serial No. 357,682. (No model.)



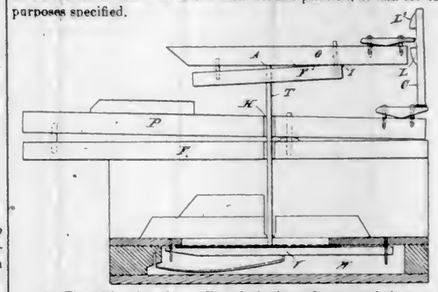
Claim.—The combination of the crimping-board, the strips B B, provided each with two longitudinal slots, pins passing through each of these slots into the rear and lower edges of the board, thereby attaching the said strips thereto, a beveled nut D, fitted between the adjacent ends of the said strips and provided with wings *a' a'*, that work in corresponding recesses in the ends of the strips, a screw for operating this nut, and clamps carried by the said strips and nut, substantially as described.

447,120. COMBINED PIANO AND ORGAN. JOHN A. SMITH, York, Pa. Filed Mar. 24, 1890. Serial No. 345,180. (No model.)

Claim.—1. The combination, with a piano, of an organ having its keys O located above the piano-keys P, while its valves V, with the wind-chest, reeds, and other necessary surrounding parts, are located below the piano-keys P, with suitable means of communicating the motion of the keys O to the valves V, substantially as shown and described.

2. An organ with its keys O arranged to operate the valves V through the medium of the tracker-pins T, in combination with a piano having its keys P interposed between the keys O and the valves V of the organ, the keys P being provided with holes H, through which the tracker-pins T pass, as specified and shown.

3. In an instrument having two or more banks of keys, the tilting key-frame F', pivoted at each end on the line A, with the rearwardly-projecting keys O mounted thereon, and suitable means for oscillating the said key-frame and keys, whereby the rear ends of the keys O may be carried either below or above their normal position, as and for the purposes specified.



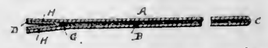
4. The tilting key-frame F' and the keys O mounted thereon, in combination with the keys P, the connecting-rods C, and the lugs L, secured thereto, whereby when the key-frame F' and the keys O are tilted so that the rear ends of the keys O are carried down against the lugs L manipulation of the keys P will, through the medium of the connecting-rods C and the lugs L, cause the keys O to operate and both the combined instruments to sound.

5. In a combined piano and organ, the tilting key-frame F' and the keys O mounted thereon, in combination with the lugs L', secured to the connecting-rods C, whereby when the key-frame F' and the keys O are tilted so that the rear ends of the keys O are carried up against the lugs L' manipulation of the keys O will not only cause the organ to sound by the depression of the tracker-pins T and the opening of the valves V, but the rear ends of the keys O being carried upward impinge the lugs L' and carry them up also with the connecting-rods C, thus setting in motion the action mechanism above and causing the piano to sound the same as if the keys P were manipulated.

6. In a musical instrument having two or more banks of keys, the combination of the keys P, operating action mechanism above through the medium of the connecting-rods C, having lugs L and L' secured thereto, with the tilting key-frame F' and the keys O mounted thereon, the keys O operating the action mechanism below through the medium of the tracker-pins T, and suitable means for oscillating the key-frame F' and the keys O, whereby when the rearward ends of the keys O are depressed against the lugs L manipulation of the keys P will not only actuate the action mechanism above, but will, through the medium of the connecting-rods C and the lugs L, cause the keys O to operate, thereby actuating the action mechanism below, as well as that above, while if the rearward ends of the keys O are elevated against the lugs L' manipulation of the keys O will not only actuate the action mechanism below, but will, through the medium of the lugs L', secured to the connecting-rods C, actuate that above as well.

7. In combination with the series of keys O, provided with holes 2, the key-binder 3, secured in its position by the hooks 4 or other suitable means, whereby the keys O are held to their fulcrum 1 and yet are free to operate with the least possible friction.

447,121. STICKY FLY-PAPER. HENRY W. STECHER, Cleveland, Ohio. Filed Sept. 17, 1890. Serial No. 365,306. (No specimens.)



Claim.—1. The combination, with a pair of sheets or leaves of sticky fly-paper placed face to face with the coated surface and having uncoated margins, of longitudinally doubled or folded sealing-strips inserted with their doubled edges between said uncoated margins and attached to the same with a permanent adhesive, substantially as described.

2. The combination, with a sheet of sticky fly-paper doubled upon itself upon the coated surfaces and having uncoated margins, of longitudinally doubled or folded sealing-strips inserted with their doubled edges between said uncoated margins and attached to the same with a permanent adhesive, substantially as described.

3. The combination, with a pair of sheets or leaves of sticky fly-paper placed face to face with the coated surfaces and having uncoated margins, of longitudinally doubled or folded strips inserted with their doubled edges between said coated margins, attached to the same with a permanent adhesive, and provided at said doubled edges with means for easily severing said doubled edges, substantially as described.

4. The combination, with a pair of sheets or leaves of sticky fly-

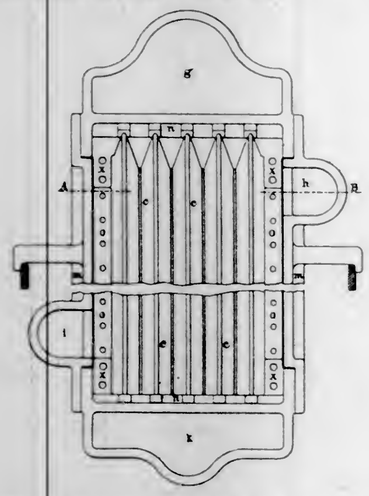
paper placed face to face with the coated surfaces and having uncoated margins, of longitudinally doubled or folded strips inserted with their doubled edges between said uncoated margins, attached to the same with a permanent adhesive, and having perforations at said doubled edges, and a string or coating of adhesive and brittle material filling said perforations, substantially as described

447,122. GATE. WILLIAM H. SWOGGER, New Wilmington, Pa. Filed Oct. 28, 1890. Serial No. 369,607. (No model.)



Claim.—The gate having the rigid shouldered latch-bar extended beyond its free end, the vertically-slotted latch-post provided with the short aligned slots in the opposing faces of the slotted portion thereof, the latch pivoted in rear of the aligned slots in the latch-post and having a curved hook-shaped end extending toward the latch-bar and arranged to engage when in line with said latch-bar the shoulder on said bar, the guide-pins fixed to the latch and extending laterally therefrom into the aligned slots of the latch-post, and the lifting-lever pivoted to the gate and arranged to engage the curved heel of the latch as said latch engages with the latch-bar, as herein shown and described.

447,123. CONDENSING APPARATUS. EDUARD THEISEN, Cologne, Germany. Filed Sept. 29, 1887. Serial No. 251,000. (No model.) Patented in England Mar. 2, 1887, No. 3,224; in France Mar. 2, 1887, No. 181,912, and in Belgium Mar. 2, 1887, No. 76,547.

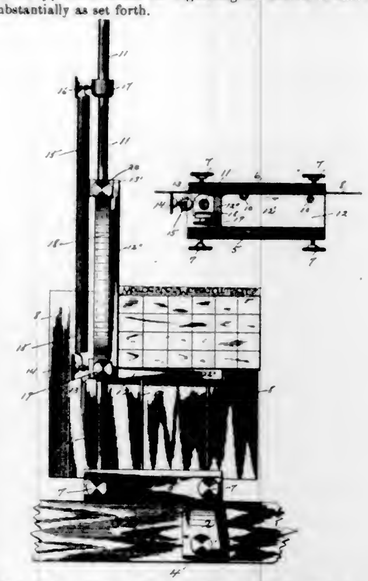


Claim.—1. The combination, with the corrugated metallic sheets *c*, connected together at their straight edges by the bars *o*, of the cast-metal end sections with zigzag flanges receiving the ends of the sheets, such end sections being ring-shaped and setting together to form the inlet vapor-port *g* and exit vapor-port *k* with openings between the pairs of sheets, substantially as specified.

2. The combination, with the corrugated metallic sheets *c*, connected together at their straight edges by the bars *o*, of the cast-metal end sections with zigzag flanges receiving the ends of the sheets, such end sections being ring-shaped and setting together to form the inlet vapor-port *g* and exit vapor-port *k* with openings between the pairs of sheets, and the side plates *m* and ports or pipes *i k* for the cooling-liquid, substantially as specified.

447,124. TYPE-DISTRIBUTING HOLDER. ASA B. ADAMS, Worcester, Mass. Filed Sept. 24, 1890. Serial No. 366,022. (No model.)

Claim.—1. As a new article of manufacture, a type-distributing holder consisting of the stationary frame part and the movable carriage for the type, and means for regulating the motion of said carriage, substantially as set forth.



2. In a type-distributing holder, the combination, with the stationary frame, of the movable carriage for the type and means for raising said carriage for the purpose stated, substantially as set forth.

3. In a type-distributing holder, the combination, with the stationary frame, of a spring-actuated carriage on which the type are carried and raised to be distributed, substantially as set forth.

447,125. BICYCLE-SUPPORT. JOHN M. ANCK, Philadelphia, Pa. Filed Sept. 11, 1890. Serial No. 364,669. (No model.)



Claim.—1. A bicycle-support consisting of a movable prop having a notch, and a spring-actuated ear to engage said notch, said parts being combined substantially as described.

2. A bicycle-support consisting of a movable prop having a notch, a bracket with ears in which said prop is adapted to operate, and having a spring with an ear to engage the notch of said prop, and an adjustable clip for attaching the prop to the bicycle, said parts being combined substantially as described.

3. In a bicycle-support, a bracket with a prop movable therein, and a supporting-arm secured to said bracket and having an adjustable clip for attachment to the bicycle, said parts being combined substantially as described.

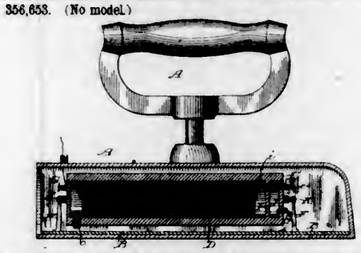
4. A bicycle-support consisting of a rod having a notch, a bracket having ears, and a spring with an ear, said rod being movable in said ears, substantially as described.

447,126. DOCTOR EMPLOYED IN THE PRINTING OF TEXTILE FABRICS. JOHN ARCHER, Radcliffe, England. Filed Sept. 12, 1890. Serial No. 364,740. (No model.) Patented in England Nov. 13, 1889, No. 18,145.

Claim.—An improved doctor made thick at the extreme front or acting part and throughout the length of the blade to insure strength and stiffness and thin at the back part to insure its elasticity and suppleness, substantially as hereinbefore described.



447,127. VACUUM-CORE FOR ELECTRICAL HEATING DEVICES. HENRY R. BUTTERFIELD, Waterville, Me. Filed June 25, 1890. Serial No. 356,653. (No model.)



Claim.—1. In an electric heater, a hollow core inclosing a vacuum and a resistance which forms part of an electric circuit, the said core being provided at one end with a partition cutting off a space J, a screw-plug closing at will air-outlets in the said partition and the end wall of said core, or the latter only, a water-outlet cock from said space, and a steam-inlet into the body of the core, substantially as set forth.

2. In combination with the shell of an electric heater, a hollow core inclosing a resistance which forms part of a circuit and having journals on its ends, and a removable tray or plate provided with bearing-standards which support said journals, allowing said core to turn axially, the said core being provided with a separated space at one end and with a steam-inlet, air-outlet, water-outlet, and plug for closing the air-inlet and the opening through the partition, all substantially as set forth.

3. A hollow core inclosing a vacuum and an electrical resistance and provided with journals, in combination with a removable tray having bearing-standards raised thereon, in which said journals are supported, allowing said core to turn on its axis, substantially as set forth.

447,128. BIFOCAL SPECTACLES. GODFREY H. CLINE, Jersey Shore, Pa. Filed Sept. 17, 1889. Serial No. 324,210. (No model.)



Claim.—In bifocal spectacles, the combination of long-focus or distance lenses provided with notches in their lower inner or nasal edges, having their axes approximately parallel, and short-focus or near-view lenses arranged within the said notches at an angle to the plane of the long-focus lenses, with their axes convergent to a point in the plane of normal vision, the said near-view lenses being placed with one horn of the lens at the lower temporal edge and the other horn at the middle nasal edge of the spectacles, so that a line drawn from one horn to the other across the lens will be the axis upon which the said lens is rotatable, the said upper or distance lenses being beveled on the lower curved edges, so as to allow them to receive the upper edges of the lower or near-view lenses at the aforesaid angle to their planes, all substantially as described.

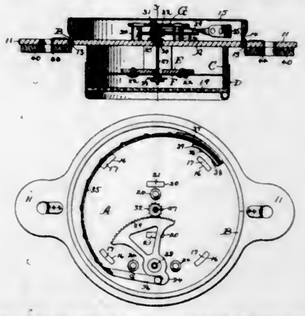
447,129. OVEN-THERMOMETER. DAVID G. COOPER, Pequabuck, Conn. Filed Jan. 21, 1890. Serial No. 337,581. (No model.)

Claim.—1. In an oven-thermometer, the main plate A, having a series of perforations 12 and a series of perforations 16, with the movement case or rim B on one side and the dial case or rim C on the other, said cases having lugs received within said perforations for securing the cases to said plate, substantially as described, and for the purpose specified.

2. In an oven-thermometer, the combination of the main plate A, forming one of the movement-plates, the dial-case on one side and the movement case upon the other, with the posts or pillars 24, secured directly to said plate, and the plate G, secured to said posts, said plate A having perforations 25 and 26, with bushings 30 for bearings of the shafts of the movement, substantially as described, and for the purpose specified.

3. In an oven-thermometer, the combination of the movement-frame and its case or rim B, the plate G of said movement-frame, with the boss or projection 31 formed thereon, and the cap 15, held out of contact with the movement-shafts by said boss, substantially as described, and for the purpose specified.

4. In an oven-thermometer, the rack 29, provided with the curved adjustable arm 34, substantially as described, and for the purpose specified.



5. In an oven-thermometer the movements of which consist, essentially, of an actuating-strip, a segmental rack and its shaft, and an index shaft and pinion, the combination of the two lower pillar-posts 24, the shaft 28 for said rack, located between said pillar-posts 24 and the pinion 32, said two posts serving as stops for limiting the movement of the rack, substantially as described, and for the purpose specified.

6. In an oven-thermometer, the combination of the curved bimetal strip, the movement case or rim B, and the intermediate re-enforcing piece 37, extending along by the side of the strip beyond its point of separation from said case, substantially as described, and for the purpose specified.

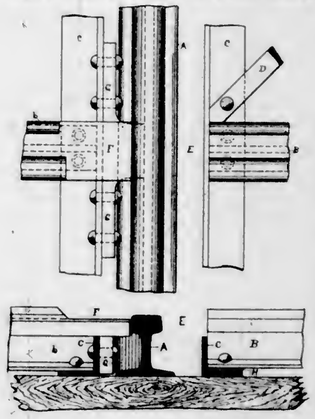
7. In an oven-thermometer, the combination of the movement case or frame B, the bimetal strip 35, and the inner re-enforcing plate between the rivet-heads and said strip and having the end which faces the body of the strip curved inwardly, substantially as described, and for the purpose specified.

8. In an oven-thermometer having fastening-lugs, the combination of said lugs with the non-conducting washers 40 and clips 44 for securing said non-conducting washers in place prior to attachment, substantially as described, and for the purpose specified.

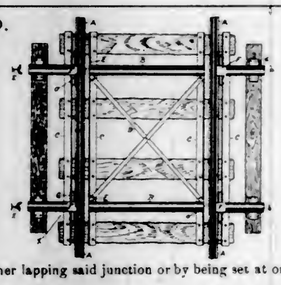
9. The combination of an oven-thermometer having a circular dial-case for projecting through the door to which it is attached, and the surrounding ornamental and protecting hood K, adapted to be secured with the same bolts by which the thermometer is secured in place, substantially as described, and for the purpose specified.

447,130. RAILROAD-CROSSING. EDWARD B. ENTWISLE, Johnstown, Pa., assignor to the Johnson Company, of Kentucky. Filed Apr. 2, 1889. Serial No. 305,659. (No model.)

Claim.—1. In a railroad-crossing, a movably-fixed chock, as G, adapted to brace a crossed and crossing-rail at their meeting point or



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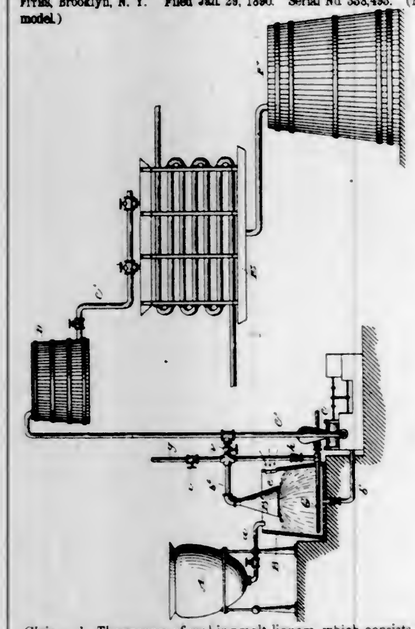


junction by either lapping said junction or by being set at one side of the same.

2. In a railroad-crossing, the combination of crossing rails, as B b, chocks, as G, and angle-tie bars, as C, for the purposes set forth.

3. In a railroad-crossing, the combination of angle-ties, as C, and diagonal tie-bars, as D, for the purposes set forth.

447,131. PROCESS OF MAKING MALT LIQUOR. JOHN GRIFFITHS, Brooklyn, N. Y. Filed Jan. 29, 1890. Serial No. 338,493. (No model.)



Claim.—1. The process of making malt liquors, which consists in filtering the worts through a layer of hops and subsequently discharging the just-filtered worts in fine spray into the hop-back and intermixing air with said worts, substantially as specified.

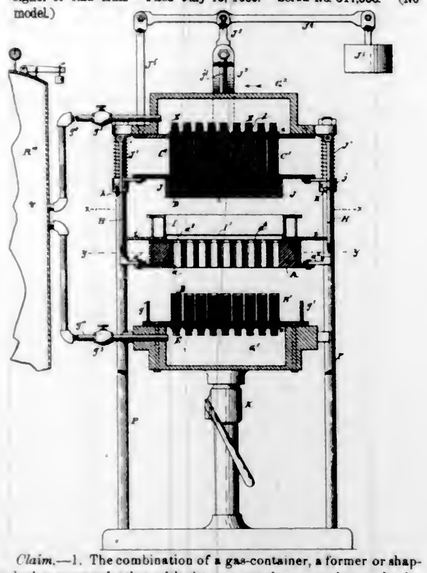
2. The process of making malt liquors, which consists in passing the wort through a layer of hops and subsequently spraying the thus-filtered worts back through the layer of hops and simultaneously therewith oxygenating the worts, substantially as and for the purpose specified.

3. The process of making malt liquors, which consists in first passing wort through a layer of hops, mixing cold water therewith, subsequently supplying the mixture in the form of spray back onto and through the layer of hops, and at the same time oxygenating the same, as specified.

4. The process of making malt liquors, which consists in passing wort through a layer of hops, subsequently spraying and passing the wort through the hops and aerating the same, removing the coagulated particles while in the hop-back, and cooling the liquid in its passage through the hop-back to the cooler, substantially as described.

5. The process of making malt liquors, which consists in first passing wort through a layer of hops, repassing the mixture in the form of spray, admitting air under atmospheric pressure and mixing with the wort in its free passage through the worts, and cooling the liquor in its second passage through the hops, substantially as specified.

447,132. MACHINE FOR SHAPING PLASTIC MATERIAL. WOLCOTT A. HULL and ARTHUR G. BOYER, New York, N. Y.; said Boyer assignor to said Hull. Filed July 13, 1889. Serial No. 317,388. (No model.)



Claim.—1. The combination of a gas-container, a former or shaping device communicating with the gas-container, a cock or valve intermediate of the gas-container and former or shaping device, and means for supplying the container with gas under pressure, substantially as specified.

2. The combination of end sections or formers, a gas-chamber communicating with said end sections or formers, a container for gas, and a cock or valve intermediate of the gas-chamber and container for gas, substantially as specified.

3. The combination of end sections or formers, a gas-chamber communicating with said end sections or formers, valves or ejectors located in the shaping-surfaces of the formers, and means for supplying gas under pressure for the gas-chamber, substantially as specified.

4. The combination of a gas-chamber, end sections or formers communicating with the gas-chamber, valves or ejectors located in said shapers or formers and made flaring so as to deflect the escaping gas over the shaping-surfaces of the end sections, and a container for gas communicating with the gas-chamber, substantially as specified.

5. The combination of a gas-chamber, end sections or formers having passages leading from the shaping-surfaces of the end sections or formers to the gas-chamber, and valves isolated from the said shaping-surfaces and serving to cut off a supply of gas to said end sections or formers as the contents thereof are ejected, substantially as specified.

6. The combination of a gas-chamber, end sections or formers communicating with said gas-chamber, valves operating by a pressure of gas in the gas-chamber to cut off said communication, and a gas-container communicating with the gas-chamber, substantially as specified.

7. The combination of a shaping device, a gas-chamber with which said shaping device communicates, a valve or ejector co-operating with the shaping device to effect the ejection or disengagement of shaped material therefrom, and a passage in the shaping device adjacent to the said valve or ejector and affording an escape for moisture or fluid expressed from the material, substantially as specified.

8. The combination of a body-section provided with cavities and receiving mouths or funnels made rectangular at the top and arranged at close contiguity, a feed-box arranged beyond the receiving mouths or funnels, and end sections movable through the feed-box to the cavities of the body-section, substantially as specified.

9. The combination of a body-section having a cavity and two opposite end sections constructed to move within the cavity to shape material therein and to carry the shaped material away from the opening at which the material entered and out of another opening, substantially as specified.

10. The combination of a body-section having a cavity, a feed box or receptacle adjacent to said body-section, a block or presser, and an end section working into the cavity of the body-section, said block or presser and end section being constructed to force material from the feed box or receptacle into the cavity of the body-section, substantially as specified.

11. The combination of a body-section having cavities, a feed-box above the the body-section, a block above the feed-box constructed to be received within the feed-box, and end sections extending into the said block and working through said block into the cavities of the body-section, substantially as specified.

12. The combination of a body-section having cavities and movable in the direction of the length of its cavities, a series of end sections beyond one end of the body-section, and a movable series of end sections beyond the other end of said body-section and adapted to extend into the cavities thereof, the support of the latter serving to impart motion to the body-section, substantially as specified.

13. The combination of a body-section having cavities and movable in the direction of the length of its cavities, a series of end sections beyond one end of the body-section, a movable series of end sections beyond the other end of said body-section, and a support for the movable end sections serving to move the body-section toward the first-named series of end sections, both of said end sections adapted to enter the cavities of the body-section, substantially as specified.

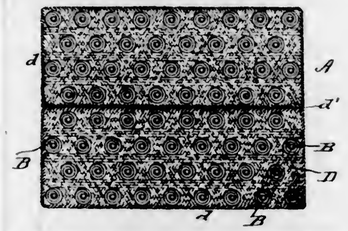
14. The combination of a body-section having cavities and movable lengthwise of its cavities, a feed-box at one end of the body-section, a block or presser constructed to be received within the feed-box and movable in the direction of the length of the cavities of the feed-box, a spring or the equivalent thereof for resisting the movement of the block or presser in its upward direction, and end sections working within the block or presser and the cavities of the body-section from opposite ends thereof, substantially as specified.

15. The combination of a body-section having cavities and movable lengthwise of its cavities, catches for sustaining the body-section after it has been moved into a certain position, a feed-box at one end of the body-section, a block or presser constructed to be received within the feed-box and movable in the direction of the length of the cavities of the feed-box, a spring or the equivalent thereof for resisting the movement of the block or presser in its upward direction, and end sections working within the block or presser and the cavities of the body-section at opposite ends thereof, substantially as specified.

16. The combination of a body-section having cavities and movable in the direction of the length of its cavities, a feed-box at one end of the body-section, a block or presser constructed to be received within the feed-box, a strap or frame for limiting the movement of the block or presser in one direction, a spring or the equivalent thereof for moving the block or presser in this direction, and end sections working through the block or presser and into the cavities of the body-section at opposite ends thereof, substantially as specified.

17. The combination of a body-section having shaping-cavities, and at one end of these shaping-cavities receiving mouths or funnels of rectangular form at the outer end and conforming at the inner end to the shape of the said cavities, a feed-box adjacent to the outer ends of the receiving months or funnels, end sections conforming externally to the shape of the cavities in the body-section, and a block or presser having openings constructed to conform in shape to the end sections and cavities of the body-section and to fill the space between the exteriors of the end sections, so that the end sections and this block or presser will together serve to force substantially the entire mass of material within the feed-box through the receiving mouths or funnels into the cavities of the body-section, substantially as specified.

447,133. SPRING BED-BOTTOM. GEORGE KEENHOLTS, Philadelphia, Pa., assignor to Alida Keenholts, same place. Filed Mar. 15, 1888. Serial No. 267,207. (No model.)



Claim.—A spring bed-bottom having a base composed of two sets of longitudinal slats, the slats of each set being united by transverse slats, springs B, secured upon said base-slats, the top of each section composed of parallel courses of wires interlaced with each other and with the top coils of the springs, and the adjacent wires of each section interlaced with each other to form a hinge connection between the sections, substantially as described.

447,134. MATRIX-MAKING OR TYPE-SETTING MACHINE. HOMER LEE and EDMUND LEBRUN, New York, N. Y., assignors to the Electric Typographic Company, of West Virginia. Filed Oct. 31, 1888. Serial No. 289,676. (No model.)

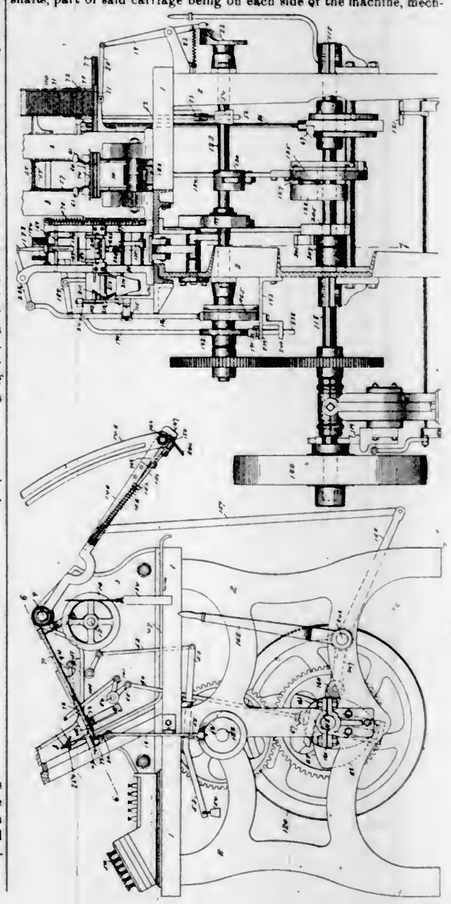
Claim.—1. In a machine of the class referred to, the combination of a row of type and type-bars, said row containing two or more sets of bars carrying different characters, a delivery-shaft for each set of bars, and mechanism for operating the delivery-shafts to release selected bars, substantially as described.

2. In a machine of the class referred to, the combination of a row of type and type-bars, said row containing two or more sets of bars carrying different characters, delivery mechanisms, one for each set of bars, a series of keys, and connections between said keys and delivery mechanisms for operating the delivery mechanisms to release selected bars, substantially as described.

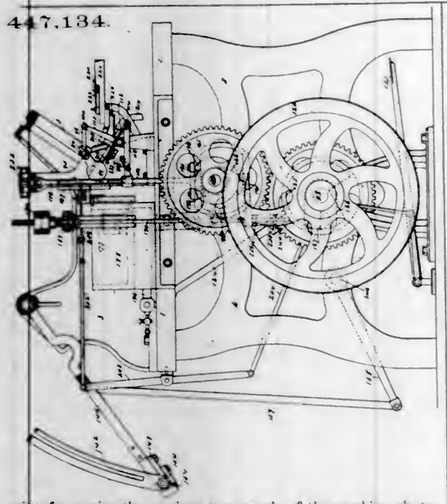
3. In a machine of the class referred to, the combination of a row of type and type-bars, said row containing two or more sets of bars carrying different characters, delivery mechanisms, one for each set of bars, and electro-magnetic devices for controlling the delivery mechanisms to release selected bars, substantially as described.

4. In a machine of the class referred to, the combination of a row of type and type-bars, said row containing two or more sets of bars carrying different characters, a delivery-shaft for each set of bars, and an electro-magnet and circuit-connections for operating each shaft to release selected bars, substantially as described.

5. In a machine of the class referred to, the combination of a row of type and type-bars arranged transversely of the machine, said row containing two sets of bars carrying different characters, a delivery-shaft for releasing each set of bars, the delivery-shafts of each set passing respectively to opposite sides of the machine, a carriage for said shafts, part of said carriage being on each side of the machine, mech-



447,134.



anism for moving the carriage transversely of the machine, electro-magnets mounted on the carriage, and circuit-connections controlling the electro-magnets for operating the delivery-shafts, substantially as described.

6. In a machine of the class referred to, the combination of type or justifying bars, delivery-shafts, a balanced carriage for said delivery-shafts, electro-magnets mounted on said carriage for operating the delivery-shafts, some of said electro-magnets being on each side of the carriage, and mechanism for moving said carriage laterally, substantially as described.

7. In a machine of the class referred to, the combination of the type or justifiers, bars to which they are attached, said bars being arranged in rows, a movable carriage having bearings on both sides of said bars, a set of keys carried on a fixed part of the machine, and mechanism connected with the keys and moving with the carriage for releasing the bars of selected type or justifiers, substantially as described.

8. In a machine of the class referred to, the combination of the type or justifiers, bars to which they are attached, said bars being arranged in rows, a movable carriage having bearings on both sides of said bars, a delivery-shaft on the carriage for each row of bars, a set of keys, and mechanism connecting the keys and the delivery-shafts for effecting the release of selected type or justifiers, substantially as described.

9. In a machine of the class referred to, the combination of the type and a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges attached to reciprocating bars, mechanism for causing said bars to reciprocate in the direction of their length to and from the line of type, mechanism for advancing the justifying-wedges to effect justification, a power-shaft, and connections between the power-shaft and the justifying mechanism, whereby the latter is operated automatically and at recurring intervals, substantially as described.

10. In a machine of the class referred to, the combination of the type and a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges attached to reciprocating bars, wedge-plates, mechanism for causing said bars to reciprocate in the direction of their length to and from the line of type, mechanism for advancing the justifying-wedges to effect justification, a power-shaft, and connections between the power-shaft and the justifying mechanism, whereby the latter is operated automatically and at recurring intervals, substantially as described.

11. In a machine of the class referred to, the combination of the type, a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges, means for causing the justifying-wedges to assume their proper positions in the line of type, mechanism for causing the advance of the justifying-wedges between the type to effect the justification, and other mechanism for producing the matrix, said justifying and matrix-making mechanism being connected with the shafting of the machine so that they are actuated automatically and at recurring intervals, substantially as described.

12. In a machine of the class referred to, the combination of type, a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges, means for causing the justifying-wedges to assume their proper positions in the line of type, mechanism for causing the advance of the justifying-wedges between the type to effect the justification, mechanism for locking the justified line of type, and other mechanism for producing the matrix, said justifying, locking, and matrix-making mechanism being all connected with the shafting of the machine, so that they are actuated automatically and at recurring intervals, substantially as described.

13. In a machine of the class referred to, the combination of the type, a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges and wedge-plates, means for causing the justifying-wedges and wedge-plates to assume their proper positions in the line of type mechanism for causing the simultaneous advance of the justifying wedges between the type to effect the justification, mechanism for locking the justified line of type, and other mechanism for producing the matrix, said justifying, locking, and matrix-making mechanism being all connected with the shafting of the machine, so that they are actuated automatically and at recurring intervals, substantially as described.

14. In a machine of the class referred to, the combination of the type and a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges, means for causing the justifying-wedges to assume their proper positions in the line of type, a thrust-plate for causing the advance of the justifying-wedges between the type to effect the justification, mechanism for locking the justified line of type, and other mechanism for producing the matrix, said thrust-plate, locking, and matrix making mechanism being all connected with the shafting of the machine, so that they are actuated automatically and at recurring intervals, substantially as described.

15. In a machine of the class referred to, the combination of the type and a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges, means for causing the justifying-wedges to assume their proper positions in the line of type, mechanism for causing the advance of the justifying-wedges between the type to effect the justification, mechanism for locking the justified line of type, mechanism for producing an impression upon a matrix-blank, and mechanism for feeding the matrix-blanks to and from the position in which they are impressed, said justifying, locking, impressing, and feeding mechanism being all connected with the shafting of the machine, so that they are actuated automatically and at recurring intervals, substantially as described.

16. In a machine of the class referred to, the combination of the type and a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, justifying-wedges and wedge-plates, bars to which the justifying-wedges are attached, guideways in which the bars slide longitudinally, a rest-bar, mechanism for causing the bars to advance until the wedge-plates rest upon the rest-bar, mechanism for causing the advance of the justifying-wedges between the type to effect the justification, mechanism for locking the justified line of type, and mechanism for producing a matrix, said justifying, locking, and matrix-making mechanism being all connected with the shafting of the machine, so that they are actuated automatically and at recurring intervals, substantially as described.

17. In a machine of the class referred to, the combination of the type and a type-bar for each type, said type-bars being independently supported and actuated, means for assembling the type in line, mechanism for locking the assembled type, the impression-table 111, the power-shafting, and connections between the power-shafting and the locking mechanism and impression-table for causing the locking of the type and the impression movement of the table automatically and at recurring intervals, substantially as described.

18. In a machine of the class referred to, the combination of the type and a type-bar for each type, said type-bars being independently supported and actuated, means for assembling and locking the type in line, an impression-table, a normally-rotating power-shaft from which other parts of the machine are driven, and connections between the table and the shaft whereby the former is automatically advanced at recurring intervals as the shaft revolves, substantially as described.

19. An organized machine of the class described, containing, in combination, type and a type-bar for each type, said type-bars being independently supported and actuated, mechanism for causing the type-bars to advance until the selected type are assembled in line, mechanism for justifying the assembled type, mechanism for locking them in position, mechanism for advancing the impression-table to produce the impression, and a power-shaft, said justifying, locking, and impression mechanism being so connected with the power-shaft as to be actuated at recurring intervals as the shaft revolves, substantially as described.

20. An organized machine of the class described, containing, in combination, type and a type-bar for each type, mechanism for causing the type-bars to advance longitudinally until the selected type are assembled in line, mechanism for justifying the assembled type, mechanism for locking them in position, mechanism for advancing the impression-table, mechanism for retracting the type-bars to distribute the type, and a power-shaft, said justifying, locking, impression, and distributing mechanism being connected with the power-shaft so as to be actuated at recurring intervals as the shaft revolves, substantially as described.

21. The combination of the impression-table 111, the lever 117, the swinging link 123, the power-shaft 118, and connections between the power-shaft and lever 117, substantially as described.

22. The combination of the crank arm and pin 128 127, cam 126, counter-balance 130, lever 117, provided with a swinging fulcrum, and table 111, substantially as described.

23. In a machine of the class referred to, the combination of type or justifiers, a bar for each type or justifier, to which the same are attached in a fixed position, guides in which the bars move longitudinally, mechanism for retracting the bars in order to distribute the type or justifiers, a power-shaft, and connections between the retracting mechanism and the shaft, whereby the type or justifiers are automatically distributed at a certain point in the revolution of the shaft substantially as described.

24. In a machine of the class referred to, the combination of the type or justifiers and mechanism for assembling them in line, lifter-bars, and sliding lifter-bar carriers for effecting their distribution, a rock-shaft having arms on which the lifter-bar carriers are pivotally mounted, a power-shaft, and connections between the power-shaft and the rock-shaft, whereby the type or justifiers are automatically distributed at a certain point in the revolution of the power-shaft, substantially as described.

25. In a machine of the class referred to, the combination of a type or justifier, mechanism for causing the type or justifier to come to the composing-space, and a yielding gate engaged by the advancing type or justifier and operating to adjust the type in the composing-space, substantially as described.

26. In a machine of the class referred to, the combination of a type or justifier, mechanism for causing the type or justifier to come to the composing-space, a rest-bar for supporting the type in the impression position, and a yielding gate engaged by the advancing type or justifier and operating to adjust the type in the composing-space, substantially as described.

27. In a machine of the class referred to, the combination of a type or justifier, mechanism for causing the type or justifier to come to the composing-space, and a swinging gate engaged by the advancing type or justifier and operating to adjust the type in the composing-space, substantially as described.

28. In a machine of the class referred to, the combination of a type or justifier, mechanism for causing the type or justifier to come to the composing-space, and a swinging spring-gate engaged by the advancing type or justifier and operating to adjust the type in the composing-space, substantially as described.

29. In a machine of the class referred to, the combination of a justifier in two parts, mechanism for causing it to come to the composing-space, mechanism for causing one of the parts to move with reference to the other to effect justification, and a yielding gate engaged by the justifier as it comes to the composing-space and operating to adjust the entire justifier while permitting movement of one of the parts thereof, substantially as described.

30. In a machine of the class referred to, the combination of a justifier in two parts, mechanism for causing it to come to the composing-space, mechanism for causing one of the parts to move with reference to the other to effect justification, and a swinging gate engaged by the justifier as it comes to the composing-space and operating to adjust the entire justifier while permitting movement of one of the parts thereof, substantially as described.

31. In a machine of the class referred to, the combination of a justifier in two parts, mechanism for causing it to come to the composing-space, mechanism for causing one of the parts to move with reference to the other to effect justification, and a swinging spring-gate engaged by the justifier as it comes to the composing-space and operating to adjust the entire justifier while permitting movement of one of the parts thereof, substantially as described.

32. The combination of means for assembling a line of type in position to make an impression, mechanism for producing a matrix bearing the impression of the type, and means for casting a printing-bar from the matrix, substantially as described.

33. The combination of means for assembling a line of type in position to make an impression, mechanism for producing a matrix bearing the impression of the type, means for casting a printing-bar from the matrix, and mechanism for transferring the completed matrix to the casting mechanism, substantially as described.

34. The combination of means for assembling a line of type in position to make an impression upon a matrix, a series of impression-able matrix-blanks, and means for casting printing-bars from the impressed matrices, substantially as described.

35. The combination of an assembled line of type, an impression-able matrix-blank, mechanism for presenting the matrix-blank to the type to receive an impression therefrom, means for casting a printing-bar from the impressed matrix, and mechanism for transferring the matrix from the impression mechanism to the casting mechanism, substantially as described.

36. The combination of mechanism for impressing a matrix, mechanism for casting a printing-bar therefrom, and mechanism for transferring the matrix from the matrix-making to the casting mechanism, substantially as described.

37. The combination of mechanism for impressing a matrix, mechanism for casting a printing-bar therefrom, a runway, a line of matrix-blocks, and a plunger for forcing the blocks through the runway, substantially as described.

38. An organized machine of the class described, containing, in combination, type and mechanism for assembling them in line, mechanism for justifying the type, mechanism for locking them in position, mechanism for advancing the impression-table to produce an impression upon a matrix-blank, a printing-bar-casting mechanism, mechanism for conveying the matrices from the impression-table to the casting mechanism, and a power-shaft, the locking mechanism, the impression mechanism, the conveying mechanism, and the casting mechanism being connected to the power-shaft so as to be actuated at recurring intervals as the shaft revolves, substantially as described.

39. An organized machine of the class described, containing, in combination, mechanism for composing a line of type and producing an impression upon a matrix-blank, mechanism for casting the printing-bars from the matrix, mechanism for conveying the matrix from the impression-table to the casting mechanism, and a power-shaft, the connections between the impression mechanism, the casting mechanism, and the conveying mechanism and the power-shaft being such that the said mechanisms are operated at recurring intervals to perform their functions, substantially as described.

40. An organized machine of the class described, containing, in combination, mechanism for assembling the line of type and taking an impression therefrom upon a matrix-blank, mechanism for casting printing-bars from the matrix, mechanism for conveying the matrices from the impression-table to the casting mechanism, mechanism for delivering the printing-bars in proper order to a galley, and a power-shaft, said impression mechanism, casting mechanism, conveying mechanism, and delivering mechanism being so connected to the power-shaft as to be actuated periodically thereby to perform their functions, substantially as described.

41. The combination, in a machine of the class referred to, of mechanism for preparing a matrix-block, mechanism for casting a printing-bar therefrom, a runway connecting said mechanisms, and mechanism for forcing a line of abutting matrix-blocks through said runway, substantially as described.

42. The combination, in a machine of the class referred to, of mechanism for preparing a matrix-block, mechanism for casting a printing-bar therefrom, a runway connecting said mechanisms, a line of abutting matrix-blocks in said runway, and mechanism for moving the entire line of blocks one step forward at recurring intervals in the operation of the machine, substantially as described.

43. In a machine of the class referred to, the combination of the type, mechanism for assembling and locking them in line, a movable impression-table by which the matrix-blank is carried against the type, and a runway for matrix-blanks, formed in part of the impression-table in one of its positions, substantially as described.

44. In a machine of the class referred to, the combination of the type, mechanism for assembling and locking them in line, a movable impression-table by which the matrix-blank is carried against the type, a runway for matrix-blanks formed in part of the impression-table in one of its positions, and a plunger for forcing the matrix-blanks through the runway to the impression table, substantially as described.

45. In a machine of the class referred to, the combination of the type, mechanism for assembling and locking them in line, a movable impression-table by which the matrix-blank is carried against the type, a runway for the matrix-blanks formed in part of the impression-table in one of its positions, a plunger for forcing the matrix-blanks through the runway, a power-shaft, and connections between the power-shaft and the plunger for operating the latter, substantially as described.

46. An organized machine of the class described, containing, in combination, type, mechanism for assembling and locking the type in line, an impression-table, mechanism for casting printing-bars from matrices, a runway for the matrices formed in part of the impression-table in one of its positions, and a plunger for forcing the matrices through the runway first to the impression-table and thence to the casting mechanism, substantially as described.

47. An organized machine of the class described, containing, in combination, type, mechanism for assembling and locking the type in line, an impression-table capable of being moved from its normal position to a position where it presents a blank to the line of type to produce a matrix, mechanism for casting printing-bars from the matrix,

a holder for receiving the matrix-block and presenting it to the casting-mold, a runway formed in part of the impression-table and holder in their normal positions, and a plunger for forcing the matrix blanks and blocks in a continuous line through the runway, substantially as described.

48. In a machine of the class referred to, the combination of mechanism for preparing a matrix, mechanism for castiug a printing-bar therefrom, a runway through which the matrix passes from the forming to the casting mechanism, and a rotary reciprocating holder in one of its positions forming part of the runway, substantially as described.

49. In a machine of the class referred to, the combination, with a runway for the matrix, of a holder having a rotary reciprocating motion, forming in one position a part of said runway and in another position presenting the matrix to the printing-bar mold, substantially as described.

50. In a machine of the class referred to, the combination of mechanism for preparing a matrix, mechanism for casting a printing-bar therefrom, a continuous ruuway for the matrices passing from the point where they are prepared to the point where they are delivered from the machine, and a reciprocating holder forming in one of its positions a part of said continuous runway and in the other presenting a matrix to the casting mechanism, substantially as described.

51. In a machine of the class referred to, the combination of mechanism for preparing a matrix-block, mechanism for casting a printing-bar therefrom, a continuous runway for matrix-blocks passing from the point where they are prepared to the point where they are delivered from the machine, a reciprocating holder forming in one of its positions a part of said continuous runway, in the other presenting the block to the casting mechanism, and a plunger for forcing the blocks through the runway, substantially as described.

52. In a machine of the class referred to, the combination of a casting mechanism, a continuous runway for matrix-blocks passing from the point where the blocks are introduced into the machine to the point where they are delivered therefrom, a reciprocating holder forming in one of its positions part of said runway and in its other position presenting the block to the casting mechanism, a line of abutting blocks extending throughout said runway, and mechanism for forcing the blocks through said runway, substantially as described.

53. In a machine of the class referred to, the combination of a line of abutting matrix blanks or blocks, mechanism for moving the line step by step through the machine, and mechanism for removing a blank or block out of line and returning it to the line between two successive movements of the line, whereby the blank or block may be more conveniently operated upon than in the line, substantially as described.

54. In a machine of the class referred to, the combination of a casting mechanism and a holder for the matrix while the operation of casting is in progress, said holder being provided with a spring arranged to bear upon the matrix, whereby the holder is adapted to matrices varying in size, substantially as described.

55. In an organized machine, the combination of a rotary reciprocating matrix-holder, a reciprocating mold-plate, a reciprocating casting mechanism, a power-shaft, and connections between each of the said reciprocating parts and the power-shaft, whereby they are brought into conjunction and pressed together periodically in the revolution of the shaft, substantially as described.

56. The combination of a printing-bar-casting mechanism, a galley for receiving the printing-bars, and a series of pivoted leaves successively receiving and acting upon the bars for delivering the latter from the casting mechanism to the galley, substantially as described.

57. The combination of the printing-bar-casting mechanism, the incline 210, pivoted leaves 221 223, and the galley 224, substantially as described.

58. The combination of the pivoted leaf 221, receiving the printing-bars, pivoted leaf 223, the galley 224, and connections for operating said pivoted leaves, substantially as described.

59. The combination of the receiver 213, the plate 215, against which the matrix-blocks are successively delivered, the stop 220, and means for withdrawing the plate periodically to allow a block to pass forward, substantially as described.

60. The combination of the matrix-holder 89, the receiver 213, the spring-plate 215, the stop 220, and connections for operating the spring-plate, substantially as described.

61. The combination of the receiver 213, plate 215, the spring-catch 216, the stop 220, and the pin 219, substantially as described.

62. In a machine of the class referred to, the combination of a continuous runway for matrix-blocks from the point where they enter the machine to the point where they are delivered, the plunger for forcing the blocks through said runway, the movable holder 89, forming in one of its positions a part of said runway, and the delivery-pipe 214 for receiving the blocks when ejected from the holder, substantially as described.

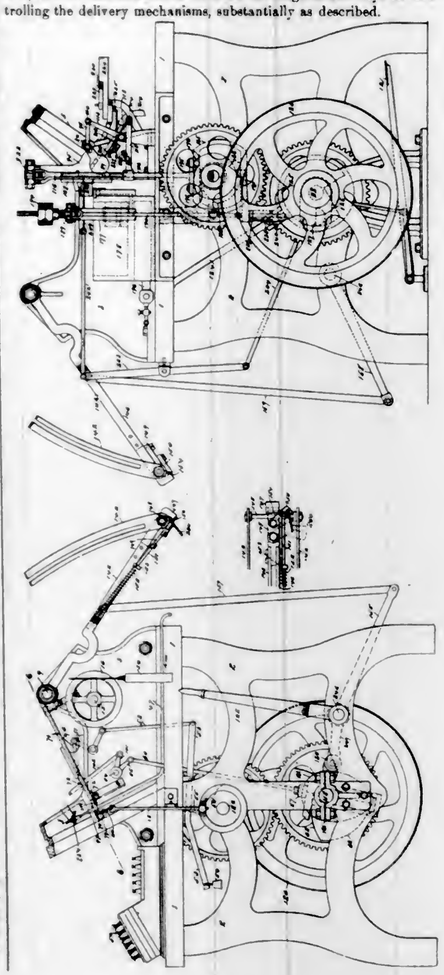
447,135. MATRIX-MAKING OR TYPE-SETTING MACHINE.

HOMER LEE, New York, N. Y., assignor to the Electric Typographic Company, of West Virginia. Filed Apr. 16, 1889. Serial No. 307,469. (No model.)

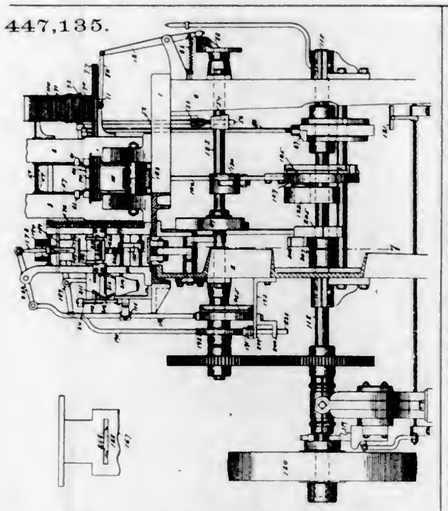
Claim.—1. In a machine of the class referred to, the combination of the type arranged in sets of different characters, a type-bar for each type, said type-bars being independently supported and actuated, a single delivery mechanism for each set of type, and keys, electro-magnets, and circuit-connections between the magnets and keys for controlling the delivery mechanism to deliver selected type, substantially as described.

2. In a machine of the class referred to, the combination of the type arranged in sets of different characters, guides in which the bars are adapted to move under the influence of gravity or an equivalent force, detents for holding the bars in said guides at suitable distances from the composing-space, a single delivery mechanism for each set of type for controlling the detents to release selected type, and keys, electro-magnets, and circuit-connections between the magnets and keys for controlling the delivery mechanisms, substantially as described.

3. In a machine of the class referred to, the combination of the type and type-bars arranged in sets of different characters and so held that the type are normally at suitable distances from the composing-space, a carriage and mechanism for causing the carriage to move longitudinally of the line of type as the composition of the line proceeds, a single delivery mechanism for each set of type moving with the carriage and controlling the positions of the bars, and keys, electro-magnets, and circuit-connections between the magnets and keys for controlling the delivery mechanisms, substantially as described.



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4. In a machine of the class referred to, the combination of the type and type-bars or justifiers and justifying-bars arranged in sets transversely of the machine, the type or justifiers being normally held at suitable distances from the composing space, a carriage and mechanism for causing it to move longitudinally of the line of type as the composition of the line proceeds, delivery-shafts moving with the carriage, mechanism whereby the delivery-shafts control the position of the bars, electro-magnets mounted upon the carriage and adapted to actuate the delivery-shafts of selected type or justifiers, keys carried by a fixed part of the machine, and circuit-connections between the said magnets and keys, substantially as described.

5. In a machine of the class referred to, the combination of the type and type-bars or justifiers and justifying-bars arranged in sets transversely of the machine, the type or justifiers being held normally at suitable distances from the composing-space, guides in which the bars move, detents for holding the bars in their normal positions in the guides, delivery-shafts for controlling the detents, a carriage carrying the delivery-shafts, mechanism for moving the carriage longitudinally of the line of type as the composition of the line proceeds, electro-magnets mounted upon the carriage and adapted to operate the delivery-shafts to release selected type or justifiers, keys carried by a fixed part of the machine, and circuit-connections between said keys and electro-magnets, substantially as described.

6. In a machine of the class referred to, the combination of the type and type-bars or justifiers and justifying-bars arranged in sets transversely of the machine, mechanism for effecting the release of selected type or justifiers, a carriage with which the releasing mechanism moves, keys carried by a fixed part of the machine, electro-magnets and circuit-connections between the magnets and keys for controlling the releasing mechanism, and mechanism for causing and controlling the movement of the carriage longitudinally of the line of type as the composition of the line proceeds, substantially as described.

7. In a machine of the class referred to, the combination of the type and type-bars or justifiers and justifying-bars arranged in sets transversely of the machine, guides in which the bars are normally held so that the type or justifiers are at a proper distance from the composing-space, toward which they are impelled by gravity or an equivalent force when released, mechanism for effecting the release of selected bars, a carriage with which the releasing mechanism moves, keys carried by a fixed part of the machine, electro-magnets and circuit-connections between the magnets and keys for controlling the releasing mechanism, and an electro-magnet, circuit, and key for controlling the movement of the carriage as the composition proceeds, substantially as described.

8. In a machine of the class referred to, the combination of the type and type-bars or justifiers and justifying-bars arranged in sets transversely of the machine, the delivery-shafts 31 for controlling the bars, the carriage on which the delivery-shafts are carried, keys, electro-magnets, and circuit-connections between the magnets and keys for operating the delivery-shafts from a fixed part of the machine, and the electro-magnet 41 and circuit-connections for controlling the movement of the carriage, substantially as described.

9. In a machine of the class referred to, the combination, with the type-bars or justifying-bars, of the delivery-shafts 31, electro-magnets 131, carriage 132 133, carrying said shafts and magnets, keys on a fixed part of the machine, and circuit-connections between the magnets and keys, substantially as described.

10. In a machine of the class referred to, the combination of the delivery-shafts 31, carriage 132 133, carrying said shafts and adapted to move laterally in bearings in the frame of the machine, the escapement 34 40 on a fixed part of the machine for controlling the lateral movement of the carriage, and the electro-magnet for controlling the escapement, substantially as described.

11. In a machine of the class referred to, the combination of the type-bars or justifying-bars, a carriage, delivery mechanism for the bars moving with the carriage, mechanism for moving the carriage, a magnet, as 41, and circuit-connections for controlling the carriage-moving mechanism from a fixed part of the machine, substantially as described.

12. In a machine of the class referred to, the combination of type, type-bars to which the type are attached, means for assembling the type in line by advancing the type-bars longitudinally from their normal position to the space in which they are composed and used, extra separate type adapted to be inserted independently of the machine in the line being composed, and a blast for forcing said type together and holding them in position as they are assembled, substantially as described.

13. In a machine of the class referred to, the combination of type, type-bars to which the type are attached, means for assembling the type in line by advancing the type-bars longitudinally from their normal position to the space in which they are composed and used, and a blast for forcing the type together and holding them in position as they are assembled, substantially as described.

14. In a machine of the class referred to, the combination, with type and means for assembling them in line, of extra separate type adapted to be inserted in the line independently of the machine and free to fall out of the line when pressure upon it is released, and means for pressing the type together to hold the extra type in position, substantially as described.

15. In a machine of the class referred to, the combination, with type and means for assembling them in line, of extra separate type adapted to be inserted independently of the machine in the line being composed and free to fall out of the line when pressure upon it is released, and a blast for holding the extra type in position during composition, substantially as described.

16. In a machine of the class referred to, the combination of the type and means for assembling them in line, flexible bars to which the type are attached, and a blast for forcing the type together and holding them in place in the line, substantially as described.

17. In a machine of the class referred to, the combination of the type and bars therefor, mechanism for causing the bars as they are advanced to take an oblique course, so as to avoid other type and type-bars, and a blast for forcing them back to their proper positions in the line, substantially as described.

18. In a machine of the class referred to, the combination of the type and type-bars, guides between which the bars move, said bars being bent laterally, so as to acquire an oblique direction of motion as they advance between the guides, and a blast for returning the type to their proper position in the line, substantially as described.

19. In a machine of the class referred to, the combination of type or justifiers and mechanism for assembling them into line, and a double blast for holding the type or justifiers in place in the composing-space, one part of said blast descending obliquely upon the type from a vent somewhat above the same, substantially as described.

20. In a machine of the class referred to, the combination of the type and means for assembling them in line, a justifier, a flexible bar to which the justifier is attached, means for advancing the justifier to the line, and a blast for forcing the justifier to its proper position and holding it in place, substantially as described.

21. In a machine of the class referred to, the combination of the type and mechanism for assembling them in line, a justifier, means for causing it as it advances to the composing-space to take an oblique course, so as to avoid other type and justifiers, and a blast for forcing the justifier to assume its proper position in the line, substantially as described.

22. In a machine of the class referred to, the combination of the type and mechanism for assembling them in line, justifiers and justifying-bars, guides between which the justifying-bars move, said bars being bent laterally, so as to acquire an oblique direction of motion as they descend between the guides, and a blast for forcing the justifiers to assume their proper positions in the line, substantially as described.

23. In a machine of the class referred to, the combination of the type and means for assembling them in line, a justifier, a flexible bar to which the justifier is attached, means for advancing the justifier to the composing-space, and a blast for forcing the justifier to assume its proper position in the line, substantially as described.

24. In a machine of the class referred to the combination of the

type and means for assembling them in line, type-bars to which the type are attached, said type-bars being independently supported and actuated, a justifier and justifying-bar, means for bringing the justifier into line with the type, and a blast for forcing the justifier and type together and holding them in place in the line, substantially as described.

25. In a machine of the class referred to, the combination, with a justifier made in two parts adapted to move longitudinally of each other, of a leaf 245, carried by one part and overlapping the other part for preventing interference with contiguous type or justifying-bars, substantially as described.

26. In a machine of the class referred to, the combination of the type or justifiers and means for assembling them in line, mechanism for distributing the type or justifiers, a power-shaft, connections between the power-shaft and type-distributing mechanism, whereby the latter is caused to be operated at a certain point in the revolution of the shaft, and means independent of the power-shaft whereby the distributing mechanism may be operated at will, substantially as described.

27. In a machine of the class referred to, the combination of lifter-bar carriers 142, power-shaft 118, cam 161 or its equivalent, connections between the said shaft and cam and lifter-bar carriers, and hand-lever 162 for operating the carriers independently of the shaft, substantially as described.

28. In a machine of the class referred to, the combination of type and means for assembling them in line, a blast, and an alarm brought into operation by the blast when the line is composed, substantially as described.

29. In a machine of the class referred to, the combination of type and mechanism for assembling them in line, a blast operating upon the type as they come into line, a shunt for said blast into which the same is diverted as the line becomes full, and an alarm mechanism connected with the shunt and adapted to be operated by the diverted blast, substantially as described.

30. In a machine of the class referred to, the combination of type and mechanism for assembling them in line, a blast operating upon the type as they come into line, a shunt for said blast into which the same is diverted as the line becomes full, an electric alarm, and a circuit-contact operated by the blast in said shunt, substantially as described.

447,136. SCALE-WEIGHT. ABRAM C. MOTT, Philadelphia, Pa., assignor to the Abram Cox Stove Company, same place. Filed Dec. 17, 1890. Serial No. 375,021. (No model.)



Claim.—1. A scale-weight recessed or concaved on the under side so as to form an annular bearing-rim and having at the top an outer rim and a figure or numeral with intervening depressed portion, the faces of the portions in relief being in the same plane, substantially as specified.

2. The within-described scale-weight, having its under portion concaved or recessed so as to form an annular bearing-rim and having at the top an outer rim, an inner band, and a central numeral with intervening depressed portions, the faces of the portions in relief being in the same plane, substantially as specified.

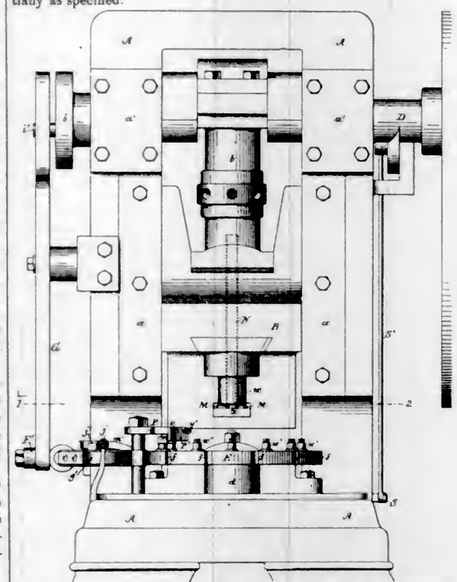
447,137. MACHINE FOR MAKING METAL CAPSULES. FRANKLIN W. PERRY, Philadelphia, Pa., assignor to the Hero Fruit Jar Company, same place. Filed Sept. 15, 1890. Serial No. 365,012. (No model.)

Claim.—1. The combination of the rotating disk and its threaded lower dies, the reciprocated slide and the upper die carried thereby, means for intermittently rotating the lower die-carrying disk, and a toothed or roughened segment, whereby the caps formed upon said threaded lower dies are automatically unscrewed therefrom as the dies are carried past the bar, substantially as specified.

2. The combination of the disk carrying the threaded lower dies, means for intermittently rotating said disk, the toothed or roughened segmental bar, and a spring forming a backing for said bar at the front end of the same, substantially as specified.

3. The combination of the upper and lower dies, a blank-carrying hopper, feed-levers mounted upon the upper die-carrier, and means for reciprocating said levers so as to deposit the blanks in succession upon the lower dies, substantially as specified.

4. The combination of the die-carrying slide and its blank-hopper, the feed-levers, a slide carrying the same, a second slide connected to said feed-levers, and means for imparting reciprocating movement to said second slide, whereby the feed-levers are moved back and forth and are opened and closed at the limits of their movement, substantially as specified.



5. The combination of the upper die-carrying slide, the feed-levers carried thereby, a slide for operating said levers, a slide-operating rod having adjustable collars, and a reciprocated actuating-rod having an arm projecting between said collars, whereby movement to any desired extent may be imparted to the slide-operating rod, substantially as specified.

447,138. ARTIFICIAL FUEL. RUDOLPH J. SCHIMPER, Jersey City, N. J., assignor, by mesne assignments, to the United States Fuel Company, of New Jersey. Filed July 31, 1888. Renewed Nov. 11, 1889. Serial No. 329,861. (No specimens.)

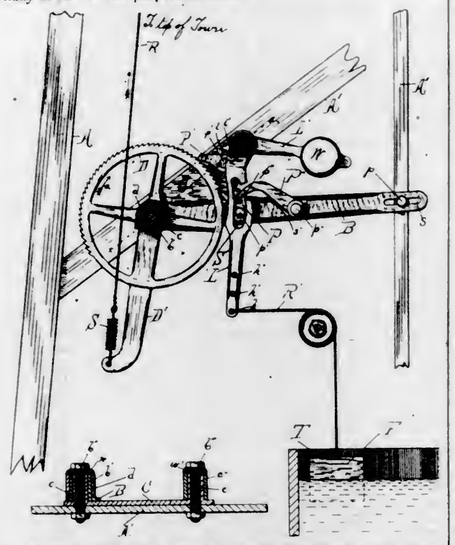
Claim.—The composition of matter for heating purposes, consisting of powdered charcoal saturated with a solution of acetate of lead, with lime and gypsum compressed into blocks, in the following proportions, viz: one hundred pounds powdered charcoal, twenty-four ounces acetate of lead, ninety-five pounds of lime, and five pounds of gypsum, substantially as set forth.

447,139. WINDMILL-REGULATOR. DANIEL C. STOVER and OSCAR J. ZIEGLER, Freeport, Ill. Filed June 11, 1890. Serial No. 355,041. (No model.)

Claim.—1. In a regulator of the class described, the combination, with the ratchet-wheel and means for connecting it with the working parts of a windmill, of a lever adapted to be connected with the pump-rod of the mill, a pawl pivoted to said lever and adapted to engage the teeth of the ratchet-wheel and to transmit the motion of the lever to the wheel, a second pawl pivoted to a stationary support and adapted to engage the teeth of the ratchet-wheel, a swinging lever, and means for connecting the free end of the lever with a tank-float, whereby the lowering of the float may operate and swing the lever, drawing both of said pawls out of engagement with the teeth of the ratchet-wheel, the pawl upon the operating-lever being drawn out of such engagement in advance of the pawl pivoted to the stationary support, substantially as and for the purpose set forth.

2. In a regulator of the class described, the combination, with a ratchet-wheel provided with a projecting arm and means for connecting the free end of said arm with the working parts of a windmill, of an operating-lever adapted to be connected with the pump-rod of the mill, a pawl pivoted to said lever and a pawl pivoted to a stationary support, both adapted to engage said ratchet-wheel, a bell-crank lever adapted to engage directly both of said pawls and having one of its arms weighted, whereby it tends normally to preserve the engagement

of said pawls with said ratchet-wheel, and means for connecting the other member of the lever with a tank-float, whereby the lowering of the float may operate said bell-crank lever to draw both of said pawls out of engagement with the ratchet-wheel, the pawl pivoted upon the operating-lever being so withdrawn in advance of the other, substantially as and for the purpose set forth.



3. The combination, with the ratchet-wheel D, of the operating-lever B, the pawls P P', adapted to engage said ratchet-wheel, the weighted bell-crank lever L L', formed with the slots S', adapted to engage a pin on the pawl P, and means for connecting the free end of the member L of the lever with the tank-float, whereby the lowering of the float may withdraw the free end of the lever from the ratchet-wheel B and thereby draw the pawl P out of engagement with the wheel, substantially as and for the purpose set forth.

4. The combination, with the lever B, ratchet-wheel D, and pawls P P', of the bell-crank lever L L', slotted to receive the pin p''' on the pawl P and provided with the lug l', engaging a lug l on the pawl P', whereby the movement of the free end of the lever-arm L away from the wheel D may withdraw first the pawl P and then the pawl P' from engagement with the wheel, substantially as and for the purpose set forth.

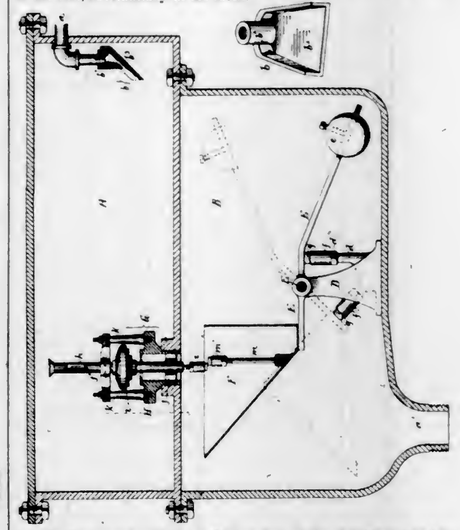
5. The combination, with the wheel D, lever B, and pawl P', of the pawl P, pivoted to the lever B and provided with the spur s' and notch n, the pawl P'', also pivoted to the lever B and adapted to cooperate with the pawl P, substantially as and for the purpose set forth, and the bell-crank lever L L', slotted to engage the pin p''' and provided with a lug engaging a coacting lug of the pawl P', whereby a movement of the free end of the lever-arm L away from the wheel D may disengage first the pawl P and then the pawl P' from the ratchet-wheel, and the pawl P'' may engage the notch n in the pawl P' and hold said pawl out of engagement with the ratchet-wheel, substantially as and for the purpose set forth.

6. The combination, with the ratchet-wheel, the lever B, and the lever L, of the pawl P, pivoted to the lever B and operated by the lever L, the pivot of the pawl being below the center of gravity thereof and in a vertical plane lying between the limits of motion of the free end of the pawl.

447,140. OSCILLATING METER. RUSSEL A. THAYER and EDWARD EVERETT, Allentown, Pa. Filed July 28, 1890. Serial No. 360,209. (No model.)

Claim.—1. In a meter for registering the water of condensation from a steam system, the combination consisting of a weighing-chamber B, having an outlet a', a receiving-box A directly above the chamber B, an opening forming a communication between the box and chamber, a valve controlling the flow of water through said opening, a stem on said valve with a pivoted lever E, carrying a measuring-vessel F, and a register geared thereto, the whole being so arranged that when the measuring-vessel is in a position to receive water from the box A it supports the valve, substantially as and for the purpose set forth.

2. The combination of the receiving-box, the weighing-chamber, a lever therein, a measuring-vessel carried by said lever, an outlet from the receiving-box directly above the measure, and a valve in said receiving-box acted upon by said measure and controlling the flow of liquid through the outlet, the seat of said valve being above the floor of the box, substantially as set forth.

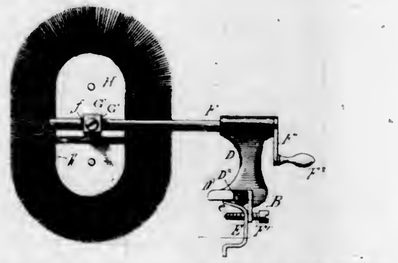


3. The combination, in a fluid-meter, of the weighing-chamber, the receiving-box, an outlet therefor, a valve controlling said outlet, a stem on said valve extending down into the weighing-chamber, a pivoted lever, a measuring-vessel carried thereby, said vessel being directly under the outlet-opening of the box, and a standard on said lever adapted to act upon and support the valve by its stem, substantially as set forth.

4. The combination, in a meter for measuring the water of condensation from steam-pipes, of the receiving-chamber A, the measuring-chamber B, situated below said chamber A, an outlet for said chamber, a valve in said outlet having a hollow stem forming an overflow-pipe for the said chamber A, a beam pivoted in the chamber B, having a receiving-measure directly under the outlet of the chamber A, and a device for tripping the valve in said outlet, the arrangement being such that the overflow from the chamber A will pass into the measuring-vessel, substantially as described.

5. The combination of the weighing-chamber, a pivoted lever therein, a measuring-vessel and a standard carried by said lever, an adjustable bumper on said standard, a receiving-box above the chamber, an outlet-opening therefrom directly above the measure, a valve therefor, and a stem on said valve having an adjustable bumper acted upon by the bumper carried by the lever, substantially as set forth.

447,141. TYPE-CLEANING BRUSH FOR TYPE-WRITING MACHINES. FRED VAN FLEET, Williamsport, Pa. Filed Nov. 21, 1890. Serial No. 372,196. (No model.)



Claim.—1. In combination with the types of a type-writer, a brush having the outline of a part at least of the type-opening and rotating across the plane of the latter, said brush being of greater area than the type-opening in order that the sides as well as the face of the type may be brushed, substantially as set forth.

2. In combination with the types of a type-writer, a brush corresponding to a part at least of their outline collectively considered, and a rod or shaft carrying said brush and rotating so as to turn the latter in a vertical plane across the said type, the said brush being of flat form and attached to said shaft at one of its flat sides, for the purpose set forth.

3. In combination with the types of a type-writer, a brush corresponding in outline with a part at least of the type-opening, devices for adjusting the position of said brush both lengthwise of said opening and transversely thereof, and devices for rotating said brush across the plane of the types, for the purpose set forth.

4. In combination with the types of a type-writing machine, a brush arranged to rotate across the plane of said types and corresponding in outline to that of a part at least of said type-opening, a rotary shaft carrying said brush, a block which is sleeved on said shaft and to which said brush is fastened, and a screw which adjustably secures said block on said rod, substantially as set forth.

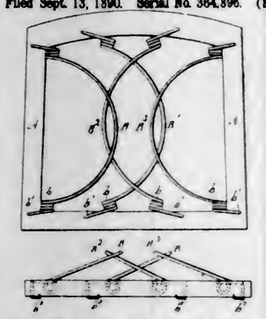
5. In combination with the types of a type-writer, a brush arranged to rotate across the plane of said type and corresponding in outline to at least a part of the type-opening, a rotary shaft on which said brush is mounted, and a clamping device allowing the adjustment of said brush endwise with respect to said shaft, substantially as set forth.

6. A rotary type-cleaning brush and its shaft arranged to carry said brush across the plane of the type, in combination with a standard which supports the said shaft, and a clamping device for securing said shaft to the frame of the machine and allowing its adjustment along said frame, substantially as set forth.

7. In combination with a rotary type-cleaning brush and its shaft, a standard affording a bearing for said shaft and recessed to receive a rod or bar of the machine-frame, a clamping-plate adapted to secure said rod or bar within said recess, and a screw passing through said standard and said clamping-plate for the purpose of drawing the latter against the said rod, substantially as set forth.

8. In combination with a type-cleaning brush and its shaft, an attachment of said shaft having a screw-threaded outer part and a square inner part, the latter fitting within a square hole of said brush and allowing its position to be changed, as described, and the said screw-threaded part receiving a clamping-nut, which holds the said brush in either position, substantially as and for the purpose set forth.

447,142. SEAT-SPRING FOR CUSHIONED SEATS. WILLIAM WESTERMANN, Louisville, Ky., assignor to the Louisville Chair Company, same place. Filed Sept. 13, 1890. Serial No. 364,896. (No model.)



Claim.—1. The combination, with a seat-frame, of a series of curved springs overlapping and bearing upon each other for mutual support and having each end portion formed with coils *b* and a bearing arm *b'*, said coils located flush with or below the top surface of the seat-frame, and the bearing-arms resting on the latter, extending through the frame, and clinched to the under side of the latter, substantially as described.

2. The combination, with a seat-frame, of a series of springs overlapping and bearing upon each other for mutual support, and each composed of a curved strip of wire having both of its end portions formed with coils *b* and bearing-arms *b'*, said coils located within the seat-frame flush with or below its top surface, and said bearing-arms resting on the latter and rigidly engaged with the frame, substantially as described.

447,143. ELECTRIC HEATER. JOHN I. ASHBAUGH, Chattanooga, Tenn., assignor of one-half to David G. Curtis, same place. Filed Mar. 15, 1890. Serial No. 343,864. (No model.)

Claim.—1. In an electric heating device, the combination of the solid central bar or part of clay or its equivalent, the coil of wire closely wrapped about this solid center, through which coil passes the electric current, and a heat-conducting envelope surrounding the said coil, said envelope preventing the conduction of electricity



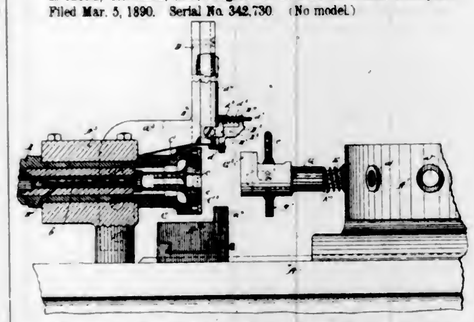
2. In an electric heating device, the combination of the solid center of clay or other similar material, the coil of wire wrapped closely around said center, through which coil passes the electric current, an external metallic casing adapted to radiate heat and surrounding the said coil, and an intervening heat-conducting envelope between the coil and the external case, which envelope is a non-conductor of electricity.

3. In an electric heating device, the combination of the central part of clay or similar equivalent material, the coil of wire wrapped closely about said central part, through which coil passes the electric current, an envelope which is a non-conductor of electricity, such as asbestus, surrounding the wire coil, the external metallic incasement surrounding the whole device, and the annular packing between the non-conducting envelope of asbestus and the said metallic casing, substantially as described.

4. In an electric heating device, the combination of the solid center of clay or its equivalent having a fluted surface, the coil of wire wrapped closely around said solid center, with its strands entering the surface flutings, through which coil passes the electric current, the heat-conducting envelope, which is a non-conductor of electricity, surrounding the said wire coil, the external metallic casing, and the annular packing between the envelope and the casing.

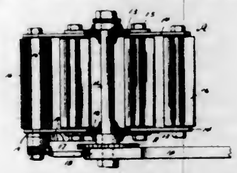
5. In an electric heating device, the combination of the central part A, of clay or similar material, formed into a solid bar without any central opening, the coil of wire B, surrounding the same, the envelope of asbestus paper C, surrounding the wire coil, which envelope conducts heat but is a non-conductor of electricity, and the metallic casing D, adapted to receive and contain the aforesaid parts and radiate the heat communicated thereto in consequence of the passage of the current through the coil, all substantially as described.

447,144. AUTOMATIC FEED MECHANISM FOR CHUCKS. JAMES B. CLYNE, Cleveland, Ohio, assignor to Thomas H. White, same place. Filed Mar. 5, 1890. Serial No. 342,730. (No model.)



Claim.—The combination, with upright feed-box and cut-out mechanism consisting, essentially, of a tilting lever carrying two stops or projections, one of which is yieldingly held in position, of a shaft projecting laterally from the lathe-turret, a spring-actuated sleeve mounted on such shaft, such sleeve having a recess adapted to receive the blanks discharged from the feed-box, the shaft having a projecting member adapted to actuate the tilting lever of the feed-box, substantially as and for the purpose set forth.

447,145. PEDAL FOR VELOCIPEDES. GEORGE W. CUSHMAN, New York, N. Y. Filed Sept. 12, 1890. Serial No. 364,769. (No model.)



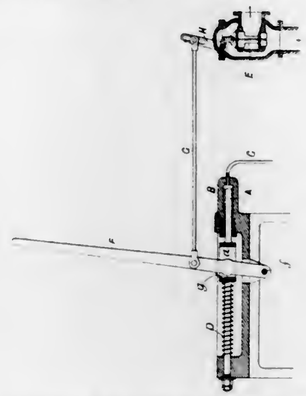
Claim.—1. As an improved article of manufacture, a pedal for bicycles and similar machines, consisting of side bars apertured to receive a spindle and two foot-rests secured laterally side by side between the said side bars at each side of the spindle-opening, substantially as and for the purpose specified.

2. The combination, with the crank-arm of a bicycle or similar machine and the crank-spindle, of a pedal loosely mounted upon the spindle, a ratchet-wheel secured to the spindle, a pawl attached to the pedal and locking with the ratchet-wheel upon the downward movement of the pedal only, substantially as shown and described, whereby at the downward movement of the pedal the pedal and crank-arm are connected, as and for the purpose specified.

3. The combination, with the crank-arm and crank-spindle of a bicycle or similar machine, of a treadle held to revolve around the spindle and provided with two foot-rests at each side of the spindle, a ratchet-wheel fast upon the spindle, and a spring-pressed pawl pivoted to the treadle and adapted for engagement with the ratchet-wheel, substantially as and for the purpose set forth.

4. In a bicycle or similar machine, the combination, with the crank-spindle of the machine and a ratchet-wheel firmly secured to said spindle, of a pedal held to revolve around the spindle, provided with two rest-bars at each side of the latter a pawl pivoted to the pedal and adapted to engage with the ratchet-wheel, and a washer intervening the pivotal portion of the pawl and the pedal and engaging with one face of the pawl, substantially as shown and described, whereby the action of the pawl and ratchet is rendered noiseless, as specified.

447,146. GEAR FOR CONTROLLING THE SPEED OF PUMPING-ENGINES. CHARLES DAVY, Sheffield, England. Filed May 3, 1890. Serial No. 350,464. (No model.)

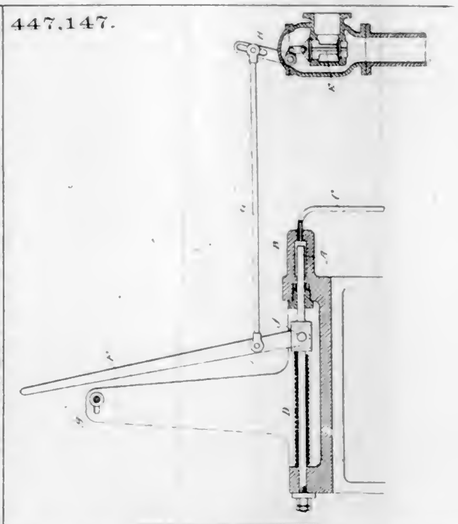


Claim.—In hydraulic-press pumping-engines, the combination, with a steam-regulating valve, of a plunger acted on in one direction by the hydraulic pressure opposed to the pumping-engines and in the other direction by a spring, and a hand-lever connected to the valve and working in a slot in the plunger, whereby the opening of the valve beyond a certain point is dependent on the position of the plunger and the movement of the hand-lever by the attendant, while the valve may be closed independently of the position of the plunger, substantially as specified.

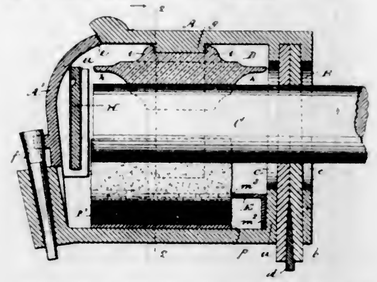
447,147. GOVERNING-GEAR FOR THE PUMPING-ENGINES OF HYDRAULIC FORGING OR OTHER PRESSES. CHARLES DAVY, Sheffield, England. Filed Nov. 22, 1890. Serial No. 372,272. (No model.) Patented in France May 2, 1890, No. 208,404; in Belgium May 2, 1890, No. 90,407, and in Italy June 30, 1890, XXIV, 27,463, and LIV, 70.

Claim.—In hydraulic-press pumping-engines, the combination, with a steam-regulating valve, of a plunger acted on in one direction by the hydraulic pressure opposed to the pumping-engines and in the other direction by a spring, a hand-lever pivoted to the plunger and connected to the steam-regulating valve, and an adjustable stop limiting the motion of the hand-lever, whereby the opening of the valve beyond a certain point is dependent on the position of the plunger and on the lever being moved or held by the attendant, while the valve may be closed by an opposite movement of the hand-lever, whatever may be the position of the plunger, substantially as specified.

447,147.



447,148. RAILWAY AXLE-BOX. LOUIS ELLERT, New York, N. Y., assignor to himself and Henry A. Newell, Jr., same place. Filed Nov. 12, 1890. Serial No. 371,150. (No model.)



Claim.—1. The combination, with a box-shell which is vertically recessed across its inner end, said recess being slightly tapered from below upwardly by convergence of the walls which form it, of a leather packing-joint that is apertured to fit tightly on an axle-journal and is split to receive a wedge from below, substantially as set forth.

2. The combination, with a box-shell which has a transverse and vertical recess formed at its inner end by the upward convergence of the walls which produce it, of a leather packing-joint which is formed of two layers connected flatwise and adapted to receive a wedge between the layers, said packing being apertured to receive an axle-journal and a wedge upwardly inserted between the layers of the joint, substantially as set forth.

3. In a railway axle-box, a support for the lubricating device, consisting of a plate having depending flanges on three sides and longitudinally slotted from its unflanged side, substantially as set forth.

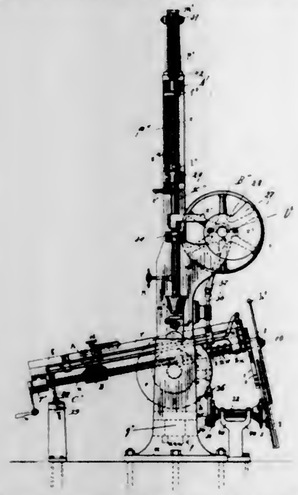
4. In a railway axle-box, the combination, with a slotted plate having depending flanges, of an elastic shoe having an essentially-rectangular base to engage the slotted plate and diverging walls to support the lubricant feeding material, as set forth.

5. The combination, with an axle-journal, an axle-box shell, a brass on the journal held in place by its contact with a ledge on the shell, and a leather joint which fits on the journal and in a recess at the inner end of the axle-box and is wedged fast therein, of a supporting-holder for a sponging device in the shell and a sponging device composed of an elastic sheet-metal shoe having divergent side walls and a layer of felt sponging secured on the inner face of the shoe, substantially as set forth.

447,149. FILE-CUTTING MACHINE. JULIUS ERLENWEIN, Edenkoben, Germany. Filed Sept. 23, 1890. Serial No. 365,877. (No model.)

Claim.—1. In file-cutting machines, the mechanism for automati-

cally feeding the file, indicated by a screw-spindle *n*, connected with the file-table and rotated by the toothed wheel *x*, the rotation of which wheel is carried out by pawls with the aid of a lever *y'*, a connecting-rod 3, jointed to the link 36 by means of the socket-joint 13, the nut 7, the shaft 32, and the disks 5 and 33, and a crank-lever 37, actuated by the driving-shaft for the purpose of regulating the extent of the stroke of the pawls and of obtaining coarse or fine cuts or serrations, substantially in the manner and for the purposes hereinbefore described.



2. In a file-cutting machine, the mechanism for moving the chisel or cutter holder automatically, indicated by the arrangement of an adjustable pin Q, upon which the lever P, carrying the chisel, is arranged to pivot, the other end of the said lever—i. e., the end opposite that carrying the chisel—being connected by a rod R with two rings U, carrying a roller W, and clasping the driving-shaft, while the said roller enters, when the driving-shaft rotates, a recess formed in the said shaft, so that the up-and-down motion thereby imparted to the lever carrying the chisel or cutter can be intensified by the springs T X, substantially as described.

3. In a file-cutting machine, the mechanism for pressing the file tightly upon the anvil and for actuating the hammer, indicated by a movable and adjustable lever *h'*, one end of which is connected with a pressure-piece *r'*, while its other end is jointed by means of a rod *k'* and a lever *b'* with the axis *x''*, carrying the hammer, which axis is surrounded by springs and is furnished with a projection *z'*, actuated by the cam *x'*, mounted on the main shaft, substantially in the manner and for the purposes hereinbefore described.

4. In a file-cutting machine, the combination, with a table having a threaded spindle journaled thereunder, provided at its ends, respectively, with a handle and a ratchet-wheel, and a nut movable on the spindle and carrying at its upper end a carriage movable on the table, of a lever pivoted on the spindle and carrying pawls engaging the ratchet-wheel, a shaft journaled below the table and provided with a disk at each end, a lever-and-link connection between one of said disks and the pawl-carrying lever, and a lever-and-crank connection between the other of said disks and a disk on the driving-shaft of the machine, substantially as shown and described, for the purpose set forth.

5. In a file-cutting machine, the combination, with a vertically-guided sledge and a lever pivoted on the sledge and carrying a chisel or cutter at its outer end, of a spring-controlled vertical lever connected at one end to the inner end of the chisel-carrying lever and having at its other end rings embracing the driving-shaft of the machine, and a roller pivoted between the rings and entering a recess in the driving-shaft, substantially as shown and described.

6. In a file-cutting machine, the combination, with a vertically-guided sledge and a lever pivoted on the sledge and carrying a chisel or cutter at its outer end, of a lever pivoted to the sledge below the chisel-carrying lever and provided at its outer end with a removable pressure rod or finger, a spring-controlled vertical axis mounted in bearings on the machine, carrying a hammer at its lower end and having a projection or tappet on one side, lever-and-link connections between the axis and the chisel-carrying lever, and a cam-disk mounted on the driving-shaft of the machine and adapted to engage the projection on the hammer-axis, substantially as shown and described.

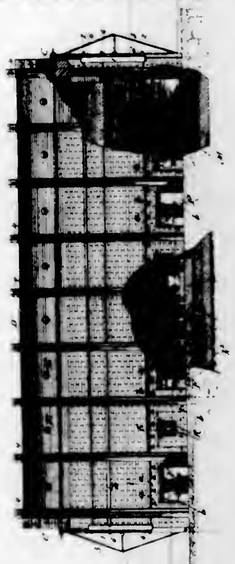
447,150. BOOT OR SHOE CASE. SIMON F. FRAZIER, Quenemo, Kans. Filed July 24, 1890. Serial No. 359,841. (No model.)



Claim.—1. A boot or shoe case having a series of guides or strips centrally pivoted to the side of the case, substantially as shown and described.

2. The combination of the casing A, the centrally-pivoted guide-strips *g*, the grooved or notched pieces b^3, attached to the sides of the case, and the removable partition P, adapted to be adjustably held in the notched side pieces, and provided, also, with centrally-pivoted guide-strips *g*, substantially as shown and described.

447,151. BRICK-KILN. JOHN B. GRISWOLD, Zanesville, Ohio. Filed July 28, 1890. Serial No. 360,244. (No model.)



Claim.—1. The combination, substantially as set forth, with a brick-kiln, of the vertical flues I', extending entirely around the inside of the side and end walls, said flues disconnected at the corners I^2, the longitudinally-slotted bottom L, the transverse flues M, communicating with the slotted-floor furnaces F, communicating with the flues I' and M, the outer longitudinal flues H, having an indirect connection with the flues M, a central longitudinal flue H', having a direct communication with the flues M, said flue H' provided with valves, whereby it may be used in connection with the flues H or be separated therefrom, substantially as and for the purpose described.

2. In a brick-kiln, the combination, with the fire-chamber, of the flues I', extended entirely across the side and end walls and disconnected at the corners I^2, the furnaces F, connected with the flues I', said furnaces formed with the vertical walls Y, dividing said flues I' into a series of flues and arranged centrally over the furnace-openings, whereby such openings are divided, the slotted floor L, the transverse flues M under said floor, and the flues H H, connected with said flues M, all arranged substantially as shown and described.

3. In a brick-kiln essentially as described, the combination, with the kiln proper, the slotted floor L, the transverse flues M, and the discharge-flues H H, of the vertical flues I', the furnaces F, communicating therewith, the division-walls Y, extended from the tops of said flues I' down to the floor of the kiln and arranged to divide the mouth of the furnaces F, a series of vertical walls in the flues I', extended to near the top of the furnace-openings, whereby a series of flue-chambers I' are formed between the walls Y, and a series of dampers *a*, operating to close any or all of such chambers I', whereby the fire can be sent up one or more of the flue-chambers I' of each section or entirely cut off from such sections, substantially as and for the purpose described.

4. In a brick-kiln, the combination, with the kiln-chamber, of a series of flue-chambers I', arranged in sections, each section divided by a series of vertical walls extended down to near the floor of the kiln, a series of dampers *a*, arranged to be operated from the outside of the kiln-wall, whereby any or all of the vertical ways of each flue-section may be cut off, a series of furnaces opening into the flue-sections I', the mouth of such furnaces being divided by the division-wall of each flue-section I', the slotted floor L, the transverse flues M, and the flues H H, connected with the flues M, all arranged substantially as and for the purpose described.

5. The combination, substantially as set forth, of a kiln formed with the vertical flues I' in its sides and ends opening into the kiln-chamber, a series of furnaces communicating therewith, a slotted floor L, a series of transverse flues M below the floor L, communicating therewith, a central flue H', having a direct communication with the flues M, and a pair of longitudinal flues H, arranged below the furnaces and having indirect and valved connection with the flues M, said flues H H' connected with each other and with the stack H^3, the flue H' formed with cut-offs V, whereby the said flue can be used jointly with the outer flues H, or the outer flues H separate from the flue H', all arranged substantially as and for the purpose described.

6. A brick-kiln consisting of the main walls, the top formed with a series of valved openings E E', the end flues I', arranged on the inner faces of the end walls, a series of flues I' on the inner faces of the side walls, said flues opening at their tops into the interior of the kiln, a series of furnaces opening into the side flues I', the division-walls Y of the side-flue series extended down to floor of the kiln centrally of the furnace-openings, a horizontal division-wall Z, dividing the mouth of such furnaces into upper and lower outlets, a series of flue-sections K, extending from the lower furnace-outlets to the floor L, said floor slotted longitudinally, transverse flues M, arranged in a series below the floor L, and the discharge-flues H, connected with said flues M, all arranged substantially as and for the purpose described.

7. The combination, with the kiln, of the end flues I', the top provided with outlets E, the longitudinally-slotted floor extended at its ends under the flues I', the flue-sections K, the furnaces F, opening into said sections K, and the transverse flues M, formed in sections and arranged in communication with the flues K and slotted floor L, all arranged substantially as and for the purpose described.

8. The combination, with the kiln, of the end flues I', the top formed with draft-openings E E', the longitudinally-slotted floor, its ends extended under the flues I', the downwardly-extending flues K, the furnaces F, opening into such flues K, the division-wall Y, dividing said flues K into sections K' and arranged centrally of the furnace-opening, whereby such opening is divided, and whereby the fire from each furnace will enter the adjacent flue-sections K, and the transverse flues M, connecting the flues K' with the slotted floor, substantially as and for the purpose described.

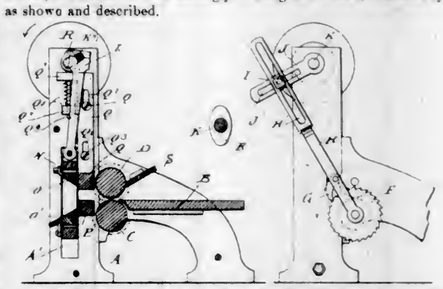
9. A brick-kiln consisting of a main wall, a top formed with valved draft-openings E E', the end and side flues I', the centrally longitudinally-slotted floor extended from end to end of the kiln, the flues K, located and in line with the side flues, a series of furnaces F, communicating with the flues I' and K, a horizontal division-wall Z, dividing the flues I' and K and the exit-mouth of the furnaces in upper and lower sections S R, the vertical walls Y, extended from the top of side flues I' down to the floor of the kiln, dividing the flues I' and K into sections, and the furnace-exit into side chambers, the transverse flues connecting the flues K and slotted floor, and the exit-flues H H, connected with the flues M, all arranged substantially as and for the purpose described.

10. The combination, with the kiln, of the end flues I', the top formed with draft-openings E E', the centrally longitudinally-slotted floor L, the furnaces F, the downwardly-extended flue-sections K', communicating therewith, the combustion-openings *b*, opening into said flue-sections K', and the transverse flues M, connecting the flues K' and the slotted floor, all arranged substantially as and for the purpose described.

447,152. MACHINE FOR DECORTICATING FIBROUS PLANTS. José G. HERNANDEZ, Havana, Cuba. Filed May 2, 1890. Serial No. 350,374. (No model.)

Claim.—1. In a decorticating-machine, the combination, with reciprocating double knives, of a fixed presser-bar and a movable presser-bar arranged in the rear of the said knives and in line with the same, and means for operating said bar, substantially as shown and described.

2. In a decorticating-machine, the combination, with reciprocating double knives, of a fixed presser-bar and a movable presser-bar arranged in the rear of the said knives and in line with the same, and means for operating said bar, and feed-rollers having an intermittent rotary motion and serving to feed the material to the said bars and knives, and means for intermittingly rotating said rollers, substantially as shown and described.



3. In a decorticating-machine, the combination, with reciprocating double knives, of a fixed presser-bar and a movable presser-bar arranged in the rear of the said knives and in line with the same, feed-rollers having an intermittent rotary motion and serving to feed the material to the said bars and knives, and means, substantially as described, for intermittingly rotating said rollers and for imparting motion to the said knives and movable presser-bar, as set forth.

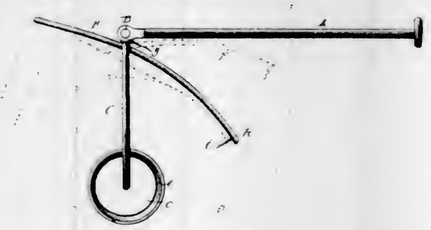
4. In a decorticating-machine, the combination, with a knife-frame having a reciprocating motion and knives secured on opposite bars of the said frame, of a fixed presser-bar arranged in the rear of the said frame in line with the said knives, and a movable presser-bar arranged above the said fixed presser-bar and adapted to clamp the material on the said fixed presser-bar while the knives operate on the material, and means for operating said bar, substantially as shown and described.

5. In a decorticating machine, the combination, with a knife-frame having a reciprocating motion and knives secured on opposite bars of the said frame, of a fixed presser-bar arranged in the rear of the said frame in line with the said knives, a movable presser-bar arranged above the said fixed presser-bar and adapted to clamp the material on the said fixed presser-bar while the knives operate on the material, and means, substantially as described, for imparting a reciprocating motion to the said knife-frame and a downward motion to the said movable presser-bar, substantially as shown and described.

6. In a decorticating-machine, the combination, with a knife-frame having a reciprocating motion and knives secured on opposite bars of the said frame, of a fixed presser-bar arranged in the rear of the said frame in line with the said knives, a movable presser-bar arranged above the said fixed presser-bar and adapted to clamp the material on the said fixed presser-bar while the knives operate on the material, means, substantially as described, for imparting a reciprocating motion to the said knife-frame and a downward motion to the said movable presser-bar, and springs for raising the said presser-bar, substantially as shown and described.

7. In a decorticating-machine, the combination, with a fixed presser-bar, of a movable presser-bar having arms guided vertically, springs pressing on the said arms to raise the movable presser-bar, and cams adapted to press on the said arms to lower the said presser-bar, substantially as shown and described.

447,153. TWINE-REEL. JOHN B. HOLMES, New York, N. Y. Filed Sept. 24, 1889. Serial No. 324,903. (No model.)



Claim.—1. In a twine-reel, the combination of a frame having vertical arms forming at their lower ends a support on which the ball may turn, and a second frame pivoted to the upper end of said first-named frame to swing in the vertical plane and having a cross-bar at its heavier end, said heavier end having normally a tendency to gravi-

tate in the direction of the vertical arms of the ball-supporting frame, substantially as described.

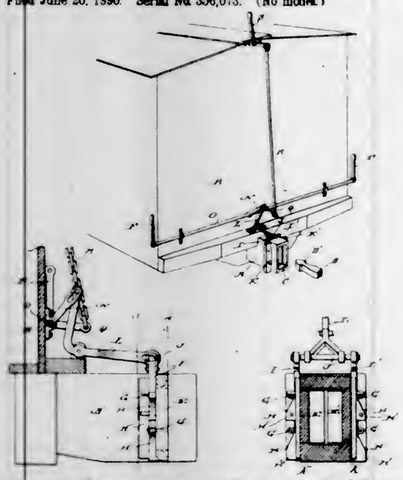
2. In a twine-reel, the combination of a frame having vertical arms forming a support for a ball of twine, and a second frame pivoted at the upper end of said first-named frame and having a cross-bar at one end, provided on the under side with spurs for entering the ball of twine, substantially as described.

3. The combination, in a twine-reel, of a frame consisting of a cross-bar and vertical arms, the latter forming a support for the ball of twine, and a cord-controlling frame pivoted at the upper end of the said first-named frame, one end of the said second frame having an eye or opening forming a guide for the cord, and the opposite heavier end having a transversely-ranging bar and normally tending to gravitate in the direction of the vertical ball-supporting arms, substantially as described.

4. The combination, in a twine-reel, of a supporting-frame for the ball of cord, and a second frame pivoted to the first-named frame for movement in the vertical plane, said second frame having an eye or opening at one end forming a guide for the cord and having a spurred cross-bar at the opposite heavier end, substantially as described.

5. The combination, with the bracket-arms A A, of a twine-supporting frame pivoted to said arms A A and consisting of a cross-bar having depending arms that form at their lower ends a support for a ball of twine, and a cord-controlling frame pivoted to the cross-bar of said first-named frame for vertical movement and formed at its heavier end with a cross-bar having spurs on its under side, the said heavier end of the cord-controlling frame normally tending to gravitate in the direction of the vertical arms of the ball-supporting frame, whereby its spurred cross-bar will act as a stop for the ball, substantially as described.

447,154. CAR-COUPLING. FRANCIS A. JOHNSON, Powhatan, Ark. Filed June 20, 1890. Serial No. 356,073. (No model.)



Claim.—1. The combination, with the draw-head and the transversely sliding spring-pressed plates in the sides thereof, of parallel vertically-reciprocating bars having inclines to engage the said plates and throw them outward, substantially as set forth.

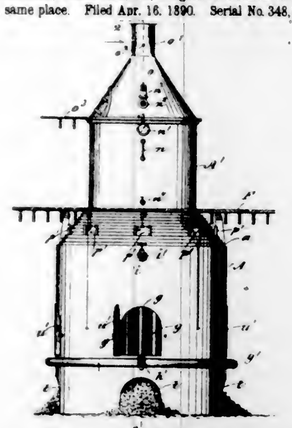
2. The combination, with the draw-head and the transversely-sliding spring-pressed plates in the sides thereof, of vertically-reciprocating bars at the outer sides of the draw-head connected at their upper ends and provided with inclines on their outer edges to throw the said plates apart, and a vertically-rocking lever connected with the upper ends of the said bars, substantially as set forth.

3. In a car-coupler, the combination, with a draw-head, of plates arranged vertically and adapted to slide transversely in the draw-head to meet near the center of the central opening, and springs connecting the said plates with each other to hold the same in a closed position, substantially as shown and described.

4. In a car-coupler, the combination, with a draw-head, of plates arranged vertically and adapted to slide transversely in the draw-head to meet near the center of the central opening, springs connecting the said plates with each other to hold the same in a closed position, and means, substantially as described, for moving the said plates apart, as set forth.

5. In a car-coupler, the combination, with the draw-head, of plates arranged vertically and adapted to slide transversely in the said draw-head and toward and from each other, springs connecting the said plates with each other, friction-rollers held on the outer ends of the said plates, bars fitted to slide on the sides of the draw-head and provided with inclines adapted to engage the said friction-rollers, and means, substantially as described, for raising or lowering the said bars to open the said plates, substantially as shown and described.

447,155. APPARATUS FOR THE CALCINATION OF CEMENT. PAUL KROTTNAURER, White Hall, Pa., assignor of one-fifth to Amable B. Bonneville, same place. Filed Apr. 16, 1890. Serial No. 348,199. (No model.)



Claim.—1. A lime or cement calcining apparatus having an enveloping cylindrical jacket-wall, a combustion-chamber within comprised of an annular water-chamber and tubes depending therefrom in a circular row which are adapted to circulate water through them, a tubular steam-generator above the combustion-chamber, and a jet-head below said chamber which is connected to the steam-generator, substantially as set forth.

2. A lime or cement calcining apparatus having an outer masonry jacket, an inner concentric annular water-chamber at the top of the combustion-chamber, a series of spaced depending tubes arranged in cylindrical form that are bent outwardly below to be connected together and to a source of water-supply, and a water-discharge for the annular water-chamber, substantially as set forth.

3. The combination, with a jacket-wall, of an annular water-chamber within, a series of tubes which form a combustion-chamber depending from the water-chamber, a water supply and discharge therefor, and a steam-boiler above the combustion-chamber and within the jacket, substantially as set forth.

4. The combination, with a jacket-wall, of an annular water-chamber, a series of spaced tubes attached to the water-chamber in a circular row and connected at their lower ends, a water supply and discharge therefor, and a perforated dome-wall on the water-chamber, substantially as set forth.

5. The combination, with a jacket-wall, of an annular water-chamber, a series of spaced tubes attached to and extending down from the water-chamber in a circular row and connected at their outer ends, a water supply and discharge therefor, a perforated dome-wall on the water-chamber, and a feed-conduit penetrating the dome-wall, substantially as set forth.

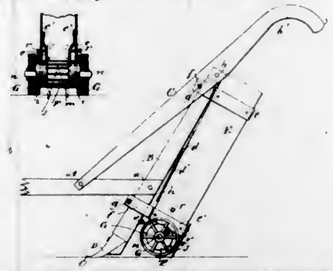
6. The combination, with a jacket-wall, of an annular water-chamber, a series of spaced tubes attached to and extending down from the water-chamber in a circular row and connected at their outer ends, a water supply and discharge therefor, a perforated dome-wall on the water-chamber, a feed-conduit penetrating the dome-wall, and a boiler above the dome-wall, through which extends the said feed-conduit, substantially as set forth.

7. The combination, with a cylindrical jacket-wall that is reduced in diameter above a combustion-chamber within, a combustion-chamber comprised of an annular water-chamber, and tubes which depend in a circular spaced row therefrom and outwardly bent to join a connecting tubular ring, a tubular ring, and a water inlet and discharge for the combustion-chamber, of a perforated dome-wall on the water-chamber's inner wall, a feeding-conduit above the dome-wall, a steam-boiler having vertical flues located above the dome-wall, and a draft-stack on the jacket-wall, substantially as set forth.

8. The combination, with a jacket-wall, an annular water-chamber within, depending tubes therefrom that are adapted to have water circulation, a water-supply and a water-discharge for the tubes and water-chamber, a perforated dome-wall, and a feed-conduit, of a steam-boiler, a jet-nozzle head below, and a steam-connection for the jet-head with the steam-boiler, substantially as set forth.

9. The combination, with a jacket-wall having apertures with doors on its sides, discharging-apertures below, a contracted upper portion, and air-inlets that are in the jacket-wall having adjustable gates for supplying air to a hot-air compartment within the jacket-wall above a combustion-chamber, of a combustion-chamber comprised of an annular water-chamber having a series of depending tubes therefrom that are provided with means for continuous water-circulation, a dome-wall which is perforated at intervals, a feeding-conduit thereon, a tubular boiler above the dome-wall, through which the feed-conduit passes, a stack above the boiler seated on a hood, and a hood which is adapted to permit access to the feed-conduit, substantially as set forth.

447,156. COMBINED PLOW AND FERTILIZER-DISTRIBUTER. WILLIAM F. MOSS, Fitzpatrick's, Ala. Filed July 30, 1890. Serial No. 360,361. (No model.)



Claim.—1. The combination, with a plow and a hopper-box which is self-adjusting for height on the plow, of a revoluble distributer-roller that is longitudinally grooved, means to rotate the roller as the plow moves forward, and spring-plates in the hopper-box which touch the grooved face of the distributer-roller, substantially as set forth.

2. The combination, with a shovel-plow standard and a hopper-box which is adapted to slide vertically on the standard, of a longitudinally-fluted distributer-roller, means to revolubly support the roller on the lower end of the hopper-box, wheels fixed on the ends of the roller, and spring-plates in the box which touch the grooved face of the roller, substantially as set forth.

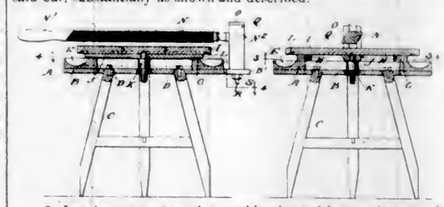
3. The combination, with a plow-standard, a shovel-blade on the standard, a hopper-box which aligns with the standard, and bracket-loops that are adapted to removably hold the hopper-box free to slide vertically on the standard, of a fluted roller on the lower end of the hopper-box, bracket-plates fast on the box, which loosely engage the body of the roller and permit it to rotate, wheels fixed on the ends of the roller, and two adjustable spring-plates which touch the grooved face of the roller oppositely, substantially as set forth.

4. The combination, with a plow-standard, a shovel-blade on the lower end of the standard, and a depending tongue held by its upper end on the standard, of an upright hopper-box, a shoe on the hopper-box, that loosely engages the tongue on the standard, two bracket-loops fastened to the hopper-box and loosely secured on the standard, a fluted revolubly-supported distributer-roller, fixed wheels on the ends of the roller, spring-plates in the box, which touch the roller-face, and a depending harrow-plate at the rear of the hopper-box, substantially as set forth.

5. The combination, with a plow-standard, a shovel-blade on the lower end of the standard, a depending tongue on the rear face of the standard, an upright hopper-box, two bracket-loops fastened to the hopper-box and made to engage opposite sides of the standard with their end portions, cross-bolts which pass through the bracket-loop ends in front of the standard, and a shoe on the hopper-box which loosely fits onto the depending tongue on the standard, of a longitudinally-grooved distributer-roller, two bracket-plates on the lower end of the hopper-box, which loosely support the distributer-roller thereon, two opposite adjustable spring-plates within the hopper-box that bear with their spring ends on the grooved face of the roller, two spring-plates which are adjustable in and form a feed-throat for the hopper-box above the grooved roller, and a harrow-plate attached to the hopper-box behind the grooved roller, substantially as set forth.

447,157. BUTTER-WORKER. THOMAS MUIR, Margaretville, N. Y. Filed Sept. 3, 1890. Serial No. 363,824. (No model.)

Claim.—1. In a butter-worker of the class described, a revoluble table made of a series of boards fitted together with tongues and grooves, segmental lugs secured on the under side of the table across the said board and near the outer edges of the latter, a bar extending in the middle of the said table across the said boards, and undercut blocks secured to the said table and engaging the outer ends of the said bar, substantially as shown and described.

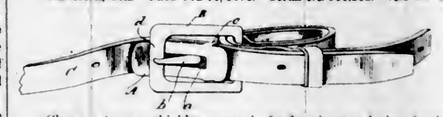


2. In a butter-worker, the combination, with a stationary table made in ring shape and provided on top with an annular groove and a circular track, of a cross engaging the under side of the said table, legs supporting the said cross and fastened thereto by lag-screws, a pivot-pin held in the center of the said cross, and a revoluble table mounted to turn on the said pin and provided on its under side with segmental lugs traveling on the said track, substantially as shown and described.

3. In a butter-worker, the combination, with a stationary table made in ring shape and provided on top with an annular groove and a circular track, of a cross engaging the under side of the said table, legs supporting the said cross and fastened thereto by lag-screws, a pivot-pin held in the center of the said cross, a revoluble table mounted to turn on the said pin and provided on its under side with segmental lugs traveling on the said track, and a transverse bar secured centrally on the under side of the said table and provided with an opening engaged by the said pivot-pin, substantially as shown and described.

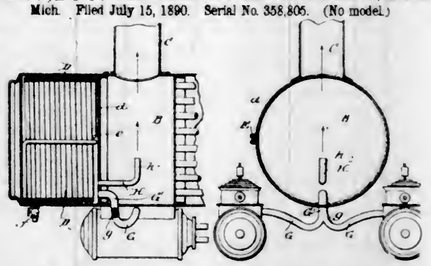
4. In a butter-worker, the combination, with a stationary table made in ring shape and provided on top with an annular groove and a circular track, of a cross engaging the under side of the said table, legs supporting the said cross and fastened thereto by lag-screws, a pivot-pin held in the center of the said cross, a revoluble table mounted to turn on the said pin and provided on its under side with segmental lugs traveling on the said track, a transverse bar secured centrally on the under side of the said table and provided with an opening engaged by the said pivot-pin, and undercut blocks secured on the under side of the said table and engaging the outer ends of the said transverse bar, substantially as shown and described.

447,158. STRAP AND BUCKLE SHIELD. GEORGE H. NICHOLLS, Galveston, Tex. Filed Oct. 16, 1890. Serial No. 368,282. (No model.)



Claim.—A strap-shield composed of a flat elongated plate having parallel side edges, a slot longitudinally formed in said plate near its transverse center, and two pairs of limbs projected in the same direction from the side edges of the plate and bent toward each other in pairs to loosely clasp a strap, substantially as set forth.

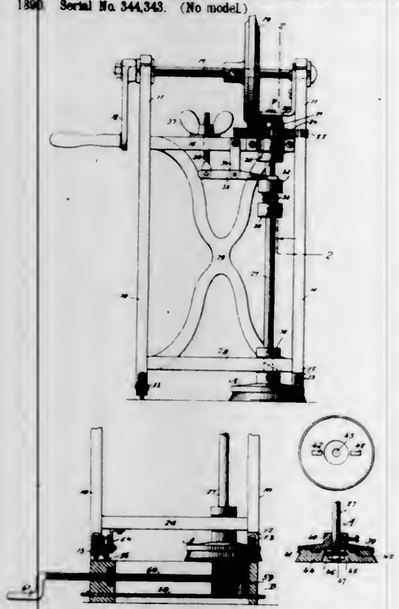
447,159. FEED-WATER HEATER. LOVEATUS NORTON, Escanaba, Mich. Filed July 15, 1890. Serial No. 358,805. (No model.)



Claim.—As an improvement in feed-water heaters, the combination, with the boiler A, a supplemental chamber D, arranged in advance of the smoke-chamber B thereof, the steam-exhaust inlets G G, arranged to communicate with the bottom of the chamber D, an exhaust-outlet H, connected therewith and arranged above the inlet G, said outlet H projected upward into the smoke-chamber, of the feed-water pipe E,

extended along the outside of the boiler, passed through the wall of the chamber D, coiled therein, its end passed through said wall, extended back to the outside of the boiler A, a check-valve F, connected with said end, said end then passed into the water-chamber of the boiler, all arranged substantially as and for the purpose described.

447,160. MACHINE FOR DRESSING FLOORS OR THE SURFACE OF LUMBER. ROBERT L. PATTERSON, Wellington, Kans., assignor of one-half to Henry A. Riemann, same place. Filed Mar. 18, 1890. Serial No. 344,343. (No model.)



Claim.—1. The combination, with the wheeled frame having a vertical shaft provided at its lower end with a dressing-head, of a clamping-frame having a longitudinal track or way on its upper side, on which the said frame travels to bring the said head along the material to be dressed.

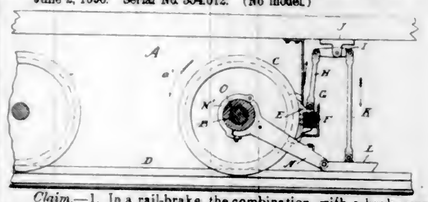
2. In a machine of the character described, the oblong frame D, having series of apertures 57 in its opposite sides, rods 58, adjustable in said apertures according to the width of the boards to be dressed, and transverse screws projecting through one side of the frame to clamp the boards resting on said rods against the inner face of the opposite side of the frame, substantially as set forth.

3. In a machine of the character described, the dressing-head B, having a flat lower face, oppositely-facing vertical shoulder-forming recesses 50 in the edge or periphery of the head, the upper face of the head in front of each recess being beveled downward, as shown at 51, and angle-knives 52, the vertical members of which are secured to said vertical shoulders, as at 53, and the horizontal members projecting forwardly under the lower face of the head, substantially as set forth.

4. In a machine of the character described, the combination, with a frame, a drive-shaft journaled in said frame, a spur-gear provided with an attached hub, and a feather in the bore of said hub and wheel, and a binding-collar attached to the hub, of a perpendicular shaft having a longitudinal groove in its upper portion and adapted to receive the feather of the spur-gear and its hub, a spring tension device attached to the shaft, a lever fulcrumed upon the frame and having a bearing upon said device, a cutting-head secured to the lower end of the shaft, and a connection, substantially as shown and described, between the hub spur-gear and the drive-shaft, as and for the purpose specified.

5. The combination, with a machine provided with a rotary spring-pressed shaft, a cutting-head secured to the said shaft and having rollers journaled in the legs at one side of the machine and grooved wheels journaled in the legs upon the other side of the machine, of a frame provided with a track adapted to receive the grooved wheels, supporting gage-rods detachably secured in said frame, and threaded clamping-rods passed through one side bar of the frame, substantially as and for the purpose specified.

447,161. RAIL-BRAKE. ALBERT M. PERRY, Richmond, Va. Filed June 2, 1890. Serial No. 354,012. (No model.)



Claim.—1. In a rail-brake, the combination, with a brake mechanism, of an arm fulcrumed loosely on the car-axle, a shoe on the end of the said arm, and connections between the said shoe and the brake mechanism, substantially as described.

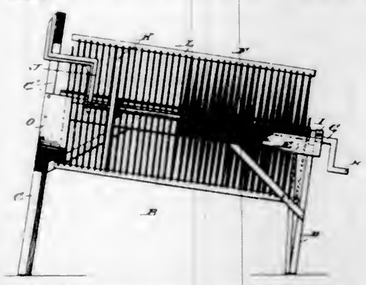
2. A rail-brake comprising an arm fulcrumed loosely on the car-axle, a brake-shoe pivotally connected with the said arm, and links and a lever connected with the said brake-shoe and adapted to be connected with the ordinary brake mechanism, substantially as shown and described.

3. In a rail-brake, the combination, with the ordinary brake mechanism, of a link pivotally connected with the brake-beam of the said mechanism, a lever pivotally connected with the said link, a second link pivotally connected with the said lever, and a brake-shoe held on the said second link and adapted to be placed in contact with the rail, substantially as shown and described.

4. In a rail-brake, the combination, with the ordinary brake mechanism, of a link pivotally connected with the brake-beam of the said mechanism, a lever pivotally connected with the said link, a second link pivotally connected with the said lever, a brake-shoe held on the said second link and adapted to be pressed in contact with the rail, and an arm pivotally connected with the said brake-shoe and loosely fulcrumed on the car-axle, substantially as shown and described.

5. In a rail-brake, the combination, with a collar adapted to be secured to one of the axles, of an arm loosely fulcrumed on the said collar, a brake-shoe pivotally connected with the said arm and adapted to engage the top of the rail, a link pivotally connected with the said brake-shoe, a lever pivotally connected with the said link, and a second link pivotally connected with the said lever and also pivotally connected with the brake-beam of the ordinary brake mechanism, substantially as shown and described.

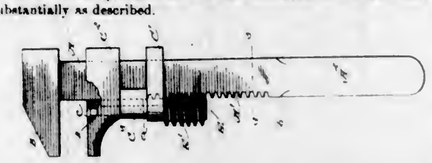
447,162. SAND-SCREEN. CHARLES PRESCOTT and MOSES H. BENNETT, Fairmount, Nebr. Filed June 30, 1890. Serial No. 357,269. (No model.)



Claim.—The herein-described screen, comprising the frame B, having a circular opening C in its front, a double angle bracket J, secured to the front of the frame, projecting through the said opening, and having a shaft-bearing in the lower end of its inner depending arm, a bearing I at the opposite end of the frame, a rotary sieve having a central shaft G mounted in the said bearings, the bracket J, projecting into the interior of the screen, as shown, and the curved plate O, projecting inwardly from the bottom of the opening C, substantially as set forth.

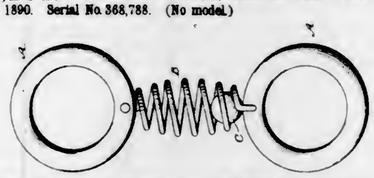
447,163. SCREW-WRENCH. JOHN RYAN, New York, N. Y., assignor to himself and Seymour G. Smith, Plainfield, N. J. Filed May 18, 1889. Serial No. 310,944. (No model.)

Claim.—1. The combination, with a shank having a fixed jaw and provided with a threaded edge, of an adjustable jaw held to slide on said shank by integral straps and provided with a longitudinal bore which is countersunk on the face of the jaw, and an operating-nut provided with a peripheral thread engaging the thread of the shank and having a fixed axial stem extending through the bore of the adjustable nut and upset at its end in the countersink of the said bore substantially as described.



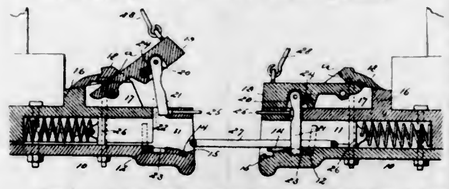
2. The combination, with a shank having a fixed jaw and provided with a threaded edge, of an adjustable jaw held to slide upon said shank, provided with an extension on its under face, a strap integral with the extension and also provided with a bore extending through it, the strap and extension, which bore is countersunk on the upper face of the jaw, and an operating-nut provided with a peripheral thread engaging the thread of the shank and having a fixed axial stem extending through the bore of the adjustable jaw and its appendages and upset at its ends in the countersink of the said bore, substantially as shown and described whereby the nut is located back of the jaw and serves as a support therefor, substantially as described.

447,164. TOY. SADIE F. SIMPSON, Saxonville, Mass. Filed Oct. 21, 1890. Serial No. 368,788. (No model.)



Claim.—The within-described toy, consisting of separated teething-rings, a hollow handle interposed between and uniting said rings, and a rattling device within the hollow handle, substantially as shown and described.

447,165. CAR-COUPLING. CHAUNCEY W. SMITH, Brush Creek, Iowa. Filed Aug. 15, 1890. Serial No. 362,058. (No model.)



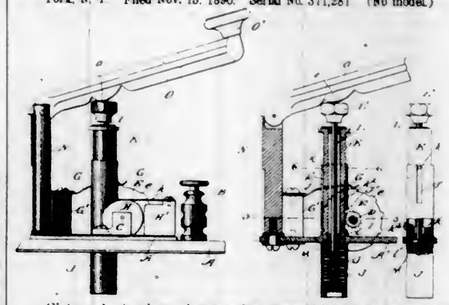
Claim.—1. A car-coupling comprising a draw-head having link and pin openings, an offset 16, having a hood 18, beveled at *a*, the lift-arm 19, pivoted in the offset and having a recess 20, the pin 21, pivoted at its upper end in said recess, the spring 24, and means for releasing the said pin when set for coupling, substantially as set forth.

2. A car-coupling comprising a draw-head having a channel 15 in the bottom of its link-opening, a pin-opening 22, a pin-supporting shoulder at the upper end of said opening, a spring-pressed buffer-block 26, the forward throw of which terminates in rear of the pin-opening, the link-raiser 12, having a cranked portion 14 resting in the channel 15, the lift-arm 19, the pin 21, and spring 24, substantially as set forth.

3. In a car-coupling, the combination, with a draw-head provided with pin-apertures, of a lift-arm pivoted at one end upon the draw-head, a coupling-pin pivoted at its upper end in the said arm, and a buffing-needle held to slide longitudinally in the draw-head and adapted for for engagement with the said pin, substantially as shown and described, whereby the pin, when elevated, is unseated by the opposed draw-head striking the needle, as and for the purpose set forth.

4. In a car-coupling, the combination, with a draw-head provided with pin-apertures and a recess in the forward wall of the said apertures, of a lift-arm pivoted near one end over the upper face of the draw-head, a spring-pressed coupling-pin pivoted near its upper end in the lift-arm and adapted, when raised, to be seated in the recess of the wall of the upper pin-aperture, and a buffing-needle held to slide longitudinally in the draw-head, one end of which needle projects beyond the front face of the draw-head, while the other end extends within the said recess to an engagement with the coupling-pin, as and for the purpose set forth.

447,166. TELEGRAPH-TRANSMITTER. SAMUEL W. SMITH, New York, N. Y. Filed Nov. 13, 1890. Serial No. 371,281. (No model.)



Claim.—1. A telegraph-transmitter comprising a revoluble shaft carrying sending mechanism of the character described and having a pinion fixed thereto, a slotted tube arranged opposite the pinion, a spring-pressed shaft mounted in the tube and having one side formed into a rack to engage the pinion, and means for closing the circuit through the shaft-pinion and sending mechanism during the upward movement of the shaft, substantially as shown and described.

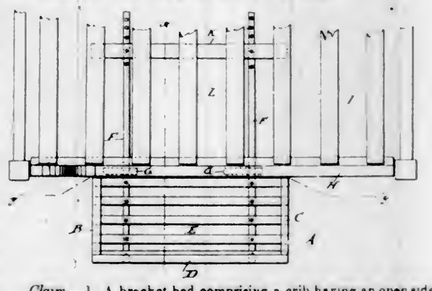
2. The combination, with the shaft having sending mechanism thereon and having a pinion fixed thereto, of a vertical spring-pressed hollow shaft having a rack thereon to engage the pinion, a rod extending through the hollow shaft and insulated therefrom, said rod having on its lower portion a washer to contact with the hollow shaft, and an insulating-washer between the rod-washer and the spring, substantially as shown and described.

3. A telegraph-transmitter comprising a revoluble shaft carrying sending mechanism of the character described, a pinion fixed to the shaft, a vertically-slotted tube arranged adjacent to the revoluble shaft, a spring-pressed hollow shaft mounted in the tube and having a rack formed thereon to engage the pinion, a rod extending vertically through the hollow shaft and provided at its lower portion with a washer to engage the hollow shaft and at its upper portion with a head, an insulating-washer between the rod-washer and the spring in the tube, and a lever for actuating the rod, substantially as shown and described.

4. The combination, with the revoluble shaft carrying sending mechanism, as shown, and provided with a pinion and with a disk having a laterally-extending pin, of a vertically-movable rack to engage the pinion and turn the shaft, a stop to engage the pin and limit the movement of the shaft, and means for releasing the stop by the downward movement of the vertical shaft, substantially as shown and described.

5. The combination, with the revoluble shaft carrying sending mechanism and provided with a pinion and with a disk having a laterally-projecting pin, of a vertically-movable rack to engage the pinion, a weighted stop pivoted in a support adjacent to the disk and provided with a hook to engage the pin of the disk and a bent arm fixed to the vertical rack and adapted to engage the rear end of the stop, substantially as shown and described.

447,167. BRACKET-BED. THOMAS E. SMITH, New Castle, Pa. Filed Sept. 6, 1890. Serial No. 364,179. (No model.)



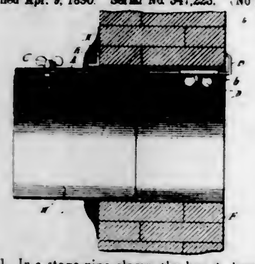
Claim.—1. A bracket-bed comprising a crib having an open side, transversely-extending spring-bars secured to the under side of the said crib and adapted to pass through suitable bearings on a regular bedstead, and a longitudinal bearing adjustably secured to the free ends of the said spring-bars, substantially as shown and described.

2. In a bracket-bed, the combination, with bearings adapted to

be secured to a regular bedstead, of spring-bars adapted to pass into the said bearings, a crib supported at the outer ends of the said spring-bars, and a longitudinal bar adjustably secured to the inner ends of the said spring-bars with each other, substantially as shown and described.

3. In a bracket-bed, the combination, with bearings open at one side adapted to be secured to the under side of the rail of a regular bedstead, of spring-bars adapted to pass into the said bearings, a crib supported at the outer ends of the said spring-bars, a longitudinal bar connecting the inner ends of the said spring-bars with each other, and buttons adapted to be pivoted to the rail of the bedstead adjacent to the bearings for locking the said spring-bars in place in the said bearings, substantially as shown and described.

447,168. STOVE-PIPE FASTENER. FRANK A. SNOW, David City, Nebr. Filed Apr. 9, 1890. Serial No. 347,223. (No model.)

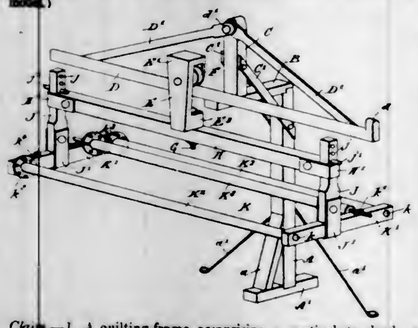


Claim.—1. In a stove-pipe clamp, the bar A, having a longitudinal slot *d* and an outwardly-projecting flange or hook B at its inner end and a screw or pin receiving aperture in its outer end, a second member or bar A', extending longitudinally along the bar A and having a slot *d'* at its inner end registering with slot *d* and a flange E at its outer end, a space being formed between the outer ends of the two bars or members for the introduction of a part of a stove-pipe after the device has been secured in place, and a screw or pin for locking the stove-pipe to the bar A at the apertured outer end thereof, substantially as set forth.

2. In a stove-pipe clamp, the bar A, having a longitudinal slot *d*, parallel side flanges *b b*, hooked or flanged inner end B, and the boss A^3, having screw-threaded aperture, the second member or bar A', having a slotted inner end extending between said flanges, the adjusting-screw passed through the said two slots, the flange E on the outer end of the member A', and the thumb-screw C for said threaded boss, substantially as set forth.

3. A stove-pipe clamp consisting in a bar A, having a flanged or hooked inner end B, a longitudinal slot *d*, and an aperture at or near its outer end, and two other superposed bars or members having longitudinally slotted inner ends registering with the slot in bar A and having parallel flanges at their outer ends, the set-screw passing through said slots, and the pin or screw to pass through the stove-pipe and the said end aperture, substantially as set forth.

447,169. QUILTING-FRAME FOR SEWING-MACHINES. JAMES N. TOUCHSTONE, Ida, Tex. Filed Oct. 22, 1890. Serial No. 368,884. (No model.)



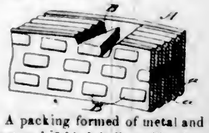
Claim.—1. A quilting-frame comprising a vertical standard, an arm extending at right angles to the standard, a vertical post mounted upon the arm and connected by braces with the standard, a track resting upon the free end of the arm and pivotally connected with the top of the post, said track having at one end a stop, as shown, a pulley-block adapted to run upon the track, and a quilt-holding frame suspended swivelly from the pulley-block, substantially as described.

2. A quilting-frame comprising a vertical standard, an arm extending laterally therefrom, a post mounted vertically upon the arm and connected by suitable braces with the standard, a bevel-edged single track resting upon the arm and pivotally connected with the upper end of the post, a pulley-block adapted to slide upon the track, and a quilt-holding frame adjustably suspended from the pulley-block, substantially as described.

3. A quilting-frame comprising a vertical standard, an arm extending laterally therefrom, a vertical post mounted on the arm and connected with the standard by braces, a track resting on the arm and having a stop at one end, braces secured to the track and pivoted to the post, a pulley-block adapted to run on the track, said block having its lower end extending beneath the track, a cross-beam swivelly connected with the pulley-block, and a quilt-holding frame adjustably suspended from the cross-beam, substantially as described.

4. A quilting-frame comprising a vertical standard having braces to secure it to a support, an arm extending laterally from the top of the standard, a post mounted on the arm and connected with the standard by braces which embrace the arm, a single track mounted on the arm and connected with the post by braces secured to the track near opposite ends and pivoted to the upper part of the post, a pulley-block mounted on the track, and a quilt-holding frame adjustably suspended from the pulley-block, substantially as described.

447,170. ROD-PACKING. JAMES WALKER, London, England. Filed Sept. 9, 1890. Serial No. 364,413. (No model.) Patented in England Mar. 9, 1888, No. 3,675.



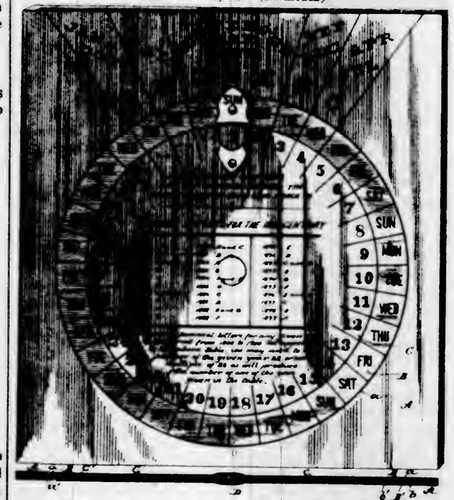
Claim.—1. A packing formed of metal and fibrous strands interwoven into a sheet and folded bellows like into layers, and metallic pins embedded in the packing and exposed on the working-face thereof, the folds to open to the steam, substantially as set forth.

2. A packing-strip formed of asbestus and wire strands interwoven into a sheet, said sheet being folded bellows like into a strip of suitable length, and the metallic pins embedded in the working-face of the strip, the folds to open to the steam, substantially as set forth.

3. A packing-strip formed of a sheet of interwoven asbestus and wire folding bellows like into a strip, an external coat of rubber over said strip, and metal pins embedded in the working-face of the strip, substantially as set forth

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447,171. CALENDAR. JAMES D. WATTERS, Belair, Md. Filed Nov. 29, 1890. Serial No. 373,041. (No model.)



Claim.—1. A calendar having a section, as A, provided with the characters, substantially as described and shown, designed and adapted to exhibit to the eye the true relation of the first days of the several calendar months to each other with reference to the ordinary days of the week, and also to exhibit to the eye the relation of the first day of the several calendar months of every year to Sunday, substantially as described, and for the purposes set forth.

2. The improved calendar, substantially as described, comprising a section provided with the characters or symbols adapted and designed to exhibit to the eye the true relation of the first days of the several calendar months to each other, and also the true relation of the first days of the several calendar months of every year to Sunday, a second section provided with the days of the week arranged to register with the characters or symbols on the first section, and a third section provided with the days of the month arranged to register with the said days of the week and with the said characters or symbols on the first-named section, the said sections being movable relatively, substantially as shown and described, and for the purposes specified.

3. A calendar, substantially as described, comprising a section provided with the dominical letters or their equivalents, a section provided with the days of the week arranged to register with the said dominical letters, and a section provided with the days of the month arranged to register with the days of the week, the said sections being movable relatively, substantially as described, and for the purposes specified.

4. The improved calendar herein described, comprising a section provided with the dominical letters or their equivalents, a section provided with the days of the week arranged to register with the dominical letters, and a section having thirty-one numbers or subdivisions and arranged to register with the days of the week, the said sections being movable relatively to each other, all substantially as and for the purposes set forth.

5. A calendar, substantially as described, consisting of a main section provided with the dominical letters, a disk-section turning in said main section and provided with the days of the week arranged in a number of series following each other, and a disk-section concentric with the first-named disk and provided with numbers from one to thirty-one, such disk-sections being movable independently of each other and of the main section, all substantially as and for the purpose set forth.

6. A calendar, substantially as described, provided with the dominical letters and having the names of the months arranged adjacent to the said dominical letters and in the fixed relation to said letters substantially as described and shown

7. In a calendar, the combination of the main section having the dominical letters and provided with the names of the months arranged adjacent to and in relation to said letters substantially as described, and the movable sections, one section having the days of the week arranged to register with the dominical letters and the other section having numbers arranged to register with the days of the week, all constructed and adapted for use substantially as and for the purposes set forth.

8. The calendar herein described, consisting of the main section having the dominical letters and provided adjacent thereto with the names of the months arranged in relation to the said letters substantially as shown, the movable disk B, having the names of the days of the week arranged to register with the dominical letters and the movable disk C, having the numbers of the days of the month arranged to register with the days of the week, all substantially as and for the purposes set forth.

9. The calendar consisting of the main section A, having a recess *a* and groove *a'*, the disk B, having a flange *b*, fitted to said groove *a'* and a groove *b'*, and the disk C, having a flange C' to fit the groove *b'*, all substantially as and for the purpose set forth.

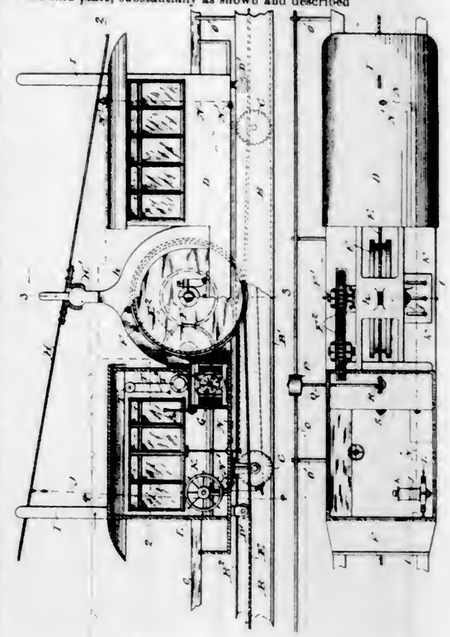
447,172. ELEVATED RAILROAD. DAVID B. WEAVER, Hopewell, Huntingdon County, Pa. Filed Mar. 1, 1890. Serial No. 342,186. (No model.)

Claim.—1. In a cable railway of the character described, the combination of a drum, bearings for the same, one of which is laterally adjustable, and a housing for the drum having an opening in one side, substantially as and for the purpose set forth.

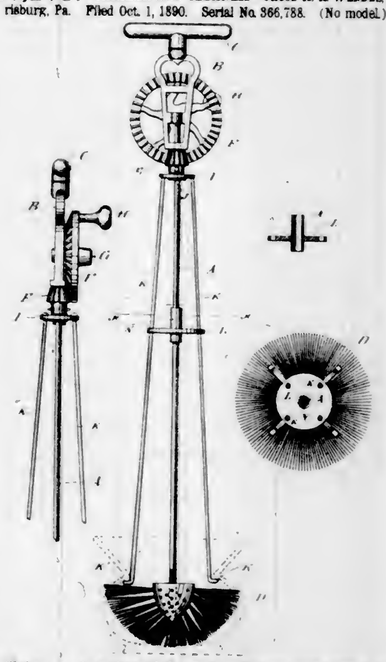
2. In an elevated railroad, the combination, with a car, of a plate held above the top of the car and pivoted in its middle to a suitable bearing on the said car, substantially as shown and described.

3. In an elevated railroad, the combination, with a car, of a plate held above the top of the car and pivoted in its middle to a suitable bearing on the said car, and guide-posts held on the ends of the said car and passing through the ends of the said plate, substantially as shown and described.

4. In an elevated railroad, the combination, with a car, of a plate held above the top of the car and pivoted in its middle to a suitable bearing on the said car, guide-posts held on the ends of the said car and passing through the ends of the said plate, ropes connected with the ends of the said plate, and a drum mounted in the said car and adapted to wind up or unwind the said ropes to change the position of the said plate, substantially as shown and described



447,173. CARRIER AND CLEANER. JACOB H. R. WENDEL, Harrisburg, Pa. Filed Oct. 1, 1890. Serial No. 366,788. (No model.)



Claim.—1. A carrier and cleaner for spittoons, comprising a rotary brush-carrying shaft, a brush, and a series of lifting or carrying arms having a connecting-plate at their upper ends, through which said shaft

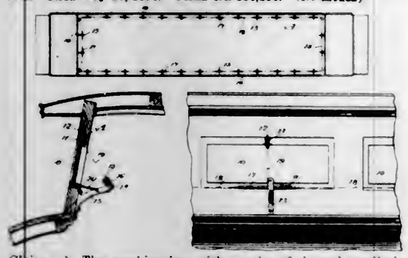
loosely passes, the lower ends of the lifting-arms extending adjacent to the brush, substantially as set forth.

2. In a carrier and cleaner, the combination, with a handled frame, of a rotary brush-carrying shaft mounted to turn therein, a plate held loosely on the said shaft, and a series of arms projecting from the said plate and adapted to engage the spittoon or other receptacle at the neck, substantially as shown and described.

3. In a carrier and cleaner, the combination, with a handled frame, of a shaft mounted to turn therein, a plate held loosely on the said shaft, a series of arms projecting from the said plate and adapted to engage the spittoon or other receptacle at the neck, and a disk mounted to slide on the said shaft and through which pass the said arms, the said disk serving to open and close the arms, substantially as shown and described.

4. In a carrier and cleaner, the combination, with a handled frame, of a shaft mounted to turn therein, a brush secured on the outer end of the said shaft, a bevel-pinion secured on the said shaft, a bevel gear-wheel in mesh with the said pinion, a plate held loosely on the said shaft, arms projecting from the said plate, and a disk through which pass loosely the said arms and which is fitted to slide on the said shaft to open and close the said arms, substantially as shown and described.

447,174. TRANSOM-LIFTER. JOHN L. BAKER, Greensborough N. C. Filed July 29, 1890. Serial No. 360,259. (No model.)

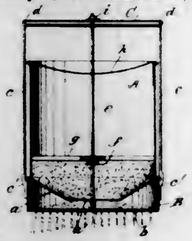


Claim.—1. The combination, with a series of pivoted ventilating-windows, each window provided with a latch adapted for engagement with a keeper, of horizontal shifting bars held to slide laterally beneath the windows, chains, ropes, or cords connecting the bars and the window-bolts, a chain or rope connection between the shifting bars and a shifting lever attached to the connecting chains or ropes of the bars, as and for the purpose specified.

2. The combination, with a series of pivoted windows provided with spring-latches adapted for engagement with keepers, brackets secured beneath the windows, and a shifting bar held to slide in each bracket, of a chain or rope connecting each shifting bar with one of the window-bolts, chains connecting all of the shifting bars, and a shifting lever attached to the connecting-chains of the bars, as and for the purpose set forth.

3. The combination, with a series of pivoted window-sashes provided with spring-latches adapted for engagement with keepers, and a bracket located beneath the opening in which each sash is pivoted, the said brackets being each provided with a grooved pulley and a friction-wheel beneath the pulley, and a spring secured at one end to each bracket and at its opposite end to the sash in front of the bracket, of a bar held to slide in each bracket in engagement with the friction-roller thereof, a chain or cord connected at one end with each of the bolts passed over the grooved pulley of a bracket and secured at its opposite end to a shifting bar, chains connecting the various shifting bars, and a shifting lever connected with the said chains of the shifting bars, substantially as and for the purpose set forth.

447,175. POWDER-DISTRIBUTER. MERRITT C. BARDEN, West Pawlet, Vt. Filed July 15, 1890. Serial No. 358,789. (No model.)



Claim.—1. A hand implement of the character described, comprising the open two-part rectangular frame A A′, the boring-bit mounted in the part A′ at right angles to the part A, an operating mechanism, and the auxiliary sliding frame P, sliding vertically on the side bars of the part A and having an outwardly-projecting bracket R, provided with clamping-plates in front of and at right angles to the said boring bit, substantially as described.

2. A hand implement of the character described, comprising the open two-part rectangular frame A A′, the part A being provided in its side bars with apertures, the boring-bit mounted in the part A′ at right angles to the part A and provided with an operating mechanism the vertically-sliding auxiliary frame P, having side arms P^2, provided at their lower ends with lugs P^3, engaging said apertures, and a bracket projecting from said auxiliary frame and having a plate at its outer end at right angles to the boring-bit, substantially as described.

3. A hand implement of the character described, comprising the two-part open frame A A′, the bit mounted in the part A′ and provided with operating mechanism, the auxiliary frame P on the part A, provided with an outwardly and upwardly projecting bracket having a plate Q at its outer end at right angles to the bit, a lever R, pivoted between its ends to the bracket, passed through a slot Q^2 therein and having a plate R^2 at its outer upper end and a handle portion at its lower end, and means for locking the said lever, substantially as described.

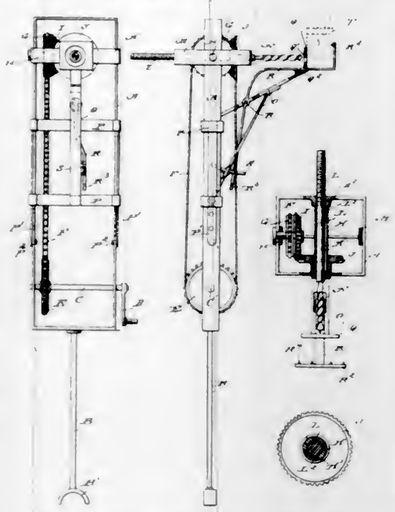
4. An implement of the character described, consisting in the two part open frame A A′, the rod B at the lower end of part A and having a crook B′, the main drive-shaft C, having a wheel, the wheel G in the upper part A′ of the frame, provided with a gear I and driven from the wheel on shaft C, the nut A^2 in one side of the part A′, the sleeve K, crossing the part A′ in the line with the nut and provided with a gear J, meshing with gear I, the threaded-bit shank L, passing through said sleeve and nut, a spline and groove connecting between

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Claim.—1. The combination, with a pan having a cylindrical side wall and a foraminated bottom and a transverse handle for said pan connected thereto by vertical limbs, of a cylindrical vessel having a dished and centrally-apertured bottom and loosely embraced by the limbs of the handle and concentrically pivoted in the pan, substantially as set forth.

2. The combination, with a pan having a cylindrical side wall and a foraminated bottom, a transverse handle for the pan, and two parallel limbs that retain the handle above the pan, of a cylindrical vessel of a less diameter than the pan, having a dished and centrally apertured bottom, a top cross-bar fixed in the cylindrical vessel, having a central vertical perforation, a lower cross-bar secured in the cylindrical vessel, and an axial pivot-rod extending from the cross-handle of the pan down through the top cross-bar of the vessel and having engagement with the lower cross-bar of said vessel, substantially as set forth.

447,176. BORING-MACHINE. GEORGE L. CAMPBELL, Williamsport, Pa., assignor to Chet S. Hill and J. B. H. Trainer, both of same place. Filed May 3, 1890. Serial No. 350,430. (No model.)



Claim.—1. A hand implement of the character described, comprising the open two-part rectangular frame A A′, the boring-bit mounted in the part A′ at right angles to the part A, an operating mechanism, and the auxiliary sliding frame P, sliding vertically on the side bars of the part A and having an outwardly-projecting bracket R, provided with clamping-plates in front of and at right angles to the said boring bit, substantially as described.

2. A hand implement of the character described, comprising the open two-part rectangular frame A A′, the part A being provided in its side bars with apertures, the boring-bit mounted in the part A′ at right angles to the part A and provided with an operating mechanism the vertically-sliding auxiliary frame P', having side arms P^2, provided at their lower ends with lugs P^3, engaging said apertures, and a bracket projecting from said auxiliary frame and having a plate at its outer end at right angles to the boring-bit, substantially as described.

3. A hand implement of the character described, comprising the two-part open frame A A′, the bit mounted in the part A′ and provided with operating mechanism, the auxiliary frame P on the part A, provided with an outwardly and upwardly projecting bracket having a plate Q at its outer end at right angles to the bit, a lever R, pivoted between its ends to the bracket, passed through a slot Q^2 therein and having a plate R^2 at its outer upper end and a handle portion at its lower end, and means for locking the said lever, substantially as described.

4. An implement of the character described, consisting in the two part open frame A A′, the rod B at the lower end of part A and having a crook B′, the main drive-shaft C, having a wheel, the wheel G in the upper part A′ of the frame, provided with a gear I and driven from the wheel on shaft C, the nut A^2 in one side of the part A′, the sleeve K, crossing the part A′ in the line with the nut and provided with a gear J, meshing with gear I, the threaded-bit shank L, passing through said sleeve and nut, a spline and groove connecting between said sleeve and shank, the sliding auxiliary frame P, having the bracket O, provided with plate Q, and clamping-lever R, having a plate R^2, substantially as described.

447,177. REGULATOR FOR ELECTRIC CIRCUITS. THOMAS M. EDWARDS, New London, Conn., assignor to Thomas W. Williams, same place. Filed Nov. 5, 1890. Serial No. 370,365. (No model.)



Claim.—1. In an electric regulator, substantially as described, the combination of the liquid-resistance receptacle, the pivoted lever having the locking-screw handle and the contact end, and the contact-plate immersed in the liquid; said lever being adapted to be moved upon or away from the contact-plate in the liquid or out of the liquid, all substantially as and for the purpose set forth.

2. In a regulator for electric currents, the combination, with the liquid resistance receptacle, of the horizontal shaft, the levers pivoted on said shaft and having the locking-handles and the contact ends, the contact-plates, and circuits including the respective levers and corresponding contact-plates, as set forth.

3. In a regulator for electric currents, the combination of the liquid-resistance receptacle, the pivoted lever provided with the upper locking device and the lower contact end, the tension-spring adapted to contact with the lever and connected with the circuit to be controlled, and the contact-plates immersed in the liquid and connected with the line, all substantially as set forth.

4. In a regulator for electric currents, the combination of the liquid-resistance receptacle having a suitable back for supporting the connections, the axis, controlling-levers mounted on the axis and provided with upper locking-screws and the lower insulated contacts ends, the contact plate or plates in the bottom of the receptacle adapted to connect with the line, the binding-posts and indicator-lamps on the back, and electrical connections between the contact ends of the respective controlling-levers and the corresponding lamps and binding-posts, all substantially as set forth.

5. The combination of the liquid-receptacle having the curved bottom provided with the metallic lining and the contact-plates, the lever, and the axis of said lever, the bottom being formed in an arc slightly eccentric to the arc in which the end lever moves, whereby the said lever withdraws gradually from the bottom, as explained.

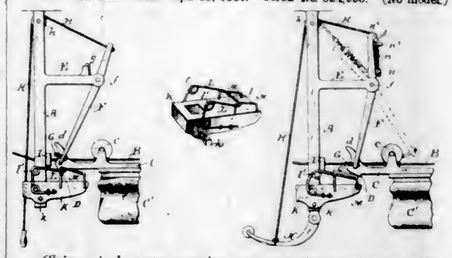
6. In a regulator for electric circuits, the combination of the liquid-receptacle, a moving contact-lever journaled in the receptacle and having the transverse pin or projection, the curved contacting and tension spring fixed to the receptacle and having the bifurcated end bearing on the transverse pins on opposite sides of the movable lever, and the contact in the liquid-receptacle, all substantially as set forth.

7. In a regulator for electric circuits, the combination of the resistance-medium movable lever having the transverse pin or projection and the curved contact-spring provided with the additional curved face-spring by which it is adapted to contact with the transverse pin of the movable lever, substantially as and for the purpose set forth.

8. In a regulator for electric circuits, the combination of the liquid-receptacle or other resistance medium, the horizontal shaft capable of being rotated in its bearings, a series of controlling-levers mounted upon said shaft and each provided with a suitable device for locking it upon the shaft, and the contacting tension-spring bearing against the levers, whereby said lever sand the circuits controlled by them may be manipulated independently or in groups, substantially in the manner hereinbefore specified.

9. In an electric-lighting system, the combination of the several series of lights, the secondary circuits including said lights, the converters supplying said secondary circuits, the primary circuits including the respective converters, and regulators interposed in the respective primary circuits and consisting of the liquid-resistance receptacles, the horizontal shaft, the contact-levers mounted on the shaft, the terminals in the receptacle with which the levers are adapted to contact connection between said terminals and ends of the primary circuits curved contact-springs mounted on the receptacle and bearing constantly against the levers, connection between the curved springs and the other ends of the respective primary circuit, and the locking-screw handles carried by the respective levers, all substantially as and for the purpose set forth.

447,178. STORE-SERVICE APPARATUS. JAMES R. HAIGHT, Adrian, Mich. Filed Sept. 26, 1889. Serial No. 324,993. (No model.)



Claim.—1. In a store-service apparatus, the combination, with a way, a carriage traveling thereon, and a suitable propelling device, of a retarding-spring engaging the carriage and adapted to follow and retard its outward movement when acted upon by the propelling device, and adjustable mechanism for releasing the carriage when a predetermined propelling-power has been exerted, substantially as shown and described.

2. In a store-service apparatus, the combination, with a way, a carriage traveling thereon, a pivoted propelling-lever engaging with said carriage, an operating-cord connected directly thereto, and a guide-pulley arranged to cause the lever and cord to assume substantially a straight line, of a retarding device engaging the carriage and adapted to follow and retard its outward movement when acted upon by the propelling-lever, and mechanism for releasing the carriage when a predetermined propelling-power has been exerted, substantially as shown and described.

3. In a store-service apparatus, the combination, with a way, a carriage traveling thereon, a pivoted propelling-lever provided with an operating-cord and engaging with the carriage, and a concussion spring adapted to engage the propelling-lever, of a retarding-spring provided with a catch engaging the carriage and adapted to follow and retard its movement when operated upon by the propelling-lever and mechanism for releasing the carriage when said retarding-spring is under a predetermined tension, all constructed, arranged, and operating substantially as shown and described.

4. In a store-service apparatus, the combination, with a standard, a way, a carriage traveling thereon and provided with hooks at its ends, an arm projecting from the standard, and a propelling-lever pivoted to said arm and provided with an operating-cord and adapted to engage with the carriage, of an adjustable block secured to the standard, a retarding-spring L, secured to said block and having the catch portion *l* adapted to engage the hook on the carriage, and the inclined guards M, extending over the catch portion of the retarding-spring, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

5. The combination of a standard or station-post having a projecting arm, a lever pivoted to the arm and provided on its lower free end with a loop adapted to engage the carriage, a pulling or operating cord connected directly to the upper end of the lever, and a guide-pulley mounted in the standard or station-post, over which the pulling or operating cord passes, substantially as shown and described.

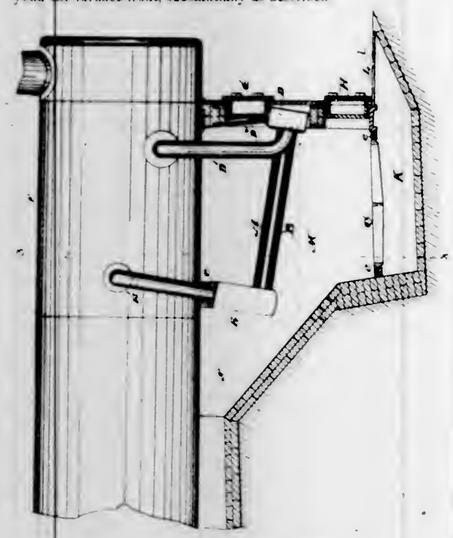
447,179. FURNACE. MELVILLE C. HAWLEY, St. Louis, Mo. Filed Sept. 6, 1889. Serial No. 323,183. (No model.)

Claim.—1. In a combined downward and upward draft furnace, the combination of the lower upward-burning grate, an upper downward-burning grate, an intermediate combustion-chamber, and an escape-flue leading from said combustion-chamber, the bars in said upper grate being spaced widely apart, as described, and at each end thereof connecting with a water-chamber in turn connected with the boiler, and the bars in said lower grate being spaced closer together than are the bars of said upper grate, substantially as described.

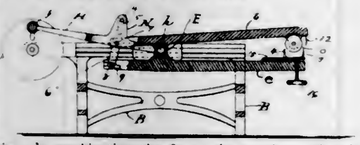
2. In a combined downward and upward draft furnace, the combination of the lower upward-burning grate, an upper downward burning grate, an intermediate combustion-chamber, and an escape flue leading from said combustion-chamber, the bars in said upper grate being spaced widely apart and forming a series of zigzag spaces as described, and at each end thereof connecting with a water-chamber in turn connected with the boiler, and the bars in said lower grate being spaced closer together than are the bars of said upper grate, substantially as described.

3. In a combined downward and upward draft furnace, the combination of the lower upward-burning grate, an upper downward burning grate, an intermediate combustion-chamber, and an escape-flue leading from said combustion-chamber, the bars in said upper

grate being spaced widely apart and forming a series of zigzag spaces, as described, and at each end thereof connecting with a water-chamber in turn connected with the boiler, and the bars in said lower grate being spaced closer together than are the bars of said upper grate, and the ash-pit extending below the floor of the boiler-room and beyond the furnace-front, substantially as described



447,180. LEATHER-STAKING MACHINE. EDWARD HAYES, Lynn, Mass., assignor of three-fourths to James T. Lennox, John J. Lennox, and Thomas Dowling, all of same place. Filed July 9, 1889. Renewed Jan. 31, 1891. Serial No. 379,790. (No model.)



Claim.—In combination, the frame, the member *c*, the pivoted member *b*, the staking devices on said members, the pitman H for reciprocating the said members, and means for operating the member *b* on its pivot, consisting of a pivoted lever 6, pivotally connected to the pitman and to the member *b*, substantially as described

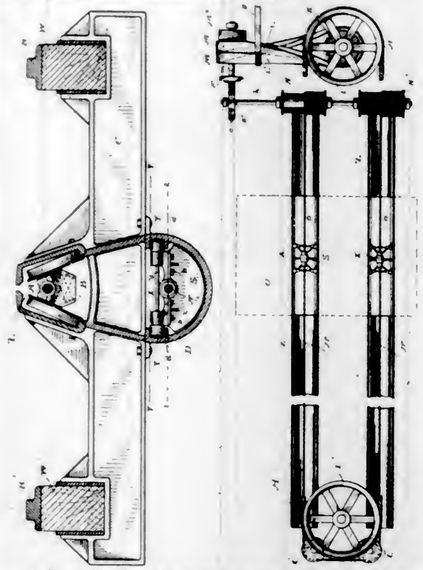
447,181. APPARATUS FOR CLEANING RAILWAY-CONDUITS. WILLIAM HECKERT, Yonkers, N. Y. Filed July 20, 1889. Renewed Feb 3, 1891. Serial No. 379,975. (No model.)

Claim.—1. In combination with a conduit for railways, a slowly-reciprocating cable in the bottom of said conduit and scrapers attached to said cable, together with suitable driving-gear for imparting reciprocating motion to said cable, substantially as described.

2. In combination with a conduit for railways, a slowly-reciprocating cable in the bottom of said conduit, trucks provided with rollers which run upon rails attached to said conduit, and which trucks are attached to and support the said cable, together with scrapers attached to said truck, and driving-gear which imparts reciprocating motion to the cable and trucks, substantially as described.

3. In combination with a conduit for railways, a slow-moving cable in the bottom of said conduit, suitable trucks provided with rollers which run upon rails attached to said conduit, and which trucks are attached to and support the said cable, and additional horizontal rollers on said trucks, which bear against the sides of the conduit, together with suitable scrapers attached to said trucks and suitable driving-gear which imparts motion to the cable and trucks, substantially as described.

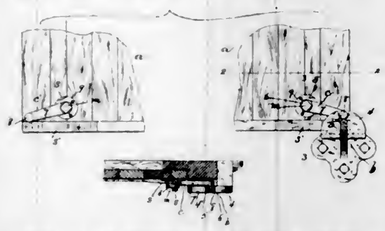
4. In combination with a conduit for railways, a slowly-reciprocating cable in the bottom of said conduit and scrapers attached to said cable, together with driving-gear for imparting reciprocating motion to said cable, and openings in the bottom of said conduit placed at distances apart slightly less than the distance through which the cable reciprocates, through which openings the dirt collected by said scrapers may drop, substantially as described.



5. In combination with a conduit for railways, a slow-moving cable in the bottom of said conduit and suitable scrapers attached to said cable, together with guide-sheaves for said cable, placed at one end of a road or of a section thereof, a drum at the other end of the road or section, onto which one end of the cable winds as the other end unwinds, and suitable driving-gear for revolving said drum alternately in opposite directions, substantially as described

6. In combination with a conduit for railways, a slow-moving cable in the bottom of said conduit and suitable scrapers attached to said cable, together with guide-sheaves for said cable, placed at one end of a road or of a section thereof, a drum at the other end of the road or section, onto which one end of the cable winds as the other unwinds, openings in the bottom of said conduit at suitable distances apart, and suitable driving-gear for revolving the drum alternately in opposite directions sufficiently to give the scrapers a reciprocating motion through a distance slightly in excess of the distance between any two openings, substantially as described.

447,182. CAR-DOOR LATCH. OLIVER P. HIX, Rockland, Me., assignor to the Dunham Manufacturing Company, Boston, Mass. Filed May 23, 1890. Serial No. 352,817. (No model.)

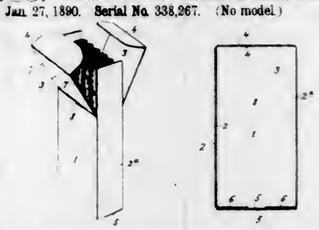


Claim.—1. The combination of the pivot 6, adapted to be attached to the side of a car-door, the latch composed of the shank 7, adapted at one end to receive and turn upon the said pivot and provided at the other end with the outwardly-projecting finger 8, and the ear *b*, adapted to be secured to the car and provided with a socket formed to receive said finger and prevent movement thereof in either direction, and with a guiding-edge formed to raise the finger to the socket during a movement of the car-door, as set forth.

2. The combination of a car-door, a latch pivoted thereto and composed of a shank having at its free end an outwardly-projecting finger, an ear on the car, having a finger-receiving socket and a finger-guiding edge, and stops on the car-door above and below said latch, whereby the movements of the latter are limited, as set forth.

3. The combination of a car-door, two latches pivotally connected therewith, one near the front and the other near the rear edge of the door, stops on the door, whereby the movements of said latches are limited, and an ear affixed to the car and provided with a socket, arranged to engage one latch when the door is opened and the other when the door is closed, and with two guiding-edges at opposite sides of said socket, as set forth.

447,183. CIGARETTE-BOX. ERNEST A. HORN, Richmond, Va. Filed Jan. 27, 1890. Serial No. 338,267. (No model.)



Claim.—1. The herein-described blank for cigarette-boxes, consisting of the side portions 1, the end portions 2 2^a, the two corresponding movable portions carried by the sides 1 and separated from the end portions 2 2^a at 7, the flaps 4, carried by the movable portions 3, and the bottom-forming flaps, substantially as shown and described.

2. A cigarette-box, substantially as herein described, having the bottom, ends, and a portion of the sides permanently secured together and the movable corresponding similarly-formed spring-covers 3, provided with overlapping flaps 4 and carried by the said sides 1, substantially as and for the purposes set forth.

3. A cigarette-box, substantially as herein described, having the pair of movable inclosing covers 3, connected to the sides and forming the top and a portion of the sides, substantially as and for the purpose set forth.

447,184. RAZOR-STROP. CHARLES L. HOLLAND, Revere, Mass. Filed Nov. 5, 1889. Serial No. 329,306. (No model.)



Claim.—1. As an improved article of manufacture, a razor-strop consisting of a flattened core-piece having the yielding cushions secured to its opposite sides and inclosed by a seamless woven tube of fibrous material coextensive with the length of the cushions on the core-piece, and having its meshes filled with cement or other proper filling material effective for stropping razors, substantially as described.

2. A razor-strop consisting of the flattened core-piece having the yielding cushions secured to its opposite sides and inclosed by a flexible woven tube of fibrous material filled with cement effective for stropping razors, and having one of its exterior sides provided with an attached soft leather razor-finishing sheet, substantially as described.

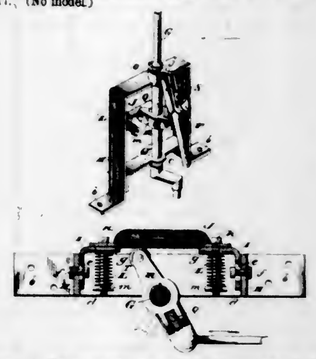
447,185. CORKSCREW. CARL HOLLWEG, Barmen, Germany. Filed Oct. 6, 1890. Serial No. 367,247. (No model.)



Claim.—1. A corkscrew having a handle composed of four pieces connected at their ends to form a toggle-joint, and provided with gears, in combination with a screw-shank secured to the handle at one of the joints, substantially as described.

2. A corkscrew having a handle composed of four pieces connected at their ends to form a toggle-joint, and provided at diagonal or opposite corners with double joints and intermeshing gears, and a screw-shank secured to the handle at one of the double joints, substantially as described

447,186. SAFETY-SWITCH. HENRY N. HOPKINS, Taunton, and EMERY H. BRYANT, New Bedford, Mass. Filed Apr. 3, 1883. Serial No. 90,517. (No model.)



Claim.—1. The combination, with the switch-stand, the switch-operating rod, and target-shaft, of an engaging device carried by the shaft, a yielding engaging device connected with the stand, and a lever and connections to relieve the target-shaft from the strain of the yielding engaging device.

2. The combination, with a switch-rod and a switch-stand provided with a yielding cross-bar, of a vertically-movable locking-bar adapted to rest in the same horizontal plane with the yielding cross-bar when the parts are in a locked position, and means for elevating the said locking-bar above the yielding cross-bar, substantially as and for the purpose set forth.

3. The combination, with a switch-rod and a switch-stand provided with a yielding cross-bar, of a vertical spindle journaled in the frame, a movable locking-bar keyed to the spindle, a handle for elevating the locking-bar, and means for locking the handle in a depressed position, all of the above parts combined as described.

4. The combination, with a switch-rod and a switch-stand provided with a yielding cross-bar adjustably secured thereto, of a vertical spindle journaled therein, a movable locking-bar keyed to the spindle and provided with a roller adapted to bear against the cross-bar, and a handle for elevating the locking-bar above the yielding cross-bar substantially as and for the purpose set forth.

5. The combination, with a switch-bar and a switch-stand provided with a cross-bar, springs for holding the cross-bar in place, and nuts for regulating the tension of said springs, of a spindle mounted in the stand, a collar secured to the spindle, a locking-bar made vertically adjustable on the spindle, a handle pivoted to said collar, a link connecting the handle and locking-bar and provided with a hasp, and a lock for holding the handle on the link, said handle being adapted to the hasp, substantially as set forth.

6. The combination, with a switch-stand, its operating-rod, and target-shaft, of a yielding locking-plate, an engaging device carried by the shaft and vertically movable to engage and disengage said locking-plate, and means for operating the said engaging device with reference to the locking-plate, substantially as set forth.

7. The combination, with a switch-stand, a switch-operating rod, and target-shaft, of an engaging device carried by the shaft, a spring-actuated engaging device upon the stand and aiding to complete the movement of the switch, and means to engage and disengage said devices.

8. The combination, with a moving rod connected with the switch-rails, of a spindle or crank-shaft adapted to operate said rod, a yielding locking-plate checking the rotation of the spindle, and an engaging part rotating with the spindle and thrown out of connection with the yielding locking-plate by the vertically-moving lever, substantially as set forth.

9. The combination of the standard or fixed parts, the spindle, and switch-operating rod with spring-actuated engaging parts, one of which is carried by the spindle and the other by the stand, so formed that the spring shall aid in the completion of the movement of the switch, and means whereby said switch or its lever may be relieved of the resistance offered by the spring engaging devices, substantially as set forth.

10. The combination of the standard, the spindle, and switch-operating rod with engaging devices which are brought together by a spring and one of which is carried by the spindle and the other by the stand, and a vertically-swinging lever adapted to disengage the engaging devices and permit the spindle to be freely revolved, substantially as set forth.

11. The combination, with a switch-stand, a switch-operating rod,

and a target-shaft, of a spring-actuated engaging device to lock the switch in either of its positions and to complete the movement of the switch.

12. The combination, with a switch-stand, a target-shaft, and a switch-rod, of an arm extending laterally from the target-shaft and a yielding device arranged to engage the outer end of said arm on the target-shaft and complete the movement of the target-shaft in either direction, substantially as set forth.

13. The combination, with a switch-stand, a rotary crank-shaft journaled therein, and a switch-rod connected with the crank of said shaft, of a spring-actuated device for locking the switch in either of its positions and for completing the movement of the switch, substantially as set forth.

14. The combination, with a switch-stand, a switch-operating rod, and a target-shaft, of a horizontally-yielding engaging device to complete the movement of the switch in either direction, and a lever for operating and locking the switch.

15. The combination, with a switch-stand, a switch-rod, and a target-shaft provided with a laterally-projecting arm, of an engaging device for completing the movement of the switch, and a lever for raising and lowering the arm on the target-shaft, substantially as set forth.

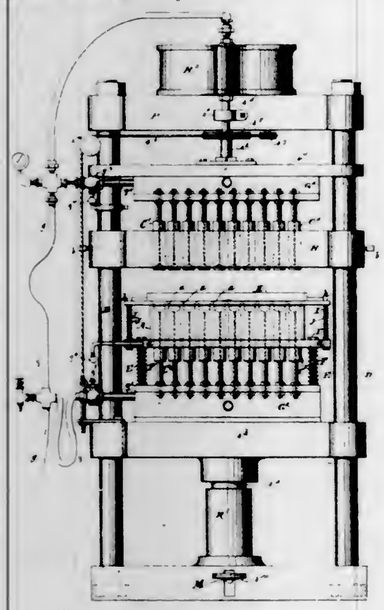
16. The combination, with a switch-stand, the switch-operating rod, and the target-shaft, of an engaging device carried by the shaft, and a sliding spring-actuated engaging device connected to the stand and moving transversely to and from the shaft, as and for the purpose set forth.

17. The combination, with the switch-stand, the switch-operating rod, and the target-shaft having a crank, of an engaging device carried by the shaft, a yielding engaging device carried by the stand, and a lever and connections to engage and disengage said devices and to turn the shaft.

18. The combination, with the switch-stand, the switch-operating rod, the crank-shaft, an engaging device checking the rotation of the shaft, of an engaging device rotating with the shaft, said devices being disengaged by movement of one of them independently of the rotary movement of the shaft, as set forth.

19. In a switch-stand, the combination, with the target-shaft, an engaging device carried by the shaft, and a yielding engaging device connected with the stand, of means for engaging and disengaging said devices, and means for varying the relative adjustment of said engaging devices and thereby adjusting the throw of switch-rail, substantially as set forth.

447,187. PRESS FOR SHAPING PLASTIC MATERIAL. WOLCOTT A. HULL and ARTHUR G. BOYER, New York, N. Y.; said Boyer assignor to said Hull. Filed Feb. 6, 1890. Renewed Jan. 22, 1891. Serial No. 378,626. (No model.)



Claim.—1. In a press, the combination of two series of end mold-sections or plungers having a relative movement, a fixed mold-plate, and a movable plate, substantially as specified.

2. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate, and springs intermediate of the movable plate and the engine for transmitting motion from the engine to said movable plate, substantially as specified.

3. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate having cavities fitting one of said series of end mold-sections or plungers, springs, and bolts for adjustably limiting the range of movement of the movable plate, substantially as specified.

4. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate, springs intermediate of the plate and the engine for transmitting motion from the engine to said movable plate, a receiver fitting round one end of the movable plate, and springs for supporting the receiver, substantially as specified.

5. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate, springs intermediate of the movable plate and the engine for transmitting motion from the engine to said movable plate, a receiver fitting round one end of the movable plate, springs for supporting the receiver, and adjustable bolts for limiting the movement of the receiver, substantially as specified.

6. In a press, the combination of two series of end mold-sections or plungers, two engines for imparting motion to the two series of end mold-sections or plungers, a connection between the valve of one engine and a part moved by the other engine, a valve controlling the engine last named, a fixed mold-plate, and a movable plate, substantially as specified.

7. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers having passages through them, gas-chambers with which said end mold-sections or plungers communicate, and valves at the operative extremities of said end mold-sections or plungers, substantially as specified.

8. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers having passages through them, gas-chambers with which said end mold-sections or plungers communicate, valves at the operative extremities of said end mold-sections or plungers, and valves at the inner extremities of said end mold-sections or plungers, the two sets of valves belonging to each series of end mold-sections or plungers being connected together, substantially as specified.

9. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers having passages through them, gas-chambers with which said end mold-sections or plungers communicate, valves controlling the ingress of gas to said chambers, and adjustable stops or tappets for effecting the opening of said valves, substantially as specified.

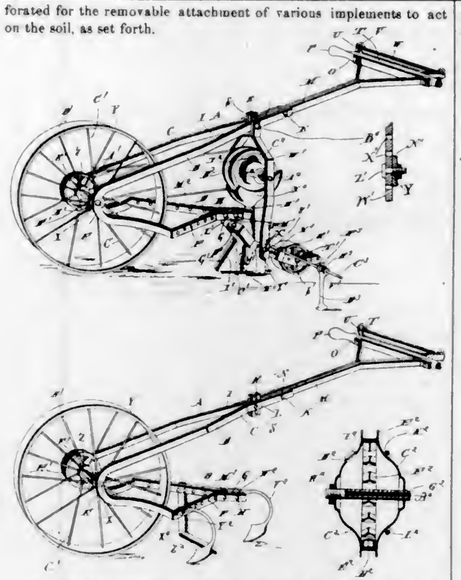
10. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers, and a movable plate having cavities provided at the upper end with beveled or flaring mouths having rectangular extremities which are separated by narrow edges, substantially as specified.

447,188. COMBINED CULTIVATOR AND SEED-DRILL. CHRISTOPHER C. HUNTER, Topeka, Kans. Filed Sept. 14, 1888. Serial No. 285,356. (No model.)

Claim.—1. In a hand-cultivator, the frame comprising the two similar bars B, separated from each other and arranged edgewise and bent at an intermediate point, so as to form the arms C D, the arms C extending upward on an incline and secured together at their outer upper ends, and the arms D extending rearward beneath the arms C in a horizontal plane and bent first outwardly to a point and then bent inwardly until the two arms closely approach each other, thereby forming somewhat the shape of a diamond in plan view, substantially as described.

2. In a hand-cultivator, the frame comprising the two similar bars B, separated from each other and arranged edgewise and bent at an intermediate point, so as to form the arms C D, the supporting-wheel journaled at the point where the bars B are bent, the arms C extending upward on an incline and secured together at their outer upper ends, the push-bar or handle secured to the arm C at that point, and the arms D extending rearward beneath the arms C in a horizontal plane and bent first outwardly to a point and then bent inwardly until the two arms closely approach each other, thereby forming somewhat the shape of a diamond in plan view, and the implements to act on the soil attached to the arms D, substantially as described.

3. In a hand-cultivator, the arms D, extending rearward from the supporting-wheel and first bent outwardly to a point and then bent inwardly till the ends of the arms touch, or nearly so, thereby forming an approximately diamond-shaped frame, the sides of which are perforated for the removable attachment of various implements to act on the soil, as set forth.



4. The hand cultivator or seeder having the push-bar and the cross-bar provided with handles at its ends, the yoke secured on the outer side of the cross-bar, and the strap connecting the arms of the yoke and arranged parallel with the cross-bar, the handles standing on each side and in advance of the strap, substantially as described.

5. The cultivator or seeder having the push-bar, the cross-bar secured to the rear end thereof, the yoke secured to the rear side of the cross-bar and having the rearward-diverging arms, the rings attached to eyes in the rear ends of said arms, and the strap stretched between and secured to the said rings, substantially as described.

6. The combination of the frame, the driving-wheel journaled in the front end of the frame, the furrow-opener attached to the rear ends of the frame, the arms N', having their front ends pivoted to the furrow-opener, the roller journaled between said arms, the arms or standards Y', having their upper ends pivoted to the handles and their lower ends attached to arms N', the bolt A^3, connecting said arms or standards Y', the drum or hopper journaled on said bolt, and devices for connecting the driving-wheel with the drum or hopper, substantially as described.

7. The combination of the frame having the rearward and upward extending arms C and the rearward-extending arms D with the driving-wheel journaled in the front end of the frame, the furrow-opener attached to the rear ends of arms D, the arms N', having their front ends pivoted to the furrow-opener, the roller journaled between said arms, the arms or standards W', having their upper ends pivoted to arms C and their lower ends attached to arms N', the bolt A^3, connecting said arms or standards Y, the drum or hopper journaled on said bolt, the pulley attached to the driving-wheel, and the endless belt connecting the same to the drum, substantially as described.

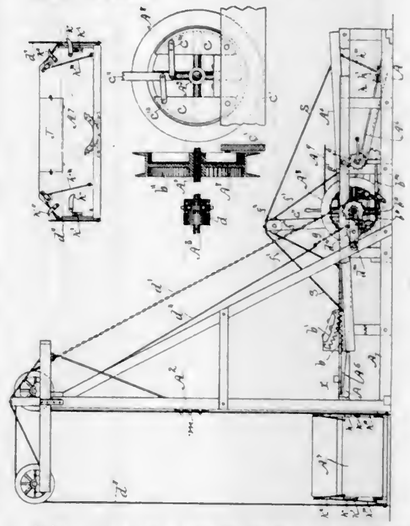
8. The drum or hopper comprising the separable sections having the overlapping rims, and the tubular sleeves secured in the center of one section, passing through the center of the other section, and the clamping-nut engaging threads on said projecting end of the sleeve substantially as described.

9. The combination, in a drum or hopper, of the separable sections having the overlapping rims provided with the seed-openings, the plate secured on one of the said rims, having the scale and the end stops, and the hand or pointer secured to one of the sections and adapted to sweep over the scale, substantially as described.

447,189. RED DYE. PAUL JULIUS, Ludwigshafen-on-the-Rhine, Germany, assignor to the Badische Anilin and Soda Fabrik, same place. Filed Oct. 31, 1890. Serial No. 369,959. (Specimens.) Patented in Germany Dec. 13, 1889, No. 52,596.

Claim.—As a new article of manufacture, the substantive red dye-stuff, (sodium salt of diamidodiphenylene ketoxime diazo-naphthionic acid,) which appears in the form of a dark-colored powder giving a brown streak on rubbing; it is readily soluble in both cold and hot water, yielding bluish-red solutions; it is almost insoluble in alcohol even on boiling; insoluble (or practically so) in benzine and ether; it dissolves in concentrated sulphuric acid, giving a blue solution, which on the addition of water gives a blue precipitate; chloride of calcium gives a brownish-red precipitate, and copper chloride a dark brownish-purple one, all substantially as hereinbefore described.

447,190. WAGON DUMP AND ELEVATOR. JOHN S. KIDD, Des Moines, Iowa. Filed Jan. 4, 1889. Renewed Aug. 11, 1890. Serial No. 361,638. (No model.)



Claim.—1. In a wagon dump and elevator, the combination of a dumping-platform adapted to receive and support a loaded wagon, said platform being fulcrumed to a stationary base or frame, an elevator-box suspended from a frame that rises from the base or frame that supports the platform, and a drum and ropes for transferring and utilizing the weight of the elevator-box to lift the dumping-platform and loaded wagon.

2. In a wagon dump and elevator, the combination of a dumping-platform adapted to receive and support a loaded wagon, said platform being fulcrumed to a stationary base or frame, an elevator-box suspended from a frame that rises from the base or frame that supports the dumping-platform, a drum and ropes for transferring and utilizing the weight of the elevator-box to lift the dumping-platform and loaded wagon thereon, and mechanism for tilting the dumping-platform after it is lifted.

3. In a wagon dump and elevator, the combination of a dumping-platform adapted to receive and support a loaded wagon, said platform being fulcrumed to a stationary base or frame, a floor or platform adapted to support horses hitched to the wagon, an elevator-box suspended from a frame that rises from the base or frame that supports the platform, and a chain and ropes for transferring and utilizing the weight of the elevator-box to lift the dumping-platform and loaded wagon.

4. The levers A^4, fulcrumed to the frame A and carrying the platform A^5, the floor A^6, the elevator-box A^7, and mechanism for operating said levers by the weight of the said box, for the purposes stated.

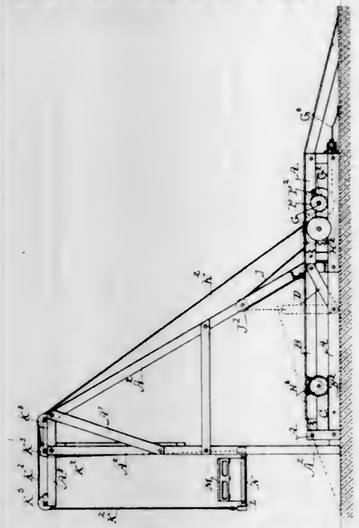
5. The frames A and A^2, the shaft A^3, having a fixed drum and fixed sprocket-wheels, an elevator-box suspended from the frame A^2 and connected with the sprocket-wheels by means of ropes and chains, and a rotating shaft *h*, connected with the shaft A^3 and the levers A^4 by means of chains arranged and combined to operate in the manner set forth, for the purposes stated.

6. The levers A^4, having fixed racks *b*, the platform A^5, having fixed toothed segments *b'*, the floor A^6, the shaft *f*, and the ropes *f'*, arranged and combined with a wagon dump and elevator to operate in the manner set forth, for the purposes stated.

7. The frames A and A^2, the shaft A^3, having a fixed drum and fixed sprocket-wheels *d*, the levers A^4, fulcrumed to the frame and provided with fixed racks *b*, the platform A^5, provided with fixed toothed segments *b'*, the elevator-box A^7, connected with the sprocket-wheels *d* by means of ropes and chains extended over pulleys at the top of the frame A^2, the shaft *f*, connected with the platform A^5 by means of ropes *f''* extended over pulleys *f'''*, and the shaft *h*, connected

with the shaft A^3 and the levers A^4 by means of ropes arranged and combined to operate in the manner set forth, for the purposes stated.

447,191. WAGON DUMP AND ELEVATOR. JOHN S. KIDD, Des Moines, Iowa. Filed Sept. 5, 1888. Renewed Aug. 20, 1889. Again renewed Aug. 11, 1890. Serial No. 361,640. (No model.)



Claim.—1. In a wagon dump and elevator, the combination of a platform-section that is supported upon traction-wheels at one end and hinged to a fixed platform at its other end by means of straight bars in such a manner that when the hinged end is elevated the complete section will be moved longitudinally toward an elevator-box, for the purposes stated.

2. The platform-section B, having fixed bearings B^3 and wheels B^2 at its front end and pivoted bars D at its rear end, in combination with the platform and elevator-frame and mechanism for lifting the rear end of the movable platform-section, for the purposes stated.

3. The ropes J, passed over pulleys J^3, attached to an elevator-frame, the rotating sleeve or shaft F, having fixed drums F^3, and the platform-section B, supported upon wheels at its front end and connected at its rear end with the fixed platform by means of bars D, arranged and combined to operate in the manner set forth.

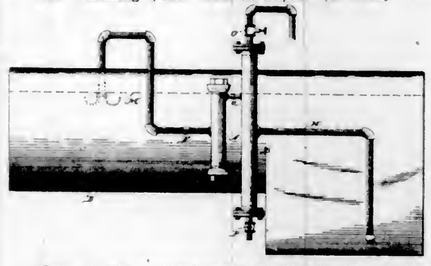
4. The combination of the shaft G, having a fixed drum G^3, and fixed gear-wheel H, the shaft F, having fixed drums F^3, the sleeve F, having fixed drums F^3, the ropes J, extended over pulleys J^3, attached to the elevator-frame, the platform-section B, mounted on wheels at its front end and connected with the fixed platform by means of bars D, and an elevator-box suspended from the top of the elevator-frame by means of ropes fixed to the drums F^3, to operate in the manner set forth, for the purposes stated.

5. A wagon dump and elevator comprising an elevator-frame and a wagon-platform fixed to the base of the elevator-frame, an adjustable platform-section supported upon traction-wheels at its front end, hinged to the fixed platform at its rear ends by means of bars that allow vertical adjustment and longitudinal motion to the adjustable section, an elevator-box suspended from the top of the elevator-frame by means of ropes and pulleys, a rotating shaft having fixed drums to which said ropes are attached to raise and lower the said box, mechanism for rotating shaft, and ropes extended over pulleys attached to the elevator-frame and connected with the shaft and also with the rear end of the adjustable platform-section, arranged and combined to operate in the manner set forth, for the purposes stated.

6. In a wagon dump and elevator, the combination of a suspended elevator-box and adjustable platform-section and mechanism for transferring the weight of the box to the said platform-section, for the purpose of elevating one end of a wagon on the platform-section.

7. The combination of an elevator-box suspended from the top of an elevator-frame by means of ropes, mechanism for operating the ropes to raise and lower the box, and an adjustable platform adapted to support a wagon and connected with the rope-operating mechanism for the purpose of dumping the contents of the wagon into the elevator-box.

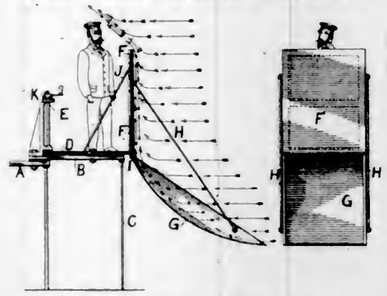
447,192. BOILER-CLEANER. SIDNEY C. LA HATT, Alexandria, Minn. Filed Aug. 4, 1890. Serial No. 360,928. (No model.)



Claim.—1. The combination, with a boiler, of a cleaner arranged in juxtaposition thereto and composed of two drums of unequal length, the shorter drum having communication at its ends with the longer drum at points distant from the ends of the said longer drum, and pipes connecting the top portion of the boiler with the middle of the shorter drum, and the lower portion of the boiler with the middle of the longer drum, respectively, substantially as set forth

2. The combination, with the boiler, of the two drums A and B, of unequal length, arranged with their middle in the plane of or above the horizontal medial line of the boiler, the shorter drum being connected at its ends with the longer drum at points distant from the ends thereof, a pipe connecting the middle of drum A with the top portion of the boiler, the upper end of the pipe extending below the water-line in the boiler, a pipe connecting the middle of drum B with the lower portion of the boiler, and blow-off cocks at the ends of drum B, substantially as described.

447,193. SHELTER FOR WATCHMEN ON VESSELS. HENRY L. MEADOWS, Wexford, Ireland. Filed Oct. 24, 1890. Serial No. 369,208. (No model.) Patented in England Aug. 21, 1889, No. 13,216.



Claim.—1. The combination, in a shelter for the watch or officer of a vessel, of an adjustable platform carrying an upright screen, and a concaved or scoop-shaped wind collector and deflector connected with the lower portion of the screen and arranged at an angle thereto, substantially as and for the purpose described.

2. The combination, in a shelter for the watch or officer of a vessel, of a horizontally-rotating platform, means for turning the platform, an upright screen secured to the platform, and a concaved or scoop-shaped wind collector and deflector pivotally connected with the lower portion of the screen and arranged at an angle thereto, substantially as and for the purpose described.

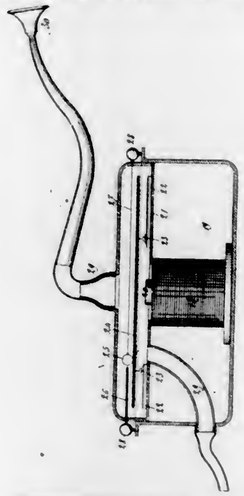
447,194. TELEPHONE. ERNEST J. P. MERCADIER, Paris, France. Filed May 26, 1890. Serial No. 353,162. (No model.) Patented in France May 30, 1888, No. 190,909; in England July 17, 1888, No. 10,363; in Germany Aug. 16, 1888, No. 49,213, and in Belgium Aug. 28, 1888, No. 83,066.

Claim.—1. In a telephone, a diaphragm tuned to respond to one rate of vibration only, substantially as described.

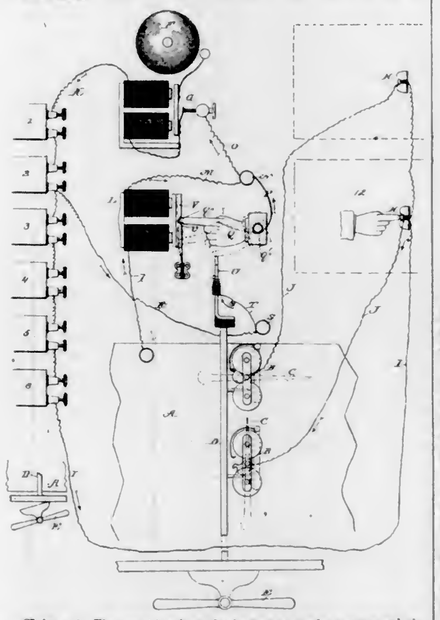
2. In a telephone, the combination of an electro-magnet and a diaphragm-armature in inductive proximity thereto, said diaphragm-armature being tuned to respond to one rate of vibration only, substantially as described.

3. In a telephone, a diaphragm supported at points located approximately in the nodal line or lines of the first harmonic of the said diaphragm, substantially as described.

4. In a telephone, a diaphragm free at its edge or edges resting upon points located approximately in the nodal line or lines of the first harmonic of its fundamental note, and a weight resting upon the diaphragm, adjustable in position thereon, for tuning the diaphragm to respond to vibrations of the first harmonic only, substantially as described.



447,195. ANNUNCIATOR AND INDICATOR SYSTEM. JOHN E. A. MILLER, San Francisco, Cal. Filed Sept. 5, 1890. Serial No. 364,082. (No model.)



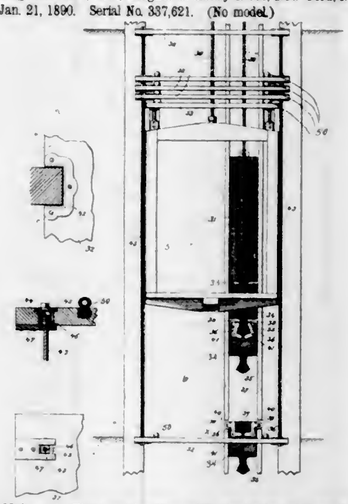
Claim.—1. The combination of a battery, a main or external circuit including the annunciator and the magnet L, having an armature provided with a bearing, as *v*, a switch composed of two movable members, one Q arranged to engage in bearing *v*, the other U arranged to be engaged by said member Q when released from the bearing *v*, said switch being included in a local circuit containing a signaling device

2. The combination of the indicators or pointers and their magnets, the pointer-adjusting bar, the battery, the annunciator-bell, the switch-magnet L, the switch composed of two movable members, one Q arranged to engage the armature of the magnet L and the other U arranged to be engaged by said member Q when released from engagement with the said armature, the said switch being included in a local circuit containing a signaling device.

3. In an electric signaling system, the combination, with the magnet L, having its armature provided with a bearing *v*, of the switch member U, movable longitudinally, the switch member Q having a point *q* arranged to engage in the bearing *v*, and arranged when released from said bearing *v* to engage the switch member U, the annunciator-bell, the indicator, the battery, and the necessary connecting-wires, all substantially as and for the purposes set forth.

4. In an electric signaling system, the combination of the wires and connections forming the main and short circuits, an audible signal in the short circuit, visual signals in the main circuit, a closer for the short circuit, including a magnet in the main circuit, a switch composed of two members Q and U, movable as described, and the indicator-adjusting bar D, arranged to engage switch member U and readjust the same and switch member Q to their normal positions in the movement of such bar D to readjust the pointers of the visual indicators, substantially as set forth.

447,196. HATCHWAY FOR ELEVATORS. JOHN J. MCBRIDE, Ridgefield Park, N. J., assignor to Henry I. Coe, New York, N. Y. Filed Jan. 21, 1890. Serial No. 337,621. (No model.)



Claim.—1. The combination, with the series of traveling doors of an elevator and with a counterpoise, of one or more supplementary weights constructed, substantially as described, with jaws on one member and foot on the other member, so as to become automatically attached to said counterpoise on each descending and detached on each ascending journey of the latter, for the purpose set forth.

2. The combination, with the elevator-cab and a series of traveling doors and with a notched or recessed guideway, of a counterpoise armed at bottom with spear 35, and one or more supplementary counter-weights 34, which are adapted to be automatically engaged with and disengaged from said counterpoise, substantially as and for the purpose set forth.

3. The combination, with the main counterpoise of an elevator-car, of supplementary counter-weights, coupling devices on all of said supplementary weights, and armed jaws connecting with said coupling devices and engaging with rests or notches in the guide-frame.

4. The pick-up supplementary counter-weight 24, having spear-shaped foot 35 and L-shaped levers or jaws 36.

5. The combination, with the suspenders 43 of a series of traveling doors 32, of the adjusting and coupling device consisting of nut 44 45, screw-head 46, polygonal collar 46', and yoke 47.

6. In combination with the series of traveling doors, the counterpoise 31, and the series of automatically engaging and disengaging supplementary weights 34, said counterpoise and each supplementary weight, except the bottom one, having an arrow-shaped foot 35, and each supplementary weight having jaws 36, adapted to grasp such foot of the member immediately above it on descent of said member and to be released therefrom and engage in recesses of the guide-frame on ascent of said member, substantially as set forth.

7. In an elevator having a cradle on top of the elevator-cab and a series of traveling hatchway-doors in the guide-shaft, the combina-

and a target-shaft, of a spring-actuated engaging device to lock the switch in either of its positions and to complete the movement of the switch.

12. The combination, with a switch-stand, a target-shaft, and a switch-rod, of an arm extending laterally from the target-shaft and a yielding device arranged to engage the outer end of said arm on the target-shaft and complete the movement of the target-shaft in either direction, substantially as set forth.

13. The combination, with a switch-stand, a rotary crank-shaft journaled therein, and a switch-rod connected with the crank of said shaft, of a spring-actuated device for locking the switch in either of its positions and for completing the movement of the switch, substantially as set forth.

14. The combination, with a switch-stand, a switch-operating rod, and a target-shaft, of a horizontally-yielding engaging device to complete the movement of the switch in either direction, and a lever for operating and locking the switch.

15. The combination, with a switch-stand, a switch-rod, and a target-shaft provided with a laterally-projecting arm, of an engaging device for completing the movement of the switch, and a lever for raising and lowering the arm on the target-shaft, substantially as set forth.

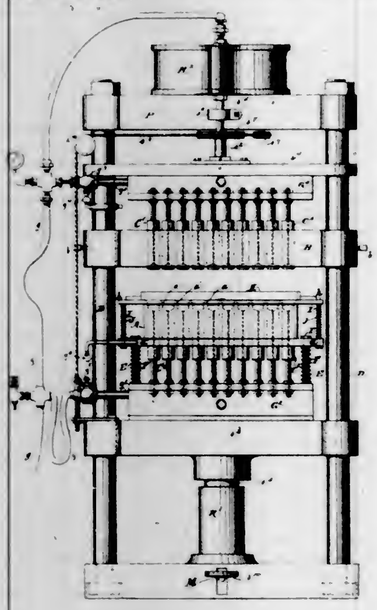
16. The combination, with a switch-stand, the switch-operating rod, and the target-shaft, of an engaging device carried by the shaft, and a sliding spring-actuated engaging device connected to the stand and moving transversely to and from the shaft, as and for the purpose set forth.

17. The combination, with the switch-stand, the switch-operating rod, and the target-shaft having a crank, of an engaging device carried by the shaft, a yielding engaging device carried by the stand, and a lever and connections to engage and disengage said devices and to turn the shaft.

18. The combination, with the switch-stand, the switch-operating rod, the crank-shaft, an engaging device checking the rotation of the shaft, of an engaging device rotating with the shaft, said devices being disengaged by movement of one of them independently of the rotary movement of the shaft, as set forth.

19. In a switch-stand, the combination, with the target-shaft, an engaging device carried by the shaft, and a yielding engaging device connected with the stand, of means for engaging and disengaging said devices, and means for varying the relative adjustment of said engaging devices and thereby adjusting the throw of switch-rail, substantially as set forth.

447,187. PRESS FOR SHAPING PLASTIC MATERIAL. WOLCOTT A. HULL and ARTHUR G. BOYER, New York, N. Y.; said Boyer assignor to said Hull. Filed Feb. 6, 1890. Renewed Jan. 22, 1891. Serial No. 378,626. (No model.)



Claim.—1. In a press, the combination of two series of end mold-sections or plungers having a relative movement, a fixed mold-plate, and a movable plate, substantially as specified.

2. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate, and springs intermediate of the movable plate and the engine for transmitting motion from the engine to said movable plate, substantially as specified.

3. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate having cavities fitting one of said series of end mold-sections or plungers, springs, and bolts for adjustably limiting the range of movement of the movable plate, substantially as specified.

4. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate, springs intermediate of the plate and the eugine for transmitting motion from the engine to said movable plate, a receiver fitting round one end of the movable plate, and springs for supporting the receiver, substantially as specified.

5. In a press, the combination of two series of end mold-sections or plungers, an engine for moving one of said series, a fixed mold-plate, a movable plate, springs intermediate of the movable plate and the engine for transmitting motion from the engine to said movable plate, a receiver fitting round one end of the movable plate, springs for supporting the receiver, and adjustable bolts for limiting the movement of the receiver, substantially as specified.

6. In a press, the combination of two series of end mold-sections or plungers, two engines for imparting motion to the two series of end mold-sections or plungers, a connection between the valve of one engine and a part moved by the other engine, a valve controlling the engine last named, a fixed mold-plate, and a movable plate, substantially as specified.

7. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers having passages through them, gas-chambers with which said end mold-sections or plungers communicate, and valves at the operative extremities of said end mold-sections or plungers, substantially as specified.

8. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers having passages through them, gas-chambers with which said end mold-sections or plungers communicate, valves at the operative extremities of said end mold-sections or plungers, and valves at the inner extremities of said end mold-sections or plungers, the two sets of valves belonging to each series of end mold-sections or plungers being connected together, substantially as specified.

9. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers having passages through them, gas-chambers with which said end mold-sections or plungers communicate, valves controlling the ingress of gas to said chambers, and adjustable stops or tappets for effecting the opening of said valves, substantially as specified.

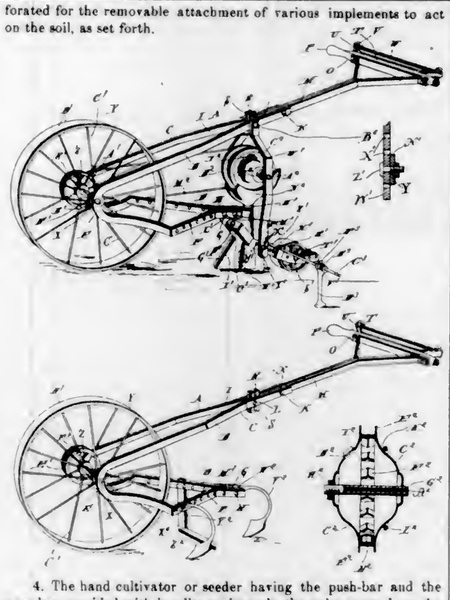
10. In a press, the combination of a fixed mold-plate, two series of end mold-sections or plungers, and a movable plate having cavities provided at the upper end with beveled or flaring mouths having rectangular extremities which are separated by narrow edges, substantially as specified.

447,188. COMBINED CULTIVATOR AND SEED-DRILL. CHRISTOPHER C. HUNTER, Topeka, Kans. Filed Sept. 14, 1888. Serial No. 285,356. (No model.)

Claim.—1. In a hand-cultivator, the frame comprising the two similar bars B, separated from each other and arranged edgewise and bent at an intermediate point, so as to form the arms C D, the arms C extending upward on an incline and secured together at their outer upper ends, and the arms D extending rearward beneath the arms C in a horizontal plane and bent first outwardly to a point and then bent inwardly until the two arms closely approach each other, thereby forming somewhat the shape of a diamond in plan view, substantially as described.

2. In a hand-cultivator, the frame comprising the two similar bars B, separated from each other and arranged edgewise and bent at an intermediate point, so as to form the arms C D, the supporting-wheel journaled at the point where the bars B are bent, the arms C extending upward on an incline and secured together at their outer upper ends, the push-bar or handle secured to the arm C at that point, and the arms D extending rearward beneath the arms C in a horizontal plane and bent first outwardly to a point and then bent inwardly until the two arms closely approach each other, thereby forming somewhat the shape of a diamond in plan view, and the implements to act on the soil attached to the arms D, substantially as described.

3. In a hand-cultivator, the arms D, extending rearward from the supporting-wheel and first bent outwardly to a point and then bent inwardly till the ends of the arms touch, or nearly so, thereby forming an approximately diamond-shaped frame, the sides of which are perforated for the removable attachment of various implements to act on the soil, as set forth.



4. The hand cultivator or seeder having the push-bar and the cross-bar provided with handles at its ends, the yoke secured on the outer side of the cross-bar, and the strap connecting the arms of the yoke and arranged parallel with the cross-bar, the handles standing on each side and in advance of the strap, substantially as described.

5. The cultivator or seeder having the push-bar, the cross-bar secured to the rear end thereof, the yoke secured to the rear side of the cross-bar and having the rearward-diverging arms, the rings attached to eyes in the rear ends of said arms, and the strap stretched between and secured to the said rings, substantially as described.

6. The combination of the frame, the driving-wheel journaled in the front end of the frame, the furrow-opener attached to the rear ends of the frame, the arms N', having their front ends pivoted to the furrow-opener, the roller journaled between said arms, the arms or standards Y', having their upper ends pivoted to the handles and their lower ends attached to arms N', the bolt A^2, connecting said arms or standards Y', the drum or hopper journaled on said bolt, and devices for connecting the driving-wheel with the drum or hopper, substantially as described.

7. The combination of the frame having the rearward and upward extending arms C and the rearward-extending arms D with the driving-wheel journaled in the front end of the frame, the furrow-opener attached to the rear ends of arms D, the arms N', having their front ends pivoted to the furrow-opener, the roller journaled between said arms, the arms or standards W', having their upper ends pivoted to arms C and their lower ends attached to arms N', the bolt A^2, connecting said arms or standards Y, the drum or hopper journaled on said bolt, the pulley attached to the driving-wheel, and the endless belt connecting the same to the drum, substantially as described.

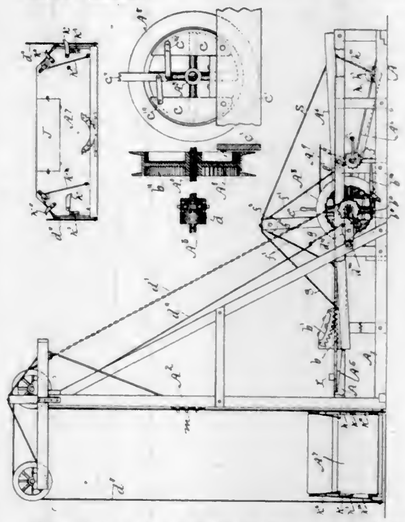
8. The drum or hopper comprising the separable sections having the overlapping rims, and the tubular sleeves secured in the center of one section, passing through the center of the other section, and the clamping-nut engaging threads on said projecting end of the sleeve substantially as described.

9. The combination, in a drum or hopper, of the separable sections having the overlapping rims provided with the seed-openings, the plate secured on one of the said rims, having the scale and the end stops, and the hand or pointer secured to one of the sections and adapted to sweep over the scale, substantially as described.

447,189. RED DYE. PAUL JULIUS, Ludwigshafen-on-the-Rhine, Germany, assignor to the Badische Anilin and Soda Fabrik, same place. Filed Oct. 31, 1890. Serial No. 369,959. (Specimens.) Patented in Germany Dec. 13, 1889, No. 52,596.

Claim.—As a new article of manufacture, the substantive red dye-stuff, (sodium salt of diamidodiphenylene ketoxime diazo-naphthionic acid,) which appears in the form of a dark-colored powder giving a brown streak on rubbing; it is readily soluble in both cold and hot water, yielding bluish-red solutions; it is almost insoluble in alcohol even on boiling; insoluble (or practically so) in benzine and ether; it dissolves in concentrated sulphuric acid, giving a blue solution, which on the addition of water gives a blue precipitate; chloride of calcium gives a brownish-red precipitate, and copper chloride a dark brownish-purple one, all substantially as hereinbefore described.

447,190. WAGON DUMP AND ELEVATOR. JOHN S. KIDD, Des Moines, Iowa. Filed Jan. 4, 1889. Renewed Aug. 11, 1890. Serial No. 361,638. (No model.)



Claim.—1. In a wagon dump and elevator, the combination of a dumping-platform adapted to receive and support a loaded wagon, said platform being fulcrumed to a stationary base or frame, an elevator-box suspended from a frame that rises from the base or frame that supports the platform, and a drum and ropes for transferring and utilizing the weight of the elevator-box to lift the dumping-platform and loaded wagon.

2. In a wagon dump and elevator, the combination of a dumping-platform adapted to receive and support a loaded wagon, said platform being fulcrumed to a stationary base or frame, an elevator-box suspended from a frame that rises from the base or frame that supports the dumping-platform, a drum and ropes for transferring and utilizing the weight of the elevator-box to lift the dumping-platform and loaded wagon thereon, and mechanism for tilting the dumping-platform after it is lifted.

3. In a wagon dump and elevator, the combination of a dumping-platform adapted to receive and support a loaded wagon, said platform being fulcrumed to a stationary base or frame, a floor or platform adapted to support horses hitched to the wagon, an elevator-box suspended from a frame that rises from the base or frame that supports the platform, and a chain and ropes for transferring and utilizing the weight of the elevator-box to lift the dumping-platform and loaded wagon.

4. The levers A^4, fulcrumed to the frame A and carrying the platform A^5, the floor A^6, the elevator-box A^7, and mechanism for operating said levers by the weight of the said box, for the purposes stated.

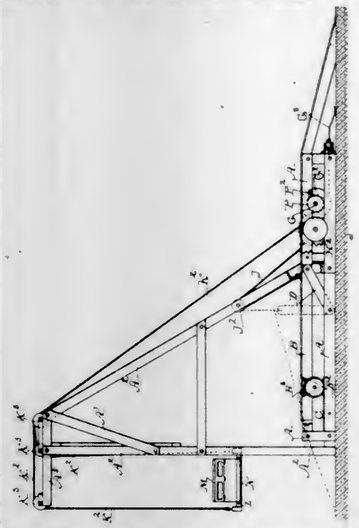
5. The frames A and A^3, the shaft A^2, having a fixed drum and fixed sprocket-wheels, an elevator-box suspended from the frame A^3 and connected with the sprocket-wheels by means of ropes and chains, and a rotating shaft *h*, connected with the shaft A^2 and the levers A^4 by means of chains arranged and combined to operate in the manner set forth, for the purposes stated.

6. The levers A^4, having fixed racks *b*, the platform A^5, having fixed toothed segments *b'*, the floor A^6, the shaft *f*, and the ropes *f''*, arranged and combined with a wagon dump and elevator to operate in the manner set forth, for the purposes stated.

7. The frames A and A^3, the shaft A^2, having a fixed drum and fixed sprocket-wheels *d*, the levers A^4, fulcrumed to the frame and provided with fixed racks *b*, the platform A^5, provided with fixed toothed segments *b'*, the elevator-box A^7, connected with the sprocket-wheels *d* by means of ropes and chains extended over pulleys at the top of the frame A^3, the shaft *f*, connected with the platform A^5 by means of ropes *f''* extended over pulleys *f'''*, and the shaft *h*, connected

with the shaft A^3 and the levers A^4 by means of ropes arranged and combined to operate in the manner set forth, for the purposes stated

447,191. WAGON DUMP AND ELEVATOR. JOHN S. KIDD, Des Moines, Iowa. Filed Sept. 5, 1888. Renewed Aug. 20, 1889. Again renewed Aug. 11, 1890. Serial No. 361,640. (No model.)



Claim.—1. In a wagon dump and elevator, the combination of a platform-section that is supported upon traction-wheels at one end and hinged to a fixed platform at its other end by means of straight bars in such a manner that when the hinged end is elevated the complete section will be moved longitudinally toward an elevator-box, for the purposes stated.

2. The platform-section B, having fixed bearings B^3 and wheels B^4 at its front end and pivoted bars D at its rear end, in combination with the platform and elevator-frame and mechanism for lifting the rear end of the movable platform-section, for the purposes stated.

3. The ropes J, passed over pulleys J^3, attached to an elevator-frame, the rotating sleeve or shaft F, having fixed drums F^3, and the platform-section B, supported upon wheels at its front end and connected at its rear end with the fixed platform by means of bars D, arranged and combined to operate in the manner set forth.

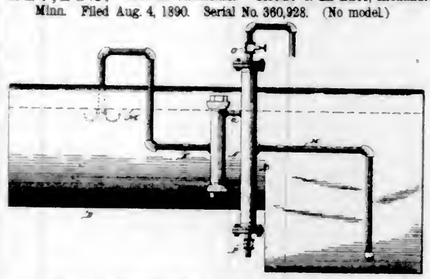
4. The combination of the shaft G, having a fixed drum G^3, and fixed gear-wheel H, the shaft F, having fixed drums F^3, the sleeve F, having fixed drums F^3, the ropes J, extended over pulleys J^3, attached to the elevator-frame, the platform-section B, mounted on wheels at its front end and connected with the fixed platform by means of bars D, and an elevator-box suspended from the top of the elevator-frame by means of ropes fixed to the drums F^3, to operate in the manner set forth, for the purposes stated.

5. A wagon dump and elevator comprising an elevator-frame and a wagon-platform fixed to the base of the elevator-frame, an adjustable platform-section supported upon traction-wheels at its front end, hinged to the fixed platform at its rear ends by means of bars that allow vertical adjustment and longitudinal motion to the adjustable section, an elevator-box suspended from the top of the elevator-frame by means of ropes and pulleys, a rotating shaft having fixed drums to which said ropes are attached to raise and lower the said box, mechanism for rotating shaft, and ropes extended over pulleys attached to the elevator-frame and connected with the shaft and also with the rear end of the adjustable platform-section, arranged and combined to operate in the manner set forth, for the purposes stated.

6. In a wagon dump and elevator, the combination of a suspended elevator-box and adjustable platform-section and mechanism for transferring the weight of the box to the said platform-section, for the purpose of elevating one end of a wagon on the platform-section.

7. The combination of an elevator-box suspended from the top of an elevator-frame by means of ropes, mechanism for operating the ropes to raise and lower the box, and an adjustable platform adapted to support a wagon and connected with the rope-operating mechanism for the purpose of dumping the contents of the wagon into the elevator-box.

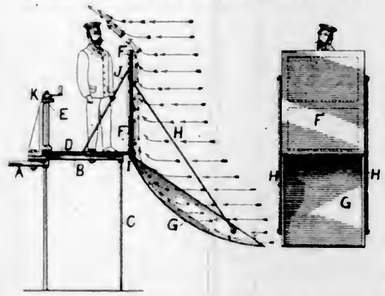
447,192. BOILER-CLEANER. SIDNEY C. LA HATT, Alexandria, Minn. Filed Aug. 4, 1890. Serial No. 360,928. (No model.)



Claim.—1. The combination, with a boiler, of a cleaner arranged in juxtaposition thereto and composed of two drums of unequal length, the shorter drum having communication at its ends with the longer drum at points distant from the ends of the said longer drum, and pipes connecting the top portion of the boiler with the middle of the shorter drum, and the lower portion of the boiler with the middle of the longer drum, respectively, substantially as set forth.

2. The combination, with the boiler, of the two drums A and B, of unequal length, arranged with their middle in the plane of or above the horizontal medial line of the boiler, the shorter drum being connected at its ends with the longer drum at points distant from the ends thereof, a pipe connecting the middle of drum A with the top portion of the boiler, the upper end of the pipe extending below the water-line in the boiler, a pipe connecting the middle of drum B with the lower portion of the boiler, and blow-off cocks at the ends of drum B, substantially as described.

447,193. SHELTER FOR WATCHMEN ON VESSELS. HENRY L. MEADOWS, Wexford, Ireland. Filed Oct. 24, 1890. Serial No. 369,208. (No model.) Patented in England Aug. 21, 1889, No. 13,216.



Claim.—1. The combination, in a shelter for the watch or officer of a vessel, of an adjustable platform carrying an upright screen, and a concaved or scoop-shaped wind collector and deflector connected with the lower portion of the screen and arranged at an angle thereto, substantially as and for the purpose described.

2. The combination, in a shelter for the watch or officer of a vessel, of a horizontally-rotating platform, means for turning the platform, an upright screen secured to the platform, and a concaved or scoop-shaped wind collector and deflector pivotally connected with the lower portion of the screen and arranged at an angle thereto, substantially as and for the purpose described.

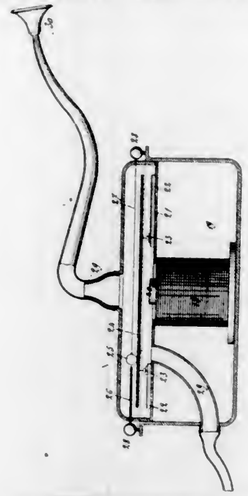
447,194. TELEPHONE. ERNEST J. P. MERCADIER, Paris, France. Filed May 26, 1890. Serial No. 353,162. (No model.) Patented in France May 30, 1888, No. 190,909; in England July 17, 1888, No. 10,363; in Germany Aug. 16, 1888, No. 49,213, and in Belgium Aug. 28, 1888, No. 83,056.

Claim.—1. In a telephone, a diaphragm tuned to respond to one rate of vibration only, substantially as described.

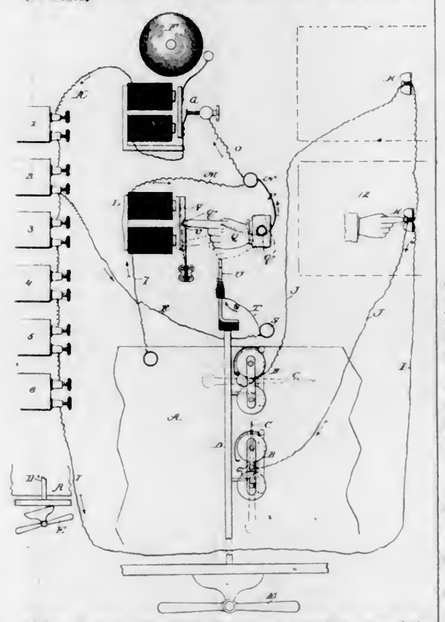
2. In a telephone, the combination of an electro-magnet and a diaphragm-armature in inductive proximity thereto, said diaphragm-armature being tuned to respond to one rate of vibration only, substantially as described.

3. In a telephone, a diaphragm supported at points located approximately in the nodal line or lines of the first harmonic of the said diaphragm, substantially as described.

4. In a telephone, a diaphragm free at its edge or edges resting upon points located approximately in the nodal line or lines of the first harmonic of its fundamental note, and a weight resting upon the diaphragm, adjustable in position thereon, for tuning the diaphragm to respond to vibrations of the first harmonic only, substantially as described.



447,195. ANNUNCIATOR AND INDICATOR SYSTEM. JOHN E. A. MILLER, San Francisco, Cal. Filed Sept. 5, 1890. Serial No. 364,082. (No model.)



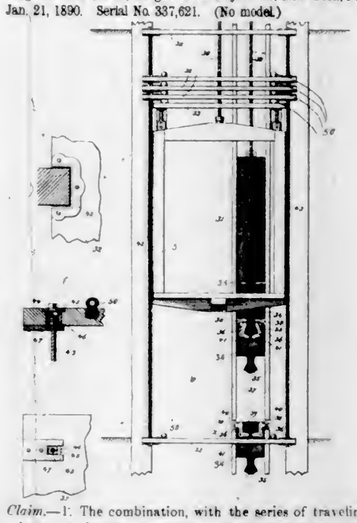
Claim.—1. The combination of a battery, a main or external circuit including the annunciator and the magnet L, having an armature provided with a bearing, as *v*, a switch composed of two movable members, one Q arranged to engage in bearing *v*, the other U arranged to be engaged by said member Q when released from the bearing *v*, said switch being included in a local circuit containing a signaling device

2. The combination of the indicators or pointers and their magnets, the pointer-adjusting bar, the battery, the annunciator-bell, the switch-magnet L, the switch composed of two movable members, one Q arranged to engage the armature of the magnet L and the other U arranged to be engaged by said member Q when released from engagement with the said armature, the said switch being included in a local circuit containing a signaling device.

3. In an electric signaling system, the combination, with the magnet L, having its armature provided with a bearing *v*, of the switch member U, movable longitudinally, the switch member Q having a point *q* arranged to engage in the bearing *v*, and arranged when released from said bearing *v* to engage the switch member U, the annunciator-bell, the indicator, the battery, and the necessary connecting-wires, all substantially as and for the purposes set forth.

4. In an electric signaling system, the combination of the wires and connections forming the main and short circuits, an audible signal in the short circuit, visual signals in the main circuit, a closer for the short circuit, including a magnet in the main circuit, a switch composed of two members Q and U, movable as described, and the indicator-adjusting bar D, arranged to engage switch member U and readjust the same and switch member Q to their normal positions in the movement of such bar D to readjust the pointers of the visual indicators, substantially as set forth.

447,196. HATCHWAY FOR ELEVATORS. JOHN J. MCBRIDE, Ridgefield Park, N. J., assignor to Henry I. Coe, New York, N. Y. Filed Jan. 21, 1890. Serial No. 337,621. (No model.)



Claim.—1. The combination, with the series of traveling doors of an elevator and with a counterpoise, of one or more supplementary weights constructed, substantially as described, with jaws on one member and foot on the other member, so as to become automatically attached to said counterpoise on each descending and detached on each ascending journey of the latter, for the purpose set forth.

2. The combination, with the elevator-cab and a series of traveling doors and with a notched or recessed guideway, of a counterpoise armed at bottom with spear 35, and one or more supplementary counter-weights 34, which are adapted to be automatically engaged with and disengaged from said counterpoise, substantially as and for the purpose set forth.

3. The combination, with the main counterpoise of an elevator-car, of supplementary counter-weights, coupling devices on all of said supplementary weights, and armed jaws connecting with said coupling devices and engaging with rests or notches in the guide-frame.

4. The pick-up supplementary counter-weight 24, having spear-shaped foot 35 and L-shaped levers or jaws 36.

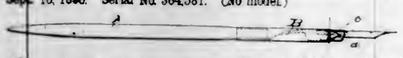
5. The combination, with the suspenders 43 of a series of traveling doors 32, of the adjusting and coupling device consisting of nut 44 45, screw-head 46, polygonal collar 46', and yoke 47.

6. In combination with the series of traveling doors, the counterpoise 31, and the series of automatically engaging and disengaging supplementary weights 34, said counterpoise and each supplementary weight, except the bottom one, having an arrow-shaped foot 35, and each supplementary weight having jaws 36, adapted to grasp such foot of the member immediately above it on descent of said member and to be released therefrom and engage in recesses of the guide-frame on ascent of said member, substantially as set forth.

7. In an elevator having a cradle on top of the elevator-cab and a series of traveling hatchway-doors in the guide-shaft, the combina-

tion, with a counterpoise 31, having an arrow-shaped foot 35, and with recesses 40 in the guide-frame, of a series of supplementary weights, one for each pair of said doors, each weight, except the bottom one, having a like arrow-shaped foot, and each weight having a pair of jaws 36, adapted to grasp such foot of the member immediately above it at each descent and to become released from said foot and engage in said recesses at each ascent of the counterpoise, said weight having spring-catches 39, and the whole being arranged and adapted to operate as set forth.

447,197. PEN-HOLDER. THOMAS NANCE, Shelbyville, Tenn. Filed Sept. 10, 1890. Serial No. 364,581. (No model.)

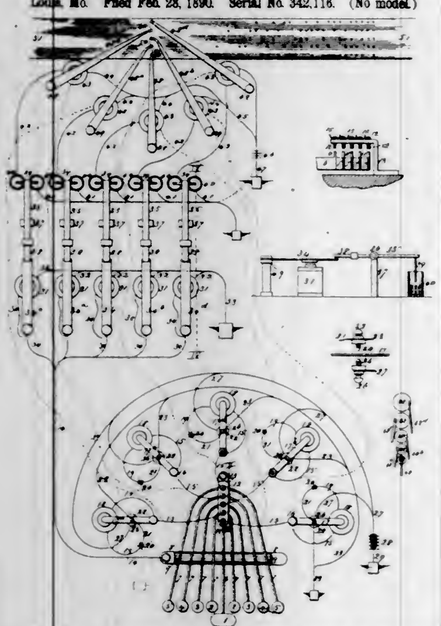


Claim.—1. A pen-holder consisting of the tube B, having the holes c, the piece C, having holes c' and spring d, and the split tube D, having the openings c^2 and inserted in the piece C, the pieces B, D, and C being pivotally secured together by and having the pin c^3, substantially as and for the purpose set forth.

2. As an improved article of manufacture, a pen-holder consisting of a stock, a tube B, having the holes c and cut away, as at a, the piece C, having the holes c' and spring d, and the split tube D, having the opening c^2 and cut away, as at e, the pieces B, C, and D being pivotally secured together by and having the pin c^3, all constructed, arranged, and operating substantially as and for the purpose set forth.

3. As an improved article of manufacture, a pen-holder consisting of a stock, a tube B, having the holes c and cut away, as at a, the piece C, having the holes c' and spring d, and the split tube D, having the elongated openings c^2 and cut away, as at e, the pieces B, C, and D being pivotally secured together by and having the pin c^3, substantially as and for the purpose set forth.

447,198. TELEGRAPH APPARATUS. JOSIAH A. PARKER, St. Louis, Mo. Filed Feb. 28, 1890. Serial No. 342,116. (No model.)



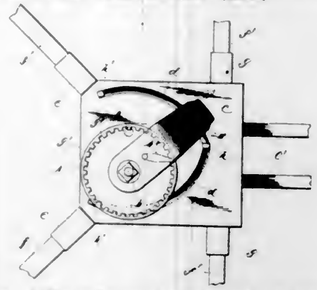
Claim.—1. An electric telegraph having a number of divaricate circuit closing or breaking keys, each key having at the ends finger-buttons for the corresponding fingers of the right and left hands, substantially as and for the purpose set forth.

2. The combination, in an electric telegraph apparatus, of divaricate circuit closing or breaking keys, each key having at the ends buttons for the corresponding fingers of the right and left hands, and electro-magnets excited by the keys and having armatures whose levers have markers thereon adapted to mark a ribbon in a series of marks transverse to the ribbon, substantially as and for the purpose set forth.

3. The combination, in an electric telegraph, of a series of divaricate keys, as 2 3, at the transmitting-station, each key having a button at each end for the corresponding fingers of the right and left hands, electro-magnets, one of which is connected with each key and adapted to be excited by movement of the key, each of such electro-magnets having a reed-armature set to a different pitch to the armature or armatures of the other electro magnet or magnets, a line-wire adapted to receive electric impulses from the tuned armatures, electro-magnets at the receiving-station excited by impulse in the line-wire and having reed-armatures set to various pitch and each armature set to the same pitch as an armature at the transmitting-station, and a recording device governed by the armatures of the receiving-station, substantially as set forth.

4. The combination of the divaricate keys located in proper positions for the respective thumbs and fingers, a number of magnets connected to the respective keys, a number of vibrating armatures, each differing in pitch from the others and affected by the respective magnets, a line-circuit running to the receiving-station and connected with a number of magnets, and vibrating armatures operated upon by the respective receiving-magnets and set to a varying pitch corresponding with the respective armatures at the transmitting-station, all substantially as herein set forth.

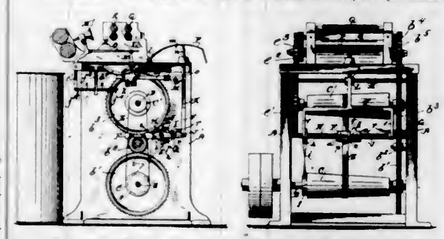
447,199. RETURN-PULLEY. LAWRENCE H. PAUL, Wyoming, Iowa. Filed July 19, 1890. Serial No. 359,297. (Model.)



Claim.—1. The pulley having in its upper side an annular series of teeth or cogs, the base having a horseshoe-shaped groove, at the center and ends of which are stops, the shiftable axle or journal of said pulley adapted to be adjusted into either one of two openings in said base, and the lever-pawl fulcrumed upon said axle or journal and having a reversible tooth or dog engaging said teeth or cogs, said lever-pawl also having a stud or projection traversing said groove and adapted to engage the center stop and one or the other of the end stops, substantially as specified.

2. The combination, with the pulley and its journal or axle and actuating lever-pawl, of the base having a horseshoe-shaped groove traversed by a stud or projection on said lever, said stud or projection adapted to engage a stop at the center of said groove and one or the other of two end stops, one at each end of said groove, said base having upon one end at the corners, as also at the opposite end near the corners thereof, downwardly and outwardly inclined bifurcated brackets adapted to have connection with braces, substantially as set forth.

447,200. RAILWAY DRAWING-HEAD. WILLIAM C. PEIRCE, Providence, R. I. Filed June 12, 1890. Serial No. 355,219. (No model.)



Claim.—1. The combination, with the feed-rolls, the drawing-rolls, the cone-pulleys, the driving-belt, and the gearing which connects the cone-pulleys with the feed and drawing rolls, of the belt-shifting mechanism and the movable creel connected with the belt-shifting mechanism, substantially as described.

2. The combination, with the feed-rolls, the drawing-rolls, the cone-pulleys, the driving-belt, and the gearing which connects the cone-pulleys with the feed and drawing rolls, of the belt-shifting mechanism, the trumpet-guide, the movable creel, and the connections between the belt-shifting mechanism, the trumpet-guide, and creel, substantially as described.

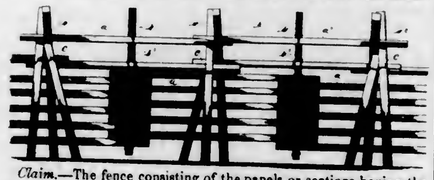
3. The combination, with the movable creel and the weighted lever connected therewith, of the belt-shipper, the reversely-threaded revolving screw, the nuts adapted to revolve with the screw, and the catch operatively connected with the weighted lever and adapted to engage with the nuts to stop their revolution with the screw, and thereby cause the required lateral movement of the belt-shipper, substantially as described.

4. The combination, with the cone-pulleys, the driving-belt, and the belt-shipper, of the reversely-threaded revolving screw, the nuts adapted to revolve with the screw, and the catch adapted to stop the revolution of either one of the nuts, and thus cause the required lateral movement of the belt-shipper, substantially as described.

5. The combination, with the movable creel, the weighted lever, the adjusting-weight, the sliding weight, the lever for operating the sliding weight, the trumpet-guide, its operating-springs, and a connection between the trumpet-guide and the weight-operating lever, of the feed-rolls, the drawing-rolls, the cone-pulleys, the driving-belt, the belt-shifting mechanism, and the gearing which connects the cone-pulleys with the feed and driving rolls, substantially as described.

6. The combination, with the cone-pulleys, the driving-belt, and the belt-shipper, of the revolving screw, a nut adapted to revolve with the screw, the catch adapted to stop the revolution of the nut to cause the lateral movement of the belt-shipper, and the guide for raising the catch out of engagement with the nut to prevent a dangerous excess of movement, substantially as described.

447,201. STRAIGHT RAIL FENCE. DAVID PORT and SAMUEL R. PORT, Dublin, Ind. Filed July 18, 1890. Serial No. 359,339. (No model.)



Claim.—The fence consisting of the panels or sections having the tripod interlocking arrangement of posts at each end, the riders, the suspended rails interlapping the panels or sections, the ends of said rails supported in a binder suspended from the riders, the interlocking and intertwisting wires comprising the vertical wires and the binding-loops, supporting and securing the binder and rails, and the wires securing the lower riders in position, and the tripod-posts, substantially as described.

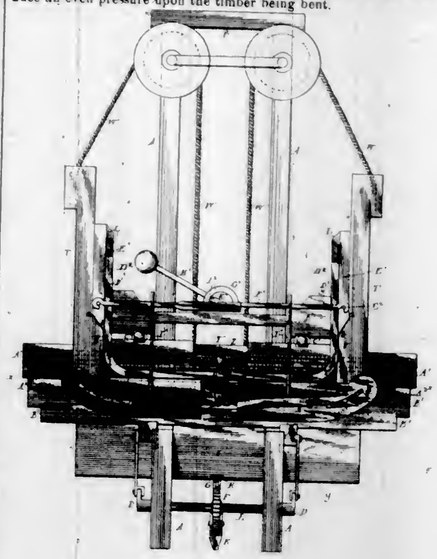
447,202. MACHINE FOR BENDING TIMBER. WILLIAM RANKE and WILLIAM YERGENS, Fort Wayne, Ind. Filed July 24, 1890. Serial No. 359,750. (No model.)

Claim.—1. In a machine for bending timber, the combination, with the table thereof, of the slotted plates embracing its sides and the blocks to which said plates are secured, the right-and-left screw connecting said blocks, and the pressure-levers having their fulcrum-pins bearing in the slots in said plates, whereby the levers are caused to follow the timber as they are elevated, substantially as described.

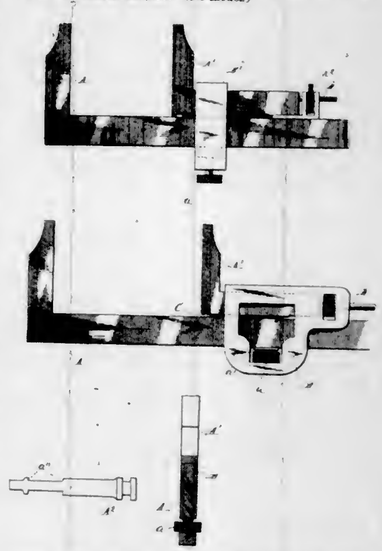
2. In a machine for bending timber, the combination, with the table thereof, of the slotted plates embracing its sides, the block to which said plates are secured, the right-and-left screw connecting said blocks, the pressure-levers having their fulcrum-pins bearing in the slots in said plates, the flexible straps connecting the levers and the blocks to which the plates are attached, and the flexible strap having head-blocks adapted to engage the levers and lugs to engage the ends of the timber and hold it in place, all constructed, arranged, and operating substantially as shown and described.

3. In a machine for bending timber, the combination, with the table thereof, of the slotted plates embracing its sides, the blocks to which said plates are secured, the right-and-left screw connecting said blocks, the pressure-levers having their fulcrum-pins bearing in the slots in said plates, the flexible straps connecting the levers and the blocks to which the plates are attached, and the flexible strap having head-blocks adapted to engage the levers, and lugs to engage the ends of the timber and hold it in place, and the adjustable mold-blocks, and clamping devices for holding the mold-blocks and levers in position, all constructed, arranged, and operating substantially as shown and described.

4. In a machine for bending timber, the combination, with the table thereof, of the plates embracing its sides and the blocks to which said plates are secured, the right-and-left screw connecting said blocks, the curved slots in said plates, and the pressure-levers having their fulcrum-pins mounted and sliding in said curved slots, all constructed and arranged substantially as shown and described, whereby the movement of the pressure-levers is controlled by the curved slots, so as to produce an even pressure upon the timber being bent.



447,203. GAGE. WILLIAM RICKETTS, Cranston, R. I. Filed June 21, 1890. Serial No. 356,239. (No model.)



Claim.—The caliper consisting of the right-angled jaws, resting one above the other, the right-angled bar having its vertical arm bifurcated to receive and carry the adjusting-screw, and the yoke for assembling the said parts, said yoke carrying the retaining-screw for the jaws, substantially as described.

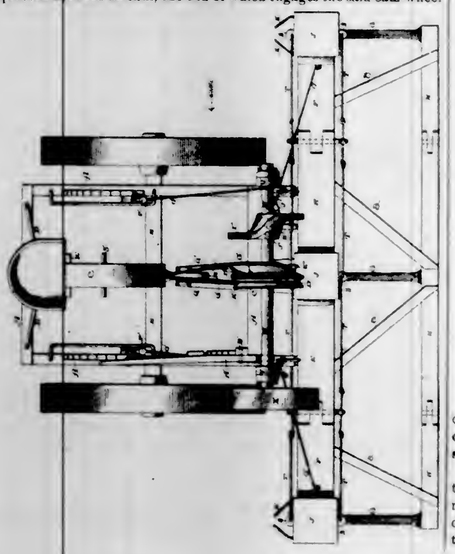
447,204. FENCE-POST. JOHN M. RIPE, Troy, Ohio. Filed Nov. 5, 1890. Serial No. 370,419. (No model.)

Claim.—In a fence-post, the combination, with the base thereof having hook and cross-head, as described, of the semi-cylindrical post-sections detachably held together and having respectively upon their lower ends an opening and cross-bar for engagement of the hook upon the base, and upon the opposite post-section locking-flanges for the cross-head of the base, substantially as and for the purpose set forth.

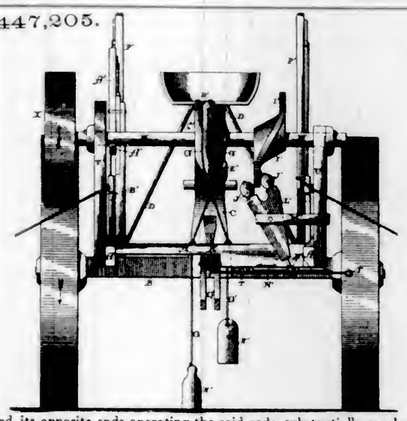


447,205. CORN-PLANTER. ARTHUR F. RUNYAN, Yorktown, Ind. Filed July 17, 1890. Serial No. 359,043. (No model.)

Claim.—1. In a corn-planter, the combination of the wheel-frame, the seed-box, and runner-frame, the driving-wheels, a shaft journaled upon the wheel-frame, having one end provided with a friction-wheel which engages the driving-wheel, a cam-wheel upon the said shaft, the seed-boxes, plates under the boxes having an opening and extending ends, pivots passing through the plates between their ends, and a lever pivoted between its ends, one end of which engages the said cam-wheel



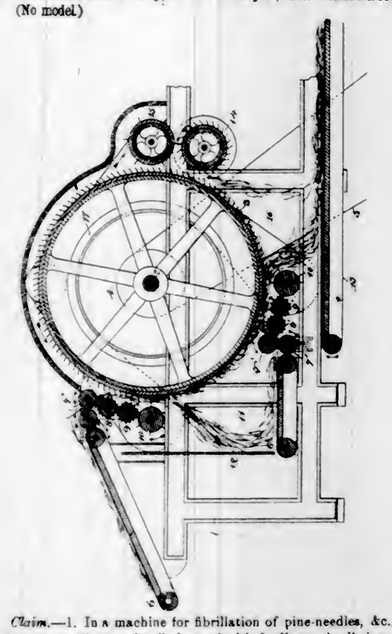
447,205.



and its opposite ends operating the said rods, substantially as shown and described.

2. The combination of the wheel-frame, the seed-box, and runner-frame, the driving-wheels, a horizontal shaft supported upon the wheel-frame, a wheel secured thereto and engaging the driving-wheel, a wheel secured to the said shaft, having grooves which have one end terminate in hooks and their opposite ends cut away, and cords which have one end secured to the frame and passed loosely over the wheel, engaged by the said hooks and carried thereby to the said grooves, and weights secured to their opposite ends for making a mark, and the planting mechanism, substantially as shown and described.

447,206. MACHINE FOR FIBRILLATION OF PINE-NEEDLES. ALEXANDER SCOTT, Cronly, N. C. Filed May 12, 1890. Serial No. 351,488. (No model.)

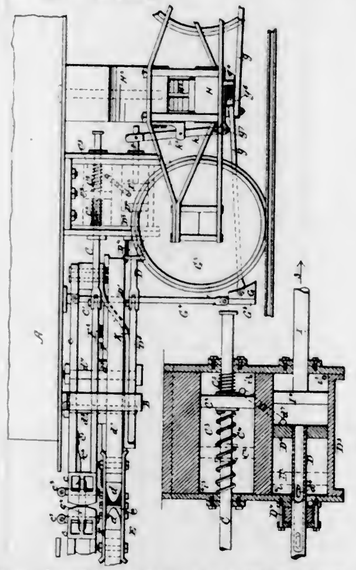


Claim.—1. In a machine for fibrillation of pine-needles, &c., the combination, with a card-cylinder and with feeding and splitting rolls, of one or more groups or trains of refeeding and resplitting members, substantially as set forth.

2. In a machine for fibrillation of pine-needles, &c., the combination, with a card-cylinder and an initial train of hackling or splitting rolls and a cleaning-roll, of one or more additional trains, consisting of deflecting-plate 12, forwarding-apron 6′, and train of refeeding, resplitting, and recleaning rolls 7 7× 8 9 10′, substantially as set forth.

3. In a machine for fibrillation of pine-needles, &c., the combination, with a card-cylinder and with initial feeding and hackling members, of one or more sets of deflecting, refeeding, rehackling, and recleaning members, a final cleaner and stripper, and a delivery-apron, substantially as and for the purpose set forth.

447,207. AUTOMATIC CAR-BRAKE. JESSE P. SEAWELL, Clarksburg, Mo., and JOHN H. O'HARA, New York, N. Y. Filed July 5, 1890. Serial No. 357,863. (No model.)



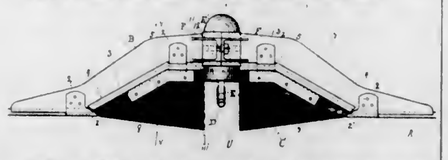
Claim.—1. In combination with the draw-head and brakes of a car, an air-holding cylinder secured to said car and within said cylinder, a piston and a piston-rod connected to the draw-head, and a second piston and piston-rod connected with the brakes.

2. In combination with the draw-head and brakes of a car, an air-holding cylinder secured to said car and having pistons therein and a second cylinder and piston therein automatically operated by the draw-head and by the air within said cylinders.

3. In combination with the draw-head and brakes of a car, an air-holding cylinder secured to said car and a packing-box attached to one end of said cylinder, a piston having a laterally-perforated hollow piston-rod passing through said packing-box and automatically operated by the draw-head, and a second piston and piston-rod connected with the brakes.

4. The combination of a draw-head and brakes of a car, air-holding cylinders secured to said car, pistons in said cylinders and having their piston-rods connected to said draw head, a tubular connection between said cylinders, and a piston and piston-rod connected with the brakes.

447,208. CROSS-OVER FOR TROLLEY-LINES. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Oct. 22, 1890. Serial No. 368,994. (No model.)



Claim.—1. The cross-over composed of an arch, means for securing the conductor or trolley wire in an arched position thereon, and a separate track-piece secured within the arch, substantially as described.

2. The cross-over composed of a metal arch, means for securing the conductor or trolley wire in an arched position thereon, and the track-piece of wood or non-conducting material secured within the arch, substantially as described.

3. The grooved arch, in combination with the conductor or trolley wire laid in an arched position in said groove, and the retaining-clips, substantially as described.

4. The arch comprising a web with side flanges at the bottom and provided with a groove between said flanges, in combination with the conductor or trolley wire in said groove, and the retaining-clips, substantially as described.

5. The cross-over comprising the arch with depending ears, the track-piece secured to the arch through said ears, and the means of securing the conductor or trolley wire on the arch, substantially as described.

6. The grooved arch provided with depending ears, in combination with the conductor or trolley wire in the groove, the retaining-clips, and the track-piece fastened to the arch through said ears, substantially as described.

7. The combination, with the arch, the conductor or trolley wire, and the track-piece, of a clip under the said conductor and track-piece across the joint at the end of said track-piece, substantially as described.

8. A clip provided with a toe, substantially as described.

9. A clip provided with a toe, in combination with an arch to which the clip is secured, a conductor or trolley wire in the clip, and a track-piece whose end overlies said toe, substantially as described.

10. A cross-over comprising a notched track and provided with a holder for the insulating-support of the transverse conductor or trolley wire, said holder consisting of a socket above the notch, one part of which socket is stationary on the cross-over and the other is a removable piece, substantially as described.

11. A cross-over comprising a notched track and provided with a bracket projecting laterally from the cross-over above the notch and carrying the holder for the insulating-support of the transverse conductor or trolley wire, substantially as described.

12. A cross-over comprising, first, a metal arch provided with a bracket-holder for the insulating-support of the transverse conductor or trolley wire; second, means for securing to said arch the conductor or trolley wire in which the cross-over is placed, and, third, the track-piece having the opening for the transverse conductor below the said holder, substantially as described.

13. A track-piece composed of a number of thicknesses of wood secured together with their grain in different directions and arranged to present one of its edges as a bearing-surface for the trolley or traveler, substantially as described.

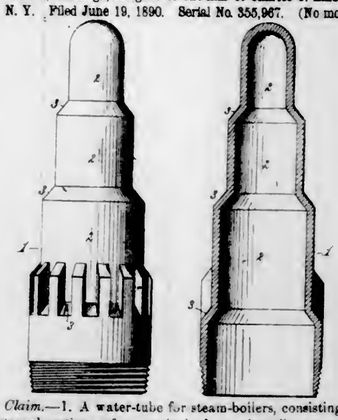
14. A laminated track-piece having the surface formed by the edge of an intermediate thickness or lamina, substantially as described.

15. A cross-over comprising a notched laminated track-piece, the thicknesses or laminæ being of wood secured together with the grain in different directions, and the bearing-surface on the edge of said lamina, substantially as described.

16. A laminated wooden track-piece, in combination with a metal frame, substantially as described.

17. A cross-over comprising a metal arch and a laminated wooden track-piece secured to said arch with the bearing-surface at the edge, substantially as described.

447,209. WATER-TUBE FOR STEAM-BOILERS. EDWARD G. SHORTT, Carthage, assignor of one-half to Charles G. Emery, Brooklyn, N. Y. Filed June 19, 1890. Serial No. 355,967. (No model.)



Claim.—1. A water-tube for steam-boilers, consisting of a series of integral sections of successively-decreasing diameter toward the closed end of the tube, substantially as described.

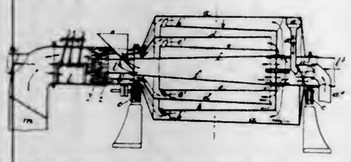
2. A water-tube for steam-boilers, consisting of a series of sections of successively-diminishing diameter toward the closed end of the tube,

said sections being united by integral intermediate sections, substantially as described.

3. A water-tube for steam-boilers, consisting of a series of sections of constantly-diminishing diameter toward the closed end of the tube, said sections being united by intermediate sections having their walls inclined at an angle to the axis of the tube, substantially as described.

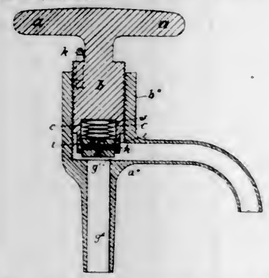
4. A water-tube for steam-boilers, consisting of a series of sections increasing in diameter successively from the closed end toward the open end, the final or larger section being provided with a screw-thread and the next in succession with an annular ratchet, substantially as described.

447,210. EVAPORATING APPARATUS. EDUARD THEISEN, Siegig, Germany. Filed May 14, 1890. Serial No. 351,768. (No model.) Patented in Germany Mar. 15, 1889, No. 51,010, and in England June 18, 1889, No. 10,048.



Claim.—In a rotating drying or evaporating apparatus, the combination of a series of concentric cylinders *a b d e f*, divided into compartments, passages *l l*[5] for the supply of hot air to the cylinders *a*, *d*, and *f*, a flue *l*[5] for drawing off the hot air, and a hopper *o*, supplying the central tube *f* with the wet material to be dried, from which tube the material is made to pass successively through the cylinders *e*, *d*, *b*, and *a*, while being subjected to the currents of hot air passing through the cylinders *a d f*, substantially as described.

447,211. VALVE FOR WATER, STEAM, &c. WILLIAM THOMSON, Glasgow, Scotland. Filed Mar. 25, 1889. Serial No. 304,673. (No model.) Patented in England Mar. 30, 1889, No. 5,471; in Germany June 13, 1889, No. 50,959; in France June 18, 1889, No. 199,023; in Belgium June 19, 1889, No. 86,694; in India Nov. 7, 1889, No. 298, and in Italy June 21, 1890, No. 490.

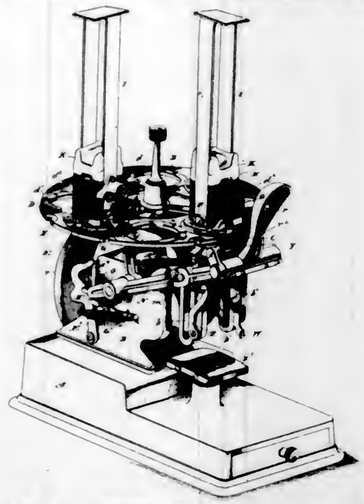


Claim.—1. In a stop-cock, the combination, with the housing having inlet and outlet ports and a valve-seat arranged above the inlet-port, whereby the flow is prevented, said housing being provided with an internally-threaded neck, a cylindrical plug screwing into said neck and having a cup or cavity formed in its lower end, a valve arranged in said cup above the inlet-port and having pin-and-slot connection with the plug, and the elastic disks *j*, arranged in said cup above said valve and having the central boss *j*[×], whereby the said disks will hold the valve firmly upon its seat and prevent the flow, while at the same time the plug will turn the valve around, substantially as set forth.

2. The combination, with the housing having inlet and outlet ports and the valve-seat, of the valve-stem having a cup or cavity at its lower end, a valve arranged in said cup and having slot-and-pin connection with said stem, and an elastic packing arranged in said cup and having the central boss *j*[×] bearing upon said valve, substantially as set forth.

3. In a stop-cock, the combination, with the housing, a hollow cup screwed within said housing and having a prismatic projection at one end and a valve connected to the other end by feather-and-slot connection, and a spring bearing between said cup and valve, of a valve-stem having a prismatic socket in which said projection is seated, and a conical swell on said stem adapted to come in contact with the housing when the valve is open, substantially as and for the purposes set forth.

447,212. APPARATUS FOR ATTACHING ADHESIVE STAMPS. CHARLES W. TOBEY, New Bedford, Mass., assignor to Burt & Tobey, same place. Filed Apr. 11, 1890. Serial No. 347,471. (No model.)



Claim.—1. A mechanism for affixing stamps in which are combined an oscillating stamp-carrier having its stamp-receiving face turned upward when in position to receive a stamp, and a stamp hopper or holder which delivers stamps thereto, substantially as and for the purpose specified.

2. A mechanism for affixing stamps in which are combined an oscillating stamp-carrier having its stamp-receiving face turned upward when in position to receive a stamp, pivoted fingers to impinge upon and confine a stamp thereto, and a stamp-hopper arranged above the same and adapted to discharge stamps thereto one at a time, substantially as and for the purpose shown.

3. A mechanism for affixing adhesive stamps in which are combined an oscillating stamp-carrier having its stamp-receiving face turned upward when in position to receive a stamp, a stamp-hopper arranged above the same and adapted to discharge stamps thereto one at a time, and a device for moistening a stamp in transit to the surface to which it is to be attached, substantially as and for the purpose specified.

4. A mechanism for affixing adhesive stamps in which are combined an oscillating stamp-carrier having its stamp-receiving face turned upward when in position to receive a stamp, and a series of stamp-hoppers supported above the same and adapted for successive co-operation therewith, substantially as and for the purpose set forth.

5. A mechanism for affixing adhesive stamps in which are combined an oscillatory invertible carrier, a stamp hopper or holder which delivers stamps thereto, and means for moistening stamps, substantially as and for the purpose shown.

6. A mechanism for affixing adhesive stamps in which are combined stamp-holding devices, an oscillatory vertically-movable carrier below the same, devices for delivering stamps to said carrier when at the upper limit of its vertical motion, and means for moistening a stamp in its transit to the surface to which it is to be affixed, substantially as and for the purpose set forth.

7. A mechanism for affixing adhesive stamps in which are combined a supporting-frame, a rotary invertible carrier, stamp-holding devices supported above the latter and adapted to discharge stamps one at a time upon the same, and an operating-lever for causing such discharge of the stamps and the movement of the carrier, substantially as and for the purpose described.

8. A mechanism for affixing adhesive stamps, in which are combined stamp-holding devices, a stamp-carrier arranged below the latter, to which stamps may be delivered from said holding devices, and a lever for operating said carrier and causing a delivery of stamps thereto, substantially as and for the purpose specified.

9. In a device for affixing adhesive stamps, in combination, stamp-holding devices having movable fingers to support stamps, a stamp-carrier, and a lever to disengage said fingers from the stamps and to operate said carrier, substantially as and for the purpose set forth.

10. In a device for affixing adhesive stamps, in combination, stamp-hoppers having the movable stamp-retaining devices, a stamp-carrier,

a lever to disengage said retaining devices from the stamps, and the mechanism between said lever and devices, substantially as and for the purpose shown.

11. In a derice for affixing adhesive stamps, in combination, the supporting-plates provided with guide-slots, a carrier mounted between such plates and having trunnions projecting through such slots, the pivoted bars engaging said trunnions, the operating-handle connecting the ends of said bars, the head connecting said supporting-plates, and the stamp holding and discharging devices, the latter being operated by said handle, substantially as and for the purpose described.

12. In a device for affixing adhesive stamps, in combination, the supporting-plates provided with guide-slots, a carrier mounted between such plates and having trunnions projecting through said slots, the pivoted operating-lever engaging said trunnions, the head connecting said supporting-plates at their upper ends, the turret mounted on said head, and the series of stamp-hoppers adapted for successive co-operation with said carrier, substantially as and for the purpose specified.

13. In a device for affixing adhesive stamps, in combination, the supporting-plates provided with guide-slots, an oscillatory invertible carrier mounted between such plates and having trunnions projecting through said slots, the stamp-moistening devices, the pivoted operating-lever engaging said trunnions and said moistening devices, the head connecting the supporting-plates at their upper ends, and the stamp-holding devices mounted on such head and adapted to deliver stamps to the carrier, substantially as and for the purpose set forth.

14. In a device for affixing adhesive stamps, in combination, the supporting-plates provided with guide-slots, a rotary invertible carrier mounted between such plates and having trunnions projecting through said slots, the stamp-moistening devices, the pivoted operating-lever engaging said trunnions and said moistening devices, the head connecting the supporting-plates at their upper ends, the stamp and stamp-separator holding devices mounted on such head, the mechanism for discharging stamps and separators therefrom, and the separator-ejecting mechanism, substantially as and for the purpose shown.

15. In a device for affixing adhesive stamps, a hopper for storing stamps which at its lower end is provided with pivoted fingers connected by a spring that operates to confine the contents in place and are adapted to be withdrawn to permit of the delivery of a stamp from said hopper, substantially as and for the purpose described.

16. In combination with a stamp-hopper open at its lower end to discharge stamps therefrom, the fingers projecting inwardly from opposite sides of said bottom and having connections between them, so as to cause them to move together, substantially as and for the purpose specified.

17. In combination with a stamp-hopper open at its lower end to discharge stamps therefrom, the pivoted fingers projecting inwardly from opposite sides and the pivoted bars connecting said fingers, substantially as and for the purpose set forth.

18. In a device for affixing adhesive stamps, a stamp-hopper open at its lower end to discharge stamps therefrom and the pivoted spring-connected fingers projecting inwardly from opposite sides, in combination with means whereby said fingers are automatically withdrawn to permit of the successive and separate delivery of stamps, substantially as and for the purpose shown.

19. In combination with a stamp-hopper open at its lower end to discharge stamps therefrom, the inwardly-projecting fingers having yielding connections between them, substantially as and for the purpose described.

20. In a device for affixing adhesive stamps, in combination with a stamp-hopper, plates having projections on their upper and lower sides, which are placed between and operate to keep the stamps separate from each other, substantially as and for the purpose specified.

21. In combination with a device for affixing adhesive stamps, having means for holding stamps in a column, means for holding the stamps in such column out of contact, which consist of plates placed between adjacent stamps, substantially as and for the purpose specified.

22. In combination with a device for affixing adhesive stamps, having a hopper for holding a column of stamps, means for holding the stamps out of contact, which consist of plates placed between adjacent stamps and which horizontally substantially fill said hopper, substantially as and for the purpose shown.

23. In a device for use in affixing adhesive stamps, in combination with a stamp-hopper provided with a discharge-opening, plates within and guided by said hopper for the separation of adjacent stamps within the same, substantially as and for the purpose described.

24. In a device for use with stamp-affixing mechanism, a plate for the separation of stamps arranged in a column having a projection centrally disposed on one face and two projections arranged near its edges on its other face, substantially as and for the purpose set forth.

25. A mechanism for affixing adhesive stamps, in which is combined, with means for storing and delivering detached stamps, a carrier that is adapted to receive each stamp as it is delivered, to move the same into contact with a moistening device, and to deposit the stamp upon and press it against the surface to which it is to be attached, substantially as and for the purpose set forth.

26. In a mechanism for affixing adhesive stamps, a carrier-block which is adapted to be moved vertically within certain limits and to have its position reversed when thus moved, in combination with stamp storing and delivering devices and mechanism that operates to confine a stamp upon the face of such carrier at the upper limit of its motion and to release said stamp when said carrier reaches the lower limit of its motion, substantially as and for the purpose described.

27. In a mechanism for affixing adhesive stamps, in combination with a suitable support, a reciprocable and rotary carrier adapted to receive a stamp, move it into contact with a moistening device, and press it against the surface to which it is to be attached, substantially as and for the purpose specified.

28. In a mechanism for affixing adhesive stamps, in combination with a suitable support, a reciprocable and rotary carrier, means for delivering a stamp thereto, and a device to automatically engage therewith to confine a stamp and to automatically disengage therefrom to release said stamp, substantially as and for the purpose shown.

29. In a mechanism for affixing adhesive stamps, in combination with a suitable support having guide-slots, a reciprocable carrier receiving and carrying stamps one at a time, having bearings in such slots, and means for co-operating with said carrier to confine a stamp thereto and permit its removal therefrom, substantially as and for the purpose set forth.

30. In a mechanism for affixing adhesive stamps, in combination with a supporting-frame, a stamp-carrier, a device for confining a stamp to the latter, and devices on said supporting-frame to engage with and operate said confining device, substantially as and for the purpose described.

31. In a stamp-affixing mechanism, in combination with a stamp-carrier, a stamp-confining device adapted to co-operate therewith, and a spring for carrying said device into and retaining it in contact with a stamp thereon, substantially as and for the purpose specified.

32. In a stamp-affixing mechanism, in combination with a stamp-carrier, a stamp-confining device adapted to co-operate therewith, a spring for carrying said device into contact with a stamp thereon, and devices for disengaging it from said stamp, substantially as and for the purpose shown.

33. In a stamp-affixing mechanism, in combination with a stamp-carrier, a pivoted stamp-confining device adapted to be thrown into and out of engagement with a stamp placed upon said carrier, substantially as and for the purpose set forth.

34. In a stamp-affixing mechanism, in combination with a stamp-carrier, a pivoted stamp-confining device, a spring for carrying the latter into engagement with said carrier, and the lugs for effecting its disengagement therefrom, substantially as and for the purpose described.

35. In a stamp-affixing mechanism, in combination, a stamp-carrier, a water-receptacle, a moistening device movable from said receptacle into contact with a stamp when on said carrier, a spring for effecting said movement, and the carrier-operating lever connected to said moistening device and effecting its return to said receptacle, substantially as and for the purpose specified.

36. In a stamp-affixing mechanism, in combination, a stamp-carrier, a water-receptacle, and a moistening-roller movable from said receptacle into yielding contact with a stamp when on said carrier, substantially as and for the purpose shown.

37. In a stamp-affixing mechanism, in combination, a stamp-carrier, a water-receptacle, a moistening device, and a spring for moving the latter from a stamp when on said receptacle into contact with said carrier, and means for moving it away therefrom, substantially as and for the purpose set forth.

38. In a stamp-affixing mechanism, in combination, a stamp-carrier, a moistening device, and a spring for moving the latter into contact with a stamp when on said carrier, and means for moving it away therefrom, substantially as and for the purpose described.

39. In a stamp-affixing device, in combination, a stamp-carrier, a moistening device, a spring for moving the latter into contact with a stamp when on said carrier, and a lever for moving it out of the path thereof, substantially as and for the purpose specified.

40. In a stamp-affixing mechanism, in combination, a stamp-carrier, an operating-lever therefor, a second pivoted lever engaged by said operating-lever, a stationary water-receptacle, an oscillating moistening device movable into and out of the latter, and a bar or link connecting said moistening device to said pivoted lever, substantially as and for the purpose shown.

41. In a stamp-affixing mechanism, in combination, a stamp-carrier, a lever to operate the latter, a stationary water-receptacle, an oscillating moistening device movable into and out of the latter, a pivoted arm engaged by said lever and connected to said moistening device to cause its movements, and a locking-pawl adapted for engage-

ment with and to be released from said pivoted arm, substantially as and for the purpose shown and described.

42. In a stamp-affixing mechanism, in combination, a stamp-carrier, a stationary water-receptacle, a moistening-roller, a pivoted arm carrying the latter, and the devices for moving the roller into and out of the path of said carrier, substantially as and for the purpose set forth.

43. In a stamp-affixing mechanism, in combination, a rotary stamp-carrier, a water-receptacle, a moistening-roller, a pivoted arm carrying the latter, a spring for moving said roller out of said receptacle into the path of said carrier, and a lever for returning said roller into said receptacle, substantially as and for the purpose specified.

44. In a stamp-affixing mechanism, in combination with a stamp-carrier, a series of stamp-receptacles and a revoluble turret carrying the latter, substantially as and for the purpose shown.

45. In a stamp-affixing mechanism, in combination with an oscillatory stamp-carrier, a revoluble turret having a series of openings and a series of stamp-receptacles arranged over said openings and adapted for successive co-operation with said carrier, substantially as and for the purpose set forth.

46. In combination with a stamp-affixing mechanism, a revoluble turret and a series of stamp-hoppers, substantially as and for the purpose specified.

47. In combination with a stamp-affixing mechanism, a revoluble turret and a series of detachable stamp-receptacles, substantially as and for the purpose shown.

48. In a stamp-affixing mechanism, in combination with a stamp-carrier, a stamp receptacle or hopper, the stamp-separating plates, means for liberating the latter one at a time from said hopper, and means for ejecting each one as liberated out of the way of a succeeding one, substantially as and for the purpose set forth.

49. In a stamp-affixing mechanism, in combination with a stamp-carrier, a stamp-hopper, stamp-separating plates, means for liberating the latter one at a time from said hopper, and a reciprocating ejector-plate, substantially as and for the purpose described.

50. In a stamp-affixing mechanism, in combination with a stamp-hopper, stamp-separating plates, means for liberating the latter one at a time from said hopper, and a spring-actuated ejector-plate, substantially as and for the purpose specified.

51. In a stamp-affixing mechanism, in combination with a stamp-hopper, stamp-separating plates, means for liberating the latter one at a time from said hopper, a reciprocating ejector-plate, and a pivoted spring-actuated lever for moving the same, substantially as and for the purpose shown.

52. In a stamp-affixing mechanism, in combination with a stamp-hopper, stamp-separator ejecting mechanism consisting of a reciprocating plate and means to automatically cause its reciprocations, substantially as and for the purpose set forth.

53. In combination with stamp-affixing mechanism, a supporting-frame provided with a stamp-carrier, guideways, a holder for stamps and stamp-separators, and a separator-ejecting plate reciprocable in said guideways, substantially as and for the purpose specified.

54. In a stamp-affixing mechanism, in combination with a supporting-frame, a reciprocating separator-ejecting plate, a pivoted lever engaging with the latter, and a reciprocating stamp-carrier provided with means to cause a movement of said lever in one direction, substantially as and for the purpose shown.

55. In a stamp-affixing mechanism, in combination, a supporting-frame, a separator-ejecting plate, a pivoted lever engaging with the latter, and a reciprocating carrier having a part to engage with said lever to set said plate, substantially as and for the purpose set forth.

56. In a stamp-affixing mechanism, in combination, a supporting-frame, a separator-ejecting plate, a pivoted lever engaging with the latter, a spring for moving said plate in one direction, a reciprocating carrier having a part to engage with said lever to set said plate, and a locking device to hold said plate when set, substantially as and for the purpose described.

57. In combination with the stamp-carrying mechanism, the pivoted operating-lever, the cam-bar pivoted in rear of the latter and engaging the rearwardly-extended end thereof, and the spring connected to said cam-bar and a relatively-fixed part to return said lever to and hold it in its normal position, substantially as and for the purpose shown.

58. In combination with the stamp-carrying mechanism, the pivoted operating-lever, the pivoted cam-bar engaging therewith and having an upwardly-extending arm, and a spring extending between the latter and a relatively-fixed part to return said lever to and hold it in its normal position, substantially as and for the purpose set forth.

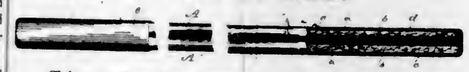
59. In combination with a stamp-hopper having stamp-retaining devices adapted to be moved into and out of the path of stamps, a lock to hold the stamp-retaining devices in a position to permit the insertion of stamps into said hopper, substantially as and for the purpose shown.

60. In combination with a stamp-hopper and the movable connected fingers co-operating with its lower end, a device to lock said fingers in a position so as to permit the insertion of stamps into said hopper, substantially as and for the purpose described.

61. In combination with a stamp-hopper and the movable fingers co-operating with its lower end, the stud-and-slot connection between said hopper and said fingers operating as a lock to hold said fingers in a position to permit the insertion of stamps into said hopper, substantially as and for the purpose set forth.

62. In combination with a stamp-hopper, movable fingers co-operating with its lower end, two bars connected to each other and to said fingers, and a stud provided on said bars at their point of connection engaging with a slot having an offset that is provided in said hopper, substantially as and for the purpose specified.

447,213. RAZOR-STROP. JOSEPH R. TORREY, Worcester, Mass. Filed Oct. 2, 1890. Serial No. 366,382. (No model.)

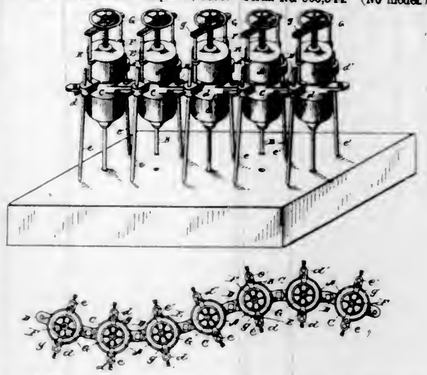


Claim.—1. A semi-rigid razor-strop consisting of two contiguous flexible stuffed stropping-cushions without a rigid body-piece, said cushions being attached together and suitably finished at one end to form a handle.

2. A semi-rigid razor-strop consisting of two superposed flexible stuffed cushions suitably attached together, combined with a flexible longitudinal stiffening, said strop being suitably finished at one end to form a handle.

3. A razor-strop consisting of two contiguous superposed flexible stuffed cushions A, each of which is composed of a paper case *a*, filled with a suitable packing and having an outer leather covering *c*, combined with a longitudinal stiffening-strip *d*, said strop having at one end an envelope *e*, finishing the said strop at said end to form a handle.

447,214. MULTIPLE ROCK-DRILL. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Sept. 19, 1890. Serial No. 365,544. (No model.)



Claim.—1. In a system of rock-drills, a plurality of drilling-engines in tandem relation to each other, each engine being vertically self-supporting and being laterally supported by its adjacent engine or engines.

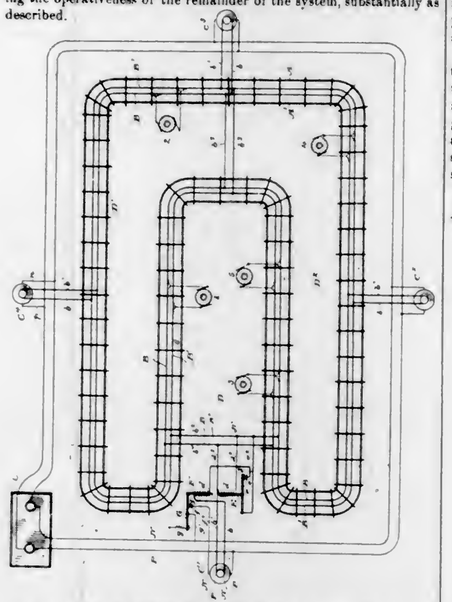
2. In a system of rock-drills, a plurality of drilling-engines arranged in tandem relation to each other, a support for each engine, and detachable adjustable connections between the supports of all the engines.

3. In a system of rock-drills, a plurality of drilling-engines in tandem relation to each other, each engine being vertically self-supporting and being laterally adjustably supported by its adjacent engine or engines.

447,215. ELECTRIC-RAILWAY SYSTEM. CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed Mar. 7, 1889, Serial No. 302,287. Divided and this application filed Nov. 8, 1890. Serial No. 370,739. (No model.)

Claim.—1. A system of supplying and distributing currents for electric railways, comprising working-conductors along the line of way, a circuit supplying currents of relatively high potential, main tension-reducing devices connected with the high-tension circuit and continuously supplying currents of lower potential to the working-conductors, and auxiliary tension-reducing devices distributed along the line of way and provided with automatic means for closing the circuits and rendering the auxiliary converters operative upon a fall of potential in the working-circuit, substantially as described.

2. A system of supplying and distributing currents for electric railways, comprising normally-continuous working-conductors along the line of way, a circuit supplying currents of relatively high potential, a plurality of tension-reducing devices distributed along the line of the railway and arranged to receive high-tension supply-current and to supply current of reduced potential to the working-conductors, the intervals between the converters being arranged in accordance with the electro-motive force of the working-current and the capacity of the circuit, and means for cutting out of the main working-circuit the portions thereof supplied by any of the converters without affecting the operativeness of the remainder of the system, substantially as described.



3. A system of supplying and distributing currents for electric railways, comprising normally-continuous working-conductors along the line of the railway, a supply-circuit carrying continuous currents of relatively high potential, a plurality of tension-reducing devices of the continuous-current type distributed along the line of the railway and connected in multiple arc with the work at intervals, connections between the high-tension supply-conductors and the primary circuit of the converters and between the secondary circuits of the converters and the working-conductors, and automatic means for opening the converter-circuits when the potential of the working-conductors is normal and for closing said circuits and opening the converter upon the fall of the potential in the working-circuit in the vicinity of the converter, substantially as described.

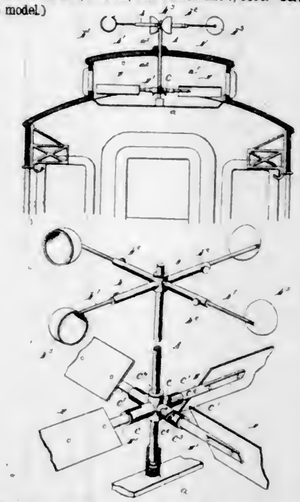
4. In a system of supplying and distributing currents for electric railways, a working-conductor extending along the line of way and having double or looped portions therein, a plurality of tension-reducing devices connected with said working-conductors at intervals therealong, cross connections extending between and uniting adjacent portions of the working-conductors, a primary supply-circuit carrying currents of relatively high potential, and connections between the primary circuit and the primary circuit of the tension-reducing devices and between the secondary or current-generating portions of the converter and the working-conductors.

5. In a system of supplying and distributing currents for electric railways, the combination, with a tension-reducing or current-converting device, a primary supply-circuit therefor, and a secondary consumption-circuit in connection therewith, of means for automatically controlling the action thereof, comprising separable contacts in the primary circuit, separable contacts in the secondary circuit, means normally holding said contacts together, and a solenoid of relatively high resistance connected in the working-circuit and acting, when sufficiently energized, to move the contacts and open both primary and secondary circuits.

6. The combination, with a tension-reducing or current-transforming device, of primary and secondary circuits therefor, separable contacts in both circuits, a spring-actuated lever provided with a contact adapted to engage a second contact to close the primary circuit, a plunger connected with said lever and moving in a solenoid of relatively high resistance spanning the working-circuit, a second plunger also connected with said lever and moving in a solenoid included in series with the secondary circuit of the converter, a second contact-carrying arm connected with said plunger and controlling the working-circuit of the converter, and a tension-spring normally holding the levers and plungers in position to close both sets of contacts, whereby when the potential of the working-circuit is sufficiently high both plungers will be raised and both sets of contacts opened and upon a fall of potential in the working-circuit the tension of the spring will move the parts to close both sets of contacts, thereby completing the primary and secondary circuits of the converter and rendering the same active.

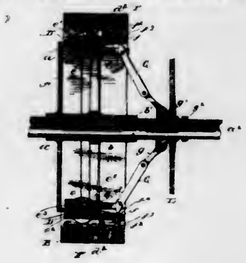
7. A continuous converter comprising an armature in circuit with the primary supply-current, an armature operated thereby and acting to generate currents of the desired potential, and field-magnets for both armatures, said field-magnets being provided, respectively, with energizing-coils connected in shunt relation to their respective armatures and with additional coils placed thereon and connected in series with said armatures and with their working-circuits, substantially as described.

447,216. VENTILATING DEVICE FOR RAILWAY-CARS. RICHARD W. WALDROP, Norfolk, Va. Filed June 7, 1890. Serial No. 354,611. (No model.)



Claim.—In a ventilating device for railway-cars, the fan-wheel comprising the hub mounted on a rotary shaft and carrying a series of radial-hollow arms or sockets, each provided with a longitudinal slot *c'* terminating at its rear end in an oblique slot *c²*, one edge of which has a series of obliquely-arranged notches or recesses, in combination with the fan-blades having the arms inserted in said sockets and provided with lugs adapted to enter said grooves and engage any one of said recesses, whereby the obliquity of the fan-blades may be adjusted, substantially as specified.

447,217. FRICTION-CLUTCH PULLEY. CHARLES H. WATEROUS, Jr., and JAMES N. PEEL, Brantford, Canada. Filed Jan. 4, 1890. Serial No. 335,839. (Model.) Patented in Canada Feb. 4, 1890, No. 33,584.



Claim.—1. The combination, with a wheel having a flange, of a pulley, a friction-grip comprising inner and outer lever-arms, and an operating-lever connected to said inner lever-arm and having its end engaging said outer lever-arm, closing the contact ends of said lever-arms on said flange, as set forth.

2. The combination, with a fast wheel, of a loose pulley, a frictional grip comprising inner and outer lever-arms having widened contact ends carrying removable blocks, the yoke or bracket to which said lever-arms are pivoted, the spring bearing on said outer lever-arm, and the operating-lever connected to one of said lever-arms and bearing against the end of the other lever-arm, substantially as set forth.

3. The combination, with a fast wheel, of a loose pulley, a friction-grip comprising inner and outer lever-arms having widened contact ends, an adjustable block secured in the end of said outer lever-arm, the yoke or bracket to which said lever-arms are pivoted, and the grip-operating lever pivoted to one end of said inner lever-arm and engaging said adjustable block, substantially as set forth.

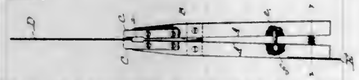
4. The combination, with a fast wheel, of a loose pulley, a friction-grip comprising inner and outer lever-arms having widened contact ends, an adjustable block pivotally secured in said outer lever-arm and having a groove or recess, a set-screw bearing against the free end of said block, the operating-lever connected to said inner lever-arm and having its end in contact with said block, and the sliding sleeve to which said lever is connected, substantially as set forth.

5. The combination, with a fast wheel having a flange, of a pulley, the yoke or bracket secured to said latter pulley and having a boss or enlargement and parallel ears, the friction-grip comprising inner and outer arms having ears fulcrumed by a pin or bolt to said former ears, the adjustable lock in one end of said outer arm, the set-screw bearing thereon, the spring located in said boss or enlargement, the operating-lever fulcrumed on said inner arm and having its end in contact with said block, the sliding sleeve, and the connecting-links, substantially as set forth.

6. The combination, with a wheel having a flange, of a pulley having a pair of friction grip-arms pivotally secured thereto and secured together, said arms acting as levers, a sliding collar, and an operating-lever connected to one of said lever-arms and to said collar, as set forth.

7. The combination, with a wheel having a flange, of a pulley, two lever-arms having their contact ends in juxtaposition to said flange for engagement therewith, the sliding collar, and lever connection between the latter and said lever-arms for forcing said lever-arms apart at one end and toward each other at the other end, as set forth.

447,218. GIN-SAW CLEANER. JOHN W. WEBB, Union Springs, Ala. Filed Feb. 27, 1890. Renewed Dec. 31, 1890. Serial No. 376,349. (No model.)



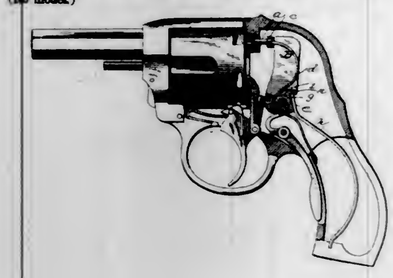
Claim.—1. In a saw-cleaner, the combination, with pivoted arms A A′, of scrapers C, mounted thereon, as set forth.

2. In a saw-cleaner, the combination, with spring-actuated pivoted arms A A′, of scraper C, mounted thereon, as set forth.

3. In a saw-cleaner, the combination, with pivoted arms A A′, of scrapers C, formed with cut-away portions *a*, as set forth.

4. In a saw-cleaner, the combination, with pivoted arms A A′, provided with sockets *b*, of spring *c*, mounted in such sockets, and scrapers C, secured to the arms, as set forth.
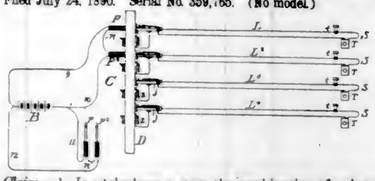
447,219. LOCK FOR REVOLVERS. CHARLES A. WEEKS and CHARLES FOEHL, Philadelphia, Pa. Filed Mar. 4, 1890. Serial No. 342,546. (No model.)



Claim.—1. In combination, the hammer, the normally-retracted firing-pin, and means for retracting said pin and holding its rear end in position, consisting of a spring connected at one end to the pin and at the other end to the frame.

2. The hammer supported on its pivot between bosses, the firing-pin, and the spring arranged by the side of the hammer, extending past the bosses, and connected to the pin, substantially as described.

447,220. TRANSMITTER-CIRCUIT. ANTHONY C. WHITE, Boston, Mass., assignor to the American Bell Telephone Company, same place. Filed July 24, 1890. Serial No. 359,765. (No model.)



Claim.—1. In a telephone system, the combination of a plurality of independent metallic circuits, a transmitter and a receiver in each circuit, and a transmitter-energizing battery common to all said circuits, the circuits being adapted for connection at one end to one pole of said battery and at the other to one end of any of the other circuits of the system, so as to form therewith a continuous circuit through the instruments of both circuits and through said battery, substantially as described.

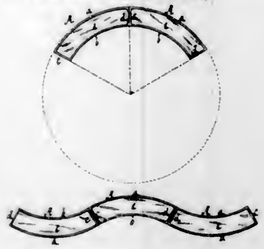
2. In a telephone system, the combination of a series of independent metallic circuits extending from a central station and including each a transmitter and a receiver, an energizing-battery at the central station common to all of said circuits, and means, as indicated, for connecting said circuits in pairs, thereby constituting any desired number of compound circuits, each including a pair of connected stations and the common battery, and each independent of the others, substantially as described.

3. In a telephone-exchange system, a series of metallic telephone-circuits extending from sub-stations to a central station and each including telephone transmitting and receiving instruments, double conductor-connections for uniting the said metallic circuits in pairs at the said central station for intercommunication, and a low-resistance battery located at the central station, included in and forming a part of each of the circuits of the said double-conductor connections, whereby the said battery may be used in common by the said metallic circuits without interference to energize the transmitters thereof, substantially as described.

4. Two or more independent metallic circuits, each including a pair of stations connected at a central station for conversation, and each station having a transmitter and a receiver, in combination with a battery at said central station for energizing the transmitters of all the circuits, said battery forming a common conducting-section of the several circuits, substantially as described.

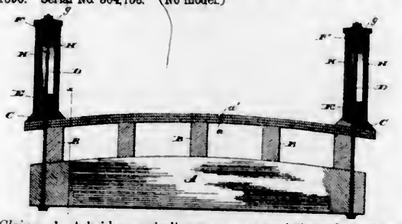
5. In a telephone system, a battery at a central station, main conductors extending from the poles thereof, respectively, a number of loops therefor in parallel circuit of the said battery with each other, each extending from one of the said main conductors to the other, and including a variable-resistance transmitter and one helix of an induction-coil, and constituting, together with said battery and main conductors, a metallic telephone-circuit, a series of main-line circuits extending to different stations, an independent telephone-circuit connection in circuit with the remaining helix of each of the said induction-coils for including the same at will in any of said main-line circuits, substantially as described.

447,221. TRAY. ALBERT WIGGERS, West Hoboken, N. J. Filed Nov. 6, 1890. Serial No. 370,462. (No model.)



Claim.—As a new article of manufacture, a tray composed of two side pieces formed of sections of cylinder-shells having a common axis and diameters of different lengths, flat rectangular end pieces, and a flat bottom, substantially as described.

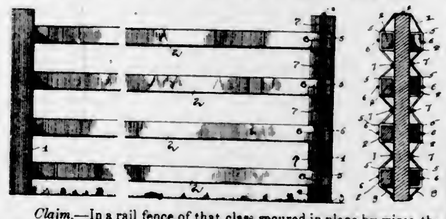
447,222. BRIDGE. WILLIAM B. WISE, Elba, Ala. Filed Sept. 6, 1890. Serial No. 364,158. (No model.)



Claim.—1. A bridge or similar structure consisting of a series of transverse sills, the upper edges thereof being curved, longitudinal sleepers secured upon the upper portion of said sills, a flooring secured to the sleepers, said flooring being made up of two or more sets of boards laid at right angles to the sleepers, side or guard rails supported upon blocks C, and bolts extending through the guard or side rails and secured thereto and to the sills, substantially as shown, and for the purpose set forth.

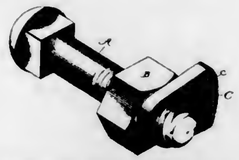
2. The combination, in a bridge, of the transverse sills A, having raised central portions, longitudinal sleepers secured thereto, a curved flooring made up of three sets of floor-boards, arranged substantially as shown, and blocks C, upon which the sills of the side trusses rest, said trusses being sheathed and provided with covering-plates, substantially as set forth.

447,223. PORTABLE RAIL FENCE. CLYDE B. WYNEGAR, Nineveh, Ind. Filed June 17, 1890. Serial No. 355,777. (No model.)



Claim.—In a rail fence of that class secured in place by wires, the combination, with the posts, of the rails having their ends bearing flat against the posts, and the securing-wires secured at their ends to the top and bottom of the posts and at intermediate points coiled around the ends of each rail, and staples passed over the coils into each rail and also over the wires into the post between the rails, as set forth.

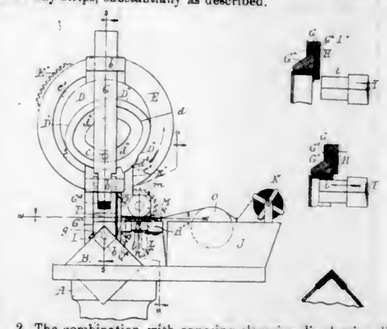
447,224. LOCK-NUT. LEVI H. YOUNG, St. John, Canada. Filed Dec. 2, 1890. Serial No. 373,341. (Model.) Patented in Canada July 12, 1890, No. 34,694.



Claim.—A reversible lock-nut having flat or substantially flat faces and a preponderance of weight at one edge, and of such thickness in relation to its thread that when screwed up to a given point on a bolt the heavy edge will fall on one side or the other of the center, according as one or the other of its faces is outermost, whereby it is adapted to securely lock a nut at any desired point on a bolt.

447,225. MACHINE FOR ATTACHING STAYS TO THE CORNERS OF BOXES. FRED H. BEACH, Rochester, N. Y. Filed June 10, 1885. Serial No. 168,218. (No model.)

Claim.—1. The combination, with opposing clamping-dies having diverging working-faces, of a feeding mechanism constructed to deliver stay-strips between said clamping-dies, and a pasting mechanism for rendering adhesive the stay-strips, said clamping-dies being constructed to co-operate in pressing upon interposed box-corners the adhesive stay-strips, substantially as described.



2. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being arranged to co-operate in pressing adhesive fastening-strips upon interposed box-corners, a feeding mechanism constructed to feed forward a continuous fastening-strip, and a cutter for severing the said continuous strip into stay-strips of suitable lengths, substantially as described.

3. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being arranged to co-operate in pressing an adhesive fastening-strip upon the corner of an interposed box, a feeding mechanism constructed to feed between the dies a continuous fastening-strip, a pasting mechanism for applying adhesive substance to the strip, and a cutter for severing the strip into stay-strips of suitable lengths, substantially as described.

4. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being constructed to co-operate in pressing an adhesive fastening-strip upon an interposed box-corner, of a movable plunger or strip-bender constructed to bend downwardly or inwardly a projecting end of the stay-strip, that one of the clamping-dies which engages the inner surface of the box-corner being movable into and out of its usual working position, whereby it may engage and carry inside of the box-corner the said projecting end of the stay-strip, substantially as described.

5. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being constructed to co-operate in pressing an adhesive fastening-strip upon an interposed box-corner, of a movable plunger or strip-bender constructed to bend downwardly or inwardly a projecting end of the stay-strip, that one of said clamping-dies which engages the inner surface of the box-corner having a reciprocatory motion in a direction parallel with the box-corner, so as to carry inward and press against the inside of the box-corner the said projecting end of the stay-strip, substantially as described.

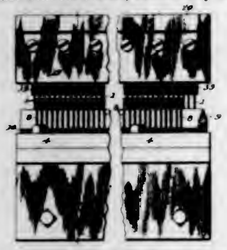
6. The combination of opposing clamping-dies having diverging working-faces constructed to co-operate in pressing an adhesive stay-strip upon an interposed box-corner, one of said clamping-dies being constructed to act with an elastic or yielding pressure to enable the dies to operate upon box-corners of different thicknesses, substantially as described.

7. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being arranged to co-operate in pressing an adhesive fastening-strip upon an interposed box-corner, of a feeding mechanism constructed to feed forward a continuous fastening-strip, a cutter for severing the strip into suitable lengths, and a movable part or plunger which bends downwardly or inwardly the projecting end of the fastening-strip, that one of the clamping-dies which engages the inside of the box-corner being constructed to reciprocate in a direction parallel with the box-corner, substantially as described.

8. The combination, with a form or stationary die provided with a recess or notch, of a reciprocating die constructed to fit the notch and having diverging working-faces, a movable die or plunger provided with diverging working-faces corresponding with those of the said reciprocating die, and a secondary movable die or plunger constructed to bend downwardly or inwardly the projecting end of the fastening-strip into position to be caught by the reciprocating die, substantially as described.

447,226. MACHINE FOR PRODUCING KNITTED PILE FABRICS. JAMES BOOTH, Halifax, England. Filed Mar. 18, 1890. Serial No. 344,379. (No model.)

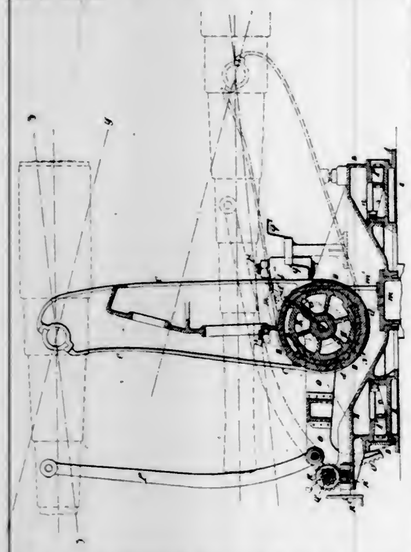
Claim.—1. In a straight-bar knitting-machine adapted for making looped fabrics, the combination, with the needles, sinkers, and guide-eyes, of a shaft carrying cutters and a longitudinal bar carrying hooks or holders, said cutters working between said hooks, which latter are adapted to hold a series of loops and allow those first laid on to be brought first in contact with the cutters, substantially as described.



2. In a straight-bar knitting-machine, the combination, with the guide-eyes 1, of shaft 23 and slide-bed 25, connections between said guide-eyes and shaft, and means for giving said shaft a backward-and-forward motion in the slide-bed, said means having provision for adjustment and including the cam 33, substantially as described.

3. In a straight-bar knitting-machine and in combination, the guide-eyes 1, the fingers 39, extending between them to separate the yarns, and the supporting means for the fingers and guide-eyes, substantially as described.

447,227. RECOIL-CHECK FOR DISAPPEARING-GUN CARRIAGES. JEAN B. G. A. CANET, Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, Limited, Openshaw, England. Filed Dec. 31, 1888. Serial No. 295,062. (No model.) Patented in England Nov. 12, 1887, No. 15,514, and Nov. 14, 1887, No. 15,592, and in France Jan. 28, 1888, No. 188,413.



Claim.—1. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic apparatus comprising an outer cylinder and an inner cylinder or drum, one of which is fixed and the other of which is capable of rotation or oscillation about its axis and is firmly attached to the said lever, for the purposes above specified.

2. The combination, with a rocking lever for carrying a gun, of the rotary or oscillatory hydraulic apparatus, the outer cylinder of which is firmly attached to the said lever and the inner cylinder or drum of which serves as the pivot-pin or fulcrum of the said lever, substantially as and for the purposes set forth.

3. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic brake comprising an outer cylinder and an inner cylinder or drum, one of which is fixed and the other of which is capable of rotation or oscillation about its axis and is firmly attached to the said lever, and apparatus which receives the liquid from the said brake in the recoil and descent of the gun and forces the said liquid back into the said brake to effect the return of the gun to the firing position, substantially as and for the purposes above specified.

4. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic brake comprising an outer cylinder and an inner cylinder or drum, one of which is fixed and the other of which is capable of rotation or oscillation about its axis and is firmly attached to the said lever, and a recuperator comprising a cylinder connected with the said brake and provided with a ram or piston, and an air-compressor or its equivalent, whereby energy is stored during the recoil and descent of the gun and is utilized for effecting the return of the gun to the firing position, substantially as and for the purposes above specified.

5. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic brake comprising an outer cylinder and an inner cylinder or drum, one of which is fixed and the other of which is capable of rotation or oscillation about its axis and is firmly attached to the said lever, and which are provided with projecting segments forming a piston and abutments, substantially as and for the purposes above specified.

6. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic brake comprising an outer cylinder firmly attached to the said lever and provided with an inwardly-projecting segment or piston, and an inner cylinder or drum secured to the base-plate, turn-table, or platform of the gun-mounting and provided with an outwardly-projecting segment, forming abutments, and with ports or passages for the ingress and egress of the fluid, substantially as and for the purposes above specified.

7. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic brake, comprising an outer cylinder and an inner cylinder or drum, one of which is fixed and the other of which is capable of rotation or oscillation about its axis and is firmly attached to the said lever, a recuperator comprising a cylinder connected with the said brake and provided with a ram or piston and an air-compressor which is acted upon by and reacts upon the said ram or piston, and a compressed-air chamber or reservoir in communication with the said compressor, substantially as and for the purposes above specified.

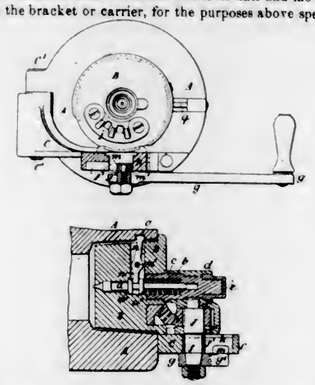
8. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic brake comprising an outer cylinder and an inner cylinder or drum, one of which is fixed and the other of which is capable of rotation or oscillation about its axis and is firmly attached to the said lever, and a parallel-motion apparatus comprising an arm arranged to turn about the axis of a movable cylinder, mechanism for elevating the gun by the adjustment of the said arm, and a rod or link parallel with the rocking lever and coupled at one end to the said arm and at its other end to the gun, substantially as and for the purposes above specified.

9. The combination, with a rocking lever for carrying a gun, of a rotary or oscillatory hydraulic brake comprising an outer cylinder and an inner cylinder or drum, one of which is fixed and the other of which is capable of rotation or oscillation about its axis and is firmly attached to the said lever, and a parallel-motion apparatus comprising an arm arranged to turn about the axis of the movable cylinder, mechanism for elevating the gun by the adjustment of the said arm, and a rod or link parallel with the rocking lever and coupled at one end to the said arm and at its other end to the gun, a recuperator comprising a cylinder connected with the said brake and provided with a ram or piston, and an air-compressor which is acted upon by and reacts upon the said ram or piston, substantially as and for the purposes above specified.

10. In a gun-mounting, the combination of the rocking lever carrying the gun, a hydraulic brake comprising an inner cylinder or drum secured to the turn-table or platform of the gun-mounting, and an outer cylinder firmly attached to and serving as the boss or bearing of the said lever, a parallel-motion apparatus comprising arms or levers provided with toothed segments and loosely mounted on trunnions or projections on the said inner cylinder, and rods or links connecting the said arms or levers to the gun, an elevating mechanism comprising toothed pinions geared with the said toothed segments, a worm-wheel connected by friction cones or clutches with the said pinions, and a worm geared with the said worm-wheel and provided with a handle for rotating it, substantially as and for the purposes set forth.

447,228. BREECH-LOADING ORDNANCE. JEAN B. G. A. CANET, Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, Limited, Openshaw, England. Filed Feb. 7, 1889. Serial No. 299,008. (No model.) Patented in France May 10, 1887, No. 180,578, and in England July 4, 1887, No. 9,453.

Claim.—1. In a breech-loading gun, the combination, with a breech-screw having an interrupted thread and with a bracket or carrier hinged or pivoted to the body of the gun for supporting the breech-screw when out of the breech, of a shaft extending transversely to the longitudinal axis of the gun and movable to and fro with the breech-screw in the said bracket or carrier, gearing connecting the said shaft with the breech-screw, and a lever fixed on the said shaft for turning the same in either direction about its axis and moving it to and fro in the bracket or carrier, for the purposes above specified.



2. In a breech-loading gun, the combination, with a breech-screw having an interrupted thread and with a bracket or carrier hinged or pivoted to the body of the gun for supporting the breech-screw when out of the breech, of a shaft extending transversely to the longitudinal axis of the gun and movable to and fro with the breech-screw in the said bracket or carrier, gearing connecting the said shaft with the breech-screw, and a bell-crank lever fixed on the said shaft for turning the same in either direction about its axis and moving it to and fro in the bracket or carrier, the short arm of the said lever having a pin or stud adapted to enter a groove or slot in the said bracket or carrier, substantially as and for the purposes above specified.

3. In a breech-loading gun, the combination, with a breech-screw having an interrupted thread and with a bracket or carrier hinged or pivoted to the body of the gun for supporting the breech-screw when out of the breech, of a bell-crank lever fixed upon a shaft carried by the breech-screw and arranged to slide to and fro therewith in the bracket or carrier, and toothed gearing connecting the said shaft with the breech-screw, substantially as and for the purposes above specified.

4. In a breech-loading gun, the combination, with a breech-screw having an interrupted thread and with a bracket hinged or pivoted to the gun for supporting the said breech-screw when out of the breech, of a lever fixed upon a shaft *f*, carried by the breech-screw and arranged to slide in a slot *k* in the said bracket, a toothed segment *h*, fixed upon the said shaft, a toothed segment *j*, fixed upon the breech-screw and geared with the said toothed segment *h*, and a roller *m* on the said lever, arranged to work in a groove *l* in the said bracket, substantially as and for the purposes set forth.

5. In a breech-loading gun, the combination, with a breech-screw having an interrupted thread, of a firing-pin or striker carried thereby, a cocking-lever pivoted in a slot in the said breech-screw and engaging at one end with the said firing-pin and at its other end with a groove in the body of the gun, having an inclined or helical surface, a sear for holding the said firing-pin in its cocked position, and a trigger for effecting the release thereof, for the purposes above specified.

6. In a breech-loading gun, the combination, with a breech-screw operated substantially as above described, of a firing pin or striker carried thereby, a cocking-lever *n*, pivoted in a slot in the said breech-screw and engaging at one end with the said firing-pin and at its other end with a groove in the body of the gun, having an inclined or helical surface, a catch or sear *p*, adapted to engage with the said firing-pin and hold the same in its cocked position, and a lever or trigger *q*, pivoted to the body of the gun and adapted to act upon the said sear to release the same from the firing-pin, substantially as and for the purposes above specified.

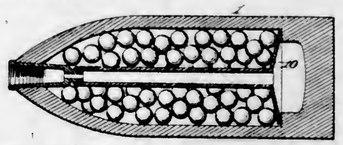
7. In a breech-loading gun, the combination, with a breech-screw operated substantially as above described, of a firing-pin or striker carried thereby, a cocking-lever *n*, pivoted in a slot in the said breech-screw and engaging at one end with the said firing-pin and at its other end with a groove in the body of the gun having an inclined or helical surface, a catch or sear *p*, adapted to engage with the said firing-pin and hold the same in its cocked position, a lever or trigger *q*, and a notch q^3 in the breech-screw, whereby the said trigger is allowed to act upon and release the said sear when but not until the breech-screw is locked in the breech, substantially as and for the purposes above specified.

8. In a breech-loading gun comprising a breech-screw provided with interrupted threads, the combination of the recesses or grooves in the body of the gun and the extractors *r*, which are pivoted to the breech-screw and are acted upon by springs, and which when the breech-screw is inserted in the breech enter the recesses or grooves therein, so that they can move outward to engage with the cartridge-flange, but when the breech-screw is turned about its axis to lock it in the breech the said extractors are securely held in engagement with the cartridge-flange by the interior surface or wall of the gun, substantially as and for the purposes set forth.

9. In a breech-loading gun, the combination, with the breech-screw and the hinged bracket for supporting the same, of a shaft carried by the said breech-screw and arranged to slide in a groove in the said bracket, an operating-lever fixed upon the said shaft, toothed gearing for communicating motion from the said shaft to the breech-screw, a hook formed or fixed on the breech, and a bolt or latch pivoted to the said bracket and adapted to engage with the said hook and with the said shaft or its bearing, substantially as and for the purposes set forth.

10. In a breech-loading gun, the combination, with the breech-screw and the hinged bracket for supporting the same, of a shaft carried by the said breech-screw and arranged to slide in a groove in the said bracket, an operating-lever fixed upon the said shaft and provided with a cam or projection, and a boss or projection on the breech for the said cam to bear against, substantially as and for the purposes set forth.

447,229. SHELL. CLAUD T. CAYLEY and REUBEN S. COURTMAN, London, England, assignors, by direct and mesne assignments, to the E. W. Bliss Company, Limited, Brooklyn, N. Y. Filed Nov. 10, 1887. Serial No. 254,805. (No model.)



Claim.—As a new article of manufacture, a punch-forged hollow projectile or shell having a conoidal point and a longitudinally-drawn and punched-out cylindrical portion formed with a lustrous external surface having parallel thread-like marks or lines extending longitudinally therenpon, substantially as herein set forth.

447,230. CURRENT-CONTROLLING DEVICE FOR ELECTRIC-RAILWAY CARS. JACOB C. CHAMBERLAIN, New York, N. Y. Filed Sept. 9, 1889. Serial No. 323,345. (No model.)

Claim.—1. The combination, with an electric circuit, of groups of batteries, a motor, and a regulator having series of contacts for changing the grouping of said batteries and, co-operating therewith, separate series of contacts adapted to connect said batteries with opposite poles of said motor, all of said contacts being mechanically connected, so as to move together, substantially as set forth.

2. The combination, in an electric circuit, of batteries or groups of batteries, an electric motor, and a regulator having a plurality of series of contacts, each series containing contacts for the terminals of each battery or group of batteries of the motor field-magnets and of the motor-armature, and such contacts in the different series being differently connected up, so as to connect the batteries to opposite poles of the motor-armature, all of said contacts being operatively connected to move together, substantially as set forth.

3. The combination of regulator cylinder or block 5, having series of contact plates or blocks connected up in various relations, whereby the electro-motive force of a current may be varied by continuous gradations from one polarity to the other, and a stop for arresting said cylinder or block at each extremity of its movements at a point between the extreme gradations, substantially as set forth.

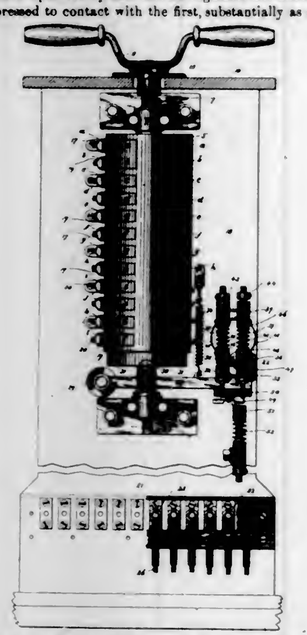
4. In combination with a contact-brush, a post whereon the same is mounted, and a ferrule embracing both post and brush, substantially as set forth.

5. In combination with contact-brushes, posts on which the same are mounted, ferrules, or rings surrounding said posts or brushes, and straining or set screws engaging with said posts, ferrules, and brushes, substantially as set forth.

6. In combination with a current-regulator, a circuit-breaker operated thereby, having two or more pairs of contacts arranged in multiple arc with one another and in series with the regulator, and adapted to operate substantially as set forth.

7. In combination with a current-regulator a circuit-breaker hav-

ing one member operated by said current-regulator and another member spring-pressed to contact with the first, substantially as set forth.



8. In a circuit-breaker, the combination of two pairs of contacts connected to the same circuit in multiple arc, one contact of each pair being yielding, and means for operating one contact of each pair simultaneously.

9. The combination of positively-movable contact 32, spring-pressed contact 35, and adjustable stop 43, arranged and adapted to operate substantially as set forth.

10. In a circuit-breaker, the combination of two pairs of contacts connected to the same circuit, means for operating one contact of each pair simultaneously, one of said pairs of contacts being yielding and brought into contact before the other.

11. The combination of positively-movable contacts 32 33, spring-pressed contacts 35 36, carried by rods 37, sleeves 38 39, wherein said rods slide, and adjusting-nuts 43 43, substantially as and for the purpose set forth.

12. The combination of contacts 32 35, sliding rod 37, sleeve 38, spring 42, and flexible conductor 45, substantially as and for the purpose set forth.

13. The combination of contacts 32 35, sliding rod 37, sleeve 38, spring 42, and fiber or equivalent collars 46, substantially as and for the purposes set forth.

14. The combination of a current-regulator, a circuit-breaker operated thereby, and an electro-magnet arranged to blow out the spark of said circuit-breaker, substantially as set forth.

15. The combination of the circuit-breaker having two or more pairs of contacts and an electro-magnet arranged with its pole adjacent to the contact-point of one of said pairs and having its helix in a shunt around the other pair of contacts, substantially as set forth.

16. The combination of the circuit-breaker with an electro-magnet for breaking the spark between a pair of contacts connected to the same circuit as the circuit-breaker and having its helix arranged in a shunt around the contacts of the circuit-breaker, substantially as set forth.

17. The combination of a circuit-breaker having two pairs of contacts and an electro-magnet having its pole adjacent to the contact-point of one of said pairs and its helix in circuit with said pair and in shunt around the other pair of contacts, substantially as and for the purposes set forth.

18. The combination of current-regulator having series of contact plates and brushes bearing thereon, a current-breaking lever operated by the movement of said regulator, two contact buttons or blocks carried by said lever, two contact buttons or blocks mounted on fixed supports and adapted to be impinged on successively by the contacts on said lever, and an electro-magnet having its pole adjacent to the contacts which separate later and its helix in shunt around the other contacts, substantially as and for the purposes set forth.

19. In combination with an electric circuit including batteries, a current-regulator, and the field-magnets and armatures of a motor, a high resistance in shunt around said batteries, regulator, and armature, and contacts in said shunt-circuit operated by said regulator, substantially as and for the purposes set forth.

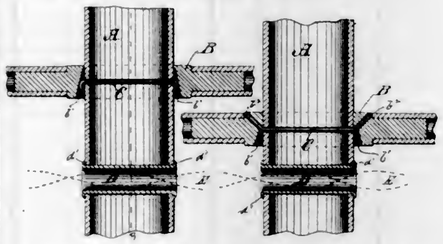
20. The combination of an electric circuit including batteries, a current-regulator, the field-magnet and armature of a motor, and contacts operated by said regulator for breaking said circuit with a shunt-circuit including said field-magnets, a high resistance, and contacts operated by said regulator and adapted to be closed immediately before the contacts of the main circuit are operated, substantially as set forth.

21. The combination of two identical regulators at opposite ends of a car, each regulator having a number of series of contact-plates and a series of brushes adapted to contact therewith, a number of batteries or groups of batteries, an electric motor or motors, and independent connections from the terminals of said batteries and from the motor or motors to said contact-brushes, and the connection being such that batteries placed, respectively, in series and in multiple by the movement of one regulator, so as to be unequally discharged, will be placed in multiple and in series by movement of the other regulator, whereby the current drawn from the several batteries during a trip is equalized, substantially as set forth.

22. The combination, on a car, of a number of batteries or groups of batteries, electric motor for driving said car, and two identical current-regulators on opposite ends of said car, each regulator having a series of brushes in independent connection with the terminals of said batteries and of the motor field-magnets and armature, sets of contact-plates adapted to be brought in contact with said brushes to vary the grouping of the batteries, and an additional set of plates for reversing the connection of the batteries to the motor, substantially as set forth.

23. In combination with the two relatively-movable contact-pieces in an electric circuit, an electro-magnet in proximity thereto normally unexcited, and means whereby the latter is excited at or immediately preceding the rupture of contact, substantially as set forth.

447,231. FENCE-POST. JOHN B. CLEAVELAND, Indianapolis, Ind. Filed Apr. 22, 1890. Serial No. 348,972. (No model.)



Claim.—1. A fence-post having a key or pin extended transversely through it so that the ends of the pin project, in combination with a clip having a keyway or recess upon its inner face to receive the ends of the key or pin, substantially as described, and for the purpose set forth.

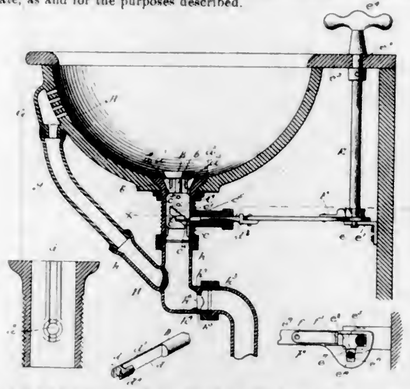
2. The post A, having the projected pin C secured thereto, in combination with the clip B, having a keyway b' b^2 to receive and hold the ends of the pin, substantially as and for the purpose set forth.

3. The post A, having the key or pin C projected transversely through it, with its projected ends bent vertically, in combination with the clip B, having a keyway to bind the bent ends of the key or pin and hold the clip in place, substantially as described.

4. In a fence, the combination of the tubular post A, having a series of transverse holes a^2 through it, the tubular brace-sleeves D, secured in said holes and having annular flanges at their ends to bear against the outside of the post, the wires E, loosely extended through said sleeves, the clips B, and the keys C, engaged by said clips, all arranged substantially as described, and for the purpose specified.

447,232. SET BOWL OR WASH-BASIN. SAMUEL P. CROSWELL, 2d, (now SAMUEL P. CROSWELL,) West Medford, Mass. Filed Aug. 21, 1890. Serial No. 362,580. (No model.)

Claim.—1. A set bowl or basin having a direct-escape passage from its bottom formed by a pipe and ways in the pipe for the guidance of a slide-plate, said slide-plate having an inclined slideway across it, a stopper fastened to the slide-plate, and a slide movable from without the escape-passage across in said inclined slideway in the slide-plate, as and for the purposes described.



2. A set bowl or basin having the direct-discharge pipe a, the slide-plate c^1 in the passage of said pipe, the stopper connected with said slide-plate, the inclined slideway in said plate, and the horizontally-movable spindle formed with the T end d^4, which laps upon the slide and serves to secure it to the spindle, as and for the purposes described.

3. In a set bowl or basin, the outlet-pipe a and slide-plate c^2 to slide in the bore of said pipe, controlled by simple guides, and a stopper attached to said slide-plate, having the inclined slideway and operating-spindle, the end of which enters said slideway and the side of which is cut away at d' to form a recess for a portion of the slide-plate and also the T d^4, as and for the purposes described.

4. A basin having the escape-pipe a, the bore of which has guides for a slide-plate C, said slide-plate C having an inclined slideway c', stopper B, secured to the slide-plate, the lower corner of the slide-plate being cut away at c^4, and the slide or end d of a slide-spindle, as and for the purposes described.

5. A set bowl or basin having an outlet-pipe and slide-plate in the outlet-pipe, a stopper secured to the slide-plate, an inclined slideway in the slide-plate, a spindle having a section entering said slideway, and means for varying the extent of outward movement of the spindle, whereby it is caused to be used both as a stop in preventing the withdrawal of the stopper and slide and also to permit by its further movement the withdrawal of the stopper and slide, as and for the purposes specified.

6. In a set bowl or basin having an outlet-pipe, a stopper for controlling the passage therein, a slide-plate in said passage, to which the stopper is secured, an inclined guideway in said slide-plate, a sliding spindle having a section to enter the said guideway, a shaft having a crank, and a pitman connecting the crank-pin of said crank with the spindle, as and for the purposes described.

7. In a set bowl or basin having an outlet-pipe, a stopper for controlling the passage therein, a slide-plate in said passage, to which the stopper is secured, an inclined guideway in said slide-plate, a sliding spindle having a section to enter the said guideway, a shaft having a crank, and a pitman connecting the crank-pin with the slide, having a T-shaped slot at its outer end, one arm of which receives the crank pin, the other arm the operating-shaft, and a stop F.

447,233. CATCHER'S GLOVE. EARLE H. DECKER, Philadelphia, Pa., assignor, by direct and mesne assignments, to Alfred J. Reach, same place. Filed May 10, 1890. Serial No. 351,294. (No model.)

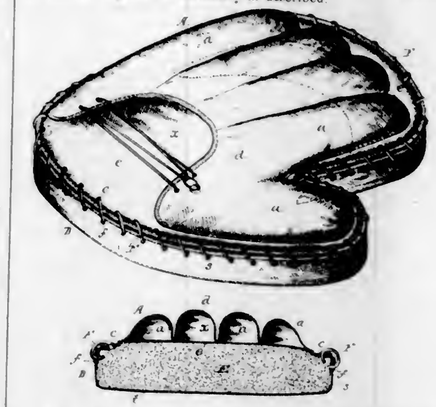
Claim.—1. A catcher's glove made with the back A and the palm or front D in two separable portions, and connections for joining the portions together at the edges, substantially as described.

2. A catcher's glove made in two separable portions, a pad between the portions, and connections for joining the portions together, substantially as described.

3. A catcher's glove made in two separable portions, the back portion being provided with a pocket for the hand, a pad between the portions, and connections for joining the portions together, substantially as described.

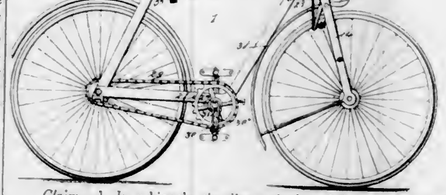
4. A catcher's glove consisting of the back portion having a pocket for the hand, a front portion, a pad, eyelets in the front and back portions, and a cord for lacing and securing the two portions together, substantially as described.

5. A catcher's glove consisting of a back and front portion, the back portion having a pocket for the hand and the front portion being flanged, a pad between the two portions, and connections for securing the portions together, substantially as described.



6. A catcher's glove consisting of a back portion having a pocket for the hand, a front portion having a flange, a pad between the two portions, and eyelets and cord for securing the back and front portions together, substantially as described.

447,234. BICYCLE. SAMUEL A. DONNELLY, Chicago, Ill. Filed Feb. 24, 1890. Serial No. 341,606. (No model.)



Claim.—1. In a bicycle, the diamond-shaped frame formed of two metal strips bent to form a diamond frame, each strip extending from the rear to the front end of the frame, where it is curved around and extends back to the rear frame end, substantially as set forth.

2. The double frame formed of the two channel-bars 2, bent to form a diamond-shaped frame and connected by the transverse bracing-bolts, each channel-bar extending from the rear to the front end of the frame, where it is curved around and extends back to the rear frame end, substantially as set forth.

3. In a bicycle, the combination, with a front fork having the bearings 20 20, of the diamond frame formed of the channel-bars 2, bent to form the double diamond frame secured by transverse bracing-bolts, and the frame-head 12, adapted to fit in the rounded front end of the diamond frame and formed with the upper and lower pivot-points 13 13*, substantially as set forth.

4. In a bicycle, the double diamond frame formed of the channel-bars 2, the lower ends of the upper bar being bent at right angles to form the integral mounting-steps 6 6, substantially as set forth.

5. In a bicycle, the combination, with the frame having at its forward end the frame-head 12, formed with the upper and lower pivots 13 13*, of the front fork formed of the channel-bars 14 and the U-shaped frame 15, secured between them, the head-frame 16, having the eyebolts 20 secured transversely in it, the spiral spring 23, secured at its ends to said bolts, and the transverse bolt 24, secured in the hollow fork, substantially as set forth.

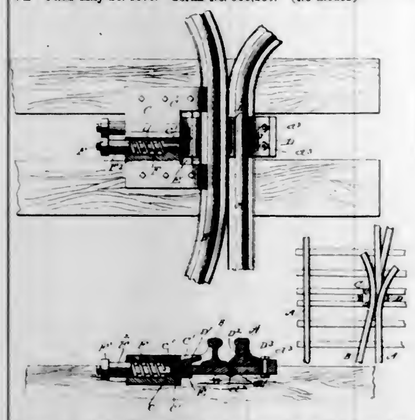
6. In a bicycle, the combination, with the frame having at its forward end the frame-head 12, formed with the upper and lower pivots 13 13*, of the front fork formed of the channel-bars 14 and the U frame 15, secured between them, the upper and lower pairs of rollers 22 22*, journaled in the hollow fork, the head-frame 16, having the eyebolts 20 secured transversely in it, the spiral spring 23, secured at its ends

to said bolts, and the transverse bolt 24, secured in the hollow fork, substantially as set forth.

7. The combination, with the bicycle-frame, of the saddle having the threaded post 33, the lower and upper plates 34, and the adjusting and retaining nuts 35 36, screwing on the threaded saddle-post above and below the plates 34, substantially as set forth.

8. The combination, with the frame 1, formed of the parallel flanged channel-bars, of the square bearing-box 25, movably fitted between the lower part of said frame and formed at its lower end with the integral crank-shaft box 25*, and the adjusting-screw 26, substantially as set forth.

447,235. RAILROAD-FROG. MASON A. DUDLEY, Buffalo Forge Va. Filed May 26, 1890. Serial No. 353,281. (No model.)



Claim.—1. In a railway-frog, the combination, with a fixed wing-rail, of a spring-actuated slide-plate arranged beneath the same, and a movable wing-rail secured to the said plate, substantially as shown and described.

2. In a frog, the combination, with a fixed wing-rail, of a sliding plate arranged beneath the same and provided with a shoulder to engage the fixed rail, and a movable rail secured to the sliding plate, substantially as shown and described.

3. The combination, with a fixed wing-rail, of a brace secured contiguous therewith, a plate sliding beneath the rail and provided with bolts sliding in the brace, and a shoulder adapted to engage the fixed wing-rail, and a movable wing-rail secured to the sliding plate, substantially as shown and described.

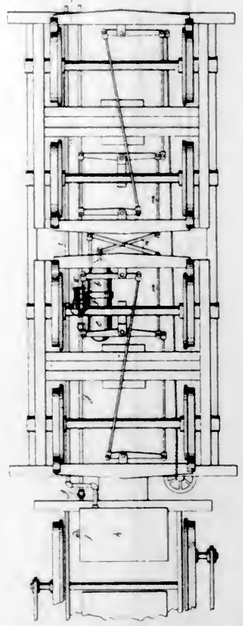
4. The combination, with the fixed wing-rail, of its brace recessed and apertured as described, the sliding plate arranged beneath the rail and provided with bolts sliding in the brace and a shoulder adapted to engage the rail, the movable wing-rail secured to the outer end of the plate, and springs arranged upon the inner ends of the bolts to return the movable wing-rail to its normal position, substantially as shown and described.

5. The combination, with the fixed rail B, of the brace C, recessed at C' and bored at *c*, the plate D, provided with the shoulder D' and bolts *d*, the movable rail A, braces D^1 and D^2, guiding-clip E, springs F, and nuts F', all arranged and adapted to operate substantially as shown and described.

447,236. AIR-BRAKE. CHRISTOPHER R. JAMES, Jersey City, N. J. Filed Feb. 14, 1890. Serial No. 340,462. (No model.)

Claim.—1. The combination, with the brake piston and cylinder, of the piston-valve controlling the brake-cylinder port, the constantly-open main compressed-air pipe connected to the case of said valve in the arrangement for opening and normally keeping the brake-cylinder port open to the exhaust by the pressure of the main tank and for admitting compressed air from the main tank to the brake-cylinder to apply the brakes when said valve is reversed, and the pipe connecting said valve-case behind the large end of the valve with the main tank subject to the engineer's valve in the arrangement to overbalance the pressure on said valve through the main pipe and reverse the valve to open the brake-cylinder to the compressed air from said main pipe by the air admitted by the engineer's valve through the pipe connected with the valve-case behind said large end of the valve, substantially as described.

2. The combination, with the valve controlling the brake-cylinder port for admitting the compressed air to apply the brakes and for exhausting it to release the brakes, of the constantly-open pipe connecting the case of said valve between the heads thereof with the main tank, the pipe connecting said case behind the large head with the main tank through the engineer's valve, said first-mentioned pipe admitting the air for opening and keeping the brake-cylinder port open to the exhaust and admitting air to the brake-cylinder to apply the brakes when the valve is reversed, and the other pipe admitting air to reverse the valve for so applying the brakes when the engineer's valve is opened, substantially as described.



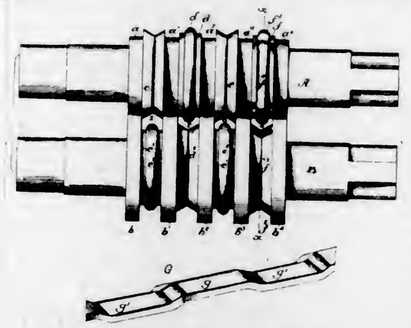
3. The combination, with the brake piston and cylinder, of the valve controlling the brake-cylinder port, the main supply-pipe admitting air to actuate said valve for normally exhausting the brake-cylinder and for filling said cylinder when the valve is reversed, also another supply-pipe subject to the engineer's controlling-valve and admitting overpowering pressure to reverse said valve to open the brake-cylinder port and admit air from the main supply-pipe to apply the brakes, and also the secondary valve intermediate to the main supply-pipe and the said valve controlling the brake-cylinder port and automatically admitting overpowering pressure from the chambers of the two valves behind said valve controlling the brake-cylinder port to reverse it and apply the brakes when the supply through the main pipe fails.

4. The combination, with the brake piston and cylinder, of the valve controlling the brake-cylinder port, the main supply-pipe admitting air to actuate said valve for normally exhausting the brake-cylinder and for filling said cylinder when the valve is reversed, also another supply pipe subject to the engineer's controlling-valve and admitting opposing and overpowering pressure to reverse said valve and open the brake-cylinder port to apply the brakes, also the secondary valve intermediate to the main supply-pipe and the said valve controlling the brake-cylinder port and automatically admitting overpowering pressure from the chambers of the two valves behind said valve controlling the brake-cylinder port to reverse it and apply the brakes when the supply through the main pipe fails, the inlet-passages for the air from the main pipe through the large head of the secondary valve, and the disk and spring for closing said passage when said air-supply through the main pipe fails, said pipe connecting with the main tank through the engineer's valve, having a check-valve in close proximity to the chamber of the valve controlling the brake-cylinder port.

447,237. ROLLS FOR ROLLING TURN-BUCKLE BLANKS. WILLIAM B. MIDDLETON, Lebanon, Pa. Filed Aug. 21, 1890. Serial No. 362,587. (No model.)

Claim.—1. Rolls which embody passes, which operate to form a blank passed successively through them into the shape of the lateral half of a turn-buckle of the form shown, substantially as set forth.

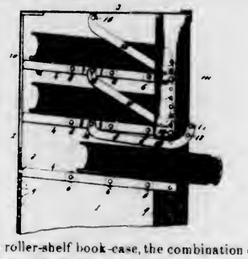
2. Rolls which embody passes of semi-annular outline, and also a pass which embodies matched elevations and depressions, substantially as set forth.



3. Rolls which embody faces and grooves which form a series of passes of substantially similar semi-annular outline but of graduated sizes, and also a groove and face constituting a pass and embodying a matched elevation and depression, substantially as set forth.

4. Rolls which embody opposing pairs of grooves and faces which form a series of passes of semi-annular outline, and one pair of which pairs of grooves and faces embodies matched elevations and depressions so respectively set that in the rotation of the rolls the elevations take into the depressions, substantially as set forth.

447,238. ROLLER-SHELF BOOK-CASE. EDMOND H. BABBITT, St. Louis, Mo., and EARL T. HARVEY, Chicago, Ill. Filed June 28, 1890. Serial No. 357,096. (No model.)

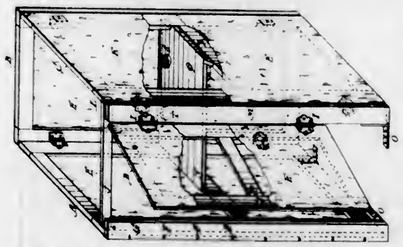


Claim.—1. In a roller-shelf book-case, the combination of inclined shelves and hinged stops for holding the books on said shelves, substantially as and for the purpose set forth.

2. In a roller-shelf book-case, the combination of inclined shelves and stops for holding the books on said shelves, said stops being composed of rollers, and hinged or pivoted arms in which said rollers are journaled, substantially as and for the purpose set forth.

3. In a roller-shelf book-case, the combination of the inclined shelves and stops for holding the books on said shelves, said stops being composed of pivoted arms having curved outer ends, and rollers journaled in the outer ends of the arms, substantially as set forth.

447,239. VOTING-BOOTH. CALEB S. BABCOCK and DAVID A. GOURLAY, Mount Vernon, N. Y. Filed Aug. 21, 1890. Serial No. 362,608. (No model.)



Claim.—1. In a voting-booth, the independent frames composing the sides, back, and door, hinged together as described, and provided with supporting-pieces for a detachable shelf, in combination with a translucent covering material secured to said frames, and a brace-bar connected with one of the sides and adapted to engage the opposite side for connecting such sides and forming a stop for the door, substantially as described.

2. In a voting-booth, the independent frames composing the sides, back, and door, hinged together as described, and provided with supporting-pieces for a detachable shelf, in combination with translucent covering material secured to said frames, and a brace-bar pivotally connected with one of the sides and having a dovetailed end to engage a dovetailed recess on the opposite side for connecting such sides, substantially as described.

3. In a voting-booth, the independent frames composing the sides, back, and door, hinged together and provided with supporting-pieces for a detachable shelf, in combination with translucent covering material secured to said frames, and a brace-bar pivotally connected with one of the frames at its top end and adapted to detachably engage the opposite side for connecting such sides together and forming a stop to the door in its closing movement, substantially as described.

4. In a voting-booth, the independent frames composing the sides and back, hinged together, and provided with supporting-pieces for a detachable shelf, in combination with a translucent covering material secured to the frames, a molding attached to one of the sides, a molding hinged to the opposite side, and a swinging door pivoted to the hinged molding, substantially as described.

5. In a voting-booth, the independent frames composing the sides and back, hinged together and provided with shelf-supporting pieces, in combination with a translucent covering material secured to said frames, a molding rigidly attached to one of the sides, a molding hinged to the opposite side, a swinging door pivotally connected to the hinged molding, and a brace-bar connected with the rigidly-attached molding and adapted to detachably engage the side which carries the hinged molding substantially as described.

6. In a voting-booth, the combination of the independent frames composing the sides and back, hinged together and provided with shelf-supporting pieces and covered with translucent material, a molding secured to each of the sides, a swinging door hinged to one of the moldings, a brace-bar connected to the other molding and adapted to detachably engage the opposite side to connect such sides and form a stop for the door, and angle-irons secured to the lower ends of the sides and of the moldings for rigidly attaching such parts to a floor, substantially as described.

7. In a voting-booth whose sides and back are composed of independent frames hinged together, the combination, with the side frame A, of the molding G, secured to and forming with the said side frame a recess, and the locking-brace connected to the molding in said recess and adapted to engage the opposite side frame to connect such side frames and form a stop for a hinged swinging door connected with one of the side frames, substantially as described.

8. In a voting booth or compartment whose sides and back and door are composed of independent frames hinged together, the movable brace J, having one end pivoted to the molding G and the other end adapted to interlock with the side frame C, said brace being adapted to hold the sides A and C in place and to operate as a door stop for the door of the booth, substantially as shown and described.

447,240. STREET-CAR. FRED BAIER and DANIEL R. HART, St. Louis, Mo., assignors to the Brownell Car Company, same place. Filed Jan. 2, 1891. Serial No. 376,513. (No model.)

Claim.—1. In the construction of a car-body, the ventilator-rails 2 and 3 and the uprights 4, when such parts are framed into an arched form before being placed in position in the construction of the car, substantially as specified.

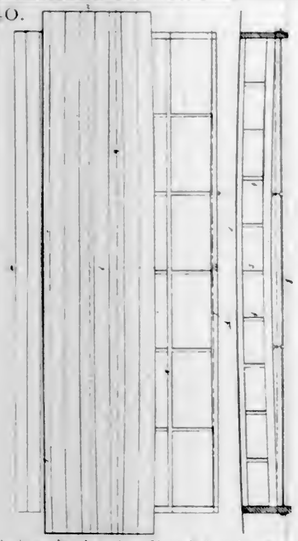
2. In the construction of a car-body, the combination of the ventilator-rails, carlings of uniform length, and the taper top plates 7, substantially as and for the purposes set forth.

3. In the construction of a car-body, the combination of the ventilator-rails 2 and 3 and uprights 4, framed into an arched form before being placed in position, the carlings of uniform length, the tapering top plates 7, and the irregular-shaped roof-boards 9, substantially as specified.

4. In the construction of a car-body, the combination of the ventilator-rails 2 and 3 and uprights 4, framed into an arched form before being placed in position, the carlings 6 of uniform length, the tapering

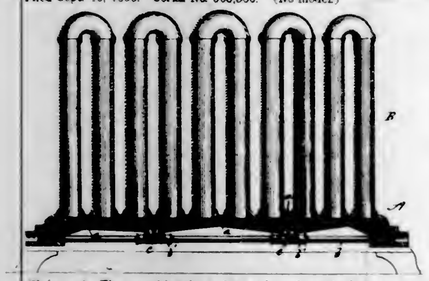


447,240.



top plates 7 the irregular-shaped roof-boards 9, and truss-rods 8, substantially as and for the purpose set forth.

447,241. STEAM-RADIATOR. CLARK OTIS, Farmer Village, N. Y. Filed Sept. 18, 1890. Serial No. 365,386. (No model.)



Claim.—1. The combination of a series of vertical steam-pipes connected together at their upper ends to form pairs, a hollow base communicating with the lower ends of the said pipes and provided with a series of transverse partitions *a*, thereby dividing the base into a series of independent chambers, each of which has its bottom inclined toward a drip-opening *c*, depending chambers *a'*, formed at the ends of the base and provided, respectively, with an outlet and inlet opening, a horizontal pipe arranged under the base and having its ends communicating with the said depending chambers, and couplings on this pipe communicating with the drip-openings, whereby all the water of condensation may readily run out of the radiator as fast as formed, substantially as described.

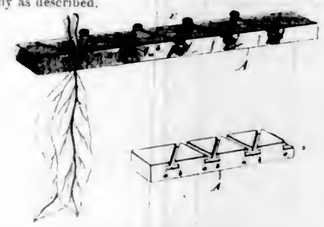
2. The combination of a series of vertical pipes, a hollow base communicating therewith and provided at its ends with depending chambers *a' a'*, communicating, respectively, with the inlet and outlet openings of the radiator, and a horizontal pipe arranged under the base and communicating with the said depending chambers, substantially as described.

447,242. TOBACCO-HANGER. WALTER J. SCULTHORP, Columbia Grove, assignor of one-half to Charles Madison Hardy, Reedy, Va. Filed Feb. 6, 1890. Serial No. 339,413. (No model.)

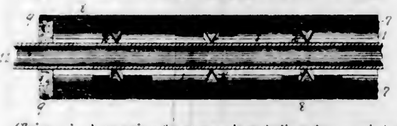
Claim.—1. A tobacco-hanger consisting of a stick provided with stops at its sides below the top of the stick to prevent accidental displacement of the cable, in combination with the cable, substantially as and for the purposes specified.

2. A tobacco-hanger consisting of a stick provided with grooves in its surface which extend across the stick to opposite sides, and which grooves end and communicate with recesses or under-cuts at the sides of the stick, substantially as described.

3. A tobacco-hanger consisting of a stick provided with grooves on its surface, which grooves intersect each other at opposite sides of the stick, the stick being recessed at the points of intersection of the grooves by means of lateral under-cuts opening into the grooves, substantially as described.



447,243. AIR-SPACE COVERING FOR STEAM-PIPES, &c. JOSEPH P. COSTIGAN, Minneapolis, Minn., and THOMAS M. VALLEAU, Brooklyn, N. Y. Filed Nov. 6, 1890. Serial No. 370,471. (No model.)

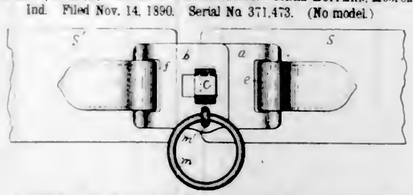


Claim.—1. A covering for steam-pipes, boilers, &c., consisting of an inner plate or shell separated from the surface to be covered by means of V-shaped struts, each formed by cutting or striking out two oppositely-extending tongues from the metal forming the plate, bending the same toward each other, and folding the edge of one tongue over the edge of the other, and a non-conducting covering inclosing said shell and covering and inclosing said air-space, substantially as specified.

2. A covering for steam-pipes, boilers, &c., consisting of an inner plate or shell separated from the surface to be covered by means of V-shaped struts, each formed by cutting or striking out two oppositely-extending tongues of unequal length from the metal forming the plate, bending the same toward each other at equal angles to the body of the plate, and folding the outer extremity of the longer tongue over the outer edge of the shorter tongue, and a non-conducting covering outside of said plate or shell and inclosing the same and the air-space formed between the same and the surface to be covered, substantially as specified.

3. A covering for steam-pipes, boilers, &c., consisting of an inner plate or shell having supports adapted to rest upon the surface to be covered, formed by turning down the side edges thereof and turning under the edge of the turned-down portion substantially at right angles thereto, intermediate supports, each formed by cutting or striking out two oppositely-extending tongues at a short distance apart from the metal forming the plate or shell, bending the same toward each other, and folding the outer extremity of one tongue over the outer edge of the other, and a non-conducting covering inclosing said shell and air-space formed therein, substantially as specified.

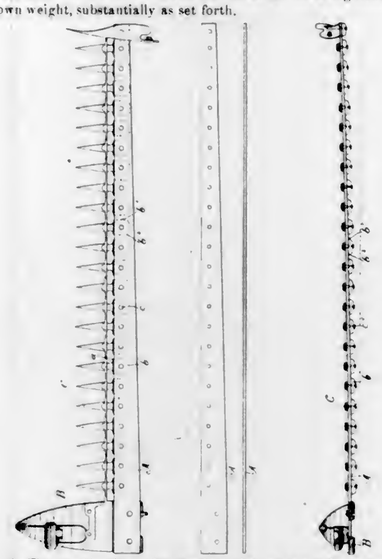
447,244. BUCKLE FOR HARNESS. MARK HUFFMAN, Moorehand, Ind. Filed Nov. 14, 1890. Serial No. 371,473. (No model.)



Claim.—In a harness buckle or coupling, the combination embracing a plate provided with an eye *e*, whereby it is secured to a strap *s*, said plate being also provided with a stud or head projecting from it at or near one end, a plate *b*, provided with an eye *f*, by which it is secured to a strap *s'*, an eye *d*, with which said latter plate *b* is also provided, by which said plate is adapted to be coupled to plate *a*, and a shoulder *b'*, adapted to abut against opposite plate when so coupled, all as and for the purposes set forth.

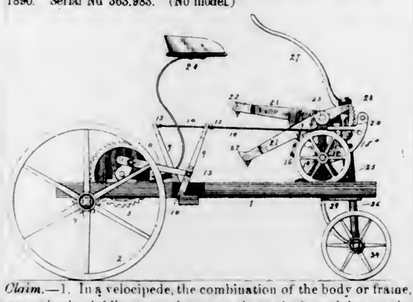
447,245. FINGER-BAR. ANDREW J. INGLIS, Milwaukee, Wis. Filed Oct. 30, 1890. Serial No. 369,862. (No model.)

Claim.—1. The combination, in the cutting apparatus of a mowing-machine, of the finger-bar and the guard-fingers, the former supported from its inner end and the latter having their heel faces hollowed out in the direction of their lengths, which will by means of the bolts by which the guard-fingers are secured to the former cause it to assume a downward middle curvature sufficient to be straightened by its own weight, substantially as set forth.



2. The combination, with the finger-bar, of guard-fingers having on the sides only of their heels raised edges adapted to bear against said finger-bar and bolts binding said guard-fingers between their bearing to said finger-bar, substantially as and for the purpose set forth.

447,246. VELOCIPEDE. THOMAS W. JAMISON, Salisbury, Mo., assignor of one-half to Thomas H. Walton, same place. Filed Sept. 5, 1890. Serial No. 363,983. (No model.)



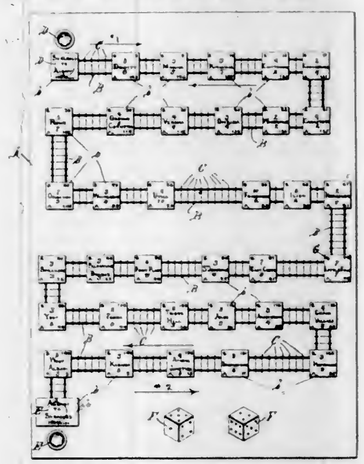
Claim.—1. In a velocipede, the combination of the body or frame, the rear wheels rigidly secured to an axle or shaft, a pinion on the axle or shaft, a cog-wheel engaging said pinion and mounted on a crank-shaft, vertical levers pivoted to the body or frame and connected to said cranks, oscillating wheels or drums, cords or cables connecting the wheels *c*, drums to said levers, pinions secured to the shaft of said wheels or drums, rack-segments pivoted over said pinions and engaging therewith, and pedals secured to the inner ends of extensions on said rack-segments, substantially as and for the purpose set forth.

2. In a velocipede, the combination of the frame or body 1, rear wheels 2, a pinion 4, secured to the axle of the rear wheels, a cog-wheel 5, engaging the pinion 4, a shaft 6, to which the cog-wheel 5 is secured and which is provided with cranks 8, levers 9, pivoted to the frame or body 1, straps or rods 11, forming a connection between said levers and cranks, oscillating wheels or drums 16, having shafts journaled in sockets 18, cords or cables 14, connecting the drums to the upper ends of said levers, rack-segments 20, journaled in the upper ends of said brackets and having extensions 21, and pedals 22, secured to the inner ends of said extensions, substantially as and for the purpose set forth.

3. In a velocipede, the combination of the body or frame 1, ground-wheels 2, pinion 4, secured to the shaft or axle of the wheels 2, cog-wheel 5, engaging the pinion 4, shaft 6, upon which the cog-wheel 5 is mounted, cranks 8 on the shaft 6, levers 9, pivoted to the body or frame 1 and having a number of perforations, straps or rods 11, having a number of perforations in their outer ends and by which an adjustable connection is made between said levers and cranks, hooks 15, adjustably secured to the upper ends of said levers, wheels or drums 16, secured to shafts journaled in brackets 8, secured to the body or frame 1, cords or cables 15, forming a connection between said hooks and drums, pinions 19 on said drum-shafts, cog-segments 20, engaging said pinions and having extensions 21, and pedals 22, substantially as and for the purpose set forth.

4. In a velocipede, the combination of the frame 1, sleeve 25, secured to the front end of the frame, a shaft 26, passing through said sleeve, a plate 29 on the shaft and upon which the frame or body 1 rests, a lever 27 on the upper end of the shaft 26 and adjustably secured thereto, a cross-head 31 on the lower end of the shaft 26, an axle 32, pivoted to said cross-head, and the front wheels 34, substantially as and for the purpose set forth.

447,247. GAME APPARATUS. WALTER F. JONES, Syracuse, N. Y. Filed Sept. 29, 1890. Serial No. 366,431. (No model.)



Claim.—1. The herein-described game, the same consisting of a series of stations, a member movable on said station, different symbols for the stations, and a chance-indicating device having thereon symbols to correspond with the aforesaid symbols, substantially as described.

2. The herein-described game, the same consisting of a series of stations, two starting-stations, a pair of traveling members, different symbols for said stations, and a chance-indicating device having thereon symbols to correspond with the aforesaid symbols, substantially as specified.

3. The herein-described game, the same consisting of a series of stations, two starting-stations, a pair of traveling members, and a station interposed between said former stations upon which both of the traveling members may rest at the same time, substantially as set forth.

4. The herein-described game, the same consisting of a series of stations, two starting-stations, different symbols for said stations, a chance-indicating device having symbols thereon to correspond with the aforesaid symbols, and a resting-station upon which both of said traveling members may rest at the same time, substantially as and for the purpose set forth.

5. The herein-described game, the same consisting of a series of stations, three or more of which are at unequal distances from each other, a traveling member movable on said stations, and a chance-indicating device having thereon symbols corresponding to the different distances between said stations, substantially as and for the purpose specified.

6. The herein-described game, the same consisting of a series of stations, three or more of which are at unequal distances from each other a pair of starting-stations, a pair of traveling members movable toward each other from said starting-stations, and symbols on said

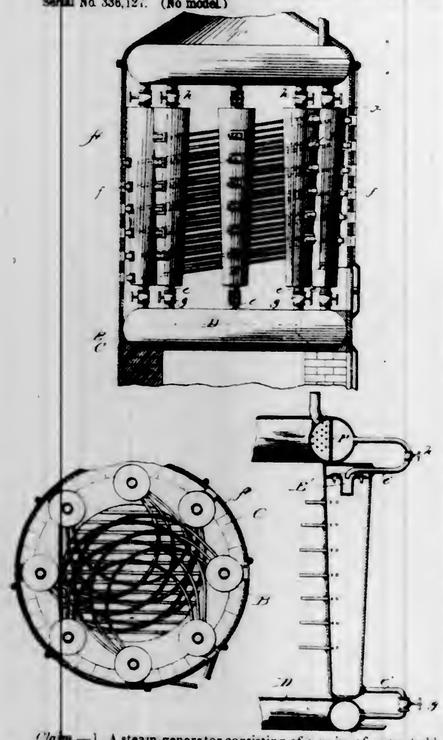
members corresponding to the distances between said stations, substantially as and for the purpose described.

7. The herein-described game, the same comprising a thoroughfare, a series of stopping-stations, symbols for distinguishing one station from the other, symbols for distinguishing the distance of one station from the other, and a chance-indicating device having thereon symbols to correspond with one series of the aforesaid symbols, substantially as set forth

8. The herein-described game, the same comprising a thoroughfare, a series of stations consisting of two opposite starting-points and a series of intervening stations, symbols for distinguishing the distance of the intervening stations from the starting-stations, a pair of traveling members movable on the stations, and a chance-indicating device or members having thereon symbols to correspond with the distance between the adjacent stations, substantially as described

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447,248. **STEAM-BOILER.** MORDICAI LEVI, Charleston, W. Va., assignor of one-third to William T. Levi, same place. Filed Jan. 7, 1890. Serial No. 336,127. (No model.)



Claim.—1. A steam-generator consisting of a series of water-holding and steam-generating tubes B of inverted-cone shape, a steam-drum, a mud-drum with connections to the tubes B, and the circulating-pipes between the inverted-cone-shaped tubes.

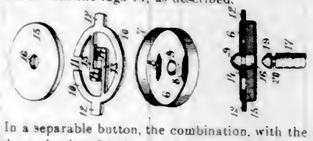
2. In combination, the water-tubes with circulating-pipes, the steam-drum, the mud-drum, and the connecting-pipes *c* between the water-tubes and drums, said pipes extending laterally in order to permit the said tubes and drums to be arranged close together.

3. In combination, the water-tubes with circulating-pipes, the steam-drum resting on said tubes, the mud-drum, also bearing against said tubes, and the valved connections *c* between the drums and tubes, substantially as described.

4. A steam-boiler consisting of a series of tubes, a steam-drum, a connecting-pipe, and a diaphragm having a tubular portion provided with perforations and a flanged upper portion, the end of the receiving-pipe extending into the tubular portion of the diaphragm, substantially as described.

447,249. **SEPARABLE BUTTON.** RUSSELL H. LEWIS, Providence, R. I., assignor to Albert Eddy, same place. Filed Nov. 5, 1890. Serial No. 370,374. (No model.)

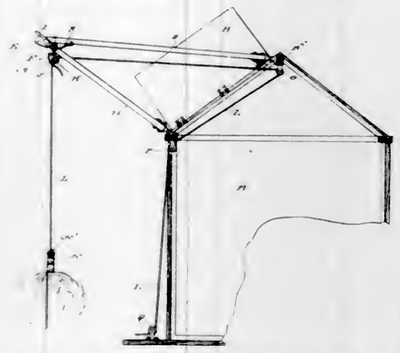
Claim.—1. In a separable button, a spring locking device formed from one piece of metal, and having the slot 11, push-rods 12, and arms 13, provided with the lugs 14, as described.



2. In a separable button, the combination, with the base-plate 6, having the projections 8 and recess 9 stamped therefrom and furnished with the rim 7, of the spring-plate 10, having the slot 11, push-bars 12, and arms 13, supplied with the lugs 14, and the cover 15, over which a portion of the rim 7 is turned to secure the parts together and form a base, as described.

3. In a separable button, the combination, with the post or spindle 17, rigidly secured to the front piece 18 and having a tapering end 19 and a circumferential groove 20, of a base composed of the base-plate 6, having the raised rim 7, projections 8, and recess 9, together with the spring-plate 10, having the slot 11, push-rods 12, and arms 13, supplied with the lugs 14, and a covering-plate 15, having the central hole 16, as described.

447,250. **HAY-STACKER.** MILLER MACHIN, Bowen, Ill., assignor of one-half to David S. Adams, same place. Filed July 12, 1890. Serial No. 358,487. (No model.)



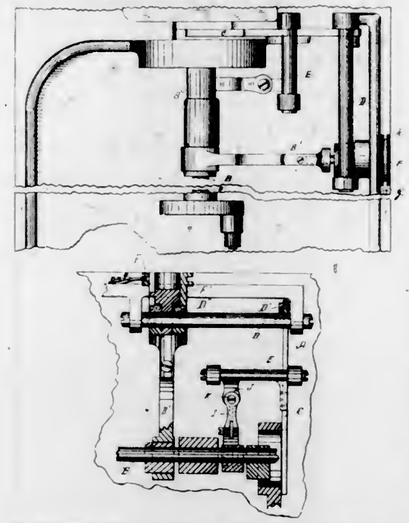
Claim.—1. In a hay-stacker, the combination, with a pivoted arm having a head, of levers connected at their free ends by a transverse rod arranged at the under side of the said pivoted arm, a rope secured by one end to the said transverse rod and adapted to pass over a pulley suspended from the said rod and also adapted to support the hay-fork, a tripping-lever fulcrumed on the said transverse rod, and a catch pivoted on the said arm and adapted to lock the said tripping-lever in place, substantially as shown and described.

2. In a hay-stacker, the combination, with a pivoted arm having a head, of levers connected at their free ends by a transverse rod arranged at the under side of the said pivoted arm, a rope secured by one end to the said transverse rod and adapted to pass over a pulley suspended from the said rod and also adapted to support the hay-fork, a tripping-lever fulcrumed on the said transverse rod and adapted to rest with its fulcrumed end against the head of the said arm, it being also provided with a curved slotted end adapted to be engaged by the hay-fork, and the catch pivoted on said arm, substantially as shown and described.

3. In a hay-stacker, the combination, with connected levers, of a tripping-lever fulcrumed in the free end of the said connected levers and provided with a curved forked arm, a pulley suspended from the pivot of the said tripping-lever, a rope secured at one end to the pivot of the said tripping-lever and adapted to support a hay-fork and also passing over the said pulley, a pivoted arm resting with its under side on the pivot end of the said tripping-lever, and an L-shaped catch pivoted on the said arm and adapted to lock the said tripping-lever in place, substantially as shown and described.

447,251. **FEEDING MECHANISM FOR SEWING-MACHINES.** WILLIAM A. MACK, Norwalk, Ohio, assignor to the Standard Sewing Machine Company, of Ohio. Original application filed Apr. 25, 1885, Serial No. 163,395. Divided and this application filed Sept. 12, 1885. Serial No. 176,879. (Model.)

Claim.—1. The combination, in a sewing-machine provided with a main driving-shaft carrying a shuttle and an eccentric or cam, a reciprocating feed-dog having connection with and operated by a rock-shaft, and a reciprocating connecting-rod having connection at one end with said cam or eccentric on the driving-shaft and at its opposite end provided with an adjusting device, substantially as described, for adjustable connection with said rock-shaft or part thereof, of a secondary rock-shaft provided at or near one end with an arm or extension for engagement with the feed-dog to give the latter its up-and-down motion, and at or near its opposite end is provided with a pivoted lever and an adjusting-screw for the latter to adjust its free end, which is engaged by a cam or eccentric on the driving-shaft, substantially as described, and for the purpose set forth.



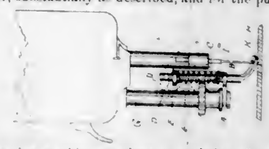
2. The combination, in a sewing-machine, with a driving-shaft provided with a cam or eccentric thereon and a feed-dog horizontally reciprocated by said driving-shaft through the medium of a rock-shaft, a rod connecting said rock-shaft and the said cam or eccentric, said connecting-rod being provided with a shoulder or projection, and an adjusting-screw adapted to engage with an arm of said rock-shaft to operate the latter, of a secondary rock-shaft provided with an arm for engagement with the feed-dog to give the latter an up-and-down movement and with a pivoted or hinged arm or lever for engagement with a cam or eccentric on the driving-shaft to operate said rock-shaft, and means for adjusting said pivoted or hinged lever, substantially as described, and for the purpose set forth.

3. The combination, in a sewing-machine, with the main driving-shaft, a feed-dog horizontally reciprocated by a rock-shaft, a cam located on said driving-shaft, and a rod connecting said rock-shaft and cam, of a secondary rock-shaft provided at one end with an arm for engagement with said feed-dog and at its opposite end with a hinged or pivoted arm for engagement with an operating cam or eccentric on the driving-shaft, and a spring and adjusting-screw for adjusting the engaging end of said pivoted lever in its relation to its engaging cam or eccentric, substantially as described, and for the purpose set forth.

4. The combination, in a sewing-machine, of a feed-dog horizontally reciprocated by a rock-shaft, connecting-rod, and a cam or eccentric secured on the lower driving-shaft, an intermediary rock-shaft provided at or near one end with an arm projecting beneath the feed-dog, and a supporting-roller to relieve the bearing-surface from friction and at or near its opposite end with another arm or extension having a secondary arm hinged at or near its center thereto, the free end of which is adjusted for a greater or less degree of contact with a cam or eccentric on the driving-shaft to adjust the throw of said secondary rock-shaft, substantially as described, and for the purpose set forth.

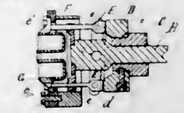
447,252. **PRESSER-FOOT FOR SEWING-MACHINES.** WILLIAM A. MACK, Norwalk, Ohio, assignor to the Standard Sewing Machine Company, of Ohio. Filed July 26, 1887. Serial No. 245,306. (No model.)

Claim.—1. A sewing-machine attachment consisting of a supporting plate or frame provided with means for connection with the presser-bar, an elastically-supported shaft provided with a presser-foot, an actuating-lever pivoted on said shaft and having a link connection with said supporting plate or frame, in combination with the needle-bar provided with a projection thereon for engagement with said actuating-lever, substantially as described, and for the purpose set forth.



2. A sewing-machine attachment consisting of a supporting plate or frame provided with a shank for detachable connection with the presser-bar of a sewing-machine and with a vertical slot therein, a vertically-arranged shaft and foot carried by said supporting plate or frame, provided with a projection adapted to extend within said vertical slot in the supporting-frame, a coiled spring, and an actuating-lever pivoted to said vertical shaft and having a pivotal link connection with said supporting-plate, substantially as and for the purpose set forth.

447,253. **SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES.** WILLIAM A. MACK, Norwalk, Ohio, assignor to the Standard Sewing Machine Company, of Ohio. Filed Nov. 14, 1888. Serial No. 290,856. (No model.)

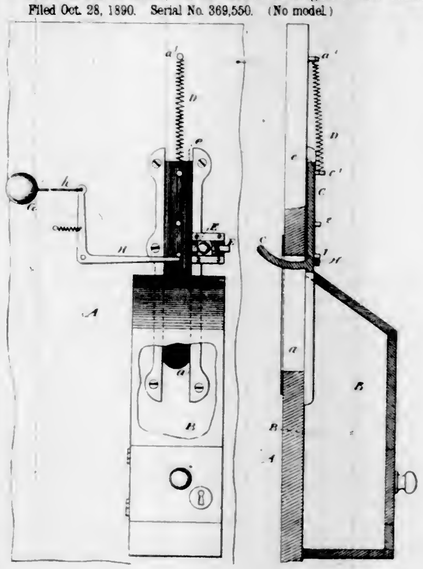


Claim.—1. In a sewing-machine, the combination, with the shuttle-race, of a shuttle provided with openings or recesses therein, a driving-shaft, a shuttle-driver pivotally mounted on said shaft and provided with pivoted arms, a guide-plate for said pivoted arms, and a cam adapted to operate said shuttle-driver and arms, substantially as described, and for the purpose set forth.

2. In a sewing-machine, the combination, with a shuttle-race, of a shuttle provided with openings therein, a driving-shaft and a shuttle-driver pivotally mounted on the said driving-shaft and provided with pivoted arms, a guide-plate located between said driver and shuttle-race, and a stationary cam surrounding the driving-shaft, substantially as described, and for the purpose set forth

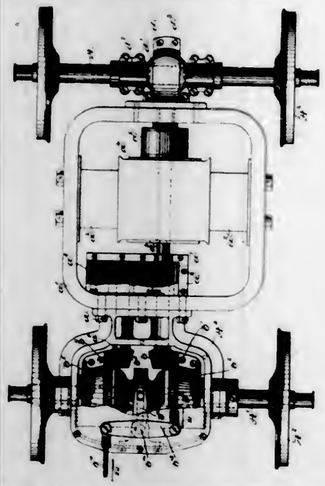
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447,254. **HOUSE-DOOR LETTER-BOX.** JOSE MATTHEWS and JOSEPH GILMER, Savannah, Ga.; said Matthews assignor to said Gilmer. Filed Oct. 28, 1890. Serial No. 369,550. (No model.)



Claim.—The combination, with a vertically-slotted house-door, of an inside box B, secured thereto, a slotted cover C, retracting-spring D, spring-latch E, and lever H, connecting with a striking-bell, said cover provided with the studs 1 2, as and for the purpose set forth.

447,255. ELECTRIC-MOTOR MECHANISM. SAMUEL E. MOWER, New Haven, Conn., assignor to Henry G. Thompson & Sons, same place. Filed May 31, 1890. Serial No. 353,830. (No model.)



Claim.—1. An axle, a continuously-running electric motor, speed-reducing gears connecting the revolving armature-shaft of the motor with the axle, one of the said gears being loose on the axle, a second set of speed-reducing gears connecting the armature-shaft with the axle, one gear of the second set of gears being loose on the axle, and a double-beveled cone friction-clutch mechanism secured on the axle intermediate of the loose gears of the speed-reducing gears, substantially as described.

2. An axle, a continuously-running electric motor, speed-reducing gears connecting the revolving armature-shaft of the motor with the axle, one of the said gears being loose on the axle, a second set of speed-reducing gears connecting the armature-shaft with the axle and differentiated from the first set of gears, one gear of the second set of gears being loose on the axle, and a clutch mechanism secured to the axle and adapted to engage the said loose gears, substantially as described.

3. The combination, with the car-axle of an electric-railway car, of a beveled hub loose on the said axle, a gear secured to said hub, an electric motor having its armature-shaft provided with a pinion to rotate said gear continuously, and a beveled friction-clutch mechanism secured to the car-axle and adapted to be inserted into the said beveled hub to revolve the car-axle, substantially as described.

4. The combination, with an electric-railway car and a continuously-rotating electric motor having its armature-shaft arranged longitudinally with relation to the car and provided with a bevel-pinion, of a car-axle, a bevel-gear loose thereon driven by the bevel-pinion, and a clutch on the car-axle, substantially as described.

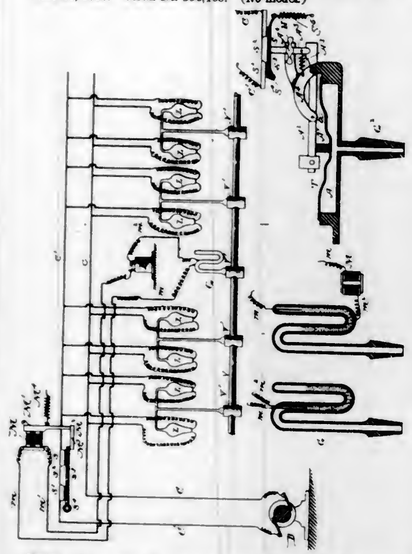
5. The combination, with the car-axle and gears b' b^4, loosely mounted thereon, of an electric motor having its armature-shaft provided with a pinion to engage the pinion b' and with a pinion a^2, a counter-shaft provided with a pinion to engage the gear b^4 and a gear a^3 to engage the pinion a^1, and a clutch mechanism secured to the car-axle and adapted to be moved into engagement with the gears b' b^4, substantially as described.

6. The combination, with the car-axles of an electric-railway car, a yoke A^3, supported by one axle, and a motor-supporting frame supported by the other car-axle, a motor secured to said supporting-frame, having its armature-shaft supported by said frame and the yoke A^3, and pinions b a^7 on the armature-shaft, of conical hubs b^2 b^5 on the car-axle, a hub b^7, keyed on the said axle and provided with conical ends to engage the said conical hubs, and means to move the hub b^7, substantially as described.

7. An axle, a conically-shaped hub loose thereon, an electric motor, its armature-shaft, and gearing between the said shaft and hub, and a hub keyed on the car-axle and provided with a conical end to engage the conically-shaped hub, whereby the rotation of the axle may be controlled, substantially as described.

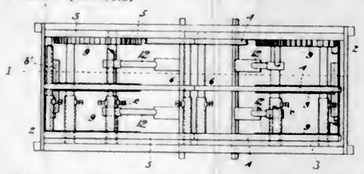
8. The combination, with the car-axles of an electric-railway car, a yoke A^3, supported by one axle, a motor-supporting frame sustained at one end by a ball-and-socket joint on the other car-axle, and a motor secured to said supporting-frame, having its armature-shaft supported by the said frame and yoke A^3, of speed-reducing gears connecting the revolving armature-shaft of the motor with the axle, one of the said gears being loose on the axle, and a clutch mechanism secured on the axle to revolve therewith and adapted to be engaged with the loose gear of the speed-reducing gears, substantially as described.

447,256. APPARATUS FOR FLASHING AND EXHAUSTING INCANDESCENT ELECTRIC LAMPS. WILLIAM E. NICKERSON, Cambridge, and ADOLPH BERENBERG, Somerville, Mass., assignors to the Beacon Vacuum Pump and Electrical Company, Portland, Me. Filed June 20, 1890. Serial No. 356,105. (No model.)



Claim.—In combination, one or more electric lamps connected to an exhaust apparatus, a main circuit for flashing the filaments of said lamps, a local circuit including a circuit-closing device operative upon admission of air to the exhaust apparatus, and a cut-out for the main circuit controlled by said local circuit, substantially as and for the purpose set forth.

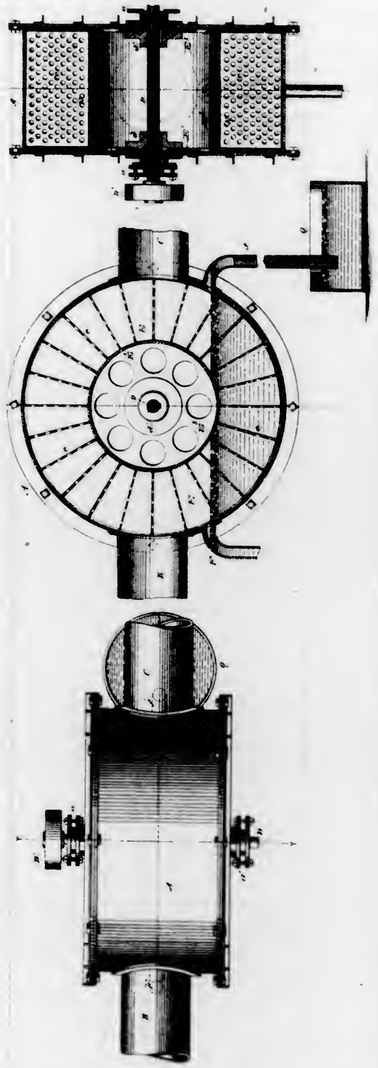
447,257. BED. THOMAS J. PARKINSON, Pittsburg, Pa., assignor of one-half to John R. Baum, same place. Filed Sept. 15, 1890. Serial No. 364,934. (No model.)



Claim.—1. The combination of a bed-frame adapted to be set in and removed from a bed and pivoted bed-sections set in the frame, said bed-frame having side rails formed of parts relatively movable longitudinally to vary the length of the frame, substantially as and for the purposes described.

2. The combination of a bed-frame adapted to be set in and removed from a bed, and pivoted bed-sections set in the frame, said bed-frame having transverse connecting-bars formed of parts relatively movable longitudinally to vary the width of the frame, and said pivoted sections having also transverse connecting-bars formed of parts relatively movable longitudinally for a like purpose, substantially as and for the purposes described.

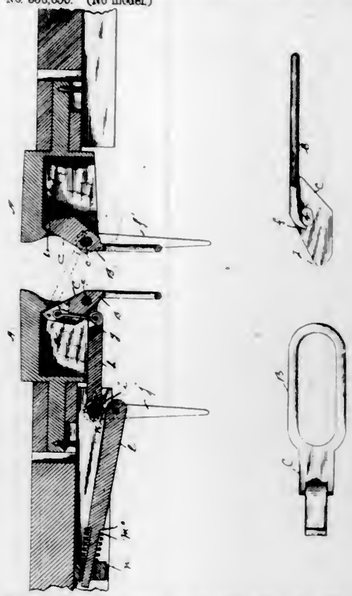
447,258. METHOD OF AND APPARATUS FOR SEPARATING VAPORS FROM FOAMING CONCENTRATED SOLUTIONS. JOHN PATTEN, New York, N. Y., assignor to the John Patten Manufacturing Company, of New York. Filed Apr. 25, 1890. Renewed Jan. 19, 1891. Serial No. 378,327. (No model.)



Claim.—1. The herein-described method of preventing the clogging of scrubbing apparatus used for separating vapor from foaming concentrated solutions, which consists in at intervals washing the surfaces of the scrubbing-plates, which are made to intersect the path along which the vapor flows across the scrubbing-chamber, by successively immersing all portions of the system of scrubbing-plates in a thin washing-liquid of the same character as the solution which is undergoing concentration.

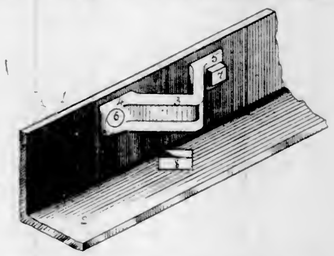
2. In a scrubbing apparatus for separating vapors from foaming concentrated solutions, and in which a more or less high vacuum is required to be maintained, the combination, as herein set forth, of a scrubbing-chamber, a rotating system of scrubbing-plates contained within said chamber, vapor induction and eduction pipes appropriately connected with said chamber, a service-pipe for supplying washing-liquid to said chamber, a cistern situated thirty-three feet (more or less) below said chamber, and an overflow-pipe for conducting said washing-liquid from said chamber downward into and beneath the surface of a body of similar liquid contained in said cistern.

447,259. CAP-COUPLING. GEORGE R. ROGERS, Parkersburg, Ind., assignor of one-half to George S. Harney. Filed July 8, 1890. Serial No. 358,050. (No model.)



Claim.—The combination of the draw-head, the combined link and pin, the rock-shaft i, bar h, link g, rod l, spring m, and link k, all arranged and operating substantially as specified.

447,260. HARROW. MARSHALL SATTLEY, Springfield, Ill., assignor to himself and Archibald Sattley and Samuel E. Prather, same place. Filed May 5, 1890. Serial No. 350,546. (No model.)



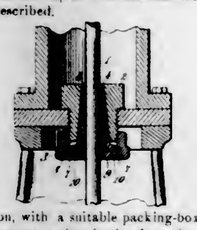
Claim.—1. In combination with a harrow-bar, a tooth-clip having a long side and a shorter side, the long side being riveted to the bar and the short side provided with a binding-bolt extending through the bar, as set forth.

2. In harrows, in combination, a bar having a side plate and a base-plate, the latter having holes to receive the teeth, and clips having each a long side riveted to the side plate and a short side secured to the side plate by a binding-bolt, as set forth.

3. In combination with a harrow-bar, a clip having a long side and a short side, the long side being secured permanent and the short side secured adjustably to the bar.

447,261. ROD-PACKING. EDWARD G. SHORTT, Carthage, N. Y. Filed Nov. 21, 1890. Serial No. 372,210. (No model.)

Claim.—1. A metallic packing for piston or valve rods, consisting of sections having flanged ends and a cap adapted to connect with a packing-box and engaged with the flanges of the packing-sections for removing the latter with the cap as it is detached from the packing-box, substantially as described.



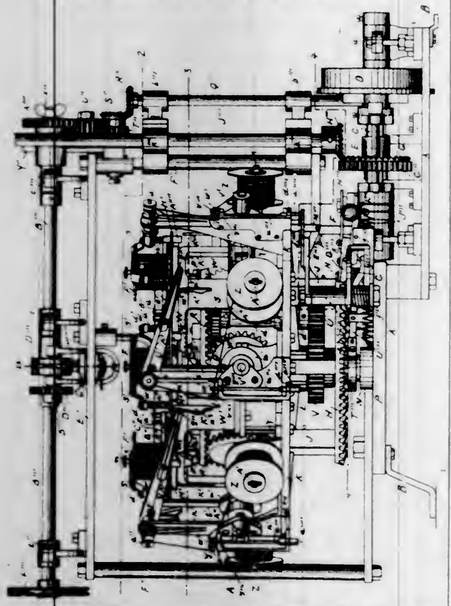
2. The combination, with a suitable packing-box, of a metallic packing composed of separate sections having flanged ends and a screw-cap connected with the packing-box and engaged with the flanges of the separable sections for removing the latter as the cap unscrews, substantially as described.

3. A metallic packing for piston-rods and valve-rods, composed of separable interlocking sections internally grooved to receive a fibrous packing and flanged at one end to engage a screw cap or nut by which the packing is supported in its box and removable with said cap or nut, substantially as described.

4. The combination, with a piston-rod or valve-rod and an externally-threaded box, of a metallic rod-packing composed of separable interlocking sections flanged at one end and a screw cap or nut adapted to engage the box and recessed or grooved to receive the flanged end of the packing, whereby said packing is supported in the box and removable therefrom with the screw cap or nut, substantially as described.

5. The combination, with the rod 1 and externally-threaded box 2, of the metallic packing 4, composed of separable interlocking sections provided with flanges 7 and an internal groove 10, and the screw cap or nut 3, having a groove or recess 8 to receive the flanged end of the packing, whereby the packing is supported in the box and removable therefrom with the screw cap or nut, substantially as described.

447,262. BRAIDING-MACHINE. JAMES TREGURTHA, Malden, assignor to Henry A. Clark and Thomas A. Johnson, both of Boston, Mass. Filed Dec. 2, 1889. Serial No. 332,278. (No model.)



Claim.—1. The combination, with the oppositely-moving gear wheel or plate and ring-plate, of a radial shaft mounted in bearings on the former, means for imparting rotation to said shaft in its bearings, and a bobbin-carrier mounted on the ring-plate and engaged by the end of the shaft, the threads above which the bobbin-carrier moves passing successively between the bobbin-carrier and the end of the shaft.

2. The combination, with the oppositely-moving gear wheel or plate and ring-plate, of a radial shaft mounted in bearings on the former and having a longitudinally-projecting tubular-shaped end, one portion of which is cut away, means for imparting rotation to said shaft in its bearings, and a bobbin-carrier mounted on the ring-plate, having a segmental circular groove to engage with the tubular end of the shaft, the threads above which the bobbin-carrier moves passing successively between the bobbin-carrier and the end of the shaft.

3. The combination, with the oppositely-moving gear wheel or plate and ring-plate, of a radial shaft mounted in bearings on the former, means for imparting rotation to said shaft in its bearings, and a bobbin-carrier having a groove on its under side to fit and by which it is guided on the ring-plate and engaged by the end of the shaft.

4. The combination, with a ring plate or support and a series of bobbin-carriers mounted thereon, of a revolving plate, a series of radial shafts mounted in bearings thereon and each engaging at its outer end with one of the bobbin-carriers, the gear-wheels R', carried by said shafts, and the revolving gear-wheel W in engagement with said gear-wheels R', the outer ends of the shafts being constructed to permit the passage of braiding-threads between them and the bobbin-carriers.

5. The combination, with a bar or rod a''', having a hook b''', a plate or support for a bobbin, having guideways in which said bar or rod is arranged to slide up and down, and a rotating carrier, of an arm E''', pivoted to a suitable support and having an arm F''', a latch or locking arm, and the clutch-operating lever

6. The improved stopping mechanism for acting in case of the failure or breakage of one or more of a series of braiding-threads, comprising, in combination, pivoted arm K''', adapted to be engaged by a moving projection under the control of each thread, a lever P''', connected to the said arm, a lever U''', operated from said lever P''', and a latch-lever G''' for locking the clutch of the driving-shaft of the machine.

7. The combination, with an arm or rod having a longitudinal groove in its side secured to a bracket or support, of a washer on said rod adapted to engage with said groove, and a spring on said rod bearing against the bracket and washer, for the purpose specified.

8. The combination, with an arm or rod having a longitudinal groove in its side secured to a bracket or support, of a washer on said rod adapted to engage with said groove, a screw-nut, and a spring on said rod bearing against the screw-nut and washer, for the purpose specified.

9. The combination, with an arm or rod having a longitudinal groove in its side, of a washer on said rod adapted to engage with said groove, a spring on said rod bearing against the bracket and said washer, a washer on the outer end of said rod, and a piece pivoted to said rod to hold the washers and spring upon said rod, for the purpose specified.

10. The combination, with an arm or rod having a longitudinal groove, of a washer on said rod adapted to engage with said groove, a spring on said rod bearing against the bracket and washer, a washer on the outer end of the rod, the end of the rod being shaped in cross-section to prevent its turning thereon, and a piece pivoted in a slot in the end of the rod, substantially as and for the purpose specified.

11. The combination, with a post or support a', secured to a suitable base, of a spring-arm S', a screw securing said spring-arm to said post or support, and a spring to bear against said arm and hold it up against said screw.

12. The combination, with a post or support a', secured to a suitable base, of a spring-arm S', having a cap or collar on one end to fit over said post or support, a screw securing said arm to said post or support, and a spring to bear against said arm and hold it up against said screw.

13. The combination of a gear-wheel H, a support for one set of bobbins carried by said gear-wheel, a sleeve or bearing L, to which said gear-wheel is secured, a support around which said sleeve revolves, a central standard N, a stationary gear-wheel V on or of said standard, a gear-wheel U, engaging with said stationary wheel, a vertical shaft T, to which said gear-wheel U is secured, arranged to revolve in suitable bearings on said bobbin-support, a gear-wheel S on said shaft, a gear-wheel Q, engaging with said gear-wheel S, a bevel gear-wheel R, secured to gear-wheel Q, radial shaft Q', turning in bearings on said gear-wheel R, supports for another set of bobbins, a ring-plate on which said latter bobbin-supports are supported and travel, each radial shaft arranged to connect with a support for the latter bobbins, a gear-wheel R' on each radial shaft, and a gear-wheel W, with which each radial-shaft gear-wheel engages and which is secured to said sleeve, by which the two sets of bobbins are carried round in concentric paths in opposite directions.

14. The combination of the gear-wheel H, a support for one set of bobbins carried by said gear-wheel, a sleeve or bearing L, to which said gear-wheel is secured, a support around which said sleeve revolves, a central standard N, a stationary gear-wheel V on or of said standard, a gear-wheel U, engaging with said stationary gear-wheel, a vertical shaft T, to which said gear-wheel U is secured and arranged to revolve in suitable bearings on said bobbin-support, a gear-wheel S on said shaft, a gear-wheel Q, engaging with said gear-wheel S, a bevel gear-wheel R, secured to gear-wheel Q, a series of shafts V', gear-wheels W' on said shafts engaging with the bevel gear-wheel R, eccentrics on said shafts V', and thread-delivery levers U', connected to said eccentrics, for the purpose specified.

15. The combination of a gear-wheel H, a ring-plate K, supported and carried by said gear-wheel and on which one set of bobbins is supported, a sleeve or bearing L, to which said gear-wheel is secured, a support around which said sleeve revolves, a central standard N, a stationary gear-wheel V on or of said standard, a gear-wheel U, engaging with said stationary gear-wheel, a vertical shaft T, to which said gear-wheel U is secured and arranged to revolve in suitable bearings, a gear-wheel S on said shaft, a gear-wheel Q, engaging with said gear-wheel S, a bevel gear-wheel R, secured to gear-wheel Q, radial shafts Q', turning in bearings on said gear-wheel R, supports for another set of bobbins, a ring-plate on which said latter bobbin supports are supported and travel, a gear-wheel R' on each radial shaft, a gear-wheel W, with which each radial-shaft gear-wheel engages and which is secured to said sleeve, by which the two sets of bobbins are carried round in concentric paths in opposite directions, a series of gear-wheels W', engaging with the bevel gear-wheel R, a shaft V' for each gear-wheel W', having an eccentric, and thread-delivery levers connected to said eccentrics, for the purpose specified.

16. The combination, with a thread-delivery lever U' for carrying the thread from a bobbin to be delivered to the proper place in a braiding-machine, of a shaft V', carrying an eccentric and connected to said thread-delivery lever for operation thereof, for the purpose specified.

17. The combination, with feed-rollers C''' and D''', the feed-rollers C''' being arranged to revolve in bearings in a frame C''', arranged to be moved forward and backward on a suitable support provided with a set-screw E''', of a bearing or rest F''' for the set-screw to bear or rest against, arranged to move back and forth in a suitable guideway, a spring f^3, and a cam-lever G''', pivoted to said bearing or rest and arranged to bear upon the support for said bearing or rest, for the purpose specified.

18. The combination, with feed-rollers C''' and D''', the feed-rollers C''' being arranged to revolve in bearings in a frame C''', arranged to be moved forward and backward on a suitable support, and a set-screw E''' on said support, of a pin F''', having a head b^4 for the set-screw to bear or rest against, arranged to move back and forth in a suitable guideway, a spring f^3, and a cam-lever G''', pivoted to the pin and arranged to bear upon the support for said bearing or rest, for the purpose specified.

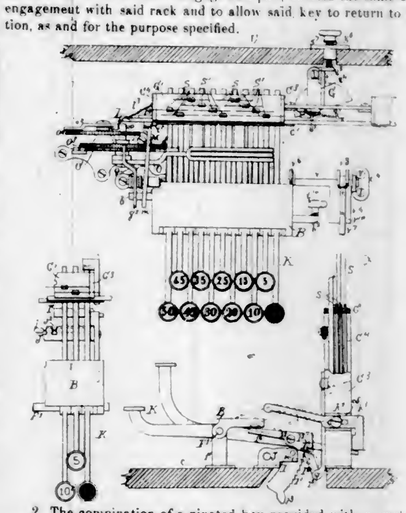
447,263. SHOE-UPPER. EDWARD WALDSCHMIDT, Watsontown, Pa., assignor to the Watsontown Boot and Shoe Company, same place. Filed Jan. 6, 1890. Serial No. 337,022. (No model.)



Claim.—The herein-described shoe-upper, the same consisting of the completed inner top 1, the completed inner quarter 2, the vamp 3, and the partial outer quarter 4, all integrally formed, the outer top section 10, secured to the upper edge of the outer quarter, the triangular section 7, secured to the rear end of the incomplete outer quarter, the rear edges of the upper sections thus formed being sewed together, the stay 16, embracing the seam, the re-enforcing counter 18, secured to the quarters, and the eyelet-stays secured to the front edges of the tops, substantially as specified.

447,264. CASH REGISTER AND INDICATOR. JEROME J. WEBSTER and WILLIAM W. DREW, Somerville, Mass., assignors to the Boston Cash Indicator and Recorder Company, Bangor, Me. Filed June 26, 1889. Serial No. 315,618. (No model.)

Claim.—1. The combination of a pivoted key provided with a rack and with a finger, a pawl engaging said rack to prevent the return of said key, said finger being adapted, when said key is fully depressed, to strike said pawl and to throw the same out of engagement with said rack, and a catch-lever having a weighted arm provided with a notch or shoulder to engage said pawl to hold the same out of engagement with said rack and to allow said key to return to position, as and for the purpose specified.



2. The combination of a pivoted key provided with a rack and with a finger, a pivoted rocking plate arranged above said key and raised by the depression of said key, a pawl normally engaging said rack to prevent the return of said key, said finger being adapted, when said key is fully depressed, to strike said pawl and to throw the same out of engagement with said rack, and a catch-lever having a weighted rear arm provided with a notch or shoulder to engage said pawl to hold the same out of engagement with said rack and to allow said key to return to position, the front arm of said catch-lever extending under said rocking plate and adapted to be struck and depressed by said rocking plate when said key returns to position, and to thereby raise said rear arm of said catch-lever out of engagement with said pawl and to allow said pawl to return to position, as and for the purpose specified.

3. The combination of a series of keys, each provided with a rack and with a finger, a series of stops adapted to prevent a depression of any key except when every other key of said series is in its normal position, and a pawl adapted to engage each of said racks to prevent the return of any depressed key until said key is fully depressed, the finger of said key being adapted, when said key is fully depressed, to strike said pawl and to throw the same out of engagement with said rack, as and for the purpose specified.

4. The combination of a series of keys, each provided with a rack and with a finger, a series of stops adapted to prevent a depression of any key except when every other key of said series is in its normal position, a pawl adapted to engage each of said racks to prevent the return of any depressed key until said key is fully depressed, the finger of said key being adapted, when said key is fully depressed, to strike said pawl and to throw the same out of engagement with said rack, and a catch-lever having a weighted arm provided with a notch or shoulder to engage said pawl to hold the same out of engagement with said rack and to allow said key to return to position, as and for the purpose specified.

5. The combination of a series of keys, each provided with a rack and with a finger, a rocking plate arranged above said keys and raised by the depression of any of said keys, a series of stops arranged to prevent the depression of any of said keys except when every other key of said series is in its normal position, a pawl adapted to engage each of said racks to prevent the return of any depressed key until said key is fully depressed, the finger of said key being adapted, when said key is fully depressed, to strike said pawl and to throw the same out of engagement with said rack, and a catch-lever having a weighted arm provided with a notch or shoulder to engage said pawl to hold the same out of engagement with said rack and to allow said key to return to position, the front arm of said catch-lever extending under said rocking plate and adapted to be struck and depressed by said rocking plate when a depressed key returns to position, and thereby to raise said rear arm of said catch-lever out of engagement with said pawl and to allow said pawl to return to position, as and for the purpose specified.

6. In an indicating-machine, a series of numbered keys, indicating devices adapted to be operated by said keys to display numbers corresponding with the numbers on said keys and simultaneously to withdraw from view previously-indicated numbers, another key adapted to withdraw from view said previously-displayed numbers without displaying other numbers, and a slide adapted to be moved over the rear end of said last-named key to prevent the operation of said last-named key, as and for the purpose specified.

7. In an indicating and registering machine, a series of numbered keys, indicating devices adapted to be operated by said keys to display numbers corresponding with the numbers on said keys and to withdraw from view previously-indicated numbers, registering devices operated by said keys to register the total amount of the indicated numbers, alarm devices operated by said keys, another key adapted to withdraw from view said previously-displayed numbers without displaying other numbers and without operating said registering devices and said alarm devices, and a slide adapted to be engaged with the rear end of said last-named key to prevent the operation of said last-named key, as and for the purpose specified.

8. The combination of the case, the frame, a key, and a slide supported on said frame within said case and incapable of being moved when said case is closed, but adapted to be moved by the hand inserted in said case when the same is open over the rear end of said key and to prevent the front end of said key from being depressed, as and for the purpose specified.

9. The combination of the case, the drawer sliding in said case, a key arranged partly within said case, but extending outside of the same, a rocking plate arranged above said key and adapted to be raised by the depression of said key, a bolt normally locking said drawer when said drawer is closed and adapted to be drawn by the raising of said plate to allow said drawer to be opened, and means arranged within said case substantially as described, of preventing the operation of said key, as and for the purpose specified.

10. The combination of the case, the frame, the drawer sliding in said case, a key, a rocking plate arranged above said key and adapted to be raised by the depression of said key, a bolt normally locking said drawer when said drawer is closed and adapted to be drawn by the raising of said plate to allow said drawer to be opened, and a slide supported on said frame within said case and adapted to be moved over the rear end of said key to prevent the front end of said key from being depressed, as and for the purpose specified.

11. The combination of the case, the drawer sliding in said case, the keys, the rocking plate actuated by any of said keys, a rocking bar provided with arms extending upward and having hooks, and with another arm weighted to throw said hooks over said rocking plate, said last-named arm being arranged above a pin which slides vertically in said case, said pin, an incline secured to said drawer and raising said pin when said drawer is closed to rock said bar and to throw said hooks from above said rocking plate to permit the operation of said keys and rocking plate, as and for the purpose specified.

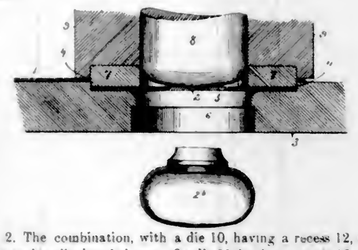
12. The combination of the case, the drawer sliding in said case, the keys, the rocking plate actuated by any of said keys, the bolt normally locking said drawer, but adapted to be raised by the rocking of said plate to permit the opening of said drawer, a rocking bar provided with arms having hooks, and with another arm weighted to throw said hooks over said rocking plate, said last-named arm being arranged above a pin which slides vertically in said case, said pin, an incline secured to said drawer and raising said pin when said drawer is closed to rock said bar and to throw said hooks from above said rocking plate to permit the operation of said keys and rocking plate, as and for the purpose specified.

13. The combination of the case, the drawer sliding in said case, the keys, the rocking plate actuated by any of said keys, a rocking bar provided with arms extending upward having hooks, and with an upwardly-extending fork, a rod sliding in a hole with which the case is provided in front of said rocking bar, and having a lateral projection, and a lock secured to said case and arranged to have its bolt shot in behind said projection, the rear end of said rod being secured to said fork to hold said hooks over said rocking plate and to prevent the operation of said keys, as and for the purpose specified.

14. The combination of the case, the frame, the drawer sliding in said case, keys, a rocking plate arranged above said keys, a bolt sliding vertically in said case and normally locking said drawer when the same is closed, said bolt being provided with pins or ears, and levers pivoted in said case and reaching under said ears, the free ends of said levers being jointed to vertical rods having heads to engage with said rocking plate, as and for the purpose specified.

447,265. SEAMLESS SHEET-METAL KNOB OR HANDLE. SAMUEL R. WILMOT and FRANK A. WILMOT, Bridgeport, Conn. Filed June 30, 1890. Serial No. 357,235. (No model.)

Claim.—1. The herein-described method of making knobs or handles, which consists in drawing a blank to cup shape and then closing the top of the cup inward and abutting the inner edge of the same inward against a core which forms an opening to receive a shank.



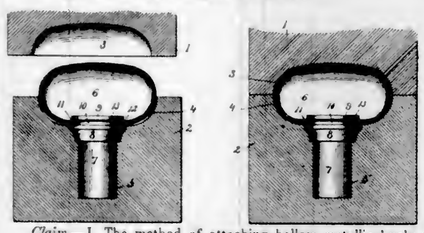
2. The combination, with a die 10, having a recess 12, substantially as described and shown, of a die 11, having a recess 13, substantially as described and shown, and at the center of said recess a downwardly-extending core 14, as and for the purpose set forth.

3. The combination, with a die 10, having a recess 12, of a die 11, having a recess 13, and a downwardly-extending core 14, concentric with said recess, the lower end of said core extending nearly to the bottom of the recess in die 10, so that in closing in the top of a sheet-metal cup the metal at the upper edge of the cup is closed about the upper edge of the core, the lower end of the core coming in contact with the metal on the inner side of the cup to prevent dimpling.

4. A seamless sheet-metal knob having an opening on its inner side and inturned edges in the same plane surrounding said opening, said knob being of a spheroidal form, so that a cross-section thereof through said opening will present a continuous curve in the metal shell thereof.

5. A seamless sheet-metal knob, said knob having an opening on its inner side, and surrounding said opening thickened inturned edges which are in the same plane and bound said opening.

447,266. METHOD OF ATTACHING KNOBS OR HANDLES. SAMUEL R. WILMOT and FRANK A. WILMOT, Bridgeport, Conn. Filed June 30, 1890. Serial No. 357,236. (No model.)



Claim.—1. The method of attaching hollow metallic knobs to shanks, which consists in forming an opening in the inner side of the knob, inserting the end of the shank into the opening, and then closing the metal of the knob tightly about the shank.

2. The method of attaching hollow metallic knobs to shanks, which consists in forming the knob of the required diameter and of greater thickness than the completed knob and forming an opening in the inner side thereof, then inserting the shank into the opening, and finally closing the metal of the knob inward upon the shank, whereby the thickness of the knob is reduced and the shank is firmly gripped.

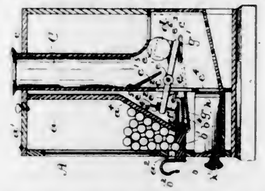
3. The method of attaching knobs to shanks, which consists in forming a groove at the outer end of the shank, forming a hollow knob with an opening of sufficient diameter to receive the shank, and then closing the metal of the knob into the groove.

4. The method of attaching knobs to shanks, which consists in forming a flange at the outer end of the shank, a groove below the flange, and another flange below the groove of greater diameter than the outer flange, forming a hollow knob with an opening of sufficient diameter to receive the outer flange but not the inner flange, and then closing the metal of the knob into the groove between the flanges.

5. The method of attaching knobs to shanks, which consists in forming a flange at the outer end of the shank, a groove below the flange, and another flange below the groove of greater diameter than the outer flange, then striking in the metal of the outer flange to fill the groove in one or more places and form lugs extending outward beyond the edge of the outer flange, forming a knob with an opening of sufficient diameter to receive the outer flange but not the inner flange, forming notches in the edge of said opening to engage said lugs, and then closing the metal of the knob inward into the groove, whereby the knob is firmly locked to the shank.

6. The combination, with a shank having a flange at its outer end, a groove just below the flange, and just below the groove another flange of greater diameter than the outer flange, of a knob or handle having an opening of just sufficient diameter to receive the outer flange but not to receive the inner flange, the metal of said knob or handle being closed inward into the groove between the flanges, as and for the purpose set forth.

447,267. COIN-CONTROLLED VENDING-MACHINE. FRANKLIN J. WOOD, Newark, N. J., assignor of one-half to Milton E. Blanchard, same place. Filed Dec. 1, 1890. Serial No. 373,151. (No model.)



Claim.—1. In a coin-controlled vending-machine, the combination, with a delivery-shelf and a coin-chute, of a fulcrumed lever adapted to engage with said shelf to hold the same in its locked position, and a rod attached to said shelf extending back therefrom into said chute beneath the coin-operated end of said lever, said rod being adapted to slide forward as the shelf is being withdrawn, thereby causing said lever to tilt still further and cause the coin to drop into a coin-receptacle, for the purposes set forth.

2. In a coin-controlled vending-machine, the combination, with a casing and a goods-containing chamber, of a delivery-shelf provided with a longitudinally-placed groove, said shelf being provided with a perforated tongue, a chute within said casing having a fulcrumed lever within the same, one end of which projects from an opening in said chute and is provided with a pin adapted in its unoperated position to be held in locked engagement with said perforated tongue on the delivery-shelf, said lever being adapted to be tilted by a coin dropped into the chute, disengaging said pin from said perforated tongue, and being provided with a guide on its free end within the chute, and means connected with said delivery-shelf and extending back therefrom beneath the coin-holding end of the lever, whereby the lever and its coin are held in its tilted position to allow the withdrawal of the delivery-shelf, and whereby when the shelf is operated the lever is free to tilt still further and the coin can drop from said guide on lever into a coin-receiving compartment, as and for the purposes set forth.

3. In a coin-controlled vending-machine, the combination, with a casing and a goods-containing chamber, of a delivery-shelf provided with a longitudinal groove, said shelf being spring-actuated and provided with a perforated tongue, a chute within said casing having a lever fulcrumed within the same, one end of which projects from an opening in said chute and is provided with a pin adapted in its unoperative position to be held in locked engagement with said perforated tongue on the delivery-shelf, said lever being adapted to be tilted by a coin dropped into the chute, thereby disengaging said pin from said perforated tongue, and a rod connected with the bottom of the delivery-shelf and extending back therefrom, being bent at a right angle or approximately so, at its free end, and said bent portion passing through a slot in the side of the chute and projecting beneath the coin-operated end of the lever, whereby said lever is held in its tilted position and the coin is caused to engage with the inner surface of the chute and is held, and whereby when the shelf is operated, said rod moves forward and the bent portion slides within the slot in the chute and the lever is free to tilt still further and coin can drop into a receiving-compartment, as and for the purposes set forth.

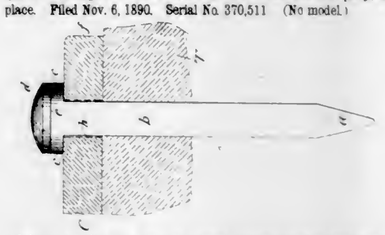
4. In a coin-controlled vending apparatus, the combination, with a coin-chute and its coin-controlled mechanism, of a delivery-shelf provided with a longitudinal groove, and a rod secured to said shelf and sliding in slots in said chute and being in sliding engagement with the coin-controlled mechanism, as and for the purposes set forth.

5. In a coin-controlled vending apparatus, the combination, with a chute provided with a fulcrumed lever having a guide on its free end within the chute, of a grooved delivery-shelf and a tongue on said shelf in engagement with the opposite end of the coin-controlled lever, and a rod secured to said shelf and sliding in a slot in said chute engaging with the under side of the coin-operated lever, as and for the purposes set forth.

6. In a coin-controlled vending apparatus, the combination, with a delivery-shelf provided with a longitudinal groove and a coin-chute, of a fulcrumed lever in said chute adapted to engage with said shelf to hold the same in its locked position, and a rod secured to said shelf and sliding in a slot in said chute engaging with the under side of the coin-operated lever, as and for the purposes set forth.

7. In a coin-controlled vending apparatus, the combination, with the case and the goods-delivery drawer adapted to slide therein, and a coin-receptacle, of a chute provided with a coin-controlled lever, one end of which is provided with a guide, while its opposite end projects from an opening in said chute and is held in locking engagement with a tongue on the delivery-drawer, said lever, when operated by means of a coin, being released from said tongue and tilted so that the coin is held between the guides and the inner surface of the chute, a rod secured to the delivery-shelf, sliding in a slot in said chute, and engaging with the under side of the coin-operated lever, said rod sliding forward in the slot as the shelf is being withdrawn, thereby causing said lever to tilt still further, whereby the coin is dropped upon an incline in the bottom of the chute and rolls into the coin-receiving receptacle, as and for the purposes set forth.

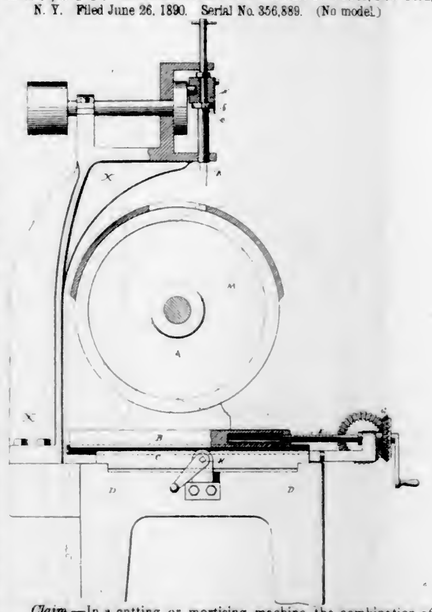
447,268. RAILWAY-CHAIR SPIKE. WILLIAM C. WOOD, Brooklyn, N. Y., assignor to the Lewis & Fowler Girder-Rail Company, same place. Filed Nov. 6, 1890. Serial No. 370,511. (No model.)



Claim.—A spike for spiking down railway-chairs and the like, having a round head, convex on top, bolsters under said head at front and rear, and a square shaft or body central with reference to the head, the lateral edges of said head forming elevated shoulders to facilitate withdrawing the spike, and said bolsters serving to re-enforce the union between said body and the head, substantially as herein-before specified

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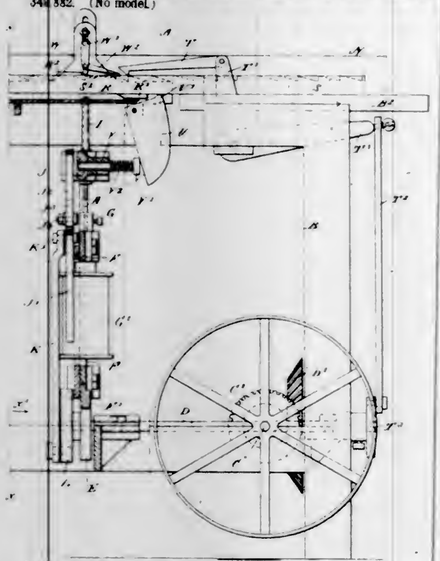
447,269. MORTISING-MACHINE. HARRY F. WYATT, New York, N. Y. Filed June 26, 1890. Serial No. 356,889. (No model.)



Claim.—In a cutting or mortising machine, the combination of the movable carriages B and C with the bed D, the holder A, the ad-

justable supports M' M^2 M^3 M^4, the bracket X, and the adjustable cutting-tool K, substantially as described.

447,270. BLIND-STILE BORING AND MORTISING MACHINE. WILLIAM C. AYCOCK and JOHN A. AYCOCK, Griffin, Ga., assignors of one-third to James A. Brooks, same place. Filed Apr. 29, 1890. Serial No. 349,882. (No model.)



Claim.—1. The combination, with a reciprocating non-rotary hollow mortising-tool, of a rotary boring-bit passing therethrough and disconnected therefrom, and means for reciprocating the boring-bit independently of said mortising-tool, substantially as described.

2. The combination, with a hollow intermittently-reciprocating non-rotary mortising-tool, of a separate disconnected and independent regularly-reciprocating rotary boring-bit passing through said mortising-tool, substantially as described.

3. The combination, with a stile-carrier having a variable feed or movement at stated intervals, of an intermittently-reciprocating hollow mortising-tool operating in connection therewith, and a separate and independent regularly-reciprocating boring-bit passing through the said hollow tool, substantially as described.

4. In a blind-stile boring and mortising machine, the combination, with a stile-carrier fitted to slide horizontally, of a vertically-reciprocating tool frame carrying the bits, and a mortising tool-frame carrying hollow mortising-tools through which pass the said bits and movably independent of the bit-carrying frame, substantially as shown and described.

5. In a blind-stile boring and mortising machine, the combination, with a stile-carrier fitted to slide horizontally, of a vertically-reciprocating tool-frame carrying the bits, a separate and independent mortising-tool frame carrying hollow mortising-tools through which pass the said bits, and means, substantially as described, for imparting motion to the said frames and the carrier, as set forth.

6. The combination, with the longitudinally-extending stile-carrier provided with sets of teeth of different lengths, a lug on its under side just in advance of each set of smaller teeth, and a reciprocating pawl operating alternately on said sets of teeth, of a regularly-reciprocating boring-bit-carrying frame under said stile-carrier, a mortising-tool frame in which the bit-carrying frame reciprocates, the hollow mortising-tools through which said bits pass, a reciprocating bar for operating the mortising-tool frame, a device for connecting the said frame and bar, and a pawl or lever in the path of the said lugs to operate said connecting device and permit the mortising-tool frame to be reciprocated when the pawl is acting on said shorter teeth, substantially as described.

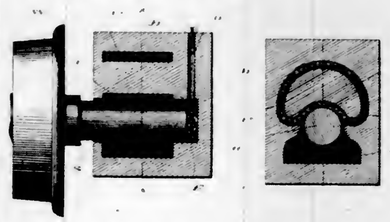
7. In a blind-stile boring and mortising machine, a stile-carrier having sets of teeth of varying lengths, in combination with a pawl adapted to engage the said sets of teeth to move the carrier forward and a device, substantially as described, to cover part of the small teeth, so that the said pawl moves the said carrier the distance between two small teeth, substantially as shown and described

8. In a blind-stile boring and mortising machine, a stile-carrier having sets of teeth of varying lengths on its upper side, a lug on said upper side in rear of each set of shorter teeth, and a lug on its under side in advance of each of said sets of shorter teeth, the swinging frame over the stile in the path of the upper lugs and carrying a wedge, the pawl for engaging the stile-teeth and engaged at intervals by said wedge for the purpose described, a pawl or lever below the stile-carrier in the path of the lower lugs, a vertical tool-carrying frame provided with a bolt operated by said pawl or lever, and an operating mechanism connected with the said frame when the bolt is operated by said pawl or lever, substantially as described.

9. In a blind-stile boring and mortising machine, the combination, with a stile-carrier provided in its under side with a lug, of a gravity-pawl adapted to be actuated by the said lug, a spring-pressed bolt engaging the said gravity-pawl, a frame carrying the mortising-tools and in which the said bolt is fitted to slide, an arm having a reciprocating motion and adapted to be engaged by the said bolt to reciprocate the said frame, and a block held adjustably on the said arm and adapted to engage the said bolt, substantially as shown and described.

10. In a blind-stile boring and mortising machine, the combination, with a stile-carrier provided in its under side with a lug, of a gravity-pawl adapted to be actuated by the said lug, a spring-pressed bolt engaging the said gravity-pawl, a frame carrying the mortising-tools and in which the said bolt is fitted to slide, an arm having a reciprocating motion and adapted to be engaged by the said bolt to reciprocate the said frame, a regularly-reciprocating boring-bit frame within the mortising-tool frame, the bits thereof passing through the mortising-tools, and means, substantially as described, for moving the said stile-carrier when the said frames slide downward and the mortising and boring tools are disengaged from the stile, substantially as shown and described.

447,271. CAR-AXLE BOX. DANIEL BARCKDALL, Indianapolis, Ind., assignor of one-half to Willis J. Woodward, same place. Filed Sept. 10, 1890. Serial No. 364,562. (No model.)



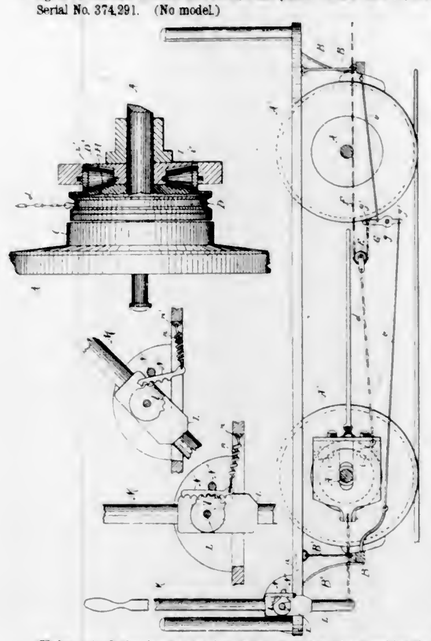
Claim.—1. A car-axle boxing *b*, provided with an irregular circular-shaped channel *c*, an axle opening below, and a recess formed in the boxings and below such axle to receive dirt, friction-rolls inserted and adapted to move in such channel, the latter of such radius above the axle as to secure the contact of the friction-balls above and on either side of the vertical diameter of such axle, whereby lateral movement thereof is prevented, substantially as shown and described.

2. A car-axle boxing *b*, provided with an irregular circular-shaped channel *c*, and an axle-opening below, a recess formed in the boxings below such axle to receive dirt, friction-balls inserted and adapted to move in such channel, the latter of such radius above the axle as to secure the contact of the friction-rolls above and on either side of the vertical diameter of such axle, whereby any lateral movement thereof is prevented, and friction-balls confined in the axle-opening between the end of the axle and the inside of the boxing, all combined substantially as shown and described.

3. In a car-truck, a boxing having an axle-opening, a recess below the axle to receive extraneous matter, an irregular circular channel in such boxing above the axle, friction-rolls inserted in such channel, the latter of such radius above the axle as to allow the friction-rolls to come in contact with the axle above and on either side the vertical diameter of such axle for preventing any lateral movement thereof and the wearing away of the boxing on either side, substantially as shown and described.

4. In a car-truck, a boxing *b*, having an axle-opening, an irregular circular channel *c* above such axle-opening, friction-rolls *r*, inserted therein and disposed so that the rolls will come in contact with the axle above on either side of the vertical diameter of the axle and prevent lateral movement thereof, an opening *o* in the rear of the boxings, and a series of friction-balls *f*, inserted therein and adapted to operate as a buffer when the axle is drawn out and as a frictional bearing when the axle is pushed in, preventing the wearing away of the end of the boxing, all combined substantially as shown and described.

447,272. CAR-BRAKE. EDWARD M. BARNES, Cleveland, Ohio, assignor of one-half to John A. Davies, same place. Filed Dec. 11, 1890. Serial No. 374,291. (No model.)



Claim.—1. In brake mechanism for street-cars, the combination, with car-axle and a friction-drum mounted thereon, such friction-drum having a conical end, of wedging device for actuating the drum endwise, such wedging device comprising a sliding block in position crosswise the axle and bearing rollers adapted to engage the conical ends of the drum, and an abutment for holding such wedging device to its work, substantially as set forth.

2. In combination, a car-axle having mounted thereon a conical-ended friction-drum, and a wedging device for actuating the drum endwise toward its co-operating friction member, such wedging device comprising a block adapted to slide in the direction crosswise the axle, such block bearing rollers adapted to engage the conical end of the drum, the axle bearing a collar serving as an abutment for holding the wedging device to its work, substantially as set forth.

3. In combination, a car-axle bearing a friction-drum, the drum having a conical end, a slotted block mounted astride the axle, such block bearing rollers adapted to engage the conical end of the drum, and a collar mounted on the axle and adapted to engage such block for holding the latter to its work in wedging the drum endwise toward its co-operating friction member, substantially as set forth.

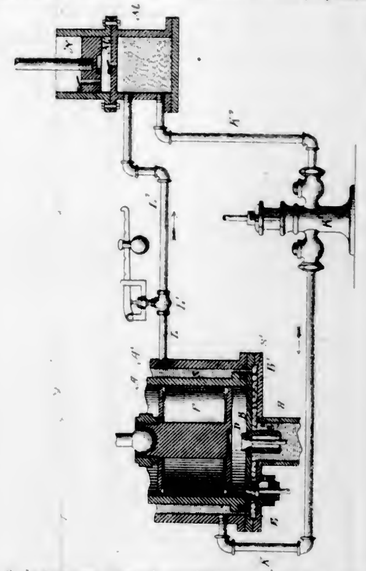
4. The combination, with opposing levers connected so as to oscillate in unison, such lever system being connected with a hand-lever mechanism at the respective ends of the car, of car-axles bearing friction-drums and wedging devices for each drum, substantially as indicated, such wedging devices being operatively connected with such oscillating-lever system, substantially as set forth.

5. In brake mechanism for street-cars having hand-lever devices for operating the same, locking devices for such hand-lever, a hand-lever having a toothed sector, a rack adapted to engage such sector, and an abutment for holding the rack to its engagement with the sector, a spring combined with the rack and arranged, substantially as indicated, to cramp the rack and thereby lock the lever in position braking the car, substantially as set forth.

6. The combination, with the car-axle, a friction-drum mounted thereon, and chain adapted to bear on the drum in setting the brake, such drum having a conical end, of a sliding block bearing rollers adapted to engage the conical end of the drum, and an abutment for holding the sliding block in position for acting on the drum, substantially as set forth.

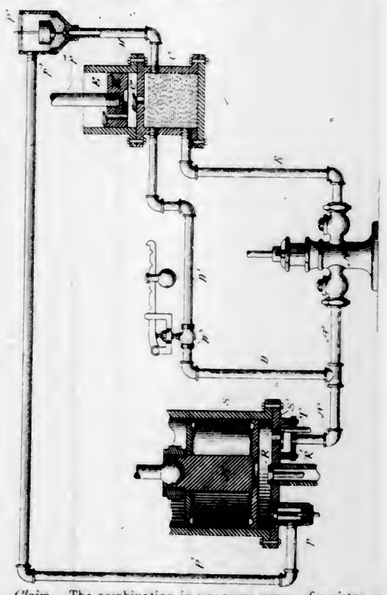
447,273. VACUUM-PUMP. ADOLPH BERRENBERG, Somerville, and WILLIAM E. NICKERSON, Cambridge, Mass., assignors to the Beacon Vacuum Pump and Electrical Company, Portland, Me. Filed May 10, 1890. Serial No. 351,358. (No model.)

Claim.—1. In the jacketing-spaces of a vacuum-pump, deaerated oil as a sealing medium, substantially as and for the purpose set forth.



2. In a vacuum-pump, the combination of jacketing-spaces sealed with deaerated oil, and an apparatus having passage-connection with said spaces and adapted to deaerate the oil and force it through the jacketing-spaces, operating substantially as and for the purpose set forth.

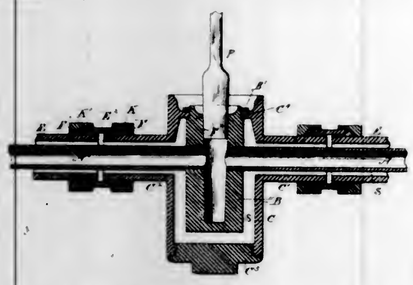
447,274. VACUUM-PUMP. ADOLPH BERRENBERG, Somerville, and WILLIAM E. NICKERSON, Cambridge, Mass., assignors to the Beacon Vacuum Pump and Electrical Company, Portland, Me. Filed May 10, 1890. Serial No. 351,359. (No model.)



Claim.—The combination, in a vacuum-pump, of a piston and cylinder, with a filling of deaerated oil adapted to fill all the space under and about the piston within the cylinder at the completion of the

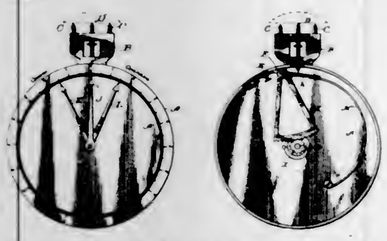
stroke of the piston, and thus completely expel all air, substantially as and for the purpose set forth.

447,275. VACUUM-PUMP CONNECTION. ADOLPH BERKENBERG, Somerville, Mass., assignor to the Beacon Vacuum Pump and Electrical Company, Portland, Me. Filed June 2, 1890. Serial No. 354,046. (No model.)



Claim.—In connection with a system of vacuum-pipes, the combination of a socket-piece adapted to receive a key or the socket end of a fork, and having passage-connections with the vacuum system, with the jacketing-piece C, having passage-connection with a jacketing system as described, substantially as and for the purpose set forth

447,276. GAGE FOR DETERMINING THE RADIUS OF CURVATURE. JAMES T. BRATTON, Chicago, Ill., assignor to the Geneva Optical Company, of Illinois. Filed Jan. 23, 1890. Serial No. 337,852. (No model.)



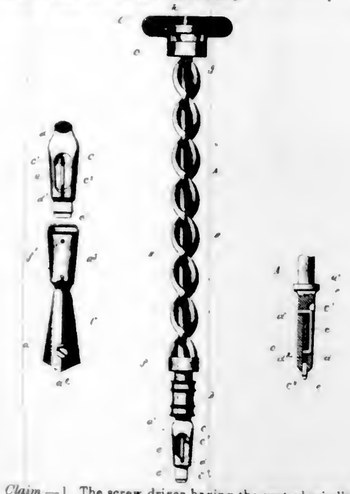
Claim.—1. The combination, in a lens-measuring instrument, of contact devices consisting of three contact-pieces whose pointed ends lie in the same plane, the position of the middle contact-piece being variable relatively to the outer pieces, and indicating devices operated by the movable contact-piece, said indicating devices consisting of a lever-arm abutting against or attached to said movable contact-piece, and gearing connecting said arm to a pointer moving over a dial, said dial being graduated to show the focal length of the lens, substantially as described.

2. The combination, in a lens-measuring instrument, of contact devices consisting of three contact-pieces whose pointed ends lie in the same plane, the position of the middle contact-piece being variable relatively to the outer contact-pieces, and indicating devices operated by said movable contact-piece, said indicating devices consisting of a lever-arm abutting against or attached to said movable contact-piece and having a fulcrum movable relatively thereto, and gearing connecting said lever-arm to a pointer moving over a dial graduated to show the focal length of the lens, substantially as described.

3. The combination of the fixed contact-pieces C C, the movable contact-piece D, all three of said contact-pieces lying in the same plane, the sector H, against a projection of which the said movable piece abuts, said sector having a fulcrum movable relatively to the contact-piece D, the spring M, the pinion I, carrying the pointer J, and the dial A', graduated to show the focal length of the lens placed against said contact-pieces, substantially as described.

4. The combination, in a lens-measuring instrument, of three contact-pieces, one of said pieces being movable relatively to the other two, a pointer for indicating the movements of the movable piece, a pinion on the pointer-shaft and sector in contact with the movable piece, connecting the pointer and said movable piece, and an adjustable bearing in which said sector is pivoted, whereby the relative movement of the movable piece and the pointer may be varied, as and for the purpose described

447,277. PUSH SCREW-DRIVER. ELLSWORTH BROWN, Dayton, Ohio, assignor of one-half to James Hays, same place. Filed May 16, 1890. Serial No. 351,999. (No model.)



Claim.—1. The screw-driver having the central spindle, upon the upper end of which is secured a head, the lower end of said spindle passing through a collar, and the double spirally-arranged guide-wires passing through said head and connected at their upper ends to a disk having the fixed section of the knob, the loose section of said knob receiving said head and disk, and the lower ends of said spirally-arranged wires secured to said collar, substantially as and for the purpose set forth.

2. In a screw-driver, the combination, with the spindle having the bit-holder provided with the lateral opening and the aperture and recess, of the spring-clasp having lateral end portions engaging said aperture and said recess, and an aperture in the bit, the aperture in the bit-holder being arranged near the upper end wall of said opening, and said recess being arranged in the lower end wall of said opening, substantially as set forth.

3. In a screw-driver, the combination, with the spindle or stem and its bit-holder, of the auger-bit holder having a socket at each end, one provided with a set-screw and the other with apertures for engagement therewith of the screw-driver-bit-fastening clasp, substantially as specified.

447,278. HAT-HOLDER. GEORGE N. COOPER, Haverhill, Mass., assignor of one-half to Adriance S. Dinsmore, same place. Filed May 10, 1888. Serial No. 273,739. (No model.)

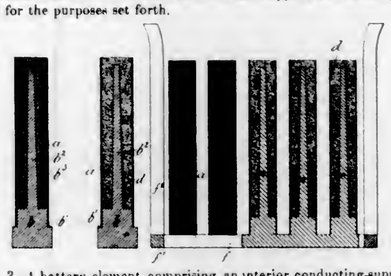


Claim.—The within-described hat-supporter, consisting of a wire bent in substantially semicircular shape at G to inclose the crown of the hat, at right angles to the bent section G upon each side, as at F F, at right angles at *d d*, forming the sides E E, and at an angle at *c c*, forming the sides D D, which are united by the ring B, the space between the sides F F and D D being sufficient to include the roll of the brim of the hat, substantially as described

447,279. SECONDARY BATTERY. STANLEY C. C. CURRIE, Philadelphia, Pa., assignor to the United Gas Improvement Company, same place. Filed Nov. 18, 1890. Serial No. 371,828. (No model.)

Claim.—1. A battery element comprising an interior support, an exterior insulating woven tube fitted onto said support, and an integral mass of metallic material or materials cast within said tube and around said support, substantially as and for the purposes set forth.

2. A battery element comprising a conducting-support, an exterior tube of woven asbestus fitting onto said support, and a metallic salt cast within said tube and around said support, substantially as and for the purposes set forth.



3. A battery element comprising an interior conducting-support provided with a shoulder, an exterior woven insulating-tube fitting thereon and extending beyond said support, and metallic material cast within said tube around said support and in contact with the meshes of said woven tube and adapted to become the active material of said element, substantially as and for the purposes set forth.

4. A battery electrode comprising a connection provided with a lug or other terminal device and with supports, woven insulating-tubes mounted on said supports, and metallic material cast between said supports, and wholly or partially filling the meshes or interstices of said woven tubes, substantially as and for the purposes set forth.

5. A battery electrode comprising a lead connection provided with a lug or other terminal device and with supports, woven asbestus tubes mounted on said supports, and a salt of lead cast between said supports and tubes and adapted to become porous and metallic, substantially as and for the purposes set forth.

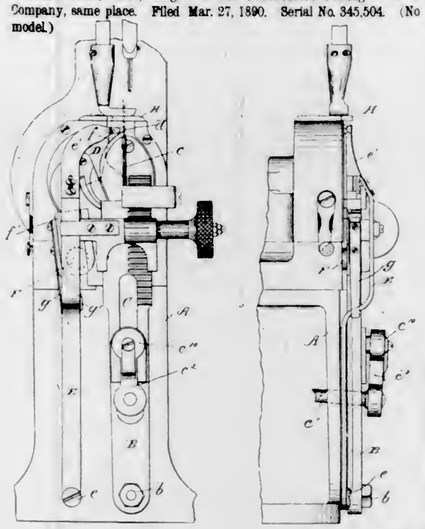
6. A battery electrode comprising a connection provided with a lug or other terminal device and with arms, supports cast integral with said arms, woven tubes mounted on said supports, and a material cast between said supports and tubes and adapted to become porous and metallic, substantially as and for the purposes set forth.

7. The combination of a vase or cell, an electrolyte, two series of supports cast integral with connections, and woven insulating-tubes mounted on said supports and filled with porous crystallized metallic material or materials, substantially as and for the purposes set forth.

8. The combination, in a secondary battery, of a cell, a suitable electrolyte, one electrode provided with connections, supports, woven insulating-tubes, and cast crystallized porous material or materials, and the other electrode composed of a series of lead or other plates, substantially as described.

9. A battery element comprising a core of conducting material, having a metallic mass cast around the same, and surrounded by a tubular woven insulating fabric, substantially as and for the purposes set forth.

447,280. THREAD-GUARD FOR SEWING MACHINES. JAMES H. CUTTEN, Boston, Mass., assignor to the Davis-Moore Sewing Machine Company, same place. Filed Mar. 27, 1890. Serial No. 345,504. (No model.)



Claim.—1. In a sewing-machine, the combination, with an oscillating or rotary shuttle and a needle, of a vibrating thread-guard arranged to press against the front or outer face of the said shuttle and operated independently thereof, said thread-guard vibrating in a direction parallel to the movement of the said shuttle, or approximately so, and projecting behind or inside of the shuttle-thread and between the latter and the shuttle to hold the said thread out of the path of the beak of the shuttle when the latter is approaching the needle, substantially as set forth.

2. In a sewing-machine, the combination, with the needle-bar C and its needle *c*, of the oscillating or rotary shuttle D, having the outwardly curved or inclined beak *d*, the spring thread-guard *e'*, having an upwardly and outwardly curved end bearing against the front or outer face of the shuttle and co operating with the beak of the latter to prevent said beak from catching the shuttle-thread, and the vibrating lever E, carrying said thread-guard and moving back and forth parallel to the plane of movement of the shuttle, said lever being operated independently of the shuttle, as set forth.

447,281. TRAVELING CRANE. JACOB H. GREINER, Lancaster, assignor to Joseph H. Cofrode, Philadelphia, Pa. Filed Nov. 7, 1890. Serial No. 370,649. (No model.)

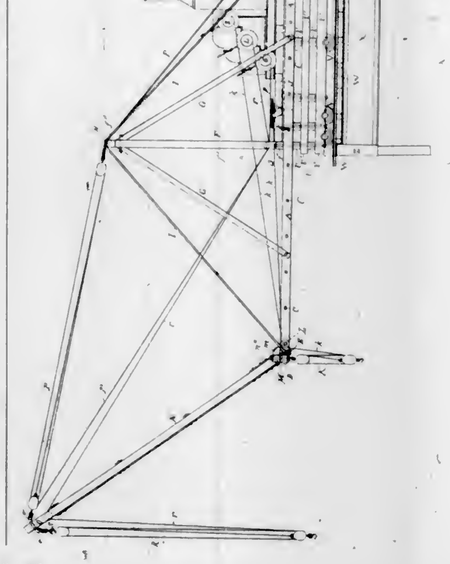
Claim.—1. The combination of a fixed horizontal boom, a hinged boom supported at the outer end of said fixed boom, a guy for sustaining the outer end of said hinged boom, and hoisting-tackle depending from both of said booms, substantially as set forth.

2. The combination of fixed horizontal booms, a hinged boom supported at the outer ends thereof, a guy for sustaining the outer end of said hinged boom, and hoisting-tackle depending from the fixed booms and the free end of hinged boom, substantially as set forth.

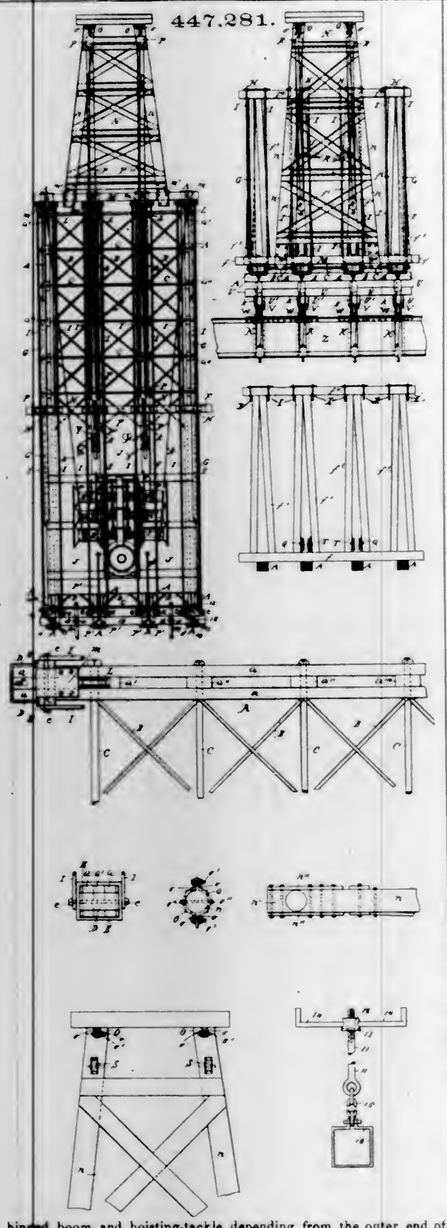
3. The combination of a plurality of fixed horizontal booms, a trestle rising therefrom, truss-rods bearing upon said trestle and connected at their ends to the outer ends of said fixed booms, a hinged boom supported at the outer ends of said fixed booms, a guy for sustaining the outer end of said hinged boom, and hoisting-tackle depending from the fixed and hinged booms, substantially as set forth.

4. The combination of a plurality of fixed horizontal booms, the beam M, resting upon their outer ends, the block *m*, secured to said booms behind said beam, the boom N, hinged to said beam, a guy for sustaining the outer end of the hinged boom, and hoisting-tackle depending from the fixed and hinged booms, substantially as set forth.

5. The combination of a plurality of fixed booms, a hoisting-tackle depending from each, a sheave L, journaled to each boom, over which the falls of said tackle pass, a hinged boom supported at the outer ends of said fixed booms, a guy for sustaining the outer end of the



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hinged boom, and hoisting-tackle depending from the outer end of said hinged boom, substantially as set forth.

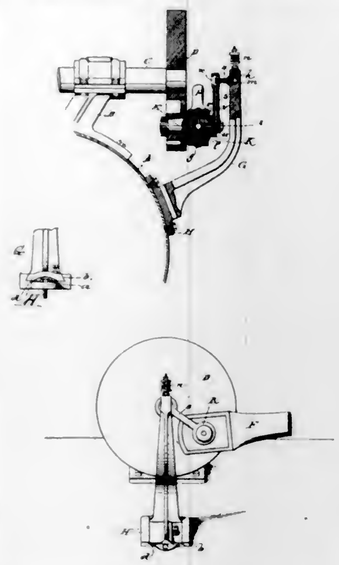
6. The combination, with the horizontal booms and the hoisting-tackle depending from the outer ends thereof, of the sills U U', upon which said booms rest and from which they project, anchors for holding said booms down, a hinged boom supported at the outer ends of said horizontal booms, and hoisting-tackle depending from the outer end of the hinged boom, substantially as set forth.

7. The combination, with the horizontal booms A, the hoisting-tackle depending therefrom, and the sills upon which said booms rest and from which they project, of anchors consisting of eyebolts 11, nuts 12, having handles 14, the chains 15, the stirrups 16, and the beam 17, substantially as set forth.

8. The combination, with the fixed booms, the hinged boom supported at the outer ends thereof and the hoisting-tackle depending from said booms, of the trestle F, and the guys for sustaining the outer end of the hinged boom, consisting of the block and tackle P, having fall *p*, and the cable P', resting upon the trestle F and anchored at the rear extremity of the fixed booms, substantially as set forth.

9. The combination, with a plurality of fixed horizontal booms and a hoisting-tackle depending from each, of a single hinged boom supported at the outer ends of said fixed booms, a plurality of guys for sustaining the outer end of said hinged boom, and a plurality of hoists depending from said hinged boom, substantially as set forth.

447,282. CENTRIFUGAL OILER. CHARLES O. HEGGEM, Massillon, Ohio, assignor to the Russell & Company, same place. Filed Apr. 2, 1890. Serial No. 346,263. (No model.)



Claim.—1. In a lubricator, the combination, with the wrist-pin having a longitudinal screw-threaded channel and passages radiating therefrom, of a cap secured to said wrist-pin and provided with a hollow arm having at its free end a transverse opening, a screw uniting said cap to said wrist-pin and provided with a passage to establish communication between the channel in the arm and that in the wrist-pin, and an oil-cup communicating with said arm, substantially as set forth.

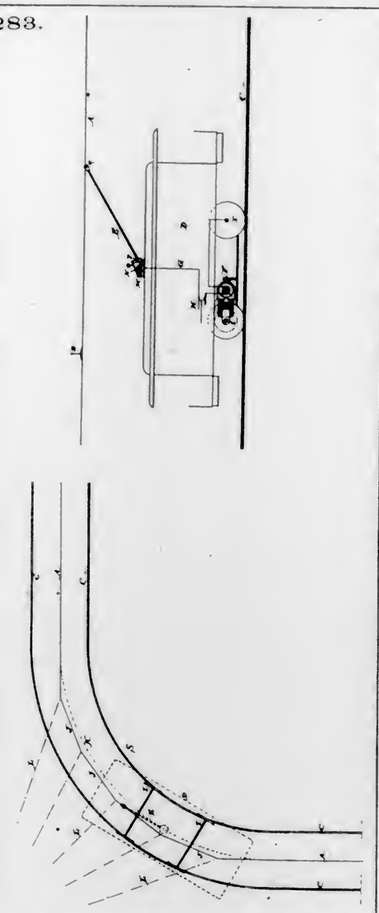
2. In a lubricator, the combination of a wrist-pin having channels therein, a hollow arm communicating with said wrist-pin, an adjustable arm having a vertical and transverse passage, an oil-cup arranged in the vertical passage, and a tube for conducting the oil from the transverse passage to the hollow arm, substantially as set forth.

447,283. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Dec. 6, 1890. Serial No. 373,748. (No model.)

Claim.—1. In an electric railway, the combination of the track-rails having a curved portion and a suspended working-conductor arranged at an elevation above the rails and extending along said railway and about its curve, in which the curved portion of the working-conductor is arranged farther from the center of curvature of the railway-track than would be the case if the conductor were extended around the curve with the same relative position to the rails occupied by it on the straight portion of the railway.

2. In an electric railway, the combination of the track-rails having a curved portion, a suspended working-conductor arranged at an elevation above the rails and extending along said railway and about its curve, in which the curved portion of the working-conductor is arranged farther from the center of curvature of the railway-track than would be the case if the conductor were extended around the curve

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with the same relative position to the rails occupied by it on the straight portion of the railway, and an electrically-propelled car traveling upon the railway and provided with an upwardly-extending current-collecting device making a traveling contact with the suspended conductor.

3. In an electric railway, the combination of the track-rails having a curved portion, a suspended working-conductor arranged at an elevation above the rails and extending along said railway and about its curve, in which the curved portion of the working-conductor is arranged farther from the center of curvature of the railway-track than would be the case if the conductor were extended around the curve with the same relative position to the rails occupied by it on the straight portion of the railway, and an electric car running upon said railway and provided with an upwardly-extending and laterally-moving current-collecting device making a traveling contact with the suspended conductor.

4. In an electric railway, the combination of the track-rails having a curved portion, a suspended working-conductor arranged at an elevation above the rails and extending along said railway and about its curve, in which the curved portion of the working-conductor is arranged farther from the center of curvature of the railway-track than would be the case if the conductor were extended around the curve with the same relative position to the rails occupied by it on the straight portion of the railway, and an electric car running upon said railway and provided with an upwardly-extending and laterally-moving current-collecting device making a traveling contact with the suspended conductor and having its contact part arranged to the rear of the wheel-base of the car.

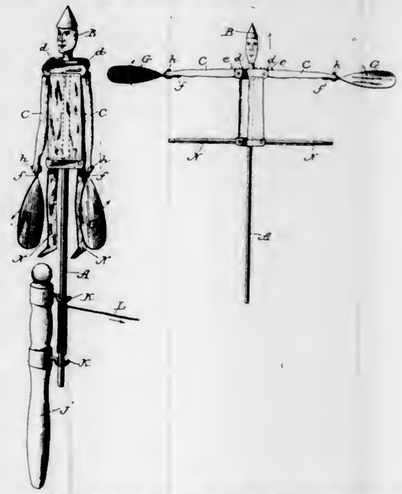
5. In an electric railway, the combination of the track-rails having a curved portion, a suspended working-conductor arranged at an elevation above the rails and extending along said railway and about its curve, in which the curved portion of the working-conductor is arranged farther from the center of curvature of the railway-track than would be the case if the conductor were extended around the curve with the same relative position to the rails occupied by it on the straight portion of the railway, an electric car, and a current-collecting device carried by the car with provision for vertical and lateral movement and provided with a contact making an underrunning traveling connection with the suspended conductor.

6. In an electric railway, the combination of the railway-track having a curved portion, a suspended bared working-conductor extending along said track and about its curve, and in which the curved portion of said suspended conductor is composed of a series of straight portions arranged end to end and at an angle to each other and arranged farther from the center of curvature of the track than said curved portion of the suspended conductor would occupy if it were carried about the curve, maintaining the same relative position to the rails which it occupied with respect to the straight portion of the railway.

7. In an electric railway, the combination of the railway-track having a curved portion, a suspended bared working-conductor extending along said track and about its curve, and in which the curved portion of said suspended conductor is composed of a series of straight portions arranged end to end and at an angle to each other and arranged farther from the center of curvature of the track than said curved portion of the suspended conductor would occupy if it were carried about the curve, maintaining the same relative position to the rails which it occupies with respect to the straight portion of the railway, an electric car, and a current-collecting device carried upon the car with freedom of lateral movement and making a traveling connection with the suspended conductor.

8. In an electric railway, the combination of the railway-track having a curved portion, a suspended bared working-conductor extending along said track and about its curve, and in which the curved portion of said suspended conductor is composed of a series of straight portions arranged end to end and at an angle to each other and arranged farther from the center of curvature of the track than said curved portion of the suspended conductor would occupy if it were carried about the curve, maintaining the same relative position to the rails which it occupies with respect to the straight portion of the railway, an electric car adapted to run upon said railway, and an upwardly-extending current-collecting device carried by the car with provision for vertical and lateral movement and provided with a contact part for making a traveling connection with the under side of the suspended conductor.

447,284. TOY. ELISEO DEL VALLE, Brooklyn, N. Y. Filed June 25, 1890. Serial No. 356,668. (No model.)



Claim.—1. A flying toy constructed of a central spindle, arms pivoted loosely to said spindle to swing out at a right angle therewith, and propelling-blades attached to said arms, substantially in the manner and for the purpose herein set forth.

2. A flying toy constructed of a central spindle, a double set of

arms pivoted loosely to said spindle at different points in its length to swing out at a right angle therewith, and propelling-blades attached to one set of the pivoted arms, substantially in the manner and for the purpose herein set forth.

3. In a flying toy, the combination, with a central spindle and arms pivoted to said spindle to swing out therefrom, of blades rotatably adjustable in the outer end of said arms, substantially in the manner and for the purpose herein set forth.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

DANIELS *v.* MORGAN.

Decided January 10, 1891.

1. PRIORITY OF INVENTION—DECREE OF CIRCUIT COURT ON A BILL IN EQUITY BROUGHT UNDER THE REVISED STATUTES OF THE UNITED STATES, SECTION 4915, EFFECT OF.

Where, after priority had been adjudicated by the Patent Office to one of two parties in an interference proceeding, and a patent had been issued in accordance therewith, it appeared that the circuit court, upon a bill in equity filed by the other party under section 4915 of the Revised Statutes, had decreed that the plaintiff was the original, first, and sole inventor of the invention in controversy and entitled to a patent therefor, and that a certified copy of said decree had been filed in the Patent Office in accordance with the provisions of the statute referred to, *Held* that the Commissioner was authorized by such adjudication to issue a patent to the plaintiff, notwithstanding it appeared that defendant had duly appealed to the Supreme Court of the United States and had filed a bond for the payment of costs.

2. APPEAL—BOND.

An appeal with no other bond than a bond for costs does not act as a *supersedeas*.

ON petition.

MECHANISM FOR COILING WIRE RODS.

Application of Fred H. Daniels filed June 26, 1886, No. 206,323. Patent granted Charles H. Morgan December 10, 1889, No. 416,940.

Mr. Charles H. Burleigh for Daniels.
Mr. Anthony Pollok for Morgan.

MITCHELL, *Commissioner:*

In this case a decision was rendered by my predecessor on the 22d day of March, 1889, in favor of Morgan. A petition for rehearing before the present Commissioner was denied. Thereupon Daniels filed his bill in equity in the Circuit Court of the United States for the District of Massachusetts, in accordance with section 4915 of the Revised Statutes, and such proceedings were had in said court, Morgan having been duly notified and participating therein, that a final decree was entered in the case in and by which it was ordered, adjudged, and decreed that the complainant, Fred H. Daniels, was the original, first, and sole inventor of and entitled according to law to receive a patent for the invention specified in certain claims recited in said decree, as follows:

1. The combination, with a rod-coiling receptacle or reel, of a spider or lifting-plate mounted on a central shaft which is supported and reciprocatively movable within the reel-supporting shaft, and provided with means for elevating said central shaft and plate, substantially as and for the purpose set forth.
2. The combination, with a rod-coiling receptacle or reel having a hollow supporting-shaft carrying a frictional actuating-wheel and a lifting spider or plate having a shaft extending through and reciprocatively movable within said hollow reel-supporting shaft, of a pressure-cylinder containing a hollow primary piston or plunger acting against said reel-supporting shaft, and a secondary piston or plunger acting against the shaft of said spider or plate, for the purposes set forth.
3. The combination, with a reel or coiling receptacle and a spider or lifting-plate having supporting-shafts that telescope one with the other, of a lifting mechanism comprising a pressure-cylinder with primary and secondary plungers adapted for acting on the respective shafts, and a catch device for retaining said secondary plunger when in depressed position in relation to said primary plunger, for the purposes set forth.
4. The combination, with the reel and its shaft and lifting spider and its shaft, of the pressure-cylinder, the hollow primary plunger, the secondary plunger provided with the inclined lug *i*, the locking-lever L, fulcrumed on said primary plunger, with its end *l* extending through an opening into the primary plunger for engagement with said secondary plunger, substantially as set forth.
5. The combination, with a rod-coiling receptacle or reel-tub arranged to rotate with the top of its rim substantially level with a horizontal table, floor, or platform, of an elevating spider or plate disposed within said tub and adapted for lifting the coil of wire rod to a position above the level of said floor or platform to facilitate its discharge, substantially as set forth.
6. The combination of the coil-receptacle B having inwardly-projecting ribs *b*, the series of pins or fingers b^2, and the lifting spider or plate C, having arms that radiate across the space between said fingers and ribs, substantially as and for the purpose set forth.

A certified copy of said adjudication having been filed in the Patent Office in accordance with the provisions of the statute referred to, Morgan was required to show cause why an order should not be made directing that Letters Patent be granted to Daniels, in accordance with the decree of said court.

In reply to said order to show cause, counsel for Morgan stated that an appeal had been taken by Morgan to the Supreme Court of the United States and that such appeal had been duly allowed, in proof of which a copy of a decretal order was filed ordering that defendant's appeal be allowed, and, as the conditions of such appeal, that the defendant file a bond in the penal sum of one thousand dollars, with surety to be approved by the Court, on the condition that the defendant will prosecute such appeal to effect, and if he fail to make his appeal good will pay all costs.

It was thereupon contended by counsel for Daniels that under the adjudication of said Court the Commissioner is authorized to issue a patent covering the claims specified in the decree, and that, being authorized, it is his duty so to do. On the other hand, it is maintained that an appeal having been taken and allowed, such appeal does and should operate as a *supersedeas* to postpone the granting of the patent so long as appellate proceedings are pending. Counsel for Daniels in reply maintains that the appeal does not act as a *supersedeas*.

It appears from the order of the Court allowing the appeal that the same was granted upon filing a bond for the payment of costs. A bond for costs never acts as a *supersedeas*. (Rule 29, Supreme Court U. S.; R. S. U. S., sec. 1000; *Stafford* v. *Union Bank*, 16 How., 135; 17 How., 275; *Stafford* v. *New Orleans Canal and Banking Co.*, 17 How., 283; *Orchard* v. *Hughes*, 1 Wall., 73; *Gay* v. *Parpart*, 101 U. S., 391; *American*

Nicholson Pavement Co. v. *City of Elizabeth*, 1 Banning & Arden, 463.)

If therefore the court were clothed with jurisdiction to enforce its decree by a direct order to the Commissioner, the appeal and the bond for costs provided for in the appeal would not act as a *supersedeas* to prevent the issuance of the order. The question before me then is, what is the duty of the Commissioner, in view of the fact that the court would not withhold its order on account of anything contained in the appeal or the bond for costs.

In *Gandy* v. *Marble* (122 U. S., 432) Mr. Justice Blatchford said, (referring to a decision of the circuit court:)

> The decision of the court on a bill in equity becomes, equally with the judgment of the Supreme Court of the District of Columbia on a direct appeal under section 4911, the decision of the Patent Office, and is to govern the action of the Commissioner.

It is thus authoritatively held that the decision of the court upon the bill in equity becomes the decision of the Patent Office and is to govern the action of the Commissioner. It is equally clear that an appeal with bond for costs does not act as a *supersedeas*. It would seem to follow that the response of the Patent Office to the decree of the court should not await the decision of the Supreme Court, thereby giving to the appellant all the advantage which would result from a *supersedeas*, to which he is not entitled according to law.

Besides, it is to be noted that the statutes regulating the granting of patents are very careful in specifying the course and effect of appeals, and the presumption is strong that if in cases like the present it were contemplated that the Commissioner should await the action of an appellate tribunal the statute would have so stated. On the contrary, it provides that the court having cognizance of the bill in equity, on notice to adverse parties and other due proceedings had, may adjudge that the applicant is entitled according to law to receive a patent for his invention, and that "such adjudication"—to wit, the adjudication of said court having cognizance and giving notice and hearing the parties—shall authorize the Commissioner to issue a patent, if it be in favor of the right of the applicant. I have already said that an appeal with no other bond than a bond for costs never supersedes the execution of the decree.

In *Wells* v. *Boyle* (43 O. G., 753) the Commissioner was asked to direct that no patent issue to the prevailing party in an interference pending proceedings by bill in equity on behalf of the defeated party. The Commissioner said:

> I am compelled to refuse this request. There is nothing in the patent law which suggests anything in the nature of a *supersedeas* upon the filing of a bill in equity by the defeated party in interference in the circuit court of the United States. The fact that there is no such provision in the statute and nothing relating thereto in any of the rules of practice furnishes conclusive evidence, to my mind, that under the present circumstances, when an application has received the final sanction and approval of the Commissioner of Patents, and in his official judgment applicant is entitled to a patent, the Commissioner has no longer any power or discretion to withhold the issue of such patent from the party so entitled.

It is true that the case of *Wells* v. *Boyle* is different in many respects from the one now before me. There is very little analogy between proceedings in equity to obtain a patent denied by the Commissioner and an appeal to the Supreme Court from the decree of a circuit court of the United States. Nevertheless, beneath the differences which are recognized, there is also a resemblance which must be regarded. The reason given for refusing to withhold the patent pending the proceedings in equity was that there is nothing in the patent law which suggests anything in the nature of a *supersedeas* upon the filing of such a bill. In like manner there is no statute or rule providing for the *supersedeas* of a decree upon the filing of an appeal accompanied by a bond for costs only, and there would seem to be just as little warrant for withholding the patent where there is no *supersedeas* in the one case as in the other.

My only substantial misgiving arises out of the fact that the Commissioner was not a party to the bill and had no opportunity to be heard. An interfering party is prompted by self-interest to maintain that the invention is patentable, both in its intrinsic character and as against specific references. Unless the Commissioner is permitted to be heard the case is, in a very practical sense, without a defendant. References are sometimes discovered after a patent has been granted.

In *Hill* v. *Wooster* (132 U. S., 693) Mr. Justice Blatchford said:

> The provision of section 4915 is that the circuit court may adjudge that the applicant "is entitled, according to law, to receive a patent for his invention, as specified in his claim, or for any part thereof, as the facts in the case may appear;" and that, if the adjudication is in favor of the right of the applicant, it shall authorize the Commissioner to issue the patent. It necessarily follows that no adjudication can be made in favor of the applicant, unless the alleged invention for which a patent is sought is a patentable invention. The litigation between the parties on this bill cannot be concluded by solely determining an issue as to which of them in fact first made a cabinet-creamery. A determination of that issue alone, in favor of the applicant, carrying with it, as it does, authority to the Commissioner to issue a patent to him for the claims in interference, would necessarily give the sanction of the court to the patentability of the invention involved.

This case of *Hill* v. *Wooster* is authority for the proposition that the issue presented by a proceeding under section 4915 is not a mere issue of priority as between two parties to a former interference in the Patent Office, but extends to and includes the broad question whether the complainant is entitled to a patent as against the rejection by the Commissioner upon his own decision or upon the decision of the Supreme Court of the District of Columbia. In the present case the Commissioner was not made a party, nor was the suit brought in any court having jurisdiction over the Commissioner. (*Butterworth* v. *Hill*, 114 U. S., 128; *Illingworth* v. *Atha et al.*, 51 O. G., 803.)

It is nevertheless true that according to the precedents the court in this case had jurisdiction to decree that Daniels was entitled to a patent, and that an appeal taken does not constitute a *supersedeas*. Besides, I may not be unmindful of the fact that it is contrary to public policy to postpone the granting of patents. It is to be always kept in mind that the public are entitled to come into the enjoyment of the unrestricted use of the invention at the expiration of the lawful term of the patent, and that the enjoyment of this right may not be postponed, excepting in obedience to some requirement of law.

In this case, too, a motion made in the circuit court for a writ of *supersedeas* was denied and dismissed as to costs.

A suitable order will be entered in the *ex parte* case of Daniels, in accordance with the conclusion herein reached that a patent should be granted, as decreed by the court.

SHINN *v.* MCELROY.

Decided February 21, 1890.

MOTION TO REOPEN—JURISDICTION.

The decision of Examiner of Interferences dismissing a motion to reopen the interference for want of jurisdiction overruled, and *Held* that the motion being noticed for hearing within the time originally limited for appeal operated to stay the running of the time limited, and therefore the Examiner had jurisdiction to hear and act upon the motion.

APPEAL from the Examiner of Interferences.

HEATING SYSTEMS.

Application No. 291,928, filed November 26, 1888, by J. A. Shinn. Patent No. 391,326, granted October 16, 1888, on application filed by J. F. McElroy.

Messrs. Hopkins & Atkins for Shinn.

Messrs. T. S. Sprague & Son for McElroy.

MITCHELL, *Commissioner:*

In this case the Examiner of Interferences declined to take jurisdiction, and an appeal is taken to the Commissioner from his order dismissing the motion of Shinn to reopen the interference. On October 24, 1889, judgment of priority of invention was rendered on the record in favor of McElroy, and the limit of appeal from such award was fixed to expire on the 13th of November, 1889. On the last-mentioned day Shinn filed a motion to reopen the interference, noticing the hearing for the same day. The day for the hearing was extended by stipulation. The reason assigned by the Examiner in dismissing the motion was want of jurisdiction, in view of the decision of the present Commissioner in the case of *Holton & Malsch* v. *Merrow*, (41 MS. D., 457.) The Examiner seems to have overlooked the fact that the motion was noticed for hearing within the time originally limited for appeal, and therefore it operated to stay the running of the time limited, so that according to the decision referred to the Examiner had jurisdiction to hear and act upon the motion. The Examiner quotes from the decision the passage stating that the Examiner of Interferences will be without jurisdiction—

> if the day fixed for the hearing of a motion is not within the time limited within which appeal may be taken.

The day "fixed" contained in the passage quoted refers to the day designated in the motion, as the context indicates, and not the day when the final hearing may in fact be had.

The decision of the Examiner of Interferences is overruled.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Rhode Island

FOSTER *v.* CROSSIN *et al.*

Decided October 18, 1890.

1. DESIGN—JEWELRY-PINS—NOVELTY.

A Design for jewelry-pins, consisting of a piece of metal in the shape of a spoon or fork two inches long, precisely similar in appearance to common spoons or forks six inches long, lacks the novelty necessary to support a Design patent.

2. SAME—INVENTION.

In order to support a patent for a Design, as for any other subject, under the acts passed by Congress in the exercise of its constitutional power to secure to inventors the exclusive right to their discoveries, there must be some invention, and not a mere application to a new material of something already known.

Mr. Walter B. Vincent for the complainant.

Mr. John N. Brennan and *Mr. Warren R. Perce* for the defendants.

Before GRAY and COLT, *Judges.*

GRAY, *J.:*

This is a bill in equity to restrain the infringement of two patents, applied for and issued in 1884, for Designs of jewelry-pins, the one representing a spoon and the other a table-fork. The specification of the first patent (omitting the introductory paragraph and the description of the drawings) is as follows:

> The leading features of my Design consist in a plate, the outside and front surface of which is made to represent a spoon, with the continuous outline edge of the plate turned backward for nearly a uniform distance from its front, and also having an engraved, chased, or embossed handle.
>
> The form and style of the ornamentation may be varied without affecting the general appearance of the whole Design.
>
> I claim as my invention the Design for a jewelry-pin herein shown and described, the same consisting of a plate having the shape of a spoon, with the outline edge of the plate turned backward at a nearly uniform distance from its front, and the surface of the handle of the spoon showing an embossed or engraved ornamentation.

The corresponding parts of the specification of the second patent differ only in substituting "table-fork" for "spoon" in the body of the specification and in the claim. Upon the filing of the bill the district judge granted a temporary injunction and delivered an opinion reported in 23 *Federal Reporter*, 400. The case has now been heard upon pleadings and proofs. There is some conflict in the testimony. Taking the whole evidence as favorably as possible for the plaintiff, the material facts appear to be as follows: Before either of these patents was applied for common spoons and forks, as well as jewelry-pins in other shapes than spoons or forks, had been made with the edges turned over as described in these patents; but jewelry-pins in the shape of spoons and forks had never been made with the edges so turned, and the plaintiff's pins, by reason of their peculiar form and appearance, resulting from the turning of the edges, were easily distinguishable from such pins of other manufacturers and had a readier and larger sale. Under section 4886 of the Revised Statutes, authorizing a patent to be granted to—

> any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof,

it is well settled that the application of an old process or machine to a new or analogous subject, (although of very different size or material,) with no change in the manner of application, and accomplishing no result substantially different in its nature, will not sustain a patent. (*Pennsylvania R. Co.* v. *Locomotive Safety Truck Co.*, 110 U. S., 490, 4 Sup. Ct. Rep., 220, and cases cited; *Peters* v. *Manufacturing Co.*, 129 U. S., 530, 9 Sup. Ct. Rep., 389; *Peters* v. *Hanson*, 129 U. S. 541, 9 Sup. Ct. Rep., 393.) Under section 4929 a patent for a Design can only be granted to—

> any person who by his own industry, genius, efforts, and expense has invented and produced any new and original Design for a manufacture—

or other thing mentioned in this section—

> or any new, useful, and original shape or configuration of any article of manufacture, the same not having been known or used by others before his invention or production thereof, or patented or described in any printed publication.

A patent under this section, indeed, is for the Design which is the product of the invention, and not for the

process or the means by which it is produced, and has less regard to the utility of the product than to the novelty and originality of its appearance; but in order to support a patent for a Design, as for any other subject, under the acts passed by Congress in the exercise of its constitutional power to secure to inventors the exclusive right to their discoveries, there must be some invention, and not a mere application to a new material of something already known The Design must be new and original and not a copy or an imitation. This is required by the clear words of the section and has been constantly recognized in the judicial decisions under it. (*Clark* v. *Bousfield*, 10 Wall., 133, 139; *Gorham Co.* v. *White*, 14 Wall., 511, 524, 525; *Wooster* v. *Crane*, 5 Blatchf., 282, 2 Fish. Pat. Cas., 583; *Niedringhaus's Appeal*, 8 O. G., 279; *Northrup* v. *Adams*, 2 Ban. & A., 567; *Theberath* v. *Harness Co.*, 15 Fed Rep., 246.) The decisions under the corresponding provision of the English patent act are to the same effect. (*Mullooey* v. *Stevens*, 10 Law T., N. S., 190; *Lazarus* v. *Charles*, L. R., 16 Eq., 117; *Windover* v. *Smith*, 32 Beav., 200; *Adams* v. *Clementson*, 12 Ch. Div., 714; *Dicks* v. *Brooks*, 15 Ch. Div., 22, 34; *Le May* v. *Welch*, 28 Ch. Div., 24; *In re Bach's Design*, 42 Ch. Div., 661.) In the light of the words of the statute, and of the uniform course of decision up on the subject, we can have no doubt that a Design for a piece of metal in the shape of a spoon or fork two inches long, precisely similar in appearance, both generally and in form of edge, to common spoons or forks six inches long, lacks the novelty necessary to support a patent.

Bill dismissed with costs.

U. S. Circuit Court—Eastern District of Wisconsin.

INTERNATIONAL TOOTH CROWN COMPANY *v.* CARMICHAEL.

Decided December 1, 1890.

1. CROSS-BILL—OBJECT OF.
   The purpose of a cross-bill is to obtain discovery of facts in aid of the defense to the original bill, or to obtain full relief to all parties touching the matter of the original bill.
2. SAME—NOT FOR INDEPENDENT UNLAWFUL ACT.
   The defendant in an equity suit for infringement of patent cannot file a cross-bill to enjoin the complainant from publishing the fact of infringement, and thus interfering with his trade or business. In such case, the fact sought to be presented by cross-bill being at most merely an independent unlawful act by the complainant, would neither throw light upon the subject nor avail to defeat the patent or justify an infringement of it, if valid.
3. ORIGINAL BILL—PUBLICATIONS INJURIOUS TO BUSINESS NOT ESJOINABLE.
   It is more than doubtful if an original bill will lie to enjoin publications injurious to one's trade or business; and this upon the ground that the injured party has a complete remedy at law.

Mr. Charles K. Offield for the motion.
Mr. Ephraim Banning opposed.

JENKINS, *J.*:

The original bill in this cause was filed to restrain the alleged infringement of Letters Patent No. 238,490, issued March 15, 1881, to James E. Low for an improvement in the dental art—

whereby artificial dental surfaces may be permanently fixed in the mouth in place of lost teeth without the use of plates or other means of deriving support from the gum beneath the artificial dentition.

This patent was passed upon and sustained in the case of *International Tooth Crown Co.* v. *Richmond*, (30 Fed. Rep., 775;) but the answer here asserts that full proofs were not presented upon the hearing of that case.

The defendant now moves for leave to file a cross-bill charging anticipation of the alleged invention; that the patent, if valid, cannot be construed to cover all practical forms of artificial dentures commonly known as "crown and bridge work," and that with a view to hinder and harass the complainant in the cross-bill in his dental business and to divert patronage from his business to dentists licensed under the Low patent, the International Tooth Crown Company has heretofore, and presumably since the filing of the original bill, caused to be published in newspapers and circular letters, and caused to be circulated throughout the United States and within this district, certain threats and warnings embodied in a notice specifying certain dentists as the only licensees of the company in the city of Milwaukee; that the patents of the company are construed to cover all practical forms of artificial dentures now commonly known as "crown" or "bridge" work; warning all persons against obtaining such artificial dentures from the complainant in the cross-bill, and that the full legal penalty will be exacted of all infringers, patients as well as dentists, and offering a reward for information of the performance of any bridge-work of one, two, or more crowns or bridges prepared by any dentist not licensed by the company.

This notice and threat is charged to divert patronage and to seriously interfere with the business of the cross-complainant. An injunction is prayed restraining the publication and circulation of such notices and threats, and a decree is sought for the damages sustained for such alleged wrongful publications.

All matters contained in the cross-bill attacking the validity of the patent, or limiting its scope, can be presented by answer to the original bill. No cross-bill is necessary for that purpose. The interference with the business of the cross-complainant by reason of the publication of the notice and threats charged is the only matter not pertinent as a defense to the original bill. If the publication be construed as a mere notification of the rights claimed by the company under the Low patent, it would not be unwarranted unless the patent was invalid, and possibly not in that event. If, as is claimed, it is a malicious and unwarranted threat, even if the Low patent be held valid, the act done would not avail as a defense for infringement of the Letters Patent. It would in such case be an unwarranted attack on the business of the cross-complainant, independently of the validity or non-validity of the Low patent, for which he has appropriate remedy. Such matter, as I conceive, is not proper subject-matter of a cross-bill. The purpose of such a bill is to obtain discovery of facts in aid of the defense to the original bill, or to obtain full relief to all parties touching the matter of the original bill. The matter sought to be charged does not respond by way of defense to the original bill. Every matter in dispute touching the validity or infringement of the patent can be contested under the original bill, full proofs made, and complete decree rendered touching its validity and scope upon the pleadings thereto without the aid of the cross-bill. The facts charged by the proposed pleading would neither throw light upon the subject nor avail to defeat the patent or justify an infringement of it if valid. The cross-bill merely charges an independent unlawful act by the owner of the patent.

It is more than doubtful if an original bill in equity would lie upon the matter charged in the proposed cross-bill, and this upon the ground that complete remedy at law is at the command of the injured party for the injury done. The cases of *Ide* v. *Ball Engine Co.* (31 Fed. Rep., 901) and *Emack* v. *Kane* (34 Fed. Rep., 46,) uphold the right to maintain such an action. The latter case certainly presents a strong assertion by Judge Blodgett of the right of a court of equity to interfere in such a case as here presented, and is sought to be distinguished from the cases of *Kidd* v. *Horry* (28 Fed. Rep., 773) and *Wheel Co.* v. *Bemis* (29 Fed. Rep., 95,) opposed. The contention seems, however, to be authoritatively settled by the case of *Francis* v. *Flinn*, (118 U. S., 385,) and I am unable to distinguish the latter case from that here presented.

The motion to file the cross-bill is denied.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

VOL. 54---No. 9. TUESDAY, MARCH 3, 1891. PRICE---$5 per year.

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Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Issue of March 3, 1891.

Patents	467—No. 447,285 to No. 447,751,	inclusive.
Designs	31—No. 20,535 to No. 20,565,	inclusive.
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Reissues	2—No. 11,147 to No. 11,148,	inclusive.
Total issue	552	

To citizens of the United States: Patents and Designs—454; Trade-Marks and Labels—46.
To citizens of foreign countries: Patents and Designs—41; Trade-Marks and Labels—6.

DESIGNS.

20,535.—BARBER'S CHAIR.—*Timothy J. Collins*, Toledo, Ohio, assignor of one-half to *Ransom & Randolph*, same place. Application filed January 19, 1891. Serial No. 378,357. Term of patent 3½ years.

20,536.—BOX FOR WASHING-MACHINES.—*Henry H. Dennis*, Chicago, Ill. Application filed November 1, 1890. Serial No. 370,083. Term of patent 14 years.

20,537.—SPOON, &C.—*Frederick H. Sloan*, Hartford, Conn. Application filed January 22, 1891. Serial No. 378,703. Term of patent 3½ years.

20,538.—SPINNING-RING.—*Charles E. Trowbridge*, Whitinsville, Mass., assignor to *The Whitinsville Spinning Ring Co.*, same place. Application filed October 25, 1890. Serial No. 369,362. Term of patent 14 years.

20,539.—HORSE-BLANKET.—*Charles A. Turner*, Brooklyn, N. Y. Application filed September 27, 1890. Serial No. 366,369. Term of patent 7 years.

20,540.—STAIR-CARPET BUTTON.—*David Walker* and *Frank H. Howard*, Newark, N. J.; said *Howard* assignor to said *Walker*. Application filed February 4, 1891. Serial No. 380,235. Term of patent 7 years.

20,541.—SPOON, &C.—*William B. Durgin*, Concord, N. H. Application filed January 21, 1891. Serial No. 378,599. Term of patent 7 years.

20,542.—HANDLE FOR SPOONS, &C.—*William B. Durgin*, Concord, N. H. Application filed January 29, 1891. Serial No. 379,579. Term of patent 7 years.

20,543.—HANDLE FOR SPOONS, &C.—*Henry L. Dole*, Haverhill, Mass. Application filed January 19, 1891. Serial No. 378,361. Term of patent 7 years.

20,544.—SUSPENDER-BUCKLE.—*Charles R. Harris*, Williamsport, Pa. Application filed January 14, 1888. Serial No. 260,786. Term of patent 7 years.

20,545.—HANDLE FOR FORKS, SPOONS, OR SIMILAR WARE.—*Charles E. Galt*, Philadelphia, Pa., assignor to *Davis & Galt*, same place. Application filed January 7, 1891. Serial No. 377,044. Term of patent 7 years.

20,546 and 20,547.—FONT OF PRINTING-TYPE.—*Herman Ihlenburg*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Applications filed February 6, 1891. Serial Nos. 380,506 and 380,507. Term of patents 7 years.

20,548.—GARMENT-PROTECTOR.—*Otto F. Ostergren* and *Alexander K. Schaap*, Richmond, Va. Application filed December 8, 1890. Serial No. 373,962. Term of patent 14 years.

20,549 to 20,561, inclusive.—CANE OR UMBRELLA HANDLE.—*Henry O. Schmidt*, New York, N. Y., assignor to *Simons Brothers & Co.*, Philadelphia, Pa. Applications filed February 6, 1891. Serial Nos. 380,508 to 380,520, inclusive. Term of patents 3½ years.

20,562.—CAN.—*George W. Walton*, Grayling, Mich. Application filed January 26, 1891. Serial No. 379,175. Term of patent 7 years.

20,563.—FONT OF PRINTING-TYPE.—*Charles H. Becler, Jr.*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Application filed February 6, 1891. Serial No. 380,502. Term of patent 7 years.

20,564.—EXTERIOR OF A COUNTRY HOUSE.—*Theresa Lewis*, Washington, D. C. Application filed February 5, 1891. Serial No. 380,362. Term of patent 3½ years.

20,565.—RADIATOR LOOP-PIPE.—*John R. Reed*, Westfield, Mass. Application filed December 9, 1890. Serial No. 374,086. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

19,103.—CORSETS.—*Armstrong, Cator & Co.*, Baltimore, Md. Application filed October 30, 1890. Used since October 20, 1886.
"The letters 'B Y A.'"

19,104.—COMPOSITION COFFEE.—*James E. Burns*, Philadelphia, Pa. Application filed January 27, 1891. Used since November 1, 1890.
"The words 'PROCESS COFFEE COMPANY.'"

19,105.—COMPOUND FOR REMOVING BOILER-SCALES.—*Diamond Compound Co.*, Harrison, N. J. Application filed January 29, 1891. Used since November 1, 1890.
"The words 'DIAMOND COMPOUND COMPANY' inclosed within the lines of a diamond or lozenge shaped figure with red-colored outlines."

19,106.—TIGHT-FOLDING UMBRELLAS AND PARASOLS.—*Follmer, Clogg & Co.*, Philadelphia, Pa., and New York, N. Y. Application filed January 20, 1891. Used since January 1, 1891.
"A bell-shaped figure with sidewise-projecting top portion."

19,107.—WHISKY.—*John J. Hayes*, Boston, Mass. Application filed January 15, 1891. Used since 1876.
"The words 'MADISON CLUB.'"

19,108.—WAX MATCHES.—*Bryant & May, Limited*, London, England. Application filed February 6, 1891. Used since 1888.
"The representation of a street vender ringing a bell and carrying a box."

19,109.—TABLETS FOR DUPLICATING MANUSCRIPT.—*Louis Neuhaus*, New York, N. Y. Application filed January 21, 1891. Used since July 23, 1890.
"The representation of a locomotive-engine having the word 'THE' printed in the steam issuing therefrom, the word 'RAPID' on the boiler of the locomotive-engine, and the word 'COPYIST' printed under the track on which the locomotive-engine is."

19,110.—LINE OF PROPRIETARY MEDICINES.—*Roswell Van Buskirk* Newark, N. J. Application filed January 2, 1891. Used since 1880.
"The word 'PAUSTIC.'"

19,111.—ELECTRIC INSOLES.—*Estella Wingren & Co.*, Burlington, Kans. Application filed December 11, 1890. Used since October, 1890.
"The words 'THE SILVER INSOLES WIN GOLDEN OPINIONS' and the representation of an American silver dollar."

19,112.—REMEDY FOR COUGHS, COLDS, AND LIKE DISEASES.—*Ellsworth S. Beshore*, Pottstown, Pa. Application filed January 28, 1891. Used since November 1, 1890.
"The words 'ONE NIGHT COUGH CURE.'"

19,113.—STOVE PASTE POLISH.—*Harry C. Bomhard*, Milwaukee, Wis. Application filed November 28, 1890. Used since May 15, 1876.
"The word 'CROW' in connection with the picture of a crow."

19,114.—OINTMENT.—*Thomas F. Christman*, Greenville, N. C. Application filed January 23, 1891. Used since January, 1887.
"A monogram composed of the letters 'T F C.'"

19,115.—PORTABLE HEATERS.—*Daniel H. Erdman*, Camden, N. J. Application filed January 21, 1891. Used since January 1, 1871.
"The word 'GIANT-HEATER.'"

19,116.—EMULSIONS.—*Gulick & Co.*, Terre Haute, Ind. Application filed January 28, 1891. Used since November, 1889.
"The word 'GLYCOLEIN.'"

19,117.—CIGARS, CIGARETTES, AND MANUFACTURED TOBACCO.—*José Gener*, Havana, Cuba. Application filed January 26, 1891. Used since 1865.
"The word 'ESCEPCION.'"

19,118.—CIGARS, CIGARETTES, AND MANUFACTURED TOBACCO.—*José Gener*, Havana, Cuba. Application filed January 26, 1891. Used since 1882.
"The word 'TRAFALGAR.'"

19,119.—ALE.—*Chester H. Graves & Sons*, Boston, Mass. Application filed February 5, 1891. Used since January 28, 1891.
"The words 'BLUE LABEL.'"

19,120.—VETERINARY REMEDIES.—*John E. Jayne*, De Witt, Mich. Application filed January 27, 1891. Used since January 1, 1891.
"The monogram-symbol 'J E J.'"

19,121.—REMEDIES FOR DISEASES OF THE THROAT AND LUNGS.—*Alfred O. Kring*, St. Louis, Mo. Application filed January 30, 1891. Used since November 1, 1890.
"The word 'ANTICOF.'"

19,122.—REMEDY FOR DISEASES OF THE THROAT AND LUNGS.—*Charles Leslie & Co.*, St. Louis, Mo. Application filed January 19, 1891. Used since July 1, 1890.
"The words 'LESLIE'S COUGHINE.'"

19,123.—INTERNAL AND EXTERNAL REMEDY FOR SKIN DISEASES.—*P. H. Mandabach*, Columbus, Ohio. Application filed December 24, 1890. Used since February 15, 1890.
"The word 'KALODERM.'"

19,124.—WIRE-STITCHING MACHINES.—*James L. Morrison*, New York, N. Y. Application filed February 3, 1891. Used since January 1, 1880.
"The word 'PERFECTION.'"

19,125.—WIRE FOR STITCHING-MACHINES.—*James L. Marrison*, New York, N. Y. Application filed February 3, 1891. Used since January 1, 1889.
"The word 'PERFECTION.'"

19,126.—ROCK-CANDY FLAVORED FOR USE IN CORDIALS.—*John U. O'Meara*, Washington, D. C. Application filed January 24, 1891. Used since January 15, 1891.
"The word 'ROYAL.'"

19,127.—KITCHEN-STOVE FURNITURE.—*Alexander G. Patton*, Columbus, Ohio. Application filed January 26, 1891. Used since May 12, 1890.
"The word 'TRIUMPH.'"

19,128.—SEWING-MACHINES AND ATTACHMENTS.—*James P. Page*, New York, N. Y. Application filed January 21, 1891. Used since November 15, 1890.
"The word 'PAN-AMERICAN.'"

19,129.—HOSIERY.—*Pilling & Madeley*, Philadelphia, Pa. Application filed November 20, 1890. Used since April 10, 1890.
"The fac-simile firm-signature 'PILLING & MADELEY' crossing the word 'SEAMLESS.'"

19,130.—REMEDY FOR RHEUMATISM AND KINDRED AILMENTS.—*Morris Rosenberg*, Philadelphia, Pa. Application filed January 21, 1891. Used since December 9, 1890.
"The words 'FRENCH OIL' associated with the representation of a man seated in a chair, having one limb exposed, which is being rubbed by a female nurse kneeling on the floor and having at her side a bottle having a label thereon, on which appear the words 'FRENCH OIL.'"

19,131.—SODA-WATER.—*Walter P. Sheldon*, Malden, Mass. Application filed January 24, 1891. Used since February 1, 1890.
"The words 'QUEEN SHERBET.'"

19,132.—SARSAPARILLA BEVERAGE.—*J. Schweppe & Co., Limited*, London, England. Application filed January 26, 1891. Used since December 22, 1886.
"The representation of a flowing fountain."

19,133.—TYPE-WRITER RIBBONS.—*John Underwood & Co.*, New York, N. Y. Application filed January 30, 1891. Used since January 1, 1891.
"The word 'DIAMOND.'"

19,134.—RIBBONS FOR TYPE-WRITERS.—*John Underwood & Co.*, New York, N. Y. Application filed January 30, 1891. Used since January 1, 1891.
"The word 'VALADIUM.'"

19,135.—CONFECTIONERY.—*Philip Wunderle*, Philadelphia, Pa. Application filed June 21, 1889. Used since May 15, 1889.
"The representation of a box having parallel stripes or bands."

19,136.—LETTER BOOKS AND INDEXES.—*Richard R. Vernon*, New York, N. Y. Application filed January 30, 1891. Used since August 15, 1890.
"The word 'ECLIPSE.'"

19,137.—WAX MATCHES.—*Bryant & May, Limited*, London, England. Application filed February 6, 1891. Used since 1883.
"The words 'ROYAL WAX VESTAS.'"

19,138.—UNDERWEAR AND HOSIERY.—*Dunham, Buckley & Co.*, New York, N. Y. Application filed January 31, 1891. Used since September 1, 1890.
"The word 'EREBUS.'"

19,139.—AXLE-GREASE.—*Bernard Derhake*, Quincy, Ill. Application filed August 31, 1889. Used since October 1, 1883.
"The representation of a castor-bean stalk and a bunch of castor-beans growing thereon."

19,140.—LAUNDRY-SOAP.—*Kansas City Soap Company*, Kansas City, Mo., and Kansas City, Kans. Application filed February 3, 1891. Used since 1882.
"The word 'FERN' and the representation of ferns."

19,141.—SALT.—*Retsof Mining Company*, York and New York, N. Y. Application filed February 6, 1891. Used since January 1, 1887.
"The word 'RETSOF.'"

19,142.—COUGH-SIRUP AND COUGH-DROPS.—*Frances A. Robbins*, Nahant, Mass. Application filed January 22, 1891. Used since December 1, 1890.
"The representation of a child and dog."

19,143.—RAZORS.—*John Sellers & Sons*, New York, N. Y., and Sheffield, England. Application filed January 30, 1891. Used since May, 1890.
"The word 'SIGNAL.'"

19,144.—LAUNDRY-SOAP.—*Water King Soap Company*, Kansas City, Kans. Application filed February 5, 1891. Used since September 22, 1890.
"The words 'WATER KING' and the representation of a steamboat with the words 'WATER KING' on the covering to the side wheel."

19,145.—WAX MATCHES.—*Bryant & May, Limited*, London, England. Application filed February 6, 1891. Used since 1869.
"The representation of a tiger."

19,146.—CIGARS.—*Gabrio & Spitz*, Des Moines, Iowa. Application filed December 2, 1890. Used since May 1, 1890.
"The words 'THE CLOWN.'"

19,147.—PLASTERS AND SALVES.—*Catherine A. Staub*, Cleveland, Ohio. Application filed January 28, 1891. Used since March, 1890.
"The words 'ST. BENEDICT WONDER PLASTER' and the representation of a saint."

LABELS.

6,465.—Title: "HENRY OST'S PREPARED CASTOR OIL."—*Henry Ost*, Newark, N. J. Application filed February 7, 1891.

6,466.—Title: "ELDREDGE'S COUGH REMEDY."—*J. B. Eldredge & Co.*, Bridgeport, Conn. Application filed February 9, 1891.

6,467.—Title: "NON-ALCOHOLIC EXTRACT OF VANILLA."—*Alexander C. Howell*, Hackettstown, N. J. Application filed January 29, 1891.

6,468.—Title: "DIAMOND WHITE GRAPES."—*The Diamond White Grape Company*, Rochester and Brighton, N. Y. Application filed November 10, 1890. (Trade-Mark Registered.)

6,469.—Title: "THE OILS THAT LUBRICATE MOST."—*Vacuum Oil Company*, Rochester, N. Y. Application filed February 10, 1891.

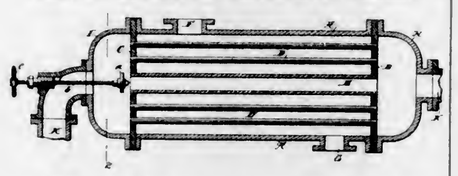
6,470.—Title: "THE OIL WHICH LUBRICATES BEST."—*Vacuum Oil Company*, Rochester, N. Y. Application filed February 10, 1891.

6,471.—Title: "THE OIL WHICH LUBRICATES MOST."—*Vacuum Oil Company*, Rochester, N. Y. Application filed February 10, 1891.

PATENTS

GRANTED MARCH 3, 1891.

447,285. SURFACE CONDENSER. LOUIS R. ALBERGER, New York, N. Y., assignor to William A. Perry and Charles C. Worthington, both of same place. Filed Sept. 9, 1890. Serial No. 364,491. (No model.)



Claim.—1. A surface condenser provided with means for varying relatively to each other the amounts of cooling medium acting upon different parts of the condensing-surface, substantially as described.

2. The combination, with a surface condenser provided with two or more condensing-surfaces of different areas, of means for varying relatively to each other the amounts of cooling medium acting upon the different surfaces, substantially as described.

3. The combination, with a surface condenser provided with two or more condensing-pipes of different bores through which the cooling medium passes, of means for varying the amount of cooling medium passing through the different pipes, substantially as described.

4. The combination, with a surface condenser provided with two or more condensing-pipes of different bores and different condensing areas through which the cooling medium passes, of means for varying the amount of cooling medium passing through the different pipes, substantially as described.

5. The combination, with a surface condenser provided with a pipe through which a part of the cooling medium passes and which forms a part of the condensing-surface, of a valve controlling said pipe, whereby the relative amounts of cooling medium passing through said pipe and other parts of the condenser may be adjusted, substantially as described.

6. The combination, with a surface condenser provided with a series of condenser-pipes, and a pipe of larger bore through which a part of the cooling medium passes and which forms a part of the condensing-surface, of a valve controlling said larger pipe, whereby the relative amounts of cooling medium passing through the larger and smaller pipes may be adjusted, substantially as described.

7. The combination, with the main of a pumping-engine, of a surface condenser through which the water of the main passes, the steam-exhaust entering said condenser, a discharge-pipe for the water of condensation, and means for adjusting relatively to each other the amounts of water acting upon different parts of the condensing-surface, substantially as described.

8. The combination, with the main of a pumping-engine, of a surface condenser provided with condensing-pipes of different bores through which the water of the main passes, the steam-exhaust entering said condenser, a discharge-pipe for the water of condensation, and means for varying the amount of water passing through the different pipes, substantially as described.

9. The combination, with the main K, of the casing A, pipe E, and series of pipes D, through which the water of the main passes, steam exhaust and discharge pipes F G, and a valve controlling the pipe E, substantially as described.

447,286. BUTTER-LIFTER. WELFORD S. BAILEY and WILLIAM M. STEVENSON, Cleveland, Ohio. Filed Feb. 12, 1890. Serial No. 340,124. (No model.)

Claim.—1. The circular cup having vanes at intervals on its inside and a piston provided with slots corresponding to said vanes, substantially as described.

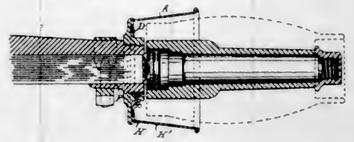


2. A cup-shaped lifter having a neck *a* fixed to the cup and lateral arms *a'* at the top of the neck, in combination with a piston having a stem extending through said neck and arms and vertical vanes on the inside of the cup, substantially as described.

3. In a butter-lifter, the cup provided with an air-duct having an opening at the bottom of the cup and a rod with a head to close said opening at the bottom, substantially as described.

4. In a butter-lifter, a cup having parallel vanes on its inside and a neck with a handle, in combination with a piston adapted to said cup and vanes and having a stem extending through said neck, substantially as described.

447,287. SAND-BAND. ALBERT BALL, Claremont, N. H., assignor to the Sullivan Machine Company, same place. Filed July 21, 1890. Serial No. 359,351. (No model.)



Claim.—1. In a sand band or box, a shell provided with a head of malleable metal having a groove or its equivalent for the reception of the edge of the shell, said edge being gripped by an edge of the metal of the head forced down upon the same, substantially as set forth.

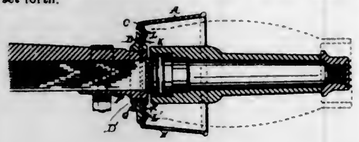
2. In a sand band or box, a shell provided with a head of malleable metal having a groove or its equivalent for the reception of the edge of the shell, said edge being gripped by an edge of the metal of the head forced down upon the same, said edge being slotted or cut in sections, substantially as set forth.

3. In a sand band or box, a shell having a folded or enlarged edge and provided with a head of malleable metal having a groove or its equivalent for the reception of the edge of the shell, said edge being grippped by an edge of the metal of the head forced down upon the same, substantially as set forth.

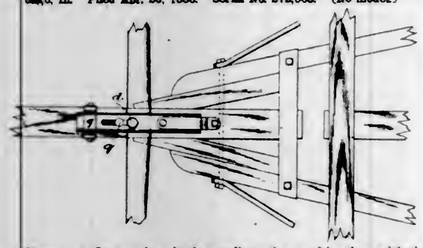
447,288. SAND-BAND. ALBERT BALL, Claremont, N. H., assignor to the Sullivan Machine Company, same place. Filed July 26, 1890. Serial No. 360,031. (No model.)

Claim.—1. In a sand band or box, a shell having an inturned flange, a band or washer, a head provided with a screw-threaded opening or rim, and projections on the head engaging the band and forced down upon the same to grip the flange between the head and said band, substantially as set forth.

2. In a sand band or box, the shell having flange C, the head D, made of malleable metal, and the ring N, said head being provided with projections O, turned down and clinched upon the ring, substantially as set forth.



447,289. SPRING DRAFT ATTACHMENT. HIRAM BARBER, Chicago, Ill. Filed Apr. 26, 1888. Serial No. 272,003. (No model.)

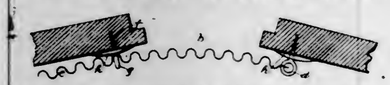


Claim.—1. In a spring draft-equalizer, the combination, with the tongue of a vehicle, of the metallic casing longitudinally movable thereon, divided into chambers, the hollow cores located within said chambers, surrounded by coiled springs, and adapted to be compressed and relaxed by the evener-bar located in the forward chamber, substantially as described.

2. In a spring draft-equalizer, the combination, with the tongue of a vehicle, of the metallic casing longitudinally movable thereon, divided into compartments and provided with a hinged strap, the hollow cores provided with heads, located within the chambers, the coiled springs surrounding said cores and adapted to be contracted and relaxed by the evener-bar located in the forward chamber, for the purpose set forth.

3. In a spring draft-equalizer, the combination, with the tongue of a vehicle, of the metallic casing longitudinally movable thereon, divided into chambers and provided with a hinged strap, the hollow cores located within the chambers, having heads, the coiled springs surrounding said cores, the evener-bar secured to the head of the core in the chamber M, and the core N, abutting against the bolt H in rear chamber, substantially as described.

447,290. SHUTTER-BOWER. THOMAS W. BARTHOLOMEW, Danville, Pa. Filed July 12, 1890. Serial No. 358,593. (No model.)



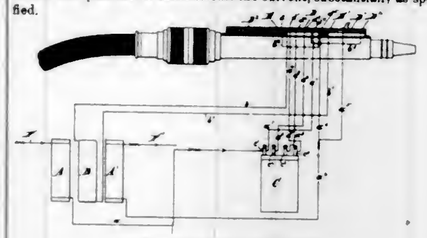
Claim.—1. The combination of the transversely-corrugated metal strip having a fastening-eye at one end for loosely securing it and the catch for the other shutter, consisting of the pin having the lateral head or arm, and a washer to lie between said head and the shutter.

2. A shutter-bower consisting of a piece of round or flat metal corrugated transversely and formed at one end to be loosely secured to the window-shutter by screw or pin, and an eye or hook to be attached to the other shutter and having a lateral head to engage or hold the corrugated piece, substantially as described.

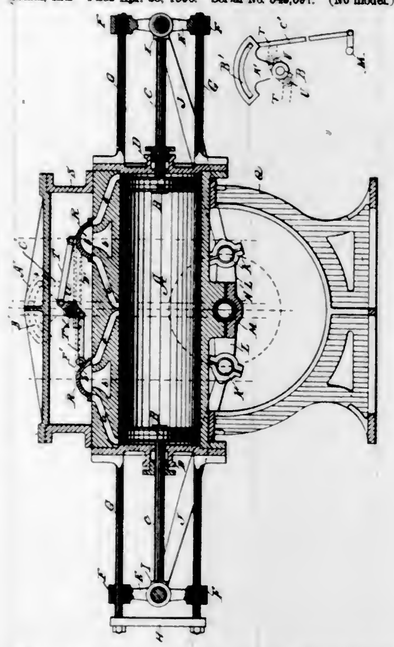
3. The shutter-bower consisting of the flexible metal strip corrugated or fluted transversely througbout its length and formed at one end to be loosely secured to a shutter, in combination with the catch to be attached to the other shutter, constructed to detachably fit the corrugation of said strip and hold the strip at any point within its length, substantially as described.

447,291. ELECTRIC DENTAL MOTOR. HARRY H. BLADEN, Detroit, Mich., assignor to the Detroit Motor Company, same place. Filed Mar. 23, 1888. Serial No. 268,234. (No model.)

Claim.—In an electric dental motor, the combination of the hand-hole, a longitudinally-sliding switch D, located on said hand-hold, a series of terminals carried by said switch, the fixed contacts E E', a regulator C, comprising a series of resistances, circuit-connections, substantially as described, whereby the motor is adapted to be variably energized or reversed at will, and a spring for normally throwing the switch into position to short-circuit the current, substantially as specified.



447,292. STEAM-ENGINE. CHARLES A. BLUME and DAVID LANUM, Colfax, Ind. Filed Apr. 23, 1890. Serial No. 349,091. (No model.)



Claim.—1. In an engine, the combination of the horizontal cylinder, the two oppositely-moving pistons therein provided with piston-rods extending through the opposite heads, the steam-chest on said cylinder, two sets of ports from the chest to the cylinder for admitting and exhausting steam from opposite sides of said pistons, two valves in said chest respectively governing a set of said ports, the main engine-shaft connected with and driven by said piston-rods, the shaft for operating said valves parallel with said engine-shaft and connected therewith to be rocked thereby, and the links connecting said valve-shaft and said two valves to operate the same simultaneously, substantially as described.

2. In combination, the horizontal cylinder, the continuous steam-chest thereon, the two oppositely-moving pistons in said cylinder having their rods extending through opposite cylinder-heads, the horizontal engine-shaft mounted horizontally and transversely beneath and journaled to the center of said cylinder, connections from the piston-rods to drive said shaft, the ports from said chest into the cylinder, the valves to control said ports, the counter-shaft above said cylinder and to which said valves are connected so as to be simultaneously operated thereby, and means connecting the engine and said counter-shaft to rock said counter-shaft.

3. In combination, the horizontal cylinder, two horizontal parallel guide-rods rigid with each cylinder-head and secured together and extending out therefrom, the two oppositely-movable pistons in said cylinder having rods extending through opposite heads and each between a pair of guide-rods, vertical cross-heads sliding on said guides, each having a piston-rod secured thereto, the engine crank-shaft horizontally mounted in a plane passing transversely through said cylinder, and the horizontal rocking cross-heads, each journaled in and extending through a vertical cross-head and connected with said shaft to rotate the same.

4. The combination of a continuous cylinder A, having two pistons B, a continuous steam-chest, valves R R, governing two sets of ports *a a b*, links T, reciprocating said valves and connected to a rocker-arm U, a shaft V, secured to the rocker-arm U, and a rod C', oscillating the shaft V and operated by connection with the main engine-shaft, substantially as described.

5. In combination, a continuous cylinder provided with two sets of ports *a a b*, two pistons B, working in opposite directions therein, two valves R, provided with the exhaust-cavities *b'*, controlling the two sets of ports, links T, connecting the valves with a rock-shaft V, a sector A', oscillating the rock-shaft, a link C', operated from the engine-shaft oscillating said sector, and a slot in the sector, whereby the link C' may be shifted so as to reverse the motion of the valves, substantially as described.

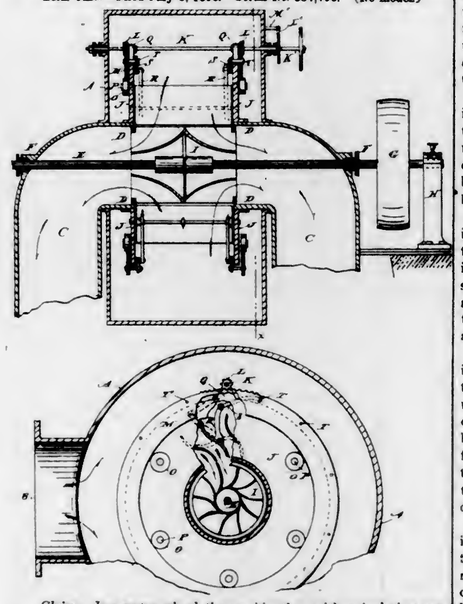
6. The combination of the cylinder, the two horizontal guide-rods, the vertical cross-head secured to the piston-rod of the cylinder-piston and having boxes at its ends sliding on said guide-rods, and provided with a horizontal bearing, a horizontal rocking cross-head at its center mounted in said bearing, the connecting-rods or pitmen secured to its opposite ends, and the oil-cup on the upper box of said vertical cross-head, said head being provided with an oil-duct from said upper bearing into and through the horizontal bearing to the lower box, as set forth.

447,293. PRINTER'S PRESS-GUIDE. JOHN G. BOEHRINGER and JOSEPH A. BOEHRINGER, Buffalo, N. Y. Filed Nov. 27, 1889. Serial No. 331,743. (No model.)



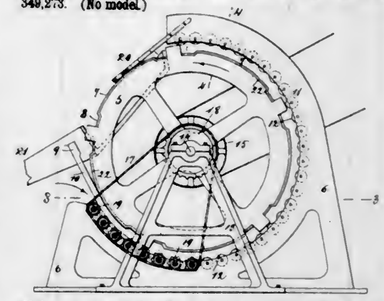
Claim.—In a feed-guide for printing-presses, the adjusting-screw c, adapted to work in a hinged top, in combination with a pin or pins *d' d'*, forming part of the device, substantially as specified.

447,294. WATER-WHEEL. FRANCIS M. BOOKWALTER, Springfield, Ohio. Filed July 5, 1890. Serial No. 357,790. (No model.)



Claim.—In a water-wheel, the combination, with an inclosing case having an inlet-opening, draft-tubes extending from said case and having shaft-bearings, and a wheel of extreme width mounted to discharge into said tubes, of stationary side plates fixed to the inner ends of said tubes, independent rings having gear-segments and rotatably mounted on said side plates, respectively, gates pivotally supported by said stationary side plates and of extreme width corresponding with said wheel and operatively connected at each end with the corresponding ring, pinions meshing with their respective ring-segments, and a rotatable cross-shaft for said pinions and operated from outside of the case to cause both rings to act in unison and simultaneously on said gates at both ends thereof, substantially as described, and for the purpose set forth.

447,295. STAVE-BENDING MACHINE. FREDERICK BRENNER and JOHN BRENNER, Cincinnati, Ohio. Filed Apr. 24, 1890. Serial No. 349,273. (No model.)



Claim.—1. A stave-bending machine consisting of a wheel the face of which is adapted to receive staves by cutting its face down at the proper places to admit their croze end, in combination with a stationary frame surrounding to the extent of its length this wheel and being circular at its inner surface, which surface is opposite and parallel or concentric with the face of said wheel and formed by a number of small rollers journaled in it, the stave being carried in by the revolving wheel and passed through the space between its face and the faces of the small rollers opposite it, all as fully shown and described.

2. A stave-bending machine consisting of a wheel the face of which is adapted to receive staves by cutting its face down at the proper places to admit their croze end, in combination with a stationary frame surrounding to the extent of its length this wheel and being circular at its inner surface, which surface is opposite and parallel or concentric with the face of said wheel and formed by a number of small rollers journaled in it, a part of them near the feed end revolving with the machine to facilitate the introduction of the staves, which are carried in by the revolving wheel and passed through the space between it and the small rollers, all as fully shown and described.

3. A stave-bending machine consisting of a wheel the face of which is adapted to receive staves and yielding to accommodate irregularities in their thickness, in combination with a stationary frame surrounding to the extent of its length this wheel, its inner surface being opposite, parallel, and concentric with the face of the wheel, the stave being carried in by the revolving wheel and passed through the space between it and the said frame, all as fully shown and described.

4. A stave-bending machine consisting of a wheel the face of which is adapted to receive staves and yielding to accommodate irregularities in their thickness, in combination with a stationary frame surrounding to the extent of its length this wheel, its inner surface being opposite, parallel, and concentric with the face of the wheel and formed by a number of small rollers journaled in it, the stave being carried in by the revolving wheel and passed through the space between it and the said rollers, all as fully shown and described.

5. A stave-bending machine consisting of a wheel the face of which is adapted to receive staves and yielding to accommodate irregularities in their thickness, in combination with a stationary frame surrounding to the extent of its length this wheel, its inner surface being opposite, parallel, and concentric with the face of the wheel and formed by a number of small rollers journaled in it, a part of them near the feed end revolving with the machine to facilitate the introduction of the staves, which are carried in by the revolving wheel and passed through the space between it and the rollers, all as fully shown and described.

6. A stave-bending machine consisting of a wheel the face of which is adapted to receive staves and yielding to accommodate irregularities in their thickness, in combination with a stationary frame surrounding to the extent of its length this wheel, its inner surface being opposite, parallel, and concentric with the face of the wheel and formed by a number of small rollers journaled in it, a part of them near the feed end revolving with the machine to facilitate the introduction of

the staves, which are carried in by the revolving wheel and passed through the space between it and the said rollers, and a suitable ejecting device, all as fully shown and described.

447,296. CORN-HARVESTER. SAMUEL BROOKE, Macksville, Kans. Filed Nov. 29, 1890. Serial No. 373,014. (No model.)



Claim.—1. A machine for cutting corn, sunflowers, and the like, comprising a platform having forwardly-converging knives or cutters and provided on opposite sides with runners of unequal height, substantially as set forth.

2. In a machine of the class described, the combination, with a reversible platform provided on opposite sides with runners of unequal height, of the detachable and interchangeable knives or cutters having curved outer edges, substantially as and for the purpose set forth.

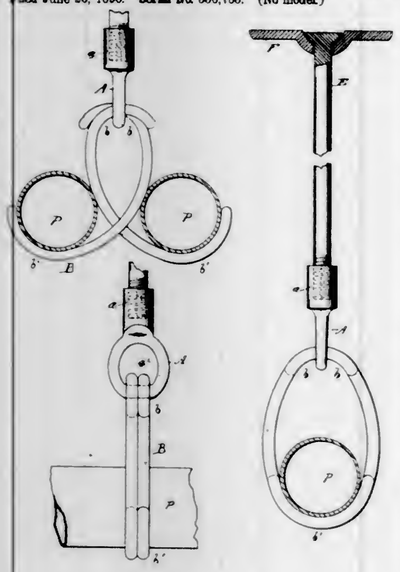
3. In a machine of the class described, the combination of a reversible triangular platform, the runners of unequal height mounted on opposite sides of said platform parallel to each other and extending from the rear edge in the direction of the point of said platform, and the knives or cutters secured at the sides of the latter, substantially as and for the purpose set forth.

4. In a machine of the class described, the combination of the reversible platform, the runners on opposite sides of the latter, the connecting-bolts extending vertically through the platform and through the runners on opposite sides thereof, and the forwardly-converging knives or cutters at the sides of said platform, substantially as and for the purpose set forth.

5. In a machine of the class described, the combination of the reversible triangular platform, the runners of unequal height, secured on opposite sides of said platform parallel to each other and extending from the rear edge in the direction of the point of the platform, and the knives or cutters having upwardly-curved outer edges and meeting in a point at their front ends, said knives or cutters being mounted detachably and interchangeably at the sides of the platform, substantially as and for the purpose set forth.

6. In a machine of the class described, a reversible platform composed of parts or sections hinged together and having forwardly-converging front sides provided with detachable and interchangeable knives or cutters, said parts or sections being each provided on opposite sides with runners of unequal height, substantially as and for the purpose herein set forth.

447,297. PIPE-HANGER. ROLLA C. CARPENTER, Lansing, Mich. Filed June 26, 1890. Serial No. 356,783. (No model.)

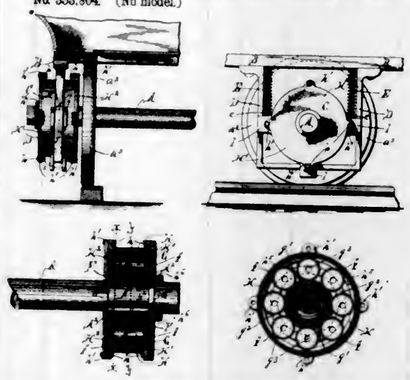


Claim.—1. In a pipe-hanger for steam or water distribution, the combination of the reversible hook having its arms curved to the curves of different pipes on the same side of the body of the hook, with the means suspended from the ceiling for receiving the reversible hook, all substantially as described.

2. In a pipe-hanger for steam or water distribution, the combination of the reversible hook having its arms curved to the curves of different pipes on the same side of the body of the hook, with the eye-piece for receiving one arm of the hook, and the rotatable rod for sustaining the eye-piece attached to the ceiling, all substantially as described.

3. The combination of the suspending-rod supporting the eye-piece, with the eye-piece supporting the hooks, the wide slot for receiving the hooks to permit lateral movement, and the hooks inserted in the slot, all substantially as described.

447,298. AXLE-BEARING. DAVID W. COPELAND, Syracuse, N. Y., assignor to J. Milford Andrews, same place. Filed May 31, 1890. Serial No. 353,804. (No model.)



Claim.—1. The herein-described axle-bearing, the same consisting of a movable sleeve encircling the axle and formed with a central opening of greater diameter than said axle, an annular groove on the axle for receiving said sleeve, a tooth for locking the sleeve to the axle, and a bearing upon which said sleeve rolls, substantially as and for the purpose set forth.

2. The herein-described axle-bearing, the same consisting of a sleeve encircling the axle and having engaging-teeth, two or more rollers on the outside of said sleeve having teeth for engaging the teeth of the sleeve, and a support for said rollers, substantially as and for the purpose specified.

3. The herein-described axle-bearing, the same consisting of a sleeve encircling the axle and formed with a central opening of greater diameter than said axle, an annular groove on the axle for receiving said sleeve, an engaging-tooth for locking the sleeve to the axle, two or more rollers on the outside of said sleeve, and a support for said rollers, substantially as and for the purpose set forth.

4. The herein-described axle-bearing, the same consisting of a sleeve encircling the axle, engaging-teeth on the said sleeve for locking the same to the axle, a second series of teeth on said sleeve, two or more rollers on the outside of said sleeve, teeth on said rollers for engaging the second series of teeth on the sleeve, and a support for said rollers, substantially as and for the purpose specified.

5. The herein-described axle-bearing, the same consisting of a sleeve encircling the axle and having engaging-teeth, two or more rollers on the outside of said sleeve having teeth for engaging the sleeve, a support in which said rollers are journaled, and an outer sleeve having a bearing for said rollers, substantially as and for the purpose specified.

6. The herein-described axle-bearing, the same consisting of a sleeve encircling the axle, engaging-teeth on said sleeve for locking the same to the axle, two or more rollers on the outside of said sleeve, engaging-teeth on said rollers for engaging the sleeve, an outer sleeve having a bearing for said rollers, and yielding supports for said outer sleeve, substantially as and for the purpose set forth.

7. The herein-described axle-bearing, the same consisting of a movable sleeve encircling the axle, a recess at the opposite extremities of said sleeve for engaging the axle, and two or more rollers for supporting said sleeve, substantially as and for the purpose set forth.

8. The herein-described axle-bearing, the same consisting of a movable sleeve encircling the axle, a recess at the opposite extremities of said sleeve for engagiag the axle, and two or more rollers for supporting said sleeve, said rollers being of less diameter than said sleeve, substantially as and for the purpose specified.

9. The herein-described axle-bearing, the same consisting of a movable sleeve encircling the axle, a recess at the opposite extremities of said sleeve for engaging the axle, two or more rollers for supporting said sleeve, and teeth at the opposite extremities of said rollers for engaging the opposite extremities of said sleeve, substantially as and for the purpose set forth.

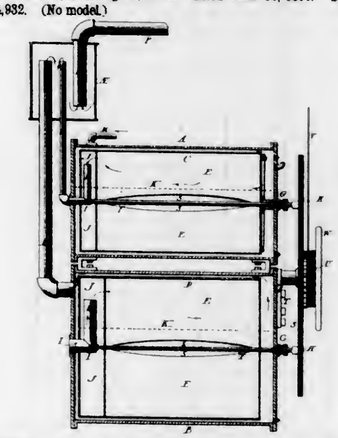
10. In combination, an axle having an annular groove, a movable sleeve surrounding said axle and formed with a central opening of greater diameter than said axle, an annular groove on the axle for receiving said sleeve, a tooth for locking said sleeve to the side wall of said groove, and a bearing upon which said sleeve rolls, substantially as and for the purpose specified.

11. In combination, an axle having an annular groove, a movable sleeve surrounding said axle, a tooth for locking said sleeve to the side wall of said groove, rollers on the outside of said sleeve, and a support for said rollers, substantially as and for the purpose set forth.

12. In combination, an axle having an annular groove, a movable sleeve surrounding said axle, a tooth for locking said sleeve to the side wall of said groove, rollers on the outside of said sleeve, an outer sleeve having a support for said rollers, and a yielding support for said outer sleeve, substantially as and for the purpose specified.

13. The herein-described axle-bearing, the same consisting of a sleeve around the axle, two or more rollers on the outside of said sleeve, an outer support for said rollers, and a bushing removably inserted between said support and rollers, substantially as and for the purpose set forth.

447,299. APPARATUS FOR MIXING GAS AND AIR. GEORGE R. COTTRELL, New York, N. Y., assignor of one-half to Wm. W. Dudley and F. L. Browne, Washington, D. C. Filed June 10, 1890. Serial No. 354,932. (No model.)

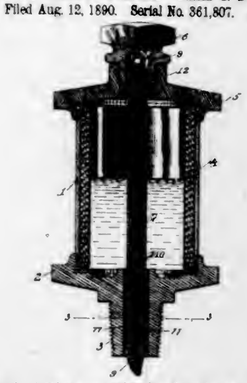


Claim.—1. In an air and gas mixer, the combination of a cylinder for containing water, a screw-wheel consisting of a drum having a length greater than its diameter, a central shaft mounted in said cylinder, a chamber at one end, and five spirally-arranged partitions forming chambers open at their ends and having a pitch that will effect the simultaneous closing and opening of the inlet and the outlet ends of said chambers in relation to a water-line K in the rotation of said wheel, and mechanism for rotating said screw-wheel, whereby the said chambers will be water sealed between their receiving and discharging ends, the gas received within said chambers at its normal pressure and delivered therefrom at a low pressure, the wheel balanced, and the flow of gas through it automatically cut off when the machine is at rest, substantially as described.

2. In an air and gas mixer, the combination of two measuring-wheels C and D, one for gas and one for air, each having a chamber J at one end, and each constructed with five spirally-arranged partitions forming chambers open at their ends and having a length greater than the diameter of the wheel and a considerable pitch, a cylinder A and B for each wheel, respectively, containing a sealing-liquid for the said spiral chambers, the cylinder A having a pipe W for admitting gas under pressure and an elbow-pipe I for the escape of the measured gas, the cylinder B having an inlet elbow-pipe I^2, open to the outer air, and an outlet-pipe L, and a mixing-chamber V, into which the said outlet-pipes terminate, and mechanism for connecting and rotating said wheels, whereby the gas is received and measured by the wheel C at its normal or meter pressure and delivered at a low pressure, and the air is received by induction and measured and delivered by the wheel D at the same pressure and velocity at which the gas is delivered, in the way described and for the purpose stated.

3. In an air and gas mixer, the combination of a cylinder for containing water, a screw-wheel consisting of a drum having five screw-formed division-vanes of a length greater than its diameter, a central shaft mounted in said cylinder, a chamber at one end, and a series of spirally-arranged partitions forming chambers open at their ends having the pitch described, with a register-plate mounted upon the receiving end of said drum, and mechanism for rotating said screw-wheel, substantially as described, for the purpose stated.

447,300. OIL-CUP FEEDER. JAMES S. DONNELLAN, Dubuque, Iowa. Filed Aug. 12, 1890. Serial No. 361,807. (No model.)

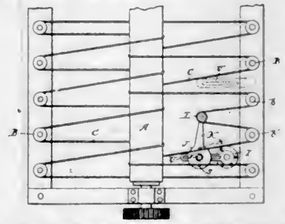


Claim.—1. A wire core twisted to form loops or eyes at opposite ends thereof, in combination with a covering of yarn threaded through said loops, substantially as set forth.

2. A core provided with loops or eyes at its ends, in combination with a covering of yarn having ends projecting at one end of said core and a single strand of yarn tied in the eye at the opposite end of said core, substantially as set forth.

3. The combination, with a lubricator or oil-cup, of a reversible feeder and regulator consisting of a wire core having eyes or loops at its ends, a covering of yarn threaded through said eyes, and an unequal number of strands of yarn projecting at opposite ends, substantially as and for the purpose set forth.

447,301. TENSION-REGULATING DEVICE FOR SPINDLE-DRIVING BANDS. WILLIAM DOOTSON, Athens, Ga. Filed Jan. 25, 1890. Serial No. 338,049. (No model.)



Claim.—In a band-tension for spinning-machines, the combination, with a fixed bracket or support and a base adjustable thereon, having an enlarged or cup-shaped portion and a centrally-arranged pin, of a lever pivoted on said pin, having a covering portion J and a tension-pulley at its free end, and a spring within the cup-shaped portion, one end of which is connected to the base and the other end to the lever, substantially as described.

447,302. VIOLET DYE. CARL DUISBERG, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Aug. 19, 1889. Serial No. 321,305. (Specimens.) Patented in Spain Sept. 12, 1885, Nos. 9,506 and 6,017; in England Nov. 24, 1885, No. 14,424; in Germany Feb. 9, 1886, No. 40,247; in France Feb. 15, 1886, No. 183,042; in Italy Mar. 26, 1886, No. 19,967, and in Austria-Hungary Dec. 1, 1888, No. 20,062 and No. 98,178.

Claim.—The coloring-matter herein described, which is derived from the action of one molecule of tetrazodiphenoldialkyl ether first on one molecule of alpha-naphthylamine monosulpho-acid and then on one molecule of alpha-naphthol monosulpho-acid, and which forms in a dry state a green-blue amorphous powder which is easily soluble in water with a violet shade and in concentrated sulphuric acid with a fine green-blue color, and which is precipitated out of a water solution by the addition of a mineral acid as a blue precipitate.

447,303. **ORANGE DYE.** CARL DUISBERG, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Oct. 29, 1890. Serial No. 369,742. (Specimens.) Patented in Germany Apr. 23, 1887, No. 44,797.

Claim.—1. The process for producing the coloring-matter herein described by combining one molecule of tetrazo-diphenyl with one molecule of salicylic acid to an intermediate product and combining this with one molecule of naphthylamine monosulpho-acid.

2. As a new product, the new orange dyeing coloring-matter herein described, having the following properties; is easily soluble in water, the water solution being darkened by weak acetic acid and precipitated by mineral acid; in concentrated sulphuric acid it dissolves with blue color and has the chemical formula: $C_{17}H_{13}N_3SO_3Na_2$.

447,304. **STEP FOR CARS.** ELIAS E. FASHION, Emporia, Kans. Filed June 25, 1890. Serial No. 356,614. (No model.)

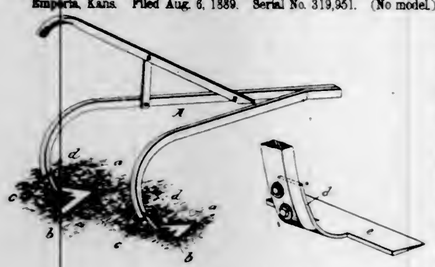


Claim.—1. The combination of the extension-step, the side plates secured to the ends of the step and having sigmoidal extensions adapted to be secured to the sides of the car-steps and provided with sigmoidal slots, whereby the step is caused to descend slowly, and suitable operating means, substantially as described.

2. The combination of the extension-step, the side plates secured to the ends of the step and provided with sigmoidal extensions designed to be secured to the sides of car-steps and provided with sigmoidal slots, whereby the step is caused to descend slowly, the levers fulcrumed on the sides and having their front ends pivoted to the side plates and their rear ends connected by a rod, and the operating rod or bar pivoted to the rear end of one of said levers, substantially as described.

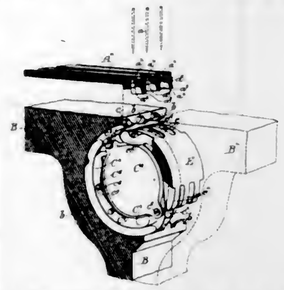
3. The combination of the extension-step, the side plates having arms 6, secured to the ends of the step and provided with sigmoidal extensions adapted to be secured to the sides 4 of car-steps and having sigmoidal slots, whereby the step is caused to descend slowly, the levers fulcrumed on the sides 4 and having their front ends pivoted to the sigmoidal extensions, the rod 13, connecting the rear ends of the levers, and the operating rod or bar pivoted to the rear end of one of the levers and arranged in a keeper 15, and provided with shouldered notches to engage the keeper and maintain the extension-step in its open and folded positions, substantially as described.

447,305. **CULTIVATOR SHOVEL AND KNIFE.** SAMUEL J. FISH, Emporia, Kans. Filed Aug. 6, 1889. Serial No. 319,951. (No model.)



Claim.—A corn-hoe or weeding-blade substantially horizontal in working position, having a diamond point and a central arm or shank bent outward and upward and having cutting-wings with their inner sides curved slightly upward, the outer wing being shortened to about one-half the length of the inner wing, substantially as described.

447,306. **SEWING-MACHINE.** MARSHALL GARDNER, Aurora, Ill., assignor to Thomas H. Ball and James Stone, same place, and Simon Florsheim, Chicago, Ill. Filed Aug. 17, 1888. Serial No. 282,999. (No model.)



Claim.—1. The combination, with a series of parallel circular shuttle-races, of a series of circular hooked shuttles engaged therewith and a segmental oscillating driver engaged with said shuttles, said shuttles being each provided with a central recess concentric with the axis of rotation of the shuttle for containing a flat cop, an exit thread-guide passing through the side wall of the shuttle at the center of said recess, and a flat cover for closing said recess, substantially as described.

2. The combination, with a circular shuttle-race, of a circular hooked shuttle engaged therewith and an oscillating segmental driver, said shuttle being provided with a central recess concentric with the axis of rotation of the shuttle, an exit thread-guide passing through the side wall of the shuttle at the center of said recess, a flat cover closing said recess, a tension-spring located in a cavity outside of the central recess and provided with guide-notches for holding the thread in engagement with said spring, substantially as described.

3. The combination, with a series of needles and a series of parallel circular shuttle-races, of a series of circular hooked shuttles engaged with said shuttle-races and a throat-plate extending over the shuttles and having in its under surface grooves forming parts of the shuttle-races, said throat-plate being provided with needle-apertures at the sides of the shuttle-races, and provided also with a series of narrow guide slots or recesses for the thread-loops, extending upwardly from the shuttle-races and laterally from the needle-apertures at one side thereof in a direction transverse to the paths of the points of the shuttles, substantially as described.

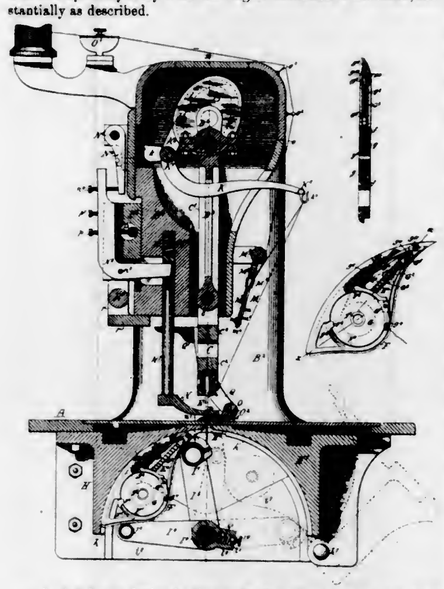
447,307. **SEWING-MACHINE.** MARSHALL GARDNER, Aurora, Ill., assignor to Thomas H. Ball and James Stone, same place, and Simon Florsheim, Chicago, Ill. Filed June 21, 1887. Renewed Jan. 7, 1891. Serial No. 376,974. (No model.)

Claim.—1. The combination, with a curved shuttle-race, of a shuttle-carrier comprising two horizontal bars I' I², the bar I' adjacent to the point of the shuttle being provided with a guide-groove for the needle and with an adjacent notch to receive the edge of the shuttle, substantially as described.

2. The combination, with a series of oscillating shuttles, of a curved shuttle-race formed of two horizontally-arranged parts or castings H H', arranged at opposite sides of the needles and provided with a series of parallel downwardly-opening guide-grooves in their under surfaces, a shuttle-carrier located beneath the several shuttles and supporting the same in engagement with the race, one of said parts or castings, as H', being pivoted at its outer margin to the frame, whereby it may be moved to permit the extraction and insertion of the shuttles, substantially as described.

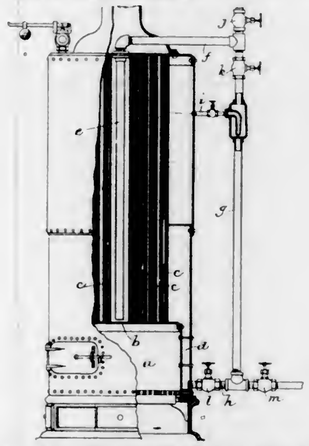
3. The combination, with a series of oscillating shuttles moving in parallel planes, of a curved shuttle-race provided with a series of downwardly-opening guide-grooves, and an oscillating shuttle-carrier comprising two bars I' I², each engaging the said several shuttles and sustaining them in engagement with the grooves of the race, the said shuttle-race consisting of two pieces or castings H H', one of which is pivotally supported to admit of its being removed to allow the extraction and insertion of the shuttles, substantially as described.

4. The combination, with the reciprocating needle-bar of a sewing-machine and an oscillating take-up arm for the needle-thread, of a spring take-up comprising a slotted rod, a sliding block or ring upon the rod, and a spring for actuating said block or ring, the said rod being arranged with its end toward which the ring is thrown by the spring downward and remote from the take-up arm, and a guide for the needle-thread located above said rod, whereby the needle-thread is drawn upwardly away from the ring at both sides of the latter, substantially as described.



5. A take-up device for the needle-threads of a gang sewing-machine, consisting of a series of slotted rods M' M', a series of sliding rings upon said rods, springs actuating said rings, and a bar located adjacent to the ends of the several rods, transverse to the latter, and sustained by a spring arm or arms, substantially as described.

447,308. **STEAM-BOILER.** CHARLES F. GARLAND, Chelsea, assignor of one-half to John J. Quigley, East Boston, Mass. Filed Dec. 26, 1889. Serial No. 334,966. (No model.)

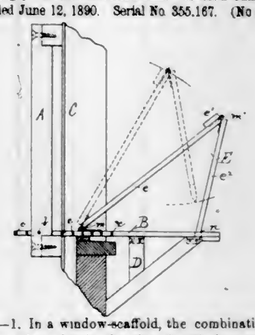


Claim.—1. The combination, with a boiler provided with a crown-sheet, of the vertically-arranged blow-off and supply pipe *e*, extending from the exterior to and terminating with an open end or mouth near or over the upper surface of said crown-sheet, a supply and discharge pipe *g*, to which said pipe *e* is connected, and the valves *j* and *k*, located, respectively, above and below the connection between said pipes *e* and *g*, substantially as and for the purpose set forth.

2. A boiler provided with a vertically-arranged blow-off and supply pipe *e*, extending from the exterior to and terminating with an open end near the upper surface of the crown-sheet, an independent surface blow-off, and an independent water-leg blow-off, as set forth.

3. The combination, with a boiler provided with a crown-sheet and an independent water-leg, of the vertically-arranged blow-off and supply pipe *e*, extending from the exterior to and terminating near the upper surface of said crown-sheet, a vertically-disposed supply and discharge pipe *g*, the branch pipe *f*, connecting said pipe *e* with said pipe *g*, and the blow-off pipe *h*, connecting said water-leg with said pipe *g*, together with the series of valves arranged in said pipes *g* and *h*, substantially as set forth.

447,309. **WINDOW-SCAFFOLD.** ADOLPH GERWALD, St. Louis, Mo. Filed June 12, 1890. Serial No. 355,167. (No model.)



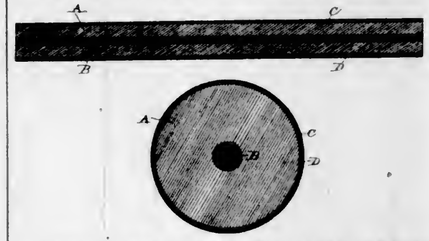
Claim.—1. In a window-scaffold, the combination, with a rectangular frame adapted to be placed against the inner side of a window-frame, of an adjustable platform pivoted at its inner end to said frame, and laterally-folding brackets on the lower side of the platform, substantially as and for the purposes specified.

2. In a window-scaffold, the combination, with a rectangular frame, of a pivoted platform adjustably secured to said frame, a protection-railing hinged to said platform, and laterally-folding brackets for supporting the platform, substantially as and for the purposes specified.

3. The combination, in a window-scaffold, of a rectangular frame adapted to bear against the inner side of the window-frame, a platform adjustably pivoted at its inner end to said frame, laterally-folding brackets secured to the under side of the platform outside the window, and a longitudinally-folding protection-railing hinged at its inner end to said platform and supported at its outer end by a hinged supporting-post resting in apertures in the platform, substantially as and for the purposes described.

4. In a window-scaffold, the combination, with the platform having means of adjustment at its inner end, of dependent brackets pivoted at two distant points on the under side of said platform and adapted to fold laterally against said platform, substantially as and for the purposes specified.

447,310. **LEAD-PENCIL.** BYRON B. GOLDSMITH, New York, N. Y. Filed May 8, 1890. Serial No. 351,065. (No model.)



Claim.—1. As an article of manufacture, a lead-pencil having a coat of pyroxyline upon its exposed surface and a coat of ordinary varnish upon the pyroxyline, substantially as described.

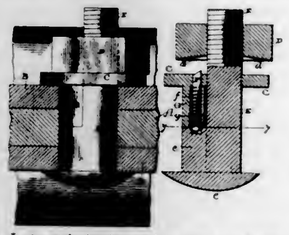
2. As an article of manufacture, a lead-pencil having a tinted coat of pyroxyline upon its exposed surface and a protective coating of ordinary varnish upon the pyroxyline, substantially as described.

3. As an article of manufacture, a lead-pencil having a polished and tinted coat of pyroxyline upon its exposed surface and a protect-

ive coating of ordinary varnish upon the pyroxyline, substantially as described.

4. As an article of manufacture, a lead-pencil having a polished coat of pyroxyline upon its exposed surface and a polished coating of ordinary varnish upon the pyroxyline, substantially as described.

447,311. NUT-LOCK. BENJAMIN F. GRAM, Cordelia, and WILLIAM BARD, Columbia, Pa. Filed Dec. 10, 1890. Serial No. 374,160. (No model.)

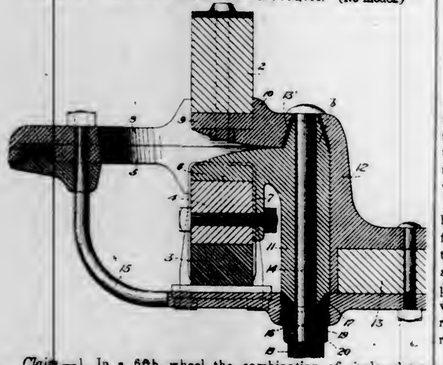


Claim.—1. In a nut-lock, the combination, with a bolt having a shoulder formed thereon, of a washer having a recessed lug, a spring-actuated pawl located in said recess, and a ratchet-faced nut adapted to be engaged by the pawl, substantially as and for the purpose specified.

2. In a nut-lock, the combination, with a bolt having a shoulder formed thereon, of a washer, a recessed lug formed on the inner face of the washer and having an opening in its rear wall, a pawl located in the recess and having its rear end registering with the opening in the rear wall thereof, a ratchet-faced nut constructed to be engaged by the pawl, and a spring adapted to keep the pawl in engagement with the ratchet, substantially as specified.

3. In a nut-lock, the combination, with a bolt enlarged on one side, said enlargement extending from the head of the bolt a portion of the distance between the head and the screw and having a socket in the inner end thereof, of a washer having a recessed lug adapted to bear against the inner end of the enlargement of the bolt and having an opening in its rear wall registering with the socket in said enlargement, a pawl located in said recess and extending through the washer and adapted to pass through the opening in the rear wall of said recess, a ratchet-faced nut constructed to be engaged by the pawl, and a spring coiled about the pawl and adapted to hold the same in engagement with the ratchet, all constructed and operating substantially as and for the purpose specified.

447,312. FIFTH-WHEEL FOR VEHICLES. WILLIAM W. GRIER, Hulton, Pa. Filed June 9, 1890. Serial No. 354,765. (No model.)

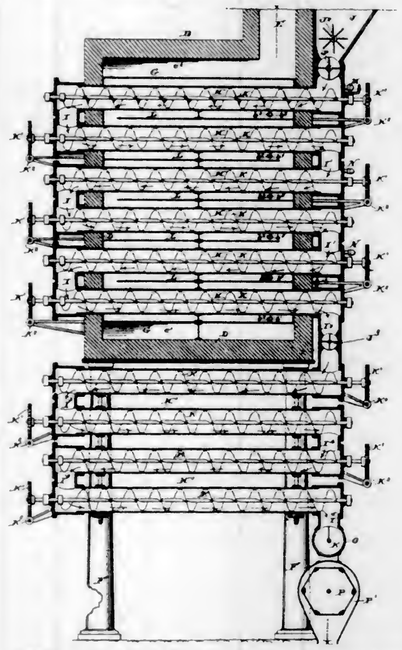


Claim.—1. In a fifth-wheel, the combination of circle-plates adapted to be fitted to the head-block and axle-bed and having their center of motion back of the axle, an upright shank fixed to the axle and extending downwardly in the rear thereof, a reach-iron 12, which extends from the reach to the upper circle-plate and encircles the upper part of said hollow shank, a king-bolt which passes through the said reach-iron and shank, and a brace which extends from the reach to the circle-plate in front of the axle and has a positive lateral connection with the lower part of said shank, substantially as and for the purposes described.

2. In a fifth-wheel, the combination of circle-plates adapted to be fitted to the head-block and axle and having their center of motion back of the axle, an upright hollow shank situate back of and connected with the axle, and a brace which extends from the circle-plate to the reach and fits around the lower part of said shank, and a nut inserted in said brace and having a tapering connection with the shank, substantially as and for the purposes described.

3. In a fifth-wheel, the combination of circle-plates adapted to be fitted to the head-block and axle-bed, a king-bolt back of the axle, a brace extending from the lower part of the king-bolt, and a spring which bears on the king-bolt and on the brace and exerts thereon a longitudinally-acting force, substantially as and for the purposes described.

447,313. APPARATUS FOR REBURNING ANIMAL CHARCOAL. JOHN H. GRIMM and WILLIAM G. PENNYPACKER, Wilmington, Del. Filed Nov. 27, 1889. Serial No. 331,754. (No model.)



Claim.—1. In a device for reburning animal charcoal, a retort-chamber, in combination with one or more series of connective retorts situated one above another therein, conveyers working in the retorts, substantially as described, so as to convey the char gradually through the retort system, a series of ports arranged at varying heights in the retort-chamber for the supply of steam or gas used in heating it, and valves governing said ports.

2. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater situated in the furnace, one or more conduits connecting the superheater with the retort-chamber, one or more series of connected retorts H, situated one above the other in the retort-chamber, a conduit leading from the superheater to the system of retorts and having a controlling-valve, conveyers working inside the retorts, a feed-hopper leading into the upper retort of the system, and a discharge-passage leading from the lower retort.

3. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater situated in the furnace, conduits connecting the superheater with the inside of the retort-chamber, one or more series of connected retorts H, situated one above the other in the retort-chamber, a series of partitions L, placed in the retort-chamber between the superimposed retorts, so as to divide it into a zigzag passage, a feeding-hopper J, connected with the upper retort or retorts, a passage I^3, leading from the lower retorts, and conveyers K, situated in the retorts.

4. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater situated in the furnace, conduits connecting the superheater with the inside of the retort-chamber, one or more series of connected retorts H, situated one above the other in the retort-chamber, a series of partitions L, placed in the retort-chamber between the superimposed retorts, so as to divide it into a zigzag passage, a feeding-hopper J, connected with the upper retort or retorts, a passage I^3, leading from the lower retorts, and conveyers K, situated in the retorts.

5. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater situated in the furnace, conduits connecting the superheater with the inside of the retort-chamber, one or more series of connected retorts H, situated one above the other in the retort-chamber, a series of partitions L, placed in the retort-chamber between the superimposed retorts, so as to divide it into a zigzag passage, a feeding-hopper J, connected with the upper retort or retorts, a passage I^3, leading from the lower retorts, one or more series of connected cooling-tubes H', connected with the retorts H by passage I^2, and conveyers K, situated in the retorts and cooling-tubes and arranged to feed the char through them.

6. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater situated in the furnace, conduits connecting the superheater with the inside of the retort-chamber, one or more series of connected retorts H, situated one above the other in the retort-chamber, a series of partitions L, placed in the retort-chamber between the superimposed retorts, so as to divide it into a zigzag passage, a feeding-hopper J, connected with the upper retort or retorts, a passage I^3, leading from the lower retorts, a feeding-valve J^3, situated in passage I^3, one or more series of connected cooling-tubes H', connected with the retorts H by passage I^2, and conveyers K, situated in the retorts and cooling-tubes and arranged to feed the char through them.

7. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater situated in the furnace, conduits b' b^4 b^5, &c., connecting the superheater with the inside of the retort-chamber at different levels and having regulating-valves b^4, one or more series of connected retorts H, situated one above the other in the retort-chamber, a series of partitions L, placed in the retort-chamber between the superimposed retorts, so as to divide it into a zigzag passage, a feeding-hopper J, connected with the upper retort or retorts, a passage I^3, leading from the lower retorts, and conveyers K, situated in the retorts.

8. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater situated in the furnace, conduits b' b^4 b^5, &c., connecting the superheater with the inside of the retort-chamber at different levels and having regulating-valves b^4, one or more series of connected retorts H, situated one above the other in the retort-chamber, vent-pipes N, leading from the retorts, a series of partitions L, placed in the retort-chamber between the superimposed retorts, so as to divide it into a zigzag passage, a feeding-hopper J, connected with the upper retort or retorts, a passage I^3, leading from the lower retorts, and conveyers K, situated in the retorts.

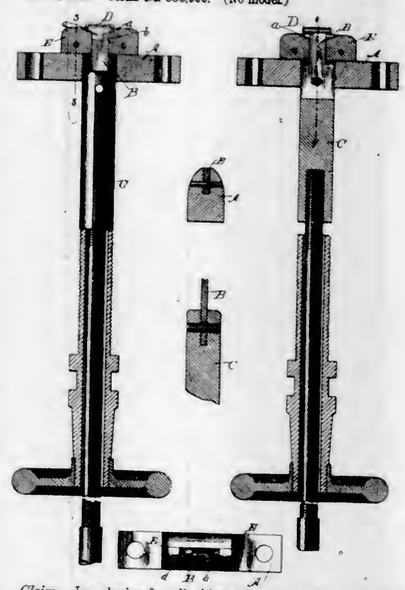
9. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a flue leading from the furnace around the retort-chamber, a steam-superheater situated in the furnace, conduits connecting the superheater with the inside of the retort-chamber, one or more series of connected retorts H, situated one above the other in the retort-chamber, a series of partitions L, placed in the retort-chamber between the superimposed retorts, so as to divide it into a zigzag passage, a feeding-hopper J, connected with the upper retort or retorts, a passage I^3, leading from the lower retorts, and conveyers K, situated in the retorts.

10. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater connected with the retort-chamber by conduits b' b^4 b^5, &c., a series of connected retorts H, situated in the chamber, a feed-hopper J, leading into the upper retort, a feed-regulating valve to govern the amount of char delivered to the retorts, conveyers K, working in the retorts, and a passage I^3, leading from the lower retort of the series outside of the chamber G.

11. In a device for reburning animal charcoal, a furnace A, in combination with a retort-chamber G, a steam-superheater connected with the retort-chamber by conduits b' b^4 b^5, &c., a series of connected retorts H, situated in the chamber, a feed-hopper J, leading into the upper retort, a feed-regulating valve to goveru the amount of char delivered to the retorts, conveyers K, working in the retorts, a passage I^3, leading from the lower retort of the series outside of the chamber G, and a regulating-valve J^3, situated in passage I^3.

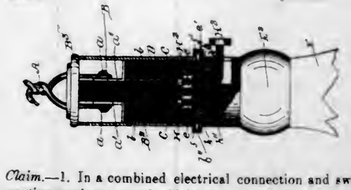
12. In a device for reburning animal charcoal, the retort-chamber G, in combination with the connected retorts H, the connected cooling-tubes H', conveyers K, working in the retorts and tubes, a bolting-reel P, connected with the delivery end of the cooling-tubes, a reel-chamber P', and an exhaust P^2, acting to draw fine char through the reel P and from chamber P'.

447,314. DEVICE FOR CLINCHING WIRE STAPLES. EDWARD GRUNICE, Chicago, Ill., assignor to Edward P. Donnell, same place. Filed Feb. 3, 1890. Serial No. 338,999. (No model.)



Claim.—In a device for clinching wire staples, the combination, with an anvil having two fixed and oppositely-inclined bending-guides and a central hole between the guides, of a central clinching-die and devices for positively actuating said die, substantially as and for the purpose specified.

447,315. INCANDESCENT-LAMP SOCKET. HARRY J. GUTMAN, Des Moines, Iowa. Filed Sept. 29, 1890. Serial No. 366,571. (No model.)

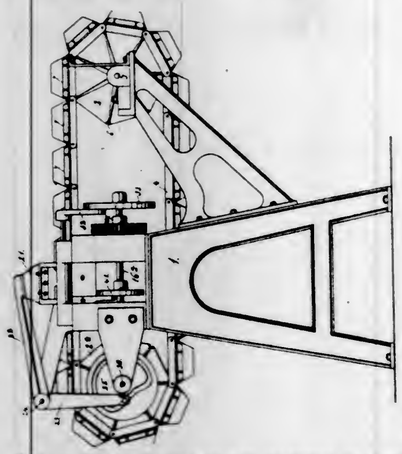


Claim.—1. In a combined electrical connection and switch, the two meeting sections, one of which is provided with contact-plates to which the main leads are electrically connected, the other part having plugs or pins acted upon by yielding pressure, one of said pins having secured thereto an actuator operated from the exterior and held by an approximately angular slot to break contact, as and for the purposes set forth.

2. In a combined electrical switch and contact, the combination of meeting parts or sections, one of which has a slotted chambered portion, contact-plates electrically connected with the main leads, and an exterior casing having slots, the other one of said parts or sections having lugs adapted to enter the slots of the chambered part of the interior portion and casing and having also beveled bores which are metallically lined, pins or plugs within said bores acted upon by yielding pressure and normally bearing against the contact-plates when the connection is effected, one of said pins or plugs having a finger-piece traveling within an approximately-angular slot, to operate as and for the purposes set forth.

3. In an electrical connection, the two parts or sections to which the leads of the circuit are respectively connected, having contact-plates electrically connected through insulating material with said leads carried by one part or section, and movable contact-plugs having buttons thereon adapted to contact with the plates carried by the other part or section, slotted metallic bores embedded in insulating material, pins adapted to travel within the slots of the bores, and spiral springs surrounding the contact-plugs, together with a bayonet-joint connection between the two parts or sections, as set forth.

447,316. **MACHINE FOR FORMING AND PLACING METAL PIECES ON SCALE-BOARD DISHES.** THOMAS J. HADEN, Utica, N. Y., assignor to William M. White, same place. Filed Mar. 22, 1888. Serial No. 268,162. (No model.)



Claim.—1. The combination of the form, the forming and holding die, the clasp-former, and the opening and closing jaws.

2. The combination of the movable carrier having forms with slotted openings on either end, formers for forming the metal pieces, the movable forming and holding die, and the clinching-jaws.

3. The combination of the carrier provided with forms with openings at each end of the forms at the lower outer edge thereof, arms mounted on the carrier, the movable formers, the forming and holding die, and the jaws.

4. The form having openings at each end thereof at the lower outer edge, in combination with a forming and holding die, clasp-former, and the jaws, substantially as set forth.

5. The combination of the carrier provided with forms, the forming and holding die, and the clasp-former and jaws.

6. A carrier provided with forms having openings at the lower outer ends of the forms and pivoted weighted arms projected across the openings, in combination with the clasp-formers and clinching-jaws.

7. The combination of the intermittently-moving carrier provided with forms, the forming and holding die, the intermittently-moving former, and the reciprocating opening and closing jaws.

8. In a machine for placing metal pieces on scale-board dishes, the combination of the form, forming and holding die, and the opening and closing jaws, substantially as set forth.

9. The combination, in a machine for placing metal pieces on scale-board dishes, of the movable carrier having forms thereon, the forming and holding die adapted to descend upon the forms as they are successively moved into position, and the opening and closing jaws for placing the metal pieces on the dish, substantially as set forth.

10. The combination, in a machine for placing metal pieces on scale-board dishes, of the movable carrier provided with forms, forming and holding die adapted to descend upon the forms, and the reciprocating opening and closing jaws adapted to place the metal pieces upon the scale-board dishes reciprocating toward and from the form, substantially as set forth.

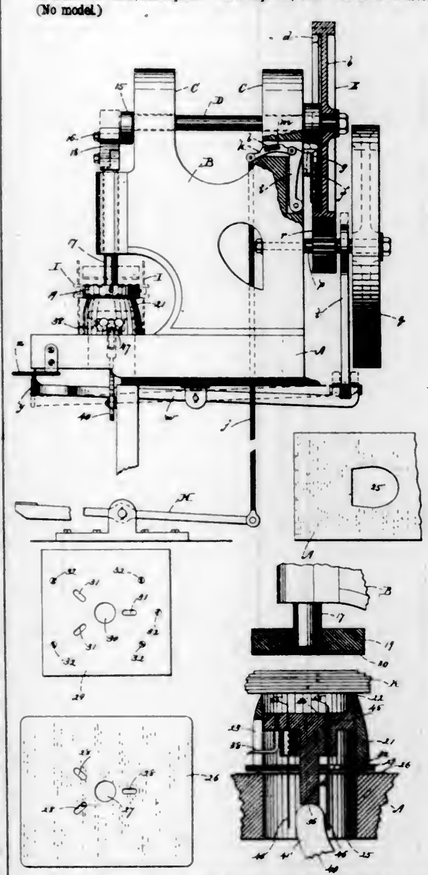
11. The combination of a form, a forming and holding die, clasp-formers, and opening and closing jaws located at the lower edge of the form and adapted to grasp the edge of a dish placed upon the form, substantially as set forth.

12. The combination of a form, a forming and holding die, a clasp-former, and reciprocating opening and closing jaws located at the lower edge of the form and adapted to grasp the edge of a dish placed upon the form and reciprocate in a line parallel with the side of the form toward and from the form.

13. The combination, in a machine for placing metal pieces upon scale-board dishes, of a form, a forming and holding die, and opening and closing jaws located at the lower edge of the form in position and adapted to grasp the edge of a dish placed on the form and clinch a metal piece thereon, substantially as set forth.

14. The combination, in a machine for placing metal pieces on scale-board dishes, of a form, a forming and holding die, reciprocating opening and closing jaws located at the lower edge of the form and adapted to grasp the edge of a dish placed on the form, and mechanism for reciprocating the jaws in a line parallel with the side of the form, substantially as set forth.

447,317. **HEEL-MACHINE.** JOHN A. HALL, Union, N. H., assignor to Harriet A. Hall, same place. Filed Sept. 12, 1890. Serial No. 364,736. (No model.)



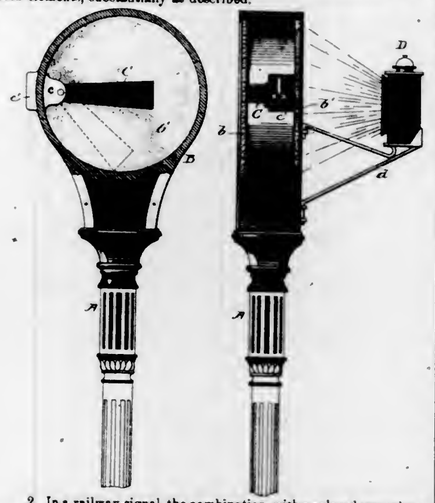
Claim.—1. In a heel-making machine, the combination of a body provided with a table, a hollow cutting-die disposed on said table, a plunger sliding in said body above said die, a crank-shaft connected with said plunger, a gear-wheel E loose on said shaft, provided with sockets *d*, a driving-shaft provided with a pinion meshing with said gear-wheel, a boss fixed on said shaft and provided with a tubular arm *f*, a rod *g*, adapted to slide in said arm to engage said sockets and provided with a lateral arm at its inner end, a shipping-lever *i*, adapted to engage said arm for withdrawing said rod from the sockets, and means for actuating said shipping-lever, substantially as described.

2. In a heel-making machine, the plug 50, adjustable on the machine-body, in combination with the lever-supported block 35, fitted to slide in the cutting-die and provided with nail-openings 45, and the rods 46, supported on said plugs and working in said openings, substantially as described.

3. In a heel-making machine, the combination of a crank-actuated plunger, a hollow cutting-die provided with a gage-opening, a lever-supported block fitted to slide in said die and having an index projecting through said slot, and nail-rods mounted on adjustable supports and working in openings in said block, substantially as described.

447,318. **RAILWAY-SIGNAL.** WILLIAM P. HALL, Greenwich, Conn., assignor to the Hall Signal Company, Portland, Me. Filed Oct. 16, 1890. Serial No. 368,313. (No model.)

Claim.—1. In a railway-signal, the combination, with a semaphore-arm or signal-banner, of a background upon which the position of the same is indicated, said semaphore or banner and background having contrasting colors, and means for artificially illuminating one of said elements, substantially as described.



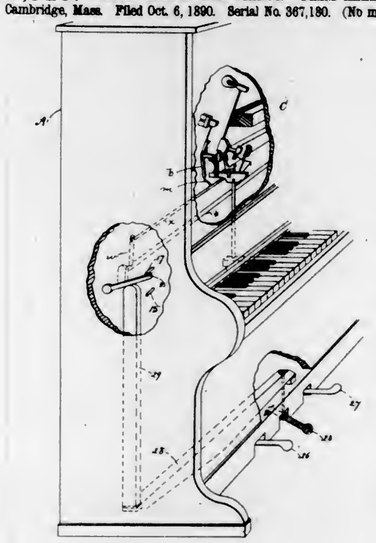
2. In a railway-signal, the combination, with a colored semaphore-arm or signal-banner through which light may pass and a contrasting colored background upon which the position of the same is indicated, of means for artificially illuminating one of said elements, substantially as described.

3. In a railway-signal, the combination, with a semaphore-arm or signal-banner, of a transiucent background upon which the position of the same is indicated, and means for illuminating said background, substantially as described.

4. In a railway-signal, the combination, with a translucent semaphore-arm or signal-banner, of a translucent background therefor upon which the position of the same is indicated, and a lamp located behind said background, for the purpose set forth.

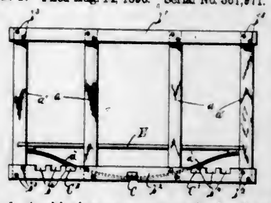
5. In a railway-signal, the combination, with a semaphore-arm or signal-banner, of an illuminated background or screen upon which the position of the semaphore-arm or banner is indicated.

447,319. **PEDAL-ACTION FOR PIANOS.** FRANZ HAMMERLE, Cambridge, Mass. Filed Oct. 6, 1890. Serial No. 367,180. (No model.)



Claim.—In an upright piano, the dampers provided with eccentric projections, as *p*, at their lower ends, in combination with a pedal-actuated crank-rod disposed in the piano-frame below said dampers and provided with arms non-radial to the arc of the crank-arms, and a strip of flexible or rigid material connecting the outer ends of said arms in position to be thrown into engagement with said projections when the dampers are moved by the piano-action, substantially as described.

447,320. **SPRING-BOTTOM CRATE.** HENRY W. HAMMOND, North Bergen, N. Y. Filed Aug. 14, 1890. Serial No. 361,971. (No model.)



Claim.—1. A shipping-crate composed of a frame, a movable wall in said frame, a spring-bar having its extremities elevated for supporting said wall, and a movable support for varying the position of said extremities of said spring, substantially as and for the purpose described.

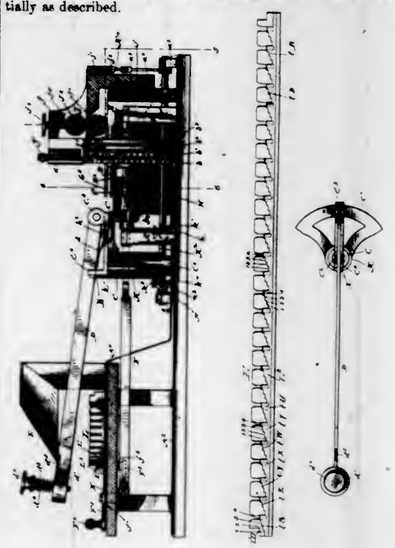
2. An open-sided shipping-crate composed of corner-strips arranged at an angle with each other for forming a guide, tie-pieces between said corner-strips, a yielding bottom having its corners guided in the angle formed by the corner-strips, a spring for supporting said bottom, and a movable support for adjusting the tension of the spring, substantially as and for the purpose specified.

3. A shipping-crate composed of a frame, seats in said frame, bars removably supported in said seats, a spring supported by said bars, and a wall yieldingly mounted on said spring, substantially as and for the purpose described.

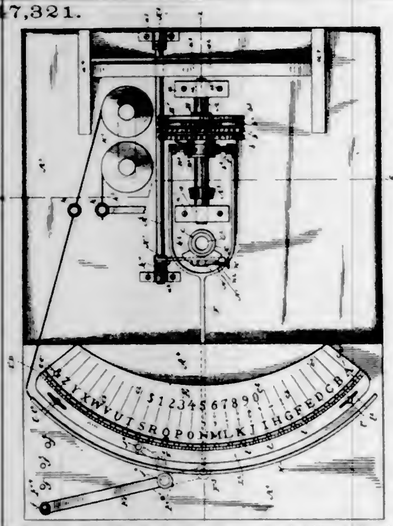
4. A shipping-crate composed of a frame, a central notch in the lower frame-bar, a series of notches on either side of the central notch, a central bar supported in said central notch, end bars supported in the notches on either side of said central bar, a spring passed between said bars, and a bottom wall mounted on said spring, substantially as and for the purpose set forth.

447,321. **ELECTRIC MATRIX-MAKING MACHINE.** THOMAS C. HARGRAVE, Minneapolis, Minn., assignor of one-half to John W. Cobb, same place. Filed Dec. 26, 1889. Serial No. 335,067. (No model.)

Claim.—1. In a matrix-making machine, a rotary and shifting die-wheel, in combination with a forked rod for shifting the die-wheel and having elastic or spring prongs engaging said die-wheel, all substantially as described.



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2. In a matrix-making machine, a rotary and shifting die-wheel having a loose collar, in combination with a forked rod for shifting the die-wheel, said forked rod being provided with elastic prongs having pins engaging the loose collar on the die-wheel, all substantially as described.

3. In a matrix-making machine, a rotary and shifting die-wheel removable from its bearings, in combination with a forked rod for shifting the same, said rod being provided with elastic prongs engaging said die-wheel, all substantially as described.

4. In a matrix-making or similar machine, a stop and a contact-plate, in combination with a character-board downwardly inclined, and a contacting key-lever bearing up against the lower edge of the character-board and having a knife-edge for indicating the character to be selected, and means for yieldingly forcing the key-lever against the lower edge of the character-board, all substantially as described.

5. In a matrix-making or similar machine, a stop and a contact-plate, in combination with a vertically and horizontally swinging key-lever provided at the forward end with a yielding button carrying a contact-pin, all substantially as described.

6. In a matrix-making or similar machine, a notched spacing-plate and a contact-plate connected with the indenting mechanism, in combination with a vertically and horizontally swinging key-lever provided at its end with a yielding button carrying a contact-pin, all substantially as described, whereby the lever is first depressed into the spacing-notches to complete the spacing operation and the contact-pin is then brought into contact with the contact-plate to operate the plunger, all substantially as described.

7. In a matrix-making or printing machine, the combination, with a plunger and a vertically and horizontally swinging key-lever for selecting a character for printing or indenting, of an electrical plunger-depressing device comprising a single flat contact-plate for all the characters opposite to and adapted to be struck by the key-lever, substantially as described.

8. In a matrix-making or printing machine, the combination of a plunger for indenting the matrix, an electro-magnet and armature and connecting devices, substantially as described, between the armature and the plunger, and an electric circuit comprising a vertically and horizontally swinging key-lever, and a single flat contact-plate in the circuit of sufficient extent adapted to be struck by the key-lever on its downward movement at any point, substantially as described.

9. In a matrix-making or printing machine, a character-board and a vertically and horizontally swinging key-lever carrying a button for closing a circuit, in combination with a plunger and an electrical device, substantially as described, for depressing the plunger, and a single flat conducting-strip in the circuit of the electrical plunger-depressing device and adapted to be struck by the key-lever at any point opposite the character-board, all substantially as described.

10. In a matrix-making machine, the combination of a circular character-board and a circular flat conducting-strip arranged parallel to the same and extending substantially the entire length of the character-board, with a horizontally and vertically swinging lever, the conducting-strip and the lever being included in an electrical circuit for actuating an indenting-plunger, all substantially as described.

11. In a matrix-making machine, the combination, with a character-die and a plunger, of a hinged stripper-plate located between the die and the plunger, and means for lifting the stripper-plate away from the die when the plunger is released, all substantially as described.

12. In a matrix-making machine, the combination of a character-die, an indenting-plunger, a lever for actuating said plunger, a hinged stripper-plate between the die and the plunger, and a rest for the stripper-plate attached to the actuating-lever and serving to carry the stripper-plate away from the die when the plunger is released, all substantially as described.

13. In a matrix-making machine, the combination of the following parts: a character-die, a plunger, an armature provided with a set-screw, and connections, substantially as described, between the plunger and the armature, an electro-magnet, and a stripper-plate between the die and plunger and resting on the set-screw on the armature, all substantially as described.

14. In a matrix-making or printing machine, the combination of the matrix-carriage provided with serrations, and an oscillating rod carrying a pawl-arm engaging the serrations on the matrix-carriage at one end and at the other an upwardly-urged arm, with a hub for carrying a key-lever, and a sliding sleeve encircling said hub and provided with a segmental flange impinging against said arm, all substantially as described.

15. In a matrix-making and printing machine, the letter-spacing device having an arm bearing upwardly, in combination with a pivoted hub provided with a key-lever, and a sleeve encircling the hub and provided with a segmental flange near the bottom and a forked projection at its top for embracing the key-lever, all substantially as described.

16. In a spacing device for matrix and similar machines, the combination of a sliding sleeve provided with a flange and with a pivoted arm controlling the carriage-feed, and having a contact-piece for bearing against the flange, the said contact-piece being adjustable with relation to the pivot of the pivoted arm, all substantially as described.

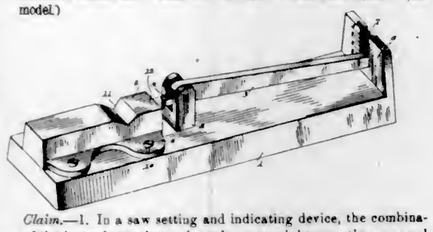
17. In a spacing device for matrix and similar machines, the combination of a flanged piece adapted to be depressed by the key-lever, with a pivoted arm controlling the carriage-feed, having a contact-piece bearing against the flanged piece, the said contact-piece being adjustable with respect to the pivoted arm, substantially as described.

18. In a spacing device for matrix and similar machines, the combination of a sliding sleeve provided with a segmental flange, with an arm controlling the carriage-feed and provided with an adjustable block for bearing against the segmental flange, all substantially as described.

19. In a spacing device of a matrix and similar machine, the combination of a sliding sleeve provided with a segmental flange, with an arm controlling the carriage-feed and provided with an adjustable block having a knife-edge, all substantially as described.

20. In a spacing device for matrix and similar machines, the combination of a sliding sleeve provided with a segmental flange, with a feed-controlling arm provided with lugs, an adjustable block, and an adjusting-screw journaled in said lugs and passing through the adjustable block, all substantially as described.

447,322. SAW SETTING AND INDICATING DEVICE. ANANIAS HARMAN, Roann, Ind. Filed Oct. 18, 1890. Serial No. 368,555. (No model.)

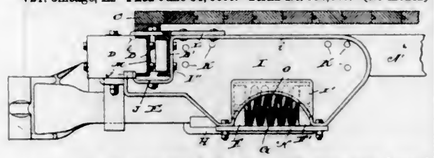


Claim.—1. In a saw setting and indicating device, the combination of the base-plate, a lever pivoted to an upright upon the same and provided with a tooth arranged to be engaged by the teeth of the saw, and an indicator-plate arranged adjacent to the outer end of the lever, substantially as described.

2. In a saw setting and indicating device, the combination of the base, the anvil mounted upon the base and having a transverse angular recess, the lever pivotally mounted upon an upright rising from the base and having a tooth arranged adjacent to the anvil, and an indicator-plate, substantially as described.

3. In a saw setting and indicating device, the combination of the base, the anvil mounted upon the same and having a transverse angular recess, the lever having a tooth arranged adjacent to the anvil, and the indicator-plates arranged at the outer end of the base and forming a space to receive the lever and provided with a stop-bar to confine the lever in said space, substantially as described.

447,323. DRAW-GEAR FOR RAILWAY-CARS. GEORGE L. HARVEY, Chicago, Ill. Filed June 30, 1890. Serial No. 357,179. (No model.)



Claim.—1. In a draw-gear, a draft-connection comprising flanged plates secured to the sides of the longitudinal sill or sills of the car, and having an offset portion projected below said sills to provide a pocket to receive the follower-blocks and connected parts, substantially as described.

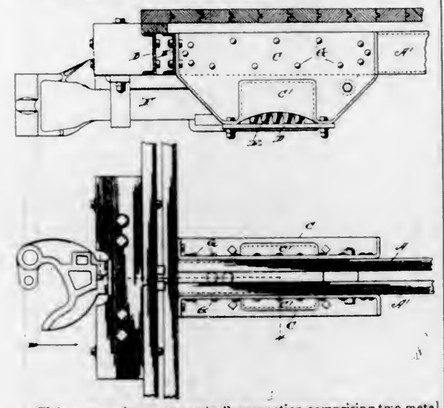
2. In a draw-gear, a draft-connection comprising plates, each having a bearing on the end sill and on the vertical sides of the longitudinal sill or sills, an extension adapted to project beyond the end sill and engage the front thereof, and an offset portion to furnish bearings for the follower-blocks, substantially as described.

3. In a draw-gear, a draft-connection comprising two metallic plates, each having a web portion and strengthening-flanges, a shoulder to engage the inner side of the end sill, a reduced portion to project beneath the end sill and upturned to engage the front thereof, and an offset portion in the web to provide bearings for the follower-blocks, substantially as described.

4. In a draw-gear, a draft-connection comprising two draft-plates, each consisting of a web with marginal strengthening-flanges, a reduced extension thereof to project beneath the end sill and upturned to engage the same, a strap secured to the top of the plate and hooked for engagement with the end sill, and an offset portion in the web to provide bearings for the follower-blocks, substantially as described.

5. In a draw-gear, a draft-connection comprising two draft-plates, each consisting of a web with marginal strengthening-flanges, a reduced extension thereof to project beneath the end sill and upturned to engage the same, a strap secured to the top of the plate and hooked also for engagement with the end sill, and an offset portion in the web to provide bearings for the follower-blocks, said offset portion having its lower edge arched and a strap connecting the lower points of the arch to provide a way whereon the follower-blocks slide, substantially as described.

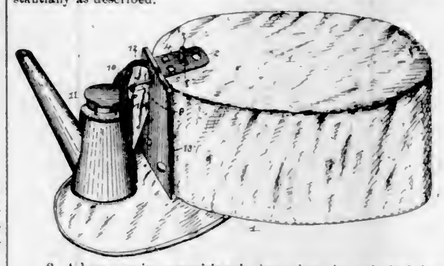
447,324. DRAW-GEAR FOR RAILWAY-CARS. GEORGE L. HARVEY, Chicago, Ill. Filed Sept. 20, 1890. Serial No. 365,621. (No model.)



Claim.—In a draw-gear, a draft-connection comprising two metal plates having integral extensions adapting them to be secured to the sides of the longitudinal sill or sills of a car, and integral portions projecting below the sills and having therein offsets to provide bearings for the draw-head connections, substantially as set forth.

447,325. LAMP-CARRIER FOR MINERS' HATS. CHARLES H. HOBSON, Mount Carmel, Pa. Filed Apr. 22, 1890. Serial No. 349,013. (No model.)

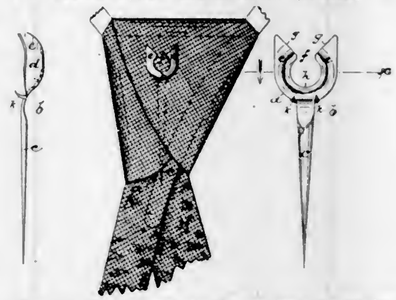
Claim.—1. A lamp-carrier comprising the base-plate adapted to be secured to a cap, the rock-shaft journaled in the base-plate, and the lamp-holder pivotally connected to the rock-shaft, whereby the lamp is adapted to swing laterally and forward and backward, substantially as described.



2. A lamp-carrier comprising the base-plate, the rock-shaft journaled in the base-plate, the lamp-holder pivotally connected to the rock-shaft, and the guard 13, secured to the base-plate and interposed between the same and the lamp, substantially as described.

3. A lamp-carrier comprising the base-plate provided with the bearings 5 and the slot 8, the rock-shaft journaled in the bearings and having its rear end bent and arranged in the slot 8 and having its front end bifurcated, the lamp-holder 10, pivoted in the bifurcation of the rock-shaft and adapted to be secured to a lamp, and the guard 13, secured to the base-plate, substantially as described.

447,326. NECKTIE-FASTENER. FRANK H. HOWARD, Irvington, N. J. Filed June 25, 1890. Serial No. 356,617. (No model.)



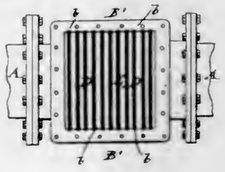
Claim.—1. The improved scarf-fastener herein described, combining with the concaved head having arms *e e*, the extremities of which extend forward, as described, to engage the back of the scarf, and a central pin, substantially as described.

2. The improved scarf-fastener herein described, combining with the head having forwardly-projecting arms *e e*, with an opening between to receive the shank of the button, a pin arranged in line with said opening and tapering from the point to the union with said head, substantially as set forth.

3. The improved scarf-fastener, combining therein the head having arms *e e*, a pin *c*, integral with said head, and prongs *k k* at each side of the line of said pin, substantially as and for the purposes set forth.

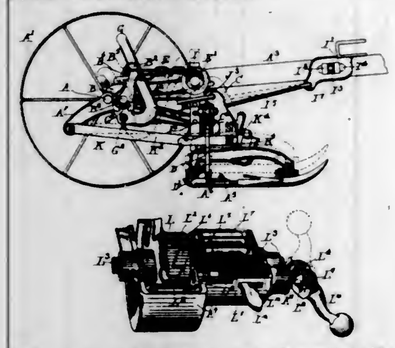
4. The improved scarf-fastener, combining a concaved head having forwardly-curved arms *e e*, bearing *h*, opening *f*, and inclines *g g*, and a pin *c*, formed in line with said opening and consisting of rolled metal integral with the head, substantially as set forth.

447,327. GREASE SEPARATOR FOR STEAM-ENGINES. LEVI HUSSEY and EDWARD MCCANN, New York, N. Y., assignors of one-third to Theodosia Hatch, same place. Filed Mar. 31, 1890. Serial No. 345,966. (No model.)



Claim.—In a grease-separator for the exhaust-pipe of a steam-engine, the combination of a casing, a number of screens disposed therein, and a baffle-disk of smaller diameter than the screens supported centrally of the casing between said screens, substantially as described.

447,328. **MOWER.** GUSTAF JERNBERG, Rockford, Ill. Filed Sept. 18, 1890. Serial No. 365,429. (No model.)



Claim.—1. In combination, the rock-shaft provided with the counterbalancing-lever, the foot lifting-lever having segment-gear connecting therewith, the spring for actuating the counterbalancing-lever, the hand lifting-lever adapted to engage with and operate the foot lifting-lever, the tilting post seated on the hinge-bar, the segment-pulley mounted on the tilting post between the ends thereof, the gag-lever, and the chain connection between the counterbalancing and gag levers, substantially as and for the purpose specified.

2. In combination, the rock-shaft provided with an upwardly-extending counterbalancing-lever having a segment-gear on the lower end thereof and being provided with a recess in its rear portion, the counterbalancing-spring coiled about the rock-shaft engaging with and actuating the counterbalancing-lever, the foot lifting-lever provided at its lower end with a segment-gear meshing with the segment-gear of the counterbalancing-lever, the finger-bar, the equalizing-pulley arranged to move freely up and down in the recess in the counterbalancing-lever, and a chain having axial connection with the equalizing-pulley and connecting with the finger-bar, substantially as and for the purpose specified.

3. In combination, the rock-shaft provided with the counterbalancing-lever having a recess in the back side thereof, the foot lifting-lever having segment-gear connection with the counterbalancing-lever, the spring for actuating the counterbalancing-lever, the hand lifting-lever adapted to engage with and operate the foot lifting-lever, the hinge-bar, the tilting post seated thereon, the segment-pulley mounted on the tilting post between the ends thereof, the finger-bar, the gag-lever mounted thereon, the equalizing-pulley arranged to travel up and down in the recess in the counterbalancing-lever, and the chain connection between the equalizing-pulley and gag-lever, substantially as and for the purpose specified.

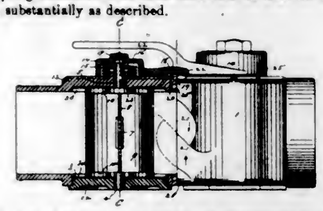
4. In combination, the tongue, the hinge-bar, the draft-adjusting bar having loose connection therewith and sliding connection with the main frame or tongue of the mower, the draft-clevis adapted to slide on the tongue, and the draft-rod having loose vertically-adjustable connection with the draft-adjusting bar and loose connection with the draft-clevis, substantially as and for the purpose specified.

5. In combination, the shipper engaging with and adapted to operate the part clutch L′, the shipping-rod fast at one end to the shipper and arranged to slide in a bearing in the gear-case, the cam pivotally connected with the other end of the shipping-rod and adapted to withdraw and hold the part clutch L′ out of engagement with the part L, the latch having sliding connection with the shipping-rod, the spring for actuating the part clutch L′, and latch, substantially as and for the purpose specified.

447,329. **COUPLING FOR HOT-WATER HEATING-PIPES.** WILLIAM D. JOHNSON, New Haven, and THEODORE A. CURTIS, Hartford, Conn. Filed Aug. 12, 1890. Serial No. 361,780. (No model.)

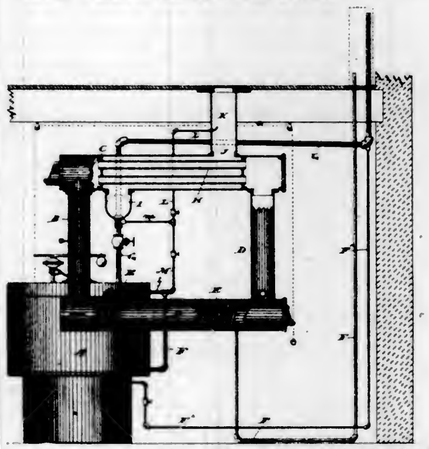
Claim.—1. In a valve-coupling for pipes, the combination of two cases or shells, each provided with ears 21, which interlock with each other, and a pivoted rotating valve in each shell, each valve operated by a lever secured to its pivot outside of the shell or case, and the two cases held together by the valve-lever of one of the cases extending over and against the adjacent end of the opposite case, and by the interlocking ears, substantially as described.

2. In a valve-coupling for pipes, the combination of two shells or cases, each provided with interlocking ears 21, a pivoted rotating valve 9 in each case, a lever 22, connecting with each valve, and both levers in engagement when the valves are open, a spring detent or catch connected with one of said levers for holding the valves open, and an actuating-spring connected with each valve and its case for closing said valves, substantially as described.



3. In a valve-coupling for pipes, the combination of two shells or cases, one provided with an orifice 20 for the escape of air from the space between the two valves, a valve 9, pivoted in each shell and adapted to partially rotate therein, a lever connected with the pivot of each valve for operating the same, and a spring-detent adapted to close said orifice when the valves are fully opened, substantially as described.

447,330. **STEAM-HEATING APPARATUS.** ROBERT W. KING, Georgetown, Canada. Filed Apr. 24, 1890. Serial No. 349,369. (No model.) Patented in Canada Apr. 19, 1890, No. 34,135.



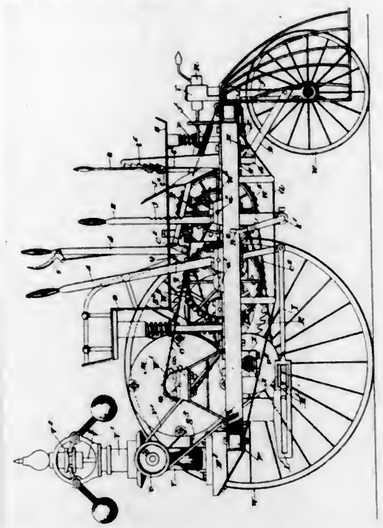
Claim.—1. A steam-heating boiler and a smoke-flue therefor, a steam-radiator, a main steam-pipe extending from the steam-space of the boiler to a point at the inlet of the radiator, and a return-pipe extending from the outlet of the radiator, in combination with a coil situated in the smoke-flue of the boiler and connecting the said return-pipe with the boiler substantially as and for the purpose specified.

2. A steam-heating boiler and a smoke-flue therefor, a steam-radiator, a main steam-pipe extending from the steam-space of the boiler to a point at the inlet of the radiator, a return-pipe extending from the outlet of the radiator, a coil or water-pipe situated in the smoke-flue of the boiler and connecting said pipe to the boiler, in combination with a return-pipe leading from a point in the main steam-pipe before it reaches the radiator directly to the boiler, substantially as and for the purpose specified.

3. A steam-heating boiler and a smoke-flue therefor, a steam-radiator, a main steam-pipe extending from the steam-space of the boiler to a point at the inlet of the radiator, a return-pipe extending from the outlet of the radiator, a coil or water-pipe situated in the smoke-flue of the boiler and connecting said pipe to the boiler, in combination with a pipe leading from the upper part of the coil E to the main steam-pipe G, substantially as and for the purpose specified.

4. The combination, with the boiler, the smoke-flue, and indirect smoke-flue, of the pipe E in the indirect smoke-flue, the main steam-pipe G, the return-pipe F, the hot-air flue, the pipe L, connected with the main steam-pipe and emptying into the hot-air flue, and the pipe M, connecting the steam-pipe with the pipe E, substantially as and for the purpose specified.

447,331. **TRICYCLE.** DAVILLA L. KLAHR, Shelbyville, Ill. Filed Sept. 16, 1890. Serial No. 365,188. (No model.)



Claim.—1. In a velocipede, the combination, with the frame-work F, having the curved track T, of the upright shaft U, journaled in said frame-work, the fork *f*, depending from said shaft, the steering-wheel *w*, journaled in said fork, the diagonal braces D, extending rearwardly from said fork, the friction-wheel *d* at the upper end of said braces moving beneath said track, the pivot of said wheel being extended into a hook H, and a chain N, connecting said hook with the lower end of said shaft, as and for the purpose set forth.

2. In a velocipede, the combination, with the upright shaft U, carrying the steering-wheel *w* and journaled in the frame-work F, and a segmental gear *g*, connected to the upper end of said shaft, of a rack-bar R, engaging said gear and moving in guides *r*, a connecting-rod *p*, pivoted to said rack-bar, a steering-lever 4, to which said connecting-rod is attached, a disk Q alongside said steering-lever and having a number of notches *q* in its edge, and a catch-lever 5, operating a bolt Q′ and engaging said notches, as and for the purpose set forth.

3. In a tricycle, the combination, with the axle A, carrying the driving-wheels W, the driving-shaft *a*, the drum M, mounted loosely thereon and connected by sprockets and chains with said axle, and the spring S, connected at one end to said drum and at the other end to said driving-shaft, of the winding-shaft i^3, a large gear g^4 thereon, connected with a gear *g′* on the driving-shaft, a ratchet-wheel E on each side of said large gear, loop-levers *e*, engaging said ratchet-wheel, a long lever E′, pivoted to the frame, and to which said loop-levers are pivotally connected at either side of this pivot, and means for reciprocating said long lever, all as and for the purpose set forth.

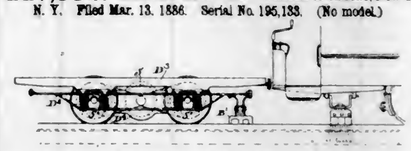
4. The combination, with a spring-actuated driving-shaft *a*, a ratchet-wheel R′, and pawl P′, of a gear *g′* upon said driving-shaft, a winding-shaft i^3, carrying a large gear g^4, an interposed idle-shaft *i*, having gears g^5 and g^6 connecting said power and winding shafts, a ratchet-wheel E on each side of said large gear, loop-levers *e*, drawn into engagement with said ratchet-wheels by coiled springs *e′*, a long lever E′, pivoted at E^3, the loop-levers being pivotally connected to said long lever on either side of its pivotal support, a slotted plate L′, in which the longer arm of said long lever is guided, a winding-lever 1, and a pitman Y, connecting the winding-lever with the long lever, all as and for the purpose set forth.

5. In a tricycle, the combination, with the axle having driving-wheels and the driving mechanism connected with said axle, of a speed-governor carried upon the frame-work of the tricycle and connected by belt and pulleys to the axle, a shaft S′, journaled in said frame-work and having brake-shoes S^3 opposite said driving-wheels, and an arm S^4, keyed on said shaft and adapted to be actuated by said governor to apply the brakes, as and under the circumstances set forth.

6. The combination, with a speed-governor, an arm S^4, having a slot *s′*, which arm is operated by said speed-governor, a stationary pin s^3, passing loosely through said slot, and a coiled spring s^4, surrounding said pin below said arm, of a lever *t*, resting between its ends upon a stationary bar *t′*, one end of said lever supporting said coiled spring, and a handle-lever for operating the other end of said lever, the whole operating as and for the purpose set forth.

7. In a tricycle, the combination, with the main axle having driving-wheels and the driving mechanism connected with said axle, of a speed-governor carried upon the frame-work of the tricycle and driven by said axle, a brake-shaft S′, journaled in the frame-work and having shoes S^3 opposite said driving-wheel, a brake-handle lever on said shaft, an arm S^4, keyed on said shaft and adapted to be actuated by said governor to apply the brakes, and a tension device, substantially as described, for imparting a regulated degree of resistance to the movement of said arm, as and for the purpose hereinbefore set forth.

447,332. **ELECTRIC RAILWAY.** WALTER H. KNIGHT, New York, N. Y. Filed Mar. 13, 1886. Serial No. 195,133. (No model.)



Claim.—1. The combination, with a car and its wheels, of a supplementary frame journaled on the axles supporting said car through intermediate springs and carrying an electric motor geared to said wheels.

2. The combination, with the axles and wheels of an electrically-propelled vehicle, of a supplementary motor-supporting frame journaled on the axles, and the car-body supported from said frame by springs at points adjacent to the journals.

3. The combination, in an electrically-propelled vehicle, of a motor-supporting frame resting directly upon the axles, with the springs adjacent to each axle-box bearing upon said frame and the car-body supported upon said frame through the springs, as described.

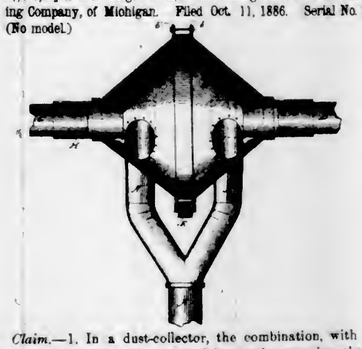
4. The combination, in an electric-railway crossing, of a transverse railway-track rail having a break for the passage of the contact device, and an electric supply-conductor interrupted mechanically at the point below the break in the said rail, but electrically continuous through the bridging conductor.

5. The combination, in an electric-railway crossing, of an electric supply-conductor interrupted at a point below a transverse railway-track rail, a contact device adapted to travel along said conductor, and an insulated piece in the break adapted to carry over the contact device.

6. The combination, in an electric-railway crossing, of an electric supply-conductor, a contact device, a transverse railway-track rail above said conductor interrupted to allow the passage of the contact device, and insulation upon the side of the break, whereby contact between said contact device and the rail is prevented.

7. The combination, with a slotted conduit of an electric railway, of a transverse track-rail E′, interrupted at the slot and having its ends at the opening cut away on the lower edge to permit of a greater thickness of insulation between the ends of the rail and the passing contact-plow.

447,333. **DUST-COLLECTOR.** OSWALD KUTSCHER, Chicago, Ill., assignor, by mesne assignments, to the Allington & Curtis Manufacturing Company, of Michigan. Filed Oct. 11, 1886. Serial No. 215,846. (No model.)

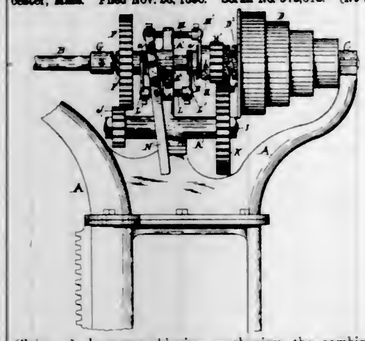


Claim.—1. In a dust-collector, the combination, with a cone-shaped separating-chamber, of a delivery-pipe entering the side of said chamber tangentially at a point between the base and apex thereof, said chamber having an air-outlet at the apex and a dust-discharge opening at the base, substantially as described.

2. The combination of a delivery-pipe for dust-laden air and a

double-cone-shaped separating-chamber provided with outlets for purified air at its two apexes and an orifice for dust or waste at its middle, said pipe being forked and debouching into the chamber tangentially midway between the base and apex of each cone.

447,384. POWER-SHIPPING MECHANISM. SINAI LEVISOO, Worcester, Mass. Filed Nov. 28, 1890. Serial No. 372,812. (No model.)



Claim.—1. In power-shipping mechanism, the combination of shaft B and cone-pulley D, fitted to turn and held against longitudinal motion thereon, also having a toothed hub D^2 at its inner end, with the grooved and toothed sleeve E, splined to said shaft B and fitted to slide longitudinally thereon, the grooved and toothed loose sleeve H, having the pinion H' thereon and adapted to be engaged with the toothed hub of the cone-pulley, the toothed collar G, rigidly secured to shaft B, the gear F, loose on said shaft B and having a toothed hub adapted to engage with the toothed end of rigid collar G, pinion J, engaging with gear F, gear K, engaging with pinion H', shaft I, fitted to turn in frame A', and to which said pinion J and gear K are secured, and the shipper device consisting of the forked rod L, engaging with the sleeve E and gear F, forked rod M, engaging with sleeve H, and shipper N, pivoted at its upper end to the outer end of rod M and to the rod L, substantially as and for the purpose set forth.

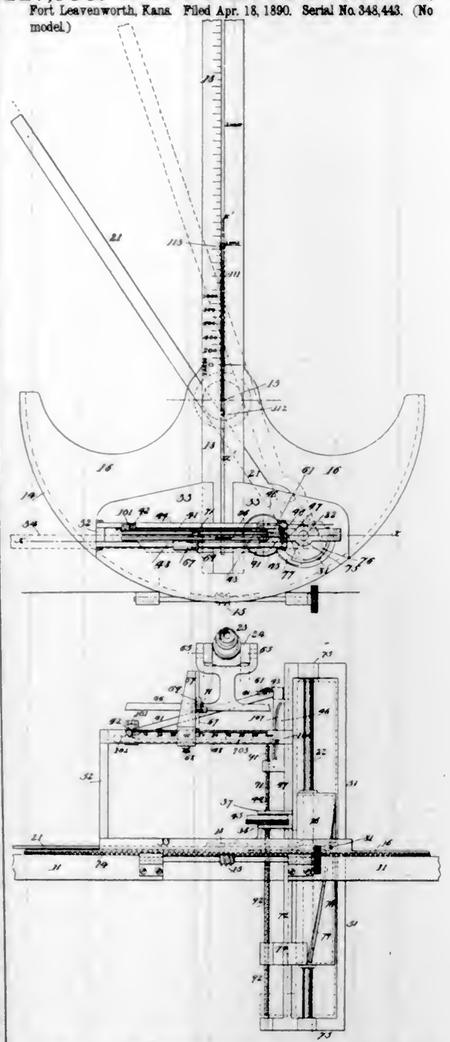
2. In power-shipping mechanism, the combination of shaft B and cone-pulley D, fitted to turn and held against longitudinal motion thereon, also having a toothed hub at its inner end, with the loose grooved and toothed sleeve H, having the pinion H' mounted thereon and adapted to engage with the toothed hub of said cone-pulley, loose gear F, having a grooved and toothed hub and adapted to engage with the toothed end of collar G, said collar G, secured to shaft B, pinion J and gear K, adapted to engage with gear F and pinion H', respectively, shaft I, fitted to turn in frame A', and to which said pinion and gear J K are secured, forked rod L, fitted to slide in said frame A' and engaging with gear F and sleeve H, and shipper N, pivoted at its upper end and to said rod L, substantially as and for the purpose set forth.

3. In power-shipping mechanism, the combination of shaft B, toothed collar G, secured thereto, loose grooved and toothed gear F, adapted to engage with said toothed collar, pinion J, engaging with gear F and secured to shaft I, said shaft fitted to turn in a stationary bearing, gear K, secured to shaft I and engaging with pinion H' on loose sleeve H, said sleeve provided with an annular groove and toothed at one end, also adapted to engage with the toothed hub of cone-pulley D, and said cone-pulley having a toothed hub at its inner end also fitted to turn on shaft B, as well as held against longitudinal motion thereon, substantially as set forth.

4. In power-shipping mechanism, the combination of shaft B and cone-pulley D, fitted to turn and held against longitudinal motion thereon, also having a toothed hub at its inner end, with the grooved and toothed sleeve E, splined to shaft B, fitted to slide thereon and adapted to engage with the toothed hub of the cone-pulley, grooved and toothed sleeve H, fitted to turn and to slide over the sleeve E, also having the pinion H' thereon and adapted to engage with the toothed hub of the cone-pulley independent of sleeve E, and means for operating said sleeves, substantially as and for the purpose set forth.

5. In power-shipping mechanism, the combination of grooved and toothed sleeve E, splined to shaft B and fitted to slide longitudinally thereon, grooved and toothed sleeve H, fitted to turn and to slide on sleeve E, also having the pinion H' thereon, and gear F, fitted to turn and slide on shaft B, also having its hub grooved and toothed, with the forked shipper-rod M, engaging with sleeve H and the upper end of shipper N, forked shipper-rod L, engaging with sleeve E, gear F, and shipper N, said shipper N, and frame A', in which rods L and M are fitted to slide, substantially as and for the purpose set forth.

447,385. RANGE AND POSITION FINDER. ISAAC N. LEWIS, Fort Leavenworth, Kans. Filed Apr. 18, 1890. Serial No. 348,443. (No model.)



Claim.—1. The combination, with the telescope or other part of a range-finding instrument movable in known relation to the range, of a rectilinear scale-bearing arm and an index-arm pivoted at a fixed distance from the scale-arm, intersecting the scale thereon, and movable in known relation to the said movable part of the instrument.

2. The combination, with a range and position finding instrument having distinct movements in relation to the range and to the position of a distant object, of a range and position indicating mechanism composed of the following elements: a plane table, a rectilinear scale-bearing arm pivoted thereon, an index-arm pivoted to the scale-bearing arm aside from the scale-line so as to intersect the same, and mechanism for imparting the said distinct movements of the instrument to the scale-arm and the index-arm, respectively.

3. The combination, in a range and position finding instrument, of a telescope vertically movable in known relation to the range and horizontally movable in definite relation to the position of a distant object, a plane table, a rectilinear scale-bearing arm pivoted thereon movable in definite relation to the said horizontal movement of the telescope, and an index-arm pivoted to the scale-bearing arm aside from the scale-line so as to intersect the same, movable in known relation to the said vertical movement of the telescope.

4. The combination, in a range and position finding instrument, of a telescope the horizontal axis of which is removed from intersecting its vertical axis, a plane table, and a rectilinear position-indicating arm pivoted to the table, movable horizontally with the telescope, and fixed in the vertical plane including the line of collimation of the telescope.

5. The combination, in a range-finding instrument, of a telescope having depression angular motion, the horizontal axis of which is removed from intersecting its vertical axis, a rectilinear scale-bearing arm, and a pivoted index-arm intersecting the scale, movable thereon in known relation to the angle of depression of the telescope.

6. The combination, in a range-finding instrument, of a telescope having depression angular motion, a plane table, a pivoted rectilinear scale-arm supporting the telescope movable horizontally over the plane table, maintaining a parallel to a vertical plane including the line of collimation of the telescope, and an index-arm pivoted to the scale-bearing arm aside from the scale-line so as to intersect the same, movable in known relation to the angle of depression of the telescope.

7. In a range and position finding instrument, the combination of a plane table bearing a map, a rectilinear scale-arm radial to a vertical axis of rotation thereof bearing a relation to the map corresponding to the geographical position of the instrument, a depression-telescope supported upon the scale-arm having its plane of angular movement parallel thereto, and an index-arm pivoted to the scale-arm aside from the line of the scale so as to intersect the same, movable in known relation to the angle of depression of the telescope.

8. The combination, in a range-finding instrument, of a telescope having depression angular motion, an elevating-screw, a rectilinear-scale arm, a pivoted index-arm intersecting the scale to indicate the range, a non-rotary index-cylinder concentric with the axis of the index-arm moved in the length of said axis by the elevating-screw, an inclined slot or surface on the periphery of the cylinder, and a pin or projection radial to the axis of the index-arm engaging with said inclined slot or surface and bearing a fixed relation to the index-arm, whereby the same is moved simultaneously with the movement of the telescope.

9. In a range-finding instrument, the combination of a telescope having a depression angular motion, a variable base-line of triangulation determined by the altitude of the axis of angular movement of the telescope above the sea-level or other horizontal element of the triangle, a pivoted elevating-arm, an elevating-screw connected to the pivoted arm tangent to the angle of the same with a line perpendicular to the axis of the screw, a movable guide parallel with the axis of the screw adjustable at different intermediate points in the length of the elevating-arm, and a connecting-piece between the elevating-arm and the movable end of the telescope (or its frame) having a tangent line of movement determined by the position of said guide.

10. In a range-finding instrument, the combination of a telescope having a depression angular motion, a variable base-line of triangulation determined by the altitude of the axis of angular movement of the telescope above the sea-level or other horizontal element of the triangle, a pivoted elevating-arm movable in a vertical plane transverse to the vertical plane of movement of the telescope, a transverse horizontal bearing-bar connected to the movable end of the telescope, a transverse horizontal scale-bar bearing a scale representing lengths of said variable base-line, a vertical elevating-screw at the free end of the elevating-arm, tangent to the angle of the same with the scale-bar, a vertical guide also tangent to said angle, adjustable at intermediate portions of the elevating-arm upon the scale, and a connecting-piece movable upon the vertical guide for connecting the horizontal bearing-bar of the telescope with the pivoted elevating-arm at points lying in the tangent represented by the position of the vertical guide.

11. In a range-finding instrument, the combination of a telescope having depression angular motion about an axis at variable known altitude above the sea-level or other horizontal element of triangulation, an indicating-scale having given range-indications, and mechanism for determining different scale-indications for given angles of the telescope in definite relation to the variable length of the base-line of triangulation represented by the said altitude.

12. In a range-finding instrument, the combination of a telescope having depression angular motion about an axis at variable known altitude above the sea-level or other horizontal element of triangulation, an indicating-scale having given range-indications, a tangent-screw and mechanism for operating the indicator therefrom, and a pivoted elevating-arm operated by said screw by a line of movement thereof tangent to various angles of said arm with a given line, said telescope being elevated by said arm in different lines parallel to the tangent line of said screw at variable distances from the pivot of the arm.

13. In a range-finding instrument, the combination of a telescope having depression angular motion, an indicating-scale having given range-indications, a pivoted elevating-arm for the telescope having motion imparted to its free end in a fixed line tangent to its angle with a given line and in given relation to the movement of the indicator, a guide for determining a parallel tangent-line of movement of the movable end of the telescope, and mechanism, substantially as described, for moving the pivot of the elevating-arm from a normal position to increase the depression of the telescope above that given through the free end of the arm in given ratio to the range.

14. The combination of a telescope having depression angular motion, an indicating-scale having given range-indications, a pivoted elevating-arm for the telescope, a tangent-plate whereby motion is imparted to the free end of said arm in a fixed line tangent to its angle with a given line and in given relation to the movement of the indicator, a guide for determining a parallel tangent-line of movement of the movable end of the telescope, a sliding block bearing the pivot of the elevating-arm, a movable wedge acting thereon, and an inclined slot in the tangent-plate for moving the wedge, said slot having ordinates of curvature whereby to move the pivot so as to increase the depression of the telescope in definite relation to the range according to the curvature of the earth's surface.

15. The combination, in a range-finding instrument, of a depression-telescope, an elevating-screw, a rectilinear scale-arm, a pivoted index-arm movable in a horizontal plane to intersect the scale-arm, and a non-rotary index-cylinder bearing a helical groove or surface engaging with a projection of the index-arm moved vertically by said screw.

16. A range-finding instrument composed of the following elements: a depression-telescope, a rectilinear scale-arm in the same vertical plane with the telescope, a pivoted index-arm movable in a horizontal plane to intersect the scale-arm, an elevating-screw, a non-rotary index-cylinder bearing a helical groove engaging with the index-arm by vertical movement thereof imparted by said screw, a pivoted elevating-arm for the telescope, a tangent-plate connected to the free end of the elevating-arm, having a vertical line of movement also imparted by said screw, a horizontal scale-bar indicating altitudes, and a movable vertical guide thereon determining the point of contact of the movable end of the telescope with the said elevating-arm.

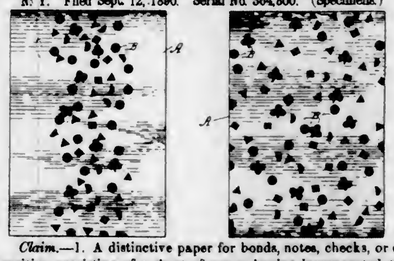
17. A range and position finding instrument composed of the following elements: a plane table, a depression-telescope, a rectilinear scale-arm movable horizontally over the plane table on a vertical axis and bearing the telescope in the vertical plane of its scale-line, an index-arm pivoted to the scale-arm aside from the scale-line to intersect the same by horizontal movement, an elevating-screw and a non-rotary index-cylinder vertically moved thereby bearing a helical groove engaging with the index-arm, an elevating-arm for the telescope pivoted at one end and connected at the other with the said screw, and a vertical guide for determining the point of connection of the movable end of the telescope with said elevating-arm according to the altitude of the instrument.

18. The combination, with the rectilinear scale-arm and pivoted index-arm intersecting it, of the pencil-bearing slide and pencil and a weight or equivalent for retaining the same in contact with the index-arm, as described.

19. The combination, with the plane table and the scale-arm and intersecting index-arm horizontally movable thereon to intersect at all portions of the table, of a slide upon the scale-arm controlled by the movement of the index-arm carrying an electrical contact, and of electrical contact plates or heads on the surface of the table, the said contacts being included in electrical circuits for imparting the effect of a given position of the instrument to a distant point, for the purposes described.

20. The combination of the pivoted index-arm, the non-rotary index-cylinder concentric with the axis of the arm movable in the length of such axis, bearing a helical surface engaging with a projection of the index-arm, and a spring connected to the shaft of said arm to retain the projection thereof upon the helical surface.

447,336. DISTINCTIVE PAPER. JAMES MACDONOUGH, New York, N. Y. Filed Sept. 12, 1890. Serial No. 364,800. (Specimens.)



Claim.—1. A distinctive paper for bonds, notes, checks, or other securities, consisting of a sheet of paper having incorporated therewith a multiplicity of planchets, substantially as described.

2. A distinctive paper for bonds, notes, checks, or other securities, consisting of a sheet of paper having incorporated therein a multiplicity of planchets of a color differing from said sheet.

3. A distinctive paper for bonds, notes, checks, or other securities, consisting of a sheet of paper having colored portions and having incorporated therein a multiplicity of planchets.

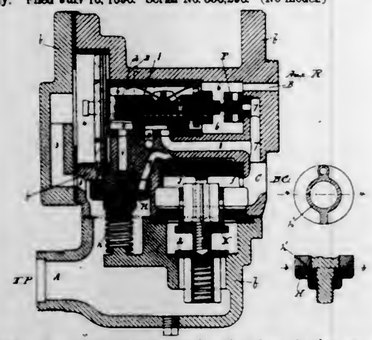
4. A distinctive paper for bonds, notes, checks, or other securities, consisting of a sheet of paper having incorporated therewith a multiplicity of planchets of different colors.

5. A distinctive paper for bank-notes, checks, bonds, or other securities, consisting of a sheet of paper having incorporated therewith a multiplicity of planchets of a predetermined shape.

6. A distinctive paper for bonds, notes, checks, or other securities, consisting of a sheet of paper having incorporated therewith a multiplicity of planchets of different shapes.

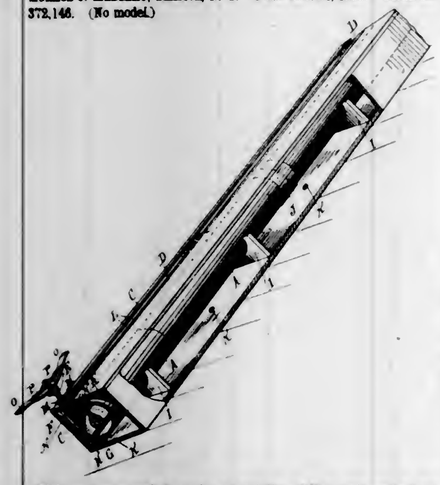
7. A distinctive paper for bonds, notes, checks, or other securities, consisting of a sheet of paper having incorporated in portions thereof a multiplicity of planchets.

447,337. **AUTOMATIC VALVE FOR AIR-BRAKES.** ALBERT P. MARBLE, Watertown, N. Y., assignor to the Eames Vacuum Brake Company. Filed July 10, 1890. Serial No. 358,298. (No model.)



Claim.—In a triple valve, the main-valve piston having one side open to pressure from the auxiliary reservoir and the other side open to train-pipe pressure, combined with a valve controlling a direct passage from the train-pipe to the brake-cylinder, a piston actuating said valve, a passage leading from the train-pipe to said piston, and a valve controlling said passage and subject on one side to auxiliary-reservoir pressure and on the other to train-pipe pressure.

447,338. **CONDUIT FOR UNDERGROUND TROLLEY-WIRES.** HORACE J. MEDBERY, Ballston, N. Y. Filed Nov. 21, 1890. Serial No. 372,146. (No model.)



Claim.—1. A conduit made, essentially, of fiber pulp and of substantially tubular form, the meeting edges, however, of which are not coincident either in circumferential or radial lines, substantially as set forth.

2. A conduit made, essentially, of fiber pulp and of substantially tubular form, the meeting edges, however, of which are not coincident, but which overlap each other, substantially as set forth.

3. A conduit comprising an exterior casing and an interior conduit made, essentially, of fiber pulp formed into substantially tubular form, the meeting edges, however, of which overlap, substantially as set forth.

4. A conduit composed of fiber pulp treated with preservative material and formed into substantially tubular form, the meeting edges, however, of which overlap, substantially as set forth.

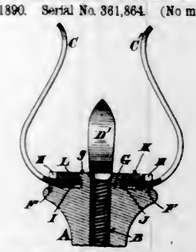
5. A conduit comprising an exterior casing and an interior tube composed of fiber pulp, the edges of which overlap each other, and supports for the several sections, whereby the tube is removed from contact with the exterior casing, substantially as set forth.

6. A conduit comprising, essentially, an exterior casing having a longitudinal slot at one side of its medial line and an interior tube composed of fiber pulp treated with preservative material, substantially as set forth.

7. The combination of a conduit the edges whereof overlap, a casing for the conduit, and a trolley-arm which enters the conduit and is held against vertical movement, substantially as set forth.

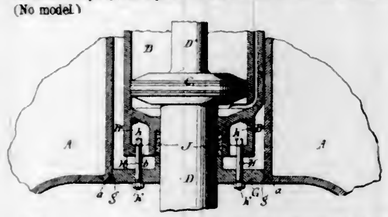
8. The combination of a conduit the edges whereof overlap, a casing for the conduit, a trolley-arm which enters the conduit and is held against vertical movement, and a flexible connection between the trolley-arm and the car, substantially as set forth.

447,339. **CANDLE-HOLDER.** ANDREW MESSMER, Cincinnati, Ohio. Filed Aug. 13, 1890. Serial No. 361,864. (No model.)



Claim.—The combination, in a candle-holder, of the crown A, having a nipple G and notched annular flange F, the ring I, having an opening J, that fits around said nipple, and a series of long fingers C C' and short fingers D D' seated within the notches H, and an annular cap K, whose opening L fits around said nipple and is secured thereto by upsetting the latter at *g*, as herein described.

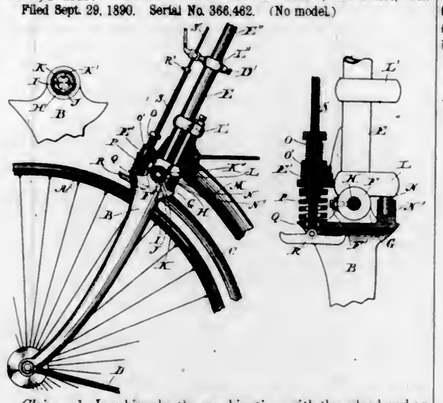
447,340. **STUFFING-BOX FOR STEAM-HAMMERS.** THOMAS H. MIRKIL, Jr., Philadelphia, Pa., assignor to the Southwark Foundry and Machine Company, same place. Filed Nov. 27, 1888. Serial No. 291,948. (No model.)



Claim.—1. In a steam-hammer, the combination of a stuffing-box gland, a space formed in the cylinder-head and perforated with elongated holes or slots to admit the heads of T-headed bolts, bolts secured by their heads in the space and passing through the flange of the gland, and bearings formed in the heavy castings of the tool for the outer surface of the gland, all substantially as and for the purpose specified.

2. In a steam-hammer, the combination of a stuffing-box gland, a space formed in the cylinder-head and perforated with elongated holes or slots to admit the heads of bolts, the T-headed bolts secured by their heads in the space and passing through the flange of the gland, and an annular flange formed integral with and extending beyond the piston-head and having bearings formed in it for the edges of the flange of the gland, all substantially as and for the purpose specified.

447,341. **BICYCLE.** VAN ZANDT M. MOORE, Milwaukee, Wis. Filed Sept. 29, 1890. Serial No. 366,462. (No model.)



Claim.—1. In a bicycle, the combination, with the wheel and an integral two-legged fork having no joints in its legs, of a handle-post-supporting head supported on the fork and hinged thereto beyond the periphery of the wheel in the substantially straight axial line of the fork and head, and a backbone pivoted to the handle-post-supporting head, above its junction with the fork, substantially as described.

2. In a bicycle, the combination, with a wheel and an integral two-legged fork having no joints in its legs, of a handle-post-supporting head supported on the fork and hinged thereto beyond the periphery of the wheel in the substantially straight axial line of the fork and head, independent and separable bearings at the rear of the junction of the head on the fork, whereby the fork and head normally held in line by the bearings are allowed a hinge movement on each other, and a backbone pivoted to the handle-post-supporting head above its junction with the fork, substantially as described.

3. In a bicycle, the combination, with an integral wheel-straddling fork and a handle-post-supporting head hinged thereto by a pivot in the continuous straight axial line of the fork and head and a backbone pivoted to the head, of bearings on the fork and the head at the rear of their joint, and a spring in front of the joint interposed between projections on the head and on the fork, whereby the forward movement of the head and fork toward each other is limited and modified, substantially as described.

4. In a bicycle, the combination, with an integral wheel-straddling fork and a handle-post-supporting head jointed to the united upper end of the fork beyond the periphery of the wheel, the fork and head having a continuous substantially straight axial line in which the pivot is located, and a backbone pivoted on the head, of projections from the fork and the head bearing against each other at the rear of the joint, projections from the head and the fork toward the front, and a spring interposed between the front projections, all these projections and the spring being located beyond the periphery of the wheel, substantially as described.

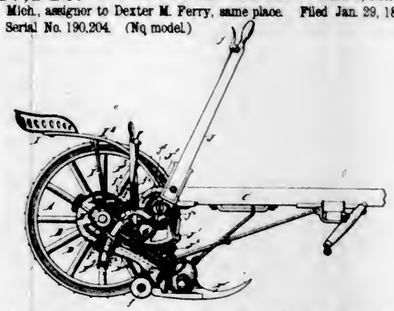
5. In a bicycle, the combination, with a wheel-supported fork and a backbone-supporting head pivoted on the fork, of substantially unyielding bearings on the fork and the head opposite each other at the rear of the head and fork joint, and an adjustable bearing at the front of the head and fork joint between a bracket and ledge on the head and fork, respectively, whereby the forward movements of the extremities of the head and fork toward each other are limited or prevented, substantially as described.

6. In a bicyle, the combination, with a wheel-supported fork and a thereon-hinged post-carrying head, of a brake-shoe, a thereto-connected brake-rod, and lugs or brackets on the head in which the brake-rod is movable endwise, the brake-shoe being in such construction arranged to bear on the wheel at or near the top of the fork, substantially as described.

7. In a bicycle, the combination, with a wheel-straddling fork and a post-supporting head pivoted together, of a ledge projecting from the fork near its jointed end, a bracket projecting from the head opposite the ledge on the fork, a hollow bolt having a shoulder and turning by screw-thread through the bracket toward the ledge, and a spring interposed between the ledge and the bracket and bearing at one end on the ledge and at the other end against the shoulder on the bolt, whereby it is capable of adjustment, substantially as described.

8. In a bicycle, the combination, with a wheel-straddling fork and a post-supporting head pivoted thereto in a substantially straight axial line, of substantially unyielding bearings on the fork and the head at the rear of their joint, a spring interposed between projections on the fork and on the head in front of their joint, and an adjusting-screw turning through the projection on the head against the spring, whereby its tension is regulated, substantially as described.

447,342. **MOWING-MACHINE.** GEORGE L. K. MORROW, Detroit Mich., assignor to Dexter M. Ferry, same place. Filed Jan. 29, 1886. Serial No. 190,204. (No model.)



Claim.—1. The combination, with the main frame, of a radial arm inclined downward and laterally from a point at or near the middle of the axle toward one of the wheels, and a stay-rod or brace G', connected with the lower end of the radial arm and with said frame, said brace extending back from the lower extremity of the arm directly to the main frame in the plane or substantially in the vertical plane of the draft, substantially as described.

2. The combination, with the main frame provided with a lever for raising the cutting apparatus and with a radial arm, of a foot-board and pole-socket united therewith adjacent to the axle by eye-bolt connections, whereby the main frame is permitted to rotate when the radial arm is raised or lowered without disturbing the foot-board or axle, substantially as described.

3. The combination, with the foot-board, of a seat-support and seat-braces I', extending over the gear-case cover and secured at their extremities to the foot-board, substantially as described.

4. The combination, with the main frame and the foot-board having a seat-support, of seat-braces I', fastened at their lower extremities to the foot-board by the eyebolts, wherewith the latter is connected to the main frame, substantially as described.

5. The combination, with the main frame surrounding the axle and provided with a lever for raising the cutting apparatus and with a radial arm, of a foot-board and pole-socket united to said frame adjacent to said axle, said union formed by eyebolts on the foot-board engaged with eyebolts upon the said frame, whereby the frame may rotate about the axle when the radial arm is raised or lowered without disturbing the foot-board, substantially as described.

447,343. **AUTOMATIC SALESMAN AND CHANGE-MAKER.** GEO. D. MORSE, MILTON CHASE, and DR FORREST W. CHASE, Haverhill, Mass. Filed Mar. 14, 1890. Serial No. 343,833. (No model.)

Claim.—1. A casing A, having a shelf C, set on an angle, guide-rods D, a sliding board E, having bars F and wheels G at each end, guide-rods H, a rack L, secured to the rear of the sliding board E, and clock-work mechanism, in combination with a chute 4, coin-director 3, chutes 2 6, pawls *b d*, and ratchet-wheel *a*, substantially as and for the purposes set forth.

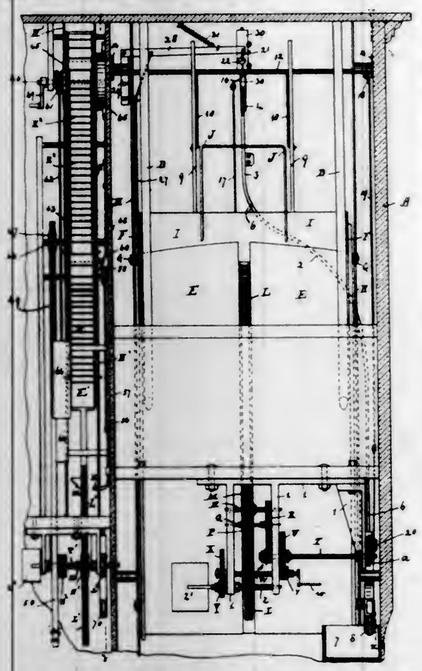
2. A casing A, having a shelf C, set on an angle, a sliding board E, and suitable guides, a rack L, clock-work mechanism, ratchet-wheel *a*, pawls *b d*, and chute 2, in combination with a frame consisting of bars 9, rods 10, shafts 11 12, arms 15 16, rod 17, connecting the arms 15 and 16, an arm 18, and rod 19, substantially as and for the purposes set forth.

3. In an automatic salesman having a sliding board E, an arm 26, secured near the top thereof, the outer end of the arm embracing a rod 27, having a stop 32 at its lower end, its upper end being connected to a lever 28, carrying a slide 30, and a spring 31, substantially as and for the purposes set forth.

4. In an automatic salesman, the combination of a ratchet-wheel *a*, and pawl *b*, having a notch in its upper surface, with the auxiliary pawl *d*, substantially as and for the purpose set forth.

5. In an automatic salesman, a sliding frame having a series of shelves upon which change or articles to be sold are placed, said frame being carried by a rack in gear with suitable clock-work, a ratchet-wheel and pawls for regulating the movement of the frame, and bars to prevent more than one article passing out at a time, substantially as set forth

6. In an automatic salesman having a sliding frame carrying a series of shelves, upon which change or articles to be sold are placed, said frame being carried by a rack, the combination of an auxiliary supply-frame consisting of a series of shelves, endless chains or belts mounted upon drums, to one of which a rotary motion is imparted, a spring and weight rack, gears, and suitable clock-work mechanism for automatically regulating the movement of both the sliding and auxiliary frames when a coin strikes the tail of a pawl in contact with a ratchet-wheel, substantially as set forth.



7. An automatic salesman or change-maker having a frame provided with shelves and an auxiliary supply-frame having shelves, a ratchet-wheel, pawls, and suitable clock-work mechanism, racks for regulating the movement of the supply-frame and auxiliary supply-frame, and means for automatically throwing the clock-work out of gear with the supply-frame rack and into gear with the auxiliary supply-frame rack, substantially as set forth.

8. In an automatic salesman or change-maker having a frame provided with shelves, an auxiliary supply-frame, and a bolt for retaining the auxiliary supply-frame stationary until the supply-frame is being emptied of its contents, and which first-mentioned frame then automatically withdraws the bolt to release the auxiliary supply-frame, substantially as set forth.

9. In an automatic salesman or change-maker, a ratchet-wheel having a wide rim on its outer edge and any desired number of teeth, in combination with a lever *b*, having a pin that rides on the outer edge of said rim and comes in contact with the teeth, and a nose b^3, carrying a pin b^2, that runs under the rim, substantially as set forth.

10. In an automatic salesman or change-maker, a coin-distributer consisting of a casing having a single opening at its upper end and two passages at its lower end, a gate fulcrumed in the center, whereby the coin as it is guided to one of the passages at the bottom sets the gate so as to guide the next coin into the other passage, in combination with the pin 37 and spring 38 for retaining the gate in position, substantially as shown and described.

11. In an automatic salesman or change-maker, a coin-distributer adapted to receive coins of any diameter and consisting of a casing having an opening at its upper end for the insertion of the coins, a gate fulcrumed at or near its center and operated by a sidewise-inserted coin, which is guided to one side by the gate and sets the same so as to guide the next coin to the opposite side, said gate having a pin or crank 37, in combination with a spring 38 for retaining the gate in position until moved by a coin, substantially as set forth.

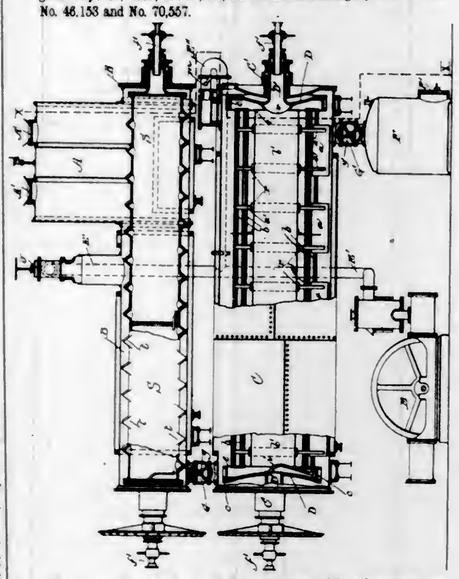
12. In an automatic salesman or change-maker in which the movement is regulated by clock-work, a ratchet-wheel, and a pawl having a notch in its upper surface, and an auxiliary pawl for locking the pawl in contact with the ratchet-wheel, substantially as set forth.

13. In an automatic salesman or change-maker where the articles to be delivered are arranged upon shelves, shelves notched on their adjacent edges, whereby the line of junction is broken, substantially as and for the purposes set forth.

447,344. PROCESS OF PREPARING ORES FOR AMALGAMATION. HENRY S. MYERS, Brooklyn, N. Y. Filed Apr. 7, 1888. Serial No. 269,966. (No specimens.)

Claim.—The method of chemically treating gold and silver ores in order to clean the particles of metal from any adherent substances which interfere with amalgamation, said method consisting in wetting the broken or pulverized ores before roasting with a solution of muriate of ammonia or the like, and then after roasting wetting the ores so treated with a mixture of sulphuric acid and water or the like, whereby the particles of metal are prepared for perfect amalgamation.

447,345. VACUUM DRYING APPARATUS. EMIL FASSBURG, Breslau, Germany. Filed June 19, 1888. Serial No. 277,609. (No model.) Patented in Germany Apr. 13, 1888, No. 49,905; in France May 12, 1888, No. 190,569; in England May 22, 1888, No. 7,555; in Belgium Sept. 16, 1889, No. 87,636, and in Austria-Hungary Feb. 5, 1890, No. 46,153 and No. 70,557.



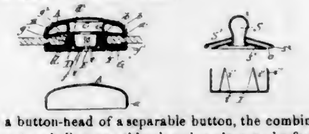
Claim.—1. In a drying-cylinder, a system of heating-pipes comprising, in combination, a central pipe b' of large diameter, the parallel outer pipes *b* of small diameter, the walls *c*, carrying the ends of said pipes, the V-rings *c*, and the domed covers D thereon, substantially as set forth.

2. The combination of a main drying-cylinder, a rotary system of parallel heating-pipes therein, a receiving-chamber having as a part thereof a preliminary heating-cylinder of comparatively small capacity, and a rotary heating and conveying barrel of comparatively large diameter in said preliminary heating-cylinder, adapted to press and feed the wet material into the main cylinder and to dry the same sufficiently to avoid it adhering to the rotary pipe system therein.

3. The combination of the drying-cylinder C, having a rotary system of heating-pipes therein, the receiving-chamber A, adapted to be closed air-tight, the preliminary heating-cylinder B being a part of said receiving-chamber, the delivery-chamber F, adapted to be closed air-tight, the pipes of communication G and G', with band-valves *g* and *g'* therein, the air-exhaust pipes E' and E'', communicating, respectively, with the cylinders B and C, and the valves J and *m* in said pipes E' and E'', respectively, the whole substantially as and for the purposes herein set forth.

447,346. SEPARABLE BUTTON. EUGENE PRINGLE, Gloversville, N. Y., assignor to Madison D. Shipman and Charles E. Bradt, both of De Kalb, Ill. Filed Mar. 20, 1888. Serial No. 267,864. (No model.)

Claim.—1. In a button-head, the combination of a shell-form slitted stud-catch E, held in place by two pieces, as F and D, with a clinching-tube having its end turned over the margin of a clinch-receiving disk for securing said pieces securely attached to the fabric and with the shell of the button-head.



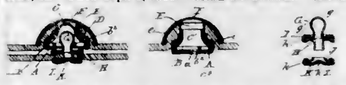
2. In a button-head of a separable button, the combination, with the outer or top shell, upper-side clamping-piece, and a fastening-eyelet, of the upper and lower stud-holder-retaining pieces D and F, an under-side clamping-piece, and a piece which will turn the clinching portion of the fastening-eyelet when the parts of the button-head are applied to the fabric and forced together, substantially as and for the purposes set forth.

3. In a separable button-head, the combination of a disk F, a shell-form slitted stud-catch E, and a chambered stud-catch-retaining piece secured to said disk F with a tubular clinching-tube and a clinch-receiving disk for securing the above parts to the fabric and button-head, substantially as and for the purpose set forth.

4. In a stud or button fastening, the combination of two disks centrally secured together and clamping on one side of the fabric with an opposite side disk having fastening-spurs projecting through the fabric and between the first two disks around the outer periphery of the inside disk and a stud secured to one of the above disks.

5. A fastener consisting of a pronged disk to clamp one side of the fabric and two disks centrally secured together to clamp the opposite side of the fabric, the prongs of said disk adapted to pass through the fabric around the outside of the inside disk and be clinched between the two said disks, substantially as and for the purpose set forth.

447,347. SEPARABLE BUTTON. EUGENE PRINGLE, Gloversville, N. Y., assignor to Madison D. Shipman and Charles E. Bradt, both of De Kalb, Ill. Filed Sept. 8, 1888. Serial No. 284,942. (No model.)



Claim.—1. In a separable button, the combination of the spring B, having the outlying ring-form portion *b*, the inner central portion *b'*, and the stud-engaging arm b^3, with the plate A, having a stud-receiving opening, a second outwardly-flanged piece, said pieces interlocked at their outer margins and firmly clamping the said outlying ring-form portion *b* of the spring, and a clinching-tube for securing all of the above parts to the button-cap and fabric, substantially as and for the purpose set forth.

2. In the button-head of a separable button, the combination of the stud-catch B, held in place within the button-head by an outlying ring-form portion, the stud-catch-supporting piece having the perforation *a*, and an upper side binding-piece securing the outlying portion of the stud-catch B and said perforated supporting-piece with the outer shell of the button-head, substantially as and for the purpose set forth.

3. In a separable button, the combination, with a shell-form stud provided with a base-flange and an eyelet secured by its flange with the flange of said stud, of the holding-washer and washer-backing piece secured to said washer, substantially as and for the purposes set forth.

447,348. SEPARABLE BUTTON. EUGENE PRINGLE, Gloversville, N. Y., assignor to Madison D. Shipman and Charles E. Bradt, both of De Kalb, Ill. Filed Sept. 8, 1888. Serial No. 284,944. (No model.)



Claim.—1. In a separable button, the combination, with the outer shell of a button-head and a fastening-eyelet, of a stud-catching piece A, in form of a section of a circular disk and having the stud-receiving opening *a*, and a spring-catch B, which is held in position at a side of said stud-receiving opening and in opposition to the margin-edge portion A^3 of the same by pieces inclosing said spring-catch, and its co-acting stud-catching piece, substantially as and for the purposes set forth.

2. In a separable button, the combination, with the piece A, having the stud-receiving opening *a* and the spring-retaining recess A', said piece A held within a shallow chamber between two pieces clinched together, of a spring-catch held within said recess and a fastening-eyelet adapted to secure said parts with a button-head to the fabric, substantially as and for the purpose set forth.

3. In a separable button, the combination, with an eyelet for securing the outer shell of a button-head to the material, the piece A, provided with opening *a*, and the coacting spring-catch B, of a supporting-piece operating with the eyelet to hold said piece A and spring B in place, substantially as and for the purposes set forth.

4. In a separable button, the combination, with the outer shell of a button-head and piece F, secured within said shell and in contact with its inner side surface, of the piece A, provided with opening *a*, spring-catch B, a piece supporting said piece A and spring-catch B and connected with the flange of a fastening-eyelet which holds with the outer shell of the button, and with said shell clamps the material.

5. In a separable button, the combination, with a fastening-eyelet C, piece D, provided with a central perforation which communicates with the bore of the tube portion of the said eyelet and is secured to the flange of the same, and the stud-holding device composed of the piece A, having opening *a*, and the coacting spring-catch B, of the outer shell of the button-head, having piece F secured within it and in contact with the inner side surface of said shell, for operation with the said fastening-eyelet, substantially as and for the purposes set forth.

447,349. SEPARABLE BUTTON. EUGENE PRINGLE, Gloversville, N. Y., assignor to Madison D. Shipman and Charles E. Bradt, both of De Kalb, Ill. Filed Sept. 8, 1888. Serial No. 284,947. (No model.)



Claim.—1. In a button-head of a separable button, the combination of a ring-form stud-catch having a stud-receiving opening *a'* and slit or opening *a* from its outer circumference to said stud-receiving opening, with a catch-guarding disk having a catch-receiving aperture, within which the said catch can be expanded, the guarding-piece and catch being held from shifting in the button-head, substantially as and for the purposes set forth.

2. In a button-head of a separable button, the combination, with a ring-form stud-catch which has its continuity broken at one side thereof, and a catch-guarding piece having a central aperture loosely holding said catch with permission for its expansion, of a supporting-piece below and a holding-piece above, and which are held secured to the fabric by a fastening-eyelet, substantially as and for the purposes set forth.

3. In a button-head of a separable button, the combination, with the stud-catch above described, a catch-guarding piece holding said catch with permission for its expansion, a lower-side supporting-piece, and an upper-side holding-piece binding on the said catch-guarding piece, of an eyelet-spreading piece, an eyelet-holding piece, and a fastening-eyelet, substantially as and for the purposes set forth.

4. In a button-head of a separable button, the combination of the spring-catch A, the catch-guarding piece B, holding and permitting the said spring-catch to be expanded, the lower-side supporting-piece and upper-side holding-piece binding on said guarding-piece B, with the eyelet-holding piece, the fastening-eyelet, and outer shell, substantially as and for the purpose set forth.

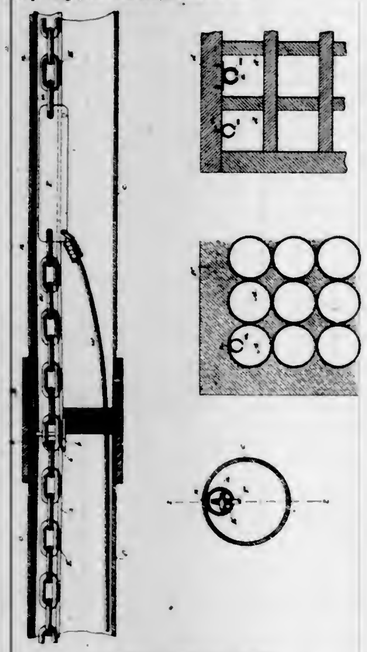
447,350. ELECTRICAL SUBWAY. JOHN C. REILLY, Brooklyn, N. Y. Filed May 20, 1890. Serial No. 352,471. (No model.)

Claim.—1. In an electrical subway, the combination of a duct or passage consisting of a metal pipe for the reception of insulated conductors, a second duct or passage consisting of a metal pipe fixed to the upper interior surface of the first-named duct, a longitudinal slot in the lower side of the second duct, a plate or link traveling in said slot, to which a cable or conductor may be attached, and a suitable device located in the second duct for drawing said plate or link along in the slot and introducing the conductor in the first-named duct, substantially as described.

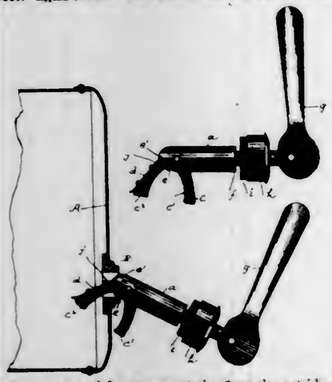
2. In an electrical subway, the combination of a duct or passage consisting of an iron pipe for the reception of insulated conductors, a second duct or passage consisting of an iron pipe removably fixed to the upper interior surface of the first-named duct by screws, a longitudinal slot or passage in the lower side of said second duct, a plate P, traveling in said slot, and a chain E for moving said plate along in said slot to introduce a conductor with respect to the first-named pipe, substantially as described.

3. The combination of two or more sections of underground conduit, each section being composed of two metal pipes of respectively different diameters, the smaller pipe fixed to the interior upper sur-

face of the larger pipe, a longitudinal slot or passage in the lower side of the smaller pipe, a plate or link located in the said slot, a device for drawing said plate or link along, located within the smaller pipe, a screw-thread on the exterior of the larger pipe, a screw-threaded coupling for uniting one section of conduit with another, a screw-threaded hole in the surface of said coupling, through which conductors may be led out, and a screw-threaded plug for closing said aperture or passage, substantially as described.



447,351. TOOL FOR PLUGGING OPENINGS IN BOILERS, &c. HENRY S. REYNOLDS, Brooklyn, N. Y. Filed Jan. 5, 1889. Renewed Oct. 30, 1889. Again renewed Feb. 4, 1891. Serial No. 380,124. (No model.)



Claim.—1. A tool for stopping holes from the outside, consisting of an anchor of greater width than the diameter of the hole to be stopped and adapted to be passed through the hole in one position and thereafter to be reversed to straddle the hole on the inside, a movable packing member, and means, such as a cam-lever, for applying pressure to the said packing member against the resistance of the anchor, and thereby crowding the packing member against the opening and stop it, substantially as set forth.

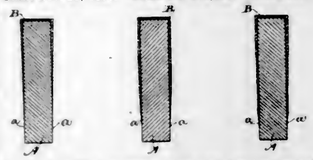
2. A tool for stopping holes, composed of a furcated anchor, a slotted stem, in one end of which the anchor is pivoted to permit one limb of said anchor to move back and forth through said slot, a detent for the anchor to limit the movement of the said limb through the said slot, a packing member, and a pressure-applying member for said packing member, substantially as set forth.

3. A tool for stopping holes, composed of a slotted stem, a furcated anchor playing in said stem, one limb of which is provided with a spring-detent co-operating with notches in the end of the stem; a packed member, and a pressure-applying member, substantially as described.

4. A tool for stopping holes, consisting of a slotted stem, a furcated anchor pivoted to one end of said stem, a collar provided with a packing-face arranged near the other end of said stem, and a cam-lever pivoted to said stem in the rear of the collar, substantially as described.

5. A tool for stopping holes, composed of a slotted stem, an anchor pivoted in said slotted stem and having one limb superior in weight to the other and provided with a stop to limit the descent of the said superior limb when it is uppermost, a packing member, and a pressure-applying member, substantially as described.

447,352. COMMUTATOR-BRUSH. EDWIN W. RICE, Jr., Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Nov. 28, 1890. Serial No. 372,859. (No model.)

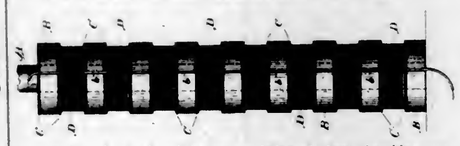


Claim.—1. A carbon commutator-brush having a metal coating gradually decreasing in thickness toward the wearing-surface of the brush, for the purpose set forth.

2. A carbon commutator-brush coated with a plating of copper gradually decreasing in thickness toward the wearing-surface of the brush.

3. A carbon commutator-brush coated with a plating of metal tapering down toward the wearing-surface of the brush until it terminates in practically a mere film, as set forth.

447,353. ELECTRIC HEATER. CHARLES C. RICE, Mount Vernon, N. Y. Filed Sept. 15, 1890. Serial No. 365,049. (No model.)



Claim.—1. An electric heater consisting of a heat-absorbing core, a series of radiating-rings encircling said core, said rings being provided on both sides with insulating-washers, and insulated coils surrounding said core between the rings and washers, substantially as described.

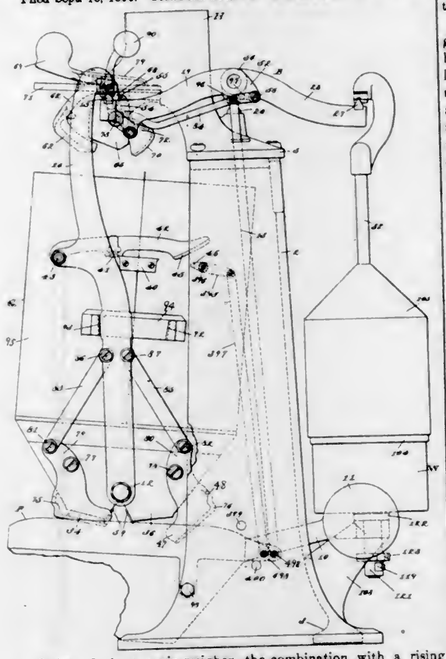
2. An electric heater consisting of a heat-absorbing center, a series of radiating-rings encircling said core, said rings being provided with slots and with insulating-washers on both sides, and insulated coils surrounding said core between the rings and washers, being connected into a continuous circuit by passing through the slots in said rings, which divide the coils, substantially as described.

3. An electric heater consisting of a heat-absorbing center, a series of radiating-rings encircling said core, said rings being provided with slots and with insulating-washers on both sides, and insulated coils surrounding said core between the rings and washers, being connected into a continuous circuit by passing through the slots in said rings, which divide the coils, and an insulating substance placed between each layer of each section of coils, substantially as described.

4. An electric heater consisting of an iron core, a series of iron radiating-rings provided on both sides with asbestus washers and with slots, and insulated coils surrounding the core between the rings and washers, being connected into continuous circuit by passing through the slots in said rings, which divide the coils, substantially as described.

5. An electric heater consisting of an iron core, a series of iron radiating-rings provided on both sides with asbestus washers and with slots, insulated coils surrounding the core between the rings and washers, being connected into continuous circuit by passing through the slots in said rings, which divide the coils, and an insulating substance placed between each layer of each section of coils, substantially as described.

447,354. REGULATOR GRAIN-WEIGHER. FRANCIS H. RICHARDS, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Sept. 10, 1890. Serial No. 364,574. (No model.)



Claim.—1. In a grain-weigher, the combination, with a rising and falling grain-bucket suspended from the scale-beam of the grain-weigher and having a bucket-latch for discharging the load, of a regulator located and supported for operation by the discharged grain, and a shiftable bucket-latch stop carried by the frame-work and operatively connected to the regulator, whereby said stop is shifted into an inoperative position on the working stroke of the regulator.

2. In a grain-weigher, the combination, with the scale-beam and with the oscillating grain-bucket suspended thereon, said bucket being arranged to have a movement relative to the hangers for discharging the load of grain, of a bucket-latch for disengaging the bucket to discharge the load, the regulator located and supported for operation by the discharged grain, and a shiftable bucket-latch stop carried by the frame-work and operatively connected to the regulator, whereby said stop is shifted into an inoperative position upon the working stroke of the regulator.

3. In a grain-weigher, the combination, with the scale-beam and with the hangers suspended therefrom, of the oscillating grain-bucket pivotally supported in said hangers, stops limiting the oscillating movement of the bucket, a bucket-catch, substantially as described, for locking the bucket in its respective positions, the shiftable bucket-latch stop arranged for normally disengaging said catch on the descent of the bucket, and a regulator, substantially as described, operatively connected to shift said stop into its inoperative position on the working stroke of the regulator.

4. In a grain-weigher, the combination, with a grain-bucket and hangers, substantially as described, suspended from the scale-beam of the grain-weigher, and with the regulator-hopper below said grain-bucket, of the bucket-catches and the bucket-catch lever 42, and the stop 46 normally located for operating said bucket-catch lever and carried by a lever operatively connected to said hopper, whereby on the descent of said hopper said stop 46 is carried out of position for operating said bucket-catch lever.

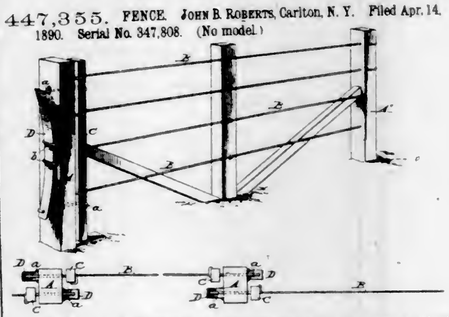
5. In a grain-weigher, the combination, with the hangers suspended from the scale-beam, and with the oscillating bucket pivotally supported, substantially as described, in said hangers, of the closers 75 and 76, pivoted to the bucket and connected with the hangers above the bucket-pivots, substantially as described, whereby on the rearward movement of the bucket the forward compartment is closed and the rearward compartment opened.

6. In a grain-weigher, the combination, with the hangers and with the oscillating bucket pivoted at the lower end thereof to said hangers, of the closer 75, carried on pivots 77 and connected by a rod 83 to the hanger at 86, the movement of the bucket relative to the hanger being limited by stops and catches, substantially as described, whereby the movement of the closer is limited.

7. In a grain-weigher, the combination, with a rising and falling grain-bucket suspended from the scale-beam of the grain-weigher and having a bucket-latch for discharging the load, and with a regulator located and supported for operation by the discharged grain, of a valve normally actuated by the scale-beam through a shiftable valve-actuator operatively connected with the regulator, whereby said valve may be closed by the regulator independently of the scale-beam movement, and a bucket-latch stop shiftably supported and operatively connected with said regulator, whereby on the working stroke of the regulator the bucket-latch stop is thrown into its inoperative position and the cut-off valve is closed, thereby preventing the completion of a second bucket-load before the discharge of a first bucket-load and preventing the discharge of an incomplete bucket-load.

8. In a grain-weigher, the combination, with a bucket mechanism, substantially as described, suspended from the scale-beam of the grain-weigher and having a bucket-latch for discharging the load, and with a regulator located below the grain-bucket and supported for operation by the discharged grain, of the cut-off valve, the shiftable actuator on the beam for actuating said valve from the scale-beam movement, actuator-shifting links, substantially as described, operatively connected to the regulator, whereby said actuator may be shifted for closing the valve independently of the scale-beam movement, and a shiftable bucket-latch stop operatively connected with said regulator, whereby on the working stroke of the regulator the bucket-latch stop is thrown into its inoperative position for preventing the discharge of an incomplete bucket-load, and whereby the actuator-shifting links are operated for the closing of said valve, thereby preventing the completion of a second bucket-load before the discharge of the first bucket-load.

447,355. FENCE. JOHN B. ROBERTS, Carlton, N. Y. Filed Apr. 14, 1890. Serial No. 347,808. (No model.)



Claim.—1. In a fence, the combination, with the posts A A', of the wires B, secured at one end to one of the posts and at the opposite end to an equalizing-bar C, a spring-plate secured to the other post, and wires connecting the ends of the spring-plate with the ends of the equalizing-bar.

2. In combination with a post, the wires B B, and an equalizing-bar C, a spring-plate D, secured to the post, and a connection between the ends of the bar and spring-plate, all substantially as shown.

3. In combination with a post, an equalizing-bar on one side of the post, a spring-plate on the opposite side, connected at its ends to the ends of the bar, and wires B, secured to the bar.

447,356. RAILWAY-TIE. EUGENE ROBINSON, Detroit, Mich. Filed June 20, 1890. Serial No. 356,059. (No model.)

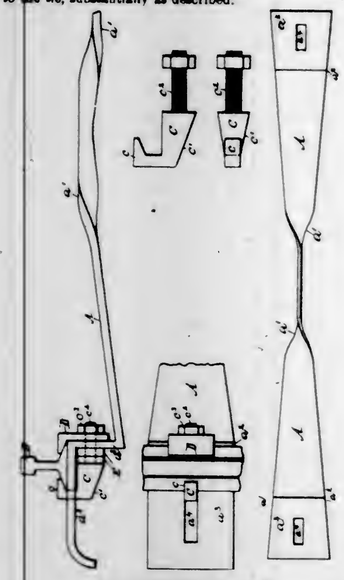
Claim.—1. A metallic railway-tie bent into the upright portions a^3 and arched centrally between such portions to form the middle a' at a higher level than the lower parts of such upright portions, substantially as described.

2. A metallic railway-tie bent to form the upright portions a^3 and having the elevated, twisted, or upset portion a' centrally between such upright portions, substantially as described.

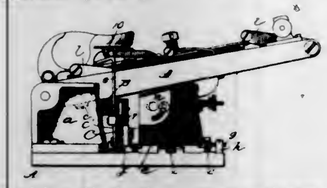
3. A metallic railway-tie bent to form the upright portions a^3 and outwardly-extending horizontal portions a^4, and having centrally between such upright portions the elevated twisted portion a', substantially as described.

4. In a metallic railway-tie, the combination, with the upright portion a^3 and horizontal portion a^4, of a combined rail clamp and bolt C, formed as shown, whereby the rail is firmly clamped to the tie, substantially as described.

5. The combination, with a metallic tie having the upright portion a^2 and horizontal portion a^3, provided with the slot a^4, of the combined clamp and bolt C and clamp or fastener D for clamping the rail firmly to the tie, substantially as described.



447,357. TYPE-WRITING MACHINE. JOHN R. ROBINSON, Salem, assignor to Lyman S. Hapgood, Boston, Mass. Filed May 6, 1889. Serial No. 309,743. (No model.)



Claim.—1. In combination, the supporting-base, the paper-carriage thereon, a printing-frame, and means for supporting said printing-frame, consisting of two parallel laterally-extending arms pivotally connected at their front ends to the base, supporting-bearings for the said arms to sustain them rigidly, the said printing-frame being pivoted to the rear free ends of the two supporting-arms opposite their point of support, and the plate *l*, comprising a part of the printing-frame and movable vertically under tension, substantially as described.

2. In combination, the supporting-base, the paper-carriage thereon, the lugs *a*, on the base, the printing-frame, and means for supporting the said frame, consisting of the two arms A A, pivoted at their front ends to the lugs and extending laterally over the paper-carriage, the said printing-frame being movable vertically between the arms and independently thereof, and the bearings for supporting the arms and limiting their movement, said bearings being on the lugs to which the arms are pivoted, substantially as described.

3. In combination, the supporting-base, the paper-carriage, the printing-frame, the supporting means for the same, consisting of the two parallel arms extending laterally over the carriage and pivotally connected to the base, the said printing-frame being pivoted between the arms and stops on the base for the supporting-arms, and stops on the supporting-arms A for the printing-frame, substantially as described.

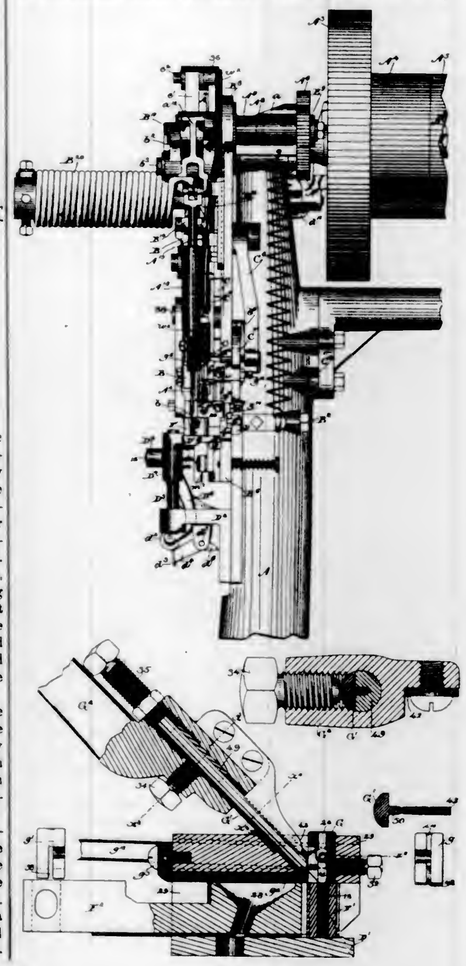
4. In combination, the supporting means, the printing-frame comprising the bars 3, pivoted to the support, the type-form plate, the links 1, connecting said plate with the side bars 3, and the pad-plate 2, pivoted to the said side bars and extending between them, and the catch for holding the pad-plate in position, substantially as described.

5. In combination with a paper-carriage having a rack-bar, a lever C, a push-pawl 7, pivoted to the lever, an arm on the lever, and a removable stop-pin in the push-pawl engaging with the arm extending from the lever and limiting the vertical movement of the pawl on its pivots, substantially as described.

6. In combination with the paper-carriage having a rack-bar toothed on each edge, a lever C, with operating means therefor, a pawl carried by the lever, and a link C′, pivoted to the lever at one end and to the base of the machine at the other end, and having a tooth intermediate of its pivots adapted to the under edge of the rack, substantially as described.

7. In combination, a stationary roller having its journals bearing in slots in the carriage-frame, a movable roller, a pivoted paper-clip pivoted on the journals of the movable roller, and the stud on the carriage-frame engaging the curved slots of the paper-clip for causing the separation of the rolls, substantially as described.

447,358. NAILING-MACHINE. STILLMAN W. ROBINSON and SERN P. WATT, Columbus, Ohio, assignors to the Wire Grip Fastening Company, Chicago, Ill. Filed June 9, 1890. Serial No. 354,706. (No model.)



Claim.—1. In a nailing-machine, a cutting-box having a notch where the end of the wire rests, combined with an inclined pointing-tool to enter said notch, and a carrier to actuate said tool, whereby the inclined tool cuts into one end of the wire a notch which is slanted with relation to the axis of the wire, leaving a two-pronged point, substantially as described.

2. The lever C′, the feeding-gripper g^{14}×, the cutting-box, and means to support it, combined with the pivoted carrier G³, the pointing-tool attached thereto, and means to reciprocate the said carrier diagonally with relation to the axis of the wire, substantially as described.

3. The cutting-box notched at 48 and having a concavity at one side of the wire-passage, combined with the carrier G³, the pointing-tool therein, shaped substantially as shown, to co-operate with the notch 48 and cut a slanting notch in the end of the wire, and a bender moving with the said pointing-tool to bend the wire, substantially as described.

4. The cutting-box having the pointing-notch 48, the inclined pointing-tool, its diagonally-movable carrier, the main slide B⁶, and the nose-plate D′, supported thereby and having a nail-passage 19, combined with a pivoted nail-carrier interposed between the said cutting-box and nose-plate, substantially as described.

5. The nose-plate having a nail-passage 19, and a nail-carrier pivoted thereon, having at its inner side and at the opposite sides of its center concaved cam-surfaces 22 and 23, combined with the cam-slide F³, to vibrate and lock the said nail-carrier accurately in its two extreme positions at the proper time, substantially as described.

6. The cutting-block having the point-forming notch 48 and the wire-passage, an inclined pointing-tool and its reciprocating carrier, and the nose-plate having a nail-passage, combined with the nail-carrier having concaved cam-surfaces 22 and 23, and the cam-slide to vibrate the same to cut off the wire between it and the cutting-box and to lock the said nail-carrier in its extreme positions, substantially as described.

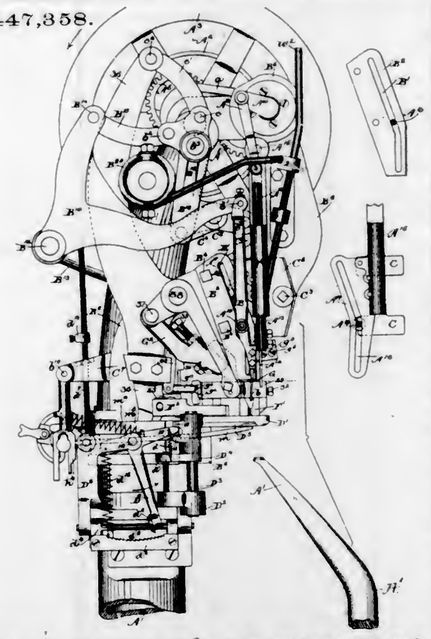
7. The cutting-box having the point-forming notch 48 and wire-passage, the carrier and its connected inclined pointing-tool, to form a point for the end of the wire, the nail-carrier, the nose-plate D′, having a nail-passage, a wire-feeding device, substantially as described, to feed the pointed end of the wire into the nail-carrier for a greater or less length, according to the thickness of the stock on the horn, and a cam-slide to vibrate the nail-carrier to cut off the pointed end of the wire and form a nail of the desired length and place the said nail over the nail-passage in the nose-plate, substantially as described.

8. The lever 36, its attached plate g^3, and the gripper-actuating cam-rods g^6 and g^{13} jointed thereto, combined with the two grippers, the gripping-plates, the lever C′ to actuate them, and the cutting-box, to operate substantially as described.

9. In a nailing-machine, a wire-feeding device consisting, essentially, of a sliding pin, as g^3, a cam-rod to actuate it, a block having a wire-passage entered by the said pin, and an adjusting-screw to adjust the said cam-rod, substantially as described.

10. The main shaft, the frame *a*, pivoted thereon and having the bearing A⁹, the main slide B⁶, entered by the said bearing, the driver-bar guide pivoted on the said main slide, the driver-bar, its attached driver and link, combined with the shaft A⁸, having a crank, and means to actuate the said shaft, substantially as described.

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11. The main shaft, the frame *a*, pivoted thereon and having a bearing A⁹, the crank-shaft A⁸ in said bearing, the connected driver-bar, the driver, a dog attached to the said shaft A⁸, non-circular gear loose on the said shaft, a pin or projection between the said dog and gear, a non-circular gear fast to the main shaft, and a spring to actuate the driver and through it rotate the shaft A⁸ during a part of each rotation, for the purpose set forth.

12. The awl-bar B, the lever to move it, the slotted cam-plate B⁹, and the pivoted driver-bar guide having a slotted cam A¹⁷ and the driver-bar, combined with the pin A¹⁹ to enter the cam-slots of both the said bars to move the awl-bar and driver-bar laterally, as desired, to enable them to move alternately in the same path, substantially as described.

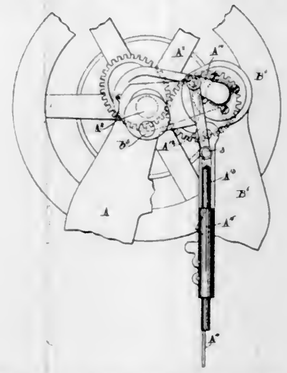
13. In a nailing-machine, the following instrumentalities, viz: a nose-plate to bear on the stock, the movable slide B⁶, with which the nose is connected, a wire-holding gripper carried by and adapted to rise and fall with the said slide and nose-plate, a wire-feeding gripper, a carrier for the said feeding-gripper, means to raise and lower the said carrier with relation to the nose plate, and means to automatically vary the nail length to compensate for upset, substantially as described.

14. The wire-feeding gripper, a carrier for the said gripper, and the pin b^6 and means to move it, combined with an eccentric b^5 interposed between the said carrier and the said pin, and means to operate the said eccentric, substantially as and for the purpose described.

15. The vertically-movable foot-lift, the lever D⁶, the stops 13 and 16, rising and falling with the said foot-lift, a spring to raise the foot-lift, and a locking device for the said lever, substantially as described.

16. The vertically-movable foot-lift, the lever D⁶, the stops 13 and 16, rising and falling with the said foot-lift, a spring to raise the foot-lift, and a locking device for the said lever, and means to actuate the said locking device, substantially as described, to lock and release the said lever D⁶ at the proper times, as and for the purposes set forth.

447,359. NAILING-MACHINE FOR BOOTS OR SHOES. STILLMAN W. ROBINSON, Columbus, Ohio, assignor to the Wire Grip Fastening Company, Chicago, Ill. Filed June 10, 1890. Serial No. 354,944. (No model.)



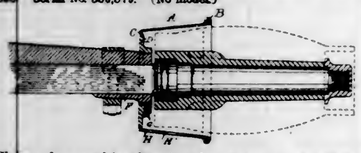
Claim.—The combination, in a nailing-machine, of the following instrumentalities, viz: a driver-bar, a guide therefor, and crank-shaft to actuate the driver-bar, a link to connect the said bar and crank-shaft, a pivoted yoke *a*, forming bearings for the said crank-shaft, the main shaft A⁹, and non-circular gears fast to the said shafts, whereby the main shaft driven at a uniform speed actuates the crank-shaft at a varying speed, to thus hasten the descent of the driver-bar and enable the driver carried by it to strike a nail, the driver-bar being actuated positively both in its ascent and descent, substantially as described.

447,360. PROCESS OF MANUFACTURING MINERAL WOOL. CHARLES H. ROCKWELL, Cleveland, Ohio. Filed Feb. 21, 1888. Serial No. 264,818. (No specimens.)

Claim.—1. The process of manufacturing mineral wool, consisting of remelting hardened slag or scoria from a smelting-furnace with lime and silica or lime and silica bearing stone mixed in proper proportions and blowing the same into mineral wool, substantially as described.

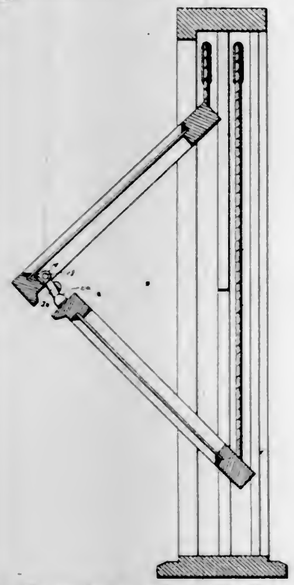
2. The process of manufacturing mineral wool, consisting of remelting hardened slag or scoria from a smelting-furnace, with lime or lime-bearing stone mixed in proper proportions and blowing the same into mineral wool, substantially as described.

447,361. SAND-BAND. FRANK S. ROLFE, Claremont, N. H., assignor to the Sullivan Machine Company, same place. Filed July 21, 1890. Serial No. 359,379. (No model.)



Claim.—In a sand band or box for wagons or carriages, a shell having a flange soldered to a head, said head being provided with a screw-threaded opening adapted to receive a corresponding threaded axle-holder, substantially as set forth.

447,362. WINDOW. GEORGE R. ROTH, Reading, assignor to W. W. Lesher, Messersville, Pa. Filed Sept. 4, 1889. Serial No. 322,939. (No model.)



Claim.—1. The combination, with a window-frame, of sashes mounted therein capable of sliding past each other or being laterally tilted, and a hinge connection between the sashes, said hinge being capable of disconnection when the meeting-rails of the sashes are together, but incapable of disconnection when the sashes are tilted, substantially as set forth.

2. The combination, with a window-frame, of sashes mounted therein capable of being laterally tilted, and hinge connections at the meeting-rails of the sashes, said hinges being capable of disconnection when the meeting-rails are together, but incapable of disconnection when the sashes are tilted, substantially as set forth.

3. The combination, with a window frame and sashes capable of sliding or tilting, of a hinge connection between the sashes, consisting of an arm connected with each sash capable of lateral movement when the meeting-rails of the sashes are together, but incapable of this lateral movement when the sashes are tilted, substantially as set forth.

4. The combination, with a window frame and sashes capable of sliding or tilting therein, of a hinge connection betweeen the sashes, consisting of an arm loosely connected with each sash and having a rounded projection on one end adapted to enter a recess in the sash when the sashes are tilted, to prevent its displacement, substantially as set forth.

5. The combination, with a window frame and sashes capable of sliding or tilting therein, of a hinge connection between the meeting-rails, consisting of a frame having a bolt therein on one rail and an arm projecting from the bolt, with a laterally-projecting pintle on one end and a rounded projection on the extreme end, and a locking-plate having a perforated lug in which the pintle extends, and a recess which the projection on the end enters when the sashes are tilted, substantially as set forth.

6. The combination, with a window frame and sash, of a locking-bolt located on the sash, a centering-plate removably secured to the bolt, and a rotary head on said plate, substantially as set forth.

7. The combination, with a window frame and a sash, of a locking-bolt located on the sash and a centering-plate having a rotary head thereon, said plate pivotally secured on the end of the bolt at one end and having a pin on the other end adapted to enter a hole in the sash after the head is properly centered, substantially as set forth

8. The combination, with a window frame and sashes, of a hinge connection between the meeting-rails of the sash, said hinge consisting of a frame having a bolt therein, a centering device on the end of the bolt, an arm projecting from the bolt, and a locking-plate with which said arm engages, substantially as set forth.

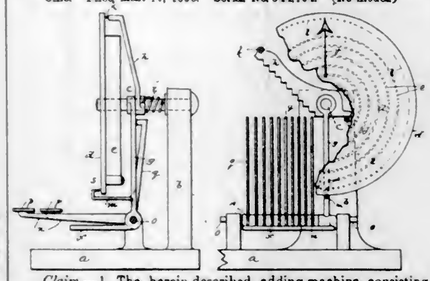
9. The combination, with a window frame and sashes, said frame having stiles and center bead thereon and grooves between them, of a hinge connection between the meeting-rails of the sashes, consisting, essentially, of a frame, a bolt therein, a plate on the end of the bolt having a rotary head pivotally secured thereto, a pin on the plate to hold the head properly centered, an arm projecting laterally from the bolt, and a locking-plate with which the latter engages, substantially as set forth.

10. The combination, with a window frame and sash, of a weight-cord attachment consisting of a main plate, a shank pivotally secured thereto at its upper end, said shank being secured to the sash, and an interlocking clamping-plate removably secured to the main portion of the attachment, between which and the main portion the weight-cord is held, substantially as set forth.

11. A weight-cord attachment for window-sashes, consisting, essentially, of a narrow plate adapted to slide in the groove of the frame, a shank adapted to be secured to the sash and pivotally secured to the plate at its upper end, and an interlocking clamping-plate removably secured to the narrow plate, substantially as set forth.

12. The combination, with a window frame and sashes, of a weight-cord attachment consisting, essentially, of a narrow plate having a recessed back and bearings at either end, a shank pivoted at one end, a depression formed at the other end, and a removable plate interlocking with the inner face of the depression and adapted to hold the end of the weight-cord, substantially as set forth.

447,363. ADDING-MACHINE. DAVID J. ROWLAND, Youngstown, Ohio. Filed Mar. 17, 1890. Serial No. 344,194. (No model.)

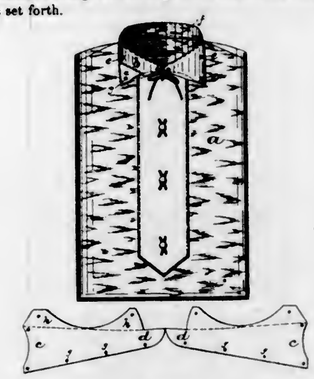


Claim.—1. The herein-described adding-machine, consisting of the disk *d*, loosely mounted on a shaft *c*, rigidly secured in suitable bearings, the lever *h*, attached to the said shaft *c* and having the notched edge, the leaf or table *f* and operating-levers *n q*, pivoted beneath the disk, the arm *g*, attached to the said leaf or table *f* and provided with a pin *s* to engage with perforations *l*, formed about the periphery of the disk *d*, and a spring *i* for operating the lever *h*, substantially as and for the purpose described.

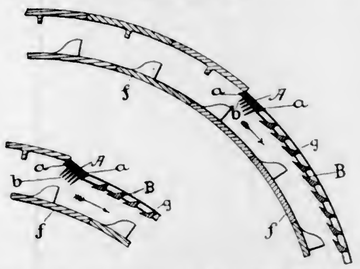
2. In an adding-machine, the combination of a primary adding-disk having a series of apertures, a pivoted spring-pressed arm adapted to enter one of the apertures in said disk and having a series of notches, a series of keys, each provided with an upwardly-extending arm adapted to enter one of the notches in the pivoted arm, an apron arranged in the path of the series of keys and provided with an arm which normally locks the primary adding-disk in position, a spring for impelling the primary adding-disk in one direction when released from its locking-arm, and means for returning the notched pivoted arm to its normal position, substantially as described.

447,364. STIFFENER FOR FLANNEL-SHIRT COLLARS. LEOPOLD S. SAMUEL, Newark, N. J. Filed Dec. 3, 1889. Serial No. 332,427. (No model.)

Claim.—The combination, with a soft collar of a garment, of a collar-stiffener conforming to the outline of the forward ends of the collar, the said collar-stiffener being perforated to receive removable fasteners and being in sections, whereby the front edges of the collar-stiffener may be changed in its relation to the front edges of the collar, and said fasteners holding the free edge of the collar from rolling, substantially as set forth.



447,365. COTTON-OPENER, &c. ROBERT SCHAELLIBAUM, Manchester, England. Filed June 2, 1890. Serial No. 354,027. (No model.) Patented in England June 13, 1885, No. 7,228.



Claim.—In an opener or scutcher, the comb A, having a knife-edged plate or foundation *a*, and pins *b*, inclined against the direction in which the cotton moves, the points of each longitudinal row of which in the same direction are gradually nearer to the beater or cylinder *f* than the preceding row, in combination with a knife-edged grid B, substantially as and for the purpose set forth.

447,366. CONCRETE-MIXER. SAMUEL R. SCHARF, Washington, D. C. Filed Dec. 20, 1888. Serial No. 294,228. (No model.)

Claim.—1. The combination, in a concrete-mixer, of a drum loosely mounted on a suitable shaft and having a sliding door with a stop to engage said door while the drum continues to rotate, thereby opening the door, a series of radiating arms secured to the shaft, and mechanism for rotating the shaft, substantially as set forth.

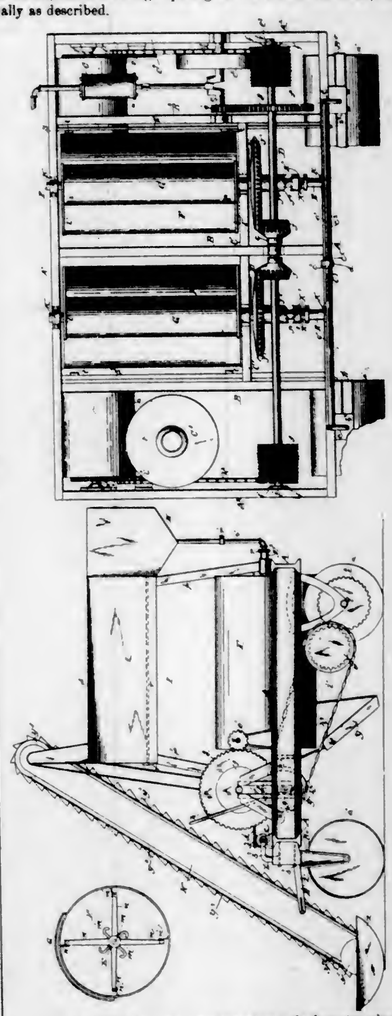
2. The combination, in a mixer, of a drum loosely mounted upon a shaft, provided with stirring-arms and driven by the friction of the arms with the material in the drum, and having a door, and means for stopping the drum with the door in its lowest position while the shaft continues to rotate, substantially as described.

3. The combination, in a mixer, of a drum loosely mounted on a shaft and a series of radiating arms upon the shaft within said drum, whereby the drum is caused to rotate by the friction of the arms with the material in the drum, substantially as described.

4. The combination, in a mixer, of a horizontal mixing-drum loosely mounted on a shaft, with stirring-arms on said shaft, whereby the drum is rotated by the friction of the arms and material in the drum, substantially as described.

5. The combination, in a concrete-mixer, of a drum loosely mounted upon a shaft, a series of radiating arms upon the shaft within said drum, and scrapers on the ends of said arms, whereby the drum is caused to rotate by the friction of the arms with the material in the drum and the material is removed from the inner periphery of the drum, substantially as described.

6. The combination, in a concrete-mixer, of a drum loosely mounted on a shaft, a series of radiating stirring-arms upon the shaft, whereby the drum is rotated by the friction of the arms with the material in the drum, and a discharge-opening on one side of the drum, substantially as described.



7. The combination, in a concrete-mixer, of a drum loosely mounted on a shaft, a series of radiating stirring-arms provided with scrapers upon the shaft, whereby the drum is rotated by the friction of the arms with the material in the drum, and a discharge-opening in one side of the drum, substantially as described.

8. The combination, in a mixer, of a drum loosely mounted on a hollow rotating shaft and rotated by friction of the material-stirring arms on said shaft, and water-ways between the hollow shaft and drum, substantially as described.

9. The combination, in a concrete-mixer, of a drum loosely mounted on a hollow rotating shaft, said drum and shaft being independently movable in the same direction, a series of radiating arms secured to said shaft within the drum, a series of curved nozzles, also within the drum, connecting with the hollow shaft, substantially as described.

10. The combination, in a concrete-mixer, of a drum loosely mounted on a hollow rotating shaft, said drum and shaft being independently movable in the same direction, a series of radiating arms secured to said shaft within the drum, and a series of curved nozzles connecting with the hollow shaft, said shaft being connected to a water-tank, substantially as described.

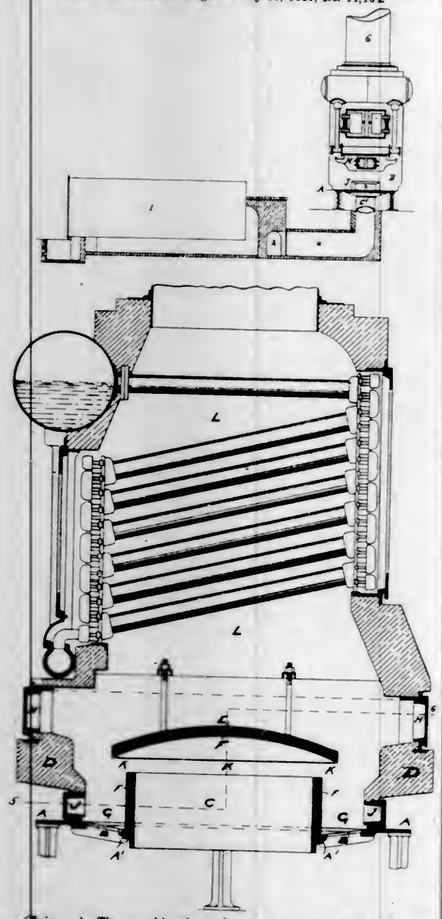
11. The combination, in a mixer, of a frame, a drum rotatively mounted on said frame, but loose on its shaft, and rotated by friction of the material in the drum, a shaft adjacent to said drum and rotated

by the engine, a beveled pinion on said shaft, a co-operating gear loosely mounted on the drum-shaft and provided with a clutch connection with the shaft, and the radiating arms within the drum, substantially as described.

12. The combination, in a mixer, of a frame, one or more drums rotatively mounted on said frame, the main shaft D, adjacent to said drum or drums, beveled pinions *j j* on said main shaft, co-operating gears mounted loosely on hollow shafts E, radiating arms upon said shafts, the curved pipes, also mounted on said shaft and communicating with its center, and a conducting-pipe *o'*, communicating with a water-tank, substantially as set forth.

13. The combination, in a mixer, of a frame, one or more drums rotatively mounted on said frame and the door of each provided with a lug *u* thereon, and an arm J, connected to the frame and adapted to engage with said lug as the drum revolves, thereby opening the door, substantially as set forth.

447,367. APPARATUS FOR CONSUMING SMOKE. FREDERICK T. SCHMIDT, Bradford, England. Filed Nov. 5, 1889. Serial No. 329,267. (No model.) Patented in England July 11, 1889, No. 11,164.

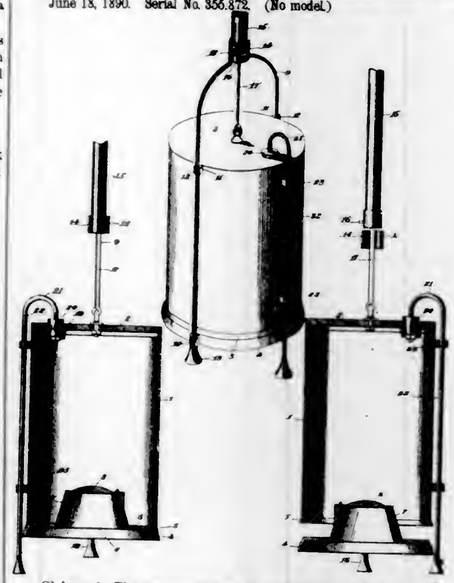


Claim.—1. The combination of a steam-boiler or other furnace having a smoke-flue leading therefrom, with a smoke-consuming apparatus consisting of a tube, into which the said furnace-flue discharges and around this tube a fire-chamber which is in communication with the tube, as and for the purpose set forth.

2. The combination of a steam-boiler or other furnace having a smoke-flue leading therefrom, with a smoke-consuming apparatus consisting of a central tube, into which the said furnace-flue discharges, with a deflecting-plate over this tube and a communicating fire-chamber around it, all substantially as and for the purpose set forth.

3. The combination of a steam-boiler or other furnace having a smoke-flue leading therefrom, with a smoke-consuming apparatus consisting of a tube into which the said furnace-flue discharges, and around this tube a fire-chamber which is in communication with the tube, and a steam-boiler over the fire-chamber, substantially as described.

447,368. DEVICE FOR CLEANING CISTERNS. ORREN I. SEARLES, GEORGE F. JACKSON, and FRANK M. GUNTIN, Fort Madison, Iowa. Filed June 18, 1890. Serial No. 355,872. (No model.)



Claim.—1. The combination of the cylindrical shell, the bottom having an opening provided with an upwardly-opening valve, a yoke the legs of which extend through bearings on opposite sides of the head of the cylinder and are attached to opposite sides of the bottom, means for locking the cylinder and the bottom together, and a vertically-sliding-rod mounted in bearings upon the outer side of the cylinder and terminating at its upper end in a goose-neck carrying a stopper or valve having a seat in the top of the cylinder, substantially as set forth.

2. In a device for cleaning cisterns, the combination of the yoke, the cylindrical shell mounted to slide upon the legs of said yoke, the bottom having a valved opening secured to the lower ends of said legs, a sleeve or ferrule at the upper end of said yoke having an L-shaped slot, a handle extending through the sleeve or ferrule and having a notch extending through the slot in the latter, a rod, as 17, connecting said handle with the top of the cylinder, and a rod mounted slidingly upon the outer side of the cylinder and carrying a stopper or valve having a seat in the top of said cylinder, substantially as and for the purpose set forth.

3. In a device for cleaning cisterns, the combination, with a shell or casing the bottom of which has an opening provided with an upwardly-opening valve and the top of which has an opening or valve-seat, of a valve or stopper seated in the latter opening and mounted upon a vertically-sliding rod which is mounted exteriorly upon the shell or casing and extends below the bottom of the latter, a yoke secured to the bottom and extending through bearings at the top of the cylinder, a ferrule at the upper end of said yoke, a handle extending through said ferrule and adapted to be locked therein by a bayonet-joint, and a rod, as 17, connecting said handle with the top of the cylinder, substantially as and for the purpose herein set forth.

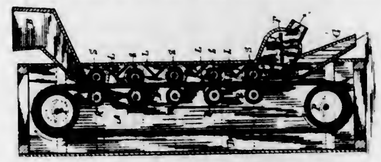
447,369. GLOVE-FASTENING. MADISON D. SHIPMAN, De Kalb, Ill. Filed Jan. 25, 1889. Serial No. 297,543. (No model.)



Claim.—1. As an article of manufacture, a stud A, composed of the head *a*, the clinching-tube *a'*, the shoulders a^3 a^4, and the perforated washer B, seated in the annular depression between the shoulders a^3 and a^4, the clinching-tube *a'* extending below said washer, substantially as and for the purpose set forth.

2. The combination of the hollow stem A, having an eyelet *a'*, and a washer B, with a second washer C and a clinching-piece D, attached to said second washer and having a projection *d'* to clinch the eyelet, substantially as described.

447,370. MACHINE FOR SCOURING GRAIN. DENNIS E. SIBLEY, Chicago, Ill. Filed Oct. 27, 1890. Serial No. 369,446. (No model.)

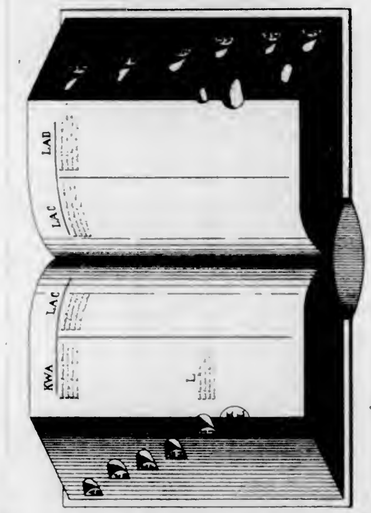


Claim.—1. In the grain-scouring machine shown and described, the combination, with the case A, having the inlet-spout B and outlet-spouts F and G, of the drums P, brush-belt D, mounted on said drums, brush-rollers S, arranged in a vertical train against the said belt brush, so their brushes will intermesh with those of said belt brush and rotate at a different speed from said belt brush, guide-rollers R for holding said belt brush in contact with said roller brushes, deflecting-boards L, screens V, and suction fan-blower J, all arranged to operate substantially as and for the purpose set forth.

2. In the grain-scouring machine shown and described, the combination of drums P, belt brush D, mounted on said drums, brush-rollers S, arranged in a vertical train against said belt brush so their brushes will intermesh with those of the roller brushes and rotate at a different speed from said belt brush, guide-rollers R for holding said brush-belt in contact with said roller brushes, deflecting-floors L, worm-wheels W, arranged on the ends of the shafts of said roller brushes, shaft J', worms Z', secured on said shaft and arranged to mesh with said worm-wheels, and bevel-gears H H' and shaft J^3, all arranged to operate substantially as and for the purpose set forth.

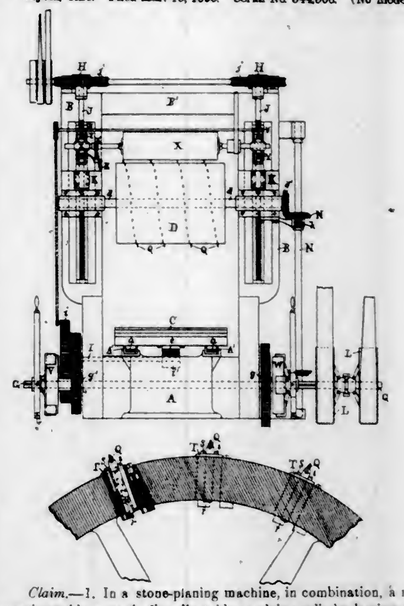
3. In the grain-scouring machine shown and described, the combination, with the endless brush-belt B and roller brushes S, of the outlet-spout F, having the fan J, the screen V, arranged across the inner end of said spout, and spout G, having the series of arms Z arranged to extend across its inner end, substantially as and for the purpose set forth.

447,371. INDEXED BOOK. HERBERT A. SILVERA, New York, N. Y. Filed July 19, 1887. Serial No. 244,773. (No model.)



Claim.—A book indexed as described—viz., one index to two subject-matters, the indicia being placed between adjoining subject-matters and referring to them reversely, substantially as described.

447,372. STONE-PLANING MACHINE. EDWARD SMALLWOOD, Elyria, Ohio. Filed Mar. 18, 1890. Serial No. 344,368. (No model.)



Claim.—1. In a stone-planing machine, in combination, a reciprocating table, a vertically-adjustable revolving cylinder having stone-cutting tools projecting radially from its surface, and mechanism for simultaneously reversing the motion of both the table and cylinder, substantially as and for the purpose specified.

2. In a stone-planing machine, in combination, a reciprocating table, a vertically-adjustable revolving cylinder having stone-cutting tools projecting radially from its surface, a main shaft, and suitable connections between said shaft and the table and cylinder, respectively, two reversely-revolving pulleys mounted loosely on said shaft, a double clutching device secured to said shaft, and mechanism operated by the table for throwing said clutching device out of engagement with one of said pulleys and into engagement with the other, whereby the direction in which the shaft revolves is reversed, with the result of simultaneously reversing the motion of both the table and cylinder, substantially as and for the purpose specified.

3. In a stone-planing machine, in combination, a reciprocating table, a revolving cylinder having stone-cutting tools projecting radially from its surface, mechanism for simultaneously reversing the motion of table and cylinder, a revolving grinding-wheel parallel to said cylinder, and mechanism for moving said grinding-wheel toward and from said cylinder, substantially as and for the purpose specified.

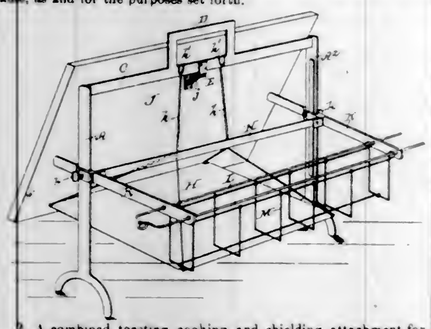
4. In a stone-planing machine, in combination, a reciprocating table, a vertically-adjustable revolving cylinder having radial sockets for the reception of the stone-cutting tools, and the following mechanism for holding and adjusting said tools within the socket, to wit: a radially-movable knee-bar, a screw the inner end of which engages with a threaded socket in said knee-bar, the outer end of said screw being accessible from outside the cylinder, and a wedge for holding the tool firmly in place with its end resting against the knee of said bar, substantially as and for the purpose specified.

5. In a stone-planing machine, in combination, a reciprocating table, a vertically-adjustable revolving cylinder having radial sockets, and the following mechanism for adjusting the position of the tools and for securing them in said radial sockets, to wit: a removable box T, having a flange around its upper edge, a knee-bar inclosed within said box, a screw S, passing through the upper part of said box and engaging with said knee-bar, a wedge for securing the tool within said box with its end resting against the knee of said bar, and a wedge for securing the box within the socket, substantially as and for the purpose specified.

447,373. COOKING, TOASTING, AND SHIELDING DEVICE FOR STOVES. IDA SMITH, West Union, Iowa. Filed Oct. 31, 1890. Serial No. 369,988. (No model.)

Claim.—1. A combined cooking, toasting, and shielding attachment for stoves or ranges, consisting of a supporting-frame, a toast-

ing-rack adjustably held to said frame, a base-plate removably held to the frame, together with a shielding-plate removably attached to the frame, as and for the purposes set forth.

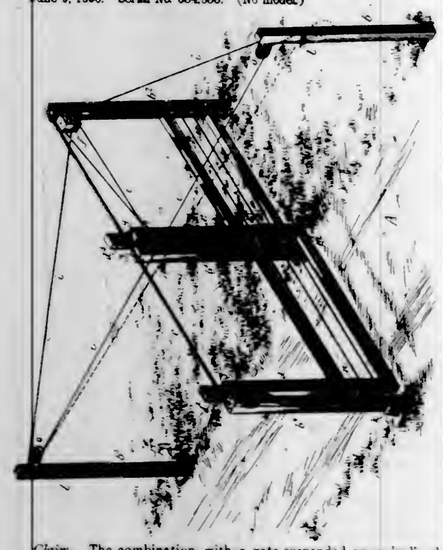


2. A combined toasting, cooking, and shielding attachment for stoves, consisting of a base-plate and means for suspending the same from a vertical frame, a shielding-plate detachably held to said frame, and a toasting-rack removably held to said frame by means of arms adjustably mounted on the vertical pieces of said frame, as and for the purposes set forth.

3. The combination, in a toasting, cooking, and shielding device to be used in conjunction with stoves or ranges, of a vertical frame consisting of upright pieces and a cross-piece connected to said uprights at their upper ends, a base-plate supported from said cross-piece by wires and hooks, a shielding-plate detachably held to said cross-piece by a hook on the cross-piece and a loop on the plate, together with arms adjustably mounted on the upright pieces, detachably holding a toasting-rack, as and for the purposes set forth.

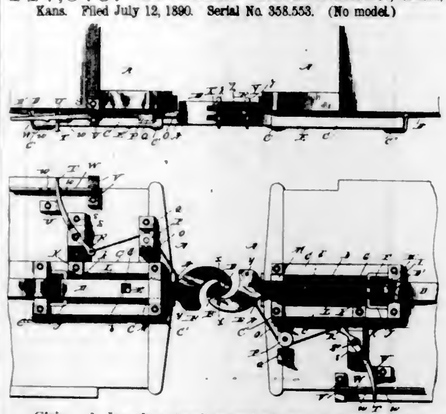
4. The combination, in a device for toasting, cooking, and shielding, for use in conjunction with stoves and ranges, of a frame consisting of upright pieces having adjustable arms mounted thereon, extending arms holding a frame removably therein, which latter holds a toasting-rack, a cross-piece connecting together the two upper ends of the upright pieces, a base-plate removably supported from the cross-piece by means of wires and hooks, and a shielding-plate also removably held to said cross-piece by means of a hook and loop, said shielding-plate resting at its upper portion on an extension-frame from the cross-piece, its lower portion resting on one of the edges of the base-plate, as and for the purposes set forth.

447,374. GATE. WILLIAM H. SMITH, Port Lavaca, Tex. Filed June 9, 1890. Serial No. 354,853. (No model.)



Claim.—The combination, with a gate suspended on an inclined track *c*, of a single pull-rope passing around suitable pulleys on posts *b'*, *b²*, and *b³* and secured at both ends to the inner upright *a'* of the gate, so as to form a bisected triangle, and catch-springs *l* on the front of the posts *b'* and *b²*, substantially as shown and described.

447,375. CAR-COUPLING. HEINRICH SOMMERFELD, Canton, Kans. Filed July 12, 1890. Serial No. 358,553. (No model.)



Claim.—1. In a draw-head, a hooked portion, a groove in one side of said draw-head extending from the base of the hooked portion to its forward end, and a groove in the opposite side of the draw-head having an opening at each end, substantially as described.

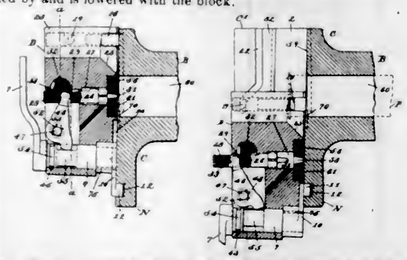
2. In a car-coupling, a hooked draw-head adapted to have a lateral movement and provided on each side with grooves for the insertion of links, lugs on said draw-head to limit its movement, an operating-lever pivoted to the car-platform, and a chain passing around a pulley and connecting said lever with the draw-head, substantially as described.

3. In a car-coupling, bars secured to the under side of the car-platform, the draw-head located between said bars, lugs on said draw-head, and openings in said bars to receive the lugs, thereby limiting the movement of the draw-head, substantially as described.

4. In a car-coupling, the bars secured to the under side of the car-platform, the draw-head located between said bars, a brace or loop also located between said bars and in which the rear portion of the draw-head rests, and springs encircling the rear portion of the draw-head, substantially as described.

447,376. BREECH-LOADING ORDNANCE. CHARLES W. SPONSEL, Hartford, Conn. Filed Apr. 30, 1890. Serial No. 350,107. (No model.)

Brief.—The operating-shaft for lowering the breech-block is carried by and is lowered with the block.



Claim.—1. In breech-loading ordnance, the combination, with the barrel and the breech-piece thereof, of the sliding breech-block and the block-actuating shaft carried in said block and having an arm engaging with the body of the cannon, whereby said shaft is carried with the breech-block in its movements.

2. In breech-loading ordnance, the combination, with the breech-piece having a groove crosswise to the breech-block movement, of the sliding breech-block, the block-actuating shaft carried by said block, and a crank-arm on said shaft and engaging said groove, whereby the block is actuated by the turning therein of the shaft carried thereby and is locked at the extremes of its movement by said crank.

3. In breech-loading ordnance, the combination, with the breech-piece having the sides thereof unconnected at their rear ends, of the breech-block sliding between said sides and the block-actuating shaft carried by said block and engaging the front wall of the breech-piece, all being constructed and combined substantially as described, so that the block may be withdrawn with said shaft projecting from the rearward side thereof.

4. In breech-loading ordnance, the combination, with the breech-piece and with the movable breech-block and its crank-shaft carried therein, of the firing-pin located in said block above and substantially parallel with said shaft, and a cam on said shaft constructed and connected, substantially as set forth, to draw back the firing-pin on the turning of the shaft in the block to open the breech.

5. In breech-loading ordnance, the combination, with the breech-block, of the firing-pin and the block-actuating shaft, both carried by said block, a cam on said shaft, and the cocking-lever pivoted in said block and connected to actuate the firing-pin from said cam.

6. In breech-loading ordnance, the combination, with the breech-block, of the shaft 9, having the cam 55, the firing-pin, and lever 46, pivotally supported in said block and engaging said pin and constructed to be operated by said cam.

7. In breech-loading ordnance, the combination, with the breech-block, of the shaft carried thereby and having the cocking-cam, the cocking-lever, the firing-pin, and a mainspring connected to throw forward said pin.

8. In breech-loading ordnance, the combination, substantially as described, with the breech-piece and with the movable breech-block and its actuating crank-shaft carried therein, of the firing-pin located in said block above and substantially parallel with said shaft, the cocking-cam on said shaft, and operatively connected, substantially as set forth, to actuate said pin to draw back the same on the turning of the shaft to lower the breech-block, a mainspring connected to throw forward the firing-pin, and the sear engaging the firing-pin when this is retracted.

9. In breech-loading ordnance, the combination, with the breech-block, of the firing-pin, the block-actuating shaft carried by said block and having the cocking-cam operatively connected to actuate said pin, a mainspring connected to throw forward said pin, the sear 32, fitted to revolve in said block and engage said firing-pin, and a trigger operatively connected to disengage said sear.

10. In breech-loading ordnance, the combination, with the breech-block, of the firing-pin having notch 29, the shaft carried by said block and having the cocking-cam, the lever operatively connecting said cam and firing-pin, the sear 32, having the catch 33, engaging said notch, and means, substantially as described, for operating said sear by hand.

11. In breech-loading ordnance, the combination, with the breech-block, of the block-actuating shaft carried thereby and having the cocking-cam, the firing-pin, the lever operatively connecting said cam and firing-pin and carried by the shaft 47, the shaft 47, having arm 49, and a mainspring bearing on said arm to throw forward said firing-pin.

12. In breech-loading ordnance, the combination, with the breech-block and with the firing-pin 26, having the notch 29, of the sear 32, fitted to turn in a bore in said block and having a catch engaging said pin, and having an arm connected by a rod with the trigger, whereby said sear may be turned to release the firing-pin.

13. In breech-loading ordnance, the combination, with the breech-block and with the block-actuating shaft carried thereby and grooved for a shaft-retaining pin, of the trigger carried on a stem extending into the groove of said shaft and constituting such retaining-pin.

14. In breech-loading ordnance, the combination, with the breech-block and with its actuating-shaft carried therein and having the groove for a retaining-pin, of the trigger having a stem constituting such retaining-pin and having its arm extending under a lug on said block for holding the trigger in place.

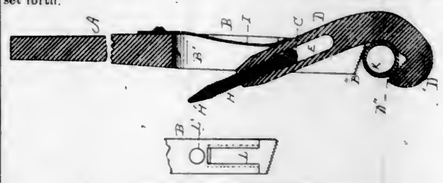
15. In breech-loading ordnance, the combination, with the breech-block moving between the sides of the breech-piece, of a reciprocating extractor carried by the block and constructed to have a movement in the block crosswise to the movement of the block and engaging a cam-groove in the breech-piece.

16. In breech-loading ordnance, the combination, with the breech-block moving in the breech-piece, substantially as described, of the extractors constructed with a projection engaging the groove 22 in the breech-piece.

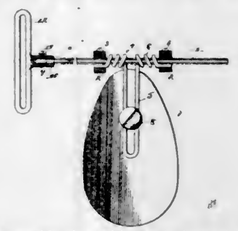
17. In breech-loading ordnance, the combination, with the breech-block moving in the breech-piece, substantially as described, and having the guide-bearer 6, mortised for the extractor, of the extractor 16, sliding in said mortise and provided with the extractor-hook and with a projection engaging a cam-groove in the breech-piece.

447,377. PIPE-WRENCH. DANIEL P. STANTON, Warwick, R. I. Filed Dec. 5, 1890. Serial No. 373,679. (No model.)

Claim.—The herein-described improved pipe-wrench, consisting, essentially, of the bifurcated frame or stationary jaw B, provided with the handle A, pivot C, and serrated ends B", the hook or movable jaw D, provided with the serrated face D" and slot E, the screw H, entering the jaw D from the rear and bearing against the pivot C, and the spring I, secured to the frame and bearing against the movable jaw, as shown, said serrated faces of the two jaws being not parallel but at angles to approach each other at their forward ends, substantially as set forth.

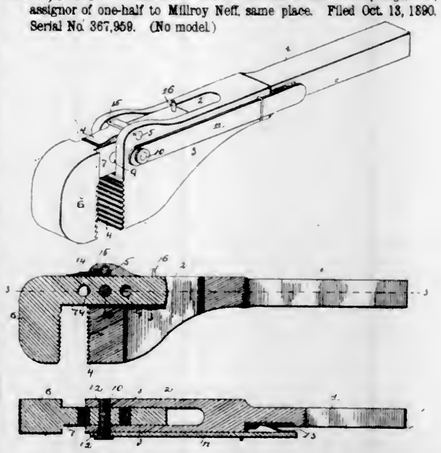


447,378. TRUSS. HENRY C. STICKNEY, St. Louis, assignor to W. B. Forden, Springfield, Mo. Filed Apr. 17, 1890. Serial No. 348,349. (No model.)



Claim.—The combination, with the body-band, of the opposite couplings consisting of the loops 12, connected to the ends of the band, and the inwardly-disposed sockets 10, provided with screws 14, the band-section 1, reduced at its ends and entered in said sockets, and pads secured to the said section 1, substantially as specified.

447,379. WRENCH. JOHN H. STILES, Green Cove Springs, Fla., assignor of one-half to Milroy Neff, same place. Filed Oct. 13, 1890. Serial No. 367,959. (No model.)



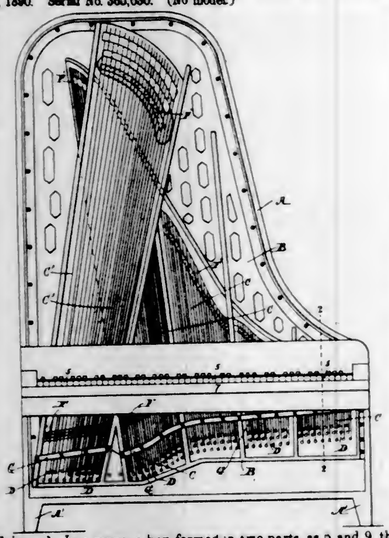
Claim.—1. In a wrench, the combination of a handle having a jaw vertically slotted to form side pieces or cheeks, the pin connecting the latter, a jaw mounted upon a shank arranged to slide between said cheeks under said pin, and means for retaining the said shank in position pivotally, substantially as and for the purpose set forth.

2. The combination of the handle having the jaw slotted vertically to form side pieces or cheeks, a pin connecting the latter, a shank mounted between said side pieces or cheeks and carrying the movable jaw and provided with transverse perforations, and a pivoted rod or handle carrying a pin adapted to extend through the perforations in the sliding shank and through corresponding perforations in the side pieces or cheeks, substantially as set forth.

3. The combination of the handle having the jaw slotted vertically to form side pieces or cheeks, the transverse pin connecting the latter, the sliding transversely-perforated shank carrying the movable jaw, a

spring arranged to press said shank, and a transverse pin mounted upon a spring-actuated handle to retain said shank in position pivotally and adjustably, substantially as set forth.

447,380. PIANO. DANIEL L. STIRN, Milwaukee, Wis. Filed Sept. 15, 1890. Serial No. 365,030. (No model.)



Claim.—1. In a piano, a key formed in two parts, as 5 and 9, the part 9 being located near one end of the part 5 and substantially parallel thereto, an elastic pin, as 11, fixed in the two parts 5 and 9, the part 9 being beveled from the pin 11 in opposite directions away from the part 5, so as to be tiltable slightly thereon, and screws 10 10, passing through the part 9 and turning into the part 5 at a distance on each side from the pin 11, all combined substantially as described.

2. In an upright piano, a jack pivoted to and pendent from the inner end of a key, a spring holding the jack yieldingly toward the key and away from the string of the piano, a shoulder on the outside of the jack facing upward, and a hammer-stem pivoted to the frame outside of the jack, a shoulder 17 on the stem, adapted to engage the shoulder 16 on the jack, and a block 21, secured adjustably in the extremity of the jack and adapted to impinge against the stem of the hammer between its pivotal point and the hammer-head, all combined substantially as described.

3. In a piano, a metal string-plate covering the face of the tuning-block and having frusto-conical apertures in and through which tuning-pins are inserted, the pins being constructed and arranged to bear against the metal plate only at a thin encircling edge thereof, substantially as described.

4. In an upright piano, the combination, with a key and an arm, as 25, affixed thereto substantially at right angles therewith, of a jack pivoted to the key and pendent therefrom substantially parallel with the arm 25, a spring attached to the arm and to the key, adapted to hold the jack yieldingly away from the arm, and a block 23, secured adjustably to the arm by a bolt passing movably through the jack and arranged to limit the movement of the jack away from the arm, substantially as described.

5. In an upright piano, the combination, with a key and a rigid arm 25, affixed at right angles thereto, of a damper 33, secured to one arm of a lever, which lever is pivoted medially on the frame of the piano, the other arm of which lever impinges with the fixed arm 25, and a spring 38, bearing against the lever and adapted to hold the damper yieldingly in contact with a string of the piano, substantially as described.

6. In a piano, the combination, with a key, a jack pivoted thereto and provided with a shoulder adapted to engage a corresponding shoulder on the stem of a hammer, and a hammer on a stem pivoted to the frame and provided with a shoulder to be engaged by the jack, of a hammer-catch 30, attached rigidly to the key of the piano and arranged to receive and hold the head of the hammer on the face of the catch, substantially as described.

7. In an upright piano, the combination, with a frame, a string-plate, and strings secured thereon, of a tuning-block and tuning-pins on which the strings are wound, which tuning-pins are inserted and arranged in the tuning-block through a vertical plate of the string-plate, the vertical tuning-block and plate thereon being located below the key-board, substantially as described.

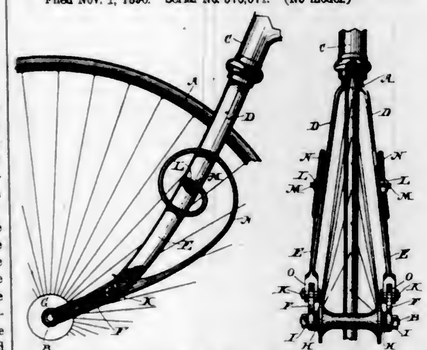
447,381. SWEEPER. OTIS D. THOMPSON and HOWARD F. SMITH, Elkhart, Ind. Filed May 21, 1890. Serial No. 352,599. (No model.)



Claim.—1. In a machine of the class described, the combination, with the spindles of the driving and companion wheels, of a revoluble brush connected by gearing with the driving-wheel and having a central spindle, arms connecting the spindles of the wheels and brush, and springs adapted to bear on these arms and keep the brush in contact with the ground, as set forth.

2. In a machine of the class described, the combination, with the spindles of the driving and companion wheels, of the revoluble brush connected by gearing with the driving-wheel and having a central spindle, arms connecting the spindles of the wheels and brush, springs adapted to bear on these arms, and a shoe connected by arms to the frame, all substantially as and for the purposes set forth.

447,382. BICYCLE. WILLIAM E. THOMPSON, Milwaukee, Wis. Filed Nov. 1, 1890. Serial No. 370,071. (No model.)



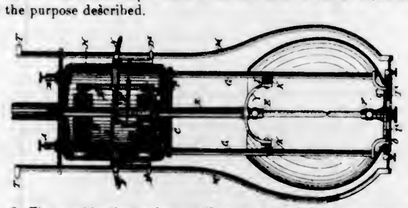
Claim.—1. A bicycle-fork having legs formed in two parts pivoted together at a distance from the supporting-axle, the lower parts of the legs being continued upwardly beyond the pivotal points, which continuations of the lower parts are elastic and form springs connected rigidly at their upper extremities to the upper parts of the legs of the fork, substantially as described.

2. In a bicycle, the combination, with a wheel and its axle loose therein, of a fork supported on the axle, the legs of which fork are constructed in two parts pivoted together, the lower parts being continued upwardly and secured at a distance from their pivotal points to the upper parts, forming springs integral with the lower parts of the legs, adapted to support the legs yieldingly, substantially as described.

3. In a bicycle, a fork having legs in two parts, the upper parts of which, E E, have bifurcated lower extremities O O, in combination with lower parts F F of the legs, secured rigidly to the axle of the wheel and pivoted at a distance therefrom in the bifurcate extremities O O to the parts E E, and springs N N, integral with the parts F F, projecting upwardly therefrom, and secured rigidly at their upper ends to the parts E E, substantially as described.

447,383. ELECTRIC-ARC LAMP. ELIHU THOMSON, New Britain, Conn., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 16, 1884. Serial No. 121,023. (No model.)

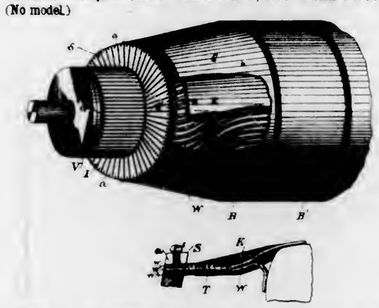
Claim.—1. The combination, substantially as described, of the upper-carbon rod or carrier guided in a bushing at the bottom of the lamp-frame, a cross-bar Y, carrying guide-pieces supported by said bar below the carbon-clamp and guided upon the side rods that support the lower carbon, a lifting and feed clamp supported immediately above the bushing at the lower part of the lamp-frame, a lever D^4, sustained by said clamp and carrying the armatures for the lamp-magnets, the vertical arm or extension from the feed-clamp, a releasing elbow-lever carried by the lever D^4 and arranged to engage said vertical extension, and a stop for the horizontal arm of said lever, as and for the purpose described.



2. The combination, substantially as described, in an electric-arc lamp, of rods G G, carrying the lower carbon, the globe surrounding said rods, exterior rods M, supporting the globe-holder, and the tilting clamps or clutches N, supported from the side of the lamp-casing, as and for the purpose described.

3. The combination, in an electric lamp, of the globe-holder, the vertically-sliding rods M, supporting the same, and having stops T at their upper ends, guides D^5 D^5, secured to the lamp-casing, and clamps or clutches N N, supported from the lamp frame or case above said guides, as and for the purpose described.

447,384. DYNAMO-ELECTRIC MOTOR OR GENERATOR. ELIHU THOMSON, Swampscott, Mass. Filed Oct. 20, 1890. Serial No. 368,665. (No model.)



Claim.—1. An armature for a dynamo-electric motor or generator, having the wires leading from the armature to the commutator-segments bound together, and to the armature by an intermediate filling, as described.

2. An armature for a dynamo-electric motor or generator, having its wires leading to the commutator-segments bound together into a fairly rigid mass with the armature-body by a filling of a heat-resisting material applied in a plastic state.

3. An armature for a dynamo-electric motor or generator, having its wires leading to the commutator-segments bound together by a filling of paper-pulp and an agglomerating material, as glue, for the purpose set forth.

4. An armature for a dynamo-electric motor or generator, having the wires leading from the armature to the commutator bound together by a filling comprising paper-pulp and an agglomerating material, as glue, and a covering of water-proof material protecting such filling from moisture.

5. An armature for a dynamo-electric motor or generator, having a wrapping around the projecting ends of the armature-wires, which are led to the commutator-segments, and an insulating-filling around and between the said wires and wrappings.

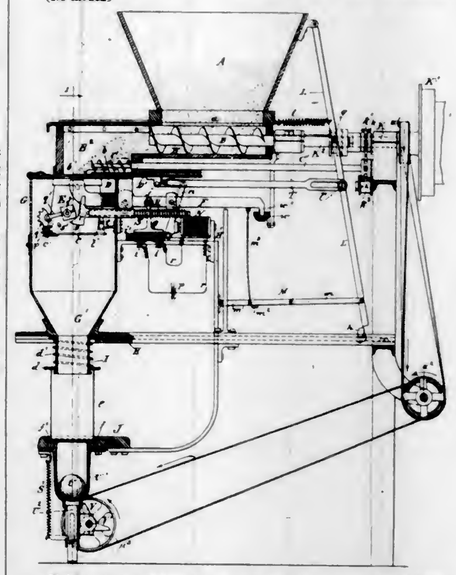
6. An armature for a dynamo-electric motor or generator, having an auxiliary wire or wires joined with the projecting ends of the ordinary armature-wires leading to the commutator-segments, and thereby adding rigidity thereto, as described.

7. An armature for a dynamo-electric motor or generator, having an auxiliary steel wire wrapped together with the ends of the armature-wires where the latter are led to the commutator-segments, and a filling of heat-resisting material around and between said wires and wrappings.

8. A commutator composed of segments having radial slits, in which the armature-wires are laid, and plugs extending into holes communicating with the slits, and thereby holding the wires in place, as set forth.

9. A commutator composed of segments having radial slits, and screw-tapped holes communicating with the slits, in combination with the armature-wires laid in the respective slits, and the screw-plugs holding the said wires in place.

447,385. WEIGHING AND PACKING MACHINE. GEORGE D. VAN HOESEN, Brooklyn, N. Y. Filed Apr. 3, 1890. Serial No. 346,385. (No model.)



Claim.—1. In a weighing-machine, the combination, with a scale, of a mechanical feeding apparatus driven from a source of power, and comprising a major and a minor feed for feeding, respectively, large and small streams to the scale-pan, means for arresting the major feed by the descent of the scale-beam under somewhat less than the full weight, and means for subsequently stopping the minor feed operated by the descent of the scale-beam under the exact full weight.

2. In a weighing-machine, the combination, with a scale, of a mechanical feeding apparatus comprising a major and a minor feed driven from a source of power, the major feed operating intermittently and delivering a large stream to the scale-pan and the minor feed operating after the arrest of the major feed and delivering a small stream, means for arresting the major feed by the descent of the scale-beam under somewhat less than the full weight, and means for subsequently cutting off the flow from the minor feed, operated by the descent of the scale-beam under the exact full weight.

3. In a weighing-machine, the combination, with a scale, of a mechanical feeding apparatus comprising a major and a minor feed driven from a source of power, for feeding respectively large and small streams to the scale-pan, means for arresting the major feed by the descent of the scale-beam under somewhat less than the full weight, a cut-off slide for terminating the flow from the minor feed, and means for closing said slide by the descent of the scale-beam under the exact full weight.

4. In a weighing-machine, the combination, with a scale, of a mechanical feeding apparatus consisting of a major and a minor feed driven from a source of power, for feeding respectively large and small streams to the scale-pan, means for arresting the major feed by the descent of the scale-beam under somewhat less than the full weight, the minor feed constructed after the arrest of the major feed to deliver to the scale-pan a stream having at first considerable volume, but diminishing as the full weight is approached into a much reduced or attenuated stream, and means for cutting off the minor feed, operated by the descent of the scale-beam under the full weight.

5. In a weighing-machine, the combination, with a scale, of a feeding apparatus comprising a major and a minor feed, the major feed constructed to discharge the material over the minor feed and into the scale-pan, whereby upon its arrest it leaves a mass of material to be operated upon by the minor feed, means for arresting the major feed by the descent of the scale-beam under somewhat less than the full weight, and means for subsequently cutting off the minor feed, operated by the descent of the scale-beam under full weight, whereby the minor

feed, after the arrest of the major feed, delivers the accumulated material to the scale-pan in a stream of rapidly-diminishing volume.

6. In a weighing-machine, the combination, with a scale, of a feeding apparatus comprising a major feed consisting of a conduit and an intermittently-revolving conveyer-screw therein, a minor feed consisting of a revolving conveyer-screw, a clutch connecting the major feed-screw with a source of power, means for disengaging the clutch, operated by the descent of the scale-beam under somewhat less than the full weight, a slide for cutting off the feed from the minor screw, and means for closing this slide by the descent of the scale-beam under the full weight.

7. In a weighing-machine, the combination, with a scale, of a feeding apparatus comprising a major and a minor feed, the major feed consisting of a conduit and a conveyer-screw rotating therein, and a minor feed consisting of a conveyer-screw rotating in a chamber at the discharge end of said conduit, so that the material discharged from the major feed is forced onto and over the minor feed on its way to the scale-pan, means for arresting the major feed-screw by the descent of the scale-beam under somewhat less than the full weight, a cut-off slide for the minor feed, and means for closing this slide, operated by the descent of the scale-beam under the full weight.

8. In a weighing-machine, the combination, with a scale, of a feeding apparatus comprising a mechanical feed, a clutch for connecting it to a source of power, a lever for operating said clutch, a spring tending to move said clutch out of engagement, a detent device in connection with said lever for retaining the latter in position, consisting of toggle-arms arranged to act as a strut between said lever and a fixed part, and a connection between said toggle-arms and the scale-beam, whereby the tilting of the latter under the load in the scale-pan will trip the toggle-arms and enable them to be collapsed under the tension of said spring, whereby the lever is vibrated, the clutch is disconnected, and the feed is stopped.

9. In a weighing-machine, the combination, with a scale, of a feeding apparatus, means for arresting the feed by the descent of the scale-beam, a manually-operated part, as a slide, a dumping mechanism for emptying the scale-pan, operated by said slide, and means for setting the feed in operation again, adapted to be operated by a subsequent movement of said slide, whereby the re-establishment of the feed is under the control of the operator after he has caused the weighed charge to be dumped.

10. In a weighing-machine, the combination, with a scale, of a feeding apparatus for feeding a stream to the scale-pan, a cut-off slide for interrupting the feed, means operated by the descent of the scale-beam for closing said slide, a manually-operated part, as a slide, a dumping mechanism for emptying the scale-pan, operated by said manually-operated part, and means for subsequently reopening said cut-off slide and re-establishing the feed, operated by a subsequent movement of said manually-operated part.

11. In a weighing-machine, the combination, with a scale, of a feeding apparatus comprising a conveyer-screw, a clutch for connecting it to a source of power, a spring-pressed lever for operating said clutch, tending to disengage it, a restraining device in the nature of a detent for withholding said lever, means for releasing said device, operated by the descent of the scale-beam, and a manually-operated part, as a slide, constructed to engage and restore said clutch-lever and thereby to re-engage the clutch and re-establish the feed.

12. In a weighing-machine, the combination, with a scale, of a feeding apparatus comprising a cut-off slide for stopping the feed, a spring tending to close said slide, a restraining device for holding said slide open, means operated by the descent of the scale-beam for releasing said restraining device, a manually-operated part, as a slide, and a mechanical connection between said part and the cut-off slide adapted to reopen the latter and re-engage it with its restraining device.

13. In a weighing-machine, the combination, with a scale, of a feeding apparatus, a receiving-chamber arranged to receive the weighed charge dumped from the scale-pan, a manually-operated slide for closing the bottom of said chamber, and means constructed to be operated upon the operation of said slide adapted to set the feed into operation upon the movement of the slide to discharge the material from said chamber, whereby the new charge cannot be weighed and dumped until the charge already weighed has been discharged from said chamber.

14. In a weighing-machine, the combination, with a scale, of a feeding apparatus, means for automatically cutting off the feed when the full weight has been fed into the scale-pan, a dumping apparatus for dumping the scale-pan, a receiving-chamber arranged to receive the weighed charge dumped from the pan, and a slide for closing the bottom of said chamber, having an opening adapted to register therewith to receive beneath it the can or receptacle to be filled, whereby when the can is placed to receive the charge and the slide moved to bring said opening into register with the bottom opening of the chamber the weighted charge is discharged through said opening into the receptacle.

15. In a weighing-machine, the combination, with a scale, a feeding apparatus, and means for stopping the feed when the full weight has been deposited in the scale-pan, of a dumping apparatus for dumping the scale-pan, a chamber for receiving the charge dumped from the pan, and means for closing the discharge-opening of said chamber in mechanical connection with said dumping apparatus, whereby the closing of said opening is effected before the dumping of the scale-pan.

16. In a weighing-machine, the combination, with a scale, a feeding apparatus, and means for automatically arresting the feed, of a dumping apparatus for dumping the scale-pan, a receiving-chamber for receiving the charge dumped from the pan, and a manually-operated moving part or slide constructed when moved in one direction to dump the scale-pan and when moved in the opposite direction to restore the scale-pan and restart the feeding apparatus.

17. In a weighing-machine, the combination, with an automatic weighing apparatus consisting of a scale, a feeding apparatus, and means for stopping the feed upon the filling of the scale-pan to a predetermined weight, of a receiving-chamber for receiving the charge dumped from the scale-pan, a dumping apparatus for dumping the pan, and a manually-operated part or slide adapted when moved in one direction to operate the dumping apparatus to dump the scale-pan and when moved in the opposite direction to operate said apparatus to restore the scale-pan ready for receiving the next charge, and subsequently to restart the feed.

18. In a weighing-machine, the combination, with a scale, of a feeding apparatus, means for controlling the feed, tending to act to stop the feed, a restraining device for restraining said means, connected to the scale-beam to be operated by the descent thereof under a predetermined weight, and thereby to stop the feed when said weight is attained, a manually-operated moving part or slide, a dumping apparatus constructed to be operated thereby for dumping the scale-pan and said moving part constructed to subsequently operate said feed controlling device to start the feed and to re-engage it with the restraining device.

19. In a weighing-machine, the combination, with automatic weighing apparatus comprising a scale beam and pan, the latter having a pivoted bottom, and a counter-weight acting normally to hold said bottom closed against the weight of the material in the scale-pan, of a dumping apparatus consisting of a pusher adapted to engage some part in connection with said pivoted bottom and by its movement to lift the weight and open the bottom.

20. In a weighing-machine, the combination, with an automatic weighing apparatus comprising a scale beam and pan, the latter constructed with a pivoted bottom, a counterweighted lever geared to said bottom and adapted to hold the latter closed against the weight in the scale-pan, of a dumping apparatus consisting of a pusher having a cam-surface adapted to engage said weighted arm and lift the latter, thereby opening the bottom.

21. In a weighing-machine, the combination, with automatic weighing apparatus comprising a scale beam and pan, the latter having a pivoted and counterweighted bottom, of a dumping apparatus consisting of a pusher adapted when thrust laterally to lift the counter-weight and open the bottom, and means for limiting the lateral displacement of the scale-pan, consisting of a stop t on the pan, adapted to be displaced into contact with and be arrested by a fixed lateral stop t' in substantially the manner specified.

22. In a weighing-machine, the combination, with automatic weighing apparatus comprising a scale beam and pan, the latter constructed with a pivoted and counterweighted bottom, of a dumping apparatus consisting of a pusher constructed when thrust laterally to lift the counter-weight and open the bottom, and means for preventing the immediate ascent of the scale-pan on being relieved of the weight of its charge, consisting of a stop projection in connection with the scale-pan and a cam-surface in connection with the pusher, adapted to engage said stop projection upon the tilting of the pan and inclined to permit the ascent thereof as the pusher is retracted.

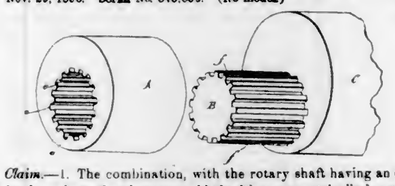
23. In a weighing-machine, the combination, with the scale-beam and the dumping scale-pan, of means for cushioning the return movement of the scale-beam, consisting of a projection on the beam and a cup containing sand or equivalent comminuted material arranged to be entered by it to cushion said projection.

24. In a weighing-machine, the combination, with automatic weighing apparatus, of a receiving-chamber G′ for receiving a charge dumped from the scale-pan, a slide H for closing the discharge-opening thereof, a spout I, communicating with the opening in said slide, a movable dust-collar d on said spout, adapted to fit against the top of the can, and a spring d' for pressing down said collar.

25. In a weighing-machine, the combination, with automatic weighing apparatus, of a receiving-chamber G′ for receiving the charge dumped from the scale-pan, a spout I, through which the charge is discharged into the receptacle, a table J beneath for upholding the receptacle, a spring for pressing the receptacle down against said table, and a jarring device in connection with said table for jarring or rapping the receptacle to pack the charge and facilitate its descent through the spout into the receptacle.

26. In a weighing and packing machine, the combination, with a table for holding the can in position to receive the weighed charge, of a jarring device consisting of a ball, a thrower for throwing the ball so that it shall strike a blow or jar to be imparted to the can, and a cam for imparting motion to said thrower.

447,886. ECCENTRIC. AIMÉ VUILLIER, Brooklyn, N. Y. Filed Nov. 29, 1890. Serial No. 373,066. (No model.)

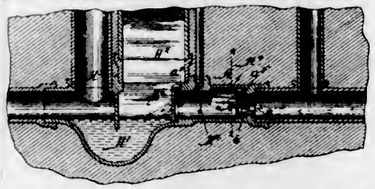


Claim.—1. The combination, with the rotary shaft having an eccentric pin or lug, of a sleeve provided with an eccentrically-located bore, said sleeve and pin or lug being provided with corresponding cogs and sockets, substantially as described.

2. The combination, with a shaft having an eccentric lug or pin rotating with the shaft and provided with cogs and sockets, of a sleeve having an eccentrically-located bore adapted to receive the eccentric lug, and being provided with cogs and sockets to engage the cogs and sockets of the lug, whereby the sleeve can be adjusted and its degree of eccentricity changed at will, substantially as described.

3. The herein-described eccentric, consisting of the eccentric-pin carried by a shaft and the sleeve on said pin provided with an eccentric bore, said sleeve being capable of adjustment on the pin to vary the degree of eccentricity said pin and sleeve being provided with means, substantially as described, for relatively holding or locking said parts together in the desired position against separate rotation, as set forth.

447,887. SEWER-FLUSH CHECK-VALVE. JAMES J. WADE, Chicago, Ill. Filed Apr. 12, 1890. Serial No. 347,706. (No model.)



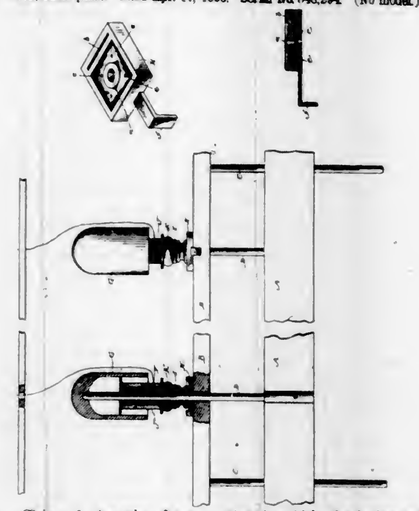
Claim.—1. In combination with the sewer-pipe provided with an induction for the flushing jet or stream, a check-valve located back of the entrance of such jet and adapted to close away from the same and to open automatically with the normal flow through the sewer, substantially as and for the purpose set forth.

2. In combination with the sewer-pipe having an induction-orifice for the flushing stream or jet directed onward in the normal direction of flow through the sewer, a check-valve interposed in the sewer-pipe in advance of the flushing-jet orifice and in proximity thereto and standing normally in range of the jet ejected from the orifice and adapted to close back toward said orifice, whereby back-water from the sewer is prevented by such valve from entering the flushing-pipe and the valve is washed clean by the flushing-pipe, substantially as set forth.

3. In a sewer-pipe, a fitting A, having a flushing-jet orifice A^4 and provided with an annular boss or shoulder a^3 back of said orifice, and a rectangular recess A^7 upon the upper side, and a valve-seat B, adapted to be secured upon the annular boss, and the pivots B′, projecting laterally in said rectangular recess, and the valve provided with the downwardly-open hooks C′ C′, whereby it is adapted to be pivoted on said pivots B′, substantially as set forth.

4. In combination with the fitting having the interiorly-annular boss a^3, the valve-seat B, adapted to be secured upon said boss and having the lugs B′ B′, the valve C, having the hooks C′ C′, whereby it is adapted to be suspended on said pivots, said pivots projecting in the annular space included between a horizontal and two opposite vertical tangents to the outer margin of the valve-seat, the said pipe having the rectangular recess A^7 at the upper side, the height of which above the horizontal line of said pivots is less than the sum of the thickness of the valve and the diameter of the pivots, whereby the upper wall of said recess serves to retain the valve on said pivots, substantially as set forth.

447,388. WASHER FOR SPINNING AND TWISTING MACHINES. JOSEPH WALKER, Trenton, N. J., assignor of one-half to Roger C. Jackson, same place. Filed Apr. 17, 1890. Serial No. 348,294. (No model.)

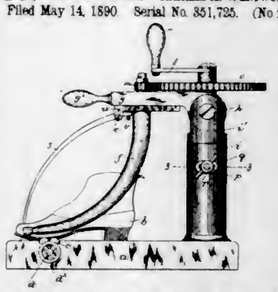


Claim.—1. A washer for supporting the whirls of spinning and twisting machines, consisting of an interiorly-chambered metal plate for receiving packing for holding and distributing a lubricant upon the spindle and whirl, substantially as described.

2. A washer for supporting the whirls of spinning and twisting machines, consisting of an interiorly-chambered metal plate, and having a packing within said chamber to hold and distribute a lubricant upon the spindle and whirl, and a vertical annular passage through the plate for the spindle, said passage having a connection with said lubricating-chamber, substantially as described.

3. A washer for supporting the whirls of spinning and twisting machines, consisting of an internally-chambered metal plate having a central vertical annular aperture for receiving the spindle, and a mouth or opening into the chamber for the introduction of a packing into said chamber, the plate having a recessed upper face and one or more openings from said recessed face into said chamber, substantially as described.

447,389. SOLE-MACHINE. CHARLES A. WENTWORTH, Hyde Park, Mass. Filed May 14, 1890. Serial No. 351,725. (No model.)



Claim.—1. The combination of an arm or support formed to enter a boot or shoe or other like article, a rotary cutter at one end of said arm, formed to bear on and cut away the foot bearing-surface of a sole, means for transmitting power to said cutter, and thereby causing it to act on the foot bearing-surface of the sole of a boot or shoe, and an external indicator occupying a definite relation to the cutter, whereby the location of the cutter within the boot or shoe is shown, as set forth.

2. In a machine for cutting out or forming the inner surfaces of boot or shoes bottoms and other like articles, the combination, substantially as hereinbefore set forth, of a curved horn formed to enter the article, a rotary cutter at one end of said horn, a flexible shaft extending through the curved horn and connected at one end with the cutter, and means for applying power to the opposite end of the shaft.

3. In a machine for cutting out or forming the inner surfaces of boot or shoe bottoms and other like articles, the combination of a holder or clamp adapted to grasp the sole of a boot or shoe, a horn formed to enter the boot or shoe, a flexible shaft extending through the horn, a rotary cutter supported by one end of the horn and attached at one end to the cutter, and means for applying power to the opposite end of said shaft, as set forth.

4. In a machine for cutting out or forming the inner surfaces of boot or shoe bottoms and other like articles, the combination of a holder or clamp adapted to grasp the sole of a boot or shoe, a horn formed to enter the boot or shoe, a pivoted support for the horn, whereby the latter is adapted to rise and fall, a rotary cutter supported by one end of the horn, a shaft extending through the horn and attached at one end to the cutter, and means for applying power to the opposite end of the shaft, as set forth.

5. In a machine for cutting out or forming the inner surfaces of boot or shoe bottoms and other like articles, the combination of a holder or clamp adapted to grasp the sole of a boot or shoe, a horn formed to enter the boot or shoe, an arm supporting the horn, a universal joint connecting said arm with a fixed support, whereby the outer end of the horn is adapted to move both vertically and laterally, a rotary cutter supported by the outer end of the horn, a shaft extending through the horn and attached at one end to the cutter, and means for applying power to the opposite end of the shaft, as set forth.

6. In a machine for cutting out or forming the inner surfaces of boot or shoe bottoms and other like articles, the combination of the supporting bed or table, sole-clamping devices thereon, a horn formed to enter a boot or shoe on said table and pivotally connected to a fixed support, whereby the outer end of the horn is adapted to rise and fall, a rotary cutter supported by the outer end of the horn, means for rotating said cutter, and an indicator connected with the horn and adapted to rise and fall therewith, said indicator being arranged with one end in close proximity to the cutter.

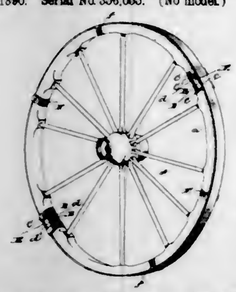
7. The combination, with the horn having the rotary cutter, of the indicator pivotally connected with its support and adapted to swing away from its normal position to permit the application of the boot or shoe to the horn, as set forth.

8. The combination of the boot or shoe supporting table having sole-clamping devices, a standard on said table, having an upper section mounted to turn horizontally, an arm pivoted to said upper section and adapted to swing vertically, a horn attached at one end to said arm, a rotary cutter supported by the outer end of said horn, a shaft extending through the horn and attached at one end to the cutter, and means for applying power to the opposite end of the shaft, as set forth.

9. The combination of the boot or shoe supporting table having sole-clamping devices, a standard on said table, having an upper section mounted to turn horizontally, means for locking said upper section to the lower section, an arm pivoted to said upper section and adapted to swing vertically, a horn attached at one end to said arm, a rotary cutter supported by the outer end of said horn, a shaft extending through the horn and attached at one end to the cutter, and means for applying power to the opposite end of the shaft, as set forth.

10. The combination, with the bed or table and with the rotary cutter and its supporting and operating devices, of the slides *d d*, movable in a guide in said table, means for moving said slides simultaneously in opposite directions, and the clamps *c c*, pivoted to said slides and adapted by their pivotal connection to conform to the shape of different portions of the edges of a sole interposed between them, as set forth.

447,390. TIRE-TIGHTENER. HENRY WIDDOWS, Newman, Ill. Filed June 20, 1890. Serial No. 356,055. (No model.)

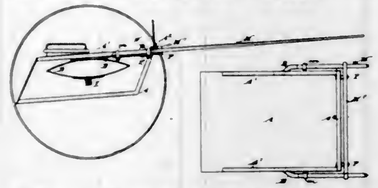


Claim.—1. In a tire-tightener, the combination, with the tightening-screw disposed between the opposing ends of two felly-sections and comprising right and left hand threaded extensions and the central cylindrical portion, of a filling-block provided with a concave inner face corresponding to the periphery of said circular portion and adapted to be disposed between the latter and the tire, substantially as and for the purpose set forth.

2. In a vehicle-wheel, the combination, with a tire-tightener comprising opposing caps mounted upon the opposing ends of the two felly-sections and provided, respectively, with right and left hand screw-threaded perforations, said caps being extended over the said edges of the tire, and a tightening-screw provided with right and left hand screw-threaded extensions engaging the correspondingly-threaded perforations in the cap, and with a central cylindrical portion, of a filling-block provided with a concave inner face and a diametrically-convexed outer face, said block conforming to the contour of said circular portion and the tire and adapted to be disposed between the same, substantially as and for the purpose set forth.

3. In a tire-tightener, the combination, with the opposing caps provided, respectively, with right and left hand threaded perforations, of a right and left hand threaded tightening-screw engaging the corresponding perforations and provided with an enlarged central portion, and a filling-block adapted to be disposed between said enlarged portion of the screw and the tire, substantially as set forth.

447,391. ROAD-CART. HENRY M. WILLIS, East Williston, N. Y. Filed June 16, 1890. Serial No. 355,547. (No model.)



Claim.—1. In a road-cart, the combination, with the body, supporting-springs, and axle, of additional springs affixed to the body at or near its mid-length, and the thills extending along the sides of the body independent and free thereof and of the axle, and connected rigidly to the opposite ends of said additional springs, all arranged substantially in the manner and for the purpose specified.

2. In a road-cart having thills fixed to the body by elastic connections, a removable bar adapted to lie across the top near the front and bear fairly on both body and thills, in combination with such cart and with fastenings adapted to hold the body and thills firmly to such bar when required and to conveniently and entirely release the parts when required for general use, as herein specified.

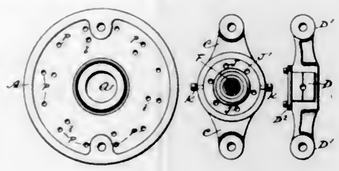
3. In a road-cart, the arms O O′, extending between the thills and the body and rigidly attached to one part, in combination with the irons *a*, slotted, as shown, and attached to the other part, and with spring connections D between the body and the thills, the hooks O′ on said arms standing in position to defend against too great lateral motion, as herein specified.

4. In a road-cart, the arms O O′, affixed to the thills by means of the same clips which hold the thill and spring together, said arms extending laterally and engaged with slotted irons on the body, adapted to allow a limited freedom of the motion, all substantially as herein specified.

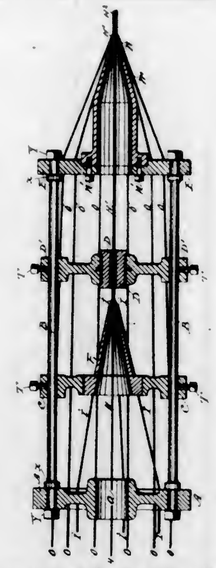
447,392. WIRE-ROPE MACHINE. JAMES WILSON, Merritton, Canada. Filed June 16, 1890. Serial No. 355,686. (No model.) Patented in Canada Feb. 10, 1890, No. 33,644.

Claim.—1. The combination, in a wire-rope-strand machine, of a rotary face-plate A, having a series of apertures P and *i* and a bored center *a*, the longitudinal rods B B, the adjustable support C, provided with a hollow cone F, with its flange J′ having apertures J and set-screws K, the removable die D, cap D^3, and adjustable support D′, arranged and devised substantially as described and set forth.

2. In a compound wire-rope-strand machine, a rotary face-plate A, having a series of apertures P and *i* and center *a*, the support C, provided with hollow cone F, with flange J′, having apertures J and set-screws K, the support D′, with its die D and cap D^3, in combination

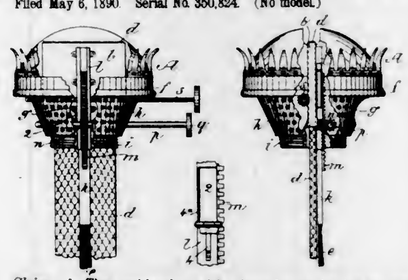


447,392.



with the plate E, having apertures S, and a hollow flanged cone M, with rounded nose N, held in position by the screws N′, all substantially combined by the longitudinal rods B B, substantially as specified and set forth.

447,393. LAMP-LIGHTER. JOHAN WITZELL, New York, N. Y. Filed May 6, 1890. Serial No. 350,824. (No model.)



Claim.—1. The combination, with a lamp-burner having an opening through the side below the chimney-supporting base for inserting a match, of an adjustable igniting-wick and wick-tube normally lodged with the igniting end of said wick in reach of a match inserted through said opening, and a lifter below the chimney-supporting base, and a lifter and depressor adapted to shift said end to and from the lamp-wick while inclosed by the lamp-chimney, substantially as described.

2. The combination, with a lamp-burner having an opening through the side below the chimney-supporting base for inserting a match, of an adjustable igniting-wick and wick-tube normally lodged with the igniting end of said wick in reach of a match inserted through said opening, a lifter and depressor below the chimney-supporting base, a lifter and depressor adapted to shift said end to and from the lamp-wick while inclosed by the lamp-chimney, and an extinguisher closing on said end of the lighting-wick when it returns to the normal position, substantially as described.

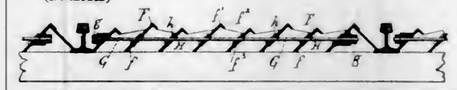
3. The combination, with a lamp-burner having an opening through the side below the chimney-supporting base for inserting a match, of an adjustable igniting-wick and wick-tube normally lodged with the igniting end of said wick at the mouth of said opening through the side of the chimney-supporting base and below said base, and a lifter and depressor adapted to shift said end to and from the lamp-wick while inclosed by the lamp-chimney, substantially as described.

4. The combination, with a lamp-burner having an opening through the side below the chimney-supporting base for inserting a match, of an adjustable igniting-wick and wick-tube normally lodged with its igniting end at the mouth of said opening, a lifter and depressor adapted to shift said end to and from the lamp while inclosed by the lamp-chimney, and a gravitating extinguisher suspended in proximity to the normal position of said igniting end to extinguish the lighting-flame when said wick is returned to said position, substantially as described.

5. The combination, with a lamp-burner having an opening through the side below the chimney-supporting base for inserting a match, of the ignitible wick, the jointed tube therefor normally lodged with the igniting end at the mouth of said opening, and the lifter and depressor adapted to shift the end of said igniting-wick to and from the lamp-wick while inclosed in the chimney, substantially as described.

6. The combination, with the lamp-burner having an opening through the side below the chimney-supporting base for inserting a match, of the igniting-wick, the jointed tube therefor normally lodged with the end of the wick at the mouth of said opening, and the lifter and depressor consisting of the shaft entering the head of the stationary part of said jointed wick-tube and attached to the base of the shifting part thereof and adapted to shift the end of said igniting-wick to and from the lamp-wick while inclosed in the chimney, substantially as described.

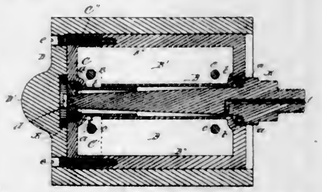
447,394. CATTLE-GUARD FOR RAILWAYS. BENJAMIN WOLHAUPTER, Fenton, Mich. Filed July 30, 1889. Serial No. 319,165. (No model.)



Claim.—1. A railway cattle-guard consisting of the longitudinal bars F, the longer legs *f* of which rest on the ties and the shorter legs f^3 are bent over to form the angles *f′*, and the bolts G, passing through said bars to clamp them together, substantially as described.

2. A railway cattle-guard consisting of the longitudinal bars F, of angle-iron shape, the bolts G, and the intermediate pieces H, of a shape to conform to the bars F, substantially as described.

447,395. BICYCLE-PEDAL. WILLIAM O. WORTH, Cedar Rapids, Iowa, assignor to the Chicago Bicycle Company, same place. Filed Nov. 25, 1889. Serial No. 331,471. (No model.)



Claim.—1. An elastic foot-pad for bicycles, incasing the frame of the pedal on the sides and outer end and having a central enlargement on the outer end, whereby the pedal is cushioned against sudden jars due to falling and the like, substantially as described.

2. The combination, with a bicycle-pedal, of an elastic foot-pad having a continuous connection across the outer end, whereby dust and dirt are excluded from the axle and bearings and the same is cushioned against bending strains by falling, as described.

3. The combination, with a bicycle-pedal, of an elastic casing inclosing the pedal-box on the sides and outer end, substantially as and for the purpose set forth.

4. An elastic foot-pad for bicycle-pedals, substantially as herein described, having lugs to retain the foot from lateral displacement, formed integral with the body of the foot-pad, as set forth.

5. In a bicycle-pedal, the combination, with an axle having shoulders thereon to serve as bearings for anti-friction balls, of a box composed of two parts, adjustable endwise, counterbored at their outer ends, respectively, balls interposed between said shoulders and counterbores, and one or more set-screws in one of the parts of the box, adapted to abut upon the other part of the box and distend the said box.

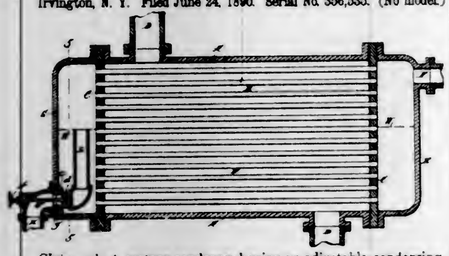
6. The herein-described box for bicycle-pedals, composed of the hub B, counterbored to form a seat for anti-friction balls and having flanges B′ B′ and wings B″ B″, the extension-nut C, similarly counterbored and having flanges C′ C′ and wings C″ C″, connecting-bolts *c c*, and adjusting-screws *e e*, substantially as and for the purpose set forth.

7. In a pedal, substantially as described, the combination of the extension-box, an inclosing-casing of elastic material, as rubber, bolts adapted to connect the two parts of the box, and washers under the heads and nuts of said bolts, having a bearing on the box-plate and another bearing on the rubber, whereby all the parts are held in connection, substantially as described.

8. The combination, in a bicycle-pedal, of an axle having an oil-

hole leading to the bearings from the inner end of said axle, and a box inclosed by an elastic foot-pad, whereby dust and dirt are excluded from the bearings, as described.

447,396. SURFACE CONDENSER. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed June 24, 1890. Serial No. 356,535. (No model.)



Claim.—1. A surface condenser having an adjustable condensing-surface, substantially as described.

2. A surface condenser provided with means for varying the extent of condensing-surface exposed to the steam in its passage through the condenser, substantially as described.

3. A surface condenser provided with means for varying the extent of surface exposed to the steam in its passage through the condenser, substantially as described.

4. A surface condenser provided with means for varying the amount of water of condensation remaining in the condenser and about the condensing-surface during its operation, substantially as described.

5. A surface condenser provided with means for varying the level of the water of condensation remaining within the condenser and about the condensing-surface during its operation, substantially as described.

6. The combination, with a surface condenser, of a discharge-pipe for the water of condensation and means for varying the level of the discharge-port, substantially as described.

7. The combination, with a surface-condenser, of a movable discharge-pipe entering the condenser or discharge-chamber, and means for adjusting the position of the discharge-pipe to vary the level of the discharge-port, substantially as described.

8. The combination, with a surface condenser, of a discharge-pipe extending into the condenser or discharge-chamber and pivotally mounted to swing therein, whereby the level of the discharge-port may be adjusted, substantially as described.

9. The combination, with the main of a pumping-engine, of a surface condenser through which the water of the main passes, the steam-exhaust entering said condenser, a discharge-pipe for connection to the air-pump and hot-well, and means for adjusting the condensing-surface of the condenser, substantially as described.

10. The combination, with the main of a pumping-engine, of a surface condenser through which the water of the main passes, the steam-exhaust entering said condenser, a discharge-pipe for connection to the air-pump, and means for adjusting the level of the discharge-port, substantially as described.

447,397. FRAUD-PREVENTIVE IN CAPSULED BOTTLES. CHAS. CHESWRIGHT, London, England. Filed Nov. 4, 1889. Serial No. 329,201. (No model.) Patented in England July 31, 1889, No. 12,125, and in France Nov. 20, 1889, No. 200,525.



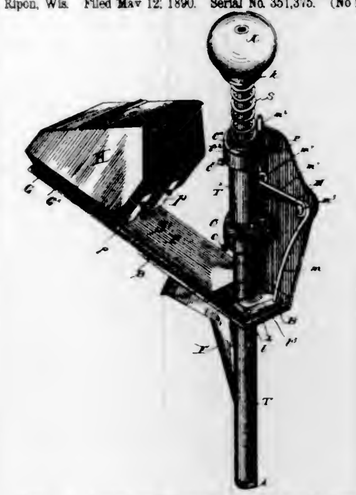
Claim.—1. Means for preventing fraud in sealed bottles and like receptacles, comprising a collarette *a*, composed of thin metal sufficiently rigid or hard to be inseverable by a knife, and having slits or cuts *b* formed therein, and a cap or cover *f*, protecting the cork and composed of flexible easily-torn material where connected with the collarette, all constructed and arranged as specified.

2. The collarette herein described, consisting of an open-ended tube slitted longitudinally and constructed of metal which is sufficiently rigid or hard to be inseverable by a knife and applicable to a bottle, substantially as set forth, combined with a capsule and an easily-ruptured connection between the collarette and capsule, substantially as described.

3. The combination, with a collarette *a*, provided with slits or cuts *b*, of the outwardly-projecting hollow bead *d*, containing a spring *e*, substantially as specified.

4. Means for preventing fraud in sealed bottles, comprising a collarette composed of thin metal sufficiently rigid or hard to be inseverable by a knife and applicable to a bottle, substantially as set forth, and a capsule constructed of a material that is readily severable, a portion of which is secured to the collarette with sufficient permanence to resist the removal of the capsule intact, combined with a bottle and its cork, substantially as described.

447,398. HAND NAILING-MACHINE. SAMUEL E. CRAWFORD, Ripon, Wis. Filed May 12, 1890. Serial No. 351,375. (No model.)



Claim.—1. A hand nailing-machine comprising a plunger-tube, a spring actuated plunger, and a driver connected therewith, said plunger carrying the knob K, in combination with a guide to guide the nails to the plunger-tube, a feed-lever consisting of a bell-crank lever having a notched segment the notch whereof is normally in register with the nail-guide, and means for vibrating the lever to transfer the nails from the nail-guide to the plunger-tube consisting of the spring-lever M, provided with the vertical arm m^3, arranged in the path of the knob K on the plunger, substantially as and for the purpose specified.

2. In a hand nailing-machine, the combination, with the plunger-tube and the driver, of an adjustable nail-guide and a notched feed-lever L, adapted to vibrate across the end of the guide and carry the nails to the plunger-tube, said feed-lever being detachably connected with its support, whereby feed-levers having notches differing in size may be interchangeably used with the guide to feed nails of different thickness to the plunger-tube and driver, substantially as described.

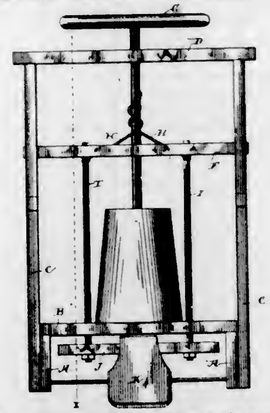
3. In a hand nailing-machine, the combination, with the plunger-tube and the driver, of an adjustable nail-guide, a notched feed-lever L, detachably connected with its support and adapted to vibrate across the end of the nail-guide and carry the nails to the plunger-tube and driver, and a thimble A, constructed as set forth and detachably connected with the plunger-tube, whereby feed-levers having notches differing in size and thimbles having axial passages differing in diameter may be interchangeably used with the guide to feed nails of different thickness, substantially as described.

4. In a hand nailing-machine, the combination, with the nail-guide, the feed-lever L, the plunger-tube, the plunger, and the driver, arranged to operate as set forth, of the thimble A, secured to the plunger-tube, said thimble being slotted laterally and provided with springs *s* arranged in said slots, the free end of the springs projecting into the axial passage of the thimble, substantially as and for the purposes specified.

5. The combination, with the slotted nail-guide, the slot whereof is provided with inclined sides, of the adjusting-screw S' for regulating the depth of the slot at the point where said screw is arranged, substantially as and for the purposes specified.

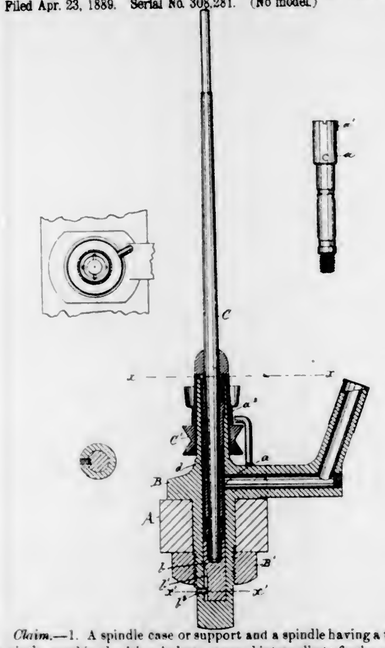
6. In a hand nailing-machine, the combination, with the nail-driving mechanism, of a nail-guide provided with a longitudinal feed-slot having at one end a laterally-curved and enlarged extension, and a feed-lever having a segmental notched arm, the notch in said arm being of less diameter than the nail-head and normally in register with the feed-slot, said lever being arranged to vibrate in a direction opposite to the curvature of the lateral extension of said feed-slot and across the same, for the purposes set forth.

447,399. CHURN. RILEY CROUCH, May, Tex. Filed Dec. 31, 1889. Renewed Feb. 4, 1891. Serial No. 380,146. (No model.)



Claim.—The combination of the side bars A, the standards rising therefrom and having the longitudinal slots E, the sliding bar F, having its ends playing in said slots, the dasher-shaft driven by said sliding bar, the cord secured to the dasher-shaft and the sliding bar and adapted to wind around the said shaft, the vertical rods extending downward from the said sliding bar, the cross-bar J, connecting the lower ends of said vertical rods, and the treadle fulcrumed between the side bars A and having its inner end resting on the cross-bar J, as set forth.

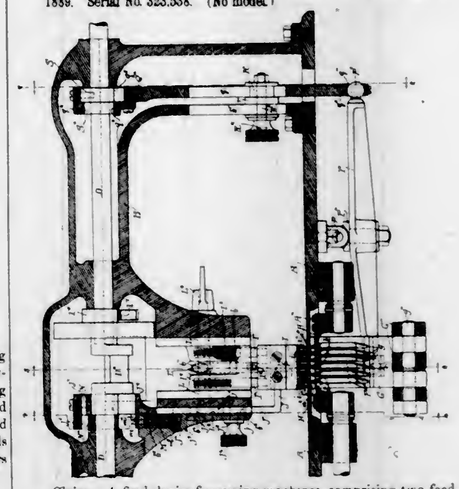
447,400. SUPPORT FOR SPINNING-SPINDLES. EBEN S. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Apr. 23, 1889. Serial No. 308,281. (No model.)



Claim.—1. A spindle case or support and a spindle having a tapering pintle, combined with a bolster tapered internally to fit the spindle and threaded externally at its lower end, and with an independent step threaded internally and into which the lower end of the bolster is screwed loosely, substantially as described.

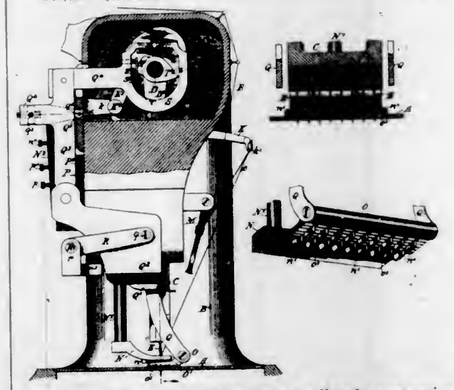
2. The combination, with a supporting case or holder and a step recessed at its upper end, as described, of an independent bolster, the lower end of which is inserted in the step loosely to permit lateral movement of the bolster in or with relation to the step, substantially as described.

447,401. FEEDING MECHANISM FOR SEWING-MACHINES. MARSHALL GARDNER, Aurora, Ill., assignor to Thomas H. Ball and James Stone, same place, and Simon Florsheim, Chicago, Ill. Filed Sept. 10, 1889. Serial No. 323,536. (No model.)



Claim.—A feed device for sewing-machines, comprising two feed-dogs, one located below and the other above the work, and means for actuating said dogs, comprising two bars pivotally supported at points between their ends and severally connected with and actuating said feed-dogs, a single driving-shaft provided with a series of pairs of cams, one pair engaging each of said bars and giving both longitudinal and lateral movement thereto, and shifting-pivots severally engaging and supporting said bars, whereby the length of the stitch may be changed, substantially as described.

447,402. SEWING-MACHINE. MARSHALL GARDNER, Chicago, assignor to Thomas H. Ball and James Stone, Aurora, and Simon Florsheim, Chicago, Ill. Original application filed June 21, 1887, Serial No. 241,950. Divided and this application filed June 1, 1888. Serial No. 362,144. (No model.)



Claim.—1. The combination, with the needles of a gang sewing-machine, of a presser-foot the working-face of which is provided with two series of fingers, one series located at the point at the front and the other at the rear of the needles, both series being in alignment with the needles, substantially as described.

2. The combination, with the needles of a gang sewing-machine, of a presser-foot provided with apertures for the needles and having

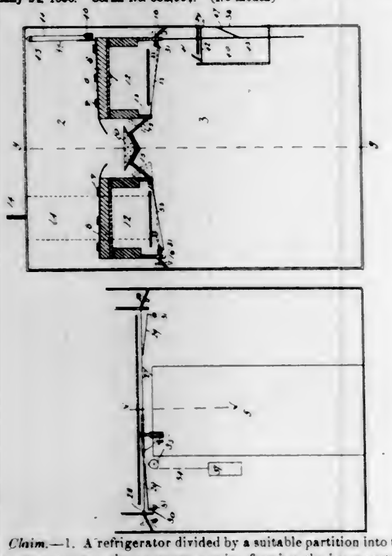
projections on the under face thereof located in alignment with said apertures at the front and rear of the needles, a feed-dog having fingers extending between the said projections of the presser-foot, means giving a vertical reciprocatory motion to the presser-foot, and means giving a combined horizontal and vertical motion to the feed-dog, substantially as described.

3. The combination, with a presser-foot N, of a spring applied to throw the said presser-foot downwardly, a bent lever N^1, pivoted upon the frame of the machine and provided with a horizontal arm connected with the presser-foot, a rock-shaft N^2, provided with a depending arm engaging the said lever N^1 and with a second arm extending to a point adjacent to the driving-shaft of the machine, and a cam upon said driving-shaft engaging said second arm of the rock-shaft, substantially as described.

4. The combination, with a feed-dog located above the work-plate of the machine, an arm P, sustaining said dog, and means for movably sustaining the said arm from the machine-frame, affording a vertical and horizontal motion in the feed-dog, of means for giving a combined oscillatory and vertical movement to said feed-dog, consisting of a revolving shaft provided with two cams severally acting upon a part rigidly connected with said arm, a spring for depressing the feed-dog, and a frictional retarding device attached to the machine and acting upon the movable part supporting the feed-dog, whereby the horizontal movement of the feed-dog, under the action of the cam, is limited or controlled, substantially as described.

5. The combination, with a feed-dog located over the work-plate of the machine and an arm Q, sustaining said feed-dog, of means for movably sustaining the said arm from the machine-frame, affording a vertical and horizontal motion in the feed-dog, an arm Q^1, rigidly attached to said arm Q, a revolving shaft provided with two cams acting upon the upper end of said arm Q^1, and a friction device consisting of a plate or plates Q^3, connected with the frame, a bolt passing through the said plate or plates and the arm Q^1, and a spring-washer or equivalent means producing frictional engagement between said plate or plates Q^3 and arm Q^1, substantially as described.

447,403. REFRIGERATOR. DAVID GAUL, Denver, Colo. Filed May 24, 1890. Serial No. 352,991. (No model.)

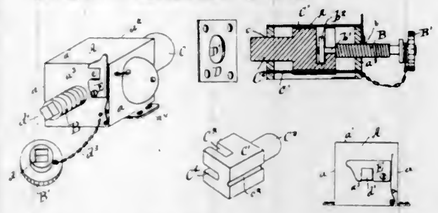


Claim.—1. A refrigerator divided by a suitable partition into two compartments—namely, an upper portion forming the ice-receptacle and a lower portion constituting the cooling-chamber—the partition separating these compartments being provided with valves, a frame suitably supported and composed of rods having the form of a quadrilateral, the extremities of the rods being pivotally connected, extension-rods connected with opposite sides of the pivoted frame and also connected with the valves in the partition, and an arm secured to the pivot located at one corner of said frame, said arm projecting outward, chamber 3 being provided with a door adapted to engage the free extremity of said arm, whereby the closing of the door moves the pivoted frame sufficiently to actuate the extension-rods connected with the opposite sides of the frame, thereby opening the valves in the partition, substantially as described, and for the purpose set forth.

2. A refrigerator composed of two compartments, one forming an ice-receptacle and the other a cooling-chamber, the partition dividing these compartments being provided with valves, a frame of suitable material composed, preferably, of four sides having pivoted or movable joints and suitably supported, extension-rods connected at one extremity with this frame and secured to the valves at the opposite extremity, an arm secured to the frame at one extremity and extending outward, a door adapted to engage the outer extremity of said arm, whereby the closing of the door moves the frame sufficiently to actuate the extension-rods and open the valves, and a cord secured to said frame at one extremity, passing over a pulley and provided with a weight at the opposite extremity, whereby as soon as the door is opened the action of the pivoted frame is reversed and the valves closed, substantially as and for the purpose set forth.

3. A refrigerator divided by a suitable partition into chambers 2, 3, and 40, chamber 2 for the ice being located above, the cooling-chamber 3 below, and the chamber 40 in front, a vertical rod passing through suitable guide-openings in chamber 40, a flexible extension connected with the upper extremity of said rod and supported by a pulley, a weight secured to the flexible extension, a door 38 in front hinged at the top and opened by lifting, and an arm 47, hinged at one extremity to the vertical rod and at the opposite extremity to the door 38, whereby as the door is raised the weight descends, drawing the vertical rod upward, the gravity of the weight being so regulated that the door 38 is supported in any desired position by the arm 47, the weight acting as a counter-balance for the door, substantially as described.

447,404. SASH-FASTENER. ISAAC GILES, New York, N. Y. Filed Mar. 26, 1890. Serial No. 345,406. (No model.)



Claim.—1. In a sash-fastener, the combination, with a suitable housing or casing, of a locking-bolt contained within said casing and adapted to be projected through one end thereof, and an operating-spindle for said bolt loosely connected with said bolt and adapted to be screwed through the other end of the housing and thereby move the locking-bolt, and a detachable head for said operating-spindle, having a circular bore from which extends a quadrangular key-slot adapted to engage a squared projection on the end of said spindle, for the purpose specified.

2. In a sash-fastener, the combination, with a suitable housing or casing, of a locking-bolt adapted to be moved longitudinally therein, and a signaling device carried by said housing or casing adapted to be operated by the bolt when the same is moved in one direction, as described.

3. In a sash-fastener, the combination, with the housing or casing, of the locking-bolt located therein and adapted to be projected through one end of said housing, said bolt being provided with the intersecting recesses described, and the threaded operating-spindle adapted to be screwed into and out of the casing through the other end thereof, and having the reduced portion passing through one of the recesses in the bolt and the enlarged portion in rear of said reduced portion fitting within the other recess of the bolt, all combined and operating substantially as described, for the purpose specified.

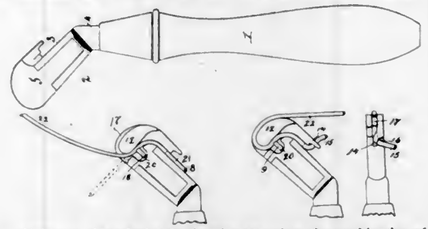
4. In a sash-fastener, the combination, with the housing or casing, of a locking-bolt contained within said casing and adapted to be projected through one end thereof, and an operating-spindle for said bolt loosely connected with the same and adapted to be screwed through the other end of the casing, and a locking-catch secured to the outside of the casing and adapted to engage a squared portion of the spindle to prevent its rotation, as described.

5. In a sash-fastener of the character described, the combination, with a suitable locking-bolt and its operating-spindle and disk, of an attached gong, one end of the clapper of said gong extending over the bolt or its actuating-spindle and adapted to engage a projection thereon when the same is withdrawn, thereby striking an alarm, as and for the purpose intended, substantially as described.

6. In a sash-fastener of the character described, having projectible bolt C^3, the operating screw-threaded spindle B, provided with detachable head, said spindle having quadrangular recess d^3 near its end, in combination with spring-controlled recessed catch E, supplied with lower squared notch *e*, adapted to mesh with the quadrangular recess

d^3 of said spindle and maintain it in locked position, as set forth, as and for the purpose intended, substantially as described.

447,405. DEVICE FOR MAKING EAR-WIRES. SIMON GOLDNER, Brooklyn, N. Y. Filed Oct. 27, 1890. Serial No. 369,439. (No model.)



Claim.—1. In a device for forming ear-wires, the combination of the head 2, having an ear-lobe former 12, shoulder 13, inclined head 16, and lug 14, comprising an operative surface coinciding with the contour of the article to be produced, and means for confining the said article within the device, substantially as described.

2. In a device for forming ear-wires, the combination of the head 2, having an ear-lobe former 12, shoulder 13, inclined head 16, and lug 14, a recess 18, and a removable cover 5, having a longitudinal groove 19, aligning with the recess 18, substantially as described.

3. In a device for forming ear-wires, the combination of the head 2, having an ear-lobe former 12, shoulder 13, inclined head 16, lug 14, a recess 20, and a removable cover 5, fitting flush over said recess, substantially as described.

4. In a device for forming ear-wires, said device consisting of a handle, a head secured to the handle, said head being provided with a series of shaped or configured surfaces conforming in aggregated outline to the shape of the article to be produced, in combination with a cover removably secured to the head aforesaid, whereby the article is held within the said head while it is being shaped, substantially as described.

5. In a device for forming ear-wires, said device consisting of a handle 1, a head 2, extending diagonally from said handle and provided with a series of shaped or configured surfaces, comprising the ear-lobe former 12, shoulder 13, inclined head 16, and lug 14, which conform in aggregated outline to the shape of the article to be produced, in combination with the cover 5, removably secured to the head 2, substantially as described.

447,406. FEEDER FOR TANKS OR RESERVOIRS. WILFRED S. GRIFFITH, Ambler, Pa. Filed July 16, 1890. Serial No. 358,885. (No model.)

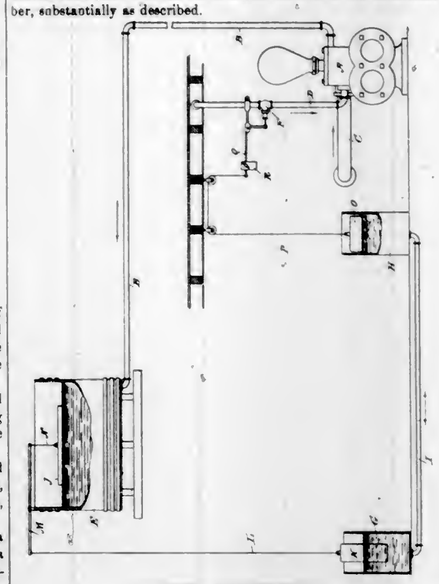
Claim.—1. The combination of the pump, the tank and its supply-pipe, the auxiliary reservoir, the float in the tank connected with a weight in the reservoir, the float-chamber communicating with the auxiliary reservoir, the float in the chamber, and mechanism connected therewith for controlling the action of the pump, substantially as described.

2. The combination of the pump, the tank and its supply-pipe, the auxiliary reservoir, the float in the tank, the weight in the reservoir connected with the float, the float-chamber communicating with the reservoir, the float in the chamber, the pivoted bell-crank lever controlling the application of power to the pump, and a flexible connection between the lever and the float in the float-chamber, substantially as described.

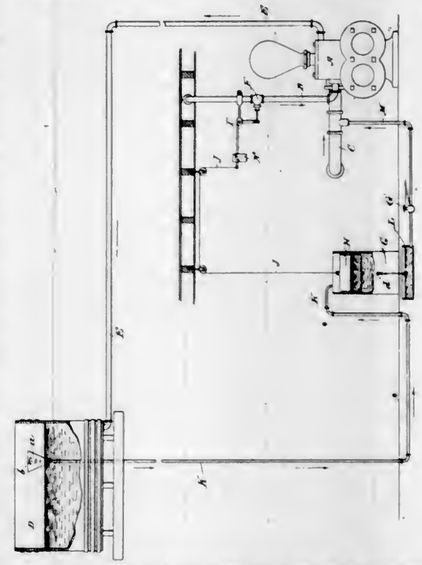
3. The combination of the pump, the tank and its supply-pipe, the auxiliary reservoir, the float in the tank, the weight in the reservoir connected with the float, the float-chamber communicating with the reservoir, the float in the chamber, the pivoted bell-crank lever having an adjustable weight on one arm and its other arm arranged to control the application of power to the pump, and a flexible connection between the lever and the float in the chamber, substantially as described.

4. The combination of the pump, the tank and its supply-pipe, the auxiliary reservoir, the float in the tank, the weight in the reservoir connected with the float, the float-chamber communicating with the reservoir, the float in the chamber, the valve controlling the admission of steam to the pump, and mechanism connecting the float with the valve, substantially as described.

5. The combination of the pump, the tank and its supply-pipe, the auxiliary reservoir, the float in the tank, the weight in the reservoir connected with the float, the float-chamber communicating with the reservoir, the float in the chamber, the pivoted bell-crank lever having an adjustable weight on one arm and its other arm connected with the throttle-valve controlling the admission of steam to the pump, and a flexible connection between the lever and the float in the float-chamber, substantially as described.



447,407. FEEDER FOR TANKS OR RESERVOIRS. WILFRED S. GRIFFITH, Ambler, Pa. Filed July 16, 1890. Serial No. 358,886. (No model.)



Claim.—1. The combination of the pump, the pipe leading thence to the tank, the overflow-pipe, the auxiliary reservoir connected therewith, the float in the reservoir, and mechanism actuated by the float to stop and start the pump, substantially as described.

2. The combination of the pump, the tank, the supply-pipe for the latter, the overflow-pipe, the auxiliary reservoir having escape-orifices, the float in the reservoir, the weighted bell-crank lever, and the flexible connection between the latter and the float, substantially as described.

3. The combination of the pump, the pipe leading thence to the

tank, the overflow-pipe projecting into the tank and having graduated openings at its upper end, the auxiliary reservoir having escape-apertures, the float therein, the pivoted bell-crank lever, one arm controlling the application of power to the pump and the other carrying an adjustable weight, and a flexible connection between the lever and the float, substantially as described.

4. The combination of the pump, the tank, the supply-pipe for the latter, the overflow-pipe projecting into the tank and having a funnel-shaped mouth with graduated openings, as described, the auxiliary reservoir having escape-apertures, the float in the reservoir, and mechanism connected therewith for stopping and starting the pump, as and for the purpose set forth.

5. The combination of the pump, the pipe leading therein to the tank, the overflow-pipe from the latter, the auxiliary reservoir having escape-apertures, the float, mechanism connected with the latter for controlling the action of the pump, the drip-pan, and the pipe leading thence to the pump, substantially as described.

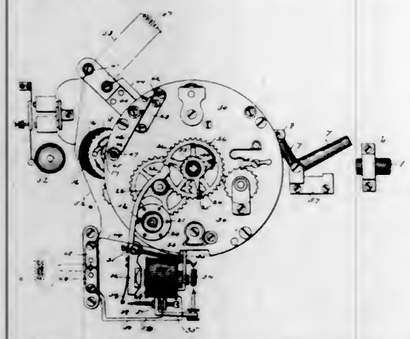
6. The combination of the pump, the tank, the supply-pipe for the latter, the overflow-pipe projecting up into the tank, the funnel-shaped mouth with graduated openings, the auxiliary reservoir having the graduated escape-apertures, the float, the weighted bell-crank lever controlling the application of power to the pump, the flexible connection between the float and the lever, the drip-pan, and the pipe leading thence to the pump, substantially as described.

447,408. COMBINED SHIRT AND DRAWERS. SAMUEL H. HALSTED, Cincinnati, Ohio. Filed Sept. 4, 1890. Serial No. 363,891. (No model.)



Claim.—A combination union garment having inserted pieces substantially such as described crossing and overlapping each other at their upper ends, as set forth, one of such pieces at its upper portion being passed between the inside of the garment and the under side of the other corresponding piece, and both attached by the same horizontal seam to the inside of the body of the garment at about the waist-line.

447,409. ELECTRIC TIME-LOCK. JOSEPH H. KAISER and ANDREW B. LEDWITH, Brownsville, Pa. Filed May 15, 1890. Serial No. 351,932. (No model.)



Claim.—1. In a time-lock for safe-doors, the combination consisting of the locking-crank 7, a divided bar 8, actuated by a spring 11 and connected to a crank 9 of a secondary movement, and a means for releasing the said movement at a given time, as and for the purpose set forth.

2. In combination with a time locking device operated by an electrical circuit, an open branch circuit provided with contact-plates separated the one from the other and located at a suitable point on the inner side of the door, whereby a contact or connection may be made between the two by perforating the door at that point, as and for the purpose described.

3. In a time-lock, the combination, with the bolt-works, of a locking-crank adapted to be thrown or adjusted into the path of said bolt-works to arrest the withdrawal of the same, an extensible rod connected to said locking-crank, a secondary clock-work connected to said extensible rod and having the stop-wheel 20, a primary time mechanism having its hand-arbor provided with the arm 24, an electrical circuit including the magnets 29, the contacts, and the armature for the purpose of closing said circuit, and a lever 56, which normally engages the stop-wheel 20 to arrest the secondary clock mechanism and which carries an armature to be attracted by the magnets, said lever being arranged in the path of the arm 24 of the primary time mechanism and adapted to be operated by said arm at the proper period of time to close the circuit through the armature and release the stop-wheel 20, whereby the secondary time mechanism is released to retract the extensible rod and withdraw the locking-crank out of the path of the bolt-works, substantially as described.

4. In a time-lock, the combination, with the bolt-works, of a locking-crank, a secondary clock-work, an extensible-spring-controlled rod connected to said locking-crank and to the secondary clock-work to be operated by the latter, an open electrical circuit, the magnets included in said circuit, a primary time mechanism having its hand-arbor provided with an arm, and a lever 22, arranged in the path of the arm of the primary time mechanism and carrying an armature and contact-piece to close the electric circuit through said magnets and armature, whereby the secondary clock-work is released from the lever and operates to retract the extensible rod and the locking-crank, substantially as described.

5. In a time-lock, the combination, with the bolt-works, of a locking-crank, a secondary clock-work having the stop-wheel 20 and the rotatory contact 45, a rod 8, connected to the locking-crank and to the clock-work, an open electrical circuit, the magnets included in said circuit and having the yielding contact which presses against the rotary contact 45 of the secondary clock-work, a primary time mechanism having the arm, and a lever 22, held in the path of the arm of said primary time mechanism and carrying an armature for the purpose described, substantially as set forth.

6. In a time-lock, the combination, with the bolt-works, of a pivoted locking-crank, a secondary clock-work having the stop disk 20, the rod 8, connected to the locking-crank and to the secondary clock-work and having the extensible sections and the retracting-spring, the open electrical circuit, the magnets included in said circuit, the primary time mechanism having the arm 24, the lever normally engaging the stop-wheel of the secondary clock-work and arranged in the path of the arms of said primary time mechanism, and the armature and contact-piece carried by the lever and adapted to close the circuit when attracted by the magnets, for the purpose described, substantially as set forth.

7. In a time-lock, the combination, with the bolt-works, of a locking-crank, a secondary clock-work having the stop-wheel 20, the rod intermediate of the locking-crank and the secondary clock-work, the open electrical circuit, the magnets included in said circuit, the spaced electrical contacts 48, included in said circuit and adapted to be closed by insertion of a pin between said plates, the lever 22, normally engaging the stop-wheel 20 and carrying an armature and the yielding electrical contact 39, the contact-bar 38, arranged in the path of the said yielding contact 39, and the primary time mechanism having the arm arranged to move the lever 22 out of engagement with the stop-wheel 20, substantially as described.

447,410. VAGINAL SYRINGE. LYMAN D. MCINTOSH, Ravenswood, Ill. Filed Dec. 4, 1889. Serial No. 332,595. (No model.)

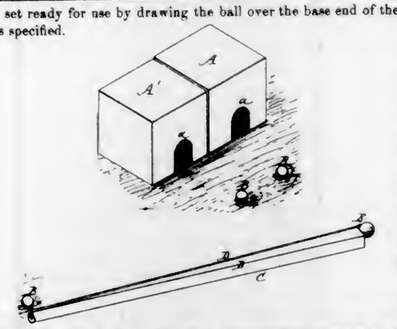


Claim.—The combination, in a syringe, of the head A, having the discharge-holes *a'*, the supply stem or tube B, united to the head A, the stem or tube C, having the eduction-holes *c* and connected with the head A around the stem or tube B, and of a less length than the stem or tube B, the eduction-space *c'* between the two stems or tubes B and C, and receiving plug D, closing at one end around the stem B and at the other end around the stem C, substantially as and for the purposes specified.

447,411. TOY. JOSEPH M. MCMASTER, Rochester, N. Y. Filed Sept. 25, 1890. Serial No. 366,150. (No model.)

Claim.—1. The combination of the half-boxes A A', provided with the openings *a a*, the marbles B B B, set in advance of the half-boxes, and the shooting device consisting of the cue C, provided with the double elastic cord D and rubber ball E, as shown and described, and for the purpose specified.

2. The shooting device consisting of the cue C, the double elastic cord D, attached to the small end thereof, and the rubber ball E, strung on the cord, the whole so arranged, as herein described, that the device is set ready for use by drawing the ball over the base end of the cue, as specified.



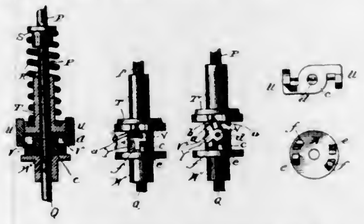
3. In billiard toys, the combination of two sectional pockets, each provided with an arch or opening on one side and capable of being shut together for convenience of transportation and storage, as herein shown and described.

447,412. COMPOSITION OF PLASTIC MATERIAL. JAMES S. PALMER, London, England, assignor to Frederick Beck, New York, N. Y. Filed Aug. 2, 1890. Serial No. 360,818. (No specimens.)

Claim.—1. In a composition adapted for the production of decorative surfaces for walls, ceilings, floors, and other surfaces requiring decoration, stearine bitumen and a vegetable or an equivalent substance capable of being incorporated with it to give increased body to the composition.

2. A composition suitable for the manufacture of embossed or molded articles, consisting of stearine bitumen, wood-flour, and ground fiber, with or without whiting and with or without a pigment or coloring substance.

447,413. SAFETY-COUPLING. THOMAS O. PERRY, Chicago, Ill. Filed Aug. 23, 1890. Serial No. 362,903. (No model.)



Claim.—1. In combination with a driving-shaft and a driven shaft meeting end to end, a safety-latch pivoted to the driving-shaft, a driven clutch secured to the driven shaft and driven by said safety-latch, a compressed spring resting against a support secured to said driving-shaft, and a suitably-guided sliding flange pressed upon by said spring and adapted to retain the said safety-latch in working position, said flange having a shoulder adapted to secure said safety-latch against snapping back after it has once been turned out of its working position by excessive strain, substantially as herein set forth.

2. In combination with a driving-shaft and a driven shaft meeting end to end, two safety-latches pivoted to the driving-shaft on opposite sides thereof, a driven clutch with opposite shoulders secured to the driven shaft and driven by said safety-latches, a compressed spring resting against a support secured to said driving-shaft, and a suitably-guided sliding flange pressed upon by said spring and adapted to retain said safety-latches in working position, said flange having shoulders adapted to secure said safety-latches against snapping back after they have once been turned out of their working position by excess of strain, substantially as herein set forth.

3. In combination, a driven shaft having a driven shoulder, a driving-shaft, a movable flange suitably guided, a spring adapted to press against said flange, and a driving-latch pivoted on said driving-shaft and having back of its pivotal axis a projection pressed against by said flange to hold said latch in driving position, said projection being also adapted to receive the thrust of said flange, so as to hold said latch from snapping back after once being turned out of its driving position, substantially as herein set forth.

4. The pivoted safety-latches V, having projections Y and V' carried by a latch-carrier C, keyed to the driving-shaft P, in combination with a driven clutch W, keyed to the driven shaft Q and having shoulders *e*, a sliding flange T, a spring R, compressed between said sliding flange and a support S, secured to said driving-shaft, the flange T being pressed by said spring against the projections V', so as to hold the projections Y in driving position against the shoulders *e*, the said flange being also adapted to hold the said safety-latches from snapping back after once being turned out of their working position by excessive strain, substantially as herein shown and described.

5. In combination, a driven shaft having a driven shoulder, a driving-shaft, a driving-latch pivoted on said driving-shaft and having back of its pivotal axis a projection, and a spring adapted to press against said projection to hold said latch in driving position against said driven shoulder, said projection being also adapted to receive the thrust of said spring, so as to hold said latch from snapping back after once being turned out of driving position, substantially as herein set forth.

6. In combination with a driving-shaft P and a driven shaft Q, a pivoted safety-latch V, having projections Y and V', a latch-carrier C, secured to said driving-shaft and having guide *u*, a sliding flange T, having spur *a* and notch *b*, a clutch W, secured to said driven shaft and having shoulder *e*, a spring R, and a spring-support S, secured to said driving-shaft, substantially as herein shown and described.

7. In combination with a driving-shaft P and a driven shaft Q, the pivoted safety-latch V, having projections Y and V', the latch-carrier C, keyed to said driving-shaft and having guide *u*, the sliding flange T, having notch *b*, the spring-support S, secured to said driving-shaft, the spring R, and the driven clutch W, keyed to said driven shaft and having shoulder *e* and knob *f*, substantially as herein shown and described.

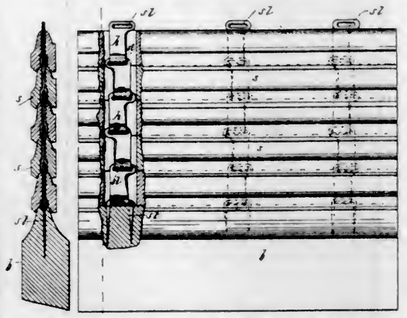
447,414. CURTAIN-PULL. JOHN O. REMINGTON, Hingham, assignor to Burr, Brown & Co., Boston, Mass. Filed Jan. 18, 1890. Serial No. 336,765. (No model.)



Claim.—1. A curtain-pull composed of two or more rings, covered or otherwise, contiguous at diametrically-opposite points, where they are united, and adapted to be combined with a suspending device, substantially as described.

2. A curtain-pull composed of two or more rings arranged after the manner of meridian circles, combined with a suspensory cord at one point, where said rings intersect, the skirt pendent about said rings at an opposite point, and a fastening-band of chenille below said rings, substantially as set forth.

447,415. DESK-CURTAIN. JOHN N. ROBERTS, Indianapolis, Ind. Filed Oct. 28, 1889. Serial No. 328,444. (No model.)



Claim.—1. The hinging-links *h*, having slots *sl* in each end, one end having an offset below the slot for permitting its passage through the slots of the next link, substantially as shown and described.

2. A chain for desk-curtains composed of a series of flat links *h*, having slots *sl*, connected together, the slotted heads of each alternate link reversed with respect to the head of the one above and below it, substantially as shown and described.

3. A desk-curtain wherein the slats are connected by a chain composed of links *h*, formed of strips of metal having slots *sl*, such links having an offset below the slot to admit its passage through the slots of the next link, all combined substantially as described.

4. A desk-curtain comprising a series of slats hinged together by links passing through slits in such slats, the links having slots *sl* in each end, and one end having an offset below its slot for permitting its pas-

sage through the slots of the next link, all combined substantially as shown and described.

3. A desk-curtain composed of slats strung upon links hinged the one to the other, forming a continuous chain, the link passing entirely through the slat and provided with slots at right angles to its length to receive the end of the next link, substantially as shown and described.

4. A desk-curtain comprising a series of slats connected by links of thin sheet metal, slots formed in the ends of the links at right angles to the length thereof, the shank narrowed at one end below the slot to admit its passage through the slots of the next link, such chain flexible only in the line of its length, substantially as shown and described.

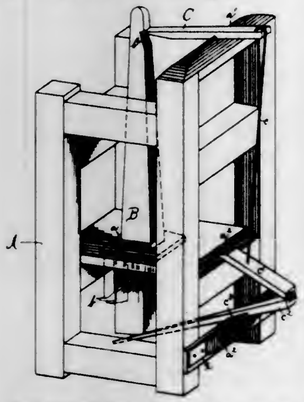
447,416. HORSESHOE. WILLIAM SOMERVILLE, Sr., Buffalo, N. Y. Filed Dec. 12, 1890. Serial No. 374,435. (No model.)



Claim.—1. The combination, with a horseshoe provided with a raised toe-plate B, having a flat bearing-face *b* below the body of the shoe, with projecting ribs *b'* formed on said face and separated by a central space *b²*, and heel-plates C, having flat bearing-faces *c* and projecting ribs *c'*, of a removable toe-calk D, provided with a flat bearing-face *d*, having flanges *d'*, adapted to rest against the bearing-face of the toe-plate between the projecting ribs of said plate, removable heel-calks J, provided with flat bearing-faces having lateral flanges and adapted to rest against the bearing-faces of the heel-plates between the projecting ribs of said plates, vertical studs or pins formed on both the toe and heel calks and engaging in sockets formed in the plates, and fastening-screws whereby the removable calks are secured to the raised plates, substantially as set forth.

2. The combination, with a horseshoe provided with a raised toe-plate B, having a flat bearing-face *b* below the body of the shoe, with projecting ribs *b'* formed on said face and vertical ribs *b²* formed on opposite ends of said toe-plate, of a removable toe-calk D, provided with a flat bearing-face *d*, having lateral flanges *d'* and adapted to rest against the bearing-face of the toe-plate between the projecting ribs *b'* of said plate, and vertical lips *h*, formed on opposite ends of said toe-calk and adapted to fit between the vertical ribs *b²*, formed on the ends of the toe-plate, and fastening-screws *i*, engaging in openings formed in the lips *h* and end walls of the toe-plate, substantially as set forth.

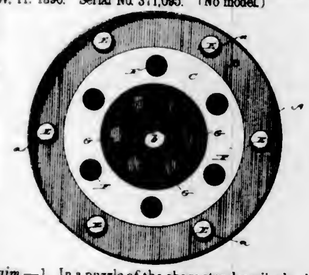
447,417. MOLE-TRAP. JAMES C. TROUT, Morrilton, Ark. Filed Sept. 29, 1890. Serial No. 366,480. (No model.)



Claim.—1. The combination of the frame A, having the perforation *a*, pivot *a'*, notches *a²*, and cross-piece *x*, the shaft B, having the spikes *b* and notch *b'*, lever C, fulcrumed on pivot *a'*, one end working in notch *b'*, cord *c*, one end attached to the free end of lever C and the other to bar *c'*, bar *c'*, one end working in the notch *a²* and the other end hinged to trigger *c²*, trigger *c²*, having the depression *c³*, working over the cross-piece *x*, with its free end resting on the mole-path, and spring *a³*, one end secured to said cross-piece *x* and its free end resting against the outer wall of depression *c³* and adapted to throw said trigger from under the trap when released, substantially as shown and described.

2. In combination with a mole-trap, substantially as shown and described, the spring *a³*, one end secured to the cross-piece *x* and its other end working in the depression *c³* of the trigger *c²* and adapted to throw said trigger from under the trap when said trigger is released, substantially as shown and described.

447,418. PUZZLE. PARIS H. WHEELER, Washington, D. C. Filed Nov. 11, 1890. Serial No. 371,095. (No model.)

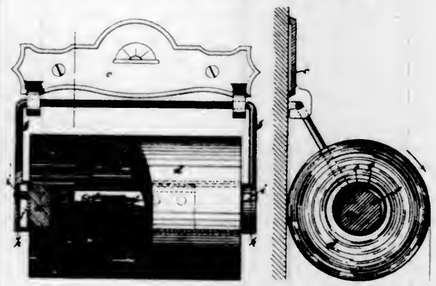


Claim.—1. In a puzzle of the character described, a board or table having its surface divided into a series of sections or divisions, each section or division having a separate color or other distinguishing mark, and each provided with a series of pockets, the number of pockets in each section being equal, and an extra pocket being provided in the center of the board or table, of a series of movable objects bearing colors or other distinguishing marks corresponding with the colors or marks of the sections of the board or table, substantially as described, and for the purpose specified.

2. In a puzzle of the character described, a board or table the surface of which is divided into a series of divisions or spaces arranged one within the other, each of the divisions or sections being of a different color, and each provided with a series of pockets, substantially as and for the purpose specified.

3. The herein-described puzzle, the same consisting of a board or table the surface of which is divided into a series of divisions or sections arranged one within the other, and each having a different color or other distinguishing mark, and each provided with a series of pockets, the central section having an extra pocket at the central point upon the board, and a series of marbles or other movable objects having colors or other distinguishing marks corresponding with the colors or marks of the sections of the board or table, substantially as and for the purpose specified.

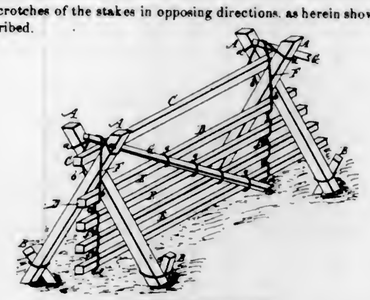
447,419. TOILET-PAPER FIXTURE. SETH WHEELER, Albany, N. Y. Filed July 11, 1890. Serial No. 358,448. (No model.)



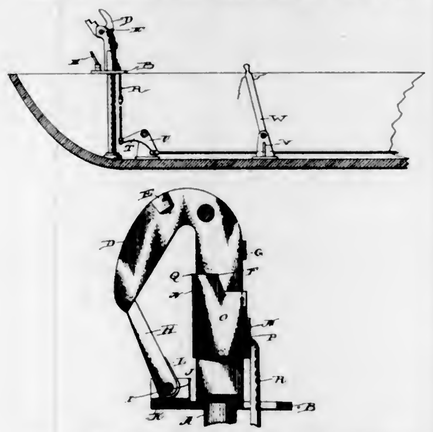
Claim.—In a paper-holder, the combination of a stationary roller with a roll of paper and an intermediate spring *e* for producing friction between the periphery of the roller and the inner periphery of the roll of paper and to prevent the roll of paper from turning in but one direction, substantially as described.

447,420. FENCE. WILLIE D. WHITNEY, Clarendon, N. Y. Filed July 21, 1890. Serial No. 359,471. (No model.)

Claim.—In a rail fence, the combination, with the crossed stakes A A and upper two rails C D, resting in the upper and lower crotches of the same, of the single wire F, formed with the loop *b b*, embracing the ends of said rails, and with loops at the bottom for receiving the lower rails of the fence, and a binder G, inserted in the loop *b* above the upper rail, said binder serving to tighten the two upper rails into the crotches of the stakes in opposing directions, as herein shown and described.



447,421. BOAT-DETACHING APPARATUS. MICHAEL WOGAN, Chester, Pa. Filed Oct. 3, 1890. Serial No. 366,935. (No model.)



Claim.—1. The combination of the hooks having notches in the lower ends, the locks arranged below said hooks and having projections engaging said notches, the operating-lever, and connections between the said operating-lever and the locks, as set forth.

2. The combination of the fork, the stop on the rear side of the same, the hook pivoted within the same and adapted to bear against said stop when closed and having lateral offsets adapted to rest against the rear side of the fork when the hook is opened, and means for operating the said hooks, substantially as described.

3. The combination of the fork, the hook pivoted within the same and having lateral offsets adapted to rest against the rear side thereof when the hook is opened, and means for operating the said hooks, substantially as described.

4. The combination of the forks, the hooks pivoted in the said forks and having notches in their lower ends and provided with offsets on their sides adapted to rest against the rear side of the fork when the hooks are opened, the locks having projections engaging said notches, the operating-lever, and connections between the said operating-lever and the locks, as set forth.

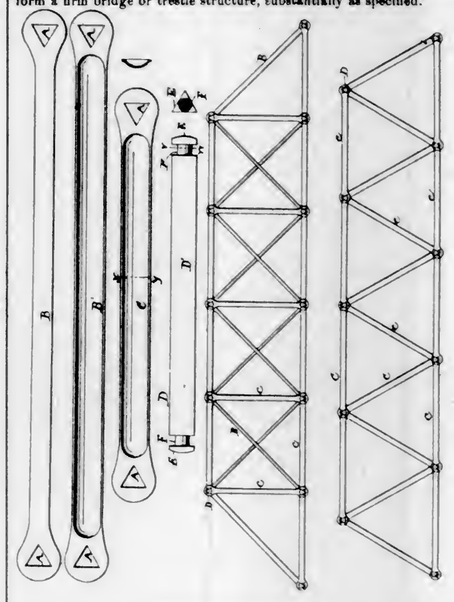
5. The combination of the fork, the stop on the rear side of the same, the hook pivoted within the same and bearing against the stop when closed, and means for operating the said hook, substantially as described.

447,422. TOY BRIDGE. HENRY C. ZENKE, St. Paul, Minn. Filed June 5, 1890. Serial No. 354,377. (No model.)

Claim.—1. The brace-piece B, provided with equilateral angular openings through its ends, substantially as and for the purposes specified.

2. The tie-bolt D, constructed substantially as shown and described, with the angular heads, as E, the circular bearings, as F, and the intermediate angular portion, as D', substantially as and for the purposes specified.

3. The combination for a toy bridge or trestle, consisting of brace-pieces provided with equilateral angular heads, as E, contiguous circular bearings, as F, and intervening angular central portion, as D, the several parts being constructed and arranged to lock together to form a firm bridge or trestle structure, substantially as specified.



447,423. WINDOW-SCREEN. CHARLES H. BENOIT and ALEXANDRE PILLOT, San José, Cal. Filed Mar. 22, 1890. Serial No. 344,864. (No model.)



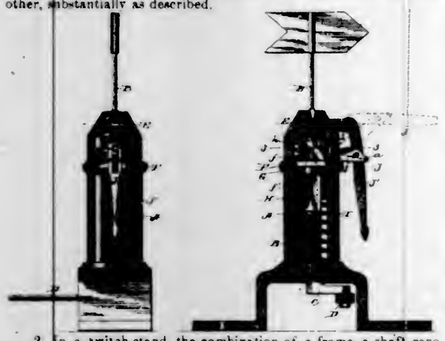
Claim.—1. The combination of tracks or ways secured to the inside faces of the side pieces of the window frame or casing and extending the length of the same, the screen-sash provided with lengthwise grooves for containing said tracks, and also chambers in the sides of said grooves, and curved flat springs loosely contained within said chambers, their central curved portions having pressure against the sides of said tracks or ways to hold the sash in the desired position, substantially as set forth.

2. The combination of tracks or ways secured to the inside faces of the side pieces of the window frame or casing, the screen-sash provided with lengthwise grooves for containing tracks, and also chambers in the sides of said grooves, having recesses in their opposite ends, and curved flat springs fitting loosely in said chambers, their ends being contained within said recesses, respectively, and their central curved portions having pressure against the sides of said tracks to hold the screen at the desired position, substantially as described.

447,424. SWITCH-STAND. WILLIAM A. BOCK, Chicago, Ill. Filed Nov. 19, 1890. Serial No. 371,925. (No model.)

Claim.—1. The combination, in a switch-stand, of a block secured to a shaft, by which the shaft is thrown, said block having a cavity

with parallel sides, the cap fitted to the body of said switch-stand so as to be capable of rotating therein, and provided with a yielding clutch, and having a polygonal boss extending within the cavity of said block, and a forked lever fitted within said cavity and over said polygonal boss, whereby said block and cap may be locked together or may, by the withdrawal of said forked lever, be released from each other, substantially as described.



2. In a switch stand, the combination of a frame, a shaft revoluble therein and adapted to operate the switch, a block secured to said shaft and having a cavity two of whose sides are parallel, a hand-lever having a forked portion fitted within said cavity, a cap interposed between said block and said frame and extending within the cavity of said block and having the top of the polygonal section over which the forked end of said lever fits, substantially as described.

3. The combination, in a switch-stand, of a frame, a shaft revoluble therein and adapted to operate the switch, a cap fitted to said frame and surrounding said shaft, a device adapted to lock said cap to said shaft, a clutch-block secured to said frame, and a sleeve formed upon or attached to said cap, having a yielding clutch-block adapted to engage with the first-named clutch-block and to slide upon said sleeve, but not to revolve thereon, and a spring maintaining the contact between said fixed and said yielding clutch-block, substantially as described.

4. The combination, in a switch-stand, of a frame and a shaft revoluble in said frame and adapted to operate the switch, a block secured to said shaft and having a cavity therein whose two opposite sides are parallel, a hand-lever having a forked end fitted within the parallel sides of said cavity, a cap interposed between said block and frame, having a polygonal boss extending within said cavity, said polygonal boss being fitted to the forked end of said lever, a sleeve extending below said cap and forming a part thereof or attached thereto, said sleeve being adapted to revolve within the stand and having a yielding clutch-block fitted to slide longitudinally thereon and revolve therewith, a fixed clutch-block adapted to engage with said yielding clutch-block, and a spring for maintaining contact between said clutch-block, substantially as described.

5. The combination, in a switch-stand, of a yielding lock comprising a fixed clutch-block fitted to the frame of the switch-stand, a sleeve extending through said clutch-block so as to be capable of revolution therein, a shaft adapted to operate the switch passing through said sleeve, and having devices adapted to lock it to and release it from said sleeve, a yielding clutch-block fitted to said sleeve so as to be capable of sliding longitudinally of said sleeve, but not to revolve thereon, and a spring for maintaining contact between said fixed and said yielding clutch-block, substantially as described.

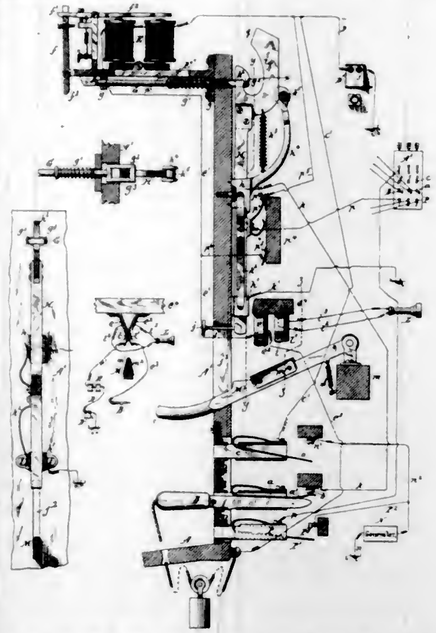
447,425. WITHDRAWN.

447,426. TELEPHONE-SWITCH SYSTEM. CLAUDE C. GOULD, Batavia, assignor to the Eastern Electrical Manufacturing Company, Wheatfield, N. Y. Filed Oct. 10, 1887. Serial No. 251,885. (No model.)

Claim.—1. The combination, with the annunciator and its apron, of a locking-bolt actuated by the falling of the apron, and a movable switch-bar engaging with said locking-bolt and adapted to replace the fallen apron when disengaged from said locking-bolt, substantially as set forth.

2. The combination, with the annunciator and its apron, of a locking-bolt actuated by the falling of said apron, and a movable switch-bar engaging with said locking-bolt and provided with a cam which strikes the locking-bolt when the switch-bar descends and replaces the fallen apron, substantially as set forth.

3. The combination, with the apron *f* and the locking-bolt G, of a movable switch-bar H, provided with a hook or nose engaging with said locking-bolt, and with a cam *i*, arranged above said hook or nose, substantially as set forth.



4. The combination, with the apron *f* and the locking-bolt G, of a movable switch-bar H, provided with a hook or nose engaging with said locking-bolt, a cam *i*, arranged above said hook or nose, which moves the locking-bolt forwardly when the switch-bar descends, and an incline *q*, formed at the upper end of the switch-bar, and whereby the locking-bolt is moved forwardly and the apron is replaced when the switch-bar is raised, substantially as set forth.

5. The combination, with the locking-bolt G and the movable switch-bar H, of a switch-lever M, arranged below the switch-bar and adapted to raise the latter for engaging the locking-bolt with said switch-bar, while at the same time looping in the operator's listening-telephone, substantially as set forth.

6. The combination, with the switch-bar H, of the contact-springs *e* e^3 *l l'*, listening-telephone J, and a switch-lever M, whereby the listening-telephone is looped into the circuit and the switch-bar is elevated upon raising the lever M, substantially as set forth.

7. The combination, with the contact-points p^3 p^3, connected with the main line, of a switch-bar H, provided with a contact-point *p'*, adapted to engage alternately with the contact-points p^3 p^3, and an outsocket P, connected with the contact-point *p'*, substantially as set forth.

8. The combination, with the locking-bolt G and the switch-bar H, of the contact-points p^3 p^3, connected with the main line, a contact-spring *p'*, attached to the switch-bar and adapted to engage with the contact-point p^3 when the switch-bar is in a normal position and with the contact-point p^3 when the switch-bar is in an abnormal position, substantially as set forth.

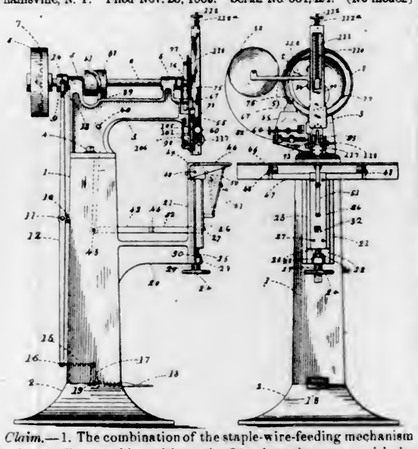
9. The combination, with two or more sections or tables, of a switch-lever H and contact-points *p'* p^3 p^3, arranged upon one section, and an outsocket P, arranged in some other section and connected with the contact-point *p'*, substantially as set forth.

447,427. TANNING PROCESS. WILLIAM E. HEDGES, Polk Bayou, Ark. Filed Nov. 28, 1890. Serial No. 372,888. (No specimens.)

Claim.—1. The process of tanning hides, which consists in first soaking them until perfectly soft and then removing all flesh; then liming them with the following composition: twelve gallons of water, ten quarts of lime, and ten quarts of ashes; then when the hair slips easily raising them and putting them in clear water to soak a while; then removing all hair; then soaking in clear water until the lime is removed; then removing all water that can be removed by working them on the flesh side; then tanning by immersing them in a mixture of sixteen gallons of strong oak ooze and four pounds of salt and letting them remain until the grain side is a bright straw color; then strengthening the ooze by adding ten pounds of gum-gambier; then adding one ounce of alum to one gallon of ooze; then raising the hides two or three times the first day; then letting them remain until tanned, and then washing thoroughly.

2. The process of tanning hides, which consists in first soaking them until perfectly soft and removing all flesh; then liming them with the following compound: twelve gallons of water, ten quarts of lime, and ten quarts of ashes; then when the hair slips easily raising them and putting them in clear water to soak a while; then removing all hair; then soaking in clear water until the lime is removed; then removing all water that can be removed by working them on the flesh side; then tanning by immersing them in a mixture of sixteen gallons of strong oak ooze and four pounds of salt and letting them remain until the grain side is a bright straw color; then strengthening the ooze by adding ten pounds of gum-gambier; then adding one ounce of alum to one gallon of ooze; then raising the hides two or three times for the first day; then letting them remain until tanned; then washing thoroughly; then with a steel sleek working thoroughly on flesh side; then hanging in the shade, and when about half dry oiling them on the grain side with tanner's oil and on the flesh side with oil and tallow, in equal parts; then hanging in the shade to dry; then taking them to the beam and taking a thin shaving off the flesh side.

447,428. WIRE-STAPLING MACHINE. HENRY C. HERR, Williamsville, N. Y. Filed Nov. 25, 1889. Serial No. 331,421. (No model.)



Claim.—1. The combination of the staple-wire-feeding mechanism of a wire-stapling machine with a tube 84, adapted to move with the feeding mechanism and with the wire in its forward movement and to slide back over the wire on the backward movement of the feed for protecting the wire as it is being carried into the machine, substantially as described.

2. In a wire-stapling machine, the combination therewith of a feeding-carriage mounted in a slideway and provided with a tubular portion 84, that moves back and forth with it for protecting the staple-wire in its forward movement, a pivoted dog kept in its place by a spring for carrying the wire forward during every forward movement of the carriage and tube 84, a dog for preventing the backward movement of the staple-wire, and a means, substantially as above described, for giving the feeding-carriage its forward movements, substantially as hereinbefore set forth.

3. In a wire-stapling machine, the combination of an adjusting-bar 57, fitted in a substantially horizontal slideway in the frame 55 and carrying in a slideway within itself the feeding-carriage, a lug 58 at the rear of the bar 57, projecting outward, a sliding plate 67, fitted in a substantially horizontal slideway in the rear of the frame 55 and carrying the pivoted arm for operating the feeding-carriage, a lug 66, projecting forward from the plate 67 through the frame 55, and an adjusting-rod 59, provided with a thumb-piece 60 and with a screw-thread at each end, one right and the other left handed, the screw portions being mounted in lugs 58 66, the rod 59 being mounted so as to turn in a stationary bearing on the frame 55, so as to prevent any longitudinal movement, and thereby provide the means for adjusting the length of the feeding movement, substantially as described.

4. A feeding mechanism for a wire-stapling machine, consisting in the combination of an arm 70 75, pivoted to the frame and having a friction-roller 76 pivoted to its upper end and its lower end pivoted to the feeding-carriage, a pivoted dog on the feeding-carriage for moving the wire forward, a stationary dog for preventing backward movement of the wire, a cam for operating the pivoted arm and giving the feeding-carriage its proper feeding movement, and a spring for giving it its return movement, substantially as described.

5. In a wire-stapling machine, the combination of a cutter 85, mounted in a vertical slideway in the head of the adjusting-bar carrying the feeding mechanism, and through which the wire is fed to be cut into proper lengths, a pin projecting from the side of the staple-former 102 into a hole in the cutter, a bar 105, connected to the staple-former, provided with a friction-roller 107 and a groove-cam 108, into which it fits, for giving the former and cutter the proper up-and-down vertical movements for cutting the wire at the proper time, substantially as described.

6. In a wire-stapling machine, the combination of a vertically-movable staple-former for bending the staple over a former and a means, substantially as described, for giving it its required vertical movements, a staple-driver for driving the staple, and a cam and spring for giving it its proper movements, and a pivoted staple-former, over which the staple is formed, having substantially the projecting portion 94, opening 96, and inclined portion 95, whereby the staple is formed into shape, the portion 94 is forced out of the way and away from the staple as the driver comes down to drive it, substantially as described.

7. In a wire-stapling machine, the combination of a pivoted swinging staple-former having a projecting portion over which the staple-wire passes and is formed, and provided with an inclined portion 95, a spring for keeping it in its normal position, and a staple-driver for forcing it out of the way while a staple is being driven, substantially as described.

8. In a wire-stapling machine, the combination, with the feeding mechanism and the vertically-movable staple-former, of a gage-wheel 117, mounted on a screw-shaft rigidly secured to one side of the vertically-movable staple-former opposite to the feeding mechanism, so as to be adjustable, substantially as described.

9. In a wire-stapling machine, the combination therewith of a staple-driving mechanism mounted in a vertically-supporting-case and consisting of the lower staple-driving portion 113, the round portion 110, projecting up through the top of the supporting-case to keep it in alignment, a spring for holding it down, a friction-roller 115, and a cam 116 for raising it up and then releasing it to permit the spring to act and drive it home on its return movement, substantially as and for the purposes described.

10. In a wire-stapling machine, the combination, with the staple-driver, of a spiral spring 111, and a vertically-adjusting screw for regulating the force of the staple-driver in its downward movement and thereby adjusting the force of the blow as it strikes upon the staple, substantially as and for the purposes described.

11. In a wire-stapling machine, a single supporting-table pivoted to a stationary portion of the machine, substantially as above described, so that different sides can be turned up for use, thereby adapting it to be used either as a broad flat table 46 or as a narrow or saddle table 49, in combination with a toggle-joint 51 for holding it in position as a broad flat table or permitting it to be turned so as to use the narrow saddle-table, the pivots 48 being placed, substantially as above described and shown, so that either table is of substantially the same height when brought into use, as above described.

12. In a wire-stapling machine, the combination of a bar 31, mounted in the case 23, so as to be movable up and down therein, and carrying the pivoted clinchers 35, a bar 34, mounted within the bar 31, so as to have a vertical movement for operating the clinchers, a grooved cam 33 33^a for giving the bars 31 and 34 their required vertical movements, and a spring for keeping the bar 34 in engagement with the cam 33, an arm pivoted to the column 1, having its lower end pivoted to the cam-bar 32 and its upper end in engagement with a grooved cam on the driving-shaft for operating the clinching mechanism, substantially as described.

13. In a stapling-machine, the combination therewith of a vertically-movable case 23, carrying the clinching-mechanism bar 31, and a hand-wheel 24 for adjusting it vertically, substantially as hereinbefore set forth.

14. In a wire-stapling machine, the combination of the bar 31, mounted so as to be movable vertically in the case 23, pivoted clinchers 35 within the upper portion of the bar 31, a bar 34, mounted so as to move vertically within the bar 31, a spring for keeping it down in its normal position, and a cam for moving it up against the force of the spring and operating the clinchers, substantially as described.

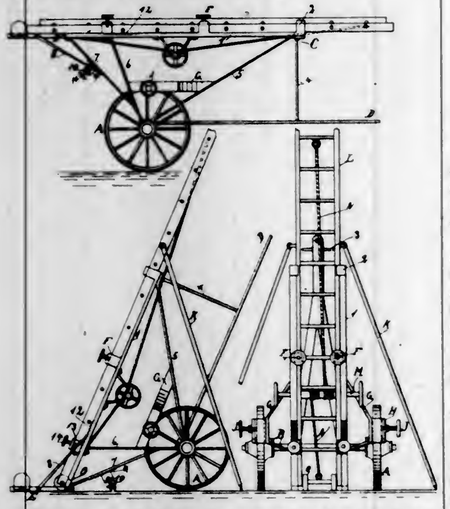
15. In a wire-stapling machine, the combination of a bar 31, carrying the clinching mechanism, with a cam 33^a on the cam-bar 32, and mechanism, substantially as above described, for giving the cam its required reciprocating movements and giving the bar 31 a slight movement upward while the clinching mechanism is in operation, substantially as described.

16. In a wire-stapling machine, a double table formed in one piece and pivoted to the machine so that it may be turned upward and used as a broad flat table or turned down and used as a narrow saddle-table, in combination with mechanism consisting of the hand-wheel 24 and the portion 23, by which the table is supported and adjusted, substantially as described.

17. In a wire-stapling machine, the combination of a double table 46 and 49, having its supporting-pivots located at equal distances from the surface of the table, so that either will be at the same level when turned up for use, a cross-bar 47, to which the table is pivoted, a vertically-adjustable portion 23, forming a part of the cross-bar 47 and kept in position by a slideway in which it is secured, and a hand-wheel for adjusting the same and the double table, substantially as described.

18. In wire-stapling machine, the combination of a staple-driver 113, mounted in a vertical supporting-case, a spring for holding it down, a friction-roller 115, pivoted to the staple-driver, a cam 116 for moving it up against the force of the spring and then releasing it to permit the spring to drive it home on its return movement, and a cam 126 for holding it rigidly down until the clinching mechanism completes its action, substantially as described.

447,429. FIRE-LADDER. CHARLES H. IVES, Sterling, Ill. Filed Nov. 17, 1890. Serial No. 371,718. (No model.)



Claim.—1. In a fire-ladder, the combination of an axle B, suitably supported upon carrying-wheels, a ladder-bearing frame C, supported a sufficient distance above the ground to be permitted to be tilted on said axle, as shown, and a platform E, suitably hinged to the rear end of said frame, substantially as shown, and for the purpose described

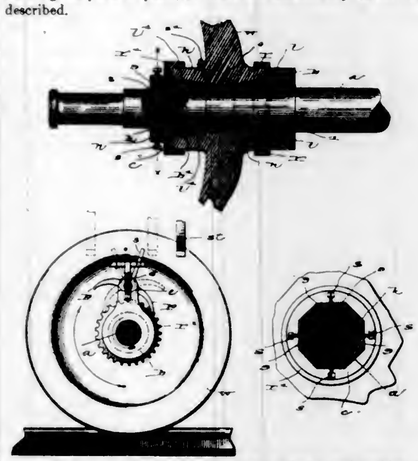
2. In a fire-ladder, the combination of an axle B, supported upon suitable carrying-wheels, a frame C, supported upon said axle in position to be tilted thereon, as described, and the lower ladder L, adjustably seated on said frame and provided with base-supporting rollers O, substantially as shown, and for the purpose described.

3. In a fire-ladder, the combination of an axle B, supported upon suitable carrying-wheels, a ladder-supporting frame C, seated upon said axle as its pivotal point, carrying-wheels A, and the wheel-lock G H J, attached to said frame and adapted to hold said carrying-wheels from rotation when the apparatus is in use, substantially as shown, and for the purpose described.

4. In a fire-ladder, the combination of an axle B, supported upon suitable carrying-wheels, a frame C, suitably supported upon said axle as its pivotal seat, the platform E, hinged to the rear end of said frame and adapted to optionally form either an extension of the latter or a brace therefor, and means, substantially as shown, for carrying and extending a fire ladder or ladders on said frame, for the purpose described.

447,430. CAR-TRUCK. JESSE B. JOHNSON, Indianapolis, Ind. Filed Aug. 6, 1890. Serial No. 361,176. (No model.)

Claim.—1. In a car-truck, the axle *a*, shouldered at 1 and 2, as shown, the adjustable taper boxing *b*, rigidly connected to such axle behind, and the taper bushing *b'*, keyed to such axle in front of the wheel, metal linings *l l'*, superimposed about such boxing and bushing, dust-rings *r r'*, shrunk upon the opposite sides of the wheel-hub, the wheel adapted to revolve upon such boxings, an oil-chamber formed in the hub thereof, with means, such as a lock-nut and washer, for securing the parts in place, all combined substantially as shown and described.



2. In a car-truck, an axle *a*, a taper boxing *b*, and bushing *b'* secured thereon, a wheel *w*, adapted to revolve upon such taper bushing and boxing, and a ratchet and double pawl mechanism connected thereto for alternately locking the wheel to the axle on the opposite sides, all combined substantially as shown and described.

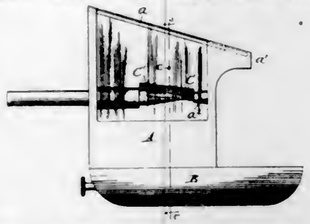
3. In a car-truck, an axle, taper boxings rigidly connected thereto, a wheel loosely mounted on such boxings, metallic linings interposed between the wheel and such boxings, and means, such as a lock-nut and washer, for holding the parts in place and taking up the lost motion occasioned by wear, all combined substantially as shown and described.

4. A car-truck wherein the wheel revolves upon taper boxings rigidly connected to the axle in the rear and detachably connected to the axle in front, with means, such as a lock-nut, operating upon keys whose outer faces are threaded, and a washer loosely mounted on the axle for taking up lost motion occasioned by the wear of the parts, all combined substantially as shown and described.

5. A car-truck wherein the wheel revolves upon a boxing rigidly connected to the axle in the rear, and a bushing detachably connected to the axle in front, a washer loosely mounted on such axle outside such bushing, with means, such as a lock-nut, operating upon keys whose outer faces are threaded, such keys passing through such washer and keying the bushing to the axle for taking up lost motion occasioned by the wear of the parts, all combined substantially as shown and described.

6. In a car-truck, an axle, a boxing rigidly connected thereto behind the wheel, a bushing keyed to such axle in front of the wheel, a wheel loosely mounted on such boxing, and means, such as a lock-nut and washer, with keys threaded upon the outside for engaging with such nut for holding the parts in place and taking up lost motion occasioned by wear, all combined substantially as shown and described.

447,431. PENCIL-SHARPENER. ALBERT F. A. KING, Washington, D. C. Filed Dec. 15, 1890. Serial No. 374,745. (No model.)



Claim.—1. A pencil holder or tunnel consisting of the combination, substantially as hereinbefore set forth, of a fixed longitudinal section, a set-screw, and another longitudinal section mounted thereon and movable laterally and parallelly relatively to the fixed section to vary the caliber of the tunnel to adapt it to pencils of different sizes.

2. The combination, substantially as hereinbefore set forth, of a pencil holder or tunnel, a chamber into which it projects, a shoulder or abutment in line with the tunnel against which the end of the pencil may rest, and a slot in the wall of the chamber extending from the inner end of the tunnel to the abutment at an inclination to the axis of the tunnel, for the traverse of the knife.

3. The combination, substantially as hereinbefore set forth, of a sharpening-chamber, a tunnel projecting therein, a knife-slot in the side wall thereof intersecting the axial plane of the tunnel, and an inclined transparent top or cover.

4. A pencil-sharpening chamber constructed, substantially as hereinbefore set forth, with transparent sides and top, a pencil holder or tunnel projecting into the chamber, a knife-slot intersecting a plane passing through the axis of the tunnel, and a rear projection of the chamber, constituting a thumb-rest.

5. The combination, substantially as hereinbefore set forth, of the parallel side walls, a septum or shield movable endwise therein, the pivot on which it is suspended, the opening around this pivot of a larger diameter, and the notch or recess in the septum for the reception of the knife.

6. The combination, substantially as hereinbefore set forth, of the knife-slot and the endwise-moving oscillating knife-shield closing said slot.

7. The combination, substantially as hereinbefore set forth, of a pencil-holder, a knife-slot, and a movable shield covering the slot.

8. The combination, substantially as hereinbefore set forth, of a sharpening-chamber, a pencil-holder projecting therein, a shoulder or abutment, a knife-slot between the pencil-holder and abutment, and a movable shield closing the slot.

9. The movable shield provided with a peripheral notch or recess for the reception of the knife, substantially as hereinbefore set forth.

10. The improved pencil-sharpener hereinbefore described, consisting of the combination of the sharpening-chamber, its transparent sides and top and light-reflecting interior, a pencil holder or tunnel projecting therein, a knife-slot in one of its walls, and a freely-movable shield covering the slot and provided with a notch for the insertion of a knife and adapted to conform to its movements in the slot, for the purposes described.

447,432. CONVERTIBLE CHAIR. CHARLES F. KRAMER, Mondovi, assignor of two-thirds to John Higgins, Eau Claire, Wis. Filed July 15, 1889. Serial No. 317,636. (No model.)



Claim.—1. The herein-described convertible chair, the same comprising back, arms, a frame-work having one swinging side and legs at the four corners of said frame-work, and a number of stools removably inserted within said frame-work and of a size to be withdrawn from the swinging side thereof, their seats forming the seat of the chair, substantially as set forth.

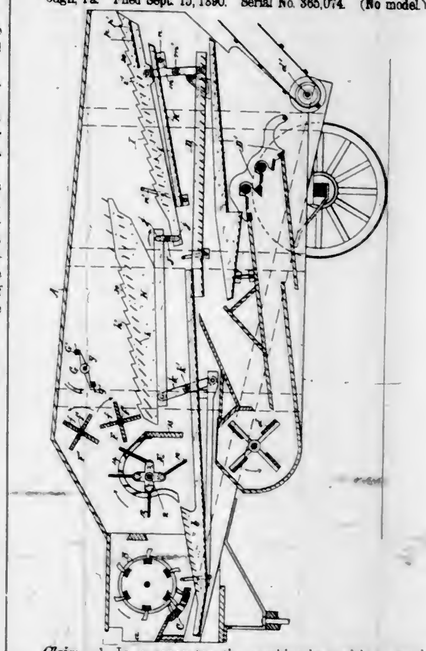
2. In a convertible chair, the combination, with the frame-work F, having the stationary side pieces *f*, the front and rear pieces R, and the brackets K, connected to said front and rear pieces and mounted on pivots *p* in the side pieces, of the stools S, of a size to pass into the frame-work when the front and rear pieces are thrown back, the seats E of said stools forming the seat of the chair, substantially as set forth.

3. In a convertible chair, the combination, with the frame-work F, mounted upon legs L, and the removable pieces R, supported by brackets K, pivotally connected to said frame-work, of the stools S, whose seats form the seat for the chair, each stool having an independent standard of its own, and the back D, adapted to be lowered when the stools are assembled within the frame-work, substantially as set forth.

4. The stool S, comprising a seat E, supported on a standard, a back D, pivoted to said seat, a brace J, pivoted at M to a cross-bar of the back and having a pin *m* in its lower end, and a plate N, secured to the rear edge of the seat and having an L-shaped recess *n*, adapted to be engaged by said pin, the whole operating substantially as hereinbefore set forth.

5. The herein-described convertible chair, the same comprising back, arms, a frame-work having one swinging side and legs at the four corners of said frame-work, and a number of stools removably inserted within said frame-work side by side and of a size to be withdrawn from the swinging side thereof, their seats forming the seat of the chair, and each stool being supported upon its own legs independent of the legs of the frame-work, and having hinged backs D, swinging backward so as to depend below the seat and leave the latter unobstructed when the stools are assembled within the frame-work, substantially as set forth.

447,433. GRAIN-SEPARATOR. FRANK F. LANDIS, Waynesborough, Pa. Filed Sept. 15, 1890. Serial No. 365,074. (No model.)



Claim.—1. In a separator, the combination, with a revoluble picker for taking the straw from the thrashing-cylinder, of two revoluble beaters provided with intercurrent plates for the straw from the picker to pass between and a fork provided with rows of teeth and revolving at a higher speed than the beaters, a row of teeth being arranged to come behind and between each pair of opposed beater-plates, whereby the straw may be loosened, and toothed driving-wheels positively connecting the shafts of the said picker, beaters, and fork, substantially as set forth.

2. In a separator, the combination, with the two beaters, each provided with four equidistant plates intercurrent with each other for the straw to pass between, of the intergearing toothed wheels secured upon the beater-shafts, a fork provided with two rows of teeth and mounted on a shaft behind the said beaters, and intermediate toothed wheels connected to one of the beater-wheels and revolving the said fork at twice the speed of the said beaters, whereby the straw delivered from between the beaters may be loosened by the fork, substantially as and for the purpose set forth.

3. In a separator, the combination, with a straw-shaker consisting of longitudinal bars provided with ratchet-teeth and a series of inclined cross-slats supported between the said bars and arranged with a decreasing angularity to the longitudinal path of the material over the slats, of an operating device, such as a crank, for imparting a longitudinal reciprocating motion to all the slats and a tossing move-

ment to those slats having the greatest inclination, the said tossing motion decreasing in extent proportional to the decreasing inclination of the slats in the series, substantially as set forth.

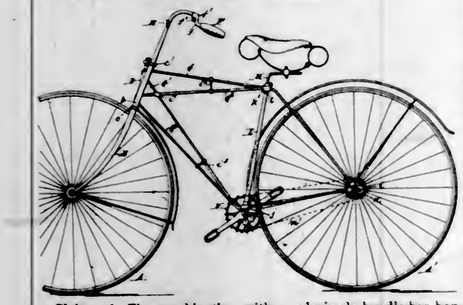
4. In a separator, the combination, with a straw-shaker provided with a series of inclined cross slats arranged substantially radial to a point near one end of the shaker, of an operating device, such as a crank, operatively connected to that end of the shaker near the said point for reciprocating the shaker longitudinally and also vertically in proportion to the inclination of the said slats, substantially as set forth.

5. In a separator, the combination, with a straw-shaker consisting of longitudinal bars provided with ratchet-teeth and a series of inclined cross-slats supported between the said bars, of a crank for imparting motion to one end of the shaker, pivoted supporting-links near the other end of the shaker, and a gather-board forming a continuation of the said series of cross-slats and situated at the extreme end of the shaker beyond the said links and having serrations arranged in a reverse direction to the said ratchet-teeth to cause the grain falling upon it to be carried in the reverse direction from the straw above, substantially as set forth.

6. In a separator, the combination, with the first inclined straw-shaker and the links pivotally supporting its front end, of the second inclined straw-shaker arranged behind the first said shaker and the links pivotally supporting the rear end of the said second shaker, the revoluble cranks supporting and actuating the meeting ends of the two said shakers, the serrated gather-board under the second shaker, pivoted at its rear end to the supporting-link of the second shaker, and the links pivotally supporting the front end of the said gather-board, substantially as and for the purpose set forth.

7. In a separator, the combination, with a revoluble picker for taking the straw from the thrashing-cylinder, of a pair of revoluble beaters for the straw to pass through after being raised by the picker, a revoluble fork for loosening the straw behind the said beaters, a straw-shaker provided with longitudinal toothed bars and cross-slats between the bars and arranged behind and below the said fork, and means, such as a crank, for imparting a longitudinal reciprocating and tossing motion to the said shaker, whereby the grain and chaff may be shaken out of the straw, substantially as set forth.

447,434. **VELOCIPEDE.** EMMIT G. LATTA, Friendship, N. Y. Filed Aug. 25, 1890. Serial No. 363,025. (No model.)



Claim.—1. The combination, with a velocipede handle-bar having backwardly-bent end portions, of a handle and a crank-shaped shank connecting the handle with the handle-bar, whereby the handle may be adjusted vertically as well as inwardly and outwardly, substantially as set forth.

2. The combination, with a velocipede handle-bar having backwardly-bent end portions, of a handle and a connecting-shank secured to the handle and having an offset portion arranged parallel with the handle and which is adjustably attached to the end of the handle-bar, substantially as set forth.

3. The combination, with a velocipede handle-bar having backwardly-bent end portions, of a handle and a crank-shaped connecting-shank secured to the handle and having a split clamping-socket, whereby it is adjustably secured to the end of the handle-bar, substantially as set forth.

4. In a velocipede, the combination, with the front and rear wheels and a steering head or pivot, of a main frame consisting of four members, each extending from the steering head or pivot to the central portion of the rear wheel and each composed of a single continuous piece or length, substantially as set forth.

5. In a velocipede, the combination, with the front steering-wheel, a rear driving-wheel, and the steering-pivot, of a main frame or reach supporting the steering-pivot at its front end, the rear-wheel axle at its rear end, and the saddle-support and driving-gear at its central portion, and having two members extending from the steering-pivot rearwardly to the saddle-support and thence downwardly to the rear-wheel axle, and two similar members extending downwardly and rearwardly from the steering-pivot and thence rearwardly to the rear axle, the four members of the frame being each composed of a single continuous piece or length, substantially as set forth.

6. The combination, with the steering-pivot, the driving-gear, and the saddle-support, of a main frame supporting said parts and having two members which connect the saddle-support with the upper and lower portions of the steering-pivot, and two members whereby the support of the driving-gear is also connected with the upper and lower portions of the steering-pivot, substantially as set forth.

7. The combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and having a member connecting the upper part of the steering-pivot with the support of the driving-gear, and a member crossing said first-mentioned member and connecting the lower part of the steering-pivot with the saddle-support, substantially as set forth.

8. The combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and having a member connecting the upper part of the steering-pivot with the support of the driving-gear, a member crossing said first-mentioned member and connecting the lower part of the steering-pivot with the saddle-support, and a union or coupling connecting the two members, substantially as set forth.

9. In a velocipede, the combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and consisting of four members extending rearwardly from the steering-pivot at different inclinations, substantially as set forth.

10. In a velocipede, the combination, with the front and rear wheels and the steering-pivot, of a main frame consisting of four longitudinal members having their front portions connected to the steering-pivot at different elevations, substantially as set forth.

11. In a velocipede, the combination, with the steering-pivot, the saddle-support, and the driving-gear, of a main frame supporting said parts and consisting of four members extending rearwardly from the steering-pivot at different inclinations, and cross ties or braces connecting the members of the frame, substantially as set forth.

12. The combination, with the front and rear wheels and the steering-pivot, of a frame or reach composed of longitudinal members formed of a rod or bar coiled or wound around the steering-pivot and having its branches extended rearwardly from the pivot, substantially as set forth.

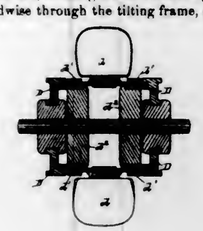
13. The combination, with the front and rear wheels and the steering-pivot, of a main frame having two members connected to the steering-pivot at different elevations, converging rearwardly and connected to the upper part of the frame at about the same elevation, and two members connected to the steering-pivot at different elevations, converging rearwardly and downwardly and connected to the lower part of the frame at about the same elevation, substantially as set forth.

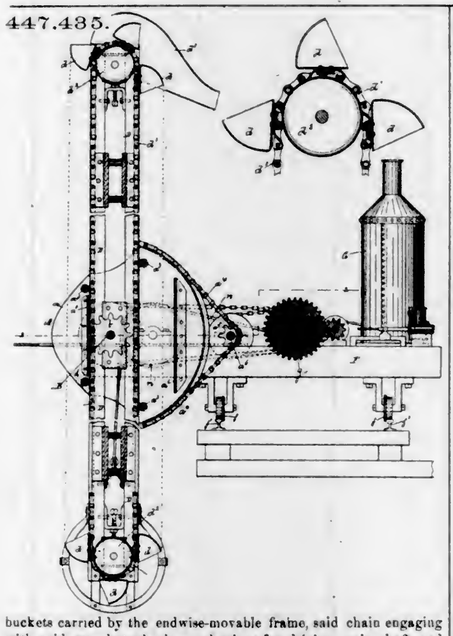
14. The combination, with the front and rear wheels and the steering-pivot, of a main frame having a double member composed of a single continuous piece or length and having one of its rear branches secured to the rear-wheel axle on one side of the rear wheel, its other branch secured to the rear-wheel axle on the opposite side of the wheel and its front portions extending forwardly and connected to the steering-pivot, substantially as set forth.

15. The combination, with the front and rear wheels and the steering-pivot, of a main frame composed of longitudinal members extending rearwardly from the steering-pivot and crossing the longitudinal center line of the machine, substantially as set forth.

447,435. **ELEVATOR.** THEODORE L. MARVEL, Taunton, Mass., assignor to William H. Phillips, same place. Filed Oct. 27, 1890. Serial No. 369,430. (No model.)

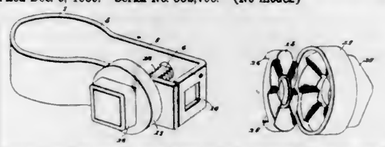
Claim.—The improved elevator above described, consisting of a supporting-frame, a main shaft journaled in that frame and having sprocket-wheels thereon, a tilting frame carried by the main shaft, a frame movable endwise through the tilting frame, an endless chain of





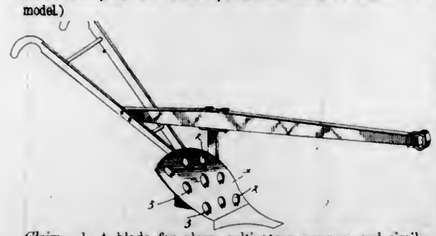
buckets carried by the endwise-movable frame, said chain engaging with said sprocket-wheels, mechanism for driving main shaft and buckets, mechanism for moving the bucket-carrying frame endwise, and mechanism for controlling the tilting frame, all combined and operating substantially as described.

447,436. **WIRE-TIGHTENER.** JOHN N. PARKER, Coldwater, Mich. Filed Dec. 6, 1889. Serial No. 332,760. (No model.)



Claim.—In a fence, a wire fastener and tightener comprising the metal strap or band having a cylindrical portion to receive a tubular post and a rectangular portion having the end piece 9 bearing against the side and provided with a central opening, the bolt passing transversely through the rectangular portion of the strap or band, the ratchet-plate provided with flanges adapted to engage one side of the strap or band and hold the ratchet-plate stationary, and the cap having an annular flange inclosing the ratchet-plate and provided with a rectangular flange forming a recess adapted to receive the head of the bolt, said flange being designed to be engaged by a wrench, substantially as described.

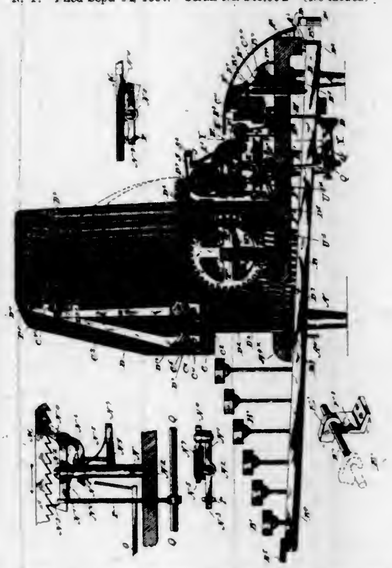
447,437. **PERFORATED BLADE FOR PLOWS, &c.** VERNON RHODES, Memphis, Tenn. Filed Sept. 13, 1890. Serial No. 364,906. (No model.)



Claim.—1. A blade for plows, cultivators, scrapers, and similar implements, provided with openings the lower edges of which have upwardly-extending triangular tongues, substantially as set forth.

2. A blade for plows, cultivators, scrapers, and similar implements, provided with oval openings the small ends of which face downward and are provided with upwardly-extending triangular tongues, substantially as set forth.

447,438. **TYPE-WRITING MACHINE.** CHARLES SPIRO, New York, N. Y. Filed Sept. 14, 1887. Serial No. 249,684. (No model.)



Claim.—1. The combination, with the paper-carriage and platen of a type-writing machine, of a rack-bar secured to the carriage and two ratchets mounted one on each side of a vertical pivot for successive oscillation into and out of contact with the bar and one of them pivoted to move at a right angle to the direction of its oscillation, substantially as specified.

2. The combination, with the rack-bar of a carriage of a type-writing machine, of two pawls carried by a support, oscillating on a fixed vertical pivot and each mounted for oscillation simultaneously in opposite directions and one pivoted for movement substantially lengthwise of the rack-bar, substantially as specified.

3. The combination, with the rack-bar of a type-writing machine, of two pawls mounted for successive oscillation into and out of contact with said bar and one of them pivoted for movement at substantially a right angle to the direction of its oscillation, and a rod pivotally connected with the non-pivoted pawl for producing the oscillation thereof, and connected by a bail with the key-levers of the machine, whereby the depression of a key-lever operates the pawls, substantially as specified.

4. The combination, with the rack-bar of a carriage of a type-writing machine, of two pawls on opposite sides of a vertical rack and extending substantially parallel with said rack and mounted for oscillation simultaneously in opposite directions, one of said pawls being mounted for movement at an angle to the direction of its oscillatory movement, and a stop to limit said angular movement, substantially as specified.

5. The combination, with the rack-bar of a carriage of a type-writing machine, of two pawls mounted for oscillation simultaneously in opposite directions, one of said pawls being mounted for a movement at an angle to the direction of its oscillatory movement, and a spring for cushioning the pawl in said angular movement, substantially as specified.

6. The combination, with the rack-bar of a carriage of a type-writing machine, of two pawls mounted for oscillation simultaneously in opposite directions, one of said pawls being mounted for movement independently of its oscillation, and a lever adapted to engage directly said pawl for producing at will said independent movement, substantially as specified.

7. In a type-writing machine, the combination, with its series of key-levers and reciprocating carriage, of a bail arranged to be operated by the levers and rigidly secured to a rock-shaft, and an arm rigidly connected with the rock-shaft, and two pawls, one of which is connected with the arm and both pivotally supported for simultane-

ous horizontal movement into and out of contact with a rack-bar secured lengthwise to the carriage of the machine, and a pivotal connection for the pawls one with the other, whereby one is rigid and the other movable lengthwise of the rack-bar and carriage, substantially as specified.

8. The combination, with the carriage of a type-writing machine having a diagonally-disposed series of pins depending therefrom, of a sliding plate mounted on a fixed part of the machine adjacent to the carriage and for movement into contact with any one of the pins depending therefrom, substantially as specified.

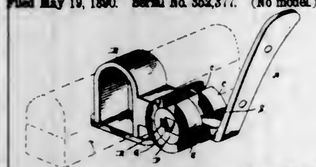
9. In a type-writing machine, the combination, with the rack-bar, of a vertical sleeve upon a fixed vertical pivot perpendicular to the face of the teeth of the rack and having lateral arms, one of which terminates in a pawl and the other having pivotally connected therewith another pawl, substantially as described.

10. In a type-writing machine, the combination of the rack-bar and a sleeve mounted to oscillate upon a fixed vertical pivot perpendicular to the face of the teeth of the rack and terminating at its upper end in lateral arms, one of which is formed with a pawl, and a pawl pivotally connected with the other arm and having an extension and a spring bearing on said extension, substantially as shown and described.

11. The combination, with a type-writing machine inking-ribbon and its spools and spool-operating gears, of a shaft having thereon a pinion and a ratchet and capable of longitudinal movement to bring the pinion into mesh with either spool-gear, of a pawl pivoted to follow the ratchet in the longitudinal movements thereof and to ride the teeth of the ratchet, substantially as specified.

12. The combination of the ink-ribbon spools of a type-writing machine and the mechanism for operating the same, said mechanism comprising a ratchet mounted for rotation and for longitudinal movement with the shaft upon which it is mounted, a pawl pivoted to ride the teeth of and follow the ratchet, and a rock-shaft and arm connected with the pawl and with the series of key-levers of the machine, substantially as specified.

447,439. THILL-COUPLING. WILLIAM M. STROTHER, Lynchburg, Va. Filed May 19, 1890. Serial No. 352,377. (No model.)



Claim.—1. In a thill-coupling, the combination, with the clip having forwardly-projecting ears separated by a slot and provided with a transverse cylindrical hole open at its upper side, of a roller having a lug, said roller and lug passing longitudinally into said hole and the opening at the upper side thereof and then turning forwardly with its lug in said slot, and a thill-iron locked in and against turning within the roller and normally extending through said slot, substantially as described.

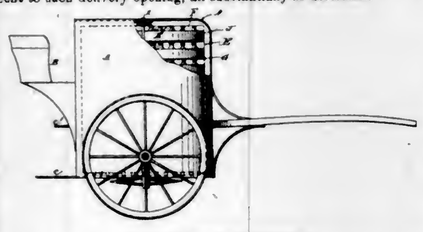
2. In a thill-coupling, the combination, with the clip having forwardly-projecting ears separated by a slot and provided with a transverse cylindrical hole, of a roller turning in said hole and having an angular groove in its front side with an opening at the bottom of said groove, a thill-iron passing through said slot and having an angular head standing in said groove, and an expansible cushion in said opening, substantially as set forth.

3. In a thill-coupling, the combination, with the clip having forwardly-projecting ears separated by a slot and provided with a transverse cylindrical hole, of a roller turning in said hole and having a groove in its front side with an opening at the bottom of said groove, means, substantially as described, for preventing the longitudinal displacement of said roller, a thill-iron passing through said slot and having a head standing in said groove, and an expansible cushion in said opening, substantially as set forth.

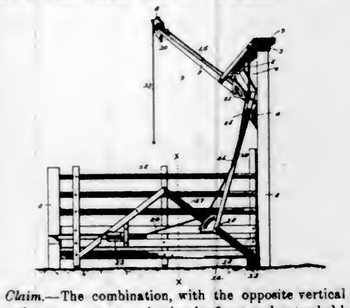
4. In a thill-coupling, the combination, with the clip having forwardly-projecting ears separated by a slot and provided with a transverse cylindrical hole, of a roller turning in said hole and having a groove in its front side, with an opening at the bottom of said groove extending through the roller, the body of said opening being tapered, a thill-iron passing through said slot and having a head standing in said groove, and an expansible cushion in said opening, substantially as set forth.

447,440. DELIVERY-WAGON. HORACE S. TUTHILL, New York, N. Y. Filed Oct. 22, 1890. Serial No. 368,968. (No model.)

Claim.—In a delivery-vehicle, the combination of a closed body provided with a rear delivery-opening, an interior rotary stand adapted to receive and transport articles of trade, and an exterior seat adjacent to such delivery-opening, all substantially as described.

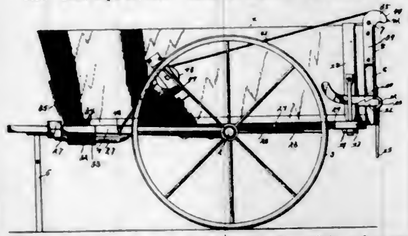


447,441. GATE. CHARLES A. ANDERSON, Caseyville, Ky. Filed Oct. 13, 1890. Serial No. 367,968. (No model.)



Claim.—The combination, with the opposite vertical posts, the connecting transverse cap having its front end extended beyond the faces of the posts, blocks secured below the cap, strips connecting the blocks with the extended edge of the cap and combining with the faces of the posts to form guides, the oppositely-disposed inclined arms bifurcated at their outer ends, the levers pivoted in the bifurcations and bifurcated at their outer ends, the bell-crank 9, having extended portions 10, pivoted in the bifurcations of the levers, and the bell-cranks 21, pivoted at the inner ends of the levers, which levers have their inner ends riding in the guides and provided with hooks, of the gate having the spring-pressed latch or bolt, the loose bolt passed transversely through the gate, the connecting-bars pivoted at their lower ends to the bolt and having their upper ends engaging the hooks of the levers, the bell-cranks 22, pivoted on said bolts, the cords or wires 24, connecting the rear end of the latch-bolt with the upper ends of the bell-cranks 22, the cords or wires 25, connecting the lower ends of the bell-cranks 22 with the lower ends of the bell-cranks 21, the cords or wires 26, connecting the upper ends of the bell-cranks 21 with the inner ends of the bell-cranks 9, the depending ropes 11, connected to the outer ends of the bell-cranks 9, the bearing-blocks secured to the faces and near the lower ends of the posts, the trunnions extending from the lower rear corner of the gate and taking into bearings formed in the blocks, and the latch-post normally engaged by said spring-pressed bolt, substantially as specified.

447,442. DUMPING-CART. AUGUST F. BEHRMAN, Buena Vista, Colo. Filed Sept. 30, 1890. Serial No. 366,671. (No model.)

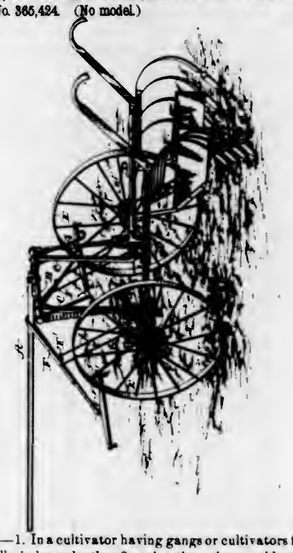


Claim.—1. In a dump-cart, the combination of the axle supporting the body, the pivoted thill-frame having a cross-bar, the longitudinally-movable spring-actuated rod having a bolt engaging a recess in said cross-bar, the end-gate having a rock-shaft provided with catches engaging hooks upon the cart-body, and a downward-extending lever or handle lying in the path of the longitudinally-movable rod, and a spring pressing against an upward extension of said lever or handle, substantially as and for the purpose set forth.

2. In a dump-cart, the combination of the body mounted upon the axle, the hinged end-gate provided with a rock-shaft, the locking-catches engaging hooks upon the cart-body, a spring-actuated lever-handle, the longitudinally-sliding rod adapted to engage the lever-handle and terminating at its front end in a beveled bolt engaging a recess in a cross-bar of the thill-frame, a bell-crank lever having a forked arm engaging recesses in the longitudinally-sliding rod, and a lever pivoted upon the front end of the cart-body and adapted to engage the forwardly-extending arm of the bell-crank lever, substantially as set forth.

3. In a dump-cart, the combination, with the body of the hinged end-gate having the strip 39, provided with a curved guide 38, having groove 40, of the thill-frame pivoted upon the axle, a guide-pulley mounted upon the side of the cart-body, and a rope or equivalent 41, attached to the curved guide 38 and passing over the guide-pulley to the thill frame, where it is made fast, substantially as and for the purpose set forth.

447,443. CULTIVATOR. WARREN M. BRINKERHOFF, ABRAM W. STEVENS, and LESTER D. SWART, Auburn, N. Y. Filed Sept. 18, 1890. Serial No. 365,424. (No model.)



Claim.—1. In a cultivator having gangs or cultivators free to move longitudinally independently of each other, the combination, with a pivoted standard having an axle-arm at its lower end and a cultivator-beam pivotally connected therewith, of a lifting-spring connected at its upper end with said standard and its lower end connected for lifting said beam, the point at which the upward pressure of the spring is applied being below the longitudinal center of the said beam, substantially as described.

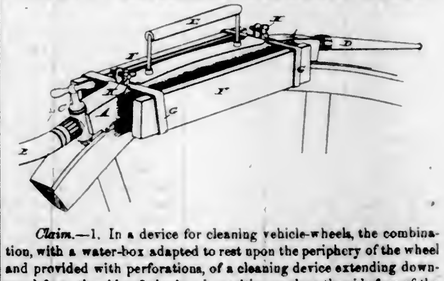
2. In a cultivator, the combination, with the cross-bar, the standards having divided tubular portions engaging said cross-bar, and the strengthening-web connecting said parts to the standard, of the divided clamping-collar for engaging said cross-bar and securing and adjusting said standards with respect thereto, said collar having perforated ears and a bolt engaging said ears, substantially as described.

3. In a cultivator, the combination, with the pivoted beam, of a lifting-spring and a stirrup having its lower ends provided with an inwardly-turned hook adapted to engage recessed parts connected for vertical movement with said beam, substantially as described.

447,444. BELT-TENSION DEVICE. JAMES C. BRYCE, Battle Creek, Mich., assignor to the Nichols & Shepard Company, same place. Filed Dec. 26, 1890. Serial No. 375,870. (No model.)

Claim.—1. In a belt-tension device, the stand or bracket having the cylindrical casing, the coiled spring adjustable in said casing for varying its tension, and the cap-plate pivoted to said casing and carrying the tension-pulley arranged eccentrically to the pivot of said plate, substantially as described.

2. The combination, in a belt-tension device, of the cylindrical casing having the hollow central hub, the cap-plate having also a hollow central hub journaled on said casing-hub and carrying the eccentrically-arranged tension-pulley, and the inclosed coiled spring connecting said casing and cap-plate and operating substantially as described.



3. The combination, in a belt-tension device, of the cylindrical casing for the tension-spring, provided with notches or shoulders for holding said spring at different adjustments, the coiled spring adjustable in said casing, the lever cap-plate pivoted to said casing, connected therewith by said spring, and carrying the eccentrically-arranged tension-pulley, and stops on said casing and cap-plate for limiting the throw of the latter, substantially as described.

447,445. SAD-IRON HEATER. AUGUST F. CHARLE and EDWARD M. ROBERTS, Marion, Kans., assignors, by direct and mesne assignments, to said Charle and Joseph C. Price, Evansville, Ind. Filed Mar. 31, 1888. Serial No. 269,090. (No model.)



Claim.—1. The combination of the hollow iron having the opening in its upper side, the vapor-burner secured in the iron, the latter being provided at its lower edges with openings B, and the detachable bottom plate having the side flanges V projecting from its upper side and arranged within and out of contact with the inner side of the iron when said plate is secured to the latter, for the purpose set forth, substantially as described.

2. The combination of the sad-iron body having notches in its lower edges, the bottom plate having flanges extending along and at a short distance from its edges parallel to the notched sides of said body, and a vapor-burner extending longitudinally through the casing and arranged to project the flame downwardly and against the deflectors formed by the flanges upon the bottom plate, substantially as and for the purpose set forth.

3. The combination of the sad-iron body, the vapor-burner extending longitudinally through said body and arranged to project flame downwardly, and the supply-tubes extending through the body parallel to the vapor-burner and attached to the latter at one end, substantially as set forth.

447,446. VEHICLE-CLEANING DEVICE. JOHN H. COOK, Washington, D. C. Filed Mar. 18, 1889. Serial No. 303,764. (No model.)

Claim.—1. In a device for cleaning vehicle-wheels, the combination, with a water-box adapted to rest upon the periphery of the wheel and provided with perforations, of a cleaning device extending downward from the side of the box in position to clean the side face of the felly, all substantially as shown.

2. In a device for cleaning wheels, the combination, with a perforated box, of cleaning devices applied to the sides of the box and adjustable one in relation to the other, substantially as shown, whereby

the space between the cleaning devices may be varied to suit different-sized wheels.

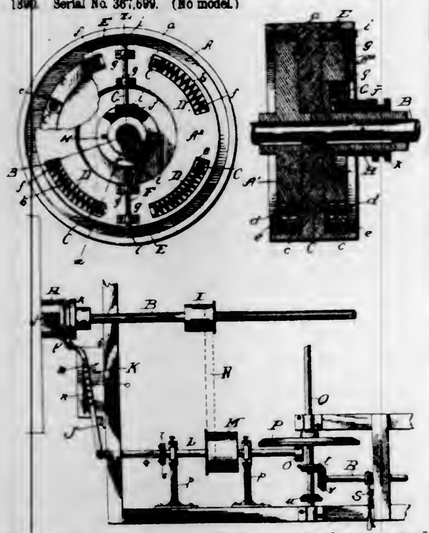
3. In a device for cleaning wheels, the combination, with a perforated box provided with laterally-extending arms, of cleaning devices carried by the arms, and means, substantially such as shown, for varying the space between the cleaning devices.

4. In a device for cleaning wheels, the combination, with the box A, provided with perforations in its lower face, of a cleaning device applied to the side of and adapted to act in conjunction with the box, and rollers secured to the under side of the box, substantially as shown.

5. In combination with a box A, provided with separated chambers *b c*, the latter closed at one end, a valve C, adapted to direct the water into either of the chambers at will, and a cleaning device applied to the side of the box, as and for the purpose set forth.

6. The box A, provided with threaded nipples *e* and *f*, and the separated chambers *b c*, perforations in the bottom wall of chamber *c*, a valve C, adapted to direct water into either of the chambers *b c* at will, and a cleaning device applied to the side of the box.

447,447. **GEARING.** JOHN DAILY, Marengo, Ohio. Filed Oct. 10, 1890. Serial No. 367,699. (No model.)



Claim.—1. The combination, with the central and outer parts of the pulley, of the connecting-pins held in the central part and working in curved slots in the outer parts, and the circumferentially-arranged springs, as set forth.

2. The combination, with the central and outer parts of the pulley, of the pins held in the central part and working in curved slots in the outer parts, the spring-seats held thereby, and the coiled springs held at one end by said seats, substantially as specified.

3. The combination, with the central and outer parts of the pulley, of the segmental geared plates on the outer part and the sliding sleeve operated through connection with the geared plates, as set forth.

4. The combination, with the central and outer parts of the pulley, of the geared plates on the outer part, the sliding sleeve having gear portion, and the shaft journaled on a fixed part of the pulley and carrying gears meshing with the plate and with the gear portion of the sleeve, substantially as specified.

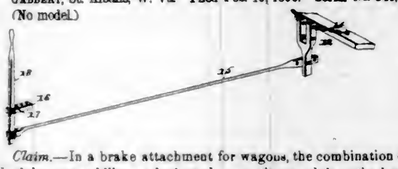
5. The combination, with the shaft, the central part of the pulley, the outer parts fixed to the shaft and having hubs on which the center part is loosely sleeved, the sleeve or collar sliding on the hub, the segmental geared plates on the center part of the pulley, the shafts journaled on one of the fixed parts of the pulley, and the pinions on the shafts meshing with the geared plates and with gear portions on the sliding collar, as set forth.

6. The combination, with the pulley, as described, of the friction-disk, the endwise-movable shaft, the friction-roller carried thereby, the sliding collar of the pulley and the gear thereof, and connections, substantially as described, between the sliding shaft and collar, whereby the movement of the latter governs the speed of the disk-shaft, as set forth.

7. The combination, with the friction-disk and its shaft, of the friction-roller, its shaft movable endwise in its bearings, and the lever pivotally connected with the last-mentioned shaft, of the pulley and its geared portion *j* and movable collar, and a connection between the collar and lever, substantially as specified.

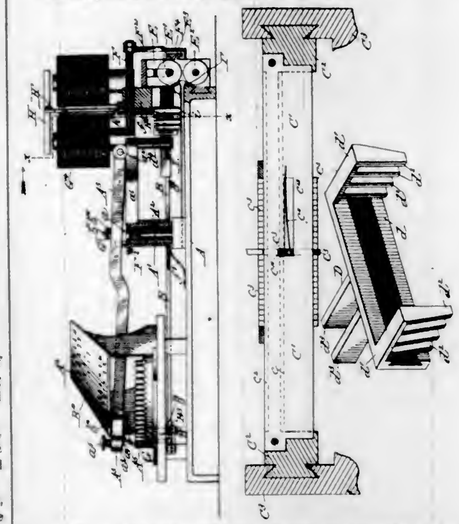
8. The combination, with the friction-disk, its shaft, the friction-roller and its shaft movable endwise in its bearings, and the lever pivotally connected with the endwise-movable shaft and provided with adjustable fulcrum, of the pulley and its geared portion *j* and movable collar connected with the said lever, substantially as specified.

447,448. **WAGON-BRAKE.** JAMES T. GABBERT and WILLIAM D. GABBERT, St. Albans, W. Va. Filed Feb. 19, 1890. Serial No. 341,055. (No model.)



Claim.—In a brake attachment for wagons, the combination of a forked lever straddling and pivoted upon the reach-bar, the brake-bar mounted slidingly upon the hound-frame and connected with the upper ends of the arms of the forked lever, the operating-lever mounted at the front end of the wagon-frame, and a rod connecting the lower end of the operating-lever with the lower end of the forked lever, substantially as set forth.

447,449. **MATRIX-MAKING MACHINE.** THOMAS C. HARGRAVE, Minneapolis, Minn., assignor of one-half to John W. Cobb, same place. Filed May 7, 1890. Serial No. 350,902. (No model.)



Claim.—1. In a matrix-making machine, the combination of a die-carrier having a die-containing channel open at top and bottom with a die-shifter, also open at top and bottom, and means for supporting the dies in the die-containing channel, substantially as described.

2. In a matrix-making machine, the combination of a die-carrier having a die-containing channel open at top and bottom, and dies contained and supported in said channel with their faces in a downward position with a die-shifter, also open at top and bottom, substantially as set forth.

3. In a matrix-making machine, the combination of a die-carrier having a number of die-containing channels and dies sliding in contact with the said channels with a die-shifter having two arms extending across the channels for embracing the lines of dies in said channels and adapted to move the dies back and forth in the channels, all substantially as described.

4. In a matrix-making machine, the combination of a die-carrier having a number of die-containing channels and dies sliding in contact with the said channels with a die-shifter for moving the dies back and forth in the channels, said die-shifter being provided with tongues entering the die-containing channels and adapted to embrace the lines of dies therein, all substantially as described.

5. In a matrix-making machine, the combination of a sliding die-carrier having a number of die-channels containing a number of dies with a die-shifter for moving the dies back and forth in the channels transversely to the movement of the die-carrier, all substantially as described.

6. In a matrix-making machine, a die-carrier having die-channels and a die-shifter for moving the dies back and forth in the channels and provided with a bracket, as d^3, in combination with a key-lever and a stud extending therefrom to engage the bracket, all substantially as described.

7. In a matrix-making machine, a die-carrier having die-channels and a die-shifter having a forwardly-extending forked bracket, in combination with a swinging key-lever having a depending stud for engaging with the forked bracket, all substantially as described.

8. In a matrix-making machine, the combination of a die-carrier having die-channels, each channel containing a row of dies, with a die-shifter having a vertical body and arms extending over the die-carrier to embrace the rows of dies and provided with tongues depending into the die-channels, all substantially as described.

9. In a matrix-making machine, the combination of a sliding die-carrier provided with channels containing rows of dies and a die-shifter movable transversely to the sliding movement of the die-carrier and provided with a forked bracket extending therefrom with a key-lever having a depending stud for engaging the forked bracket, all substantially as described.

10. In a matrix-making machine, a die-carrier containing die-holding channels provided with die-retaining ribs and having vertical slots and horizontal slots extending therefrom, in combination with pins in said vertical slots and extending into the channels into line with the die-retaining ribs and springs located in the horizontal slots and attached to the pins, all substantially as described.

11. In a matrix-making machine, the combination of a die-depressing plunger with a die-carrier provided with a die-containing channel having a die-retaining rib, a portion of which is held yieldingly, and a die-shifter, all substantially as described.

12. In a spacing device for matrix-making machines, the combination of a sliding flanged piece, as F^2, provided with a flange, as f^2, with an arm for controlling the carriage-feed, and a vibrating shaft, the arm being held adjustably by the vibrating shaft, all substantially as described.

13. In a spacing device for matrix-making machines, the combination of a sliding flanged piece, as F^2, provided with a flange, as f^2, and a slotted vibrating shaft, an arm for controlling the carriage-feed passing through the slot in the vibrating shaft, and a set-screw for holding the arm in position of adjustment, all substantially as set forth.

14. In a matrix-making machine, a matrix-carriage, in combination with a sliding frictional clutch-block and means for causing the clutch-block to grip the carriage on its forward movement and to release the same on its return, all substantially as described.

15. In a matrix-making machine, a step-by-step spacing device consisting of a carriage having a rib carrying a sliding block and a dog having a cam-face journaled therein, in combination with a vibrating dog and means for returning the sliding block to its initial position, all substantially as described.

16. In a matrix-making machine, a step-by-step spacing device consisting of a carriage provided with a rib carrying a sliding block and a dog journaled in the block, the journal being partly cut away, in combination with a vibrating dog and a spring for returning the sliding block to its initial position, all substantially as described.

17. In a matrix-making machine, the combination of a character-board and a pointer mounted on and adapted to slide over the same with a key-lever and means for loosely connecting the key-lever with the pointer, all substantially as described.

18. In a matrix-making machine, the combination of a character-board provided at its lower edge with a bead and a pointer having a sleeve for embracing the said bead with a key-lever and means for connecting the key-lever with the pointer, all substantially as described.

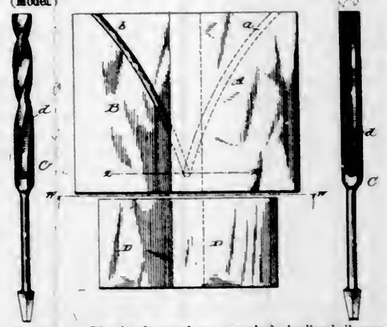
19. In a matrix-making machine, a character-board provided at its lower edge with a bead and a pointer having a sleeve for embracing the said bead and a downwardly-extending fork, in combination with a key-lever straddled by the fork, all substantially as described.

20. In a matrix-making machine, the combination of a matrix-carriage with a bed and a stripper-plate, the space between the bed and stripper-plate being flared opposite the matrix-carriage, all substantially as described.

21. In a matrix-making machine, an electric circuit for operating a die-plunger, comprising a key-lever included in said circuit and adapted to close the same when depressed and a spring for raising the key-lever and connecting the same with a binding-post in the circuit, substantially as described.

22. In a matrix-making machine, a horizontally-swinging key-lever adapted to be depressed, in combination with a spring attached to the top thereof by a headed pin passing loosely through the perforation in the same and a binding-post in an electric circuit, the spring being connected to the binding-post, all substantially as described.

447,450. **PROCESS OF AND DIES FOR MAKING TWIST-DRILLS.** THOMAS HOOKER, Syracuse, N. Y. Filed Mar. 15, 1890. Serial No. 344,028. (Model.)



Claim.—1. Dies having each an oppositely-inclined rib upon their adjacent faces of a cross-section corresponding to that of the finished groove in the drill and constructed to be operated to twist and roll a blank placed therebetween, as set forth.

2. Dies formed upon their acting faces with oppositely-curved ribs, a single rib on each die, as and for the purpose specified.

3. Dies for the purpose specified, formed upon their adjacent faces with inclined ribs, one upon each die, terminating at a distance from the edge of the die, substantially as specified.

4. The combination, with the main dies, each formed with a single curved rib constructed to twist, roll, and finish a drill-blank, of accessory dies independent of the main dies and constructed to roll the shank of the blank, substantially as specified.

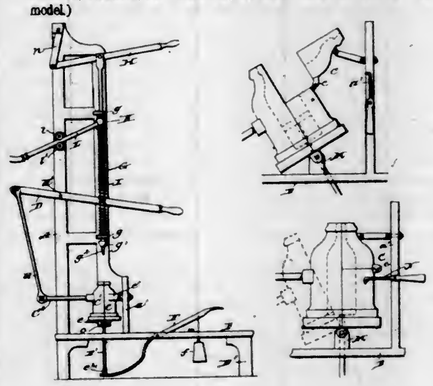
5. The combination, with the main dies, formed upon their adjacent faces each with a single oppositely-inclined rib upon curved lines and of a contour corresponding to the shape of the desired completed groove, of accessory dies independent of the main dies and capable of being moved independent thereof at different rates of speed, as set forth.

6. The process herein described, which consists in passing a forged blank having a straight groove between flat parallel plates, forming a twist therein while revolving it by the continuous action of a single rib, substantially as specified.

7. The process herein described, which consists in passing a forged blank having a straight groove between parallel flat plates, forming a twist therein while revolving it by the continuous action of a single rib upon each plate, and simultaneously reducing the cylindrical portion to proper size and straightening it, substantially as specified.

8. The process herein described, which consists in passing a forged blank having diametrically-opposite longitudinal grooves between parallel plates, engaging said grooves by a continuously-acting rib, and revolving said blank and forming a twist therein during the process of revolving, as set forth.

447,451. **MACHINE FOR FORMING GLASS BOTTLES.** THOMAS B. HOWE, Scranton, Pa. Filed May 14, 1890. Serial No. 351,780. (No model.)



Claim.—1. In a bottle-forming machine, the combination, with the vertically-movable tubular plunger connected to an air-supply adapted to enter the mold, and the lever for operating the same, of the separable mold composed of the halves hinged together at the bottom, one half connected to the frame and the other carrying the mold-bottom and connected to an operating-lever, whereby the mold can be opened and the bottle resting on one half turned to one side by a single operation, substantially as described.

2. In a bottle-forming machine, the combination, with the separable mold hinged together at the bottom, having one half connected to the frame and the hand-lever connected to the opposite side, of the movable piston-bottom within the mold, having the stem passing through a guide on the swinging section of the mold, whereby the bottom is caused to move with the same, an independent lever for elevating the bottom, and the vertically-movable tubular plunger in communication with the air-pressure supply working in bearings above the mold and adapted to fit within and close the mouth of the mold, substantially as described.

3. In a bottle-forming machine, the combination, with the mold and the vertically-movable tubular plunger working in bearings above the mold in communication with the source of air-pressure supply and adapted when depressed to close the mouth of the mold, of a valve controlling a passage of air through said tubular plunger, operated by the movement thereof to turn on the air-pressure when the plunger is depressed and cut off the air-pressure when the plunger is elevated, substantially as described.

4. In a bottle-forming machine, the combination, with the mold, and the vertically-movable plunger working in bearings above the same and adapted when depressed to close the mouth of the mold, of the air-pressure-supply pipe, and a valve for automatically opening and cutting off the supply of air, interposed between said pipe and plunger, substantially as described.

5. In a bottle-forming machine, the combination, with the mold and the vertically-movable tubular plunger mounted in bearings above the mold, of the air-pressure-supply pipe communicating with the plunger and mounted on a pivotal support, and a valve connected to and controlled by said air-pressure-supply pipe, whereby air is admitted when the plunger descends and is cut off as the plunger ascends, substantially as described.

6. In a bottle-forming machine, the combination, with the mold and the vertically-movable tubular plunger mounted in bearings above the mold, of the air-pressure-supply pipe communicating with said plunger, and the rollers between which said pipe passes, mounted on a swivel base, and a valve connected to and controlled by said pipe for regulating the admission of air to the plunger, substantially as described.

7. In a bottle-forming machine, the combination, with the frame, the mold divided vertically into halves hinged together at the bottom, and one of said halves divided horizontally into two parts hinged together, with the upper section connected to the frame by a link, of the hand-lever connected to the other half for opening the mold, substantially as described.

8. In a bottle-forming machine, the combination, with the frame, the mold divided vertically into halves hinged together at the bottom, and one of said halves divided horizontally into two parts hinged together, with the upper section connected to the frame by a link, of the hand-lever connected to the other half for opening the mold, and the vertically-movable piston-bottom within the mold, whereby the amount of glass inserted may be gaged, substantially as described.

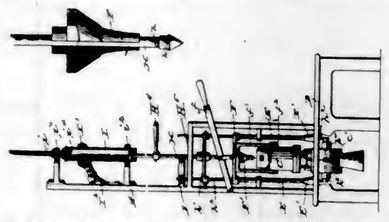
9. In a bottle-forming machine, the combination, with the frame, the mold divided vertically into halves hinged together at the bottom, and one of said halves divided horizontally into two parts hinged together, a link connecting the upper section of said half and the frame, and a catch for holding the lower section in vertical position, of a hand-lever connected to the other half and a vertically-movable piston-bottom within the mold, substantially as described.

10. In a bottle-forming machine, the combination, with the separable mold composed of two sections hinged together at the bottom and a hand-lever pivoted to the frame and one of the mold-sections for opening the latter, of the vertically-movable plunger operating in bearings above the mold, the hand-lever pivoted thereto, and a link connecting said lever and the frame, the air-pressure-supply pipe communicating with the plunger and the foot-lever for elevating the piston-bottom, substantially as described.

447,452. BOTTLE-FORMING MACHINE. THOMAS B. HOWR, Scranton, Pa. Filed July 8, 1890. Serial No. 358,117. (No model.)

Claim.—1. In a bottle-forming machine, the combination, with the mold and the air-supply tube passing within the mold, of the cylinder communicating with said tube and the handle for depressing the cylinder and forcing its contained air through the tube, substantially as described.

2. In a bottle-forming machine, the combination, with the mold and vertically-movable air-pressure-supply tube, of the air-chamber at the upper end of the tube and the handle for simultaneously depressing the tube and compressing the air within the chamber, substantially as described.



3. In a bottle-forming machine, the combination, with the mold and the vertically-movable air-pressure-supply tubes having the piston at the upper end, of the vertically-movable cylinder surrounding said piston and the handle for depressing said cylinder to compress the air within the same, substantially as described.

4. In a bottle-forming machine, the combination, with the mold, the vertically-movable air-pressure-supply tube having the piston at the upper end, and the handle thereon for holding the same depressed, of the vertically-movable cylinder surrounding said piston and the handle for depressing said cylinder to compress the air within the same, substantially as described.

5. In a bottle-forming machine, the combination, with the divided mold, of the vertically-movable plunger having the downward extensions embracing the sections of mold to hold the same closed and the air-pressure-supply tube passing through the plunger, substantially as described.

6. In a bottle-forming machine, the combination, with the mold formed in halves hinged together at the bottom, of the vertically-movable plunger fitting within the mouth of the mold, the downward extensions on the plunger embracing the halves of said molds when depressed, and the vertically-movable air-pressure-supply tube working through said plunger, substantially as described.

7. In a bottle-forming machine, the combination, with the mold formed in halves hinged together at the bottom, said halves having abutting lugs, of the vertically-movable plunger having the bifurcated downward extensions embracing said lugs and the air-pressure-supply tube passing through the plunger, substantially as described.

8. In a bottle-forming machine, the combination, with the mold and the piston working within and forming the bottom of the same, of the vertically-movable air-pressure-supply tube and the rods moved by the tube for depressing the piston as the tube is depressed, substantially as described.

9. In a bottle-forming machine, the combination, with the mold and the piston working within and forming the bottom of the same, of the vertically-movable plunger for closing the mouth of the mold, the air-pressure-supply tube working through said plunger, and the rods moved by the air-pressure-supply tube for depressing the piston, substantially as described.

10. In a bottle-forming machine, the combination, with the mold, the piston working within and forming the bottom of the same, and the lever for elevating said piston, of the vertically-movable plunger fitting within the mouth of the mold, the tubes on which said plunger is mounted, the vertically-movable air-pressure-supply tube mounted on rods passing through the tubes which carry the plunger, and the cross-piece or roller at the bottom of said rods adapted to engage the foot-lever to depress the piston, substantially as described.

11. In a bottle-forming machine, the combination, with the mold and the tubular plunger for fitting within the mouth of the same, of the air-pressure-supply tube having the closed end and the exit-apertures above the end, adapted to be closed by the plunger, substantially as described.

12. In a bottle-forming machine, the combination, with the mold and the tubular plunger fitting within the same to form the mouth of the bottle, of the air-pressure-supply tube having the enlarged end below the plunger and the exit-apertures above said head, substantially as described.

13. An air-pressure-supply tube for bottle-forming machines, having an enlarged end with the exit-apertures for the air above said enlargement, substantially as described.

14. An air-pressure-supply tube for bottle-forming machines, having the sharpened and enlarged end and the exit-apertures for the air above the same, substantially as described.

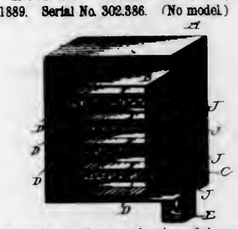
15. In a bottle-forming machine, the combination, with the mold and plunger fitting within the mouth of the same, of the air-pressure-supply tube working through said plunger and having the end below the same of substantially the same diameter as the end of the plunger, substantially as described.

16. In a bottle-forming machine, the combination, with the mold, of the piston working within and forming the bottom of the mold and an adjustable stop for gaging the downward movement of the piston, whereby different-sized bottles may be formed in the mold, substantially as described.

17. In a bottle-forming machine, the combination, with the mold and the piston working within and forming the bottom of the mold, of the rods for depressing the piston, having the adjustable stop for gaging the downward movement of the piston, whereby different-sized bottles may be formed in the same mold, substantially as described.

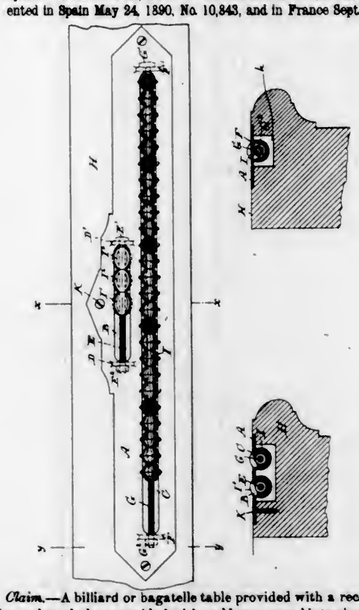
18. In a bottle-forming machine, the combination, with the mold and the piston working within and forming the bottom of the mold, of the movable air-supply tube, the adjustable stop on said tube, and the rods connected to the tube for depressing the piston in unison with the air-supply tube, substantially as described.

447,453. INCUBATOR. HERMAN H. UNLAND, Cimarron, Kans. Filed Mar. 7, 1889. Serial No. 302,386. (No model.)



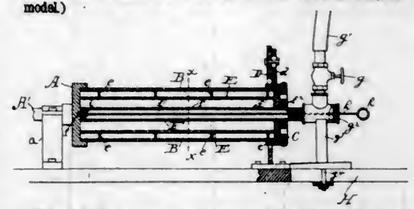
Claim.—In an incubator, the combination of the casing A, a hatching-chamber B, egg-trays D, arranged a short distance apart in the hatching-chamber, a vertical hot-air chamber C within the casing A, pipes J, connecting the chamber C with the hatching-chamber just above each egg-tray, and means for heating the air in said chamber as and for the purpose set forth.

447,454. GAME-COUNTER. ARTURO V. Y VELASCO, Barcelona, Spain. Filed Nov. 20, 1890. Serial No. 372,112. (No model.) Patented in Spain May 24, 1890, No. 10,843, and in France Sept. 29, 1890.



Claim.—A billiard or bagatelle table provided with a recessed rail or rim, a slotted plate provided with end lugs secured into the recessed portion of said rail or rim, rods or bars supported in the lugs of said plate, and nuts applied at each end of said rods or bars, and balls mounted on said rods or bars and accessible from the face of said slotted plate, all arranged in the manner shown, and for the purposes described.

447,455. MACHINE FOR MAKING PULP CYLINDERS. FRANK L. BARTLETT, Portland, Me. Filed Apr. 7, 1890. Serial No. 346,809. (No model.)



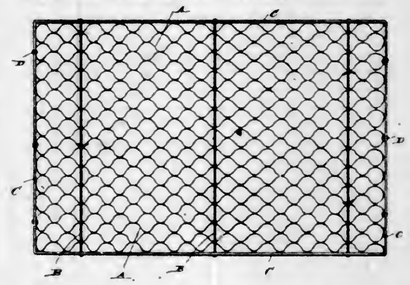
Claim.—1. In a centrifugal machine for forming pulp cylinders, a rotating outer perforated tube, an inner perforated tube of smaller diameter secured concentric therewith to form a drainage-space between said tubes, and means for supplying pulp to said inner tube, in combination, substantially as described.

2. In a centrifugal machine for forming pulp cylinders, an outer perforated tube, an inner perforated tube concentric therewith, and annular rings or collars for separating said tubes, in combination, substantially as described.

3. In a centrifugal machine for forming pulp cylinders, a rotating pervious tube and a non-rotating pulp-supply pipe fixed centrally therein and having pulp-openings throughout its entire length, in combination, substantially as described.

4. A pervious cylinder, a pulp-supply pipe extending centrally through it, a T or branch at the outer end of said pipe connecting with a source of supply, a plug in the end of said pipe having an aperture therein, and a clearing-rod passing through said aperture and extending through said pipe, in combination, substantially as described.

447,456. DOOR-MAT. JOHN G. BATTELLE, Covington, Ky. Filed Jan. 9, 1888. Serial No. 260,258. (No model.)



Claim.—1. The combination of the continuous folded corrugated ribbon A and transverse binding-rods B, on which the ribbon is free to slide, substantially as and for the purposes specified.

2. The combination of the continuous folded corrugated ribbon A, transverse binding-rods B, and surrounding frame C, substantially as and for the purposes specified.

3. In a door-mat, the combination of a surrounding frame and a continuous folded corrugated ribbon, the ribbons not crossing one another, but lying alongside of each other, the curved flattened part of one ribbon being close to the curved part of the adjacent ribbon, the ribbons being supported by the transverse binding-rods fastened to the frame and passing through said swelled flattened portion of the ribbons loosely, leaving the ribbons free to slide on said rods, substantially as and for the purposes specified.

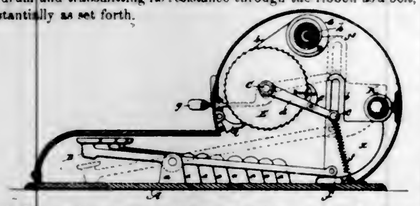
4. A door-mat consisting of a series of flexible rows of corrugated ribbon and guide-rods for the said rows to slide on, passing laterally through holes in the ribbons and provided with retaining-heads at each end, substantially as and for the purpose set forth.

5. A door-mat consisting of a series of laterally-flexible rows of corrugated ribbon and inflexible retaining devices for maintaining the said rows of ribbons in the same relative positions with regard to each other, substantially as and for the purpose set forth.

447,457. ADDING-MACHINE. WILLIAM H. BEARDSLEY and LEWIS M. HOSKA, Cincinnati, Ohio. Filed Dec. 23, 1889. Serial No. 334,731. (No model.)

Claim.—1. In a register or adding-machine, the combination of a series of manipulating-keys, a rotating drum actuated thereby, a ribbon-reel, a numbered strip or ribbon wound upon said drum and pay

ing off from said reel, and a spring actuating said reel in opposition to the drum and transmitting its resistance through the ribbon as a belt, substantially as set forth.



2. The combination, in a register or adding-machine, of a series of manipulating-keys, a ribbon-winding drum actuated by said keys in progressive increments of rotation according to their relative values, a strip or ribbon having numbers in consecutive series indicated visually thereon, a reel from which the strip or ribbon passes to the drum, a spring actuating said reel in opposition to the winding action of the drum, a ratchet upon the drum-shaft, and a pawl engaging therewith to retain it in advanced positions, substantially as set forth.

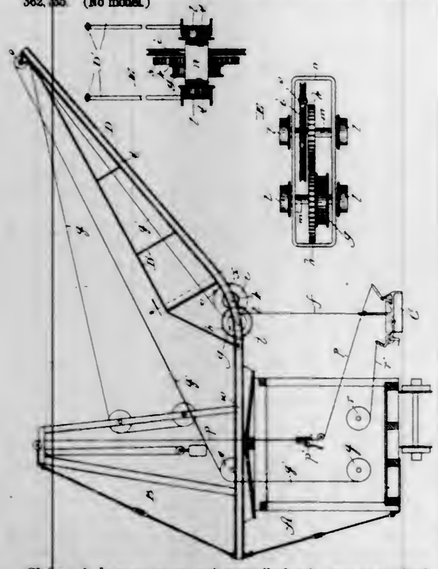
3. In a register or adding-machine, the combination of a drum-shaft provided with a ratchet wheel or wheels, a series of manipulating-levers arranged below and transversely to the shaft, having varying fulcrum positions, a series of duplicated slotted links pivotally secured to the rear of the levers in a common pivotal line and extending thence upward in a common plane, a yoke concentrically hung upon the drum-shaft, extending rearwardly, having its cross-bar embraced by all the link-slots, and a pawl or pawls upon the yoke-arms engaging said ratchet wheel or wheels, substantially as specified.

4. In a register or adding-machine, the combination, with a drum-shaft, a winding-drum loose thereon, manipulating-levers connected with said drum, actuating connections between the levers and drum, and a spring-retracted reel, of a number-carrying band permanently fastened to the reel and drum, substantially as described.

5. The combination of the drum-shaft, the loose drum, the adjustable clutch, the spring-retracted wheel, the ribbon, and the spring-impelled block acting as a brake upon the drum and engaging in a detent upon its periphery, substantially as set forth.

6. In combination with the loose drum, clutch, and friction-brake, the manipulating-levers *g* and *k*, arranged for conjoint operation, as set forth.

447,458. FEEDING APPARATUS FOR USE IN BURNING CLAY. HENRY G. BUTLER and WILLIAM BUTLER, Kenosha, Wis. Filed Aug. 22, 1890. Serial No. 362,736. (No model.)



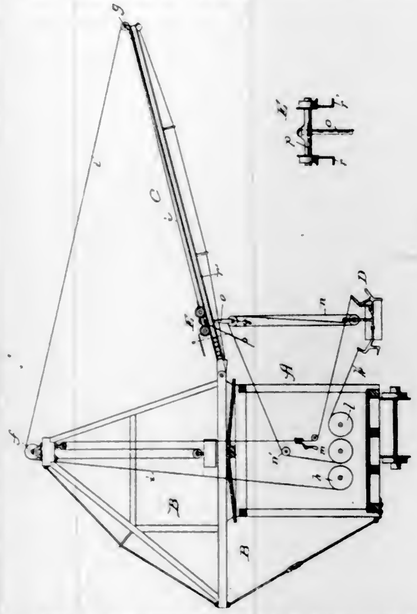
Claim.—1. In an apparatus substantially for the purpose set forth, the combination, with the support A, provided with winding mechanism *q r*, of a boom D, having a track extending lengthwise along it, a carriage supported on the track and provided with intermeshing gears, a scraper C, suspended from one of said gears and connected by a flexible medium *r'* with and controlled from the winding device *r*, the other said gear being connected by the flexible medium *q'* with and controlled from the winding device *q*, the said intermeshing gear operating by the weight of the scraper, when lowered, to wind up slack in the connecting medium *q'*, and, by drawing against the carriage to move it, to unwind the said slack and thereby raise the scraper, substantially as described.

2. In an apparatus substantially for the purpose set forth, the combination, with the support A, of a boom D, rising toward its outer end and comprising flanged beams *l*, braced by a truss structure D' and forming with their adjacent flanges an inclined track, a carriage E, supported on the track, a scraper suspended from the carriage, and winding mechanism on the support A for controlling the movement of the carriage and the operations of the scraper, substantially as described.

3. In an apparatus substantially for the purpose set forth, the combination, with the support A, of a boom D, having a track extending lengthwise along it and rising toward its outer end, a carriage E, supported on the track and provided on its axles with the intermeshing pinions *k* and *h* and the pulleys *i* and *g*, winding-drums *r* and *q* on the support A, a scraper C, suspended by a cable *f* from the pulley *g*, a cable *q'*, connecting the pulley *i* with the drum *q*, and a cable *r'*, connecting the scraper with the drum *r*, substantially as described.

4. In an apparatus substantially for the purpose set forth, the combination, with the car A, of a boom D, rising toward its outer end and comprising I-beams *l*, braced by a truss structure D' and forming between their adjacent flanges an inclined track, a carriage E, supported on the track and comprising a frame *n*, provided with axles *m* and *m'*, carrying the wheels *l*, the intermeshing pinions *k* and *h*, and the pulleys *i* and *g*, winding-drums *r* and *q* on the car, a scraper C, suspended by a cable *f* from the pulley *g*, a cable *q'*, connecting the pulley *i* with the drum *q*, and a cable *r'*, connecting the scraper with the drum *r*, the whole being constructed and arranged to operate substantially as described.

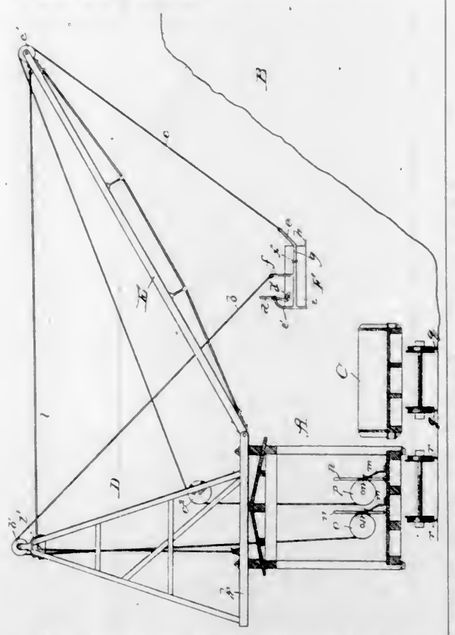
447,459. FEEDING APPARATUS FOR USE IN BURNING CLAY. HENRY G. BUTLER and WILLIAM BUTLER, Kenosha, Wis. Filed Aug. 22, 1890. Serial No. 362,736. (No model.)



Claim.—1. In an apparatus substantially for the purpose set forth, the combination of a support A, provided with winding-drums *l*, *m*, and *h*, and carrying a mast B, a boom C, having a track extending lengthwise along it and rising toward its outer end, a carriage E, supported on the track and connected from its forward end by a cable *i* with the drum *h*, a scoop or scraper D, suspended from the carriage by a cable *n*, connected with the drum *m*, and a cable *k*, connecting the device D from its forward end with the drum *l*, substantially as described.

2. In an apparatus substantially for the purpose set forth, the combination of a car A, provided with winding-drums *l*, *m*, and *h*, and carrying on its roof the mast structure B, a boom C, extending from the car and provided with a track rising toward the outer end of the boom, a carriage E on the track, connected from its forward end by a cable *i* with the drum *h* and provided with a suspension-rod *o*, carrying a pulley *q*, a scoop or scraper D, suspended from the pulley *q* by a cable *n*, connected with the drum *m*, and a cable *k*, connecting the device D from its forward end with the drum *l*, the whole being constructed and arranged to operate substantially as described.

447,460. BALLAST-LOADING APPARATUS. WILLIAM BUTLER and ZALMON G. SIMMONS, Jr., Kenosha, Wis. Filed Sept. 22, 1890. Serial No. 365,821. (No model.)

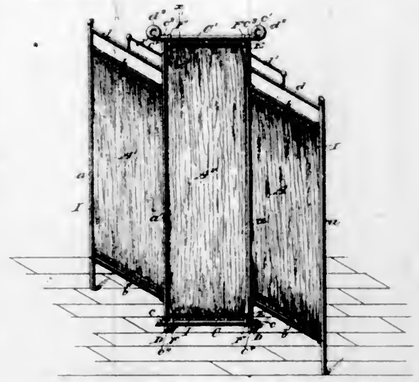


Claim.—1. In a loading apparatus substantially for the purpose set forth, a car A on a track *r*, extending along the burnt side of a pile B, a mast D on the roof of the car, having a boom E extending toward the pile, winding mechanism on the car, and a scoop connected with the winding mechanism by a cable *c* to control the scoop to be dragged up the side of the pile in the direction away from the car, and by a cable *b* for hoisting the scoop, substantially as described.

2. In a loading apparatus, a car A on a track *r*, extended along the burnt side of a pile B, a mast D on the roof of the car, having a boom E extending toward the pile, a scoop F, comprising a bucket *i*, pivotally supported eccentrically in a frame *g* and having a beak *h* at its forward end and a catch *d'*, and a handle *e*, bail *f*, and latch *d* on the frame, winding-drums *o* and *p* on the car, a cable *c*, connecting the scoop from the frame *g* with the drum *p* and passing over guide-pulleys *c'* and *c²*, and a cable *b*, connecting the scoop from its bail *f* with the drum *o* and passing over a guide-pulley *b'* on the mast, the whole being constructed and arranged to operate substantially as described.

3. A loading apparatus comprising, in combination, a car A on a track *r*, extended along the burnt side of a pile B, a mast D on the roof of the car, having a boom E extending from it toward the pile, a scoop F, comprising a bucket *i*, pivotally supported eccentrically in a frame *g* and having a beak *h* at its forward end and a catch *d'*, and a handle *e*, bail *f*, and latch *d* on the frame, winding-drums *o* and *p* on the car, spring-controlled levers *n*, carrying brake-shoes for the drums, a cable *c*, connecting the scoop from the frame *g* with the drum *p* and passing over guide-pulleys *c'* and *c²*, and a cable *b*, connecting the scoop from its bail *f* with the drum *o* and passing over a guide-pulley *b'* on the mast, the whole being constructed and arranged to operate substantially as described.

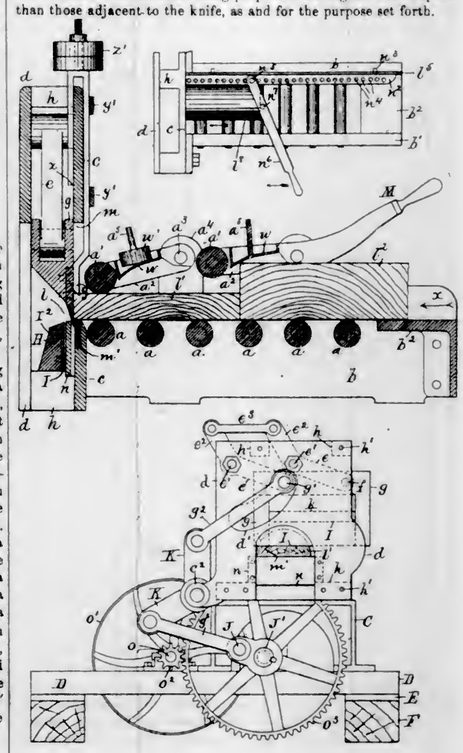
447,461. FOLDING SCREEN. JAMES W. CAMPBELL, Germantown, assignor to Ferguson Brothers, New York, N. Y. Filed Oct. 20, 1890. Serial No. 368,623. (No model.)



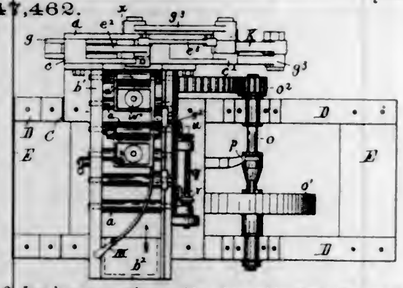
Claim.—The combination, with two outer panels having rigid frames, each consisting of two uprights and cross-bars connecting the uprights, of an intermediate panel formed by a pair of cross-bars pivotally connected at their opposite ends with the adjacent uprights or the rigid frames of the outer panels, substantially as set forth.

447,462. LOG-CROSSCUTTING MACHINE. THOMAS S. CRANE, East Orange, N. J., assignor to Edward Bradley, New York, N. Y. Filed May 1, 1890. Serial No. 350,195. (No model.)

Claim.—1. In a log-crosscutting machine, the combination, with a shear-plate and a knife movable past the same for cutting the logs, of feed-rolls arranged to propel a series of logs toward the knife, the rolls farthest from the knife being propelled at a higher rate of speed than those adjacent to the knife, as and for the purpose set forth.



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2. In a log-crosscutting machine, the combination, with a suitable bed for sustaining the logs, of a knife-carriage reciprocated transversely to the bed, with the knife *g* and gage-plate I, the slide movable vertically adjacent to the knife and provided with the dog *y* at its lower end, the weight *x'* upon the slide, and the arm *z*, projected from the slide in the path of the knife-carriage and lifted by the carriage during the feeding movement of the log, substantially as herein set forth.

3. In a log-crosscutting machine, the combination, with a suitable bed to support the logs, a knife reciprocated transversely to the bed, and a gage-plate movable with the knife, of feed-rolls rotated in the bed to propel the logs, and one or more rolls *a*, mounted in roll-frames a^3, pivoted at one end only by studs a^3 and provided with the weight-studs a^4 and removable weights *w'*, substantially as herein set forth.

4. In a log-crosscutting machine, the combination, with a suitable bed for sustaining the logs, of a head consisting in the plates c and *d*, sustained transverse to the bed, the knife-carriage *g*, carrying the knife *k* and gage-plate I and pivoted movably within the head by links *e*, and a crank and connections to the carriage for reciprocating the same, substantially as herein set forth.

5. In a log-crosscutting machine, the combination, with a suitable bed for sustaining the logs, of a head consisting in the plates *c* and *d*, fixed transverse to the bed, the knife-carriage *g*, carrying the knife *k* and gage-plate I and pivoted movably within the head by links *e*, the crank-shaft J', arranged beneath the bed and provided with the crank J, the bell-crank K, pivoted upon the head, and the links g^2 and g^3, the whole arranged and operated substantially as set forth.

6. In a log-crosscutting machine, the combination, with a suitable bed for sustaining the logs, of a head consisting in the plates *c* and *d*, fixed transverse to the bed, the knife-carriage *g*, carrying the knife *k* and gage-plate I and pivoted movably within the head by links *e*, the crank-shaft J', arranged beneath the bed and provided with the crank J, the bell-crank K, pivoted upon the head, and the links g^2 and g^3, the series of rolls *a* in the bed, the shaft *q*, conected with the shaft J', as described, and gearing connecting the shaft *q* with the feed-rolls and adapted to rotate the rolls at different speeds, as and for the purpose set forth.

447,463. GATE FOR RAILWAY-TRACKS. WILLIAM P. ELLIOTT, Chicago, Ill. Filed Apr. 1, 1890. Serial No. 346,207. (No model.)

Claim.—1. In a system of gates for conflicting railroad-crossings, the combination, with a series of gates for one of the conflicting tracks and a gate or gates for the other of the conflicting tracks, each of said gates comprising pivoted bars operated by fluid-motors, of suitable pipes for delivering the motor fluids to said motors, and said pipes having valves to control the passage of the fluid therethrough, the valves for the series being coupled together and the valve or valves for the gates of the other conflicting track arranged in a plane intersecting that in which the first-named valves are placed, and valve-stems for the respective sets of valves adapted when rocked to intercept each other's path, whereby to lock one series of gates while the other is being operated, substantially as described.

2. In a system of gates for conflicting railroad-crossings, the combination, with a series of gates for one series of conflicting tracks and a gate or gates for the other conflicting track or tracks, each of said gates having a pivoted gate-bar operated by a fluid-motor, of pipes for delivering the motor fluid thereto, said pipes having valves therein connected in pairs to correspond with the gates, rigid valve-stems having their ends linked together, and the valves for the respective series of gates being arranged in planes intersecting each other, whereby when said valve-stems are turned they are caused to lock the valve-stems of the other series against movement, substantially as described.

3. In a system of gates for conflicting railroad-crossings, the combination, with the gates for the respective series, of pipes for delivering a motor fluid to the respective gates, said pipes having valves assembled in proximity to each other, valve-stems located in planes intersecting each other, disks secured to move with said valve-stems, locking-seats on the adjoining faces of said disks, a locking-lever adapted to reciprocate between said locking-seats and adapted for engagement therewith, and means for reciprocating said locking-lever, whereby when one set of gates is operated said locking-bar is caused to engage with and lock the operative mechanism of the conflicting series of gates against movement, substantially as described.



4. In a system of gates for conflicting railroad-crossings, the combination, with the gates for the respective series, of pipes for delivering a motor fluid to the respective gates, said pipes having valves assembled in proximity to each other, valve-stems located in planes intersecting each other, disks secured to move with said valve-stems, locking-seats on the adjoining faces of said disks, a locking-lever adapted to reciprocate between said locking-seats and for engagement therewith, and auxiliary motors actuated by the gate-motors and adapted to reciprocate said locking-lever when one set of gates is operated whereby to cause said lever to engage with and lock the operative mechanism of the said series of gates against movement, substantially as described.

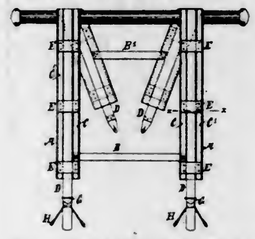
5. In a system of gates for conflicting railroad-crossings, the combination, with a series of gates for one series of conflicting tracks and a gate or gates for the other conflicting track or tracks, each of said gates having a pivoted gate-bar operated by a fluid-motor, of pipes for delivering a motor fluid thereto, said pipes having valves assembled in proximity to each other, valve-stems located in planes intersecting each other, disks secured to move with said valve-stems, locking-seats on said disks, a locking-lever adapted to reciprocate between said locking-seats and for engagement therewith, a series of auxiliary motor-cylinders corresponding in arrangement with the prime motors and operated thereby and all connected to a common pipe for delivering a motor fluid to means for reciprocating said locking-lever, said auxiliary cylinders having exhaust-ports in their side walls, whereby when the series of gates is operated the motor fluid from each of said auxiliaries may exhaust until the ports of all are covered and the locking mechanism is operated by the auxiliary last to act, substantially as described.

6. In a system of gates for conflicting railroad-crossings, the combination, with a gate or gates for each of the conflicting tracks, each having pivoted gate-bars operated by a fluid-motor, of pipes for delivering the motor fluid, said pipes having valves therein assembled in proximity to each other, valve-stems located in planes intersecting each other, and a reciprocating locking-bar actuated by an auxiliary motor, a lever pivotally connected between its ends with said locking-bar, and movable stops adapted to be controlled by the auxiliary motor and adapted to furnish a bearing for the lower end of said pivoted lever, whereby said bar may be moved out of locking engagement with the operating mechanism for one set of gates and into engagement with the other at the will of the operator, substantially as described.

7. In a system of gates for conflicting railroad-crossings, the combination, with a gate or gates for each of the conflicting tracks, each having pivoted gate-bars operated by a fluid-motor, of pipes for delivering the motor fluid, said pipes having valves therein assembled in proximity to each other, valve-stems located in planes intersecting each other, a reciprocating locking-bar actuated by an auxiliary motor, a lever pivotally connected between its ends with said locking-bar, movable stops adapted to be controlled by the auxiliary motor and adapted to furnish a bearing for the lower end of said pivoted lever, and means for controlling the auxiliary motor, whereby to exhaust the same and thereby prevent the return of one of the stops to a position to engage the pivoted lever, whereby when the operator has selected a gate or series of gates to unlock the unlocking of the conflicting series by the manipulation of the pivoted lever is rendered impossible, substantially as described.

8. In a system of gates for conflicting railroad-crossings, the combination, with a series of gates for one series of conflicting tracks and a gate or gates for the other conflicting tracks, each of said gates having a pivoted gate-bar operated by a fluid-motor, of pipes for delivering a motor fluid thereto, said pipes having valve-stems assembled in proximity to each other, said stems located in planes intersecting each other, disks secured to move with said valve-stems, locking-seats on said disks, a locking-lever adapted to reciprocate between said locking-seats, bell-crank levers having one of their members pivotally connected to said locking-lever near its ends, said members having bent ends adapted to engage the locking-seats, and a series of auxiliary motor-cylinders corresponding in arrangement with the prime motors and operated thereby and all connected to a common pipe for delivering a motor fluid to means for rocking said bell-crank levers and thereby reciprocating said locking-lever, substantially as described.

447,464. SHOULDER-BRACE. HERRMANN HEYDER, Reichthal, Germany. Filed Nov. 28, 1890. Serial No. 372,850. (No model.) Patented in Germany Mar. 8, 1890, No. 54,605.



Claim.—1. The combination of bands A with strips C C' secured thereto to form grooves, straps E, spanning the grooves, and with longitudinal bands D within the grooves and having fastening devices at the ends, substantially as specified.

2. The combination of bands A with strips C C' secured thereto to form grooves, straps E, spanning the grooves, longitudinal bands D within the grooves and having fastening devices at the ends, and with cross-bands B B', that connect bands A, substantially as specified.

447,465. CORN-HARVESTER. SAMUEL C. KENAGA, Chicago, Ill. Filed July 12, 1889. Serial No. 317,302. (No model.)

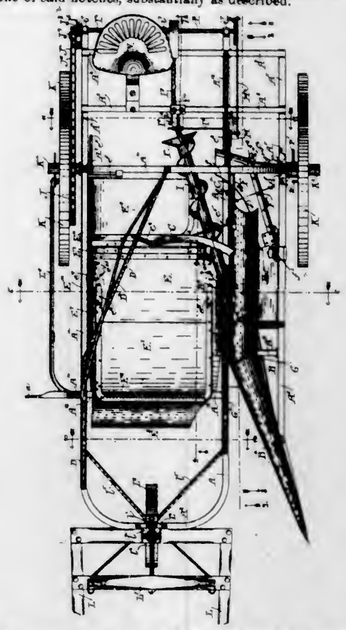
Claim.—1. The combination, with the thill of a corn-harvester, of a downwardly and forwardly extending guide-rod or parting-guide, and a longitudinal guide-rod located below the thill, attached at its forward end to the said parting-guide, and extending rearwardly to a point adjacent to the front end of the machine, substantially as described.

2. The combination, with the frame of a corn-harvester and a cutting-knife thereon, of an elevated deflector for throwing the tops of the corn forward, said deflector being longitudinally adjustable upon the machine-frame, substantially as described.

3. The combination, with the frame of a corn-harvester and a cutting-knife thereon, of a deflector for throwing the tops of the corn forward, said deflector being longitudinally movable on the machine-frame, and a locking device for securing said deflector in place, substantially as described.

4. The combination, with the frame of a corn-harvester and a cutting-knife thereon, of a deflector for throwing the tops of the corn forward, said deflector being longitudinally movable on the machine-frame, and a bar for moving said deflector, attached to the deflector and extending rearwardly therefrom, substantially as described.

5. The combination, with the longitudinally-adjustable deflector C, having sliding connection with the machine-frame, of a bar connected with said deflector, said bar being provided with a series of notches, and a stationary stop or projection upon the frame adapted to engage either one of said notches, substantially as described.



6. The combination, with the frame of a corn-harvester and elevated lateral guides for the stalks thereon, of a longitudinally-adjustable deflector for throwing the tops of the corn forwardly, said deflector having sliding engagement with said guides, substantially as described.

7. The combination, with the frame of a corn-harvester, an elevated lateral guide B^3, running outside of the stalks to be cut, and an inclined lateral guide D, of a longitudinally-adjustable deflector for throwing the tops of the corn forwardly, said deflector having sliding engagement at one end with the said guide B^3 and being provided with a slotted arm, which is engaged with the said inclined guide, substantially as described.

8. The combination, with the lateral guide B^3, provided with a longitudinal guide-slot, of the deflector C, provided at one end with a T-head engaging said slot, and a guide for the opposite end of said deflector, substantially as described.

9. The combination, with the frame of a corn-harvester, a cutting-knife, and a receptacle for the cut corn, of a longitudinally-arranged elevated guide for bending the tops of the standing corn inward, said guide being curved or rounded on its upper and inner surface, a longitudinally-adjustable elevated deflector for throwing the tops of the corn forward, and a vertical guide-surface extending downwardly from said guide to a point below the ears on the standing stalks, substantially as described.

10. The combination, with the frame and cutting-knife of a corn-harvester, of a receptacle for the cut corn, a hinged dropping extension at the rear end of said receptacle, and means for actuating said dropping extension, embracing a support for the extension, which is contractible to allow the same to rise to pass over obstructions at times when it is lowered, said receptacle having vertically-movable connection with the frame, whereby the said receptacle may rise and the hinged extension may be bodily lifted to pass over obstructions, substantially as described.

11. The combination, with the frame and cutting-knife of a corn-harvester, of a receptacle for the cut corn, comprising a hinged rear part or dropping extension adapted to swing downwardly to discharge the stalks, and a separate tilting section at the forward part of the receptacle, the forward end of which section is constructed to swing upwardly and rearwardly, so as to thrust the cut stalks toward the rear of the machine, substantially as described

12. The combination, with the frame and cutting-knife of a corn-harvester, of a receptacle for the cut corn, comprising a hinged dropping extension at the rear end of said receptacle and a separate tilting section at the forward part of said receptacle for thrusting backward the cut stalks, and a connection between the dropping extension

and hinged section, by which the former will be lowered when the latter is elevated, substantially as described.

13. The combination, with a receptacle for cut corn, a dropping extension at the rear end thereof, and a tilting section at the forward end thereof, of a connection between said parts, which is contractible to allow the dropping extension to arise to pass over an obstruction in its path, substantially as described.

14. The combination, with the receptacle E, comprising a dropping extension E^3 and a tilting section E^4, of a rigid arm upon the said dropping extension, rods connecting said arm with the tilting section, blocks or clips affording sliding connection between said rods, and stops upon the rods adapted to engage the blocks or clips for limiting the extension of the rods, substantially as described.

15. The combination, with the frame and cutting-knife of a corn-harvester and a receptacle for the cut corn, comprising a dropping extension hinged at the rear end of said receptacle and a separate tilting section hinged to the forward end of the receptacle for thrusting rearwardly the cut stalks, said tilting section being connected with and constructed to actuate the dropping extension, of an actuating bar or rod connected with the said tilting section and extending to a point within reach of the driver, substantially as described.

16. The combination, with the frame and cutting-knife of a corn-harvester and a receptacle for the cut corn, of guides or deflectors for deflecting the corn-tops inwardly and forwardly over the receptacle, and a rotating spiral conveyer located at one side of the knife and provided with a shield or deflector at its rear end, substantially as described.

17. The combination, with the frame and cutting-knife of a corn-harvester and a receptacle for the cut corn, of guides or deflectors for deflecting the corn-tops inwardly and forwardly over the receptacle, and a rotating spiral conveyer located at one side of the knife, said conveyer being adjustable vertically on the machine-frame, substantially as described.

18. The combination, with the frame and cutting-knife of a corn-harvester and guides on the frame throwing the tops of the corn forwardly and inwardly, of a receptacle for the cut corn, consisting of a main part or body supported on the frame, and a tilting section to receive the tops of the corn, located at the front part of the receptacle and hinged at its rear end to said receptacle, so that its forward end may swing upwardly and rearwardly against the tops of the stalks to thrust the latter rearwardly out of the receptacle, substantially as described.

19. The combination, with the frame of a corn-harvester, comprising a longitudinal frame-piece A, which forms a guide for the stalks, and a cutting-knife, of a rotating spiral conveyer located adjacent to the knife, and a support for the forward end of the conveyer, comprising a standard i', attached to the frame-piece A, and a tube i^3, engaging said standard, a bearing i, attached to the top of the tube, and a pin or other equivalent means for securing the tube from the movement on the standard, substantially as described.

20. The combination, with the frame of a corn-harvester, of a cutting-knife supported thereon, said knife having upwardly-yielding connection at each end with the machine-frame, and adjustable means for determining the lowermost position of the knife, substantially as described.

21. The combination, with the frame of a corn-harvester, of a longitudinally-arranged cutting-knife having an oblique cutting-edge and vertically-movable connection with the frame at its forward and rear ends by means allowing free upward movement of both ends thereof, and a spring applied to yieldingly sustain the rear end of the knife from downward movement, substantially as described.

22. The combination, with the frame of a corn-harvester, of a longitudinally-arranged cutting-knife supported on the frame, said knife having upwardly-yielding connection with the frame at both its front and rear ends, and an upwardly and forwardly inclined vertically-movable knife-support or guard connected with the front end of the knife, substantially as described.

23. The combination, with the frame of a corn-harvester, of a cutting-knife supported upon the frame, said knife having upwardly-yielding connection with the frame at both ends, and an upwardly-yielding knife-support pivotally connected at its front end with the frame and connected with the forward end of the knife, substantially as described.

24. The combination, with the frame of a corn-harvester and a cutting-knife having upwardly-yielding connection with the machine-frame at both ends, of a swinging knife-support sustaining its forward end, an upright rod attached to the machine-frame and guiding the rear end of the knife, and a spring sustaining the rear end of the knife, substantially as described.

25. The combination, with the frame of a corn-harvester, of a cutting-knife thereon, having upwardly-yielding connection with the frame at both ends, a swinging knife-support H, said knife-support being pivoted at the forward end of the machine-frame and pivotally connected at its rear end with the forward end of the knife, and a stop for limiting the downward movement of the forward end of the knife and the knife-support, substantially as described.

26. The combination, with the machine-frame and a cutting-knife having vertically-movable connection at its rear end with the frame, of a knife-support hinged at its forward end to the machine-frame and pivoted at its rear end to the forward end of the knife, a rod or bar connected with the said knife-support and having sliding engagement with the machine-frame, and an adjustable stop upon said rod or bar for limiting the downward movement of the said knife-support and the forward end of the knife, substantially as described.

27. The combination, with the frame of a corn-harvester, of a cutting-knife provided with a rearwardly and inwardly inclined cutting-edge, which is inwardly curved at its rear part, said knife being provided with an upwardly-extending flange along its outer edge and across its rear end, substantially as described.

28. The combination, with the machine-frame and a rearwardly and inwardly inclined cutting-knife sustained thereon and operating to sever the stalks by being drawn or carried against the same in the forward movement of the machine, of an auxiliary cutter arranged adjacent to the rear end of the main knife with its cutting-edge in a vertical plane for cutting off inwardly-bent and down stalks which escape the main knife, substantially as described.

29. The combination, with the frame and a cutting-knife of a corn-harvester, said frame being provided with a lower longitudinal inner guide for the corn, of an auxiliary cutter located above the said guide at a point adjacent to the rear end of the main knife, substantially as described.

30. The combination, with the frame and cutting-knife of a corn-harvester and a spiral conveyer thereon, of an auxiliary cutting-knife located adjacent to the rear of the main knife and adjacent to the conveyer for cutting off bent or down stalks which escape the main knife, substantially as described.

31. The combination, with the frame of a corn-harvester and a cutting-knife thereon, said frame being provided with a longitudinal frame-piece, which forms an inner guide for the corn and which extends beneath the rear end of the knife, of an auxiliary cutter attached to said longitudinal frame-piece near the rear end of the knife and extending upwardly from said frame-piece, substantially as described.

32. The combination, with the frame of a corn-harvester and a rearwardly and inwardly inclined cutting-knife thereon, said frame being provided with an inner longitudinal guide for the corn, of an auxiliary cutter located near the rear end of the cutting-knife over said longitudinal guide and extending upwardly therefrom, said auxiliary knife comprising stationary and movable parts operating with a shear action, substantially as described.

33. The combination, with the frame of a corn-harvester and a cutting-knife thereon, said frame being provided with a longitudinal frame-piece, which forms an inner guide for the corn, of an auxiliary cutter comprising a plate or casting attached to the said frame-piece and extending upwardly therefrom and provided with a cutting edge or edges, and a movable part or knife acting in connection with said cutting edge or edges and with an upwardly and rearwardly inclined guide m^3, substantially as described.

34. The combination, with the frame of a corn-harvester, of a cutting-knife provided with an upwardly-extending flange at its outer edge and across its rear end, said knife having yielding connection with the machine-frame at both ends, an upright rod attached to the machine-frame, and two slotted arms attached to the said flange and engaging said rod, substantially as described.

35. The combination, with the frame of a corn-harvester and a cutting-knife supported on the frame, of a spiral conveyer conveying the butts of the cut corn inward from the knife, and a stationary transversely-arranged plate or shield located at the rear of the conveyer and knife, substantially as described.

36. The combination, with the frame of a corn-harvester having a longitudinal external frame-piece A^5, of a cutting-knife having vertically-movable connection with the frame, a vertically-movable knife support or guard pivoted at its front end to the machine-frame and at its rear end to the knife, and an inclined guide-rod G, attached to the frame-piece A^5 and extending to the forward end of the said knife-support, substantially as described.

37. The combination, with the frame and cutting-knife of a corn-harvester, of a receptacle for cut stalks, comprising a dropping rear section and a separate tilting section at or near its front end, said tilting section being adapted to swing upwardly and forwardly at its front end and having at its said front end a series of teeth to engage the upper parts of the stalks, substantially as described.

38. The combination, with the frame and cutting-knife of a corn-harvester, of a receptacle for cut stalks, comprising a tilting section provided at its front end with a series of teeth and in front of the same with an upwardly-curved supporting-surface located in position to lift the stalks clear of the teeth when said tilting section is raised, substantially as described.

39. The combination, with the frame and cutting-knife of a corn-harvester, of a receptacle for the cut corn, provided near its forward end with a tilting section hinged at its rear end to the receptacle, and a spring applied between the forward ends of the receptacle and tilting section to receive the impact of the said section when the same is lowered, substantially as described.

40. The combination, with the main frame of a corn-harvester, two supporting-wheels at the rear part of the frame, a wheeled supporting-frame connected with the front end of the main frame by both vertical and horizontal pivots, thills connected with the said supporting-frame, and draft connections attached to the forward end of the main frame, substantially as described.

41. The combination, with the main frame of a corn-harvester, of two supporting-wheels at the rear part of the frame, a separate wheeled supporting-frame connected with the front end of the main frame by both vertical and horizontal pivots, thills connected with the said separate supporting-frame, and draft connections attached to the forward end of the main frame, the vertical pivot being formed by cylindric pivot-rod L^3, engaged with the main frame at a point above its lower end, and a brace rod or rods l^3, connecting the lower part of said pivot-rod with the frame, substantially as described.

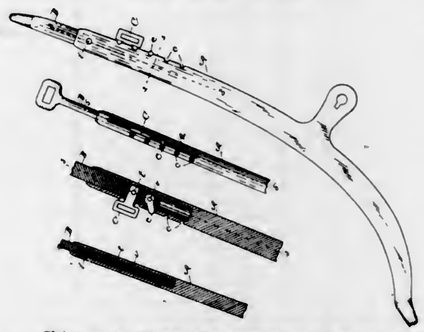
42. The combination, with the main frame of a corn-harvester, of two vertically-adjustable supporting-wheels at the rear part of the frame, and a separate wheeled supporting-frame connected with the front end of the main frame by both vertical and horizontal pivots, the vertical pivot being affixed to the supporting-frame and the front end of the main frame being adjustable vertically on said vertical pivot, substantially as described.

43. The combination, with a corn-harvester, of an alarm or signaling apparatus operated by the turning of the wheels of the harvester to indicate the point at which the stalks are to be dumped, substantially as described.

44. The combination, with the corn-harvester and a supporting-wheel therefor, provided with a stud or projection, of an alarm or signaling apparatus comprising an actuating-lever operated by the said stud or projection on the wheel, a bell or gong, a hammer acting on the gong, a revolving cam or wiper actuating the hammer, a plurality of ratchet-wheels, each having a different number of teeth, said ratchet-wheels being mounted upon a shaft which is connected with and actuates said cam, and a pawl adapted for engagement with either of said ratchet-wheels, substantially as described.

45. The combination, with the machine-frame and cutting-knife of a corn-harvester, of a receptacle for the cut corn, comprising a tilting section, which is bodily adjustable backward and forward relatively to the main part of the receptacle, substantially as described.

447,466. **HAME.** RALPH R. KRUMM, Vicksburg, Mich. Filed May 22, 1890. Serial No. 352,695. (No model.)



Claim.—1. An adjustable hame consisting of the two parts, one sliding within the other, the outer part being provided with the notches and with the slot leading into its hollow interior, and the inner part being provided with the pivoted latch and being also provided with the rein-ring eye, substantially as set forth.

2. An adjustable hame comprising the two parts, one sliding within the other, the outer part being provided with the notches and the slot leading into its hollow interior and with the pin-hole also leading into its hollow interior, and the inner part being provided with the latch attached thereto by a detachable pivot, said latch being extended out through a slot in the outer part of the hame and turned at an angle to engage the notches, substantially as set forth.

3. An adjustable hame comprising the two parts, one sliding within the other, the outer part being provided with the notches and the slot leading into its hollow interior and with the pin-hole also leading into its hollow interior, and the inner part being provided with the latch attached thereto by a detachable pivot, said latch being extended out through a slot in the outer part of the hame and turned at an angle to engage the notches, and said inner part being also provided with the rein-ring eye attached thereto by a detachable pin, substantially as set forth.

447,467. **REFRIGERATOR.** OSWALD KUTSCHE, Chicago, Ill. Filed Jan. 14, 1890. Serial No. 336,858. (No model.)



Claim.—1. A refrigerator having the usual ice-chest and refrigerating-chamber, said ice-chest having perforations in its bottom for the passage of the cold air, a flange rising from the bottom wall of said chamber exterior to said perforations and having apertures therein, and a valve normally suspended above said flange, and a pivoted arm, upon the inner end of which said valve is seated, and its outer end projected to engage the door of the refrigerator when closed and adapted to be lowered by the opening of the door, whereby to seal said passage, substantially as described.

2. A refrigerator having an ice-chest and refrigerating-chamber, said ice-chest having perforations in its bottom for the passage of the cold air, an annular flange encircling said perforations, apertures in said flange and a drip-aperture exterior to the flange, a vertically-adjustable cap-valve adapted to be lowered to seal the apertures in said flange, a drip-plate below said bottom, having a spiral conducting-channel in its body portion and a drip-pipe delivering at the inner end of said spiral channel, and an escape-pipe to which the outer end of said channel delivers, substantially as described.

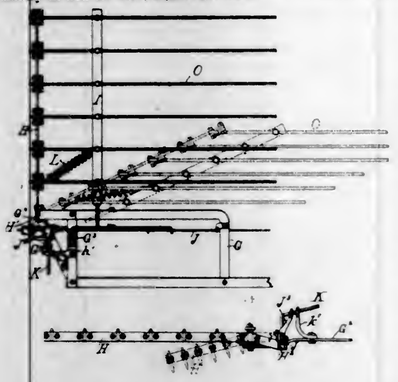
447,468. **SHEAF-CARRIER.** JAMES MACPHAIL, Rockford, Ill., assignor to the McCormick Harvesting Machine Company. Filed May 27, 1890. Serial No. 353,324. (No model.)

Claim.—1. In a bundle-carrier, the combination of a supporting-bar, a controlling-bar, parallel fingers individually pivoted to both bars, the controlling-bar attached at its inner end to the machine, and the extended end of the supporting-bar having bearings in a sliding bar, one end of which moves through a fixed guide, while the other is held in position by a link and adapted to be moved by a link-and-lever connection, substantially as and for the purpose specified.

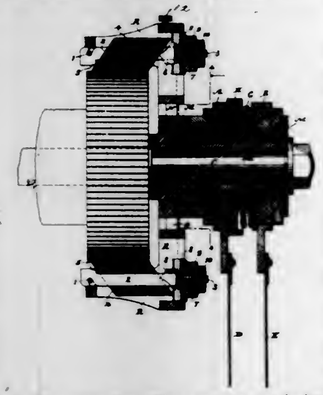
2. In a bundle-carrier, the supporting-bar H, upon which the fingers rest, extending from the machine at a right angle, or nearly so, to its path, a joint at its inner end to allow the bar to move downwardly to the rear at its outer end, and an inward extension engaging with a controlling device, substantially as and for the purpose specified.

3. In a bundle-carrier, the combination of the sliding supporting-bar J, the inner end of supporting-bar H resting under or jointed thereto, the carrying-link J^3, an arm or lever adjacent to the driver's seat, and

a connection therefrom to the sliding supporting-bar J, whereby the operator can move the bar back and forth and thus raise the outer end of the supporting-bar H to receiving position or allow it to trail, substantially as and for the purpose specified.



447,469. COMMUTATOR-BRUSH. WILLIAM MAIN, Brooklyn, N. Y. Filed Dec. 23, 1889. Serial No. 334,643. (No model.)



Claim.—1. The combination, with a commutator and a brush-carrier, of a commutator-brush consisting of a series of parallel plates inclined to the surface of the commutator and having their contact edges parallel to the plane of rotation of the commutator or brush-carrier, said plates being independently pivotally mounted in the carrier, and means for pressing the plates together and holding their contact edges against the commutator, substantially as described.

2. The combination, with a commutator and a brush-carrier, of a commutator-brush consisting of a series of parallel plates inclined to the surface of the commutator and having their contact edges parallel to the plane of rotation of the commutator or carrier, said plates being independently pivotally mounted in the carrier, and a spring pressing against the plates outside of their pivotal points, whereby the plates are pressed together and their contact edges held against the commutator, substantially as described.

3. The combination, with a commutator and a brush-carrier, of a commutator-brush consisting of a series of parallel plates inclined to the surface of the commutator, said plates having a common pivotal bearing in the carrier, on which they are mounted to swing together in a plane transverse to the plane of rotation of the commutator or carrier, but to have a lengthwise movement independently of each other, and means for pressing the plates together and holding their contact edges against the commutator, substantially as described.

4. The combination, with a commutator and a rotating brush-carrier, of a brush carried by said carrier outside the commutator, said brush being so mounted in the carrier that its center of gravity and contact-surface tend to move in opposite directions relatively to the axis of rotation, substantially as described.

5. The combination, with a commutator and a rotating brush-carrier, of a brush carried by said carrier and pivotally mounted therein between its center of gravity and the contact-surface of the commutator to swing to and from the commutator, whereby the brush is held in contact with the commutator by centrifugal force when the carrier is rotated, substantially as described

6. The combination, with a commutator and a rotating brush-carrier, of a brush carried by said carrier outside the commutator, said brush being pivotally mounted on one side of its center of gravity to swing to and from the outer surface of the commutator, whereby the brush is held in contact with the commutator by centrifugal force when the carrier is rotated, substantially as described.

7. The combination, with a commutator and a rotating brush-carrier, of a brush carried by said carrier and pivotally mounted therein between its center of gravity and the contact-surface of the commutator to swing to and from the commutator in a plane transverse to the plane of rotation of the carrier, whereby the brush is held in contact with the commutator by centrifugal force when the carrier is rotated, substantially as described.

8. The combination, with a commutator and a rotating brush-carrier, of a brush carried by said carrier and pivotally mounted therein between its center of gravity and the contact-surface of the commutator to swing to and from the commutator in a plane transverse to the plane of rotation of the carrier, whereby the brush is held in contact with the commutator by centrifugal force when the carrier is rotated, and means for holding the brush in contact with the commutator when centrifugal force is insufficient for this purpose, substantially as described.

9. The combination, with a commutator and a rotating brush-carrier, of a brush consisting of a series of parallel plates inclined to the surface of the commutator and having their contact edges parallel to the plane of rotation of the carrier, said brush being pivotally mounted between its center of gravity and the contact-surface of the commutator to swing to and from the commutator in a plane transverse to the plane of rotation, whereby the brush is held in contact with the commutator by centrifugal force when the carrier is rotated, substantially as described.

10. The combination, with a commutator and a rotating brush-carrier, of a commutator-brush consisting of a series of parallel plates inclined to the surface of the commutator and having their contact edges parallel to the plane of rotation of the carrier, said plates being pivotally mounted in the carrier independently of each other between their centers of gravity and the contact-surface of the commutator to swing in a plane transverse to the plane of rotation, whereby the plates are held in contact with the commutator by centrifugal force when the carrier is rotated, substantially as described.

11. The combination, with a commutator and a rotating brush-carrier, of a commutator-brush consisting of a series of parallel plates inclined to the surface of the commutator and having their contact edges parallel to the plane of rotation of the carrier, said plates being pivotally mounted in the carrier independently of each other and between their centers of gravity and the contact-surfaces of the commutator to swing in a plane transverse to the plane of rotation, whereby the plates are held in contact with the commutator by centrifugal force when the carrier is rotated, and means for holding the plates against the commutator when centrifugal force is insufficient for this purpose, substantially as described.

12. As a commutator-brush or an element thereof, a plate inclined to the surface of the commutator and pivotally mounted in a rotating carrier on one side of its center of gravity to swing to and from the outer surface of the commutator, whereby the plate is held in contact with the outer surface of the commutator by centrifugal force when the carrier is rotated, substantially as described.

13. As a commutator-brush or an element thereof, a plate inclined to the surface of the commutator and having its contact edge parallel with its plane of movement and pivotally mounted in a rotating carrier inside its center of gravity so as to swing to and from the commutator, whereby the plate is held in contact with the commutator by centrifugal force when the carrier is rotated, substantially as described.

14. The combination, with a commutator and a brush-carrier, of a brush-supporting bar on said brush-carrier extending transversely to the plane of rotation of the commutator or carrier, a brush consisting of a series of parallel plates inclined to the surface of the commutator and independently pivotally supported to swing longitudinally of said bar, and means for holding the contact edges of the plates in contact with the commutator, substantially as described.

15. The combination, with a commutator and a brush-carrier, of a brush-supporting bar on said carrier extending transversely to the plane of rotation of the carrier or commutator, the brush consisting of a series of parallel plates inclined to the surface of the commutator and independently pivotally supported on said bar to swing longitudinally thereof, and means for holding the contact edges of the plates in contact with the commutator, substantially as described.

16. In a commutator-brush, the combination of a series of contact-plates provided with slots, and a bar passing through said slots upon which the plates are independently pivotally supported to slide in the direction of their own length or to swing or slide longitudinally of the bar, but are held from sidewise movement transversely to the bar, substantially as described.

17. In a commutator-brush, the combination of a series of slotted contact-plates inclined to the commutator, a supporting-bar passing through the slots in said plates, a shoulder forming a rest or bearing for said plates as a whole, a pressure-piece on the bar, and means for pressing said pressure-piece against the plates outside the line of support, whereby the inner ends of the plates are pressed against the commutator, substantially as described.

18. The combination, with a commutator, of a brush consisting of a series of parallel contact-plates having independent movement with respect to each other to and from the surface of the commutator and having their edges in contact with the commutator and parallel to the plane of movement of the commutator or brush, substantially as described.

19. The combination, with a commutator, of a brush consisting of a series of parallel contact-plates having their edges in contact with the commutator and parallel to the plane of movement of the commutator or brush, and means for pressing the plates together and their edges against the commutator with a yielding pressure, substantially as described.

20. The combination of a supporting-bar 2, parallel plates 4, mounted to swing and slide on said bar, a shoulder or bearing, as 5, for the plates as a whole, and means whereby the plates are held against the shoulder and their contact edges pressed against the commutator, substantially as described.

21. The combination of supporting-bar 2, provided with a shoulder 5, plates 4, threaded on said bar, and a spring-pressed pressure-piece 6, sliding on said bar and pressing the plates against the shoulder, substantially as described.

447,470. MAIL-SACK DROPPER. JOHN F. MAINS, Indianapolis, Ind., assignor of three-fourths to Bruce Carr, Harvey M. La Follette, and Edward J. Robison, all of same place. Filed July 10, 1890. Serial No. 358,292. (No model.)



Claim.—1. In a mail-sack dropper, the combination of a dropping-lever pivoted to the car so as to swing thereon in a vertical plane and arranged to be extended laterally from the car, said lever having a transverse slot formed near its outer end, a bar arranged to slide across said slot and adapted to enter the ring of a mail-sack, and a trip-lever pivoted to said dropping-lever so as to swing in a plane at a right angle to the plane in which the dropping-lever itself swings on the car and projecting beyond the end of the dropping-lever, said tripping-lever being arranged in engagement with said sliding bar, whereby the bar is withdrawn from said slot by the swinging of the tripping-lever, as set forth.

2. In a mail-sack dropper, the combination of the dropping-lever pivoted to the car so as to swing vertically thereon, the sliding bar mounted on said lever and adapted to enter the ring of the mail-sack, and the trip-lever pivoted to the dropping-lever and engaging the sliding bar, all arranged to co-operate substantially as specified, whereby the mail-sack is suspended from the car, is held by the sliding bar, and is discharged therefrom by the contact of the trip-lever with a post during the movement of the car, as set forth.

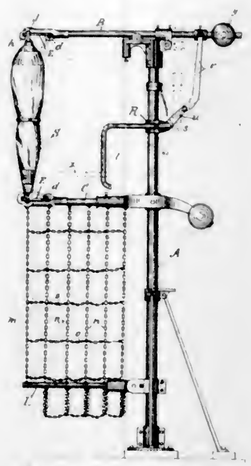
3. In a mail-sack dropper, lever A, having casing D and slot F, sliding bar G, having shoulder H, spring I, and trip-lever J, all combined and arranged to co-operate substantially as set forth.

447,471. MAIL-SACK CRANE. JOHN F. MAINS, Indianapolis, Ind., assignor of three-fourths to Bruce Carr, Harvey M. La Follette, and Edward J. Robison, all of same place. Filed July 10, 1890. Serial No. 358,293. (No model.)

Claim.—1. In a mail-sack crane having a pair of horizontal arms arranged to hold a mail-sack extended in a vertical position between them, the combination, with one of said arms, of a short bar adapted to enter the ring of a mail-sack and hinged at one end to the arm so as to swing laterally thereon and also vertically toward the sack, said arm extending beyond the free end of said bar and forming a rest therefor, substantially as and for the purpose set forth.

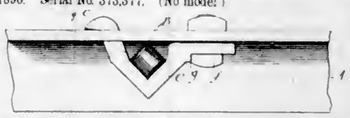
2. In a mail-sack crane, the combination of the arm having hook *d* and convex bearing *h*, and the bar E, having eye F and a concaved free end, all arranged to co-operate substantially as specified.

3. In a mail-sack crane, the combination of the arm adapted to swing in a vertical plane and held in a horizontal position by a mail-sack suspended from the crane, and the flexible net attached at its upper end to said arm and suspended therefrom and attached at its lower end to an arm projecting laterally from the crane-mast, all being arranged to co-operate substantially as set forth, whereby the net is held extended by the mail-sack suspended from the crane and is collapsed when said sack is removed, so as to enfold a sack received therein, as set forth.



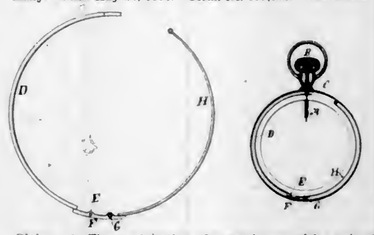
4. In a mail-sack crane, the combination of the mast, arm B, pivoted thereto, shaft *s*, mounted in a bearing on the mast and having bent arms *t*, arm *u*, and link *v*, all arranged to co-operate substantially as and for the purpose set forth.

447,472. HARROW. JOSIAH H. MOORE, Bloomington, Ill., assignor to himself and the Walton Plow Company, same place. Filed Dec. 2, 1890. Serial No. 373,377. (No model.)



Claim.—The combination, with a harrow-tooth and the angle-iron having holes *a b*, of a clamp C, having a hook *c*, adapted to pass through the hole *a*, an angular portion *d*, adapted to clamp the tooth, and a plain portion *e*, adapted to be bolted by a bolt *f* to the angle-iron, substantially as specified.

447,473. WATCH-CASE SPRING. JOSEF PALLWEBER, Furtwangen, Baden, assignor to Sigmund Stern, Frankfort-on-the-Main, Germany. Filed May 27, 1890. Serial No. 353,303. (No model.)

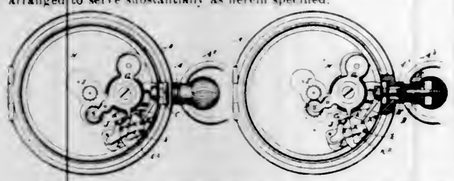


Claim.—1. The combination of a watch-case with a pair of springs D H, a lever F, acted upon by both of said springs, a pin G, carried by said lever, and a lid engaged by said pin, substantially as specified.

2. The combination, in a watch-case, of spring D, having hook C, with stem A, that engages said spring, and with spring H, lever F, engaged by springs D H, pin G on lever F, and a lid engaged by said pin, substantially as specified.

447,474. PENDANT-SET WATCH. ROSWELL L. PEABODY, New York, N. Y. Filed Sept. 8, 1890. Serial No. 364,273. (No model.)

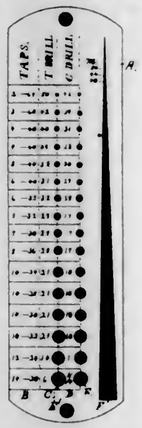
Claim.—1. In a pendant winding and setting watch, the yoke G, carrying the winding and setting train and partially rotating cam K, serving as an intermediate member, the lever M for operating such cam to change the winding and setting mechanism from the hand-setting condition to the winding, as required, and having the bent arm M' engaged with the operating-collar D^2 on the stem, all combined and arranged to serve substantially as herein specified.



2. In a pendant winding and setting watch, the yoke G, carrying the train of winding and setting mechanism and having the bent arm G' and actuating-spring J, in combination with the cam K and spring L, acting on the stud K^3, and with the lever M M' and the stem D, having the collar D^2 and arranged to be moved endwise as well as rotated, as set forth.

3. In a stem winding and setting watch, a pull-stem D D', a spring-head C, operated by thrusting the stem and adapting the mechanism to serve in a hunting-case, and the lever M, cam K, intermediate between the lever and the yoke, said cam carrying the pins K^3 and K^2, and the actuating-spring L, in combination with each other and with the yoke G and its operating-spring J and the gearing for winding and setting, all arranged to serve substantially as herein specified.

447,475. DRILL AND TAP SCALE. BENNARD H. POMEROY, New York, assignor to Pomeroy Machine Co., Brooklyn, N. Y. Filed Feb. 6, 1889. Renewed Jan. 27, 1891. Serial No. 379,245. (No model.)



Claim.—1. A scale provided with the column B, designating the size of the taps, in combination with the column C, designating the size of tap-drills, as and for the purposes specified.

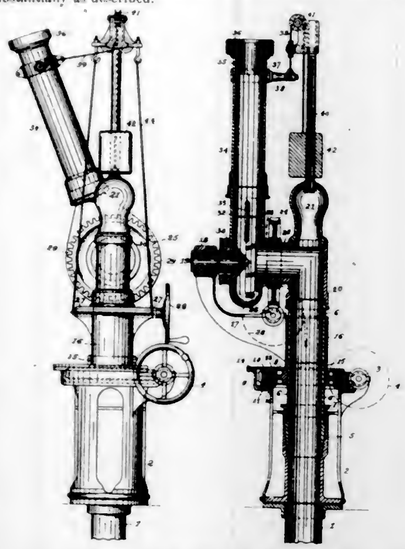
2. A scale provided with the column B, designating the size of the taps, in combination with the column D, designating the size of the clearance-drills, as and for the purpose specified.

3. A scale provided with the column B, designating the size of taps, in combination with the column C, designating the size of the tap-drills, and column D, designating the size of the clearance-drills, as and for the purpose specified.

4. A scale provided with the column B, designating the size of the taps, in combination with the hole E, designating the size of the clearance-drills, and hole E', designating the size of the tap-drills, as and for the purpose specified.

447,476. FIRE-EXTINGUISHING APPARATUS. JOHN E. PRUNTY, Baltimore, Md., assignor to Greene & Prunty. Filed July 12, 1890. Serial No. 358,516. (No model.)

Claim.—1. In a fire-extinguishing apparatus, the combination of a stand-pipe connected to a supply of water and provided with a conical joint to permit the upper part to turn, a gear-wheel keyed to the upper movable portion of said pipe and sustained upon an anti-friction bearing, and means co-operating with said gear whereby the movable portion of said stand-pipe may be revolved upon a vertical axis, substantially as described.



2. In a fire-extinguishing apparatus, the combination of a stand-pipe connected to a supply of water and provided with a conical joint to permit the upper part to turn, a gear-wheel keyed to the upper movable portion of said pipe and sustained upon an anti-friction bearing, and means co-operating with said gear whereby the movable portion of said stand-pipe may be revolved upon a vertical axis, the upper end of the stand-pipe being provided with a right-angle elbow, and a nozzle, the lower end of which is provided with a distributing-chamber, into one side of which the elbow of the stand-pipe enters, and which is connected with the elbow by a conical joint, which will permit the nozzle to move upon the elbow, substantially as described.

3. In a fire-extinguishing apparatus, the combination of a supply-pipe with a nozzle provided at its lower end with a distributing-chamber circular in form and of much greater diameter than the supply-pipe, having in one side an aperture for the admission of water, at which point the chamber is secured to the supply-pipe, and having on the side opposite the water-inlet a cone the apex of which projects into the chamber in line with the center of the opposite aperture.

4. In a fire-extinguishing apparatus, the combination of a supply-pipe with a revolnble nozzle provided on its lower end with a distributing-chamber circular in form and of much greater diameter than the supply-pipe, having in one side an aperture for the admission of water, from which a section of pipe projects, which forms one part of a conical-joint connection with the supply-pipe, a cone, which projects into the chamber and the apex of which is in line with the center of the inlet-aperture, and means for revolving the distributing-chamber and nozzle about the supply-pipe, substantially as described.

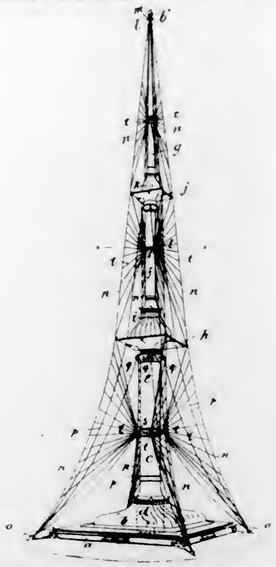
5. In a fire-extinguishing apparatus, the combination of a supply-pipe with a nozzle and a distributing-chamber connected to the supply-pipe at one side and provided with a cone on its interior secured to the wall of the chamber opposite the inlet, said distributing-chamber also having blades secured to the interior of the water-way between the distributing-chamber and the nozzle, as and for the purpose specified.

6. In a fire-extingnishing apparatus, the combination of a supply-pipe with a nozzle and a distributing-chamber connected to the supply-pipe at one side and provided with a cone on its interior secured to the wall of the chamber opposite the inlet, said distributing-chamber also being provided with a baffle-plate secured to its interior and in the path of the stream of water as it leaves the distributing-chamber, as and for the purpose specified.

447,477. TOWER. THEOPHILUS REICHARD, Brooklyn, N. Y. Filed Apr. 19, 1890. Serial No. 348,689. (No model.)

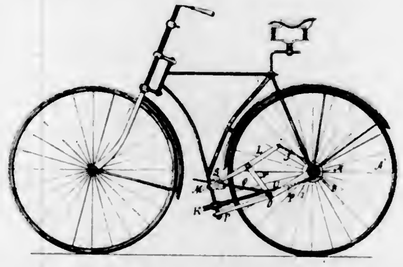
Claim.—1. A tower consisting of a hollow shaft composed of three sections with intervening projecting platforms, dome-shaped

structures above said platforms, and a series of cables connecting the tower and platforms, as set forth.



2. A tower formed of three sections with intervening platforms, vertical cables connecting the tower-shaft and platforms, and cables attached at intermediate points between said platforms and connected to the vertical cables, as set forth.

447,478. VELOCIPEDE. JOSEPH SCHINDLER, Uittwa, No. 7, near Carlsbad, Austria-Hungary. Filed Nov. 12, 1890. Serial No. 371,165. (No model.)



Claim.—1. The combination of chain-wheels K B and chain J with a pair of levers L, secured to the chain, pivoted levers N, on which levers L turn, and with pedals M on levers L, and racks Q, engaging the pedals, substantially as specified.

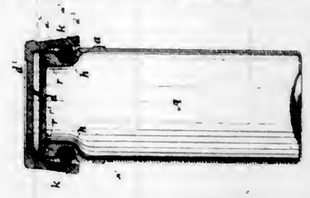
2. The combination of levers N with levers L and racks Q, pivoted thereto, chain J and pedals M, connected to levers L, sockets R, embracing racks Q, pawls S for engaging such racks, and with chain-wheels B, substantially as specified.

3. The combination of levers N with levers L and racks Q, pivoted thereto, chains J and pedals M, connected to levers L, chain-wheels B, boxes C, and segments F, operated by the chain, sockets R, embracing racks Q, and with pawls S for engaging such racks, substantially as specified.

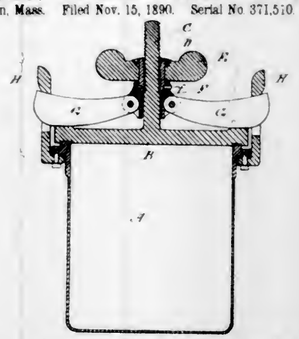
447,479. PRESERVE-JAR. ALFRED STELZNER, Wiesbaden, Germany. Filed Oct. 29, 1890. Serial No. 369,696. (No model.)

Claim.—1. The combination of a jar having an inner flange r' and an outer groove h with an inner cover d, an outer cover d', having tapering flange d^2, and with a gasket k, adapted to be received by groove h, substantially as specified.

2. The combination of a jar having an inner flange r' and groove r, and an outer groove h with a gasket k, an inner cover d, and an outer cover d', having an internally-corrugated flange d^2, adapted to compress the gasket, substantially as specified.



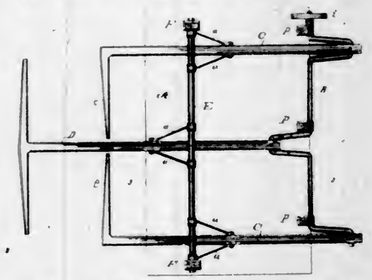
447,480. VULCANIZING APPARATUS. ARTHUR H. STODDARD, Boston, Mass. Filed Nov. 15, 1890. Serial No. 371,510. (No model.)



Claim.—1. In combination with a vulcanizer-flask A and its cover B, a threaded post centrally secured upon the cover, a nut adapted to be screwed up or down upon the said post, a sleeve surrounding the said post and so secured to the nut as to rise and fall but not revolve therewith, a plurality of locking-levers pivotally secured to the said sleeve, and posts or abutments attached to the vulcanizer-flask and slotted, as described, to receive the locking-levers, all substantially as set forth.

2. In combination, the flask A, cover B, threaded post C, nut D, insulated hand-wheel E, sleeve F, having a spline connection with the nut D, as described, locking-levers G, pivotally connected to the said sleeve, and slotted posts H, all substantially as set forth.

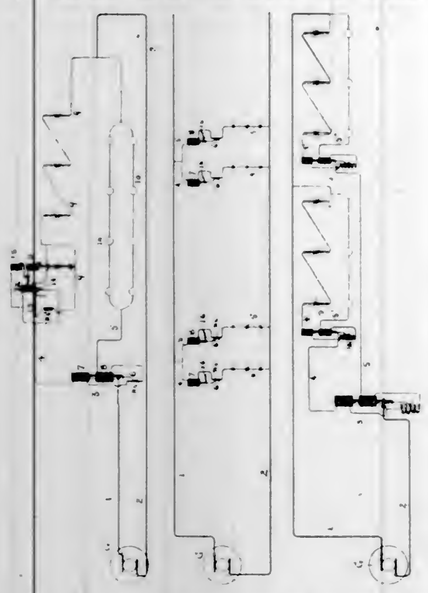
447,481. HARVESTER-REEL. CHARLES D. TOWNE, Galesburg, Mich. Filed Nov. 11, 1890. Serial No. 371,038. (No model.)



Claim.—1. In a harvester-reel, the combination of the sickle-platform provided with the rear standards, a shaft having bearings in said standard, said shaft being provided with the cranks thrown out from opposite sides of said shaft, the L-shaped reel-rakes, and the center T-shaped reel-rake, the rear ends of said rakes being pivotally attached to the cranks of the power-shaft, a fulcrumed support between the power-shaft and the forward end of the grain-platform, said rakes being pivotally supported by hangers from said shaft, substantially as set forth.

2. In a reel-rake for harvesters, the combination of the L-shaped reel-rakes and the T-rake, a power crank-shaft to which said rakes are pivotally attached, and fulcrum-supports for said rakes, whereby the T-rakes and the L-rakes alternate in their movements in striking into the grain and reeling it back upon the grain-platform, substantially as set forth.

447,482. ELECTRIC-LIGHTING SYSTEM. BARTON B. WARD, New York, N. Y., assignor to the Electric Construction and Supply Company, same place. Filed May 5, 1890. Serial No. 350,599. (No model.)



Claim.—1. In an electric-lighting system, the combination of the main wires or leads, multiple-arc branches containing translating devices, a resistance-regulator for each pair of branches between one of the leads and the translating devices, said regulator comprising a coil in each branch, a resistance, part of which is in one branch and part of which is in a second branch, and a contact connected with one of the line-wires bearing on said resistance and moved by the coils to throw resistance from one branch to the other, substantially as described.

2. In an electric-lighting system, the combination of a main circuit, one or more pairs of multiple-arc branches, said branches, or either of them, containing translating devices provided with cut-out resistances approximately equal to the normal resistance of said translating devices, and an automatic resistance-regulator between one main wire and said translating devices, consisting of a resistance divided between the branches, and coils in said branches controlling a contact-bearing on the resistance between the points where the branches are connected, whereby movement of said contact throws resistance out of one branch and into the other, substantially as described.

3. A resistance-regulator consisting of a resistance the two terminals of which are connected through coils to two lines, in combination with a contact connected to the source of current bearing on the resistance between the two terminals and controlled by the armature of the coils, whereby resistance is thrown from one line to the other as required, substantially as described.

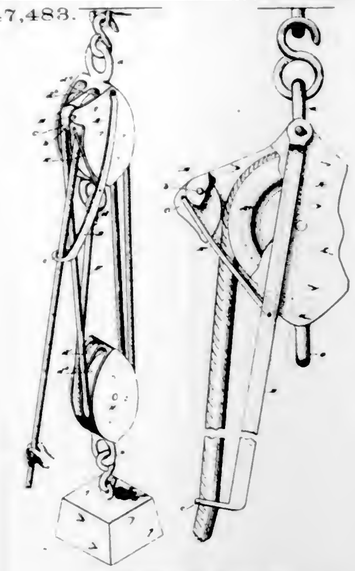
4. In an electrical lighting system, the combination of the main wires, multiple-arc branches containing translating devices, a resistance-regulator for each pair, consisting of a coil in each of said branches, a resistance in each branch, said resistances being substantially equal when the working-resistances of the branches are equal, and circuit-controlling devices moved by the coils for simultaneously cutting resistance out of one branch and cutting resistance into the other branch, substantially as described.

447,483. HOIST. FRANK E. YOUNG, Canton, Ohio. Filed June 21, 1889. Serial No. 315,072. (No model.)

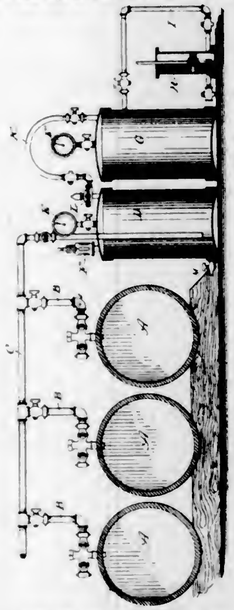
Claim.—1. The combination, in a pulley-block, of a locking-eccentric and a lever having a pivotal connection therewith and adapted to engage the lifting-rope through an eye, so as to engage and release said eccentric, as and for the purpose specified.

2. The combination of the pulley-block A, a pivoted lever D, provided with the eye *c*, the connecting-bar E, and the locking-eccentric C, adapted to engage the elevating-rope F, substantially as and for the purpose set forth.

447,483.



447,484. PROCESS OF FINISHING BEER. OTTO ZWIETUSCH, Milwaukee, Wis. Filed Sept. 26, 1888. Serial No. 286,415. (No specimens.)



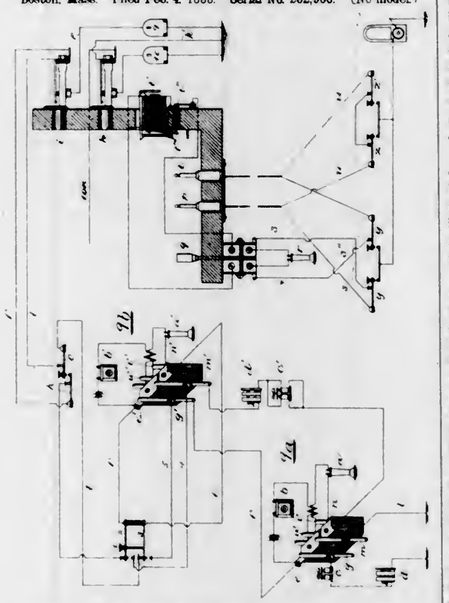
Claim.—1. In bunging beer, the method of maintaining the beer under a predetermined pressure after sufficient carbonic-acid gas has been generated by the beer to give that pressure, which consists in collecting a supply of carbonic-acid gas as it is generated by the beer, forcing the collected carbonic-acid gas back in a retrograde movement toward the beer whenever the pressure upon the beer shall fall below the predetermined pressure, and throughout the operation relieving the beer from any pressure in excess of the predetermined pressure, substantially as described.

2. In bunging beer, the method of maintaining the beer under a predetermined pressure after sufficient carbonic-acid gas shall have been generated by the beer to give that pressure, which consists in collecting a supply of carbonic-acid gas as it is generated by the beer, forcing the collected carbonic-acid gas back in a retrograde movement toward the beer by the pressure of an extraneous aeriform fluid whenever the pressure upon the beer shall fall below the predetermined pressure, and throughout the operation relieving the beer from any pressure in excess of the predetermined pressure, substantially as described.

3. In bunging beer, the method of placing the beer at will and maintaining it under a predetermined pressure, which consists in supplying to the beer an extraneous aeriform fluid at substantially the predetermined pressure until the pressure of carbonic-acid gas generated in the beer shall cause a retrogression of the extraneous aeriform fluid, collecting a supply of the advancing carbonic-acid gas, forcing the collected carbonic-acid gas back toward the beer in a retrograde movement by a pressure of the extraneous aeriform fluid whenever the pressure upon the beer shall fall below the predetermined pressure, and throughout the operation relieving the beer from any pressure in excess of the predetermined pressure, substantially as described.

4. In bunging beer in connected casks, the method of establishing in the casks a predetermined pressure of carbonic-acid gas generated by the beer and maintaining that pressure notwithstanding leakage, and, without detracting from the pressure in those casks previously in the series, imparting it to any casks of freshly-bunged beer which may be annexed to the series, which consists in collecting, after it has reached the predetermined pressure, a supply of the carbonic-acid gas generated by the beer, forcing the collected carbonic-acid gas back in a retrograde movement whenever any deficiency of pressure occurs in the system by means of an extraneous aeriform fluid at substantially the predetermined pressure established for the beer, and throughout the operation relieving the beer from any pressure in excess of the predetermined pressure, substantially as described.

447,485. TELEPHONE-EXCHANGE APPARATUS. FRANKLIN G. BEACH, Chicago, Ill., assignor to the American Bell Telephone Company, Boston, Mass. Filed Feb. 4, 1888. Serial No. 262,966. (No model.)



Claim.—1. The combination, with two telephone-exchange stations, of two lines, each passing through each of said stations and each to ground at one of said stations, said lines extending to the central office and being there connected with different portions of the same spring-jack, one of said portions of the spring-jack being connected through an annunciator to ground and the other portion being normally insulated, and switching apparatus and generators at the different stations, whereby either subscriber may send current through said annunciator at the central office, substantially as described.

2. The combination, with two telephone-lines, each connected with different portions of the same switching device at the central office and extending through each of said stations and to a separate ground at one of said stations, of telephones, one at each of said stations and one at the central office, and switching apparatus at each of said stations and at the central office, whereby said lines may be disconnected from ground and the telephone at either station looped in metallic circuit with the telephone at the central office.

3. The combination, with two subscribers' stations, of two lines grounded at one of said stations and passing, respectively, through both of said stations in series to a common switching device at the central office, one of said lines being closed through an annunciator to ground and the other being normally open at the central office, of the generator of the subscriber at the intermediate station included in the normally-open line, and a switching device for closing said generator to the closed line, whereby the subscriber at the said intermediate station may send current from his generator to operate the annunciator included in the circuit grounded at the central office.

4. The combination, with two electric circuits passing each in series through an outer station and an intermediate station to the central office, one of said circuits being normally open and the other being normally grounded through an annunciator at the central office, and both of said circuits being normally grounded at the outer station, of the generator of the intermediate station included in the normally-open circuit, and switching apparatus for connecting said generator to the circuit including the annunciator.

5. Two electric circuits passing each from a separate ground connection at one subscriber's station through said station and another intermediate subscriber's station to the central-office switch-board of a telephone-exchange, one of said lines being normally open at said switch-board and the other passing from said switch-board through an annunciator to ground, of the generator and bell of the different stations, the bell and generator at one station being in one line and the bell and generator of the other station being in the other line, and switching apparatus at the intermediate station, whereby current may be sent from either station to operate the annunciator at the central office without ringing the bell of the other station.

6. Two telephone-lines extending through stations 9^a 9^b normally to the central office, said lines being normally grounded at station 9^a, in combination with switching apparatus at station 9^b for disconnecting both of said lines from the central office and uniting them in a circuit including the signal devices—that is, the bell and generator of each station and automatic telephone-switches, one at each station, and the said subscribers' telephones, whereby current may be sent from the generator at station 9^b to ring the bell at station 9^a, and whereby on taking down the telephones said telephones will be connected in metallic circuit while the signal devices of station 9^a are disconnected therefrom.

7. The combination, with two lines connected with different parts of the same switch at the central office, and each line including the bell of a different subscriber's station, of a plug with two points or contacts for connecting with the different parts of said switch, respectively, and the strands of the cord of said plug, a key in each strand, and a source of electricity whereby current may be sent from the central office to signal the subscriber at either of the stations.

8. The combination, with the operator's telephone at the central office, of flexible conducting-strands and a loop-plug connected therewith, a loop-switch for bringing the telephone into the circuit of the cords and a switch upon the switch-board, with which two different lines are connected, each line passing through a station 9^b to a station 9^a and to ground, and the polarized bells at said stations included, respectively, in different lines, and a source of electricity for sending current in reversals and keys for closing said source of electricity to either line, whereby the operator's telephone may be looped into a metallic circuit formed between the two lines, or whereby current may be sent to ring the bell at either station at the will of the operator.

9. The combination, with two subscribers' stations, of two lines grounded at one of said stations and passing, respectively, through both of said stations in series to a common switching device at the central office, one of said lines being closed through an annunciator to ground and the other being normally open at the central office, the generator of the subscriber at the intermediate station being included in the normally-open line with a switching device for closing said generator to the closed line, whereby the subscriber at the said intermediate station may send current from his generator to operate the annunciator included in the circuit grounded at the central office.

10. The combination, substantially as specified, of two parallel telephone-lines extending between a central station, an intermediate sub-station, and a terminal sub-station and connected to earth at the latter, signaling appliances at each sub-station, included each in the circuit of one of the said lines, switching devices at each sub-station controlling the outgoing and incoming ends of both lines, operated in one direction by a positive force to unite the two ends of the said two lines leading to the central station and to form thereby a metallic talking-circuit, and oppositely, by the replacement of the telephone on its holder, acting against said positive force to break the said metallic circuit and to re-establish the two independent signaling-circuits, a

common switching and signal-receiving appliance at the central station for both lines, and a circuit-changer at the intermediate sub-station whereby the call-sending appliance at said station may be temporarily transferred from one signaling-line to the other, for the purposes described.

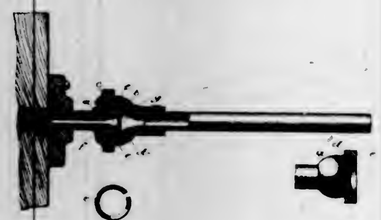
11. Two independent earth return-lines, each extending from a central station through an intermediate sub-station to a terminal sub-station, signal sending and receiving appliances at each sub-station, those at the intermediate sub-station being in circuit with one of the said lines and those at the terminal sub-station being in the circuit of the other said line, telephones at each sub-station, and an automatic switch at each sub-station, controlled by the removal and replacement of said telephone in its holder and being adapted when the said telephone is removed to disconnect the earth terminals and to unite the central-station ends of both lines, thereby forming a metallic circuit including the sub-station telephones and extending from said sub-station to the central station, substantially as specified.

12. In combination with two subscribers' stations connected with each other and with a central station by means of two electric lines, forming together a metallic or loop talking-circuit and severally independent circuits, each including the signaling apparatus of one of the said sub-stations, an automatic telephone-switch at each sub-station determining by its position the arrangment at any given moment of said two lines, a telephone at each sub-station, adapted for inclusion in the metallic talking-circuit and mechanically controlling the said automatic switch, an independent circuit-changer at the intermediate station only, acting in its normal position to maintain continuity of the two line-circuits, and two normally-discontinuous branches derived from the lines leading to the outer sub-station and extending to alternative contact-terminals of the said circuit-changer, the said circuit-changer being movable into contact therewith, and being thereby adapted to complete a metallic telephone-circuit between the two sub-stations independent of the central station.

13. In a telephone-exchange system, the combination of a central station, two sub-stations, signaling devices at each sub-station, two electric conducting-lines extending from the central station through the signaling appliances of the two sub-stations, respectively, to earth terminals at the outermost sub-station, thus constituting an independent signaling-circuit for each sub-station, and means, as indicated, at each sub-station for simultaneously disconnecting both lines from their earth-terminal extensions and for uniting the said two lines through the sub-station telephones for the purpose of forming a metallic talking-circuit, substantially as hereinbefore described.

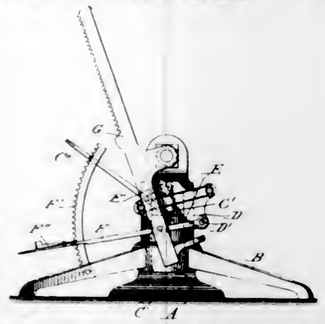
14. In a telephone-exchange system, a central station, two sub-stations, two parallel earth return-lines constituting signal-receiving circuits for the said two sub-stations, respectively, and each passing through both sub stations serially to ground at the outermost one, and switching devices capable of two positions at each sub-station, which in one position maintain continuity of the said two independent signaling-lines, but in another disconnect the ground terminal therefrom and unite the two ends of the portions of both lines leading to the central station, thus constituting a metallic talking-circuit, substantially as specified.

447,486. UNIVERSAL JOINT FOR INCANDESCENT-LAMP BRACKETS. EDWIN C. BENNETT and ELISHA C. FREEK, Chicago, Ill. Filed Apr. 4, 1890. Serial No. 346,593. (No model.)



Claim.—The combination, in a ball-and-socket joint provided with an opening for a pair of flexible conducting-wires, of insulating material at the portion thereof which comes against the wires, the socket of said joint being formed of a cup and cap, said cap being adapted to be screwed over the cup to form an adjustable frictional clamp between the ball and socket, and a reversible frictional ring open on one side, placed in the cup, and serving as a bearing or seat for the ball when in position, substantially as and for the purpose specified.

447,487. DENTAL CHAIR. ANDREW BROSTLE, Hyde Park, assignor to John Hood and Stephen H. Reynolds, Boston, Mass. Filed May 12, 1890. Serial No. 351,406. (No model.)

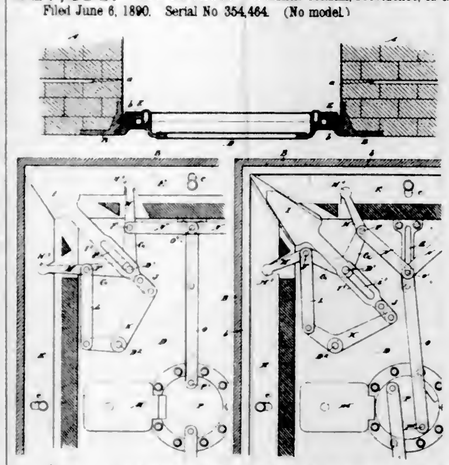


Claim.—1. In a dental chair, the base, the side standards pivoted to the base, the segmental gears keyed on a shaft journaled to the base the segmental gears pivoted to the side standards and meshing with the segmental gears pivoted to the base, and the lever for operating the same, substantially as and for the purpose specified.

2. In a dental chair, the base, the frame pivoted to the base, the segmental gears pivoted to said frame and meshing with similar gears keyed on a shaft journaled to the base, and the frame connecting the intermeshing gears, substantially as and for the purpose specified.

3. In a dental chair, the combination of the base, the frame pivoted to the base, the means for rotating said frame, consisting of the segmental gears keyed on a shaft journaled to the base and meshing with similar gears pivoted to the standards of the frame, the lever for operating said gears, the curved rack, and the frames connecting the centers of the segmental gears for holding them in their relative positions, substantially as and for the purpose specified.

447,488. SAFE OR VAULT. WILLIAM CORLISS, Providence, R. I. Filed June 6, 1890. Serial No. 354,464. (No model.)



Claim.—1. In a vault or safe, a rectangular door-frame having a groove, in combination with a door having plates, and mechanism for moving such plates outward to engage in such groove when required, such mechanism having the two sets of toggles N N and G H, acting one upon the other so as to apply a great force toward the end of the outward movement, substantially as herein specified.

2. In a door for vaults or safes, having a guiding-slot or guide *d* extending longitudinally, the link O and operating-wheel P, with locking means M therefor, said link having a pin O′ for taking hold of said guide, in combination with each other and with the links N N, acting togglewise transverse to the door, and the links G H, acting to force the plates E outward, the force being thereby great at the end of the movement and the motion being equal on the two sides of the door, as herein specified.

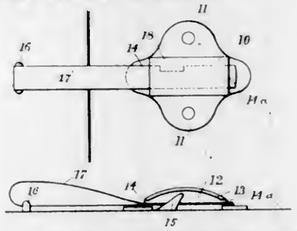
3. In a vault or safe, the wedge-shaped corner-pieces I I′, in combination with movable plates E, having correspondingly beveled and grooved ends, and mechanism, substantially as specified, for moving the corner-pieces outward and inward to a large extent and for moving the plates E outward and inward to a smaller extent, all arranged for joint operation, substantially as herein specified.

4. In a vault or safe, the door D, oscillating wheel P arranged to be operated from the outside of the safe, links O N N, two sets of toggles G G, each rigidly connected to its mate at a right angle, as shown, and toggle-links H, engaged therewith, arranged to urge the movable plates E outward and inward at the top and side of the door at the same time by a single motion, substantially as herein specified.

5. In a vault or safe, the rectangular door-frame B, having a groove *b*, the door D, movable plates E, matched in said groove *b*, and operating-toggles G H, with connections N O P′ P for operating them, in combination with each other and with corner-pieces I, link J, bell-crank lever K, and means, as the link L, for communicating the large amount of motion required, all arranged for joint operation, substantially as herein specified.

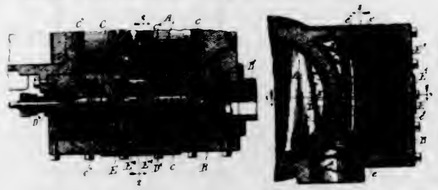
6. In a vault or safe having rectangular doors and rectangular door-frames, the links H, each having a cylindrical head H′ with its axis at right angles to the link, in combination with locking-plates E, having corresponding cylindrical recesses, with openings for allowing the links to swing, and with mechanism for strongly operating such links, all substantially as herein specified.

447,489. SEAL-LOCK. OLIVER P. HIX, Rockland, Me. Filed Apr. 16, 1890. Serial No. 348,279. (No model.)



Claim.—In a seal-lock for car-doors, the combination, with a double strip or band of spring metal secured to the car next the door and formed with aligning recesses in one edge near its free end, of a metal casting secured to the car-door, formed with an interior recess having a concave front wall and a forwardly-projecting catch fixed to the base of said recess, substantially as shown and described.

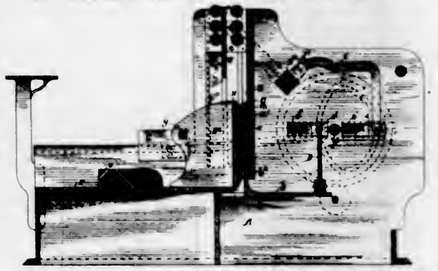
447,490. VALVE FOR STEAM-ENGINES. ALBERT L. IDE, Springfield, Ill. Filed Sept. 5, 1890. Serial No. 364,046. (No model.)



Claim.—1. The combination, with an engine-cylinder and a stationary chest having a valve-seat provided with steam-ports near its ends and a central exhaust-port, of a flat reciprocating valve provided with four transverse parallel bars and a stationary imperforate valve-plate arranged parallel with the valve-seat, said valve-seat being made shorter than the steam-chest and the outer cross-bars of the valve being located at such distance apart that at each limit of the movement of the valve the cross-bar at one end of the valve will stand outside of or beyond the said plate, so as to admit steam from the chest to the adjacent steam-port, while the cross-bar at the opposite end of the valve will stand between the end of the plate and the adjacent steam-port, so as to cut off the flow of steam to the latter, substantially as described.

2. The combination, with an engine-cylinder and a steam-chest provided with a valve-seat having steam-ports near its ends and a central exhaust-port, of a flat valve provided with four transverse parallel bars and an imperforate valve-plate arranged parallel with the valve-seat, said valve-plate and the valve-seat being made shorter than the interior of the steam-chest, and the valve-seat being raised at its ends above the adjacent wall of the steam-chest, and the exterior cross-bars of the valve being disposed at such distance apart that at each limit of the movement of the valve the cross-bar at one end of the valve will stand outside of or beyond the said plate, so as to admit steam from the chest to the adjacent steam-port, while the cross-bar at the opposite end of the valve will stand between the end of the plate and the adjacent steam-port, so as to cut off the flow of steam to the latter, the said valve-plate being provided with a longitudinal passage opening at its ends at the inner or bearing face of the plate adjacent to the ends thereof, substantially as described.

447,491. PRINTING-PRESS. WILLIAM B. LAWRENCE, Columbus, Ohio. Filed Jan. 2, 1890. Serial No. 335,645. (No model.)



Claim.—1. In a printing mechanism, the combination, with the press-frame and its form-carrying frame b^3, of the revolving cam-disk having therein a camway formed by the connection of a concentric and eccentric groove, a cross-head sliding within the press-frame, an idler projecting therefrom within said camway, and a horizontal traveling bed-plate connected with said cross-head, substantially as described.

2. In a printing mechanism, the combination, with a frame, ink-rollers supported in vertically-sliding bearings, shaft F, and cam-disks f^* thereon, said disks having the camway f^3, consisting of two connected grooves respectively concentrically and eccentrically located therein, of the sliding cross-head *e*, its idler projecting into said camway, and shaft d^2, connected with said cross-heads *e* by arms E and with the roller-bearing blocks by slotted arms d^3, substantially as described.

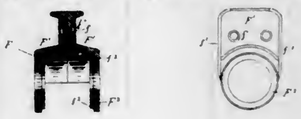
3. In a color-printing-press mechanism, the combination, with the frame, of two vertical sets of inking-rollers horizontally journaled in sliding blocks, two inking-pads, as described, revolving cam-disk f^* and camway f^3 in each of said disks, consisting of a concentric and eccentric groove, sliding cross-head *e*, having an idler which projects within said camway, as described, rocking arms E, connecting cross-head *e* and a shaft d^2, and slotted arms d^3, connecting, as described, the shaft d^2 and roller-bearing blocks, substantially as specified.

4. In a printing mechanism, the combination, with the frame, the movable and stationary bed-plate arranged as described, the former supporting a form-frame b^3 in front of the latter, two vertical rows or sets of horizontal inking-rollers pivotally supported in vertically-sliding blocks, and printing-forms supported, as described, in the frame b^3 and bed-plate *a*, of cam-disks f^*, supported, as described, on rotated shaft F, a camway f^3 in each of said disks, consisting of a concentric and eccentric curved groove, horizontally-sliding cross-heads *e* and *d*, having idlers which project, respectively, into the portions 9 and 3 of said camway, vertical cross-plate D, connecting cross-heads *d* and bed-plate *b*, rocking arms E, connecting cross-heads *e* and shaft d^2, and slotted arms d^3, connecting, as described, the shaft d^2 and roller-bearing blocks, substantially as described.

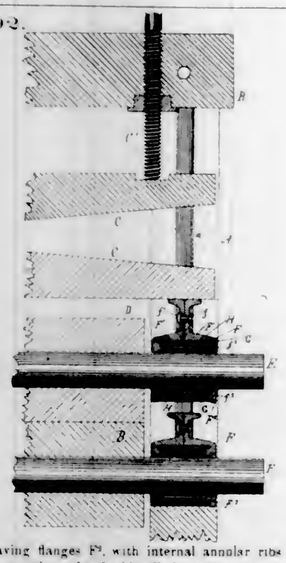
447,492. JOURNAL-BEARING. MELVIN N. LOVELL, Erie, Pa. Filed Dec. 22, 1890. Serial No. 375,465. (No model.)

Claim.—1. The combination, for the purposes named, of the cylinder G, the rollers H, contained within said cylinder, and the box F, formed of the two parts F′ F″, bolted together as shown, and thus forming a clamp, and having flanges F^2, which embrace the ends of said cylinder and retain the rollers H therein.

2. The combination, for the purposes named, of the cylinder G, the rollers H, contained within said cylinder, and the box F, formed of the two parts F′ F″, bolted together as shown, and thus forming a



447,492.



clamp, and having flanges F^3, with internal annular ribs f^2, which embrace and enter the ends of said cylinder and retain the rollers H therein.

447,493. CUFF-HOLDER. HAIG DER MUGERDITCHYAN, Chicago, Ill. Filed Oct. 20, 1890. Serial No. 368,757. (No model.)



Claim.—1. A cuff-holder comprising, in combination with a stem having at one end thereof a clamp or clasp to engage the shirt-sleeve and at the other end means for engaging the cuff, said means comprising an upturned end of the stem, a rotatable pin journaled in said upturned portion and carrying at each end thereof short bars substantially at right angles to the pin and to each other, and a spring having one end thereof secured to the stem and its opposite end bearing upon the lower of said bars and adapted to exert a constant pressure thereon, substantially as described.

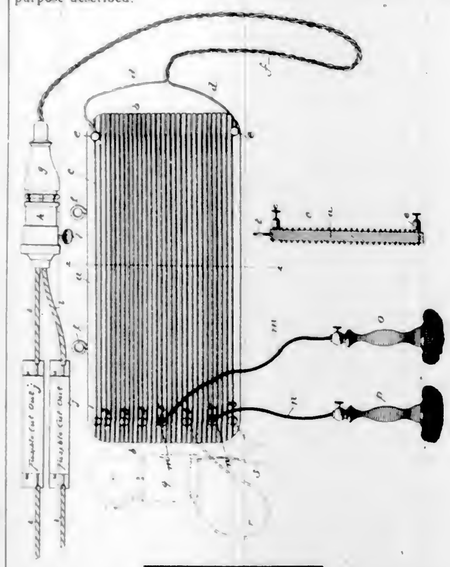
2. A cuff-holder comprising, in combination, a stem or shank provided at one end with a clasp or clamp to engage the shirt-sleeve and having its opposite end upturned and a seat formed at an angle thereof, a pin rotatably secured to the upturned portion by passing through longitudinal apertures therein, said pin bearing at each end thereof short bars disposed angularly with reference to the pin and to each other, and a spring having one end secured with the shank and the other provided with a seat for the lower of the bars carried by the pin and bearing upon said bar and adapted to exert a constant pressure thereon, substantially as described.

3. In a cuff-holder, the combination, with the stem 6, of a clasp 7, said stem having the upturned and returned portion 10 and a seat therein, the pin 12, having the bars 13 14, and the spring 15, having the seat 17, substantially as described.

447,494. RHEOSTAT. JEREMIAH O'MEARA, New York, N. Y. Filed Nov. 15, 1890. Serial No. 371,596. (No model.)

Claim.—1. A support and an electrical conductor coiled about it, a series of binding-posts disposed at intervals along said support and in contact with the conductor, leading-in wires connected to opposite ends of said conductor and adapted to be connected with an electric-light circuit or other source of electricity, and leading-out wires, one of which is movable to include a greater or less number of coils of the conductor, substantially as and for the purpose described.

2. A support and an electrical conductor coiled about it, a series of binding-posts disposed at intervals along said support and in contact with the conductor, leading-in wires connected to opposite ends of said conductor and adapted to be connected with a source of electricity, such as an electric-light circuit, leading-out wires, one of which is movable to include a greater or less number of coils of the conductor, and means, such as therapeutical electrodes or bells, included in the circuit of the leading-out wires, substantially as and for the purpose described.



447,495. TURN-OUT AND CROSSING FOR LINE CONDUCTORS. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Apr. 12, 1890. Serial No. 347,832. (No model.)



Claim.—1. In a two-wire system of line conductors for electric railroads, the combination of the two trunk or main line trolley-wires with two curved branch trolley-wires, one of which crosses a main wire and both affording continuous electric trolley contact, substantially as described.

2. The combination, with two main trolley-wires of opposite polarity, of two frogs or switches in said wires, two curved branched trolley-wires affording continuous electric trolley contact and connected with said frogs or switches, and an insulated section in one main wire at the crossing between one of said branched trolley-wires and the said main wire of opposite polarity, substantially as described.

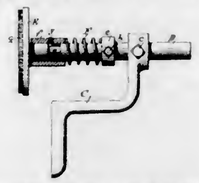
3. In a two-wire system of line conductors for electric railroads, the combination, with a main or trunk line, of a curved turn-out from the main line having one of its conductors crossing but clearing the said main line below the latter and affording continuous electric trolley contact, and an insulating guide or track on the crossed main-line conductor bridging the crossing turn-out conductor, substantially as described.

4. In a two-wire system of line conductors for electric railroads, the combination, with the two conductors of a trunk or main line, one of which is provided with a double inclined and notched insulated or insulating track, of a turn-out or branch composed of a frog in each main conductor, a curved conductor extending from the frog on one main conductor underneath the other main conductor through the notch in the track, and another curved conductor extending from the other frog, substantially as described.

5. The combination, with two main trolley-wires and two frogs or switches in said wires, of two curved branched trolley-wires, one of which crosses a main wire below the latter and both connected with said frogs or switches, a notched insulated or insulating track in the crossed main wire at the crossing, and a support for the crossing wire in the notch, substantially as described.

6. The combination, with a span-wire, of a trolley-wire provided with a double inclined and notched track, an insulated support between said span-wire and said track above the notch therein, a crossing trolley-wire extending through the notch, and an insulator supporting the crossing wire in said notch, substantially as described.

447,496. FRICTION ATTACHMENT FOR SPOOL-CREELS. WALTER SLADE, Pascoag, R. I. Filed Apr. 14, 1890. Serial No. 347,859. (No model.)

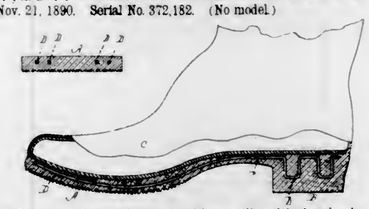


Claim.—1. A spool-creel provided with an adjustable revoluble friction-head adapted to press eccentrically against the head of the inserted spool, substantially as described.

2. The combination of the eccentrically-arranged sliding friction-head, the supporting-bar, the adjustable collar, and the operating-spring, substantially as described.

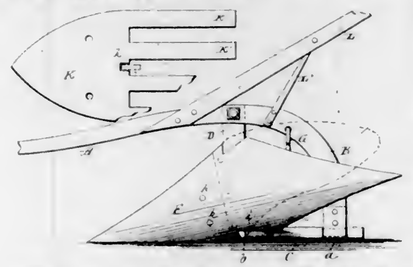
3. The combination, with the friction-head adapted to press eccentrically against one head of the spool, of a spring placed upon the journal of the opposite end of the spool, substantially as described.

447,497. RUBBER BOOT. WILLIAM R. SMITH, Exeter, N. H. Filed Nov. 21, 1890. Serial No. 372,182. (No model.)



Claim.—A rubber sole provided internally with the elastic metallic strengthening-wire D, said wire being embedded horizontally in the sole near the edge and conforming substantially to the outline of said edge, whereby strength and rigidity are imparted thereto without destroying its elasticity, substantially as set forth.

447,498. PLOW. WILLIAM W. SPEER, Pittsburg, Pa. Filed Oct. 17, 1890. Serial No. 368,397. (No model.)

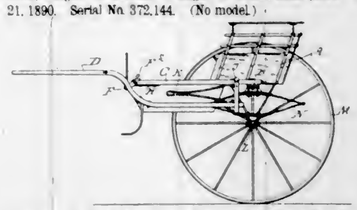


Claim.—1. The combination, with a stock and standard, of a rocking shaft supported in the lower ends of said parts, and a plate or block secured to the forward end of the shaft and adapted to act as a seat for removable parts, such as a mold-board or shovel, said plate or block having projections or ears thereon adapted to engage and have attached to them the removable part, substantially as set forth.

2. The combination, with a stock and a standard, of a rocking shaft supported in the lower ends of said parts, and a plate or block secured to the forward end of the shaft and adapted to act as a seat for removable parts, such as a mold-board or shovel, and capable of serving as a shoulder to bear against the standard when in certain positions, substantially as set forth.

3. The combination, with a stock and standard, of a shaft loosely supported in the lower ends of the stock and standard, a plate or block secured to the shaft, and a double-pointed mold-board removably secured to the plate and adapted to have its ends reversed, said mold-board having notches in its edges adapted to receive the standard, substantially as set forth.

447,499. TWO-WHEELED VEHICLE. JOHN STAHL, Grinnell, Iowa, assignor of one-half to Edgar W. Stahl, same place. Filed Nov. 21, 1890. Serial No. 372,144. (No model.)



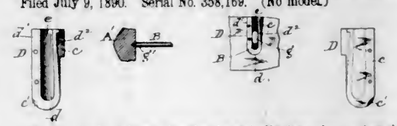
Claim.—1. In a two-wheeled vehicle, side bars fixed to the body thereof, hangers adjustably depending from said side bars, thills adjustably fixed to said side bars and projecting rearward from the point of junction therewith and confined within the hangers, and yielding pressure interposed between the side bars and the rearwardly-projecting portion of the thills, as shown and described.

2. In a two-wheeled vehicle, a device for neutralizing the horse motion comprising thills, the forward and rear portions of which are in different horizontal planes and connected by a double curved portion, side bars shackled at their forward ends to the curved portion of the thills at a point intermediate between the forward and rear portions of said thills, hangers depending from the rear portion of said side bars confining the rear end portion of the thills, yielding pressure interposed between the rear portions of the thills and the side bars, and means for regulating the tension of said yielding pressure, as and for the purposes stated.

3. In combination with the side bars of a vehicle, thills each having a double curved portion adjustably fixed to the adjacent side bar, and a rearwardly-extending straight portion confined within a hanger adjustably fixed to said side bar, as shown and described, for the purposes stated.

4. In a two-wheeled vehicle, a device for overcoming the horse motion, consisting of thills having two straight portions in different horizontal planes connected by a double curved portion, means for connecting each of said curved portions to the front end of the adjacent side bar, a hanger adjustably fixed to and depending from each of said side bars and confining the rear end portion of the adjacent thill, together with a semi-elliptic spring fixed to and interposed between said side bars and the rearwardly-projecting portion of the thills, as and for the purposes set forth.

447,500. LOOM-SHUTTLE. ALBERT H. STEELE, Worcester, Mass. Filed July 9, 1890. Serial No. 358,169. (No model.)



Claim.—1. In a loom-shuttle, the spindle fastening or bearing D, having the vertical slot *e* to receive the end of the spindle, and the spring d^2 at the side thereof, substantially as and for the purpose set forth.

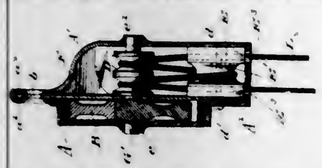
2. In a loom-shuttle, the combination of shuttle-frame A' and spindle B with spindle fastening or bearing D, having the vertical slot *e* and the spring d^2 at the side thereof, substantially as and for the purpose set forth.

3. In a loom-shuttle, the combination of shuttle-frame A', spindle B, and bearing *h* with bearing D, having the vertical slot *e* and the spring d^2 at the side thereof, substantially as and for the purpose set forth.

447,501. FIRE-ESCAPE. HAMBERRY WILSON, Zanesville, Ohio, assignor to the Wilson Manufacturing Company. Filed June 30, 1890. Serial No. 357,267. (No model.)

Claim.—1. In a fire-escape, the divided case, the shaft having the star-wheel and pulley rigidly connected thereto, and the bearing for the shaft, formed in the case to support the shaft at each end, and also having a central support, and the friction-blocks carried by the star-wheel, all combined substantially as set forth.

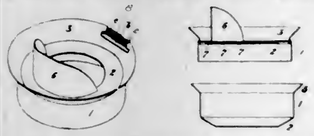
2. In a fire-escape, the divided case having the bearing therein for the rotatable shaft, with the central division-plate provided with a bearing in line with those in the case, combined with a friction-brake and pulley-block and guide-block, substantially as set forth.



3. In a fire-escape, the case having the star-wheel and brake-blocks mounted in one part thereof and the guide-pulleys and guide-block in the opposite part, with an eye formed with the case and located substantially centrally of the shaft of the star-wheel and pulleys, all combined substantially as set forth.

4. In a fire-escape, the divided case and the central division-plate, each having a portion of the suspension-bearing formed therewith and having the eye extending through them, combined with a rotary brake and pulley and guide-block, substantially as set forth.

447,502. **MANUFACTURE OF JUG-TOPS.** HOMER WRIGHT, Pittsburg, Pa. Filed Apr. 11, 1890. Serial No. 347,501. (No model.)



Claim.—1. The method hereinbefore described of forming a jug-top, which consists in forming an annular body portion, placing within the same a dished ring or disk, and flattening said ring or disk, whereby it is expanded and firmly secured in place, substantially as and for the purposes described.

2. The method hereinbefore described of forming a jug-top, which consists in forming an annular body portion, forming therein an internally-projecting bead or shoulder, placing against said bead or shoulder a dished disk or ring, and flattening the disk or ring, whereby it is expanded and firmly secured in place, substantially as and for the purposes described.

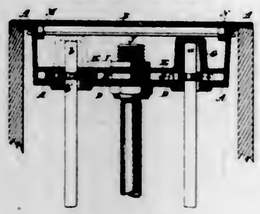
3. The method hereinbefore described of forming a jug-top, which consists in forming a cup-shaped blank having a dished bottom, cutting out the middle of said bottom and the annular rim 2 thereof, and securing the annular portion within the blank by expanding it therein, substantially as and for the purposes described.

4. The method hereinbefore described of forming a jug-top, which consists in forming a cup-shaped blank, cutting out and separating the middle of the bottom and the annular rim thereof, and securing the rim within the blank, substantially as and for the purposes described.

5. In a jug-top, the combination of a collar having a cut-out portion *b* with opposite integral projections *c*, a spiral spring interposed between said projections and held thereby, a lid, and a piece which is secured to the lid and which passes around the projections and spring and forms the pintle of the hinge, substantially as and for the purposes described.

6. In a jug-top, the combination of a collar having a cut-out portion *b* with opposite integral projections *c*, a lid, and a spiral spring interposed between the projections and bearing on the lid and spout, substantially as described.

447,503. **STREET-WASHER BOX.** GEORGE W. ALDRICH, Brooklyn, N. Y., assignor of five-eighths to John L. Spence, same place. Filed Oct. 13, 1890. Serial No. 367,957. (No model.)



Claim.—1. A street-washer box provided with a perforated bottom D and combined with the reversible false bottom E, substantially as described.

2. In a street-washer box, the combination of the perforated reversible false bottom E with the valve-stems *a b* and pipe J, all arranged so that one of said valve-stems is exposed for access through the false bottom, while the other valve-stem is covered and rendered inaccessible by said false bottom, as specified.

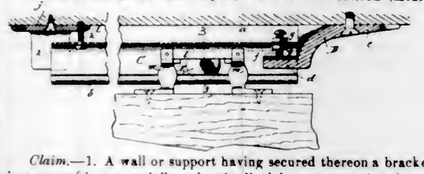
3. The box A, combined with the valve-stems *a b*, pipe J, and false bottom E, raised to form the cap G, said cap rendering one of said valve-stems inaccessible, as specified.

447,504. **CLOTHES-PIN.** ARCHIBALD G. BOWMAN, Joliet ville, assignor of one-half to Phidiller S. Woods, Lebanon, Ind. Filed June 18, 1890. Serial No. 355,849. (No model.)



Claim.—As an improved article of manufacture, a clothes-pin formed of a single piece of wire which is bent at one end to form a hook having its members of a different length and connected by an intermediate coiled spring, the finger formed of the other end of said wire and connected with the longer member of the hook by a coiled spring which forces said finger outward against the shorter member of the hook, substantially as and for the purpose specified.

447,505. **TROLLEY-SUPPORT FOR DOORS.** LEMUEL COBURN, Holyoke, Mass., assignor to the Coburn Trolley Track Manufacturing Company, same place. Filed July 15, 1889. Serial No. 317,584. (Model.)



Claim.—1. A wall or support having secured thereon a bracket-piece comprising, essentially, a longitudinal lug or extension *d*, combined with a tubular trolley-track, substantially as described, having in the upper wall of its one end portion the screw *f*, adapted to be turned inwardly and outwardly through said upper wall and resting by its lower end on said extension *d*, and a supporting-stud at and for the other end of the tubular track and having a screw engagement for a vertical adjustment upon the wall or support, substantially as described.

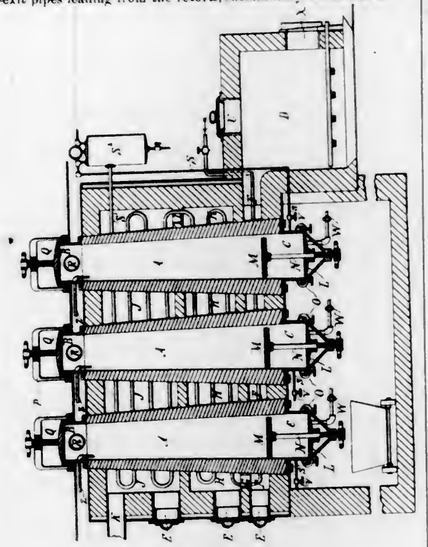
2. The combination, with a bracket-step *d* and a plate *f*, having a screw-bore and provided with cheek-pieces *k k*, of the tubular trolley-track, substantially as described, provided at one end portion with a screw passing with an engagement through its upper wall and adapted to be turned inwardly and outwardly through said upper wall and to rest by its lower end on said bracket-step, and provided at its other end portion with a supporting-screw which passes upwardly through said track and with a screw engagement into said bored plate, substantially as and for the purpose described.

447,506. **APPARATUS FOR THE MANUFACTURE OF GAS.** PETER E. DE MILL, Jr., Detroit, Mich. Filed May 31, 1889. Serial No. 312,746. (No model.)

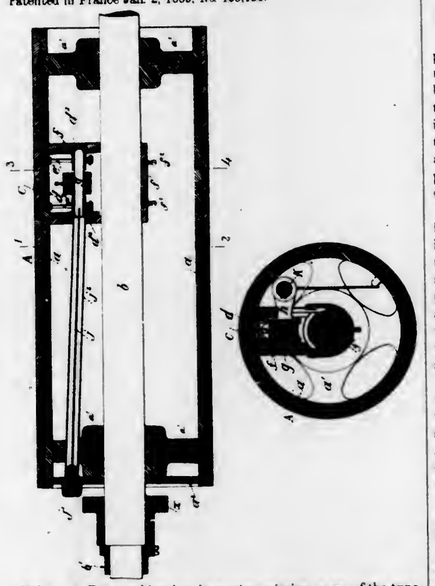
Claim.—1. In a gas-making apparatus, the combination of a vertical retort having a charging door or lid in its top and a discharging-door in its bottom, an external furnace having laterally-extended flues superposed one above another and surrounding the retort to supply heat for generating gas, a vertically-movable and perforated diaphragm in the lower part of the retort for sustaining the charge, a steam-conduit leading into the retort beneath said diaphragm, and a gas-exit pipe leading from the upper part of the retort, substantially as described.

2. In a gas-making apparatus, the combination of a series of vertical retorts, a furnace having laterally-extended flues superposed one above another and surrounding the retorts, said flues being successively increased in depth from below upward, steam-conduits leading into the retorts below the charges of coal supported therein, a steam-generator consisting of pipes located in a furnace-flue and connected with said steam-conduits, and gas-exit pipes leading from the retorts, substantially as described.

3. In a gas-making apparatus for the continuous production of illuminating and fuel gas, the combination of a series of vertical retorts, a furnace having laterally-extended flues superposed one above another and surrounding said retorts, which project at top and bottom beyond the said flues, vertically-movable diaphragms in the lower portions of said retorts to sustain the charges of coal, steam-conduits leading into the retorts beneath said diaphragms, pipes for discharging liquid hydrocarbon into the upper portions of the retorts, and valved gas-exit pipes leading from the retorts, substantially as described



447,507. **CHROMATIC-PRINTING PRESS.** AMEDÉE FAYOL, Bordeaux, France. Filed Jan. 2, 1891. Serial No. 376,471. (No model.) Patented in France Jan. 2, 1889, No. 195,139.

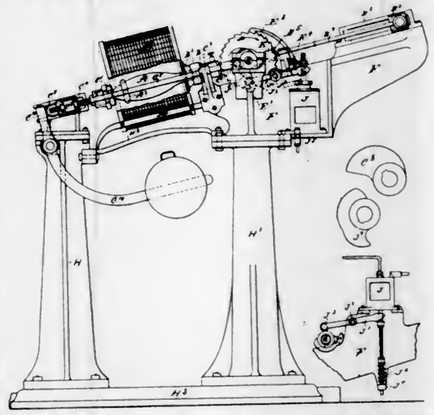


Claim.—1. The combination, in a color-printing press, of the type-cylinder *a* with the type-carrier *d* placed therein and with mechanism within the type-cylinder, substantially as described, for drawing said type-carrier inward, and with mechanism, substantially as described, for enabling centrifugal force to move said type-carrier outward, as specified.

2. The combination of the hollow type-cylinder with the reciprocating type-carrier *d* placed therein and with the lever *h*, arbor *k*, lever *l*, spring *r*, and stationary cam *x*, all arranged for operation substantially as herein shown and described.

3. The combination of the type-cylinder *a* with the inner box *f*, reciprocating type-carrier *d*, rod *g*, lever *h*, spring *r*, arbor *k*, arm *i*, lever *l*, and stationary cam *x*, all arranged substantially as herein shown and described.

447,508. **MACHINE FOR BOTTLING AERATED WATER.** THOMAS FERGUSON, Albert Park, near Melbourne, assignor of one-half to Evan Rowlands, Melbourne, Victoria. Filed Jan. 14, 1886. Serial No. 188,565. (No model.) Patented in Victoria June 29, 1885, No. 4,112; in Tasmania Dec. 3, 1885, No. 380; in South Australia Dec. 5, 1885, No. 628; in New Zealand Dec. 10, 1885, No. 1,650; in England Jan. 12, 1886, No. 513; in Cape of Good Hope Jan. 18, 1886, No. 335; in France Jan. 20, 1886, No. 173,658; in Belgium Jan. 30, 1886, No. 71,713; in New South Wales Feb. 1, 1886; in India Mar. 13, 1886; in Canada Feb. 16, 1887, No. 26,019; in Queensland Nov. 5, 1887, No. 304, and in Germany Nov. 30, 1887, No. 41,611.



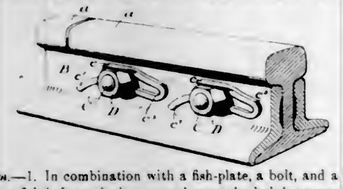
Claim.—1. In a bottling machine, the combination of a bottle-support comprising a shoe or buffer composed of a metal socket and a recessed wooden block carried thereby to receive the bottom of the bottle, a vertical stem supporting said socket, and a cross-head attached to said stem, a rod attached to said cross-head, cam mechanism connected with and adapted to reciprocate said rod, and the thereto-connected cross-head and bottle-bottom support, a wire bottle-guard, a pronged bottle-guide, and a bottle-charging cone having an overflow-passage therein, and a valve for controlling the supply to the bottle, substantially as set forth.

2. In a bottling-machine, the combination, with the shoe or buffer herein described rigidly held vertically to support the bottle-bottom in inclined position, and mechanism, as described, for longitudinally reciprocating said buffer, of a bottle-charging cone having a bell-month and an elastic washer therein to receive the bottle-head, an air-relief passage having a regulating thumb-valve, an overflow-opening having a similar valve and fluid-supply passages guarded by spring check-valves, a ratchet-disk having a stud or studs adapted as said disk revolves to engage with and open the fluid-supply valves, and devices, as described, for actuating said ratchet-disk.

3. The combination, with the shaft G and buffer or shoe C, of the recessed block C to receive the bottle-bottom, a screwed stem secured to the rear of said block or socket C, cross-head C*, supporting said stem, a longitudinally-adjustable guide-bracket, a rod and cam mechanism, substantially as described, for reciprocating the bottle-bottom support, and a rod connecting said supporting devices and the operating mechanism.

4. The combination, with the spindle or shaft G, a horizontally-adjustable and reciprocating support for the bottle-bottom, a cam keyed upon said spindle to engage with and operate a rod connected to said bottle-support and having a friction-roller, a weighted lever adapted to hold the reciprocating parts rigid, a handle for actuating said spindle and parts connected therewith, a filling-cone having an elastic washer to receive the bottle-head, valve-guarded overflow and air-relief passages, valve-guarded fluid-supply passages, a rearwardly-extending cork-trough communicating with the rear end of the cone, a ram for forcing the corks to and into the bottle-neck, and means, substantially as described, for actuating said ram.

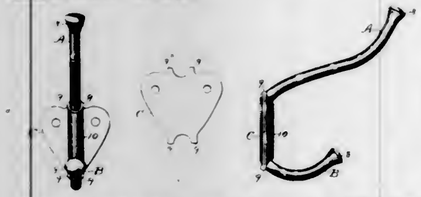
447,509. NUT-LOCK. HARRY G. FITLER and WILLIAM H. ARMSTRONG, Philadelphia, Pa., assignors of two-fifths to James Henry F. Dixon, same place. Filed Nov. 5, 1889. Serial No. 329,288. (No model.)



Claim.—1. In combination with a fish-plate, a bolt, and a many-sided nut, a fish-bolt nut-lock mounted upon the bolt between the nut and plate, said nut-lock embodying a free portion or end capable of radial movement with respect to the bolt and nut, upon which end or portion is mounted a flange which normally sets against a side face of the nut, but which flange in the manipulation of the nut is transiently lifted by the contact of a corner thereof in passing beneath it, said nut-lock being formed as a spring so as to bear, respectively, against and tend to force apart the fish-plate and nut and so as to present said flange against the side of the nut in the different positions of the latter upon the bolt, substantially as set forth.

2. In combination with a fish-plate, a bolt, and a many-sided nut, a fish-bolt nut-lock, consisting of a bar of metal formed intermediately of its length into an open eye through which the bolt extends, one end portion of said bar extending away from the eye and then returning so that its extremity lies within the opening of said eye and beneath the nut, said returning extremity being set out from the fish-plate to press said nut away from the fish-plate, and a flange extending along the side of the portion of the bar extremity which is beneath the nut, which flange normally sets against and along the side of the nut, substantially as set forth.

447,510. COAT AND HAT HOOK. CHARLES GLOVER, New Britain, Conn., assignor to P. & F. Corbin, same place. Filed Sept. 6, 1890. Serial No. 364,098. (No model.)



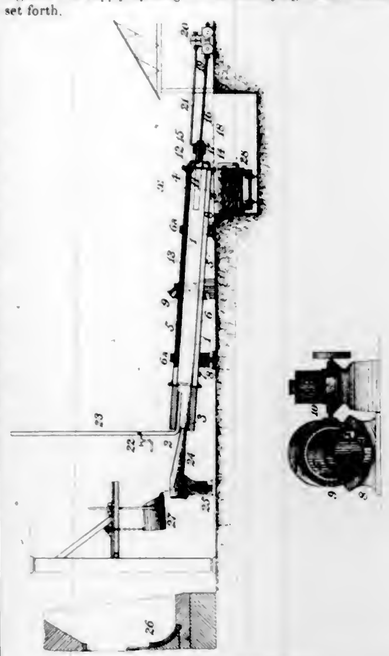
Claim.—The herein-described coat and hat hook, consisting of the hooks A B and connecting body 11, and the socket-plate C, having a socket on its back side, with a solid wall of metal in front of said connecting body, and having projections or lugs 9 at each of its upper and lower corners, which lugs are turned rearwardly and embrace the bases of said hooks at points above and below said connecting body and in front of its rear side, substantially as described, and for the purpose specified.

447,511. METHOD OF AND APPARATUS FOR SOLIDIFYING MOLTEN METAL. GEORGE W. GORTZ, Pittsburg, Pa. Filed Nov. 29, 1889. Serial No. 331,901. (No model.)

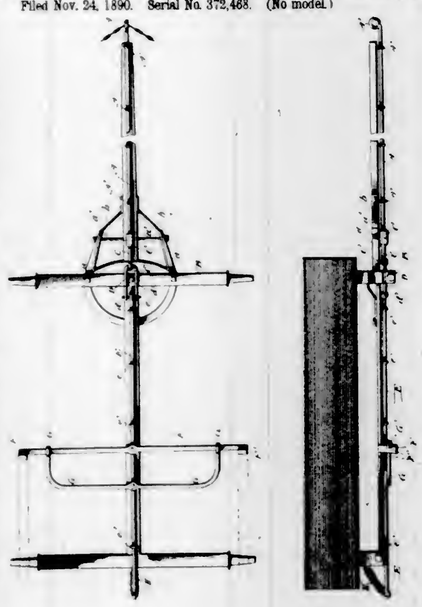
Claim.—1. As an improvement in the art of solidifying molten metal and separating it into merchantable form, the method which consists in subjecting the molten metal to the action of refrigeration and to mechanical movement by its progressing traverse over and in continuous contact until partially solidified, with a refrigerated unbroken surface moving transversely to the line of traverse of the metal, whereby the metal will be partially solidified and separated into detached portions, substantially as set forth.

2. As an improvement in the art of solidifying molten metal and separating it into merchantable form, the method which consists in feeding the same into and effecting its comparatively slow longitudinal traverse through a solidifying-vessel, solidifying the metal by subjecting it to the action of a refrigerating medium during such traverse, and coincidently separating the metal when partially solidified into detached portions by diverting it from direct longitudinal traverse, substantially as set forth.

3. The combination of a tubular solidifying-vessel which is open at one of its ends, a refractory lining extending longitudinally therein at and near its open end, a casing inclosing the vessel for the remainder of its length and forming an annular cooling-chamber around the same, a lateral discharge-passage extending through said chamber adjacent to the end farthest from the refractory lining, bearing-rings fixed upon the periphery of the casing, roller-bearings supported in fixed stands at different elevations and sustaining said rings, so as to impart a longitudinal inclination to the vessel, gearing for imparting rotation to the vessel, supply and discharge connections leading from the cooling-chamber to a refrigerating apparatus, and a receiving-channel projecting into the supply-opening of the solidifying-vessel, substantially as set forth.



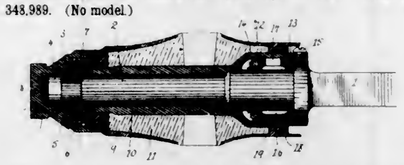
447,512. VEHICLE-BRAKE. JOSEPH P. GREGORY, Lafayette, Tex. Filed Nov. 24, 1890. Serial No. 372,468. (No model.)



Claim.—1. In an automatic vehicle-brake, the combination, with the running-gear and tongue of a vehicle, of a sliding rod movable within staples or guides attached to the lower face of the tongue and having hinged connection with one end of the bar C, the opposite end of which bar is pivotally connected with a clevis D, the casing C, loosely sleeved over the joint between the sliding rod and bar C, and of sufficient diameter to permit the required play thereof, the rod E, loosely sleeved within keepers e^3, and the brake-bar carried by the rod E and provided with brake blocks or shoes, substantially as shown and described, and for the purpose specified.

2. The herein-described automatic vehicle-brake, the same comprising, in combination with the running-gear and pole of a vehicle, a sliding rod movable within keepers or staples attached to the lower face of the pole, the clevis, the bar or link C, having hinged connections at its ends with the rod and clevis, respectively, the rod E, having hinged connection at its forward end with the clevis and its rear end extended to the rear of the rear axle, the spiral spring H, connecting the rear end of said rod with the rear axle, and the brake-bar carried by the rod E and provided with brake blocks or shoes, and the curved strengthening-rod G, secured at its center to the bar or rod E and having its ends formed into loops loosely embracing the brake-bar, substantially as shown and described, and for the purpose specified.

447,513. AXLE-BEARING. ALEXANDER R. HAMILTON, Decatur, assignor, by direct and mesne assignments, to William D. Barnett and G. L. Lukens, both of Clinton, Ill. Filed Apr. 22, 1890. Serial No. 348,989. (No model.)



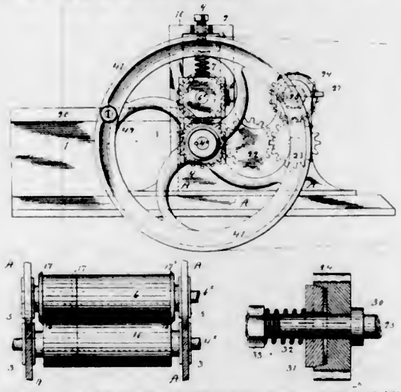
Claim.—In combination with a spindle and hub, the detachable collar 13, having the internal annular recess 16 and openings in its upper surface only, as set forth.

447,514. GELATINE CAPSULE. SOLOMON E. HEINEMAN, Detroit, Mich., assignor to the Merz Capsule Company, same place. Filed Dec. 11, 1890. Serial No. 374,371. (No specimens.)

Claim.—1. As an improved article of manufacture, a soluble capsule the body of which is formed of intermixed gelatine and an alkali, and wherein the alkali remains inactive until taken into the stomach, substantially as described.

2. A soluble capsule the body of which is formed of intermixed gelatine and soda carbonate to correct acidity of the stomach, substantially as described.

447,515. MACHINE FOR TRIMMING AND COMPRESSING SHEET METAL. GEORGE D. HERBOLDSHIMER, Westernport, Md. Filed Aug. 7, 1890. Serial No. 361,310. (No model.)



Claim.—1. A hard-surfaced roll in fixed bearings and a yielding roll in spring-pressed bearings, said movable roll being parallel with the roll in the fixed bearings, a disk-cutting blade on one roll cutting past a shoulder on the other roll, and gears connecting the rolls and causing them to revolve in unison, substantially as described.

2. In a metal-trimming machine, the combination of a pair of trimming-rolls, one of the same provided with cutting-knives, as described, a winding-drum and intermediate pinions from the rolls, and a friction-gear between the pinions and the winding-drum, substantially as described.

3. In a metal-trimming machine, the combination of a pair of trimming-rolls, a winding-drum, and a friction-gear for driving the same, and a spring-flap on the winding-drum, substantially as described.

447,516. BOLT. EDWARD HUBER, Marion, Ohio. Filed Oct. 29, 1890. Serial No. 369,693. (No model.)



Claim.—1. A T-bolt the head of which is approximately flat on its under side and provided near one end with an integral spur or projection, the latter extending parallel with the shank of the bolt, substantially as set forth.

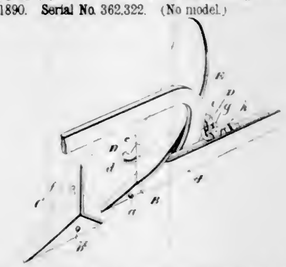
2. A T-bolt the head of which is approximately flat on its lower surface and provided near one end with an integral depending flat spur, the latter extending parallel with the shank of the bolt, substantially as set forth.

3. A T-bolt the head of which is approximately flat on its lower surface and provided near one end with an integral depending V-shaped spur, the latter extending parallel with the shank of the bolt, substantially as set forth.

4. A T-bolt having an integral depending spur at one end of the head thereof adapted to extend parallel with the shank of said bolt, and an integral depending spur at the other end of said head, substantially as set forth.

5. A T-bolt having an integral spur at one end of the head thereof and adapted to extend parallel with the shank of said bolt, said shank being provided with screw-threads, and a nut adapted to be screwed upon said shank, substantially as set forth.

447,517. PLOW. ROBERT S. HYER, Georgetown, Tex. Filed Aug. 18, 1890. Serial No. 362,322. (No model.)



Claim.—1. In a plow, the combination, with a landside, mold-board, and share, of a combined brace and fastening device for connecting the landside and mold-board and detachably connected to the share and landside, substantially as set forth.

2. In a plow, the combination, with a landside, mold-board, and share, of a lever for locking the share in position and for bracing the mold-board.

3. In a plow, the combination, with a landside, mold-board, and share, of a lever pivoted to the mold-board and provided with a device on its front end for engaging a projection on the share, and means for locking the rear end of the lever to the landside, thereby forming a rigid brace between the mold-board and landside, substantially as set forth.

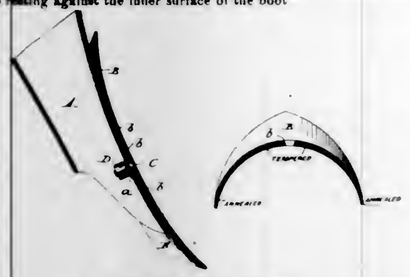
4. In a plow, the combination, with a landside, mold-board, and share, of a lever pivoted to the mold-board and provided with a hook at its front end for engaging a projection on the under side of the share, and means for locking the rear end of the brace directly to the landside, substantially as set forth.

447,518. DRILL-TOOTH. THOMAS MARR and CHARLES W. SMITH, Warrenton, Va. Filed July 7, 1890. Serial No. 357,936. (No model.)

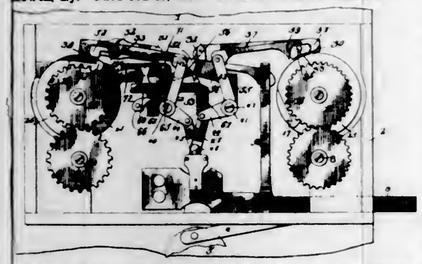
Claim.—1. The herein-described point or tooth for seed-drills, having bent pointed opposite ends and annealed longitudinal edges, which are thinner than the tempered body and ends of the tooth, the body of the tooth being provided with one or more apertures, for the purpose specified.

2. The combination, substantially as hereinbefore set forth, of the

boot, the tooth or point having bent pointed opposite ends and a series of countersunk holes on its outer face, a headed bolt extending through one of the holes and through a hole in the boot and having its head countersunk in the hole, and a nut having a rounded inner face resting against the inner surface of the boot



447,519. PERMUTATION-LOCK. DUNCAN MCL. QUARLES, JR., Howell, Ky. Filed Oct. 16, 1890. Serial No. 368,281. (Model.)



Claim.—1. In a permutation-lock, the combination, with a spindle 12, having a number of steps provided with grooves 22, of tumblers 14 mounted one upon each step and having interlocking pins on their adjacent faces, and washers 20 between the tumblers, having inwardly-projecting studs 21 engaging said grooves, substantially as described.

2. The herein-described tumbler for permutation-locks, the same comprising a body with a notch in its edge, a hub 23, turning within said body and carrying pins at each end engaging with those on adjacent hubs, and springs 28, located in recesses 27 of the body and bearing frictionally against the periphery of said hub, substantially as described.

3. In a permutation-lock, the combination, with a bank of tumblers having notches 29 and the inner tumbler having a pin 85, and the lever-support 30, adapted to drop into said notches when they register, of a dog 81, centrally pivoted to the lock-case below said lever-support, its upper end 82 being reduced and its lower end 83 weighted, said pin 85 striking the weighted end of the dog and tripping its reduced end from beneath the lever-support when the tumbler is moved in one direction, as and for the purpose set forth.

4. In a permutation-lock, the combination, with the lever-support 30, the pivoted latch 72 beneath said support, means for moving the latch longitudinally, and a stud 74 on the latch, of a bank of tumblers, the innermost one having a pin 80, a lever 75, pivoted to the casing and struck by said pin, and a flange 76, having a notch 77 adapted to move over said stud, as and for the purpose set forth.

5. In a permutation-lock, the combination, with the lever-support 30, the latch 72 beneath said support, said latch having a stud 74 and a pin 73, the moving slide 70, to which said latch is pivotally connected, the moving slide 60 adjacent thereto and having a notch 62, the bracket 63 on said slide 60, having an open-topped notch 64 engaging said pin, the connecting-lever 51, mounted on a fixed pivot at one end and having a depending face 52 at its other end, adapted to engage the notches 29 of a bank of tumblers, the link 53, pivoted to said lever and having a reduced lower end removably engaging said notch 62, and means for moving the link around its pivot, of a bank of tumblers, the innermost one having a pin 80, a lever 75, pivoted to the casing and struck by said pin, and a flange 76, having a notch 77 adapted to move over said stud 74, as and for the purpose set forth.

6. In a permutation-lock, the combination, with the lever-support 30, the latch 72 beneath said support, said latch having a stud 74 and a pin 73, the moving slide 70, to which said latch is pivoted, the moving slide 60 adjacent thereto and having a notch 62, the bracket 63 on said slide 60, having an open-topped notch 64 engaging said pin, the connecting-lever 51, mounted on a fixed pivot at one end and having a depending face 52 at its other end, adapted to engage the notches 29 of a bank of tumblers, the link 53, pivoted to said lever and having a reduced lower end removably engaging said notch 62, a bell-crank lever 41, a bank of tumblers, a main lever 37, connected at one end to said bell-crank lever and at its other end adapted to engage the notches 29 of this bank, an arm 55 on said bell-crank lever, and a connecting-bar 54 between said arm 55 and the link 53 for moving the latter around its pivot, of another bank of tumblers, the innermost one having a pin 80, a lever 75, pivoted to the casing and struck by said pin, and a flange 76, having a notch 77 adapted to move over said stud 74, as and for the purpose set forth.

7. In a permutation-lock, the combination, with the lever-support 30, the movable latch 72 beneath said support, said latch having a stud 74, the moving slide 60 adjacent the latch, connections, substantially as described, between the slide and the latch, the connecting-lever 51, mounted on a fixed pivot at one end and having a depending face 52 at its other end, adapted to engage the notches 29 of a bank of tumblers, the link 53, pivoted to said lever and having a reduced lower end removably engaging a notch 62 in said slide, and means for moving the link around its pivot, of a bank for tumblers, the innermost one having a pin 80, a lever 75, pivoted to the casing and struck by said pin, and a flange 76, having a notch 77 adapted to move over said stud 74, as and for the purpose set forth.

8. In a permutation-lock, the combination, with the lever-support 30, the movable latch 72 beneath said support, said latch having a stud 74, the moving slide 60 adjacent the latch, connections, substantially as described, between the slide and the latch, the connecting-lever 51, mounted on a fixed pivot at one end and having a depending face 52 at its other end, adapted to engage the notches 29 of a bank of tumblers, the link 53, pivoted to said lever and having a reduced lower end removably engaging a notch 62 in said slide, a bell-crank lever 41, a bank of tumblers, a main lever 37, connected at one end to said bell-crank lever and its other end adapted to engage the notches 29 of this bank, an arm 55 on said bell-crank lever, and a connecting-bar 54 between said arm 55 and the link 53 for moving the latter around its pivot, of another bank of tumblers, the innermost one having a pin 80, a lever 75, pivoted to the casing and struck by said pin, and a flange 76, having a notch 77 adapted to move over said stud 74, as and for the purpose set forth.

9. In a permutation-lock, the combination, with the lever-support 30, the movable latch 72 beneath said support, said latch having a stud 74, the moving slide 60 adjacent the latch and having a notch 62, connections, substantially as described, between the slide and the latch, the connecting-lever 51, mounted on a fixed pivot at one end and carrying a link 53, having a reduced lower end removably engaging said notch, and means for moving the link to reciprocate said slide, of a bank of tumblers, the innermost one having a pin 80, a lever 75, pivoted to the casing and struck by said pin, and a flange 76, having a notch 77 adapted to move over said stud 74, as and for the purpose set forth.

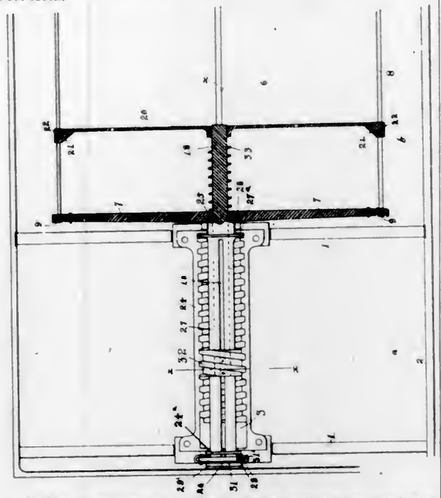
10. In a permutation-lock, the combination, with the lever-support 30, the movable latch 72 beneath said support, said latch having a stud 74, the moving slide 60 adjacent the latch, connections, substantially as described, between the slide and latch, a bank of tumblers, and means for moving the slide from said bank, of another bank of tumblers, the innermost one having a pin 80, a lever 75, pivoted to the casing and struck by said pin, and a flange 76, having a notch 77 adapted to move over said stud 74, as and for the purpose set forth.

11. In a permutation-lock, the combination, with the bell-crank lever 40, having a cam 67 on its shaft, the stop-bolt 46, connected to one arm of said lever, a bank of tumblers, and a main lever 36, connecting said bank with the other arm of the bell-crank lever, of a plate 66, resting on said cam, a slide 60, connected to a latch 72, standing beneath the lever-support 30 of said bank, a pin 65, resting on said plate and passing loosely through a hole in the slide, a weighted pawl 56, having a groove 57 sliding over said slide, and means for moving said pawl, as and for the purpose set forth.

447,520. WASHING-MACHINE. THOMAS J. THORP, Chicago, Ill., assignor of one-third to George N. Kneeland, Rochester, N. Y. Filed Aug. 26, 1890. Serial No. 363,119. (No model.)

Claim.—1. In a washing-machine, a tank, a cylinder supported in journals within said tank, mechanism for revolving the cylinder, perforated disks or pistons in the cylinder, and devices for moving the same endwise of the cylinder, consisting of piston-rods provided with the externally-threaded sleeves, the screw-threaded bearings to receive the sleeves, and the slotted tubular cylinder-journals, the piston-rods being connected to the threaded sleeves by a web extending through the slots in the journals, and mechanism for rotating the cylinder, substantially as set forth.

2. In a washing-machine, the tank, the cylinder provided with slotted tubular journals, the disks provided with rods extending within said journals, mechanism for revolving the cylinder, and devices for moving each disk to and from its respective end of the cylinder, said devices being operated by the rotation of the cylinder, but adapted to be disengaged and left at rest by its continued rotation, substantially as set forth.



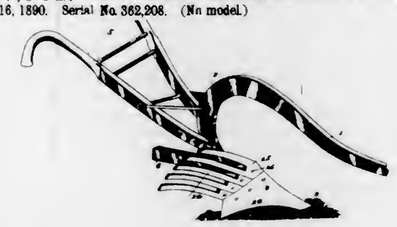
3. In a washing-machine, the tank, the cylinder provided with slotted tubular bearings, mechanism for revolving the cylinder, the disks and their rods, the externally-screw-threaded sleeves surrounding the journals and connected through their slots with the rods, and the tubes each having internal threads extended to a point having a distance from the outer end of the tube greater than the length of a sleeve, whereby when the disks have been moved to their respective ends of the cylinder by its rotation the sleeves will be disengaged from the threads of the tubes, substantially as set forth.

4. In a washing-machine, the tank, the cylinder provided with slotted tubular bearings, mechanism for revolving the cylinder, the disks and their rods, the externally-screw-threaded sleeves surrounding the journals and connected through their slots with the rods, and the tubes, each having internal threads extended to a point having a distance from the outer end of the tube greater than the length of a sleeve, and springs tending to cause the engagement of the sleeves with the internally-threaded tubes when the motion of the cylinder is reversed, whereby when the disks have been moved to their respective ends of the cylinder by its rotation the sleeves will be disengaged from the threads of the tubes and will be re-engaged upon reversing the rotation of the cylinder, substantially as set forth.

5. In a washing-machine, the tank, the slotted cylinder, and the disks provided with lugs having heads, said lugs fitting the slots and the heads extending transversely beyond the slots and bearing on the exterior of the cylinder, whereby said cylinder is supported against internal pressure, and mechanism for moving the disks endwise of the cylinder and mechanism for rotating the same, substantially as set forth.

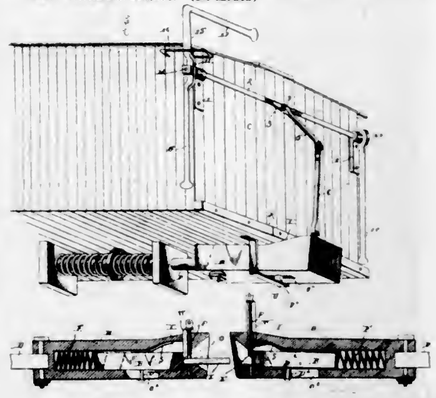
6. In a washing-machine, the cylinder provided with the pivoted doors, the locking-bars, each having two members and pivoted to one door, a lug or keeper on the other door adapted to receive one of said members, and a recess in the cylinder-head adapted to receive the other member, substantially as set forth.

447,521. PLOW. ALFRED F. BALL, Rock Hill, Tex. Filed Aug. 16, 1890. Serial No. 362,208. (No model.)



Claim.—The combination of the plow-beam having the standard 2, provided with offset 3 and foot 4, extending forwardly from the latter, the landside having recesses 7 and 7^b and wing 11, the mold-board having the point 8 seated in the recess 7 of the landside, and the tines 14, having plates 15, the latter and the mold-board being bolted upon the wing 11 with their meeting edges flush, all as herein described.

447,522. CAR-COUPLING. DAVID BOWLES, Maryville, Tenn., assignor of one-half to William P. Hastings, same place. Filed Oct. 24, 1890. Serial No. 369,201. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head and the pin moving vertically therethrough, of a rock-shaft mounted in bearings across the end of the car and having a flat plate at its center, an operating-lever at the end of said shaft, an arm having a bifurcated rear end which embraces said plate and is pivoted near the rear edge thereof, and a rigid link pivotally connecting the front end of this arm with said pin, as and for the purpose set forth.

2. In a car-coupling, the combination, with a rock-shaft mounted in bearings across the end of the car and having squared extremities, an arm extending forwardly from said rock-shaft, a link connected to said arm, and a coupling-pin connected to said link, of an operating-lever depending from the rock-shaft at one side of the car, another operating-lever rising from the rock-shaft at the other side of the car, passing over the corner of the car, and extending to the transverse center of the car-top, both said levers having squared heads engaging the extremities of said rock shaft, and means for holding said heads thereon, as set forth.

3. In a car-coupling, the combination, with the car-body having a metal-faced dead-block, of the draw-bar mounted beneath said body, the draw-head pivotally connected to said draw-bar, the upper side of said head inclining outwardly and its front end inclining downwardly and inwardly, and a stirrup depending from the car and supporting the draw-head, the whole constructed as and for the purpose set forth.

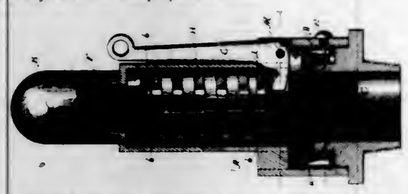
4. In a car-coupling, the combination, with the draw-head, a block moving longitudinally therein and having a forward extension E at the upper side of its front end, a spring moving said block forwardly, a stud on said block for limiting its movement, the draw-head being so shaped interiorly as to permit the rise and fall of the front end of said block as well as its longitudinal movement, and a spring pressing said front end downwardly, of a link, a pin passing vertically through the draw-head and link and through a notch in the extension of the block, and means for operating the pin, the whole constructed as and for the purpose set forth.

5. In a car-coupling, the combination, with the draw-head, a block moving longitudinally therein and having a forward extension E at the upper side of its front end, a spring moving said block forwardly, and a stud on said block for limiting its movement, the draw-head being so shaped interiorly as to permit the rise and fall of the front end of said block as well as its longitudinal movement, of a link adapted to enter said draw-head and stand beneath said extension, and a pin passing downwardly through the draw-head and a notch in the front end of said extension, said pin having a web on its rear side extending downwardly for a portion of the length of the pin, the whole constructed as and for the purpose hereinbefore set forth.

447,523. SAFETY-VALVE. ISAAC F. KEARNS, Chicago, Ill. Filed May 22, 1890. Serial No. 352,768. (No model.)

Claim.—1. The combination of a valve-casing having a vertical

slot therethrough and an oblique aperture therein extending from the outside of the casing on one side of the vertical slot to and into the wall of the other side of such slot, where it terminates in a socket, with a detachable valve-lifting lever having a hole normally in line with the aperture in the casing, and a securing-pin passed into and through the oblique aperture and hole and screwed into the socket, substantially as and for the purpose set forth.



2. The combination of a valve and a spring for forcing the same to its seat, the said spring having its upper and lower surfaces beveled outwardly, with bearing-surfaces inclined or concaved to adapt them to the spring, whereby a ball-and-socket connection is obtained, substantially as and for the purpose set forth.

3. The combination of a valve and a coiled spring for forcing the same to its seat, the upper and lower coils of which spring are beveled outwardly, with bearing-surfaces inclined or concaved to adapt them to the contour of the upper and lower coils of such spring, whereby a ball-and-socket connection is obtained between the spring and its bearings, substantially as and for the purpose set forth.

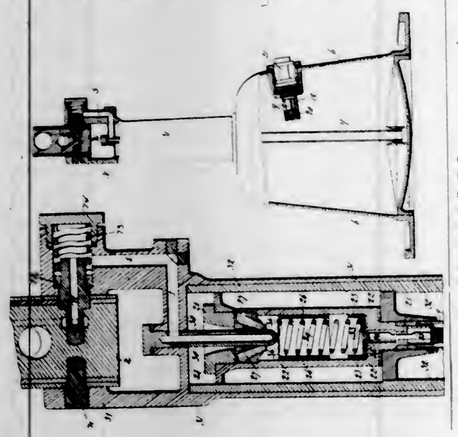
4. The combination of a valve having an upwardly-projecting neck which terminates in a disk concaved upon its remote side, an adjusting-nut having its inner surface concaved, and a coiled spring confined between such nut and disk and having its upper and lower coils beveled outwardly, substantially as and for the purpose set forth.

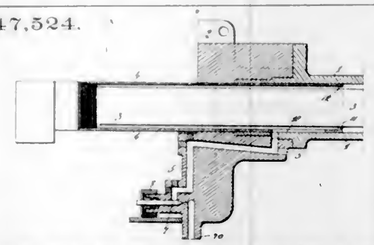
5. The combination of a safety-valve having its edge extending beyond its seating-surface and recessed on the under side thereof, with an adjustable ring surrounding the edge of said valve and provided with an inner recessed surface extending laterally as far as the outer edge of the valve and bounded by an upright wall, whereby the ring may be adjusted above the outer edge of the valve, substantially as described.

447,524. AUTOMATIC GUN. HIRAM S. MAXIM, London, England. Filed June 10, 1890. Serial No. 354,930. (No model.) Patented in England Oct. 13, 1886, No. 13,083; in Belgium Oct. 15, 1887, No. 79,005; in Italy Nov. 26, 1887, No. 22,500; in France Dec. 14, 1887, No. 185,641; in Austria-Hungary Apr. 21, 1888, No. 34,166, and in Germany Aug. 24, 1888, No. 44,208.

Claim.—1. In a machine-gun, the combination, with the barrel, the breech mechanism, and a part movable by or in the operation of the gun, of a casing or chamber surrounding the barrel and provided with an inlet and an outlet, a reservoir of water or cooling liquid connecting with the said chamber, and a valve intermediate to the reservoir and chamber for controlling the communication between the same, said valve being connected with and controlled by the said movable part, as set forth.

2. In a machine-gun, the combination, with the barrel, the breech





mechanism, and a part movable by or in the operation of the gun, of a casing or chamber surrounding the barrel and provided with an inlet and an outlet, a reservoir of water or cooling liquid under pressure connecting with the said chamber, and a valve intermediate to the reservoir and chamber for controlling the communication between the same, said valve being connected with and controlled by the said movable part, as set forth.

3. The combination, in a gun, with a chamber or casing surrounding the barrel and provided with an inlet and an outlet, of a reservoir or receptacle containing water or cooling liquid and formed or attached to the gun carriage or mounting and connected with the chamber, and a valve for controlling or effecting the flow of water from said reservoir into the chamber surrounding the barrel and dependent for operation upon the movement of a part of the gun, as set forth.

4. The combination, in a gun, with a chamber or casing surrounding the barrel and provided with an inlet and an outlet, of a reservoir of liquid communicating therewith and a valve for controlling the flow of liquid from the reservoir to the chamber surrounding the barrel connecting or engaging with the trigger, whereby said valve will be opened by the movement of the trigger in discharging the gun, as set forth.

5. The combination, in a gun, with a chamber or casing surrounding the barrel, of an air-tight reservoir containing a cooling fluid and compressed air, a passage of communication between the reservoir and the said chamber, a valve contained therein, and connection between the same and the trigger or equivalent moving part of the gun, as set forth.

6. The combination, with a gun having a chamber or casing surrounding the barrel and provided with an inlet port or passage, of a reservoir containing a cooling fluid and a self-closing or automatic outlet-valve for said reservoir, adapted to be freed and held open by the inlet-port of the casing around the barrel when the said casing and reservoir are brought into communication, as set forth.

7. In a gun, the combination, with a chamber or casing surrounding the barrel, of a reservoir containing a cooling fluid, means for opening and closing communication between the reservoir and the casing, and an automatic reducing-valve for regulating the flow of liquid when such communication is established, as set forth.

8. The combination, with a gun-barrel, a chamber or casing surrounding the same, and a hollow perforated stem forming the inlet-port for such chamber, of a reservoir for containing a cooling liquid, an india-rubber valve-seat surrounding the outlet of such reservoir, and a spring-impelled valve for closing the outlet and adapted to be forced off its seat and opened by the tubular stem when the gun and reservoir are associated, in the manner described.

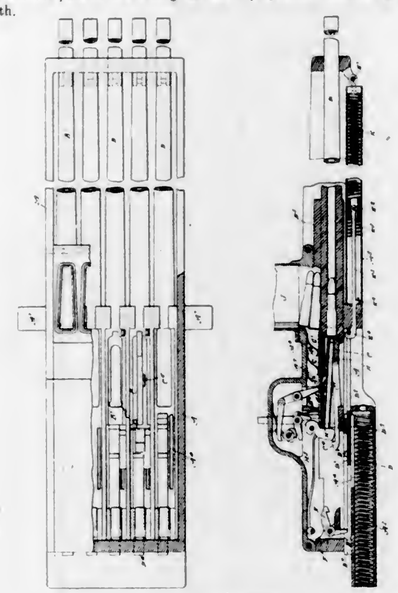
447,525. AUTOMATIC GUN. HIRAM S. MAXIM, London, England. Filed June 10, 1890. Serial No. 354,931. (No model.) Patented in England June 1, 1886, No. 7,354; in France June 30, 1887, No. 181,516; in Belgium Oct. 15, 1887, No. 79,005; in Italy Nov. 26, 1887, No. 22,500; in Germany Jan. 20, 1888, No. 41,870, and in Austria-Hungary Apr. 21, 1888, No. 34,166.

Claim.—1. The combination, with two or more automatic guns, each consisting of a barrel and a breech mechanism therefor adapted to be moved relatively to each other by the force of a discharge in said barrel, and a hammer and sears forming a part of each breech mechanism, of a trigger-rod mounted transversely to the barrels and adapted to release all the sears or firing mechanisms successively, and pawls intermediate to the trigger-rod and the moving parts of each gun, whereby the discharge of one gun turns said rod to fire another, as set forth.

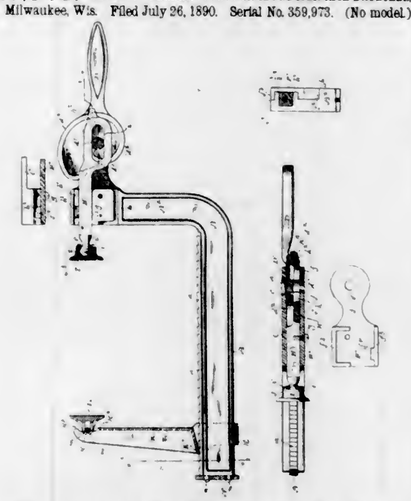
2. The combination, with two or more sliding barrel and breech mechanisms, each constituting an automatic gun and mounted in a common frame or support, of a trigger-rod mounted transversely to the same and adapted when turned to discharge the guns in succession, ratchets on said trigger-rod, and pawls between the same and each barrel and adapted to be operated to turn the trigger-rod by the recoil of the barrels, as set forth.

3. The combination, with two or more sliding barrels and breech

mechanisms, each constituting an automatic gun and mounted in a common frame or support, of a trigger-rod mounted transversely to the same, and provided with cams adapted to engage successively with the sears of the several guns when the trigger-rod is rotated, ratchets carried by the trigger-rod, and pawls engaging therewith and extending into the path of the sliding barrels or projections thereon, as set forth.



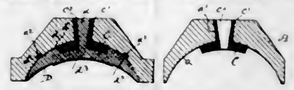
447,526. CLAMP. GERHARD P. PLISCHKE and HEINRICH ERUECKEL, Milwaukee, Wis. Filed July 26, 1890. Serial No. 359,973. (No model.)



Claim.—1. In a clamp, the combination of an angular clamping-bar, with a movable jaw at one end carrying a clamping-head and a clamping-rod sliding in the other end of said bar and provided with a clamping-head at its lower or inner end and a loop at its upper or outer end, a cam-lever pivoted to said bar and having a stud projecting through the loop of said clamping-rod, and a marginal cam-track, the extreme outer or upper end of said clamping-rod engaging with said cam-track at a point between said stud and the outer end of the cam-lever, substantially as set forth.

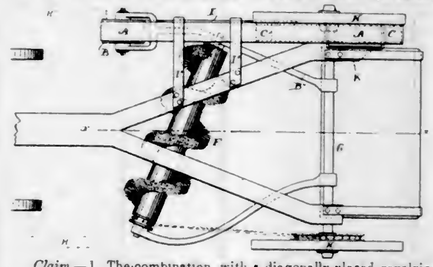
2. In a clamp, the combination, with an angular bar, of a movable jaw sliding on the same and having a bifurcated outer end and a transverse recess in one edge of said bifurcations, a pin located in said recess, and a clamping-head provided with studs on its reverse side passing between said bifurcations and straddling said pin and having converging ends bent around said pin, substantially as set forth.

447,527. CAR-AXLE JOURNAL-BEARING. GEORGE N. SCHEUS, Milwaukee, Wis., assignor to the Milwaukee Brass and Copper Works, same place. Filed Oct. 24, 1890. Serial No. 369,207. (No model.)



Claim.—An improved journal-bearing comprising a metal backing-piece having inwardly-tapered apertures extending through its body, a mass of metal cast upon the concave side of the bearing, and having hollow internally-tapered integral portions extending into said apertures and forming keys, and an outer mass of bearing metal having integral portions cast within the bores of said keys, substantially as set forth.

447,528. STREET-SWEEPING MACHINE. ANDREW H. SMITH, New York, N. Y. Filed Dec. 26, 1890. Serial No. 375,839. (No model.)



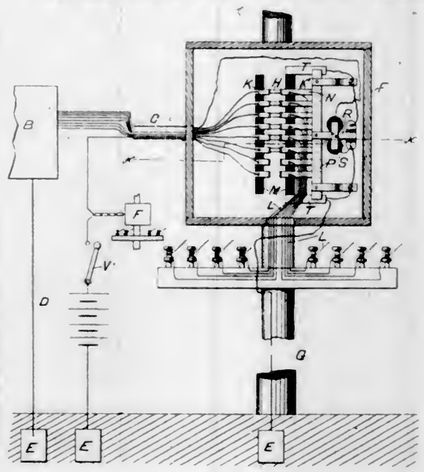
Claim.—1. The combination, with a diagonally-placed revolving brush and the driving-wheels therewith connected, of an endless band upon which the sweepings are delivered, and elevating-buckets upon the driving-wheel, around which such band or apron passes, substantially as set forth.

2. The combination, in a street-sweeper, with the wheel H and buckets C, of the endless band A and guide-wheel B and the diagonally-placed sweeping-brush F, substantially as set forth.

3. The wheel H, having a plate to close the spaces between the spokes and the buckets C upon such plate, in combination with the endless band A, passing around the buckets C, the guide-wheel B, and a hanging shield or apron I adjacent to the endless band and the revolving brush, substantially as set forth

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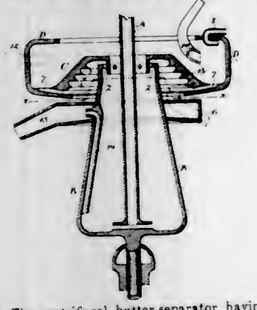
447,529. ELECTRO-MAGNETIC CUT-OUT. GILES TAINTOR, Worcester, Mass. Filed Aug. 16, 1890. Serial No. 362,250. (No model.)



Claim.—1. In combination with the other operating parts of an electric system of telegraph, telephone, or similar conductors, contacts connected with the several conductors, a contact-block common to several of said contacts and connected to earth, and electrically-operated means for making and breaking connection between said contacts and said contact-block, substantially as set forth.

2. In combination with a telephone, telegraph, or like system of electrical conductors, contacts connected to line and cable wires at their junction, a contact-block connected to earth and adapted to contact with the line-contacts, an electro-magnet, armature, lever, and retracting device for making and breaking such contact, and a switch and connections for making and breaking current in the said electro-magnet, substantially as set forth.

447,530. **CENTRIFUGAL SEPARATING APPARATUS.** ADOLPH WAHLIN, Stockholm, Sweden, assignor to Richard Duncan Harris, New York, N. Y. Filed June 21, 1890. Serial No. 356,272. (No model.)

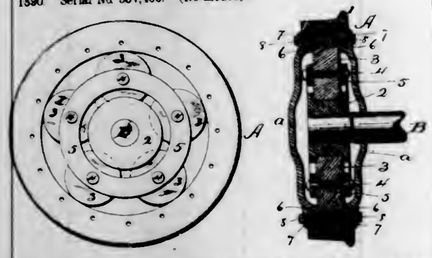


Claim.—1. The centrifugal butter-separator having an approximately conical form and a series of annular ledges upon its inner surface, the cream being received at the smaller end of such butter-separator, in combination with an annular chamber revolving with the butter-separator, there being an opening for the discharge of the buttermilk and butter from the butter-separator into the annular chamber, and a discharge-opening for the buttermilk, substantially as set forth.

2. The conical centrifugal butter-separator, over the surface of which the cream is caused to pass outwardly and discharge from the larger end, in combination with a surrounding annular chamber connected to and rotating with the butter-separator and receiving the materials therefrom and provided with a discharge-opening for the skim-milk, substantially as specified.

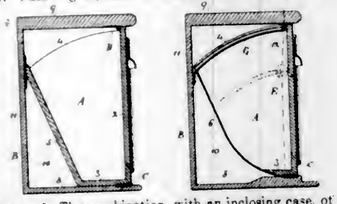
3. A centrifugal butter-extractor having internal annular ledges, over which the buttery particles are caused to pass in succession as the skim-milk is thrown off from the same, in combination with an annular chamber connected to and revolving with the butter-separator, and into which the buttery particles and skim-milk are received, and a pipe-opening at one end near the inner surface of the wall of the annular chamber and at the other end outside the apparatus for the passage of skim-milk, and means for removing the buttery particles from the inner surface of the annular layer within the annular chamber, substantially as set forth.

447,531. **CAR-WHEEL.** MARION A. ANDREWS, Syracuse, N. Y., assignor of one-half to James M. Andrews, same place. Filed July 2, 1890. Serial No. 357,466. (No model.)



Claim.—The combination, with the tire of a wheel, of an anti-friction bearing within the tire, comprising a central tubular ring grooved in its periphery, friction-rollers inserted between and engaging with the inner wall of the tire and the periphery of the ring, separate arbors for the rollers mounted in annular rings, and inwardly-flanged caps secured to and closing the ends of the tire.

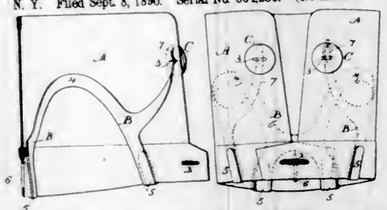
447,532. **BIN OR HOLDER FOR COFFEE, &c.** BYRON R. BACON, East Orange, N. J., assignor to himself, and Thomas R. Sully, Buffalo, N. Y. Filed Aug. 20, 1890. Serial No. 362,476. (No model.)



Claim.—1. The combination, with an inclosing case, of a bin fitting within the case and narrower at the bottom than at the top, and pivots at the bottom edge of the front of the bin for connecting the same to the case, and a stop to limit the movement of the bin as it is swung open, substantially as set forth.

2. The combination, with an inclosing case, of a bin fitting into such inclosing case, pivots at the bottom edge of the front of the bin, upon which said bin can be swung, and an auxiliary cover within the case, formed as a segment of a cylinder and corresponding to the upper edges of the sides of the bin, substantially as set forth.

447,533. **CUFF HOLDER AND DISTENDER.** BYRON R. BACON, East Orange, N. J., assignor to himself, and Thomas R. Sully, Buffalo, N. Y. Filed Sept. 8, 1890. Serial No. 364,250. (No model.)

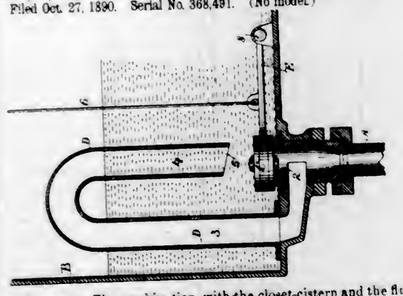


Claim.—1. The spring cuff-distender adapted to pass around the inner surface and having hooks to receive the lower edge of the cuff and outwardly-projecting ends terminating with shank-clips for connecting with the cuff-buttons, substantially as specified.

2. The cuff-distender of spring material, having hooks for receiving the lower edge of the cuff and passing around the inner surface of the cuff and arched upwardly between one hook and the next near the cuff-button hole, and having outwardly-projecting clips for the cuff-button shanks, substantially as specified.

3. The spring cuff-distender B, having hooks 5 for grasping the lower edge of the cuff, outwardly-projecting ends terminating with shank-clips for the cuff-buttons, a stud 12 for buttoning on the cuff, and a pin 11 for connecting the distender to the sleeve, substantially as specified.

447,534. **CLOSET-CISTERN.** BYRON R. BACON, East Orange, N. J. Filed Oct. 27, 1890. Serial No. 368,491. (No model.)

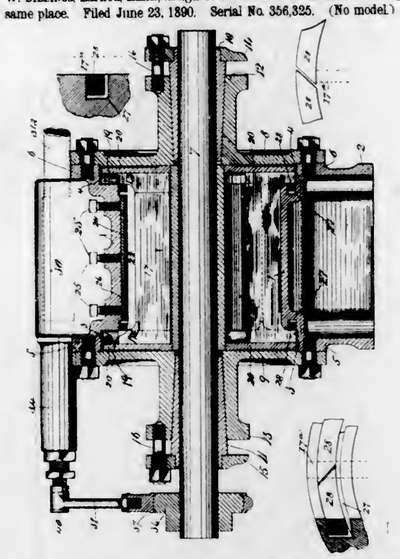


Claim.—1. The combination, with the closet-cistern and the flushing-pipe, of a stationary suction-pipe opening at its lower end into a flushing-pipe, a valve and a seat for the valve at the upper end of the

flushing-pipe, and a second seat for the valve at the higher end of the suction-pipe, whereby the valve is held open by the suction action while the water is running from the cistern to the closet, substantially as set forth.

2. The combination, with the water-closet cistern and flushing-pipe, of a valve, a valve-seat at the upper end of the flushing-pipe, a pivot upon which the valve is allowed to swing, and a stationary suction-pipe opening at its lower end beneath the valve-seat and having a secondary valve-seat at the other end against which the valve closes and is held during the passage of the water from the cistern by the suction action, substantially as set forth.

447,535. **ROTARY ENGINE.** WILLIAM G. BILLINGS and AVERY W. BILLINGS, Larned, Kans., assignors of one-third to Arthur T. Billings, same place. Filed June 23, 1890. Serial No. 356,325. (No model.)



Claim.—1. In a rotary engine, the combination, with the elliptically-formed steam-cylinder and a shaft having its axis located above the axes of the said cylinder, of the shaft, adjustable conical sleeve-bearings and their supporting-sleeves, a suitable piston-carrier, the piston-carrier disks, the radial pistons having the outwardly-extending wings 17^a, said wings overlapping and contacting with the annular duplex wedge-shaped steam packing-rings, said rings so arranged as to expand radially and outwardly by the steam-pressure and resting in grooves concentric with the steam-cylinder, and means for supplying and exhausting the steam to and from said cylinder, substantially as described.

2. In a rotary engine, the combination of the cylinder 1, the shaft 7, the adjustable journals, as 10 and 11, and means for securing and supporting the same, the packing-rings 28, the disks 20, the blade-carrier 18 and its wings 17^a-17^b, overlapping the ends of said cylinder and packing-rings, the exhaust-port 41, and balanced valve 32 and its peripheral ports 32^a, all combined and arranged substantially as described.

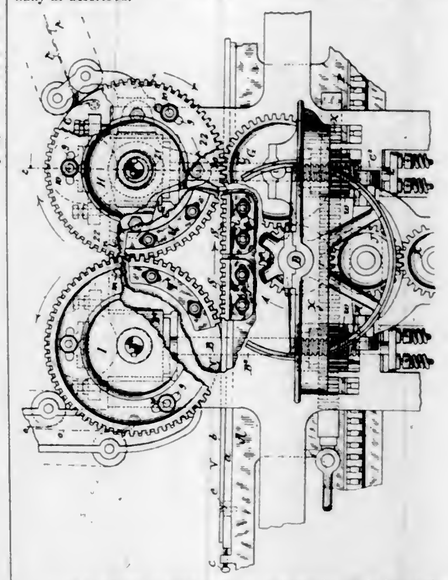
447,536. **REGISTERING DEVICE FOR PRINTING-PRESSES.** JOHN BROOKS, Plainfield, N. J. Filed Sept. 8, 1890. Serial No. 364,298. (No model.)

Claim.—1. In a cylinder printing-press, the combination of the two impression-cylinders, each provided with a segmental rack meshing with one another, and the form-bed having a rectilinear rack with which each of the segmental racks mesh, substantially as described.

2. In a cylinder printing-press, the combination of the two impression-cylinders driven independently of the bed, and each provided with a segmental rack meshing with one another, and the form-bed having a rectilinear rack with which each of the segmental racks mesh, substantially as described.

3. In a cylinder printing-press, the combination of the two impression-cylinders, each provided with a segmental rack meshing with one another, and the form-bed having a divided rectilinear rack with which each of the segmental racks mesh, substantially as described.

4. In a cylinder printing-press, the combination of the two impression-cylinders, each provided with a segmental rack meshing with one another, the cylinder spur-gear having circumferentially-adjustable rims, and the form-bed having a longitudinally-adjustable rectilinear rack with which each of the segmental racks engage, substantially as described.



5. In a cylinder printing-press, the combination of the impression-cylinder provided with a segmental rack, the cylinder spur-gear or a connecting-gear having a circumferentially-adjustable rim, and the form-bed having a longitudinally-adjustable rectilinear rack with which the segmental rack engages, substantially as described.

6. In a cylinder printing-press, the combination, with a vertically-movable impression-cylinder, its fast spur-gear, the driving-pinion, intermediate wheel in gear with the pinion, a loose spur-gear on a fixed axis meshing with the intermediate wheel and another spur-gear meshing with the loose spur-gear and the fast spur-gear, of a segmental rack on the cylinder, and a form-bed having a rectilinear rack with which the segmental rack meshes, substantially as described.

7. In a cylinder printing-press, the combination, with the two impression-cylinders, a spur-gear fast to each cylinder and meshing with each other, the driving-pinion, intermediate wheel in gear with the pinion, a loose spur-gear on a fixed axis meshing with the intermediate wheel and with one of the cylinder spur-gears, of a segmental rack on each cylinder, and a form-bed having a rectilinear rack with which the segmental racks mesh, substantially as described.

8. In a cylinder printing-press, the combination, with the two impression-cylinders vertically movable to and from the plane of impression, the driving-shaft, and gearing interposed between the cylinder-gears and said driving-shaft insuring the constant mesh of the cylinder-gears with the pinion on said shaft, of a segmental rack on each cylinder meshing with each other during a portion of the rotation of the cylinders, and a form-bed having a rectilinear rack with which the segmental racks mesh, substantially as described.

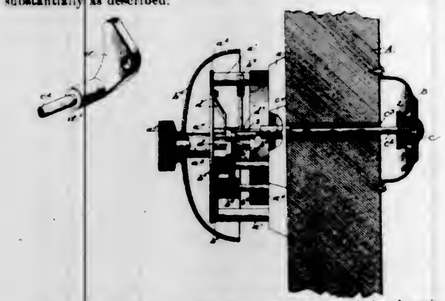
447,537. **ALARM-GONG.** NAHUM J. BUSBY, Maplewood, Mass. Filed Dec. 17, 1889. Serial No. 334,061. (No model.)

Claim.—1. The gong, a rock-shaft, a hammer and a pallet attached to the rock-shaft, and a pallet-wheel and means to rotate it, combined with a push-rod, an arm arranged upon the push-rod to come into contact with the face of the pallet-wheel to arrest its rotation, and a spring to force said push-rod and its arm into such contact, substantially as described.

2. The gong, a rock-shaft, a hammer and a pallet attached to said shaft, a pallet-wheel and means to rotate it, combined with a push-rod adjustable as to length and having an arm in frictional engagement with the pallet-wheel to restrain the rotation of the pallet-wheel, and a spring acting upon the push-rod with a tension variable by adjustment of the push-rod, substantially as described.

3. The gong, a rock-shaft, a hammer and a pallet thereon, and a rotary pallet-wheel, combined with a spring-actuated two-part adjust-

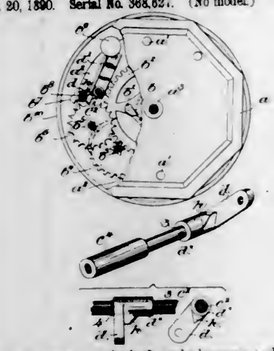
able push-rod and means to prevent the rotation of the pallet-wheel, substantially as described.



4. The push-rod of a gong-bell, composed of a rod c^4 and a spindle c^4, made adjustable one on the other, combined with a spring normally to move the push-rod in the direction of its length, as and for the purposes described.

5. The gong, a rock-shaft, a hammer and a pallet attached to said shaft, a pallet-wheel, and means to rotate it, combined with a push-rod having an arm, and a spring acting upon said rod to throw the arm against the face of the pallet-wheel and restrain its rotation by frictional contact therewith, substantially as described.

447,538. ALARM-GONG. NAHUM J. BUSBY, Maplewood, Mass. Filed Oct. 20, 1890. Serial No. 368,627. (No model.)



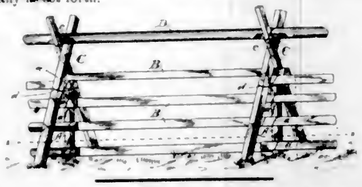
Claim.—1. A gong, a rock-shaft, and a hammer and a pallet movable therewith, and a pallet-wheel and means to rotate it, combined with a push-rod, an actuating-spring therefor, and a dog arranged upon the push-rod and adapted to cause one end of the pallet to be retained in engagement with and to positively lock the pallet-wheel, substantially as described.

2. A gong containing the following instrumentalities, viz: a rock-shaft having a hammer and a pallet, a pallet-wheel, an actuating train of gearing therefor containing a normally-wound spring, and a spring-actuated push-rod having a dog or projection adapted to normally effect the locking of one end of the pallet into one of the spaces of the pallet-wheel, to thus positively lock the said wheel, substantially as described.

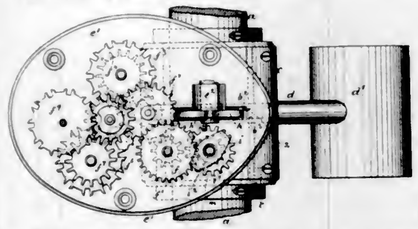
3. A gong containing the following instrumentalities, viz: a rock-shaft having a hammer and a pallet, a pallet-wheel, an actuating train of gearing therefor containing a normally-wound spring, and a spring-actuated push-rod composed of separable parts, whereby the said rod may be adjusted as to its length, the said rod having a dog or projection adapted to normally effect the locking of one end of the pallet into one of the spaces of the pallet-wheel, to thus positively lock the said wheel, substantially as described.

447,539. FENCE. CYRUS CRABBS, Toronto, Canada. Filed Oct. 10, 1889. Serial No. 326,599. (No model.)

Claim.—The combination, in a fence, of the vertical post A, arranged centrally in relation to the weight supported thereby, the rails B, secured to opposite sides thereof, except the top one, which rests on the top of said post and under the rider-stakes, said rider-stakes arranged in pairs which straddle said main part of the fence above said top rail at both its ends, and the rider-rails D, arranged between the upper ends of said rider-stakes vertically above the rails which rest on top of the posts A, the whole being secured together by wires, substantially as set forth.



447,540. CYCLOMETER. EDWARD R. DE WOLFE, New York, N. Y., assignor to George R. Bidwell, same place. Filed Sept. 20, 1890. Serial No. 365,637. (No model.)



Claim.—1. The combination, with the registering mechanism, a case inclosing the same, a housing connected to said case, and a weight attached to and suspended from the housing, of a sleeve for the rotative axle of the vehicle, a pin in said sleeve, a radially-slotted disk or Geneva wheel mounted in and projecting through the lower plate of the case within the housing and adapted to be operated by the pin of the sleeve, and devices connected to the Geneva wheel for imparting a step-by-step movement to the train-registering mechanism, substantially as set forth.

2. The combination, with the registering mechanism, a case inclosing the same, a housing connected to said case, and a weight attached to and suspended from the housing, of a two-part sleeve $b\ b'$ upon the rotative axle of the vehicle, having circumferential flanges $b^3\ b^3$, between which is a groove 2 and a depressed portion 3, a pin 1, secured in the flanges $b^3\ b^3$ and extending across the groove, and a notched disk adapted to be rotated by the engagement of the pin 1 to operate the train-registering mechanism, substantially as set forth.

3. The combination, with the train-registering mechanism, a case inclosing the same, a housing connected to said case, and a weight attached to and suspended from the housing, of the two-part sleeve $b\ b'$, having flanges $b^3\ b^3$ and a groove 2 and depression 3, the pin 1, the radially-slotted disk or Geneva wheel h, the pin or roller h' upon said wheel, the block e^3, the toothed wheel i, and pinion i', the parts being constructed and operating in substantially the manner and for the purposes set forth.

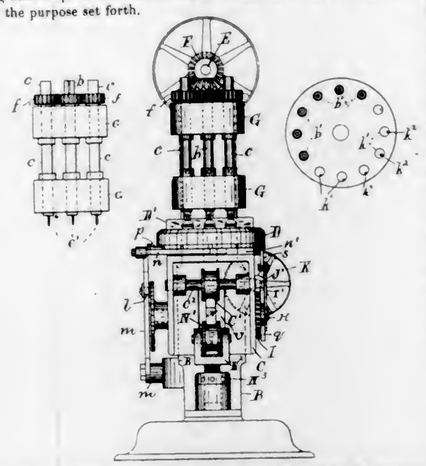
4. The combination, with the registering mechanism, a case inclosing the same, a housing, and a weight attached to and suspended from the housing, of a sleeve upon the rotative axle, flanges thereon, and a pin 1, a radially-slotted or Geneva wheel h, operated by the pin 1 to set in motion the train-registering mechanism, a bell and its hammer connected to the case, and a cam upon an arbor of the registering mechanism for periodically sounding the bell, for the purposes and substantially as set forth.

447,541. DRILLING OR SPINNING MACHINE. ULRICH EBERHARDT and HENRY E. EBERHARDT, Newark, N. J. Filed Jan. 4, 1890. Serial No. 335,883. (No model.)

Claim.—1. The combination, with a frame, of a bracket movable thereon, a table rotary upon the bracket, one or more rotary spindles mounted upon the frame parallel with the movement of the bracket, and a wedge reciprocated between a bearing on the bracket and an abutment upon the frame to press the table toward the ends of the spindles, substantially as herein set forth.

2. The combination, with a frame, of a bracket movable thereon, a table rotary upon the bracket, one or more rotary spindles mounted upon the frame parallel with the movement of the bracket, a wedge reciprocated in contact with a roller fixed upon the frame, and a roller fixed upon the bracket to press the table toward the spindles, substantially as herein set forth.

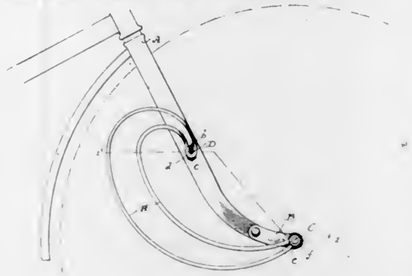
3. In a caster-machine, the combination, with one or more rotary spindles, and the rotary table D, having the caster parts arranged thereon concentrically with its axis, of the dog-holder D', one or more dogs d', movable transversely to the holder, the spring d^3, the oscillating shaft d^2, and the finger e', engaged with a projection upon the dog and adapted to move the dog in opposition to the spring, as and for the purpose set forth.



4. In a caster-machine, the combination, with a vertical frame having the movable bracket C fitted thereto and carrying the rotary table D, of the spindles $b\ c$, having their axes arranged concentrically with the axis of the table, the crank-shaft H, the worm-wheel I, worm J, pulleys K, and belt L for rotating the same, a wedge fitted between an abutment upon the frame and a bearing on the bracket and reciprocated by connection with the crank-shaft, feeding mechanism connected with one end of the crank-shaft for intermittingly rotating the table, dogs for holding the caster parts upon the table, and mechanism connected with the opposite end of the crank-shaft for reciprocating such dogs, the whole arranged and operated substantially as herein set forth.

5. In a caster-machine, the combination, with a rotary table for conveying the caster parts in succession to a rotary spindle, of the spinning-tool consisting in the rotating shank i, and the disks g, pivoted adjacent to one another and rotatable in opposite directions, substantially as herein set forth.

447,542. VELOCIPEDE. JOHN A. HOLMES, Milwaukee, Wis. Filed Dec. 13, 1890. Serial No. 374,570. (No model.)



Claim.—1. In a bicycle or analogous vehicle, the combination of a fork, axle-hangers pivoted to the furcations thereof, and an endless spring connected to each fork-furcation and opposed to pivotal movement of the adjacent hanger, substantially as set forth.

2. In a bicycle or analogous vehicle, the combination of a fork, axle-hangers pivoted to the furcations thereof, and endless springs having their upper extremities connected to the fork-furcations and their lower extremities connected to the axle, substantially as set forth.

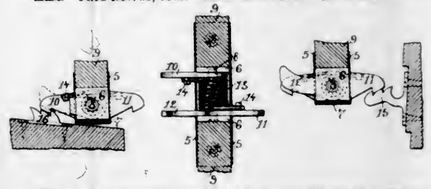
3. In a bicycle or analogous vehicle, the combination of a fork, axle-hangers pivoted to the furcations thereof, and endless springs connected to the fork-furcations and arranged to oppose pivotal movement of the hangers, each spring consisting of a rod bent to form two curves, one within the other, and united at its ends, substantially as set forth.

4. In a bicycle or analogous vehicle, the combination of a fork having the furcations thereof provided with laterally-extended supports, plates arranged on the rod and provided with ears, axle-hangers pivotally connected to the fork-furcations, and springs having their upper extremities engaging said supports between the plate-ears and their lower extremities arranged to oppose pivotal movement of said hangers, substantially as set forth.

5. In a bicycle or analogous vehicle, the combination of a fork having the furcations thereof provided with laterally-extended supports, plates arranged on the rods and provided with ears, axle-hangers pivotally connected to the fork-furcations, and endless springs having their upper extremities engaging said supports between the plate-ears and their lower ends arranged to oppose pivotal movement of said hangers, substantially as set forth.

6. In a bicycle or analogous vehicle, the combination of a fork having the furcations thereof provided with foot-rests, axle-hangers pivotally connected to the fork-furcations, and springs connected to the foot-rests and arranged to oppose pivotal movement of said hangers, substantially as set forth.

447,543. SHUTTER-FASTENER. WILLIAM J. MONKS, Fall River, Mass. Filed Nov. 28, 1890. Serial No. 372,813. (No model.)

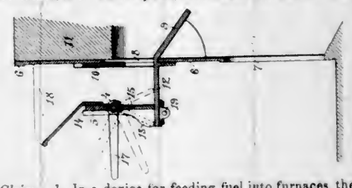


Claim.—1. In combination with the pivoted latch 10 and the pivoted latch 11, provided with the arm 12, the coiled spring 13, the opposite ends of which bear on and hold the latches in their locked position.

2. The combination, with the side plates 5 and end plates 6, the side plates extending beyond the end plates, of the spindle 8, the latch 10, hinged on the spindle, the latch 11 and arm 12, also hinged on the spindle, and the coiled spring 13, the ends of which bear on the latches 10 and 11 and hold the same in the locked position, as described.

3. The combination, with the spring-pressed and pivoted latch 10 and the pivoted latch 11, provided with the arm 12, of the hooks 15 and 16, each provided with two or more projections adapted to engage with and hold the hook of the latches, as described.

447,544. FUEL-FEEDER FOR FURNACES. ROBERT NEWTON, Providence, R. I. Filed Sept. 22, 1890. Serial No. 365,774. (No model.)



Claim.—1. In a device for feeding fuel into furnaces, the combination, with the stoke-hole and a fuel-reservoir, of a bed-plate forming the bottom of the fuel-reservoir, and a hinged feed plate or door forming the side of the fuel-reservoir opposite the stoke-hole, said feed-plate having capacity to vibrate and swing on its pivotal support, as described.

2. The combination, with the hopper 18 and stoke-hole 8, of the fixed bed-plate 12, forming the bottom of the hopper and support of the fuel in the hopper, and the feed-plate 15, pivotally supported at its upper end in vertical yielding bearings, the lower edge sweeping over the surface of the bed-plate, as described.

3. The combination, with the stoke-hole of a furnace, the hopper forming the fuel-reservoir, and a bed-plate forming the bottom of the fuel-reservoir and support of the fuel in the hopper, of the pivoted feed-plate forming the part of the fuel-reservoir opposite the stoke-hole, adapted to push the fuel into the stoke-hole, form the temporary bottom of the fuel-reservoir, and a door opposite the stoke-hole, as described.

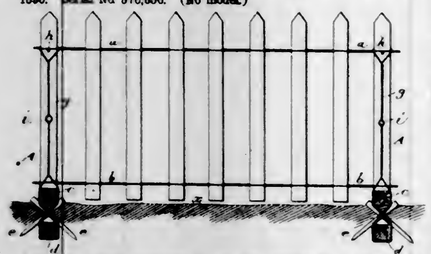
4. The combination, with the stoke-hole of a furnace, the bed-

plate 12, and the dead-plate 9, of a fuel-reservoir secured in front of the stoke-hole and over the bed-plate, forming an unobstructed passage for the coal from the hopper to the stoke-hole, a feed-plate pivoted at or near its upper edge, the lower edge resting on the bed-plate, forming one side of the fuel-reservoir, and a door giving access to the fuel-reservoir near its bottom and to the stoke-hole, and mechanism, substantially as described, for vibrating the feed-plate, as described.

5. The combination, with the stoke-hole of a furnace and a fuel-reservoir secured in front of the stoke-hole, of the bed-plate 12, forming the bottom of the fuel-reservoir, the feed-plate 15, hinged at its upper end, the lower end sweeping over the surface of the bed-plate, and the arm 17, adapted to oscillate or vibrate the feed-plate to feed the fuel to the furnace and swing the feed-plate into the horizontal position inwardly, so as to expose the stoke-hole, as described.

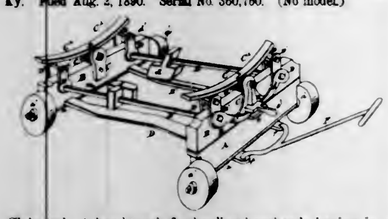
6. The combination, with the stoke-hole of a furnace and a fuel-reservoir placed in front of and connected with the stoke-hole, of the bed-plate 12, forming the bottom of the fuel-reservoir, the pivoted feed-plate 15, journaled in the vertical slots 14, the follower-plate 5, the arm 17, and pin 20, constructed to feed the fuel to the furnace and close the bottom of the fuel-reservoir above the stoke-hole, as described.

447,545. FENCE. LEVI MOSGLE, Tarlton, Ohio. Filed Nov. 7, 1890. Serial No. 370,636. (No model.)



Claim.—A fence composed of pickets connected by upper and lower twisted wires, in combination with supporting-pickets placed at intervals, each of which is provided with a horizontal base-piece fastened to the picket, a sunken horizontal anchor-piece placed under said base-piece, two stakes *c*, driven in the ground diagonally near each end of the anchor-piece and crossing each other, as shown, and wire connected with the opposite ends of said base and anchor pieces and passed over the upper horizontal wire of the fence and twisted, the stakes bearing against the anchor-piece and the base-piece resting on said stakes, substantially as set forth and described.

447,546. TOBACCO-WAGON. MICHAEL F. C. O'BRIEN, Louisville, Ky. Filed Aug. 2, 1890. Serial No. 360,780. (No model.)



Claim.—1. A hand-truck for hauling hogsheads, having, in combination, an axle-bed resting on the front axle, with a bolster above it, a bolster on the rear axle, perches angularly bent, connecting one bolster with the other on each side of the truck, standards bolted to the front and rear of each bolster and rising above it and connected by tie-bolts, on each of which are hinged two curved bars forming a concave load-seat above each bolster, rectangular weight-bars on each side of the truck, passing through the bolsters, and having on each of them between the bolsters a balance-weight, and also having keyed on each one of them, in front and rear of each bolster, stirrup-standards connected at top by a stirrup-bolt adapted to serve as rests for the outer ends of the hinged load-seats, said weight-rods also having keyed on them in front of the front bolster, outside the stirrup-standards, dogs adapted to rest on a seat projecting horizontally from the bottom of said bolster and to be held in place by a catch hinged at its upper end on the bolt on which the curved seat-pieces are hinged, which catch has a pedal projecting from its lower part, substantially as set forth, and for the purpose specified.

2. In a truck for hogsheads, the combination, with two angular weight-rods D, having keyed on them between the front and rear bolsters of the truck balance-weights *d* and in front and rear of each bolster stirrup-standards *D'*, rising above the bolsters and held together at the top by the stirrup tie-bolts *d'*, and on the outside of the stirrup-standards, in front of the front bolster, dogs *d*², of the standards C, the tie-bolts *c*, the curved seat-pieces C', hinged on the bolt *c* at their inner end and adapted to rest on the stirrup tie-bolts *d'* toward their outer end, the catch E, having the pedal *e*, and the dog-seat *e'*, substantially as described, and for the purpose specified.

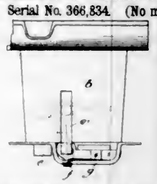
3. In a truck for hogsheads, a load-seat above the axle, consisting of two curved pieces C', hinged at their inner ends, in combination with means for supporting, lowering, and fixing the outer ends at pleasure, for the purpose specified, and substantially as set forth.

447,547. CONVERTIBLE CARRIAGE. GEORGE E. SPARE, New Haven, Conn. Filed Oct. 25, 1890. Serial No. 369,367. (No model.)



Claim.—In a carriage convertible from one to two seats, the forward seat supported upon uprights in a stationary position, the rear seat arranged in a plane below the plane of the forward seat and supported upon uprights and adapted to slide on the body, the said rear seat constructed with longitudinal slots corresponding to the uprights which support the forward seat, the said slots open at the forward edge of the rear seat, substantially as described, and whereby as the rear seat is moved forward the said slots permit it to pass beneath the forward seat.

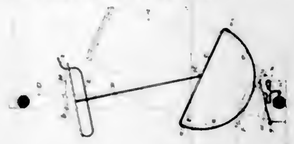
447,548. COOKING-STOVE. ARTHUR W. WALKER, Malden, Mass. Filed Oct. 2, 1890. Serial No. 366,834. (No model.)



Claim.—1. The combination, with the fire-pot and grate provided with journals, of a sliding and rocking shaft having laterally-extended arms shaped substantially as described to receive and form bearings for the said grate and an elongated bearing for the said shaft and upon which it may slide, substantially as described.

2. The combination, with the fire-pot having guides *e*³ *e*⁴ and the grate having its journals arranged to slide in the said guides, of a sliding and rocking shaft having arms to receive the journals of the grate, substantially as described.

447,549. LANTERN. WILLIAM C. WINFIELD, Warren, Ohio, assignor to the Winfield Manufacturing Company, same place. Filed Feb. 23, 1889. Serial No. 300,819. (No model.)



Claim.—1. In a tubular lantern, a globe-guard having a horizontal upper portion and sides rigid with the globe-rest and said upper portion and a globe-rest pivoted at one side of its center to tilt laterally, in combination with a canopy and pivoted connections between the canopy and the globe-guard, substantially as described.

2. In a tubular lantern, a globe-rest having a pivot at one side on which it tilts and a guard rigid therewith, in combination with a canopy supported on a tube and free to slide and tilt thereon and pivoted side connections uniting the canopy and the guard, substantially as set forth.

3. In a tubular lantern, a globe-rest and a canopy, in combination with connections of fixed lengths between the rest and canopy rigid with the globe-rest and provided with joints by which the canopy is free to tilt for the removal of the globe, substantially as set forth.

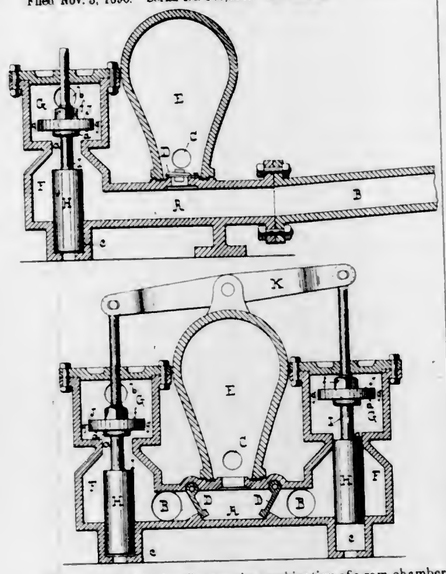
4. In a tubular lantern, a globe-rest and a link connected pivotally with said rest and the base of the lantern, in combination with a guard for the globe, a canopy, and pivoted side wires extending from the guard to the canopy, substantially as set forth.

5. In a tubular lantern, the lantern-base and the globe-rest and an intermediate link on which the rest has two pivot movements, in combination with a guard attached to the rest, a canopy, and pivoted side wires connecting canopy and guard, substantially as described.

6. In a tubular lantern, a central tube, a canopy on the said tube, a globe-rest, and a guard for the globe rigid with the rest, in combination with connections between said guard and canopy provided with joints to allow the globe-rest or canopy to be tilted, substantially as described.

7. In a tubular lantern, a globe-rest and a canopy, in combination with connections between the said parts rigid at their ends and jointed at or near their center to permit the tilting of the globe-rest and canopy, and a central tube on which the canopy tilts, substantially as set forth.

447,550. HYDRAULIC RAM. GEORGE YELLOTT, Towson, Md. Filed Nov. 3, 1890. Serial No. 370,250. (No model.)

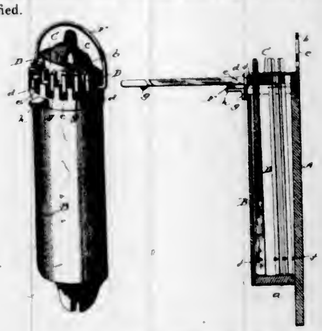


Claim.—1. In a hydraulic ram, the combination of a ram-chamber with a plunger-chamber in communication therewith, and an outlet leading from the plunger-chamber to a waste-water chamber having a discharge-chamber, a reciprocating plunger-valve situated in the said plunger-chamber, adapted in its upper stroke to enter the said outlet and thereby cut off the waste water, a stem leading from the said plunger, and a disk operated by the said stem, which disk is of such size as to provide an annular space around it for the escape of water, substantially as specified.

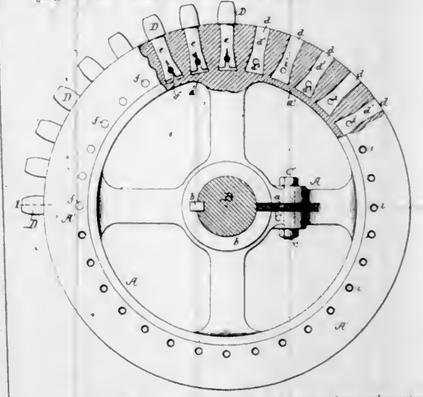
2. In a hydraulic ram, the combination of a ram-chamber having two plunger-chambers in communication therewith, each plunger-chamber having an outlet leading to a waste-water chamber with a discharge-opening, a plunger in each of the said plunger-chambers adapted to have a reciprocating motion and in its upward stroke to enter the outlet above it, and provided with a stem carrying a disk, around which is an annular space for the escape of water, and a lever which connects the stems of the two plungers, whereby the same have an alternate action, substantially as specified.

447,551. CLOTHES-DRIER. GEORGE W. ANSLEY and JOSEPH H. BOYD, Medical Lake, Wash.; said Boyd assignor to said Ansley. Filed Nov. 21, 1890. Serial No. 372,212. (No model.)

Claim.—The clothes-rack described, consisting of the back plate, the casing secured thereto and provided with a bottom, and a top provided with openings at its outer edge, forming shoulders, the swinging bail having its ends extended inward horizontally and forming the pivots on which it turns, the lug therefor attached to the vertical flange of the top, and the supporting-arms free to be moved within the casing and at their outer ends provided with eyes or loops, substantially as specified.



447,552. COG-WHEEL. LEONARD ATWOOD, Philadelphia, Pa. Filed Aug. 28, 1890. Serial No. 363,274. (No model.)



Claim.—1. The combination of the flange having undercut pockets therein and teeth in said pockets with transverse pins passing through the side walls of the pockets and through the shanks of the teeth and expanding the teeth into the undercut portions of the same, substantially as specified.

2. The combination of the flange, tapered and undercut pockets therein, and teeth having tapered and slotted shanks with transverse pins passing through the side walls of the pockets and through the slotted portions of the teeth, whereby the teeth are expanded, substantially as and for the purpose specified.

3. The combination of the wheel having a radial slot, an independent key-seat therein, a shaft, and a key adapted to said shaft and to the key-seat in the wheel with a bolt for drawing the wheel tightly to the shaft after it has been keyed thereto, substantially as specified.

4. The combination of the shaft, a wheel having a key-seat therein, a key adapted to the shaft and wheel, a radial slot in said wheel, and a deadening-block in said slot with a device for drawing the wheel tightly to the shaft, substantially as described.

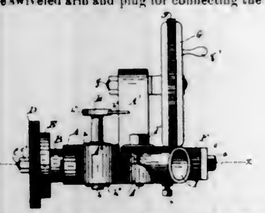
5. The combination of the flange having undercut pockets, cog-teeth therein, the shank of each cog-tooth slotted and having a guiding-groove, and pins passing through the side walls of the pockets and through the guiding-grooves of the teeth, substantially as and for the purpose specified.

6. A gear-tooth having a head forming the tooth proper and a shank tapered from the shoulder to the end of the shank, said shank being split part way for the insertion of an expanding pin, so as to give a reverse taper to the end of the shank, substantially as set forth.

447,553. MACHINE FOR GRINDING LATHE-CENTERS. WILLIAM BARKER, Newport, Ky. Filed Sept. 22, 1890. Serial No. 365,724. (No model.)

Claim.—1. The combination, in a center-grinding attachment for lathes, of the stock, the cylinder B, having rack-teeth *b*, fitted to slide longitudinally in said stock, the spindle carrying the grinding-wheel journaled in said sleeve and movable longitudinally with it, the gear

for revolving the spindle, the cogged turret for reciprocating the sleeve and spindle, and the swiveled arm and plug for connecting the machine to the lathe.



2. In a center-grinding attachment for lathes, the combination of the stock carrying the moving parts, a spindle carrying the grinding-wheel longitudinally movable in said stock, a hand-wheel and gearing to revolve the spindle, the arm swiveled to said stock, and a plug to connect said arm and the foot-stock of the lathe, substantially as shown and described.

3. The combination, substantially as specified, of the stock comprising the cylinder A, standard A', boss A^2, and lug A^3, the sleeve B, having rack-teeth upon one side fitted to slide in said cylinder, and the teeth projecting into the bore in boss A^2, the cogged turret journaled in said boss and having its teeth meshing with the rack-teeth on the sleeve, the spindle C, journaled in said sleeve and movable longitudinally with it, the pinion F, disk E, and grinding-wheel D, secured upon said shaft, the cogged hand-wheel journaled on a stud in said standard and meshing with the pinion to revolve the shaft, the hollow arm I, swiveled upon lug A^3, and the plug J for connecting the device to the foot-stock of a lathe.

447,554. JACKET FOR MAKING GARMENT-PATTERNS. ELLEN A. BERRY, Boston, Mass., assignor of one-half to Samuel W. McDaniel, same place. Filed June 14, 1890. Serial No. 355,411. (No model.)



Claim.—A new article of manufacture consisting of a skeleton jacket of plastic material in its original and minimum size and form saturated and combined with a wax-like material to give to such jacket the property of plasticity and to enable the same to be molded and fitted, substantially as hereinbefore set forth.

447,555. MOLD. GEORGE W. BEYER, Brooklyn, assignor to Hiram W. Harris, New York, N. Y. Filed Oct. 22, 1890. Serial No. 368,948. (No model.)



Claim.—1. In a mold, the combination of plates having shaping-cavities and central openings, and other plates arranged outside the first-mentioned plates and provided with hubs extending into the central openings thereof, substantially as specified.

2. In a mold, the combination of plates having shaping-cavities and central openings and rings projecting upward from the circumference or edge of such openings, and other plates arranged outside the first-mentioned plates and provided with hubs extending into the central openings thereof, substantially as specified.

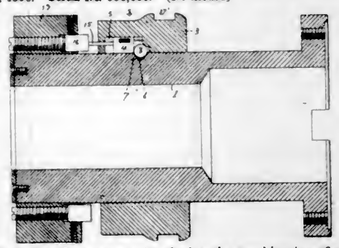
447,556. PROCESS OF PRODUCING ARTICLES OF PLASTIC MATERIAL. GEORGE W. BEYER, Brooklyn, assignor to Hiram W. Harris, New York, N. Y. Filed Oct. 22, 1890. Serial No. 368,949. (No model.)

Claim.—1. The process of producing articles of plastic material with different colors, consisting in placing an unformed mass of plastic material in a mold, placing a differently-colored material in the mold adjacent to part of said mass of plastic material, subjecting the materials together to pressure, so as to unite them and shape the plastic material and afterward subjecting the materials to a finishing-mold, substantially as specified.

2. The process of ornamenting articles of plastic material, consisting in placing plastic material in a mold having a design formed in it by sinking lines into its surface, placing coloring material in the sunken lines of the mold, subjecting the plastic material to pressure, so as to form colored ridges, and afterward subjecting the material to pressure in a smooth finishing-mold for smoothing out the colored ridges, but leaving the lines of colored material, substantially as specified.



447,557. STOP-MOTION MECHANISM. WILLIAM L. CLOUSE, Tiffin, Ohio, assignor of one-half to John D. Jones, same place. Filed July 14, 1890. Serial No. 358,666. (No model.)



Claim.—1. In a stop-motion device, the combination of a stationary portion having a recess therein, a locking device adapted to engage the said recess, and movable portions adapted to move the said device into and out of engagement with the said recess.

2. In a stop-motion device, the combination of a stationary portion having a recess therein, a cylinder or its equivalent adapted to engage the said recess, and movable portions adapted to move the cylinder into and out of engagement with the said recess.

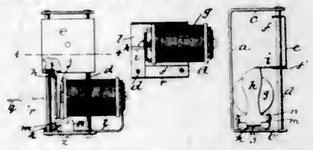
3. In a stop-motion device, the combination of a stationary portion having a recess therein, a cylinder adapted to engage the said recess, and connected movable portions, one of which is formed with an irregular surface adapted to lock the said device in the recess.

4. In a stop-motion device, the combination of a stationary portion having a recess therein, a cylinder adapted to engage the said recess, and movable spring-connected portions adapted to move the cylinder into and out of engagement with the said recess.

5. In a stop-motion device, the combination of a stationary portion having a recess therein, a cylinder adapted to engage the said recess, and movable portions, one of which is adapted to move the cylinder out of the recess and the other to move it into and lock it in the recess.

6. In a stop-motion device, the combination of a stationary portion having a recess therein, a cylinder adapted to engage the said recess, and movable spring-connected portions, one of which is adapted to move the cylinder out of the recess and the other to move it into and lock it in the recess.

447,558. ELECTRICAL ANNUNCIATOR. WILLIAM E. CRAM, Cambridge, assignor of one-half to Edwin S. Beckford, Quincy, Mass. Filed May 23, 1890. Serial No. 352,820. (No model.)

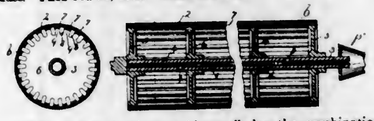


Claim.—1. An annunciator comprising in its construction a plurality of electro-magnets extending horizontally and longitudinally toward the sides of their base-board, pivoted armatures at the ends of the said electro-magnets having their axes perpendicular to the cores of said electro-magnets, gravity-drops arranged in a plane parallel to the cores of said magnets and provided with extensions to engage the upper end of the armatures when the latter are in their normal position, slide-rods for guiding the drops in their movements, and a lifting-rod for said drops, as set forth.

2. In an annunciator, the combination, with a series of gravity-drops provided with extensions, of the electro-magnets having each an armature pivoted at one end thereof and a spring interposed between the armature and the base of the electro-magnet and connected to said armature, substantially as set forth, said extensions of the gravity-drops being designed to engage the upper ends of said armatures when the latter are in their normal position, as stated.

3. The combination, with the frame *a*, having angular projecting parts *c c'*, of the electro-magnet, its support *l*, provided with ears *n*, the armature *h*, having the ears *m* pivoted to the ears *n*, the guide-rods *d*, and drop *e*, provided with the extension *i*, as set forth.

447,559. IRONING-MACHINE. JAMES G. CRAWFORD, Boston, Mass. Filed Oct. 30, 1889. Serial No. 328,647. (No model.)

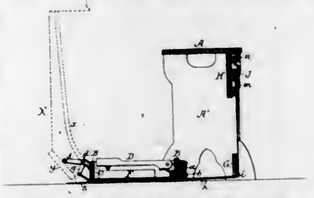


Claim.—1. In an ironing-machine cylinder, the combination of the shaft, the end hubs 5 5, the intermediate hubs 6, cut away at their peripheries to form air-spaces 8, the longitudinal bars attached to the hubs between said spaces, and the textile covering bearing on the bars, the said air-spaces permitting free passage of air through the covering at the hubs 6 and preventing contact between the hubs and covering, as set forth.

2. In an ironing-machine, the combination of the fixed concave ironing-bed, the cylinder having the textile covering, the movable boxes supporting said cylinder, guides for said boxes, whereby the cylinder is adapted to move toward and from the ironing-bed, the detaching-roll in contact with the cylinder, the pivoted weighted arms supporting said roll and holding it in yielding contact with the cylinder, whereby the detaching-roll is enabled to move with the cylinder relatively to the ironing-bed, and the belt connecting a pulley on the shaft of the roll with a pulley on the shaft of the cylinder, as set forth.

3. In an ironing-machine, the combination of the cylinder composed of the skeleton frame and the textile covering, the tubular shaft supporting the cylinder and provided with orifices within the same, and an exhausting apparatus communicating with said tubular shaft, whereby air is drawn from the interior of the cylinder and through the textile covering thereof, as set forth.

447,560. PEDAL ATTACHMENT FOR ORGANS. MILTON B. CROWELL, Newport News, assignor of one-half to Caroline M. Bickford, Hampton, Va. Filed Oct. 9, 1890. Serial No. 367,519. (No model.)



Claim.—1. The combination, in a pedal attachment for organs, of the stool, a pedal attachment carried by said stool and projecting in front of the same, a pumping-lever hung to the stool, and means whereby the movement of said lever can be transmitted to the bellows mechanism of the main organ, substantially as specified.

2. The combination, in a pedal attachment for organs, of the stool, a pedal attachment carried by said stool and projecting in front of the same, a pumping-lever hung to the stool, means whereby the movement of said lever is transmitted to the bellows mechanism of the main organ, and a pipe or conduit affording a communication between the wind-chest of the main organ and the reed-box of the pedal attachment, substantially as specified.

3. The combination of the stool, the pedal attachment having a frame connected to the stool, lever mechanism carried by said frame for acting on the foot-boards of the main organ, a pumping-lever hung to the stool, and cords or like connections between said pumping-lever and said foot-board levers, substantially as specified.

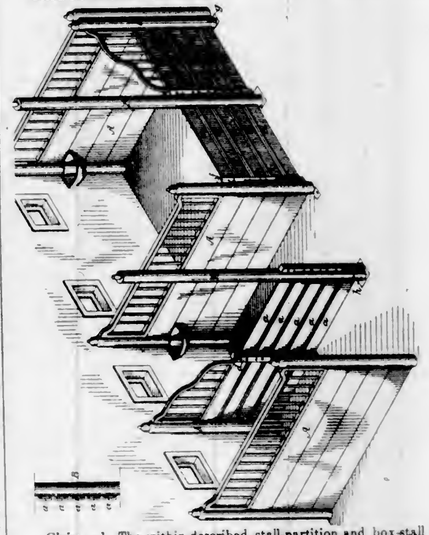
4. The combination of the stool with a frame connected thereto and projecting beyond the same, pedals mounted in said frame, and a reed-box located beneath said pedals, substantially as specified.

5. The combination of the stool, a frame pivoted thereto and carrying a reed-box and pedals, a pumping-lever hung to the stool, and means for transmitting the movement of said pumping-lever to the foot-boards of the main organ, substantially as specified.

6. The combination of the stool, the pedal attachment carried by said stool and projecting in front of the same, and tongues or fingers projecting from said pedal attachment, so as to be inserted beneath the frame of the main organ, and thus serve as anchors for said pedal attachment, substantially as specified.

7. The combination of the stool, the pedal attachment carried thereby, the pumping-lever carried by an arm hung to the stool, and a detachable retaining device for said arm, whereby the arm and its lever may be moved inward, so that said lever will not project beyond the end frame of the stool, substantially as specified.

447,561. COMBINED PARTITIONED AND BOX STALL FOR STABLES. GEORGE F. DAVIS, Collingswood, N. J. Filed Oct. 9, 1890. Serial No. 367,564. (No model.)



Claim.—1. The within-described stall-partition and box-stall inclosure for stables, the same consisting of a pivot-post located at the end of the stall and carrying a partition structure which is free to slide for a portion of its length in respect to said pivot-post, substantially as specified.

2. The within-described stall-partition and box-stall inclosure for stables, the same consisting of a mortised pivot-post located at the end of the stall, and a partition structure carried by said post and free to slide through the mortised portion of the same, substantially as specified.

3. The combination of the pivot-post at the gangway end of the stall, a slatted partition, the rails of which are free to slide in guides on said pivot-post, and bars whereby the rails are connected together in front and rear of said post, substantially as specified.

4. The combination of the pivot-post and a partition structure carried by said post, but free to slide in respect to the same for a portion of its length, and means for locking said partition structure in either of its two positions, substantially as specified.

5. The combination of permanent partitions separating a series of stalls with movable partitions, each consisting of a pivot-post midway between said permanent partitions, at the gangway end of the stall, and a partition structure carried by said post, but free to slide in respect to the same for a portion of its length, substantially as specified.

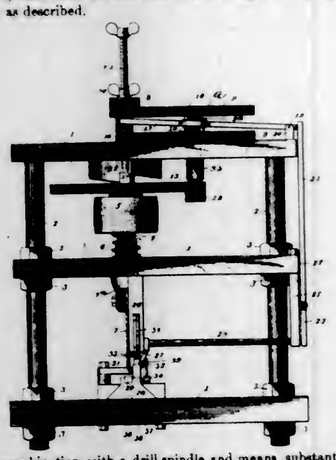
447,562. MACHINE FOR DRILLING IRON. CHARLES K. DAWES, Trenton, N. J. Filed Apr. 24, 1890. Serial No. 349,357. (No model.)

Claim.—1. In a drilling-machine, the combination, with a rotating drill-spindle, of a cog-wheel loose thereon, having a projecting lug engaging with bevels or notches on a fixed disk, a driving-pulley, and a retracting-spring, substantially as described.

2. The combination, with the drill-spindle, driving-pulley, and retracting-spring, of the cog-wheel 13, having lug 14, the disk 15, provided with inclined notches, the gears 8, 9, 10, and 12, the rod 17, formed with the ring in which works the clutch *a*, the lever 21, the crank 22, rock-shaft, and bent lever 27, substantially as described.

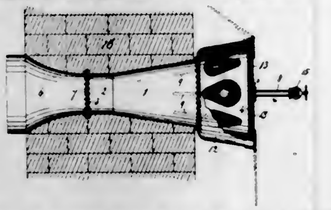
3. The combination, with the drill-spindle, driving-pulley, and retracting-spring, of the cog-wheel 13, having lug 14, the disk 15, provided with inclined notches, the gears 8, 9, 10, and 12, the recipro-

cating pin 16, the rod 17, carrying the clutch, the lever 21, crank 22, rock-shaft 24, bent lever 27, and the work-carriage having lug 39, substantially as described.



4. The combination, with a drill-spindle and means, substantially as described, for actuating the same and feeding the drill to and withdrawing it from the work, of the sliding carriage having a templet provided with notches, spring-actuated pawls for engaging with said notches, a rod or bar actuated by the drill-spindle to raise said pawls out of the notches, and rack-teeth on the under side of the carriage and a spring-actuated pinion meshing therewith, as set forth.

447,563. STEAM AND AIR INJECTOR FOR FURNACES. SALVER E. EARLE, Belleville, Canada. Filed Nov. 21, 1890. Serial No. 372,249. (No model.) Patented in Canada Oct. 20, 1890, No. 35,254.



Claim.—An injector having a tapering section 1, closed at the larger end and provided with a series of peripheral perforations 5, a hood 12, surrounding the larger end of said tube peripherally and provided with doors 13, inclosing said end, and a steam-pipe entering said closed end and through said doors, said hood and doors shutting off direct admission of air through the perforations when slow combustion is desired, as set forth.

447,564. OVERSHOE. HENRY EGLEY, Toledo, Ohio. Filed Nov. 28, 1890. Serial No. 372,873. (No model.)

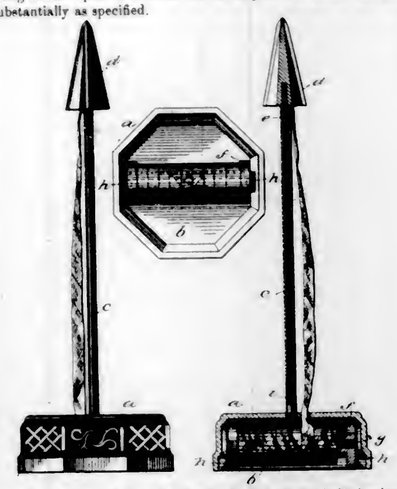


Claim.—In an overshoe, the combination, with the heel portion, of a series of open elastic loops extending normally at right angles to the said heel portion and adapted to engage frictionally with the boot proper of the wearer.

447,565. SPINDLE FILE OR BINDER. ROBERT R. GATLING, Hartford, Conn. Filed Nov. 26, 1890. Serial No. 372,661. (No model.)

Claim.—1. A file consisting of a base with a spindle projecting therefrom, a bobbin supported by the base, and a fastening reeled upon the bobbin and leading to the end of the spindle, substantially as specified.

2. A file consisting of a base with a spindle projecting therefrom, a bobbin located in an opening in the bottom of the base, and a fastening reeled upon the bobbin and leading to the end of the spindle substantially as specified.

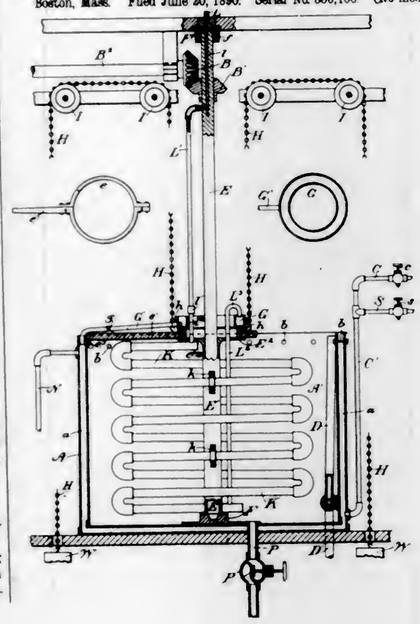


3. A file consisting of a hollow base with a spindle having a removable head projecting therefrom, a bobbin held in the opening in the base, and a fastening reeled upon the bobbin and leading to and temporarily held by the removable head, substantially as specified.

4. A file consisting of a hollow base with a tubular spindle projecting therefrom, the head of the spindle having a shank fitting within the spindle, a bobbin held in the opening in the base, and a fastening wound upon the bobbin, with an end temporarily connected with the shank of the removable head of the spindle, substantially as specified.

5. A file consisting of a hollow base with a spindle projecting therefrom, a bobbin held by spring-fingers in the opening in the base, and a fastening reeled upon the bobbin, with its free end temporarily connected with the outer end of the spindle, substantially as specified.

447,566. AGITATOR FOR KETTLES OR TANKS. JOHN HOBBS, Boston, Mass. Filed June 20, 1890. Serial No. 356,100. (No model.)



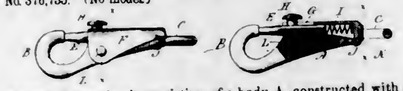
Claim.—1. The combination, with a kettle or other vessel, of a vertical shaft, a stuffing-box, a sleeve embracing said shaft and revoluble with and movable up and down upon said shaft, a system of piping secured to said sleeve, and suitable inlet and outlet passages constructed and arranged substantially as described.

2. The combination, with a kettle or other vessel, of a vertical shaft, a stuffing-box, a sleeve embracing said shaft and revoluble therewith, a system of piping secured to said sleeve, suitable inlet and outlet pipes, and a stationary annular pan, substantially as described.

3. The combination, with a kettle or other vessel, of a vertical shaft, an agitator revoluble with and movable up and down upon said shaft, a stationary lifting-strap suitably connected with said revoluble agitator, and suitably-guided chains connected to said strap and provided with counterbalancing-weights, substantially as described.

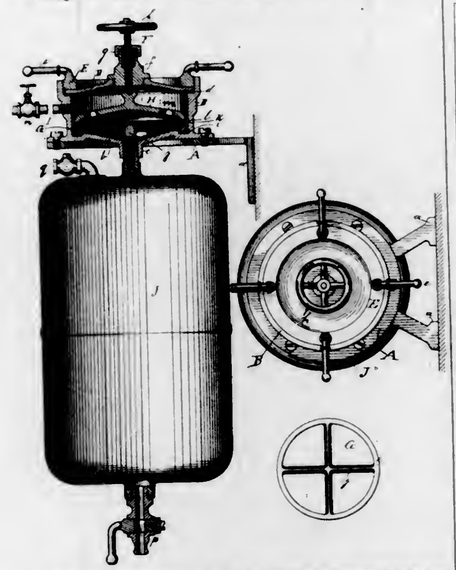
4. The combination, with a kettle or other vessel, of a vertical shaft, an agitator revoluble with and movable up and down upon said shaft, provided with a circulatory system of piping and suitable inlet and outlet passages, a stationary strap suitably connected with said revoluble agitator, and suitably-guided chains connected to said strap and provided with counterbalancing-weights, all constructed and arranged substantially as and for the purposes described.

447,567. SNAP-HOOK. GEORGE M. HUBBARD, New Haven, Conn., assignor to W. & E. T. Fitch, same place. Filed Jan. 5, 1891. Serial No. 376,735. (No model.)



Claim.—A snap-hook consisting of a body A, constructed with a hook B at one end and a loop or attaching device at the opposite end, the thickness of the body corresponding substantially to the body of the bolt, combined with a cap F, of inverted-U shape, the legs of the U forming cheeks *a a* distant from each other corresponding to the thickness of the body and so that, the cap being set over the body, the said cheeks will embrace the two sides of the body from the forward end of the cap to the loop and form a bolt and spring chamber between the said cap and body, the cap constructed with a longitudinal slot G at its forward end and constructed at its rear end with a projection adapted to engage with the body at the rear end, a bolt and spring arranged in the said chamber between the body and cap, and a rivet through the cheeks and body, substantially as described.

447,568. FILTER. WILLIAM M. JEWELL and OMAR H. JEWELL, Chicago, Ill. Filed Dec. 1, 1890. Serial No. 373,109. (No model.)



Claim.—The combination, with chamber B, having discharge-nozzle c and cover D, removably secured by screw-threaded ring E, and having screw-stem F, of grate G, supporting diaphragms of filtering material *l*, of perforated cup H, covering and holding the diaphragms *l* and being compressed by screw-stem F, of a water-supply pipe communicating with chamber B, and of a reservoir connected with nozzle *c*, all substantially as set forth.

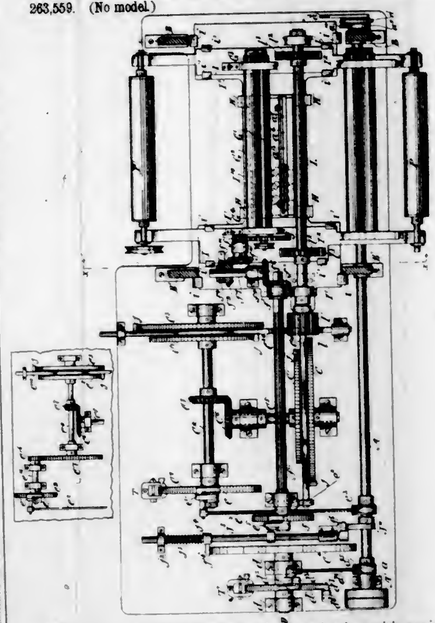
447,569. ELECTRICAL TRANSFORMER. RANKIN KENNEDY, Glasgow, Scotland, assignor of one-half to Robert Dick, same place. Filed Dec. 29, 1886. Serial No. 222,929. (Model.)



Claim.—1. A cable for transformers of electric energy having insulated copper conductors for the primary and secondary circuits inclosed throughout their length within an outer sheathing of iron wires or plates, substantially as and for the purpose set forth.

2. A transformer of electric energy in the form of a cable and comprising the combination of an outer sheathing of iron wires or plates with inner primary and secondary wires having connections made at any number of points along the length of the cable for the purpose of obtaining any desired electro-motive force less than the maximum, substantially as herein set forth.

447,570. QUILTING-MACHINE. MATTHIAS KOCH, New York, N. Y., assignor to Louis Schultz, same place. Filed Feb. 10, 1888. Serial No. 263,559. (No model.)



Claim.—1. In a sewing-machine, the combination, with sewing mechanism, of a support for the work, a main shaft, a shaft extending parallel with the main shaft and deriving motion therefrom, two pattern-cams mounted on said second shaft, a third shaft deriving motion from the second-named shaft and extending at right angles thereto, two pattern-cams mounted on said third-named shaft, and gearing, substantially such as described, operated from the pattern-wheels mounted on the second-named shaft, for causing a fore-and-aft motion of the said work-support, and an arm operated from the pattern-wheels mounted on the third-named shaft for causing a side-to-side movement of said work-support, substantially as specified.

2. In a sewing-machine, the combination, with a sewing mechanism, of a support for the work, a main shaft, two pairs of pattern-cams for imparting motion to said work-support, and arms extending between said pattern-cams, each of said arms bearing two pins or projections, one of which pins or projections bears upon one of the cams of the pair with which it co-operates and the other of said pins or projections bears upon the other of said pair of cams, said arms serving to transmit motion to the work-support, substantially as specified.

3. In a sewing-machine, the combination, with sewing mechanism, of a support for the work, a pair of pattern-cams, a shaft upon which said cams are mounted, an arm provided with projections bearing upon the peripheries of said cams, said arm being provided with a rack, a gear-wheel with which said rack engages, a shaft upon which said gear-wheel is mounted, other gear-wheels mounted on said shaft, and racks upon the work-support, with which the last-named gear-wheels engage, substantially as specified.

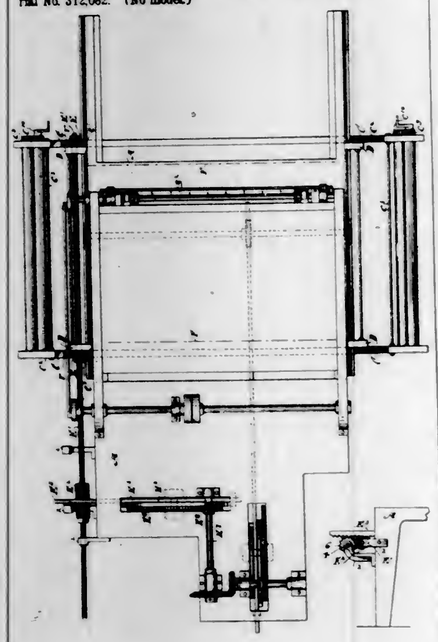
4. In a sewing-machine, the combination, with sewing mechanism, of a support for the work, a rack and pinion for imparting a movement to the support, a shaft upon which said pinion is mounted, a pinion provided with elongated teeth, also mounted on said shaft, a rack engaging said last-named pinion, and pattern-wheels imparting a longitudinal movement to said last-named rack, substantially as specified.

5. In a sewing-machine, the combination, with sewing mechanism, of a support for the work, a pair of pattern-cams, a shaft upon which said cams are mounted, an arm provided with projections bearing upon the peripheries of said cams, said arm being provided with a rack, a shaft mounted on the work-support so as to move with the latter, a gear-wheel engaging said rack and mounted on the last-named shaft so as to move with the same, other gear-wheels mounted on said last-named shaft, and racks upon the work-support, with which said last-named gear-wheels engage, substantially as specified.

6. In a sewing-machine, the combination, with sewing mechanism, of a support for the work, a shaft, a pattern-cam controlling the rotation of said shaft, a gear-wheel rotated by said shaft, a second gear-wheel rotated by the gear-wheel first named, a shaft mounted upon the said work-support and bearing the gear-wheel last named, a third gear-wheel rotated by the second-named shaft, said gear-wheels and shafts being connected to have a relative sliding movement, feed-rollers, and gearing intermediate of said last-named gear-wheel and the feed-rollers for transmitting motion to the latter, substantially as specified.

7. In a sewing-machine, the combination, with sewing mechanism, of a support for the work, a shaft, a pattern-cam controlling the rotation of said shaft, feed-rollers, a second shaft, intermittently-operating bevel gear-wheels for transmitting motion from the first-named to the second-named shaft, other intermittently-operating bevel gear-wheels for transmitting motion from the second-named shaft to the feed-rollers, one of said last-named gear-wheels being movable lengthwise on the second-named shaft, substantially as specified.

447,571. QUILTING-MACHINE. MATTHIAS KOCH, Chicago, Ill., assignor to Louis Schultz, New York, N. Y. Filed May 25, 1889. Serial No. 312,082. (No model.)

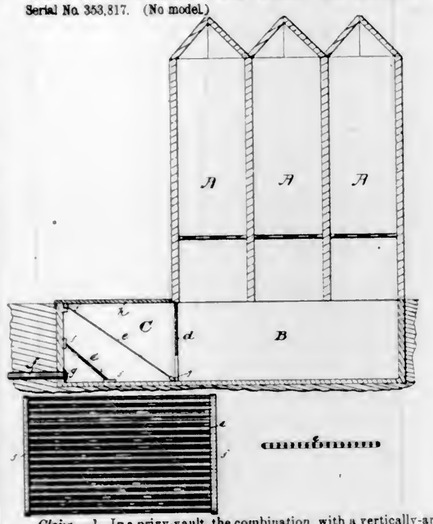


Claim.—1. In a quilting-machine, the combination, with a series of needles and two work-carriages arranged one upon the other for supporting and moving the fabric universally in a plane transverse to the reciprocation of the needles and pattern-wheels for moving said carriages, of mechanism, substantially such as described, between one of the carriages and its pattern-wheel, whereby the direction of certain motions of such carriage may be reversed without reversing the pattern-wheel, substantially as specified.

2. In a quilting-machine, the combination, with a series of needles and two work-carriages arranged one upon the other for supporting and moving a fabric universally in a plane transverse to the reciprocation of the needles, of a rack on one carriage, a gear-wheel engaging with the rack, a shaft carrying the gear-wheel, a rack-bar extending over this shaft, a long pinion supported on the shaft so that it may be shifted into or out of engagement with the rack-bar, bearings for a second shaft, and gear-wheels on the second shaft arranged so that when the second shaft is in place and the long pinion is shifted one of these gear-wheels on the second shaft will engage with the long pinion and the other with the said rack-bar, substantially as specified.

3. In a quilting-machine, the combination, with a series of needles and two work-carriages arranged one upon the other for supporting and moving a fabric universally in a plane transverse to the reciprocation of the needles, of a rack r on one carriage, a gear-wheel E, engaging with the rack, a shaft E', carrying the gear-wheel, a rack-bar E^3, extending over this shaft, a long pinion E^3, supported on the shaft so that it may be shifted into or out of engagement with the rack-bar, bearings 2 3 for a second shaft 4, and gear-wheels 5 6 on the second shaft, arranged so that when the second shaft is in place and the long pinion is shifted one of these gear-wheels on the second shaft will engage with the long pinion and the other with the said rack-bar, substantially as specified.

447,572. PRIVY-VAULT. ALFRED LISTER, Newark, N. J.; Joanna C. Lister executrix of said Alfred Lister, deceased. Filed May 31, 1890. Serial No. 353,817. (No model.)

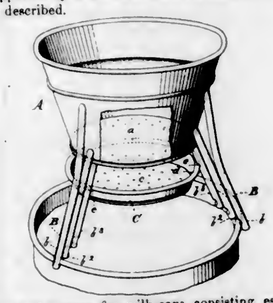


Claim.—1. In a privy-vault, the combination, with a vertically-arranged partition having an opening at its bottom, of an inclined perforated partition extending from the opening in the vertical partition diagonally upward to and resting upon the opposite side of the vault over the outlet, substantially as described.

2. In a privy-vault, the combination, with a vertically-arranged partition having an opening at its bottom, of a partition extending diagonally upward from the opening in the vertical partition to and resting against the opposite wall of the vault over the outlet, said partition consisting of a series of straight rods arranged parallel with each other and having their ends secured in end pieces, substantially as described.

447,573. AERATOR. LEWIS J. MACY, Pulaski, N. Y. Filed Aug. 25, 1890. Serial No. 362,946. (No model.)

Claim.—1. A cooler and aerator for milk-cans, consisting, essentially, of a receptacle provided with a perforated bottom and having secured to its outer surface a series or set of legs or supports, their lower ends provided with a series of notches or seats adapted to engage and be supported upon milk-cans of different diameters or sizes, substantially as described.



2. A cooler and aerator for milk-cans, consisting, essentially, of a receptacle provided with a perforated bottom and having secured to its outer surface a series or set of legs or supports, their lower ends provided with a series of notches or seats adapted to engage milk-cans of different sizes, and a second dish or receptacle having a perforated bottom placed beneath the first receptacle and held in position by supporting-notches formed in said legs or supports, substantially as described.

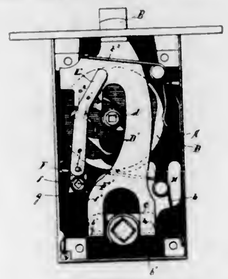
3. The cooler and aerator for milk-cans, having the receptacle provided with a perforated bottom, the legs or supports secured to said receptacle, said legs being formed of parts having different lengths, each series of corresponding parts being adapted to engage milk-cans of different diameters and a second receptacle or pan provided with a perforated bottom placed beneath the first receptacle and engaging supporting-notches in the said legs, substantially as described.

447,574. SYRINGE-TUBE SINKER. DENNIS B. MARTIN, New Haven, Conn. Filed Nov. 17, 1890. Serial No. 371,679. (No model.)



Claim.—The herein-described sinker for syringes, consisting of a tubular body made from elastic flexible india-rubber adapted at one end for attachment to the inlet-tube of the syringe, and at its opposite end constructed with a loop made of the same material and integral with the body, substantially as described.

447,575. PERMUTATION-LOCK. JAMES B. MILLER, Kent, Ohio. Filed May 29, 1890. Serial No. 353,571. (No model.)

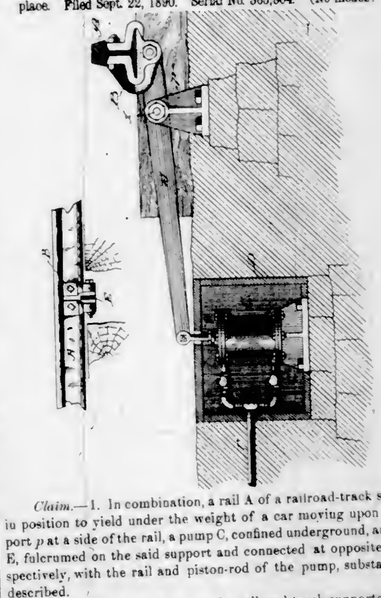


Claim.—1. In a permutation-lock of the class indicated, in combination, a bolt, a vibrating lever adapted to lock the bolt, and a cam-bearing disk for actuating the vibrating lever, such vibrating lever having a movable fulcrum, whereby the lever may be advanced to or withdrawn from its engagement from the opposing member of the bolt, substantially as set forth.

2. In a permutation-lock of the class indicated, the combination, with a bolt, a vibrating lever, and a cam-disk, substantially as indicated, of cut-out mechanism comprising a rock-arm to which the vibrating lever is pivoted, and means for shifting the rock-arm to move the vibrating lever toward or from the bolt, substantially as set forth.

3. The combination, with a bolt, a bolt-spring, and a knob-spindle bearing cams for withdrawing the bolt, of a sliding plate having lugs interposed between the cams of the knob-spindle and the opposing lugs of the bolt, such sliding plate being provided with a spring adapted to act in opposition to the cams of the knob-spindle, substantially as set forth.

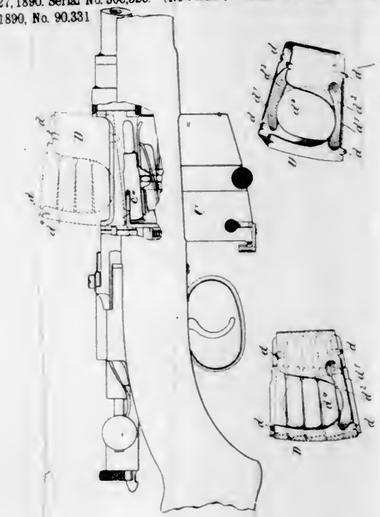
447,576. TRACK-PUMP APPARATUS. MORTIMER B. MILLS, Chicago, Ill., assignor to the Bogue & Mills Manufacturing Company, same place. Filed Sept. 22, 1890. Serial No. 365,804. (No model.)



Claim.—1. In combination, a rail A of a railroad-track supported in position to yield under the weight of a car moving upon it, a support p at a side of the rail, a pump C, confined underground, and a lever E, fulcrumed on the said support and connected at opposite ends, respectively, with the rail and piston-rod of the pump, substantially as described.

2. In combination, a rail A of a railroad-track supported in position to yield under the weight of a car moving upon it, and having a clamp B, a pump C in a housing D, a support p near the rail, and a lever E, pivoted at one end to the clamp below the rail, fulcrumed to the support p, and pivotally connected at its opposite end with the piston-rod q of the pump, the whole being constructed and arranged to operate substantially as described.

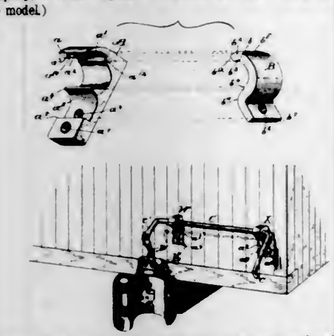
447,577. CARTRIDGE-FEED CASE FOR MAGAZINE-GUNS. KOSTA R. MILOVANOVITCH-KOKA, Vienna, Austria-Hungary. Filed Sept. 27, 1890. Serial No. 366,320. (No model.) Patented in Belgium Apr. 26, 1890, No. 90,331.



Claim.—1. A cartridge holder or case consisting of a casing that is open at top and bottom and has finger-slots d^4 formed in the sides thereof at the shell end, said finger-slots d^4 extending in reverse directions from one edge nearly to the opposite edge, in combination with retaining devices to prevent the cartridges from falling out, substantially as and for the purposes set forth.

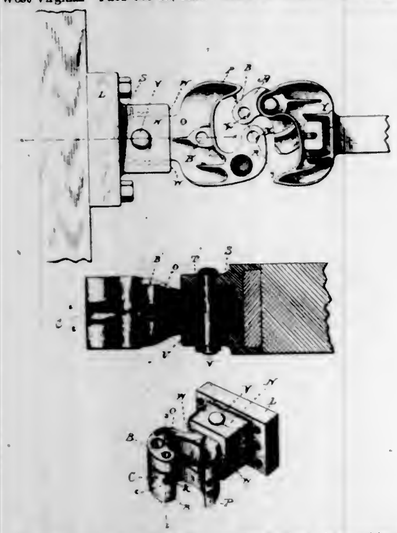
2. A cartridge holder or case consisting of a sheet-metal casing that is open at top and bottom and that has inwardly-bent retaining-lips d formed on the side edges, and that has finger-slots d^4 formed in the sides at the shell end of the casing, which finger-slots extend in opposite directions from one edge nearly to the other, substantially as and for the purposes set forth.

447,578. LEVER-BRACKET FOR CAR-COUPLINGS. THOMAS L. MCKEEN, New York, N. Y., assignor to the Thurmond Car Coupling Company, of West Virginia. Filed Oct. 25, 1890. Serial No. 369,348. (No model.)



Claim.—In a bracket, the combination of a rear section A, screwed to the bracket-support and having jaws with curved recesses a' and a^{11}, a lug a^{14}, and faces a, a^3, a^2, a^{13}, a^4, and a^5, and bolt-holes a^6 and a^7, with a movable section B, having convex surfaces b' and b^{11} registering with the concave surfaces a' and a^{11}, the faces b, b^3, b^2, b^{13}, b^4, and b^5 registering with a, a^3, a^2, a^{13}, a^4, and a^5, and bolt-hole b^6 registering with a^6, as and for the purposes described.

447,579. COUPLING FOR LOCOMOTIVES. THOMAS L. MCKEEN, New York, N. Y., assignor to the Thurmond Car Coupling Company, of West Virginia. Filed Oct. 25, 1890. Serial No. 369,347. (No model.)

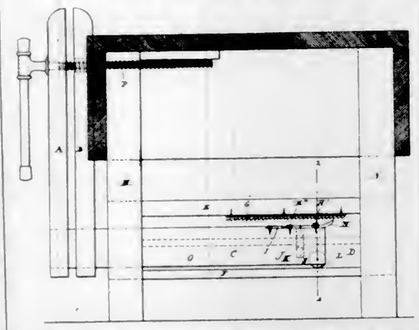


Claim.—1. In a coupler for locomotive-tenders, the combination of a face-plate having a projection containing a chamber having a semi-cylindrical rear interior face, a draw-head having a perforated shank extending into the face-plate with a semi-cylindrical rear face fitting loosely within the semi-cylindrical portion of the said chamber, a pin provided with a recess for the reception of the boss and a hole for the reception of the plug, and a plug which, when placed in the hole in the pin, prevents it from being removed from the hook, as and for the purposes described.

2. In a coupler for locomotive-tenders, the combination of a face-plate having a chambered projection, a draw-head having a perforated shank which extends within the chamber of the face-plate, two pairs of pin-holes in the outer and inner portions of the said draw-head, with a slot for link-and-pin coupling between each pair, and a pivot-pin which passes through the chambered projection of the face-plate and the aperture of said shank, substantially as described.

3. In a coupler for locomotive-tenders, the combination of a face-plate having a projection containing a chamber having a semi-cylindrical rear interior face, a draw-head having a perforated shank extending into the face-plate, with a semi-cylindrical rear face fitting loosely within the semi-cylindrical portion of the said chamber, two pairs of pin-holes in the outer and inner portions of the said draw-head, with a slot for link-and-pin coupling between each pair, and a pivot-pin which passes through the chambered projection of the face-plate and the aperture of said shank, substantially as described.

447,580. VISE. GEORGE W. MCKENZIE, Boston, Mass. Filed Nov. 24, 1890. Serial No. 372,418. (No model.)



Claim.—1. The improved vise consisting of a fixed jaw affixed to a bench or other suitable support, a movable jaw, a screw adapted to move said movable jaw toward and from the fixed jaw, a guide-piece affixed to the lower end of said movable jaw and sliding on a track under said bench, a dog affixed to the upper side of the inner end of said guide-piece, and a ratchet supported in suitable relation with said dog, as set forth.

2. In a vise, the combination, with a bench, of the fixed jaw attached thereto, the movable jaw, a screw adapted to move said movable jaw toward and from the fixed jaw, the guide-piece affixed to the lower end of said movable jaw and adapted to move on a track under said bench, a dog affixed to the upper side of the inner end of said guide-piece by screws passing through slots in said dog and allowing a slight amount of horizontal and vertical movement to said dog, the backing piece or support I, adapted to prevent a too great horizontal movement of said dog, and the ratchet supported above said guide-piece in suitable relation to the said dog, as set forth.

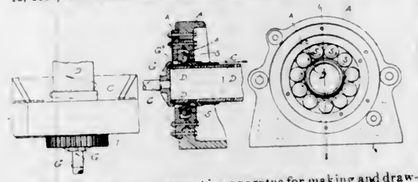
3. The improved vise consisting of a fixed jaw affixed to a bench or other suitable support, a movable jaw, a screw adapted to move said movable jaw toward and from the fixed jaw, the guide-piece C, attached to the lower end of said movable jaw and projecting under the bench or other support, the cross-piece F, acting as a track on which the guide-piece C moves, the roller L at the under side of the inner end of said guide-piece, the dog H, loosely attached to the upper side of the same by screws passing through slots in said dog, and thus allowing said dog a slight horizontal and vertical movement with relation to said guide-piece, the cross-piece E, the ratchet G on said cross-piece and supported thereby just out of engagement with the dog H when the latter is in its normal position and so as to be engaged by said dog when any article is clamped between the jaws of the vise, the guide-bars O and O', and the support I, firmly affixed to the guide-piece C in close proximity to the dog H, as set forth.

447,581. MEAT OR VEGETABLE CUTTER, FRUIT-PRESS, &c. AUGUST NITTINGER, Sr., Philadelphia, Pa. Filed Nov. 6, 1890. Serial No. 370,581. (No model.)

Claim.—A meat-cutter, &c., having a casing, a hopper, a rotary screw in said casing with an exposed portion at the base of the hopper, ears secured to said hopper, a lever pivoted to said ears and having a suitable handle, and a depending arm attached to said lever and provided with a head adapted to work in and close said hopper above said exposed portion of the screw, said parts being combined substantially as described.



447,582. MACHINE FOR MAKING TUBING. JAMES ROBERTSON, Birmingham, England. Filed Mar. 7, 1890. Serial No. 343,031. (No model.) Patented in England Apr. 4, 1888, No. 5,018; in France Mar. 13, 1889, No 196,678, and in Belgium Mar. 14, 1889, No. 85,583.



Claim.—1. As an improvement in apparatus for making and drawing out tubes and tubular articles, the combination of a die comprising a plurality of vertically-disposed circularly-arranged rolls and a holder therefor, the periphery of said rolls constituting the forming portions of the die, a horizontally-disposed mandrel formed to pass through the space surrounded by said rolls, and mechanism for simultaneously rotating said mandrel and moving it endwise through the die, as set forth.

2. As an improvement in apparatus for making and drawing out tubes and tubular articles, the combination of a vertically-disposed fixed annular holder or casing, an annular two-part roll-guide fitted to rotate in said holder, and a vertically-disposed circularly-arranged plurality of rolls fitted to rotate independently in said guide, as set forth.

3. As an improvement in apparatus for making and drawing out tubes and tubular articles, the combination of a vertically-disposed fixed annular holder or casing, an annular two-part roll-guide fitted to rotate in said holder, and a vertically-disposed circularly-arranged plurality of rolls fitted to rotate independently in said guide, a mandrel formed to pass through the space surrounded by said rolls, and means for simultaneously rotating and advancing said mandrel, as set forth.

4. As an improvement in apparatus for making and drawing out tubes and tubular articles, the combination of a vertically-disposed fixed annular holder or casing, an annular two-part roll-guide fitted to rotate independently in said holder, a series of rolls rotatable independently in said roll-guide, and means for positively rotating said roll-guide, whereby the rolls therein are revolved about their common center, as set forth.

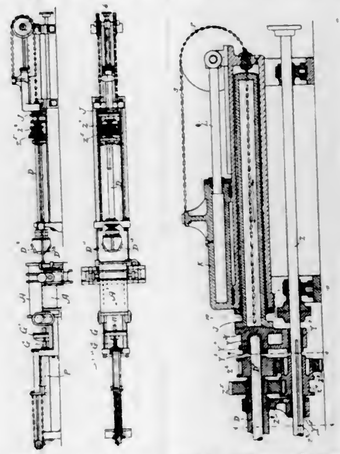
5. As an improvement in apparatus for making and drawing out tubes and tubular articles, the combination of a fixed annular holder or casing, an annular roll-guide fitted to rotate independently in said holder, a series of vertically-disposed circularly-arranged rolls rotatable independently in said roll-guide, and means for positively rotating said roll-guide, whereby the rolls therein are revolved about their common center, a mandrel, and means for giving simultaneous forward and rotary movements thereto, as set forth, said mandrel being passed horizontally between said rolls, as stated.

6. As an improvement in apparatus for making and drawing out tubes and tubular articles, the combination of a die comprising a plurality of loose rolls and a holder therefor, a mandrel formed to pass through the space between the rolls, mechanism for rotating and progressively moving the mandrel, and a movable guard or abutment on the mandrel adapted to bear on the end of a tube-blank in process of construction and force said guard or abutment having a frictional hold on the mandrel, whereby it is adapted first to press the blank or billet forward between the rolls and mandrel and impart rotary motion to the blank or billet from the mandrel at the commencement of the operation and afterward to yield and be forced backwardly by the elongation of the tube-blank, as set forth.

7. As an improvement in apparatus for drawing out tube-blanks, the combination of a die comprising a plurality of vertically-disposed circularly-arranged loose rolls and a holder therefor, a mandrel formed to pass horizontally through the space between the rolls, means for rotating and progressively moving the mandrel, and an after holding-up head G', having a yielding movement and adapted to clamp the forward end of the tube-blank upon the mandrel and prevent independent movement of said blank, as set forth.

8. The herein-described method of drawing out tubes from tube-blanks, which consists in internally supporting the blank, rotating the same, and moving it longitudinally forward and applying rolling pressure to its outer surface while being revolved and moved forward, said pressure and movements compacting and drawing out the metal in tube form, as set forth.

447,583. APPARATUS FOR MAKING TUBE-BLANKS. JAMES ROBERTSON, Birmingham, England. Filed Mar. 7, 1890. Serial No. 343,032. (No model.) Patented in England Apr. 4, 1888, No. 5,018; in France Mar. 13, 1889, No. 196,678, and in Belgium Mar. 14, 1889, No. 85,583.



Claim.—1. As an improvement in apparatus for making and drawing out tube-blanks, tubes, and tubular articles, the combination of a die, a mandrel composed of a series of obliquely-arranged forming-rolls, a rotary head or holder therefor, whereby said rolls may be revolved about the axial center of the mandrel, and a central roll supporting said forming-rolls and having direct frictional contact therewith, means for revolving the series of forming-rolls, and means for independently rotating the central supporting roll, as set forth.

2. The combination of a head or holder, a series of obliquely-arranged rolls journaled therein, a tubular shaft or stem to which said head or holder is affixed, and a central roller arranged to support and having direct frictional contact therewith, said series of rolls affixed to a stem which is journaled in said tubular stem and is rotatable independently of the latter, as set forth.

3. The combination of a head or holder D, a series of rolls journaled therein, a tubular shaft or stem to which said head or holder is affixed, a central roller arranged to support said series of rolls and affixed to a stem which is journaled in said tubular stem, and mechanism for independently rotating said tubular stem and central roller-stem, as set forth.

4. The combination of a rotary mandrel having a stem, as D^{11}, mechanism for rotating the same, a progressively-moving carrier

whereby endwise motion is imparted to said mandrel while it is rotating, and a hydraulic back center supported by said carrier and receiving the rear end of said stem, said back center constituting an anti-friction support for the end-thrust of the rotating mandrel, as set forth.

5. The combination of a rotary mandrel, mechanism for rotating the same, a hydraulic ram J, constituting a carrier, whereby the mandrel is moved endwise while rotating, and a hydraulic back center attached to said ram and consisting of a head having a cavity receiving the stem of said mandrel and containing a liquid cushion to support the end-thrust of said stem, as set forth.

6. In a tube-forming machine having a mandrel composed of a series of forming-rolls, a rotary head or holder carrying said rolls, a tubular stem secured to said holder, and a central roll supporting said forming-rolls and having a stem journaled in the tubular stem, the combination, with said mandrel, of gears on said stems, a positively-rotated shaft having gears rotatively engaged with but adapted to slide along said shaft, said sliding gears engaging the gears in the mandrel-stems, and means for imparting endwise movement to said mandrel while the parts thereof are rotating, as set forth.

7. The combination of the mandrel having the outer and inner stems D' D^{11} and the rolls supported thereby, gears Z^3 Z^6, attached, respectively, to the stems D' D^{11}, the gears Z^4 Z^5, rotatively engaged with and adapted to slide on a positively-rotated shaft, a hydraulic ram arranged to impart endwise motion to the mandrel through the stem D^{11}, and a hydraulic back center attached to said ram and receiving the stem D^{11}, as set forth.

8. The combination of the mandrel having the outer and inner stems D' D^{11}, the positively-rotated shaft Z, rotated in fixed bearings, the sliding bush or bracket Z^8, in which the stem D' is journaled, the ram J, having the hydraulic back center Y, which receives the stem D^{11} and through the latter supports the end-thrust of the mandrel, the gears Z^4 Z^5, attached, respectively, to the stems D' D^{11}, and the gears z^4 z^5, rotatively engaged with the shaft Z and adapted to slide thereon, said gears being engaged, as described, with the gears Z^3 Z^6, whereby the endwise movement imparted to the mandrel by the ram J is imparted to the gears Z^4 Z^5, as set forth.

9. The combination, with the die and the rotating and progressively-moving mandrel having a series of forming-rolls operating, as described, within the die, of the yielding head G', adapted to bear on the inner end of the billet, and means whereby the rotation of the head G' during its yielding movement is prevented, as set forth.

10. The combination, with the die and the rotating and progressively-moving mandrel having a series of forming-rolls, of the yielding head G', adapted to bear on one end of the tube-blank and provided with teeth to engage and prevent rotation of the blank, and means for preventing rotation of the head G' during its endwise movement, as set forth.

11. The combination, with the die and the rotating and progressively-moving mandrel, of the yielding head arranged to bear on the inner end of the blank and hold the same from rotating, and means for applying retarding pressure to said head and releasing the head from said pressure, as set forth.

12. In a mandrel, the combination of the head or holder, the series of forming-rolls journaled therein, the tubular stem-rod having a clutch member engaged with clutch-teeth on the head or holder, the central roll bearing on the forming-rolls, and the stem-rod removably engaged with said central roll, whereby the said stem-rods may be withdrawn from the head or holder and central roll, as set forth.

13. The mandrel composed of the head or holder, the forming-rolls journaled therein, and the central roll bearing on the forming-rolls, the stem-rods removably connected, respectively, with the head or holder and the central roll, whereby said stem-rods may be withdrawn from the mandrel, and a head G', provided with means for engaging and supporting the mandrel, and means for moving said head, whereby the mandrel may be returned to engagement with its stem-rods, as set forth.

14. A tube-forming die composed of the fixed longitudinal sections A and the movable section A', connected at their inner ends by hinge members and provided with lugs or flanges at or near their opposite ends, fixed hydraulic cylinders A^{23} and rams therein, said ram bearing against projections on the movable sections, whereby the latter may be raised to open the die, as set forth.

15. A tube-forming die composed of the fixed longitudinal sections A and the movable section A', connected at their inner ends by hinge members and provided with lugs or flanges at or near their opposite ends, fixed hydraulic cylinders A^{23} and rams therein, said rams bearing against projections on the movable section, whereby the latter may be raised to open the die, and the fixed hydraulic cylinders A^{24}, having rams which are formed to engage the lugs or flanges of the die-sections and lock the same together, as set forth.

16. The herein-described method of drawing out tubes from tube-blanks, the same consisting in applying outward and forward rotary pressure to the inner surface of a rigidly-supported blank, said pressure compacting and laying up a portion of the metal against the walls of the die in tube form and displacing a portion of the metal endwise of the die, as set forth.

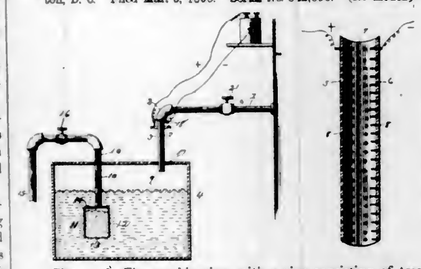
447,584. WASH-BOILER. JOHN F. ROWELL, Hookset, N. H. Filed June 12, 1890. Serial No. 355,218. (No model.)



Claim.—1. A boiler provided on its interior near its top with an inwardly-curved deflector B, extending entirely around the boiler and provided with numerous apertures *b*, whereby the ebullient water is arrested from overflowing the sides of the boiler and is turned inwardly and returned to the bottom of the boiler, substantially as described.

2. The combination, with a boiler having an inwardly-curved deflector B arranged near its top and extending entirely around the boiler, of a cover provided with a presser secured to and depending from its under side, and locking devices whereby the cover may be secured to the boiler and prevented from rising by the action of the clothes thereon during ebullition, substantially as described.

447,585. LIQUID-PURIFIER. GEORGE G. SCHROEDER, Washington, D. C. Filed Mar. 6, 1890. Serial No. 342,836. (No model.)

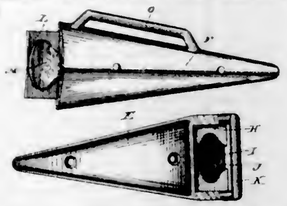


Claim.—1. The combination, with a pipe consisting of two longitudinal sections insulated from each other, of conducting-points projecting inwardly from the said sections, and a suitable source of electricity having its opposite poles connected with the opposite sections, as described.

2. The combination, with a pipe consisting of two longitudinal sections insulated from each other and having a single central bore, of conducting-points consisting of non-oxidizable material projecting inwardly from the said sections, and a source of electricity the opposite poles of which are connected to the opposite sections, as described.

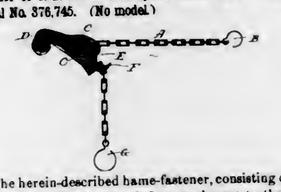
3. The combination, with the pipe having inwardly-projecting conducting-points thereon, the points upon the one side of the pipe being insulated from those upon the other, of a source of electricity having its positive pole connected with the points on the one side of the pipe and its negative pole with those on the opposite side of the pipe, as described.

447,586. HORSE-COLLAR FASTENER. HERMAN F. SEAVERT, Fort Atkinson, Wis. Filed Nov. 22, 1890. Serial No. 372,297. (No model.)



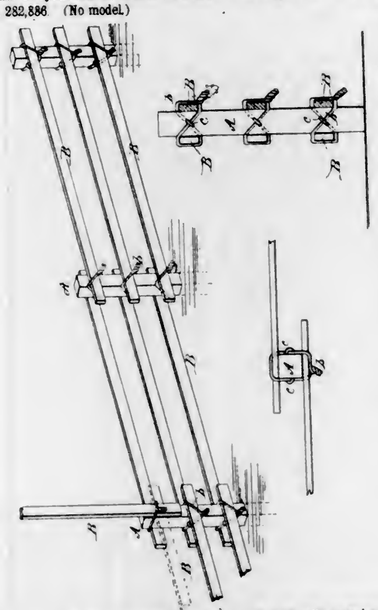
Claim.—The horse-collar fastener consisting of the two parts E and F, formed for and adapted to be secured in the groove in the two parts of a horse-collar, the ends of the parts being arranged to abut against each other, one part having a tongue formed in two integral flat sections, an outer enlarged section L and an inner smaller section M, having a neck near its junction with the main part F, and an enlarged portion at a distance therefrom, the entire section M being smaller in lateral dimensions than the section L and being adapted to serve as a key covered by the larger section L, the part E having a double recess adapted to receive therein the sections L and M of the tongue of the other part, and a single loop K, formed on the part E at its extremity opposite the recess H, for receiving the hame-strap therein and holding it against the flat extended surface of the tongue, substantially as described.

447,587. HAME-FASTENER. CHARLES H. SMITH, New Haven, Conn., assignor to O. B. North & Company, same place. Filed Jan. 5, 1891. Serial No. 376,745. (No model.)



Claim.—The herein-described hame-fastener, consisting of a frame constructed with a clip D at one end for attachment to the hame, a cross-bar E at the opposite end, and a projecting finger F at the cross-bar end, combined with a chain adapted for attachment to the other hame, the said chain passing through said frame over the cross-bar, and the said finger adapted to engage a link of the chain, substantially as described.

447,588. FENCE. THOMAS A. TWEEDY, Knightstown, Ind., assignor to Cyrus Crabbe, Toronto, Canada. Filed Aug. 16, 1888. Serial No. 282,886. (No model.)

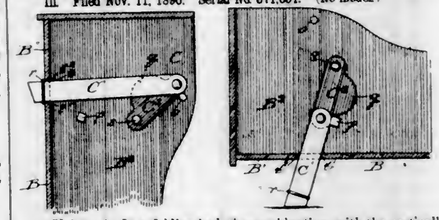


Claim.—1. A fence formed of upright posts and rails attached to said posts by means of wires passing around them, said rails being arranged on the opposite sides of the posts, and one of said rails being held at an angle while the wire is put in position and then forced down into its normal position, thus tightening the wire and securing the rails and posts firmly together.

2. The combination, in a fence, of upright posts, fence-rails, and wires passing around said posts and said rails, said wires being severally placed in position while the rail to be held thereby is held at an angle, said rail being afterward brought down into its normal position, substantially as and for the purposes set forth.

3. The combination, with a fence-post and the rails of the two adjacent panels, of a tie-wire and a pair of staples, said wire passing diagonally across both sides of the post, through a staple on each side thereof, around the post, and around the said rails, as shown and described.

447,589. FOLDING-BED SUPPORT. HARVEY WADDELL, Chicago, Ill. Filed Nov. 11, 1890. Serial No. 371,061. (No model.)



Claim.—1. In a folding bed, the combination, with the vertically-swinging body portion, of an extensible and folding support for the foot portion, comprising a link pivoted at one end to the said body portion, a leg pivotally connected with the free end of the link, and a guide on the said body portion through which the leg reciprocates in the folding and extending operations of the said support, substantially as described.

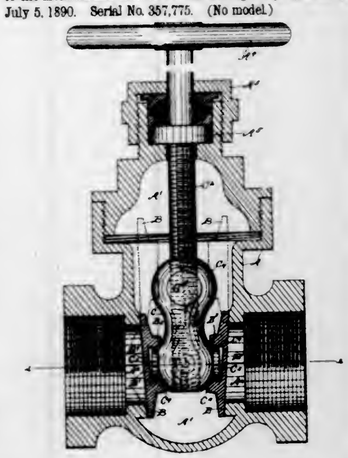
2. In a folding bed, the combination, with the vertically-swinging body portion, of an extensible and folding support for the foot portion, comprising a link pivoted at one end to the said body portion, a leg pivotally connected with the free end of the link, a guide opening in the said body portion through which the leg reciprocates in the folding and extending operations of the said support, and a stop *p* on the said body portion for limiting the movement of the link, substantially as described.

3. In a folding bed, the combination, with the vertically-swinging body portion, of an extensible and folding support for the foot portion, comprising a link weighted at one side and pivoted at one end to the said body portion, a leg pivotally connected with the free end of the link, a guide-opening in the said body portion through which the leg reciprocates in the folding and extending operations of the said support, and a stop *p* on the said body portion for limiting the movement of the link, substantially as described.

4. In a folding bed, the combination, with the vertically-swinging body portion, of an extensible and folding support for the foot portion, comprising a link pivoted at one end to the said body portion, a leg pivotally connected with the free end of the link, a guide-opening in the said body portion through which the leg reciprocates in the folding and extending operations of the said support, a stop *p* on the said body portion for limiting the movement of the link, and a stop *r* on the leg beyond the guide-opening, substantially as described.

5. In a folding bed, the combination, with the vertically-swinging body portion, of an extensible and folding support for the foot portion, comprising a link pivoted at one end to the said body portion, a leg pivotally connected with the free end of the link, a guide-opening in the said body portion through which the leg reciprocates in the folding and extending operations of the said support, and stops *p* and *o* on the said body portion at opposite sides of the link, substantially as and for the purpose set forth.

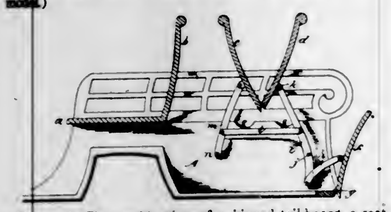
447,590. VALVE. ASA T. WALDRON, Waterford, N. Y., assignor to the Mohawk and Hudson Manufacturing Company, same place. Filed July 5, 1890. Serial No. 357,775. (No model.)



Claim.—1. In a valve, the combination, with a pair of oppositely-located gates, each provided with a carrier-bearing on its back, and converging gate-seats, of a carrier-stem, with means for operating the stem, and a gate-carrier provided with two sets of gate supporting and seating bearings, substantially as and for the purposes set forth.

2. In a valve, the combination, with a pair of oppositely-located gates, each provided with a carrier-bearing on its back, and converging gate-seats, of a carrier-stem, with means for operating the stem, and a gate-carrier provided with two sets of gate supporting and seating bearings differing from each other in size, for the purpose of providing a compensation for the wear of the carrier-bearings upon the backs of the gates, substantially as described.

447,591. CARRIAGE-SEAT. HARLAN P. WELLS and OSGOOD MORRILL, Amesbury, Mass. Filed Dec. 5, 1890. Serial No. 373,643. (No model.)



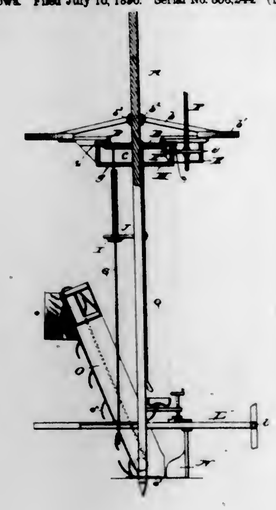
Claim.—1. The combination of a hinged tail-board, a seat provided with bottom and back at proper relative angles, a pair of jumping-irons pivoted at their lower ends to the body and at their opposite ends pivoted to the back and bottom of said seat, respectively, a rod pivotally connected with said irons between their said pivots, and a connector pivoted to said tail-board and a jumping-iron, all substantially as specified.

2. The combination of pivoted tail-board *f*, jumping-irons *i m*, respectively pivoted to the body and seat, connector *l*, pivoted to said jumping-irons, and connector *h*, pivoted to said tail-board and to jumping-iron *i*, substantially as specified.

3. The combination of the seat having its members *c d* hinged together, the jumping-irons *i m*, pivoted to the body and respectively to members *c d* of the seat, connector *l*, pivoted to said jumping-irons, and connector *h*, pivoted to iron *i* and to the hinged tail-board *f*, substantially as specified.

4. The combination of a carriage-seat having members *c* and *d*, each adapted to serve either as the bottom or back of the seat, and a pair of jumping-irons, respectively pivoted at one end to the body and at the other to one of said members of the seat, whereby when said seat is jumped the back becomes the bottom and the bottom the back, substantially as specified.

447,592. WELL-BORING MACHINE. CHAUNCEY F. WHIPPLE, Newtonville, Iowa. Filed July 10, 1890. Serial No. 358,244. (No model.)



Claim.—1. In a well-digging apparatus, the combination, with the vertically-movable standard, of a platform located near the end of the same, a radially-movable plow on the platform, a supporting-frame, and gearing in the frame for rotating the standard and plow, substantially as described.

2. The combination, with a standard, of a supporting-guide consisting of radial arms carrying curved shoes on their ends, a collar to which said arms are pivoted, whereby the downward movement of the collar forces the arms out, substantially as described.

3. The combination, with a standard, of a supporting guide-frame having extensible arms, a friction-disk, friction-wheels in the frame engaging the disk, means for rotating the standard, and an excavating device on the standard, substantially as described.

4. The combination, with the standard and its actuating means, of an elevator, a pendent driving-shaft connecting the actuating means, a sliding gear on the shaft, and connecting means between the gear and elevator, substantially as described.

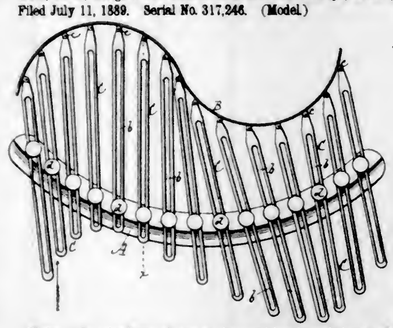
5. The combination, with the standard, of the supporting-guide having jointed arms and curved shoes on the arms, a collar to which the inner ends of the arms are hinged, and a catch on the supporting-frame for engaging the collar and retaining the arms in their distended position, substantially as described.

6. The combination, with the supporting guide-frame, of the large friction-disk, the grooved wheel, extensible arms supporting the disk, and the standard carrying the excavator, passing through the disk, substantially as described.

7. The combination, with a standard, of a frame, a pivoted screw in the frame, a plow having an apertured connection with the screw, and a hand-wheel for actuating the screw to move the plow, substantially as described.

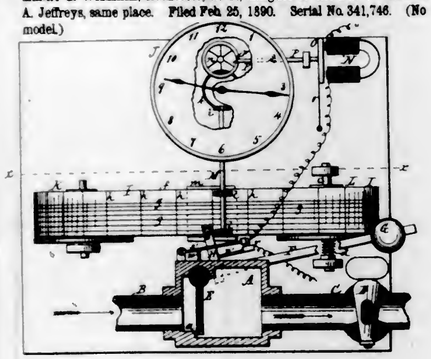
8. The combination, with the standard, of a radially-movable plow, an elevator, and means for rotating the standard, substantially as described.

447,593. DRAFTSMAN'S CURVE. HENRY B. WILLIAMS, Rochester, N. Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed July 11, 1889. Serial No. 317,246. (Model.)



Claim.—In a draftsman's curve, the combination of a base, a flexible rule, stays pivoted at one end to the rule and resting at the other on the base, set-screws for securing the stays to the base, and washers between the stays and base, said washers varying in thickness under the different stays, as and for the purpose specified.

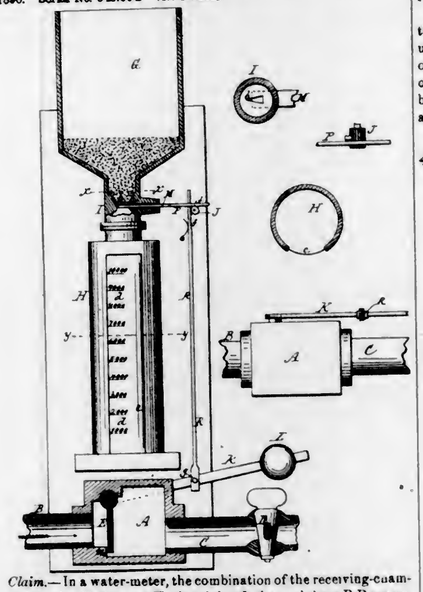
447,594. RECORDING MECHANISM FOR WATER-METERS. HENRY B. WILLIAMS, Rochester, N. Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed Feb. 25, 1890. Serial No. 341,746. (No model.)



Claim.—1. In a water-meter, the combination of the receiving-chamber A, the pivoted valve E, the weighted lever F, the arm H, attached to the lever and carrying a pencil, the traveling ribbon I, the clock J, provided with a spindle M, which gives motion to the ribbon, the electro-magnet N, armature O, and arm P, which engages with the balance-wheel of the clock, and the electrodes *r s*, one attached to lever F and the other to chamber A, as shown and described, and for the purpose specified.

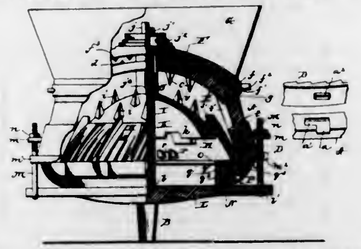
2. In a water-meter, the combination, with the valve-lever F and clock J, of the electro-magnet N, armature O, arm P, fixed electrode *r*, and swinging electrode *s*, arranged to operate in the manner and for the purpose specified.

447,595. WATER-METER. HENRY B. WILLIAMS, Rochester, N. Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed Mar. 7, 1890. Serial No. 343,064. (No model.)



Claim.—In a water-meter, the combination of the receiving-chamber A, the valve E, the arm K, the pinion J, the rack-bars R P engaging with the said pinion, the slide M, the hopper G, and the graduated receptacle H, located under said hopper, as shown and described, and for the purpose specified.

447,596. GRINDING-MILL. JOHN C. WOODCOCK, New Lexington, Ohio. Filed Apr. 15, 1889. Serial No. 307,255. (No model.)



Claim.—1. In a grinding-mill, the casing and a shell arranged therein, the two being united solely by means of bayonet-joints, the members of which are fixed upon and concealed between the casing and shell and which lock in the direction of rotation of the runner, substantially as described.

2. In a grinding-mill, the runner and the dome connected solely by bayonet-joints concealed upon the inside and interlocking in the direction of rotation of the runner, substantially as described.

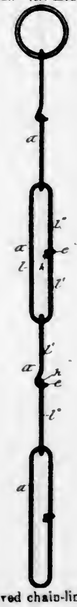
3. In a grinding-mill, the meal or feed trough combined with the casing and lugs *o*, projecting from one of these members and interlocking with L-shaped lugs *o'*, projecting from the other member, substantially as described.

4. In a grinding-mill, the runner and the dome inserted in said runner from below, the two being connected solely by bayonet-joints concealed upon the inside and interlocking in the direction of rotation of the runner, and the dome having a socket in its inner face combined with a bridge-tree having an annular step or socket, and a dead-spindle held rigidly and stationarily in the bridge-tree and fitted in the dome-socket to permit the rotation of the dome and runner thereon, and a rotating spider to which the dome is secured, substantially as described.

5. In a grinding-mill, the feed-trough combined with the conveyer having a rectangular rim, with a bearing *q'* on the upper inner edge of the feed-trough, and a second bearing q^3 near the bottom of such trough, whereby the conveyer is supported upon the feed-trough with its wings out of contact with the trough, so that it may be rotated freely, substantially as described.

6. The runner having the series of teeth and interposed rubbers, the said teeth being of different lengths from the bottom of the runner upwardly, and having their greater depth at the bottom and running out to nothing at their upper ends, slanted lengthwise in the direction of rotation, and having their cutting-edges slanting rearwardly and being substantially triangular in cross-section, substantially as shown and described.

447,597. WIRE CHAIN-LINK. ORRIN D. WRIGHT, Kenwood, N. Y., assignor to the Oneida Community, Limited, same place. Filed Nov. 3, 1890. Serial No. 370,142. (No model.)



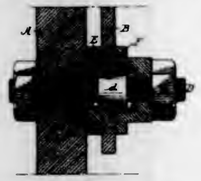
Claim.—The improved chain-link composed of a single piece of wire having its central or main portion straight and its end portions bent back toward each other and parallel with the main portion, one of said end portions being terminated with the head *h*, standing at right angles toward the main portions, and the other end portion terminating in an eye *e*, standing in a plane at right angles to said end portion and embracing the first-named end portion immediately back of the head *h*, substantially as described and shown.

447,598. BEARING. GEORGE H. ZIEGLER, Philadelphia, Pa., assignor to the MacKellar, Smiths & Jordan Company, same place. Filed Dec. 30, 1890. Serial No. 376,237. (No model.)

Claim.—1. The combination of the spindle provided with a tapered portion and screw-threaded portions at each side of the tapered portion, a lever adapted to said tapered portion, and nuts on each side of the lever and adapted to said screw-threaded portion, substantially as described.

2. The combination of the frame, a spindle provided with a tapered portion and with screw-threaded portions on each side of the tapered portion, a lever having an orifice adapted to said tapered por-

tion, nuts adapted to the screw-threaded portion of the spindle and bearing against each side of the lever, said spindle passing through the frame, and a jam-nut on the spindle, said frame being confined between the jam-nut and one of the adjusting-nuts, substantially as described.



447,599. **ATOMIZER.** CHRISTIAN F. BACHLER, Philadelphia, Pa. Filed Nov. 17, 1890. Serial No. 371,696. (No model.)

Brief.—An expansible bottle-stopper surrounds the air-tube of an atomizer and serves to make a tight joint in the neck of any vessel to contain the medicament to be sprayed.



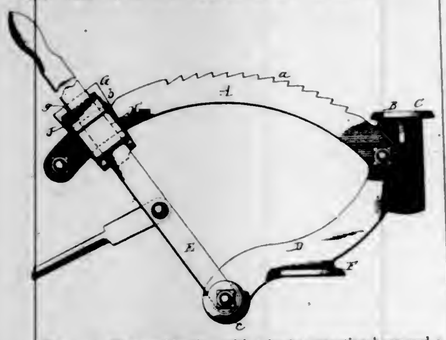
Claim.—1. In combination, the liquid-discharge tube having the upper discharge end, the air-inlet tube surrounding said discharge-tube, the air-chamber carried by the air-tube and surrounding the discharge end of said liquid-tube, and an expansible bottle-stopper to support said atomizer, consisting of an expansible section and rigid sections on and surrounding said air-tube.

2. In an atomizer, the combination of the liquid-tube, the air-inlet tube exteriorly threaded having the rigid exterior collar, the elastic and sliding members of an expansible stopper on said air-tube, and the expanding nut of the stopper on said tube.

3. The atomizer having the lower portion of its liquid-discharge tube telescopic, substantially as described.

4. In an atomizer, the combination of the inner liquid-tube, the air-tube removably on the same and having the threaded upper end and a stopper, the air-chamber having the elongated contracted discharge and the small threaded opening opposite said discharge, and the threaded bottom opening screwed onto the upper end of said air-tube, and the contracted mouth-piece having the small threaded end screwed into said opening opposite the discharge, as set forth.

447,600. **BRAKE LEVER AND LOCK.** JOHN L. BARKER, Racine, Wis. Filed May 19, 1890. Serial No. 352,274. (No model.)



Claim.—1. The combination, with a brake-operating lever and a quadrant, of a pivoted lever extending across said quadrant, a yoke on the quadrant having a tooth to engage notches in the quadrant, and a cam-block in said yoke, substantially as set forth.

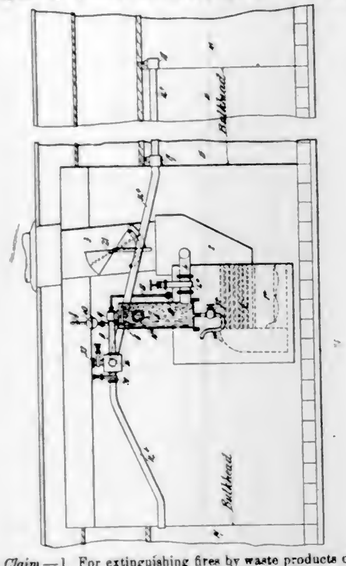
2. The combination, with a notched quadrant, of a yoke thereon having a tooth to engage the notches in the quadrant, a cam-block passing through said yoke, and a pivoted lever passing loosely through the yoke and cam-block, substantially as set forth.

3. The combination, with a notched segment, of a yoke thereon having a beveled top and a beveled box projecting outwardly therefrom, a block having a beveled projection to lie parallel with the beveled top and a beveled portion to lie parallel with the beveled box, and a lever passing through the yoke and cam-block, substantially as set forth.

4. The combination, with a notched segment, of a yoke thereon and having a tooth to engage the notches in the quadrant, a cam-block passing through said yoke, and a pivoted lever passing loosely through the yoke and cam-block, said yoke being provided with a recess in which the lever is adapted to normally rest, substantially as set forth.

5. The combination, with a brake-operating lever and a quadrant, of a pivoted lever extending across said quadrant, a yoke on the quadrant having a tooth to engage notches in the quadrant, a cam-block in said yoke, and a spring to maintain the tooth in engagement with the quadrant, substantially as set forth.

447,601. **APPARATUS FOR EXTINGUISHING FIRES.** HENRY C. CARVER, Manchester, England. Filed Aug. 7, 1888. Serial No. 282,134. (No model.) Patented in England Sept. 5, 1887, No. 12,010; in Germany July 25, 1888, No. 46,637; in France July 27, 1888, No. 192,065; in Belgium July 27, 1888, No. 82,707, and in Italy Sept. 30, 1888. XLVII, 186.



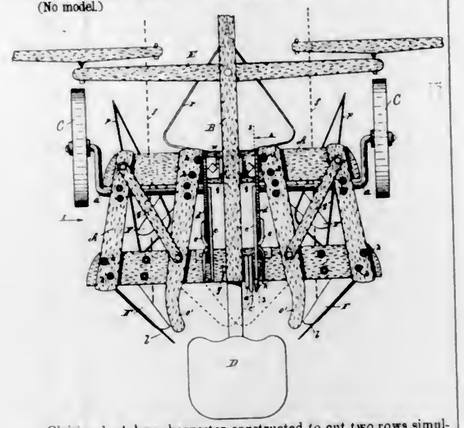
Claim.—1. For extinguishing fires by waste products of combustion, the combination, with the smoke-box of a steam-boiler furnace, of a branch outlet-pipe therefrom, a valve for controlling the passage through said pipe, an air-conduit, a valve for controlling the passage of air therethrough, and a steam-jet blower adapted to withdraw products of combustion from said smoke-box through said branch outlet-pipe and to draw air through said air-conduit, substantially as herein described, for the purposes specified.

2. For extinguishing fire by waste products of combustion, the combination, with the smoke-box of a steam-boiler furnace, and a steam-boiler heated by said furnace, of a branch outlet-pipe 4 therefrom, a washing-chamber 5, a valve adapted to place said chamber in communication with said smoke-box, an air-inlet pipe by which said chamber may be placed in communication with the atmosphere, a water-distributer located within the upper part of said chamber, a steam-jet blower in communication with the upper part of said chamber, and a pipe 12, with valve for supplying steam from said boiler to said steam-jet blower.

3. For extinguishing fire by waste products of combustion, the combination, with the smoke-box of a steam-boiler furnace and a steam-boiler heated by said furnace, of a branch outlet-pipe 4 from said smoke-box, a valve for controlling the passage therethrough, a washing-chamber 5, an air-inlet by which said chamber may be placed in communication with the atmosphere, a steam-jet blower 11 in communication with the upper part of said chamber, a receiver 14, in communication with said steam-jet blower and provided with one or more outlets, and a pipe or pipes in communication with said receiver, substantially as herein described, and for the purposes specified.

4. For extinguishing fire by the waste products of combustion, the combination, with the smoke-box of a steam-boiler furnace, of a branch outlet-pipe therefrom, a blower adapted to withdraw waste products from said smoke-box and force the same to the place where they are to be utilized, two washing-chambers through which said waste products are caused to pass by the action of said blower, a valve for controlling the communication between the first of said washing-chambers and said smoke-box, water-distributers located within said washing-chambers, and trapped outlets for withdrawing water from said washing-chambers, said blower being arranged to draw the products through the first washing-chamber and discharge them into the second washing-chamber, substantially as herein described, for the purpose specified.

447,602. **BEAN-HARVESTER AND WEED-CUTTER.** WILLIAM CARVER, Scottsville, N. Y. Filed Sept. 25, 1890. Serial No. 366,051. (No model.)



Claim.—1. A bean-harvester constructed to cut two rows simultaneously, having a rigid trapezoidal frame, in combination with four separate and independent cutting-blades, two secured at the rear of the frame and two at the front of the frame, the rear blades having their cutting-edges turned toward each other and the forward blades having their edges turned away from each other, one rear and one forward blade on the same side of the frame constituting a pair to coact in cutting a row of beans, each of the blades being independently adjustable on the frame, substantially as shown and described.

2. A bean-harvester having a frame with cutting-blades secured thereto to cut two rows simultaneously, in combination with dividers for the beans, one being between the two rows and one on the outside of each of said rows, the two outside dividers extending back of the central divider and each having a laterally-expanded part in rear of said central divider, substantially as shown, and for the purpose set forth.

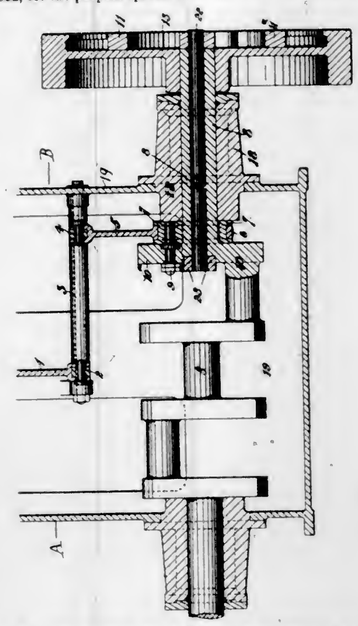
3. A harvester for beans, having a frame with cutting-blades secured thereto to cut two rows of beans at once, in combination with dividers for the beans, one on either side of each of said rows, secured to the frame so as to have the lines of the adjacent dividing-faces crossing the respective rows of beans in advance of the cutting-blades, substantially as shown and described.

4. A bean-harvester for cutting two rows of beans simultaneously, having a frame provided with two pairs of cutting-blades, one pair at the right and the other at the left of the machine, the two blades of each pair co-operating to cut a row of beans, in combination with a draft-tongue for the machine, held adjustably at two places on the machine, substantially as and for the purpose specified.

447,603. **CUT-OFF GEAR FOR ENGINES.** NOEL CHANDLER, Hednesford, England. Filed Sept. 5, 1890. Serial No. 364,083. (No model.)

Claim.—1. In a cut-off gear for engines, the combination of a shaft, a shifting or cut-off eccentric driven by said shaft and located at the inner end of one of the shaft-bearings, a spindle that extends through an axial hole or passage in said shaft and is capable of being partly rotated from the outer end of the said bearing, and link-work connecting the said spindle to the eccentric, so that the position of the eccentric can be varied by partial rotation of the spindle, substantially as herein described, for the purpose specified.

2. In an automatic cut-off gear for fluid-pressure engines, the combination of a shaft, a shifting or cut-off eccentric driven by said shaft and located at the inner end of one of the shaft-bearings, a spindle extending through an axial hole or passage in said shaft, link-work connection between the eccentric and spindle, and a centrifugal governor arranged on said shaft at the outer side of said bearing and adapted to partly rotate said spindle automatically, substantially as herein described, for the purpose specified.



3. In an automatic cut-off gear, the combination of a crank-shaft, a bearing for same, an eccentric having an elongated eye for the passage of said shaft, journaled on a pin driven by said shaft and located at the inner end of said bearing, connections from said eccentric to a cut-off or distributing valve, a spindle that extends through an axial hole or passage in said crank-shaft, levers fixed to the inner and outer ends of said spindle, links connecting the inner lever to said eccentric, and a centrifugal governor arranged on said crank-shaft outside of said bearing and connected to the lever at the outer end of said spindle, substantially as described.

4. In a fluid-pressure engine, the combination of a crank-shaft 8, with axial hole or passage therethrough, a bearing 18 for same, a crank-web with extension 10ª, an eccentric 7, having an elongated eye for the passage of said shaft, and arms or lugs 25 25ª in one with or directly connected to said eccentric, a pin 9, fixed to said extension 10ª of the crank-web and whereon said eccentric is journaled, so that it is located between the crank 10 and the before-mentioned bearing 18 at the inner end of the latter, a fly-wheel or plate 13, fixed to said crank-shaft outside of said bearing, weights 11 11ª, pivotally mounted on said fly-wheel or plate, springs 15 15ª, connecting said weights to said fly-wheel or plate, links 20 20ª, connecting said weights to lever-arms or projections 21 21ª, fixed to a spindle 22, that passes through the before-mentioned hole or passage in said crank-shaft, other lever-arms or projections 23 23ª at the inner end of said spindle, and links 24 24ª, connecting same to the arms or lugs 25 25ª of the before-mentioned eccentric, all substantially as herein described, for the purpose specified.

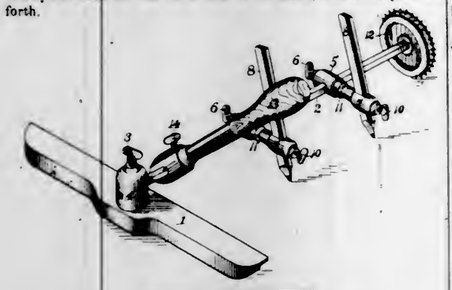
447,604. **GAGE FOR CARPENTRY.** MATTHEW CRIDGE, Ross, Allegheny County, Pa. Filed Oct. 16, 1890. Serial No. 368,336. (No model.)

Claim.—1. A gage having, in combination, a fence, a beam adjustably attached thereto, and one or more yielding holders for the pencil or marker adjustably attached to the beam, substantially as set forth.

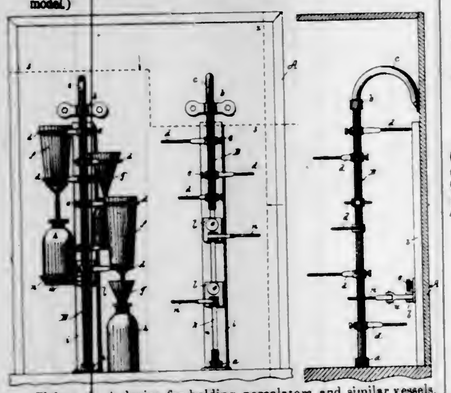
2. A gage having, in combination, a fence, a beam adjustably attached thereto, and a disk provided with spurs mounted on the beam with its axis at an angle less than a right angle to the guiding-edge of the fence, substantially as set forth.

3. A gage having, in combination, a fence, a beam adjustably attached to the fence, one or more blocks adjustably mounted on the beam, and one or more blocks provided with means for holding pencils or markers and having a yielding connection to the adjustable blocks on the beam, substantially as set forth.

4. A gage having, in combination, a fence, a beam adjustably attached to the fence at an angle less than a right angle to the guide-edge thereof, one or more yielding holders for the pencil or marker adjustably mounted on the beam, and a disk provided with spurs loosely mounted on the outer end of the beam, substantially as set forth.



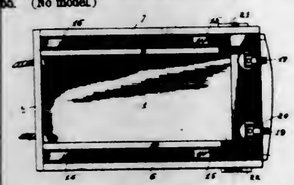
447,605. VESSEL-HOLDER FOR DRUGGISTS' USE. JAY C. D. CURTIS, Rochester, N. Y. Filed Nov. 3, 1890. Serial No. 370,118. (No model.)



Claim.—1. A device for holding percolators and similar vessels, consisting of a standard B, provided with shiftable holding-rings, in combination with a rigid grooved bar parallel with said standard, shiftable clamping-heads held in the groove of said bar, holding-rings, and jointed ring-holding arms held by said clamping-heads, substantially as shown, and for the purpose specified.

2. A device for holding percolators and other vessels, having a rigid grooved standard, a sliding head held by said standard, formed with a part *p* within the groove and a separate part *s* without the groove, held to the part *p* by a clamping-screw, and an arm *t*, pivoted to said sliding head to swing in a horizontal plane, in combination with a holding-ring *n*, pivoted to said arm to turn in a horizontal plane, substantially as shown and described.

447,606. BABY-CARRIAGE. WILLIAM GARDNER, New York, N. Y., assignor to Joanna Gardner, same place. Filed Nov. 17, 1890. Serial No. 371,755. (No model.)

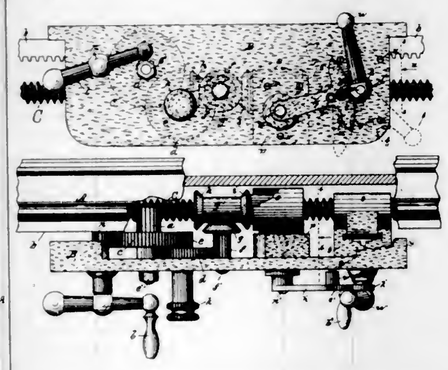


Claim.—1. A low-down baby-carriage consisting of the frame having the front and rear carrying-wheels suitably journaled therein, the body secured directly to the frame, a handle, and the caster-wheels 18 19, supported directly on the frame and arranged between and in rear of the rear carrying-wheels, said caster-wheels being elevated slightly above the carrying-wheels and turning freely on vertical pivots, whereby the caster-wheels serve as pivots or supports when the carriage is tilted and lifted off the carrying-wheels to enable the carriage to be turned within a narrow space, substantially as shown and described.

2. A low-down baby-carriage consisting of a frame having the parallel inner and outer side bars, the carrying-wheels arranged between the inner and outer bars of the frame and having their axles journaled thereon, the body fixed directly to the frame, and the pair of swiveled caster-wheels 18 19, supported directly on the frame with their vertical pivots free to turn in suitable sockets, said pair of caster-wheels being arranged between the rear carrying-wheels and in rear of the same, substantially as and for the purpose described.

3. A low-down baby-carriage consisting of the body, the frame having the side pieces 6 7, which project laterally beyond the vertical sides of the body to form horizontal ledges along the sides of the carriage, the carrying-wheels arranged within the side pieces of the frame, and the handle pivoted to the body and adapted to be folded over the same to rest on the horizontal ledges at the sides of the carriage, substantially as shown and described.

447,607. SAFETY ATTACHMENT FOR LATHES. WILLIAM GLEASON, Rochester, N. Y. Filed Sept. 1, 1890. Serial No. 363,690. (No model.)



Claim.—1. In combination with the feed and the lead mechanisms of a lathe, an alternately-locking mechanism connecting said feed and lead mechanisms, adapted to prevent either of said feed or lead mechanisms being brought into action while the other is acting, substantially as described.

2. The feed mechanism and the lead mechanism of a lathe, in combination with a reciprocally-interlocking device or mechanism common to both said feed and lead mechanisms, whereby when either of said feed or lead mechanisms is held in position to set the other one is locked out, as and for the purpose specified.

3. In combination with the screw of a lathe, a sleeve on the screw, and a shear-nut for said screw, an arm to operate the sleeve and a handle to operate the shear-nut, said arm and handle engaging each other, whereby the arm serves to control the shear-nut and the handle serves to control the sleeve, substantially as described.

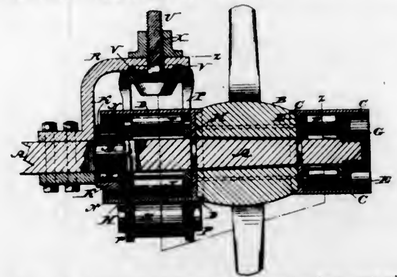
4. In combination with the feed and the lead mechanisms of a lathe, an alternately-locking mechanism connecting said feed and lead mechanisms, adapted to prevent either of said feed or lead mechanisms being brought into action while the other is acting, but permitting either to be brought into operation at pleasure, as set forth.

5. The feed mechanism and the lead mechanism of a lathe, in combination with a recessed arm for operating the feed mechanism and a disk connected with the lead mechanism in position to enter the recess in said arm to prevent the latter being turned, as and for the purpose specified.

6. In combination with the feed mechanism and the lead mechanism of a lathe, a recessed disk connected with the lead mechanism and an arm for operating the feed mechanism to occupy the recess in said disk to prevent the lead mechanism being moved, as and for the purpose specified.

7. In combination with the feed and lead mechanisms of a lathe, an arm for operating the feed mechanism and a handle for operating the lead mechanism, said arm and handle engaging each other, whereby either one locks the other, said arm having a detent to hold it in position, substantially as shown and described.

447,608. AXLE-BEARING. SAMUEL B. GOFF, Camden, N. J. Filed Dec. 16, 1890. Serial No. 374,906. (No model.)



Claim.—1. A hub-band having anti-frictional rollers contacting with the inner periphery thereof and an axle supporting the bearings of said rollers, said bearings being stationary on the axle, substantially as described.

2. A hub with end bands, an axle with bearings in said bands, and anti-frictional rollers movable with said axle and in contact with the bands, said parts being combined substantially as described.

3. The combination of a hub having a band secured to one end, an axle having an end within said hub and band, spiders within said band, secured to said axle, and carrying anti-frictional rollers contacting with said band, substantially as described.

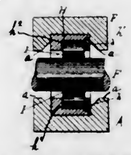
4. The combination of a hub having a band on one end, a head carrying anti-frictional rollers on both its inner and outer surfaces adapted to bear, respectively, against an inserted axle and the band, and other anti-frictional rollers in said band and bearing against the same, substantially as described.

5. The combination of a hub having a band on one end, an axle with an end in said hub and band, spiders secured to the axle within the band and carrying anti-frictional rollers, and a head in said band carrying sets of rollers on its opposite faces, one set of said rollers being in contact with the band and the other set being in contact with the axle, substantially as described.

6. An axle with an arm secured thereto, a hub with a band on one of its ends bearing on said axle, and a box secured to said arm and having anti-frictional rollers in contact with said band, said parts being combined substantially as described.

7. A hub with a band thereon and an axle with an arm supporting an anti-frictional roller adapted to bear against said band, said parts being combined substantially as described.

447,609. CLOTHES-WRINGER. LOUIS T. GORENFLO, Erie, Pa., assignor to Charles F. Adams, same place. Filed Dec. 9, 1890. Serial No. 374,017. (No model.)



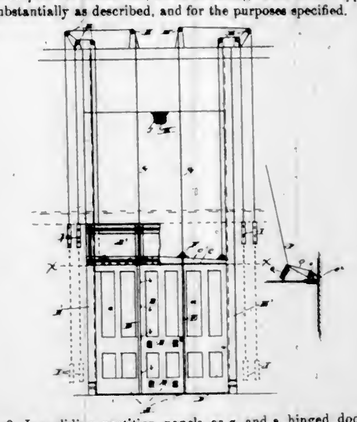
Claim.—1. In a clothes-wringing machine, the combination, with the roll-shafts F, of the surrounding bearing-boxes, the rollers I within said boxes around said shafts, the keeper-rings *h*, retaining said rollers within said boxes, and the forked posts A, having inwardly-extending lips *a*, which flank the sides of said boxes and form guides therefor.

2. In a clothes-wringing machine, the combination, with the shafts F and the posts A, having vertical slots with lips *a a*, of the bearing-boxes having the ledged central opening, the rollers I within said ledged opening, and the keeper-rings *h*, seated on the ledges *h'* and retaining the rollers I within said boxes.

447,610. SLIDING PARTITION. JAMES HAYES, Cleveland, Ohio. Filed Apr. 18, 1890. Serial No. 348,453. (No model.)

Claim.—1. The combination, with a vertically-sliding partition having panels, as *a*, a hinged door or doors, as B, a strip C, to which the upper ends of said panels are rigidly secured, and a thin flat strip D, to which the lower ends of said panels are secured, said strips C and D stiffening the partition and said strip D serving also as an unnoticed threshold for the door or doors, of guiding-posts receiving the edges of said partition, pulleys, cords secured at one end to said partition, and counter-weights secured to the opposite ends of said cords.

2. In a sliding partition, panels, a hinged door between the same, connecting-strips at the top and bottom of said partition, vertically grooved posts at either side, and a stiffening-beam on the upper end, all substantially as described, and for the purposes specified.



3. In a sliding partition, panels, as *a*, and a hinged door, as B, between the same, in combination with the bearing-strips E and connecting-strips C and D, all arranged substantially as described, and for the purposes specified.

4. In a sliding partition, panels, hinged doors between said panels, metallic strips on the upper and lower edges of said partition, vertical bearing-strips E on said panels, vertical guiding-grooves on either side of the partition, and an inclosure between divided studding in the wall above the sliding partition, in combination with bearing-strips E^2, arranged opposite said bearing-strips E, all as described, and for the purposes specified.

5. The combination, with a partition and guide-posts having vertical grooves receiving the sides of said partition, of vertical bearing-strips E in said partition, additional bearing-strips E^2, arranged opposite said bearing-strips, and cords secured at one end to the top of said partition, pulleys over which said cords pass, and counter-weights on the other end of said cords.

6. In a sliding partition, a lower portion of separate panels rabbeted together, an upper integral portion, and a metallic bar, as L, received by grooves in the upper edge of the panels, substantially as described.

7. In a sliding partition, a lower portion of separate panels rabbeted together, a hinged door between the same, an upper integral portion, as A^3, a metallic bar, as L, attached to the lower edge of the portion A^3 and inserted in grooves in the upper edge of the panels, with strengthening-bars at the upper and lower edges of the partition, substantially as described, and strengthening-bars at the side connecting the upper portion of the partition and the other doors.

8. The combination, with a vertically-sliding partition, cords attached to its upper ends, pulleys over which said cords pass, and counter-weights on the opposite ends of said cords, of a lever pivoted at one side of said partition and having its outer end formed as a dog and its inner end connected with one of said cords, and a spring between said partition and the under side of the inner end of said lever, substantially as described, whereby said dog will automatically stop said partition in the event of a breakage of the cords, substantially as described.

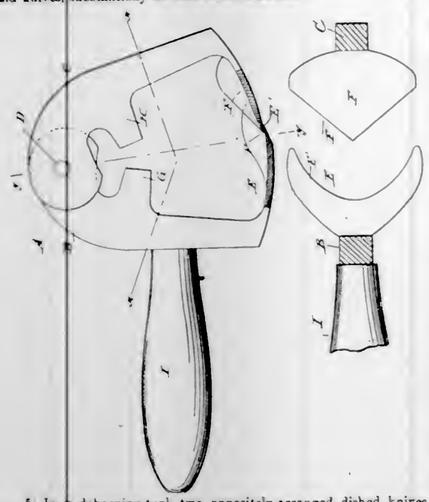
447,611. TOOL FOR DEHORNING CALVES. CHARLES T. INGRAHAM, Dwight, assignor of one-half to Samuel W. Gammon, Chicago, Ill. Filed June 19, 1890. Serial No. 355,962. (No model.)

Claim.—1. In a dehorning-tool, the combination, with two knife-arms pivoted together at the top, of knives secured to the free ends of the said arms and having V-shaped cutting-edges, the V-shaped cutting-edges being reversely formed, substantially as shown and described.

2. In a dehorning-tool, the combination, with two knife-arms pivoted together at the top, of knives secured to the free ends of the said arms and having V-shaped cutting-edges, and stops formed on the said knife-arms to limit the closing movement of the said knives, substantially as shown and described.

3. In a dehorning-tool, the combination, with two knife-arms pivoted together at the top, of knives secured to the free ends of the said arms and having V-shaped cutting-edges, and a handle secured on one of the knife-arms and standing at or about at right angles to the same, substantially as shown and described.

4. In a dehorning-tool, the combination, with two knife-arms pivoted together at the top, of knives secured to the free ends of the said arms and having V-shaped cutting-edges, a handle secured on one of the knife-arms and standing at or about at right angles to the same, and stops formed on the inner edges of the said knife-arms and arranged opposite each other, so as to limit the closing movement of the said knives, substantially as shown and described.



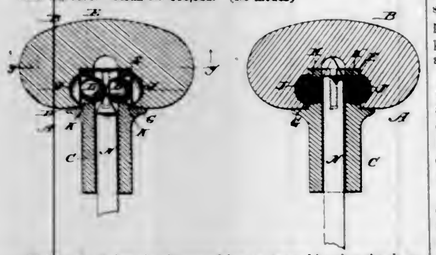
5. In a dehorning-tool, two oppositely-arranged dished knives having V-shaped cutting-edges, the V-shaped cutting-edges being reversely formed, substantially as shown and described.

447,612. PAVING-BRICK. ATHELSTAN O. JONES, Zanesville, Ohio. Filed June 26, 1890. Serial No. 356,910. (No model.)



Claim.—A paving-brick having rounded upper edges with diagonal grooves *b* upon one side and vertical grooves *b'* upon the other, the said grooves running out at the top into the rounded portion, but stopping short of the bottom edge, substantially as and for the purpose described.

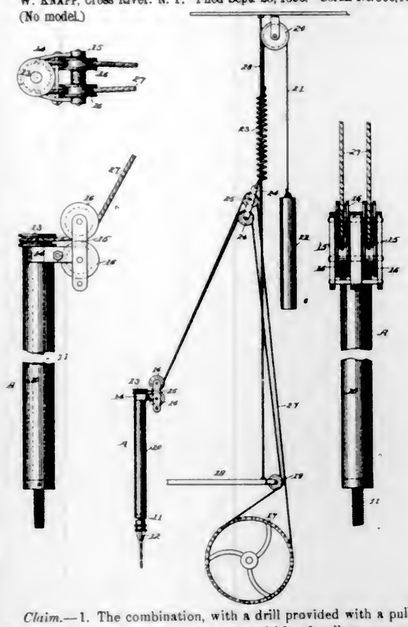
447,613. DOOR-KNOB. HENRY F. KEIL, New York, N. Y. Filed June 24, 1890. Serial No. 356,522. (No model.)



Claim.—1. A door-knob comprising a recessed head, a shank engaging the said head, and soft-metal bails pressed into and filling recesses in the said head and openings in the said shank, substantially as shown and described.

2. In a door-knob, the combination, with a shank having a central opening and one or more side openings the walls of which are tapering, of a ball held in each side opening, a head having recesses adapted to receive the said shank and to register with the side openings in the said shank to permit of pressing the ball held in the side opening into the corresponding recess in the head, and lugs held on the said shank and adapted to engage grooves in the said head to prevent the shank from turning, substantially as shown and described.

447,614. DRIVING MECHANISM FOR HAND-DRILLS. JONAH W. KNAPP, Cross River, N. Y. Filed Sept. 25, 1890. Serial No. 366,106. (No model.)



Claim.—1. The combination, with a drill provided with a pulley horizontally attached to its main stem or shaft, of pulleys supported in pairs at one side of the horizontal pulley, substantially as and for the purpose specified.

2. The combination, with a drill provided with a pulley horizontally secured to its driving shaft or stem, of a bracket connected with the drill, pulleys arranged in pairs and journaled in the said brackets, located opposite one side of the horizontal pulley, and a driving-belt passed between the pairs of pulleys and over the horizontal pulley, substantially as and for the purpose specified.

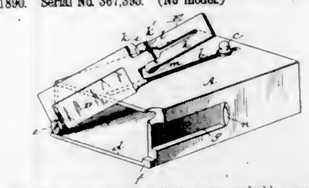
3. A drill provided with a horizontal pulley attached to its driving shaft or stem, and vertical pulleys arranged in pairs located at one side of the horizontal pulley, the said horizontal pulley being in alignment with the space intervening the peripheral surface of the pairs of pulleys, substantially as shown and described.

4. In a driving mechanism, the combination, with a driving-pulley, an upper pulley, and a cord passed over the upper pulley having a spring attached to one end and a weight secured to the other, of guide-pulleys secured to the lower end of the spring, and a driving-belt passed over the driving-pulley and guide-pulley, substantially as shown and described.

5. In a driving mechanism, the combination, with a driving-pulley, a pulley located above the same, a cord passed over the upper pulley and provided at one end with an attached spring and at the other end with an attached weight, of guide-pulleys connected with the lower end of the spring, a guide-rod passed through the spring, and a driving-belt engaging with the driving-pulley and guide-pulleys, substantially as and for the purpose specified.

6. The combination, with a drill having a horizontal pulley secured to its driving shaft or stem and vertical pulleys arranged in pairs at one side of the horizontal pulley, of a driving-pulley, a supension-pulley, a rope or cord passed over the suspension-pulley, a spring secured to one end of the rope or cord and a weight attached to the other end, guide-pulleys secured to the lower end of the spring, and a driving-belt engaging with the driving-pulley, the guide-pulleys, and the horizontal pulley of the drill, the said belt passing between and engaging with the vertical pairs of pulleys, as and for the purpose specified.

447,615. TOBACCO-BOX. JOSEPH LEWIS, Winsted, Conn. Filed Oct. 8, 1890. Serial No. 367,395. (No model.)

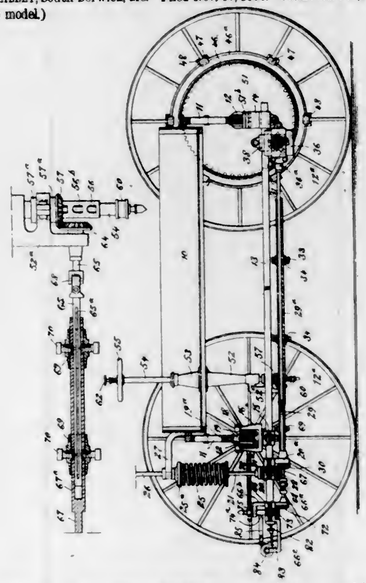


Claim.—1. The combination, with the open-ended box part having a recess in its side, of a pivoted knife adapted to work across or over the open end of the box part and having jointed to it at its free end a handle adapted to swing into line with the knife or to shut down within the recess in the side of the box part, essentially as and for the purposes herein described.

2. In a box of the character herein specified, the combination, with the open-ended box part and its pivoted knife, of a longitudinally-slotted spring-handle at the free end of the knife adapted to open and fold, as described, and a joint connecting the knife and handle provided with a locking projection, and grooves adapted to hold the handle extended or folded, substantially as herein set forth.

3. A tobacco-box consisting of an open-ended box part, a follower within said box part capable of manipulation from the exterior of the latter, a pivoted knife adapted to work across or over the open end of the box part, and a folding handle jointed to the free end of said knife and adjustable both into line with the knife and into line with the side of the box part, essentially as and for the purposes specified.

447,616. PROPELLING MECHANISM FOR VEHICLES. MARK A. LIBBEY, South Berwick, Me. Filed Nov. 17, 1890. Serial No. 371,640. (No model.)



Claim.—1. A propelling mechanism for vehicles, comprising a revoluble spiral shaft mounted vertically on a vehicle, a vertical shaft slidably connected with the spiral shaft, but adapted to turn therewith, an adjustable connecting-shaft geared to the vertical shaft and extending to the rear portion of the vehicle, adjustable transverse shafts geared to the connecting-shaft and having their outer ends provided with pinions, flanges attached to the rear wheels of the vehicle and projecting inwardly therefrom, and gears fixed to the flanges so as to mesh with the pinions, substantially as shown and described.

2. The combination, with the vehicle having its front and rear axles adjustably connected, of a vertical revoluble spiral shaft mounted on the front end of the vehicle, a vertical shaft slidably connected with the spiral shaft, a connecting-shaft geared to the vertical shaft and extending to the rear portion of the vehicle, adjustable transverse shafts geared to the connecting-shaft and extending to a point adjacent to the rear wheels, said shafts having pinions upon their outer ends, and flanges fastened to the rear wheels and provided with gears to engage the pinions, substantially as shown and described.

3. The combination, with the flanges secured to the rear wheels, as shown, of a dust-band covering the outer sides of the flanges and clamped to the wheels, and a dust-band secured to the rear axles so as to cover the inner sides of the flanges, substantially as shown and described.

4. In a propelling mechanism for vehicles, the combination, with the vehicle and with the connecting-shaft extending horizontally beneath the vehicle-body and geared to driving mechanism on the rear wheels of the vehicle, of a revoluble spiral shaft mounted vertically on the front end of the vehicle, a vertical shaft slidably connected with the spiral shaft and geared at its lower end to the connecting-shaft, and a ball-bearing for the vertical shaft, substantially as shown and described.

5. In a propelling mechanism for vehicles, the combination, with the horizontal connecting-shaft having its rear end connected by a gear mechanism with the rear wheels of the vehicle, of a spiral revoluble shaft mounted on the front portion of the vehicle, a central tube fastened to the spiral shaft, and a vertical shaft having its upper end adapted to slide in the tube and turn therewith and having its lower end geared to the connecting-shaft, substantially as shown and described.

6. In a propelling mechanism for vehicles, the combination, with a horizontal connecting-shaft suspended beneath the vehicle-body and connected by a gear mechanism with rear wheels, of the spiral revoluble shaft mounted on the front portion of the vehicle, a central tube having a flanged lower end fixed to the shaft, a vertical shaft adapted to slide in the tube and turn therewith, said shaft having its lower end geared to the connecting-shaft, and a ball-bearing for the vertical shaft, substantially as shown and described.

7. In a vehicle-propelling mechanism, the combination, with the reach-rods clamped to the rear axle, as shown, and the forward axle, of a clip or frame connecting the forward ends of the reach-rods, a U-shaped frame pivoted in the clip so as to extend over and embrace the axle, and a similar frame having the upper ends of its arms pivoted to the U-shaped frame and having its lower portion clamped to the axle, substantially as shown and described.

8. The combination, with the forward axle and the reach-rods having their rear ends connected with the rear axle, of a clip connecting the reach-rods, a U-shaped frame pivoted in the clip and with its arms embracing the forward axle, a similar frame having its arms pivoted to the upper ends of the arms of the U-shaped frame, and a clip for fastening the smaller frame to the axle, said clip having at its upper end a king-bolt, substantially as shown and described.

9. The combination, with a horizontal connecting-shaft having suitable driving mechanism and having its rear end of the shaft, the adjustable transverse shafts having their inner ends mounted in the casing and geared to the connecting-shaft and their outer ends provided with pinions, and flanges secured to the vehicle-wheels and provided with gears to mesh with the pinions, substantially as shown and described.

10. The combination, with the connecting-shaft having suitable driving mechanism, as shown, of the casing adapted to support the rear end of the connecting-shaft and having laterally-extending concaved arms, the hollow shaft adjustably secured to the concaved arms and extending to points adjacent to the rear wheels, the shafts mounted within the hollow shaft, having their outer ends provided with pinions and their inner ends connected by a gear mechanism with the horizontal connecting-shaft, the flanges secured to the rear wheels, and gears secured to the flanges and adapted to mesh with the pinions, substantially as shown and described.

11. The combination, with the horizontal connecting-shaft, the transverse hollow shafts, and the central casing adapted to support the rear end of the connecting-shaft and having laterally-extending concaved arms adjustably secured to the hollow shafts, of the shafts extending longitudinally through the hollow shaft and provided at their outer ends with gears connected with gears attached to the rear wheels and having their inner ends provided with square-sided hollow portions, and shafts shaped to fit the hollow portions of the pinion-shafts and having their inner ends projecting through the casing and geared to the horizontal connecting-shaft, substantially as shown and described.

12. In a vehicle-propelling mechanism, the combination, with the flanges having means for attachment to the rear wheels and having indentations therein, of the gears secured to the flanges and provided with cut-away portions to fit the indentations, substantially as shown and described.

13. The combination, with the laterally-extending flanges having means for attachment to the rear wheels, said flanges having on their inner sides an annular rib and indentations, as described, of the gears

adapted to abut with the flanged ribs and having cut-away portions to fit the indentations of the flanges, substantially as shown and described.

14. The combination, with the reach-rods, the forward axle, and the sprocket-wheel mechanism for turning the axle, of the spring-pressed rods mounted in the reach-rods, and a strap-connection between the spring-pressed rods and the sprocket-wheel shaft, substantially as shown and described.

15. The combination, with the reach-rods, the forward axle, and the sprocket-wheel mechanism for turning the axle, of the spring-pressed rods mounted in the forward ends of the reach-rods and connected by a cross-strip, a pulley mounted in front of the reach-rods, and straps connected with the cross-strip and extending over the pulley to connect with the sprocket-wheel shaft, substantially as shown and described

16. The combination, with the spring-pressed tension-strap, of the sprocket-wheel shaft having a vertical slot to receive the strap, a pin in its rear portion to which the strap is attached, and having the front sides of the slot rounded outwardly, substantially as shown and described.

17. The combination, with the vertical sprocket-wheel shaft connected with the forward axle, as shown, of the horizontal shaft geared to the vertical shaft and having means for longitudinal adjustment, and gear mechanism for turning the horizontal shaft from the vehicle-body, substantially as shown and described.

18. The combination, with the sprocket-wheel shaft connected with the forward axle, as described, of a horizontal shaft geared to the sprocket-wheel shaft, said horizontal shaft having means for longitudinal adjustment and having universal joints therein, and a gear mechanism for turning the horizontal shaft from the vehicle-body, substantially as shown and described.

19. The combination, with the vertical sprocket-wheel shaft and the horizontal shaft geared thereto and provided at its rear end with a gear-wheel, of a depending tube fixed to the wagon-body and terminating in a bracket, a hollow gear mounted in a bracket so as to mesh with the gear-wheel on the horizontal shaft, a sleeve keyed to the gear-wheel so as to slide through the same and provided with a series of diametrically-opposite slots, a hollow shaft extending vertically through the sleeve and through the floor of the vehicle-body, said shaft having its upper end provided with a wheel, a pair of springs fixed in the lower portion of the hollow shaft and provided with oppositely-extending shoulders to project through slots in the shaft and into the slots in the sleeve, and a spring-pressed rod mounted in the shaft and provided at its lower end with a slotted head to engage the shoulders of the springs, substantially as shown and described.

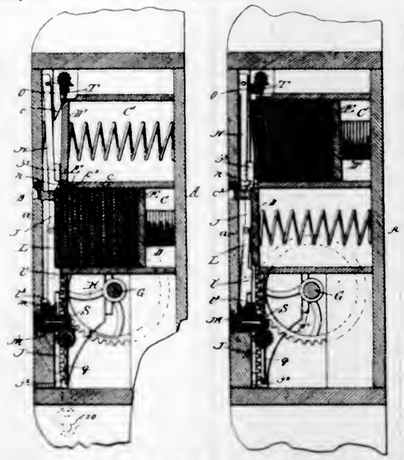
20. The combination, with the hollow gear-wheel connecting by a suitable gear mechaniam with the sprocket-shaft which turns the forward axle, of a sleeve keyed to the gear-wheel so as to slide therein and provided with a series of opposite slots, a hollow shaft extending vertically through the sleeve and provided with slots adapted to align with the slots of the sleeve, springs fixed in the lower end of the hollow shaft and provided at their upper ends with shoulders having inclined upper surfaces, said shoulders being adapted to enter the slots of the shaft and sleeve, and a spring-pressed rod mounted in the hollow shaft above the springs, said rod having at its lower end a head with a slot therein to fit the inclined shoulders, substantially as shown and described.

21. The combination, with a hollow shaft and the springs mounted therein, of the plug adapted to enter the end of the shaft between the springs, and the thimble adapted to screw upon the shaft and hold the plug, substantially as shown and described.

447,617. STATION OR STREET INDICATOR. WILLIAM S. MALLARD, Darien, Ga. Filed Mar. 28, 1890. Serial No. 345,719. (No model.)

Claim.—1. A street or station indicator consisting of a casing formed with a sight-opening and two pockets arranged one above the other, one to the rear of said sight-opening, a series of automatical outwardly-pressed indicator-plates adapted to be held in said pockets, shifting devices arranged within the casing adapted to move each of the indicator-plates out of one of the pockets into the other in one direction of movement and back into the first pocket in the reverse direction of movement, an operating-shaft extended without the casing, and a train of gearing intermediate said shaft and the shifting devices, whereby said devices can at any time be set for reverse movements of the indicator-slides, substantially as and for the purpose described.

2. In a street or railway indicator, the combination, with a casing formed with a sight-opening, pockets arranged one above the other to the rear of the sight-opening, a series of outwardly spring-pressed indicator-plates adapted to be held in said pockets, of shifting devices arranged within the casing, a spring-actuated rock-shaft mounted within said casing and connected with the shifting devices, an operating cord or handle extended without the casing, said shaft and shifting devices adapted to move the slides from the lower to the upper pocket when the said cord is pulled downward by hand and from the upper to the lower compartment by the automatic reverse movement of the shaft, and means for setting the said devices for reverse movement at any point between the first and last indicator-plate, substantially as and for the purpose described.



3. In an indicator device for the purpose described, the combination of the casing provided with a sight-opening, two pockets C C, arranged one above the other and one to the rear of said sight-opening, a series of outwardly spring-pressed indicator-slides held in said pockets, shifting devices held within the casing, arranged to move said slides successively from the lower to the upper pocket on their forward movement, and a hand-operated shaft extended without the casing and connected to the shifting devices, adapted to set said devices at any point intermediate the first and last slides (when on their backward movement) will operate the said slides in a reverse direction, substantially as and for the purpose described.

4. An indicator for the purposes described, comprising a box formed with a sight-opening, pockets C C, arranged therein, one above the other and one to the rear of the sight-opening, a series of outwardly spring-pressed indicator-slides held in said pockets, whereby the outer slide is normally projected beyond said pockets, a rock-shaft journaled in the casing, means for rocking said shaft by hand in one direction of movement, a spring for operating it in reverse direction, rack-bars J J, operated by the rock-shaft formed with arms J' J', the fingers L L, pivoted to said arms J', adapted to engage the indicator-slides and move same from the lower to the upper compartment, and means for holding said slides from reverse movement, substantially as and for the purpose described.

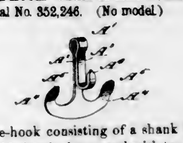
5. The combination of the casing provided with a sight-opening and pockets C C, arranged one to the rear of said opening, indicator-slides held in said pockets, means for pressing said slides outward, the outermost slide normally disposed beyond the outer edge of the pockets of the reciprocating shifting devices held within the casing, said devices consisting of a rock-shaft G, formed with a gear-wheel H, said shaft spring-actuated in one direction of movement, the rack-bars J, connected with said gears H, the arms J' J', formed thereon, provided with enlargements j^3, the finger-bars L, pivoted to said arms J', formed with projections l', the spring-actuated retaining-pawls N for holding the slides from reverse movement, and means for setting said shifting devices for reverse movements, substantially as and for the purpose described.

6. In an indicator substantially as described, the combination, with the pockets C C, the spring-actuated followers therein, and the indicator-slides held thereon, of the reciprocating rack-bars J J, formed with lateral members J' J', provided with lugs j^3, projected normally over the upper pocket, the finger-bars L L, pivoted to the arms J' J', formed with lugs l', projected normally over the lower edge of the lower set of slides, the spring-actuated holding-pawls N, projected normally over the lower edge of the upper pocket and adapted to be automatically pushed out of the path of the movement by the moving indicator-plate, and the rock-shaft connected with the rack-bars adapted to be rocked in one direction by hand and in the opposite direction by the spring K, substantially as and for the purpose described.

7. The combination of the casing, the pockets C C, disposed

therein, a series of independent indicator-slides held in said pockets and adapted to be automatically held against the front wall of said casing, the rack-bars J, the members J', secured thereto, provided with lugs j^3, the pivoted fingers L, formed with lugs l^3 and projecting ends l^2, the spring-pawls N, arranged as shown, the rotatable cams M, formed each with a diagonally-disposed groove in its periphery, adapted to receive the ends l^2 of arms L, and the cams O, formed with inclined faces adapted when turned in one of their positions to project over the upper pocket and depress the upper end of the plates when fed into such pocket, said cams O adapted when turned into their other position to pull the pawls N out of operative position, and means for operating the said cams, substantially as shown and described.

447,618. ROPE-HOOK. JAMES K. MILLER, Emporia, Kans. Filed May 17, 1890. Serial No. 352,246. (No model.)

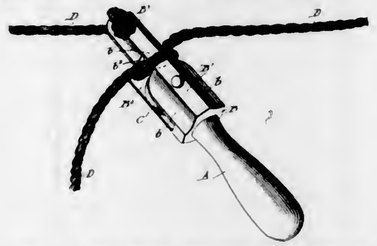


Claim.—1. A rope-hook consisting of a shank having an eye at its upper end and provided at its lower end with two hooks projecting in diametrically-opposite directions, and with a third hook projecting from the shank above and at right angles to the two hooks, substantially as described.

2. A rope-hook consisting of a shank having an eye at its upper end and provided at its lower end with two hooks projecting in diametrically-opposite directions and having oppositely-curved points, and with a third hook above and at right angles to the two hooks, substantially as herein shown and described.

3. A rope-hook consisting of a shank formed of two members of unequal length doubled together to form an eye, the lower end of the shorter member being formed into a hook and the lower end of the longer member into two oppositely-projecting hooks, substantially as described.

447,619. SHOCK-COMPRESSOR. JAMES K. MILLER, Emporia, Kans. Filed Oct. 20, 1890. Serial No. 368,685. (No model.)



Claim.—1. A shock-binder comprising a handle, a central body portion split longitudinally to form two arms, one of which is prolonged and formed into a narrow neck and a terminal head, and a pulley pivoted between the arms, the head being apertured to receive a rope, substantially as described.

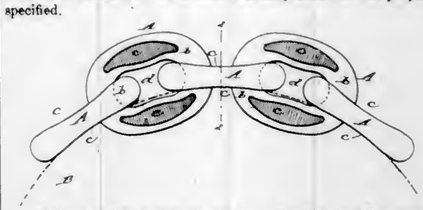
2. A shock-binder comprising a handle, a central body portion split longitudinally to form two arms, one of which is prolonged and formed into a narrow neck and a terminal head, a pulley pivoted between the arms, and a rope attached to the head, substantially as described.

3. A shock-binder comprising a handle, a body portion connected therewith, said body portion being split longitudinally to form opposite arms, one of the arms being prolonged and formed into a narrow neck, a terminal head having a transverse hole therein, a binding-rope attached to the perforated head, and a pulley pivoted between the arms, substantially as described.

4. A shock-binder comprising a handle, a body portion connected therewith, said body being split longitudinally to form opposite arms, one of the arms being rounded and reduced to form a neck, and then enlarged to form a terminal head, and the opposite arm being concaved at the end, forming retaining-shoulders at the outer corners, a pulley pivoted between the two arms, and a binding-rope attached to the enlarged head, substantially as described.

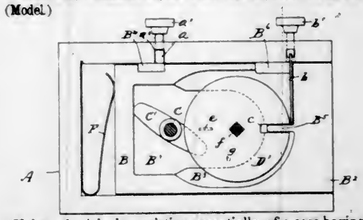
447,620. CHAIN. RICHARD PAXSON, Philadelphia, Pa. Filed Nov. 12, 1890. Serial No. 371,164. (No model.)

Claim.—1. As a new article of manufacture, a chain having links crossing each other, as described, constructed with concave bearing-surfaces on the faces of the links, substantially as and for the purposes specified.



2. An open-link chain having its succeeding links in different planes and crossing one another, constructed with concave bearing-surfaces on opposite faces of the links upon opposite sides of the opening through the links, essentially as shown and described, and for the purposes herein set forth.

447,621. PERMUTATION-LOCK. THOMAS A. PHILLIPS and JAMES J. GREENHOK, Williamstown, Pa. Filed Mar. 22, 1890. Serial No. 344,922. (Model.)



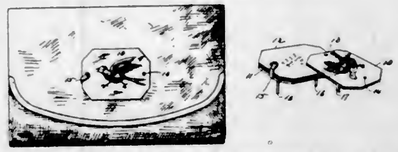
Claim.—1. A lock consisting, essentially, of a case having therein a horizontally-movable frame with a locking-bar formed thereon and with horizontal ribs on the sides thereof, a tumbler fixed to the lock-spindle so as to move in a recess of the frame and actuate the same, two similar disks pivoted to the lock-case on opposite sides of the frame, each of said disks having a radial slot therein to receive a rib of said frame, means for placing the slots of said disks in line with the ribs of the frame, and a stop projecting downwardly through the top of the case and upon each side of the frame, so as to cut off the slots of the disks from the ribs of the frame, substantially as described.

2. The combination, with a lock-case, and with a locking-bar movable horizontally in said case and having a recess in the upper part thereof, of a vertically-movable stop projecting through the case into the recess of the locking-bar, so as to limit the movement of said bar, substantially as described.

3. The combination of the case, the movable frame having longitudinal ribs, the revoluble disks having slots to receive the ribs, and the forked stop mounted in the case to slide between the ribs and the slotted disks, substantially as described.

4. The combination, with the case A and frame B, having tumbler C for actuating the same, and having the recess B^4 therein and the ribs B^5 thereon, of the disks D D', pivoted to the case A, having slots *c* therein, and having a catch e, pin *g*, and pins *d* and *f* to bring the slots in line with the ribs B^5, and the stop *b* for cutting off the disks from the ribs, substantially as described.

447,622. TABLET ORNAMENT. LOUIS B. PRAHAR, Brooklyn, N. Y. Filed June 16, 1890. Serial No. 355,605. (No model.)

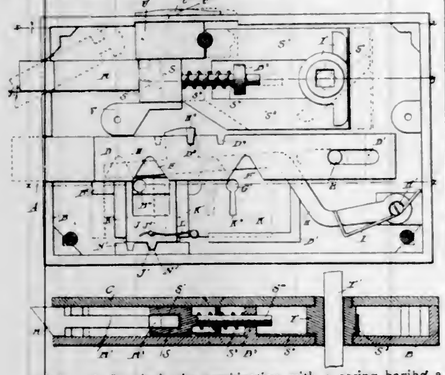


Claim.—1. A tablet ornament for the purpose described, consisting of a back plate and a pivoted front plate, memoranda-leaves pivoted between the two plates, a spring-latch device secured to the back plate, and a gathering and stop lug attached to the pivoted plate, substantially as described, whereby when the plates are brought one over the other they are locked and the leaves compelled to follow the pivoted plate, as set forth.

2. In a tablet ornament, the combination, with a back plate and a pivoted front plate, of memoranda-leaves pivoted between the two plates, a combined spring-latch and stop device attached to one plate

and adapted for engagement with the other, and a fastening device, substantially as described, attached to the back plate, as and for the purpose specified.

447,623. LOCK. GRANDISON T. ROGERS, Jefferson City, Mo. Filed Apr. 26, 1890. Serial No. 349,596. (Model.)



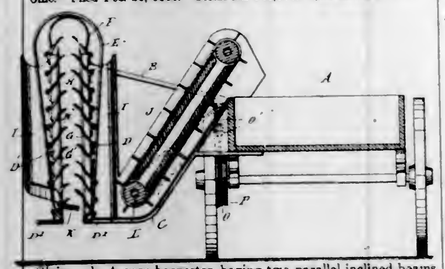
Claim.—1. In a lock, the combination, with a casing having a key-hole and a cover for the said casing having a key-hole, the said key-holes not being in line with each other, of plates fitted to slide in the said casing and on the said cover, each provided with a key-hole adapted to register with its respective key-hole in the said casing or cover, and a bolt fitted to slide in the said casing and provided with notches adapted to be engaged by the bit of the key, which is also adapted to operate the said plates to shift the latter longitudinally, and a spring-pressed locking-plate held to slide vertically in the said plates, substantially as shown and described.

2. In a lock, the combination, with a plate provided with a key-hole and fitted to slide longitudinally, of a second plate fitted to slide vertically in the said first-named plate and provided with an aperture adapted to be engaged by the bit of the key, and means, substantially as described, for locking the said vertically-sliding plate in position, as set forth.

3. In a lock, the combination, with a plate having a key-hole and fitted to slide longitudinally, of guideways arranged vertically on the said plate, an apertured plate fitted to slide vertically on the said first-named plate and adapted to be acted on by the bit of the key, a notched bar, and a spring held on the said first-named plate and pressing on the said second-named plate to engage the latter alternately with notches in the said bar, substantially as shown and described.

4. In a lock, the combination of a latch having a notched shank, a spring-pressed and sliding head having its upper face recessed to receive the notched shank of the latch, and a sliding block above the head and covering the recess thereof, the said block serving as one of the guides for the head and adapted to be operated from the outside to permit the latch to be reversed, substantially as described.

447,624. CORN-HARVESTER. THOMAS C. ST. JOHN, Willoughby, Ohio. Filed Feb. 26, 1890. Serial No. 341,807. (No model.)



Claim.—1. A corn-harvester having two parallel inclined beams adapted to straddle a row of corn and forming a free and unobstructed passage between the same, in combination with a series of fingers pivoted to each of the beams and extending upward and inward toward the middle of the said passage, the said fingers being adapted to swing upward and outward only from their normal position, substantially as shown and described.

2. A corn-harvester having fingers pivotally connected at one end and adapted to swing at their free ends upward and outward only from their normal position over the passage through which pass the corn-stalks, substantially as shown and described.

3. A corn-harvester having two parallel inclined beams adapted to straddle a row of corn and forming a free and unobstructed passage between the same, in combination with a series of fingers pivoted to each of the beams extending upward and inward toward the middle of the said passage and adapted to swing upward and outward only from their normal position, and knife-blades secured to the inside of the said beams and having their cutting-edges extending upward under the said fingers, substantially as described.

4. In a corn-harvester, two parallel inclined beams adapted to straddle the row of corn, chutes held on the outside of the said beams for transporting the cut ears to a common point of delivery, and flexible fingers extending from the lower end of one of the beams to the other to connect the lower ends of the chutes, substantially as shown and described.

5. In a corn-harvester, the combination, with upwardly and rearwardly inclined beams carrying knife-blades, of pivoted fingers held on the said beams and extending upward and toward each other, and chutes connected with the outsides of the said beams to receive the ear of corn after it is cut by the said knives, substantially as shown and described.

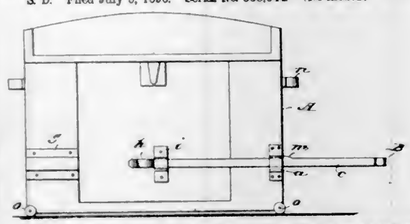
6. In a corn-harvester, the combination, with upwardly and rearwardly inclined beams carrying knife-blades, of pivoted fingers held on the said beams and extending upward and toward each other, chutes connected with the outsides of the said beams to receive the ear of corn after it is cut by the said knives, and an elevator connected with the lower ends of the said chutes to elevate the ears of corn sliding down the chutes, substantially as shown and described.

7. In a corn-harvester, the combination, with a wagon, of beams extending rearward and upward and supported from the said wagon, curved U-shaped bars connecting the said beams with each other, knives held on the inside edges of the said beams, and pivoted fingers held on the said beams and extending upward and toward each other, substantially as shown and described.

8. In a corn-harvester, the combination, with a wagon, of beams extending rearward and upward and supported from the said wagon, curved U-shaped bars connecting the said beams with each other, knives held on the inside edges of the said beams, pivoted fingers held on the said beams and extending upward and toward each other, chutes arranged on the outsides of the said beams and adapted to receive the ear of corn cut by the said knives, and flexible fingers held at the lower end of one of the beams at the end of one of the chutes to connect the lower ends of the chutes to each other, substantially as shown and described.

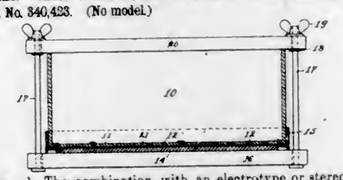
9. In a corn-harvester, the combination, with a wagon, of beams extending rearward and upward and supported from the said wagon, curved U-shaped bars connecting the said beams with each other, knives held on the inside edges of the said beams, pivoted fingers held on the said beams and extending upward and toward each other, chutes arranged on the outside of the said beams and adapted to receive the ear of corn cut by the said knives, flexible fingers held at the lower end of one of the beams at the end of one of the chutes to connect the lower ends of the chutes to each other, and an elevator connected with the lower end of one of the said chutes and adapted to discharge into said wagon, which is also adapted to impart motion to the said elevator, substantially as shown and described.

447,625. TRUNK ATTACHMENT. WILLIAM R. SUTLEY, Mitchell, S. D. Filed July 8, 1890. Serial No. 358,044. (No model.)



Claim.—The combination, with a trunk or like receptacle having four casters, one on each lower corner of the trunk, of a handle-bar provided with parallel limbs which loosely embrace the sides of the trunk, and spring-stops on the ends of these limbs, keeper-plates that the spring-stops may engage, and keeper-loops that retain the handle-bar limbs in sliding adjustment with the trunk-body, substantially as set forth.

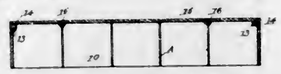
447,626. BACKING FOR ELECTROTYPE OR STEREOTYPE SHELLS. JACOB C. WOLFE, New York, N. Y. Filed Feb. 14, 1890. Serial No. 340,423. (No model.)



Claim.—1. The combination, with an electrotype or stereotype shell, of a backing provided with vents and a space above the vents for the reception of the surplus cementing material passing through said vents, substantially as herein shown and described.

2. The combination, with electrotype or stereotype shells, of a metal box-like backing having vents produced in one face for the reception of the surplus cementing material, by which the shell is secured to the backing, substantially as shown and described.

447,627. BACKING FOR ELECTROTYPE OR STEREOTYPE SHELLS. JACOB C. WOLFE, New York, N. Y. Filed July 5, 1890. Serial No. 357,786. (No model.)

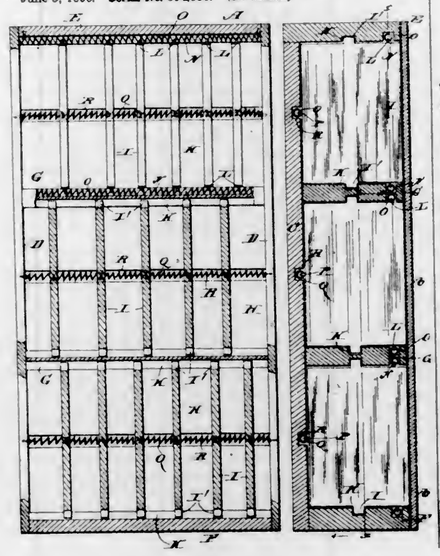


Claim.—1. As an improved article of manufacture, an electrotype or stereotype block or base consisting of a body-shell provided with an interior lattice-work and a top plate detachably attached thereto adapted for the reception of the electrotype or stereotype shell, as and for the purpose specified.

2. A block or base for electrotype or stereotype shells, consisting of a body-shell, removable interior lattice-work supporting-strips, and a removable top plate adapted to receive the electrotype or stereotype shell, substantially as shown and described.

3. A block or base for electrotype or stereotype shells, consisting of a body-shell open at the top and bottom, interior removable lattice-work supporting-strips, a top plate covering the upper portion of the body-shell and lattice-strips and adapted for the reception of the electrotype or stereotype shell, and connection between the top plate and the structure covered thereby, substantially as shown and described.

447,628. BOOK-CASE. ISAAC C. WOOLREY, Geneseo, Kans. Filed June 5, 1890. Serial No. 354,356. (No model.)

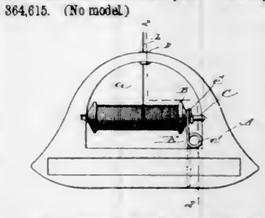


Claim.—1. The combination, with a book-case, of a series of vertically-arranged partitions fitted to slide freely between the shelves thereof and horizontally-arranged springs connected to the several partitions and holding them yieldingly apart, substantially as described.

2. The combination, with a book-case provided with grooved top and bottom and grooved shelves, of vertical partitions fitted to slide freely in the grooves of the top and bottom and the shelves and horizontally-arranged springs connected to the partitions and holding them yieldingly apart, substantially as described.

3. In a book-case, the combination, with the casing or shell having grooved top and bottom, of grooved shelves arranged in the said shell, partitions arranged in the said shell and having tongues fitting into the said grooves, and springs held in grooves in the casing and shelves and connected with the said partitions to permit the latter to slide, substantially as shown and described.

447,629. TENSION-REGULATING DEVICE FOR LOOM-SHUTTLES. SQUIRE BENTLEY and ALFRED BENTLEY, Paterson, N. J., assignors of one-third to Richard Carroll, same place. Filed Sept. 11, 1890. Serial No. 364,615. (No model.)



Claim.—1. The combination, with the shuttle-body, of the spring tension-regulator having one end doubled upon itself and inserted in a perforation of the shuttle-body, having a central coil, as shown, and having a terminal eye inclosing the quill-spindle and pressing against the end of the quill, substantially as described.

2. A tension-regulator for ribbon-shuttles, consisting of a spring-wire having one end doubled upon itself to adapt it for insertion in the shuttle-body, a central coil, and a terminal eye adapted to inclose a quill-spindle, substantially as described.

447,630. CORSET-FASTENING. THOMAS J. BROUGH, Baltimore, Md. Filed July 8, 1890. Serial No. 358,103. (No model.)



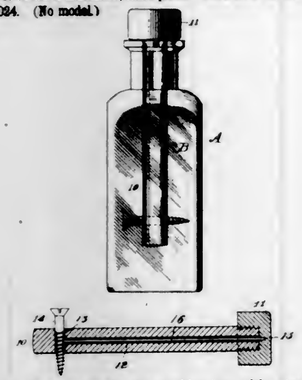
Claim.—1. In a corset-fastening, substantially as herein described, the combination of the supporting-busk, the lock having a handle-bar and a hook, and the cap-plate provided with an opening through which the said hook projects and in which it journals, the said cap-plate being secured to the corset over the lock and serving to secure such lock to the corset and to form a bearing for the pivotal movement of said lock, substantially as and for the purposes set forth.

2. In a corset-fastening, the combination of the supporting-busk, the lock having a handle-bar and a hook, and the cap-plate secured to the busk and having a central portion C^2, provided with an opening C for the hook and having wings C^3, arranged at their edges C^4 to form stop-abutments for engagement by the handle-bar in its locked and unlocked positions, substantially as set forth.

3. In a corset-fastening, the combination of the supporting-busk, the under bearing-plate E, the lock arranged to turn on the plate E and provided with a hook, and the cap-plate fitted and secured over the said lock and having an opening through which the lock-hook projects and in which the shank of said hook turns, substantially as and for the purposes set forth.

4. The improved corset-fastening, substantially as herein described and shown, consisting of the busk having slots D and *d*, the plate E, having a lug or tongue passed through slot *d* and bent in rear of the busk, the lock placed on said plate E and having a hook-like projection and a handle-bar, and the cap-plate having a central portion C^2, provided with opening C for the hook and having end wings C^3, provided with edge stop-bearings C^4 for abutment by the handle-bar, and with tongues projected through the slots D and bent in rear of the busk, all substantially as and for the purposes set forth.

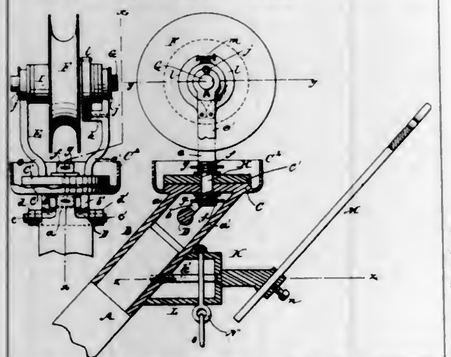
447,631. TOY PUZZLE. WILLIAM W. BROWN, New York, N. Y., assignor to Edward Muchsam, same place. Filed Nov. 11, 1890. Serial No. 371,024. (No model.)



Claim.—1. In a toy puzzle, the combination, with a transparent or translucent bottle-like receptacle, of a stem comprising a body-section and a cap-section detachably secured to the body-section, the body-section being provided with a transverse aperture and a central bore leading into the aperture, and a pin loosely fitting into the transverse aperture of the stem, and a rod passed downward through the bore of the stem and engaging with the pin, as and for the purpose specified.

2. In a toy puzzle, the combination, with a transparent or translucent bottle-like receptacle, of a stem consisting of a body-section adapted to enter the receptacle, provided with a transverse aperture near its lower end and a central bore extending downward from the top to the transverse aperture, a cap-section detachably secured to the body-section, the said cap-section having a recess in its under face, a pin loosely fitted in the transverse aperture of the stem, and a rod located in the bore of the stem, one end of which rod is in engagement with the pin, the opposite end being adapted to enter the recess in the cap-section of the stem, substantially as and for the purpose specified.

447,632. TROLLEY FOR ELECTRIC RAILWAYS. WILLIAM J. CAVERT, Albany, and WILLIAM P. WINWALL, West Troy, N. Y. Filed Aug. 27, 1890. Serial No. 363,202. (No model.)



Claim.—1. In a trolley for electric railways, the combination, with the trolley-fork having ends *c c'* provided with holes *h*, and the wearing-disks J, having studs *i* entering said holes, of the trolley-wheel journaled in the fork between said disks, substantially as set forth.

2. In a trolley for electric railways, the combination, with the socket B, terminating at its upper end in arms *a a'*, the disk C, provided on its under side with arms *b b'*, and the bar D, supported by the arms *b b'* and having threaded ends *c c'* provided with binding-nuts for the conductor, of the fork pivoting on the disk C and provided with a trolley-wheel, substantially as set forth.

3. In a trolley for electric railways, the combination of the socket B, provided with arms *a a'*, the disk C, bar D, the fork E, furnished with the disk C', the pivotal bolt H, connecting the disks C C, and the trolley-wheel F, journaled in the fork E, substantially as specified.

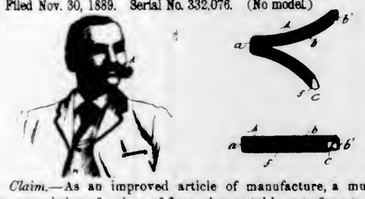
4. In a trolley for electric railways, the combination, with the disk C', fork E, and trolley-wheel carried by the said fork, of the disk C, having on its periphery the upwardly-turned rim, substantially as specified.

5. In a trolley for electric railways, the combination, with the fork E and trolley-wheel F, furnished with the boss I, of the pivoted curved spring-pressed arms *l*, substantially as specified.

6. In a trolley for electric railways, the combination, with the trolley and its wheel, of an arm or bearing below the wheel, and a fork projecting therefrom upward to embrace the conductor at a point beyond where it is engaged by the wheel, said fork being adapted to contact with the conductor when the trolley-wheel fails to follow it, substantially as set forth.

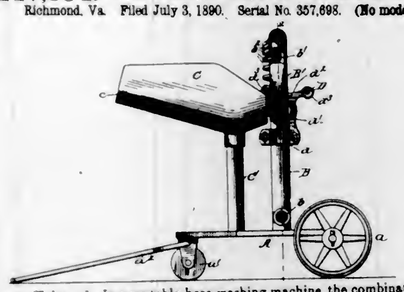
7. In a trolley for electric railways, the combination, with the socket B, provided with the vertically-extending turning-fork provided with a trolley-wheel, of the arm K, secured horizontally to the socket below the wheel, and having an inclined aperture through its outer end, of the fork M, having a shank adjustable longitudinally through said aperture, said fork being adapted to contact with the conductor when the trolley-wheel fails to follow it, substantially as set forth.

447,633. MUSTACHE-TRAINER. ISAAC COMMONS, Piqua, Ohio. Filed Nov. 30, 1889. Serial No. 332,076. (No model.)



Claim.—As an improved article of manufacture, a mustache-trainer consisting of a piece of flat spring metal bent to form two limbs of unequal length, the longer limb having its end bent over upon itself approximately parallel with the body thereof to form a hook, under which the end of the shorter limb is adapted to be sprung, and a covering for the said limbs, as specified.

447,634. HOSE-WASHING MACHINE. ANDERSON B. COSBY, Richmond, Va. Filed July 3, 1890. Serial No. 357,698. (No model.)



Claim.—1. In a portable hose-washing machine, the combination, with a portable frame or carriage, of a supply-pipe arranged thereon and a vertical annular pipe supported upon the supply-pipe and in communication therewith, said pipe having a series of perforations, substantially as and for the purpose described.

2. In a hose-washing machine, the combination of an annular pipe having a series of apertures formed in one side of the same, said apertures being arranged obliquely and converging to a common central point without the plane of the annular ring, substantially as described.

3. In a hose-washing machine, the combination of an annular ring which is made thicker on one side, said thickened side being provided with a series of apertures, said apertures being bored obliquely and converging toward a common central point without the plane of the annular ring, substantially as shown and described.

4. In a hose-washing machine, the combination, with a frame, of a water-supply pipe, a washing-pipe over which the hose passes, supported upon the supply-pipe, a trough, and discharge-pipe for supporting the same, substantially as shown and described.

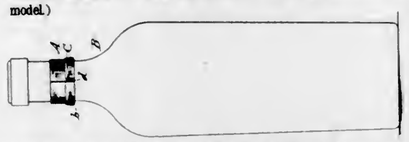
5. In a hose-washing machine, the combination, with a supply-pipe, of an annular pipe supported thereon and a hose-supporter secured to the supply-pipe and adapted to support the hose as it passes through the said annular pipe, substantially as shown and described.

6. In a hose-washing machine, the combination, with a washer, of a trough and a discharge-pipe leading from said trough, said pipe being the sole support for said trough, substantially as shown and described.

7. In a hose-washing machine, the combination, with a water-supply-pipe, of an annular pipe supported thereon and an anti-friction hose-supporter constructed as described, and secured to the main supply-pipe, and having the supporting anti-friction rollers arranged upon opposite sides of the annular pipe, substantially as shown and described.

8. A machine for washing hose, comprising a portable carriage, a vertical supply-pipe secured thereon, a vertical annular pipe mounted upon the supply-pipe after supporter, anti-friction hose-supporter, water-trough, and discharge-pipe supporting the water-trough, all arranged and adapted to operate substantially as shown and described.

447,635. ABSORBENT BOTTLE-COLLAR. BENJAMIN H. DAY, Jr., West Hoboken, N. J. Filed Oct. 10, 1890. Serial No. 367,672. (No model.)



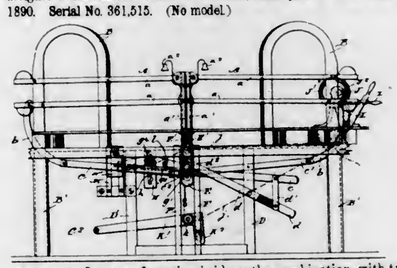
Claim.—1. A drip-absorbent for bottles and other vessels, composed of a flexible band of bibulous material adapted to hug the neck of the bottle or vessel and having a pocket in or along it adapted to receive a retaining device for holding said absorbent in place, essentially as herein set forth.

2. In a drip-absorbent for bottles and other vessels, a band of bibulous material adapted to hug the neck of the bottle or vessel and provided along one of its longitudinal margins with a retaining-wire or fastening adapted to hold the absorbent in place, essentially as set forth.

3. In a drip-absorbent for bottles and other vessels, the combination, with a band of bibulous material adapted to hug the neck of the vessel, of an attached engaging and disengaging fastening adapted to secure the ends of the band when closed.

4. In a drip-absorbent for bottles and other vessels, the combination, with the drip-absorbent band, of a fastening incorporated therewith provided with an eye at its one end and arranged to project beyond both ends of the band, substantially as shown and described.

447,636. BRIDGE-GATE. HENRY E. DEWEY, South Haven, Mich., assignor to himself and James H. Johnson, same place. Filed Aug. 9, 1890. Serial No. 361,515. (No model.)



Claim.—1. In gates for swing-bridges, the combination, with two vertically-swinging gates, of a vertically-movable post to support the ends of the gates, a lever mechanism connecting the post and gates, so that they will be simultaneously raised and lowered, and a lever mechanism mounted upon the bridge and connected with the gate-operating mechanism, substantially as described.

2. In gates for swing-bridges, the combination, with two vertically-swinging gates adapted to close the entrance to the bridge, of a post vertically movable through the approach to the bridge and adapted to support the ends of the gates, a lever connection between the post and the gates, means for operating the gates from the land side, means for operating the gates from the bridge, and a lever mechanism to shift the connection from the land-side operating-levers to the bridge-operating mechanism, substantially as described.

3. The combination, with the vertically-swinging gates, of curved rods pivoted to the outer ends of the gate-bars, inwardly-extending levers pivoted to the curved rods and provided with slots at their point of intersection, a post vertically movable through the floor of the approach and adapted to support the inner ends of the gates, a plate pivoted upon a support and having in one end a vertical opening, said plate being connected to the slotted levers, as shown, a plate extending vertically through the opening in the pivoted plate and having a perforation therein, a spring-pressed rod mounted on the pivoted plate and adapted to engage the vertical plate, means for throwing the rod into and out of engagement with the vertical plate, a hand-operated shaft mounted in a support, and a cable mounted upon the shaft and connecting over suitable pulleys with the upper and lower ends of the vertical plate, substantially as described.

4. The combination, with the vertical plate and with the cable for operating the same, of the bent arm pivoted below the plate and provided with a pulley to engage the cable, and means for vertically adjusting said arm, substantially as described.

5. In gates for swing-bridges, the combination, with the pivoted plate having connection with the gate and post operating levers, as shown, and having a spring-rod mounted thereon, of the walking-beam pivoted upon a support and having at one end a slide-block with a perforation to engage the spring-rod and at the opposite end a slide-block with a laterally-extending pin, a vertically-movable cross-head mounted upon the end of the bridge and adapted to engage the pin of one slide-block, and means for moving the said cross-head, substantially as described.

6. In gates for swing-bridges, the combination, with the vertical plate having means by which it may be moved from the land side and the vertically-movable slide-block having a perforation therein and connected with the walking-beam and bridge cross-head, as shown, of the pivoted plate connected with the gate and post operating levers and having a spring-rod thereon adapted to engage the vertical plate and the perforated slide-block, and means for vertically adjusting the said pivoted plate, substantially as described.

7. The combination, with the vertically-movable plate having a perforation to engage the spring-rod, as shown, and the vertically-movable perforated slide-block connected with the bridge cross-head, as described, of the pivoted plate, the spring-pressed rod thereon adapted to engage the vertical plate and the perforated slide-block, a lever pivoted upon a support, and a cable fixed to one end of the lever and to the spring-rod, whereby the spring-rod may be actuated, substantially as described.

8. The combination, with the spring-rod mounted upon the pivoted plate and adapted to engage the perforated plate and the perforated slide-block, of a lever pivoted on a support, a cable connecting one end of the lever with the spring-rod, and a ratchet-bar for holding the lever in position, substantially as described.

9. The combination, with the pivoted plate connected with the gate and post operating levers, as shown, the spring-pressed rod mounted thereon, and the walking-beam pivoted upon a support, said walking-beam having at one end a slide-block to engage the spring-rod and at the opposite end a slide-block carrying a projecting pin, of a frame fixed to the end of the bridge, a cross-head vertically movable in the frame and adapted to engage the pin of the second slide-block, a shaft mounted horizontally upon the bridge, a pulley fixed to the shaft, a cable extending over the pulley and over pulleys in the cross-head frame, said cable being attached to the cross-head, and a lever mechanism for operating the shaft, substantially as described.

10. The combination, with the pivoted plate having connection with the post and gate operating levers, as shown, and having a spring-pressed rod mounted thereon, and the vertically-movable cross-head mounted upon the end of the bridge and having means, as described, for operating the same, of a slotted frame fixed to the wall of the land-pier, a walking-beam pivoted between the members of the frame, a slide-block pivoted to one end of the walking-beam, so as to move vertically in the frame, said slide-block having a transverse perforation to engage the spring-rod, and a second slide-block pivoted to the opposite end of the walking-beam to move vertically in the frame, said second slide-block having a laterally-extending pin to engage the bridge cross-head, substantially as described.

447,637. KEY. PAREN ENGLAND, Aspen, Colo., assignor to L. W. England, same place. Filed Nov. 5, 1890. Serial No. 370,425. (No model.)



Claim.—The combination, with the key proper having the bit b^2 and hollow shank B rigidly connected, of the key-hole guard composed of the part c, the shank C, and the flat head C', as shown and described.

447,638. TOY BUZZER. GEORGE T. FALLIS, St. Joseph, Mo. Filed Oct. 4, 1890. Serial No. 367,134. (No model.)

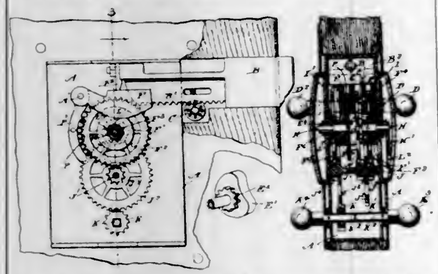
Claim.—1. A toy buzzer formed of a body portion having laterally-extended ends and an elastic band passed over said ends, whereby an air-space is formed between it and the body portion, substantially as and for the purpose set forth.



2. A toy buzzer consisting of a body portion having laterally-enlarged heads, an elastic passed over said heads, whereby spaces are formed between the elastic and the body, a rudder or steering-vane secured to the body, and means for holding and whirling the device in the air, substantially as and for the purpose described.

3. The combination, with the body A, the enlarged heads *a a*, secured thereto, the rearwardly-extending rudder-blade secured to said body A, and a cord for swinging same, of the elastic C, passed over said head, its edges being arranged in line with the movement of said device when operated, substantially as and for the purpose described.

447,639. COMBINATION-LOCK. JOHN E. FARNSWORTH, Bazine, Kans., assignor to Farnsworth & Williams, same place. Filed Oct. 18, 1890. Serial No. 368,548. (Model.)



Claim.—1. In a combination-lock, the combination, with a series of levers adapted to engage or disengage the locking-bolt, of a series of cam-wheels adapted to actuate the said levers, and means, substantially as described, for moving some of the said cam-wheels in both directions and one only in one direction, substantially as shown and described.

2. In a combination-lock, the combination, with a series of levers adapted to engage or disengage the locking-bolt, of a series of cam-wheels adapted to actuate the said levers, means, substantially as described, for moving some of the said cam-wheels in both directions and one only in one direction, and pointers connected with the said cam-wheels and indicating on dials, substantially as shown and described.

3. In a combination-lock, the combination, with a series of levers adapted to engage or disengage the locking-bolt, of a series of cam-wheels adapted to actuate the said levers, means, substantially as described, for moving some of the said cam-wheels in both directions and one only in one direction, pointers connected with the said cam-wheels and indicating on dials, and a train of gear-wheels connecting the said cam-wheels with the said pointers to move the latter at a different rate of speed, substantially as shown and described.

4. In a combination-lock, the combination, with a series of levers adapted to engage or disengage the locking-bolt, of a series of cam-wheels adapted to actuate the said levers, means, substantially as described, for moving some of the said cam-wheels in both directions and one only in one direction, pointers connected with the said cam-wheels and indicating on dials, a train of gear-wheels connecting the said cam-wheels with the said pointers to move the latter at a different rate of speed, and a knob-spindle carrying a pinion in mesh with the said train of gear-wheels, substantially as shown and described.

5. In a combination-lock, the combination, with a series of levers adapted to engage or disengage the locking-bolt, of a series of cam-wheels adapted to actuate the said levers, and a train of gear-wheels for actuating the said cams at different rates of speed, substantially as shown and described.

6. In a combination-lock, the combination, with a series of levers adapted to engage or disengage the locking-bolt, of a series of cam-wheels adapted to actuate the said levers, a train of gear-wheels for actuating the said cams at different rates of speed, and a knob-spindle provided with an indoor and outdoor knob and carrying a pinion in mesh with the said train of gear-wheels for actuating the lock, substantially as shown and described.

7. In a combination-lock, the combination, with a bolt provided with a back plate, of a series of pivoted levers provided with shoulders on their upper sides and upon the upper sides of which the back plate is adapted to travel, and a series of cam-wheels for operating the said levers, substantially as and for the purpose set forth.

8. In a combination-lock, the combination, with a bolt provided with a back plate, of a series of levers adapted to engage the said back plate in an innermost or outermost position of the said bolt to lock the latter in place, a corresponding series of cam-wheels adapted to actuate the said levers to engage said levers with the back plate or disengage them from the same, a train of gear-wheels for actuating the said cam-wheels at different rates of speed, and a knob-spindle carrying a pinion in mesh with the said train of gear-wheels, substantially as shown and described.

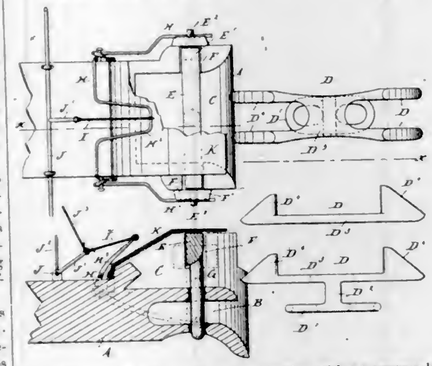
9. In a combination-lock, the combination, with a bolt provided with a back plate, of a series of levers adapted to engage the said back plate in an innermost or outermost position of the said bolt to lock the latter in place, a corresponding series of cam-wheels adapted to actuate the said levers to engage said levers with the back plate or disengage them from the same, a train of gear-wheels for actuating the said cam-wheels at different rates of speed, a knob-spindle carrying a pinion in mesh with the said train of gear-wheels, and sets of pointers connected with the said cam-wheels and adapted to indicate on suitable dials, substantially as shown and described.

10. In a combination-lock, the combination, with a cam-wheel and a lever actuated by the said cam-wheel, of a pawl-and-ratchet mechanism connected with the said cam-wheel, a gear-wheel carrying the pawl of the said mechanism, and a train of gear-wheels in mesh with the said gear-wheel, substantially as shown and described.

11. In a combination-lock, the combination, with a cam-wheel and a lever actuated by the said cam-wheel, of a pawl-and-ratchet mechanism connected with the said cam-wheel, a gear-wheel carrying the pawl of the said mechanism, a train of gear-wheels in mesh with the said gear-wheel, and a knob-spindle carrying a pinion in mesh with the said train of gear-wheels, substantially as shown and described.

12. In a combination-lock, the combination, with a dial, of three pointers adapted to indicate on the said dial, and mechanism, substantially as described, for turning two of the said pointers in both directions and one in only one direction, as set forth.

447,640. CAR-COUPLING. MICHAEL F. FINNERTY, Brooklyn, N. Y., assignor of one-half to George Dittrich, same place. Filed Oct. 10, 1890. Serial No. 367,669. (No model.)



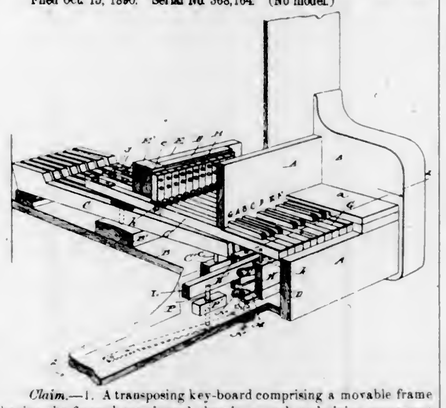
Claim.—1. In a coupling, the combination, with a transverse bar mounted to slide vertically in the draw-head and provided with a downwardly-extending pin, of a coupling-link provided with a link proper adapted to be engaged by the said pin and with a forked bar having hooks at its ends adapted to engage the said bar, substantially as shown and described.

2. In a coupling, the combination, with a draw-head provided with an upper and a lower compartment, of a bar extending transversely in the said upper compartment and fitted to slide vertically in the said draw-head, a pin projecting downward from the said bar to pass into the lower compartment, and a coupling-link adapted to be engaged by the said bar and the said pin, substantially as shown and described.

3. In a coupling, the combination, with a draw-head provided with an upper and a lower compartment, of a bar extending transversely in the said upper compartment and fitted to slide vertically in the said draw-head, a pin projecting downward from the said bar to pass into the lower compartment, a coupling-link provided with a link proper adapted to enter the lower compartment to be engaged by the said pin, and a bar held above the said link proper and provided with forked ends and hooks adapted to engage the said transverse bar, substantially as shown and described.

4. In a coupling, the combination, with a draw-head provided with an upper and a lower compartment, of a bar extending transversely in the said upper compartment and fitted to slide vertically in the said draw-head, a pin projecting downward from the said bar to pass into the lower compartment, a coupling-link provided with a link proper adapted to enter the lower compartment to be engaged by the said pin, a bar held above the said link proper and provided with forked ends and hooks adapted to engage the said transverse bar, and means, substantially as described, for raising the said bar, as set forth.

447,641. TRANSPOSING KEY-BOARD. JAMES M. GILBERT, Putney, Vt., assignor of one-half to George M. Gilbert, Sioux City, Iowa. Filed Oct. 15, 1890. Serial No. 368,164. (No model.)



Claim.—1. A transposing key-board comprising a movable frame having the finger-keys pivoted therein, a rack-and-pinion movement for actuating the frame, and a locking device for the pinion, substantially as described.

2. A transposing key-board comprising a movable frame, a series of finger-keys pivoted in the frame, said keys having guide-pins, as shown, a vertically-movable bar extending transversely beneath the keys, means for raising the bar, a rack-and-pinion movement for operating the frame, and a locking device for the pinion, substantially as described.

3. A transposing key-board comprising a laterally-movable frame having a series of keys pivoted therein, said keys having suitable guide-pins, as shown, a guide for the frame, a rack-and-pinion movement for operating the frame, and a locking device for the pinion, substantially as described.

4. The combination, with the keys of a transposing key-board and the frame in which they are pivoted, of a bar pivoted transversely below the keys, a rack on the frame, a pinion engaging the rack, and a lock for the pinion, which lock is also in engagement with the pivoted bar, substantially as described.

5. A transposing key-board comprising a frame, a series of keys pivoted in the frame and provided with suitable guide-pins, a transverse bar extending beneath the front ends of the keys, a rack-and-pinion movement for operating the frame, a pinion-shaft having a perforated handle located beneath the case of the instrument, a spring having one end fixed to the instrument beneath the key-board and having its free end provided with a stud adapted to enter the perforations of the pinion-handle, and a pin extending through the instrument-case, having its upper end impinging on the transverse bar and its lower end on the spring, substantially as described.

6. The combination, with a piano, of a frame mounted above the piano-keys and having a series of finger-keys pivoted therein, suitable guides for the frame and for the keys, a vertically-movable bar extending transversely beneath the keys, said bar having a link connection with the frame, as shown, a rack-and-pinion movement for operating the frame, a pinion-shaft having a perforated handle located beneath the case of the instrument, a spring having one end fixed to the instrument-case and the free end provided with a stud to enter the perforations of the pinion-handle, and a pin extending vertically through the case, its upper end impinging on the transverse bar and its lower end impinging on the spring, substantially as described.

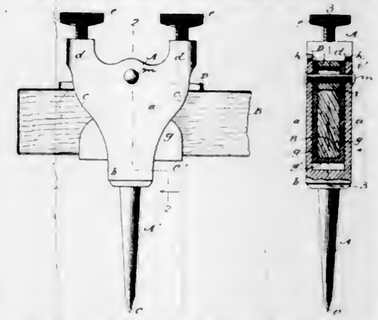
7. In a transposing key-board, the combination of the movable frame, the blocks fixed to the rear rail of the frame and provided with depending tongues, and the finger-keys having slots therein to receive the tongues, substantially as described.

8. In a transposing key-board, the combination of the movable frame, the blocks fixed to the rear rail of the frame and provided with depending tongues, and the finger-keys having slots to receive the tongues, said keys being pivoted to the tongues and having their rear ends provided with weights, substantially as described.

9. In a transposing key-board, the combination, with the movable frame having the finger-keys pivoted therein, of a cross-bar extending above the keys, and clips fixed to the cross-bar and having their ends bent to embrace and guide the end rail of the frame, substantially as described.

10. In a transposing key-board, the combination of the movable frame, the rack-and-pinion movement for operating the frame, the perforated handle of the pinion-shaft, and the spring fixed to the instrument-case and provided at its free end with a stud adapted to enter the perforations of the pinion-handle, substantially as described.

447,642. TRAMMEL-HEAD. REINHOLD G. HAUSDÖRFER, Zanesville, Ohio. Filed Sept. 18, 1890. Serial No. 365,344. (No model.)



Claim.—1. The combination, with a head-frame and a trammel-point thereon, of a shoe pivoted within the frame, a clamping-plate, and two thumb-screws which engage this plate, substantially as set forth.

2. The combination, with a head-frame and a trammel-point thereon, of a shoe within the frame, a clamping-plate, two thumb-screws mounted in the frame and engaging the plate, and a fulcrum-pin uniting the frame and shoe and on which the plate is loosely mounted, substantially as specified.

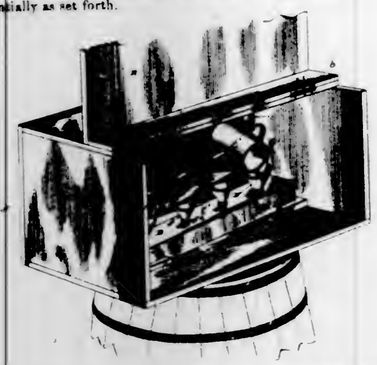
3. The combination, with a beam, of a head-frame, a trammel-point, a shoe pivoted to swing in the frame, a clamping-plate adapted to rock and move vertically in the shoe, and two set-screws which are adjustable in the frame and bear on the clamping-plate near its ends, substantially as set forth.

4. The combination, with a compass-beam which is rectangular in cross-section, of a head-frame having spaced parallel walls which are joined below by a hub, a tapered point in the hub, a shoe which embraces the beam and slides between the walls of the head-frame, the frame and shoe being perforated transversely near their upper edges and longitudinal centers, two vertical thumb-screws inserted in threaded perforations of integral bosses on the head-frame which are at an equal distance from the perforations, a clamping-plate located in the shoe and transversely slotted through a longitudinally central ear, and a fulcrum-pin which retains the frame, shoe, and clamping-plate in loose adjustment, substantially as set forth.

447,643. CABINET FOR MOLASSES-MEASURES. SAMUEL B. KERSEY, Greensborough, N. C. Filed July 17, 1890. Serial No. 359,061. (No model.)

Claim.—1. The combination, with a cabinet, of a drain-receptacle disposed therein, elevated at one end and provided at its opposite end with a downwardly-projecting tube extending through the bottom of the casing and adapted to project within a barrel or other receptacle, openings in said drain-receptacle, graduated funnels engaging the same, and an inclined board or plate arranged at an angle to the drain-receptacle and provided with recesses of varying size, said board or plate and the funnels being adapted to support graduated measures in such

a manner as to effect drainage of the same into the drain-receptacle, substantially as set forth.

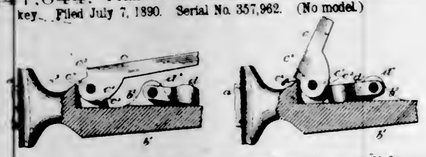


2. The combination, with a cabinet, of an inclined drain-receptacle disposed therein and provided with a series of tubes projecting inwardly from the top of said receptacle, and with a tube projecting from the bottom of the latter at its lower end and through the casing, a support in rear of the receptacle, and funnels disposed in the inwardly-projecting tubes and comprising a flaring mouth flat upon one side, and a tube projecting from said mouth, provided with a collar, for the purpose described, said support and funnels being adapted to receive graduated measures, in the manner and for the purpose set forth.

3. The combination, with a barrel or other receptacle, of a cabinet disposed on top thereof and containing an inclined drain-receptacle connected at its lower end with the barrel or receptacle by a tube, tubes projecting inwardly from the top of the drain-receptacle, funnels engaging said tubes, and an obliquely-arranged support in rear of the drain-receptacle and at an angle thereto, substantially as and for the purpose set forth

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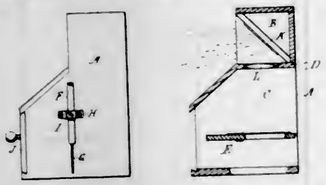
447,644. FORK-GUARD. STEPHEN NOWILL, Constantinople, Turkey. Filed July 7, 1890. Serial No. 357,962. (No model.)



Claim.—In a carving-fork, the combination of the shank *b*, formed with a recess b^2, a guard *c*, pivoted to the shank in said recess and provided with shoulders c^2 and c^3 for the purpose explained, and a tumbler *d*, also pivoted to the shank in the recess b^2, said tumbler being adapted to engage the shoulder c^3 for holding the guard in raised position and to lie snug against the shank in either of its positions, substantially as herein set forth

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447,645. SOLAR REFLECTING-CAMERA. ROBERT N. REED, Covington, Ky. Filed Apr. 22, 1890. Serial No. 348,045. (No model.)

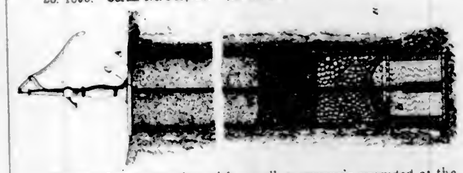


Claim.—1. In a solar reflecting-camera having the chambers B and C, divided by the partition D, having in it the lens L, the inclined mirror K in chamber B, and the focusing-rack E, vertically moving in the chamber C, substantially as described.

2. In a solar reflecting-camera having in the upper open front chamber a forwardly-inclined mirror, a horizontal lens below said mirror, and the vertically-movable rack E in the lower chamber, adjustable by set-screw, as described, said lower chamber having in front a laterally-sliding shutter J, all substantially as described.

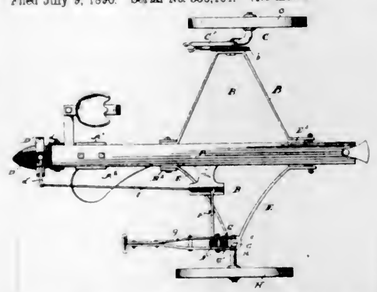
3. In a solar reflecting-camera, substantially as described, having a lower chamber slotted at G, the vertically-movable platform or focusing-rack E, combined with the bent arm F, extending through said slot and the keeper H, and set-screw I, substantially as and for the purpose set forth.

447,646. WELL. JOHN O. RICE, Hutchinson, Minn. Filed Apr. 28, 1890. Serial No. 349,720. (No model.)



Claim.—In combination with a well, a reservoir provided at the bottom thereof and consisting of a single unbroken chamber having an opening near its top, a channel or pipe extending from said reservoir to or above the surface of the ground, the surface between the latter and the reservoir being filled with stone, gravel, and earth, respectively, in the order named, substantially as and for the purpose set forth.

447,647. WHEEL-PLOW. PHILIP W. STANHOPE, Jr., Peoria, Ill. Filed July 9, 1890. Serial No. 358,181. (No model.)



Claim.—1. The combination of the plow-beam with the frame B, composed of side portions B′ and E, connected at their ends by pieces B^2 and E^2, which partly encompass the beam, and having projecting notched portions e^2 at one side, substantially as described.

2. The combination of a plow with a frame connected thereto, a revoluble casting mounted on said frame, a shaft playing through said casting, a wheel connected to said shaft, and the lever for vertically adjusting said shaft and for turning the casting, all substantially as described.

3. The combination of the plow and the caster-wheel with a frame attached to and projecting from the furrow side of the beam, the casting mounted on said frame having a segment and a vertical opening, a shaft playing through said opening, a lever linked to said shaft for vertically adjusting it and for turning the casting, a wheel supported by and vertically adjustable with the shaft and horizontally adjustable with the casting when the latter is turned, and the arm and devices for locking said casting when turned, substantially as described.

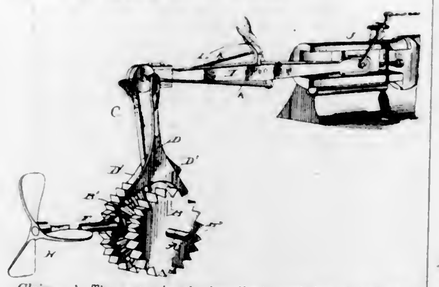
4. The combination of a plow and a frame carrying a furrow-wheel and having one end fast to the beam and the other loosely connected thereto, with a revoluble casting mounted on said frame, a vertically-adjustable shaft in said casting, a wheel supported by said shaft, and the lever, substantially as described, for shifting said shaft and casting, as and for the purpose set forth.

5. The combination of the plow, the caster-wheel at the rear end thereof, and the arm for turning said wheel, with the frame attached to the beam carrying a revoluble casting, the arm projecting inwardly from said casting and connected by a link with the arm of the caster, and the shaft carried by said casting and supporting a furrow-wheel, and a lever and links supporting and adjusting said shaft vertically and for turning the casting, substantially as set forth.

6. The combination, in a riding-plow, of the beam standard and share and caster attached to the rear end of the beam, having an arm projecting from its stem, with a frame connected to and projecting on both sides of the beam, the wheel mounted on the frame at the land side of the beam, the horizontally-revoluble casting mounted on said frame at the furrow side of the beam and having a sector and an inwardly-projecting arm, the link-rod connecting said arm with the caster-wheel arm, the lever pivoted on said casting, the shaft playing

vertically therethrough, links connecting said shaft and lever, the wheel carried by said shaft, and the locking devices for locking the casting when shifted, all substantially as and for the purpose set forth.

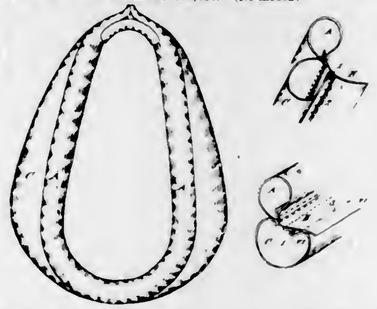
447,648. MOTOR. THOMAS SUTHERLAND, Stillwater, Minn. Filed Oct. 23, 1890. Serial No. 369,108. (No model.)



Claim.—1. The motor herein described, consisting of the loosely-mounted drive-wheels B, having the circle of bevel-teeth B′ on their adjacent sides, and the edge teeth B^3, the lever pivoted between the said drive-wheels and having the oppositely-arranged pawls pivoted to its sides and engaging with the two drive-wheels, and the beveled pinion secured on a shaft and meshing with the two drive-wheels, substantially as set forth.

2. The combination of the drive-wheels B B, loosely mounted on a transverse shaft and formed with the bevel-teeth B′ and the edge teeth B^3, the lever pivoted at its lower end between the drive-wheels, the pitman connecting the upper end of this lever with the piston-rod of an engine, the double-ended pawls pivoted on opposite sides of the lever and having the upper spring ends, the drive-shaft having the bevel-pinion at its inner end and the propeller at its outer end, the centrally-pivoted reversing-lever, and the rods pivotally connecting the upper ends of the double-ended pawls with the reversing-lever, substantially as and for the purpose set forth.

447,649. HORSE-COLLAR. JOHN F. TRAUTMANN, St. Louis, Mo. Filed Oct. 27, 1890. Serial No. 369,486. (No model.)



Claim.—1. In a horse-collar, the combination of the roll, facing and backing, the outer edge of the facing being connected to the backing and the outer edge of the backing being folded over the point of connection between it and the facing and being itself secured to the facing at a point remote from the edge of the latter, substantially as set forth.

2. In a horse-collar, the combination, with the roll, facing and backing, of a narrow strip secured to the under or inner side of the backing and to which strip the outer edge of the facing is connected, the outer edge of the backing being folded over the point of connection between said strip and facing and being itself secured to the facing at a point remote from the edge of the latter, substantially as set forth

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447,650. MOP-HEAD. FRANK P. WHITE, Shallotte, N. C. Filed June 11, 1890. Serial No. 355,085. (Model.)

Claim.—In a mop, the combination of the handle provided with a socket, the stationary concaved cross-bar provided along its longitudinal edges with flanges 3 and having its ends bent inward and provided with threaded arms 5 and slots arranged upon opposite sides of the arms and forming teeth 12, the adjustable concaved cross-bar provided along its longitudinal edges with flanges and points or projections arranged at intervals upon its inner face and having its ends perforated and arranged upon the threaded arm, and the springs arranged upon the threaded arms and seated in the slots and interposed between the cross-bar and the thumb-nut, substantially as described



447,651. COPY-HOLDER. KENNON AGEE, Magnolia, Ala. Filed Oct. 27, 1890. Serial No. 369,500. (No model.)



Claim.—1. A copy-holder consisting of two metal plates adjustable upon each other and each having its sides bent over, forming horizontal ways for the reception of a copy-slip, and provided at their outer ends with hooks adapted to engage with a paper sheet, substantially as described.

2. In a copy-holder, the combination, with the plate having bent-over sides and a horizontal slot, of an adjustable hook having a shank provided with upwardly and outwardly projecting lugs adapted to engage with the edges of the slot, substantially as described

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447,652. LOOM. CLINTON ALVORD, Worcester, Mass. Filed Apr. 19, 1890. Serial No. 348,728. (No model.)



Claim.—1. A cam having two concentric grooves and two cam-grooves which cross each other and open into the concentric grooves, and provided with a set of frogs for the purpose of shutting off either of said cam-grooves from said concentric grooves, substantially as described

2. In a loom, the combination, with a pattern-chain, an indicating lever, and a set of frogs carrying a contact-piece to work with the indicating-lever, of a cam having two concentric grooves, and two cam-grooves which cross each other and open into the concentric grooves, substantially as described.

3. In a loom, the combination, with a harness-jack provided with a pin to work in a cam, of a pattern-chain, an indicating-lever, and a cam provided with a set of frogs carrying a contact-piece to work with the indicating-lever, said cam having two concentric grooves and two cam-grooves which cross each other and open into the concentric grooves, substantially as described.

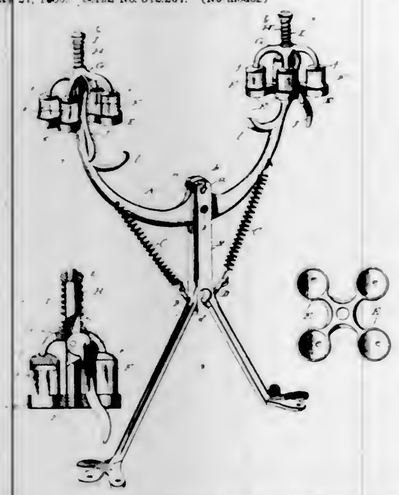
4. In a loom, the combination, with a series of levers provided with pins for working in a series of cams, a series of box-operating levers, and intermediate connections between said cam-actuated levers and said box-operating levers, of a pattern-chain, a series of indicating-levers, and a series of cams, each cam provided with a set of frogs carrying a contact-piece to work with the indicating-lever, said cams having two concentric grooves and two cam-grooves which cross each other and open into the concentric grooves, substantially as described

447,653. SMOKING-PIPE. JOHN ARSTIN, Des Moines, Iowa. Filed July 29, 1890. Serial No. 360,262. (No model.)



Claim.—The combination of the cylindrical bowl having a flange at its outer end and slotted longitudinally at its inner tapering end, said slotted part bent to form lugs, the stem or mouth-piece having an inside annular notch or recess adapted to engage said lugs, and the cylindrical sleeve of larger diameter than the bowl and confined endwise between the outer flange on the same and the mouth-piece, substantially as and for the purpose shown and set forth.

447,654. DRINK-MIXER. CHARLES BEW, Angola, Ind. Filed May 27, 1889. Serial No. 312,261. (No model.)



Claim.—1. In a beverage-shaking apparatus, a stationary frame, a rocking receptacle carrying bar pivoted on the frame, receptacles mounted on the said bar to one side of the pivotal point thereof, and a spring between the frame and the bar and acting on the bar, substantially as set forth.

2. The combination, with the tumbler-support and the stem having a slot, of the holder placed on the said stem, the operating cam-lever pivoted in the slot, and the spring for pressing the holder down, substantially as and for the purpose described.

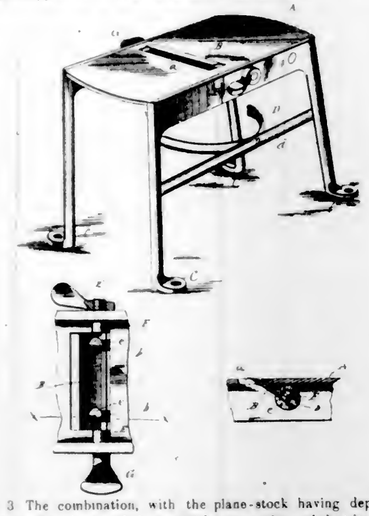
3. The combination, with the bracket and the curved beam pivoted to the said bracket and having finger-rests to one side of the pivotal point thereof, and having tumbler-holding devices, of the springs between the said beam and the bracket, substantially as described, for the purpose specified.

4. The herein shown and described shaker, comprising the bracket having notches, the oscillating beam having gudgeons that are inserted in the notches and having finger-rests, the springs placed between the beam and the bracket, the tumbler-supports, the holders, the cam-levers, and the springs for pressing the holders down on the covers, substantially as described.

447,655. ICE-PLANE. CHARLES BEW, Angola, Ind. Filed Sept. 12, 1889. Serial No. 323,679. (No model.)

Claim.—1. The combination, with the plane-stock having a bit-opening, a support journaled on the said stock and having a limited movement about its axis, and means for holding the said support rigidly at any adjustment within the prescribed limits, of the slicing-knife secured directly to and supported solely by the said support and adapted to be projected a greater or less distance beyond the face of the said plane-stock to cut the required thickness of slice by simply adjusting the said support on its axis, substantially as set forth.

2. The combination, with the plane-stock having a bit-opening, a support journaled on the said stock and having a limited movement about its axis, and means for rigidly holding the said support at any adjustment on its axis, of the slicing-knife and means for adjustably connecting the said knife with the support to compensate for wear, the said knife being adjusted a greater or less distance from the face of the plane-stock to cut the required thickness of slice by adjusting the said support on its axis, substantially as specified.



3. The combination, with the plane-stock having depending flanges at its edges, and the rotatable support journaled at its ends in said flanges, one journal being reduced and threaded and the support cut away between its ends to form a flat bearing-surface, of the thumb-nut screwed on the said threaded journal and adapted to clamp the flange between it and the shoulder formed by the said reduced journal, and the bit adjustably connected with the cut-away portion of the said support, substantially as and for the purpose described.

447,656. REIN-SUPPORT. JACOB W. BEYRON, Jackson, Ohio. Filed Sept. 29, 1890. Serial No. 366,546. (No model.)



Claim.—As an improved article of manufacture, a rein-holder comprising in a single piece of material an angularly-bent base-piece with open rings or loops at the ends, the ends of each two arms forming the rings extended past each other, leaving a vertical space between them, and a lug to prevent side movement of the holder when in position, substantially as shown and described.

447,657. FLEXIBLE RULE. WILLIAM H. BLAKE, 2d, and EDWARD T. BRADLEY, Swanton, Vt. Filed June 26, 1890. Serial No. 356,791. (No model.)

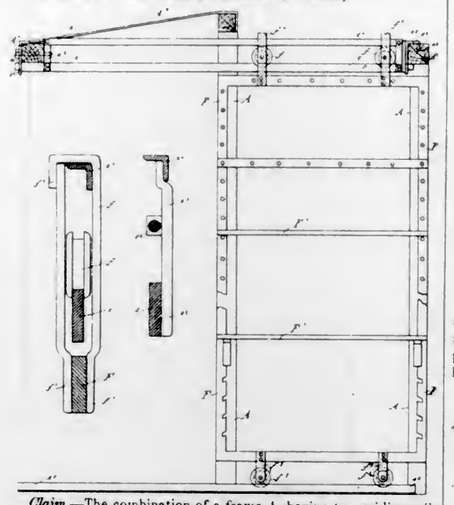


Claim.—1. As an improved article of manufacture, a rule or scribing device consisting, essentially, of a flexible face-strip having guide-posts on its rear side, a flexible rod movable in said guides, a plain nut on the posts, and a jam-nut for pinching the plain nut on the rod substantially as specified.

2. A rule or scribing device having a flexible face-strip, in combination with posts fixed to the rear side thereof and their outer ends terminating in threaded reduced portions, and also having guide-apertures, a plain nut arranged on the threaded portion, and a jam-nut also arranged thereon and being of a diameter equal to the face-strip, substantially as specified.

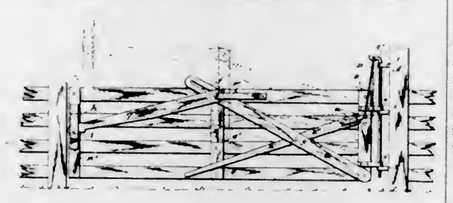
3. A rule or scribing device consisting of a flexible face-strip having guide-posts on its rear side, a flexible rod movable in said posts, the guides terminating in a reduced threaded portion, and a nut for fixing the flexible rod to the guides, substantially as specified.

447,658. SHOW-STAND. ERNST BROCKMANN, Ellrich, Germany. Filed July 23, 1890. Serial No. 359,653. (No model.)



Claim.—The combination of a frame A, having top guiding-rails c, guiding angle-irons c', projecting out in front and connected to said frame and cross-bar A′ by straps c^3 c^4 c^5 and bolt c^3, tie A^3, and hook c^6 of the frames F F, containing adjustable shelves F′ F′ and supported on upper guide-rails c c' by rollers f f and straps f' f' and on ground-rail c^6 by rollers f^2 f^2, said frames, together with guide-rails being adjustable sidewise in frame A A′, in the manner described.

447,659. GATE. JAMES E. BUCK, Lansing, Mich. Filed June 27, 1889. Renewed Jan. 22, 1891. Serial No. 378,667. (No model.)



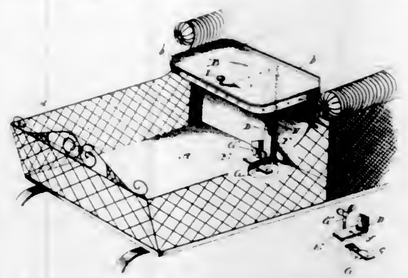
Claim.—1. The combination, in a swinging gate, of a hinge-rod C, having a bent end, a link or bar hung thereon, a lever E, pivoted to a brace G, its end engaging with said link and with retaining-notches on the gate, and brace G, one end of which is pivoted upon the gate, while the opposite end slides upon a bolt f, substantially as set forth.

2. The combination, in a swinging gate having rails and vertical panels pivotally connected to each other, of eyes attached to the gate and supporting-post, through which a rod passes to allow the gate to slide vertically upon said rod, a brace G, pivoted to the gate at its rear lower corner, the opposite end of said brace sliding upon a bolt or pin secured to the upper end of the central panel, and a lever E, pivoted to said brace G, one end thereof engaging a swinging connection, while the opposite end engages notches formed in the lower end of the central panel, substantially as shown, and for the purpose set forth.

3. The combination, in a swinging gate constructed substantially as shown, of the rod C, upon which the hinges of the gate slide vertically, the link D, supported on rod C, lever E, engaging at its opposite ends with link D and with the retaining-notches on the gate, brace G, pivoted to the gate at its rear lower corner and also to the lever E, and the lever Y, fulcrumed on a pin f, which passes through a slot in the upper end of brace G and engaging a pin i on the front stile of the gate to maintain the gate in an inclined position when desired, all as herein described.

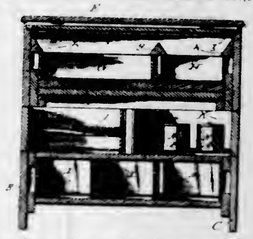
447,660. ATTACHMENT FOR BABY-CARRIAGES. WILLIAM T. BUMSTEAD, Beatrice, Nebr., assignor of one-half to Henry M. Hill, same place. Filed Nov. 11, 1890. Serial No. 371,077. (No model.)

Claim.—1. The combination, with the standard having horizontal arm and foot and foot-brace, of the table-top provided with cleats to receive the said horizontal arm and means for detachably securing the parts in place, as set forth.



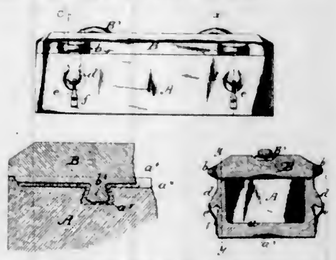
2. The combination, with the standard formed with horizontal arm and foot, of the table-top provided with cleats upon the under side and a stop in one of the cleats, the foot-brace, and the thumb-screw passed through from the upper side of the table-top and engaging a hole in the end of the said arm, substantially as specified.

447,661. FLOUR AND CEREAL TESTING CASE. JOHN W. BUKK, Coldwater, Mich. Filed July 19, 1889. Serial No. 317,970. (No model.)



Claim.—In a flour and cereal testing cabinet, the combination, with the two juxtaposed drawers G and H in the same plane, and having the double-inclined cross-bar g placed over the edges of the inner or adjacent sides of the said drawers, and having the inclined cross-bars h arranged over the edges of the outer sides of the said drawers, of the removable testing-board placed over the said drawers and having discharge-openings formed therethrough near each end and subdivided into separate sections, which sections are numbered to correspond with the different reels in a mill, substantially as set forth.

447,662. BURIAL-CASE. WILSON W. BUTLER, Lima, Ohio. Filed Nov. 8, 1890. Serial No. 370,753. (No model.)



Claim.—1. The combination of the receptacle of a burial-case, having a groove a^4 and dovetailed cavities a^5 extended below the bottom of said groove in the edge of the receptacle, with the cover having headed pins b^5 to enter said cavities and be locked therein with cement in said cavities, substantially as described.

2. The combination of the receptacle of a burial-case of plastic material, having rounded undergrooved handles d in the sides thereof, with the cover B, having handles b vertically above the handle d, substantially as and for the purpose described.

3. The combination of the burial-case receptacle having rounded undergrooved handles d in the sides thereof, with the metal straps e, pivotally secured to said sides and having one end resting against said handles, substantially as described.

447,663. HOLDER FOR POSTAGE-STAMPS OR OTHER ARTICLES. BENJAMIN F. CARPENTER, Roselle, N. J. Filed July 17, 1890. Serial No. 359,019. (No model.)

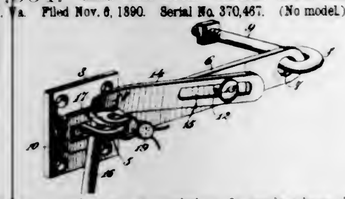


Claim.—1. A postage-stamp holder consisting of a cylindrical tubular receiver B, open at one end for the introduction of postage-stamps or other articles, and provided with oppositely-arranged finger-holes *b* for moving the articles lengthwise out of the tubular receiver, in combination with a cylindrical tubular receptacle A, into and out of which the cylindrical receiver slides lengthwise, said cylindrical receptacle having at one end a socket *a'* to receive the end of a pencil or pen-holder and closed by an internal head or bottom *a*, which limits the lengthwise sliding movement of the cylindrical receiver, substantially as described.

2. A holder for postage-stamps and other articles, composed of a receiver A, provided with an internal head *a* and a socket *a'*, and of a receptacle B, provided with an internal head *b'* and a socket b^3, substantially as described.

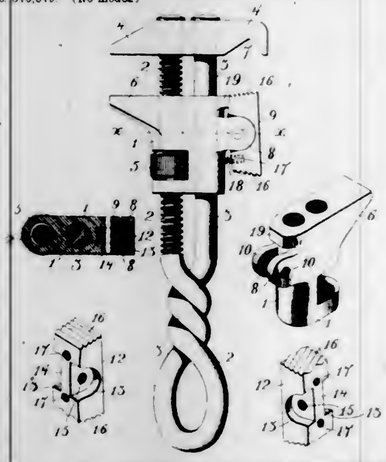
3. A holder for postage-stamps and other articles, composed of a receiver A, provided with an internal head *a* and a socket *a'*, and of a receptacle B, provided with finger-holes *b b*, an internal head *b'*, and a socket b^3, substantially as described.

447,664. SEAL HASP-LOCK. ANTHONY CLARK, Parkersburg, W. Va. Filed Nov. 6, 1890. Serial No. 370,467. (No model.)



Claim.—A seal hasp-lock consisting of a staple, a hasp-plate having at one end a slot for the passage of the staple, and a locking-plate having a pin and elongated slot connection with the hasp-plate and provided with a pendent bolt, and a lateral lug arranged in juxtaposition to the bolt and having an orifice therethrough for the passage of a seal-wire through the lug and the staple, whereby the bolt cannot be lifted from the staple without breaking the seal, substantially as described.

447,665. WRENCH. FRANK S. COOK, Chicago, Ill., assignor to the Capitol Manufacturing Company, same place. Filed Dec. 29, 1890. Serial No. 376,079. (No model.)



Claim.—1. The combination, in a wrench, of an adjustable slide having one of its vertical sides provided with a semicircular bearing and a duplex reversible gripping-pawl having between its ends a semicircular bearing which corresponds to and is articulated on the semicircular bearing of the slide, substantially as described.

2. The combination, in a wrench, of an adjustable slide having one of its vertical sides provided with a semicircular bearing, a duplex reversible gripping-pawl having between its ends a semicircular bearing which corresponds to and moves on the semicircular bearing of the slide, and a transverse pivot-pin passing through a portion of the duplex reversible pawl between its two acting ends for retaining the pawl in position on the slide, substantially as described.

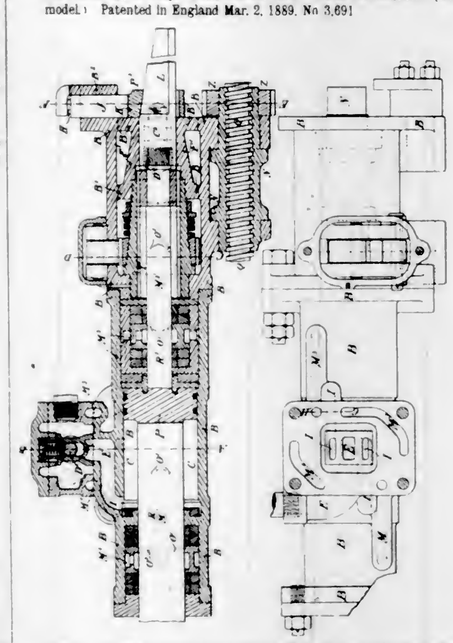
3. The combination, in a wrench, of a slide having on one of its vertical sides a laterally-projecting semicircular bearing, a duplex reversible gripping-pawl having a semicircular bearing which corresponds to and moves on the slide, and a transverse pivot-pin passing through a portion of the pawl between its two acting ends to retain the pawl in proper position and permit it to oscillate, substantially as described.

4. The combination, in a wrench, of a slide or box provided with a pair of laterally-projecting ears having transverse orifices and semicircular outer edges which are concentric to the axes of the orifices, a duplex reversible gripping-pawl having between its ends a pair of semicircular socket-bearings which fit the edges of the ears, and a central web which projects between the ears, and a transverse pivot-pin extending through the ears and the web of the pawl, substantially as described.

5. The combination, in a wrench, of a slide having a pivoted pawl, and a laterally-projecting abutment or stop located above the pawl-pivot and against which the uppermost end of the pawl is adapted to rest for the purpose of preventing a pipe from being wedged in between the pawl and the stationary head or jaw of the wrench, substantially as described.

6. The combination, in a wrench, of an adjustable slide provided with projecting ears having orifices and semicircular edges which are concentric to the axes of the orifices, and a laterally-projecting abutment or stop located above the ears, a duplex reversible pawl having semicircular socket-bearings fitting and moving on the semicircular edges of the ears, and a pivot-pin passing through the ears and a portion of the pawl, said pawl adapted to strike the abutment or stop for the purpose of preventing the pipe being wedged in between the pawl and the stationary jaw of the wrench, substantially as described.

447,666. ROCK-DRILL. ALBERT W. DAW and ZACHARIAS W. DAW, Laurvik, Norway. Filed Oct. 12, 1889. Serial No. 326,846. (No model.) Patented in England Mar. 2, 1889, No. 3,691.



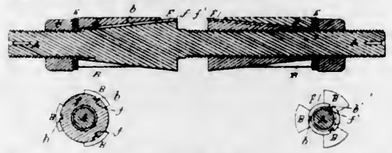
Claim.—1. The combination of the drill-casing, the valve-chamber connected therewith and containing the steam-valve, passages M' and M^3, connecting opposite ends of said valve-chamber with the drill-casing, a piston-rod within said casing provided with a piston P and with elongated passages M and M^3 on opposite sides of said piston, the passage M, registering at one end with the outer atmosphere and at the other end with the passage M' when the piston is near the end of its forward stroke, and the passage M^3, registering at one end with the outer atmosphere and at the other end with the passage M^3 when the piston is near its backward stroke, substantially as set forth.

2. The combination, in a rock-drill, of a saddle carrying the guide-bars and feed-screw, with a nut mounted to revolve in the casing of the drill and engaging the feed-screw, while arms projecting from such casing engage the guide-bars, all substantially as and for the purpose specified.

3. The combination, with the piston-rod, of a cuneiform or wedge-shaped lifter for actuating the feed-gear, said lifter being adapted to reciprocate with the piston-rod and prevented from rotating therewith, substantially as described.

4. The combination, with the drill-casing, of a hollow block F', the drill-piston extending into said block, a lifter L, guided in said block and connected to said piston, a puppet-head actuated by said lifter, and a bush Y, journaled at one end in said block, substantially as described.

447,667. EXPANDING MANDREL. JOSEPH D. O. DUBRULE, Montreal, Canada. Filed Sept. 2, 1890. Serial No. 363,778. (No model.) Patented in Canada Oct. 6, 1890, No. 35,184.

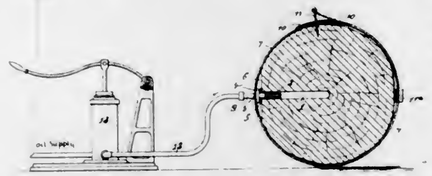


Claim.—1. In an expanding mandrel, the combination of a spindle, a stationary expansion-head, a movable expansion-head, and means for expanding the heads, as set forth.

2. In an expanding mandrel, the combination of a screwed spindle, a stationary cone and a movable cone, each tapering in the direction of the respective ends of such spindle, wedges adapted to be adjusted longitudinally along the surfaces of such cones, and means for adjusting such wedges, as set forth.

3. In an expanding mandrel, the combination of a screwed spindle, a cone on same dovetail-grooved longitudinally, wedges having their under surfaces bearing on the exterior surface of such cone and having dovetail projections located centrally in such under surfaces and fitting such grooves, so that such wedges are adapted to be adjusted longitudinally along said cone with their said under surfaces in contact with the said exterior surface of same, and a traveler on such spindle for effecting such adjustment, as set forth.

447,668. DEVICE FOR RENDERING LOGS BUOYANT. GEORGE DURYEE, Orange, N. J. Filed Mar. 4, 1890. Serial No. 342,551. (No model.)



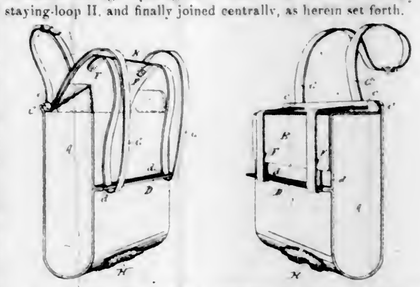
Claim.—1. The combination of the pipe for entering the log, having the head 4, adapted to be connected to a pump, an adjustable clamping-band bearing upon said head and adapted to encircle the log, and a pin for connecting the ends of said bands together, substantially as set forth.

2. The combination of the pipe for entering the log, having the head 4, the pipe 9, secured in said head and adapted to be connected to a pump, and a rigid adjustable clamping-band bearing upon said head and having a perforation for the passage of said pipe 9, substantially as set forth.

447,669. COMBINED SHOULDER-STRAP BAG OR KNAPSACK. JOHN T. DWYER, Montreal, Canada. Filed Apr. 17, 1890. Serial No. 348,360. (No model.)

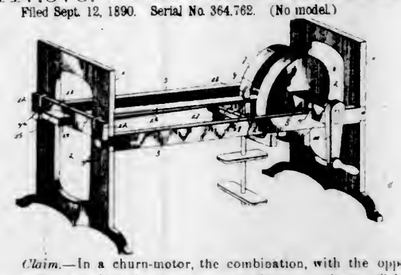
Claim.—1. In a shoulder-strap bag, the combination, with the bag proper and the cover, of transverse strengthening-ribs C at the junction of bag and cover and D across the bag below the flap, and straps G G', secured to flap and taken first down through rib D, thence upward through rib C, and joined, as herein set forth.

2. In a shoulder-strap bag, the combination, with the bag proper and the cover, of transverse strengthening-ribs C and D, formed, respectively, at the junction of bag and cover and across the face of the bag, and straps G G', secured to flap, taken down through openings in D, thence through openings in C, then down the back through the staying-loop H, and finally joined centrally, as herein set forth.



3. The combination, with a knapsack-bag having strengthening-ribs and carrying-straps, the latter secured to cover of bag and passing through such ribs, of a re-enforcing stay secured round its edge to the bottom of the bag and having a transverse loop or loops formed in its substance by slitting same transversely, or approximately so, to such bottom, and under which loops and between the substance of same and the bag proper the ends G' G' of said straps pass and are buckled together, as shown and described.

447,670. MOTOR FOR CHURNS. LOUIS S. EAVES, Polkville, N. C. Filed Sept. 12, 1890. Serial No. 364,762. (No model.)



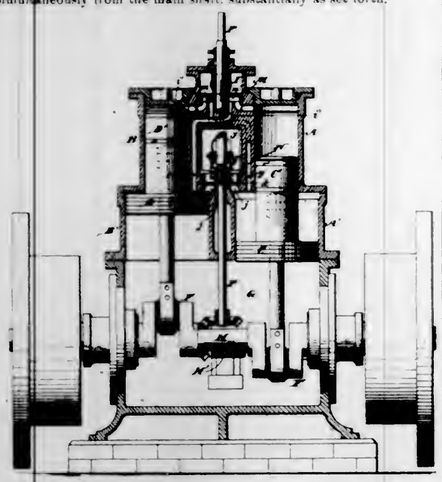
Claim.—In a churn-motor, the combination, with the opposite vertical end standards having openings and the opposite parallel side bars connecting the standards and having their opposite ends projecting beyond one of said standards and shouldered or recessed, of bearings mounted on the upper edges of the bars, a shaft mounted in the bearings and having a central squared portion and a crank for revolving the same, opposite disks mounted on the squared portion between the bearings, bolts connecting the same and provided with friction-rollers, a spring-pawl the shank or rear end of which is squared, a cleat secured to the standard and resting in the recesses of the side bars and having an opening corresponding in shape and adapted to receive the squared shank, the opposite end of the pawl terminating between the disks and in the path of the friction-rollers and provided with an opening near its end, a link pivoted loosely in the opening and bifurcated at its lower end, a dasher-rod loosely pivoted at the upper end of the link, and a frame secured to the under edges of the bars and provided with opposite vertical guides, substantially as specified.

447,671. COMPOUND STEAM-ENGINE. JOHN H. EICKERSHOFF, Cincinnati, Ohio, assignor to the Triumph Compound Engine Company, same place. Filed Oct. 3, 1889. Serial No. 325,896. (No model.)

Claim.—1. In a compound engine, the combination of a crank-case, a main shaft journaled in and through the same having oppositely-set cranks, two single-acting steam-cylinders, each of two different diameters, mounted upon and opening into the crank-case at their larger ends, a hollow trunk piston fitting conformably in each cylinder, pitmen pivoted within the pistons and coupling thence directly to the crank-wrists, one distribution-valve governing the initial induction of steam to the smaller or high-pressure ends and its expansion over to the larger or low-pressure ends of the cylinders, and one eduction-valve governing the final eduction of steam from the larger or low-pressure ends of the cylinders, substantially as set forth.

2. In a compound engine, the combination of a crank-case, a main shaft journaled in and through the same, having oppositely-set cranks, two single-acting steam-cylinders, each of two different diameters,

mounted upon and opening into the crank-case at their larger ends, a hollow trunk-piston fitting conformably in each cylinder, pitmen pivoted within the pistons and coupling thence directly to the crank-wrists, one distribution-valve governing the initial induction of steam to the smaller or high-pressure ends and its expansion over to the larger or low-pressure ends of the cylinders, one eduction-valve governing the final eduction of steam from the larger or low-pressure ends of the cylinders, and a single driving connection operating both valves simultaneously from the main shaft, substantially as set forth.



3. In a compound engine, the combination of a crank-case, a main shaft journaled in and through the same, having oppositely-set cranks, two single-acting steam-cylinders, each of two different diameters, mounted upon and opening into the crank-case at their larger ends, a hollow trunk-piston fitting conformably in each cylinder, pitmen pivoted within the pistons and coupling thence directly to the crank-wrists, and two rotating disk-valves controlling the distribution of steam to, between, and from all the cylinders, substantially as set forth.

4. The combination, in a compound engine of the character described, of the crank-case, the two differential cylinders vertically mounted thereon side by side at their larger ends, valve-chambers arranged in vertical succession wholly above the corresponding shoulders of the larger cylinders and having horizontal seats, two rotary disk-valves controlling the ports of said seats, and a vertical shaft having rotating connections with the main shaft, passing centrally through said valve chests and seats, and coupled to both valves, substantially as set forth.

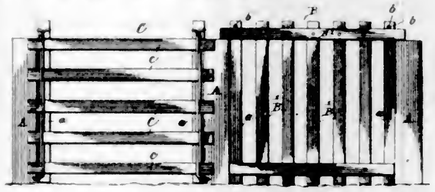
5. The combination, in a two-cylinder engine of the character described, of the two parallel cylinders, each of differential diameters, placed side by side, the steam-chests and valve-seats placed above the shoulders of the larger cylinders and occupying the space offset by the reduced diameter of the high-pressure extensions, and a vertical shaft passing centrally through said steam-chests and carrying the rotary valves for controlling the steam induction and eduction, said shaft rotated by suitable connections with the crank-shaft, substantially as described.

6. In a compound two-cylinder engine of the character described, in combination with the two cylinders, each of differential diameters, placed side by side, of the induction-valve seat arranged transversely to the axis of the cylinders immediately at the induction-ports of the high-pressure cylinders, and the eduction-valve seat arranged in like relation to the eduction-ports and formed by and upon the shoulders of the expansion-cylinders, substantially as set forth.

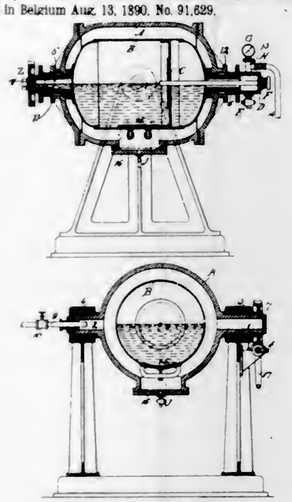
7. The combination, in a two-cylinder engine of the character described, of the two parallel cylinders, each of differential diameters, placed side by side, the exhaust-chamber placed between said smaller cylinders with the valve-seat at the bottom formed by the shoulders of the cylinders and connecting the same, the induction-chamber and valve-seat arranged above the exhaust-chamber in the said space adjacent to the inlet-ports of the cylinders, passages leading from the induction-valve seat around the exhaust-chamber to the larger cylinders, and induction and eduction valves, and driving connections, substantially as set forth.

447,672. FENCE. AARON F. ELSEY, Bardwell, Ky. Filed Aug. 17, 1889. Serial No. 321,068. (No model.)

Claim.—In a fence of the class described, the combination, with the posts provided upon their opposing faces with centrally-disposed permanent vertical cleats or strips of less breadth than the posts, of panels comprising horizontal parallel members having their ends overlapping said cleats and abutting against the opposing faces of the post, said cleats extending throughout the height of the posts, substantially in the manner and for the purpose set forth.



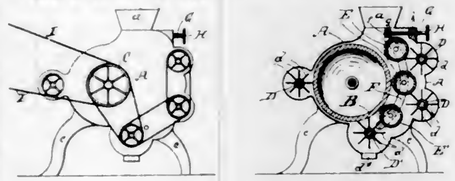
447,673. VACUUM-PAN. FRIEDRICH H. FLOTTMANN, Bochum, Germany. Filed Oct. 28, 1890. Serial No. 369,566. (No model.) Patented in Belgium Aug. 13, 1890, No. 91,629.



Claim.—1. The combination of the outer vessel A, having the hollow trunnion 1 and the trunnion 2, and stuffing-boxes 11 12, arranged at a right angle to the said trunnions, bearings 3 4 for receiving the trunnions 1 2, an inner vessel B, having hollow trunnions 5 6, with which it is mounted in the stuffing-boxes 11 12, pipes in connection with the trunnions 2 and 6, and means for rotating the vessel A in its bearings 3 4 and the vessel B in the stuffing-boxes 11 12, substantially as described.

2. The combination of the outer vessel A, having the hollow trunnion 1 and the trunnion 2, and stuffing-boxes 11 12, arranged at a right angle to the said trunnions, bearings 3 4 for receiving the trunnions 1 2, an inner vessel B, having hollow trunnions 5 6, with which it is mounted in the stuffing-boxes 11 12, pipe 9 in connection with the hollow trunnion 2, the closed stuffing-box cap D on trunnion 6, pipe 13, attached to the said cap, and means for rotating the vessel A in its bearings 3 4 and the vessel B in the stuffing-boxes 11 12, substantially as described.

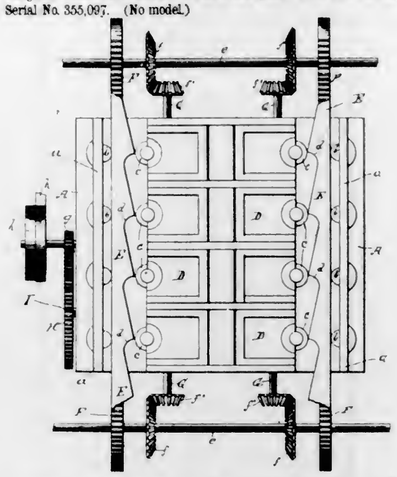
447,674. PULVERIZER. SAMUEL B. FRANK, Nashville, Tenn., assignor of one-half to Edward B. Polk, same place. Filed June 11, 1890. Serial No. 355,096. (No model.)



Claim.—1. In a pulverizer, the frame A, the cylindrical roller B, and the scraper D', in combination with the rollers E, adapted to be adjusted so as to form a graduated space between themselves and the roller B, substantially as shown and described.

2. In a pulverizer, the combination of the large roller B, the scrapers D, located on either side of the said large roller, with the roller E', the semicircular arm fulcrumed in the sides of the frame A, the rollers E, journaled in said semicircular arm, the bar *f*, having a screw-threaded aperture, and the adjusting-screw, substantially as shown and described, and for the purpose set forth.

447,675. BRICK-MACHINE. SAMUEL B. FRANK, Nashville, Tenn., assignor of one-half to Edward B. Polk, same place. Filed June 11, 1890. Serial No. 355,097. (No model.)



Claim.—1. In a brick-machine, the combination of the cam-bars having rack-teeth, the lateral plungers provided with rollers, and mechanism for operating the same, substantially as shown and described.

2. In a brick-machine, the combination of the pressure-chamber, the lateral plungers, and quadrants with the cam-bars provided with rack-teeth, substantially as and for the purpose set forth.

3. In a brick-machine, the cam-bars having a series of cams formed therein and provided with rack-teeth, substantially as shown and described, and for the purpose set forth.

4. In a brick-machine, the combination of the shaft *c*, the quadrants F, located on said shafts at either end of the machine, with the cam-bars provided at either end with rack-teeth, whereby the said cam-bars are advanced and retracted, for the purpose set forth.

5. In a brick-machine, the combination of the plunger L, the lateral plungers D, the caps K, and the cam-bars, said caps being adapted to advance with the plungers D and form an abutment for a brick under pressure, substantially as described.

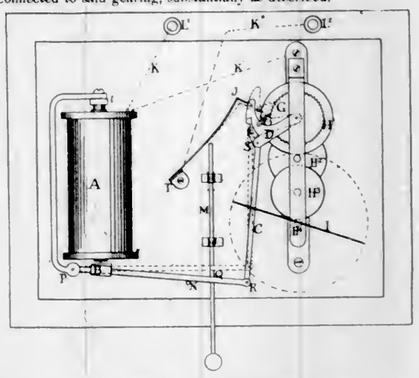
6. In a brick-machine, the combination of the frame thereof, the table C, supported on the uprights B, the right-angle projections *a*, provided with friction-rollers, with the plungers D, provided with the rollers *c*, and the cam-bars adapted to move back and forth between the friction-rollers and the rollers *c*, substantially as described.

447,676. ELECTRIC CUT-OUT. GEORGE C. GAMMON, Pawtucket, R. I. Filed July 2, 1889. Serial No. 316,336. (No model.)

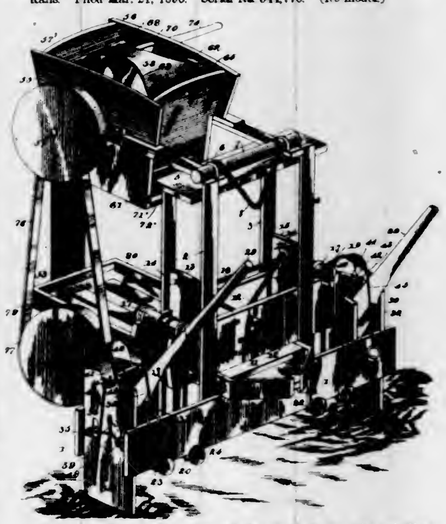
Claim.—1. In a cut-out, the combination of the fan I, a train of gear-wheels H'-H³, &c., connected therewith, a movable piece D, having the pawl actuating said gear-train, said movable piece being provided with an insulating-stop and spring-contact J adapted to slide upon said movable piece, an electro-magnet A, and an armature for said electro-magnet, connected with the movable piece D, substantially as described.

2. In a cut-out, the combination of the fan I, a train of gear-wheels H' H³, &c., connected therewith, a movable piece D, having the pawl actuating said gear-train, said movable piece being provided with an insulating-stop and spring-contact J, adapted to slide upon said movable piece, an electro-magnet A, and an armature for said electro-magnet connected with the movable piece D, and a releasing-rod M for forcing J out of the insulating-stop of the movable piece D, substantially as described.

3. In a cut-out, the combination, with an electro-magnet having an armature and included in a normally-open electric circuit, of a contact-finger also included in said circuit, a movable contact-breaker consisting of a movable piece D, connected to the armature and having an insulated portion, a driving-pawl connected to the movable piece D, a train of gearing adapted to be actuated by the pawl, and a fan connected to said gearing, substantially as described.



447,677. CIDER PRESS AND MILL. JAMES F. GEARHART, Devon, Kans. Filed Mar. 21, 1890. Serial No. 344,776. (No model.)



Claim.—1. The combination of the main frame, the windlass-frames 30, arranged at the ends thereof, the plunger, the rope or cable 16, connected to the plunger, the windlass-shaft provided with ratchet-wheels having the cable or rope 16 secured thereto, the operating-levers fulcrumed in the windlass-frame and provided with link-plates arranged to engage and rotate the ratchet-wheels, the pawl pivoted in the frame, the springs arranged to engage the pawls and hold them in engagement with the ratchet-wheels, and means, substantially as described, for withdrawing the pawls and link-plates from engagement with the ratchet-wheels, substantially as described.

2. The combination of the main frame, the plunger, the rope or cable 16, connected to the plunger, the windlass-frames arranged at the ends of the main frame, the windlass-shafts provided with ratchet-wheels and having the cable or rope 16 secured thereto, the operating-levers fulcrumed in the windlass-frames and provided with link-plates arranged to engage and rotate the ratchet-wheels, the spring-actuated pawls pivoted in the windlass-frames, the curved levers 40, fulcrumed to the windlass-frame, the ropes 48, connected to the link-plates and to the curved lever, and the U-shaped rods secured to the curved levers and provided at their lower ends with hooks engaging the pawls, substantially as described.

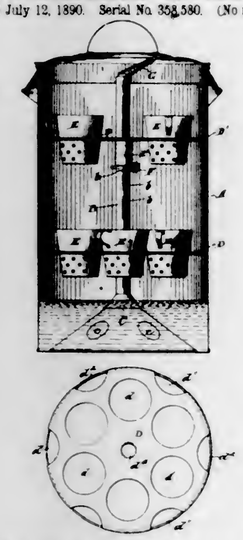
3. The combination of the main frame, the plunger, the rope or cable 16, connected to the plunger, the windlass-frames arranged at the ends of the main frame, the windlass-shafts provided with ratchet-wheels having the cable or rope 16 secured to them, the operating-levers fulcrumed in the windlass-frame and provided with link-plates, the ropes 33, having their farther ends secured to the link-plates and their adjacent ends connected by the spring 34 and adapted to hold the plates in engagement with the ratchet-wheels, the spring-actuated pawl, the U-shaped rods having their lower ends engaging the pawls, the ropes 48, secured to the link-plates, the rope 45, and the curved levers fulcrumed on the windlass-frames and connected to the U-shaped rods and having the said ropes 48 secured to them and the rope 45 and adapted to be swung back beyond their pivotal point to hold the pawl and links out of engagement with the ratchet-wheels, substantially as described.

4. The combination of the frame, the grater-box mounted thereon, the grater-disk arranged in the box, the inclined sides 62, and the cap consisting of the top plate curved around the disk and provided with segmental side plates 66 and having the boards 67 secured to the side plates, substantially as described.

5. The combination of the grater-box, the disk mounted therein, the depending sides 61, secured to the box, the hinged doors 69, the dumps 71*, operated thereby, and the operating-lever 74, fulcrumed in the box and connected with the hinged doors by the rods 71 and the links 72, substantially as described.

6. The combination of the grater-box, the grater-disk, the sides depending from the box, the doors 69, hinged at the bottom of the box, means for operating the doors, and the L-shaped dumps pivoted at the bottom of the depending sides and arranged to be engaged and operated by the hinged doors, substantially as described.

447,678. **DUMPLING-STEAMER.** SUSAN GIBSON, Arkansas City, Kans. Filed July 12, 1890. Serial No. 358,580. (No model.)



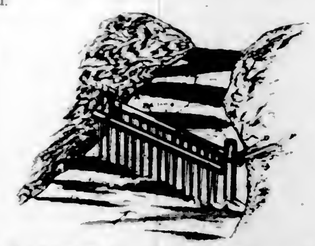
Claim.—1. The combination of the can A with the perforated cone C, the stem B, having handle G, the shelf D, fixed to the stem and perforated at d, and having segmental openings or notches d', and another upper shelf D', having adjustable sleeve d^3 centrally secured thereto, substantially as and for the purposes described.

2. In combination with the steamer A, the stem B, having the perforated cone C at its lower end and the perforated and notched shelf D on said stem above said cone, and the perforated cups E, fitting in the perforations in the shelf, whereby in use the steam circulates through the said notches and has free access on all sides to the contents of said cups.

447,679. **FLOOD-GATE.** LEE L. GRAY, Viola, Ark. Filed Apr. 16, 1890. Serial No. 348,157. (No model.)

Claim.—1. In a flood-gate, the combination, with two upright posts, of two heads placed, respectively, on opposite sides thereof and having depending bars, and a breakable pin passing through and connecting the heads, substantially as described.

2. In a flood-gate, the combination, with the supports or posts and two heads having bars thereon, of a breakable pin inserted through the heads for normally holding the same in place, substantially as described.

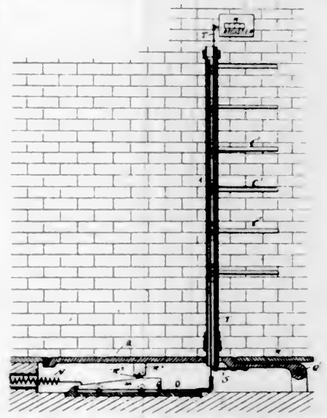


3. In a flood-gate, the combination, with two upright posts, of a head across the same, chains connecting it thereto so as to permit a partial revolution, bars depending from said head, and a breakable pin standing parallel with the current, one end passing through the head and its other end fixed, substantially as described.

4. In a flood-gate, the combination, with two upright posts, of a head across the same, chains connecting it thereto so as to permit a partial revolution, bars depending from said head, a handle seated at one end in said head at an angle to the bars and its other end free, and a breakable pin, one end passing through the head and its other end fixed, substantially as described.

5. In a flood-gate, the combination, with a head, of bars extending from said head, and a breakable pin holding said bars against movement by and in the direction of a gentle current, but yielding under a strong one, substantially as hereinbefore described.

447,680. **REGISTERING-GATE.** ELIAS R. GUERRA, Hacienda de San Matias, Jalisco, Mexico. Filed Mar. 13, 1890. Serial No. 343,760. (No model.)



Claim.—1. In a gate, the combination, with two standards, of a series of independently-swinging arms on the same, a platform, a registering device connected with said platform, and a connection between the several arms and the platform, so as to permit said platform to descend when the arms are swung in one direction, substantially as set forth.

2. In a gate, the combination, with two standards, of a series of independently-swinging arms on the same, a platform, a slide supporting said platform, a rope connected with the swinging arms and with said slide, and a registering device connected with said platform, substantially as set forth.

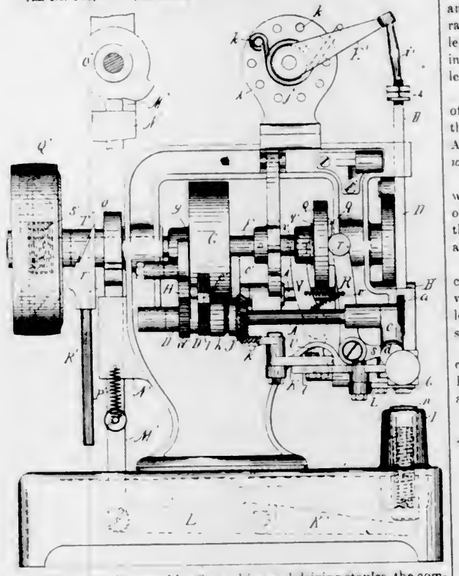
3. In a gate, the combination, with two standards, of a series of independently-swinging arms on the same, a platform, a slide below the platform, a rope connecting the several arms with the slide, a spring acting on said slide, and a registering device connected with said platform, substantially as set forth.

4. In a gate, the combination, with two standards, of swinging arms on the same, a vertically-swinging platform, a wedge-shaped slide below said platform and serving to support it in normal position, a rope connecting said slide with the arms, a spring acting on said slide, and a registering or counting device connected with said platform, substantially as set forth.

5. The combination, with two tubular standards, of a series of independently-swinging arms on the same, pulleys on the inner ends of the arms, fixed pulleys in the standards above and below the pulleys on the arms, a rope passing through the standards and having its upper end fixed, which rope passes between the fixed pulleys and the pulleys on the arms, a spring fixed to the standard and resting against the pulley on the arm at a point opposite the point of contact between the pulley and the rope, a platform, a slide below the platform connected with said rope, and a registering device connected with the platform, substantially as set forth.

6. In a gate, the combination, with a standard, of a wire rope passed longitudinally through said standard, a spring connected with said rope, a counting or registering mechanism connected with and operated by said rope, and a series of arms mounted on the standard to swing on the same and connected to act on said rope when they swing, substantially as set forth.

447,681. **STAPLING-MACHINE.** WILLIAM S. HANN, Newton, assignor, by mesne assignments, to the Staple Fastening Machine Company, Boston, Mass. Filed Nov. 16, 1889. Renewed Jan. 19, 1891. Serial No. 378,212. (No model.)



Claim.—1. In a machine for making and driving staples, the combination of a staple-forming anvil, a bending-die co-operating therewith, a driver, operating mechanism for said parts, a slide or carrier movable toward and from said anvil, a wire-cutting knife on said carrier, independent means for operating said knife, a wire-feeding roll, a feed-regulating device, connections between said feed-regulating device and the knife-carrier, whereby changes in the position of the carrier to move the knife from or toward the staple-bending anvil are caused to regulate the movement of the feed-roll, and means for adjusting the slide or carrier, as set forth.

2. In a machine for making and driving staples, the combination, with the staple-forming anvil, the bending-die co-operating therewith, and operating mechanism for said parts, of a slide or carrier movable toward and from said anvil, a wire-cutting knife on said carrier, means for operating said knife, a wire-feeding roll mounted on a shaft, a ratchet affixed to said shaft, a movable feed-regulating shield partly covering said ratchet, a reciprocating pawl or pawls adapted to engage the ratchet and having their operative engagement therewith controlled by said shield, devices connecting said shield with the adjustable knife-carrier, whereby changes in the position of said carrier to move the knife from or toward the staple-bending anvil are caused to move the shield, and thereby enable the pawl to give a greater or less movement to the feed-roll, and means for adjusting the slide or carrier and through the connecting devices the feed-regulating shield, as set forth.

3. In a machine for making and driving staples, the combination, with the staple-forming anvil, the bending-die co-operating therewith, and operating mechanism for said parts, of the feed-shaft and its roll, the ratchet secured to said shaft, the sleeve D, having the arm E, pawl or pawls e', and the gear d', a segmental gear for engaging with the gear d', and a cam for oscillating said segmental gear, all as set forth.

4. In a machine for making and driving staples, the combination, with the staple-forming anvil, the bending-die, and operating mechanism co-operating therewith, of the feed-shaft and its roll, the ratchet secured to said shaft, an oscillating pawl or pawls engaging with said ratchet, the gear J, having the feed-regulating shield i, the lever K, having the gear k, meshing with the gear J, the lever L, engaged with the lever K, a block or carrier M, engaged with the lever L, the wire-cutting knife on said carrier, and a thumb-screw adapted to move said carrier toward and from the said anvil, all as set forth.

5. In a machine for making and driving staples, the combination, with the staple-forming anvil, the bending-die co-operating therewith, and operating mechanism for said parts, of an adjustable sliding block or carrier provided with a spring-raised knife, a bell-crank lever, one arm of which extends over said knife, and a cam engaged with the other arm of the lever and adapted to oscillate the lever, and thereby operate the knife, all as set forth.

6. In a machine for making and driving staples, the combination, with the staple-forming anvil, the bending-die co-operating therewith, and operating mechanism for said parts, of the feed-shaft and its roll and the ratchet I, an oscillating pawl or pawls for engaging with said ratchet, the gear J, having the shield i, lever K, having the gear k, lever L, an adjustably-sliding block having a spring-knife, a lever having one arm extending over said knife, and a cam for operating said lever, all substantially as described.

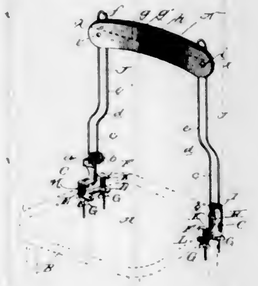
7. In a machine for making and driving staples, the combination of the shaft F, lever U V, cam q', and block T, mechanism for feeding the wire and cutting it off in short lengths over the projection t, lever A' B' C', pin a', and sliding block W, having the projection w and slot w', and staple-driving mechanism, all as set forth.

8. In a machine for making and driving staples, the combination, with wire feeding and cutting mechanism and a movable staple-former, of the shaft F, cam q', lever A' B' C', pin a', sliding block W, having the projection w and slot w', the plunger D', roller l', cam F', arm E', and spring j', all as set forth.

9. In a machine for making and driving metallic fastenings, the combination, with wire feeding, cutting, and driving mechanism, of a vertical casing k', the anvil n' n^3 and its spring o' in said casing, the lever K' L', the vertically-sliding arm M', and a cam and spring whereby said arm is reciprocated, all as set forth.

10. In a machine for making and driving metallic fastenings, the combination of the shaft F, the cam O', spring-arm M', spring p', lever K' L, yielding anvil n', the cam F', driver-bar D', driver h', and roll l', all as set forth.

447,682. **DETACHABLE CHAIR-BACK.** JOHN H. HAULENBECK, Cleveland, Ohio, assignor to A. Cushman Bishop, Detroit, Mich. Filed July 31, 1890. Serial No. 360,559. (No model.)



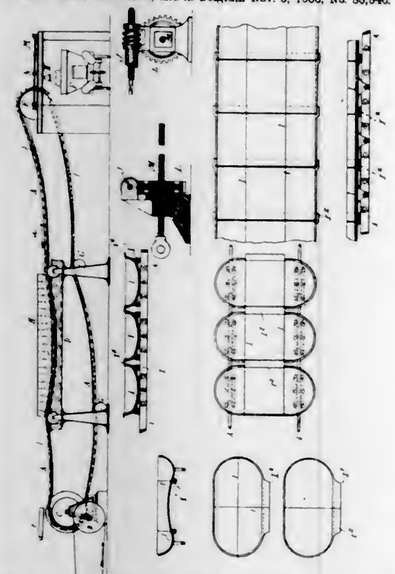
Claim.—1. In a detachable chair-back, the combination, with a body having vertical pockets therein, hooked bolts passing through the body, and flanges on the bottom of the body, of spring-arms secured in the said pockets and coiled at their lower ends, and a back consisting of two parallel yielding strips having compression-bolts passing through the ends, substantially as described.

2. In a detachable chair-back, the combination, with the clamps adapted to be secured to the seat of the chair, of two spring-arms secured thereto and bent inwardly at a point near their centers, whereby they are adapted to fit under the arms of the chair, and an adjustable back, substantially as set forth.

3. In a detachable back, the combination, with the vertical supporting-arms, of a back consisting of two separated bars centrally secured together, and means for clamping said bars upon the arms, substantially as described.

4. In a detachable chair-back, the cross-bar N, consisting of the two like flexible strips *g g'*, the spacing-bar *h*, the clamping-bolts *i*, and nuts *j*, substantially as described.

447,683. APPARATUS FOR REMOVING SLAG FROM FURNACES. WILLIAM HAWDON, Middlesbrough-on-Tees, England. Filed Nov. 5, 1888. Serial No. 290,037. (No model.) Patented in England Oct. 31, 1887, No. 14,803, and in Belgium Nov. 5, 1888, No. 83,846.



Claim.—1. The combination, with the endless carrier or conveyer, of a number of pans secured thereto, each pan being divided into two or more sections and the several sections of each pan being rigidly riveted or bolted together, whereby the said pans may expand and contract under changes of temperature without fracturing, substantially as set forth.

2. The combination, with the carrier or conveyer, of pans or molds for the reception of the molten metal, secured thereto, and each being divided longitudinally and transversely and the sections secured rigidly together, substantially as set forth.

3. The combination, with the carrier or conveyer, of pans or molds for the reception of molten metal, each being completely divided longitudinally and transversely and the sections thereof having the ears or flanges l' at intervals along the joints riveted together, substantially as and for the purposes set forth.

4. The combination, with the endless carrier, of a water-trough, pulleys arranged to guide said carrier through said trough, molds or pans secured to said carrier, and a spray-pipe arranged lengthwise of said carrier and adapted to discharge into said pans or molds, substantially as set forth

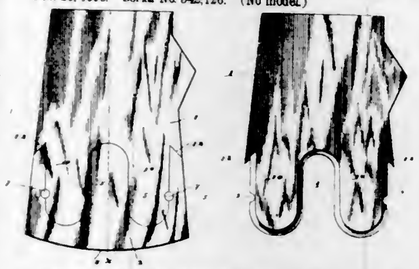
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447,684. VALVE-HANDLE. JOHN B. HEIGHINGTON and WILLIAM HEIGHINGTON, Toronto, Canada, assignors to Joseph Heighington and Melville Fitch Brown, both of same place. Filed Oct. 22, 1889. Serial No. 327,855. (No model.) Patented in Canada Nov. 12, 1889, No. 32,804.



Claim.—The combination of the metallic disk B, having corrugated flanged edge *b*, with the annular ring C, of rubber or other suitable non-conducting material, having a corrugated channel *c*, formed to fit the corrugated flanged edge *b* of the disk B, substantially as and for the purpose set forth.

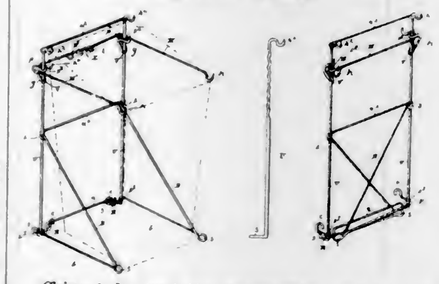
447,685. AX-HEAD. JOHN M. HOLLADAY, Holladay, Va. Filed Feb. 28, 1890. Serial No. 342,126. (No model.)



Claim.—1. The head 1, having on its lower edge the two fingers 10, interposed recess 4, and outer downwardly-inclined shoulders 12, in combination with the blade 2, having its upper edge formed with three fingers to fit said lower edge, and means, substantially as described, for removably connecting the said fingers with the blade, as set forth.

2. The head 1, having on its lower edge a finger and downwardly-inclined shoulders 12 at each end of the head, in combination with the blade 2, having its upper edge formed to fit said lower edge, registering notches 3 in said edges, and rivets 7, seated in said registering notches, substantially as described.

447,686. BAG-HOLDER. JOHN M. HOLLADAY, Holladay, Va. Filed June 2, 1890. Serial No. 353,913. (No model.)



Claim.—1. In a bag-holder, the combination, with the uprights, a bottom brace connecting them, and holding-arms carried by said upright, of side braces having eyes mounted loosely on the uprights, the bodies of said braces in rear of said eyes being bent at right angles and provided with downwardly-opening hooks adapted to engage said bottom brace, the whole operating substantially as described.

2. In a bag-holder, the supporting frame-work composed of wire bent into uprights U, connected by an integral bottom brace *a*, said uprights having hooks h^2, a central brace *a'* and a top brace a^3 at the ends, in combination with braces for holding said frame-work in upright position, and bag-holding arms carried by said uprights, substantially as described.

3. In a bag-holder, the two uprights U, having looped feet *s* at their lower ends and connected by a bottom brace *a*, all formed of a single piece of wire, and the side braces B, connected to said uprights and having looped feet *s* at their front ends, in combination with bag-holding arms, substantially as described.

4. In a bag-holder, the combination, with the uprights and the side braces for holding them in position, of the holding-arms having grips at their inner ends, each grip having an eye near its upper end and an acute angle near its lower end, both embracing the body of the upright, substantially as described.

5. In a bag-holder, the combination, with the uprights having crimped bodies and braces for holding them in position, of the holding-arms having grips at their inner ends embracing said crimped bodies and frictionally supported thereby, substantially as described.

6. In a bag-holder, the combination, with the uprights and the braces for holding them in position, of the wire holding-arms having hooks at their outer ends, and the sheet-metal grips whose bodies are

bent at an angle, the upper members thereof being provided with eyes and the lower members with V-shaped angles both embracing said uprights, the inner ends of said holding-arms passing through holes in the ends of said members and being soldered thereto, substantially as described.

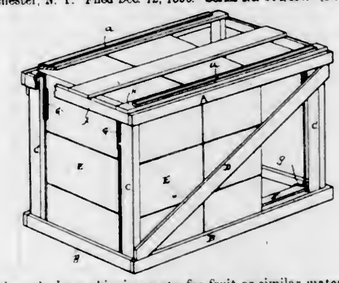
7. In a bag-holder, the combination, with the uprights and the braces for holding them in position, of the holding-arms vertically adjustable at their inner ends upon said uprights, each of said arms having hooks at its inner and outer ends, as and for the purpose set forth.

8. In a bag-holder, the combination, with the uprights and the braces for holding them in position, of the holding-arms, the grips secured to the inner ends thereof and vertically adjustable upon said uprights, and the two links extending inwardly from said grips and respectively provided at their inner ends, one with a hook and the other with a number of eyes, as and for the purpose set forth.

9. The herein-described bag-holder, the same comprising a rectangular supporting frame-work, side braces pivoted on the uprights thereof at their lower ends, holding-arms pivotally mounted upon said uprights near their upper ends, and means, substantially as set forth, for holding said braces and arms in distended position, as and for the purpose described.

10. The herein-described bag-holder, the same comprising side uprights U, connected by an integral bottom brace *a* and having hooks h^2 at their upper ends, a central brace *a'* and a top brace a^3, side braces B, having eyes pivoted just below said central brace and just above said bottom brace, respectively, of each upright, the lower member *b* of each side brace having a right-angular arm R, provided with a hook *c*, holding-arms H, each having a grip vertically adjustable upon said uprights and each provided with hooks *h h'* at its outer and inner ends, respectively, links L, connecting said grips in rear of their pivots on the uprights, and a single hook and a number of eyes in the meeting ends of said links, the whole constructed and operating substantially as and for the purpose hereinbefore set forth.

447,687. FRUIT-CRATE. LEWIS W. HORN and JAMES MCARTHUR, Rochester, N. Y. Filed Dec. 12, 1890. Serial No. 374,467. (No model.)



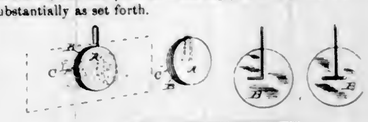
Claim.—1. In a shipping-crate for fruit or similar material, the main crate composed of the upper and lower frames and the corner standards connecting them and forming guides for the fruit-boxes, the supporting-tray for the fruit-boxes, having the ends projecting endwise between the standards, and the suspending-springs connected to the tray ends and to the upper portion of the crate (as the end of the corner-post or upper frame) arranged wholly within the respective end sections of the frame, whereby the tray and contained boxes will be elastically supported and the springs will be protected and will not interfere with the carrying capacity of the crate, substantially as described.

2. In a shipping-crate for fruit or similar material, the main crate composed of the upper and lower frames and the corner standards connecting them and forming guides for the fruit-boxes, the supporting-tray for the boxes, composed of the two slats with their ends projecting endwise between the standards, and the suspending-springs connected at their lower ends, engaging the ends of the slats and connected at their upper ends to the upper portion of the crate (as the ends of the corner-posts or upper frame) and arranged wholly within the respective end sections of the frame, whereby the tray and contained boxes will be elastically supported and the springs will be protected and will not interfere with the carrying capacity of the crate, substantially as described

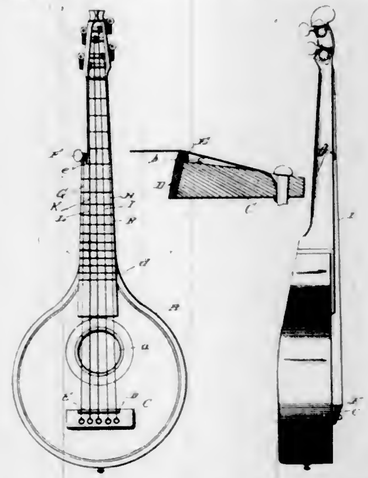
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447,688. TAG-FASTENER. MO ISAACS, New York, N. Y. Filed Aug. 8, 1890. Serial No. 361,452. (No model.)

Claim.—A securing device for show and other cards, consisting of the three disks A B C, glued together, the middle disk being formed with the slot adapted to receive the inner bent end of the securing-pin, and the front disk A having its outer side coated with an adhesive substance, and the pointed retaining-pin having the bent inner end, substantially as set forth.



447,689. STRINGED MUSICAL INSTRUMENT. OSCAR LEMINER, Sr., Cass City, Mich. Filed Nov. 29, 1890. Serial No. 372,992. (No model.)



Claim.—1. As a new article of manufacture, a banjo-guitarina having a body approximately the shape of a guitar with its closed rear wall sloping toward the stock or neck and extending well into the same, the four strings, and also the supplemental string, the keys adjustably securing the upper ends of the strings, the tail-piece for the attachment of the lower ends of said strings, the metallic bridge, and the auxiliary removable rod or bridge, substantially as specified.

2. A musical stringed instrument having its body portion approximating a guitar with a violoncello head, a neck corresponding to that of a banjo and having frets, a metallic bridge, a removable auxiliary steel bridge, four main strings arranged as described, and a supplemental or auxiliary string of higher pitch or tone than the highest main string; substantially as specified.

447,690. MANUFACTURE OF HOLLOW PROJECTILES OR SHELLS. ROBERT LOW, London, England. Filed Nov. 20, 1890. Serial No. 372,040. (No model.)

Claim.—1. The improved method of manufacturing a hollow projectile or shell by rolling or hammering an ingot of metal supported upon a rotatable mandrel and gradually forcing the metal of the said ingot back over the body of the said mandrel.

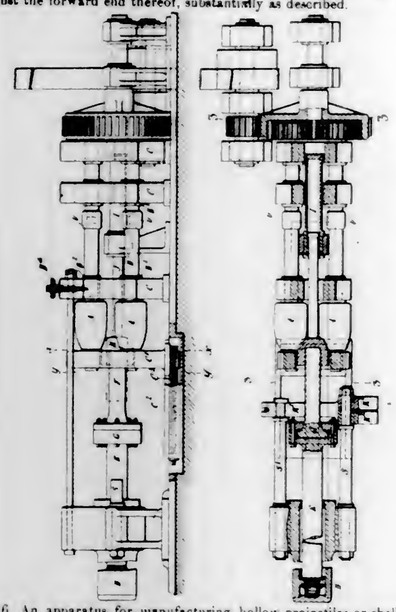
2. The improved method of manufacturing a hollow projectile or shell from an ingot or disk of metal by first punching or cupping the said disk or ingot and then rolling or hammering the same while supported upon a mandrel which is free to turn about its longitudinal axis.

3. The improved method of manufacturing a hollow projectile or shell from an ingot or disk of metal by first punching or cupping the said disk or ingot, so as to produce therein a cavity having the same or approximately the same shape as that of the cavity in the finished shell near its forward end, and then rolling or hammering the same while supported upon a mandrel which is free to turn about its longitudinal axis.

4. The improved method of manufacturing a hollow projectile or shell by rolling or hammering an ingot of metal, the said ingot having a central hole or cavity and being supported upon a rotatable mandrel adapted to enter the said hole or cavity and to force the ingot forward between suitable rolls or under a suitable hammer.

5. The improved method of manufacturing a hollow projectile or shell by rolling or hammering an ingot of metal supported upon a rotatable mandrel inserted into a hole or cavity therein and supported

or retained upon the said mandrel by a ram or buffer adapted to press against the forward end thereof, substantially as described.



6. An apparatus for manufacturing hollow projectiles or shells, having a rotatable mandrel adapted to force the ingot from which the projectile is formed forward between suitable rolls or under a suitable pressing head or hammer while permitting the rotation thereof.

7. An apparatus for manufacturing hollow projectiles or shells, comprising a series of rolls of tapered form toward their forward ends arranged parallel with one another around a common center, and a rotatable mandrel to support the ingot from which the projectile is formed and which moves longitudinally to and fro in the space between the said rolls.

8. An apparatus for manufacturing hollow projectiles or shells, comprising a series of rolls arranged or disposed around a common center, a rotatable mandrel adapted to support the ingot from which the projectile is formed, and a hydraulic ram or buffer adapted to press against the forward end of the ingot and hold it in position upon the mandrel.

9. In an apparatus for the manufacture of hollow projectiles or shells by hammering under a pressing head or hammer, a rotatable mandrel for supporting and feeding the work in the said head or hammer provided with screw-threads adapted to work in a corresponding internally-threaded fixed nut or block.

10. The combination, in an apparatus for the manufacture of hollow projectiles or shells, of the rolls A, the rotatable mandrel F, the hydraulic ram E for forcing the same forward, and the subsidiary hydraulic ram or buffer J for holding the work on the said mandrel and for pressing the same backward when its stroke is completed.

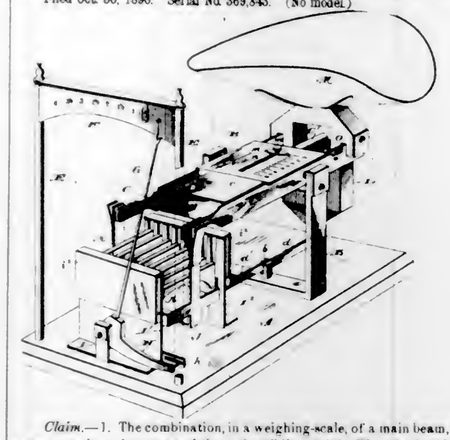
11. In an apparatus for manufacturing hollow projectiles or shells, the combination, with the roll-shafts B, provided with the pinions P, of the internally and externally toothed gear-wheel O for driving the said pinions, substantially as described.

12. The combination, in an apparatus for the manufacture of hollow projectiles or shells, of a longitudinally-movable mandrel F, and a disengaging device comprising the clip-arms R R', bent so as to closely surround the said mandrel, secured together by the catch-piece T, substantially as set forth.

13. In an apparatus for the manufacture of hollow projectiles or shells, the pillars or base-pieces M, each having a socket in the upper part thereof containing a spring K', and a sliding plunger F^3, adapted to support the buffer-cylinder I or the screw-block L, as the case may be, for the purposes specified.

14. In an apparatus for the manufacture of hollow projectiles or shells, the combination of the forging-head or steam-hammer V, the screw-threaded mandrel F, working in the block L, the buffer J, working in the cylinder I, the spring-supported plungers F^3 for supporting the said block and cylinder, and the anvil-block W, substantially as described.

447,691. WEIGHING-SCALE. GUSTAVE LUNDBERG, Logan, Utah. Filed Oct. 30, 1890. Serial No. 369,843. (No model.)



Claim.—1. The combination, in a weighing-scale, of a main beam, a support pivoted to one end thereof, a sliding weight W, and a bar O for adjusting the sliding weight, said weight having attached thereto a slotted tube carrying an indicator which moves over a scale-plate attached to the beam, substantially as set forth.

2. The combination, in a weighing-scale, of the pivoted beam C, having a slotted scale-plate, a movable weight carrying a slotted tube and a locking-bar O, and a transverse guide or wall having an opening through which the slotted tube and locking-bar pass, said locking-bar having notches, substantially as set forth.

3. In a weighing-scale, the combination of a main beam consisting of parallel side pieces suitably fulcrumed, and a pan-carrying frame through which the tube C' and locking-bar pass, said pan-carrying frame being pivotally attached to the side pieces of the beam and provided with a link or bar *d*, connecting the same with the base-frame, substantially as set forth.

4. The combination, in a weighing-scale, of the pivoted beam C, having a movable sliding weight and means for adjusting and holding the same, a slotted scale-plate over which the indicator passes, a pan-supporting frame hung upon the side pieces of the beam and connected to the base by a bar *d*, and a basket hung upon the opposite end of the beam, said basket being located beneath a series of vertically-movable weights and provided with a slotted bar with which the arm of an oscillating pointer engages, substantially as set forth.

5. In combination with a main beam C and attachments therefor, the vertical supports I' and I^2, having slots for supporting a series of vertically-moving weights, and a basket or frame located beneath said weights and pivotally attached to the end of the main beam, said basket being adapted to operate an indicator, substantially as set forth.

6. In combination with the main beam C of a weighing-scale, a vertically-moving basket or frame J, a bar *d'* for connecting the same to the base, a frame L, attached to the beam C C at the opposite end to which the frame J is secured, and bar *d*, connecting the lower end of the frame L to the base, substantially as set forth.

7. In combination with a weighing-scale constructed substantially as shown, standards attached to the same base and carrying a graduated plate, a pivoted pointer adapted to move in proximity thereto, and means for connecting the same to a movable basket suspended from the scale-beam, substantially as set forth.

8. In a weighing-scale, the combination, with the scale-beams C, carrying at one end a basket, said basket having a horizontal slot, of an indicator or pointer G, carried by a weighted arm H, said arm being pivotally secured to a support and provided with a projecting pin which engages with the slot in the basket, together with a scale-plate F, over which the indicator travels, substantially as set forth.

9. In combination with a series of weights K, supports therefor having V-shaped slots, within which the pins carrying the weights lie, and a vertically-movable basket or frame attached to the scale-beam, substantially as set forth.

10. The combination, with a scale-beam constructed substantially as set forth and provided with an adjustable weight, of a slotted tube C' and spring locking-bar O, having notches *a*, said bar being twisted so that the portion in which the notches are located is vertical and its spring tendency downward, as set forth.

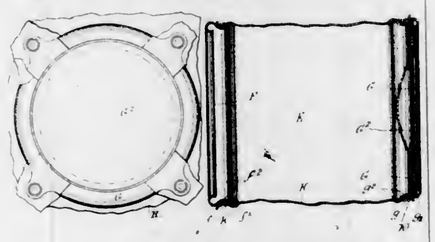
11. In combination with a weighing-scale, a beam C, pan-supporting frame L, bars *d* and *d'*, pivoted as shown, and a basket or frame J, attached to the main beam and bar *d'*, said basket being adapted to engage with a series of vertically-moving weights and operating an oscillating pointer which moves over the faces of the scale-plate F, substantially as set forth.

447,692. BRACELET. ADOLPH W. MAGERHANS, New York, N. Y. Filed June 28, 1890. Serial No. 357,142. (No model.)



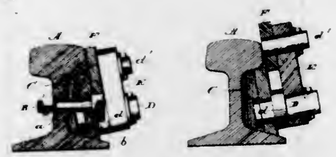
Claim.—In a bracelet, the combination, with the front link A and the rear link B, of a tubular pivot *a'*, extending loosely through an opening in the back plate of the front link A, said tubular pivot *a'* being provided with an internal screw-thread to engage a screw a^6, and with two heads a^2 a^3, the head a^3 being situated between the front and rear plates of the front link A, while the head a^2 engages a cavity in the rear link B, substantially as described.

447,693. GAS-METER. ROBERT MITCHELL and CHARLES LAWSON, Montreal, Canada. Filed Mar. 14, 1890. Serial No. 343,906. (No model.) Patented in Canada Apr. 2, 1890, No. 34,038.



Claim.—In a gas-meter, the diaphragm composed of the front plate having an inwardly-projecting flange and expansible leather sides and back plate having an aperture therein and plate normally covering same, and an inwardly-projecting flange, as and for the purposes set forth.

447,694. DETECTOR-BAR. LOUIS N. MOSIER, Harlem, Mo. Filed Mar. 27, 1890. Renewed Jan. 22, 1891. Serial No. 378,678. (No model.)

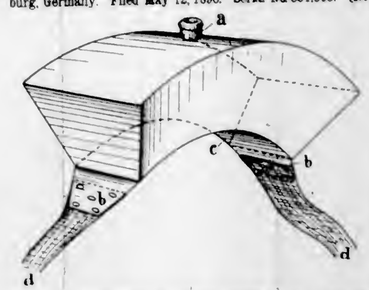


Claim.—1. The combination, with a railroad-rail, of recessed blocks secured to the web of the rail by bolts B, said blocks having outwardly and upwardly inclined bolts D, upon which are pivoted links or arms E, and a detector-bar secured to the upper ends of said arms, the bolts B serving the twofold purpose of holding the blocks C to the rails and as stops for the detector-bar, substantially as set forth.

2. In combination with a railroad-rail, blocks C, having their ends shaped to conform to the rail, bolts B for securing said blocks in place, upwardly-inclined bolts D, secured to the blocks, links loosely pivoted thereon, and a detector-bar having upwardly-inclined projections or bolts *d'* for attaching the upper ends of the links thereto, substantially as set forth.

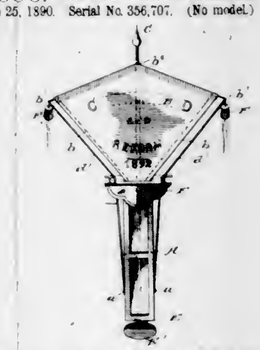
3. The combination, with a railroad-rail, of blocks C, having inclined recesses *b*, horizontal bolts B for securing said blocks to the rail, said bolts having rectangular heads adapted to partially lie within the recesses *b*, bolts or pintles D, secured to the blocks C at an upward inclination, washers *d*, and links E, pivotally mounted on the bolts D and pivotally connected to the detector-bar, so that when the detector-bar is elevated the upper edge thereof will be over the edge of the rail and when lowered will rest upon the projecting heads of the bolts B, substantially as shown, and for the purpose set forth.

447,695. ANTI-SNORING BANDAGE. ANTON MOSERTS, Strasburg, Germany. Filed May 12, 1890. Serial No. 351,395. (No model.)



Claim.—An anti-snoring device consisting of a hollow cushion adapted to be inflated, having a concave front conforming to the shape of the neck, with an approximately level top portion adapted to support the chin, and fastening means for holding the cushion in position beneath the chin.

447,696. BANNER. HENRY W. MUNDBENK, Gilman, Iowa. Filed June 25, 1890. Serial No. 356,707. (No model.)



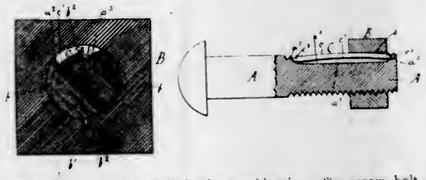
Claim.—1. A hollow staff having a sliding block, a banner secured to said block, a rod for forcing said banner out of said staff, and an elastic connection adapted to spread the banner, substantially as described.

2. In combination with a hollow staff, a sliding block adapted to slide in said staff and a banner hinged to said block, means for forcing said banner out of the staff, and an elastic connection with the block adapted to spread said banner open, substantially as described.

3. In combination with a hollow staff, a block D, adapted to slide therein, braces *b b*, hinged thereto, a banner secured to said braces, means for spreading said banner, an operating-rod E, secured to sliding block D and extending to the top of the banner, and a suitable head secured to rod D, substantially as described.

4. In combination with a hollow staff, a block sliding therein and banner hinged thereto, means for spreading said banner, an operating-rod D, secured to the sliding block and extending to the top of the banner, and a suitable decoration secured to the top of the staff, substantially as described.

447,697. NUT-LOCK. THOMAS P. POLLARD, Richmond, Va. Filed May 21, 1890. Serial No. 352,585. (No model.)

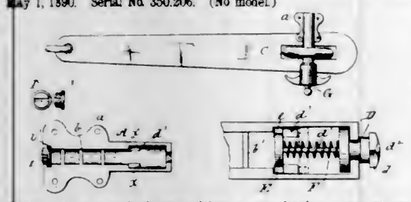


Claim.—1. In a nut-lock, the combination of a screw-bolt A, formed with a groove *a'*, having an inclined side a^3 and a side a^4, which is inclined or made to slant to a greater extent than the side a^3, a nut B, formed with one or more grooves *b*, having inclined sides *b'* and sides b^2, which are inclined or made to slant to a greater extent than

the sides *b'*, and a bowed spring C, which bridges or spans the greater portion of the length of the groove *a'*, said spring being constructed and arranged to be depressed and thereby clear the grooves *b* when the nut is being screwed up and to expand and enter with its bowed portion into one or the other of said grooves *b* when the nut is slightly unscrewed, substantially as described.

2. A nut-lock comprising, in combination, a bolt having a longitudinal groove *a'*, which is inclined or beveled at its ends, as at a^5, a bowed spring C, bridging or spanning the groove *a'* lengthwise and resting with its ends upon the bevels a^5, and a nut B, substantially as described.

447,698. HASP-LOCK. WILLIAM W. PURSELL, Berwick, Pa. Filed May 1, 1890. Serial No. 350,206. (No model.)



Claim.—1. A hasp-lock comprising a case having a stop at one end to limit the movement of the lock when thrust through a staple, a rotatable locking-bolt at the opposite end of the case, and a locking head or cap secured to the case by the said locking-bolt, substantially as set forth.

2. The combination, with the case and the rotatable locking-bolt, of the spring-actuated guide having engagement with and adapted to turn with the said locking-bolt, but free to move thereon, and having lateral projections which are adapted to engage with the said case, and a cap adapted to be engaged by the said locking-bolt, substantially as set forth.

3. The combination, with the case having a stop at one end to limit the movement of the case when thrust through a staple and a rotatable locking-bolt in the case at the end opposite the said stop, having locking projections at its outer end, of a locking-cap having an inner flange, and an interlocking groove and projection between the said cap and case to guide the cap when placed on the case to give proper direction to the locking-bolt head and prevent the cap from turning when in place on the case, substantially as described.

4. A hasp-lock comprising a case which is made in sections, each section having lateral wings which form means for securing the said sections together and serve as a stop to limit the movement of the said case when thrust through the staple, a locking-bolt inclosed within said case and adapted to have a movement to secure the lock when in position, and a cap held on the case by the locking-bolt, substantially as set forth.

5. In a hasp-lock, the combination, with the case or barrel made in sections, each section having stops, of a key having notches in its edges to correspond with the position of the said stops, substantially as described.

6. The hereinbefore-specified hasp-lock, composed of a case which is made in sections, each section having stops and lateral wings which serve as fastening means for securing the sections together, a rotatable key-guide I, the locking-bolt D, the guide E, mounted on the shank of the locking-bolt and having a limited movement thereon, the spring F for pressing the guide E back in the case, and the locking head or cap G, substantially as set forth.

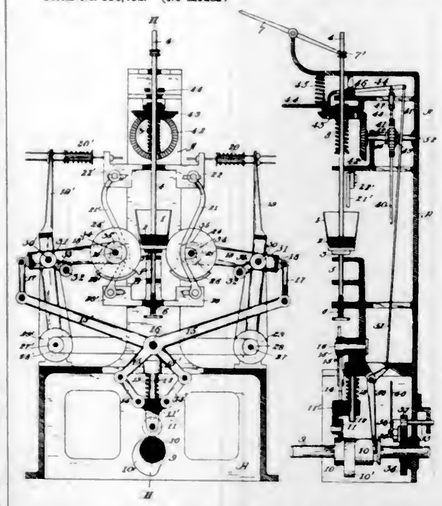
447,699. TOBACCO-HANGER. ISAAC REICH, Winston, N. C., assignor of one-third to Charles H. Tise, same place. Filed Aug. 12, 1890. Serial No. 361,812. (No model.)



Claim.—1. A tobacco-hanger consisting of a looped head adapted to receive a carrier-bar, a shank located below the looped head and adapted to engage an orifice in a tobacco-stick, and two leaf-tobacco stringers or arms extending in different directions from a point between the looped head and the shank, substantially as described.

2. A tobacco-hanger consisting of a single piece of wire bent to form a looped head, a twisted shank, and two stringers or arms extending in different directions from a point between the looped head and the twisted shank, substantially as described.

447,700. APPARATUS FOR GRINDING OR POLISHING GLASSWARE. HERMANN SCHULZE-BERGE, Rochester, Pa. Filed May 6, 1890. Serial No. 350,732. (No model.)



Claim.—1. In apparatus for grinding or polishing glassware, a revoluble spindle for centering and holding the glass object adapted to be revolved intermittently and a grinding-wheel journaled in movable bearings and adapted to be forced toward the spindle.

2. In apparatus for grinding or polishing glassware, a spindle revoluble in stationary bearings for centering and holding the glass object, a grinding-wheel journaled in movable bearings and adapted to be moved toward the spindle, and a profile-guide shaped and placed so as to regulate the motion of the grinding-wheel toward the glass object.

3. In apparatus for grinding or polishing glassware, a revoluble spindle for centering and holding the glass object, and a plurality of grinding-wheels journaled in movable bearings adapted to be moved simultaneously toward the spindle.

4. In apparatus for grinding or polishing glassware, a revoluble spindle for centering and holding the glass object, a grinding-wheel journaled in movable bearings and adapted to be moved toward the spindle, a revoluble shaft provided with a sliding cam-sleeve, a lever adapted to actuate the cam-sleeve, gearing on the shaft adapted to actuate a crank and adapted to rotate intermittently the revoluble spindle centering the glass object, and a pitman, pawl, ratchet-wheel, and intermediate gearing.

5. In apparatus for grinding or polishing glassware, a revoluble spindle for centering and holding the glass object, a grinding-wheel journaled in movable bearings and adapted to be moved toward the spindle, a revoluble shaft provided with a sliding cam-sleeve, a lever adapted to actuate the cam-sleeve, and gearing upon the shaft adapted to actuate a crank and adapted to rotate intermittently the revoluble spindle centering the glass object.

6. In apparatus for grinding or polishing glass objects, an automatic revolving and stopping arrangement for revolving intermittently and setting at rest the glass object, consisting in a spindle centering and holding the glass object, a wheel concentric with such spindle, in combination with a continuously-revoluble shaft and intermediate connections between the shafts and the spindle gearing a crank-shaft with a pitman, a pawl actuated by the pitman, a ratchet-wheel and gear-wheels adapted to transfer the motion from the ratchet-wheel axle upon the spindle, a revoluble disk or wheel provided with one or more rests, and a lever adapted to meet such rest in course of rotation of the disk, and connections, substantially as described, adapted to transfer the motion imparted to the lever upon the pawl of the ratchet-wheel, whereby the further rotation of the spindle is prevented.

7. In a device for intermittently rotating a glass object held between the spindles of a grinding apparatus, a lock-gearing attached to a steadily revoluble shaft and provided only on a part of the circumference with a series of cogs, and a second gear-wheel attached to a crank-shaft, which gear-wheel is provided with a locking-tooth and a series of cogs corresponding in number to the cogs of the first gear-wheel, which lock-gearing is so constructed and related to the first gear-wheel that while the first performs a single steady rotation one single and full rotation is performed intermittently by the second gear-wheel.

8. In apparatus for grinding or polishing glassware, a revoluble spindle for centering and holding the glass object and a plurality of grinding-wheels journaled in movable bearings, flexible shafting connected to the axle of each grinding-wheel, which bearings of the grinding-wheels are adapted to be forced from various directions simultaneously toward the spindle, and profile-guides arranged around the revoluble spindle in the pathway of the axles or of the bearings of the grinding-wheels.

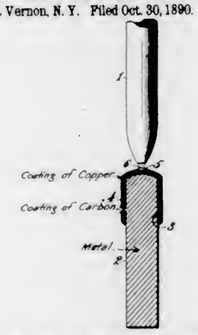
9. An apparatus for grinding or polishing glassware, consisting of a revoluble spindle for centering and holding the glass object journaled in bearings attached to a vertically-movable slide adapted to receive reciprocating motion from a revoluble shaft by means of a cam, and a profile-guide attached to the reciprocating slide, in combination with a grinding-wheel revoluble in a sliding bearing adapted to be moved toward the spindle of the grinding machinery by spring power and controlled in its motion toward or away from said spindle by the profile-guide.

10. In apparatus for grinding or polishing glassware, a spindle for centering and holding the glass object, a grinding-wheel adapted to revolve in a plane parallel to the axle of the spindle, and a profile or stop guide adapted to control the approach of the grinding-wheel toward the spindle.

447,701. PROCESS OF PRINTING IN COLORS. WILLIAM SCHUMACHER, Brooklyn, N. Y., assignor of one-half to Louis Rahmer, same place. Filed Mar. 3, 1890. Serial No. 342,469. (Specimens.)

Claim.—The method of printing in colors, which consists in placing successively as many transparent sheets as there are colors in the picture to be copied over said picture and applying to each sheet a wash-tint in lithographic ink corresponding to that part of the original picture to be reproduced by the aid of said sheet, then transferring the several tints to separate lithographic stones having grained surfaces, and then printing the different colors from the separate stones in register to correspond with the parts of the original picture, substantially as described.

447,702. ELECTRODE FOR ELECTRIC-ARC LAMPS. ALBERT C. SEIBOLD, Mount Vernon, N. Y. Filed Oct. 30, 1890. Serial No. 369,814. (No model.)



Claim.—1. In an arc lamp, a negative electrode consisting of a metallic bar or rod having a layer of carbon upon one end inclosed or covered by a thin metallic plating, substantially as described.

2. In an arc lamp, the combination, with a positive electrode or carbon of usual form, of a negative electrode composed of a bar or rod of suitable metal having one end entirely covered by a layer of carbon, which is in turn inclosed by a thin plating of copper, substantially as described.

447,703. NUT-LOCK. EDWARD W. SPRAGUE, Central Square, N. Y. Filed Apr. 19, 1889. Serial No. 307,669. (Model.)

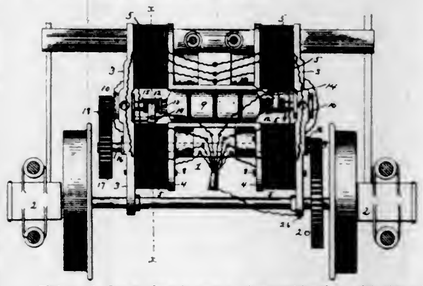
Claim.—1. The combination, with the fish-plates and the securing bolts and nuts, of a locking-bar constructed in sections, the outer ends of the sections fitting over the securing-bolt and having a shoulder bearing against the nut thereon and provided with an edge notch fitting over the nut on the inner securing-bolt, one section having serrations upon its inner end and the other having like serrations locking into those on the other sections, as set forth.

2. The combination, with the fish-plates and the securing bolts and nuts, of a nut-locking bar constructed in sections, the outer ends of both sections being pivotally mounted upon the outer securing-bolts and each having a shoulder bearing against the nut upon the securing-bolt and each section being notched to fit over the nuts on the intermediate bolts, one section having serrated teeth upon its inner end and the other having serrated recesses adapted to engage with the teeth.

3. A fish-plate nut-lock consisting of two bars notched to fit over the nuts, the one being provided with serrations 9 and the other with beveled lip or lips 11, substantially as described.



447,704. ELECTRIC MOTOR. ROBERT W. TRAYLOR, Richmond, Va., assignor to the Traylor Electric Company, same place. Filed May 21, 1890. Serial No. 352,589. (No model.)



Claim.—1. In an electric motor, the combination, with the pole-pieces of the field-magnet, of cores arranged between the yokes and the parallel projections of the pole-pieces, each magnet being wound with a separate coil, and a counter-shaft extending between and parallel with the cores of said magnets, substantially as described.

2. In an electric motor, the combination, with the yokes and the parallel projections supporting the pole-pieces, of cores having a triangular arrangement between the said projections and the yokes and united thereto by bolts and nuts, whereby an extended base of support and attachment is afforded between said parts, substantially as described.

3. In an electric motor, the combination, with the pole-pieces of the field-magnet, having lateral projections and provided with yokes parallel therewith, of cores each carrying a separate coil and each arranged between the said yokes and parallel projections, bolts passing through the cores of said magnet and projecting at their ends through the said yokes and projections, and nuts turned upon the said projecting ends, substantially as described.

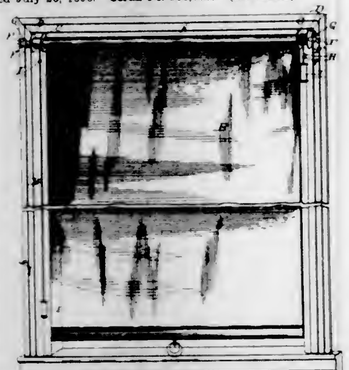
4. In an electric motor, the combination, with the pole-pieces of a field-magnet, of three separate cores having their cores arranged upon each keeper at the apices of a triangle, each core being wound with a separate coil, an armature having its shaft arranged in substantial parallelism with and at equal distances from the cores of the

four cores adjacent to the said armature, and a counter-shaft arranged between the three cores upon one side of said armature and provided with a pinion meshing with a gear on the car-axle and at the other end with a large gear meshing with a small pinion upon the shaft of the armature, substantially as described.

5. In an electric motor for cars and similar vehicles, the combination, with an armature-shaft, of pole-pieces having lateral projections, cores arranged in triangular groups of three upon each side of said armature, each core being wound with a separate coil and being secured between the lateral projections of the pole-pieces and yokes parallel therewith by means of bolts passing through both and secured by nuts, and a counter-shaft parallel with and intermediate of the cores of one of the triangular groups of cores and carrying a gear and pinion meshing, respectively, with a gear on the axle and a pinion on the armature-shaft, substantially as described.

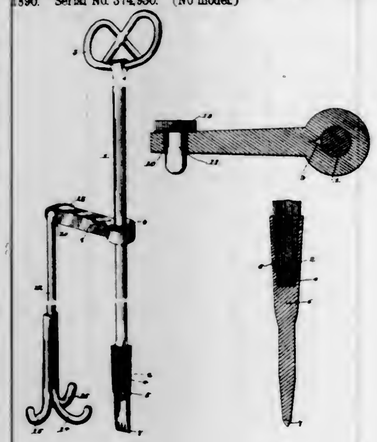
6. In an electric motor, a field-magnet having its coils separated into groups of three, each wound on a separate core and having substantially triangular arrangement on opposite sides of the armature, the terminals of each coil being connected to the corresponding coil in the opposite group, and said circuits being connected in shunt or series, substantially as described.

447,705. SHADE-ROLLER. JOSEPH A. TURNER, Passaic, N. J. Filed July 26, 1890. Serial No. 360,099. (No model.)



Claim.—The combination, with a roller, bearings in which it is adapted to freely revolve, and a curtain secured to the roller, of cords secured one at each end thereof and each being wound thereon in a direction opposite to the other, and a counterbalancing-weight attached to each cord, either of which weights is adapted to ascend while the other descends in the raising and lowering of the curtain, substantially as and for the purpose set forth.

447,706. PLOW-BOLT HOLDER. NATHAN W. VERNON, Corning, Kans., assignor of one-half to David Henry, same place. Filed Dec. 16, 1890. Serial No. 374,930. (No model.)



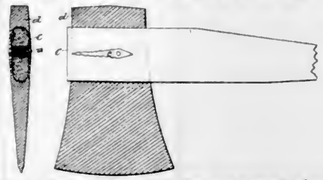
Claim.—1. A bolt-holder comprising a bar having one end adapted to engage a bolt, an arm adjustably mounted on the bar, and a rod having one end connected to the arm and its other end adapted to engage a body having the bolt, substantially as described.

2. A bolt-holder comprising the bar 1, the arm adjustably mounted on the bar, and the rod having one end pivoted to the arm and the other end provided with a hook, substantially as described.

3. A bolt-holder comprising the bar 1, the arm provided at one end with an eye to receive the bar and having its other provided with a perforation, and the rod having one end provided with a hook and its other end bent to form a pivot and arranged in the perforations of the arm, substantially as described.

4. A bolt-holder comprising the bar, the arm provided with an eye to receive the bar, and the rod pivoted to the arm and having one end bent to form a hook 14 and provided with hooks 15, arranged on opposite sides of the hook 14, substantially as described.

447,707. FASTENING FOR TOOL-HANDLES. JULIUS WEISS, Kiel, Germany. Filed Sept. 20, 1889. Serial No. 324,594. (No model.)



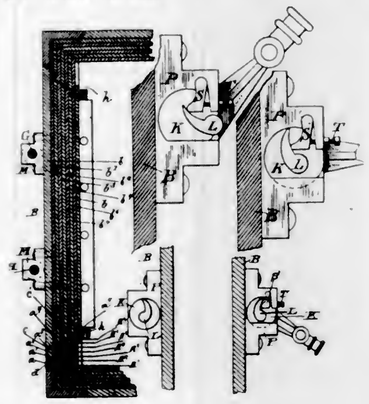
Claim.—A fastening for tool handles, consisting of a double-ended wedge with one end longer and thinner than the opposite end, the former end provided with serrations on its opposite edges and the larger end provided with a rivet-hole, in combination with a handle mortised to receive said wedge, and a tool-head also provided with a rivet-hole, whereby said wedge is adapted to be riveted in said handle and tool-head, substantially as described.

447,708. CARD HOLDER OR SLIDE. JAMES R. WEST, Evansville, Wis. Filed June 3, 1890. Serial No. 354,116. (No model.)



Claim.—An improved card holder or slide composed of a single strip or blank of metal having one or more notches *a a* on its sides and bent to form flanges, and with the rear end of each flange pinched inwardly to form an incline to retain the card within the holder and to guide the next card into the succeeding holder and secured one above the other and side by side on the backing B for the reception of cards, and a number of cards having the letters of the alphabet thereon and arranged with relation to these sides, substantially as described.

447,709. SAFE. JAMES WHITE, Cleveland, Ohio, assignor to the National Safe and Lock Company, same place. Filed Dec. 8, 1886. Serial No. 221,008. (No model.)

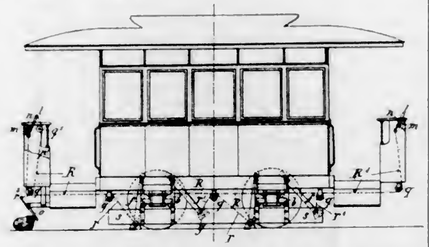


Claim.—1. In a safe, the combination, with the door, the jamb, and the bolts, of the cushions interposed between the bolts and the jamb to receive the recoil of the bolts, substantially as set forth.

2. In a safe, the combination, with the door, of its casing, a rocking shaft having cams at its ends and arranged across the door, and the boxes P, provided with adjustable abutments, substantially as set forth.

3. In a safe, the combination, with the door and its casing, of a rocking shaft arranged across the door and provided with cams upon its ends, and the boxes P at the ends of the shafts and provided with the swinging toe-pieces, and means for adjusting the toe-pieces, substantially as set forth.

447,710. SAFETY-BRAKE APPARATUS. JOSEPH H. VON HORCHSTATTEN, Vienna, Austria-Hungary. Filed Nov. 20, 1890. Serial No. 372,065. (No model.)



Claim.—1. The combination, with a car, of a brake consisting of an arm pivoted on each side of a car-wheel, connecting-rods connecting two arms on the same side of a pair of wheels, a brake-shoe for each wheel, secured to said connecting-rods, said parts constituting a gravitating brake, chains or ropes extending to the opposite ends of the car, one of which chains or ropes is secured to the connecting-rod on one side of a pair of wheels and the other to the like rod on the opposite side of such wheels, and a lifting and lowering device at each end of the car, connected with said chains or ropes, substantially as and for the purpose set forth.

2. The combination, with a car and its axle-boxes and wheels, of the yokes *b*, connected with said axle-boxes, the arms *f*, pivotally connected with the yokes on opposite sides of a wheel, the connecting-rods *h*, pivotally connecting two arms on the same side of a pair of wheels, a lifting and lowering device at each end of the car, and ropes or chains connecting the rods *h* on one side of the wheels with the lifting and lowering device on one end of the car and the rods *h* on the opposite side of the wheels with the like device at the opposite end of the car, substantially as and for the purpose set forth.

3. The combination, in a car-brake, with a vibratory brake-shoe support, of a lifting and lowering device adapted to be operated by an obstruction on the track, and a connection between said device and the brake-shoe support, substantially as set forth.

4. The combination, in a car brake, with a vibratory brake-shoe support, a lever for vibrating the same, and a connection between said lever and support, of a fender pivotally suspended in front of the wheels, and a connection between the fender and the operating-lever, substantially as and for the purpose set forth.

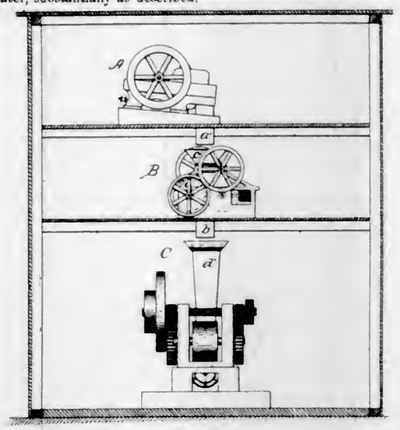
5. The combination, in a car-brake, with a vibratory brake-shoe arm, a lever for vibrating the same, and a connection between said lever and arm, of a fender pivotally suspended from the car in front of the wheels, a connection between the fender and operating-lever adapted to impart motion thereto, and a fender *s*, suspended outside of the wheels, substantially as and for the purpose set forth.

6. In a car-brake such as described, the combination, with the yoke *b*, provided with pivot-bearings, of the brake-shoe-frame arms *f*, slotted at their upper ends for the reception of the pivot-pins *c*, and an adjustable slide *k* on the slotted end of said arms, acting as a stop for the pivots *c*, substantially as and for the purpose set forth.

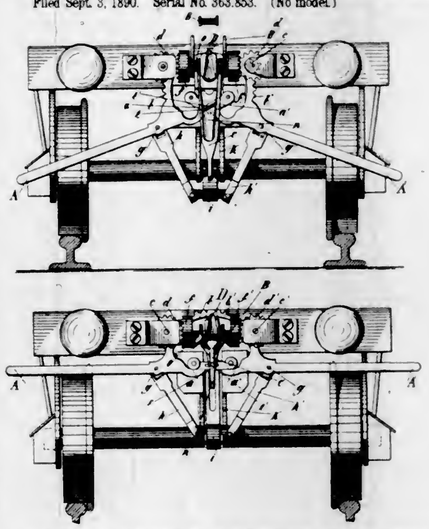
447,711. APPARATUS FOR TREATING VISCOUS ROCK FOR PAVING PURPOSES. ALBERT W. HYDE, Newton Centre, Mass. Filed Sept. 26, 1890. Serial No. 366,197. (No model.)

Claim.—1. In an apparatus for treating bituminous or other rock, the combination, with a preliminary crusher, an intermediate granulating device, and a pulverizer, of a heater and a conveyer to deliver the pulverized material to the heater, substantially as described.

2. In an apparatus for treating bituminous and other rock, the combination, with a preliminary crusher, an intermediate granulating device, and a pulverizer, of a heater, mechanism for revolving said heater, and mechanism for delivering the pulverized material to the heater, substantially as described.



447,712. CAR-COUPLING. HERMANN MOTE, Leipsic, Germany. Filed Sept. 3, 1890. Serial No. 363,853. (No model.)



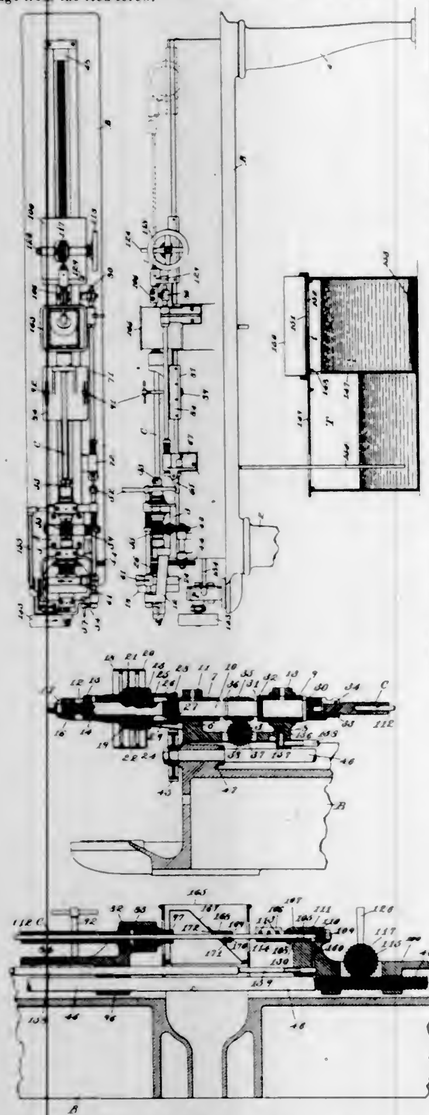
Claim.—1. In a coupling for railway-wagons, the combination of one or more levers A A', the toothed segments *b b'*, spur-wheels *c c' d d'*, and crown-wheels *f f'*, arranged to operate the link B, and the arms *h h'*, crank *i*, and knee-lever *n* to operate the safety-hook C, substantially as described.

2. In a coupling for railway-wagons, the combination of sliding catches *t*, provided with grooves *t'* and slide-pieces *p'*, acted upon by the weight of a rod *q*, provided with a knob *q'* and pins *q⁴* to prevent the side levers from descending and thereby disconnecting the railway-wagons, substantially as described.

447,713. GUN-BARREL-DRILLING MACHINE. CHARLES W. SPONSEL, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Oct. 28, 1890. Serial No. 369,605. (No model.)

Claim.—1. In a gun-barrel-drilling machine, the combination, with a frame having ways for a barrel-rest and a drill-carriage, of the barrel-carrying spindle and the feed-screw supported by bearings in substantial alignment with said ways, the barrel-rest constructed to support the outer end of the barrel and to be clamped to the frame and having a drill-guide, the drill-carriage fitted to slide on said ways and carrying the drill in alignment with said drill-guide and barrel-

carrying spindle, and means for engaging and disengaging the carriage from the feed-screw.



2. In a gun-barrel-drilling machine, the combination, with the frame, the barrel-carrying spindle and a feed-screw, of the barrel-rest movable on said frame and constructed to carry the outer end of the barrel, and provided with a drill-guide, of the drill-carriage connected and fitted to slide on said frame and adapted to be actuated by said screw, a drill carried by said carriage in alignment with said drill-guide and spindle, means for forcing lubricating-fluid in through the drill and out through the drilled bore and drill-guide, and a funnel, substantially as described, covering the drill adjacent to the guide for catching the discharged chips and lubricating-fluid.

3. In a gun-barrel-drilling machine, the combination, with means for rotating the barrel and with the movable barrel-rest adapted to engage the outer end of the barrel, of the drill-guide 97, closely fitting the drill and set in alignment with the axis of the barrel, the drill fitting said guide and having a covered channel to the point thereof, a carriage carrying and feeding the drill, and means supplying lubricating-fluid to the drill-channel, whereby the drill is accurately guided and the point thereof supplied with fluid, and the drill-guide kept free of obstruction.

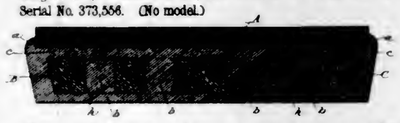
4. In a gun-barrel-drilling machine, the combination, with a drill-carriage and a drill carried thereby, of a bushing fitted to slide on the drill in engagement with the groove thereof, whereby the bushing is revolved with the drill, and a funnel, substantially as described, supported on the revolving bushing in longitudinal engagement therewith, whereby the bushing is slid on the drill.

5. In a gun-barrel-drilling machine, the combination, with the frame having ways for the drill-carriage and having a feed-screw parallel with said ways, of the drill-carriage 100, fitted to slide on said ways and carrying the drill, a revolving nut supported on said carriage in engagement with the feed-screw, means for revolving said nut by hand for traversing the carriage, and a clamp for frictionally setting the revolving nut to feed forward the carriage with a limited power, whereby the feeding movement is retarded by increased resistance to the drill.

6. In a gun-barrel-drilling machine, the combination, with the head carrying the spindle, and having a channel supplied by a pump, and with the drill-carriage carrying the channeled drill in alignment with said spindle, of the two conveyer-tubes, one fixed to the head and communicating with the channel therein and the other fixed to said carriage and communicating with the drill-channel, said tubes being telescoped one within the other and forming an extensible connection between the pump and the drill, and a frictional carriage-feed, substantially as described, adapted to yield on the increase of pressure in the tubular connection beyond the normal working-point.

7. In a drilling-machine, the combination, with means for supporting and rotating the piece to be drilled, of the drill-carriage carrying the channeled drill, a positive-acting pump communicating by connections, substantially as described, with the drill-channel, and frictional feed mechanism forwardly actuating the drill-carriage, whereby an obstruction in the bore raises the pressure to retract the drill and dislodge the obstruction.

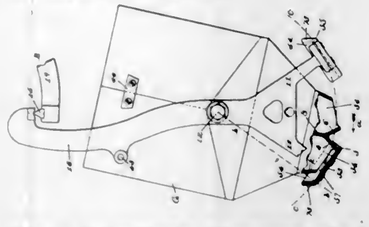
447,714. INKING-PAD. EDWARD J. BROOKS, East Orange, N. J., assignor to E. J. Brooks & Co., New York, N. Y. Filed Dec. 4, 1890. Serial No. 373,556. (No model.)



Claim.—1. An inking-pad having an ink-absorbing top of felt, an elastic cushioning and binding portion of gelatine compound or the like, comprising a layer c c of the same immediately beneath the felt, and a relatively inflexible elastic support composed of particles of cork or the like embedded in gelatine compound, which immediately underlies said layer c c and is inclosed within the gelatine compound, which completes the base of the pad, substantially as hereinbefore specified.

2. In an inking-pad having an ink-absorbing top of felt and an elastic cushioning and binding portion of gelatine compound or the like, a relatively inflexible support B, provided with holes *h*, penetrated by binding portions of the gelatine compound, which incloses said relatively inelastic support and completes the base of the pad, substantially as hereinbefore specified.

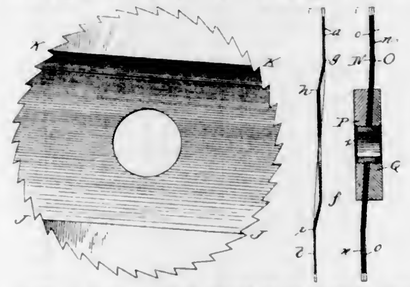
447,715. GRAIN-WEIGHER. CHARLES H. COOLEY, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed July 14, 1890. Serial No. 358,643. (No model.)



Claim.—1. In a grain-weigher, the combination, with the bucket-supporting hangers and with the oscillating bucket carried in said hangers and having discharge-spouts, substantially as described, of the closer-plate carried by the hangers and set tangential at a point substantially coincident with the upper side of the closed spout to a circle concentric with the bucket-axis, the lower edge of the closer being contiguous to the lower side of the closed spout, whereby the spout begins at once to open for the free discharge of the grain on the beginning of the bucket movement.

2. In a grain-weigher, the combination, with the hangers and the oscillating double-chambered grain-bucket supported thereby and having oppositely-disposed discharge-spouts, substantially as described, of the two oppositely-disposed bucket-closers, each set inclined, substantially as shown, tangential to the circle concentric with the bucket-axis, the lower edges of the closers being contiguous to the lower side of the closed spouts, whereby the spouts begin at once to open for the free discharge of the grain on the beginning of the bucket movement, the whole being constructed to close one spout simultaneously with the opening of the opposite spout.

447,716. DADO-CUTTER. WILLIAM R. FOX, Grand Rapids, Mich. Filed Aug. 3, 1889. Serial No. 319,611. (No model.)



Claim.—1. A saw for cutting grooves, having an inclined portion provided with teeth for removing the intervening stock, and a segment also provided with teeth extending to the periphery from the inclined portion at right angles to the axis, substantially as described.

2. A pair or series of saws for cutting grooves, each having an inclined portion provided with teeth, and a segment also provided with teeth and extending to the periphery from the inclined portion at right angles to the axis, and means for supporting said saws adjustably, substantially as described.

3. A saw having a segment on opposite sides, each in a plane at right angles to the axis of the saws, and an intermediate inclined part, substantially as described.

4. A saw having segments on opposite sides and a central portion in planes at right angles to the axis of the saws, with inclined portions between the central portion and marginal segments, substantially as described.

447,717. APPARATUS FOR HOLDING DREDGES IN PLACE. JOHN KENNEDY, Montreal, Canada. Filed May 12, 1890. Renewed Feb. 9, 1891. Serial No. 380,727. (No model.)



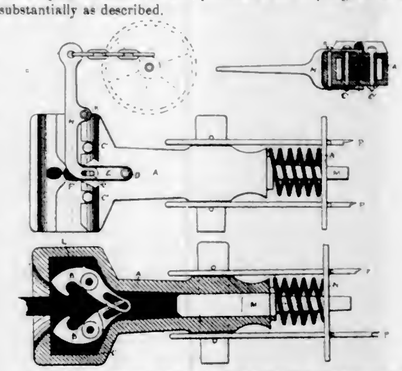
Claim.—1. In apparatus for holding dredges, the combination of the following elements, viz: horizontal bars or plates secured to the guide-posts or carried on and connected with the hull of the dredge, a vertical strap or straps secured to the spud and passing between such bars, and means for holding such straps and bars together at any desired point, all as herein described.

2. The combination of the guide-posts B B, bars D D', and clamping-plate E, attached thereto, straps F F', secured to spud C and passing between such clamps, and screw H, working in plate G and against clamp E, all substantially as herein set forth.

447,718. CAR-COUPLING. PEDER PEDERSEN and DEWITT C. MILLER, Omaha, Nebr. Filed Oct. 13, 1890. Serial No. 368,017. (No model.)

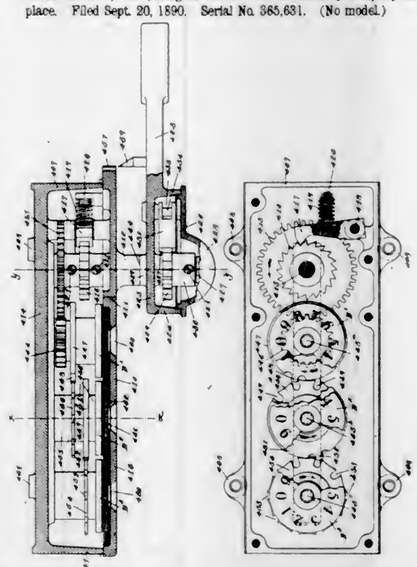
Claim.—1. In a car-coupling, the combination, with a recessed draw-head, of two pivoted jaws within said recess, a pin working within the slotted stems of said jaws, sliding links connected to said pin, an operating-lever connected to said sliding links, and a double-headed spear-shaped link, all arranged substantially as and for the purpose set forth.

2. In a car-coupler, the combination, with a recessed draw-head, of two pivoted spring-actuated locking-levers A, pin and links connecting said levers to a suitable operating-lever, a double-ended spear-ended connecting-pin adapted to work between said jaws, and a buffer-stem keyed to said draw-head, provided with a spring, all arranged substantially as described.



3. In a car-coupler, the recessed draw-head A, the pivoted spring-actuated jaws B B', the pin D, link E, lever H, and the buffer-stem M, in combination with the pin C, all arranged and adapted to operate substantially as described.

447,719. REGISTER FOR GRAIN-WEIGHERS. FRANCIS H. RICHARDS, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Sept. 20, 1890. Serial No. 365,631. (No model.)



Claim.—1. In register mechanism, the combination, with the dial-actuating shaft projecting from the register-case, of a ratchet-case, substantially as described, journaled on said shaft and connected for rotary reciprocating movement, the ratchet-wheel fixed on the shaft within said case, two pawl-carrying pins fixed in said case at equal distances from said ratchet-wheel, and two interchangeable gravity-pawls, substantially as described, carried on said pins, whereby a certainty of operation and the correct assembling of the parts are attained.

2. In register mechanism, the combination, with the dial-actuating shaft projecting from the register-case, of a ratchet-case, substantially as described, journaled on said shaft and connected for rotary reciprocating movement, the ratchet-wheel fixed on the shaft within said case, the pawl-carrying pin fixed in the case, the gravity-pawl carried freely on said pin and engaging the ratchet-wheel, and the stop limiting the outward movement of the pawl to slightly clear the ratchet-wheel tooth on the return movement of the ratchet-case.

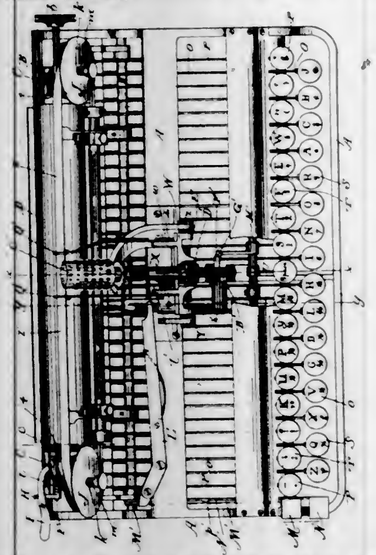
3. In register mechanism, the combination, with the dial-actuating

shaft projecting outside of the register-case, of the register-case journaled on said shaft and having a cover also journaled on said shaft, said cover having a projecting hub-case 428, the ratchet-wheel 429 on said shaft within said case and having its hub projecting beyond the front of the ratchet-case within said hub-case, and a pin, substantially as described, passing through the ratchet-wheel hub and engaging said shaft, said pin being located beyond the front line of the ratchet-case when the ratchet-case cover is removed, whereby the pin is accessible for removal, substantially as set forth.

4. In register mechanism, the combination, with a register-case and a ratchet-case, of a dial-actuating shaft extending into both said cases, a portion of the shaft intermediate thereto being covered by a projecting hub, as 412, whereby access of dust to the interior of the said cases through the working-joint 440 is prevented, substantially as set forth.

5. In register mechanism, the combination, with a register-case, substantially as described, of the ratchet-shaft having fixed thereon a detent-wheel within the register-case, a detent engaging said wheel, a ratchet-case carried on the projecting end of said shaft, a ratchet-wheel fixed on said shaft within the ratchet-case, a pawl carried by the ratchet-case and engaging with said ratchet-wheel, and an indicator, substantially as described, for indicating the position of the inclosed parts by the position of the ratchet-case relatively to the register-case.

447,720. TYPE-WRITING MACHINE. FRANK E. WILDER, Salem, assignor to Oscar M. Angier, Boston, Mass. Filed July 22, 1889. Serial No. 318,216. (No model.)



Claim.—1. In combination with the paper-carriage and its rack, the pinion K, ratchet L, spring-lever M and its dog, the projection *r*, and means for raising the lever M, as set forth.

2. In combination with the paper-carriage and its rack, the pinion K, ratchet L, spring-lever M and its dog, and a space-lever for lifting said lever M, all as set forth.

3. In combination with the paper-carriage and its rack, the pinion K, ratchet L, spring-lever M and its dog, the lever S×, having the lug *t*, and a space-lever for bearing down said arm and lifting the lever M, as set forth.

4. In combination with the ratchet L, spring-lever M and its dog, the levers S× and V, attached at their upper arms, and means for raising the upper or backward arm of the lever S×, all as set forth.

5. In combination with the ratchet L, spring-lever M and its dog, the levers S× and V, attached at their upper arms, a pivotal bar or bars bearing against the under sides of said upper arms, and a space-lever for lifting said bar or bars, all as set forth.

6. In combination with the type-cylinder and its shaft, a bar extending transversely across and attached to the same and pivoted at its ends to two standards, an arm projecting from said cross-bar, a connecting-link extending from said arm, and a lever for bearing down said link, all as set forth.

7. In combination with the type-cylinder and its shaft, a bar extending transversely across and attached to the same and pivoted at its ends to two standards, an arm projecting from said cross-bar, a connecting-link extending from said arm, the lever A', a pivotal bar or bars for bearing against the under side of said lever, and the key-lever for lifting the same, all as set forth.

8. In combination with the type-cylinder having a longitudinal shaft and a pinion keyed to the same, a segmental gear for engaging with said pinion, the shaft *b'*, segmental gears E' and G', shaft H', arms I', and means for rocking the same, all as set forth.

9. In combination with the type-cylinder having a longitudinal shaft and a pinion keyed to the same, the segmental gears E' F' G', shaft H', arms I', having the projections *o'*, and the key-levers having the cam-slots *d'*, all as set forth.

10. In combination with the type-cylinder having a longitudinal shaft and a pinion keyed to the same, the series of levers having the cam-slots *d'*, the shaft H', a series of hanging arms secured to said shaft and having bearing-surfaces for said cams, and a series of gears connecting said shaft with the pinion on the type-cylinder shaft, all as set forth.

11. In combination with the type-cylinder pivotally supported in a lateral direction, the pinion *i'*, and bar *m'* longitudinally movable in unison, all substantially as and for the purpose set forth.

12. In combination with the type-cylinder supported in a lateral direction, with its shaft having longitudinal play, a vertical horizontally-sliding plate connected with said cylinder, and a spring-lever for operating the same, all as set forth.

13. In combination with the type-cylinder supported in a lateral direction, with its shaft having longitudinal play, a vertical horizontally-sliding plate connected with said cylinder, a spring-lever for operating the same, and a key-lever for operating said spring-lever, all as set forth.

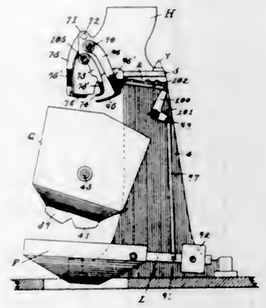
14. In combination with the type-cylinder supported in a lateral direction, with its shaft having longitudinal play, a vertical horizontally-sliding plate connected with said cylinder, lateral projections on the under side of said plate, a lever having a cam-slot in its under side for engaging with said projections, and the key-lever for operating said cam-lever, all as set forth.

15. In combination with the key-lever, a lever operated by said key-lever and having cam-slots in its under side, a sliding plate having bearings for engagement with said slot, and a connection between said plate and the type-cylinder, whereby the latter is slid backward and forward, all as set forth.

16. In combination with the type-cylinder and the sliding plate connected with the same, the bar *m'*, and the slotted guide *n'*, all as set forth.

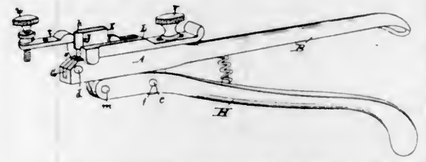
17. In combination with the inking-ribbon, the type-cylinder supported in bearings over the same, arms projecting from the cross-bar support of the type-hammer, and the levers *Q' Q'*, having loops at the ends of their outer arms, through which said ribbon passes, all as set forth.

447,721. REGULATOR FOR GRAIN-WEIGHERS. CHARLES H. COOLEY, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Jan. 31, 1890. Serial No. 338,817. (No model.)



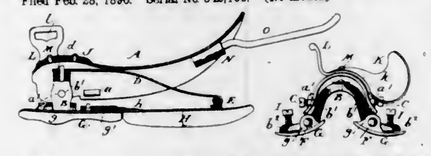
Claim.—In a grain-weigher, the combination, with the supply-chute, of the reducing and cut-off valves oppositely movable underneath said chute and together acting to normally close said chute, a valve movable below the reducing and cut-off valves and having its closing movement corresponding to the closing movement of the cut-off valve and opposite to the closing movement of the reducing-valve, and means for actuating the lower valve, subtantially as described.

447,722. SAW-SET. ANTHONY FAGER, Canton, Ohio, assignor to Isaac Harter and F. E. Kohler, both of same place. Filed Aug. 15, 1890. Serial No. 362,126. (No model.)



Claim.—The combination, with the handle B, the head A of which is provided with a longitudinal groove, a vertical aperture, a die-support E, and a depending lug F, of an anvil secured in the longitudinal groove, a die having its lower end projecting through the vertical aperture, a lever H, pivotally secured to the lug F and to the lower end of the die, and a gage, substantially as set forth.

447,723. RIDING-SADDLE. WILLIAM H. FORKER, Meadville, Pa. Filed Feb. 28, 1890. Serial No. 342,166. (No model.)

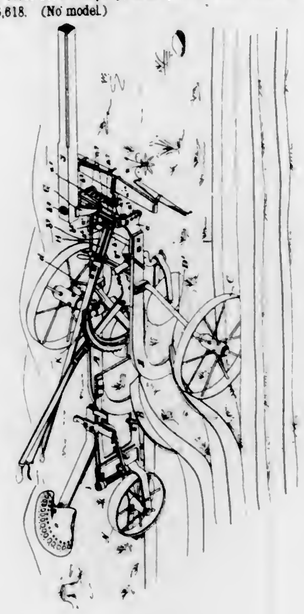


Claim.—1. A saddle consisting of the transverse bridges B E, the seat A, pivoted at C C to the front bridge B, the plate-spring D, pivoted to the rear bridge E and resting on front bridge B, and the pivoted plates G H, substantially as shown and described.

2. In a saddle-tree, the combination of the pivoted shoulder-plates G H, screws I I, and front bridge B, the latter having threaded side projections through which the screws work, as and for the purpose set forth.

3. A saddle-tree provided with the longitudinal upwardly-convexed plate-spring D, pivoted to the rear bridge E and having a slot *d* to engage a top stud *b* on the front bridge, in combination with a front pivoted saddle-seat A, as and for the purpose described.

447,724. GANG-PLOW. LEWIS GIBBS, Canton, Ohio, assignor to the Bucher & Gibbs Plow Company, same place. Filed June 25, 1890. Serial No. 356,618. (No model.)



Claim.—1. The combination, with the plow and the cranked axle-shaft, of the curved standard, a rack to slide on said standard, a spring to resist the movement of said rack, and a hand-lever to engage the rack, substantially as described, and for the purpose set forth.

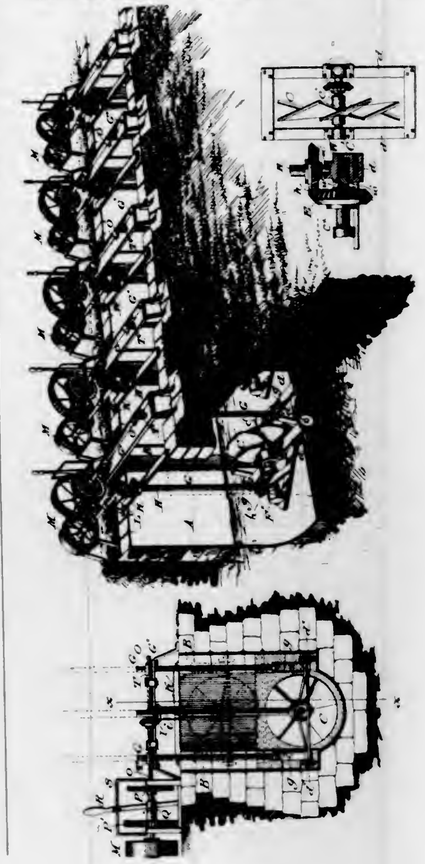
2. The combination, with the plows and the beams A and A', the cranked axle D and D', of a yielding rack and a hand-lever to engage said rack, substantially as described, and for the purpose set forth.

3. The combination, with the plows and the beams A and A', of a clevis to engage the front ends of said beams, consisting of the jaws *a*, a bar a^4, connecting said jaws, a sleeve a^5 to slide on said bar, said sleeve having a loop a^6 and a perforated plate portion a^8, and a hand-lever by which said sleeve may be moved laterally and secured in desired adjustment, substantially as described, and for the purpose set forth.

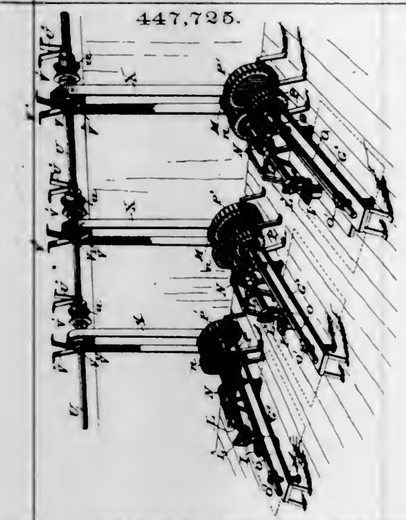
4. The combination, with the plows and the beams A and A', of the clevis-jaws secured to said beams, a bar b^2 to connect said jaws, a tongue-support having a sleeve portion b^3 to slide on said bar, a link portion b^4, and a hand-lever H, by which said sleeve and tongue may be moved laterally on said bar simultaneously with the clevis, substantially as described, and for the purpose set forth.

5. The combination, with a plow, of a rear furrow-wheel swiveled thereto, a wheel-supporting yoke having lugs h^5 and a vertical shaft or spindle h', a hub h^{61} about said shaft, having recesses to engage said lugs, a coil-spring to hold said lugs and recesses in engagement, and a foot-lever having one of its ends to engage said lug, the other to engage a rack by which said wheel may be held in desired adjustment and released to turn freely about its pivotal connection with the plow, substantially as described, and for the purpose set forth.

447,725. WATER-WHEEL. RICHARD E. GRAY, Muncy, Pa., assignor to the Gray Current Motor Company, Elgin, Ill. Filed Mar. 17, 1890. Serial No. 344,170. (No model.)



447,725.



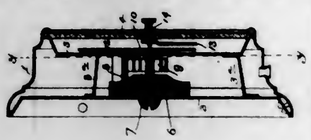
Claim.—1. In combination with a flume, a series of water-wheels arranged therein one behind the other, each rotatable in a plane transverse to the axis of said flume, and each mounted in a separate frame, each of which frames is free for independent vertical movement in said flume, means for occasioning the vertical movement of said frames, a power-receiver, such as a shaft, and gearing by which each wheel is independently connected with said power-receiver, substantially as set forth.

2. In combination with a flume, a series of water-wheels arranged therein one behind the other, each rotatable in a plane transverse to the axis of said flume, and each mounted in a separate frame, a series of pulleys or shafts, connective gearing for transmitting power from said wheels to said pulleys or shafts, which connective gearing is adjustable so as to be operative in all positions of vertical adjustment of the wheels and their frames, means for occasioning the vertical movement of said wheels and frames, a power-receiver, such as a shaft, and gearing by which each of the series of pulleys is connected with said power-receiver, substantially as set forth.

3. In combination with a flume, a series of water-wheels arranged therein one behind the other, each rotatable in a plane transverse to the axis of said flume, and each mounted in a separate frame, which frames are capable of vertical adjustment, a series of pulleys or shafts, connective gearing for transmitting power from said wheels to said pulleys or shafts, which connective gearing is adjustable so as to be operative in all positions of vertical adjustment of the wheels and their frames, lifting mechanism connected with each wheel-frame, means for throwing said lifting mechanism into engagement with so as to be operated by the power-transmitting gearing, a power-receiver, such as a shaft, and gearing by which the series of pulleys or shafts before referred to are connected with said power-receiver, substantially as set forth.

4. In combination, a flume, a series of independent water-wheels mounted for rotation in frames arranged the one behind the other in said flume, a series of independent pulley-shafts mounted one in connection with each wheel, mechanism through which the motion of each wheel is transmitted to its own pulley-shaft, lifting mechanism connected with each wheel-frame, and adapted to be operated by and thrown into and out of connection with its associated pulley-shaft, and a power-shaft to which are connected the independent pulley-shafts of all of the water-wheels, substantially as set forth.

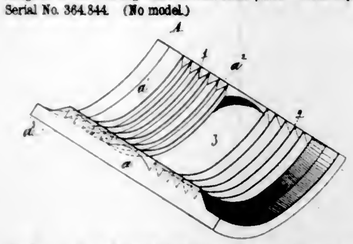
447,726. HYGROSCOPE. ANDERS HAGSTRÖM, Enköf, assignor of one-half to Carl Frost, Malmö, Sweden. Filed Sept. 27, 1890. Serial No. 366,351. (No model.) Patented in Sweden July 24, 1890, No. 2,473.



Claim.—1. In a hygrometer, the combination, with the casing, the graduated dial, and an arbor carrying a pointer, of a rotatable disk located within the casing and connected therewith by means of a rotatable screw, a projecting pin secured to said disk and the volute connected with said pin and arbor, substantially as described.

2. A volute for hygrometers, consisting of a strip of thick paper coated with albumen and then covered with a suitable gum and with tissue-paper, substantially as described.

447,727. MARINE LENS. ROBERT D. HAINES, Corning, N. Y., assignor to the Corning Glass Works, same place. Filed Sept. 13, 1890. Serial No. 364,844. (No model.)

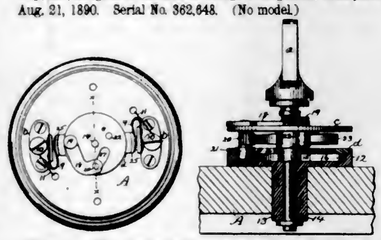


Claim.—1. A cylindrical lens having a smooth outer surface provided upon its concave or inner surface with the angular or prismatic horizontal grooves or furrows, substantially as described, and for the purpose set forth.

2. A section of a cylindrical lens having a smooth outer surface, provided upon its concave or inner surface with the annular or prismatic horizontal grooves or furrows, substantially as described, and for the purpose set forth.

3. A cylindrical lens or section having a smooth outer surface, provided upon its concave or inner surface with the horizontal zones 1 2 3, the zones 1 and 2 having the angular or prismatic horizontal grooves or furrows and the zone 3 being transversely convex and smooth, substantially as described and set forth.

447,728. ELECTRIC SNAP-SWITCH. GERALD W. HART, Kansas City, Mo., assignor of one-half to George S. Hegeman, same place. Filed Aug. 21, 1890. Serial No. 362,648. (No model.)



Claim.—1. The combination of the cam-plate having cams 15 and let-offs or inclines 16 with the slotted switch-plate, spring-plate, the spring, and the stud 20, carried by said spring-plate and engaging said switch-plate and cams, substantially as described, and for the purpose specified.

2. The combination of the shaft, the spring-plate mounted to revolve with the same and slotted, as described, the stud or pin 22, fixed on said spring-plate for one end of the spring, and the pivoted link carried by said spring-plate, a swinging stud at the outer end of said link, a spring connected to said studs with a constant tendency to force them apart, the slotted switch-plate having the swinging stud extended through its slot, and the cam-plate for engaging the lower end of said swinging stud, substantially as described, and for the purpose specified.

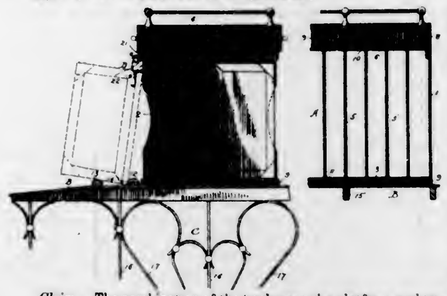
447,729. SEWING-MACHINE-NEEDLE GUIDE. GEORGE S. HILL, Lynn, Mass., assignor to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed Mar. 29, 1887. Serial No. 232,848. (No model.)



Claim.—In a sewing-machine, the presser-bar and its presser-foot or roller, combined with the vertically-reciprocating needle-guide c.

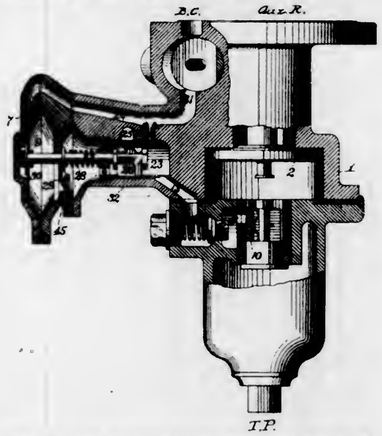
constructed of a piece of metal bent essentially at right angles, and thus projecting from the presser-bar into the path of the needle, and having the needle-holes 4 5 at one end and secured at its other end to the presser-bar at a height that will keep it out of contact with the material being sewed, while serving to stay the needles at the point of greatest strain upon them in entering the material to be sewed, substantially as described.

447,730. BOOK-RACK. JAMES W. HINE, Jamestown, N. Y. Filed Apr. 14, 1890. Serial No. 347,847. (No model.)



Claim.—The combination of the book-case, the platform, and two separated lines of rollers supported above the platform parallel to each other and in front of the case, substantially as set forth.

447,731. AIR-BRAKE. THOMAS J. HOGAN, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Original application filed May 29, 1890, Serial No. 353,609. Divided and this application filed Aug. 12, 1890. Serial No. 361,838. (No model.)



Claim.—1. In an automatic fluid-pressure brake mechanism, the combination of a train-pipe release-valve for releasing the air from the train-pipe under each car by a preliminary reduction of train-pipe pressure, said valve being operated by the pressure of the air in the auxiliary reservoir, and a passage from the release-valve to the brake-cylinder and to the atmosphere, and a valve device which closes the passage to the brake-cylinder when a given pressure has been reached therein, and thereby prevents the escape of air from the brake-cylinder to the atmosphere.

2. In an automatic fluid-pressure brake mechanism, the combination of a triple valve, a train-pipe release-valve operated thereby, and a passage from the train-pipe release-valve to the brake-cylinder and to the atmosphere, and a valve device controlling the flow of air to the brake-cylinder and to the atmosphere.

3. In an automatic fluid-pressure brake mechanism, the combination of a train-pipe release-valve operated by auxiliary-reservoir pressure, a passage from the release-valve to the brake-cylinder and to the atmosphere, and a valve which closes said passage to the brake-cylinder and opens the passage to the atmosphere.

4. In an automatic fluid-pressure brake mechanism, the combination of a triple valve, a train-pipe release-valve operated thereby, a passage from the release-valve to the brake-cylinder and to the atmosphere, and a valve which closes said passage to the brake-cylinder and opens the passage to the atmosphere.

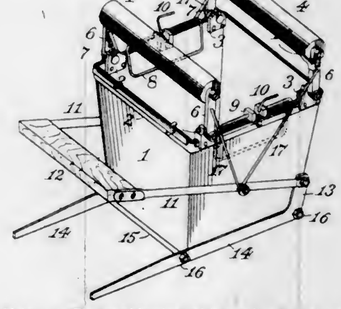
5. In an automatic fluid-pressure brake mechanism, the combination of a train-pipe release-valve operated by auxiliary-reservoir pressure, a passage from the release-valve to the brake-cylinder, and a valve which closes the passage to the brake-cylinder and holds it closed by means of the pressure of the air in the brake-cylinder.

6. In an automatic fluid-pressure brake mechanism, the combination of a train-pipe release-valve operated by the pressure in the auxiliary reservoir, passages from the release-valve to the brake-cylinder and to the atmosphere, and a valve device which operates to permit a portion of the air to pass to the atmosphere, then closes the passage to the atmosphere and opens the passage to the brake-cylinder, and finally closes the passage to the brake-cylinder and opens the passage to the atmosphere.

7. In an automatic fluid-pressure brake mechanism, the combination of a train-pipe release-valve operated by the movement of the triple valve, passages from the release-valve to the brake-cylinder and to the atmosphere, a differential piston or diaphragm, and a valve operated by the pressures on the differential piston or diaphragm to control the passages leading to the brake-cylinder and to the atmosphere.

8. In an automatic fluid-pressure brake mechanism, a device for releasing the air from the train-pipe to the brake-cylinder under each car, which consists of a valve operated by auxiliary-reservoir pressure, a passage controlled by said valve and leading from the train-pipe to a chamber, a diaphragm or piston in said chamber, which is always exposed on one side to brake-cylinder pressure, and a second valve operated by the diaphragm or piston and opened by the pressure of air from the train-pipe acting on one side of the diaphragm or piston, and a passage controlled by the second valve and through which air from the train-pipe is admitted to the brake-cylinder.

447,732. MOP-WRINGER. WALTER S. JARBOE, Allegheny, assignor to the Pittsburg Mop Wringer Company, Pittsburg, Pa. Filed Dec. 1, 1890. Serial No. 373,186. (No model.)



Claim.—1. The combination, with a pail, of a pair of vibrating wringing-rolls, a pair of clamping-bails swinging transversely to the rolls and actuated by one of said rolls, a pivoted treadle, and springs coupling the rolls to said treadle, substantially as set forth.

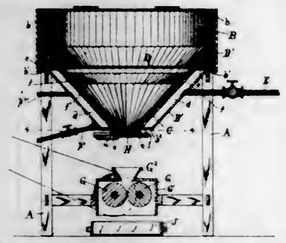
2. The combination of a pail, a rim or top frame connected thereto, swinging links journaled in pairs in bearings on the rim, wringing-rolls connected to the free ends of said pairs of links, a pair of clamping-bails journaled on the rim at right angles to the wringing-rolls, a treadle pivoted on the pail, springs coupling said treadle with the links of the wringing-rolls, and fingers connected to one pair of said rolls in position to abut against arms on the clamping-bails, substantially as set forth.

3. The combination of a pail, a pair of removable base-bars, transverse bolts clamping said base-bars against opposite sides of the pail, a treadle pivoted to extensions on the base-bars, a top frame or rim connected to the pail, a pair of ringer-rolls fixed to links journaled on the rim, and springs coupling said links to the treadle, substantially as set forth.

447,733. APPARATUS FOR TREATING COMPOSITION FOR ORNAMENTING MOLDINGS. GEORGE W. LANDON, Relay, assignor to Landon & Kent, Baltimore, Md. Filed Jan. 15, 1891. Serial No. 377,808. (No model.)

Claim.—1. In an apparatus for treating composition to render it plastic, the combination of a receptacle for the composition in its pri-

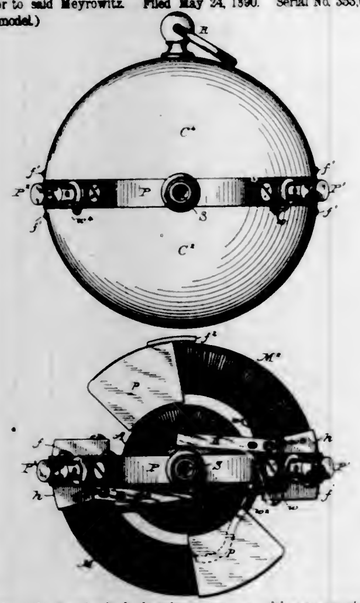
mary state, a hopper below said receptacle, a grating between said hopper and receptacle, and means for admitting steam beneath the said grating to soften the bottom portion of the composition and cause it to drop through the grating into the said hopper, in the manner described.



2. In an apparatus for treating composition to render it plastic, the combination of a receptacle for the composition in its primary state, a hopper below said receptacle incased in a steam-jacket, a grating between said hopper and receptacle, and means for admitting steam to the said steam-jacket and hopper and beneath the said grating to soften the bottom portion of the composition and cause it to drop through the grating into the hopper, in the manner described.

3. In an apparatus for treating composition to render it plastic, the combination of a receptacle for the composition in its primary state, having an inside shoulder *b'* at its base and a depending extension beyond said shoulder constituting a steam-jacket, a hopper incased in said steam-jacket and supported by said shoulder, a grating over the top of said hopper and constituting the bottom of said primary receptacle, means for admitting steam to the steam-jacket and hopper, whereby the bottom portion of the composition is softened and drops through the grating into the hopper, and a cut-off slide at the lower end of the latter.

447,734. ELECTRIC MOTOR. EMIL B. MEYROWITZ, Ridgefield, N. J., and FERDINAND BUCHHOP, New York, N. Y.; said Buchhop assignor to said Meyrowitz. Filed May 24, 1890. Serial No. 353,074. (No model.)



Claim.—1. A spherical electric motor comprising an equatorial frame-plate with the binding-posts attached to its periphery, field-magnets supported by said plate within its perimeter, an armature rotating between the poles of said magnets, a pair of hemispherical or nearly hemispherical casing parts adjoining said frame-plate on its respective sides, a motion-transmitting spindle which protrudes from within the casing, and suitable electrical connections and accessories, substantially as hereinbefore specified.

2. In a spherical electric motor, an equatorial frame-plate having binding-posts attached, with interposed insulators to its periphery, in combination with a pair of field-magnets having cores attached to said plate within its perimeter and magnetically connected thereby, an armature rotating between the poles of said magnets, a motion-transmitting spindle, and suitable electrical connections and accessories, substantially as hereinbefore specified.

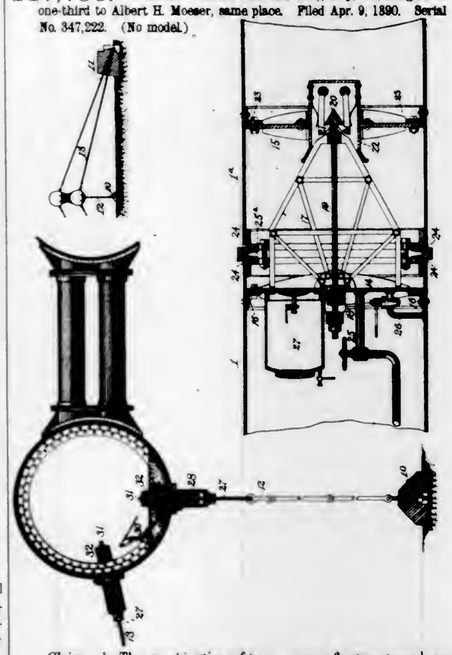
3. In a spherical electric motor, an equatorial frame-plate having a suitable opening therein, in combination with a pair of field-magnets having cores attached to said plate on its respective sides at diametrically-opposite points and curved in one and the same circular line, a central armature rotating between the poles of said magnets, a motion-transmitting spindle, and suitable electrical connections and accessories, substantially as hereinbefore specified.

4. In a spherical electric motor, the combination, with an equatorial frame-plate having a suitable opening therein, of a central rotary armature, an armature-spindle in the plane of the frame-plate, curved field-magnets attached to said plate and surrounding or partly surrounding said armature, a commutator carried by the armature-spindle, insulated brushes carried by said plate, and suitable electrical connections, substantially as hereinbefore specified.

5. In a spherical electric motor, the combination, with an equatorial frame-plate, of insulated binding-posts attached to its periphery, field-magnets attached to its respective sides and magnetically connected thereby, a central rotary armature, an armature-spindle in the plane of the plate, a commutator carrier by the armature-spindle, insulated brushes attached to the respective sides of the plate, and insulated wires connecting the positive binding-post with the coils of the field-magnets in series, said coils with one of the brushes and the other brush with the negative binding-post, substantially as hereinbefore specified.

6. In a spherical electric motor, an equatorial frame-plate having a suitable central opening and divided diametrically, in combination with a pair of field-magnets, the cores of which have heels whereby the magnets are attached to the respective sides of the plate and the parts of the plate are united, an armature rotating within said opening, a motion-transmitting spindle, and suitable electrical connections and accessories, substantially as hereinbefore specified.

447,735. TUNNEL. HENRY MOESER, Allegheny, Pa., assignor of one-third to Albert H. Moeser, same place. Filed Apr. 9, 1890. Serial No. 347,222. (No model.)



Claim.—1. The combination of two or more floating tunnels secured together in approximate parallelism with each other, and guys for holding such tunnels in suitable position below the surface of the water, substantially as set forth.

2. A floating tunnel, in combination with guys for holding the tunnel in suitable position below the surface of the water, and a pier or anchorage for securing the middle portion of the tunnel as against longitudinal movement, substantially as set forth.

3. The combination of a floating tunnel, guys having their outer ends attached to suitable anchorages, and adjustable connections uniting the opposite ends of the guys to the tunnel, substantially as set forth.

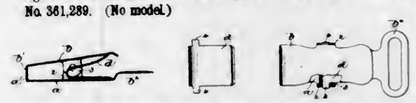
4. The combination of a floating tunnel, guys having their outer ends attached to suitable anchorage, and fluid-pressure cylinders secured to the tunnels and having their pistons attached to the inner ends of the guys, substantially as set forth.

5. The combination of a floating tunnel, guys for holding the tunnel in suitable position below the surface of the water, and cylindrical shore-sections arranged with their axes at an angle of the floating tunnel, the shore-sections being movable with the floating sections during the expansion and contraction thereof, substantially as set forth.

6. The combination of a floating tunnel, guys for holding the tunnel in suitable position below the surface of the water, hollow piers at the ends of said tunnel, and vertical cylinders floating within said piers, the tunnels passing through the walls of the piers and connecting with the cylinders, substantially as set forth.

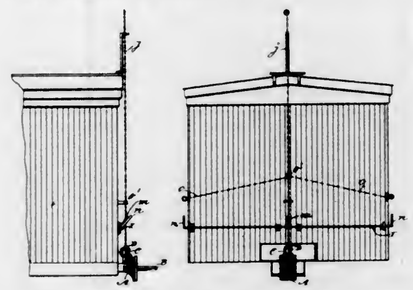
7. The combination of a floating tunnel and guys for holding the tunnel in suitable position below the surface of the water, said guys being provided with jackets formed of a material of less specific gravity than the water, substantially as set forth.

447,736. GARMENT-CLASP. JOHN H. MURCH, Boston, Mass., assignor to Frederick J. Gilbert, same place. Filed Aug. 7, 1890. Serial No. 361,289. (No model.)



Claim.—The herein-described clasp, consisting of two jaws having ears, and a leaf-spring having lugs integral therewith to constitute pivots for the ears of said jaws, substantially as described.

447,737. CAR-COUPLING. ROBERT MCMAHON, Seattle, Wash., assignor of one-half to Herbert Gaston, same place. Filed June 26, 1890. Serial No. 356,810. (No model.)



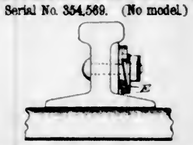
Claim.—1. The combination, with a draw-head which is recessed and provided with a flaring front end, and a vertical guide-tube for a coupling-pin, of a rocking bar that loosely embraces the guide-tube, is pivoted on the guide-tube and adapted to support a coupling-pin through a slot in the guide-tube, a coupling-pin having a flanged head, a pivoted cam-block which may have contact with the toe of the rocking bar, and a pendent pivoted tripping limb that impinges on the cam-block and rocks the cam-block outwardly when it is pushed inwardly by a coupling-link that is entering the draw-head, substantially as set forth.

2. The combination, with a draw-head which is recessed forwardly and has a flaring front end, a vertical guide-tube that aligns with perforations in the top and bottom walls of the draw-head, and a coupling-pin which may slide in the guide-tube, of an apertured rocking bar which loosely embraces the guide-tube and is adapted to engage the coupling-pin and retain it elevated, a pivoted inclined cam-block which is engaged by the depending toe of the rocking bar, and a pendent tripping limb which will rock the cam-block outwardly when its lower portion is moved inwardly by a coupling-link, substantially as set forth.

3. The combination, with a draw-head which is longitudinally recessed, has a flaring front end, and is perforated through its top and bottom walls near the front end for the introduction of a coupling-pin, a vertical guide-tube slotted on one side and provided with a movable cap-piece, and a coupling-pin therein having a radial flange near its head that is perforated, of an apertured rocking bar which straddles the guide-tube and is pivoted thereon, so as to align its upper end with the slot in the guide-tube, a pivoted cam-block, a tripping limb which engages the cam-block with its head when it is rocked inwardly and which is pivoted thereto through said head that lies between two forked portions of the cam-block, substantially as set forth.

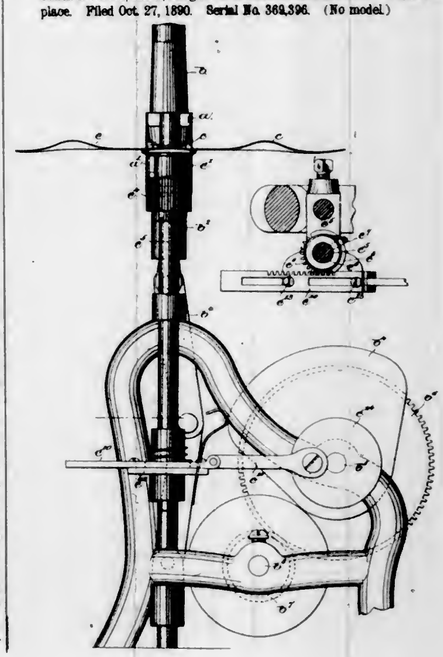
4. The combination, with a draw-head which is longitudinally recessed, has a flaring front end, and is vertically perforated near the flared portion for the reception of a coupling-pin, a guide-tube that is secured to the top wall of the draw-head and is aligned with the perforations therein, and a coupling-pin therein having a perforated head and a radial flange near the head, of a rocking bar which is apertured to straddle the guide-tube and adapted to engage the flanged head of the coupling-pin through a transverse slot in the guide-tube, a pivoted cam-block on which the toe of the rocking bar rests, a pendent tripping limb which will rock the cam-block outwardly when the limb is swung inwardly, and a device which engages the perforated head of the coupling-pin and reciprocates it in the guide-tube when said device is manipulated from the sides or roof of a car, substantially as set forth.

447,738. NUT-LOCK. ARTHUR F. PRITSCHAU, Denver, Colo. Filed June 7, 1890. Serial No. 354,569. (No model.)



Claim.—A nut-lock consisting of a spring expansion-ring having its opposite inner sides inclined or tapered toward its ends and outer sides forming the wedge-shaped sections B, said ends being coiled and partially overlapped so as to embrace the bolt and in frictional contact at their inclined edges, and the central point of the ring being adapted to rest on the flange of the rail and form a fulcrum, substantially as described.

447,739. SOLE-MOLDING MACHINE. JAMES W. RICHMOND, South Hanover, Mass., assignor of one-half to Edward M. Sweeney, same place. Filed Oct. 27, 1890. Serial No. 369,396. (No model.)

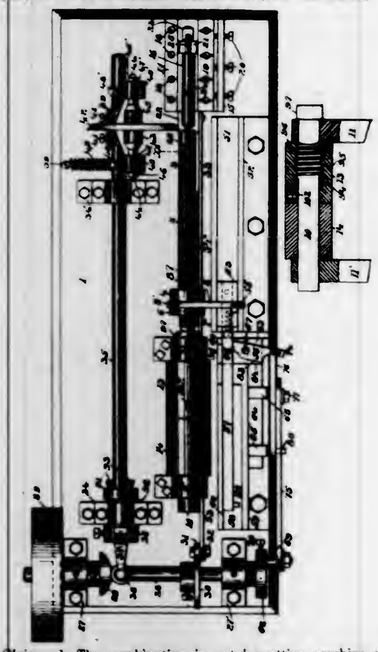


Claim.—1. In a sole-molding machine, two dies and means for moving one with relation to the other, combined with a sole-carrier, a rotatable and vertically-movable hub to which it is attached, a toothed wheel on said hub, a pinion in engagement therewith on a shaft having at its lower end a series of notches to form ratchet-teeth, a pawl-carrier rotatable on said shaft and having a series of teeth thereon, and a reciprocating toothed rack engaging said pawl-carrier to thereby rotate the shaft and sole-carrier, substantially as described.

2. In a sole-molding machine, two dies and means for moving one with relation to the other, a series of sole-carriers located in a horizontal plane between the dies and adjacent to the face of the movable die, and a rotatable hub supporting said carriers, and mechanism to rotate and vertically move the hub and carriers, the movable die carrying the sole-carriers up to and against the fixed die to mold the sole, substantially as described.

3. In a sole-molding machine, two dies and means for moving one with relation to the other, combined with a series of sole-carriers, a rotatable and vertically-movable hub to which they are attached, and a spring supporting said hub, and means for moving the hub and carriers, substantially as described.

447,740. MACHINE FOR CUTTING PAPER TUBES. GEORGE P. SALISBURY, New Haven, Conn., assignor to Eugene K. Plumly, Philadelphia, Pa. Filed Oct. 3, 1890. Serial No. 366,974. (No model.)



Claim.—1. The combination, in a tube-cutting machine of the character described, of the arbor 2 for supporting the tube to be cut, and means, substantially as shown, for revolving such arbor, tube-carrier sleeve 4, mounted on such arbor, and means, substantially as shown, whereby a rotary motion is imparted to such tube-carrier sleeve through the medium of the tube-supporting arbor, and means, substantially as shown, whereby such carrier-sleeve engages with the inner end of the tube, causing such tube to revolve with the carrier-sleeve and arbor, and means, substantially as shown, to advance such tube-carrier sleeve during its rotary motion and independent of such motion along the tube-supporting arbor, such carrier-sleeve halting in each advanced position of its forward movement during the operation of cutting the tube, combined with a cutter for severing such tube, as set forth.

2. In a tube-cutting machine, the combination, with an arbor for supporting the tube to be cut, and means for rotating such arbor, a tube-carrier mounted on such arbor and arranged to rotate therewith, and means for imparting an alternating or step-by-step movement to such carrier parallel with the axis of such arbor, a support for the free end of such arbor, and means whereby such support is automatically brought into engagement with such arbor to support it against the cutting strain and disengage it therefrom, of a cutter, a support for the same, and means for advancing such cutter toward such arbor and withdrawing it therefrom, as described.

3. In a tube-cutting machine, the combination, with an arbor for supporting the tube to be cut, of a tube-carrier mounted on such arbor, and means, substantially as shown, whereby a rotative motion is imparted to such arbor and carrier, and means, substantially as shown, for imparting a step-by-step movement to such carrier longitudinally along such arbor, and means, substantially as shown, to check the forward movement of such carrier beyond a predetermined point, an automatically-operated support, arranged substantially as shown, to engage the free end of such arbor and support the same against the cutting strain and be withdrawn therefrom when said cut is completed, a cutter, a support for the same, and means, substantially as shown, for advancing such cutter toward such arbor and withdrawing the same, substantially as set forth.

4. In a tube-cutting machine, the combination of the following parts, to wit: a tube-supporting arbor and means for imparting a rotative motion thereto, a tube-carrier mounted on such arbor and arranged to rotate therewith, and means, substantially as shown, to impart a step-by-step motion to such carrier along such arbor, and means to check the further movement of such carrier at a predetermined point on such arbor, a support for the free end of such arbor, an independent driving-shaft supported from the bed, a cam mounted thereon, and means, substantially as shown, to connect such cam with such arbor-support, whereby such support is caused to engage with and disengage from such arbor at the proper time, a rocker-shaft, supports for the same, and means provided on such shaft to engage a cam mounted on the driving-shaft, a cutter-frame carrying a cutter mounted on such rocker-shaft, and by means of such cam on the driving-shaft such cutter is caused to advance and retreat from the tube-arbor at the proper time required, substantially as set forth.

5. In a machine of the character described, the combination, with the tube-supporting arbor 2, of the frame 16, a support for such frame, and means, substantially as shown, whereby such frame is moved longitudinally thereon to and from the tube-supporting arbor, arbor center support 24, pivotally supported to such frame in the manner substantially as shown, and means, substantially as shown, on such tube-arbor center support to engage with the tube-arbor, such tube-arbor center support arranged, when disengaged from the tube-arbor, to be swung laterally on its pivoted support out of alignment with such arbor, substantially as set forth.

6. The combination, in a tube-cutting machine of the character described, of the arbor 2 and means, substantially as shown, to revolve the same, tube-carrier sleeve 4, mounted on such arbor, and means, substantially as shown, for imparting a rotary motion to such tube-carrier sleeve through the medium of the tube-supporting arbor, with the arm 8, one end of which arm loosely engages the tube-carrier sleeve, substantially as shown, carrier-block 53 to engage with the other end of such arm, a guiding-track for such carrier-block, such track arranged parallel with the tube-supporting arbor, and means, substantially as shown, to advance such tube-carrier block step by step along such track, and thereby impart such motion to the tube-carrier sleeve through the medium of the connecting-arm, as set forth.

7. The combination, in a tube-cutting machine, of the tube-supporting arbor 2, having longitudinal groove 3 therein, and means, substantially as shown, to revolve such arbor, with the tube-carrier sleeve 4, mounted on such arbor, such sleeve having a reduced portion, arm 8, one end of which arm loosely engages such reduced portion, collar 6, rigidly mounted thereon to hold such arm in place, and means, substantially as shown, to engage such tube-carrier sleeve with the longitudinal groove of the tube-arbor, whereby such sleeve is revolved with such arbor, and means, substantially as shown, connected with the free or projecting end of the arm to advance the tube-carrier sleeve longitudinally along the tube-arbor, substantially as shown.

8. In a machine of the character described, the combination, with an arbor for supporting the tubes to be cut, a tube-carrier mounted on such arbor, and means to rotate such carrier and arbor together, of a bar arranged parallel with such tube-carrying arbor, a support for such bar, and means, substantially as shown, for connecting such tube-carrier with such bar, a feed-dog, a support for the same, such feed-dog pivoted to such support and arranged by means of reciprocating mechanism to turn on such support and by frictional contact engage such bar and advance with the same a predeterminal distance and by means of the reciprocating mechanism such feed-dog, together with its support, will be returned to its former position independent of the feed-bar, as set forth.

9. In a tube-cutting machine, the combination, substantially as shown, with an adjustable reciprocating mechanism and means for operating the same, of a bar, a support for the same, a feed-dog, a support for the same, such feed-dog pivoted thereto, and means for connecting such feed-dog with the reciprocating mechanism, whereby such feed-dog is turned on its pivoted support and by frictional contact is made to alternately engage such bar and move with the same a predetermined distance, a stop on the feed-dog support to engage such feed-dog when released from said bar, so that by means of such stop, combined with the reciprocating mechanism, such feed-dog and its support are both returned to their former position, as set forth.

10. The combination, in a tube-cutting machine of the character described, of an arbor for supporting the tube to be cut and means to revolve such arbor, a tube-carrier sleeve mounted thereon, such carrier-sleeve caused to revolve with such arbor and through the medium of the same, with a feed-bar and means, substantially as shown, for connecting such feed-bar with the tube-carrier sleeve, a feed-dog, a support for the same, such feed-dog pivoted thereto, a projection on such support, the feed-bar placed between such projection and the clamping-face of the feed-dog, such dog arranged by means of the reciprocating mechanism connected therewith, substantially as shown, to turn on its pivoted support and by frictional contact engage the feed-bar, and while thus engaged and through the medium of the reciprocating mechanism such feed-dog, its support, and feed-bar, together with the tube-carrier sleeve, will be advanced a predetermined distance, a stop on such feed-dog support to engage the feed-dog when released from the feed-bar, and by means of such stop, combined with the reciprocating mechanism, such feed-dog and its support are returned to their former position independent of the feed-bar, substantially as set forth.

11. The combination, in a tube-cutting machine of the character described, of a tube-supporting arbor and means for revolving the same, a tube-carrier sleeve mounted thereon, and means, substantially as shown, on such arbor whereby such carrier-sleeve is revolved with such arbor and through the medium of the same such carrier-sleeve engaging the end of the tube to be cut, causing such tube to revolve with such arbor and carrier-sleeve, a cutter, a support for the same, and means, substantially as shown, to bring such cutter into engagement with such tube, with a feed-bar and means, substantially as shown, for connecting such feed-bar with the tube-carrier sleeve, a feed-dog, a support for the same, such feed-dog pivoted thereto, a projection on such support, the feed-bar placed between such projection and the clamping-face of the feed-dog, reciprocating mechanism connected with such feed-dog, causing the same to alternately engage the feed-bar and advance such feed-bar, the feed-dog, and its support, together with the tube-carrier sleeve, a predetermined distance, and a stop or check, substantially as shown, on such a feed-bar to engage the feed-dog and thereby prevent the tube-carrier advancing within the cutting-field, all substantially as set forth.

12. The combination, in a tube-cutting machine of the character described, of the driving-spindle 10, having shouldered portion 97 and threaded portion 95, standards 11 11′ for supporting such spindle, pulley 13, mounted on such spindle, such pulley having threaded portion 94 to engage with the threaded portion of the spindle, standard 11, placed between the face 96 of said pulley and the face of the shouldered portion of the spindle, as shown, said spindle having the tube-supporting arbor 2 projecting therefrom, combined with the cutter 42, so that by means of the adjustment of the pulley on the spindle the proper relation between the edge of the cutter and the end of the tube-supporting arbor is maintained, and means, substantially as shown, whereby said pulley is rigidly secured to the spindle, as set forth.

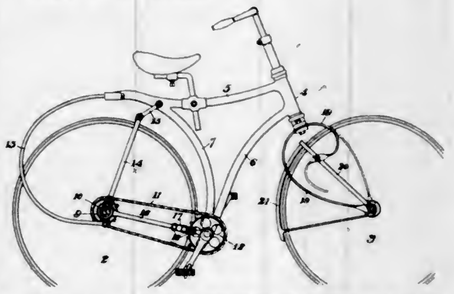
13. The combination, in a tube-cutting machine of the character described, of the rocker-shaft 35, supporting-standards for the same, a cutter-support rigidly mounted on such shaft, a cutter in such support, with collar 91 rigidly mounted on such shaft, washer 92, loosely mounted thereon and placed between such collar and one of the supporting-standards or other suitable support for the same, screws 93, adjustably engaging with such collar, as shown, and projecting through the same, the projecting ends of which screws engage the washer, and by means of the collar, adjusting-screws, the washer, and its support, all combined and arranged as shown and set forth, the end-play of the shaft is taken up and the tube-cutter is held in proper relation with the tube-supporting arbor, as set forth.

14. The combination, in a tube-cutting machine, of the cutter 42, sleeve 43, such cutter rigidly mounted thereon, spindle 44, supporting such sleeve and cutter, split bushings 46 46′ on the spindle, one of such bushings placed on each side of the cutter with the cutter-support 39, having branches 40 40′, forked openings 47 47′ therein to support the split bushings, and means, substantially as shown, whereby such bushings are held in such forked supports or openings and the tension on the spindle regulated thereby, the inner ends of such bushings abutting the cutter-sleeve and arranged to be adjusted laterally in their supports and thereby adjust the cutter with relation to the tube-supporting arbor, such spindle allowed to turn freely without end-play, as shown and set forth.

15. The combination, in a tube-cutting machine of the character described, of an arbor for supporting the tube to be cut and means to revolve such arbor, a tube-carrier sleeve mounted thereon, such sleeve revolved with such arbor and through the medium of the same, substantially as shown, such tube-carrier sleeve engaging one end of the tube to be cut, causing such tube to be revolved with such tube-carrier sleeve and arbor, a cutter, a support for the same, and means, substantially as shown, for advancing such cutter toward the arbor and withdrawing it therefrom, such cutter arranged to be revolved by the engagement of its cutting-edge with the revolving tube, and such cutter combined with the end of the arbor and form thereby a shearing cut to sever the tube, as set forth.

16. The combination, in a machine for cutting paper tubes, of a tube-supporting arbor and means, substantially as shown, to cause such arbor to revolve, a tube-carrier sleeve mounted thereon and arranged, substantially as shown, to be revolved with such arbor and through the medium of the same, such sleeve engaging with the inner end of the tube, thereby causing such tube to revolve with such sleeve and arbor, such tube-carrier sleeve arranged to be moved during its rotary motion and independent of such motion along the tube-supporting arbor and thus advance the tube into the cutting field, all substantially as set forth.

447,741. VELOCIPEDE. HARRY SEMPLE, Steubenville, Ohio, assignor of one-half to John F. Flood, same place. Filed July 5, 1890. Serial No. 357,767. (No model.)



Claim.—1. In a bicycle or velocipede, the combination, with the frame and the rear-wheel bearing, of a rearwardly-curved C-spring connected by one end to the frame substantially over the bearing and by the other end to the bearing below the center, substantially as and for the purposes described.

2. In a bicycle or velocipede, the combination, with the frame and the rear-wheel bearing, of a rearwardly-curved C-spring connected by one end to the frame and by the other end to the bearing, and a horizontal pivoted brace-rod which connects the bearing with the frame, substantially as and for the purposes described.

3. In a bicycle or velocipede, the combination, with the frame and rear-wheel bearing, of a rearwardly-curved C-spring connected by its upper end with the frame and by its lower end with the bearing, and a vertical toggle or jointed brace-rod which connects the frame and the bearing, the connection of the said jointed brace-rod and spring being at substantially opposite points on the bearing, substantially as and for the purposes described.

4. In a bicycle or velocipede, the combination, with the frame and the rear-wheel bearing, of a rearwardly-curved C-spring connected by its upper end with the frame and by its lower end with the bearing, a horizontal pivoted brace-rod which connects the bearing and the frame, and a vertical toggle or jointed brace-rod which connects the frame and the bearing, the connection of the said jointed brace-rod and the spring being at substantially opposite points on the bearing, substantially as and for the purposes described.

5. In a bicycle or velocipede, the combination, with the pedal-crank bearing, of a substantially triangular frame having rigid parts 6 and 7 extending upwardly from the crank-bearing to the front and rear, respectively, and an integral horizontal brace 5 at the top of the frame, substantially as and for the purposes described.

6. In a bicycle or velocipede, the combination, with the frame and the front-wheel bearing, of a bowed spring whose ends are connected with the bearing and which at a point intermediate of its length is connected with the frame, substantially as and for the purposes described.

7. In a bicycle or velocipede, the combination, with the frame and the front-wheel bearing, of bowed springs at the sides of the front wheel, each connected at one end with the said bearing and with the frame at an intermediate point and at the other end or another intermediate point with braces connecting the springs with said bearing, said braces being connected, substantially as and for the purposes described.

8. In a bicycle or velocipede, the combination of the frame, the driving-wheel bearing, a spring connecting these parts, the crank-shaft bearing, a brace connecting the wheel-bearing with the latter, and a

jointed brace connecting the wheel-bearing with the upper part of the frame, substantially as and for the purposes described.

9. The combination, with the pedal-crank shaft, of a sleeve encircling the same and rotary within a socket on the bicycle-frame, braces screwed to the sleeve, and ball-bearings at the ends of the sleeve, substantially as and for the purposes described.

447,742. **SET-SCREW PROTECTOR.** HARRY B. WALMSLEY, Beverly, assignor of one-half to Charles H. Warren, Lynn, and Charles H. King, Swampscott, Mass. Filed Sept. 4, 1890. Serial No. 363,948. (No model.)

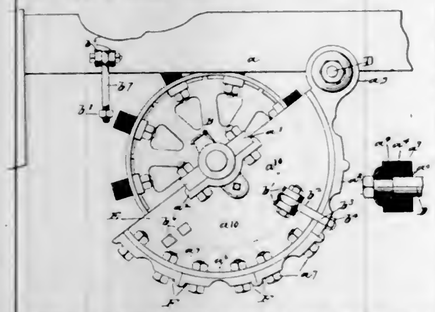


Claim.—1. The improved set-screw protector consisting of a hollow elastic ball or bulb having a perforated base or bottom adapted to be secured on the set-screw, substantially as and for the purpose set forth.

2. The improved set-screw protector consisting of a hollow elastic ball or bulb having a perforated base or bottom adapted to be secured to the set-screw and having external base extensions or projections, substantially as and for the purpose set forth.

3. The combination of a shaft, a hub or collar thereon, and a set-screw for securing such parts together, with a guard or shield consisting of a hollow elastic ball or bulb having a perforated base adapted to be secured on the set-screw, substantially in a manner as specified.

447,743. **CLOVER-HULLER.** LEWIS S. WHITING, Ashland, assignor of one-half to Horace H. Whiting, Canton, Ohio. Filed June 5, 1890. Serial No. 354,398. (No model.)



Claim.—1. In a clover-huller, the concave consisting of end pieces a^{10}, stays F, means for securing them to the end pieces, a concave stave a^9, having a hinged connection with the machine with one and removably secured with the other end to the body of the concave, in combination with means for securing said concave in operative position to the machine, substantially as set forth.

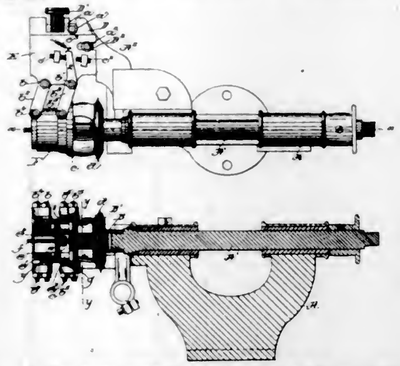
2. In a clover-huller, the concave consisting of end pieces a^{10}, staves F, means for securing them to the end pieces, a concave stave a^9, having a hinged connection with the machine, and an eyebolt pivotally secured to the end piece a^{10} and having its free end adapted to engage the concave stave, in combination with means for securing said concave in operative position to the machine, substantially as set forth.

447,744. **HEEL-TRIMMING MACHINE.** HENRY W. WINTER, Boston, Mass. Filed Feb. 3, 1888. Serial No. 262,871. (No model.)

Claim.—1. In a heel-trimming machine, a rotary cutter for the heel and a hollow rand or counter guard having an edge, as *c*, to enter the rand-crease, combined with pivoted supporting-arms b^3 b^3, of equal length and arranged parallel each to the other, whereby the said rand-guard in all its different positions, whether uncovering more or less of the acting edges of the knives of the cutter, always occupies the same angular position with relation to the axis of rotation of the shaft carrying the heel-cutter, substantially as described.

2. In a heel-trimming machine, the rand or counter guard having a guiding-edge, as *c*, the parallel pivoted arms b^3 b^3, and the lug 2, combined with back and front stops to determine the extent of movement of the said rand or counter guard, and with a rotary cutter, to operate substantially as described.

3. In a heel-trimming machine, the rand or counter guard having a guiding-edge, as *c*, parallel pivoted arms b^3 b^3, and the lug 2, and back and front stops co-operating therewith, and adjustable cross-slides E D, combined with a rotary cutter, to operate substantially as described.



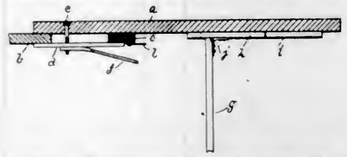
4. The rotary cutter, the shaft A′ and spindle, the rand-guard having a guiding edge, as *c*, and pivoted arms to support the said rand-guard, and a hub *e*, provided with rand-cutters, combined with the shaft *f*, pivoted at its inner end to the said spindle, and the driver carried by the said shaft and engaging and actuating the said hub and rand-cutter, substantially as described.

5. In a heel-trimming machine, the rotary cutter, its shaft and spindle B, and the hollow rand-guard having a sleeve-like hub, and a support therefor independent of the support for the rotary cutter-shaft, combined with a rand-cutter, the hub of which is extended into and takes bearing in the sleeve of the said guard, and the shaft *f*, jointed at its inner end to the said spindle, substantially as described.

6. In a heel-trimming machine, the rotating cutter *m*, its actuating-shaft, the independent rand-guard, and the hub *e*, supported by it and having a rand-cutter, combined with the short shaft *f*, loosely jointed to and so as to rotate in unison with the cutter-actuating shaft, and with a driver loosely connected to the said hub to rotate the same, and at the same time permit the hub, together with the rand-guard, to be moved to cover or uncover more or less of the acting surfaces of the blades, for the purpose set forth.

7. The combination, in a heel-trimming machine, of the lug or projection *l*, the rand-cutter, arc-shaped projection, and arc-shaped groove, to operate substantially as described.

447,745. **IRONING-BOARD.** ELBERT E. WOOD, Brooklyn, N. Y. Filed June 25, 1890. Serial No. 356,672. (No model.)



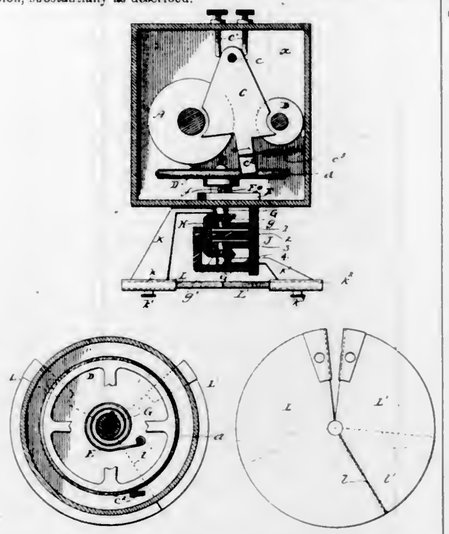
Claim.—The combination, with the ironing-board having the clamp for attaching one end to the table, of the leg for supporting the other end, connected to the under side of the board by the adjusting-plate, and the spring-cleats, said cleats forming a slideway for the plate, and said plate being detachable and reversible in said slideway, substantially as described.

447,746. **ELECTRIC-ARC LAMP.** LUTHER H. BUCHANAN, Pasadena, assignor of one-half to J. De Barth Shorb, San Gabriel, Cal. Filed July 8, 1890. Serial No. 358,039. (No model.)

Claim.—1. In an arc lamp, the combination, with two sector-shaped carbons, of supporting and carrying arms therefor, one of said arms being pivoted to a support, the center of the pivot and the inner ends of the radii of both sectors being in alignment.

2. In an arc lamp, the combination, with two sector-shaped carbons, of pivoted supporting and carrying arms therefor, the center of the circle of which the carbons are sectors being in line with the center of motion of the arms, and gearing between the said arms, substantially as described.

3. In an arc lamp, the combination, with two sector-shaped carbons, of pivoted carrying-arms therefor, the center of the circle described by the carbons being in line with the center of motion of the arms, gearing between the said arms, a wheel carried by the shaft of one arm, a magnet and armature for moving said wheel in one direction, and a spring for moving the shaft and wheel in the other direction, substantially as described.



4. In an arc lamp, the combination, with a pair of carbons, one of which is connected to an arm carried by a rotary shaft, of a wheel on said shaft, a magnet having a portion of its armature engaging the periphery of said wheel, and a spring for rotating said shaft, substantially as described.

5. In an arc lamp, the combination, with a pair of carbons, one of which is connected to an arm carried by a rotary shaft, of a wheel secured to said shaft and having an elastic periphery, and a magnet having its armature engaging said periphery, substantially as described.

6. In an arc lamp, the combination, with a pair of carbons, one of which is connected to an arm carried by a rotary shaft, of a wheel secured to said shaft and having an elastic periphery, a magnet having its armature engaging said periphery, a sleeve adjustably secured to the said shaft, and a spring having one end secured to the sleeve and the other end to the frame, substantially as described.

7. In an arc lamp, the combination, with a pair of carbons, one of which is connected to an arm carried by a rotary shaft, of a wheel secured to said shaft, main and shunt magnets in the circuit of the lamp, a pivoted armature having a wing for each magnet and an extension engaging the periphery of the wheel, and an adjusting-screw each side of the pivot of the armature, as described.

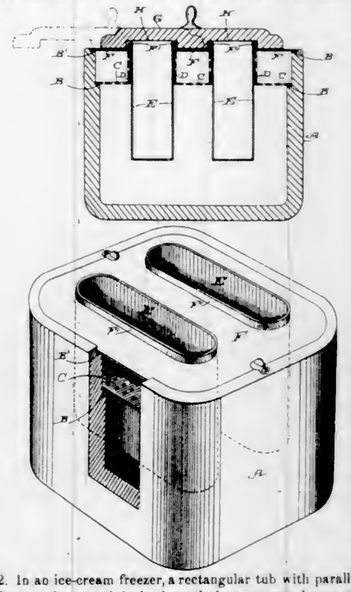
8. In an arc lamp, the combination, with the frame, of the bracket J, having insulating-arms 1, 2, 3, and 4, a shaft journaled in the lower arms 3 and 4 and having an arm carrying a carbon, a shaft journaled in the upper arm 1 and the frame and having an arm carrying the other carbon, a bevel-pinion on each shaft, and an intermediate pinion of insulating material meshing with said shaft-pinions and journaled in the arm 2 of the bracket, as set forth.

9. A cut-out for arc lamps, consisting of main and shunt coils in the circuit, a metallic bar extending from one coil to the other, but insulated therefrom, an armature of the main coil connected to the main circuit and having an extension adapted to make contact with one end of the said bar, and an armature of the shunt-coil connected also to the main circuit and adapted to make contact with the other end of said bar when released by the core of said shunt-coil, substantially as described.

10. The combination, with the coils A and B, of the bar or strip A′, the pivoted strips a^3 and b^3, the former having an extension a^4, and connections from the two pivoted strips to the main circuit, substantially as described.

447,747. **ICE-CREAM FREEZER.** JOHN A. BUFFER, San Francisco, Cal. Filed Aug. 1, 1890. Serial No. 360,707. (No model.)

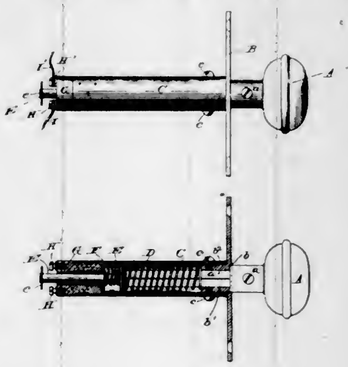
Claim.—1. In an ice-cream freezer, a tub having a ledge or offset around its upper edge, a continuous horizontal plate the periphery of which rests upon the ledge, oval openings in the plate and correspondingly-shaped cans extending through the openings and permanently fixed therein, a second ledge or offset between this plate and the bottom of the tub, and a continuous horizontal perforated plate resting thereon with openings corresponding with the position of the cans in the upper plate, and upturned perforated flanges through which the cans are inserted or withdrawn, substantially as herein described.



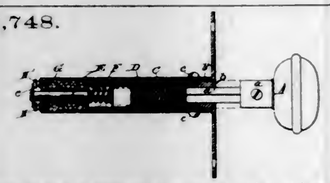
2. In an ice-cream freezer, a rectangular tub with parallel ledges or offsets, as shown, a tight horizontal plate supported upon the upper ledge, a series of oval equally-spaced cans permanently fixed in openings in the plate, so as to extend above and below the plate, a perforated plate supported upon the lower ledge with flanged openings through which the lower ends of the cans pass freely, and a continuous cover with equally-spaced depressions fitting the tops of the cans, so that the cover may be moved to expose one or more of the cans and close the remainder, substantially as herein described.

447,748. **ELECTRICAL DOOR-BELL PULL.** LEWIS W. CLEVELAND, Portland, Me., assignor of three-fourths to Clarence L. Marston, Lewis A. Barker, and Dennis A. Meaher, all of same place. Filed Dec. 1, 1890. Serial No. 373,207. (No model.)

Claim.—1. In an electrical door-bell pull, the combination of the handle and spring about its spindle, whereby it is normally held in place, with a second spring-actuated spindle and the insulating material through which said spindle is movable, and the binding-posts in said material, whereby when the handle and its spindle are drawn out



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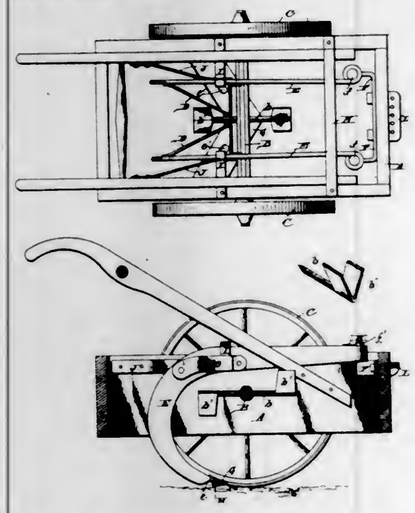
said second spindle is insulated by its spring action and makes connection between said binding-posts, substantially as described.

2. In combination with a door-escutcheon and a metal cylinder C, fixed thereto at one end, the handle A and its spindle and the spring about it inside said cylinder, and the hard rubber G, fixed in the opposite end of the cylinder and projecting beyond said cylinder, and the binding-posts and spring-actuated and headed spindle E, substantially as and for the purposes set forth.

3. In an electric door-bell pull, the combination of the spring-actuated handle and the insulating material and binding-posts therein with the second spring-actuated spindle in alignment with the first spindle, movable through said insulating material, and all in the manner and for the purposes described.

4. In an electric door-bell pull, substantially as described, the combination of the door-escutcheon and sleeves or cylinder attached thereto, the hard-rubber or insulating material secured in and to the outer end of said sleeve and cylinder, and the binding-posts secured to said material, and the headed and spring-actuated metal spindle movable within said sleeve or cylinder and also through said insulating material, and the handle and its connections normally holding said headed spindle out of contact with the binding-posts, substantially as and for the purposes set forth.

447,749. COTTON-CHOPPER. JOHN W. COBB, Thomasville, Ga., assignor of one-half to John Clewis, same place. Filed Nov. 18, 1890. Serial No. 371,846. (No model.)

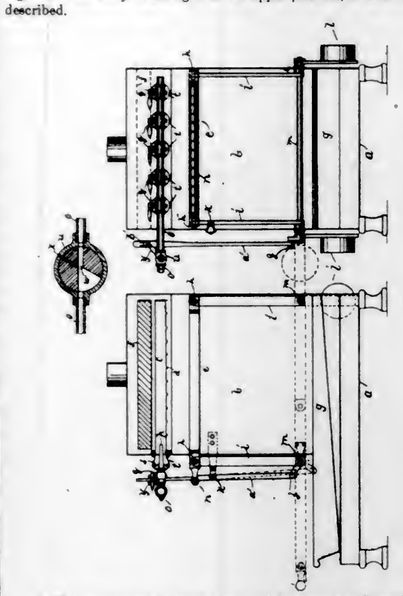


Claim.—1. The combination, with the beams adapted to yield laterally and having the cutting devices and having tappets applied on their opposing sides, of the rotating axle having arms and wedge-shaped heads on the said arms, substantially as set forth.

2. The combination, with the beams pivoted at their front ends and keepers to support the said beams near their rear ends and limit their movements, of the springs for retaining the said beams to their normal position, and the axle having cam-heads to engage with and effect a separation of the said beams, substantially as described.

447,750. BROILING-STOVE. ALBERT J. DOTT, New York, N. Y. Filed June 25, 1890. Serial No. 356,620. (No model.)

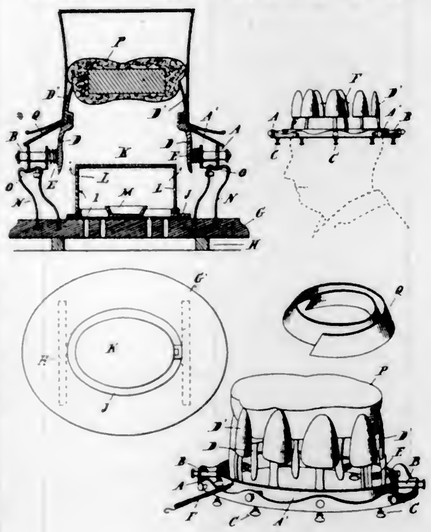
Claim.—1. The combination, with the oven and the downwardly-projecting burners located in the upper space therein, of the gridiron supported on the pivoted parallel-motion supports and having a holding device normally retaining it in the upper position, substantially as described.



2. The combination, with the oven and the downwardly-projecting burners located in the upper space therein, of the gridiron supported on the pivoted parallel-motion supports having a counterpoise device for normally retaining it in the upper position, substantially as described.

3. The combination, with the oven and the downwardly-projecting burners located in the upper space therein, of the gridiron supported on the pivoted parallel-motion supports, the three-way cock in the gas-supply pipe and the connection of said cock with the moving support for automatically actuating it, substantially as described.

447,751. COMBINED HAT CONFORMATOR AND STRETCHER. HUGH LYONS, Lansing, Mich., assignor of one-half to John F. Crotty, same place. Filed June 9, 1890. Serial No. 354,829. (No model.)



Claim.—1. In a hat-conformator, the combination, with the base and heating medium, of supports in said base, concentric rings resting on said supports, spring-actuated conformator-blades adjustably secured in said rings, a pad adapted to be clamped between the blades, and an annular ring inclined upwardly, substantially as described.

2. In a hat-conformator, the combination, with the adjustable hat-conformator blades, of an annular strip arranged outside of the same and forming a shield for the hat-brim, and means for heating the hat, substantially as described.

3. In a hat-conformator, the combination, with the base-heating medium, supports, concentric rings, and spring-actuated slides having blades secured to their inner ends, of a shield inclined upwardly closely fitting around the blades and under the hat-brim, substantially as described.

4. In a hat-conformator, the combination, with the conformator-frame and heating means, of an annular strip arranged at the edge of the frame, having its lower face inclined upwardly from the outer edge, forming a protector for the brim and a deflector for the hat, substantially as described.

5. In a hat-conformator, the combination, with the conformator-blades, of a yielding pad arranged between the blades, and means for heating the hat, substantially as described.

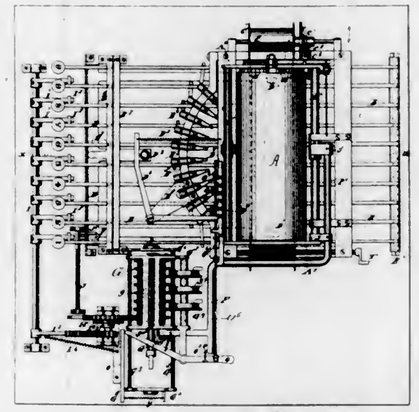
6. In a hat-conformator, the combination, with the blades and heating means, of a shield for the hat-rim, consisting of a split ring adapted to embrace the blades, substantially as described.

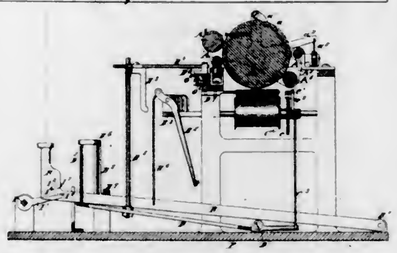
REISSUES.

11,147. ADDING AND WRITING MACHINE. ALBERT C. LUDLUM, Denver, Colo. Filed May 19, 1890. Serial No. 352,422. Original No. 384,373, dated June 12, 1888.

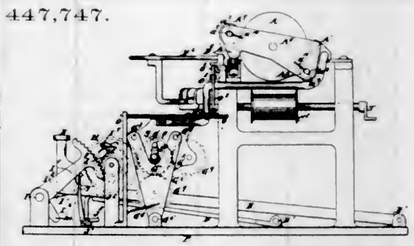
Claim.—1. The combination, with type mechanism, of a carriage provided with an impression-surface over which paper to be printed upon may pass, feed-rollers for the paper mounted in said carriage, a number of adding-wheels mounted in an appurtenance of the said carriage, and mechanism, substantially such as described, for operating the type mechanism and adding-wheels and for moving the said carriage and the adding-wheels in unison widthwise of the machine, substantially as specified.

2. The combination of type-levers, an impression-cylinder, a carriage in which said cylinder is mounted, a number of adding-wheels, a carriage in which said wheels are mounted connected to the carriage





447,747.



supporting the impression-cylinder, and mechanism, substantially such as described, for moving the said carriage and operating the type-levers and adding-wheels, substantially as specified.

3. The combination of an impression-cylinder, type-levers for operating in conjunction therewith, finger-levers for operating the type-levers, adding-wheels, a motor-wheel adapted to engage with the adding-wheels one at a time, and a rock-shaft for transmitting motion to the motor-wheel and deriving motion from the operation of the levers which actuate the type-levers, substantially as specified.

4. The combination of a writing mechanism consisting essentially of type-levers and an impression-cylinder having a rotary and longitudinal movement, a carriage in which said cylinder is supported, adding mechanism, a carriage in which said adding mechanism is supported connected to the carriage of the impression-cylinder, an oscillating frame supporting the last-named carriage, and a cam-lever whereby this frame may be oscillated to render the adding mechanism inoperative, substantially as specified.

5. The combination of the carriage A', an impression-cylinder supported on said carriage, a rack-bar connected to said carriage, a pawl for engaging with said rack-bar for the purpose of imparting motion to the carriage, adding mechanism, a carriage supporting the adding mechanism and connected to the carriage of the impression-cylinder, an oscillating frame supporting the carriage of the adding mechanism, a cam-lever whereby this frame may be oscillated, a connection between said lever and a device extending under the said pawl, whereby said pawl may be rendered inoperative at the same time that the adding mechanism is rendered inoperative by the oscillation of the lever, substantially as specified.

6. The combination of type-printing mechanism, adding mechanism, a carriage controlling the adding mechanism and printing mechanism, and a series of finger-keys governing the aforesaid mechanisms and carriage.

7. The combination of adding mechanism, a carriage controlling the same, and a series of finger-keys governing said adding-mechanism and carriage.

8. The combination, with calculating mechanism variably controlled by finger-keys, of type-printing mechanism operated thereby, and a carriage governing the printing, also controlled by said finger-keys.

9. The combination of finger-keys of different denominations, adding mechanism operated thereby, type-printing mechanism controlled by the same finger-keys that operate the adding mechanism for recording the numbers registered by said adding mechanism, and disconnecting means for removing the adding mechanism from under the control of said finger-keys and rendering it inoperative.

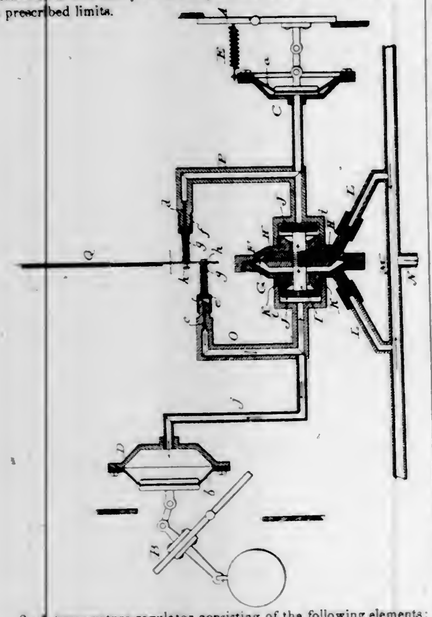
10. The combination of finger-keys, adding mechanism controlled thereby, a carriage governing said adding mechanism, devices for automatically feeding the carriage as the finger-keys are operated, and detachable connections for removing said carriage from the control of the automatic feed, whereby the carriage may be moved into any desired position at pleasure.

11. The combination of adding mechanism, type-printing mechanism, finger-keys for operating said mechanisms, a carriage governing said adding and printing mechanisms, devices for automatically feeding the carriage as the finger-keys are operated, and detachable connections for removing said carriage from the control of the automatic feed, whereby the carriage may be moved into any desired position at pleasure.

11,148. TEMPERATURE-REGULATOR. LUCIEN F. EASTON, La Crosse, Wis. Filed Jan. 13, 1891. Serial No. 377,667. Original No. 432,866, dated July 22, 1890.

Claim.—1. In a temperature-regulating apparatus, the combination of a fluid-main common to two or more apartments and communicating with apparatus for varying the pressure within the main, a chamber containing a central diaphragm or piston and communicating on opposite sides of said diaphragm or piston with said main, two chambers, each containing a movable diaphragm or piston and re-

spectively communicating with opposite sides of the first-mentioned chamber, a warm-air valve or damper connected with the piston or diaphragm of one of said chambers, a cold-air valve or damper connected with the piston or diaphragm of the other of said chambers, air-inlets communicating with said chambers, respectively, air-vents communicating with said chambers, respectively, and a thermostat arranged, substantially as set forth, to act upon said valves and to open or close them alternately as the temperature rises above or falls below the prescribed limits.



2. A temperature-regulator consisting of the following elements: a service-main communicating with a pumping apparatus for producing pressure or suction as required, a chamber containing a central diaphragm or piston, passages opening from opposite sides of the piston or diaphragm into the main, valves or disks carried by the central diaphragm or piston and serving to open one and close the other side of the chamber alternately, a second chamber containing a flexible diaphragm or partition, a cold-air valve or damper connected with and movable by the diaphragm or partition of said second chamber, a third chamber, also provided with a flexible diaphragm or partition, a warm-air valve or damper connected with and controlled by said diaphragm or partition, two air-vents, each communicating with one side of the first chamber and with the second or the third chamber, valves controlling said vents, and a thermostat arranged and operated, substantially as set forth, to actuate said valves alternately and to open one or the other, according to variations in the temperature of the apartment in which the thermostat is located.

3. In a temperature-regulating apparatus, the combination of a fluid-main M, a chamber F, provided with a central diaphragm or piston G, pipes L L, connecting opposite sides of said chamber with the main M, stem I, carried by the piston or diaphragm G and provided with disks or valves J, pipes O and P, provided, respectively, with vents *c* and *d*, valves *e* and *f*, applied to said vents, chambers C and D, provided, respectively, with diaphragms or pistons *a* and *b*, cold-air valve B, connected with the piston or diaphragm *b*, warm-air valve A, connected with the piston *a*, and thermostat Q, arranged, substantially as shown and described, to actuate the valves *e* and *f*.

4. In a temperature-regulator, the combination with a hot-air valve or regulator and a cold-air valve or regulator, of movable diaphragms or pistons for actuating the same, a service-main, an intermediate chamber containing a central diaphragm or piston, air-vents arranged one to admit air to one side of the intermediate chamber and to the piston controlling the cold-air valve, the other to admit air to the other side of the intermediate chamber and to the piston of the warm-air valve, valves controlling said vents, and a thermostat adapted to actuate said valves alternately as the temperature rises above or falls below the predetermined point.

5. In a temperature-regulator such as set forth, an air-vent *c*, a valve *e*, provided with a stem *h*, a spring *g*, encircling said stem and serving normally to seat the valve and close the vent, and a thermostatic bar Q, arranged to act upon said stem and to open the valve when the bar moves in the proper direction.

6. In a temperature-regulator, the combination of a chamber, a movable partition within said chamber, four ports, two on each side of said partition, one port on each side communicating with the atmosphere and the other with a main or reservoir, two valves, one on each side of and operated by the partition to control the passage of fluid through the chamber, a thermally-controlled valve applied to each of the ports communicating with the atmosphere, an expansible and contractible chamber communicating with one of the ports opening to the atmosphere at a point between the thermal valve and the partition-actuated valve, and a damper, valve, or like device connected with a movable part of the expansible and contractible chamber.

7. In a temperature-regulator, the combination of a chamber, a movable partition therein, four ports, two on each side of said partition, one port on each side communicating with the atmosphere and the other communicating with a main or reservoir, two valves, one on each side of and operated by the partition to control the passage of fluid through the chamber, a thermally-controlled valve applied to each of the ports in communication with the atmosphere, two expansible and contractible chambers, each communicating with one of the ports opening to the atmosphere at a point between the thermal valve thereof and the partition-actuated valve, and two valves, dampers, or like devices, each connected with a movable part of one or the other of said expansible and contractible chambers.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE SPECKHAUCH.

Decided January 3, 1890.

1. DIVISION—CLAIMS FOR COMBINATIONS AND CLAIMS FOR ELEMENTS AND SUB-COMBINATIONS.

Where in an application for a patent describing a series of mechanisms in one machine performing certain functions in succession, the applicant made certain claims for combinations which were not limited in their scope to either one of the mechanisms of the series, and also other claims for elements and sub-combinations which were limited to one of the mechanisms of the series, but were also contained in the broader combinations not so limited, *Held* that division could not be required until it had been determined whether the broader combinations were true combinations within the meaning of the law.

2. SAME—CLAIMS FOR VARIOUS IMPROVEMENTS FOR PERFORMING DIFFERENT FUNCTIONS IN AN OLD MACHINE.

Where the machine improved upon is as a whole an old and well-known machine performing in succession a series of separate and distinct functions and some of the improvements are limited in their scope to the mechanism performing one function, the remaining improvements being limited to other mechanism performing different functions, division should be required and the claims should be grouped with reference to the mechanisms to which they pertain.

3. SAME—COMBINATIONS, ELEMENTS AND SUB COMBINATIONS.

Where a combination of elements is held to be legitimate, the elements and sub-combinations may be claimed in the same application, unless they have acquired a definite status in the arts, industries, and trades—that is to say, pertain to and are improvements upon parts or devices which have acquired such status.

4. SAME—WHEN COMBINATION AS A WHOLE IS PATENTABLE, WHAT IS REQUISITE TO NECESSITATE DIVISION.

In order to necessitate the dividing out of elements, when the combination as a whole is held to be patentable, it must appear, *first*, that the elements or parts of the invention which are to be divided out have obtained a definite place in art and manufacture, and, *second*, that they can be used in other relations.

ON petition.

PRINTING-PRESSES.

Application of Bernard H. Speckbauch, No. 317,903, filed July 18, 1889.

Mr. M. Bailey for the applicant.

MITCHELL, *Commissioner:*

The object of the invention described in this application is to construct a platen printing-press consisting of a duplex machine carrying two forms, opposite to which work two platens, and provided with duplicate inking devices and driving mechanisms, the machine being adapted to print at the same time on opposite sides of the same sheet, the paper being taken from a roll or rolls and automatically fed and cut into sheets.

The Examiner requires division upon the ground that claims 1 to 3, inclusive, 13 to 29, inclusive, and 40 and 41, are for the printing-machine; claims 4 to 12, inclusive, and 30 are for the feeding mechanism; and that claims 31 to 39, inclusive, are for the inking apparatus. The requirement for division is said to be based upon the well-established practice of the Office as laid down in a long line of decisions, which are referred to. The Examiner says:

> It goes without saying that the printing mechanism performs all its functions whether the paper be fed by this applicant's mechanism or by any other web-feeding mechanism; that its operation is in no way affected by any influence or action of these feeding devices; so, also, that the feeding devices are in no slightest manner affected by the action of the printing mechanism. The same is true, fully, as to the inking apparatus. It is just as well adapted to very many other reciprocating printing-machines as to this, and very many other inking devices would just as well operate as this with this printing-machine.

The following passage from the decision rendered in *ex parte Willcox and Borton* (45 O. G., 455) is quoted by the Examiner, with approval, as governing his requirement in this case:

> Hence the rule that if one of the elements or parts of the invention has obtained a distinct place in art and manufacture, and can be used in other relations, it cannot be claimed in the same application with the principal invention. It must be claimed separately. * * *

I am not disposed to dissent from the principle as thus announced. Under this rule two things are requisite in order to necessitate division in a case to which it is applicable. They are, first, that the "elements or parts of the invention" which are divided out shall have obtained "a distinct place in art and manufacture;" and, second, that they can be used in other relations. It is not enough that they can be used in other relations if they have not obtained a distinct place in art and manufacture. That I am right in this view of the case will appear from what is said in *ex parte Willcox and Borton, supra*, with reference to certain mechanisms of which the presser-foot of a sewing-machine is taken as an illustration:

> These mechanisms or parts are not known or recognized by manufacturers or venders as entire machines for their separate uses and purposes. The presser foot mechanism is an instance of this kind. It has no other function, use, or purpose except to take its place as a part of the general organism, as the femur or tibia does in the human organism. They are manufactured separately and remain upon the manufacturer's shelves until called for to take their place in the particular sewing-machine of that manufacture. Such transient and piecemeal existence in severality does not impart to them the character of complete machines or articles which must be applied for in separate applications. Not only this, but it may be said of the class of sewing-machines, and of any other distinct and recognized class of machines of which there are distinct types or varieties all comprehended in one of the official classes, that it is not required by the principles of the Herr decision that the known parts of a known machine are to be separately patented merely because they are capable of use in all machines of the particular kind or class in which they are presented. Such parts, not being separate manufactures, are not patentable. Before they can be required to be separately applied for and separately patented either as parts, articles of manufacture, or machines, it must appear that they have acquired a distinct place in art and

the industries and are capable of use in other relations than in sewing-machines.

In the pending case the Examiner states that the inventions which he thinks should be separately patented are capable of use in other relations than in those in which they are found in the machine under consideration. He does not state, however, that they have obtained a distinct place in art and manufacture, nor does it appear that the different parts which he requires to be divided out of this application have acquired any more decisive status as separate mechanisms in the trade than the presser-foot of the sewing-machine; and I must assume, for the purposes of this decision, that the various elements and combinations which the Examiner requires to be divided out have not acquired a distinct standing in the trade within the m aning of *ex parte Willcox and Borton*.

There is another reason why the requirement of the Examiner should be overruled. In *ex parte Willcox and Borton* the Commissioner, speaking of the trimmer, tension devices, and the looper, which he held to be articles which have severally acquired a distinct place in manufacture as well as in art and invention, said:

As to claims covering these devices or parts thereof specifically with the general organism or parts thereof, the applicants will be entitled to consideration upon the merits before division can be required.

Applying this rule to claims 4 to 12, inclusive, which the Examiner states relate to the feeding mechanism, it will be found that they are all for combinations in which the "impression devices," which are unquestionably portions of the printing machine or mechanism, are elements, and therefore division cannot, in any event, be required until it has been ascertained whether the so-called combinations are patentable. So, too, as to some of the claims which are said to be for the inking apparatus, as, for instance, claim 31, where the ink-fountain and other elements are spoken of in combination with the "form of the platen."

A number of other cases are cited by the Examiner, among which is *ex parte Van Matteson*, (24 O. G., 389.) The Van Matteson case related to harvesting machines and the application sought to protect certain improvements upon a machine covered by a previous patent to the same applicant. The improvements related, severally, either singly or in groups, to distinct portions of the machine improved upon. That case therefore simply supports the proposition that improvements relating to separate and distinct mechanisms constituting an old and well-known machine must be grouped with reference to the portions of the mechanism to which they pertain.

Mr. Commissioner Marble expressly says that—

Applicant in this case has the right to claim and have a patent for the entire machine, if it is new, together with the subordinate combinations and parts which make up such machine.

He applied another rule simply because he held that the machine was not of such a character.

If it appeared in the pending case that the machine improved upon was, as a whole, an old and well-known printing-press, performing in succession a series of functions, and that some of the improvements were limited in their scope to the mechanism performing one function, while other improvements were similarly limited to other mechanisms performing different functions, I should have no difficulty in reaching the conclusion which was reached in *ex parte Van Matteson*. The statute provides for patenting improvements upon existing machines, and when an applicant seeks to protect mere improvements upon an old machine he should confine himself in each application to such improvements as are connected in design and operation and contribute to a single proximate result in the machine. Thus, if the machine under consideration were conceded to be an old and recognized machine for automatically performing the successive functions of feeding, printing, and folding paper, and the several improvements were some of them limited to the feeding portion of the machine, some of them to the printing portion, and some of them to the folding portion, it would be proper that they should be patented in separate groups, for the reason that the group designed to facilitate the feeding operation would be connected in design and operation, and the groups relating to the performance of the remaining operations would severally be similarly interrelated. It is true that such improvements would all be related to each other by the fact that they were all contained in one complex machine; but it is not believed that such a relationship would constitute the necessary connection in design and operation which the rule requires where the machine performs a series of operations and where the improvements are limited severally to facilitating one only of the several successive operations.

In the present case, as has been seen, the improvements said to relate to the feeding devices are not limited to the feeding devices. The first claim, which the Examiner says pertains to a printing-press, is as follows:

1. In a printing-press, the combination, with a form and platen, of the supports for a roll of paper, and devices for feeding the paper from the roll to the form, substantially as described.

The fourth claim, which the Examiner states belongs to the feeding mechanism, is as follows:

4. In a printing-press, the combination, with a form and platen, of the supports for a roll of paper, two reciprocating paper-feeders, and a paper-cutter arranged between the feeders, substantially as described.

The fifth, sixth, seventh, eighth, ninth, tenth, and eleventh claims, which are said to pertain to the feeding mechanism, are all of them, like the first and fourth claims, for combinations in which portions of the printing mechanism and portions of the feeding mechanism are claimed in combination. For this reason, as already stated, the question of division cannot be reached until it is determined whether the combinations are true combinations, within the meaning of the law, and patentable as combinations. It is true that some of the other claims are limited to the feeding devices; but the question of division as to such claims also turns upon the question whether the claims involving both the printing devices and the feeding devices are patentable, because it has been repeatedly held that where the combination is legitimate the elements and sub-combinations may be claimed in the same application, unless they have acquired a definite status in the arts, industries, and trade—that is to say, pertain to and are improvements upon parts or devices which have acquired such status.

The requirement of division must be overruled.

EX PARTE ROY AND NOURSE.

Decided February 14, 1891.

1. TRADE-MARK FOR USE IN DEALING IN REAL ESTATE.

A Trade-Mark adopted for use in dealing in real estate is not proper subject for registration.

2. SAME.

Where the mark sought to be registered was affixed to billheads, letter-heads, cards, and circulars which applicants used in their business, *Held* that such a use did not come within the statute.

3. TRADE-MARKS—REGISTRATION OF SIGNS OR SYMBOLS PROVIDED FOR, WHEN.

Registration of signs or symbols is provided for only when they are applied to transportable articles of commerce—that is, "goods, wares, and merchandise."

ON petition.

TRADE-MARK REGISTRATION.

Application filed October 18, 1890, No. 36,097.

Mr. C. C. Linthicum for the applicants.

FISHER, *Acting Commissioner:*

This petition is taken from the refusal of the Examiner of Trade-Marks to register a certain mark presented by the petitioners.

It is alleged by the petitioners that they are engaged at the city of Chicago—

* * * in the business of selling, leasing, managing, and exchanging real estate, lots, lands, and tenements.

and that they have adopted the mark presented for use in said business. They further state that they have been accustomed to use said mark—

* * * by painting or stenciling the same upon our signboards, and by printing on our business-cards, stationery, circulars, &c.

Registration is denied by the Examiner upon the grounds that real estate is not property as to which Trade-Mark rights can exist, and that, even if it were, a Trade-Mark for use in dealing therein is not proper subject for registration, since the commercial marks registrable under the act of Congress are not to be used upon real estate.

So far as it is necessary for the purposes of this case to consider it, the object of a Trade-Mark is to protect the producer of or dealer in merchantable commodities so that he may have the benefit of the reputation which his goods have gained by their quality or character, and also to protect purchasers against fraudulent imitations or unauthorized dealers, to the end that they may not buy the goods of one person when they intend to buy those of another.

By different writers a Trade-Mark has been defined to be:

A symbol, emblem, or mark which a tradesman puts upon or attaches in some way to the goods he manufactures or has caused to be manufactured. (Bouvier's Law Dictionary, 15th ed., title "Trade-Marks.")

An arbitrary symbol affixed by the manufacturer or merchant to a vendible commodity. (Browne on Trade-Marks, 2d ed., 2.)

The name, symbol, figure, letter, form, or device adopted and used by the manufacturer or merchant in order to designate the goods that he manufactures or sells and distinguish them from those manufactured or sold by another, to the end that they may be known in the market as his, and thus enable him to secure such profits as result from a reputation for superior skill, industry, or enterprise. (Upton on Trade-Marks, 9.)

A distinguishing mark or device used by a manufacturer on his goods or labels. * * * (Webster's Dictionary, 1890.)

These definitions of a Trade-Mark have been derived from decisions of numerous courts, both English and American, which have passed upon such marks. Such decisions have uniformly indicated that Trade-Marks are intended to be used upon goods or manufactured articles, the general objects of commerce.

Thus in *Hall* v. *Barrows* (4 De G., J. & S., 150) Lord Westbury said:

A Trade-Mark consists in the exclusive right to the use of some name or symbol as applied to a particular manufacture or vendible commodity.

In *Amoskeag Manufacturing Co.* v. *Spear & Ripley* (2 Sanford, 599) the court said:

Every manufacturer and every merchant for whom goods are manufactured has an unquestionable right to distinguish the goods that he manufactures or sells by a peculiar mark or device, so that they may be known as his in the market. * * * His Trade-Mark is an assurance to the public of the quality of his goods and a pledge of his own integrity in their manufacture and sale.

In *Canal Company* v. *Clark*, (13 Wall., 311:)

The office of a Trade-Mark is to point out distinctively the origin or ownership of the article to which it is affixed, or, in other words, to give notice who was the producer. * * * The essence of the wrong [wrongfully using another's Trade-Mark] consists in the sale of the goods of one manufacturer or vendor as those of another. * * *

In *Manufacturing Company* v. *Trainer*, (11 Otto, 51:)

The object of the Trade-Mark is to indicate, either by its own meaning or by association, the origin or ownership of the article to which it is applied.

In *Paul* v. *Virginia* (8 Wall., 168) the court, in considering the question whether a policy of insurance written by a corporation of one State on property situated in another was an article of commerce, said:

They are not commodities to be shipped or forwarded from one State to another and then put up for sale.

The definitions above quoted being based upon these and many similar decisions, have become a part of the common law of the land, and the statute of the United States which relates to the registration of Trade-Marks (act of March 3, 1881) must be considered to have been enacted with them in view and to have adopted them. This statute restricts the registration of Trade-Marks to those used in commerce with foreign nations and Indian tribes, and throughout its entire body what the mark is to be used upon is designated as "merchandise," "goods," and "articles." The act of August 14, 1876, which was passed for the purpose of preventing the counterfeiting or imitation of Trade-Marks, likewise refers throughout to goods to which Trade-Marks are to be affixed.

The language of the statutes and that of the courts therefore renders it clear that the things to which Trade-Marks may be affixed so as to be protected and registered are what are ordinarily termed in law "goods, wares, and merchandise"—that is, articles of ordinary commerce, such as may be transported from one country to another in contradistinction to all those fixed species of property which the law includes under the term "real estate."

This is not only shown by the use of the terms "goods," "merchandise," "commodities," and "articles," but also by the mention of those by whom Trade-Marks may be used, as "merchants," "manufacturers," and "traders," manufacturers, it being of course well understood, being those who make the goods, while merchants and traders are those who deal in them.

Further than this, so far as dealing in real property is concerned, the office of a Trade-Mark cannot be the same as its office when used in connection with ordinary articles of commerce. The reputation or quality in the market of any particular real estate is not a thing which arises from its being produced or dealt in by any particular person. Its quality arises from

circumstances entirely beyond his control and in the hands of one dealer is precisely the same as in those of another; neither is there any such danger as arises in the case of articles of commerce that the lands of one dealer may be bought when it is desired to buy those of another.

Stress is laid by the petitioners upon the fact that the mark sought to be registered is affixed by them to bill-heads, letter-heads, cards, and circulars which they use in their business; but this is not such a use as comes within the contemplation of the statute. The signs may indeed be set up on a particular piece of real estate or affixed to a building offered for sale, but this is of no moment, since, as has been seen, registration of signs or symbols is provided for only when they are applied to transportable articles of commerce. It is true that the use of a mark upon a bill, letter-head, business card, or circular is in a broad sense a use in commerce, but in order to receive the protection of the statute such mark would have to be affixed to these things as articles of trade and not as mere vehicles of communication between the dealer and other persons.

In Browne on Trade-Marks, 2d ed., section 301, it is said upon this point:

> There is not any exclusive ownership of the symbols which constitute a Trade-Mark apart from the use or application of them to a vendible commodity. * * * A symbol does not become a Trade-Mark until actually stamped upon or otherwise affixed to goods to be sold. It would not therefore be correct for one to say that his Trade-Mark is stamped upon his business cards or other mere advertisements, for the impression of the symbol would be nothing more than a fac-simile or copy of his Trade-Mark.

It does not appear that the precise question involved in this case has ever before arisen or been decided in the Patent Office; but in *Hankinson, ex parte*, (8 O G., 89,) a somewhat similar case arose in which a man engaged in the business of cleaning carpets sought to register a mark which he used upon the wagons by means of which he transported the carpets from their owners' dwellings to his shop, and also upon the tags which he attached to the carpets as well as upon his cards, circulars, and bill-heads. It was held in that case that the applicant was neither a manufacturer nor trader within the meaning of the statute, and that therefore his mark was not registrable. In denying the application for registration, Mr. Commissioner Thacher said:

> Applicant may have a proprietary interest in the mark described for the particular use to which he has appropriated it, which the courts will sustain. This is not denied. It is not a question for discussion here. But, admitting that he has, it does not necessarily follow that he can register this mark in the Patent Office as a Trade-Mark. Whether he can register or not has no effect upon his common-law right to the mark in question. The question of registration is to be determined by the provisions of the law.

I therefore think that the Examiner of Trade-Marks was right in refusing to register the mark presented by petitioners and his decision is accordingly affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

AM ENDE *v.* SEABURY & JOHNSON.

Decided August 6, 1890.

1. EXCEPTIONS TO MASTER'S REPORT—LIABILITY OF INFRINGER FOR PROFITS.
   The infringing corporation held liable for whatever profit is derived from the manufacture and sale of the chemical preparation of plaintiff's patent, notwithstanding it might have made and sold the ingredients of said preparation if it had chosen to do so, and at the same or even larger profit.
2. SAME—CALCULATION OF PROFITS—"FACTORY COST."
   The master held to have properly refused to allow the defendant corporation, as an element of the "factory cost" of the article infringed, interest on its capital invested in the business.
3. SAME—SAME—SAME.
   The master held to have properly disallowed a certain sum for salary of the president of the defendant as an element of cost, it not being shown that the president was a salaried officer.
4. SAME—SAME—SAME.
   The master properly found that the percentage for selling expenses, which should be added to the factory cost of all the goods sold by the defendant, exclusive of certain goods named, was twenty-nine per cent.
5. SAME—INFRINGEMENT—DAMAGES.
   The loss entailed upon plaintiff by reason of his being compelled to reduce his price in consequence of the reduction of price made by the defendant, who was the only competitor of the plaintiff in the market, was a proper item of damages.

Mr. Arthur v. Briesen and *Mr. Antonio Knauth* for the complainant.

Mr. Norman T. Melliss for the defendant.

WALLACE, *J.*:

None of the exceptions filed by the defendant to the master's report are well taken.

First. The corporation defendant manufactured and sold the borated cotton of the complainant's patent, and it was properly held liable for the profits derived from the manufacture and sale of that article, notwithstanding it might have made and sold the cotton, boracic acid, and glycerine, which are the ingredients of borated cotton, if it had chosen to do so, and at the same or even a larger profit. Instead of selling these ingredients, however, the defendant preferred to convert them into the new chemical composition invented by the complainant, and whatever profit it derived accrued by reason of appropriating the patented invention.

Second. The master properly refused to allow the defendant, as an element of the "factory cost" of the borated cotton, interest on the capital of the corporation invested in its business. As the Supreme Court say in disallowing a similar item in *Rubber Co.* v. *Goodyear*, (9 Wall., 804,) in ascertaining profits—

> the calculation is to be made as a manufacturer calculates the profits of his business.

In calculating profits manufacturers customarily treat as items of expense interest paid out on money borrowed for the use of the business, as well as rent paid for the use of property in the business; but it is not customary to charge against profit interest upon the capital embarked by the owners in the enterprise or rent for the use of property owned by them. There is nothing inconsistent with this conclusion in the opinion in *Manufacturing Co.* v. *Cowing*, (105 U. S., 257,) because, for all that appears in that case, the "use of tools, machinery, and power," for which it was said an allowance should be made to the defendant, may have been a hired use.

Third. The master properly disallowed the item of fifteen thousand dollars per annum for salary of the president of the defendant as an element of cost, because it was not shown that the president was a salaried officer. The defendant introduced evidence to show what compensation would be reasonable for such services as were performed by the president of the defendant; but for all that appears he was serving without compensation. If he had paid any salary, the fact could and would have been shown.

Fourth. The master properly found that the percentage for selling expenses, which should be added to the factory cost of all the goods sold by the defendant, exclusive of the goods known as "Benson's Plasters," was twenty-nine per cent. The fair interpretation of the very confusing statement of the cashier of the defendant is that instead of fifty per cent. the amount to be added was 76,837/132,473 of fifty per cent.

Fifth. The testimony showed that the defendant was the only competitor of the complainant in the market in selling the borated cotton of the patent, and that, in consequence of the reduction of price made by the defendant, the complainant was compelled to reduce his price in order to retain his customers. The loss entailed upon him by reason of this enforced reduction of price was a proper item of damages and was properly allowed by the master.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 10. TUESDAY, MARCH 10, 1891. PRICE---$5 per year.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. TERMS: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Withdrawal of Cases from Issue.

(ORDER NO. 629.)

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

C. E. MITCHELL,
Commissioner.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Women Inventors.

The Patent Office has published and has for sale a volume, containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

Issue of March 10, 1891.

Patents	440—No.	447,752 to No.	448,191, inclusive.
Designs	16—No.	20,566 to No.	20,581, inclusive.
Trade-Marks	26—No.	19,148 to No.	19,173, inclusive.
Labels	3—No.	6,472 to No.	6,474, inclusive.
Reissues	3—No.	11,149 to No.	11,151, inclusive.
Total issue	488		

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nevada	.....	.....
Arizona Territory	.....	.....	New Hampshire	1	.....
Arkansas	2	.....	New Jersey	24	1
California	19	.....	New Mexico Territory	.....	.....
Colorado	8	.....	New York	81	6
Connecticut	13	.....	North Carolina	2	.....
Delaware	1	.....	North Dakota	.....	.....
District of Columbia	5	.....	Ohio	32	1
Florida	.....	.....	Oklahoma Territory	.....	.....
Georgia	3	.....	Oregon	5	.....
Idaho	.....	.....	Pennsylvania	46	4
Illinois	41	6	Rhode Island	3	.....
Indian Territory	.....	.....	South Carolina	.....	.....
Indiana	11	1	South Dakota	1	.....
Iowa	7	.....	Tennessee	5	.....
Kansas	3	.....	Texas	5	.....
Kentucky	3	.....	Utah Territory	.....	.....
Louisiana	3	.....	Vermont	1	1
Maine	1	.....	Virginia	3	1
Maryland	5	.....	Washington	2	.....
Massachusetts	40	.....	West Virginia	1	.....
Michigan	5	.....	Wisconsin	10	.....
Minnesota	3	1	U. S. Army	.....	.....
Mississippi	2	.....	U. S. Navy	.....	.....
Missouri	15	1	Total to citizens of the United States	418	23
Montana	1	.....			
Nebraska	2	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Mexico	.....	.....
Austria-Hungary	.....	.....	Netherlands	.....	.....
Belgium	1	.....	Newfoundland	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	New Zealand	.....	.....
Canada	7	.....	Portugal	.....	.....
Chili	.....	.....	Queensland	.....	.....
Colombia	.....	.....	Russia	.....	.....
Cuba	.....	.....	Scotland	.....	.....
Denmark	.....	.....	South Australia	.....	.....
Ecuador	.....	.....	Spain	.....	.....
England	18	2	Sweden	1	.....
Finland	.....	.....	Switzerland	1	.....
France	2	3	Victoria	.....	.....
Germany	8	1	West Indies	.....	.....
Hawaii	.....	.....			
Ireland	.....	.....	Total to citizens of foreign countries	38	6
Japan	.....	.....			

DESIGNS.

20,566.—CLOSED VESSEL WITH PERFORATED COVER.—*Nicholas Kopp*, Fostoria, Ohio, assignor to *The Fostoria Shade and Lamp Company*, same place. Application filed January 24, 1891. Serial No. 378,979. Term of patent 7 years.

20,567.—BOTTLE.—*Edward A. Kramer*, New York, N. Y. Application filed December 26, 1890. Serial No. 375,871. Term of patent 3½ years.

20,568.—ALBUM.—*Lewis A. Lipman*, Brooklyn, N. Y. Application filed January 10, 1891. Serial No. 377,371. Term of patent 3½ years.

20,569.—COLLAR OR RUFFLE.—*John Wightman*, Nottingham, England. Application filed January 30, 1891. Serial No. 379,725. Term of patent 3½ years. Patented in England September 22, 1890, No. 15,214.

20,570.—ORNAMENTATION OF GLASSWARE.—*John Billard*, Honesdale, Pa., assignor to *T. B. Clark & Co.*, same place. Application filed February 3, 1891. Serial No. 380,092. Term of patent 14 years.

20,571.—WAIST-BELT.—*Julius Lambert*, Hoboken, N. J. Application filed January 29, 1891. Serial No. 379,582. Term of patent 14 years.

20,572.—SIGN-PLATE.—*John W. Oftelie*, Bearden, Ark. Application filed February 4, 1891. Serial No. 380,239. Term of patent 7 years.

20,573.—GRATE.—*Charles P. Peterson*, Chattanooga, Tenn., assignor to *The Cahill Iron Works*, same place. Application filed November 22, 1890. Serial No. 372,379. Term of patent 7 years.

20,574.—RADIATOR.—*John R. Reed*, Westfield, Mass. Application filed December 9, 1890. Serial No. 374,085. Term of patent 14 years.

20,575.—CHAIR.—*James G. Wilson*, New York, N. Y. Application filed February 10, 1891. Serial No. 381,000. Term of patent 7 years.

20,576.—HANDLE FOR SPOONS, &c.—*William A. Bates*, Winchester, Mass. Application filed January 24, 1891. Serial No. 378,978. Term of patent 7 years.

20,577.—EMBROIDERY.—*Philip Kleeberg*, New York, N. Y. Application filed February 13, 1891. Serial No. 381,362. Term of patent 3½ years.

20,578.—BRUSH.—*George W. Wilson*, Lansingburg, N. Y. Application filed January 28, 1891. Serial No. 379,451. Term of patent 14 years.

20,579.—TOY BANK.—*Russel Frisbie*, Cromwell, Conn., assignor to *The J. & E. Stevens Company*, same place. Application filed May 12, 1890. Serial No. 351,562. Term of patent 7 years.

20,580.—BADGE.—*Charles B. McElroy* and *Thomas W. Minshull*, Cleveland, Ohio. Application filed January 19, 1891. Serial No. 378,362. Term of patent 7 years.

20,581.—BOTTLE.—*Abraham Rheinstrom*, Cincinnati, Ohio. Application filed February 11, 1891. Serial No. 381,088. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

19,148.—POWDER FOR POLISHING METAL.—*Caledonia Mining and Manufacturing Company*, Lancaster, Pa. Application filed January 19, 1891. Used since September, 1890.
"The word 'IVORY.'"

19,149.—MUSICAL INSTRUMENTS KNOWN AS XYLOPHONES AND BELLS.—*Leslie D. Mitchell*, Brattleborough, Vt. Application filed February 2, 1891. Used since January 1, 1890.
"The words 'MITCHELL STANDARD.'"

19,150.—TWINES, LINES, CORDS, ROPE, AND THREAD.—*Travers Bros.*, New York, N. Y. Application filed February 2, 1891. Used since January 1, 1891.
"The word 'ALLIANCE.'"

19,151.—SOAP, PERFUMERY, COSMETICS, AND LIKE TOILET PREPARATIONS.—*William S. Thomson*, London, England. Application filed January 27, 1891. Used since January 1, 1890.
"The word 'CUCUMBER.'"

19,152.—REMEDY FOR EPILEPSY AND OTHER NERVOUS DISEASES.—*Samuel Allen Richmond*, Tuscola, Ill. Application filed January 28, 1891. Used since July, 1884.
"The pictorial representation of a figure of a man standing upright and showing the venous system."

19,153.—LADIES' AND GENTLEMEN'S FURNISHINGS.—*Harris Wolf*, Chicago, Ill. Application filed January 15, 1891. Used since 1881.
"The representation of a wolf."

19,154.—REMEDY FOR THE CURE OF CATARRH.—*Peter M. Hunt*, Pittsburg, Pa. Application filed October 4, 1890. Used since April 26, 1890.
"The portrait of the registrant with the fac-simile signature 'P. M. HUNT.'"

19,155.—HATS AND CAPS.—*Benjamin Kahn*, New York, N. Y. Application filed February 7, 1891. Used since July, 1888.
"The word 'ELLEVRAM.'"

19,156.—GAME-COUNTERS.—*George Kuehl*, Chicago, Ill. Application filed February 9, 1891. Used since November, 1890.
"The representation of an elephant."

19,157.—BICYCLES, TRICYCLES, AND OTHER CYCLES.—*George Leonard Morris* and *William Thomas Wilson*, London, England. Application filed February 5, 1891. Used since February, 1887.
"The words 'REFEREE CYCLES.'"

19,158.—VARNISH-GUMS.—*William H. Scheel*, New York, N. Y. Application filed January 28, 1891. Used since May 1, 1889.
"The word 'TIKI.'"

19,159.—CARRIAGE-PAINT.—*The Cary-Ogden Company*, Chicago, Ill. Application filed October 17, 1890. Used since January 1, 1886.
"The letters 'O. K.' and the representation of a carriage."

19,160.—CERTAIN NAMED DIETETIC PRODUCTS.—*Gesellschaft für Fabrikation Diaetetischer Produkte, Ed. Loefund & Co.*, Stuttgart, Germany. Application filed October 23, 1890. Used since August 26, 1875.
"The representation of a shield and a monogram therein composed of the letters 'L H.'"

19,161.—KIDNEY, LIVER, AND BLADDER REMEDY.—*Dr. Kilmer & Co.*, Binghamton, N. Y. Application filed February 11, 1891. Used since December 1, 1890.
"The representation of a rooster."

19,162.—MEDICATED WINE.—*P. Lebeault & Co.*, Paris, France. Application filed February 3, 1891. Used since 1871.
"The words 'VIN DE BUGEAUD.'"

19,163.—MEDICATED WINE.—*P. Lebeault & Co.*, Paris, France. Application filed February 3, 1891. Used since 1871.
"The representation of an alembic and the signature 'BUGEAUD' in fac-simile."

19,164.—MEDICATED WINE.—*P. Lebeault & Co.*, Paris, France. Application filed February 3, 1891. Used since 1871.
"The signature 'LEBEAULT ET CIE' in fac-simile."

19,165.—REMEDY FOR TOOTHACHE, NEURALGIA, AND OTHER NERVOUS DISEASES.—*William Tack*, Hilton, N. J. Application filed February 4, 1891. Used since June, 1885.
"The word 'DEN-THOLISE.'"

19,166.—WHISKY.—*Edel Bros.*, Richmond, Va. Application filed February 6, 1891. Used since January 12, 1891.
"The words 'KENTUCKY CREAM' and the representation of a cow."

19,167.—FIRE-HOSE MADE OF WOVEN AND KNITTED FABRIC.—*Eureka Fire Hose Company*, New York, N. Y. Application filed February 6, 1891. Used since May, 1890.
"The word 'WOVENIT.'"

19,168.—SHAVING-CREAM.—*William Henry Hall*, New York, N.Y. Application filed January 22, 1891. Used since 1884.
"The word 'SOZODONT.'"

19,169.—HAIR-RESTORATIVES.—*Charles H. Pape*, St. Louis, Mo. Application filed February 3, 1891. Used since 1865.
"The words 'SPIRITUS CAPILLI' and the portrait of Dr. Pape."

19,170.—CERTAIN NAMED REMEDIES.—*Protection Papier Co.*, Philadelphia, Pa. Application filed January 28, 1891. Used since July, 1890.
"The word 'PROTECTION.'"

19,171.—WHISKY.—*Standard Distilling Co.*, Cincinnati, Ohio. Application filed February 6, 1891. Used since 1885.
"The words 'LICK RUN.'"

19,172.—BICYCLES AND TRICYCLES.—*A. G. Spalding & Bros.*, Chicago, Ill., and New York, N. Y. Application filed January 31, 1891. Used since February 1, 1890.
"The word 'NONPAREIL.'"

19,173.—BICYCLES AND TRICYCLES.—*A. G. Spalding & Bros.*, Chicago, Ill., and New York, N. Y. Application filed February 3, 1891. Used since November 15, 1890.
"The word 'CREDENDA.'"

LABELS.

6,472.—Title: "DIRECTIONS FOR USING CLEVENGER'S HAIR BALSAM."—*Clevenger Hair Balsam Co.*, Minneapolis, Minn. Application filed March 28, 1890.

6,473.—Title: "SYRUP OF PRUNES." (For a medicine.)—*E. H. Bindley & Co.*, Terre Haute, Ind. Application filed February 11, 1891.

6,474.—Title: "DR. GROVES' ANODYNE FOR INFANTS."—*John D. Groves*, Philadelphia, Pa. Application filed February 13, 1891.

DISCLAIMERS.

314,884.—*Isaac D. Smead*, Toledo, Ohio. IMPROVEMENT IN DRY CLOSETS, &c. Patent dated March 31, 1885. Disclaimer filed March 3, 1891, by *Theodore C. Northcott*, assignee for the State of New York and all those parts of the States of Massachusetts and Connecticut which lie west of the Connecticut river.

Enters his disclaimer to claim 1 in said patent, which is in the following words:

"1. The combination and arrangement of one or more ducts for the removal of the foul air from a room or rooms of a building, a vault for receiving and retaining the fecal deposits, connected with said duct or ducts, and a ventilating or exit shaft connected with said vault, whereby the warm air from within the building is made to desiccate or dry the deposit in the vault and remove all odors therefrom to the outer air, as set forth."

303,971.—*Isaac D. Smead*, Toledo, Ohio. IMPROVEMENT IN DRY CLOSETS. Patent dated May 31, 1887. Disclaimer filed March 3, 1891, by *Theodore C. Northcott*, assignee for the State of New York and all those parts of the States of Massachusetts and Connecticut which lie west of the Connecticut river.

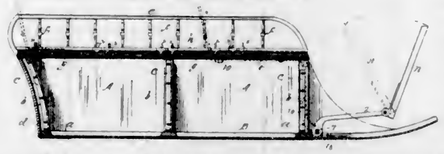
Enters his disclaimer to claim 2 of said patent, which is in the following words:

"2. In combination with the vault D of a dry closet, the transverse absorbent partition C, with an air-space both above and below it for the passage of air, substantially as shown and described."

PATENTS

GRANTED MARCH 10, 1891.

447,752. CARRIAGE. SAMUEL R. BAILEY, Amesbury, Mass. Filed Dec. 24, 1890. Serial No. 375,733. (No model.)



Claim.—1. In an adjustable-seat carriage, and in combination with said seats provided with suitable supporting projections to coact therewith, the hanger-plates secured to the sides of the body at the proper height from the floor and having seats to receive said supporting projections, substantially as specified.

2. In combination with the front and rear seats provided with their supporting projections or studs, the hanger-plates duly secured to the body-sides and provided with a series of seats for said studs so arranged as that said seats may be adjusted therein in the positions specified.

3. The combination, with the front seat provided with its pivoted jumping-irons and the hanger-studs near its rear edge, of the hanger-plates having a series of seats for said studs, whereby the position of the front seat may be varied to coact with the rear seat, substantially as specified.

4. In a two-seat carriage, the combination, with the front seat, of the rear seat provided with the hanger-studs, and the hanger-bars having seats to receive said studs, both said studs and stud-seats being so relatively arranged that the seat may be turned forward upon its front pivots to serve as a deck-panel or to serve as a back seat, substantially as specified.

5. In a two-seat carriage, the combination, with the front seat, of the rear seat provided with hanger-studs, and the hanger-plates provided with hanger-seats, said studs and hanger-seats being so relatively arranged that the rear seat may, by turning it end for end, be arranged to serve either as a forward or rearward facing seat, substantially as specified.

6. In a two-seat carriage, and in combination with the front seat, a back-supporting iron formed of three parts or members, one part being secured to the under side of the seat, an intermediate part hinged to that so secured beneath the seat, and a third member hinged to said intermediate part and secured to the back, whereby the back may be lowered beneath the seat and folded down, substantially as specified.

7. In combination with a jump or turn-down seat, a spring combined and connected therewith in manner substantially as specified whereby the turning down of the seat creates stress upon the spring and the latter co-operates in elevating the seat.

447,753. FASTENER FOR THE MEETING-RAILS OF SASHES. BYRON BALDWIN, Brooklyn, N. Y. Filed July 2, 1890. Serial No. 357,512. (No model.)

Claim.—1. The combination with the upper and lower sashes of a window, of the vertically-slotted plate C, secured to the upper sash, a plate D, attached to the lower sash, and an upright rod E, pivoted at its lower extremity to the plate on the lower sash and having its upper extremity loosely engaged with and sliding in the slotted part of the plate on the upper sash, substantially as described.

2. The combination, with the upper and lower sashes of a window, of the vertically-slotted plate C, secured to the upper sash, a plate D, attached to the lower sash, an upright rod E, connected at its lower extremity to the plate on the lower sash and having its upper extremity loosely connected with and sliding in the slotted part of the plate on the upper sash, and a set-screw F, adjustable along the slotted plate above the upper end of the upright rod to serve as an abutment for the latter, substantially as described.



3. The combination, with the upper sash of a window, provided with the plate C, having the vertical slot *c*, and the rod D, pivotally engaged to the lower sash, having its upper end engaged in said slot *c*, of the pin d^2 for retaining the rod in the slot *c*, substantially as described.

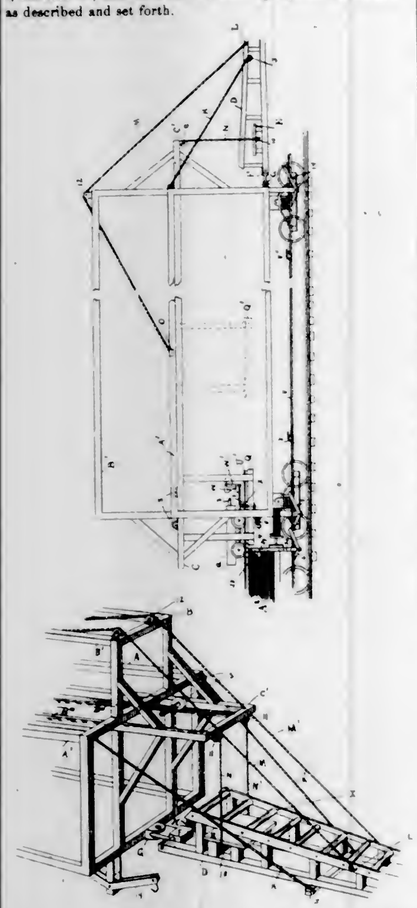
447,754. TRACK-LAYER. HENRY BIRKBY, Chillicothe, Ill. Filed Sept. 18, 1890. Serial No. 365,349. (No model.)

Claim.—1. In a track-laying machine, a frame-work carried upon trucks for passage on railway-tracks, provided with a tramway running throughout its entire length, a carriage suspended upon axes provided with wheels which travel upon tracks which form the tramway, ropes for moving the carriage back and forth, and a boom pivotally attached at its rear extremity, the upper part of the frame-work of which has a gradual decline forward, and provided with a series of rollers journaled into the sides of the frame-work, all substantially as described and set forth.

2. In a track-laying machine having the main frame-work B B' A A' C C' and necessary uprights and cross-ties with the tramway formed by the frame-pieces B B', the carriage suspended upon axes which have flanged wheels, and having the ropes N N' operating the carriage which bears upon the tramway, and the boom D, pivoted at G and provided with the ropes K K' M M' for raising, lowering, and shifting from side to side, and having the rollers I journaled into the main frame-work, all substantially as described and set forth.

3. In combination with a track-laying machine having a tramway running through its entire length, the carriage having the general frame construction Q R suspended upon axes S' S'', which axes bear the wheels S S, with the bottom of the carriage provided with the track formed by the rails U U', upon which the car or dumpy *a* is carried, the car or dumpy being engaged and released by means of the

lever 2, the arm W', and the catch W, working together, all substantially as described and set forth.



4. In combination with a track-laying machine, the hanger formed of the parts 30 29' 30' 31 and tied together in the center by means of the clamp 32 33 and carrying on their respective ends the frame-works 30 30', which frame-works are made in two pieces, respectively, with blocks and rollers as separating means, and provided with a series of perforations for the insertion of pins useful in pivoting the blocks or as journals for the rollers, all substantially as described and set forth.

5. In combination with a track-laying machine, a clamp formed of the two sections S S' and hinged at the top, and with the section S' provided with the pins 15 15', and the section S provided with the openings 16 16', having the raised surfaces 17 18, and the lever formed of the parts 19 20 for clamping and securing the rails together, all substantially as described and set forth.

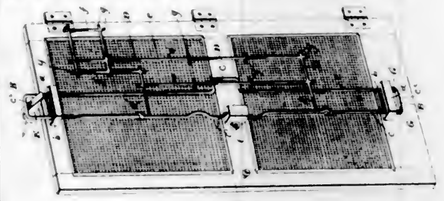
6. In combination with a track-laying machine, the brake formed by the parts 7 25, pivoted on the journal of the roller 23, which is carried in the frame 24, the brake being provided with the hook 27, all substantially as described and set forth

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447,755. FLY-FRIGHTENER. JOHN BOSWORTH, Battle Creek, Mich. Filed Aug. 16, 1890. Serial No. 362,222. (No model.)

Claim.—1. The combination, with a door, of a revoluble fly-frightener attached thereto, and devices for automatically partially revolving said fly-frightener when the door is opened or closed, substantially as set forth

2. The combination, with a door, of a frame connected therewith and adapted to slide thereon, a portion of said frame comprising a revoluble spiral, a nut on said spiral and secured to the door, and a frame connected with the spiral and adapted to normally lie against the door and be moved therefrom by the combined action of the spiral and nut, substantially as set forth.

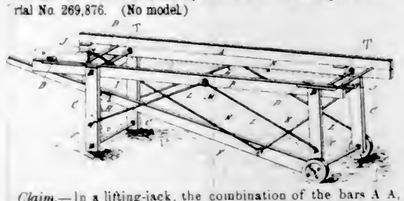


3. The combination, with a door and door-frame, of a frame connected to the door and adapted to slide thereon, a portion of said frame comprising a revoluble spiral, a nut on said spiral and secured to the door, a frame secured to the spiral and adapted to lie normally against the door, a block secured to the door-frame and having an inclined face adapted to engage the first-mentioned frame to raise it, and a spring at the other end of said frame to return it to its normal position when released by the inclined block, substantially as set forth.

4. The combination, with a door, of a fly-frightener pivotally connected therewith, said fly-frightener being composed of an open frame having a series of loops thereon, and screening material secured to said loops, substantially as set forth.

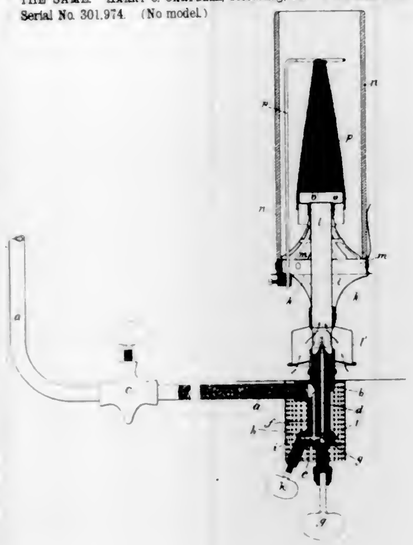
5. The combination, with a door, of a fly-frightener pivotally connected thereto, said fly-frightener being composed of a wire frame having an upper portion and a lower portion, loops projecting from both portions, and screening material secured to said loops, substantially as set forth.

447,756. WAGON-JACK. CHARLES C. BOWER, Birmingham, Ala., and AURELIUS B. EVANS, Thompsontown, Pa. Filed Apr. 6, 1888. Serial No. 269,876. (No model.)



Claim.—In a lifting-jack, the combination of the bars A A, the L-shaped levers D D, adapted to support said bars, the pitmen E E, foot-lever F, and the frame provided with braces, legs, and wheels, substantially as described.

447,757. INCANDESCENT BURNER AND METHOD OF USING THE SAME. HARRY C. CAMPBELL, Pittsburg, Pa. Filed Mar. 5, 1889. Serial No. 301,974. (No model.)

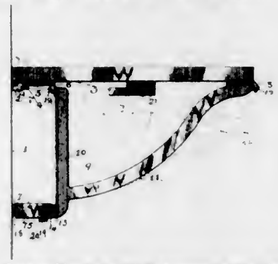


Claim.—1. The method of employing hydrocarbon fluids for illuminating purposes herein described—that is to say, vaporizing the hydrocarbon liquid by heat, and causing the heated vapor to pass in a fine stream under considerable pressure through an air-mixing chamber, and igniting the heated mixture of hydrocarbon fluid and air in presence of a refractory substance capable of incandescence, substantially as described

2. The combination, in one device, as a portable incandescent lamp, of a Bunsen burner, an incandescent filamentary substance, and a self-generating and heating-gas attachment, substantially as described

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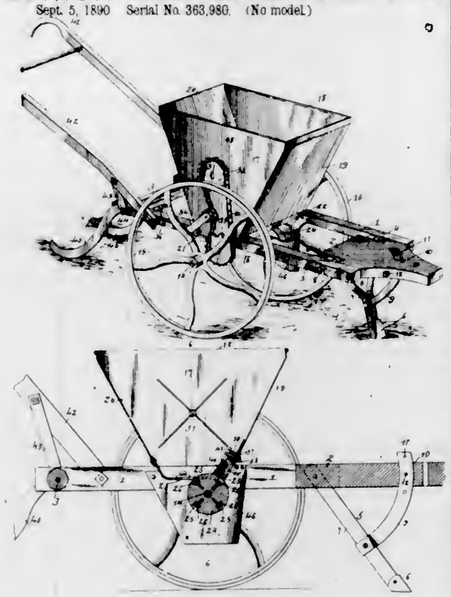
447,758. TABLE-LEAF SUPPORT. LEWIS G. CASH, Russellville, Mo. Filed Aug. 5, 1890. Serial No. 361,044. (No model.)



Claim.—1. The combination, with the support having the opposite screw-eyes, the leaf, the plates secured to the rear under side of the leaf, said plates being reduced at their rear ends and bent to form hooks for engaging the eyes and at their front ends bent to form perforated lugs, and bearing-lugs located at the front ends of the leaf and opposite the plates, of V-shaped brackets having their upper terminals reduced to form bearings and entering the lug and their lower ends rearwardly bent, and the arms pivotally connected to the elbows and provided upon their under sides and rear ends with sockets and rubber buffers mounted in the same, substantially as specified.

2. The combination, with a leaf hinged at its upper rear edge to its support, of a bracket-arm depending therefrom and secured thereto a short distance in front of its rear edge, and a short arm hinged to the lower end of the bracket-arm, adapted to fold up against the bracket-arm, and provided at its outer edge and at its end with bearings 20 and 18, respectively, substantially as specified.

447,759. PLANTER. JAMES C. CAYTON, Thornton, Tex. Filed Sept. 5, 1890. Serial No. 363,980. (No model.)



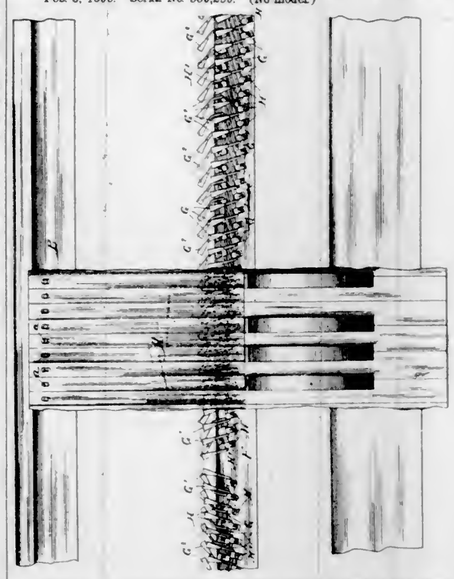
Claim.—1. In a seed-planter, the frame comprising the side beams, the rear cross-bar, and the tongue mounted between the front ends of said side beams, said tongue being provided with notches or recesses at its rear end, in combination with the bifurcated standard having the ends of its arms mounted in said notches or recesses upon a pivotal bolt extending transversely through the side beams of the frame and through the rear end of the tongue, and the segmental bar pivoted between the arms of the standard, extending through a vertical slot in the tongue and having transverse perforations for the reception of a pin or key, substantially as set forth.

2. In a seed-planter, the combination of a frame, the revolving axle having the transporting-wheels, the seed-disk mounted on the said axle, the hopper mounted upon the frame, the plate secured in the bottom of the hopper to the front and rear sides of the latter, fitted between the side beams of the frame, and having a longitudinal slot to accommodate the seed-disk, and the regulating-slides arranged in pairs at the front and rear ends of said slot, substantially as and for the purpose set forth.

3. In a seed-planter, the combination, with the frame having longitudinal side beams, of the hopper having vertical sides provided with downwardly-extending lips or flanges secured to the outer sides of the side beams and inclined front and rear sides, the bottom plate secured to said front and rear sides, fitting between the side beams of the frame, and provided with a longitudinal slot, the regulating-slides arranged in pairs at the front and rear ends of said slot, and the revolving axle having a seed-disk fitting in said slot, substantially as and for the purpose set forth

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447,760. ORGAN-ACTION. MELVILLE CLARK, Chicago, Ill. Filed Feb. 5, 1890. Serial No. 339,289. (No model.)



Claim.—1. In combination with the manual and the valve-operating plungers, rock-shafts journaled below the horizontal plane of the keys, having two arms bent at right angles to the shafts, respectively, on opposite sides of the shaft-bearings and adjacent thereto, one arm of each shaft being bent upwardly and toward the vertical plane of the plungers in a plane at right angles to the shaft and terminating under the key corresponding thereto, the other arm being bent horizontally to pass the bearing and then obliquely back toward the vertical plane of the first arm to reach the end of the plunger, substantially as set forth.

2. In combination with the manual and the reed-chambers pertaining to the manual-keys, respectively, said reed-chambers being wider than the keys, the valve-operating plungers pertaining to said chambers, respectively, the rock-shaft G, located below the manual-keys and above the reed-chambers and comprising lever-arms G', all in planes at right angles to the rock-shafts, respectively, and the lever-arms G^2, comprising portions oblique to the rock-shafts, respectively, the oblique angles between the vertical planes of said oblique portions and their shafts, respectively, being all equal, and the rock-shafts

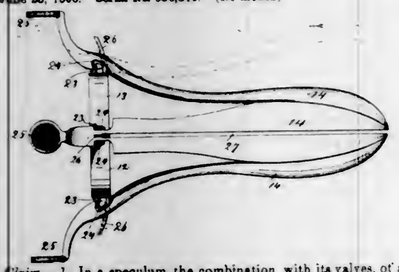
being of different lengths, corresponding to the distances between the vertical planes of the keys and their plungers, respectively, substantially as set forth.

3. In combination with the manual and the reed-chambers pertaining to the manual-keys, respectively, said reed-chambers being wider than the keys, the valve-operating plungers pertaining to said chambers, respectively, the rock-shafts G, located below the manual and above the reed-chambers and comprising lever-arms G', all in planes at right angles to the rock-shafts, respectively, and the lever-arms G^3, comprising portions oblique to the rock-shafts, respectively, said oblique portions being all of equal length and the oblique angles between the vertical planes of said oblique portions and their shafts, respectively, being all equal, and the rock-shafts being of different lengths, corresponding to the distances between the vertical planes of the keys and their plungers, respectively, substantially as set forth.

4. In combination with the manual and the reed-chambers wider than the manual-keys, respectively, the valve-operating plungers pertaining to said chambers, respectively, the rock-shafts G, located and journaled between the manual and the reed-chambers, said rock-shafts being parallel to each other and oblique to the keys of the manual and having the arms G^3 bent first at right angles to the shafts and then obliquely thereto to reach the plungers, respectively, said arms being equal and parallel, the rock-shafts being of different lengths, corresponding to the differing distances between the vertical planes of the keys and their plungers, respectively, and having the lever-arms G' set off upwardly from the rock-shaft and extending thence in planes at right angles thereto toward the vertical plane of the pivots of the keys of the manual and underneath said keys, respectively, and adapted to be operated thereby, the lengths of said lever-arms being related to the distances from their contact, respectively, with the keys which operate them to the pivots of such keys to give the rock-shafts equal angular action for equal depression of the keys, respectively, substantially as set forth.

5. In combination with the manual and the reed-chambers pertaining to the manual-keys, respectively, said reed-chambers being wider than the keys, the valve-operating plungers pertaining to said chambers, respectively, the rock-shaft G, located below the manual and above the reed-chambers and comprising lever-arms G', all in planes at right angles to the rock-shafts, respectively, and the lever-arms G^3, comprising the portions G^{10}, at right angles to the shaft and the remainder oblique thereto, said rock-shafts being of different lengths, corresponding to the distances between the vertical planes of the keys and their plungers, respectively, and said lever-arms projecting forward from the rock-shafts to reach the buttons on the keys and the plungers, and the bar J, having the coupler rock-shafts journaled thereon, with their lever-arms projecting rearward and contacting, respectively, the coupler-buttons on the keys, and the coupler-buttons on the plungers, said bar being pivoted longitudinally approximately in line with the contact of the levers with the plunger coupler-buttons, substantially as described.

447,761. SPECULUM. WILLIAM E. CLOUGH, Oxford, Ohio. Filed June 23, 1890. Serial No. 356,319. (No model.)

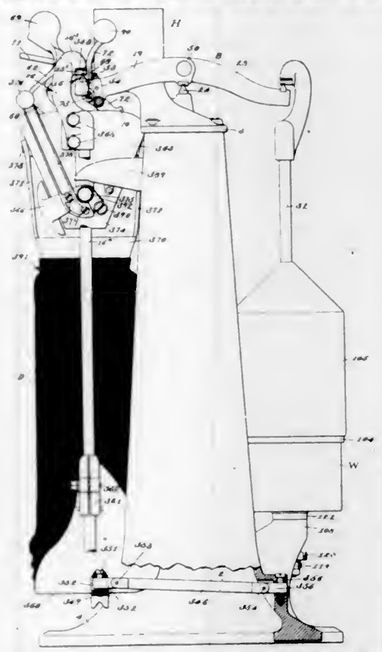


Claim.—1. In a speculum, the combination, with its valves, of an expansible ring upon which the former are pivotally mounted, by which construction either the fulcrumed portions of the valves or their inner ends may be adjusted—that is, distended or contracted—independently from each other and held independently in such adjusted position, all as described and shown.

2. In a speculum, the combination of its valves, an expansible ring upon which the former are pivotally mounted, and means to lock the sections of this ring at any point between the extreme limits of its adjustability, all as shown and described.

3. In a speculum, the combination of the valves having an outwardly-extending shank with a ring to which the former are pivotally secured, and serrated supports 26, occupying slots in the valves and holding them in their adjusted positions when distended, all as substantially shown and described.

447,762. GRAIN-WEIGHER. CHARLES H. COOLEY and FRANCIS H. RICHARDS, Hartford, Conn., assignors to the Pratt & Whitney Company, same place. Filed Aug. 23, 1890. Serial No. 362,907. (No model.)



Claim.—1. In a grain-weigher, the combination, with the scale-beam, of the hangers suspended therefrom, a drip-holder pivotally supported and carried by the hangers and having a catch arranged to engage a detent-latch, a detent-latch located to engage said drip-holder catch for holding the drip-holder clear of the descending column of grain, and a stop located to disengage said catch on the downward movement of the scale-beam, whereby the drip-holder is first held clear of the descending column of grain and on the downward movement of the scale-beam is disengaged and allowed to intercept said column.

2. In a grain-weigher, the combination, with the scale beam, of the hangers suspended therefrom, a drip-holder, substantially as described, pivotally supported and carried by the hangers and having thereon stop-catches corresponding to successive positions of said holder, a detent-latch arranged to engage said catches successively for holding the drip-holder in successive positions, and a stop located to disengage said latch on the downward movement of the hangers, whereby the drip-holder is first held clear of the descending column of grain and is disengaged and allowed to intercept said column on the downward movement of the scale-beam.

3. In a grain-weigher, the combination, with the scale-beam, of the hangers suspended therefrom, the drip-holder, substantially as described, pivotally supported and carried by the hangers and having two stop-catches corresponding to successive positions of said holder, a detent-latch located for engaging said catches, means, substantially as described, for moving the drip-holder on the unhooking of the catches, and a stop located to unhook the detent-latch on the downward movement of the scale-beam, and thereby allow the drip-holder to intercept the descending column of grain and to disengage the second catch on the further downward movement of the scale-beam, and thereby allow the drip-holder to discharge its load.

4. In a grain-weigher, the combination, with the supply chute and the scale-beam and with a reducing-valve and a cut-off valve for the supply-chute, of the bag-holder suspended from the scale-beam and having the catch-pan carried therewith, and a catch-valve operatively connected to close the catch-pan on the closing of the reducing-valve and to open the same on the closing of the cut-off valve.

5. In a grain-weigher, the combination, with the scale-beam and the hangers suspended therefrom, of the catch-pan carried by the hangers, the catch-valve supported to close the discharge-outlet of said pan and having stops, substantially as described, a detent-latch carried by the hangers and engaging the valve, and a stop on the frame operating said latch on the descent of the scale-beam, whereby the valve is closed under the catch-pan on the downward movement of the scale-beam.

6. In a grain-weigher, the combination, with the scale-beam and the hangers suspended therefrom, of the catch-pan carried by the hangers, the catch-valve having two stop-catches corresponding to two successive positions of the valve, and a detent-latch arranged to engage said catches successively to hold the valve in successive positions, first open and then closed.

7. In a grain-weigher, the combination, with the scale-beam and with the hangers suspended therefrom, of the catch-pan carried by the hangers, the catch-valve supported to close said pan and having two catches arranged for locking the valve in successive positions, first open and then closed, a detent-latch, and a counter-weight arranged to close the valve on the unhooking of the first catch and to open the valve on the unhooking of the second catch.

8. In a grain-weigher, the combination, with the scale-beam, of the hangers suspended therefrom and carrying the catch-pan, the catch-valve supported substantially as described and having two stop-catches corresponding to two successive positions of the valve, one of said catches being located on a longer radius than the other, and a detent-latch supported substantially as described and arranged to engage said catches in succession, whereby one fixed stop on the frame first disengages the first catch on the downward movement of the scale-beam and afterward disengages the second catch on the farther downward movement of the scale-beam.

9. In a grain-weigher, the combination, with the scale-beam, of the hangers suspended therefrom and carrying a catch-pan, the catch-valve pivotally supported, substantially as described, and having two stop-catches corresponding to two successive positions of the valve, one of said catches being located on a longer radius than the other, a detent-latch supported substantially as described and arranged to engage said catches in succession, whereby one fixed stop on the frame first disengages the first catch on the downward movement of the scale-beam and afterward disengages the second catch on the further downward movement of the scale-beam, the latch-actuating stop, and a valve-actuating weight arranged to close the valve on the disengagement of the first catch and to open the valve by a continued movement thereof on the disengagement of the second catch, whereby the catch-valve is first closed and then opened by successive movements in the same direction.

10. In a grain-weigher, the combination, with the scale-beam, of the hangers suspended therefrom and carrying the catch-pan, the catch-valve pivotally supported, substantially as described, and having catches engaging a detent, whereby the valve is held in successive positions, a fixed abutment, and a lock-arm on the valve located to lock down the scale-beam by engaging said abutment on the final movement of the valve, whereby the supply-chute remains closed on removal of the load.

11. In a grain-weigher, the combination, with the scale-beam, of the hangers suspended therefrom and carrying the catch-pan, the catch-valve supported substantially as described and having catches engaging the detent, whereby the valve is held in successive positions, a fixed abutment having its face crosswise to the hanger movement, and a lock-arm located on the valve to come vertically under said abutment on the final movement of the valve to discharge the drip, and a handle for the valve, whereby to reset the mechanism, said handle and lock-arm together constituting a lever for controlling by hand the upward movement of the scale-beam.

12. In a grain-weigher, the combination, with the scale-beam and with the reducing-valve and the cut-off valve, each actuated, substantially as described, from said beam to be closed successively, of the hangers suspended from the scale-beam and carrying a catch-pan, the catch-valve for closing said pan, and means, substantially as described, for detaining said valve in successive positions, said means comprising a detent-arm and a stop located for operating said arm on the downward movement of the hangers, all organized and coacting, substantially as described, to close the catch-valve on the closing of the reducing-valve and to open the catch-valve on the closing of the cut-off valve, whereby the major part of the load passes through the catch-pan, and whereby the drip is retained in the catch-pan until the close of the weighing operation.

13. In a grain-weigher, the combination, with the supply-chute and the scale-beam and with the reducing-valve and the cut-off valve actuated to be opened by said beam on the upward movement thereof, said cut-off valve having a cam-arm, substantially as described, provided with two faces, one of which is neutral and the other effective in respect of the beam movement, whereby the weight of said arm is thrown onto the beam subsequent to the poising, of bag-holding devices suspended from the scale-beam and carrying drip-catching apparatus, substantially as set forth, and a detent operating to discharge the drip subsequent to the poising, all organized and coacting substantially as set forth, whereby the drip is discharged by the force of said cam-arm bearing on the beam.

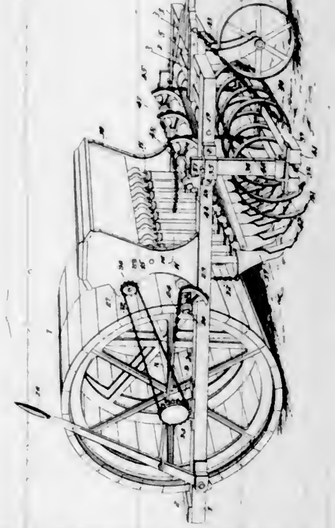
14. In a grain-weigher, the combination, with the supply-chute and the scale-beam and with the cut-off valve actuated to be opened by said beam on the upward movement thereof, of a cam-arm, substantially as described, provided with two faces, one of which is neutral and the other operative in respect of the scale-beam movement, said arm being located in the machine to bear its effective face on the scale-beam subsequent to the poising, bag-holding devices suspended from the scale-beam and carrying drip-catching apparatus, substantially as described, and a detent operating to discharge the drip subsequent to the poising, all organized and coacting substantially as set forth, whereby the detent is disengaged and the drip is discharged by the weight of said cam-arm transmitted to the scale-beam through said effective cam-face bearing on the beam subsequent to the poising.

15. In a grain-weigher, the combination, with the supply-chute and the scale-beam, of the hangers suspended from the scale-beam, jointed stay-rods connecting the lower ends of the hangers for resisting lateral movement thereof, a bag-holder carried by the hangers between the upper ends thereof, and a bag-seat carried on the hangers below the bag-holder and vertically adjustable on the hangers for holding bags of different sizes.

16. In a grain-weigher, the combination, with the scale-beam and the hangers supported thereon and carrying the bag-holder, of the cross-bar connecting the lower ends of the hangers, and a pair of jointed stay-rods connecting said bar with the frame for preventing lateral movement thereof.

17. In a grain-weigher, the combination, with hangers suspended from the scale-beam, of the catch-pan 365, fixed between the hangers, the bag-holder 370, carried by arms connected to the sides of the catch-pan, and the catch-valve pivotally supported on the catch-pan and swinging between the catch-pan and the bag-holder arms, said valve being provided with a handle for operating it.

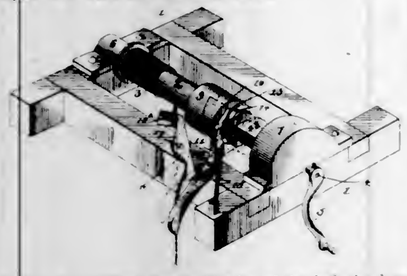
447,763. COMBINED HARROW AND ROLLER. EDWIN T. COOMBS, Sabinsville, Pa., assignor of one-half to Milford H. Stebbins, Melvin B. Stebbins, and Henry Baker, all of same place. Filed Aug. 15, 1890. Serial No. 362,115. (No model.)



Claim.—1. The combination of the frame having the roller and the caster-wheel, the vertically-movable harrow composed of two sections hinged together at their meeting ends and connected at their outer ends to vertically-movable bars, a shaft arranged transversely above the harrow and having segments connected with the harrow-sections by chains, the hopper, the drill-tubes having brackets mounted pivotally upon a transverse shaft, a shaft arranged in rear of the hopper and having segments connected by chains with the drill-tubes, a segment upon the latter shaft connected by a chain with a segment upon the harrow-adjusting shaft, and an operating-lever connected by a link-rod and chain with a segment upon the shaft arranged in rear of the hopper, substantially as set forth.

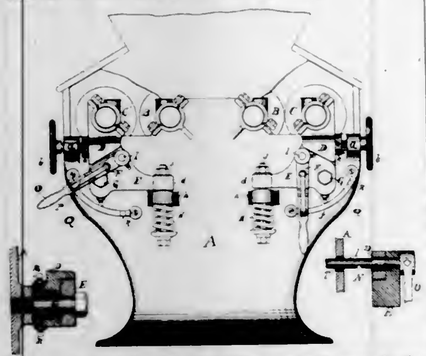
2. The combination of the frame, the hopper, the drill-tubes having brackets mounted pivotally upon a transverse shaft, the harrow composed of two sections hinged together and provided at their upper ends with arms arranged to slide vertically in suitable bearings in the main frame, and mechanism for simultaneously raising or lowering the drill-tubes and the harrow-sections, substantially as set forth.

447,764. WINDLASS. JOHN D. DANIEL, Mayfield, N. C. Filed Sept. 5, 1890. Serial No. 363,981. (No model.)



Claim.—In a windlass, the combination of the shaft, the drum mounted revolubly upon the shaft and having a clutch member, the clutch-collar mounted slidingly upon a squared portion of the shaft and having an annular groove, a bifurcated lever pivoted on the frame and engaging said groove, a spring bearing against said lever to hold the clutch normally in gear, and an independent brake-lever having a shoe adapted to engage the periphery of the clutch member of the drum and provided with a handle lying in the path of the handle of the clutch-operating lever, substantially as and for the purpose set forth.

447,765. ROLLER-MILL. EDWARD G. DEWALD, Dayton, Ohio. Filed Mar. 15, 1890. Serial No. 343,955. (No model.)



Claim.—1. In a roller-mill, the swinging journal-bearings for the movable roll, formed in sections, a common center upon which said sections are pivoted, and means for simultaneously moving said sections in opposite directions for the purpose of spreading or closing the rolls, substantially as shown and described.

2. The combination, as hereinbefore set forth, of the sectional arms D E, the stud G supporting them, means such as shown for simultaneously moving said sections in opposite directions around their common pivot G to separate or close the rolls, and the spring H, pressing the inner end of the arm E.

3. The combination of the sectional journal-arms D E, the studs G, pivoting said arms, the through-shaft I, journaled in the arms E, the eccentrics N upon said shaft and engaging the arms D, and the lever O to rock said shaft for the purpose of moving the arms and separating or closing the rolls, substantially as shown and described.

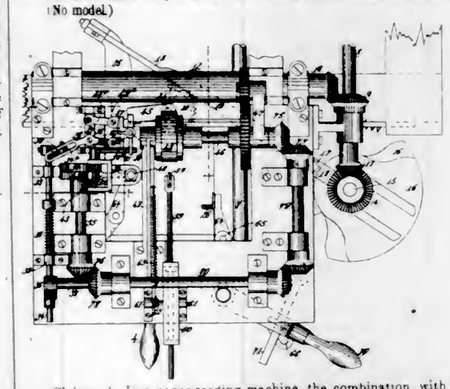
4. The combination, substantially as hereinbefore set forth, of the swinging sectional arms D E, the adjacent ends of said arms being rabbeted and lapping one upon the other, the pivot-pin G, forming the common pivot for both sections, and the said section E having a boss *d*, the ear *h* upon the end of the frame A, the rod *j* passing through the said boss and ear *h*, and the spring H to draw the end of arm E in the direction of said ear, the vertical adjustable bearings G in the arm D, whereby the said arm D is vertically adjustable independent of the arm E, and means for moving the sections D E one upon the other for the purpose of spreading or closing the rolls.

5. The combination of the swinging roll-bearings for the movable rolls, made in two parts D E, pivoted upon a common center, but capable of moving around said center in opposite directions, the pivot G, supporting the same, the spring pressing the inner end of said bearings to hold the movable roll in working position with the ear *a*, the screw *c*, passing through said ear and tapped into the edge of the swinging roll-bearings, the hand-wheel *b*, and jam-nut *e* to adjust the roll and hold the adjustment.

6. In a grinding-mill, the combination of a movable roll, a swinging arm made in two parts at each end of said roll, a rigid pivot for both of said sections, a spring to urge the bearings inward when said sectional arms are locked as one piece, and devices, substantially as shown, to move the said sections of the swinging arm in opposite directions upon said pivot, whereby the tension of said spring is relaxed when the rolls are separated, substantially as shown and described.

7. The combination, in a roller-mill, of the swinging journal-arm D, vertically slotted, as shown, the stud G, secured to the frame of the machine and serving as pivot for said arm, the boxing G', vertically adjustable in the slot of the swinging journal-arm, and the set-screws *m* for adjusting said boxes and holding the adjustment, substantially as shown and described.

447,766. MACHINE FOR FEEDING AND SEPARATING PAPER. LEWIS F. FALES, Walpole, Mass. Filed Feb. 28, 1890. Serial No. 342,055. (No model.)



Claim.—1. In a paper-feeding machine, the combination, with a feed-platform supporting a pile or stack of sheets or blanks, of means, substantially as set forth, for advancing or projecting the edge of the upper sheet beyond the edge of the stack, and a plate or support rising beneath said projected edge and then passing between the upper sheet and the pile or stack, substantially as described.

2. In a paper-feeding machine, the combination, with a feed-platform supporting and feeding a pile or stack of sheets or blanks, of means, substantially as set forth, for advancing or projecting the edge of the upper sheet beyond the edge of the pile or stack, a plate rising beneath said projected edge and then passing between the upper sheet and the pile or stack, and a roll having a raised surface portion revolving above and engaging the sheet to feed it off the plate, substantially as described.

3. In a machine for feeding paper, the combination, with a table supporting and feeding a pile or stack of sheets or blanks, of a swinging vertically-movable shoe having points or pricks upon its lower surface, a swinging and vertically-rising separating-plate mounted on a vertical shaft near the feed-edge of the table, and a feed-roll having a raised surface portion engaging the blank as the separating-plate passes under the edge of the sheet, substantially as described.

4. In a machine for feeding paper, the combination, with a table supporting and feeding a pile or stack of sheets or blanks, of means, substantially as set forth, for feeding said table upward, a swinging vertically-movable shoe mounted in a frame over the edge of the blanks or sheets and having points upon its lower surface, a separating-plate carried by a rock-shaft, a cam raising said rock-shaft, and a feed-roll having a projecting surface portin rotating above said separating-plate, substantially as described.

5. In a machine for feeding paper, the combination, with a table or platform supporting and feeding a pile or stack of sheets or blanks, of a threaded shaft feeding said table upward, a spring-raised stop resting upon the blanks or sheets and having an arm engaging a cam depressing said stop, a separating-plate carried by a vertical rock-shaft, a cam raising said shaft, a shoe carried by a vertical rock-shaft and having points engaging the flaps of the blanks, a cam-slide rocking said shaft, and a feed-roll having a raised surface portion revolving over the separating-plate as the latter swings under the raised edge or flap of the blank, substantially as described.

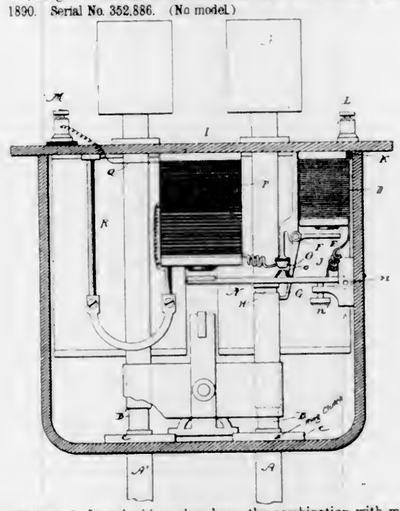
6. In a machine for feeding paper, the combination, with a vertically-fed table or platform carrying the blanks, of a vertical shaft arranged in a frame overhanging the table, a cam-slide rocking the horizontal arm carrying said frame, a bell-crank and cam lifting the shaft in said frame, a vertical shaft carrying upon its end a separating-plate arranged in front of the edges of the blanks, cams lifting and turning said plate as the shoe rises with the flap of a blank attached to its points, and a feed-roll engaging the flap of the blank as it rests on the inserted separating-plate, substantially as described.

7. In a machine for separating and feeding sheets or blanks of paper, the combination, with a table or platform carrying the piled sheets, of mechanism, substantially as set forth, for raising said table, a separating-plate mounted on a vertical rock-shaft having a fast and a loose segmental gear, the latter provided with a lifting-cam, spring-retracted slide-bars having racks meshing with said gears, a separating-plate carried by said rock-shaft and rising and turning in close proximity to the edges of the upper blanks, a rising and horizontally-swinging shoe having points raising the flap or edge of the upper blank, and a feed-roll having a raised surface portion which bears against the separating-plate as it lies under the raised edge of the blank, substantially as described.

8. In a machine for feeding paper, the combination, with a table having a fixed upward feed, of a sharp-edged wheel mounted on a bar arranged in a spring-tilted frame, its edge resting on the surface of the upper blank, a step thrown downward by a cam on the edge of said blank and raised therefrom at intervals by a spring, a shoe having points engaging the flap or edge of the upper blank, a bell-crank lever raising said shoe, a cam-slide swinging the frame carrying said shoe, a separating-plate turning beneath the raised flap of the blank, a cam-lift raising said plate as it lies under said flap, means, substantially as described, for turning the plate after it has lifted the flap sufficiently to pass beneath the same, a feed-roll having a projecting surface portion engaging the flap, and feed-rolls between which the blank passes, substantially as described.

9. In a machine for feeding paper, the combination, with a rising and falling separating-plate, of a vertically-movable rock-shaft, on the end of which the plate is mounted, a spring-retracted slide-bar having a rack meshing with a segment-gear fast on said shaft, a similar slide-bar having a rack meshing with an independent segment-gear loose on the rock-shaft and provided with a lifting-cam, and two cams carried by a vertical shaft, upon which are slipped the slotted ends of the slide-bars, said cams bearing against friction-rolls on the bars, substantially as described.

447,767. ELECTRIC-ARC LAMP. HENRY C. FORGASON, Oakland, Cal., assignor of one-half to H. G. Comstock, same place. Filed May 23, 1890. Serial No. 352,886. (No model.)

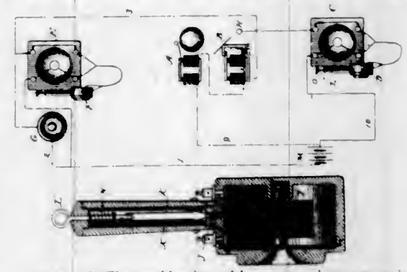


Claim.—1. In a double-carbon lamp, the combination, with main and auxiliary cut-outs, of a magnet in the main cut-out circuit, a second magnet for operating the auxiliary cut-out, and a contact operated by the first-mentioned magnet for energizing the second magnet, whereby the main cut-out may be cut out by the auxiliary, substantially as described.

2. In a double-carbon lamp, the combination, with lifting-clamps, of the carbon-carrying rods having reduced portions, one of said rods having also a locking device adapted to be released by magnetic action, substantially as described.

3. In a double-carbon arc lamp, the combination, with lifting-clamps, of the carbon-carrying rods having reduced portions, one of said rods having also a recess, a pawl for engaging said recess, and a magnet in the cut-out circuit for releasing said pawl from the recess, substantially as described.

447,768. COMBINED ANNUNCIATOR AND TELEPHONE SYSTEM. JOHN C. FRANCIS, New York, N. Y., assignor to Elias M. Greene, same place. Filed Nov. 5, 1889. Serial No. 329,293. (No model.)



Claim.—1. The combination, with an annunciator system including the battery, a normally-open push-button in the apartment, an annunciator and bell at the central office, and a branch circuit from the battery including the telephone-instruments, said branch circuit terminating in a bar, of telephone-instruments located in the apartment in a normally-open branch around the push-button, whereby when the push-button is closed the bell and annunciator will be operated and the drop of the annunciator will automatically close the circuit through the telephones at the central office and cut out the annunciator and bell, substantially as described.

2. A telephone-instrument the coil of which is provided with a loop connected to spring-terminals having a spring-actuating hook normally closing the terminals and arranged to break the circuit at the terminals when supporting the telephone, substantially as described.

3. The combination, with an annunciator system, of circuits, telephone-instruments included in said circuits, a support connected to one of the terminals of a telephone, a hook connected with one of the telephone-instruments, and a branch circuit around the coil of the telephone and including the hook and the other terminal of the telephone, substantially as described.

447,769. PERCH FOR CAGES. ALICE C. GOE, Stone Fort, Ill. Filed Sept. 6, 1890. Serial No. 364,185. (No model.)

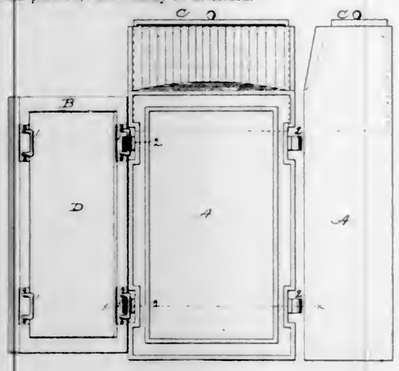


Claim.—A clip for bird-cage perches, comprising the ferrule forming the socket adapted to receive an end of the perch-rod, and the L-shaped hook having one arm 5 extending from the socket and projecting beyond the rod, and the arm 6 extending across the end of the rod a short distance therefrom and provided with the lip 7, projecting from the hook and forming a finger-hold, substantially as described.

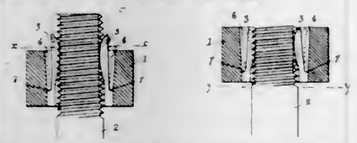
447,770. LADY'S SHOE-MIRROR. SIMON GOODMAN, Dayton, Ohio. Filed July 12, 1890. Serial No. 358,531. (No model.)

Claim.—A lady's foot-rest having hooked bearings in the sides thereof, in combination with a mirror-frame, with a mirror on its under

surface and provided with bearing-loops to hold said mirror-frame in a lateral position, substantially as described.



447,771. NUT-LOCK. PHILLIPS B. GRIMES, Glenwood, Mo. Filed May 21, 1890. Serial No. 352,590. (No model.)



Claim.—1. The threaded bolt provided with grooves arranged transversely to the threads, a threaded nut provided with spring-catches secured in its interior lengthwise thereof and between the bolt and nut and having slots to receive the springs and adapted to engage them through the major part of their length, said springs being normally in contact with the bolt and having flared or beveled ends to adapt them to receive a releasing device, substantially as set forth.

2. The spring cut away at the back and flared outwardly at the ends and having the parts 4 secured in the slots in the interior of the nut near one end and extending to near the other end thereof, said slots being also extended nearly the whole length of the nut and adapted to receive the side of the springs when forced away from the bolt, in combination with the nut and with the bolt provided with longitudinal grooves, but having its threads entire at the upper screw-threaded portion for a distance equal to about one-third the length of the nut, substantially as set forth.

3. The combination of the grooved bolt and the slotted nut with the springs lying lengthwise between the bolt and nut and having parts 4 and cut away at the back and flared at the ends, said ends extending to about the end of the nut, the slots being deeper than the springs and the latter normally in contact with the bolt, all substantially as specified, whereby the springs normally lie lengthwise in the grooves, and whereby a releasing device can be entered in the nut beyond the outer screw-threads thereof to release the concealed springs from the grooves in the bolt, substantially as set forth.

447,772. TENON-CUTTING MACHINE. BURR A. HAINES, Smithville, N. J. Filed Aug. 12, 1890. Serial No. 361,798. (No model.)

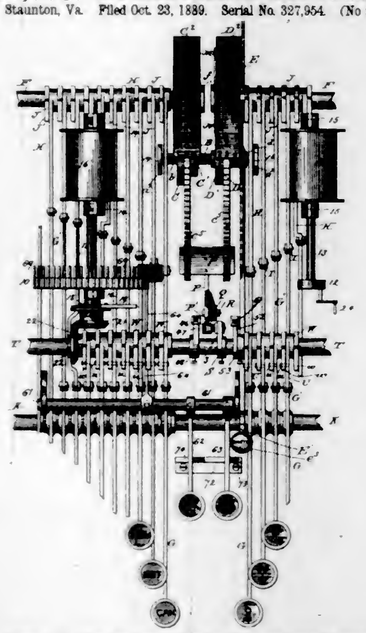


Claim.—1. The combination, with a revolving chuck, of an oscillating frame having a drunken and true saw upon the opposite sides thereof, a plunger connected with the said frame and imparting motion thereto, and a plate carrying the said chuck, having a projection thereon adapted to engage the said plunger, as described.

2. The combination, with an oscillating frame having a drunken and a true saw mounted upon the opposite sides thereof, of two revolving chucks located above and below the centers of the said saws, respectively, a pedal, a plunger pivoted thereto, a link pivoted to the said plunger and to the oscillating frame, a plate carrying one of the said chucks and having a projection thereon engaging the said plunger, and a spring adapted to bring the said true saw in front of the chucks, as described.

3. The combination, with a driving-shaft, of a frame pivoted thereto having two forks upon its upper end, a drunken and a true saw upon the opposite forks, the true saw being aligned with the middle of the cut of the drunken saw, a revolving chuck, and a stop mounted upon the said frame, as described.

447,773. TYPE-WRITING MACHINE. AUDLEY E. HARNSBERGER, Staunton, Va. Filed Oct. 23, 1889. Serial No. 327,954. (No model.)



Claim.—1. The combination, with the type-wheel journaled in the frame A, provided with a series of types on a segment of its peripheral surface and with a series of peripheral notches arranged in the same relation as the types and disposed on the diametrically-opposite face of said wheel, of a partially-rotatable shaft, intermediate gear-connections between said shaft and the type-wheel, the key-levers, the variable connections between said levers and the rotatable shaft, a swinging detent, and intermediate connections between said detent and the key-levers, whereby said detent will be brought into engagement with any predetermined notch in the type-wheel to limit the forward throw of such wheel, said detent, rotatable shaft, and type-wheel being all operated by a single movement of the key-levers to act substantially in the manner and for the purposes described.

2. In a writing-machine, a type-wheel provided on one segment of its surface with types, a series of notches formed in an approximately diametrically-opposite segment of such wheel corresponding in number and relation with the said types, a rock-shaft journaled independent of said wheel, intermediate gearing between said shaft and wheel, key-levers for rocking said shaft through different degrees of movement, and a pawl or detent adapted to engage any of the notches in the type-wheel to limit the forward rotation of said wheel, said pawl connected with and operated by the movement of any of the key-levers, substantially as and for the purpose described.

3. In a writing-machine, a word type-wheel and a letter type-wheel provided on a segment of their surface with types and with notches on

another segment thereof corresponding in number and relation with said types, rock-shafts, intermediate gearing between said shafts and type-wheels, said type-wheels journaled independently of each other, key-levers, by which to rock either of said shafts through different portions of its movement, and a pawl or detent adapted to engage any of the notches in either of said type-wheels, said pawl connected with and operated by the key-levers, substantially as and for the purpose described.

4. The combination, with the partially rotatable type-wheel, the rock-shaft F, and the intermediate gearing between said shaft and type-wheel, of the key-levers arranged in banks and the intermediate connections between said levers and shaft, said connections consisting of a series of arms journaled on and projected from said rock-shaft F, said arms having pivotal connections with said key-levers, said pivotal connections arranged at different points forward of the shaft F, whereby the degrees of rotation of said shaft will be varied by the movement of the various key-levers, substantially as and for the purpose described.

5. The combination, with a shaft or bearing supported in the frame of the machine and a word type-wheel journaled thereon operating in a fixed vertical plane, of the letter type-wheel journaled on the said support, operating in a vertical plane and adapted for adjustment toward or from the word-wheel, and means for shifting said letter-wheel, substantially as and for purpose described.

6. The combination, with key-levers journaled on a common axis, a rock-shaft T, journaled parallel to said lever-axis, and a connection between said levers and shaft whereby said shaft T is rocked at the movement of any of the key-levers, of a shaft 11, journaled at right angles to the shaft T, a spacer-wheel journaled on said shaft 11 to revolve therewith, a reciprocating carriage operated by said wheel, and a clutch-gear mechanism between said shaft T and 11, whereby a continuous intermittent rotation of the shaft 11 is obtained by the rocking movement of the shaft T, all arranged substantially as and for the purpose described.

7. The combination, with the type-wheels, of the bed-plate provided with the openings $X X^2$, the rocking shaft T, connected with and operated by the key-levers, said shaft provided with rearwardly-extending arms, and connections between said arms and the bar 36, whereby said arm is depressed at each movement of the key-levers and shaft T, substantially as and for the purpose described.

8. In a type-writing machine, essentially as described, the combination, with a carriage consisting of a rectangular frame provided with the paper-feed rollers at its rear end and a paper-guide arranged in front of said rollers, of the bed-plate provided with the openings $X X^3$ and the curved paper-guide secured to one of the standards of the machine at the front edge of the bed-plate, substantially as shown and described.

9. The combination, with the spacer-wheel provided with fingers extending horizontally from the inner face of said wheel, of a rock-shaft 61, a lifting-finger connected to said shaft, adapted to engage the fingers on the spacer-wheel, and the spacer-levers connected to said rock-shaft, said levers adapted to rock said shaft to different portions of its movement, substantially as shown and described.

10. The combination, with the carriage having a rack-bar, of the shaft 11, spacer-wheel 10, journaled thereon, provided with peripheral cogs or teeth adapted to engage said rack-bar and with lateral fingers of the same number as and arranged in alignment with the said cogs, connections between the said wheels and the key-levers, and an independent rock-shaft having spacing-key levers connected thereto, said shaft connected with the lateral fingers of said spacer-wheel, all arranged whereby said wheel is operated by the movement of the regular key-levers or by the independent spacing-levers, substantially as and for the purpose described.

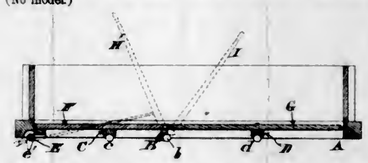
11. The combination, with the partially-rotatable type-wheel, the rock-shaft connected therewith, as shown, and the key-levers connected with said shaft to operate it, as described, of the impression-bar journaled for vertical movement over said type-wheel, provided with a winged arm disposed normally over said wheel, a standard having a tripping device at its upper end engaging the free end of said impression-bar, and a connection between said tripper and the key-levers, whereby said impression-bar is raised by the tripper and allowed to fall by gravity as the tripper is disengaged from the said bar, all arranged substantially as and for the purpose described.

12. The combination, with the type-wheel, the rock-shaft F, and intermediate gearing between said shaft and the type-wheel, said rock-shaft provided with a series of projections *j*, arranged longitudinally thereon and in different vertical planes, of a series of arms H, loosely journaled on said rock-shaft, each provided with a lateral projection *h*, engaging the adjacent projection *j* on the shaft F, and a series of key-levers journaled on a common axis, their rear ends connected with the outer ends of the arms H, all arranged substantially as and for the purpose described.

13. A type-writing machine comprising a partially-rotatable type-wheel, a rock-shaft geared therewith, a series of type-levers, intermediate connections between said levers and the rock-shaft F, said levers journaled on a common axis, a spacer-wheel mounted on a rotatable shaft journaled in the frame, a carriage engaging said wheel, intermediate mechanism between said spacer-wheel shaft and the key-levers, whereby said shaft is rotated, an impression-bar having a vertical movement over the type-wheel, and intermediate connections between said bar and the key-levers, all arranged whereby the operation of any one of the key-levers will operate the several parts set forth, substantially as and for the purpose described.

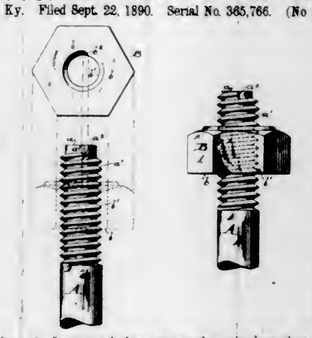
14. The combination, with the key-levers journaled on a common shaft, a rock-shaft T, journaled in the frame above said lever-shaft, forwardly-projecting arms loosely journaled thereon, provided with lateral projections adapted to engage radial projections on the rock-shaft T, connecting-arms between said arms and the key-levers, and a bevel-gear mounted on said shaft, of a shaft 13, journaled in the frame at right angles to the rock-shaft, a ribbon-spool mounted thereon, a second shaft 11, parallel to the shaft 13, provided with a ribbon-spool and a roller adapted to support one end of the carriage, said spools carrying the ribbon, a spacer-wheel mounted on the shaft 11, adapted to engage the carriage, a ratchet formed on the shaft, and a clutch-collar engaging said ratchet, having a bevel-gear engaging the bevel-gear on the rock-shaft T, all arranged substantially as and for the purpose described.

447,774. DUMPING-WAGON. JOSEPH A. HEAD, Greenfield, Ohio, assignor of three-fourths to Joseph Irons, James L. Smith, and Edward L. McClain, all of same place. Filed Dec. 22, 1890. Serial No. 375,437. (No model.)



Claim.—The combination, in a dumping-wagon, of the main frame A, a stop-beam B *b*, rock-shaft E *e e'*, a pair of rock-beams C *c c'* D *d d'*, journaled in said frame, a lever H, secured to the journal *b* of beam B, a rod *h*, connecting said lever with the arm *e* of shaft E, a lever I, swinging freely upon said journal *b*, rods *i i'*, connecting this lever with the arms *c' d'* of rock-beams C D, tilting sections F G, mounted upon the latter, and a fastener temporarily coupling said levers together, for the purpose described.

447,775. SCREW BOLT AND NUT. CLINTON A. HIGBEE, Princeton, Ky. Filed Sept. 22, 1890. Serial No. 365,766. (No model.)



Claim.—1. In screw-bolts, nuts, and equivalent threaded objects adapted for use in screw couplings or unions, as specified, a screw-thread having its end terminating in a blunt broad face beneath the end or face of the part in or on which it is formed, said end being symmetrically disposed, or substantially so, with respect to the line of the center of the thread, substantially as shown and described, and for the purpose specified.

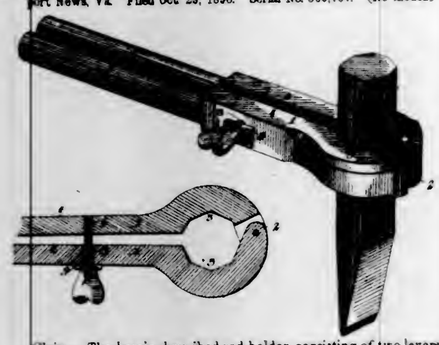
2. In screw-threaded bolts and nuts and equivalent male and female threaded objects adapted to screw together and form a screw coupling or union, threads having their ends terminating beneath the ends or faces of the threaded parts of the coupling, and each end symmetrically disposed, or substantially so, with respect to the center line of the threads, all substantially as shown and described, and for the purpose specified.

3. In screw-bolts, nuts, and equivalent threaded objects adapted for use in screw-couplings, as specified, a screw-thread having its end

terminating in a blunt broad face symmetrically disposed with respect to the center line of the thread, and a cylindrical extension, as a^2, formed to fit neatly in the other member of the coupling, said extension extending between the end of the thread and the face of the threaded object, all substantially as and for the purpose set forth

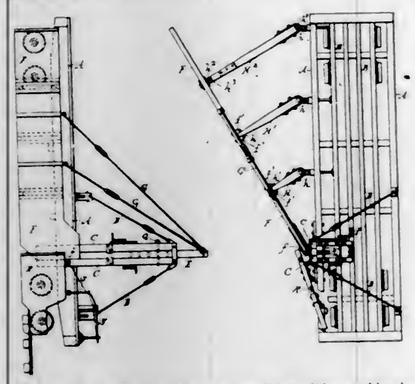
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447,776. CLAMP FOR HOLDING CHISELS. JOHN A. ISLIN, Newport News, Va. Filed Oct. 29, 1890. Serial No. 369,707. (No model.)



Claim.—The herein-described rod-holder, consisting of two levers pivoted together at their outer ends and terminating at their inner ends in handles, and between their ends upon their inner faces provided with polygonal plain-faced recesses or half-bearings adapted to conform to and snugly fit a rod of the class described for the purpose specified.

447,777. RAILROAD-SCRAPER. OSWALD F. JORDAN and ROBERT POTTS, St. Thomas, Canada. Filed Aug. 5, 1890. Serial No. 361,035. (No model.)



Claim.—1. A railroad-bed scraper consisting of the combination, with a railway-car, of the wing or scraper F, suspended from the side of said car, mechanism for adjusting said scraper vertically, and braces H and H', having one end pivoted to the car and the other resting in recesses on said wing and bracing against it, substantially as and for the purposes described.

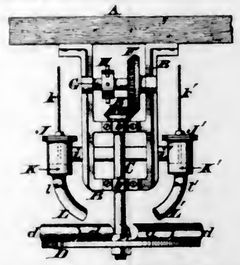
2. In a railway road-scraper, the combination, with a railway-car, of two upright posts rigidly engaged to the side thereof, a movable post between and supported by the rigid posts, the wing or scraper F, having one end hinged to the post and the other end supported therefrom by guy ropes or rods, and means for raising and lowering the movable post, substantially as described.

3. In a railway road-scraper, the combination, with a railway-car, of a wing or scraper F, hinged to a support on the side thereof and adjustable either vertically or horizontally to vary the angle, and another scraper in front of the former, attached to the car and movable vertically thereon, substantially as described.

4. In a railway road-scraper, the combination, with a railway-car, of a wing or scraper F, supported from a vertically-movable post, and means for moving said post vertically, consisting of the rack-bar on said post and one or more pinions connected with a crank-shaft and meshing with said rack-bar, substantially as described.

5. The combination, with a railway-car and a main wing or scraper extending therefrom, of a supplemental scraper located in advance of the main scraper and recessed at its end, so that one end may project over the ties, substantially as described.

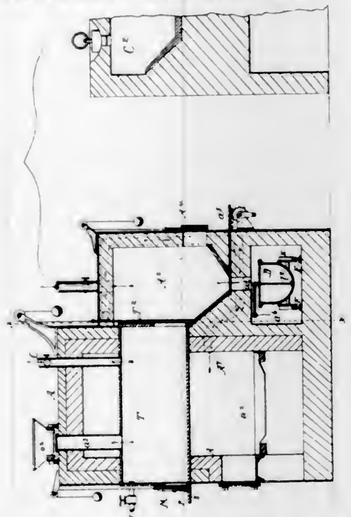
447,778. WATER-SPRINKLER. WILLIAM S. KISINGER, Bellevue, Ky., assignor to Henry G. Stiebel, Cincinnati, Ohio. Filed Oct. 20, 1890. Serial No. 368,640. (No model.)



Claim.—1. A centrifugal sprinkler consisting of a single plate or disk armed with a series of buckets or vanes, in combination with a pair of ventages having independent cut-offs, one of which ventages discharges in front of the disk-shaft, while the other ventage discharges in the rear of said shaft, in order that the single disk may disperse the jets either to the right or left of the machine or to both sides of the same, substantially as herein described.

2. In combination with a centrifugal sprinkler, a pair of angularly-adjustable ventages or nozzles adapted to discharge water on the front and rear surfaces of a single disk, each ventage being provided with an independent valve or cut-off, substantially as herein described, and for the purpose stated.

447,779. RETORT-FURNACE FOR DEOXIDIZING ORE. JAMES H. LANCASTER, New York, and MICHAEL R. CONLEY, Brooklyn, N. Y. Filed Feb. 24, 1890. Serial No. 341,393. (No model.)



Claim.—1. In an ore-deoxidizing furnace, the retort T, connected with a rearward auxiliary chamber A^3, separated from the said retort-chamber by a division-wall having an opening opened and closed by the sliding gate T^2, said auxiliary chamber being provided with side and bottom outlets, sliding gates therefor, said retort being also provided with filling-chute A^3, discharge-pipe C, front inlet M, all placed within the brick-setting A, having fire-place a^2, and flues A^7, leading thereunder and around the auxiliary chamber of the retort, substantially as and for the purpose specified.

2. In a retort-furnace for deoxidizing ore, the combination, with an auxiliary chamber, of the retorts T, provided with filling-chute c^3,

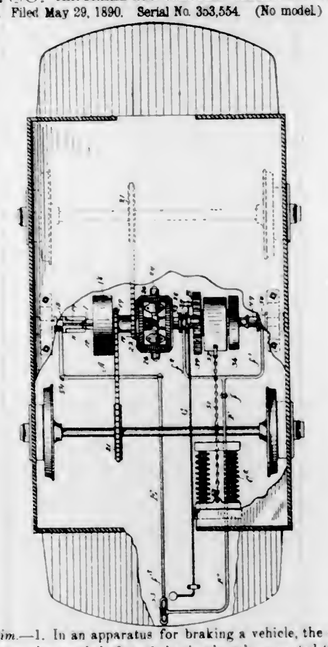
with cover, the outlet-pipe C, front inlet M, having self-shaped lip S, and a rear opening into the auxiliary chamber, substantially as specified.

3. In a retort-furnace for deoxidizing ore, the combination, with the auxiliary chamber and the retorts open at the rear, of the combustion-chamber a^8, and the flues A^7, leading from the combustion-chamber under and around the auxiliary chamber, substantially as and for the purpose specified.

4. The combination, with the retort and the auxiliary chamber, of the sliding door between the two, sliding-door mouth-piece A^4 to the auxiliary chamber, and the flues A^7, leading from the combustion-chamber under and around the auxiliary chamber, as set forth.

5. The combination of the retorts open at the rear, the closed auxiliary chamber connected thereto, a combustion-chamber for heating the retorts, flues leading from the combustion-chamber under and around the auxiliary chamber, a passage-way a^8 from the bottom of the auxiliary chamber, a truck beneath the opening, a valve P^2, controlling the discharge-opening in the bottom of the truck, and a sliding gate a^6, controlling the opening in the bottom of the auxiliary chamber, substantially as specified.

447,780. CAR-BRAKE AND STARTER. CHARLES J. LUCK, Niantic, Conn. Filed May 29, 1890. Serial No. 353,554. (No model.)



Claim.—1. In an apparatus for braking a vehicle, the combination of a supplemental shaft, as 1, having loosely mounted thereon a wheel, as 18, means for revolving this wheel about the shaft, driven by one of the axles of the vehicle, means for tightening the shaft to this wheel frictionally, and means for holding the shaft stationary, substantially as described.

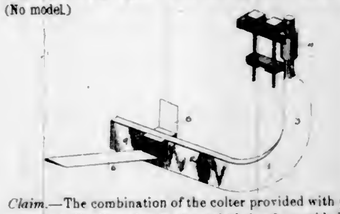
2. In an apparatus for braking and starting a vehicle, a supplemental shaft, as 1, upon which is loosely mounted a wheel, as 18, means for revolving this wheel upon the shaft, connected with and driven by one of the axles of the vehicle, and means for tightening the shaft to the wheel frictionally, controlled by the operator, in combination with a coiled spring secured to the shaft at one of its ends and to the bottom of the car at the other and wound on the shaft when it revolves, and means for retaining the spring in tension and for releasing the same, controlled by the operator, substantially as described.

3. In an apparatus for braking and starting a vehicle, a supplemental shaft, as 1, having loosely mounted thereon the wheel 18, with means for revolving this wheel on the shaft, connected with and driven by one of the axles of the vehicle, and means for tightening frictionally and securing the shaft to the wheel 18, controlled by the operator, in combination with a winding-drum, as C, loosely mounted on the shaft and provided with a coil-spring, one end of which is secured to the periphery of the drum and the other end to the bottom of the car, means for securing the drum to the supplemental shaft to wind the spring and to brake the car, means for holding and releasing the spring, and means for imparting a forward and backward movement to the shaft in starting or braking the vehicle, controlled by the operator, substantially as described.

4. In an apparatus for braking and starting a vehicle, a supplemental shaft, as 1, having loosely mounted thereon the wheel 18, with means for revolving this wheel on the shaft, connected with and driven by one of the axles of the vehicle, and means for tightening frictionally and securing the shaft to the wheel 18, controlled by the operator, in combination with a winding-drum, as C, loosely mounted on the shaft and provided with a coil-spring, one end of which is secured to the periphery of the drum and the other end to another spring, which is secured to the bottom of the car, means for securing the drum to the supplemental shaft to wind the spring and to brake the car, means for holding and releasing the spring, and means for imparting a forward and backward movement to the shaft in starting or braking the vehicle, controlled by the operator, substantially as described.

5. In an apparatus for braking and starting a vehicle, a supplemental shaft, as 1, having loosely mounted thereon the wheel 18, with means for revolving this wheel on the shaft, connected with and driven by one of the axles of the vehicle, and means for tightening frictionally and securing the shaft to the wheel 18, controlled by the operator, in combination with a winding-drum, as C, loosely mounted on the shaft, a spiral spring secured to the bottom of the vehicle, and means to connect the spiral spring and the drum C, means for securing the drum to the supplemental shaft, to wind the spring, and to brake the car, means for holding and releasing the spring, and means for imparting a forward and backward movement to the shaft in starting or braking the vehicle, controlled by the operator, substantially as described.

447,781. SELF-CLEANING WEED-CUTTER. FREDERICK E. LUX, Walla Walla, Wash. Filed June 28, 1890. Serial No. 357,141. (No model.)



Claim.—The combination of the colter provided with perforations 5, the rearwardly-diverging horizontal blades 6, provided with vertical blocks or flanges 7, formed integral with the blades and arranged at the inner ends of the same and at an acute angle to the same, and provided with perforations, and having their upper edges flush with the upper edges of the colter and arranged at the same point along the colter, and the bolts passing through the colter and both blocks or flanges, substantially as described.

447,782. BUTTON. ADOLF MANDEL, New York, N. Y. Filed Nov. 26, 1890. Serial No. 372,731. (No model.)

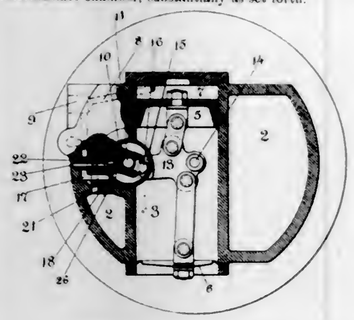


Claim.—In a button, a yoke-shaped shank, spring-arms adapted to fit one within the other and hinged to the shank to fall into a common plane when folded to form a continuation of the shank, in combination with the notches *e e*, *f f*, *g g*, and *h h* on opposite sides of the shank engaged by said arms to hold them in their ultimate position, substantially as described.

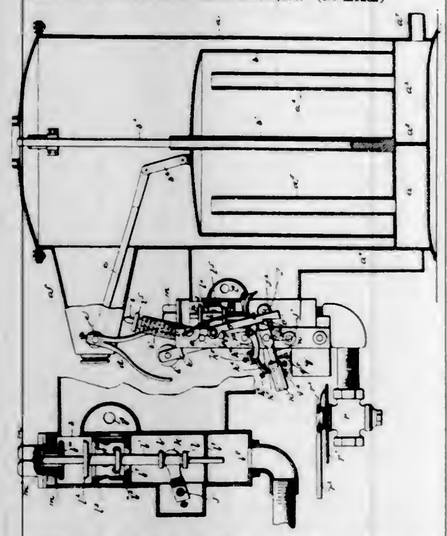
447,783. AUTOMATIC AIR-BRAKE. ALBERT P. MASSEY, Watertown, N. Y., assignor to the Eames Vacuum Brake Company. Filed Jan. 23, 1890. Serial No. 337,868. (No model.)

Claim.—1. In a fluid-pressure brake mechanism, the combination of a train-pipe, auxiliary reservoir, intermediate chamber, and brake-cylinder with a valve device consisting of a valve-case containing a diaphragm and piston connected at different angles to a lever in such a manner that the effective leverage of one will increase when the other decreases, combined with a valve situated in a chamber connected with the auxiliary reservoir, whose preliminary traverse admits air from an intermediate chamber to the brake-cylinder, and which by a further traverse closes the intermediate chamber from the brake-cylinder and admits air from the auxiliary reservoir to the brake-cylinder, substantially as set forth.

2. In a fluid-pressure brake mechanism consisting of a train-pipe, auxiliary reservoir, intermediate chamber, and brake-cylinder, a governing-valve situated in a chamber connected with the auxiliary reservoir, with ports which will in a preliminary traverse admit air from an intermediate chamber to the brake-cylinder and by a further traverse will close the intermediate chamber from the brake-cylinder and open it to the train-pipe, so that air may flow directly from the train-pipe to the intermediate chamber, substantially as set forth.



447,784. GAS AND AIR MIXER. EDMUND MEREDITH, Philadelphia, Pa., assignor to the Pennsylvania Globe Gas Light Company, same place. Filed Nov. 26, 1890. Serial No. 372,656. (No model.)



Claim.—1. In a mixer, an outer casing and a holder arranged therein, valves for controlling the admission of air and gas to said holder, a tripping mechanism interposed between the said holder and valves and operated by the rise and fall of the holder, and comprising a rock-shaft connected with the stem of the valves, a rock lever or arm for moving said shaft, a spring plunger or piston for holding the said rock lever or arm in given position, a crank connected with the pivot or shaft of the said rock lever or arm, and an arm co-operating with said crank and actuated by a rod connected with and moved by the holder, substantially as described.

2. In an air and gas mixer, a holder and puppet-valves interposed between the air and gas inlets and in an air and gas mixing chamber and controlling the admission of mixed air and gas to the mixer, combined with a rock-shaft connected with the stem of the said valves, an arm on said shaft provided with anti-friction devices, a rock-lever having arms to co-operate with the anti-friction devices, a spring-plunger controlling the movement of the said rock-lever, a crank attached to the shaft or pivot of said rock-lever, and a forked arm co-operating with said crank and deriving its motion from the holder, substantially as and for the purpose described.

3. In an air and gas mixer, a movable holder, a rock-shaft provided with a depending forked arm and a rod connecting the said holder and rock-shaft, combined with valves arranged in a mixing-chamber and providing for the mixing of air and gas and the admission of the mixed air and gas to the holder, a rock-shaft and a connection between it and the common stem of the said valves, an arm on said valve-actuating shaft, a rock-lever for actuating said arm, a spring-plunger for controlling the movement of said rock-lever, a crank on the rock-lever shaft extended into operative connection with the forked arm, and a dash-pot connected with the arm on the valve-operating shaft, substantially as described.

4. In an air and gas mixer, the holder, a rock-shaft, and a rod connecting the said rock-shaft and the holder, valves for permitting the mixing of air and gas and admitting the mixed air and gas to the holder, the valve-actuating shaft, and means, substantially as described, interposed between the rock-shaft and valve-actuating shaft, for operating said valve-actuating shaft, and a shaft-locking device consisting of an arm secured on the valve-actuating shaft and provided with a pin, a latch to engage said pin, and a tripping device for said latch, and means controlled by the holder for actuating the tripping device to disengage the latch and permit of the opening of the valves, substantially as described.

5. In an air and gas mixer, a holder, a rock-shaft, and a rod connecting the said rock-shaft and holder, combined with valves for mixing air and gas and admitting the mixed air and gas to the holder, a rock-shaft for actuating the said valves, a rock-lever provided with arms for rocking the said shaft first in one direction, then in another, and a third and laterally-projecting arm on said rock-lever, means, substantially as described, for holding said rock-lever in position and for moving it, and a locking and unlocking device for the valve-operating shaft, comprising a weighted arm secured on said valve-operating shaft, a latch for engaging it, and a tripping device for disengaging the latch, arranged in the path of movement of the laterally-projecting arm of the rocking lever and actuated by the said laterally-projecting arm as it descends, substantially as described.

6. In an air and gas mixer, a holder, a rock-shaft provided with a depending forked arm, and a rod connecting the two, combined with valves for providing for the mixing of the air and gas and for the admission of the mixed air and gas to the holder, and means actuated by the forked arm to open and close the said valves, and a device for locking the said valves in closed position and for positively unlocking them when desired, comprising a valve-shaft, a weighted arm on said shaft, a latch to engage said arm and prevent it from falling and to retain the valves closed, and a tripping device arranged to be actuated by the valve-moving mechanism to disengage the latch and weighted arm and permit the weighted arm to put in motion the valve-moving mechanism, substantially as described.

447,785. OBSERVATORY-CAR. THOMAS J. MCBRIDE, Winnipeg, Canada. Filed Aug. 30, 1890. Serial No. 363,549. (No model.)

Claim.—1. A passenger-car constructed with one or more observatory-sections extended above the level of the other portions of the car, the said observatory-sections being provided with transparent walls and seats for passengers, the interior of the observatory-section being continuous and undivided from the body of the car, whereby the observatory does not obstruct or interfere with the customary usage of the lower or floor space of the car and affords to the occupants thereof a view of the interior of the car, substantially as set forth.

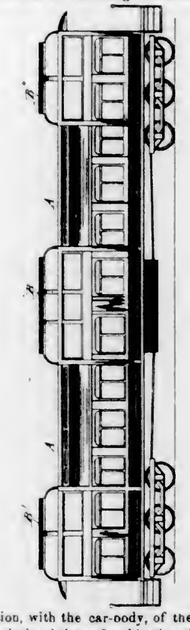
2. A passenger-car constructed with one or more observatory-sections extended above the body of the car and having its interior continuous therewith provided with transparent walls, and having elevated seats in the upper or observatory portion, and the lower tier of seats on the car-floor, with a common or central or aisle space extending from the floor to the top of the car.

3. The combination, with the car-body having a lower or floor tier of seats crosswise of the car, of an upwardly-extended observatory-section continuous with the body of the car, having transparent walls, and elevated seats in said observatory-section parallel with said lower seats, having their foot-rests in line with the backs of the lower seats.

4. In the sleeping-car or other passenger-coach having its seats arranged in pairs face to face, the combination, with the car-body, of the upwardly-extended observatory-sections having transparent walls and elevated face-to-face seats located therein parallel with the lower seats, alternating therewith, and having their foot-rests over the backs of the lower seats, whereby comparatively little obstruction is interposed in the central upper space over the lower pair of seats.

5. In the sleeping-car or other passenger-coach having its seats arranged in pairs face to face, the combination, with the car-body, of the upwardly-extended observatory-sections having transparent walls, the elevated pairs of faced seats located in the observatory portion

parallel and alternating with the lower seats and having the foot-rests in line with the backs thereof, and supports extending from the backs of the lower seats to the foot-rest portion of the upper seats, provided with steps on their aisle-face for affording access to the upper seats.



6. The combination, with the car-body, of the observatory-sections extended above the level thereof and having their interiors continuous therewith, of a double central roof and the observatory-sections having its two parts spaced apart and provided with air-inlets, whereby the top of the observatory is kept comparatively cool.

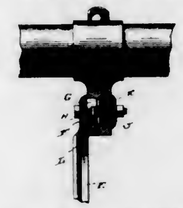
7. The combination, with the car-body, of the upwardly-extended observatory-sections continuous therewith, provided with double roofs spaced apart, transoms to the lower wall thereof, leading to the interior of the observatory and the car-body, substantially as described.

8. The combination, with the car-body, of the upwardly-extended observatory-section having its interior continuous therewith, provided with transparent side and end walls and transparent sections in its roof, directly over the elevated seats, substantially as described.

9. The combination, with the car-body having an observatory extended above the level thereof, of a stair located between the backs of two lower seats and affording access to the upper seats at a point adjoining the side wall of the car or in the space usually occupied by the upper berths.

10. The combination, with the car-body having an observatory extended above the level thereof, of a seat or seats facing the walls of the car and having the foot-space adjoining the wall.

447,786. THILL-COUPLING. DAVID MCCREADY, Perrysville, Ohio. Filed May 27, 1890. Serial No. 353,301. (No model.)

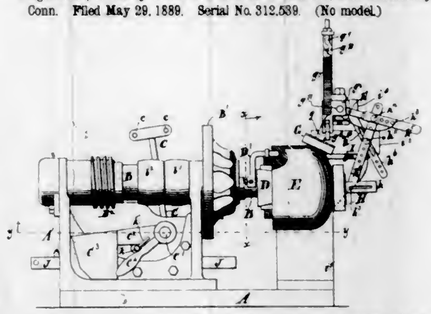


Claim.—1. In a coupling, the combination of the clip, the apertured curved bosses pivoted in said clip and connected by a rib and groove, and a bolt for securing the bosses in engagement, substantially as described.

2. In a coupling, the combination of a clip having the apertured lug, the draw-iron having the disk formed with a curved lug having a channel, the disk having a curved lug formed with a rib fitting in the channel of the other boss or lug, the two lugs or bosses fitting in the apertured lug on the clip, and a bolt passing through the curved lugs for securing the bosses in engagement, substantially as described.

3. In a coupling, the combination of a shackle composed in two parts, having a lock on the inner face and connected together by a bolt, one of the parts having a threaded orifice and a nut to lock the said threaded part on the bolt, substantially as shown and described.

447,787. HAT-POUNCING MACHINE. SAMUEL T. NEWMAN, Danbury, and EDWIN C. OAKLEY, Bethel, assignors, by direct and mesne assignments, to Henry Griffin and Charles H. Merritt, both of Danbury, Conn. Filed May 29, 1889. Serial No. 312,539. (No model.)



Claim.—1 In a hat-pouncing machine, the combination of a rotary hat-block, a reciprocating pad having a tubular shank, a spring in said shank, a block in said shank, and a support extending through longitudinal slots in the shank and through a hole in the block, substantially as specified.

2. In a hat-pouncing machine, the combination of a rotary oval hat-block, a reciprocating slider consisting of two sections operated from the main shaft, a pad reciprocated in substantially one plane by the slider and connected thereto so that it may be adjusted longitudinally of the slider, substantially as specified.

3. In a hat-pouncing machine, the combination of a rotary hat-block, a reciprocating slider made in two sections and operated from a worm on the main shaft, and a pad connected to one of the sections and adjustable with said section relatively to the other, substantially as specified.

4. In a hat-pouncing machine, the combination of a rotary hat-block, a pad, a lever h^4, supporting said pad, arms h^3 h^4, supporting the lever h^4, and an oscillating sleeve to which the arm h^3 is rigidly attached, substantially as specified.

5. In a hat-pouncing machine, the combination of a main shaft, a rotary hat-block having its axis parallel with that of the main shaft, a worm rotated by the main shaft, a worm-wheel engaging with the worm, a slider traveling on ways attached to the frame and reciprocated through the worm-wheel in the direction of the axis of the hat-block, and a pad carried by the slider and reciprocated by it over the hat-block, substantially as specified.

6. In a hat-pouncing machine, the combination of a rotary hat-block, a driving-shaft, a reciprocating pad, a belt-shifter, a holder for maintaining the belt-shifter in position to keep the belt on the fixed pulley of the driving-shaft, and a movable stop or support which ultimately will allow the reversal of the belt-shifter, substantially as specified.

7. In a hat-pouncing machine, the combination of a rotary hat-block, a driving-shaft, a reciprocating pad, a belt-shifter, a holder for maintaining the belt-shifter in position to keep the belt on the fixed pulley of the driving-shaft, and a stop or support movable with and adjustable on the holder, which ultimately will allow the reversal of the belt-shifter, substantially as specified.

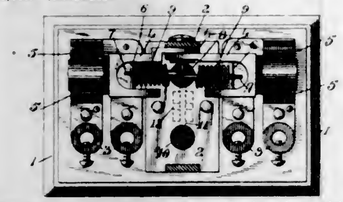
8. In a hat-pouncing machine, the combination of a rotary hat-block, a reciprocating pad, a crank reciprocating the pad, a driving-shaft effecting the revolution of the crank, fast and loose pulleys on the driving-shaft, a belt-shifter, a weight for moving the belt-shifter so as to cause it to shift the belt upon the loose pulley, and a movable support or stop for preventing the movement of the belt-shifter by the weight until the proper time, substantially as specified.

9. In a hat-pouncing machine, the combination of a rotary hat-block, a reciprocating pad; a crank reciprocating the pad, a driving-shaft effecting the revolution of the crank, fast and loose pulleys on the driving-shaft, a belt-shifter, a weight for moving the belt-shifter so as to cause it to shift the belt upon the loose pulley, and an adjustable and movable stop or support for preventing the movement of the belt-shifter by the weight until the proper time, substantially as specified.

10. In a hat-pouncing machine, the combination of a rotary hat-block, a reciprocating pad, a crank reciprocating the pad, a driving-shaft imparting motion to the crank, fast and loose pulleys on the driving-shaft, a belt-shifter, a weight for moving the belt-shifter over the loose pulley, a support, as *j'*, a slider-bar, as J, a lever, as K', and a cam for operating the lever, substantially as specified.

11. In a hat-pouncing machine, the combination of a rotary hat-block, a reciprocating pad, a crank reciprocating the pad, a driving-shaft imparting motion to the crank, fast and loose pulleys on the driving-shaft, a belt-shifter, a weight for moving the belt-shifter over the loose pulley, a support, as *j'*, a slider-bar, as J, with which said support is adjustably connected, a lever, as K', and a cam for operating the lever, substantially as specified.

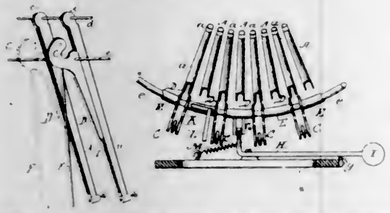
447,788. ELECTRIC SWITCH. JOHN M. ORFORD, Bridgeport, and JOHN C. ENGLISH, New Haven, Conn. Filed Dec. 19, 1890. Serial No. 375,219. (No model.)



Claim.—1. The combination, in an electric switch, with the terminals, of a pair of pivoted circuit-breaking levers, a pair of guided plungers connected together for purposes of mutual operation, slotted links interposed one between one of said plungers and each of the circuit-closing levers, and springs surrounding said links, substantially as described.

2. The combination, with the terminals, of a pivoted circuit-closing bar or lever, a plunger, a spring interposed between said plunger and said circuit-closing lever, and a second plunger parallel with the first and connected thereto, whereby the fulcrum against which the spring acts may be changed by pressure upon either plunger, substantially as and for the purpose set forth."

447,789. TYPE-WRITING MACHINE. JOSEPH H. OSGOOD, Peabody, Mass. Filed Mar. 1, 1889. Serial No. 301,621. (No model.)



Claim.—1. The combination, with two or more sets of pivotally-hung type-bars, those of the different sets being alternately disposed upon their frame, of a series of lifting-levers pivoted upon a sliding ring below the type-bars and with the distance between each two adjacent levers equal to the distance between the type-bars of one of said sets, means for operating said levers to raise the type-bars, and means for sliding the frame supporting said levers, whereby the levers may be moved under the type-bars of any one set, all as set forth.

2. The combination, with two or more sets of type-bars pivotally hung upon a circular frame and with those of the different sets alternately disposed upon said frame, of a series of lifting-levers pivoted upon a sliding ring below the type-bars and with the distance between each two adjacent levers equal to the distance between the type-bars of one of said sets, means for operating said levers to raise the type-bars, and means for sliding the frame supporting said levers, whereby the levers may be moved under the type-bars of any one set, all as set forth.

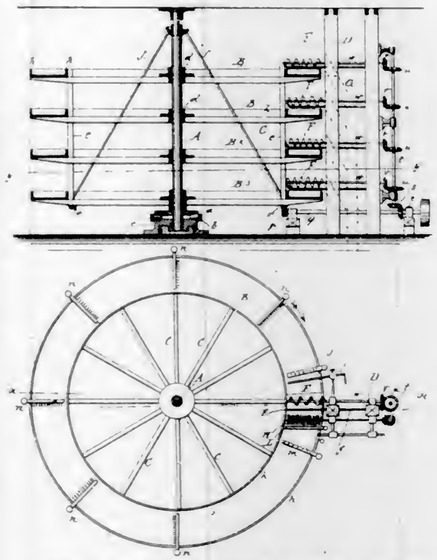
3. The combination, with two or more sets of type-bars pivotally hung upon a circular frame and with those of the different sets alternately disposed upon said frame, of a series of lifting-levers pivoted upon a sliding ring below the type-bars and with the distance between each two adjacent levers equal to the distance between the type-bars of one of said sets, means for operating said levers to raise the type-bars, and a lever engaging with said ring for sliding the same, whereby the levers may be moved under the type-bars of any one set, all as set forth.

4. The combination, with two or more sets of type-bars pivotally hung upon a circular frame with those of the different sets alternately disposed upon said frame, of a series of lifting-levers pivoted upon a sliding ring below the type-bars and with the distance between each two adjacent levers equal to the distance between the type-bars of one of said sets, means for operating said levers to raise the type-bars, a lever engaging with said ring for sliding the same, and stops for limiting the play of the ring, all as set forth.

5. The combination, with two or more sets of type-bars pivotally hung upon their frame and with those of the different sets alternately disposed upon said frame, of the lifting-levers C D, pivoted upon a sliding ring below the type-bars and with the distance between each two adjacent levers equal to the distance between the type-bars of one of said sets, the levers O, and connecting-rods F, and means for sliding the frame or ring which supports the levers, all as set forth.

6. The combination, with two or more sets of type-bars pivotally hung upon a circular frame, with those of the different sets alternately disposed upon said frame, of the ring *e*, loose sleeves E, levers C D, means for raising said levers, and means for sliding said sleeves with the levers upon the ring *e*, all as set forth.

447,790. CONTINUOUS AUTOMATIC STARCH-TABLE. JOHN A. OSTENBERG, Des Moines, Iowa. Filed Oct. 19, 1889. Serial No. 327,581. (No model.)



Claim.—1. In a continuous automatic starch-table, the combination, with an annular table furnished with raised edges or lips, of a tube for supplying the starch liquid to the table, a scoop for lifting the starch from the table, a conveyer for removing the starch lifted by the scoop, and a discharge-pipe for removing the water which has been discharged of starch, substantially as specified.

2. In a continuous automatic starch-table, the combination, with an annular table, of a pipe for supplying the starch liquid, a series of brushes for sweeping the surface of the starch, a scoop for lifting the starch from the table, a conveyer for removing the starch from the scoop, a flexible scraper for cleaning the surface of the starch, and a pipe for removing the water which has been discharged of starch, substantially as specified.

3. The combination, with the annular table B and scoop E, of the brush H and the scraper *k*, provided with the gutter *l* for cleaning the table, substantially as specified.

4. In a continuous starch-table, the combination of the table B, provided with raised edges, the supply-pipe *j*, the sweeps *n*, scoop E, the flexible scraper *i*, the conveyer F, the suction discharge-pipe *m*, and mechanism, substantially as described, for operating the table and the conveyer, as specified.

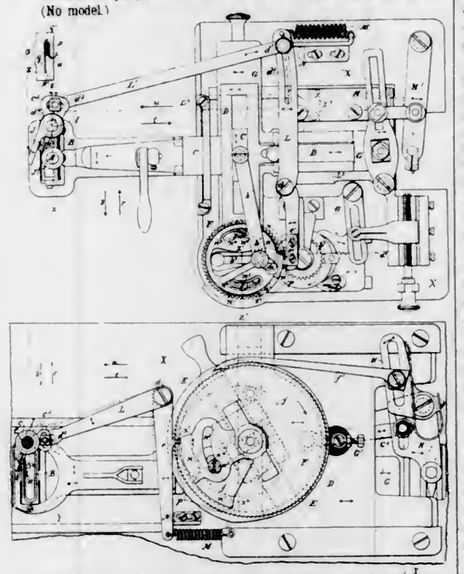
5. In a continuous starch-table, the combination of the table B, provided with raised edges, the supply-pipe *j*, the sweeps *n*, scoop E, the flexible scraper *i*, the conveyer F, the suction discharge-pipe *m*, mechanism, substantially as described, for operating the table, the brush H, and scraper *k*, provided with the gutter *l*, as specified.

6. The herein-described method of forming starch, which consists in discharging a thin stream of starch liquor continuously upon the table and simultaneously moving the settled starch slowly forward in a direction opposite the flow of the liquor to preserve the even thickness of the layer at its forward end, then forcing the forward end of the layer upward from the table and removing it therefrom, substantially as described.

7. The herein-described method of forming starch, which consists in discharging a thin stream of starch liquor continuously upon the table and simultaneously moving the starch slowly forward in a direction opposite the flow of the liquor to preserve the even thickness of the layer at its forward end, then forcing the forward end of the layer upward from the table and removing it and also simultaneously withdrawing the waste liquor from the table at the opposite or thin end of the starch-layer, substantially as described.

8. The herein-described method of forming starch, which consists in discharging a stream of starch liquor upon the table and simultaneously moving the settled starch slowly forward in a direction opposite the flow of the liquor to preserve the even thickness of the layer at its forward end, then cleaning the surface of the layer, then forcing its forward end upward from the table and removing it continuously therefrom, and finally withdrawing the waste liquor from the table at the rear or thin end of the layer, substantially as described.

447,791. MACHINE FOR CUTTING AND STITCHING BUTTON-HOLES. JAMES A. OSTERHOUT, Troy, N. Y., assignor to the National Machine Company, same place. Filed Dec. 22, 1885. Serial No. 186,426. (No model.)



Claim.—1. In a button-hole sewing-machine, the combination, with its stitch-forming and work-moving mechanisms, of a work-cutter and its carrier normally elevated, a depressor which ordinarily does not depress the cutter-carrier and cutter, a cutter-controller connected to and moving with the said work-moving mechanism, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the latter is temporarily caused to depress the cutter-carrier and cutter, substantially as set forth.

2. In a button-hole sewing-machine, the combination, with its stitch-forming and work-moving mechanisms, of a work-cutter and its carrier normally elevated, a depressor which is operated by the needle-actuating mechanism of the sewing-machine, and which ordinarily does not depress the cutter-carrier and cutter, a cutter-controller connected to and moving with the said work-moving mechanism, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the latter is temporarily caused to depress the cutter-carrier and cutter, substantially as set forth.

3. In a button-hole sewing-machine, the combination, with its stitch-forming and work-moving mechanisms, of a work-cutter and its carrier normally elevated, a depressor which is operated by the needle-carrier of the sewing-machine, and which ordinarily does not depress the cutter-carrier and cutter, a cutter-controller connected to and moving with the said work-moving mechanism, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the cutter-carrier and cutter are temporarily depressed by the said depressor, substantially as described.

4. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamps, and mechanism including a rotary feed device for operating the work-clamp, of a work-cutter and its carrier normally elevated, a depressor which ordinarily does not depress the cutter-carrier and cutter, a cutter-controller connected to and rotating with the said rotary feed device, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the said depressor is temporarily caused to depress the cutter-carrier and cutter, substantially as set forth.

5. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism including a rotary feed device for operating the work-clamp, of a work-cutter and its carrier normally elevated, a depressor operated by the needle-actuating mechanism of the sewing-machine, a cutter-controller connected to and rotating with the said rotary feed device, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the cutter-carrier and cutter are temporarily depressed by the said depressor, substantially as set forth.

6. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism including a rotary feed device for operating the work-clamp, of a work-cutter and its carrier normally elevated, a depressor operated by the needle-carrier of the sewing-machine, a cutter-controller connected to and rotating with the said rotary feed device, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the cutter-carrier and cutter are temporarily depressed by the said depressor, substantially as described.

7. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism for operating the work-clamp, of a depressor operated by the actuating mechanism of the sewing-machine, a work-cutter, its carrier, means to elevate the cutter-carrier, and means to support it when elevated and disconnected from said depressor, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the cutter-carrier is temporarily connected with and depressed by the said depressor and is thereupon elevated and disconnected from the depressor, substantially as described.

8. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a depressor connected with and operated by the needle-carrier of the sewing-machine, a work-cutter and its carrier, means to elevate the cutter-carrier, and means to support it when elevated and disconnected from said depressor, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the cutter-carrier is temporarily connected with and depressed by said depressor and is thereupon elevated and disconnected therefrom, substantially as described.

9. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism for operating the work-clamp, of a depressor and an elevator operated by actuating mechanism of the sewing-machine, a work-cutter and its carrier, a support for the cutter-carrier when elevated and disconnected from said depressor, a cutter-controller connected to and moving with the said mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, depressor, and elevator, whereby the cutter-carrier is temporarily connected with and depressed and elevated by said depressor and elevator and is thereupon disconnected from said depressor, substantially as set forth.

10. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism for operating the work-clamp, of a depressor and an elevator connected with and operated by the needle-carrier of the sewing-machine, a work-cutter and its carrier, a support for the cutter-carrier when elevated and disconnected from said depressor and elevator, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, depressor, and elevator, whereby the cutter-carrier is temporarily connected with, depressed, and elevated by and disconnected from said depressor and elevator, substantially as described.

11. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a work-cutter and its carrier normally elevated, a depressor operated by actuating mechanism of the sewing-machine and ordinarily disconnected from the cutter-carrier, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, and depressor, the same being constructed and arranged so as to

cause the cutter-carrier and cutter to be connected with and depressed by the said depressor to cut a button-hole when the sewing-machine is stitching at one side only of the button-hole, substantially as set forth.

12. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a work-cutter and its carrier normally elevated, a depressor operated by actuating mechanism of the sewing-machine and ordinarily disconnected from the cutter-carrier, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, and depressor, the same being constructed and arranged so as to cause the cutter-carrier and cutter to be connected with and depressed by the said depressor to cut a button-hole in rear of the stitching when the sewing-machine is stitching at one side only of the button-hole, substantially as described.

13. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a work-cutter and its carrier normally elevated, a depressor operated by actuating mechanism of the sewing-machine and ordinarily disconnected from the cutter-carrier, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connecting mechanism between the said cutter-controller, cutter-carrier, and depressor, the same being constructed and arranged so as to cause the cutter-carrier and cutter to be connected with and depressed by said depressor to cut a button-hole when the sewing-machine is stitching at one side only of the button-hole and the needle of the sewing-machine is at one edge only of the row of to-and-fro stitches, substantially as described.

14. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a work-cutter and its carrier normally elevated, a depressor operated by actuating mechanism of the sewing-machine and ordinarily disconnected from the cutter-carrier, a cutter-controller connected to and moving with the mechanism for operating the work-clamp and connecting mechanism between the said cutter-controller, cutter-carrier, and depressor, the same being constructed and arranged so as to cause the cutter-carrier and cutter to be connected with and depressed by said depressor to cut a button-hole in rear of the stitching when the sewing-machine is stitching at one side only of the button-hole and the needle is at one edge only of the row of to-and-fro stitches, substantially as described.

15. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism for operating the work-clamp, of a cutter-carrier normally elevated, and an attached cutter of suitable length to cut a button-hole at one insertion, a depressor operated by actuating mechanism of the sewing-machine, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, and depressor, the same being constructed and arranged so as to cause the cutter-carrier and cutter to be depressed by the said depressor to cut a button-hole when the sewing-machine is stitching at or near one end part of one side of the button-hole, substantially as set forth.

16. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism for operating the work-clamp, of a cutter-carrier normally elevated and its attached cutter of suitable length to cut a button-hole at one insertion, a depressor operated by actuating mechanism of the sewing-machine, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, and depressor, the same being constructed and arranged so as to cause the cutter-carrier and cutter to be depressed by the said depressor to cut a button-hole in rear of the stitching when the sewing-machine is stitching at or near one end part of one side of the button-hole, substantially as set forth.

17. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a cutter-carrier normally elevated and its attached cutter of suitable length to cut a button-hole at one insertion, a depressor operated by actuating mechanism of the sewing-machine, a cutter-controller connected to and moving the mechanism for operating the work-clamp, and connecting mechanism between the said cutter-controller, cutter-carrier, and depressor, the same being constructed and arranged so as to cause the cutter-carrier and cutter to be depressed by said depressor to cut a button-hole when the sewing-machine is stitching at or near one end part of one side of the button-hole, and the needle is at one edge only of the row of to-and-fro stitches, substantially as described.

18. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a cutter-carrier normally elevated and an attached cutter of suitable length to cut a button-hole at one insertion, a depressor operated by actuating mechanism of the sewing-machine, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connecting mechanism between the said cutter-controller, cutter-carrier, and depressor, all constructed so as to cause the cutter-carrier and cutter to be depressed by said depressor to cut a button-hole in rear of the stitching when the sewing-machine is stitching at or near one end part of one side of the button-hole and the needle is at one edge only of the row of to-and-fro stitches, substantially as described.

19. In a button-hole sewing-machine, the combination, with its stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a cutter-carrier normally elevated and an attached cutter arranged to descend with its cutting-edge in a plane at one side of the needle a distance equal to the length of the depth stitches back from the edge of the button-hole, a depressor operated by actuating mechanism of the sewing-machine, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connecting mechanism between the said cutter-controller, cutter-carrier, and depressor, the same being constructed so as to cause the cutter-carrier and cutter to be depressed by the said depressor to cut a button-hole only when the needle is at one side of the button-hole and is laterally away from the edge thereof, as in making a depth stitch, substantially as set forth.

20. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism, work-clamp, and mechanism for operating the work-clamp, of a work-cutter and its carrier normally elevated and furnished with means by which the cutter is secured to its carrier and is adjustable thereon laterally in relation to the work-clamp and to the needle of the sewing-machine, a depressor operated by actuating mechanism of the sewing-machine, a cutter-controller connected to and moving with the mechanism for operating the work-clamp, and connections between the said cutter-controller, cutter-carrier, and depressor, whereby the cutter-carrier and cutter are temporarily caused to be depressed by the said depressor to cut the work, substantially as described.

21. In a machine for stitching button-holes, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism for operating the latter, of a cutter, a cutter carrier or bar, a depressor operated by the needle-bar-actuating mechanism, a cam or device rotating in unison with the clamp-operating cam or disk, and connections between the said rotating cam or device and depressor, whereby the cutter is thrown into action.

22. In a machine for stitching button-holes, the combination, with a stitch-forming mechanism, a work-clamp, and mechanism for operating the latter, of a cutter-bar sliding vertically in the head of the machine and entirely disconnected from the needle-bar thereof, a cutter of suitable length to cut an entire button-hole at a single stroke, a slotted throat-plate through which the said cutter can descend, a depressor operated by the needle-bar-actuating mechanism to cause a descent of the cutter-bar and cutter as a button-hole is being completed, a cam or device rotating in unison with the feed cam or disk for the clamp, and connections between the said rotating cam or device and depressor, whereby the latter is thrown into action to operate the cutter.

23. The cloth-clamp to hold the material, a cam forming part of the mechanism for moving the cloth-clamp, the needle-bar, its attached eye-pointed needle and stitch-forming mechanism complemental thereto, the cutter-bar, its attached cutter or blade having its cutting-edge offset for a distance equal to the length of the depth stitches back from the edge of the button-hole slit, the cam, and intermediate mechanism between the cutter-bar and the said cam, whereby the cutter or blade is made to descend and cut the material step by step along the first half or side of the button-hole in advance of the stitching, the cutting taking place at the time that the needle is operating to form the depth stitches along the first half or side of the button-hole slit.

24. In a machine for stitching button-holes, the following instrumentalities, viz., a needle-bar having an eye-pointed needle and stitch-forming mechanism complemental thereto, a cloth-clamp to hold the material to be stitched and cut, a cutter-bar and attached cutter or blade having its cutting-edge offset or located at one side of the needle equal to the depth stitching back from the edge of the button-hole, and means to actuate the cutter-bar to cause it to descend and cut the material step by step after the first side of the button-hole has been stitched, the blade descending through the material while the needle is making the depth stitch in the material back from the edge of the slit.

25. The needle-bar having a projection, the cloth-clamp feeding-cam and cutter-bar controlling cam moving in unison with it, combined with the cutter, the cutter-carrying bar having a projection and a rod or link intermediate the said bar and cam, with means to move the bar in opposition to the cam, whereby the position of the cutter or blade of the cutter-carrying bar may be determined by the said cam and the cutter-bar be reciprocated at the proper times.

26. In a button-hole-stitching machine, the combination, with a cloth-clamp, the vertically-reciprocating cutter-bar and the web connected to its lower end, of a blade and independent blade-holder adjustably secured to the said web, whereby the said blade may be adjusted laterally with relation to the said cutter-bar and to the longitudinal center of the opening in the cloth-clamp to enable the edge of the blade to be adjusted centrally with relation to the stitching constituting the sides of a button-hole.

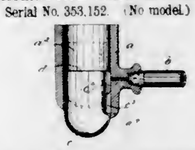
27. A clamp to hold and feed under the needle the material to be overstitched to make a button-hole, a reciprocating needle-bar, an attached eye-pointed needle to penetrate the fabric at the point where the edge of the button-hole is to show and at a slight distance therefrom, as when the depth stitch is being formed, and a slotted throat-plate, combined with a cutter-bar and its attached cutter, the acting edge of which is parallel to the line of overstitching constituting the edge of the button-hole, the said cutter being located at one side the said needle, but at a distance therefrom equal to the width of the depth stitches for the overstitching at each side of the button hole, whereby when the needle is in position to penetrate the fabric in the production of a depth stitch the cutter may be thrown down to sever the material or fabric between the line of edge stitches.

28. The combination, with a button-hole sewing-machine, of a cutter, a cutter-carrier, a cam from which motion is transmitted to the cutter-carrier to depress the cutter, and mechanism whereby the depression of the cutter from the cam will be produced but once and after the stitching of the greater part of a button-hole, substantially as specified.

29. The combination, with a button-hole sewing-machine, of a cutter and cutter-bar, a cam operated by said machine, a cam-follower and connections between the same and said cutter, whereby the cutter is depressed by said cam, and mechanism whereby the cam and follower, which remain normally—that is, during the stitching of the greater part of a button-hole—out of coaction, are thrown into coaction to depress the cutter once, and at the end of such single stroke of the cutter their coaction automatically stopped, substantially as specified.

30. The combination, with a button-hole sewing-machine, of a cutter and cutter-bar, a cam operated by said machine, a cam-follower, which cam and follower are normally out of coaction, connections between the follower and cutter, whereby the cutter is depressed by said cam, a tripping device operated by the work-clamp operating cam or device, whereby the cam and follower are thrown into coaction, and means whereby the coaction of said cam and follower is stopped after a single stroke of the cutter, substantially as specified.

447,792. SMOKING-PIPE. DAMASE M. POULIN, Boston, Mass. Filed May 26, 1890. Serial No. 353,152. (No model.)



Claim.—1. A pipe having a bowl open at top and bottom and a stem, combined with a receptacle longitudinally movable in said bowl, said receptacle having a perforated top for supporting the tobacco in the bowl and a side passage communicating with the stem of the pipe in the various positions of said receptacle, substantially as described.

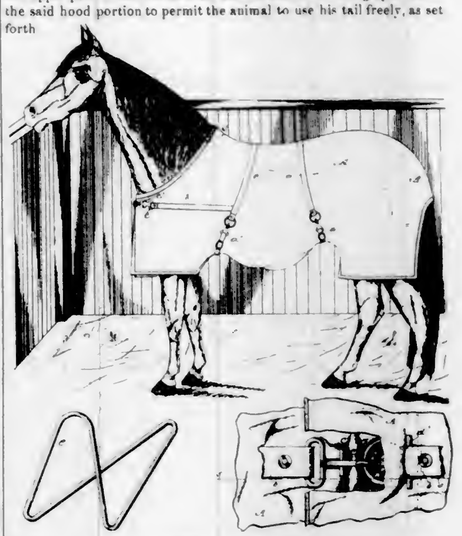
2. The combination of a bowl open at top and bottom and having a longitudinal bore with a receptacle *e*, longitudinally movable therein, said receptacle having a perforated top and a groove or depression in its side, and the bowl having a lateral passage leading from said groove in the said receptacle, substantially as described.

447,793. HORSE-BLANKET. ALBERT F. RANSOM, Burlington, Wis. Filed Nov. 29, 1890. Serial No. 373,007. (No model.)

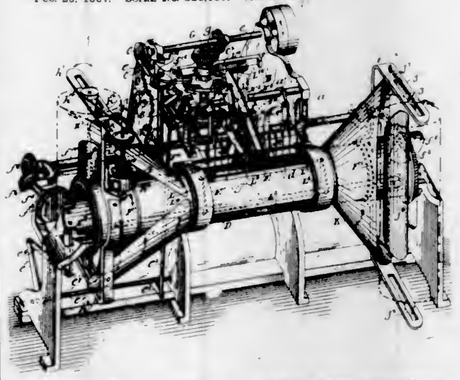
Claim.—1. The combination, with a horse blanket or cover provided with the bands or stays *a* of fabric, of the fabric breast-stays *b*, one having a snap-hook and the other a ring to be engaged by said hook, said ring and hook being each provided with a cross-bar to engage the said blanket or cover, and thus divide the strain between the latter and the said stays.

2. A horse blanket or cover provided at the upper side of its neck portion with a semi-rigid stiffening-frame *c*, stitched inside of the cover fabric and arranged to straddle the withers and hold the blanket or cover in place and prevent it from sawing back and forth, and thus wearing the mane.

3. A horse blanket or cover provided at the upper side of its neck portion with a semi-rigid stiffening-frame *c*, secured inside of the cover fabric and arranged to straddle the withers and hold the front end of the cover in place, the said cover having at its rear end an imperforate or non-open hood portion A', of suitable length to extend down over the upper part of the animal's tail, and the said cover being open below the said hood portion to permit the animal to use his tail freely, as set forth.



447,794. QUILTING-MACHINE. LOUIS SCHULTZ and THEODORE A. WEBER, New York, N. Y.; said Weber assignor to said Schultz. Filed Feb. 26, 1887. Serial No. 228,939. (No model.)



Claim.—1. The combination, in a sewing-machine, of a fabric-carrying frame revolving about a central longitudinal axis, a feed mechanism carried by said frame and operating to draw the fabric longitudinally lengthwise of the frame parallel with said axis, and needles reciprocating toward and from said axis, substantially as described.

2. The combination, in a sewing-machine, of a frame revolving about a central longitudinal axis, an automatic feed mechanism for moving a fabric in the direction of said axis during the operation of the machine, and reciprocating needles in the line of said axis, substantially as specified.

3. The combination, with sewing mechanism, of a curved work-bed, fabric-supports rotating at the ends thereof, the axis of their rotation being coincident with the longitudinal axis of the curved work-bed, and a carrier moving lengthwise of the work-bed for moving the work along and with the fabric-supports causing it to move spirally about the work-bed, substantially as specified.

4. The combination, with sewing mechanism, of a curved work-bed and fabric-supports rotating on their own axes and revolving at the ends of the work-bed, the axis of their revolution being coincident with the longitudinal axis of the curved work-bed, said supports carrying the work longitudinally and around the work-bed, substantially as specified.

5. In a sewing-machine, the combination of a reciprocating needle or needles, a work bed or support of curved form, and roller mechanism revolving around said work bed or support and rotating on their axes for moving the goods to be sewed lengthwise of said work bed or support, substantially as specified.

6. In a sewing-machine, the combination of a reciprocating needle or needles, a work bed or support of curved form, and feed-rollers and delivery-rollers revolving around said work bed or support for moving the goods to be sewed lengthwise of said work bed or support, substantially as specified.

7. In a sewing-machine, the combination of a reciprocating needle or needles, a work bed or support of curved form, a roller or rollers revolving around said work bed or support and serving to feed the goods to be sewed lengthwise thereof, and a delivery-roller and guides also revolving around said work bed or support for guiding the work to be sewed from the delivery-roller to the surface of the work bed or support and from the latter to the take-up or feed roller or rollers, substantially as specified.

8. In a sewing-machine, the combination of a reciprocating needle or needles, a work bed or support of curved form, a curved carrier fitting said work bed or support, a band or strap adjacent to the carrier, and mechanism comprising toggle-links and levers whereby the band or strap will be at times tightened on the goods being sewed and with the carrier moved in the direction of the axis of the work bed or support to feed the goods in that direction and at other times released, so that it and the carrier may be moved back to the original position without dragging back the goods, substantially as specified.

9. In a sewing-machine, the combination of a reciprocating needle or needles, a work bed or support of curved form arranged adjacent thereto, a delivery-roller, a guide between the delivery-roller and the work bed or support, a rotary support for the delivery-roller and guide, a take-up or feed roller, a guide between the work bed or support and such take-up and feed roller, a rotary support for the take-up or feed roller and its guide, and mechanism for rotating the two said rotary supports in unison, substantially as specified.

10. In a sewing-machine, the combination, with a reciprocating needle or needles, of a work bed or support of curved form, a curved carrier fitting said work bed or support, a band or strap adjacent to the carrier, a support for one end of the band or strap, a lever connected to the other end of the band or strap, toggle-links connected to the lever, a cam for deflecting the toggle-links and moving the work in one direction, and a spring for moving the curved carrier in one direction, substantially as specified.

11. In a sewing-machine having a reciprocating needle or needles, a work bed or support of curved form, a curved carrier for moving the goods lengthwise of the work-bed, and a spring for moving the curved carrier in one direction, the combination of the bands or straps L^1 L^2, the levers L^4 L^5, springs L^{12} L^{13}, toggle-links, and a cam for operating the toggle-links and serving to move the goods, substantially as specified.

12. In a sewing-machine, the combination of a reciprocating needle or needles, a curved work bed or support arranged adjacent thereto, mechanism for feeding the goods to be sewed spirally in the direction of the curved surface of the work bed or support and comprising rotary feed and delivery rollers, the carrier L^1 L^2 L^3, springs P P^3, rods I^7 I^{10}, straps or bands L^4 L^5, levers L^7 L^8, toggle-links, and a cam for operating the toggle-links and moving the carrier, substantially as specified.

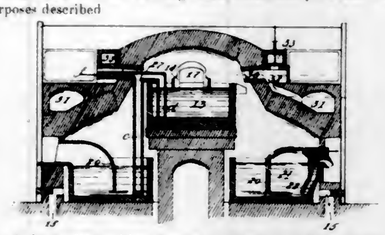
13. In a sewing-machine, the combination of a reciprocating needle or needles, a curved work bed or support arranged adjacent thereto, rotary supports for the goods at the ends of the work bed or support, stationary racks concentric therewith, feed and delivery rollers comprised in said supports and fitted in brackets affixed to the supports, and mechanism, substantially such as described, for imparting rotary motion to the rollers from said stationary racks, substantially as specified.

14. In a sewing-machine having a reciprocating needle or needles, a work bed or support of curved form, and mechanism for feeding the goods lengthwise, the combination of rotary supports, take-up and delivery rollers carried by said supports, a spring-actuated shaft and mechanism between the spring-actuated shaft and the take-up roller for rotating the latter, substantially as specified.

15. In a sewing-machine, the combination, with a reciprocating needle or needles, of a curved work bed or support arranged adjacent thereto, rotary supports at the ends of the latter, feed and delivery rollers carried by said supports, a worm, mechanism between the worm and the rotary supports for transmitting motion to the latter, a two-armed pawl-lever upon the worm-shaft, a two-armed pawl carried by this lever, a toothed wheel with which this pawl may engage, and a tappet or cam for actuating the said pawl, substantially as specified.

447,795. GLASS-MELTING FURNACE. HERMANN SCHULER-BERGE, Rochester, Pa. Filed July 14, 1890. Serial No. 358,714. (No model.)

Claim.—1. In a glass-melting furnace, a melting-vessel for melting the glass batch, a separate working-vessel constructed and arranged to receive the molten glass from the melting-vessel, and a removable and exchangeable siphon adapted to transfer the fluid glass from the melting-vessel into the working-vessel, substantially as and for the purposes described



2. In a glass-melting furnace, a melting-vessel for melting the glass batch, a series of separate glass-working pots, each one directly and independently of the others capable of receiving the molten glass from the melting-pot, and means, substantially as described, for transferring the glass from the melting-vessel to the working vessels or pots, substantially as and for the purposes described.

3. In a glass-melting furnace, the combination of a melting-vessel, a separate working-vessel situate in the path of the waste heat from the melting-vessel, and a siphon for transferring the molten glass from the melting-vessel to the working-pot, substantially as and for the purposes described.

4. In a glass-melting furnace, the combination of a melting-vessel and a siphon for transferring the molten glass from the melting-vessel into a working-vessel, which siphon is provided with an exhaust-tube leading therefrom to the outside of the furnace, substantially as and for the purposes described.

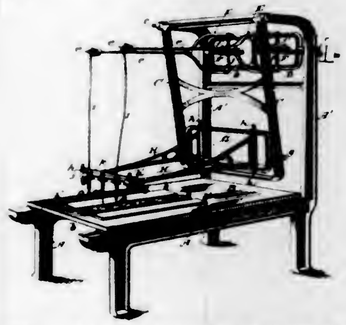
5. In a glass-melting furnace, the combination of a glass-working pot adapted to receive the glass from a glass-melting vessel, provided with a covered front chamber, an adit-pipe for introducing compressed air into the front chamber, and an outlet-pipe leading into the front chamber for the discharge of the glass, substantially as and for the purposes described.

6. In a glass-melting furnace, the combination of a glass-melting vessel for melting the batch, a series of glass-working pots or vessels, each one constructed to receive separately and independently of the other working-pots the glass from the melting-vessel and constructed to be heated from the sides and from above, and a siphon, substantially as described, constructed to transmit the fluid glass from the melting-vessel into the glass-working pot, substantially as and for the purposes described

7. In a glass-melting furnace, the combination of a melting-vessel, a separate working-vessel, and a siphon connecting said vessels, which, with the siphon, are contained within the furnace, substantially as and for the purposes described

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447,796. CARVING-MACHINE. THOMAS L. SMITH and PAUL W. POST, Reedsburg, Wis. Filed Apr. 9, 1888. Serial No. 270,072. (No model.)



Claim.—1. In a carving-machine, the combination of a rigid vibratory frame suspended on suitable bearings, an oscillatory yoke supported in said suspended frame by bearings in a line parallel with the bearings of said frame, vibratory arms hinged in said yoke on axes transverse to its axis of oscillation, and guiding and cutting tools connected with said vibratory arms, substantially as and for the purposes set forth

2. In a carving-machine, the combination of a tool-carriage revoluble upon its axis, a guiding and a cutting tool connected therewith, and guiding mechanism connected with said tool-carriage, substantially as and for the purposes set forth.

3. In a carving-machine, the combination of a tool-carriage capable of oscillation upon its axis, tool-holders having a jointed connection with said carriage, a guiding and a cutting tool adapted to said holders, and guiding mechanism connected with said carriage, substantially as and for the purposes set forth.

4. In a carving-machine, the combination, with a supporting-frame and work-table, of a rod connected at its ends with said frame by jointed guiding mechanism, a sleeve supported and capable of oscillation upon said rod, tool-holders pivotally connected with said sleeve, and a guiding and a cutting tool carried by said tool-holders, substantially as and for the purposes set forth

5. In a carving-machine, the combination, with a suitable supporting-frame, of a tool-carriage composed of a shaft, and a sleeve capable of oscillation thereon, jointed guiding mechanism having jointed connections with the ends of said carriage-shaft and with said frame, screw-threaded boxes pivotally attached to said sleeve, screw-threaded tool-holders adjustable axially in said boxes, and guiding and cutting tools adapted to said tool-holders, substantially as and for the purposes set forth

6. In a carving-machine, the combination, with a suitable supporting-frame, of a frame suspended by suitable bearings thereon, an oscillating yoke supported in said suspended frame on suitable bearings, vibratory arms supported by and having jointed connections with said oscillating yoke, a shaft parallel with the axis of said yoke and hinged to the free ends of said vibratory arms, tool-holders mounted upon said shaft, and a guiding and a cutting tool adapted to said tool-holders, substantially as and for the purposes set forth.

7. In a carving-machine, the combination, with two or more cutting-tools, of a guiding-tool connected therewith so as to control the movements of said cutting-tools, guiding mechanism connecting said tools with a suitable fixed support so as to permit them to be moved in any direction and at the same time to maintain them in the same relative position to each other and to the pattern and work, and driving mechanism arranged to rotate said cutting-tools in opposite directions, whereby the tendency of each cutting-tool to crawl over the work and to move away from a given position is balanced by the other tool tending in the opposite direction, substantially as and for the purposes set forth.

8. In a carving-machine, the combination, with a rigid vibratory frame hinged in a horizontal line at one side to a suitable support, of a jointed parallelogram having a jointed connection with said vibratory frame in a line parallel with the axis on which said frame swings, and a guiding and a cutting tool connected with the free side of said jointed parallelogram, substantially as and for the purposes set forth.

9. In a carving-machine, the combination, with a suitable supporting-frame, of a vibratory frame suspended therefrom by one side, a jointed parallelogram hinged at one side to said vibratory frame in a horizontal line parallel with that on which said frame swings, a tool-carriage connected with the opposite free side of said parallelogram, and a guiding and a cutting tool supported by said carriage, substantially as and for the purposes set forth.

10. In a carving-machine, the combination, with a rigid vibratory frame, of a jointed parallelogram having a jointed connection therewith in a line parallel with that on which said frame swings, an oscillatory tool-carriage mounted upon the free side of said parallelogram, and a guiding and a cutting-tool connected with said carriage, substantially as and for the purposes set forth.

11. In a carving-machine, the combination, with a rigid vibratory frame hinged in a horizontal line to a fixed support, of a jointed parallelogram having a jointed connection therewith in a parallel line, an oscillatory tool-carriage mounted upon the free side of said parallelogram, and connected guiding and cutting tools having jointed connections with said carriage, substantially as and for the purposes set forth.

12. In a carving-machine, the combination, with a rigid swinging frame having a jointed connection with a suitable fixed support, of vibratory arms having a universal-joint connection with said swinging frame, a tool-carriage hinged to the free ends of said vibratory arms, and a guiding and a cutting tool, substantially as and for the purposes set forth

13. In a carving-machine, the combination, with a universally-movable tool-carriage provided with a guiding and two or more cutting tools, of a pulley-yoke capable of oscillation on a horizontal axis and provided with a weighted arm, two or more vertical pulley-shafts journaled in said yoke, and forked arms hinged at their forked ends to said pulley-yoke concentrically with said pulley-shafts and provided at their free ends with sheaves which are connected with said cutting-tools, substantially as and for the purposes set forth.

14. In a carving-machine, the combination of a rigid frame capable of oscillation on a horizontal axis, a tool-carriage provided with a guiding and one or more cutting tools, and vibratory arms having jointed connections at opposite ends with said oscillatory frame and with said carriage, substantially as and for the purposes set forth.

15. In a carving-machine, the combination of a rigid frame capable of oscillation on a horizontal axis, vibratory arms having jointed connections with said frame, a tool-carriage having jointed connections with the opposite ends of said arms, a guiding and a cutting tool carried by said carriage, and driving mechanism connecting the cutting-tool with a suitable source of power, so as to conform to the movement of said carriage, substantially as and for the purposes set forth.

16. In a carving-machine, the combination with a rigid frame capable of oscillation on a fixed horizontal axis, of a tool-carriage connected with said frame by vibratory arms, tool-holders provided with a guiding and a cutting tool and having jointed connections with said carriage, and driving mechanism connecting the cutting-tool with a suitable source of power in such manner as to conform to the movement of said carriage, substantially as and for the purposes set forth.

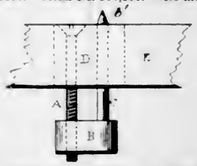
17. In a carving-machine, the combination of a frame capable of oscillation on a horizontal axis, a yoke carried by said frame and capable of oscillation on an axis parallel to that upon which said frame swings, a tool-carriage connected with said yoke by vibratory arms which have jointed connections therewith, and a guiding and a cutting tool carried by said carriage, substantially as and for the purposes set forth.

447,797. WHEEL. ABNER SNODDY, Bellefontaine, Ohio, assignor to Minnie Snoddy, same place. Filed June 1, 1889. Renewed July 31, 1890. Serial No. 360,465. (No model.)



Claim.—The combination of the hub-sections D E, the sleeves F F, fitted in and extending through the bores of said hub-sections and provided at their outer ends with flanges *f*, bearing against the outer ends of said hub-sections, a right-and-left-hand-threaded nut adjusted upon the correspondingly-threaded inner ends of the sleeves and having an angular surface forming a wrench-seat, the rim, and the spokes having their inner ends seated in sockets in the hub-sections, all constructed and arranged substantially as set forth.

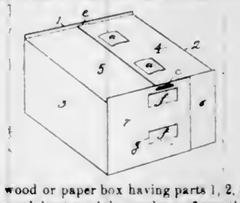
447,798. BENCH-SPUR. WILLIAM J. STRAIN, Jersey City, N. J. Filed Jan. 18, 1890. Serial No. 337,399. (No model.)



Claim.—The bench-spur consisting of the block D, having the vertical perforations *a* and *a'*, the block B, having the passage *b* screw-threaded, the rod C, having the pointed end and secured to block B, and the screw A, passing through the perforation *a* in block D, the screw end thereof engaging the threads in the block B, whereby said block and pointed rod C can be raised or lowered by manipulating the screw, all substantially as described

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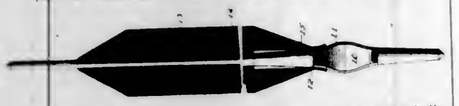
447,799. BERRY-BOX. CLEON TONDEUR, Canastota, N. Y. Filed Dec. 26, 1890. Serial No. 375,826. (No model.)



Claim.—A wood or paper box having parts 1, 2, and 3 made of a continuous piece and bent at right angles to form three sides of the box, interlocking parts 6 and 7, situated at the ends of the parts 2 and 3 and forming the fourth side of the box, and interlocking parts 4 and

5, projecting at right angles from the lateral edges of the parts 2 and 3 and forming the bottom of the box, substantially as and for the purpose described.

447,800. COP-SPINDLE FOR REELS. ISAAC WALKER, Philadelphia, Pa. Filed Apr. 25, 1890. Serial No. 349,446. (No model.)

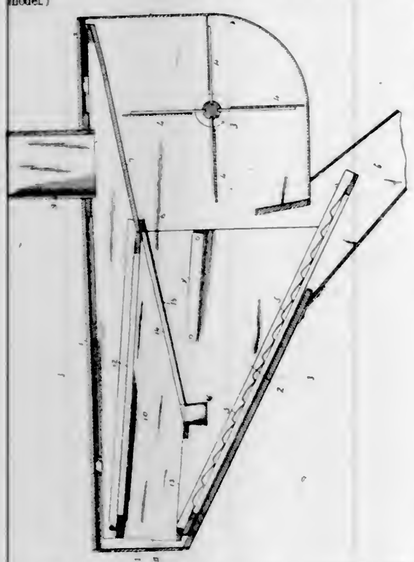


Claim.—1. As an improved article of manufacture, a cop-spindle round in cross-section from the point 12 upward and provided with opposite concavities or flattened portions 10 10 where the body of the spindle joins the shank, the opposite edges of the concaved or flattened portions being bulged outward or convex, substantially as shown and described.

2. As an improved article of manufacture, a cop-spindle round in cross-section and hollow-ground or concaved in its body portion between the points 12 13, substantially as shown and described.

3. As an improved article of manufacture, a round cop-spindle A, concave or hollow-ground between the points 12 13 and formed with opposite concavities or flattened portions 10 10 betwen its shank and the point 12, the opposite edges of the concave or flattened portions being bulged outward or convex, as shown at 11, substantially as set forth.

447,801. CLOVER-SEED RECLEANER. JACOB WELTY and ARTHUR A. LEACH, Hayesville, Ohio; assignors of one-third to Hezekiah Butcher, same place. Filed Sept. 5, 1890. Serial No. 363,988. (No model.)

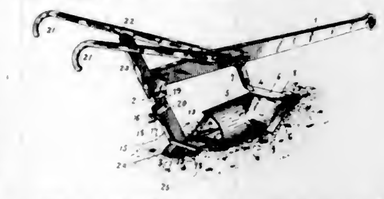


Claim.—1. In a clover-seed recleaner, the combination, with the casing having the inlet 9 and outlet 6, of the vibratory shoe 2, having an inclined riffled-bottom screen, and an auxiliary shoe mounted detachably in the said main shoe and having suitably-arranged screens, substantially as and for the purpose set forth.

2. In a clover-seed recleaner, the combination, with the casing having the fan, of the vibratory shoe 2 mounted in said casing and having the wind-board or deflector 7 and the inclined riffled-bottom screen 5, and an auxiliary shoe mounted detachably in said main shoe, abutting against the wind-board, and having suitably-arranged screens, substantially as and for the purpose set forth.

3. In a clover-seed recleaner, the combination, with the casing having the fan, the inlet 9, and outlet 4, of the vibratory shoe mounted in said casing and having the inclined riffled-bottom screen extending into the outlet-chute and the wind-board 7, and an auxiliary shoe mounted detachably in the said main shoe and having a bottom screen 22 a series of top screens 19, 20, and 21, and a longitudinally-movable plate or deflector 23, arranged between the top and bottom screens and having a handle extending through the rear end of the casing, substantially as set forth.

447,802. PLOW. IRVIN WILLIAMS, Bonham, Tex. Filed Apr. 9, 1890. Serial No. 347,172. (No model.)



Claim.—1. In a hillside-plow, the combination of the standard, the shaft journaled in the foot of the standard, the plow-point pivoted at the front of the standard, the diverging arms arranged at the rear end of the shaft, and the gravity-latch adapted to engage the arms substantially as and for the purpose described.

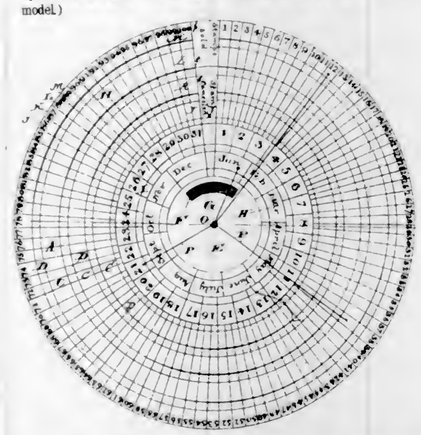
2. In a hillside-plow, the combination of the standard, the depending colter, the shaft journaled in the foot of the standard, and the plow-point pivoted to the front of the standard and consisting of similar blades 6, arranged at an angle to each other and adapted to align with the colter and form a continuous cutting-edge from the point to the plow-beam, substantially as described.

3. In a hillside-plow, the combination of the standard, the shaft journaled in the foot of the standard, the mold-board, the diverging arm rigidly attached to the rear end of the share and adapted to align with the standard, and the gravity-latch pivoted near the upper end of the standard and provided with a notch to engage the diverging arm and having its edges upon each side of the notch beveled, substantially as and for the purpose described.

4. In a hillside-plow, the combination of the standard, the depending colter, the shaft journaled in the foot of the standard, and the plow-point pivoted to the front of the standard and having its cutting-edges adapted to align with the colter and form a continuous cutting-edge from the point to the plow-beam, substantially as described.

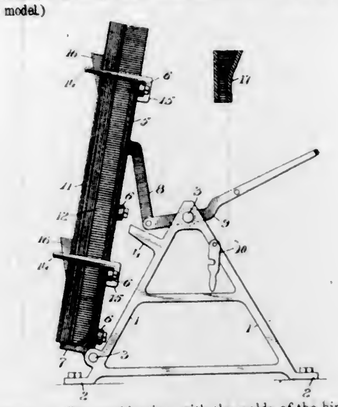
5. In a hillside-plow, the standard 2, having the foot 3 and the shaft 12 journaled in the standard, combined with the mold-board pivoted to the front end of the shoe and mounted on the shaft 12 to turn therewith, the diverging arms 16, mounted on the shaft 12 outside the standard, and the gravity-latch 16, as set forth.

447,803. INDICATOR FOR POST-OFFICES. HIRAM B. WINTER, Tyrconnell Mines, W. Va. Filed Apr. 12, 1890. Serial No. 347,588. (No model.)



Claim.—In an indicator, the combination of a dial having annular concentric indicating-spaces and circular grooves between said spaces, a central post, and hands of unequal lengths pivoted upon said post, having their outer portions bent downward and outward and provided with knobs which slide in said grooves upon the under sides of said outwardly-bent ends, substantially as described.

447,804. RACK FOR MOLDS. FREDERICK J. WOOSTER and ROLLA L. ANDRUS, Waterbury, Conn. Filed Dec. 31, 1890. Serial No. 376,408. (No model.)



Claim.—1. The combination, with the molds, of the hinged rack for the support of said molds, standards to which the lower end of said rack is hinged, and the lifting-levers interposed between the standards and the rack, substantially as described.

2. The combination, with the standards, of the rack adapted to support the molds and hinged to said standards, and toggle-levers secured between the rack and the standards, whereby the former may be swung forward and upward relatively to the latter and there retained, substantially as set forth.

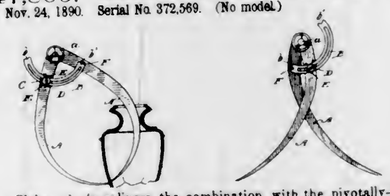
3. The combination, with the standards, of the hinged rack adapted to support the molds, levers interposed between the rack and standards, whereby the former may be swung upward and forward relatively to the latter, and a locking device for holding the rack and molds in their vertical position, substantially as set forth.

4. The combination, with the molds, of the hinged rack provided with a shelf, the standards to which the lower end of said rack is hinged, and the levers interposed between the standards and the rack, the whole arranged substantially as described.

5. The combination, with the molds, of the supporting-rack, the bands engaging the molds and having means of connection with the rack, and wedges adapted to tighten the grasp of the bands, substantially as described.

6. The combination, with the hinged rack, of the molds, the bands adapted to embrace the molds and having hooks for engagement with the rack, and means for tightening the grasp of the bands, substantially as described.

447,805. CALIPERS. RAIMUND YANDA, Pittsburg, Pa. Filed Nov. 24, 1890. Serial No. 372,569. (No model.)

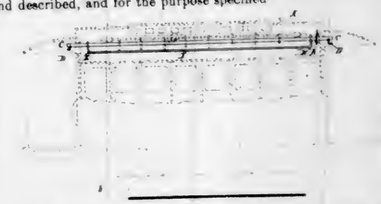


Claim.—1. In calipers, the combination, with the pivotally-connected arms, of a slotted curved guide-piece B, a set-screw adjustably connecting it with one arm and a stop on the other arm, with which said guide is adapted to engage, substantially as and for the purposes described.

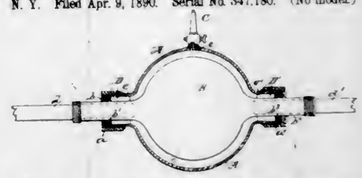
2. In calipers, the combination, with the pivotally-connected arms, of a slotted curved guide-piece B, a set-screw adjustably connecting it with one arm, a stop on the other arm, with which said guide is adapted to engage, and a guide E, substantially as and for the purposes described.

447,806. REGISTERING APPARATUS FOR STREET-CARS. HORACE G. CANFIELD, Akron, Ohio. Filed Apr. 7, 1890. Serial No. 346,838. (No model.)

Claim.—In a car-fare-registering apparatus, the combination of the registering mechanism B, the rock-shaft C, extending through the car, provided at each end outside of the car with crank-arms D and inside the car with crank-arms E, united by the rod F, the bell-crank H, and spring G, all constructed and arranged substantially as shown and described, and for the purpose specified.



447,807. METALLIC CASING. WILLIAM L. CHASE, New York, N. Y. Filed Apr. 9, 1890. Serial No. 347,180. (No model.)



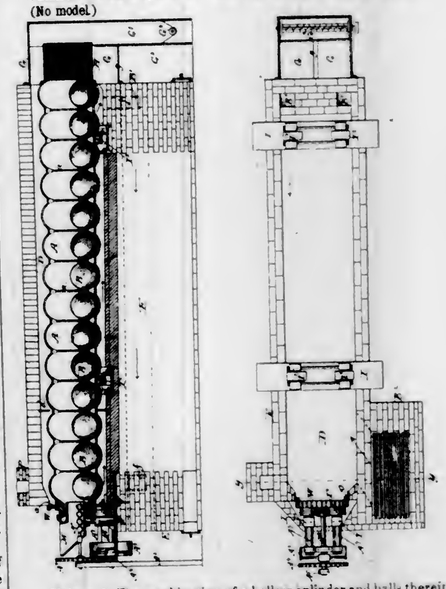
Claim.—1. In a gas-engine, a metallic casing, in combination with the rubber bag for conducting gas to said engine and secured in said casing by bolts and nuts, and means for removing the obnoxious vapors accumulated in said casing, so as to permit of the free expansion of the rubber bag, substantially as and for the purpose hereinbefore set forth.

2. In a gas-engine, the combination, substantially as hereinbefore set forth, of the metallic casing, the rubber bag, the iron pipes *d d* for holding the ends of the rubber bag, and the gas-burner C for the purpose of burning the gas from said casing, so as to permit of the free expansion of the rubber bag.

3. The combination, substantially as hereinbefore set forth, of the metallic casing, the rubber bag, the iron pipe, and the split tapering plug for holding the rubber bag in position and to prevent the gas from escaping from said metallic casing.

4. The combination, substantially as hereinbefore set forth, of the metallic casing, the rubber bag, the tapering plug, and the nuts *a a'* for controlling said tapering plug.

447,808. GRINDING, DRYING, AND INCORPORATING MACHINE. PHILIPP C. CLOSE, Augusta, Ga. Filed Feb. 15, 1890. Serial No. 340,546. (No model.)



Claim.—1. The combination of a hollow cylinder and balls therein, and a hopper at one end, an inclosure around said cylinder, a furnace

alongside of said inclosure, smoke-passage between said inclosure and the cylinder, downward flues B' adjacent to the discharge end of the cylinder, the chimney P, and the arch F between the downward flue and the chimney, substantially as described.

2. The combination of a hollow cylinder and balls therein, an inclosure around said cylinder, a furnace, a smoke-passage between said inclosure and the cylinder, valves *d* in said passage, and pipes D^3, leading into the entrance of the cylinder, substantially as described.

3. The combination of a hollow cylinder and balls therein, a screen H at one end of said cylinder, and a chamber with a conveyer therein beyond said screen, with a furnace, and passages D and D^3, leading into the cylinder, substantially as described.

447,809. **ENVELOPE MOISTENER AND CLOSER.** DANIEL COYLE, Philadelphia, Pa. Filed June 2, 1890. Serial No. 353,961. (No model.)



Claim.—1. In an envelope moistener and closer, a chamber having a perforated top and a yielding wall opposite the same, substantially as described.

2. In an envelope moistener and closer, a chamber having a perforated wall and a hollow handle, the latter being in communication with said chamber, substantially as described.

3. A moistener for envelopes, &c., provided with a pressing or closing device projecting laterally from the side thereof, substantially as described.

4. A fluid-receiving chamber having discharge-openings, and a guard above the same, in combination with a pressing device projecting laterally from the side of said chamber, substantially as described.

5. A fluid-receiving chamber having discharge-openings, an absorbent pad on said openings, and a yielding wall opposite said openings, in combination with a guard above said pad, and a pressing-roller aside of said chamber, substantially as described.

6. The chamber A, with perforated wall C, and pad D thereover, the guard E above said pad, the arm G, secured to the chamber, a pressing device on said arm, and a handle attached to said chamber, the base of the chamber having a yielding part, so as to force the contents of the chamber through the perforated wall and supplying the pad with the same, substantially as described.

7. In a device, substantially as described, the guard E, having a shoulder E', for the purpose set forth.

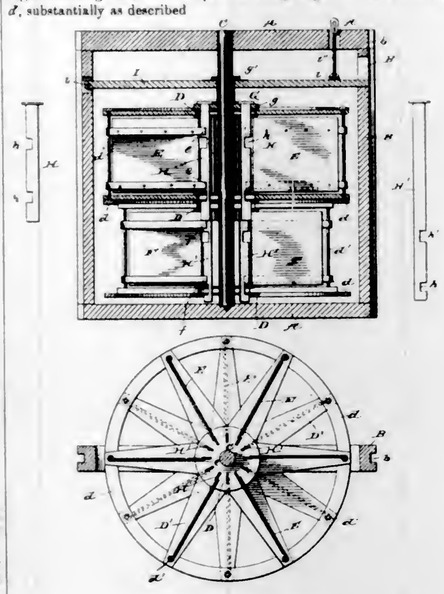
447,810. **WATER-POWER WHEEL.** JOHN DAHLQUIST, Portland, Oreg., and OLOF N. DAHLQUIST, Tucker, Wash. Filed June 17, 1890. Serial No. 355,766. (No model.)

Claim.—1. The combination, with the series of paddles having lugs on their inner ends, of the sleeve having extensions, one of which is slotted, the locking-rods provided with notches, and the cross-beam suitably connected to a lifting-rod, substantially as described.

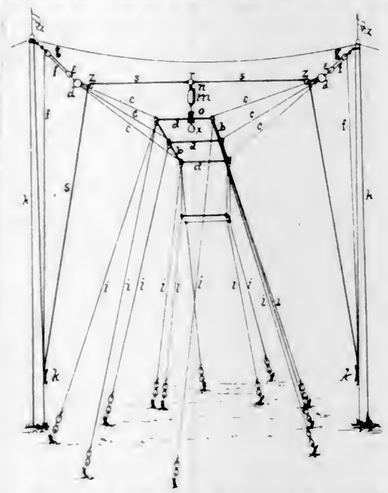
2. In a water-wheel, the sleeve having extensions, one of said extensions being slotted, the alternate long and short locking-rods having notches, the cross-beam connected to the sleeve and a suitable lifting-rod, and an upper and lower series of paddles having lugs or projections, the whole secured and operating in a suitable frame, substantially as described.

3. In a water-wheel, the frame, a cross-beam pivotally secured to said frame and connected to a lifting-rod, the sleeve having extensions, one of which is slotted, the said sleeve working around a shaft and secured to the cross-beam, the long and short locking-rods having notches, and the upper and lower series of paddles provided with lugs or projections which engage the locking-rods, substantially as described.

4. The combination, in a water-wheel, with a frame having grooved side pieces, the shaft C, the cross-beam pivoted to one of the side pieces of said frame, a lifting-rod secured to said beam, the sleeve G, having extensions *g* and *g'*, the extension *g* being slotted, the alternate long and short locking-rods having notches, the slotted plates D, between which the arms D' are secured, a vertical standard *d'* and ring *d*, connecting the arms D', and the paddles having projections engaging the locking-rods, the said paddles being hinged to the standards *d'*, substantially as described



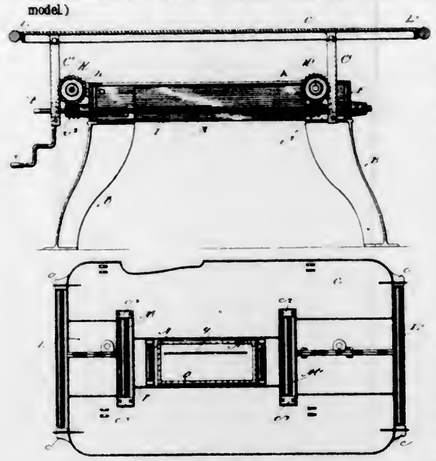
447,811. **GYMNASTIC APPARATUS.** CHRISTIAN H. DIEKELMAN, St. Louis, Mo. Filed Dec. 23, 1890. Serial No. 375,583. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the aerial parallel bars, the side pieces or bars to which they are secured, the adjustable guy-ropes extending downwardly therefrom, the ropes extending upwardly and outwardly from opposite sides thereof, the rings to which these ropes are secured, the block and tackle secured to the rings, and the cleats for making the adjusting ropes of the tackle fast.

2. The combination, substantially as hereinbefore set forth, in the leap-for-life apparatus, of the coiled rope, a fastening device holding the coils together, an adjustable support above the rope, and a yielding or elastic band interposed between the rope and its support.

447,812. **POWER-FEED SAWING-MACHINE.** WILLIAM J. EDWARDS, Chicago, Ill. Filed Apr. 14, 1890. Serial No. 347,892. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a bed-frame whereon the saw is mounted, the elevated saw-table provided with legs or pendent standards, gear-connected shafting supported upon the bed-frame and provided with winding-pulleys arranged at the corners of the machine, and chains or cables attached to said legs or standards of the saw-table and connected with the pulleys, so that they can be wound upon and unwound from the pulleys for the purpose of varying the height of the saw-table.

2. The combination, substantially as hereinbefore set forth, of the saw-table provided with legs or pendent standards, and a raising and lowering mechanism therefor, comprising the transversely-arranged rotary shafts H, carrying winding-pulleys, the longitudinally-arranged rotary shaft I, geared to said transversely-arranged shafts, and chains or cables attached to the legs or pendent standards of the saw-table and connected with the pulleys on the transversely-arranged shafts, for the purpose described.

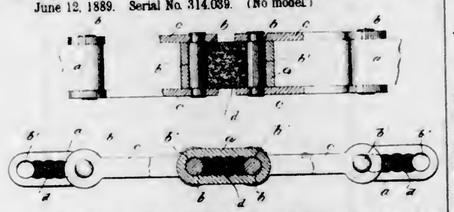
3. The combination, substantially as hereinbefore set forth, of the vertically-movable saw-table provided with grooved legs or pendent standards C, gear-connected shafting provided with winding-pulleys G, which are partially received within the grooves of the legs or pendent standards, and chains or cables attached to the legs or pendent standards within the grooves thereof and connected with the winding-pulleys, for the purpose described.

4. The combination, with the saw-table provided with a centrally-arranged opening, of the removable center piece P, provided with rolls N N', and removably fitted in said opening and arranged to lie in the plane of the table, said rolls being respectively at the front and rear of the saw, which project up through said center-piece, substantially as and for the purpose described.

5. The center piece P, removably applied to the saw-table and provided with a removable slotted block Q, substantially as and for the purpose set forth.

6. The saw-table provided with end rollers L and L' and intermediate rollers M and M' and having a removable center piece P, provided with rollers N and N', substantially as and for the purpose described.

447,813. **DRIVE-CHAIN.** STERLING ELLIOTT, Newton, Mass. Filed June 12, 1889. Serial No. 314,039. (No model.)



Claim.—1. A drive-chain having the oiling-links *a*, each made of a single piece of metal which is pierced transversely to form an opening, in the opposite ends of which the pins *b* are arranged, with the lubricant absorbent *d* between said pins, the opening in said links having open sides for access to the absorbent, combined with connecting-links *c*, secured to the pins at the sides of the oiling-links, substantially as described.

2. A drive-chain having oiling-links *a*, each made of a single piece having a central transverse passage open at each side of the link and formed of a series of cylindrical holes opening into one another in the direction of their length, their intersecting surfaces affording anchorage for a lubricant absorbent arranged in said opening, and having terminal sockets *b'* for the pins, with the intermediate portion supplied with a lubricant absorbent, substantially as described.

3. A drive-chain having oiling-links each made of a single piece of metal recessed through and through transversely and containing porous or absorbent material to receive and hold oil to lubricate the links, substantially as described

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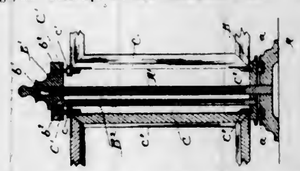
447,814. **METHOD OF MAKING OILING-LINKS FOR DRIVE-CHAINS.** STERLING ELLIOTT, Newton, Mass. Filed June 10, 1890. Renewed Jan. 28, 1891. Serial No. 379,388. (No model.)



Claim.—1. The method herein described of forming oiling-links for drive-chains, which consists in drilling cylindrical end holes transversely through a block, and thereafter removing the material between said end holes, substantially as and for the purpose specified.

2. The method herein described of forming oiling-links for drive-chains, which consists in cutting a block from a rod or bar, drilling end holes transversely through it, and thereafter removing the material between said end holes, substantially as and for the purpose specified.

447,815. **SAMPLE OR PICTURE EXHIBITOR.** HENRY FRERCKS, Chicago, Ill. Filed Apr. 21, 1890. Serial No. 348,833. (No model.)



Claim.—1. In combination with the base and its spindle and the turret revolving thereon and having top and bottom plates facing each other and provided with the vertical card-frame bearings, respectively, in vertical line with each other, the card-frames, the length of the frames plus the length of one pintle being less than the distance between the opposing faces of the top and bottom plates, and the distance between the opposite extremities of said pintles being greater than the distance between the opposing faces of said plates, substantially as set forth.

2. In a sample or picture exhibitor, in combination with the revolving turret, the card-frames adapted to be pivoted vertically in said turret, said frames having their interior edges grooved to receive the cards, and having their upper ends hinged to one side and adapted to be releasably secured to the opposite side, substantially as set forth.

3. In combination with the turret and the card-frames pivoted at one vertical edge to the top and bottom plates of the turret, said card-frames having the upper end hinged to the outer side, and having an eye adapted to shut down over the pintle at the inner side, and suitable means for locking said eye onto said pintle, whereby the pintle serves, in addition to its principal purpose, the further purpose of securing the hinged end, substantially as set forth

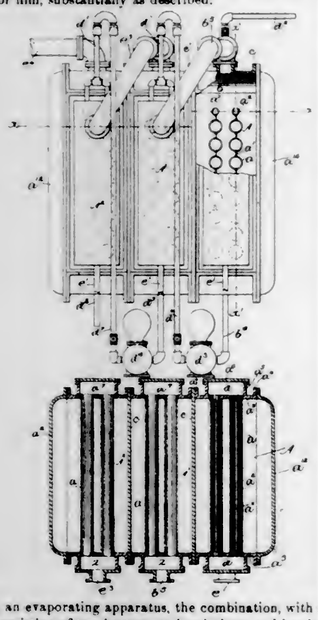
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447,816. **MULTIPLE-EFFECT EVAPORATING APPARATUS.** THOMAS GAUNT, Brooklyn, N. Y. Filed Feb. 14, 1890. Serial No. 340,440. (No model.)

Claim.—1. In an evaporating apparatus, the combination, with an inclosing case, of one or more substantially vertical partitions dividing the said inclosing case into sections arranged side by side, a substantially vertical evaporating-surface composed of horizontally-arranged tubes or pipes, and a liquid-supply in each section, located above said evaporating-surface, to discharge the liquor upon the surface in thin sheet or film, substantially as described.

2. In an evaporating apparatus, the combination, with an inclosing case consisting of top, bottom, and end plates and headers, of one or more substantially vertical partitions dividing the said inclosing case into sections arranged side by side, and a substantially vertical

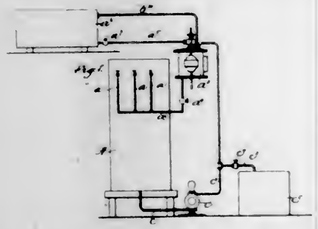
evaporating-surface and liquid-supply in each section, located above said evaporating-surface, to discharge the liquor upon the surface in thin sheet or film, substantially as described.



3. In an evaporating apparatus, the combination, with an inclosing case consisting of top, bottom, and end plates and headers, of one or more substantially vertical partitions dividiog the said inclosing case into sections arranged side by side, an evaporating-surface consisting of tubes or pipes secured to said headers and arranged in a substantially vertical row, and a liquid feed or supply for each evaporating-surface, located above the said surface, to discharge the liquid upon the said surface in thin sheet or film, substantially as described.

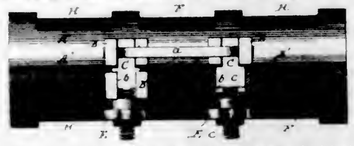
4. In an evaporating apparatus, the combination, with an inclosing case provided with a series of vertically-arranged evaporating-surfaces, and liquid-supplies for said surfaces, located above the same, to discharge the liquid upon the said surface in thin sheet or film, of a substantially vertical partition dividing the said inclosing case into sections arranged side by side, a vapor-outlet pipe for one section connected to the second section outside of the said case to constitute the heat-conducting pipe for said second section, and a pump connected to the liquid-outlet of one section and to the liquid-inlet of another section, substantially as described.

447,817. EVAPORATING APPARATUS. THOMAS GAUNT, Brooklyn, N. Y. Filed July 18, 1890. Serial No. 359,133. (No model.)



Claim.—In an evaporating apparatus, the combination, with an evaporator and a liquid-supply therefor, of an independent auxiliary or mixing chamber connected to the said liquor-supply and to the evaporator and interposed between them, a valve to control the liquor-supply, a float connected to the supply-valve and operated by the level of the liquid in the mixing-chamber, and a pump connected to the said evaporator and to the mixing-chamber, and a branch pipe connected to the discharge-pipe for the pump, substantially as described.

447,818. HOSE-CLAMP. HENRY GERSTUNG, Jr., Elizabeth, N. J. Filed Aug. 7, 1890. Serial No. 361,293. (No model.)



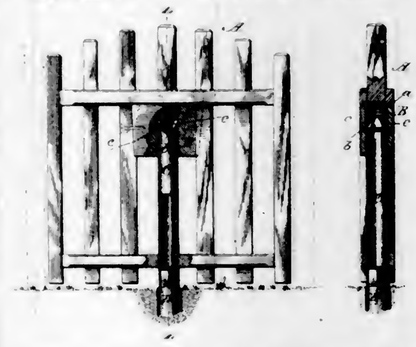
Claim.—1. A hose-clamp having two semi-cylindrical sections hinged to each other, the two screw-threaded rods hinged to one of the sections and connected by a tie rod or bar, and the nuts upon the rods bearing against lugs upon the other of the sections, substantially as herein described.

2. In a hose-clamp, the combination, with the two semi-cylindrical shells hinged together, of a rod hinged to one of the sections and having a screw-threaded end and an enlarged central portion, the lug B', having the slot *b* and the recess *b'*, and the nut which engages with the screw-threaded part of the rod and bears against the lug B', substantially as herein described.

3. A hose-clamp having two semi-cylindrical sections hinged together, the two screw-threaded rods hinged to one of the sections and connected by a tie-rod, the slotted lugs with which the said rods engage, the nuts upon the rods, and the elastic lining for the sections of the clamp having its ends projecting beyond the edges of the sections, substantially as set forth

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447,819. SWINGING GATE. JOHN W. GORHAM, Mount Union, Iowa. Filed July 7, 1890. Serial No. 357,982. (No model.)



Claim.—The combination, with a base, of a removable cylindrical post having a double-V cam formed at its top, a gate centrally pivoted on said post, and a supporting cross-pin secured to the gate and traveling upon said double cam, substantially as shown.

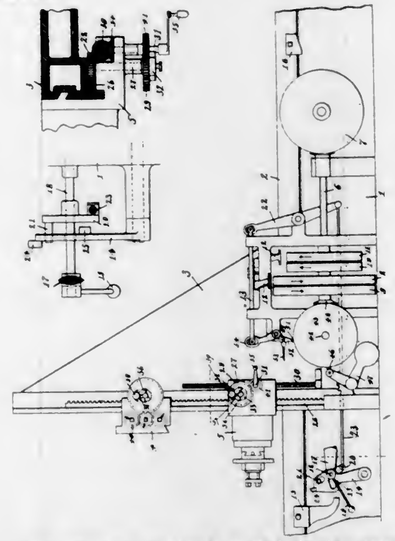
447,820. METAL-PLANING MACHINE. GEORGE A. GRAY and ERNST RICHTER, Cincinnati, Ohio, assignors to the G. A. Gray Company, same place. Filed Sept. 1, 1890. Serial No. 363,737. (No model.)

Claim.—1. In a metal-planing machine, the combination, substantially as set forth, with a tumbler and belt-shifter, of a shaft projecting outwardly beyond the tumbler and provided with a handle, a lever fast on said shaft and connected with the tumbler, so that oscillations of one are imparted to the other, and a connection from the lever to the belt-shifter.

2. In a pawl-and-ratchet device, the combination, substantially as set forth, of a ratchet-wheel, a pawl, a segment frictionally carried by the ratchet-wheel and adapted to prevent engagement of pawl with ratchet-wheel, and a tail-piece on the segment adapted to engage a part of the pawl and cause the segment to change its position on the ratchet-wheel.

3. In a pawl-and-ratchet device, the combination, substantially as set forth, of a ratchet-wheel, a pawl, a segment frictionally carried by the ratchet-wheel and adapted to prevent engagement of pawl with ratchet-wheel, and a tail-piece adjustably mounted on the segment and adapted to engage a part of the pawl and move the segment on the ratchet-wheel.

4. In a pawl-and-ratchet device, the combination, substantially as set forth, of a ratchet-wheel, a double-ended pawl, a segment frictionally carried by the ratchet-wheel and adapted to prevent engagement of pawl with ratchet-wheel, and a tail-piece on the segment, adapted to engage a part of the pawl and move the segment on the ratchet-wheel.



5. The combination, substantially as set forth, of two separate feeding devices, as the feed-gears on the rail and on the side head of a metal-planing machine, a transmitting part, as a reciprocating rack, for actuating both said feeding devices, a pawl and ratchet-wheel as part of one of said feeding devices, a segment frictionally carried by said ratchet-wheel and adapted to prevent engagement of pawl with ratchet-wheel, and a tail-piece on the segment, adapted to engage a part of the pawl and move the segment on the ratchet-wheel.

6. In a metal-planing machine, the combination, substantially as set forth, of a side head arranged to be moved up and down on a housing of the machine, power-driven mechanism for giving such movement, a shaft mounted in the side and rising and falling therewith and connected with said feeding mechanism, and a hand-crank on said shaft, adapted to serve in feeding the side head by hand.

7. In a metal-planing machine, the combination, substantially as set forth, of a feed device on rail or side head, or both, a pulley arranged to be driven in a constant direction regardless of the direction of motion of the table, and mechanism for transmitting intermittently motion from said pulley to said feed device.

8. In a metal-planing machine, the combination, substantially as set forth, of a feed device on rail or side head, or both, a loose pulley to receive one of the driving-belts when the belt is idle, and mechanism for transmitting motion from said loose pulley to said feed device.

9. In a metal-planing machine, the combination, substantially as set forth, of a feed device on rail or side head, or both, a rotary feed-piece, as a crank, for imparting motion to the feed device, a pulley having a constant direction of rotation, a self-gripping friction-clutch serving to transmit motion from pulley to rotary feed-piece, a dog arranged to normally release the friction-clutch and arrest the motion of the rotary feed-piece, reversing mechanism for the table motion, and a connection from such mechanism to the dog to trip the dog.

447,821. KETTLE EAR AND COVER. MATTHEW GRISWOLD and MATTHEW GRISWOLD, Jr., Erie, Pa. Filed Oct. 15, 1890. Serial No. 368,196. (No model.)

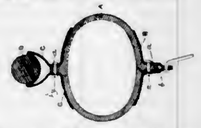


Claim.—1. A kettle provided with perforated ears for receiving the bail, located approximately on opposite sides of the kettle, and composed each of two laterally-projecting portions lying in different horizontal planes and connected by an angular web, around which the bail is looped, substantially as described.

2. A kettle-ear having the upper and lower portions located in different horizontal planes, and a web connecting said portions, in combination with a bail looped around said web, substantially as described.

3. The kettle having the ears which receive the bail formed with the extended side flanges d^3, both facing the same side of the kettle and located at the upper edge thereof, in combination with a cover having angular clips or hooks arranged to pass beneath and engage said ear-flanges, substantially as described.

447,822. WHEEL FOR VELOCIPEDES. JOHN W. HALL, Whitehaven, England. Filed Oct. 4, 1890. Serial No. 367,071. (No model.) Patented in England Dec. 13, 1889. No. 20,108.



Claim.—1. In a wheel for velocipedes and other vehicles, the combination of an annular hollow elastic cushion attached at its inner or smaller circumference to a metal rim adapted to receive the spokes, with another metal rim adapted to carry the tire and attached to the outer or larger circumference of the hollow elastic cushion, substantially as herein described, and illustrated in the accompanying drawings.

2. In a wheel for velocipedes and other vehicles, the combination of a hollow elastic cushion having one or more annular chambers adapted to be filled with air, water, or other fluid under compression and attached at its inner or smaller circumference to a metal rim adapted to receive the spokes, with another metal rim adapted to carry the tire, and which rim is attached to the outer or larger circumference of the hollow elastic cushion, substantially as herein described and shown.

3. In a vehicle-wheel, the combination of the main rim B, of the hollow elastic cushion A, and of the rim C with the tire D, all combined, arranged, and operating as set forth.

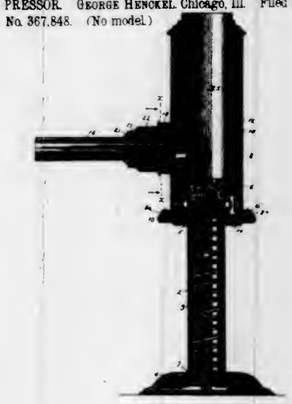
4. In a vehicle-wheel, the combination of the main rim B, of the hollow elastic cushion A, with circumferential flanges *a a*, and of the rim C with the tire D, all constructed, arranged, and operating as and for the purpose set forth.

5. In a vehicle-wheel, the combination of the main rim B, having circumferential flanges *b' b'*, of the rim C, having circumferential flanges *c' c'*, of the hollow elastic cushion A, and of the tire D, all combined, arranged, and operating as and for the purpose set forth.

6. In a vehicle-wheel, the combination of the main rim B, having circumferential flanges *b' b'*, of the rim C, having circumferential flanges *c' c'*, adapted to slide over the flanges *b' b'* of the rim B, of the studs *v v*, engaging with the holes or slots *w w*, of the hollow elastic cushion A, and of the tire D, all constructed, arranged, and operating as and for the purpose set forth.

7. In a vehicle-wheel, the combination of the main rim B, of the rim C, of the tire D, of the hollow elastic cushion A, and of the flexible links *a' a'*, all combined, arranged, and operating as and for the purpose set forth.

447,823. COMBINED LARYNGOSCOPE AND TONGUE-DEPRESSOR. GEORGE HENCKEL, Chicago, Ill. Filed Oct. 11, 1890. Serial No. 367,848. (No model.)

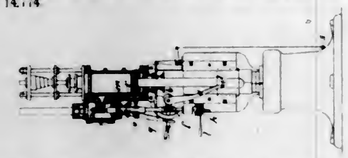


Claim.—1. In a physician's lamp, the combination of an opaque tube surrounding the flame and having an opening in its side opposite the flame, and a solid glass rod detachably secured in said opening and having its axial line directed to said flame, substantially as described.

2. The combination, in a physician's lamp, of a tube surrounding the flame and having an opening in its side opposite the flame, a glass rod detachably secured therein by a short tube or collar secured to one end thereof, said collar being adapted to fit within the top of the tube which surrounds the flame, whereby the glass rod may be secured within the last-named tube when not in use, substantially as described.

3. The combination of a tube containing a candle and devices for maintaining the height thereof constant, a larger tube mounted at the top of the first-named tube and composed of inner and onter sleeves having a layer of non-conducting material interposed between them, the last-named tube also having an opening opposite the candle-flame, in which opening is detachably mounted a glass rod by means of a short tube or collar secured at one end thereof and engaging by means of lugs at its end with a flange upon the outer sleeve, said collar being fitted to the inner sleeve whereby the glass rod may be inserted and secured within said sleeve when not in use, and caps, as 23 24, fitted to said collar and said opening, substantially as described.

447,824. STEAM-HAMMER. JOHANN A. HENCKELS, Solingen, Germany. Filed Sept. 5, 1888. Serial No. 284,968. (No model.) Patented in Germany Nov. 6, 1885, No. 35,606, and in England Dec. 1, 1885, No. 14,774.

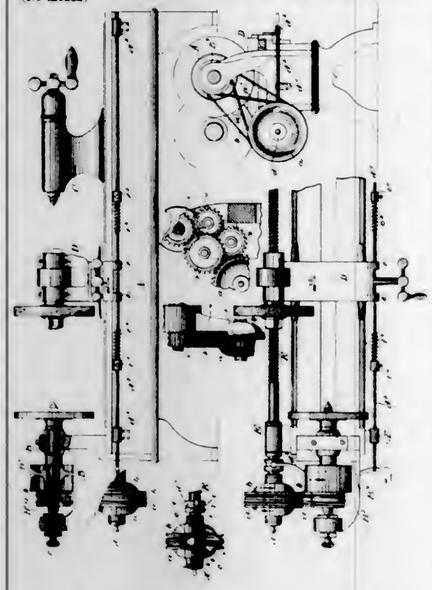


Claim.—1. The combination, with the valve and its rod, of the movable wedge *h*, the rod *i*, the shaft *k*, and the hand-lever *l*, as described.

2. The combination, with the valve and its rod, of the plunger *m*, the lever *n* on the shaft *k*, and the wedge, as described

3. The combination, with the slide-valve *a*, of the shaft *p*, steel pawl *o*, double lever *q*, spiral spring *r*, pedestal *s*, slide-valve rod, and steel plate *t*, the whole as described, and for the said purposes.

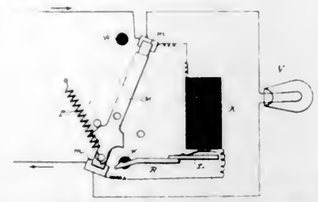
447,825. REVERSING MECHANISM FOR LATHES. FREEMAN HIGGINS, Manchester, N. H. Filed Dec. 24, 1889. Serial No. 334,819. (No model.)



Claim.—1. The tool-carriage, the screw-shaft, and the loose pulleys or wheels thereon having clutch-teeth, means to rotate the said pulleys or wheels in opposite directions, a clutch-hub movable longitudinally on the said screw-shaft and having clutch-teeth, a rod *d*, located within the said screw-shaft and connected to said clutch-hub, combined with a collar, also connected to the said rod, a shipper-lever, and a slide-rod pivotally connected thereto and provided with springs, against which the tool-carriage contacts to move the said collar, and thereby the clutch-hub, in one or the other direction, substantially as described.

2. The tool-carriage having the lugs *e e*, the screw-shaft engaging and reciprocating it, two loose pulleys or wheels and a clutch-hub on the said shaft, a shipper-lever d^3, and means to connect it with the clutch-hub, combined with a rod extended through said lugs and springs and collars adjustable thereon, the springs being adapted to be engaged by the lugs on the said carriage to compress one or the other of the said springs and move the rod, the rod and shipper-lever being pivotally connected, substantially as described.

447,826. ELECTRIC SWITCH AND CUT-OUT. WILLIAM HOCHHAUSEN, Brooklyn, N. Y. Filed Mar. 12, 1889. Serial No. 303,012. (No model.)



Claim.—1. The combination, with a spring-actuated switch, of a catch and a releasing-magnet, all inclosed in a suitable case, a releasing-button having a cam adapted to engage with the edge of the catch, and a resetting arm or lever connected with the switch, as and for the purpose described.

2. The combination, with the base board or support A, of a switch-lever mounted on a vertical spindle on said support and adapted to swing in a plane parallel to the surface of the board, the plates B B, of conducting material, resting on the upper surface of said board and having projecting clamp-blocks sunk beneath the surface of the board and provided with sockets in line with openings extending inward from the edge of the board, and suitable clamp-screws, as and for the purpose described.

3. The combination, with the conducting-plates B B, mounted on the switch board or support A and having clamping-screws for securing the supply-wires, of arms F F, cast in one piece with said plates and extending into proximity to an opening in the cover for the switch, and clamping devices on said arms for connection of the wires leading to the lamp, as and for the purpose described.

4. The combination, with the switch, of a lubricating-button located in position to be rubbed by the contact-surfaces of the switch, as and for the purpose described.

5. The combination, with the switch-lever mounted on a suitable board and having an inclosed cover or case, of an electro-magnet supported by said board and in a branch around the switch, a spring acting on said lever, a catch carried by the armature of the magnet and engaging with the lever, a button projecting from the case and carrying a cam which may engage with and move the catch, and an arm or lever projecting from the case and connected with said switch-lever, whereby the same may be moved or set in position to be engaged by the catch.

6. The combination, with the electro-magnet mounted in the base-plate with its core parallel to the plane of the plate, of the iron angle-piece for the magnet, the cross-piece or bridge formed in one piece with the angle-piece and rising from the base-plate, and a tube or bushing in said bridge forming a passage for the wires leading to a translating device.

7. The combination, with the base-plate, of the contact carrying-plate B B, fastened to the surface thereof, block *b b*, let into the base and having sockets adapted to receive the two circuit-wires, arms F F, rising from the plates and having clamps for attachment of the lamp-wires, a switch-lever having contacts adapted to complete the circuit between the plates B B, an electro-magnet having an armature which carries a catch for said lever, a releasing-button adapted to engage the armature-lever, and a resetting-lever engaging with the switch-lever and mounted on a frame rising from the base, as and for the purpose described.

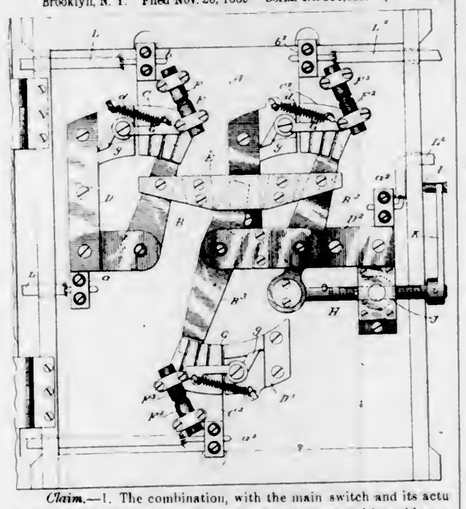
8. The combination, in an electric switch, of a suitable base plate or board A, metal plates B B, secured thereto and having clamp-blocks for attachment of contact-wires, contacts *m m*, connected with said

plates, a lever M, pivoted on the base-plate and carrying a spring O, whose ends slide upon said contacts when the lever turns in a plane parallel to the face of the base, a cross-bar or yoke H, mounted on the base-plate and carrying a rock shaft or spindle provided at its outer end with a resetting arm or handle and at its inner end with an arm connected to the switch-lever M, a catch-lever, also mounted on the base-plate and adapted to turn in a plane parallel with the base thereof, an armature connected to said lever, an electro-magnet mounted on the base-plate, and a releasing-button for actuating said catch to release the switch, as and for the purpose described.

9. The combination, substantially as described, of a suitable base-plate of insulating material, a switch-lever and a catch, both mounted on said plate and adapted to turn in a plane parallel with the face thereof, an electro-magnet carried by said base-plate and having an iron angle piece or connection I, parallel with the base-plate and connected at its free ends with an armature connected to the catch, an arch or cross-piece of iron rising from said angle-piece in a direction at right angles from the base-plate, and a resetting arm or lever secured to a rock shaft or spindle which is mounted in a cross-bar or arch-piece and is connected beneath the same with the switch-lever

10. The combination, substantially as described, of a base-plate, metal blocks or plates B B, carrying clamp-blocks *b* and having contacts *m*, whose contact-faces are parallel with the plane of the base-plate, a switch-lever M, carrying on its under side a spring O, which slides over the contacts *m m*, the catch-lever, also mounted on the base-plate, an electro-magnet whose armature connects with said catch, a resetting arm or lever mounted on the rock shaft or spindle vertical to the plate and connected with the switch-lever, and a releasing button or spindle mounted on a suitable guide and working at right angles to the base-plate, as and for the purpose described.

447,827. ELECTRIC STARTING-SWITCH. WILLIAM HOCHHAUSEN, Brooklyn, N. Y. Filed Nov. 26, 1889. Serial No. 331,659. (No model.)



Claim.—1. The combination, with the main switch and its actuating devices, of a resistance-switch positively operated by said actuating devices in a direction to throw out the resistance and having a lost motion adjusted as described, so that an interval shall elapse after the closure of the main switch before the resistance-switch may be moved by the actuating devices to position where the resistance will be thrown out.

2. The combination, with an electric motor and the main starting and stopping switch for making and breaking connection between the motor and the electric source, of a secondary safety-switch controlling the armature circuit, an actuating-handle for throwing both said switches positively in the operation of starting the motor, and intermediate actuating mechanism between the safety-switch and actuating handle having lost motion, as described, whereby a time interval may elapse between the closure of the main switch and the movement of the safety-switch under the operation of the actuating-handle to position where the safety device shall be thrown out of action.

3. The combination, with an electric motor, of a starting and stopping switch, an actuating-handle therefor, a safety device for preventing injury to the armature from excessive flow of current through it, and a switch for throwing said safety device into and out of circuit and connected with and positively operated by said actuating-handle through devices having a lost motion when the apparatus is operated in a direction to start the motor, as and for the purpose described.

4. The combination, with a starting-switch and a shouldered bar, as E, connected therewith, of a safety-switch engaged by the shoulder on the shouldered bar and adapted to be actuated thereby after the main switch has been actuated, substantially as and for the purpose described.

5. The combination, with a starting-switch and a safety-switch, of a slotted bar connected to the starting-switch, the lever of the safety-switch extending into the slot of the slotted bar and having considerable play therein, substantially as and for the purpose described.

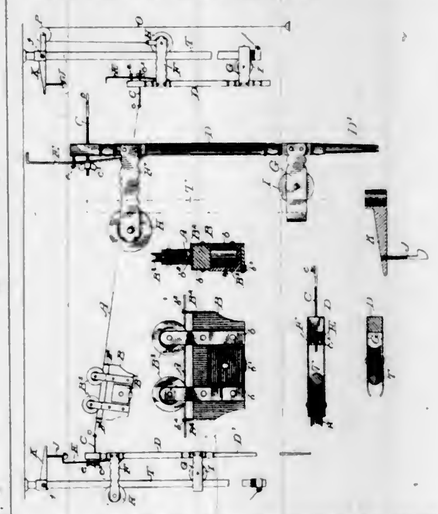
6. The combination, as and for the purpose described, of a circuit closing and breaking switch, a safety-switch, an actuating-handle connected with the main switch through a speed-reducing mechanism, and devices for moving the safety-switch when the actuating mechanism has moved to a predetermined extent.

7. The combination, as and for the purpose described, of a circuit closing and breaking switch, a safety-switch, an actuating-handle connected with the main switch through a speed-retarding mechanism, and devices having lost motion for moving the safety-switch when the actuating mechanism has moved to a predetermined extent.

8. The combination, as and for the purpose described, of a circuit closing and breaking switch, a safety-switch, an actuating-handle, an independent worm or screw shaft connecting the same with the main switch, and devices having lost motion for moving the safety-switch when the actuating mechanism has moved to a predetermined extent

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447,828. CASH-CARRIER APPARATUS. ANTHONY ISKE, Lancaster, Pa., assignor of one-half to D. F. Buchmiller, same place. Filed May 22, 1890. Serial No. 352,687. (No model.)



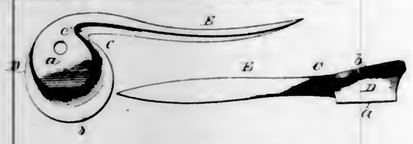
Claim.—1. A cash carrier track, in combination with vertically-movable supports for the ends thereof, fixed catches arranged above said supports, spring-catches attached to said supports and arranged for engaging said fixed catches, guiding devices for said movable supports, and lifting-cords for the same, the ends of said track being attached so as to draw on said spring-catches, substantially as set forth.

2. In combination with a cash-carrier track, a vertically-movable bar D for supporting one end of the same, a fixed catch J, arranged above said bar, a spring-catch E, carried by said bar and arranged to engage said fixed catch, and a bolt C, attached to said spring-catch and extending through said bar, one end of the said track being attached to said bolt, substantially as set forth.

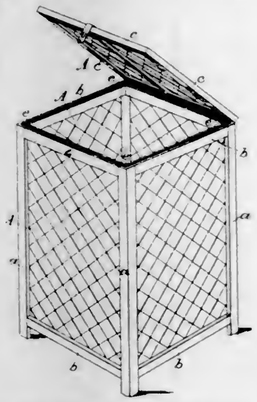
447,829. FASTENER FOR FURNITURE. WILLIAM G. JARVIS, Piqua, Ohio. Filed May 10, 1890. Serial No. 351,303. (No model.)

Claim.—As new article of manufacture, a fastening device consisting of a head and a handle, the head being eccentrically pivoted and having a flat seat on one side and a lip of greater diameter than

the seat on the other side, said lip and seat being in planes at convergence or divergence to each other, substantially as set forth.



447,830. **BASKET HAMPER.** DAVID J. JOHNSON, San Francisco, Cal. Filed Aug. 7, 1890. Serial No. 361,325. (No model.)



Claim.—1. A basket hamper having the splint-work inclosed in a frame of wood or other material, the frame-pieces covering the edges of the splint-work on both sides, and having inserted in the corners at the top and bottom, between the frame-pieces, right-angle plates of iron or other metal to hold and bind the corners firmly and solidly together, and provided with a removable splint bottom framed together with a cover of same material, substantially as herein described and set forth.

2. In a basket hamper, the combination of the splint-work with a frame of wood or other material having the upright corner-posts of the frame extending a little below the bottom of the hamper as supports, and also having right-angle pieces of iron or other material inserted in the corners at the top and bottom between the frame-pieces that cover the edges of the splint-work, binding the corners firmly and solidly together, substantially as herein described and set forth.

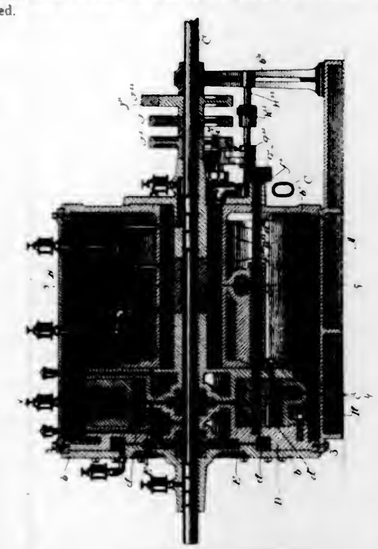
3. A basket hamper comprising the splint-work and the frame-pieces of wood or other material, with upright corner-posts of the frame extending a little below the bottom of the hamper, together with triangular upright pieces *e e e*, capping and protecting the edges of the splint-work that meet on the inside of the upright corner-posts, and having inserted in the corners of the frame-work at the top and bottom right-angle pieces of iron or other material to bind the corners firmly and solidly together, substantially as and for the purpose described.

447,831. **ROTARY ENGINE.** MATHEW JOHNSON, Chicago, Ill. Filed May 20, 1890. Serial No. 352,506. (No model.)

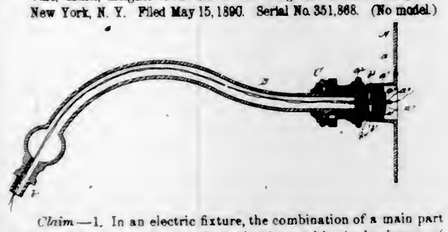
Claim.—1. In a rotary engine, the combination, with a steam-chamber and a rotating piston therein, of a second steam-chamber of less diameter than the first steam-chamber, a rotating piston therein, and a connection between the exhaust-port of the first steam-chamber and the admission-port of the second steam-chamber, substantially as specified.

2. In a rotary engine, the combination, with a steam-chamber and a rotating piston therein, of a second steam-chamber of greater area and less diameter than the first steam-chamber, a rotating piston therein, and a connection between the exhaust-port of the first steam-chamber and the admission-port of the second steam-chamber, substantially as specified.

3. In a rotary engine, the combination, with a series of steam-chambers, a series of pistons and uninterrupted connections between the several steam-chambers, of a series of valves which divide the steam-chambers, a series of cams mounted upon the main shaft, and connections between the cams and valve-shafts, substantially as specified.



447,832. **ELECTRIC-LIGHT FIXTURE.** JOSEPH KINTZ, Ballard Vale, Mass., assignor of one-half to the Craighead & Kintz Company New York, N. Y. Filed May 15, 1890. Serial No. 351,868. (No model.)



Claim.—1. In an electric fixture, the combination of a main part or section provided with a nipple, a plug inserted in the back part of the nipple, electrodes fitted in said plug and protruding from the forward end of the plug, a secondary part or section made in the form of a tube, a plug fitting in the inner end of said secondary part and having a flange-like portion lapping over said end of the secondary part and a notch in said flange, a rib or tongue on the secondary part entering the notch of the flange, electrodes in the last said plug, and a coupling-piece connected with the one part and engaging with the other, substantially as specified.

2. In an electric fixture, the combination of a main part or section composed of a plate-like portion having a hollow forward or outward projection and a nipple inserted in said projection and constructed so as to be open at both ends, a plug inserted at the back end of said nipple, electrodes arranged in said plug, a secondary part or section made in the form of a tube of a size to enter the outer end of the nipple, a plug in said secondary section, electrodes in said plug, and a coupling-piece connected with the one part and engaging with the other, substantially as specified.

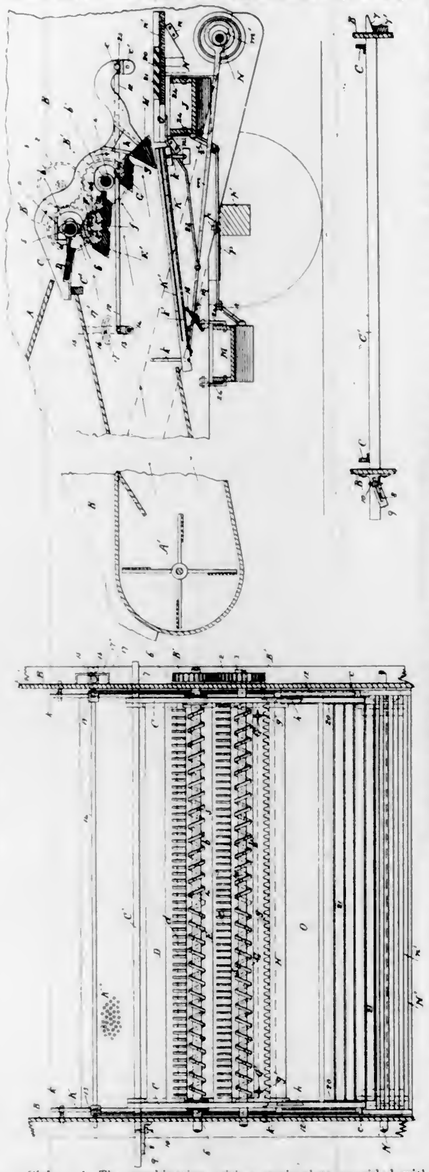
447,833. **COUPLING FOR ELECTRIC WIRES.** CLIMPSON M. KNIGHT and THOMAS HAWKEN, Salem, Mass. Filed Nov. 20, 1890. Serial No. 372,020. (No model.)



Claim.—1. A coupling for electric wires, composed of two like halves or portions A B, each half of portion having two grooves or passages *a a'* arranged in alignment with deep recesses a^3 a^3 at their adjacent ends to receive the wires and bulbous formations thereon, which wires are embraced when the halves or portions are placed together, and fastenings for said halves or portions, substantially as described.

2. A coupling for electric wires, composed of two halves or portions adapted to embrace the ends of the wires, said halves or portions having reduced portions near the ends, and a wire wound around the said halves or portions at said reduced portioos, substantially as described.

447,834. **GRAIN-CLEANING DEVICE.** FRANK F. LANDIS, Waynesborough, Pa. Filed Nov. 8, 1890. Serial No. 370,799. (No model.)



Claim.—1. The combination, with a grain-plate provided with flutes, of a roll provided with spiral grooves and journaled behind the said flutes at the rear of the said plate, substantially as and for the purpose set forth.

2. The combination, with a grain-plate provided with flutes, of a roll journaled at the rear of the said plate and provided with spiral grooves and notches arranged out of line with each other on its periphery between the grooves, substantially as and for the purpose set forth.

3. The combination, with a grain-plate provided with flutes, of a roll journaled at the rear of the said plate behind the said flutes and provided with right and left handed spiral grooves extending from the center to the opposite ends of the roll, substantially as and for the purpose set forth.

4. The combination, with a grain-plate and a revoluble grooved roll at the rear of the said plate, of an adjustable retaining-plate pivoted to the front of the said grain-plate, substantially as and for the purpose set forth.

5. The combination, with a grain-plate, of a toothed comb adjustably secured to the said plate, and a removable dividing-bar supported below the points of the teeth of the said comb, substantially as and for the purpose set forth.

6. The combination, with the side plates, of a grain-plate secured to the side plates, the toothed comb secured to the said grain-plate, and the removable dividing-bar provided with wedge-shaped end brackets adapted to be dropped into pockets in the side plates, whereby the said bar may be supported below the teeth of the comb, substantially as set forth.

7. The combination, with the upper and lower grooved cleaning rolls, of the side plates, a support for the front ends of the side plates to slide on, brackets for supporting the rear ends of the side plates, the grain-plates secured to the said side plates in front of the cleaning-rolls, the rods pivotally connected to the rear ends of the side plates, and the cross-shaft provided with a handle and with levers pivoted to the said rods, whereby the distance between the grain-plates and the rolls may be adjusted, substantially as set forth.

8. The combination, with the reciprocating gather-board provided with an opening across its lower end, of the perforated screen secured above the gather-board and vibrating with it, the brackets secured to the gather-board, and the tilting guide-slat pivoted in the said brackets below the said opening, with one or the other of its edges bearing against the under side of the gather-board and adapted to discharge the small seeds into the grain-spout or to one side of it, substantially as set forth.

9. The combination, with the tailings-spout, of the shaking-shoe situated at the rear of the tailings-spout and provided with a serrated bottom, and a frame provided with a series of inclined slats and adapted to be slid on the said shoe over the said tailings-spout, whereby coarse rubbish may be removed from the tailings, substantially as set forth.

10. The combination, with the longitudinally-reciprocating gather-board, of the grain-spout and the tailings-spout, both pivotally supported crosswise of the machine, the revoluble eccentrics and the eccentric-rods connected to the said gather-board, the shaking-shoe behind the said tailings-spout, the rods secured to the eccentric-rods and to the said shoe, the double bell-crank lever pivoted between the two said spouts, the rods connecting the respective spouts with the opposite arms of the bell-crank lever, and the rod connecting the middle arm of the bell-crank lever with one of the said eccentric-rods, whereby all the said reciprocating parts may be operated by the said eccentrics, substantially as set forth.

11. The combination, with the brackets secured to the casing, of the longitudinally-adjustable side plates for carrying the grain-plates, said side plates having their rear ends pivotally supported on the said brackets, a transverse bar forming a support upon which the front ends of the said side plates may slide, the revoluble cams on one of the grain-rolls, and the inclined guides supporting the said transverse bar and permitting it to be moved transversely to lower the said side plates onto the cams, substantially as set forth.

447,835. **VELOCIPEDE.** GEORGE D. LEECHMAN, London, England. Filed Sept. 8, 1890. Serial No. 364,233. (No model.) Patented in England Dec. 5, 1887, No. 16,723.



Claim.—1. In a frame for a single rear-driving velocipede supporting the forward ends of the members forming the equivalent of the lower back fork by a fork or arch formed on the seat-pillar tube, extending these members forward to carry the bearings for the pedal-crank axle, and connecting their forward ends to the neck spindle or socket by two ties, as and for the purpose set forth.

2. In a frame for a single rear-driving velocipede, the combination, with the double-back fork or its equivalent, of the seat-pillar tube forked or arched at its lower end to support the members of the lower back fork and adapted to receive the top back fork at any convenient position above the arch or fork, and of the two ties connecting the forward ends of the members of the lower back fork with the lower extremity of the neck spindle or socket, all combined, arranged, and operating as and for the purpose set forth.

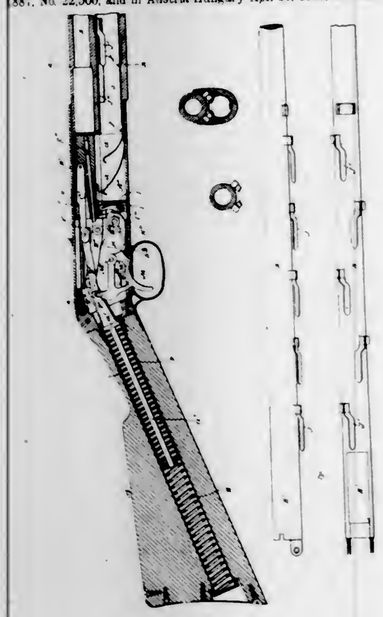
3. In a frame for a single rear-driving velocipede, making those three members of the frame which converge at or about the pedal-crank axle double or forked through the whole or a portion of their lengths, enabling the driving-chain wheel to be mounted on the pedal-crank axle between the said members of the frame, as and for the purpose set forth.

4. In a frame for a single rear-driving velocipede, the combination of the top back fork A, of the seat-pillar tube B, having a fork B' fixed to or formed on or at its lower end and adapted to support the forward ends of the members of the lower back fork C, of the two ties D D, connecting the forward ends of the members of the said back fork with the lower end of the neck spindle or socket Y, and of the tube E, connecting the top of the neck spindle or socket with the seat-pillar B, all combined, arranged, and operating as set forth.

5. In a frame for a single rear-driving velocipede, the combination of the top back fork A, of the seat-pillar tube B, having a fork B' at its lower end adapted to support the members of the lower back fork C, of the extensions of the members of the said lower back fork running up to the lower end of the neck spindle or socket Y, and of the tube E, running from the neck spindle or socket to the top, or approximately so, of the seat pillar B, all combined, arranged, and operating as set forth.

6. In a frame for a single rear-driving velocipede, the combination of the top back fork A, of the seat-pillar tube forked throughout the whole of its length and adapted at its lower ends to support the members of the lower back fork C, of the tie-tubes D D, running between the forward extremities of the members of the said lower back fork and the neck spindle or socket Y of the steering-head, and of the tube E, running between the neck spindle or socket Y of the steering-head and the junction of the top back fork A and the fork B', all combined, arranged, and operating as set forth.

447,836. AUTOMATIC GUN. HIRAM S. MAXIM, London, England. Original application filed Dec. 28, 1886, Serial No. 222,849. Divided and this application filed Oct. 18, 1889. Serial No. 327,458. (No model.) Patented in France June 19, 1885, No. 169,647, and Feb. 12, 1887, No. 181,516; in England June 1, 1886, No. 7,354; in Germany Jan. 20, 1887, No. 41,870; in Belgium Sept. 26, 1887, No. 79,005; in Italy Nov. 26, 1887, No. 22,500, and in Austria-Hungary Apr. 21, 1888, No. 34,166.



Claim.—1. The combination of the outer frame, the stock or handle to which it is secured, a barrel and inner frame fixed or formed on the barrel and arranged to slide in the outer frame, a breech-block adapted to slide in the inner frame, and springs placed in the stock for returning the breech-block and barrel after recoil, as herein set forth.

2. The combination of the outer frame, the stock or handle to which it is secured, a sliding barrel, breech-block, and breech mechanism connected therewith, adapted to be operated by the recoil of the barrel to reload the same after a discharge, a hammer adapted to be cocked by the movement or operation of the breech mechanism, and a trigger engaging therewith to prevent the automatic discharge of the gun, as set forth.

3. In a fire-arm provided with a sliding barrel arranged to recoil at each discharge, a tubular magazine parallel to said barrel, and pawls or projections from the barrel entering the magazine and adapted to engage with and move the cartridges backward to the breech at each discharge, as set forth.

4. The combination of a sliding barrel arranged to recoil at each discharge, a frame formed on or attached to said barrel, a tilting breech-block adapted to engage with the frame, whereby it is locked to the barrel, and means for releasing it from the frame, as set forth.

5. The combination of the outer frame A, the sliding barrel B, the inner frame B', secured thereto and provided with an engaging-shoulder c', the movable breech-block C, having a shoulder c, adapted to engage with the shoulder c' when the breech-block is in its forward position, and the arm F", secured to the outer frame in position to move the breech-block out of engagement with the frame B' on their recoil, as set forth.

6. In a fire-arm, the combination of a sliding barrel, a breech-block normally locked to the barrel, but capable when released of independent movement, a trigger which when pulled to fire the gun is brought into a position to engage with the breech-block at the termination of its recoil, and a catch adapted to engage with the trigger when brought to such position and hold the same until the engagement therewith of the breech-block.

7. In a fire-arm, the combination, with the outer frame and stock of a barrel and attached frame capable of sliding in said outer frame and a breech-block arranged to slide in the inner frame, springs connected to the barrel and breech-block and the outer frame, respectively, and supplemental springs between the rear end of the inner frame and the stock or stationary part of the gun, as set forth.

8. In a fire-arm, the combination, with a reciprocating breech-block and breech mechanism for operating the same, of a trigger adapted to engage with and lock the breech-block in its rearmost position, the said trigger being provided with forward and rear finger-pieces for moving it positively in either direction, as set forth.

9. The combination, with the outer frame A, the stock A', the sliding barrel B, the inner frame B', attached thereto, and the breech-block C, movable in frame B', of the spring E, arranged within the gun-stock, the hollow plunger b and links B", connecting the spring with the inner frame, the spring D, arranged within said plunger, and rod a' and links D', connecting it with the breech-block, as set forth.

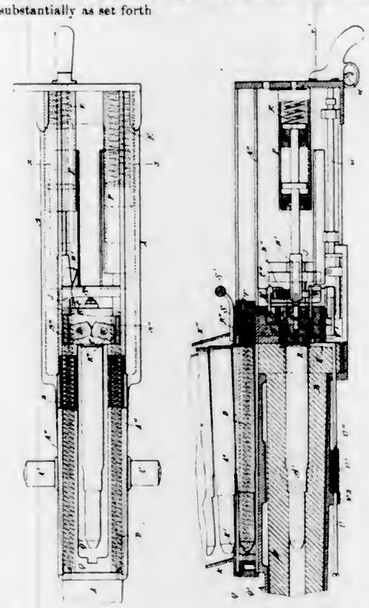
10. The combination, with the sliding barrel, of the tubular magazine J, the pawls J', extending from the barrel into the magazine and retaining-pawls placed within the magazine, as set forth.

447,837. AUTOMATIC MACHINE-GUN. HIRAM S. MAXIM, London, England. Original application filed Dec. 28, 1886, Serial No. 222,849. Divided and this application filed Oct. 18, 1889. Serial No. 327,459. (No model.) Patented in France June 19, 1885, No. 169,647, and Feb. 12, 1887, No. 181,516; in England June 1, 1886, No. 7,354; in Germany Jan. 20, 1887, No. 41,870; in Belgium Sept. 26, 1887, No. 79,005; in Italy Nov. 26, 1887, No. 22,500, and in Austria-Hungary Apr. 21, 1888, No. 34,166.

Claim.—1. The combination of the outer frame, the sliding barrel provided with a forked extension, one or more springs connected with the barrel for effecting its return movement after a recoil, the longitudinally-movable breech-block, one or more springs acting thereon to effect its return or forward movement after recoil, a locking device normally securing the breech-block to the barrel, a detent or device for releasing the same at the termination of the recoil of the barrel, whereby the breech-block is free to continue its backward movement, and means for relocking the barrel and breech-block together when in their forward position, as set forth.

2. The combination of an outer frame, a sliding barrel provided at its breech end with an extension and arranged to recoil in said outer frame at each discharge, a breech-block fitted to slide to and fro in said frame in rear of the barrel, bolts or shafts in said block formed with parts adapted when the bolts or shafts are turned to engage with grooves or notches in said extension of the barrel, and means for turning said bolts or shafts to lock or unlock the breech-block from the barrel.

3. The combination, with the breech-block and the locking bolts or shafts R R' therein, of the pinions R", connecting said bolts or shafts, the arms F G, extending from one of the bolts, and inclined surfaces or projections on the gun-frame in the path of the arms F G for operating said bolts or shafts in the to-and-fro movement of said breech-block, substantially as set forth.



4. The combination, with the breech-block, the locking bolts or shafts R R' therein, and the pinions R", connecting the same, of the slide S, connected to said block and formed with a part S' to serve as a handle, and racks S" on the slide S, gearing with the pinions R", as set forth.

5. The combination, with a sliding breech-block, of a hammer mounted on a vertical pivot or shaft thereon, a cam J' with a bent H on the hammer-shaft, a sear I, engaging therewith, a spring actuating the sear, a locking-bolt in the breech-block adapted to be rotated by the to-and-fro movement of the same, and an arm G" on said bolt adapted to engage with the sear, as herein set forth.

6. The combination, with a reciprocating breech-block, of a hammer H', its vertical shaft J, the disk or cam J', formed with the bent H and secured to the hammer-shaft, the sears I I', engaging with the disk J', the divided spring J", bearing on the sears, an arm G", extending from a rotating bolt or shaft R' in the breech-block, the sliding bar M', engaging with the sear, and a trigger M for moving the same, as set forth.

7. The combination, with a barrel and cartridge hopper or feeder, of a breech-block fitted to slide to and fro in the frame of the gun in rear of the barrel, and a frame Q, formed with the aperture Q', connected with the breech-block and extending over the barrel and beneath the hopper when the breech is closed, as set forth.

8. The combination, with a stationary frame A and sliding barrel B, of the hydraulic buffers I' between the barrel and the frame, for counteracting the recoil of said barrel, and the spring E intermediate to the barrel and frame, for effecting the forward or return movement of the barrel, as set forth.

9. The combination, with the barrel and the breech-block adapted to slide to and fro in rear of the same, of the bent bar U, sliding in guides or bearings attached to said barrel, and the spring U' intermediate to the bar and a lug on the gun-frame and adapted to force the bar U back on the separation of the barrel and breech-block, as set forth.

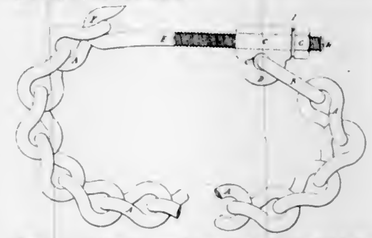
10. The combination, with a gun-frame, a barrel, and a breech-block adapted to slide to and fro on the frame in line with the barrel, of a hook on the breech-block for engaging with the frame and holding said block at the rear end of its stroke or movement and a releasing device adapted to be struck by the cartridges when falling into line with the barrel, and thereby caused to release said block and permit its forward movement, as set forth.

11. The combination, with the outer frame A, the barrel, and the breech-block C, adapted to slide to and fro in said frame in line with the barrel, of the spring-catch C' on the breech-block for engaging with said frame when the breech-block has reached its limit of backward movement, a pivoted spring-actuated lever in position to be struck by the cartridges falling into line with the opening in the breech, and a plate or slide between said lever and the catch C' for disengaging said catch when the lever is struck by a cartridge, as set forth.

12. The combination, with a gun mounted on trunnions, of a shoulder-piece or crutch, a curved serrated arm or toothed segment secured to the stationary mounting, and a spring-actuated detent device carried by the crutch and adapted to engage with said segment and hold the gun in any position to which it may be turned on its trunnions.

13. The combination, with a gun mounted on trunnions, of a tube attached to the gun-frame, a hollow block formed or fixed on said tube, a shoulder-piece fitted to slide on said block toward and away from the gun, a pair of clamping-jaws, one of which is fixed in said tube and the other of which is movable therein, a curved arm attached to the gun-mounting and extending between said jaws, one or more springs for operating said movable jaw to clamp said arm, and means whereby said movable jaw may be withdrawn and said arm released by pressure against said shoulder-piece, substantially as and for the purposes set forth.

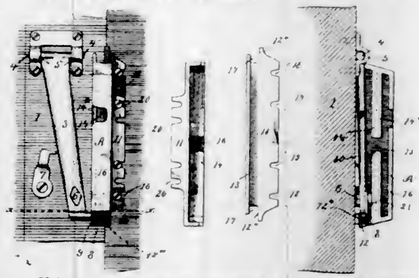
447,838. APPARATUS FOR SECURING TOGETHER SCAFFOLD-POLES. JAMES C. MONTGOMERIE, Bitterne, near Southampton, England. Filed Jan. 13, 1891. Serial No. 377,633. (No model.) Patented in England July 11, 1890, No. 10,813.



Claim.—1. In a chain fastening for scaffold-poles and the like, the combination, with the chain A, which holds the poles together, of a screw-hook E F, chain-carrying sleeve, such as C D, and nut G, substantially as described, and illustrated in the accompanying drawings.

2. In a chain fastening for scaffold-poles and the like, the combination, with a screw-hook and nut, such as E, F, and G, of a chain-carrying sleeve, such as C D, substantially as described, and illustrated in the accompanying drawings.

447,839. DOOR-CHECK. GEORGE W. MOULTON, Bridgeport, Conn., assignor of one-half to Wilbur E. Nichols, same place. Filed Nov. 24, 1890. Serial No. 372,463. (No model.)



Claim.—1. A self-locking door-holder consisting of a depending lever having a beveled head and a neck, adapted for attachment to a jamb, and a catch having at its lower end an opening to receive the neck and head, an engaging-surface acting to force the lever outward slightly, so that the head will pass through the opening, and a flange which is engaged by the head when the door is swung toward the open position.

2. A self-locking door-holder consisting of a depending lever having a beveled head and a neck, and a catch having at its lower end an opening to receive the neck and head, an engaging-surface acting to force the lever outward slightly, so that the head will pass through the opening, a flange which is engaged by the head when the door is swung toward the open position, a rib 14, having a flange 14', and an

2. In a frame for a single rear-driving velocipede, the combination, with the double-back fork or its equivalent, of the seat-pillar tube forked or arched at its lower end to support the members of the lower back fork and adapted to receive the top back fork at any convenient position above the arch or fork, and of the two ties connecting the forward ends of the members of the lower back fork with the lower extremity of the neck spindle or socket, all combined, arranged, and operating as and for the purpose set forth.

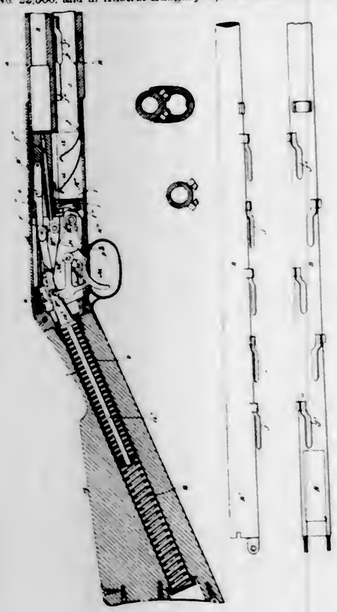
3. In a frame for a single rear-driving velocipede, making those three members of the frame which converge at or about the pedal-crank axle double or forked through the whole or a portion of their lengths, enabling the driving-chain wheel to be mounted on the pedal-crank axle between the said members of the frame, as and for the purpose set forth.

4. In a frame for a single rear-driving velocipede, the combination of the top back fork A, of the seat-pillar tube B, having a fork B' fixed to or formed on or at its lower end and adapted to support the forward ends of the members of the lower back fork C, of the two ties D D, connecting the forward ends of the members of the said back fork with the lower end of the neck spindle or socket Y, and of the tube E, connecting the top of the neck spindle or socket with the seat-pillar B, all combined, arranged, and operating as set forth.

5. In a frame for a single rear-driving velocipede, the combination of the top back fork A, of the seat-pillar tube B, having a fork B' at its lower end adapted to support the members of the lower back fork C, of the extensions of the members of the said lower back fork running up to the lower end of the neck spindle or socket Y, and of the tube E, running from the neck spindle or socket to the top, or approximately so, of the seat-pillar B, all combined, arranged, and operating as set forth.

6. In a frame for a single rear-driving velocipede, the combination of the top back fork A, of the seat-pillar tube forked throughout the whole of its length and adapted at its lower ends to support the members of the lower back fork C, of the tie-tubes D D, running between the forward extremities of the members of the said lower back fork and the neck spindle or socket Y of the steering-head, and of the tube E, running between the neck spindle or socket Y of the steering-head and the junction of the top back fork A and the fork B', all combined, arranged, and operating as set forth.

447,836. **AUTOMATIC GUN.** HIRAM S. MAXIM, London, England. Original application filed Dec. 28, 1886, Serial No. 222,849. Divided and this application filed Oct. 18, 1889. Serial No. 327,458. (No model.) Patented in France June 19, 1885, No. 169,647, and Feb. 12, 1887, No. 181,516; in England June 1, 1886, No. 7,354; in Germany Jan. 20, 1887, No. 41,870; in Belgium Sept. 26, 1887, No. 79,005; in Italy Nov. 26, 1887, No. 22,500, and in Austria-Hungary Apr. 21, 1888, No. 34,166.



Claim.—1. The combination of the outer frame, the stock or handle to which it is secured, a barrel and inner frame fixed or formed on the barrel and arranged to slide in the outer frame, a breech-block adapted to slide in the inner frame, and springs placed in the stock for returning the breech-block and barrel after recoil, as herein set forth.

2. The combination of the outer frame, the stock or handle to which it is secured, a sliding barrel, breech-block, and breech mechanism connected therewith, adapted to be operated by the recoil of the barrel to reload the same after a discharge, a hammer adapted to be cocked by the movement or operation of the breech mechanism, and a trigger engaging therewith to prevent the automatic discharge of the gun, as set forth.

3. In a fire-arm provided with a sliding barrel arranged to recoil at each discharge, a tubular magazine parallel to said barrel, and pawls or projections from the barrel entering the magazine and adapted to engage with and move the cartridges backward to the breech at each discharge, as set forth.

4. The combination of a sliding barrel arranged to recoil at each discharge, a frame formed on or attached to said barrel, a tilting breech-block adapted to engage with the frame, whereby it is locked to the barrel, and means for releasing it from the frame, as set forth.

5. The combination of the outer frame A, the sliding barrel B, the inner frame B', secured thereto and provided with an engaging-shoulder *c'*, the movable breech-block C, having a shoulder *c*, adapted to engage with the shoulder *c'* when the breech-block is in its forward position, and the arm F''', secured to the outer frame in position to move the breech-block out of engagement with the frame B' on their recoil, as set forth.

6. In a fire-arm, the combination of a sliding barrel, a breech-block normally locked to the barrel, but capable when released of independent movement, a trigger which when pulled to fire the gun is brought into a position to engage with the breech-block at the termination of its recoil, and a catch adapted to engage with the trigger when brought to such position and hold the same until the engagement therewith of the breech-block.

7. In a fire-arm, the combination, with the outer frame and stock of a barrel and attached frame capable of sliding in said outer frame and a breech-block arranged to slide in the inner frame, springs connected to the barrel and breech-block and the outer frame, respectively, and supplemental springs between the rear end of the inner frame and the stock or stationary part of the gun, as set forth.

8. In a fire-arm, the combination, with a reciprocating breech block and breech mechanism for operating the same, of a trigger adapted to engage with and lock the breech-block in its rearmost position, the said trigger being provided with forward and rear finger-pieces for moving it positively in either direction, as set forth.

9. The combination, with the outer frame A, the stock A', the sliding barrel B, the inner frame B', attached thereto, and the breech-block C, movable in frame B', of the spring E, arranged within the gun-stock, the hollow plunger *b* and links B'', connecting the spring with the inner frame, the spring D, arranged within said plunger, and rod *a'* and links D', connecting it with the breech-block, as set forth.

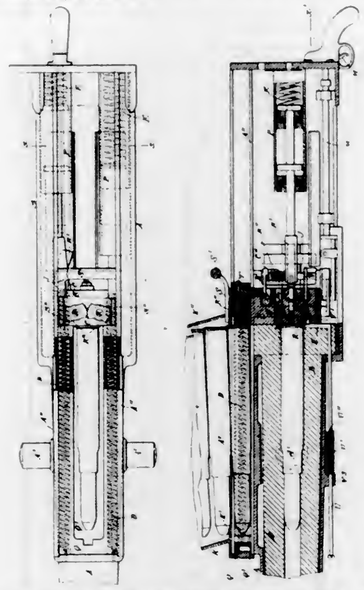
10. The combination, with the sliding barrel, of the tubular magazine J, the pawls J', extending from the barrel into the magazine, and retaining-pawls placed within the magazine, as set forth.

447,837. **AUTOMATIC MACHINE-GUN.** HIRAM S. MAXIM, London, England. Original application filed Dec. 28, 1886, Serial No. 222,849 Divided and this application filed Oct. 18, 1889. Serial No. 327,459. (No model.) Patented in France June 19, 1885, No. 169,647, and Feb. 12, 1887, No. 181,516; in England June 1, 1886, No. 7,354; in Germany Jan. 20, 1887, No. 41,870; in Belgium Sept. 26, 1887, No. 79,005; in Italy Nov. 26, 1887, No. 22,500, and in Austria-Hungary Apr. 21, 1888, No 34,166.

Claim.—1. The combination of the outer frame, the sliding barrel provided with a forked extension, one or more springs connected with the barrel for effecting its return movement after a recoil, the longitudinally-movable breech-block, one or more springs acting thereon to effect its return or forward movement after recoil, a locking device normally securing the breech-block to the barrel, a detent or device for releasing the same at the termination of the recoil of the barrel, whereby the breech-block is free to continue its backward movement, and means for relocking the barrel and breech-block together when in their forward position, as set forth.

2. The combination of an outer frame, a sliding barrel provided at its breech end with an extension and arranged to recoil in said outer frame at each discharge, a breech-block fitted to slide to and fro in said frame in rear of the barrel, bolts or shafts in said block formed with parts adapted when the bolts or shafts are turned to engage with grooves or notches in said extension of the barrel, and means for turning said bolts or shafts to lock or unlock the breech-block from the barrel.

3. The combination, with the breech-block and the locking bolts or shafts R R' therein, of the pinions R'', connecting said bolts or shafts, the arms F G, extending from one of the bolts, and inclined surfaces or projections on the gun-frame in the path of the arms F G for operating said bolts or shafts in the to-and-fro movement of said breech-block substantially as set forth



4. The combination, with the breech-block, the locking bolts or shafts R R' therein, and the pinions R'', connecting the same, of the slide S, connected to said block and formed with a part S' to serve as a handle, and racks S'' on the slide S, gearing with the pinions R'', as set forth.

5. The combination, with a sliding breech-block, of a hammer mounted on a vertical pivot or shaft thereon, a cam J' with a bent H on the hammer-shaft, a sear I, engaging therewith, a spring actuating the sear, a locking-bolt in the breech-block adapted to be rotated by the to-and-fro movement of the same, and an arm G'' on said bolt adapted to engage with the sear, as herein set forth.

6. The combination, with a reciprocating breech-block, of a hammer H', its vertical shaft J, the disk or cam J', formed with the bent H and secured to the hammer-shaft, the sears I I', engaging with the disk J', the divided spring J'', bearing on the sears, an arm G'', extending from a rotating bolt or shaft R' in the breech-block, the sliding bar M', engaging with the sear, and a trigger M for moving the same, as set forth.

7. The combination, with a barrel and cartridge hopper or feeder, of a breech-block fitted to slide to and fro in the frame of the gun in rear of the barrel, and a frame Q, formed with the aperture Q', connected with the breech-block and extending over the barrel and beneath the hopper when the breech is closed, as set forth.

8. The combination, with a stationary frame A and sliding barrel B, of the hydraulic buffers I' between the barrel and the frame, for counteracting the recoil of said barrel, and the spring E intermediate to the barrel and frame, for effecting the forward or return movement of the barrel, as set forth.

9. The combination, with the barrel and the breech-block adapted to slide to and fro in rear of the same, of the bent bar U, sliding in guides or bearings attached to said barrel, and the spring U' intermediate to the bar and a lug on the gun-frame and adapted to force the bar U back on the separation of the barrel and breech-block, as set forth.

10. The combination, with a gun-frame, a barrel, and a breech-block adapted to slide to and fro on the frame in line with the barrel, of a hook on the breech-block for engaging with the frame and holding said block at the rear end of its stroke or movement and a releasing device adapted to be struck by the cartridges when falling into line with the barrel, and thereby caused to release said block and permit its forward movement, as set forth.

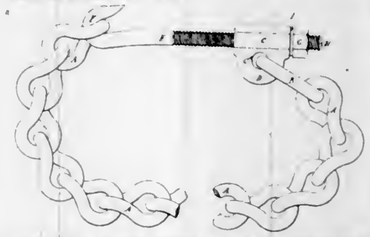
11. The combination, with the outer frame A, the barrel, and the breech-block C, adapted to slide to and fro in said frame in line with the barrel, of the spring-catch C' on the breech-block for engaging with said frame when the breech-block has reached its limit of backward movement, a pivoted spring-actuated lever in position to be struck by the cartridges falling into line with the opening in the breech, and a plate or slide between said lever and the catch C' for disengaging said catch when the lever is struck by a cartridge, as set forth.

12. The combination, with a gun mounted on trunnions, of a shoulder-piece or crutch, a curved serrated arm or toothed segment secured to the stationary mounting, and a spring-actuated detent device carried by the crutch and adapted to engage with said segment and hold the gun in any position to which it may be turned on its trunnions.

13. The combination, with a gun mounted on trunnions, of a tube attached to the gun-frame, a hollow block formed or fixed on said tube, a shoulder-piece fitted to slide on said block toward and away from the gun, a pair of clamping-jaws, one of which is fixed in said tube and the other of which is movable therein, a curved arm attached to the gun-mounting and extending between said jaws, one or more springs for operating said movable jaw to clamp said arm, and means whereby said movable jaw may be withdrawn and said arm released by pressure against said shoulder-piece, substantially as and for the purposes set forth

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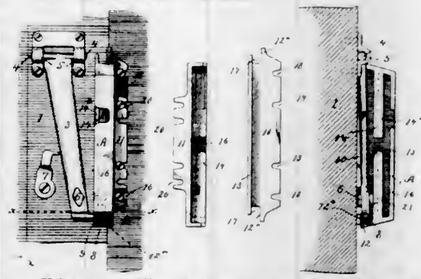
447,838. **APPARATUS FOR SECURING TOGETHER SCAFFOLD POLES.** JAMES C. MONTGOMERIE, Bitterne, near Southampton, England. Filed Jan. 13, 1891. Serial No. 377,633. (No model.) Patented in England July 11, 1890. No. 10,813.



Claim.—1. In a chain fastening for scaffold-poles and the like, the combination, with the chain A, which holds the poles together, of a screw-hook E F, chain-carrying sleeve, such as C D, and nut G, substantially as described, and illustrated in the accompanying drawings.

2. In a chain fastening for scaffold-poles and the like, the combination, with a screw-hook and nut, such as E, F, and G, of a chain-carrying sleeve, such as C D, substantially as described, and illustrated in the accompanying drawings.

447,839. **DOOR-CHECK.** GEORGE W. MOULTON, Bridgeport, Conn., assignor of one-half to Wilbur E. Nichols, same place. Filed Nov. 24, 1890. Serial No. 372,463. (No model.)



Claim.—1. A self-locking door-holder consisting of a depending lever having a beveled head and a neck, adapted for attachment to a jamb, and a catch having at its lower end an opening to receive the neck and head, an engaging-surface acting to force the lever outward slightly, so that the head will pass through the opening, and a flange which is engaged by the head when the door is swung toward the open position.

2. A self-locking door-holder consisting of a depending lever having a beveled head and a neck, and a catch having at its lower end an opening to receive the neck and head, an engaging-surface acting to force the lever outward slightly, so that the head will pass through the opening, a flange which is engaged by the head when the door is swung toward the open position, a rib 14, having a flange 14*, and an

opening through it, and an outer rib 16, also having an opening through it, so that when properly manipulated the head of the lever may be passed through said openings and swung upward out of the way by a person on the outside.

3. The combination, with a suitable catch adapted for attachment to a door, of a depending lever having a head and neck adapted to engage the catch, lugs 6, and trunnions 4, ears adapted for attachment to a jamb, which are loosely engaged by the trunnions, and a retaining-latch 7, which is adapted to engage one of the lugs to retain the lever out of operative position.

4. The combination, with a swinging lever having a beveled head and neck, substantially as described and shown, of a catch having an engaging-surface 12^a, an opening 12, notch 17, flange 13, flanged rib 14, and rib 16, said ribs having openings 15 through them to permit the head to pass when the lever is properly manipulated.

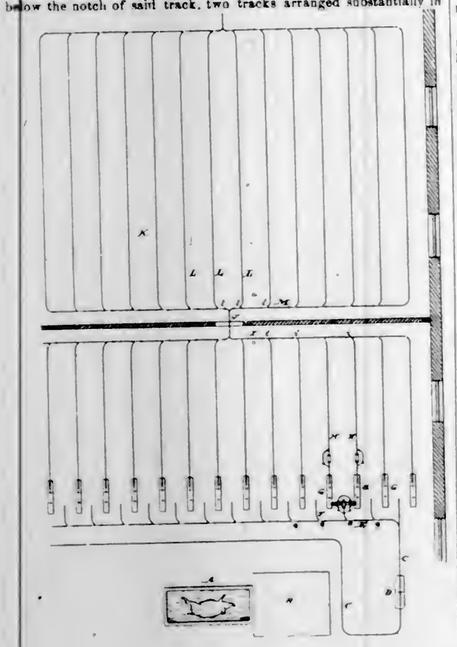
5. The combination, with the depending lever having a beveled head and neck, substantially as described and shown, of a catch consisting of a base-plate having a notch 17, an engaging-surface 12^a, and a rib 13, and a holding-plate having a flanged rib 14 and an outer rib 16, said ribs having openings through them, said base-plate and holding-plate being provided with screw-slots, so that the two parts of the catch may be attached to a right or left door, leaving an opening at the bottom to receive the neck and head of the lever.

447,840. **ABATTOIR.** JONAH W. MOYER, Philadelphia, Pa. Filed Nov. 4, 1890. Serial No. 370,273. (No model.)

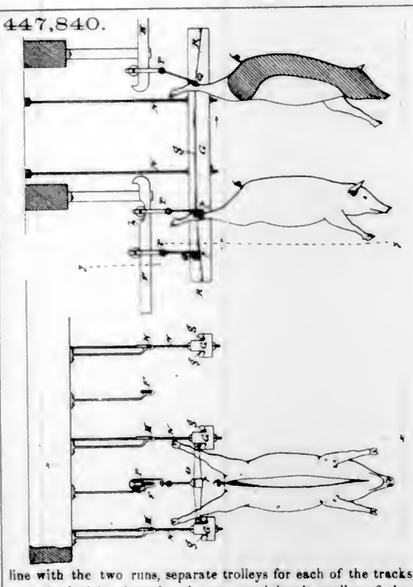
Claim.—1. The combination of a track, two runs arranged upon either side of said track, two tracks arranged substantially in line with the two runs, separate trolleys for each of the tracks, and a gambrel-stick adapted to be supported by the trolley of the first-mentioned track, whereby a hog may be supported upon the gambrel-stick and conveyed to the runs and after being halved the halves be sustained by the separate trolleys on the remaining tracks and conveyed to a distant place.

2. The combination of a track, two runs arranged upon either side of said track and having grooved guides which are inclined downward at each end, two tracks arranged substantially in line with the two runs, separate trolleys for each of the tracks, and a gambrel-stick adapted to be supported by the trolley of the first-mentioned track, whereby a hog may be supported upon the gambrel-stick and conveyed to the runs and after being halved the halves be sustained by the separate trolleys on the remaining tracks and conveyed to a distant place.

3. The combination of a track having a notch in its upper portion, two runs arranged upon either side of said track and arranged below the notch of said track, two tracks arranged substantially in



447,840.



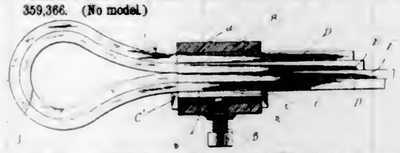
line with the two runs, separate trolleys for each of the tracks, and a gambrel-stick adapted to be supported by the trolley of the first-mentioned track, whereby a hog may be supported upon the gambrel-stick and conveyed to the runs and after being halved the halves be sustained by the separate trolleys on the remaining tracks and conveyed to a distant place.

4. The combination of a track E, a series of short tracks F, arranged at an angle thereto, a series of switches *e*, forming a connection between either of said tracks F and the track E, a series of runs G, arranged between the tracks F, a series of tracks H, arranged substantially in line with the runs G, and separate trolleys for the tracks H, whereby a trolley with a whole hog may be conveyed over the tracks E and F to the runs G, upon which the said hog is sustained during halving and from which the halves may be removed by separate trolleys upon the tracks H H.

5. The combination of a track E, a series of short tracks F, arranged at an angle thereto, a series of switches *e*, forming a connection between either of said tracks F and the track E, a series of runs G, arranged between the tracks F, a series of tracks H, arranged substantially in line with the runs G, a track I, communicating with all of the tracks H by means of switches *i*, a chill-room provided with tracks, a track connecting the tracks of said chill-room with the track I, and separate trolleys for the tracks H, whereby the trolley with a whole hog may be conveyed over the tracks E and F to the runs G, upon which the said hog is sustained during halving and from which the halves may be removed by separate trolleys upon the tracks H H and conveyed over the tracks H and I into the chill-room.

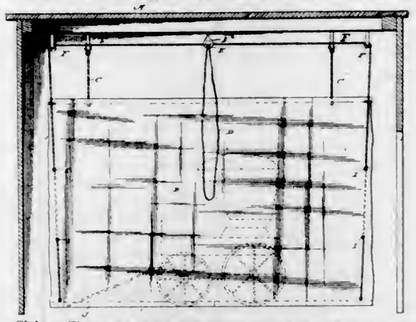
6. The combination of a railway leading from the slaughtering and scalding portion of the abattoir, two short runs arranged at a point of said railway distant from said slaughtering and scalding portion of the abattoir, a gambrel-stick adapted to support the hog and rest upon the runs during halving, a trolley adapted to the railway and supporting the gambrel-stick, and a railway extending beyond the runs, whereby the halved hog may be conveyed to a distant place with but little friction.

447,841. **PICKER-STAFF-OPERATING DEVICE FOR LOOMS.** THOMAS MCCARTY, Charlton, Mass. Filed July 21, 1890. Serial No. 359,366. (No model.)



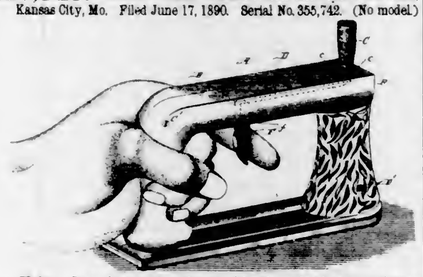
Claim.—The combination of picker-staff H and operating-strap J, having its doubled body turned to a vertical horizontal position as it passes through metal piece A and thence around the picker-staff to form an outer circular and inner elongated loop I for encircling the picker-staff, with its ends D and E turned back and passed through metal piece A and arranged parallel with the doubled part of strap J therein, metal piece A, having cross-grooves *a* on one of its vertical inner sides, the piece C, having cross-grooves *b* on its inner face, and screw B, all substantially as shown and described, and for the purposes set forth.

447,842. **CARRIAGE-COVER.** BENJAMIN F. PARTRIDGE, Portsmouth, Mich. Filed Aug. 20, 1890. Serial No. 362,481. (No model.)



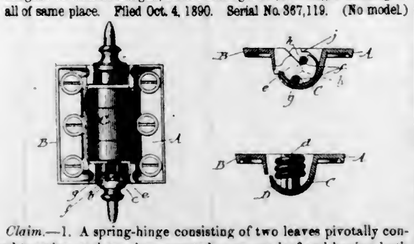
Claim.—The carriage-cover B, having eyes I at the folds, in combination with the frames between which it is suspended, the upper of which is provided with rounded slotted corners, adjustable jointed rods L, and the variable cross-frame H, the rope D, fastened to the base of the cover at opposite ends and passing through eyes I', the pulleys F, the hooks F', and the eye F^3, the whole co-operating, as and for the purpose set forth.

447,843. **CIGAR-CUTTER.** EMMET T. QUIN and JOHN F. DUNCKEL, Kansas City, Mo. Filed June 17, 1890. Serial No. 355,742. (No model.)



Claim.—In a cigar-cutter, the combination of a base portion, a removable bottom therein, uprights secured to the said base portion at each end, one of the said uprights constituting a hand-hold and the other forming a chamber for the reception of the cuttings, a hollow horizontal portion connecting the upper end of the chamber with the hand-hold, and a cutting device located in said horizontal portion, substantially as described.

447,844. **SPRING-HINGE.** MICHAEL REDLINGER, Freeport, Ill., assignor to Charles Morgan, Albert Baumgarten, and Edgar H. Morgan, all of same place. Filed Oct. 4, 1890. Serial No. 367,119. (No model.)

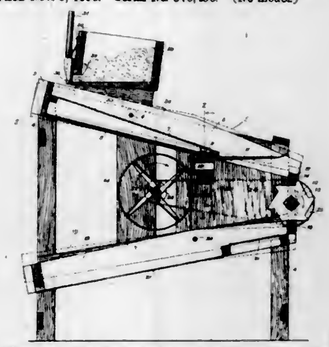


Claim.—1. A spring-hinge consisting of two leaves pivotally connected together, and a spring mounted upon one leaf and having both of its extremities attached to one and the same end of the other leaf at opposite sides of the hinge-pivot at such end to reduce friction, substantially as described.

2. In a spring-hinge, the combination of two leaves A B, hinged together, one of said leaves having an ear *e*, provided with recesses *f* on opposite sides of the hinge-journal and the other leaf having a pin *d*, of a spring D, mounted upon the pin *d* and having its ends inserted in the recesses *f*, substantially as and for the purpose specified.

3. A spring-hinge consisting of two pivotally-connected leaves, one having a hood C and a slot *c* and the other having an ear *e*, provided with recesses *f*, a spring D, mounted upon one of the leaves and having its two extremities secured in the recesses of the other leaf, and the lip projection *j*, serving to retain one end of the spring in its recess and prevent the separation of the hinge-leaves, substantially as described.

447,845. **GRAIN-SEPARATOR.** DE MARQUIS SCOTT, Goss, Mo. Filed Nov. 5, 1890. Serial No. 370,430. (No model.)



Claim.—1. In a grain-separator, the combination, with an upper and a lower pivoted screen-shoe, of one or more cams, each engaging both of the said screen-shoes for simultaneously tilting the same and then releasing them to the action of gravity, for the purpose set forth.

2. In a grain-separator, the combination, with a vertically-rocking inclined upper screen-shoe and a vertically-rocking lower screen-shoe oppositely inclined thereto, of one or more cams located between the lower end of the upper and the upper end of the lower shoe for simultaneously rocking the shoes, substantially as and for the purpose set forth.

3. In a grain-separator, the combination, with a rocking screen-shoe, of a floor or bottom for the shoe extended beyond the discharge end of the screen or screens and provided at such end beyond the screen with openings for the grain to pass through, substantially as and for the purpose set forth.

4. In a grain-separator, the combination, with an upper vertically-rocking screen-shoe, such as 5, and a lower vertically-rocking screen-shoe, such as 19, of one or more cams 12, placed intermediate the adjacent ends of and engaging the said screen-shoes for simultaneously actuating the same, substantially as and for the purpose set forth.

5. In a grain-separator, a screen-shoe, such as 5, having an imperforate bottom 8, inclined from one side of the shoe toward the other and provided with a discharge-spout 9, substantially as and for the purpose set forth.

6. In a grain-separator, a screen-shoe 5, provided with a screen or sieve 7, an imperforate bottom 8 beneath the said screen, and a discharge-spout 9, and a screen or perforated plate 11 for receiving the material from the screen 7, substantially as and for the purpose set forth.

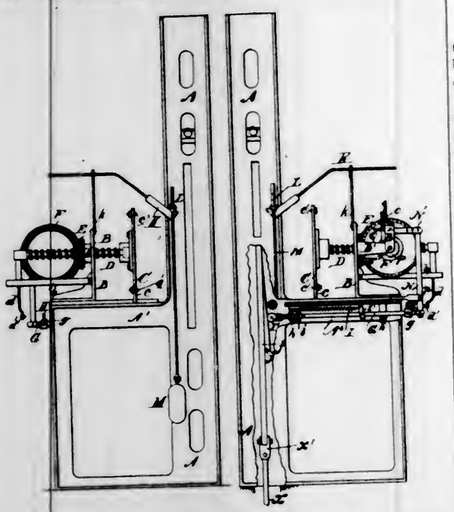
447,846. **EXCELSIOR-CUTTING MACHINE.** CHARLES G. SMITH, Detroit, Mich. Filed June 23, 1890. Serial No. 356,428. (No model.)

Claim.—1. In an excelsior-cutting machine, the combination of the main frame in which the cutter-plate reciprocates with the table which supports the feed mechanism, the cutter-plate carrying the inclined plane, the inclined plane which pushes out the bar extended beneath the table, the spring to retract the bar, the stud on the bar which supports the locking-latch, and the locking-latch pivoted to the table, all substantially as described.

2. In an excelsior-machine, the combination of the main frame A A, in which the cutter-plate reciprocates with the table A', which supports the feed mechanism, the cutter-plate J, which carries the inclined plane *j*, the inclined plane *j*, which pushes the bar G outward, the bar G, suspended in hangers beneath the table A', the spring I for retracting the bar G, the lever N, fulcrumed on the arm *n* and pivoted at its lower end to the bar G, and connected at its upper end by the link N' to the feed mechanism, all substantially as described.

3. In an excelsior-cutting machine, the combination of the main

frame A A, in which the cutter-plate reciprocates, with the table A', which supports the feed mechanism, the cutter-plate J, which carries the inclined plane *j*, the inclined plane *j*, which impels the bar G outward, the bar G, reciprocating in the hangers under the table A, the spring I for retracting the bar G, the lever N, vibrated by the bar G and fulcrumed on the arm *n* of the table A, the link N', connecting the lever N to the arm B, the arm B, journaled on the shaft F and carrying the pawl O, the pawl O, which engages with the ratchet-wheel P, and the ratchet P, which rotates the shaft F of the feed mechanism, all substantially as described.



4. In an excelsior-cutting machine, the combination of the main frame A with the table A', supporting the feed mechanism, the standard B, arising from the table A', the screw-shaft D, supported in the spur-wheel E by the standard B, the feed-plate C, actuated by the screw-shaft D, the spur-wheel E, screw-threaded interiorly to engage with the screw-shaft D, the spur-wheel F on the shaft F' and meshing with the spur-wheel E, the shaft F, journaled on an arm of the standard B, the ratchet-wheel P, keyed on the shaft F, the pawl O, pivoted to the arm B^3 and engaging with the ratchet-wheel P, the arm B^3, journaled on the shaft F', the link N', connecting the arm B^3 to the lever N, the lever N, pivoted to and vibrating on the arm *n* and connected at its lower end to the bar G, the bar G, reciprocating in hangers under the table A' and actuated by the inclined plane *j*, the inclined plane *j* on the cutter-plate, and the cutter-plate reciprocating in the main frame A, all substantially as described.

5. In an excelsior-cutting machine, the combination of the posts of the cutter-plate provided with grooves for the reception of the knife-blades, with the knife-blades and the gage-plates for gaging the cut of the knives, all substantially as described.

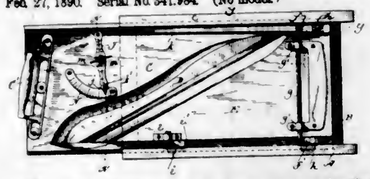
6. In an excelsior-cutting machine, the combination of the journal-box of the roller-slitter with the roller-slitter journaled in the journal-box, and the roller-slitter cleaner attached to the journal-box of the roller-slitter, all substantially as described.

7. In an excelsior-cutting machine, the combination of the roller-slitter for slitting the block and the roller-slitter cleaner for freeing the roller-slitter from shavings, all substantially as described.

8. In an excelsior-cutting machine, the combination of the posts of the cutter-plate, provided with grooves for the reception of the knife-blade, with the knife-blades for cutting the excelsior, and the roller-slitter for slitting the block, and the roller-slitter cleaner, all substantially as described.

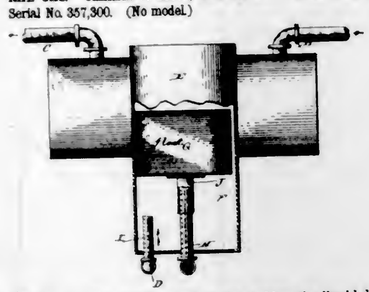
9. In an excelsior-cutting machine, the combination of the table which supports the feed mechanism with the standard B, arising from the table, the screw-shaft D, supported in the spur-wheel E on the standard B, the feed-plate C, actuated by the screw-shaft D, the spur-wheel E, interiorly screw-threaded to engage with the shaft D, the spur-wheel F on the shaft F' and meshing with the spur-wheel E, the shaft F', journaled on an arm of the standard B, the ratchet-wheel P, keyed on the shaft F', the pawl O, pivoted to the arm B and engaging with the ratchet-wheel P, the link connecting the arm B to the lever N, and the lever N, pivoted to and vibrating on the arm *n*, all substantially as described.

447,847. SLICER. JOSEPH SPILLINGER, Philadelphia, Pa. Filed Feb. 27, 1890. Serial No. 341,984. (No model.)



Claim.—The combination, with the vertical supporting-frame and the knife-frame sliding in ways on the supporting-frame, of a gage-board adjustable toward and from the knife, a segmental scale arranged on the knife-frame, an adjusting-lever pivoted between its ends to the knife-frame and having one of its arms provided with a thumb-piece for shifting the lever and a pointer which traverses said scale, a rod connecting the other arm of the lever with the adjustable gage-board, and a thumb-nut applied to the pivot of the adjusting-lever for clamping the lever in position, substantially as set forth.

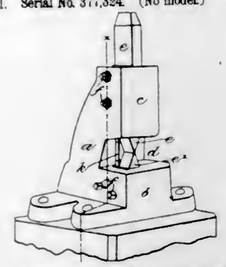
447,848. DEVICE FOR SEPARATING LIQUIDS FROM NATURAL GAS. CHARLES L. STOCK, Fostoria, Ohio. Filed June 30, 1890. Serial No. 357,300. (No model.)



Claim.—1. The combination of the holder, the liquid-discharge pipe entering the bottom of the same, the escape-pipe extending upward within the holder and passing through the bottom of the same, and the float fitted within the holder and provided with a depending tube on its bottom fitting over the escape-pipe, as set forth.

2. The combination of the holder, the liquid-discharge pipe entering the bottom of the holder and having a foraminous end, the escape-pipe leading from the holder and having its end provided with suitable openings, the float fitted in the holder, and the tube depending from the float and fitting over the end of the escape-pipe, as set forth.

447,849. METAL-CUTTER. HENRY B. TODD, Meriden, Conn. Filed Jan. 10, 1891. Serial No. 377,324. (No model.)



Claim.—1. In combination with a supporting-frame, a cutting-tool held in a socket in the frame and a reciprocating cutting-tool supported in a socket in alignment with the lower tool and having its outer end adapted and arranged to receive a blow from a hammer or like tool, all substantially as described.

2. In combination, a tool-supporting frame, a work-holding table or base, a reciprocating cutting-tool arranged in a socket in the frame and adapted to receive on its upper end a blow from a hammer or like tool, all substantially as described.

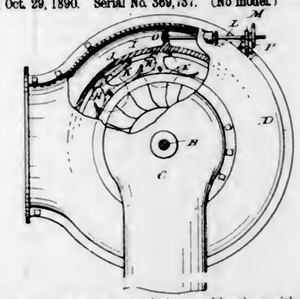
3. In combination, a tool-supporting frame, a work-holding table or base, a reciprocating cutting-tool arranged in a socket in the frame and adapted to receive on its upper end a blow from a hammer or like

tool, and a stop device that limits the downward movement of the cutting-tool, all substantially as described.

4. In combination, a tool-supporting frame, a work-holding table, a metal-working tool supported in a socket in the table, and a reciprocating cutting-tool supported in a socket in the frame in line with the lower tool, all substantially as described.

5. In combination, a tool-supporting frame, a reciprocating punch with its opposing die arranged on one side of the frame, a reciprocating cutting-off tool arranged in a socket on the opposite side of the frame, and a punch-withdrawing lever pivotally supported on the frame, all substantially as described.

447,850. WATER-WHEEL. FULLER TRUMP, Springfield, Ohio. Filed Oct. 29, 1890. Serial No. 369,737. (No model.)

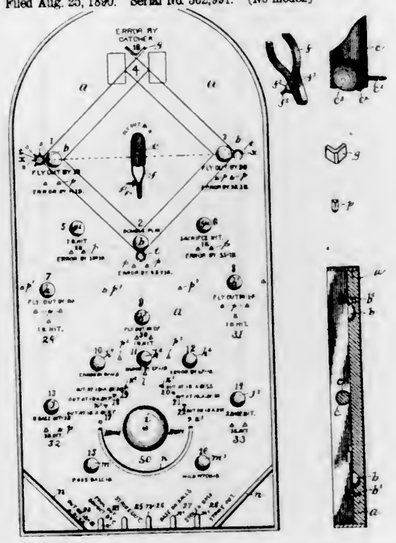


Claim.—1. In a water-wheel, the combination, with a casing and a suitable wheel mounted therein, of a series of pivoted gates having arms whose outer ends constitute the arc of a circle, and an operating-ring mounted upon said arms and connected with said gates, whereby upon moving the ring to adjust the gates the ring rides on the arms as upon anti-friction rollers.

2. In a water-wheel, the combination, with a casing proper and a suitable wheel mounted therein, of a series of gates pivotally mounted and having each an arm whose outer end constitutes the arc of a circle, and the operating-ring mounted upon said arms, and a link connection between said ring and said gates, whereby upon operating the ring to adjust the arms it is moved on the gate-pivots, so that the arms act like anti-friction rollers in their support of the ring.

3. In a water-wheel, the combination, with the casing and a suitable wheel mounted therein, of a series of pivoted gates having arms whose outer ends constitute the arc of a circle, a grooved ring mounted upon said arms, a connection between said ring and each gate, and adjusting devices to manipulate the ring.

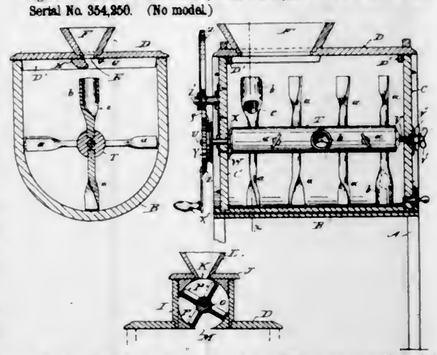
447,851. GAME-BOARD. HENRY WACHTER, Columbus, Ohio. Filed Aug. 25, 1890. Serial No. 362,991. (No model.)



Claim.—1. In a game, the combination, with a flanged game-board having numbered and lettered ball depressions formed therein, a ball-supporting tube *c*, supported upon said board, and a V-shaped deflecting-plate projecting from said board in front of said tube, of a ball-impelling device consisting of the bent or double spring-strip *f*, the arms of which are connected by an adjusting-screw *f''*, substantially as and for the purpose specified.

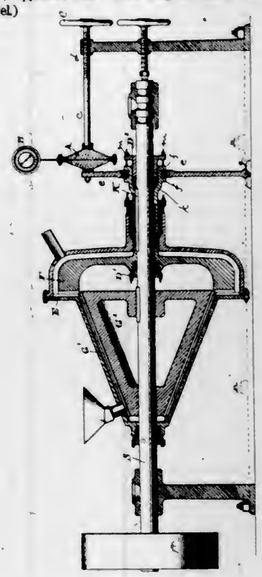
2. In a game, the combination, with a flanged board *a*, the representation of a base-ball diamond thereon, numbered and lettered ball depressions *b*, located at the side and lower corners of said diamond, similar depressions arranged in rear of said diamond, peg-sockets adjacent to each of said depressions *b*, tube *c*, supported in the center of said diamond and provided with end stop-lugs c^2, a ball normally supported within said tube, and a ball-impelling device consisting, as described, of the doubled spring-strip *f* and an adjusting-screw *f''*, connecting, as described, the arms of said spring-strip, substantially as specified.

447,852. CHURN. WESLEY N. WACHTER, Springfield, Ohio, assignor of one-half to Thomas Reynolds, same place. Filed June 4, 1890. Serial No. 354,250. (No model.)



Claim.—In a churn, the combination, with a casing and a solid shaft mounted therein, of beaters carried by said shaft and having solid inner ends and tubular outer ends, each tubular portion being provided with an opening near the shaft, substantially as shown and described.

447,853. PULP REFINING AND DRESSING ENGINE. SOLOMON R. WAGG, Appleton, Wis. Filed Aug. 31, 1889. Serial No. 322,628. (No model.)



Claim.—1. The combination, with the rotating shaft, of a grinding-disk rotating with said shaft, but movable lengthwise thereof, a fixed surface against which said disk bears the material to be ground, and packing-glands surrounding the shaft and covering the central part of the disk, so as to protect the same, substantially as described.

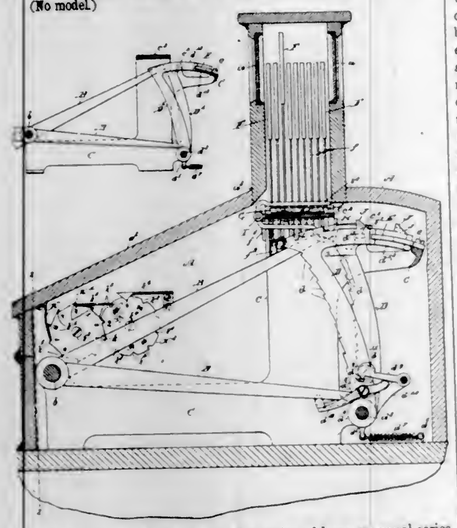
2. The combination, with the fixed grinding-surface, of the rotating shaft, a grinding-disk movable lengthwise thereof and facing the grinding-surface, a standard connected to said disk, substantially as described, and a screw-shaft operating on said standard to support the same, substantially as described.

3. The combination of the fixed grinding-surface, a rotating shaft, a movable disk on said shaft facing said surface, devices for shifting said disks lengthwise of the shaft, and a pressure-gage interposed in said devices to indicate the pressure on said disk, substantially as described.

4. The combination of the fixed grinding-surface, the driving-shaft and disk thereon, a movable standard, connections, substantially as described, between said standard and disk, a gage on which the standard bears, and a screw-shaft resting against said gage, substantially as described.

5. The combination, with the rotating shaft and a fixed grinding-surface, of a disk movable on the shaft with relation to the grinding-surface, and an index or indicator showing the position of the grinding-disk, substantially as described.

447,854. CASH REGISTER AND INDICATOR. JEROME J. WEBSTER, Somerville, Mass., assignor to the Boston Cash Indicator and Recorder Company, Bangor, Me. Filed Aug. 8, 1890. Serial No. 361,467. (No model.)



Claim.—1. The combination of a series of keys, an equal series of movable racks, each adapted to be moved by the movement of a key, and a series of movable stops arranged to allow the movement of any rack and to prevent the simultaneous movement of two or more racks and thereby to prevent the simultaneous movement of two or more keys, as and for the purpose specified.

2. The combination of a series of keys, an equal series of movable racks, and a series of stops, each arranged to swing in a plane at right angles to the plane in which said racks are movable and arranged to allow the movement of any rack and to prevent the simultaneous movement of two or more racks, as and for the purpose specified.

3. The combination of a series of keys, a series of pivoted racks, each provided with a series of teeth of equal length adapted to engage a key and to prevent a return movement of the same, and with a longer tooth adapted to be struck by said key to throw said rack out of engagement with said key, a spring to hold said rack in engagement with said key, and a series of hooks equal in number to the number of said racks and each adapted to engage a rack and to hold the same out of engagement with a key, as and for the purpose specified.

4. The combination of a series of keys, a series of pivoted racks, each provided with a series of teeth of equal length adapted to engage a key and to prevent a return movement of the same, and with a longer tooth adapted to be struck by said key to throw said rack out of such engagement, a series of hooks, each adapted to engage a rack and to hold the same out of engagement with a key during the return movement of said key, and a series of levers, each adapted to be struck by a key and to disengage one of said hooks from the corresponding rack at the completion of the return movement of said key, as and for the purpose specified.

5. The combination of a series of keys, an equal series of movable racks, each of said racks being arranged to engage one of said keys and to be moved thereby, an equal series of signal-levers, each provided with a signal, and each of said signals bearing a corresponding mark with one of said keys, an equal series of cams, each arranged upon one of said racks, and an equal series of signal-raising rods, each adapted to be operated by one of said cams and to raise one of said signals, as and for the purpose specified.

6. The combination of a series of keys, an equal series of movable racks, each of said racks being arranged to engage one of said keys and to be moved thereby, an equal series of signal-levers, each provided with a signal and each of said signals bearing a corresponding mark with one of said keys, an equal series of cams, each arranged upon one of said racks, an equal series of signal-raising rods, each adapted to be operated by one of said cams and to raise one of said signals, and each provided with an upward projection or shoulder, and a pivoted retainer arranged to rest normally upon all of said rods, but to be raised by the shoulder of any of said rods and to fall behind such shoulder and to prevent a return movement of said rod, signal-lever, and signal, as and for the purpose specified.

7. The combination of a series of keys, an equal series of movable racks, each of said racks being arranged to engage one of said keys and to be moved thereby, an equal series of signal-levers, each provided with a signal, an equal series of cams, each arranged upon one of said racks, an equal series of signal-raising rods, each adapted to be operated by one of said cams and to raise one of said signals, and each provided with an upward projection or shoulder, the retaining and releasing rod provided with a retaining-arm arranged to rest normally upon all of said rods, but adapted to be raised by the shoulder of any of said rods and to fall behind such shoulder and to prevent a return movement of said rod last named, said retaining and releasing rod being also provided with an equal series of releasing-arms, and another equal series of cams, each arranged upon one of said racks and each adapted to raise one of said releasing-arms to rock said releasing-rod, and to raise said retaining-arm to permit a return movement of a raised signal and the corresponding signal-raising rod, as and for the purpose specified.

447,855. SEPARABLE BUTTON. WILLIAM F. WHITING, Providence, R. I., assignor to Hiram Howard and Stephen C. Howard, same place. Filed June 28, 1890. Serial No. 357,078. (No model.)



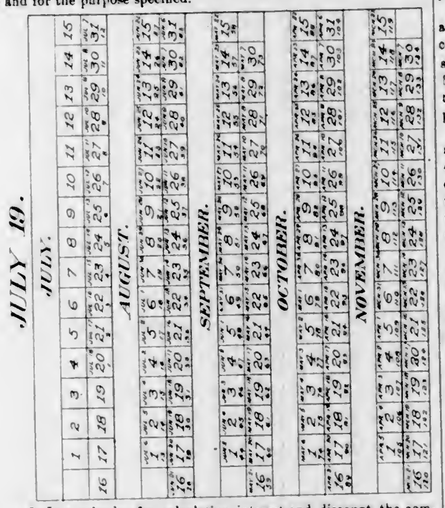
Claim.—In a separable button, the combination of a head or front having an attached tubular post-section notched at the forward end, spring-arms fitted in said post-section and provided with notches 1 and projections 2 3, bolts a^6, whose outer ends work through holes provided in a cap-plate which is comprised in said head or front and whose inner ends coact with the projections 2 of the spring-arms, projections a^7, extending from said bolts, a ring a^8, placed rearward of said bolts and having notches for receiving the projections a^7 thereof, and a back-plate having a tubular post-section b, provided with holes b^3 for engaging with the projections 3 on the spring-arms, substantially as specified.

447,856. DISCOUNT AND INTEREST CALENDAR. WILLIAM R. WILL, Baltimore, Md. Filed Aug. 16, 1890. Serial No. 362,157. (No model.)

Claim.—1. In a calendar, the arrangement of the days of the month in two lines, the first line consisting of fifteen figures from 1 to 15, successively, and the second line consisting of the balance of the numbers of the days of the month, with the number 17 immediately below the figure 1, indicating the first day of the month, and the remaining numbers beneath the numbers succeeding 1, as and for the purpose specified.

2. In a calendar for calculating interest and discount, the combination of three hundred and sixty-five leaflets, on each of which is printed a separate date of the year and also a calendar for the whole of the month in which that day is and calendars for the four succeeding months, the date succeeding the date of the leaflet in the calendar for the month to which the leaflet belongs being numbered 1 in small type and the succeeding date numbers being numbered continuously

to the end of the five months upon the leaflet, and the date preceding the date of the leaflet being printed in conjunction with the number indicating the date succeeding the date of the leaflet, and each succeeding date having in conjunction with it a date indicating the number of days backward which it is forward from the date of the leaflet, as and for the purpose specified.

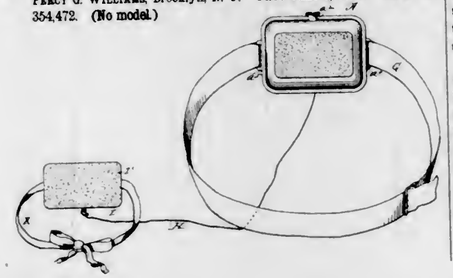


3. In a calendar for calculating interest and discount, the combination of three hundred and sixty-five leaflets, on each of which is printed a separate date of the year and also a calendar for the whole of the month in which that day is and calendars for the four succeeding months, the date of the leaflet in the calendar for the month to which the leaflet belongs being numbered 1 and the succeeding date numbers being numbered consecutively to the end of the five months upon the leaflet, and having the date preceding the date of the leaflet printed in conjunction with the number indicating the date of the leaflet in the calendar of the month of the leaflet, and each succeeding date having in conjunction with it a date indicating the number of days backward which it is forward from the date preceding the date of the leaflet, as and for the purpose specified.

4. In a calendar, the combination of three hundred and sixty-five leaflets, upon each of which is printed a date, one for each day of the year, and a calendar for the entire year, the first month of which is the month of the leaflet, each date of each calendar being printed in conjunction with two numbers, one indicating the number of days intervening between that date and the date of the leaflet counting backward and the other indicating the number of days intervening between that date and the date of the leaflet counting forward.

5. In a calendar, the combination of twelve leaflets, upon each of which is printed a date which shall be the same day of each of the twelve months and a calendar for the entire year, the first month of each yearly calendar being the month of the leaflet and each date on each calendar being printed in conjunction with two numbers, one indicating the number of days intervening between that date and the date of the leaflet counting backward and the other indicating the number of days intervening between that date and the date of the leaflet counting forward.

447,857. GALVANIC APPARATUS FOR THE HUMAN BODY. PERCY G. WILLIAMS, Brooklyn, N. Y. Filed June 6, 1890. Serial No. 354,472. (No model.)



Claim.—1. In a galvanic apparatus, the combination of a battery having a flat thin case faced on one side with felt or like material, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

2. In a galvanic apparatus, the combination of a battery having a flat thin case, having on one side an electrode protruding through the case and a switch for operating in connection with said electrode, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

3. In a galvanic apparatus, the combination of a battery having a thin flat case faced on one side with felt or like material and having on the other side an electrode insulated from the case and a switch coacting with said electrode, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

4. In a galvanic apparatus, the combination of a battery having a flat thin case A, a protruding electrode D, insulated therefrom, a boss a^4, a switch E, having a concave recess near the free end for engaging with the electrode or with said boss, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

447,858. INDUCTION-PREVENTIVE FOR TELEPHONES. THOS. F. WRIGHT and ED. G. WILSON, Chicago, Ill. Filed July 28, 1890. Serial No. 360,165. (No model.)



Claim.—1. An induction-preventive for telephones, comprising a hollow casing having perforations therein, a tube extending between said perforations, and a coil one end of which is embedded in a spool or block of wood or its equivalent and the other terminates opposite the center of a perforation in the casing opposing the diaphragm of a telephone-receiver to which the casing is secured, substantially as described.

2. An induction-preventive for telephones, comprising a hollow casing provided with perforations, a tube consisting of a coil of metallic wire extending between said perforations, and a coil, one end of which is embedded in a spool or block of wood or its equivalent and the other terminates opposite the center of a perforation in the casing opposing the diaphragm of a telephone-receiver to which the casing is secured, substantially as described.

3. An induction-preventive for telephones, comprising a hollow casing provided with perforations, a tube extending between said perforations, a spool located within said casing, and a coil of wire wound upon said spool, one end of which is embedded in the spool and the other terminates opposite the center of a perforation in the casing opposing the diaphragm of the receiver to which the device is secured, substantially as described.

4. An induction-preventive for telephones, comprising a hollow casing provided with perforations, a tube consisting of a coil of metallic wire extending between said perforations, a spool located within said casing, and a metallic coil wound thereon, one end of which is embedded in the spool, and the other end terminates opposite the center of the perforation in the casing opposing the diaphragm of the telephone-receiver to which the device is secured, substantially as described.

5. The combination, with a telephone-receiver and the diaphragm thereof provided with a central perforation, of an induction-preventive comprising a hollow casing provided with perforations, a tube extending between said perforations, a spool located within said casing, and a metallic coil wound upon said spool, one end of which is embedded in the spool and the other terminates opposite the center of the perforation in said diaphragm, substantially as described.

447,859. TYPE-WRITING MACHINE. GEORGE W. N. YOST, New York, N. Y., assignor to the Yost Writing Machine Company, same place. Filed Mar. 31, 1888. Serial No. 269,064. (No model.)

Claim.—1. The combination, with the rotating shaft, of a grinding-disk rotating with said shaft, but movable lengthwise thereof, a fixed surface against which said disk bears the material to be ground, and packing-glands surrounding the shaft and covering the central part of the disk, so as to protect the same, substantially as described.

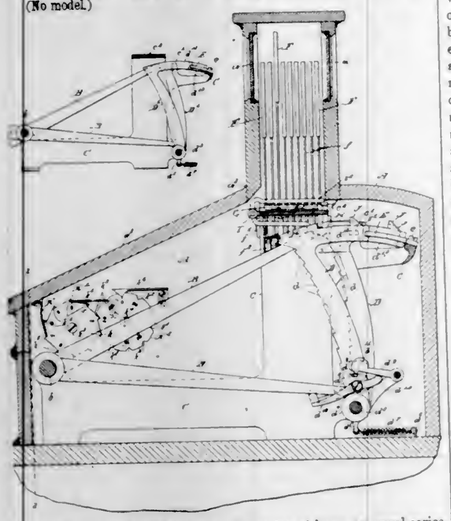
2. The combination, with the fixed grinding-surface, of the rotating shaft, a grinding-disk movable lengthwise thereof and facing the grinding-surface, a standard connected to said disk, substantially as described, and a screw-shaft operating on said standard to support the same, substantially as described.

3. The combination of the fixed grinding-surface, a rotating shaft, a movable disk on said shaft facing said surface, devices for shifting said disks lengthwise of the shaft, and a pressure-gage interposed in said devices to indicate the pressure on said disk, substantially as described.

4. The combination of the fixed grinding-surface, the driving-shaft and disk thereon, a movable standard, connections, substantially as described, between said standard and disk, a gage on which the standard bears, and a screw-shaft resting against said gage, substantially as described.

5. The combination, with the rotating shaft and a fixed grinding-surface, of a disk movable on the shaft with relation to the grinding-surface, and an index or indicator showing the position of the grinding-disk, substantially as described.

447,854. CASH REGISTER AND INDICATOR. JEROME J. WEBSTER, Somerville, Mass., assignor to the Boston Cash Indicator and Recorder Company, Bangor, Me. Filed Aug. 8, 1890. Serial No. 361,467. (No model.)



Claim.—1. The combination of a series of keys, an equal series of movable racks, each adapted to be moved by the movement of a key, and a series of movable stops arranged to allow the movement of any rack and to prevent the simultaneous movement of two or more racks and thereby to prevent the simultaneous movement of two or more keys, as and for the purpose specified.

2. The combination of a series of keys, an equal series of movable racks, and a series of stops, each arranged to swing in a plane at right angles to the plane in which said racks are movable and arranged to allow the movement of any rack and to prevent the simultaneous movement of two or more racks, as and for the purpose specified.

3. The combination of a series of keys, a series of pivoted racks, each provided with a series of teeth of equal length adapted to engage a key and to prevent a return movement of the same, and with a longer tooth adapted to be struck by said key to throw said rack out of engagement with said key, a spring to hold said rack in engagement with said key, and a series of hooks equal in number to the number of said racks and each adapted to engage a rack and to hold the same out of engagement with a key, as and for the purpose specified.

4. The combination of a series of keys, a series of pivoted racks, each provided with a series of teeth of equal length adapted to engage a key and to prevent a return movement of the same, and with a longer tooth adapted to be struck by said key to throw said rack out of such engagement, a series of hooks, each adapted to engage a rack and to hold the same out of engagement with a key during the return movement of said key, and a series of levers, each adapted to be struck by a key and to disengage one of said hooks from the corresponding rack at the completion of the return movement of said key, as and for the purpose specified.

5. The combination of a series of keys, an equal series of movable racks, each of said racks being arranged to engage one of said keys and to be moved thereby, an equal series of signal-levers, each provided with a signal, and each of said signals bearing a corresponding mark with one of said keys, an equal series of cams, each arranged upon one of said racks, and an equal series of signal-raising rods, each adapted to be operated by one of said cams and to raise one of said signals, as and for the purpose specified.

6. The combination of a series of keys, an equal series of movable racks, each of said racks being arranged to engage one of said keys and to be moved thereby, an equal series of signal-levers, each provided with a signal and each of said signals bearing a corresponding mark with one of said keys, an equal series of cams, each arranged upon one of said racks, an equal series of signal-raising rods, each adapted to be operated by one of said cams and to raise one of said signals, and each provided with an upward projection or shoulder, and a pivoted retainer arranged to rest normally upon all of said rods, but to be raised by the shoulder of any of said rods and to fall behind such shoulder and to prevent a return movement of said rod, signal-lever, and signal, as and for the purpose specified.

7. The combination of a series of keys, an equal series of movable racks, each of said racks being arranged to engage one of said keys and to be moved thereby, an equal series of signal-levers, each provided with a signal, an equal series of cams, each arranged upon one of said racks, an equal series of signal-raising rods, each adapted to be operated by one of said cams and to raise one of said signals, and each provided with an upward projection or shoulder, the retaining and releasing rod provided with a retaining-arm arranged to rest normally upon all of said rods, but adapted to be raised by the shoulder of any of said rods and to fall behind such shoulder and to prevent a return movement of said rod last named, said retaining and releasing rod being also provided with an equal series of releasing-arms, and another equal series of cams, each arranged upon one of said racks and each adapted to raise one of said releasing-arms to rock said releasing-rod, and to raise said retaining-arm to permit a return movement of a raised signal and the corresponding signal-raising rod, as and for the purpose specified.

447,855. SEPARABLE BUTTON. WILLIAM F. WRITING, Providence, R. I., assignor to Hiram Howard and Stephen C. Howard, same place. Filed June 28, 1890. Serial No. 357,078. (No model.)



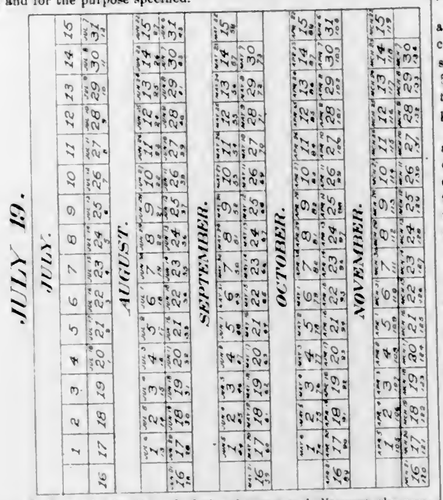
Claim.—In a separable button, the combination of a head or front having an attached tubular post-section notched at the forward end, spring-arms fitted in said post-section and provided with notches 1 and projections 2 3, bolts a^6, whose outer ends work through holes provided in a cap-plate which is comprised in said head or front and whose inner ends coact with the projections 2 of the spring-arms, projections a^7, extending from said bolts, a ring a^3, placed rearward of said bolts and having notches for receiving the projections a^7 thereof, and a back-plate having a tubular post-section b, provided with holes b^2 for engaging with the projections 3 on the spring-arms, substantially as specified.

447,856. DISCOUNT AND INTEREST CALENDAR. WILLIAM R. WILL, Baltimore, Md. Filed Aug. 16, 1890. Serial No. 362,157. (No model.)

Claim.—1. In a calendar, the arrangement of the days of the month in two lines, the first line consisting of fifteen figures from 1 to 15, successively, and the second line consisting of the balance of the numbers of the days of the month, with the number 17 immediately below the figure 1, indicating the first day of the month, and the remaining numbers beneath the numbers succeeding 1, as and for the purpose specified.

2. In a calendar for calculating interest and discount, the combination of three hundred and sixty-five leaflets, on each of which is printed a separate date of the year and also a calendar for the whole of the month in which that day is and calendars for the four succeeding months, the date of the leaflet in the calendar for the month to which the leaflet belongs being numbered 1 in small type and the succeeding date numbers being numbered continuously

to the end of the five months upon the leaflet, and the date preceding the date of the leaflet being printed in conjunction with the number indicating the date succeeding the date of the leaflet, and each succeeding date having in conjunction with it a date indicating the number of days backward which it is forward from the date of the leaflet, as and for the purpose specified.

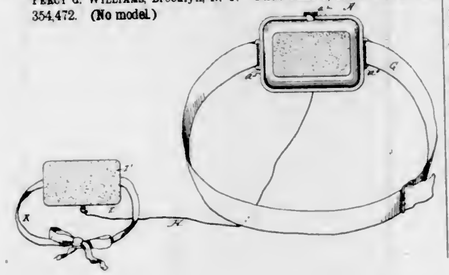


3. In a calendar for calculating interest and discount, the combination of three hundred and sixty-five leaflets, on each of which is printed a separate date of the year and also a calendar for the whole of the month in which that day is and calendars for the four succeeding months, the date of the leaflet in the calendar for the month to which the leaflet belongs being numbered 1 and the succeeding date numbers being numbered consecutively to the end of the five months upon the leaflet, and having the date preceding the date of the leaflet printed in conjunction with the number indicating the date of the leaflet in the calendar of the month of the leaflet, and each succeeding date having in conjunction with it a date indicating the number of days backward which it is forward from the date preceding the date of the leaflet, as and for the purpose specified.

4. In a calendar, the combination of three hundred and sixty-five leaflets, upon each of which is printed a date, one for each day of the year, and a calendar for the entire year, the first month of which is the month of the leaflet, each date of each calendar being printed in conjunction with two numbers, one indicating the number of days intervening between that date and the date of the leaflet counting backward and the other indicating the number of days intervening between that date and the date of the leaflet counting forward.

5. In a calendar, the combination of twelve leaflets, upon each of which is printed a date which shall be the same day of each of the twelve months and a calendar for the entire year, the first month of each yearly calendar being the month of the leaflet and each date on each calendar being printed in conjunction with two numbers, one indicating the number of days intervening between that date and the date of the leaflet counting backward and the other indicating the number of days intervening between that date and the date of the leaflet counting forward.

447,857. GALVANIC APPARATUS FOR THE HUMAN BODY. PERCY G. WILLIAMS, Brooklyn, N. Y. Filed June 6, 1890. Serial No. 354,472. (No model.)



Claim.—1. In a galvanic apparatus, the combination of a battery having a flat thin case faced on one side with felt or like material, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

2. In a galvanic apparatus, the combination of a battery having a flat thin case, having on one side an electrode protruding through the case and a switch for operating in connection with said electrode, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

3. In a galvanic apparatus, the combination of a battery having a thin flat case faced on one side with felt or like material and having on the other side an electrode insulated from the case and a switch coacting with said electrode, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

4. In a galvanic apparatus, the combination of a battery having a flat thin case A, a protruding electrode D, insulated therefrom, a boss a^4, a switch E, having a concave recess near the free end for engaging with the electrode or with said boss, a strap for fastening the battery to the body, a contact-piece, a strap for fastening the contact-piece to the body, and a flexible conductor extending between one of the elements of the battery and the contact-piece, substantially as specified.

447,858. INDUCTION-PREVENTIVE FOR TELEPHONES. THOS. F. WRIGHT and ED. G. WILSON, Chicago, Ill. Filed July 28, 1890. Serial No. 360,165. (No model.)



Claim.—1. An induction-preventive for telephones, comprising a hollow casing having perforations therein, a tube extending between said perforations, and a coil one end of which is embedded in a spool or block of wood or its equivalent and the other terminates opposite the center of a perforation in the casing opposing the diaphragm of a telephone-receiver to which the casing is secured, substantially as described.

2. An induction-preventive for telephones, comprising a hollow casing provided with perforations, a tube consisting of a coil of metallic wire extending between said perforations, and a coil, one end of which is embedded in a spool or block of wood or its equivalent and the other terminates opposite the center of a perforation in the casing opposing the diaphragm of a telephone-receiver to which the casing is secured, substantially as described.

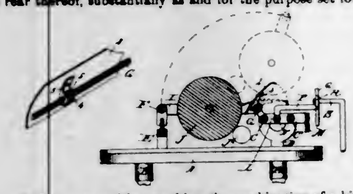
3. An induction-preventive for telephones, comprising a hollow casing provided with perforations, a tube extending between said perforations, a spool located within said casing, and a coil of wire wound upon said spool, one end of which is embedded in the spool and the other terminates opposite the center of a perforation in the casing opposing the diaphragm of the receiver to which the device is secured, substantially as described.

4. An induction-preventive for telephones, comprising a hollow casing provided with perforations, a tube consisting of a coil of metallic wire extending between said perforations, a spool located within said casing, and a metallic coil wound thereon, one end of which is embedded in the spool, and the other end terminates opposite the center of the perforation in the casing opposing the diaphragm of the telephone-receiver to which the device is secured, substantially as described.

5. The combination, with a telephone-receiver and the diaphragm thereof provided with a central perforation, of an induction-preventive comprising a hollow casing provided with perforations, a tube extending between said perforations, a spool located within said casing, and a metallic coil wound upon said spool, one end of which is embedded in the spool and the other terminates opposite the center of the perforation in said diaphragm, substantially as described.

447,859. TYPE-WRITING MACHINE. GEORGE W. N. YOST, New York, N. Y., assignor to the Yost Writing Machine Company, same place. Filed Mar. 31, 1888. Serial No. 269,064. (No model.)

Claim.—1. In a type-writing machine, the combination, with a hinged paper-carriage, of a paper-table hinged to said paper-carriage in rear thereof, substantially as and for the purpose set forth.



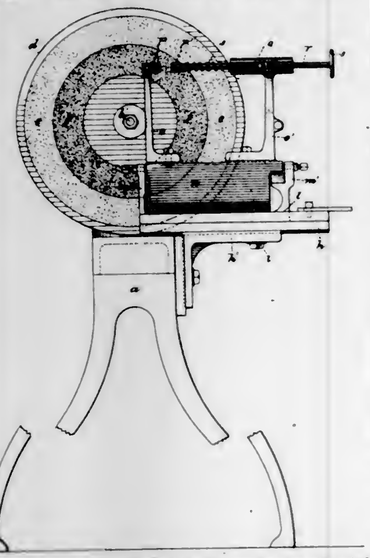
2. In a type-writing machine, the combination of a hinged paper-carriage, a paper-table hinged to said paper-carriage in rear thereof, and a spring for turning said paper-table independently of the paper-carriage when the latter is moved about its axis of motion, substantially as set forth.

3. In a type-writing machine, the combination of a hinged paper-carriage, a paper-table hinged to said paper-carriage in rear thereof, and a pin-and-slot connection between the paper-carriage and the paper-table, substantially as set forth.

4. In a type-writing machine, the combination of a hinged paper-carriage, the hinge-rail of which is provided with a pin or stud, a paper-table hinged to said hinge-rail and having a slot for said pin or stud, and a spring for turning said paper-table, substantially as set forth.

5. In a type-writing machine, the combination of a guided sliding yoke, a paper-carriage hinged to said yoke, a paper-table hinged to the hinge-rail of the paper-carriage, and a spring for turning said paper-table, substantially as set forth.

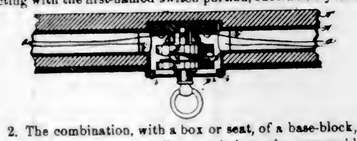
447,860. CORK-GRINDING MACHINE. CHARLES D. ARMSTRONG, Pittsburg, Pa. Filed Oct. 25, 1890. Serial No. 369,332. (No model.)



Claim.—In a cork-grinding machine, the combination of a grinding-disk having an abrasive face, mechanism for rotating said disk, a table mounted on slides, on which it is longitudinally movable in front of and parallel with the face of the grinding-disk, a swinging cork-holding frame pivotally mounted on said table and movable laterally on its pivot toward the face of said grinding-disk, a rotary cork-holder on said frame, and a handle by which the holder may be turned and the cork moved to or from the disk, substantially as and for the purposes described.

447,861. CONDUIT FOR ELECTRIC WIRING IN BUILDINGS. SIGMUND BERGMANN, New York, N. Y. Filed Aug. 1, 1890. Serial No. 360,652. (No model.)

Claim.—1. The combination, with a frame having a base of insulating material and contact-plates thereon, of a switch portion removably engaging with said contact-plates, and a rotary switch portion coacting with the first-named switch portion, substantially as specified.

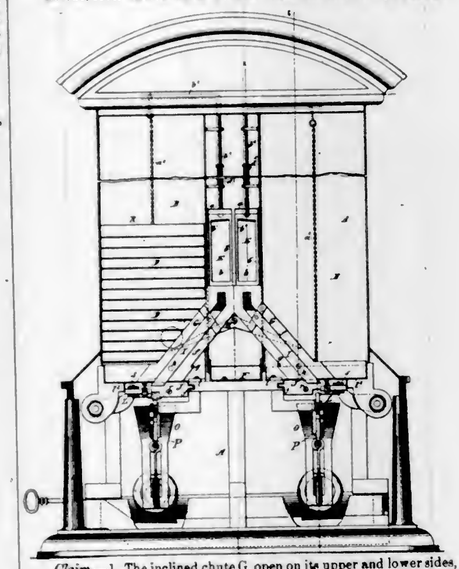


2. The combination, with a box or seat, of a base-block, contact-plates therein having spring-clips, a switch portion removably engaging with said clips, and a rotary switch portion coacting with the first-named switch portion, substantially as specified.

3. The combination, with a box or seat and a base-block of vitreous material therein having binding-screws, of a switch consisting of a rotary portion and a stationary portion removably engaging with the base-block, substantially as specified.

4. In a switch, the combination, with the box having the binding-screws and plates therein, a rotary shaft, a wheel of insulating material mounted thereon, contact-plates thereon arranged in two circles, a wheel of insulating material constructed to rotate with the shaft, and curved resilient contacts on said wheel, substantially as specified.

447,862. VENDING APPARATUS. THEODOR BERGMANN, Gaggenau, Germany, assignor to John H. Volkmann, New York, N. Y. Filed Nov. 20, 1888. Renewed Dec. 10, 1889. Serial No. 333,179. (No model.)



Claim.—1. The inclined chute G, open on its upper and lower sides, combined with the pivoted balanced lever H beneath said chute, the end of said lever passing into said chute from the under side, said lever forming the bottom of the chute and being adapted to be depressed by a coin of proper weight to form a tread for the coin, and to cause a coin of less weight to pass out of the upper side of the chute, substantially as described.

2. The inclined plates *e f*, connected together on their edges near one end and free on their edges above said connected part, thereby forming open upper and lower sides, combined with the balanced lever H below said plates, the end of said lever being passed between said plates from the under side, thereby forming a tread for a coin of proper weight, and causing a coin of less weight to pass through the upper side of the chute, substantially as described.

3. The chute E, having an opening *b* and edges *b'* at the sides of said opening, combined with the inclined chute G, having open upper and lower sides, and with the balanced lever H below said chute, the end of said lever being passed within said chute from below, and with a stop *g* for the end of the lever, said lever thereby forming a tread for a coin, substantially as described.

4. In a vending apparatus, the combination, with the casing having an opening *a* for the entry of coins, of a rod b^3 for passing across said opening, a spring for raising said rod, and a weight for depressing said rod, substantially as described.

5. The combination, with a chute having an opening *i*, of a spring I, having a pin *h* for passing into said opening, and with a pusher that engages said spring, and a lever H for passing across said chute, all arranged for operation substantially as herein shown and described.

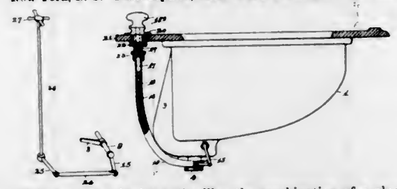
6. In a vending apparatus, the bar *j*, carrying screws *q q* and *r*, combined with the movable screw *u*, said screws being adapted to support a coin in the conveyer and to release said coin when the screw *u* is moved, substantially as described.

7. In a vending apparatus, the bar *j*, carrying screws *q* and *r*, combined with the movable screw *u* and with the rod N for moving said screw, all arranged for operation substantially as herein shown and described.

8. In a vending apparatus, the bar *j*, carrying screws *q* and *r*, combined with the lever L and screw *u*, that is carried by said lever, and with the rod N for moving said lever L and screw *u*, substantially as described.

9. In a vending apparatus, the bar *j*, having lugs *p p* and screws *q q r*, combined with the lever L, having screw *u* and the spring *t*, and with the rod N for moving the lever L and screw *u*, all arranged for operation substantially as herein shown and described.

447,863. WASH-BASIN PLUG AND MECHANISM. WILLIAM BUNTING, Jr., Brooklyn, assignor to the Meyer-Sniffen Company, Limited, New York, N. Y. Filed Sept. 30, 1890. Serial No. 366,647. (No model.)



Claim.—1. In a basin or the like, the combination of a plug or stopper pivoted within the basin and extending down into the outlet thereof, a rock-shaft, a finger on said rock-shaft adapted to vibrate in said outlet to lift said plug or stopper, and means, substantially as described, for rocking said shaft.

2. In a basin or the like, the combination of a plug or stopper pivoted within the basin and extending down into the outlet thereof, a rock-shaft having a finger arranged within said outlet to lift said plug or stopper, a crank-arm on said rock-shaft, and means, substantially as described, attached to said crank-arm and extending to or in the vicinity of the top of the basin.

3. In a basin or analogous structure, the combination, with a plug or stopper, of a rock-shaft provided with a lifting-finger and a crank-arm, a chain attached to the crank-arm at its lower end and connected at its upper end to a knob or handle, and a tubular guide for said chain.

4. In a basin or analogous structure, the combination, with a plug or stopper, of a rock-shaft, a lifting-finger, a crank-arm, a chain, a knob or handle, a tubular coupling 19, attached to the slab, and a guide-tube for the chain attached to the coupling.

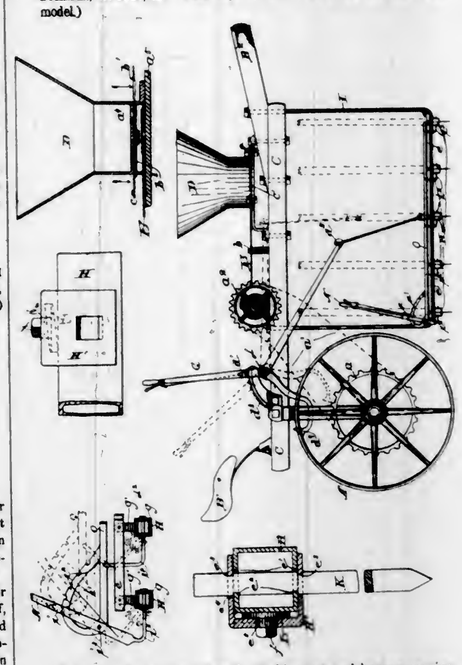
5. The combination, in a basin or the like, the outlet of which is provided with a lateral housing 10, of a plug or stopper fitted to said outlet from within the basin and opening upwardly, a rock-shaft mounted in said housing 10, a finger on said rock-shaft extending into said outlet and adapted to lift said plug or stopper, a crank-arm, and means, substantially as described, attached to the crank-arm for rocking said shaft and elevating and depressing the lifting-finger.

6. The combination, in a basin or the like having an overflow-pipe extending to the outlet of the basin on one side and formed at the outlet opposite the overflow-pipe with a lateral housing, of a plug or stopper fitted to said outlet and opening upwardly, a rock-shaft mounted in said housing, a lifting-finger extending from said rock-shaft into the outlet beneath the plug or stopper, and means, substantially as described, for rocking said shaft and elevating and depressing said finger.

7. The combination, in a basin or analogous structure formed with a lateral chamber 10 at the outlet thereof and having a pivoted plug or stopper within the basin, of a rock-shaft mounted in said chamber, a thimble 4 in the outlet of the basin, having an opening 7, a lifting-finger extending from said rock-shaft through the opening 7 to the bottom of the plug or stopper, and means, substantially as described, for rocking said shaft.

8. The combination, in a basin or analogous structure formed with a lateral chamber 10 and having a pivoted plug or stopper, of a rock-shaft mounted in said chamber, a thimble 4 in the outlet of the basin, having an opening 7, a lifting-finger extending from the rock-shaft through the opening 7 to the under side of the stopper, a crank-arm on the rock-shaft exteriorly of the chamber, a flexible connection attached to the crank-arm and extending to or above the top of the basin, and a tubular guide for said flexible connection.

447,864. COMBINED SEEDER AND HARROW. WILLIAM C. BURRELL, La Salle, Ill. Filed Sept. 1, 1890. Serial No. 363,704. (No model.)



Claim.—1. In a combined seeder and harrow and harrow-carrier, the combination of the teeth-holding bars H, having openings therein for the teeth, and the cross-bars *e*, pivotally securing the bars H together, the whole hinged to the hanger I, with the frame C, having the hanger I, the tongue B^3, seeder D, having its bottom provided with the opening a^4, the disk B', having the openings b^3 b^3 b^4 b^5 and the spring-actuated dog *c*, the plate a^5, the lever E, secured to the frame C, the worm-cam F, the levers G, the spring-seat B', the axle B, supporting the frame C and having the wheels A A', and the wheel A', having the sprocket-wheel *a*, connected with the wheel a^3 by means of the belt *a'*, substantially as set forth.

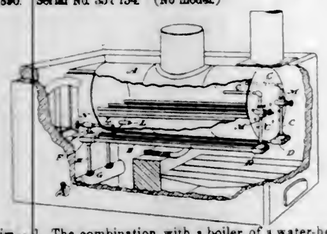
2. In a combined seeder and harrow and harrow-carrier, the combination of the main frame C, having a seeder D, operated by the movement of the wheels of the carriage, with the carriage, the bars H, *e*, and O, secured together and divided into two parts and hinged on the hanger I, secured to the frame C, the bars H having the holes e', the teeth K, having the niches e^2 e^2, the clamp H', having the holes e^3, and a wedge, the bands *g*, having the shanks *g'*, pivotally secured to the bars *e*, the levers G, foot-rests d^4, and the levers N, having the pawl *i* and fulcrumed on the bar O and having the rods i^3, substantially as set forth.

3. In a combined seeder and harrow and harrow-carrier, the combination of the harrow-frame H, *e*, and O, secured together and divided into two parts and hinged on the hanger I, secured to a frame, the bars H having the holes e', the teeth K, the clamps H, having holes e^3 and a wedge, and the bands *g*, having the shanks *g'*, pivotally secured to the bars *e*, with the hanger I, the seeder D, operated by the movement of the wheels of the carriage, the levers G, foot-rests d^4, and the levers N, fulcrumed on the bar O and having the rods i^3, substantially as set forth.

4. In a combined seeder and harrow and harrow-carrier, the combination of a main frame C, mounted on a carriage, with the carriage, the bars H, *e*, and O, secured together and forming the harrow-frame and divided into two parts, each part being hinged on a hanger I, secured to the main frame, the bars H having the holes e', the teeth K, having the niches e^2 e^2, clamps H', having holes e^3 e^3, the rotary wedge L, having the shank *f* and pivotally secured to the bars *e*, the seeder

D, operated by means of the movement of the wheels of the carriage, the levers G, foot-levers d^3, and the levers N, having the pawls i, rods i^3, and fulcrumed on the bars O, substantially as set forth.

447,865. STEAM-GENERATOR. JAMES J. BUSH, Newark, N. J., assignor of one-half to Thomas F. Powers, Brooklyn, N. Y. Filed July 5, 1890. Serial No. 357,734. (No model.)



Claim.—1. The combination, with a boiler, of a water-heater and steam-generator consisting of a series of straight pipes B, arranged immediately below the boiler and in the fire-box or flame-chamber, communicating through a compound coupling at one end with a single pipe, which also communicates with the boiler at or near the top thereof, and at the other end through a compound expansion-coupling with a pipe which communicates with the boiler at or near the bottom thereof, substantially as shown and described.

2. The combination, with a boiler, of a water-heater and steam-generator consisting of a series of straight pipes B, arranged immediately below the boiler and in the fire-box or flame-chamber, communicating through a compound coupling at one end with a single pipe, which also communicates with the boiler at or near the top thereof, and at the other end through a compound expansion-coupling with a pipe which communicates with the boiler at or near the bottom thereof, the said couplings being also provided with passages, as J, in a direct line with the pipes of the series, substantially as shown and described.

3. The combination, with a boiler, of a steam-generator consisting of a series of pipes B, arranged immediately below the boiler, the couplings F and D, the pipes E and C, and the mud-drum G, the pipe E being in communication with the boiler at one end at or near the bottom thereof and the pipe C being in communication therewith at the opposite end and at or near the top thereof, each of said pipes being also in communication with each of the pipes of the series B by means of curved passages in the couplings F and D, said couplings being also provided with passages J, which communicate with the pipes B in a direct line, substantially as shown and described.

4. The combination, with a boiler, of a steam-generator consisting of a series of pipes B, arranged immediately below the boiler, the couplings F and D, the pipes E and C, and the mud-drum G, the pipe E being in communication with the boiler at one end at or near the bottom thereof and the pipe C being in communication therewith at the opposite end and at or near the top thereof, each of said pipes being also in communication with each of the pipes of the series B by means of curved passages in the couplings F and D, said couplings being also provided with passages J, which communicate with the pipes B in a direct line, and the mud-drum being in communication with pipe E by means of a passage through coupling F in a direct line therewith, substantially as shown and described.

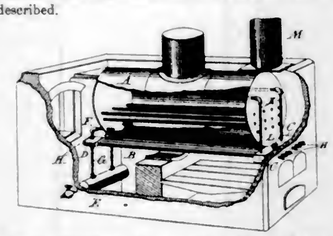
5. The combination, with a boiler, of the steam-generating pipes B, the expansion-couplings F, the coupling D, and pipes C and E, the construction being such that there is a direct communication from the lower part of the boiler at one end and the upper part of the boiler at the other end through said pipes and couplings, substantially as shown and described.

6. The combination, in a steam-generator, of a coupling having a series of longitudinal passages entering the same at one end and communicating with the central vertical passage and a series of longitudinal passages entering at the opposite end and communicating with the first-named passages in a direct line therewith, substantially as shown and described.

7. The combination, with a boiler, of a series of pipes B, arranged beneath the same, the coupling provided with passages with which the pipes B communicate, the passages closed by the plugs K, and the passages with which the pipes E and H communicate, said series of pipes being in communication with the boiler, substantially as shown and described.

447,866. STEAM-GENERATOR. JAMES J. BUSH, Newark, N. J., assignor of one-half to Thomas F. Powers, Brooklyn, N. Y. Filed Jan. 16, 1891. Serial No. 378,060. (No model.)

Claim.—1. The combination, with a boiler, of a water-heater and steam-generator consisting of a series of pipes, as B, arranged immediately below the boiler and the fire-box or flame-chamber, communicating through a coupling, as D, at one end with a single pipe, which also communicates with the boiler at or near the bottom thereof, and at the other end through a water box or chamber, as C, with a pipe which communicates with the boiler at or near the top thereof, the water box or chamber constituting an arch plate and separating the front end of the boiler-flues from the furnace, substantially as shown and described.

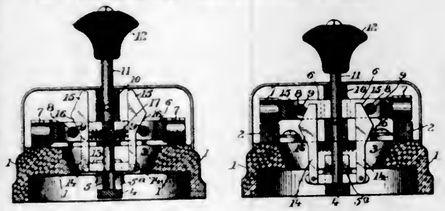


2. The combination, with a boiler, of a water-heater and steam-generator consisting of a series of pipes, as B, arranged immediately below the boiler and in the fire-box or flame-chamber, communicating through a coupling, as D, at one end with a single pipe, which also communicates with the boiler at or near the bottom thereof and with a pipe which communicates with the mud-drum, and at the other end through a water box or chamber, as C, with a pipe which communicates with the boiler at or near the top thereof, the water box or chamber constituting an arch plate and separating the front end of the boiler-flues from the furnace, substantially as shown and described.

3. The combination, with a boiler, of a water-heater and steam-generator consisting of a series of pipes, as B, arranged immediately below the boiler and in the fire-box or flame-chamber, communicating through a coupling, as D, at one end with a single pipe, which also communicates with the boiler at or near the bottom thereof, and at the other end through a water box or chamber, as C, with a pipe which communicates with the boiler at or near the top thereof, the water box or chamber constituting an arch plate and separating the front end of the boiler-flues from the furnace, and being provided with plugs or tubes K, which extend through the front wall of the furnace in line with the pipes of the series B, and also in line with similar plugs with which the couplings D are provided, substantially as shown and described.

4. The combination, with a boiler, of a water-heater and steam-generator consisting of separate series of pipes, as B, arranged immediately below the boiler and in the fire-box or flame-chamber, each series being in communication at one end through couplings, as D, with separate single pipes, which also communicate with the boiler at or near the bottom thereof, and at the other end through a water box or chamber, as C, constituting an arch plate, which separates the front end of the boiler-flues from the furnace, with a pipe or pipes which communicate with the boiler at or near the top thereof, substantially as shown and described.

447,867. ELECTRIC SWITCH. HORACE T. CLARK, Bridgeport, Conn. Filed Jan. 26, 1891. Serial No. 379,002. (No model.)



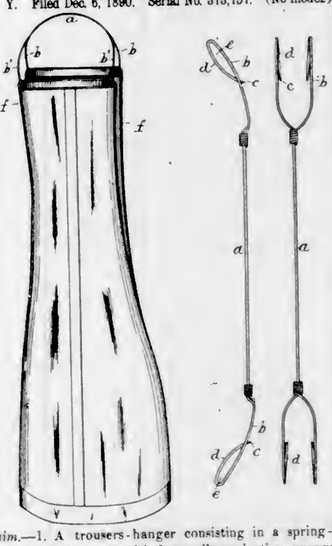
Claim.—1. In an electric switch, the combination, with a vertically-movable circuit-closer, of a pair of double-faced actuators, a spring for forcing said actuators apart, a handle for moving them, and means of engagement between their operating-faces and the circuit-closer, substantially as described.

2. In an electric switch, the combination, with a vertically-movable circuit-closer, of the handle, the arms carried thereby and provided with double oblique faces, and a spring arranged between the arms, substantially as set forth.

3. In an electric switch, the combination, with the base and suitable terminals, of the circuit-closing bar and guides wherein it may move vertically, a vertically-movable operating-handle, a pair of pivoted arms carried by said handle and each provided with a double oblique face, a spring for the outward actuation of the arms, and pins or projections upon the circuit-closing bar, against which the oblique faces on said arms may act, substantially as set forth.

4. The combination, with the base, the terminals, and the circuit-closing bar having a central opening and suitable guides, of the vertically guided and longitudinally-movable operating-handle, and the spring actuated arms pivoted thereto, each arm provided with a double oblique operating-face, substantially as and for the purpose set forth.

447,868. TROUSERS-STRETCHER. ARTHUR B. COGSWELL, Oswego, N. Y. Filed Dec. 6, 1890. Serial No. 373,757. (No model.)

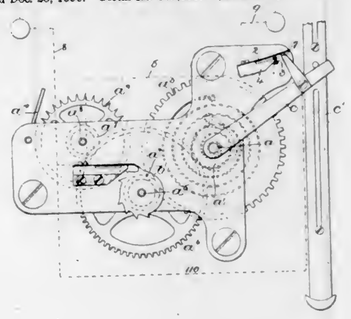


Claim.—1. A trousers-hanger consisting in a spring-body *a*, forked at its opposite ends with forwardly-projecting prongs curved to shape the bottom of the trousers, and provided upon their outer or convex sides with spurs to engage the cloth, substantially as herein set forth.

2. A trousers-hanger consisting in a spring-body *a*, forked at its opposite ends with wire prongs, the wire of each prong being folded backward in a loop upon the inner side of the prong and its point bent across the prong and projected beyond the outer side of the same to form a spur yielding in relation to the prong, as and for the purpose set forth.

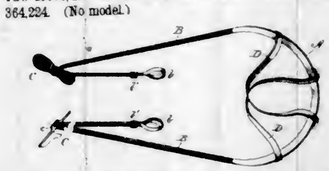
3. A trousers-hanger folded at its opposite ends with wire prongs, the wires being joined together by twisting at the base of the fork, and the wire of each prong being folded back in a loop upon the inner side of the prong and its point bent across the prong and projected beyond the outer end of the same to form a spur yielding in relation to the prong, as and for the purpose set forth.

447,869. SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass. Filed Dec. 23, 1890. Serial No. 375,553. (No model.)



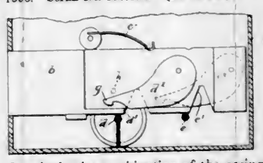
Claim.—In a signal-box, a train and signal-wheel, combined with a switch for shunting out the said signal-wheel and another switch for cutting out the said signal-wheel, said switches being operated in succession to first shunt out and thereafter cut out the said signal-wheel, substantially as described.

447,870. OBSTETRICAL HARNESS. WILLIAM A. CONANT, Paw Paw Grove, Ill. Filed Feb. 6, 1889. Renewed Sept. 8, 1890. Serial No. 364,224. (No model.)



Claim.—The obstetrical device herein described, consisting of the broad belt, as A, having the stirrup-straps B secured to its respective ends, said straps extending around the feet of the patient back to a point within reach of the hands, the parallel portions being unconnected to permit of their free movement over the feet, and foot-rests, as C, loosely held in the folds of the straps and provided with anti-friction grooves or guides on their outer faces to retain the straps in place and permit their easy movement over the same, substantially as described.

447,871. LOCK. LESTER S. ELLSWORTH, Holdrege, Nebr. Filed June 12, 1890. Serial No. 355,159. (No model.)



Claim.—In a lock, the combination of the casing, the solid bolt, the opposite sides of the rear end of the bolt being recessed, key-holes in opposite sides of said casing out of alignment with each other, notches in the lower edge of the bolt opposite each key-hole, the two gravity-catches pivoted in said recesses on opposite sides of the bolt and extending across said notches and having the beveled and shouldered ends, stops to limit their downward swing, and the pin for each catch formed on the casing, all arranged and operating substantially as described.

447,872. BOOT OR SHOE SEWING MACHINE. ANDREW EPPLER, Jr., Newtonville, assignor to the Eppler Welt Machine Company, Boston, Mass. Filed Sept. 1, 1890. Serial No. 363,735. (No model.)

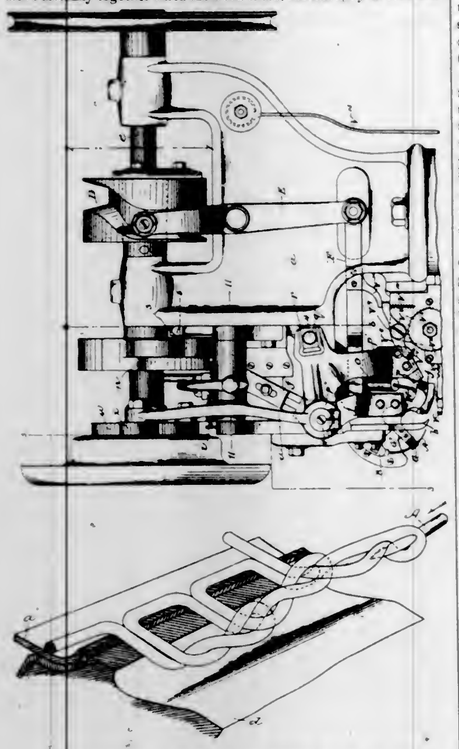
Claim.—1. In a sole-sewing machine, the combination, with a fixed channel-guide, of a laterally-movable work feeding and puncturing awl, which is so located relative to said channel-guide when making its work-puncturing movement that a continuation of the line of movement of the said awl will intersect said channel-guide near its point, whereby the between substance of the work will be directly supported by said channel-guide against the thrust of the said awl.

2. In a sole-sewing machine, the combination, with a fixed channel-guide, of a laterally-movable work feeding and puncturing awl so located relative to said channel-guide when making its work-puncturing movement that a continuation of the line of movement of said awl will intersect the said channel-guide near its point, and means for so reciprocating said awl in the direction of its length that the forward movement thereof will be arrested before the point of said awl quite reaches the channel-guide, whereby a channel-guide which will not be impinged against by the awl may be employed to support the between substance directly against the thrust of the said awl.

3. The combination, in a sole-sewing machine with a fixed channel-guide and a curved oscillating needle located when retracted at one side of said channel-guide, of a welt-guide, a curved reciprocating awl, a looper, and a horizontally-movable rest, said welt-guide, awl, looper, and rest being all located at the opposite side of said channel-guide from the said needle, and the said channel-guide being located directly in the line of the path of the awl when the latter is making its puncturing movement.

4. The combination, with a fixed channel-guide, of a welt-guide, a curved reciprocating awl, a looper, and a horizontally-movable rest, all located at one side of said channel-guide, a curved oscillating needle located when retracted at the opposite side of said channel-guide, a guard co-operating with said needle, two oscillating levers supporting

said awl and welt-guide and both mounted on a common center, whereby the awl and welt-guide are enabled to work in the same arc and to move laterally together when the work is fed, substantially as set forth.



5. The combination, with the fixed channel-guide, the oscillating needle, and the needle-guard, relatively arranged as described, of a welt-guide, a curved reciprocating awl, and a looper, all located at one side of the channel-guide, two oscillating levers supporting said awl and welt-guide and mounted on a center common to both, and means for laterally reciprocating said levers to give the awl its feeding and its return or back-feed movements, as set forth.

6. The combination of the fixed channel-guide, the awl, the welt-guide, the levers p' f'', respectively supporting the awl and welt-guide, a fixed center or stud, on which said levers are mounted to oscillate and move laterally, independent means for oscillating said levers, and the lever u, cam w, and spring z', whereby said levers are reciprocated laterally, as set forth.

7. The combination, with the fixed channel-guide, of the welt-guide, the oscillatory lever f'', supporting the same, the spring-supported slide k, having an incline j, adapted to normally support said lever and thereby hold the welt-guide against the work, a cam u, whereby said slide is depressed to release the lever f'', and a spring i, whereby said lever is held against the incline, as set forth.

8. The combination, with the fixed channel-guide and the stitch-forming mechanism, of the movable rest V, the toothed shank supporting said rest, the shaft having a pinion engaging the teeth of said shank, a ratchet on said shaft, a dog arranged to normally engage said ratchet and lock the rest, and means, substantially as described, for displacing said dog to release the rest, as set forth.

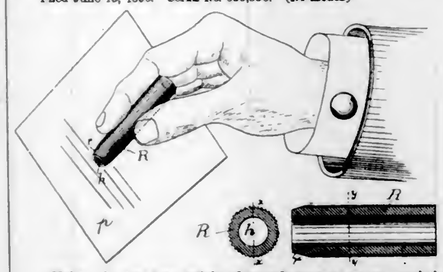
9. In a sole-sewing machine, the combination, with a curved reciprocating needle having a hook or barb and means for guiding a welted boot or shoe in suitable relation to the path of the said needle, of a work-feeding device to move the work at right angles to the path of movement of the needle, a looper, and mechanism to give said looper a complete revolution and an additional half-revolution around the needle, the said looper passing first under the needle in a direction opposite the feeding movement of the work, then over the needle in a reverse direction, and then again under the needle in the same direction as before, substantially as set forth.

10. The combination, with the curved barbed needle, of the looper having a thread-guiding eye, the lever O, supporting said looper, the grooved cam U, positively operating said lever O, the three-armed lever Q', having an arm Q, to which said lever O is pivoted, and an upper arm carrying the trundle-roll Q^4, the peripheral cam T, and the spring S for holding said roll in contact with the said cam T, whereby a revolving motion once and a half times around said needle is given to said looper.

11. The combination, with the fixed channel-guide, the work-feeding awl, and the stitch-forming mechanism, of the welt-guide and the awl, both movable laterally relative to the line of movement of the latter in piercing the stock, a spring, and devices co-operating with the latter for pressing the welt-guide yieldingly against the upper during the insertion and withdrawal of the needle and the feeding of the work, and a relatively weaker spring, which acts on the welt-guide during the backward or return movement of the awl and welt-guide to relieve the said pressure without straining the seam, as set forth.

12. The combination, with a fixed channel-guide, a work-feeding or laterally-movable awl, and stitch-forming mechanism, of a welt-guide movable laterally with the awl, and means for pressing the welt-guide against the material at a point opposite the channel-guide during the insertion and removal of the needle, whereby the parts being united are compressed independently of the thread and of the stitch-forming mechanism, as set forth.

447,873. TUBE ERASER. CHARLES HANIMANN, New York, N. Y. Filed June 13, 1890. Serial No. 355,338. (No model.)



Claim.—1. As a new article of manufacture, an eraser consisting of a hollow rubber tube provided with longitudinal corrugations on its outer surface, and with a smooth interior bore, whereby a sharp and even circumferential edge is always maintained, substantially as described.

2. The combination, with a pencil, of an eraser consisting of a hollow rubber tube provided with longitudinal corrugations on its outer surface, and with a smooth interior bore, whereby a sharp and even circumferential edge is always maintained, substantially as described.

447,874. BUCKLE. SAMUEL E. HARSH, Wabash, Ind., assignor of one-half to John M. Harter, same place. Filed Oct. 13, 1890. Serial No. 367,962. (No model.)



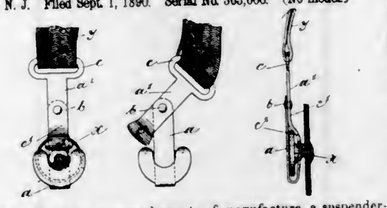
Claim.—The herein-described buckle, consisting of the side bars, the two end bars, the intermediate bar carrying the buckle-tongue resting on the end bar in proximity thereto, the other intermediate bar at the lower edges of said side bars, and the lug extending straight up from the upper face of said last-mentioned bar and having its upper end extending at right angles toward and in the same direction as said tongue to form a square hook, as set forth.

447,875. CIGAR-LIGHTER. ARTHUR F. HAWKESLEY, Altrincham, England. Filed Jan. 29, 1890. Serial No. 338,467. (No model.) Patented in England Sept. 1, 1886, No. 11,135.



Claim.—In a cigar or pipe lighter, the separate masses of ignitible composition g, threaded or molded in a series at distances apart upon a stick or core h, in combination with the case a, having slits f and the pusher e, substantially as set forth.

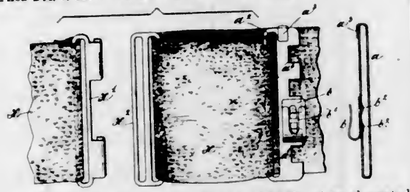
447,876. SUSPENDER-FASTENING. HENRY A. HAYDEN, Jersey City, N. J. Filed Sept. 1, 1890. Serial No. 363,600. (No model.)



Claim.—1. As an improved article of manufacture, a suspender-fastening consisting of a button-pocket of a J form, having a suspending stem and an upturned forked branch to take behind the button and engage the shank thereof, and a lever to which the suspending stem of the button-pocket is pivotally attached, the upper end c of said lever being adapted to be secured to the suspender-end and the lower part c' below the pivot taking behind the button in the pocket and having a shoulder c^3, which takes over the said button, substantially as set forth.

2. As an improved article of manufacture, a suspender-fastening consisting of a lever adapted to be secured to the suspender-end and carrying a retainer and locking-slide, and a button-pocket having a suspending stem pivotally attached to said lever, and an upturned forked branch which takes behind the button and engages the shank thereof, the said retainer being adapted to take over the upper part of the button in the pocket and the said slide being adapted to hold said pocket against movement with respect to said retainer, substantially as set forth.

447,877. WAIST-BELT. HENRY A. HAYDEN, Jersey City, N. J. Filed Dec. 6, 1890. Serial No. 373,838. (No model.)

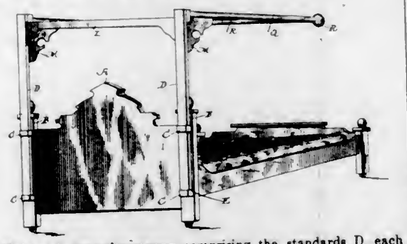


Claim.—1. The combination, with a waist-belt, of an elongated hoop-like slide a, which embraces the belt and is adapted to be shifted along the same, the inner bar of said slide, which extends transversely of the belt, being provided with a series of notches a', substantially as set forth.

2. An attachment for a waist-belt, consisting of an elongated hoop-like slide on and embracing the belt, said slide having a series of securing devices on its inner bar to receive a button-grip, and a detachable button-grip, also provided with a securing device to engage those on the slide, whereby said grip may be secured to the bar at different points, substantially as set forth.

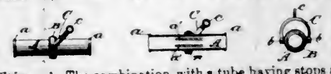
3. An attachment for a waist-belt, consisting of an elongated hoop-like slide a, having notches a' in its inner bar, and a button-grip b, having a clip composed of spring branches b^3, adapted to engage the margins of the notches a' in the bar, substantially as set forth.

447,878. MOSQUITO-CANOPY FRAME. ADAM JATHO, Victoria, Tex. Filed Nov. 15, 1889. Serial No. 330,430. (No model.)



Claim.—A mosquito-canopy comprising the standards D, each formed on its inside face with a recess provided with a cross projection for a hook to engage and on its front face with a recess provided with a cross projection, and at a point above said last recess with a threaded aperture, a cross-bar I, extending from one standard D to the other and provided at its ends with hooks entering the recesses formed in said standards and extending down back of the cross projections of said recesses, the brackets M, provided with hooks entering the recesses in the front of the standards D and extending back of the cross projections thereto, the top faces of the brackets being below the threaded apertures in the standards, the front cross-bar having threaded apertures, and the side bars resting upon said brackets so as to turn thereon, and having their ends threaded and entering the threaded apertures of the standards and of the front cross-bar, said thread being right and left, so that by turning the side-bars the standards and front cross-bar will be simultaneously adjusted to and from each other, said bracket serving to support said side bars during their adjustment, substantially as and for the purposes set forth.

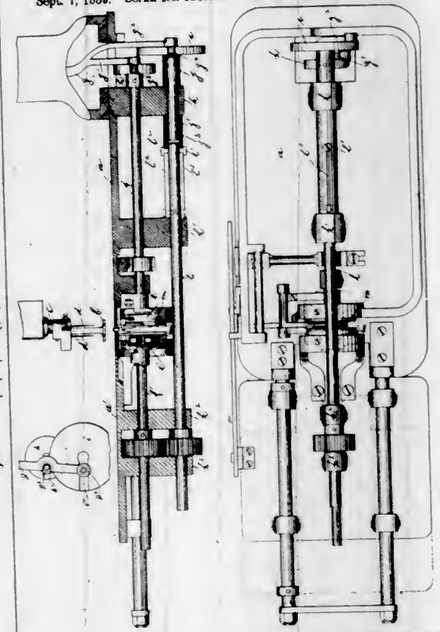
447,879. SUSPENSION DEVICE FOR PENCIL-CASES, &c. JOHN C. W. JEFFERYS and GEORGE DICKMAN, London, England, assignors to George W. Mabie, Brooklyn, N. Y. Filed June 7, 1890. Serial No. 354,549. (No model.) Patented in England Feb. 2, 1889, No. 1,897.



Claim.—1. The combination, with a tube having stops at its opposite ends, of a ring surrounding the tube and free to slide thereon between said stops, and an attaching device secured to the ring, substantially as set forth.

2. The herein-described holder, consisting of a tube provided with exterior flanges at its opposite open ends, a ring embracing the tube and free to slide thereon between the flanges, and a pendant pivoted to the opposite sides of the ring, substantially as set forth.

447,880. SHUTTLE-ACTUATING MECHANISM FOR DUPLEX-NEEDLE SEWING-MACHINES. FERDINAND KERN, Newark, N. J., assignor of three-fourths to Hellner & Strauss, New York, N. Y. Filed Sept. 7, 1889. Serial No. 323,262. (No model.)



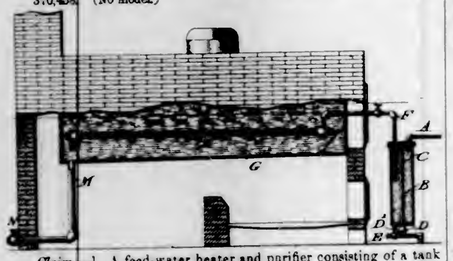
Claim.—1. In a duplex-needle machine, in combination with the shafts by which the shuttles are actuated, the forked connecting-rod, whereby motion is transmitted from the needle-bar shaft to both shuttle-shafts, substantially as set forth.

2. In a duplex-needle machine, in combination, the needle-actuating shaft, the shuttle-actuating shafts, the forked connecting-rod, and a grooved disk interposed between each shuttle-shaft and a prong of the forked connecting-rod, substantially as set forth.

3. In a duplex-needle machine, in combination, the shaft for driv-

ing the needle, the shaft *f* for driving a stationary shuttle, the shafts *f'* and *l* for driving a movable shuttle, (the latter shaft being provided with a telescope-joint,) and a forked connecting-rod *g*, whereby motion is imparted from the needle-shaft to the respective shuttle-shafts, substantially as described.

447,881. FEED-WATER HEATER AND PURIFIER FOR BOILERS. WILLIAM KERR, Philadelphia, Pa. Filed Nov. 6, 1890. Serial No. 370,458. (No model.)

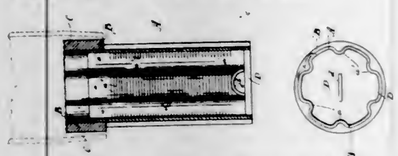


Claim.—1. A feed-water heater and purifier consisting of a tank with inlet and outlet pipes, said outlet-pipe leading upward from within the tank below the opening of the inlet-pipe, and a series of pipes, each of which is in communication at one end with said outlet-pipe and open at the other end, said parts being combined substantially as described.

2. A feed-water heater and purifier consisting of a tank with an inlet-pipe, an outlet-pipe leading into the upper part thereof, leading from the middle portion of said tank, having an enlarged upper end above the openings of the inlet and outlet pipes, a scum-discharge pipe below the opening of the inlet-pipe and a waste-pipe, a series of pipes communicating at one end with said outlet-pipe and open at the other end, a boiler in which said series of pipes are located, and a waste-pipe leading from the boiler at the end thereof where the open ends of the series of pipes are located and provided with a blow-off cock, said parts being combined substantially as described.

3. A feed-water heater and purifier having a tank with inlet and outlet pipes and a scum-separating device, and a series of pipes, each communicating with the said outlet-pipe at one end and open at the opposite end, said parts being combined substantially as described.

447,882. SAND-STRAINER FOR DEEP WELLS. JOHN H. KING, Cincinnati, Ohio, assignor of one-half to Rees W. Dugan, Covington, Ky. Filed Nov. 22, 1890. Serial No. 372,285. (No model.)



Claim.—1. The hereinbefore-described strainer for deep wells, consisting of the tube A, having its perimeter of varying diameters, the outer portions *a* of which are transversely slotted and the inner ones *a'* left unsevered to support the ribs *a*², which form the meshes of the strainer.

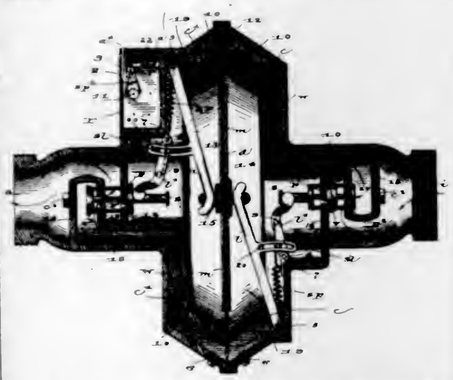
2. As a strainer for deep wells, the corrugated metal tube A, having the alternate longitudinal convex ribs *a* and concave depressions *a'*, the said ribs *a* being transversely slotted to form meshes for the strainer, substantially as shown and described.

3. The method of forming strainers for deep wells, which consists in corrugating the cylinder, mounting the same between centers, and revolving the said corrugated cylinder against a traveling saw-blade and severing the outer or higher corrugations transversely to form meshes for the strainer, substantially as shown and described.

447,883. GAS-METER. JAMES B. KNICKERBOCKER, Indianapolis, Ind. Filed July 11, 1890. Serial No. 358,460. (No model.)

Claim.—1. In a gas-meter, a casing composed of two equivalent parts, having outlet and inlet openings, and a single flexible diaphragm centrally secured therein, such casing provided with an outer rim, whereby a channel for the passage of the gas through openings in the diaphragm is formed between the rim and the walls of the central diaphragm-chamber, substantially as shown and described.

2. In a gas-meter, a casing composed of two equivalent parts with inlet and outlet connections on opposite sides of such casing, a single flexible diaphragm centrally secured therein, outlet and inlet valves seated in partitions formed in the halves of the casing adjacent to the inlet and outlet openings, levers connected to the diaphragm on each side, and spring-actuated secondary levers connected to the valve-stems and adapted to be controlled during a part of their movement by the diaphragm-levers and automatically controlled by the springs when such lever has reached a certain point, such casing having a channel to permit the passage of the gas through openings in the diaphragm between the inner wall of the casing and the wall of the diaphragm-chamber, all combined substantially as shown and described.



3. In a gas-meter, a casing having an exterior rim providing a channel-way between the rim and casing for the passage of the gas, such casing divided into two parts, a single diaphragm secured between them dividing the central chamber, an inlet formed upon one side and an outlet upon the other side of the casing, outlet and inlet valves seated in partitions formed in the ends adjacent to the outlet and inlet openings, and a pair of diaphragm-levers connected on either side of the diaphragm and adapted to initiate the movement of auxiliary levers pivoted to the interior walls of the casing and connected to the valve-stems at the other and controlled by a spring which automatically operates the valves when the action of the diaphragm-lever has carried the auxiliary lever beyond a certain point, in combination with a dial-registering mechanism connected to the casing and actuated by one of the diaphragm-levers, all combined substantially as shown and described.

4. A gas-meter comprising a hollow casing composed of two similar halves having outlet and inlet openings on opposite sides of the casing, a single flexible diaphragm centrally secured between the halves thereof, and outlet and inlet valves supported in partitions formed in the casing, their valve-stems connected to a stirrup-lever controlled by a coiled spring whose tension normally operates against the pressure upon the diaphragm, substantially as shown and described.

5. In a gas-meter, a hollow casing having an outside rim forming a channel-way for the passage of the gas between the rim and the casing, a single diaphragm dividing the chamber and secured between the two halves of the casing, outlet and inlet openings, and valves arranged therein, the movement of such valves controlled by a spring connected to the stem, whose tension normally operates to resist the pressure of the diaphragm, in combination with levers connected to the diaphragm and the casing provided with projections for initiating the movement of the spring-controlled stirrup-lever, and a registering mechanism connected to the casing, all combined substantially as shown and described.

6. A gas-meter comprising a hollow casing formed in two equal parts centrally connected to a single flexible diaphragm secured between them, having outlet and inlet openings, and valves, the latter seated in walls formed in the interior of the casing, such valves actuated by the tension of a coiled spring connected through stirrup-levers to their stems, the movement of such stirrup-levers initiated through arms connected with the diaphragm, whereby the final action of the valve is controlled by a spring independently of the further movement of the diaphragm, all combined substantially as shown and described.

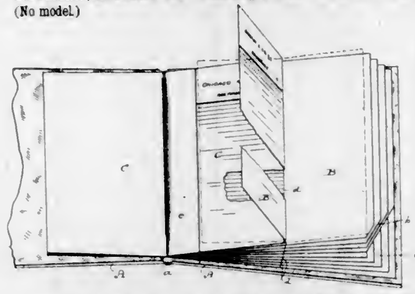
7. In a gas-meter, a hollow casing composed of two equivalent parts having outlet and inlet openings, valves seated in walls formed in a casing adjacent to such outlet and inlet openings, and a single flexible diaphragm extending from side to side, dividing the hollow chamber of the casing, an exterior passage-way for the gas through

openings in the diaphragm provided between the walls of the rim and those of the diaphragm-chamber, in combination with a dial-registering mechanism, substantially as shown and described.

8. A gas-meter comprising a hollow casing formed of two equal halves secured together, and a single flexible diaphragm set between such halves, forming an inlet-chamber upon one side of such diaphragm and an outlet-chamber upon the opposite side, such casing provided with an exterior passage-way for the gas between the walls of a rim and those of the casing, substantially as shown and described.

9. A gas-meter comprising a hollow casing formed of two similar halves secured together, and a single flexible diaphragm set between such halves, whereby an inlet-chamber is formed upon one side thereof and an outlet-chamber upon the opposite side, such casing provided with an exterior passage-way for the gas between the walls of the central diaphragm-chamber and the outer wall of the casing, such diaphragm perforated to admit the passage of the gas through such channel and through the diaphragm, substantially as shown and described.

447,884. COMBINED RECEIPT AND RECORD BOOK. HUGO LOEWENBACH, Milwaukee, Wis. Filed Aug. 8, 1890. Serial No. 361,424. (No model.)



Claim.—1. A carbon copying receipt and record book consisting of a series of leaves each divided by vertically-arranged perforations or indentations into two portions having blanks imprinted upon their opposite sides and of successively-increasing width from front to back of each series, substantially as set forth.

2. A carbon copying receipt and record book consisting of alternating groups of series of leaves each divided into two portions having blanks imprinted upon their opposite sides and of successively-increasing width from front to back of the book, the series of leaves in one group being arranged with full-length outer end extensions, alternating with groups having the end extensions of their series of leaves cut off or out for a portion of their length, substantially as set forth.

3. A carbon copying receipt and record book consisting of series of leaves each divided by vertically-arranged perforations or indentations into two portions having blanks imprinted upon their opposite sides, the inner portions of said leaves having inner blank portions or stubs of uniform width integral therewith, and the outer portions of said leaves having outer extensions of successively-increasing width, substantially as set forth.

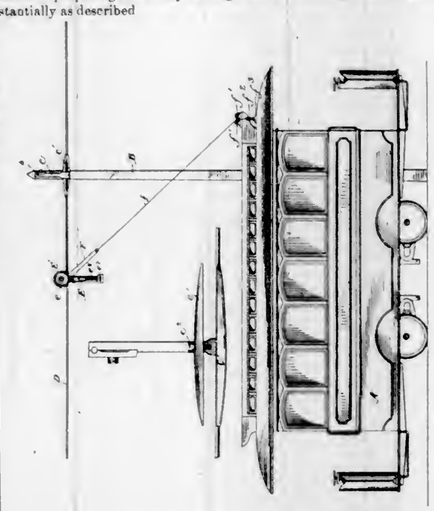
447,885. TROLLEY-CARRIAGE AND CONDUCTOR. CHARLES J. LUCE, Niantic, Conn. Filed Apr. 4, 1890. Serial No. 346,601. (No model.)

Claim.—1. In an electrical railway, the combination of a moving vehicle upon which a motor is carried, a main conducting-wire, a trolley-carriage mounted on the wire provided with a wheel or pulley above and below the wire, and a conductor attached to a rigid arm, as F, and the latter pivoted to the carriage at a point between the wheels or pulleys and connected at its other end to the moving vehicle, substantially as described.

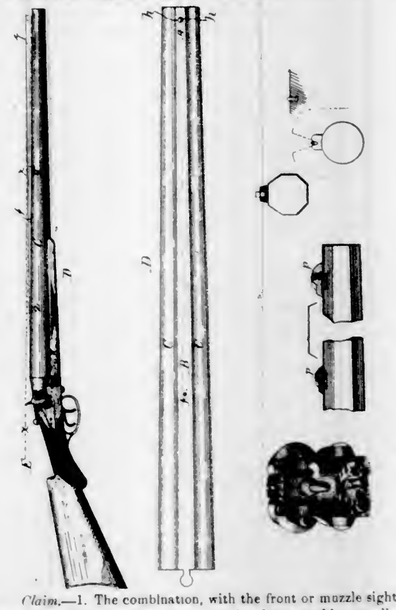
2. In an electrical railway, the combination of a moving vehicle bearing a motor, a main conducting-wire, and mounted thereon a trolley-carriage consisting of a frame supporting two circumferentially-grooved and co-operating wheels to receive said wire, and automatically adjusted to receive said wire or its supporting-brace, a wire connecting the trolley-carriage to the car and motor and provided with a flexible or elastic connection where it joins the car, substantially as and for the purposes specified.

3. In an electrical railway, the combination of a trolley-carriage with a conducting-wire, as D, supported by a bracket, as C, consisting of a connecting-brace, as *c'*, constructed in two longitudinal halves provided with longitudinal grooves to receive the conducting-wire, and means for securing the two halves together and arranged to pass between the circumferentially-grooved wheels of the trolley, substantially as described.

4. A trolley-carriage consisting of a frame supporting two wheels adapted to be run one above and the other below a main conducting-wire, the upper one having two circumferential grooves to conform to the wire and a connecting-brace, in combination with a moving vehicle for propelling the trolley-carriage and a connecting-brace F, substantially as described



447,886. GUN-SIGHT. WILLIAM LYMAN, Middlefield, Conn. Filed Dec. 8, 1890. Serial No. 373,980. (No model.)



Claim.—1. The combination, with the front or muzzle sight of a gun, of a smaller barrel sight, stud, or bead arranged intermediate of the front sight and sighting point or position of the eye in aiming and between or within the diverging lines or planes of sight extending from the said sighting-point to the sides or cross-sectional outlines of the front sight, substantially as and for the purpose specified.

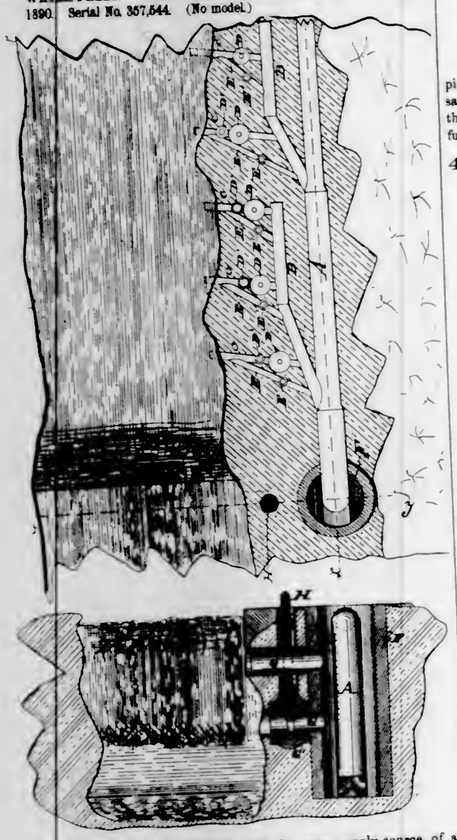
2. The combination, with the front or muzzle sight of a gun, of a smaller barrel sight, stud, or bead wholly of ivory or corresponding reflective material, arranged intermediate of the front sight and sighting point or position of the eye in aiming and between or within the

diverging lines or planes of sight extending from the sighting-point to the sides or cross-sectional outlines of the front sight, substantially as and for the purpose specified.

3. The combination, with the front or muzzle sight of a gun, of a smaller barrel sight, stud, or bead arranged intermediate of the front sight and sighting point or position of the eye in aiming and under the line of sight between vertical planes extending from the said sighting-point to the sides or lateral outlines of the front sight, substantially as and for the purpose specified.

4. In sights for shotguns, the combination of the spherical front sight or bead, of ivory or corresponding reflective material, and a similar smaller rear sight arranged intermediate of the front sight and sighting point or position of the eye in aiming between vertical planes extending from the said sighting-point to the sides of the front sight and under a line extending from the sighting-point to the base of the front sight, substantially as and for the purpose specified.

447,887. APPLIANCE FOR UTILIZING RIVER-CURRENTS AND WATER-FALLS. FRANK S. MARTIN, Hamburg, N. Y. Filed July 2, 1890. Serial No. 357,544. (No model.)



Claim.—1. The combination, with the water-supply source, of a main pipe connected with the same, one extremity of which extending beyond the lower water-level of said supply-source and provided with a water seal at the discharge end of said pipe, consisting of a pit having a discharge located above the discharge of said main pipe, as set forth.

2. The combination, with the water source, of a main pipe connected with the same and having one extremity extending downward to below the lower level of said source, a water seal around said downwardly-extending portion and having discharge-openings at different elevations in the same, and valves controlling said openings, substantially as described.

3. The combination, with the main pipe having the downwardly-projecting discharge, of a water seal around the same, consisting of a pit, the said pipe discharging into the lowest point thereof, discharge-openings at various elevations in said pit, and valves controlling said discharge-openings.

4. The combination, with the water-supply source, of a main pipe composed of sections of different diameters, and auxiliary pipes connecting therewith and with the water-supply source and provided with water-motors, said main pipe having a downwardly projecting discharge-pipe, substantially as and for the purpose set forth.

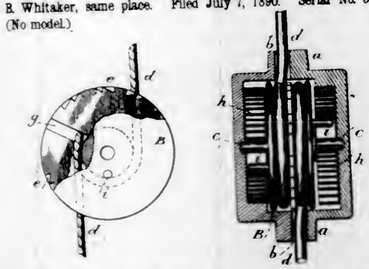
5. The combination, with the water-supply source, of the main pipe, the offsets connecting therewith, the pipes connecting with the water-supply source and said offsets, water-motors within said pipes controlled by valves, as described, and auxiliary pipes E, connecting said pipes and provided with suitable valves, substantially as described.

447,888. SCOOP. ROBERT J. MASBACH, New York, N. Y. Filed Apr. 24, 1890. Serial No. 349,310. (No model.)



Claim.—The combination of a scoop A with the pivoted shield-piece D, having cheeks *d*, that bear against the sides of the scoop, said shield-piece being adapted to fold against and extend the back of the scoop, and also to fold over the mouth of the scoop and form a funnel, as specified.

447,889. HANGING AND ADJUSTING DEVICE FOR CORDS. JAMES A. MATTESON, River Point, R. I., assignor of one-third to Henry B. Whitaker, same place. Filed July 7, 1890. Serial No. 357,990. (No model.)



Claim.—A hanging and adjusting device for electric lights, consisting of the two-part case A, with outside perforated lugs *a*, openings *n*, and cord-passages *b*, the pulley B, with slot *g*, two peripheral grooves, ratchet-teeth *e*, and studs *i*, the shaft *h*, journaled in the center of case, the springs *k k*, with hook at one end to engage stud *i* and fastened at the other end to the case, and the pivoted pawl *m*, extending through the case, all constructed and arranged as shown and described.

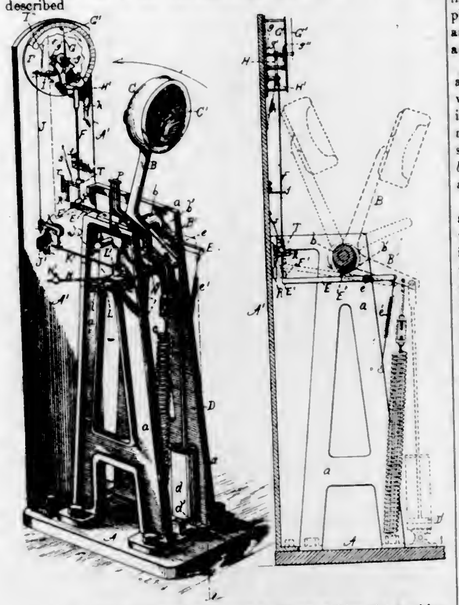
447,890. COIN-CONTROLLED INDICATING STRIKING-MACHINE. CHARLES J. MEANS, Boston, Mass. Filed Nov. 8, 1890. Serial No. 370,779. (No model.)

Claim.—1. In a coin-controlled indicating striking-machine, a striking mechanism comprising the following elements, viz: a striking-pad, a spring by which said striking-pad is held normally in position, a registering mechanism, and a separate spring which is normally restrained by the striking-pad mechanism, but freed by the operation of the said striking-pad mechanism, and thereby allowed to actuate the registering mechanism, substantially as set forth.

2. In a coin-controlled indicating striking-machine, a striking mechanism comprising a lever fixed on a shaft or arbor and held in its normal position by a spring, a cam on said arbor, a lever supported in the frame and engaged by said cam, a registering mechanism, and mechanism intermediate with said lever and registering mechanism for actuating the latter, whereby the registering mechanism is operated indirectly only by the force of the blow on the pad, substantially as described.

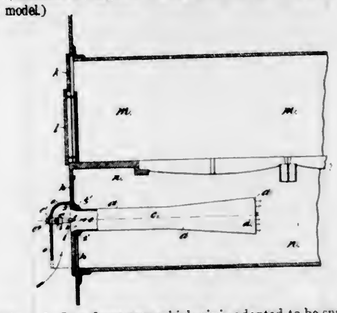
3. In a coin-controlled indicating striking-machine, the combination of the shaft *b*, provided with the cam *b'*, the lever B B', and pad C, the spring *c*, piston-rod, piston, and cylinder D D' *d*, lever E, provided with the protuberance E', spring *e'*, rod F, and registering mechanism, substantially as set forth.

4. In a coin-controlled indicating striking-machine, the combination, with the lever E E', spring *e'*, and rod F, actuating the registering mechanism and provided with the collar T, of the bell-crank lever R and spring S, combined and arranged as described, whereby a second blow is prevented from actuating the registering mechanism until the same is freed by the coin-controlled mechanism, substantially as described



5. In a coin-controlled indicating striking-machine, the combination of the following parts, viz: the coin-lever N N' N'', rock-shaft L, lever L', rod K', bell-crank K, link J, crank I, and pawl I', engaging with the registering mechanism, substantially as set forth.

447,891. FURNACE. JAMES J. MELDRUM and THOMAS F. MELDRUM, Manchester, England. Filed Nov. 12, 1890. Serial No. 371,199 (No model.)



Claim.—1. In a furnace to which air is adapted to be supplied to the ash-pit thereof under pressure, the combination, with the ash-pit, of a plate *h*, inclosing such ash-pit, a steam-jet blower or blowers *a*, consisting of a tapered inlet *b*, mixing-tube *c*, and diverging outlet *d*, and disposed substantially wholly within the ash-pit under the fire-bearers and in the horizontal plane, a plate or bar *o* across said blower-inlet, and a steam-supply nozzle *e*, supported by said plate or bar *o*, substantially as described.

2. In a furnace to which air is adapted to be supplied to the ash-pit thereof under pressure, the combination, with the ash-pit, of the plate *h*, by which said ash-pit is closed, a steam-jet blower or blowers *a*, consisting of a coned inlet, steam-jet nozzle, mixing-tube, and diverging outlet, as described, and disposed substantially wholly under the fire-bearers and within the ash-pit and in the horizontal plane, and a door *f* in said plate *h*, adapted to make an air-tight joint therewith, said plate and door at the sides thereof being provided with wedge devices adapted to cause said door to be drawn up to the plate and make said air-tight joint by its own weight, substantially as described.

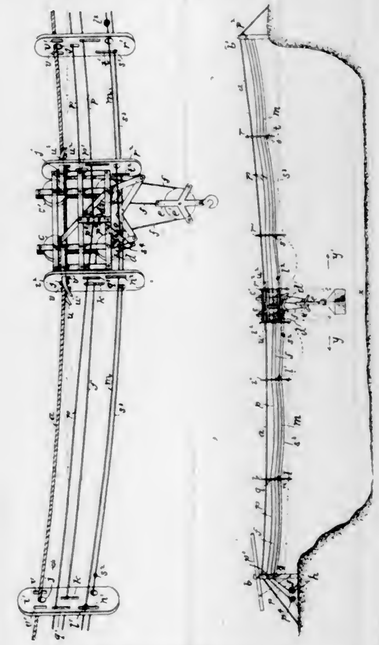
3. In a furnace to which air is supplied to the ash pit thereof by a steam-jet blower or blowers, the combination of front plate *h*, by which said ash-pit is closed, a steam-jet blower *a*, consisting of a coned inlet *b*, steam-nozzle *e*, mixing-tube *c*, and diverging outlet *d*, a bridge plate or bar *o*, disposed across said inlet *b* and supporting said nozzle and through which steam is adapted to be conveyed to said nozzle, and a steam-supply pipe *i*, substantially as described.

4. In a furnace to which air is supplied to the ash-pit thereof by a steam-jet blower or blowers, the combination of front plate *h*, by which said ash-pit is closed, a steam-jet blower *a* consisting of a coned inlet *b*, steam-nozzle *e*, mixing-tube *c*, and diverging outlet *d*, and connected to said plate at and by the outer end of said coned inlet by a screwed ring-nut *g*, a bridge plate or bar *o*, disposed across said inlet *b* and supporting said nozzle *e*, and a steam-supply pipe *i*, substantially as described.

5. In a furnace to which air is supplied to the ash-pit thereof by a steam-jet blower or blowers, the combination of front plate *h*, by which said ash-pit is closed, a steam-jet blower *a*, consisting of a coned inlet *b*, steam-nozzle *e*, mixing-tube *c*, and diverging outlet *d*, a bridge plate or bar *o*, disposed across said inlet *b* and supporting said nozzle *e* and through which steam is adapted to be conveyed to said nozzle, a plug *e'*, by which access to the inside of the nozzle is had for inspection and cleaning purposes, and a steam-supply pipe *i*, substantially as described.

6. In a furnace to which air is supplied to the ash-pit thereof by a steam-jet blower or blowers, the combination of front plate *h*, by which said ash-pit is closed, a steam-jet blower *a*, consisting of a coned inlet *b*, steam-nozzle *e*, mixing-tube *c*, and diverging outlet *d*, and disposed horizontally and substantially wholly within said ash-pit under the fire-bearers and suitably fastened to said front plate *h*, and a plate *o*, disposed over the inlet *b* of the blower and adapted to serve as a dust or dirt guard thereto, substantially as and for the purposes described.

447,892. HOISTING AND CONVEYING APPARATUS. THOMAS S. MILLER, New York, N. Y. Filed July 12, 1890. Serial No. 358,533. (No model.)



Claim.—1. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a fall-rope, a retaining and outward-hauling rope, and a rope-carrier which acts to sustain both the fall-rope and the retaining and outward-hauling rope, substantially as described.

2. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a fall-rope, a retaining and outward-hauling rope,

and a carrier whereby the retaining and outward-hauling rope is supported, substantially as described.

3. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a fall-rope, a retaining and outward-hauling rope, a rope-carrier whereby said fall-rope is supported, and a rope-carrier whereby said retaining and outward-hauling rope is supported, substantially as described.

4. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a fall-rope, a retaining and outward-hauling rope, a series of rope-carriers whereby said fall-rope is supported, mechanism whereby the position of said fall-rope carriers is automatically determined, a series of retaining and outward-hauling rope carriers, and mechanism whereby the position of said retaining and outward-hauling rope carriers is automatically determined, substantially as described.

5. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a fall-rope, a retaining and outward-hauling rope, a fall-rope carrier, a stop whereby the position of the same is determined, a retaining and outward-hauling rope carrier, a stop whereby the position of the same is determined, and means whereby said parts are supported, substantially as described.

6. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a retaining and outward-hauling rope, a series of retaining and outward-hauling rope carriers, a series of stops, each of which is adapted to engage one of said carriers, and means for supporting said stops, substantially as described.

7. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a fall-rope, a retaining and outward-hauling rope, a series of fall-rope carriers, a series of stops, each of which is adapted to engage one of said fall-rope carriers, means for supporting said stops, a series of retaining and outward-hauling rope carriers, a series of stops, each of which is adapted to engage one of said retaining and outward-hauling rope carriers, and means for supporting said last-mentioned stops, substantially as described.

8. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a fall-rope, a series of fall-rope carriers, a series of stops, each adapted to engage one of said fall-rope carriers, a retaining and outward-hauling rope, a series of retaining and outward-hauling rope carriers, a series of stops, each adapted to engage one of said retaining and outward-hauling rope carriers, and means whereby said two series of stops are supported so as to overlap one another, and thereby extend the range of movement of said two series of rope-carriers, substantially as described.

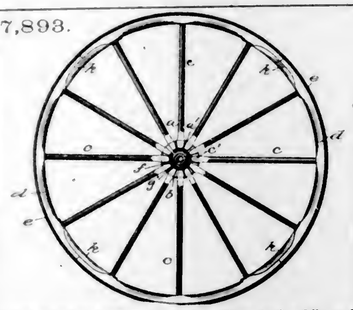
9. In a hoisting and conveying apparatus, in combination, a cable, a carriage to travel thereon, a retaining and outward-hauling rope, a retaining and outward-hauling rope carrier, and means connected with said carriage and said retaining and outward-hauling rope carrier, whereby the carriage causes the return of the carrier to a supporting position, substantially as described.

10. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a rope-carrier arranged to slide upon said cable, and means connected with said carriage whereby the support of said rope-carrier is transferred from the cable to the carriage, substantially as described.

11. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a retaining and outward-hauling rope, and a supporting device connected with said carriage, whereby the position of the retaining and outward-hauling rope is maintained at the point where it passes said carriage, substantially as described.

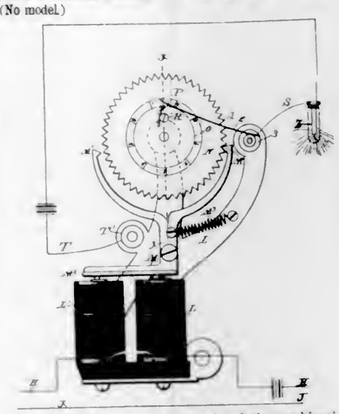
12. In a conveying apparatus, in combination, a cable, a carriage to travel thereon, a retaining and outward-hauling rope, a retaining and outward-hauling rope carrier, a stop whereby the supporting position of said carrier is determined, a rope whereby said stop is supported, and a supporting device connected with the carriage, whereby the position of said last-mentioned rope is determined at the point where it passes the carriage, substantially as described.

447,893.



fitting the mortises between the hub-sections, and a felly and tire encircling the spokes, substantially as described, and for the purpose specified.

447,894. ELECTRIC-LIGHT SIGNAL. WALTER R. MCCANN and SIMON S. CREIDER, Sterling, Ill. Filed Sept. 8, 1890. Serial No. 364,300. (No model.)



Claim.—1. In an electric alarm-signal, the combination, with the wires of a main circuit having a series of local alarm-circuits controlled thereby, of means for opening and closing the main circuit, consisting of a rotary drum having a metallic band or tire, a covering of non-conducting substance covering the tire, except an annular space at one end, rows of metallic pins through the non-conducting substance in electrical contact with the tire, a metallic tongue in constant electrical contact with the uncovered portion of the tire and with one wire of the main circuit, a series of tongues or strips engaging with the rows of pins, respectively, and means for establishing electrical connection between any one of the series of tongues and the other line of the main circuit, substantially as described.

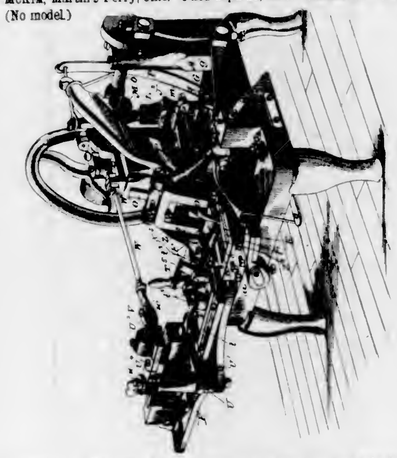
2. In an electric alarm-signal, the combination, with the wires of a main circuit provided with means for opening and closing said circuit, of a series of magnets connected with the wires of said circuit, each of which said magnets is supported upon but insulated from a signal-post, a ratchet-wheel pivotally connected with the post, an insulated disk on the face of the wheel and carried thereby, a metallic point on the disk in electrical connection with the wheel, a bifurcated armature-lever pivotally connected with the post for rotating the ratchet-wheel, a spring-plate attached to but insulated from the post, the free end of which is in constant contact with the periphery of the disk upon the ratchet-wheel, said parts all being in substantially the same plane, and a local alarm-circuit, one wire of which is connected with the post and the other wire is connected with the spring-plate, substantially as described.

3. In an electric alarm-signal, the combination, with the main circuit provided with means for opening and closing the same and an indicator, of a series of magnets connected with the wires of said circuit, each magnet being supported upon but insulated from a signal-post, a ratchet-wheel pivotally connected with the post, the outer face of which is provided with an annular series of guide-numerals to correspond with the indicator in the main circuit, an insulated disk upon the outside of the ratchet-wheel, a radial metallic tongue in the outside of the disk, a screw for retaining the tongue and the disk in position and for establishing electrical connection between the tongue and the wheel, a spring-plate attached to but insulated from the post, the free end of which is in constant contact with the disk, and a local alarm-circuit, one wire of which is connected with the post and the other wire is connected with the spring-plate, substantially as described.

4. In an electric alarm-signal, the combination, with the main circuit, of a series of local circuits controlled thereby, each local circuit being provided with a ratchet-wheel circuit-breaker, said wheel being provided with guide-numerals, an indicator in the main circuit, consisting of a fixed dial provided with two annular series of numerals, the outer one of which corresponds with the number of teeth of the ratchet-wheel in each local circuit, and the inner one corresponds with the number of local circuits, an indicator-hand adapted to be moved over the dial synchronously with the movements of the ratchet-wheels, and means for opening and closing the main circuit, substantially as described.

5. In an electric alarm-signal, the combination, with the main circuit, of a series of local circuits controlled thereby, each local circuit being provided with a ratchet-wheel circuit-breaker, and the main circuit with a rotary drum having rows or series of pins arranged therein, each row or series of which aggregates a different number, and two or more of which equal the number of teeth in each ratchet-wheel in the local circuits, metallic strips engaging with the rows of pins, respectively, and means for completing the main circuit through any of the strips independently of the other strips, substantially as described.

447,895. WIRE-NAIL-MAKING ATTACHMENT. GEORGE W. MCKIM, Martin's Ferry, Ohio. Filed Sept. 23, 1890. Serial No. 365,897. (No model.)



Claim.—1. The combination, with the wire-feed devices, of a fixed horizontal die having its cutting-edges in a vertical plane, a horizontally-movable cutting-die arranged to operate against said fixed die, and means intermediate the power-shaft of the machine and the horizontally-movable cutting-die, whereby it is operated, as and for the purpose described.

2. A wire-nail-making attachment for cut-nail machines, consisting of an automatic wire-feed, a horizontally-disposed fixed cutting-die, a horizontally-movable cutting-die, and a horizontally-disposed and laterally-movable yielding conductor intermediate the device and the cutting-dies, in combination with the gripper and heading devices, and means for operating the feed, the dies, and the gripper and heading devices, substantially as and for the purpose described.

3. The combination, with the wire-feeding devices and the heading and gripping devices, of a horizontally-disposed fixed die having its cutting-face in a vertical plane, a horizontally-disposed cutting-die arranged to be moved to operate against the fixed die, said movable die arranged for vertical and lateral adjustment on the main frame, and means, substantially as shown, for operating the cutting, heading, and gripping dies and the wire-feed devices, substantially as shown and described.

4. The combination, with the pivotal head of a cut-nail machine provided with a yielding wire-lifter adapted to raise the wire between the grippers, of the fixed cutting-die, the longitudinally-movable cutting-die, the gripping and the heading dies, means for operating the said grippers, header and cutting dies, and the wire-feeding devices, all arranged substantially as and for the purpose described.

5. The combination, with pivotal head of a cut-nail machine provided with a combined yielding wire-lifter and nail-pusher, of the gripping and heading dies and the detachable and adjustable feeding and cutting devices, substantially as shown and described.

6. In wire-nail-making attachments for cut-nail machines, the combination, with the drive-shaft, and header and gripper dies of such machines, of a fixedly-held horizontal cutting-die, a horizontally-disposed and longitudinally-movable cutting-die, and devices intermediate the rear end of said movable die and the drive-shaft for reciprocating said movable die, as described.

7. In a machine essentially as described, the wrie-lifter O', formed with a projecting nose-piece o and an upwardly and inwardly inclined face, substantially as and for the purpose described.

8. In wire-nail-making attachments for cut-nail machines, the combination, with the fixed cutting-die and the gripping and heading dies, of a longitudinally-movable cutting-die, a pivoted spring-actuated lever connected with the rear end of said movable die, the drive-shaft, and an eccentric cam mounted thereon adapted to engage and operate said lever, substantially as and for the purpose described.

9. The yielding conductor pivoted intermediate the wire-feed, and the cutting devices adapted to be swung in the direction of the movement of the movable cutter in one direction and back to normal position by spring-pressure, as and for the purpose described.

10. In a wire-nail-making machine, the combination, with the straightening-rolls, of a reciprocating wire-carriage arranged in advance thereof, formed with a wire-holding cam-lever, a rocking lever connected at one end to the said carriage, a connection between the opposite end of the said rocking lever and the drive-shaft, and a yielding conductor arranged in advance of the carriage, substantially as shown and described.

11. In a wire-nail-making attachment for cut-nail machines, a reciprocating wire-feed carriage formed with a longitudinal wire-groove, a locking dog or pawl, and apertured guide-lugs formed over the ends of said wire-groove, substantially as and for the purposes described.

12. The combination, with a reciprocating wire-feed carriage operating on the wire-feed stand, of a bell-crank lever mounted thereon, one arm of said lever connected to said carriage, the drive-shaft O, an eccentric mounted thereon, a pitman mounted on said eccentric, and an adjustable connection between the end of said pitman and the bell-crank lever, whereby the throw of the wire-carriage can be increased or decreased, substantially as and for the purpose described.

13. The combination, with the drive-shaft O, formed with an eccentric, and the reciprocating wire-feed carriage, of a bell-crank lever pivoted on the feed-standard, the lower arm thereof connected with the feed-carriage, a frictional connecting-block pivoted on the outer end of the upper arm, and a pitman connecting said drive-shaft eccentric and the friction connection, substantially as and for the purpose described.

14. The combination, with the fixed bed-socket, a stationary cutting-die held therein, and a fixed wire-guide disposed parallel to said die and formed with a downwardly-projecting finger, of a longitudinally-movable cutting-die, the upper pivotal head, and the combined yielding guide and pushing-finger held therein and adapted to operate between the fixed die and fixed guide, substantially as and for the purpose described.

447,896. INSULATION OF ELECTRIC CONDUCTORS. FREDERIC J. NASH, Brooklyn, N. Y. Filed May 12, 1890. Serial No. 351,460. (No model.)



Claim.—1. An electric conductor insulated by a surrounding bed or layer of insulating material in the condition of an impalpable powder, whereby the particles thereof pack together so closely as to exclude air and moisture.

2. An electric conductor insulated by a surrounding bed or layer of glass in the condition of an impalpable powder, whereby the particles thereof pack together so closely as to exclude air and moisture.

3. An electric conductor insulated by a surrounding bed or layer of insulating material in the condition of an impalpable powder, whereby the particles thereof pack together so closely as to exclude air and moisture, with a retaining-covering inclosing the insulating material.

4. An electric conductor insulated by a surrounding bed or layer of insulating material in the condition of an impalpable powder, whereby the particles thereof pack together so closely as to exclude air and moisture, with an impervious retaining-covering inclosing the insulating material to prevent access of air and moisture thereto.

5. An electric conductor insulated by a surrounding bed or layer

of pulverized or granulated insulating material, the particles of which are free to move relatively, and an impalpable powder of insulating material filling the interstices between the coarser particles, whereby air and moisture are excluded.

6. An electric conductor insulated by a surrounding bed or layer of pulverized or granulated vitreous or silicious materials, the particles of which are free to move relatively, and an impalpable powder of insulating material filling the interstices between the coarser particles.

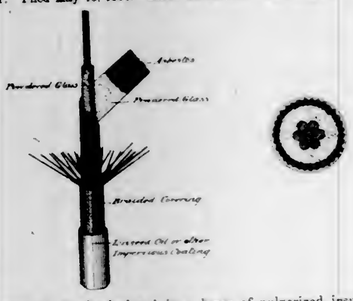
7. An electric conductor insulated by a surrounding bed or layer of pulverized or granulated glass, the particles of which are free to move relatively, and an impalpable powder of insulating material filling the interstices between the coarser particles.

8. An electric conductor insulated by a surrounding bed or layer of pulverized or granulated glass, the particles of which are free to move relatively, and impalpably-powdered glass filling the interstices between the coarser particles.

9. An electric conductor insulated by a surrounding bed or layer of pulverized or granulated glass, with an impalpable powder filling the interstices between the coarser particles, and an impervious retaining-covering to prevent access of air and moisture thereto.

10. A series or group of parallel wires laid in a retaining-conduit and insulated by a filling in said conduit of pulverized insulating material, forming a bed between and around the wires, and an impalpable powder filling the interstices between the coarser particles for excluding air and moisture from the wires.

447,897. ELECTRIC CONDUCTOR. FREDERIC J. NASH, Brooklyn, N. Y. Filed May 13, 1890. Serial No. 351,637. (No model.)



Claim.—1. A wire inclosed in a layer of pulverized insulating material the particles of which are free to move relatively, and a retaining-envelope for holding the insulating material against the wire.

2. A wire inclosed in a layer of pulverized insulating material the particles of which are free to move relatively, and an impervious retaining-envelope for holding the insulating material against the wire and excluding moisture therefrom.

3. A wire inclosed in a layer of pulverized glass the particles of which are free to move relatively, and a retaining flexible envelope for holding the powdered glass against the wire.

4. A wire insulated by a layer of uncemented pulverized insulating material with a surrounding layer of asbestus.

5. A wire insulated by a layer of uncemented pulverized insulating material with a surrounding layer of asbestus and an outer envelope of textile material.

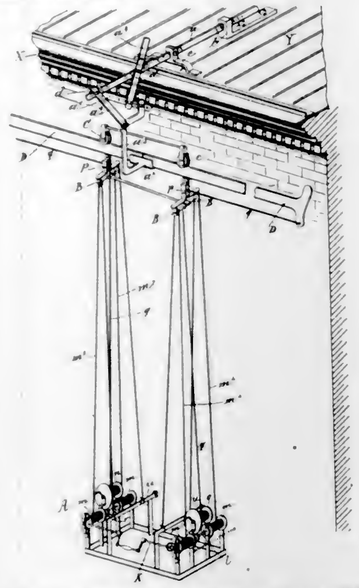
6. A wire insulated by a layer of uncemented pulverized insulating material with a surrounding layer of asbestus and an impervious coating for excluding moisture.

7. A wire inclosed in a layer of asbestus having a layer of uncemented pulverized insulating material applied to it on the side next the wire.

8. A wire insulated by a spirally-wound tape of asbestus having uncemented pulverized glass applied to its surface and filled into its interstices on the side next the wire, and an external binding envelope of textile material to hold the glass and asbestus closely against the wire.

447,898. PORTABLE SCAFFOLD. AXEL T. NYGREN, Stockholm, Sweden, assignor to Anders Victor Carlson and Petter Johan Alfred Nygren, same place. Filed Nov. 19, 1889. Serial No. 330,934. (No model.) Patented in Sweden Aug. 8, 1889, No. 1,928, and in Germany Sept. 20, 1889, No. 48,608.

Claim.—1. In a portable scaffold, the combination, with the rail or rails for supporting the carriage, of a bracket consisting of the bar *a*, which is supported on the roof and projects therefrom, the bar *a'*, pivotally connected to the bar *a*, the tie-bar a^3, connected adjustably to the bars *a* and *a'*, the three bars forming a triangle, the suspender for the rail or rails, and the brace a^4, connecting the bar *a* with said suspender, substantially as set forth.



2. In a portable scaffold, the combination, with the rail D and the carriage mounted thereon and provided with supporting-pulleys and guide-pulleys, of the chair A, the rope-drums *m m* and their shafts mounted on said chair, the hoisting-ropes on said drums, which pass over the respective supporting-pulleys on the carriage, the rope-drums *n* and *o* on the chair, geared to the shafts of the drums *m*, the ropes *q* on said drums, which pass over the respective guide-pulleys on the carriage and are secured to the respective ends of the rail D, and the crank-shaft K, geared at its ends to the respective shafts *l* of the drums *m*, whereby all the drums are or may be rotated simultaneously, for the purpose specified.

3. In a portable scaffold, the combination, with a support therefor, of the chair A, the four hoisting-rope drums *m*, mounted rotatively thereon, two at each end thereof, as described, the shafts of said drums, the hoisting-ropes adapted to be wound on said drums when the chair is hoisted, and the longitudinally-arranged crank-shaft K on said chair, said crank-shaft being geared at its ends with the transverse drum-shafts, substantially as set forth.

447,899. ELEVATOR. NORTON P. OTIS, Yonkers, N. Y. Filed July 14, 1890. Serial No. 358,633. (No model.)

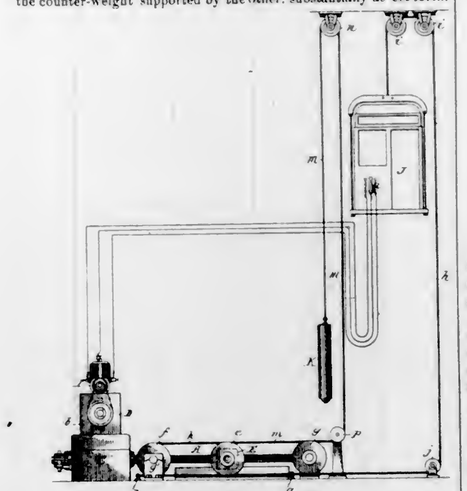
Claim.—1. The combination, with the standing and running multiplying sheaves and operating screw-shaft and cable passing around said sheaves and cage connected with the cable, of a second set of standing and running multiplying sheaves, a second cable passing around the same, and a counter-weight supported by said cable, substantially as set forth.

2. The combination, with the operating screw-shaft, of standing sheaves, a carriage moved by said shaft and carrying running sheaves, an elevator-cage suspended from a cable passing around one set of standing and running sheaves, and a counter-weight exceeding the weight of the cage and suspended from a cable passing around another set of standing and running sheaves, substantially as set forth.

3. The combination, with an elevator-cage and counter-weight, of standing sheaves, the carriage supporting the running sheaves, a screw-shaft for moving said carriage, and cables extending from the cage and from the counter-weight around said sheaves, substantially as described, whereby the draft upon the carriage exerted by one cable is counterbalanced by that exerted by the other, substantially as set forth.

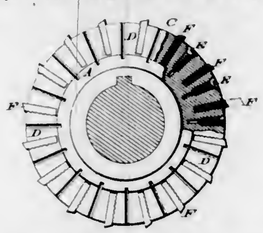
4. The combination, with the cage, counter-weight, screw-shaft, carriage, and running sheaves, and with the stationary sheaves and cage and counter-weight-supporting cables, of a motor connected to drive said shaft, a stopping, starting, and reversing device for said motor, and an operating device within the cage connected with the said stopping, starting, and reversing device, substantially as set forth.

5. The combination, with the screw-shaft and standing sheaves supported near the opposite end of said shaft, of a carriage driven by said shaft and supporting two sets of running sheaves, independent cables passing each around one of the standing sheaves and around one of the running sheaves, a cage supported by one of the cables, and the counter-weight supported by the other, substantially as set forth.



6. The combination of standing sheaves and two sets of running sheaves movable to and from each other, a screw-shaft connected to move both sets of running sheaves, and cables connected with the cage and with a counterbalance-weight and arranged on the sheaves, substantially as and for the purpose set forth.

447,900. MILLING-CUTTER. EDWARD R. PALLEN, Philadelphia, Pa. Filed Sept. 12, 1890. Serial No. 364,756. (No model.)



Claim.—1. An expansible cutter-head having openings for the bits and means intermediate of said bit-openings for clamping the bits in place, said parts being combined substantially as described.

2. A rotary cutter having a head with slots in its periphery, forming jaws, the latter having openings therein for the bits, and screws provided with seats in adjacent sides of the jaws, said parts being combined substantially as and for the purpose set forth.

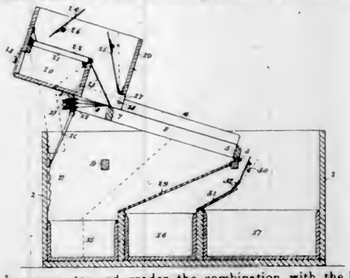
3. A rotary cutter provided with peripheral jaws, the latter having openings with serrated walls for the bits, and means intermediate of said openings and inserted in said jaws for compressing the same and binding the bits in place, said parts being combined substantially as described.

4. A bit for a milling-tool, having one side provided with serrations, combined with a tool-head with jaws, one of said jaws having serrations, substantially as described.

447,901. FRUIT-CLEANER. WILTON H. PERRY, Brooklyn, N. Y. Filed July 16, 1890. Serial No. 358,943. (No model.)

Claim.—1. In an apparatus for grading fruit and other articles, the combination of a box, as 2, provided with separate compartments, as 15, 16, and 17, a screen, as 4, pivoted in said box over said compartments, and plates or diaphragms 29 and 31, and the pivoted deflector 30 for directing the foreign substances, the imperfect and the perfect fruits or other articles each into one of said compartments, substantially as shown and described.

2. The combination of the box 2, having the separate compartments therein, the screen 4, hinged at one end within said box, the box 19, supported by screen 4 on the end thereof opposite the hinge and provided with screen 21, substantially as shown and described.



3. In a separator and grader, the combination, with the box 2, having separate compartments therein, of the screen 4 and the pivoted deflector 30 for directing the separate products of the screen into the separate compartments, substantially as shown and described.

4. The combination of the box 2, having the separate compartments, the screen 4, pivoted at one end therein, and means for directing the separate products of the screen into the separate compartments, and the box 19, having the screen 21 and the compartment 20, substantially as shown and described.

5. The combination of the box 2, having the separate compartments therein, the hinged or pivoted screen 4, the diaphragms and pivoted deflector for directing the separate products of the screen into the separate compartments, and means for adjusting the height of the head of the screen, substantially as shown and described.

6. The combination of the box 2, provided with the screen 4, hinged therein, the box 19, supported by the screen 4 at the end opposite the hinge and provided with a screen 21, means by which articles, after passing over screen 21, are conducted to screen 4, and devices for adjusting the inclination of the screens, substantially as shown and described.

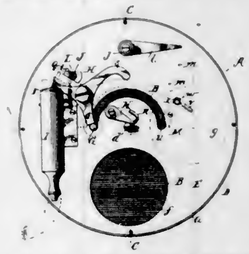
7. In a separator and grader, the combination of the box 2, having the hinged screen 4, the compartments arranged therein, the inclined plates or diaphragms, and the pivoted deflector 30 with the box 19, having the screen 21, the pivoted or hinged guide-plates 24 and 25, and provided with a passage forming a communication between screen 21 and screen 4, substantially as shown and described.

8. A screen or separator consisting of a frame having the end pieces 5 and 6, the bridge 7, and the wires 8, in combination with the eyebolts 12 and thumb-nuts 13, substantially as shown and described.

9. In a separator and grader, the box 19, provided with the screen 21, and the pivoted guide-plates 24 and 25, substantially as shown and described.

10. In a separator and grader, the box 19, having the compartment 20, the screen 21, covering said compartment, the guide-plates 24 and 25, and the open passage beneath the guide-plate 25, substantially as shown and described.

447,902. CAMERA-SHUTTER. LOUIS PROSCH, Jr., Brooklyn, N. Y. Filed Aug. 20, 1890. Serial No. 362,493. (No model.)



Claim.—1. A rotary shutter carrying a pin or projection G, combined with an arm *o* to hold said pin in check when the shutter is set, another arm *s*, connected to the arm *o* and adapted to pass across the path of the pin G to arrest the shutter midway of its motion, a spring to move the arm *s* out of the path of the pin G, an arm *q*, connected with the arms *o* and *s*, a piston against which the arm *q* rests, and means, substantially as described, for moving said piston, said piston when moved outward acting to move the arm *s* across the path of the

pin G, said arm being moved away from said pin by said spring when the piston recedes, substantially as described.

2. A rotary shutter carrying a pin or projection G, combined with an arm *o* to hold the pin G when the shutter is set, another arm *s*, connected with the arm *o* to pass across the path of said pin to arrest the shutter, a swiveled eccentric stud J to regulate the movement of the arm *s* to permit an instantaneous or time exposure to be made, and with means, substantially as described, for actuating the arms *o* and *s*, substantially as described.

3. A rotary shutter carrying a projection G, combined with the arms *o* and *s* to engage said projection to regulate the movement of said shutter, and with the swiveled stud J, carrying the projection L, to regulate the movement of the arm *s*, and with means, substantially as described, for actuating the arms *o* and *s*, as specified.

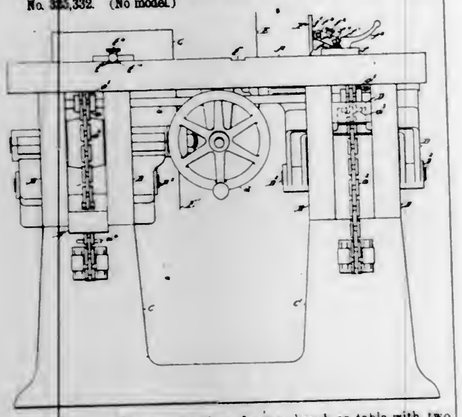
4. A rotary shutter carrying a projection G, combined with a three-armed lever H, two of whose arms are adapted to engage said projection G at different times to hold the shutter in different positions, the remaining arm being connected with devices for operating said lever, and with a swiveled eccentric stud to regulate the amount of movement of said lever to allow an instantaneous or time exposure to be made, substantially as described.

5. A casing having an aperture and a curved slot *n*, combined with a rotary shutter carrying a projection G, that passes through said slot, and an opening *g* in the shutter to register with the opening in the casing, combined with a stop or hook N, pivoted on the casing and adapted to pass across said slot *n* to engage said projection to hold the openings in the casing and shutter in line, substantially as described.

6. A rotary shutter provided with a pin or projection G and a spring to turn said shutter, combined with a pivoted lever M, one end of which projects in the path of said projection G to prevent a rebound of the shutter from the tension of said spring, a stop to limit the movement of said lever, and a spring to hold said lever in its normal position, substantially as described.

7. A casing having an aperture X, a shutter carried by said casing and having a projection G, combined with a stop-lever M, one end of which is normally held in the path of the projection G, a pin on said lever and projecting through the aperture X, and a spring connected to said lever to hold it in its normal position, the end walls of the aperture X limiting the movement of the pin, substantially as described.

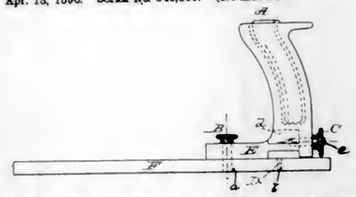
447,903. SAWING-MACHINE. PERRY PUTNAM, Lowell, Mass., assignor to Charles E. Gee, same place. Filed Sept. 27, 1889. Serial No. 325,332. (No model.)



Claim.—1. The combination of a saw bench or table with two frames, each hinged to swing in a vertical arc, the said frames carrying saw-arbors with circular saws, the periphery of which may project through slots in the said table, two endless chains mounted on sprocket-wheels, means, substantially such as described, for revolving the said sprocket-wheels, and two pins or studs, one projecting from each of the said endless chains in suitable places to engage with each saw-arbor frame, one at a time, for the purpose of adjusting the relative height of the saw with the surface of the table through which the saw projects.

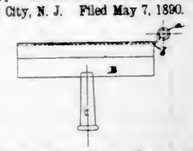
2. The combination of a hand-wheel, worm-gear, shaft, and two or more sprocket-wheels, with two chains adapted by means of projecting pins in the chains, and set-screws in the sprocket-wheels to be adjusted so as to raise the pin in one chain at the same time that the like pin in the other chain is being lowered, as and for the purpose specified.

447,904. FILE-HANDLE. JOHN REILLEY, Jersey City, N. J. Filed Apr. 18, 1890. Serial No. 348,585. (No model.)



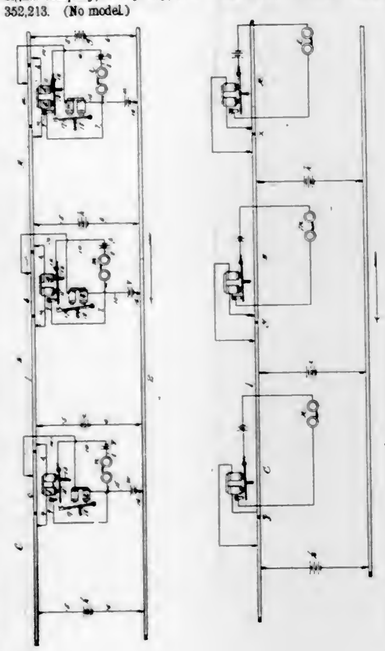
Claim.—The combination, with the handle having the semicircular portion *c*, of the projecting circular end having the perforation *f*, the base-block E, provided with the rounded portion *d*, adapted to engage the semicircular portion *c* of the handle, the thumb-screw B, pin *e*, nut C and pin D, and the file having perforations *b a*, adapted to receive, respectively, the screw B and pin D, all as and for the purpose set forth.

447,905. DEVICE FOR CLEANING GAS-BURNERS. JOHN REILLEY, Jersey City, N. J. Filed May 7, 1890. Serial No. 350,951. (No model.)



Claim.—As an article of manufacture, the within-described gas-tip cleaner, consisting of the flat blade B, having a rigid back provided with a longitudinal opening *b*, a needle A, adapted to engage this opening and provided with the eye *a*, formed integral therewith, said eye serving the double purpose of a handle and an eye for hanging the device to a nail, all as shown and described.

447,906. ELECTRIC RAILWAY-SIGNAL. WILLIAM W. ROSENFIELD, New York, N. Y., assignor to the American Electric Railway Signal Company, Jersey City, N. J. Filed May 17, 1890. Serial No. 352,213. (No model.)



Claim.—1. In a railway-signal system, the combination, with the rails and an electro-magnet bridging an insulated joint therein, of a line-battery connected to both rails and constructed to energize said magnet when its current is closed through the magnet alone, but not to energize the magnet when the current is divided, substantially as described.

2. In a railway-signal system, the combination, with the rails provided with insulated joints at suitable distances apart dividing the track into signal-sections and electro-magnets bridging said insulated joints and completing line-circuits between two adjacent sections, of a line-battery connected to both rails between two of said magnets, whereby the circuit of the battery is closed through one or the other of said magnets or its current divided between them, according to the position of trains upon the track, substantially as described.

3. In a railway-signal system, the combination, with the rail provided with insulated joints at suitable distances apart dividing the track into signal-sections and electro-magnets bridging said insulated joints and completing line-circuits between two adjacent sections, of a line-battery between each two magnets connected to both rails, whereby the circuit of each line-battery is closed through one or the other of the adjacent magnets or their currents divided between said magnets, according to the position of trains upon the track, substantially as described.

4. In a railway-signal system, the combination, with the rails and electro-magnets bridging insulated joints therein at suitable distances apart, of a line-battery between each two magnets connected to both rails, whereby the circuit of each line-battery is closed through one or the other of the adjacent magnets or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of said magnets alone, but to energize neither of them when the current is divided, substantially as described.

5. In a railway-signal system, the combination, with the rails, one of which is continuous and the other provided with insulated joints at suitable distances apart, and electro-magnets bridging said insulated joints, of a line-battery between each two magnets connected to both rails, whereby the circuit of each line-battery is closed through one or the other of said magnets or its current divided between them, said line-batteries being constructed to energize either of said magnets alone, but to energize neither of them when the current is divided, substantially as described.

6. In a railway-signal system in which the line-circuit is made through the rails and electro-magnets at suitable distances apart, the combination, with two of said electro-magnets, of a line-battery connected to both rails between said magnets and constructed to energize either of the magnets alone when its circuit is closed through the same, but to energize neither of the magnets when its current is divided between them, substantially as described.

7. In a railway-signal system in which the line-circuit is made through the rails and electro-magnets at suitable distances apart, the combination, with two of said electro-magnets, of a line-battery connected to both rails between said magnets, whereby the circuit of the battery is closed through one or the other of said magnets or its current divided between them, according to the position of trains upon the track, such line-battery being constructed to energize either of the magnets alone or to energize neither of the magnets when the current is divided, substantially as described.

8. In a railway-signal system in which line-circuits are made through the rails and electro-magnets at suitable distances apart, the combination, with the rails and electro-magnets, of a line-battery between each two magnets connected to both rails, the circuits of said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of the said line-magnets alone, but to energize neither of them when the current is divided, and signal devices controlled by said electro-magnets, substantially as described.

9. In a railway-signal system in which line-circuits are made through the rails and relay-magnets at suitable distances apart, the combination, with the rails and relay-magnets, of local circuits controlling the signals and opened and closed by said relay-magnets, and a line-battery between each two relay-magnets connected to both rails, the circuit from said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of the trains upon the track, said line-batteries being constructed to energize either of the said magnets alone, but to energize neither of them when the current is divided, substantially as described.

10. In a railway-signal system, the combination, with the rails and electro-magnets bridging insulated joints therein at suitable distances apart, of a line-battery between each two magnets connected to both rails, the circuit from said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of the said magnets alone, but to energize neither of them when the current is divided, substantially as described.

11. In a railway-signal system, the combination, with the rails and relay-magnets bridging insulated joints therein at suitable distances apart, of local circuits controlling the signals and opened or closed by said relay-magnets, and a line-battery between each two relay-magnets connected to both rails, the circuits from said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of the said magnets alone, but to energize neither of them when the current is divided, substantially as described.

12. In a railway-signal system, in which line-circuits are made through the rails and relay-magnets at suitable distances apart, the combination, with the rails and relay-magnets, of electro-magnets located at suitable points and controlling the signals, local circuits controlling the said electro-magnets and opened and closed by said relay-magnets, and a line-battery between each two relay-magnets connected to both rails, the circuit from said line-batteries being closed through one or the other of said magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of the magnets alone, but to energize neither of them when the current is divided, substantially as described.

13. In a railway-signal system, the combination of line-circuits made through the rails and relay-magnets at suitable distances apart, local circuits controlling the signals and opened or closed by said relay-magnets, a locking-circuit controlled by the train for retaining the local circuit in its closed or open condition, and a line-battery between each two relay-magnets, the circuits from said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of said magnets alone, but to energize neither of them when the current is divided, substantially as described.

14. In a railway-signal system, the combination of line-circuits made through the rails and relay-magnets at suitable distances apart, permanent magnets located at suitable points and controlling the signals, local circuits neutralizing or partially neutralizing said permanent magnets and opened or closed by said relay-magnets, and a line-battery located between each two relay-magnets, the circuit from said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of said magnets alone, but to energize neither of said magnets when the current is divided, substantially as described.

15. In a railway-signal system, the combination of line-circuits made through the rails and relay-magnets at suitable distances apart, magnets located in position to attract a part carried by the train for controlling the signal, local circuits controlling said magnets and opened and closed by said relay-magnets, and a line-battery between each two relay-magnets, the circuits from said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said batteries being constructed to energize either of said magnets alone, but to energize neither of them when the current is divided, substantially as described.

16. In a railway-signal system, the combination of line-circuits made through the rails and relay-magnets at suitable distances apart, a bar carried by a train and controlling the signal device, magnets located in position to attract the bar, local circuits controlling said magnets and closed or opened by said relay-magnets, and a line-battery between each two relay-magnets, the circuit from said line-batteries being closed through one or the other of said magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries being constructed to energize either of said magnets alone, but to energize neither of them when the current is divided, substantially as described.

17. In a railway-signal system, the combination of line-circuits made through the rails and relay-magnets at suitable distances apart, a movable bar carried by the train, a signal-circuit made and broken by said bar, magnets located in position to attract the movable bar for controlling the signal-circuit, local circuit controlling said magnets and opened and closed by said relay-magnets, and a line-battery between each two relay-magnets, the circuit from said line-batteries being closed through one or the other of the magnets between which they are located or their currents divided between said magnets, according to the position of trains upon the track, said line-batteries

being constructed to energize either of said magnets alone, but to energize neither of them when the current is divided, substantially as described.

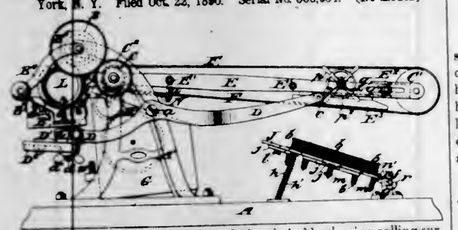
18. In a railway-signal system, the combination of a permanent magnet, a circuit controlled by trains upon the track and controlling said permanent magnet, and a signal device operated by said permanent magnet to give a danger-signal when the magnet-controlling circuit is broken, substantially as described.

19. In a railway-signal system, the combination of a permanent magnet, a circuit controlled by trains upon the track and operating when closed to neutralize or partially neutralize said magnet, and a signal device operated by said permanent magnet to give a danger-signal when the neutralizing-circuit is broken, substantially as described.

20. In a railway-signal system, the combination, with the rails and insulated sections therein, as *a*, of a circuit controlling the signals and opened or closed, according to the position of trains upon the track, and a locking-circuit closed by a train upon the insulated section and locking said signal-controlling circuit in its closed or open condition, substantially as described.

21. In a railway-signal system, the combination, with the rails and insulated sections, as *a*, of electro-magnets bridging said insulated sections, line-circuits closed through the said electro-magnets and controlled by trains upon the track, local circuits controlled by said line-circuits and controlling the signals, and locking-circuits closed by trains upon the insulated sections and locking said line-circuits in their closed or open condition, substantially as described.

447,907. **LABELING-MACHINE.** SIEGMUND L. SALOMON, New York, N. Y. Filed Oct. 22, 1890. Serial No. 368,931. (No model.)



Claim.—1. The combination of a bottle-holder having rolling surfaces, a receptacle for labels having an open top, and a traveling paste-carrying apron capable of a rising and falling motion for the purpose of pasting the labels in said receptacle, picking them up therefrom, and carrying them to a bottle or package in said holder, substantially as herein described.

2. The combination of a bottle-holder having rolling surfaces, a receptacle for labels having an open top, a traveling paste-carrying apron and rollers therefor, and a frame for said rollers arranged to swing to and fro about the axis of one of said rollers toward and from said receptacle, substantially as and for the purpose herein set forth.

3. The combination of a bottle-holder having rolling surfaces, a receptacle for labels having an open top, a traveling paste-carrying apron and rollers therefor, a frame for said rollers arranged to swing to and fro about the axis of one of said rollers toward and from said receptacle, a paste-reservoir, a paste-receiving roller running in said reservoir, and a paste-transferring roller situated between said paste-receiving roller and the said apron-roller, about the axis of which the said frame swings, substantially as herein set forth.

4. The combination, in a labeling-machine, with a paste-carrying apron and rollers for carrying the same, and a frame containing the said rollers and apron, arranged to swing from the axis of one of said rollers, of a label-receptacle and a fixed pivotal support therefor at one end thereof and a yielding support for the other end of said receptacle, substantially as and for the purpose herein set forth.

5. The combination, in a labeling-machine, with a traveling paste-carrying apron and a frame for said apron, of a scraper pivoted to said frame on either side of said apron and adjustable on its pivot for removing paste from a greater or less portion of the width of the said apron, substantially as herein described.

6. The combination, in a labeling-machine, of a label-receptacle, a traveling paste-carrying apron and a swinging frame for said apron for pasting and picking up labels from said receptacle, and a stripper supported in said frame for stripping the labels from said apron, substantially as herein described.

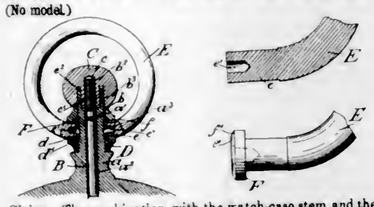
7. The combination, in a labeling-machine, with a label-receptacle and a traveling paste-carrying apron and a swinging frame for said apron for pasting and picking up labels from said receptacle, of a stripper and a shaft for carrying the same, supported in said frame and movable therewith to preserve the proper relation of the stripper to the apron during the swinging movements of the latter and the said frame, substantially as herein set forth.

8. The combination, with the rising and falling paste-carrying apron, of a label-receptacle consisting of a table and a series of spring-supported pins working through said table, substantially as and for the purpose herein set forth.

9. The combination, with the rising and falling paste-carrying apron, of a receptacle consisting of a table and a series of spring-supported pins working through said table, and a stop for retaining one of said pins below the surface of the table, substantially as and for the purpose herein set forth.

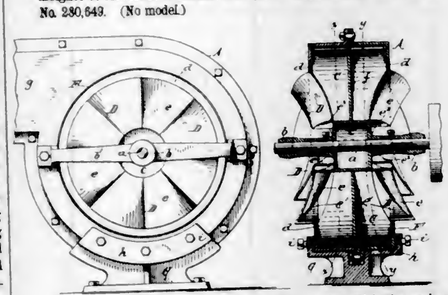
10. The combination, with a labeling-machine, a paste-carrying apron, a swinging frame and rollers therefor for carrying said apron, a label-receptacle, and a lever for operating said frame, of a bottle-holder consisting of a roller occupying a fixed position and rollers supported in said lever, substantially as herein described.

447,908. **WATCH-CASE PENDANT.** BERNHART SCHIFF and LOUIS MAYER, New York, N. Y. Filed Aug. 28, 1890. Serial No. 363,324. (No model.)



Claim.—The combination, with the watch-case stem and the band secured thereon in rotary adjustment and provided with diametrically-opposite perforations having enlarged inner portions, of a watch-bow having its ends projecting within said perforations in the band and having its inner ends upset, and a seat-washer located within the enlarged portions of said perforations in the band between the upset ends of the band and the bases of such enlarged portions, substantially as set forth.

447,909. **FAN-BLOWER.** JAMES S. SCHOONOVER, Buffalo, N. Y., assignor to Charles F. Whitcher, same place. Filed July 21, 1888. Serial No. 280,643. (No model.)



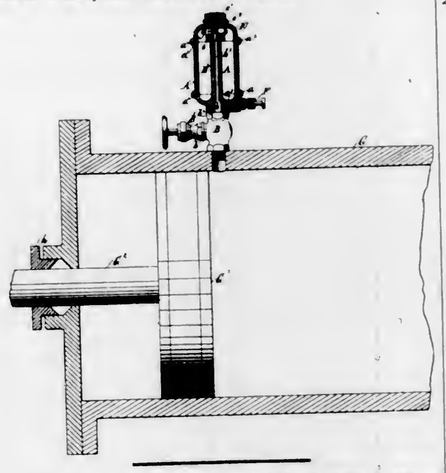
Claim.—1. In a fan-blower, and in combination with the casing and with the fan-blades therein, of a series of buckets formed, as described, of inclined plates *e*, having free front and rear edges, peripheral end plates e', inner end plates e^2, and ring *d*, the outer ends of the buckets projecting through central openings in the casing and the inner ends being connected to the hub, all substantially as and for the purposes described.

2. In a fan-blower of the class described, a series of buckets, each of which is formed of an inclined plate *e*, having free front and rear edges, a peripheral end plate e', and an inner end plate e^2, these buckets being arranged and operating substantially as described.

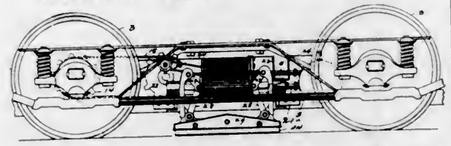
447,910. **COMPRESSED-AIR-CYLINDER LUBRICATOR.** HENRY C. SERGEANT, New York, N. Y., assignor to the Ingersoll-Sergeant Rock Drill Company, of New York. Filed Jan. 10, 1889. Serial No. 295,922. (No model.)

Claim.—The combination, with a compressed-air cylinder, of a piston working in said cylinder, an oil-cup in normally-open communication with the interior of said cylinder through a passage beyond which the piston will pass in both directions of its stroke, a pipe extending vertically through said cup to near the top thereof and in

open communication with said passage, and through which the air under pressure will be forced by the piston, and a check-valve normally closing the upper end of said pipe, but intermittently opened by the air from the cylinder under pressure to admit the air above the oil in the cup, and closed by the compressed air in the oil-cup when the piston has passed by said passage in one direction, said oil-cup being provided with an outlet for oil near its lower end, admitting oil into the interior of the cylinder, substantially as specified.



447,911. **CAR-BRAKE.** HENRY H. SESSIONS, Chicago, Ill., assignor to the Pullman's Palace Car Company, same place. Filed Apr. 15, 1890. Serial No. 348,038. (No model.)



Claim.—1. In a brake mechanism, the combination of a working-cylinder having a pair of oppositely-working pistons and open ends through which the piston-rods project, toggle-arms to which the piston-rods are connected, and the brake-head pivotally connected to said toggle-arms and supported thereby in a position substantially parallel to the track-rails, said cylinders having a supply-pipe for the admission of a fluid under pressure between the opposing faces of the pistons, substantially as described.

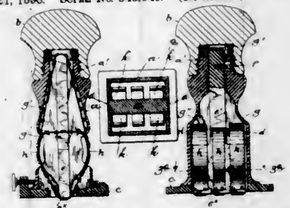
2. In a brake mechanism, the combination of a working-cylinder having a pair of oppositely-working pistons and open ends through which the piston-rods project, toggle-arms to which the piston-rods are connected, and the brake-head pivotally connected to said toggle-arms and supported thereby in a position substantially parallel to the track-rails, said cylinder having a supply-pipe for the admission of a fluid under pressure between the opposing faces of the piston, and springs adapted to return said pistons, substantially as described.

3. In a brake mechanism, the combination of a pair of working-cylinders supported on opposite sides of the truck, said cylinders having therein working-pistons whose piston-rods project beyond the cylinder ends, toggle-arms to which said rods are pivotally connected, and a brake-head supported by said arms in a position substantially parallel to the track-rail, said cylinders having supply-pipes whereby to deliver a fluid under pressure between the opposing faces of said pistons, substantially as described.

4. In a brake mechanism, the combination of a reservoir to contain a motor-fluid under pressure, branch pipes to deliver said fluid from the reservoir to working-cylinders mounted upon opposite sides of the truck-frame, said cylinders having oppositely-working pistons therein, and open ends through which the piston-rods project, said rods being pivotally connected to toggle-arms and brake-heads supported by said toggle-arms, substantially as described.

5. In a brake mechanism, the combination of an air-pump adapted to be operated by gearing from the car-axle, a reservoir in which air may be compressed by said pump, branch pipes to deliver air from said reservoir to working-cylinders mounted upon opposite sides of the truck-frame, said cylinders having oppositely-working pistons therein, piston-rods pivotally connected to toggle-arms and brake-heads supported by said toggle-arms, and a valve controlling the passage to said delivery-pipes, said valve being connected to and adapted to be operated by rods or levers extending to the car-platform, substantially as described.

447,912. **STAMP.** CHARLES H. SHAW, Brooklyn, N. Y. Filed Apr. 21, 1890. Serial No. 348,841. (No model.)



Claim.—1. A hand-stamp comprising a casing, a support for the endless type-belt, arranged within said casing, and the said endless type-belt, said casing having an aperture in its side which furnishes access to the belt for shifting it, and also having partitions at the sides of said belt to guide it in its movements, substantially as set forth.

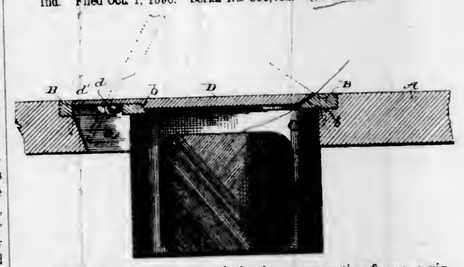
2. In a hand-stamp, the combination, with a casing having a lateral opening or slot which furnishes access to the type-belt for shifting it, of an apertured face-plate secured to the base of said casing, through which the types on the type-belt project for printing, a support for the type-belt arranged within the hollow of the casing, and the said type-belt mounted on said support, substantially as and for the purposes set forth.

3. In a stamp, the combination, with a frame therefor, of an elastically-expanded and laterally-compressible support for the type-belt and the endless type-belt mounted on said support and projecting laterally from said frame, said support being adapted for compression with the fingers for slackening the belt, substantially as set forth, whereby said support may be compressed simultaneously with the manipulation of the belt for shifting, substantially as set forth.

4. In a stamp, the combination, with a slotted casing and a support for the endless type-belt, comprising a plate *c*, mounted adjustably in said casing, and the outwardly-curved springs *h*, secured thereto at one end, of the said type-belt, mounted on said support and embracing the said springs, and the lower face e^x of the plate *c*, substantially as and for the purposes set forth.

5. In a hand-stamp, the combination, with the hollow slotted casing and the type-belts *g g' g''*, of the support for said belts, consisting of the plate *c*, with the stem c' mounted adjustably in said casing, and the three pairs of springs *h*, secured to the said plate *c*, the longer belt g' extending over the top of said stem c', substantially as set forth.

447,913. **CORD-RECEPTACLE.** HENRY T. SIMMONS, Bloomington, Ind. Filed Oct. 1, 1890. Serial No. 366,732. (No model.)



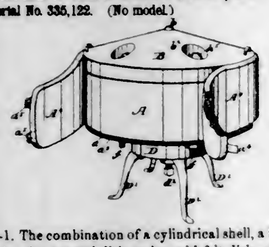
Claim.—1. A cord-receptacle having a supporting-frame, a pivoted cover provided with beveled portions engaging a seat provided with beveled edges, whereby a substantially direct passage for the cord is provided, and means for securing said supporting-frame to a table or other support, substantially as described.

2. A cord-receptacle having a supporting-frame, a cover for said receptacle engaging an aperture in said frame, the said cover having beveled portions engaging beveled portions of said frame, whereby a substantially direct passage for the cord is provided and lying flush with the top of said frame, said frame engaging a recessed support and lying flush therewith, and means for securing said frame to said support, substantially as described.

3. A cord-receptacle having a pivoted weighted cover adapted to engage the cord, said cover having a cutting-edge, substantially as described.

4. A cord-receptacle having a pivoted weighted cover adapted to engage the cord, said cover having a beveled cord engaging portion forming a cutting-edge, the said beveled portion of the cover engaging a similar beveled portion of the cord-receptacle, substantially as described.

447,914. CREAMER. JULIUS G. SMITH, Margaretville, N. Y., assignor of one-half to Charles J. Dickson, same place. Filed Dec. 27, 1889. Serial No. 335,122. (No model.)



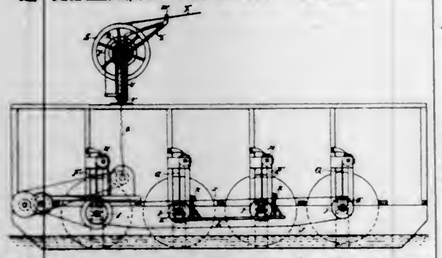
Claim.—1. The combination of a cylindrical shell, a felt disk under said shell, and a sheet-metal disk under said felt disk, a series of segmental milk-receptacles within said shell, each receptacle provided with a screw-threaded outlet-pipe passing through said disks, and nuts upon said pipes securing said disks to the bottom of the shell, substantially as described.

2. The combination of a cylindrical shell, a felt disk, and a sheet-metal disk, the latter having sockets a^2, with a series of segmental milk-receptacles within said shell and having attached thereto screw-threaded outlet-pipes and nuts thereon uniting said shell and disks, the pivoted frame C, having rollers c and extension-arms entering said sockets, with a platform D, mounted upon legs and having a circular track for said rollers, substantially as described.

3. The combination of a cylindrical shell, a disk attached thereto and having sockets adjacent to its periphery, a revoluble frame C, having rollers c, extension-arms C^3, and a spindle c^4, with a platform having a central perforation and an adjustable screw under said spindle, substantially as described.

4. The combination of a cylindrical shell, a series of segmental milk-receptacles having inclined bottoms, screw-threaded outlet-pipes attached thereto with nuts thereon and thereby secured to said shell, a central bridge under the highest portion of said inclined bottoms, and a central chamber E, resting upon said bridge, substantially as described.

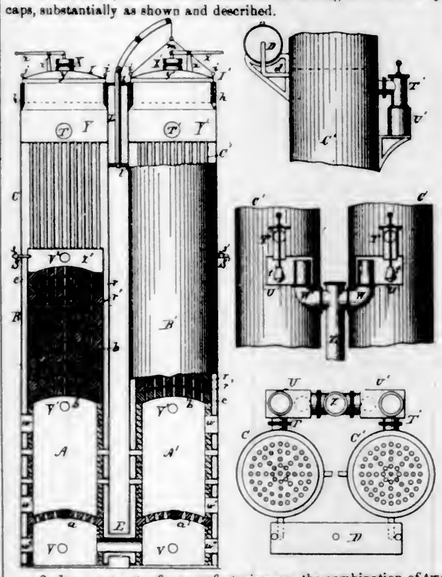
447,915. CURRENT-WHEEL. WILLIAM STEPHENS, Santa Rosa, Cal. Filed Mar. 21, 1890. Serial No. 344,806. (No model.)



Claim.—The floats with the adjustable shafts and paddle-wheels supported upon them, sprocket-wheels and chains whereby the power generated by the wheels may be transmitted to drive a dynamo, the guide mechanism consisting of the vertical standard turning upon a swivel-post, a wheel journaled upon said standard, the conductor-belt passing around said wheel and leading from it to the shore, and a spring whereby a tension is kept upon the wheel so as to allow the conductor to wind or unwind upon it automatically, substantially as herein described.

447,916. APPARATUS FOR MANUFACTURING GAS. JOHN L. STEWART, Philadelphia, Pa., assignor to the United States Light and Fuel Company, same place. Filed Mar. 25, 1886. Serial No. 196,515. (No model.)

Claim.—1. In an apparatus for manufacturing gas, the combination of two cupola gas-generating furnaces, each having a fuel-chamber at the base and a tubular boiler at the top, a steam-supply pipe connected with each furnace above the fuel, a gas-flue connecting the fuel-chambers at the base, the gas-take-off pipes, the annular seal-cups above the boilers, and the removable covers having vents closed by caps, substantially as shown and described.

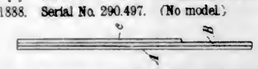


2. In an apparatus for manufacturing gas, the combination of two connected gas-generating furnaces having tubular boilers at the top, the annular seal-cups secured to the extended shells of the boilers, the removable flanged covers set in said seal-cups and having vents, caps for closing said vents, levers for raising said caps, and a crane supported between the boilers for lifting either cover, substantially as described.

3. In an apparatus for manufacturing gas, the combination, with two water-jacketed furnaces, of a connecting-flue formed by extensions of the two casings $r r'$ of the water-jackets, substantially as shown and described.

4. In combination with a gas-generating furnace, the gas-take-off pipe leading from the ash-pit, and the perforated protecting-hood covering the open end of such pipe.

447,917. STRAP. EDWIN B. STIMPSON, Brooklyn, N. Y. Filed Nov. 10, 1888. Serial No. 290,497. (No model.)



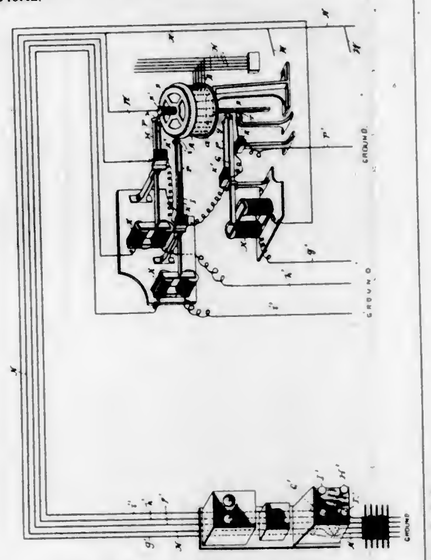
Claim.—A strap composed of a facing-piece having its ends terminating in the form of tabs provided with button-holes, a lining-piece secured to the facing-piece along the opposite edges thereof, and a re-enforcing facing-piece secured on the face of the tab on the opposite side of the lining from that on which the facing-piece is secured, substantially as set forth.

447,918. AUTOMATIC TELEPHONE-EXCHANGE. ALMON B. STROWGER, Kansas City, Mo. Filed Mar. 12, 1889. Serial No. 303,027. (No model.)

Claim.—1. In a system of telephone, telegraph, or other electrical exchange, the combination, with a series of wires leading to different stations in the system and having their ends insulated and held in curved rows, of a contact-needle supported at the axis of the rows, mechanism for moving the needle from row to row, mechanism for moving the needle along the row, magnets for actuating said mechanism, and wires leading from a sub-station for conducting electricity to energize the said magnets, substantially as set forth.

2. In a system of electrical exchange, the combination, with an insulating-cylinder, a system of wires having their ends extending to the inside of the cylinder, and a rotary and longitudinally-movable rod located at the axis of the cylinder, of a contact-needle attached to the rod, levers for moving the rod longitudinally, levers for rotating the rod, magnets for actuating the levers, and means for energizing the magnets at pleasure, substantially as set forth.

3. In a system of electrical exchange, the combination, with an insulating curved surface, a system of wires having their ends extending to and through said surface to the concave surface thereof, and a rotary and longitudinally-movable rod located at the axis of curvature, of a contact-needle fastened to the rod, levers for moving the rod longitudinally, levers for rotating the rod, magnets for vibrating the lever, and means for energizing the magnets at pleasure, substantially as set forth.



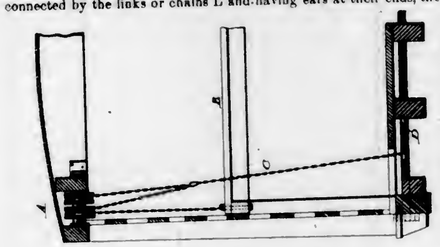
4. In a system of electrical exchange, the combination, with an insulating-cylinder, a system of wires having their ends extending to the inside of the cylinder, and a rotary and longitudinally-movable rod located at the axis of the cylinder, of a sleeved arm fastened to the rod, a contact-needle, levers for moving the rod longitudinally, levers for rotating the rod, magnets for actuating the levers, means for pressing the needles outwardly, and means for energizing the magnet at pleasure, substantially as set forth.

5. In combination, the set of wires having their ends secured in a cylinder, the cylinder, the rod at the axis of the cylinder, the pieces fastened to the rod, the levers provided with pawls pivoted thereto for actuating the rod, the magnets for actuating the levers, the magnets for actuating the pawls, the keys at the sub-station, and the wires connecting the keys with the actuating-magnets, substantially as set forth.

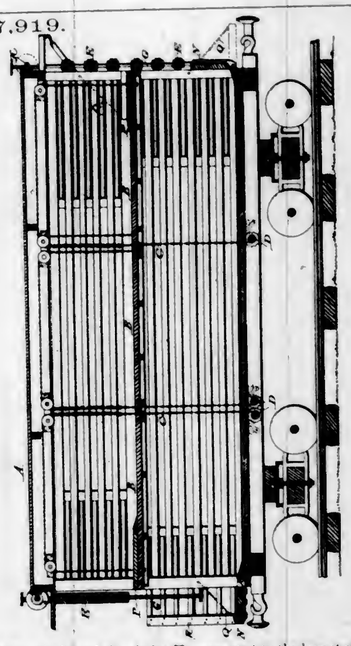
447,919. CATTLE OR STOCK CAR. DAVIS L. SYLVESTER, Philadelphia, Pa., assignor to the Allison Manufacturing Company, of Pennsylvania. Filed May 2, 1889. Serial No. 309,341. (No model.)

Claim.—1. A cattle or stock car having an additional floor composed of separate parts independent of the floor proper, bridges having ends adapted to rest on the said floors, mechanism for operating the floors, substantially as described, and sliding guards adapted to work in guides on the sides of the car and be projected longitudinally beyond the end of the car on each side of the bridges, and end blinds, said parts being combined substantially as described.

2. In a cattle-car, the combination of the blinds consisting of slats connected by the links or chains L and having ears at their ends, the



447,919.

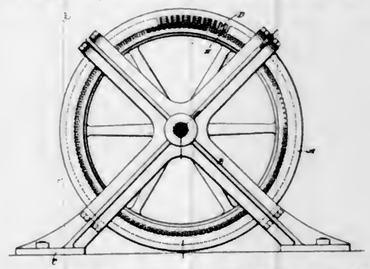


guiding-rods G, and the chains H, connected to the lowest of the slats and to the drum J, mounted on the shaft K, said shaft being journaled in the car-body, substantially as described.

3. In a cattle or stock car having bridges in connection with the lower floor thereof, the sliding guards R, adapted to work in guides on the sides of the car and be projected longitudinally beyond the end of the car and on each side of the said bridges, substantially as described.

4. A cattle or stock car comprising a floor proper, a movable floor made in separate parts, bridges in connection with said floors, sliding guards at the ends of the car, adjustable end slats, and the operating mechanism for said parts, substantially as described.

447,920. METHOD OF OPERATING ARC LAMPS. NIKOLA TESLA, New York, N. Y. Filed Oct. 1, 1890. Serial No. 366,734. (No model.)

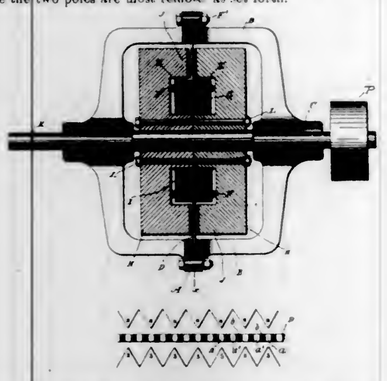


Claim.—The method of abating or rendering inaudible the sound emitted by arc lamps supplied with or operated by an alternating or pulsating current by increasing the rate of such alternations or pulsations up to that of the limit of audition, as set forth.

447,921. ALTERNATING-ELECTRIC-CURRENT GENERATOR. NIKOLA TESLA, New York, N. Y. Filed Nov. 15, 1890. Serial No. 371,554. (No model.)

Claim.—1. The combination, in an annular field of force formed by opposing polar faces with radial grooves or serrations and with said poles, of a connected series of radial conductors so disposed with relation to the serrations that while one portion of the radial conductors is passing between the strongest parts of the field, or the points where the two poles most nearly approach, the adjacent or intermediate con-

ductors will pass through the weakest parts of the field, or the points where the two poles are most remote, as set forth.



2. The combination, with a connected series of radial conductors forming an annular coil, of a stationary two-part supporting-frame clamped to and insulated from the outer ends of said conductors, a ring formed in two parts clamped to the inner ends of the same, an energizing-coil contained in said ring, and a field-core made in two parts and inclosing said energizing-coil and presenting annular polar faces to the series of radial conductors, as described.

3. The combination, with the annular conducting-plate slotted to form a connected series of radial conductors, a sectional supporting-frame secured to and insulated from the outer edge of the slotted plate, a sectional ring secured to and insulated from the inner edge of said plate, a hollow energizing-coil contained in said ring, and a field-core composed of two parts bolted together and recessed to inclose the energizing-coil, said cores being mounted in a rotating shaft, as set forth.

4. The combination, with two annular polar faces of opposite magnetic polarity and formed with opposite points, projections, or serrations, of a conductor turned back upon itself in substantially radial convolutions and mounted in the annular field, whereby a rotation of the field or said conductor will develop therein an alternating current, as set forth.

5. The combination, with a polar face of given polarity formed with grooves or serrations, of a polar face of opposite polarity with corresponding grooves or serrations, the two polar faces being placed with their grooves opposite to each other, and a conductor or coil mounted between said faces with the capability of movement across the lines of force in a direction at right angles to that of the grooves or serrations, as set forth.

6. In a magneto-electric machine, the combination of a sectional frame, a field-magnet core composed of two connected parts, a rotating shaft on which said core is mounted, a conductor in which currents are to be induced, the convolutions of which are radially disposed between the polar faces of the field-core and secured to and supported by the frame, and an energizing-coil for the field-core supported by the induced-current coil and contained in an annular recess formed by grooves in the faces of the two sections of the field-core.

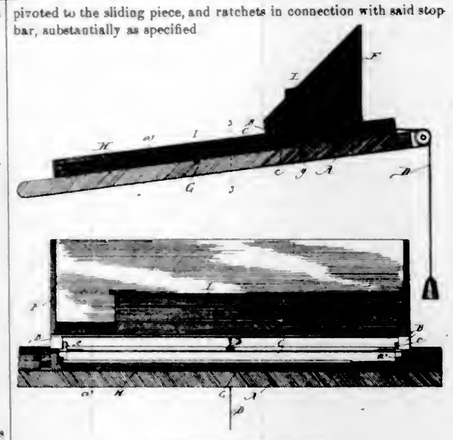
7. The combination, with opposing field-magnet poles formed with projections or serrations in their faces, the highest parts or prominences of one face being opposite to those of the other, of a conductor the convolutions of which are adapted to pass at right angles through the magnetic lines between the opposing prominences, as set forth.

8. The combination, with a rotating field-magnet core having two opposing and annular polar faces with radial grooves or serrations therein systematically disposed, so that the highest parts or prominences of one face lie opposite to those of the other, of a stationary conductor with radial convolutions and mounted between the polar faces, as set forth.

447,922. APPARATUS FOR WAY-BILLING ARTICLES FOR SHIPMENT. OTTO H. THIEL, Chicago, Ill. Filed Oct. 14, 1890. Serial No. 368,064. (No model.)

Claim.—1. The combination, with the base, of the way, the sliding piece thereon, the pivoted stop-bar and the ratchets in connection therewith, all adapted and arranged to operate substantially as and for the purpose specified.

2. The combination, with the base, of the way, the sliding piece thereon provided with a bill-receptacle, as F, the stop-bar having arms pivoted to the sliding piece, and ratchets in connection with said stop-bar, substantially as specified.

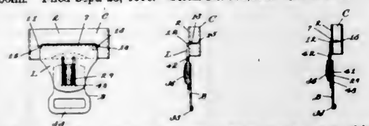


447,923. MILK-CAN. WILLIAM C. THORNTON, Jefferson City, Mo. Filed June 11, 1890. Serial No. 355,022. (No model.)



Claim.—In a milk-can, the combination, with the can-body, of the double-weighted bottom having a central screw-threaded opening, a central tube having its lower end seated in said screw-threaded opening, a ring removably fitted over the upper portion of said tube and having arms whose outer ends are bifurcated to detachably engage the upper edge of the can-body to thereby hold the tube in position, and a cover provided at its periphery with a downwardly-contracted flange to lie adjacent to the exterior of the can and at its center with a downwardly flaring or expanding collar to fit in said central tube, said parts being arranged substantially as described.

447,924. SUSPENDER-BUCKLE. JUSTUS A. TRAUT, New Britain, Conn. Filed Sept. 25, 1890. Serial No. 366,092. (No model.)



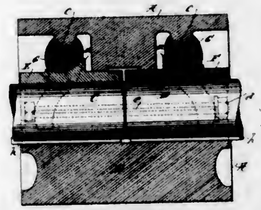
Claim.—1. In a buckle, the combination, with the buckle-plate having a guide-slot closed at the lower end thereof, a guide-bar in said slot, and the catch at the lower end of the slot below the guide-bar, of a slide-plate shaped in its upper end to engage said guide-bar and having a catch adapted to engage said buckle-plate catch.

2. In a buckle, the combination, with the buckle-plate having the guide-slot, a guide-bar, and a catch, substantially as described, of the slide-plate located in said guide-slot to engage said guide-bar and catch, and upward slide movement resisting means, substantially as described, for resisting the upward movement of the slide on the buckle-plate.

3. In a buckle, the combination, with the buckle-plate having the guide and catch, of the slide constructed to engage said guide and catch, and a spring supported on the buckle-plate and acting on the slide to hold the same in engagement with the buckle-plate catch, substantially as described.

4. In a buckle, the combination, with the buckle-plate having the vertical slot, the guide-bar in said slot, and the upwardly-projecting catch 40 below said guide, of the slide having the slide-case constructed to engage said guide-bar, the lower end of said slide-case for engaging said buckle-plate catch.

447,925. SHAFT-COUPLING. WILLIAM B. TURNER, Schenectady, N. Y. Filed Sept. 20, 1890. Serial No. 365,605. (No model.)



Claim.—1. In a shaft-coupling, the combination of a casing inclosing the shafts to be coupled, a bearing rigid with said casing, a bearing movable transversely to said casing and shafts, a pair of levers fulcrumed on the casing and engaging the movable bearing by cam-surfaces, and operating-connections between the levers inside the lines of engagement of their cam-surfaces with the movable bearing, substantially as described.

2. In a shaft-coupling, the combination of a casing inclosing the shafts to be coupled, a bearing rigid with said casing, a bearing movable transversely to said casing and shafts, a pair of levers, one lever straddling each shaft, said levers being fulcrumed on the casing and engaging the movable bearing by cam-surfaces, and operating-connections between the straddling portions of said levers, substantially as described.

3. In a shaft-coupling, the combination of a casing inclosing the shafts to be coupled, a bearing rigid with said casing, a bearing movable transversely to said casing and shafts, a pair of bifurcated levers, one lever straddling each shaft, said levers being fulcrumed upon the casing and engaging the movable bearing by cam-surfaces, and operating-connections between the inner ends of said levers, substantially as described.

4. In a shaft-coupling, the combination of a casing inclosing the shafts to be coupled, a bearing rigid with said casing and splined or otherwise secured to the shafts to be coupled, a bearing movable transversely to said casing and shafts, a pair of levers, one lever straddling each shaft, said levers being fulcrumed on the casing and engaging the movable bearing by cam-surfaces, and operating-connections between the straddling portions of said levers, substantially as described.

5. In a shaft-coupling, the combination of a casing inclosing the shafts to be coupled, a bearing rigid with said casing, a bearing movable transversely to said casing and shafts, the bifurcated levers G, fulcrumed on the casing and having cams *g* engaging the movable bearing, and operating-connections between the inner ends of the levers, substantially as described.

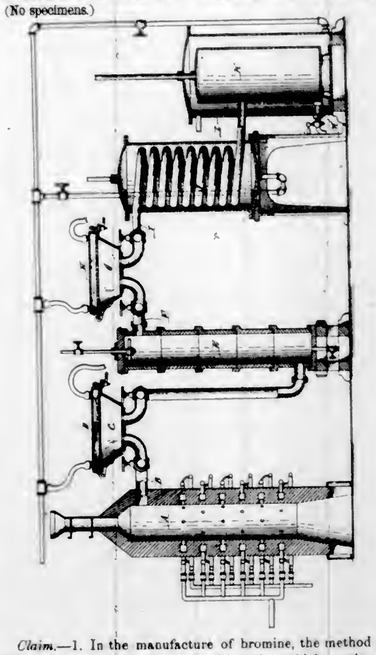
6. In a shaft-coupling, the combination of a casing inclosing the shafts to be coupled, a bearing rigid with said casing, a bearing movable transversely to said casing and shafts, the bifurcated levers G, fulcrumed on the casing and having cams *g* engaging the movable bearing, inclined seats *a* upon the movable bearing for receiving said cams, and operating-connections between the inner ends of the levers, substantially as described.

7. In a shaft-coupling, the combination of a casing inclosing the shafts to be coupled, a bearing rigid with said casing, a bearing movable transversely to said casing and shafts, the bifurcated levers G, fulcrumed on the casing and straddling the shafts and having cams *g* engaging the movable bearing, and rods *e* and nuts *d* upon the straddling ends of the levers for operating the same, substantially as described.

8. The combination, with the shafts C D, rigid bearing B, caps E F, and casing A, of the levers G, fulcrumed upon the casing and having cams *g* engaging the caps E F, and operating-connections between the levers, substantially as described.

9. The combination, with the shafts C D, rigid bearing B, caps E F, and casing A, of the levers G, fulcrumed upon the casing and having cams *g* engaging the caps E F, inclined seats *a* upon said caps for receiving said cams, and operating-connections between the levers, substantially as described.

447,926. PROCESS OF OBTAINING BROMINE AND IODINE. HERBERT H. WING, Buffalo, N. Y. Filed Oct. 2, 1890. Serial No. 366,824. (No specimens.)



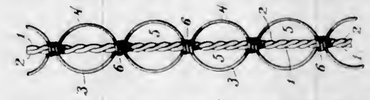
Claim.—1. In the manufacture of bromine, the method of producing fumes containing chlorine and bromine, which consists in mixing bittern with silicious material and calcining the mixture, substantially as set forth.

2. The method of producing bromine, which consists in calcining a mixture of bittern and silicious material, bringing the resulting fumes which contain chlorine and bromine in contact with bittern, and collecting the resulting bromine, substantially as set forth.

3. In the manufacture of bromine, the method of producing iodine as a by-product, which consists in calcining a mixture of bittern and silicious material and collecting the sublimed iodine, substantially as set forth.

4. The herein-described method of producing bromine and iodine, which consists in calcining a mixture of bittern and silicious material, whereby fumes containing chlorine, bromine, and iodine are formed, collecting the sublimed iodine, bringing the remaining fumes in contact with bittern-water, whereby the bromine and iodine contained in the same are liberated, and collecting the liberated iodine and bromine, substantially as set forth.

447,927. FENCING-STRAND. ALONZO B. WOODARD, Hornellsville, N. Y. Filed Dec. 26, 1890. Serial No. 375,825. (No model.)

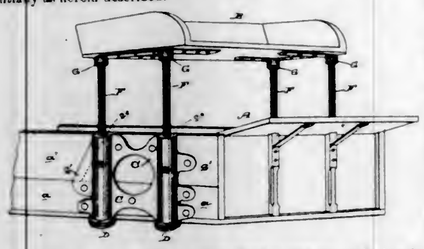


Claim.—A fencing-strand consisting of two longitudinal spirally-twisted wires and serpentine wires coiled at intervals around the exterior of the spirally-twisted wires and between such coiled portions expanded into curvilinear or oblong loops, substantially as shown and described.

447,928. SPRING-SEAT FOR VEHICLES. WILLIAM H. H. WRIGHT, San Francisco, assignor of one-half to George W. Lewis, Oakland, Cal. Filed Aug. 5, 1890. Serial No. 361,063. (No model.)

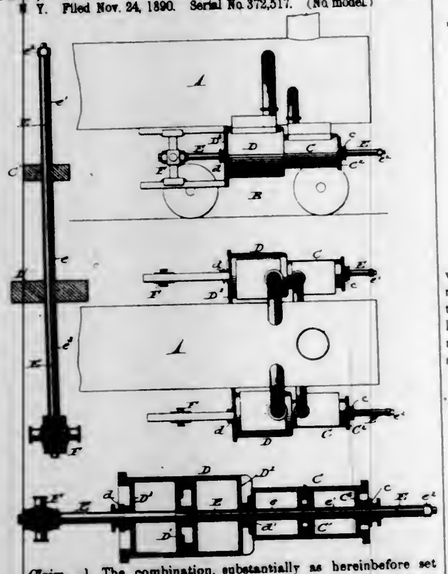
Claim.—1. A spring connection for vehicle-seats, consisting of the brackets secured to the vehicle sides and each formed with a plural number of vertical sockets having inwardly-flanged tops, spiral springs or cushions seated in said sockets, and parallel rods secured at their upper ends to the seat and having enlarged lower ends or feet playing

within the sockets and resting on the springs or cushions therein, substantially as herein described.



2. A spring connection for vehicle-seats, consisting of the brackets secured to the vehicle sides and each formed with vertical sockets having inwardly-flanged tops, the bottom plates secured to and closing the lower ends of the sockets, the spiral springs or cushions seated in said sockets and resting on the bottom plates, and the rods secured at their upper ends to the seat and having enlarged lower ends or feet playing within the sockets and resting on the springs or cushions therein, substantially as herein described.

447,929. COMPOUND STEAM-ENGINE. JOHN BAIRD, New York, N. Y. Filed Nov. 24, 1890. Serial No. 372,517. (No model.)

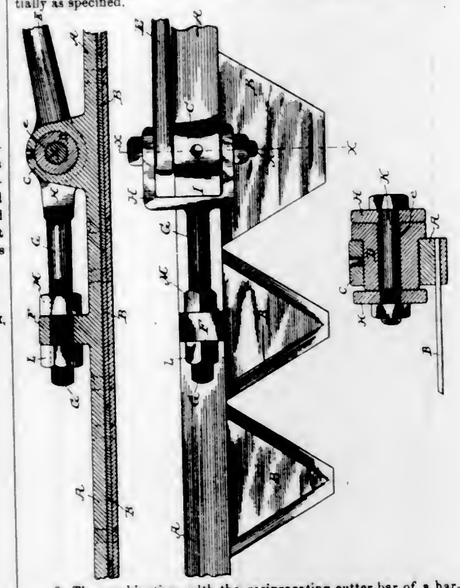


Claim.—1. The combination, substantially as hereinbefore set forth, of cylinders abutted end to end in the same axial line, their pistons, a single piston-rod extending through both pistons and through both cylinders, a cross-head at one end of the rod and a nut at the other, and removable spacing-thimbles interposed between the pistons and between the cross-head and nut and pistons, respectively, the sleeves thus constituting the bearing-surface of the piston-rod and permitting its removal by unscrewing the nut.

2. The combination, substantially as hereinbefore set forth, of the high-pressure cylinder, the low-pressure cylinder secured thereto in the same axial line, their pistons, a single piston-rod extending through both pistons and all the cylinder-heads, a cross-head on the end of the piston-rod next the low-pressure cylinder, a nut on the opposite end, removable spacing-thimbles on the piston-rod between the pistons and between the cross-head and nut and pistons, respectively, and the removable outer heads of the cylinders, whereby the proper relation of the pistons is secured and their removal through the end of their appropriate cylinder is facilitated.

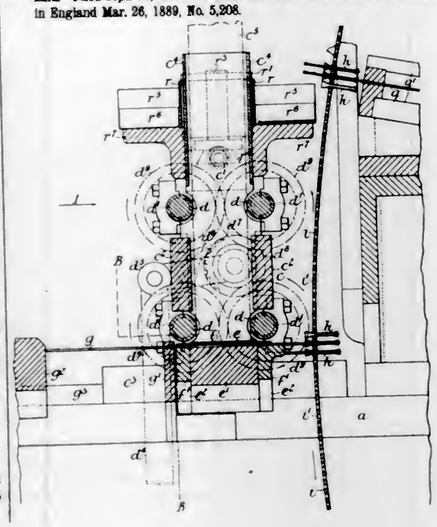
447,930. PITMAN CONNECTION FOR HARVESTERS. JOSEPHUS BAUM, Ridge Farm, Ill. Filed Nov. 24, 1890. Serial No. 372,464. (No model.)

Claim.—1. The combination, with the cutter-bar of a harvester having two vertical lugs, of the pitman provided with a boss at its outer end, having an opening extending through it and adapted to work in the outer lug of the cutter-bar, a link having a shank threaded at one end and bifurcated at the other to embrace the outer lug and bossed pitman, the bolt K, and the nuts located on the threaded shank of said link, whereby compensation for the wear of the parts may be made and lost or slack motion of the cutter-bar prevented, substantially as specified.



2. The combination, with the reciprocating cutter-bar of a harvester having two vertical lugs, of the pitman having a boss at its connecting end provided with an opening extending through it and adapted to be fitted at either side of the outer lug, the reversible bifurcated link, the threaded bolt, and nuts, whereby the pitman may be connected at the right or left hand end of the cutter-bar, substantially as specified.

447,931. MATCH-MACHINE. CHARLES R. E. BELL, London, England. Filed Sept. 27, 1890. Serial No. 366,418. (No model.) Patented in England Mar. 26, 1889, No. 5,208.



Claim.—1. An automatic machine for the manufacture of matches by a continuous process, having in combination the following devices, namely: an intermittent feed which presents the edge of the veneers toward a rotary drum, a knife or knives for cutting the veneers in the direction of their grain, grippers for holding the splints in such intermittently-rotating drum, a casing or chamber inclosing a portion of the drum and through which the splints pass, a paraffine heating-tank for paraffining the splints, a rotating drum coated with striking composition, a cooling and drying chamber inclosing a portion of the drum, and a comb for delivering the finished articles, the combination being and operating substantially as described.

2. In a match-making machine, an intermittently-rotating drum carrying a system of grippers adapted for receiving, gripping, and holding match splints or tapers, said grippers having a bell-shaped or funnel mouth and a set of spring gripping-tongues, substantially as and for the purposes set forth.

3. In a match-making machine, the combination, with the intermittently-rotating drum, of feed-rollers bearing on the opposite edges of the veneer, and a knife or knives whose cutting edge or edges are substantially in line with the radius of the drum for severing the splints from the veneer, and plungers for pushing the said splints or tapers into the grippers in the drum, substantially as shown and described.

4. In a match-making machine, the combination, with the said intermittently-rotating drum and with intermittently-operated rollers serving to bear on the edges of the veneer to feed the same, and with a knife or knives reciprocating in right lines and cutting the veneers in the direction of the grain of the wood into match splints, and a plunger for pushing the said splints into clips in the said drum, of devices, substantially as described, for heating, paraffining, cooling, tipping, and drying the matches.

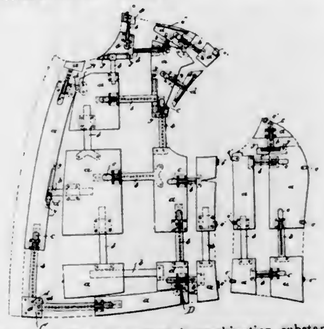
5. In match-making machinery, the combination, with the drum and with the grippers *h h'*, having the bell-mouth and split shank, of an ejecting-comb actuated by rods and levers within the drum and serving automatically to push the finished matches from the grippers in the drum into suitable receptacles, substantially as described.

6. In an automatic machine for the continuous manufacture of matches from a strip or sheet, the combination of a slotted guide with intermittently-actuated feed-rollers bearing against and gripping the edges of the strip or sheet, and whereby said strips are vertically introduced into measuring-grooves, substantially as and for the purposes described.

7. In an automatic machine for the continuous manufacture of matches, the combination of an intermittent feed and a slotted guide, as described, with a horizontal plate provided with grooves, into which the ends of the strips of veneer or the like are introduced by the act of feeding, the depth of the grooves corresponding to the predetermined thickness of the match.

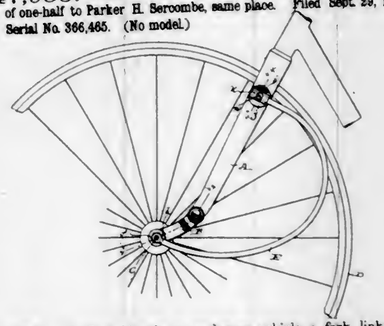
8. An automatic machine for the continuous manufacture of matches, having in combination an intermittent vertical feed, slotted guides, grooved plate, and horizontally-reciprocating knives, as set forth, and whereby the portion of the veneers advanced into the recesses of the grooved plate is held for severing and is cut off of the predetermined thickness, all substantially as set forth.

447,932. ADJUSTABLE PATTERN FOR DRAFTING GARMENTS. SALVATORE BISHR, now SALVATORE BISCEGLIA, Chicago, Ill. Filed Oct. 14, 1889. Serial No. 327,046. (Model.)



Claim.—In an adjustable pattern, in combination, substantially as set forth, independent sections having their corresponding edges facing each other, and the bars which connect adjacent sections connected to and projecting from the edge of one section and entering the edge of the adjacent section and sliding therein, such bars having a longitudinal series of apertures and a spring-catch pivoted on the section in which the bar slides, having a tooth which projects through the plane of the section to enter such apertures of the bar and having a suitable thumb-piece by which it may be disengaged from the bar, substantially as set forth.

447,933. BICYCLE. FRANK H. BOLTE, Milwaukee, Wis., assignor of one-half to Parker H. Sercombe, same place. Filed Sept. 29, 1890. Serial No. 366,465. (No model.)



Claim.—1. In a bicycle or analogous vehicle, a fork, links pivotally connected to the same and provided with tapered polygonal openings, an axle having tapered polygonal portions engaging the openings in the links, a wheel on the axle, and a spring-resistance arranged to oppose pivotal movement of said links, substantially as set forth.

2. In a bicycle or analogous vehicle, a fork, links pivotally connected thereto, an axle rigid in the links, a wheel on the axle, radially-serrated disks fast on the fork branches, similar disks engaging the first and provided with screw-threaded shanks extended through said fork branches, clamping-nuts arranged on said shanks, and bow-springs having their upper extremities fast to the shanked disks and arranged to resist pivotal movement of said links, substantially as set forth.

3. In a bicycle or analogous vehicle, a fork, links pivotally connected thereto, an axle rigid in the links, a wheel and cones arranged on the axle, pins connecting the links and cones, and a spring-resistance arranged to oppose pivotal movement of said links, substantially as set forth.

4. In a bicycle or analogous vehicle, a fork, links pivotally connected thereto, an axle rigid in the links, a wheel on the axle, serrated disks fast on the fork branches, similar disks engaging the first, curved spring-rods having their lower extremities arranged to resist pivotal movement of said links, and suitable means for clamping the upper extremities of said springs, outer disks, and fork branches, substantially as set forth.

5. In a bicycle or analogous vehicle, a fork, spring-controlled hangers having their inner ends in the form of shouldered sleeves, shouldered pivots connecting the fork and sleeve ends of the hangers, an axle supported by the hangers, and a wheel on the axle, substantially as set forth.

6. In a bicycle or analogous vehicle, a fork, spring-controlled hangers having their inner ends in the form of shouldered sleeves, shouldered pivot-bolts connecting the fork and sleeve ends of the hangers, nuts adjustable on the bolts, an axle supported by the hangers, and a wheel on the axle, substantially as set forth.

7. In a bicycle or analogous vehicle, a fork, spring-controlled links pivotally connected to the same and provided with squared openings, an axle having squared portions fitting the link-openings and extended portions beyond the links, retaining devices carried by the axle in opposition to said links, and a wheel on said axle, substantially as set forth.

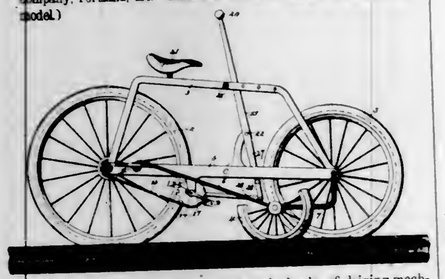
447,934. SCREEN. JAMES A. BOUGHAN, Brooklyn, N. Y. Filed Apr. 29, 1889. Serial No. 309,028. (No model.)



Claim.—1. A screen consisting of a rectangular frame formed with parallel top and bottom rails joined permanently together at one end through the medium of a stile and having a detachable stile temporarily attached against the opposite ends of said rails, which are cut square, said detachable stile constructed with an inward shoulder formed integrally with the stile to enter between the ends of the rails, and said detachable stile extending entirely past the square ends of each of said rails and constructed on its exterior face with a longitudinal groove throughout its entire length, whereby to shorten the screen the detachable stile may be removed, the ends of the rails cut square off, and the stile attached against the square-cut ends of the rails, with its inward projection entering between them to hold them apart and its outer grooved side extending entirely past their square-cut ends, thereby constituting a complete screen having a groove throughout the entire length of one of its sides.

2. A screen consisting of a rectangular frame formed with parallel rails joined permanently together at one end through the medium of a stile and having a detachable stile constructed to fit against the opposite ends of the rails and formed with an inward projection to enter partly between them, and having beveled end faces to wedge them apart as it is forced between them, and the detachable stile fastened temporarily to the rails and a netting fastened to the rails and permanent stile, whereby the netting is stretched between the side rails by the attachment of the detachable stile.

447,935. RAILWAY-VELOCIPEDE. FRANK BRADY, Chicago, Ill., assignor, by mesne assignments, to the American Railway Tricycle Company, Portland, Me. Filed Feb. 17, 1890. Serial No. 340,664. (No model.)



Claim.—1. The combination, with a velocipede, of driving mechanism having pedals adapted to be operated solely by the feet of the rider and an alternative device consisting of a vibratable lever located forward of said pedals, said lever being connected to the driving mechanism and having rests or holds for the hands and feet, whereby both may be utilized for propulsion, a detachable connection between the said lever and the driving-wheel, and a clamping device whereby the said lever may be fixed to afford a purchase for the hands when not in use for driving the velocipede, substantially as described.

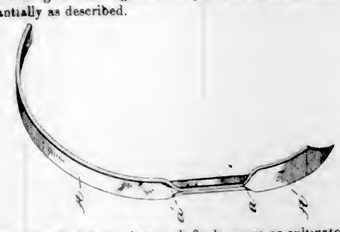
2. The combination, with a velocipede, of driving mechanism comprising a shaft, as 12, a sprocket-wheel on said shaft, and a chain connecting said sprocket-wheel to a sprocket on the driving-wheel shaft, pedals driving the first named shaft, and a vibratable lever provided with hand and foot holds and connected to and operating said first-named shaft, a detachable connection between the said lever and the driving-wheel, and a clamping device whereby the said lever may be fixed to afford a purchase for the hands when not in use for driving the velocipede, substantially as described.

3. The combination, with a velocipede, of a driving-shaft, pedals connected thereto and situated directly below the rider, an upright vibratory lever located forward of said pedals and driving-shaft and provided with hand and foot holds, one of said pedals being mounted on a movable crank whereby both cranks may be adjusted to lie in the same direction and to move in unison with the vibratable lever when the latter is in use, substantially as described.

4. The combination, with a velocipede, of a driving-shaft, as 12, vibratory pedals, a clutch connecting said shaft and pedals, a vibratory upright lever adapted to be worked by the rider, and a clutch upon said driving-shaft connected to and operated by said lever, substantially as described.

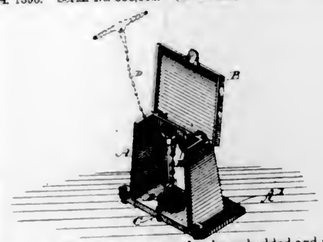
447,936. SPRING-TOOTH FOR HARROWS. WARREN M. BRINKERHOFF, Auburn, N. Y. Filed Dec. 22, 1890. Serial No. 375,486. (No model.)

Claim.—1. An arched flat spring-tooth for harrows or cultivators, having a broad surface presented to the line of draft throughout the main portion of its length and having at its lower extremity a broad earth-engaging part and a narrower portion between the said earth-engaging part and the broad main body of the tooth, formed by compactly folding or doubling back the parts intervening between them, substantially as described.



2. An arched flat spring-tooth for harrows or cultivators, having a broad surface presented to the line of draft throughout the main portion of its length and a broad earth-engaging part at its lower extremity, and a narrower part between the broad earth-engaging part and the broad portion of the main body, formed by compactly folding or doubling back the edges of main body together, substantially as described.

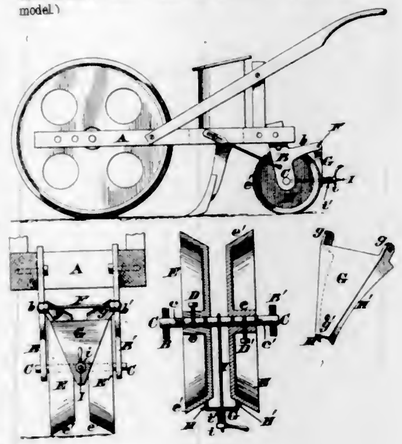
447,937. HITCHING-BOX. ISAAC BROOKS, Pottstown, Pa. Filed Jan. 24, 1890. Serial No. 338,002. (No model.)



Claim.—1. A hitching-box adapted to be embedded and provided with a cover and with inwardly-projecting parallel hooks attached to the upper part of one side of the box for the support of the bar of the chain, thereby leaving the main portion of the top free for insertion of the hand into and under the chain-bar, said hooks being separated, so that the fingers may pass under and grasp the bar between said hooks, substantially as and for the purpose set forth.

2. A hitching-box adapted to be embedded and having a bottom flange and tapering sides to resist vertical displacement, and a hinged cover, a chain attached at its lower end, and inwardly-projecting hooks attached to one side near the upper edge of said box and centrally separated, substantially as and for the purpose set forth.

447,938. COVERING-WHEEL FOR DRILLS, &c. JAMES CAMPBELL, Harrison, Ohio. Filed Oct. 27, 1890. Serial No. 369,386. (No model.)

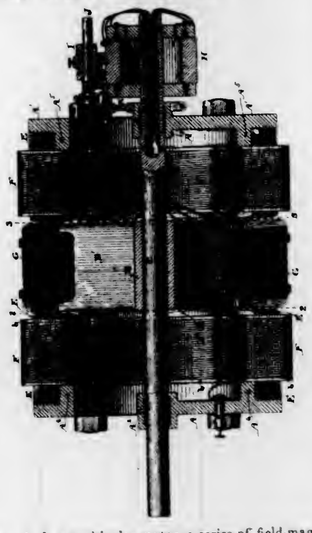


Claim.—1. The combination, in a drill or planter or other similar implement, of the swinging scraper G, rod I, nut *i*, and spring *i'*, the front end of said rod being coupled to the shaft of the covering wheels or disks, for the purpose described.

2. The scraper G, having side flanges H H', which flanges have concave front edges, for the purpose described.

3. The combination, in an agricultural implement, of main frame A, hangers B *b* B' *b'*, shaft C, wheels or disks E E', adjustably secured along said shaft, rod F, scraper G, freely suspended from said rod, and rod I, coupled to said shaft C and having at its rear end a nut *i* and spring *i'*, all as herein described, and for the purpose stated.

447,939. ELECTRIC MOTOR. WILLIAM H. CHAPMAN, Portland, Me., assignor to the Giant Electric Motor Company, same place. Filed July 5, 1890. Serial No. 357,708. (No model.)



Claim.—1. In a multipolar motor, a series of field-magnet cores constructed and arranged in pairs, the two cores in each pair being placed parallel to the axis of revolution of the armature and connected together in one piece, but removed from contact with the cores of the next magnet and having their pole ends curved tangentially to a plane at right angles to the axis of revolution in both directions from the center of the width of each of said cores.

2. In a multipolar motor, a series of field-magnet cores constructed and arranged in pairs, the two cores of each pair being composed of a series of plates placed one above another and each forming a part of each core and being placed parallel to the axis of revolution of the armature, but removed from contact with the cores of the next magnet and having their pole ends curved tangentially to a plane at right angles to the axis of revolution in both directions from the center of the width of each of said cores.

447,940. WITHDRAWN.

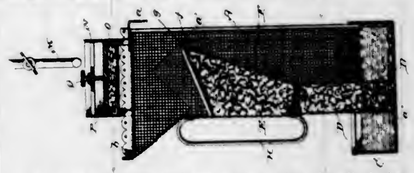
447,941. COATING FOR THE PROTECTION OF BOTTOMS OF VESSELS. ROBERT A. CHESEBROUGH, New York, N. Y. Filed Nov. 26, 1889. Serial No. 331,693. (No specimens.)

Claim.—The combination, with those parts of a navigable vessel which are to be submerged, of a coating of ozocerite for the purpose of protecting such parts against marine animals and plants, against the corroding action of sea-water, and against rot, substantially as herein described.

447,942. AIR-PURIFIER. JOHN W. COLLINS, Washington, D. C. Filed July 8, 1890. Serial No. 358,088. (No model.)

Claim.—1. In an air-purifier and evaporator such as described, the combination, with the open-work basket having a removable section and a tank, of the pocket mounted on such removable section and containing absorbent material, whereby the pocket, with its contents, may be removed and recharged, substantially as described.

2. In an air-purifier and evaporator such as described, the combination, with the open-work basket having the removable section and the tank, of the pocket containing absorbent material having the lower section dipping into the tank and the upper section mounted on the removable section of the basket, with the absorbent material of the two sections in contact, substantially as described.

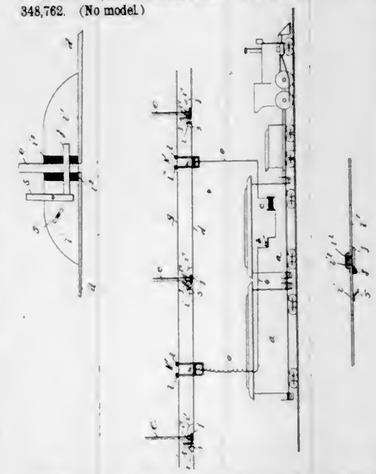


3. In an air-purifier and evaporator such as described, the combination, with the open-work basket having the removable panel in the front, of the pocket mounted on said panel and adapted to be removed therewith, and the tank, substantially as described.

4. In an air-purifier and evaporator such as described, the combination, with the open-work basket and tank, of the rod *g*, extending across the basket, and the pocket hooked on said rod, substantially as described.

5. In an air-purifier and evaporator such as described, the combination, with the open-work basket having the tank and pocket containing absorbent material, of the reservoir located above the pocket and having the perforated bottom, the pervious material over said perforations, and the plate and set-screw for compressing said material, substantially as described.

447,943. RAILWAY-CAR TELEGRAPHY. WILLIAM S. COOK and MOSES C. COOK, South Omaha, Nebr. Filed Apr. 21, 1890. Serial No. 348,762. (No model.)



Claim.—1. In an electric-railway system, the combination of the line telegraph-wire broken into insulated sections, normally-closed circuit-closers located at the breaks between the sections, a vehicle or train having a partial circuit extending therethrough, including telegraphing-instruments, a front contact device electrically connected with the front end of said partial circuit and engaging said line-conductor and carrying means to throw open said circuit-closers, and the rear contact device connected with the rear end of said partial circuit and engaging said conductor and provided with means arranged to close the closers opened by the front contact, as set forth.

2. An electric railway-signal comprising a line telegraph-conductor divided into insulated sections, normally-closed circuit-closers at the breaks between said sections, a vehicle or vehicles, a partial circuit extending therethrough, including telegraph-instruments, a front and a rear contact-trolley connected, respectively, with the opposite ends of said partial circuit and maintaining constant electric connection with said line-conductor, the front trolley provided with means arranged to open said closers and the rear trolley provided with means arranged to close the closers opened by the front closer.

3. An electric railway-signal comprising a line-conductor divided into insulated sections, normally-closed circuit-closers at the breaks

between the sections, each comprising a swinging contact, a vehicle or vehicles having a partial circuit therethrough, including telegraphing-instruments, a front and a rear trolley electrically connected with opposite ends of said circuit, respectively, and traveling on and maintaining constant contact with said conductor, the front contact having an arm or projection arranged to engage said swinging contacts to open the closers and the rear trolley having an arm or projection arranged to engage said contacts to close the closers.

4. In an electric railway-signal, the line-conductor divided into insulated sections, supports therefor, and normally-closed circuit-closers at the breaks between the sections, each comprising a rigid metal strip electrically connected with one section, and a vertical swinging bar electrically connected with the adjoining conductor-section and arranged to be swung into or out of engagement with said strip, and the trolleys to swing said bars.

5. In combination, hangers, vertical metal plates rigidly secured on opposite sides of and insulated from the hangers, the line-conductor sections at their ends secured to said plates, and the circuit-closers located at the breaks between the sections and comprising the stationary and swinging metal strips carried by said plates.

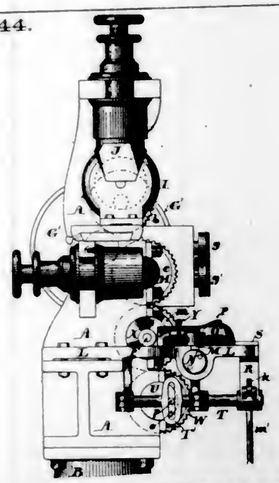
6. In combination, the signal and telegraph conductors, a train of vehicles, the front and rear contact devices having separate contacts traveling on the telegraph and signal conductors, a partial circuit connecting the telegraph-conductor contacts and extending throughout the vehicles, a source of electricity in said circuit, separate circuits from the signal-conductor contacts in the front and rear vehicles and grounded through the same, a source of electricity and alarm in each signal-circuit, normally-open local circuits in the front and rear vehicle, each having an alarm and including the source of electricity in the signal-circuits, and electric magnetic devices in said partial circuit controlling circuit-closers in said local circuits, as set forth.

7. A hanger supporting a pair of parallel wires, the line-conductor formed in sections, each section at its ends being secured to plates secured to and insulated from said hangers, and a circuit maker and breaker for each break between the line-conductor sections carried by said plates, in combination with a train or vehicle having trolleys traveling on said wires and bearing on said conductor and adapted to operate said circuit-closers, substantially as described.

8. A line-conductor extending along the track, in combination with a moving train having front and rear contacts electrically engaging said conductors, a partial circuit extending through the train and at its opposite ends respectively connected with said conductors, telegraphing-instruments in said partial circuit, a source of electricity, open local circuits at the opposite ends of the train having batteries and alarms, and electro-magnetic devices in circuit with said partial circuit and controlling circuit-closers in the local circuits and arranged so that the local circuits will be closed when said partial circuit is broken.

447,944. HEEL-STIFFENER MACHINE. LOUIS CORÉ, St. Hyacinthe, Canada. Filed Oct. 27, 1890. Serial No. 369,423. (No model.)

Claim.—1. In a machine for shaping counter-stiffeners for boots or shoes, the combination of a former approximating to the shape of the heel portion of a last and provided along the center of its tread-surface with a downwardly-projecting rib, leaving a recess on each side, a pair of molds having their inner faces made to conform to the shape of the sides of said former and each provided with a lip to overlap or pass beneath a portion of the tread-surface of said former, arranged one upon each side of said former and to be moved toward and from each other and said former, and a notched plate constructed and arranged to be reciprocated in the direction of the length of said former to turn the rear or heel portion of the flange of the stiffener, while the side portions of said flange are turned by the lips on the molds.



2. In a machine for shaping counter-stiffeners for boots or shoes, the combination of a former made in two parts pivoted together and to the table or bed of the machine at or near the center of the heel end and provided with a downwardly-projecting rib extending from its pivotal connection toward its free or movable end, a pair of molds arranged one upon each side of said former and mounted upon movable pivots, with their inner faces made to conform to the forward side portions of said former and each provided with a lip to project under the tread-surface of said former to turn the side portions of the flange of the stiffener, springs for pressing said molds toward the former, a reciprocating notched plate for turning the rear portion of the flange of the stiffener, a revolving wedge-like cam constructed and arranged to act upon the free or movable ends of the two parts of said former to separate them, and a spring to move said parts toward each other and said cam.

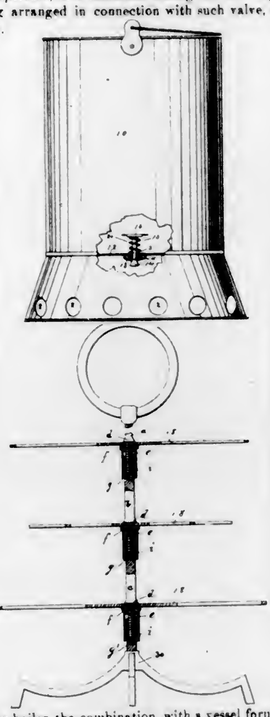
3. In a machine for shaping counter-stiffeners for boots and shoes, the combination, with a divided former pivoted together and to a fixed part of the machine near one end, a cam and spring for vibrating the two parts of said former toward and from each other, and two molds mounted upon movable fulcrums upon opposite sides of said former, of a notched flange-turning plate, a carrier for said flange-turner fitted to and movable in a suitable slide, a reciprocating rod passing through said carrier and provided with a notch to receive a locking-latch, a locking latch-lever pivoted to said carrier in position to engage with said notch when depressed, and a spring constructed and arranged to disengage said latch-lever from said notch when the power that depresses it is removed.

4. The combination of the former P, made in two parts pivoted together, the molds O O, provided with the lips *e e* and mounted upon movable fulcrum-pins on opposite sides of said former, the movable pistons N N, carrying said fulcrum-pins, the springs Q Q, inclosed between said pistons, the plugs N′ N′, and the cam X, all constructed, arranged, and operating substantially as described.

5. The combination of the divided and pivoted former P, provided with the ribs *f*, the pivoted and yielding molds O O, each provided with the lip *e*, the notched flange-turner S, the carrier R, the latch-lever *k*, pivoted to said carrier, the spring *n* for raising said lever, the rod T, provided near one end with the notch *l* to receive the latch-lever *k* when depressed, the yoke T′, formed in or connected to said rod T and provided with the slot *o*, the revolving shaft, and the crank-pin *p* for reciprocating said rod, the cam X for moving the free ends of the divided former away from each other, and the spring Y, all constructed, arranged, and operating substantially as described.

447,945. AUTOMATIC EGG-BOILER. GEORGE L. DALE, Newark, N. J. Filed Sept. 20, 1890. Serial No. 365,619. (No model.)

Claim.—1. In an egg-boiler, the combination, with a vessel formed with a discharge-aperture, of a combined closing and flow-regulating valve and a spring arranged in connection with such valve, substantially as described.



2. In an egg-boiler, the combination, with a vessel formed with a discharge-aperture, of a valve adapted to close said aperture and formed with a stem which constitutes a regulating-valve and acts to control the flow from said aperture, and a valve-spring, substantially as described.

3. In an egg-boiler, the combination, with a vessel formed with an apertured bottom, of a valve arranged to close said aperture, a regulating-valve consisting of a stem of gradually-increasing diameter connected to the closing-valve, which said regulating-valve acts to control the flow from said aperture, and a spring arranged in connection with the valves, substantially as described.

4. In an egg-boiler, the combination, with a vessel formed with an apertured bottom, of a valve arranged to close said aperture and provided with a tapering stem which constitutes a flow-regulating valve, a spring arranged about said stem, and a plate adjustably connected to the stem, substantially as described.

5. In an egg-boiler, the combination, with a vessel formed with an apertured bottom, of a spring-actuated valve arranged to close said aperture and extend below the vessel-bottom, and a base which extends below the valve and serves as a support for the vessel, substantially as described.

6. In an egg-boiler, the combination, with a vessel formed with an apertured bottom, of a spring-actuated valve arranged to close said aperture and extend below the vessel-bottom, and a base which extends below the valve and serves as a support for the vessel, said base being formed with a number of apertures, substantially as described.

7. A caster consisting, essentially, of two or more egg-receiving racks and an adjustable sectional stem, substantially as described.

8. In an egg-receiving caster, the combination, with a base, of a stem adjustably connected thereto, racks carried by the stem, and a means for adjusting the stem between the racks, substantially as described.

447,946. TAIL-PIECE FOR MUSICAL INSTRUMENTS. GEORGE B. DURKEE, Chicago, Ill., assignor to Lyon & Healy, same place. Filed Feb. 3, 1889. Serial No. 299,309. (No model.)

Claim.—1. A tail-piece for the purpose set forth, consisting of the metal plate *a*, provided with a set of struck-up string-holding fingers *a′*, which rise from the plane of said plate, substantially as described.

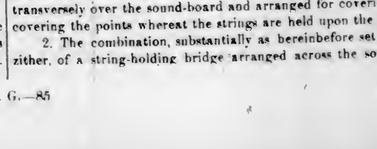
2. The tail-piece A, consisting of a metal plate *a*, provided with a flange a^b, and having the struck-up fingers *a′*, which rise from the plane of the plate, substantially as and for the purpose described.



3. The combination, with a mandolin, of the tail-piece A, provided with the body-plate *a*, having struck-up fingers *a′*, said plate *a* being fitted directly against the flattened end portion *b* of the mandolin-body substantially as and for the purpose described.

4. The combination, with the metal plate provided with means for holding the strings and having a pintle-bearing, of the guard pivoted to said pintle-bearing and adapted to cover said plate, substantially as described.

447,947. BANJO. GEORGE B. DURKEE, Chicago, Ill., assignor to Lyon & Healy, same place. Filed Feb. 26, 1889. Serial No. 301,265. (No model.)



Claim.—1. A banjo having its straining-band *a* provided with a set of string-holding openings, substantially as set forth.

2. In a stringed musical instrument such as set forth, a movable guard for covering and concealing and uncovering the point whereat the strings are held.

3. The combination, with a stringed musical instrument such as set forth, of a hinged guard, and arranged for covering and concealing the point whereat the strings are held, substantially as described.

4. The combination, with a stringed musical instrument, of the hinged guard and a locking device to hold the guard in position to cover the string-holder, substantially as described.

5. The combination, with the string-holder of a musical instrument such as set forth, of a guard made separate from the string-holder and adapted to cover and conceal the knotted ends of the strings.

6. The combination, with the banjo neck and body, of one or more push-pins M, arranged to bear against the body, and one or more wedges N, arranged for forcing said push pin or pins against the body, substantially as set forth.

7. The combination, with the banjo neck and body, of one or more push-pins M, one or more wedges N for forcing said pin or pins against the body, and one or more screws for adjusting said wedge or wedges, substantially as described.

8. The combination, with the hoop or rim in a banjo body, of the brace-plate R, fitted throughout its length against the inner side of said hoop at a point opposite the connection between the hoop and the neck, substantially as described.

9. The combination, with a banjo, of a guard adapted for covering and concealing the knotted ends of the strings and held upon the rim of the instrument.

447,948. ZITHER. GEORGE B. DURKEE, Chicago, Ill., assignor to Lyon & Healy, same place. Filed June 11, 1889. Serial No. 313,940. (No model.)



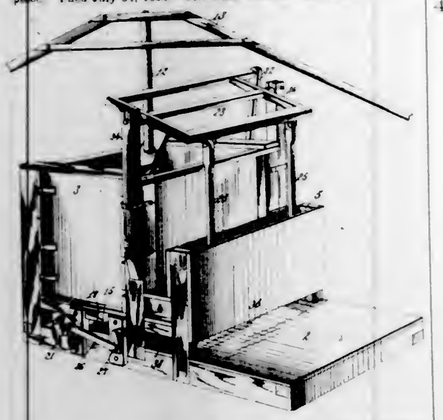
Claim.—1. The combination, substantially as hereinbefore set forth, in a zither, of a string-holding bridge secured upon the flexible sound-board and a movable combined guard and finger-rest extending transversely over the sound-board and arranged for covering and uncovering the points whereat the strings are held upon the bridge.

2. The combination, substantially as hereinbefore set forth, in a zither, of a string-holding bridge arranged across the sound-board

and a combined guard and finger-rest arranged transversely over the sound-board and hinged to said bridge, for the purpose described.

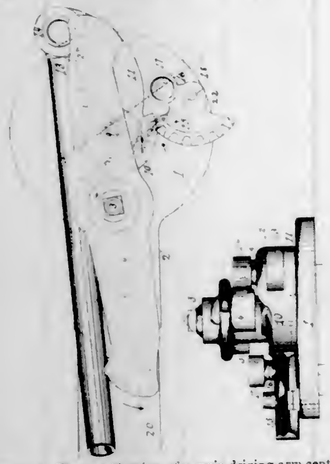
3. The combination, substantially as hereinbefore set forth, in a zither, of the string-holding bridge provided with pins which rise from its top side for the purpose described, and the guard E, recessed longitudinally along its under side and arranged for covering the pins.

447,949. BRICK-MACHINE. JOSEPH A. FRAZIER and WILLIAM A. MILAM, Corrona, Miss., said Milam assignor to Franklin P. Frazier, same place. Filed July 31, 1890. Serial No. 360,510. (No model.)



Claim.—The combination, with a base-frame having a table or platform, a mold-advancing plate, a rock-shaft connected with said plate, a plunger-chamber above the table or platform, a clay-box having a throat communicating with the plunger-chamber, a plunger in the plunger-chamber, and a rocking frame having at one end a connection with the plunger and at the opposite end a pendent pitman, of a crown-wheel journaled on the base-frame below the clay-box and two independent pinions both engaging the crown-wheel, one of said pinions having its shaft provided with a crank connected to the pendent pitman of the rocking frame and the other pinion having its shaft provided with a crank connected with the rock-shaft for operating the mold-advancing plate, substantially as described.

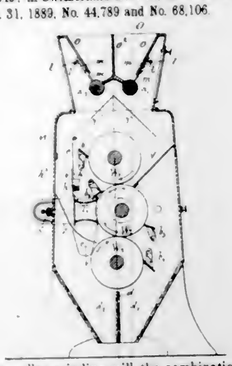
447,950. BALING-PRESS. MANETHO C. JACKSON, Denver, Colo. Filed June 5, 1889. Renewed Feb. 9, 1891. Serial No. 380,735. (No model.)



Claim.—1. The combination of a main driving-arm centrally pivoted and having curved projecting ridges substantially along either end thereof and flanges across its ends, a gear or segmental gear-wheel having an arm connected with a pitman-rod and carrying a roller arranged to be impinged upon by the curved projecting ridges, and a second gear or segmental gear-wheel meshing with the first and carrying a roller adapted to be impinged upon by the end flanges, substantially as set forth.

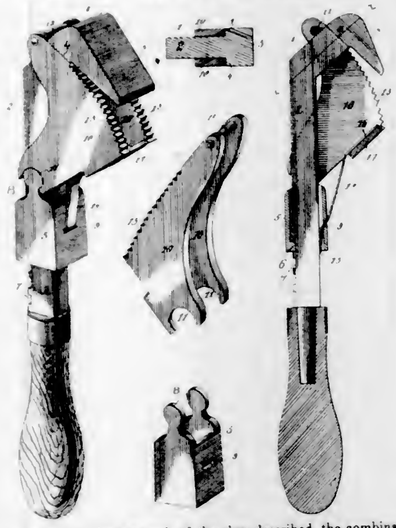
2. The combination of main driving-arm 4, having curved projecting ridges 5 and 6 and flanges 7 and 8, the gear-segment 10, having arm 11 and carrying the bearing 14, a pitman-rod connected thereto, and a gear 15, carrying a roller 17, substantially as described.

447,951. ROLLER GRINDING-MILL. CARL G. W. KAPLER, Berlin, Germany. Filed Jan. 10, 1889. Serial No. 296,084. (No model.) Patented in Germany Mar. 28, 1888, No. 45,567; in England Nov. 6, 1888, No. 16,049; in Switzerland Nov. 15, 1888, No. 67, and in Austria-Hungary Jan. 31, 1889, No. 44,789 and No. 68,106.



Claim.—In a roller grinding-mill, the combination, with a casing, of a gate b^2 in the same, the three rollers W', W^3, and W^4, one above the other, a conveyer-belt parallel with and adjacent to the side of the roller W^3, the partition e, extending upward from the inner edge of the conveyer-belt, a peak-shaped deflecting-guard above the uppermost roller, an inclined deflecting-partition below the endless belt, and gates in the partition e, which gates are provided on their under sides with V-shaped projections, substantially as set forth.

447,952. WRENCH. TRUMAN D. KEITH, South Pasadena, Cal. Filed Nov. 21, 1890. Serial No. 372,236. (No model.)



Claim.—1. In a wrench of the class described, the combination, with the stock or shank bent at its upper end to form a fixed head or jaw, of a sleeve mounted loosely upon the shank, a pair of jaws pivoted to the upper end of the sleeve, embracing the shank and having an eccentrically-curved toothed working-face, a rib formed upon the inner side of the sleeve and adapted to engage recesses formed in the shank, and a spring for normally forcing the rib into the recesses and for pressing the jaws to the front, substantially as described.

2. In a wrench, the combination, with the stock or shank provided upon its rear face with notches and having its upper end bent to form a rigid or fixed jaw or head, of a sleeve loosely fitting the shank, provided upon its interior with a rib for engaging the notches and at its front with a transverse opening, a pair of jaws connected and embracing the stock or shank, and a flat spring passed through the opening in the sleeve and having its lower portion pressing against the front face of the stock and its upper end terminating against the inner connecting portion of the jaws, substantially as specified.

3. In a wrench, the combination, with the stock bent at its upper end to form a fixed head or jaw, a sliding sleeve-mounted thereon, and a pair of jaws embracing the stock and pivoted at their lower ends to the sleeve, of means for adjusting the sleeve upon the stock, substantially as specified.

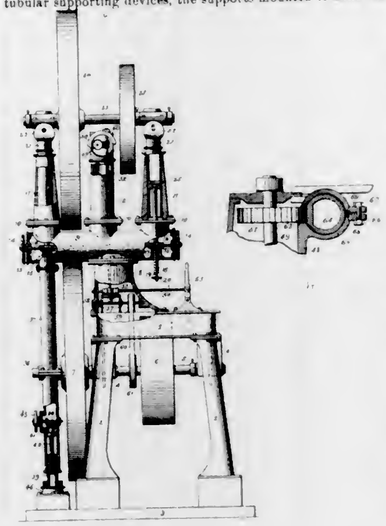
4. In a wrench, the combination, with the rectangular stock having its upper end bent to form a fixed head or jaw and having lateral extensions or shoulders projecting beyond the opposite faces of the stock, of a pair of spring-pressed jaws pivoted below the head and adapted to coact therewith, said jaws embracing the stock below the shoulders, substantially as specified.

5. In a wrench, the combination, with the rectangular stock the rear edge of which is provided with a series of notches, said stock being bent at an obtuse angle near its upper end and having its upper end bent at a right angle to said obtusely-bent portion and provided with laterally-disposed shoulders, of a sleeve loosely fitting the stock, provided upon its inner rear side with a rib for engaging the notches of the stock, at its front side with a transverse opening, and at its upper opposite sides with substantially circular lugs, a pair of jaws loosely embracing the stock, provided with semicircular recesses at their lower ends for engaging the lugs and having their working-faces eccentrically curved and toothed with relation to their bearings, a bolt connecting the rear ends of the jaws and a plate connecting their front ends, and a flat spring bearing against said front end in rear thereof and having its lower end passed through the transverse opening of the sleeve and bearing against the front face of the stock, substantially as specified.

447,953. BAND-SAW MILL. ISAAC N. KENDALL, New Westminster, Canada. Filed Apr. 11, 1890. Serial No. 347,477. (No model.)

Claim.—1. In a band-saw mill, the combination, with the upper saw-shaft, of the vertically-adjustable supports for the same, the adjusting-screws, the interiorly-threaded worm-wheels engaging the said adjusting-screws, a shaft provided with hand-wheels and with worms engaging the said worm-wheels, and an independent adjusting-screw extending vertically through the adjusting-screw supporting the rear end of said shaft and having a hand-wheel at its lower end, substantially as set forth.

2. The combination, in a band-saw mill, with the upper saw-shaft, of the tubular supporting devices, the supports mounted to slide vertically therein and having diaphragms at their lower ends, the wrought-iron followers and interposed elastic cushions placed against the under sides of said diaphragms, and the adjusting-screws arranged to bear against the said followers, as set forth.



3. In a band-saw mill, the combination, with the frame, of a vertical supporting-column arranged outside the lower saw-carrying wheel and having a bearing for the shaft of the latter, and having a vertically-movable foot-piece, which may be raised to permit the removal of the saw, substantially as set forth.

4. In a band-saw mill, the combination, with the frame, of a vertical supporting-column arranged outside the lower saw-carrying wheel and having a vertically-movable foot-piece, which may be raised to permit the removal of the saw, substantially as set forth.

5. In a band-saw mill, the combination, with the frame, of the vertical supporting-column arranged outside the lower saw-carrying wheel and having a vertically-movable foot-piece provided with a guard-ring of lead or analogous material, substantially as set forth.

6. In a band-saw mill, the combination, with the frame, of the vertical supporting-column arranged outside the lower saw-carrying wheel and having a vertically-adjustable foot-piece, which may be raised to permit the removal of the saw, and a supporting-socket for the said foot-piece, substantially as set forth.

7. In a band-saw mill, the combination, with the frame, of the tubular supporting-column arranged outside and adjacent to the lower saw-carrying wheel and having a diaphragm at its lower end, an adjusting-screw swiveled in said diaphragm, a tubular extension-piece screw-threaded interiorly to engage said adjusting-screw, and means for operating the latter, substantially as set forth.

8. In a band-saw mill, the combination, with the vertically-adjustable saw-guide having a rack-bar, of means for adjusting the said saw-guide, comprising a horizontal shaft provided at one end with a pinion to engage said rack-bar and at the other end with a worm-wheel, a vertical shaft having a worm at its upper end meshing with said worm-wheel, a laterally-movable slide having a box or bearing for the lower end of said vertical shaft, a horizontal friction-disk at the extreme lower end of said vertical shaft, a horizontal shaft driven from the lower saw-shaft and having a pair of friction-wheels located on opposite sides of the friction-disk at the lower end of the vertical shaft, and a vertical hand-lever connected pivotally with the laterally-movable slide-bar and weighted at its lower end to hold the friction-disk at the lower end of the vertical shaft normally out of contact with the friction-wheels upon the horizontal shaft, substantially as set forth.

9. In a band-saw mill, the combination of a vertical tubular support having a laterally-extending tubular arm, a guide-sleeve at the outer end of the latter, the vertically-movable tube mounted in said guide-sleeve and forming a receptacle for lubricating material, mechanism for adjusting the said tube in either upward or downward direction, and the saw-guide at the lower end of said tube having perforated faces communicating with the interior of said tube or receptacle, substantially as set forth.

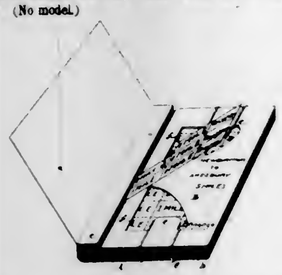
10. The combination, with the vertically-slotted guide-sleeve having flanges adjacent to the slot therein, of the vertically-movable tube carrying the saw-guide, the feather upon the latter engaging a groove in the slotted side of the guide-sleeve, the clamping-bolts connecting

the flanges of the said tube, the rack-bar upon the vertically-movable tube, and adjusting mechanism for the latter, substantially as set forth.

11. In a band-saw mill, the combination, with a vertically-adjustable tube to form a receptacle for lubricating material, of the saw-guide at the lower end of said tube and the valved channel in said saw guide, substantially as and for the purpose set forth.

12. In a band-saw mill, a vertically-adjustable saw-guide mounted upon a tubular receptacle and having a valved channel connecting the escape-openings in said saw-guide with the said receptacle, substantially as and for the purpose set forth.

447,954. COMBINED MILEAGE-BOOK INDICATOR AND GUARD. WILLIAM H. KNIGHT, Newbury, Mass. Filed Jan. 17, 1891. Serial No. 378,172. (No model.)

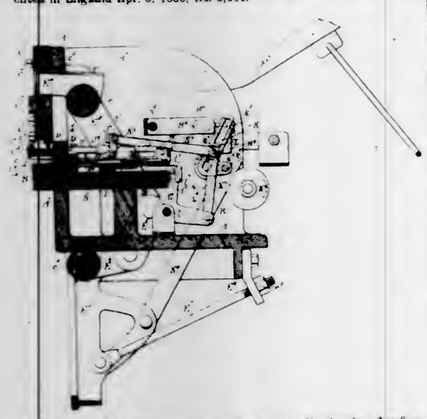


Claim.—1. In combination with a plate B, provided with lips *e* in the same plane with the body of the plate, an endless band or elastic, substantially as and for the purposes set forth.

2. In combination with a plate B, provided with lips *e* in the same plane with the body of the plate and having the openings *f*, an endless band or elastic, substantially as and for the purposes set forth.

3. In combination with a mileage-book, a plate B, provided with lips *e* in the same plane with the body of the plate and having openings *f*, and a band or elastic engaging with said lips to bind said plate in the book, substantially as specified.

447,955. BOX-JOINTING MACHINE. MARK D. KNOWLTON, Chicago, Ill. Filed Feb. 14, 1888. Serial No. 263,998. (No model.) Patented in England Apr. 5, 1888, No. 5,080.



Claim.—1. The combination, with clamping-dies having flat faces arranged at an angle with each other, said dies co-operating to press an adhesive fastening-strip upon the corner of an interposed box, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, substantially as described.

2. The combination, with clamping-dies having flat faces arranged at an angle with each other, said dies co-operating to press an adhesive fastening-strip upon the corner of an interposed box, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, and a feeding mechanism for the strip, substantially as described.

3. The combination, with clamping-dies having flat faces arranged at an angle with each other, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, a paste or glue applying device for rendering the strip adhesive, and a feeding mechanism for the strip, substantially as described.

4. The combination, with clamping-dies having flat faces arranged at an angle with each other, of a folder or creasing device operating to fold or crease longitudinally a continuous jointing-strip, a paste or glue applying device for rendering the strip adhesive, a feeding mechanism for the strip, and a cutting device for severing the strip, substantially as described.

5. The combination of an anvil-block and an opposing movable die, said anvil-block and die co-operating to press an adhesive jointing-strip upon the corner of an interposed box, and said anvil-block being bodily movable on the machine-frame, a cutting device for severing the strip into suitable lengths, a feeding mechanism for the strip, embracing an adjusting device by which the movement or throw of the feeding devices may be changed, and an operative connection between the movable anvil and the said adjusting device by which the adjusting device is controlled by the shifting of the anvil, substantially as described.

6. The combination, with clamping-dies having flat faces arranged at an angle with each other, said dies co-operating to press an adhesive fastening-strip upon the corner of an interposed box, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, and cutters for severing the strip, having angular cutting-edges, substantially as described.

7. The combination, with clamping-dies having flat faces arranged at an angle with each other, said dies co-operating to press an adhesive fastening-strip upon the corner of an interposed box, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, and a stationary knife or cutter having angular cutting-edges, that one of said dies which is movable being provided at the ends of its working-faces with cutting-edges acting in connection with the cutting-edges on the said stationary knife or cutter, substantially as described.

8. The combination, with clamping-dies having flat faces arranged at an angle with each other, said dies co-operating to press an adhesive fastening-strip upon the corner of an interposed box, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, a cutting device for severing the strip, having angular cutting-edges, and a paste or glue applying device for rendering the strip adhesive, substantially as described.

9. The combination, with clamping-dies, of a feeding device embracing a reciprocating carrier and gripping-jaws mounted thereon and adapted to engage the said jointing-strip, and a paste or glue applying device for rendering the strip adhesive, substantially as described.

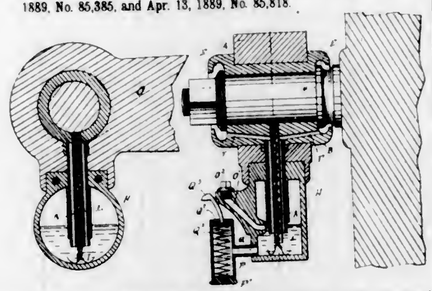
10. The combination, with clamping-dies, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, a feeding device embracing a reciprocating carrier and gripping-jaws thereon, one of which jaws is provided with a narrow edge engaging longitudinally the crease or fold of the strip, and a paste or glue applying device for rendering the strip adhesive, substantially as described.

11. The combination, with clamping-dies, of a folder or creasing device operating to fold or crease longitudinally a jointing-strip, a feeding device embracing a longitudinally-arranged guide-strip having a narrow edge engaging a crease or fold of the jointing-strip, a reciprocating carrier and gripping-jaws mounted on the carrier, one of said jaws being provided with a narrow edge arranged longitudinally of the jointing-strip and engaging the crease or fold of the same, and a paste or glue applying device for rendering the strip adhesive, substantially as described.

12. The combination, with an anvil-block or die adjustably supported upon the machine-frame, an opposing movable die, and a stationary knife or cutter acting, in connection with a cutting-edge, upon the movable die, of a reciprocating feeding device embracing a carriage and gripping-jaws mounted thereon, and means for giving reciprocating motion to said feeding device, embracing a rocking lever, means for actuating the same, a connecting-rod, a pivot or stud, said pivot or stud being movable longitudinally upon the rocking lever, and operative connections, substantially as described, between the said die-block and the said pivot pin or stud, whereby the stud is moved toward or from the pivot of the lever when the anvil-block is shifted.

13. The combination, with an anvil-block or die adjustably supported upon the machine-frame, an opposing movable die, and a stationary knife or cutter acting, in connection with a cutting-edge, upon the movable die, of a reciprocating feeding device embracing a carriage and gripping-jaws mounted thereon, and means for giving reciprocatory motion to said feeding device, embracing a rocking lever, means for actuating the same, a connecting-rod, a pivot or stud upon the said rocking lever engaging the connecting-rod, said pivot or stud being movable longitudinally upon the rocking lever, and operative connection between the said adjustable die-block and the said pivot pin or stud, embracing a bell-crank lever connected with the anvil-block and a connecting rod or bar connected with said lever and stud.

447,956. LUBRICATOR. AUGUST KRAUTTER, Brussels, Belgium, assignor of one-half to Henry Baumann, Brooklyn, N. Y. Filed Oct. 17, 1890. Serial No. 368,473. (No model.) Patented in Belgium Mar. 14, 1889, No. 85,385, and Apr. 13, 1889, No. 85,818.

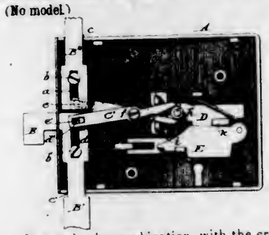


Claim.—1. In a lubricating device, a lubricating wick composed of thin spirally-twisted wires and a covering of cotton, substantially as set forth.

2. A lubricating-wick composed of thin spirally-twisted wires and a covering of cotton for the same, the lower ends of the wires being uncovered and curved, so as to form an elastic cushion for the wick, substantially as set forth.

3. The combination, with a journal-box, of an oil-receptacle, a cylinder connected by a branch tube with the bottom of said receptacle, the bottom of said cylinder being below the bottom of the oil-receptacle, and a plunger in said cylinder, substantially as set forth.

447,957. LOCK. JOHN KUBLER, Hot Springs, Ark., assignor to Daniel B. Teabeaut, Thomasville, Ga. Filed June 28, 1890. Serial No. 357,051. (No model.)

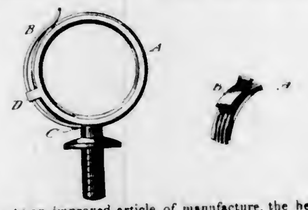


Claim.—1. In a lock, the combination, with the crossed levers C C' and the bolts or bars connected therewith, of the sliding plate D, provided with lugs *i i'*, and a stud *h* to work, respectively, against the outer and inner faces of the tails of the levers, substantially as shown and described.

2. In a lock, the combination, with the slotted bolt B^2 and the slotted bolt B B', of the crossed levers C C', connected with the bolts, a sliding plate D, provided with lugs *i i'*, and stud *h* to act alternately upon the levers, substantially as shown and described, and tumblers and guiding-lugs.

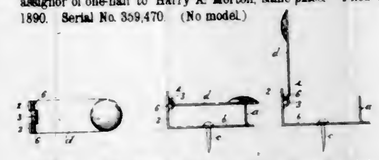
3. In a lock, the combination, with the bar B^2, of the L-shaped bar or bolt B B', projecting from two faces of the lock-case, keepers F F^2 F^3 for the bars or bolts, the crossed levers connected with the bolts, and the plate D, provided with lugs *i i'*, and stud *h* for actuating the levers, all substantially as shown.

447,958. TERRET AND HITCHING-STRAP HOLDER. OSCAR E. LAWSON, Alcester, S. D. Filed July 5, 1890. Serial No. 357,920. (No model.)



Claim.—As an improved article of manufacture, the herein-described combined terret and hitching-strap holder, the same consisting of the terret A, the spring-arm B, secured to the outer face of the terret by means of a rivet C passed through the lower end of the arm, the upper end of the arm being normally in close contact with the terret, with a space intervening between the body of the spring and the terret, the outer face of the terret upon the side adjacent to the arm being provided with longitudinal corrugations, as described, and a retaining-hook D, integral with the terret and serving to retain the arm B in position, substantially as described, and for the purpose specified.

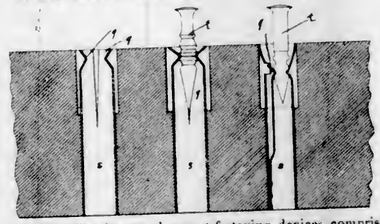
447,959. CARPET-FASTENER. HORACE E. LEEMAN, Lynn, Mass., assignor of one-half to Harry A. Morton, same place. Filed July 21, 1890. Serial No. 359,470. (No model.)



Claim.—1. The improved carpet-securing device hereinbefore described, consisting of the sheet-metal plate *b*, having an upwardly-projecting prong at or near one end, and divided at its other end to form a series of elastic ears, which are bent upwardly substantially at right angles to the body of the plate, said plate and ears being formed in a single piece, and the sheet-metal guard-plate engaged at one end with said elastic ears to form a yielding hinge-joint, which is adapted to retain the guard-plate either in a raised or in a depressed position, said plate being formed to cover the point of the tack when depressed, as set forth.

2. The improved carpet-securing device, consisting of the sheet-metal plate *b*, having the upwardly-projecting prong or tack at or near one end and divided at its other end to form the elastic ears 2 2 and 3, bent upwardly from the plane of the body of the plate, said plate, tack, and ears being made in a single piece, and the sheet-metal guard-plate *d*, having the bent end 6 and a slot adjoining said bent end, said slot being formed to receive the offset end of one of the elastic ears, which bears against the outer edge of the slot, while the bent end 6 is formed to bear at its outer end on another of said ears, the form of the bent end being such that when the guard-plate is being moved from its raised to its depressed position the ear bearing on the edge of the slot is pressed away from the other ears, the pressure of said ears tending to hold the guard-plate both in its raised and in its depressed position, as set forth.

447,960. CARPET-FASTENER. HORACE E. LEEMAN, Lynn, Mass., assignor of one-half to Harry A. Morton, same place. Filed Dec. 6, 1890. Serial No. 373,747. (No model.)



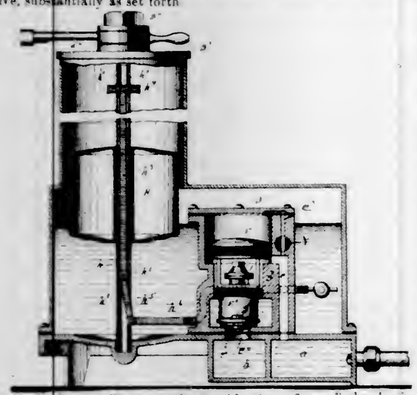
Claim.—The improved carpet-fastening devices comprising the spring-jawed sockets *s*, adapted to be inserted in holes in the floor, and the grooved headed pins *t*, formed to be yieldingly engaged by the jaws of said sockets, as set forth.

447,961. HYDRAULIC AIR-PUMP. THOMAS LIEB, New York, N. Y. Filed Aug. 25, 1890. Serial No. 363,065. (No model.)

Claim.—1. The combination, with a casing having a compression-chamber and a water induction and eduction channel, of a cylinder in said casing, pistons of different areas guided in said cylinder, a discharge-valve guided in the lower piston, a supply-channel extending from the induction-channel above and below the upper piston, an outlet-channel extending from the main eduction-channel to the box of the cylinder, a float in the compression-chamber, a shifting mechanism operated by said float and connected with the oscillating valve so as to produce the raising or lowering of the pistons and the opening or closing of the eduction-port by the discharge-valve, substantially as set forth.

2. In a hydraulic pump, the combination, with a cylinder, of two united pistons, a sliding valve in the lower piston, an inlet-channel and an outlet-channel for conducting water into and out of the cylinder,

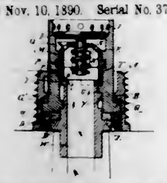
respectively, and a single oscillating valve controlling both inlet and outlet channels, and means for automatically shifting this oscillating valve, substantially as set forth



3. In a hydraulic pump, the combination of a cylinder having a bottom outlet, two connected pack-pistons in said cylinder, a sliding valve-stem in the lower piston, a valve on the lower end of said stem for closing the bottom outlet, a valve-head on the upper end of the stem, and means for automatically reversing the movement of the united pistons, substantially set forth.

4. In a hydraulic pump, the combination of a cylinder D, having the bottom outlet e^3, the inlet-channels e e^3, the outlet-channel e', the oscillating valve B, having the openings e^4 and e^5, means for automatically shifting said valve, the united pistons E E' in the cylinder D, the valve F in the piston E', and the valve-head f' on the upper end of the stem of said valve F, substantially as set forth.

447,962. LOCK-VALVE AND FAUCET. CHARLES E. MASON, San Francisco, Cal. Filed Nov. 10, 1890. Serial No. 370,969. (No model.)



Claim.—1. A bushing adapted to be fixed permanently into the cask or tank, having the recessed outer end and a shoulder formed within it, a projecting lug interior to the shoulder, and screw-threads formed within the outer recess, in combination with a sleeve having a groove or channel to fit over the projecting lug and a flange around its outer end, between which and the shoulder of the bushing a packing-ring is fitted, and a screw-threaded collar or nut D fitting the threads in the interior of the bushing, whereby the supplemental sleeve is locked within the bushing and prevented from rotating, substantially as herein described.

2. A bushing fixed within a cask or tank, having a projecting lug E, in combination with a removable sleeve fitting within the bushing, having a groove or channel engaging said lug, whereby the sleeve is prevented from turning, and an annular nut fitting the bushing and bearing against the sleeve to retain it in place, substantially as herein described.

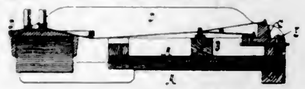
3. A bushing permanently fixed in the cask or tank, having the interior shoulder and guide-lug, as shown, a sleeve adapted to fit said bushing, channeled so as to be guided upon the lug, with a flange fitting upon the shoulder of the bushing, a valve-seat formed upon its inner end, and spiral grooves or channels extending outwardly from the valve-seat, in combination with a puppet-valve fitting said seat, a cylindrical perforated shell through the center of which the valve-stem passes, lugs upon the exterior of said shell fitting the spiral channels in the supplemental sleeve, a spring surrounding the valve-stem within the shell, and means whereby the shell and valve may be rotated so as to open or close the valve, substantially as herein described.

4. A bushing permanently fixed within a cask or tank having the non-rotating sleeve fitted therein, with a packing to prevent leakage between the two, a valve-seat formed on the inner end of the sleeve, spiral channels extending outwardly from said seat, a puppet-valve fitting said seat, a cylindrical shell having lugs upon its outer periphery to engage the spiral channels in the sleeve, and a hole through one end, through which the stem of the valve passes, a spiral spring surrounding the stem and acting to draw the valve against its seat, a second shell adapted to turn within the cylindrical sleeve without advancing in either direction, and lugs and locking devices by which said second shell engages the shell which carries the valve, and a key or coupling by which said second shell may be turned so as to move the valve-carrying shell and cause it to advance in either direction to open or close the valve, substantially as herein described.

5. The combination of a bushing fixed permanently in a tank or cask, a non-rotating removable sleeve fixed within a bushing and having a valve-seat at its inner end, inclined channels extending from the valve-seat toward the outer end of the sleeve, a rotatable shell having lugs engaging said channels, a valve fitting the valve-seat, having a stem entering the shell, and means for holding the rotatable shell in position, substantially as herein described.

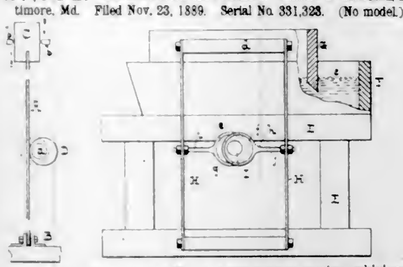
6. A bushing fixed permanently in a cask or tank, a non-rotating removable sleeve fixed within the bushing and having a valve-seat at its inner end, inclined channels extending from the valve-seat toward the outer end of the sleeve, a shell rotatable within the sleeve, with exterior lugs fitting the inclined channels, a valve the stem of which enters the end of the shell and a spring connected therewith, an intermediate shell rotatable within the sleeve without longitudinal advance, and lugs by which it is connected with the valve-carrying shell, a key or coupling having semicircular rings or bands Y Y', corresponding bands *b b* within the outer end of the sleeve, with which they engage, and a lug upon the intermediate shell, which is engaged by the inner end of the key or coupling, substantially as herein described.

447,963. PIANO-FORTE. VICTOR H. MATHUSHEK, New York, N. Y. Filed Apr. 24, 1890. Serial No. 349,345. (No model.)



Claim.—The combination, with the sounding-board composed of two layers of wood united with the grain running in different directions, of a sounding-board bridge B, made to rest on the sounding-board, a hitch-pin block C, supporting-frame D, and the screws E, passing through the hitch-pin block and the sounding-board layers into the supporting-frame, substantially as described.

447,964. MECHANICAL MOVEMENT. HENRY D. MENTZEL, Baltimore, Md. Filed Nov. 23, 1889. Serial No. 331,323. (No model.)



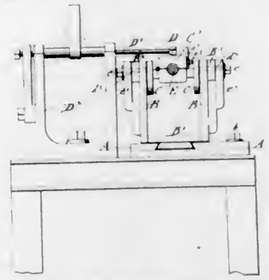
Claim.—1. A toggle to effect a reciprocating motion, which consists of a spring-bar secured so as to be immovable at one end and at the other end attached to the device to be reciprocated, combined with a deflecting device which is applied to the said bar at a point between the ends thereof, substantially as and for the purpose specified.

2. In combination with the frame or some other stationary part of a machine, spring-bars connected at their ends to the said frame and also to some device to be reciprocated, and means for deflecting intermediate portions of the said spring-bars in a direction practically at a right angle with the line of movement of the said driven device, substantially as and for the purpose specified.

3. In combination with the frame or some other stationary part of a machine, spring-bars connected at their ends to the said frame and also to some device to be reciprocated, and a revoluble shaft situated between the said bars, carrying eccentrics whereby in the revolution of the said shaft the springs are deflected from their normal position or shape, substantially as and for the purpose specified.

447,965. LATHE FOR MAKING FLUTED WOODEN BODIES. BENJAMIN MERKLEN, New York, N. Y., assignor to Merklen Brothers, same place. Filed July 5, 1890. Serial No. 357,752. (No model.)

Claim.—1. The combination, with a rotary cutter-head, of a single blank-carrying spindle, a rocking frame having boxes supporting said spindle at right angles to the axis of the cutter-head, and means for detachably securing the ends of the spindle in said boxes, substantially as set forth.



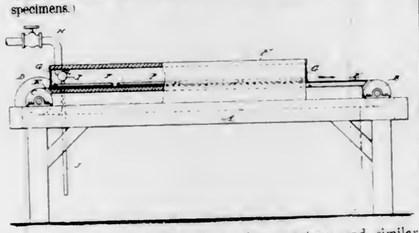
2. The combination, with a rotary cutter-head, of a blank-carrying spindle and a rocking frame having a box with an interior and axially-turning socket for one end of the spindle and a second box with a hinged upper section for permitting the removing of the spindle from the rocking frame for removing the fluted blank and applying a new blank to the spindle, substantially as set forth.

3. The combination, with a rotary cutter-head, of a blank-carrying spindle, a rocking frame having boxes at its ends for supporting said spindle and perforated plates in its side walls, and an upright supporting-frame having vertically-adjustable pivot-pins that are adapted to engage the perforations of the side plates, so as to permit the rocking of the spindle on different centers relatively to the cutter-head, substantially as set forth.

4. The combination of an upright supporting-frame having recessed side walls and bracket-arms, guide-blocks in the recessed side walls, guide-plates interposed between the side walls and bracket-arms, means for clamping said guide-plates in position, pivots passing through holes of the guide-blocks and guide-plates, and a rocking frame having perforated plates in its side walls for engagement with the vertically-adjustable pivots of the upright frame, substantially as set forth.

5. The combination, with a rocking frame, a box at one end of said frame, said box having a square recessed socket supported in said box, means for axially turning said socket on the box, a second box located at the opposite end of the rocking frame and formed of a fixed lower and a hinged upper section, the latter having an interior projection, means for locking the sections of the box, and a spindle having a square end for engaging the socket of one box, and an annular groove for engagement with the projection of the second box, substantially as set forth.

447,966. PROCESS OF TREATING CAKES, &c. JAMES H. MITCHELL, Philadelphia, Pa. Filed June 11, 1890. Serial No. 355,059. (No specimens.)

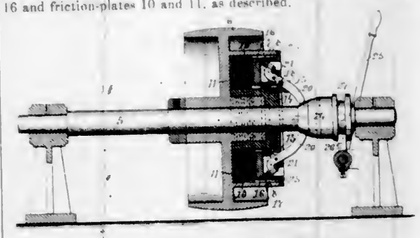


Claim.—The process of treating cakes, crackers, and similar products, which consists in subjecting the same while warm from the oven to a bath of low-pressure steam or spray.

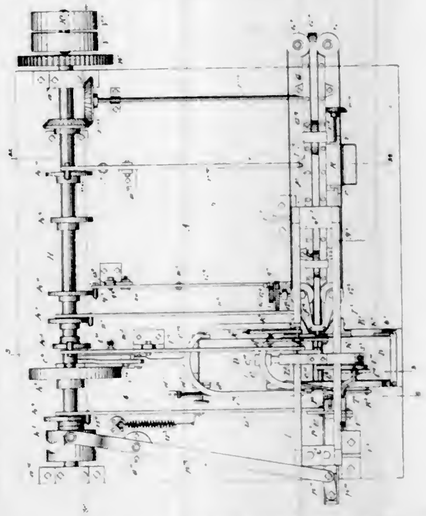
447,967. FRICTION-CLUTCH. JAMES A. MONCRIEF, Pawtucket, R. I. Filed Nov. 28, 1890. Serial No. 372,823. (No model.)

Claim.—1. In a friction-clutch, a following plate fitting loosely over a sleeve and arranged to be forced inward by levers pivotally secured to the face-plate, and provided with set-screws bearing on the following plate to press the friction-plates together, and to be released from contact with the friction-plates by springs carried on bolts secured to the following plate, as described.

2. In a friction-clutch, the combination, with the levers 20, hinged to studs on the face-plate 17 and provided with the set-screws 21, which pass through holes 22 in the face-plate, of the following plate 16 and friction-plates 10 and 11, as described.



447,968. CIGARETTE-MACHINE. ALBERT L. MUNSON, New York, N. Y. Filed Nov. 9, 1889. Serial No. 329,754. (No model.)



Claim.—1. The combination, in a cigarette-machine, with the devices for forming the filler rod and devices for wrapping the wrapper around the filler-rod, of a filler-rod carrier consisting of a pair of semi-tubular filler-grasping holders interposed between the said devices, means, substantially as described, for moving the holders to grasp and release the filler-rod, and means for operating each of said devices and the filler-carrier, substantially as described.

2. The combination, with a filler-rod former, a severing device therefor, a wrapper-carrier, and a wrapper-apron, of a filler-rod carrier consisting of a pair of semi-tubular grasping-holders adapted to grasp and carry the severed filler-rod to the wrapper-apron, means, substantially as described, for moving the holders to grasp and release the filler-rods, and means for causing the wrapper-apron to wrap the wrapper around the filler-rod, substantially as described.

3. The combination, in a cigarette-machine, of a filler-rod former, a severing device for the filler-rod, a movable filler-rod carrier consisting of a pair of grasping-holders adapted in one position to be in axial alignment with the former to receive the filler-rod therefrom and to grasp the same, the wrapping devices, and means for operating the filler-rod former, carrier, and wrapping devices, substantially as described.

4. In a cigarette-machine, the combination, with intermittingly-moving belts, a compressor, as the roll G^{12}, and a delivery-tube for forming the filler, of a filler-serving device, a filler-carrier, an intermittingly-moving wrapper carrier, a wrapping-apron, and means for causing the wrapping-apron to wrap the wrapper around the filler, substantially as described.

5. In a cigarette-machine, the combination, with the intermittingly-moving belts, presser-roll, and delivery-tube for forming the filler, and a filler-severing device, of a vertically-movable filler-carrier consisting of a pair of grasping-holders, an intermittingly-moving wrapper-carrier, a wrapping-apron, and means for causing the wrapping-apron to wrap the wrapper around the filler, substantially as described

6. In a cigarette-machine, the combination, with the intermittingly-moving belts, presser-roll, and delivery-tube for forming the filler, and a filler-severing device, of a pair of separable and filler-grasping holders forming the filler-carrier, an intermittingly-moving wrapper-carrier, a wrapping-apron, and means for causing the wrapper to wrap the wrapper around the filler, substantially as described.

7. In a cigarette-machine, the combination, with the intermittingly-moving belts, presser-roll, and delivery-tube for forming the filler, and a filler-severing device, of a pair of separable holders forming the filler-carrier, a guard-plate therefor, an intermittingly-moving wrapper-carrier, a wrapping-apron, and means for causing the wrapping-apron to wrap the wrapper around the filler, substantially as described.

8. In a cigarette-machine, the combination, with a filler-former, a filler-severing device, and a filler-carrier consisting of a pair of filler-grasping holders, of a guide for the wrapper-strip, a strip-severing device, a wrapper-length carrier, a wrapping-apron, and means for causing the wrapping-apron to wrap the wrapper around the filler, substantially as described.

9. In a cigarette-machine, the combination, with a filler-former, a filler-severing device, and a filler-carrier consisting of a pair of filler-grasping holders, of an intermittingly-operating wrapper-feeder, a strip-severing device, an intermittingly-moving wrapper-length carrier, a wrapping-apron, and means for causing the wrapper-apron to wrap the wrapper around the filler, substantially as described.

10. In a cigarette-machine, the combination, with a filler-former, a filler-severing device, and a filler-carrier consisting of a pair of filler-grasping holders, of an intermittent wrapper-strip feeder, a strip-severing device, a reciprocating wrapper-carrier for carrying the wrapper-lengths, a wrapping-apron, and means for causing the wrapping-apron to wrap the wrapper around the filler, substantially as described.

11. In a cigarette-machine, the combination of a filler-former, a filler-severing device, a filler-carrier consisting of a pair of filler-grasping holders, a wrapper-carrier, a wrapping-apron, and a traveling blade for rolling the apron around the filler and wrapper, substantially as described.

12. In a cigarette-machine, the combination of the intermittingly-moving belts, presser-roll, and delivery-tube for forming the filler, a filler-severing device, a filler-carrier consising of a pair of filler-grasping holders, an intermittingly-moving wrapper-carrier, a wrapping-apron, and a traveling blade for rolling the apron around the filler and wrapper, substantially as described.

13. In a cigarette-machine, the combination of the intermittingly moving belts, presser-roll, and delivery-tube for forming the filler, a filler-severing device, a filler-carrier consisting of a pair of filler-grasping holders, a guide for the wrapper-strip, a severing device therefor, a reciprocating wrapper-length carrier, a wrapping-apron, and a traveling blade for rolling the filler and wrapper, substantially as described.

14. In a cigarette-machine, the combination of means for forming a filler-rod, consisting of a channeled guide, three carrying-belts and pulleys therefor, means for compressing the filler downwardly between the belts, a delivery-tube, the latter being fixed with respect to the belts, and means for carrying and wrapping the formed rod, substantially as set forth.

15. In a cigarette-machine, the combination of means for forming a filler-rod, consisting of a channeled guide, three carrying-belts and pulleys therefor, means for compressing the filler downwardly, gearing for driving the belts in unison, a pawl and ratchet for imparting intermittent motion to said belts, a delivery-tube, the latter being fixed with respect to the belts, and means for carrying and wrapping the formed rod, substantially as set forth.

16. In a cigarette-machine, the combination, with the filler-former and wrapping devices and means for conducting the formed filler to the wrapping devices, of a severing device for the filler, consisting of a pair of cutters, a lever and connections with both of the cutters, and an operating-arm, substantially as described.

17. In a cigarette-machine, the combination, with the filler-former and wrapping devices and means for conducting the formed filler to the wrapping devices, of a severing device for the filler, consisting of a pair of pivoted cutters, a double bell-crank lever and connections with both of the cutters, and an operating-arm, substantially as described.

18. In a cigarette-machine, the combination, with the wrapping devices, of a vertically reciprocating frame, a pair of separable filler carrying and grasping holders, each of semi-tubular form, carried by said frame, substantially as described.

19. In a cigarette-machine, the combination, with the wrapping devices, of a vertically-reciprocating frame, a pair of filler-carrying holders, each of semi-tubular form, pivoted to said frame, and a cam and connections for moving the holders to and from each other, substantially as described.

20. In a cigarette-machine, the combination, with the wrapping devices, of a vertically-reciprocating frame, a pair of separable filler-carrying holders carried by said frame, a guard-plate for the holders, and means for operating the holders and guard-plate, substantially as described.

21. In a cigarette-machine, the combination, with the wrapping devices, of a vertically-reciprocating frame, a pair of filler-carrying holders pivoted to said frame, a guard-plate for the holders, and a cam and connections for vibrating the holders and moving said guard-plate, substantially as described.

22. In a cigarette-machine, the combination, with the wrapping devices, of a vertically-reciprocating frame, a pair of filler-carrying holders pivoted to said frame, a guard-plate mounted beneath said holders, a fixed cam, a lever carried by the frame connected with the holders and engaging said cam, and connections for operating the guard-plate, substantially as described.

23. The combination, with a guide for the wrapper-strip and a severing device therefor, of means, substantially as described, for withdrawing the forward edge of the strip from the blade of the severing device, substantially as described.

24. The combination, with a guide for the wrapper-strip, a severing device therefor, and a wrapper-carrier, of means, substantially as described, for withdrawing the forward edge of the strip from the blade of the severing device, substantially as described.

25. The combination, with a guide for the wrapper-strip, having a transverse recess therein, and a severing device for the strip, of a plate adapted to bear upon the strip over said recess in the guide for withdrawing the forward edge of the strip from the severing device, substantially as described.

26. The combination, with a guide for the wrapper-strip, having a transverse recess therein, and a severing device for the strip, of a pivotally-mounted plate, its edge adapted to bear upon the strip over said recess in the guide for withdrawing the forward edge of the strip from the severing device, substantially as described.

27. The combination, with a guide for the wrapper-strip and a severing device therefor, of a withdrawer for withdrawing the forward edge of the strip from the blade, and a reciprocating wrapper-carrier for grasping the end of the strip and carrying it forward, substantially as described.

28. The combination, with a guide for the wrapper-strip, having a transverse recess therein, and severing device therefor, of a plate adapted to bear upon the strip above said recess in the guide for withdrawing the forward edge of the strip from the severing device, and a wrapper-carrier for grasping the end of the strip and carrying it forward, substantially as described.

29. The combination of a guide for the wrapper-strip, a severing device therefor, spring-plates mounted to bear upon opposite sides of the wrapper-strip, and a wrapper-carrier for grasping the end and carrying it forward, substantially as described.

30. The combination of a guide for the wrapper-strip, a severing device therefor, spring-plates mounted to bear upon opposite sides of the strip, means for withdrawing the forward edge of the strip from the severing device, and a wrapper-carrier for grasping the end of the strip and carrying it forward, substantially as described.

31. The combination of a support for a wrapper-strip roll, a feed-roll therefor, a guide for the strip, a strip-severing device, and an intermittingly-operated wrapper-carrier, which grasps the end of the strip and conveys it forward independent of the feed movement of the feed-roll before the said strip is severed to form the wrapper, substantially as described.

32. The combination of a support for a wrapper-strip roll, an intermittingly-rotated feed-roll therefor, adapted to pay off a definite length of strip, a guide for the strip, a severing device, and a reciprocating wrapper-carrier, which grasps the end of the strip and conveys it forward before the said strip is severed to form the wrapper, substantially as described.

33. The combination, with a guide for a wrapper-strip, of a pasting device consisting of a paste-fountain, a rotating roll, and a radially-reciprocating paste-blade, substantially as described.

34. The combination, with a guide for a wrapper-strip, of a paste-fountain, a roll, and an intermittingly-operating paste-blade extending longitudinally with the strip, substantially as described.

35. The combination, with a guide for a wrapper-strip, of a paste-fountain, a roll, an intermittingly-operating paste-blade extending longitudinally with the strip, and an intermittingly-operated wrapper-carrier, substantially as described.

36. The combination, with a guide for a wrapper-strip, of a rotating roll carrying a radially-reciprocating paste-blade and an intermittingly-operated wrapper-carrier, substantially as described.

37. The combination, with a guide for a wrapper-strip, of a pasting device consisting of a fountain, a roll rotating partially within the fountain and carrying a radially-reciprocating paste-blade, and a pair of spring-pressed plates bearing against the roll to prevent the escape of paste, substantially as described.

38. The combination, with a guide for a wrapper-strip, of a paste-fountain, a paste-roll, a radially-reciprocating paste-blade carried thereby, and a cam for projecting the blade, substantially as described.

39. The combination, with a stationary guide for a wrapper-strip, and a pasting device for applying a line of paste to the strip, of a holding-finger adapted to hold the strip against disturbance during the pasting operation, substantially as described.

40. The combination, with a stationary guide for a wrapper-strip and a pasting device moving laterally against the surface of the strip, of a holding-finger adapted to hold the strip against the lateral movement of the pasting device, substantially as described.

41. The combination, with a guide for a continuous wrapper-strip and a paste-blade applying lines of paste intermittingly along one edge of the continuous strip, of an intermittingly-operated holding-finger for the strip, substantially as described.

42. In a cigarette-machine, the combination of a wrapper-apron, a traveling blade for imparting the rolling motion to said apron, and a cam for controlling the position of the edge of the blade with respect to the horizontal surface of the apron, substantially as described.

43. In a cigarette-machine, the combination of a platen, a wrapping-apron thereon, a traveling blade for imparting the rolling motion to said apron, and a cam for controlling the position of the edge of the blade with respect to the horizontal surface of the apron, substantially as described.

44. In a cigarette-machine, the combination of a wrapping-apron, a reciprocating carriage, a blade pivoted to said carriage for imparting the rolling motion to said apron, and a cam for controlling the position of said blade, substantially as described.

45. In a cigarette-machine, the combination, with a wrapping-apron and a traveling blade for imparting the rolling motion to said apron, and a cam for controlling the position of the edge of the blade, of a wrapper-carrier reciprocating transversely across the apron, substantially as described.

46. In a cigarette-machine, the combination, with the side guides and platen of the wrapping devices, of a wrapping-apron located between said side guides, a traveling blade for imparting the rolling motion to said apron, an adjusting-rod to which one end of the apron is attached, and a toothed wheel and holding-pawl for the rod, substantially as described.

47. In a cigarette-machine, the combination of a wrapping-apron, a traveling blade for imparting the rolling action to said apron, and a vibrating and traveling tongne carried with the blade for forming the apron-fold to one side of the blade, substantially as described.

48. In a cigarette-machine, the combination of a wrapping-apron, a traveling blade, a vibrating tongue, and a deflector for rocking the tongue into operative position, substantially as described.

49. In a cigarette-machine, the combination of a wrapping-apron, a traveling blade, side guides for supporting and guiding said blade, a vibrating tongue traveling with the blade, and a deflector for rocking the tongue into operative position, substantially as described.

50. In a cigarette-machine, the combination of a wrapping-apron, a traveling blade, a vibrating and traveling tongue, a deflector for said tongue to cause it to move along in contact with the apron in one direction, and means for imparting an additional movement to the tongue to form the apron-fold to one side of the blade, substantially as described.

51. In a cigarette-machine, the combination of a wrapping-apron, a reciprocating carriage, a blade pivotally mounted thereon, a cam, and connections mounted on the carriage for rocking the blade, substantially as described.

52. In a cigarette-machine, the combination, with a filler-carrier and a wrapper-carrier, of a wrapping-apron, a traveling blade, and a cam for controlling the position of the edge of the blade with respect to the rolling surface of the apron, substantially as described.

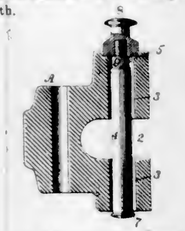
53. In a cigarette-machine, the combination, with the wrapping devices and a wrapper-carrier, of a retainer for temporarily holding the inclosing-wrapper and mounted above the wrapping devices, substantially as described.

54. In a cigarette-machine, the combination, with the wrapping devices and a wrapper-carrier, of a temporary retainer for the inclosing-wrapper, a dog for holding the retainer in action, and a cam for tripping the dog to allow the retainer to return to its idle position, substantially as described.

55. In a cigarette-machine, the combination, with the wrapping devices, a filler-carrier, and a wrapper-carrier, of a reciprocating frame, a temporary retainer for the inclosing-wrapper carried thereby, a dog for holding the retainer in action independent of the frame, and a cam for tripping the dog, substantially as described.

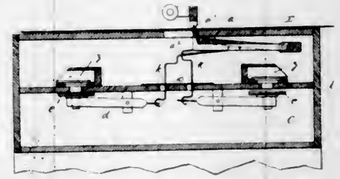
447,969. CAR-COUPLING. WILLIAM MCCONWAY, Pittsburg, Pa. Filed Nov. 25, 1890. Serial No. 372,583. (No model.)

Claim.—1. In a coupler, a hook provided with a horizontal slot and a vertical hole transverse of the slot, and an inwardly-projecting rib at the upper end of the hole, in combination with a headed pin fitting in said hole and provided at its lower end with an enlargement constructed to engage said rib and prevent the removal of the pin from the hook while permitting the free rotation of the pin, the pin and the walls of the vertical hole being so constructed that the pin shall bear against the side of the hole along its entire length, substantially as set forth.



2. In a coupler, a hook provided with a horizontal slot and a vertical hole transverse of the slot, and an inwardly-projecting rib at the upper end of the hole, in combination with a headed pin fitting in said hole and provided at its lower end with an enlargement constructed to engage said rib, the pin being grooved at a point in line with the rib when the pin is in normal position, substantially as set forth.

447,970. MECHANICAL MUSICAL INSTRUMENT. CARL PIETSCHMANN, Pankow, near Berlin, assignor to the Berliner Musik Instrumenten Fabrik, Aktien Gesellschaft, vormals Chas. F. Pietschmann & Söhne, Berlin, Germany. Filed Sept. 29, 1890. Serial No. 366,518. (No model.) Patented in Germany Jan. 29, 1889, No. 50,193; in France Feb. 9, 1889, No. 195,974; in England Feb. 26, 1889, No. 3,395, and May 23, 1890, No. 8,097, and in Austria-Hungary Aug. 26, 1889, No. 7,853 and No. 40,183.



Claim.—1. In a mechanical musical instrument, the combination, with a casing having a vacuum-chamber, a bellows-chamber below the same containing bellows for creating a vacuum in said vacuum-chamber, reeds above the vacuum-chamber, valves in said vacuum-chamber for closing the reed-boxes, and mechanism for operating said valves, which mechanism is adapted to be operated by a perforated music-sheet, said casing having an opening extending from end to end between the bellows-chamber and the vacuum-chamber, through which opening the endless music-sheet can pass, substantially as set forth.

2. The combination, with a casing, having a vacuum-chamber, valve-levers in the vacuum-chamber, key-levers for operating the valve-levers and arranged above the vacuum-chamber, mechanism for operating the key-levers, detachable rods extending from the key-levers to the valve-levers and resting loosely on the same, and apertured diaphragms, through which said rods pass, substantially as set forth.

447,971. HINGE. LANSING PORTER, Auburn, N. Y. Filed Nov. 8, 1890. Serial No. 370,734. (No model.)

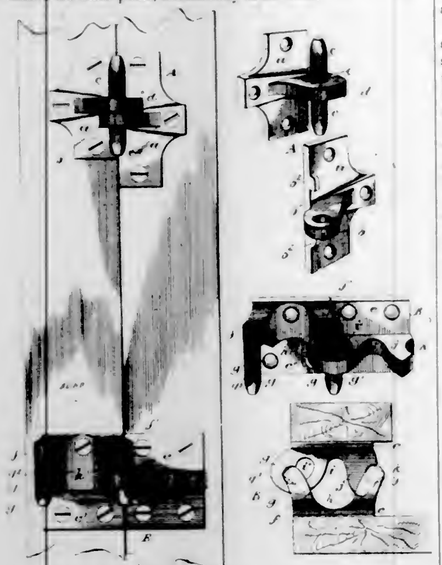
Claim.—1. The combination, with a shutter, door, or analogous device and support therefor, of an upper hinge for supporting the shutter or other device and a lower hinge consisting of two sections, one of which is provided with two pintles of approximately the same size and the other section with a slot to receive one of the pintles and a catch to engage the other pintle, substantially as set forth.

2. The combination, with a window-blind and a window-frame, of an upper reversible hinge for sustaining the weight of the blind and a lower reversible lock-hinge having no horizontal bearings, substantially as set forth.

3. In a reversible lock-hinge, the combination of a leaf having two pintles and a leaf having an elongated slot for the reception of one of the pintles and an open recess or notch in which the other pintle rests when the two leaves of the hinge are in open adjustment, substantially as set forth.

4. In a lock-hinge, the combination, with a leaf having two pintles of approximately the same size, of a leaf having an arm or knuckle provided with an elongated slot eccentric to the axis of the

device carried by the hinges to receive one of said pintles and a catch to receive the other pintle, substantially as set forth.



5. In a lock-hinge, the combination, with a leaf having two pintles of approximately the same size thereon and a shoulder in rear of each pintle, of a leaf having an arm provided with an eccentric slot to receive one of said pintles and a catch adapted to engage the other pintle, said catch and arm being guided by the shoulders on the first-mentioned leaf, substantially as set forth

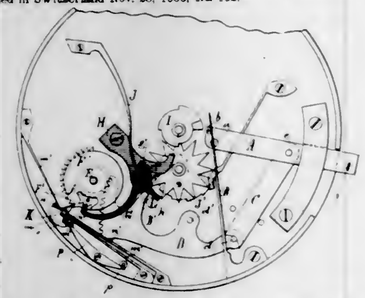
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447,972. MANUFACTURE OF BRICKS. ERNEST L. RANSOME, San Francisco, Cal. Filed Apr. 17, 1889. Serial No. 307,575. (No model.)

Claim.—The improvement herein described in the process of manufacturing brick made of ashes and lime or their equivalents, which consists in hardening and in cleansing the bricks from soluble alkaline matter by immersion in a succession of liquor baths the waters of which contain relatively-diminishing quantities of soluble salts or alkalies, substantially as described

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447,973. REPEATING-WATCH. BERNARD REBER, Locle, Switzerland. Filed June 30, 1890. Serial No. 357,232. (No model.) Patented in Switzerland Nov. 23, 1888, No. 102.



Claim.—1. In repeating-watches, the combination, with the lever A, having a pin *b*, and its pivot *a* near the center of the watch, of an arm C, pivoted to the lever A at *c* and having a forked lower end, the rack-lever D and its pin *d*, against which the forked end of arm *c* bears, and a spring B, bearing against the pin *b*, substantially as and for the purpose specified.

2. In repeating-watches, the superposed hammers M and N, oscillating upon the same pin or axis K, as set forth.

3. In repeating-watches, the combination, with the pin or axis K, of the superposed hammers M and N and the toothed plates *n* and *m*, all mounted and oscillating upon the same axis, as set forth

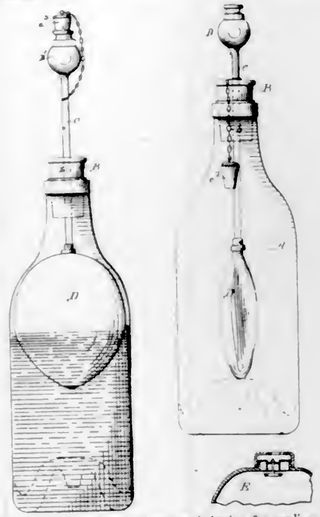
4. In repeating-watches, the combination, with the toothed spring-barrel and mechanism for imparting a partial rotation to the same in one direction, of the toothed rack *f*, the hook-arm G, and its projection *g*, the spring J, the lever H, to which the arm G is pivoted, the snail I, and screw-stop *h*, adapted to engage and limit the movements of the lever H, substantially as set forth.

5. The combination, in repeating-watches, with the toothed spring-barrel and hammers, of a pivot or axis K, the toothed plates *n m*, the pins n^3, m^3, and *o* and springs *n'*, *m'*, and m^3, and the regulating-lever P, substantially as set forth.

6. In repeating-watches, the combination, with the superposed toothed plates *n m* and the hammers, of the spring-barrel having hour rack-teeth F on the plane only of one toothed plate, and quarter-teeth F' upon the planes of both toothed plates *n* and *m*, substantially as set forth

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447,974. CLOSING DEVICE FOR BOTTLES, &c. MOSES RHEINSTROM, Cincinnati, Ohio. Filed Nov. 25, 1890. Serial No. 372,631 (No model.)



Claim.—1. In the herein-described device for sealing portions of the interior of a vessel from which the contents have been partially withdrawn, the combination of an air-duct tube and an attached distensible sack with a cork having a vertical bore, through which the tube will be free to move vertically to desired elevations, and means, as set forth, for expanding said sack by introduction of air therein through said duct, said duct being provided at its upper end with a valve controlling the admission and expulsion of air through the induction-opening of said tube, as and for the purpose intended, substantially as described.

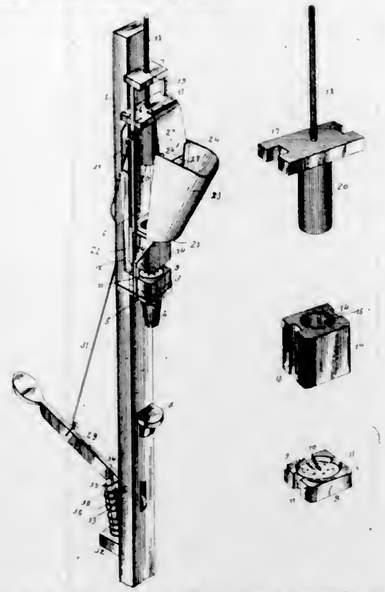
2. The herein-described device for sealing portions of a vessel the contents of which have been partially withdrawn, which consists in an air-duct tube provided with an ingress and egress orifice, said tube carrying at its lower end an expansible sack and at its upper end a cup supplied with a valve controlling the admission and expulsion of air to and from the expansible sack, said cup provided with an independent removable cork c^3, all in combination with a closing-cork B, having a vertical bore *b*, which receives the duct-tube, substantially as described.

3. The herein-described device for sealing portions of a vessel the contents of which have been partially withdrawn, consisting of an orificed cork B, carrying an air-duct C, having attached to its lower end an expansible sack D and to its upper end a valve-cup D', provided with supplementary cork c^3, all in combination with removable compress-ball E, having apertured nipple *e*, as and for the purpose intended, substantially as described

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447,975. LEMON PRESSER OR SQUEEZER. SALATHIEL C. RUPE, Carrollton, Mo. Filed Aug. 13, 1890. Serial No. 361,875. (No model.)

Claim.—1. In a lemon-press, the combination, with a perforated strainer-cup, a standard for supporting the same, and a superimposed knife, of a reciprocating bucket mounted above the strainer, a reciprocating plunger having a presser-head, means for raising and lowering said head, and a spring-ejector extending from the standard and adapted to be compressed by the bucket and liberated by the upward movement thereof, substantially as specified



2. In a lemon-press, the combination, with a standard, a perforated strainer mounted in front of the standard, a reciprocating bucket centrally bored and arranged over the strainer, an ejecting spring-tongue secured to the standard and adapted to be depressed by the bucket, of means for raising the bucket and liberating the same, a reciprocating plunger terminating at its lower end in a presser-head, and means for raising and lowering the plunger, substantially as specified.

3. In a lemon-press, the combination, with a standard, a strainer, and a bucket mounted above the strainer and having a central opening throughout its length, of a hopper located at one side of the bucket and provided with ways, a reciprocating plunger terminating in a presser-head adapted to be received by the bucket, a sliding gate or cut-off mounted in the ways, a loose roller journaled above the ways, and a flexible connection between the presser-head and the gate, said connection being passed over the roller, substantially as specified.

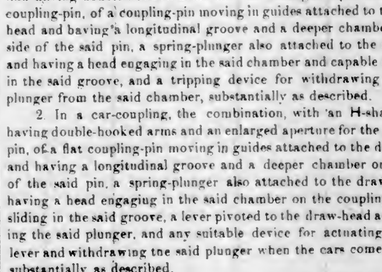
4. In a lemon-press, the combination, with a standard, a bracket having an opening terminating in a discharge secured to the face of the standard, opposite vertical guides rising from said bracket, and a strainer having a knife mounted upon the bracket, of a bucket having opposite grooves to receive the guides, a central opening and adapted at its lower end to fit the strainer, a spring-tongue secured to the standard and extending over the strainer, a block connecting the upper ends of the guides and having an opening, a plunger mounted for reciprocation in the opening, a yoke grooved at its ends to embrace the guides and connected with the plunger, a presser-head adapted to fit the bucket mounted on the lower end of the plunger, a spring-latch secured to one end of the yoke and adapted to ride in an inclined recess formed in the edge of the standard and adapted to take under the lower end of the bucket and elevate the same, and means for reciprocating said plunger, substantially as specified.

5. The combination, with the standard, the strainer, the knife, and reciprocating plunger, its guides and yoke, of a foot-lever pivoted in the standard, a bail connecting the yoke with the foot-lever, a perforated bracket located below the lever, a gnide-pin mounted for reciprocation in the bracket, bifurcated at its upper end to loosely embrace the lever, a link connecting said pin to the lever, and a coiled spring encircling the pin and interposed between the lever and bracket, substantially as specified.

6. The combination, with the standard, the strainer, the reciprocating plunger, and means for operating the same, of a hopper located above the standard and provided with opposite ways, a gate or cut-off mounted in said ways, and means for operating or raising said gate at each downward reciprocation of the plunger, substantially as specified.

7. In a lemon-press, the combination, with a strainer, a knife, a superimposed reciprocating bucket, and a hopper having a gate and adapted to deliver lemons to the strainer, of a plunger having the presser-head and mechanism for depressing the head, raising the gate, and operating the bucket, substantially as specified.

447,976. COAT-HOLDER. HUGH R. RUSK, Rutherford, N. J. Filed July 9, 1890. Serial No. 358,175. (No model.)



Claim.—In a coat-holder, the combination, with a chain and suitable suspension devices to which the ends of the chain are attached and between which the chain is slack, of a coiled spring through which the chain is passed, the spring being of a less length than the distance between the suspension devices and having its ends connected to links of the chain a short distance from the ends thereof, and serving to draw taut those portions thereof lying between the suspension devices and the ends of the spring and to slacken that portion thereof lying inside of and between the terminal coils of the springs, substantially as specified.

447,977. CAR-COUPLING. JOSEPH SCHATZ, Newport, Ky. Filed Dec. 5, 1890. Serial No. 373,678. (No model.)

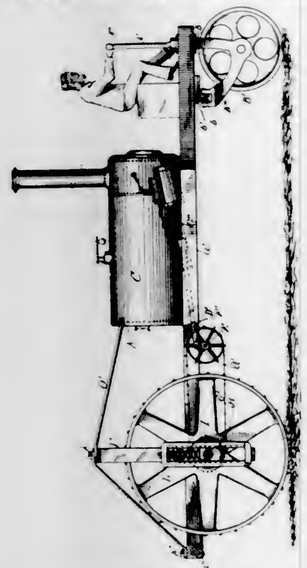
Claim.—1. In a car-coupling, the combination, with an H-shaped link having double-hooked arms and an enlarged aperture for the coupling-pin, of a coupling-pin moving in guides attached to the draw-head and having a longitudinal groove and a deeper chamber on one side of the said pin, a spring-plunger also attached to the draw-bar and having a head engaging in the said chamber and capable of sliding in the said groove, and a tripping device for withdrawing the said plunger from the said chamber, substantially as described.

2. In a car-coupling, the combination, with an H-shaped link having double-hooked arms and an enlarged aperture for the coupling-pin, of a flat coupling-pin moving in guides attached to the draw-head and having a longitudinal groove and a deeper chamber on one side of the said pin, a spring-plunger also attached to the draw-bar and having a head engaging in the said chamber on the coupling-pin and sliding in the said groove, a lever pivoted to the draw-head and engaging the said plunger, and any suitable device for actuating the said lever and withdrawing the said plunger when the cars come together, substantially as described.

3. In a car-coupling, the combination of an H-shaped link B', having double-hooked arms b^2 and b^2, b^4 and b^4, with an opening between the same and an enlarged rectangular chamber near each end of the link for the coupling-pins, with a rectangular coupling pin having a long guide-arm moving in a slot in the lower portion of the draw-head, a pin near the extremity of the said lower arm, a longitudinal groove and a deeper chamber on one side of the coupling-pin, a spring-

plunger also attached to the draw-bar and having a head engaging in the said chamber on the coupling-pin and sliding in the said groove, a lever pivoted to the draw-head and engaging the said plunger, and any suitable device for actuating the said lever and withdrawing the said plunger when the cars come together, substantially as described.

447,978. TRACTION-ENGINE. GEORGE G. SCHROEDER, Washington, D. C. Filed Aug. 28, 1890. Serial No. 363,379. (No model.)



Claim.—1. In a traction-engine, the combination of a main frame, a shaft journaled thereon in stationary bearings, a frame-work secured to the main frame, having axial extensions and provided with yielding bearings for the traction-wheel, and connections therefrom, substantially as described, as and for the purpose set forth.

2. In a traction-engine, in combination with the metal frame consisting of inner and outer side bars, top bar, and projecting axles, substantially as set forth.

3. In a traction-engine, a metal frame-work, substantially as described, consisting of the top bar, the inner side bars having slideways, the outer side bars, and the side projecting arms forming axles, as set forth.

4. In a traction-engine, in combination, supporting-wheels mounted on each side of the machine, a rigid metal frame-work, of which the axle of these wheels forms part, and a traction-wheel and axle yieldingly mounted in said frame-work between said supporting-wheels, as set forth.

5. In a traction-engine, in combination, a stationary shaft, a yielding axle, a sprocket-wheel on each having a yielding band, and a drive-chain connecting said sprocket-wheels, as set forth.

6. A sprocket-wheel consisting of a hub, a yielding band, spokes extending radially from the hub through said band, and springs for supporting said band against extreme inward pressure, as set forth.

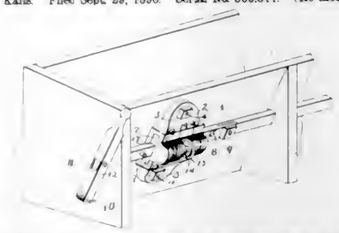
7. A sprocket-wheel consisting of a hub, a slotted band, spokes rigidly secured to the hub and projecting radially through the slots in the band, and springs around the spokes bearing at their inner ends against the hub and at their outer ends against the band, as set forth.

8. In combination, the main frame, the boiler secured therein, the traction-wheel-supporting frame, and the brace-rods connected to each of these parts, respectively, substantially as set forth.

9. In a traction-engine, the combination of the main frame and its supporting-wheels, the frame-work having the side extensions to form axles for the supporting-wheels and provided with slideways for the bearings of the traction-wheel, the traction-wheel mounted between the supporting-wheels, and springs to keep its bearings normally in their lower position, substantially as described.

10. In a traction-engine, the combination of a main frame, a shaft journaled in said frame, carrying on its ends sprocket-wheels, with a frame-work secured to said main frame and provided with yielding bearings for the shaft of the traction-wheel, said shaft carrying on its ends sprocket-wheels connected to the sprocket-wheels of the stationary shaft, and means by which the outer peripheries of the sprocket-wheels are maintained equidistant in all positions, substantially as described.

447,979. LIVE-STOCK RELEASER. NIAL R. SHEETS, Dighton, Kans. Filed Sept. 29, 1890. Serial No. 366,511. (No model.)

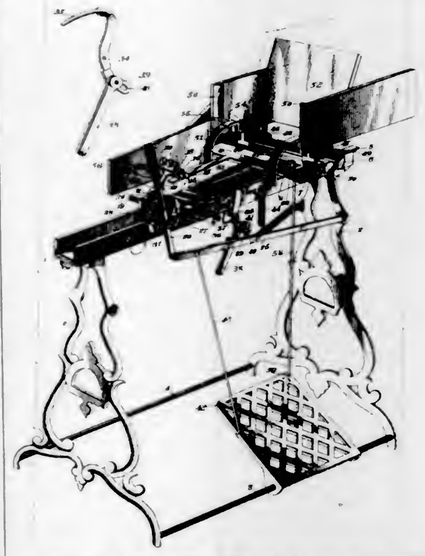


Claim.—1. The combination of the bracket having the longitudinal dovetailed recess and provided with a pin 14, arranged opposite the recess, the slide arranged in the recess and provided with parallel flanges having openings to receive the pin 14, and means for locking the slide in the bracket, substantially as described.

2. The combination of the recessed bracket 2, provided with the pin 14, the slide arranged in the recess and provided with flanges having openings to receive the said pin, the sliding bar provided with a notch 25, and the key pivotally mounted in the slide and arranged to engage the notch of the sliding bar, substantially as described.

3. The combination of the bracket having the recess 5 and provided with the flange 15, arranged at one end of the recess, the pin 14, extending laterally from the flange 15 and arranged opposite the recess, the sliding bar 9, arranged in the recess of the bracket and provided with a notch 25, the slide fitting in the recess of the bracket and provided in its lower face with a longitudinal recess to receive the sliding bar and provided with the flanges 18, 19, and 20, arranged at intervals and having spaces between them, and the key hinged to the slide and arranged between the flanges 18 and 19 and provided with a projection to engage the notch of the sliding bar, substantially as described.

447,980. ADDRESSING-MACHINE. GEORGE C. SHERMAN, Alfred, N. Y., assignor to Martha L. Sherman, same place. Filed June 16, 1890. Serial No. 355,594. (No model.)



Claim.—1. In an addressing-machine, the combination, with the rock-shaft carrying the hammer, of a spring to force the said hammer in a downward direction against the type, a spring to cause said hammer to rebound after delivering its blow, mechanism for holding the said rock-shaft with the hammer in a raised position, and releasing mechanism, substantially as described.

2. The combination of the rock-shaft carrying the hammer, the operating-spring having an arm or extension adapted to be placed under any one of a series of studs extending from the frame of the machine, the rebounding spring, and the hammer holding and releasing mechanism, substantially as set forth.

3. The hammer having a head provided with a recess, in combination with a plate mounted adjustably in said recess and having a pad at its lower edge, substantially as set forth.

4. The combination, with the rock-shaft carrying the hammer, of the disk mounted upon the said rock-shaft and having a peripheral notch and a forwardly-projecting stud, the pawl engaging the said notch, the operating-spring, and mechanism for releasing the pawl, substantially as set forth.

5. The combination of the rock-shaft carrying the hammer, the operating-spring, the disk mounted upon the rock-shaft and having a peripheral notch, the pawl to engage the said notch, an auxiliary pawl pivoted to the main pawl, a holding-spring, and a vertically-sliding arm having a notch to engage the auxiliary pawl, substantially as set forth.

6. The combination of the rock-shaft carrying the hammer, the operating-spring, the disk mounted upon the rock-shaft and having a notch and a forwardly-extending stud, the pawl engaging the said notch, the auxiliary pawl pivoted to the main pawl, the holding-spring, and a vertically-movable arm having a notch to engage the auxiliary pawl and a shoulder to engage the forwardly-extending stud of the disk, substantially as set forth.

7. The combination of the rock-shaft carrying the hammer, the operating-spring, the rebounding-spring, the disk mounted upon the rock-shaft and having a notch, a pawl to engage the said notch, mechanism for releasing the said pawl, and mechanism for feeding the galley, substantially as set forth.

8. The combination, with the rock-shaft carrying the hammer, of the operating-spring, mechanism for holding the hammer normally in a raised position, mechanism for releasing the hammer, mechanism for feeding the galley, and mechanism for delivering the paper into a receiving-box, all constructed and arranged and timed to operate substantially as set forth.

9. In an addressing-machine, the combination of the pivoted feed-lever, a pawl pivoted to the upper end of the same, an arm pivoted adjustably at the lower end of the feed-lever and adapted to be engaged by a stud extending from the operating-lever, and means for retaining the said pivoted arm at any desired adjustment, substantially as set forth.

10. The combination, with the feed-lever, of an arm pivoted to the lower end of the same, adapted to be engaged by a stud extending from the operating-lever and having a head provided with a slot concentric with its pivotal point, and a binding-screw, substantially as set forth.

11. The combination of the feed-lever having a pawl at its upper end, the arm pivoted to the lower end of the feed-lever and having a slotted head, the binding-screw, the operating-lever having a stud to bear against the feed-lever, and a spring to hold the latter in contact with said stud, substantially as set forth.

12. In an addressing-machine, the combination, with the bed or trough having laterally-extending flanges, of the cross-head mounted adjustably upon said flanges and carrying the receiving-box, substantially as set forth.

13. The combination, with the bed or trough, of the cross-head mounted adjustably upon the same and the feed-box composed of sides mounted adjustably upon the said cross-head, and a longitudinally-sliding inclined rest, substantially as and for the purpose set forth.

14. The combination of the bed or trough, the longitudinally-adjustable cross-head, the flanged plates provided with hooked castings, by means of which they are mounted adjustably upon the said cross-head, the sliding rest, and the inclined or beveled cleats at the front ends of the flanges of the plates that support the rest, substantially as set forth.

15. The combination, with the cross-head, of the flanged plates and the hooked castings by means of which said plates are mounted adjustably upon the cross-head, said castings being provided with forwardly and downwardly extending curved arms or guides that extend above the front ends of the flanged plates to form shoulders, substantially as set forth.

16. The combination, with the cross-head, of the flanged plates having the beveled cleats, and the hooked castings having curved arms or guides that are extended upwardly to form shoulders at the front ends of the plates, and the inclined rest supported sliding upon said plates, substantially as set forth.

17. The combination, with the cross-head, of the flanged plates supporting an inclined sliding rest, the curved arms or guides at the front ends of said flanged plates, and a gage-plate attached to an arm mounted pivotally upon the rear side of the rear flanged plate, substantially as set forth.

18. The combination, with the cross-head carrying the receiving-box, of a rock-shaft journaled in arms extending from the said cross-head, the frisket attached to said rock-shaft, and operating mechanism, substantially as set forth.

19. The combination of the cross-head, the receiving-box having the beveled cleats and the curved guide-arms, the latter being extended upwardly to form shoulders at the front end of said box, the hinged or pivoted arm carrying the gate-plate, the rock-shaft journaled in arms extended from the cross-head, the frisket attached to said rock-shaft, an arm extending from the latter, a rod connecting said arm with a treadle, and a spring to restore the rock-shaft to its normal position when pressure upon the treadle is released, substantially as set forth.

20. The combination of the cross-head carrying the receiving-box, the rock-shaft mounted in arms extending from said cross-head, the frisket attached to said rock-shaft, an arm extending from the latter, a rod connected pivotally with said arm and extended through a perforation in the treadle, and a head or enlargement at the lower end of said rod adapted to be engaged by the treadle when the latter has partially completed its downward movement, substantially as set forth.

21. The combination of the rock-shaft carrying the hammer, the operating spring mechanism for holding the said rock-shaft with the hammer in a raised position, mechanism for releasing the holding mechanism and for restoring the hammer to its normal position, the feed-lever, the operating-lever having a stud engaging the feed-lever, a rod or pitman connecting the operating-lever with a treadle, a spring to restore the said operating-lever to its normal position, the sliding cross-head carrying the receiving-box, the rock-shaft journaled in arms extending from said cross-head and carrying the frisket, an arm extending from said rock-shaft, a rod connected pivotally with said arm and extended through a perforation in the treadle and having a head or enlargement at its lower end, and a spring to restore the rock-shaft to normal position after operation, substantially as set forth.

447,981. REIN-HOLDER. JAMES D. SHURMON, Paint Rock, Tex. Filed June 25, 1890. Serial No. 356,679. (No model.)



Claim.—In a rein-holder, the combination, with the body portion 2, provided upon its rear face with perforated ears 3, formed close together and provided with vertical concavities to fit the dash-board frame, and having eyes 7, one of which is screw-threaded, of the dependent spring-tongue 11, made integral with the main body portion 2, substantially as described.

447,982. SAWING-MACHINE. WILLIAM H. H. SPRADLIN, South Fork, Mo. Filed Aug. 25, 1890. Serial No. 362,952. (No model.)

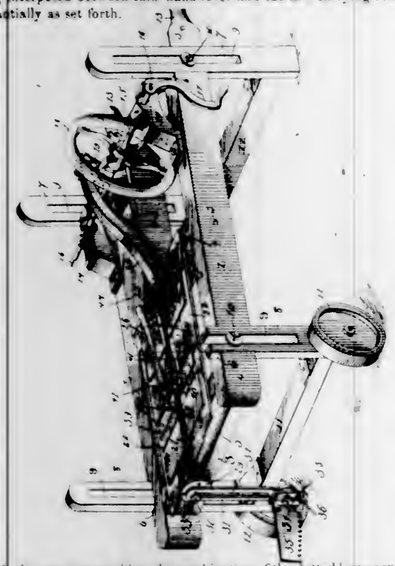
Claim.—1. The combination of the frame having suitable guideways, the cross-head connected by a pitman with a crank-shaft journaled upon the frame, the cleat mounted transversely at the front end of the cross-head and having a horizontal slot and upwardly-extending vertical lugs, the saw-carrying rod, the connecting pin or bolt and the saw connected adjustably and detachably with said rod, substantially as set forth.

2. The combination of the cross-head having the cleat provided with a horizontal slot and vertical lugs, the saw-carrying rod connected pivotally with said cleat and provided near its front end with a stationary disk and having its projecting end screw-threaded, the longitudinally-slotted extension-arm having a screw-threaded pin at its outer end, the saw having a bail or handle provided with a perforation, and the clamping-nuts, substantially as set forth.

3. In a sawing-machine, the combination, with the frame, of a reciprocating cross-head having at its front end a cleat provided with a horizontal slot and vertical lugs, a rod connected adjustably with the said cleat, a longitudinally-slotted extension-arm connected adjustably with the outer or rear end of said rod, and the saw mounted adjustably and detachably at the outer end of said extension-arm, substantially as set forth.

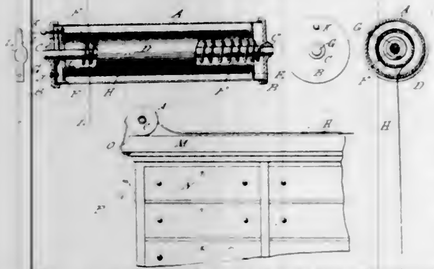
4. The combination of the frame having suitable guideways, the reciprocating cross-head, the saw-carrying rod connected pivotally

with the front end of the latter and swinging in a horizontal plane, the outwardly-beveled ratchets at the front end of the cross-head, the upwardly-extending studs rising from a cross-bar of said cross-head, a hand-lever mounted interchangeably upon said studs, and a coiled spring interposed between said hand-lever and the saw-carrying rod, substantially as set forth.



Claim.—In a sawing-machine, the combination of the slotted legs or supports, the vertically-adjustable frame, the cross-head connected by a pitman with the crank-shaft journaled upon the frame, the transverse cleat having a horizontal slot and upwardly-extending lugs, the outwardly-beveled ratchets, the pivoted saw-carrying rod, the slotted extension-arm connected adjustably with the latter, the saw mounted adjustably and detachably at the outer end of said arm, the hand-lever mounted interchangeably upon one of a series of studs rising from the cross-head and engaging the outwardly-beveled ratchets, and a spring adapted to be interposed between said hand-lever and the saw-carrying rod, substantially as set forth.

447,983. CASE FOR MAPS OR SHEETS. EDWARD B. STRONG, San Francisco, Cal. Filed Aug. 13, 1890. Serial No. 361,879. (No model.)



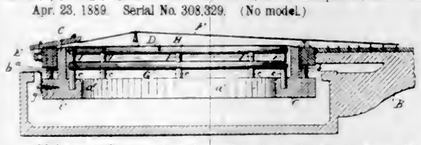
Claim.—In a rolling-case for maps or sheets, the combination of the outer case A, having the ends B B provided with bearings C, the spool D, having axle G, supported in the bearings C, the coiled spring F, surrounding axle G, one end being connected to said axle and the other to one of the heads B, and the stop consisting of a flat spring I, which is riveted or fastened to one of the heads B and is provided with a central hole L, which loosely surrounds the axle G, said spring I carrying a stop-pin K, which engages the end of the spool and extends out through one of the heads B, and the flexible hinge or support O for supporting the case from a desk or other object, substantially as and for the purpose described.

447,984. SECRET-LOCKING BOX. CHRISTOPHER J. THEUERKER, Newark, N. J. Filed May 31, 1890. Serial No. 353,825. (No model.)

Claim.—The improved locking-box, consisting of the outside box A, provided with the rods *h*, secured in the inside and at the rear end thereof, the drawer B, telescoping in the said box A, the secret drawer C, fitting friction-tight in the drawer B and provided at its inner end with the stop-lugs *c* and the hook *d*, the end plate D, covering the rear end of the box A and provided with the lugs *g*, and the spring-actuated cross-bar *e*, having the hook *f* thereon, the said plate D being held in place by and traveling upon the rods *h* and adapted to engage automatically in locking relation with the drawer C and to be disengaged therefrom by retraction of the plate D, all combined and arranged substantially as set forth and described.



447,985. BANJO. WILLIAM TITUS, North Hempstead, N. Y. Filed Apr. 23, 1889. Serial No. 308,329. (No model.)

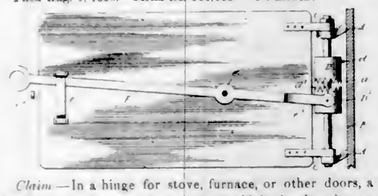


Claim.—1. The combination, with the strings, parchment head, and parchment-bearing ring of a banjo, of a resonant ring G and studs *e*, carried by the inner flange *a'* of the parchment-bearing ring C, substantially as and for the purpose herein set forth.

2. The combination, with the strings, parchment head, and parchment-bearing ring of a banjo, of the resonant ring G, the ring H, having its upper edge extended beyond the adjacent upper edge of the parchment-bearing ring, the studs *f*, interposed between the resonant ring G and the ring H, and the studs *e*, carried by the bearing-ring C, substantially as and for the purpose herein set forth.

3. The combination, with the strings, parchment head, and parchment-bearing ring of a banjo, of the resonant ring G, the ring H, having its upper edge extended beyond the adjacent upper edge of the parchment-bearing ring, the studs *f*, interposed between the resonant ring G and the ring H, and the studs *e*, inserted in the flange *a'* of the said parchment-bearing ring, substantially as and for the purpose herein set forth.

447,986. LOCK-HINGE. CHARLES C. WARE, Glassborough, N. J. Filed Aug. 1, 1890. Serial No. 360,669. (No model.)



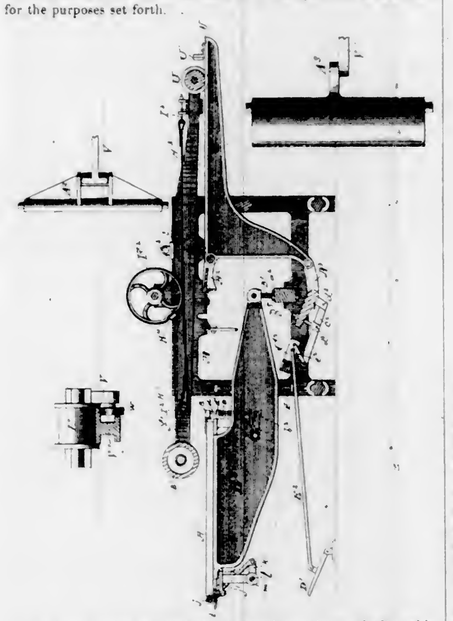
Claim.—In a hinge for stove, furnace, or other doors, a rod or the like mounted on the structure to which the door is attached, a block or cylinder rigid on the rod and provided with inclined teeth, a sliding block or cylinder on the rod, also provided with inclined teeth, and a latch or lever pivoted to the door and connected with the sliding block or cylinder, substantially as described.

447,987. IRONING-MACHINE. LEWIS H. WATSON, Newark, N. J. Filed May 23, 1890. Serial No. 352,840. (No model.)

Claim.—1. In an ironing-machine, the combination, with a stationary ironing-table, of an ironing-roll, a traveling carriage or frame carrying said roll and mounted upon suitable ways or tracks, a vertically-movable bracket or track engaging with the rear end of said traveling frame and upon which the latter travels, and means adapted to tilt said frame and bring said roll into contact with the ironing-table and release it therefrom, as described, for the purposes set forth.

2. In an ironing-machine, the combination, with a stationary ironing-table, of an ironing-roll, a traveling carriage or frame carrying said roll and mounted upon suitable ways or tracks, a vertically-movable bracket or track, rock-shafts A^2 and A^3, journaled, respectively, at the upper and lower portions of the supporting-frame and pivotally connected with said bracket or track, and means for operating the same, as described, for the purposes set forth.

3. In an ironing-machine, the combination, with a stationary ironing bed or table of an ironing-roll, a traveling carriage or frame carrying said roll and mounted upon suitable tracks or ways, a vertically-movable bracket or track, rock-shafts A^2 and A^3, journaled, respectively, to the supporting-frame and pivotally connected with said bracket or track, a lever c^3, a rock-shaft C^3, journaled upon the supporting-frame aforesaid, a connecting-rod c^2, a foot-treadle, a connecting-rod E^2, and a spring S, arranged with relation to one another and operating to bring the ironing-roll into contact with the ironing-table and to release it therefrom at the will of the operator, as described, for the purposes set forth.



4. In an ironing-machine having a stationary ironing bed or table, a movable frame carrying an ironing roll and mounted upon tracks or ways carried by the supporting-frame of said machine, a bracket V', carrying a track V, wheels carried by said movable frame and engaging said tracks, and means operating in connection with said movable frame and bracket to impart a forward-and-backward and a tilting movement to said frame, as described, for the purposes set forth.

5. In an ironing-machine, the combination, with the ironing-table, of a clamping-bar arranged at the front end thereof and having depending arms, cranks *k*, pivotally connecting therewith, a shaft *l*, working in suitable bearings and carrying said cranks, a spring *n*, and a seat or hook *o*, said parts being arranged with relation to one another, and operating, as described, for the purposes set forth.

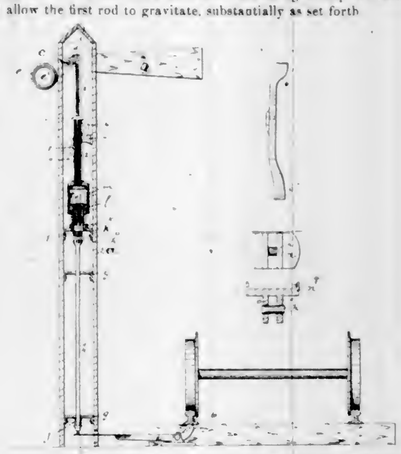
447,988. PNEUMATIC SEMAPHORE-SIGNAL. JAMES WAYLAND, Newark, N. J. Filed July 3, 1890. Serial No. 357,617. (No model.)

Claim.—1. In a railway-signal, the combination, with the semaphore and air-receptacle *m*, of separate or independent rods 2 and 3 and a catch operable to hold rod 3 and to be thrown from holding engagement by rod 2, substantially as and for the purposes set forth.

2. In a railway appliance, the combination, with a part *b* to be operated and a rod 2, adapted to move under an impulse given by the railway-train, of a rod 3, movable independent of the said rod 2 and connected to said part *b*, means for holding said part *b* stationary while the said rod 2 is returning to a normal position after the said impulse given by the railway-train, and means on said rod 2 for releasing said holding means, substantially as set forth.

3. In a railway-signal, the combination, with the semaphore, of a rod 2, adapted to be moved vertically under the impulse of the passing train, an independent rod 3, connected to said semaphore and provided with a bearing 5, and a lever adapted to engage said bearing and to hold said rod 3 from gravitating, the said rod 2 being provided with means adapted to engage said lever and release the same from holding engagement, substantially as and for the purposes set forth.

4. In a railway appliance, two movable rods arranged in line, one provided with a bearing to receive a catch and the other a bearing to trip said catch, and said catch extending into positions to engage said bearings, whereby when the upward movement of one of said rods will throw the other upward the latter will be caught and held until the gravitation of the other rod will cause its bearing to trip the catch and allow the first rod to gravitate, substantially as set forth.



5. In a railway appliance, the combination, with the part *b* to be operated, of a vertical rod 3, connected with and operating the same and provided with a catch-bearing 5, a rod 2, movable vertically under the impulse given by the passing train and provided with a bearing 8, and a pivoted lever 6, adapted to engage the said bearings 5 and 8, substantially as and for the purposes set forth.

6. In a railway-signal, in combination, the semaphore *b*, pivoted at *c*, crank 4, rod 3, operating the same and having bearing 5, a rod 2 in line with said rod 3, but movable independent thereof and having a bearing 8, a lever 6, adapted to enter into holding engagement with said bearing 5 and to be thrown from such engagement by the bearing 8, and means, substantially as described, for forcing said rod 2 under the impulse given by the passing train, substantially as set forth.

7. In a railway appliance, the combination, with the vertically-movable rod 2, an independent movable rod 3, and catch, of an air-receptacle having a movable part connected with said rod 2 and means for introducing air to said receptacle, means for allowing the slow escape of said air and gravitation of said movable part and rod connected therewith, and means operable by said gravitating parts to release said catch, substantially as and for the purposes set forth.

8. In a railway appliance, the combination, with the part 3 to be operated by the passing train, of a catch to hold said part stationary, a pneumatic receptacle having a movable part connecting with the railway and adapted to be operated by the passing train to cause an inflow of air to said receptacle and at the same time to force the said appliance or part 3 into engagement with said catch, and a vent adapted to allow an outflow of air from said receptacle and the gravitation of the movable parts, the gravitating parts being adapted to engage the catch whereby the part 3 is released to return automatically to an initial position, substantially as set forth.

9. In combination, semaphore *b*, crank 4, rod 3, having bearing 5, independent rod 2, having bearing 8, catch 6, air-receptacle having a movable part *m*, connecting with said rod 2, valve allowing an inflow of air to said receptacle, a vent allowing a slow exit, and means for forcing the air into said receptacle, substantially as and for the purposes set forth.

10. In a railway appliance the combination, with the part to be operated and a catch to hold the same in position when thrown from the normal position by the passing train, of a device adapted to be operated upon by the passing train to throw said part to be operated into engagement with said catch and to gravitate immediately thereafter, the said device having a suitable projection to engage said catch and release the same from said part to be operated to allow the same to return to a normal position, substantially as set forth.

11. In combination with the lever *i* and rod *h*, having a cylinder secured at the upper end thereof, with arms *r* and head *n*, a fixture *k*, having the head *l*, on which the said cylinder works, a valve to allow a rapid inflow of air and a valve to allow a slow outflow of air, a rod 2, fixed to and working with the cylinder, having a bearing 8, a rod 3, adapted to be operated by the rod 2 and to be separated therefrom and having a bearing 5, and a catch adapted to be engaged by said bearings 8 and 5, substantially as set forth.

12. In a railway appliance, substantially as set forth, the rod 2, connected with the railway and adapted to be operated by the passing train, said rod having a bearing 8, in combination with a rod 3, having a bearing 5, and a catch adapted to hold said rod 3 in a raised position until released by engagement with the bearing 5, substantially as set forth.

13. In a railway appliance, a rod 2, connected with the railway and having a bearing 8, a rod 3, arranged telescopically therein and having a bearing 5, and a catch adapted to be engaged by said bearing, substantially as set forth.

14. In a railway appliance, a rod 2, adapted to be held in a stationary position, a rod 12, adapted to be operated by the passing train and to operate said rod 3 to raise it to its stationary position, means for holding said rod 3 in its stationary position, and means connected to said rod 2 to release the said rod 3, said parts being combined substantially as set forth

15. In a railway appliance, the combination, with a rod 3 adapted to be forced to an elevated position by the movable portion of a pneumatic receptacle, of a catch for holding said rod in said elevated position, a vent adapted to allow the gravitation of said movable portion, and a releasing bearing controlled by said movable portion, whereby the catch may be released from holding engagement with the elevated rod at a desired point of its gravitation, substantially as set forth

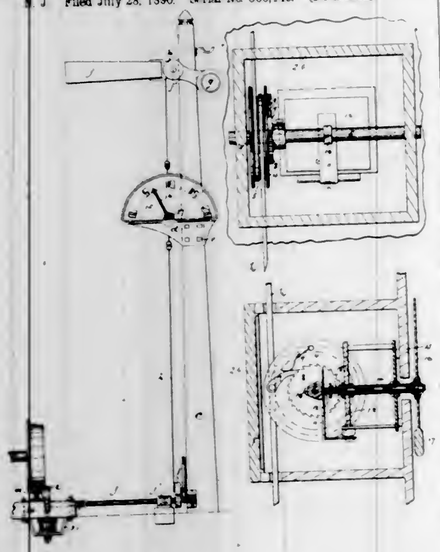
16. In a railway appliance, the combination, with a semaphore or other railway appliance or device adapted to be moved from one position to another and to be held at said other position, of a rod 2, adapted to be operated by the passing train in connection with the movable portion of a fluid receptacle, a catch controlled by said rod for holding said semaphore stationary, a vent to allow a return movement of the said movable portion of the fluid-receptacle, and means for regulating the flow of fluid from said vent, whereby the said return movement may be controlled with reference to time, substantially as set forth.

17. In a railway appliance, the combination, with the rod 3, adapted to be raised and held stationary, of a catch for holding the same, a fluid-receptacle having a movable part controlled by the passing train and controlling the rod 3 to raise the same and a releasing bearing to disengage the catch from holding relation to the said rod 3, a valve to allow an inflow of fluid to said receptacle, and a vent allowing a slow outflow, substantially as set forth

18. In a railway appliance, the fixture *k*, a threaded head screwed thereto, and a cylinder movable on said head and connected to the railway to be operated by the passing train, said parts being arranged and adapted to operate substantially as set forth

19. In a railway appliance, a cylinder having arms *r r*, in combination with connections for operating said cylinder under the power transmitted from the passing train, substantially as set forth.

447,989. RAILWAY TIME-SIGNAL. JAMES WAYLAND, Newark, N. J. Filed July 28, 1890. Serial No. 360,140. (No model.)



Claim.—1. In a railway-signal, the combination, with a hand and means for clamping the same, of a revolving cam or eccentric projection, a ratchet and pawl, and means for turning said ratchet and pawl and communicating the motion to the cam, substantially as set forth.

2. In a railway-signal, the combination, with the hand and clamping shafts, of a triangular cam and means for revolving or turning the same, substantially as set forth.

3. In a railway-signal, the semicircular frame or plate *d*, having the integral box 24 for the clock mechanism, and vertical flange 25 at the rear thereof, substantially as and for the purposes set forth.

4. In combination with a railway, posts *c c*, having a semaphore *f* and time-signals thereon, levers *i*, connecting by flexible connections with said signals, a catch *m* for holding said lever, a cylinder and piston for operating the catch, and a duct *p*, connecting a cylinder *q* and piston *r*, adapted to be operated by the passing train to force the body of air into said cylinder *n* to force back the catch from holding relation to the lever, substantially as set forth.

5. In a railway signaling system, the combination, with a catch for holding the signal at a position indicative of danger, of a piston and cylinder stationed at a distance from said catch, and a duct connecting with the catch, whereby a body of air may be forced through said duct and the catch forced from its holding engagement with the signal, substantially as set forth.

6. In a railway-signal, the combination, with the railway, of a signal and a lever connecting with the same, a catch *m*, piston *o*, cylinder *n*, duct *p*, valve 3, cylinder *q*, piston *r*, and lever to engage the same, all arranged and combined substantially as and for the purposes set forth

7. The improved railway time-signal, combining therein a post, a clock, and above the same a pivoted semaphore having a weight at one side of the pivot and a signaling-blade at the other, a weighted lever arranged adjacent to the track to be operated by the passing train, the weight of which lever overbalances the weight of the semaphore and draws said semaphore to a position indicative of safety, and a flexible cord extending from the semaphore down to the clock mechanisms and connecting with said clock mechanisms to enable the semaphore to operate the clock as said semaphore moves from a position of safety to that of danger, and said cord extending downward to the said lever at the foot of the post and connecting therewith, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

8. The improved railway-signal herein described, combining therein a post having a semaphore pivoted thereon, a clock secured on said post at a distance therefrom, a weighted lever *l*, arranged at the foot of said post and adapted to be operated upon by the passing train, whereby the weight thereon is thrown up, a catch for holding said weight in its elevated position, and a flexible cord connecting the weighted lever with the clock and the clock with said semaphore, whereby when the said cord is released of the tension or draft of said weighted lever the semaphore will operate automatically to allow the clock-hands to move to an initial position, substantially as set forth

9. In a railway time-signal, the combination, with a clock arranged on the signal-post and having hand-clamps and hands, and mechanisms for operating the same, of a semaphore independent of said clock but connected to and controlling the same, and a weighted lever arranged at the foot of the post and adapted to be actuated by the passing train and connected to and normally holding said semaphore to a position indicative of safety, said parts being arranged and operating substantially as set forth.

10. In combination with a semaphore, a lever adapted to be operated on by the passing train and controlling said semaphore, a connection *h*, and a weight adjustably arranged on said lever, substantially as and for the purposes set forth.

11. In a railway-signal, the combination, with the signaling apparatus, of a lever adapted to be operated by the passing train and having a curved extremity the bearing of which is concentric to the center of movement, and a catch bearing on said concentric extremity, substantially as and for the purposes set forth.

12. The improved railway time-signal, the combination of the lever *i*, semaphore controlled thereby, cord *h*, connecting said semaphore with the wheel 4, said wheel, a ratchet and pawl, shaft 6, cam 10, clock-hand shaft 14, spring-actuated shaft 13, and hand 16, all arranged and operating substantially as and for the purposes set forth.

13. In a railway-signal, the combination, with a lever adapted to be operated upon at the passing of a train, of a semaphore arranged at the top of a signal-post and controlled by the said lever and being held in a position indicative of safety thereby, and a clock connected to the said semaphore, but arranged at a distance therefrom and having clamped hand and means for operating the same and means for unclamping said hand, the latter of said means being controlled by said semaphore, whereby when said semaphore turns to its position indicative of danger the said hand will be allowed to turn to its initial position, substantially as herein described.

14. In a railway-signal, the combination, with the hand and clamping-shafts, of a wheel 4, adapted to be operated at the passing of a train, a pawl 7, arranged on said wheel, and a shaft 6, having a ratchet-wheel and cam thereon, all arranged and combined substantially as and for the purposes set forth.

15. In a railway-signal, the combination, with the signal-post c, of a metal dial-frame *d*, secured to said post and having an integral box and plate at the rear thereof forming an angle for the reception of the said post, the said box being formed centrally on said dial-frame and having time signaling clock mechanisms therein, substantially as set forth.

16. In a railway-signal, the combination of the signaling apparatus, lever i and catch for holding the same, piston and cylinder operating said catch, and pneumatic duct, and piston and cylinder for forcing air through said duct, and a perforated valve 3, substantially as set forth.

447,990. RADIATOR. JOHN L. WELLS, New York, N. Y. Filed Nov. 28, 1890. Serial No. 372,914. (No model.)



Claim.—A radiator consisting of tiers of return-boxes, each one engaged with the other by a dovetailed tongue and groove, with a series of independent tubes having screw-threaded extremities which are screwed into the respective tiers of return-boxes, substantially as described.

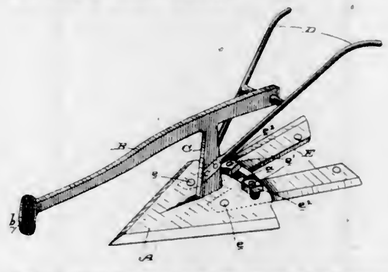
447,991. METHOD OF DECORATING GLASS AND PORCELAIN. AMOS WESTWOOD, Oakland, and PETER L. MALLON, San Francisco, Cal.; said Westwood assignor to said Mallon. Filed Sept. 17, 1889. Serial No. 324,454. (No specimens.)

Claim.—1. The process of decorating glass, porcelain, and other surfaces, consisting of coating the surface to be decorated with a sensitive emulsion made of a saturated solution of bichromate of potash rendered alkaline, sugar, gelatine, and alcohol, exposing it under a positive, developing the image or impression by dusting in a ceramic powder, coating it with a flux, and firing it, substantially as herein described.

2. The process of decorating glass, porcelain, and other surfaces, consisting in coating the surface to be decorated with an emulsion made of a saturated solution of bichromate of potash rendered alkaline in the proportion of three parts, a solution of sugar in the proportion of three parts, moist gelatine in the proportion of one part, and alcohol in the proportion of two parts, exposing the surface under a positive, developing the image or impression by the dusting in of a ceramic powder, applying a coating of flux to the surface, and firing it, substantially as herein described.

3. The sensitive emulsion herein described, consisting of a saturated solution of bichromate of potash rendered alkaline, a solution of sugar, moist gelatine, and alcohol, combined in the proportions substantially as herein described.

447,992. CULTIVATOR. BENJAMIN P. WHITNEY, Los Alamos, Cal., assignor of one-half to W. F. Wickenden, same place. Filed Aug. 25, 1890. Serial No. 363,028. (No model.)



Claim.—1. In a cultivator, the combination of the triangular share or point, the rearwardly-divergent extension-blades adjustably secured to said share or point, whereby they may be set at different angles and the beam connected with the share, substantially as herein described.

2. A cultivator consisting of the triangular share or point having the slot in its rear portion, the beam-standard secured to said share or point, the beam and the handles carried by the standard, the rearwardly-divergent extension-blades pivoted at their forward ends to the point or share and having pins or studs projecting through its slot, and the nuts on the pins or bolts for fixing the blades where adjusted, substantially as herein described.

447,993. TIRE FOR BICYCLES. LOUIS D. WHITTEMORE, Jr., Boston, Mass. Filed Dec. 15, 1890. Serial No. 374,825. (No model.)



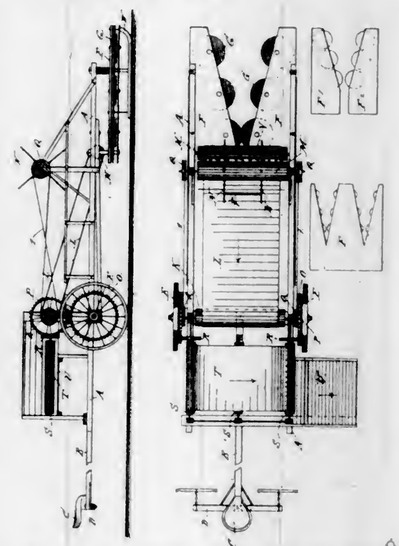
Claim.—1. A tire for bicycles, comprising a rubber tube filled with an elastic material compounded of gum-rubber, glue, molasses, and glycerine, substantially in the proportions specified.

2. In a tire for bicycles, an elastic tube, in combination with a core of fibrous or other flexible material disposed therein, and a soft elastic filling surrounding said core, substantially as described.

3. In a tire for bicycles, the tubing *f*, fibrous or flexible core *i*, and soft elastic filling *h*, combined and arranged substantially as described

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447,994. CANE-CUTTER. ROBERT R. WILSON, New Orleans, La. assignor of one-third to Louis P. Fulda, same place. Filed June 26, 1890. Serial No. 356,885. (No model.)

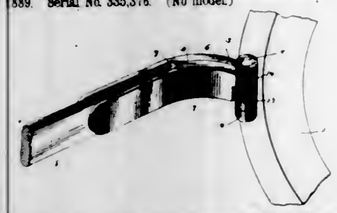


Claim.—1. The combination, with the main frame mounted on runners and traveling wheels, as described, of the cutting apparatus carried by said runners, the cog-gears fixed to said traveling wheels, the transverse drum journaled in the main frame above the traveling wheels and carrying gears meshing with the gears of said wheels, the transverse drum H, journaled in the frame above the rear end of the cutting apparatus, the endless carrier traveling around the drum H and the transverse drum above the traveling wheels, and the longitudinal drums journaled at the sides of the frame in rear of the traveling wheels and carrying gears meshing with the gears of said wheels, all adapted to operate substantially as and for the purpose specified.

2. In a cane-cutter, substantially as described, the main frame mounted on runners and traveling wheels, the cutting apparatus carried by said runners, the cog-gears fixed to said traveling wheels, the transverse drum K, journaled in the main frame above the traveling wheels and carrying a pulley at its end, the transverse drum H, journaled in the frame above the rear end of the cutting apparatus, the endless carrier traveling around the drums H and K, and the longitudinal drums journaled at the sides of the frame in rear of the traveling wheels and carrying gears meshing with the gears of said wheels, and the endless carrier traveling around said longitudinal drums, in combi-

nation with the reel-shaft journaled in the frame above the cutting apparatus and the drum H and carrying a pulley at its end connected by an endless belt with the pulley on the shaft K, substantially as and for the purpose specified.

447,995. HAME-TUG. MOSES J. YOUNG and CLARK ROBINSON, Hartley, Iowa, assignors of one-half to I. N. Drake, same place. Filed Dec. 30, 1889. Serial No. 335,376. (No model.)



Claim.—In a hame-tug, the combination of the clip comprising the similar leaves or sections 6 and 7, provided at their front ends with eyes 13 and 14, and being hinged together and to the hame and swinging apart laterally, and having their inner faces rabbeted to provide a recess, and having an integral stud, and the hame-tug provided with an opening to receive the stud and being pivoted in the recess, substantially as described.

447,996. BRUSH. MCCLINTOCK YOUNG, Frederick, Md. Filed June 26, 1890. Serial No. 356,349. (No model.)



Claim.—1. A fastener for securing tufts in series in a brush-block, consisting of a narrow sinuous strip presenting on one edge the projections to enter the tuft-holes and bear within the bight of the tufts and on the other edge the notches or openings whereby the two sides of each tuft are permitted to close together through the projection by which they are held

2. The improved tuft-fastener for use in brushes, consisting of a wire bent as described to present a series of tuft-holding projections.

3. The tuft-fastener for use in brushes, consistiog of the sinuous strip having the projections adapted to enter the tuft-holes and bear within the tufts, and having also the teeth or notches c^4 to engage the walls between the tuft-holes.

4. The improved brush consisting of the block or body provided with a series of holes, the tufts inserted in said holes, and a sinuous fastener having connected portions extending downward into the respective holes within the bight of the tufts, said portions having the openings c^4, whereby the two sides of the tuft are permitted to close compactly together above the fastening device.

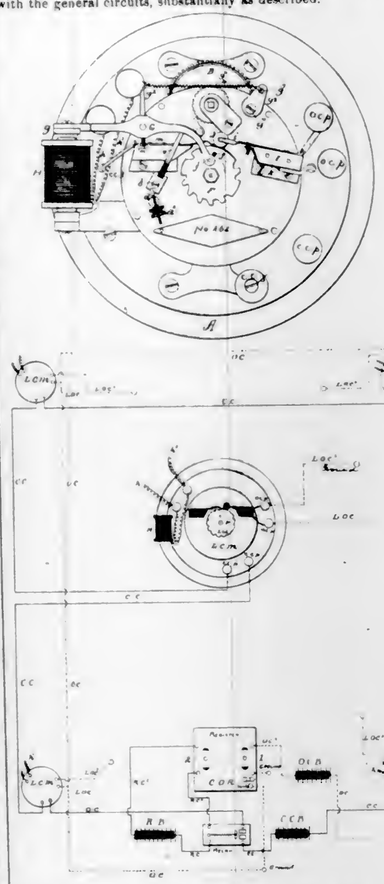
447,997. ROOF-PAINT. JACOB B. ZOOK, Xenia, Ind. Filed Nov. 10, 1890. Serial No. 370,952. (No specimens.)

Claim.—A paint composed of the following elements, namely coal-tar, oxide of iron, slate, chip rubber, asbestus, polish composed of rosin, benzine, crude carbolic acid, lamp-black, and asphaltum, creosote, benzine, and turpentine, which are mixed in substantially the proportions specified.

447,998. ELECTRIC ALARM. GEORGE W. ADAMS, Boston, Mass. Filed June 6, 1890. Serial No. 354,508. (No model.)

Claim.—1. In an electrical protective system, the simultaneous combination of two independent circuits, one open O C and one closed C C, with one and same break-wheel F, the revolution of which is adapted to simultaneously close the open circuit and break the closed circuit by means of the insulating-trolley *j*, the springing-arm i, and the contact-point *k* for the open circuit and the springing-arm *m* for the closed circuit, substantially as and for the purpose described.

2. In the automatic contact-maker of an electrical protective apparatus, the break-wheel F, carrying the pins *f* and *f'* upon the face thereof, in combination with the detent G', one end of which is provided with the armature *g* and the other end of which is provided with the pin *g'*, adapted to be engaged with the pin *f'* of the break-wheel F when the armature is up and with the pin *f* when the armature is down, said pins *f* and *f'* being located on the face of the break-wheel F at different radial distances from its center and upon radial lines at an angle with each other and within that segment of the break-wheel which places the contact maker and breaker in normal relations with the general circuits, substantially as described.

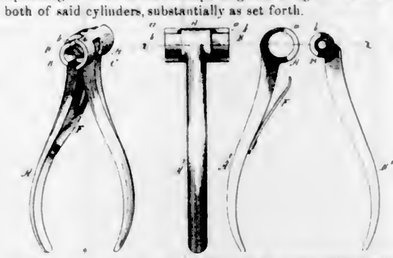


3. The combination of the detent G, adjustable ear g^3, posts g^3 g^4, spring g^5, and break-wheel F, substantially as and for the purposes described.

4. In an electric protective apparatus, the combination of the localized alarm-circuit L C, provided with alarm-stations B *a*, and with an electric contact maker and breaker L C M, containing a break-wheel F, carrying two pins *f f'*, arranged upon its face, as described, and with a detent G, adapted to engage with said pins *f f'*, as described, and with two general circuits, one closed C C and one open O C, each of which is connected with other localized alarm-circuits and other contact makers and breakers of the same description, said general circuits being simultaneously employed for the sending of signals of different electrical character to one and the same central office from the building in which a localized apparatus is situated, and with two alarms located in said central office, substantially as described.

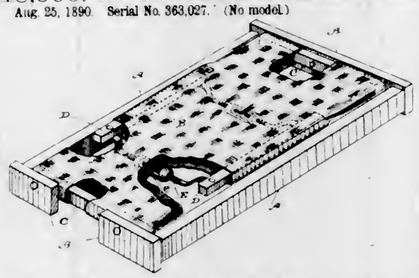
447,999. WIRE-CUTTER. OLIVER ARNOLD, Leicester, assignor of one-half to William Richardson and Addison Arnold, Worcester, Mass. Filed Sept. 17, 1890. Serial No. 365,307. (No model.)

Claim.—1. A wire-cutter consisting of two cylindrical parts, one arranged within the other, portions of said cylinders being cut away to form semi-cylindrical jaws with cutting-edges that shear past each other by rotative action of one cylinder in relation to the other, and an operating lever or levers for imparting oscillating movement to one or both of said cylinders, substantially as set forth.



2. The wire-cutting tool consisting of an outer cylindrical part A and the inner cylindrical part B, fitted within said outer cylinder, both having semi-cylindrical jaws formed thereon, with cutting-edges *a* and *b*, that shear past each other by oscillating action of the cylinders, in combination with handles or operating-levers, one of which is rigidly attached to the outer cylinder, the other passing through a slot in said outer cylinder and connecting with the inner cylinder, all substantially as set forth.

448,000. BED. FRIEDRICK H. b. BABBE, San Francisco, Cal. Filed Aug. 25, 1890. Serial No. 363,027. (No model.)



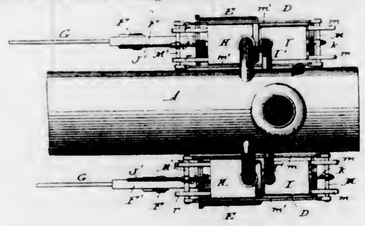
Claim.—The combination of the exterior frame, the bars fixed to the ends of the frame, the endless band, in the bights of which said bars are fitted, the side bars independent of said exterior frame and fitted in the sides of said band, and the transverse braces adjustably connecting said side bars and provided with turn-buckles, substantially as herein described.

448,001. COMPOUND STEAM-ENGINE. JOHN BAIRD, New York, N. Y. Filed Nov. 19, 1890. Serial No. 371,964. (No model.)

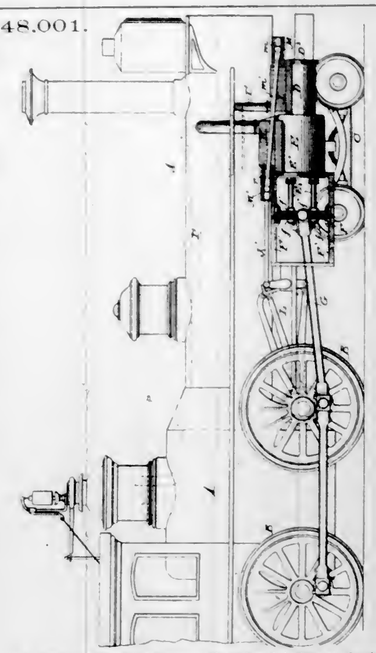
Claim.—1. The combination, substantially as hereinbefore set forth, of two abutting cylinders in the same axial line, pistons therein, a central piston-rod connecting both pistons, two additional piston-rods connected with the larger piston, the removable head of this larger piston, a cross-head with which these piston-rods are connected, and guides in which the piston-rods reciprocate and the removable cylinder-head slides and is supported when detached from its cylinder.

2. The combination, substantially as hereinbefore set forth, of the cylinder, its removable head, its piston, its two piston-rods, the guides for the cylinder and piston-rods, the cross-heads sliding therein, and the jam-nuts on opposite sides of the cross-head, through which and the jam-nuts when unscrewed the piston-rods slide to permit of the removal of the head and piston.

3. The combination, substantially as hereinbefore set forth, of the large and small cylinders in the same axial line, their valves in different planes, their rods or spindles, their cross-heads and slides at opposite ends of the valve-chests, the side rods connecting them, and the eccentric link-motion actuating both sets of valves synchronously.



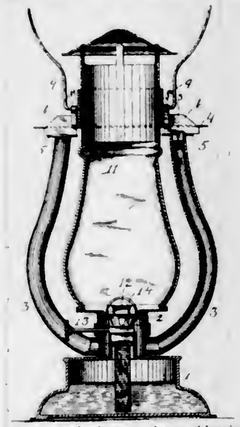
448,001.



4. The combination, substantially as hereinbefore set forth, of the cylinders, their pistons and piston-rods, the cross-head, the vertical guides in which it slides, the valves, their cross-heads and side rods, the guides for the rear valve cross-head, mounted on the large cylinders and their valve-chests, and the eccentric link-motion actuating this valve cross-head

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448,002. TUBULAR LANTERN. WILLIAM BALDWIN, Great Bend, Pa. Filed Apr. 7, 1890. Serial No. 346,949. (No model.)



Claim.—1. In a tubular lantern, the combination of the reflector 4, the tube 3, terminating beneath the reflector, the vertical deflector, and the guard-flange surrounding the upper end of the tube, substantially as and for the purpose set forth.

2. In a tubular lantern, the guard for the end of the tube, consisting of the parallel disks, the lower one of which surrounds the mouth of the tube and the upper one of which is above the end of the tube and has an aperture over the tube-opening, and the deflector extending from the tube through the apertore in the upper disk, substantially as set forth.

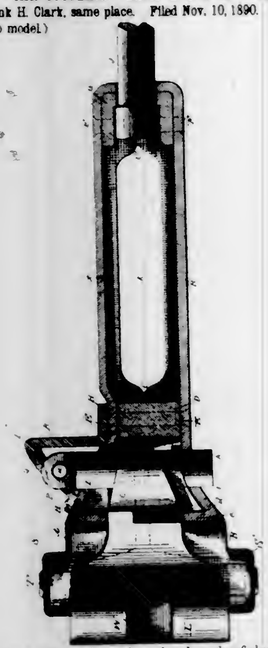
3. The combination of the wall 11, vertical tubes 3, guard-disks

5, surrounding the ends of the tubes, reflector 4, having slots 7 above the ends of the tubes, and vertical reflectors 6, radiating from the wall 11, secured within the mouths of the tubes and extending upward through the deflector, as and for the purpose set forth.

4. The combination, with the wick-tube, of the deflector 13, having the slots 15 provided with the lips 14, extending upward and outward over the said slots, as and for the purpose set forth.

5. The combination, with the wick-tube, of the deflector 13, having the elongated slots 15 parallel with the wick-tube, and the lips 14, extending upwardly and outwardly over the said slots for deflecting the air which passes through the slots outward, as explained.

448,003. CAR-COUPLING. DAVID L. BARNES, Chicago, Ill., assignor to Frank H. Clark, same place. Filed Nov. 10, 1890. Serial No. 370,985. (No model.)



Claim.—1. In a car-coupler, a draw-head made of sheet metal in two parts and having flanges, as described, kept in relative position by suitable tenons, substantially as described.

2. In a car-coupler, a draw-head made, as described, in two parts, secured together at the rear ends by a U-strap, block, or spacer, and riveted, substantially as described.

3. In a car-coupler, a draw-head made, as described, in two parts, secured together at their rear ends by a U-strap and rivets, the strap having a hole registering with a cut-away portion of the two parts and adapted to receive the tail-bolt, substantially as described.

4. In a car-coupler, a pressed-metal draw-head made in two parts secured together, whereof the lower part is provided with a lug or flange adapted to engage the locking-pin, substantially as described

5. In a car-coupler, a pressed-metal draw-head wherein the metal of the head is depressed to form a working fit around a portion of the rear side of the knuckle, thus re-enforcing it against shocks, substantially as described.

6. In a car-coupler, a detachable pressed-metal draw-bar stop adapted to be secured to the draw-bar, substantially as described.

7. In a car-coupler, a detachable pressed-metal draw-bar stop having a vertical stop-face and an inclined face serving as a brace, substantially as described.

8. In a car-coupler, a detachable pressed-metal draw-bar stop having a vertical stop-face and an inclined face serving as a brace, one or both of the faces being corrugated to obtain greater stiffness, substantially as described.

9. In a car coupler, a detachable pressed-metal draw-bar stop having a vertical stop-face, an inclined face serving as a brace, and lips or flanges H H', whereby the stop may be secured to the draw-bar, substantially as described.

10. In a car-coupler, a detachable pressed-metal draw-bar stop having a vertical corrugated stop-face, an inclined corrugated face acting as a brace, and lips or flanges adapted to secure the top to the draw-bar, substantially as described.

11. In a car-coupler, a rotating knuckle having a wing U, provided with the flange U' U³, and a cut-away portion X, substantially as described.

12. In a car-coupler, a rotating knuckle having trunnions formed integrally therewith, and a wing U, provided with flanges U' and U³ and adapted to engage a suitable locking-pin by the shock of coupling, substantially as described.

13. In a car-coupler, a rotating knuckle having a wing or flange preventing the locking-pin from turning to a locked position while the knuckle stands open, substantially as described.

14. In a car-coupler, a locking-pin consisting of a shank or round body Z, a wing *f*, adapted to engage the knuckle, and a wing *e*, adapted to engage a projection on the draw-head, substantially as described.

15. In a vertical-plane car-coupler, a locking-pin consisting of a shank or round body Z, a wing *f*, adapted to engage the knuckle, and a wing *e*, provided with one or more steps *d e*, adapted to engage a projection on the draw-head at different points in the rotation of the pin, substantially as described.

16. In a vertical-plane car-coupler, a locking-pin made as described and adapted to be rotated outward by the knuckle when lifted up to free the wing *e* from a projection on the draw-head, substantially as described.

17. In a vertical-plane car-coupler, a locking-pin made as described and adapted to be rotated by the closing of the knuckle to such a point as will permit the wing *e* to drop behind a locking projection on the draw-head, substantially as described.

18. In a car-coupler, the combination of a draw-head made in two parts, as described, each part formed with a trunnion-bearing of unbroken circumference, and a knuckle having integrally-formed trunnions adapted to turn in such bearings, with a pin or bolt passed through the axis of the trunnions securing the parts together, substantially as described.

19. In a car-coupler, the combination of a pressed-metal draw-head made in two parts, as described, spaced apart by filler-blocks and secured together by rivets having its rear end re-enforced with a U-strap, and a trunnion-bearing of unbroken circumference formed in each part, with a knuckle adapted to rotate in such bearings and to engage a locking-pin, substantially as described.

20. In a car-coupler, in combination, a pressed-metal draw-head made in two parts, as described, having its rear end re-enforced with a perforated U-strap adapted for the insertion of a tail-bolt, a knuckle rotating in trunnion-bearings of unbroken circumference formed in each part of the head and adapted to engage a locking-pin, and a pin passing through the axis of the trunnions, securing the parts together, substantially as described.

21. In a car-coupler, in combination, a pressed-metal draw-head made in two parts, as described, having a bearing of unbroken circumference in each part, and a knuckle adapted to rotate in such bearings and to engage a locking-pin having two wings, one engaging the knuckle and the other a proper projection on the draw-head, substantially as described.

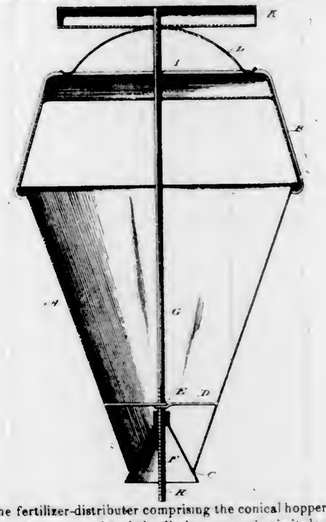
22. In a car-coupler, a pressed-metal draw-head made in two parts, as described, having a bearing of unbroken circumference in each part, and a knuckle, as described, to rotate in such bearings, in combination with a locking-pin having two wings, one adapted to be engaged by the knuckle while closing and the other formed in steps arranged to fall behind and engage with a projection on the draw-head, substantially as described.

23. In a car-coupler, a pressed-metal draw-head such as described, having a bearing of unbroken circumference in each part, and a knuckle arranged to rotate in such bearings between suitable stops limiting its play, in combination with a locking-pin having two wings, one adapted to be engaged by the knuckle while closing, and thus rotate the pin, and the other adapted to be engaged by the knuckle while opening after being lifted out of engagement with a stop on the draw-head, substantially as described.

24. In a car-coupler, a pressed-metal draw-head having bearings in each part and a knuckle arranged to rotate in such bearings, having a wing U, provided with a flange U', adapted to strike the side of the head to limit the play in one direction, a flange U³, engaging the locking-pin, and a stop *k*, limiting its play in the other direction, in combination with a rotating locking-pin having a wing provided with steps successively engaging a projection on the draw-head by the rotation of the pin, substantially as described.

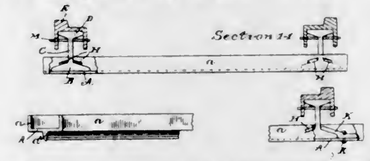
448,004. HAND FERTILIZER-DISTRIBUTER. CHARLES C. BATES and CHARLES D. WREN, Centreville, Miss. Filed Dec. 3, 1890. Serial No. 373,438. (No model.)

Claim.—1. The fertilizer-distributer comprising the conical hopper having the handle at its upper end and the discharge-opening in its lower end, the conical cup arranged in the opening and adapted to close it, the rod attached to the cup and guided in the handle, the cross-bar at the upper end of the rod, and the spring arranged between the handle and the cross-bar, substantially as described.



2. The fertilizer-distributer comprising the conical hopper having the handle at its upper end and the discharge-opening in its lower end, the conical cup arranged in the opening and adapted to close it, the rod screwed in the upper end of the cup, whereby the latter is rendered adjustable, the guide for the rod, the cross-bar at the upper end of the latter, and the spring-bearing between the handle and the cross-bar, substantially as described.

448,005. STREET-RAILWAY TIE. CHARLES A. BEACH, Albany, N. Y. Filed Aug. 14, 1890. Serial No. 362,037. (No model.)



Claim.—1. The combination, with a metallic cross-tie having its open side uppermost, of a rail-chair having a base-flange resting within the channel of the tie and a locking-key passed through an opening formed in the vertical flanges of the tie, substantially as shown and described.

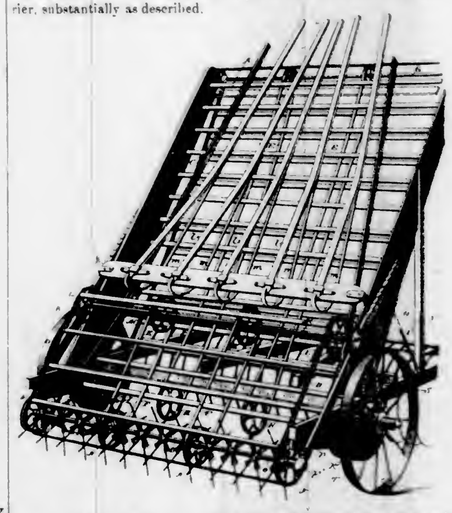
2. The combination, with a metallic cross-tie having its open side uppermost, of a rail-chair having a base-flange resting within the channel of the tie, a locking-key passed through openings formed in the vertical webs of the tie, and a clamping-plate secured to the tie so as to overlap the base-flange of the chair, substantially as shown and described

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448,006. HAY-LOADER. MARSHALL BECK, Chicago, Ill., assignor to the Beck & Hopkins Manufacturing Company, same place. Filed Mar. 25, 1890. Serial No. 345,259. (No model.)

Claim.—1. In a hay-loader, the combination, with the elevating-carrier, the auxiliary carrier, and the ground-wheel, of a master gear-wheel provided with interual and rim cogs and mounted concentrically to the ground-wheel, a pawl-and-ratchet connection between said ground and master gear-wheel, a gear-connection between the internal cogs and the drive-shaft of the elevating-carrier, and a pinion and sprocket-wheel and chain connection between the rim cogs and the power-shaft of the auxiliary carrier, substantially as described.

2. In a hay-loader, the combination, with the main or elevating carrier, the auxiliary carrier, and the ground-wheel, of a master gear-wheel provided with internal and rim cogs and mounted concentrically to the ground-wheel, a pawl-and-ratchet connection between said ground and master gear-wheel, a gear-connection between the internal cogs and the drive-shaft of the elevating-carrier, an adjustable arm mounted concentrically to the master gear-wheel, carrying a stud, a pinion and sprocket-wheel connected and mounted upon said stud, the former meshing with the rim-cogs and the latter having a sprocket-wheel and chain connection with the power-shaft of the auxiliary carrier, substantially as described.



3. In a hay-loader, the combination, with an auxiliary carrier and the upper drive-shaft thereof, of the side hanging arms journaled upon an axis common to said drive-shaft, the lower idle-shaft of said carrier journaled upon said arms, and spring-rods connecting the upper ends of said arms with the frame of the machine, whereby the lower end of said carrier is free to rise over obstructions upon the ground, substantially as described.

4. In a hay-loader, the combination, with an auxiliary carrier and the upper drive-shaft thereof, of the side hanging arms journaled upon an axis common to said drive-shaft, the lower idle-shaft of said carrier journaled upon said arms, and spring-rods connected at one end with the frame of the machine and at their opposite ends adjustably connected with the upper ends of said arms, substantially as described.

5. In a hay-loader, the combination, with an auxiliary carrier and the upper drive-shaft thereof, of the side hanging arms journaled upon an axis common to said drive-shaft, the lower idle-shaft of said carrier, a ball-and-socket connection between said shaft and arms, and spring-rods connecting the upper ends of said arms with the frame of the machine, whereby either end of the shaft may rise over obstructions independent of the other, substantially as described.

6. In a hay-loader, the combination, with a rotatable idle-shaft and a longitudinal series of radially-projecting rake-teeth secured to said shaft, of an endless slatted carrier operating around said shaft upon wheels loosely journaled thereon, the slats of said carrier operating to drive and strip the teeth, substantially as described.

7. In a hay-loader, the combination, with an idle-shaft and a longitudinal series of radially-projecting teeth pivotally secured to said shaft and free to have a partial circumferential movement about the shaft, of an endless slatted carrier operating around said shaft upon wheels loosely journaled thereon, the said slats operating to drive and strip the said teeth, substantially as described.

8. In a hay-loader, the combination, with an auxiliary carrier journaled at its upper end and yieldingly supported at its lower end and the lower idle-shaft of said carrier, of a series of radially-projecting longitudinally-arranged teeth secured upon said shaft, said slats operating to drive and strip said teeth, substantially as described

9. In a hay-loader, the combination, with the main carrier, the auxiliary carrier, and the retaining-slats, of compressing-springs rigidly secured at their upper ends to said slats and having their lower ends free to rise and fall, substantially as described.

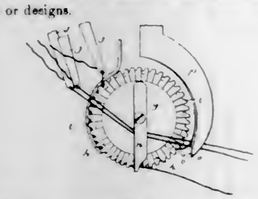
10. In a hay-loader having a dumping-rake pivotally connected to its main frame, the combination, with a wheel mounted upon the journal of said rake and radial projections thereon, of the ground-wheel, a chain or belt connection between said ground-wheel and the wheel upon the journal of the rake, and projections on said chain or belt engaging and tripping the projections on said journal, substantially as described.

11. In a hay-loader having a dumping-rake pivotally connected

to its main frame, the combination, with a flanged belt-wheel rigidly mounted upon the journal of said rake and provided with radial jaws, of a belt connecting one of the ground-wheels with and sliding upon said belt-wheel and trip-rollers or their equivalent upon said belt engaging and tripping said jaws, substantially as described.

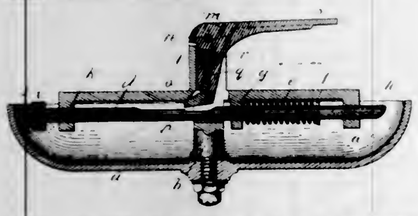
448,007. STRIPING MECHANISM FOR KNITTING-MACHINES. JOHN BRADLEY, North Chelmsford, Mass. Filed Apr. 29, 1890. Serial No. 349,924. (No model.)

Brief.—The machine is intended to knit plush-faced fabrics in varying colors or designs.



Claim.—The combination, with a needle-cylinder and needles, of a filling-wheel adapted to lay a yarn behind certain needles and in front of others, a plurality of yarn-guides, and means for throwing said yarn-guides into and out of action with relation to the filling-wheel and needles, as set forth.

448,008. GONG. CORNELIUS CALLAHAN, Boston, Mass., assignor to the Cornelius Callahan Company, same place. Filed Oct. 9, 1890. Serial No. 367,522. (No model.)



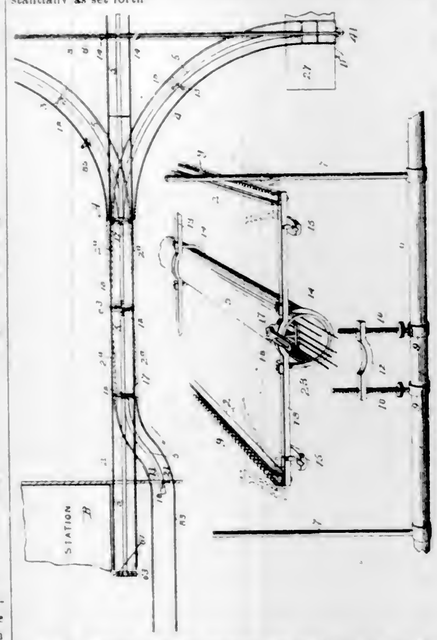
Claim.—In a gong, the combination of a bracket for supporting the gong, a spring-impelled striking-bar having bearings in the bracket, an elbow-lever fulcrumed on the bracket and provided with a pawl or dog adapted to engage the striking-bar, and a spring for moving said elbow-lever in one direction, as set forth.

448,009. DINING-ROOM SERVICE APPARATUS. HENRY W CLAPP, Northampton, Mass. Filed Aug. 18, 1890. Serial No. 362,254. (No model.)

Claim.—1. In a dining-room service apparatus, a platform having a carriage-track thereon, a bracket supporting said platform, a pillar-support for said bracket to which the same is movably attached and on which it and said platform move up and down, a shaft on said support having pulleys fixed thereon, on one of which said bracket is suspended, means, substantially as described, connected with one of said pulleys for rotating said shaft by hand, an elevated track coinciding with the elevated position of said platform and the track thereon extending from said platform to a kitchen-station, and a carriage having spring propelling mechanism, substantially as described, running over said track between said platform and station, combined and operating substantially as set forth.

2. In a dining-room service apparatus, a platform having a carriage-track thereon, a bracket supporting said platform, having a pending ratchet-bar thereon, a pillar-support for said bracket to which the same is movably attached and on which it and said platform move up and down, a spring-catch near the base of said pillar-support for engagement with said ratchet-bar, a shaft on said support having a pulley fixed thereon on which said bracket is suspended, a spring connected to said shaft to retard and to assist in the rotation thereof, an elevated track coinciding with the elevated position of said platform and the track thereon extending from said platform to a kitchen-station, and a carriage having spring-propelling mechanism, substantially as described, running over said track between said platform and station, combined and operating substantially as set forth.

3. In a dining-room service apparatus, a platform having a carriage-track thereon, a bracket supporting said platform, a support for said bracket, consisting of three vertical pillars triangularly arranged and firmly secured at their opposite ends in said room, on which support said bracket and platform move up and down, a spring-catch near the base of said pillar-support for engagement with said ratchet-bar, a shaft on said support having a pulley fixed thereon on which said bracket is suspended, a spring connected to said shaft to retard and to assist in the rotation thereof, an elevated track coinciding with the elevated position of said platform and the track thereon extending from said platform to a kitchen-station, and a carriage having spring propelling mechanism, substantially as described, running over said track between said platform and station, combined and operating substantially as set forth.



4. In a dining-room service apparatus, a platform having a carriage-track thereon, a bracket supporting said platform, a pillar-support for said bracket to which the same is movably attached and on which it and said platform move up and down, an elevated track coinciding with the elevated position of said platform and the track thereon extending from said platform to a kitchen-station, a carriage having spring-propelled mechanism, substantially as described, running over said track between said platform and station and having fixed thereunder a ratchet bar 35 and a pending post 28, said platform having thereon a lever 34 for engagement with said ratchet-bar, two pivoted levers 30, two spring-actuated bolts 31, connected to said levers, a slotted plate 36, and a yoke 29, connected to said levers and engaged by said post, and subsequently by said plate, and the track at the end adjoining said platform, having thereon catches 32 to engage said bolts, substantially as set forth.

5. In a dining-room service apparatus, the movable platform having a carriage-track thereon consisting of rails on which the supporting-wheels of a carriage run and a rack *g* parallel with one of said rails, a permanent track adjoining and extending from said platform to a station removed therefrom, having rails and a rack coinciding with those of said platform, cross-bars on which said rails are supported, a tube extending longitudinally between said rails coextensive therewith, to which said cross-bars are secured, devices for hanging said permanent track-construction in an elevated position, consisting of horizontal and vertical hanging bars and girders, substantially as described, adjustable supporting devices between said hanging bars and tube, consisting of a cross-bar on which the latter rests and vertical screw-posts between said cross and hanging bars, a lever 59, hung in the end of said tube adjoining said platform, and a latch-bar 64 thereon engaging with said lever during the upward movement of the platform, combined with a hand-lever bearing an indicating-letter located at the opposite end of said tube and connected with said lever 59 by a wire extending within said tube, substantially as set forth.

6. In combination, the tube 5, the lever 59, hung therein, the platform D^2, the latch-bar 34, hinged thereon and engaging with said lever during the upward movement of said platform, the lever 61, bearing an indicating character, and a wire extending within said tube and connecting said levers 61 and 59, substantially as set forth.

7. In combination, the platform, the carriage having the ratchet-bar 35 thereunder, the lever 34, pivoted on said platform and having one end for engagement with said bar, the tube 5, the lever 59, pivoted in said tube and having an arm for engagement with the lower end of said lever 34, and a lever 61 at the opposite end of said tube, having a wire connection with said lever 59, substantially as set forth.

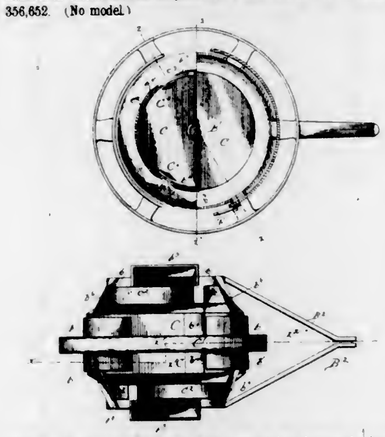
8. In combination, the carriage, a pending switch-post 25, secured under said carriage, the fixed track on which said carriage is propelled having one or more adjacent pivoted switching-sections, fixed cross-bars 13 in said fixed track, one of which adjoins the movable end of said switching-section, having horizontal lips thereon, a cross-bar 16, supporting said movable end of the switching-section of the tracks and resting on said lips, vertical switch-posts 17, each having a bar 23 fixed on its inner end, located in two or more of said fixed cross-bars 13, and extending into the tube 5 of the fixed track and having a rocking motion, a slotted arm 18, fixed on the outer end of each of said posts 17, engaging with one or more of said cross-bars 16, connecting-rods 24 within tube 5, uniting the ends of said bars 23, a bar 22, having a pivotal connection with one of said arms 18, and a vertical switch-lever 21, engaging said bar 22 and itself engaged by said post 25 when a carriage moves thereover, substantially as set forth.

9. In a dining-room service apparatus, a track consisting of parallel rails for a carriage and a rack *g* parallel with said rails, a carriage having wheels for said rails, a swiveling support for each of said wheels, whereby their axes are constantly maintained at right angles to the tracks, and spring propelling mechanism for said carriage, substantially as described, engaging said rack, whereby it is moved over said track, combined and operating substantially as set forth.

10. In a dining-room service apparatus, a track, substantially as described, having a rack *g* near one of the rails thereof, a carriage for said rack having propelling mechanism independent of its bearing-wheels, consisting of a shaft 72, having a gear thereon engaging with said rack, a clutch-ring fixed on said shaft, and a clutch-pinion thereon in which the shaft turns freely, but which has a sliding motion toward and from said ring, a shaft 76, having a gear 74 thereon engaging with said clutch-pinion, a spring engaging said gear 74 and the frame of the carriage, a winding-up crank on shaft 76, and a lever to move said clutch-pinion into engagement with said clutch-ring, combined and operating substantially as set forth.

11. In a dining-room service apparatus, a bill-of-fare stand consisting of a series of vertical sections *s*, having recesses *x* therebetween to receive said bills and pins *c*, on which the same are attached, said stand having a base *o* and head *y*, the latter bearing indicating-numbers thereon corresponding with numbers on said bills, combined with the table 27 of said apparatus and suitably-numbered plates thereon corresponding with the numbers borne by said bills of fare, substantially as set forth.

448,010. COMBINED FERTILIZER-DISTRIBUTER AND SEEDER. SAMUEL E. CLARKSON, Philadelphia, Pa. Filed June 25, 1890. Serial No. 356,652. (No model.)



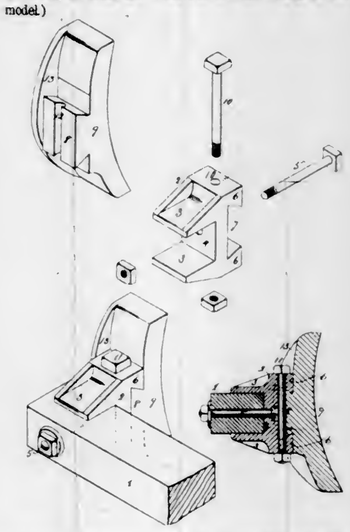
Claim.—1. The combination, with a revolving drum, of a hopper on each side thereof forming supports for the said drum, and annular flanges projecting inward from each of the said hoppers and having an opening between their lower ends, as described.

2. The combination, with an apertured revolving drum, of a rim projecting from the periphery thereof, hoppers carrying the said drum and located upon both sides thereof, and annular flanges projecting inward from the said hoppers and partially encircling the said drum, as described.

3. The combination, with a revolving drum, of a circular hopper on each side thereof and forming a support therefor, the said hoppers having apertures in their bases, annular flanges upon the sides of the drum revolving upon the outside of the hoppers and having openings therein, and projections upon the sides of the said drum opposite the said openings and revolving within the said hoppers, as described.

4. The combination, with a revolving apertured drum, of a rim projecting from the periphery thereof, circular hoppers on each side of the said drum and having apertures in their bases, annular flanges projecting inward from the said hoppers and partially encircling the said drum, annular flanges upon the sides of the said drum revolving upon the outside of the said hoppers and having openings therein, and projections upon the sides of the drum opposite the said openings and revolving within the said hoppers, as described.

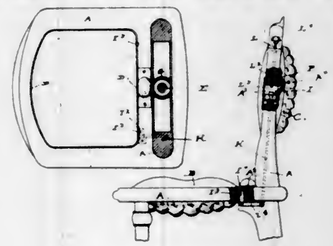
448,011. CAR-BRAKE SHOE. CHARLES H. EMERSON, Mason City, Iowa, assignor to Charles H. Ackert, Marshalltown, Iowa, and Robert W. Green, St. Louis, Mo. Filed Dec. 30, 1890. Serial No. 376,255. (No model.)



Claim.—1. The combination of a brake-shoe bracket adapted for attachment to a car-brake bar, a sole-plate having slip-joint connection therewith, substantially as set forth, and the side rib 13, constructed and adapted to operate substantially as set forth.

2. The combination, in a brake-shoe, of a bracket 2, adapted for attachment to a car-brake bar 1, and a sole-plate having sliding dovetail connection with the said bracket, and having a side rib 13 extending along one side of the bracket, substantially as and for the purpose set forth.

448,012. COIN-OPERATED REVERSIBLE-SEAT CHAIR. LOUIS M. ERB, San Francisco, Cal., assignor to the Reversible Chair Company, of California. Filed Mar. 19, 1890. Serial No. 344,507. (No model.)



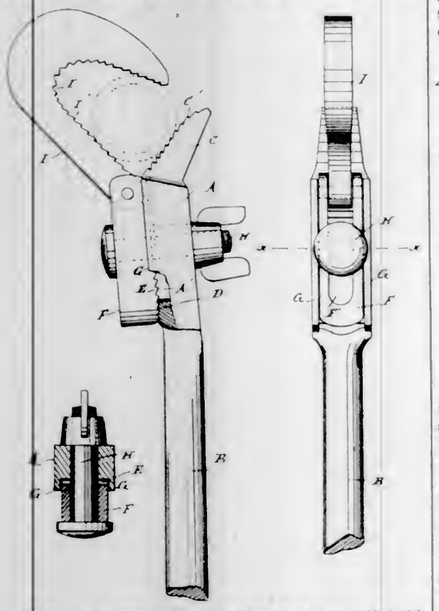
Claim.—1. In combination with a chair having a revolving seat and a revolving back covered or cushioned on one side and uncovered or plain on the reverse side and connected together to revolve simultaneously, a spring-operated shaft which is arranged to be wound up or put in a state of tension by turning the said revolving part in one direction, and coin-controlled locking mechanism adapted to hold the revolving parts in position against the force of the spring and to be operated or acted on by an inserted coin to release said parts and permit the spring-shaft to turn them, substantially as herein set forth.

2. The combination of a suitable frame, a revolving seat having one side covered or cushioned and the reverse side uncovered or plain, a spring operated shaft which is arranged to be wound up or put in tension by turning the said seat in one direction and to revolve the seat in the opposite direction when released, a locking-catch which is adapted to hold the seat in one position against the force of the spring when in tension, and mechanism adapted to be controlled by an inserted coin arranged to operate said locking device and release the seat, substantially as set forth.

3. In an opera-chair having a reversible seat and a reversible back to present either cushioned or uncushioned surfaces to the front, the combination of a spring adapted to be wound up or put in tension by movement of said parts on their centers in one direction and by reaction to bring the said parts back to reverse position, and locking mechanism consisting, essentially, of latches I I*, catches I³, connecting-rod K, push-rod L, recess *m*, and coin-channel P, arranged for operation as set forth.

4. In a reversible seat and back chair, the combination of locking-latches I I*, catches I³, connecting-rod K, push-rod L, and coin-chamber A³, having a slit and a channel or guide which is adapted to deliver a coin between the push-rod and the latch, for operation as set forth.

448,013. WRENCH. BENJAMIN B. FARRIS, Rocky Ford, Ga. Filed Dec. 13, 1890. Serial No. 374,541. (No model.)



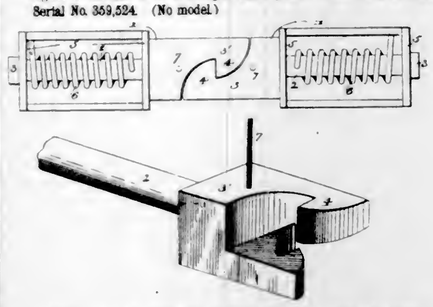
Claim.—1. A wrench comprising a handled stock provided with an angular jaw, a head fitted to slide on the said stock, a bolt for fastening the said head to the stock, and a hooked jaw pivoted on the said head, substantially as described.

2. In a wrench, the combination, with a handled stock provided with an angular jaw and a longitudinal slot, of a head fitted to slide in the said stock and provided with a slot in line with the slot of the stock, a bolt engaging the said head and stock and passing through the slots therein, and a hinged jaw pivoted on the said head, substantially as shown and described.

3. In a wrench, the combination, with a stock provided with an annular jaw and parallel flanges, of a head pivoted to slide between the said flanges, a bolt for locking the said head to the said stock and passing through slots in the said head and stock, and a hooked jaw pivoted on the said head, substantially as shown and described.

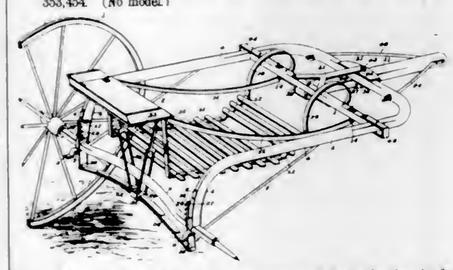
4. In a wrench, the combination, with a stock provided with an annular jaw, parallel flanges, and serrations between the said flanges, of a head provided with serrations adapted to engage the serrations on the stock, a bolt passing through slots in the said head and stock and adapted to lock the two together, and a hooked jaw pivoted on the said head, substantially as shown and described.

448,014. CAR-COUPLING. JOSEPH M. FISK, Greenfield, Ind., assignor of one-half to W. G. Bridges, same place. Filed July 22, 1890. Serial No. 359,524. (No model.)



Claim.—In a car-coupling, the combination, with a draw-head, of an oscillatory cylindrical bar mounted therein, provided with a square coupling-head having outwardly-projecting hooks with curved ends at two opposite diagonal corners, and having their outer faces curved to correspond with the curved ends of the hooks, a vertical arm or rod for actuating said coupling-head, and a coiled spring encircling the draw-bar, substantially as described.

448,015. TWO-WHEELED VEHICLE. CHARLES C. FRICK and NIMROD P. WOOD, Blue Springs, Mo. Filed May 28, 1890. Serial No. 353,454. (No model.)



Claim.—1. In a vehicle, the combination of the axle, the draft-frame secured to the axle, the seat, the bottom bars 10, secured to the seat and having their front ends formed into springs and attached to the front of the frame, the spring side bars rigidly secured to the seat and flexibly connected to the frame, the leaf-spring suspended below the axle, and the standards having their upper ends secured to the seat and their lower ends hinged to the leaf-spring transversely of the latter and provided with longitudinal openings to receive the axle, whereby the body of the vehicle will have lateral swing, substantially as described.

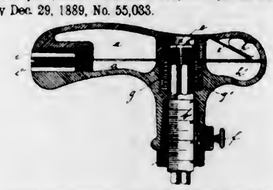
2. In a vehicle, the combination of the axle, the draft-frame, the seat arranged above the axle, the bottom bars 10, having their front ends secured to the lower face of the cross-bar of the frame and curved up over the same to form a spring and inclined at 12, and then extending rearwardly in a horizontal plane to the axle, and provided with the vertical portions connected by the integral cross-bar and secured to the seat, substantially as described.

3. In a vehicle, the combination of the draft-frame, the cross-bar 5, connecting the sides of the frame near the front end, the plates 35 and 36, secured to the front of the frame and provided with registering perforations, the metallic straps or keepers 46, serving as a means of attaching the cross-bar to the frame and projecting out beyond the sides of the frame to form loops to receive the ends of the shafts, the coupling-pin for the plates 35 and 36, and the keeper 39 on the cross-bar, whereby the frame is adapted to receive either a tongue or shafts, substantially as described.

4. In a vehicle, the combination of the axle, the draft-frame, the seat arranged above the axle, the bottom bars 10, having their front ends secured to the lower face of the cross-bar of the frame and curved up over the same to form springs and inclined at 12, and then extending rearwardly in a horizontal plane to the axle, and provided with the vertical portions connected by the integral cross-bar and secured to the seat, and the side bars 15, connected to the front of the frame and having their rear ends adjustably secured to the seat, substantially as described.

5. In a two-wheeled vehicle, the axle, the spring suspended therefrom, the seat, the standards 20, secured to the seat and hinged to the spring, so as to have lateral movement, the bottom bars 10 of the foot-board, having rear ends rigidly connected to the seat and their front ends formed into springs attached at their front ends to the frame, and the spring side bars 15, rigidly connected to the seat and flexibly connected at their front ends to the frame, substantially as described.

448,016. COMBINATION CANE AND SLIDE-GAGE. ROBERT FUCHS, Biberach, Germany, assignor to William Dieterich, New York, N. Y. Filed Sept. 1, 1890. Serial No. 363,594. (No model.) Patented in Germany Dec. 29, 1889, No. 55,033.



Claim.—1 The combination, with a hollow cane and a sliding gage-tube therein, of a handle formed of two sections, one of which is secured to the cane and the other to the sliding gage-tube, means for locking the gage-tube in place in the cane, and pointers adapted to be screwed into the ends of the handle-sections or stored away in the gage-tube, substantially as set forth.

2. The combination, with a hollow cane and a sliding gage-tube therein, of a handle formed of two sections, one of which is secured to the cane and the other to the sliding tube therein, a binding-screw for locking the tube in place in the cane, and pointers adapted to be screwed into the ends of the handle-sections, substantially as set forth.

3. The combination, with a hollow cane and a sliding gage-tube therein, of a handle composed of two sections, one of which is secured to the cane and the other to the sliding tube therein, a spring surrounding said sliding tube and adapted to press the same outward, a screw for locking the sliding tube in place in the hollow cane, and detachable pointers adapted to be secured in the hollow sections, substantially as set forth.

4. The combination, with a hollow cane and a sliding gage-tube therein, of a handle formed of two sections, one of which is secured to the cane and the other to the tube, a spring-actuated gate hinged to the handle-section of the gage-tube, and a plate or abutment on the handle-section of the cane, substantially as set forth.

448,017. CUTTING-TOOL. RICHARD GÄBEL, Dresden, Germany. Filed Mar. 21, 1890. Serial No. 344,841. (No model.) Patented in Germany Aug. 4, 1888, No. 46,961.

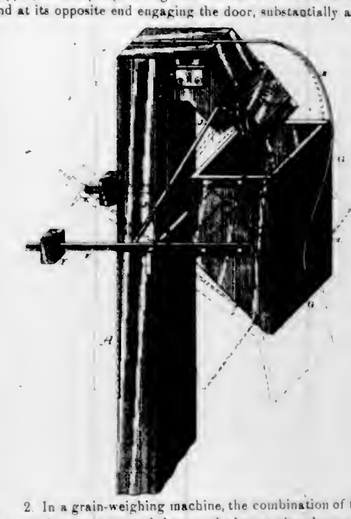


Claim.—1. A cutting-tool having an internally-threaded open rear end and a centrally-apertured front and provided at its sides near its front with discharge-openings, and centrally-apertured cutting and centering plates held spaced apart at its front, substantially as shown and described.

2. In a cutting-tool, the combination, with the body A, open at its rear and apertured at its sides and front, of the plate C, having a central aperture and cutting-edges on opposite sides of said aperture, the plate D, bulged at its front and having a central aperture and held in front of the plate C, and the annular cover B, bearing on the plate D, substantially as shown and described.

448,018. AUTOMATIC MEASURING-MACHINE. JOHN W. GARDE, Marea, Ill. Filed Oct. 17, 1890. Serial No. 368,378. (No model.)

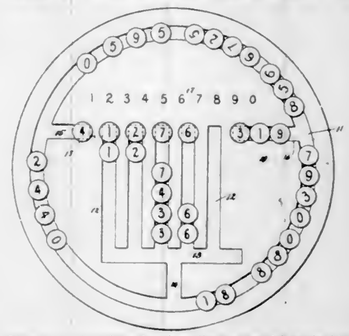
Claim.—1. In a weighing-machine, the combination of the elevator having a pivotal support, the beams resting upon the support, the hopper secured to the outer end of the beams, the weights upon the inner ends of the beams, a door pivoted in the front end of the hopper, and a spring having one end secured to a stationary support and at its opposite end engaging the door, substantially as shown.



2. In a grain-weighing machine, the combination of the elevator, a pivotal support secured thereto, the beams placed upon the support, the weights placed upon one end of the beams, and the hopper secured to their opposite ends, a cut-off pivoted at the mouth of the elevator, a rod connecting the cut-off and one of the beams in the rear of their pivotal point, a door pivoted in the front end of the hopper, and a spring which is connected at one end to a stationary support and has its opposite end resting against the door below the pivotal point when the hopper is in a vertical position and above the pivotal point when the hopper is tilted, for the purpose shown and described

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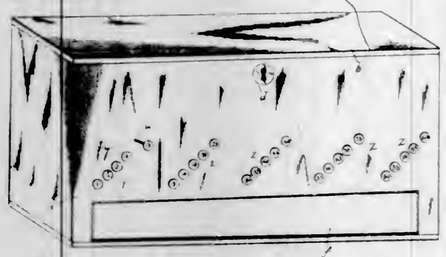
448,019. EDUCATIONAL APPLIANCE. ADOLPH F. C. GARBEN, Hoboken, N. J. Filed Apr. 4, 1890. Serial No. 346,563. (No model.)



Claim.—1. An educational appliance or arithmetical board comprising a board provided with a series of parallel vertical channels 12, closed at their upper ends, a transverse channel connecting their lower ends, an outer storage-channel 11, inclosing the channels 12 13, and a channel 14, connecting said channels 11 14, and the numeral-buttons sliding in said channels, substantially as set forth.

2. An educational appliance or arithmetical board comprising the board 10, having parallel vertical channels 12, closed at their upper ends, a transverse channel 13, connecting the lower ends of said channels, a storage-channel 11, inclosing said channels 12 13 and connected with the latter by a channel 14, and the opposite transverse short divisor and quotient channels 15 and 16, extending inwardly from the said channel 11 toward but not connected with the left and right channels of the series 12, and the numeral-blocks movable in said channels, substantially as set forth.

448,020. CASH-REGISTER. WILLARD H. GILMAN, Boston, Mass., assignor to Arthur William Tice, same place, and Richard S. Dodge and Richard Nagle, Lynn, Mass. Filed Apr. 23, 1890. Serial No. 349,119. (No model.)



Claim.—1. In a cash-register, a case, a series of sliding keys therein, a rotary shaft bearing a friction-wheel and pulleys, respectively connected with said keys, and an indicator-tape in engagement with said wheel and adapted to be moved thereby as the shaft is rotated by the withdrawal of one of said keys, substantially as described.

2. In a cash-register, the combination of a case, a sectional shaft mounted therein, graded pulleys arranged in series on each shaft-section, whereby the shaft may be rotated to move the tape as said keys are withdrawn, sliding keys mounted in the case-front and respectively connected with said pulleys, a friction-wheel on each shaft-section, and an indicator-tape in engagement with each wheel, substantially as set forth.

3. The combination of a case provided with a spring-actuated money-drawer, a pivoted plate engaging a locking-pawl on said drawer, sliding keys in the case, catches on said plate, and inclined bosses on said keys for engaging said catches and elevating the plate to release said drawer, substantially as set forth.

4. The combination of a case, a rotary shaft, a series of graded pulleys mounted loosely thereon, pallets on said pulleys engaging ratchets on said shaft, a series of sliding keys connected with said pulleys and rotating the shaft when withdrawn, spring-actuated cords on said pulleys for returning them when the key is released, a friction-wheel, and a recording-tape, substantially as and for the purpose set forth.

5. The combination of a case provided with a spring-actuated money-drawer with a sliding key in said case actuating a drawer-releasing mechanism when withdrawn, a rotary shaft actuated by said key, a friction-wheel on said shaft, and a recording-tape moved by said wheel, substantially as described.

6. In a cash-register, a case, longitudinally-sliding keys mounted in diagonally-arranged series therein, a shaft bearing a friction-wheel and a series of loose graded pulleys connected by cords with said keys, pallets on the pulleys engaging ratchets on the shaft, springs secured to the case and connected by cords with the pulleys, and a recording-tape in engagement with said wheel, substantially as set forth.

7. In a cash-register, the combination of a case, a shaft bearing an indicator-wheel and a series of loose pulleys, sliding keys actuating said pulleys when withdrawn, mechanism for rotating the shaft as the pulleys are moved, and springs for returning said pulleys and keys, substantially as described.

8. In a cash-register, a case, a shaft bearing an indicator-wheel and series of loose pulleys, mechanism for rotating the shaft when the pulleys are moved in one direction, springs for returning the pulleys when released, a spring-actuated money-drawer, a locking mechanism therefor, sliding keys connected with said pulleys and respectively adapted to conjointly rotate said shaft and release said locking mechanism when withdrawn, and catches on said mechanism for independently locking said keys, substantially as described.

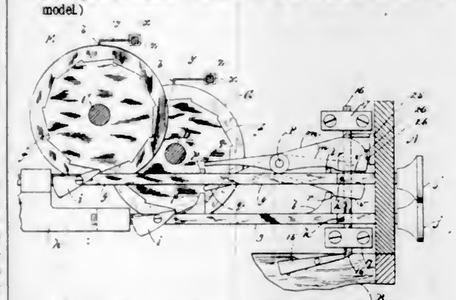
9. In a cash-register, the case A, provided with the spring-actuated drawer *f*, in combination with the sliding keys *w*, having inclined bosses 19, the hinged plate H, provided with catches 20, and the pawl 18, engaging said plate to lock the drawer, substantially as described.

10. The combination of case provided with a cash-drawer, sliding keys arranged in series and independently actuating a drawer-releasing mechanism when withdrawn, a rotary shaft actuated by said keys, an indicator wheel, a spaced and numbered tape, an index-finger, catches for locking the keys when withdrawn, and springs for returning them when released, substantially as and for the purpose set forth.

11. The combination of the case A, provided with the drawer *f*, the pivoted plate H for locking said drawer, and the keys *w*, actuating an indicating mechanism and provided with projections engaging catches on said plate when the keys are withdrawn, substantially as and for the purpose set forth.

12. The combination of the case A, the sectional shaft *h*, each shaft-section bearing an indicating-wheel and a series of graded loose pulleys, the keys *w*, arranged in series and connected with said pulleys, mechanism connecting the pulleys and shaft-sections for rotating said sections as the keys are withdrawn, the springs 23 and cords 24 for reciprocating the pulleys, and means for independently locking the keys when drawn outward.

448,021. CASH-REGISTER. WILLARD H. GILMAN, Boston, Mass., assignor to Richard S. Dodge and Arthur W. Tice, same place, and Richard Nagle, Lynn, Mass. Filed June 11, 1890. Serial No. 355,000. (No model.)



Claim.—1. The combination of a case, a series of sliding keys, a series of locking-pawls actuated by said keys, a money-drawer, and a drawer-locking mechanism adapted to be released by said pawls, substantially as described.

2. The combination of a case, a rotary register-wheel having its face divided into numbered spaces by peripheral lines, and short diagonal partitions on said face at a given point on its periphery, and a sliding index-finger adapted to be engaged by said partitions to shift it into a succeeding division at each complete revolution of said wheel, substantially as described.

3. The case, drawer, and locking mechanism, in combination with the sliding keys *g*, provided with the studs or projections *p l*, and the pawls *m*, mounted on the shaft P, substantially as described.

4. The case, drawer, and locking mechanism, in combination with the sliding keys *g*, provided with the studs *p l*, the pawls *m*, the wheels E G F H, and actuating mechanism, substantially as described.

5. The rotary register-wheels provided with numbered spaces and diagonal partitions, in combination with the sliding index-fingers *y*, the keys *g*, provided with pawls i, engaging ratchets on said wheels, and the locking-pawls *m*, arranged to operate substantially as set forth.

448,022. BALE-TIE FASTENER. DAVID W. GISH, San José, Cal. Filed July 25, 1890. Serial No. 359,932. (No model.)

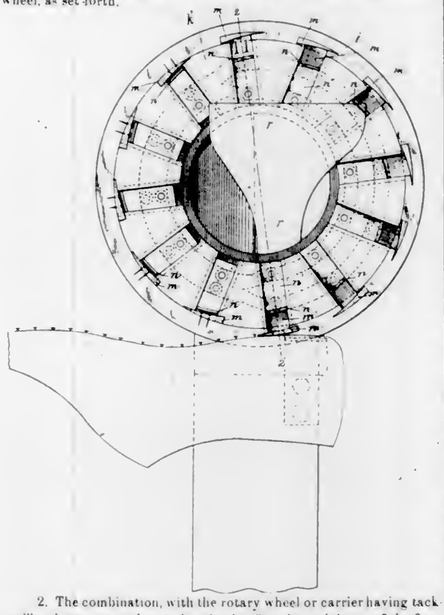


Claim.—1. The bale-tie fastening consisting of the tie having a loop or eye at each end, one of said loops being adapted to pass into the other, and the locking-pin having a crook at its middle, said pin passing across one of said loops or eyes and through the other, and its crook engaging said last-named loop or eye, substantially as herein described.

2. The bale-tie fastening consisting of the tie having a loop or eye at each end and the locking-pin having a crook at its middle and downwardly-bent ends, said pin passing across one of said loops or eyes and through the other, and its crook engaging said last-named loop or eye, substantially as herein described.

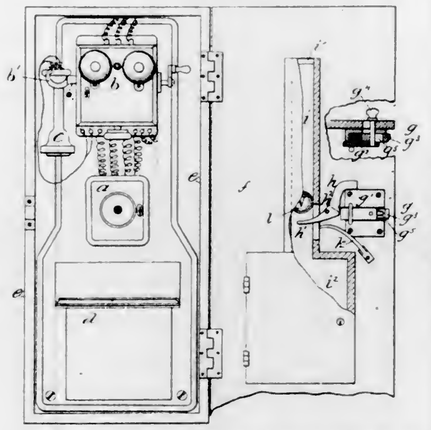
448,023. MACHINE FOR EXTRACTING LASTING-TACKS. WILLIAM GORDON, Boston, Mass. Filed July 5, 1890. Serial No. 357,792. (No model.)

Claim.—1. A rotary wheel or carrier having a series of tack-extracting jaws arranged on and projecting from the periphery of the wheel, as set forth.



2. The combination, with the rotary wheel or carrier having tack-pulling jaws arranged on and projecting from its periphery, of the fixed rest or finger arranged to support the upper near the point from which the tacks are extracted, as set forth.

448,024. TELEPHONE-TOLL APPARATUS. WILLIAM GRAY, Hartford, Conn., assignor of one-half to Charles Soby, same place. Filed Apr. 5, 1888. Serial No. 269,771. (No model.)



Claim.—The combination of the box *e*, a door hinged thereto provided with a coin-slot, a lock having a sliding bolt, and a pivoted tumbler *h* to engage the end of the bolt and hold it locked, and the other end of the tumbler projected into the coin-slot of the door and adapted to be engaged by a passing coin, whereby the tumbler is disengaged from the end of the bolt, substantially as and for the purpose specified.

448,025. FIFTH-WHEEL. JAMES H. GRESSON, Knapp, Wis. Filed May 15, 1889. Renewed Nov. 24, 1890. Serial No. 372,447. (No model.)

Claim.—1. The combination, with an annular coupling-block affixed to the axle and provided with an annular plate which projects inward beyond the interior of the block, of the revoluble head having the bolster attached thereto and provided at and near its lower end with upper and lower parallel flanges, which bear, respectively, on the upper and lower sides of the said annular plate, and at its upper end with a third flange for securing the block to the bolster, substantially as specified.

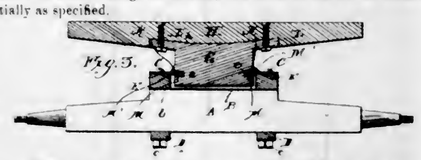


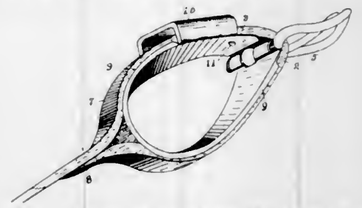
Fig. 5.

2. The combination, with an annular block affixed to the axle, of the annular plate on the upper side of the said block, formed in semicircular sections and secured to the block by bolts, and the revoluble head having the bolster attached thereto and provided with parallel laterally-extending flanges M M′ at and near its lower end, which bear, respectively, on the lower and upper sides of the said annular plate, substantially as specified.

3. The combination of the annular coupling-block affixed to the axle and provided on its upper side with T-shaped clips F F, the annular plate formed in semicircular sections which fit at their ends under the arms of the said clips, and the revoluble head having the bolster attached thereto and provided with upper and lower flanges to bear on the upper and lower sides of the plate, substantially as specified.

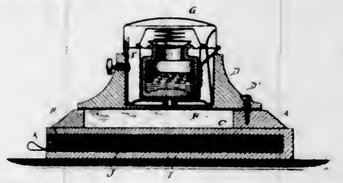
4. The combination, with the axle, of the annular coupling-block provided with a transverse groove in its under side fitting over the axle, the annular plate on the upper side of the said block, the vertical bolts extending through the plate and the block and secured at their lower ends to clips which bear against the under side of the axle, and the revoluble head having the bolster attached thereto and provided with upper and lower flanges which bear on the upper and lower sides of the annular plate, substantially as and for the purpose specified.

448,026. HARNESS-TUG. DANIEL F. GROUT, Montpelier, Vt. Filed Sept. 10, 1890. Serial No. 364,516. (No model.)



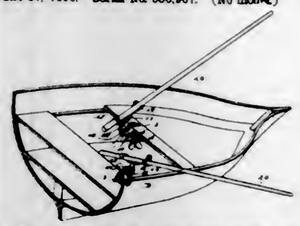
Claim.—A leather tug having a metal lining open at the top and slotted at one of its upper free ends to form fingers 6, and having said fingers bent about the buckle-frame, one on each side of the tongue, the latter projecting through the tug, said lining extending around the tug with its other free end fastened to the leather near the buckle by a rivet passing through its end and through the leather, and having its edges turned down upon the leather, except near the loop and buckle, substantially as set forth.

448,027. COMBINED INKSTAND, RECEPTACLE, AND PAD-HOLDER. JOSEPH C. HACKER, Brooklyn, N. Y. Filed Aug. 26, 1890. Serial No. 363,086. (No model.)



Claim.—The combination, with a base having compartments formed in its top and a recess in its side, of a cover pivoted on the base and adapted to cover and close said compartments, an inkstand in said cover, and a removable paper-holder in the recess in the base, substantially as set forth.

448,028. FISHING-ROD SUPPORT. SHARON HALL, Albany, N. Y. Filed June 27, 1890. Serial No. 356,967. (No model.)



Claim.—The herein-described fishing-rod holder, the same consisting of the U-shaped clamp-yoke having a clamping-screw and a centrally-perforated ratchet-disk, a similar ratchet-disk centrally perforated and meshing with the disk of the clamp and provided upon its rear side with opposite perforated ears, a screw-eye passed through the perforations of the two disks, a nut for the same, and a Y-shaped yoke or rod holder having oppositely-curved terminals and swiveled in the ears and screw and adjustable by the latter, substantially as specified.

448,029. RAIL-COUPLING FOR IRON FENCES. CHRISTIAN HARTKA, Wichita, Kans. Filed Dec. 31, 1889. Renewed Feb. 9, 1891. Serial No. 380,778. (No model.)



Claim.—1. The fence-rail coupling described, consisting of the head-block D, provided with the vertical post-picket hole *a*, the horizontal screw-threaded hole *a'*, the shoulder P, and the arms D' D', respectively provided with the studs a^3 a^3, the cap-plate B, provided with corresponding holes and with the flange-hook *z*, and the screw *d*, substantially as and for the purpose described.

2. The combination, with the fence-rails having the slots S, the post-picket *e*, and the brace E, of the head-block D, provided with the vertical hole *a*, the horizontal screw-threaded hole *a'*, the shoulder P, and the opposite side arms D' D', respectively provided with the studs a^3 a^3, the cap-plate B, provided with corresponding holes and with the flange-hook *z*, the screw *d*, and the lock-nut *d'*, substantially as and for the purpose specified.

3. The fence-rail coupling consisting of the head-block D, provided with the opposite extending studded side arms and secured to the post-picket, and the cap-plate B, seated upon and secured to the head-block in the manner described, whereby the fence-rails are held from vertical or lateral movement and permitted a longitudinal movement the limit of their slot, substantially as and for the purpose specified.

4. The combination, with the slotted fence-rails R R and the flanged cap-plate B, of the head-block D, provided with and studded opposite side arms D' D', less in width and on a lower plane than the upper surface of the head-block, and the means for securing the cap-plate upon the head-block, substantially as and for the purpose set forth.

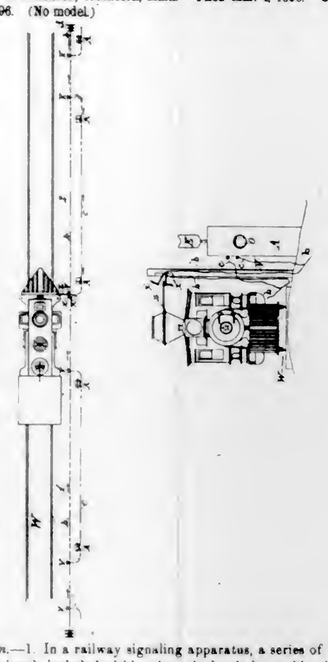
5. The combination, with the detachable head-block D, provided with the studded arms D' D' and shouldered at the junction of the arms, of the cap-plate B, arranged upon the head-block with its end portions overhanging said arms, and the slotted fence-rails R R, respectively arranged between said arms and cap-plate, substantially as set forth.

448,030. DRAFT-BAIL. ZACHARIAH T. HARMISH, Water Street, Pa. Filed Apr. 3, 1890. Serial No. 346,499. (No model.)



Claim.—The combination, with the plow-beam, a U-shaped frame bolted to the end thereof, a plate mounted for sliding in the frame, a bolt swiveled loosely in the end of the frame and having its outer end bent only at one side of its axial center to form a hook, thus forming a seat for a connecting device at one side of the axial center of the bolt, and having a stop arranged in rear of the plate and a spring interposed between the plate and end of the frame, of a tree, a D-shaped yoke connected to the tree, and a ring loosely engaging the yoke, said ring and yoke being adapted for separate connection with the hook of the bolt, substantially as specified.

448,031. ELECTRIC RAILWAY SIGNALING APPARATUS. EUGENE L. HARRISON, Crookston, Minn. Filed Mar. 4, 1890. Serial No. 342,596. (No model.)



Claim.—1. In a railway signaling apparatus, a series of electro-magnetic signals included within a branch circuit, in combination with a main circuit provided with opening and closing jaws located at intervals along the circuit and a moving object adapted to traverse a contiguous track and to actuate the jaws, in the manner and for the purpose substantially as described.

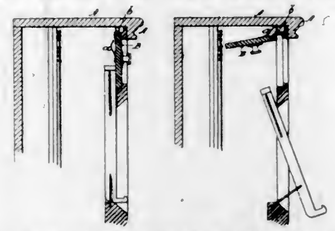
2. In a railway signaling apparatus, a main circuit provided with opening and closing devices arranged therein and branch circuits connected therewith, in combination with an electro-magnetic signaling mechanism consisting of an electro-magnet, a trip actuated by said magnet, a rotary spindle normally held in check by said trip, clock mechanism for actuating the spindle, and an auxiliary signal arranged to show when said clock mechanism needs rewinding, as and for the purpose substantially as described.

3. The combination, in an electric signaling apparatus for railways, of a main circuit running contiguous to the track, opening and closing devices arranged within the circuit, branch circuits having electro-magnetic signals located at the beginning and ending of each, and a moving object provided with an arm arranged to actuate the opening and closing devices, as and for the purpose substantially as described.

4. In an electric signaling apparatus, a main circuit containing a series of jaws through which the current passes, posts or suitable supports for said jaws, branch circuits containing electro-magnetic signals actuated by the opening and closing of the jaws, and a moving object adapted to open said jaws, in the manner and for the purpose substantially as described.

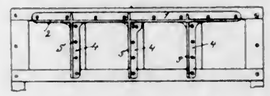
5. In an electric signaling apparatus, the combination, with a main circuit provided with opening and closing devices, of a series of branch circuits containing electro-magnetic signaling devices and an opening device located upon the engine or train, whereby the current will be diverted from the main line to each branch circuit whenever the jaws are actuated in the manner and for the purpose described.

448,032. UPRIGHT-PIANO CASE. AZARIAH H. HASTINGS, New York, N. Y. Filed July 29, 1890. Serial No. 360,265. (No model.)



Claim.—In an upright-piano case, a sound-deflector hinged to the front of the piano-frame and adapted to be moved laterally thereof, in combination with a spring-stop arranged to automatically control the swing-panel forming the sound-deflector and retain the same in its open position, substantially as described, for the purposes set forth.

448,033. KEY-BOTTOM SUPPORT. AZARIAH H. HASTINGS, New York, N. Y. Filed Aug. 22, 1890. Serial No. 362,720. (No model.)



Claim.—1. In a metal support for the key-bottoms of piano-fortes, a front rail and a central cross-support, substantially as specified.

2. In a metal support for the key-bottoms of piano-fortes, a front rail and a central cross-support, and means for retaining the spring for holding the under panel of the case cast integral therewith, substantially as specified.

3. In a metal support for the key-bottoms of piano-fortes, a front rail and a central cross-support, both provided with strengthening ribs or projections, and means for retaining the spring for holding the under panel of the case cast integral therewith, substantially as specified.

4. In a metal key-bottom support for piano-fortes, a skeleton frame conforming to the wooden key-bottom to which it is attached, substantially as specified.

5. In a metal key-bottom support for piano-fortes, front and back rails connected by one or more cross-supports and means for retaining the spring for holding the under panel of the case, the pedal attachment and the trap-levers formed in one piece, substantially as specified.

6. In a metal key-bottom support for piano-fortes, front and back rails connected by one or more cross-supports, all provided with strengthening ribs or projections, and means for retaining the spring for holding the under panel of the case, the pedal attachment and the trap-levers formed in one piece, substantially as described.

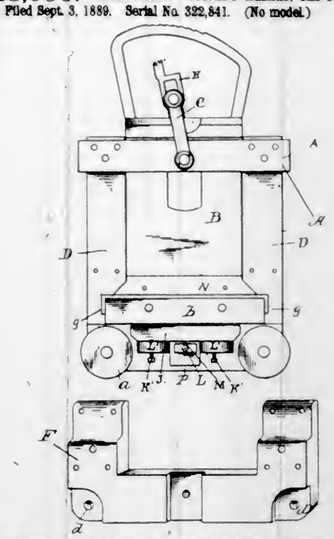
448,034. METAL BOX. CHARLES J. HAUCK, Jr., Brooklyn, N. Y. Filed Jan. 3, 1891. Serial No. 376,636. (No model.)



Claim.—1. The combination, with the box-body A, having the two opposite pivots *b b*, of the two semi-lids B C, mounted on the pivots to swing in opposite directions and having their lower edges *c* extending round the box-body and coming to rest against the opposite sides of such box-body when the lids are opened, substantially as described.

2. The combination, with the box-body A, having the two opposite pivots *b b*, of the semi-lids B C, one of which is mounted at its lower edge on the pivots and the other one provided with the overhanging flange *b*, having its lower ends mounted on the pivots, said semi-lids having divergent lower edges *c*, extending round the box-body and coming to rest against opposite sides of such body when the lids are opened, substantially as described.

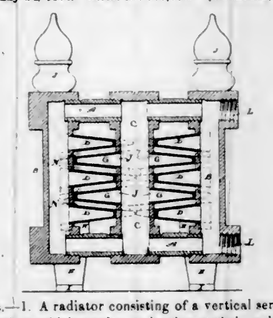
448,035. CABLE-GRIP. CLEMENT HAZARD, San Francisco, Cal. Filed Sept. 3, 1889. Serial No. 322,841. (No model.)



Claim.—1. In a cable-grip, substantially as described, the combination, with the main frame comprising the vertical side stiles and the upper and lower horizontal cross-bars, the lower cable-gripping die adjustably mounted on the lower cross-bar of the frame, and the friction-pulleys mounted on said cross-bar, of the movable plate B, provided adjacent to its lower end on both of its sides with strengthening-plates, one of which has its ends extending over the side stiles to prevent a displacement of the plate, the transverse bar G, attached to the other strengthening-plate and extending over the vertical branches of the lower bar F for a similar purpose, the cable-grip connected to one of the lower transverse strengthening-plates, and a means, substantially as described, for raising and lowering the said movable plate and its cable-gripping die, substantially as specified.

2. The combination, with a movable plate vertically adjustable in a frame, substantially as described, and having a horizontal cable-gripping die at its lower end, of the lower cable-gripping die having the depending vertically-slotted branch, the adjusting-screw taking through the vertical slot in the said depending branch to fasten the same upon one of the lower horizontal bars of the frame, and the platform-lugs attached to said bar of the frame and having vertical screw-threaded apertures, and the screws or bolts taking through said apertures and bearing upon the lower sides of the adjustable die adjacent to the ends thereof, all adapted to operate substantially as specified

448,036. RADIATOR. HENRY N. HEMINGWAY, Auburn, N. Y. Filed May 24, 1890. Serial No. 353,064. (No model.)



Claim.—1. A radiator consisting of a vertical series of flat horizontal chambers which overlap each other at their ends and separated a suitable distance for the circulation of air, vertical pipes which pass through and support the said chambers, and horizontal pipes which connect the said vertical pipes, substantially as shown and described.

2. A radiator consisting of a central vertical series of diamond-shaped chambers, a vertical pipe which passes through them, a series

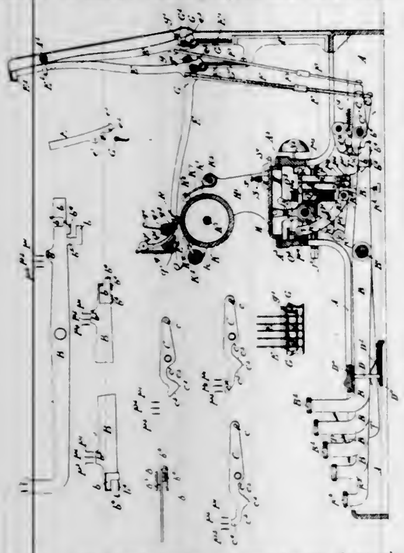
of chambers which are triangular in cross-section, which extend between and overlap the edges of the diamond-shaped chambers, vertical pipes connected to the outer edges of the triangular chambers, and horizontal pipes which connect the vertical pipes, substantially as specified.

3. A radiator consisting of a vertical series of diamond-shaped chambers in cross-section, a pipe which passes vertically through the center of said chambers, horizontal pipes connected with the said central vertical pipe, two end vertical pipes connected with the outer ends of the horizontal pipes, and chambers which are triangular in cross-section, which are secured at their outer edges to the said end pipes, and their inner edges extending beyond the central vertical pipe provided with a cut-away portion for the said pipe, substantially as specified.

4. The combination, with a radiator composed of a central vertical series of horizontal chambers and vertical and horizontal pipes connecting and supporting them, of hollow feet connected to the outer corners of the lower chambers and connected therewith and the wooden blocks placed in the lower ends of the feet, substantially as shown and described.

5. The combination, with a radiator having vertical and horizontal pipes and a series of horizontal chambers connected between their edges to the said vertical pipes and separated from each other, of a foot-rest consisting of a V-shaped frame having its ends provided with hooks adapted to catch behind the vertical pipes and projections a suitable distance from its ends to catch against the outer edges of the chamber, substantially as set forth.

448,037. **TYPE-WRITING MACHINE.** EDWARD S. HIGGINS and HENRY C. JENKINS, London, England. Filed July 27, 1889. Serial No. 318,877. (No model.) Patented in England June 6, 1889, No. 9,425.



Claim.—1. In a type-writer, a key-lever, a group of secondary levers, a corresponding group of type-levers, and shiftable connections between said levers, whereby the key-lever may be connected with either type-lever of the group, substantially as described.

2. In combination, a key-lever, a group of secondary levers, a movable fulcrum therefor, laterally-extending platforms upon the key-lever, and a heel upon each secondary lever, adapted to ride upon one of the platforms, substantially as described.

3. In a type-writer, a key-lever, a movable group of secondary levers, means for moving the secondary levers to engage any one thereof separately with the key-lever, and a group of type-levers, each type-lever being connected to a secondary lever, substantially as described.

4. In combination, a key-lever having a projection or platform and a secondary lever mounted upon a movable fulcrum and provided with a heel having inclined sides, said heel being adapted to rest upon the said platform, substantially as described.

5. In a variable feed mechanism, a group of frames and a series of key-levers, each bearing a projection, said projections varying in size according to the number of frames desired to be engaged thereby, substantially as described.

6. In combination, a key-lever, a secondary lever operated thereby, and a group of frames forming part of a variable feeding mechanism, said secondary lever having a projection which is adapted to engage selected frames, substantially as described.

7. In combination, a key-lever, a group of secondary levers movably mounted, type-levers, connections between the type-levers and the secondary levers, a variable feeding device, and means for causing the key-lever to engage either secondary lever and to produce a corresponding movement of the feeding device, substantially as described.

8. In combination, a key-lever, a feeding device, a secondary lever movably mounted, and means for moving said secondary lever simultaneously into or out of engagement with the key-lever and the feeding device, substantially as described.

9. In combination, a key-lever, a group of type-levers, a variable feeding mechanism, and shiftable connections between said parts, whereby the key-lever may operate either type-lever and cause an appropriate movement of the feeding device, substantially as described.

10. In a type-writer escapement, a rack, two coaxially-mounted arms, each bearing a plurality of teeth, and means for vibrating the arms, substantially as described.

11. In a feeding device, a rack, fixed and sliding coaxially-mounted arms, each bearing a plurality of teeth and adapted to engage the rack, and movable stops for variably limiting the travel of the sliding arm, substantially as described.

12. In a feeding device, a rack, fixed and sliding coaxially-mounted pawls, stepped faces upon the sliding pawl, and a stop movable so as to engage either or neither of the faces, substantially as described.

13. In a type-writer, the combination, with a pivoted ink-pad and types and type-levers for swinging the same, of a distributing-roller arranged to pass over the pad at each of its vibrations.

14. In combination with the supporting-bracket, the ink-pad pivoted thereto and normally in the path of the types, the inking-roller, and the guides for said roller, substantially as described.

15. In a type-writer, a pivoted inking-pad forked at its free end, as and for the purpose described.

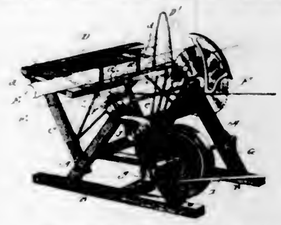
16. The combination, with the type-lever E, having segmental notch e, of the rail G and comb G^2, substantially as described.

17. The combination, with the type-levers having notches e and heels e^2, of the rail G and overlying stop-rail g', substantially as described.

18. The combination, with the line-spacing ratchet and pawl and the operating-lever, of the adjustable link L for varying the line-space, substantially as described.

19. The combination, with the pivoted rack having the projections n and n', of the lever having the recesses m^3 and m^4 and the spring m^5, substantially as described.

448,038. **POLE OR WOOD SAW.** EDWARD G. HOBLER, Chicago, Ill. Filed Nov. 3, 1890. Serial No. 370,146. (No model.)

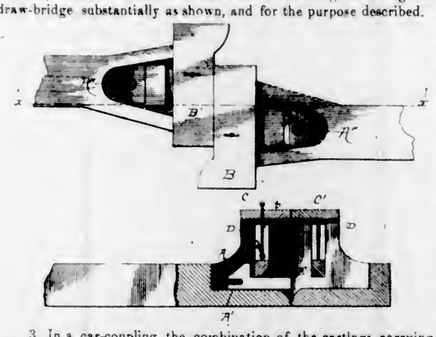


Claim.—A pole or wood saw having in combination a stationary frame and a tilting frame, said stationary frame having journaled thereon the saw-shaft and in a lower plane the balance-wheel shaft and an intermediate pulley, and a driving-belt carried about driving-pulleys on the saw-shaft and counter-shaft and over the intermediate pulley, whereby both the saw-shaft and balance-wheel shaft are driven by the same belt, substantially as described.

448,039. **CAR-COUPLING.** SHERMAN M. HOBSON, Pueblo, Colo. Filed Oct. 31, 1890. Serial No. 369,878. (No model.)

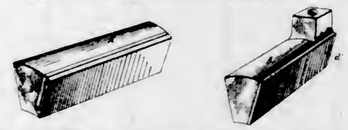
Claim.—1. In a car-coupling, the casting having beveled guards on each side thereof, in combination with the beveled coupling-hooks having bolt-orifices and link recesses, and the draw-bridges, substantially as shown, and for the purposes described.

2. In a car-coupling, the hooks having bolt-orifices and recesses for reception of links, in combination with the casting containing the draw-bridge substantially as shown, and for the purpose described.



3. In a car-coupling, the combination of the castings carrying draw-bridges, the beveled guards, and the hooks, substantially as shown and described.

448,040. **COMMUTATOR.** WILLIAM HORNBERGER, Elkhart, Ind. Filed Aug. 2, 1890. Serial No. 360,741. (No model.)

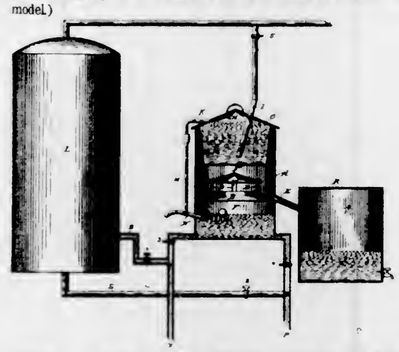


Claim.—1. For a commutator, a section having a side edge protected or strengthened by metal of greater density or hardness, substantially as and for the purpose set forth.

2. A metallic commutator-section having a body of soft metal and its side edge or edges re-enforced by hardened metal to prevent sparking, substantially as described.

3. A commutator-section having a groove along its side edge and a strip of hard metal inserted in said groove, for the purpose and substantially as specified.

448,041. **APPARATUS FOR DISTILLING WATER.** NELSON HUNTING, Albany, N. Y. Filed Oct. 23, 1888. Serial No. 288,901. (No model.)



Claim.—1. An apparatus for distillation, composed of a heater and connections P X therefrom to a main vessel A, an open-work diaphragm allowing contained air and vapor to circulate freely, but arresting the descent of the water of condensation, an angular gutter and a spout for conducting away such water, in combination with each other and with a condensing-vessel mounted in the top of said vessel A, a pipe supplying cold water thereto, with means for controlling it, and an overflow-pipe leading therefrom, an inclined branched pipe arranged, as shown, so as to lead the overflow into the evaporating-chamber when the level therein is low and to conduct away the surplus, all substantially as herein specified.

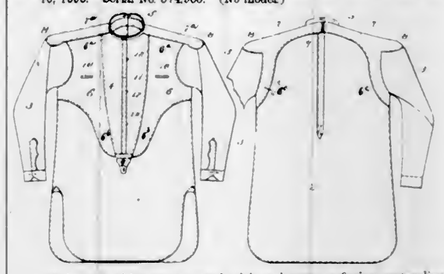
2. In a water-distilling apparatus, the combination of a vessel having vaporizing and condensing chambers, an open-work diaphragm, a spout leading from the suspended angular gutter through the wall of the vessel, a cold-water reservoir located in the mouth of the vessel, with a narrow annular aperture between for the induction of additional air, an overflow-pipe, and an inclined branch pipe connected therewith for supplying water to the vaporizing-chamber, arranged, as shown, so as to maintain a constant level in said chamber and to discharge the remainder of the overflow, as herein specified.

3. In an automatically-operating water-distilling apparatus, the combination of a vessel A, containing a vaporizing-chamber F and provided with a coniform diaphragm B, secured by a water-tight joint to the inner side of said vessel, a shield B' of a greater diameter than the central opening of said diaphragm and held clear from the upper surface of the latter, an outlet-pipe E for conveying the distilled water from the angular channel or gutter formed by the junction of said diaphragm with the body of the vessel, a cold-water receptacle H, which forms a removable cover for the vessel A and is provided with a cold-water-supply pipe I and with a waste water pipe K, the latter being connected with a pipe M, forming a junction with an inclined branch N, opening into the vaporizing-chamber F below its water-line at one end and the opposite end forming an escape-outlet for the waste water from the apparatus, the pipes K, M, and N, forming an overflow water-pipe from the receptacle H to the vaporizing-chamber F, substantially as specified.

4. In an apparatus for open distillation, the vessel A, with provisions for heating the water lying in the lower part thereof, an open-work diaphragm for allowing the vapor-laden warm air to circulate freely, but to interrupt the falling of the condensed drops and to convey them to one side, an angular gutter and spout for conveying away such water, a removable cover with provisions for holding cold water and allowing it to condense the vapor on its under surface, an annular space around such cover in which the vapor-laden air may circulate and condense its vapor, and provisions for supplying cold water to the cover, and a detachable connection to a discharge-pipe for allowing the water to flow away and the cover to be easily removed and replaced, as herein specified.

5. An apparatus for distillation, composed of a heater Q and connections P X therefrom to a main vessel A, an open-work diaphragm allowing contained air and vapor to circulate freely, but arresting the descent of the water of condensation, an angular gutter and a spout for conducting away such water, in combination with each other and with a condensing-vessel, a pipe supplying cold water thereto, with means for controlling it, an overflow-pipe leading therefrom, a branch pipe connecting therewith, one branch leading to the evaporating-chamber and the other branch adapted to conduct away the surplus liquid, and means, as the valve and float, to automatically stop the supply to the evaporating-chamber and to direct away the surplus without cooling the evaporating-chamber when the latter is filled to the proper level, all substantially as herein specified.

448,042. **SHIRT.** SAM L. HYMAN, Nashville, Tenn. Filed Dec. 16, 1890. Serial No. 374,905. (No model.)



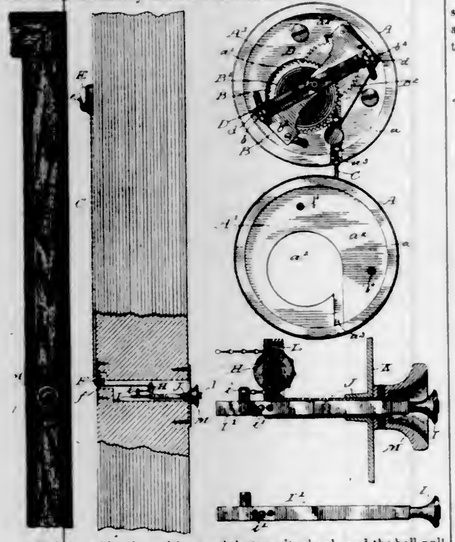
Claim.—A shirt constructed with a bosom, a facing extending alongside the bosom and re-enforcing the shirt-body between the bosom and armhole, a strip extending from the facing beneath and around the armhole to the yoke, the yoke connecting said strip and the facing, said facing-strip and yoke being made integral, as set forth.

448,043. **DEVICE FOR OPERATING DOOR-BELLS.** ALBERT ISKE, Lancaster, Pa., assignor, by mesne assignments, to the Self Acting Bell Company, same place. Filed June 19, 1890. Serial No. 355,938. (No model.)

Claim.—1. In combination with a push-button and its shank, a sleeve inclosing the same and longitudinally movable with respect thereto, a chain attached to said push-button shank and passing over an attachment of said sleeve in order that said chain may be drawn either by pressure on said push-button or by pulling said sleeve, and an alarm connected to said chain, substantially for the purposes set forth.

2. In combination with a push-button, its shank and the bell-pull

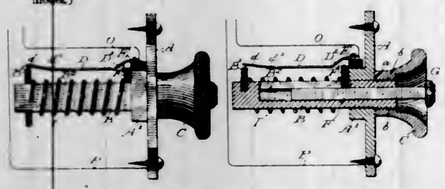
chain attached thereto, a guide-sleeve for said shank, a pulley over which said chain passes, alarm mechanism connected to and operated by said chain, and an external tubular guide surrounding said push-button and detachably secured to said sleeve.



3. In combination with a push-button, its shank, and the bell-pull chain attached thereto, a guide-sleeve for said shank, a plate to which said guide-sleeve is attached and through which it protrudes, an attachment of said sleeve over which the said chain passes in order that it may be drawn upon when said sleeve is pulled outward, an alarm attached to said chain, and an external guide and finger-hold surrounding said push-button and secured detachably to the protruding end of said sleeve, substantially as set forth.

4. In combination with the frame and operating mechanism of a clock-work-operated bell, a bridge which supports the latter and which is transversely slotted at the ends, the said bell being arranged in front of said frame-bridge and operating mechanism, and the said bridge being attached to said frame by devices passing through said slots in order that the position of said bridge and bell may be shifted by way of compensation to keep said bell in position to be struck by the hammer, for the purpose set forth.

448,044. COMBINED PUSH AND PULL. ALBERT ISKE, Lancaster, Pa., assignor, by mesne assignments, to the Self Acting Bell Company, same place. Filed June 27, 1890. Serial No. 356,930. (No model.)

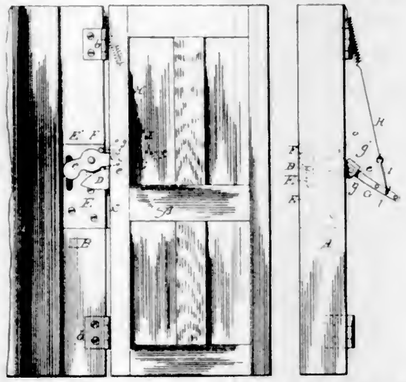


Claim.—1. In combination with a contact-plate forming one of the terminals of an electric circuit, a pull-knob constituting the other terminal thereof, and provided with an attachment for making electrical contact with said plate, a push-button which is in electrical communication with said pull-knob, and an attachment of said button arranged to be moved at will into contact with said plate, the circuit being open only when neither of such attachments is in such contact and closed equally well by a push or by a pull, substantially as set forth.

2. A push-button and its shank provided with a stud, in combination with a pull-knob and its draw-bar provided with a stud, a contact-plate arranged to be struck by said studs at certain points of their inward and outward play, and circuit-wires connected, respectively, to said plate and to the other devices named, the said plate being insulated from the latter, substantially as set forth.

3. A longitudinally-movable and longitudinally-slotted draw-bar having a stud on its inner end and a pull-knob on its outer end, in combination with a push-button having a shank or stem which moves longitudinally in said draw-bar, and a stud protruding through said slot, a replacing-spring which bears against each of said studs to push them in opposite directions, an insulated contact-plate arranged to be struck by said studs as they move inward or outward, respectively, and the circuit-wires having their terminals respectively in said contact-plate and in the other devices, substantially as set forth.

448,045. TRIP FOR DOOR-BELLS AND BURGLAR-ALARMS. ANTHONY ISKE, Lancaster, Pa., assignor to the Self Acting Bell Company same place. Filed June 10, 1890. Serial No. 354,916. (No model.)

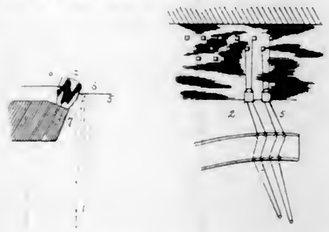


Claim.—1. In combination with a lever pivoted to a door-frame and a bell cord or wire drawing on one end of said lever or horn attached to the door and beveled to act on the other end of said lever, as described, and a slotted plate and socket for receiving said horn, substantially as set forth.

2. A pivoted finger, in combination with the lever which carries it, a bell cord or wire removably attached to said finger, and a horn for holding said lever against the draft of said cord when the door is closed, the said finger being capable of folding, substantially as set forth.

3. A lever connected to a bell cord or wire and freed by the opening of a door, in combination with a stop which limits its motion in one direction and a finger which forms the connection with said cord or wire, this finger having a lip formed thereon which prevents it from moving on its pivot independently in one direction, while leaving it free to move pivotally and independently in the other, substantially as set forth.

448,046. AGRAFFE FOR PIANO-FORTES. WILLIAM H. IVERS, Dedham, assignor to the Ivers & Pond Piano Company, Boston, Mass. Filed Oct. 6, 1890. Serial No. 367,157. (No model.)

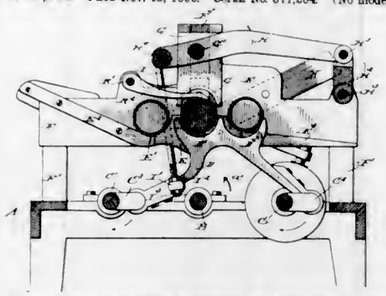


Claim.—1. An agraffe for piano-fortes, composed of an upper head portion and a lower screw-threaded portion, the side of the head at the point where the wires enter projecting laterally beyond any other part of said agraffe, substantially as stated and described.

2. In agraffes, the combination, with the lower screw-threaded holding portion, of a head provided with transverse holes for the passage of the wire or wires and undercut at the sides, substantially as and for the purposes herein set forth.

3. An agraffe composed of a head part and a lower holding portion, the head being provided with one or more transverse holes and with the sides converging from a point beneath the wires toward the longitudinal axis of the agraffe, substantially as described.

448,047. CAN-CAPPING MACHINE. MATHIAS JENSEN, Astoria, Oreg., assignor of one-half to the Jensen Can Filling Machine Company, same place. Filed Nov. 13, 1890. Serial No. 371,284. (No model.)



Claim.—1. In a can-capping machine, the combination, with the frame, a stationary horizontal bed-mold, and a clamping-mold above and movable toward and from the stationary mold to press the can-body down thereon, of a vertically and longitudinally swinging conveyer movable past the stationary mold to successively deposit and remove the can-body, substantially as set forth.

2. In a can-capping machine, the combination, with stationary bed-molds, of clamping-molds adapted to clamp a can-body onto the said bed-molds, a conveyer mounted to swing and adapted to carry the can-body onto the said stationary bed-molds and also adapted to actuate the said clamping-molds, cylinders arranged in line with the said bed-molds, and plungers fitted to slide in the said cylinders and adapted to force the caps onto the ends of the can-body held in the said bed-molds by the said clamping-molds, substantially as shown and described.

3. In a can-capping machine, the combination, with the frame, the horizontally-extending stationary bed-molds spaced apart, and vertically-reciprocating clamping-molds above the stationary molds to clamp the can-bodies down thereon, of a vertically and longitudinally swinging conveyer below and in vertical alignment with the space between the two bed-molds to work therein and successively deposit and remove the can-body, and connections for operating the clamping-molds from the conveyer, substantially as set forth.

4. In a can-capping machine, the combination, with stationary bed-molds, of a conveyer mounted to swing vertically and longitudinally and provided on top with two recesses, of which one serves to lift the can-body onto the said stationary bed-molds and the other to remove the capped can from the said bed-molds, a resting-place arranged on one side of the said bed-molds and connected with inclined bars, and inclined bars arranged at the other side of the said bed-molds, substantially as shown and described.

5. In a can-capping machine, the combination, with stationary bed-molds and a can-body conveyer operating between the said bed-molds, of clamping-molds adapted to close onto the said bed-molds to hold a can-body in place thereon, cylinders arranged in line with the said bed-molds, and plungers fitted to slide in the said cylinders and adapted to force the caps onto the projecting ends of said can-body while held by the said clamping-molds, substantially as shown and described.

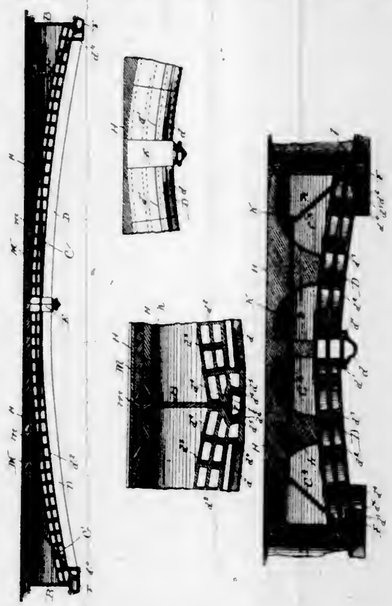
6. In a can-capping machine, the combination, with stationary bed-molds and a can-body conveyer operating between the said bed-molds, of clamping-molds adapted to close onto the said bed-molds to hold a can-body in place thereon, cylinders arranged in line with the said bed-molds, plungers fitted to slide in the said cylinders and adapted to force the caps onto the projecting ends of said can-body while held by the said clamping-molds, and chutes adapted to carry the caps and opening into the slots formed in the said cylinders in front of the said plungers when the latter are in their outermost position, substantially as shown and described.

7. In a can-capping machine, the combination, with a cylinder adapted to receive a cap, of a plunger fitted to slide in the said cylinder to move the cap in the same, and a vertically-movable block held in the said cylinder and adapted to rest on top of the cap when the latter is moved by the said plunger, substantially as shown and described.

8. In a can-capping machine, the combination, with stationary bed-molds, of clamping-molds adapted to clamp a can-body onto the said bed-molds, an arm mounted to swing and adapted to carry the can-body onto the said stationary bed-molds and also adapted to actuate the said clamping-molds, cylinders arranged in line with the said bed-molds, plungers fitted to slide in the said cylinders and adapted to force the caps onto the ends of the can-body held in the said bed-molds by the said clamping-molds, and means, substantially as described, for imparting motion to the said movable parts, substantially as shown and described.

9. In a can-capping machine, the combination, with stationary bed-molds and clamping-molds arranged in conjunction therewith for holding a can-body in place, of cylinders extending in line with the said molds, plungers fitted to slide in the said cylinders, and levers having swinging motion and each provided with a forked end, of which one prong engages the slot in the respective plunger and the other prong carries a set-screw adapted to engage the outer end of the plunger, substantially as described.

448,048. CONSTRUCTION OF FIRE-PROOF BUILDINGS. ERNEST V. JOHNSON, Chicago, Ill. Filed Nov. 3, 1890. Serial No. 370,150. (No model.)



Claim.—1. In a building, the combination, with four supporting posts or columns, of girders or beams extending between said posts, a cloister hollow-tile arch ceiling and floor structure extending between and supported by said girders or beams, said girders or beams being secured together at the corners, so that each parallel pair thereof serves to bind or tie the other parallel pair together, whereby they serve at the same time to support the weight of the arch and to resist its lateral thrust in all directions, substantially as specified.

2. In a building, the combination, with four supporting posts or columns, of girders or beams extending between said posts, a cloister hollow-tile arch ceiling and floor structure extending between and supported by said girders or beams, and a concrete filling above said cloister tile arch, said girders or beams being secured together at the corners, so that each parallel pair thereof serves to bind or tie the other parallel pair together, whereby they serve at the same time to support the weight of the arch and to resist its lateral thrust in all directions, substantially as specified.

3. In a building, the combination, with four supporting posts or columns, of girders or beams extending between said posts, a cloister tile arch ceiling and floor structure extending between and supported by said girders or beams, and a concrete filling above said cloister tile arch, said concrete filling having a series of hollow channels or arches, said girders or beams being secured together at the corners, so that each parallel pair thereof serves to bind or tie the other parallel pair together, whereby they serve at the same time to support the weight of the arch and to resist its lateral thrust in all directions, substantially as specified.

4. In a building, the combination, with four supporting posts or columns, of girders or beams extending between said posts, a cloister hollow-tile arch ceiling and floor structure extending between and supported by said girders or beams, and a concrete filling above said cloister tile arch, said concrete filling having a series of hollow chan-

nels or arches extending in the direction of the curvature of each triangular section of said cloister tile arch, substantially as specified.

5. The combination, with the four beams or girders B, of the cloister hollow-tile arch D, having four diagonal ribs *d*, composed of tile furnished with shoulders or ledges *d'* to engage the adjacent tile, substantially as specified.

6. The combination, with the four beams or girders B, of the cloister hollow-tile arch D, having four diagonal ribs *d*, composed of tile furnished with shoulders or ledges *d'* to engage the adjacent tile, the marginal tile d^4, having shoulders or recesses d^5 to fit the webs of said girders or beams B, substantially as specified.

7. The combination, with the four beams or girders B, of the cloister hollow-tile arch D, having four diagonal ribs *d*, composed of tile furnished with shoulders or ledges *d'* to engage the adjacent tile, the marginal tile d^4, having shoulders or recesses d^5 to fit the webs of said girders or beams B, and the intermediate tile d^3, fitting on said ledges *d'* and having inclined faces d^6, substantially as specified.

8. The combination, with four supporting girders or beams B, of a cloister hollow-tile arch D, having marginal tile d^4, furnished with inclined ledges d^6, and a beam covering and protecting tile F, supported by said inclined ledges d^6, substantially as specified.

9. The combination, with four girders or beams B, of a cloister tile arch supported thereby, and a tie-rod C, extending between opposite beams B B, substantially as specified.

10. The combination, with four girders or beams B, of a cloister hollow-tile arch supported thereby, and a tie-rod C, extending between opposite beams B B and bails or clips C^1, substantially as specified.

11. The combination of four girders or beams B with a cloister hollow-tile arch supported thereby and corner tie-rods C^2, substantially as specified.

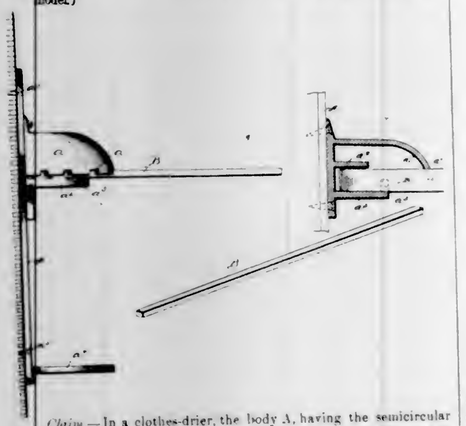
12. The combination of four girders or beams B with a hollow-tile arch floor and ceiling structure, and a concrete filling above the same furnished with or made in the form of a series of hollow channels or arches, said girders or beams being secured together at the corners, so that each parallel pair thereof serves to bind or tie the other parallel pair together, whereby they serve at the same time to support the weight of the arch and to resist the lateral thrust in all directions, substantially as specified.

13. The combination, with a tile arch floor and ceiling structure, of a concrete filling above the same furnished with or made in the form of a series of hollow channels or arches and arch-forming devices K, substantially as specified.

14. The combination, with a tile arch floor and ceiling structure, of a concrete filling above the same furnished with or made in the form of a series of hollow channels or arches, and arch-forming devices K and clamps or clips *k*, substantially as specified.

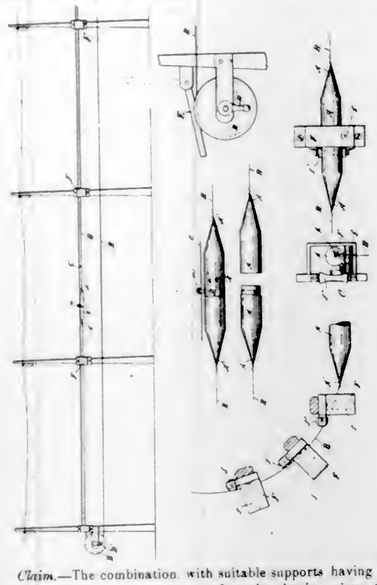
15. The combination, with four supporting beams or girders, of a cloister hollow-tile arch supported thereby, and a concrete filling having a series of hollow channels or arches extending from each side toward the center and tapering or diminishing from their outer toward their inner ends, substantially as specified.

448,049. CLOTHES-DRIER. MARK D. JUDKINS, Osakis, Minn. Filed Mar. 19, 1889. Renewed Dec. 15, 1890. Serial No. 374,791. (No model.)



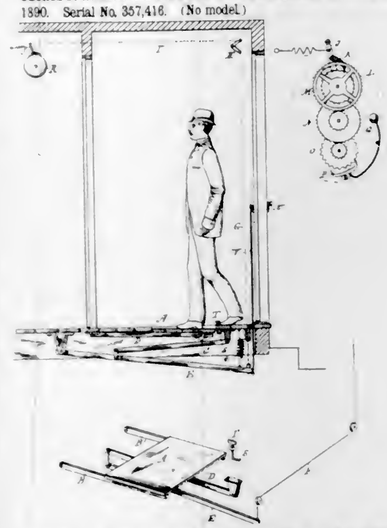
Claim.—In a clothes-drier, the body A, having the semicircular sloping water-shed *a*, with the notched rim *a'*, the notched plate a^2, located under said water-shed, the bar a^3, and the perforated plate a^4, in combination with the bar B, substantially as described and set forth.

448,050. APPARATUS FOR CARRYING PACKAGES, &c. JOHN O. KAPP, Poe, Ohio. Filed Apr. 17, 1890. Renewed Jan. 26, 1891. Serial No. 379,043. (No model.)



Claim.—The combination, with suitable supports having frames thereon and rollers in the frames, of carriers having wires attached at their ends, said wires and carriers adapted to pass through the frames, a stationary wire track passing through the frames, a roller on the carrier adapted to travel on the track, and means for propelling the carrier, substantially as set forth.

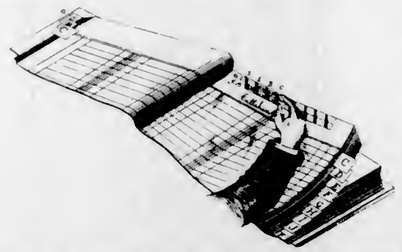
448,051. AUTOMATIC BURGLAR-ALARM AND DOOR-BELL. GEORGE F. KIERSON and ALFRED K. YOUNG, Allegheny, Pa. Filed July 1, 1890. Serial No. 357,416. (No model.)



Claim.—1. The combination of the platform A, hinged and movable on suitable supports and having on the under side the block C, combined with the multiplying-levers D and E, situate beneath and moved by the downward pressure of said platform, and the rope or chain F, connected to the front end of the lever E, and the rod, crank, lever, and gong, all operated as and for the purposes described.

2. In combination with the platform A and multiplying-levers D and E, situate beneath and operated by said platform, and the chain F, connected to said lever E, and the rod, crank, and lever attachments, as described, the button S under the front edge of the platform, movable by handle T, whereby the platform may, when desired, be kept in a fixed horizontal position, so that the ordinary door-gong may be rung.

448,052. COMBINED LEDGER AND INDEX. SIMEON B. KIRTLEY and HIRAM PHILLIPS, Columbia, Mo. Filed Dec. 7, 1886. Serial No. 220,924. (No model.)

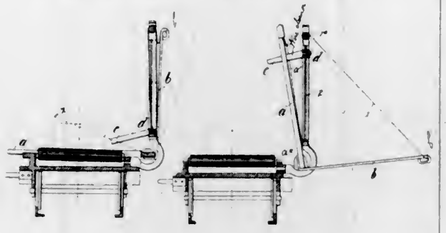


Claim.—1. A ledger or other book having integral therewith an index provided in any usual way with index-letters along or in its edges, and at the cut-away portions at the top of each series of leaves or pages having thereon the first vowel and first consonant following to denote on which particular page of said series a particular name can be found.

2. A ledger or book having integral therewith an index arranged according to the first vowel after the initial letter and first consonant following, whereby the vowels are marked with the consonants in due succession on the several pages under each alphabetical index-letter, substantially as described.

3. A ledger or book having integral therewith an index arranged by alphabetical letters and initial letters of Christian names, according to the first vowel after the initial letter and the first consonant following, whereby under each letter any desired name can be found by two motions of the hand.

448,053. AUTOMATIC WIRE-CLEANER FOR BRICK OR TILE MACHINES. GUSTAV KOKENTHAL, Brunswick, Germany. Filed Jan. 31, 1890. Serial No. 338,720. (No model.)



Claim.—1. The combination, with the cutting-frame having wires, of the ductors, and a lever for moving said ductors lengthwise of the wires connected to and operated by the cutting-frame, substantially as set forth.

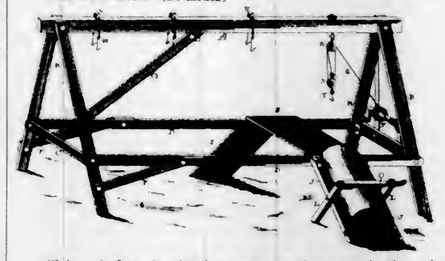
2. The combination, with the cutting-frame having cutting-wires, of the cross-bar carrying ductors, a lever connected with said cross-bar for dragging the ductors along the wires, and said lever being also secured to and operated by the cutting-frame, substantially as set forth.

3. The combination, with the cutting-frame having cutting-wires, of the cross-bar carrying ductors, a lever secured to said cutting-frame and a cord connecting said lever with said cross-bar, substantially as set forth.

4. The combination, with the cutting-frame having cutting-wires, of the cross-bar having ductors, ways for guiding said cross-bar, and a lever secured to and operated by said frame and having connection with said cross-bar for operating the same, substantially as set forth.

5. The combination, with the cutting-frame having wires, of the cross-bar having ductors, ways for guiding said cross-bar, a lever secured to said cutting-frame and moved thereby, a cord attached to said lever and cross-bar, and a roller over which said cord passes.

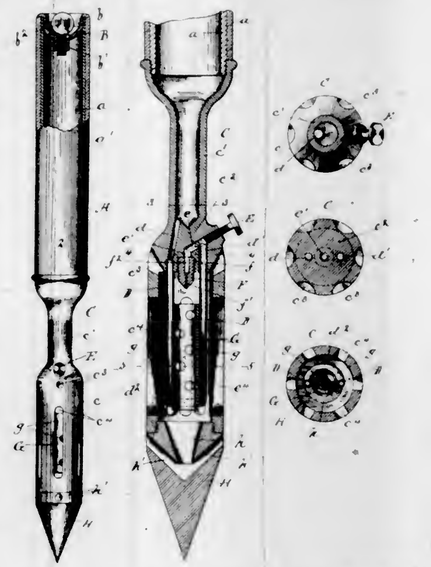
448,054. DERRICK FOR SLAUGHTERING ANIMALS. WILLIAM F. KINGERY and J. B. CAVANAUGH, Greenfield, Iowa. Filed Dec. 16, 1890. Serial No. 374,937. (No model.)



Claim.—1. In a slaughtering apparatus, the supporting-legs, the beam supported at their upper ends, the side arms, a platform, and a tank or receptacle at one end of the platform having its open end substantially in a plane with the surface of the said platform, whereby the animals may be passed from the platform into the tank, substantially as shown and described.

2. The combination of the beam, the supporting-legs, the side arms, the platform, the legs or supports J, the supports L, cross-lever, and the tank, substantially as shown.

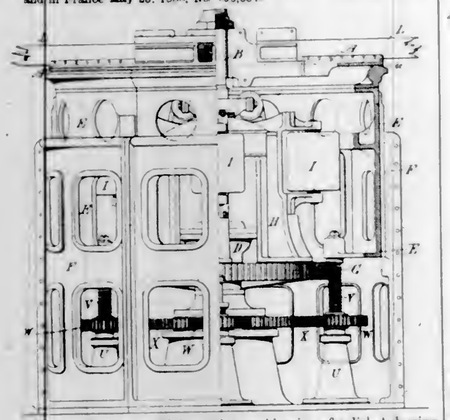
448,055. SELF-HEATING SOLDERING-IRON. CHARLES LEHMANN and EDWARD BRUNHOFF, Chicago, Ill. Filed June 9, 1890. Serial No. 354,730. (No model.)



Claim.—1. In a self-heating soldering-iron, the handle A, forming itself the main reservoir for the oil, in combination with the hollow single piece C, constructed with a thick cross-partition about midway of its length and connected at its open tubular end directly with the open inner or lower end of the hollow reservoir-handle and having an opening through the central partition into the tubular space below, which forms a combustion-chamber, and the generating-tube and burner located within the combustion-chamber and connecting directly with the passage through the central partition, substantially as and for the purposes specified.

2. In a self-heating soldering-iron, the combustion-chamber, in combination with the U-shaped generating-tube D, arranged within said chamber and communicating at one end with the reservoir and at the other with the burner, and the perforated tube G, open at both ends and arranged between the legs of said U-shaped tube, substantially as and for the purposes specified.

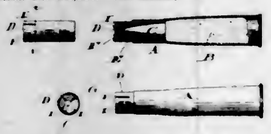
448,056. ROUNDABOUT. THOMAS C. LIDSTER, Hull, England. Filed Aug. 9, 1889. Serial No. 320,312. (No model.) Patented in England Nov. 15, 1887, No. 15,614; in Belgium May 11, 1888, No. 81,763, and in France May 28, 1888, No. 190,837.



Claim.—1. In a roundabout, the combination of a disk A, having radial arms carrying vehicles or conveyances and having a lower edge *a*, adapted to bear upon the upper edge of an adjustable tube or cylinder, a spindle B, supporting said disk and having its lower end C shaped spherically to form part of a ball-and-socket joint and having an intermediate bearing adapted to slide in a slot *s*, a stand supported upon the base or frame and terminating at its upper end in a cup D, adapted to form a ball-and-socket joint with the spindle end C, the gear-wheel G, journaled upon said stand and carrying a shell H, surrounding the cup D and having a slot *s*, and having radial projections in which are journaled vertical friction-rollers bearing internally on a rim or flange of an adjustable tube or cylinder E, surrounding the shell H, rollers I, and wheel G, and made adjustable within a framing and having its upper edge adapted to support the disk A, the frame F, surrounding the tube E, means to drive the wheel G, and means to raise, lower, and hold the tube or cylinder E, substantially as set forth.

2. In a roundabout, the combination, with the disk carried upon a spindle adapted to assume an inclined position while rotating with said disk, of a tube or cylinder E, adjustable in elevation and having its upper edge adapted to support said disk, substantially as set forth.

448,057. CARTRIDGE. BENJAMIN LONG, Boulder, Colo. Filed June 20, 1890. Serial No. 356,067. (No model.)



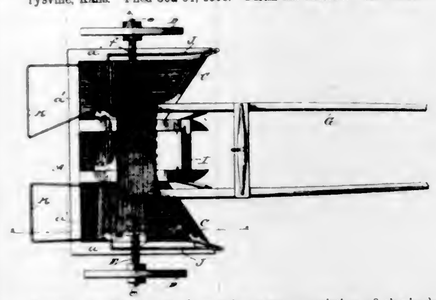
Claim.—1. A cylindrical projectile jacket or envelope made of wood or equivalent material adapted to split longitudinally, having at its rear end a recess or chamber adapted to fit and cover the projectile and at its front end a cup-shaped recess or concavity, said two recesses being connected by a central bore, substantially as and for the purpose shown and set forth.

2. A cylindrical projectile jacket or envelope made of wood or equivalent material adapted to split longitudinally, having at its rear end a recess or chamber adapted to fit and cover the projectile and at its front end a cup-shaped recess or concavity, the sides of which are split longitudinally, substantially as and for the purpose shown and set forth.

3. A projectile embedded in a jacket or envelope of wood or equivalent material adapted to split in the direction of the greatest length of the projectile, the forward part of said jacket being cup-shaped and extended in front of the projectile, with a central bore or aperture connecting said cup-shaped recess with the recess in which the projectile is embedded, and having the edges of the recessed forward part of the jacket slitted longitudinally, substantially as and for the purpose shown and set forth.

4. A cartridge comprising in its make-up the following elements, viz: the cartridge-case A, powder-charge B, projectile C, and jacket D, having cup-shaped recess F, split longitudinally at I, and central bore G, substantially as and for the purpose herein shown and set forth.

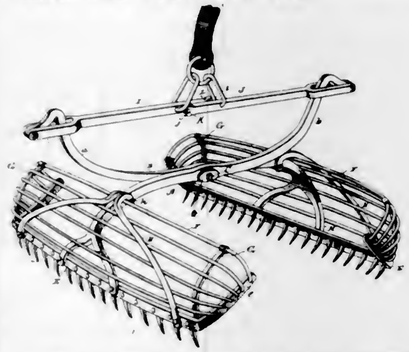
448,058. CORNSTALK-HARVESTER. PETER S. LUNDGREN, Marysville, Kans. Filed Oct. 31, 1890. Serial No. 369,987. (No model.)



Claim.—1. An improved corn-harvester, consisting of the body portion A, formed of the side bars *a*, the cross-bar *a'*, the central longitudinal bars a^3 a^3, and the boards a^3, secured to the bottom of said bars, whereby a trough-like body B, having open ends, is formed, knives C, secured to the forward under ends of the bars *a* a^3 and disposed diagonally to the line of draft, the shafts secured to the bars a^3 between the cutters, the seat-bar H, the cross-piece I, the guards J K, and the supporting-wheels, all arranged substantially as and for the purpose described.

2. In a corn-harvester, the combination, with the body portion formed with side bars *a' a'*, having vertical recesses *f*, of the supporting-shafts E, each formed of a horizontal member *e* and a vertical member *e'*, said member *e'* passed through the bottom of the body, as shown, the member *e* seated in the recess *f*, the supporting-wheels mounted on the member *e*, and means for adjusting the body A on the said bent shafts E, substantially as and for the purpose described.

448,059. OYSTER-TONGS. FRANCIS T. MADDRIX, Crisfield, Md. Filed Mar. 14, 1890. Serial No. 343,905. (Model.)



Claim.—1. A pair of oyster-tongs having the levers connected by an automatically-shifting pivot, substantially as and for the purpose described.

2. The combination, with the levers and a locking device to hold the jaws separated, of an automatically-shifting pivotal connection between the said levers, which will change its position and effect a disengagement of the said locking mechanism, substantially as set forth.

3. The combination, with the levers having the jaws at their lower ends and locking-bars at their upper ends, of a shifting pivot connecting the levers between their ends, substantially as and for the purpose described.

4. The combination, with the levers having jaws at their lower ends and having a trefoil opening at their pivotal point, of a pivot adapted to pass through said openings and connect the said levers together, substantially as and for the purpose described.

5. In oyster tongs, the combination, with the levers pivotally connected together, of the locking-bars adapted to have their ends overlap and interlock, substantially as and for the purpose described.

6. In oyster-tongs, the combination, with the levers having jaws at their lower ends, of the locking-bars pivotally connected with the said levers and having notches in their inner ends and stops a short distance from the said notched ends to engage with the said notched ends and effect a locking of the said bars, substantially as set forth.

7. In oyster-tongs, the combination, with the levers having their upper ends bent outward at approximately right angles to form arms, of the locking-bars pivotally connected at their outer ends with the said arms and adapted to have their inner ends overlap and interlock, and the hoisting-rope having connections with the locking-arms near their inner ends, substantially as set forth.

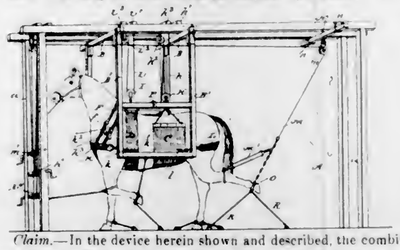
8. In oyster-tongs, the herein-described jaw, comprising a tooth-bar having its ends bent up at right angles and guard-bars having their ends bent and secured to the bent ends of the tooth-bars, substantially as described.

9. In oyster-tongs, the herein-described jaw, comprising a toothed bar having its ends bent up and guard-bars having their ends bent and secured to the bent ends of the tooth-bar, the bent ends of the guard-bars being of graduated lengths, substantially as and for the purpose described.

10. In oyster-tongs, the herein-described jaw, comprising tooth and guard bars, in combination with the lever and brace-bars H, which embrace the said guard-bars, the brace-bars being secured to the lever above the guard-bars and the lever and brace-bars being secured at their lower ends to the tooth-bar, substantially as set forth.

11. In oyster-tongs, the hereinbefore-specified jaw, comprising a toothed bar having its ends bent up, guard-bars arranged in parallel series with the toothed bar and having their ends bent and secured to the bent ends of the toothed bar, end brace-bars G, the lever having its lower end forked and secured to the tooth-bar, and the diverging braces H, embracing the guard-bars between them and the forked end of the lever, secured at their upper ends to the lever and at their lower ends to the tooth-bar, substantially as specified.

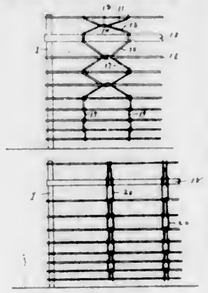
448,060. HORSESHOEING-RACK. SAMUEL M. MARTIN, Sidney, Ohio. Filed Aug. 14, 1890. Serial No. 362,026. (No model.)

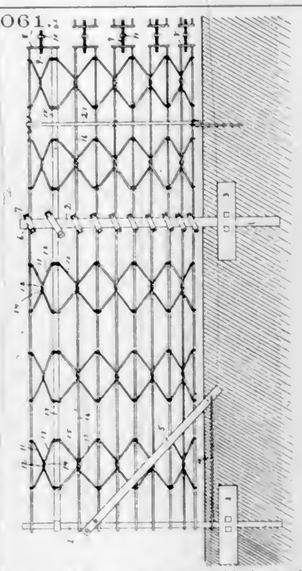


Claim.—In the device herein shown and described, the combination, with a scaffold, of a supporting-rack suspended from the said scaffold and adapted to retain the animal, a transversely-shifting bar arranged at the top of the scaffold and to the rear of the rack, a pulley attached to said bar, and a rope passing over said pulley, adapted to be attached at one end to the hind leg of the animal, substantially as and for the purpose described.

448,061. WIRE FENCE. PETER MAST, Waterville, Ohio. Filed Oct. 4, 1890. Serial No. 367,083. (No model.)

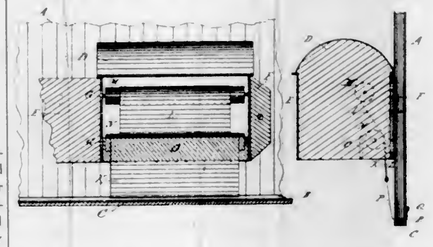
Claim.—1. In a wire fence, the combination, with the parallel strands, of a series of loop-shaped supporting-wires, the ends of each of the said wires in a series being secured to the same strand, and the loop portions interlocking with the similar portions of a series of supporting-wires carried by one of the other strands.





2. In a wire fence, the combination, with the parallel strands, of a series of wire loops, the ends of one loop being attached to one strand and its middle portion passed over an adjacent strand and interlocking with it and with the loop on one of the other strands.

448,062. LETTER-BOX. WILLIAM MCCLOSKEY, New Orleans, La., assignor of one-half to Charles J. Hoyt, same place. Filed Sept. 8, 1890. Serial No. 364,329. (No model.)



Claim.—In a letter-box such as described, two rollers placed therein, two aprons passing over said rollers, with pockets therein for receiving and discharging mail-matter through an aperture under a door, in the manner herein set forth.

448,063. MACHINE FOR MAKING CARD-BOARD. JOHN MCCOY, York, Pa. Filed Apr. 5, 1890. Serial No. 346,762. (No model.)

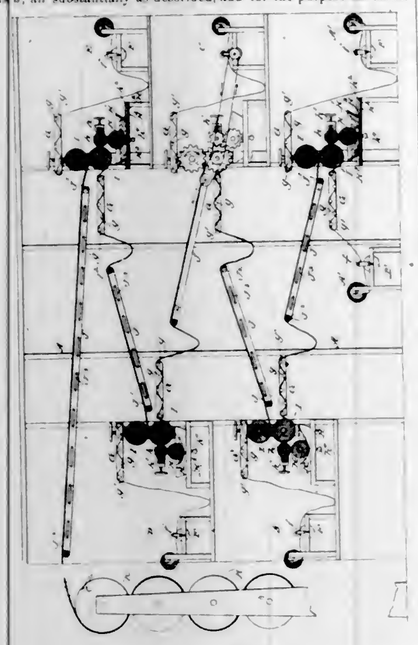
Claim.—1. The improved machine herein described, comprising the paper-supports, the pressure-rolls, the tension devices G, arranged between the paper-supports and the pressure-rolls, the pasting devices, and the drier, all substantially as set forth.

2. In a machine substantially as described, the combination of the framing, the series of paper-supports, the series of pasting devices, the series of pressing devices, and the series of driers, such driers being located one in rear of each of the pressing devices and arranged substantially as described, whereby the opposite sides of the paper card-board as it runs through the machine are alternately exposed to the successive driers, substantially as set forth.

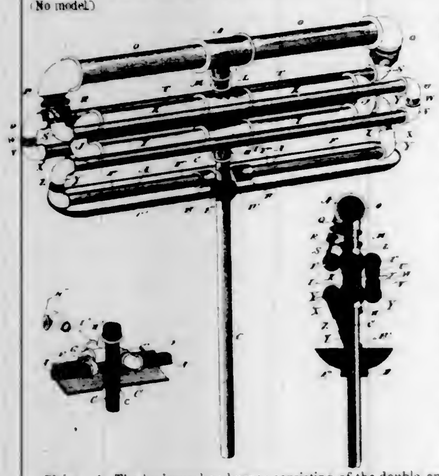
3. In a machine, substantially as described, the combination of the pressure-rollers I, the pasting-trough, the roller H, turning in said trough, the roller *h*, turning in contact with roller H, and a screw by which such roller *h* may be adjusted against one of the pressure-rollers I, all substantially as set forth.

4. The improved card-board-making machine herein described, consisting of the paper supports or rolls, the feeding-rollers F *f*, the

pasting-rolls H A, the tension device G, the pressure-rollers I I, and the driers J, all substantially as described, and for the purpose set forth.



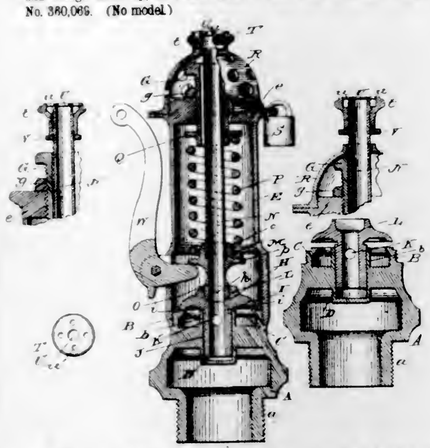
448,064. HYDROCARBON-BURNER. JOHN MCHALE and VICTOR C. DILLMANN, Kansas City, Mo. Filed Oct. 10, 1890. Serial No. 367,653. (No model.)



Claim.—1. The hydrocarbon-burner consisting of the double cylindrical retort H, receiver N, pipe M, connecting said retort and receiver, supply-pipe C, connecting with the lower side of the retort, the longitudinally-arranged pipes T T, the elbows and pipes P, R, and S and Q, R, and S, connecting said pipes T T and receiver at opposite ends, longitudinal pipes X X, elbows U V, and short pipes W, connecting at opposite ends of the burner, the pipes T and X, and longitudinal pipes A', provided with closing end caps B' and orifices F' in their upper surfaces and connected at opposite ends with the pipes X by elbows Y Y and short pipes Z, substantially as described.

2. In a hydrocarbon-burner, the combination, with a vertical supply-pipe, of a retort H, consisting of two pipes I K, the one above the other, and elbows connecting the corresponding ends of the said pipes I K, the said supply-pipe being connected to the central portion of the lower pipe, pipes T and X, the one above the other on each side of the retort H and having their adjoining ends connected, the upper of the said pipes T and X being connected with upper pipe K of the said retort, and perforated pipes A' on opposite sides of the said supply-pipe, each of the said pipes A' having a closed end contiguous to the vertical supply-pipe and connected to the lower of one of the said pipes X, as described.

448,065. SAFETY-VALVE. WILLIAM MCSHANE, St. John, New Brunswick, Canada, assignor to Thomas McAvity, John A. McAvity, and George McAvity, all of same place. Filed July 28, 1890. Serial No. 360,066. (No model.)



Claim.—1. A safety-valve, substantially as described, having its valve proper provided with a tubular stem hollow from end to end for the passage of the steam into the atmosphere, substantially as set forth.

2. In a safety-valve, the combination, with the valve having a hollow tubular stem open at its end, of a regulating-disk supported and adjustable toward and from the open end of said stem, substantially as set forth.

3. The combination of the valve having the tubular stem open at its end, the disk supported concentrically above said open end of the valve, the nut supporting said disk, and a support to which said nut is screwed, whereby the disk may be adjusted up or down, substantially as and for the purposes set forth.

4. The combination of the base A, having the valve-seat and provided with the central socket D, and the valve proper fitted to said seat and having a hollow tubular stem and a lower extension, the latter being arranged to operate in the socket D, all substantially as and for the purposes set forth.

5. The combination, with the base having the valve-seat, of the valve having a lower extension and provided with a tubular stem formed in sections N and O united, substantially as set forth.

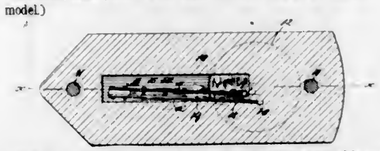
6. The combination of the base having the valve-seat and provided with the socket D, the valve proper provided with a depending extension J, fitting in the said socket and having in its upper side a socket or concavity *h*, and the tubular valve-stem formed at its lower end to fit in said socket *h*, substantially as set forth.

7. The combination of the casing, the cap thereon, the valve having the tubular stem extended into said cap, the regulating-disk, and the nut supporting said disk and threaded on the cap, all substantially as set forth.

8. The combination of the valve having the tubular stem, the regulating-disk having an opening U in alignment with said stem and opening *u*, and adjustable supports for the said regulating-disk, all substantially as set forth.

9. The improvement in safety-valves, substantially as herein described and shown, consisting of the base A, having the valve-seat and the central socket D, the valve proper fitting the valve-seat and having a socket *h*, and a lower tubular extension J, fitting in the socket D and provided with external grooves and lateral ports K, the tubular stem M, having sections N, and a section O, formed at its lower end to fit in the socket *h*, and provided with a flange *p*, the bearing-ring Q, and adjusting-bolt G, and the spring on the stem M, arranged to bear between the flange *p* and the ring Q, all substantially as and for the purposes set forth.

448,066. THERMOMETER FOR SAD-IRONS. AUGUST NICOLAUS, New York, N. Y., assignor of two-thirds to Herman Kahn and Samuel J. Besthoff, same place. Filed Sept. 10, 1890. Serial No. 364,532. (No model.)

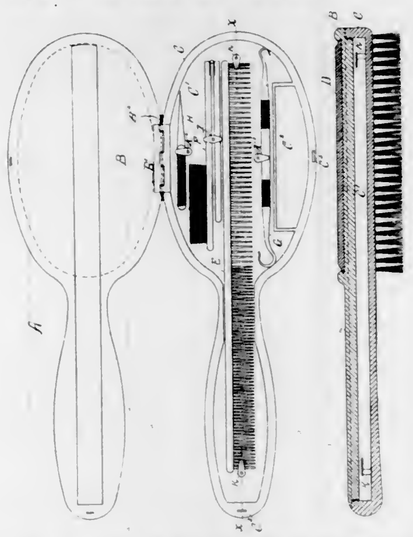


Claim.—1. The combination, in a sad-iron, with the movable pointer, of the thermostat-bar formed in two parallel sections secured together at one end and each section being formed of two strips of unequal expansion, the free end of one section extending adjacent to and connected with the pointer and the corresponding end of the other section being secured to the sad-iron, whereby when heated the bar will flex and operate the pointer, substantially as set forth.

2. The combination, with the sad-iron having in its upper face a recess 14, provided with a narrow channel 16 in one end wall, of a thermostat-bar formed of metallic strips of unequal expansion, said bar comprising two parallel sections *a a'*, connected at one end, the opposite end of the section *a'* being held in said channel 16, and a pivoted pointer above the free end of the section *a* and connected therewith, substantially as set forth.

3. The combination, with the sad-iron having a recess 14, a pivoted dial-pointer on the upper side of the iron, and provided on its lower side with a pin 18, extending down into said recess, and a cover-plate for said recess, of the thermostat-bar A, consisting of two parallel sections *a a'*, formed of metal strips of unequal expansion, the free end of the section *a* having a loop or eye engaging the pin 18, and the adjacent end of the section *a'* being secured to the sad-iron, substantially as set forth.

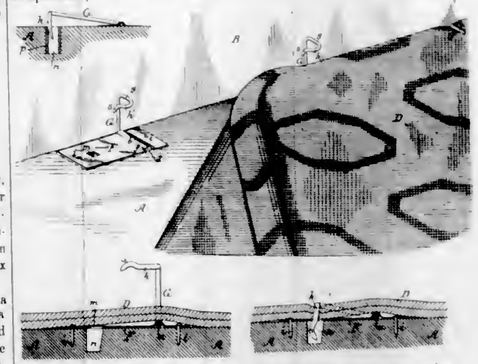
448,067. TOILET-BRUSH. JOSEPH O. NIGHTINGALE, Paterson, N. J. Filed Nov. 11, 1889. Serial No. 329,917. (No model.)



Claim.—A toilet-brush having two separable halves detachable hinged together, one half being provided with a brush and handle and the other half being provided with a mirror and handle, substantially as shown and described.

448,068. CARPET-FASTENER. GEORGE C. PARMETER and ALEXANDER G. C. STETSON, Philadelphia, Pa. Filed Dec. 13, 1890. Serial No. 374,560. (No model.)

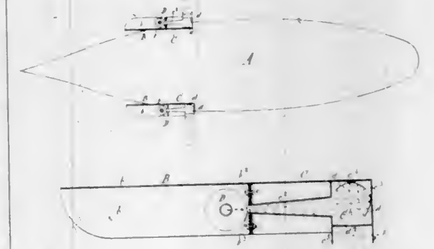
Claim.—1. The within-described carpet-retainer, consisting of an arm pivoted to the floor, so as to swing in a plane parallel with the edge of the carpet, and having at its free end a lateral projecting finger for overlapping the edge of the carpet, said projecting finger having a forwardly-extending tongue for penetrating the carpet, substantially as specified.



2. The combination of the arm pivoted to the floor, so as to swing in a plane parallel with the edge of the carpet, and having a laterally-projecting finger with tongue for penetrating the carpet, with a plate confining said arm to the floor and having an opening for the passage of said tongue, substantially as specified.

3. The combination of the recessed floor or floor-plate with the arm pivoted to the floor, so as to swing in a plane parallel with the edge of the carpet, and having a laterally-projecting finger with elastic penetrating tongue, and means for pivoting said arm to the floor, substantially as specified

448,069. SIGNAL-LIGHT. GEORGE T. PARRY, Philadelphia, Pa. Filed Oct. 6, 1890. Serial No. 367,260. (No model.)



Claim.—1. In marine signals, the box B, having a signal-lamp D, in combination with the box C, comprising a conducting-tube c^3, connecting the signal-lamp box with the reflecting-chamber, a reflecting-chamber C', reflecting means, and a colored signal-glass, substantially as described.

2. In marine signals, in combination, the lamp D, giving a colored light in a forward and sidewise direction, the reflectors *d d'*, reflecting-chamber C', having a signal-glass d^3, and a tube c^3, connecting the signal-lamp with the reflecting-chamber and forming a communication between the lamp-box and the reflector-chamber C', of the box C, the said signal-glass d^3 giving a light-signal in a lateral direction and of the same color as the signal of lamp D, substantially as described.

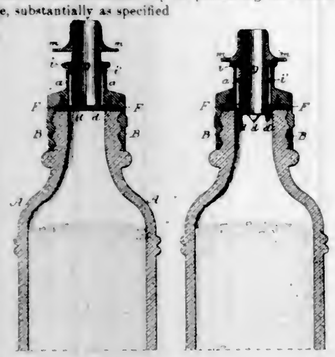
3. In marine signals, in combination, a signal-lamp connected by a tube with a reflecting-chamber and giving a colored light in a rear, forward, and sidewise direction, a reflected light of the same color at a distance from the same, and guards for preventing the reflected light from spreading laterally unduly, substantially as described.

4. In a marine signal-light, the combination of the box B, lamp D, box C, having a reflecting-chamber C', a flaring tube c^3, and suitable reflecting means arranged within the reflecting-chamber in proper relation to the flaring end of said tube, substantially as described.

448,070. BOTTLE-STOPPER. FRANK W. PERRY, Philadelphia, Pa., assignor to the Hero Fruit Jar Company, same place. Filed Dec. 13, 1890. Serial No. 374,561. (No model.)

Claim.—The combination of the bottle, the cap secured thereto and having a projecting tubular portion, the disk secured by the cap

and having a central slitted portion, the tubular nozzle supported by the slitted portion of the disk but guided in the tubular projection of the cap and having beyond the same a projecting flange and projecting shoulders on the nozzle and cap for preventing the withdrawal of the nozzle, substantially as specified

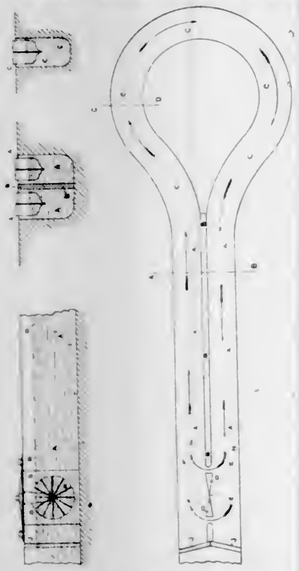


448,071. SWEAT-PAD FASTENING. ERNEST F. PFLUEGER, Akron, Ohio. Filed May 16, 1890. Serial No. 352,019. (No model.)



Claim.—The sweat-pad fastening for horse-collars, consisting of the clasp or band having struck up from its outer surface near one end two loops *f f*, and the fastener having the loops b^3 and the parallel arms *b* formed with end portion extended inwardly toward each other and engaging the said loops on the band, substantially as described.

448,072. CONSTRUCTION OF CANALS. ARTHUR PICKARD, Leeds, England. Filed June 4, 1889. Renewed Feb. 11, 1891. Serial No. 381,028. (No model.) Patented in England July 20, 1888, No. 10,519.



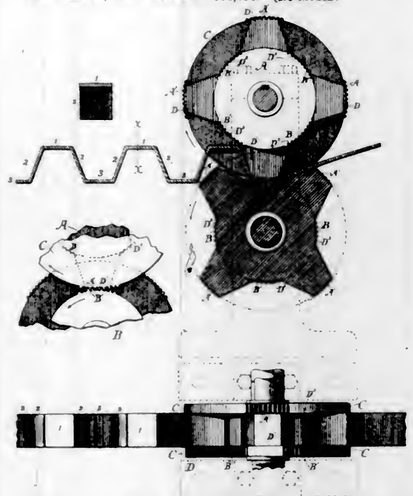
Claim.—1. In a canal, a water-propelling wheel mounted in the canal and adapted to produce a current for the propulsion of boats, substantially as set forth.

2. In a canal having two legs or branches, a water-propelling wheel situated in the canal at the side of the channel and between said branches, substantially as set forth.

3. A continuous canal or water-course divided longitudinally by a wall partition or mid-feather and provided with a propeller-wheel for forcing the water from one side of said canal into the other side, whereby a continuous current is established, substantially as set forth.

4. A continuous canal or water-course divided longitudinally by a wall partition or mid-feather and provided with a propeller-wheel for forcing the water from one side of said canal into the other side, whereby a continuous current is established, and lock *J* for transferring boats from one side of the canal to the other, as set forth.

448,073. ROLLING-MILL. JAMES M. PRICE, Philadelphia, Pa., assignor to the Price Railway Appliance Company, of Pennsylvania. Filed June 26, 1890. Serial No. 356,758. (No model.)



Claim.—1. A pair of rolls with dies for shaping metal into a series of undulating truncated pyramids connected at base, and with heads and feet in parallel planes, substantially as described.

2. A pair of rolls formed with one or more dies curved circularly on their outer faces and projecting from a circular die of smaller diameter.

3. A pair of rolls embraced or confined between two concentric toothed rims of different diameters adapted to drive reciprocal rims or wheels upon or attached to the opposing roll, substantially as described.

4. A pair of rolls confined between two concentric toothed rims of diverse diameters, of which for each so many teeth shall have been omitted or removed as shall permit the one pair of wheels attached to the driving-axle so to engage and disengage the opposing pair as to produce harmony of action, regardless of the difference of diameter, substantially as described.

5. The alternate engagement and disengagement of two pairs of toothed wheels or rims, of diverse diameters, interlocking the large with its small opponent, said rims having mutilated gearing, substantially as described.

6. Toothed rims or wheels provided with mutilated gearing and in pairs of different diameter, interlocking the small one with the opposite large, so as to make continuous motion at different speeds in machinery thereby driven, substantially as described.

7. A pair of rolls, each confined between a pair of toothed rims or wheels of diverse diameter, and but one pair of these rolls and one pair of concentric wheels being attached to the driving-axle, the other to be moved by its fellow with alternate speed and slowness, according to the diameter of the toothed wheel in action, substantially as described.

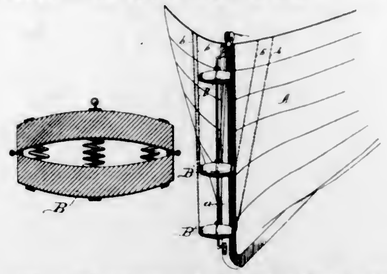
8. Dies with curved exterior faces, the sectional part so far of a cylinder, either smooth or guttered to fit the metal to be passed between them, and resting at their base upon arcs or sections of a smaller concentric cylinder, forming part of the same block or roll for rolling and shaping metal, substantially as described.

9. Dies of curved exterior face, smooth and flat on the transverse line or guttered longitudinally, around which metal is passed and

shaped by rolling between toothed wheels embraced by suitable housings to produce a series of connected truncated pyramids, substantially as described.

10. Dies of curved exterior so placed on opposing rolls or blocks as to fall into the interspaces or intervals between the opposite pair of molds and press smoothly and firmly between their sides and upon their faces against the interposed metal, curve against curve, circular die against circular base covered by the metal interposed, substantially as described.

448,074. SHIP'S FENDER. THOMAS RAFFERY, New York, N. Y. Filed Nov. 11, 1889. Serial No. 329,862. (No model.)



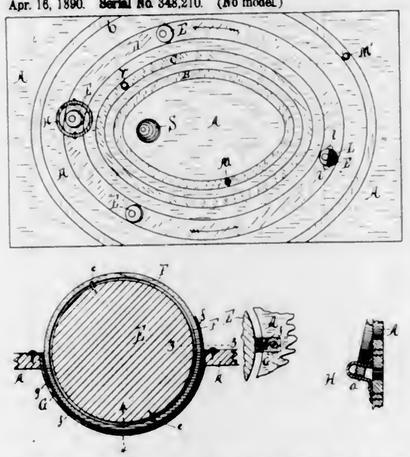
Claim.—1. The combination, with the bow of a vessel having a guide device, of one or more movable fenders arranged upon the cutwater and capable of sliding up and down thereon, substantially as described.

2. The combination, with the bow of a vessel having a guide device, of one or more stationary and one or more movable fenders, the movable fenders being arranged to move up and down on the guide device, substantially as described.

3. The combination, with the bow of a vessel, of a rod or bar attached thereto and one or more stationary and one or more vertically-movable fenders attached to the rod or bar, substantially as described.

4. The combination, with the bow of a vessel, of a vertical rod attached thereto, one or more stationary and one or more movable fenders attached to the rod, and chains or ropes attached to the fenders and attached to a drum or the like on the deck, substantially as described.

448,075. TELLURIAN. JOHN K. RASSWEILER, Wheaton, Ill. Filed Apr. 16, 1890. Serial No. 348,210. (No model.)

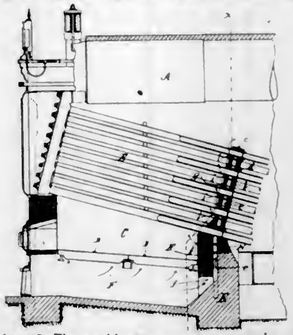


Claim.—1. In an apparatus of the class described, the plane surface A, representing the ecliptic having spheres mounted therein to indicate the positions of the sun and earth, and annular portions H, pivoted thereto by means of the pivots *h* and clamps *h'*, to represent the orbits of the heavenly bodies, together with spheres mounted on said annular portions to represent said bodies, substantially as described.

2. In combination with the ecliptic plane having a sphere properly located therein to represent the sun, a globe supported by the grooved half-ring G, fixed to the ecliptic plane, the flanged ring F, and the pivots *e*, secured to the ring F and supporting said globe, substantially as described.

3. The combination of the spheres representing the earth and moon, the ecliptic plane having the annular portions cut therefrom and pivoted therein, and the bridge-pieces *a*, to unite the parts of the plane on opposite sides of the portions cut away without interfering with the free oscillation of the annular portion, substantially as described

448,076. SMOKE-PREVENTING WATER-TUBE-BOILER FURNACE. THOMAS REESE, Jr., Newark, N. J., and HARRY W. SELLER, Brooklyn, N. Y. Filed Nov. 19, 1890. Serial No. 371,961. (No model.)

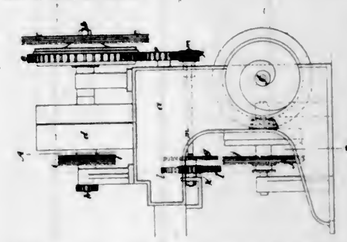


Claim.—1. The combination, in a gas-consuming and smoke-preventing boiler-furnace, of a bridge-wall having an upward hollow extension forming an air chamber or passage therein, said chamber extending up to the top tier of the bank of water-tubes used in said boiler, with a series of openings through the front wall of said bridge-wall, through which air or gas can be supplied to the fire in front of the bridge-wall below and between the tubes from the air chamber or passage in the bridge-wall, substantially as and for the purpose set forth.

2. The combination, in a gas-consuming and smoke-preventing boiler-furnace, of a bridge-wall having an upward hollow extension forming an air chamber or passage, said chamber extending up to the top tier of the first bank of water-tubes, and also having a rear wall extending up to the top tier of the upper bank of water-tubes composing said boiler, so as to form a bridge-wall extending to the top of one or more banks of tubes, with a series of holes perforated in the front wall of said bridge-wall below and between the water-tubes, through which air or gas can be supplied from the air passage or chamber within the bridge-wall to the fire in front thereof, substantially as and for the purpose set forth.

3. The combination, in a gas-consuming and smoke-preventing boiler-furnace, of a bridge-wall having an upward hollow extension forming an air chamber or passage therein, said chamber extending up between the bank or banks of water-tubes in said boiler and having the front wall thereof provided with openings for supplying air or gas to the fire in front of said bridge-wall, with a valve for regulating the supply of air to the air chamber or passage in the bridge-wall, substantially as and for the purpose set forth.

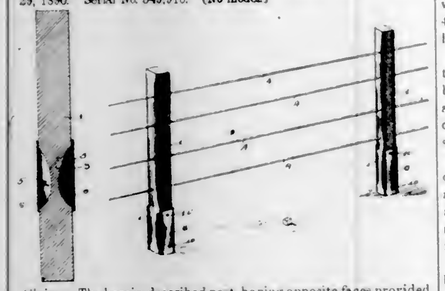
448,077. MULE AND TWINER FOR SPINNING AND DOUBLING COTTON OR OTHER FIBROUS SUBSTANCES. WILLIAM H. RHODES, Manchester, England, assignor to Curtis Sons & Co., same place. Filed July 24, 1888. Serial No. 280,880. (No model.) Patented in England Nov. 8, 1886, No. 14,368.



Claim.—The combination of the head-stock frame having a curved slot, the backing-off wheel, and the rim-shaft, with a loose pulley *d* on

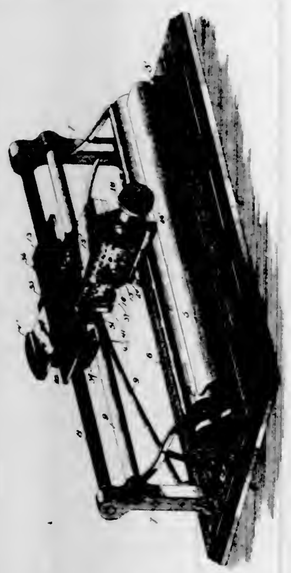
the rim-shaft, a grooved band-pulley *i* on the said loose pulley, a band *h*, a second band-pulley *g*, spur-pinion *k*, fixed to the said band-pulley *g*, and a shaft carrying a spur-wheel *l*, gearing into said pinion, and a toothed pinion *n*, and with a carrier-wheel *o*, gearing into this toothed pinion and also into the backing-off wheel and mounted in the curved slot to permit a change of the toothed pinion, all substantially as described.

448,078. FENCE POST. TICE S. RIDDEL, Eugene, Oreg. Filed Apr. 29, 1890. Serial No. 349,918. (No model.)



Claim.—The herein-described post, having opposite faces provided with a series of parallel longitudinally-disposed short pockets or holes, the bottoms of which are at one side of the center of the post or terminate short of said center and are inclined toward the exterior of the post, the sheets of packing covering the pockets, and the metal plates covering the packing-sheets and secured in position, substantially as specified.

448,079. TYPE-WRITING MACHINE. GEORGE F. ROBERTSON, Morristown, Tenn. Filed July 31, 1890. Serial No. 360,511. (No model.)



Claim.—1. In a type-writer, the hinge spacing-rod and the rod 9, in combination with the printing mechanism having rotary and sliding movement on the spacing-rod and provided with spacing mechanism automatically actuated by contact with rod 9, substantially as described.

2. In a type-writer, the combination of the rods 8 and 9, the carrier-block hinged to the spacing-rod 8 and provided with the spring-actuated bar 37, having the stop-hook 40, and the extension rack-bar 31, substantially as described.

3. In a type-writer, the combination of the rods 8 and 9, the carrier-block hinged to the spacing-rod 8 and provided with the spring-actuated bar 37, having the stop-hook 40, and the adjustable stop 42, as shown and described.

4. In a type-writer, the combination of the grooved rod 8 and rod 9, the carrier-block hinged to the rod 8 and provided with the pivoted locking-lever 44, having the spring 47, and the cam projection 48, actuated by contact with rod 9, as shown and described.

5. In a type-writer, the combination of the grooved rod 8 and rod 9, the carrier-block hinged to the grooved spacing-rod and provided with the pivoted jump-lever 45, having the cam projection 50, actuated by contact with rod 9, and spring 49, as shown and described.

6. In a type-writer, the combination of the grooved rod 8 and rod 9, the carrier-block hinged to the grooved spacing-rod and provided with the pivoted locking-lever 44, having the spring 47, the cam 48, and the stop 51, in combination with the pivoted jump-lever 45, having the spring 49, cam 50, and slot 52, as shown and described.

7. In a type-writer the combination of the carrier-block hinged to rod 8 and having the integral character-board, said carrier-block being recessed beneath the character-board transversely of the hinge and having the sliding plate 14, whereby the first and last rows of characters are automatically stopped in position for printing, with stops 14′ 14″, substantially as shown and described.

8. In a type-writer, the hinged carrier-block having the integral character-board and guide-recess, in combination with the sliding plate and its depending bearings, the rotary type-roller, its operating-knob, and the segment-gear and rack with its pointer attachments, said segment-gear and rack constituting an automatic stop or limit to the rotation of the type-roller, as and for the purpose set forth.

9. In a type-writer, the hinged carrier-block, integral character-board, and pivoted stop-bar 37, in combination with the rotary adjustable type-roller, the segment-gear, the rack-bar, and the rack-bar extension, as and for the purpose described.

10. In a type-writer, the hinged carrier-block, integral character-board, and pivoted stop-bar 37, in combination with the endwise and rotary adjustable type-roller, the segment-gear, the rack and pointer, and the rack-bar extension, all as shown and described.

11. In a type-writer, the hinged carrier-block, integral character-board, and pivoted stop-bar 37, in combination with the adjustable type-roller, the segment-gear and rack-bar, and the notch-extension of the latter, as shown and described.

12. In a type-writer, the hinged carrier-block, integral character-board, and pivoted stop-bar 37, in combination with the endwise and rotary adjustable type-roller, the segment-gear, the rack and pointer, and the rack-bar extension having the locking-notches, as shown and described.

13. In a type-writer, the hinged carrier-block, integral character-board, and toothed stop-bar 37, in combination with the rotary and sliding type-roller, the segment-gear and rack-bar with its pointers, and the rack-bar extension provided with the locking-notches, as and for the purpose set forth.

14. In a type-writer, the hinged carrier-block, integral character-board, toothed stop-bar 37, and locking and spacing levers, in combination with the rotary and sliding type-roller, the segment-gear and rack with its pointers, and notched locking-extensions, as shown and described.

15. In a type-writer, the type-roller having the integral hollow journal 17′, and the plate 21, having the equidistant locking holes or recesses, in combination with the rack and segment-gear 19, provided with the locking-pin, as and for the purpose set forth.

16. In a type-writer, the combination of the type-roller having the integral hollow journal 17′, the shaft 16′, fixed against endwise movement in its bearings and having the head 16″, and the spiral spring, as shown and described.

17. In a type-writer, the type-roller provided with the type-sections and the integral hollow journal 17′, the space-plate 21, having the equidistant locking-recesses, and independent journal 16′, fixed against endwise movement in its bearings, in combination with the segment-gear 19 and its locking-pin and with a spring for holding the segment-gear and plate detachably pressed together.

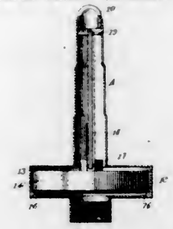
18. In a type-writer, the combination of the rods 8 and 9, the hinged carrier-block, and sliding and rotary type-roller with the pivoted segment-gear 28, actuating-arm 30, and pinion 23, loosely journaled on the shaft 16′, as and for the purpose set forth.

19. In a type-writer having the rods 8 and 9 and the pivoted printing mechanism, the combination therewith of the pivoted segment-gear 28, actuating-arm 30, and pinion 23, having the arm 24, shaft 25, and inking-roller 26, as and for the purpose set forth.

20. In a type-writer having the rods 8 and 9, the hinged printing mechanism, the pivoted segment-gear 28 with its actuating-arm 30, in combination with the pinion 23, journaled upon the axis of the type-roller and having the spring-actuated arm 24, shaft 25, and inking-roller 26, as and for the purpose set forth.

21. In a type-writer, the combination of the character-board having the independent character-sections and pointers with the type-roller having corresponding independent character-sections in duplicate and means for locking either of the sections in operative position to each other, substantially as described.

448,080. BURNER. JOHN J. ROBINSON, Brooklyn, N. Y. Filed Feb. 21, 1890. Serial No. 341,282. (No model.)



Claim.—1. The combination, with the burner having a valve-seat within its lower portion, of a downward-closing horizontal valve resting upon said seat, and a thermostat suspension-rod secured at its upper end within the upper part of the burner and secured at its lower end to the said valve to positively raise it from its seat and lower it, substantially as set forth.

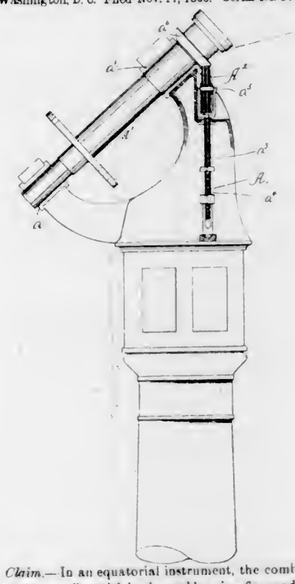
2. The combination, with the burner having a valve-seat in its lower portion, of a downward-closing horizontal valve resting upon said seat, and a thermostat suspension-rod pivotally connected at its lower end to the upper side of the valve and secured at its upper end within the upper part of the burner, substantially as set forth.

3. The combination, with the burner having a valve-seat in its lower portion, of a downward-closing valve resting thereon, and a suspension-rod formed of unequally expansive metallic strips and pivoted at its lower end to the said valve and secured at its upper end within the upper part of the burner

4. The combination, with the burner having a valve-seat in its lower portion, of a horizontal valve provided on its upper side with a central vertical screw-plug, and the thermostat suspension-rod pivoted at its lower end to said plug and secured at its upper end within the upper end of the burner, substantially as set forth.

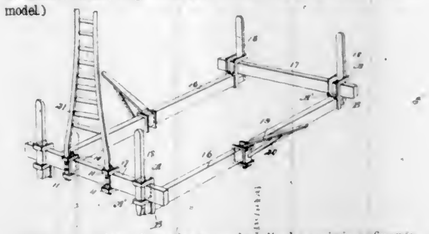
5. The combination, with the burner having an enlarged chamber 13 at its lower end, an annular knife-edge valve-seat 16 on the bottom of said chamber, and a central inlet 11, of the horizontal disk-valve 14, having a lower beveled edge 15 resting on said knife-edge, a central vertical screw-plug in the upper side of the said valve, and the suspension-rod formed of unequally expansive metallic strips and pivoted at its lower end to said plug and at its upper end within the upper part of the burner, substantially as set forth.

448,081. EQUATORIAL MOUNTING. GEORGE N. SAEGMULLER, Washington, D. C. Filed Nov. 17, 1890. Serial No. 371,725. (No model.)



Claim.—In an equatorial instrument, the combination of a polar axis having a collar with horizontal bearing-face and a series of wheels or rollers mounted upon a single shaft and supporting the polar axis by contacting with the beveled face of said collar.

448,082. CLASP FOR CONNECTING TIMBERS. HAROLD A. SALISBURY, Vinson, Oreg. Filed May 20, 1890. Serial No. 352,645. (No model.)



Claim.—1. A clasp of the character described, consisting of upper and lower parallel horizontal stirrups and a single vertical stirrup located beneath the lower horizontal stirrup, substantially as and for the purpose specified.

2. A clasp of the character described consisting of upper and lower horizontal spaced stirrups connected at their rear ends, the upper stirrup being open at the said rear end and the lower stirrup provided with a table partially closing the same, and a vertical stirrup projected downward from the rear under portion of the lower horizontal stirrup, as and for the purpose specified.

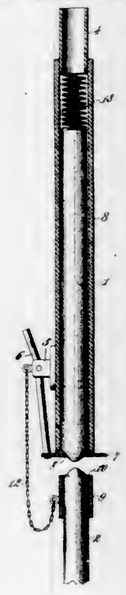
448,083. PEN-HOLDER. HERMANN F. E. SCHUSTER, Savannah, Ga. Filed Sept. 3, 1890. Serial No. 363,840. (No model.)



Claim.—1. In a pen-holder, the combination of the holder proper, a ferrule projection thereof, having a semi-cylindrical tongue 3, and an inclosing rotatory cylindrical sleeve having a detent to prevent the nib sharing in the rotation of the said handle proper.

2. In a pen-holder, the combination of the holder proper 1, a ferrule projection 2 thereof, having the semi-cylindrical tongue 3, an inclosing rotatory cylindrical sleeve 4, and a cross-bar 6, which extends diametrically across said sleeve, as and with the object set forth.

448,084. ELECTRODE FOR ARC LAMPS. ALBERT C. SEIBOLD, Mount Vernon, N. Y. Filed Dec. 24, 1890. Serial No. 375,701. (No model.)



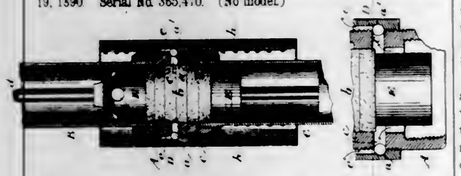
Claim.—1. In an electric-arc lamp, a holder or casing for the positive-carbon electrode, consisting of a metallic tube having an interior diameter freely admitting the carbon, the lower end of said tube being provided with a removable flat plate arranged in immediate proximity to the arc and having an opening of somewhat less diameter than the carbon, substantially as described.

2. In an arc lamp, the combination, with the clamp for the upper-carbon electrode, of a metallic tubular holder or casing having an interior diameter freely admitting the positive carbon and provided upon its lower open end with a removable flat plate arranged in immediate proximity to the arc and having an opening of less diameter than the carbon electrode to receive and sustain the point of the latter, substantially as described.

3. In an arc lamp, the combination, with a metallic holder or casing adapted to receive the positive-carbon electrode and attachable to the upper-carbon clamp of the lamp, of a lever fulcrumed on said holder and having a metallic plate upon its end provided with an opening of less diameter than the carbon, said plate being normally held by the lever beneath the lower open end of the carbon-holder to sustain the carbon projecting through the said opening, substantially as described.

4. An arc lamp having a metallic tubular holder inclosing the positive carbon and provided with a removable flat plate arranged in immediate proximity to the arc to sustain the carbon, through an opening in which the point of the carbon projects, and a metallic cap or shield consisting of a short cylinder having an inwardly-turned edge upon its upper end, said cylinder surrounding the upper portion of the negative carbon and sustained thereon by the inwardly-turned edge, which rests upon the end or point of said carbon, substantially as described.

448,085. DEVICE FOR SPRAYING OIL FROM THE TUBING OF OIL-WELLS. HARVEY F. SEYBERT, Queenstown, Pa. Filed Sept. 19, 1890. Serial No. 365,470. (No model.)



Claim.—1. In an oil-well, the combination, with the tubing, of a cylinder provided with apertures *c*, and an outside groove *a*, connecting with said apertures, a ring placed on said cylinder and provided with inner vertical grooves in position to connect with said groove *a*, and a hollow plug removably placed in said cylinder and adapted to close said apertures *c*, substantially as set forth and described.

2. The combination, with the tubing and working-barrel, of a cylinder A, provided with groove *a* and apertures *c*, a ring D, placed on said cylinder and provided with inner vertical grooves adapted to connect with said groove *a*, a hollow plug E, provided with packing and seated in said cylinder, and a perforated casing *h*, adapted to inclose said cylinder, substantially as set forth and described.

448,086. HOUSE-DOOR LETTER-BOX. GEORGE M. SHINN, Newton, Mass. Filed Jan. 5, 1891. Serial No. 376,773. (No model.)

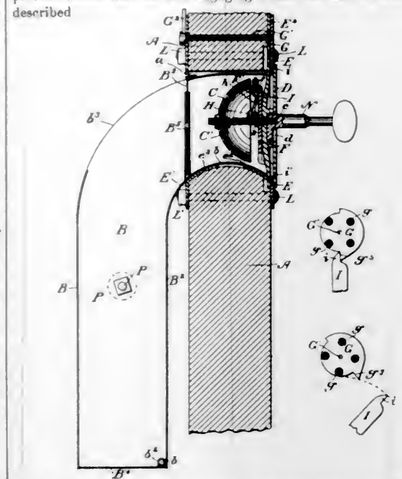
Claim.—1. As a new article of manufacture, a movable letter-box having its top curved over substantially at right angles to the body thereof and provided with a receiving and delivering mouth, substantially as described.

2. The combination, with a door or suitable support provided with an opening, of a letter-box having its top curved over substantially at right angles to the body thereof and movable within said opening, substantially as described.

3. A letter-box having its top curved over substantially at right angles to the body thereof and provided with a mail receiving and delivering mouth, in combination with a door or support provided with an opening, and having a seat over which the box is adapted to slide or roll within said opening, substantially as described.

4. A letter-box provided with a receiving and delivering mouth and having its top curved over substantially at right angles to the body thereof, the under surface of the curved top forming practically the arc of a circle, in combination with a door or suitable support provided with an opening through which the box is adapted to roll from a vertical to a horizontal position, and a front plate secured to the body of the box, whereby the opening is closed when the body of the box is vertical, substantially as described.

5. A letter-box having its top curved over substantially at right angles to the body thereof and provided with a receiving and delivering mouth, in combination with a door or suitable support provided with an opening through which the box is adapted to slide or roll and having suitable locking-recesses, and a key-operated locking-bar pivoted within said box and engaging in said recesses, substantially as described



6. The combination, with a door or suitable support provided with an opening *a* and recesses a' a^2, of a front frame-plate E, a letter-box movable within said opening and frame-plate, a front plate D, secured to said letter-box and adapted to close over said frame-plate, and a key-operated locking-bar pivoted within said letter-box and engaging in said recesses a' a^2, substantially as and for the purposes described.

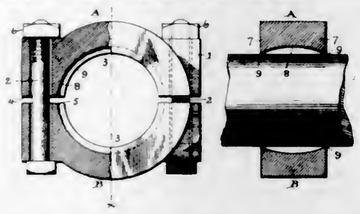
7. The combination, with a door or suitable support provided with an opening, of front and rear frame-plates E E', provided with inwardly-curved seat-forming flanges e^2 e^2, and a letter-box having its top curved over substantially at right angles with the body thereof and movable over said flanges and within said opening, substantially as described.

8. A letter-box having a key-operated locking-bar pivoted therein and provided with ratchet-teeth, a bell-hammer, a vibrator connected with said hammer and operated by said ratchet-teeth, and a bell arranged and operating substantially as described.

9. A movable letter-box provided with a key-operated locking device, in combination with a door or suitable support provided with an opening within which the box slides, and an indicator automatically operated by said locking device, substantially as and for the purposes described.

10. The combination, with a door or suitable support provided with an opening, of a letter-box movable within said opening and having stops on the sides thereof, whereby the box is prevented from being removed from the opening, substantially as described.

448,087. SHAFT-COLLAR. FLAVEL SIMONSON, Milwaukee, Wis. Filed Nov. 22, 1890. Serial No. 372,374. (No model.)



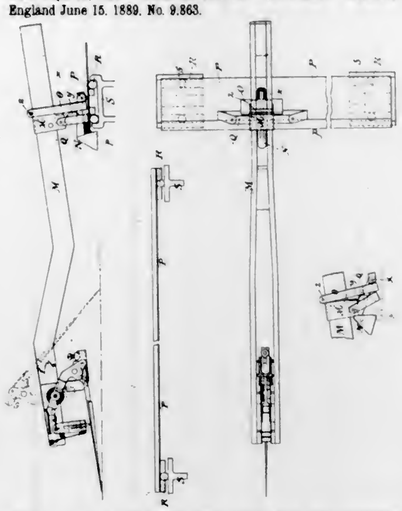
Claim.—1. A shaft-collar consisting of sections having approximately semicircular binding-edges and a concave recess intermediate the same.

2. A shaft-collar having an interior recess terminating at its sides in binding-edges.

3. A shaft-collar having circular binding-edges designed to engage with the shaft and a circular concave recess between the said edges.

4. A sectional shaft-collar, each section having an interior concave recess and a binding-edge on each side of the recess, and means for clamping the sections on a shaft.

448,088. APPARATUS FOR CUTTING PILE FABRICS. JAMES H. SMITH, Eccles, ANDREW GODDARD, Stockport, and LLOYD HIGGINBOTTOM and THOMAS MANROCK, Manchester, assignors to the Fustian Cutting Machine Company, (Limited,) Ordsall Lane Mills, Salford, England. Filed Sept. 22, 1890. Serial No. 365,769. (No model.) Patented in England June 15, 1889, No. 9,863.



Claim.—1. In machines for cutting pile fabrics, the combination of the knife with a level composed of a sleeve or its equivalent fixed to the handle of the knife, a front and a back member pivoted to the sleeve, and a hook pivoted to the back member, the said hook and the front member being adapted to clamp the table when the knife is forced backward, substantially as and for the purposes set forth.

2. In machines for cutting pile fabrics, the combination of a knife for cutting the pile fabric with a laterally-movable table to which the knife is clamped, the said table being free to follow the lateral motion of the knife, substantially as and for the purposes set forth.

3. In machines for cutting pile fabrics, the combination of a knife with a table to which the knife is clamped, the said table being mounted upon a supporting-frame and provided with pieces attached to the under side of the table, and rollers between the supporting-frame and the table, substantially as and for the purpose set forth.

448,089. MICROMETER-GAGE. LAROY S. STARRETT, Athol, Mass. Filed May 4, 1889. Serial No. 309,584. (No model.)

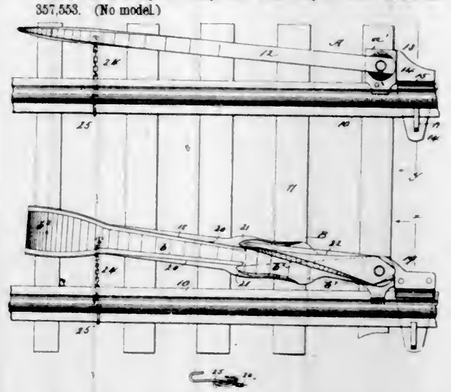


Claim.—1. In a micrometer-gage, the anvil A, the neck B, the fixed tubular barrel C, threaded internally and having externally a line of longitudinal graduations, and the terminally-graduated sleeve E, revolving outside of said barrel, in combination with the spindle D having a threaded portion engaging the threaded interior of the barrel, the peripherally-milled end portion F, for turning said sleeve and spindle in adjusting the device, and with the axial extension thumb-piece G, fixed to said spindle D, materially less in diameter than said milled end portion F, for increasing the speed of rotation, substantially as set forth.

2. In a micometer-gage, the unslotted and internally-threaded barrel C and the peripherally-graduated sleeve revolving around it, in combination with the spindle affixed to said sleeve and having a threaded portion engaging within the threaded barrel, and with a spring H, arranged within the annular space around the unthreaded part of the spindle within said barrel, substantially as set forth.

3. In a micrometer-gage, the anvil A, neck B, and tubular body C, threaded internally, in combination with the spindle D, having a threaded portion terminating in a defined shoulder J, and with a coiled spring H, telescoped by said spindle and compressed between the shoulder J and the bottom of the cavity in the barrel, substantially as set forth.

448,090. CAR-REPLACER. WILLIAM STEPHENS, Redding, and JOSEPH MOTT, Siskiyou County, Cal. Filed July 2, 1890. Serial No. 357,553. (No model.)



Claim.—1. A car-replacer consisting of two inclined skids, each comprising a base-section and a rail-section, one of the rail-sections being provided with a switch-point capable of lateral movement, and each base-section being provided with an attached plate adapted to extend beneath the flange of the rail, said plate having formed thereon near one end an angular clamping-rib and provided near the opposite end with a bifurcated key, substantially as shown and described

2. A car-replacer consisting of two skids, each comprising an inclined rail-section and a base-section pivotally attached to the rail-section, one of the rail-sections being provided with a flat upper face and side flanges, and a switch-point pivotally attached at the upper end capable of lateral movement upon the flat base between the flanges, the base-sections being provided with a horizontal plate adapted to extend beneath the flange of the rail, which plates are provided with adjustable bifurcated keys and an angular clamping-rib, and both rail-sections with an attached chain or grapple, as and for the purpose specified.

3. In a car-replacer, a skid comprising a base-section, a track-section pivoted to the base-section and provided with upwardly-projecting and recessed flanges, and a switch-point pivoted to the pivotal end of the track-section, substantially as herein shown and described.

4. In a car-replacer, the combination, with a base consisting of a block provided with a downwardly-extending spur, a plate forming a portion of the block and extending outward therefrom, which plate is provided with a transverse clamping-rib near one end and a movable bifurcated key at the opposite end, of a rail-section pivoted at one end of the base and inclined downward in the direction of its opposite end, and a chain attached to the lower end provided with a grappling-hook, substantially as shown and described.

5. In a car-replacer, the combination, with a base-section consisting of a block, a plate extending from and beyond the block and having a transverse clamping-rib formed near one end, a bifurcated key movable in the opposite end of the plate, and a spur downwardly projecting from the block, of a rail-section pivoted at one end of the base, inclined downward in the direction of the opposite end, and provided with a flat upper face of varied width, flanges formed at the sides of the rail-section, provided with horizontally-aligning recesses, and a switch-point pivoted near the pivotal point of the rail-section and adapted to slide upon the flat surface thereof between the flanges and to enter the recesses of the latter, substantially as shown and described.

6. In a car-replacer, the combination, with a skid, of a chain attached thereto and a twin hook secured to the chain the shanks whereof are in essentially the same horizontal plane and the hooks faced inward, substantially as and for the purpose specified.

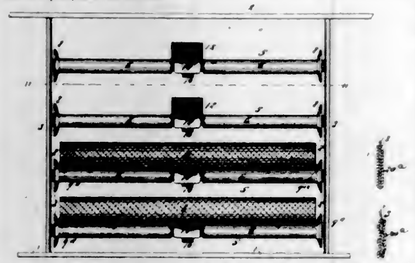
448,091. BOOK-SHELF. LOUIS STOCKSTROM, St. Louis, Mo. Filed Apr. 15, 1890. Serial No. 348,030. (No model.)

Claim.—1. A book-case having shelves provided with rollers, one or more of said rollers having flanges at the ends, substantially as and for the purpose set forth.

2. A book-case having roller-shelves, one or more of the rollers of which have inclined flanges at the ends, substantially as and for the purpose set forth.

3. A book-case having roller-shelves and a pull-bar or rod 10, in

connection with a shelf having an upturned inner end, substantially as and for the purpose set forth.



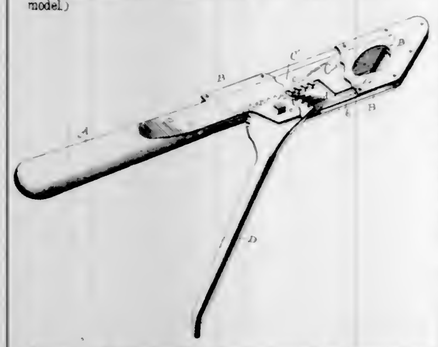
4. A book-case having roller-shelves and a spring pull-bar or rod 10, in connection with a shelf having an upturned inner end, substantially as and for the purpose set forth.

5. A book-case having roller-shelves and a pull-bar or rod, in connection with a shelf having perforated upturned inner ends and extension-pins passing through the perforations, and a spring 17, substantially as and for the purpose set forth.

6. In a book-case, the combination of the roller-shelves, pull-bars having handles 18, adapted to fit between the inner ends of the sectional outer rollers, and springs for holding the bars in their inner positions, substantially as and for the purpose set forth.

7. In a book-case having roller-shelves, the combination of pull-bars by which the books are withdrawn and the shields 20 over the pull-bars between the front rollers of the shelves, substantially as and for the purpose set forth.

448,092. IMPLEMENT FOR DEHORNING CATTLE. GEORGE H. STOUT, Marceline, Mo. Filed Nov. 29, 1890. Serial No. 373,059. (No model.)

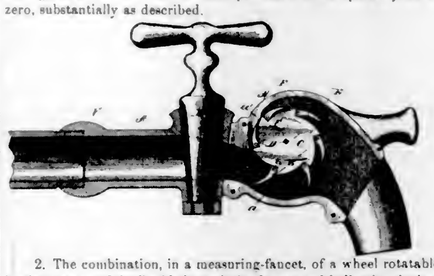


Claim.—1. The combination, in an implement for dehorning cattle, of the plates B B, rigidly secured to a handle so as to be on a line therewith, said plates being connected to each other and provided with correspondingly-shaped openings B', located one above the other, so as to provide bearings above and below the cutter, a movable cutter having an inclined cutting-edge located between said plates and provided on one side with a rack-bar, and a lever pivoted between the plates and provided with a toothed portion which engages with the rack-bar, whereby the implement can be rigidly held while the cutter is being operated, substantially as shown, and for the purpose set forth.

2. In a dehorning implement, the combination of the handle A, plates B B, located one above the other and provided with oval apertures, said plates being rigidly secured to each other and to the handle, a strip *b*, terminating so as to provide an opening through which the sliding cutter may be passed and a straight portion against which said sliding cutter bears, and a lever removably secured to the side pieces for operating the sliding cutter, substantially as shown, and for the purpose set forth.

448,093. MEASURING-FAUCET. FRANK C. H. STRASBURGER, Chicago, Ill. Filed Nov. 17, 1890. Serial No. 371,658. (No model.)

Claim.—1. The combination, in a measuring-faucet, of a wheel rotated by the passage of liquid through said faucet, and indicating devices showing the amount of liquid corresponding to the revolutions of said wheel, said indicating devices consisting of a pointer moving over the dial and driven by gearing connected to said pointer by means of a clutch, means for releasing said clutch, a spring adapted to return said pointer to zero when the clutch is released, and a second dial also put in motion by the measuring-wheel within the faucet through a ratchet connection which permits it to be separately set to zero, substantially as described.

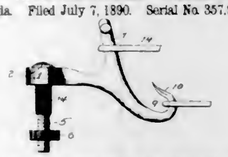


2. The combination, in a measuring-faucet, of a wheel rotatable by the passage of the liquid through the faucet, and indicating devices showing the quantity of liquid corresponding to the revolutions of said wheel, said indicating devices consisting of a worm-gear having a hollow axle, within which axle is fitted a clutch and a spring adapted to hold such clutch in engagement with said gear, a spindle connected to said clutch and carrying the pointer moving over the dial, and a spring attached to said spindle adapted to return the pointer to the zero-mark when released, substantially as described.

3. The combination, in a measuring-faucet, of a wheel rotated by the passage of liquid through said faucet, and indicating devices showing the amount of liquid corresponding to the revolutions of said wheel, said indicating devices consisting of a pointer moving over the dial and driven by gearing connected to said pointer by means of a clutch, means for releasing said clutch, a spring adapted to return said pointer to zero when the clutch is released, and a second dial also put in motion by the measuring-wheel within the faucet, substantially as described.

4. The combination, in a measuring-faucet, of a wheel rotatable by the passage of the liquid through the faucet, and indicating devices showing the quantity of liquid corresponding to the revolutions of said wheel, said indicating devices consisting of a worm-gear having a hollow axle, within which axle is fitted a clutch and a spring adapted to hold said clutch in engagement with said gear, a spindle connected to said clutch and carrying the pointer moving over the dial, and a spring attached to said spindle adapted to return the pointer to the zero-mark when released, the exterior of said axle being threaded and engaging with a worm-gear which drives a dial graduated to show the quantity of liquid which has passed through the faucet.

448,094. CHECKREIN-HOLDER. FREDERIC P. THOMPSON, Fredericton, Canada. Filed July 7, 1890. Serial No. 357,935. (No model.)



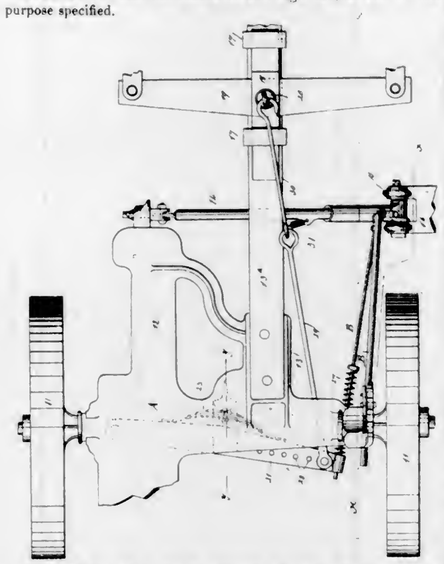
Claim.—1. A combined checkrein and shoulder-strap holder consisting of a plate adapted to be secured to a harness-saddle provided with a vertical shank having transversely-projecting arms at its upper end and a forwardly and downwardly projecting arm having its end turned upwardly, forming a hook, substantially as described.

2. The combination, with the checkrein-hook having a circular opening in its rear end, of the bolt consisting of the head 2, circular portion 3, angular part 4, the screw-threaded portion 5, and binding-nut 6, substantially as described.

3. The combination, with the plate having a circular opening and formed with a vertical shank and transverse arms, of the securing-bolt consisting of the enlarged head, a circular portion engaging with the opening in said plate, the angular portion adapted to engage with a corresponding opening in a harness-saddle, the screw-threaded portion, and the binding-nut, substantially as described.

448,095. DRAFT-EQUALIZER. THOMAS THOMPSON, Townsend, Mont., assignor to himself and William S. Thompson, same place. Filed Oct. 25, 1890. Serial No. 369,325. (No model.)

Claim.—1. In a mowing or similar machine, the combination, with the tongue and finger-bar, of a doubletree capable of sliding upon the tongue, a draft-bar pivoted at one end to the rear of the machine, the opposite end of the bar being free to move laterally, and connections, substantially as shown and described, between the free end of the draft-bar and both the doubletree and finger-bar, as and for the purpose specified.

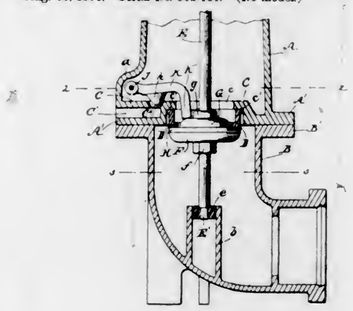


2. In a mowing or similar machine, the combination, with the frame, the tongue, and the finger-bar, of a draft-bar pivoted at one end beneath the frame, a spring-cushion bearing against the forward side of the draft-bar, a doubletree capable of sliding upon the tongue, an adjustable link connection between the free end of the draft-bar and the doubletree, and a cushioned connection between the free end of the draft-bar and the finger-bar, substantially as shown and described.

3. In a mowing or similar machine, the combination, with the tongue, a doubletree held to slide upon the tongue, and the finger-bar, of a spring-pressed draft-bar pivoted at one end to the frame of the machine, links connected with the doubletree and adjustably attached to the free end of the draft-bar, a rod attached to one end of the finger-bar and having a sliding connection with the free end of the draft-bar, and a cushion carried by the connecting-bar and having a bearing against the draft-bar, substantially as shown and described.

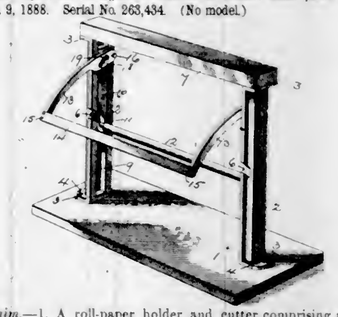
4. In a mowing or similar machine, the combination, with the frame, the tongue connected with the frame, and the finger-bar, of a spring-pressed draft-bar pivoted at one end beneath the axle of the frame, a connecting-bar having a sliding connection with the frame and a pivot connection with the finger-bar, a doubletree capable of a sliding movement upon the tongue, a link connection between the free end of the draft-bar and the doubletree at or near its center, and a rod provided with a spring-cushion held to slide at one end in the free extremity of the draft-bar and having its opposite end attached to the connecting-bar near its pivotal attachment to the finger-bar, substantially as and for the purpose specified.

448,096. HYDRANT. WILLIAM R. THROPP, Trenton, N. J. Filed Aug. 16, 1890. Serial No. 362,181. (No model.)



Claim.—In a hydrant, the combination, with the vertically-movable valve-stem having a collar loosely mounted on the lower end thereof, of a socket vertically aligning with the valve-stem and adapted to hold the collar from turning, substantially as described.

448,097. ROLL-PAPER HOLDER AND CUTTER. WILLIAM VAN HORN, Piqua, Ohio, assignor to Charles E. Stuart, same place. Filed Feb. 9, 1888. Serial No. 263,434. (No model.)



Claim.—1. A roll-paper holder and cutter comprising a frame having standards or uprights having roll-receiving and slide-holding guideways therein, a pair of curved knife-carrying arms having pivotal bearings at their rear portion between said uprights, a knife attached to and connecting the front or lower ends of said arms, and a pair of slides loosely supported between and resting against the respective inner faces of the frame-standards and adapted to receive and support the paper-roll and engaging, respectively, with the knife-carrying arms, substantially as and for the purpose set forth.

2. A roll-paper holder and cutter comprising a framing having vertical guideways therein, a roller or spindle carrying the paper-roll, a pair of slides or hangers contained within said guideways with capacity of vertical reciprocation therein and adapted to support said roller-spindle and paper-roll, a knife, and a pair of outwardly-curved knife-carrying arms in contact with said slides or hangers and having pivotal bearing at their rear ends for the purpose of securing the automatic operation of said slides or hangers and knife-carrying arms and maintaining the knife in position against the paper-roll.

3. In a roll-paper holder, the combination of the standards 2, having vertical guideways therein, and roll-supporting hangers adapted to receive the roller-journals and suspend the paper-roll between and reciprocate vertically along said standards.

4. In a roll-paper holder, the combination of vertical standards having vertical guideways therein, roll-supporting hangers adapted to reciprocate along said guideways, a pair of pivotally-mounted knife-carrying arms connected to said roll-hangers and having a slotted rear portion, studs or pins engaging the slotted portions of said arms for the purpose of maintaining the knife in position against the paper-roll, and a knife connecting said knife-arms together.

5. A roll-paper holder and cutter having a knife held to position against the roll of paper essentially by means of the weight of the roll, substantially as set forth.

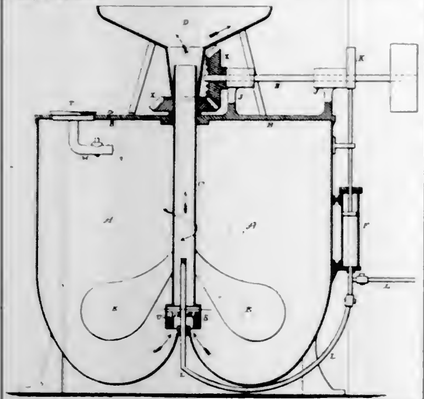
6. In a roll-paper holder and cutter, the combination, with the paper roll and its carrying roller or spindle, of a frame, a pair of slides adapted to receive said roller-spindle and to reciprocate vertically upon said frame, and a pair of knife-carrying arms having connection with said slides, whereby as said slides reciprocate said knife-arms will be either raised or lowered for the purpose of maintaining the knife in contact with the paper-roll, substantially as set forth.

7. A roll-paper holder and cutter having a pair of vertically-reciprocating roll-carrying slides, and a pair of knife-carrying arms connected therewith, whereby as said slides are drawn down by the weight of the paper said knife-arms will be correspondingly drawn down and the knife carried thereby pressed against the paper-roll.

8. A roll-paper holder and cutter comprising a frame having standards or uprights having vertical slots therein to receive the roll-spindle and vertical guideways to guide the roll-supporting slides and maintain them in position, a pair of curved knife-carrying arms having pivotal bearing at their rear between said uprights, a knife attached to and connecting the front or lower ends of said arms, and a pair of slides supported between said standards with capability of vertical reciprocation therealong and adapted to receive and support the paper-roll and engaging, respectively, with the knife-carrying arms, substantially as set forth.

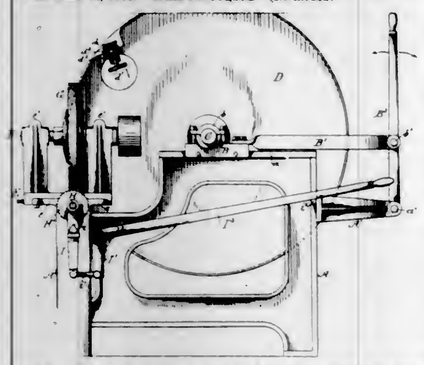
448,098. SEPARATOR FOR THE PRECIOUS METALS. WILLIAM C. VAN HORN, South Pittsburg, Tenn. Filed Dec. 23, 1890. Serial No. 375,622. (No model.)

Claim.—1. In a separator, a tub, a revolving tube provided with means for keeping the contents of the tub in motion, a pump, and a pipe extending from the pump into the lower portion of the tube, substantially as shown.



2. The combination of a tub having its center raised, a revolving tube provided with means for keeping the contents of the tub in motion, a pump, a pipe extending from the pump to the lower portion of the tube, and a mechanism for operating the tube and the pump at the same time, substantially as described.

448,099. **MACHINE FOR GRINDING THE EDGES OF BAND-SAW BLANKS OR OTHER METALLIC STRIPS.** JOHN WALLWORK, Philadelphia, Pa., assignor to Henry Disston & Sons, Incorporated, same place. Filed June 14, 1889. Serial No. 314,264. (No model.)



Claim.—1. The combination, in a machine for grinding the edges of metallic strips, of a revolving drum, around which the strip to be ground is wound and secured, devices for securing the strip to the drum, with grinding-wheels situated at the sides of the drum and adapted to grind the edges of the strip clamped to said drum, substantially as described.

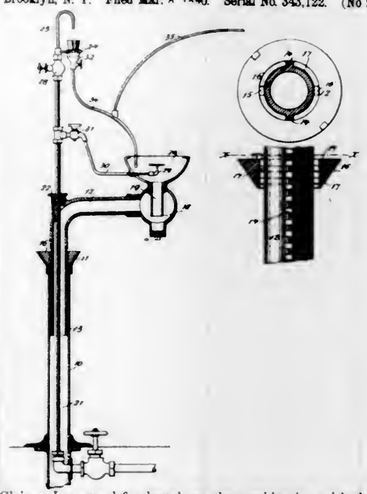
2. The combination, in a machine for grinding the edges of metal strips, of a revolving drum on which the metallic strip the edges of which are to be ground is secured, devices for securing the strip firmly to the drum, with carriages on each side of the drum, grinding-wheels carried thereby and so situated as to grind the edges of the strip, with mechanism for feeding the grinding-wheel toward or from the drum, substantially as set forth.

3. The combination, in a grinding-machine, of the slotted drum, a spring-pin adapted to engage with one end of the strip to be ground, with a clamp to pass around the periphery of the drum and secure the strip in place upon the drum, substantially as described.

4. The combination, in a machine for grinding the edges of metallic strips, of the drum on which is secured the strip to be ground, said drum being narrower than the strip, so that the strip will overlap the edges of the drum, with a narrow securing-band placed around the strip on the drum, by which the strip is firmly secured to the drum, a grinding-wheel at the side of the drum, and mechanism for revolving the said drum, substantially as described.

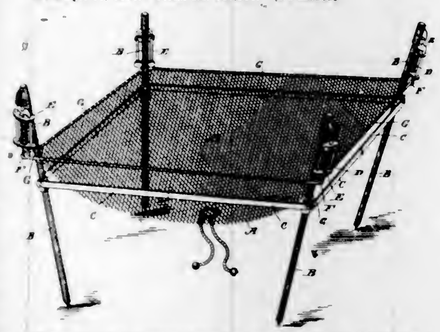
5. The combination of the frame of a machine for grinding the edges of metallic strips, slides B, adapted to longitudinal ways on said frame, mechanism for moving said slide, with a drum D, the shaft of which has its bearings in the slides, mechanism for revolving said drum, and devices for securing the strip to be ground upon said drum, with ways on the frame at right angles to the slideways of the slides B, carriages E E, adapted to said ways, revolving grinding-wheels having their bearings on said carriages, and devices for moving the carriages toward and from the strip to be ground substantially as described.

448,100. **DENTAL-SERVICE STAND.** WALTER E. WARNER, Brooklyn, N. Y. Filed Mar. 8, 1890. Serial No. 343,122. (No model.)



Claim.—In a stand for dental use, the combination, with the vertical waste-pipe 10 and the detachable bored plug 16, supported therein and having internal grooves and ribs, of the laterally-extended pipe 12, carrying a spittoon, and the spray 29, located within it, all as shown and described.

448,101. **FIRE-ESCAPE.** EDWIN R. WHITTIER, Somerville, Mass. Filed Apr. 11, 1890. Serial No. 347,506. (No model.)

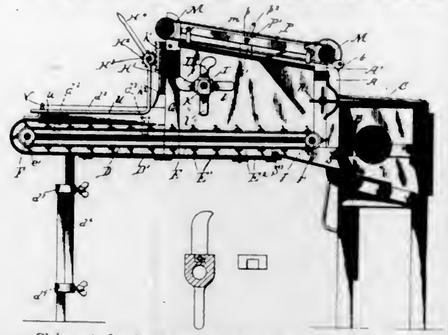


Claim.—1. The combination of a portable folding frame and a spring-supported flexible fabric mounted thereon with a central opening through such fabric and means for collapsing or covering said opening, substantially as set forth.

2. The combination of web or net A, poles B B, cross-bars C C, and springs D D, the web or net being disconnected from the cross-bars and the springs connected to the upper ends of said poles and engaging the margins of said web, substantially as and for the purpose set forth.

3. The combination of poles B B and horizontal cross-bars C C, jointed centrally and pivoted at their ends to said poles, forming a collapsible frame, with the net or web A and the springs D D, arranged on the outer faces of said poles at their upper ends, substantially as and for the purpose set forth.

448,102. **BAND-CUTTER AND FEEDER.** EDMUND S. WILBITE, West Salem, Ill. Filed July 16, 1890. Serial No. 358,911. (No model.)

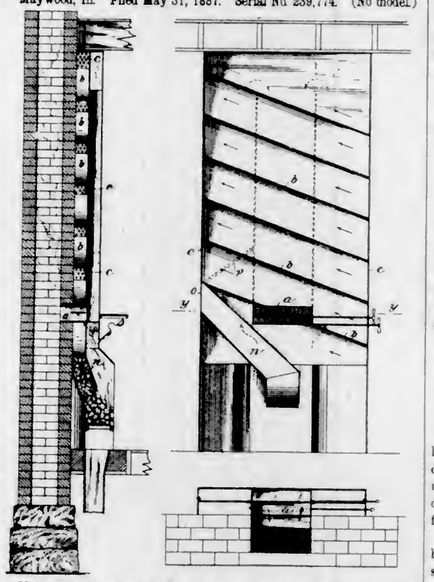


Claim.—1. In a band-cutter and feeder, the combination, with the shaft I, of a series of combined knife-holders and grain-spreaders arranged spirally upon the said shaft, and the curved knives secured in the said holders opposite the said grain-spreaders, substantially as shown and described.

2. A combined knife-holder and grain-spreader constructed in one piece and having a central aperture, said holder being recessed on one side to receive the shank of a knife, the opposite side having spreading-prongs formed thereon, substantially as shown and described.

3. In combination, in a band-cutter and feeder, substantially as shown and described, a crank pivoted to the side frame of the cutter and feeder, the long arm of which is provided with a weight and the short arm adapted to form a journal-bearing, of the shaker, secured at one end to a rod located inside said cutter and feeder and the other end extending outside, for the purpose set forth.

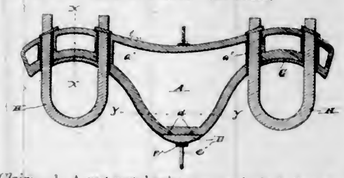
448,103. **FIRE-PLACE HEATER.** FREDERICK D. WOODRUFF, Maywood, Ill. Filed May 31, 1887. Serial No. 239,774. (No model.)



Claim.—1. In a heater for warming purposes, the combination of a fire-pot, a combustion-chamber above the fire-pot, having the side extending beyond the back thereof and below such combustion-chamber, such extension having perforations therein, a flue in the combustion-chamber, extending from the lower part thereof into a chimney, vertical partitions in the combustion-chamber, extending from below the flue therein and upon each side thereof to near the top of the combustion-chamber, forming divisions therein, a damper adapted to close the lower end of the division of the combustion-chamber within which the flue to the chimney is located and below such flue, and ribs upon the back of the combustion-chamber, extending diagonally from one of the perforated extended sides upward to the other of the perforated extended sides of the combustion-chamber, substantially as described.

2. In a heater for warming purposes, the combination of a fire-pot, a combustion-chamber above the fire-pot, the sides to such combustion-chamber extending beyond the back thereof and below the lower end, perforations in such extended sides, a flue in the combustion-chamber, extending to a chimney, and ribs upon the back of the combustion-chamber, extending diagonally from one of the perforated extended sides upward to the other extended perforated side of the combustion-chamber, whereby, when the heater is placed with such perforated extended sides in close contact with the chimney or wall, air passing through the perforated extension of one side of the combustion-chamber and heated by coming in contact with the back of the combustion-chamber may be directed to pass in such heated condition through the other perforated extension of the side of the combustion-chamber, all substantially as described.

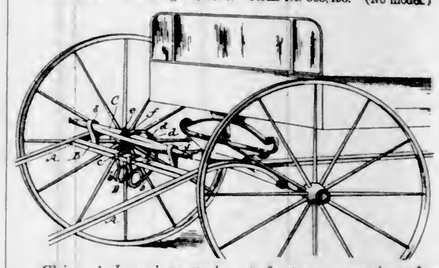
448,104. **OX-YOKE.** WILLIAM J. ACKERMAN, Malcolm, Wis. Filed Dec. 10, 1890. Serial No. 374,212. (No model.)



Claim.—1. A cast-metal yoke composed of a hollow stock having bow-openings, and having tubular extensions on the inner side of the stock in line with the bow-openings and extending flush with the top and the bottom sides of the stock, and having openings *g* in the top side opposite the neck-cavity, and the zinc plates fitted to the neck-cavities and having their ends bent over the sides of the stock into the said openings *g*, substantially as described.

2. The combination, with the hollow cast-metal stock having bow-openings, and having portions cut from the edges of the top side at *g* opposite the neck-cavities, of the bows H and the zinc plates lining the said neck-cavities of the stock and having their ends bent over the edges of the said stock, substantially as described.

448,105. **WHIFFLETREE.** BENJAMIN B. ALLEN, Hanford, Cal., assignor to himself, William Henry Wilson, and Edward Weisbaum, same place. Filed Aug. 30, 1890. Serial No. 363,493. (No model.)



Claim.—1. In spring attachments for trace connections of vehicles, the combination, with the singletree of a vehicle, of a spring-carrying and having pivoted to it at its free end said singletree intermediately of its length and a support for the fast end of said spring connected with the shafts or pole of the vehicle, substantially as specified.

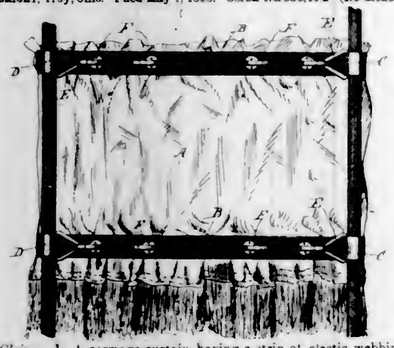
2. In spring attachments for the singletrees of vehicles, the combination, with the singletree, of a bifurcated double-coil tree-carrying spring and a support for the same connected with the shafts or pole of the vehicle, said spring being arranged to pass back of and over or above said support and pivoted at its closed free end to the singletree intermediately of its length, essentially as described.

3. In spring attachments for the singletrees of vehicles, the combination, with the singletree C, of the bifurcated double coil spring D, pivoted at its closed free end to said spring, and the cross-bar B or its equivalent spring-support, substantially as described.

4. In a spring attachment for the singletrees of vehicles, the bifurcated or double-coil spring D, composed of two coils *b b*, arranged

side by side in the bifurcated portion of it and having opposite end arms *c d*, the latter of which close and meet and form the free end of the spring, essentially as shown and described.

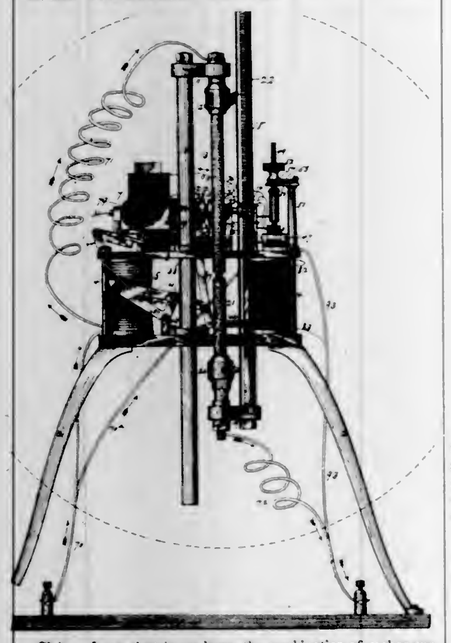
448,106. CARRIAGE-CURTAIN ATTACHMENT. DANIEL ARGERBRIGHT, Troy, Ohio. Filed May 1, 1890. Serial No. 350,194. (No model.)



Claim.—1. A carriage-curtain having a strip of elastic webbing secured thereto, and a series of hooks attached to said elastic webbing, in combination with the free ends formed of different elastic material adapted to be secured to the said strip, and a pair of eyes one of which is secured to either of the said free ends, substantially as and for the purpose set forth.

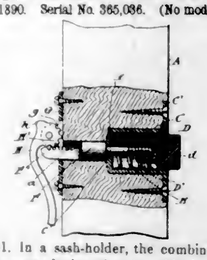
2. The combination, with the curtain and its elastic webbing, and the hooks F, of the free end pieces C and D, and the eyes E, secured to the said free end pieces, which are secured to the said elastic webbing, substantially as shown and described, and for the purpose set forth.

448,107. ELECTRIC-ARC LAMP. LA MOTTE C. ATWOOD, St. Louis, Mo., assignor to the Atwood Electric Company, same place. Filed Oct. 28, 1890. Serial No. 369,547. (No model.)



Claim.—In an electric-arc lamp, the combination of carbon-supporting rods, a motor, a train of gearing located between the motor and rods and containing an automatic clutch by which the gearing is thrown into and out of action, a magnet and armature, a spring-actuated pivoted lever connected to said clutch, a pivoted bell-crank lever, a link connecting said levers, and a link connecting said bell-crank lever to said armature, substantially as and for the purpose set forth.

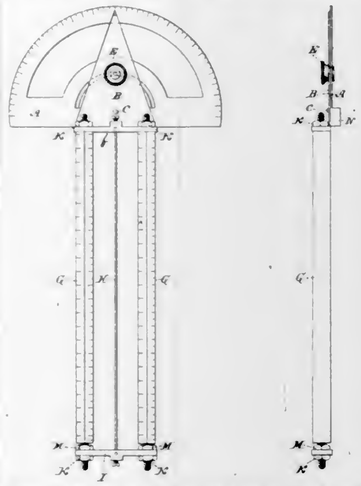
448,108. SASH-HOLDER. ALBERT AYERS, Rahway, N. J. Filed Sept. 15, 1890. Serial No. 365,036. (No model.)



Claim.—1. In a sash-holder, the combination, with the socket and the spring-pressed plug therein, said plug having an internally-screw-threaded tube in its inner end, of a rod extending into the socket, said rod having its inner end screw-threaded to engage the tube in the plug and having its outer end formed into a rack, as shown, and a pivoted handle having its pivoted end enlarged and provided with teeth to fit the rod-rack, substantially as described.

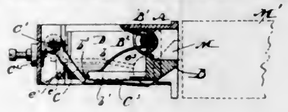
2. The combination of the spring-pressed plug, the rod connected therewith and provided at its outer end with a rack, the slotted plate to receive the outer end of the rack, and the handle pivoted in the plate, said handle having its pivoted end enlarged and provided with teeth to fit the rod-rack and having upon its upper side a projection to engage the plate and limit its movement, substantially as described.

448,109. PLOTTER. ROBERT L. BARNHART, Pittsburg, Pa. Filed Oct. 21, 1889. Serial No. 327,737. (No model.)

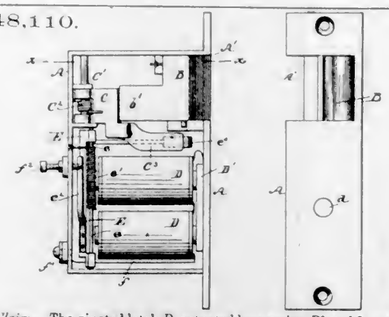


Claim.—In an instrument of the character hereinbefore indicated, the combination, with the slotted protractor or head A, having an abutment N, of the index-head B and clamp-screw, the bars G G and ruling-rod H, the cross-bar I and opposite flange *b*, having slots to permit lateral adjustment of said bars G G, and nuts K and M, applied to the threaded ends of the latter, substantially as shown and described.

448,110. ELECTRIC DOOR-OPENER. LOUIS BATES, Jersey City, N. J. Filed July 14, 1890. Serial No. 358,596. (No model.)

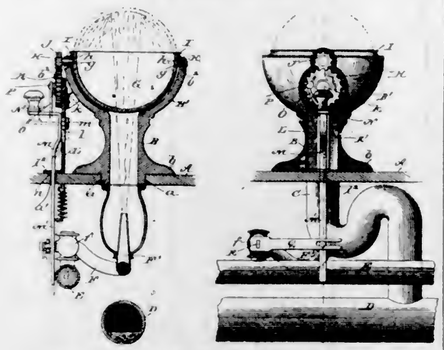


448,110.



Claim.—The pivoted latch B, actuated by a spring B^3 and formed with an extension B', notched at b^3, and the locking-pawl C, actuated by a spring C^3 and formed with an arm or extension C^2, in combination with the electro-magnets D and vibratory armature E, provided with the hammer e^3, arranged to operate substantially as described.

448,111. CUSPIDOR. CHARLES L. BEERS, Scranton, Pa. Filed Oct. 25, 1890. Serial No. 369,292. (No model.)



Claim.—1. An improved cuspidor consisting of a reversible bowl, a discharge-trough arranged to receive the contents of such bowl when reversed, a source of water-supply adapted to wash against the bowl when inverted, and devices intermediate the bowl and water-supply arranged to operate for reversing said bowl and turning on the water-supply, substantially as and for the purpose described.

2. An improved cuspidor consisting of a hollow standard and outlet-pipe, a bowl journaled in the hollow standard for reversible movement and adapted to empty its contents in the standard when reversed, and a source of water-supply cut off when the bowl is in its normal position and opened to wash against the inner face of the bowl when turned over to empty its contents, as stated, substantially as shown and described.

3. In an improved cuspidor, the combination, substantially as described, of a hollow standard formed with a semi-spherical bowl at its top, a second bowl journaled therein and arranged for a semi-rotation, a waste-outlet connected with the hollow standard, a source of water-supply opening into the said standard, and devices intermediate the second bowl and the water-supply arranged to turn the said second bowl and turn on the water-supply and automatically bring the second bowl back to its normal position and cut off the water, substantially as and for the purpose described.

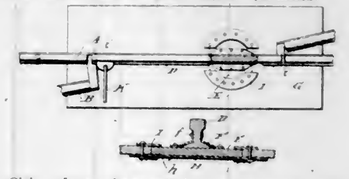
4. The combination, with the hollow standard B and a discharge-outlet connected therewith, and source of water-supply arranged to throw water from below against the bowl when inverted, of the bowl G, journaled in the bowl B, and a packing device secured to the upper rim of the hollow standard, adapted to bear against the bowl G and prevent water being passed out between the bowl and the hollow standard, substantially as and for the purpose stated.

5. The combination, with the reversible bowl G, the standard or support for the same, a discharge-outlet connected with said standard, and a valved water-supply pipe extended within the hollow standard, of the vertically-movable operating-bar connected at its upper end with the reversible bowl G and at its lower end with the valve *f* of the water-supply pipe and arranged when depressed to rotate the bowl G and turn on the valve *f*, and means for bringing such valve and bowl to their normal position, substantially as and for the purpose described.

6. The combination, with a hollow standard formed with a discharge-pipe at its lower end and a fixed bowl B′ at its upper end, of the reversible bowl G, journaled in said bowl B′ and arranged to fit same snugly, as shown, whereby said bowl when reversed will close the upper end of the bowl B′, and a water-supply arranged to wash the inverted bowl G and bowl B′ when said bowl G is reversed, substantially as and for the purpose described.

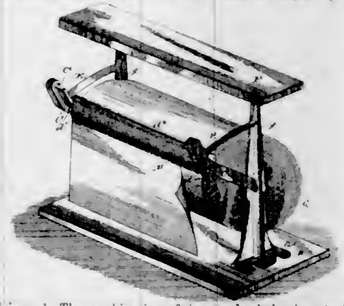
7. The combination of the hollow standard B, formed with a bowl B′ and a discharge-pipe connected therewith, a source of water-supply extended up into said standard, a bowl G, hung for reversible movement in the bowl B, a valve *f* in the water-supply, and a spring-actuated depressing-bar, said bar connected with the bowl G and the valve *f* and arranged when depressed to dump the bowl G and turn on the water-supply, substantially as and for the purpose described.

448,112. RAILWAY-SWITCH. ORLANDO BIXLER, Wellston, Ohio. Filed Aug. 21, 1890. Serial No. 362,698. (No model.)



Claim.—In a railway-switch, the combination, with the main track and siding, of the switch C, the switch-rod connected therewith, the bell-crank lever *b*, the switch-stand *c*, hand-lever pivoted therewith, the link connecting said bell-crank lever with the hand-lever, the frog-rail D, the sill G, having the circular aperture, the semi-rotative disk, arranged in said aperture and receiving the frog-rail, the angular plates secured to the frog-rail at one end and secured to said disk at their opposite ends, the protecting-plates arranged around the disk, the bell-crank lever L, the transverse rod connecting one branch thereof with one end of the frog-lever, and the longitudinal rod connecting the bell-crank levers, substantially as described.

448,113. ROLL-PAPER HOLDER AND CUTTER. JAMES M. BOLTON, Springfield, Ill. Filed Oct. 18, 1889. Serial No. 327,403. (No model.)



Claim.—1. The combination of the standards having the inclined arms provided with grooves, the roll of paper journaled in said grooves, the knife provided at its ends with integral journals arranged in said grooves, and means for limiting the rotary motion of the knife and holding the same in proper position for cutting, substantially as described.

2. The combination of the standards having inclined arms provided with grooves, the roll of paper journaled in said grooves, and the knife provided at its ends with integral journals arranged in the grooves and having upon one of its ends a projection adapted to engage the side of one of the arms to limit the rotary motion of the knife and hold the latter against the paper, substantially as described.

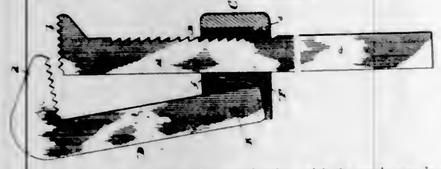
3. The combination of the standards having the inclined arms provided with grooves, the roll of paper journaled in said grooves, the knife provided at its ends with integral journals and having depending ears d^3, and a roller journaled in said ears and having its journals projecting beyond the knife and adapted to engage the sides of the arms, substantially as and for the purpose described.

4. The combination of the standards provided with inclined arms having grooves, the roll of paper journaled in said grooves, the knife

having integral journals and provided with depending ears d^3 and a flange d^4, a roller journaled in said ears and having its journals projecting beyond the knife and engaging the sides of the arms, and a plug interposed between the roller and the flange, substantially as and for the purpose described.

5. The combination of the standards having arms provided with grooves and having openings communicating with the grooves arranged at their sides and within a short distance of their ends, the roll of paper journaled in the grooves, and the knife provided at its ends with integral journals arranged in the grooves, substantially as described.

448,114. **WRENCH.** HARRISON T. BRIGGS, South Bend, Ind. Filed Dec. 20, 1890. Serial No. 375,353. (No model.)

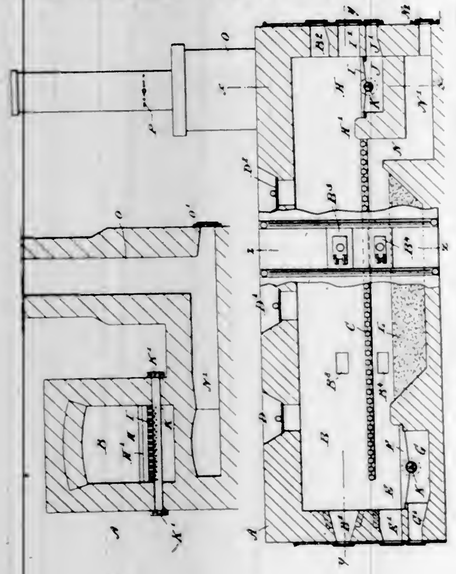


Claim.—1. In a wrench, the combination, with the stationary jaw A, having a serrated edge, of a U-shaped toothed catch C, sliding thereon and adapted to engage the serrations thereof, a movable jaw D, pivotally connected to the catch, and a bent spring F, secured between the legs of the catch and interposed between the jaws, all substantially as described.

2. The combination of the stationary jaw attached to the handle and having one edge serrated, a catch-block sliding thereon and having integral teeth at its rear edge adapted to engage the serrations of the jaw, the movable jaw pivotally connected to said catch-block on the side opposite the serrations of the fixed jaw, and the return-bend spring concealed in the catch and between the jaws and adapted to normally hold the catch in engagement with the serrations of the fixed jaw and to depress the movable jaw, substantially as specified.

3. The herein-described adjustable wrench, consisting of a fixed jaw A, having serrations or ratchet-teeth on one edge, a U-shaped catch-block C, sliding thereon, having teeth c at its rear edge adapted to engage the said ratchet-teeth, a movable jaw D, pivoted to said catch-block near its front edge and at the side opposite the teeth, and a bent spring F, attached to the block and interposed between the pivoted rear end of the movable jaw and the fixed jaw, substantially as set forth.

448,115. **GARBAGE-FURNACE.** ALEXANDER BROWNLEE, Dallas, Tex. Filed Oct. 14, 1890. Serial No. 368,110. (No model.)



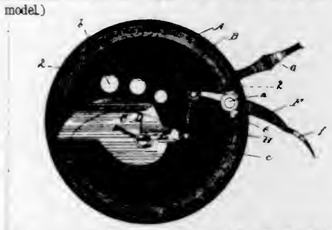
Claim.—1. A garbage-furnace comprising a chamber having a grate for the reception of the garbage, a fire-box at each end, and a sand-box between the fire-boxes below the grate, substantially as described.

2. A garbage-furnace comprising a chamber having feed-openings in its top, a fire-box at each end and in different planes, a sand-box between the fire-boxes, and a grate for the reception of the garbage, said grate being arranged in about the same horizontal plane with the grate-bars of one fire-box and extending partly over the grate-bars of the other fire-box, substantially as described.

3. In a garbage-furnace, the combination, with a casing provided with a fire-box at each end and in different horizontal planes, of a sand-box between the fire-boxes, a grate extending from the bridge-wall of one fire-box to and partially over the grate-bars of the other fire-box, and a channel between the sand-box and bridge-wall and extending below the fire-box to the chimney, substantially as herein shown and described.

4. In a garbage-furnace, the combination, with the casing A, provided with openings in its top, sides, and ends, of the fire-boxes E H at opposite ends of the casing and in different planes, the fire-box H being provided with the bridge-wall H', the grate C, extending from the bridge-wall H' to and partially over the grate-bars of the fire-box E, the sand-box L below the grate and between the fire-boxes, and the channels N N', leading down between the bridge-wall H' and the sand-box L below the ash-pit of fire-box H to the chimney, substantially as herein shown and described.

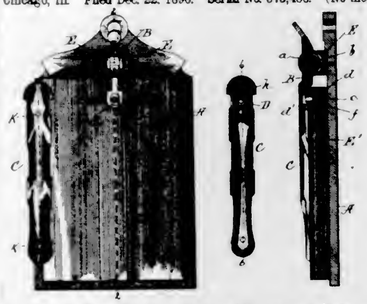
448,116. **CIGAR-TIP CUTTER.** EDWARD BRUNHOFF and CHARLES LEHMANN, Chicago, Ill. Filed Oct. 27, 1890. Serial No. 369,394. (No model.)



Claim.—1. In a cigar-tip cutter, the top B, having holes *b*, in combination with knife C, post E, spring D, lever F, link H, and handle G, substantially as shown and described.

2. In a cigar-tip cutter, the lever F, pin *a*, link H, knife C, post E, and spring D, in combination with the top B, having holes *b*, substantially as shown and described.

448,117. **FILE-CLIP.** EDWARD BRUNHOFF and CHARLES LEHMANN, Chicago, Ill. Filed Dec. 22, 1890. Serial No. 375,488. (No model.)

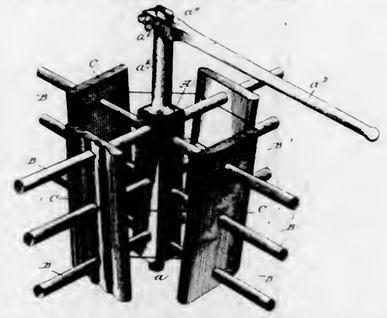


Claim.—1. In a file-clip, a detachable upsetting-lever provided with an upsetting-die and with a hook at its inner end, and a thumb-piece provided with shoulders adapted to engage with the hook of the upsetting-lever, and also provided with a hole at its inner end and pivoted at its center to the frame, and having a chamber at the center to receive a coiled-wire spring, and said coiled-wire spring, in combination with a stud secured to the frame of the clip, and an eyelet fitting loosely on said stud and so placed in the clip that said upsetting-die will engage with the top of said eyelet for the purpose of upsetting it, substantially as specified and shown.

2. In a file-clip, the frame A, thumb-piece B, having shoulders *d* and a hole *a'* at its inner end, said thumb-piece being pivoted to the frame A by suitable devices, and a coiled-wire spring *a*, stud *c*, and

eyelet *d*, in combination with the upsetting-lever C, having the upsetting-die D, and hook A, substantially as shown and described.

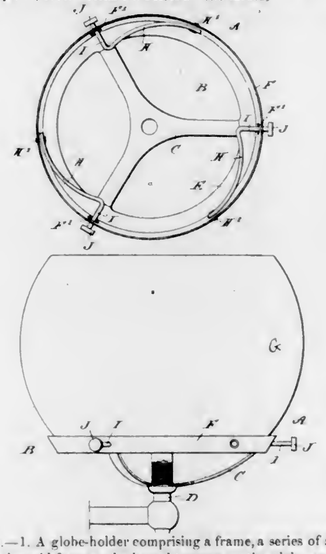
448,118. **WASHING-MACHINE.** JOHN N. BUNCH, Eugene, Oreg. Filed Jan. 26, 1891. Serial No. 379,138. (No model.)



Claim.—1. In a washing-machine, the combination, with a central post and rods or bars, of fixed uprights upon the rods or bars about equidistant from their ends, the rods or bars extending beyond the uprights to serve as arms to catch the goods and move them back and forth at the circumference, where the motion is the greatest, and the uprights projecting laterally from the rods or bars, leaving but a small space between one upright and another, substantially as and for the purpose set forth.

2. In a washing-machine, the combination, with a central post and rods or bars, of fixed uprights upon the rods or bars about equidistant from their ends, the uprights projecting laterally from the rods or bars, leaving but a small space between one upright and another, and wires stretched between adjacent uprights, substantially as and for the purpose set forth.

448,119. **GLOBE-HOLDER.** HOWARD R. BURK, New York, N. Y. Filed Apr. 17, 1890. Serial No. 348,484. (No model.)

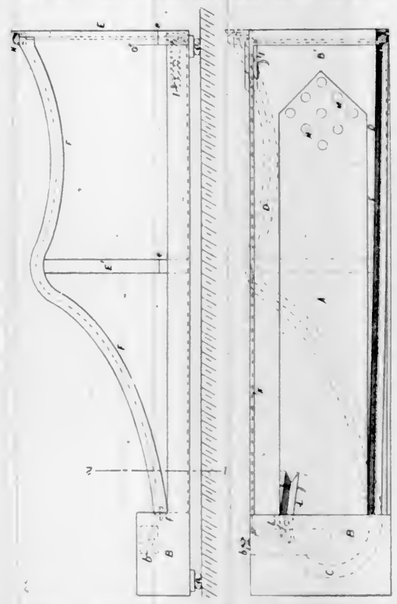


Claim.—1. A globe-holder comprising a frame, a series of springs secured to the said frame and adapted to press on the globe, and arms formed integral with and extending from the free ends of the said springs and passing through slots in the said frame to the outside of the latter to form convenient handles for manipulating said springs, substantially as shown and described.

2. In a globe-holder, the combination, with a frame provided with a flanged ring, of a series of springs secured to the inside of the flange of the said ring and projecting inward, and handles formed on the free ends of the said springs and passing through slots in the said flange to the outside of the latter to form handles for conveniently manipulating the said springs, substantially as described.

3. In a globe-holder, the combination, with a frame provided with a flanged ring, of a series of springs secured to the inside of the flange of the said ring and projecting inward, arms formed integral with and projecting outward from the free ends of the said springs and passing through bearings in the said flange, and a knob or button held on the outer end of each of the said arms to conveniently manipulate the said springs, substantially as shown and described.

448,120. **BOARD OR GAME TABLE.** JAMES S. BURROUGHES, London, England. Filed Sept. 6, 1889. Serial No. 323,219. (No model.) Patented in England Mar. 12, 1889, No. 4,312; in Victoria May 23, 1889, No. 6,671; in New South Wales May 27, 1889, No. 1,444; in India June 20, 1889, No. 132; in France Aug. 28, 1889, No. 200,451; in Germany Aug. 28, 1889, No. 51,266; in Canada Dec. 5, 1889, No. 33,046; in Belgium Dec. 9, 1889, No 88,786; in Italy Dec. 10, 1889; in Austria-Hungary Dec. 7, 1889, No. 52,900, and in Spain Dec. 30, 1889, No. 10,386.



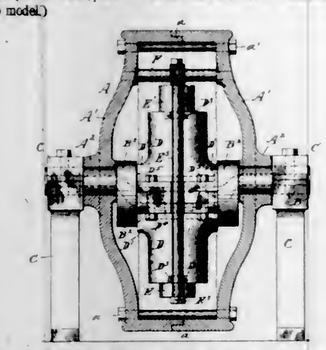
Claim.—1. A game board or table having a suitable playing-surface, an inclined grooved way curved to form various gradients, a projectile-supporting means at the upper portion of said way, a raised portion at the lower part of said way, a guide-trough pivoted thereto, a projectile-propelling device, and connections between the same and the guide-trough.

2. A game board or table having a suitable playing-surface, an inclined grooved way curved to form various gradients, a projectile-supporting means at the upper portion of said way, a raised board, as B, at the lower portion of said way, a guide-trough pivoted thereto, a vertical rod upon the upper end of which the projectile rests, a pivoted transverse lever connected at one end to said rod, a sliding cam adapted to engage the other end of said lever, and connections between said sliding cam and the guide-trough.

3. A game board or table having a suitable playing-surface, an inclined grooved way curved to form various gradients, a projectile-supporting means at the upper portion of said way, a raised board as B, at the lower portion of said way, a normally spring-pressed guide-trough pivoted thereto, a projectile-propelling device, and connections between the same and the guide-trough.

4. A game board or table having a suitable playing-surface, an inclined grooved way curved to form various gradients, uprights supporting the same pivotally secured to the game-board, a projectile-supporting means at the upper portion of said way, a raised board at the lower portion thereof, a guide-trough pivoted thereto, a projectile-propelling device, and connections between the same and the guide-trough, said game-board having a bed or playing-surface of convex shape transversely and provided with gutters upon either side thereof.

448,121. ROTARY ENGINE. WILLIS CARTER and LYMAN CARTER, Spokane Falls, Wash. Filed June 26, 1890. Serial No. 356,792. (No model.)



Claim.—1. A rotary engine consisting, essentially, of a shaft fixed in suitable supports, having a central crank portion and having central bores extending from each end and opening through opposite sides of the crank portion, a separable case mounted loosely upon the shaft, a transversely-divided cylinder bolted together at its inner ends and there mounted loosely upon the crank portion of the shaft, pistons movable in opposite ends of the cylinder and connected by a frame, as shown, and a transverse shaft mounted in the case and connected with one end of the piston-frame, substantially as described.

2. A rotary engine consisting, essentially, of a shaft mounted in suitable supports, having a central crank portion having disks formed at each end of the crank portion, as shown, and having central bores extending from each end of the shaft and opening through opposite portions of the crank, a longitudinally-separable case mounted loosely upon the shaft and having a flattened outer surface, as shown, a compound cylinder mounted upon the crank portion of the shaft, so as to extend from opposite sides of the same, pistons movable in the cylinder ends and connected by a suitable frame, and a shaft mounted in the case and connected with the piston-frame, substantially as described.

3. The combination, with the shaft B, mounted in supports C, as shown, said shaft having the crank portion B' and the disk B^3 formed thereon, and having the central bores B^3, separated by the partition B^4 and terminating in ports B^5, and the separable case A, mounted loosely upon the shaft, of the cylinder D, mounted loosely upon the crank B', the pistons E, movable in the cylinder and connected by the cross-pieces E^3 and side rods E^2, and the shaft F, mounted in the case A and attached to one of the cross-pieces E^3, substantially as described.

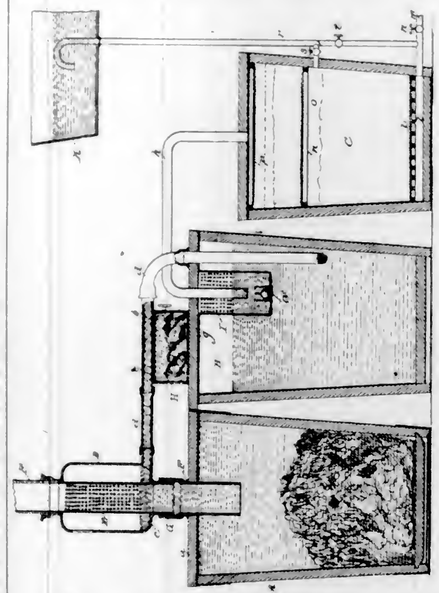
4. The combination, with the hollow shaft B, having the bores B^3 and ports B^5, and having the disks B^3, with shoulders *b* thereon, of the transversely-divided cylinder D, mounted upon the shaft, as shown, and provided with bosses D', having the tapering grooves D^2, which receive the shoulders of the disks, the plates D^4 between the adjacent ends of the cylinder and concave on their inner edges to fit the hollow shaft, and the bolts D^5, securing the two cylinder-sections together around the shaft, substantially as described.

448,122. APPARATUS FOR TREATING SEWAGE. CHARLES W. CHANCELLOR, Baltimore, Md. Filed June 9, 1890. Serial No. 354,837. (No model.)

Claim.—1. In an apparatus for treating sewage, the combination of a closed receptacle for crude sewage, connected with the discharge-pipe from the closet, and a reticulated screen or strainer arranged in the path of the discharge from the said discharge-pipe into the receptacle, to serve the purpose, first, of straining the sewage as it issues from the receptacle, and, secondly, of being scoured and having its interstices kept open and operative by the dynamic force of the discharge from the soil-pipe, substantially as shown and described.

2. The combination, with a subjacent collecting-receptacle for the solid or more weighty matters, of a tight soil-pipe connection, a strainer composed of a perforated or reticulated pipe-section interposed in the length of or aligned with the soil-pipe, so as to form a continuation of the conduit, and a surrounding casing disposed about the strainer to carry off the supernatant liquid, substantially as shown and described.

3. In an apparatus for treating sewage, the combination, with the sewage pipe or conduit *d*, having openings *e* and *b*, and the precipitating-tank B, into which said pipe discharges, of the box H, containing the precipitating reagent, the same being arranged alongside the pipe and having an inlet and outlet in one side, which coincide and communicate with the aforesaid openings, as shown and described, whereby a portion of the liquid sewage passing along the pipe is deflected into, and traverses the box H and then re-enters the pipe, thus supplying the reagent required for precipitation of sewage in the tank B, as set forth.

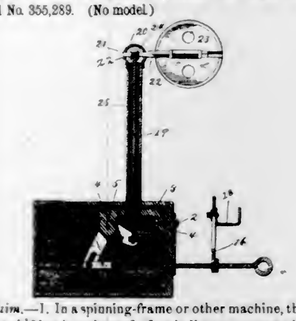


4. The combination, with the tank B, of a strainer I, arranged in the top of the same and having an outflow-pipe communicating with its interior, and a relief-valve *a'* opening inwardly into the strainer to relieve any arrest of outflow due to stoppage of the meshes of the strainer, substantially as shown and described.

5. In an apparatus for treating sewage, the combination of three hermetically-closed tanks arranged in communication with each other, the first being constructed, substantially as described, to receive the solid matters by subsidence, the second being provided with an automatic feeder for supplying chemical reagents for precipitating or disinfecting, and the third being arranged as a filter, substantially as shown and described.

6. In an apparatus for treating sewage, the combination, with a filter for filtering the effluent, of an automatically-acting intermittent flushing-tank arranged to relieve the filtering material of accumulated obstruction by a forcible flush in direction opposite to the normal flow substantially as shown and described.

448,123. INDICATOR FOR SPINNING-FRAMES OR OTHER MACHINES. ALEXANDER R. CLARKSON, Wilmington, assignor of one-half to John Lewis Vansant, Highlands, Del. Filed June 13, 1890. Serial No. 355,289. (No model.)



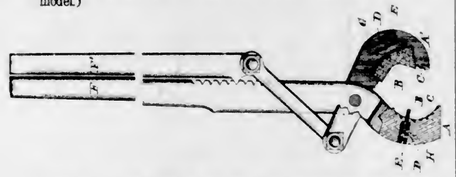
Claim.—1. In a spinning-frame or other machine, the combination, with the shifting-bar thereof, of an indicator connected with and operated by said shifting-bar to display signals indicating whether the machine is working or at rest, substantially as described.

2. The combination, with the frame or housing of a spinning-frame or other machine, of an elbow-lever pivoted thereto, the shifting-bar connected with one arm of said lever, the shaft connected with the other end thereof, and a target or other signaling device connected with said shaft, substantially as described.

3. The combination, with the housing of a spinning-frame or other machine, of an elbow-lever pivoted in a bracket secured thereto, one arm of said lever provided with an elongated slot, a bifurcated connection connected with said arm by a pivot passing through said slot, a shifting-bar connected with the bifurcated connection, a vertical shaft connected with the other arm of the lever, an inclosing tube surrounding said shaft, and a target or other signal connected with the shaft, substantially as described.

4. The combination, with the housing of a spinning-frame or other machine, of an elbow-lever pivoted in a bracket secured thereto, one arm of said lever provided with an elongated slot, a bifurcated connection secured to said arm, a shifting-bar connected with said bifurcated connection, provided with an upright bar carrying a shifting-stirrup, a vertical shaft connected with the other arm of the elbow-lever, a tube surrounding said shaft, provided with a coupling at its upper end, a rod journaled in said coupling, carrying a target or other signal, and a crank connecting said rod and the vertical shaft, substantially as described.

448,124. PROTECTOR FOR JAWS OF WRENCHES. CHARLES C. CONROY, Buffalo, N. Y. Filed Dec. 18, 1890. Serial No. 375,080. (No model.)



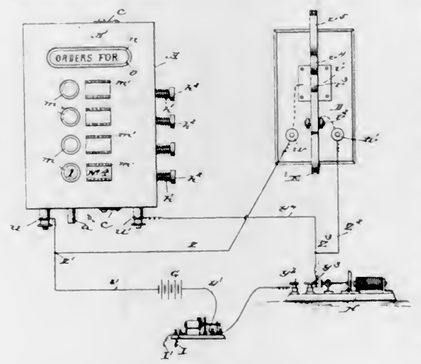
Claim.—1. In a pipe-wrench and pipe-tongs, a movable carrier having its bearing-surface above the plane of the bite of said tongs or wrench and adapted to be depressed, as and for the object stated.

2. In a pipe-tongs and pipe-wrench, a spring-carrier having its bearing-surface above the plane of the bite of said tongs or wrench and adapted to be depressed by the application of the tool, as and for the purpose stated.

3. In a pipe-tongs and pipe-wrench, the combination, with the jaw having the bite, as described, of a carrier having its bearing-surface normally located above the plane of the bite and a spring arranged to act upon said carrier to retain and return it to its normal position, as stated, whereby the carrier is depressed by the application of the tool upon a pipe or rod, as and for the purpose specified.

4. In a pipe-tongs and pipe-wrench, the combination, with the jaw A, of the hole H therein, the headed pin B in said hole and projecting from the inner bite of said jaw, the spiral spring acting upon the head of said pin B, and the plug E, as and for the object specified.

448,125. TRAIN-ORDER ANNUNCIATOR. LEONARD T. CRABTREE, Oconto, assignor of one-half to Gilbert Milligan Knapp and Dayn Eldridge Wescott, both of Shawano, Wis. Filed July 11, 1890. Serial No. 358,385. (No model.)



Claim.—1. In a train-order annunciator, the combination, with a battery and a telegraph receiving-instrument, of a train-order recording and indicating device electrically connected to the battery and telegraph receiving-instrument and adapted to make and break circuit therewith by adjustment of its mechanism, substantially as set forth.

2. In a train-order annunciator, the combination, with a battery and a telegraph receiving-instrument, of a train-order recording and indicating device electrically connected to the battery and telegraph receiving-instrument and adapted to make and break circuit therewith by an adjustment of its mechanism, and a circuit-closer, substantially as set forth.

3. In a train-order annunciator, the combination, with a battery and a telegraph receiving-instrument, of a train-order recording and indicating device having a series of independently-adjustable indicator-sliding plates therein, said device being electrically connected to the battery and telegraph receiving-instrument, and a circuit-closer adapted to be set by the display of a train-signal, substantially as set forth.

4. In a train-order annunciator, the combination, with an adjustable recording and indicating device, a telegraph receiving-instrument, and an electrical generator, of conductor-wires normally in open circuit and a circuit-closer adapted to close the circuit when a train-signal is set, substantially as set forth.

5. In a train-order annunciator, the combination, with a case having independent indicator slide-plates therein, and a gravity-bar adapted to break an electrical circuit when the indicator slide-plates are free to be moved endwise, of a telegraph receiving-instrument, conductor-wires in open circuit, and a circuit-closer adapted to close the circuit when a train-signal is displayed, substantially as set forth.

6. In a train-order annunciator, the combination, with a case, indicator slide-plates therein adapted for longitudinal movement to expose an indicating number thereon, and a transversely-slotted upright bar, of pusher-bars adapted to actuate the indicator-plates and expose a number thereon, and draw-bars adapted to engage the indicator-plates and move them to conceal the numeral thereon, substantially as set forth.

7. In a train-order annunciator, a recording and indicating device having a case, a horizontal slot at the top of the face-board of the case, a legend-bearing display-plate vertically movable behind said slot, a series of vertically arranged and spaced apertures in the face-board, indicator slide-plates within the case behind said apertures, and a series of tablets aligned and paired with the apertures in the face-board, substantially as set forth.

8. In a train-order annunciator, a circuit-closing device consisting of a bracket-block, a spring-actuated contact-finger secured on a conductor-plate on said block, an arm pivoted on said block and normally held away at its upper end from the contact-finger by its own weighted lower end, a binding-post electrically connected to the contact-finger, and a binding-post electrically connected to the pivoted and weighted arm, substantially as set forth.

9. In a train-order annunciator, the combination, with a case, an upright laterally-movable bar having a series of spaced transverse grooves on its front face, and a series of indicator-plates adapted to slide in said grooves, having spaced numbers on their faces and ratchet-teeth on their lower edges, of a face-board having apertures adapted to register with the numbers on the indicator-plates, pusher-bars for the indicator-plates and adapted to engage their ratchet-cut teeth, and draw-bars adapted to engage the ends of the indicator-sliding plates, substantially as set forth.

10. In a train-order annunciator, the combination, with a case, an upright bar slotted in series across its face and movable laterally, and latch-hooks pivoted on the ends of the case and engaging the ends of the upright bar, said bar having a series of pins projecting from one face, of a series of horizontally-disposed indicator slide-plates engaging the grooves in the upright bar and between which said pins project, said slide-plates having ratchet-teeth on their lower edges, and pusher-bars provided with spring-pawls normally engaging the ratchet-teeth of the indicator slide-plates and adapted to be depressed to release the slide-plates when the upright bar is moved laterally, substantially as set forth.

11. In a train-order annunciator, the combination, with a case, an upright bar movable laterally in the case, and indicator slide-plates having numerals in series on their faces, of a face-board on the case, having a series of apertures in it adapted to register with the numerals on the indicator slide-plates, pusher-bars provided with spring-pawls normally engaging ratchet-teeth on the edges of the indicator slide-plates, and pins on the upright bar adapted to release the spring-pawls of the pusher-bars from the ratchet-teeth on the indicator slide-plates when the upright bar is moved laterally in one direction and permit the pawls to re-engage the ratchet-teeth when the upright bar is moved in the opposite direction, substantially as set forth.

12. In a train-order annunciator, the combination, with a case, an upright bar therein, and a vertically-adjustable gravity-bar in the case, said bars having spaced transverse grooves on their front faces, which

grooves align horizontally when the gravity-bar is in lowered adjustment and are staggered when the gravity-bar is raised, of a series of indicator-plates movable horizontally in said case, and a series of horizontal hook-bars adapted to engage said plates and retract them independently, substantially as set forth.

13. In a train-order annunciator, a recording and indicating device having a rectangular case, a series of horizontal spaced indicator slide-plates therein, means for moving said indicator-plates manually, a device for moving the lower indicator slide-plate automatically, a vertically-adjustable gravity-bar in the case, a parallel laterally-movable upright bar therein, a face-board having apertures adapted to expose numbers on the indicator plates, and a slot through which a legend is exposed on a board transversely secured on the gravity-bar near its upper end, substantially as set forth.

14. In a train-order annunciator, the combination, with a case, an upright bar therein, and a vertically-movable gravity-bar parallel to the upright bar, both said bars being grooved at spaced intervals on their front faces, of numerically-marked indicator slide-plates, a board secured transversely on the upper end portion of the gravity-bar, having a legend on its front face, a face-board for the case, apertured to expose the numbers on the indicator-plates successively as the plates are moved horizontally and slotted transversely to exhibit the legend on the display-board when the gravity-bar is in lowered adjustment, substantially as set forth.

15. In a train-order annunciator, the combination, with a rectangular case, a face-board therefor, having a series of vertically-aligned equal-sized apertures therein, a transverse slot near its top edge, and a series of tablet-frames secured on the face-board in horizontal alignment with the apertures therein, of a vertically-adjustable gravity-bar in the case, an upright bar within the case held laterally adjustable, both bars being grooved at intervals on their front faces, a series of sliding indicator-plates having guide-ribs engaging the grooves in the upright bar and gravity-bar, said plates having spaced numerals on their faces, a series of pusher-bars, each provided with a spring-pawl normally engaged with teeth on the indicator-plates, and a series of draw-bars adapted to engage the ends of the indicator-plates, substantially as set forth.

16. In a train-order annunciator, the combination, with a case and a vertically-movable gravity-bar having a transverse contact-pin projecting therefrom on its sides near its lower end, of a contact-spring secured by one end to the lower wall of the case by a binding-post, and a second binding-post electrically connected to one end of the transverse contact-pin, substantially as set forth.

17. In a train-order annunciator, the combination, with a case, a vertically-movable gravity-bar within the case, a writing implement adapted to engage a perforation in the upper portion of the gravity-bar and hold it elevated, and a transverse contact-pin secured to the lower portion of the gravity-bar and projecting from opposite sides of said bar, of a contact-spring secured by one end to the lower wall of the case by a binding-post, and having its free end in contact with the contact-pin when the gravity-bar is held up by the writing implement, and a second binding-post on the lower wall of the case electrically connected to the other end of the contact-pin, substantially as set forth.

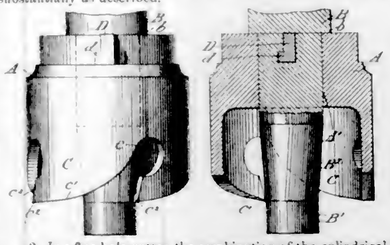
18. In a train-order annunciator, the combination, with a case, a vertically-movable gravity-bar therein, and a parallel upright bar having a series of spaced grooves mating with similar transverse grooves in the gravity-bar, of a series of indicator-plates adapted for sliding engagement with the grooves in the parallel upright bar and the gravity-bar when the gravity-bar is in lowered adjustment and to be held by contact with said bar from longitudinal movement when the gravity-bar is in elevated adjustment, substantially as set forth.

19. In a train-order annunciator, the combination, with a case and a gravity-bar vertically movable therein and laterally perforated at its upper end outside of the case to receive a style or other writing implement, of a transverse contact-pin secured in the gravity-bar near its lower end and a contact-spring engaging the contact-pin when the style is placed in the gravity-bar, substantially as set forth.

20. In a train-order annunciator, the combination, with a case and a vertically-adjustable gravity-bar perforated outside of the case at its upper end to receive a style or similar writing implement, of a contact-spring within the case, a contact-pin on the gravity-bar engaged by the contact-spring when said bar is in elevated adjustment, a binding-post secured to the contact-spring, a binding-post electrically connected to the contact-pin, a battery, a receiving telegraph-instrument, a circuit-closer, an operating-lever of a train-signaling device, leading-wires connecting the binding-posts on the case with the battery and telegraph-instrument, and branch wires connecting the circuit-closer with the leading-wires, substantially as set forth.

448,126. FLUE-HOLE CUTTER. WILLIAM R. CRAIG, Shelby, Ala., assignor of one-half to Homer R. Stoughton, same place. Filed Sept. 6, 1890. Serial No. 364,147. (No model.)

Claim.—1. The herein-described flue-hole cutter, consisting in the combination of the mandrel, the circular cutter-head provided with teeth, and the wedge for connecting the mandrel firmly to the cutter-head, so that the device may be employed for cutting holes in metal, substantially as described.

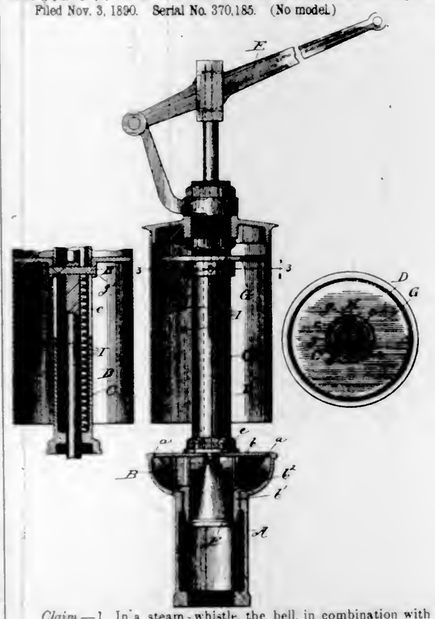


2. In a flue-hole cutter, the combination of the cylindrical cutter-head A, having the teeth C, and the mandrel B, passing through said cutter-head, the point of the mandrel extending through the head and forming a center guide for the cutting-teeth, and the wedge passing through a slot in the mandrel and the head and connecting them together, substantially as described.

3. In a flue-hole cutter, the cylindrical cutter-head A, provided with a series of three or more teeth C, said teeth having a point c^3, a straight edge c^3, and a curved edge c', which latter edge runs from the point c^3 to the opening c, substantially as described.

4. In a flue-hole cutter, the combination of the cutter-head A, having the cylindrical bore A' and the teeth C, having points c^3, straight edge c^3, and curved edge c', and the mandrel B, having shoulder b and end B', and the wedge D, passing through a slot in the mandrel and the cutter-head and provided with a flange d, substantially as described.

448,127. STEAM-WHISTLE. RICHARD T. CRANE, Chicago, Ill. Filed Nov. 3, 1890. Serial No. 370,185. (No model.)

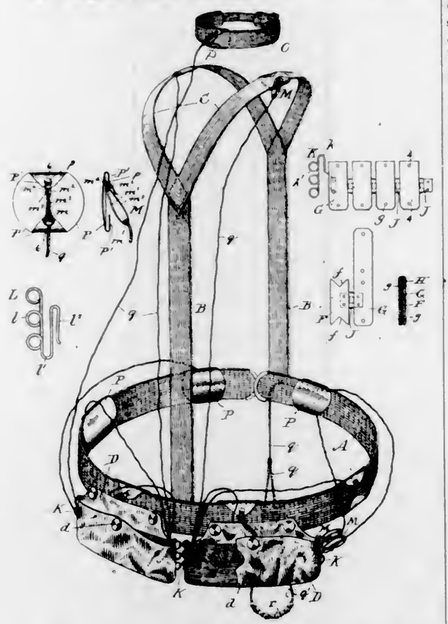


Claim.—1. In a steam-whistle, the bell, in combination with a vertically-movable piston arranged therein and connected to the steam-valve, whereby the movement of the valve also adjusts the piston within the bell, substantially as and for the purposes specified.

2. In a steam-whistle, the bell D, in combination with the tubular standard C, valve-stem e, passing down through the standard, and a piston G, sleeved on the standard and connected through slots in the latter to the valve-stem within, substantially as and for the purposes specified.

3. In a steam-whistle, the tubular standard C, rising from the cup and provided with lateral slots c, in combination with the valve E, the stem e of which passes up through the said standard, the bell D, mounted on said standard, the piston G, arranged within the bell and sleeved on the standard, the pin H, passing through the side slots in the standard and connecting the piston to the valve-stem; and the spring I, arranged below the piston within the space between the valve-stem and the standard, substantially as and for the purposes specified.

448,128. BODY-BATTERY AND ATTACHMENTS FOR THE SAME. JOHN A. CRISP and GEORGE F. WEBB, Jefferson, Ohio. Filed Nov. 21, 1890. Serial No. 372,125. (No model.)



Claim.—1. The battery-cell comprising the copper plate F, having notches $f\,f$ in its ends, the zinc plate G, bent upon itself and inclosing the same, the rivets passed through the two integral members of the zinc plate and notches f to hold plate F in place, and the absorbent material between the zinc and copper plates, substantially as set forth.

2. The battery-cells, each comprising a copper plate F, having notches $f\,f$, a zinc plate G, bent upon itself and inclosing the plate F, rivets passing through the two integral members of the zinc plate and the notches f to hold plates F in place, an absorbent material separating the zinc and copper plates, copper hinges connecting the copper plate of one cell with the zinc plate of the next cell, and hooks connected, respectively, to the copper plate of one end cell and the zinc plate of the opposite end cell, substantially as set forth.

3. In a body-battery, the electrode P, formed of a circular convex plate having its edge at opposite points bent over upon the concave side of the plate, as shown at P' P', one of the integral bent-over portions P' being provided with an aperture p, substantially as set forth.

4. The combination, with the electrode formed of a circular convex plate P, having its edge bent over at opposite points upon the concave side of the plate, as at P' P', one of said parts P' having an aperture p, of the snap-hook M, formed of spring-wire formed into a coil at m, having a doubled member m', terminating in a hook m^2, and the parallel members m^3, extending between the wires of the doubled member m' and terminating back of the hook m^2 in coils m^4, the hook m^2 engaging the aperture p from the inner side of the bent portion P' and the coils m^4 pressing against the concave side of the electrode, substantially as set forth.

5. The combination, with the case D, having attaching devices at its upper open end, and a water-proof pocket E in said case, provided with a closing-flap at its upper open end, of the battery-cells in the pocket E and having hooks on the copper and zinc plates of the end cells, provided with bends to pass over the upper edges of the ends of the case, and eyes or rings exterior to the case for connecting the circuit-wires, substantially as set forth.

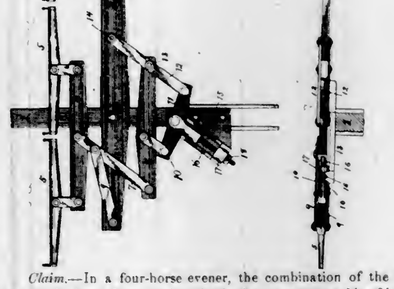
6. The combination, with the battery and pocket for the same, of the hook having a bend to fit the pocket, said hook having one end connected with an element of the battery and the other end formed into a series of rings, substantially as described.

7. In a body-battery of the character described, the adjuster formed of spring-wire, said adjuster having one end formed into a hook to fit the battery-hinges, its central portion bent to fit over the battery-pocket, and its outer end provided with a series of rings, substantially as described.

8. In a body-battery of the character described, the combination, with the ringed hooks of the batteries and the perforated electrodes, of the connecting-wires and the spring-hooks attached to the wires, said hooks having an end coil, a doubled member extending from the end coil and terminating in a hook, and two spring members extending from the coil and through the doubled member, substantially as described.

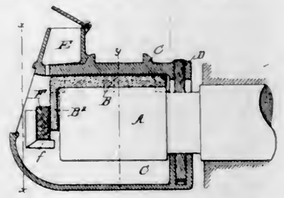
9. The combination, with the battery, of a connecting-wire formed into a loop and the bead-like electrodes mounted on the loop, substantially as described.

448,129. DRAFT-EQUALIZER. DANIEL B. CROFT, Sweet Water, Ill. Filed Nov. 24, 1890. Serial No. 372,485. (No model.)



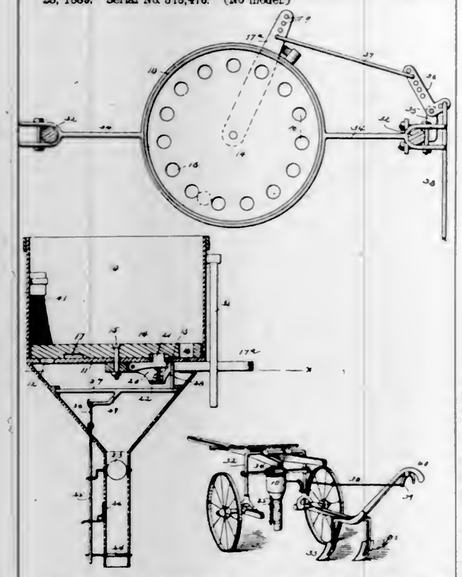
Claim.—In a four-horse evener, the combination of the draft-tongue, the beam 2, secured to the draft-tongue to one side of its middle, a doubletree 4, provided with whiffletrees and connected to the long end of said beam, a beam 8, a doubletree 4, provided with whiffletrees and connected by a strap 7 to the beam 8, a strap 9, connecting the short end of the beam 2 to the strap 7, a beam 11, a strap 10, connecting the beam 11 to the beam 8, and a strap 12, connecting the beam 11 to the beams 8 and 2, substantially as and for the purpose set forth.

448,130. CAR-AXLE BOX. WILLIAM CROSS, Winnipeg, Canada. Filed July 2, 1890. Serial No. 357,578. (No model.)



Claim.—The combination, with the axle-journal, the axle-box, and its front cross-bar, of the bearing-block B, having its pendent front end tapered, thus forming side passages for the lubricant, as specified, and the tallow-box E, having a bottom outlet located in front of said block and directly over the cross-bar, as and for the purpose specified.

448,131. **REPLANTING ATTACHMENT FOR CULTIVATORS.** GEORGE W. CUNNINGHAM and JAMES M. FERRY, Bismarck, Ill. Filed July 23, 1889. Serial No. 318,416. (No model.)



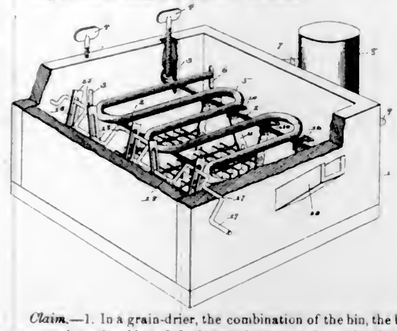
Claim.—1. In a replanting attachment, the combination, with an essentially funnel-shaped hopper provided with a horizontal partition having a single seed-opening produced therein and a curved slot 13, of a disk held to revolve upon the partition, provided with a series of seed openings capable of registering with the seed-opening in the partition, ratchet-teeth upon the under face, and a lever fulcrumed at one end beneath the partition, provided with a vertically-movable dog capable of contacting with the ratchet-teeth through said slot, substantially as and for the purpose specified.

2. In a replanting attachment the combination, with an essentially funnel-shaped seed-hopper provided with a horizontal partition having a single seed-opening produced therein and a disk held to revolve upon the said partition, provided with a series of seed-openings, each capable of registering with the seed-opening in the partition and provided with ratchet-teeth upon the under face, of a lever fulcrumed beneath the partition, a spring-actuated dog pivoted in said lever, capable of contact with the ratchet-teeth of the disk, valves located in the reduced portion of the hopper, a rock-shaft having an arm projecting into the path of said lever, and a connection between the said rock-shaft and valves, substantially as shown and described.

3. In a replanting attachment, the combination, with a hopper, a partition horizontally supported in said hopper, provided with a single seed-opening and a radial slot, a seed-carrying disk held to revolve upon the partition, provided with a series of seed-openings capable of consecutively registering with the seed-opening of the partition, and ratchet-teeth produced in the under face of the disk, a lever pivoted at one end to the under face of the partition, and a spring-actuated dog pivoted in the said lever, capable of contact with the ratchet-teeth of the disk, of a rock-shaft provided with an arm contacting with the lever and a downwardly-extending angled arm, a cut-off valve or damper and a drop-valve or damper pivoted in the reduced section of the hopper, and a spring-actuated connecting-bar uniting the said dampers or valves with the angled arm of the rock-shaft, the dampers being so attached to the said connecting-bar that when one is closed the other is open, substantially as and for the purpose specified.

4. A combined replanter and cultivator consisting in the arched wheeled frame, the hopper 10, supported thereby and provided with a single seed-opening in its bottom, a seed-spout below the opening and terminating at a height above the ground out of reach of the growing plants, a rotary disk having a circular series of openings registering successively with the opening in the hopper-bottom and a concentric series of ratchet-teeth on its under face, a horizontal lever provided with a vertically-movable dog engaging said ratchet-teeth, valves in the seed-spout operated from said lever, a cultivator hinged to the arched frame in rear of and to one side of the seed-hopper to work between the rows while the spout is passing over the row of plants, and a trigger or hand-lever on the cultivator-handle and connected to the lever of the seed-dropper for operating the same to deliver seed to vacant places in the rows of plants, substantially as set forth.

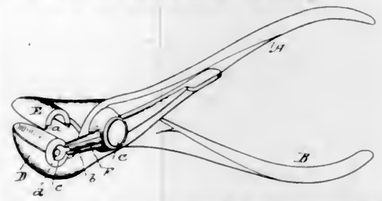
448,132. **GRAIN-DRIER.** JOHN V. CURLIN, Edith, Tenn. Filed July 26, 1890. Serial No. 360,056. (No model.)



Claim.—1. In a grain-drier, the combination of the bin, the brackets secured to the sides of the latter, the supporting-rods pivoted to said brackets, the rods at one side being provided with upwardly-extending arms, the operating-shaft having cranks working in slots at the upper ends of said arms, the pivoted bars connecting the lower ends of the supporting-rods and having U-shaped stirrers or agitators, and a steam-pipe mounted upon suitable supports within the bin, substantially as set forth.

2. In a grain-drier, the combination of the bin having a feed-chute and an escape-spout provided with suitable doors, the vertically-adjustable supporting-rods mounted in said bin, the steam-pipe mounted upon said rods and having its ends extended through vertical slots in the side of the bin, flexible couplings connecting the ends of said pipe with a steam generator and exhaust, the stirring or agitating devices in the bin, and a reflector arranged between the lid or cover and the steam-pipe, substantially as and for the purpose set forth.

448,133. **SUPPOSITORY-MOLD.** ENOS L. CUSHING, Albion, N. Y. Filed June 2, 1890. Serial No. 353,986. (No model.)



Claim.—1. The improved device for forming suppositories, bougies, and similar articles, consisting of two crossed levers of the first class, the shorter arm of each lever being provided with one section of a longitudinally-divided mold, which sections form jaws in which to pinch and mold the material, and one of said sections being provided with a lip surrounding and extending from the same and adapted to overlap the other section, all as set forth.

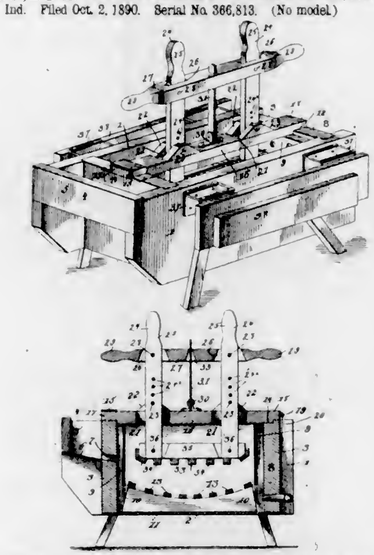
2. The improved device for forming suppositories, bougies, and similar articles, consisting of two crossed levers of the first class, the shorter arm of each lever being removable and provided with one section of a longitudinally-divided mold, which sections form jaws in which to pinch and mold the material, all as set forth.

3. The improved device for forming suppositories, bougies, and similar articles, consisting of two crossed levers of the first class, the shorter arm of each lever being provided with one section of a longitudinally-divided mold, which sections form jaws in which to pinch and mold the material, and one of said sections being provided with a lip surrounding and extending from the same and adapted to overlap the other section, and a lever connected with the other two levers and having one of its arms adapted to swing over the base of the mold, all as set forth.

4. The improved device for forming suppositories, bougies, and similar articles, consisting of two crossed levers of the first class, the shorter arm of each lever being provided with one section of a longitudinally-divided mold, which sections form jaws in which to pinch and mold the material, and one of said sections being provided with a lip surrounding and extending from the same and adapted to overlap the other section, and a lever connected with the other two levers, having one of its arms adapted to swing over the base of the mold and having the hole *c* for the escape of the surplus material, all as set forth.

5. The improved device for forming suppositories, bougies, and similar articles, consisting of two crossed levers of the first class, the shorter arms of the levers being provided with jaws, between which the material is adapted to be squeezed, and an outlet-opening from said jaws, and one of said jaws being provided with a lip surrounding and extending from the same and adapted to overlap the other jaw, all as set forth.

448,134. **WASHING-MACHINE.** WILLIAM L. DEARTH, Frankfort, Ind. Filed Oct. 2, 1890. Serial No. 366,813. (No model.)



Claim.—1. In a washing-machine, the combination, with a stationary rubbing-frame located in the suds-box thereof, and opposite compartments formed at the ends of the frame and having their inner walls perforated, of levers pivoted above the suds-box and depending thereinto, and a rubber-frame pivoted to the levers, substantially as specified.

2. In a washing-machine, the combination, with the suds-box provided at opposite ends with compartments, the inner walls of which are perforated, and above its bottom with an open frame, of a longitudinal bar removably mounted upon the suds-box, a pair of levers passing through openings in the bar in which they are adjustably mounted, a rubbing-head pivoted in the lower ends of the levers, and a bar for the operating-levers pivotally connecting the same near their upper ends, substantially as specified.

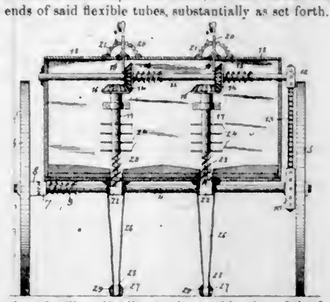
3. In a washing-machine, the combination, with the suds-box and a pair of levers pivoted in the top of the same and depending into the box and carrying a pivoted rubbing-head, of a lever-operating bar slotted to receive said levers and pivoted thereto and provided with a transverse central slot, and a spring-blade passing through said slot and secured at its lower end to the top of the washer, substantially as specified.

4. The combination, with the suds-box, the opposite pairs of bars 10, and the perforated plates 9, connecting each pair of bars at their front edges, said bars being provided at their front lower ends with inclined or undercut faces, of the rectangular frame 11, supported upon the bottom of the box, the ends of the longitudinal bars being beveled and taking under the undercut ends of the bars 10, substantially as specified.

5. The suds-box having the recess 14 at one end and the keeper 15 at the other, the bar 16, having one end entering the keeper 15 and its other end fitting the recess, said bar carrying the rubber and its actuating means, and the hinged lids 38 to close the top of the suds-box on each side of the bar 16, substantially as specified.

448,135. **FERTILIZER-DISTRIBUTER.** WILLIAM G. DE BERRY, Mount Gilead, assignor of one-half to C. C. Wade and W. T. Wade, both of Wadeville, N. C. Filed Sept. 24, 1890. Serial No. 365,998. (No model.)

Claim.—1. The combination of the hopper, the tubes extending through the bottom of the same, the feed-shafts mounted vertically in the hopper and having spiral flanges extending into said tubes, the flexible tubes mounted upon the latter, and the tubular weights at the lower ends of said flexible tubes, substantially as set forth.

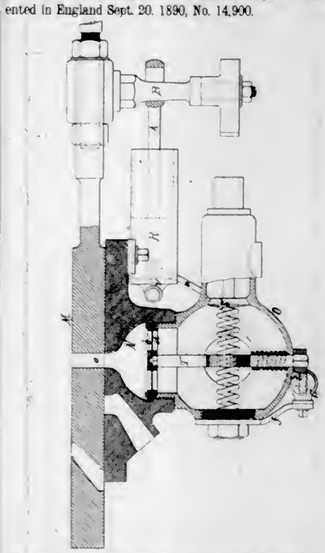


2. In a fertilizer-distributer, the combination of the flexible dropping-tubes, the oval tubular weights mounted upon the lower ends of the latter, and the tongues formed by slitting the projecting ends of the flexible tubes, said tongues being bent back over the weights and made fast, substantially as and for the purpose set forth.

3. The combination of the frame, the hopper, the tubes extending through the bottom of the latter, the feed-shafts mounted in the hopper and having spiral flanges extending into the said tubes, the levers mounted upon the frame in the rear of the hopper and having downwardly-extending arms provided with eyes or rings at their lower ends, and the flexible dropping-tubes attached to the lower ends of the rigid tubes, extending through the rings or eyes at the lower ends of the arms and the tubular weights at the lower ends of said flexible tubes, substantially as and for the purpose set forth.

4. In a fertilizer-distributer, the combination, with the hopper and the dropping mechanism, of the flexible tubes, the tubular trailing weights mounted upon the lower ends of the said flexible tubes and secured by tongues formed by slitting the lower ends of said tubes and bent back over the weights and made fast, and mechanism, substantially as described, for adjusting said tubes more or less closely together and for retaining them at any desired adjustment, substantially as set forth.

448,136. **MEANS FOR GOVERNING OR REGULATING THE ACTION OF GAS OR OTHER LIKE EXPLOSIVE ENGINES.** EDOUARD DELAMARE-DEBOUTTEVILLE and LÉON MALANDIN, Fontaine-le-Bourg, France. Filed Oct. 14, 1890. Serial No. 368,141. (No model.) Patented in England Sept. 20, 1890, No. 14,900.

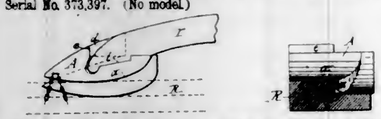


Claim.—1. In a gas-engine, the combination of the mixing-chamber with a valve between the said chamber and the cylinder and means

consisting of a pump actuated by the engine and an air-chamber connected to the pump and containing a piston to automatically control the valve to regulate the amount of explosive mixture admitted to the cylinder.

2. In a gas-engine, the combination of the mixing-chamber with a regulating-valve between the mixing-chamber and the cylinder, an air-chamber containing a piston to control the regulating-valve, and a pump or regulator provided with an adjusting-valve to regulate the supply of air to the air-chamber in proportion to the power to be developed, as and for the purposes set forth.

448,137. CAR-REPLACER. EDOUARD DESCOMPS, Utica, N. Y., assignor of one-half to Louis Lombard, same place. Filed Dec. 3, 1890. Serial No. 373,397. (No model.)



Claim.—1. In a car-replacer, the replacing-rail *r*, in combination with the shoe A, formed with a bearing for the end of said rail and having its bottom formed with the downwardly-projecting shoulder *a'*, substantially as and for the purpose set forth.

2. In a car-replacer, the combination of the shoe A, formed with the mortises *p p* in its top, and the rail *r*, provided at its end with the lugs *l l*, entering said mortises, as set forth.

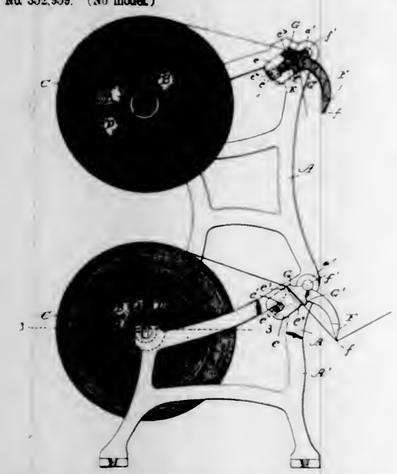
3. In combination with the shoe A, formed with the mortises *p p*, and intermediate tongue *t*, the rail *r*, formed with the lugs *l l* and intermediate notch *n*, and the key *d*, entering said notch, as set forth and shown.

4. A car-replacer consisting of the shoe A, formed at its under side with the shoulder *a'*, extending diagonally across it, and provided at its top with the mortises *p p* and intermediate tongue *t*, and upward-projecting shoulder *e*, the rail *r*, formed with the lugs *l l* and intermediate notch *n*, and the key *d*, entering said notch, substantially as described and shown.

5. The combination, with the shoe A and rail *r* connected thereto, of the chain *f*, attached to the said shoe and provided with a ring for the reception of an anchoring-pin, as set forth.

6. The combination, with the shoe A and rail *r* connected thereto, of the lateral anchoring-chain *f* and longitudinal anchoring-chain *f'*, attached to the shoe, and each of said chains provided with an eye for the reception of an anchoring-pin, substantially as described and shown.

448,138. ROLL-PAPER HOLDER AND CUTTER. EDWARD C. FORD and GEORGE T. JACOBS, Washington, D. C. Filed May 23, 1890. Serial No. 352,959. (No model.)



Claim.—1. In a roll-paper holding and severing machine, the combination, with a frame or support for the roll, of a longitudinal support for the free edge of the paper, and an oscillating knife having parts or surfaces on opposite sides of its axis acting to hold the paper against said support in either position of the knife, substantially as set forth.

2. In a roll-paper holding and severing machine, the combination, with a frame or support for the roll, of a longitudinal support for the free edge of the paper, and an oscillating knife having a part constituting a tension-bar operated by the movement of the knife, said support and bar acting to hold the paper between them in either position of the knife, substantially as set forth.

3. In a roll-paper holding and severing machine, the combination, with a frame or support for the roll, of bearings adapted to fit within the roll, a stationary axis held from rotation on said frame and passing through said bearings, and rubber sleeves interposed between the interiors of the bearings and the exterior of the axis, substantially as set forth.

4. In a roll-paper holding and severing machine, the combination, with a frame or support for the roll, of exteriorly-conical bearings adapted to be wedged within the ends of the roll, a stationary axis held from rotation on said frame and passing through said bearings, and rubber sleeves interposed between the interiors of the bearings and the exterior of the axis, substantially as set forth.

5. The combination, with the frames A A and the continuous knife pivoted thereon, of the continuous support E and the separate intermediate bracket A', shaped to fit the said support, substantially as set forth.

448,139. BAG-FRAME. BENJAMIN MAYER, Philadelphia, Pa. Filed Dec. 23, 1890. Serial No. 375,567. (No model.)



Claim.—A bag-frame having pivoted jaws, a coiled spring bearing against the same, having its ends projecting in opposite directions, and covering-plates secured to said jaws, forming a chamber within which said ends are located and have their play, said parts being combined substantially as described.

448,140. POST-DRIVER. JOSEPH MCLANDSBOROUGH, Station Fifteen, Ohio. Filed Nov. 13, 1890. Serial No. 371,308. (No model.)

Claim.—1. The combination, with the derrick and the base, of the supplemental sills and the notched latch-bars for holding the base down on the sills, substantially as set forth.

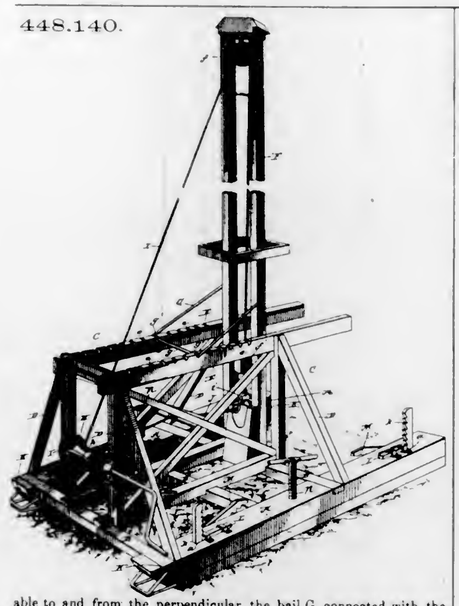
2. The combination, with the derrick and the base, of the supplemental sills, the notched standards, the latch-bolts, and the set-screws, substantially as described.

3. The combination, with the base having frames, as C C, the upper bars of which are notched, of the derrick having pivotal connection with the base, the bail connected with the derrick and adapted to engage with the notched bars and catches for holding the bail in engagement with the said notched bars, substantially as set forth.

4. A post-driver comprising the instrumentalities hereinbefore shown and described, composed of a base having notched bars E E, supplemental sills, the notched standards projected up from the sills, the latch-bolts L to engage with the said standards, the notched latch-bars M to hold the base down, the set-screws N for vertically adjusting the base on the sills, the derrick pivoted to the base and adjust-

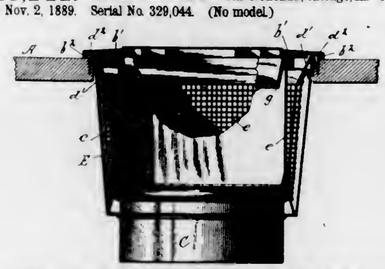


448,140.



able to and from the perpendicular, the bail G, connected with the derrick and adjustable on the notched bars E E, catches *g'* to hold the bail G in engagement with the notched bars E E, and the hammer and means for operating the hammer, substantially as described.

448,141. HOT-AIR REGISTER. JOHN NORTHEN, Chicago, Ill. Filed Nov. 2, 1889. Serial No. 329,044. (No model.)



Claim.—1. In combination with a hot-air flue and with a hot-air register and wholly detached from the latter, a flue-head, supporting-straps secured thereto for attachment to the house-floor, and an external box inclosing the flue-head and fitting closely upon the flue, substantially as described, and for the purposes set forth.

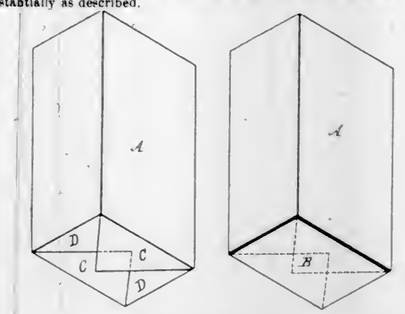
2. In a hot-air register, the combination of a face-plate cast as a single piece and having downwardly-projecting flanges, with a flue-head wholly detached therefrom and consisting of an inner and an outer box, the outer box carrying a fireproofing material, said flue-head being provided with supporting-straps for attachment to the house-floor, substantially as described, and for the purposes set forth.

3. In a hot-air register, the combination, with a fireproofed flue-head, of a face-plate wholly disconnected from the flue-head and having downwardly-projecting flanges for engaging the flue-head and the edges of the floor-aperture, substantially as and for the purposes set forth.

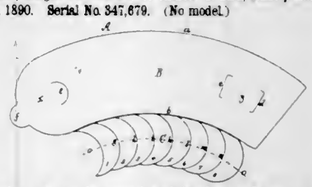
448,142. PAPER BAG. FREDERICK O. PAIGE, Detroit, Mich. Filed Sept. 13, 1890. Serial No. 364,892. (No model.)

Claim.—1. A satchel-bottom paper bag having one end folded to form a satchel bottom without the use of paste on any of its folded portions, and provided with a re-enforcing sole-piece coextensive in dimensions with the satchel bottom and pasted throughout its entire extent over the exterior thereof to secure and hold down the folded flaps, entirely cover the folding seams, provide a smooth surface, and prevent the egress of pulverulent material, substantially as described.

2. A satchel-bottom paper bag having the folded flaps C C and D D to form a completely-closed satchel bottom without paste on any of such folded portions, and provided with a re-enforcing sole-piece composed of an approximately square sheet of paper coextensive in dimensions with the satchel bottom and pasted throughout its entire surface upon the satchel bottom from edge to edge thereof for the purpose of holding the folded flaps against flying out of place and preventing egress of pulverulent material contained in the bag, substantially as described.

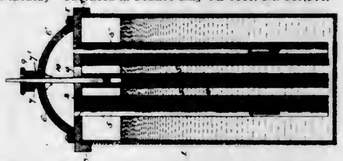


448,143. FOLDING FLOWER-POT. MYRON H. PIPER, Walpole, Mass., assignor of one-half to Charles S. Bird, same place. Filed Apr. 12, 1890. Serial No. 347,679. (No model.)



Claim.—As an improved article of manufacture, a flower-pot blank comprising the members B and C in one piece of sheet material, creased at *b*, the member B provided with locking tongues and slits for attaching the portions to be lapped and the member C divided into a series of curved portions which, when the blank is folded to form a plot, lap on one another and constitute a bottom polygonal in outline, as represented.

448,144. APPARATUS FOR RECUTTING FILES. AUGUSTIN P. DE SENNEVOY, Paris, France. Filed Dec. 15, 1890. Serial No. 374,749. (No model.) Patented in France May 14, 1888, No. 189,311.



Claim.—1. A file-recutting battery composed of a file constituting the positive electrode, a series of negative electrodes, a suitable electrolytic fluid, and an external short circuit, substantially as described.

2. In a file-recutting battery, the combination of a file constituting the positive electrode, a series of carbons surrounding the file and constituting the negative electrode, and an electrolytic fluid composed of water, nitric acid, and sulphuric acid, substantially as described.

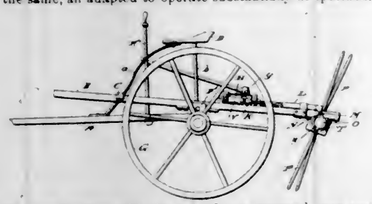
3. In a recutting battery, the combination of an electrolytic fluid, the article to be recut constituting the positive electrode, a suitable negative electrode, and a clamp for the article constituting an external short circuit for the battery, substantially as described.

4. A recutting battery composed of an article to be recut constituting the positive electrode, a negative electrode, a suitable electrolytic fluid, and an external short circuit, substantially as described.

448,145. HAY-RAKE. WILLIAM R. SHARP, near Donaldsonville, La. Filed Sept. 25, 1890. Serial No. 366,181. (No model.)

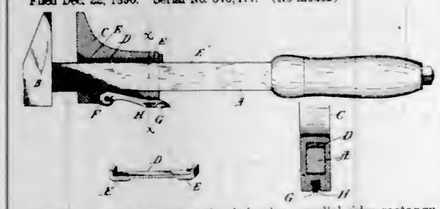
Claim.—1. The combination, with the axle supported by wheels, the frame fulcrumed thereon provided in its forward portion with a

lateral pedal branch, and the transverse shaft carrying raking-teeth journaled on the rear end of the frame and provided at its ends with radial oppositely-directed lugs, of the transverse rock-shaft also journaled on the frame, the crank-arms fixed on the ends of the rock-shaft, the lever-arms K, pivotally connected to the crank-arms, the sliding rods L, pivotally connected to the lever-arms and provided at their rear ends with depending lugs adapted to engage the lugs upon the tooth-shaft, and the lever connected with the rock-shaft and adapted to turn the same, all adapted to operate substantially as specified.



2. The combination, with the main frame mounted upon an axle supported by wheels and the transverse shaft carrying raking-teeth journaled on the rear end thereof and having at its ends the radial oppositely-directed lugs, of the transverse rock-shaft journaled on the frame, the crank-arms fixed on the ends of the rock-shaft, the lever-arms K, pivotally connected to the crank-arms, the sliding rods L, pivotally connected to the lever-arms and provided at their ends with depending lugs adapted to engage the lugs upon the tooth-shaft, and the lever connected with the rock-shaft and adapted to rock the same, all adapted to operate substantially as specified.

448,146. **WRENCH.** ADOLPH HAMELEHLE, Grand Rapids, Mich. Filed Dec. 22, 1890. Serial No. 375,477. (No model.)



Claim.—1. In a wrench, a shank having parallel sides rectangular in cross-section, having one side serrated and a fixed jaw at one end, a movable jaw provided with a gib having teeth adapted to engage said serrations, and a cam engaging the side of said shank opposite said gib, substantially as described.

2. In a wrench, a shank having a fixed jaw attached and serrations on one side, a movable jaw provided with teeth adapted to engage said serrations, and a cam engaging the opposite side of said shank, substantially as described.

3. In a wrench, a shank having a fixed jaw attached and serrations in one side, a movable jaw having teeth engaging said serrations, and a cam engaging the opposite side of said shank, said cam provided with a laterally-flexible lever having a depression in one side adapted to engage a projection on said movable jaw, substantially as described.

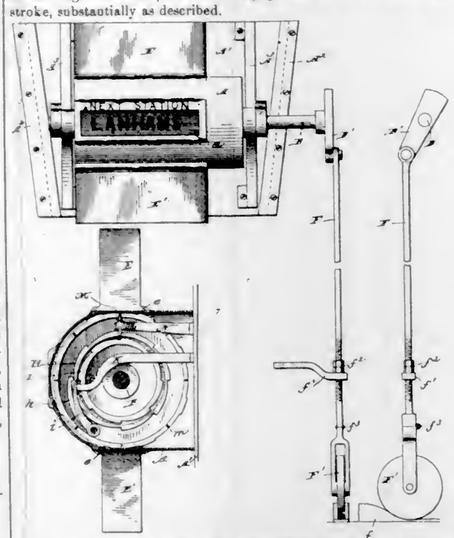
4. In a wrench, a shank of rectangular cross-section having one side serrated and a fixed jaw attached, a movable jaw surrounding said shank having a detachable gib provided with teeth engaging said serrations, and a cam opposite said gib having a laterally-flexible lever having a depression in its side engaging a projection on said movable jaw, substantially as described.

448,147. **STATION-INDICATOR.** JOSEPH F. HARTIGAN, Salem, assignor of two-thirds to M. A. Riffe & Co., Roanoke, and G. W. Argabite, Lynchburg, Va. Filed Apr. 5, 1890. Serial No. 346,653. (No model.)

Claim.—1. In a station-indicator, the combination, with the rotary drum having the tablet-recesses therein, mechanism for rotating the drum, and the casing having the sight-opening, of the interchangeable hoppers dovetailed into the casing above and below the drum, substantially as described.

2. In a station-indicator, the combination, with the rotary drum and the ratchet-wheels on said drum, having oppositely-arranged teeth, of the independently-movable operating-pawls engaging said teeth to rotate the drum in opposite directions, and a stationary stop for holding one of said pawls out of engagement at one extreme of its stroke, substantially as described.

3. In a station-indicator, the combination, with the rotary drum and the ratchet-wheels on said drum, having oppositely-arranged teeth of the independently-movable operating-pawls mounted on a common carrier to rotate the drum in opposite directions, and a stationary stop for holding one of said pawls out of engagement at one extreme of its stroke, substantially as described.



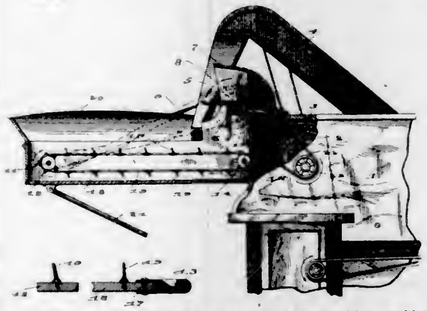
4. In a station-indicator, the combination, with the rotary drum and the ratchet-wheels thereon having the oppositely-arranged teeth, of the rotary disk carrying independently-movable pawls for engaging said teeth, and a stationary stop for holding one of said pawls out of engagement at one extreme of its stroke, substantially as described.

5. In a station-indicator, the combination, with the central shaft having the drum mounted loosely thereon, the ratchet-wheels on the drum, and the disk fixed on the shaft and carrying the pawls engaging the ratchet-wheels, of the pivoted catch engaging the drum to hold it in locked position, and the wedge-shaped projection on the disk engaging the catch to release the same, substantially as described.

6. In a station-indicator, the combination, with the shaft having the drum mounted loosely thereon, and pawl-and-ratchet connections between said drum and shaft, of the crank on the shaft, the vertical operating-rod connected to the crank, the roller on the lower end of the rod, and the cam or projection with which the roller engages to reciprocate the shaft, substantially as described.

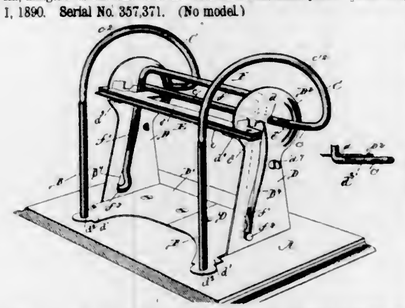
7. In a station-indicator, the combination, with the support having the side pieces forming dovetail grooves, of the indicator-casing having the base fitting in said grooves, whereby the casing may be removed, substantially as described.

448,148. **FEEDER ATTACHMENT FOR CLOVER-HULLERS.** JOHN W. HARVEY, Cumberland, Ind., assignor of one-half to George E. Wray, same place. Filed Oct. 22, 1890. Serial No. 368,986. (No model.)



Claim.—An automatic feeding mechanism for thrashing-machines, comprising a hopper-frame secured to the front end of the machine, a brace supporting such frame beneath, connected to the machine-frame below, a horizontally-moving endless belt formed of drive-chains, transverse metal slats connected thereto, the ends of the slats riveted in jaws formed on the links of the drive-chains, and carrying-pins set obliquely in such slats and inclined to the rear, such endless belt carried on sprocket-wheels mounted on rollers journaled in the sides of the hopper-frame, the forward one of such rolls located contiguous to the throat of the thrashing-cylinder, the other roll journaled at the rear of the hopper-frame, all combined substantially as shown and described.

448,149. **BILL OR LETTER FILE.** JOSEPH W. HENSON, La Grange, Ill., assignor of one-half to N. Edward Jennison, same place. Filed July 1, 1890. Serial No. 357,371. (No model.)



Claim.—1. A paper-file comprising a base, receiving-wires, uprights possessing inherent elasticity and having bearings, and movable transfer-wires pivotally supported in said bearings, said uprights engaging and acting upon said transfer-wires and serving to hold the same with relation to their pivotal support.

2. A paper-file comprising a base, receiving-wires, movable transfer-wires, and upright spring-plates upon which said transfer-wires are supported, said upright spring-plates engaging and acting upon said transfer-wires and said receiving and transfer wires being adapted to be joined by said transfer-wires approaching and engaging the receiving-wires by a substantially longitudinal movement.

3. A paper-file comprising a base-board, receiving-wires, movable transfer-wires having a bearing portion, and upright spring-plates upon which said bearing portion is supported, said upright spring-plates engaging and acting upon said transfer-wires.

4. A paper-file comprising a base-board, receiving-wires, movable transfer-wires embracing an intermediate bearing portion c and side needles c^3, and spring-uprights which support said intermediate bearing portion and bear against said needles.

5. A paper-file comprising a base-board, receiving-wires, and movable transfer-wires supported by upright spring-plates, said plates bearing against said transfer-wires to lock the same in engagement with said receiving-wires.

6. A paper-file comprising a base-board, receiving-wires, movable transfer-wires embracing an intermediate bearing portion c, offsets c', and needles c^3, and upright spring-plates for supporting said wires and which bear against said offsets.

7. A paper-file comprising a base-board, receiving-wires, movable transfer-wires embracing an intermediate bearing portion and needles, and upright spring-plates supporting said bearing portion and provided with notches for engaging said needles when they meet the receiving-wires.

8. A paper-file comprising a base-board, receiving-wires, movable transfer-wires embracing an intermediate bearing portion and needles, and upright spring-plates supporting said bearing portion and provided with ribs or ridges having notches, said notches being located to engage said needles when the latter meet the receiving-wires.

9. A paper-file comprising a base, two upright spring-plates having base portions D' and perforated projections d', receiving-wires secured in said perforated projections, and movable transfer-wires supported upon said upright spring-plates, said upright spring-plates engaging and acting upon said transfer-wires.

10. A paper-file comprising a base-board, receiving-wires, movable transfer-wires embracing an intermediate bearing portion c, offsets c', and needles c^3, upright spring-plates having bearing-apertures for supporting said intermediate portion, and ribs or ridges on said plates having notches located to engage said offsets when the transfer-wires meet the receiving-wires.

11. In a paper-file having receiving-wires and movable transfer-wires supported upon upright spring-plates which engage and set upon said transfer-wires, stops upon said upright spring-plates for limiting the rearward movement of said transfer-wires.

12. A paper-file having a base-board, receiving-wires, movable transfer-wires supported by upright side plates, and a punch supported by said side plates.

13. A paper-file having a base-board, receiving-wires, movable transfer-wires supported by upright side plates, a punch supported by side plates, and a sliding lever for operating said punch.

14. A paper-file having a base board, receiving-wires, movable transfer-wires supported by upright side plates, a punch supported by said side plates, upright guideways upon said side plates, and a lever for operating said punch sliding in said guideways.

15. A paper-file having a base-board, receiving-wires, movable transfer-wires supported by upright side plates, a punch provided with lateral ears or projections c^4, which engage openings c^4 in said plates, and brackets or supports near the forward portions of said plates upon which the punch rests.

16. A paper-file having a base-board, receiving-wires, movable transfer-wires supported by upright side plates, a punch supported by said plates, guideways in said plates, and a lever for operating said punch, having a cross-bar and side bars having lugs which enter said guideways.

17. A paper-file having a base-board, receiving-wires, movable transfer-wires supported by upright spring-plates, a punch supported by said plates, and a sliding operating-lever located between said plates and adapted to be engaged and held by said plates when the transfer-wires are in engagement with the receiving-wires.

18. A paper-file having a base-board, receiving-wires, movable wires supported upon upright spring-plates which are adapted to lock the transfer-wires in engagement with the receiving-wires, upright slots D^4 in said plates, and substantially horizontal slots D^2, leading from near the upper ends of said slots D^4 through the plates, wings d^4, projecting from the lower edges of said slots D^2, a punch supported by said plates and resting within said slots D^2 and secured to said wings, and an operating-lever arranged to slide within said upright slots.

448,150. **SURGICAL EXPLORER.** FRANK K. HESSE, Boston, Mass., assignor to Codman & Shurtleff, same place. Filed May 20, 1890. Serial No. 352,474. (No model.)



Claim.—1. The frame, a movable arm or explorer, and a pinion to which it is attached, said pinion being concealed by the frame, combined with a rack in mesh with said pinion, and means for moving the said rack longitudinally, substantially as described.

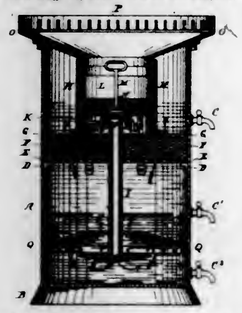
2. A frame and oppositely-movable arms or explorers, combined with racks and pinions for actuating said arms or explorers, substantially as described.

448,151. HORSE-BLANKET. ARTHUR H. KINDER, Boston, Mass., assignor to L. C. Chase & Co., same place. Filed Feb. 26, 1890. Serial No. 341,832. (No model.)



Claim.—As an improved article of manufacture, a horse-blanket having its edges turned to form a pocket, a cord or rope B, inserted in said pocket to prevent tearing of the blanket, and a binding *b*, adjacent to said pocket, substantially as described.

448,152. OIL-FILTER. ALVARO S. KROTZ, Defiance, assignor to Halbert K. Hitchcock, Edward B. Miller, and Bertram G. Work, all of Akron, Ohio. Filed Aug. 21, 1890. Serial No. 362,578. (No model.)



Claim.—1. The combination, with the inclosing case A, having cocks C C C' projecting therefrom at different heights, filtering material F, compressed between perforated plates E G and located substantially centrally in case A, with the cylinder H resting on said plate G, and a pipe I, placed centrally in the plates E G, having a flange J projecting from its lower end, of a cap K, arranged to inclose the upper end of said pipe I, substantially as shown and described.

2. In an oil-filter, the combination of an inclosing case A and perforated plates E G, having located centrally therein a pipe I, with flange J attached to its lower end, of the annular flange Q, attached to the interior of said case A above said flange J and arranged to receive oil escaping over the outer edge of the flange J, substantially as shown and described, and for the purpose specified.

3. The herein-described oil-filter, consisting of the case A, cocks C C C', perforated disks E G to retain filtering material F, cylinder H, pipe I, having flange J and cap K, inner cylinder L to receive filtering material N and having a perforated bottom, and top O, provided with parallel bars P, all constructed and arranged substantially as shown and described, and for the purpose specified.

448,153. APPARATUS FOR INTENSIFYING ELECTRICAL UNDULATIONS. JOHN C. LUDWIG, San Francisco, Cal., assignor of seven-eighths to Henry T. Compton, Louis F. Monteagle, Timothy Paige, and George H. Roe, same place, Allen T. Ayres and William C. Mason Oakland, Cal., and Hiram J. Ayres, Akron, Ohio. Filed Sept. 10, 1889. Serial No. 323,525. (No model.)



Claim.—1. In a telephone repeating-instrument, a telephone-receiver, a local-battery circuit having its poles terminating adjacent to the diaphragm, loose granular particles of carbon or other conducting substance placed on the diaphragm to complete the local-battery circuit, and one or more secondary circuits interposed between the line-wire and the bobbin of the receiver.

2. In a telephone repeating-instrument, a telephone receiver and transmitter placed between two induction-coils, each of which contains a primary and a secondary circuit, the secondary circuit connecting with the bobbin-wire underneath the diaphragm of the receiver and transmitter, while the primary circuit connects above the diaphragm, and means for causing the vibration of the diaphragm to disturb the primary circuit, substantially as set forth.

3. A telephone repeating-instrument consisting of a telephone receiver and transmitter placed between two induction-coils, the primary or battery circuit of the induction-coils connected at one end with a local battery, while the opposite ends of each connect with insulated metallic connections adjacent to the diaphragm of the transmitter, one or more secondary circuits surrounding the primary circuit on each side of the receiver and transmitter, one end of each secondary coil being connected with the wire of the line, while their opposite ends are connected with the bobbin-wire of the receiver and transmitter, and means for causing the vibrations of the diaphragm to disturb the primary and induced current, substantially as described.

4. In a telephone repeating-instrument, a telephone receiver and transmitter having a horizontally-disposed magnet, a case mounted on said magnet and having a horizontal upper face, a lid for said case having a recessed under surface, and a horizontal diaphragm supported by the horizontal face of the case, in combination with a bobbin passing vertically through the case, a core or magnetic pole extending vertically from the magnet through the bobbin, a local-battery circuit connected with electrodes terminating above the diaphragm, and means supported by said diaphragm within the recess in the cover and operating, as described, to complete the primary circuit.

5. In a telephone repeating-instrument, a magnet placed between two induction-coils, a telephone receiver and transmitter having a horizontal diaphragm placed above the magnet, a local-battery circuit connected with electrodes terminating immediately above the diaphragm, one or more secondary circuits interposed between the line-wire and the bobbin of the receiver and transmitter, and means for causing the vibration of the diaphragm to disturb the primary circuit, substantially as described.

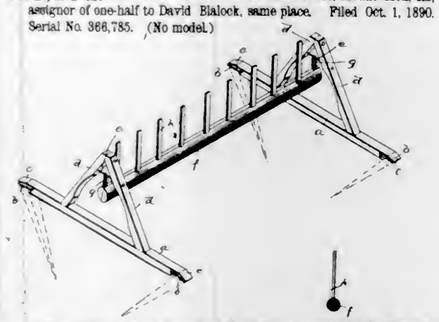
6. In a telephone repeating-instrument, a telephone-receiver, a local-battery circuit having its poles terminating above the diaphragm, loose granular particles of carbon or other conducting substance placed upon the diaphragm to complete the primary or local-battery circuit, a case having a horizontal face to support said diaphragm, and one or more secondary circuits interposed between the line-wire and the bobbin of the receiver and transmitter, all arranged and combined substantially as shown, and for the purposes set forth.

7. In a telephone repeating-instrument, a diaphragm horizontally supported on a case above a magnet, a cover for said case having a chamber on its under side above the diaphragm, a central metallic post passing down through the cover and terminating at the roof of the chamber, and an annular metallic plate insulated from the center post and metallicly connected with a binding-post above the cover, substantially as herein shown and described.

8. In a telephone repeating-instrument, a horizontal magnet consisting of two magnets A A, placed in line with each other, a metallic plate C, arranged to bridge the space between the adjacent poles of the magnet, a case F, having an upper horizontal face, a diaphragm *g*, supported on said horizontal face above the magnets, a bobbin or spool D in the center of the case, and a magnetic pole *e*, extending up through the center of the bobbin, substantially as herein described.

9. In a telephone repeating-instrument, a telephone-receiver, a local-battery circuit having its poles terminating adjacent to the diaphragm, said circuit being completed by the electric undulations acting on said diaphragm, and one or more secondary circuits interposed between the line-wire and the bobbin of the receiver and transmitter.

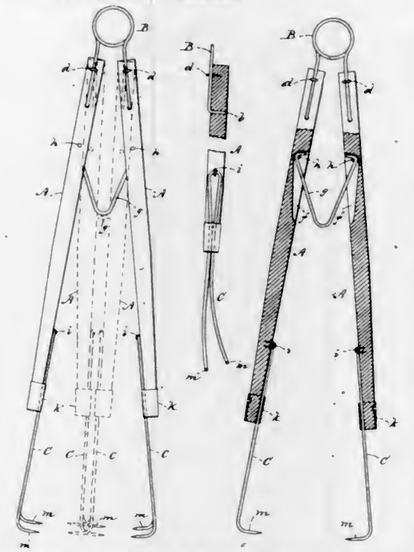
448,154. FLOOD-FENCE. HARVEY A. MACE, Mount Zion, Ill., assignor of one-half to David Bialock, same place. Filed Oct. 1, 1890. Serial No. 366,785. (No model.)



Claim.—The herein-described flood-fence, consisting in the combination of the parallel horizontal sills *a a*, buried beneath the surface of the earth and having beveled ends and anchored by stakes driven through clevises against said ends, a triangular supporting-frame on each sill, consisting of the two beams *d d*, at their lower ends secured on the sill a distance apart and rigidly and directly bolted together at their upper ends, the swinging beam *f*, loosely suspended within said frames from the upper portions of said beams *d*, the horizontal bolts *e*,

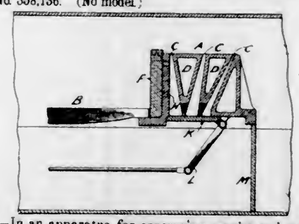
and the suspending-links thereon carrying beam *f*, said swinging beam being formed in longitudinal sections between which the pickets are clamped, as set forth.

448,155. CULINARY FORK. STEPHEN A. MERRILL, Cambridge, assignor of one-half to Arthur S. Locke, Lowell, Mass. Filed Dec. 1, 1890. Serial No. 373,121. (No model.)



Claim.—In a culinary fork, the handles A, chambered at *f*, in combination with the torsion-spring B, the stiffening-spring *g*, secured in said chambers, and the hook-shaped laterally-curved tines C, secured to said handles, substantially as described.

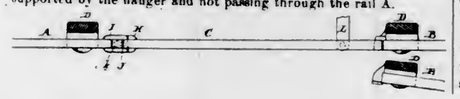
448,156. APPARATUS FOR CONSUMING SMOKE AND SAVING FUEL IN FURNACES. GEORGE MOFFATT and SAMUEL STUTTAFORD, London, England, assignors to the Vulcan Patent Smoke Consumer and Fuel Economizer Corporation, (Limited,) same place. Filed July 9, 1890. Serial No. 358,136. (No model.)



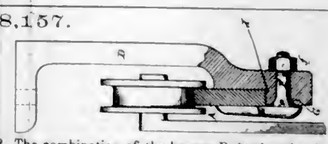
Claim.—In an apparatus for consuming smoke and saving fuel, consisting of a bridge in the rear of the furnace, the combination, in and with a block A, of the transverse passages C, the chambers D, and the face F, with the holes H, substantially as described, for the purpose specified.

448,157. OVERHEAD RAILWAY. JONAH W. MOYER and GEORGE F. JACKSON, Philadelphia, Pa. Filed Nov. 4, 1890. Serial No. 370,265. (No model.)

Claim.—1. The combination of the hanger D, having the shoulder *d*, the rail A, and a clamping-bolt consisting of the enlarged flanged head E, extending by and pressing against the face of the rail to hold it against the hanger and furnished with a laterally-projecting shank F, extending through the lower part of the hanger and provided with a nut *f* to draw it against the face of the rail, the bolt being entirely supported by the hanger and not passing through the rail A.



448,157.



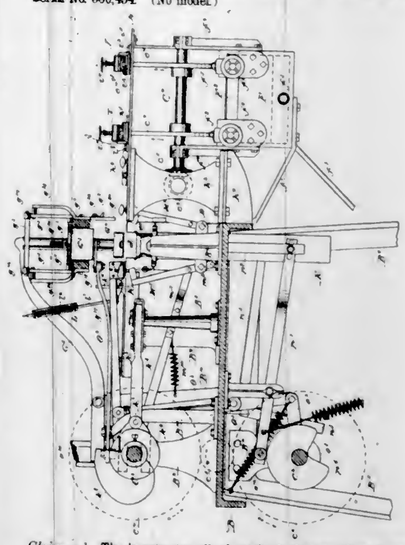
2. The combination of the hanger D, having the shoulder *d* and a transverse hole G below the shoulder made flaring on its end which comes below said shoulder, the rail A, a clamping-bolt consisting of the enlarged flanged head E, extending by and pressing against the face of the rail to hold it against the hanger and provided with a laterally-projecting shank F, enlarged at its point of connection with the head E and extending through the transverse part of the hanger, and a nut *f* to draw the bolt-head against the face of the rail, the bolt being entirely supported by the hanger and not passing through the rail A.

3. In an overhead railway, the combination of a hanger against one face of which a flattened rail is pressed, a flat rail set on edge and having its upper edge clear of the hanger, and a laterally-arranged clamping-bolt extending through the lower part of the hanger and provided with an upwardly-extending flange or head pressing against the outer face of the rail and clamping the said rail tightly to the hanger, the bolt being entirely supported by the hanger and not passing through the rail A.

4. The combination, in an overhead railway, of a main track, a branch track, a switch-section hinged to the main track, in which the said hinge between the switch-section and main track consists of the enlarged parts I and H, formed upon the lower portions of the said track and switch-section, and a hinge bolt or pin K, extending down through the parts I and H and having its head portion *k* arranged in a recess J between the track-rail and switch-section and above the enlarged portions I and H, whereby said head constitutes a part of the track upon which the trolley runs.

5. In a railway, the combination of the main track and the switch-section hinged together, with a recessed portion at their upper edges and immediately above the hinge, in combination with a hinge pin or bolt between the said track and switch-section, the upper portion of which bolt fits into the recess and constitutes a part of the track-way for the wheel of the trolley or vehicle.

448,158. PAPER-BOX MACHINE. ALBERT L. MUNSON, New York, N. Y., assignor to Munson & Co., New Haven, Conn. Filed Jan. 9, 1890. Serial No. 336,454. (No model.)



Claim.—1. The herein-described method of assembling or nesting boxes or trays, the same consisting in bending the box so that its ends approach each other and holding it in such condition to receive within it the succeeding box similarly bent.

2. In a box-forming machine, the combination of a cementing device, substantially as described, for applying a line or lines of paste to the blank, a blank-carrier, box-forming devices, substantially as described, and movable carriage carrying part of the forming devices

for moving the finished box away from the remaining forming devices, substantially as described.

3. The combination of a box-former and coacting box-forming devices, box-nesting devices, substantially as described, and a carriage carrying said box-former for moving the finished box from the coacting devices to the nesting devices, substantially as described.

4. In a box-forming machine, the combination of a box-former and coacting box-forming devices, box-nesting devices, substantially as described, situated in a different vertical plane therefrom, and means, substantially as described, for moving the box-former laterally to the nesting devices, substantially as described.

5. In a box-forming machine, the combination, with a male former and devices coacting therewith for permanently forming boxes, of box-nesting devices, substantially as described, and a carriage for carrying the permanently-formed boxes to the nesting devices, substantially as described.

6. The combination of a laterally-movable box-former and coacting box-forming devices, a tubular holder for receiving the nested boxes, and box-nesting devices, substantially as described, for removing the box from the box-former and depositing it in the holder and nesting it with others, substantially as described.

7. The combination, in a box-forming machine, of male and female formers, an end folding-blade, means, substantially as described, for folding the side flaps, and an end-flap folder adapted to fold the securing-flap inwardly and down, substantially as described.

8. The combination, in a box-forming machine, of male and female formers and a flap-folder adapted to rock horizontally and vibrate vertically, substantially as described.

9. The combination, in a box-forming machine, of male and female formers and an end-flap folder adapted to reciprocate and rock horizontally and to vibrate vertically, substantially as described.

10. The combination, in a box-forming machine, of male and female formers and two end-flap folders, both adapted to rock horizontally and vibrate vertically and one of them to reciprocate horizontally, substantially as described.

11. In a box-forming machine, the combination of a male former and box-forming devices, substantially as described, co-operating therewith, and a flap-securing blade carried by the male former, substantially as described.

12. In a box-forming machine, the combination of a male former and box-forming devices, substantially as described, co-operating therewith, and a yielding flap-securing blade carried by the male former, substantially as described.

13. The combination, in a box-forming machine, of a stationary female former, a horizontally-movable carriage, a male former carried by and vertically movable independent of said carriage, and means for moving the carriage and for moving the male former, substantially as described.

14. The combination, in a box-forming machine, of a stationary female former, a horizontally-movable carriage, a vertically-movable male former mounted in said carriage, and an inclined guide or guides for returning the male former to its high position during the return of the carriage, substantially as described.

15. The combination, in a box-forming machine, of a stationary female former, a carriage, a vertically-movable male former mounted in said carriage, and a friction-brake for sustaining the carriage in its high or low position, substantially as described.

16. The combination of a male former for sustaining the finished box, a vertically-movable stripper, a holder, and a retarding-plate for the center of the box, substantially as described.

17. The combination of a male former supporting the finished box, a vertically-movable stripper for removing the box from the male former, a guide for directing the stripper, and a retarding-plate for the center of the box, substantially as described.

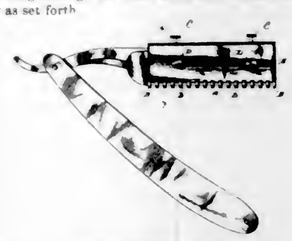
18. The combination, with a platen for the blank and a side gage therefor, of a front gage adapted to withdraw from the front of the blank, and a blank-carrier and a projection from the front gage in the path of the blank-carrier, whereby the front gage is withdrawn as the carrier moves to grasp the blank, substantially as described.

19. The combination of a platen for the blank, a side gage, a spring-plate bearing a pair of gage-pins forming the front gage for the blank, a reciprocating blank-carrier, and a projection on the spring-plate in the path of the carrier, by which the gage-pins are temporarily withdrawn, substantially as described.

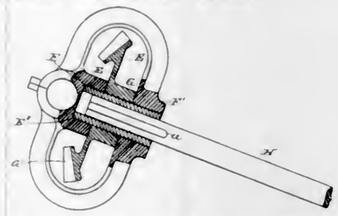
20. The combination of a fixed female former, a vertically-movable male former, means, substantially as described, for positively moving the male former downward and up, and a brake for sustaining the former in both of its positions, substantially as described.

448,159. RAZOR-GUARD. PETER D. MURPHY and CHARLES O. CHAPLIN, Lockport, N. Y.; said Chaplin assignor to said Murphy. Filed May 20, 1890. Serial No. 352,558. (No model.)

Claim.—The razor-guard consisting of the holder formed of a single piece of elastic metal and having a backward-curved slotted edge, the thumb-screws arranged in its back-edge portion near the ends to engage the corresponding surface of the razor-blade, and the thumb-screws arranged in one side of said holder near its ends to engage the opposite surface of the razor-blade about in a plane, transversely passing through the razor-blade and the aforesaid screws, substantially as set forth.



448,160. LOCOMOTIVE-GEARING. ROBERT E. MCWHIRTER, Lima, Ohio, assignor of one-fourth to John Y. Burgoyne, same place. Filed Dec. 9, 1890. Serial No. 374,092. (No model.)



Claim.—1. In a locomotive, the combination, with the main frame and the wheels, of a main crank-shaft mounted in the main frame, a pinion on said crank-shaft, a crank-shaft mounted on the truck, a pinion on said truck crank-shaft, and a line-shaft carrying a pinion at each end adapted to mesh with the pinions on the crank-shafts, and a pitman connected to the wheels and the truck crank-shaft, substantially as set forth.

2. In a locomotive, the combination, with the main frame and the truck and wheels, of a crank-shaft mounted in the main frame, a crank-shaft mounted in the truck, and a line-shaft adapted to transmit motion from the main crank-shaft to the truck line-shaft, said line-shaft being adapted to have longitudinal movement to compensate for the irregularities in the movement of the wheels, substantially as set forth.

3. In a locomotive, the combination, with the main frame and the front and rear trucks carrying wheels, of a main crank-shaft, pinions thereon, a crank-shaft on the trucks, a pinion on each truck crank-shaft, pitmen connecting the wheels of each truck and connected to the truck crank-shafts, and line-shafts carrying pinions adapted to mesh with the pinions on the main crank-shaft and the truck-shafts, substantially as set forth.

4. In a locomotive, the combination, with the main frame, truck, and wheels, of a main shaft on the main frame, a pinion on said main shaft, a crank-shaft on the truck and connected with the pitman on the driving-wheels, a pinion on the truck crank-shaft, a yoke or frame mounted on the main shaft, a pinion mounted in said yoke or frame, a line-shaft having a sliding bearing in said frame or yoke and adapted to rotate with the pinion therein, and a pinion on the other end of said line-shaft adapted to mesh with the pinion on the truck crank-shaft, substantially as set forth.

5. In a locomotive, the combination, with the main frame, truck, and wheels, of a main shaft on the main frame, a pinion on said main shaft, a crank-shaft on the truck and connected with the pitman of the driving-wheels, a pinion on the truck crank-shaft, a yoke or frame mounted on the main shaft, a bushing mounted in said yoke or frame, a pinion in the yoke or frame and connected with said bushing, a line-shaft in said bushing, said line-shaft being adapted to have a sliding or longitudinal movement in the bushing and to rotate with it and the pinion, and a pinion on the other end of the shaft, adapted to mesh with the pinion on the truck crank-shaft, substantially as set forth.

6. In a locomotive, the combination, with the main frame, the truck, and the wheels, of a shaft on the main frame, a pinion on said shaft, a crank-shaft on the truck, connected with the pitman of the driving-wheels, a pinion on said truck crank-shaft, a frame or yoke mounted on the main frame, a pinion mounted in said yoke or frame and meshing with the pinion on the main shaft, a yoke or frame mounted on the truck crank-shaft, a pinion in said yoke or frame and adapted to mesh with the pinion on the truck crank-shaft, and a line-shaft connecting said yokes or frames and adapted to rotate with the pinions therein, substantially as set forth.

7. In a locomotive, the combination, with the main frame, truck, and wheels, of a main shaft mounted on the main frame, a pinion on said main shaft, a yoke or frame mounted on said main shaft, a pinion carried by said yoke or frame and adapted to mesh with the pinion on the main shaft, a crank-shaft mounted in the truck, a yoke or frame loosely connected with said truck crank-shaft, and a line-shaft connecting said yokes or frames, said crank-shaft carrying a pinion within one of said yokes or frames and adapted to mesh with the pinion on the truck crank-shaft, the other end of said line-shaft being adapted to rotate with the pinion in the other yoke or frame and have a longitudinal movement independent thereof, substantially as set forth.

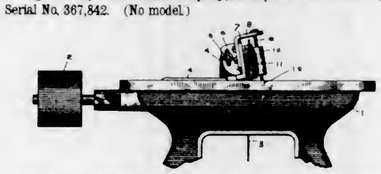
8. In a locomotive, the combination, with a main frame and a truck and wheels, of a main shaft, a pinion thereon, a line-shaft carrying a pinion to mesh with the pinion on the main shaft, a crank-shaft on the truck, a pinion on said truck crank-shaft, a yoke or frame having bearings for the end of the line-shaft, a pinion secured to the line-shaft within said yoke or frame, and a sleeve or collar adapted to loosely encircle the truck crank-shaft, substantially as set forth.

9. In a locomotive, the combination, with the main frame, truck and wheels, of a main shaft, a crank-shaft mounted on the truck and having an enlargement between its ends, a sleeve keyed to said enlarged portion, a flange projecting from said sleeve, a pinion secured to said frame, a yoke or frame having a collar or sleeve to loosely embrace the sleeve on the crank-shaft, a pinion in said yoke or frame, a line-shaft secured to said pinion and having its bearings in said yoke or frame, a pinion at the other end of the line-shaft, and a pinion on the main shaft, with which the latter-mentioned pinion is adapted to mesh, substantially as set forth.

448,161. SOLDER. GEORGE F. FABST, Philadelphia, Pa., assignor of one-half to Joseph Muller, same place. Filed Dec. 1, 1890. Serial No. 373,241. (No specimens.)

Claim.—Solder composed of aluminum, zinc, and tin, substantially as described.

448,162. WEATHER-BOARD-SAWING ATTACHMENT FOR CIRCULAR SAWS. LUTHER E. PAINE, Edinburg, Ind., assignor to the Edinburg Foundry and Machine Company, same place. Filed Oct. 11, 1890. Serial No. 367,842. (No model.)



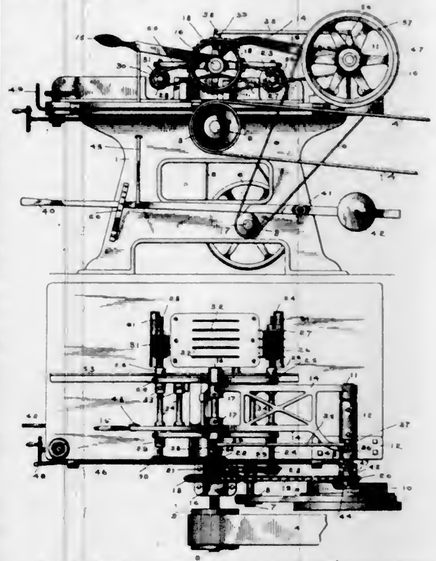
Claim.—1. In a sawing-machine, an attachment for sawing weather-boarding, comprising a gage-plate connected to the machine-table having an upright projection, an auxiliary plate detachably secured thereto by means such as a thumb-screw, a bent arm bolted to such plate carrying a revoluble spindle, a pressure-roll rigidly mounted thereon, and the foot of the spindle seated in an inclined socket formed in the table of the machine, substantially as shown and described.

2. An attachment for circular sawing machines, comprising the plate 7, connected to the machine-frame, a bent arm 8, connected to such plate and carrying a revoluble headed spindle 9, a pressure-roll 10, rigidly mounted on such spindle, a sawing-machine table having an inclined socket in which such spindle is seated, and a gage-plate connected to such table, with means, substantially as described, for securing the parts in position.

3. An attachment for circular sawing machines, comprising the plate 7, connected to the machine-frame, an arm 8, connected thereto and carrying a revoluble spindle 9, an elastic pressure-roll 10, mounted on such spindle, a sawing-machine table having an inclined socket therein, and a gage-plate connected to such table, with means, substantially as described, for securing the parts in position.

448,163. SELF-FEED RIP-SAWING MACHINE. LUTHER E. PAINE, Edinburg, Ind., assignor to the Edinburg Foundry and Machine Company, same place. Filed Oct. 11, 1890. Serial No. 367,861. (No model.)

Claim.—1. In a rip-sawing machine, a main frame, a driving-shaft journaled therein carrying a pulley on one end and saws on the other, a bracket bolted to such frame or table, an upper vertically-swinging frame journaled on a shaft carried in bearings connected to such bracket, a lower frame connected beneath to such swinging frame, a counter-shaft journaled therein, front and rear feed-rolls detachably mounted on such shafts, such upper and lower frames connected by a shaft passing centrally through both, sprocket-wheels mounted on such shaft, drive-chains leading therefrom to sprocket-wheels carried on the shafts of the feed-rolls, and a lever connected to such upper vertically-swinging frame for operating the same, whereby the upper and lower frames may be lifted simultaneously and the front and rear feed-rolls maintained in the same horizontal plane, all combined substantially as shown and described.



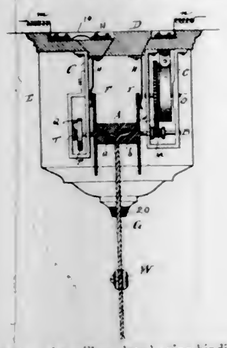
2. In a rip-sawing machine, a frame, a main shaft journaled therein, a driving-pulley and saws mounted on such shaft, front and rear feed-rolls mounted on counter-shafts journaled in boxings adjustably connected to an auxiliary frame, sprocket mechanism connected to the other end of the feed-roll, shafts for driving the same, a vertical frame swinging on a counter-shaft mounted in bearings on a bracket connected to the main frame or table, such swinging frame connected to the auxiliary frame below by a shaft centrally journaled in both and carrying sprocket-wheels for driving the feed-rolls, an auxiliary pulley mounted upon a shaft having bearings above the machine-table driven by belts from the main shaft, a clutch mechanism located inside such pulley, and a rod connected thereto for operating the same so as to throw the feed-rolls in or out of gear, as desired, and a lever pivoted to the main frame above, having an adjustable weight on its inner end for regulating the pressure of the feed-rolls upon the material, all combined substantially as shown and described.

3. In a rip-sawing machine, a frame, a driving-shaft carrying a pulley and saws mounted in bearings thereon, feed-rolls mounted on shafts carried in a vertically-movable frame, sprocket-wheels mounted on the shafts of the feed-rolls and on a central counter-shaft for driving the feed-rolls, drive-chains leading from such sprocket-wheels to a counter-shaft driven by belts from the main shaft, a lever for lifting the vertically-movable frame, whereby the relative position of the feed-rolls is maintained in the same horizontal plane, such lever connected to a lever pivoted to the machine-frame below, and a counter-weight mounted on such lower lever and adjustable thereon for regulating the pressure of the feed-rolls upon the material, all combined substantially as shown and described.

448,164. DEVICE FOR RAISING OR LOWERING INCANDESCENT ELECTRIC LAMPS. CHARLES F. REINMANN, Brooklyn, N. Y. Filed Feb. 8, 1890. Serial No. 339,757. (No model.)

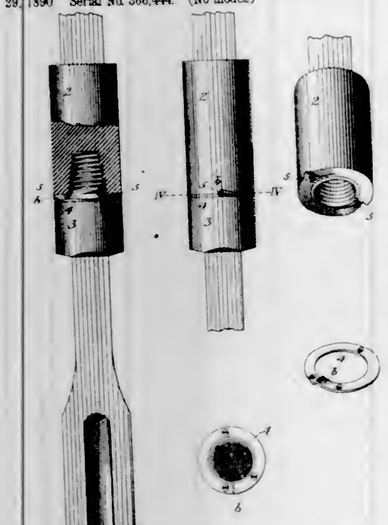
Claim.—1. The combination of a ceiling-plate having binding-posts for the line-wires, hangers dependent therefrom, spring-brushes dependent from said ceiling-plate and in connection with the binding-posts, a shaft journaled in said hangers, a spring-motor for rotating said shaft, an automatic locking and releasing device also in connection with said shaft, a spool fixed to said shaft and having conductive heads insulated from each other and in contact with said spring-brushes, and a lamp-cord composed of insulated conducting-wires, the upper ends of which are connected, respectively, to the spool-heads.

2. The combination of a ceiling-plate having binding-posts for the line-wires, hangers dependent therefrom, spring-brushes dependent from said ceiling-plate and in connection with the binding-posts, a shaft journaled in said hangers, a spring-motor for rotating said shaft, an automatic locking and releasing device also in connection with said shaft, a spool fixed to said shaft and having conductive heads insulated from each other and in contact with said spring-brushes, a lamp-cord composed of insulated conducting-wires, the upper ends of which are connected, respectively, to the spool-heads, and a casing inclosing said mechanism and provided with an eye in its bottom for the passage of the cord.



3. The combination of a ceiling-plate having binding-posts for the line-wires, hangers dependent therefrom, spring-brushes dependent from said ceiling-plate and in connection with the binding-posts, a shaft journaled in said hangers, a spring-motor for rotating said shaft, an automatic locking and releasing device also in connection with said shaft, a spool fixed to said shaft and having conductive heads insulated from each other and in contact with said spring-brushes, a lamp-cord composed of insulated conducting-wires, the upper ends of which are connected, respectively, to the spool-heads, a casing inclosing said mechanism and provided with an eye in its bottom for the passage of the cord, and an adjustable stop on said lamp-cord adapted to act in conjunction with said eye.

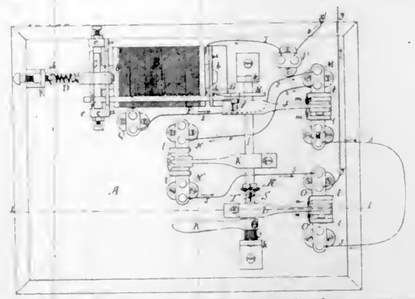
448,165. DEEP-WELL TOOL. CHARLES W. ROBISON, Allegheny, Pa., assignor of one-half to Robert B. Robison, same place. Filed Sept. 29, 1890. Serial No. 366,444. (No model.)



Claim.—The combination, with the sections of a deep-well tool having a screw-threaded projection and a surrounding shoulder or seat on one part and a corresponding threaded socket and surrounding seat on the other part, of an annular locking-washer having a projecting spring-tongue, being adapted to encircle the threaded projection and fixed laterally to the seat of one of the said parts, and the other of said parts having on its seat a ratchet notch or notches adapted to engage with said tongue, substantially as and for the purpose described.

448,166. AUTOMATIC SWITCH-BOARD AND SAFETY CUT-OUT FOR ELECTRIC CIRCUITS. EDGAR A. SWEET, Milford, Mass., assignor of one-half to Joseph L. Buxton, same place. Filed Oct. 22, 1890. Serial No. 368,943. (No model.)

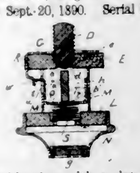
Brief.—A break in work-circuit 3 de-energizes magnet, permitting armature-spring to draw projection *i* on lever G out of path of tooth on wheel H fast to the shaft I. Spring *j* turns shaft I, which opens work-circuit through arms J and L and establishes short circuit with arm K. Rotation of shaft causes half-revolution of indicator or alarm T.



Claim.—1. An automatic switch-board and safety cut-out consisting of the electro-magnet, the armature, the toothed arm G, connected to each other, the spring D for operating the armature, the toothed wheel, the shaft supporting said wheel, provided with arms J K L, the handle K′, and spring J, the posts M M′, N N, and O O′, each having a bearing-face to touch the head of said arms or of spring-arms secured to said heads, and the binding-posts P and Q, all supported and arranged with relation to the switch-board essentially as set forth and represented.

2. An automatic switch-board and safety cut-out consisting of an electro-magnet, an armature, and a toothed arm connected to each other, an armature-operative spring, a toothed wheel adapted to engage said toothed arm, a shaft supporting said toothed wheel and provided with arms J K L, a bevel-gear, a handle, and a spring, the latter to turn the shaft axially, the series of binding-posts having inclined faces *m*, the spring-arms secured to the heads of the arms J K L, the standard U, the signal-spindle supported therein, the pinion fixed to said spindle, engaging the gear R, and the binding-posts P and Q, all supported and arranged with relation to the switch-board essentially as represented and explained.

448,167. SWITCH FOR INCANDESCENT-LAMP SOCKETS. ALFRED T. TREGURTHA, Everett, assignor of one-half to John A. Murray, Boston, Mass. Filed Sept. 20, 1890. Serial No. 365,608. (No model.)



Claim.—1. The combination, with a plate having a contact point or electrode, and a casing secured to and between two insulating plates or heads, in which casing said plate is arranged to move up and down, the sides of the casing forming a guide or bearings for the plate in its movements therein, and a spring arranged to bear upon said plate, of a bar or key pivoted in a suitable support and adapted to engage with said plate, for the purpose specified.

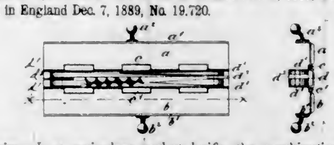
2. The combination, with a plate having a contact point or electrode and a transverse groove, a casing secured to and between two insulating plates or heads, in which casing said plate is arranged to move up and down, the sides of the casing forming a guide or bearings for the plate in its movements therein, and a spring arranged to bear upon said plate, of a bar or key pivoted in a suitable support and adapted to engage with said plate, for the purpose specified.

3. The combination, with a plate having a contact point or electrode, and a casing secured to and between two insulating plates or heads, in which casing said plate is arranged to move up and down,

the sides of the casing forming a guide or bearings for the plate in its movements therein, and a spring arranged to bear upon said plate, of a bar or key pivoted in a suitable support and adapted to engage with said plate, having a thumb-piece attached to one of its pivots, a cross-pin in said thumb-piece, and an opening in said pivot having its ends enlarged through which said cross-pin extends, for the purpose specified.

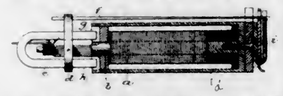
4. The combination, with a plate having a contact point or electrode, and a casing secured to and between two insulating plates or heads, one of which is provided with a diametrical groove in one of its sides, and a screw extending through said plate at said groove, and a strip disposed in said groove and secured to said screw, in which casing said plate is arranged to move up and down, the sides of the casing forming a guide or bearings for the plate in its movements therein, and a spring arranged to bear upon said plate, of a bar or key pivoted in a suitable support and adapted to engage with said plate, for the purpose specified.

448,168. POCKET-KNIFE. WILHELM VOGEL, Cologne, Germany, assignor to Max Steinberg, same place. Filed Feb. 19, 1890. Serial No. 341,068. (No model.) Patented in France Dec. 4, 1889, No. 189,264, and in England Dec. 7, 1889, No. 19,720.



Claim.—In a springless pocket-knife, the combination of the parts *a b*, the central part *d*, the partitions *d′ d′*, and intermediate plates d^3 d^3, which said parts *a b d* are combined by hinge-joints *c c′*, and form with the continuations *a′ b′* a casing in which the blades, corkscrew, button-hook, and other instruments are fastened, and which casing is closed by buttons a^3 b^3, attached to the continuations, substantially as and for the purpose herein described.

448,169. POLARIZED ANNUNCIATOR. ERNEST P. WARNER, Chicago, Ill. Filed Jan. 9, 1890. Serial No. 336,425. (No model.)

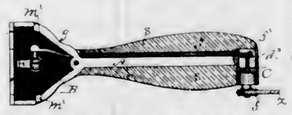


Claim.—1. The combination, with the electro-magnet having the annular space between the poles thereof, of a pivoted permanent magnet having its poles in said annular space, whereby said permanent magnet is vibrated by changes in the direction of the current, substantially as and for the purpose specified.

2. The combination, with the electro-magnet, of the permanent magnet, the central pole of said electro-magnet being placed between the poles of said permanent magnet, said permanent magnet being pivoted and carrying a hook normally in engagement with the shutter, whereby on sending current through said magnet in the proper direction the hook is lifted to release the shutter, substantially as and for the purpose specified.

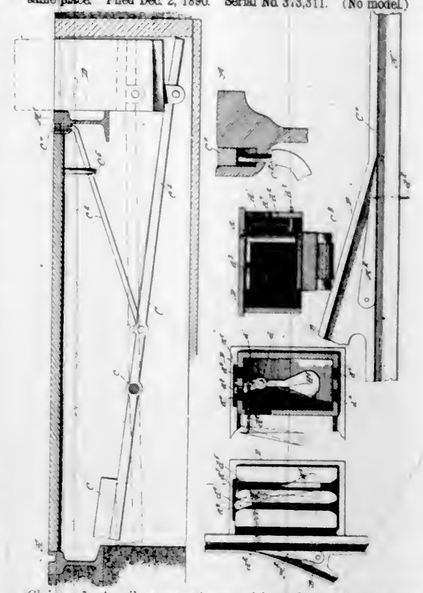
3. The electro-magnet provided with the soft-iron shield extending to surround the central pole of the core of said electro-magnet, an annular space being thus formed between the two poles of said electro-magnet, in combination with a pivoted permanent magnet adapted to vibrate in a vertical plane, the poles of said permanent magnet being included in said annular space, a hook connected with said permanent magnet and the shutter, substantially as and for the purpose specified.

448,170. CLIPPING-SHEARS. LOUIS G. WERNER, Des Moines, Iowa, assignor of three-fifths to M. C. Fullenwider and John W. Chase, both of same place. Filed Mar. 26, 1889. Serial No. 304,910. (No model.)



Claim.—The handle B, having a recessed enlargement at its front end, a pivoted bell-crank *d* in said enlargement, a lateral extension C, swiveled to its rear end, a rotating shaft *f*, having a crank on its inner end, and a rod *g*, having a universal joint *g′*, arranged and combined in a clipping-shears, substantially as shown and described, for the purposes stated.

448,171. AUTOMATIC RAILWAY-SWITCH. JOHN R. WIGGINTON, Washington, D. C., assignor of one-half to William R. H. Alexander, same place. Filed Dec. 2, 1890. Serial No. 373,311. (No model.)



Claim.—1. A railway-switch comprising a box or frame situated adjacent to the rails of a track and capable of vertical movement, an operating-lever arranged within the box or frame, a switch connected with the operating-lever, and arms projecting from a car engaging the operating-lever, substantially as described.

2. A railway-switch comprising a box or frame situated adjacent to the rails of a track and capable of vertical movement, an operating-lever arranged within the box or frame, a switch connected to the operating-lever, projections from the car engaging the operating-lever, and a locking device retaining the box or frame in an elevated position, substantially as described.

3. A railway-switch comprising a box or frame situated adjacent to a railway-track, a lever arranged beneath the track, one end having a projection extending through one of the rails, the lever being also connected with a box or frame, an operating-lever in the box or frame, a switch connected with the operating-lever, and projections from a car engaging the operating-lever when the box or frame is in an elevated position, substantially as described.

4. A railway-switch comprising a lever arranged beneath the track and having a pivoted arm projecting through the rail and terminating in the rail, the lever being connected to a vertical box or frame containing an operating-lever, a switch connected with the operating-lever, and projections from a car engaging the lever, substantially as described.

5. In a railway-switch, a lever arranged beneath and adjacent to a car-track, connected with a vertical box or frame and having a pivoted arm terminating in the track, an operating-lever connecting with a rotating post in the box or frame, a switch connecting with an elongated staple in the box or frame, and projections from the car engaging the operating-lever, substantially as described.

448,172. TROLLEY FOR ELECTRIC RAILWAYS. MERLE J. WIGHTMAN, Scranton, Pa., assignor to the Wightman Electric Manufacturing Company, same place. Filed Aug. 12, 1890. Serial No. 361,799. (No model.)



Claim.—1. An electric-railway trolley having a trolley-arm provided with a practically universal joint, and a spring tension device tending to move the arm into vertical position, whereby the direction

of pressure between the trolley and the trolley-wire is always in a plane practically parallel to the wire.

2. An electric-railway trolley having a trolley-arm provided with a practically universal joint, and a spring tension device tending to force the trolley-arm into position, the leverage between the trolley-arm and tension device varying with the direction of displacement of the trolley-arm from the vertical, so that the greatest pressure on the trolley-arm is in a plane practically parallel to the trolley-wire and the least in a plane at right angles thereto.

3. An electric-railway trolley having a trolley-arm provided with a practically universal joint, and a tension device or spring tending to force the arm into vertical position, the distance between the pivotal or fulcrum points and the point of application of the power of the tension device or spring varying, so that such distance is greatest in the plane containing the trolley-wire and least in the direction at right angles to such plane.

4. An electric-railway trolley having a trolley-arm mounted upon a suitable support and having a set of pivotal or fulcrum points, so that one or the other of them may be brought into play according to the direction in which the trolley-arm is displaced, and a tension device or spring applied to the trolley-arm between such points, so that in swinging the trolley-arm in one direction or the other the fulcrum may accordingly be changed from one side of the power-point to the other, for the purpose set forth.

5. A trolley-arm support comprising a stand or base and a support mounted thereon so that it may be rotated, and provided with a spring or springs for opposing its rotation and restoring it to normal position, the base of the trolley-arm or its socket-piece provided with a plurality of pivotal or fulcrum points adapted to engage with the said support, a tension device or spring connected with the base of the trolley-arm or its socket-piece at a point between the pivotal points thereof, and tending to hold the same to the support.

6. A trolley-arm support comprising a base and a support mounted therein so as to turn on a horizontal axis parallel to the trolley-wire and provided with a set of bearing-points, a trolley-arm socket-piece provided with suitably-spaced fulcrums or pivotal points adapted to engage the bearing-points upon the support, and a spring or springs connected to the socket-piece intermediate its fulcrum or pivotal points and acting to hold the same and the support as well as to oppose the rotation of the support, for the purpose set forth.

7. A trolley-arm support comprising a base and a tubular support having a head formed with a recess communicating with the interior thereof and mounted in the said base so as to rotate therein, bearing-points arranged within the recess at either side of the axis of rotation of the support, and a trolley-arm socket-piece provided with suitably-spaced fulcrum or pivotal points adapted to engage the bearings on the support, a spring or springs, and connections extending through the interior of the support and attached to the socket-piece at a point intermediate the pivotal points thereof for holding the socket-piece to the support and opposing the rotation thereof, substantially as and for the purpose set forth.

8. A trolley-arm support comprising a base and a support mounted thereon so as to turn, and held thereto by spring power, a cam or cams for moving the support along its axis of rotation when rotated and in opposition to the spring-power, and a spring-acted trolley-arm socket-piece mounted upon the said support so as to rock thereon, for the purpose set forth.

9. A trolley-arm support comprising a tubular base, formed with a cam-surface at one end thereof, a support mounted in the base so as to turn therein and provided with projections for engaging the cam-surface of the base, a spring for holding the support to the base and opposing the action of the cam, and a trolley-arm socket-piece mounted on the support so as to rock thereon, substantially as and for the purpose set forth.

10. In an electric railway, the combination, with a trolley-wire having a branch or branches therein located to one side of the center line of the tracks, of a trolley carried by a car having a trolley-arm therefor provided with a practically universal joint and having a spring or springs tending to force the trolley-arm into vertical position, so that the pressure on the trolley is exerted in a plane practically parallel to the trolley-wire, whereby the trolley may be made to take one branch or another, according to which side of the wire it may be running on, without the use of the ordinary frogs, substantially as set forth.

11. In an electric railway, the combination, with a railway-track having a branch therein and a car provided with a trolley having an arm formed with a practically universal joint and provided with springs tending to force the arm into vertical position, so that the pressure on the trolley may always be in a plane practically parallel to the trolley-wire, of a trolley-wire suspended above the tracks and formed with a branch therein disposed to one side of the track, whereby the trolley may be diverted from the main wire to a branch, or vice versa, without the use of the ordinary frogs, substantially as set forth.

12. In an electric railway, the combination, with a railway-track formed with a turn-out and a car provided with a trolley having a spring-acted trolley-arm formed with a practically universal joint at its point of support and exerting its pressure on the trolley-wire in a plane practically parallel with the trolley-wire, of a trolley-wire suspended above the tracks and formed with branches therein corresponding to the branches in the turn-out in the track, the said branch wires being disposed between the branches of the turn-out, whereby the trolley may be diverted from the main wire to one or the other of the branches, or vice versa, according as the trolley is made to run on one side or the other of the wire, substantially as set forth.

13. In an electric-railway system, the combination, with a trolley, of a trolley-wire having a branch therein and a V-shaped block seated in the fork of the branch and suitably secured therein, whereby the wires may be more evenly joined, substantially as set forth.

14. In an electric-railway system, the combination, with a trolley, of suspended crossed or branched conductors formed with a laterally extended or broadened body at the crossing or branching points for assisting the crossing or switching of the trolley, substantially as set forth.

15. In an electric-railway system, the combination, with a trolley, of suspended crossed or branched conductors provided at the crossing or branching points with a rounded body tapered at its ends for assisting the passage of the trolley over such points, substantially as set forth.

16. In an electric railway, the combination, with a trolley, of crossed conductors, each provided at the crossing-point with a rounded and tapered enlargement or body having a depression at the crossing-point for facilitating the passage of the trolley across such point, substantially as set forth.

17. In an electric railway, the combination, with branching conductors, of a block secured in the fork of the branch and an insulated suspending device attached thereto for supporting the conductors at the branching-point, substantially as set forth.

18. In an electric railway, the combination, with a suspended conductor and a trolley, of an upwardly-bowed guard-flange fastened above the conductor adjacent thereto, so as to cover the same as a roof and prevent the derailment of the trolley.

19. In an electric railway, the combination, with a trolley and two conductors arranged near each other and blocks or spacing pieces secured between the conductors, of an upwardly-bowed guard-flange for each conductor, secured above the same and projecting in opposite directions and each one covering a conductor and serving as a guard for the trolley running thereon.

20. In an electric railway, the combination, with a trolley and two conductors arranged near each other, with spacing blocks or pieces secured between the conductors, of an upwardly-bowed guard-flange for each conductor, secured by one edge to the said spacing blocks or pieces, and each serving to cover one of the conductors and acting as a guard for the trolley, substantially as and for the purpose set forth.

21. In an electric railway, the combination, with a trolley and two conductors arranged near each other, with spacing blocks or pieces fastened between the conductors, of insulated suspending devices secured to the spacing blocks or pieces for supporting the conductors, substantially as set forth.

22. In an electric railway, the combination, with branching conductors, of a V-shaped block secured in the fork of the branch between the conductors, and provided with upwardly-bowed guard-flanges projecting above the conductors and in opposite directions from each other, and acting as a guard for the trolley in passing over the branching-point, substantially as set forth.

23. In an electric railway, the combination, with a railway-track having a branch, and a trolley-wire suspended above the same and formed with a branching-point corresponding to the branch in the track, but located to one side thereof, of a car provided with a trolley having an arm capable of pressing in all directions, whereby the trolley may be tilted so as to run upon the side of the wire in passing the branching-point, substantially as and for the purpose set forth.

24. In an electric railway, the combination, with a car having a trolley provided with an arm capable of being longitudinally and laterally displaced from the vertical, of a railway-track C, provided with a branch or branches, and a suspended trolley-wire *b*, formed with the branching points *a a*, corresponding each to a branching-point in the track and located to one side thereof, substantially as and for the purpose set forth.

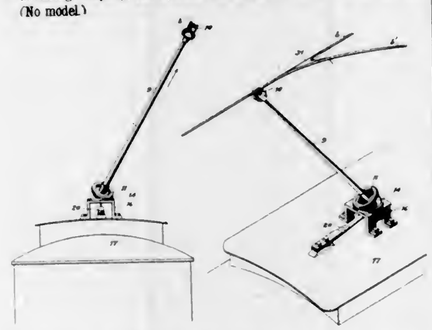
25. The combination, with a trolley-arm 15, having its lower end provided with the fulcrum or pivotal points 18, and a bearing-plate 19, of a spring tension device attached to the base of the trolley-arm at a point intermediate the fulcrum or pivotal points 18 and adapted to hold the same to the bearing-plate 19, whereby the fulcrum may be changed from one side of the power point to the other, substantially as and for the purpose set forth.

26. The combination, with a trolley-arm 15, having its base provided with the fulcrum or pivotal points 18, and a bearing-plate 19 for the same to pivot on, of a spring 25, connected to the base of the trolley-arm at a point between the fulcrum-points 18, substantially as and for the purpose set forth.

27. The combination, with a trolley-arm 15, having the base thereof provided with the fulcrum or pivotal points 18, of a rotatable support 19 and a spring or springs for holding the trolley-arm to the support and opposing the rotation of the support, substantially as and for the purpose set forth.

28. The combination, with a trolley-arm 15, provided with a socket-piece 50, formed with an extension 17, which is provided with the pivotal or fulcrum points 18, of a support 19, provided with a tubular shaft 31, and a stand in which said shaft is loosely mounted so as to turn therein, a spring or springs connected to the socket-piece 50 at a point intermediate its pivotal points 18 and tending to hold the socket-piece to the support and to oppose the rotation of the support, substantially as and for the purpose set forth.

448,173. TROLLEY FOR ELECTRIC RAILWAYS. MERLE J. WIGHTMAN, Scranton, Pa., assignor to the Wightman Electric Manufacturing Company, same place. Filed Aug. 12, 1890. Serial No. 361,800. (No model.)



Claim.—1. An electric-railway trolley provided with a trolley-arm having a practically universal joint and provided with a gear to prevent twisting of the trolley-arm.

2. An electric-railway trolley having a trolley-arm provided with a socket-piece and a base or bearing plate upon which it is mounted, so that it may be gyrated, and a spring-tension device attached to the socket-piece for holding it to the base, for the purpose set forth.

3. An electric-railway trolley having a trolley-arm provided with a socket-piece formed with a rim or disk extending at right angles therefrom, a bearing or base plate for supporting said rim or disk, and a spring-tension device for holding the socket-piece to the base, for the purpose set forth.

4. An electric-railway trolley having a trolley-arm provided at its foot with a socket-piece formed with an elliptical-shaped rim or disk extending at right angles thereto, a bearing or base plate conforming to the shape of the rim or disk of the socket-piece for supporting the same, and a spring-tension device for holding the socket-piece to the bearing-plate or base, for the purpose set forth.

5. An electric-railway trolley having a trolley-arm provided with a socket-piece formed with a rim or disk extending at right angles therefrom, a bearing or base plate for the rim or disk to rock on, and a spring-tension device for holding the socket-piece to the base, the said rim or disk and the said bearing or base plate each formed with teeth adapted to mesh with each other to prevent twisting of the trolley-arm.

6. In a support for an electric-railway trolley-arm, the combination, with a horizontally-disposed bearing-plate or base having an opening therein, of a socket-piece for the trolley-arm formed with a rim or disk projecting at right angles therefrom and adapted to rock and roll on the bearing-plate, and a spring-tension device extending through the opening in the bearing or base plate and connected to the socket-piece for holding it thereto, substantially as and for the purpose set set forth.

7. In an electric railway, the combination, with two tracks arranged side by side, cars each having a trolley provided with a trolley-arm formed with a practically universal joint at its point of support, and a spring-tension device tending to force the arm into the vertical, so that the direction of pressure between the trolley and the wire may always be in a plane practically parallel to the wire, of suspended trolley-wires for each track arranged close together between the tracks and an insulated supporting-clamp suitably suspended above the wires for supporting both of them, whereby the supporting-clamp may be common to both wires.

8. The combination, with a trolley-arm, of a socket-piece 11, provided with a curved fulcrum edge or disk 12 and a bearing-plate 14, for supporting said edge or disk, and a spring-tension device attached to the socket-piece at the center thereof, tending to hold the socket-piece to the support, substantially as and for the purpose set forth.

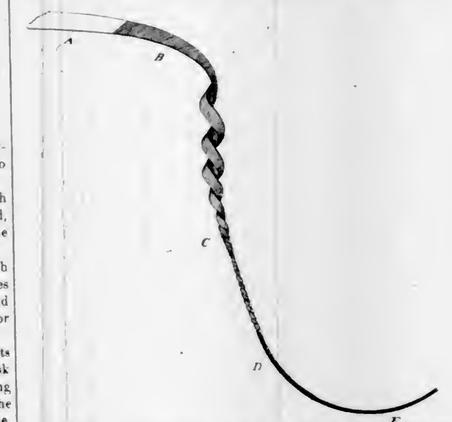
9. The combination, with a trolley-arm 9, of a socket-piece 11, provided with a fulcrum disk or edge 12, a bearing-plate or support 14, for supporting the fulcrum-disk, and a spring 25, connected by a link 19 to the center of the base of the socket-piece and tending to hold the same to the bearing-plate 14, substantially as and for the purpose set forth.

10. The combination, with a trolley-arm 9, of a socket-piece 11, provided with a fulcrum disk or edge 12, formed with the teeth 24, and a bearing or supporting plate 14, provided with the teeth 24, and a spring-tension device attached to the center of the base of the socket-piece for holding the same to the support, substantially as and for the purpose set forth.

11. The combination, with a trolley-arm 9, of a socket-piece 11, provided with a fulcrum-disk 12, a bearing or supporting plate 14, provided with an opening, a spring 20, a bell-crank lever 21, to one end of which the spring is attached, and a link 19, secured to the bell-crank lever and to the center of the base of the socket-piece, substantially as and for the purpose set forth.

448,174. TWINE. FARMER R. WILLIAMS and GEORGE H. CRAN, Beloit, Wis. Filed May 25, 1889. Serial No. 312,068. (Specimens.)

Brief.—Paper, preferably made from chemical fiber, tobacco stems, rags, wood-pulp, and rope-stock, is first treated with a mixture of beeswax, tallow, pine-tar, linseed-oil, and an acid solution, or other water-proofing material, then twisted into twine, then coated with beeswax or paraffine, and finally compressed between grooved rollers.



Claim.—1. A compressed binding-twine for harvesters, composed of waterproofed paper, substantially as described.

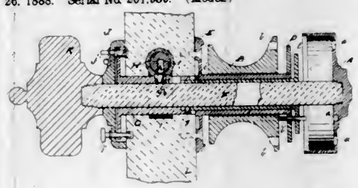
2. Twine composed of waterproofed paper and coated with wax, substantially as described.

3. Twine composed of waterproofed paper coated with wax and compressed, substantially as described.

4. A paper twine coated with wax, substantially as described.

5. A paper twine coated with wax and compressed, substantially as described.

448,175. COMBINATION-LOCK. EDGAR W. WILSON, Denver, Colo., assignor of two-thirds to Willis Z. Bills, same place. Filed Jan. 26, 1888. Serial No. 261,939. (Model.)



Claim.—1. In a combination door-lock, knob A, screwed on spindle F and provided with shank B, sleeve knob-plate E, tumbler D, and sleeve-tumbler C, made to connect with flange-sleeve G, spindle F, provided with pin *f*, and bolt H, provided with dog *h*, for the purpose set forth and described.

2. In a combination door-lock, knob A, provided with shank B, sleeve knob-plate E, sleeve-tumbler C, tumbler D, and keys O, for the purpose set forth and described.

3. In a combination-lock, the bolt H, having pivoted dog *h* and spiral spring *h'*, in combination with the spindle F, having pin *f*, and the sleeve G, having the slot *g'* and shoulders g^2 g^3, as and for the purpose set forth.

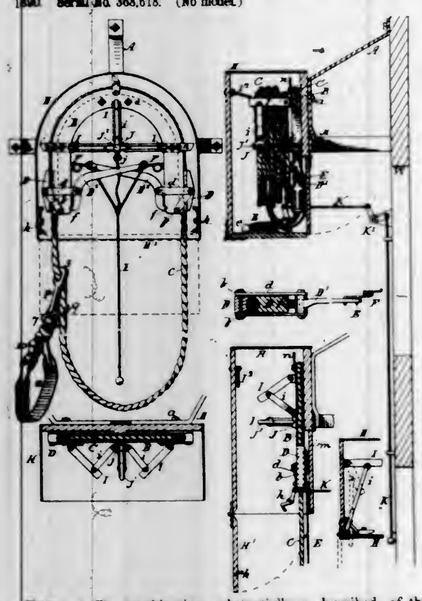
4. The combination, in a permutation-lock, with the knob-spindle thereof, of a sliding sleeve G and tumbler C, the two interlapping at their meeting ends and connected by a pin *g*, as shown and described.

5. The combination, in a permutation-lock, with the knob-plate J and flanged sliding sleeve G, slotted at g^4, of the swiveled screw *j* and set-screw *j'*, arranged as shown, whereby the sleeve G may be set in a suitable position and then moved, as and for the purpose specified.

6. In a combination door-lock, the combination of knob A, attached to spindle F and provided with sleeve knob-plate E, shank B, tumblers C and D, and keys O, shank B being provided with pin *b'*, tumbler D being provided with notches D' and D^2 and slot *d*, and sleeve-tumbler C being provided with notches C', slot *c*, and pins *c'* and *g* and made to connect with flange-sleeve G, spindle F, provided with pin *f*, and bolt H, provided with dog *h* and spring *h'*, and knob-plate J, provided with screw *j*, set-screw *j'*, and slot J^3, for the purpose set forth and described.

7. In a combination door-lock, the combination, with knob A, attached to spindle F and inclosing adjustable and reversible keys O, and sleeve-tumbler C, provided with spring E, attached to the same by means of pin *e'*, of tumbler D, provided with spring *d'*, attached to the same by means of spring attachment d^3, shank B, fitted into the back part of said knob and provided with pin *b'*, and sleeve knob-plate E, to which also are attached the springs E' and *d'* by means of the spring attachment E^3 and pin *e* and provided with pin E^2, flange-sleeve G, provided with shoulders g^2, g^4, and g^5 and adjustably attached to knob-plate J by means of screw *j* and set-screw *j'*, knob-plate J, provided with slot J^3, pin *f*, made stationary on bolt F, and dog *h*, pivoted to bolt H, for the purpose set forth and described.

448,176. **FIRE-ESCAPE.** EZEKIEL W. BULLARD, Battle, Mass., assignor of one-half to Asel N. Elliott, Philadelphia, Pa. Filed Oct. 18, 1890. Serial No. 368,618. (No model.)



Claim.—1. The combination, substantially as described, of the grooved semicircular arched guide having supporting brackets or frame whereby it is attached to the building, the endless rope suspended in the groove of said guide, a brake for clamping said rope, a brake-operating lever, and the controlling-cord, for the purposes set forth.

2. The combination, substantially as described, of a grooved arched guide, the endless rope suspended therefrom, the collapsible coil-supporter, the coil-supporter trip, the brake, (or brakes,) the brake-actuating lever and connections, and the controlling cord, (or cords,) connected with said brake-levers, for the purposes set forth.

3. The combination, substantially as described, with the arched guide, traveler-rope, brake mechanism, and controlling-cord, of the protecting-hood having the drop-bottom, a trip latch (or latches) for sustaining and releasing said bottom, and the trip-pull for retracting said latch, extending down the side of the building to position for convenient reach, for the purposes set forth.

4. The combination, substantially as described, of the arched guide, attaching-brackets for supporting the same on a building, the rope or traveler suspended in the groove of said guide, the brake, (or brakes,) the brake lever, (or levers,) brake connections, a collapsible coil-supporter, a coil-supporter trip and pull-cord for discharging said coil-supporter, and the protecting hood or casing inclosing said apparatus, as set forth.

5. The combination, substantially as described, in a fire-escape having a traveler rope and a collapsible coil-supporter whereon said rope is coiled preparatory for use, of a hood or inclosing casing having the drop-bottom, a trip latch (or latches) for sustaining said bottom, and pull mechanism arranged for operation in the manner described, whereby the first pull releases the drop-bottom and the second pull releases the coil-supporter for discharging the traveler-rope therefrom, for the purposes set forth.

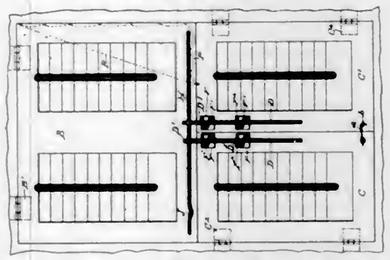
6. The combination, substantially as described, with the grooved arched guide, the traveler-rope, and coil-supporter, of the adjustable buttons *n*, for the purpose set forth.

7. The grip-hook P, having the loop 5, with open side for receiving the rope, and the sling or belt S, connected with its opposite end, of the laterally-projecting hook 9 on the shank of said grip-hook, adapted for holding the same adjacent to the side of the traveler-rope, in combination with the arched guide, the traveler-rope sustained in the groove of said guide, the brake, brake-operating connections, and controlling-cord, substantially as and for the purpose set forth.

8. The combination, substantially as set forth, of the exteriorly-grooved arched guide, the endless rope sustained in said groove, the brake-block D, connected to the said arched guide by links *b*, the brake-operating lever D', fulcrumed on the inner side of said arch at *f* and connected with the brake-block by links *d*, the relieving-spring F for raising the arm of said brake-lever, and the controlling-cord attached to the end of the lever, for the purposes set forth.

9. The collapsible coil-supporter consisting of a hinged bar (or bars) sustained by an adjustable brace i, a trip or slide for displacing the end of said brace, and a pull-line for actuating said trip, in combination with a fire-escape, substantially as and for the purposes set forth.

448,177. **WINDOW-BLIND.** WILLIAM N. CARY, Mechanicsville, assignor of one-half to Walden L. Haskin, Granville, N. Y. Filed Jan. 7, 1890. Serial No. 336,213. (No model.)



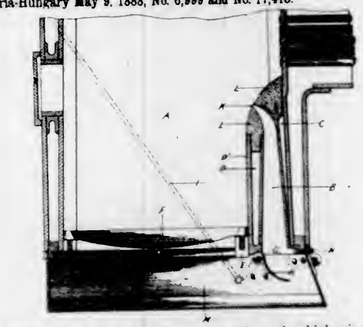
Claim.—1. The combination, with a window-frame, of an upper blind hinged by its upper edge to the upper part of the frame to swing vertically, a horizontal slideway secured to such blind, a lower blind hinged by one of its side edges to one side of the frame to swing horizontally, a slideway secured to such lower blind, and a slide-brace movable vertically in the slideway fixed upon the lower blind and movable horizontally in the slideway fixed upon the upper blind, substantially as described.

2. The combination, with an upper blind hinged to a window-frame to swing vertically and a pair of lower blinds the members of which are separately hinged to the frame to swing horizontally, of a pair of supporting-braces D, each secured at its lower end to one of the horizontally-swinging blinds and at its upper end to the lower end of the vertically-swinging blind for the purpose of supporting the several blinds in an open position, substantially as described.

3. The combination, with a horizontal slideway H upon an upper vertically-swinging blind and a vertical slideway having eyes F^6, one above the other, with slide-slot F^4 upon a lower horizontally-swinging blind, of a slide-brace D, having at its upper end an eye D', at its lower end a hook D^3, and intermediately of its ends thin parts D^4, adapted to pass through the slots F^4, substantially as described.

4. The combination, with an upper blind hinged to a window-frame to swing vertically and a lower blind hinged to the frame to swing horizontally, of a flexible triangular-shaped side curtain secured along one edge to the upper blind, along another edge to the window-frame, and at a middle point in its third edge to the lower blind, substantially as described.

448,178. **APPARATUS THROUGH WHICH AIR IS SUPPLIED TO FURNACES OF STEAM-BOILERS.** WILLIAM J. CHUBB, London, England, assignor to the Vulcan Patent Smoke Consumer and Fuel Economizer Corporation, Limited, same place. Filed June 30, 1890. Serial No. 357,288. (No model.) Patented in England May 16, 1884, No. 7,782; in France Aug. 22, 1884, No. 163,891; in Belgium Feb. 15, 1888, No. 80,661; in Cape of Good Hope Mar. 3, 1888, No. 6, and in Austria-Hungary May 9, 1888, No. 6,999 and No. 17,413.



Claim.—1. In a tuyere or apparatus through which air is supplied to the furnace of a steam-boiler, the combination of the plate C and mid-feather D, of metal, with the block or blocks L, of fire-brick or other similar material, fitted to the upper ends of the said plate and mid-feather, substantially as and for the purpose specified.

2. In a tuyere or apparatus through which air is supplied to the furnace of a steam-boiler, the combination of the plate C, of metal, with the mid-feather D and block or blocks L, of fire-brick or other similar material, fitted to the upper ends of the said plate and mid-feather, substantially as and for the purpose specified.

448,179. **COATING COMPOUND FOR BRICK-WORK.** GEROME L. CROSS, Springfield, Mass., assignor to himself, Georg K. Geiger, and William D. McKenzie, same place. Filed July 5, 1890. Serial No. 357,915. (No specimens.)

Claim.—1. A coating compound for brick-work, composed of muriatic acid, salt, ammonia, high-wine vinegar, alcohol, glue, and water, in substantially the proportions stated.

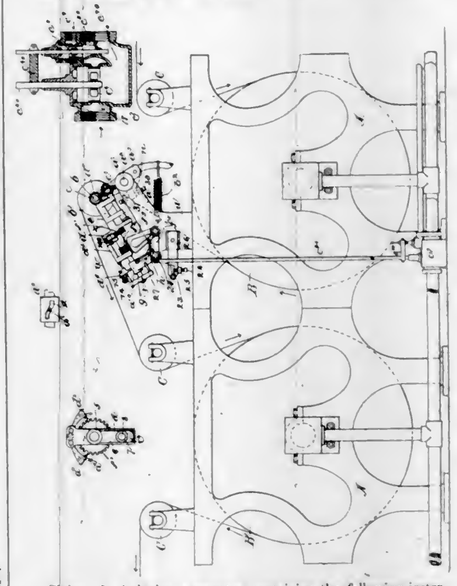
2. A coating and coloring compound for brick-work, composed of muriatic acid, salt, ammonia, high-wine vinegar, alcohol, glue, water, and a coloring body, in substantially the proportions stated.

448,180. **FENCE-POST.** JAMES E. DANIELS, Paullina, Iowa, assignor of one-half to George Hakeman and Stephen Harris. Filed Oct. 20, 1890. Serial No. 368,670. (No model.)



Claim.—A ground-section for a fence-post, consisting of a flat head formed with tapering sides, a convexed back, and a beveled point *a*, the wings A' on the upper portion of the beveled sides of the head, their upper ends being cut away at right angles, the integral supporting-extension B at one side of the center of the head, the lateral curved blade C, extending from the top of the extension down to a point near the lower end of the head, the shelf D, parallel with the upper edge of the head and attached at one end to the blade, and the bracket E, supporting the other end of the shelf, substantially as described.

448,181. **DRYING-MACHINE.** PETER DILLON, Lawrence, Mass., assignor of one-half to John Henry Horne, same place. Filed Sept. 19, 1890. Serial No. 365,524. (No model.)



Claim.—1. A drying apparatus containing the following instrumentalities, viz: a steam-heated drum, a valve to control the admission of steam thereto, a roll over which the article being dried is passed, a spring to control the said roll and move it in opposition to the strain of the material on the roll, and intermediate devices between the said roll and the said valve, comprising a guide-frame, sleeve and attached worm, a toothed sector, a ratchet-wheel and pawls to rotate it, and devices connecting the toothed sector and valve to automatically control the admission of steam in quantity as needed to keep the drying operation uniform, substantially as described.

2. The steam-heated drum, a valve to control the admission of steam thereto, the roll *b'*, the levers in which it has its journal, the worm *c*, and the worm-gear *c'*, the shaft c^2, crank-pin carried thereby, and the frame *e*, rocker-lever having two pawls, the sleeve *f*, having a ratchet-wheel *f'*, and a worm f^3, and the sector-lever f^5, and mechanism intermediate said sector-lever and steam-valve to control the latter, combined with an oscillating shaft d^4, having a pawl-controlling shield to permit one or the other of the said pawls to engage the ratchet-wheel, substantially as described.

3. The steam-heated drum, a valve to control admission of steam thereto, the roll *b'*, its pivoted bearings, the guide-frame *e*, the sleeve *f*, mounted loosely thereon and having a ratchet-wheel and a worm-gear, the sector-lever f^5, valve-operating mechanism intermediate said valve and sector-lever, the rocker-lever *d*, having pawls *d'* d^3, and the oscillating shaft d^4, having the finger d^5, combined with the stand having a slot to co-operate with the said finger, whereby the longitudinal movement of the frame *e* causes the said rock-shaft to be turned to permit one or the other of the said pawls to engage the said ratchet-wheel, according as it is desired to rotate the said worm f^3 in one or the other direction, substantially as described.

4. The steam-heated drum, a valve to control admission of steam thereto, the roll *b'*, its pivoted journal-bearing levers, the guide-frame *e*, the sleeve *f*, mounted loosely thereon and having a ratchet-wheel and a worm-gear, the sector-lever f^5, valve-operating mechanism intermediate said valve and sector-lever, the rocker-lever *d*, having pawls *d'* d^3, and the oscillating shaft d^4, having the finger d^5, combined with the stand having a slot to co-operate with the said finger, whereby the longitudinal movement of the frame *e* causes the said rock-shaft to be turned to permit one or the other of the said pawls to engage the said ratchet-wheel, according as it is desired to rotate the said worm f^3 in

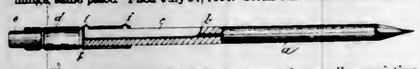
one or the other direction, and with means to adjust the said finger on the said rock-shaft, substantially as described.

5. The steam-heated drum, a valve to control the admission of steam thereto, the roll b', the levers in which it is journaled, the worm c, the worm-gear c', the shaft c^2, a crank-pin carried thereby, and the frame e, rocker-lever having two pawls, the sleeve f, having a ratchet-wheel f' and a worm f^3, the sector-lever f^3, having the catch 20, the valve-rod, and the latch h, combined with an oscillating shaft d^4, having a pawl-controlling shield to permit one or the other of said pawls to engage the ratchet-wheel to open or close the valve, substantially as described.

6. The steam-heated drum, a valve to control the admission of steam thereto, the roll b', the levers in which it is journaled, the frame e, the sleeve f thereon, having a worm f^3, the toothed sector-lever f^3 in engagement therewith, its arm f^4, and the catch 20, pivoted thereon and to the valve-rod, the valve-rod combined with the latch h, the part 3 of the frame, its arm and pin 27, and means between it and the said latch to operate the latter to release the catch 20, substantially as described.

7. The steam-heated drum, a valve to control the admission of steam thereto, the roll b', the levers in which it is journaled, the frame e, the sleeve f thereon having a worm f^3, the toothed sector-lever f^3 in engagement therewith, its arm f^4, having the pivoted latch, and the connected valve-rod having a shoulder or projection 22, combined with the latch h, means, including a part 3 of the frame, arm, and pin, to operate the latch to release the catch, and with the stop 23 for the valve-rod, substantially as described.

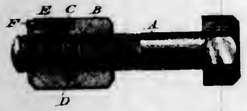
448,182. COMBINED PENCIL AND PENCIL-SHARPENING KNIFE. RHODOLPH H. FRANKLIN, Brooklyn, N. Y., assignor to Charles C. Cummings, same place. Filed July 31, 1890. Serial No. 360,430. (No model.)



Claim.—1. The improved knife attachment for pencils, consisting of the tube adapted for inserting one end portion of a wood pencil in it, and a knife-blade set radially edgewise in and projecting from one end of said tube, with its back in line with one side and its edge in the axial line of said tube, or thereabout, substantially as described.

2. The improved knife attachment for pencils, consisting of the tube adapted for inserting one end portion of a wood pencil in it, and a knife-blade set radially edgewise in and projecting from one end of said tube, with its back in line with one side and its edge in the axial line of said tube, or thereabout, in combination with a wood pencil having a radial groove adapted to receive said blade when applied for sheathing the blade, substantially as described.

448,183. NUT-LOCK. WALTER GLEDHILL, Clifton, Pa., assignor of one-half to James Smethurst, St. Helen's, England. Filed Oct. 7, 1890. Serial No. 367,321. (No model.)

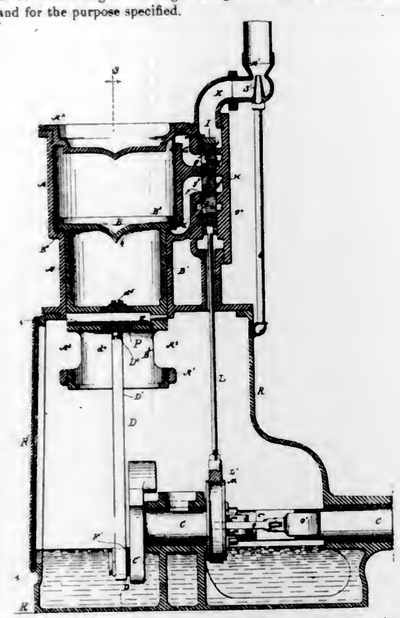


Claim.—Two nuts with screw-threads in reverse directions, the outer nut having a sunken groove on the inner face thereof, and the inner nut having a raised ratchet on the outer face thereof, said ratchet being centered and freely seated in said groove, and a removable screw passing through the outer nut, having its point within the groove in engagement with the ratchet, the head of the screw being on the outside of the outer nut, said parts being combined with a right and left threaded bolt, substantially as described.

448,184. STEAM-ENGINE. WILLIAM E. GOOD, Philadelphia, Pa., assignor to the Southwark Foundry and Machine Company, same place. Filed Dec. 29, 1888. Serial No. 294,954. (No model.)

Claim.—1. In combination with a vertical single-cylinder compound engine having a cylinder A with extension A′ and a piston B, working in the cylinder, with a hollow trunk-extension B′, working in the extension A′, said piston B having a downwardly-curved and centrally-pointed form b, a pin E, secured in the trunk-piston B′, and a connecting-rod D, coupled to the piston by pin E and having an oil cup and hole d^8, situated below the point b.

2. In a single-cylinder compound engine, a cylinder A, having a prolonged extension A′, having openings A^3 in its sides, in combination with a piston B, working in the cylinder, a trunk-extension B′ of said piston working in the extension A′ of the cylinder end, having openings B^3 through its sides so arranged as to register with the openings A^3 at the bottom of the stroke, a pin E, secured in the trunk-piston B′, and a connecting-rod having bearings on said pin, all substantially as and for the purpose specified.



3. In a single-cylinder compound engine, a cylinder A, having an extension A′, a piston B, working in cylinder A and having a trunk-extension working in extension A′ of the cylinder, ports G′ G, exhaust K, steam-port J, and valve I, having ports i i' i^3, adapted to register with ports J G′ G and exhaust K, as specified, all substantially as shown and described.

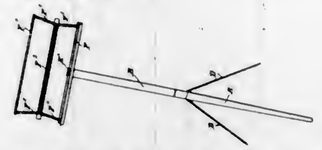
4. In a single-cylinder compound engine, a cylinder A, having extension A′, a piston B, working in cylinder A and having a trunk-extension working in extension A′ of the cylinder, ports G′ G, exhaust K, steam-port J, valve I, having ports i i' i^3, adapted to register with ports J G′ G and exhaust K, as specified, a valve-rod and eccentric-strap, a rotating shaft C, made with straight sides at C^2 and with a perforation C^3, an eccentric M, having a slot M′, by which it is secured to the shaft and free to slide thereon, a joint-pin m^4, secured in the eccentric, a link N, extending from pin m^4 through perforation C^3, a pivoted weighted lever O, attached to said link, and a counterbalancing-spring arranged to resist the momentum of weighted lever O, all substantially as and for the purpose specified.

5. In a single-cylinder compound engine, a cylinder A, having extension A′, a piston B, working in cylinder A and having a trunk-extension working in extension A′ of the cylinder, ports G′ G, exhaust K, steam-port J, valve I, having ports i i' i^3, adapted to register with ports J G′ G and exhaust K, as specified, a valve-rod and eccentric-ring, a rotating shaft C, made with straight sides at C^2 and square block at C^4, said squares C^3 C^4 having perforations C^3 C^3 passing through them, an eccentric M, having a slot M′, by which it is secured to the shaft and free to slide thereon, a joint-pin m^4, secured in the eccentric, a link N, extending from pin m^4 through perforation C^3, a pivoted weighted lever O, attached to said link, and a counterbalancing-spring arranged in perforation C^3, an eyebolt to hold said spring, and a cup to secure said bolt on the side of the shaft opposite to the lever O, all substantially as and for the purpose specified.

6. In combination with a vertical steam-engine having a trunk-piston extending out of its cylinder and a connecting-rod working on a pin secured in the trunk-piston, the device of forming the head of the piston with a downwardly-extending point, in combination with an oil hole and cup in the top of the connecting-rod.

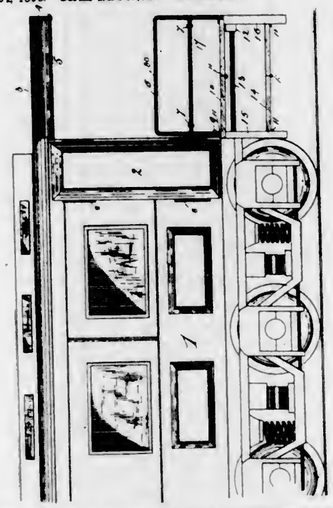
448,185. CANE MUSIC-STAND, AND MUSIC-HOLDER. EDWARD HARDERS and MILTON P. FLEISCHMAN, San Francisco, Cal. Filed May 19, 1890. Serial No. 352,395. (No model.)

Claim.—1. The combination of a base A, having the eccentric bore A^* in the upper end thereof, and a plate C near the top, provided with inverted T-slot C^* C^*, with legs D D, having wrist-pins in the upper ends thereof for insertion in and engagement with the slots C^* C^*, the hollow metallic extension B, and a folding music-rack, all substantially as and for the purpose set forth.



2. The combination, with a base A, having a plate C upon it provided with slots, legs D D, hollow metallic extension B, provided with recess or shoulder E, and a central transverse plate E^*, provided with slits n n n, of a music-rack consisting of a trough-like plate F, having the pins fixed centrally thereto, as described, a top bar F^*, a longitudinally-slotted central bar F^4, and the pivoted and sliding arms F^5 F^5, connecting the side bars F F^* to the slotted bar and adapted to fold inward upon said slotted bar, as set forth.

448,186. VESTIBULE-CAR. HENRY M. JONES, Denver, Colo. Filed Mar. 24, 1890. Serial No. 345,149. (No model.)



Claim.—1. A railway passenger-coach provided with a platform having a plate 15 secured to the frame-work of the car and across the end thereof, a similar outer plate 16, the two plates being connected by the top 30, hinged in the center and to the plates 15 and 16, these plates being provided with downward projections, the steps 14 being hinged in the center and to the projections of plates 15 and 16, the hinged parts of the platform all yielding in harmony when subjected to sudden pressure or contact from the opposite car, substantially as described.

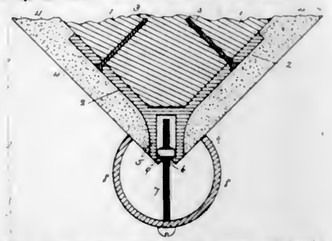
2. The combination, with a hinged platform all parts of which are adapted to yield in harmony to abnormal or sudden pressure, of a bar 13, secured to the front of the platform, passing backward underneath the same, and terminating in a part 32, having cogs or teeth on its opposite edges, cog-wheels 33, one on each side, engaging the cogs in the bar, coiled springs 36, located between the cog-wheels and the platform of the car and so connected with the said wheels that as the platform yields and bar 13 moves backward under pressure and turns the cog-wheels the tension of the springs 36 increases so that as soon as the pressure on the platform ceases the hinged parts thereof will return to their normal position by virtue of the action of the springs 36 upon the bar 13, substantially as described.

3. A platform for railway passenger-coaches provided with suitable seats or settees, the seat portion proper being adjustable and the backs being high enough to form a railing for the platform, substantially as described.

4. A railway passenger-coach having folding doors 3 hinged to its sides at each end of the platform and adapted to fold around and completely inclose the platform, substantially as described.

5. A railway passenger-coach provided with end doors 20 on each side of the usual central door and meeting above said central door, the doors 20 being adapted to open inwardly, substantially as described.

448,187. CORNER-STRIP. FREDERICK KERR, Minneapolis, Minn. Filed Apr. 23, 1890. Serial No. 349,174. (No model.)



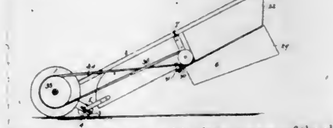
Claim.—1. The combination, with a corner-strip and a corner to be plastered, of a bracket or fastening permanently attached to the latter, and means for detachably securing the strip to the bracket, substantially as set forth.

2. In combination, a corner-strip, a plastered angular surface, a bracket underlying the plaster and exposed at the angle, and means, substantially as described, for connecting the staff to the bracket.

3. A corner-strip comprising a detachable angle-staff and permanent brackets to which it is connected, substantially as set forth.

4. In combination, permanent brackets, a detachable angle-staff, and screws or bolts for connecting them, substantially as set forth.

448,188. GRASS-RECEPTACLE FOR LAWN-MOWERS. TERRON F. BARTLETT, Denver, Colo. Filed June 24, 1890. Serial No. 356,579. (No model.)



Claim.—The combination, with a lawn-mower, of the elevator side pieces and connecting-board, the rollers journaled in said side pieces and the apron carried upon said rollers, the pulley having radial recesses provided with spring-actuated pawls, the projecting journal having a shouldered recess on one side, the band connecting the pulley with a driving-pulley on the mower-shaft, and a receptacle for the grass, all arranged and combined as set forth.

448,189. SEPARATOR. ERASTUS S. BENNETT, Denver, Colo. Filed Apr. 11, 1889. Renewed Aug. 16, 1890. Serial No. 362,151. (No model.)

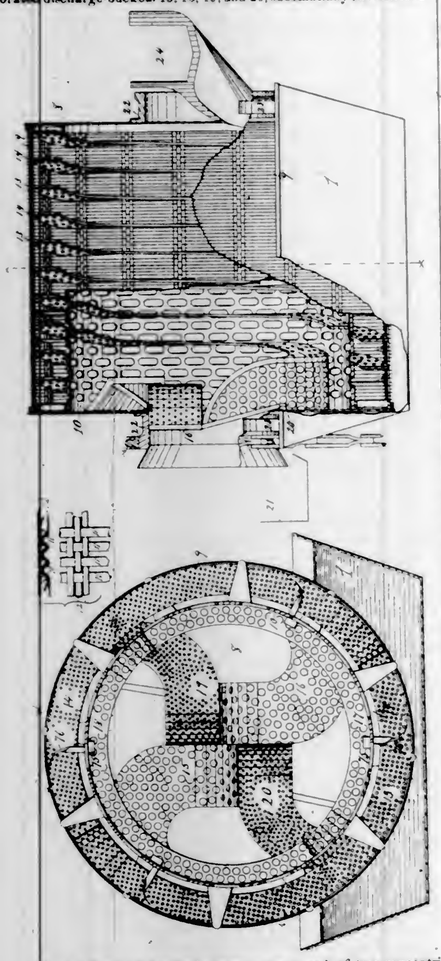
Claim.—1. A rotating separator composed of two concentric cylindrical screens rigidly secured together, each screen being provided on its inner surface with two perforated conveying-screws, the thread of one screw being in the interthread-space of the other screw, substantially as described.

2. A rotating separator composed of two concentric cylindrical screens, each screen being provided on its inner surface with two perforated conveying-screws, the thread of one screw being in the interthread-space of the other screw and the thread of each screw being carried to or about the center of one end of the cylinder, where such threads are formed into four perforated discharge-buckets 15, 16, 19, and 20, substantially as described.

3. A rotating cylindrical separator composed of two concentric cylindrical screens, each screen being provided on its inner surface with two perforated screw conveyers, the conveyers of both screens being adapted to conduct the material toward the discharge end of the separator, the threads of the conveyers being carried to or about the center of the discharge end of the separator and formed into four perforated discharge-buckets 15, 16, 19, and 20, the two concentric screens being of such relative diameters that there is a space left between the two screens of a width greater than the width of the conveyer of the outer screen to allow material, if necessary, to pass between the free edges of the conveyers and the outer surface of the inner screen, substantially as described.

4. A rotating cylindrical separator composed of two concentric cylindrical screens of different meshes, the outer being the finer, each

screen being provided on its inner surface with two perforated screw conveyers, the threads of the conveyers being carried to or about the center of the discharge end of the separator and formed into four perforated discharge-buckets 15, 16, 19, and 20, substantially as described



5. A rotating cylindrical separator composed of two concentric cylindrical screens provided with two perforated screw conveyers, the inner screen being provided with the fingers 76, projecting from its outer surface into the interthread-spaces of the conveyers of the outer screen, substantially as described.

6. A rotating separator of uniform diameter, composed of two concentric screens of different meshes, the outer being the finer, each screen being provided on its inner surface with two perforated screw conveyers, the conveyers of each screen being adapted to conduct the material in the same direction, the threads of the conveyers being carried to or about the center of the discharge end of the separator and formed into four perforated discharge-buckets 15, 16, 19, and 20, the two screens being of such relative diameters that the space between them is of greater width than the thread of the conveyers of the outer screen to allow material to pass between the free edge of the conveyers thread and the outer surface of the inner screen, fingers 76, projecting from the periphery of the inner screen into the interthread-spaces of the conveyers of the outer screen, an inlet at one end of the separator, through which the material is discharged to the inner screen, a water-supply tank, and suitable means of supporting the separator within said tank, substantially as described.

7. A rotating cylindrical ore-separator suitably supported and composed of an inner and an outer screen of different meshes, the outer screen being the finer and constructed of wires or rods of triangular or approximately triangular shape in cross-section and secured together in such a manner that the openings between the wires shall increase in size from the interior to the exterior of the screen, the separator being provided at one end with discharge-spouts leading from each screen and at the opposite end with an inlet through which the material to be treated is fed to the inner screen, each screen being provided on its inner surface with perforated screw conveyers adapted to conduct the material treated toward the discharge end of the separator, substantially as described.

8. A rotating cylindrical ore-separator of uniform diameter and provided with a ring or metallic collar 22 at each end, in combination with a tank adapted to supply the separator with water, said tank being provided with suitable roller-bearings for collars 22, the separator being composed of two screens rigidly secured together and arranged concentrically to each other, the screens being of different meshes, the outer being the finer and constructed of wires or rods of triangular shape or of a shape approaching triangular in cross-section, these wires being secured together in such a manner that the openings between them increase in size from the interior to the exterior of the screen, each screen being provided with perforated screw conveyers, the separator having a discharge-spout at one end for each screen and an inlet-pipe at the opposite end through which the material is fed to the inner screen, substantially as described.

9. A rotating cylindrical ore-separator of uniform diameter and composed of two screens arranged concentrically to each other and rigidly secured together, said screens being of different meshes, the outer being the finer and constructed of wires or rods triangular or approximately triangular in cross-section and secured together in such a manner that the openings between the wires increase in size from the interior to the exterior of the screen, each screen being provided on its interior with perforated screw conveyers, the separator having discharge-openings at one end for each screen and an inlet at the opposite end through which the material to be treated is fed to the inner screen, in combination with a tank provided with suitable bearings for the separator and within which the separator may be partially immersed in water, substantially as described.

10. A rotating cylindrical ore-separator of uniform diameter and composed of two screens arranged concentrically to each other and rigidly secured together, a space being left between the exterior of the inner and the interior of the outer screens, the two screens being of different meshes, the outer being the finer and constructed of wires or rods triangular in shape or approaching the triangular shape in cross-section, the wires being secured together in such a manner that the openings between them shall increase from the interior to the exterior of the screen, each screen being provided with two perforated conveying-screws on its interior, the end of each screw being carried to the center of the separator at one end and formed into a discharge-bucket thereat, the separator being provided at the opposite end with an inlet through which the material to be treated is fed to the inner screen, in combination with a suitable tank adapted to support the separator and supply it with water, and suitable means for rotating the separator, substantially as described.

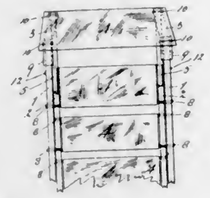
11. A rotating cylindrical ore-separator of uniform diameter and composed of two screens arranged concentrically to each other and rigidly secured together, the screens being of different meshes, the outer being the finer and constructed of wires or rods wider in cross-section on their interior than on their exterior faces, each screen being provided with one or more perforated conveying-screws on the interior, the end of each screw being carried to the center of the separator at one end and formed into a discharge-bucket thereat, the separator being provided with an inlet at the opposite end, through which the material is discharged to the inner screen, the periphery of the inner screen being provided with fingers 76, which project therefrom into the interthread-spaces of the screws upon the outer screen, in combination with a tank provided with suitable roller-bearings for the ends of the separator and within which the separator may be partially immersed, and suitable mechanism for propelling the separator, substantially as described.

448,190. STEP-LADDER. ANTHONY A. BRANDENBURG, Denver, Colo. Filed Feb. 10, 1890. Serial No. 339,830. (No model.)

Claim.—1. A step-ladder composed of two pairs 1 1 and 2 2 of longitudinal side bars, each pair of similar bars being connected by rods 8 at suitable intervals, the tops of the side bars being pivoted to a strip 3 on each side of the ladder, said strips terminating in hooks 9, the top step 4 of the ladder being rigidly secured to the strips 3, the other steps of the ladder being each secured to a pair of rods 8, one rod of each pair being connected with each pair of similar side strips, substantially as described.

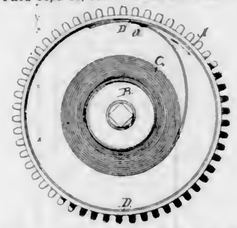
2. In a step-ladder, two pairs 1 1 and 2 2 of longitudinal side bars, each pair of similar bars being connected by rods 8 at suitable intervals, steps 4, each step being movably secured to two rods 8, one of said rods connecting bars 1 and the other of said rods connecting bars 2, one of the steps near the top of the ladder being provided with strips 6, secured thereto and provided with guides 7, suitably secured to strips 6, and legs 5, passing through guides 7 and pivoted at their upper extremities to bars 1, substantially as described.





3. In a step-ladder, the combination, with supporting-bars, of steps carried thereon, one of the said steps near the top of the ladder carrying rearwardly-extending strips having guides pivoted to their rear ends, and legs pivoted to the said supporting-bars and passing through the said guides, as described.

448,191. MAINSPRING FOR WATCHES. ERNEST M. FASOLDT, Albany, N. Y. Filed Sept. 12, 1885. Serial No. 176,858. (No model.)



Claim.—The combination of a spring-barrel and its arbor and a mainspring having attached to its outer end a friction-sprig whose length is at least one and one-eighth times the circumference of the barrel, the overlapping end of said friction-spring being retained and pressed between the coil of the latter and the interior of the barrel, substantitially as described

REISSUES.

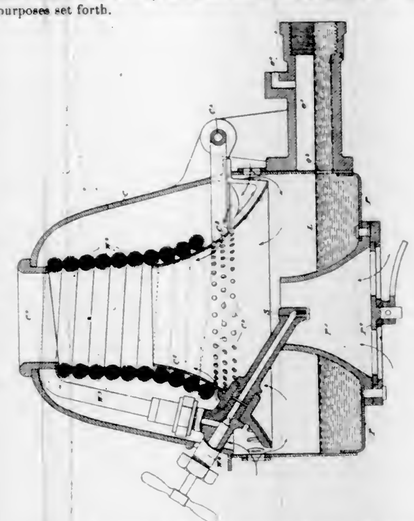
11,149. VAPOR-BURNER. GEORGE S. GRIMSTON, Greenwich, assignor to the Lucigen Light Company, Limited, Westminster, England. Filed Jan. 10, 1890. Serial No. 336,562. Original No. 407,198, dated July 16, 1889. Patented in England Nov. 16, 1888, No. 16,636; in France Mar. 30, 1889, No. 197,104, and in Belgium Mar. 30, 1889, No. 85,619.

Claim.—1. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan provided with an air-passage in the bottom, a burner-cover with a flame-orifice at the top surmounting the pan, a steam-coil in the cover connecting with a steam-jet projecting upward through the air-passage and discharging within the pan, and a conoidal casing within the burner-cover, for the purposes set forth.

2. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan provided with an air-passage in its bottom, means, substantially as described, for regulating the amount of air admitted therethrough, a burner-cover having a flame-orifice at the top surmounting the pan, a steam-coil in the cover connecting with a steam-jet projecting upward in the air-passage and discharging within the pan in close proximity to the surface of the oil therein, and a conoidal casing within the burner-cover, for the purposes set forth.

3. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan provided with a central air-passage in its bottom, a movable burner-cover having a flame-orifice at its top and hinged to the pan and surmounting the same, a steam-coil within the cover connecting with a steam-jet projecting upward through the air-passage and discharging within the pan, and a conoidal casing within the burner-cover, for the purposes set forth.

4. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan having one or more openings around its edge above the surface of the oil, whereby air is admitted to the interior of the pan, and having an air-passage in its bottom, a burner-cover having a flame-orifice at its top surmounting the pan, a steam-coil in the cover connecting with a steam-jet projecting upward in the air-passage and discharging within the pan, and a conoidal casing provided with one or more openings therein for the passage of air, for the purposes set forth.



5. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan provided with an air-passage in its bottom, a burner-cover having a flame-orifice at its top surmounting the pan, a steam-coil in the cover connecting with a steam-jet projecting upward through the air-passage and discharging within the pan, a conoidal casing within the burner-cover, and a closed oil-reservoir connecting with the oil-pan by a horizontal pipe and an air-port in said pipe, for the purposes set forth.

6. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan provided with an air-passage in its bottom, as set forth, a burner-cover with a flame-orifice at the top, a steam-coil within said cover, a steam-jet passing upward through the air-passage and discharging within the pan connected with the steam-coil, a conoidal casing within the burner-cover, and a suitable valve for regulating the supply of steam admitted.

7. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan provided with an air-passage at its bottom, as set forth, of a burner cover with a flame-orifice at the top, a steam-coil within said cover, a steam-jet passing upward through the air-passage and discharging within the pan connected with the steam-coil, a conoidal casing within the burner-cover, and a suitable source of water-supply connected with the steam-coil.

8. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan having an air-opening at its bottom, a hinged burner-cover having a flame-orifice at the top, a steam-coil in the interior of the cover, a conoidal casing witnin the same, and a bent pipe provided with a suitable discharge-nozzle connected with said coil arranged to pass into the interior of the burner in such a manner that steam is discharged within the pan at the extremity of the air-opening and in proximity to the surface of the oil in the pan.

9. In a vapor-burner, the combination, substantially as hereinbefore set forth, of an oil-pan having an air-opening at its bottom, a hinged burner-cover having a flame-orifice at the top, a steam-coil in the interior of the cover, a conoidal casing within the same, a bent pipe provided with a suitable discharge-nozzle, whereby steam is discharged into the burner in proximity to the surface of the oil in the pan, and a valve in said pipe for controlling the amount of steam admitted without removing the cover.

10. In a vapor-burner, the combination of a closed oil-reservoir, a burner provided with a series of perforations around its upper edge having a central air-opening in its bottom and supported on a level with the oil-reservoir, a hinged burner-cover having a flame-orifice at the top and containing a perforated inner conoidal casing also terminating at the top in a flame-orifice, a steam-coil located in said cover and having at its lower end a steam-jet that projects upward in the center of the burner, a valve for controlling the steam-jet, and a pipe

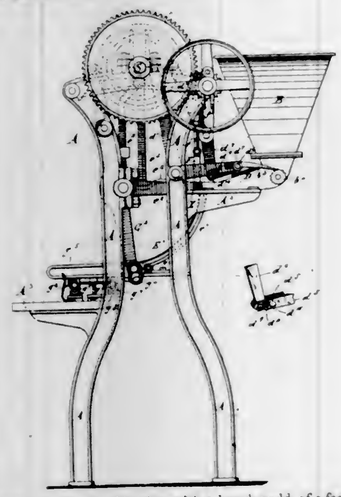
leading from the lower part of the oil-reservoir to the lower part of the burner and provided at its top with an air-inlet to the oil-reservoir, substantially as described.

11. In a vapor-burner, the combination of a closed oil-reservoir, a burner provided with a series of perforations around its upper edge having in its bottom a central air-passage controlled by a valve, a pipe leading from the lower part of the oil-reservoir to the lower part of the burner and communicating therewith only at the lower part of said pipe, which is provided in its upper part with an air-inlet to the oil-reservoir, a hinged burner-cover having a flame-orifice in its top, an inner perforated conoidal casing supported by the cover and also having a flame-orifice in its top, a steam-coil supported in the cover having at its lower end a steam-jet that projects upward in the center of the burner, a valve for controlling the steam-jet, and a pipe communicating with the steam-coil through the hinge-joint of the burner-cover, substantially as described.

12. In a vapor-burner, the combination of a closed oil-receptacle, a burner provided with a series of perforations around its upper edge on a level with said reservoir, a pipe leading from the lower part of the reservoir to the lower part of the lamp and having an air-inlet to the reservoir, a hinged burner-cover having a flame-orifice, a perforated and open top casing, a steam-generating coil supported in the cover and having at its lower end a steam-jet that projects upward in the center of the burner, a water-tank having a pipe communicating with the steam-coil through the hinge-joint of the cover, and a pump connected to the water-tank, substantially as described.

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1 1,150. CIGAR-BUNCHING MACHINE. FERDINAND J. HAGEN, New York, N. Y., assignor to the Eureka Cigar Machine Company, of New Jersey. Filed Oct. 20, 1890. Serial No. 368,753. Original No. 415,943 dated Nov. 26, 1889.



Claim.—1. The combination, with a bunch-mold, of a feed-throat leading thereto, a platen-like feed-clamp reciprocating longitudinally and vibrating laterally in the said throat to intermittingly compress the filler and force it toward the mold, a cutter to separate the molded filler from the remainder, and means for discharging the bunch from the mold, substantially as described.

2. The combination, with a bunch-mold, of a feed-throat tapering toward the mold, a feed-clamp having a platen-like engaging face maintained at an inclination corresponding to the taper of the throat and working intermittingly in the said throat, a cutter to separate the molded filler, and a bunch-discharging device, substantially as described.

3. The combination, with a supply-hopper, a bunch-mold, and a feed-throat leading from the hopper to the mold, of a feed-wheel to feed the filler from the hopper through the throat, a platen-like feed-clamp operating in the throat to compress successive areas of the filler and to force the filler intermittingly toward the mold, a cutter to separate the molded filler, and a bunch-discharging device, substantially as as described.

4. The combination, with a bunch-mold composed of a plurality of relatively movable sections, of a feed-throat leading to said mold, a feeding mechanism in said throat to force the filler intermittingly toward said mold, a cutter for separating the molded filler, and a bunch-discharging device, substantially as described.

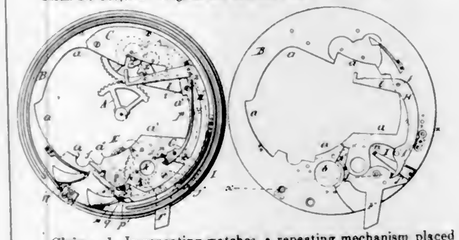
5. The combination, with a bunch-mold and a feed-throat leading thereto having a lateral opening, of a platen-like feed-clamp reciprocating longitudinally in said opening, and a cover-plate constantly closing the varying opening between the moving feed-clamp and the wall of the throat and yielding to the motion of the feed-clamp, substantially as described.

6. The combination, with a bunch-mold, a feed-throat, a feeding mechanism to pack the filler in the mold, a cutter to separate the molded filler, and a rolling mechanism, of a shell inclosing the mold, a mold-carrier oscillating from the feed-throat to the pocket of the rolling mechanism, and mechanism whereby the mold and shell are projected differentially from the carrier into the pocket, substantially as described.

7. The combination, with a feed-throat, a feeding mechanism, a cutter to separate the molded filler, and a rolling mechanism, of a mold composed of a plurality of sections, a mold-box, a shell inclosing the mold-box, a mold-carrier having shell-guides, and means for swinging the mold-carrier from the feed-throat to the pocket of the rolling mechanism and for projecting the mold-box and shell on the carrier into said pocket, substantially as described.

8. The combination, with a bunch-mold, of a feed-throat, a patent-like feed-clamp reciprocating in the feed-throat, feed-clamp-operating mechanism by which the face of the feed-clamp is maintained in engagement with the tobacco during its forward movement, and adjustable connections between the feed-clamp and its operating mechanism for adjusting the stroke of the feed-clamp while maintaining it in said engagement, substantially as described.

11,151. REPEATING MECHANISM FOR WATCHES OR OTHER TIME-PIECES. FRED TERSTEGEN, Elizabeth, N. J. Filed Aug. 30, 1890. Serial No. 363,564. Original No. 421,844, dated Feb. 18, 1890.



Claim.—1. In repeating-watches, a repeating mechanism placed on one surface of the time-movement, having separately-operated racks engaging the hammers to strike the hour and its divisions and driven by a special spring, in combination with the snails driven by the mainspring of the time-movement, substantially as described.

2. A repeating mechanism placed on the back of the watch-movement and operated by a setting-lever and having separately-operated racks for the hour and its divisions and driven by a special motor-spring, in combination with a snail or snails in connection with and driven by the mainspring of the time-movement, substantially as described.

3. A repeating attachment having separately-operated racks for the hour and its divisions, in combination with a starting device connected with the plate of the repeating attachment for releasing the rack or racks, substantially as described.

4. In combination with a watch-movement, a plate and bridge, and a repeating mechanism having separately-operated racks for the hour and its divisions, a spring for operating the repeating mechanism, and snails and snail-pieces, all of which are connected with said plate and bridge, and the snails being connected by intermediate gearing with the mainspring of the time-movement, substantially as described.

5. In combination with a watch-movement, a repeating mechanism having separately-operated racks for the hour and its divisions assembled about the center of the movement, so as to leave space on the same surface for the bell-wires within the periphery of the movement, and a special spring by which the repeating mechanism is driven, substantially as described.

6. In combination with a watch-movement, the snails, regulating-wheels, hammers, bell-wires, and spring-barrel, snail-pieces, and releasing device for the rack that strikes the divisions of the hour placed on one surface of the movement, substantially as shown and described.

7. The combination, in a repeating mechanism, of the snails, snail-pieces, spring-barrel, and regulating-wheels placed together on the back of the watch-movement, substantially as specified.

8. As a new article of manufacture, a repeating mechanism having separate racks for engaging the hammers for striking the hours and its divisions assembled together ready for placing on the watch-movement, and having a special spring for driving the repeating mechanism, substantially as described.

9. The combination of the plate B, adapted to be connected with a watch-movement, and a bridge C, placed on the said plate and the repeating mechanism herein described, connected with the said plate and bridge, so that when placed on the watch-movement it can be connected with the time mechanism, and having a special spring for driving the repeating mechanism, substantially as described.

10. The plate B, adapted to be connected with a watch-movement and provided with a suitably-placed opening for the spring-barrel, in combination with a spring-barrel connected with said opening, and repeating mechanism driven by the spring in said barrel, substantially as described.

11. The repeater-plate provided with an opening or seat for the mainspring of the repeating mechanism, in combination with a mainspring and repeating mechanism driven thereby and a device for winding the spring, substantially as described.

12. A spring-barrel for repeating mechanism placed above or over the gearing mechanism in a watch-movement, substantially as described and shown.

13. In a repeating-watch, a plate provided with an opening or seat for the mainspring of the repeating mechanism, in combination with a winding device for the spring, all arranged on the back plate or bridge of the watch-movement, substantially as described.

14. In a watch-movement, the back plate or bridge provided with a suitable seat for the motor-spring of a repeating mechanism arranged to be placed on the back of a watch-movement, substantially as described.

15. In combination with a watch-movement, a setting-lever, striking-racks engaging the hammer-clicks, a releasing device for the rack that moves the hammer that strikes the divisions of the hour, snail-pieces, and snails, all arranged and connected above the back of the watch-movement, substantially as specified.

16. In combination with the watch-movement, the hammers, striking-racks engaging the hammer-clicks, snail-pieces, and snails, all arranged and connected above the back of a watch-movement, so as to leave space on the same surface for the bell-wires within the periphery of the movement, substantially as specified.

17. In striking attachments for watches, a spring-barrel separated from the time-movement, in combination with the regulating-gearing and a device for winding up the spring in the barrel placed on one surface of the watch-movement, substantially as described.

18. A repeating mechanism placed between a plate and bridge, in combination with devices for connecting the same with the time-train of a watch-movement and a special spring for driving the repeating mechanism, substantially as described.

19. A repeating mechanism in which the hours and its divisions are struck by separate racks and adapted to be connected with the time-train by the gearing which sets the snail, assembled on the back of the watch-movement so as to leave space on the same surface for the bells, in combination with a special spring for driving the repeating mechanism, substantially as described.

20. The combination, in a repeating-watch, of the hour-rack, finger *h*, and rack-piece H′ with the regulating-gearing arranged on the back of the watch-movement, substantially as described.

21. The combination, in a repeating-watch, of the hour-rack, finger *h*, and rack-piece H′ with the hammers, all arranged on one surface of the watch-movement, substantially as described.

22. The combination of the hour-rack, finger *h*, and rack-piece H′ with the regulating-gearing and hammers arranged above the back of the watch-movement, substantially as described.

23. In a repeating-watch, the hour-rack, finger *h*, and rack-piece H′, in combination with the hammers and bell-wires arranged above the surface of the watch-movement, substantially as described.

24. The combination of the spring-barrel and its arbor, the hour-rack, finger *h*, gearing E, and winding device when placed on one surface of the watch-movement, substantially as described.

25. In repeating mechanism in which the hour and its divisions are struck by separate racks, the combination of one surface of the hour-striking rack, finger *h*, piece H′, bell-wires, hammers, and regulating-gearing, as and for the purpose described.

26. The combination of the hammers, rack-piece H′, hour-rack, and releasing device for the rack that strikes the divisions of the hour when arranged on one surface of the watch-movement, substantially as described.

27. The combination of the snail which regulates the striking of the divisions of the hour, gearing to connect the said snail with the time mechanism, rack-piece H′, releasing-spring I, and hammer, all arranged on one surface of the watch-movement, substantially as specified.

28. The combination of the winding segment and pinion, spring-barrel, and mainspring, barrel-arbor, suitable racks for striking the hour and its divisions, snails and snail-pieces, releasing device for the rack that strikes the divisions of the hour, regulating-gearing, and hammers, all arranged on one surface of the watch-movement and adapted to be connected with the time-train on the same surface, substantially as described.

29. A repeating mechanism in which the striking-racks and the devices for setting the same are assembled on the back of a watch-movement, so as to leave a space on the same surface for the bells, in combination with a separate spring for driving the repeating mechanism, substantially as described.

30. In combination with the hour-rack and its hammer placed above the back of the watch-movement, a device operated by the rack-piece H′ to adjust the hammer-click to avoid engaging the teeth of the rack before being set, substantially as described.

31. The combination of a repeating mechanism placed on the back of the watch-movement with the hour-rack, the hour-hammer, hour-hammer click provided with the pin *q*, and the rack-piece H′, provided with the shoulder 4, substantially as shown and described.

32. In combination with an hour-striking rack and hour-hammer, an hour-piece and hour-snail Z, placed on the back of the movement, and a separate spring for driving the repeating mechanism, substantially as described.

33. In combination with the hour-rack, its arbor and spring-barrel, and hour-piece H, placed on the back of a watch-movement, the releasing-spring I, substantially as described

34. The hour-piece H and releasing-spring attached directly thereto, in combination with the winding-segment G, provided with an arm L, setting-lever F, and the rack H′, which strikes the divisions of the hour, substantially as described.

35. The repeater-plate B, placed on the back of the watch, so as to leave space between its periphery and the periphery of the watch-movement for the bells, and provided with a projection *q′* for the attachment of the bell-wires, substantially as described.

36. In combination with the watch-movement and the watch-case, the repeater-plate provided with the projection *q′*, for the purpose specified.

37. A bell-wire having its screw-plate so formed and attached to the watch-movement that the said plate stands over the periphery of the watch-movement for the purpose of pressing on the edge of the watch-case when applied thereto, substantially as shown and described.

38. A bell-wire having a screw-plate provided with a projection or flange to press on the periphery of the case, substantially as described.

39. A sliding bolt for operating the lever of a repeating mechanism, adapted to connect with the said lever above the center of the case, substantially as described.

40. In combination with the repeating mechanism and its lever, a slide placed outside of the case and connected with the lever above the center of the case, substantially as described.

41. In combination with the lever F, the inside slide N, and outside slide connected with each other and the lever above the center of the case, substantially as shown and described.

42. The combination, in a repeating-watch, of a lever for actuating a repeating mechanism, a watch-case, a sliding bolt for actuating the lever, and a spring for adjusting the said bolt to the case to form a dust-tight connection, substantially as specified.

43. A slide for operating the repeating mechanism, connected with the case and adapted to engage the lever of the repeating mechanism, said slide being connected with the lever between the cap and the center of the case, substantially as described.

44. A repeating attachment having separately-operated racks for engaging the hammers that strike the hour and its divisions and bell-wires, all of said parts being assembled on a plate applied to a time-movement, in combination with a special spring for driving the repeating mechanism, substantially as described.

45. In combination with the bell-wires of a repeating mechanism, a clamp for clamping the bell-wires to the movement, provided with the flange 15 to connect the wires with the case for the purpose of increasing the volume of sound, substantially as described.

46. A rack-piece provided with a suitable adjusting device for adjusting it to the snail, substantially as described.

47. The hour-piece provided with an adjusting device, in combination with the snail and hour-disk, substantially as described.

48. An hour-striking rack, in combination with an hour-piece provided with an adjusting device, substantially as described.

49. A striking-rack, in combination with a rack-piece provided with an adjusting device and a snail, substantially as described.

50. A slide for setting the repeating mechanism of a watch, placed above the center rim of the case, in combination with the case having a cut or slot through its back cover, substantially as described.

51. A hammer for striking-watches, made from sheet metal and provided with a hole in its head by which to fasten the hair-spring, substantially as described.

52. In a repeating mechanism, the combination, with a striking-hammer and a spring attached thereto, of a stud 17, fixed to the plate,

against which the spring acts to throw the hammer away from the bell-wire after making a stroke, substantially as specified.

53. The combination of a watch-movement, a repeating mechanism connected therewith, a lever placed on the back of the watch-movement for setting the repeating mechanism to strike the time, said lever arranged to be operated by swinging its arm in a direction approximately parallel to the periphery of the watch, and a sliding bolt for operating the said arm of the lever, substantially as specified.

54. The combination, with a watch-movement and repeating mechanism connected therewith, of an actuating-lever placed on the back of the watch-movement and for setting the repeating mechanism to strike the time, and a suitable spring that operates and returns the said lever to its normal position independently of the motor-spring for the repeater, substantially as specified.

55. The combination, with a watch-movement, of regulating-gearing arranged between a plate and bridge independently of the watch-plates, the said plate and bridge adapted to be connected to the exterior surface of a watch-plate, a motor-spring of a repeating mechanism for driving the said gearing, and an actuating-lever for operating and retracting the motor-spring, substantially as specified.

56. The combination, with an actuating-lever, of a toothed segment that is operated thereby and in engagement with a pinion of an hour-rack, the hour-rack which is turned thereby, and gearing for regulating the speed of the said rack on its return motion, said gearing arranged on the back of a watch-movement, substantially as specified.

57. In a repeating-watch, the combination, with the back plate of a watch, of an actuating-lever for setting a toothed segment, the toothed segment in gear with a pinion of an hour-rack, and the pinion and the hour-rack turned by the movement of the said lever, substantially as specified.

58. The combination, in a repeating-watch, of an actuating-lever, a toothed segment, and a separately-movable hour-piece that operates a releasing device, and the releasing device for unlocking a rack, all arranged above the back of the watch-movement, substantially as specified.

59. In a repeating-watch, the combination, with the back plate of a watch-movement, of an hour-snail and an hour-piece that operates a releasing device, a releasing device for unlocking a rack, a toothed segment, and an actuating-lever for moving the segment and setting the hour-piece against the hour-snail, whereby the said hour-piece operates the releasing device, substantially as specified.

60. In a repeating-watch, the combination, with a striking-rack provided with a projection or shoulder between its rack-teeth and its pivot or center, of a releasing device having a stud or pin *n*, that engages and rests behind the said shoulder of the rack for holding it in the normal position of rest, substantially as specified.

61. The combination, with a striking-rack provided with a projection or shoulder between its center or pivot and its rack-teeth, of a releasing device provided with a stud or pin *n* on its upper side for locking the said rack in the normal position of rest, a spring engaging the rack for setting the same, and an hour-piece that operates the said releasing device for unlocking the rack when the said hour-piece is moved against the hour-snail, substantially as specified.

62. In a repeating-watch, the combination of an hour-rack and a separate rack for the divisions of the hour, hammers, and hammer-springs, hammer-clicks and springs, and the bell-wires arranged and placed above the back of the watch-movement, substantially as specified.

63. The combination, with a watch-case, of a sliding bolt that is movable parallel to the center of the watch-case, and a lever that is operated thereby and attached to the back of a watch-movement, the said lever arranged for actuating a repeating mechanism, substantially as specified.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

CONSOLIDATED ROLLER-MILL COMPANY *v.* WALKER.

Decided January 26, 1891.

1. GRAY—ROLLER GRINDING-MILL—MECHANICAL SKILL.
The first claim of Letters Patent No. 228,525, granted June 8, 1880, to William D. Gray, for an improvement in roller grinding-mills, declared invalid, as evincing only the exercise of ordinary mechanical or engineering skill.

2. ANALOGOUS USE.
The application of an old process, machine, or device to a like or analogous purpose, with no change in the mode of application and no result substantially different in its nature, will not sustain a patent, even if the new form of result has not before been contemplated.

3. INVENTION.
The mere carrying forward of an original conception, resulting in an improvement in degree simply, is not invention.

APPEAL from the Circuit Court of the United States for the Western District of Pennsylvania.

Mr. Rodney Mason for the appellant.

Mr. Robert H. Parkinson and *Mr. J. G. Parkinson* for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Western District of Pennsylvania, by the Consolidated Roller-Mill Company against R. R. Walker, for the infringement of claim 1 of Letters Patent No. 228,525, granted June 8, 1880, on an application filed May 2, 1879, to William D. Gray, for an improvement in roller grinding-mills. The circuit court, held by Judges McKennan and Acheson, entered a decree dismissing the bill, with costs. The case was heard on pleadings and proofs. The answer denied the validity of the patent, charged want of novelty and of patentability, and denied infringement. The opinion of the court (43 Fed. Rep., 575) was written by Judge Acheson. The specification and claims of the patent are as follows:

My invention relates to that class of mills in which horizontal grinding-rolls arranged in pairs are employed; and the invention consists in the improved arrangement of belts and pulleys for communicating motion to the rolls, and in other minor details hereinafter described in detail.

In the accompanying drawings, Figure 1 represents a side elevation of the same; Fig. 2, a top-plan view of the rolls and their operating-belts; and Fig. 3, an end elevation of the same, partly in section.

It has been found by experience that when the rolls are driven by gearing a great deal of noise and a jarring of the parts of the apparatus and trembling of the mill-floor result, and this jarring and trembling in turn cause an unevenness of operation or grinding and a rapid and uneven wear of the rolls. To obviate these difficulties and produce an even, steady motion I discard the gearing hitherto employed, and substitute therefor a system of belting arranged in a peculiar manner, to give the proper direction and speed to the rolls.

In the drawings, A represents the frame or body of the machine, in the upper part of which are mounted, in pairs, a series of grinding or crushing rolls, C D E F. Above the grinding-rolls is arranged a hopper provided with feeding-rolls G H, arranged to deliver the grain to each pair of rolls.

B represents a counter-shaft, which is represented in the drawings as extending transversely through the base of the frame or body A, parallel with the grinding-rolls, but which may, if desired, be located entirely without the machine.

As represented in Figs. 1 and 2, the grinding-rolls are furnished alternately at opposite ends, each with a belt-wheel or pulley, while the counter-shaft B is furnished at one end with one wheel or pulley and at its opposite end with two.

N represents the main driving-belt, which passes to and around the pulley *c* of the roll C, thence downward and around pulley *b* of the counter-shaft B, thence upward and around pulley *c* of the roll E, and back to the source of power, imparting to the rolls C and E a motion in one direction, and to the counter-shaft a motion in the reverse direction. From the pulleys *b'b''* on the rear end of the counter-shaft B, belts P and R pass upward and around pulleys *d* and *f* of the rolls D F, as shown in Fig. 2, imparting to said rolls a motion the reverse of that of the rolls C E. In this way the two rolls of each set are caused to revolve toward each other while being all driven from a common source primarily.

The use of belting obviates all the noise incident to gearing and produces a much more even and steady motion, each roller being driven from the counter-shaft, instead of one from another, as heretofore.

Another advantage incident to the arrangement of belting above described is, that by simply removing the pulley of any shaft and replacing it with another of proper size, any desired difference in the speed of the rolls may be obtained, whereas in the case of gearing this cannot be accomplished except through the use of a very complicated arrangement of intermediate wheels.

In order to adapt the counter-shaft B to perform the double purpose of reversing the motion of certain of the rolls and of acting as a belt-tightener, it is mounted, at opposite sides of the frame or body A, in boxes swiveled or hung in yokes L, sliding vertically in guides or boxes K, and adjusted up and down therein by screw rods or stems S, the swivel-boxes permitting a slightly greater movement of the shaft B at one end than at the other without interfering with its free rotation, and thereby permitting the tightening of the belt or belts at one side of the machine without disturbing those at the other.

In order to adjust and maintain the rolls C D and E F in proper relation to each other, the two outer rolls, C and E, are carried in sliding boxes, which are formed each with a T rib or standard, *m*, moving in a groove or way of corresponding shape, the rolls being held up to their operative position by springs U, which, in turn, are regulated in pressure by screws T.

Clamping-screws may be arranged to secure the sliding boxes Q in any desired position.

By the above arrangement of the sliding boxes they are prevented from being advanced or retracted unequally, and thereby giving the rolls a "winding" position.

It is desirable that when the rolls are not employed in grinding they should be held apart, as otherwise they would be liable to injury by direct contact, and also subjected to unnecessary wear. To accomplish their ready separation I place just in front of each sliding box Q a rotating cam or eccentric, Y, which when turned in one direction permits the box to be advanced, but when given a partial revolution about its axis forces and holds back the same.

The meal, after being crushed by the rollers, sometimes packs or cakes together; and for the purpose of regranulating the same it is passed through a disintegrator.

The disintegrator cylinder may be mounted on and driven by the counter-shaft B, as shown in Fig. 3, in which case the usual surrounding shell or casing (shown in the drawings) will need to be adjustable vertically.

The peculiar manner of or means for adjusting the shell forms no part of the present invention, and need not, therefore, be described in detail herein. Many arrangements—such as the use of bolts and slots, or adjusting-screws, for example—will suggest themselves to the skilled mechanic.

Machines of this class are found to be impaired in their operation through the heating of the roller-journals. To overcome this defect I form on the shafts of the rollers, and also on the counter-shaft, near each end, a collar, *x*, which serves both to prevent end play of the shaft and to carry upward continually a supply of oil from the chamber or supply *z* to the upper side of the shaft and box, whence it spreads out over the entire surface of the bearing and journal.

The boxes are each formed with an annular oil-chamber, *v*, at each end, communicating by inclined passages *w* with the supply chamber or sink *z*. In this way a perfect lubrication of the bearings is constantly maintained and heating is obviated.

The feed-rolls G H are furnished at their ends with pulleys *g h*, which are driven by belts from the grinding-rolls D E, which, being stationary, cannot interfere with the tension of the belts, as would the adjustable rolls C F.

I am aware that various devices have hitherto been employed to regulate the distance between the rolls, in order to govern the thickness of the material delivered from them, and I am also aware that shafts have been made movable in such manner as to tighten belts passing over pulleys on other shafts, and I lay no claim thereto; but I believe myself the first to construct and organize a grinding-mill in the peculiar manner herein shown and described, whereby the single belt is caused to operate the various parts in the required directions and the disintegrating-cylinder caused to keep the belt tight.

Having thus described my invention, what I claim is—

1. In a roller grinding-mill, the combination of the counter-shaft provided with pulleys at both ends and having said ends mounted in vertically and independently-adjustable bearings, the rolls C E, having pulleys connected by belts with one end of the counter-shaft, and the rolls D F, independently connected by belts with the other end of the counter-shaft, as shown.

2. In a roller grinding-mill, a disintegrating-cylinder connected at its two ends by belts with the rolls, in combination with independently and vertically adjustable supports connected by transverse pivots with the boxes sustaining the ends of the cylinder, in the manner described and shown.

3. In a roller-mill, the combination of the frame, the cylinder, the pivoted bearings K, the forked arms L, having the bearings therein, and the screw S, as shown.

The opinion of the circuit court, after quoting from the specification, says:

Gray's specification, as our quotations therefrom indicate, suggests the idea that he was the first to apply belt-drives to roller grinding-mills; but the fact is otherwise, as the proofs abundantly show. Nor was he the first to discard from such mills cog-gearing and friction-gears altogether, and substitute therefor belt-driving.

The opinion then refers to Mechwart's Austrian patent, granted August 3, 1875, extracts from which, as found in the record, are as follows:

The arrangement invented by me has for its object an advance in the former method of driving the co-operating rollers of any particular roller-mill. This end has heretofore been obtained exclusively either by the intermeshing of both rollers through the means of spur-gear, or else through the naked driving of the one roller from the driven roller by means of friction produced through any pressure whatever between the rollers. * * * The substance of the invention, which I consider new and desirable for patent, consists in the use of belts for the driving of each single roller of a pair in roller-mills for the begetting of mill products in any desired relation of the two co-operating rolls to each other. Heretofore, in roller-mills one roll of a pair has been driven from the other by means of spur-gearing, or by means of friction caused by the pressure between the rollers. The transmission of movement through spur-gearing has, however, the disadvantage that, through the unavoidable inequality of the intermeshing, an unequal movement of the rollers ensues, which results, according to experience, in the rapid loss of "true," and in unequal wearing away of the rollers. Besides this, the disagreeable rattling of spur-gearing, and the rapid wearing away of the gears themselves, is a disadvantage. The driving of the second roller by means of friction of the two rollers pressed together is only practical when the chop passes the rollers in very thin strata, and not in coarse particles. In case of the latter the friction will be relieved, and the driven roller be stopped. Besides this, only an equal peripheral speed of the rollers is permitted by this construction, and therefore it is not applicable when an unequal speed is desired—as, for example, in the grinding of the middlings into flour. These disadvantages the inventor has removed by his application of belt-drive to every single roller of a roller pair of a roller-mill, which, according to his best knowledge and conscience, has never been employed in similar machines, and is entirely new, so that, by means of such transmission of movement, an equal revolution is obtained, which is impossible with spur-gearing. In the accompanying three drawings are six different arrangements, shown for different groupings of the rollers, although I do not thereby intend to exclude every other possible arrangement.

The opinion then proceeds:

We find therein distinctly set forth the disadvantages resulting from the use of spur-gearing in roller grinding mills, viz., the disagreeable rattling, the rapid wearing away of the gears, and the unequal movement and unequal wearing away of the rollers, and also the inefficiency of driving by means of frictional contact between the rolls, which latter, it is set forth, is only practical when the chop passes the rollers in very thin layers, and not in coarse particles, and is not applicable when an unequal peripheral speed of the rolls is required. All these disadvantages, it is declared, are avoided by Mechwart's invention, which consists in driving both co-operating rolls by means of belts, whereby, also, can be obtained an equal and also an unequal peripheral speed, while the diameter of the rolls, as well as the diameter of the belt-pulleys, can be varied relatively to each other for different objects. Mechwart's drawings show, as examples, six different arrangements of belting, which, he states, are intended to illustrate "only some of the different arrangements of the belt-drive for roller-mills, without exhausting the possible variations in its application." Fig. 3, Sheet A, shows a machine having two pairs of grinding-rolls, the pairs being vertical, and arranged side by side. A shaft, mounted in the machine-frame in fixed bearings, carries two pulleys, one at each side of the machine. A belt from one of these pulleys passes around a tightening-pulley at the upper right-hand corner of the machine, thence around a pulley on the upper left-hand roll-shaft, thence around a pulley on the lower right-hand roll-shaft, and thence back to the driving-pulley; and by this belt one roll of each pair is driven. From the other pulley, on the other side of the machine, a belt is arranged in a similar manner, so as to drive the other two rolls of the pair. Without further description of the Mechwart system it is enough to say that his patent disclosed roller grinding-mills, single and double, with both vertical and horizontal pairs of rolls arranged side by side, driven by means of belts exclusively, his machine being equipped with adjusting or tightening pulleys, and having a shaft journaled directly into the machine-frame and receiving its motion from the prime mover of the mill, either directly or by belt.

It then says:

But turning now to machinery employed in the arts generally, it is certain that the use of belt gearing interchangeably with or as a substitute for cog-gearing was very old and common before Gray's alleged invention. It was, too, an old and familiar expedient to keep the belt adjusted to a proper degree of tightness by means of tightening-pulleys, the shafts of which, in revolving, sometimes did other work about the machine, and shafts had been made movable in such manner as to tighten belts passing over pulleys on other shafts. It was also old, and very common in machine shops and factories of various kinds, to provide an individual machine with a counter-shaft mounted directly in the machine-frame, the counter-shaft being driven by a belt from the line-shaft, and the machine by a belt from the counter-shaft. Furthermore, it was no new thing to provide the journal boxes or hangers in which counter-shafts are mounted with means for independently adjusting the ends of the shaft.

It then adds that, in view of the things referred to, the court is unable to discover any patentable subject-matter in claim 1 of Gray's patent; and that it falls directly within the established principle, that the application of an old process, machine, or device to a like or analogous purpose, with no change in the mode of application, and no result substantially different in its nature, will not sustain a patent, even if the new form of result has not before been contemplated: citing *Pennsylvania R. Co.* v. *Locomotive Truck Co.*, (110 U. S., 490; 4 Sup. Ct. Rep., 220,) and *Blake* v. *San Francisco*, (113 U. S., 679; 5 Sup. Ct. Rep., 692.)

It then says that it is quite clear, moreover, that the application of belting to drive roller grinding-mills, to obviate the difficulties incident to the use of cog-gearing and to secure the advantages set forth in Gray's specification, did not originate with him; and that, therefore, even were it conceded that his peculiar arrangement is attended with better results than had been attained previously, still this would not sustain the patent, for the mere carrying forward of an original conception, resulting in an improvement in degree simply, is not invention: citing *Burt* v. *Evory*, (133 U. S., 349, 10 Sup. Ct. Rep., 394.) and that the conclusion is unavoidable, that the combination set forth in Gray's first claim evinces only the exercise of ordinary mechanical or engineering skill: citing *Hollister* v. *Manufacturing Co.*, (113 U. S., 59; 5 Sup. Ct. Rep., 717;) *Thompson* v. *Boisselier*, (114 U. S., 1; 5 Sup. Ct. Rep., 1042;) *Aron* v. *Railway Co.*, (132 U. S., 84; 10 Sup. Ct. Rep., 24;) *Hill* v. *Wooster*, (132 U. S., 693, 701; 10 Sup. Ct. Rep., 228,) and *Howe Machine Co.* v. *National Needle Co.*, (134 U. S., 388; 10 Sup. Ct. Rep., 570.)

We fully concur in these views and conclusions, and regard them as entirely sufficient to justify the decree.

The circuit court further says:

It seems to be proper for us to add that our judgment is with the defendant upon the defense of non infringement also. To understand the nature of the invention intended to be covered by the first claim, resort must be had to the specification, and we there find that the 'swivel boxes" are essential to the contemplated greater movement at one end of the shaft than at the other, whereby is effected "the tightening of the belt or belts at one side of the machine, without disturbing those at the other." This is apparent on the face of the paragraph hereinbefore quoted at length, and the expert testimony is direct and convincing that, to the practical working of the described device as a belt-tightener, this swiveling feature is indispensable. Without the swiveled boxes, Gray would not have "independently adjustable bearings." True, those boxes are not expressly mentioned in the claim, but we think they are to be regarded as entering therein by necessary implication, for the reason just stated, as well as by force of the words "as shown." Moreover, the prior state of the art would limit the claim to the specific organization shown and described. (*Custer Co.* v. *Spiegel*, 133 U. S. 369, 369; 10 Sup. Ct. Rep., 369.) But that organization the defendant does not use. His alleged infringement consists in the use of a roller mill manufactured under and in accordance with Letters Patent No. 334,150, granted on January 19, 1886, to John T. Obenchain. In the defendant's machine the journal boxes are rigidly supported so as to be always horizontal, and incapable of any tilting or swiveling motion; and this is essential to the working of the apparatus. A continuous counter-shaft is not employed, but three coupled base-shafts, the outer shafts or sections being each journaled at the outer end in a vertically-adjustable non swiveling box, and the inner end of each being forked and carrying a loosely-pivoted ring. These two rings are connected by a tumbling-rod forked at each end and pivoted to the rings, thus forming a universal coupling, and thereby, through the central shaft or tumbling-rod, rotary motion is transmitted from one of the end shafts or sections to the other, no matter how much they may differ in vertical position. Now, for the reasons already given, we are of opinion that such a construction of Gray's first claim as would embrace the Obenchain device is inadmissible.

We see no reason to doubt the correctness of these views. Decree affirmed.

U. S. Circuit Court—Northern District of Ohio.

MYERS *et al. v.* CUNNINGHAM *et al.*

Decided June Term, 1890.

ACTIONS FOR INFRINGEMENTS—PLEADINGS.

Revised Statutes United States, section 4919, provides that damages for infringement of a patent may be recovered by an action on the case. Section 1920 prescribes the nature of pleadings to be used in the action, and was passed in 1871. Section 914, which provides that the practice, pleadings, &c., in the Federal courts shall conform as near as may be to those "in like causes" in the State courts of the State where such Federal courts are held, was passed in 1872. *Held* that, as actions for infringements of patents are within the exclusive jurisdiction of the Federal courts, the pleadings therein are governed by section 1920, and a declaration in such an action, conforming to a common-law declaration in an action on the case, is sufficient, though a different form is prescribed by the statutes of the State where the court is held, and that the answer in such an action should comply with the common-law pleadings in actions on the case in form covering one or more of the defenses permitted in section 1920.

On demurrer to answer.

Messrs. Lee & Brown for the complainants.

Messrs. Doyle, Scott & Lewis for the respondents.

RICKS, *J.*:

A common-law declaration was filed in this case under section 4919 of the Revised Statutes of the United States, which provides that damages for the infringement of any patent may be recovered by an action on the case in the name of the party interested, either as patentee, assignee, or grantee. An answer was filed on the 17th of May, 1890, which was, in substance, an answer such as is permitted in actions at law in the State courts of this State. The plaintiff filed exceptions to that answer because it was not in the form required by the statute of the United States. Those exceptions were sustained, and the defendant then filed a plea containing the general issue, with seven other special pleas. The first plea of the general issue concludes "to the contrary," in the manner usual in pleas at common law. The other pleas do not in form conclude "to the contrary," nor aver that the pleader is ready to verify, as provided in the forms in such cases. The plaintiff demurred to this answer, claiming that it was not in conformity to the answer required in a patent case in response to a declaration in an action on the case. The defendant on the argument claimed that the demurrer filed searched the record, and thereupon contended that the declaration filed in this case was not such as is provided in actions at law in this court. This presents the question as to the proper form of pleadings in this court in an action of this character for damages for an infringement.

It is undoubtedly true, as contended by the defendant in this case, that in actions at law in the circuit court in this district the pleadings conform as near as may be to the pleadings prescribed by the statute of Ohio in its courts of common pleas in similar cases. But where a statute of the United States prescribes a special form of pleading, such statute should undoubtedly control. It should be remembered that in this action, the validity of a patent being involved, the jurisdiction is exclusively vested in the circuit court of the United States. If Congress has provided any form for pleading in such an action, that should prevail. The first act passed by Congress on this subject was that of April 10, 1790, another passed on the 21st of February, 1793, and still another on July 4, 1836. In this last act we find the first provision definitely prescribing the pleading in an infringement case at law.

Looking first to the sufficiency of the pleading filed by plaintiff in this case, it may be remarked that no matter what it is called, whether a declaration or a petition or a complaint, it will still be a good pleading in this suit if it be properly entitled and contains the essential averments necessary to constitute plaintiff's statement of his ground for recovery in an action on the case. This is what the court decided in the case of *May* v. *Mercer Co.*, (30 Fed. Rep., 246.) On examination of the pleading filed by the plaintiff in that case, the court found that "it contained all the allegations material to make an action on the case," and therefore held it sufficient. That may fairly be said of the pleading in the case now under consideration. It is, in substance, a declaration according to the forms prescribed under the old common-law pleading in an action on the case. The act of 1836, which, as before stated, has defined what sort of a plea the defendant should file in an action of this character, was repealed by the act of July 8, 1870. This last act provided a substitute for the provision in the act of July 4, 1836, by which the defendant was authorized to plead the general issue, and, having given notice, might prove on the trial any one or more of five special matters therein specified, viz: (1) That the specification contained less than the whole truth as to the invention or discovery; (2) that the plaintiff had surreptitiously or unjustly obtained his patent; (3) that it had been patented or described prior thereto; (4) that he was not the original inventor, &c.; (5) that it had been in public use for more than two years, or that it had been abandoned to the public. This act continued in force until the 22d of June, 1874, when it was repealed by the act of that date. That act is found in the Revised Statutes as section 4920, and substantially re-enacts the provision as to pleadings to be used by the

defendant, as prescribed by the act of July 4, 1836. Now it will be well to note that section 914 of the Revised Statutes, which provides that the practice, pleadings, forms, and modes of proceeding in civil cases, other than equity and admiralty, in the circuit and district courts shall conform, as near as may be, to the practice, pleadings, forms, and modes of proceeding existing at the time in like causes in the courts of record of the State within which such circuit and district courts are held, was passed and took effect June 1, 1872, so that when the act of June 22, 1874, more particularly defining the nature of pleadings to be used in suits of this character, was passed, Congress evidently had before it the provisions of section 914 of the Revised Statutes, and section 4920 must therefore be construed with this fact in view. Now upon every principle of construction of statutory provisions the latter act of June 22, 1874, must prevail as against the provisions of the prior act of June 1, 1872. It is evident, therefore, upon this principle of construction of statutes, that full force and effect must be given section 4920, even though seemingly in conflict with the provisions of section 914. But in view of the fact that this act of 1874 defines the pleadings in an action at law in a case exclusively within the jurisdiction of the circuit court of the United States, the provisions of that act, so far as they define the nature of pleadings required to set forth the issue between the parties in such a case, are to prevail. It seems plain that, while a code answer in the practice in Ohio might be sufficient to clearly define the defenses upon which the defendant relied in all actions provided for by the State statutes, it is nevertheless true that Congress legislated with a view to the character of defenses usual in actions of this kind, and intended to provide a special form of pleading which would more fully meet the requirements of such a case than the varied forms of answers in the different States in which the circuit courts might sit to try such cases. There is no great hardship in adopting and following this form of pleading. It is simple, clear, and meets all the requirements of the defenses usually set up in such suits.

The cases to which counsel have cited the court do not, we think, fully meet this question. The opinion of Judge Lacombe, in the Circuit Court of the Southern District of New York, does not fully disclose the nature of the pleading upon which the defendant in that case relied. In that opinion he says that an answer which would be good in the courts of the State of New York in a "like case" ought to be good in the circuit court of the United States. But, as before stated, suits of this character are not brought in the courts of any State. A suit at law which involves the validity of a patent could not be brought in any court other than the courts of the United States. There can be, therefore, no pleading prescribed by State laws in a "like case." Mr. Walker, in his work on patents, takes this view of the subject. In section 442, in discussing the question of rules of common-law pleading that are applicable to cases of this kind, he says:

> Where an authoritative precedent can be found for a particular relaxation, that particular relaxation must be regarded. In the absence of such a precedent the safe and proper course is to conform to the ancient common-law rules, unless the pleader is willing to risk his defenses upon the theory that State statutes relevant to pleadings are binding on Federal courts when trying patent actions of trespass on the case. The text-writer believes that they are not binding under such circumstances, because actions of trespass on the case were first prescribed by Congress for patent suits in 1790, and because the law has never since been changed in that particular, and because, therefore, there seems to be no good cause for holding that such an action under the Revised Statutes is a different proceeding from what it was under the earliest of the statutes at large.

In none of the cases cited by counsel has this question of the proper form of pleading in this kind of a case been fully considered. The court, for the reasons above stated, is therefore of opinion that the plaintiff's pleading in this case contains all the essential averments that are prescribed for a declaration in an action on the case under the common-law form of pleading, and is therefore sufficient. The court is further of opinion that an answer in an action of this kind should be substantially in compliance with the forms of pleading heretofore used in actions on the case, but of course should cover one or more of the specific lefenses permitted under section 4920 of the Revised Statutes. Whether the defense relied on is based on one or all of these five defenses, it should be pleaded substantially as in the form heretofore used in pleas in actions on the case. The court therefore sustains the demurrer in this case and holds that the several pleas made in the answer should conclude in the form usual to pleas in actions on the case at common law.

U. S. Circuit Court—Southern District of New York.

MACK *v.* SPENCER *et al.*

Decided December 11, 1890.

INFRINGEMENT. PRELIMINARY INJUNCTION.

A preliminary injunction should not issue in a suit for infringement where upon the issue of priority of invention the evidence is merely oath against oath.

MOTION for preliminary injunction.

Mr. H. A. West for the complainant.

Mr. Charles C. Gill for the defendants.

LACOMBE, *J.*:

Patent No. 268,112 was upheld by Judge Shipman, (43 Fed. Rep., 69.) but not as a pioneer invention, the invention of the complainant being found to consist in the combination, with a detachable opera-glass handle made in telescopic sections, of the fastening device consisting of a piston, hook, and slot, or their equivalent. I am not satisfied that the fastening devices used by the defendants in the exhibits put in evidence are such an equivalent for that of the patent as will warrant the claim that they infringe. They seem to be a pretty plain infringement of the devices described in the other patent sued upon, No. 399,543. Conceding that this latter patent was sustained by Judge Shipman as showing patentable invention, (and that is by no means clear,) the fact remains that his decision was rendered in a case where there was not before him the question of priority of invention as between complainant and these defendants. Here it is a distinct issue; and, as upon that issue there is merely oath against oath, a preliminary injunction should not issue.

DANISH TRADE-MARK LAW.

DECREE OF APRIL 11, 1890.

(Translated and forwarded for publication by Messrs. Wm. P. Thompson & Co., Liverpool and London.)

We, Christian the Ninth, by God's Grace King of Denmark, of the Wends and of the Goths, Duke of Schleswig-Holstein, Stormarv, Ditmarschen, Lauenburg, and Oldenburg, hereby publicly announce that we have confirmed the following law passed by the Reichstag:

Article 1. Any person who carries on within the kingdom manufactures, agriculture, mining, commerce or industry, can, in addition to the rights belonging to him of using his firm, name or the name of any real property belonging to him as trade marks, obtain the right by means of a registration in accordance with this law, to distinguish his goods from others by a different trade mark. This right shall embrace all kinds of his goods unless it shall have been restricted to special classes on registration. The marks are to be placed on the goods themselves or on their coverings (wrapper, case, etc.)

Art. 2. The register of trade marks shall, as before, be kept by a duly appointed registrar in Copenhagen.

Art. 3. Any person desiring to register a trade mark must either deliver an application to the registrar, or send the same by post, together with a clear description of the same, giving his full name, firm, calling and postal address, and also state therein whether the marks in question are to apply only to special classes of goods, (in this latter case, to which.)

With the application there must be sent—

1st. A representation of the mark on stout paper in 3 copies of at most 10 centimeters in breadth;

2d. Two blocks of the same size necessary for printing the mark;

3d. 40 (forty) crowns tax for payment of the registration and publication.

The registrar shall send as soon as possible to the applicant, when the latter has filed his address as provided in Art. 3, a written certificate of application on which the day and hour of the application shall be duly marked. This certificate shall have a copy of the mark attached thereto.

Art. 4. A trade mark shall not be registered—

1st. If it consist of figures, letters or words which have no sufficiently distinctive peculiar form as to be able to be considered as figure marks;

2d. If it contain, without any right thereto, the name or firm of another party, or name of another's real property;

3d. If it contain public arms or marks;

4th. If it contain offensive representations;

5th. If the same exactly resemble a mark already registered, or one for which an application in proper form has already been filed; or if it resemble such an one to such a degree that the mark can easily be mistaken for the first named in size and appearance with the exception of some little differences; the registration shall not however be refused if the similarity lies in the points detailed in Art. 7, or if the two marks relate to different classes of goods.

Art. 5. If the registration be refused notice thereof shall immediately be given to the applicant in writing together with the reasons for refusal (in accordance with Art. 3). If the applicant consider the decision erroneous, he can within two months submit the decision of the registrar to the Ministry of the Interior, by doing which however he shall not forfeit his right to have the matter determined in a court of law.

Art. 6. If however nothing stand in the way of the registration, it shall be allowed and the advertisement of the same shall take place as quickly as possible in the "Berlingsken Tidende" as well as in the Official Registration Journal.

Art. 7. If a registered trade-mark contain figures, letters, or words which have not a sufficiently peculiar form to allow of their being regarded as design marks; or if it consist partially or entirely of figures or marks which are in use in certain trades, other persons can not be debarred from the right of using the same designations, as in this mark or at least a portion of it.

Art. 8. The right to a registered trade mark can only be transferred in connection with the business for which it is used; should any person transfer his business to another, the right to the registered marks falls to the buyer unless a special arrangement therefor be made that the vender retain the right to the mark or that both parties shall use the same mark for different classes of goods.

Art. 9. The protection for a registered mark expires unless the application for renewal be made within 10 years, reckoned from the date of registration for the first term, and within 10 years from the last date of renewal for the following ones. The registrar shall give notice to the applicant or his agent at least 3 months before the expiry of the above named time, that the protection will go void if the renewal be not made in time. Any person desiring to renew the registration of his trade mark must file a written application in the prescribed form conformably to Art. 3, together with 10 (ten) crowns for the registration tax. If in the meantime the mark be registered for another person, the old proprietor must establish his right to the same. The renewal shall be entered in the register as speedily as possible, and the applicant be informed of the completion as prescribed in Art. 3. Should the registrar find the application to be defective, he shall refuse the renewal; in the event of an appeal then Art. 5 shall come into play.

Art. 10. Should the Ministry of the Interior find that a trade mark should not have been registered, having regard to the regulations in Article 4, Nos. 3 and 4, its removal from the register can be required. The applicant can however demand a judicial confirmation of this. If a trade mark be registered, which consists only of figures or marks which are used in a certain trade, the canceling of such can be demanded by any one who carries on a similar business. Both in this case as well as in that where any party considers that the registration of a trade mark will cause him damage, the removal of the mark in question shall depend on a judicial decision. If the registration of a trade mark be refused on the ground of Art. 4, No. 5, and the applicant within a given time, can prove, as against the owner of a mark previously applied for, that the mark which the latter has appropriated was originally used by him, permission shall be accorded him by a judicial decision to have the marks in question registered with the sole right of using; in case he applies about the matter within four months from the advertisement of the mark in the "Berlingsken Tidende."

Art. 11. If the registration of a mark be declared void, or the protection for a registered mark have expired or the person thereto entitled desire it, such mark shall be removed from the register and the erasure published in the papers named in Art. 6. If a mark be canceled by command of the Ministry of the Interior conformably with Art. 10, the registrar shall communicate the circumstances to the owner of the mark.

Art. 12. Any person employing, on goods exposed for sale or on the packages of the same, the name or firm of another or the name of real property belonging to another, or the registered trade mark of another, and also any person selling such goods, can on the demand of the injured party, be legally restrained from further employing the mark in question, and from selling the goods so marked. If however he knew that he was doing an injustice to another, he can be sentenced to a fine of from 200 to 2,000 crowns, and in case of repetition, to the same penalty or imprisonment, and he can also be compelled to give compensation for the damages caused, and also to remove such marks from all goods and packages which are in his possession, or stand at his disposal, or to destroy the same.

Art. 13. The regulations of Art. 12 also apply, if the name or the firm, or the name of real property belonging to another, or the registered trade mark, be reproduced, not completely indeed but still so nearly that in spite of single small differences one is easily mistaken for the other.

Art. 14. Where reciprocity is granted, it can be allowed by royal decree that the provisions of the above law shall apply to those who carry on any of the businesses enumerated in Art. 1 outside the kingdom. In this case the paragraphs of the law, observing the following conditions, come into application as regards the trade marks to be registered.

1st. The application must be accompanied by a proof wherein it is shown that the applicant has fulfilled all the requisite conditions for obtaining protection of the trade mark in his respective foreign state.

2d. The applicant shall accept the marine and commercial court here as deciding authority in all matters relating to the trade marks in question, and shall nominate in addition an attorney resident within the kingdom who can appear for him.

3d. The trade marks will not be granted to a greater extent or protected for a longer time than they are in their respective foreign states.

The following regulations can be applied by royal decree for those marks which are registered in a state which accords special privileges to Danish marks.

4th. The trade mark shall be registered in the form in which it is registered in the foreign country, that is unless it offend against morality or public order.

5th. Should any person four months or more after the mark is published in a foreign state order the registration in this country, such application shall be regarded in a different manner to one made simultaneously with that in a foreign state.

6th. Should registration be refused under No. 5 of Art. 4 and the applicant can prove to the court, as against the owner of the earlier registered mark, that the same was originally used by him and that the other party had merely appropriated the same,

he shall obtain by order of the court the registration of his mark with the sole right of employing it on the goods to which he had formerly applied it at the time the opposition mark was registered; this applies however only if he make application in the matter within six months after the commencement of the registration of the opposition mark. No limitation however of the rights enumerated in Art. 10, paragraph 3, will be made in this case.

7. Should a convention be concluded with any country whose law coincides with the above, old trade marks which in such country are legally registered for those carrying on businesses and which consist solely or mainly of ordinary figures, letters or names, shall, if protected in the foreign country, enjoy the same protection in this kingdom, so that others shall neither be allowed to use these names, letters or figures on similar goods nor designate their firm or name with the same initial letters. The registration having this effect shall however only take place within a certain time which will be more precisely fixed by royal decree and the advertisement of the registration shall contain the class of goods, as well as the grounds, for the registration.

Art. 15. By royal decree this protection can also be extended to those who carry on one of the businesses enumerated in Art. 1 in the Danish West Indian Islands but this only under the conditions named in the royal decree.

Art. 16. More detailed regulations for the arrangement, form and utilization of the marks, the publication of that part of the official journal treating thereof, as well as the rendering of accounts to the state treasury, will be issued by the Minister of the Interior, who shall also appoint the registrar.

Art. 17. Matters of civil right which shall arise with reference to the regulations contained in the above law, shall be regarded as commercial matters. Matters which shall be raised under Art. 12, para. 2, come under the public police court and a time can be appointed therefor if desired.

Art. 18. Any and every person shall be allowed to obtain information by inspection of, or by extracts from, the register, but the designs in the same shall not be reproduced. 2 (two) crowns shall be paid to the state treasury for an extract from the register or an original application. The register can be inspected free of expense.

Art. 19. The above law comes into force in place of the one promulgated on July 2nd, 1880; it shall not however affect trade marks registered under that law.

The Government shall be authorized by royal decree to put this law in force in the Faroe Islands with special regulations suitable to the conditions of these islands. All persons are to be bound by this law hereafter.

Under our royal hand and seal.

CHRISTIAN IX. KING.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 11. TUESDAY, MARCH 17, 1891. PRICE---$5 per year.

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Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., March 7, 1891.

SIR: The Secretary of the Interior has ordered that Charles E. Garitee, of Baltimore, Md., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully, E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Changes in Classification.

(ORDER No. 670.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 7, 1891.

The following changes are directed in Division IV, Class 37, Excavating:

Sub-class Excavators, carrier, is abolished, and the following sub-classes are established:

Excavators—
- Buckets,
- Chain and buckets,
- Plow and carrier,
- Screw,
- Screw and carrier,
- Wheel and belt,
- Wheel and carrier.

Dredgers—
- Buckets,
- Clam-shell.

Scrapers—
- Railway-side.

Self-loading carts—
- Carrier,
- Scoop,
- Wheel.

C. E. MITCHELL,
Commissioner.

Issue of March 17, 1891.

Patents	431	No. 448,192 to No. 448,622, inclusive.
Designs	9	No. 20,582 to No. 20,590, inclusive.
Trade-Marks	26	No. 19174 to No. 19,199, inclusive.
Labels	2	No. 6,475 to No. 6,476, inclusive.
Reissue	1	No. 11,152.
Total issue	469	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire	3	
Arkansas	3		New Jersey	17	
California	10		New Mexico Terr'y		
Colorado	2		New York	66	5
Connecticut	15		North Carolina	3	
Delaware	1		North Dakota	2	
District of Columbia	2		Ohio	41	5
Florida			Oregon	1	
Georgia	2	1	Pennsylvania	33	1
Idaho	2		Rhode Island	10	
Illinois	36	3	South Carolina		
Indiana	8		South Dakota		
Indian Territory			Tennessee		1
Iowa	5		Texas	11	
Kansas	1	1	Utah Territory		
Kentucky	3	1	Vermont		
Louisiana	1		Virginia	1	
Maine	4		Washington		
Maryland	4	1	West Virginia	2	
Massachusetts	44	1	Wisconsin	15	
Michigan	14		Wyoming		
Minnesota	10		U. S. Army		
Mississippi			U. S. Navy		
Missouri	19				
Montana			Total to citizens of the United States	399	20
Nebraska	7				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	1		Mexico		
Barbadoes			Netherlands		
Belgium			Newfoundland		
Bermuda			New South Wales		
Brazil			New Zealand		
Canada	6		Norway		
Chili			Queensland		
Colombia			Russia		
Cuba			Scotland		
Denmark			South Australia	1	
Ecuador			Spain		
England	14	4	Sweden	3	
France	6	3	Switzerland		
Germany	9	1	Turkey		
Gibraltar					
Ireland			Total to citizens of foreign countries	41	8
Italy	1				

DESIGNS.

20,582.—DENTAL CABINET.—*Timothy J. Collins*, Toledo, Ohio, assignor to *John R. B. Ransom* and *Thaddeus F. Randolph*, both of same place. Application filed February 2, 1891. Serial No. 379,935. Term of patent 14 years.

20,583.—RADIATOR.—*Thaddeus C. Joy*, Titusville, Pa., assignor to *Thaddeus C. Joy* and *Daniel Colestock*. Application filed February 4, 1891. Serial No. 380,234. Term of patent 7 years.

20,584.—SPOON OR FORK.—*Ernst Schall*, Hartford, Conn. Application filed January 27, 1891. Serial No. 379,327. Term of patent 3½ years.

20,585.—BREAST-PUMP.—*Charles A. Tatum*, New York, N. Y., assignor to *Whitall, Tatum & Co.*, same place. Application filed April 10, 1890. Serial No. 347,404. Term of patent 14 years.

20,586.—MATCH-SAFE.—*Egerton A. Bliss*, New York, N. Y., assignor to *The E. A. Bliss Company*, same place. Application filed January 28, 1891. Serial No. 379,453. Term of patent 7 years.

20,587.—LACE-PIN.—*Albert Epple*, Providence, R. I. Application filed October 1, 1890. Serial No. 366,763. Term of patent 3½ years.

20,588.—BOTTLE.—*Dock D. Harr*, Belmond, Iowa. Application filed February 10, 1891. Serial No. 380,984. Term of patent 14 years.

20,589.—FONT OF PRINTING-TYPE.—*William W. Jackson*, Philadelphia, Pa., assignor to *The Mather Manufacturing Company*, same place. Application filed February 11, 1891. Serial No. 381,086. Term of patent 7 years.

20,590.—THIMBLE.—*Henry A. Weihman*, Philadelphia, Pa. Application filed February 6, 1891. Serial No. 380,505. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

19,174.—BUTTER AND BUTTERINE.—*Armour Packing Co.*, Kansas City, Kans. Application filed December 26, 1890. Used since December 1, 1890.

"The figure of an ellipse and the words 'SILVER CHURN.'"

19,175.—TIN PLATES, TERNE PLATES, AND BLACK PLATES OF SIEMENS STEEL.—*Alfred Baldwin & Company, Limited*, Panteg, near Newport, England. Application filed January 9, 1891. Used since January 2, 1888.

"The word 'PANTEG.'"

19,176.—KNIT SHIRTS AND DRAWERS.—*Union Special Sewing Machine Company*, Chicago, Ill. Application filed February 6, 1891. Used since January, 1891.

"The words 'FASHION SEAM.'"

19,177.—MOCHA, JAVA, AND RIO COFFEE.—*Woolson Spice Company*, Toledo, Ohio. Application filed January 17, 1891. Used since 1864.

"The word 'LION.'"

19,178.—SAFETY-MATCHES.—*Bryant & May*, Limited, London, England. Application filed February 6, 1891. Used since 1861.

"The representation of Noah's Ark and the word 'SECURITY.'"

19,179.—WAX MATCHES.—*Bryant & May*, Limited, London, England. Application filed February 6, 1891. Used since 1869.

"Two serrated disks with their points alternating, and placed on them a ribbon-like band bearing the words 'BRYANT & MAY, WAX VESTAS, LONDON,' and the band inclosed in a ring."

19,180.—COMBS.—*Felix Armand Maurey-Deschamps*, Paris, France. Application filed February 12, 1891. Used since November 24, 1886.

"The representation of a griffin."

19,181.—TOILET-COMBS.—*Felix Armand Maurey-Deschamps*, Paris, France. Application filed February 12, 1891. Used since November 24, 1886.

"The representation of a swallow."

19,182.—MEN'S SHIRTS, COLLARS, AND CUFFS.—*George D. Eighmie*, New York, N. Y. Application filed February 4, 1891. Used since November 1, 1890.

"The words 'EIGHMIE PATENT' in caligraphic letters when the stem of the letter 'g' in the word 'Eighmie' and a flourish on the lower part of the capital letter 'E' of that word are made to form the initial letter of the word 'Patent.'"

19,183.—CHAMPAGNES.—*Ernest Irroy & Co.*, Rheims, France. Application filed January 24, 1891. Used since January 1, 1889.

"The representation of a battle-ax with a crescent-shaped blade."

19,184.—JOURNAL COMPOUNDS AND LUBRICATING OILS AND GREASE.—*Chas. H. Moore & Co.*, Cincinnati, Ohio. Application filed January 26, 1891. Used since October 15, 1890.

"The word 'LION.'"

19,185.—VARNISHES, JAPANS, OIL-FINISH, AND BRONZING-LIQUID.—*Mayer & Loewenstein*, New York, N. Y. Application filed February 10, 1891. Used since February 7, 1891.

"The representation of a four-leaf clover."

19,186.—TENNIS-RACKETS.—*Wright & Ditson*, Boston, Mass. Application filed September 18, 1890. Used since September 8, 1890.

"The word 'CAMPBELL.'"

19,187.—TOILET-SOAP, PERFUMERY, POWDER, AND HAIR-RESTORATIVES.—*Louise F. Marshall*, New York, N. Y. Application filed February 2, 1891. Used since 1879.

"The words 'MONTE CHRISTO.'"

19,188.—LAUNDRY-SOAP.—*Procter & Gamble*, Hamilton County, Ohio. Application filed March 6, 1890. Used since May 10, 1887.

"The word 'CLOVER.'"

19,189.—LAUNDRY-SOAP.—*Procter & Gamble*, Hamilton County, Ohio. Application filed March 6, 1890. Used since May 10, 1887.

"The word 'CLOVER.'"

19,190.—PERFUMERY AND TOILET-SOAP.—*The Majestic Perfume Co.*, New York, N. Y., and Nashville, Tenn. Application filed February 14, 1891. Used since December 6, 1889.

"The words 'AMERICAN BEAUTY.'"

19,191.—WATER-PROOF FABRICS AND GARMENTS.—*The Porous Waterproofing Co.*, Philadelphia, Pa. Application filed July 6, 1889. Used since June 1, 1889.

"The words 'ANTI PLUIE.'"

19,192.—PAPER BAGS.—*Union Bag and Paper Company*, Chicago, Ill. Application filed January 27, 1891. Used since August 1, 1890.

"The word 'TRADE.'"

19,193.—TIN PLATES.—*Webb, Shakspeare & Williams, Limited*, Pontardulais, England. Application filed February 12, 1891. Used since January 1, 1875.

"The word 'SEINE.'"

19,194.—METALLIC WIRE FOR USE IN ELECTRICAL WORK.—*The Electrical Supply Company*, Chicago, Ill. Application filed February 14, 1891. Used since September 1, 1890.

"The word 'HERCULES.'"

19,195.—HAIR-TONIC.—*Edmund J. Hickey*, Augusta, Ga. Application filed January 30, 1891. Used since May 16, 1890.

"The word 'HAIRALINE.'"

19,196.—SEWING-NEEDLES.—*Georg Printz & Co.*, Aachen, Prussia, Germany. Application filed December 16, 1890. Used since March 23, 1889.

"The representation of a hand throwing flashes of lightning and the words 'LIGHTNING NEEDLE.'"

19,197.—HAIR-TONIC.—*William P. T. Ragio*, Nashville, Tenn. Application filed October 17, 1890. Used since July, 1890.

"The word 'RAGIO'S' above a circular disk bearing the representation of a dressing-case or bureau with crossed comb and shears before it."

19,198.—STEAM AND HOT-WATER HEATERS AND FURNACES.—*Superior Furnace Company*, Little Falls, N. Y. Application filed February 5, 1891. Used since February 4, 1889.

"The word 'SUPERIOR' located on an outline map of Lake Superior."

19,199.—EMBROCATION FOR RHEUMATISM, NEURALGIA, AND SIMILAR AILMENTS.—*Eugene Wunsch*, Cincinnati, Ohio. Application filed February 4, 1891. Used since September, 1890.

"The words 'MARTHA WASHINGTON LINIMENT,' and the portrait of Martha Washington."

LABELS.

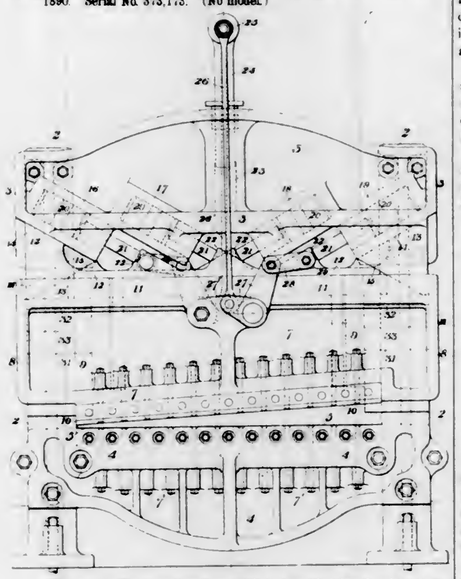
6,475.—Title: "G. L. MCGREEVY'S COMPOUND TONIC."—*George L. McGreevy*, Baltimore, Md. Application filed February 21, 1891.

6,476.—Title: "R. L. TUDOR'S PATENT LEATHER AND ENAMELED LEATHER SOFTENER."—*Robert L. Tudor*, Maysville, Ky. Application filed February 5, 1891.

PATENTS

GRANTED MARCH 17, 1891.

448,192. SHEARS. HENRY AIKEN, Pittsburg, Pa. Filed Dec. 1, 1890. Serial No. 373,173. (No model.)



Claim.—1. The combination, with the moving head, of an actuating-cylinder and a wedge-bar actuated by the cylinder and having wedge-bearings at both ends of the head transmitting power thereto in parallel directions at the extremes of the lines of work, substantially as and for the purposes described.

2. The combination, with the moving head, of an actuating-cylinder and a bar movable longitudinally by the cylinder and connected with the head at both ends thereof at the extremes of the lines of work, substantially as and for the purposes described.

3. The combination, with the moving head, of an actuating cylinder set at an oblique angle to the lines of motion of the head, and interposed power-transmitting mechanism bearing on the knife-head, whereby motion of the cylinder will exert on the moving head a partial direct force, the remainder of the force being transmitted to the head by the transmitting mechanism, substantially as and for the purposes described.

4. The combination, with the moving head, of independently-acting actuating-cylinders set at both sides of the middle of the machine at oblique angles to the lines of motion of the head, and power-transmitting mechanism bearing on the knife-head, substantially as and for the purposes described.

5. The combination, with the moving head, of actuating-cylinders and wedge-bars actuated by the cylinders and having wedge-bearings at both ends of the head transmitting power thereto in parallel directions, said cylinders being adapted to operate the wedge-bars in opposite directions, substantially as and for the purposes described.

6. The combination, with the moving head, of actuating-cylinders set at oblique angles to the lines of motion of the head, and wedge-bars actuated by the cylinders and having wedge-bearings at both ends of the head transmitting power thereto in parallel directions, said cylinders being adapted to operate the wedge-bars in opposite directions, substantially as and for the purposes described.

7. The combination, with the moving head, of a longitudinally-movable bar connected with the ends of the head, an actuating-cylinder set at an oblique angle to the lines of motion of the head, and having a bar 21, connecting its piston with the bar, and a counterbalancing-cylinder, substantially as and for the purposes described.

8. The combination, with the moving head, of longitudinally-movable bars connected with the ends of the head, cylinders acting on the bars to move them in opposite directions, a counter-balance, and levers connecting the operative mechanism of the counter-balance with the bars, substantially as and for the purposes described.

9. The combination, with the moving head, of longitudinally-movable bars connected with the ends of the head, and independently-acting obliquely-inclined cylinders bearing on the bars, substantially as and for the purposes described.

448,193. WHIFFLETREE-HOOK. STEPHEN BAILEY, Ansonia, Ohio. Filed Nov. 6, 1890. Serial No. 370,535. (No model.)

Claim.—1. In a device of the class described, the combination of a clip, the arms of which are connected by a segmental plate, a hook having a bifurcated shank mounted pivotally and concentrically upon the said plate, and a latch pivoted between the cheeks or side pieces of the shank of said hook, substantially as and for the purpose set forth.

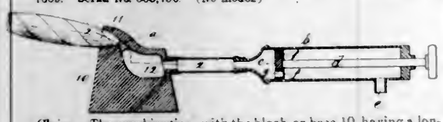
2. In a device of the class described, the combination of a clip, a segmental plate connecting the arms of said clip and having a curved notch or recess, a hook having a bifurcated shank mounted pivotally upon said segmental plate, and a latch pivoted between the cheeks or side pieces of said hook and provided at its inner end with a tooth adapted to engage the said curved recess, substantially as and for the purpose set forth.

3. In a device of the class described, the combination of a clip having a segmental plate provided with a curved notch or recess, the upper edge of which is raised so as to form a tooth or projection, a hook having a bifurcated shank mounted pivotally upon said segmental plate, a latch pivoted between the cheeks or side pieces of the shank of said hook and having at its inner end a tooth adapted to engage the said curved recess, and a stop or shoulder formed at the lower edge of the segmental plate, substantially as and for the purpose set forth.

4. In a device of the class described, the combination of a clip having a segmental plate provided with a curved recess, a hook having a bifurcated shank mounted pivotally upon said plate, and a latch pivoted between the cheeks or side pieces of the shank of said hook, and having a curved inner end normally bearing against the edge of the segmental plate and terminating in a tooth adapted to engage the curved recess in said plate, substantially as and for the purpose set forth.

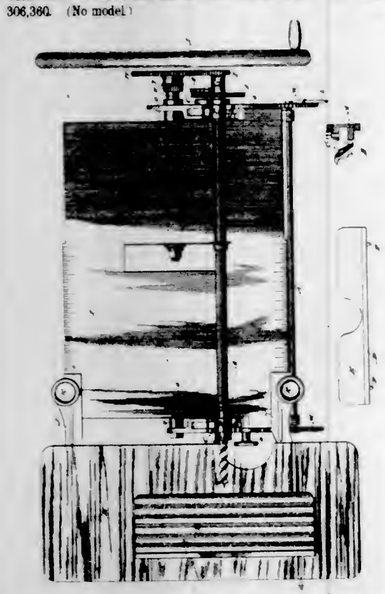
5. In a device of the class described, the combination of the clip having the segmental plate provided with a curved recess, the upper edge of which is raised to form a tooth or projection, a hook having a bifurcated shank mounted pivotally and concentrically upon said plate, a latch pivoted between the cheeks or side pieces of the shank of the hook and having a curved inner end normally bearing against the edge of the segmental plate and terminating in a tooth adapted to engage the curved recess of said plate, and a stop or shoulder formed at the lower edge of the latter, substantially as and for the purpose herein specified.

448,194. IMPLEMENT FOR TESTING THE BURNING QUALITIES OF CIGARS. GABRIEL BALBIN, Brooklyn, N. Y. Filed Dec. 14, 1889. Serial No. 333,750. (No model.)



Claim.—The combination, with the block or base 10, having a longitudinally-extending chamber 12, cigar-holding openings in one side of the block, all communicating with said chamber, and an outlet for the chamber, of a suction device provided with a tube connected with said outlet, substantially as set forth.

448,195. BORING ATTACHMENT FOR SAWING-MACHINES. ELBRIDGE P. BARNES, New Haven, Conn. Filed Apr. 8, 1889. Serial No. 306,360. (No model.)

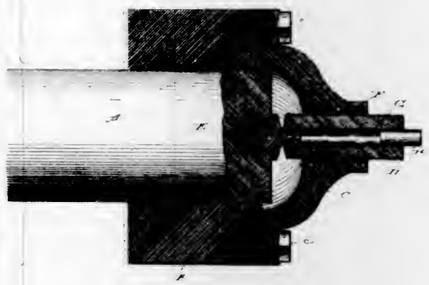


Claim.—1. The combination, with a table, a horizontal shaft located directly above the same, two toothed segments respectively carrying the opposite ends of the said shaft and connected together for simultaneous operation by a single manual, an auger mounted in one end of the shaft and projecting beyond one end of the table, an independent boring-table secured to the table before mentioned for co-operation with the auger, which is raised above or lowered toward it, as desired, by raising and lowering the shaft through its segments, and means for driving the shaft, substantially as described.

2. The combination, with a table, a horizontal shaft located directly over the same, two toothed segments respectively carrying the opposite ends of the said shaft and connected together for simultaneous operation by a single manual, an auger mounted in one end of the shaft and projecting beyond one end of the table, an independent boring-table provided with two inwardly-projecting hand-clamps, by which it is removably attached to one end of the table before mentioned for co-operation with the auger, which is raised above and lowered toward it by means of the segments carrying the shaft, a guide reversible edge for edge, combined with the said boring-table, and means for driving the shaft, substantially as described.

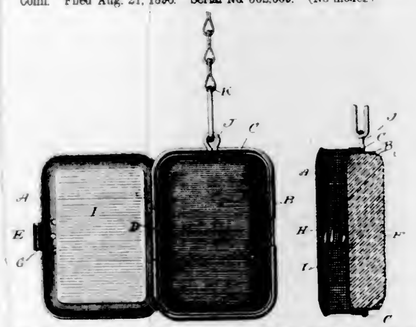
3. The combination, with a sawing-table, of a driving-shaft, a feed-shaft, two toothed segments respectively carrying the opposite ends of the feed-shaft and connected together for simultaneous operation under one manual, an auger mounted in one end of the feed-shaft and projecting beyond one end of the table, an independent boring-table attached to one end of the sawing-table for co-operation with the auger, which is raised above and lowered toward it, as desired, by means of the segments carrying the shaft, gearing for connecting the two shafts for running them for sawing, a gear-wheel permanently attached to the driving-shaft, and a removable pinion for attachment to the adjacent end of the feed-shaft and meshing into the said fixed gear, the other gearing between the two shafts being retired when the removable pinion is put in place to mesh with the said permanent gear-wheel, substantially as described.

448,196. JOURNAL-BEARING. BRUNO BEAUPRE, St. Paul, Minn. Filed July 18, 1890. Serial No. 359,155. (No model.)



Claim.—The combination, with the collarless axle or shaft having a bumper removably secured in its end, of the bearing surrounding the shaft, a cap removably secured to the bearing and entirely inclosing the end of the shaft, the chambered bumper screwing through the cap and engaging the bumper in the end of the shaft, and having an oil-passage leading from the chamber to its working-face, and a locking-nut for holding the bumper in adjusted position, substantially as described.

448,197. HAND-RUBBER. HENRY BEUTELSPACHER, Bridgeport, Conn. Filed Aug. 21, 1890. Serial No. 362,609. (No model.)

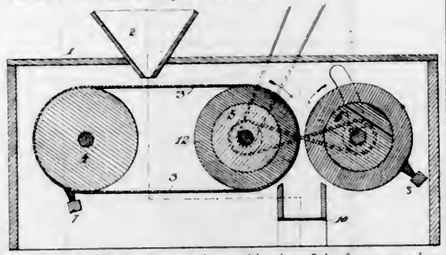


Claim.—In a hand-rubber, the combination of the pouch B, the wire around said pouch and formed at one end of the latter into an eye for attachment to a chain, and the pouch A, having at the front and rear edges a spring-catch and hinge-leaf respectively adapted to engage with said wire, substantially as set forth.

448,198. SEPARATOR. JACOB H. BISANER, Lincolnton, N. C. Filed Nov. 26, 1890. Serial No. 372,677. (No model.)

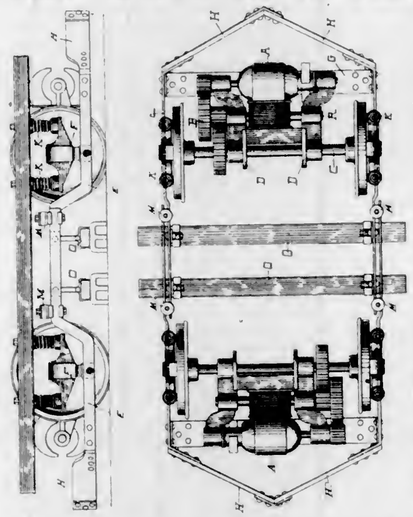
Claim.—1. In a cockle-separator, the combination of the frame or casing provided with a suitable hopper, the endless rubber belt arranged beneath the hopper and adapted to receive seed therefrom, the rubber or cork covered roller 6, arranged adjacent to the endless rubber belt, and the brushes engaging the belt and the roller 6 to remove cockle therefrom, substantially as described.

2. In a cockle-separator, the combination of the frame or casing, the rollers 4 and 5, the endless rubber belt arranged on said rollers, the hopper arranged above the belt at a point between the rollers, the rubber or cork covered roller 6, and the brushes engaging the roller 6 and the belt, substantially as described.



3. In a cockle-separator, the combination of the frame or casing, the rollers 4 and 5, the endless rubber belt arranged on the rollers, the rubber or cork covered roller 6, arranged adjacent to the roller 5, the hopper located above the belt and adapted to deliver seed thereon, the spout 10, arranged beneath the rollers 5 and 6 to receive clean seed, and the brushes engaging the belt and the roller 6, substantially as described.

448,199. ELECTRIC-MOTOR TRUCK. FRANCIS O. BLACKWELL, New York, N. Y., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed June 17, 1889. Serial No. 314,600. (No model.)



Claim.—1. The combination, with an electric motor having a framing journaled upon the axle of a vehicle and carrying gears connecting the armature-shaft with the axle, of a framing independent of the car-body attached to the journal-boxes of the truck outside of the wheels, supporting the free end of the motor and provided with a cushion modifying its action upon the journal-boxes.

2. The combination, with journal-boxes F, having springs supporting the car-body, of side bar E, forming part of a motor-supporting frame, and an intermediate cushion M, substantially as described.

3. The combination, in an electric-motor truck, of a motor extending outside of the axle and geared thereto and a framing supporting the outer end of said motor, attached to the journal-boxes outside of the wheels, with an outside cross-bar supporting the free end of the motor.

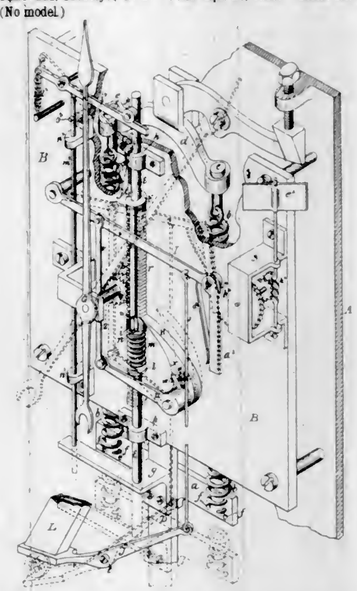
4. The combination, with an electric motor, of a framing therefor provided with bearings upon the axle, an armature-shaft and a counter-shaft carried by the said framing, the latter having gears at opposite ends thereof, and an independent frame supporting the free end of the motor.

5. The combination, with an electric motor, of a driving-axle and an intermediate gearing with a framing connecting the bearings of the motor with the axle, the said framing having an extension provided with a bearing for the commutator end of the armature-shaft, whereby the commutator is free of the said framing.

6. The combination, in an electric-railway motor, of the side arms extending from the yoke and carrying the gear connections between the armature-shaft and counter-shaft, and a common support for the said arms and the pole-piece.

7. The combination, in a motor-truck, of an electric motor and a framing journaled at one end upon the axle and furnishing bearings for the armature and counter-shaft, with the counter-shaft midway between the armature and axle, duplicate pinions upon the armature and counter-shaft, and duplicate gear-wheels upon the counter-shaft and axle.

448,200. COIN-CONTROLLED WEIGHING-SCALE. JAMES M. S. BLAUVELT, Brooklyn, N. Y. Filed Apr. 21, 1890. Serial No. 348,828. (No model.)



Claim.—1. A sliding toothed bar, combined with a pawl arranged to engage said toothed bar, coin-actuated mechanism connected with said pawl for disengaging it from said toothed bar, and a movable connection between said pawl and said coin-actuated mechanism to allow the pawl independent movement, substantially as described.

2. The sliding rack *p* and the index actuated thereby and the sliding ratchet *r*, connected with and also actuated by and with the rack *p*, combined with the pawl H, to engage the sliding ratchet *r*, and coin-actuated mechanism connected with said pawl for disengaging it from said ratchet, substantially as described.

3. The ratchet *r* and the index in connection therewith, combined with the pawl H, crank *u*, pins or projections *w x*, and lever I, connected with the crank *u*, substantially as described.

4. The rods D and E, acting in unison, stop *i* on the rod E, sleeve F on said rod, index actuated by said sleeve, and ratchet *r*, connected with said sleeve, combined with the pawl H, lever I, and connections between said pawl and lever, substantially as described.

5. The rod D, having shelf or support *g*, and the rod E, having a stop *i*, combined with the sleeve F, an index actuated thereby, and an adjustable stop to regulate the upward motion of said sleeve, substantially as described.

6. The rod D, having shelf or support *g*, and the rod E, having loose collar *i*, rigid stop *l*, and spring *m* between said collar and stop, combined with the sleeve F, sliding on the rod E, a stop for the sleeve F, and an index actuated by the sleeve F, substantially as described.

7. The rod D, having shelf or support *g*, sliding rod E, having collar or stop *i*, sleeve F, having rack *r*, and an index actuated by said sleeve, combined with the pawl H, to engage said rack, crank *u*, lever I, connected to said crank, and coin-actuated mechanism for lifting said lever to release the rack *r*, substantially as described.

8. The sliding rack F and an index actuated thereby, combined with the pawl H, to engage said rack, lever I, actuated by the entrance

of a coin, and a movable connection between said pawl and the lever I whereby the lever I can be moved a certain distance without actuating the pawl H, but by a farther movement will actuate said pawl, substantially as described.

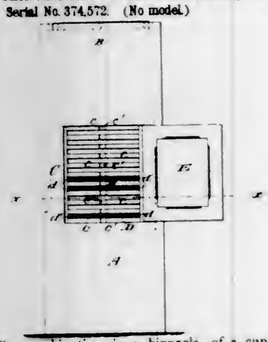
9. The sliding rack F and an index actuated thereby, combined with pawl H, crank *u*, projections *w w*, pin *x*, the distance between said projections being greater than the width of the pin *x*, lever I, connected with the crank *u*, and coin-actuated mechanism, substantially as described, for lifting the lever I, substantially as specified.

10. The lever I, pivoted rack a^3, carried thereby, and spring d^3, combined with the toothed wheel b^3, regulator c^3, driven thereby, and coin-actuated mechanism for lifting the lever I, substantially as described.

11. The support *d* and spring *b*, swiveled thereto, combined with the bar *a*, having holes *f*, that receive the coils of the spring *b*, whereby said spring can be lengthened and shortened between *a* and *d* by passing its coils more or less through the holes *f*, substantially as described.

12. The support *d*, having swiveled stud *e*, and spring *b*, connected thereto, combined with the bar *a*, having holes *f f*, that receive the coils of the spring *b*, whereby said spring can be lengthened or shortened by passing its coils through said holes, substantially as described.

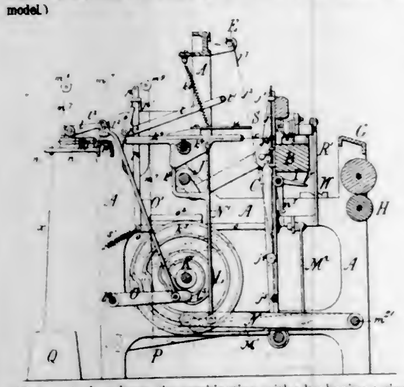
448,201. SHIP'S BINNACLE. JOHN L. BLISS, Brooklyn, N. Y. Filed Dec. 13, 1890. Serial No. 374,572. (No model.)



Claim.—1. The combination, in a binnacle, of a cupboard on either side thereof provided with a vertical series of shelves, and a door forming a closure for said cupboard and for the several spaces between said shelves, substantially as and for the purpose herein set forth.

2. The combination, in a binnacle, of a cupboard on either side thereof provided with a vertical series of horizontal shelves having recesses, and a door forming a closure for said cupboard and for the several spaces between said shelves, substantially as and for the purpose herein set forth.

448,202. LOOM. WILLIAM BOWKER, West Bedford, and ROBERT WILLIAMS, Boston, Mass. Filed Apr. 7, 1890. Serial No. 346,833. (No model.)



Claim.—1. In a loom, the combination, with a lay having a single race, of a thread-carrier arranged to travel in said race, mechanism for operating said lay and carrier, as set forth, and means, substantially as described, for supplying weft-thread to each side of the warp from two supply bobbins or spools disconnected from said lay and carrier, said carrier receiving its supply of weft-thread alternately from each of the two bobbins or spools in the manner described, so that it takes hold of and introduces a weft-thread in a double or two-ply form between the warps, first from one end of the lay and then from the other, selvage-making devices, one at or near each end of the lay, and mechanism for operating said devices to cause each of them to lay through a series of loops of the weft at one of the edges of the fabric woven, and a selvage-thread separate from the weft-threads, substantially as described.

2. In a loom, the combination of the carrier T, having a central bridge *a* and prongs or fingers *a' a'*, a lifting-finger *b*, having its free end normally at a lower level than the weft-thread upon said prongs or fingers and provided with an extension normally in the path of said bridge, and a selvage-thread shuttle having its point normally in close proximity to said finger, substantially as herein described, for the purpose set forth.

3. In a loom, the combination of the slotted lifting-finger *b*, provided with the stop b^3 and arranged to be operated in the manner set forth, a selvage-thread shuttle having its point normally in close proximity to said finger, a lifting-plate *f*, having a slot f^3 and a bearing for said shuttle and a projecting stop or guard over said shuttle, a rail *h*, having an inclined part *h'* and a raised part h^3, a bent lever *w*, arranged to be actuated by said rail, a finger *e*, connected to said lifting-plate and arranged to be actuated by said bent lever, a sliding back plate *c*, by which said lifting-finger, lifting-plate, and bent lever are carried, and means for reciprocating said sliding back plate, substantially as herein described, for the purposes set forth.

4. In a loom, the combination, with the mechanism constituting the selvage-making device constructed substantially as described and carried by a sliding plate, of mechanism for actuating said plate and comprising a lever R', connected to said plate, a lever M', connected to said lever R', and a cam L' for operating said lever M', substantially in the manner and for the purpose set forth.

5. In a loom, the combination of the lay, a carrier having hooks and arranged to travel on the race of said lay, means for operating said lay and carrier, selvage-making devices having mechanism for operating them, as specified, to cause them alternately to lay through the series of loops of the weft at each edge of the fabric woven, a selvage-thread separate from the weft-threads, with weft thread compensating take-up apparatus comprising an inner vibrating arm *k'*, a spiral spring k^3, connected to said arm, an outer vibrating arm k^4, and means for operating said arms in the manner set forth, and a gripping device for holding the weft-thread during the operation of said take-up apparatus, substantially as set forth.

6. The combination of the compensating take-up apparatus comprising an inner vibrating arm *k'*, a spiral spring k^3, connected to said arm, an outer vibrating arm k^4, a connecting-rod N' with arm k^3, a lever N, and a cam L, arranged to operate as specified, with a weighted device, as set forth, for gripping or holding the weft-thread *x* during the operation of the said take-up apparatus, substantially as set forth.

7. The combination of a tension-box comprising a hinged upper part or lid *m* with a presser roller or rollers m^3 and eyelets m^5 and m^6, and a spring or springs m^4 with a lifting device for momentarily raising the said lid *m* at the required times, all arranged and operating substantially as specified, for the purpose set forth.

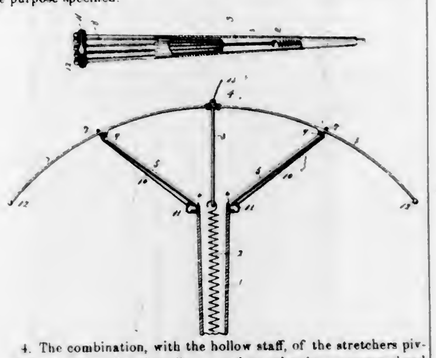
8. The combination of the knock-off apparatus comprising a lever or arm *u*, operated as set forth, a lever *t*, a cross-pin projecting from the said lever *t*, a detent *r*, a notched vertical bar *p*, a pivoted hook-lever or rocking bar *o*, a spring *s'*, a slide o^3, a catch n^3, a disengaging-treadle *v'*, and a cord *v*, with the ordinary knock-off shoe W, the ordinary knock-off finger V, and the ordinary knock-off shaft I of a loom, all arranged and operating substantially as set forth.

448,203. COMBINED UMBRELLA AND CANE. ALFRED L. BRICK, Minneapolis, Minn., assignor of one-half to Ferris M. White, same place. Filed Apr. 7, 1890. Serial No. 346,975. (No model.)

Claim.—1. A combined umbrella and cane comprising a hollow staff, stretchers pivoted at their lower ends to the upper end of the staff, and ribs for supporting the umbrella-cloth pivotally secured at their inner ends to a common head and having their outer portions mounted to slide on the upper ends of said stretchers, whereby the ribs may be folded together over their common pivotal head and incased by the stretchers and the staff.

2. A combined umbrella and cane comprising a hollow staff, stretchers pivoted at their lower ends to the upper end of said staff, ribs for supporting the umbrella-cloth secured at their inner ends to a common head and having their outer portions mounted to slide on the upper ends of said stretcher, and a folding-spring secured within the said staff and connected to the said pivotal head, substantially as and for the purpose described.

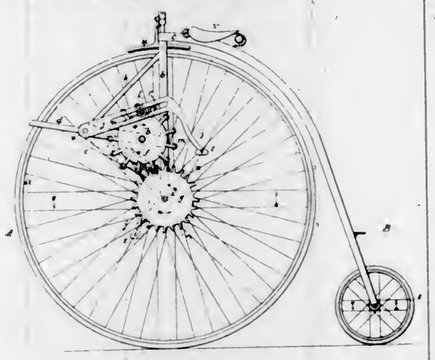
3. The combination, with the hollow staff, of the stretchers pivoted thereto, the ribs pivotally secured together by the common head and mounted to slide on said stretchers, an annulus loosely mounted on the staff, and flexible connections extending from the ribs to said annulus over the outer end of said stretchers, substantially as and for the purpose specified.



4. The combination, with the hollow staff, of the stretchers pivoted thereto, the ribs pivotally secured together by a common head and mounted to slide on said stretchers, the closing-spring within the staff and connected to said pivotal head, the annulus on the staff, and the flexible connections extending from the same over the heads of the stretchers to the ribs, substantially as described.

5. The combination, with the hollow staff, of the stretchers pivoted thereto, provided with eyelets and rollers at their outer ends, the ribs pivotally secured to a common head and mounted to slide through said eyelets, the closing-spring within the case connected to said common head, the annulus on the staff, and the flexible connections extending from the same over said sheaves to said ribs, substantially as described.

448,204. VELOCIPEDE. HENRY BRIGGS, Philadelphia, Pa. Filed June 13, 1890. Serial No. 355,318. (No model.)



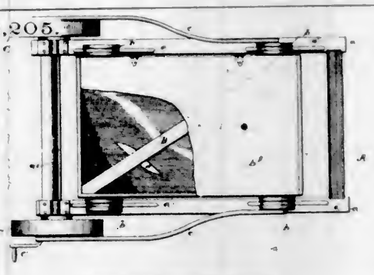
Claim.—1. The gear or crank wheel having slotted or forked teeth carrying friction-rollers composed of or covered with rubber, leatheroid, or other elastic material, as shown and described, and for the purposes set forth.

2. In a velocipede or bicycle, the combination, with the wheel *a*, rear wheel *s*, frame or fork, backbone, and axle, of the pinions on the said axle, gear or crank wheel having forked or slotted teeth having friction-rollers, and crank-pin, guides, treadle-lever crank, and frame-work, as shown and described, and for the purposes set forth.

448,205. WORKING BODY CHURN. GEORGE N. BRISBIN and JOHN COPPER, Spencer, Iowa. Filed June 21, 1890. Serial No. 356,262. (No model.)

Claim.—In a working body churn, the combination of the rectangular body and a dasher arranged diagonally within the churn-body and composed of two parallel strips *d*, having beveled ends, and breaker-pieces *d'*, separating the strips *d* and set at an oblique angle, substantially as described.

448,205.

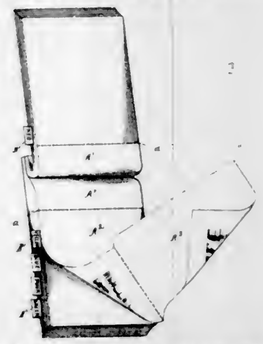


448,206. METHOD OF MAKING SHOES. GEORGE F. BROTT, Washington, D. C., assignor of one-eighth to Lewis S Wells, same place. Filed July 11, 1890. Serial No. 358,440. (No model.)



Claim.—The improved method of making shoes having soles and uppers of leather or material of like consistency, herein described, which consists in lasting the upper and cementing the edges of the same to the under side of the insole, cementing a sheet of prepared rubber fabric to the under side of the insole and over the edges of the upper, cementing the outsole to the rubber fabric on the under side of the insole, and applying pressure, substantially as and for the purpose described.

448,207. COMBINED COUNTER CHECK-BOOK AND DIRECTORY. HARMAN E. BUTTERFIELD, Toronto, Canada, assignor to Geo. Butterfield, Oconto, Wis. Filed Aug. 14, 1889. Serial No. 320,674. (No model.) Patented in Canada Oct. 13, 1886, No. 25,114.

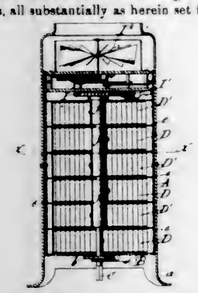


Claim.—In a counter check-book, the combination of the cover having the key, the counter-checks having a directory on their backs, and index-cards of distinct colors bound in the books with said checks, and the colors of said cards corresponding to the colors indicated, and the printed subject-matter under each color corresponding to the matter indicated by the key.

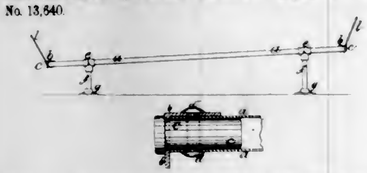
448,208. SPRING-MOTOR FOR MECHANICAL LAMPS, &c. JOHN CAMICHEL, New York, N. Y. Filed June 30, 1890. Serial No. 357,212. (No model.)

Claim.—The combination, in a spring-motor, of a main shaft, a series of coiled springs consisting of two pairs arranged about the said shaft with the coils of each pair in different directions and connected together at their outer ends, of two sleeves loose upon the said shaft, one of said sleeves having connected with it the inner ends of the

adjacent springs of the two pairs, the inner end of the spring at one end of the series being connected with said shaft and the inner end of the spring at the other end of said series being connected with the other of said sleeves, all substantially as herein set forth



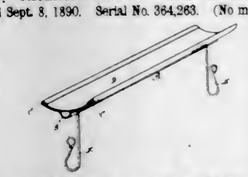
448,209. MATTRESS-FRAME AND BEDSTEAD. ISAAC CHORLTON and GEORGE L. SCOTT, Manchester, England. Filed Oct. 24, 1888. Serial No. 288,999. (No model.) Patented in England Nov. 10, 1885, No. 13,640.



Claim.—1. In a camp-bed having sides *a* of metal tubing and ends *b* of angle-iron, the device for connecting the ends to the sides, consisting of the plug *c*, passing through the angle-iron end *b* and into the end of the tubular side *a*, in combination with the transverse rivet or bolt *d*, engaging said side and plug, substantially as described and shown.

2. In combination with a folding camp-bed having sides *a* of metal tubing and ends *b* of angle-iron, and the legs *m*, in combination with the slotted T-piece *e*, secured to said legs, receiving the sides *a*, and provided with the set-screw *x* and the stops *o* and *p* on said side, substantially as set forth.

448,210. PACKAGE-CARRIER. SAMUEL R. DUMMER, New York, N. Y. Filed Sept. 8, 1890. Serial No. 364,263. (No model.)



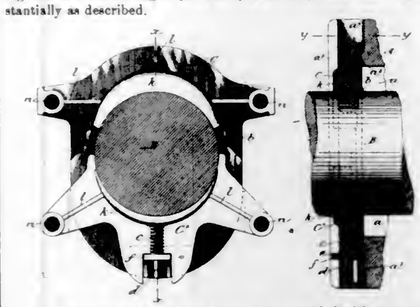
Claim.—1. A package-carrier consisting of a sheet-metal handle having a shape and size adapted to the grasp of the hand and provided with a hook at each of its ends for engagement with the package, and a receptacle for an advertising-card lying between the grooves C, formed by the folded-over edges of the sheet-metal strip, substantially as set forth.

2. A package-carrier consisting of a sheet-metal handle having a shape and size adapted to the grasp of the hand and provided with a hook at each of its ends for engagement with the package, a longitudinal strengthening rib or seam, and an advertising receptacle lying between the groove C of the folded-over edges of the sheet-metal strip, substantially as set forth.

448,211. DUST AND LUBRICANT GUARD FOR JOURNAL-BOXES. WILLIAM O. DUNBAR, Altoona, Pa. Filed Aug. 26, 1890. Serial No. 363,092. (No model.)

Claim.—1. The combination, with a journal-box provided with an opening and a pocket in its rear, and an axle B, of the two plates C C, resting side by side in said pocket and surrounding the axle, and means for not only sliding the plates on each other in opposite directions to close the joint around the axle, but also for holding the two plates pressed closely together and the plate C pressed against the front of the pocket to close the opening therein, substantially as described.

2. The combination, with the plate C, provided with an opening which is adapted to receive and fit a cylindrical axle when arranged therein, and with a lug *f*, having an opening *e*, of the plate C' for co-operating with the former, provided with a rod *d*, and a spring surrounding said rod and serving to press the plates in opposite directions, substantially as described.



3. The combination, with a journal-box provided with an opening and a pocket in its rear, and an axle entering the same, of a plate C, provided with an opening which is adapted to receive and fit such axle, a plate C', resting against the side of the former plate, and means for both holding the two plates pressed toward the axle from opposite directions and the plate C pressed against the front of the pocket, substantially as described.

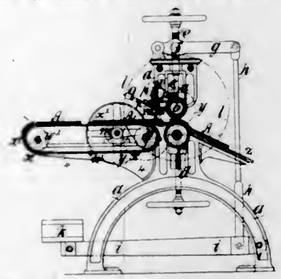
4. The combination, with a journal-box provided with an opening and a pocket in its rear, and an axle B, of the two plates C C', resting side by side in said pocket and surrounding the axle, and springs contained in such plates for not only sliding the plates on each other in opposite directions to close the joint around the axle, but also for holding the two plates pressed closely together and the plate C pressed against the front of the pocket to close the opening therein, substantially as described.

5. The combination, with a journal-box provided with an opening and a pocket in its rear, of the plate C, resting in said pocket and provided with the holders or sockets *n*, the plate C', resting against the former plate and provided with the holders or sockets *n*, and the springs *m*, located in said holders or sockets to hold the plates pressed closely together and the plate C pressed against the front of the pocket to close the opening *a*, substantially as described

6. The combination, with an axle B and the plates C C', provided with the recesses *i*, of the linings *h*, arranged in such recesses and provided with openings to receive and fit the axle, and devices whereby the plates may be held pressed toward the axle from opposite directions by spring-pressure, substantially as described.

7. The combination, with a journal-box provided with an opening *a* and a pocket *a'* in its rear, an axle entering said box, and the plates C C', provided with recesses in their backs, of the linings *h*, of vulcanized fiber, arranged in said recesses and provided with openings to receive and fit the axle when arranged therein, and devices whereby the plates are pressed toward the axle from opposite directions and forced together and against the front of the pocket by spring-pressure, substantially as described.

448,212. MACHINE FOR MARKING FOLDED WOVEN GOODS WITH TRADE-MARKS, &c. JOHN DUXBURY, Manchester, England, assignor to G. & R. Dewhurst, same place. Filed Jan. 4, 1889. Serial No. 295,438. (No model.) Patented in England Dec. 6, 1879, No. 4,998.



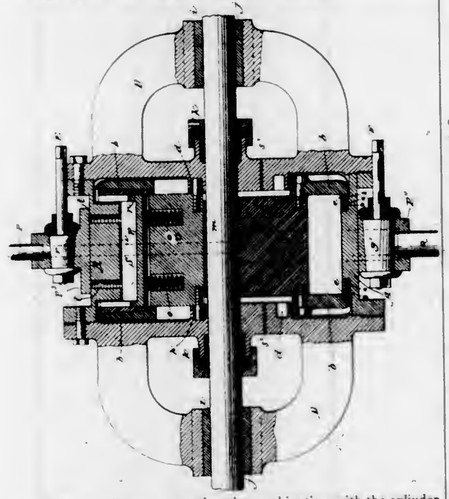
Claim.—1. In apparatus for marking folded woven piece goods with trade-marks and other marks and devices, the combination of the marking-roller *b*, supplied with color from the color-trough, with the bed-roller and the endless traveling apron *x*, having the adjustable guides *x'* for carrying forward the folded pieces to the rollers, substantially as described and shown.

2. In apparatus for the purpose set forth, the combination of the marking-roller *b*, supplied with color, the bed-roller *c*, and the endless traveling apron *x*, having a supporting and actuating roller upon each side of said bed-roller *c*, and passing with the goods between the two rollers, and holding and supporting the goods beneath the point where the impression takes place, substantially as set forth.

3. In apparatus for the indicated purpose, the combination of the traveling apron *x*, the rollers *b* and *c*, the screws *d* and *e*, nuts *f*, engaged by the latter, the presser-levers *g*, mounted on said nuts, rod *h*, levers *i*, and the delivery-table *z*, substantially as described and shown.

4. In apparatus for the indicated purpose, the combination of the roller *b*, the trough, the weighted arms *q*, and the doctor *p* with the cam 1, the bowl 2, the lever 3, and the rod *s* for actuating the color-trough, substantially as described and shown.

448,213. ROTARY ENGINE. MAGNUS P. ELGEN, St. Paul, Minn., assignor of seven-eighteenths to Thorkild Wilson, Theodore Grutling, Louis Elgen, Hans J. Nelson, and Charles Jobnke, all of same place. Filed Dec. 16, 1889. Serial No. 333,954. (No model.)

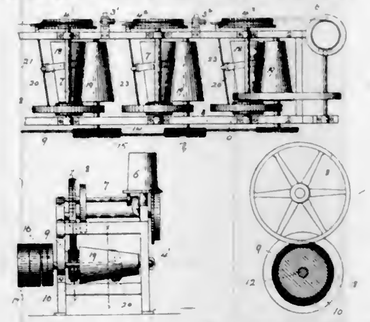


Claim.—1. In a rotary engine, the combination, with the cylinder having the annular recesses within the same in the cylindrical wall thereof and concentric with the shaft, the packing in the sides of the recesses, the steam-passages, the ports at top and bottom, and the shaft journaled eccentrically within the cylinder, of the piston mounted on said shaft, the annular flanges on the piston projecting into the recesses in the cylinder and bearing against the packing therein, the radial recesses in the piston and corresponding grooves in the inside of the flanges, the abutments sliding in said recesses and grooves, and the wedges in the grooves for taking up wear on the abutments, substantially as described.

2. In a rotary engine, the combination, with the cylinder having the annular recesses within the same in the cylindrical wall thereof, the packing-rings in the side walls of said recesses, the steam-passages, the ports at top and bottom, the shaft journaled eccentrically within the cylinder, and the cam-grooves in the heads around the shaft, of the piston mounted on the shaft, the flanges on the piston projecting into the grooves of the cylinder and bearing on the packing-rings in the side walls thereof, the radial recesses in the piston opening out at each end within the flanges, grooves in the inner surfaces of the flanges corresponding to said recesses, and sliding abutments working in said recesses and grooves and having the operating pins or projections extending out at the end of the piston and engaging the cam surrounding the shaft, substantially as described.

3. In a rotary steam-engine, the combination, with the cylinder having the annular recesses in the cylindrical wall, shaft eccentrically journaled in the same, and the cams on the cylinder-heads surrounding the shaft and concentric with the cylinder, of the piston mounted on the shaft, the annular flanges on the piston projecting into said recesses in the cylinder, the radial recesses in the cylinder opening out at each end, the grooves in the inner faces of the flanges corresponding to said recesses and the two-part abutments working in said recesses and grooves, the inner section having the projections beyond the ends of the piston and engaging the cam, and the outer section having the inclines and the wedge-shaped packing-strips adjustably secured thereon and working in the grooves in the flanges, substantially as and for the purpose set forth.

448,214. WIRE-DRAWING MACHINE. GEORGE F EVANS, Somerville, Mass. Filed July 31, 1890. Serial No. 360 470. (No model.)



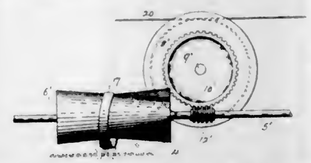
Claim.—1. In combination with a prime motor, the reversely-conical rolls actuated thereby, the endless band between said rolls, a wire-drawing drum, its independent shaft, and the interconnecting pulleys with the endless band therebetween, substantially as and for purposes explained.

2. In a wire-drawing machine, a fixed reducing-die and the independent shaft furnished with a wire-drawing drum at one end and a friction-pulley at the opposite end, combined with an endless band two reversely-conical pulleys between which said band passes, and two parallel shafts which support said conical pulleys, one shaft connecting with the prime motor, the other with the independent shaft of the wire-drawing drum, substantially as and for purposes explained.

3. In a wire-drawing machine having a suitable standard, a series of reducing-dies thereupon, the series of reversely-conical rolls, an endless band adjustable between each pair of said rolls, driving and driven, and a series of supporting-shafts 12 13, combined with a series of flanged pulleys upon the shafts 12, a series of wire-drawing drums, their independent shafts 7, the actuating-pulleys thereupon, and a series of endless bands interposed between said driven pulleys 8 and driving-pulleys 9, substantially as stated and described.

4. The combination, with the pair of reversely-conical rolls actuated by suitable means, the endless band between said rolls, a reducing-die, and the wire-drawing drum co-operating therewith, of an independent shaft which carries said drum, the friction-pulley 8 thereupon, the shaft 12, and a friction-pulley 9, which transmits motion from the conical rolls to the wire-drawing-drum shaft, substantially as specified.

448,215. WIRE-DRAWING MACHINE. GEORGE F. EVANS, Somerville, Mass. Filed Sept. 3, 1890. Serial No. 363,821. (No model.)



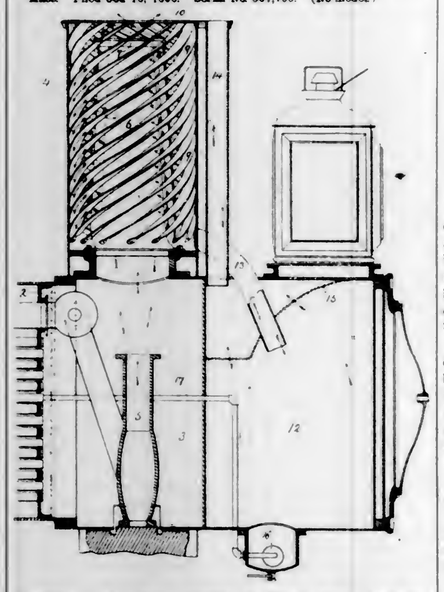
Claim.—1. In a wire-drawing machine, the combination, with a series of driving cone-pulleys revolving at uniform speed and a series of driven cone-pulleys at varying speed, of a series of wire-drawing drums, their transverse shafts, and the series of worm-gears and worms which interconnect each shaft of the driven pulley with the shaft of the wire-drawing drums, substantially as and for the purposes specified.

2. The combination, with a prime motor, a main shaft, a series of cone-pulleys thereupon having uniform speed, a series of wire-drawing drums, and their actuating-shafts, with variable speed, of a series of cone-pulleys on their respective counter-shafts, also at variable speed, the endless band gripped between the two sets of cone-pulleys, and a worm-gear and worms which interconnect the shafts of the wire-drawing drums and the driven cone-pulleys, substantially as described.

3. In combination with a series of fixed reducing-dies, a series of wire-drawing drums at variable speed, their independent shafts provided with worm-gears, the respective counter-shafts furnished with a worm and a driven cone-pulley, and the main shaft with the series of driving-cone pulleys which actuate the driven cones by a loose endless band which passes between each pair of pulleys, substantially as stated.

4. In a wire-drawing machine, a series of fixed reducing-dies, the series of transverse shafts at variable speed equipped with a wire-drawing drum, a series of counter-shafts furnished with driven cone-pulleys, and a main shaft having a series of reversely-positioned driving cone-pulleys, combined with a worm-gear, a worm, and a loose endless band, the worm-gear and worm engaging to interconnect the shafts of the wire-drawing drums with those of the driven cone-pulleys, while the endless band adjustable endwise between the two sets of cones serves to operate the driven set and imparts variable speed thereto, substantially as specified and set forth

448,216. SPARK-ARRESTER. GEORGE F. EVANS, Somerville, Mass. Filed Oct. 10, 1890. Serial No. 367,700. (No model.)



Claim.—1. In a spark-arrester for smoke-stacks, a current-changer composed of a curved plate bent upon itself to create a central bore, having its adjacent side edges overlapping but non-contiguous, open at its lower and capped at its upper end to cause the current which enters at the bottom in straight paths to escape laterally and have rotary motion imparted to it, said plate extending approximately throughout the length of the smoke-stack, substantially as stated.

2. In spark-arresters, the combination, with a stack open at the top and closed at the bottom, of a current-changer, as described, which interconnects said stack with the furnace and which extends approximately throughout the length of said stack, and the deflector-plates secured exteriorly to the stack and also extending throughout the length of the same, or approximately so, substantially as set forth.

3. A spark-arrester composed of two or more curved or segmental plates eccentrically arranged to form vertical openings between their overlapping sides, said plates extending approximately the entire length of the stack, and a cap which surmounts the upper ends of said plates, combined with the surrounding stack closed at its base and open at its upper end to cause the escaping matter traveling in straight paths to assume a horizontal rotary movement, substantially as herein set forth.

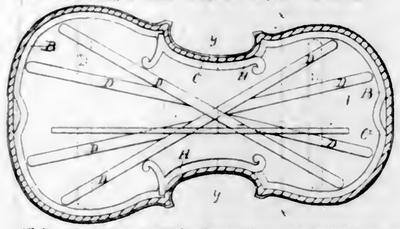
4. The combination, with a stack open at its top and closed at its bottom and provided with a series of oblique spiral deflectors attached to the interior wall of said stack and extending throughout the length thereof, or approximately so, of two or more curved plates placed vertically within said stack and having their adjacent side edges non-contiguous, said curved plates also extending approximately throughout the length of the stack, substantially as set forth.

5. In combination with a furnace, a cylindrical current-changer having vertical apertures and acting in part as the flue or discharge for the furnace, a stock inclosing said current-changer, the spiral deflectors within said stack, the cinder-chamber, its inlet-supply from the stack, and its outlet-discharge to the air, substantially as specified.

6. The combination, with a furnace, the chamber 3, the main stack furnished with interior spiral deflectors, and the current-changer, as described, which interconnects said stack with the chamber, of the cinder-chamber 12, partitioned with a screen-plate, its exhaust-flue 14, and one or more pipes 13, which connect the main stack with the cinder-chamber, substantially as described.

7. The combination, with a furnace, the chamber 3, the main stack furnished with interior deflectors, and the current-changer, as described, of the cinder-chamber partitioned by a screen, its flue 14, the supply-pipes 13, and the opening for cinder-discharge, substantially as specified.

448,217. MUSICAL INSTRUMENT. JAMES FAIRMAN, New York, N. Y. Filed Aug. 30, 1890. Serial No. 363,969. (No model.)



Claim.—1. As a new article of manufacture, a musical instrument of the class specified, provided between its neck and finger-board with a tubular cavity and provided with a sounding-post bridge, and having its belly provided with the transverse lining and with the groove extending around on the inner side of the belly close to the line of the inner side of the walls of the instrument, and also provided with the sound-emitting holes, having their outer margins coincident, respectively, with the inner faces to the walls.

2. As a new article of manufacture, a musical instrument of the class specified, provided with a sounding-post bridge, and having its belly provided with the transverse lining and with the groove extending around on the inner side of the belly close to the line of the inner side of the walls of the instrument, and also provided with the sound-emitting holes having their outer margins coincident, respectively, with the inner face of the side walls.

3. A musical instrument of the class specified, having its belly provided with a groove extending around on the inner side of the belly close to the inner side of the walls of the instrument.

4. A musical instrument of the class specified, having its belly provided on the inner face with a transverse lining extending from the middle of the belly laterally, substantially as and for the purpose set forth.

5. A musical instrument of the class specified, having its belly provided on its inner face with the radiate strips.

6. A musical instrument of the class specified, provided with the vibratory sounding-post-supporting bridge arranged longitudinally of the violin and resting upon two supporting-blocks, both resting upon the back of the violin.

7. A musical instrument of the class specified, having its belly provided with sound-emitting holes having their outer margins approximately coincident, respectively, with the inner face of the side walls of the instrument.

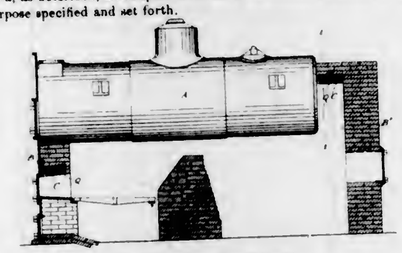
8. A musical instrument of the class specified, having its belly provided with the sound-emitting holes H, corresponding to the *f* holes of a violin, having their outer margins approximately coincident, respectively, with the line of the inner face of the side walls of the instrument and extending forward to the broad part of the instrument, as set forth.

9. A musical instrument of the class specified, provided between its neck and finger-board with a tubular cavity arranged longitudinal of the deck and having sound-emitting openings at each end.

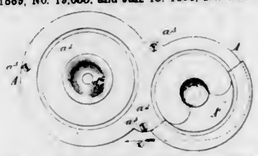
448,218. ARCH-PLATE FOR STEAM-BOILER FURNACES. JOHN FRA and WILLIAM H. HOAG, Amsterdam, N. Y. Filed Oct. 29, 1890. Serial No. 369,644. (No model.)

Claim.—1. The combination, with the front and rear walls in a steam-boiler furnace, of hollow chambered perforated plates provided with hollow metallic conoids or brackets secured to the plates and spanning the perforations in the plates, said hollow conoids or brackets having parts or portions of their walls perforated or removed, whereby a refractory compound or material can be held and secured to the plates, all substantially as specified.

2. The combination of the hollow chambered metal plates perforated and spanned by hollow perforated conoids or brackets *d*, the conduit-pipe *o'*, passing through the perforations in the brackets *d* and held in place by the refractory material, the elbow c^4, the connecting-pipe N, the outlet-pipe P, and the refractory compound or material Q, secured to the plates C by means of the perforated conoids or brackets *d*, as described, all adapted to be used, substantially as and for the purpose specified and set forth.



448,219. PRINTING DEVICE. JAMES S. FOLEY, London, England. Filed Feb. 3, 1890. Serial No. 339,092. (No model.) Patented in England Dec. 6, 1889, No. 19,635, and Jan. 15, 1890, No. 793.



Claim.—1. The combination, in a pocket printing-instrument, of a type-wheel, an inking-roller, an ink-reservoir having an automatically-closed outlet for delivering ink to said inking-roller, a housing inclosing said members and recessed to permit a portion of the periphery of said type-wheel to project beyond said housing, a cap for closing said recessed portion, and means accessible from the exterior of said housing to cause the ink to flow intermittently through said outlet, substantially as and for the purposes set forth.

2 The combination, in a pocket printing-instrument, of a type-wheel, an inking-roller normally held in contact with said wheel, an ink-reservoir having an automatically-closed outlet for permitting of the intermittent delivery of ink to said inking-roller, a housing inclosing said members and recessed to permit a portion of the periphery of the type-wheel to project beyond said housing, and a cap for closing said recessed portion, substantially as and for the purposes set forth.

3. The combination, in a pocket printing-instrument, of a case or housing provided with a cylindrical ink-reservoir and with two chambers, an inking-roller inclosed in one of said chambers, a type-wheel inclosed in the other of said chambers and having a portion of the periphery thereof extending outside the said housing or case, an automatically-closed outlet for permitting of the intermittent delivery of ink to said roller, a piston in said reservoir, and a threaded rod passing through said reservoir and engaging said piston, substantially as and for the purposes set forth.

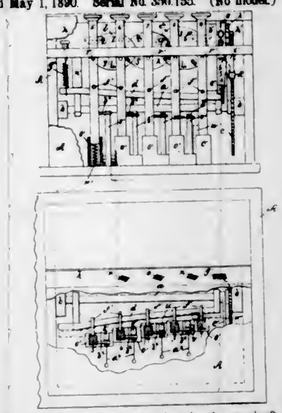
4. The combination, in a pocket printing-instrument, of a case or housing provided with two chambers and with a cylindrical ink-reservoir, a removable cap for filling said reservoir, an automatically-closed outlet for permitting of the intermittent delivery of ink from said reservoir, an ink-roller in one of said chambers, a type-wheel in the other of said chambers, a piston in said reservoir, and means for actuating said piston, substantially as and for the purposes set forth.

448,220. CARPET-FASTENER. FREDERICK FRILLMAN, Jr., Chicago, Ill. Filed Apr. 18, 1890. Serial No. 348,499. (No model.)



Claim.—A carpet stretcher and fastener comprising, in combination, a metallic strip having a flat body portion, with an integral longitudinal flange formed by doubling the strip between its edges and perforated for securement to the floor, and a second strip formed from a sheet of metal doubled between its edges to provide a flange adapted to interlock with the flange of the floor-strip, said strips affording continuously-extending projections throughout the length of the margin of the secured carpet, substantially as described.

448,221. ADDING-MACHINE. GEORGE B. GATES, Fairport, N. Y. Filed May 1, 1890. Serial No. 350,155. (No model.)



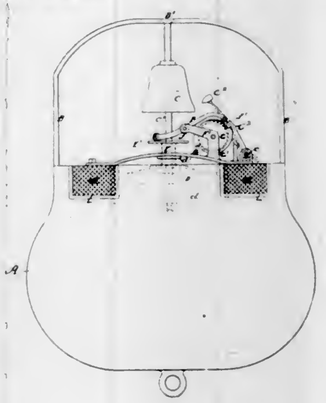
Claim.—1. An adding-machine having a shaft provided with a rigid curved frame diverging therefrom with its convex side toward said shaft, in combination with operating-keys arranged in a curved line parallel with said frame and a display-wheel provided with figures and connected with said shaft to be turned by the latter, substantially as shown and described.

2. In an adding-machine, a series of operating-keys, a main shaft, and a units-wheel, with gearing connecting said shaft and wheel, whereby the latter is operated by said keys, in combination with a series of number-dials and a train of gears connected therewith operated by a spring, said units-wheel and train of gears being connected by an escapement mechanism, substantially as shown and described.

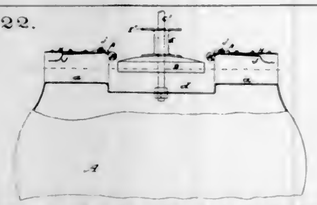
3. In an adding-machine, the units-wheel, a tens-dial, and a hundreds-dial, all operated by a series of depressing-keys with the aid of a spring, said tens-dial having an extended part overlapping the face of the hundreds-dial to cover a figure thereon, substantially as and for the purpose specified.

448,222. BELL-BUOY. JASPER GIBSON, London, England. Filed July 23, 1890. Serial No. 359,712. (No model.) Patented in England Dec. 18, 1888, No. 18,499, and July 22, 1889, No. 11,670; in France Feb. 19, 1889; in Italy Feb. 21, 1889, No. 26,983/177, and in Germany Oct. 26, 1889.

Claim.—1. In a buoy, the combination, with the frame B, bell C, and hub B', of an inside chamber having a float therein adapted to rise and fall with the undulation of the waves, and rod C', attached to and forming a means of connection between the above-mentioned parts, substantially as set forth



448,222.



2. In a buoy, the combination of the body having the chamber *a* and water-ways leading to the same, a bell carried by the buoy, a float within said chamber, and mechanism operated by said float to strike the bell, substantially as described.

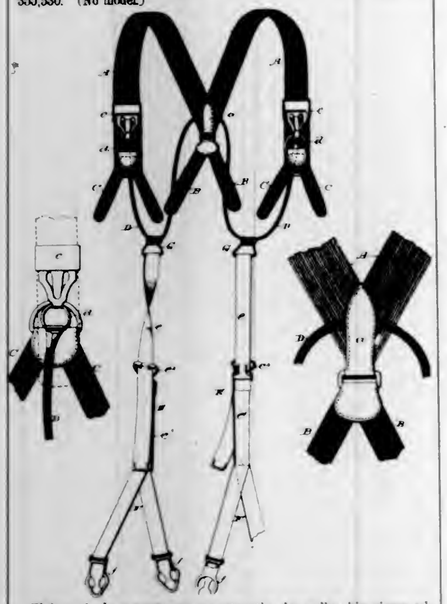
3. In a buoy, the combination, with the bell, rod *c'*, the float mounted on said rod and provided with plate E', of the clapper C', having its supporting-arm fastened to the deck of the buoy, and connections between the float and said clapper, whereby the latter is caused to ring the bell, substantially as set forth.

4. In a bell-buoy provided with a float having a supporting-arm *c'*, bell C, and plate E', the combination of cam-wheel G', cog-wheel G, clapper C', and connections between said parts, whereby when the float is moved the clapper strikes the bell, substantially as set forth.

5. In a bell-buoy, the combination, with the main body of the buoy and bell supported thereby, of a rod C', a float D, mounted on the rod, striking mechanism connected with the float, a frame-piece for limiting the movement of the float, and a stop *d'*, interposed between the float and said frame-piece, substantially as described.

6. In a buoy, the combination of the body having the chamber *d* and water-ways leading to the same, of a bell carried by the buoy, a float within said chamber, mechanism operated by said float to strike the bell, and shutters applied to the said water-ways for closing the latter against violent rushes of water, substantially as described.

448,223. GARMENT-SUPPORTER. ANNA A. GILLETT and GARLAND L. GILLETT, Milwaukee, Wis. Filed June 16, 1890. Serial No. 355,530. (No model.)

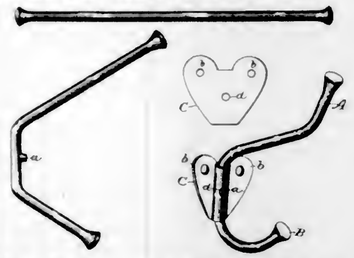


Claim.—1. In a garment-supporter, the depending hip-pieces adjustably connected with the suspenders at the front and provided with side pieces having at their lower ends hose-attaching devices, substantially as and for the purposes set forth.

2. In a garment-supporter, the depending hip-pieces adapted to be connected to the suspenders and provided with side pieces having at their lower ends hose-attaching devices and at their upper ends a sliding connection with the hip-pieces, substantially as and for the purposes set forth.

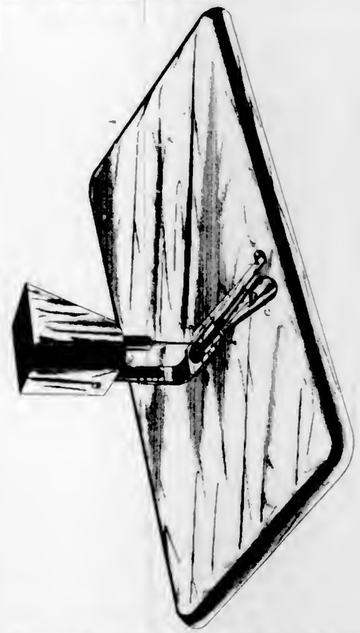
3. Garment-supporters consisting of depending hip-pieces connected with the suspenders in front and behind, their connections therewith in front being adjustable, and side pieces having self-adjusting sliding connections at their upper ends with said hip-pieces and provided at their lower ends with suitable fastenings for attachment to the hose, substantially as and for the purposes set forth.

448,224. MANUFACTURE OF COAT AND HAT HOOKS. CHAS. GLOVER, New Britain, Conn., assignor to P. & F. Corbin, same place. Filed Sept. 6, 1890. Serial No. 364,099. (No model.)



Claim.—That improvement in the manufacture of coat and hat hooks which consists of forming the wire part by first upsetting the opposite ends of a piece of wire to form an integral head at each end, then swaging and bending the same to form the middle portion and hooks, and forming a separate sheet-metal base by blanking the same from sheet metal and swaging its middle portion to form a socket on its back side, and finally securing said sheet-metal base and wire portion together to form the complete hook, substantially as described, and for the purpose specified

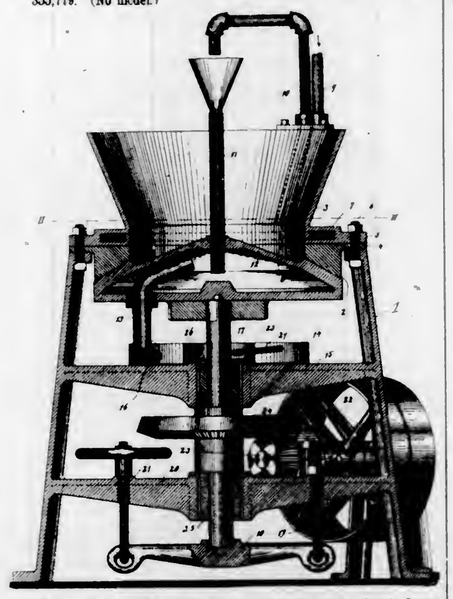
448,225. ATTACHMENT-HOLDER FOR SEWING-MACHINES. HARRY C. GOODRICH and FRANK HENRY, Chicago, Ill., assignors, by mesne assignments, to the Chicago Nickel Works, of Illinois. Filed Jan. 29 1890. Serial No. 338,492. (No model.)



Claim.—1. The combination, with a sewing-machine attachment, of a slide or holder A, made of non-resilient material, and consisting of an upper portion *a* and lower portion *b*, connected only at one end, the upper portion being fitted to the presser-foot and the lower portion being secured to and supporting the attachment, whereby the alignment of the said portion *b* and of the attachment secured thereto may be adjusted by bending the middle portion connecting said parts *a b*, substantially as described.

2. The combination of a slide or holder A, composed of non-resilient metal and made in two parts *a b*, the upper part *a* being fitted to the presser-foot of a sewing-machine, the lower part *b* having an arm D, secured thereto by a rivet E, and the attachment C, secured to said arm, whereby the said attachment is adjustable with reference to the line of stitching or may be swung entirely out of the way when not in use, substantially as shown and described.

448,226. PAINT-MILL. HENRY GOOSEN, RICHARD J. HALY, and JAMES W. KENT, Brooklyn, N. Y. Filed June 17, 1890. Serial No. 355,779. (No model.)



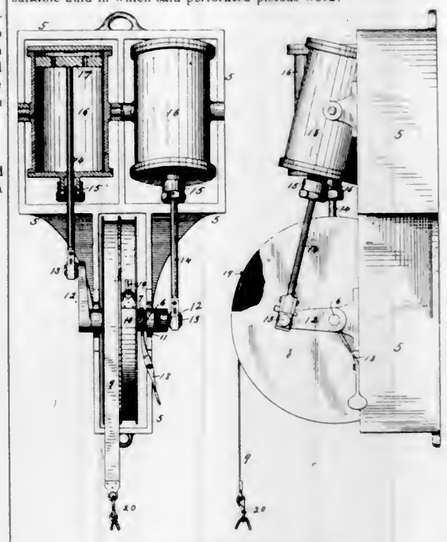
Claim.—In a paint-machine, the combination of a suitable frame having the upper flange, the hopper having an annular flange extending outward and an annular water-chamber formed in the annular flange of the hopper, the upper grinding member corresponding to the opening in the hopper and having a flange extending outward and in contact with the hopper-flange, the lower grinding member having suitable water-space, the vertical post, on which the lower grinding member is mounted, and which has suitable connection with the driving-gear, the upper grinding member and hopper being secured by means of bolts passed through their flanges and the flanges of the frame, and the machine being provided with suitable inlet and outlet pipes for water, substantially as set forth.

448,227. FIRE-ESCAPE. ABRAM G GORDON, Chester, Ill. Filed Sept. 20, 1890. Serial No. 365,613. (No model.)

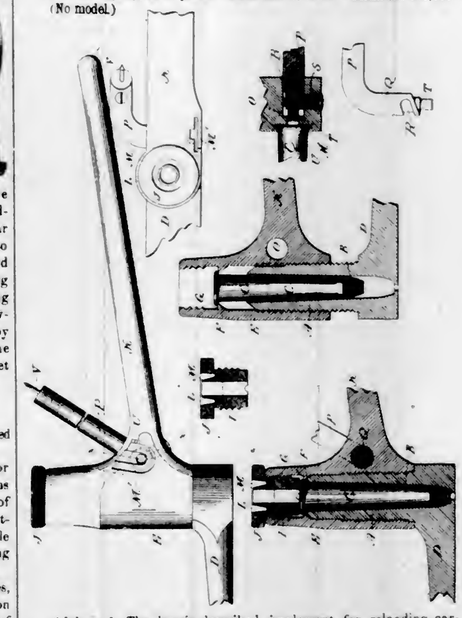
Claim.—1. An apparatus for permitting the descent of persons or bodies, consisting of a drum having one or more flexible connections wound thereupon, an automatic governor for regulating the speed of rotation of said drum, and a manually-operated means for disconnecting the drum from the automatic governor and permitting the flexible connections to be rewound without actuating the governor by rotating the drum by hand.

2. An apparatus for permitting the descent of persons or bodies, consisting of a drum having two flexible connections wound thereupon in opposite directions, each of which is rewound by the unwinding of the other, an automatic governor for regulating the speed of rotation of said drum, a catch for suitably securing the ends of the flexible connections, and means for permitting the drum to be rotated by hand, for the purpose described.

3. An apparatus for permitting the descent of persons or bodies, embodying a drum having two flexible connections wound thereupon in opposite directions, a catch for suitably securing the free ends of the flexible connections, a manually-operated means for connecting said drum to a shaft, two cranks carried by said shaft, a perforated piston operated by each crank, and oscillating cylinders containing a suitable fluid in which said perforated pistons work.



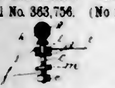
448,228. CARTRIDGE-RELOADING IMPLEMENT. CHARLES H. GRIFFITH, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Dec. 1, 1890. Serial No. 373,180 (No model.)



Claim.—1. The herein-described implement for reloading cartridges, consisting of the cylindrical socket A, having a central recess within it corresponding to the shape of the loaded cartridge, the said socket constructed with a screw-thread upon its exterior and provided with a suitable handle, combined with a sleeve E of internal shape corresponding to the exterior of the said socket and correspondingly screw-threaded, the sleeve also constructed with a shoulder F upon its inside and provided with a suitable handle with a removable plug at the outer end of the said sleeve, substantially as and for the purpose described

2. In a cartridge-reloading implement consisting of two parts adapted to be screwed together to force a loaded cartridge into one of said parts and so as to reset the shell, one of said parts constructed with an undercut open recess M′ corresponding to the head portion of the cartridge, the said part in which the said recess M′ is formed constructed with a recess O opening from the opposite side and extending toward the center of said recess M′, an L-shaped lever P Q, one part P of said lever forming the handle, the other part Q arranged in the said recess O and so as to be rotated therein, and constructed with a spiral groove R, and a stud S in said recess O, arranged to work in said spiral groove R, the said part Q provided with a primer-stud T in axial line therewith and adapted to work through an opening U from the said recess O into the said recess M′, substantially as and for the purpose described.

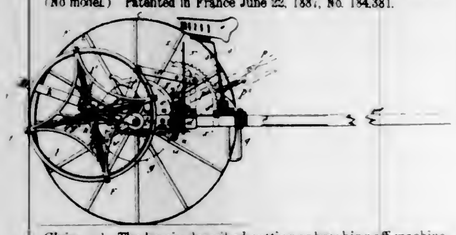
448,229. VIOLIN ATTACHMENT. ENOCH GRILL, Orono, Mich. Filed Sept. 2, 1890. Serial No. 363,756. (No model.)



Claim.—1. In combination with a violin tail-piece, a stud rigidly secured thereto, in combination with a roller located upon the stud above the tail-piece, and a nut for holding the roller in place, substantially as described.

2. In combination with a violin tail-piece, a stud rigidly secured thereto, said stud having a thread and nut upon its under side, a collar adapted to bear upon the top of the tail-piece, a threaded extension above said collar, a roller upon the extension, and a nut for holding the roller in place, as and for the purpose described.

448,230. MACHINE FOR BREAKING STALKS. ALEXANDRE A. GUICHARD, Lieusaint, France. Filed Dec. 6, 1888. Serial No. 292,781. (No model.) Patented in France June 22, 1887, No. 184,381.



Claim.—1. The herein-described cutting or breaking off machine, which consists, essentially, of one or more wires F, stretched between plates or rings *l l′*, secured on a shaft *h*, which can be raised or lowered at pleasure between the carrying-wheels *c c′* by means of a lever *p*, and which is set in rotary motion by gearing operated by one of the said carrying-wheels as the machine is moved along, substantially as hereinbefore described.

2. In a stalk-cutting machine, the combination, with the wire-carrying shaft *h* and the carrying-wheels *c*, of means for connecting and disconnecting said shaft from one of said wheels *c*, which consists of the spur-wheel *g*, fixed to the carrier-wheel *c*, the pinion *g′*, sliding on the shaft *h*, the forked lever *v*, the lever *u*, the rod *x′*, and the lever *x*, combined, arranged, and operating substantially as hereinbefore described.

3. In a machine for cutting or breaking off the stalks of wild mustard or other pernicious plants, the apparatus for raising or lowering the cutting or breaking off devices to suit the height of the plant, consisting of the lever *p*, the shaft *o*, the arms *n n′*, links *m m′*, arms *l l′*, and arms *k k′*, combined, arranged, and operating substantially as hereinbefore described.

448,231. CONNECTING-ROD FOR BRICK-MACHINES. WILLIAM H. HALL, Tiffin, Ohio. Filed Jan. 11, 1890. Serial No. 336,685. (No model.)

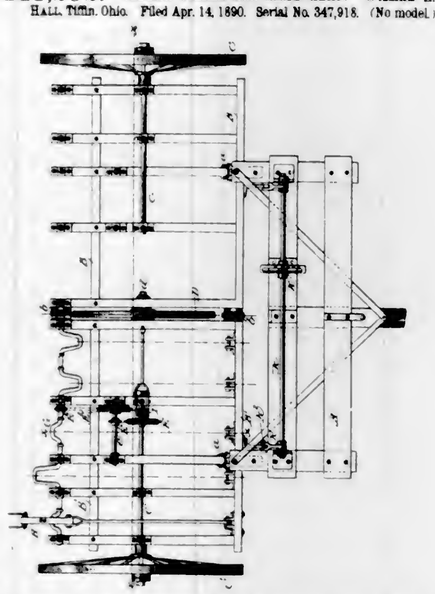


Claim.—1. The combination, in a yielding pitman, of a connecting-rod, a box adapted to slide therein, two or more jointed links, one end of the series hinged to said box and the other hinged to the connecting-rod, and a spring resisting outward movement of the joints connecting the links, substantially as and for the purpose specified.

2. The combination, in a yielding pitman, of the box *f*, sliding in a slot in the connecting-rod D, link *h*, jointed to said sliding box, a second link *h′*, jointed to link *h* at one end and at its other hinged to the connecting-rod, set-screw *i*, spring *k*, and set-screw *l*, substantially as and for the purpose specified.

3. The combination, in a pitman, of a bearing at each end thereof, a wheel taking into one of the bearings and capable of being rotated therein, the points of contact of the wheel with the bearing being equidistant from its center, an eccentric bearing for the wheel, and a worm and worm-wheel for turning the latter, combined and operating to lengthen or shorten the distance between the eccentric bearing at one end of the pitman and the bearing at the other end thereof, substantially as and for the purpose specified.

448,232. TEDDER-FRAME AND RAKE-HEAD. WILLIAM H. HALL, Tiffin, Ohio. Filed Apr. 14, 1890. Serial No. 347,918. (No model.)



Claim.—1. The combination of a draft-frame, sectional frames loosely attached thereto and carrying the forks or teeth, suitable carrying-wheels, and an intermediate wheel supporting the inner ends of the sectional frames, substantially as and for the purpose specified.

2. The combination of a draft-frame, sectional frames hinged to each other, loosely attached to the draft-frame, and carrying the forks or teeth, suitable carrying-wheels, and an intermediate wheel supporting the inner ends of the sectional frames, substantially as and for the purpose specified.

3. The combination of a draft-frame, sectional frames loosely attached thereto, end wheels mounted upon independent axles and carrying the sectional frames, and an intermediate wheel supporting the inner ends of the sectional frames, substantially as and for the purpose specified.

4. The combination of a draft-frame, sectional frames hinged to each other and loosely attached to the draft-frame, end wheels mounted upon independent axles, and an intermediate wheel supporting the inner ends of the sectional frames, substantially as and for the purpose specified.

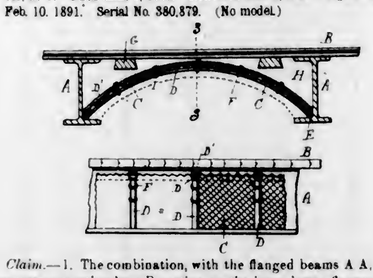
5. The combination of a draft-frame, sectional frames loosely attached thereto, wheels carrying their outer ends, an intermediate wheel supporting the inner ends of the sectional frames, and mechanism for tilting the sectional frames, substantially as and for the purpose specified.

6. The combination of a draft-frame, sectional frames attached thereto, wheels carrying their outer ends, an intermediate wheel supporting the inner ends of the sectional frames, a shaft connected by crank-arm and pitman with each of the sectional frames, and a lever for actuating said shaft, substantially as and for the purpose specified.

7. The combination of a draft-frame, sectional frames loosely attached thereto, wheels carrying their outer ends, an intermediate wheel supporting the inner ends of the sectional frames, a shaft connected by crank-arm and pitman with each of the sectional frames, a lever for actuating said shaft, and mechanism for locking the lever in position, substantially as and for the purpose specified.

8. The combination of a draft-frame, sectional frames carrying independent crank-shafts, upon which the forks are mounted, driving-wheels fixed to independent axles and carrying the sectional frames, an intermediate wheel supporting the inner ends of the sectional frames, and mechanism for communicating motion from the driving-wheels to the crank-shafts, substantially as and for the purpose specified.

448,233. FIRE-PROOF ARCH. FREDERICK L. HUGHES, Rochester, N. Y. Filed Mar. 9, 1889. Renewed Mar. 5, 1890. Again renewed Feb. 10, 1891. Serial No. 380,879. (No model.)

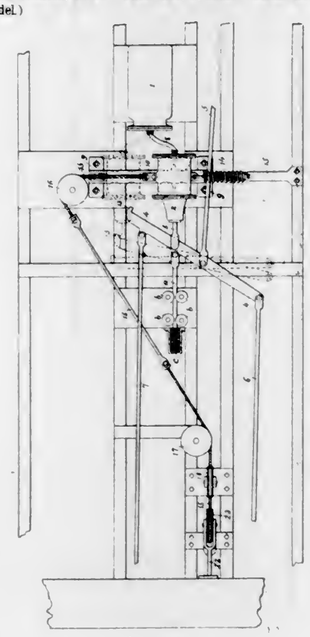


Claim.—1. The combination, with the flanged beams A A, of the transverse supporting-bars D, resting on the inner lower flanges of the beams, the metallic lathing C, placed above the bars and sustained thereby, the filling H, and plastering I, substantially as described.

2. The combination, with the flanged beams A A, of the arched supporting-bars D, resting at their ends on the inner lower flanges of the beams, the metallic lathing C, placed above the arched bars D, the bent bars D′, located above the lathing, the clips F, filling H, and plastering I, substantially as described.

3. The combination, with the metallic lathing C, supported between the flanged beams A A, of the filling H above the lathing, plastering I below, and the floor-strips G, embedded in the upper surface of the filling, substantially as described.

448,234. PRESSURE-REGULATOR FOR CAR-BRAKES. HOWARD HINCKLEY, Trenton, N. J. Filed Nov. 5, 1889. Serial No. 329,317 (No model.)



Claim.—1. In a car-brake system, the combination of the movable brake-actuating mechanism, the levers and links transmitting power from said actuating mechanism to the brake-shoes, and shifting mechanism intermediate between the brake-actuating mechanism and the car-body, whereby the vertical movement of the car shifts the brake-actuating mechanism lengthwise of the primary lever, so as to vary the point of application of the power to said lever as the vertical position of the car is altered by the varying weight of its load.

2. In a car-brake system, the combination of the brake-actuating mechanism, the connections transmitting power from said actuating mechanism to the brake-shoes, the air-cylinder of the actuating mechanism mounted so as to be movable lengthwise of the primary lever of the system, and mechanism whereby the vertical movement of the car is caused to shift the position of said cylinder with respect to the primary lever of the system and thereby vary the leverage with which the brakes are applied.

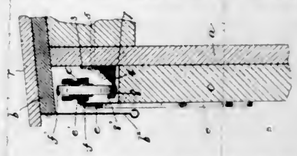
3. In a car-brake system, the combination of the brake-actuating mechanism, the connections transmitting power from said mechanism to the brake-shoes, the air-cylinder of the actuating mechanism being movably mounted with relation to the primary lever of the power-transmitting connections, a lever pivoted on the car-truck and arranged to be operated by a part of the car whose position varies with variations in the weight of the load, and a connection between said lever and the air-cylinder, whereby as the car is depressed by the increasing weight of its load the lever is operated to shift the position of the cylinder in relation to the primary lever, so as to exert a greater leverage thereon.

4. In a car-brake system, the combination of the air-reservoir 1, the air-cylinder 2, connected therewith by a flexible air-pipe, the track 10, on which the cylinder is arranged to travel, the primary lever 4 of the power-transmitting connections, the regulating lever 23, pivoted on the car-truck, the flexible connection 15, fastened at one end to the car-body, connected at its other to the movable air-cylinder, and connected with the regulating-lever, so that as said lever is depressed by the lowering of the car under the increasing weight of its load it will draw upon said connection and shift the position of the cylinder lengthwise of the primary lever.

5. In a car-brake system, the combination of the fixed reservoir 1, the movable air-cylinder 2, the transverse track 10, the horizontal pulleys 16 17, the vertical pulley 18, the primary power-transmitting lever 4, the spring 14, holding the cylinder normally at one end of the track, the flexible connection 15, extending from the side of the cylinder opposite to the spring around the pulleys 16 17 and over the pulley 18 and fastened at its end to the car-body, and the regulating-lever 22, carrying the pulley 23 in its free end, under which the flexible connection passes on its way from the pulley 18 to its point of attachment to the car, said lever being arranged to be depressed by the lowering of the car under the weight of its load, so as to draw on said connection and shift the position of the cylinder lengthwise of the primary lever 4.

6. In a car-brake system, the combination of the fixed reservoir 1, the movable air-cylinder 2, its fork-ended piston-rod 3, the transverse track 10, the horizontal pulleys 16 17, the vertical pulley 18, the power-transmitting lever 4, having a nose 13 at one end and a spring 6, acting against the back thereof, the spring 14, holding the cylinder normally at one end of the track, the flexible connection 15, attached to the opposite side of said cylinder and extending around the pulleys 16 17 and over the pulley 18 to a point where it is fastened to the car, and the regulating-lever 22, carrying the pulley 23 at its end, under which the connection is led on its way from the pulley 18 to its point of attachment to the car, the lever being arranged to be depressed by the lowering of the car under the weight of its load, so as to draw on the connection and shift the cylinder along the lever 4.

448,235. TRACK FOR SLIDING DOORS. OLIVER P. HIX, Rockland, Me., assignor to the Dunham Manufacturing Company, Boston, Mass. Filed May 23, 1890. Serial No. 352,818. (No model.)



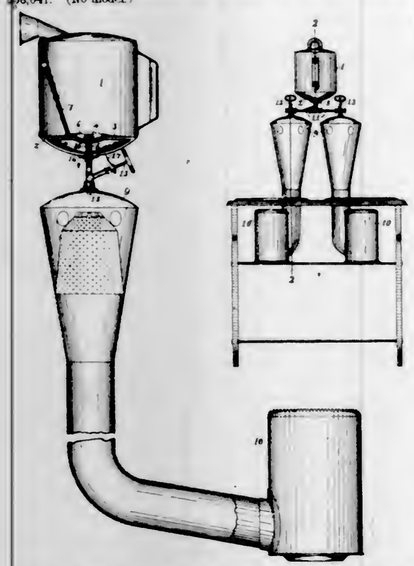
Claim.—1. The improved track-plate formed in one piece and comprising a wheel-tread-supporting trough 8, a lip or guard 8′ at one side of the trough, said lip constituting one edge of the plate, a flange or seat 3, formed to bear on the side of a car and constituting the opposite edge of the plate, and an intermediate inclined portion 4.

connecting the said flange and trough, whereby the trough and guard are offset from the flange or seat 3, as set forth.

2. The combination of the track composed of the sheet-metal plate having the vertical flange 3, the inclined portion 4, and the trough-shaped portion 8, all formed in one piece, a car to which said flange is attached, and the blocks 6, formed to bear on the under side of the car, as set forth.

3. The combination of a freight-car having its roof extended outwardly over the sides of the car, a track attached to the side of the car over the doorway under the extended roof, and the vertical shield at the outer side of the track, composed of overlapping sections of sheet metal attached at their upper edges to the extended roof and having telescopic beads at their lower edges, one section having its bead reduced at one end to enter the corresponding end of the bead on the overlapping section, as set forth.

448,236. OIL-FEEDING DEVICE FOR VAPOR-STOVES. CHARLES B. HOLLINGSWORTH, Cleveland, Ohio. Filed July 14, 1890. Serial No. 358,641. (No model.)



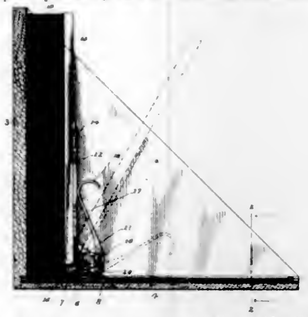
Claim.—In an oil-feeding device for vapor-stoves, a tank having a partition which divides said tank into a main reservoir and a supplemental reservoir located below the main reservoir, a casting secured to said partition and having a duct through which the liquid flows by gravity from the main to the supplemental reservoir, a wire-gauze secured to said partition above the entrance to said duct and adapted to prevent the entry of foreign particles thereto, and a casting secured to the lower wall of the supplemental reservoir, having an orifice through which the liquid flows, combined with a float-valve in said supplemental reservoir having a tube passing centrally through it and projecting below it, a valve-rod passing through said tube and pivotally connected with the part thereof which extends below said float, said valve-rod being extended at its lower end into the orifice in the lower casting and at its upper end into the duct in the upper casting and having a conical upper end adapted to engage with a conical valve-seat formed in the upper casting, substantially as and for the purpose specified.

448,237. BILL-FILE. WARREN D. HOUSE, Kansas City, Mo., assignor of one-half to John C. Pennie, Washington, D. C. Filed June 2, 1888. Serial No. 275,878. (No model.)

Claim.—1. In a bill-file, the combination, with a movable carriage, of a follower hinged thereon and a tilter for throwing said follower forward with respect to the carriage, substantially as described.

2. In a bill-file, the combination, with a movable carriage, of a follower hinged thereon and a releasable brace-lever interposed between the carriage and the follower, substantially as described.

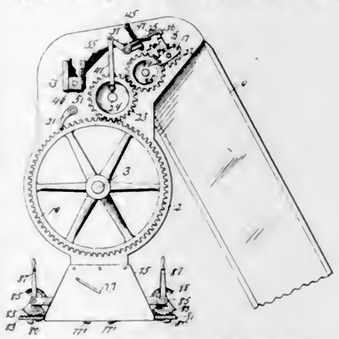
3. In a bill-file, the combination, with a movable carriage, of a follower hinged thereon, a stop for limiting the forward movement of said follower to substantially a vertical position, a stop for limiting the backward tilt of said follower, and a releasable brace-lever interposed between the carriage and follower, said carriage being also provided with a stop for preventing its forward tilting, substantially as described.



4. In a bill-file, the combination, with a movable carriage, of a follower hinged thereon and a cam-lever hinged to said follower, the lower end of said cam-lever abutting against and binding upon the carriage when in operative position, substantially as described.

5. In a bill-file, the combination of the file-box, the guide-rail, the sliding carriage, the follower hinged to the carriage, a stop for limiting the forward tilting of the follower to substantially a vertical position, a stop for limiting the backward tipping of the follower, a stop for preventing the forward tilting of the carriage, and a releasable brace-lever and tilter, the latter having pivotal connection with the carriage and the follower, substantially as described.

448,238. AUTOMATIC GRAIN-METER. WALTER A. JOHNSON, Byron, Minn. Filed Apr. 18, 1890. Serial No. 348,745. (No model.)



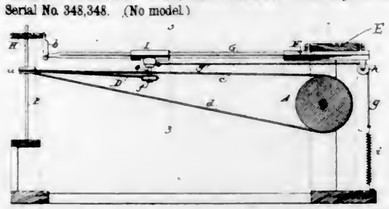
Claim.—1. The combination, with the casing and the rotating measuring-wheel, of the rotatable shaft 13, provided with the loose wheel 27, gearing connecting said wheel with a wheel upon the shaft of the measuring-wheel, a rotating and movable shaft arranged in said casing and provided with movable blades and means for turning said blades, and a clutch mechanism arranged to be thrown into operation by the movement of said shaft and to connect said wheel 27 with the shaft 13, substantially as described.

2. The combination, with the measuring-wheel and the rotating shaft 13, of the cross-plate 15, secured upon said shaft and provided with a pin 17, the arm 29, provided with a spring-controlled dog 31, adapted to be engaged by said pin 17, the locking-arm 35, adapted to engage the arm 29, means for causing the arm 35 to release the arm 29, and means for holding said arm 35 out of engagement with the arm 29 for a predetermined time.

3. The combination of the measuring-wheel, the rotating shaft 13, the loose pinion thereon, means connecting said pinion with the shaft of the measuring-wheel, the arm 29, provided with a dog 31, the locking-arm 35, the lever 37, engaging the arm 35, the crank-pin on the wheel 23, the rod 41, connecting the lever 37 with said crank-pin, the rotating shaft 49, provided with blades arranged in the casing, and the arm 55, connected to said shaft and adapted to raise the arm 35.

4. The combination, with the measuring-wheel and the driving mechanism connected therewith, of the tripping mechanism, means for operating said tripping mechanism consisting of the rotating shaft 49, provided with the movable blades, and means for turning said blades as said shaft is rotated, for the purpose specified.

448,239. SPINDLE-DRIVING MECHANISM FOR SPINNING-MACHINES. CHARLES W. JONES, London, Canada. Filed Apr. 17, 1890. Serial No. 348,348. (No model.)



Claim.—1. In combination with driving-drum A and spindles B, driving-band C, passing alternately about the spindles and drum and having a return-line D, a bar G, supported above the driving-band, a sleeve I, mounted upon the bar and having a depending arm *e* and pulley *f*, the latter receiving the return-line, a flexible connection *g* attached to the sleeve, and a spring or equivalent tension device *i*, acting upon the connection, all substantially as shown.

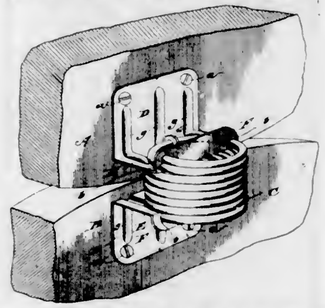
2. In combination with drum A, spindles B, and driving-band C, arranged substantially as shown, top boards E and H, a bar G, supported at its ends by the top boards, a sleeve or block I, mounted upon the bar and provided on its lower side with a pulley *f* to receive the driving-band, and a tension device connected with the sleeve.

3. In combination with drum A, spindles B, and driving-band C, passing alternately about the spindles and drum, a rigid bar G, located above the driving-band, a tension-wheel supported by the bar and extending downward between the upper and lower portions *c d* of the driving-band in position to receive the return-line of the latter, and a tension device applied to the pulley, all substantially as shown and described.

4. In combination with drum A and spindles B, driving-band C, having a return-line D, top boards E and H, a bracket or socket F, secured to board E and provided with a wheel *h*, a bar G, fitting into the socket and supported at its opposite end by a link *b*, sleeve I, provided with arm *e* and pulley *f*, cord or connection *g*, and spring *i*, all arranged substantially as shown.

5. In combination with drum A, spindles B, and driving-band C, arranged substantially as shown, angular bar G, arranged with one of its edges uppermost, and a sliding block carrying a tension-pulley, mounted upon the bar.

448,240. SPRING-HOLDING BRACKET. CHARLES KADE, Chicago, Ill. Filed Oct. 27, 1890. Serial No. 369,411. (No model.)

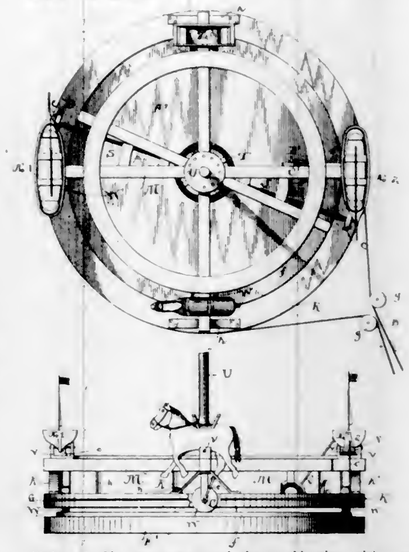


Claim.—1. A holding-bracket for coiled-wire springs, constructed from sheet metal bent to provide a fastening-flange, and a holding member angularly bent at its front margin and provided with separated seats for the end coil and adapted to form a stop for the free end thereof, and a holding-lug to engage the end coil, substantially as described.

2. A holding-bracket for coiled-wire springs, constructed from sheet metal and bent to provide a fastening-flange, and a holding member having an angular flange at its front margin perforated for the passage of the end coil and adapted to form a stop for the free end of said coil, and a holding-lug to engage the end coil, said bracket having corrugations therein, substantially as described.

3. A spring-holding bracket constructed from sheet metal bent in parallel lines to provide a member to be secured to an object, a supporting member at right angles to the fastening member, said supporting member having turned up from its body a perforated holding-lug, and a marginal flange extending parallel to the holding member and at right angles to the supporting member, said flange being perforated toward its ends for the passage of the end coil of the spring, substantially as described.

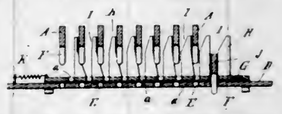
448,241. ROUNDABOUT. GEORGE KAY, FRED WILKINSON, and ROBERT FISHER, Jamestown, N. Y. Filed Sept. 6, 1890. Serial No. 364,209. (No model.)



Claim.—1. In a merry-go-round, the combination, with a rotating frame-work, brackets mounted thereon, yokes pivoted in said brackets, boats pivoted in said yokes at right angles to the pivots of the latter in the brackets, and means, substantially as described, for imparting a longitudinal rocking motion to said yokes, of a stationary toothed ring, a shaft journaled radially in said frame-work and having a gear engaging said ring, a short shaft connected by gearing with said radial shaft and having a crank, and a pitman connecting said crank with the boat, as and for the purpose set forth.

2. In a merry-go-round, the combination, with the support F and upright U, rising from the same, a toothed ring T, surrounding said upright, a frame M, journaled on the upright, a bracket V, carried by said frame, and a yoke Y, pivoted in said bracket, of a seat mounted in pivots in the yoke at its front and rear ends, a shaft S, journaled in hangers *h* beneath the frame, a gear-wheel O on its inner end engaging said toothed ring, a crank C on its outer end, a pitman *c*, connecting said crank with the end of said yoke, the shaft S', journaled in a bracket *h'* beneath the frame and driven from said shaft S by intermeshing gears I, a crank C' on said shaft S', and a pitman *c*, connecting said crank with the seat, all as and for the purpose set forth.

448,242. CASH-REGISTER. JAMES D. KING, Brooklyn, N. Y., assignor to the Latimer Cash Register Company, Detroit, Mich. Filed Apr. 15, 1890. Serial No. 348,068. (No model.)



Claim.—1. In a cash-register, the combination, with the keys having projections thereon, of an apertured bar below the same, a sliding apertured plate above the bar, and a series of varying inclines on the plate with which the keys engage, substantially as described.

2. In a cash-register, the combination, with the keys having depending projections thereon, of a stationary apertured bar below the keys, a sliding apertured plate above the bar, inclined projections on the plate, and a spring connected with the plate, substantially as described.

448,243. COVER, KETTLE, AND PLATE HANDLER. EDWARD S. LAFAYETTE, North Smithfield, R. I. Filed Aug. 4, 1890. Serial No. 361,028. (No model.)

Claim.—1. The combination of the lever G, provided with its loosely-riveted pintle P and jaw K, with the hinged arm B, having slot I, and the hinged arm A, provided with its flattened double curved prolongation, loops D F, having its termination or end X concave, and the jaw L, provided with its lip or upset Y, substantially as described.



2. The combination of the lever G, provided with its loosely-riveted pintle P and jaw K, with the hinged arm B, having slot I, and the hinged arm A, provided with jaw L, having thereon the lip or upset Y, substantially as described.

3. The hinged arm A, having a flattened double-curved prolongation D F, in combination with a hinged arm B, provided with its flattened prolongation jaw E, substantially as described.

448,244. ROOF. ROBERT P. LAMONT and EDMOND D. BRONNER, Detroit, Mich. Filed Sept. 20, 1890. Serial No. 365,592. (No model.)



Claim.—1. In a metallic-roof structure, the combination, with the roof-plates, each having a ridge or corrugation b' and dependent flange b^2, of the cross-beam formed with the upright web a' and flanges a a, the flanges b^2 of two adjacent plates being engaged to the web a', substantially as described.

2. In a metallic-roof structure, the combination, with two adjoining roof-plates provided at their edges with ridges or corrugations b' and depending flanges b^2, of the cross-beam for supporting and engaging said plates, said beam having a web a', to which the depending flanges of the plates are engaged by a through-bolt, and having also the flanges a a, which project over and cover the corrugations b', substantially as described.

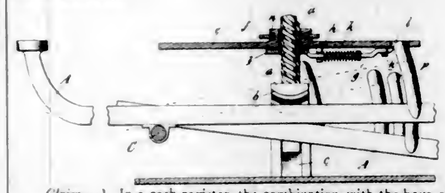
3. In a roof structure, the combination of the cross-beam formed with the upright web a' and flanges a a, the roof-plates B, provided adjacent to the edge with the corrugation b' and depending flange b^2, a suitable packing C, placed between the corrugations b' and flanges a, and a bolt passed through the flanges b^2 and web a' for securing the parts together, substantially as described.

4. In a roof structure, the combination of a supporting member comprising a vertical web a' and overhanging flanges a with metallic roofing-plates extending under the flanges and provided at their edges with flanges which are attached to the web, substantially as described

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448,245. CASH-REGISTER. WILLIAM G. LATIMER, Detroit, Mich., assignor to the Latimer Cash Register Company, same place. Filed Apr. 19, 1890. Serial No. 348,742. (No model.)

Brief.—A device for preventing the simultaneous operation of two or more keys.



Claim.—1. In a cash-register, the combination, with the keys, of a series of arms carried thereby, a movable disk having an aperture, and connecting mechanism adapted to move the disk, bringing said aperture in position to register with the arm on an operated key, substantially as described.

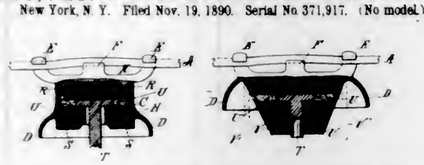
2. In a cash-register, the combination, with the keys, of a series of arms carried thereby, a rotating disk having a single aperture, and connecting mechanism adapted to rotate said disk to bring the aperture to register with the arm on an operated key, substantially as described.

3. In a cash-register, the combination, with the keys, of a series of arms carried thereby, a cross-bar adapted to be moved a different distance by each key, a screw on said cross-bar, a disk rotated by said screw, and an aperture in said disk, adapted to register with the arm of an operated key, substantially as described.

4. In a cash-register, the combination, with the keys, of a series of arms carried thereby, a cross-bar adapted to be moved a different distance by each key, a screw on said cross-bar, and a disk rotated by said screw through the medium of the arm g, adapted to be detached from said screw when the aperture in the disk registers with the arm upon an operated key, substantially as described.

5. In a cash-register, the combination, with the keys, of a series of arms carried thereby, the cross-bar a, having shoulders b of different heights, guides c, screw d, disk e, arm g, spring k, bearing j, aperture l, and spring m, substantially as described.

448,246. SUPPORT FOR ELECTRIC WIRES. CHARLES A. LIEB, New York, N. Y. Filed Nov. 19, 1890. Serial No. 371,917. (No model.)



Claim.—1. A supporter for electric wires, comprising a metallic body part and a metallic nut placed within the body part and between insulating material, and a threaded ring engaging with threads on the body part for confining the insulating material in place, substantially as set forth.

2. A supporter for electric wires, comprising, essentially, a metallic body part having hooks and an umbrella and a nut within the body part placed between insulating material, substantially as set forth.

3. A supporter for electric wires, comprising, essentially, a metallic body part having hooks integral therewith, a nut or like device located within the body part and between insulating material, substantially as set forth.

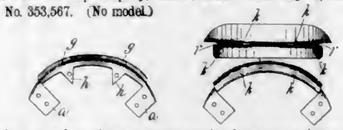
4. A supporter for electric wires, made of a single piece of metal, within which are insulated material and a nut or like device placed between insulating material, the whole being held in place by bending a portion of the body part over the same, substantially as set forth.

5. A supporter for electric wires, made of a single piece of metal, within which are insulating material and a nut placed between the insulating material, the whole being held in place by bending a portion of the body part over the same, and an umbrella integral with the body part, substantially as set forth

6. A supporter for electric wires, made of a single piece of metal, within which are insulating material and a nut placed between the insulating material, the whole being held in place by bending a portion of the body part over the same, and hooks integral with the body part, substantially as set forth.

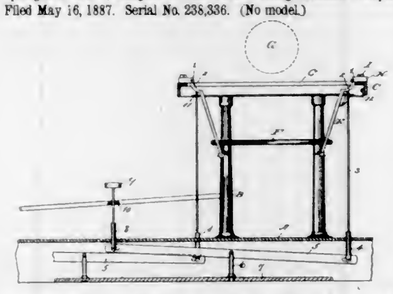
7. A supporter for electric wires, comprising a metallic body part, a nut or like device placed within the body part and between insulating material, the head of the nut or like device being larger than the opening downward in the metallic body part, whereby the wire will be held should the insulating material be destroyed, substantially as set forth.

448,247. SHOE-TIP. HOLLIS W. MERRILL, Lynn, assignor to the American Shoe Tip Company, Boston, Mass. Filed May 29, 1890. Serial No. 353,567. (No model.)



Claim.—A sole and upper protector having a central crease from end to end thereof to fit accurately between the upper and sole, the portion of said protector extending over the upper being longer than the portion extending over the sole, said upper portion having at either end thereof and beyond the ends of the sole portion inwardly-projecting securing-points integral therewith, and said sole portion covering only the edge of the sole and extending downwardly to the bottom thereof, substantially as shown and described.

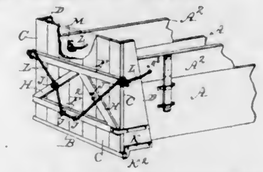
448,248. TYPE-WRITING MACHINE. CHARLES E. MERRITT, Springfield, Mass., assignor to the Yost Writing Machine Company. Filed May 16, 1887. Serial No. 238,336. (No model.)



Claim.—1. In a type-writing machine, the combination of a top plate or type-ring, a type-lever depending therefrom and having a cam-surface 2 in advance of its fulcrum, a vertically-arranged detached push-rod, a horizontally-arranged key-lever, and a finger-key.

2. In a type-writing machine, the combination, with a type bar or lever, of a detached push-rod located in front of the fulcrum of said type bar or lever, means for actuating said push-rod, and a device, as 11, for guiding and supporting its upper end, substantially as set forth.

448,249. END-GATE. JOHN MCFARLAND, Dodham, Iowa. Filed Aug. 5, 1890. Serial No. 361,145. (No model.)



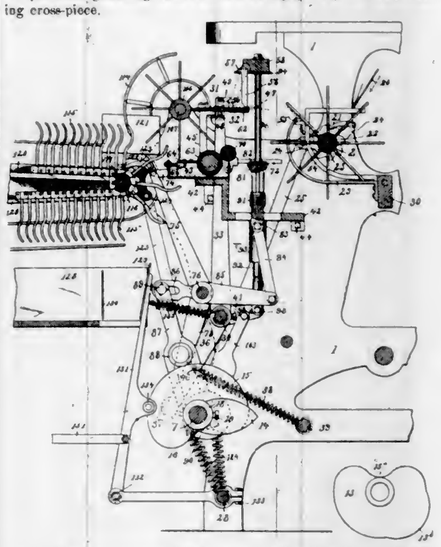
Claim.—A wagon end-gate having a bar fixed to its rear side and the ends of the bar perforated, and fixed pins projecting outward below the bar, and a rope passed through the perforated ends of the bar and its ends fastened to the sides of the wagon-box, to operate in the manner set forth, for the purposes stated.

448,250. MACHINE FOR MAKING ENVELOPES. FRANCIS T. NICHOLSON, Stamford, Conn., assignor of one-half to Reuben Mapelsden, Brooklyn, N. Y. Filed Aug. 9, 1890. Serial No. 361,524. (No model.)

Claim.—1. In a machine of the class described, the combination, with the receiving-reel and the gumming-table, of the fingers whereby envelopes are carried from the reel to the table, the reciprocating cross-piece whereby the envelope is held on the table, and the gummer.

2. In a machine of the class described, the combination, with receiving-reel and the gumming-table, of the fingers whereby envelopes are carried from the reel to the table, the reciprocating cross-piece whereby the envelope is held on the table, the gummer, and curved arm 29, whereby the envelope is stopped and the closing-flap is opened out as it is removed from the reel by the fingers.

3. In a machine of the class described, the combination, with the receiving-reel and the gumming-table, of the fingers whereby each envelope is carried from the reel to the table, the reciprocating cross-piece whereby the envelope is held on the table, the gummer, and swinging holder 56, acting, substantially as described, to hold the envelope on the gumming-table before it is engaged by the reciprocating cross-piece.



4. The combination, with the receiving-reel, the ratchet, arm 24, and the pawl, of the fingers, and curved arm 29, by which each envelope is stopped and the closing-flap opened out as it is removed by the fingers.

5. In a machine of the class described, the combination, with the receiving-reel and curved arm 29, of the fingers acting as described, and for the purpose set forth.

6. The combination, with the receiving-reel, the curved arm and the gumming-table, of the fingers whereby each envelope is carried from the reel to the table and the closing-flap opened out, the reciprocating cross-piece, and the gummer.

7. The combination, with the receiving-reel, curved arm 29, and the gumming-table, of the fingers whereby each envelope is carried from the reel to the table and the closing-flap opened out, the reciprocating cross-piece, and the swinging holder pivoted thereon, whereby the envelope is held on the table until the cross-piece descends, and the gummer whereby the closing-flap is gummed after the descent of the cross-piece, substantially as described.

8. The combination, with projections 49, having inclines 50, and arms 34, having tripping-lugs 55, of swinging arms 33, carrying-fingers 31 and 32, one finger in each pair being pivoted, spring-actuated hooks 51, acting to hold the pivoted fingers in the open position after they are opened by the inclines, and springs 53, acting to close the fingers when the hooks are disengaged by the tripping-lugs.

9. The gumming-table, projections 49, having inclines 50, and arms 54, having tripping-lugs 55, in combination with the receiving-reel, swinging arms 33, fingers 31 and 32, hooks 51, and springs 52 and 53, all acting as described, whereby each envelope is carried from the receiving-reel to the gumming-table.

10. The combination, with the receiving-reel, the fingers, and the gumming-table, of the gummer and the delivering-reel which takes the gummed envelope from the gumming-table.

11. The combination, with the receiving-reel, curved arm 29, the fingers, and the gummiog-table, of the gummer and the delivering-reel.

12. The combination, with the gumming-table and the fingers, of the reciprocating cross-piece, the swinging holder pivoted thereto, and the gummer.

13. The gumming-table having recess 61 and the fingers, substantially as described and shown, in combination with the reciprocating cross-piece and the swinging holder, said holder swinging forward out of the way when an envelope is carried to the gumming-table by the fingers and acting to hold the envelope after it is released by the fingers, and in the absence of an envelope engaging said recess and acting to prevent the downward movement of the cross-piece, as and for the purpose set forth.

14. The gumming-table having recess 61, the reciprocating cross-

piece, the swinging holder carried thereby, and the delivering-reel, in combination with cams 13, having depressions 13ª and rounded projections 13ᵇ, rods by which the cross-piece is carried, rock-levers 99, connecting-rods 103, pivoted to the rock-levers and carrying-rollers engaging the cams, and springs 104, acting to hold the rollers in contact with the cams, so that each rotation of the cams acts to move the cross-piece downward to hold an envelope during the gumming operation, then raise it again to its normal position, then raise it above that position while the gummed envelope is being picked up by the delivering-reel, and then return it to its normal position again, substantially as described.

15. The combination, with the gumming-table, the fingers, substantially as described and shown, and the reciprocating cross-piece, of the gummer, which moves upward and gums the closing-flap at the instant an envelope is held upon the gumming-table by the cross-piece.

16. The gumming-table, the reciprocating cross-piece, and the gummer, substantially as described and shown, in combination with the fingers and arm 29.

17. The gumming-table, the reciprocating cross-piece having swinging arm 56, and the gummer, acting as described, in combination with the fingers and arm 29, whereby as each envelope is carried to the gumming-table the closing-flap is opened out into position to be gummed while the envelope is held by the cross-piece.

18. The combination, with the gumming-table, the gummer, the reciprocating cross-piece, and the fingers, substantially as described and shown, of the delivering-reel and the drying-chain.

19. The gumming-table having recesses 60, the delivering-reel operating in said recesses, and the drying-chain, in combination with the gummer and the reciprocating cross-piece.

20. The receiving-box and the pusher, in combination with the counting-lever and mechanism, substantially as described and shown, which acts to swing the counting-lever and raise the closing-flap of the last envelope of a predetermined number.

21. The receiving-box, the pusher, lever 131, and the cam and spring, in combination with link 151, the counting-lever, and intermediate mechanism, substantially as described and shown, whereby the counting-lever is swung outward to raise the flap of the last envelope of a predetermined number.

22. The combination, with the counting-lever, the pusher, lever 131, and cam 14, of ratchet 147, having teeth corresponding in number with the envelopes required in each package, cam 148, rotating with the ratchet, lever 144, engaging the cam, and intermediate mechanism, substantially as described and shown, between lever 144 and the counting-lever and between the ratchet and lever 131, whereby each time an envelope is moved forward by the pusher the ratchet is actuated one tooth, and at the completion of the revolution the counting-lever is raised to lift the flap of the last envelope.

23. The receiving-box having cleats 130 and the pusher, whereby each envelope is carried past the cleats, in combination with the counting-lever, the ratchet, cam 148, moving therewith, and intermediate mechanism, substantially as described and shown, whereby each movement of the pusher carries the ratchet forward one tooth, and at the completion of the rotation of the ratchet and cam the counting-lever is raised and raises the flap of the last envelope, substantially as described.

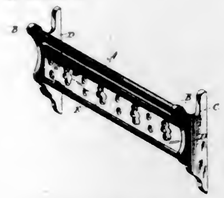
24. The receiving-box, the pusher, and the counting-lever, in combination with the ratchet having teeth corresponding in number with the envelopes required in each package, a cam moving therewith and having raised and depressed portions in its periphery, a lever 144, engaging the cam, and intermediate mechanism, substantially as described and shown, whereby each movement of the pusher imparts a forward movement to the ratchet, and at the completion of the rotation of the cam lever 144 rides up on the raised portion of the periphery of the cam, which raises the counting-lever, carrying the closing-flap of the last envelope and holds the lever in the raised position until lever 144 rides down on the depressed portion of the periphery of the cam.

25. The receiving-box having recess 139 and the counting-lever pivoted at the top of the box and having an arm 140, in combination with the pusher, ratchet 147, cam 148, lever 144, engaging said cam, and intermediate mechanism, substantially as described and shown, whereby at each movement of the pusher the ratchet is moved forward and at the completion of the rotation the counting-lever is swung out of the recess and into a horizontal position above the receiving-box, as and for the purpose set forth.

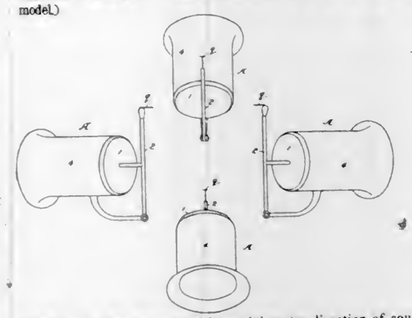
26. The receiving-box, the counting-lever, the pusher, lever 131, and link 151, in combination with the ratchet and cam 148 moving therewith, swinging arm 149, pivoted to link 151 and carrying a pawl engaging the ratchet, lever 144, engaging the cam, lever 142, and links 141 and 143, whereby the counting-lever is actuated.

448,251. BOOK-RACK. AUBORN F. OLD, New York, assignor to the Chichester Manufacturing Company, Phœnicia, N. Y. Filed Sept. 15, 1890. Serial No. 364,974. (No model.)

Claim.—A book-rack composed of two brackets D, with a front E and bottom F extending between the brackets, each of the brackets constructed with an arm projecting upward and outward above the upper edge of the front and with recesses in rear of said arms corresponding in shape to the upper end portion of the said arms, the said upper end portions of the said arms separated from but hinged to the brackets and so as to swing backward into the said recesses of the brackets, with a bar A connecting the said swinging portion of the arms, substantially as described.



448,252. METHOD OF AND APPARATUS FOR DETERMINING THE DIRECTION OF SOUNDS. NORTON P. OTIS and WALTER H. UNDERWOOD, Yonkers, N. Y. Filed Apr. 18, 1890. Serial No. 348,565. (No model.)



Claim.—1. The method of determining the direction of sounds from a single point, which consists in receiving the sound-waves at two or more different points and in indicating the effects caused by such sound-waves, substantially as described.

2. The method herein set forth of determining the direction of sound-waves, which consists in indicating the varying action of sound-waves from one point upon indicating devices at different points, substantially as set forth.

3. An instrument for indicating the direction of sounds, provided with two or more diaphragms arranged in different positions, with means for indicating variations in the degree of movements of said diaphragms, substantially as set forth.

4. The mode described of determining the direction of sound by the use of two or more diaphragms arranged to receive sounds directly from different directions and means for visibly indicating variations in the effects produced on said diaphragms, substantially as set forth.

5. The method of determining the direction of sounds, which consists in indicating or visibly recording the effects of sound-waves on one or more instruments constructed to be sensitive to such sound-waves and placed in different positions, substantially as set forth.

6. The method of determining the direction of sounds, as herein described, which consists in receiving sound-waves upon one or more instruments sensitive thereto and set in different positions and indicating the effects thereof, substantially as described.

7. An instrument for indicating the direction of sounds, provided with one or more diaphragms arranged in different positions, with means for visibly indicating variations in the degrees of movement resulting at the different places, substantially as set forth.

8. An instrument for indicating the direction of sounds, provided with two or more diaphragms arranged in different positions, with means for visibly indicating variations in the degree of movement of said diaphragms, substantially as set forth.

9. The combination, with an instrument provided with two or more diaphragms arranged in different positions to be actuated to different degrees by sound-waves, of a receiving-instrument having electro-magnets, each connected to be operated electrically by one of said diaphragms and provided with recording means for indicating the different movements of the armatures of said electro-magnets, substantially as and for the purpose set forth.

10. The combination, with two or more indicators arranged in separated positions and each provided with a diaphragm arranged to be operated by sound-waves, of a corresponding number of electro-magnets arranged in proximity, each connected with one of the indicators for its armature to move synchronously with the diaphragm thereof, and recorders for indicating the order in which the different armatures receive their impulses, substantially as set forth.

11. The combination, in an instrument for indicating the direction of sounds, of two or more diaphragms arranged to receive directly sounds proceeding from different directions, provided each with a marking device connected to be operated by said diaphragm, and a traveling sheet moving in contact with said marking device, substantially as set forth.

12. The combination of the series of indicators, each provided with a recording device and arranged in position for the different records to be simultaneously seen and compared, substantially as and for the purpose set forth.

13. The combination of two or more indicators sensitive to sound-waves and arranged in different positions and a receiving and recording instrument connected with all the indicators, substantially as set forth.

14. The combination, with the indicators arranged at separated points and with corresponding receiving-magnets and recorders operated thereby, of a sheet 46, adapted to receive the several records, substantially as described.

15. The combination, with the indicators arranged at separated points and with corresponding receiving-magnets and recorders operated thereby, of a sheet 24, provided with transverse lines and adapted to receive the several records, substantially as described.

16. The combination, with a vessel, of two instruments B B', arranged in different positions, each instrument provided with a series of devices sensitive to the action of sound-waves from different directions, substantially as set forth.

17. The combination, with a vessel, of two or more instruments B B', each provided with a series of diaphragms, and means for recording the actions thereof under the influence of sound-waves, and recorders at a central point connected with the different indicators to operate synchronously therewith, substantially as set forth.

18. The combination, with a series of indicators arranged radially and each provided with a diaphragm adapted to be operated by sound-waves, of recording devices connected with the diaphragms, substantially as set forth.

19. The combination, with a series of indicators, each provided with a diaphragm adapted to be operated by sound-waves, of a corresponding series of recording devices arranged at a distant point and each connected electrically with one of the diaphragms to move therewith, substantially as described.

20. The combination, with a series of diaphragms and indicators adapted to be actuated by sound-waves, of mirrors connected to be moved by said diaphragms and a lamp arranged in position for its rays to fall upon the mirrors, substantially as set forth.

21. The combination, with a series of indicators arranged radially and each provided with a diaphragm adapted to be operated by sound-waves, of a series of visual recorders, each connected to be operated by one of the diaphragms, substantially as and for the purpose set forth.

22. The combination, with a series of recording devices, of a single indicator and means for adjusting the same to different positions to operate the different recorders, substantially as set forth.

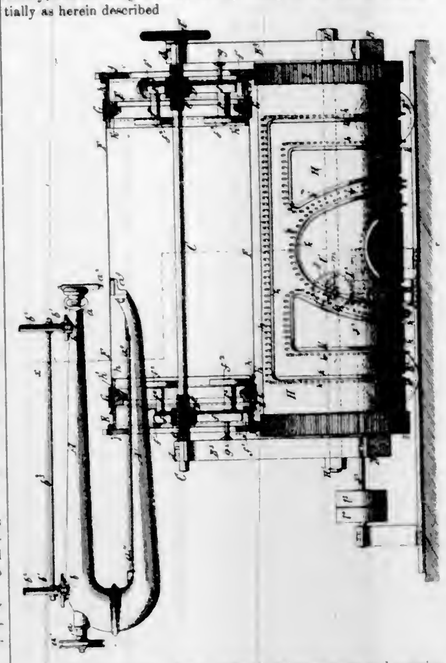
448,253. QUILTING-MACHINE. FRANK L. PALMER, New London, Conn. Filed June 13, 1884. Serial No. 134,735. (No model.)

Claim.—1. The combination of a cylindric fabric-support, a sewing-machine having its arms extending in a direction corresponding with the axial length of said support, and a carriage upon which one of said parts is supported and which is movable in a direction parallel with the axis of said support, substantially as and for the purpose herein set forth.

2. The combination, with a cylindric fabric-support, of a sewing-machine having its arms extending in a direction corresponding with the axial length of said support, a carriage on which one of said parts is supported, and a pattern acting on said carriage, substantially as and for the purpose specified.

3. The combination, with a cylindric fabric-support comprising two separate frames having a common axis and securing devices upon said frames, whereby a fabric may be secured so as to present a curved surface, of a sewing-machine having its arms extended lengthwise of said support, a carriage acting on one of said parts to impart movement thereto, a pattern acting on said carriage, and a positively-operating engaging device acting on said pattern, substantially as and for the purpose specified.

4. The combination, with a cylindric fabric-support and securing devices at or near its edges, whereby a fabric may be secured so as to present a curved surface, of a normally non-rotating screw e, a nut engaging said screw, whereby the said support may be extended axially, and a sewing-machine for operating on the fabric, substantially as herein described



5. The combination, with a cylindric fabric-support and securing devices at or near its edges, whereby a fabric may be secured so as to present a curved surface, of a sewing-machine having arms which extend lengthwise of the said fabric-support for operating upon the fabric, a pattern-track connected with said rotary fabric-support for controlling its movement, and a positively-operating engaging device, as wheel J, for engaging said track, substantially as herein described.

6. The combination, with a cylindric fabric-support having securing devices at or near its edges, whereby a fabric may be secured so as to present a curved surface, of a sewing-machine having its arms extending lengthwise of the fabric-support for operating on the fabric, a carriage for one of said parts, supports for said carriage permitting motion in a direction lengthwise of the fabric-support, a pattern-track connected with said carriage for controlling its movements, and a positively-operating engaging device, as wheel J, engaging with said track, substantially as specified.

7. The combination, with a sewing-machine, of a cylindric fabric-support to which fabric may be secured and by which it may be rotated, a pattern for controlling the movements of said support, comprising a track in pattern form geared with the said support, and a positively-operating engaging device, as wheel J, acting on said track, substantially as herein described.

8. The combination, with a sewing-machine and a fabric-support, of a pattern mechanism for controlling the the relative position of the sewing-machine needle and fabric, consisting of a track arranged in pattern form, and a positively-operating engaging device, as wheel J, acting upon said track, and a carriage upon which said pattern-track is mounted and moved by the said engaging device in planes transverse to each other, substantially as herein described.

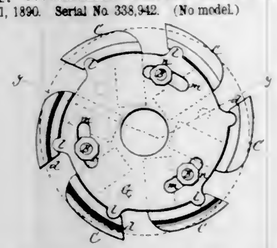
9. The combination, with two frames or spiders, one of which is non-rotary, and a screw engaging with one of them for moving it toward and from the other, of annular rotary frames or rims mounted on said frames or spiders and on which a fabric may be secured in curved form, and a sewing-machine having its arms extending lengthwise of the fabric for operating thereon, substantially as herein described.

10. The combination, with the shaft C, having reversed screw-threads *e*, of the non-rotary spiders D, provided with rollers *f f'*, the rotary frames E, fitted to and supported by said rollers, and a sewing-machine, the lower arm A' of which extends below or within the frame E above the said shaft C, substantially as herein described.

11. The combination, with a cylindric fabric-support provided with securing devices at or near it edges, whereby a fabric may be supported so as to present a curved surface, of a sewing-machine the lower arm of which enters the fabric-support, a carriage comprising bearings for said rotary support and movable lengthwise of said support, a pattern comprising a track in pattern form movable on said carriage and geared with the rotary support, and a positively-operating engaging device, as wheel J, acting upon the pattern-track and serving to produce the movements of the pattern and the said support and carriage, substantially as herein described.

12. The combination, with a cylindric fabric-support, of securing devices at or near its edges, whereby a fabric may be secured so as to present a curved surface, a track in pattern form, constructed in the form of a cylinder and geared with the fabric-support, a carriage whereon said rotary fabric-support and pattern-cylinder are journaled and movable lengthwise of said pattern-cylinder, a positively-operating engaging device, as wheel J, acting upon the pattern-track, and a sewing-machine the lower arm of which enters the cylindric fabric-support lengthwise thereof, substantially as herein described.

448,254. CUTTER-HEAD. CHARLES R. PENFIELD, Lansing, Mich. Filed Feb. 1, 1890. Serial No. 338,942. (No model.)



Claim.—1. The combination of a cutter-head composed of two parts and provided with round holes in its periphery, a set of cutters provided with cylindrical shanks resting in said holes, and clamping-screws passing through the head and clamping the parts of the same to the cutter-shanks, as herein shown and described.

2. The combination, with a cutter-head composed of two parts and having round holes in its periphery, of a set of cutters having cylindrical shanks resting in said holes, the ends of the shanks and the inner ends of the holes having screw-threads which fit together, and a set of clamping-screws passing through the head to clamp the parts together, as herein shown and described.

3. The combination, with a circular cutter-head composed of two parts and provided with round holes arranged tangentially to the axis of rotation, of a set of cutters with cylindrical shanks fitting in said holes and standing at an acute angle to the cutter-head, whereby when said cutters are set in reverse positions from their position in use they form a true circle at their periphery, as herein shown and described.

4. The combination, with a circular cutter-head and a set of cutters provided with cylindrical shanks that rest in round holes of said head, of a guard consisting of a band which encircles the head, provided with elongated holes for the passage of the cutter-shanks and with filling-lugs which rest under the cutters and between them and the head, as herein specified.

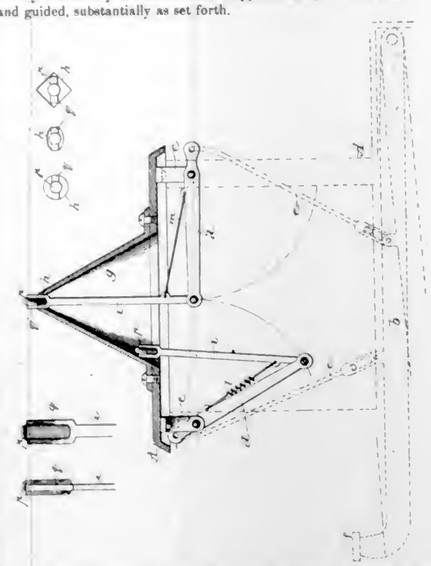
5. The combination, with a circular cutter-head and a set of cutters provided with cylindrical shanks that rest in round holes of said head, of a guard consisting of a band which encircles the head, provided with elongated holes for the passage of the cutter-shanks and with tongues on opposite sides which embrace the sides of the cutters to hold them in position, as herein specified.

6. The combination, with a cutter-head having round holes in its periphery, of a series of knives consisting of segmental cutting-blades and cylindrical shanks adapted to fit in holes in the cutter-head, whereby the cutting-points can be set in alternately offset positions by turning the cutters on the axes of the shanks, as herein shown and described.

448,255. TYPE-WRITING MACHINE. CHARLES A. PENNINGTON, Champaign, Ill. Filed Feb. 13, 1889. Serial No. 299,752. (No model.)

Claim.—1. The combination, with a frame, levers pivoted thereto and connected at their outer ends to the key-levers, and type-bars loosely mounted on the pivotal levers, of a centering device having a funnel-shaped inner face, against which the type-bars bear and by which they are maintained in approximately vertical position and guided.

2. The combination, with a frame, key-levers, levers pivoted to the frame and connected at their outer ends to the key-levers, and type-bars loosely mounted on the pivoted levers, of a centering device having a funnel-shaped inner surface, against which the type-bars bear and by which they are maintained in approximately vertical position and guided, substantially as set forth.



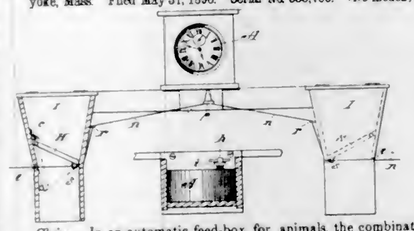
3. The combination, with a frame and a centering device having a funnel-shaped inner surface, of type-operating levers, type-bars pivoted thereto, and contractile devices connected with the type-bars for holding the free ends thereof in contact with the inner surface of the centering device, substantially as set forth.

4. The combination, with a frame and a centering device having a funnel-shaped inner surface, of type-bars, each having a fin which rests in contact with the inner surface of the centering device and springs for yieldingly holding the type-bars against the centering device, substantially as set forth.

5. The combination, with a frame and centering device, of type-bars maintained in approximately vertical position by the centering device, type, type-operating levers, contractile devices, key-levers, and pitmen, all connected and arranged substantially as described.

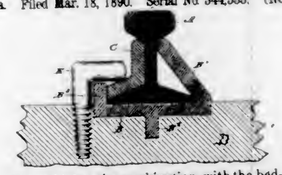
6. In a type-writer, the combination, with a funnel-shaped centering device, of keys located under and adjacent to the larger end of the centering device, type-bars, the free ends of which normally rest against the inner surface of the centering device near the larger end thereof, and contractile devices for holding the type-bars against said inner surface while moving toward the upper contracted end of said centering device, substantially as set forth.

448,256. AUTOMATIC ANIMAL-FEEDER. LUCIUS PERSON, Holyoke, Mass. Filed May 31, 1890. Serial No. 353,780. (No model.)



Claim.—In an automatic feed-box for animals, the combination of a winding-key *h* and cord-winding pulley i, combined and adapted to be made fast to the alarm-winding shaft of a clock, a cord *m*, secured to pulley i, cords *n n*, attached to cord *m*, eyes *p* and *r* for guiding cords *n n*, and doors H H, hinged in boxes I I and inclined thereto to have their lower free edges attached to cords *n n*, passing thereto through the wall of the boxes, all operating as and for the purpose set forth.

448,257. RAILWAY-JOINT. ALBERT PREISS, Norwood, South Australia. Filed Mar. 18, 1890. Serial No. 344,333. (No model.)



Claim.—In a rail-joint, the combination, with the bed-plate having projecting lugs, one of which projects inward so as to engage the head and web of the rail, of a fish-plate or angle-piece and a screwed spike having its head extending at right angles to the screw-threaded part and adapted to be turned so as to be pressed against said fish-plate, substantially as and for the purpose specified.

448,258. MACHINE FOR CUTTING BLANKS FOR METAL CAN-BODIES. DARWIN D. RANNEY, Lewistown, Ill., assignor to Henry W. Phelps and Sarah J. Ranney, same place. Filed Jan. 16, 1891. Serial No. 377,947. (No model.)

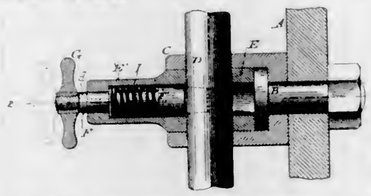


Claim.—1. In a machine for cutting blanks for can-bodies, &c., the combination of the cylindrical rotary cutters and bed-rolls, of elastic coverings secured upon the bodies of the cutters and rolls and adapted to support the metal and prevent buckling thereof under the action of the knives, substantially as described.

2. In a machine for cutting blanks for metal can-bodies, &c., the combination, with a rotatable shaft bearing cylinders having a cutting-edge at one end thereof, of sleeves of elastic material secured over the bodies of the cylinders between the knives, and a second shaft mounted parallel to the first and bearing thereon bed-rolls having elastic coverings, substantially as described.

3. In a machine for cutting blanks for metal can-bodies, &c., the combination, with a rotatable shaft bearing movable cylinders having cutting-edges at one end thereof, of elastic coverings for the bodies of said cylinders between the knives, a second rotatable shaft having removable bed-rolls thereon and elastic coverings therefor, spacing-washers for the cylinders and bed-rolls, and elastic rings to cover said washers, substantially as described.

448,259. DISCONNECTING DEVICE FOR ECCENTRIC-RODS. EDWIN REYNOLDS, Milwaukee, Wis. Filed Dec. 10, 1890. Serial No. 374,237. (No model.)



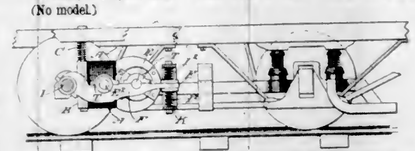
Claim.—1. In combination with a wrist-plate provided with a perforated socket-piece C, through which the eccentric-rod passes, a casting E, mounted within the socket and also perforated to receive the eccentric-rod, and means, substantially such as shown, for locking the eccentric-rod to the casting.

2. In combination with the wrist-plate provided with a cup-shaped socket C, a casting E, fitting therein and adapted to receive the eccentric-rod, and a pin or stem F, carried by the casting E and adapted to engage the eccentric-rod, all substantially as shown.

3. In combination with a wrist-plate provided with the cup-shaped socket C, perforated to receive the eccentric-rod, the casting E, fitting within the cup-shaped socket, perforated to receive the eccentric-rod, and provided also with a neck or extension having a groove H', and a pin or bolt F, adapted to engage the eccentric-rod and provided with a stud or projection H, all substantially as shown and described.

4. In combination with a wrist-plate provided with a cup-shaped socket C, perforated to receive the eccentric-rod, the casting E, fitting within the cup-shaped socket, perforated to receive the eccentric-rod, and provided with a neck or extension E', having a groove H', a rod or stem F, provided at its outer end with a handle and having its inner end fashioned to engage the eccentric-rod, a spring adapted to hold the stem normally in engagement with the eccentric-rod, and a stem or projection H, carried by the stem or bolt F and working within a groove H', formed in the neck or extension E', all substantially as shown and described.

448,260. MOTOR-SUSPENSION FOR RAILWAY WORK. EDWIN W. RICE, Jr., Lynn, Mass. Filed Aug. 15, 1889. Serial No. 320,905. (No model.)



Claim.—1. In an electric-railway motor, the combination of a motor field-magnet sleeved at one end on its armature-shaft, and an armature-shaft journaled in an independent frame carried at one end by an axle of the car and at its other by the truck-frame.

2. The combination, substantially as described, of the journal-bearing frame for the armature elastically supported at one end and sleeved to an axle of the car at the other, and a field-magnet supported on the armature-axis and at its other by an independent support.

3. The combination of the frame sleeved at one end on an axle of the car and supported at its other end by the truck-frame, of a motor-armature journaled in said frame, and a motor field-magnet supported at one end by the armature-axis and at the other by the car-body.

4. The combination, with the supporting-frame sleeved at one end on an axle of the car and elastically supported at its other, of a motor-armature journaled in said frame, and a motor field-magnet carried at one end by supporting-sleeves on the armature-axis and at its other by an attachment to the car-body.

5. The combination, with the supporting frame sleeved at one end on the driving-axle and elastically supported at its other, of an armature and gear journaled in said frame, and a field-magnet having a non-magnetic supporting sleeve or sleeves at one end borne by a shaft journaled in the frame, as and for the purpose set forth.

6. The combination, substantially as described, of the frame F, sleeved at one end on the driving-axle and elastically supported at its other, of a motor field-magnet suported at its yoke end in any suitable manner and having its field-pole end supported by the armature-shaft, journal-bearings for said shaft carried by the frame near its elastically-supported end, and a commutator-brush support mounted on said frame.

7. The combination, in an electric-railway motor, of a supporting-frame sleeved at one end on the car-axle and a driving electric motor supported at one end by the armature-axis of the motor journaled in said frame and at its other independently of said frame.

8. The combination, in an electric-railway motor, of a supporting-frame sleeved at one end on the car-axle, and a driving electric motor supported at one end by an axis that is journaled in the frame and at its other independently of said frame.

9. In an electric-railway motor, the combination, substantially as described, of a motor-frame in which the armature of the motor is mounted, and a support for the motor independent of such frame, as and for the purpose described.

10. In an electric-railway motor, the combination, substantially as described, of a frame provided with bearings for the gear which transmits motion from the armature to the car-axle, in combination with an independent elastic support for the motor sustained independently of said frame.

11. The combination, in an electric-railway motor, of a frame sleeved on the car-axle, and an elastic support independent of said frame and sustaining the field-magnet.

12. The combination, in an electric-railway motor, of a rigid frame for holding the parts in proper alignment with the car-axle, and a spring-support independent of said frame, whereby the frame may be relieved of the weight of the motor.

13. The combination, in an electric-railway motor, of a pivoted frame sustaining the armature, and a field-magnet sustained on pivoted bearings at one end carried by the frame and at the other by a support independent of the frame at the outer end.

14. In an electric-railway motor, an armature and gear supporting frame formed of two side pieces and a cross-piece integral with

one another and constituting a continuous frame independent of the motor, said frame being sleeved at one end upon an axle of the car and elastically supported at its other end on the same side of said car-axle with the electric motor sustained by said frame.

15. The combination, in an electric-railway motor, of a supporting-frame in which the armature of the motor is journaled, and a field-magnet for said armature supported at one end by non-magnetic brackets sleeved on the armature-shaft.

16. The combination, substantially as described, of the gear and armature supporting frame carried by the truck-frame and car-axle, and a motor field-magnet supported at one end by the armature-shaft.

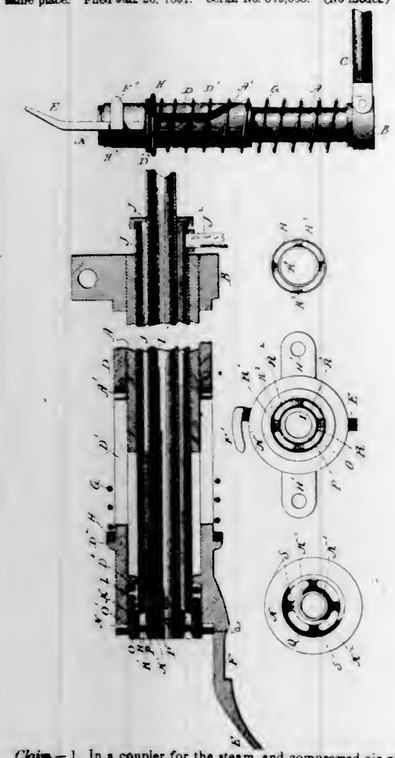
17. In an electric-railway motor, the combination of a supporting-frame provided with journal-bearings for the armature-shaft of the motor, and a motor field-magnet supported on the armature-shaft by sleeves thereon and by supports attached to the truck-frame or car-body.

18. The combination, in an electric-railway motor, of a field-magnet having its field-pole end freely supported so as to be movable by change of load, a movable supporting-frame therefor, and a commutator-brush support carried by the movable frame supporting the field-magnet, as and for the purpose described.

19. In an electric-railway motor, a rigid supporting-frame for the armature and gear shafts, said frame consisting of two longitudinal or side pieces sleeved on an axle of the car and carrying the journal-bearings for said shafts, and a cross-piece, said side and cross pieces being integral and forming three sides of a continuous frame independent of the motor, as and for the purpose described.

20. In an electric-railway motor, a rigid supporting-frame for the electric motor, consisting of the side or longitudinal pieces sleeved to an axle of the car and a uniting cross-piece integral with them, said side and cross pieces forming three sides of a continuous frame independent of the motor.

448,261. PIPE-COUPLING FOR RAILWAY-CARS. WILLIS G. RIDGE, New Haven, Conn., assignor of one-half to Clifford A. Hildreth, same place. Filed Jan. 26, 1891. Serial No. 379,065. (No model.)



Claim.—1. In a coupler for the steam and compressed-air pipes of railway-cars, a supporting-pipe, means for suspending the inner end thereof, a sleeve mounted upon its outer end so as to rotate when moved inward upon the same and provided at its outer end with two coupling-arms having diverging tapering ends, one being provided with a transverse slot and the other with a transverse finger, a steam-pipe extending throughout the length of the said operating-pipe and sleeve, an air-pipe concentric with the steam-pipe, a buffer connecting the outer ends of the steam and air pipes and projecting beyond the outer end of the sleeve, and steam and air connections with the inner ends of the steam and air pipes, substantially as described.

2. In a coupler for the steam and compressed-air pipes of railway-cars, a supporting-pipe, a sleeve mounted upon the outer end thereof and provided with longitudinal slots, pins mounted in the pipe and entering the said slots, which are shaped to co-operate with the pins in causing the sleeve to rotate, and two coupling-arms projecting from the outer end of the sleeve and having tapering extremities, one of the said arms being provided with a transverse slot and the other with a transverse finger, substantially as described.

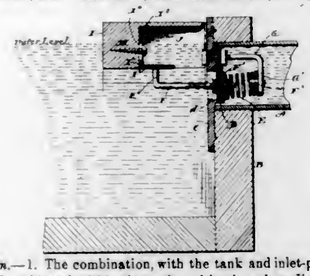
3. In a coupler for the steam and compressed-air pipes of railway cars, the combination, with a pipe and a sleeve rotally longitudinally movable thereupon and provided at its outer ends with two projecting coupling-arms having diverging tapering ends and respectively constructed with a transverse slot and provided with a transverse finger, of yielding supports for the said pipe and sleeve, concentric steam and air pipes located within the sleeve and supporting-pipe, and an annular buffer connecting the outer ends of the steam and air pipes, projecting beyond the outer end of the sleeve, and provided upon its outer face with packing-rings, substantially as described.

4. In a coupler for the steam and compressed-air pipes of railway-cars, the combination, with a pipe and a rotal and reciprocal sleeve mounted thereupon and provided at its outer end with two projecting coupling-arms, of concentric steam and air pipes extending throughout the length of the said pipe and sleeve, a flanged annular buffer connecting the outer ends of the pipes, projecting beyond the outer end of the sleeve, constructed with passages in line with the said pipes, and provided with packing-rings applied to its outer face, and a spring combined with the sleeve and buffer and located within the former for providing a yielding bearing for the latter, substantially as described.

5. In a car-coupler, the combination, with a supporting-pipe and a rotal and reciprocal sleeve mounted thereupon and having two projecting coupling-arms, of concentric steam and air pipes located within the said pipe and sleeve, an annular buffer connecting the outer ends of the steam and air pipes and having openings in line with the same, an annular groove which is formed in its outer face, two concentric packing-rings applied to the face of the buffer and having flanges which enter the said groove, and a flaring retaining-ring having passages in line with the said steam and air pipes located in the groove for holding the flanges of the packing-ring therein, substantially as described.

6. In a car-coupler, the combination, with two coupling members, each having a supporting-sleeve, and a rotal and reciprocal coupling-head, of concentric steam and air pipes located within the said pipe and head, a buffer projecting beyond the head and connecting the outer ends of the pipes, and means for supporting the said members so that they will yield to the relative movements of the cars to which they are applied, substantially as described.

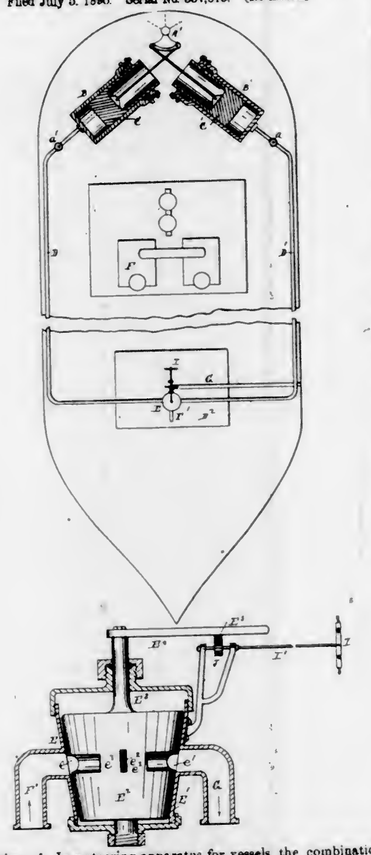
448,262. APPARATUS FOR WATERING HOGS. GEORGE F. RUNNELS, Waco, Nebr. Filed Jan. 7, 1891. Serial No. 377,017. (No model.)



Claim.—1. The combination, with the tank and inlet-pipe, of the recessed float hinged within the tank and having plate I′ within the recess, the valve in the inlet pipe, the rod F, connected to the valve and having bent end H′, and the spring E, acting on said valve and arranged within the inlet-pipe, substantially as described.

2. The combination, with the tank and the inlet-pipe, of the recessed float hinged within the tank and extended at right angles to the inlet-pipe with the recess opposite the end of said pipe, the adjustable right-angled plate I′, secured in said recess, the valve in the inlet-pipe, the bracket G in the inlet-pipe, passed through one end of the valve and having vertical arm G′, the spring E, held between said arm and the valve, and the rod F, connected at one end to the valve and the other end bent upward at right angles to its length and arranged to engage the plate I′, substantially as shown and described.

448,263. STEERING APPARATUS. WILLIAM RYMER, Detroit, Mich. Filed July 5, 1890. Serial No. 357,813. (No model.)



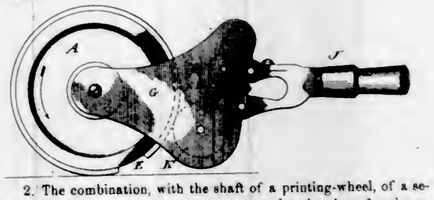
Claim.—1. In a steering apparatus for vessels, the combination, with a rudder, of a pair of cylinders provided with pistons which are connected to the rudder at opposite points, a controlling-valve provided with a through-port c^3 and side ports $c\,c'$, a pipe F′, communicating with the power-supply and communicating with said valve, supply-pipes D D′, communicating with the cylinders and said valve, and an exhaust-pipe G, substantially as set forth.

2. In a steering apparatus for vessels, the combination, with a rudder of a vessel, of a cylinder provided with a piston which is connected with the rudder, a power-supply pipe leading from the power-supply to said cylinder, a valve to control the passage of the power-supply, and mechanism for operating the valve, consisting of an arm connected to said valve and provided with a rack, and a shaft journaled in bearings and provided with a cog-wheel for engaging said rack, substantially as set forth.

3. In a steering apparatus for vessels, the combination, with the rudder, of two cylinders, each provided with a piston connected with the rudder, power-supply pipes leading from the power-supply and communicable with each other to both of said cylinders, and a valve to control the communication of said pipes with each other and the power-supply, substantially as set forth.

448,264. HAND PRINTING DEVICE. THOMAS G. SAXTON, Lexington, Ky., assignor of one-half to O. G. Vanderhoof, same place. Filed May 18, 1889. Serial No. 311,242. (Model.)

Claim.—1. In a printing-wheel having an opening and opposite flanges along its periphery, a spiral-wire band within said wheel, and a retaining device for said band, in combination with printing devices mounted in the periphery of said wheel in position to be pressed outward by said spiral-wire band, substantially as and for the purposes described.



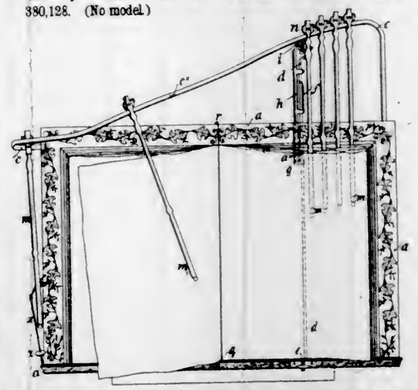
2. The combination, with the shaft of a printing-wheel, of a series of disks *a*, constructed to form an annular chamber a^3 and provided with flanges a^2, which are cut away to form an opening E, a separating-ring a^4, a spiral-wire band C within said annular chamber, a band D, provided with lugs *d*, in position to sustain the band C, and a type-holding band adapted to be inserted under flanges a^2, substantially as set forth and described.

3. The combination, with a printing-wheel having an opening in its periphery, of a type-holding band adapted to be inserted therein, and printing-types, each of which is provided with a piece of sheet metal, which is bent so that it may be applied to said band and will lap on the under side thereof, substantially as set forth and described.

4. The combination, with a hand printing-wheel and a frame in which said wheel is mounted, of an ink-reservoir which is provided with a rotative cylindrical valve N, a vessel adapted to be inserted in the top of said reservoir in position to deliver ink to said valve, said vessel being provided with a collar of flexible material, so that it fits closely in said reservoir, substantially as set forth and described.

5. The combination, with the shaft of a hand printing-wheel and a frame in which said wheel is mounted, of two boxes or housings A, detachably connected with said shaft at its extremities and adapted to rotate therewith, coiled springs H, secured within said housings and connected with said frame, said springs being adapted to be contracted when said wheel is rotated in one direction and to expand so as to rotate said wheel in an opposite direction, substantially as set forth and described.

448,265. MUSIC-LEAF TURNER. BRUNO SCHNEIDER, Buchholz, Germany. Filed Feb. 28, 1890. Renewed Feb. 4, 1891. Serial No. 380,128. (No model.)



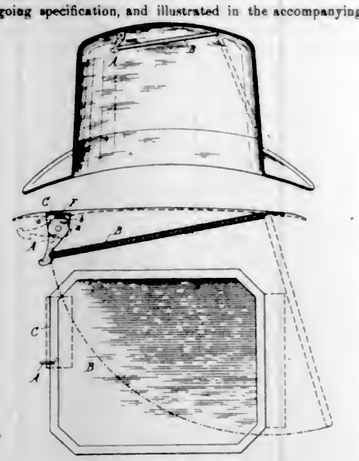
Claim.—1. The combination of an inclined rail with a series of rods *m*, having pulleys *n* that engage said rail, and with a lifter *d*, and a stop operated by said lifter and engaging the rods *m*, substantially as specified.

2. The combination of an inclined rail with a series of rods *m*, having pulleys *n* and pins *p*, and with lifter *d*, and pivoted cross-arm *t*, having pins *k l*, substantially as specified.

448,266. NOTE-PLATE FOR HEAD-COVERINGS. HEINRICH SCHNEIDER, Oberhausen, Germany. Filed Apr. 2, 1890. Serial No. 346,322. (No model.)

Claim.—A note sheet or plate B, attached to the roof of a hat or the like and being held by a movable hook A, which is operated on by a leaf-spring F, so as to retain the hook in two positions until a pressure exerted on the plate B releases the latter from the hook and allows the plate to flap down by gravity, substantially as set forth

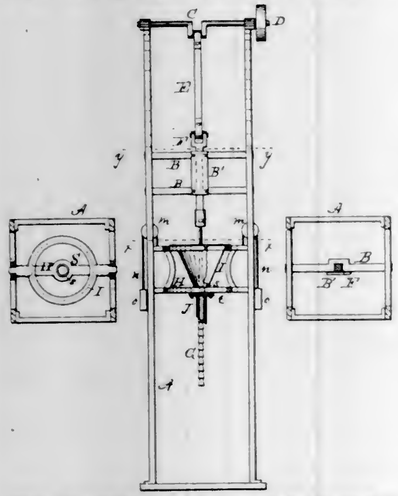
in the foregoing specification, and illustrated in the accompanying drawings.



448,267. PROCESS OF PAINTING IN OIL-COLORS. CARL C. SCHEITGER, Berlin, Germany. Filed Feb. 20, 1888. Serial No. 264,675. (No specimens.) Patented in Germany Apr. 7, 1887, No. 42,469.

Claim.—The method of painting in oil-colors which consists of, first, applying hardenable oil-colors, such as hereinabove specified, to the canvas in the usual manner, and, second, subjecting this layer or coating of paint so applied to the action of heat varying in temperature from 40° to 80° centigrade in order to quickly harden said coating of paint and prepare it to receive the immediate application of a new coating, substantially as described.

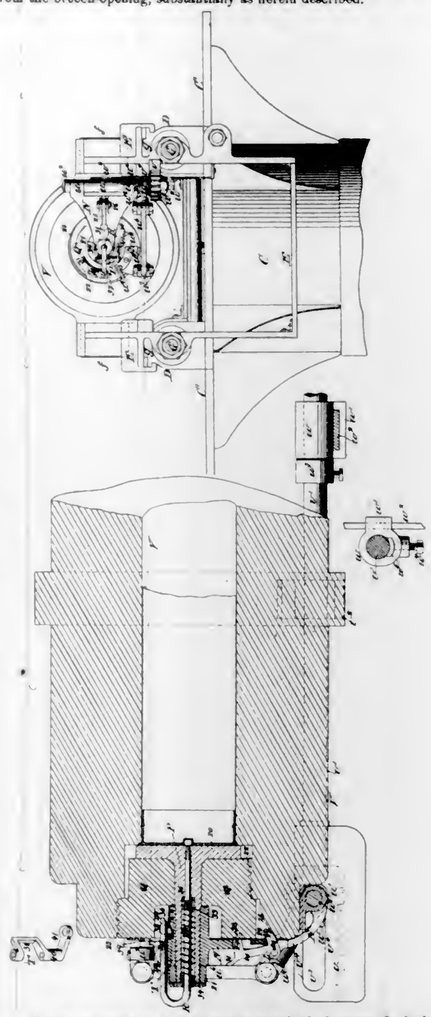
448,268. COLLAR-STUFFING MACHINE. JOHN S. SCHRAM, Dayton, Ohio. Filed Aug. 4, 1890. Serial No. 360,919. (No model.)



Claim.—In a collar-stuffing machine, the flexible hopper I, in combination with the carrier H, the feed-tube J, and the reciprocating stuffing-rod G, substantially as and for the purpose set forth.

448,269. BREECH-LOADING ORDNANCE. SAMUEL SEABURY, Bergen Point, N. J. Filed Mar. 16, 1889. Serial No. 303,598. (No model.)

Claim.—1. The combination of the gun, the breech-block, means for locking it in the breech of the gun, means for automatically rotating the breech-block to unlock and withdraw it from the breech of the gun, means for moving the breech-block laterally away from the breech-opening, and devices for then holding the breech-block away from the breech-opening, substantially as herein described.



2. The combination of the gun, the breech-block, means for locking it in the breech of the gun, means for automatically rotating the breech-block to unlock and withdraw it from the breech of the gun, means for moving the breech-block laterally away from the breech-opening, a stop for then holding the breech-block away from the breech-opening, and mechanism for automatically returning the breech-block to the breech-opening, inserting it therein, and locking it in position when the stop is released, substantially as herein described.

3. The combination, with the gun-carriage and a breech-loading gun thereon, of a hinged swinging breech-block carrier, a gear attached to the hinge of said carrier and concentric therewith, and a rack attached to a portion of the gun-carriage which does not move with the recoil of the gun and engaging with said gear for the purpose of producing the swinging movement of said carrier and the breech-block for opening and closing the breech by the backward and forward movement of the gun, substantially as and for the purpose herein specified.

4. The combination, with a gun-carriage and a breech-loading gun thereon having a hinged swinging breech-block carrier, of a spindle passing pivotally through the hinge of the carrier and a key on said spindle engaging with the said carrier, a gear on the said spindle, and a rack attached to a portion of the carriage which does not move with the recoil of the gun and engaging with said gear for the purpose of producing the swinging movement of the carrier and breech-block for opening and closing the breech by the backward and forward movement of the gun, substantially as and for the purpose herein specified.

5. The combination, with a gun-carriage and a breech-loading gun thereon having a hinged swinging breech-block carrier and a screw breech-block fitted to turn in said carrier, of a spindle passing pivotally through the hinge of the carrier and bearing a gear rigidly attached to said spindle, an arm on said spindle, a rod connecting said arm with the breech-block, a key on said spindle engaging the carrier with a lost motion, and a rack attached to a portion of the gun-carriage which does not move with the recoil of the gun and engaging with said gear for the purpose of producing both the swinging movement of the carrier and the turning movement of the breech-block in the carrier by the backward and forward movement of the gun, substantially as and for the purpose herein specified.

6. The combination, with a breech-loading gun having a hinged swinging breech-block carrier, and a carriage for said gun, consisting of a lower training carriage or member and an upper carriage or member on which the gun is directly mounted by its trunnions, and which is capable of moving back and forth on the lower carriage or member in a direction lengthwise of the gun, of a gear attached to said carrier, a rack engaging with said gear, a rack-bar connecting said rack with said lower carriage, an arc-formed standard secured to the said lower carriage or member in a position concentric with the trunnions of the gun in one position of the latter, and a slide connected with said rack-bar and fitted to slide up and down on said standard, substantially as and for the purpose herein set forth.

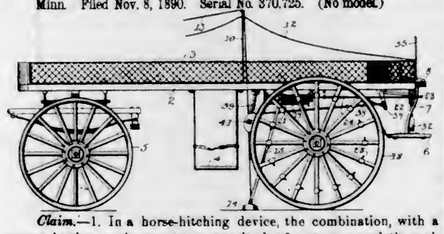
7. The combination, with a breech-loading gun having a hinged swinging breech-block carrier, and a carriage for said gun, consisting of a lower training-carriage and an upper longitudinally-moving carriage, of a gear attached to the hinge of said carrier and concentric therewith, a rack gearing with said gear, a bar carrying said rack, and a frictional sleeve fitted to said bar and attached to the lower carriage to serve as a sliding connection between said rack and the lower carriage, substantially as herein set forth.

8. The combination, with a breech-loading gun, of a swinging breech-block carrier, a mutilated-screw breech-block fitted to turn therein, a spring-actuated locking key for locking the said breech-block against turning in the carrier while out of the gun, and a camway in the breech-seat, in contact with which the said key moves to withdraw the said key from the breech-block to allow the latter to be turned to lock it in the gun, substantially as herein set forth.

9. The combination, in a breech-loading cannon, with a hinged swinging breech-block carrier having a central stem and a mutilated-screw breech-block turning on said stem, of a firing-pin composed of two straight portions, one passing through said stem and the other passing outside of said stem and provided with a projection, a trigger pivoted to said stem and engaging with the outside portion of said pin, and a cam on the said breech-block for operating on the said projection for cocking the pin, substantially as herein set forth.

10. The combination, with the stem of the swinging breech-block carrier, of a forked firing-pin, the firing-prong of which passes through and the other prong of which passes outside of said stem, a mainspring for said firing-pin, and a trigger having a stirrup-like portion through which the last-mentioned prong of the firing-pin passes, and which constitutes the sear, substantially as herein described.

448,270. HORSE-HITCHING DEVICE. CHRISTIAN SEE, St. Paul, Minn. Filed Nov. 8, 1890. Serial No. 370,725. (No model.)



Claim.—1. In a horse-hitching device, the combination, with a wagon having a rein support or standard, of a strap passed through the said standard connecting the bridle-bit and the hitching-weight, a lifting-strap for said weight, a spring-controlled sliding strap-holder operated by the driver, and a device upon said strap adapted to be engaged by the wagon-wheel when brought into proximity to it by the sliding of said holder, substantially as and for the purposes set forth.

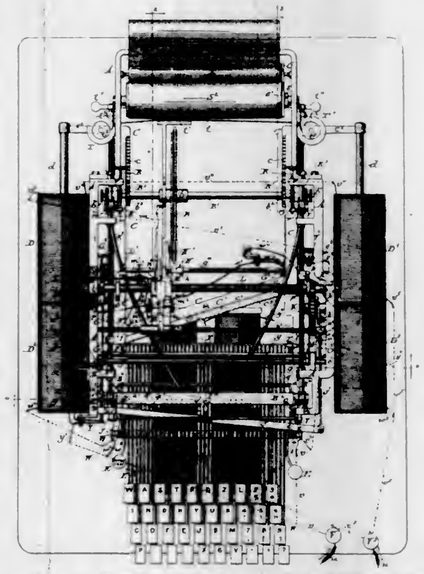
2. In a horse-hitching device, the combination, with the wagon, the hitching-weight, and its lifting-strap, of a movable support for said strap operated by the driver and devices upon one of the wagon-wheels engaging said strap and pulling upon the same to lift said weight, substantially as and for the purposes set forth.

3. In a horse-hitching device, the combination, with the wagon, the hitching-weight, and its lifting-strap, of supports for said strap upon the wagon-body, a sliding strap-holder, means operated by the driver for shifting the position of said holder, and devices upon said wheel engaging said strap when brought into proximity to them, substantially as described.

4. In a horse-hitching device, the combination, with the wagon, the hitching-weight, and its lifting-strap, of a strap-supporting drum journaled underneath the wagon-body, a clutch for said strap, means operated by the driver for releasing said clutch, a movable support for the strap adjacent to one of the wagon-wheels and operated by the driver, and devices upon the wagon-wheel for engaging said strap when brought into suitable position, substantially as described.

5. In a horse-hitching device, the combination, with the wagon, the hitching-weight, and the lifting-strap, of a clutch for said strap, means operated by the driver for bringing the strap into proximity with one of the wagon-wheels, and projections upon the wagon-wheels for engaging said strap, substantially as and for the purposes set forth.

448,271. ELECTRIC TYPE-WRITING MACHINE. EDWARD J. SILLMAN, Baltimore, Md., assignor of two-thirds to George D. Penniman and Thomas K. Worthington, both of same place. Filed Apr. 7, 1890. Serial No. 346,944. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a main frame, a type-wheel carriage traversing longitudinally guides therein, a type-wheel movable endwise on but turning with a shaft mounted in bearings in said carriage, a type-wheel-actuating frame traversing longitudinally guides on the carriage parallel therewith, racks on this actuating-frame engaging with gears on the type-wheel shaft, and electro-magnetic apparatus for reciprocating the actuating-frame and thereby turning the type-wheel.

2. The combination, substantially as hereinbefore set forth, of a main frame, a carriage traversing longitudinally guides therein, a type-wheel carried by a shaft mounted in said carriage, a type-wheel-actuating frame traversing longitudinally guides on this carriage, racks on this frame engaging gears on the type-wheel shaft, a dog engaging the type-wheel at suitable intervals to lock the carriage and actuating-frame together, and electro-magnetic apparatus for reciprocating them when thus interlocked.

3. The combination, substantially as hereinbefore set forth, of a main frame, a carriage traversing longitudinally in guides therein, a type-wheel carried by a shaft mounted in said carriage, a type-wheel-actuating frame traversing longitudinally guides in this carriage and parallel therewith, racks on this frame engaging gears on the type-

wheel shaft, a dog engaging the type-wheel at suitable intervals to lock the carriage and actuating-frame together, electro-magnetic apparatus for reciprocating both the carriage and frame together when thus interlocked, and means for automatically unlocking them to allow the type-wheel to turn by the forward movement of the actuating-frame.

4. The combination, substantially as hereinbefore set forth, of a main frame, a carriage traversing guides therein, a type-wheel carried by a shaft mounted in said carriage, a type-wheel-actuating frame sliding longitudinally parallel with said carriage on guides therein, racks on this frame engaging gears on the type-wheel shaft, solenoids mounted on the main frame, armature-cores therefor connected directly with the actuating-frame, a stop-plate also carried by this frame, a key-lever, a stop thrown thereby across the path of the stop-plate, a locking-dog engaging with the type-wheel, and mechanism for releasing it.

5. The combination, substantially as hereinbefore set forth, of a main frame, a carriage traversing longitudinally guides therein, a type-wheel mounted therein, an actuating-frame traversing longitudinally guides in said carriage, a stop-plate on this frame, a key-lever, a stop thrown across the path of this stop-plate thereby, a dog engaging with the type-wheel, and mechanism to unlock the dog.

6. The combination, substantially as hereinbefore set forth, of a main frame, a carriage traversing guides therein, a type-wheel mounted therein, an actuating-frame traversing guides therein, means for rotating the type-wheel by the differential movements of its carriage and actuating frame, a stop-plate on this frame, a key-lever, a stop thrown across the path of this stop-plate thereby, a locking-dog engaging with the type-wheel, a shifter-bar actuated by the stop, link connections between this bar and the locking-dog, a spring-latch or locking-lever which holds the dog in position, and the cam which releases the latch at the proper moment.

7. The combination, substantially as hereinbefore set forth, of a main frame, a carriage traversing therein, a type-wheel mounted in the carriage, an actuating-frame traversing guides in the carriage, gearing for rotating the type-wheel by the differential movement of this carriage and frame, a locking-dog engaging with the type-wheel, a spring-latch which holds this dog in its locked position, a releasing-cam actuating the spring-latch, and an arm on said latch positively actuated by the mechanism which locks the dog to insure the fastening of the spring-latch.

8. The combination, substantially as hereinbefore set forth, of a main frame, a carriage traversing guides therein, a type-wheel mounted therein, an actuating-frame traversing guides therein, a stop-plate carried by this frame oblique to its line of movement, a series of key-levers, a series of stops arranged transversely across the machine in the same vertical plane, each actuated by its respective key-lever, and means for reciprocating the stop-plate and for varying its range of movement according to the stop interposed.

9. The combination, substantially as hereinbefore set forth, of a reciprocating carriage, a type-wheel mounted therein, an actuating-frame traversing said carriage, a stop-plate on this frame oblique to its line of movement, a series of key-levers, stops traversable thereby athwart the line of movement of the stop-plate, a shifter-bar actuated by the stops, link connections actuated by this bar, a locking-dog actuated thereby, and electro-magnetic devices, also actuated by said link connections, regulating the movement of the type-wheel carriage and actuating-frame.

10. The combination, substantially as hereinbefore set forth, of a reciprocating type-wheel carriage or actuating frame, a stop-plate carried thereby, a series of key-levers, stops traversed thereby athwart the line of movement of the stop-plate, electro-magnetic devices for reciprocating said actuating-frame, and circuit-controlling devices actuated by the key-levers controlling said mechanism.

11. The combination, substantially as hereinbefore set forth, of a guideway, stops movable therein, a notch or step on each stop, a spring tending to engage the notch with the guideway when the stop is elevated, a stop-plate which releases the step from engagement with the guideway, and a type-wheel rotated by the stop-plate.

12. The combination, substantially as hereinbefore set forth, of a type-wheel movable laterally on its shaft, a feed-screw shaft, a slide-block thereon movable with the type-wheel, a rock-shaft, a screw-arm thereon interlocking with the slide-block and screw-shaft, a crank-arm on the rock-shaft, a dog acting thereon to release the screw-arm, electro-magnetic devices controlling link connections actuating the dog, and a spring to retract the type-wheel when released from the screw-shaft.

13. The combination, substantially as hereinbefore set forth, of a type-wheel, its reciprocating carriage, its separate reciprocating actuating-frame, type-wheel-locking mechanism carried by an independent frame, and means for actuating the locking mechanism from the actuating-frame.

14. The combination, substantially as hereinbefore set forth, of a reciprocating stop-plate, stops traversing its path, a shifter-bar actuated by the pressure of the stop-plate on the stops, a type-wheel, a dog interlocking therewith, and link connections between said shifter-bar and dog.

15. The combination, substantially as hereinbefore set forth, of a type-wheel, its carriage, its actuating-frame, a stop-plate carried thereby, yielding spring-stops intercepting the path of the stop-plate, a shifter-bar actuated by the stop-plate and stops, a dog interlocking with the type-wheel, link connections between the shifter-bar and dog to lock the type-wheel, and means for automatically releasing said dog.

16. The combination, substantially as hereinbefore set forth, of a type-wheel, a feed-screw shaft, mechanism connecting the wheel and shaft to feed the latter laterally, a laterally-moving locking-dog, link connections actuating it, and a cam on the feed-screw shaft to release the dog.

17. The combination, substantially as hereinbefore set forth, of a type-wheel, a rocking locking-dog engaging therewith, a vibrating arm actuating said dog, a pin or stop carried by the arm, a spring-actuated notched locking-lever engaging therewith to hold the dog in the proper position, and a cam on the feed-screw shaft to release the dog.

18. The combination, substantially as hereinbefore set forth, of a reciprocating type-wheel carriage, a type-wheel mounted therein, a feed-screw shaft for moving the type-wheel laterally, connections between the type-wheel and screw-shaft, a stop on the latter, and a detent on the carriage abutting against the stop to lock the type-wheel positively at the proper moment.

19. The combination, substantially as hereinbefore set forth, of a main frame, a carriage reciprocating in guides therein, a type-wheel in this carriage, a type-wheel-actuating frame reciprocating in guides on the carriage, gearing connecting the carriage and frame, means for reciprocating the actuating-frame and thereby rotating the type-wheel, separate means for actuating the carriage, and means for locking the type-wheel and actuating-frame so as to print a letter by actuating the type-wheel carriage.

20. The combination, substantially as hereinbefore set forth, of a type-wheel, its carriage, its actuating-frame, a feed-screw shaft, connections between it and the type-wheel, ratchet-gearing for rotating said shaft intermittently, and links connecting such gearing and carriage so as to feed the type-wheel laterally after each reciprocation of the type-wheel.

21. The combination, substantially as hereinbefore set forth, of a type-wheel having capital and small letters arranged alternately on its periphery, a reciprocating type-wheel carriage, a key-lever, and a stop connected therewith to limit the range of movement of the type-wheel when capitals are to be printed.

22. The combination, substantially as hereinbefore set forth, of a type-wheel, its carriage, a feed-screw shaft, a ratchet-feed and link connections between the feed-screw shaft and carriage, a rock-shaft, a laterally-sliding frame connecting the type-wheel, screw-shaft, and rock-shaft, a pivoted spring-arm carried by the rock-shaft and carrying a screw engaging with the screw-shaft, a crank-arm on the rock-shaft, a dog acting thereon, and link connections for rocking the shaft to release the actuating-arm from the screw-shaft when the type-wheel is to be retracted to commence a new line.

23. The combination, substantially as hereinbefore set forth, of a type-wheel, its carriage, a feed-screw shaft, a ratchet feed and link connections between said screw-shaft and carriage, a rock-shaft, a laterally-sliding frame connecting the type-wheel, screw-shaft, and rock-shaft, a pivoted spring-arm carried by the rock-shaft and carrying a screw engaging with the screw-shaft, a crank-arm on the rock-shaft, an impression-cylinder, its paper-feeding pawl, and link connections for simultaneously actuating the pawl and turning the rock-shaft so as simultaneously to release the actuating-arm from the screw-shaft when the type-wheel is to be retracted and simultaneously to feed the paper by actuating the pawl.

24. The combination, substantially as hereinbefore set forth, of a type-wheel, its reciprocating carriage, a type-wheel-actuating frame, mechanism carried thereby for feeding the type-wheel laterally therein, a generator of electric currents, circuit-connections, key-levers controlling them to reciprocate the type-wheel-actuating frame, a stop-plate on said frame, and stops actuated by the key-levers which control other circuit-connections, and mechanism actuated by said circuit-connections which prints a character and actuates the type-wheel-feeding mechanism.

25. The combination, substantially as hereinbefore set forth, of a type-wheel, its reciprocating carriage, a reciprocating type-wheel-actuating frame, gearing for reciprocating the type-wheel from the actuating-frame, a source of electric energy, mechanism actuated therefrom to reciprocate the actuating-frame, and automatic circuit-shifting devices operated by the actuating-frame to reverse its movements at the proper time.

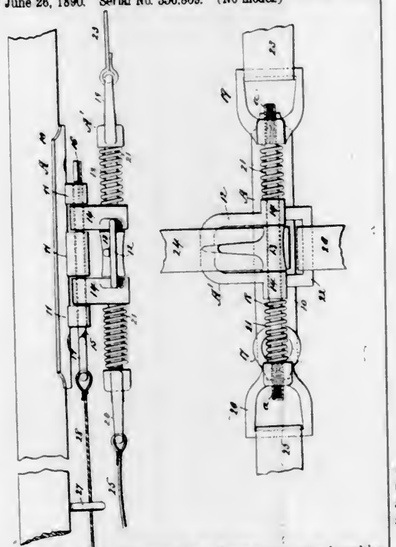
26. The combination, substantially as hereinbefore set forth, of a main frame, a type-wheel, its carriage reciprocating in guides in the main frame, a type-wheel-actuating frame reciprocating in guides on the carriage, solenoids arranged end to end in pairs on opposite sides of the main frame, (the solenoids of each pair being oppositely wound,) their armature-cores connected directly with the actuating-frame, and circuit-connections by which the current is alternately shifted from one set of solenoids to the other to rotate the type-wheel.

27. The combination, substantially as hereinbefore set forth, of a type-wheel, its carriage reciprocating in guides on the main frame, a vibrating armature connected directly with this carriage, electro-magnets on opposite sides of said armature, and circuit-connections automatically controlled by the reciprocation of the frame alternately to shift the current through the magnets to print a character and to retract the type-wheel from the impression-cylinder.

28. The combination, substantially as hereinbefore set forth, of a main frame, a type-wheel, its carriage, a type-wheel-actuating frame reciprocating in guides therein, solenoids arranged end to end in pairs on the main frame, (the solenoids of each pair being oppositely wound,) their armature-cores connected with the actuating-frame, key-levers, a contact-bar or rocking frame resting thereon, and circuit-controlling devices carried by the contact-bar so as to shift the current from one set of solenoids to the other on the depression of a key.

29. The combination, substantially as hereinbefore set forth, of a type-wheel, its reciprocating carriage, electro-magnetic devices actuating the latter, a reciprocating type-wheel-actuating frame, electro-magnetic devices operating it, a stop-plate carried by this frame, a yielding stop intersecting the path of the stop-plate, a shifter bar or frame actuated by the stop-plate and interposed stop, circuit-connections, and circuit-controlling devices actuated by the reciprocation of the type-wheel carriage and actuating-frame and of the shifter-bar to shift the current through both sets of actuating-magnets.

448,272. HORSE-DETACHER. DAVID F. SLOAN, Mattapan, Mass. Filed June 26, 1890. Serial No. 356,809. (No model.)



Claim.—1. In a horse-detacher, the shaft-plate 10, having knuckles 11, a longitudinally-sliding pintle, and a buckle having knuckles at its lower end through which said pintle passes, and a longitudinally-extending rod sliding in the lower end of the buckle parallel with said pintle and having tug and holdback connections at its ends, substantially as described.

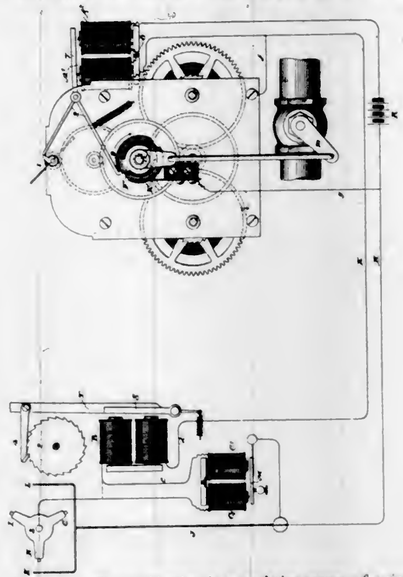
2. In a horse-detacher, the shaft-plate 10, having knuckles 11, a longitudinally-extending sliding pintle, a buckle 12, having knuckles at its lower end through which said pintle passes, a sliding rod extending through the lower end of the buckle and forming the axis of its tongue, and tug and holdback connections on the ends of said rod, substantially as described.

3. In a device of the character described, the combination, with a plate adapted for attachment to a shaft of a vehicle, of a buckle hinged to the said plate provided with a removable pintle, a rod held to slide in the lower portion of the buckle, loops upon the ends of the rod, and springs encircling the said rod at each side of the buckle, as and for the purpose specified.

4. In a device of the character described, the combination, with a plate adapted for attachment to the shaft and spaced knuckles formed upon said plate, of a buckle having knuckles formed integral therewith adapted to enter the spaces between the knuckles of the plate, a detachable pintle passed through the knuckles of the plate and the buckle provided with an eye at one end and a slot at the other, a rod held to slide laterally through the buckle, loops adjustably secured to the ends of the rod, and springs encircling the said rod between the loops and the buckle, as and for the purpose specified.

5. In a device of the character described, the combination, with a plate and spaced knuckles formed integral with said plate, of a buckle provided with a detachable tongue and rearwardly-extending knuckles adapted to enter the spaces between the knuckles of the plate, a loop formed integral with the lower portion of the buckle, a detachable pintle adapted to pass through the knuckles of the plate and the knuckles upon the buckle, the said pintle being provided with an eye at one end and a slot at the other, a rod passed through the buckle and tongue thereof and held to slide freely therein, loops adjustably secured at the extremities of the rod, and springs encircling the said rod between the opposed faces of the loops and the buckle, substantially as shown and described.

448,273. ELECTRICALLY-CONTROLLED VALVE. JOHN V. STOUT, Easton, Pa. Filed Jan. 31, 1890. Serial No. 338,762. (Model.)



Claim.—1. The combination, in a regulating system, of a circuit and a normally-open circuit-controller, a battery and magnets in series in the circuit, one of said magnets operating the circuit-controller and another of said magnets controlling the motor for the regulating-valve, and a short circuit for the battery, substantially as described.

2. The combination, in a regulating system, of a circuit, a battery, a circuit-controller, and magnets in series, one of said magnets being of higher resistance, and a shunt closed by its armature cutting out one coil thereof and shunting the contact of the circuit-controller, substantially as described.

3. The combination, in a regulating system, of an expansible device provided with electrical contact-points, movable co-operating contacts, a propelling-magnet and armature therefor carrying a propelling-pawl, and a ratchet-wheel operatively connected to said movable contacts, substantially as described.

4. The combination, in a regulating system, of an expansible device provided with electrical contact-points, movable co-operating contacts, a propelling-magnet, armature, pawl, and a detent or regulator, said armature having an extension terminating adjacent to and normally bearing against the detent, substantially as described.

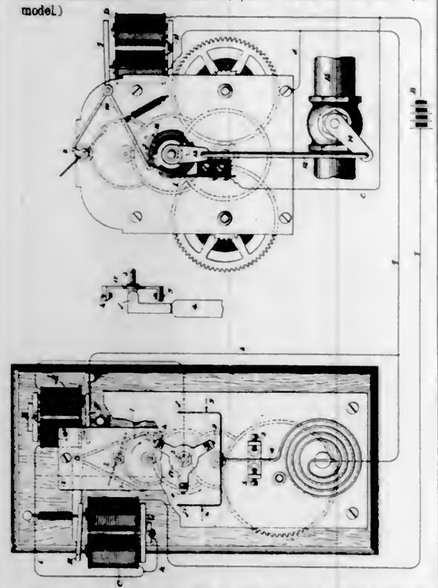
5. The combination, in a circuit-controller, of an expansible mem-

ber connected to the circuit and terminating in a contact-point, co-operating contacts movable into and out of the path of movement of said expansible member, and a locking device for retaining the same in its set position, substantially as described.

6. The combination, in a step-by-step device, of a propelling-magnet, armature, pawl, and a detent or regulator, the pawl operating on suitable gearing, said armature being provided with an extension terminating adjacent to and in front of the detent, whereby said extension serves as a stop for said detent, allowing but one revolution for each movement of the armature, and said detent serves as a back-stop for said armature, substantially as described.

7. The combination, in a regulating system, of an expansible device connected to a circuit-terminal, a co-operating contact connected to another terminal, a valve, a motor for opening and closing the same, a controlling-magnet therefor, and a single circuit and source of current-supply embracing said terminals and the motor-controlling magnet, substantially as described.

448,274. ELECTRIC TEMPERATURE-REGULATOR. JOHN V. STOUT, Easton, Pa. Filed Jan. 31, 1890. Serial No. 338,763. (No model.)



Claim.—1. The combination, in a regulator, of a thermostatic bar having conducting terminals, a revoluble plate having co-operating contacts, and means for turning said plate, whereby one of said co-operating contacts rubs across one of said terminals and is carried out of the path of movement of the bar and another contact is brought into the path of the bar on its return movement, substantially as described.

2. The combination, in a regulator, of an expansible device terminating in two conducting-arms, a revoluble plate between said arms having co-operating contacts, a circuit connected to the bar and to the plate, and a motor for moving said plate, substantially as described.

3. The combination, in a circuit-controller, of an expansible member connected to the circuit and terminating in arms each having a contact-point, and a revoluble member having co-operating contacts symmetrically arranged and connected to the opposite terminal of the circuit, substantially as described.

4. The combination, in a circuit-controller, of an expansible member terminating in an electrical contact which is extended to one side of the main body of said member, a movable co-operating contact, and means for moving the same out of the path of movement, substantially as described.

5. The combination, in a circuit-controller, of an expansible member having electrical contact-points connected to a circuit, a revoluble member provided with co-operating contacts, a motor for revolving the same, and an escapement which by its movement permits a partial revolution of the revoluble member, substantially as described

6. The combination, in a circuit-controller, of an expansible member connected to the circuit, a co-operating movable member connected to a second terminal of the circuit, and a mechanical stop independent of the circuit for each side of the expansible member, substantially as described.

7. The combination, in a regulating system, of a thermostatic circuit-controller, a regulator, a motor therefor, a circuit including a battery and three magnets, one magnet being at the regulator and controlling the motor and two of the magnets being adjacent to the circuit-controller, a shunt to the thermostatic circuit-controller controlled by one magnet, and a mechanical motor operatively connected to one contact of the circuit-controller and controlled by the third magnet, substantially as described.

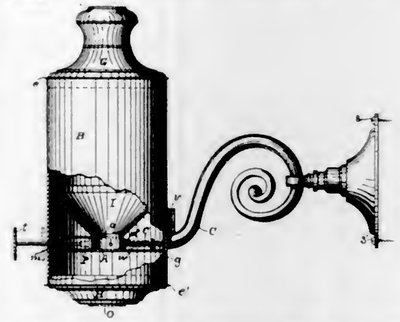
8. The combination, in a regulating system, of a circuit-controller having a movable member, a motor operatively connected thereto, a magnet and detent armature, a second magnet of higher resistance than the first and in series therewith, a shunt, and a circuit-closer therefor for removing resistance from the line, substantially as described.

9. The combination, in a regulating system, of a circuit-controller comprising an expansible member and a co-operating revoluble member, of a shunt for the contact, said shunt being closed by a magnet in the line, substantially as described.

10. The combination of a motor, a releasing-magnet, armature, a detent, a second magnet in series with the first, an armature therefor which is more readily attracted than the first armature, a circuit closed by the second armature, and a shunt around the second magnet closed by the armature of the first magnet, substantially as described.

11. The combination, in a regulating system, of a valve controlling the heating medium, a motor for opening and closing said valve, a detent for the motor, a magnet, an armature for moving said detent, and a circuit-closer on the motor-shaft, one member of the circuit-closer being connected to the main circuit between the battery and detent-magnet, and the other member being connected to the circuit on the opposite side of said magnet, substantially as described.

448,275. SOAP HOLDER AND DISTRIBUTER. HENRY F. STOWELL, Rochester, N. Y. Filed Nov. 11, 1890. Serial No. 371,025. (No model.)



Claim.—1. The soap-holder consisting of the main body or receptacle having an opening in the bottom, a hopper secured in such receptacle between its ends, a laterally-slotted discharge-box fixed to the bottom of the hopper-body, a cut-off adapted to enter the lateral slot in the box, a plate normally closing the bottom of the box, provided with a discharge-opening and adapted to be moved to bring the opening under the box, a push-rod connected to such cut-off and also to the plate, a stop on said plate, a rod connecting the discharge-box and the wall of the receptacle and passing through said stop, and a spring surrounding the rod and located between said wall and stop, substantially as set forth.

2. The soap-holder consisting of the main body or receptacle having an opening in the bottom, a hopper secured in such receptacle between its ends, a laterally-slotted discharge-box fixed to the bottom of the hopper-body, a cut-off adapted to enter the lateral slot in the box, a plate normally closing the bottom of the box, provided with a discharge-opening and adapted to be moved to bring the opening under the box, a stop on said plate, a push-rod connected to such cut-off and also to the plate, and a spring arranged between the wall of the receptacle and the stop for automatically closing the bottom of the discharge-box, substantially as set forth.

3. The soap-holder consisting of the main body or receptacle having an opening in the bottom, a hopper secured in such receptacle between its ends, a laterally-slotted discharge-box fixed to the bottom of the hopper-body, a cut-off adapted to enter the lateral slot of the box, a plate normally closing the bottom of the box, provided with a discharge-opening and adapted to be moved to bring the opening under the box, a stop on said plate, a push-rod connected to such cut-off and also to the plate, and a spring arranged between the wall of the

receptacle and the stop for automatically closing the bottom of the discharge-box, and a bracket-stud-receiving socket, said socket, spring, stop, and push-rod being arranged in the same horizontal plane, substantially as set forth.

4. In combination, the main receptacle provided with an interior hopper having attached to its bottom a discharge-box provided with a lateral slot near its top, a sliding cut-off and valve consisting of the upper plate having a rectangular part and a semi-cylindrical part resting in said lateral slot, and a lower plate rigidly connected to said first-named plate, having an opening under the rectangular part of said plate and extended beyond its semi-cylindrical portion to close the bottom of the discharge-box when said box is open at the top, and devices for moving the upper plate into the slot, and the opening in the lower plate under the box, and ways for the plates located at a distance laterally from the discharge-box, substantially as set forth.

448,276. SHADE FOR SPECTACLES OR EYEGLASSES. JOHN F. STRANGE, New Bedford, Mass., assignor to himself and Joshua B. Winslow, same place. Filed Sept. 4, 1890. Serial No. 363,910. (No model.)



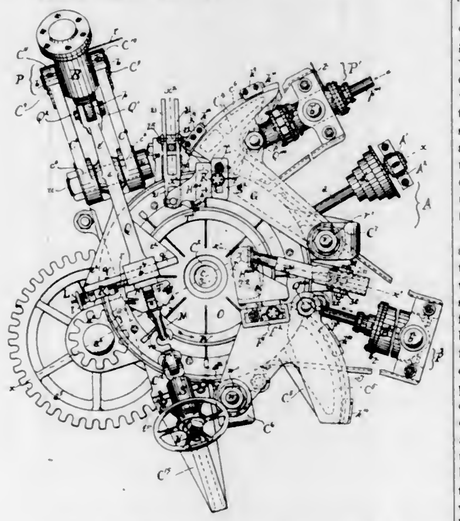
Claim.—1. Spectacles or eyeglasses provided with a protuberant concentrating-shade having a perforation which is elongated inwardly from the direct line of sight through the lens, substantially as described.

2. The combination, with a pair of eyeglasses or spectacles, of a removably-attached protuberant concentrating-shade provided with a perforation which is elongated inwardly from the direct line of sight through the lens, substantially as described.

3. The combination, with a pair of eyeglasses or spectacles, of a removably-attached protuberant concentrating-shade provided with an elongated perforation, the inner edge of which is made nearer the lens than the outer edge, substantially as described.

4. The removable concentrating-shade for spectacles or eyeglasses, made in conical form with an elongated perforation and provided with attaching-hooks, substantially as described.

448,277. BORING AND TURNING MILL. FREDERICK W. TAYLOR, Philadelphia, Pa. Filed Dec. 11, 1889. Renewed Jan. 15, 1891 Serial No. 377,818. (No model.)



Claim.—1. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage, a reciprocating ram, and operative mechanism whereby said ram may be advanced and exert a pressure on said carriage which tends in the direction in which it is desired the said carriage shall advance, and a holdback-screw with nut and abutments, substantially as and for the purposes hereinbefore described.

2. The combination, with the rotative boring-mill table, of a tool-supporting carriage pivoted to swing from "clear" to operative positions ranging within the swing range of said table's rotation, a tool-holder formed on or attached to said carriage, an advancing ram, operative mechanism whereby said ram may be advanced and exert a pressure on said carriage tending in the direction in which it is desired said carriage shall advance crosswise of said table toward the work thereon carried, and a holdback-screw with nut and abutments, substantially as and for the purposes hereinbefore described.

3. The combination of the rotative boring-mill table with a pivoted circularly-movable tool-supporting carriage, a reciprocating ram fixed in relation to said carriage and table, operative mechanism whereby said ram may be advanced and exert a pressure which tends in the direction in which it is desired that said tool-supporting carriage shall advance, a holdback-screw with nut and abutments, and any suitable known mechanical connections whereby said nut and screw may be rotated in relation the one to the other in a self-acting way and permit feed movements in said tool-supporting carriage, substantially as and for the purposes hereinbefore described.

4. The combination, with a rotative boring-mill table, of a pivoted tool-supporting carriage provided at or near its free or swinging margin with a guide part or parts, a relatively-fixed guideway therefor, clamps by which the tool-carriage may be firmly secured when the tool has been brought into the desired position in relation to the work, and a reciprocating ram and operative mechanism whereby said ram may be advanced and may exert a pressure on said carriage which will tend in the direction in which it is desired said carriage shall advance, the whole substantially as and for the purposes hereinbefore described.

5. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage provided at or near its free or swinging margin with a guide part or parts, a relatively-fixed lateral guideway therefor, a reciprocating ram, operative mechanism whereby said ram may be advanced and exert a pressure upon said tool-supporting carriage which tends to move it in the direction in which it is desired that said tool-support shall advance, and a holdback-screw with nut and abutments, as described, the said carriage's pivotal connections and tool-supporting part being so located in respect not only to each other, but also to the said advancing ram and holdback screw and nut, that the resultant center line of pressure produced by the joint advancing tendency of the ram on the one hand and the holdback nut and screw as a restraining or releasing stress on the other shall tend to deflect and move said carriage in substantially the same direction as said carriage would be deflected and moved on forcing its tool to a cut in the work, substantially as and for the purposes hereinbefore described.

6. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage provided upon its free or swinging margin with a guide part or guide parts, a relatively-fixed lateral guideway therefor, a tool-holder pivotally connected to said carriage, a reciprocating ram, operative mechanism whereby said ram may be advanced and exert a pressure upon said tool-supporting carriage which tends to move it in the direction in which it is desired that said tool-support shall advance in the said carriage's pivotal connection proper, and said tool-supporting part being so distributed and located that the reaction of the work upon the tool when being fed into or cutting a chip from said work shall tend in a direction outward and away from the portion of the work actually operated upon, substantially as and for the purposes hereinbefore described.

7. The combination, with the rotative boring-mill table, of a tool-supporting carriage pivoted to swing from clear to and within said table's swing range, said carriage having at or near its free or swing margin a guide part or parts, a relatively-fixed guideway therefor, said carriage being provided with a slide-rest's slide-block, guideways formed on or integral therein, a slide-rest block adapted to slide and be fed therein in usual way and carry a tool-holder, a tool-holder formed on or attached to said slide-block and adapted to support and operate an outside or turning tool, an advancing ram pivotally supported to said mill's frame on one hand and said carriage-body on the other, operative mechanism whereby said ram may be advanced and exert a pressure on said carriage, a holdback-screw with nut and abutments pivotally connected to said tool-holder, the relative position of said carriage's pivotal connections and said rams and said holdback-screw's carriage and tool-holder connections, respectively, treat the resultant line of pressure due to their joint actions (the one advancing, the other restraining) may lie in approximately the same line and be directed in the same outward way from the work, as the work would tend to deflect and move the jointed supports of the turning-tool so supported should said tool's edge be penetrated into the body of the work in coming to or actually taking a chip, substantially as and for the purposes hereinbefore described.

8. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage, a reciprocating ram, operative mechanism whereby said ram may be advanced and exert a pressure on said carriage which tends in the direction in which it is desired the

said carriage shall advance, a holdback-screw of rapid pitch with corresponding nut, as described, abutments, and suitable known mechanical connections whereby said nut may be used to release, arrest or rotatably control motion in said holdback mechanism, substantially as and for the purposes hereinabefore described.

9. The combination, with the rotative boring-mill table, of two or more pivoted tool-supporting carriages adapted to swing from clear to and within operative range of said table's swing, a reciprocating ram for each of said carriages, and operative mechanism whereby said rams may be advanced and exert pressure on said carriages, respectively, said pressure in each case tending in the direction in which it is desired the said carriage shall advance, and holdback-screws with nuts and abutments for each of said carriages, the whole operative substantially as and for the purposes hereinbefore described.

10. The combination, with the rotative boring-mill table, of a tool-supporting carriage pivoted to swing to and within said table's swing range, a tool-holder formed on or attached to said carriage and adapted to support and operate an inside or boring tool, an advancing ram and operative mechanism whereby said ram may exert a pressure on said carriage which tends in the direction in which it is desired the said carriage shall advance crosswise of said table as well as outward from its axis and toward the bore of the work which may be carried thereon, and a holdback-screw with nut and abutments adapted to act as releasing mechanism for said ram-advanceable carriage, substantially as and for the purposes hereinbefore described.

11. The combination, with the rotative boring-mill table, of two pivoted tool-supporting carriages adapted to swing across said table's swing range and carry the one an inside or boring tool, the other an outside or turning tool, a reciprocating ram for each of said carriages, and operative mechanism whereby said rams may be advanced and exert pressures on said carriages, respectively, said pressure in each case tending in the direction in which it is desired its respective carriage shall advance, and holdback-screws with nuts and abutment-bearings for each of said carriages, the whole operative substantially as and for the purposes hereinbefore described.

12. The combination, with the rotative boring-mill table, of two or more pivoted tool-supporting carriages severally provided with guide parts at or near their respective free or swinging margins, relatively-fixed guides operative to maintain said carriages by their said guide parts with lateral steadiness in their swinging movements, a reciprocating ram for each of said carriages, operative mechanism whereby said rams may be advanced and exert center lines of pressure on said carriages which tend in the direction in which it is severally desired the said carriages shall advance, and holdback-screws with nuts and abutments for each of said carriages, the relative distributions of said carriages' tool-holding parts and pivots, not only in relation to themselves, but also in relation to the respective locations of their several rams and releasing mechanisms, being such that the center line of pressure due to the advancing tendency of each of said rams and the center line of pressure developed by the holdback or opposing stress of said releasing mechanisms corresponding therewith shall in the case of each of said carriages produce when mutually exerted a resultant line of pressure and deflection which shall be in approximately the same direction and to the same extent as that which the tool so supported would cause its said pivoted tool-supporting carriage to deflect should said tool be penetrated into the body of the work, substantially as and for the purposes hereinbefore described.

13. The combination, with a rotative boring-mill table, of two or more pivoted tool-supporting carriages severally provided at or near their respective free or swinging margins with guide parts, relatively-fixed guideways therefor, clamps by which the several tool-carriages may be firmly secured when their respective tools have been brought into the desired position with relation to the work, a reciprocating ram for each of the said carriages, operative mechanism whereby said rams may be advanced and may exert pressure on said carriages which will tend in the direction in which it is desired said carriages shall advance, holdback-screws with nuts and abutments for each of said carriages, and suitable known mechanical connections whereby said nuts and screws may be rotated in relation to each other and may permit feed movements in said tool-supporting carriages, the whole substantially as and for the purposes hereinbefore described.

14. The combination, with the rotative boring-mill table with a pivoted tool-supporting carriage adapted to move in a plane passing at an angle to said table and within its range, as well as to swing outward and upward to a position clear of said table, said tool-supporting carriage being provided with an extension, as E', of operative means whereby said ram may be advanced and exert a pressure through said extension upon said tool-supporting carriage in such direction as tends to move it about its pivotal connection aforesaid, and thereby advance the tool which it may bear toward the table, substantially as and for the purposes hereinbefore described.

15. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage adapted to swing in a plane passing across into said table's swing range, as well as to swing outward and away therefrom to a position clear of said table and the path of incoming work, a ram pivotally connected to relatively-fixed supports and removably and pivotally connected to said carriage, and operative mechanism for advancing said ram, substantially as and for the purposes hereinbefore described.

16. The combination, with the relative boring-mill table, of a pivotally-trunnioned tool-supporting carriage adapted to swing in a plane passing at an angle to said table and within its (the table's) swing range, as well as to swing upward and outward therefrom to a position clear of said table, a ram trunnioned to relatively-fixed supports and removably and pivotally connected to said tool-supporting carriage by a rearward carriage extension, as E', in such manner as to exert a pressure thereon when said ram is actuated as shall tend to or actually move said carriage toward said table's swing range, and operative mechanism whereby said ram may be so advanced, substantially as and for the purposes hereinbefore described.

17. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage, said carriage having a slide-rest guideway formed integral therein, a slide-rest slide-block fitted slidingly thereto, operative mechanism to feed the same along said guideway, and a tool-holder formed on or attached to said slide-block, substantially as and for the purposes hereinbefore described.

18. The combination, with the rotative boring-mill table or equivalent rotative face-plate, of a pivoted tool-supporting carriage provided at or near its free and table or face-plate adjoining side with a tool-holder and said holder adapted to hold more than one tool arranged tandemwise, substantially as and for the purposes hereinbefore described.

19. The combination, with the rotative boring-mill table or equivalent rotative face-plate, of a pivoted tool-supporting carriage provided at or near its free and table or face-plate adjoining side with a tool-holder, and said tool-holder adapted to hold a plurality of tools arranged tandemwise and in respect to the work they are to operate on at progressively-advanced distances the one from the other, so that they may be used successively in a series, substantially as and for the purposes hereinbefore described.

20. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage pivoted to swing from clear to operative positions ranging within said table's swing-range, said carriage being provided with a slide-rest guideway, operative means for adjustably clamping said carriage within said table's swing range, a slide-rest slide-block slidingly fitted to said carriage guideway, an advancing ram fixed to one of said last two elements of combination, operative mechanism for advancing said ram and causing it to exert an advancing pressure upon said slide-block and a boldback-screw with nut and abutment operative to restrain or permit and control the advance of said slide-block along said slideway, substantially as and for the purposes hereinbefore described.

21. The combination, with the rotative boring-mill table, of a pivoted tool-supporting carriage adapted to swing from clear to operative positions ranging within said table's swing range, said carriage being provided with a slide-rest guideway, an advancing ram adapted to move said carriage with circular feed motions, operative mechanism for actuating said ram to that effect, a slide-rest slide-block slidingly fitted to said carriage-guideway, a slide-block-advancing ram adapted to move said slide-block along said ways, operative mechanism for actuating said ram to that effect, holdback-screws with nuts and abutments for both said rams, respectively, as described, and a tool-holder, the whole operative substantially as and for the purposes hereinbefore described.

22. The combination of a rotative boring-mill table provided with a downwardly-projecting cone-shaped mandrel part located, as described, in close association with and near to a marginal bed-bearing surface with which said table is also provided, a bed-track way adapted to receive said table's bed-bearing surface, a mandrel-cone collar for aforesaid cone-shaped mandrel part, and operative mechanism to hold said table to said track way with freedom for rotation, substantially as and for the purposes hereinbefore described.

23. The combination of a rotative boring-mill table provided with a downwardly-projecting cone-shaped mandrel part located, as described, in close association with and near to a marginal bed-bearing surface with which said table is also provided, a bed-track way adapted to receive said table's bed-bearing surface, a mandrel-cone collar for aforesaid cone-shaped mandrel part, said collar being cup-shaped and adapted to receive and retain the necessary lubricant, and operative mechanism to hold said table to said track way with freedom for rotation, substantially as and for the purposes hereinbefore described.

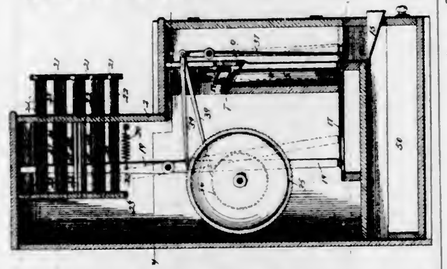
24. The combination of a rotative boring-mill table provided with a downwardly-projecting cone-shaped mandrel part located, as described, in close association and near to a marginal bed-bearing surface with which said table is also provided, a bed-track way adapted to receive said table's bed-bearing surface, a mandrel-cone collar for aforesaid cone-shaped mandrel part, said cone-collar being vertically adjustable, as by screws K^2, and operative mechanism to hold said table to said track way with freedom for rotation, substantially as and for the purposes hereinbefore described.

25. The combination of a rotative boring-mill table provided with a downwardly-projecting cone-shaped mandrel part located, as described, in close association with and near to a marginal bed-bearing surface with which said table is also provided, a bed-track way adapted to receive said table's bed-bearing surface, a mandrel-cone collar for aforesaid cone-shaped mandrel part, said cone-collar being laterally guided and vertically adjustable, as by screws K^2, and operative mechanism to hold said table to said track way with freedom for rotation, substantially as and for the purposes hereinbefore described.

26. The combination of a rotative boring-mill table having a central aperture, as described, and provided with a concentric hollow downwardly-projecting cone-shaped mandrel part, and a marginal bed-bearing surface, a bed-track way adapted to receive said table bed-bearing surface, an annular cone-collar bearing, and operative mechanism to hold said table to said track way with freedom for rotation, substantially as and for the purposes hereinbefore described.

27. The combination of a rotative boring-mill table having a transversely-projecting cone-shaped mandrel part, means for supporting and rotating said table in a definite plane, a cone-collar adapted to register with said cone-shaped mandrel part, and mechanism operative to adjust said collar to and from a bearing contact with said table's cone-shaped mandrel part, substantially as and for the purposes hereinbefore described.

448,278. CHANGE-MAKER AND AUTOMATIC REGISTER. SAMUEL J. TAYLOR, St. Thomas, (Dak. Ter.,) N. D. Filed Sept. 2, 1889. Serial No. 322,647. (No model.)



Claim.—1. The combination, with the series of coin-receptacles 5, provided with slots at their lower ends, of the slide 17, having the slotted end projecting into the lower ends of said receptacles, the levers connected with said slides, and the series of keys provided with plates arranged to engage said levers, substantially as described.

2. The combination, with the series of receptacles, a series of slides for removing the coins in said receptacles, and a series of levers connected with said slides, of the series of keys 21, the sliding rods 22, to which said keys are connected, and the plates 25, secured upon said rod and arranged to engage the necessary lever or levers for removing the amount of money indicated by the number upon the key, substantially as described.

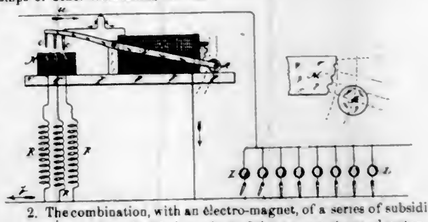
3. In a device of the class described, the combination, with the series of coin-receptacles and the slides for removing said coins, of a series of registering-wheels provided with operating-levers arranged to be engaged by the coins as they are moved out of said receptacles.

4. The combination, with the series of coin-receptacles 5, provided with exit-slots at their lower ends, of the slotted slides 17 to eject the lower coins from said receptacle, the registering-wheels 35, and the levers 39, engaging with said wheels and connected with the levers 37, extending down in front of the exit-slots in said receptacle and engaging said slides, substantially as described.

5. In a device of the class described, the combination, with the coin-receptacle provided with a double slide, of a registering-wheel provided with two ratchets and the operating-levers connected with said ratchets, substantially as described.

448,279. ELECTRIC-LIGHTING SYSTEM. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed May 21, 1886. Serial No. 202,843. (No model.)

Claim.—1. In an apparatus for governing the flow of current to a group of incandescent lamps or other translating devices, an electromagnet responsive to changes of potential at the terminals of the group and having a step-by-step movement, as described, in combination with artificial resistances and means controlled by the magnet for introducing said resistances singly and successively into circuit by the step-by-step movement to compensate for the rupture of sub-circuits containing lamps or other translating devices.

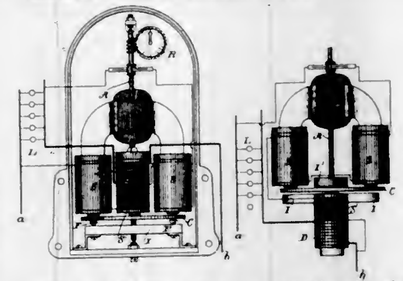


2. The combination, with an electro-magnet, of a series of subsidiary attracting projections independent of the magnet-core and systematically disposed, as described, whereby the armature or its equivalent of the magnet may be caused to move step by step or to assume certain definite positions through its range of movement, depending upon the location of the several projections of the series.

3. The combination, with an electro-magnet having a movable core, of a series of attracting projections extending transversely to the line of movement of the core and systematically disposed, as described, whereby the core may be caused to assume certain definite positions in its range of movement, depending upon the location of the several projections of the series.

4. The combination, with the movable core for an electro-magnet, of a series of attracting projections extending transversely from the side of the core and an armature or piece of magnetic material before which such projections successively pass, whereby said core may be caused to move step by step through its normal range of movement.

448,280. ELECTRIC METER. ELIHU THOMSON, Swampscott, Mass. Filed Nov. 20, 1890. Serial No. 372,001. (No model.)



Claim.—1. In an electric meter, the combination of an electric motor of constant torque operating the register with a damping mechanism consisting of a closed-circuit conductor rotating in a magnetic field whose strength is determined by the differentiation between a definite magnetic force produced, in part at least, by the motor itself, and that due to the current flowing in the main work-circuit.

2. In an electric meter, the combination of a motor of constant torque driving the register with a damping mechanism consisting of a closed-circuit conductor rotated in a magnetic field and with magnets for energizing and jointly controlling the strength of said field, comprising a magnet or magnets of substantially constant strength and a differential magnet whose strength is varied proportionally to the current flowing in the work-circuit.

3. In an electric meter, the combination of an electric motor of constant torque included in a shunt across the circuit-mains and a register driven thereby with a damping mechanism consisting of a copper disk or equivalent closed-circuit conductor rotated by the armature-shaft in a magnetic field generated by the field windings of the motor, and a differential magnet likewise acting on the copper disk and having a definite normal force, which is varied by a winding included directly in one of the mains of the circuit, as described.

4. In an electric meter, the combination of an electric motor of constant torque operating a register with a damping mechanism consisting of a copper disk or like closed-circuit conductor rotating in a magnetic field whose strength is determined by the differentiation between a definite magnetic force and that due to the current flowing in the main circuit, and a magnetic carrier to one side of and in proximity to the disk, for the purpose set forth.

5. In an electric meter, the combination of a motor of constant torque driving the register with a damping mechanism consisting of a copper disk or like closed-circuit conductor rotating in a magnetic

field the strength of which increases proportionally to the decrease of current flowing in the main circuit, and a magnetic stop device acting to stop the motor when current ceases to flow in the mains, as described.

6. In an electric meter, the combination of a motor of constant torque driving the register and a damping mechanism comprising a disk of copper rotating in a magnetic field of variable strength, which increases proportionally to the decrease of current in the main circuit, with a magnetic stop device comprising a mass or masses of magnetic material also rotating in the said field, and proportioned so as to stop the motor when the field is at its maximum strength, as described.

7. In an electric meter, the combination of a motor of constant torque driving the register with a damping mechanism consisting of a disk of copper or like closed-circuit conductor rotating in a magnetic field, and a differential magnet having one coil in a shunt of definite resistance across the mains and a second differential coil included directly in one of the mains, whereby the said magnet acts to vary the damping effect upon the motor correspondingly to the amount of current flowing in the main circuit.

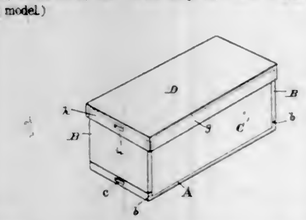
8. In an electric meter in which a damping action is secured by the relative movement of a closed conductor and a magnetic field, a stopping device adjusted to check all movement of the meter when the retarding force is at a maximum relatively to the rotating force which propels the meter.

9. In an electric meter in which a copper disk or conductor moves in a magnetic field for retarding the movement given to the meter-train, a magnetic stop device, such as a small magnetic mass carried by the disk, substantially as described.

10. In an electric meter, in which a damping action upon the driving-motor is secured by the relative movement of a closed conductor and a magnetic field, a stopping device consisting of a small magnetic mass carried by the closed conductor and adjustable within the magnetic field toward or away from the poles, as described.

11. The combination, with the rotating elements of an electric meter and a motor driving the same, whose speed is kept proportioned to the amount of current flowing in the work-circuit, but is not self-stopping under no load, of a stop device whose retarding action is adjusted to entirely stop the motor under the described condition of the work-circuit, as described.

448,281. EGG-CRATE. WILLIAM P. TILLEY and CHARLES E. CALVERT, Portsmouth, Va. Filed July 18, 1890. Serial No. 359,239. (No model.)

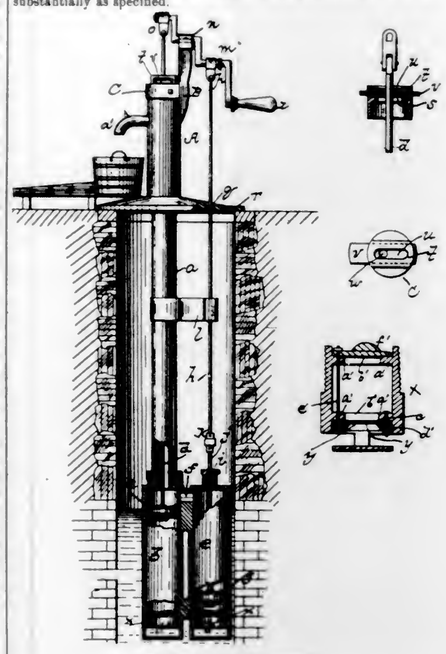


Claim.—1. A folding box or crate having, in combination, a bottom A, provided at each end with an upturned flange *b*, each having a slot *c*, and also provided at one side with an upturned flange, ends B, hinged to said end flanges and having near their top edge a slot *c'*, a side C, hinged to the said side upturned flange, and the opposite side C', hinged to the plain flush edge of the bottom, a top D, having side and end flanges, which take over the box part either when it is open or closed, and a turn-button *k* in each of the slotted flanges of the top, as and for the purpose set forth.

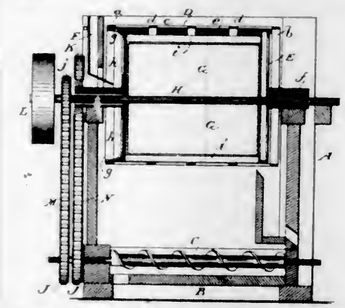
2. The herein-described collapsible cells for egg or fruit crates, comprising straight strips *m*, extending parallel in one direction and having slits *p* at one edge, while the other edge is continuous, an outside or border strip *s*, also parallel with said straight strips and having center slots *l*, and cell-sections *n*, a number of which are united and form a jointed strip by means of a strap *r*, secured across the surface of each section and leaving an open slit *m'* between every two sections, said jointed section-strips extending crosswise of the parallel straight strips and the ends of said straps passed through the center slots in the outside strips and secured thereto.

448,282. PUMP. ABRAHAM H. TITUS, Darnall, Nebr. Filed Aug. 6, 1890. Serial No. 361,212. (No model.)

Claim.—In a double-acting cylinder-pump, the combination, with a cylinder provided at its lower end with a removable valve-box provided with a strainer, of an upper or lower collar or flange on its inner side, the strainer being bolted to the lower collar between a ring *d'* and said collar, the bolt *c'* of the pair of bolts serving the double purpose of holding the valve in place and fastening the screen or strainer, substantially as specified.



448,283. FLOUR BOLT AND DRESSER. FERDINAND P. TRAUTWEIN, Lutesville, Mo. Filed June 6, 1890. Serial No. 354,454. (No model.)

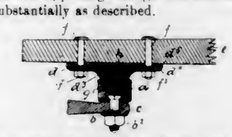


Claim.—1. In a device of the character described, a skeleton-reel support consisting of head-bands *a* and *b*, flat bands *d*, and longitudinal flat bars *c*, all of this material and all of uniform thickness, united at their points of intersection to form a smooth outer and inner periphery, substantially as shown and described.

2. In a device of the character described, a skeleton cylindrical reel frame or support consisting of end bands *a* and *b*, longitudinal flat bars *c*, and flat bands *d*, united to form a smooth outer and inner periphery, combined with the skeleton head secured to the band *a* and having inwardly-extending tubular gudgeons, and the skeleton head E, of angle-iron, secured to the bars *c* inside of the end band *b* and carrying the tubular gudgeon *f*, all substantially as shown and described.

448,284. THILL-COUPLING. THOMAS WATTS, Pershore, County of Worcester, England. Filed May 17, 1890. Serial No. 352,147. (No model.) Patented in England Apr. 12, 1889. No. 6,265.

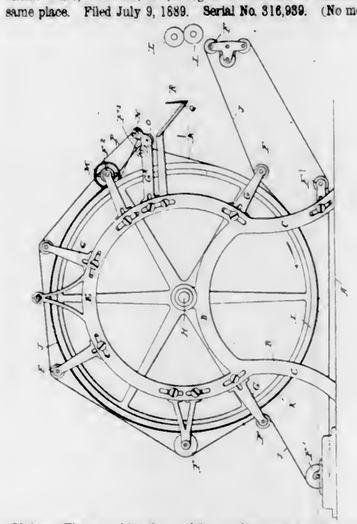
Claim.—1. The combination of the hollowing casting *a*, having the hollow necks a^3 a^3, with the shaft-plate *d*, provided with the bracket-eyes d^3, the rubber block *g*, inserted in the hollow of said casting *a*, and the bolt L, passing through said hollow necks and said rubber blocks, substantially as described.



2. In a shaft attachment, the combination, with a plate adapted to be secured to a shaft having a hole in the top and provided with bracket-eyes, of a hollow casting pivotally attached to said bracket by a horizontal bolt, and a rubber block fitted in the hollow casting and projecting through the hole in the plate, substantially as shown and described.

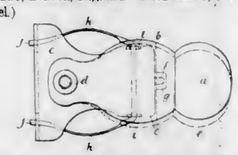
3. In shaft attachments, the combination, with the shaft *e* and the attachment-arm *c*, of the hollow casting *a*, secured to said attachment-arm by the vertical bolt *b* and nut b^3, the shaft-attachment plate *d*, secured to the shaft and formed with an opening d^3 in its middle part and pivotally attached to said hollow casting, the rubber block *g*, and the bolt *l*, passing through the said block *g* and pivotally connecting the casting *a* and plate *d*, substantially as shown and described.

448,285. APPARATUS FOR DELIVERING PAPER ARTICLES. JAMES WEST, St. Louis, Mo., assignor of one-half to Samuel Cupples, same place. Filed July 9, 1889. Serial No. 316,939. (No model.)



Claim.—The combination, with continuously-moving contacting bands and means for supplying thereto articles in a series, one overlapping the other, said bands moving at less speed than such means, of a drawing mechanism moving at a greater rate of speed than the series of articles and arranged and adapted to successively seize the projecting portion of each of the articles and carry it forward more rapidly than the remaining articles and separate it from the series, substantially as described.

448,286. HOLDER FOR CUTTERS AND COMBS FOR SHEEP-SHEARS, HORSE-CLIPPERS, AND SIMILAR INSTRUMENTS. FREDERICK Y. WOLSELEY, London, England. Filed Mar. 1, 1890. Serial No. 342,284. (Model.)



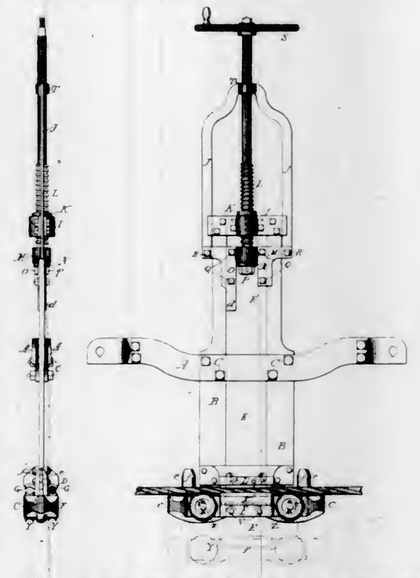
Claim.—1. In apparatus for holding the cutters on combs of sheep-shears, horse-clippers, and similar instruments while they are being ground or sharpened, spring holding-legs free at their yielding or unattached parts and formed of and integral with a single piece of steel bent substantially as described and adapted to enter holes or recesses in and to clip or grasp such cutters or combs in the manner shown and described.

2. A cutter-holder having its outer end rounded or curved, as set forth, and having spring-legs projecting through such rounded end, the extremities of such legs being in line with the length of such end.

3. A cutter-holder having a carrier whose outer end is rounded, having spring-legs adapted to enter perforations or recesses in a cutter or comb, and having a slotted handle in which the carrier is pivoted, all substantially as set forth.

4. The described cutter-holder, consisting of a handle *a*, combined with a carrier *c*, pivoted thereto and having a projection *f*, entering a recess in the handle, and with holding legs or arms *h*, having projecting ends adapted to enter appropriate holes or recesses, as described, in the combs or cutters.

448,287. GRIPPING-MACHINE FOR CABLE ROADS. FRED W. WOOD and JOHN FOWLER, Los Angeles, Cal. Filed June 23, 1890. Serial No. 356,506. (No model.)



Claim.—1. The combination, in a gripping device for cable roads, of the lower jaw F, having its ends pointed by beveling the sides for a short distance and being provided with the recesses on the sides for the pulleys Y, and the dovetailed recesses *a* for the half-round dovetailed pieces *b*, and the cells or nests W for the dies X, and the upwardly-projecting horns *e*, fitted with the removable side pieces *f*, the whole forming the lower jaw of the grip and being hung on the movable plate E, the stationary upper jaw D, fastened to the stationary plates B, the stationary cross-head I, the movable cross-head M, fastened to the movable plate E and traveling between the stationary plates B, and the peculiar-shaped bushing or nut K, fastened in the stationary cross-head I and through which the screw S works, the screw traveling with the movable blade E, the nut K remaining stationary, as set forth in the drawings and specification.

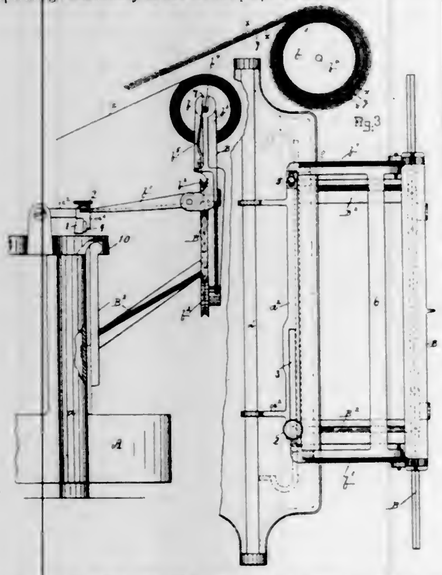
2. The combination, in a gripping device for cable roads, of the half-round dovetailed pieces *b*, with the grooved pulleys Y, the pieces *b* being set into recesses *a* and the half-round side projecting into the groove of the pulleys Y, thereby preventing the pulleys from coming off, substantially as set forth in the drawings and specification.

3. The combination, in a gripping device for cable roads, of the upwardly-projecting horns *e* on the lower jaw F, with the removable side pieces *f* for the prevention of wear, substantially as set forth in the drawings and specification.

448,288. PAPER-CARRYING-ATTACHMENT FOR TYPE-WRITING MACHINES. WILLIAM B. WRIGHT, Boston, Mass. Filed Mar. 8, 1890. Serial No. 343,203. (No model.)

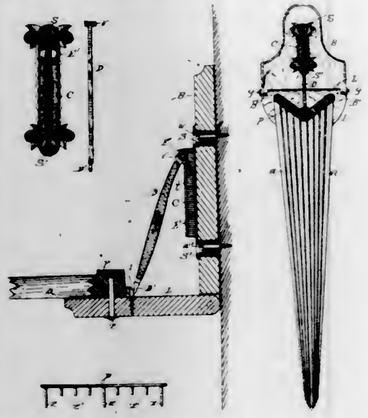
Claim.—1. In a type-writer, a rack-support, a paper-carriage, a track therefor, and means—for example, one or more arms from the

carriage—for connecting the carriage and rack-support, combined and operating substantially as and for the purpose set forth.



2. The herein-described type-writer attachment, consisting of bracket B^3, track B', paper-carriage B, and one or more arms b', substantially as and for the purpose set forth.

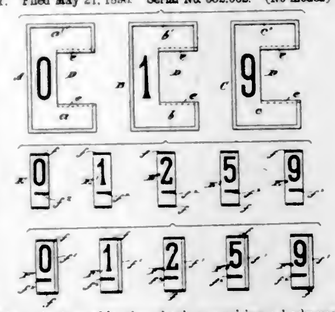
448,289. CLOTHES-DRIER. JEHIEL F. WYNKOOP, Corsica, Pa. Filed Oct. 21, 1890. Serial No. 368,739. (No model.)



Claim.—1. The herein-described clothes-drier, consisting of the combination of the back B, the leaf L, hinged thereto, the arms *a*, pivotally connected to the leaf, the studded plate P for connecting said arms, the recessed and socketed casting C, fixed to the back and provided in its front wall with a slot, and the arm D, hooked to the leaf and provided with a cross-head operating in the recess of said casting, substantially as and for the purpose set forth.

2. In the clothes-drier described, the combination, with the back B and the hinged leaf L, of the casting C, fixed to the back, as shown, and provided with the recess E, the extending recess or offset E', and the face-slot, the spring *t*, arranged within said casting-recess, and the arm D, hooked to the leaf and provided with the cross-head V, operating in the said recesses, in the manner substantially as and for the purpose set forth.

448,290. COMBINATION-CHECK. CHARLES ZALLUD, New York, N. Y. Filed May 21, 1890. Serial No. 352,602. (No model.)



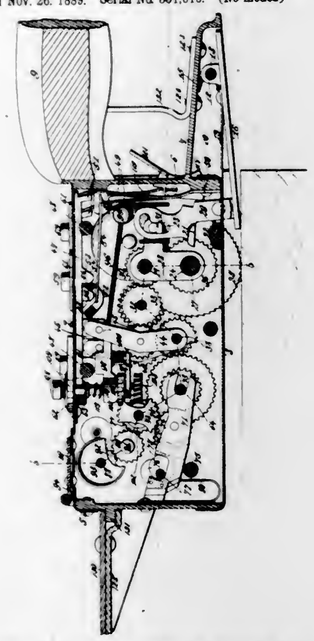
Claim.—1. A combination-check comprising a body-section representing one denomination and a removable portion representing another denomination, substantially as set forth.

2. A combination-check comprising a body-section having a recess in its edge and representing one denomination, and a removable section representing another denomination and having a sliding engagement into and out of the recess in the edge to complete the check, substantially as set forth.

3. A combination-check comprising a body portion provided with a recess in its edge, and a removable section adapted to fit within the said recess, the body-section and the removable section being provided the one with a groove and the other with a projection to enter the groove, the said sections representing different denominations of currency, substantially as set forth.

4. A combination-check comprising a body portion recessed at its edge, and removable sections adapted to fit within the recess and provided with distinguishing marks, the body-section and the removable sections being provided with marks indicating different denominations of currency, substantially as set forth.

448,291. LUMBER-MEASURE. EMMET N. BARBER, Kent, Ohio. Filed Nov. 26, 1889. Serial No. 331,610. (No model.)



Claim.—1. In a lumber-measuring apparatus, the combination, with a measuring-wheel and with a train of gearing connecting the same with a registering mechanism, one wheel of said train being

mounted on a movable bearing, of a movable runner connected with said bearing and actuating the latter, substantially as described.

2. In a lumber-measuring apparatus, the combination, with a measuring-wheel and with a registering mechanism, of an intermediate train of gearing connecting the same, one wheel of said train being mounted on a movable bearing, a depressible or movable runner, and a pivoted link connecting the runner to said movable bearing, substantially as described.

3. In an apparatus for measuring lumber, the combination, with a measuring-wheel and with a train of gearing, the latter including an intermediate gear journaled on an oscillating arm for making and breaking the operative connection of said train, of a depressible runner and a link connected therewith and with the oscillating arm by means of an inclined or angular slot in the latter, substantially as described.

4. In a lumber-measuring apparatus, the combination, with a measuring-wheel, a train of gearing, and a runner connecting and disconnecting the gearing as said runner is engaged with and disconnected from the lumber, of a shoe mounted and adjustable upon said runner beside the plane of rotation of the measuring-wheel, whereby the longitudinal adjustment of said shoe upon said runner will effect any required compensation, measurement, or allowance for what has been removed from the edges of the boards in working or dressing them, substantially as described.

5. In a lumber-measure, the combination, with a measuring-wheel, a register, and a train of gearing actuating the same, of a depressible runner actuated by contact with the lumber, a device actuated by said runner for making and breaking the operative connection of the measuring-wheel and register, a shoe adjustable parallel with the line of measurement, and a spring catch or dog locking said shoe after adjustment, substantially as described.

6. In a lumber-measure, the combination, with a measuring-wheel, a register, and a series of trains of gearing connecting said wheel and register, and consisting, in part, of a series of differential gears on parallel shafts for varying the speed of the register relatively to that of the measuring-wheel, of a movable runner, a device operated by said runner to make and break the operative connection between said wheel and the register, and a series of slide-bars for making and breaking the operative connection in the said trains of differential gearing connecting said measuring-wheel with the register, substantially as described.

7. In a lumber-measure, the combination, with a measuring-wheel, a register, and a train of gearing connecting the measuring-wheel with the register through said gearing, of a depressible runner making and breaking the operative connection, a shoe mounted on said runner and longitudinally adjustable thereon, a spring-catch mounted on the runner and engaging any one of a series of notches in the shoe, a series of pairs of differential gears on parallel shafts for varying the speed of the register relative to that of the measuring-wheel, and a series of devices operatively connecting and disconnecting any one of said pairs, substantially as described.

8. In a lumber-measure, the combination, with a measuring-wheel having a portion of its periphery projecting from the casing of the measure, of a register, a series of pairs of differential gears mounted upon parallel shafts to connect said measuring-wheel and register and to vary the amount registered according to the length of the lumber, a series of pairs of differential gears also mounted upon parallel shafts and adapted to vary the amount registered according to the thickness of the lumber, and a series of slide-bars connected with a corresponding series of levers carrying differentiated gears, whereby the amount registered is varied according to the length and thickness, substantially as described.

9. In a lumber-measure, the combination, with a measuring-wheel having a portion of its periphery projecting from the casing of the measure, of a register arranged in the latter, a double series of pairs of differential gears mounted upon parallel shafts and adapted to connect the measuring-wheel and the register to vary the action of the latter, a series of spring-retracted slide-bars, each connected with a lever carrying a differentiated intermediate gear, and a transverse trigger holding each slide-bar and automatically releasing the same when a second bar is brought into action, substantially as described.

10. In a lumber-measure, the combination, with a measuring-wheel and register, of a series of pairs of differential gears connecting said wheel and register, a series of spring-retracted slide-bars carrying devices making and breaking the operative connection between said parts and having keys by which they are moved, and a spring-actuated pawl extending across the series of slide-bars and engaging depending lugs thereon, said lugs formed as described, whereby the slide-bar thrown into operative engagement is automatically released and retracted by the engagement of any of the other bars, substantially as described.

11. In a lumber-measure, the combination, with a measuring-wheel and register, of a series of pairs of differential gears mounted on parallel shafts for connecting the said wheel and register, a series of intermediate gears mounted on movable supports, and means for actuating said supports for connecting and disconnecting the wheel and register through any one of said pairs of differential gears, substantially as described.

12. In a lumber-measure, the combination, with a measuring-wheel and a register, of a series of pairs of differential gears connecting said wheel and register, a series of intermediate gears mounted on movable supports, and a series of spring-retracted slide-bars connected with said movable supports, whereby the operative connection of the measuring-wheel and register may be made and broken through any one of the pairs of differential gearing, substantially as described.

13. In a lumber-measure, the combination, with a measuring-wheel and register, of a series of differential gears, a series of intermediate gears mounted on movable yokes, a series of spring-retracted slide-bars connected to said yokes, and a pawl engaging and holding the individual slide-bars in operative position, substantially as described.

14. In a lumber-measure, the combination, with a series of spring-retracted slide-bars, of a series of movable supports carrying devices making and breaking the operative connection of the individual pairs of a series of pairs of differentiated gears, a spring-thrown pawl extending across the series of slide-bars and engaging lugs thereon, said lugs having an inclined surface snubbing the pawl, a shoulder making positive engagement therewith, and a convex or curved end to effect the automatic release of a retained slide-bar upon the engagement of another slide-bar, substantially as described.

15. In a lumber-measure, the combination, with a measuring-wheel and a register operated thereby, of a bell, a striker acting thereon, a clutch and a cam for operating said striker at each successive measurement of a definite number of feet, and a setting device, whereby the parts may be adjusted to give the initial stroke upon the measurement of a fractional part of the whole number of feet representing the interval between successive strokes of the bell, substantially as described.

16. In a lumber-measure, the combination, with a measuring-wheel and a register operated thereby, of a bell, a pivoted striker, a cam operating said striker at stated intervals of measurement, each interval representing a definite number of feet, means for giving movement to the cam, and a setting or index nut mounted on the shaft carrying the cam, whereby the latter may be disengaged from its driving-pinion and so adjusted that the initial stroke of the bell shall be given at any decimal part of the whole number of feet representing the full interval between successive strokes, substantially as described.

17. In a lumber-measure, the combination, with a measuring-wheel and a register operated thereby, of a bell, a pivoted spring-thrown striker acting on the bell, a cam actuating said striker, a worm-gear carrying the cam, a clutch-disk on the shaft of the worm-gear, having detachable and adjustable engagement with a tooth on the cam, a worm-shaft, and a setting or index nut mounted on the cam-shaft, whereby the cam may be set to engage by said tooth with any of the teeth of the clutch-disk, substantially as described.

18. In a lumber-measure, the combination, with a measuring-wheel and a register operated thereby, of a series of trains of differential gearing by any one of which the measuring-wheel may be connected with the register to vary the amount registered thereon according to the different lengths of lumber, a series of slide-bars, a series of yokes carrying gears operatively connecting any one of said trains with the measuring-wheel, a series of pairs of differential gears varying the operation of the register with relation to the thickness of the lumber, a series of movable yokes carrying gears operatively connecting any one of said pairs with the register, a shaft having a series of eccentric disks arranged quartering with each other and engaging said sliding yokes, and a spring bearing upon an angular nut on the eccentric-shaft, substantially as described.

19. In a lumber-measure, the combination, with a measuring-wheel and a register operated thereby, of a series of pairs of differential gears, a series of sliding yokes carrying gears operatively connecting any one of said trains with the register, an eccentric-shaft carrying eccentric-disks having a quartering arrangement, and a spring bearing against an angular nut on the eccentric-shaft, substantially as described.

20. In a lumber-measure, the combination, with a measuring-wheel and a register operated thereby, of a runner moving upon the lumber and swung upon its point of pivotal support by contact therewith, a link carried by said runner, a lever having a stud lying in an annular slot in said link and carrying a gear meshing with a gear on the shaft of the measuring-wheel and which is thrown by the movement of the lever into and out of operative connection with the train of gearing actuating the register, and a spring-thrown dog engaging a notch in the link when the runner is out of contact with the lumber and the operative connection broken, said dog having a trigger or finger-lever operated to release the link when the measure is grasped, substantially as described.

21. In a lumber-measure, the combination, with a measuring-wheel

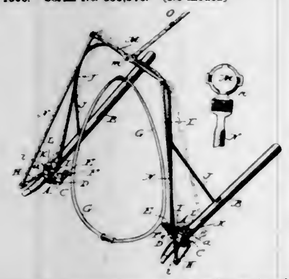
and register, of a spring-actuated runner drawn toward the measure by contact with the lumber and thrown downward by the spring when released from the lumber, a link carried by said runner and rising and falling therewith to operate a lever making and breaking the operative connection between the measuring-wheel and register, and a spring-engaged dog which snaps into a notch in the link as the latter is thrown by the runner to break such operative engagement, said pawl being provided with a finger-lever projecting at an angle beyond the end of the casing and adapted to be operated to release the link by the finger of the operator, substantially as described.

22. In a lumber-measure, the combination, with a series of spring-retracted slide-bars, each having an actuating-key and a lug, of a series of devices operated by said slide-bars to make and break operative connections in trains of gearing, a series of differential trains of gearing, a measuring-wheel, a register operated by such measuring-wheel, and a retaining-pawl extending across the series of slide-bars, substantially as described.

23. In a lumber-measure, the combination, with a series of differential gearing, of movable devices for operatively connecting the members of any one of said series, a measuring-wheel, and a link or support movable between rigid guides and operatively engaging the measuring-wheel with the register, substantially as described.

24. In a lumber-measure, the combination, with movable devices for operatively connecting any one of a series of gears with the registering mechanism, of a shaft having a corresponding series of eccentrics or cams arranged quartering or to have a successive throw as the shaft is turned, said eccentrics being engaged with and operating the movable devices, and a spring having bearing upon the straight edges of a polygonal nut rigid on the shaft carrying the eccentrics.

448,292. HARNESS. BYRON B. BOWER, Bainbridge, Ga. Filed June 14, 1890. Serial No. 355,518. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the yoke, the cross-piece pivoted thereon, the downwardly-projecting rods, and the hook-arms to which they are flexibly secured.

2. The combination, substantially as hereinbefore set forth, of the yoke, the shafts to which it is secured, the braces extending backwardly from the yoke and secured to the shafts, the bar pivoted to the top of the yoke, the hooks adapted to be secured to the hames, and connections between the hooks and the pivoted bar.

3. The combination, substantially as hereinbefore set forth, of the yoke having laterally-projecting feet adjustably secured to the shafts, the bar pivoted to the top of the yoke, the hooks, and connections between the hooks and the pivoted bar.

4. The combination, substantially as hereinbefore set forth, of the shafts, the yoke secured thereto, the hooks having arms extending at right angles to their shanks, the bar pivoted to the top of the yoke, and the rods connecting the hook-arms to the pivoted bar.

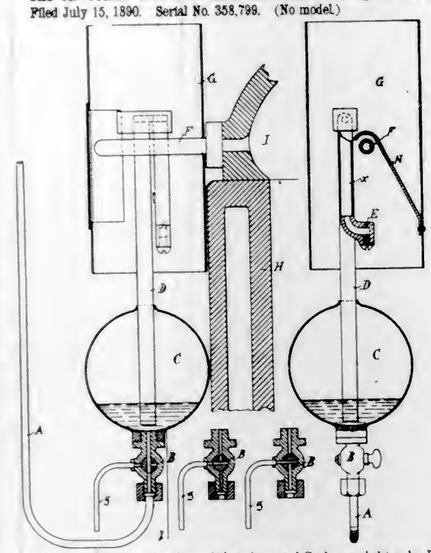
5. The combination, substantially as hereinbefore set forth, of the shafts, the couplings A, having loops and downwardly-projecting bearing-brackets C, and loops K, the yoke having laterally-projecting feet adjustably secured in the loops K, the bar pivoted to the top of the yoke, the hooks journaled in the brackets C, and the rods connecting the hooks with the pivoted bar.

6. The combination, substantially as hereinbefore set forth, of the shafts, the rear harness permanently secured thereto, the yoke secured to the front end of the shafts, the pivoted bar at the top of the yoke, the hooks adapted to engage with the hames, the rods connecting the hooks with the pivoted bar, and the strap O, extending from the top of the yoke to the rear harness.

7. The combination, substantially as hereinbefore set forth, of the shafts, the rear harness permanently secured thereto, the yoke secured to the front end of the shafts, the pivoted bar at the top of the yoke, the hooks adapted to engage with the hames, the rods connecting the hooks with the pivoted bar, and the strap P in the rear harness.

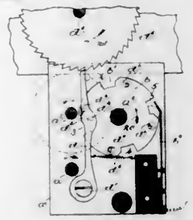
8. The combination, substantially as hereinbefore set forth, of the hook having the axle D, formed with coupling-pieces D′, with inwardly-projecting flanges, and the bracket C, with which the pieces D′ interlock.

448,293. LAMP FOR EFFECTING THE IGNITION OF VAPOR IN GAS OR OTHER MOTORS. EMIL CAPITAINE, Ellenburg, Germany. Filed July 15, 1890. Serial No. 358,799. (No model.)



Claim.—The combination of the air-vessel C, the upright tube D, extending from the bottom thereof, the tube A, communicating with the bottom of the air-vessel and with a reservoir, the oil-cock B within said tube, and the pipe *g*, communicating with a passage-way of the oil-cock.

448,294. CIRCUIT-CLOSER FOR CLOCKS. HENRY A. CHASE, Boston, Mass. Filed Sept. 6, 1889. Renewed Feb. 9, 1891. Serial No. 380,718. (No model.)



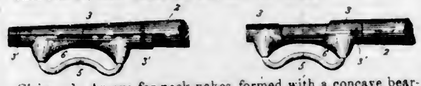
Claim.—1. In a circuit-controlling device for time mechanisms, consisting of two independent members, the combination, with one member, of the second member provided with a lug, a motor mechanism to move said second member, a locking device for said second member, provided with two detents out of line with each other, and an independent motor mechanism to operate said locking device to disengage one detent from the lug and engage the second detent with the lug and thereafter to disengage the second detent from the lug, substantially as and for the purpose specified.

2. In a circuit-controlling device for time mechanisms, the combination, with a fixed member, of a movable member co-operating with the fixed member and provided with a lug, a motor mechanism to move it, a locking device for said movable member, consisting of a lever provided with two detents out of line with each other, one of the said detents being in engagement with the lug, and an independent motor mechanism to move said lever and disengage one detent from the lug and engage the second detent and thereafter disengage the second detent from the lug, substantially as described.

3. In a circuit-closer for time mechanisms, the combination, with a fixed member, of a movable member consisting of a disk provided with a lug, as d^4, a motor mechanism to move it, a locking device for said disk, consisting of a double detent out of line with each other,

one of the said detents being normally in engagement with the lug d^4 and the other detent normally out of engagement with the said lug, and an independent motor mechanism to operate said double detent to disengage the first detent and engage the second detent with the lug d^4 and thereafter disengage the said second detent, substantially as described.

448,295. NECK-YOKE. LUMAN M. CLEVELAND, Dustin, Nebr. Filed Feb. 21, 1890. Serial No. 341,329. (No model.)



Claim.—1. An eye for neck-yokes, formed with a concave bearing-side for the coupling-strap and a convex confining-side for the same, substantially as described.

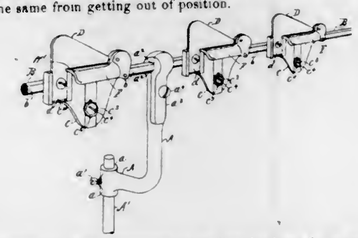
2. A neck-yoke provided with eyes at its ends formed with concave bearing-side and convex confining-side for the coupling-straps, substantially as described.

3. In a neck-yoke, a casting 3, formed with a staple 4, having a concave bearing-side 6 and an outer convex confining-side 5, and with thick curved legs or sides, substantially as described.

4. In a neck-yoke, a casting or thimble 3, fitted upon the end of the yoke and formed with a staple having an inwardly-curved outer side and a concave inner side having its metal extending around the legs of the staple, substantially as described.

448,296. YARN GUIDE AND CLEARER. JOHN M. CURTICE, Lowell, Mass. Filed Mar. 19, 1888. Serial No. 267,614. (No model.)

Brief.—The improvements relate to the support of the supporting-rail, the securing of the guides and clearers in proper position on said rail, and means for adjusting said guides and clearers and preventing the same from getting out of position.



Claim.—1. The combination of the base having a flat surface, the supporting-rod having a correspondingly-flat surface, a clamp hollowed to receive said rod, and a clamp-screw to draw said base and clamp against said rod and to hold the flat surface of said base against the flat side of said rod and to prevent said base and clamp from turning on said rod, as and for the purpose specified.

2. The combination of the supporting-rod having a flat side, the base having a corresponding flat surface and having a vertical slot, a clamp hollowed to receive said rod, and a clamp-screw arranged in said vertical slot and entering said clamp to draw said base and clamp against said rod and to hold the flat surface of said base against the flat side of said rod to prevent said base and clamp from turning on said rod and to allow said base to be adjusted vertically on said rod, as and for the purpose specified.

3. The combination of the supporting-rod having a flat side, the base having a corresponding flat surface, a clamp hollowed to receive said rod and provided with a tongue to enter an opening with which said base is provided, and a clamp-screw to draw said base and clamp against said rod and to hold the flat surface of said base against the flat surface of said rod to prevent said base and clamp from turning on said rod or on each other, as and for the purpose specified.

4. The combination of the supporting-rod having a flat side, the base having a corresponding flat surface and having a vertical slot, a clamp hollowed to receive said rod and provided with a tongue to enter a vertical groove with which said base is provided, and a clamp-screw arranged in the vertical slot of said base and connecting said base to said clamp to draw said base and clamp against said rod to prevent said base and clamp from turning on each other and to allow said base to be adjusted vertically on said rod, as and for the purpose specified.

5. The combination of the base provided with a clearing-surface and with a ledge, and the yarn-rest adapted to rest upon said ledge with its yarn-supporting surface in the same horizontal plane with said clearing-surface, and means, substantially as described, for securing said base and yarn-rest to each other, as and for the purpose specified.

6. The combination of the supporting-rod, the base provided with a clearing-surface and with a ledge, and the yarn-rest adapted to rest upon said ledge with its yarn-supporting surface in the same horizontal plane with said clearing-surface, and means, substantially as described, for adjustably securing said base and yarn-rest upon said supporting-rod, as and for the purpose specified.

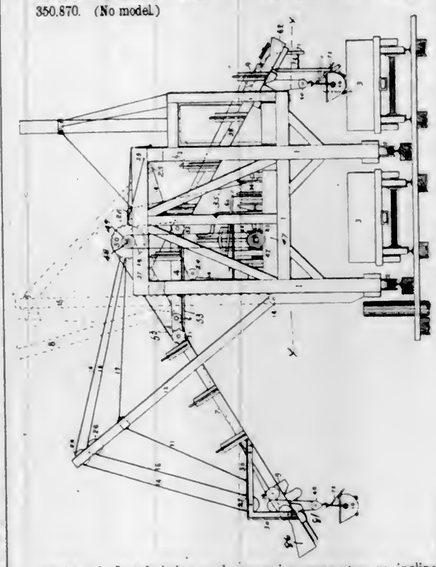
7. The combination of the supporting-rod, the base provided with a clearing-surface and having a vertical slot and a ledge, the yarn-rest adapted to rest upon said ledge with the top of its yarn-surface in the same horizontal plane with said clearing-surface and provided with a vertical slot, a clamp, and a clamp-screw, passing through both of said slots and into a threaded hole in said clamp to secure said base and yarn-rest to said supporting-rod and to keep said yarn-surface and said clearing-surface in their proper relative position while said base is being adjusted on said rod, as and for the purpose specified.

8. The combination of the base provided with a yarn-clearing surface and with a recess, a horizontal stud secured to said base within said recess, a yarn-gate pivoted on said stud, and a yarn-knife secured to said base to cover said yarn-gate and stud and to retain said gate upon said stud, and means, substantially as described, for adjusting said yarn-knife vertically to enable said knife to be adjusted without changing the position of said yarn-gate, as and for the purpose specified.

9. The combination of the supporting-rod having a flat side, the supporting-post hollowed out to receive said rod, a clamp-piece having a flat side to rest against the flat side of said rod, a screw to secure said clamp-piece to said post, and one or more yarn-guides secured to said rod, as and for the purpose specified.

10. The combination of the supporting-rod having a flat side, the supporting-post hollowed out to receive said rod, a clamp-piece having a flat side to rest against the flat side of said rod, a screw to secure said clamp-piece to said post, said post having a vertical rib and said clamp-piece having a vertical groove to receive said rib and to prevent said clamp from turning on said post, and one or more yarn-guides secured to said rod, as and for the purpose specified.

448,297. COMBINED HOIST AND CONVEYING MACHINERY. GEORGE H. HULETT, Cleveland, Ohio. Filed May 7, 1890. Serial No. 350,870. (No model.)



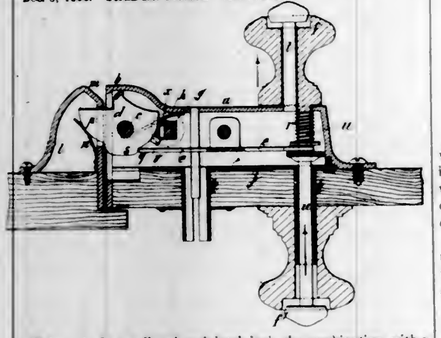
Claim.—1. In a hoisting and conveying apparatus, an inclined boom, a horizontal section of track connected therewith at one end, an inclined section connected with the horizontal portion at the other end, a wagon adapted to run on the boom and track-sections, means for drawing the wagon up the inclined boom and the inclined track-section, and a second propelling means independent of the first for operating the wagon over the horizontal section in both directions, substantially as described.

2. In combination, the wagon, the horizontal section of track, the two pulleys over the same, the hoisting-rope passing between the two pulleys, the two inclined track-sections extending from the ends of

the horizontal section, and the means for propelling the wagon over the horizontal section of track, consisting of the sprocket wheels and chain, substantially as described.

3. In combination, the track, the hoisting-rope and propelling means, the wagon having pendants 41^b, with inwardly-projecting lugs 41, the wings 41^a on the wagon, the catches 69, and the hoisting-pulley having projections 41^a, substantially as described.

448,298. LATCH. LEON R. LECELLIER, Villedieu, France. Filed Dec. 3, 1890. Serial No. 373,414. (No model.)

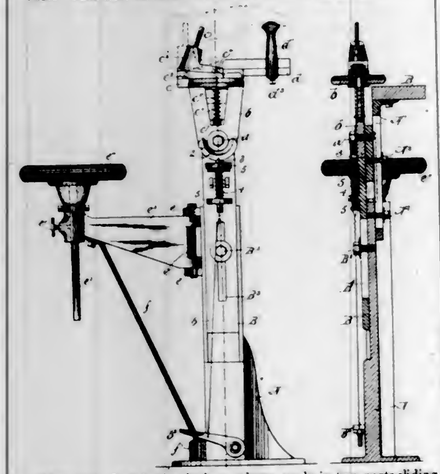


Claim.—1. In a pull-and-push latch-lock, the combination, with a rotary latch, of a lever engaging with the latch, as described, and operated by the pull-and-push spindle, and of a transversely-sliding bolt operated from the inside by hand and from the outside by a key for locking the rotary latch in its shot or projected position, as specified.

2. In a pull-and-push latch-lock, the combination, with a rotary latch having two shoulders or recesses, of a lever *e*, engaging with the latch, as described, and with the pull-and-push spindle, and of a longitudinally-sliding bolt *z*, engaging in a recess in the latch and adapted to be operated by a key which is controlled by tumbler-levers, as described.

3. In a pull-and-push latch-lock, the combination, with the rotary latch having the lug *o* and rounded face *p*, of the striking-bevel *m* on the catch-box and the spring *n* within the catch-box for throwing the latch into the locked position, substantially as described.

448,299. LASTING-JACK. RALPH C. NASH, North Pembroke, Mass. Filed Nov. 11, 1890. Serial No. 371,027. (No model.)

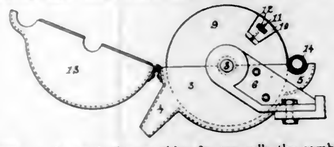


Claim.—1. In a lasting-jack, a column made in two parts sliding longitudinally one upon the other, and adjustably connected together, combined with the shank B', adjustably connected to each of said parts, a head, and a jack mounted on the said shank, substantially as described.

2. In a lasting-jack column, the shank adjustably attached thereto, the head pivoted on the shank and notched at its lower end, and a locking device to co-operate with said notches and lock the head, combined with a heel-pin and toe-rest, to operate substantially as described.

3. The jack-column and the jack having a shank adjustable on the said standard, combined with a connected pivoted seat and with means to adjust the seat vertically, substantially as described.

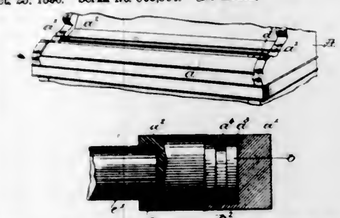
448,300. TOP-ROLL-GRINDING MACHINE. JOHN F. NICHOLS, Fall River, Mass. Filed Nov. 28, 1890. Serial No. 372,819. (No model.)



Claim.—1. In a grinding-machine for top rolls, the combination, with a lathe in which the top rolls are centered and secured, of a grinding mechanism contained in the case 3, having the cover 13 and provided with the cup 5, chute 4, and brackets 6 6, by which it is supported on a plate secured to the slide-rest of the lathe, as and for the purpose described.

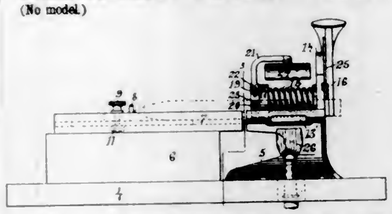
2. In a grinding-machine for top rolls, a case formed in two parts to contain a grinding-wheel and furnished with a cup projecting under the top roll during grinding to collect the particles ground therefrom and a chute through which the particles are conveyed, as described.

448,301. HINGE. GEORGE R. OLIVER, Cambridge, Mass. Filed Oct. 25, 1890. Serial No. 369,301. (No model.)



Claim.—The herein-described hinge, it consisting of two parts or members a' a^3, the part a' having a socket a^3 and a pin a^4 extending into said socket, the movable member having a boss or journal *b*, provided with grooves or channels b' b^2 to engage the pin a^4 when the member a^3 is secured to the member a', substantially as described.

448,302. CIGAR CUTTING AND BRANDING MACHINE. SQUIRE Z. PHINNEY, Pawtucket, R. I. Filed June 23, 1888. Serial No. 278,007. (No model.)



Claim.—1. In a device for cutting and branding cigars, the combination, with the cutter and adjustable stop for regulating the length of the cigar, of a concaved bed having the branding-die fixed in the same, a lamp for heating the die, and a presser constructed to force the cigar against the die and hold the same during the cutting of the end, as described.

2. A device for cutting and branding cigars, consisting of a concaved bed, an adjustable stop to regulate the length of the cigar, a die fixed in the concaved bed, a light for heating the die, a cutter-knife, and a presser yieldingly secured to and operated by the cutting-lever, as described.

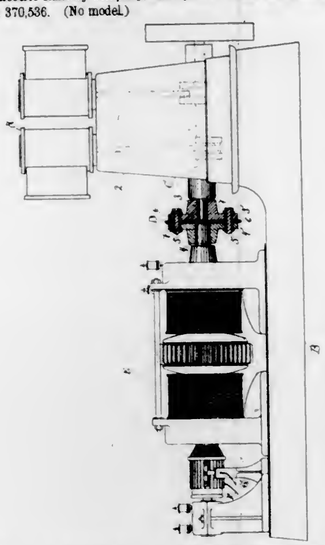
3. The combination, with a concaved bed, an adjustable stop, and a cutter operated by a hand-lever, of a branding-die located in the concaved bed, a lamp, and a spring-pressed presser-arm constructed to support a cigar, regulate its length, and cut off the end of the cigar while branding the same, as described.

4. The combination of the lever 16, provided with the shaft 15, carrying the collar 17 and the spring 18, the arm 21, adjustably attached to said collar and provided with the presser 24, the branding-die 13, and the gage, substantially as described.

5. The combination of the lever 16, the shaft 15, the spring 18, the collar 17, the arm 21, the presser 24, the cutter 25, the branding-die 13, and the gage, substantially as herein shown and described.

6. In combination, the base 5, the branding-die 13, the arm 14, the lever 16, provided with the cutter 25, the shaft 15, spring 18, collar 17, adjustable arm 21, carrying the presser 24, and the gage consisting of the part 7, the slide 8, thumb-screw 9, and nut 11, substantially as described.

448,303. DRIVING MECHANISM FOR DYNAMO-ELECTRIC GENERATORS. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Nov. 6, 1890. Serial No. 370,536. (No model.)



Claim.—1. A dynamo-electric generator mounted on an insulating-base and having the steam-engine directly coupled thereto and provided with the driving-shaft in two parts rigidly connected together, one supported on the steam-engine and the other having the armature fastened thereto, with an insulating-section between said parts, substantially as described.

2. In combination with a dynamo-electric generator mounted on an insulating-base and the steam-engine for operating the same, driving mechanism rigidly connecting the dynamo with the engine and provided with an insulating-section between the steam-engine and the dynamo, whereby the said generator is insulated from the ground, substantially as described.

3. In combination with a dynamo-electric generator and the steam-engine for operating the same, driving mechanism connecting the dynamo with the engine and comprising a shaft in two parts rigidly connected together, with an insulating-section between, the power being communicated by the engine to one of the said parts and received by the dynamo from the other part, substantially as described.

4. In combination with a dynamo-electric generator and a steam-engine for operating the same, a driving-shaft in two rigidly-connected parts, with an interposed insulating-section, one of said parts being supported on the engine-frame and provided with a crank to which the piston-rod is jointed and the other part being supported on the frame of the dynamo and fastened to the armature, substantially as described.

5. In combination with a dynamo-electric generator and a steam-engine for operating the same, driving mechanism rigidly connecting the dynamo with the engine and provided with an insulating-section between the steam-engine and the dynamo, substantially as described.

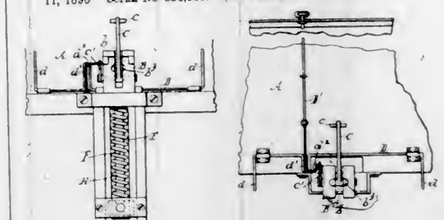
6. The combination of a dynamo-electric generator and a steam-engine the driving-shaft of which is in axial alignment with the armature-shaft of the dynamo-electric generator, with a rigid connection between the two, consisting of a metal flange on each, insulating material interposed between the two metal flanges, and insulated bolts passing through both metal flanges, substantially as described.

7. The combination of a dynamo-electric generator insulated from the ground and a steam-engine the driving-shaft of which is in axial alignment with the armature-shaft of the dynamo-electric generator, with a rigid connection between the two, consisting of a metal flange on each, insulating material interposed between the two metal flanges, and insulated bolts passing through both metal flanges, substantially as described.

8. The combination of a dynamo-electric generator and a steam-engine the driving-shaft of which is in axial alignment with the armature-shaft of the dynamo-electric generator, with a rigid connection between the two, consisting of a metal flange on each, insulating material interposed between the two metal flanges, and insulated bolts passing through both metal flanges and the insulating material interposed between them, substantially as described.

9. The combination of a dynamo-electric generator insulated from the ground and a steam-engine the driving-shaft of which is in axial alignment with the armature-shaft of the dynamo-electric generator, with a rigid connection between the two, consisting of a metal flange on each, insulating material interposed between the two metal flanges, and insulated bolts passing through both the two metal flanges and the insulating material interposed between them, substantially as described.

448,304. CAR-COUPLING. CHARLES H. SHUTTLEWORTH, Corunna, Mich., assignor of one-half to Frank F. Hoyer, same place. Filed July 11, 1890. Serial No. 358,365. (No model.)



Claim.—1. In a car-coupler, the combination, with a vertically-slotted draw-head, a link pivoted therein having at its end a cross bar, and projections on the draw-head for engagement with the link of the adjacent car, of a crank-arm c', crank-shaft D, provided with crank d', said crank d' and crank-arm c' suitably connected with each other, and means connected with the crank d' for operating the coupler from the top of the car, substantially as described.

2. In a car-coupler, a draw-head provided with a vertical slot, a link pivoted therein, and link-engaging projections on the upper surface of the draw-head, said draw-head also having a horizontal groove for the reception of an ordinary link and a vertical slot for the reception of an ordinary pin, substantially as described.

448,305. EXERCISING-MACHINE. ALFRED I. THAYER, Newark, N. J. Filed Oct. 27, 1890. Serial No. 369,451. (No model.)

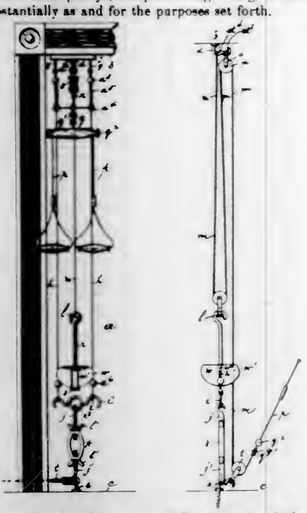
Claim.—1. The improved exercising-machine herein described, combining with a plate *f* connections *g g* for the guide-wires and a supporting-screw adapted to support said plate and hold it to the doorway, heading, or other upper bearing, and providing means to receive a pulley or sheave, a lower bearing *e*, adapted to be screwed into the floor, a coupling *i* for the guide-wires, said guide-wires held in a parallel relation, and means for stretching or tightening said wires, a draft cord and weights, said parts being arranged and adapted to operate, substantially as and for the purposes set forth.

2. In an exercising apparatus, the combination, with a pair of guide-wires, of a plate having means *g g* to receive said wires at their upper extremities and a single screw for holding said plate to the heading, the said screw providing means for supporting the upper pulley, substantially as and for the purposes set forth.

3. In an exercising-machine, the combination, with the plate *f*, having means to receive and hold the guide-wires, of a hook *d*, adapted to support said plate and provided with seats d^4 and d^5, substantially as set forth.

4. In combination, in an exercising-machine, a plate *f*, arranged horizontally and having depending wire-supports and a central sheave-support, wires extending downward from said wire-supports and at their lower ends held in a parallel relation by a coupling-piece *i*, having a central eye, a turn-buckle, and a floor-support *e*, a weight carrier, and draft cords and weights having opposite notches to receive the

guide-wires, and suitable pulleys, said parts being arranged and adapted to operate substantially as and for the purposes set forth.



5. In an exercising-machine substantially such as herein described, the combination, with guide-wires and turn-buckle, of a coupling-piece having a central eye and hooked opposite ends, substantially as and for the purposes set forth.

6. In an exercising-machine, the combination, with the lower ends of the draft-wires, of a coupling-piece, turn-buckle, floor-support *e*, having a double hook, a sheave, and draft-cord, all said parts being arranged and combined substantially as and for the purposes herein set forth and shown.

7. In an exercising-machine, guide-wires *h h*, a bar *f*, coupling the same at the top, a central support *d*, holding said bar *f* to the heading and providing means to support an upper pulley, means for coupling the lower ends of said wires and securing said coupling means to the floor, a floor pulley-weight, and draft-cord, arranged and combined substantially as and for the purposes set forth.

8. In an exercising-machine, the combination, with the draft rope or cord thereof, the hand-rope bar, and the hand-ropes, of an S-hook for catching the hand-rope bar to the draft cord or rope and a rubber or elastic ring or buffer to prevent detachment of said rope or cord from said bar and cushion the contact of the said bar with the pulley, substantially as set forth.

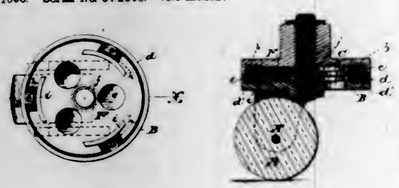
9. In an exercising-machine, the combination, with the guide-wires *h h* and weights sliding thereon, of elastic or cushion-like buffers arranged on said wires, substantially as set forth.

10. The combination, with the weight-guides and reciprocating weights, of rubbers arranged on said guides in the course or track of said weights and spiral springs interposed therebetween, substantially as and for the purposes set forth.

11. In combination with the weights of an exercising-machine and the weight-carriers thereof, an upper and a bottom bearing or support, pulleys arranged on said upper and bottom supports and on said weight-carrier, and a draft-rope secured to said top bearing and passing around the sheave of the weight-carrier, said upper pulley, and said bottom pulley, substantially as and for the purposes set forth.

12. In an exercising-machine, in combination with draft-cord, weight, and pulley, a pair of guide-wires, coupling-bars at the top and bottom of said wires, and central hooked screws holding said bars to the floor and heading, substantially as set forth.

448,306. CASTER. JOHN TOLER, Newark, N. J. Filed Dec. 11, 1890. Serial No. 374,318. (No model.)

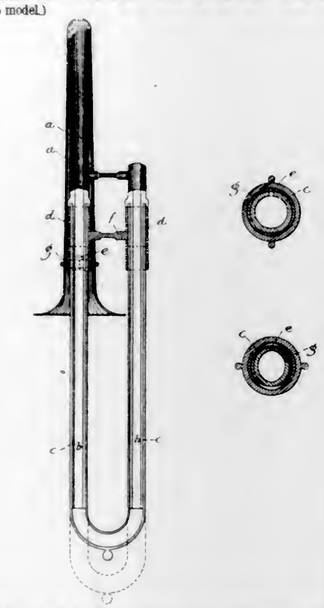


Claim.—1. The improved furniture-caster herein described, combining with the bracketed plate provided with the wheel or wheels A an upper plate provided with means whereby the same may be secured to the furniture, rollers interposed between said plates, a pivoted separating-disk having notches *h* to receive said rollers, and ribs *i* at the sides of said notches, said parts being arranged substantially as and for the purposes set forth.

2. In a caster, the combination, with the pivotally-arranged plates, a pin D, and an intermediate plate provided with notches to receive the anti-friction rollers, of a helical spring arranged on said pin and bearing on said plate to prevent vibration, substantially as and for the purposes set forth.

3. In a caster, the combination, with the pivotally-arranged plates, of a roller-separating plate, and rollers, and a spring to prevent the said roller-separating plate from vibrating, substantially as set forth.

448,307. TUNING-SLIDE FOR MUSICAL INSTRUMENTS. FRANK O. WELLCOME, Portland, Me. Filed Dec. 29, 1890. Serial No. 376,019. (No model.)



Claim.—1. In a slide-trombone, the combination, with the bell, its straight portion, and outside slide, of a tuning-slide adapted to slide upon the upper extremities of the outside slide, and means for securing it in any given position thereon, substantially as and for the purposes set forth.

2. In a slide-trombone, the combination, with the bell, its straight portion, and the outside slide, of a tuning-slide adapted to be attached to the upper extremities of said outside slide, said tuning-slide having attached thereto the handle-bar, substantially as and for the purposes set forth.

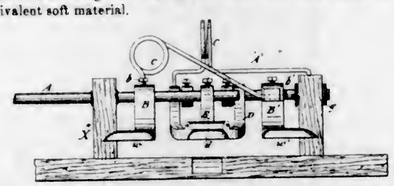
3. In a slide-trombone, the combination, with the bell, its straight portion, outside slide, and tuning-slide adapted to slide upon said outside slide and having a recess cut in its lower end, of a locking device consisting of a circular band of unequal diameters, substantially as and for the purposes set forth.

448,308. PEDAL-ACTION FOR PIANO-FORTES. CALVIN L. WEBER, New York, N. Y. Filed Aug. 13, 1890. Serial No. 361,920½. (No model.)

Claim.—1. A pedal-action for piano-fortes, consisting of a tilting bar or shaft of metal rod journaled in bearings in the frame-work, so as to be free to oscillate, and bent at or near one end to form a crank, a pedal-lever fastened on said rod to impart oscillation thereto, and an action-rod engaging said crank bend to be pressed upwardly thereby when the rod is oscillated by depressing the pedal.

2. A pedal-action for piano-fortes, consisting of a tilting bar or shaft of metal rod journaled in bearings in the frame-work, so as to be free to oscillate, and bent at or near one end to form a crank, a pedal-lever fastened on said rod to impart oscillation thereto, and an action-rod formed at its lower end with an open notch terminating in a rounded socket for engaging the wrist portion of said crank bend and adapted to be forced or sprung thereover.

3. A pedal-action for piano-fortes, consisting of a tilting bar or shaft of metal rod having a pedal-lever fastened on it and provided with journal-bushings screwed on threaded portions of the rod, having opposite flanges for receiving longitudinal thrust, and bearings for said rod embracing said bushings and faced with intervening felt or equivalent soft material.



4. A pedal-action for piano-fortes, consisting of two tilting bars or shafts of metal rod journaled in bearings in the frame-work, so as to be free to oscillate, two pedal-levers fastened on said rods, and a single intervening spring for pressing the pedals upwardly, fastened at one end to one of the pedal-levers and at the other end to the other pedal-lever, engaging them on relatively opposite sides of the pivotal axes and adapted to exert a pressure against the two levers in opposite directions, whereby each receives the reaction of the thrust imparted to the other.

5. The combination, with a pedal-action for piano-fortes, comprising the soft pedal and the parts operated thereby, of means for retaining the soft pedal applied, consisting of a supplemental stop-pedal and a vibrating arm in connection with the soft pedal, arranged relatively to the stop-pedal to be tilted by the depression thereof, and thereby to press down the soft pedal, and means for holding said stop-pedal down.

6. The combination, with a pedal-action for piano-fortes, comprising the soft pedal and the parts operated thereby, of means for retaining the soft pedal applied, consisting of a supplemental stop-pedal and a vibrating arm in connection with the soft pedal arranged relatively to the stop-pedal to be tilted by the depression thereof, and thereby to press down the soft pedal, and constructed when thus tilted to engage the stop-pedal and hold it down.

7. The combination, with a pedal-action for piano-fortes, comprising the soft pedal and the parts operated thereby, of means for retaining the soft pedal applied, consisting of a supplemental stop-pedal and a vibrating arm in connection with the soft pedal arranged relatively to the stop-pedal to be tilted by the depression thereof, and thereby to press the soft pedal down part way, and constructed when thus tilted to engage the stop-pedal and hold it down, and adapted by its further tilting by the complete depression of the soft pedal to disengage and release the stop-pedal.

8. The combination, with a pedal-action for piano-fortes, comprising the soft pedal, a longitudinal tilting bar or shaft on which it is fastened, and means for pressing it upwardly, of means for retaining the soft pedal applied, consisting of a supplemental stop-pedal having means for pressing it upwardly, and a vibrating arm fixed to the soft-pedal shaft and extending beneath some part of said stop-pedal in order that it shall be engaged and tilted thereby upon the depression of the stop-pedal, and thereby oscillate the soft-pedal shaft.

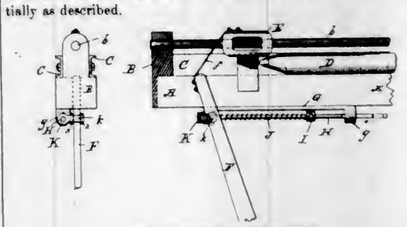
9. The combination of the soft pedal *w*, its shaft A, an arm E, fixed to said shaft, and a stop-pedal D, normally pressed upwardly and having a roller *f* arranged upon its depression to press down the arm E.

10. The combination of the soft pedal *w*, its shaft A, an arm E, fixed on said shaft, and a stop-pedal D, pivoted on an axis in the rear of the shaft, normally pressed upwardly, and having a roller *f* arranged normally above the arm E, and adapted upon the depression of the stop-pedal to engage and press down the arm E, and arranged relatively to the length of said arm to pass beyond the end thereof and be engaged and held down thereby.

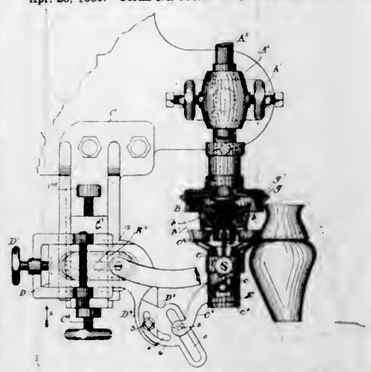
11. The combination of the soft pedal *w*, its shaft A, an arm E, having a notch or recess in its end, and a stop-pedal D, pivoted in the rear of said shaft, normally pressed upwardly, and having a roller *f* arranged relatively to said arm to engage and depress it upon the depression of the stop-pedal and to pass beyond its end and be engaged by the notch therein to hold the stop-pedal down.

448,309. PICKER-STICK CHECK FOR LOOMS. HARRY A. WILLIAMS, Penacook, N. H. Filed Apr. 28, 1890. Serial No. 349,776. (No model.)

Claim.—The combination, in a picker-stick check for looms, of a bed-casting adapted to be secured to the lathe of a loom and having a right-angled projection at each end, a spring-actuated rod mounted therein having a laterally-extending stop-piece secured to one end, said stop-piece having two forwardly-extending ears, one of which fits close against the side of one of the projections or bearings upon the bed-casting, and the other one is far enough away from or beyond the first ear to form a recess for the reception of the picker-stick, substantially as described.



448,310. HEEL-TRIMMING MACHINE. HENRY W. WINTER, Boston, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Apr. 23, 1889. Serial No. 308,282. (No model.)

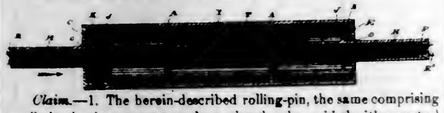


Claim.—1. In a heel-trimming machine, the following instrumentalities, viz: a rotary heel-trimming cutter to trim the body of the heel from its tread end toward the heel-seat for substantially the height of the heel toward the breast corner, a rand-guard, a tipping carriage supported to tip independently of the shaft carrying the said heel-trimming cutter and to which carriage the said rand-guard is connected, and an auxiliary cutter mounted to rotate in the said tipping carriage and having an edge to simultaneously act upon and trim that part of the heel at the rear thereof from the heel-seat toward the tread end of the heel which is not trimmed by the said rotary heel-trimming cutter, the surfaces at the rear of the heel cut by these two cutters coinciding as a line, substantially as described.

2. In a heel-trimming machine, a main rotary cutter having a series of blades to act upon and trim the heel from its tread end toward its seat end for a distance not greater than the height of the heel measured at the breast corner, combined with an independent auxiliary cutter mounted on a separate tipping shaft located at the end of the main cutter and having its cutting-edges located in the space between the said blades, the cutting-edges of the said auxiliary cutter being adapted to trim only that part of the heel at and along its seat and about the rear which is of greater height than the main body of the heel at the breast corner, and which part is not cut by the main rotary heel-trimming cutter, the surface left by the joint action of the main and auxiliary cutters coinciding as a line, thereby obviating any irregularity of curvature in the finished heel, as and for the purpose set forth.

3. In a heel-trimming machine, a main rotary cutter having a series of blades to act upon and trim the heel from its tread end toward its seat end for a distance not greater than the height of the heel measured at the breast corner, combined with an independent auxiliary cutter mounted on a separate tipping shaft located at the end of the main cutter and having its cutting-edges located in the space between the said blades, the cutting-edges of the said auxiliary cutter being adapted to trim only that part of the heel at and along its seat and about the rear which is of greater height than the main body of the heel at the breast corner, and which part is not cut by the main rotary heel-trimming cutter, the surface left by the joint action of the main and auxiliary cutters coinciding as a line, thereby obviating any irregularity of curvature in the finished heel, and with a rand-cutter, as and for the purpose set forth.

448,311. COMBINED ROLLING-PIN AND CAKE-CUTTER. ELBERT T. BALDWIN and JOHN H. STIMPSON, Gilman, Colo. Filed Jan. 16, 1891. Serial No. 378,021. (No model.)



Claim.—1. The herein-described rolling-pin, the same comprising a cylinder having one open and one closed end provided with a central perforation, a cake-cutter removably inserted in said open end and also provided with a central perforation, and a shaft journaled in said perforations, as set forth.

2. The herein-described rolling-pin, the same comprising a cylinder having one open end, a closed end thereto having a central perforation surrounded by a collar extending toward the interior of the cylinder, a cake-cutter removably inserted in said open end and also provided with a central perforation surrounded by an inwardly-extending collar, and a shaft journaled in said collars, extending entirely through the cylinder, and provided with annular projections turning against the inner ends of the collars, as set forth.

3. The herein-described rolling-pin, the same comprising a cylinder having one open and one closed end provided with a central perforation, a cake-cutter removably inserted in said open end and also provided with a central perforation, a tubular shaft journaled in said perforations and extending through the cylinder, annular projections upon said shaft just inside the perforations, one end of the shaft being closed and provided with a supporting-ring, and a cake-perforator removably inserted in the other end of said shaft and provided with a handle, as hereinbefore set forth.

448,312. DEVICE FOR ATTACHING HORSESHOES. RICHARD BARCLAY, Sodom, Ohio. Filed May 17, 1890. Serial No. 352,165. (No model.)

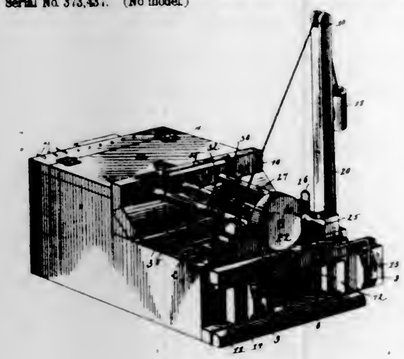


Claim.—1. The combination, with a nailless horseshoe 1, of a quarter-boot 2, connected with the shoe and formed in two parts or sections 5 and 6, and screw-bolts 14, passed through the rear boot-sections 6 and adapted to bear against the hoof to tighten the boot, substantially as described.

2. The combination, with a nailless horseshoe 1, of a quarter-boot 2, formed in two parts 5 and 6, hinged together on one side and provided with flanges 3 and lugs 9, the bolts 4, passed through said shoe and flanges, the bolt 8, engaging the lugs 9 to fasten the quarter-boot, and the bolts 14, passed through the rear boot-section 6 and adapted to bear against the hoof to tighten the boot, substantially as described.

3. The combination, with a nailless horseshoe 1, of the quarter-boot 2, formed in two parts hinged together on one side, the stocking 16, and the bolts 14, passed through the rear section of the quarter-boot to bear against the hoof and tighten the boot, substantially as described.

448,313. ANIMAL-TRAP. STEPHEN BASSINGER, Italy, Tex., assignor of one-half to W. D. Morton, same place. Filed Dec. 3, 1890. Serial No. 373,437. (No model.)



Claim.—1. The combination, in an animal-trap, of the body or frame provided with two compartments, the sliding door to open and close alternately the compartments, the shaft 15, journaled in suitable bearings, the wheel 22, mounted on the shaft and provided with a wrist-pin connected with the sliding door and reciprocating the same, and means for rotating the shaft, substantially as described.

2. The combination, in an animal-trap, of the body or frame provided with two compartments, the sliding door alternately closing and opening the compartments, the wire frame 24, secured to the sliding door and provided with the vertically-arranged loop, the shaft 15, the wheel 22, mounted on the shaft and provided with a wrist-pin engaging said loop, and means for rotating the shaft, substantially as described.

3. The combination, in an animal-trap, of the body or frame provided with two compartments, the sliding door alternately closing and opening the compartments, the shaft, the wheel 22, mounted on the shaft and provided with a wrist-pin connected with and reciprocating the sliding door, the post or upright rising from the frame and provided with the pulley, and the cord having one end wound upon the shaft and passing over the pulley and having its other end provided with a weight, substantially as described.

4. The combination of the frame or body, the sliding door, the shaft connected with and reciprocating the sliding door, the cam-wheel mounted upon the shaft, the rock-shaft provided with pawls arranged to engage the cam-wheel, and the hinged bottoms connected with the rock-shafts, substantially as described.

5. The combination, in an animal-trap, of the frame or body, the sliding door, the shaft connected with and reciprocating the sliding door, the cam-wheel mounted on the shaft, the rock-shaft provided with pawls arranged to engage the cam-wheel and having the outwardly-extending arms 28, the hinged bottoms, and the rods connecting the hinged bottoms with said arms 28, substantially as described.

6. The combination, in an animal-trap, of the body, the sliding door, the shaft connected with and reciprocating the sliding door, the cam-wheel mounted upon the shaft, the rock-shafts provided with pawls to engage the cam-wheel and having the vertically-extending arms 30, the elastic connection between said arms 30, and the hinged bottoms connected with the rock-shafts, substantially as described.

7. The combination, in an animal-trap, of the body or frame, the sliding door, the shaft connected with and reciprocating the sliding door, the cam-wheel mounted upon the shaft, the rock-shafts provided with the upwardly-extending and elastically-connected arms 30 and having the pawls arranged to engage the cam-wheel, the pins 34, projecting laterally from the cam-wheel and arranged to engage the pawls, and the hinged bottoms connected with the rock-shafts, substantially as described.

8. The combination, in an animal-trap, of the body or frame provided with two compartments, the sliding door alternately opening and closing the compartments, the shaft, the wheel 22, mounted upon the shaft and provided with a wrist-pin connected with and reciprocating the sliding door, the post or upright rising from the frame and provided with a pulley, the cord passing over the pulley, having one end wound upon the shaft and having the other end provided with a weight, and a handle arranged upon the outer end of the wrist-pin to reversely rotate the shaft and wind up the shaft, substantially as described.

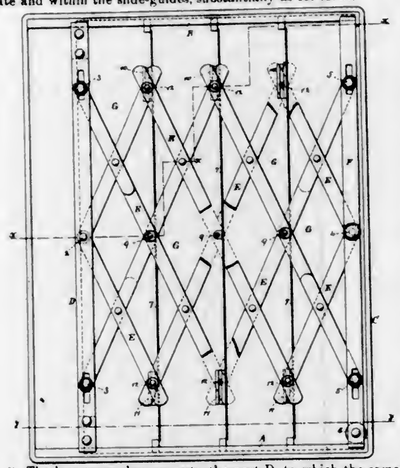
9. In an animal-trap, the combination of the frame or body provided with two compartments 4 and 5 and having openings 6 and 7, the sliding door arranged in suitable ways and provided with the central opening 12, forming end portions 13 and 14, the shaft 15, journaled in suitable bearings and connected with and reciprocating the sliding door, and means for rotating the shaft, substantially as described.

10. The combination, in an animal-trap, of the frame or body having the openings 6 and 7, the inclined partition dividing the frame or body into a rear portion or cage and a front portion or trap, the longitudinal partition 3, dividing the front portion into compartments 4 and 5, the sliding door having a central opening forming end portions 13 and 14, the shaft 15, journaled in suitable bearings, the wheel 22, mounted upon the shaft and provided with a wrist-pin connecting with and reciprocating the sliding door, the cam-wheel provided with diametrically-arranged cams, the rock-shaft arranged upon opposite sides of the shaft 10 and provided with the vertically and horizontally extending arms and having the pawls arranged to engage the cam-wheel, the hinged bottoms connected with the horizontally-extending arms, and means for rotating the shaft, substantially as described.

448,314. METAL DOOR OR GATE. ACHILLE BATAILLE, New York, N. Y. Filed Apr. 21, 1890. Serial No. 348,774. (No model.)

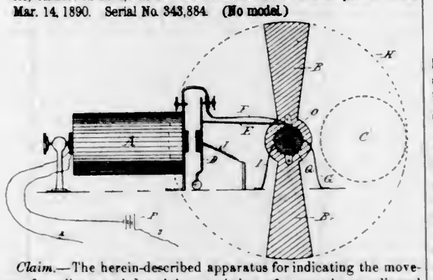
Claim.—1. The combination, with the lazy-tongs door or gate, of metal slats lapping one upon the other and having flanges on their edges turned toward the lazy-tongs and pivotal connections against the flanges for the lazy-tongs bars, substantially as set forth.

2. The slats G, having flanges at one edge and stiffening-ribs at the other edge and the flat surfaces contiguous to each other, in combination with the lazy-tongs door or gate, the attaching-pivots 9, and the slide-guides upon the metal slats against the flanges and the pivot blocks or studs contiguous to the intersections of the lazy-tongs door or gate and within the slide-guides, substantially as set forth.



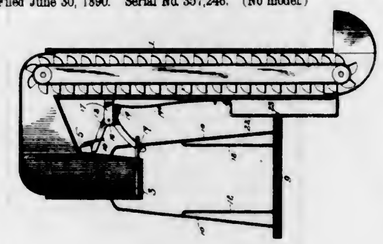
3. The lazy-tongs door or gate, the post D, to which the same is connected, and the vertical bar F at the moving edge of the lazy-tongs door, in combination with the metal slats G, having flanges at their edges and the flat surfaces lapping upon and against one another, and one of which slats is connected to the vertical bar F, the slide-guides 11 upon the slats and against the flanges, the pivots for the lazy-tongs, and the pivot blocks or studs within the slide-guides, substantially as set forth.

448,315. TAIL LIGHT FOR RAILWAY-TRAINS. ARTHUR W. BERNE, New Orleans, La., assignor of five-eighths to Brownlee W. Taylor, Charles A. Fish, and Richard J. Lowden, all of same place. Filed Mar. 14, 1890. Serial No. 343,884. (No model.)



Claim.—The herein-described apparatus for indicating the movement of a railway-train at night, consisting of a metal arm adjusted on the axle of a car, said arm being rotated by the revolution of the axle of a car, terminals of an electric circuit closed by said arm, electro-magnetic devices operated by the circuit, and a screen operated thereby for flashing a light, substantially as and for the purpose set forth.

448,316. GRAIN-SCALE. ALEXANDER W. BUTTS, Celina, Tex. Filed June 30, 1890. Serial No. 357,246. (No model.)

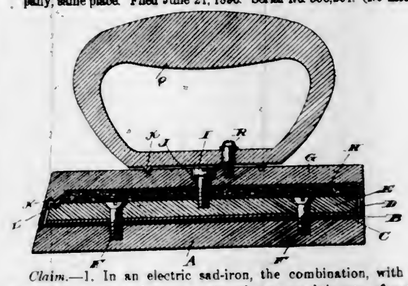


Claim.—1. The combination, with the discharge-spout and the cut-off located at the lower end of the same, of a scale-beam terminating at its front end in a yoke pivoted between its ends to the opposite sides of the spout, a bag-supporting platform depending from the front ends of the yoke, and a bell-crank lever pivoted at its angle to the casing, connected at its upper end to the yoke in rear of its pivot and at its lower end to the end of the cut-off, substantially as specified.

2. In a grain-scale, the combination, with the overhanging discharge-spout, of a scale-beam terminating at its front end in a yoke fulcrumed on the spout and provided with a sliding weight and a counterpoise, a pair of bails depending loosely from the ends of the yoke, a platform having bag-holders supported by the bails, a cut-off mounted for sliding in the spout, a pair of bearing-ears projecting from the conveyer, a bell-crank lever pivoted at its angle in said ears, provided below its pivot with a rearwardly-disposed lug, the upper terminal of the lever loosely engaging a loop projecting from the scale-beam in rear of its fulcrum and the lower terminal of said lever being pivoted to the cut-off, and a flat spring secured to the conveyer and having its free end terminating against the lug of said lever, substantially as specified.

3. The combination, with the casing terminating in the overhanging spout and the valve located in the latter, of the scale-beam pivoted to one side of the spout, the bell-crank lever pivoted at its angle to the casing, at its upper end to the beam and at its lower end to the valve, the platform suspended from the front end of the beam, and the lever 20, pivoted to the casing in rear of the fulcrum of the beam and adapted to be swung under and support the same, substantially as specified.

448,317. ELECTRIC SAD-IRON. CHARLES E. CARPENTER, Minneapolis, Minn., assignor to the Carpenter-Nevens Electro-Heating Company, same place. Filed June 21, 1890. Serial No. 356,201. (No model.)



Claim.—1. In an electric sad-iron, the combination, with the heated surface-plate and a compressing-plate secured thereto, of an electrical resistance or conductor interposed between said plates and an insulation interposed between said resistance and each of said plates, substantially as described.

2. In an electric sad-iron, the combination, with the heated surface-plate, the compressing-plate secured thereto, an electrical conductor or resistance located between said plates, and an insulation interposed between said resistance and each of said plates, of a body secured to the compressing-plate and a filling of heat-insulating material between said body and plates, substantially as described.

3. In an electric sad-iron, the combination, with the heated surface-plate, the compressing-plate secured thereto, an electrical conductor or resistance located between said plates, and an insulation interposed between said resistance and each of said plates, of a cover or body secured to the compressing-plate and a cone-and-socket connection or its equivalent between said body and plate, substantially as described.

4. In an electric sad-iron, the combination, with the heated surface-plate, the compressing-plate secured thereto, an electrical conductor or resistance located between said plates, and an insulation interposed between said resistance and each of said plates, of a cover or body secured to the compressing-plate, a cone-and-socket connection or its equivalent between said body and plate, and a heat-insulation interposed between said body and plate, substantially as described.

5. In an electric sad-iron, the combination, with the heated portion thereof, of the body or cover secured thereto and a cone-and-socket connection or its equivalent between said body and the heated portion, substantially as described.

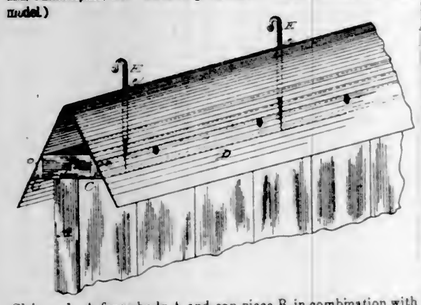
6. In an electric sad-iron, the combination, with the heated portion thereof, of a cover or body secured thereto, a cone-and-socket connection or its equivalent between said body and the heated portion, and a filling of heat-insulation between said body and the heated portion, substantially as described.

7. In an electric sad-iron, the combination, with the heated portion thereof, of a cover or body secured to said heated portion, a

handle secured to said body, and a cone-and-socket connection or its equivalent between said body and the heated portion of the iron and between said body and handle, substantially as described.

8. In an electric sad-iron, the combination, with the heated portion of the iron, the body, a screw working loosely through the body and engaging the heated portion, a heat-insulation between said screw and body, the handle, a screw working loosely through said handle and engaging the body, and a heat-insulation between said screw and handle, of a cone-and-socket connection or its equivalent between said body and the heated portion of the iron and between said body and the handle, substantially as described.

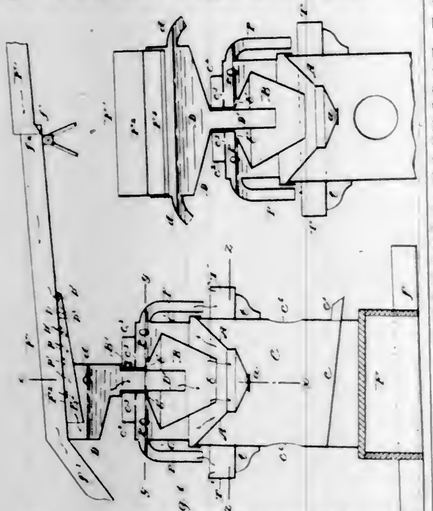
448,318. CAT-GUARD. JOHN J. CHATTANAY and CHARLES E. OWENS, Philadelphia, Pa. Filed Aug. 19, 1890. Serial No. 362,397. (No model.)



Claim.—1. A fence-body A and cap-piece B, in combination with a double roof of smooth material extending downward and outward considerably below said cap-piece to prevent animals from climbing on the said roof, substantially as set forth.

2. In combination with the fence which supports it, the double roof or double incline D, provided in its ridge or apex with a series of perforations *c*, and the clothes-hooks E, which extend down through said perforations and are screwed into the wooden part of the fence, substantially as set forth.

448,319. ORE-SEPARATOR. ANTOINE CLÉMENT-CONTI, Feletto, Italy. Filed Jan. 5, 1889. Serial No. 295,588. (No model.) Patented in France June 9, 1888, No. 191,108, and in Italy July 27, 1888, No. 23,821.



Claim.—1. The mode of separating precious metals from their ores or from sands, which consists in injecting a body of water holding the minerals in suspension under a given hydraulic pressure or head into a body of confined water at a point intermediate of the highest and lowest levels of the last-named body of water and allowing the same to flow off in proportion to the volume of injected water, for the purpose set forth.

2. The mode of separating precious metals from their ores or from sands, which consists in injecting a body of water holding the mineral in suspension under a given pressure or head into a body of water whose sectional area increases from its lowest level upwardly to a given point and then remains constant to its highest level and injecting the water holding the mineral in suspension into said body of water at a point intermediate of the greatest and least sectional areas thereof, for the purpose set forth.

3. In an ore-separator, the combination, with a separating-chamber provided with a conical bottom and an overflow at or near its upper end, of a feed-funnel provided with overflow-ports and with a tubular extension projecting into the separating-chamber, for the purpose set forth.

4. In an ore-separator, the combination, with a separating-chamber provided with a conical bottom and an overflow at or near its upper end, of a vertically-adjustable feed-funnel provided with overflow-ports and with a tubular extension projecting into the separating-chamber, for the purposes set forth.

5. In an ore-separator, the combination, with a separating-chamber provided with a conical bottom and with an overflow at or near its upper end, of a feeding device consisting of a feed-funnel provided with overflow-ports and with a tubular extension projecting into the separating-chamber, and a combining-cone encompassing the tubular extension and having inlet-ports at its upper end, for the purposes set forth.

6. In an ore-separator, the combination, with a separating-chamber provided with a conical bottom and with an overflow at or near its upper end, of a feeding device consisting of a feed-funnel provided with overflow-ports and with a tubular extension projecting into the separating-chamber, and a combining-cone encompassing the tubular extension and having inlet ports at its upper end, said cone having its discharge in a plane intermediate of the greatest and least diameters of the collector, for the purpose set forth.

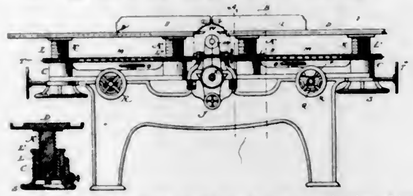
7. In an ore-separator, the combination, with a separating-chamber provided with a conical bottom and with an overflow at or near its upper end, of a vertically-adjustable feeding device consisting of a feed-funnel provided with overflow-ports and with a tubular extension projecting into the separating-chamber, and a combining-cone encompassing the tubular extension and having inlet-ports at its upper end, for the purposes set forth.

8. In an ore-separator, the combination, with the collecting-chamber provided with air-ports in its roof, with overflow-pipes at or near its upper end, and with a conical bottom, of a combining-cone suspended axially within the chamber and having its discharge on a line intermediate of the greatest and least diameter of the conical bottom of the chamber, and a feed-funnel provided with overflow-ports and with a tubular extension projecting into the combining-cone, for the purposes set forth.

9. In an ore-separator, the combination, with a separating-chamber having overflow-ports at or near its upper end and a feeding device consisting of a feed-funnel provided with overflow-ports and with a tubular extension projecting into the separating-chamber, of a feed-trough arranged on the feed-funnel and having a portion of its bottom perforated or slotted, a directing-chute arranged underneath said perforated portion and discharging into the feed-funnel, and a discharge-chute at the end of the perforated portion of said bottom, said chute projecting over the feed-funnel, for the purposes set forth.

10. In an ore-separator, the combination, with a casing provided with an inclined bottom, of a separating-vessel having overflow-pipes at its upper end and a conical bottom provided with a screw-capped discharge-port, said vessel being loosely seated in the upper end of the casing, a combining-cone suspended axially within the casing, and a feed-funnel provided with overflow-ports and with a tubular extension projecting into the combining-cone, said funnel being detachably connected with the separating-vessel, for the purposes set forth.

448,320. VARIETY WOOD-WORKER. HENRY J. COLBURN, Toledo, Ohio. Filed Feb. 15, 1889. Serial No. 300,073. (No model.)



Claim.—1. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a fixed journal-box, and an axially-divided pivotally-removable journal-box, and with means for securing the parts of said box together in working position, substantially as shown and described.

2. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a fixed journal-box, an axially-divided pivotally-removable journal-box, and position-locking means, substantially as shown and described.

3. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a journal-box Z, a fixed journal-box Z′, and a divided removable journal-box W, with means for securing the parts of said removable box together in working position, substantially as shown and described.

4. In a variety wood-worker, the combination of both vertically and horizontally adjustable independent tables, an arbor adapted to carry an exchangeable variety of cutters, a fixed journal-box Z, an axially-divided removable journal-box W, and pivoted position-locking arms, substantially as shown and described.

5. In a variety wood-worker, the combination, with an arbor adapted to carry an exchangeable variety of cutters, of the slide Y, adjustable transversely of the table and carrying the fixed journal-box Z, the journal-box Z′, and an axially-divided pivotally-removable journal-box, substantially as shown and described.

6. In a variety wood-worker, the combination, with an arbor adapted to carry an exchangeable variety of cutters, of a stationary main frame, a composite mechanism consisting of a slide and a superimposed table, said slide and table being horizontally inseparably combined and horizontally adjustable together longitudinally of said main frame, and the said table being vertically adjustable parallel with and upon the said slide and frame, substantially as shown and described.

7. In a variety wood-worker, the combination, with an arbor adapted to carry an exchangeable variety of cutters, of a main frame carrying a pair of independently horizontally-adjustable slides, one in front and one in rear of said arbor, and means, substantially as shown, for connectedly and simultaneously adjusting the same toward and from each other in a horizontal plane, each of said slides carrying a superimposed table horizontally adjustable therewith and vertically adjustable thereon independently of its horizontal adjustment, substantially as described.

8. In a variety wood-worker, the combination, with a horizontal arbor adapted to carry a cutter-head, of two independently vertically-adjustable tables and a duplex guide-fence, the parts of which fence are pivotally connected and are each respectively carried by the table upon which it is imposed, substantially as described.

9. In a variety wood-worker, the combination, with a horizontal arbor adapted to carry a cutter-head, of two independently vertically-adjustable tables, a duplex guide-fence, the parts of which fence are each respectively carried by the table upon which it is imposed, and a link pivoted at its ends to the adjacent ends of said parts, substantially as described.

10. The fixed journals Z Z′, the arbor 14, journaled therein, a pulley on said arbor, and a cutter-head adapted to be exchangeably connected to said arbor, in combination with a divided journal-box comprising the two arms W, pivoted at X to the supporting-frame of said arbor, and means, substantially as described, for locking said arms around the free ends of said arbor, as set forth.

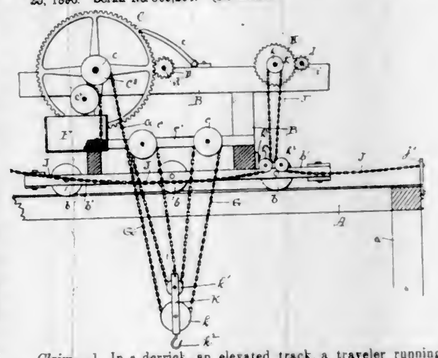
11. The slide Y, having the fixed journal-boxes Z Z′ and the arbor 14, journaled in said boxes, in combination with a divided journal-box comprising the two arms W, turning on a pivot X, parallel with said arbor, and each having an open lug S, and with the two locking-arms 5, turning on pivots 6 in said slide at right angles to said arbor, and the screw-bolt 7, carried in the free ends of said locking-arms and adapted to enter said open lugs, as and for the purpose set forth.

12. In a wood-working machine, the main frame J, a wood-working tool at its center, a pair of tables D D, and a pair of slides C, supporting said tables, moving longitudinally on said frame, and disposed one on either side of said tool, in combination with a shaft T, journaled in bearings T′ along said frame, said shaft being oppositely screw-threaded from its center and having hand-wheels T″ at its ends, nuts U′ on each of said screws, holders U, loosely embracing said nuts and rigidly connected to said slides, respectively, and thumb-screws V in said holders for impinging against said nuts when desired, as and for the purpose set forth.

13. The slide C, having vertically-bored sockets at each end, in combination with the nuts L in each of said sockets, said nuts carrying sprocket-wheels L′ L″, the chain M, connecting said sprocket-wheels, and the hand-wheel S, connected to one of said nuts, with the screws K, engaging said nuts, and the table D, carried by said screws, and with independent means, substantially as described, for adjusting said slide C longitudinally on the main frame J of a wood-working machine, as set forth.

14. In a wood-working machine, the main frame J, slides C at each end thereof, means for independently adjusting said slides longitudinally thereon, means for connectedly adjusting said slides simultaneously and in opposite directions longitudinally thereon, tables D, supported one on each of said slides, means for adjusting said tables independently of each other and vertically in said slides, fences 11 and 12, supported one on each table, and means for adjusting the angles of said fences to said tables, in combination with the arbor-carrying slide Y, carried upon said main frame J, and means for independently adjusting it horizontally and transversely thereon, the whole operating as described.

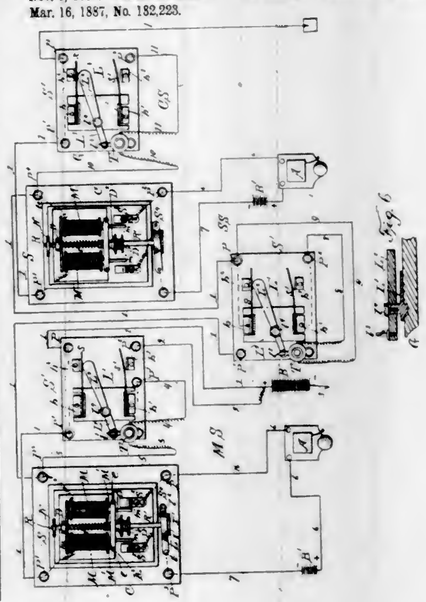
448,321. DERRICK. ALLEN COLBY, Brunswick, Me. Filed Oct. 25, 1890. Serial No. 369,291. (No model.)



Claim.—1. In a derrick, an elevated track, a traveler running thereon, a windlass on said traveler having a sprocket-drum, a chain running over said drum, a block connected by said chain with a pair of sheaves mounted on the traveler, and a guiding-pulley mounted adjacent to said drum, the said pulley and drum having their peripheries contiguous, whereby said chain is held in place on said drum, substantially as described.

2. In a derrick, a track and a traveler running thereon, a windlass on said traveler, a pair of sheaves mounted on said traveler, and a block, said sheaves and block connected with said windlass for hoisting heavy articles, a second windlass B, having a sprocket-drum, and a chain running over said drum and over suitable guiding-pulleys and secured at its ends to the extremities of the said track, whereby said traveler may be moved on said track, substantially as described.

448,322. CALL SYSTEM. LOUIS DIGEON, Paris, France. Filed Nov. 1, 1887. Serial No. 253,975. (No model.) Patented in France Mar. 16, 1887, No. 182,223.

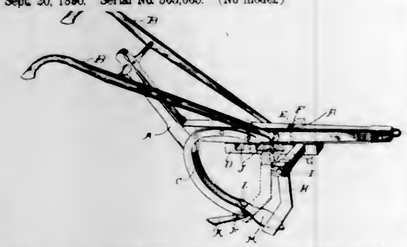


Claim.—1. A call system comprising a normally-closed telephone-circuit, a plurality of main and call stations in said circuit, a normally-interrupted local alarm-circuit at each of said main stations, a switch in the local and telephone circuits at said main stations adapted to automatically close the local alarm-circuit by dropping out of the magnetic influence of the telephone-circuit when the latter is interrupted, and a gravity switch-lever at each call-station arranged to vibrate between contacts in the telephone-circuit and operating when released to momentarily interrupt said circuit and again close the same, for the purpose set forth.

2. The herein-described switch, comprising an electro-magnet, a spring-actuated armature-rod provided with a projection or flange at its free end, and an armature secured to said rod and provided with contact-pins, in combination with a line-circuit connected with the electro-magnet, a local circuit connected with contacts in the path of the armature-pins, and a circuit-breaker for said local circuit lying in the path of the projection on the armature-rod, whereby the said circuit-closer is automatically moved into its normal position when the armature-rod and armature are moved into their normal position, substantially as and for the purpose specified.

3. The switch S, composed of an electro-magnet M, whose poles M' have attenuated extensions *m'*, the spring-actuated rod R, the armature E, adjustably secured to said rod, said armature having contact-pins *c*, and the contacts S^2 S^3, substantially as and for the purposes set forth.

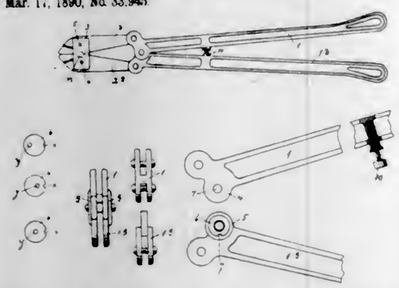
448,323. CULTIVATOR. JAMES W. DOWNS, Bowdon, Ga. Filed Sept. 20, 1890. Serial No. 365,665. (No model.)



Claim.—1. In a cultivator, the combination, with the beam and standard, of a clamping-bar applied to the beam and formed with a recess to receive a laterally-adjustable bar and securing the latter to the beam, the laterally-adjustable bar fitting in the recess of the clamping-bar and having a portion thereof bearing against the beam, and a fender rotatable upon the end of said laterally-adjustable bar, but normally held in a fixed adjusted position, substantially as and for the purposes set forth.

2. In a cultivator, the combination, with the beam and standard, of a clamping-bar applied to the beam and formed with a series of recesses to receive a laterally-adjustable bar at any one of a series of positions and securing the latter to the beam, the laterally-adjustable bar to fit in the recesses of the clamping-bar, and the fender depending from the end of said laterally-adjustable bar, substantially as and for the purposes set forth.

448,324. BOLT-CUTTER. WILLIAM L. DUTCHER, Rome, N. Y. Filed Nov. 12, 1890. Serial No. 371,157. (No model.) Patented in Canada Mar. 17, 1890, No. 33,945.



Claim.—1. The combination, in a bolt-cutter, of the cutting-levers pivoted in straps and having a semicircular recess in each between the straps, a cylindrical bearing-pin adapted to enter the recesses and prevent lateral movement of the jaws with reference to each other, and the operating-lever handles pivoted to each other and to the ends of the cutting-jaws, substantially as set forth.

2. The combination, with a bolt-cutter, of the cutting-levers pivoted in straps engaging upon either side thereof, the semicircular recess in each jaw substantially in line between the pivotal points of the cutting-levers, the bearing-pin within the semicircular recess for preventing lateral movement of the jaws with reference to each other, the operating-lever handles pivoted to each other and to the ends of the cutting-levers, substantially as set forth.

3. The combination, in a bolt-cutter, of the cutting-jaws pivoted in straps upon each side thereof, operating-lever handles pivoted to the cutting-levers, and the adjusting-blocks adapted to be placed in the joint between the lever-handles, substantially as set forth.

4. The combination, in a bolt-cutter, of the cutting-levers pivoted in straps engaging upon either side thereof adjacent to the cutting-edges, the semicircular recesses in each cutting-lever substantially in line between the pivoted point of the jaws, the bearing-pin engaging in the semicircular recesses and adapted to prevent lateral movement of the cutting-levers with reference to each other, the lever-handles pivoted to each other and to the cutting-jaws, and the adjusting-block adapted to be inserted in the joint between the lever-handles, substantially as set forth.

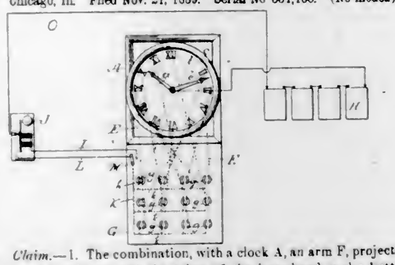
5. The combination, in a bolt-cutter, of the cutting-levers pivoted in straps engaging upon either side thereof adjacent to the cutting-edges, the semicircular recess in each cutting-lever substantially in line between the pivotal points of the cutting-levers, the bearing-pin in the semicircular recesses to prevent lateral movement of the jaws with reference to each other, the operating-lever handles pivoted to the ends of the cutting-levers and to each other, the adjusting-blocks in the joint between the lever-handles, and the projection for preventing the rotation of the adjusting-block, substantially as set forth.

6. The combination, in a bolt-cutter, of the cutting-levers pivoted in straps engaging upon either side thereof adjacent to the cutting-edges, the semicircular recesses in each of the cutting-levers substantially in line between the pivotal points thereof, the bearing-pin within the semicircular recesses, the lever-handles pivoted to each other and to the ends of the cutting-levers, the adjusting-block adapted to be used in the joint between the lever-handles, and the adjustable buffer upon the lever-handle, substantially as set forth.

7. The combination, in a bolt-cutter, of the cutting-levers pivoted in straps, the semicircular recesses in each cutting-lever substantially in line between the pivotal points thereof, the bearing-pin within the semicircular recesses and adapted to prevent lateral movement of the cutting-levers with reference to each other, the operating-handles pivoted to the cutting-levers and to each other, the adjusting-blocks adapted to be inserted in the joint between the operating-lever handles, and the protecting-washer over the joint between the operating-lever handles, substantially as set forth.

8. The combination, in a bolt-cutter, of the cutting-levers pivoted in straps engaging upon either side thereof adjacent to the cutting-edges, the semicircular recess in each of the cutting-levers substantially in line between the pivotal points, the bearing-pin within the circular recesses adapted to prevent lateral movement of the jaws with reference to each other, the lever-handles pivoted to the cutting-levers and to each other, the adjusting-blocks adapted to be inserted in the pivotal joint between the operating-levers, the protecting-washer over the joint between the pivotal levers, and the adjustable buffer in the operating-lever handles, substantially as set forth.

448,325. ELECTRIC ALARM-CLOCK. EDWARD M. EDGERTON, Chicago, Ill. Filed Nov. 21, 1889. Serial No. 331,108. (No model.)



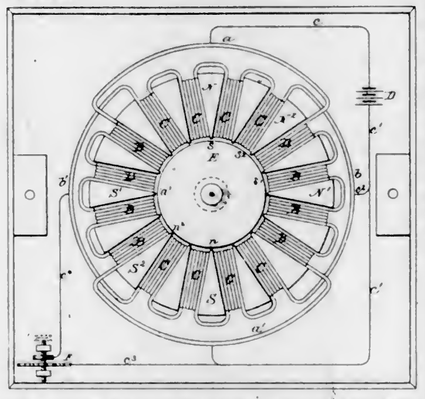
Claim.—1. The combination, with a clock A, an arm F, projecting from and revolving with the arbor of the hour-hand, and a battery connected to the same, of a series of insulated metal strips radially arranged around said arbor, with which said arm successively comes in contact, switch-board G, with one of each pair of contact-plates of which said strips are respectively connected, a key *h*, and an audible signal, as set forth.

2. The combination, with a clock A, arm F, projecting from and revolving with the arbor, a traveler which is journaled in the end thereof, and a battery connected to said clock, of a series of insulated metal strips radially arranged around said arbor, with which said traveler as the arm revolves comes successively in contact, switch-board G, with one of each pair of contact-plates of which said strips are respectively connected, a key *h*, and an audible signal, as set forth.

3. The combination of a clock A, arm F, projecting from and revolving with the arbor, a ring of non-conductive material, a series of metal strips embedded edgewise in said ring, with each of which said arm comes successively in contact as it revolves, screws passing through said ring and establishing a contact with each strip, switch-board G, with one of each pair of contact-plates of which said strips are respectively connected, a key *h*, and an audible signal, as set forth.

4. The combination, with a clock A, an arm F, actuated by the hour-hand arbor thereof, and a battery connected to said clock, of a series of metallic strips with which said arm comes successively in contact, arranged radially around said arbor, switch-board G, having twelve horizontal rows of contact-plates designated by numerals to denote the time that the arm comes in contact with the strip to which one of each pair of plates is respectively connected, key *h*, and an audible signal, as set forth.

448,326. METHOD OF AND APPARATUS FOR DEVELOPING MECHANICAL MOTION FROM ELECTRICAL ENERGY. RUDOLF EICKEMEYER, Yonkers, N. Y. Filed July 20, 1888. Serial No. 280,498. (No model.)



Claim.—1. The method of developing mechanical motion from electrical energy, which consists in intermittingly varying the polar conditions of an electro-magnetic field and in like manner varying induced polar conditions in a movable element by correspondingly varying separate supplies of field-exciting energy derived from any suitable source of electricity.

2. The method of operating electromotors, which consists in developing polar conditions in a magnetic field through the operation of one portion of appropriate field-exciting electricity, then intermittingly varying said polar condition through the operation of another independent but appropriate supply of field-exciting electricity, and also sequentially producing opposite but correspondingly-varied polar conditions in an armature or driven element, so that, the latter being capable of rotation and the polar conditions of the magnetic field being changed or varied in advance of the corresponding changes in the armature, there will be developed the alternate attractive and repulsive magnetic conditions essential for enabling said armature to operate as a movable or driven element.

3. The method of converting electrical energy into mechanical motion, which consists in feeding an element which affords a magnetic field with independent supplies of field-exciting electricity and in delivering said electricity under intermitting or impulsive conditions, and thereby positively developing variations in the polar condition of the magnetic field and sequentially developing consequent polar variations in a movable element or armature.

4. The method of converting electric energy into mechanical motion, which consists in positively developing varied polar conditions in an electro-magnet element by supplying it with field-exciting electricity by independent circuits and under intermitting or impulsive conditions, and sequentially developing in an armature element corresponding variations in its induced polar condition.

5. In an electric motor, a field-exciting element embodying helices organized into separate sets or divisions and capable of being separately and variably energized, means which independently supply said sets of helices with electric energy under impulsive or intermitting conditions, and an armature containing magnetizable metal which is variably polarized and made to move by the variable energization of the field-exciting element.

6. In an electric motor, an electro-magnet consisting of magnetizable metal annularly arranged, exciting-helices organized in separate sets or divisions, means which independently energize said helices with electric enery under impulsive or intermitting conditions for developing variable polar conditions in said electro-magnet, and a rotative armature containing magnetizable metal which is variably polarized by the variable polarization of said magnet and thereby caused to rotate.

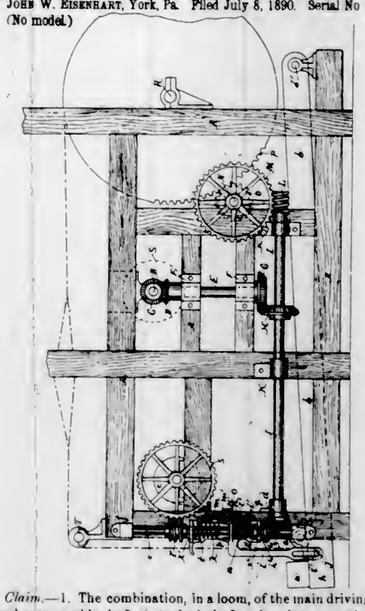
7. In an electric motor, the combination, substantially as hereinbefore described, of a magnetizable armature, two sets of exciting-helices, two separate electric circuits for energizing said helices, and a circuit-breaker in one of said circuits causing one of said sets of helices to be intermittingly energized, and thereby varying the polar conditions of the armature and causing it to rotate.

8. In an electric motor, the combination, substantially as hereinbefore described, of a magnetizable armature, separate sets of exciting-helices, a separate circuit for energizing each set of helices, an electric generator common to both circuits, and a circuit-breaker in one of said circuits which causes one of said sets of helices to be intermittingly energized, and which also intermittingly varies the energization of the other set of helices.

9. In an electric motor, the combination of an electro-magnet embodying exciting-helices for developing one pair of poles, a second set of helices for developing a second pair of poles, separate electric circuits for each of said sets of helices, means for alternately and variably energizing said two sets of helices, and a magnetizable armature which is variably polarized by or through the successive operations of said two sets of helices.

10. In an electric motor, the combination, substantially as hereinbefore described, of a magnetizable armature, an electro-magnet having separate sets of exciting-helices coupled to separate electric circuits, and means for separately supplying electric energy to said helices under impulsive conditions and causing said sets of helices to successively and alternately develop variable polar conditions in said magnet and to sequentially develop in the armature correspondingly varied but opposite polar conditions.

448,327. LET-OFF AND TAKE-UP MECHANISM FOR LOOMS. JOHN W. EISENHART, York, Pa. Filed July 8, 1890. Serial No. 358,085. (No model.)



Claim.—1. The combination, in a loom, of the main driving-shaft, a bevel-gear on this shaft, a vertical shaft, a bevel-gear on the upper part of this shaft gearing into and driven by bevel-gear on main driv-

ing-shaft, a bevel-gear on lower part of said vertical shaft, a horizontal shaft, a bevel-gear on this shaft gearing into and driven by bevel-gear on lower part of vertical shaft, a bevel-gear upon front end of horizontal shaft, a vertical shaft *e*, a bevel-gear secured to this shaft by a feather and adapted to engage with bevel-gear on front end of horizontal shaft, a worm on said vertical shaft, a worm-wheel gearing into and driven by said worm and driving the cloth-beam, a gravitating frame, a roller carried by said gravitating frame, a lever *i*, through the upper part of which shaft *e* passes and which is furnished with a pawl-operating cam, and the lower end of which is slotted and through which slot a pin on gravitating frame passes, a plate with projections at the top and bottom, through the former of which shaft *e* passes and the latter adapted to grasp a turned-out groove on the hub of bevel-gear on shaft *e*, springs surrounding shaft *e* and adapted to bear against projections at top and bottom of plate and against upper part of lever *i*, and pawls pivoted to frame of loom and adapted to engage alternately notches at top and bottom of plate, all arranged and operating substantially as and for the purposes set forth.

2. In a let-off motion for a loom, the combination of a driving-shaft furnished with a bevel-gear, a vertical shaft furnished with a bevel-gear gearing into said bevel-gear on said driving-shaft and with a bevel-gear gearing into a bevel-gear on the horizontal shaft, said horizontal shaft, a worm on said horizontal shaft gearing into and driving a worm-wheel on a horizontal shaft or stud, a pinion on said shaft or stud, and a gear-wheel upon the warp-beam shaft gearing into said pinion, all substantially as described.

3. The herein-described device for throwing bevel-gear *h* into and out of gear with bevel-gear *d* and for stopping and starting the driving of shaft *e* and the cloth-beam, and, in combination with said bevel-gears *h* and *d*, shaft *e*, worm *r*, worm-wheel *s*, cloth-beam, and the gravitating frame, a lever through the upper end of which shaft *e* passes and which is operated by the gravitating frame, as described, and which is furnished with a pawl-operating cam at its upper end, a plate the upper end of which surrounds and is guided by shaft *e* and the lower end of which is bifurcated and clasps hub of bevel-gear *h* and is furnished with notches near its upper and lower ends, pawls pivoted to the loom-frame and adapted to engage with said notches to hold said plate up or down and the bevel-gears out of or in gear, and springs for throwing said plate either up or down, as the movements of the lever and pawls may dictate.

4. In combination with the cloth-beam of a loom and as a device for stopping and starting the driving of the cloth-beam, a horizontal shaft the forward end of which is furnished with a bevel-gear, means for driving this shaft, as described, a vertical shaft furnished with a bevel-gear secured to it by a feather and adapted to engage with bevel-gear on said horizontal shaft, a gravitating frame, a lever through the upper end of which said vertical shaft passes and which carries a pawl-actuating cam, and the lower end of which is furnished with a slot in which a pin carried by gravitating frame works, a plate furnished with notches near its upper and lower ends, and the upper end of which surrounds the vertical shaft and the lower end of which is bifurcated and grasps the hub of bevel-wheel on this shaft, the springs surrounding this shaft and adapted to throw plate either up or down when the pawls are released, the pawls pivoted to the frame of the loom and adapted to engage with notches in the upper and lower ends of plate, the worm on said shaft, worm-wheel on cloth-beam engaging with said worm, and a roller on said gravitating frame under which the cloth passes on its way to the cloth-beam, all arranged and operating substantially as set forth.

448,328. ELECTRIC RAILWAY. JUSTUS B. ENTZ, New York, N. Y., assignor to the Waddell-Entz Electric Company, same place. Filed July 3, 1890. Serial No. 357,658. (No model.)

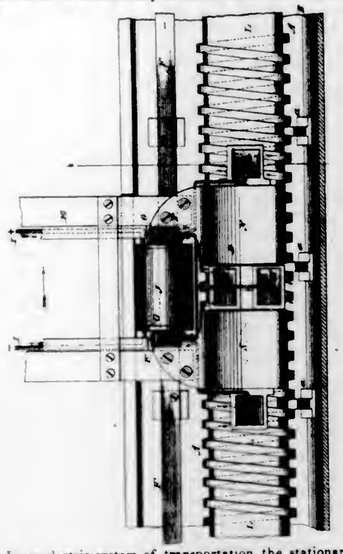
Claim.—1. In an electric system of transportation, the stationary armature A, combined with the movable magnet D and with the vehicle E, to which said magnet D is connected, all so arranged as to permit said vehicle to travel along said armature.

2. The stationary armature A, combined with the field-magnet D and with the vehicle E, which carries said field-magnet, and with proper brushes or contact-pieces and stationary conductors F, all arranged to permit said vehicle to travel along the said armature, as specified.

3. The stationary continuous coiled armature A, combined with the inclosing conduit B, with the field-magnet D, mains or conductors F, and proper contact-pieces for contacting with the armature A and with the mains F, and being attached to the vehicle E, substantially as and for the purpose herein shown and described.

4. The vehicle E, carrying conductors I and carrying likewise the field-magnet D, having the spool J and contact-pieces, in combination with the mains or conductors F and stationary armature A, substantially as herein shown and described.

5. The vehicle E, carrying conductors I and carrying likewise the field-magnet D, having the spool J and contact-pieces G and H, in combination with the mains or conductors F, stationary armature A, and with the conduit B, substantially as herein shown and described.



6. In an electric system of transportation, the stationary armature A, combined with the movable magnet D, with a source of electric current, with a magnetic core for said armature, and with the vehicle E, substantially as shown and described.

7. The vehicle E, carrying conductors I and carrying likewise the field-magnet D, having the spool J and contact-pieces G H, in combination with the mains or conductors F and stationary armature A and with an inner core contained within the armature, substantially as herein shown and described.

8. The vehicle E, carrying conductors I and carrying likewise the field-magnet D, having the spool J and contact-pieces G H, in combination with the mains or conductors F and stationary armature A, with an inner core contained within the armature, and with the conduit B, substantially as herein shown and described.

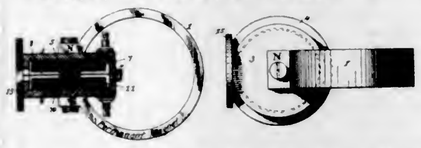
9. The combination of the stationary continuous armature A with the traveling magnet D, carried by the vehicle E, and with the inner traveling core L^3 and mains or conductors F F, placed within the armature A, substantially as described.

10. The combination of the hollow continuous stationary armature A with the exterior magnet D, connected with the vehicle E and adapted to be excited from said vehicle, and with the inner traveling core L^3, carrying brushes H, and the contact-pieces G^3, and with conductors or mains F, contained within the armature A, substantially as herein shown and described.

11. The hollow continuous armature A, combined with the magnet D, carried by the vehicle E, and with the casing M, placed around said continuous armature A, substantially as herein shown and described.

12. The hollow continuous armature A, combined with the magnet D, carried by the vehicle E and adapted to be excited thereby, with the casing M, placed around said continuous armature A, and with the traveling core L^3, carrying brushes H and contact-pieces G^3, and with the conductors F F, substantially as herein shown and described.

448,329. TELEPHONE. STEPHEN D. FIELD, Stockbridge, Mass. Filed May 25, 1889. Serial No. 312,121. (No model.)



Claim.—1. A telephone having its diaphragm supported between polar extensions of the two limbs of a magnet and magnetically connected at or near the rim, with an iron bridge connecting the poles of the magnet, each of the polar extensions being provided with a line-coil wound to develop like polarities at the confronting ends.

2. A telephone having its diaphragm in magnetic connection, with a short circuit between the poles of a permanent magnetic system and lying between two pole-pieces forming a high-resistance shunt around the short circuit, and line-coils for similarly polarizing the facing ends of the pole-pieces, whereby the lines of force are diverted from the short circuit and forced through the shunt to act upon the diaphragm.

3. A telephone comprising a permanent magnet, a hollow iron box secured to the magnet, a diaphragm supported within the box, pole-pieces facing the diaphragm on opposite sides and in magnetic connection with the box, and reversely-wound coils on the pole-pieces.

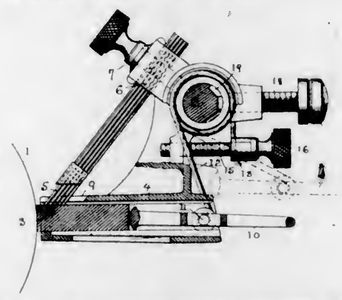
4. A telephone comprising a permanent magnet, an iron box in magnetic connection with the opposite poles thereof, iron pole-pieces magnetically connected to the permanent magnet and opposing each other in the box, said pole-pieces being surrounded by reversely-wound coils, and a diaphragm magnetically connected with the box and extending between the pole-pieces.

448,330. DEVICE FOR CONTROLLING HORSES. EDWIN J. FRASER, San Francisco, Cal. Filed Nov. 20, 1890. Serial No. 372,081. (No model.)



Claim.—A device for controlling horses, consisting of an endless girdle surrounding the nose and chin of a horse, a spring or other elastic strip adjustably connected with the front of the girdle so as to rest upon the bridge of the horse's nose, pads fixed to the ends of said spring and retained by it out of contact with the nasal passages, suspending and adjusting straps by which the device is supported from the headstall and throat-latch, and a bit independently connected with the headstall and with the driving-reins, whereby a pull upon the reins will act to force the mouth open and through the opening of the month cause the spring to be bent and the pads to press upon the nasal passages, substantially as herein described.

448,331. COMMUTATOR-BRUSH. KARL G. FRIETSCH, Schenectady, assignor to the Edison Machine Works, New York, N. Y. Filed June 28, 1890. Serial No. 357,073. (No model.)



Claim.—1. The combination, in a commutator-brush, of a contact-brush pressed against the commutator-cylinder and a brush to which the line is connected bearing against said contact-brush adjacent to its contact end, substantially as described.

2. The combination, in a commutator-brush, of a carbon block supported in a suitable holder, one end of the block bearing against the commutator-cylinder, a spring for pressing the block forward, and a line-brush of high conductivity bearing against the block near its contact end, substantially as described.

3. The combination, in a commutator-brush, of a pintle or support, a holder carried thereby, a contact-brush in the holder and adapted to bear longitudinally against the commutator-cylinder, and a second brush making contact with one side of the first brush and connected directly to line, substantially as described.

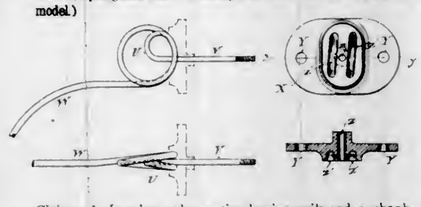
4. The combination, in a commutator-brush, of the pintle 2, the holder and the line-brush adjustably held thereon, the carbon contact-brush in the holder, the frame bearing against said brush, and springs the tension of which holds the frame against the brush, substantially as described.

5. The combination, in a commutator-brush, of the pintle, the holder supported thereon, the line-brush, the carbon contact-brush in the holder, the frame bearing against said brush, springs the tension of which holds the frame against the brush, and means for adjusting the tension of the springs, substantially as described.

6. The combination, in a commutator-brush, of the holder 4, the contact-brush therein, the line-brush bearing on the contact-brush, the device bearing against the contact-brush and the springs for pressing the same forward, and means for retracting said device and holding the same, substantially as described.

7. The combination of the holder supported on the pintle, the spring-pressed contact-brush, the line-brush, and means for retracting and holding the contact-brush from the commutator-cylinder, substantially as described.

448,332. HORSE HAY-RAKE. DANIEL D. FUNK and JOHN P. WHITE, Springfield, Ohio. Filed Apr. 26, 1890. Serial No. 349,582. (No model.)



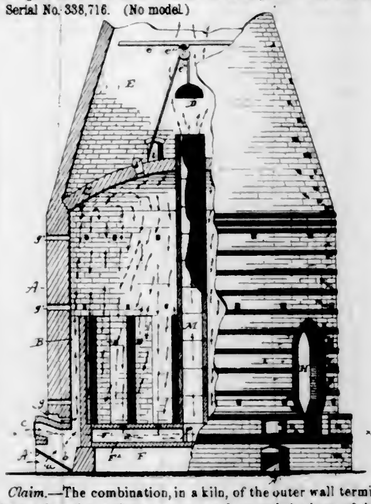
Claim.—1. In a hay-rake, a tine having coils and a shank, the latter located between the coils and substantially in line with the body.

2. In a hay-rake, a tine having coils, a portion of one of which is bent in a shorter radius than the others, and a shank projecting from said coil and located between the coils and substantially in line with the body of the tine.

3. In a hay-rake, a tine having coils and a shank passing between two of the coils.

4. In a hay-rake, the combination, with a tine having coils and a shank located between two of the coils, of a metallic seat having grooves to receive the coils and a central opening to receive the shank.

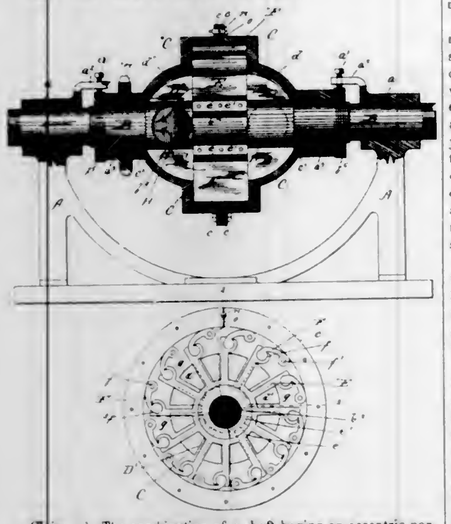
448,333. BRICK-KILN. JOHN E. GAMBLE, East Liverpool, Ohio, assignor of one-half to William Brunt, same place. Filed Jan. 31, 1890. Serial No. 338,716. (No model.)



Claim.—The combination, in a kiln, of the outer wall terminating at the top in a dome, furnaces arranged around the base of the wall, internal flues leading from the furnaces and terminating a suitable distance above the furnaces, base-flues constructed to receive the heated air, and central stack having openings at the bottom communicating

with the base-flues, said stack terminating in the dome of the kiln at its upper end, substantially as set forth.

448,334. ROTARY PUMP. ELLICK H. GOLLINGS, Lewiston, Idaho, assignor to the Gollings Bi-Centric Pump Company, Chicago, Ill. Filed May 1, 1889. Serial No. 309,675. (No model.)



Claim.—1. The combination of a shaft having an eccentric portion, a shell with a cylindric chamber surrounding the eccentric portion of the shaft and concentric with the concentric portion of said shaft, said chamber having a series of inlet and outlet passages surrounding the shaft, a wheel mounted within the shell upon the eccentric portion of the shaft, a series of parts crossing the space between the wheel and the surrounding shell and successively forming a division of said space substantially in the plane of the eccentric, a series of driving connections engaging the shell with the wheel, whereby one of these members is rotated by and with the other, said series of driving connections acting successively outside the plane of division, and means for admitting and discharging a fluid to and from the passages on opposite sides of the division of the space between the shell and wheel.

2. In a rotary pump, the combination, with a stationary shaft provided with an eccentric portion and having interior passages at its ends opening on opposite sides of the shaft, of a rotating shell supported on the concentric portions of the shaft and covering said ports or openings, a wheel mounted on the eccentric portions of the shaft and provided with radial spaces extending through it, which are successively enlarged and contracted in the rotation of the wheel, a changeable part of the spaces in the eccentric-wheel being in communication with the inlet-port of the shaft and the other changeable part of the spaces being in communication with the outside of said shaft, and means for driving the said eccentric-wheel at a practically uniform speed with the shell and at the same number of revolutions in a given time as the shell, substantially as described.

3. The combination, with a shaft having an eccentric portion, of a rotating shell mounted upon the concentric portion of the shaft, a wheel mounted within the shell upon the eccentric portion of the shaft, said wheel having radially-divided spaces which are successively enlarged and contracted in the rotation of said wheel, separated passages within the shaft, having ports on opposite sides thereof within the shell, means for cutting off communication of each of said ports with a changeable part of the spaces withid the eccentric-wheel while giving communication of the same port with another and changeable part of said spaces, and a series of successively-engaging projections by which the eccentric-wheel is driven by the shell at a practically uniform rate of speed and at the same number of revolutions within a given time as said shell, substantially as described.

4. In a rotary pump, the combination of a rotating shell, an eccentric-wheel within the shell, provided with a series of chambers radially divided by extensible partitions extending to the inner periphery of the shell, the space within the shell being divided into separated parts upon a substantially fixed plane, which is that of greatest eccentricity, two axial passages, one communicating with one of said parts of the space embraced by the shell and the other with the other, and means for driving the eccentric-wheel from and at the same rate of speed as the shell, substantially as described.

5. The combination, with the non-rotating shaft, the rotating shell, and the rotating eccentric and chambered wheel, of a series of driving projections on one of the rotating parts engaging surfaces upon the other singly and in succession, said projections making such engagement outside the plane of greatest eccentricity of the wheel-axis.

6. The combination of a non-rotating shaft, a rotating shell mounted concentrically upon the shaft and provided at each end with a series of radially-partitioned chambers surrounding the shaft and opening both toward the shaft and toward each other, an eccentric-wheel within the shell, having a series of radially-partitioned spaces corresponding in number with the chambers at either end of the shell and open at both sides and also toward the periphery of the shell, yielding extensions of the partitions which separate the chambers of the eccentric-wheel and which prolong said partitions to the periphery of the shell, and driving connections by which the eccentric-wheel is driven from the shell at the same speed, the shaft being provided with axial passages opening on opposite sides of the shaft and in communication with separated groups of shell-chambers, substantially as described.

7. In a rotary pump, a rotating shell receiving and discharging the fluid at its ends, in combination with an eccentrically-mounted wheel located in and rotated by and in unison with the shell and dividing the same centrally, said wheel having variable passages open at its sides, and said shell being divided longitudinally at each end, substantially as set forth.

8. In a rotary pump, the combination of a rotating shell and an eccentric-wheel rotating with the shell and filling the center thereof, a feed-passage opening into said shell at one side of the wheel, and a discharge-passage leading therefrom at the other side of said wheel, said wheel having passages variable in capacity, which are open to receive and discharge the fluid at the sides of the wheel, and the shell being divided longitudinally at each side of the wheel, substantially as specified.

9. The combination, with the shaft having passages and ports, as set forth, of a rotating hollow shell inclosing said ports and a rotating winged eccentric-wheel carrying movable vanes, essentially as described, the shell being divided by radial partitions at either side of the eccentric-wheel, substantially as described.

10. The combination, with the shaft having passages and ports, as specified, of a rotating hollow shell inclosing said ports and a rotating winged eccentric-wheel carrying vanes, essentially as described, the shell being divided into chambers at either side of the wheel by equally-spaced partitions agreeing in number with the equally-spaced wings of the eccentric and forming close joints therewith, substantially as set forth.

11. The shaft having passages and ports, as specified, and also having longitudinal ribs H, in combination with the partitioned shell and the eccentric winged wheel rotating on the shaft, the partitions of the shell forming close joints with the ribs H as they pass the latter, substantially as set forth.

12. The combination, with the shaft having feed and discharge passages and ports at opposite sides, of a rotating hollow shell inclosing said ports, and a rotating eccentric winged wheel dividing the interior of the shell and carrying inclined pivoted vanes which are mechanically held against the inner surface of the shell, substantially as set forth.

13. The combination, with the shaft having the passages and ports, as specified, of a rotating hollow shell inclosing said ports, and a rotating winged eccentric-wheel, the wings whereof carry vanes expanding and contracting, as set forth, and extending over the spaces between the wings, said vanes having pins working in slots in the shell, substantially as set forth.

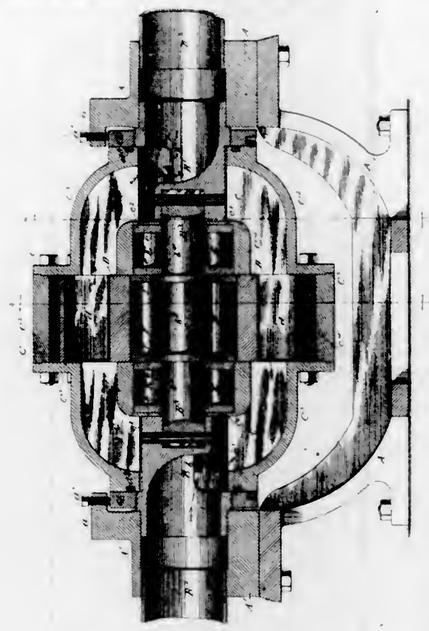
14. The combination, with the shaft having the feed and discharge passages and ports at opposite sides, of the hollow chambered rotating shell and the eccentric winged wheel inclosed within and rotating with the shell and having peripheral vanes, substantially as set forth.

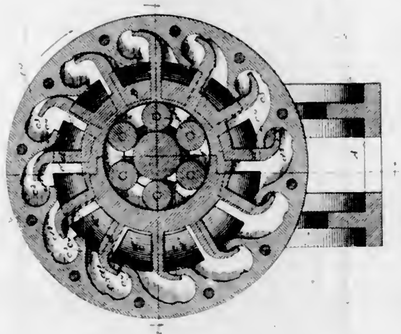
15. The combination of a shaft having an eccentric portion and a concentric portion, a rotating shell mounted on the concentric portion of the shaft, a rotating wheel mounted on the eccentric portion of the shaft, and a series of radially-movable parts connected with the shell and having contact with its inner periphery and also engaging with the wheel, said radially-movable parts successively forming means by which one of said rotating members is driven from the other, and also forming means for dividing the spaces between the shell and the wheel into receiving and discharging chambers

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448,335. ROTARY PUMP. ELLICK H. GOLLINGS, Lewiston, Idaho, assignor to the Gollings Bi-Centric Pump Company, Chicago, Ill. Filed June 22, 1889. Renewed Jan. 8, 1891. Serial No. 377,171. (No model.)

Claim.—1. In a rotary pump, the combination, with a rotating shell having a series of recesses in its inner periphery overhung in part by transverse flanges, of a chambered and eccentrically-mounted wheel within the shell, having blades which project into the recesses of the shell and engage the latter, substantially as described.

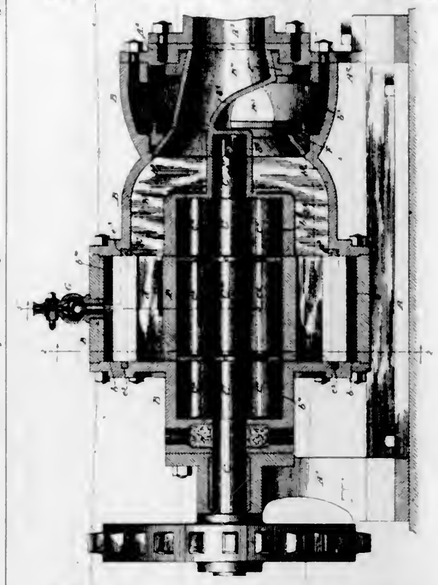




2. The combination, in a rotary pump, of a non-rotating shaft having an eccentric portion, a rotating shell mounted on the concentric portion of said shaft and having a series of recesses in its inner periphery overhung in part by transverse flanges, and a peripherally-chambered wheel mounted on the eccentric portion of the shaft within the shell and having blades which project into the recesses of the shell, the blades and the shell successively engaging at opposite sides of said shell to divide the space between the shell and wheel into receiving and discharging chambers, and the said blades successively having lateral bearing against the flanges of the shell at a point intermediate to the points of divisional contact, whereby motion is given by one of said rotating parts to the other.

3. The combination of the fixed hollow supports B and B', provided with opposite lateral openings, the non-rotating journal-shaft B^2, of less diameter than said supports, the shell having chambered hubs covering the lateral openings of the supports, but journaled upon the concentric portions of the shaft B^2, and the inclosed and chambered wheel D, rotatably mounted upon the central eccentric portion of said shaft B^2, substantially as described.

448,336. ROTARY PUMP. ELLICK H. GOLLINGS, Chicago, Ill., assignor to the Gollings Bi-Centric Pump Company, same place. Filed May 31, 1890. Renewed Jan. 8, 1891. Serial No. 377,174. (No model.)



Claim.—1. In a pump of the general character described, the combination of a shell having recesses in its inner periphery, a shaft having an eccentric portion, a winged wheel mounted on said eccentric portion of the shaft, the wings of which wheel project into the recesses of the shell, and gates applied to the wings and recesses, substantially as described.

2. In a pump of the general character described, a shell having a polygonal pump-chamber, grooves c^2 in the side walls of said chamber adjacent to its peripheral faces, and recesses in the peripheral faces, in combination with a gyrating winged wheel, the wings of which enter the recesses, and sliding gates fitted to the wings and to the grooves c^2.

3. In a pump of the general character described, having a stationary shell and a horizontal rotating shaft provided with an eccentric portion, the shell provided with recesses in its inner periphery, a gyrating winged wheel, the wings of which enter said recesses, gates applied to the wings and recesses, the upper ones of said recesses being provided with passages for the escape of air, and an air-valve applied to the top of the shell.

4. In a pump of the general character described, the combination, with the shell provided with interior recesses, the upper ones of which are in communication with each other by lateral air-passages, of a gyrating winged wheel, the wings of which enter the recesses of the shell, gates applied to said wings and recesses, and projections upon the gates extending into the recesses and adapted to close the lateral air-passages leading therefrom, substantially as described.

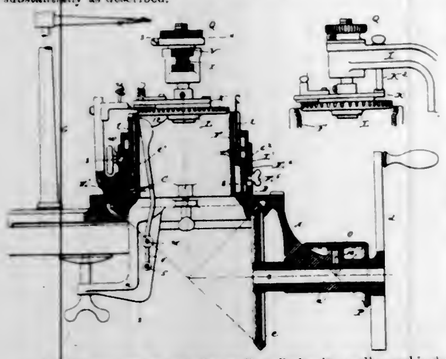
448,337. CIRCULAR-KNITTING MACHINE. HENRY J. GRISWOLD, Leicester, England. Filed Apr. 27, 1888. Serial No. 272,058. (No model.) Patented in England Apr. 5, 1886, No. 4,712, and Apr. 16, 1888, No. 5,597.

Claim.—1. The combination, with the cam-carrier of a knitting-machine, of the depressing-cam c' and the guides c^3 c^3, overlapped by said cam, substantially as and for the purpose set forth.

2. The combination, with the vertical bed or cylinder of a knitter, of a supplemental bed, an arm within the cylinder engaging with the supplemental bed and having a block at its lower end and an arm extending downwardly from the block, a rod through the block, one end of which is screw-threaded, a collar at each side of the block on the rod to prevent longitudinal movement of the block on the rod, and a guide-rod through the downwardly-extending arm, substantially as described.

3. The combination, with the main and supplemental needle-beds, of an arm supporting the supplemental bed, a rod extending through said arm, provided with a nut or collar and connected to the supple-

mental bed, and a movable distance-piece V, slotted to embrace the rod, substantially as described.

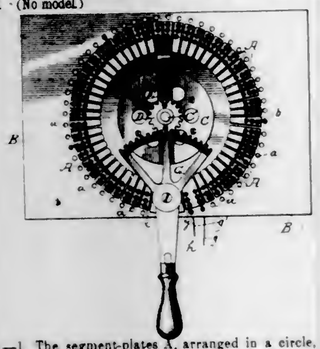


4. The combination, with the needle-cylinder, its needles, and jacks sliding in the needle-grooves beneath the needles, of the cam-ring E, having an ordinary main groove or bearing and cams arranged to act on all the needles, a supplementary groove E', and an upthrow-cam E^4, arranged to act on the jacks to push the needles out of the action of the main grooves, substantially as and for the purpose specified.

5. The combination, with the cylinder and its needles, a cam-carrier having a main and supplemental groove, and cams, of the jacks for the purpose of lifting part of the needles out of action above the path of the knitting-cams and above the main groove, as described.

6. The combination, with the grooved bed of a knitting-machine, having its grooves shallower near their verge or working-edge and deeper throughout the rest of the grooves, of wire needles having the parts farthest from their hooks widened backward beyond the line of the shank, so as to bear upon the bottoms of the deeper part, while the stems bear upon the shallower parts of the grooves, substantially as described.

448,338. SEGMENTAL RESISTANCE-BOARD. GIDEON D. HAND and OSBORN P. SELLS, Chicago, Ill. Filed Aug. 11, 1890. Serial No. 361,858. (No model.)

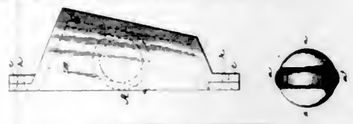


Claim.—1. The segment-plates A, arranged in a circle, circular plate C, surrounded by and concentric with plates A, having a binding-screw *c* tapped into its root and having a pivotal stud projecting outward therefrom, pinion D, journaled on said stud, and brush E, secured to said pinion, having the end of its longer arm bearing upon plates A and its opposite end upon plate B, in combination with a segmental gear G, as and for the purpose set forth.

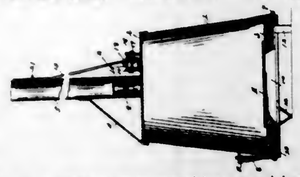
2. The segmental plates A, arranged in a circle and having the double plate *g* located in alignment therewith, plate C, surrounded by and concentric with said plates, having a pivotal stud projecting outward from its center and connected to the positive pole of the generator, pinion D, journaled on said stud, and brush E, secured to and moving with said pinion, in combination with a segmental gear G, and a handle *h*, projecting in the opposite direction from the boss thereof.

448,339. SASH-HOLDER. WILLIAM M. HAZEL, Georgetown, Del. Filed May 2, 1890. Serial No. 350,364. (No model.)

Claim.—In a sash-fastener, the combination, with the box having grooved side walls and an inclined rear wall, of the ball having spherical sides fitting loosely in said grooved side walls, and a ring around said ball raised above the line of the spherical sides, said ring standing against said rear wall and extending beyond the front of the box when in its operative position, substantially as described



448,340. CISTERN-CLEANER. ALFRED B. HILL, Prairie du Chien, Wis. Filed Nov. 26, 1890. Serial No. 372,664. (No model.)



Claim.—1. A cistern-cleaner comprising a vessel having a fixed top and a hinged bottom provided with an inwardly-opening valve, the spring-actuated escape-valve, the handle, and the operating-wire extending along the handle and connected with a spring-actuated escape-valve, substantially as described.

2. A cistern-cleaner comprising the vessel having a fixed top provided with a socket and a hinged bottom provided with an inwardly-opening valve, the handle secured in the socket, the valve-seat 14, the valve-bar pivoted intermediate its ends and having one end closing the valve-seat and provided with an eye, the spring engaging the other end of the valve-bar, and the operating-wire attached to the eye of the valve-bar and extending along the handle, substantially as described.

448,341. METHOD OF PREPARING SAUSAGE. HERMAN HIRSCHAUER, Jamestown, N. Y. Filed Dec. 30, 1890. Serial No. 376,259. (No specimens.)

Claim.—The method herein described of compounding meats for sausage, consisting, essentially, in adding to previously-prepared chopped meat finely-chopped pork-rind reduced to a solid gelatinous condition by boiling and thoroughly mixing the same with the meat and finishing in the usual manner.

448,342. BOLSTER-SPRING. NATHAN L. HOLMES, Racine, Wis. Filed Aug. 12, 1890. Serial No. 361,777. (No model.)



Claim.—1. The combination, with a spring-bar, of a bolster-spring consisting of a curved leaf or plate spring adapted to rest at its central part against the spring-bar, and curved auxiliary leaf or plate springs, each of which is attached to one end of the main spring and has bearings at both of its ends upon the bolster, substantially as described.

2. The combination, with a spring-bar, of a bolster-spring consisting of a curved leaf or plate spring adapted to rest at its central part against the spring-bar, and curved auxiliary plate or leaf springs, each of which is attached at one of its ends to one end of the main spring and has bearings at both of its ends upon the bolster, substantially as described.

3. The herein-described vehicle-spring, consisting of a continuous curved plate or leaf spring secured at its central part to the spring-bar and at each of its extremities with the outer end of an auxiliary curved plate or leaf spring, said auxiliary spring having a bearing at each of its ends upon the bolster, substantially as described.

4. The combination, with a spring-bar, of a bolster-spring consisting of a curved plate or leaf spring adapted to rest at its central part against the spring-bar and having its extremities secured within bearing-shoes, and auxiliary curved plate or leaf springs, each having one of its ends secured within one of the said shoes and the other end adapted to bear upon the bolster, substantially as described.

5. The combination, with a spring-bar, of a bolster-spring consisting of a continuous curved plate-spring secured at its central part to the spring-bar and having its extremities secured within bearing-shoes, and two auxiliary curved plate-springs, each having its outer end secured within one of said bearing-shoes and its inner end adapted to bear upon the bolster, substantially as described.

6. The combination, with a spring-bar, of a curved plate or leaf spring adapted to rest at its central part against said spring-bar and at each of its extremities secured to one end of an auxiliary curved plate or leaf spring, said auxiliary spring having a bearing at each of its ends upon the bolster, and stirrups depending from said spring-bar and embracing said main spring and said auxiliary springs, substantially as described.

7. The combination, with a spring-bar, of a curved plate-spring C, having its central portion made straight and adapted to bear against said spring-bar, and two separate auxiliary plate-springs E E, each having its outer extremity secured to one end of said spring C within a bearing-shoe and its inner extremity adapted to rest upon the bolster, and the stirrups F F, depending from the spring-bar and embracing the springs C and E, substantially as described.

8. The combination, with a spring-bar, of a bolster-spring consisting of a curved plate or leaf spring adapted to rest at its central part against the spring-bar, and auxiliary curved plate or leaf springs, each of which is attached to one end of said main spring and has bearings at both of its ends upon the bolster, each of said auxiliary springs being formed with a greater degree of curvature at one of its ends than at the other, substantially as described.

9. The herein-described bolster-spring, consisting of a curved plate or leaf spring adapted to engage at its central part with the spring-bar, and auxiliary plate or leaf springs, each secured at its outer end to one end of the main spring and having its inner end adapted to rest upon the bolster, said auxiliary springs being formed with a greater degree of curvature at their outer than at their inner ends, substantially as described.

448,343. COATING SHINGLES. NYMPHUS B. HOLWAY, La Crosse, Wis., assignor to Theodore Mott and Guy C. Prentiss, both of same place. Filed Sept. 16, 1889. Serial No. 324,089. (No model.)

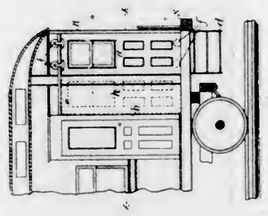


Claim.—1. The improvement in the method of coating shingles with paint or similar substances, which consists of the following steps, to wit: first, bundling the shingles in the ordinary manner of bundling them for the market; second, inserting rods between the layers of shingles third, applying the coating to the bundle, and, fourth, withdrawing the rods and allowing the bundle to resume its original form.

2. The improvement in the process of coating shingles, which consists of the following steps, to wit: first, inserting cylindrical rods between the layers of shingles; second, applying the coating to the bundle, and, third, withdrawing the rods.

3. The method of coating shingles in the bunch with paint by inserting rods between the separate layers of the shingles, and then dipping the whole bunch into the paint-bath, substantially as described.

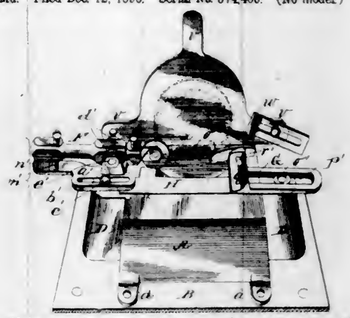
448,344. PLATFORM-DOOR FOR CARS. HENRY HOWARD, Providence, R. I. Filed Jan. 21, 1891. Serial No. 378,541. (No model.)



Claim.—1. A car having on each side of its usual entrance a recess at right angles to said entrance, such recess being just within the line of the outer side edge of the platform, in combination with sliding doors fitting such recesses, as set forth.

2. A railway-car with a hallway, entry, porch, or vestibule, formed by constructing in the interior of the car double partitions at the ends of the car at right angles with the ends thereof and forming between the partition-walls an inclosure into which doors to be used as sides of the hall, porch, or vestibule can be moved and concealed.

448,345. CAN-SOLDERING MACHINE. JOHN S. HULL, Baltimore, Md. Filed Dec. 12, 1890. Serial No. 374,468. (No model.)



Claim.—1. In a can-soldering machine, a base provided with a solder bath, a flame-passage on one side of said bath, and a can-supporting plate inclined rearward over the passage and secured on both sides thereof in position for the flame to be projected against the rear side of the plate.

2. In a can-soldering machine, a base provided with a solder bath, a vertical flame-passage on one side of the bath, a can-supporting plate inclined rearward over said passage and secured above the passage on both sides thereof, and a hood projecting up from the base and forming a chamber between the plate and the hood for confining and directing the flame against the rear side of said plate.

3. In a can-soldering-machine, a base provided with a solder bath, a flame-passage on one side of said bath, a can-supporting plate inclined rearward and pivotally and adjustably secured to the base over and above said passage and both sides thereof, and a hood projecting up from the base and inclined toward the plate to form a chamber between the plate and hood for confining and directing the flame against the rear side of said plate.

4. In a can-soldering machine, a base provided with a solder bath, a flame-passage on one side of said bath, a rearwardly-inclined can-supporting plate pivotally secured to the base over and above said passage and on both sides thereof in line of the flame from said passage, and a deflector for directing the flame in front of the plate.

5. In a can-soldering machine, a base provided with a solder bath, a flame-passage on one side of said bath, a can-supporting plate rearwardly inclined and pivotally secured to the base above said passage and on both sides thereof, and a deflector having a downward-curved surface for directing the flame in front of the plate into and across the bath.

6. In a can-soldering machine, a base provided with a solder bath, a flame-passage on one side of the bath, and a can-supporting plate having a flange or projection on the rear side to confine the flame to the lower portion thereof.

7. In a can-soldering machine, a solder bath, a flame-passage on one side of the bath, a rearwardly-inclined and adjustable can-supporting plate pivotally secured to the base over and above the passage and on both sides thereof, a curved flange on the rear side of said plate, and a vertically-adjustable bracket against which the plate rests for supporting said plate at any desired angle of inclination.

8. In a can-soldering machine, a base provided with a solder bath, a flame-passage on one side of the bath, lugs at both ends of the passage, and a can-supporting-plate secured to said lugs over and above the passage in position for the flame to be projected against the rear side of the plate, in combination with an inclined flame-confining hood on the rear side of the plate.

9. In a can-soldering machine, a can-supporting plate having a solder bath and a projection on one side thereof, in combination with a revoluble soldering-iron adjustably secured to said projection.

10. In a can-soldering machine, a solder bath and a can-supporting plate, in combination with a vertically-adjustable soldering-iron having a revoluble wheel at one end.

11. In a can-soldering machine, a solder bath and a can-support-

ing plate, in combination with a soldering-iron supported upon an adjustable base and provided with an adjustable head supporting a revoluble wheel.

12. In a can-soldering machine, a solder bath and a can-supporting plate, in combination with a base and a longitudinally and laterally adjustable soldering-iron pivotally attached to said base.

13. In a can-soldering machine, a solder bath and a can-supporting plate, in combination with an adjustable base and a longitudinally, laterally, and vertically adjustable soldering-iron pivotally attached to said base.

14. In a can-soldering machine, a solder bath, a support crossing the bath, and a can-supporting plate, in combination with a soldering-iron supported upon an adjustable base on one side of the bath and pivotally secured therein.

448,346. COPYING DEVICE. WILLIAM E. A. INNES, Pueblo, Colo. Filed Sept. 22, 1890. Serial No. 365,812. (No model.)



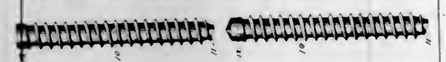
Claim.—1. In a copying device or apparatus, the combination of the frame-work provided with continuous grooves *e*, *f*, and *g*, as described, with the plates E, F, and G, of suitable material, engaging said grooves, and a suitable copying composition upon the outer side of the two outer of the said plates, as and for the purpose set forth.

2. In a copying device or apparatus, the combination of the frame-work provided with the perforations I and J at opposite ends or sides, with plates E, F, and G, forming between them the chambers K and L, communicating with the perforations I and J at opposite ends or sides, substantially as and for the purpose set forth.

3. The combination, with two parallel plates having a space between them, of a frame carrying the said plates, and a suitable copying composition upon the outer sides of the said plates, as described.

4. The combination, with two outer plates having a space between them, of an intermediate plate dividing the said space, a frame carrying the said plates, and a suitable copying composition upon the outer sides of the two outer plates, as described.

448,347. FELLY-SCREW. HORACE K. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed Dec. 8, 1890. Serial No. 373,881. (No model.)



Claim.—1. A wood-screw consisting of a body and core having a short tapering partial or truncated point, and threads extending over the body and tapering truncated point of said core, substantially as described, and for the purpose specified.

2. A wood-screw having a body and a tapering partial or truncated point provided with a rolled thread extending over said body and point, substantially as described, and for the purpose specified.

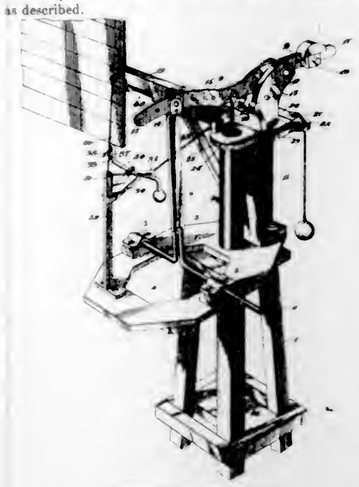
3. A wood-screw for preventing fellies or analogous articles from splitting, consisting of a body and core having a short tapering partial or truncated point, screw-threads extending over said core and its point, and the head end, whose lateral projection does not exceed that of the thread, substantially as described, and for the purpose specified.

448,348. WINDMILL. EDMUND L. KENOYER, Hanford, Cal. Filed June 25, 1890. Serial No. 356,687. (No model.)

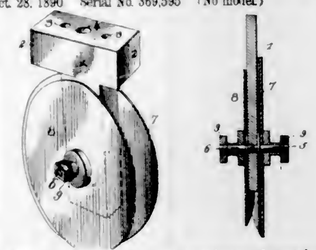
Claim.—1. In a windmill, the combination of the frame, the vane hinged to the frame, the post 32, the lever fulcrumed on the post and provided at one end with a weight and having at the other end a catch consisting of the inclined portion 38 and the shoulder 37, and means for releasing the vane, substantially as described.

2. In a windmill, the combination of the frame, the vane hinged to the frame, the post 32, provided with a horizontal arm, the weighted lever fulcrumed upon the arm and provided at one end with the catch 37 and at the other end with the weight, and an eye 33, and the cord 30, having one end secured to the vane and passing through the eye of the lever and adapted to operate the same, substantially as described.

3. In a windmill, the combination of the tower, the frame rotatively mounted upon the tower, the vertical standard rising from the same and having its upper end bifurcated and provided with a series of perforations 13, the crank-shaft journaled in suitable bearings of the same, the lever fulcrumed in the bifurcation of the standard and provided with series of perforations 15 and 16, the pitman 8, having one end connected to the crank-shaft and the other end provided with perforations 14 and connected to the lever, the adjustable weight arranged upon the end 17 of the lever, and the pump-rod connected to the lever at a point between the standard and the pitman, substantially as described.



448,349. SEED-DRILL. JAMES M. KING, Hebron, Nebr. Filed Oct. 28, 1890. Serial No. 369,595. (No model.)



Claim.—1. A furrow-opening attachment for seed-planters, comprising a pair of revolving disks or cutters of unequal size mounted upon axles at an angle to each other, the forward edge of the smaller disk being arranged to bear against the adjacent face of the larger disk, substantially as set forth.

2. In a furrow-opening attachment for seed-planters, the combination of a seed-spout having forwardly-converging sides, the stub-axles extending laterally from the said sides at right angles to the latter, and the revolving disks or cutters of unequal size mounted upon the said stub-axles, substantially as and for the purpose set forth.

3. In a furrow-opening attachment for seed-planters, the combination of a seed-spout having forwardly-converging sides and of the stub-axles extending laterally from said sides at right angles to the latter, and revolving disks or cutters of unequal sizes mounted upon the said stub-axles, the front edge of the smaller disk being arranged to bear against the adjacent face of the larger disk, substantially as set forth.

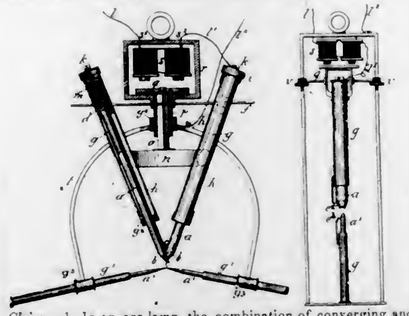
4. In a furrow-opening attachment for seed-planters, the combination of a spout having forwardly-converging sides and provided at its upper end with forwardly and rearwardly extending lugs having vertical perforations, the stub-axles extending laterally from the converging sides of the spout at right angles to said sides, and the revolving disk or cutters of unequal sizes mounted upon the said stub-axles, substantially as and for the purpose set forth.

448,350. SINGLE-DELIVERY PILL-BOX. FRIEDRICH KOCH, Berlin, Germany. Filed July 8, 1890. Serial No. 358,114. (No model.)

Claim.—In a receptacle for holding pills and the like and delivering the same singly, the combination of a box *a*, having a hole c' in the bottom *b* thereof, a rotary capsule *h* before said hole, said capsule *h* having the hole c^2 therein, the disk *f* within the box, having the hole c^3, and the spindle *e*, connecting said disk *f* and capsule *h*, the disk *f*, bottom *b*, and capsule *h* being spaced from each other for passage of the pill, in the manner set forth.



448,351. ELECTRIC-ARC LAMP. KARL KURMAYER, Vienna, Austria-Hungary. Filed Sept. 15, 1890. Serial No. 365,043. (No model.)



Claim.—1. In an arc lamp, the combination of converging and longitudinally-slotted carbon-holders, a movable bearing in each of said holders, to which bearing the pencil is secured, and a coupling-rod extending loosely through the said bearings, for the purpose set forth.

2. In an arc light, the combination of two converging carbon-holders and spring-supports therefor tending to move the holders toward each other, of converging and longitudinally-slotted carbon-holders, a gravital bearing contained therein, to which the pencil is secured, and a coupling-rod extending loosely through said bearings, for the purpose set forth.

3. In an electric-arc lamp, the combination of converging carbon-holders, spring-supports therefor tending to move the holders toward each other and constituting the support for one of the electrodes, a support for the other electrode, composed of converging longitudinally-slotted and vertically-movable holders, a gravital bearing to which the pencil is secured, contained in each of said holders, and a coupling-rod extending loosely through said bearings, of electrically-controlled devices, such as described, for automatically varying the position of one pair of carbon-holders relatively to the other pair, for the purpose set forth.

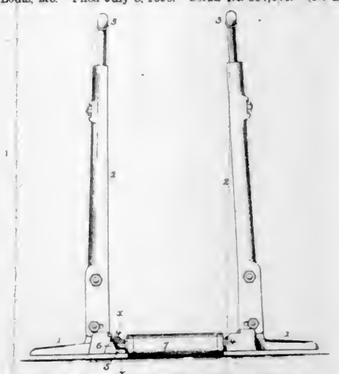
4. In an arc light, the combination of two carbon-holders *g*, provided on opposite sides with longitudinal slots and with a bearing g^3, a carbon pencil *a* for each of said holders, and a bearing *d*, to which one end of the pencil is secured, said bearing having a motion within the holder, of a coupling consisting of a rod extending loosely through perforations in the bearing *d*, substantially as and for the purposes set forth.

448,352. BOOT OR SHOE STRETCHER. DAVID T. LEE, Maidenhead, England. Filed Oct. 20, 1890. Serial No. 368,679. (No model.)



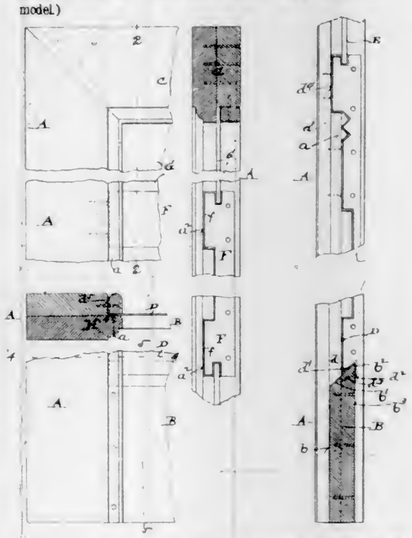
Claim.—In a boot or shoe stretcher tree, the combination of the two parts A A with the expanding-spring C, forming a toe-stretching piece, and the lever H, pivoted on the rear end thereof, said lever having the handle H^2 and the heel projection H' relatively located for action, substantially as set forth.

448,353. EXERCISING APPARATUS. FREDERICK MEDART, St. Louis, Mo. Filed July 3, 1890. Serial No. 357,678. (No model.)



Claim.—A portable set of parallel bars having the base formed with projecting socket-lugs, the sockets of which open downward, in combination with a centrally-arranged transverse roller having journal-pins that turn in said sockets, substantially as and for the purpose described.

448,354. WINDOW-SASH. FRANK MESKER and THOMAS O. ARBEGUST, St. Louis, Mo. Filed May 3, 1890. Serial No. 350,527. (No model.)



Claim.—1. In a sash, the combination of the rabbeted stiles and the sheet-metal panel having the projecting portion d^4, substantially as described.

2. In a sash, the combination, with the rabbeted stiles, of the sheet-metal transom-bar having one or more projecting portions *f f*, substantially as described.

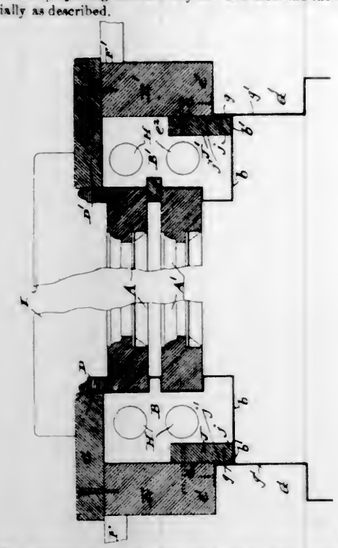
3. In a sash, the combination, with the rabbeted stiles having portions of the edge *a* removed, of the panel having a projecting portion d^4, and the transom-bar having one or more projecting portions, substantially as described.

448,355. WINDOW-FRAME. FRANK MESKER and THOMAS O. ARBEGUST, St. Louis, Mo. Filed May 3, 1890. Serial No. 350,533. (No model.)

Claim.—1. The combination of the sheet-metal stile, the stud, and the strip *d*, said strip being secured to said stud, as described, and said stile-face being secured to the projecting edge of said strip, substantially as described.

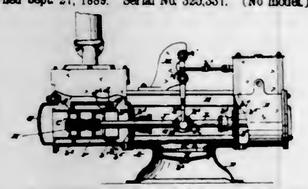
2. The combination of the sheet-metal stile, the stud, the strip

secured to and projecting outward beyond said stud and the column, substantially as described.



3. The combination of the sheet-metal stile, inside finish-board, stud, and projecting strip J, substantially as described.

448,356. DUPLEX STEAM-PUMP. CASSIUS M. MILLER, Canton, Ohio. Filed Sept. 27, 1889. Serial No. 325,331. (No model.)



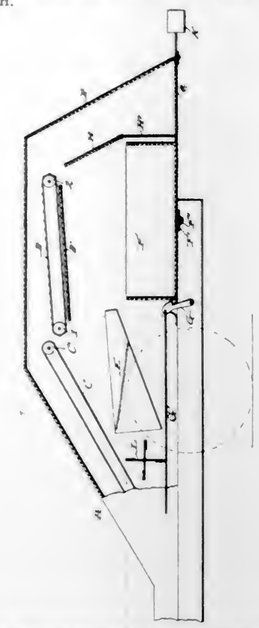
Claim.—1. In combination, a frame for supporting the cylinder, said frame provided with a cup-shaped portion having an opening, and a pedestal secured to and supporting the frame, said pedestal having a concaved portion provided with an escape-opening, whereby the water and oil dripping from parts of the machinery into the cup-shaped frame portion drain into the concaved portion of the pedestal, from whence they are conveyed to any suitable point, substantially as set forth.

2. In combination, the pump-casing, a chamber secured therein, annular collars the inner peripheries of which are of different diameters, a piston-cylinder having a screw-threaded engagement at one end with one of the collars, said cylinder provided with a collar at one end which abuts against the collar of the chamber possessing the less diameter and provided at its opposite end with a collar which fits and is supported upon the collar of the chamber possessing the greater diameter, and a removable head for the end of the casing, substantially as set forth.

448,357. CHAFF-SEPARATOR FOR THRASHERS. GEORGE E. MIMSOM, Atlanta, Cal. Filed July 7, 1890. Serial No. 358,020. (No model.)

Claim.—1. The combination, with the trunk A, of a traveling thrasher containing the usual shoe, a fan, grain and straw carriers, of the herein-described chaff-separator apparatus, consisting of the chaff-box F, secured to the bottom of the trunk A at the rear of the shoe by the spring-latch G and pivotal attachment F', the floor D' beneath the straw-carrier, the covered end B of the trunk A, the division-board H, the door H', hinged to the board H, the weighted straw-platform *a*, and the trip-cord G', all operating substantially as described.

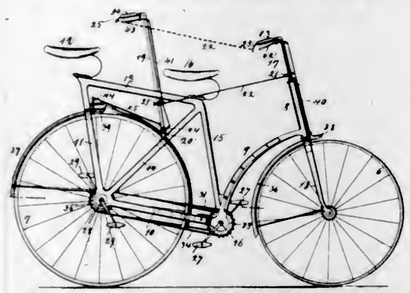
2. The combination, substantially as described, of the trunk A, having the covered end B, suitably mounted and provided with the usual shoe, a fan, grain and straw carriers, the chaff-box F at the rear of the shoe, pivotally secured at the bottom of the thrasher-trunk, the spring-latch G and the trip-cord G', the floor D', the division-board H, and the door H' in the rear of the box F, hinged to the lower edge of the board H.



3. In a thrashing-machine, the combination, with an endless straw-carrier, of a blast-fan arranged at a suitable point beneath said carrier, the grain-receiving shoe provided with an inclined sieve, and a chaff-box pivotally mounted upon the frame and adapted to be normally held in a closed position, substantially as described, for the purpose set forth.

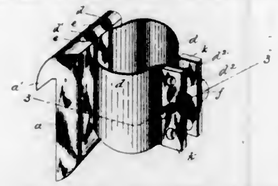
4. In a thrashing-machine, substantially as described, the combination, with endless carriers, as C and D, and the blast-fan arranged at a suitable point within the trunk, of the grain-receiving shoe, the pivotally-mounted chaff-receiving box adapted to be normally held in a closed position, the transverse fixed wall and the swinging board forming with the end wall of the trunk a straw-receptacle, and the platform or bottom *a* of the straw-receptacle, pivotally connected to the rear end of the trunk, and the counterbalance-weight attached to the rear end of said platform and adapted to keep the same normally in a closed position, substantially as specified.

448,358. TANDEM BICYCLE. THOMAS L. MOORE, Hamersville, Ohio. Filed June 16, 1890. Serial No. 355,675. (No model.)



Claim.—In a convertible or drop-frame tandem bicycle, the combination, with the wheels and driving mechanism, of the frame consisting of the members 9, 10, 11, 13, 14, and 15, arranged as shown, and the steering mechanism comprising the front steering-post 17, the rear steering-post 19, resting in a socket on member 14 and held in position by a bearing in member 13 of the frame, a lever secured to each of said steering-posts, a handle also secured to each of said steering-posts, and connecting-rods detachably secured to said levers or to said handles, all substantially as shown and described.

448,359. SUPPORT FOR ELECTRIC CABLES. HENRY B. NICHOLS, Boston, Mass. Filed Nov. 15, 1890. Serial No. 371,520. (No model.)



Claim.—1. The improved cable clamping or supporting device comprising a rigid plate or holder, clips or clamps engaged at their inner ends with said plate, said clips constituting a sectional socket formed to receive the cable, and means for compressing said socket upon the cable, as set forth.

2. The combination of a rigid plate or holder having recesses in one side, clips or clamps having ears formed to enter said recesses, said clips or clamps constituting a sectional socket, and means for compressing said socket upon a cable, as set forth.

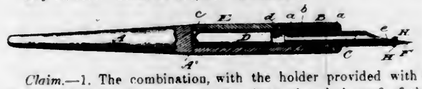
3. A compressible socket composed of flexible clips or clamps, combined with a rigid holder, with which the inner ends of said clips are engaged, and a compressing device applied to their outer ends, as set forth.

4. The combination of the rigid back plate having recesses in one side, the flexible clips or clamps having ears formed to engage said recesses, and a clamping-screw connecting the outer ends of said clips or clamps, as set forth.

5. The combination, with the clips or clamps constituting a sectional socket and provided with a compressing device, of a rigid back plate having recesses in one side to receive ears on said clips, and a hook or flange on its opposite side for engagement with a fixed support, as set forth.

6. A cable-supporting plate having a hook or flange adapted for engagement with a fixed support, combined with an adjustable socket attached to said plate and adapted to grasp or clamp a cable, as set forth.

448,360. FOUNTAIN-PEN. JOHN OLIPHANT, Toledo, Ohio. Filed May 12, 1890. Serial No. 351,461. (No model.)



Claim.—1. The combination, with the holder provided with a cavity and a removable portion at the forward end thereof, of the tube arranged beneath the removable portion, the compressible bulb within the cavity of the holder and sleeved upon the inner end of the tube, and the pivoted pressure-lever pivoted to the holder and arranged in line with the bulb to compress the same, substantially as shown and described.

2. The combination, with the holder, of the tube, the compressible bulb, and the flexible tongue arranged to bear upon the pen near its point, substantially as and for the purpose specified.

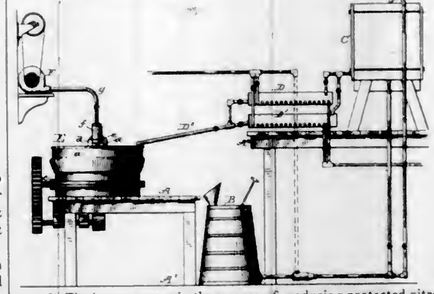
3. The combination, with the holder and the compressible bulb and pivoted pressure-lever, of the tube held within the holder and having its outer end reduced and adapted to bear upon the pen near its point, substantially as and for the purpose described.

4. In a reservoir pen-holder, the combination, with the holder having a removable portion and formed with interior shoulders *b b'*, of the tube C, held within the holder, and the compressible bulb within the holder with its outer end embracing the inner end of the tube, and held from movement outwardly by said shoulders, substantially as shown and described.

448,361. PROCESS OF MANUFACTURING NITRATE OF AMMONIA. RUSSELL S. PENNIMAN, Dover, N. J. Filed July 11, 1888. Serial No. 279,649. (No specimens.)

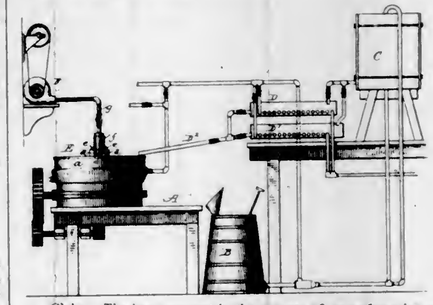
Claim.—1. The improvement in the process of manufacturing protected nitrate of ammonia, which consists in dehydrating the nitrate, then while the nitrate is in a melted condition mixing therewith a protecting medium, then cooling the mass and graining the nitrate by agitation in the presence of the protecting medium, substantially as described.

2. The improvement in the process of manufacturing protected nitrate of ammonia, substantially as hereinbefore described, which consists in mixing nitric acid with ammoniacal liquor and settling the nitrated liquor, then concentrating the liquor by evaporating therefrom the main portion of its water, then dehydrating the nitrate, then mixing with the nitrate while it is in its initially-melted condition a grain-protecting medium, and finally cooling the mass and developing it into coated or protected grains of nitrate by agitation in the presence of the protecting medium.



3. The improvement in the process of producing protected nitrate of ammonia, substantially as hereinbefore described, which consists in combining the protecting medium with the nitrate while the latter is in a liquefied and dehydrated condition and then developing the mass into a grained condition by cooling and mechanical agitation.

448,362. PREPARING NITRATE OF AMMONIA. RUSSELL S. PENNIMAN, Dover, N. J. Original application filed July 11, 1888, Serial No. 279,649. Divided and this application filed Aug. 20, 1890. Serial No. 362,483. (No model.)



Claim.—The improvement in the process of manufacturing protected nitrate of ammonia, which consists in dehydrating the nitrate while it is in a liquefied or melted condition by mechanical agitation, accompanied with the injection of air, then cooling the nitrate and developing it into grains by mechanical agitation while cooling, and then applying to the mass a medium for protecting the grains of nitrate against deliquescent tendencies.

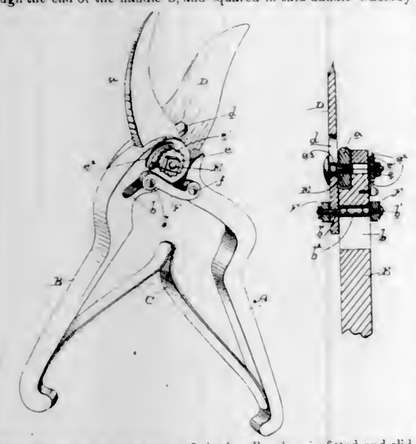
448,363. PRUNING IMPLEMENT. JAMES W. PERRY and ROBERT H. DIXON, Santa Rosa, Cal. Filed Oct. 20, 1890. Serial No. 368,723. (No model.)

Claim.—1. In shears, the combination of the opposing handles, the blade having a sliding movement on its pivotal center, a sliding pin connecting the inner end of the blade with one of the handles, a pin E, having a square portion within said handle for assisting the movement of the blade, and a pivoted link connecting said sliding pin with the other handle, whereby the sliding movement of said pin is effected, substantially as and for the purpose herein described.

2. In shears, the combination of the slotted blade, the handle A, with its finger, and the handle B, having an elongated slot, the pivot-bolt passing through the slot of the blade, through the finger, and through the end of the handle B, the pin fitted and sliding in the slot of said handle and connected with the inner end of the blade, and the link F, pivoted to the handle and connected with said pin, substantially as herein described.

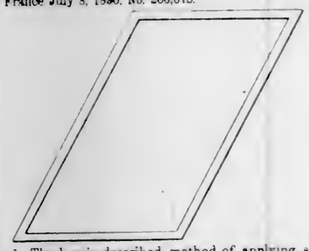
3. In shears, the combination of the slotted blade, the handle A, with its finger, and the handle B, having an elongated slot, the pivoted

bolt passing through the slot of the blade, through the finger, and through the end of the handle B, and squared in said handle whereby



it oscillates with the movement of the handle, the pin fitted and sliding in the slot of handle B and connected with the inner end of the blade, and the links F, pivoted to the handle A and connected with said pin, substantially as herein described.

448,364. PHOTOGRAPHIC FILM. VICTOR PLANCHON, Boulogne, France. Filed Sept. 17, 1890. Serial No. 365,216. (No model.) Patented in France July 8, 1890, No. 206,878.

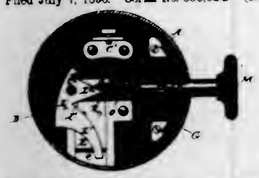


Claim.—1. The herein-described method of applying stretchers or frames to photographic films, consisting in incorporating them with the films before the films are dry or while the materials forming the film are in an inflated, humid, or semi-liquid condition, substantially as described.

2. As an improved article of manufacture, a photographic film having a relatively rigid frame or stretcher incorporated therein, substantially as described.

3. As an improved article of manufacture, a photographic film having a relatively rigid frame or stretcher incorporated therein between the successive layers of film, substantially as described.

448,365. ELECTRIC SWITCH. RANSOM D. PRATT, Marlborough, Mass., assignor of two-thirds to Julian P. Wood and Herbert J. Willard, same place. Filed July 7, 1890. Serial No. 358,024. (No model.)



Claim.—1. An electric switch having contacts, a pivoted bar to engage said contacts, provided with a V-shaped projection extending toward the push-button, a push-button for operating the bar, and a spring for retaining the push-button out of connection with the bar, the button being provided with a rod to engage the bar alternately at each side of the projection to open or close the circuit, substantially as described.

2. A switch having contacts, a pivoted bar to engage said contacts, said bar having a V-shaped projection extending toward the push-button and provided with recesses at each side of the projection, and a spring-retained push-button provided with a spring-finger connected thereto to alternately engage the recesses at each side of the projection at each forward movement of the push-button, substantially as described.

3. An electric switch having contacts, a pivoted bar to engage said contacts, a push-button for operating the bar, a spring for retaining the push-button in its normal condition away from the bar, and a rod on the push-button engaging the opposite side of the projection on the bar at each alternate forward movement, substantially as described.

4. A switch having contacts and a pivoted bar to engage said contacts, said bar having a V-shaped projection with recesses on each side of the projection, in combination with a push-button having a spring-finger connected thereto to operate the switch-bar, substantially as described.

5. A switch having contacts, consisting of plates having lips adjacent each other and a switch-bar arranged to pass between the lips, one of the lips being bent to hold the switch-bar in position, substantially as described.

6. An electric switch having the contact-plates provided with lips arranged adjacent each other, a pivoted switch-bar to engage said lips, said bar having a V-shaped projection and recesses on each side of said projection, and a push-button carrying a finger to engage the sides of said V-shaped projection and arranged to move the switch-bar only when the finger engages the recesses, substantially as described.

448,366. HORSESHOE-GAGE. WILLIAM C. PRICE, Woodburn, Oreg. Filed Aug. 1, 1890. Serial No. 360,672. (No model.)

Claim.—1. In a gage of the class described, the combination, with a base having a series of radiating studs and adjusting-disks mounted on the studs, of a flexible gage-strip mounted within and embraced by the studs, substantially as specified.

2. In a gage of the class described, the combination, with a central base, of a series of radiating studs, friction-disks mounted on the studs and a flexible gage-strip curved and inserted between the disks and having its upper edge extending above the base, substantially as specified.

3. In a gage of the class described, the combination, with a central base, a series of radiating studs, and a series of adjusting-disks mounted on the studs, of a flexible gage-strip longitudinally slotted to loosely receive the studs and mounted between the sides of the base and the inner faces of the disks, substantially as specified.

4. In a gage of the class described, the combination, with a central horseshoe-shaped disk, opposite heel, toe, and intermediate radiating studs and disks mounted for sliding upon and having frictional contact with the studs, of a flexible gage-strip provided with opposite longitudinal slots extending from each side of its center to near the extremities, said slots receiving the heel and intermediate studs and provided with a central opening for the reception of the toe-stud, substantially as specified.

5. In a gage of the class described, the combination, with a central base having radiating studs, adjusting-disks mounted on the studs, and a flexible gage-strip bent and sprung between the studs, of a gage sleeve or loop mounted upon one of the terminals of the strip, substantially as specified.

6. In a gage, the combination, with the base and an encircling flexible gage-strip, of combined strip supporting and adjusting devices extending from the base, substantially as specified.

448,367. COMBINED STEP-LADDER AND CHAIR. KIMBALL P. RAWSON, Philadelphia, Pa. Filed Dec. 3, 1889. Renewed Jan. 28, 1891. Serial No. 379,399. (No model.)

Claim.—1. A combined step-ladder and chair, comprising the separable sections A and B, hinged to each other and having inclined legs C and E, adapted to be folded against each other, the pillar A′ of section A having an integral laterally-projecting extension A^2 lying against and secured to the leg C, the pillar F of section B having a laterally-projecting extension lying against the leg E, said extensions being reversely arranged, the board H, attached to section B and having a projecting ledge, and a hinged seat C, having a projecting board H′, with an under hook K to engage the edge of the projecting ledge of board H, substantially as described.



2. In a combined step-ladder and chair, the sections A and B, hinged together and having inclined legs C and E, adapted to bear against each other, a board H, attached to said section B and having a projecting ledge with a curved edge H′ beyond the said section B, and an unbroken seat C, hinged at rear to pillars of section A and having a projecting cross-strip J, with an inner curved edge adapted to clear the said curved projecting edge H′ of the board H when said seat is lowered and raised, said seat also having recesses c to fit over projecting knuckles of the connecting hinges, and a hook K on the under side of the said strip J to engage said projecting edge H′, substantially as described.

448,368. CLOTH-MEASURING MACHINE. JOHN READING, Akron, Ohio. Filed Oct. 22, 1890. Serial No. 368,918. (No model.)



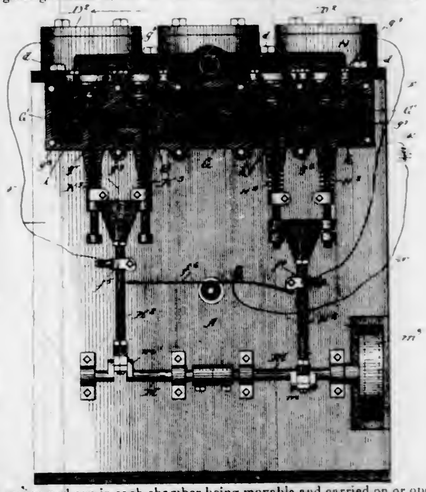
Claim.—1. In a machine for measuring strips of fabric, the combination, with two frames hinged at one side and arranged to register with each other, of two oppositely-disposed rollers severally mounted in said frames and arranged to engage and be turned by the passage of the fabric between them, and a registering device arranged to be operated by one of said rollers, substantially as shown and described.

2. The herein-described machine embodying the following elements, viz: the case A, case B, partition C, rollers D E, screw F, lever I, graduated scale G, slotted bar I′, and spindle J, all arranged to operate as hereinbefore described and shown, and for the purpose specified.

448,369. VAPOR-ENGINE. DANIEL S. REGAN, San Francisco, Cal., assignor to the Regan Vapor Engine Company, same place. Filed Nov. 6, 1890. Serial No. 370,445. (No model.)

Claim.—1. In a gas or vapor engine, the combination, with two alternately-acting high-pressure cylinders, each having a piston and furnished with an igniting-chamber, a single low-pressure cylinder having a piston and taking the exhaust alternately from each of said high-pressure cylinders, a single electric battery and normally-open circuit having normally-separated electrodes or contact-points in each of said igniting-chambers, one of said electrodes in each said igniting-chambers of said cylinders being movable and carried on or operated by the piston to close the circuit and produce the igniting-spark at the end of its charge-compressing stroke, said circuit being also provided with a circuit closer and breaker device at another point to close the circuit alternately through the electrodes of each of said igniting-chambers, the one electric battery and circuit serving to explode the charges in the igniting-chambers of both cylinders, substantially as specified.

2. In a gas or vapor engine, the combination, with two alternately-acting high-pressure cylinders, each having pistons and furnished with an igniting-chamber, two normally-separated electrodes in each of said igniting-chambers, one of said electrodes in each chamber being a

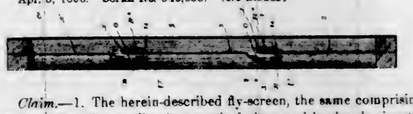


spring and one in each chamber being movable and carried on or operated by the piston, a single electric battery and circuit having two branches, one branch leading to each igniting-chamber, and a circuit closing and breaking device operating to alternately close the circuit through each of said branches to alternately explode the charges in the igniting-chambers of both cylinders, substantially as specified.

3. In a gas or vapor engine, the combination, with two alternately-acting high-pressure cylinders B B′, each furnished with an igniting-chamber having a stationary insulated spring-electrode f'' therein, pistons C C′, each furnished with an electrode f, an electric battery E and circuit F, having two branches, one leading to each of said insulating-electrodes f'' in said igniting-chambers, and a circuit closing and breaking device f^4 f^5 f^6, operating to alternately close the circuit through each of said branches leading to the igniting-chambers, whereby the circuit is closed and the spark produced in each of said igniting-chambers only at the end of the charge-compressing stroke of each piston, substantially as specified.

4. The combination, in a gas or vapor engine, of two alternately-acting high-pressure cylinders, each having a piston and furnished with an igniting-chamber, of a low-pressure cylinder having a piston and taking the exhaust alternately from each of the two high-pressure cylinders, a common crank-shaft, to which the pistons of all three of said cylinders are connected, a valve-box G, divided into three compartments g g' g^2 and provided with ports and four puppet-valves H H′ K K′ for opening and closing the communication between said cylinders, a valve-operating shaft M, having pitmen H^3 K^3 for alternately operating said valves H H′ and K K′, a single electric battery and circuit, normally-separated electrodes f'' f'' in each of said igniting-chambers, said circuit having separate branches leading to said electrodes f'' f'', and a circuit closing and breaking device f^4 f^5 f^6, connected to and operated by said valve-shaft M, to close the circuit alternately through each of said branches, substantially as specified.

448,370. SCREEN. JOHN J. RIEDER, Fredericksburg, Ohio. Filed Apr. 5, 1890. Serial No. 346,658. (No model.)



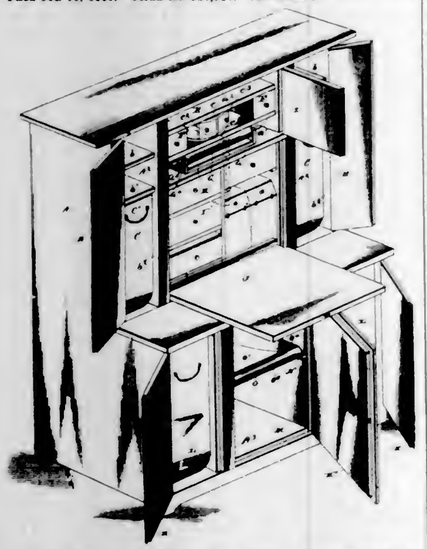
Claim.—1. The herein-described fly-screen, the same comprising a netting, its body standing in a vertical plane and having horizontal openings dividing it into sections, the lower edge of a section above an opening passing in rear of and below said opening and curving upwardly at its edge toward the plane of the netting, and the upper edge of a section below an opening curving outwardly, all said parts standing a distance apart sufficient to permit the passage of a fly therebetween, as and for the purpose set forth.

2. The herein-described fly-screen, the same comprising a netting, its body standing in a vertical plane and having horizontal openings dividing it into sections, the lower edge of a section above an opening passing in rear of and below said opening and curving upwardly at its edge toward the plane of the netting and the upper edge of a section below an opening curving outwardly, and strips secured to said edges and connected at their ends to the frame surrounding the whole, all said parts standing a distance apart sufficient to permit the passage of a fly therebetween, as and for the purpose set forth.

448,371. PROCESS OF PERFORATING ROQUEFORT OR OTHER CHEESES. LOUIS RIGAL, Roquefort, France. Filed Oct. 15, 1890. Serial No. 368,215. (No specimens.)

Claim.—The herein-described process of piercing Roquefort and other cheeses, which consists in first enveloping the cheese in a fabric and then inserting the piercing instruments into the cheese, whereby a larger number of perforations may be made therein without injuring the cheese, substantially as hereinbefore described.

448,372. PORTABLE PANTRY. RANSOM SABIN, Shelby, Mich. Filed Oct. 19, 1889. Serial No. 327,517. (No model.)



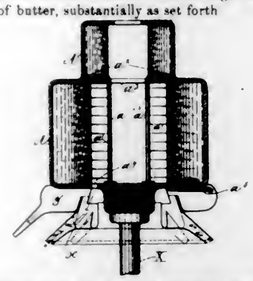
Claim.—1. The combination, in a portable pantry, of the partitions A^3, provided with recesses a^6, forming bearings and grooves a^7 communicating with said recesses and the combined bread-board and door provided with spring-actuated journals adapted to engage said recesses and be removed therefrom, substantially as described.

2. The combination, in a portable pantry, of the partitions A^3, provided with recesses a^6 and grooves a^7, the combined bread-board and door having recesses, the spring-actuated journals having their ends beveled and adapted to engage said recesses a^6 and to be removed therefrom, and the slotted plate retaining the spring-actuated journal in the recesses of the combined bread-board and door, substantially as described.

3. The combination, in a portable pantry, of the partitions A^3, the curved strips secured to the partitions, a refrigerator-pan resting on said strips and comprising the curved bottom, having its front and rear ends rolled and being provided with a depending tube, the sides secured to said bottom and having the front one bent over and secured to the outside of the bottom to provide a suitable hand-hold, the sides of said bottom projecting beyond the sides of the pan and being provided with perforations, and a suitable drain-pipe, substantially as described.

448,373. METHOD OF SEPARATING BUTTER FROM UNSKIMMED MILK OR CREAM AND APPARATUS FOR CARRYING OUT THE SAME. ERIK G. N. SALENIUS, Stockholm, Sweden. Filed July 26, 1890. Serial No. 359,998. (No model.)

Claim.—1. The improvement in the art of obtaining butter-fat from milk containing it, which consists in subjecting the milk to centrifugal action in a rapidly-revolving drum and simultaneously whipping the inner wall of said milk with a jet or spray of fluid, air, or indifferent gas forcibly projected outwardly against it, whereby the particles of fat in the milk are caused to come together, coalesce, and form a mass of butter, substantially as set forth



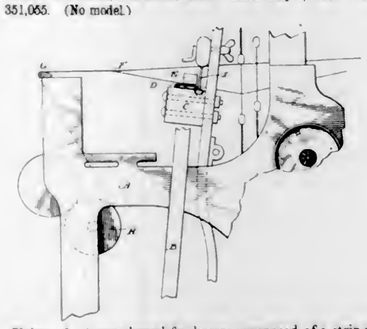
2. The improvement in the art of obtaining butter-fat from milk containing it, which consists in subjecting the milk to centrifugal action in a rapidly-revolving drum, whereby that portion of the milk containing the major portion of the butter-fat is made to form an inner wall and simultaneously projecting outwardly against said wall jets of blue milk, whereby the butter particles are caused to come together, coalesce, and form a mass of butter, substantially as set forth.

3. The improvement in the art of obtaining butter-fat from milk containing it, which consists in subjecting the milk to centrifugal action in a rapidly-revolving drum, simultaneously whipping the inner wall of said milk with a jet or spray of fluid forcibly projected outwardly against it, whereby the butter particles are caused to coalesce and the blue-milk particles set free, removing the butter in a continuous manner as formed and removing the blue milk in a continuous manner as formed.

4. In an apparatus for separating butter-fat from milk, the combination, with an imperforate drum rotatively mounted on an upright axis and having an opening in its top, of a jet apparatus consisting of an upright tube which extends down into the drum nearly to the bottom thereof and is provided with perforations in its side opposite to the drum-axis, whereby a fluid admitted to the drum through said tube may be projected outward against the cream-wall in the drum, as set forth.

5. In an apparatus for separating butter-fat from milk, the combination, with a drum A, rotatively mounted on an upright axis and having an opening in its top and outlets for butter and blue milk at its bottom, of a separator-drum A', mounted on the top of the drum A and embracing the opening in the latter, and an upright jet-pipe *a*, leading from the upper drum down into the lower drum, said pipe having a row of perforations in the outer face of that portion thereof which is in the lower drum and having its receiving end in the upper drum arranged near the outer wall of the same, whereby the blue milk from the upper drum is led down into the lower drum and discharged against the cream-wall in the same, substantially as set forth.

448,374. RACE-BOARD AND REST-BOARD FOR LOOMS. WILLIAM E. SHARPLES, Fall River, Mass. Filed May 8, 1890. Serial No. 351,055. (No model.)

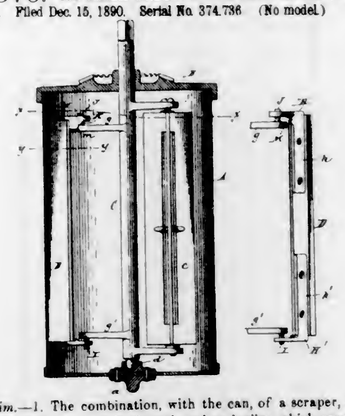


Claim.—1. A race-board for looms, composed of a strip of wood having a continuous tubular close-fitting sheathing of sheet metal applied thereto, substantially as described.

2. A rest-board for looms, composed of a strip of wood enveloped in a continuous sheathing of sheet metal, substantially as described.

3. The combination, with the wooden rest-board G, of the sheet-metal sheathing *g*, having its edges seamed together, substantially as described.

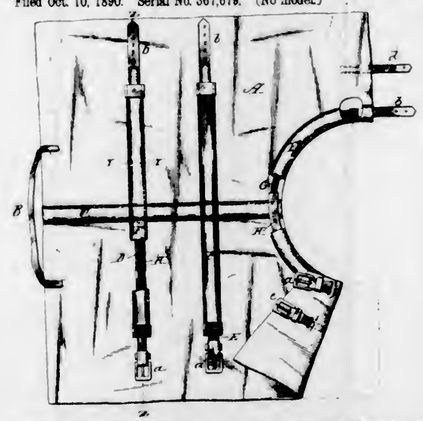
448,375. ICE-CREAM FREEZER. WALTER J. SHEPARD, Buffalo, N. Y. Filed Dec. 15, 1890. Serial No. 374,736. (No model.)



Claim.—1. The combination, with the can, of a scraper, a support to which the scraper is pivoted, and an incline which causes the scraper to rise as it swings away from the can and to descend in swinging toward the can, substantially as set forth.

2. The combination, with the can, of a scraper, a support to which the scraper is pivoted, an inclined face or cam formed on said support, and a similar incline formed on the scraper and resting on the incline of the support, substantially as set forth.

448,376. HORSE-BLANKET. HARRY W. SISSON, Monmouth, Ill. Filed Oct. 10, 1890. Serial No. 367,679. (No model.)



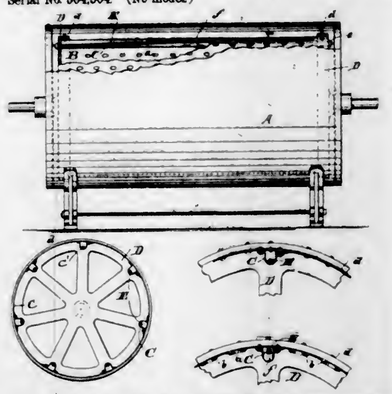
Claim.—1. A horse-blanket provided with means for fastening it to the animal, consisting of elastic straps held to the blanket wholly by confining-strips stitched to the blanket along their edges, whereby the straps will move bodily between the blanket and strips, substantially as and for the purpose set forth.

2. In a horse-blanket, elastic straps held to the blanket wholly by confining-strips stitched to said blanket along their edges, in combination with non-elastic check-straps connected to the elastic straps at their ends, substantially as and for the purpose set forth.

3. In a horse-blanket provided with re-enforce pieces, as shown and described, the combination of elastic fastening-straps held to the blanket wholly by confining-strips, which are stitched to said blanket along their edges, whereby the straps will move bodily between the blanket and strips, buckles and tongues upon the ends of the fastening-straps, and non-elastic check-straps connected to said elastic straps, substantially as and for the purpose described.

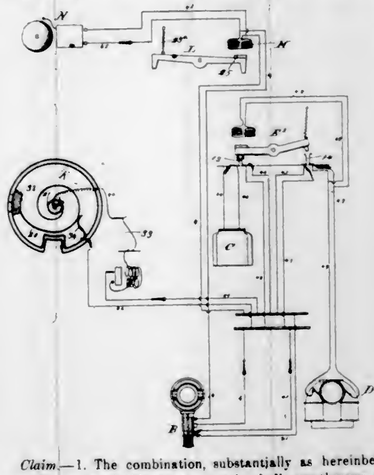
4. A blanket provided with means for securing it on the animal, consisting of a crupper-strap, elastic straps extending crosswise of the blanket and around the neck portion thereof, said straps having non-elastic check-straps connected to the elastic straps and of greater length than the latter, confining-strips for holding the straps on the blanket and admitting of their moving bodily, and buckles and straps connected to the ends of the straps, respectively, substantially as and for the purpose described.

448,377. WASHING-MACHINE. JOHN H. SLACK, Cincinnati, Ohio, assignor to the A. M. Dolph Company, same place. Filed Sept. 10, 1890. Serial No. 364,504. (No model.)



Claim.—A washing-machine having an outer stationary cylinder and an inner rotatable cylinder, the body portion of said latter cylinder having perforations therein, each perforation being surrounded by a smooth embossed or raised portion, the metal forming said embossed portion being turned inward and rounded outward within said perforation, and suitable means for rotating said cylinder, for the purposes set forth.

448,378. ELECTRICAL STREET AND STATION INDICATOR. FRANCIS H. SODEN, Chicago, Ill. Filed Mar. 20, 1890. Serial No. 344,680. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a car, a suitable street or station indicator thereon, mechanism suitable for actuating the indicator, a dynamo operated from the running-gear of the car and connections for placing the dynamo in circuit as a means for effecting the operation of the indicator-actuating mechanism, a battery and connections for placing the same in circuit as a temporary substitute for the dynamo, and an automatic switch controlled by an electro-magnet in the dynamo-circuit and arranged to place the indicator-actuating mechanism subject to the battery when the speed of the car is not sufficient to speed the dynamo to the required degree of efficiency and to cut out the battery and place said indicator-actuating mechanism subject to the dynamo when the latter has attained a suitable degree of efficiency as a result of the speed of the car.

2. The combination, substantially as hereinbefore set forth, in a system of electrically-controlled street and station indicators on cars, of a dynamo which is operated from the running-gear of the car and applied as a source of power for controlling the indicator, a battery applied to alternate with the dynamo as a source of power for controlling the indicator, and a double switch provided with opposite contact-points 17 and 19, adapted to complete the divided battery and dynamo circuits by alternately engaging the terminal contacts 13 and 14 in said circuits, said switch being subject to and controlled by a current from the dynamo and arranged to normally place the battery in circuit as a means for controlling the indicator when the dynamo is not running or has not attained sufficient speed to render it efficient as a means for controlling the indicator and to cut out the battery and place the dynamo in circuit as a means for controlling the indicator when the dynamo has attained an efficiency suitable for the purpose.

3. The combination, substantially as hereinbefore set forth, with an indicator-controlling device, of a battery and a dynamo, an automatic switch controlled by the current from the dynamo and arranged for placing the battery and the dynamo alternately in circuit for operating the indicator-controlling device, and a trolley adapted for opening and closing a circuit wherein said battery and dynamo may be alternately placed by the automatic switch.

4. A trolley for the purpose set forth suspended from a car and provided with contacts for making and breaking an electrical circuit, one of said contacts being carried by a downwardly-movable member of the trolley and arranged so that when said member is drawn down the circuit shall be closed

5. A trolley for the purpose set forth having a downwardly-movable member provided with an electro-magnet and circuit making and breaking contacts which are brought together when the electro-magnet is drawn downwardly

6. The combination, substantially as hereinbefore set forth, of the battery and a trolley suspended from a car and having a movable member provided with an electro-magnet which is supplied from the battery and circuit making and breaking contacts which are brought together when the electro-magnet is drawn downwardly.

7. The combination, with a track provided with projections 6, arranged below its surface, of an extensible trolley B, for the purpose set forth.

8. The combination, substantially as hereinbefore set forth, with the indicator-band and winding-drums therefor, of a winding-spring and barrel transferable from one winding-drum to the other.

9. The combination, substantially as hereinbefore set forth, with the indicator-band and winding-drums therefor, said winding-drums being open at one end and supported upon a fixed upright at the other end, of a winding-spring and barrel transferable from one winding-drum to the other and supported upon a movable upright.

10. The combination, substantially as hereinbefore set forth, of the indicator-band, winding-drums therefor, a winding-spring, an electrically-actuated winding device for winding up said spring, and a make-and-break device by which the winding device is intermittingly placed in circuit with a suitable source of electrical supply.

11. The combination, substantially as hereinbefore set forth, of the indicator-band, winding-drums therefor, a winding-spring, and a mechanism for winding up the spring, comprising an electro-magnet, a make-and-break device, and a pawl and ratchet operated by the make-and-break device.

12 The combination, substantially as hereinbefore set forth, of the winding drum, a winding-spring therefor, and an electrically-actuated winding device for winding up said spring, said spring being placed in the circuit by which said winding device is controlled and serving to intermittingly open and close the same.

13. The combination, substantially as hereinbefore set forth, of the winding-drum, a winding-spring therefor, and an electrically-actuated winding device for winding up said spring, said spring being placed in the circuit by which said winding device is controlled and serving to open said circuit when wound up to a certain extent, but adapted to close the same when unwound.

14. The combination, substantially as hereinbefore set forth, of a winding-drum composed of conducting material, an arbor of non-conducting material, a winding-spring secured at its inner end to said arbor and at its outer end secured to said winding-drum, but insulated therefrom, an electrically-actuated winding device for winding up said spring, the conductor carrying the current by which said winding device is controlled, having its terminals connected, respectively, with the inner end of said spring and with the winding-drum, and a contact-finger on said drum arranged to come into contact with the spring before the latter is unwound.

15 The combination substantially as hereinbefore set forth, of a winding drum, an arbor composed of non-conducting material, a winding-spring connected at its ends, respectively, to the winding-drum and to the arbor, an electrically-actuated winding device for winding up said spring, a conductor 32, connected with the inner end of said spring and passing through and projecting from the end of said arbor, and a conductor 33, held in engagement with the end of said conductor 32 by spring-pressure, said springs and conductors being included in the circuit by which said winding device is controlled.

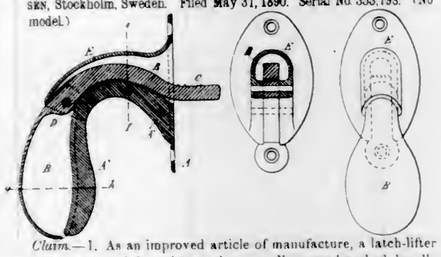
16. The combination, substantially as hereinbefore set forth, of the indicator, a device for controlling the same, a dynamo and battery, and a double make-and-break device F, controlled by the current from the dynamo, and placing the battery and dynamo alternately in circuit.

17 The combination, substantially as hereinbefore set forth, of the indicator-band provided with stops 24 and drums for winding and unwinding said band, a check device L for engaging said stops, and an electro-magnet for operating said check device.

18. The combination, substantially as hereinbefore set forth, with the track provided with projections 6, arranged below its surface, of an extensible trolley B, having a roller 5, adapted to travel over said projections, for the purpose set forth.

19. The combination, substantially as hereinbefore set forth, of the indicator-band provided with stops 24, winding-drums for said band, rollers over which said band passes, provided with toothed wheels 38, engaging said stops 24, and a check device L, for the purpose set forth.

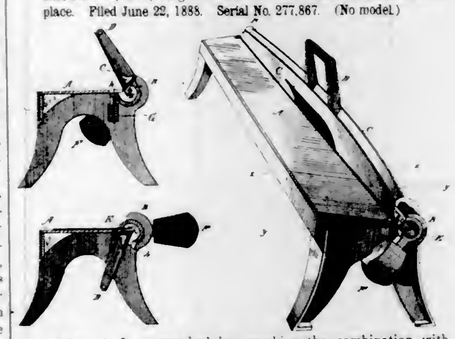
448,379. HANDLE FOR LOCKS AND LATCHES. NIELS G. SORENSEN, Stockholm, Sweden. Filed May 31, 1890. Serial No. 353,798. (No model.)



Claim.—1. As an improved article of manufacture, a latch-lifter comprising a slotted face-plate, a downwardly-curved arched handle fixed to said plate, and a downwardly-curved arched lever which takes over the outer face of said handle and is pivotally attached thereto to form a fulcrum, said lever consisting of a lifting-finger C, which projects through and plays in the slot in the face-plate, the arched upper portion B, and the pendent portion B', which embraces and partially houses the pendent portion of the handle, substantially as set forth.

2. As an improved article of manufacture, a latch-lifter consisting of a slotted face-plate, a downwardly-curved arched handle fixed to said plate, the upper arched portion of said handle being hollow or tubular, and a downwardly-curved arched lever which is pivoted to the handle and extends through the tubular portion of the same, said lever consisting of the lifting-finger C, which plays in the slot in the face-plate, the upper arched portion B, which is housed in the tubular part of the handle, and the lower pendent portion B', which embraces and partially houses the pendent portion of the handle, substantially as set forth.

448,380. SHEET-METAL-EDGING MACHINE. JACOB R. SPANGLER, Newark, N. J., assignor of one-half to Alexander P. Baldwin, same place. Filed June 22, 1888. Serial No. 277,867. (No model.)



Claim.—1. In a metal-edging machine, the combination, with the hollow supporting-bearings, of a folder having a groove and provided with hollow journals having cut-away portions in line with said groove, said bearings being also provided with cut-away portions, whereby the material may be inserted or removed from either end of the folder through the said cut-away portions of the journals and bearings, substantially as described.

2. In a metal-edging machine, the combination, with the hollow supporting-journals provided with cut-away portions in line with each other, of the folder provided with a groove having its journals engaging said bearings and provided with cut-away portions in line with each other and with said groove, whereby said cut-away portions and groove of the folder, journals, and bearings may be brought into alignment to form an open slot or recess from one end to the other, substantially as described.

3. In a metal-edging machine, the combination, with the movable folder having journals engaging suitable bearings, one of said journals having a projection, of a yielding stop in the path of said projection adapted to move said journal and folder in a direction to restore it to normal position after folding, substantially as described.

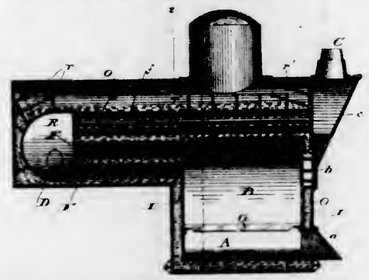
4. In a metal-edging machine, the combination, with the movable folder having journals engaging suitable bearings, one of said journals having a projection, of a plunger in the path of said projection, and a retraction-spring engaging said plunger, said spring and plunger forming a yielding stop for said folder and adapted to move said journal and folder in a direction to restore it to normal position when said spring is compressed, substantially as described.

448,381. KEY-HOOK. ROBERT SPIERLING, Hildesheim, Germany. Filed Sept. 5, 1890. Serial No. 364,062. (No model.)



Claim.—The combination, with back plate *a*, having formed integral therewith a bow B, with a hollow free end which projects toward the front of said back plate, and the rear surface of the plate *a* provided with eyes *d d'*, of a spring fitted within the hollow free end of bow B, a short-headed tube co-operating with said spring and also with the said back plate, and a detachable headed pin *e*, co-operating with the eyes *d d'*, substantially as set forth.

448,382. BOILER. JAMES C. STAMP, Louisville, Ky. Filed Apr. 24, 1890. Serial No. 349,322. (No model.)

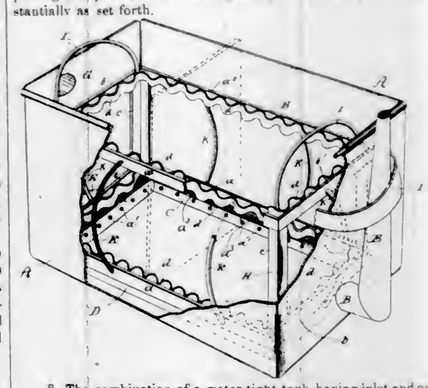


Claim.—The herein-described steam-boiler, the same comprising an outer casing O, a fire-box B, spaced from said casing on all sides and at its top and bottom, large flues F, leading rearwardly from said fire-box, a return-chamber R, of semicircular cross-section, into whose lower end said large flues deliver, said chamber having a water-space in rear of its curved wall communicating above and below with the main water-space, double doors D in the sides of the casing opening into the ends of said chamber, brace-rods *r* between the curved wall of the return-chamber and the rear end of the casing, small flues *f*, leading forwardly from the upper end of said chamber, and a chimney-flue C, into which said small flues deliver, all substantially as set forth.

448,383. PHOTOGRAPHIC-PLATE-WASHING APPARATUS. THOMAS W. TAYLOR, Brooklyn, N. Y. Filed Aug. 28, 1889. Serial No. 322,194. (No model.)

Claim.—1. The combination of a water-tight tank having inlet and outlet water pipes and an extension of the inlet-pipes extending through the wall of the tank, adapted to flush the inlet-pipes, and a removable open plate-supporting frame adapted to be placed within the tank, substantially as set forth.

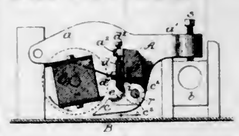
2. The combination of a water-tight tank having inlet and outlet pipes and an open removable plate-holding frame adapted to be placed within the tank and having corrugated or toothed side strips for supporting the plates, and external guiding and centering devices, substantially as set forth.



3. The combination of a water-tight tank having inlet and outlet pipes and an open removable plate-holding frame adapted to be placed within the tank and having corrugated or toothed side strips for supporting the plates, also external guiding and centering devices, and a handle or handles whereby the same may be lifted from the tank, substantially as set forth.

4. The combination of a water-tight tank having inlet-pipes perforated within the tank and on extended part through the wall of the tank, an outlet-pipe at the upper part of the tank, and an open removable plate-holding frame having corrugated side strips for sustaining the plates and external guiding and centering devices, substantially as set forth.

448,384. PLANING-MACHINE. JOHN R. THOMAS, Boston, Mass., assignor to the S. A. Wood Machine Company, same place. Filed Jan. 15, 1890. Serial No. 337,028. (No model.)



Claim.—1. The combination of the pressure-bar A, mounted on guiding-supports which direct it in a curved path around the cylinder, one or more feet *c*, pivoted therein and descending and taking their bearing upon the lumber in such curved path approximating to the direction in which the latter advances, and one or more springs *e*, arranged to transfer the lifting action of the bearing-toe of the foot to the bar, substantially as described.

2. The combination of the feed-in pressure-bar A, mounted on the guiding-supports which direct it in a curved path around the cylinder, provided with one or more shoulders a^3, one or more feet *c*, pivoted in the bar, provided with the shoulder *i* and descending and taking their bearing upon the lumber in such curved path approximating to the direction in which the latter advances, and one or more springs *e*, arranged to transfer the lifting action of the bearing-toe of the foot to the bar, substantially as described.

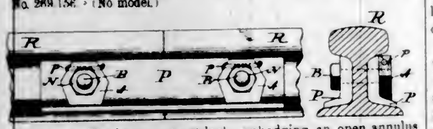
3. The combination of the feed-in pressure-bar A, mounted on guiding-supports which direct it in a curved path around the cylinder, and two or more feet *c c*, pivoted therein, descending and taking their bearing upon the lumber underneath the cylinder in a curved path approximating to the direction in which the latter advances, each provided with a bearing-spring arranged to transfer the lifting action of the bearing-toe of the foot to the bar, substantially as described.

4. The combination of the feed-in bar A, having one or more slots or mortises in its lower side, one or more feet *c*, pivoted in said slots, and one or more springs *e*, bearing upon the bar and foot between its axis and its bearing-toe, substantially as described.

5. The combination of the bar A, one or more feet *c*, pivoted to the lower side thereof, one or more springs *e*, attached to said bar, and the cap *d* and adjusting-screw d^2, arranged to adjust the tension of said spring upon the foot, substantially as described.

6. The combination of the bar A, one or more feet *c*, pivoted in the lower side thereof, one or more springs *e*, bearing upon the foot between its toe and pivot, and the shoulders a^3 and *i*, located on the bar and foot and arranged to prevent the latter rising into the cutters, substantially as described.

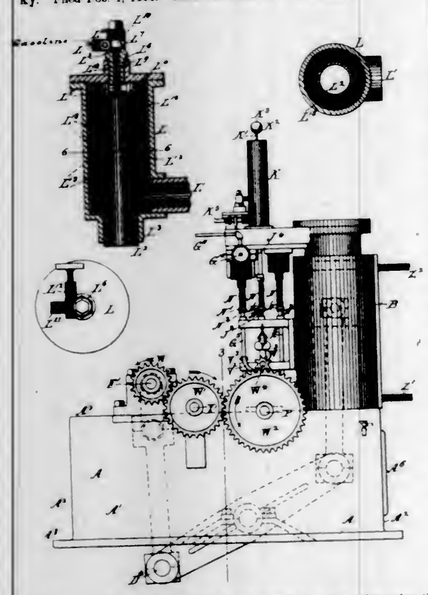
448,385. NUT-LOCK. FERDINAND F. UBCKRICH, Sandusky, Ohio, assignor to Walter H. Stone, same place. Filed Mar. 31, 1888. Serial No. 269,156. (No model.)



Claim.—1. The improved nut-lock, embodying an open annulus having a plane external face parallel with the axis of the bolt and an internal angular periphery adapted to pass over and embrace the nut, a retaining-pin seated in corresponding opposite grooves in an external face of the nut and an internal face of the annulus in the general plane of the annulus, and a washer-plate adapted to engage over two or more bolts or be otherwise fixed in position, and having a ledge engaging laterally against the plane face of the annulus, substantially as set forth.

2. As a new article of manufacture, a cast or punched open annulus having one or more straight external faces, an internal periphery adapted to pass over and fit the contour of a "nut" and perforated from side to side concentrically with and in continuation of a groove across one of its internal faces, substantially as set forth.

448,386. GAS OR GASOLINE ENGINE. BENJAMIN C. VANDUZEN, Winton Place, Ohio, assignor of one-half to Ezra W. Vanduzen, Newport Ky. Filed Feb. 1, 1890. Serial No. 338,901. (No model.)



Claim.—1. In a gas-engine, the combination of the inlet-valve G, exhaust-valve H, conduit I, and ignitor-valve J, having passage-way J^6 below the valve and communicating with conduit I and space J^7 above the valve, connected, when the valve-piece J^8 is elevated, with the said passage-way J^6, tube K, located above space J^7, pipe K′ in contact with the said space J^7 and passing through space K^4 of the burner, and sphere K^3, communicating with pipe K′ and also having aperture K^5, allowing egress of the gas within into the outer air, substantially as and for the purposes specified.

2. In a gas-engine, the combination of the inlet-valve G, exhaust-valve H, conduit I, said inlet-valve and exhaust-valve opening into said conduit, ignitor-valve J, having passage-way J^6 below the valve and communicating with conduit I, space J^7 above the valve, connected, when the valve-piece J^8 is elevated, with the said passage-way J^6, tube K, located above the space J^7, and pipe K′ in contact with the said space J^7 and passing through space K^4 of the burner, the tube K having the annular lining of non-heat-conducting material surrounding the pipe K′ above said burner-space K^4, substantially as and for the purposes specified.

3. The combination, with a gas-engine and with the supply-pipe leading thereto, of a carburetor having an air-pipe opening upwardly therein, a gravity-valve covering said pipe and lifted by the suction in the engine supply-pipe, and an oil-valve engaging the air-valve and lifted thereby to pass oil to the surface of the air-valve, whence it is distributed by the air-current, all substantially as described.

4. In a gas-engine having a governor and an air and gas supply pipe, a carburetor communicating with said supply-pipe, a feeding-valve in said carburetor operated by the suction in the supply-pipe, and an air-controlling valve in the supply-pipe, itself controlled by the governor, whereby the suction in the supply-pipe, and hence the carbureted supply, is controlled by the governor, substantially as described.

5. The combination, with a gas-engine and the supply-pipe thereof, of a carburetor communicating with said supply-pipe opening upwardly into said carburetor, a gravity air-valve covering said pipe and operated by suction in the engine-pipe, a liquid-controlling valve engaging said air-valve and operated thereby to feed liquid upon the surface of said air-valve, and carbureting-rings in proximity to said air-valve, substantially as described.

6. The combination, with the suction-pipe of a gas-engine, of the carburetor having the delivery-pipe L′, connected to said suction-pipe, and having the exterior shell L, interior tube or hollow cylinder L^3, carbureting-rings L^{13} between said shell L and said cylinder L^3, communicating with the outer air and provided with valve-piece L^4 resting upon it, valve-stems L^5 and L^{14}, valve-piece L^7, lifted by valve L^4, spaces L^8 L^9 for the passage of oil past the valve-piece L^7 when the valve is lifted, space L^{10} above the valve-piece L^7, and the inlet-valve, substantially as and for the purposes specified.

7. In a gas-engine, a governor, and the gas-supply valve G, swinging-valve stem G^2 beneath the valve G, vertically-reciprocating stud G^{13}, and lever V^3, connected to the governor and to the stem G^2, substantially as and for the purposes specified.

8. In a gas-engine, the inlet-valve G and its supporting-stem G^5, the valve-lifter G^{12}, exhaust-valve H and its supporting-stem H^5, valve-lifter H^7, and the single cam R, having working-surface R′ for both valves, substantially as and for the purposes specified.

9. In a gas-engine, the inlet-valve G, its lifter G^{12}, and exhaust-valve H and its lifter H^7, the lifters hinged on the common pivot R^3 and both engaging the same cam R whose shaft P is at right angles to the common plane passing through the valve, substantially as and for the purposes specified.

10. In a gas-engine, the inlet-valve G, its lifter G^{12} and roller G^{14}, and exhaust-valve H and its lifter H^7 and roller H^8, the lifters hinged on the common pivot R^3 and both engaging the same cam R whose shaft P is at right angles to the common plane passing through the valves, substantially as and for the purposes specified.

11. In a gas-engine, the gas-inlet valve, exhaust-valve, and ignitor-valve, and their lifters, and the cams R and T on a common shaft and operated thereby, the cam R in contact with the lifters of the inlet and exhaust valves and cam T in contact with the lifter of the ignitor-valve, substantially as and for the purposes specified.

12. In a gas-engine, the gas-inlet valve and conduit I, leading therefrom to that part of the cylinder which is above the upper stroke of the piston and above the said upper part of the cylinder, the said gas inlet valve being arranged for the admission of air and a volatilized hydrocarbon, the exhaust-valve located in conduit I between said gas-inlet valve and the working-cylinder, and an ignitor-valve located in said conduit I between the gas-inlet valve and the exhaust-valve, thereby heating those parts of conduit I through which the commingled unignited air and volatilized hydrocarbon pass on their way to the cylinder, thereby preventing any condensation of the carbureted air under pressure in said conduit and cylinder, substantially as and for the purposes specified.

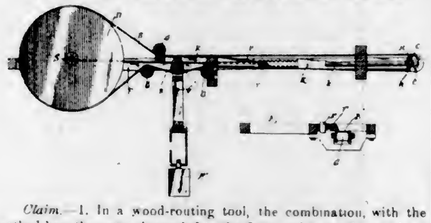
13. In a gas-engine, the gas-inlet valve and conduit I, leading therefrom to that part of the cylinder which is above the upper stroke of the piston and above the said upper part of the cylinder, the said gas-inlet valve being arranged for the admission of air and a volatilized hydrocarbon, the exhaust-valve located in conduit I between said gas-inlet valve and the working-cylinder, and an ignitor-valve located in said conduit I between the gas-inlet valve and the exhaust-valve, thereby heating those parts of conduit I through which the commingled unignited air and volatilized hydrocarbon pass on their way to the cylinder, thereby preventing any condensation of the carbureted air under pressure in said conduit and cylinder, and the cylinder below the uppermost point therein reached by the piston being in contact with a water-jacket Z for keeping the lower portion of the cylinder wherein the piston plays at all times cool and in proper condition for lubrication with oil, substantially as and for the purposes specified.

14. A gas engine having an inlet suction-pipe, in combination with a carbureting device consisting of the exterior shell L, gas-exit pipe L′, connected thereto and to the said suction-pipe of the engine, air-inlet pipe controlled by valve L^4, valve L^4, inlet gasoline-valve L^7, and means, substantially as herein set forth, for enabling said air-inlet valve L^4 to operate said gasoline-inlet valve L^7, substantially as and for the purposes specified.

448,387. NITROGENOUS FERTILIZER. JOSEPH VAN RUYMBEKE, Chicago, Ill., assignor to the National Chemical and Fertilizer Company, same place. Filed May 16, 1890. Serial No. 352,075. (No specimens.)

Claim.—A fertilizing material composed of liquid stick and ground dried animal matter in the proportions of about two thousand pounds of the former and six hundred to eight hundred pounds of the latter, thoroughly mixed and subjected to a heat not exceeding 380° Fahrenheit, whereby a dry, pulverulent, and practically non-deliquescent material is obtained, substantially as and for the purposes specified.

448,388. WOOD-WORKING MACHINE. GEORGE W. WALTON, Sparta, Tex. Filed June 28, 1890. Serial No. 357,113. (No model.)



Claim.—1. In a wood-routing tool, the combination, with the toothed bar, the cutter journaled in the front end thereof, a pawl engaging the teeth thereof, and a feed-rod also engaging said teeth, of a main crank-shaft, upon the crank of which the other end of said feed-rod is mounted, a drive-wheel on said shaft, a belt passing over said drive-wheel and cutter, and a belt-tightener thereon, substantially as described.

2. In a wood-routing-tool, the combination, with the toothed bar, the cutter journaled in the front end thereof, a pawl engaging the teeth thereof, and a feed-rod also engaging said teeth, of means, substantially as described, for imparting rotary motion to the cutter and reciprocatory motion to the feed-rod, as and for the purpose set forth.

3. In a wood-routing tool, the combination, with the frame-work having a single guide-roller at the top and two guide-rollers at the bottom thereof, a longitudinally-moving cutter-bar, a cutter journaled in the outer end thereof, and means, substantially as described, for feeding said bar intermittently forward, of a main shaft journaled in said frame, a drive-wheel thereon, a belt passing over said drive-wheel and cutter, the sides of the belt passing intermediately beneath the upper guide-wheel and above the two lower gnide-wheels, a weight-frame having a roller supported on said belt between said lower guide-wheels, and a weight attached to said weight-frame, the whole operating substantially as and for the purpose set forth.

4. In a wood-routing tool, the combination, with the frame-work F, the slotted cut-bar K, sliding therein and having teeth within its slot, the cutter journaled in the outer end thereof, and means, substantially as described, for rotating said cutter; of the pawl P, connected to the frame and engaging said teeth, the reciprocating feed-rod R, sliding through said frame, and the tongue r on the forward end of said rod, engaging said teeth beneath the tip of the pawl P, as and for the purpose set forth.

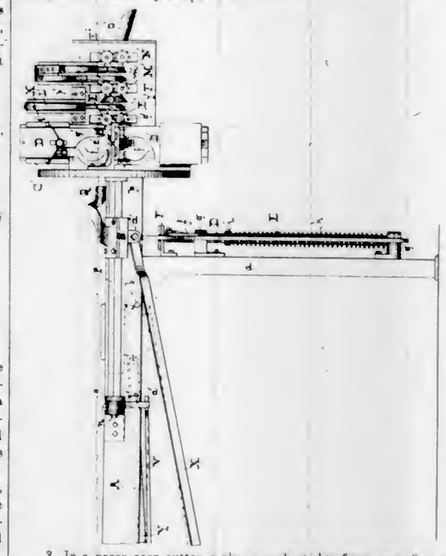
5. In a wood-routing tool, the combination, with the frame-work F, the toothed cutter-bar K, the cutter journaled in the outer end thereof, and means, substantially as described, for rotating said cutter, of the pawl P, connected to the frame and engaging said teeth, the feed-rod R, reciprocating longitudinally through a slot in said frame, the tongue r on the forward end of said rod, normally engaging said teeth beneath the tip of the pawl P, and the pin N, removably inserted through said slot in the frame and holding the tongue of the feed-rod normally in engagement with the teeth, as and for the purpose set forth.

6. In a wood-routing tool, the combination, with the cutter-bar K, having lateral guiding-wings *k* extending nearly to its outer end, a bolt *h*, journaled through said outer end, and a frame-work F, supporting said cutter-bar, of the heads H, mounted upon the opposite ends of said bolt and having reduced inner ends *b*, said heads projecting beyond said wings, the belt B, leading from a suitable source of power through said frame-work F over said reduced inner ends of the heads, and the cutters C, carried by said heads, the whole constructed and arranged substantially as and for the purpose hereinbefore set forth.

448,389. GREEN-CORN CUTTER. SOLOMON D. WARFIELD, Baltimore, Md. Filed Sept. 14, 1889. Serial No. 323,950. (No model.)

Claim.—1. In a green-corn cutter, a series of plungers having a common movement and the same office, combined with a single cutting mechanism and means for bringing said plungers by turns into operation, substantially as specified.

2. In a green-corn cutter, a series of reciprocating plungers having a common movement and the same office, combined with a single cutting mechanism and means for bringing said plungers by turns into operation, substantially as specified.



3. In a green-corn cutter, a plunger adapted to force ears of corn to a cutting mechanism, combined with a second plunger substantially like the first, and means whereby one plunger, as it returns from the forcing stroke, is moved to a different plane to make way for the forward movement of the other, substantially as and for the purpose specified.

4. In a green-corn cutter, a series of reciprocating plungers which move forward and return in different planes and have a common movement and the same office, combined with a single cutting mechanism, to which they force the ears, substantially as specified.

5. In a green-corn cutter, a series of plungers which move forward and return in different planes and have a common movement and the same office, combined with a single cutting mechanism and a feed mechanism whereby the ears are supplied to the said plungers, substantially as specified.

6. In a green-corn cutter, a series of reciprocating plungers which move forward and return in different planes and have a common movement and the same office, combined with a single cutting mechanism and a feed mechanism whereby the ears are supplied to the said plungers, substantially as specified.

7. In a green-corn cutter, a plunger adapted to force ears of corn to a cutting mechanism, combined with a second plunger and means, substantially as described, to move the said plungers to different planes, so that they may pass each other, substantially as and for the purpose specified.

8. In a green-corn cutter, a plunger adapted to force ears of corn to a cutting mechanism, combined with a similar plunger and means substantially as described, whereby the direction of movement of the two plungers is altered, so that they may pass each other, substantially as and for the purpose specified.

9. In a green-corn cutter, two reciprocating plungers, combined with actuating mechanism whereby the said plungers are alternately moved from their path, so that in their reciprocating movement they may pass each other, substantially as specified.

10. In a green-corn cutter, the combination of a centering device, a rocking bar, a block to slide on the same, a plunger which projects from the said block, and means to move the said block forward and backward on the said bar, substantially as and for the purpose specified.

11. In a green-corn cutter, the combination of a centering device, a rocking bar, a block adapted to slide on the rocking bar, a plunger which projects from the said sliding and rocking block, a second rocking bar and reciprocating plunger, and means whereby the movements of the plungers are alternately effected, substantially as and for the purpose specified.

12. In a green-corn cutter, the combination of a centering device, a bar having axial pivots or gudgeons, a block carrying a plunger adapted to slide on the said bar, a lever attached to the said pivoted

bar, having at its outer end a roller, a cam in contact with the said roller, and means to revolve the cam and thereby rock the pivoted bar, substantially as and for the purpose specified.

13. In a green-corn cutter, the combination of a centering device, a bar having axial pivots or gudgeons, a block carrying a plunger adapted to slide on the said bar, a lever attached to the said bar connected at its outer end with a cam to vibrate it, and a connecting-rod leading from the said sliding block to a crank, whereby the said plunger is given a reciprocating movement and also a rocking one, substantially as and for the purpose specified.

14. In a green-corn cutter, a centering device in two sections which interlock at the bottom and stand apart at the top, thereby forming a slot, combined with a plunger having a longitudinally reciprocating and a rocking motion, and means to move the plunger from the said centering device through the said slot, substantially as and for the purpose specified.

15. In a green-corn cutter, a frame, a centering device, a trough in the said frame, a sprocket-wheel in front of the said centering device and another in the rear of the machine, a chain belt mounted on the said sprocket-wheels, which moves longitudinally of the machine, and a plunger to force the ear left by the chain belt through the centering device, combined substantially as and for the purpose specified.

16. In a green-corn cutter, cutting-knives and a plunger to carry the ear to between the knives and to stop short of the same, combined with clasping devices to complete the unfinished forward movement of the ear, substantially as and for the purpose specified.

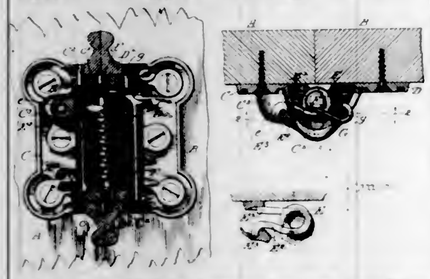
17. A centering device for a green-corn cutter, which consists of two hollow sections having a flared mouth-piece extending longitudinally thereof, and springs to retain the said sections yieldingly in a closed position, substantially as and for the purpose specified.

18. A centering device for a green-corn cutter, which consists of two hollow sections having a flared mouth-piece extending longitudinally thereof, the said sections being on pivoted bars connected by a toggle to a center rod, substantially as and for the purpose specified.

19. In a green-corn cutter, an endless feeding mechanism, combined with the reciprocating plungers, which receive the ears and successively force the same to the cutting mechanism, substantially as and for the purpose specified.

20. In a green-corn cutter, an endless feeding mechanism, combined with a series of reciprocating plungers to receive the ears and force the same to the cutting-knives, substantially as and for the purpose specified.

448,390. SPRING-HINGE. GEORGE W. WARNER, Freeport, Ill. Filed Nov. 17, 1890. Serial No. 371,708. (Model.)



Claim.—1. A spring-hinge comprising two leaves pivotally connected together and a spring provided with two arms bearing in opposite directions upon one of said leaves and having an intermediate curved or coiled portion engaged with a movable bearing upon the other leaf, substantially as described.

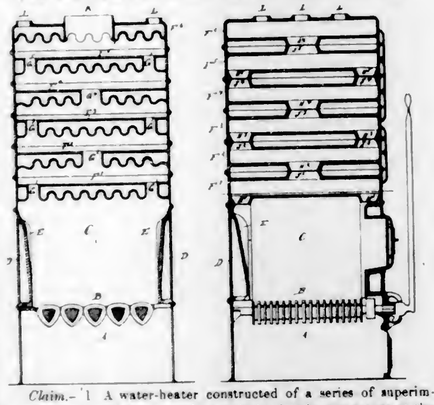
2. A spring-hinge comprising two leaves pivotally connected together, a spindle having a bearing at one end in one of said leaves and being movably connected at its other end to the other leaf, a spring having two projecting arms arranged to bear in opposite directions upon one of said leaves, and an intermediate coiled or bent portion bearing upon said spindle, said spindle being located eccentrically to the pivotal connection between the leaves, substantially as described.

3. The herein-described spring-hinge, comprising two leaves pivotally connected together, a spindle having a bearing upon one of said leaves eccentric to said pivotal connection, a hook or link secured to the other leaf of the hinge at one end and to the free end of the spindle at its other end, and a spring provided with two arms arranged to bear in opposite directions upon the first-mentioned leaf and having an intermediate curved or coiled portion engaged with said spindle, substantially as described.

4. The herein-described spring-hinge, comprising two leaves pivotally connected together, one of said leaves being provided with a barrel or housing for the spring, a spindle having a bearing at one end within said barrel or housing and eccentric to the connection between the leaves, a link connected with the other leaf and with the free end of said spindle, and a spring having a spirally-coiled body engaged with said spindle and provided with two arms arranged to bear in opposite directions upon the first-mentioned leaf, substantially as described.

5. The herein-described spring-hinge, comprising two leaves pivotally connected together, one of said leaves being provided with a barrel or housing for the spring, a spindle having a bearing at one end within said barrel or housing and eccentric to the connection between the leaves, a link connected with the other leaf and with the free end of said spindle, and a spring having a spirally-coiled body engaged with said spindle and provided with two arms arranged to bear in opposite directions upon the first-mentioned leaf, and a slot or opening formed in said leaf adjacent to one of said bearings, substantially as described.

448,391. HOT-WATER HEATER. JAMES B. WATSON, New Brunswick, N. J. Filed Sept. 15, 1890. Serial No. 365,022. (No model.)



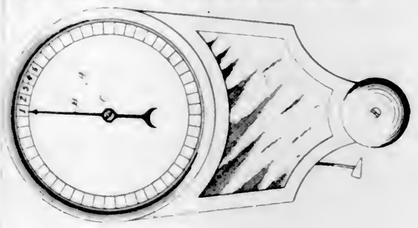
Claim.—1. A water-heater constructed of a series of superimposed sections, said sections alternately having heat-passages at the sides and the center and all having water-passages at the sides and corners alternately at the top and bottom, substantially as set forth.

2. A water-heater composed of a series of superimposed sections, said sections alternately having heat-passages at the sides and centers and water-openings at the sides and corners in the tops and bottoms, the under sides of the sections being corrugated and the upper surfaces smooth, substantially as set forth.

3. A water-heater provided with a series of superimposed sections, the sections having alternately two side openings and a single central opening for the passage of the heated gases and side openings, and alternately corner and side openings in the top and bottom for the passage of the water, those sections having the openings for the passage of the heat at the sides being provided in the bottom with corner openings for the water and in the top with side openings for the water, substantially as set forth.

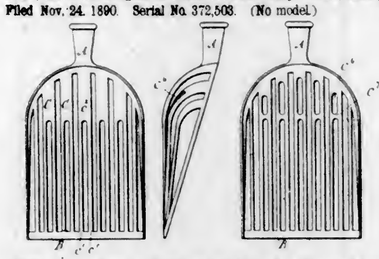
4. In a water-heater, the combination, with a leg having a fire-pot, of a series of superimposed sections, said sections alternately having heat-passages at the sides and center and having water-passages at the sides and corners alternately, the water-compartments being in communication with the water-leg, substantially as set forth.

448,392. BARBER'S INDICATOR. SIMEON P. WATSON, Brooklyn, N. Y. Filed June 7, 1890. Serial No. 354,664. (No model.)



Claim.—The combination, with an electro-magnet and circuit-changers, of a ratchet-wheel, an oscillating lever, stops for limiting the movement of the lever, a pawl pivoted to said lever and operating to move the ratchet-wheel when the lever is attracted by the electro-magnet, and a pawl adjustable on and rigidly secured to the lever, the said rigid pawl being adapted to engage the upper portion of a tooth below the pivoted pawl to block the inertia of the ratchet-wheel, substantially as specified.

448,393. SCOOP. WILLIAM WELLS and JOSEPH VOWLES, Milford, Mich.; said Wells assignor to Frank Orris and Mary Vowles, same place. Filed Nov. 24, 1890. Serial No. 372,503. (No model.)



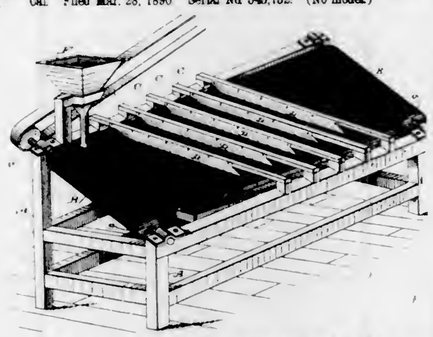
Claim.—1. A scoop in which the inside tines are arranged in pairs, each pair united near the point where they curve upward at the heel of the scoop, substantially as and for the purposes described.

2. A scoop with the inside tines arranged in pairs, each pair united near the point where they curve upward at the heel of the scoop, with an opening between said point of union and the extreme heel end of the tine, substantially as and for the purposes described.

3. A scoop with its inside tines arranged in pairs united near the point where they curve upward at the heel, the shank of the central pair stiffened with a longitudinal flange or flanges, substantially as and for the purposes described.

4. A scoop with its inside tines arranged in pairs, each pair united near the point where the tine curves upward at the heel, the shank beyond said point of union convexed upon one side and concaved upon its opposite side, substantially as described.

448,394. SEPARATOR. FAIRFAX H. WHEELAN, Santa Barbara, Cal. Filed Mar. 28, 1890. Serial No. 345,752. (No model.)



Claim.—1. In a separator for grains and seeds, a table upon which the material is fed and yielding flaps over said table, said table and flaps being the one movable with relation to the other, and the flaps arranged at such a vertical angle to the surface of the table as to effect a separation of the foreign particles by pressing them into such frictional contact with the table that they will pass the flaps, while the grains and seeds will not pass them, substantially as herein described.

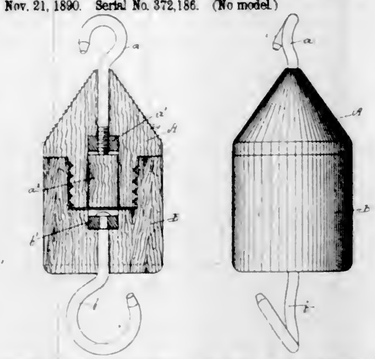
2. In a separator for grains and seeds, a moving table upon which the material is fed and yielding flaps arranged above the table at such a vertical angle to the surface thereof as to effect a separation of the foreign particles by pressing them into frictional contact with the table, whereby they pass said flaps, while the grains and seeds do not, said flaps being longitudinally laterally inclined to the plane of travel of the table, whereby the grains and seeds are rolled along by them and discharged from the side of the table, substantially as herein described.

3. In a separator for grains and seeds, a traveling table upon which the material is fed, said table being inclined at right angles to its direction of travel, and yielding flaps above the table and inclined to its surface at such a vertical angle as to effect a separation of the foreign particles from the grains and seeds as the material is brought into contact with them, said flaps being longitudinally laterally inclined to the plane of travel of the table, whereby the grains and seeds are guided down the inclines of the flaps and table to the lower side thereof, while the foreign particles pass on by the flaps with the table, substantially as herein described.

4. A separator for grains and seeds, consisting of the laterally-inclined frame, the endless traveling laterally-inclined belt carried thereby, the fixed inclined bars extending over the surface of the belt at a lateral inclination, and the yielding flaps secured to said bars and arranged at such a vertical angle to the surface of the belt as to effect a separation of the foreign particles by pressing them into said frictional contact with the belt that they will pass the flaps, while the grains and seeds will not pass them, substantially as herein described.

5. A method of separating material composed of particles of different degrees of smoothness, which consists in feeding the material upon a surface, subjecting it to such a pressure thereon as to develop in the different particles different coefficients of friction between them and the surface, and moving said material on or with said surface, thereby separating these particles having the greater from those having the lesser frictional coefficient, substantially as herein described.

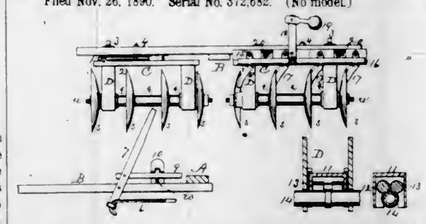
448,395. INSULATOR. GEORGE K. WHEELER, Chicago, Ill. Filed Nov. 21, 1890. Serial No. 372,186. (No model.)



Claim.—1. The cone-insulator above described, consisting of the non-conducting parts A and B, screwed together and provided with the hangers *a* and *b*, one of the parts being conical at one end to receive the hood, all substantially as described.

2. In combination, the non-conductors A and B, secured together, the hangers *a* and *b*, and the plug a^2 between the inner ends of the hangers, all substantially as described.

448,396. DISK HARROW. GOTTLIEB WILKENING, Dayton, Ohio. Filed Nov. 26, 1890. Serial No. 372,682. (No model.)



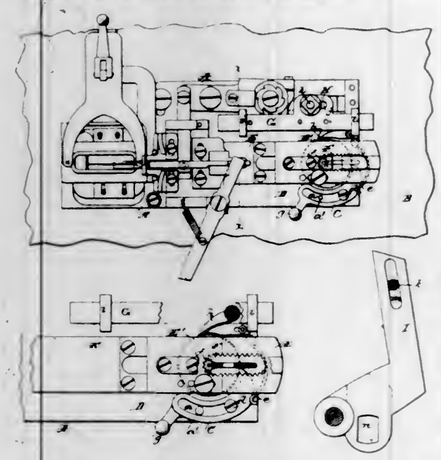
Claim.—1. In a disk harrow, the combination of the main frame A, the gang-frame C, the coupling-plate 1 to unite said frames, the draft-rod 6, hand-lever 7, locking-bar 9, and post 10 to engage said bar, substantially as set forth.

2. In a disk harrow, the combination of the standard D, hollow at the bottom, the anti-friction rollers 12 and 13, provided with peripheral grooves, frame 11 to hold said rollers, and the shaft 14, with peripheral projection to engage said grooves, substantially as set forth.

3. In a disk harrow, the combination of the hand-lever 7, pivoted to the tongue, the foot-lever 9, held up by a spring, the post 10, with a notch to engage a projection on said foot-lever, and the draft-rod 6, attached to the inner end of the gang-frame, substantially as set forth.

4. In a disk harrow, the combination of the bar 15, rigidly attached to the gang-frame, the cleaner-blades 17, pivoted to said bar, sliding bar 16, with projections to carry said blades, lever 18, and weighted arm 19, to operate said blades in cleaning the concave surface of the disks, substantially as set forth.

448,397. BUTTON-HOLE SEWING-MACHINE. HENRY J. WILLIAMS, New York, N. Y., assignor to Henry J. Davidson, same place. Filed Apr. 25, 1890. Serial No. 349,481. (No model.)



Claim.—1. In a button-hole attachment for sewing-machines, the combination, substantially as hereinbefore set forth, with the cloth-feed plate, of the ratchet-wheel E', connected to said feed-plate, and means for driving the same, the slotted pawl, and means for securing the slotted pawl movably on its support, said pawl having a movement independent of the driving mechanism for operating the cloth-feed plate, for the purpose specified.

2. In a button-hole attachment for sewing-machines, the combination, substantially as hereinbefore set forth, with the cloth-feed plate, of the ratchet-wheel E', connected to said feed-plate, and means for driving the same, the slotted pawl movably connected to a support, the screw for controlling the slotted pawl in its oscillating movement, the stop-pin, and a spring for retaining said pawl in contact with the ratchet-wheel.

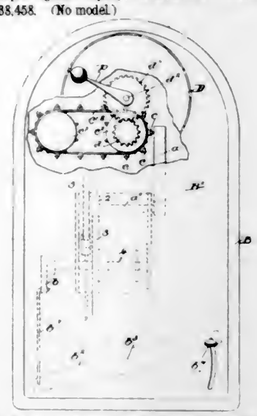
3. In a button-hole attachment for sewing-machines, the combination, substantially as hereinbefore set forth, of the cloth-feed plate, the ratchet-wheel operatively connected with the feed-plate, the reciprocating transmitting-bar G, the guides through which it moves, a pawl secured to the transmitting-bar and engaging with the ratchet-wheel, the slotted driving-lever I, operatively connected with the transmitting-bar G to give it a reciprocating motion, and means for operating the lever I.

4. In a button-hole attachment for sewing-machines, the combination, substantially as hereinbefore set forth, of the bed-plate of the machine, the cloth-feed plate, the ratchet-wheel connected to the feed-plate, a reciprocating transmitting-bar, a pawl pivoted thereon and engaging with the ratchet-wheel, the driving-lever pivoted to the under side of the bed-plate of the machine, connections between the driving-lever and the reciprocating transmitting-bar, and means for operating said lever.

5. In a button-hole attachment for sewing-machines, the combination, substantially as hereinbefore set forth, of the cloth-feed plate, the adjustable transmitting-bar, means for connecting them, the slotted driving-lever I, slotted at its forward and rear ends for the purpose specified, the stud *k*, extending vertically into and playing loosely in slot *n* and secured adjustably to the transmitting-bar, and means for operating the same.

6. In a button-hole attachment for sewing-machines, the combination, substantially as hereinbefore set forth, of the cloth-feed plate, the adjustable transmitting-bar, means for connecting them, the stud extending vertically from the transmitting-bar, the slotted driving-lever I, the shoulder-bolt J for securing said lever to the bed-plate of the machine, and the reciprocating arm extending vertically through said slot at its rear end and playing loosely therein, a means for operating said arm.

448,398. SIGNAL-BOX. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portland, Me. Filed May 17, 1887. Serial No. 238,458. (No model.)

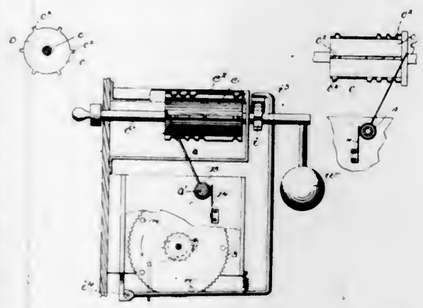


Claim.—1. A multiple-signal transmitter comprising an endless band and a series of groups of signaling-surfaces, each group arranged transversely thereon, and a contact-pen adapted to co-operate with any one group of signaling-surfaces, substantially as described.

2. A multiple-signal transmitter comprising a contact-pen, an endless band, and a series of groups of signaling-surfaces, each group arranged transversely on said band, and means for moving said band to present one or another group to the contact-pen, substantially as described.

3. A multiple-signal transmitter comprising a band having on it a series of signaling-surfaces, a cylinder over which said band passes, a pointer for effecting the movement of the cylinder to present one or another signaling-surface to the plane of rotation of a contact-pen, a dial with which the pointer co-operates, a motor mechanism for rotating the contact-pen, and a starting-lever for the motor mechanism, substantially as described.

448,399. SIGNAL-BOX. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portland, Me. Filed May 17, 1887. Serial No. 238,459. (No model.)



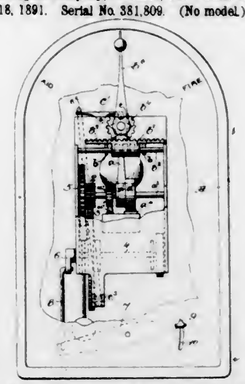
Claim.—1. In a signal-box, the contact-pen and motor mechanism for rotating it and the signal-drum and means for rotating it, combined with an engaging latch for the drum and means controlled by the motor for effecting the movement of the latch to release the drum, substantially as described.

2. In a signal-box, the contact-pen, a motor mechanism for rotating it, the signal-drum and means for rotating it, the toothed wheel *i*, latch *i'*, rod *i²*, and the wheel 3, having the studs *n* thereon, substantially as described.

3. In a signal-box, a multiple-signal transmitter comprising the contact-pen, a revoluble shaft *a'*, to which it is fixed, a cylinder with parallel sides having thereon longitudinally-arranged signaling-surfaces, the axis of rotation of which cylinder is at right angles to the axis of rotation of the shaft *a'*, the pen being arranged tangentially to the cylinder, and means for revolving said cylinder to bring one or another

signaling-surface into the plane of rotation of the contact-pen, substantially as described.

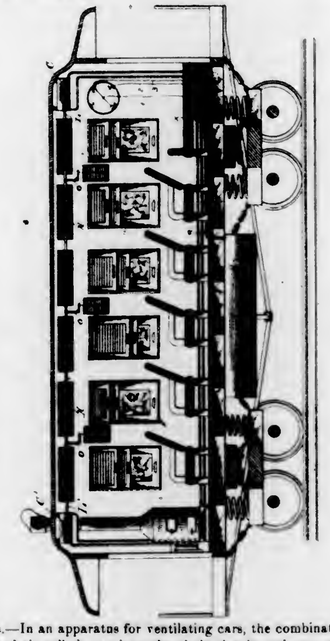
448,400. SIGNAL-BOX. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portland, Me. Filed May 17, 1887. Renewed Feb. 18, 1891. Serial No. 381,809. (No model.)



Claim.—1. In a signal-box, a rotatable contact-pen, combined with a series of signaling-surfaces arranged on a frame or carrier which is movable in a direction parallel with the axis of rotation of the contact-pen to present one or another signaling-surface to the contact-pen, a pointer connected to said frame or carrier for moving it, and a dial, substantially as described.

2. In a signal-box, a rotatable contact-pen, a series of movable signaling-surfaces, combined with a rack-bar, toothed wheel, and means for moving the toothed wheel, and a locking and releasing device for the toothed wheel, substantially as described.

448,401. APPARATUS FOR VENTILATING RAILROAD-CARS. ROBERT J. WILSON, Pittsburg, Pa. Filed Nov. 25, 1889. Serial No. 331,510. (No model.)



Claim.—In an apparatus for ventilating cars, the combination of a compressed-air cylinder, a piston therein having its rod connected to the operating-rod of a ventilator, a compressed-air tank, a pipe leading therefrom and having separate branches leading to the opposite ends of the cylinder and provided with valves on opposite sides of the branch connection, a separate pipe communicating with the opposite ends of the cylinder and having an exhaust connection with valves on opposite sides thereof, a pair of electro-magnets in circuit with a circuit switching device, a thermostat operatively connected with the said switching device, and connections between the armature of said electro-magnets and the several valves on the supply and exhaust pipes, all constructed and arranged substantially as described.

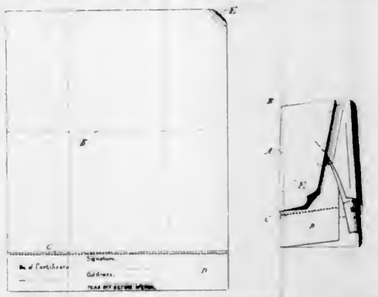
448,402. GATE. PHILANDER WOOD, Belvidere, Ill. Filed Oct. 14, 1890. Serial No. 368,107. (No model.)



Claim.—1. A gate and its hanging-post, in combination with two hanging-bars having a pivotal connection with the hanging-post and a connection with each other, said connection consisting of a ratchet located on one bar and a link connecting the ratchet with the other bar, substantially as set forth.

2. A gate and its hanging-post, in combination with two hanging-bars having a pivotal connection with the hanging-post and a connection with each other, said connection consisting of a ratchet located on one of the bars and a link connecting the ratchet with the other bar, and a hook and-eye connection between the bars, substantially as set forth.

448,403. BALLOT-PAPER OR VOTING-TICKET. CHAUNCEY K. ADAMS, Montreal, Canada, assignor to Thomas Trimble, same place. Filed Dec. 8, 1890. Serial No. 373,967. (No model.)



Claim.—1. In a ballot-paper or voting-ticket, the combination of the sheet proper for candidates' names folded over, means for closing same, and a detachable visible certificate forming part of said sheet, all as and for the purposes set forth.

2. The combination, in a ballot-paper or voting-ticket, of the ballot-paper proper A, with fold at B, line of perforations C, certificate-strip D, and gummed corner E, all arranged and operated as herein set forth.

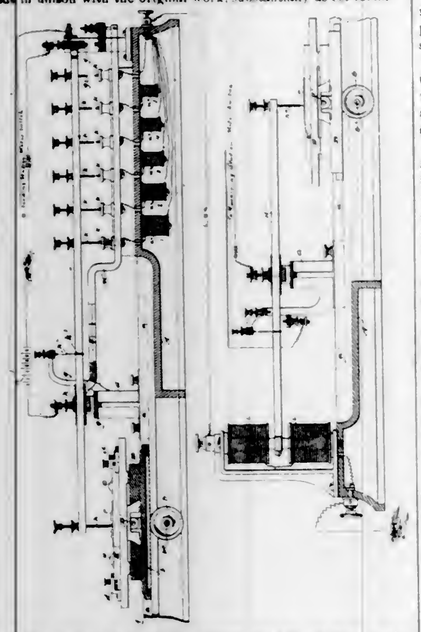
448,404. PROCESS OF AND APPARATUS FOR ELECTRICALLY REPRODUCING IRREGULAR OR UNDULATING SURFACES. NOAH S. AMSTUTZ, Cleveland, Ohio. Filed Aug. 19, 1889. Serial No. 321,254. (No model.)

Claim.—1. The method of reproducing bas-relief, intaglios, and the like surfaces, consisting in running a tracing-point in contact with the surface to be reproduced and communicating the variable vibrations of said point to a reproducing point or device by means of an electric current, substantially as set forth.

2. The method of transmitting the configuration of a given surface from one point to another, which consists in causing a tracing-point to be vibrated by and according to the undulations of the surface to be reproduced and communicating the said undulations by means of an electric current to another tracing point or device working upon another surface, substantially as set forth.

3. The method of reproducing surfaces having variable elevations, the same consisting in moving the subject to be reproduced back and forth beneath a tracing-point and communicating the up-and-down movements of said point by an electric current to a reproducing point

or device arranged over a surface in which the undulations of the original are faithfully reproduced by moving said material or work back and forth beneath the reproducing point or device by an electric current in unison with the original work, substantially as set forth.



4. The method of duplicating uneven surfaces, the same consisting in causing a tracing-point to travel back and forth in approximate paths over an undulating surface and causing a delineation of said surface to be made on another surface by a reproducing-point actuated by a current of electricity varying in strength with the varying elevations and depressions of the original surface, substantially as set forth.

5. The method herein described, consisting in reproducing an undulating surface on a body of plastic material having a substantially even surface by transmitting the undulations of the original surface electrically to the plastic surface through a suitable reproducing-point, arranged to penetrate said plastic surface to greater or less depth and width governed by the varying strength of the electric current, substantially as set forth.

6. The method herein described of working electrically from one surface to another, which consists in employing a suitable point for each surface and controlling one of said points electrically through a series of graduated resistances, substantially as set forth.

7. In an electrical transmitting system, a subject having variable elevations on its surface and a tracing-point actuated by said elevations, substantially as set forth.

8. In an electrical transmitting system, a subject with an irregular surface and a tracing-point actuated by said subject, in combination with a plate having a reproducing-point actuated electrically through the movements of the tracing-point, substantially as set forth.

9. In an electrical transmitting system, two plates and a movable point for each plate, with electrical connections, whereby one point is actuated by the variable movements of the other, substantially as set forth.

10. In an electrical transmitting system, a subject having an irregular or uneven surface and a tracing-point to work in contact therewith, in combination with a reproducing-point and electrical connections providing an undulating current for actuating the reproducing-point, substantially as set forth.

11. In an electrical transmitting system, a subject having a support provided with mechanism for moving it in different directions, a tracing-point pivoted to work up and down over said plate, and electrical connections whereby said mechanism is reversed, substantially as set forth.

12. In an electrical transmitting system, a carrier for a subject provided with longitudinal and transverse ways, mechanism to move the carrier in said ways, a tracing-point supported on an arm and having a spring to keep the point in working position, and electrical connections controlling the movements of said mechanism, substantially as set forth.

13. In an electrical transmitting system, a suitable support for a subject having an irregular surface, and an arm provided with a tracing-point adapted to work up and down over the subject, substantially as set forth.

14. In an electrical transmitting system, separate stations connected electrically, one of said stations having a subject or pattern with an irregular surface and a tracing-point actuated by said surface, and another station having a reproducing-point actuated electrically, substantially as set forth.

15. In an electrical transmitting system, a sending-station having a tracing-point operated by an uneven surface over which said point is adapted to travel, in combination with a receiving-station having a reproducing-point to interpret said irregular surface, and electrical connections between said stations, provided with means to make the strength of the current correspond to the irregularities of the surface to be reproduced, substantially as set forth.

16. In an electrical transmitting system, sending and receiving stations electrically connected and a series of graduated resistances in said connections, substantially as set forth.

17. In an electrical transmitting system, a tracing-point adapted to vibrate and a point to reproduce said vibrations on a suitable surface, in combination with electrical connections provided with varying resistances and distinct contact-points, substantially as set forth.

18. In an electrical transmitting system, a tracing-point actuated by an irregular or undulating surface and an arm supporting said point, with an electrical contact-point on said arm to close a circuit and electrically control the propelling power of the local apparatus, substantially as set forth.

19. In an electrical transmitting system, a frame holding a subject to be reproduced having ribs or beads on which the tracing-point is adapted to ride, with said tracing-point, whereby the frame is reversed through electrical connections, substantially as set forth.

20. In an electrical transmitting system, a sending-station and a receiving-station, each provided with suitable mechanism, and electrical connections between said stations whereby the said mechanism at both stations is simultaneously reversed, substantially as set forth.

21. In an electrical transmitting system, a receiving-station provided with a plate of plastic or like soft material having an even surface and a tool to work from said surface downward in lines varying in depth and width, whereby a figure, picture, or the like is produced in relief on the said surface, and electrical connections with a sending-station for actuating said tool, substantially as set forth.

22. In an electrical transmitting system, a sending-station having a subject with arbitrary elevations on its surface and a tracing-point actuated by said elevations, in combination with a receiving-station having mechanism to interpret and reproduce the movements of the actuating tracing-point, substantially as set forth.

448,405. PENCIL-CLASP. CHARLES O. BIEDERMAN, Bridgewater, N. Y. Filed Jan. 10, 1891. Serial No. 377,338. (No model.)

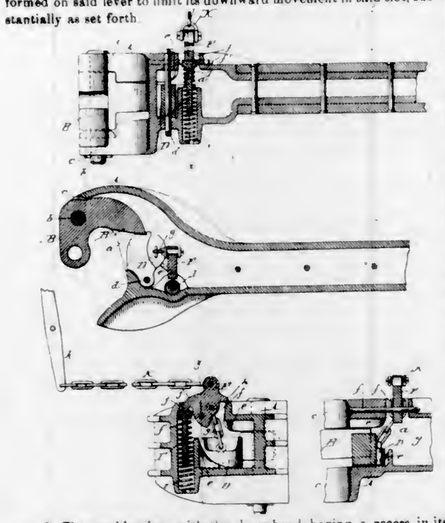


Claim.—The herein-described pencil-clasp, the same consisting of a single piece of spring-wire bent at its center in a tongue, curving to the rear at the upper end of said tongue in jaws J, which are bent slightly outward, extending thence downwardly into jaws J', also bent outwardly and standing about opposite the tip of said tongue, and extending thence upwardly in two vertical arms along the outer sides of the tongue to points about opposite said jaws J, the extremities of said arms being sharpened, all substantially as and for the purpose hereinbefore set forth.

448,406. CAR-COUPLING. THOMAS A. BISSELL, Buffalo, N. Y. Filed Dec. 6, 1890. Serial No. 373,755. (No model.)

Claim.—1. The combination, with a draw-head having a recess in its front end and a pivoted coupling-hook, of a gravity-pawl arranged in said recess and adapted to interlock with said hook, a rocking arm or lever pivoted to said draw-head and connected with said pawl, and a pull-chain attached to said lever above its pivot, substantially as set forth.

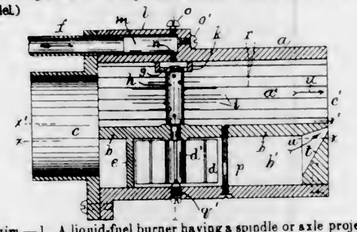
2. The combination, with the draw-head, having a recess in its front end, a pivoted coupling-hook and gravity-pawl arranged in said recess and interlocking with said hook, of a rocking arm or lever pivoted in a slot or opening formed in the draw-head above said recess, a chain connecting the pawl with said lever, and a stop or shoulder formed on said lever to limit its downward movement in said slot, substantially as set forth.



3. The combination, with the draw-head having a recess in its front end, a pivoted coupling-hook, and a gravity-pawl arranged in said recess and interlocking with said hook, of a rocking arm or lever pivoted in said draw-head and connected with said pawl, a stop or shoulder formed on said lever, and a spring whereby the rocking lever is held against said stop, substantially as set forth.

4. The combination, with the draw-head having a recess in its front end and a socket formed in one side of said recess, of a pivoted coupling-hook, a gravity-pawl arranged in said recess and adapted to interlock with said hook, a rocking arm or lever pivoted in a slot or opening formed in the draw-head, a chain connecting said lever with the gravity-pawl, a shoulder formed on one side of the rocking lever, a downwardly-projecting heel formed on the opposite side of said lever, and a spring-bolt arranged in said socket and bearing upwardly against the heel of the rocking lever, substantially as set forth.

448,407. LIQUID-FUEL BURNER. MATTHEW H. BROOKBANK, West Bergen, N. J. Filed Apr. 28, 1890. Serial No. 349,773. (No model.)



Claim.—1. A liquid-fuel burner having a spindle or axle projected across the blast-chamber, a rotary distributer affixed to such axle, and a separate motor-wheel attached to the axle and propelled by a blast to rotate such distributer, as and for the purpose set forth.

2. A liquid-fuel burner divided longitudinally into two chambers and provided with a nozzle for directing the blast into such chambers, a rotary distributer in one chamber and a motor-wheel in the other chamber connected with the rotary distributer to actuate the same, and an oil-supply pipe connected with the chamber having the rotary distributer, substantially as herein set forth.

3. A liquid-fuel burner divided longitudinally by a horizontal partition into an upper chamber *a*, provided with an oil-inlet in its upper side, and lower chamber *b'*, and provided with a rotary distributer in the upper chamber below the oil-inlet, a motor-wheel in the chamber *b'*, with connection to the rotary distributer, a nozzle *c*, to direct the blast into both chambers, the deflector *e*, directing the blast upon the motor-wheel, and the deflector *t*, to direct the air upward from the outlet of the chamber *b'*, as and for the purpose set forth.

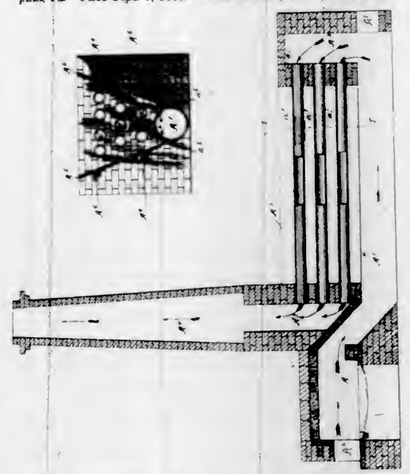
4. A liquid-fuel burner consisting in the box *a*, divided into upper and lower chambers, with the longitudinal ledges *r* formed in the sides of the upper chamber, the rotary distributer in the upper chamber, the motor-wheel in the lower chamber in connection with the rotary distributer, an oil-supply pipe connected with the upper chamber, and a nozzle for directing the blast into both the chambers, as and for the purpose set forth.

5. A liquid-fuel burner consisting in the box *a*, divided into upper and lower chambers, with the longitudinal ledges *r* formed in the sides of the upper chamber, the rotary distributer in the upper chamber, the motor-wheel in the lower chamber in connection with the rotary distributer, a nozzle for directing the blast into both the chambers, a detachable oil-pocket in the top of the upper chamber with the upper pivot of the distributer journaled therein and having discharge-holes in its lower side adjacent to such pivot, and an oil-pipe connected with such oil-pocket, as and for the purpose set forth.

6. A liquid-fuel burner consisting of the box *a*, divided into upper and lower chambers, with the longitudinal ledges *r* formed in the sides of the upper chamber, the rotary distributer in the upper chamber, the motor-wheel in the lower chamber in connection with the rotary distributer, a nozzle for directing the blast into both the chambers, a detachable oil-pocket in the top of the upper chamber with the upper pivot of the distributer journaled therein and having discharge-holes in its lower side adjacent to such pivot, the lug *l* upon the top of the box, provided with oil-pipe *f* and passage *m*, communicating by hole *n* with the oil-pocket, and the screw *o* in the top of the lug *l* for cleaning the hole *n* when clogged, substantially as herein set forth.

7. A liquid-fuel burner consisting of the box *a*, divided into chambers *a'* and *b'* by detachable partition *b*, having deflector *e* formed thereon, the propeller *d*, pivoted in the chamber *b'* and detachable with the partition, with squared axle projected through the partition, the oil-pocket *k*, secured detachably within the chamber *a'* by screws *k'* and provided with an oil-inlet *n* and discharge-holes *g*, the distributer having its upper pivot supported in the oil-pocket and its lower end upon the propeller-axle, the deflector *t* at the outlet end of the chamber *b'*, and the nozzle *c* for directing the blast into both chambers, the whole arranged and operated substantially as herein set forth.

448,408. SAND AND GRAVEL HEATER. EDWARD H. CALLAWAY, New York, N. Y., assignor of one-half to Geo. W. Sharer, Philadelphia, Pa. Filed Sept. 9, 1889. Serial No. 323,347. (No model.)



Claim.—1. In a sand-drier, the combination of a furnace, a drying-chamber having inclined side walls, a vertical flue or chamber A^2 at the rear end of the drying-chamber, a flue connecting the furnace and said vertical flue and located between the lower ends of the side walls, a vertical flue or chamber A^3 at the rear of the furnace, and flues connecting the froot and vertical flues or chambers and arranged in substantially a wedge-shaped form between the inclined side walls.

2. In a sand-drier, the combination of a furnace, a drying-chamber having inclined side walls, a vertical flue or chamber A^2 at the rear end of the drying-chamber, a flue connecting the furnace and said vertical flue or chamber and located between the lower ends of

the side walls, a vertical flue or chamber A^1 at the rear end of the furnace immediately over the connecting flue, and flues connecting the front and vertical flues or chambers and arranged in substantially a wedge-shaped form between the inclined side walls.

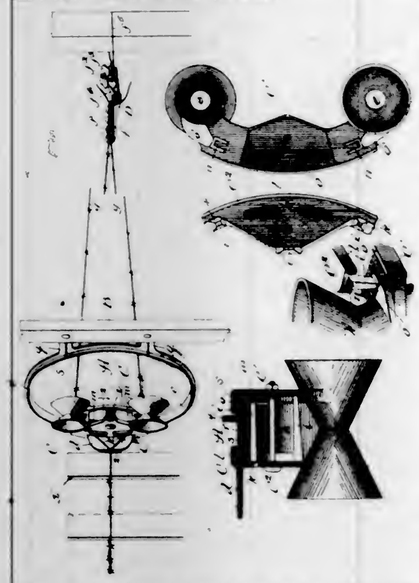
3. In a sand-drier, the combination of a furnace, a drying-chamber having inclined side walls, a vertical flue or chamber A^1 at the rear end of the drying-chamber, a flue having an inclined part in the rear of the furnace connecting the latter with the said vertical flue and located between the lower ends of the side walls, a vertical flue A^2 at the rear end of the furnace and having an inclined bottom which serves as the top of the inclined part of the main flue, and flues connecting the front and rear flues and arranged in substantially a wedge-shaped form between the inclined side walls.

448,409. NAIL-FILE FOR TOILET USE. ISABEL CASSIDY, New York, N. Y., assignor to the London Toilet Bazar Company, same place. Filed Aug. 30, 1890. Serial No. 363,501. (No model.)



Claim.—As an improved article of manufacture, the herein-described nail-file, composed of the metallic blade A and integral handle B, said blade being curved and having its faces and convex and concave edges formed with file-surfaces, those upon the edge projecting from the faces thereof and the end formed centrally with projecting screw-threaded extension E, and a tapered ivory tip G, having screw-threaded opening F to receive said extension, said tip completing the contour of the edges and faces of the blade, substantially as shown and described.

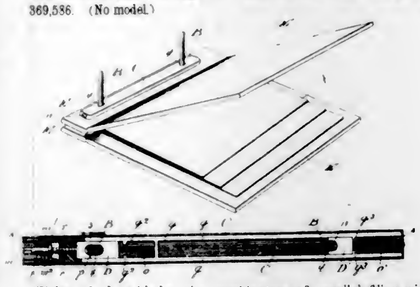
448,410. HAND FENCE-MACHINE. MATTHEW F. CONNETT, Jr., Davenport, Iowa, assignor to Lewis J. Brown, Nathan W. Warren, Porter H. Blanchard, and Theodore W. Harford, all of same place. Filed Jan. 5, 1891. Serial No. 376,785. (No model.)



Claim.—1. In a fence-machine, the combination, with the guide-ring A, having the supporting-lugs *q*, of a twister C, in two parts bolted together, mounted to travel on the guide-ring, and having inwardly-projecting segmental rims overlapping the edges of the outer surface of the guide-ring and projections on their inner faces overlapping the edges of the inner surface of the guide-ring, lugs upon one of the said parts extending against the other part, and one or more passages through the twister for the wire to be twisted, substantially as and for the purpose set forth.

2. In combination, the guide-ring A, operating-bar B, tension device D, and a twister C, comprising two parts C' and C^2, embracing the edges of the guide-ring and held in fixed relation with each other by intervening lugs and a bolt *h*, one or more bell-mouthed passages through the twister for the wire to be twisted, and a laterally-projecting lip *d* on the rim of the part C^2, substantially as and for the purpose set forth.

448,411. ORDER-SHEET BINDER. ROBERT J. COPELAND and ALBERT E. CHATTERSON, Chicago, Ill. Filed Oct. 28, 1890. Serial No. 369,536. (No model.)



Claim.—1. In a binder, the combination of parallel filing-wires and a removable hollow bar C, adjustable upon the wires and provided internally with locking mechanism to engage the wires, substantially as described.

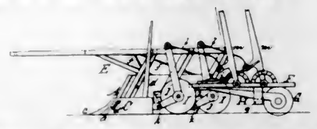
2. In a binder, the combination of parallel filing-wires, a removable hollow bar C, adjustable upon the wires and provided internally with locking mechanism to engage the wires, and a removable key for the locking mechanism, substantially as described.

3. In a binder, the combination of parallel filing-wires, a removable hollow bar provided with openings through it to receive the filing-wires, and locking mechanism in the hollow bar to engage the filing-wires, comprising sliding blocks provided with engaging edges, and means for operating the locking mechanism from outside the hollow bar to cause it to engage and release the filing-wires at will, substantially as described.

4. In a binder, the combination of parallel filing-wires, a removable hollow bar provided with openings through it to receive the filing-wires, locking mechanism in the hollow bar to engage the filing-wires, and operating means for the locking mechanism at one end of the hollow bar, substantially as described.

5. In a binder, the combination of parallel filing-wires, and a removable locking-bar comprising a case C, provided with openings through it to receive the filing-wires, a sliding bar C' in the case having a block D' toward one end, provided with an engaging edge *n* for one filing-wire, a head *r* at its opposite end, provided with a threaded opening *r'* through it, and a recess adjacent to the head, a loose sliding block D in the said recess, having an engaging edge for the other filing-wire, and a set-screw *l*, extending through the threaded opening *r'*, bearing at one end against the block D and squared at its opposite end to receive a key, substantially as described.

448,412. ROAD-SCRAPER. WILLIAM H. CRITTENDEN, Belden, Ohio. Filed Oct. 30, 1890. Serial No. 369,802. (No model.)



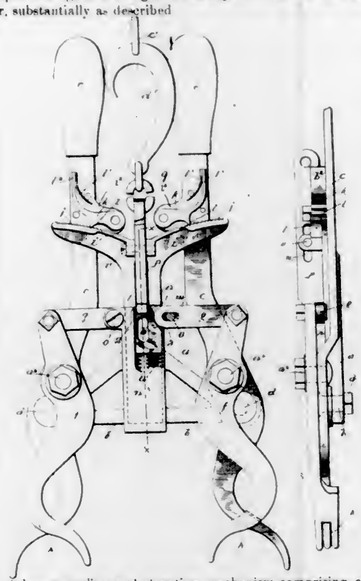
Claim.—1. In road-scrapers, the combination of the cast strip *a*, the board A, and the steel strip *a'*, covering the front surface of said board and cast strip, the same being securely bolted together, in the manner and for the purpose specified.

2. The adjustable lining-wheel G, in combination with the curved point c, for the purpose of steering the apparatus and controlling the side draft, each part being constructed in the manner specified.

448,413. SLAUGHTERING APPARATUS. THEODORE H. CURTIS, Cleveland, Ohio. Filed Oct. 28, 1890. Serial No. 369,580. (No model.)

Claim.—1. A device for the purpose mentioned, having two lever-grips held a fixed distance apart.

2. A hog grappling and elevating mechanism comprising the two pivoted lever grips or grapples so arranged and positively connected or secured together as to be rigidly held a fixed distance apart when locked upon the legs of the hog, and thereby holding said legs rigidly together, substantially as described.



3. A hog grappling and elevating mechanism comprising a pair of grapples or grips, positive non-flexible connections between said grapples, and a pair of operating levers or handles, each grip having but one of said operating levers or handles, whereby one man can operate both grips, and the grips will rigidly hold the legs of the hog.

4. In a hog grappling and elevating mechanism, the combination of the two grapples, each having a single operating lever or handle, and positive locking means for said grapples, substantially as described.

5. In a hog grappling and elevating mechanism, the combination of the two grapples or grips, rigid connections between said grips, positive locking means therefor, and the single elevating chain or connection for supporting both grips, said connection being connected to the grips independent of said locking means and the operating-levers of the grips.

6. In a hog grappling and elevating mechanism, the combination of the two grapples or grips, rigid connections between the grips, two operating levers or handles, and the elevating chain or connection attached to the connections between said grips independent of said operating-levers.

7. In a hog grappling and elevating mechanism, a lever-grip, the outer ends of the grip-levers being flared or bent outwardly and made to overlap when closed, as set forth.

8. The combination, with a connecting-frame, of two lever-grips pivoted to and fixedly connected thereby, substantially as described.

9. In a device for the purpose mentioned, a frame, in combination with a grip composed of levers of two different classes, one lever being pivoted to the frame and pivoted to and operating the other, substantially as described.

10. A hog-grappling mechanism comprising, in combination, the two positively and fixedly connected lever-grips, each having a single operating-lever, whereby one man can operate the two grips, substantially as described.

11. In combination, a rigid frame to which the elevating-chain is connected and the grips pivoted thereto and having two operating-levers, substantially as described.

12. In a device for the purpose mentioned, one or more grips and independent locking means for each grip, whereby each grip can be independently locked at any position or released, substantially as described.

13. The grips composed of levers, in combination with a separate independent locking-dog for the operating-lever of each grip and a frame connecting said grips, and with which said dogs engage to lock the grips.

14. In combination, the frame having ratchet-teeth, lever-grips carried by the frame, each having an operating-lever, and pivoted dogs carried by said levers to mesh with said teeth and lock the grips.

15. A grip mounted on a frame and having a swinging operating-lever, and a pivoted spring locking-dog carried by said lever, arranged to engage the frame and lock the lever and be operated by the thumb to release the lever.

16. A hog grappling and elevating mechanism comprising a pair of lever-grips, grapples, or other means to grasp and hold both hind legs of a hog held a fixed distance apart when closed and locked upon the legs of the hog, substantially as described.

17. In combination, a frame, a pair of grips composed of levers, and a movable bolt mounted in the frame and to which the elevating chain is attached, said bolt being arranged when upholding the hog to tighten said grips and when the frame is lifted thereon to partially open the grips, substantially as described.

18. In combination, the frame having a longitudinal opening, the bolt longitudinally movable therein and to which the elevating-chain is attached, said bolt having steps or inclined surfaces, as set forth, and the grips composed of the levers, one lever of each grip having a link, as set forth, to bear against said bolt and be operated by the steps or inclined faces thereof, substantially as described.

19. In combination, a frame and a grip carried thereby, consisting of an operating-lever fulcrumed on the frame, one end forming a handle and the other a grasping end, and another short lever at one end movably fulcrumed to the frame, the other end forming a grasping end, said lever being pivoted between its ends on the operating-lever, substantially as described.

20. In a catching and elevating apparatus, a pair of grips or grapples arranged so as to be held a fixed distance apart when locked and to grip both hind legs of a hog and prevent independent movement thereof and locking means to hold said grapples rigidly closed or locked, substantially as described.

21. In a hog grappling and elevating mechanism, the combination of the two grapples and positive connections between the same so arranged and constructed that the grips are fixedly held a determined distance apart when grappled upon the hog's legs, substantially as described.

22. A hog-catching tool consisting of the double grip or grapple the grapples of which are relatively fixed, substantially as and for the purposes set forth.

23. A hog-catching tool consisting of the double grapple and the two operating-levers to close and open the grapples of said tool, substantially as described.

24. A hog-catching tool consisting of the double grapple, the operating-levers to close and open the grapples thereof, and locking means to lock the grapples upon the legs of the hog, substantially as described.

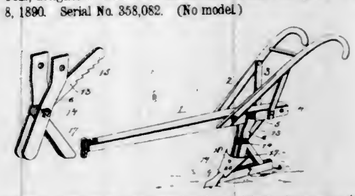
25. A hog-catching tool consisting of a rigid support and two grapples carried thereon, substantially as described.

26. A hog-catching tool consisting of two grapples fixedly secured together and incapable of relative independent movement and a single supporting or elevating chain or connection, substantially as described.

27. A hog-catching tool composed of two fixed grapples arranged and constructed to grasp both hind legs of a hog and rigidly hold them against independent movement and means for opening and closing said grapples, substantially as described.

28. A hog-catching tool consisting of two grapples, means for operating the same, and positive connections or a non-flexible support between the grapples, substantially as described.

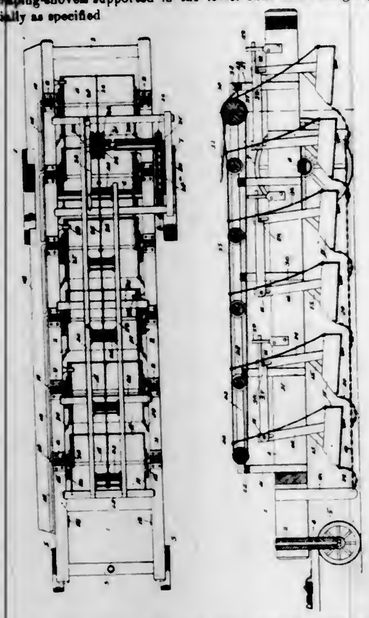
448,414. COMBINATION-PLOW. WILLIAM H. DAVIS, Chapel Hill, Tex., assignor of one-half to Robert L. Adams, same place. Filed July 8, 1890. Serial No. 358,082. (No model.)



Claim.—In a plow, the combination, with the beam provided near its rear end with a slot, of a slotted plate thereunder, a pivoted button 16, secured at one side of the slotted plate, the depending standards 6, the shoe 7, the mold-board, and the inclined brace 13, secured to the standards and toothed to engage the edge of the slot and bound against and locked by the button, substantially as specified.

448,415. SCRAPING AND GRADING MACHINE. JARET W. DENTON, Henderson, Ky. Filed June 21, 1890. Serial No. 356,273. (No model.)

Claim.—1. In a road-scraper, the combination, with an oblong frame, of a series of shafts mounted therein and terminating at their outer ends in operating-levers, a series of U-shaped hangers mounted upon the shafts upon centrally-cranked portions thereof, and a series of scraping-shovels supported in the lower ends of the hangers, substantially as specified



2. In a road-scraper, the combination, with an oblong frame, of a series of shafts having centrally-cranked portions journaled in the frame and having their ends bent at a right angle to the cranked portion to form an operating-lever, a shelf or rest secured to one of the sides of the frame for the support of the levers, U-shaped suspension-hangers loosely mounted in the cranked portions of the shafts, and scraping-shovels secured in each of said hangers, substantially as specified.

3. In a road-scraper, the combination, with an oblong frame provided at intervals with opposite pairs of bearings, of a series of shafts mounted in the bearings and having centrally-cranked portions and terminating at their outer ends in operating arms or levers, U-shaped hangers loosely suspended from the centrally-cranked portions and provided with forwardly-disposed brackets near their lower ends, a series of scraping-shovels mounted in the brackets, draft-chains extending longitudinally along the sides of the shovels, depending standards for supporting the same, and a series of pairs of short chains connected at their ends to the front ends of the shovels and at their opposite ends to the draft-chains, substantially as specified.

4. In a road-scraper, the combination, with an oblong frame provided at intervals with bearings, of a series of shafts mounted in the bearings, cranked between their bearings, and provided with an operating-arm at one side of their bearings, U-shaped suspension-straps loosely mounted on the cranked portions, scraping-shovels pivoted in the straps, and push-bars pivotally mounted upon each of the shafts and rearwardly-extending and loosely connected with the next succeeding shaft, substantially as specified.

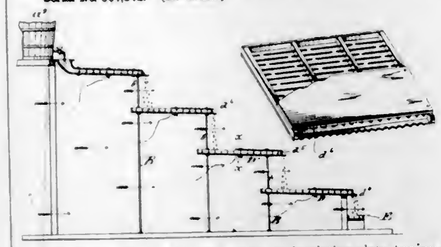
5. In a road-scraper, the combination, with an oblong frame having a series of pairs of bearings, of a series of shafts mounted in the bearings and having centrally-cranked portions between the bearings and outside of the same, terminating in arms at substantially right angles to the cranked portions, guide-brackets located in rear of each of the shafts, and push-bars provided with shoulders pivoted to each of said shafts and projecting in rear and taking against the next succeeding shaft and mounted in the brackets, substantially as specified.

6. In a road-scraping machine, the combination, with an oblong frame and a series of suspension-hangers provided with pivoted scraping-blades, of a series of pulleys mounted above and corresponding with the scraper or shovels, a drum, the shaft of the same, driving connections between the shaft and the ground-wheels of the machine, an endless belt or cable wound upon the drum and passing over and under each of the pulleys, a series of cables connecting the endless belt or cable with each of the shovels at their rear ends, and means for throwing the drum into and out of operative connection with the ground-wheel, substantially as specified.

7. In a road-scraper, the combination, with the oblong frame, the series of U-shaped suspension-hangers, and the scraping-shovels pivoted thereto, of the series of pulleys, an endless chain connecting the same and short chains connecting said chain to the shovels, and means for operating said endless chain and simultaneously tilting the shovels, substantially as specified.

8. In a road-scraping machine, the combination, with the oblong frame, of the series of crank-shafts, the U-shaped suspension-hangers provided at their front edges with brackets, and the shovels pivoted in the brackets in front of their centers, the standards 21, cross-bars 22, the rear two of which are extended beyond the standards, the connecting-bars 23 and 26, the axle 6, ground-wheels 7, one of which is provided with the sprocket-gear 8, the loose pulleys 24, arranged over the shovels in the side bars 23, the shaft 27, the gear-wheel 28, the chain 34, connecting the gear-wheel with the sprocket-gear 8, the drum 30 for engaging the toothed sleeve 29 of the sprocket 28, and the grooved brake-pulley 32 and the lever 33 for shifting the same, substantially as specified.

448,416. **WATER-PURIFIER.** VERNON M. DORSEY, Washington, D. C., assignor to Geo. G. Schroeder, same place. Filed Oct. 9, 1890. Serial No. 367,572. (No model.)



Claim.—1. The combination, with an insulating-plate having a dam upon its lower edge, of side bars upon the side of the said plates, and conducting-points projecting inwardly from the said side bars, the said conducting-points upon the opposite side bars being connected with the opposite poles of a source of electricity, as described.

2. The combination, with an insulating-plate having a chamfered lower edge and a dam above the said edge, of bars upon the side of the said plates, and connecting-points projecting inwardly from the said side bars, the said conducting-points upon the opposite side bars being connected with the opposite poles of a source of electricity, as described.

3. The combination, with two insulating-plates, the one above the other, of a dam at the lower edges of the said plates, bars at the side of the said plates, longitudinal partitions between the said plates, and conducting-points projecting from the said partitions, and side bars, the said side bars and partitions having binding-posts thereon, as described.

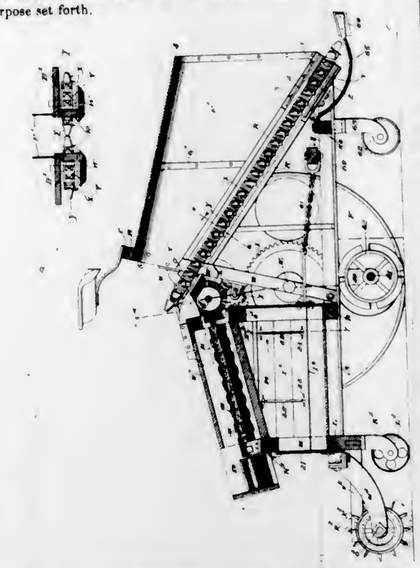
4. The process of purifying water, which consists in passing a current of electricity therethrough and in oxidizing the organic impurities in said water by causing it to fall over a plate having a chamfered edge, and in passing a current of oxygen through the spray thus formed, as described.

448,417. **CORN HARVESTER AND HUSKER.** JOHN P. DUNN, Beatrice, Nebr., assignor to J. E. Field, Fred Lynde, S. T. Huebner, C. T. White, S. W. Wadsworth, W. H. Stryker, Fred Drom, T. H. Fitton, John F. Huntling, Dan Althen, W. A. Watson, and Lewis Achenback. Filed May 16, 1890. Serial No. 352,002. (No model.)

Claim.—1. In a corn-harvester, the combination, with the frame-work and the stripping mechanism carried thereby, of brackets swiveled in said frame-work at each side of the stripping mechanism, wheels journaled in said brackets and bearing on the ground, bars extending forwardly from said brackets, tongues connected to said bars, and whiffletrees, also connected to the frame-work, substantially as described.

2. In a corn-harvester, the combination, with a rotating shaft carrying beveled gear-wheels approximately above the center of the machine, of stripping-belts carrying knives traveling upon rollers journaled in the frame-work, gear-wheels upon the rear rollers meshing with said beveled gear-wheels, husking-rollers journaled in the frame-work in rear of said shaft, and gear-wheels on said rollers, also meshing with said beveled gear-wheels, substantially as described.

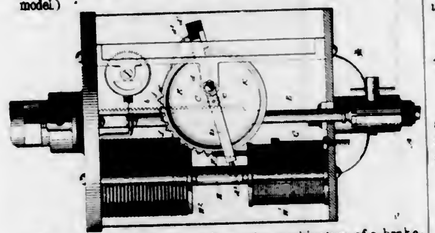
3. In a corn-harvester, the combination, with the stripping and husking mechanisms and means for driving them, of a box below the husking mechanism having vertical slots in its sides, spring-clips at the ends of said slots, and a door at the rear end of said box, as and for the purpose set forth.



4. In a corn-harvester, the combination, with the inclined beams R of the frame-work, the brackets U, pulleys V thereon, plates 2, adjustably connected by slots and set-screws 3 to said beams, shafts 1 between said plates, wheels T on said shafts, and stripping-chains passing around said wheels V and T, of husking-rollers R' S', journaled in the frame-work in rear of the stripping mechanism, a rotating shaft D^3, having beveled gears F^3, driving both the stripping and husking mechanisms, a pulley on the extended end 51 of one of the husking-rollers, and a laterally-traveling belt 50, passing around said pulley, substantially as described.

5. In a corn-harvester, the combination, with the spindles, the main wheels journaled thereon, the gear-wheels connected to said main wheels, stub-shafts journaled in the frame, idle-gears thereon meshing with said gears on the main wheels, a shaft journaled in the frame and carrying ratchet-wheels, and gear-wheels journaled on said shaft, meshing with said idle wheels and carrying pawls normally engaging said ratchet-wheels, in combination with stripping mechanism, husking mechanism, and delivering mechanism driven by said shaft, all as and for the purpose hereinbefore set forth.

448,418. **ELECTRIC-ARC LAMP.** JAMES W. EASTON, New York, N. Y., assignor to P. Minturn Smith, Plainfield, N. J., and William D. Perry, Brooklyn, N. Y. Filed Mar. 20, 1890. Serial No. 344,592. (No model.)

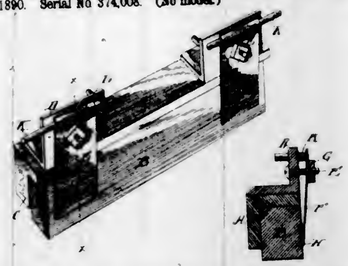


Claim.—1. In an electric-arc lamp, the combination of a brake-wheel controlling the movement of the carbon-rod and a spiral spring bearing against the periphery of said wheel, one end of said spring being secured to a fixed portion of the lamp or frame and the other end being connected with the core or armature of a solenoid or magnet, whereby the tension of said spring is varied with changes in the resistance of the lamp-circuit, substantially as and for the purposes set forth.

2. In an electric-arc lamp, the combination of the carbon-rod provided with a rack, a pinion adapted to engage therewith, a brake-wheel rigidly secured to the shaft carrying said pinion, a spiral spring bearing against the periphery of said wheel, and means, substantially as shown, for varying the length of said spring in accordance with the resistance of the lamp-circuit, substantially as shown and described.

3. In an electric-arc lamp, the combination of the carbon-rod, a rack secured thereto, a pinion adapted to engage with said rack, a wheel arranged to revolve with said pinion, a spiral spring bearing against the periphery of said wheel, a lever connected with said spring, a differential solenoid the core of which is connected with said lever, and mechanism, substantially as shown, for adjusting the tension of said spring, substantially as and for the purposes set forth.

448,419. **RAIL-BRAKE.** WILLIAM H. ELMOND, Kansas City, Mo., assignor of one-half to Martin A. Pennington, same place. Filed Dec. 9, 1890. Serial No. 374,008. (No model.)



Claim.—1. In a rail-brake, the combination, with a brake-shoe and a brake-sole, of the locking-plates, and the wedging-levers operating between the brake-shoe and the locking-plates, substantially as described, for the purpose specified.

2. In a rail-brake, the combination of a brake-shoe provided with the lugs, a brake-sole and the locking-plates connected to the lugs and engaging the brake-sole, substantially as shown and described.

3. In a rail-brake, the combination of a brake-shoe provided with the lugs, the brake-sole, the locking-plates detachably secured to the lugs and contacting at one end with the brake-sole, and the wedging-lever pivoted in the lugs and operating between the lugs and the clamping-plate, all combined and arranged as and for the purpose described.

4. In a rail-brake, the combination of a brake-shoe, the brake-sole fitted in the brake-shoe, the connecting-plates intermediate of the brake-shoe and the brake-sole and provided at one end with the tooth or biting-edge and at the other with a socket, and the wedging-levers pivoted on the brake-shoe and operating between the shoe and the plates, substantially as shown and described, for the purpose specified.

5. In a rail-brake, the combination, with an angular brake-shoe provided with the end pieces and the upwardly-extending lugs, of a brake-sole fitted within the brake-shoe, the bolts E, passing through the lugs of the brake-shoe, the locking-plates detachably fitted on said bolts and each provided at one end with the inwardly-extending biting-edge and at the other end with the socket L, and the wedging-levers pivoted in the lugs of the brake-shoe and operating between such lugs and the locking-plates, as and for the purpose specified, substantially as shown and described.

448,420. **ANTISEPTIC COMPOSITION FOR TREATING LEATHER.** JULIUS ENGELKE, Cincinnati, Ohio. Filed Aug. 19, 1890. Serial No. 362,436. (No specimens.)

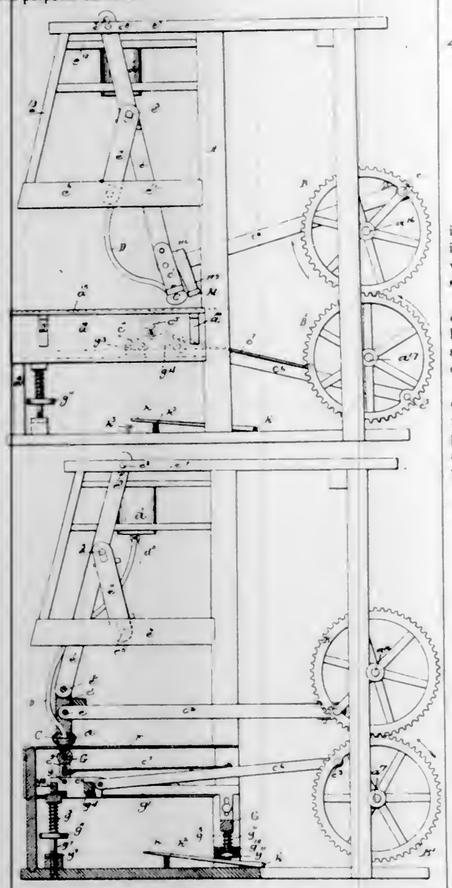
Claim.—An antiseptic tanning composition applied as described, and consisting of one part of corrosive sublimate, eight parts of phenol, and one part of salicylic acid, all dissolved in sixty parts of water, substantially as described.

448,421. **WASHING COMPOUND.** HUGH ERVIN, Chicago, Ill. Filed July 14, 1890. Serial No. 358,710. (No specimens.)

Claim.—A washing compound consisting of a mixture of the oils of camphor, sassafras, and mirbane, and a refined hydrocarbon oil, in about the proportions substantially as specified.

448,422. **LEATHER-WORKING MACHINE.** THOMAS F. GAFFNEY and THOMAS C. DAWSON, Lynn, Mass. Filed Dec. 22, 1890. Serial No. 375,424. (No model.)

Claim.—1. The combination, in a machine of the character specified, of the flexible bed F, its traversing yielding bed support or roll G, and the reciprocating tool C, having the forward and backward movement in relation to the bed support or roll specified, as and for the purposes described



2 The combination, in a machine of the character specified, of the flexible bed F, the hinged bed support or roll G, its carriage c^4, the crank c^5, pitman c^6, connecting the crank with the carriage c^4, the rod c^7, connecting the pitman with the hinged roll-support c^8, with the reciprocating tool C, its support c', hinged to a swinging bar c', held at its upper end, as specified, its pivoted supports c^4, the crank c, and the pitman c^8, connecting the crank with the hinged tool-support, substantially as described.

3. The combination of the vibrating tool C, having the movements specified, the flexible bed F, the traveling bed support or roll G, the roll-carriage c^4, and yielding ways for the same, substantially as described.

4. The combination of the vibrating tool C, having the movements specified, the flexible bed F, the yielding bed-supporting roll G, and the traversing yielding bed supporting the roll G, substantially as described.

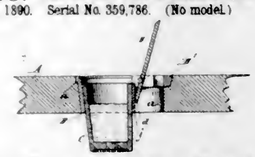
5. The combination of vibrating rubbing-tool C, having the movements specified, the flexible bed F, and the adjustable bed-supporting roll G, substantially as described.

6. The combination of the vibrating tool C, having the movements specified, the flexible bed F, the traversing bed-supporting roll G, and the lever for depressing said roll, substantially as described.

7. The combination of the vibrating tool C, having the movements specified, the flexible bed F, the traversing bed-supporting roll G, and the lever for depressing said roll, and the latch for locking or holding the lever and roll depressed, substantially as described.

8. The combination of the vibrating tool C, having the movements specified, the flexible bed F, the supplementary bed a^{18}, the traveling bed-supporting roll G, and the auxiliary rubbing or finishing tool M, having the movements of the vibrating tool C and connected therewith or with its operating mechanism, as and for the purposes described.

448,423. **INK-WELL.** JOEL G. GARRETSON, Buffalo, N. Y. Filed July 24, 1890. Serial No. 359,786. (No model.)

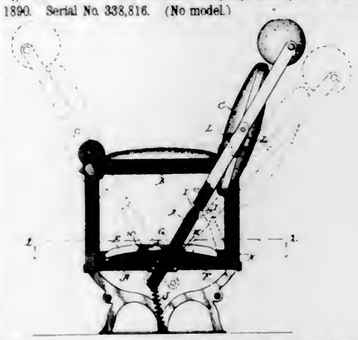


Claim.—1. The combination, with the frame of the ink-well having vertical holes provided with horizontal pivot-seats, of a cover having horizontal pivots arranged in said seats, and rivets secured in said vertical holes and having heads which confine the pivots in their seats, substantially as set forth.

2. The combination, with the frame of the ink-well having beveled vertical holes provided with horizontal pivot-seats, of a cover having horizontal pivots arranged in said seats and rivets secured in said vertical holes and having beveled heads which overlap the pivots of the cover, substantially as set forth.

3. The combination, with the frame or casing of the ink-well, of a cover attached to the casing by horizontal pivots, and provided in rear of its pivots with a ring or extension, and a guard or protector-plate arranged within the casing across the rear side of the ink-cup and receiving the impact of the cover-extension, substantially as set forth.

448,424. **CAR-SEAT.** ESSINGTON N. GILFILLAN, Chicago, Ill., assignor to the Johnston Car Seat Company, same place. Filed Jan. 31, 1890. Serial No. 338,816. (No model.)



Claim.—1. In a car-seat, the combination, with the back and the pivoted supporting-bars thereof, of an actuating-shaft journaled in the seat-frame and carrying at each end thereof crank-arms to engage and act as stops for the supporting-bars, substantially as described.

2. In a car-seat, the combination, with the back and the supporting-bars thereof pivoted to the seat-frame at its center of width, of a pair of actuating-shafts journaled in the seat-frame, one on either side of the center of said frame, and carrying at each end thereof crank-arms which alternately engage and act as stops for the supporting-bars, substantially as described.

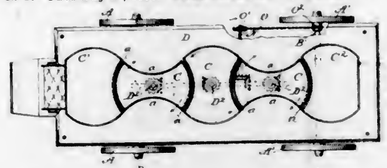
3. In a car-seat, the combination, with the back and the supporting-bars thereof, of a pair of actuating-shafts journaled in the seat-frame, one at each side of the center of said frame and carrying at each end thereof crank-arms, each of which arms is provided with a shoulder against which the supporting-bars bear, one of the crank-arms on each of said shafts terminating in a handle for simultaneously manipulating both crank-arms of the shaft, substantially as described.

4. In a car-seat, the combination, with the back, the pivoted supporting-bars thereof, and a spring for normally maintaining said bars in an upright position, of a spring-actuated shaft journaled in the seat-frame and carrying crank-arms at each end thereof, respectively engaging said supporting-bars, one of said crank-arms terminating in a handle, substantially as described.

5. In a car-seat, the combination, with the back, the pivoted supporting-bars thereof, and a spring for normally maintaining said bars in an upright position, of spring-actuated shafts journaled in the seat-frame and carrying crank-arms at each end thereof, respectively engaging said supporting-bars, one crank-arm on each shaft terminating in a handle, substantially as described

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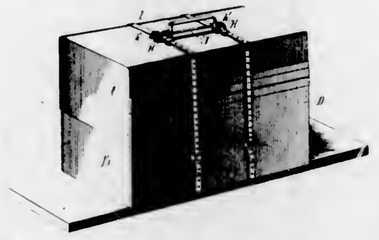
448,425. **ADVERTISING-VEHICLE.** THOMAS GILL, New York, N. Y. Filed May 31, 1890. Serial No. 353,754. (No model.)



Claim.—1. The combination, in an advertising-vehicle, with each other and with a running-gear therefor, of a series of vertical revolving standards driven by the movement of the running-gear, each divided peripherally into four longitudinal sections alternately convex and concave in cross-section and mounted to intermesh as they revolve, substantially in the manner and for the purpose herein set forth.

2. The combination, in an advertising-vehicle, of a running-gear, a platform mounted thereon, a series of two or more vertical standards mounted to revolve in close proximity upon said platform, each divided peripherally into four longitudinal sections alternately convex and concave in cross-section and adjusted to intermesh as they revolve, a driving-shaft geared to each of said standards and to the running-gear to be driven by the latter, and fixed standards corresponding substantially in form with the revolving standards placed at each end of the series, one or both having internal compartments and doors opening therein, substantially in the manner and for the purpose herein set forth.

448,426. **TELESCOPIC SATCHEL HARNESS.** EDWARD W. GILMAN, Madison, Wis. Filed Aug. 23, 1890. Serial No. 362,819. (No model.)



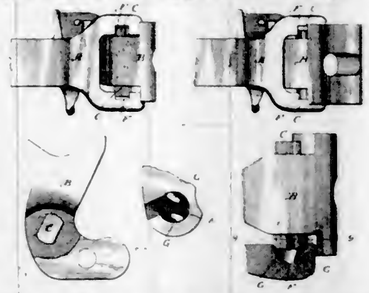
Claim.—1. In grips, the combination of a lower part provided with trays inserted in and withdrawn from the side or end, an upper part fitting over and removable from the top of the lower part, and hinged flies to inclose the trays and prevent their removal until the flies are turned back on their hinges, substantially as described

2. In grips, the combination of a lower part provided with trays inserted in and withdrawn from the side or end and having compartments above the trays opening to the top, an upper part fitting over and removable from the top of the lower part and covering the compartments above the trays, and hinged flies to inclose the trays and prevent their removal until the flies are turned back on their hinges, substantially as described

3. As a fastening device for grips and other articles, the combination of two handle attachments provided with upwardly-projecting ears having outwardly-extending edge or edges, a handle adapted to swing to the side connected to the ears, and straps connected at their end or ends to the rod or rods of a length to extend from one ear to the other and adapted to lie against the ears and under their outwardly-extending edge or edges, substantially as described

4 As a fastening device for grips, the combination of two handle attachments connected to one side of the grip top and provided with upwardly-projecting ears having an outwardly-extending edge, a companion piece connected to the other side of the grip top and extended across the top between and beyond the ears and turned up at its edge, a handle adapted to swing to the side connected to the ears, and straps connected at one end to the handle attachments and at the other to a rod of a length to extend from one ear to the other and adapted to lie against the ears and under their outwardly-extending edge and to hold the companion piece from being turned back, substantially as described.

448,427. **CAR-COUPLING.** CHARLES E. HAYNES, Minneapolis, Minn. Filed Nov. 4, 1890. Serial No. 370,271. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head provided with bearing-sockets, of a coupling-jaw, trunnions thereon working in said sockets, and inclined end bearings for the trunnion in the lower socket, substantially as described.

2. In a car-coupler, the combination, with the draw-head provided with bearing-sockets, the lower one of which has oppositely-inclined bearings at the sides thereof, of a coupling-jaw, oblong trunnions thereon working in said sockets, the lower one of which rides said inclined bearings and is so arranged as to rest near the top of the inclines when the jaw is closed, substantially as described.

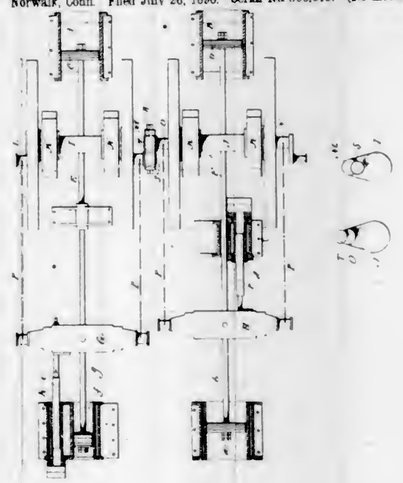
3. In a car-coupler, the combination, with a draw-head provided with bearing-sockets, the lower end of which has oppositely-inclined bearings therein, of a coupling-jaw, oblong trunnions thereon working in said sockets, the lower one of which rides said inclined bearings and is so arranged as to rest near the top of the inclines when the jaw is closed, and obliquely-arranged slots or channels at one side of the draw-head leading into the bearing-sockets thereof, said slots being of substantially the same diameter as the width of said trunnions, but less than the length thereof, substantially as described.

448,428. **BUTTON.** FRANCIS F. HEILBORN, Plainville, Mass. Filed Feb. 20, 1889. Serial No. 300,588. (No model.)



Claim.—In a button, the combination, with the head A and the attached hollow post B, provided with the openings *b b*, of the spring *d*, sliding piece *c*, and the unequal loops C C', pivoted to the post B, one within the other, and provided with the angular ends *f*, adapted to bear against the end of the piece *c*, substantially as described.

448,429. **DUPLEX STEAM-ENGINE.** EBENEZER HILL, South Norwalk, Conn. Filed July 26, 1890. Serial No. 360,015. (No model.)



Claim.—1. A steam-engine composed of two independent engines arranged side by side, the shafts of the two engines being in axial line the one with the other, the adjacent ends of the said shafts each provided with a crank, and each crank-pin constructed with a stud projecting from its end, the said studs of spherical shape, combined with a link constructed with bearings corresponding to and connecting the said spherical-shaped studs, substantially as described.

2. A steam-engine composed of two organized engines arranged side by side, the driving-shafts of the two engines being in axial line the one with the other, the adjacent ends of the shafts provided each with a crank, and the crank-pins each constructed with a stud projecting from its onter end, the said two studs traveling with the cranks and in the same plane with each other, one of said studs arranged nearer the center of motion than the other to at least the extent of the diameter of one of the studs, and a link connecting the said two studs, but removable therefrom, substantially as described.

448,430. **ATTACHABLE SLEIGH-RUNNER.** JOHN E. HOBBS, North Berwick, and BARTON M. WENTWORTH, Berwick, Me.; said Wentworth assignor to said Hobbs. Filed Jan. 19, 1889. Serial No. 296,884. (No model.)



Claim.—1. As a new article of manufacture, a hub composed of a metal cylinder or sheath inclosing a hollow wooden core shorter than the sheath, shrunk and fastened into it near one end, substantially as set forth.

2. As a new article of manufacture, a hub composed of a metal cylinder or sheath with a hollow wooden core shrunk into it and having a vertically-adjustable axle-seat S in one end, substantially as set forth.

3. As a new article of manufacture, the duplex knee or brace M, formed of the upright wooden standard *d*, having bolted to it two steel sides flaring like the arms of a capital letter Y, with a concave crown D, and having the yoke *y y* passing through its foot, substantially as described.

4. The combination, with a sleigh-runner, of tie-bar F, duplex brace M, and concave crown D, substantially as described.

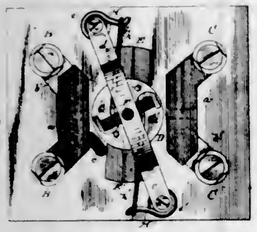
5. In a sleigh-runner, the combination of duplex brace or knee M, adjustable hub H, looped tie-bar F, and looped cap-bar C, substantially as described, and for the purposes set forth.

6. The combination, with a sleigh-runner for attachment to the axles of vehicles, of a cross-bar extending transversely across and beyond the cap-bar of the runner and connected therewith by one or more braces, carrying on its outer limb the hub H and on its inner the axle rest or seat S, and clips or loops to bind the hub to the cross-bar, substantially as described.

7. The combination, in an attachable sleigh-runner, of the longitudinally-adjustable hub H, with the looped cap-bar C, looped tie-bar F, and looped braces E E', with removable bolts or clips *b b b' b'*, substantially as described.

8. The combination, in an attachable sleigh-runner, of the longitudinally-adjustable hub H and the looped cap-bar C, the double truss I, and looped tie-bars F F' and E E', substantially as described.

448,431. **ELECTRIC SWITCH.** EDWARD H. JOHNSON, New York, N. Y. Filed Mar. 27, 1885. Serial No. 160,383. (No model.)



Claim.—1. A hand-switch for making and breaking an electric circuit having, in combination, a moving contact-piece, a spring connected with said moving contact-piece by a loose connection, and a free handle connected with such spring and acting by its movement to strain the spring and to release it without making or breaking the circuit, whereby the spring will then throw the moving contact-piece by direct spring action to the end of its movement, and the circuit will be made or broken by a spring-snap action, substantially as set forth.

2. A hand-switch for making and breaking an electric circuit having, in combination, a moving contact-piece, a spring connected with said moving contact-piece by a loose connection and adapted to throw it when strained and released by direct spring action to the end of its movement, and a free handle connected with such spring by a loose connection and acting by its movement to strain the spring and to release it without making or breaking the circuit, whereby the spring will then throw the moving contact-piece independent of the handle and the circuit will be made or broken by a spring-snap action, substantially as set forth.

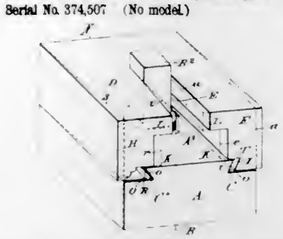
3. A hand-switch for making and breaking an electric circuit having, in combination, a pivoted contact-piece, a spring connected eccentrically thereto by a loose connection, and a free handle connected with such spring and adapted to move its bearing-point across the line of centers without making or breaking the circuit, whereby the spring will be strained and released and will move the contact-piece and make or break the circuit by a spring-snap action, substantially as set forth.

4. A hand-switch for making and breaking an electric circuit having, in combination, a pivoted contact-piece, a spring connected eccentrically thereto by a loose connection, and a free handle connected with such spring by a loose connection and adapted to move its bearing-point across the line of centers without making or breaking the circuit, whereby the spring will be strained and released and will move the contact-piece independent of the handle and make or break the circuit by a spring-snap action, substantially as set forth.

5. A double pole-switch having, in combination, two sets of stationary contacts, a contact-piece pivoted between them and having insulated metallic arms which bridge the contacts of the two sets by the turning movement of the pivoted contact-piece, and a spring-eccentric throwing such contact-piece in both directions, substantially as set forth.

6. In an electrical switch, the combination, with the pivoted contact-piece, of the lapping stationary contacts in different planes and the approaching stationary contacts in the same plane, substantially as and for the purpose set forth.

448,422. **NUT-LOCK.** FRANKLIN L. JONES, Columbia City, Ind., assignor of one-half to James B. Peabody, same place. Filed Dec. 12, 1890. Serial No. 374,507. (No model.)



Claim.—1. A nut-lock consisting of a nut, a rod or bolt screw-threaded and extending through said nut and squared or otherwise angularly shaped at its protruding upper end and adapted to fit in a slot formed in a locking-cap attachable to said nut, substantially as and for the purposes set forth.

2. The combination of a locking-cap compressible on a nut and against the squared end of a bolt extending through the nut and adapted to fit in a slot in said locking-cap, and a nut adapted to receive and retain said cap, substantially as set forth.

3. The combination of a locking-cap of malleable metal, a squared bolt adapted to fit in a slot in said locking-cap, the bolt screw-threaded and extending through the nut, and the raised wedge-shaped plane on the upper side of the said nut, and the cap adapted to fit thereon, substantially as set forth.

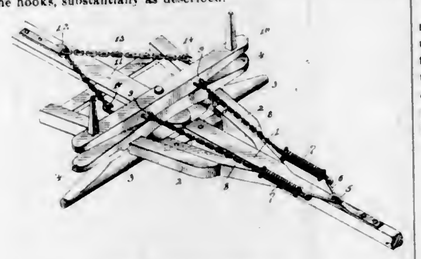
4. The combination of the nut, the plane formed thereon, and the locking-cap adapted to be compressed on and attached to said nut, as set forth.

5. The combination of the nut, the wedge-shaped plane formed thereon, the locking-cap, the slot in said cap, the two extensions of the wings of said cap, the squared end of the bolt extending through said slot, and the adjusting-space between the plane of the nut and said extensions, substantially as set forth.

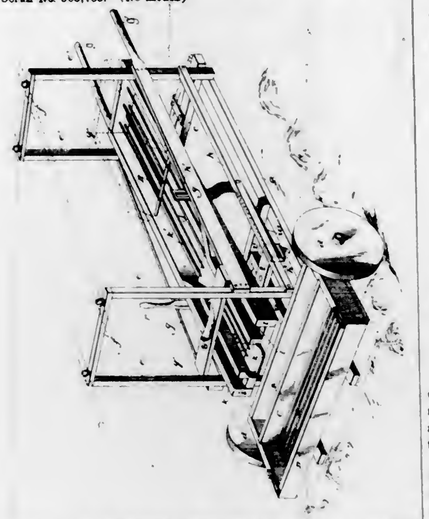
6. In a nut-lock, a compressible cap removably attached to the body of the nut and connected with the end of the bolt or rod on which said nut is screwed, in combination with the wings of the cap, the squared bolt, and the slot in the cap for securing the cap and nut together and thereby locking the nut, substantially as set forth.

448,433. **TONGUE-SUPPORT.** JAMES H. JORDAN and JAMES M. COOK, Mountain Home, Ark. Filed Nov. 4, 1890. Serial No. 370,314. (No model.)

Claim.—The combination, with the front axle, the hounds, the bolster provided on its front and rear faces with hooks arranged on opposite sides the pivotal point, of the tongue pivoted between the hounds and provided on its upper face with the hook 5, the reach having a similar hook 12, the chains 13, having their rear ends engaging the hook 12 of the reach and their front ends engaging the bolster-hooks, the yoke engaging the hook 5 of the tongue and provided with eyes, the springs secured to the eyes, and the chains 8, having their front ends attached to the springs and their rear ends engaging the hooks, substantially as described.



448,434. **MACHINE FOR SEPARATING AND ASSORTING POTATOES.** HORACE M. KEITH, Commerce, Mich. Filed Sept. 22, 1890. Serial No. 365,785. (No model.)



Claim.—1. In a machine for separating and sorting potatoes, the shaking platform having the short top vine-receiving screen E, the separating-screen *j*, the short end sorting-screen *m*, and the short under-end screen *p* of different size openings, in combination with the carrying-frame having a transverse box-receptacle extending beyond each side of the frame and having compartments arranged to receive the potatoes from the short end screens, as shown and described.

2. In a machine for separating and sorting potatoes, the combination of a separating-platform, a carrying-frame therefor, a seat upon said frame, a rocking foot-bar beneath the platform, and a bell-crank lever pivoted to said frame, to the platform, and to said foot-bar, for the purpose stated.

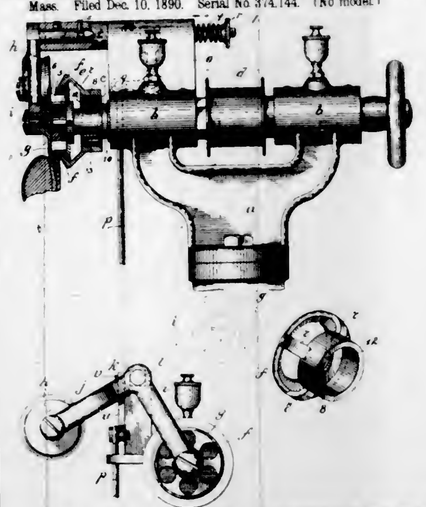
3. In a machine for separating and sorting potatoes, the combination of a separating-platform, a carrying-frame therefor, a seat upon said frame, a rocking foot-bar beneath the platform, a bell-crank lever pivoted to one side of said frame, to one side of said platform, and to one end of said foot-bar, and a hand-lever pivoted to the other side of said frame and to said platform, for the purpose stated.

4. In a machine for separating and sorting potatoes, the shaking platform having the separating-screen *j*, the inside boards *k k*, forming the side spaces *l l* within the platform, the coarse and fine screens *m p* between the inside boards, one above the other and the upper one on the same plane with the said screen *j*, in combination with a suitable box-receptacle for the sorted potatoes, and means for longitudinally shaking said screens, consisting of a foot-lever *t*, a bell-crank lever connecting said foot-lever, the shaking platform, and the frame, as shown and described.

5. In a machine for separating and sorting potatoes, the combination of the frame, the seat thereon, the shaking platform having the side stops *x* and the side spaces *l l*, the foot-lever *t* below the platform, and a bell-crank lever connecting the said foot-lever with the platform and the frame and having its foot-lever connected and weighted, for the purpose stated.

6. In a machine for separating and sorting potatoes, the combination of the frame constructed with sills, the wheel-supported axle upon the rear ends of the sills, the uprights and the shaft-bars secured thereto, the separating-platform suspended between said uprights, a transversely-arranged box of two compartments upon the rear ends of said sills, a seat upon the frame, a foot-lever arranged beneath the platform and connected to operate said platform, and stops *x* upon the latter, as shown and described.

448,435. **SOLE-FITTING MACHINE.** MYRON L. KEITH, Campello, Mass. Filed Dec. 10, 1890. Serial No. 374,144. (No model.)



Claim.—1. The combination of a rotary cutter and two guards, one formed to fit the rand-crease of the fore part and the other the rand-crease of the heel of the boot or shoe, both mounted on a movable support, whereby either guard is adapted to be placed in operative relation to the cutter, as set forth.

2. The combination of a rotary cutter, two guards, one formed to fit the rand-crease of the fore part and the other the rand-crease of the heel of a boot or shoe, both mounted on a movable support, whereby either guard is adapted to be placed in operative relation to the cutter, and a spring-pressed rest arranged to press the work toward the operative guard, as set forth.

3. The combination of a rotary cutter, the two guards formed to enter the rand-crease at the fore part and heel, respectively, the connected arms supporting said guards, and the stud or shaft supporting said arms and mounted to both rotate and move endwise in a fixed bearing, whereby the guards may be moved edgewise into and out of coincidence with the cutter and sidewise to enable the operating-guard to overlap the cutter at its margin, as set forth.

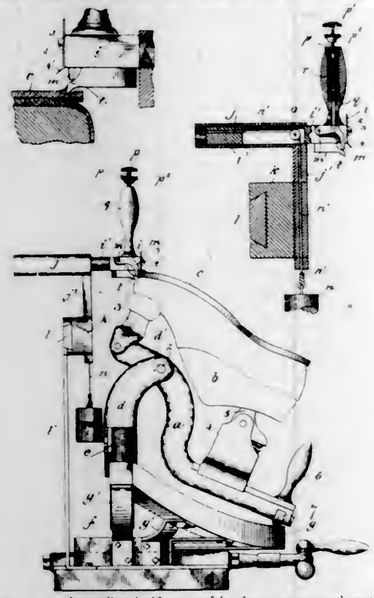
4. The combination, with the cutter and two guards, of the connected arms supporting said guards, the stud or shaft *l*, adapted to rotate and to move endwise in a fixed bearing, and a spring whereby said shaft, arms, and guards are yieldingly held in position to cause the operative guard to overlap the cutter at its margin, as set forth.

5. The combination, with the cutter and the two guards, of the connected arms supporting said guards, the stud or shaft *l*, adapted to rotate and to move endwise in a fixed bearing, a spring whereby said shaft, arms, and guards are yieldingly held in position to cause the operative guard to overlap the cutter at its margin, and means, substantially as described, for moving said shaft, arms, and guards against the pressure of said spring, as set forth.

6. The combination of the rotary cutter and its shaft, the annular rest *f*, surrounding the cutter and comprising in its construction a hub

or sleeve 8, adapted to slide on said shaft, an inwardly-projecting flange 12 on said sleeve, and arms 7 7, connecting the said hub with the sole-supporting or acting portion of the rest, said arms being separated by spaces which permit the escape of cuttings, and a spring arranged to bear on the flange 12 and press the rest toward one end of the cutter, as set forth.

448,486. **SOLE-CHANNELING MACHINE.** MYRON L. KEITH, Campello, Mass. Filed Dec. 10, 1890. Serial No. 374,145. (No model.)



Claim.—1. A channeling knife or tool having a compound rectilinear movement, substantially as described, and provided with a rest or gage having a substantially flat outer end arranged to bear on the edge of an outer sole, whereby the knife is adapted to move progressively along a boot or shoe sole and to conform to the edge and bottom curves thereof, combined with a swinging jack adapted to support a lasted boot or shoe in different positions for the action of said tool upon the outer sole, as set forth

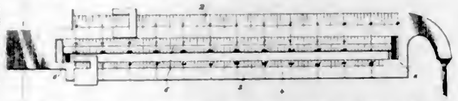
2. The combination of a fixed support or guide, a slide engaged with said guide and adapted thereby to move horizontally in a rectilinear direction, a tool-holder engaged with vertical guides on said slide and thereby adapted to move vertically, a tool-carrying shank engaged with horizontal guides, arranged on said holder and extending in a direction at right angles to the movement of the slide, said shank being provided with a channeling-knife, and a swinging jack adapted to support a lasted upper in different positions for the action of said tool upon the outer sole, as set forth

3. The combination of a fixed support or guide, a slide engaged with said guide and adapted thereby to move horizontally in a rectilinear direction, a tool-holder engaged with vertical guides on said slide and thereby adapted to move vertically, a tool-carrying shank engaged with the horizontal guides arranged on said holder and extending in a direction at right angles to the movement of the slide, said shank being provided with a channeling-knife, a vertical axis or shaft journaled in a fixed bearing, a jack pivoted to said shaft and adapted to swing horizontally by the rotation of the shaft and vertically by its pivotal connection therewith, last-supporting devices on the jack, and a jack-supporting track depressed between its ends, whereby the heel portion of the last is depressed when the jack is in position to present the toe portion of an outer sole thereon to the channeling-tool, as set forth.

4. The combination of a fixed supporting-guide, a knife-carrying shank having a compound movement thereon, as described, and provided with a channeling-knife, a sole-edge rest or gage pivoted to said shank, a push-pin whereby the operator may depress and retract the said rest or gage, and a spring whereby the rest is normally raised and held at its forward position, as set forth.

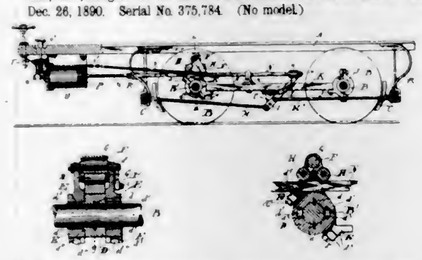
5. The combination of a fixed supporting-guide, a jack mounted to swing on a shaft or pivot beside said guide and midway between the ends thereof, said jack being adapted to stand beside the guide with either side toward the guide, a slide *k*, adapted to move lengthwise on the guide, and a knife-carrying shank having a compound movement on said slide, whereby the knife is enabled while moving with the slide along a boot or shoe sole to conform to the edge and bottom curves of said sole, as set forth.

448,437. **SCALE-BEAM.** SETH KETHLEDGE, Norfolk, Nebr. Filed Aug. 1, 1890. Serial No. 360,620. (No model.)



Claim.—The combination, with a scale-beam having a pair of graduated bars forming a continuous longitudinal opening 4 and the two sliding weights arranged on the bars, of the rollers journaled in the opening at the ends thereof and the endless band or measure arranged upon the rollers and within said opening and provided with a double set of graduations, substantially as described.

448,438. **BRAKE FOR STREET-CARS.** JOHN H. KING, Cincinnati, Ohio, assignor of one-half to Edward I. Robinson, same place. Filed Dec. 26, 1890. Serial No. 375,784. (No model.)



Claim.—1. In a car-brake, the combination of a brake-lever, a friction-pulley secured upon the car-axle, a draw-bar connected to the brake-lever and extending over the friction-pulley, a yoke journaled upon an eccentric, the eccentric and an arm secured thereon to lower the yoke, friction pulleys journaled in said yoke to press upon the draw-bar when the yoke is lowered, the brake staff and connection between the brake-staff and yoke-actuating arm, whereby said draw-bar is pressed between said friction-rolls for the purpose of throwing on the brakes, substantially as shown and described.

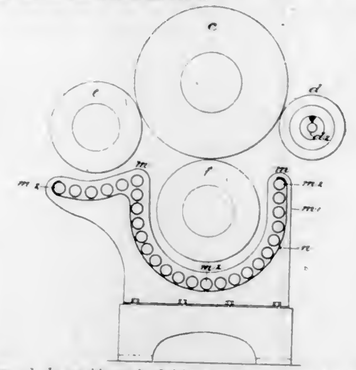
2. The combination, substantially as hereinbefore set forth, of the car brake and axle, the friction-pulley secured upon the axle and having extension-bearings d^5, the standards E, journaled upon said bearings, the eccentric F, journaled in the upper end of said bearings, the yoke G, carried by said eccentric, frictional rolls H, journaled in said yoke, the board N, connected to the brake-lever and passing between the friction-roll upon the axle and said rolls H, the crank-arm F', secured upon the journal of the eccentric roll F, the brake-staff I, the rod *i*, and chain *i'*, connecting said crank-arm and brake-staff.

3. The combination of the car-axles, the friction-pulley secured upon one of said axles to revolve therewith, standards E, clamped around the axle and carrying vertical moving friction-rolls and having a projecting lug *e*, the box J, clamped around the opposite axle and having projecting lugs *j*, the bar K, secured upon the projecting lugs *j* and *e*, the hanger *l'*, secured to said bar, the brake-lever L, fulcrumed upon said hanger, the brake-rods M M', connecting the brakes and the lever, the board N, connected to the upper end of the brake-lever and passing between the friction-rolls, and means, such as shown, for forcing the frictions together, substantially as shown and described.

4. The combination, substantially as hereinbefore set forth, of the brake and brake-lever, the board N, connected to the brake-lever, friction device connected by the car-axle and brake-staff to clamp said board and draw on the brakes, and means, such as shown, to hold the brakes when the friction-rolls are separated

5. The combination, as hereinbefore set forth, of the brakes, the brake-lever, the board N, connected to the brake-lever, the friction-rolls D H H for drawing the board forward, the cylinder O and piston P fitted therein, the rod Q, connecting the board and piston, the outwardly-opening check-valve *o* and inwardly opening spring-pressed valve *o'*, valve-rod, and treadle-cap o^3 for opening the valve *o'* to release the brakes, substantially as shown and described

448,439. **MACHINERY FOR FINISHING WORSTED AND WOOLEN FABRICS, &c.** JOHN KIRK and BENJAMIN LEE, Leeds, England. Filed Feb. 2, 1889. Serial No. 298,521. (No model.) Patented in England Apr. 23, 1888, No. 5,999; in France Feb. 1, 1889, No. 196,910, and in Belgium Feb. 2, 1889, No. 84,860.



Claim.—1. In machinery for finishing worsted, woolen, and other woven fabrics, the combination, with a positively-driven bowl or roller *c* and a positively-driven and internally-heated metallic roller *d*, of two other bowls or rollers *f* and *e* frictionally driven by the first-named roller *c*, and adjustable bearings in which rollers *d e f* are mounted, so as to be separately adjustable toward roller *c*, substantially as set forth.

2. In machinery for finishing worsted, woolen, and other woven fabrics, the combination, with a central bowl or roller *c*, carried in fixed bearings, and two or more bowls or rollers, each carried in movable bearings adjustable by screws and gearing so arranged that the bearings of each roller can be moved simultaneously on applying such roller independently to the central roller *c* with more or less required pressure, of an external heating apparatus partially surrounding one or more of the movable bowls or rollers, substantially as described.

3. The combination of the bowl or roller *c*, the heated roller *d*, the bowls or rollers *e* and *f*, and the external heating appliance *m m'*, all substantially as described.

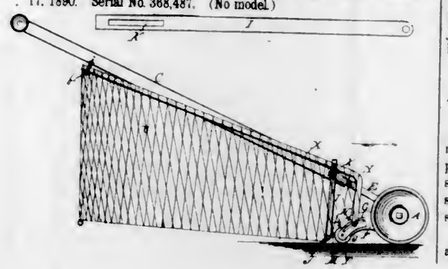
4. In machinery for the purposes set forth, the combination, with a positively-driven roller *c* and an internally-heated roller *d*, of one or more rollers having an external heating apparatus, said roller *d* and externally-heated rollers being arranged around roller *c*, substantially as described.

5. In machinery for the purpose set forth, the combination, with a central roller and two or more rollers, and means, substantially as described, for adjusting said rollers toward or from the central roller, of an external heating apparatus partially surrounding one or more of said last-mentioned rollers, substantially as described.

6. In a machine for the purpose mentioned, the combination, with a positively-driven central roller *c* and a positively-driven internally-heated metal roller *d*, of one or more pressure-rollers engaging and driven by said roller *c* and having an external heating apparatus, substantially as described.

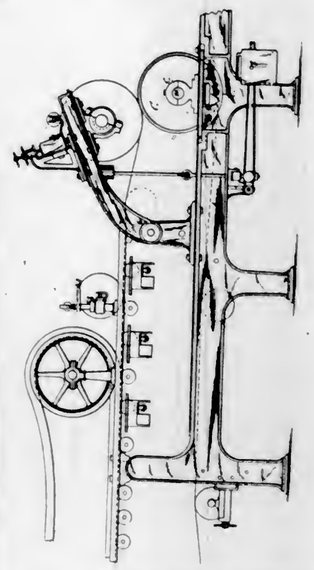
7. In machinery for the purpose described, the combination of the central roller *c*, the roller *d*, gearing for positively driving said rollers *d c*, one or more pressure-rollers yieldingly bearing on said roller *c* and driven by friction therewith, screws for adjusting said roller *d*, and means, substantially as described, for heating the fabric while passing between the rollers, substantially as described.

448,440. **GRASS-CARRYING ATTACHMENT FOR LAWN-MOWERS.** ROSWELL F. KRAUSE and JOHN GLENNON, Chicago, Ill. Filed Oct. 17, 1890. Serial No. 368,487. (No model.)



Claim.—A grass-carrying attachment for lawn-mowers, consisting of the flexible bail X, bent at its middle portion to bring its sides parallel, the forward portions being bent down and secured to the frame of the mower, side supporting-standards adjustably connected to the bail at their upper portions and having their lower portions attached to the transverse holder, which is longitudinally adjustable, and a sack secured to the bail, standards, and holder, as specified and shown.

448,441. **PAPER-MAKING MACHINE.** THOMAS H. LATIMER and FRANK A. FLETCHER, Watertown, N. Y., assignors to the Bagley & Sewall Company, same place. Filed Nov. 28, 1890. Serial No. 372,791. (No model.)



Claim.—1. In a Fourdrinier machine, the combination of the frame formed with a depression in the top of its side wall under the axis of the lower couch-roll, and an axial support for the couch-roll detachably connected to the frame to allow the wire-cloth to be removed from and replaced on the couch-roll without the necessity of lifting the said roll above the top of the frame, as set forth.

2. In a Fourdrinier machine, the combination of the frame formed with a depression in the top of its side wall directly under the axis of the couch-roll, a truss across said depression and detachably seated on the frame, and a journal-bearing for the axis of said couch-roll on the said truss, as set forth.

3. In a Fourdrinier machine, the combination of the frame formed with a depression in the top of its side wall directly under the axis of the lower couch-roll, a truss spanning said depression and seated on the frame removably sidewise therefrom, detachable fastenings retaining the truss on the frame, and a journal-bearing for the couch-roll detachably mounted on the truss, as set forth.

4. In a Fourdrinier machine, the combination of the frame formed with a depression in the top of its side wall directly under the axis of the couch-roll, a truss spanning the said depression and seated on the frame removably sidewise therefrom and provided with a socket in its top, detachable fastenings retaining the truss on the frame, and a journal-box for the couch-roll mounted on the truss and provided on its bottom with a hub entering the aforesaid socket, as set forth.

448,442. **VELOCIPEDE.** EMMIT G. LATTA, Friendship, N. Y. Filed Jan. 25, 1889. Serial No. 297,545. (No model.)

Claim.—1. In a velocipede, the combination, with the front and rear wheels and the main frame composed of two independent parts provided at their adjacent portions with tapering sockets, of a coiled spring provided with a tapering screw-threaded end arranged in said sockets, and screw-nuts applied to the threaded ends of said spring, substantially as set forth.

2. In a velocipede, the combination, with the rear driving-wheel, a front steering-wheel, and the forks or frames thereof, of a double

reach composed of two continuous tubes or branches, each tube or branch having a central depressed portion, an ascending front portion connected to the frame of the front wheel, and an ascending rear portion arranged on opposite sides of the front edge of the rear wheel and forming double supports for the saddle, substantially as set forth.



3. In a velocipede, the combination, with the front wheel, its fork, and the rear driving-wheel, of a reach composed of a central portion depressed below the center of the driving-wheel, an ascending front portion connected with the fork of the front wheel, and an ascending rear portion rigidly connected with said ascending front portion and forming a saddle-support, the space between the front and rear portions being open and unobstructed, a rear fork extending forwardly and downwardly from the axle of the rear wheel, and springs connecting the front ends of the rear fork with the reach, substantially as set forth.

4. In a velocipede, the combination, with the front wheel, its fork, and the rear driving-wheel, of a reach composed of a central portion depressed below the center of the driving-wheel, an ascending front portion connected with the fork of the front wheel, and an ascending rear portion rigidly connected with said ascending front portion and forming a saddle-support, the space between the front and rear portions being unobstructed, a rear fork extending forwardly and downwardly from the axle of the rear wheel to the reach, springs connecting the front ends of the rear fork with the reach, and a crank-shaft mounted on the rear fork in rear of said springs, substantially as set forth.

5. In a velocipede, the combination, with the main frame composed of two parallel tubes G', forming the reach, and the tubes I I, of a rear frame composed of the forks B and braces c' and connected with the main frame, substantially as set forth.

6. In a velocipede, the combination, with the main frame composed of two tubes G', arranged parallel with each other and forming the reach, and the tubes I I, extending rearwardly and upwardly from the reach and forming supports for the saddle, substantially as set forth.

7. In a velocipede, the combination, with the main frame composed of two tubes G', arranged parallel with each other and forming the reach, and the tubes I I, extending rearwardly and upwardly from the reach, and saddle-posts arranged in the tubes I I and carrying the saddle, substantially as set forth.

8. In a velocipede, the combination, with the front and rear wheels and their forks or frames, of a reach attached at its front end to the frame of the front wheel and provided at its rear end with two branches arranged on opposite sides of the center of the machine, and springs connecting the fork or frame of the rear wheel with the branches of the reach, substantially as set forth.

9. In a velocipede, the combination, with the front and rear wheels and their forks or frames, of a reach attached at its front end to the frame of the front wheel and composed of two tubes secured together and flattened on their contiguous sides, the tubes being separated or spread apart near the rear portion of the reach and forming branches arranged on opposite sides of the rear wheel, and springs connecting the front end of the rear fork or frame with said branches, substantially as set forth.

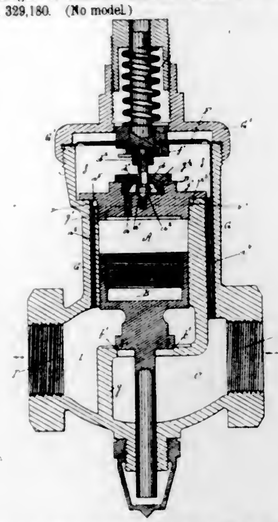
10. In a velocipede, the combination, with a reach composed of two tubes secured together side by side, of a steering-spindle provided with a split stub or lug secured with its branches in said tubes, substantially as set forth.

11. In a velocipede, the combination, with the front steering-wheel and a rear driving-wheel, of a frame consisting of two rigid independent parts having no contact with each other, a spring connecting said parts, and an elastic cushion or stop arranged on the front part of the frame independent of said spring, whereby the deflection or springing of the parts is limited, substantially as set forth.

12. In a velocipede, the combination, with the front and rear wheels and their forks or frames, of a reach attached at its front end to the frame of the front wheel and provided at its rear end with two ascending branches, a cross bar or bow connecting said branches, and an elastic buffer or cushion attached to said cross-bar, substantially as set forth.

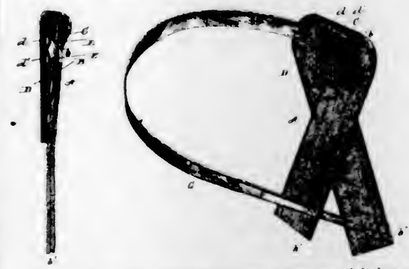
13. In a velocipede, the combination, with an axle or spindle, of a longitudinally-movable hub or sleeve arranged on said spindle and turning therewith, inner cone-bearings arranged at opposite ends of said sleeve, outer adjustable cone-bearings arranged on the end portions of the spindle, balls interposed between the inner and outer cone-bearings, and grooved bearing-boxes inclosing the balls and cone-bearings, substantially as set forth.

448,443. PRESSURE-REGULATOR. NATHANIEL C. LOCKE, Salem, Mass., assignor to Locke Brothers, same place. Filed Nov. 4, 1889. Serial No. 329,180. (No model.)



Claim.—A casing divided into high and low pressure chambers, a piston-chamber, and a diaphragm-chamber, in combination with a piston-valve, an auxiliary valve which controls the passage between the piston-chamber and the low-pressure chamber, and an additional auxiliary valve which controls the passage between the high-pressure chamber and the piston-chamber, all combined and operating substantially as described.

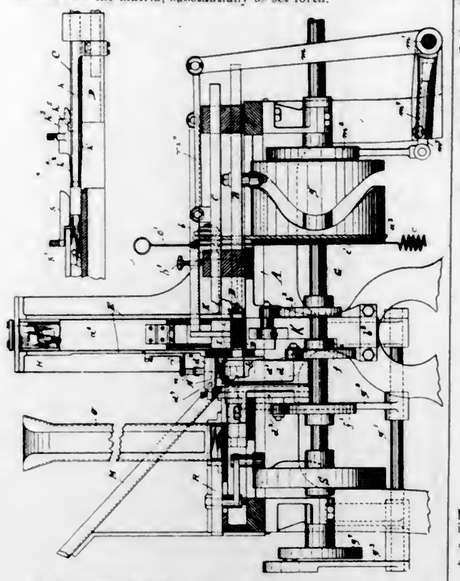
448,444. NECKTIE. GEORGE W. LOUD, Brooklyn, N. Y. Filed Apr. 9, 1890. Serial No. 347,266. (No model.)



Claim.—A necktie comprising an outer ornamental facing and a covered stiff backing, said backing having therein in its upper field two horizontally-disposed button-holes arranged one above the other, and an auxiliary piece secured to the outer facing of the backing over the button-holes, whereby protection is afforded the facing of the tie from the head of a collar-stud, as set forth.

448,445. MACHINE FOR FILLING MATCH-BOXES. FRANS LUNDGREN, Stockholm, Sweden. Filed Apr. 17, 1890. Serial No. 348,425. (No model.)

Claim.—1. In a machine for filling boxes with matches and the like, the combination, with the reservoir E for the matches and the matrix D, open at its side to said reservoir, of the reciprocating sloping bottom F of the reservoir having its free lower end arranged adjacent to the open side of the matrix and on a level with the bottom of the same, whereby the end of said bottom serves as a ram to pack the matches into the matrix, substantially as set forth.



2. In a machine for filling boxes with matches and the like, the combination of the reservoir E, the matrix or chamber D, into which the matches pass from the reservoir, and the reciprocating cut-off slide K, adapted to separate the reservoir from the matrix, substantially as set forth.

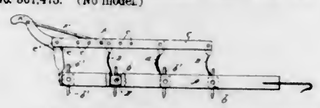
3. In a machine for filling boxes with matches and the like, the combination, with the reservoir E, of the matrix or chamber D, open to said reservoir and provided with an adjustable lid I, substantially as set forth.

4. In a machine for filling boxes with matches and the like, the combination of the matrix, the reciprocating plunger B, adapted to remove the matches from said matrix, and spring-guides d', which carry the inverted box, and the plunger L, which plays between the said springs and carries the matches into said box, substantially as set forth.

5. In a machine for filling boxes with matches or the like, the combination, with the reciprocating box-displacing plunger C and the guide formed of spring-blades through which it plays, of the reciprocating plunger R, aligned with and arranged in front of the plunger C, the tube magazine or chute O, and the reciprocating plunger P, adapted to push the inclosing tube from the said chute into the path of the plunger R, substantially as set forth.

6. In a machine for filling boxes with matches or the like, the combination of the upright spring-blades d', the hinged lid d^3, and its depressing-spring, said lid being arranged above and over the upper ends of the spring-blades d', the reciprocating lifter d^6, arranged under the lid d^3 and adapted to raise the latter, and the reciprocating plunger N, adapted to push the inverted box under the lid d^3 and in a position to engage the free upper extremities of the blades d', substantially as set forth.

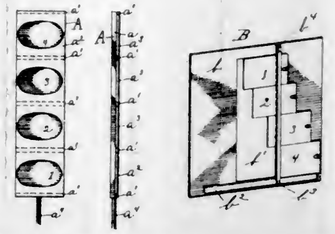
448,446. HARROW. GEORGE H. MACKEY, Milan, assignor of one-half to William A. Galpin, Cleveland, Ohio. Filed Aug. 8, 1890. Serial No. 361,473. (No model.)



Claim.—1. In a harrow, the combination, with tooth-bars, a graduating-bar extending transversely across the tooth-bar and having springs attached for connecting the graduating-bar with the respective tooth-bars, and a lever connected with the graduating-bar for simultaneously setting the tooth-bars and harrow-teeth at any desired obliquity, of a rod or brace connected with the lever at one end thereof and having a hook at the other end for engaging holes in the graduating-bar, whereby the parts may be locked in as many adjustments as have been provided for, according to the number of holes in the graduating-bar, substantially as and for the purpose set forth.

2. In a harrow, the combination, with tooth-bars and a graduating-bar, of springs connecting the graduating-bar with the respective tooth-bars, said springs being re-enforced where the greatest strain is brought to bear upon them and having screws to vary the stiffness of the springs, a lever connected with the graduating-bar for simultaneously setting the teeth at any desired obliquity, and suitable locking mechanism whereby the parts may be locked in any one of several predetermined adjustments, substantially as set forth.

448,447. PHOTOGRAPHIC COPYING APPARATUS. SOREN C. MADSEN, Sleepy Eye Lake, Minn. Filed June 26, 1890. Serial No. 356,903. (No model.)

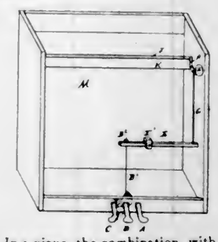


Claim.—1. In combination with a photographic camera and a properly-spaced picture-holder, the multiplying-diaphragm B, consisting of the board b, having the vertical opening b', and slides 1, 2, 3, and 4, arranged to slide upon said board and close the said opening, substantially as shown and described, and for the purposes set forth.

2. In combination with a photographic camera D and a properly-spaced picture-holder A, the multiplying-diaphragm B, consisting of the board b, having the vertical opening b', slides 1, 2, 3, and 4, cross-bar b^3, and vertical bar b^2, adapted and arranged to hold said slides in place, substantially as shown and described, and for the purposes set forth.

3. The combination of the photograph-holder A, consisting of the back a, lower rod a^4, cross-rods a', and the front plate a^3, having the openings 4, 3, 2, and 1, photographic camera D, provided with the side openings to receive the diaphragm B, and multiplying-diaphragm B, consisting of the board b, having the vertical openings b', and slides 1, 2, 3, and 4, arranged to slide upon said board and close the said openings, said slides made to co-operate with the openings 4, 3, 2, and 1 and with said camera D, for the purposes and in the manner above described.

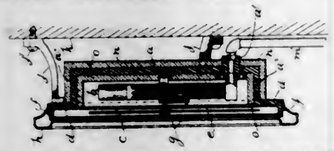
448,448. MUFFLING ATTACHMENT FOR PIANO-FORTES. HENRY MALLEBRE, New York, N. Y. Filed Nov. 25, 1890. Serial No. 372,596. (No model.)



Claim.—1. In a piano, the combination, with a pedal, of means for locking the same into lowered position, levers pivoted at opposite ends of the piano-casing, each lever having one end weighted, and a muffling-strip connected with the opposite ends of said levers, and intermediate rods and levers for operating said levers from the above-mentioned pedal, substantially as set forth.

2. In a piano, the combination, with pedals, of a latch pivoted above the one pedal and having an arm extending under an adjacent pedal, two levers pivoted to the piano-casing at opposite ends, one end of each lever being weighted, a muffling-strip attached to the other ends, and rods and levers for operating the levers carrying the muffling-strip from that pedal above which the latch is pivoted, substantially as set forth.

448,449. **PRESSURE-GAGE.** JAMES P. MARSH, Chicago, Ill. Filed Sept. 16, 1890. Serial No. 365,130. (No model.)



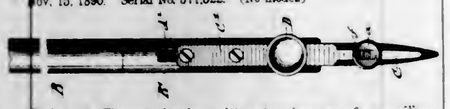
Claim.—1. The combination, with the case of a steam-gage, of legs for sustaining the same upon the boiler-front or other support, and a facing of insulating material interposed between the case and said front, substantially as shown and described.

2. The combination, with the case of a steam-gage, of means for supporting the same away from the boiler-front or other support, and a covering of insulating material upon the outside and inside of said case, substantially as shown and described.

3. The combination, with the case of a steam-gage, of a covering of insulating material upon the outside and inside of said case, substantially as shown and described.

4. A case for steam-gages, consisting of the main body *a*, a flange *d*, annular flange *f*, and legs *j*, of a greater length than the depth of the main body of the case, substantially as shown and described.

448,450. **DRAWING-PEN.** GEORGE MAYER, Orange, N. J. Filed Nov. 15, 1890. Serial No. 371,522. (No model.)



Claim.—1. The combination, with a drawing-pen, of an auxiliary blade that is supported parallel with and adapted to be longitudinally shifted alongside of one of the blades of the pen, substantially as set forth.

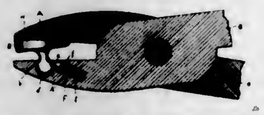
2. The combination, with a drawing-pen, of an auxiliary blade supported parallel with and adapted to be longitudinally shifted alongside of one of the blades of said pen and a set-screw for said auxiliary blade, substantially as set forth.

3. The combination of a drawing-pen, an auxiliary blade guided alongside of one of the blades of said pen, means for guiding the auxiliary blade on the handle of the pen, and a set-screw for said auxiliary blade, said regulating-screw being provided with a concave head that is used as a finger-rest, substantially as set forth.

4. The combination of a drawing-pen, an auxiliary blade supported parallel with and adapted to be shifted longitudinally alongside of one of the blades of said pen, means for guiding the auxiliary blade on the handle of the pen, and an auxiliary set-screw for said auxiliary blade, said blade being provided with a slot for the shank of the ordinary set-screw of the drawing-pen, substantially as set forth.

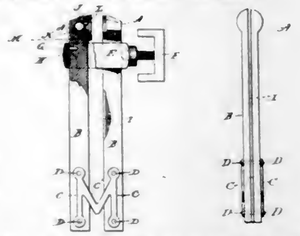
5. The combination of a drawing-pen, a handle having a tubular and longitudinally-slotted portion, an auxiliary blade located sidewise of and parallel with one of the blades of the pen, a guide-piece attached to the shank of the tubular blade and guided in the tubular portion of the handle, and a set-screw for the auxiliary blade, said set-screw engaging the guide-piece, substantially as set forth.

448,451. **JAW FOR CLAMPING-TOOLS.** GEORGE W. MILLER, Meriden, Conn. Filed Aug. 8, 1889. Serial No. 320,073. (No model.)



Claim.—In a clamping-tool, the combination, with a jaw thereof having an open socket and an inclined recess formed in its inner face, the latter opening into the open end of the former, of a bearing-piece having a head and a ball offsetting from the rear face thereof and necked or reduced where it joins the same and fitting into the said socket, a pin located in the recess in the face of the jaw and provided at its outer end with a conical head which engages with the ball of the bearing-piece on the necked side thereof and holds the ball in the socket without interfering with its free movement therein, and a spring encircling the shank of the pin and tending to press the head thereof toward the necked portion of the ball of the bearing-piece, but yielding on occasion to permit the pin to retire for the removal of the ball from its socket, substantially as described.

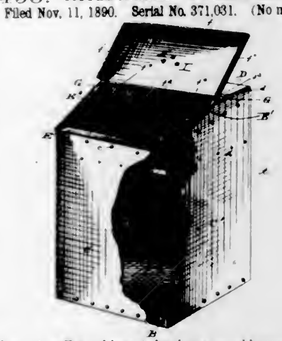
448,452. **HAND-VISE.** GEORGE W. MILLER, Meriden, Conn. Filed Dec. 30, 1889. Serial No. 335,385. (No model.)



Claim.—1. In a hand-vise, the combination, with two straight parallel jaw-shanks which co-operate in forming the sole handle of the tool, of one or more flat springs extending laterally across the jaw-shanks in the plane thereof and secured at two or more points to each jaw-shank, whereby they are rigidly secured to the said jaw-shanks and a clearance-space established between the same, substantially as described.

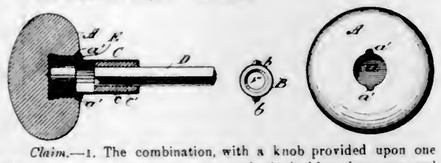
2. In a hand-vise, the combination, with two straight parallel jaw-shanks which co-operate in forming the sole handle of the tool, of two flat stationary M-shaped springs applied to the opposite faces of the shanks near but within the outer ends thereof and each connected at two separated points with each of the jaw-shanks, a yoke embracing the shanks and provided with a screw adapted to pull the same together, and a bearing-piece flexibly connected with one of the jaws, substantially as described.

448,453. **COFFEE-CABINET.** WILLIAM F. MCLAUGHLIN, Chicago, Ill. Filed Nov. 11, 1890. Serial No. 371,031. (No model.)



Claim.—A coffee-cabinet A, having a wood bottom B, sheet-metal sides C C' C² C³, tacked or nailed to said bottom, and its front upper corner cut away to form an inclined opening *a*, having side and front unbeaded edges, top D, having a front beaded edge *d*, forming the rear edge of opening *a*, wood strips E E' E², re-enforcing the side and front unbeaded edges of opening *a*, cover F, having front and side flanged edges *f f'*, respectively, to fit over the corresponding edges of the opening *a*, and rear edge *f²*, upset or beaded for the reception of a wire *f²* and said edge *f³* being cut away at *f⁴ f⁴*, strap-hinges G G, passing around said wire in said cut-away portions *f⁴ f⁴* of the edge *f²* and having their ends *g* fastened to the under side of the top D, so that the edge *d* of the latter forms a stay for limiting the extent of the opening movement of the lid F and holds or supports it in its open position

448,454. **DOOR-KNOB.** EDMUND B. OWEN, Jersey City, N. J., assignor of one-half to William W. Thomas, same place. Filed Sept. 26, 1889. Serial No. 325,186. (No model.)



Claim.—1. The combination, with a knob provided upon one side with a recess having grooves, as *a'*, of a locking-piece arranged in said recess, provided with wings extending into said grooves, and a shank comprising a metallic cylinder adapted to be forced into said recess and spread into said grooves by the wings of the locking-piece, substantially as specified.

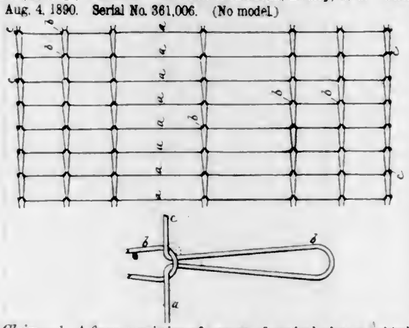
2. The combination, with a door-knob having a dovetailed or inwardly-enlarged recess, of a tubular shank having a substantially straight and uniform bore and at one end adapted to snugly fit said recess, and a central expander made separate from the knob and consisting of a tapering plug larger in its greatest diameter than the internal diameter of the shank and having a hole formed therein larger than the door-spindle, whereby when the expander is placed in the knob-recess and has the end of the shank forced inward over it it forces said end in all directions against the wall of the recess, and when all the parts are secured together a considerable range of adjustment for spindles of different lengths is obtained.

3. The combination, with a door-knob having a dovetailed or inwardly-enlarged recess, of a tubular shank having a substantially straight and uniform bore at one end adapted to snugly fit said recess, and a central expander made separate from the knob and consisting of a tapering plug larger in its greatest diameter than the internal diameter of the shank and provided with one or more projecting parts upon its surface, whereby when the expander is placed in the knob-recess it is prevented from turning therein, and when it has the end of the shank forced inward over it it forces said end in all directions against the walls of the recess.

4. The combination, with a door-knob having a dovetailed or inwardly-enlarged recess and one or more depressions in the walls of the recess, of a tubular shank having a substantially straight and uniform bore and at one end adapted to snugly fit said recess, and a central expander made separate from the knob and consisting of a tapering plug larger in its greatest diameter than the internal diameter of the shank and provided with one or more projecting parts upon its surface adapted to fit in one or more of the depressions in the walls of the recess in the knob.

5. The combination, with a door-knob having a dovetailed or inwardly-enlarged recess, of a tubular shank having a substantially straight and uniform bore and at one end adapted to fit said recess, and a central expander made separate from the knob and consisting of a tapering plug larger in its greatest diameter than the internal diameter of the shank and provided with one or more projecting parts upon its side surface, whereby when the expander is placed in the knob-recess and has the end of the shank forced inward over it it forces said end in all directions against the wall of the recess and the projections on the side surface engage with said end of the tubular shank.

448,455. **FENCE.** WILLIAM P. RANDALL, Le Roy, N. Y. Filed Aug. 4, 1890. Serial No. 361,006. (No model.)



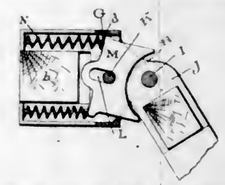
Claim.—1. A fence consisting of a series of vertical wires provided with lateral loops, which are interlocked, said loops forming the longitudinal strands of the fence and the vertical lengths the filling, as herein shown and described.

2. The fence herein described, consisting of a series of vertical wires *a a*, provided with lateral loops *b b* of greater diameter at their outer than at their inner ends, said loops forming the longitudinal strands of the fence and the vertical wires the filling, and said loops acting as springs to straighten the fence under tension, as herein shown and described.

448,456. **GATE-HINGE.** FRANK RUGE, Woonsocket, R. I. Filed Aug. 4, 1890. Serial No. 360,876. (No model.)

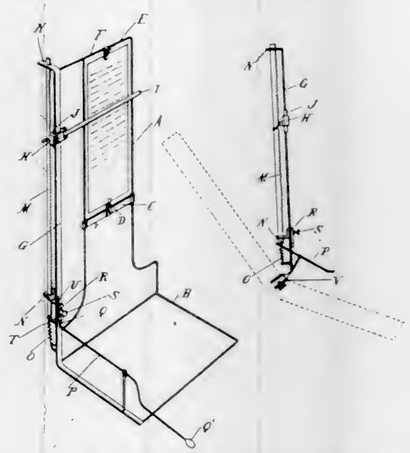
Claim.—1. In a gate-hinge, the combination, with a pivoted swinging section having its inner end rounded, as described, of a pivotally-mounted spring-actuated cam provided with a concave edge having shoulders extending beyond the pivot-point of the swinging section and adapted to impinge against said section, substantially as and for the purpose described.

2. In a gate-hinge, the combination, with a pivoted swinging section having its inner end rounded in a convex manner, of a cam provided with a longitudinal slot in its body to receive a pivot and guide-post and having its front edge concaved to receive and bear upon the rounded end of the swinging section, and retracting-springs having one end attached to the inner edge of said cam and the other end to the inner wall of a casing, all adapted to operate substantially as specified.



3. The combination, with the post-box or castingp rovided with the rectangular opening for the passage of the interior post and having the platform projection on its inner side carrying an upright pintle, the guide-post bearing in the top and bottom of said box adapted to take into the guide-slot in the body of the cam, and the said cam provided on its inner edge with retracting-springs anu having its outer edge concaved, of the swinging section suitably attached to the gate and pivotally mounted upon the pintle of the post-section, having its inner end rounded in a convex manner, substantially as and for the purpose described.

448,457. **COPY-HOLDER.** MARVIN R. SALTER, Ithaca, Mich. Filed Sept. 25, 1890. Serial No. 366,161. (No model.)

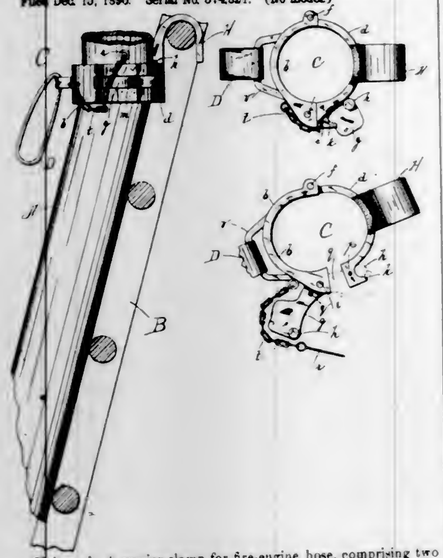


Claim.—1. In a copy-holder, the combination, with the rectangular wire standard, of the cross-bars C, slidingly secured thereto, a clamp on the cross-bar, a top cross-bar carrying a clamp, a vertical guide-bar G at one side of the standard formed with an elongated opening in its lower portion, guides extending out from the guide-bar, a ratchet-bar working in the guides, a spring for drawing the ratchet-bar down, a lever secured to the ratchet-bar and extending forward through the opening in the guide-bar, a spring-pressed sliding block on the bar G, a pawl on the block engaging the ratchet-bar, an indicator-arm on the block, and an adjustable block R, having a set-screw passing therethrough for regulating the movement of the lever, substantially as described.

2. In a copy-holder, the combination, with the standard, of the guide-bar, a ratchet-bar supported thereby, a sliding block on the guide-bar, a spring interposed between the same, an indicator-arm hinged on the block, a lever and spring for actuating the ratchet-bar, the guide-bar having an opening through which the lever passes, an adjustable plate for limiting the movement of the lever, and a pawl on the block, substantially as described.

3. In a copy-holder, a guide, a ratchet-bar supported thereby, a sliding block on the guide carrying an indicator-arm and a pawl, a lever connected with the ratchet-bar and passing through an elongated opening in the guide, a sliding plate to limit the movement of the lever, and a spring for normally holding the ratchet-bar down.

448,458. CARRIER-CLAMP FOR FIRE-ENGINE HOSE. THOMAS H. SAUNDERS, Boston, Mass., assignor to Charles J. Souther, same place. Filed Dec. 15, 1890. Serial No. 374,821. (No model.)

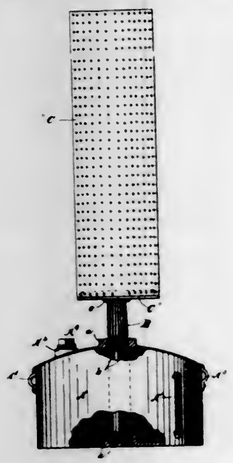


Claim.—1. A carrier-clamp for fire-engine hose, comprising two sections hinged together and adapted to encircle the hose, a locking-lever hinged to the end of one section and provided with pin-holes adapted to register with pin-holes in the opposite section, a stud on said lever, and hooks on said opposite section adapted to engage said stud, substantially as described.

2. In a carrier-clamp for fire-engine hose, the clamp C, comprising the hinged sections *b d*, the section *d* being provided with the hook *k*, pin-holes *p*, and groove *m*, in combination with the lever *g*, pivoted to the section *b* and provided with the stud *h* and pin-hole *q*, the chain *t*, and pin *r*, arranged to operate substantially as set forth.

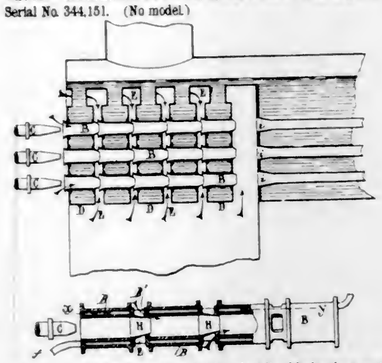
3. A carrier-clamp for fire-engine hose, comprising two hinged sections adapted to encircle the hose, one of said sections being provided with a pivoted lever adapted to take on a hook on the opposite section and lock said sections together when the hose is expanded, and a pin fitted to enter pin-holes in said hook-section and lever to secure said sections together when the hose is empty, substantially as described.

448,459. APPARATUS FOR SHRINKING CLOTH. CHARLES W. SCRAEVER, Cleveland, Ohio. Filed Jan. 28, 1890. Serial No. 338,405. (No model.)



Claim.—The combination, with a portable steam-generator and a steam-pipe connected by screw-threads to the upper and lower ends of said generator and provided with openings for the entrance of steam, of a detachable perforated drum into which the steam-pipe discharges, substantially as set forth.

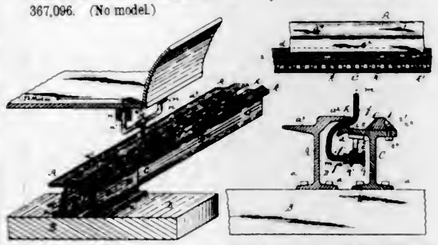
448,460. DEVICE FOR HEATING BY GAS OR COMBUSTIBLE VAPOR. ADOLPHE SEIGLE-GOUJON, Lyons, France. Filed Mar. 17, 1890. Serial No. 344,151. (No model.)



Claim.—1. In an apparatus for heating liquids having partitions separating the apparatus into alternate air and liquid spaces, the combination of a range of tubular flue-sections passing through the liquid to be heated and through the partitions, said tubular flue-sections having contracted ends adjoining the ends of the tubes next in front and leaving lateral annular air-inlet openings, and a gas-supplying jet in line with the range of tubes, whereby the flame within the direct-acting heating-tubes is supplied with air progressively to render the combustion perfect, substantially as specified.

2. The combination, with the tube C for supplying burning-gas or similar material to a flame, of a series of aligned tubes or cylinders, through which the flame is caused to pass, each tube having a contracted end passing into the next tube, with a surrounding annular air-space, each of the aligned tubes having a surrounding case and partitions forming tortuous passages, and rings between and connecting the respective aligned tubes with passages through them coinciding with the end portions of the tortuous passages of the aligned tubes, substantially as specified.

448,461. UNDERGROUND CONDUIT FOR ELECTRIC RAILWAYS. ROBERT A. STEWART, Allegheny, Pa. Filed Oct. 4, 1890. Serial No. 367,096. (No model.)



Claim.—1. An underground conduit for electric and like railways, having a chamber extending parallel with the rail and having a slot extending sidewise into the chamber for the passage of the trolley-arm or like device, substantially as and for the purposes set forth.

2. An underground conduit for electric and like railways, formed of a girder-rail having a head or tread thereon and a supplementary rail adjacent thereto to form a chamber between the two, one rail overlapping the other and so forming a slot extending sidewise into the chamber, substantially as and for the purposes set forth.

3. An underground conduit for electric railways, having a chamber extending along with the track and having a slot extending sidewise into the same for the passage of the trolley-arm, and provided with an electric conductor secured to hanging supports within said chamber, substantially as and for the purposes set forth.

4. An underground conduit for electric and like railways, having a chamber extending longitudinally of the track and having a slot extending sidewise into the same, the top of said chamber being formed of a plate or flange, and the top face of said plate being inclined downwardly from the slot, substantially as and for the purposes set forth.

5. An underground conduit for electric and like railways, formed of rails adjacent to each other, so as to form a slot extending sidewise into the longitudinal chamber of the conduit, the plate forming the lower side of the slot having the incline-faced head *k* ribbed and grooved transversely, as at *k'*, substantially as and for the purposes set forth.

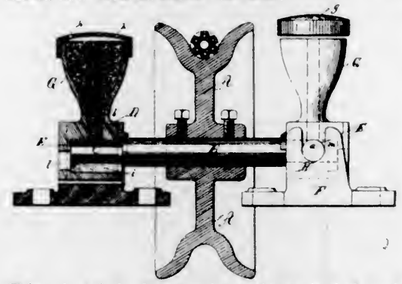
6. In conduits for electric and like railways, the combination, with a main rail, of the supplementary plate or flange *i* extending toward the main rail and under the edge thereof, so as to form a side slot between them for entrance into the conduit-chamber, said plate having the depending lip *d* extending down into the chamber, substantially as and for the purposes set forth.

7. In conduits for electric and like railways, the combination, with a main rail, of the supplementary plate or flange *i*, extending toward the main rail and under the edge thereof, so as to form a side slot between them for entrance into the conduit-chamber, said plate having the depending lip *d* extending down into the chamber, and the electric conductor *c*, secured to brackets depending from said plate *i*, substantially as and for the purposes set forth.

8. In electric railways, the combination of an underground conduit having a chamber extending longitudinally of the track and a slot extending sidewise into said chamber, with a trolley or like arm extending down from the car or truck and bent corresponding to the said side slot, so as to enter into the chamber of the conduit, substantially as and for the purposes set forth.

9. In electric railways, the combination of an underground conduit having a chamber extending longitudinally of the track and a slot extending sidewise into said chamber, with a trolley or like arm extending down from the car or truck and bent corresponding to the said slot, so as to enter into the chamber of the conduit, and said arm being forked at the upper end and having spring connections with the car or its truck, substantially as and for the purposes set forth.

448,462. BEARING-BOX. GEORGE ST. PIERRE, Oakland, Cal. Filed June 24, 1890. Serial No. 356,563. (No model.)



Claim.—1. A device for supporting a cable-carrier shaft, consisting of the bearing-boxes provided with oil-cups and having trunnions formed thereon, in combination with suitable brackets on which said trunnions bear, said brackets being provided with recesses or slots adapted to receive the trunnions, substantially as described, whereby the trunnions will permit the bearings to accommodate themselves to the shaft, as and for the purpose set forth.

2. A device for supporting a cable-carrier shaft, consisting of the bearing-boxes provided with oil-cups and with trunnions, in combination with brackets on which said trunnions rest, the said bearing-boxes being each provided with recesses adapted to receive a lignum-vitæ bearing and the end of the shaft, and having an opening through its back wall, substantially as described, and for the purpose set forth.

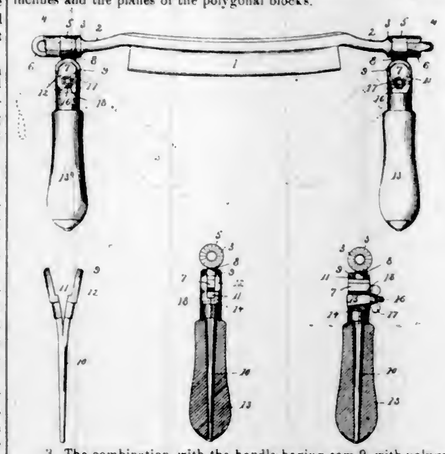
448,463. COMPOSITION OF MATTER. CARL STRAUB, Syracuse, N. Y. Filed Apr. 18, 1890. Serial No. 348,532. (No specimens.)

Claim.—The composition of matter consisting of slaked lime and infusorial earth, mixed in about the porportions specified.

448,464. DRAW-SHAVE. WILLIAM B. SWAN, Seymour, Conn., assignor to James Swan, same place. Filed Nov. 28, 1890. Serial No. 372,855. (No model.)

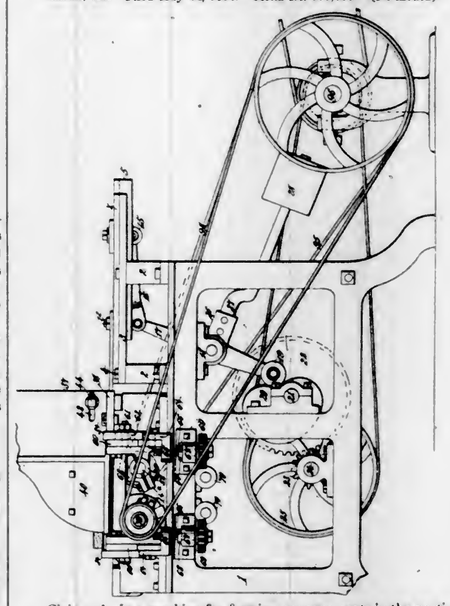
Claim.—1. The collars having polygonal blocks 7, in combination with the handles having ears with transverse polygonal openings through them to receive the blocks loosely, and transverse inclines, and wedges adapted to engage the inclines and the planes of the blocks, whereby the handles may be locked at any desired adjustment relatively to the cutting-edge.

2. The handles having ears with transverse polygonal openings through them and inclines at the bottoms of said openings, in combination with polygonal blocks upon the blade-shanks engaging said openings loosely, and wedges in said openings adapted to engage the inclines and the planes of the polygonal blocks.



3. The combination, with the handle having ears 9, with polygonal transverse openings through them, and inclines 14, of collars upon the blade-shanks having polygonal blocks engaging said openings loosely, and wedges adapted to engage said openings and the planes of the blocks and provided with threaded shanks, and nuts on said shanks whereby the wedges may be drawn inward to lock the handles at any desired adjustment.

448,465. MACHINE FOR THE MANUFACTURE OF BOXES FOR THE TRANSPORTATION OF BOTTLES. WILLIAM F. THIEMEYER, Baltimore, Md. Filed May 24, 1890. Serial No. 353,085. (No model.)



Claim.—1. In a machine for forming concave seats in the partition strips and walls of boxes for the transportation of bottles, the combination, with a reciprocating feed-frame having one or more feed-plates, of a hopper mounted on a table having openings, a series of cutters having rounded or concave edges revolving in said openings and arranged at equal distances apart, a series of channeling-tools re-

volving in spaces in front of said cutters, means for lowering the shaft of said channeling devices, a strip-holding plate or board located in front of the hopper and beneath which the strips pass to the cutters and channelers, and vertically-adjustable elastic angle-plates or springs which press said board upon the strips during the time they are operated upon, substantially as described.

3. In a machine for forming concave seats in the partition strips and walls of boxes, the combination of a reciprocating feed-frame having laterally-adjustable feed-plates of less thickness than the strips to be worked, a hopper in which the strips are piled, a series of cutters having rounded edges revolving in openings in the table supporting the hopper, a strip-holding plate or board located in front of the hopper and beneath which the strips pass as the cutters act upon them, and elastic angle-plates or springs pressing said board down, whereby the strip last fed is held against the action of the cutters by the next succeeding strip as the feed-arms retract, substantially as described.

4. In a machine for forming concave seats in the partition strips and walls of boxes, the combination of a feed mechanism, a hopper containing the strips to be worked piled therein, the opposite parts of the hopper being laterally adjustable and one portion of each being longitudinally adjustable to various widths of strips, substantially as described.

5. In a machine for forming concave seats in the partition strips and walls of boxes, the combination of a hopper holding the stack of partition-strips, a rectilinearly-reciprocating feeder which moves the lowermost strip from the hopper and temporarily supports the remainder of the pile therein, a series of vertically-adjustable revolving cutters mounted on a single shaft and located in front of the hopper for cutting a series of transverse parallel grooves in the strip, and a series of vertically-adjustable revolving channeling-saws and chisels located on a single shaft in front of the cutter-shaft for cutting a series of channels or slots in the previously-grooved strips as they leave the grooving-cutters, substantially as described.

6. In a machine for forming concave seats in the partition strips and walls of boxes, the combination of a hopper in which the strips are piled, a series of laterally-adjustable sustaining-pieces consisting of webs connecting cross-heads, those at one end of the webs being dovetailed, said cross-heads being set in an opening in the table of the machine and the others being secured by screws passing through transverse slots in the table, and a series of cutters revolving in the openings between the several webs, said cutters having heads which are laterally adjustable on the shaft, substantially as described.

7. In a machine for forming concave seats in the partition strips and walls of boxes, the combination of a table over which the strips are fed and a two-part hopper containing the strips, each supporting-bracket of the hopper having a bar or cleat bolted to its bottom, and being provided also with a transverse slot, through which passes a bolt into openings arranged in series in a transverse channel in the table which receives the bars or cleats and guides the parts of the hopper in their transverse adjustment, substantially as described.

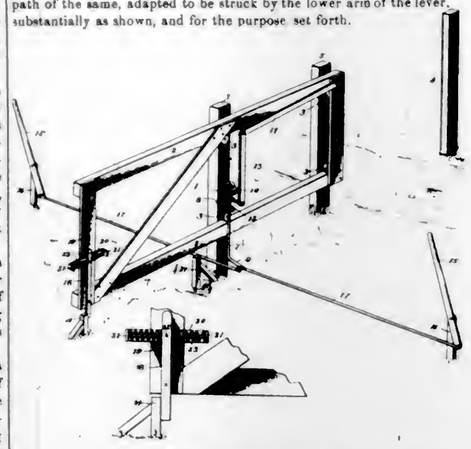
8. In a machine for forming concave seats in the partition strips and walls of boxes, the combination of a table over which the strips are fed, a spring-pressed board beneath which they pass, a series of laterally-adjustable cutters rotating in openings in the table and acting upon each strip, a succeeding series of channeling devices, also laterally adjustable, and a two-part adjustable hopper capable of being contracted to receive the short strips acted on by both the cutters and the channeling devices, substantially as described.

9. In a machine for forming concave seats in the partition strips and walls of boxes, the combination of a hopper, a feeding device, a series of cutters, and a subsequently acting series of channeling devices, the latter consisting of circular heads adjustably mounted on a shaft and provided with diametrical channels arranged on the opposite faces at an angle with each other, in which are arranged on each side of the shaft radially-adjustable plates having serrated end edges, and chisels set behind each pair of channeling-saws and adjustable inward and outward in slots in the head, substantially as described.

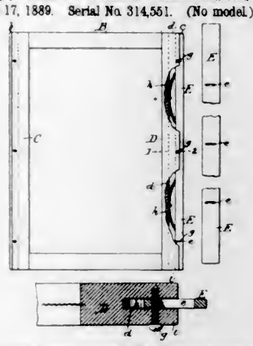
448,466. SLIDING GATE. JOSEPH M. VANOVER, Terre Haute, Ind. Filed Sept. 15, 1890. Serial No. 365,031. (No model.)

Claim.—1. In a sliding gate, the combination of a lever pivoted upon the gate-panel, springs secured upon said gate-panel and bearing against both sides of one arm of said lever, and stops arranged in the path of said gate-panel to engage said lever at the ends of the throw or stroke of said panel, substantially as described.

2. In a sliding gate, the combination, with the gate-panel provided with means for sliding it open or closed, of the lever 18, pivoted upon said panel, the transverse bar 20 upon said panel, formed with the bent perforated ends 21, the rod 22 upon the arm of said lever, sliding in said perforated ends, the springs 23 upon said rod, confined between said lever-arm and perforated ends, and the stakes 24, arranged at a distance from each other equal to the throw of the gate and in the path of the same, adapted to be struck by the lower arm of the lever, substantially as shown, and for the purpose set forth.



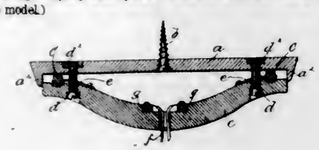
448,467. WINDOW-SCREEN. FRANK WALKER, Los Angeles, Cal. Filed June 17, 1889. Serial No. 314,551. (No model.)



Claim.—1. The combination, in a window-screen, of the side bar D, having a groove extending its entire length and forming two ribs or flanges, a tongue E, adapted to said groove and extending the full length of the screen, said tongue having a series of transverse slots, springs in the groove back of the tongue, and a series of combined guide and tie screws the threads of which engage both ribs or flanges, whereby said ribs are held equidistant and against any lateral strain, substantially as specified.

2. The combination, in a window-screen having a fixed tongue on the one side and a longitudinal grooved bar D on the opposite side, said groove extending the full length of the bar, a tongue E, adapted to said groove and provided with a series of transverse slots, springs acting on said tongue, a series of screws rigidly secured to the flanges of the grooved bar and passing through the transverse slots in the tongue, with window-sash guides A, having grooves *a*, to which the tongues are adapted, said screen being so proportioned in respect to the width of the window-frame that it can be readily removed therefrom by forcing the spring-tongue into its groove *d*, a sufficient distance to allow the fixed tongue to clear its groove *a*, substantially as specified.

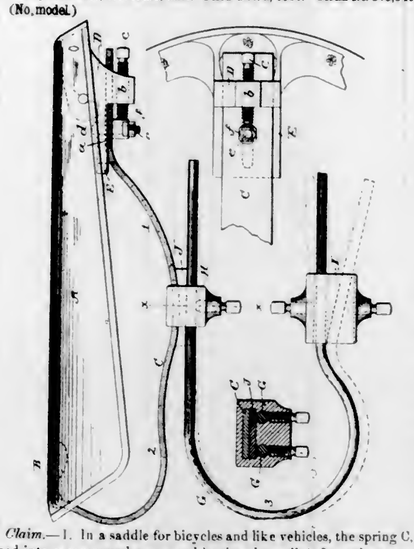
448,468. ELECTRIC-WIRE SUPPORT AND CUT-OUT. EDWIN R. WHITNEY, Manchester, N. H., assignor to the Electrical Supply Manufacturing Company, same place. Filed Nov. 4, 1890. Serial No. 370,333. (No model.)



Claim.—1. The combination of the base-piece having a surrounding flange provided with main-wire seats, combined with a removable cap adapted to enter within the said flange and to be secured to the said base-piece, said cap having yielding clamps for engaging the wires in the seats on the base-piece, substantially as described.

2. The combination of the base-piece provided with wire-seats, with a removable cap having spring-clamps near its ends to engage the wires in the wire-seats of the base, and wire-holding clamps adapted to be connected with said spring-clamps by easily-fusible conductors, substantially as described.

448,469. SADDLE FOR BICYCLES. JOSEPH L. YOST and CHARLES J. MOORE, Toledo, assignors, by mesne assignments, to said Yost, and Henry A. Lozier, Cleveland, Ohio. Filed Dec. 2, 1890. Serial No. 373,340. (No model.)



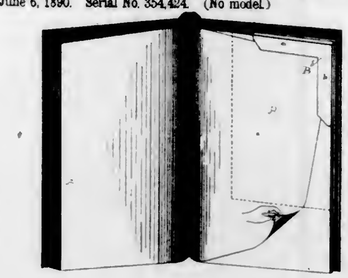
Claim.—1. In a saddle for bicycles and like vehicles, the spring C, shaped into a compound curve and having depending from the same at near its rear end a screw-threaded boss or nut which coincides with an opening through said spring, the saddle-leather, the yoke D, formed with the slotted extension *d*, a set-screw passing through the slotted extension and entering the boss or nut, a check-nut for said screw, and an adjusting-screw passing through the yoke and working against said boss or nut, substantially as shown and described.

2. In a saddle for bicycles and like vehicles, the combination, with the spring C and springs G G, of the concaved block resting upon said latter springs, and the clamp H, having the set-screw, substantially as described.

3. In a saddle for bicycles and like vehicles, the combination, with the spring C and clamps H I, of the springs G G, adjustable back and forth in said clamps, substantially as shown, and for the purpose set forth.

4. In a saddle for bicycles and like vehicles, the combination, with the spring C and clamps H I, of the springs G G, reversible and adjustable back and forth in said clamps, substantially as shown, and for the purpose as set forth.

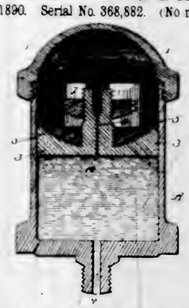
448,470. BOOK-MARK. CLARK M. BARSTOW, Bryan, Ohio. Filed June 6, 1890. Serial No. 354,424. (No model.)



Claim.—1. A book-mark comprising a base A, provided with a pocket or recess at a corner thereof along the two edges of the base, which extend at right angles to each other, said pocket serving to receive a number of leaves and the base affording a broad contact-surface to hold the pocket in place, substantially as and for the purposes set forth.

2. A book-mark comprising a base or body designed to be inserted between the leaves of a book and provided with a flap folded to form a recess to receive a number of the leaves to hold them and indicate where the reading was suspended, substantially as and for the purposes set forth.

448,471. GREASE-CUP. EDWIN H. BENNERS, Elizabeth, N. J. Filed Oct. 22, 1890. Serial No. 368,882. (No model.)



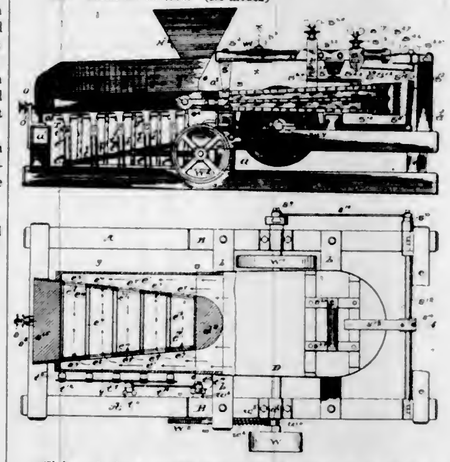
Claim.—1. In a grease-cup, the combination, with a shell or casing and plunger therein, of a disk located above the plunger and resting loosely thereon, whereby it may vibrate independently of the plunger, and by its contact against the latter force it in the direction the disk is taking, substantially as set forth.

2. In a grease-cup, the combination, with a shell or casing and plunger fitted therein, of a weighted disk resting loosely against the plunger and means for varying the extent of vibration of the disk, substantially as set forth.

3. In a grease-cup, the combination, with a shell or casing and plunger fitted therein, of a weighted vibrating disk, a nut for varying the extent of vibration of the disk, and means for securing said nut in place, substantially as set forth.

4. In a grease-cup, the combination, with a shell or casing and plunger fitted therein, said plunger having a stem, of a weighted disk mounted on the stem and adapted to vibrate against the plunger, and means on the stem for limiting the vibration of the disk, substantially as set forth.

448,472. SEPARATOR. WILLIAM I. CARD, La Crosse, Wis., assignor to the Card Concentrator Company, of Colorado. Filed July 2, 1890. Serial No. 357,502. (No model.)



Claim.—1. In a concentrator, the combination of an ore-bed, a bellows, and a beater for actuating the bellows, substantially as and for the purposes specified.

2. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, and an elastic anvil interposed between the bellows and beater, substantially as and for the purposes specified.

3. In a concentrator, the combination of an ore-bed, a bellows, a beater, and an adjustable weight arranged on the beater to control the momentum thereof, substantially as and for the purposes specified

4. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, an adjustable weight arranged on the beater, and an elastic anvil interposed between the bellows and beater, substantially as and for the purposes specified.

5. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, a strap or yoke connected with the bellows and encircling the beater, and a thumb-screw to control the movement of the beater, substantially as and for the purposes specified.

6. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, a strap or yoke connected with the bellows and encircling the beater, a thumb-screw for controlling the movement of the beater, and an elastic anvil interposed between the beater and the bellows, substantially as and for the purposes specified.

7. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, an adjustable weight arranged on the beater, a strap or yoke connected with the bellows and encircling the beater, and a thumb-screw for controlling the movement of the beater, substantially as and for the purposes specified.

8. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, an adjustable weight arranged on the beater, a strap or yoke connected with the bellows and encircling the beater, a thumb-screw for controlling the movement of the beater, and an elastic anvil interposed between the beater and the bellows, substantially as and for the purposes specified.

9. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, and ac adjustable crank for changing the throw of the beater, substantially as and for the purposes specified.

10. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, a sliding clamp arranged on the beater, and a rock-shaft and spring-arm for actuating the beater, substantially as and for the purposes specified.

11. In a concentrator, the combination of an ore-bed, a bellows, a beater for actuating the bellows, a sliding clamp arranged on the beater, a rock-shaft with spring-arm for actuating the beater, and an adjustable crank for changing the throw of the beater, substantially as and for the purposes specified.

12. In a concentrator, the combination, with an ore-bed having one or more discharge slots or ways extending downward from said bed for withdrawing the substratum of concentrates, of obstructive pieces arranged over said discharge ways or slots to prevent the formation of vortices over said discharge-slots, and means for producing stratification on said ore-bed, substantially as and for the purposes specified.

13. In a concentrator, the combination, with an ore-bed having a discharge-way for concentrates, of a concentrate-discharger arranged at the exit of said discharge-way, and mechanism for automatically actuating said discharger, whereby the discharge-way may be kept full of concentrates to prevent the escape of the stratifying medium through said discharge-way, substantially as specified.

14. In a concentrator, the combination, with an ore-bed having one or more discharge-ways for concentrates, and means for producing stratification on said bed, of oscillating plates arranged at the exits of said ways to prevent flow therethrough when at rest, and mechanism to automatically oscillate said plates to remove the contents of said discharge-ways, substantially as and for the purposes specified.

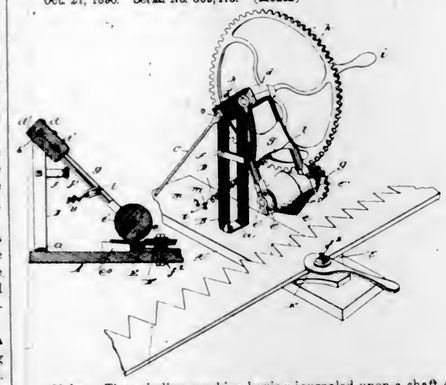
15. In a concentrator, the combination, with an ore-bed having one or more discharge-ways for concentrates, and means for producing stratification on said bed, of oscillating plates arranged at the exits of said ways, stationary plates arranged in said ways to coact with the oscillating plates in promoting a measured rate of discharge, and mechanism for automatically actuating said oscillating plates, substantially as and for the purposes specified.

16. In a concentrator, the combination, with an ore-bed having one or more discharge-ways for concentrates, and means for producing stratification on said bed, of obstructive pieces arranged over said ways, and oscillating plates arranged at the exits of said ways to regulate the discharge of concentrates, substantially as and for the purposes specified.

17. In a concentrator, the combination, with an ore-bed having one or more discharge-ways for concentrates, and means for producing stratification on said bed, of obstructive pieces arranged over said ways, dischargers arranged at the exits of said ways, and mechanism for automatically actuating said dischargers for discharging the concentrates in measured and regulated quantities, substantially as specified.

18. In a concentrator, the combination, with an ore-bed having one or more discharge-ways for concentrates, and means for producing stratification on said bed, of obstructive pieces arranged over said ways, stationary plates arranged in said ways to assist in producing a measured rate of discharge, oscillating plates arranged at the exits of said ways, and mechanism for automatically actuating said oscillating plates to discharge the concentrates at a measured rate, whereby said discharge-ways may be kept always full to prevent such escape of the stratifying-fluid through said ways as would impair the process of stratification on the surface of the ore-bed, substantially as and for the purposes specified.

448,473. SICKLE-GRINDER. GEORGE J. CLINE, Goshen, Ind. Filed Oct. 27, 1890. Serial No. 369,473. (Model.)



Claim.—The grinding-machine having journaled upon a shaft or journal supported between the upper ends of a standard a bearing-block whose free end bears a journal or shaft carrying a handled wheel, in combination with a bracket or hanger carrying the grinder, whose shaft carries a pinion geared to said wheel, and the spring-connected to said bracket and to the base of the machine, substantially as set forth.

448,474. CUE-TIP FASTENER. HENRY M. CRIDER, Knightstown, Ind. Filed Dec. 18, 1890. Serial No. 375,148. (No model.)



Claim.—1. A cue-tip fastener comprising a tube secured to the upper end of a cue, a ring sliding upon such tube, wires connected thereto having hooks at their upper ends for entering the sides of the tip, and a collar loosely mounted on the lower end of such tube, threaded inside, and engaging with threads on the outside of the sliding ring, substantially as shown and described.

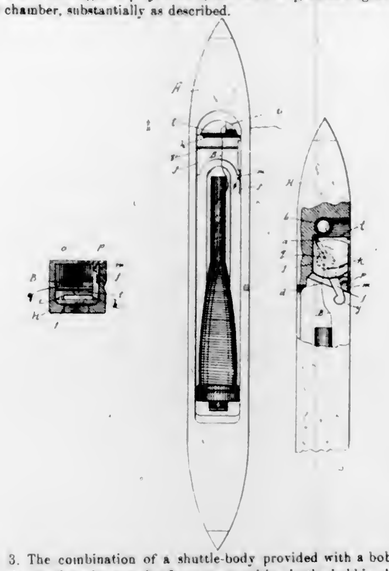
2. A cue-tip fastener comprising a tube secured to the upper end of a cue, a collar having a threaded flange loosely mounted on the lower end of such tube, a ring sliding upon the tube, wires connected therewith sliding in grooves in the sides and through openings in the re-enforced upper end of such tube, such wires having hooks for gripping the edges of the tip, in combination with a leather tip having a shouldered base seated in a similar opening in the top of the tube and with a cue connected to the tube, its upper end forming a support for the bottom of the tip, substantially as shown and described.

3. A cue-tip fastener comprising hooked wires for clutching the tip, connected to a ring sliding upon the cue, its outer surface threaded for engagement, and in combination with a collar loosely mounted on the cue below such ring and threaded inside to engage with the outer face of the ring for drawing the tip down upon and holding it to the upper end of the cue, substantially as shown and described.

448,475. TENSION DEVICE FOR LOOM-SHUTTLES. JOHN CUTHBERTSON, Lowell, Mass. Filed Feb. 8, 1890. Serial No. 339,753. (No model.)

Claim.—1. The combination of a shuttle-body, a spring-actuated tension-lever pivoted within the bobbin-chamber thereof, an adjustable stop for said lever, an arm on said lever projecting into the bobbin-chamber, and a rod extending across said chamber parallel with said arm, substantially as described.

2. The combination of a shuttle-body, a spring-actuated tension-lever *f*, pivoted within the bobbin-chamber thereof and provided with the arm *h*, having the projection *i*, and the rod *q*, extending across said chamber, substantially as described.



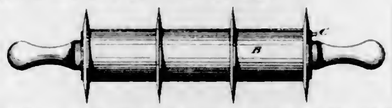
3. The combination of a shuttle-body provided with a bobbin-chamber, a thread-eye and a flange or partition in the bobbin-chamber adjacent to said eye, a rod extending across said chamber, and a spring-actuated tension-lever pivoted within said chamber and provided with a horizontal arm engaging the bottom thereof between said rod and flange, substantially as described.

4. The combination of a shuttle-body, a spring-actuated tension-lever pivoted within the bobbin-chamber thereof, an adjustable stop for said lever, and a horizontal arm on said lever projecting into the bobbin-chamber and provided with a vertical projection engaging the bottom thereof, substantially as described.

5 The combination of a shuttle-body, a spring-actuated tension-lever pivoted within the bobbin-chamber and having an arm projecting therein adjacent to the thread-eye end, and a cam-block, as *m*, pivoted to the wall of said chamber in engagement with said lever and serving as an adjustable stop therefor.

6. The combination of the body A, the lever *f*, pivoted to the wall of the bobbin-chamber thereof and having the arm *h*, provided with the stud *i*, the rod *q*, the adjustable stop *m*, and the partition *t*, substantially as described.

448,476. ROLLING-PIN. CATHARINE DEINER, Lebanon, Pa. Filed Mar. 10, 1890. Serial No. 343,416. (No model.)



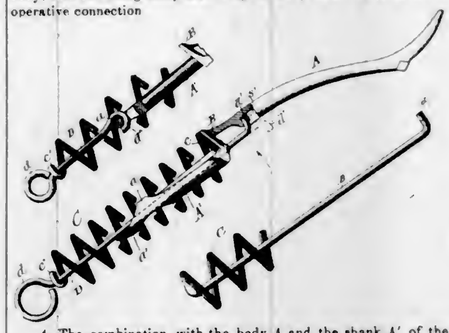
Claim.—A rolling-pin having a loop or eye on the end thereof, in combination with an encircling sleeve having a cutter thereon, and a spring-catch engaging said eye, the sleeve being provided at its ends with a flange, which is formed with an opening through which said eye projects, substantially as described.

448,477. HANDLE. LEVI M. DEVORE, Freeport, Ill. Filed Mar. 28, 1890. Serial No. 345,746. (No model.)

Claim.—1. The combination, with a rigid handle-body having an annular shoulder near one end, of a spring-coil with its end resting against said shoulder, and a rod lying within the coil, detachably connected with it at the outer end and engaging the body of the handle at its own opposite end, substantially as set forth.

2. In a device of the class described, the combination, with a suitable body, of a coil-spring resting at its inner end against a shoulder upon the body, a separable central rod or wire lying within the coil and secured at its inner end to the body, and an enlargement on the outer end of said rod pressing against the outer end of the coil and holding the same in position, substantially as and for the purpose set forth.

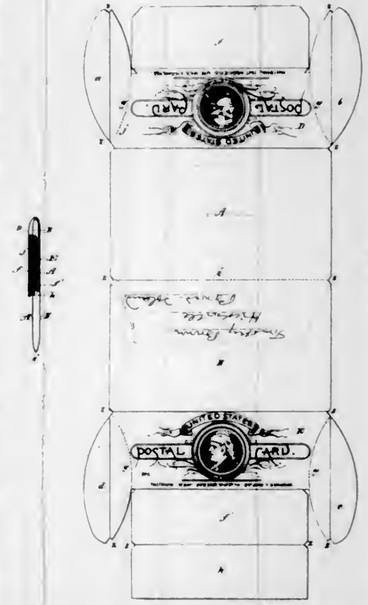
3. In a device of the class described, the combination, with a suitable body and shank, of a coil resting against a shoulder formed upon the body, a boss or button pressing against the outer end of the coil, and a separable rod or wire connecting said boss or button with the body, said coil being compressed longitudinally when the parts are in operative connection



4. The combination, with the body A and the shank A', of the coil C, the separable rod D, lying within the coil and hooked at its inner end to the body, and a suitable boss or enlargement formed at the outer end of the rod and pressing against the outer end of the coil, substantially as and for the purpose set forth.

5. In a handle of the class described, the combination, with a suitable body formed with an annular shoulder, of a coil abutting against said shoulder, a rod lying within the coil and passing through the opening in said shoulder, and means for connecting the rod with the outer end of the coil, said rod being provided with a hook engaging a suitable catch on the body, and the opening in said shoulder being of sufficient size to permit the passage of said hook.

448,478. SEALED REPLY-POSTAL. EDWARD A. DUBEY, Brooklyn, N. Y., assignor of one-half to James Langan, same place. Filed May 31, 1890. Serial No. 353,789. (No model.)

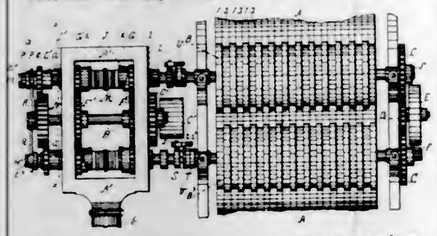


Claim.—1. A sealed reply postal-card consisting of the stamped flap D, bearing sealing-flaps *a b*, the stamped flap E, bearing sealing-flaps *d e*, said stamped flaps being connected by two or more intermediate rectangles A B, the rectangle B being arranged to bear on one side the address of the receiver and on the other side the address of the sender, substantially as described.

2. The sealed postal-card composed of the flaps *h f'*, stamped part *m*, fields A B, stamped part *j*, flap *f*, and of the side flaps *a b d e*, substantially as herein shown and described.

448,479. CARDING-ENGINE FOR MAKING MOTTLED YARNS.

RUFUS B. FOWLER, Worcester, Mass., assignor to Thomas D. Sayles, Norwich, Conn. Filed May 3, 1882. Serial No. 60,337. (No model.)



Claim.—1. The combination, with a carding-cylinder and one or more doffing-cylinders having spaced rings of card-clothing, of sliding shafts with their axes substantially in alignment with the axes of said doffing-cylinders, springs whose tension is applied to move said sliding shafts alternately in opposite directions with an instantaneous movement, and mechanism by which said springs are compressed and released, substantially as described.

2. The combination, with a carding-cylinder and one or more doffing-cylinders, of actuating-springs whose tension is applied to move said doffing-cylinders in opposite directions alternately, and cams having a continuous rotation and acting upon said springs to effect a gradual compression of the springs, followed by an instantaneous releasing of said springs, allowing their tension to be applied to said doffing-cylinders, substantially as described.

3. The combination, with the doffers of a finisher-card, of the actuating mechanism consisting of the spring M, cams K K', sleeves I I', with their projecting pins J, frame A' A', splines *a a*, collars L L', and shaft H, as described, and for the purposes set forth.

4. The combination, with the longitudinally-reciprocating doffers of a finisher-card and mechanism for actuating the same, of a locking device consisting of the pinion O, with its grooved hubs P P and cams *b* and latch R, with spring *d*, as described, and for the purposes set forth.

5. The combination, with sliding shafts H H', connected with the doffers of a finisher-card and their connected actuating mechanism and locking devices, as shown and described, of the driving-shaft B', gears E', F' F', and N, pinion D', and pulley C', as described, and for the purposes set forth.

6. The combination, with the rotary and longitudinally-reciprocating doffer-shafts, the sliding shafts H H', and their actuating mechanism, of the joints V V, consisting of the fixed collar S, with the pin *s*, the fixed collars T, the loose ring *t*, having lugs and pivot-pin, and the hinged connecting-link *t'*, as described, and for the purposes set forth.

7. The combination, with a carding-cylinder and with one or more doffers and an actuating spring or springs M and mechanism for compressing and releasing said spring or springs, of shafts H H' and connecting-joints, substantially as described, between the shafts of the doffers and the shafts H H', substantially as described.

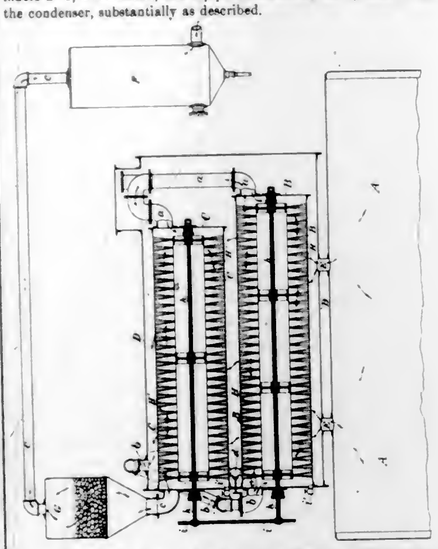
448,480. PROCESS OF AND APPARATUS FOR REFINING AND PURIFYING PETROLEUM.

HERMAN FRASCH, Cleveland, Ohio, assignor to the Solar Refining Company, of Ohio. Filed Oct. 21, 1889. Serial No. 327,637. (No model.)

Claim.—1. The process of removing from petroleum the sulphur compound known as "skunk," consisting in vaporizing the petroleum and passing the vapors through a vessel containing an oily liquid holding in solution, or solution and suspension, a substance soluble in such petroleum and having an affinity for the skunk compound, and raising the solution into contact with the vapors above the liquid by causing a device to enter repeatedly into and agitate the liquid and raise upon the surface of the device a portion of the liquid into the space occupied by the vapors, substantially as described.

2. The combination of a still for vaporizing petroleum and one or more cylinders arranged so as to connect with each other and with the vapor-space of the still, each cylinder containing a revolving brush, the cylinders being located within a chamber through which the hot vapors from the still pass before entering the cylinders, substantially as described.

3. The combination of the still A, the casing D, connected therewith, the cylinders B and C within the casing, a revoluble brush H within each cylinder, a pipe E, connecting the still and casing, a pipe *b*, connecting the casing and cylinder B, a pipe *a*, connecting the cylinders B C, a condenser, and a pipe *c*, connecting the cylinder C and the condenser, substantially as described.



4. The combination, with a vaporizing-still, of a cylinder or cylinders connected with the vapor-space of the still and each inclosing a revolving brush, a condenser, and a connection between the cylinders and condenser, substantially as described.

5. The combination, with a vaporizing-still, of a cylinder or cylinders connected with the vapor-space of the still and adapted to retain liquid therein and inclosing a revolving brush arranged to dip into the liquid, a condenser, and a partially-condensing filter having its inlet connected with said cylinder or cylinders and its outlet with said condenser, substantially as described.

448,481. CASH-RECORDER.

ABRAHAM O. FRICK, Waynesborough, Pa. Filed Sept. 15, 1890. Serial No. 365,067. (No model.)



Claim.—1. A cash-recorder comprising among its members a paper-supply roll, a feed-roll in frictional engagement with said paper-supply roll and adapted to be operated by a moving part, one of said rolls serving as a table to support the paper while the record is being made.

2. A cash-recorder comprising among its members a paper-supply roll, a feed-roll in frictional engagement with said paper-supply roll and adapted to receive paper directly therefrom, one of said rolls serving as a table for supporting the paper while the record is being made, the said rolls having the one a movement toward the other to compensate for the diminution of the paper-roll, substantially as described.

3. A cash-recorder comprising among its members a paper-supply roll, a feed-roll frictionally engaging said paper-supply roll, and a drawer operatively connected with said feed-roll, one of said rolls having a movement toward the other to compensate for the diminution of the paper-roll as the paper is withdrawn therefrom, substantially as described.

4. A cash-recorder comprising among its members a paper-supply roll, a feed-roll frictionally engaging said paper-supply roll, the paper from the supply-roll engaging the feed-roll at one or more points of its periphery, means for operating the feed-roll, an inclosing casing having a recording-aperture directly opposed to one of said rolls, the said casing and the roll opposite the aperture therein having the one a movement toward the other, substantially as described.

5. A cash-recorder comprising among its members a paper-supply roll, a feed-roll in frictional engagement therewith, means for moving said feed-roll, an inclosing casing engaging one of said rolls and having a recording-aperture adjacent to said roll, and means for holding said roll in contact and the casing in contact with the roll adjacent to the aperture therein, substantially as described.

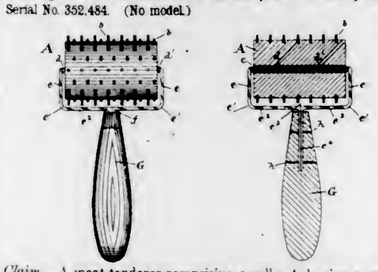
6. A cash-recorder comprising among its members a paper-supply roll, a feed-roll in frictional engagement therewith, means for moving said feed-roll, a casing for containing said parts, having a telescoping top provided with a recording-aperture adjacent to one of said rolls, said top being adapted to telescope with respect to the casing, whereby said top is held by its own weight in engagement with its adjacent roll, substantially as described.

7. A cash-recorder comprising among its members a paper-supply roll, a casing containing said parts, provided with a top movable with respect thereto, and a flexible non-elastic connection between said casing and top, permitting the movement of the latter without exposing the contents of the casing, substantially as described.

8. A cash-recorder comprising among its members a paper-supply roll, a pivoted yoke supporting the same, a feed-roll in frictional engagement with said paper-roll, means for moving the feed-roll, an inclosing casing, and a pivoted top therefor engaging the paper-roll and having a recording-aperture adjacent thereto, substantially as described.

448,482. MEAT-TENDERER.

WILLIAM P. GINTER, Hughesville, Pa., assignor of one-half to John B. FOX, same place. Filed May 20, 1890. Serial No. 352,484. (No model.)



Claim.—A meat-tenderer comprising a roller A, having a central or axial bore and having pins on its surface, a handle G, a two-part connection between the handle and the roller, consisting of the shaft portions *d* and *d'*, respectively, the flat side-bar portions *e*, the straight portions e^3, parallel with the shaft portions, and the shank portions e^4, abutting against each other, and pins transversely through the shank portions and the handle, the shaft portions of said connection extending to the center of the roller, whereby each portion has two points of contact—viz., at the end of the roller and also at the center—substantially as described.

448,483. DRAFT-EQUALIZER.

SAMUEL GRAHAM, Lebeck, Mo. Filed Nov. 10, 1890. Serial No. 370,894. (No model.)



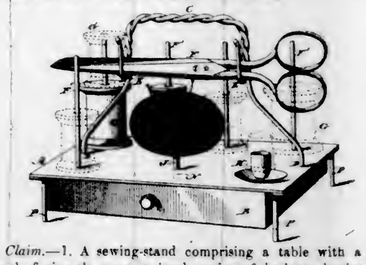
Claim.—1. In combination with a doubletree, a draft-equalizing clevis secured thereto by a bolt, having a forward-projecting portion in line with the said bolt to which the draft devices are secured, and a laterally-extending portion in rear of the said bolt and adapted to bear against the rear edge of the doubletree when the latter is pulled oblique to the line of draft, substantially as described.

2. In combination with a doubletree, a draft-equalizing clevis secured thereto by a bolt, and having two forward-projecting arms through which the said bolt passes and to which the draft devices are secured, and a lateral extension in rear of the said bolt, consisting of an arm or plate carried by each arm of the clevis and a connecting bolt or bar between such arms adapted to bear against the rear edge of the doubletree, substantially as shown and described.

3. In combination with a doubletree, a draft-equalizing clevis secured thereto and having a forward-extending portion to which the draft devices are secured, and a lateral extension in rear of the doubletree provided with a series of apertures and a bolt or pin adapted to be passed through the said apertures and to engage with the rear edge of the doubletree when it is oblique to the line of draft, substantially as shown and described.

448,484. SEWING-STAND.

MARY E. HARRIS, Camden, N. J. Filed June 30, 1890. Serial No. 357,227. (No model.)



Claim.—1. A sewing-stand comprising a table with a handle formed of wire, the upper twisted portion of the latter having hooks laterally extending from the same, substantially as and for the purpose set forth.

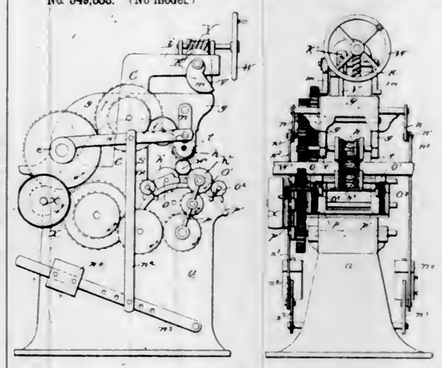
2. A sewing-stand comprising a table with a handle having a reenforcing piece of material applied thereto, the ends of the said reenforcing piece terminating in hooks extending laterally from the side of the handle, substantially as described.

3. A sewing-stand having a table provided with a handle composed of two pieces of wire, one end of each piece being secured to the stand, and the said pieces being twisted together, forming a central handle portion and having the free ends forming hooks, substantially as described.

4. A sewing-stand having a table with a standard thereon supporting a pin-cushion and provided with a drawer, the lower end of said standard extending below said table and within the drawer, forming a stop and preventing the removal of the said drawer from the table, substantially as described.

448,485. MACHINE FOR EMBOSSING DESIGNS ON WOOD.

FREDERICK H. HAWKINS, New York, N. Y. Filed Apr. 22, 1890. Serial No. 349,053. (No model.)



Claim.—1. In a machine for ornamenting wood and other suitable material, the combination, with the main frame, of a die-carrying frame pivoted thereon, a strap for suspending the outer end of the die-carrying frame from the main frame, a cam for depressing the die-carrying frame, and gearing for elevating said frame, substantially as specified.

2. The combination, with the main frame, of the standard rising therefrom and carrying horizontal arms, a worm-gear journaled between the arms, cams fixed to the outer ends of the shaft carrying the worm-gear, a power-gear also journaled on the horizontal arms and meshing with the worm-gear, a die-carrying frame journaled in the main frame, and a strap connecting the outer end of the die-carrying frame with the worm-shaft, substantially as specified.

3. In a machine substantially as described, the combination, with the main frame having the segmental bearings, of the journal boxes or blocks mounted thereon, the ornamenting-rolls journaled in said blocks, and the shafts carrying pinions also mounted in said blocks, substantially as specified.

4. The combination, with the main frame, of the upper die or roll carrying frame pivoted at one end therein, the lower rolls bearing on the main frame, the arm pivoted at one end to the main frame and having its opposite end connected with the outer end of the die-carrying frame, the weighted lever pivoted at one end to the main frame,

and the tension-bar connecting the weighted lever with the upper arm, substantially as specified.

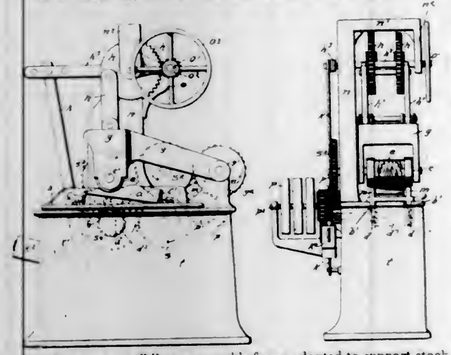
5. The combination, with the main frame, of the pivoted die-carrying frame, means for elevating the outer end of the die-carrying frame, cams for depressing said frame, and the weighted lever and arms connecting the same to the pivoted die-carrying frame, substantially as specified.

6. The main frame having a segmental bearing-face, in combination with the lower dies, blocks seated on the segmental face and supporting the dies, gearing for rotating said dies, and the pinions and shafts for moving the bearings of the lower dies, substantially as specified.

7. In a machine for embossing designs on turned or irregular-shaped articles of wood or other materials, the combination of the frame a, the standard c, the adjustable frame or arm g, the fixed arm i, the device for raising the arm g, consisting of the hand-wheel W, the worm Y, wheel K, cam m, and strap V, the dies h, h', and h^3, with their shafts and driving-gear, the pressure device consisting of the hanger n, the bar n', the tension-bar n^3, the lever n^3, and weight n^4, and the driving-gear, all substantially as shown, and for the purpose specified.

8. In a machine for ornamenting wood and the like, the pivoted arm and the upper rotatable die carried thereby, in combination with the tension device connected with said arm, a set of lower rotatable dies movably supported upon a segmental base, and means for operating said dies, whereby both the upper and lower dies may be rotated and moved to and from one another, substantially as specified.

448,486. MACHINE FOR EMBOSSING ORNAMENTAL DESIGNS ON WOOD OR OTHER MATERIAL. FREDERICK H. HAWKINS, New York, N. Y. Filed May 13, 1890. Serial No. 351,703. (No model.)



Claim.—1. A sliding or movable frame adapted to support stock, having vertical guards, in combination with a vertically-movable engraving-die limited in its downward movements by said guards, substantially as specified.

2. In a machine for ornamenting wood and other material, the combination, with a sliding frame having teeth on its under side and vertically-disposed guards on its upper side, of a vertically-yielding engraving-roll limited in its downward movement by said guard, and one or more pinions on a shaft for moving the rack and its frame, substantially as specified.

3. The combination, with the main frame, of the rack-frame having vertically-disposed guards on its upper side, the clamps also on the upper side, the angular piece arranged between the clamps, the feed-roller below the movable frame, the pinions on the shaft of said roller for moving the rack and its frame, and suitable means for rotating said shaft, substantially as specified.

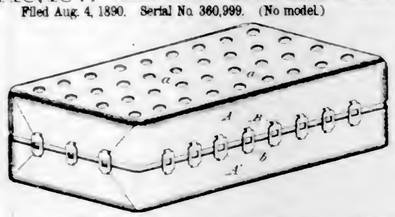
4. A machine for ornamenting wood and other material, having a vertically-adjustable engraving-die rotated by gearing, a movable stock-table also operated by gearing and having vertical guard-flanges, an inclined bearing-block on its face, clamps for confining stock on said bearing-block, tension devices connected with the movable engraving-die to hold the same depressed, and mechanical means for simultaneously raising the engraving-die and relieving the tension devices from said die, substantially as specified.

5. The combination, with the main frame, of the standard rising therefrom and having the horizontal branch and also the hanger formed thereon, a shaft journaled in said standard and carrying one or more gear-wheels, a horizontal shaft having a pinion engaging said gears, a hand-wheel on the pinion-shaft, a vertically-movable engraving-die, arms connecting the die with said gears, an arm fixed to one end of the gear-shaft, a weighted lever pivoted to the main frame, and an arm connecting the arm of the weighted lever with the arm secured to said gear-shaft, substantially as specified.

6. A machine for ornamenting wood and other material, having a movable stock frame or table, an angular bed-piece secured thereto, a vertically-movable engraving-die, gearing for rotating the die, gearing for raising and lowering said die, and a tension device connected with the latter-named gearing, substantially as specified.

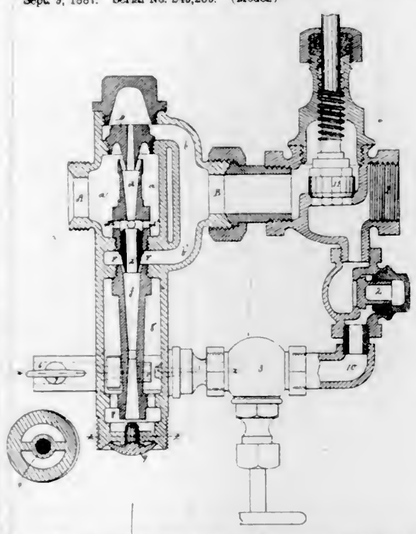
7. In a machine for ornamenting wood, the base or stand, the standard n, arm n', and hanging arm n^3, in combination with the swinging arm g, the die e, the pressure device consisting of the arms h' k', the wheels k k, the shaft k^3, the arm k^3, the tension-rod k, the lever k', and weight k^4, also the hand-wheel o^3, the shaft o', pinions o^2, and wheels k k to lift the free end of the swinging arm g, the driving mechanism consisting of the pulleys p p p, the gear-wheels p' s s' s^3 s^3 s^4, the feed-roller d^2, and pinions d and d', all substantially as shown, and for the purpose specified.

448,487. BALE-COVERING. MARK A. HEATH, Providence, R. I. Filed Aug. 4, 1890. Serial No. 360,999. (No model.)



Claim.—In a bale-covering, the combination, with the sections having slots at their edges, of compound hooks for holding the sections together, said hooks consisting of two interlocking parts, each part being provided with a hook for engaging the slots in the sections, substantially as and for the purpose described.

448,488. INJECTOR. WILLIAM R. PARK, Taunton, Mass. Filed Sept. 9, 1887. Serial No. 249,269. (Model.)

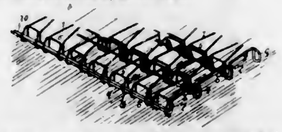


Claim.—1. In combination with overflow-chamber 8 and its waste-cock 6 7, two steam-nozzles D and F, with their tubes d d' f, nozzle D and its tube d d' emptying directly through nozzle F into its tube f, and tube f emptying directly into chamber 8, all substantially as described.

2. In a jet apparatus having an auxiliary lifting-jet, the automatic valve 2, exposed on one side to steam-pressure and on the other side to water-pressure, substantially as and for the purpose specified.

448,489. WIRE FABRIC FOR MATS. ABBOTT M. REEVES, Decatur, Ill. Filed Nov. 3, 1890. Serial No. 370,126. (No model.)

Claim.—1. A mat fabric comprising a surface composed of zigzag strips of wire, the ends of the zigzags being bent downward to form supports, looped to receive connecting-rods, and returned to the surface to form transverse lines, as set forth.



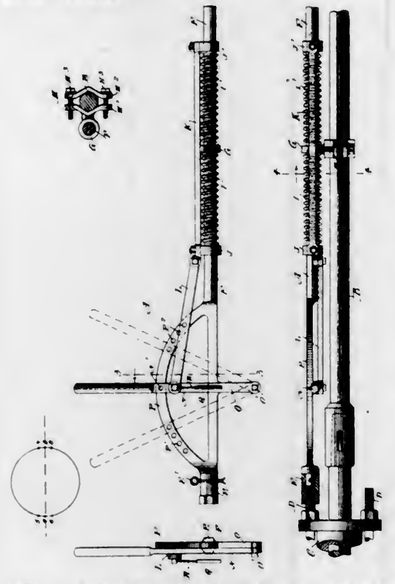
2. A mat fabric comprising a surface composed of zigzag strips of wire, having each wire of each strip alternated with the wires of conjoining strips, the ends of the zigzags being bent downward, looped, and returned to the surface, as set forth.

3. The combination, with strips having the looped extensions, of connecting-rods, each extended through the loops of two conjoining strips, bent at the ends to conform to the surface of the strips, and looped around an adjacent connecting-rod, as set forth.

4. A fabric composed of strips of zigzag wire, the bodies forming surface lines in one direction and the ends forming surface lines at or nearly at right angles with the bodies, as set forth.

5. A fabric composed of strips of zigzag wire, the bodies forming oblique surface lines tending generally in one direction and the ends forming transverse surface lines, as set forth.

448,490. DEVICE FOR SETTING ENGINE-VALVES. FREDERICK W. WILLIAMS, Minneapolis, Minn. Filed May 1, 1890. Serial No. 350,198. (No model.)



Claim.—1. A device for setting engine-valves, comprising springs adapted to exert alternately in both directions a temporary pressure on the valve equal to the pressure under which the valve operates when the engine is running, substantially as and for the purpose set forth.

2. A device for setting engine-valves, comprising a rod adapted to be clamped to the valve-stem, springs on the rod, and means for alternately compressing the springs to cause them to exert a pressure on the valve equal to the pressure under which the valve operates when the engine is running, substantially as described.

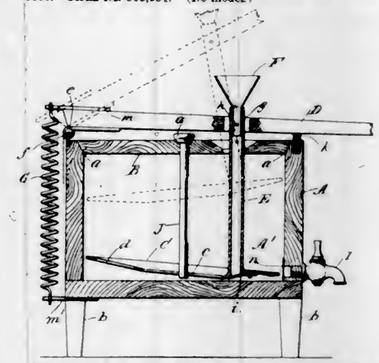
3. A device for setting engine-valves, comprising a rod adapted to be clamped to and alongside of the valve-stem, springs on the said rod, a compressing device on the rod, and a lever connected to the compressing device, substantially as herein shown and described.

4. In a device for setting engine-valves, the combination, with a clamp adapted to be secured to the valve-stem, of springs adapted to press on the said clamp in line with the travel of the valve-stem, connected collars fitted to slide and adapted to engage the said spring, and a lever connected with the said connected collars to alternately compress the said springs, substantially as shown and described.

5. In a device for setting engine-valves, the combination, with a clamp adapted to be secured to the valve-stem, of springs adapted to press on the said clamp in line with the travel of the valve-stem, connected collars fitted to slide and adapted to engage the said spring, a lever connected with the said connected collars to alternately compress the said springs, and means, substantially as described, for locking the said lever in position when one of the springs is compressed, as set forth.

6. A device for setting engine-valves, comprising a rod extending in line with the valve-stem, a lever pivoted on said rod and adapted to be locked to a segment on the said rod, a link pivotally connected with the said lever, collars fitted to slide on the said rod and connected with each other, and also pivotally connected with the said link, springs coiled on the said rod between the said collars, and a clamping device adapted to be secured on the valve-stem and formed with a collar engaging the inner ends of the said spring, substantially as shown and described.

448,491. CHURN. JOHN F. ADAMS, Aledo, Ill. Filed Sept. 24, 1890. Serial No. 365,951. (No model.)



Claim.—1. In a churn, a cream-chamber having its lid apertured to receive a thermometer which hangs pendent therein, and a centrally-apertured churn-dasher which is adapted to reciprocate vertically in the cream-chamber and by provision of its central aperture avoid contact with the thermometer, substantially as described.

2. A churn having a cream-chamber, a lid, a vertically-reciprocating dasher within, a tubular plunger-rod secured by its lower end to the dasher and provided with a normally-closed flap-valve on said lower end, a normally-horizontal vibratory lever through which the plunger-rod extends and to which it is pivoted, a funnel on the upper end of the plunger-rod above its point of connection with the lever, and a percussion-block on the cream-chamber which will receive the impact of the lever, substantially as described.

3. A churn having the following elements, viz: a cream-chamber, a lid, an upwardly-dished dasher centrally apertured and radially slotted, a tubular plunger-rod affixed near one edge of the dasher, a flap-valve on the lower end of the plunger which opens by percussion, a spring-supported lever, and a slightly elastic buffer-block whereon the lever will strike when vibrated.

448,492. MUCILAGE-SCRAPER. FREDERICK T. AIKINS, Toronto, Canada. Filed Sept. 6, 1890. Serial No. 364,160. (No model.)



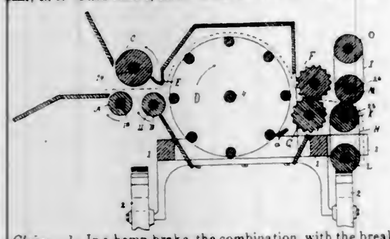
Claim.—1. A strip of metal B, detachably connected to the neck of a bottle A and having fingers C extending from it, jaws D being formed on the ends of the said fingers, which fingers are set so that the tension of their spring shall cause the jaws to press elastically toward each other, substantially as and for the purpose specified.

2. A strip of metal B, detachably connected to the neck of a bottle A and having fingers C extending from it, jaws D being formed on the ends of the said fingers, which fingers are set so as to leave a space between them and cause the jaws to press elastically toward each other, substantially as and for the purpose specified.

3. A strip of metal B, detachably connected to the neck of a bottle A and having fingers C extending from it, jaws D being formed on the ends of the said fingers, the strip B at its connection with the

finger C being set inwardly, so as to bring the jaws B squarely opposite to each other, substantially as and for the purpose specified.

448,493. HEMP-BRAKE. ALBERT ANGELL, East Orange, assignor of two-thirds to Josiah O. Ward, Orange, and Wilbur Huntington, Montclair, N. J. Filed June 9, 1890. Serial No. 354,717. (No model.)



Claim.—1. In a hemp-brake, the combination, with the breaking-cleaner, of the two lower feed-rolls, an upper feed-roll located above the space between the two lower feed-rolls, and mechanism for driving the feed-rolls, substantially as described.

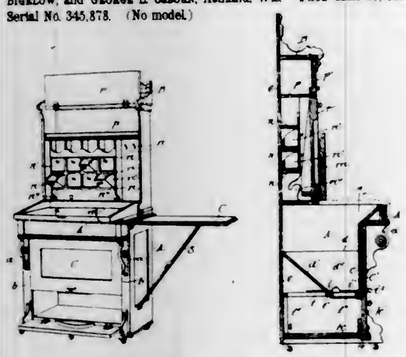
2. In a hemp brake, the combination, with the breaking-cleaner, the two lower feed-rolls, an upper feed-rod located above the space between the two lower feed-rolls, mechanism for driving the cleaner and feed-rolls, and means for regulating the pressure of the upper feed-roll, substantially as described.

3. In a hemp-brake, the combination, with the breaking-cleaner and the delivery-rolls, of the corrugated crushing-rolls located between said breaking-cleaner and delivery-rolls, substantially as described.

4. A hemp-brake composed of the three feed-rolls A B C, the breaking-cleaner D, the stationary breakers E and *a*, the delivery-aprons H and I, and the corrugated rolls F and G, located between the breaking-cleaner and delivery-aprons, substantially as described.

5. In a hemp-brake, the combination of one or more feeding-rolls, the revolving breaking-cleaner D, a delivery device, and the corrugated rolls F G, located between the cleaner D and the delivery device, substantially as described.

448,494. KITCHEN-CABINET. HENRY C. ARMSTRONG, DAVID E. BIGELOW, and GEORGE L. OSBORN, Ashland, Wis. Filed Mar. 29, 1890. Serial No. 345,878. (No model.)



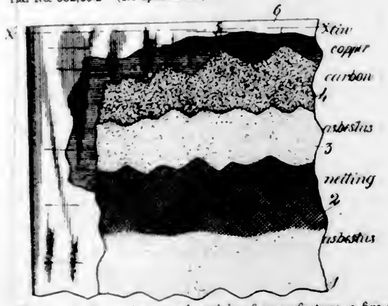
Claim.—1. The combination, with a compartment provided in its bottom near its open front end with a curved aperture, of an outward-swinging box having a curved pin n^3 on its side near its front end entering said recess, the upper edge of the rear end of the box being constructed to strike the top of the compartment at the forward end thereof, substantially as and for the purpose set forth.

2. The combination, with the cabinet having a chamber provided with a flour-bin having an outlet in its lower end, of the two strips or ledges f' and the screen-frame having a cross-bar f^3 at its front end engaging the ledges f', and the swinging leg at the rear end of the frame resting on the floor of said chamber and holding the screen in position, substantially as set forth.

3. In a cabinet of the character described, the screen-frame consisting in parallel side bars *f f*, front cross-bar f^3, projecting at its ends beyond the side bars, the bar f^3, a rectangular open recess being formed in said bars, a screen having its edges entering said recess, the wedge-strips f^4, securing the screen in place, and the swinging leg f^5 at the rear end of the frame, substantially as set forth.

4. The combination, with the cabinet having a compartment provided with a flour-bin *d*, having ledges f' f', of the removable screen-frame having a removable screen, a front cross-piece f^3, the ends of which rest on the said ledges, and a swinging leg f^5 at the rear end of the screen-frame to hold it in position, a horizontally-swinging cut-off pivoted to the under side of said removable frame, and a reciprocating wire frame in the lower part of the bin over the screen, substantially as set forth.

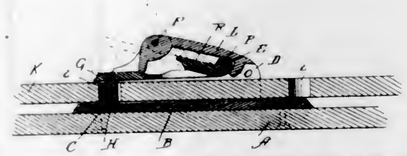
448,495. WATER-PROOF AND FIRE-PROOF MATERIAL FOR ROOFING, &c. ALOIS BLANK, St. Louis, Mo. Filed May 23, 1890. Serial No. 352,854. (No specimens.)



Claim.—1. As an improved article of manufacture, a fire-proof mass streugthened or toughened by incorporation within a body thereof of a netting of wire or other material, and having formed upon its outer surface a coating of metal, substantially as and for the purposes herein set forth.

2. The improved fire-proof material composed of a mass of fire-proof fibers toughened or strengthened by the incorporation therein of a netting 2, and having its interstices supplied with a carbonaceous material 4, and a coating of metal 5, adhering to said carbonaceous material and to the mass of fire-proof fibers, the same entering the interstices of the latter, substantially as set forth.

448,496. BUCKLE FOR SECURING STRAPS. THORVALD BRANDT, Baden, Germany. Filed Oct. 28, 1890. Serial No. 369,639. (No model.)



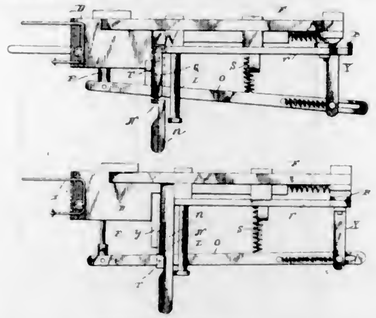
Claim.—The improved buckle for securing straps or oeits, constructed substantially as herein described and having a fastening-plate G, provided with a stud H and a tongue R, a pivoted locking-plate L, formed with a toe M, the plate G being raised or depressed by the plate L accordingly as the toe of the latter engages beneath the tongue R or against the back of the plate G.

448,497. CAR-COUPLING. TOM FULL BRIGHT, Detroit, Tex. Filed Dec. 17, 1890. Serial No. 375,016. (No model.)

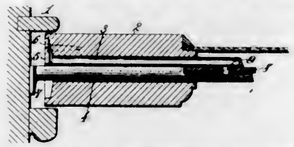
Claim.—1. In a car-coupling, the combination, with the draw-head sliding in a suitable frame-work, a rod R, pivoted thereto, a bar B, pivoted at its center to said frame-work, one end of said bar being pivoted to the rear end of said rod, and a second rod *r*, pivoted at its rear end to the other end of said bar and having a lug at its front end, of a yoke *y*, mounted in the frame-work, a trip-lever T, pivoted in said yoke, a depending bar *n* at the other side of the frame-work, having a notch N engaging said trip-bar, and a coupling-pin pressed normally upward through said draw-head by a spring and held in uncoupled position by said trip-bar when engaged in said notch, the whole operating substantially as described.

2. In a car-coupling, the combination, with the draw-head sliding in a suitable frame-work beneath the car-body, a rod R, pivoted to one side of the draw-head, a yoke Y, mounted in the frame-work near its free end, a bar B, centrally pivoted upon the stem of said yoke, one

end of said bar being pivoted to the rear end of said rod R, and a second rod *r*, pivoted at its rear end to the other end of said bar and having a lug G at its front end, of a yoke *y*, mounted in the side of the frame-work, a trip-bar T, pivoted in said yoke, a depending bar *n* at the other side of the frame-work, having a notch N engaging said trip-bar, an operating-lever O, pivoted in the rearmost yoke Y and carrying a coupling-pin P at its front end passing normally upward through a hole in the draw-head, a spring S, connecting said lever with the frame-work, and a guide L, depending from the frame-work, the whole constructed and arranged substantially as and for the purpose hereinbefore set forth.



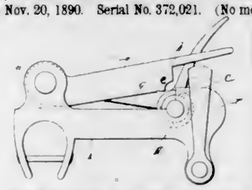
448,498. SASH-HOLDER. JOSEPH M. BROHARD, Clarksburg, W. Va. Filed Aug. 23, 1890. Serial No. 362,874. (No model.)



Claim.—1. In a sash-fastener, the combination of two substantially similar bars to be inserted in a recess or bore in the sash and one having means to firmly connect it with the sash, and a cam-lever pivoted upon one of the bars and having its edge constructed to bear against an abutment or shoulder on the other bar for projecting the latter against the window-jamb, substantially as described.

2. In a sash-fastener, the combination of two substantially similar bars to be inserted in a recess or bore in the sash and one having means to firmly connect it with the sash, and a cam-lever pivoted upon one of the bars and having its edge constructed to bear against an abutment or shoulder on the other bar for projecting the latter against the window-jamb, one of said bars formed with a rib and the other with a groove, for operation substantially as described

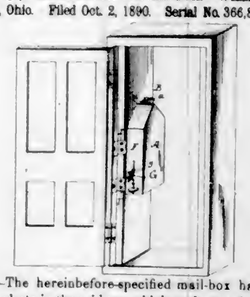
448,499. THILL-COUPLING. WILLIAM L. BRYAN, San Antonio, Tex. Filed Nov. 20, 1890. Serial No. 372,021. (No model.)



Claim.—1. The thill-coupling comprising the clip having the forward extensions or arms provided with the shoulders and the circular recesses for receiving the ends of the shaft-iron, and the bifurcated upper portion having pivoted therein the bifurcated lever-arm provided with the circular shoulders adapted to engage the ends of the shaft-iron, the catch for locking said lever-arm in such engagement, and the spring interposed between said parts for retracting said arm when released, substantially as described.

2. In a thill-coupling, the combination, with the arms *b*, having each near its forward end a shoulder *c*, and a circular groove or recess *d*, partially cut under said shoulder, of the pivoted bifurcated arm B, having the shoulders and the arc-shaped recesses, the spring-catch for holding said parts in locked position, and the spring for retracting said arm B when the catch is released, substantially as specified.

448,500. HOUSE-DOOR LETTER-BOX. WILLIAM BUSSARD, Port Jefferson, Ohio. Filed Oct. 2, 1890. Serial No. 366,837. (No model.)



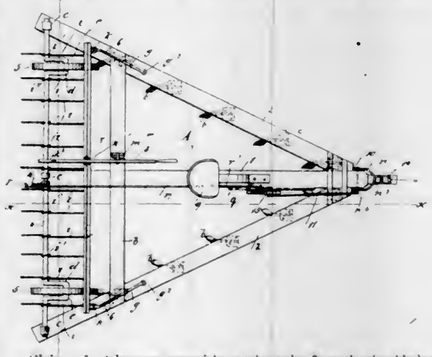
Claim.—The hereinbefore-specified mail-box having sloping top and having a chute in the said top which projects a short distance from each side thereof, a flap for closing the end of the chute, hinged to a staple that projects from the said top, a bottom adapted to slide through opening *e* in a side of the box on ways D D, strip D′ for holding the bottom down on the ways D D, the bottom having an extension *f* at its rear end to pass through opening *f″* in the rear side of the box, the bolt G to engage with and lock extension *f*, the flange H on the upper side of the bottom, the staple *h*, and a suitable lock for staple *h*, substantially as shown and described.

448,501. THRESHOLD. ASHER BUSSERT, Amanda, Ohio. Filed Aug. 7, 1890. Serial No. 361,253. (No model.)



Claim.—The combination, with a trough having an enlarged inner portion and upwardly-projecting flange, of a sill having horizontal top edge, beveled froot, projecting shoulders at each side to fit in the enlarged portions of the trough, and horizontal grooves on its under side which extend entirely across the same, substantially as described.

448,502. LEVELING ATTACHMENT FOR HARROWS. LORENZO D. CORSER, Ebensburg, Pa. Filed Sept. 10, 1890. Serial No. 364,554. (No model.)



Claim.—1. A harrow comprising a triangular frame having blades or teeth along its side bars, front and rear supporting-wheels, a transverse series of teeth extending across the rear end of the frame, each tooth being pivoted between its ends to swing vertically, a head to which the upper ends of said teeth are connected, and springs pressing the said head upward and thereby forming cushions therefor, substantially as set forth.

2. A harrow having a transverse series of teeth extending across the rear end of its frame, each tooth being pivoted between its ends to swing vertically, a head connecting the upper ends of the said teeth, and springs pressing the head upward and forming cushions therefor, substantially as set forth.

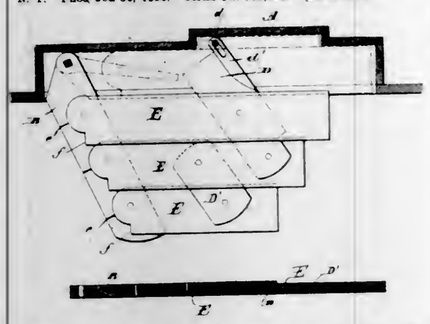
3. A harrow having a transverse series of teeth across its rear end,

the teeth being all mounted between their ends on a common axis to swing vertically, a head connecting the upper ends of all of the teeth, springs pressing the head upward and forming cushions, a lever having its outer end fulcrumed on the axis of the teeth, pivoted between its ends to the said head, and extending at its inner end toward the center of the frame, and a catch for retaining the lever depressed, substantially as set forth.

4. The rectangular open frame *n*, having the two transverse curved parallel bars *n'*, each provided with a forward-projecting apertured lug n^3, substantially as set forth.

5. The combination, with the open frame *n*, having two transverse curved parallel bars *n'*, each provided with a forward-projecting apertured lug n^3, of the caster-wheel having a fork 13, provided with a vertical shank passed through the apertures in said lugs and having a squared portion o^3 between said lugs, a shoulder or collar o' below the lugs, a retaining-nut above the lugs, and the forward-projecting piece 14, apertured to fit the squared portion o^3, substantially as set forth.

448,503. CENTER-BOARD FOR VESSELS. JOEL COUCH, Clayton, N. Y. Filed Oct. 30, 1890. Serial No. 369,829. (No model.)



Claim.—1. In a center-board for vessels, the combination, with a box adapted to receive the center-board, of a front hanger secured to the box by a pin which turns therein, so as to provide means for elevating and depressing said front hanger, and supplemental hangers or braces D and D', connecting the rear portions of the blades to each other and to the box, substantially as set forth.

2. In a center-board for vessels, the combination of a forward hanger having a series of depressions or side recesses, horizontal blades pivoted at their forward ends within said recesses so that they will lie side by side when folded, and hangers pivoted to the rear portion of the blades so as to connect the blades to each other, and a supplemental hanger or brace D, movably secured to the box or well, substantially as set forth.

3. The combination, in a center-board for vessels, of a box or housing, blades E E, adapted to lie within the same when raised and be projected horizontally therefrom when lowered, and hangers B and D, connecting said blades with the box, the forward hanger being secured to the box upon a turning pin, the upper portion of the rear hanger being slotted for engagement with a stationary pin carried by the box, substantially as set forth.

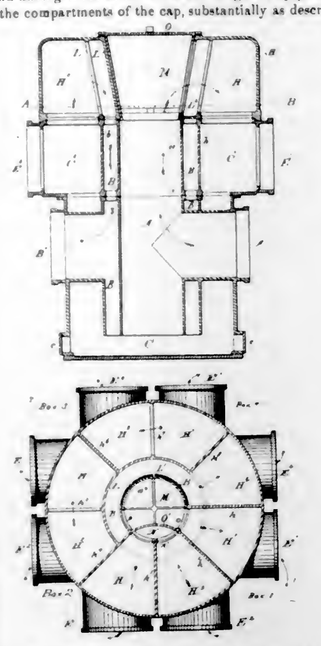
4. In a center-board for vessels, the combination, with a box or housing A, of a main hanger B, having depressions within which the blades are pivoted, presenting shoulders *e*, against which shoulders *f*, formed on said blades, abut, substantially as set forth.

5. The combination, in a center-board for vessels, of a box A, supporting a hanger to which the blades are pivotally attached, together with a supplemental hanger or brace D, pivoted to the blades and to the housing, and presenting on one edge an enlarged portion or web which fits snugly between the side walls of the box to present a rigid support, substantially as set forth.

448,504. CENTER-SEAL AND BY-PASS VALVE. WILLIAM CRIGHTON, Fort Wayne, Ind., assignor to the Kerr-Murray Manufacturing Company, same place. Filed June 26, 1890. Serial No. 356,353. (No model.)

Claim.—1. A valve chamber or cap for a center-seal divided into suitable compartments and having an inlet-chamber containing a plug-valve provided with suitable inlet and outlet openings communicating with one or more compartments of the cap, substantially as described.

2. A valve chamber or cap for a center-seal divided into suitable compartments for directing the flow of gas and having an inlet-chamber containing a plug-valve provided with suitable inlet and outlet openings, and having a recess in its walls serving as a by pass for gas between the compartments of the cap, substantially as described.



3. The combination, with the annular portion of a valve chamber or cap divided into suitable compartments for directing the flow of gas, of a central plug-valve set into such annular portion and provided with a suitable inlet and an outlet opening, substantially as described.

4. In a center-seal, the combination, with the central gas-inlet pipe, of the valve chamber or cap located above the same and divided by suitable partition-walls to direct the flow of gas and communicating with the inlet-pipe through a hollow plug contained within the said chamber, the wall of said plug having a suitable opening to direct the flow of gas into the compartments of the valve-chamber, substantially as described.

5. In a center-seal for gas-purifying boxes, the combination, with the gas-inlet pipe, of the valve chamber or cap located above the same and divided by suitable partition-walls to direct the flow of gas and containing a hollow valve-plug connecting directly with the inlet or outlet pipe, said plug fitting within the inner wall of the valve-chamber and having one or more openings to direct the flow of gas into or from the compartments of the valve-chamber, and having a by-pass connecting two compartments, substantially as and for the purpose described.

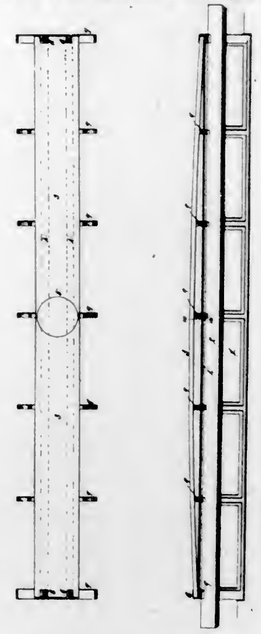
6. In a center valve for gas-purifying boxes, the combination of the gas-inlet pipe with the valve chamber or cap located above the same and divided by suitable partition-walls to direct the flow of the gas and containing a hollow plug connecting directly with the inlet or outlet pipe, said plug having a wall which fits snugly within the inner wall of the valve-chamber and having suitable openings to direct the flow of gas into or from the compartments of the valve-chamber, and a re-entrant wall of a width equal to the distance between alternate partitions of the valve-chamber, substantially as and for the purpose described.

448,505. TROLLEY-SUPPORT FOR ELECTRIC CARS. BENJAMIN F. CROW, St. Louis, Mo., assignor to the Brownell & Wight Car Company, of Missouri. Filed July 12, 1890. Serial No. 358,564. (No model.)

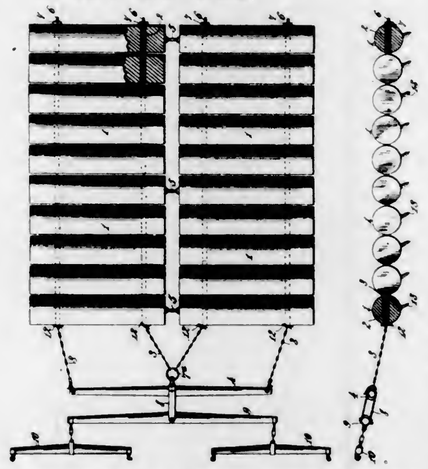
Claim.—1. In a trolley-support, in combination with a car-body, a truss composed of a compression member and a tension member mounted on the car, said tension member engaging the ends of a compression member, substantially as set forth.

2. In a trolley-support, in combination with a car-body, a truss composed of the compression member and a tension member extending the length of the car-body, the ends of the tension member being made to engage the ends of the compression member, substantially as set forth.

3. In a trolley-support, in combination with a car-body, a truss composed of the compression and tension members mounted on the car, said tension members engaging the ends of the compression member, and the notched blocks or brackets located between the car-roof and compression member, substantially as and for the purpose set forth.



448,506. HARROW. JOHN W. DAY, Baird, Tex. Filed Sept. 25, 1890. Serial No. 366,148. (No model.)



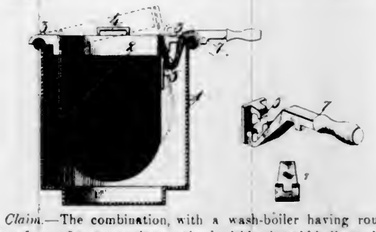
Claim.—1. A harrow and pulverizer consisting of a series of parallel cylindrical bars provided near each end with transverse perforations, chains or cables on which the cylindrical bars are loosely strung so that all the bars can bodily slide along the length of the cables into and out of superficial contact with each other, and a transverse draft-bar with which the front ends of the chains or cables are connected, substantially as described.

2. A harrow and pulverizer consisting of a series of parallel cylindrical bars having harrow-teeth projecting from one surface, chains or cables on which the cylindrical bars are loosely strung so that all the bars can slide along the length of the chains into and out of superficial contact, the screw-rods connected with one extremity of the chains or cables and provided with screw-nuts for tightening and loosening all of the cylindrical bars, and a draft-bar connected with the front extremities of the chains or cables, substantially as described.

3. A harrow and pulverizer consisting of two independently rising and falling sets or gangs of cylindrical bars flexibly connected together by link hinges and each bar provided on one surface with a line of projecting harrow-teeth, and two pairs of parallel chains or cables connected with a draft-bar, and on which the two gangs of cylindrical bars are respectively strung, substantially as described.

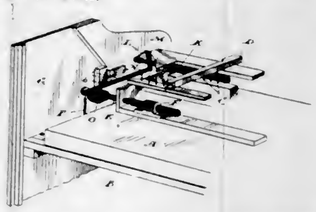
4. A harrow and pulverizer consisting of two independently rising and falling sets or gangs of cylindrical bars flexibly connected together by link hinges and each bar provided with a line of harrow-teeth projecting from one surface thereof, two pairs of parallel chains or cables on which the cylindrical bars are loosely strung, and a screw-rod connected with one extremity of each chain or cable and provided with a screw-nut for the purpose of tightening and loosening the bars, substantially as described.

448,507. WASH-BOILER. EOLINE DETRICK and WILLIAM J. WALKER, St. Louis, Mo. Filed Oct. 30, 1890. Serial No. 369,844. (No model.)



Claim.—The combination, with a wash-boiler having rounded upper edges, of a receptacle contained within the said boiler and having a downwardly-extending lip thereon, lips secured to the sides of the said receptacle and bearings upon the rounded edges of the boiler, upon which they are adapted to rock, and a handle also bearing upon the said rounded edge and having a bifurcated inner edge engaging the said downwardly-projecting lip upon the receptacle, as described.

448,508. ORGAN. ALEXANDER H. DIXON, Toronto, Canada, assignor to Annie Dixon, same place. Filed Oct. 23, 1890. Serial No. 369,059. (No model.)



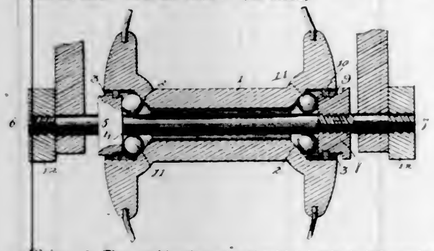
Claim.—1. An organ-action made movable in its case wherein the key-board is fixed and provided with mechanism arranged to adjust the organ-action so as to bring a higher or lower toned reed in connection with a given key, in combination with mechanism arranged to raise the keys clear of the mute-pins during the movement of the organ-action, substantially as and for the purpose specified.

2. The wind-chest to which the organ-action is connected and friction-rollers arranged in rails to support the wind-chest, in combination with a spindle connected to the wind-chest and arranged to adjust the same in relation to the key-board so as to bring a higher or a lower toned reed in connection with a given key, substantially as and for the purpose specified.

3. The wind-chest A, with its connections supported by friction-rollers *a*, arranged in the rails B, in combination with a spindle E, journaled in the casing G and screwed through the nut F, connected to the wind-chest, substantially as and for the purpose specified.

4. The wind-chest A, with its connections supported by friction-rollers *a*, arranged in rails B, and the screwed spindle E, journaled in the casing G and screwed through the nut F, in combination with the eccentric roller K, arranged below the case D, crank L, link M, lever N, cam O, and spring P, substantially as and for the purpose specified.

448,509. BICYCLE. SAMUEL A. DONNELLY, Chicago, Ill. Filed Nov. 29, 1890. Serial No. 373,057. (No model.)

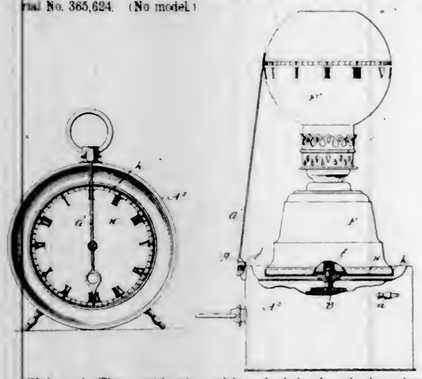


Claim.—1. The combination of a wheel having its hub formed at its end with the conical seats 2, the axle provided near one end with the fixed collar 5, having the annular groove 9, and having the threaded ends 6 and 7, the adjusting-nut 8, formed with the annular groove, the annular washers fitting in the annular grooves of the collar 5 and the adjusting-nut, and the balls 11, substantially as set forth.

2. The combination of the wheel-hub formed at its ends with the conical seats 2 and the straight bores 3 on the outer side of said seats, the axle provided near one end with the fixed collar 5, having the annular groove 9, and having the threaded ends 6 and 7, the adjusting-nut 8 formed with the annular groove, the annular washers fitting in the annular groove 9 of the collar 5 and the adjusting-nut, and the balls 11, substantially as set forth.

3. The combination of a wheel having its hub formed at its ends with the conical seats 2, the axle provided near one end with the fixed collar 5, having the annular groove 9, and having the threaded ends 6 and 7, the adjusting-nut 8, having the milled outer end and formed with the annular groove 9, the annular washers fitting in the annular grooves of the collar 5 and the adjusting-nut, the balls 11, and the outer binding-nuts 12, substantially as set forth.

448,510. ILLUMINATED CLOCK. AUSTIN A. DUBOIS, Brooklyn, N. Y., assignor to Morris Hart, same place. Filed Sept. 20, 1890. Serial No. 365,624. (No model.)

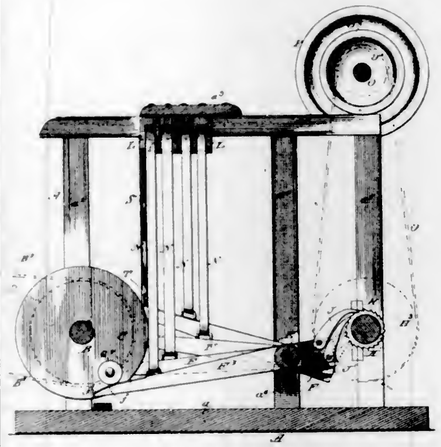


Claim.—1. The combination, with a clock having the hour-hand tube extending from the face thereof, of a dial mounted on the hour-hand tube, a lamp adapted to rest upon the dial and having in its bottom a socket for the hour-hand tube, a globe for the lamp, said globe having the hours of the day inscribed thereon, and a hand hinged to the clock-case so as to be turned opposite the globe when the lamp is in position and to extend across the dial of the clock when the lamp is removed, substantially as described.

2. An illuminated clock comprising a clock having the hour-hand tube projecting from the face thereof, a dial mounted on the tube and provided with an outwardly-extending flange, as shown, a lamp adapted to fit within the flange of the dial and having a socket in its bottom to fit the hour-hand tube, a globe for the lamp, having the hours of the day inscribed thereon, and a hand hinged to the clock-case so as to extend opposite the globe when the lamp is in position and to extend across the clock-dial when the lamp is removed, substantially as described.

448,511. MECHANICAL MOVEMENT. WILLIAM C. EICH, Harmonsburg, Pa. Filed July 7, 1888. Renewed Aug. 26, 1890. Serial No. 363,095. (No model.)

Claim.—1. In a mechanical movement, the combination, with the shaft H, having a series of ratchet-collars H' fixed thereon, a shaft E, arranged parallel thereto, and a series of levers journaled near their rear ends upon said shaft E, provided at their rear ends with pawls adapted to alternately engage the ratchet-collars H', whereby a continuous motion is applied to the shaft H, of the drive-shaft B, provided with disks having projections adapted to alternately force the front end of said levers down, and means, substantially as described, for alternately raising the forward end of said levers, as and for the purposes described.



2. The combination, with the shaft H, provided with ratchet-collars H', the shaft E, arranged parallel to the shaft H, and levers F, journaled upon the shaft E, their rear ends extending toward the shaft H and provided with gravity-pawls adapted to engage the ratchets H', of the power-shaft B, provided with a drive-pulley D and disks C, fixed thereon, said disks having projections C, having friction-rollers G mounted thereon, and said disks arranged to alternately operate upon the front ends of the levers F, and means, substantially as shown and described, for raising the front ends of said levers, substantially as and for the purposes described.

3. The combination, with the shaft H, having ratchet-collars H' secured thereon, the shaft E, arranged parallel to the shaft H, and the levers F, mounted on the shaft E, having their rear ends extending toward the shaft H and provided with pawls adapted to engage the ratchets H', the forward ends of said levers connected to straps N, each of said straps connected at one end to one lever and then passed over a pair of pulleys M, attached to another one of said levers, whereby when one of said levers shall be lowered the other will be raised, of the power-shaft B, provided with disks C, carrying projecting rollers G, arranged on the disks in a spiral about the shaft B, said projections adapted to alternately engage the front ends F' of the levers F, whereby the rear ends of said levers, with the pawls, are alternately raised, thus giving a continuous motion to the shaft H, all arranged substantially as and for the purposes described.

4. The combination, with the shaft H and ratchet-collars H' secured thereon, of the shaft E, arranged parallel to the shaft H, levers F, journaled thereon, their rear ends extending toward the shaft H and provided with gravity-pawls adapted to engage the ratchets H', and means, substantially as shown and described, for raising and lowering the forward ends of said levers F, said levers arranged to be alternately lowered and raised in series, whereby one series will be raised while the other is lowered, thereby causing a continuous revolution of the shaft H, as and for the purposes described.

5. The combination, with the shaft H, provided with ratchet-collars H', the shaft E, arranged parallel to the shaft H, and the levers F, mounted on said shaft E, having their rear ends extending rearwardly toward the shaft H and provided with gravity-pawls adapted to engage the ratchets H', the forward ends of said levers connected to straps N, each of said straps N connected at one end to one lever and then passed over a pair of pulleys M, and its other end attached to another of the said levers F, whereby when one of said levers is raised the other will be lowered, the power-shaft B, having disks provided with projections adapted to alternately operate upon the beveled front ends of said levers, of the depending bars S' S' and cross-bar T, arranged above and near the front ends of said levers, substantially as and for the purposes specified.

448,512. ARTIFICIAL STONE OR CEMENT. LOUIS ENRICHT, New York, N. Y., assignor to the Enricht Manufacturing Company, same place. Filed May 16, 1890. Serial No. 352,070. (No specimens.)

Claim.—The above-described composition of matter to be used for stone or cement, consisting of magnesium chloride, magnesium oxide, ammonium chloride, and water, substantially as and in the proportions specified.

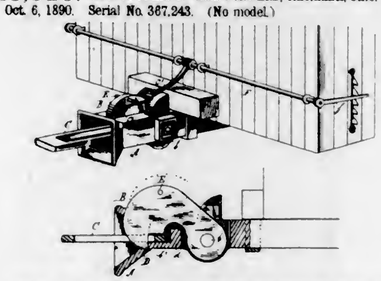
448,513. ARTIFICIAL STONE OR CEMENT. LOUIS ENRICHT, New York, N. Y., assignor to the Enricht Manufacturing Company, same place. Filed May 16, 1890. Serial No. 352,071. (No specimens.)

Claim.—The herein-described composition of matter to be used for stone or cement, consisting of sulphate of magnesium, water, and magnesium oxide, substantially in the proportions specified.

448,514. ARTIFICIAL STONE OR CEMENT. LOUIS ENRICHT, New York, N. Y., assignor to the Enricht Manufacturing Company, same place. Filed May 16, 1890. Serial No. 352,073. (No specimens.)

Claim.—The herein-described composition of matter to be used for stone or cement, consisting of an aqueous solution of magnesium chloride, sulphate of aluminium, and magnesium oxide, substantially as and about in the proportions herein described.

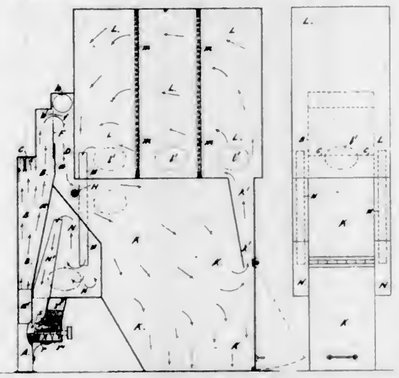
448,515. CAR-COUPLING. ROSS FORWARD, Cincinnati, Ohio. Filed Oct. 6, 1890. Serial No. 367,243. (No model.)



Claim.—1. In an automatic car-coupling, the pivoted latch having the beak *b'* at its lower forward end, a horizontal flat surface extending a short distance inward from said beak, and an upwardly-curved cavity or recess standing inward from and above said flat horizontal surface, in combination with the draw-head having a notch receiving the pointed beak of said latch and the studs projecting into said recess or cavity and the flat link, substantially as set forth.

2. In an automatic car-coupling, the combination, with the pivoted latch having the cross-pin, of the lifting-lever engaging said pin and having a horizontal joint, together with means for actuating said lever, substantially as specified.

448,516. PROCESS OF TREATING WHITE LEAD. EDWARD V. GARDNER, London, England. Filed Oct. 9, 1890. Serial No. 367,567. (No specimens.) Patented in England Feb. 12, 1889, No. 2,487.



Claim.—1. The process herein described of treating white lead, which consists in disintegrating the same, forcing the palpable and impalpable particles to ascend in and with a body of air, suddenly interrupting the upward flight of the palpable particles and causing them to descend, continuing the flight of the impalpable particles, and separating the air therefrom by subjecting the same to the spraying action of a fluid, substantially as set forth.

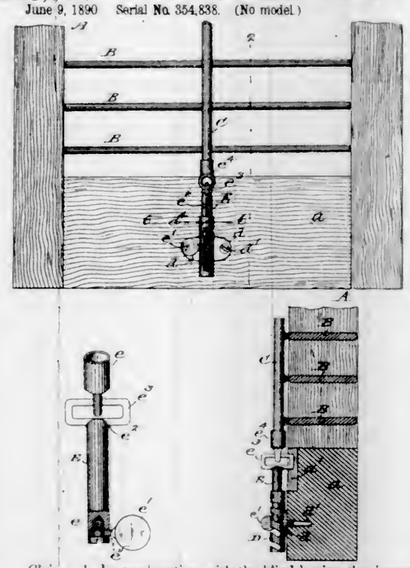
2. The process herein described of treating white lead, which consists in forcing the palpable and impalpable particles of disintegrated white lead upwardly in a vertical plane in and with an ascending body of air, suddenly interrupting the upward flight of and repelling the palpable particles, deflecting the ascending air and impalpable particles, causing the latter to descend, and depositing and collecting the same, and causing the air separating from the deposited and collected powder to make a return-circuit to the ascending palpable and impalpable particles, substantially as set forth.

3. The process herein described of treating white lead, which consists in disintegrating the white lead, forcing the palpable and impalpable particles upwardly in a vertical plane in and with an ascending body of air, obstructing the upward flight of the coarse and fine particles, repelling the ascending palpable particles, deflecting the impalpable particles and depositing and collecting the same, continuously returning the repelled coarse particles downwardly, and redisintegrating the same and forcing such redisintegrated portions upward with the ascending palpable and impalpable particles, substantially as described.

4. The process herein described of treating white lead, which consists in forcing disintegrated particles of white lead upwardly in and with an ascending body of air, causing the heavier and grosser particles to rebound downward, deflecting and carrying the lighter and finer particles forward and in their transit separating the adherent air from the surface of the particles by subjecting the same to the action of a heated fluid spray, and depositing and collecting the impalpable powder, substantially as set forth.

5. The process herein described of treating white lead, which consists in causing the disintegrated particles to rise vertically in and with an ascending body of air, dividing the heavier and grosser particles from the lighter or finer particles, separating the adherent air from the surface of the lighter or finer particles by causing the same to descend through fine sprays of heated fluid, and returning the air to the ascending particles, substantially as set forth.

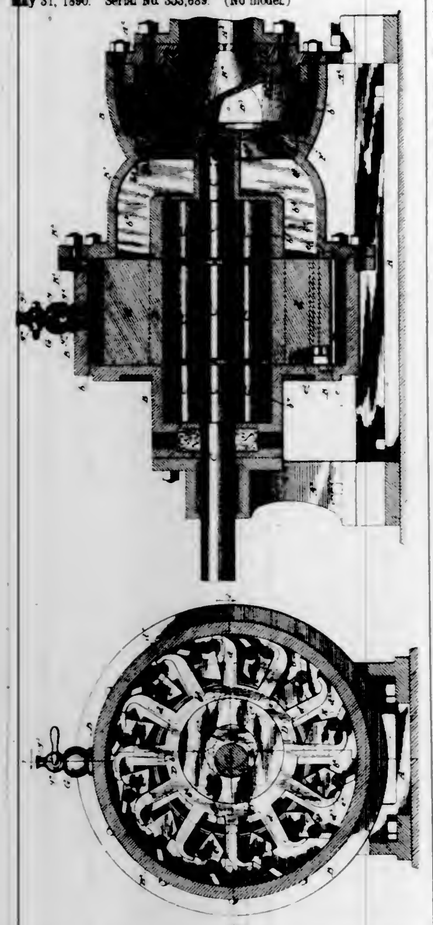
448,517. BLIND-STOP. THEODORE GOHLKE, St. Louis, Mo. Filed June 9, 1890. Serial No. 354,838. (No model.)



Claim.—1. In combination with the blind having the journaled slats and rod, the herein-described fastener, the same consisting of the case D, having the longitudinal and lateral slots, the bolt E, having the journaled handle and the elongated eye, and the socket jointed to said eye, as set forth.

2. The combination of the case having the longitudinal and lateral slots, the bolt having the handle journaled thereon at or toward its lower end and having the elongated eye at its upper end, and the rod-socket, substantially as described.

448,518. ROTARY PUMP. ELLICK H. GOLLINGS, Chicago, Ill., assignor to the Gollings Bi-Centric Pump Company, same place. Filed May 31, 1890. Serial No. 353,689. (No model.)



Claim.—1. In an apparatus of the general character described, the combination, with a non-rotating shell having a series of passages b^3, giving communication between chambers b and b', of a rotating shaft axial to the shell and having an eccentric portion within the chamber b, a non-rotating winged wheel occupying the chamber b of the shell and mounted loosely on the eccentric portion of said shaft, rotation of said wheel being prevented by engagement thereof with the shell, and a rotating member having a port or passage in communication with a part only of the passages b^3 and leading through the chamber b'.

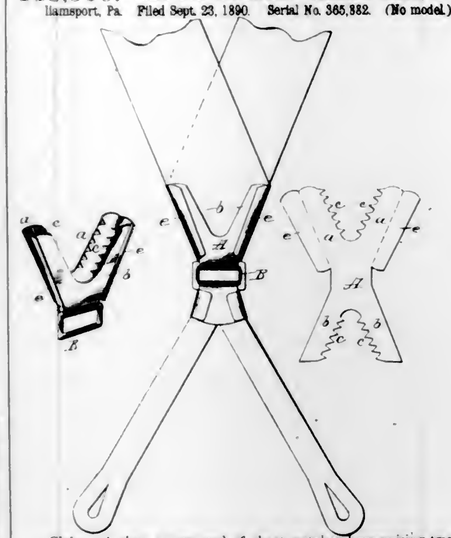
2. In a rotary pump, a non-rotating shell having a chamber b and a chamber b' communicating with each other through a series of passages separated by radial partitions, a rotating shaft C, having an eccentric portion C', a winged non-rotating wheel mounted loosely on said eccentric portion of the shaft and within the chamber b of the shell, means for connecting the wings of the said wheel with the shell, whereby the space between the shell and the wheel is diametrically divided into suction and expulsion chambers, and a rotating member B^4, constructed and arranged to afford an outlet-passage from the expulsion side of the pump-chamber and an inlet-passage from the chamber b' to the suction side of the pump-chamber, substantially as described.

3. In combination with a non-rotating shell, a horizontal rotating shaft having an eccentric portion, a winged wheel D, mounted on said eccentric portion of the shaft, a series of gates pivoted to the shell and engaged by the wings of the wheel, and an air-valve located in the upper part of the shell.

4. The shell B, containing the chamber b and provided with a series of radial partitions b^3 and with a central shaft-bearing b^4, supported by the partition b^3, combined with the rotating shaft C, resting in said bearing b^4 and having an eccentric portion C', and a winged wheel mounted on said eccentric portion of the shaft and engaged with the shell.

5. In the pump substantially as described, the combination, with the non-rotating shell, the rotating shaft having an eccentric portion, and the gyrating wheel mounted on said eccentric portion of the shaft, of the conical rotating part B^4, constructed to afford outlet and inlet passages, and the adjustable rings F and F', fitted to conical surfaces of said rotating part B^4 and supported by stationary parts of the shell and frame, substantially as described.

448,519. CLASP FOR SUSPENDERS. CHARLES R. HARRIS, Williamsport, Pa. Filed Sept. 23, 1890. Serial No. 365,882. (No model.)

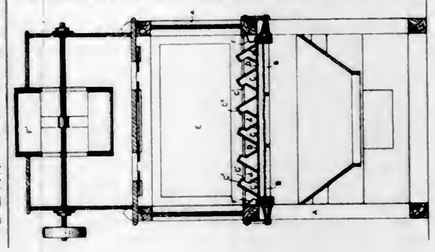


Claim.—A clasp constructed of sheet metal and comprising two integral approximately V-shaped members joined at their apices, each member being provided with teeth on its inner edges, the teeth of one member adapted to come slightly behind the teeth of the other member, one of said members being wider than the other and adapted when the parts are in position to lap over the outer face of the narrower member, substantially as set forth.

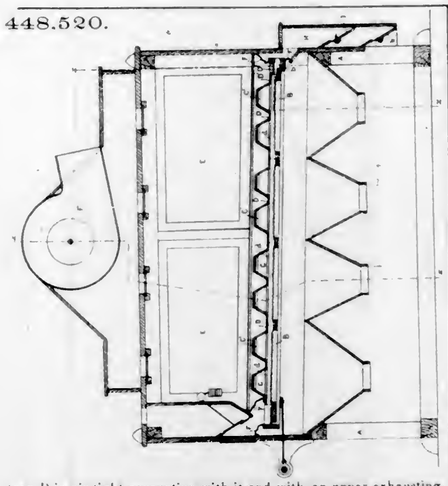
448,520. PURIFIER AND SEPARATOR. JAMES HIGGINBOTTOM, Liverpool, England. Filed Dec. 6, 1888. Serial No. 292,784. (No model.) Patented in England Oct. 13, 1888. No. 14,711.

Claim.—1. In combination with a vibrating sieving-surface and an exhausting-chamber above it, a tray or diaphragm separating the two and perforated regularly throughout its area by apertures arranged upon it in longitudinal and transverse series and tapering upward in both horizontal dimensions, whereby the exit-spaces for air are narrowed to a desirable minimum both longitudinally and transversely and a maximum of contraction and slope of passage is secured with a minimum of height and obstruction, substantially as described.

2. In a separating or purifying apparatus of the kind described, the combination, with a vibrating sieving-surface B, of a superposed



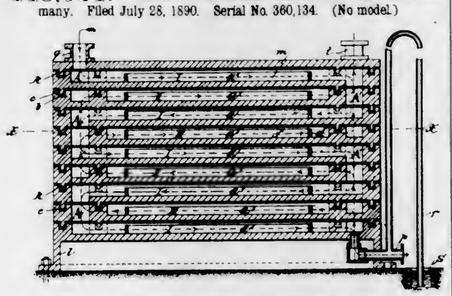
448,520.



tray D in air-tight connection with it and with an upper exhausting-compartment E, and a series of nozzles C, tapering in both horizontal dimensions and distributed, regularly over said tray both in longitudinal and transverse series, with their open bases located as close as practicable to the sieve-surface and their upper narrower ends communicating above the tray with said exhausting-compartment E, substantially as and for the purpose set forth.

3. In combination with a vibrating sieving-surface B, a superposed tray D, vibrating therewith, and an exhausting-compartment H above said tray, a series of hooded nozzles C, tapering in both horizontal dimensions and arranged in a regular manner, as described, on said tray, with their open bases located as close as practicable to said sieving-surface and having each a lateral discharge-orifice C at its upper end below said hood and opening into said exhausting-compartment, substantially as set forth.

448,521. SURFACE CONDENSER. GUSTAV HÖRNER, Lüben, Germany. Filed July 28, 1890. Serial No. 360,134. (No model.)



Claim.—1. A condenser consisting of a number of sections having independent passages through them for steam, a cooling medium, and the return of the water of condensation, respectively, substantially as set forth.

2. A condenser having passages for the steam and a cooling medium and an independent passage for leading the water of condensation back through the condenser, whereby such water will condense the steam and become heated for admission to the boiler, substantially as set forth.

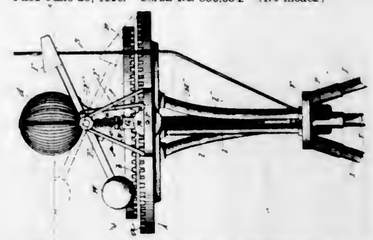
3. In a condenser, the combination of a number of sections having passages for steam and a cooling medium and an independent passage for the return of the water of condensation, and a pump connected to the steam-passage and to the said return-water passage, substantially as set forth.

4. A condenser having independent passages for steam, a cooling medium, and the return of the water of condensation, in combination with a water-gage connected to the lower end of the steam-passage, and a pump for drawing off the water of condensation and forcing it into the said return-water passage, substantially as set forth.

5. In a condenser, the combination of the boxes or sections a' a^2 a^3, having the chambers A A' D E F G, and being provided with the ribs e, the sections a' being arranged alternately with the sections a^2 a^3 and having communication with each other alternately at opposite ends through the chambers A A', and the sections a^2 a^3 being similarly connected by the chambers D E and F G, respectively, substantially as set forth.

6. A surface condenser consisting of separate rectangular boxes a' a^2 a^3, containing vertical chambers A A' D E F G and supplied in the interior with ribs e, through which circulate the steam, the feed-water resulting from the condensed steam, and the cooling means, respectively, substantially as described.

448,522. LAWN-SPRINKLER. DENNIS A. HOYT, St. Cloud, Minn. Filed June 23, 1890. Serial No. 356,354. (No model.)



Claim.—1. In a lawn-sprinkler, the combination of the stand, the rotating carriage, gearing connecting these two, a hose whose nozzle is supported by said carriage, a ratchet for operating said gearing, a counterweighted lever connected to said ratchet, a tipping water-tank on the end of said lever, and a water-supply for said tank, together with a rotating spray apparatus with paddles capable of motion in the line of the stream from the hose, substantially as described.

2. In a lawn-sprinkler, the combination of the stand, the rotating carriage for supporting the hose-nozzle, the hose, the spray apparatus capable of motion in the line of the stream from the hose, and the gearing connecting the rotating carriage with the stand and with the spray apparatus, whereby the motion of the latter rotates the carriage, substantially as described.

3. In a lawn-sprinkler, the combination of the hose, the hose-supporting stand, and a rotating spraying apparatus which consists of a number of paddles, each consisting of a row of tapering metal fingers capable of motion in the line of the stream from the hose, substantially as described.

4. In a lawn-sprinkler, the combination of the stand, the hose, the rotary carriage, the cross-bar on said carriage, a support for the hose-nozzle arranged above said cross-bar, and the adjustable arm, which extends from said cross-bar and affords a movable support or bearing for the hose, whereby the direction of the hose-nozzle may be varied without removing the same from its support, substantially as described.

5. In a lawn-sprinkler, the combination of the stand, the hose, the rotating carriage, the cross-bar on the same, and the adjustable arm which extends from said cross-bar and supports the hose, together with the guide having a number of holes through which the nozzle of the hose may be inserted, substantially as described.

6. In a lawn-sprinkler, the combination of the stand, the hose connected to said stand at a point some distance from its nozzle, the revolving carriage having a support for the end of the hose, and a loose bearing arranged on said carriage beneath said support, whereby the revolution of the carriage will not twist the hose, substantially as described.

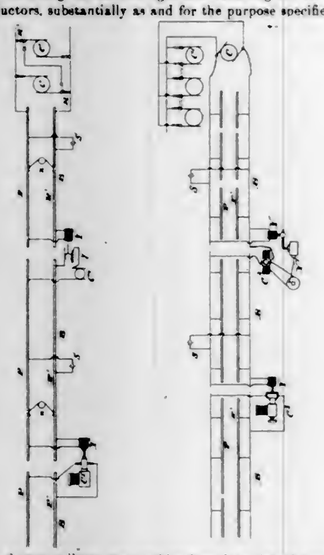
448,523. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Original application filed Mar. 18, 1886, Serial No. 195,742. Divided and application filed Sept. 21, 1887, Serial No. 250,273. Again divided and this application filed Apr. 30, 1888. Serial No. 272,260. (No model.)

Claim.—1. In an electric railway, the line conductors arranged in long sections, an electric generator for each section, and controlling devices, substantially as set forth, actuated by the strength of current in one section for controlling the supply of electricity to the next section, whereby the electric supply to all sections may be substantially or relatively the same, to the end that the same motor may run upon all sections, substantially as and for the purpose specified.

2. In an electric railway, the line conductors arranged in long sections, in combination with separate sources of electric supply, and governing devices controlled by the electric-supply generator of the first section to control the electric supply to all of the other sections automatically, substantially as and for the purpose specified.

3. In an electric railway, the line conductors and a traveling electrically-propelled vehicle receiving electricity therefrom, in combina-

tion with two or more stationary electric generators at one place in the line to supply electric current to the line conductors, and switches for coupling said generators up in multiple or in series with each other and with the line conductors, and an electric light to light the railway, and a circuit including the electric light and receiving current from the line conductors, substantially as and for the purpose specified.



4. In an electric railway, the combination of two bared working-conductors from which the traveling motors receive the electric current with a number of generators of small size and switches for coupling them up in series and quantity to obtain the requisite quantity and tension of current, substantially as and for the purpose specified.

5. In an electric railway, a series of sections of working-conductors, each receiving electricity from a different source, in combination with means to regulate the supply of electric current to all of said sections simultaneously.

6. In an electric railway, a series of sections of working-conductors, each receiving electricity from a different source, in combination with means to regulate the supply of electric current to all of said sections simultaneously, and means to control the said regulation from one place.

7. In an electric railway, a series of long line or supply conductors and a series of sections of working-conductors to each of said line conductors and receiving electricity therefrom, an independent source of electric energy for each of said line conductors, and an electrical regulator to control the supply of current to each of said line conductors, and means to control all of said regulators from one of said sources of electrical energy.

448,524. BALLOT-BOX. CALVIN JACKSON, Jacksonwald, Pa. Filed May 28, 1890. Serial No. 353,425. (No model.)

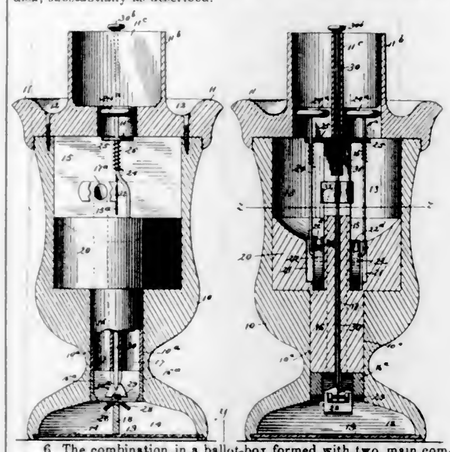
Claim.—1. The combination, in a ballot-box having two compartments, one below the other and communicating with each other, of a rotary reciprocating transfer-disk in the bottom of the upper compartment, and a spring-actuated rod secured to one side of the disk and extending up through the compartment, substantially as described.

2. The combination, in a ballot-box having an upper and a lower compartment, and ducts establishing communication between the same, of a transfer-disk controlling the transfer of the ballots from the upper to the lower compartment, and a valve in the latter, substantially as described.

3. The combination, in a ballot-box having an upper and a lower compartment and with a duct or passage in communication with both, the said passage being in communication with the upper compartment through two apertures, of a transfer-disk located at one aperture, and means, substantially as described, for operating the same, a slide at the other aperture, and an operating-rod for said slide, substantially as described.

4. The combination, in a ballot-box having a main and a receiving compartment and a valve in the latter, of a transfer-disk for controlling the escape of the ballots from the main compartment, a stop adjacent to said disk, and means, substantially as described, for operating said valve and disk, substantially as described.

5. The combination, in a ballot-box having two compartments in communication with each other, of a transfer-disk having an extension and provided in its periphery adjacent to the extension with a pocket of semicircular form, the bottom of the pocket inclining transversely at the bottom for a portion of its length, and means for operating the disk, substantially as described.



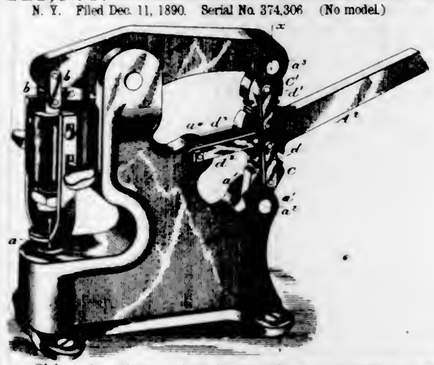
6. The combination, in a ballot-box formed with two main compartments and two receiving-compartments and with a raised neck or collar having a vertical partition, of a transfer-disk in each main compartment and an operating-rod therefor, the said operating-rods extending, respectively, into the two compartments of the neck or collar, substantially as described.

7. The ballot-box provided with duplicate main compartments, duplicate receiving-compartments, and mechanism, substantially as described, for transferring the ballots from the former to the latter, the said latter compartments having a transparent cover, substantially as described.

8. The combination, in a ballot-box provided with a main compartment and a receiving-compartment, of a transfer-disk 22, formed with extension 22^a, pocket 22^b, point 22^c, and peripheral groove 22^d, and means, substantially as described, for operating said disk.

9. The combination, in a ballot-box provided with upper compartments 13 13 and lower compartments 14 14 and the passages 17 17 and apertures 17^a 17^b, of transfer-disks 22, operating-rods 24 therefor, valve 28, rod 30, and slide 32, substantially as shown and described.

448,525. PUNCHING-MACHINE. DE LANCY KENNEDY, New York, N. Y. Filed Dec. 11, 1890. Serial No. 374,306. (No model.)



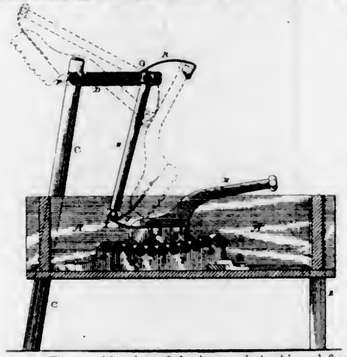
Claim.—1. A frame, a lever-beam, and eccentric-toothed cams, one pivoted to the frame and the other to the lever-beam, combined with an operating-lever whose head is toothed to engage the toothed cams and placed between said cams in operative relation thereto, substantially as described.

2. A frame, a lever-beam, an eccentric-toothed cam pivoted to said frame, and an eccentric-toothed cam pivoted to said lever-beam, combined with an operating-lever having a head toothed to engage the teeth of said cams, and links connecting said operating-lever and cams, substantially as set forth.

3. A frame, a lever-beam, an eccentric-toothed cam pivoted to said frame, and an eccentric-toothed cam pivoted to said lever-beam, the said cams having their teeth arranged upon oppbsite sides of their peripheries, combined with an operating-lever having a head toothed upon its periphery to engage the teeth of the cams, links connecting said operating-lever and cams, and links connecting said lever with the frame, substantially as set forth.

4. The combination of a frame, a lever-beam, two eccentric-toothed cams, one pivoted to the frame and the other to the lever-beam, and an operating-lever having a head toothed to engage said cams and supported in operative contact with and between said cams by a link connection, substantially as set forth.

448,526. WASHING-MACHINE. JOHN E. LAMBORN and ROSS RICKARDS, Dixon, Cal. Filed Dec. 9, 1890. Serial No. 374,020. (Model.)



Claim.—1. The combination of the box and the hinged frame, of rollers placed therein, with the legs, the arms D, secured to the upper extended ends of the legs C, the shaft G, hanger H, rub-board L, springs J, handle N, spring-catch R, and the cross-bar F, substantially as shown

2. The combination of the tub, the legs, the arms D, the shaft G, the rub-board suspended therefrom and provided with a handle N, and the spring-catch R, secured to the shaft, for catching over the upper end of the handle and holding the rub-board in a raised position, substantially as described.

448,527. HEDGE. ISRAEL L. LANDIS, Lancaster, Pa. Filed Nov. 22, 1890. Serial No. 372,271. (No model.)



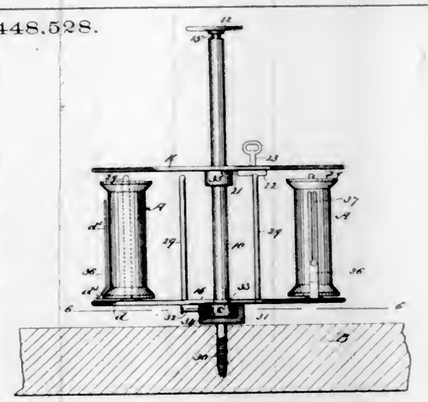
Claim.—1 In a hedge, the combination of the horizontal wires, links connecting the horizontal wires together and to anchoring-blocks buried in the ground, hedge-plants planted along the line of the wires, and a strip of wire-netting arranged along the line of the hedge and having its upper edge turned over and secured to form a hood, the sprouts of the plants being intertwined in the meshes of the wire-netting, substantially as described.

2. The combination of the hedge-plants and a strip of wire-netting arranged alongside the plants and suitably anchored, the sprigs or sprouts of the plants being intertwined in the meshes of the wire-netting, substantially as described.

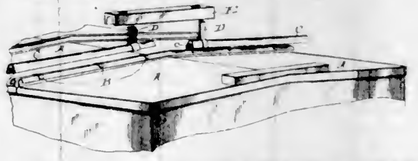
448,528. SPOOL-RACK FOR SEWING-MACHINES. CHARLES H LEWY, New York, N. Y., assignor to Charles H. Lewy and Meyer Jonasson, same place. Filed Oct. 18, 1890. Serial No. 368,609. (No model.)

Claim.—In a device of the character described, the combination, with a fixed standard, of a table mounted to turn on the said standard, spindles secured in the top of the said table, a collar secured centrally on the under side of the said table and provided with apertures corresponding to the number of spindles on the said table, and a spring-pressed locking-pin supported on the said standard and adapted to engage one of the apertures of the said collar to hold the spool to be used in proper position, substantially as shown and described.

448,528.



448,529. ROOF. OLLIVER LINK, St. Charles, Mo. Filed July 1, 1890. Serial No. 357,444. (No model.)



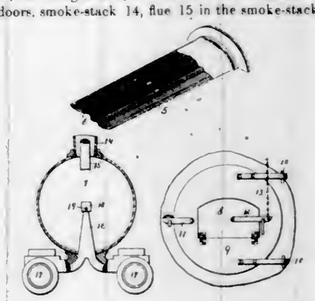
Claim.—1. A metal roof consisting of the sections A, having their adjacent edges bent to receive the locking-cap C, the securing-clamp B, adapted to be nailed to the roof-support, the securing-arms attached to the locking-cap and arranged to secure the floor-support E, and the floor-support E, secured to the sections by the arms D, thus making it possible to secure the roof to the roof-support without the use of nails, as set forth.

2. In a metal roof, the combination of the sections, the locking-cap C, engaging said sections, the securing-clamp B, one end of which is secured to the roof-support and the other passes between the sections and arranged to secure the same by the bifurcated ends thereof, the arms D, and the floor-support having mortises in either end arranged to receive the arms D, substantially as set forth.

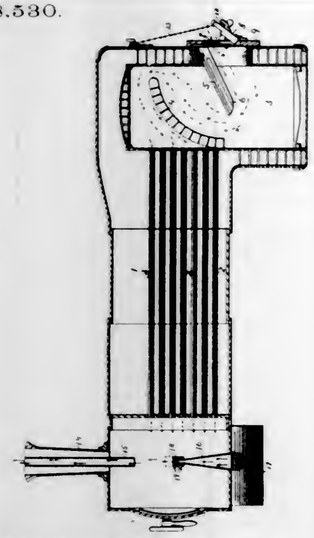
3. A metal roof consisting of the sections A, having their adjacent edges bent to receive the locking-cap C, the clamp B, bent at right angles near its middle, having one of its ends divided into two parts, while the other is adapted to be nailed to the roof-support, the locking-cap C, bent, as described, to snugly house the meeting edges of the sections, the arms secured to said cap and arranged to reach through the mortises in the ends of the floor-support and thereby secure the same in position over the apex of the roof, and the floor-support having the mortises in its ends, substantially as described, and for the purpose named.

448,530. SMOKE-CONSUMER. JOHN C. LOWDON, Kansas City, Mo., and JAMES DIXON, Kansas City, Kans.; said Lowdon assignor to Schuyler C. Elliott, Kansas City, Kans. Filed July 10, 1890. Serial No. 358,263. (No model.)

Claim.—The combination of the boiler 1, flues 2, fire chamber 3, deflector 5, deflecting-arch 4, doors 8 9, suitable hinges and fastenings on said doors, smoke-stack 14, flue 15 in the smoke-stack, exhaust-

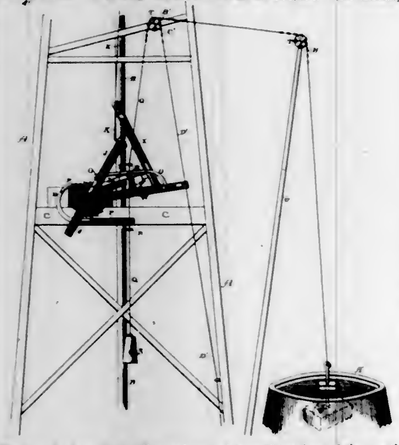


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nozzle 16, and adjustable sleeve 18 on said nozzle, substantially as described, and for the purpose set forth.

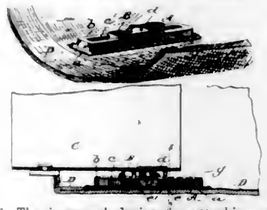
448,531. WINDMILL-REGULATOR. WILFORD L. MATTHEWS, Horton, Mich. Filed Aug. 13, 1890. Serial No. 361,932. (No model.)



Claim.—1. In a windmill-regulator, the combination of the vertically-moving pump-rod, a ratchet-wheel, a lever pivoted at one end upon or adjacent to the journal of the said wheel, a dog pivoted to the free end of the lever and extending over and engaging the said ratchet-wheel, a rod connecting the pump-rod and the free end of the said lever, a second pawl, which has one end engage the ratchet-wheel and its opposite end extend outward under the free end of the pivoted lever, a lever secured to and revolved by the ratchet-wheel, a cord connected to the lever for throwing the wind-wheel out of the wind, and a cord or wire having a weight at one end, a float at its opposite end, and stops which engage the said dogs for disengaging them from the ratchet-wheel, combined to operate in the manner shown and described.

2. The combination of the vertically-moving pump-rod, the connecting-rod, the pivoted lever operated by the connecting-rod, the pawl connected to the lever, the ratchet-wheel, a dog for preventing the ratchet from moving backward, the projection secured to the inner side of the ratchet-wheel, the lever M, provided with a projection N for catching under the pawl O, and the endwise-moving wire Q, provided with stops R and having a weight secured to one end and a float to the other, substantially as described.

448,532. CUFF-HOLDER. ASA A. MEHAFFEY, Poplar Bluff, Mo. Filed Aug. 8, 1890. Serial No. 361,503. (No model.)

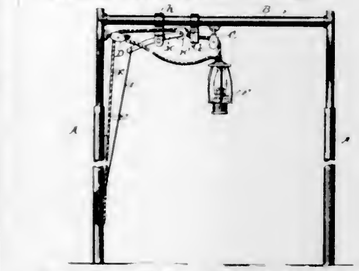


Claim.—1 The improved device for attaching cuffs to coat-sleeves, the same consisting of the slide having the spring clamping-finger, the spring-catch having lugs and attached to it, and the body having a slot and notches, as shown and described.

2. In a cuff-holder for coat-sleeves, the combination, with the slotted and notched body, of the slide a cuff clamp or holder proper attached thereto, and the spring-catch having lugs and whose free end projects from the slot and above the slide, so that it may be readily disengaged by pressure applied to the interposed cuff, as specified.

3. In a cuff-holder for coat-sleeves, the combination, with the slotted and notched body A, of the slide B, the clamping-finger pivoted to it, and the spring, one end of which bears on the said finger and the other engages the notches and projects through the slot and above the slide, thus constituting a catch for locking the slide, as specified.

448,533. STREET-LAMP. AUGUST MEYER, St. Louis, Mo. Filed Oct. 25, 1890. Serial No. 369,350. (No model.)

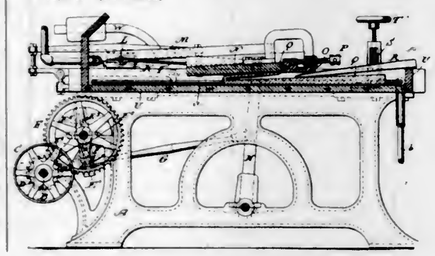


Claim.—The combination of the uprights A, the cross-piece B, the pulley secured to the center of the cross-piece, the clamping device G, secured on the cross-bar, the centrally-pivoted lever H, having the grooved pulley at its inner end and the operating-cord I at its outer end, the corner pulley D, and the operating-rope E, secured at one end to the corner pulley, passing around the middle pulley and then over the corner pulley, and having a lamp secured to it at a suitable distance from its fixed upper end, substantially as set forth.

448,534. PROCESS OF TREATING STEEL. WILLIAM B. MIDDLETON, Lancaster, Pa. Filed June 19, 1889. Serial No. 314,834. (No specimens.)

Claim.—The process of improving the quality of steel, by the use of silica or a silicate alone, which consists in heating it in the presence of and impregnating it with the silica or the silicate, as specified.

448,535. FULLING-MACHINE. JOHN W. MILLET, Dolgeville, N. Y., assignor to Alfred Dolge, same place. Filed Aug. 7, 1890. Serial No. 361,276. (No model.)



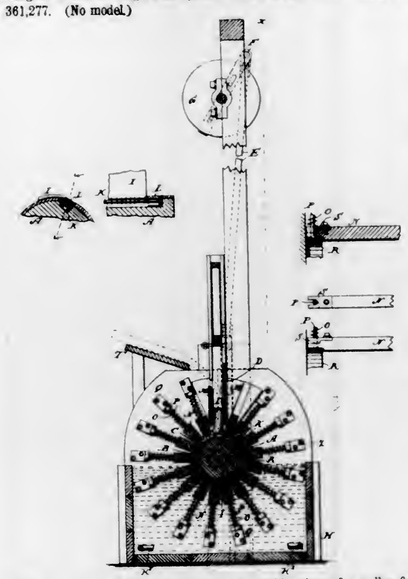
Claim.—1. In a fulling-machine, the combination, with a reciprocating clamp made to engage one end of the felt, of holding mechanism, substantially as described, for engaging the other end of the felt, and a tray or vessel in which said clamp moves, substantially as described.

2. In a fulling-machine, the combination, with a reciprocating clamp made to engage one end of the felt, of holding mechanism for the other end of the felt, said holding mechanism consisting of engaging-strips R and a clamping-screw made to act on said strips, and a tray or vessel, substantially as described.

3. In a fulling-machine, the combination, with a reciprocating clamp made to engage one end of the felt and an adjustable weight secured to the clamp for regulating the pressure on the felt, of holding mechanism, substantially as described, for the other end of the felt, and a tray or vessel, substantially as described.

4. In a fulling-machine, the combination, with a reciprocating clamp made to engage one end of the felt, an oscillating arm for moving the clamp, and a crank-pin F and link or pitman G for actuating said arm, of holding mechanism, substantially as described, for the other end of the belt, and a tray or vessel, substantially as described.

448,536. FULLING-MACHINE. JOHN W. MILLET, Dolgeville, N. Y., assignor to Alfred Dolge, same place. Filed Aug. 7, 1890. Serial No. 361,277. (No model.)



Claim.—1. In a fulling-machine, the combination of a roller for rolling the felt, a rod and latches for securing the felt to the roller, and mechanism for actuating the roller, substantially as described.

2. In a fulling-machine, the combination, with a roller for rolling the felt, of actuating mechanism, substantially as described, for the roller, and spring-pressed lags arranged independently of one another about said roller, substantially as described.

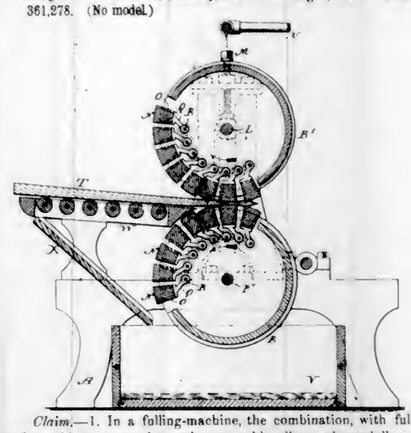
3. In a fulling-machine, the combination, with a roller for rolling the felt and actuating mechanism for the roller, of lags having their ends tipped with metal and arranged round the roller, supporting-guides for the lags, and springs for pressing the lags toward the roller, substantially as described.

4. In a fulling-machine, the combination, with a roller for holding the felt, of actuating mechanism, substantially as described, for the roller, lags arranged about the roller, and a stop or rim R for keeping the lags a suitable distance from the roller, substantially as described.

5. In a fulling-machine, the combination, with a trough or vessel having a felt channel or guide, of a roller arranged below the channel or guide for holding the felt, actuating mechanism for the roller, and lags arranged about the roller, substantially as described.

6. In a fulling-machine, the combination, with a trough or vessel having a felt channel or guide, of a roller for rolling the felt, actuating mechanism for the roller, spring-pressed lags arranged about the roller, a stop R for the lags, and a rod K and latches L for securing one end of the felt to the roller, substantially as described.

448,537. FULLING-MACHINE. JOHN W. MILLET, Dolgeville, N. Y., assignor to Alfred Dolge, same place. Filed Aug. 7, 1890. Serial No. 361,278. (No model.)



Claim.—1. In a fulling-machine, the combination, with fulling-rollers, of lags mounted to swing on said rollers, substantially as described.

2. In a fulling-machine, the combination, with fulling-rollers, of lags mounted to swing toward and from the centers of said rollers, substantially as described.

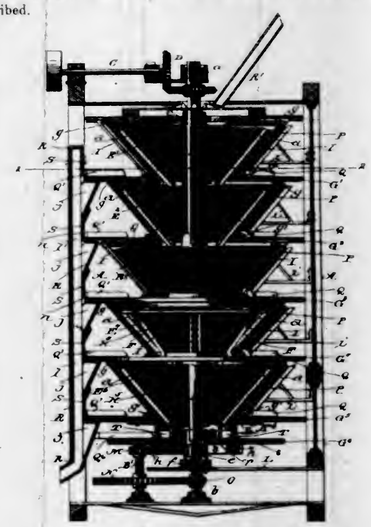
3. In a fulling-machine, the combination, with fulling-rollers, of lags mounted to swing on said rollers and springs made to act on said lags, substantially as described.

4. The combination, with fulling-rollers having ridges S, of swinging-lags on said rollers and springs secured to said ridges and made to act on said lags, substantially as described.

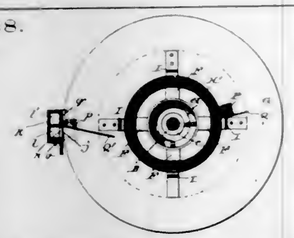
5. The combination, with fulling-rollers having swinging lags, of gears made to connect said rollers, and links P, made to connect said gears, substantially as described.

448,538. FLOUR-BOLTING APPARATUS. VICTOR MONNIER, Grafton, N. D. Filed Sept. 24, 1890. Serial No. 366,029. (No model.)

Claim.—1. In a centrifugal bolting apparatus, the combination, with a vertical rotating shaft, a series of horizontal disks mounted thereon for successively receiving the stuff to be bolted, and brushes attached to and rotating with said disks, of an external revolving part consisting of a series of horizontal tables which are rigidly connected, a corresponding series of screens arranged opposite to and surrounding the disks and attached to said tables, and a series of scrapers working on the tables for removing the flour, substantially as shown and described.



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2. In a centrifugal bolting apparatus, the combination, with a vertical rotary shaft, of a series of horizontal disks mounted thereon, a series of sets of brushes, each set being attached at their upper ends to the peripheral portion of one disk and at their lower ends to the inner or central portion of the adjacent disk, whereby they are held oblique, as shown, a series of horizontal rigidly-connected tables which revolve around the disks, a like series of screens, each attached to two contiguous tables and arranged in oblique position in contact with the aforesaid brushes, and scrapers for removing the flour from the tables, as shown and described.

3. In a centrifugal bolting apparatus, the combination, with a vertical rotating shaft, of a series of distributing-disks mounted horizontally thereon and provided with inwardly and outwardly-inclined flanges arranged at the periphery and contiguous to the center of said disks, as specified, a series of brushes attached to said flanges and thus held oblique, a series of rigidly-connected horizontal tables which revolve around the brushes and disks, a series of screens attached to and thus rotating with said tables and arranged oblique in contact with the brushes, and a series of scrapers working on said tables for removing the flour, as shown and described.

4. In a centrifugal bolting apparatus, the combination, with a rotating shaft, horizontal distributing-disks, and brushes arranged obliquely, of the surrounding rotating tables and screens and a series of fixed brushes arranged exteriorly of and in contact with said screens, a series of scrapers attached to the lower ends of the fixed brushes for moving the bolted flour to the center of the tables, and a corresponding series of longer scrapers for removing the flour into lateral pockets or receptacles, substantially as shown and described.

5. In a centrifugal bolting apparatus, the combination, with an internal part composed of the vertical shaft, horizontal distributing-disks mounted thereon, and brushes attached to and rotating with the disks, of a surrounding or outer part composed of a series of horizontal flour-receiving tables, screens attached to said tables, a series of rigid bars connecting the latter, and a rotating base-frame K, supported independently of said shaft, and means for rotating the internal and external part simultaneously, substantially as shown and described.

6. In a centrifugal bolting apparatus, the combination, with the vertical shaft, distributing-disks fixed thereon, and a series of oblique brushes, all rotating together, of a surrounding part composed of a series of horizontal flour-receiving tables, which are rigidly connected, a series of screens attached to them and working in contact with the said brushes, a rotating base-frame K, which supports and carries the said tables and screens and is provided with a hollow gudgeon that surrounds the shaft, and gearing which connects the shaft and frame for imparting rotation from the one to the other, as shown and described.

7. In a centrifugal bolting apparatus, the combination, with the interior rotating part and the exterior rotating part composing the main portion of the bolting apparatus, of the rotating base-frame K, which supports and carries such exterior part, the said frame having a cylindrical pocket with lateral openings for reception and exit of the tailings, and wings attached to the lower portion of the interior and working in said pocket of frame K for aiding the discharge of the tailings, as shown and described.

8. In a centrifugal bolting apparatus, the combination, with horizontal rotating tables upon which the bolted product is received, of a series of scrapers, blocks to which the latter are hinged, and a right-angular arm attached to some portion of the casing of the apparatus, as shown and described.

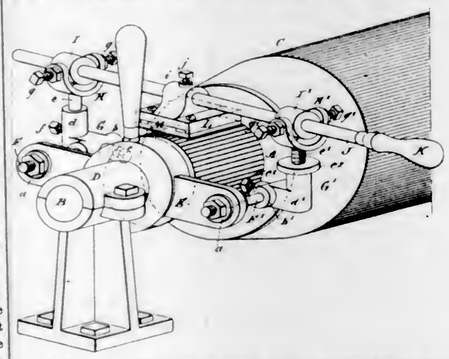
9. In a centrifugal bolting apparatus, the combination, with a series of horizontal rotating flour-receiving tables arranged one above another, a vertical discharge-spout having two or more longitudinal passages, and a series of mouths, one being arranged opposite each table, a series of notched slides covering said mouths and adjustable transversely in suitable guides, and scrapers working on said tables and attached to the slides, whereby the scrapers are adjusted simultaneously with the latter, substantially as shown and described, for the purpose specified.

448,539. TOY. CORNELIUS S. MORRIS, Moline, Ill. Filed Dec. 26, 1890. Serial No. 375,832. (No model.)

Claim.—A toy consisting of a casing having a dial-plate at its front provided with character-spaces at equidistant intervals, a receptacle near its base, a wheel above provided with inclined buckets or shelves on its periphery, and a shaft having its forward journal projecting through its bearing at the center of the dial-plate and provided with an index finger or pointer, the casing at its top having a slot through which a disk or coin may be inserted, so as to rotate the wheel and be deposited thereby in the receptacle after giving the wheel a varying momentum, which will cause the pointer or index finger to rest at a previously-undetermined point on the dial-plate, substantially as specified.



448,540. COMMUTATOR-TRUER. DAVID MCGENNISS, Amsterdam, N. Y. Filed June 10, 1890. Serial No. 354,985. (No model.)



Claim.—1. A truing attachment for dynamos, comprising two supports having attaching-rods to enter the brush-rod, apertures at opposite ends of the brush-holding arm, vertical posts mounted in said arms and carrying aligned sleeves, and a rod passed through said sleeves and having an abrader between its ends to engage the surface of said cylinder, substantially as described.

2. A truing attachment for dynamos, comprising supports adapted for connection with the opposite ends of the brush-carrying arm, vertically-adjustable posts carried by said supports, vertically-rocking aligned sleeves mounted on said posts, and a rod extending through both sleeves and provided with an abrading device between its ends, substantially as described.

3. In a commutator-truer, the combination of a support adapted for attachment to the brush-supporting arm, a rod movable lengthwise in the support, and an adjustable abrading-plate carried by the rod, substantially as specified.

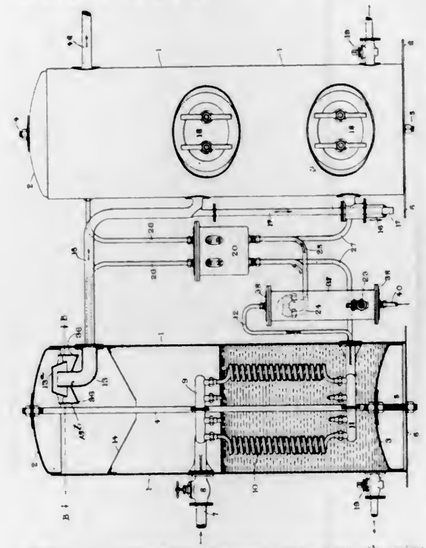
4. In a commutator-truer, the combination of the supports G G', the adjustable forked rod e, the threaded-forked rod e', the nut e^3, fitted to the rod e', the sleeves I I', the sliding rod J, and the plate L, provided with the apertured ear i and the set-screw j, substantially as specified.

5. The combination, with the brush-holding arm E and the commutator-cylinder A of a dynamo, of an abrading-plate L, and supports fitted to the arm E at opposite sides of said cylinder and adapted to hold the plate in the position of use, substantially as specified.

448,541. PROCESS OF MAKING IODINE BY ELECTROLYSIS. THOMAS PARKER and ALFRED E. ROBINSON, Wolverhampton, England. Filed Feb. 21, 1889. Serial No. 300,758. (No specimens.) Patented in England Aug. 9, 1888, No. 11,479.

Claim.—The herein-described process for producing iodine, consisting of electrolyzing an acid solution of an iodide in contact with the positive electrode, an alkaline solution being in contact with the negative electrode, the two solutions being separated by a porous diaphragm, and then draining off and washing the iodine, substantially as described.

448,542. APPARATUS FOR EVAPORATING SEA OR OTHER WATER. DANIEL A. QUIGGIN, Blundell Sands, near Liverpool, assignor of one-half to John Newton, London, England. Filed June 6, 1890. Serial No. 354,442. (No model.) Patented in England Jan. 11, 1889, No. 538, and May 16, 1889, No. 8,139.



Claim.—1. In combination, in an evaporator apparatus, the evaporator-chamber having a heating surface therein, the feed-water heater, also having a heating-surface, a pipe 12, connecting the heating-surface of the evaporator with that of the feed-water heater, and a conduit-pipe 24, leading from the water-chamber of the feed-water heater, said pipe communicating with the water-chamber of the evaporator, substantially as described.

2. In combination, the series of evaporators, a feed-water heater having water-pipes leading to the several evaporators, means for separately controlling the flow of water through said pipes, and a steam-pipe leading from the coil of the first evaporator to the heating surface of the feed-water heater, substantially as described.

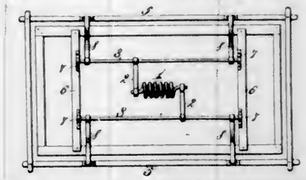
3. In apparatus for evaporating sea or other water for obtaining a supply of fresh water, the combination of two or more evaporators in series, the heat-transmitting surfaces of the second and each succeeding evaporator being connected to the vapor-outlet of the evaporator immediately preceding it, a feed-heater the heating-surfaces of which are connected to the condensed primary steam-outlet pipe of the first evaporator, and a feed-box having as many chambers as there are evaporators, each chamber being connected to its evaporator by leveling-pipes and receiving the heated feed-water from the feed-heater by a pipe which communicates with the chamber through a valve controlled by a float in said chamber, the said valves being differentially loaded to suit the different pressures in the several evaporators, substantially as described.

4. In apparatus for evaporating sea or other water for obtaining a supply of fresh water, in combination with a series of evaporators, a feed-box having as many chambers as there are evaporators, each chamber being connected to its evaporator by leveling-pipes and communicating with the feed-supply by means of a valve controlled by a float in said chamber, said valves being, if necessary, differentially loaded to suit the different pressures in the several evaporators, substantially as described.

5. In apparatus for evaporating sea or other water for obtaining a supply of fresh water, in combination, a feed-box 20, a feed-valve controlled by a float which is attached to one arm of a bell-crank lever, the other arm of the lever and a link connecting it to the valve forming a toggle-joint by means of which the valve is operated, and a valve-seating 43, adjustable through the wall of the box from the outside in position relatively to the fulcrum of said bell-crank lever, substantially as described.

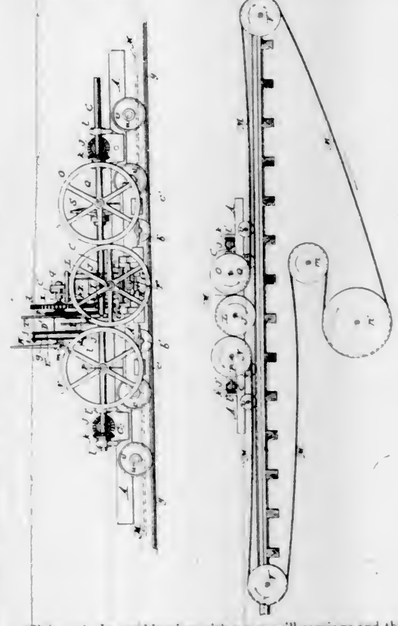
6. In apparatus for evaporating sea or other water for obtaining a supply of fresh water, in combination with the vapor-inlet pipe and condensed-vapor-outlet pipe, a pass-by pipe forming a branch of the inlet-pipe, through which a portion of the vapor passes instead of passing through the heating-surfaces, said pass-by pipe being led into the condensed-vapor-outlet pipe after the manner of an ejector, substantially as described.

448,543. VEHICLE-SPRING. GEORGE E. RAYMOND, Grand Rapids, Mich. Filed Aug. 5, 1890. Serial No. 361,036. (No model.)



Claim.—In combination with the body of a vehicle, a coiled spring arranged between two substantially parallel equalizing-bars, arms connecting the said coiled spring to said equalizing-bars by rigid connections, journals supporting the equalizing-bars and connected to the vehicle-body, arms extending outwardly from the said equalizing-bars and connected to the side bars of the body, each of said arms which connect the spring to the equalizing-bars attached to said equalizing-bars at a point intermediate the connections between said equalizing-bars and the outwardly-extending arms, all substantially as and for the purpose described.

448,544. SAW-MILL SET-WORKS. EDWIN REYNOLDS, ALTON J. SHAW, and WILLIAM H. TROUT, Milwaukee, Wis., assignors to the Edward P. Allis Company, same place. Filed Aug. 15, 1890. Serial No. 362,097. (No model.)



Claim.—1. In combination with a saw-mill carriage and the setting mechanism thereon, a cable or other wrapping connection for imparting motion to the setting mechanism and remaining in engagement with the latter throughout the travel of the carriage, and a power

mechanism independent of the carriage for imparting a continuous motion in one direction to the cable.

2. In combination with a saw-mill carriage and its setting mechanism, a continuously-traveling cable or other wrapping connection passing about pulleys mounted upon the carriage and forming part of the setting mechanism and also about pulleys carried in fixed bearings in the frame of the mill, and means for imparting motion to the cable, substantially as shown and described.

3. In combination with a saw-mill carriage, mechanism for advancing and receding the knees, pulleys L and O, mounted upon the carriage and connected, respectively, with the advancing and receding mechanisms, pulleys mounted in the frame of the mill, a continuously-traveling cable M, passing about the pulleys, and devices, substantially such as shown and described, for throwing either the advancing or receding mechanism into action or both out of action, as desired.

4. In combination with a saw-mill carriage having knees and a set-shaft and connections between the knees and shaft, a worm-wheel D, secured to the shaft, a hinged or pivoted frame G, carrying a continuously-rotating worm E, and means for raising and lowering the frame.

5. In combination with a saw-mill carriage having knees and a set-shaft and connections between the knees and shaft, a worm-wheel D, secured to the shaft, a hinged or pivoted frame G, carrying a continuously-rotating worm E, a cross-head q', provided with slots o' p' F, a shaft X, provided with a lug b, and a hand-lever W, secured to the shaft.

6. In combination with a saw-mill carriage, its knees and set-shaft, a worm-wheel D, secured to the shaft, a counterbalanced frame G, provided with a continuously-rotating worm E, and means for raising and lowering the frame.

7. In combination with a saw-mill carriage and its set-shaft and knees, a wheel D', provided with a series of holes or openings h, an arm F', a pin adapted to lock the arm to the wheel, a fixed scale j, and gearing for imparting motion to the wheel D'.

8. In combination with a saw-mill carriage and its set-shaft and knees, a wheel D', provided with openings h, an arm F', provided with a pin, a fixed scale j, gearing for imparting motion to the set-shaft and from the set-shaft to the wheel D', a lever, as W, in the path of the pin, and intermediate connections between the lever and gearing for imparting motion to the set-shaft, all combined substantially as and for the purpose set forth.

9. In combination with a saw-mill carriage and its set-shaft and knees, a wheel D', provided with holes h, an arm F', provided with a pin, a fixed scale j, mounted upon the face of the wheel, an indicator-ring E', mounted upon the rim of the wheel, a pointer t, carried by scale j, gearing for imparting motion to the set-shaft and from the set-shaft to the wheel D' and ring E', and a lever arranged in the path of the pin and serving to connect and disconnect the set-shaft from its operating-gear.

10. In combination with a saw-mill carriage and its set-shaft and knees, mechanism for imparting motion to the shaft, a wheel D', geared to the shaft and provided with holes h, an arm F', provided with a pin, a cross-head q', carrying a part of the mechanism, a shaft X, connected with the cross-head and provided with a hub m, and a lever W, pivoted to the hub in the path of the pin.

11. In combination with set-shaft C and gearing for imparting motion thereto, pinions c d, wheel D', provided with hub e and holes h and mounted upon the shaft X, arm F, mounted loosely upon the shaft X, pinion p, secured to the hub e, shaft r, provided with pinions q s, a band E', applied to wheel D', a lever W, mounted upon shaft X, and connections between the said shaft and the gearing that operates the set-shaft.

12. In combination with a saw-mill carriage and its set-shaft, a worm-wheel D, carried by the shaft, a hinged frame provided with a shaft F, having a worm E and pinion H, a shaft J, provided with a gear I and sheave L, and a cable M, passing over the sheave.

13. In combination with a saw-mill carriage and its set-shaft C, a shaft J, intermediate connections between the shafts C and J, a bevel-wheel S, secured to the shaft C, a shaft Q, provided with a bevel-gear to engage the wheel S, sheaves L and O, secured, respectively, to the shafts J and Q, a cable passing about the sheaves, and means, substantially as shown, for throwing either of the shafts J and Q into gear with the set-shaft.

14. In combination with a saw-mill carriage and its set-shaft, a shaft J, provided with a sheave L, intermediate connections between the shafts for rotating the shaft C in one direction, a shaft Q, provided with sheave O, intermediate connections between the shafts Q and C, whereby the direction of rotation of shaft C may be reversed, and a cable passing about the sheaves L O.

15. In combination with a saw-mill carriage and the setting mechanism thereon, sheaves N L O, also mounted upon the carriage, sheaves V V', fixed in position near the floor, sheaves m m', located below the floor, and a continuously-traveling cable M, passing about the sheaves.

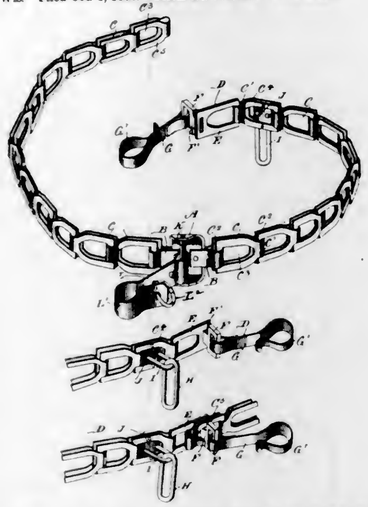
16. In combination with a head-block, a knee d', provided with a slot h', a plate i', passing through the slot, and a screw g', engaging the knee and located below the plate.

448,545. **FENCE.** NELSON RICE, New Market, Ind. Filed Feb. 5, 1890. Serial No. 339,284. (No model.)



Claim.—A fence consisting of the terminal posts inserted in the ground, a riding retaining taut wire secured by suitable means on the tops of the posts, the single and paired uprights standing between the terminal posts and extending from the ground above the retaining-wire, the paired and crossed lateral braces extending from the ground above the retaining-wire and forming crotches within which the latter rests, the longitudinal braces, and the overlapping rails built up between the paired uprights and supported between the single uprights and the longitudinal braces, the uprights, braces, rails, and riding-wire being secured substantially as described.

448,546. **ANIMAL-COLLAR.** GUSTAV R. SAGELSDORFF, Medford, Wis. Filed Oct. 1, 1890. Serial No. 366,729. (No model.)



Claim.—1. In a chain adapted to serve as an animal-collar, the combination, with two chain-sections, of the U-shaped middle piece which connects them, a pin K, supported in the outwardly-curved end of said middle piece, and a cow-bell hook turning loosely on said pin, substantially as shown and described.

2. A chain adapted to serve as an animal-collar, the same being provided with a stud F, having a reduced neck or shank and secured to one of the terminal links and adapted to pass through the other terminal link, a hook attached to said stud, and the link H, secured to the chain contiguously to the stud, and thus adapted for engagement with the aforesaid hook to form the lock hereinbefore described.

448,547. **BANK-PROTECTOR.** JAMES A. SAXON, Leonard, Tex. Filed July 1, 1890. Serial No. 357,427. (No model.)

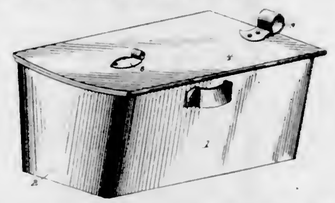
Claim.—1. In a bank-protector, the combination of the guides, the shield mounted therein and adapted to have a vertical movement, the trigger arranged to hold said shield normally above the opening and arranged to drop the same in place over the opening, the spring connected to the arm of the trigger and arranged to hold the same in a horizontal position and thus force the bolt inward and under the shield, the pulley J, and the rope secured therein, substantially as set forth.

2. A bank-protector consisting of the guides, the shield mounted therein, the trigger consisting of the arm A, provided with an arm a, the latter having pivotally secured at its lower end the bolt arranged

to hold the shield in the position above the opening, and the rope connected to the arm and passing through the pulley and adapted to actuate the trigger, substantially as described, and for the purpose named.



448,548. **BAKE-PAN.** CONRAD SCHIFFERLY, Fort Wayne, Ind. Filed Oct. 28, 1890. Serial No. 369,602. (No model.)



Claim.—The combination, with an oblong bake-pan, the rear end of which is outwardly bowed or curved throughout its length and adapted to be temporarily sprung inwardly, and the four edges of which are beaded, of a cover agreeing in size with the pan, having its opposite sides and front end provided with curved guides for embracing the side and front beads of the pan and at its rear end provided with a bead for springing over the rear end of the pan and curved to agree therewith, substantially as specified.

448,549. **STOP-WATCH.** CHARLES SCHLATTER, Hoboken, N. J. Filed Mar. 24, 1890. Serial No. 345,028. (No model.)

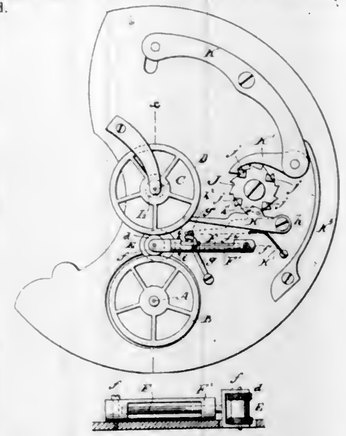
Claim.—1. The combination, with the pinions arranged in different vertical and horizontal planes, of oscillating pinions arranged between the same and movable out of engagement with both of said pinions, substantially as described.

2. The combination, with the pinions having stationary arbors and arranged in different vertical and horizontal planes, of a rocking frame arranged between said pinions and carrying pinions, said frame being movable to disengage the second-named pinions from both the first-named ones, substantially as described.

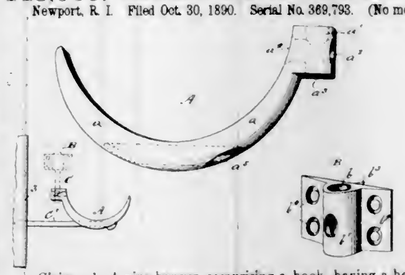
3. The frame F', pivoted at one end, and the shaft F, journaled therein and formed or provided with a stud g', in combination with the intermediate wheel E, substantially as described.

4. The frame F', provided with the shaft F, having arm g' and intermediate wheel E, in combination with the lever H and means for operating the same for turning the shaft and the intermediate wheel, substantially as described.

5. The frame F', pivoted at one end and cut away at f^3, and the shaft F, journaled in said frame and provided with the intermediate wheel and the arm g', in combination with the spring g, lever H, and the ratchet-wheel J, provided with the studs j, substantially as described.



448,550. **PIPE-HANGER.** FRANK G. SCOTT and GEORGE L. SCOTT, Newport, R. I. Filed Oct. 30, 1890. Serial No. 369,793. (No model.)



Claim.—1. A pipe-hanger comprising a hook having a head or shank provided with holes ranging at angles with each other, a rod adapted interchangeably to either of the holes to support the hook, and a wall-plate provided with holes ranging at angles with each other and adapted to receive and sustain the hanger-rod, substantially as described.

2. A pipe-hanger comprising a hook having a head or shank provided with holes ranging at angles with each other, and also having a lengthwise hole through its bent body portion, a rod adapted interchangeably to said holes to support the hook, and a wall-plate provided with holes ranging at angles with each other and adapted to receive and sustain the hanger-rod, substantially as described.

3. In pipe-hangers, the pipe-sustaining hook provided in its head or shank with holes a^3 a^3, ranging about at right angles with each other, in combination with means, substantially as described, for supporting said hook, substantially as subscribed.

4. In pipe-hangers, the pipe-sustaining hook provided in its bent body portion with a lengthwise hole a^5, in combination with means, substantially as described, for supporting said hook, substantially as described.

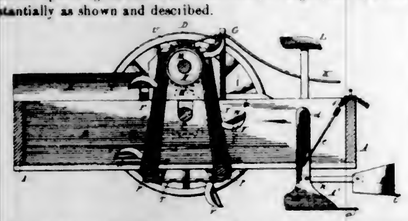
5. In pipe-hangers, the pipe-sustaining hook provided in its head or shank with holes a^3 a^3, ranging about at right angles with each other, and provided in its bent body portion with a lengthwise hole a^5, in combination with means, substantially as described, for supporting said hook, substantially as described.

6. In pipe-hangers, the hanger-rod wall-plate provided with holes b b', ranging about at right angles with each other, in combination with a rod C and a hook A, substantially as described.

448,551. **POTATO-DIGGER.** FAUNT LE ROY SENOUR, New Alexandria, Pa. Filed Apr. 3, 1890. Serial No. 346,416. (No model.)

Claim.—1. In a machine for digging potatoes, the combination, with the main frame thereof, of a vertically-adjustable frame mounted in said main frame and carrying upper and lower rollers, the lower rollers being mounted in a common horizontal plane, an endless band passing over said rollers, a series of digging and gathering fingers secured to said band and adapted to move during a portion of their travel with a horizontal sweep through the rows of potatoes, and mech-

anism for operating the band, all constructed, arranged, and operating substantially as shown and described.

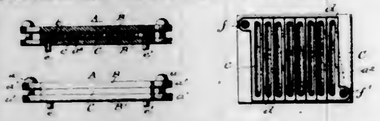


2. In a machine for digging potatoes, the combination, with the main frame thereof, of a vertically-adjustable trapezoidal frame mounted in said main frame, a roller mounted in the upper portion of the adjustable frame, and two rollers mounted in a common horizontal plane in the lower part of said frame, an endless band passing over said rollers, a series of digging and gathering fingers secured to said band and adapted to move during a portion of their travel with a horizontal sweep through the rows of potatoes, and mechanism for operating the band, all constructed, arranged, and operating substantially as shown and described.

3. In a machine for digging potatoes, the combination, with the main frame thereof and a digging-plow secured to the forward end of the frame and having a flat share angular at the point and elliptically recessed at its rear, whereby the potatoes are dug and arranged in a narrow row, of a vertically-adjustable frame mounted in said main frame and carrying upper and lower rollers, the lower rollers being mounted in a common horizontal plane, an endless belt passing over said rollers, and a series of digging and gathering fingers secured to said belt and adapted to move during a portion of their travel with a horizontal sweep behind the digging-plow, all constructed, arranged, and operating substantially as shown and described.

4. In a machine for digging potatoes, the combination, with the main frame, potato-receptacles located on each side thereof, and an angular slotted distributing table or platform located at the rear of said main frame between and communicating with the potato-receptacles, of a vertically-adjustable frame mounted in the main frame and centrally located between the potato-receptacles, upper and lower rollers mounted in the adjustable frame, the lower rollers being mounted in a common horizontal plane, an endless band passing over the rollers, a series of digging and gathering fingers secured to said band and adapted to move during a portion of their travel with a horizontal sweep and to pass through the slots in the distributing-table, and mechanism for operating the band, all constructed, arranged, and operating substantially as shown and described, whereby the potatoes are first gathered by the digging and gathering fingers and carried up and deposited upon the distributing-table.

448,552. LIQUID-COOLER. PATRICK J. SLAVIN, Waterbury, Conn. Filed Oct. 31, 1890. Serial No. 369,900. (No model.)

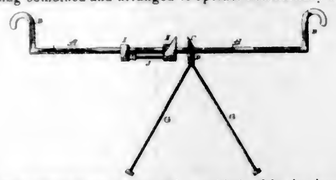


Claim.—1. In a cooling apparatus for liquids, an inside body portion or plate provided with a series of diagonal grooves extending across the same on one side and straight grooves on the opposite side, said series of grooves communicating with each other at their ends, in combination with the outer plates or covers embracing the said body portion, substantially as described.

2. In a cooling apparatus for liquids, an inner body portion one side of which is provided with diagonal grooves cut or formed in its surface and the opposite side with straight grooves, said diagonal and straight grooves having apertures at each end by which communication is established between them, in combination with the two outer plates or covers embracing the said body portion, and packing interposed between them, one of said plates carrying an inlet and an outlet pipe, said plates being held together by screws passing through screw-threaded apertures in ears or lugs projecting from the same, substantially as described.

448,553. WHEEL-WRENCH. LYMAN D. SMITH, Waterloo, Nebr. Filed Dec. 6, 1890. Serial No. 373,817. (No model.)

Claim.—1. A wrench composed of the rod provided with hooks upon its ends for attachment to the wheel, a stationary jaw secured to the rod, a movable jaw, and a screw for operating the jaw, the parts being combined and arranged to operate substantially as shown



2. The combination of the rod provided with the hooks upon opposite ends for attachment to the spokes of the wheel, a stationary jaw, a movable jaw, a screw for operating the jaw, and supports for retaining the wheel in a standing position, substantially as set forth.

448,554. COMBINED TRUNK AND BED. GEORGE W. SNAMAN, Jr., Allegheny, Pa. Filed Sept. 6, 1890. Serial No. 364,138. (No model.)

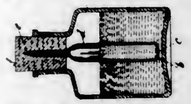


Claim.—1. In a convertible trunk, the combination, with two equal body-sections that are open at one end and are hinged together at the open end so as to permit said sections to be extended in the same plane, vertical strips secured on the sides of the body-sections at their open ends, and adjacent parallel rabbeted strips which with the end strips afford locking-grooves on the inner surfaces of the body-sections at their open ends, of an end wall which is adapted to slide in the locking-grooves when the body-sections are folded one above the other, substantially as set forth.

2. The combination, with a trunk comprised of two body-sections that are each open at one end and hinged together at said open ends, of an insertible loose end wall which is adapted to interlock with grooves formed at the open ends of the body-sections, substantially as set forth.

3. The combination, with a trunk comprised of two body-sections that are open at one end and hinged together at said open ends, an insertible end wall, and depending hooks in the trunk-body, of a tray that is adapted to rest on these hooks, and sliding latch bolts which secure the hinged lid of the tray, substantially as set forth.

448,555. MEDICINE-DROPPER. FREDERICK B. SPOONER, Brooklyn, N. Y. Filed May 19, 1890. Serial No. 352,321. (No model.)



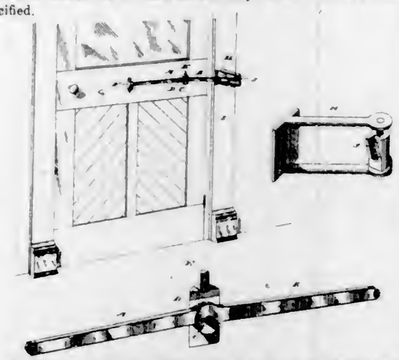
Claim.—1. A medicine-dropper consisting of a reservoir having an orifice in its lower end, an orifice in its upper portion, and its upper end being continuously tapered to a point, by means of which the dropper can be driven into and be attached to a cork, substantially as described.

2. A medicine-dropper consisting of the reservoir *a* for receiving the liquid, having the exit-orifice *c* and air-inlet orifice *d*, and provided with the solid continuously-tapering-point extension *e*, enabling it to be driven into the lower portion of a cork, substantially as described.

448,556. GRAVITATING DOOR-CLOSER. JOHN N. STONG, Woodbridge, Canada. Filed Dec. 11, 1890. Serial No. 374,336. (No model.)

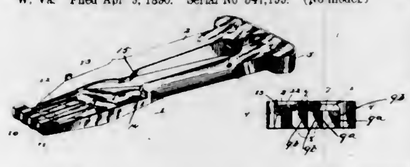
Claim.—1. Two bars A B, jointed together, the end of one end bar fitting into a socket F, fixed to a door or gate and the end of the other bar fitted into a socket J, pivoted in the end of a bracket H, fixed to the door-jamb in line with the socket F, in combination with a weight

applied to the said bar or bars, substantially as and for the purpose specified.



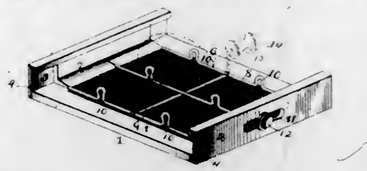
2. Two bars jointed together, the end of one bar fitting into a socket fixed to a door or gate and the end of the other bar fitted into a socket pivoted on the end of a bracket fixed to the door-jamb, the bottom of the said socket being bereled and designed to rest upon a correspondingly-beveled surface formed around its pivot in the said bracket, in combination with a weight applied to the said bar or bars, substantially as and for the purpose specified.

448,557. SHEEP-SHEARS. JOHN W. STROTHER, Cherry Camp, W. Va. Filed Apr. 9, 1890. Serial No. 347,199. (No model.)



Claim.—The herein-described improved animal-shears, comprising, in combination, the shank 1, having the flattened portion 7, formed with tines 8, having flat upper sides, cutting-edges 9, straight vertical sides 9ª, downwardly and inwardly beveled or inclined sides 9ᵇ, and shoulders 10, having blunt points 11, the shank 2, having the shear-blade 12, the connecting-spring 5, and the hook or stop 13, all constructed and arranged substantially as and for the purpose herein set forth.

448,558. EGG-TRAY FOR INCUBATORS. WILLIAM H. SULLIVAN, Holden, Mo. Filed Oct. 4, 1890. Serial No. 367,091. (No model.)



Claim.—1. An incubator-tray consisting of an open frame having a gauze bottom and oppositely-grooved side pieces and a turning frame consisting of opposite strips mounted in the grooves of said side pieces, a series of transverse wires provided at intervals with kinks, and a longitudinal wire connecting the transverse wires between their kinks, substantially as specified.

2. An incubator-tray consisting of a rectangular open frame having a gauze bottom and opposite front and rear strips, the inner faces of which are provided with ways and the front strip provided with a longitudinal slot, and a turning tray mounted in said frame and consisting of opposite L-shaped guide-pieces mounted in the ways, a series of transverse connecting-wires provided with kinks at corresponding intervals, a longitudinal wire connecting the transverse wires between their kinks and combining therewith to form egg-receiving spaces, and a headed screw mounted in the slot of the front piece of the first-mentioned frame and secured to the corresponding guide-piece of the turning or last-mentioned frame, substantially as specified.

3. An incubator-tray consisting of an open frame having a bottom and a sliding turning frame consisting of opposite strips and a series of transverse wires provided at intervals with vertical kinks, substantially as specified.

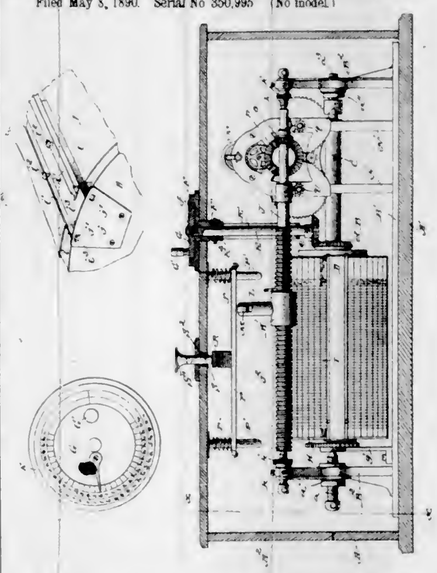
448,559. BAKING-PAN. JAMES B. TRAVERS, Winchester, Ill. Filed Oct. 14, 1890. Serial No. 368,086. (No model.)



Claim.—1. A baking-pan composed of two sections, one of the sections having an extending portion, which is provided with elongated longitudinal openings, and the other section having hooks narrower than the length of the said openings and which are placed therein, whereby one section can be moved upon the other, for the purpose described, substantially as shown.

2. A removable bottom grate for baking-pans, consisting of a single sheet of metal having its edges doubled back upon themselves, and these doubled portions bent downward to form supporting-flanges, longitudinal ribs, and openings between the ribs, substantially as shown.

448,560. TIME-RECORDER. FRANCIS E. TYNG, Irvington, N. Y. Filed May 8, 1890. Serial No. 350,995. (No model.)



Claim.—1. A time recorder consisting, essentially, of a cylinder mounted upon a suitable shaft and having a time-card thereon, as shown, a dial-plate connected by a gear mechanism with the cylinder, the numbers on the plate corresponding to the numbers on the cylinder, a frame mounted upon suitable shafts above the cylinder and having means connected therewith for marking the time-card, and a clock-movement connected with said frame so that the frame will be moved thereby, substantially as described.

2. A time-recorder consisting, essentially, of a revoluble cylinder mounted in a suitable frame and having a time-card thereon containing a series of names, a series of hour-spaces, and a series of numbers corresponding to the names, a dial-plate having numbers thereon corresponding to the numbers of the time-card, a disk mounted in the dial-plate, provided with a suitable pointer and connected by a gear mechanism with the cylinder, a frame mounted upon shafts, so as to move longitudinally above the cylinder, said frame having means for marking the time-card, as shown, and a clock-movement connected with the frame, so that the frame may be moved thereby, substantially as described.

3. A time-recorder consisting, essentially, of a revoluble cylinder having a time-card thereon containing a series of spaces for the names of the employes, a series of spaces for the numbers of the employes,

and a series of hour-spaces, a dial-plate having numbers inscribed thereon corresponding to the numbers of the time-card, a disk having a pointer fixed thereto adapted to rotate in a recess of the dial-plate and connected by a gear mechanism with the cylinder, a frame mounted upon shafts above the cylinder, one of said shafts being threaded, as shown, means for indenting the time-card from said frame, means for connecting the frame with the threaded portion of the shaft, and a clock-movement geared to said threaded shaft and adapted to move the shaft and frame, substantially as described.

4. A time-recorder consisting of a revoluble cylinder having a time-card thereon containing a series of name-spaces, a series of time-spaces, and a series of number-spaces, as shown, a dial-plate having numbers thereon corresponding to the numbers of the time-card, a disk adapted to rotate in a recess of the dial-plate, having an indicating-pointer thereon and connected by a gear mechanism with the cylinder, a pawl-and-ratchet mechanism for preventing the backward movement of the cylinder, a frame mounted upon shafts above the cylinder, one of said shafts being threaded, as shown, means for marking the time-card from said frame, a detachable connection between the frame and the threaded shaft, and a clock-movement geared to the threaded shaft and adapted to move the shaft and frame, substantially as described.

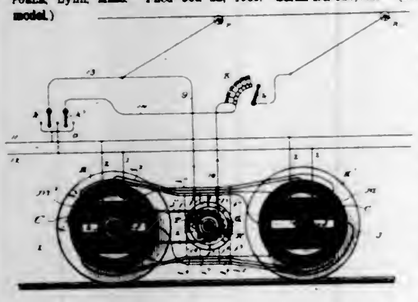
5. In a time-recorder, the combination, with the cylinder D, having grooves i therein, and the time-card I, of the rods i', having the projecting ends i^3, as shown, and the spring-plates *j*, fixed to the cylinder ends and having perforations to receive the ends of the shafts, substantially as described.

6. The combination, with the revoluble cylinder D, having the time-card I attached thereto, and the frame K, mounted above the cylinder and having means, as shown, for operating the same, the said frame having arranged thereon the standards L and L', and the central support *l* of the spring-actuated bolt *m*, projecting through a central perforation, of the frame K, the spriog-actuated arm M, pivoted to the standard L and exteoding above the support *l* and bolt *m*, the lever M', having the finger-piece M^4 mounted therein and having a spring, as M^3, attached thereto, and means, as spring-actuated bar P, rod R, and spindle S, for actuating the lever M', arm M, and bolt *m*, substantially as described.

7. In a time-recorder having a revoluble cylinder carrying a time-card, the combination, with the parallel shafts J and J', the shaft J being threaded, as shown, and operated by a clock-movement, of the frame K, mounted loosely upon said shafts and carrying means for indenting the time-card, as described, and the bent arm *n*, pivoted to the frame K, provided with a tooth *n'* to engage the thread of the shaft J, and a suitable spring for holding said tooth and threaded shaft in engagement, substantially as described.

8. In a time-recorder, the combination, with the shaft C and cylinder D, fixed thereto, said cylinder carrying a time-card, substantially as described, of the dial-plate F, having numbers inscribed thereon corresponding to the numbers of the time-card, the plate G, provided with a suitable handle and a pointer *f* to indicate the numbers of the dial, a gear mechanism connecting said plate to the shaft C, the ratchet-wheel H and spring-actuated pawl *g* for preventing the backward movement of the shaft C, the shafts J and J', mounted in the frame B above the cylinder, the shaft J being screw-threaded and geared to a clock-movement, as shown, the frame K, mounted upon said shafts and connected by the bent arm *n* with the threaded portion of the shaft J, the spring-actuated bolt *m*, mounted in the frame K and adapted to indent the time-card on the cylinder, the spring-actuated arm M, adapted to engage said bolt, said arm being pivoted to a suitable support, as shown, the spring-actuated lever M', pivoted to a suitable support and having a movable finger-piece M^4 to engage the end of the arm M and elevate the same, and means, as spring-actuated bar P, rod R, and spindle S, for tilting the lever M', substantially as described.

448,561. ELECTRIC-RAILWAY MOTOR. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Oct. 22, 1889. Serial No. 327,769. (No model.)



Claim.—1. The combination, with a moving vehicle or vehicles, of one or more motors applied to propel the same, and means actuated by the movement of said vehicles for continuously distributing supply-current of continuous direction to the said motor or motors in accordance with the speed at which the vehicles are moving.

2. In an electric-railway system, one or more motors arranged to drive a train, each motor having a revoluble armature impelled by a rotating constant field of force, each field of force presenting its poles at an angle to the revoluble armature-poles, and means for re-establishing the said relation between the armatures and the moving field of force whenever the same has been disturbed.

3. In an electric-railway system, a number of motors, each having a revolving armature mechanically connected to the wheels of the railway-vehicles, said armature being driven by a rotating constant field of force controlled by and rotating at a speed corresponding with the speed of the wheels of the vehicles.

4. In an electric-railway system, one or more motors to drive the train, each of the motors comprising a revoluble armature and a rotatable constant field of force, an electric distributer causing the rotation of the field of force of all the motor-fields, and means for placing and holding all the armature-poles in true relation with regard to the revolving field of force.

5. In an electric-railway system, one or more motors having driving-armatures impelled by stationary cylindrical field-magnets, the latter having a rotating constant field of force, and means for simultaneously positioning all the armature-poles at a working angle to the revolving fields of force whenever their true relation has been disturbed.

6. The combination, with a series of electro-dynamic motors, a suitable source of continuous current, and permanent electric connections extending to a number of points around the continuous non-rotating field-magnet coils of said motors, armatures connected to the work and rotatable within the moving fields of force of the motors, and means for moving the constant field of force around the field-magnets of the motors at a speed corresponding to that of the vehicle or vehicles driven.

7. The combination, with the wheels of a vehicle or vehicles, of one or more motors applied thereto to drive the same, a distributer carried by the vehicle in suitable position, connections between the distributer and circuit or circuits around the circumference of the field-magnets of the motor or motors, and means actuated by the movement of the vehicle for actuating a distributing device for distributing current, and thereby rotating the field-magnet poles at a rate depending upon the rate of movement of the vehicle and in true relation to the moving or driving armature or armatures.

8. The combination, with a vehicle or vehicles and a motor or motors applied to propel the wheels thereof, of a plurality of circuits adapted to supply current to the field-magnets of the motors, armatures in operative relation to the field-magnets and applied to propel the wheels of the vehicle or vehicles, and a device for distributing current in the motor-circuits to cause rotary movement of the field of force, and means operated by the movement of the vehicles for controlling the speed of the distributer in accordance with the rate of movement of the vehicles.

9. The combination of a plurality of vehicles or trucks, motors applied to propel the wheels thereof, and magnetic clutches interposed between the driving-gear and the axles to be driven, and an energizing-circuit including said clutches, whereby the same may be connected or disconnected, as desired, and from a single point.

10. The combination, with a plurality of vehicles or trucks, of a plurality of motors and detachable electro-magnetic connections between the armatures of said motors and the axles to be driven, and means controlling the action of the detachable connections and for rearranging and positioning all the said armatures with respect to their fields of force, and thereby starting up the motor-armatures in true position with regard to the moving field-magnet poles by which they are actuated.

11. The combination, with a plurality of vehicles or trucks, of a plurality of motors and mechanical connections between the armatures of said motors and the axles to be driven, magnetic clutches interposed between and connecting the armatures and the said axles, and circuits and switching devices therein for setting the clutches when the entire series of armatures is in operative position.

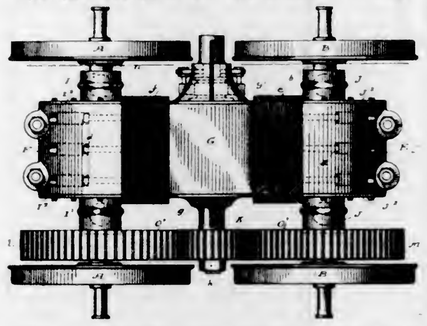
12. In an electric-railway motor system, the combination, with the axles of the vehicle or vehicles to be driven, of motors applied to propel the same, said motors comprising armatures operatively connected with the axles to be driven, and field-magnets therefor rigidly held in position to react thereon, multiple circuits extending between the source of supply and points about the said field-magnets, and a current-distributing device interposed between the source and the motors acting to distribute current successively to the conductors connected around the field-magnets of the motors, and means for actuating the distributer in synchronism with the speed of the vehicle, thereby maintaining the full torque at any speed.

13. The combination, with a moving vehicle or vehicles, of one or more motors applied to propel the same, means actuated by the movement of the vehicles for distributing supply-current to the motors, and pole-changing circuits and connections for reversing the direction of rotation of the motors.

14. The combination, with a moving vehicle or vehicles, of one or more motors applied to propel the same, means actuated by the movement of the vehicles for distributing supply-current to the motor or motors, and a series of motors all supplied from a distributer or distributers controllable from a single point.

15. The combination, with a moving vehicle or vehicles, of one or more motors applied to propel the same, means actuated by the movement of the vehicles for distributing supply-current to the motor or motors, and a series of motors all supplied by a distributer or distributers controllable from a single point, and a single set of reversing apparatus for the entire series.

448,562. ELECTRIC LOCOMOTIVE. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed May 26, 1890. Serial No. 353,246. (No model.)



Claim.—1. An electric locomotive comprising the two independent axles of a car-truck, a single motor disposed between and separately spring-supported upon said axles and provided with a suitable pinion upon its armature-shaft, and dynamometric gears on each axle, said gears being all in direct engagement with the armature-pinion.

2. An electric locomotive comprising a pair of independent axles to be driven, a motor extending between and separately spring-supported at or near the extremities of its field-magnet system upon each of said axles, and direct dynamometric spur-gearing between the armature-shaft of the motor and each of said axles.

3. In an electric locomotive, the combination of a motor having its armature centrally disposed between the independent axles of a railway-truck and provided with a suitable pinion and dynamometric gears, one on each axle, said gears engaging the pinion upon opposite sides, whereby said axles are each free to have a tilting movement independent of each other.

4. In an electric locomotive, the combination, with two axles of a truck, of a motor having its armature normally parallel with said axles and field-magnets extending from axle to axle, supporting-boxes sleeved upon the axles and connected with the ends of the field-magnet system of the motor, and springs above and below the boxes upon the axles, substantially as described.

5. An electric locomotive comprising two axles of a railway-truck, a motor having a double field-magnet, the outer ends of which extend around said axles, and have its armature and shaft centrally disposed between the axles and parallel therewith, spring-supports between the axles and the ends of the motor, and direct flexible gearing extending between the armature-shaft and said axles, substantially as described.

6. The combination, in an electric locomotive, of a motor spring-supported upon the truck, axles, flexible gear-wheels upon the axles, and a pinion upon the armature-shaft of the motor in mesh with the said gear-wheels, said pinion being formed of a plurality of toothed disks flexibly connected together and loosely secured upon the said shaft, so as to permit movement of the disks relatively to each other and to the teeth of the gears to be driven, substantially as described.

7. In an electric locomotive, a dynamometric gear-wheel comprising a hub rigid upon the axle to be driven, a rim having peripheral teeth, and radial springs extending between the hub and the rim, substantially as described.

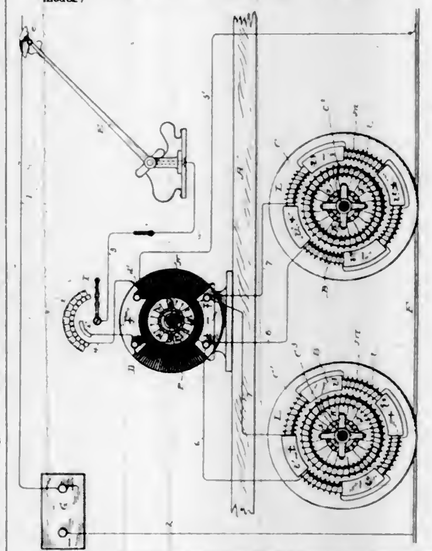
8. The combination, with the two axles of a car-truck, of an electric-railway motor having a double field-magnet sustained part above and part below the axles to be driven, and means for supporting the upper and lower parts of the field-magnet independently.

9. An electric-railway motor formed of two horseshoe field-magnet cores, pole-pieces detachably secured to the ends of the cores, and magnetizing-coils upon the extremities of the pole-pieces, substantially as described.

10. The combination, with the axles of a car-truck, of a motor comprising a central armature and a double field-magnet extending over the said axles and divisible upon its central horizontal line, substantially as described.

11. The combination, with the axles of a car-truck, of a motor having a central armature parallel with and between the axles, a field-magnet extending over the said axles and horizontally divisible, spring-boxes sleeved upon the axles at each end of the motor, and detachable connections between the sprig-boxes and the ends of the motor for spring-supporting the motor upon the axles, substantially as described.

448,563. ELECTRIC-RAILWAY SYSTEM. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Dec. 13, 1890. Serial No. 374,581. (No model.)



Claim.—1. A train system comprising a continuous-current supply-circuit along the line of way, a vehicle or vehicles, a motor or motors arranged to propel said vehicles and comprising a field-magnet and an armature having a sectional winding and commutators therefor and short-circuiting brushes thereon adjustable with relation to the inducing-poles of the field-magnet to control the power and direction of rotation of the armature, a distributer receiving the continuous supply-current and converting the same into currents of alternating polarity, and connections between the distributer and the field-magnets of the motors.

2. A train system comprising a continuous supply-circuit along the line of way, a vehicle or vehicles, motors arranged to propel said vehicles and comprising short-circuited armatures having adjustable commutator-brushes, a distributer receiving the continuous supply-current and converting the same into currents of alternating polarity, connections between the distributer and the field-magnets of the motors, and means for controlling the speed of the distributer, and thereby the rate of phase of the currents sent to the field-magnet coils of the motors.

3. In an electric-railway train system, the combination, with a source of continuous current, of an electro-dynamic machine or distributer receiving said currents and transmitting alternating currents, a motor or motors the field-magnets of which are in circuit with the alternating currents of the distributer and having armatures the winding of which is short-circuited through adjustable commutator-brushes, and means for controlling the inductional effects of the field-magnet upon the armature by varying the positions of said brushes with relation to the poles of the field-magnets of the motors.

4. A system of electric railways comprising a motor-circuit traveling with the vehicles to be propelled, motors connected to the driving-wheels of the vehicles, each having a field-magnet energized by a single alternating or pulsating current, an armature having a contin-

ous winding connected to a sectional commutator, and brushes upon said commutator short-circuiting the sections of the armature corresponding to the effective poles of the field-magnets.

5. In an electric-railway system, a continuous supply-current, a counter-electro-motive-force device or distributer for changing the continuous current into a single alternating current, motors having field-magnets energized by the alternating current, and armatures placed in inductive relation thereto, and means for closing upon themselves and short-circuiting the sections of the armature-winding corresponding to the inducing-poles of the field-magnets, substantially as described.

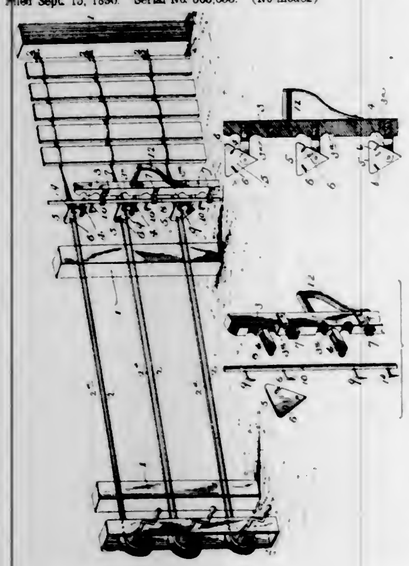
6. In an electric-railway system, an electric motor consisting of two elements carried by the axles of the vehicles to be driven, said elements each comprising an iron core having more or less finely-divided laminations and coils placed thereon, which under the influence of an alternating or pulsating current produces a number of rising and falling magnetic poles in said field-magnets, and an armature having a sectional winding and a commutator therefor, and means for closing the corresponding sections of the armature upon themselves while rotating with regard to the inducing-poles of the field-magnets.

7. In a train system having one or more motors adapted to propel a vehicle, a source of continuous current extending along the line of way, means for converting the continuous into alternating currents, connections between the source of alternating currents and the field-magnets of the motors, said motors having armatures of the continuous-current type with adjustable electrically-connected commutator-brushes corresponding in number with the poles of their field-magnets, and means for controlling the speed, power, and direction of rotation of the motor-armatures by adjusting the commutator-brushes with relation to the points of induction.

8. In an electric train system, the combination of a vehicle, a source of continuous current extending along the line of way, a motor upon and arranged to propel said vehicle, said motor comprising a close circuited armature with adjustable electrically-connected brushes and a separate field-magnet circuit, means for converting the supply-current into single currents of alternating polarity and transmitting the phases thereof to the field-magnet coils, and means also for controlling the speed and power of the motor by varying the rate and strength of the currents supplied to the field-magnet coils of the motor.

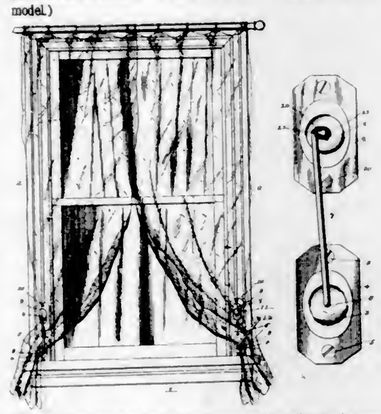
9. In a railway train system, the combination of a source of continuous current, motors having armatures with commutated windings and commutator-brushes short-circuiting the desired parts of said armature-windings, independent field-magnets, a distributer giving currents of alternating polarity and connected with the terminals of the field-magnets, and a current-modifying device receiving the supply-current and transmitting continuous current at any desired potential from the working conductors to the distributer.

448,564. **FENCE-WRENCH.** CHARLES H. VAN EPPS, Scott, Ind. Filed Sept. 15, 1890. Serial No. 365,033. (No model.)



Claim.—In a picket-fence wrench or crosser, the combination, with the twisting-plates thereof and the beam to which said plates are pivoted, of a vertical bar secured to arms, projecting inwardly from said beam, and having hooks adapted to engage with the wires of the fence and hold them in position, substantially as described.

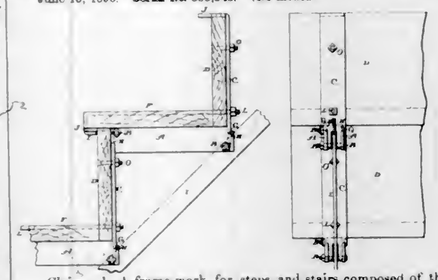
448,565. **WINDOW-CURTAIN HOLDER.** EUGENE B. WEST, Leesville, and WILLIAM D. FINNEY, Wrightsborough, Tex., executors of Larkin N. West, deceased. Filed Dec. 4, 1890. Serial No. 373,591. (No model.)



Claim.—In a curtain-holder, the commination, with the lower socket having a central opening and mounted on a base-plate, of the upper socket having a side opening and mounted on a base-plate, and the U-shaped clasp pivoted at its lower end in said lower socket and having its upper end laterally bent and designed for insertion in the side opening of said upper socket, substantially as specified

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448,566. **STEP.** STEPHEN P. WILLIAMS, Calloway, Tex. Filed June 13, 1890. Serial No. 355,345. (No model.)

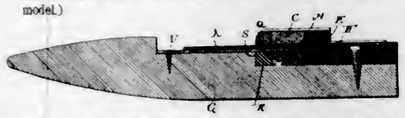


Claim.—1. A frame-work for steps and stairs composed of the vertical plates C, the horizontal plates A, the clamping-bolts B, and the diagonal brace I, substantially as shown.

2. The combination of the horizontal plates A, the vertical plates C, the clamping-bolts B, and the diagonal brace I with the steps F and the boards D, substantially as described.

3. The combination of the horizontal plates A, the vertical plates C, having their upper ends turned outward, clamping-bolts B, the diagonal brace I, the steps F, the boards D, and the clamping-rods L, substantially as set forth.

448,567. **HARVESTER CUTTING APPARATUS.** MATTHEW WILSON, Garrison, Iowa. Filed Nov. 21, 1890. Serial No. 372,208. (No model.)

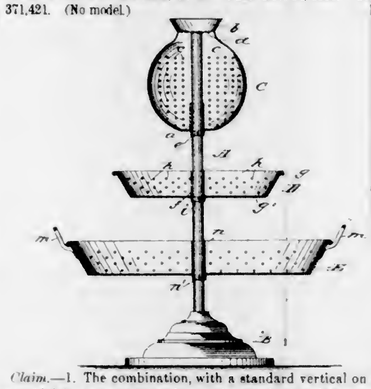


Claim.—1. In a cutting apparatus, the combination, with the finger-bar F, having a raised front edge, the fingers G, secured to said finger-bar, the bar B, detachably secured to said fingers, and the knives K, carried thereby, of the cutter-bar C, carrying knives and moving

above said knives K, arms A, detachably secured to said finger-bar and passing over its front edge E and over the cutter-bar, and a guide-bar Q, carried by the front ends of said arms, as and for the purpose set forth.

2. In a cutting apparatus, the combination, with the finger-bar F, having a raised front edge, the fingers G, secured to the lower face of said bar and having shoulders S, the bar B, resting upon said fingers against the front of the finger-bar, the retaining-bar R between the bar B and said shoulders, and the knives K, secured to the upper side of the bar B and projecting over said shoulders, of the cutter-bar C, moving above said knives K against said turned-up front edge E, knives secured to the lower face thereof and moving over and in contact with the lower knives K, arms detachably secured to the finger-bar and passing over its front edge and over the cutter-bar, and a guide-bar Q, carried by said arms and standing against the front edge of the cutter-bar and above the knives carried thereby, all as and for the purpose hereinbefore set forth.

448,568. **AERATOR FOR MILK OR OTHER LIQUIDS.** LIZZIE F. WOOD, West Lebanon, N. H. Filed Nov. 14, 1890. Serial No. 371,421. (No model.)



Claim.—1. The combination, with a standard vertical on a base, a spheroidal foraminated chamber on the standard, and a screen in the open top of said chamber, of a foraminated pan below the spheroidal chamber and adjustable on the standard, substantially as set forth.

2. The combination, with a standard, a heavy base on which the standard is vertically secured, a spheroidal foraminated chamber on the standard near its top, and a screen in the flaring inlet-aperture of the chamber, of a circular foraminated pan below the chamber on the standard, substantially as set forth.

3. The combination, with a standard upright on a base, a heavy base-block, a spheroidal chamber, having an open top guarded by a flaring wall and foraminated laterally and downwardly, and a flat screen which loosely engages the inner side of the flaring guard-wall, of a foraminated dished pan adjustable on the standard below the spheroidal chamber, and a larger foraminated pan having handles opposite on its side wall and adjustably secured on the standard between the upper pan and the base-block, substantially as set forth.

448,569. **BUTTON-MACHINE.** HEINRICH ZONDORF, Barmen, Germany. Filed Oct. 30, 1890. Serial No. 369,831. (No model.)

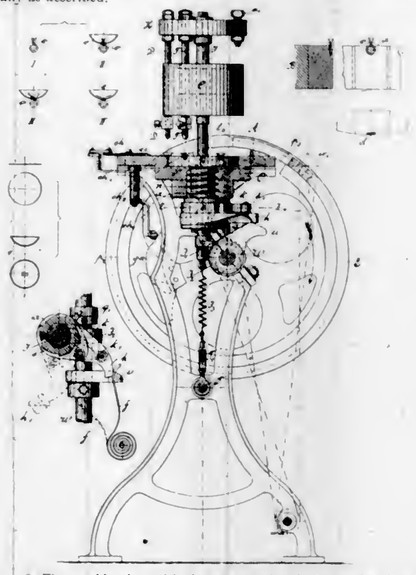
Claim.—1. In a machine for attaching eyes to caps, the combination, with an intermittently-rotated disk B for holding the eye, of plungers D F for bending the eye-shanks over on the inside of the cap, substantially as described.

2. In a machine for attaching eyes to caps, the combination, with an intermittently-rotated disk B for holding the eye and plungers D F for bending over the eye-shanks on the inside of the cap, of an ejector N for detaching the completed article from the disk B, substantially as described.

3. The combination, with the machine for attaching eyes to caps, of an eye-forming apparatus consisting of a plunger S for cutting and bending the wire, a rod Q, about which the wire is bent, fingers U U for bending the eye-shanks, and a pusher V V' V² for pushing the eye off the rod Q, substantially as described.

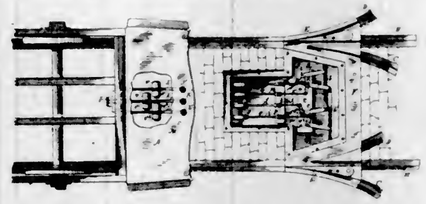
4. The combination, with the swinging punch *t* and die *b*, of a releasing-fork *w*, into which the punch is swung in order to be stripped of its cap on the rise of the punch, substantially as described.

5. The combination, with a punch *t* and a reciprocating and rotating rod *g*, to which the punch is connected, of mechanism, substantially as described, for reciprocating and rotating the rod, and a releasing-fork for stripping the punch of its adhering article, substantially as described.



6. The combination, with the eye-carrying device or disk B, of a righting device for the eyes, said righting device consisting of a split flat spring *ei* and a slide *ch* for moving the spring toward the eye, substantially as described.

448,570. **CAR-SWITCH.** WILLIAM AMOS, Providence, R. I. Filed Apr. 23, 1890. Serial No. 349,162. (No model.)



Claim.—1. The combination of the pivoted switch-tongues at opposite sides of the main track, the pivoted bars, the opposite bell-crank levers pivoted to the said bars, the vertically-arranged bell-crank levers provided with an engaging-head, and the connecting-rods which serve to connect the vertically-arranged bell-crank levers with the horizontal bell-crank levers, the car provided with the pedal-levers having elongated rollers or tappets to engage with the two adjacent projecting heads, substantially as described.

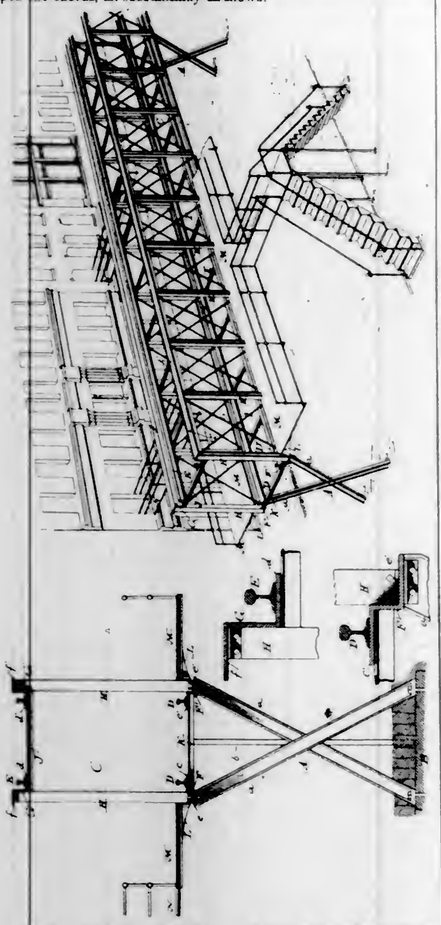
2. The combination, with the pivoted switch-tongue at one side of the main track, of the pivoted bar, the oppositely-directed bell-crank levers pivoted to the pivoted bar, the vertically-arranged bell-crank levers provided with an engaging-head, the connecting-rods which serve to connect the vertically-arranged bell-crank levers with the horizontally-arranged bell-crank levers, and the car provided with pedal-levers, which are pivoted to the car and provided with an engaging point or roller located at a forward and downward angle from a vertical line passing through the pivoting-point, substantially as described.

3. The combination of the pivoted switch-tongue at one side of the main track, the engaging-heads oppositely connected with the pivoted switch-tongue, and the car provided with the pedal-levers, which are pivoted to the car and provided with an engaging point or roller located at a forward and downward angle from a vertical line passing through the pivoting-point, substantially as described

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448,571. **ELEVATED RAILROAD.** MARION JACOBS, Chicago, Ill. Filed June 23, 1890. Serial No. 356,506. (No model.)

Claim.—1. In an elevated-railway structure, the combination, with suitable supports or standards, of a superstructure C, having the longitudinal ⌐└-shaped track-supporting chords, and rails resting upon the chords, all substantially as shown.



2. In combination with the ⌐└-shaped chords F F' G G', the cross-beams or girders, and the upright posts or columns.

3. In combination with the supporting uprights or standards, the ⌐└-shaped chords F F', resting upon the standards and carrying the track D, posts or columns H, resting upon the chords F F', ⌐└-shaped chords G G', resting upon the upper ends of the columns H and carrying the track E, and cross-beams connecting the chords F F' and G G'.

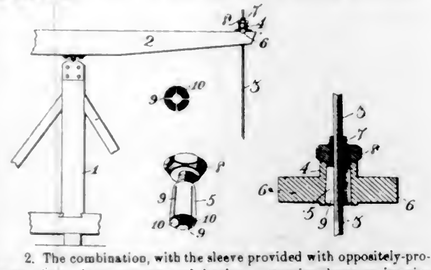
448,572. PROCESS OF MAKING CORN-COB SMOKING-PIPES. HENRY LANPARTER, Jr., St. Charles, Mo. Filed Aug. 20, 1890. Serial No. 362,559. (No specimens.)

Claim.—The process of manufacturing smoking-pipes out of the original and natural corn-cobs by cutting them into the desired shape and filling the interstices of the cob with finely-ground natural corn-cob, either pure or in combination with corn-starch, in the manner described, and coating the pipe thus filled with shellac, as described

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448,573. PUMPING MECHANISM FOR OIL-WELLS. THOMAS G. LANEY, Lima, Ohio, assignor of one-half to Mordecai Turton, same place. Filed Dec. 24, 1890. Serial No. 375,698. (No model.)

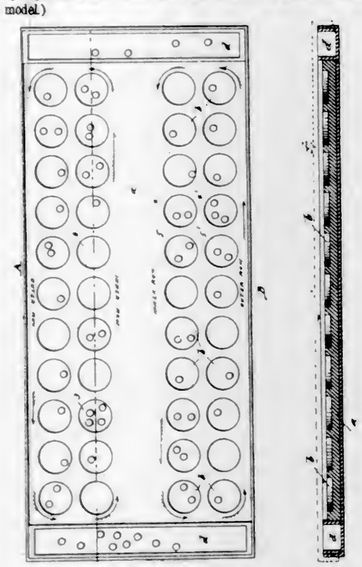
Claim.—1. The combination, with a sleeve having a longitudinal tapering bore, of a shank having a tubular tapering gripping-plug comprising elastic fingers carried by and moving with the tubular shank, and means for adjusting the latter lengthwise for causing the elastic fingers to grip a rod extending through the plug, substantially as described.



2. The combination, with the sleeve provided with oppositely-projecting journals or supports and having a tapering bore or interior caliber, of a tapering gripping-plug fitting the sleeve, having radial slits to form elastic fingers and provided with a screw-threaded stem or shank projecting above or beyond one end of the sleeve, and a screw-nut engaging the stem or shank and adapted to bear against the sleeve for the purpose of adjusting the plug lengthwise and causing its spring-fingers to grip or release a rod extending centrally through the plug, substantially as described.

3. In an oil-pumping rig, the combination, with the walking-beam and the polished rod, of the internally-tapered sleeve having journals or supports mounted on the beam, a tapered gripping-plug arranged in the sleeve and slitted radially to form spring-fingers and having a shank or stem projecting beyond one end of the sleeve, and means engaging the shank or stem for moving the gripping-plug lengthwise and causing its spring-fingers to grip or release the polished pump-rod, substantially as described.

448,574. DEVICE FOR PLAYING GAMES OF SKILL. ERWIN H. RICHARDS, Norwalk, Ohio, assignor to the Milton Bradley Company, Springfield, Mass. Filed Nov. 20, 1890. Serial No. 371,996. (No model.)

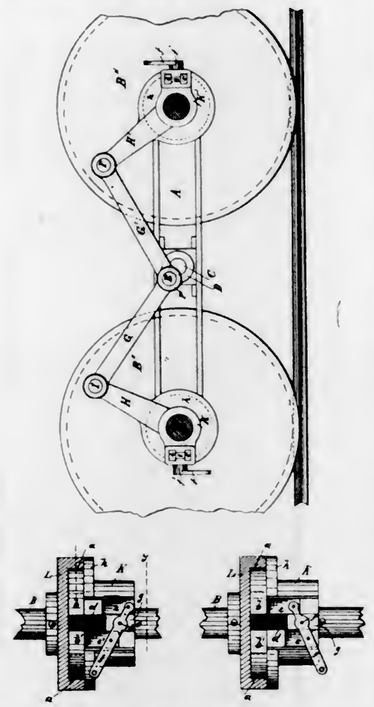


Claim.—1. Game devices consisting of a board and a series of movable men, the said board having parallel rows of depressions or pockets, the pockets of one row being opposite those of the other, and each of the pockets consisting of an opening sufficiently large to receive therein several of said movable men, substantially as and for the purposes set forth.

2. Game devices consisting of a board and a series of movable men, the said board having parallel rows of depressions or pockets, the pockets of one row being opposite those of the other and each of said pockets consisting of an opening sufficiently large to receive therein several of said movable men, and receptacle-depressions in said board suitable to contain captured men, substantially as described.

3. Devices for the playing of a game, substantially as described, consisting of a board and a series of movable men, the said board having four parallel rows of depressions or pockets, each of which consists of an opening sufficiently large to receive therein several of said movable men, the pockets of said rows being respectively opposite, substantially as shown.

448,575. POWER-TRANSMITTING DEVICE. THEODORE SCHEFFLER, Paterson, N. J., assignor of one-half to Robert Atherton, same place. Filed Nov. 1, 1890. Serial No. 370,062. (No model.)



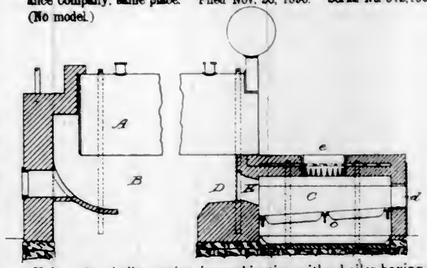
Claim.—1. An improved power-transmitting device, as herein described, consisting of a main driving-shaft, crank on said shaft, a receiving-shaft, a reversible segmental-ring friction-clutch on said receiving-shaft, a crank-arm secured to said clutch, and a rod connecting said crank-arm and the crank on the main shaft, all said parts being constructed and adapted to operate as described, and for the purposes set forth.

2. In a power-transmitting device, a reversible segmental-ring friction-clutch on the receiving-shaft, a crank-arm secured to said clutch, and means for connecting said crank-arm with the main driving-shaft, as described, and for the purposes set forth.

3. A reversible clutch, as herein described, consisting of a plate or disk provided with an annular groove and adapted to be secured to a shaft, segmental portions of a ring fitting in said groove and forming less than a complete circle, a clutch pin or bar, one end of which is adapted to fit in said groove, a loose clutch portion on said shaft provided with a bearing for the other end of said clutch bar or pin, a stop on said clutch portion holding said bar in position, a lever pivoted to said clutch portion, and sliding pins pivoted to said lever and adapted to be reciprocated in opposite directions, all said parts being adapted to operate as described, and for the purposes set forth.

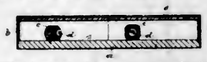
4. In a clutch, a reversible segmental-ring mechanism consisting of a clutch-pin adapted to hold in position the segmental ring, alternately-sliding pins pivoted to a lever, and means for operating said lever from a distance, all said parts being arranged and adapted to operate as described, and for the purposes set forth.

448,576. STEAM-BOILER SETTING. JEREMIAH M. ALLEN, Hartford, Conn., assignor to the Hartford Steam Boiler Inspection and Insurance Company, same place. Filed Nov. 20, 1890. Serial No. 372,106. (No model.)



Claim.—In a boiler-setting, in combination with a boiler having a combustion-chamber beneath it, a fire-box having a bridge-wall through which a flue is formed on the outline of a *vena contracta*, all substantially as described.

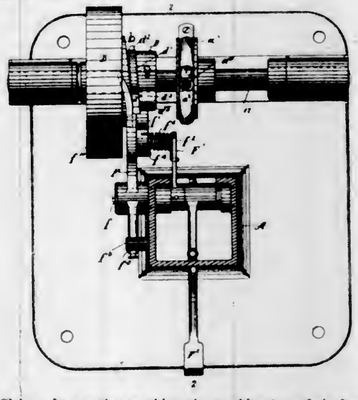
448,577. PUZZLE. THOMAS E. ARMITSTEAD, Mazomanie, Wis., assignor of one-half to William Harvey Merritt, New York, N. Y. Filed July 11, 1889. Serial No. 317,248. (No model.)



Claim.—1. The improved game or puzzle device comprising the plaque and two or more essentially round balls, each having two or more flat and numbered or otherwise characterized faces, each bounded by portions of the surface of a sphere, in combination, said plaque having the marginal guard for retaining the balls and adapted to be held in and manipulated by the hands to roll the balls thereon to expose the necessary faces to solve the puzzle, substantially as described.

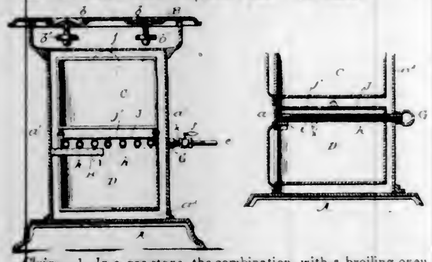
2. The improved game or puzzle device comprising the plaque and two or more essentially round balls, each having two or more flat and numbered or otherwise characterized faces, each bounded by portions of the surface of a sphere, in combination, said plaque having the marginal guard, and the transparent cover for retaining the balls and containing the balls within the marginal guard and adapted to be held in and manipulated by the hands to roll the balls thereon to expose the necessary faces to solve the puzzle, substantially as described.

448,578. STOP-MOTION FOR MACHINES. ISAAC S. CRAIG, Somerville, assignor to the Standard Rivet Company, Boston, Mass. Filed Apr. 16, 1890. Serial No. 348,140. (No model.)



Claim.—In a setting-machine, the combination of shaft *a*, loose pulley B, eccentric *a'*, its strap a^2 and rod a^3, with rocking lever *d*, rotating with shaft *a*, lever F, and rocking detent *f'*, pulley B being provided with a cam *b* and projection *b'*, lever *d* with projections d^8 d^9, lever F with a cam-surface f^{12} and shoulder f^{10}, projection d^8, engaging projection *b'* to couple the pulley and shaft, projection d^9, engaging lever *f'* to bring cam-surface f^{12} and shoulder f^{10} into the path of rocking lever d^8, and cam-surface f^{13}, rocking lever d^8 out of engagement with *b'* to allow pulley B to run free, and shoulder f^{10}, arresting lever d^8, all substantially as and for the purpose set forth.

448,579. GAS-STOVE. CHARLES H. EVANS, Jackson, Mich., assignor to the Fahnehjelm Incandescent Gas Light Company, Chicago, Ill. Filed Aug. 20, 1890. Serial No. 362,467. (No model.)



Claim.—1. In a gas-stove, the combination, with a broiling-oven and burners located within the same, of a chamber adjacent to the broiling-oven and a foraminated reflecting-plate adjacent to the burners and between the broiler and the adjacent chamber and extending entirely across the broiler, substantially as and for the purposes set forth.

2. In a gas-stove, the combination of a burner or burners with a partition having conical perforations flaring toward the burner or burners, said partition being arranged over the burners and extending entirely across the interior of the stove, substantially as and for the purposes set forth.

3. In a gas-stove, the combination of a broiling-oven and burners located within the same with a foraminated upper wall located above the burners, extending entirely across the broiling-oven and beneath the heating-chamber above and having conical downwardly-flaring perforations, substantially as described.

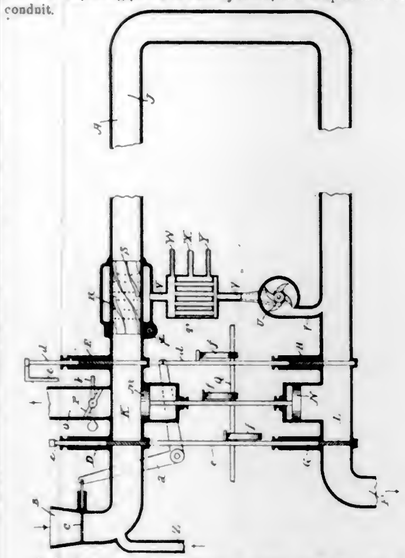
448,580. VELOCIPEDE. WILLIAM E. HURRELL, London, England, assignor to Parker H. Sercombe, Milwaukee, Wis. Filed Sept. 1, 1890. Serial No. 363,623. (No model.)

Claim.—1. In a velocipede, the combination of a main fork having a rearwardly-extended bracket, levers fulcrated to the ends of the fork-prongs, an axle supported by the forward ends of the levers, a wheel carried on the axle, a supplemental fork connected to the rear ends of said levers and provided with a spring-controlled stem loosely engaging the rearwardly-extended bracket on said main fork, and a lever-controlled brake-spoon fulcrated to the supplemental fork, substantially as set forth.

2. In a velocipede, the combination of a main fork having a rearwardly-extended bracket, levers fulcrated to the ends of the fork-prongs, an axle supported by the forward ends of the levers, a wheel carried on the axle, a supplemental fork connected to the rear ends of said levers and provided with a spring-controlled stem loosely engaging the rearwardly-extended bracket on said main fork, and a lever-controlled brake-spoon having a bifurcated rear end fulcrated to the prongs of said supplemental fork, substantially as set forth.

448,581. DIGESTING APPARATUS. GUSTAV KAPPENBERGER, Cleveland, Ohio, assignor of one-fourth to Arnold Doll, same place. Filed Nov. 19, 1890. Serial No. 371,969. (No model.)

Claim.—1. In a digester, the combination, substantially as set forth, of a condnit having a receiving end and a discharge end, two valves near the discharge end of the conduit forming a chamber in the conduit betweeen the valves, a second pair of valves near the receiving end of the conduit forming a chamber in the conduit between them, a cylinder open to the chamber formed by said second pair of valves, a displacing-piston in said cylinder, and a liquor-inlet to said conduit.



2. In a digester, the combination, substantially as set forth, of a conduit, a pair of valves near the receiving end thereof, a second pair of valves near the discharge end thereof, a cylinder at each pair of valves open to the chamber formed between the valves of the pair, a displacing-piston in each cylinder, and a liquor-inlet to the conduit.

3. In a digester, the combination, substantially as set forth, of a conduit, a pair of valves, a cylinder, and a displacing-piston near each end of the conduit, a conveyer in the conduit between the two pairs of valves, and a liquor-inlet to the conduit.

4. In a digester, the combination, substantially as set forth, of a conduit, a pair of valves, a cylinder, and a displacing-piston near each end of the conduit, a liquor-inlet to and a liquor-outlet from the conduit between the two pairs of valves, and a circulating-pump connected with said inlet and outlet.

5. In a digester, the combination, substantially as set forth, of a conduit, a pair of valves, a cylinder, and a piston near the receiving end of the conduit, a pair of valves near the discharge end of the conduit, and mechanism connecting and arranged to operate the valves and piston.

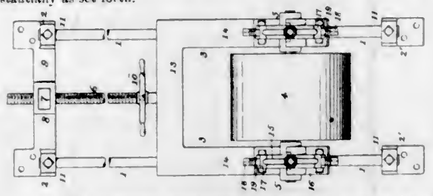
448,582. EXTENSIBLE CLOTHES-LINE-SUPPORTING POST. JOHN KREM, Grand Rapids, assignor of one-half to Henry Rauh, Walker, Mich. Filed Dec. 21, 1889. Serial No. 334,527. (No model.)



Claim.—The herein-described extension clothes-line-supporting post, consisting of a stationary post and a post vertically adjustable thereon, said adjustable post having notches on its outer face, a guide-strap E, inclosing the stationary post and secured to and moving with the adjustable post, and a strap C, pivoted to the upper end of the stationary post, inclosing said adjustable post and having at its lower forward edge an inwardly-projecting flange formed with a blunt extremity, said strap being so located and of such size that during the adjustment of the adjustable post its upper forward end and the free blunt edge of the flange will be in close contact with the forward face of said adjustable post, substantially as described, and for the purposes specified.

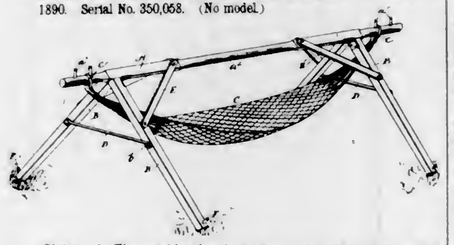
448,583. BELT-TIGHTENING MECHANISM. PHILIP MEDART, St. Louis, Mo., assignor of one-half to William Medart, same place. Filed July 7, 1890. Serial No. 357,997. (No model.)

Claim.—1. A belt-tightening mechanism comprising, in combination, a slidable carriage provided with guide-sleeves on its back, a tightening-pulley mounted in boxes thereon, a slideway for such carriage, consisting of parallel guide-rods that pass through the guide-sleeves of the carriage and attaching angle-brackets that support the guide-rods in a position away from the wall or posts, and an adjusting-screw forming an adjustable connection between the carriage and slideway, substantially as set forth.



2. A belt-tightening mechanism comprising, in combination, a slidable carriage provided with guide-sleeves on its back, a tightening-pulley mounted in boxes thereon, a slideway for such carriage, consisting of parallel guide-rods that pass through the guide-sleeves of the carriage, individual lower angle-brackets, and connected upper angle-brackets formed with a central hub for the adjusting-screw, and an adjusting-screw forming an adjustable connection between the carriage and slideway, substantially as set forth.

448,584. HAMMOCK HOLDER. JOHN I. MCCARTHY, Olean, N. Y., assignor of one-half to Stephen E. Young, same place. Filed Apr. 30, 1890. Serial No. 350,058. (No model.)



Claim.—1. The combination, in a hammock-holder, as described, of the ridge-pole A, provided with adjustable pins at its ends and having the central smooth part a^2, the legs B, hinged to the ridge-pole, the wire stay-rods D, connecting the legs, and the braces E, slanting from the ridge-pole to the legs, substantially as and for the purposes set forth.

2. The combination of the hammock-holder, as described, having its ridge-pole A provided with adjustable pins or bolts a' in each end, with the hammock C, having rings c at the ends adapted to fit upon the ends of the ridge-pole, so as to hold the hammock at any desired height, all substantially as described.

3. In a hammock-holder, the ridge-pole A, slotted at $a^\times$, combined with the legs B, slotted at b' and hinged to the ridge-pole, and the key G, fitting into the combined slots $a^\times$ and b', substantially as and for the purposes set forth.

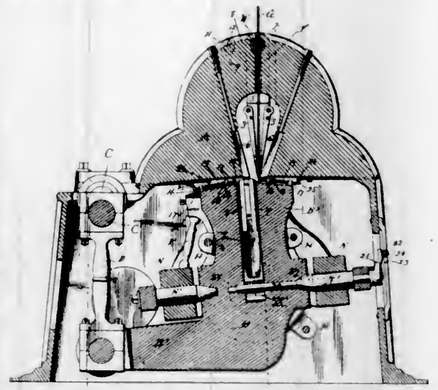
448,585. NAIL-MACHINE. GEORGE W. PACKER, Rock Falls, Ill., assignor to the Empire Manufacturing Company, Keokuk, Iowa. Filed Oct. 21, 1889. Serial No. 327,694. (No model.)

Claim.—1. In a nail-machine, the combination of a stationary knife 6, inovable knife 7, a shelf 13, adapted to receive the nail-blank, and mechanism, substantially as shown, for retaining said shelf in position to receive the severed blank, for the purpose specified.

2. In a nail-machine, the combination of the oscillating knife-head B, provided with knives 7 and forming and gripping jaws M, the stationary knives 6, the frame N, pivoted thereon, provided with dies P, and forming-jaw frame H, seated on the head B and provided with arms K and forming-dies L, the said parts having substantially the interrelation and coaction shown, whereby the nail-blank is severed, gripped laterally, and headed during each oscillation of the head B, substantially as shown and for the purpose described.

3. In a nail-machine, the knife-bearing head B, provided with the stationary die M, the frame H, pivotally seated on the head B and provided with the die-bearing arms K and dies L, the stationary knives 6, the frame N, provided with the heading-dies P, shelf 13, and blank-movers 19, whereby the nail is severed and completed at each oscillation of the head B and the control of the nail-blank is retained from before its severance until after its completion, substantially as shown, and for the purpose described.

4. In a nail-machine, the combination of a casing A, a knife-head B, adapted to oscillate thereon, the frame N, pivoted centrally lengthwise of the head B, the oscillating levers O, forming-jaw frame H, pivotally seated on the head B, and the levers R, substantially as shown, and for the purpose described.



5. In a nail-machine, the combination of the casing A, oscillating head B, pivoted frame N, and levers O, seated in diagonal relation on opposite sides of said frame with their bases projected from the vertical line of oscillation and oppositely from the center of oscillation, substantially as shown, whereby is effected the lineal and lateral oscillation, for the purpose specified.

6. In a nail-machine, the combination of the blank-movers 19, shaft 20, arm 21, and slot 23, having its middle portion inclined, substantially as shown, and for the purpose described.

7. In a nail-machine, in combination with the shelf 13, adapted to receive the severed blank, a blank-moving device 19, adapted to enter and partially traverse its recess and remove said blank therefrom, substantially as shown, and for the purpose described.

8. In a nail-machine, the combination of the opposing cutting-knives 6 and 7, shelf 13, seated in relation to receive the severed blank therefrom, opposing jaws L and M, adapted to form an intervening interval in substantial prolongation of the shelf 13, and a blank-mover 19, adapted to carry the severed blank from said shelf to and within the grasp of the said forming-jaws, whereby constant control of the blank is retained, substantially as shown, and for the purpose described.

9. In a nail-machine, the combination of a casing A, an oscillating head B, provided with trunnions 1, supporting centers or pins J, the main shaft having the crank C, the pitman connecting said head B and crank, frame N, centers N', and levers O, seated as described and adapted to laterally oscillate the frame N during the lineal oscillation of the latter, substantially as shown, and for the purpose described.

10. In a nail-machine, the combination of the oscillating frame H, pitman 9, pivoted thereto and provided with slot 11, oscillating shaft W, provided with arm 8, and bolt 12, substantially as shown, and for the purpose described.

11. In a nail-machine, the combination of the oscillating head B, the blank-mover 19, shaft 20, arm 21, boss 22, and stationary slot 23, substantially as shown, and for the purpose described.

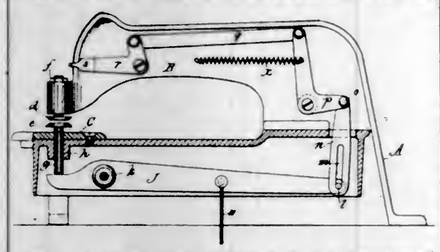
12. In a nail-machine, the combination of the shelf 13, adapted to receive the severed nail, forming-jaws L and M; and blank-mover 19, adapted to move the nail-blank endwise from said shelf to and between said jaws, substantially as shown, and for the purpose described.

13. In a nail-machine, the combination of the frame A, the oscillating head B, provided with forming-jaw M, the driving crank-shaft, the pitman connecting the said shaft and head B, the frame N, the levers O, the jaw-frame H, provided with forming-jaw L, and the levers R, substantially as shown, and for the purpose described.

14. In a nail-machine, the combination of a frame A, head B, pivotally seated thereon and provided with jaw M and knife 7, pitman D, actuating-shaft C, frame H, provided with jaw L, levers O and R, shell 13, springs 15, hooks 25 26, and stationary knife 6, substantially as shown, and for the purpose described.

15. In a nail-machine, the combination of the frame A, provided with vertical nail-bar feed F and knives 6, hooks 26, and slot 23, axle C, pitman D, frame N, centers N', braces O, heading-dies P, head H, provided with jaw L, braces R, centers J, head B, provided with knives 7 and with retaining-recess 13 14, guiding-jaws 4, blank-movers 19, shaft 20, arm 21, and boss 22, all interarranged and operating substantially as shown, and for the purpose described.

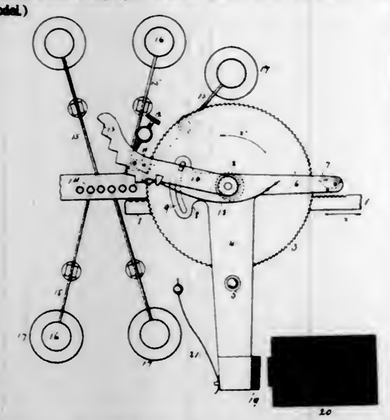
448,586. GAGE FOR SORTING LEATHER. JOHN R. PLUMMER, Waterville, N. Y. Filed July 25, 1890. Serial No. 359,910. (No model.)



Claim.—1. A leather sorting and measuring machine consisting of the fixed part *d*, the movable part *e*, co-operating therewith, a pointer and graded scale therefor, the lever J for actuating said part *e* and said pointer, a series of connecting-levers between said lever J and said pointer, said lever J being connected therewith by a slot-and-pin connection, and suitable means for operating said lever J, for the purposes and substantially as shown and described.

2. A leather sorting and measuring machine consisting of a fixed and movable part, between which the leather may be inserted, a lever J for operating said movable part, and actuating mechanism for said lever; a link *s*, a bell-crank lever *p*, connecting-rod *q*, and a bell-crank lever *r*, having a pointer secured thereto, substantially as shown and described.

448,587. ESCAPEMENT DEVICE FOR MATRIX-MAKING MACHINES. CASPER L. REDFIELD, Chicago, Ill., assignor to the Chicago Matrix Machine Company. Filed Nov. 4, 1890. Serial No. 370,284. (No model.)



Claim.—1. The combination, with an electric die-depressing device and an electric feed-escapement, of a character-selecting device provided with a circuit-controller and an electrically-controlled pawl-carrier having a detent for holding the escapement while the impression device is operating and another detent adapted to rotate with the scape-wheel variable distances to permit proper variable feed movements to take place after the impressions.

2. The combination, with an electric die-depressing device and an electric feed-escapement, of a character-selecting device provided with a circuit-controller and an electrically-controlled pawl-carrier having a detent for holding the escapement while the impression device is operating and another detent adapted to rotate with the scape-wheel variable distances to permit proper variable feed movements to take place after the impressions, and a common electric circuit through all of said electric devices controlled by the character-selecting device.

3. The combination, with the electric die-depressing device, of the escapement and stops under electric control, the sliding and swinging die-carrier having hand-key and contact, the index-plate with contacts, the vibrating pawl-carrier for holding the escapement during the operation of the impression device and permitting it to move variable distances following the operation of the impression device, and a common electric circuit through all of said electric devices.

4. An electrically-controlled impression device and an electrically-controlled feed mechanism, both on a common circuit and controlled by a character-selecting device, in combination with a pawl-carrier having one detent adapted to hold the escapement during the operation of the impression device and another detent on a swinging member adapted to move to advanced position on the wheel during the closure of the circuit, to be returned by the wheel to initial position upon the opening of the circuit.

5. In combination with an electrically-controlled die-pressing device and matrix-feed mechanism, a pawl-carrier having a detent on a swinging member that serves as the holding-dog and having a second detent that serves as a temporary holding-dog while the other is free, electrically-controlled devices for simultaneously moving the one detent into and the other out of engagement, and means for causing the swinging detent to move to advanced position along the ratchets when free to be turned to initial position upon its re-engagement with the ratchets.

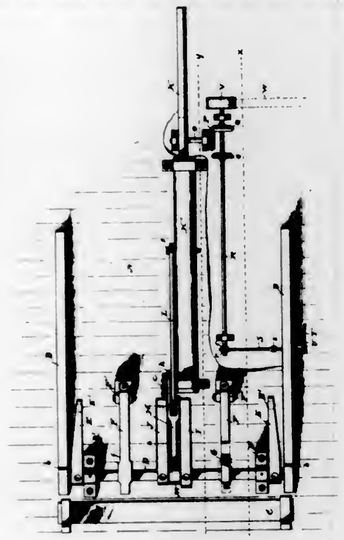
6. In combination with an electrically-controlled impression device and an electrically-controlled variable feed-escapement, a pivoted pawl-carrier having a temporary holding-dog on a rigid member and a moving pawl on a pivoted member, the same being arranged to lock the escapement during the operations of the impression device and permit variable feed movements following the operations of the impression device.

7. In a matrix-machine, a variable feed-escapement having a series of electrically-controlled stops for varying the feed, an electrically-operated pawl-carrier having one detent on a rigid member and another on a pivoted member which co-operates with the stops, the same being arranged to lock the escapement while the circuit is closed and permit the feed to take place when the circuit is broken.

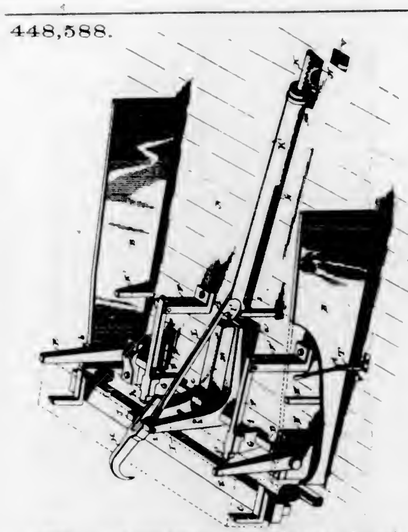
8. In a matrix-machine, an impressing device, a variable feed-escapement having a series of stops for varying the feed, levers for operating the stops, character-selecting devices controlling the operation of said levers and of the impressing device, and a pawl-carrier also controlled by the character-selecting devices and having one detent on a rigid member and another on a swinging member which co-operates with the stops, whereby the escapement is locked while dies are being impressed and the appropriate feed movements succeed the impressions.

9. The combination, with a die-impressing device, type-dies and means for presenting them at the printing-point, and a variable feed-escapement, of character-selecting devices controlling the presentation of the dies and the operation of the impressing device, and a pawl-carrier having one detent for holding the escapement while the impressing device is operating, and another detent adapted to rotate with the scape-wheel variable distances to permit proper variable feed movements to take place after the impressions, the said pawl-carrier being under the control of the character-selecting devices.

448,588. LOG LIFTING AND TURNING MACHINE. FLAVEL SIMONSON, Batesville, Ark., assignor to George H. Chamberlain, Milwaukee, Wis. Filed Oct. 16, 1889. Serial No. 327,168. (No model.)



448,588.



Claim.—1. The combination, with the logways, of a rock-shaft suitably mounted between said logways at their forward ends, cams secured on said shaft, standards placed between but independent of the logways, and lifting-levers whose rear ends are pivoted in said standards and whose forward ends rest on the cams, substantially as described.

2. The combination, with the logways, of a rock-shaft suitably mounted between said logways at their forward ends, cams secured on said shaft, and log-lifters, each having a sharp projection on its front end the forward ends of said lifters resting on the cams and their rear ends pivoted on any suitable support, for the purposes stated.

3. The combination, with the rock-shaft, of the hook, a support on which the hook is pivoted secured to said shaft, an operating-bar, and a pitman, the rear end of the latter being pivoted to the operating-bar and its forward end pivoted to the hook below the point at which the hook is pivoted to its support, whereby in the movements of the operating-bar the hook is automatically raised and lowered and the shaft rocked, substantially as described.

4. The combination, with the logways, of a rock-shaft between them, pushing-arms secured to said shaft, cams also secured to the shaft, log-lifters pivoted at their rear ends to suitable supports, their forward ends resting on said cams, a hook pivoted on a support secured to the rock-shaft, and mechanism for rocking the shaft, the hook being automatically raised and lowered by the mechanism that rocks the shaft to raise the lifters and throw the pushing-arms forward.

5. The combination, with the rock-shaft, of a hook having a bifurcated shank, two arms secured to the shaft between which the hook is pivoted by a bolt passing through its bifurcated portion and into said arms, a reciprocating operating-bar, and a pitman, the rear end of the latter pivoted to said bar and its forward end pivoted in the bifurcation of the hook below the bolt on which the hook is pivoted, whereby in the forward movement of the operating-bar the hook is raised and prevented from falling backward and the shaft rocked, substantially as described.

6. The combination, with the rock-shaft and the pushing-arms secured thereon, of a bell-crank secured to the shaft, a hook pivoted on the bell-crank, an operating-bar, and a pitman pivoted to said bar and to the hook, the pitman having a shoulder which engages with the bell-crank to limit the forward rocking of the shaft, whereby the pushing-arms are prevented from pressing against the log after the latter has been pushed to its place on the head-block, substantially as described.

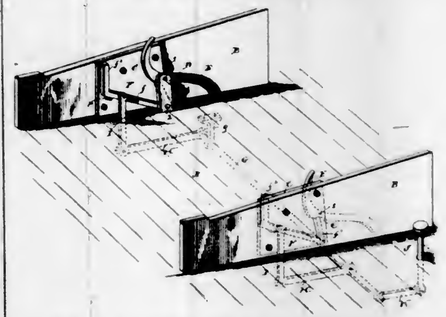
7. In a log lifting and turning machine, the combination of a rock-shaft, a hook pivoted on a support secured to said shaft, mechanism for rocking the shaft and canting the hook, and an automatically-actuated device for holding the hook elevated at the will of the operator, for the purposes stated.

8. In a log lifting and turning machine, the combination of a rock-shaft, a hook pivoted on a support secured to said shaft, mechanism for rocking the shaft and canting the hook, and an automatically-actuated weight connected to the hook for holding the latter elevated at the will of the operator.

9. In a log lifting and turning machine, the combination of a rock-shaft, a hook pivoted to a support secured to said shaft, mechanism for rocking the shaft and canting the hook, a weight hung at one end upon the rock-shaft, its other end resting normally upon a suitable support and connected to the hook, and means for automatically dropping the weight to hold the hook elevated at the will of the operator, for the purposes stated.

10. The combination, with the rock-shaft having a shallow hole serving as a pin-seat, of a bell-crank secured to the shaft and having a lateral projection on its rear arm for the support of the free end of the hook-weight, a hook pivoted on the bell-crank, a hook-weight having an elongated opening through one end, which end is placed over the rock-shaft next to the bell-crank, and also having a radial pin extending into said opening in position to register at the proper time with the pin-seat in the rock-shaft, a chain connecting the free end of said weight with the shank of the hook, an operating-bar, and a pitman pivoted to said bar and to the hook, the pitman being provided with a finger for pushing the hook-weight off from its support when the hook is to be held in an elevated position, substantially as described.

448,589. STOPPING APPARATUS. FLAVEL SIMONSON, Batesville, Ark., assignor to George H. Chamberlain, Milwaukee, Wis. Filed Nov. 12, 1889. Serial No. 330,036. (No model.)



Claim.—1. In a stopping apparatus, a skid provided with a pivoted stop, a lever pivoted beneath the pivot of said stop and provided with an arm bearing normally against the stop to lock it, and mechanism to rock the lever and unlock the stop, combined substantially as described.

2. In a stopping apparatus, a skid provided with a pivoted stop, a lever pivoted beneath the stop and provided at its front end with a resetting-arm and at its rear end with a locking-arm bearing normally against the stop, and mechanism to rock the lever and unlock the stop, combined substantially as described.

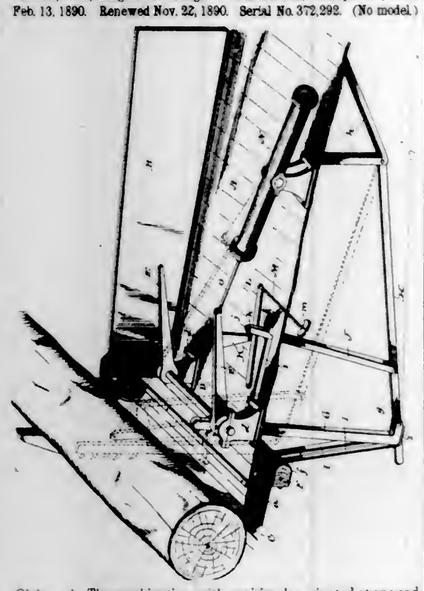
3. In a stopping apparatus, a skid provided with a pivoted stop having an ogee or wave in its under side beneath its pivotal point, a lever pivoted below the stop and provided with an arm bearing normally against the convex portion of the ogee or wave to lock the stop, and mechanism to rock the lever and throw said arm backward to unlock the stop, combined substantially as described.

4. In a stopping apparatus, a skid provided with a pivoted stop having an ogee or wave in its under side beneath its pivotal point, the stop being heavier in rear of said point than in front of it, a lever pivoted below the stop and provided with an arm bearing normally against the convex portion of said ogee or wave to lock the stop, and mechanism to rock the lever upward to throw said arm backward to unlock the stop, all combined substantially as described.

5. In a stopping apparatus, a skid provided with a pivoted stop having an ogee or wave in its under side beneath its pivotal point, a lever pivoted below the stop and provided with an arm bearing normally against the convex portion of said ogee or wave to lock the stop, mechanism to rock the lever upward to throw said arm backward to unlock the stop, and a resetting-arm secured to the lever and operated by the log or rolling body to depress the lever and thus throw the locking-arm forward again to lock the stop, all combined substantially as described.

6. A stopping apparatus comprising two skids, a stop and a lever pivoted to the inner side of each of said skids, the lever being provided with a locking-arm and a resetting-arm, a rock-shaft, arms on said shaft, links pivoted to the outer ends of said arms and to the levers, a foot-bar, and an arm rigidly secured to the shaft at one end and pivoted at its other end to the foot-bar, all combined substantially as and for the purposes stated

448,590. LOG LOADER AND TURNER. FLAVEL SIMONSON, Milwaukee, Wis., assignor to George H. Chamberlain, same place. Filed Feb. 13, 1890. Renewed Nov. 22, 1890. Serial No. 372,292. (No model.)



Claim.—1. The combination, with a raising-bar pivoted at one end to a suitable support, and mechanism for operating said bar, of a toothed bar having an angular bend at its lower end and pivoted to the raising-bar at the end of its angular portion, and a support for holding the toothed bar in an inclined position when at rest.

2. The combination, with a raising-bar pivoted at one end to a suitable support, and mechanism for operating said bar, of a toothed bar bifurcated at its lower end, the bifurcated portion being bent at an angle, passed over the raising-bar, and pivoted thereto at the end of its angular portion, and a support on each side of the raising-bar to hold the toothed bar in an inclined position when at rest.

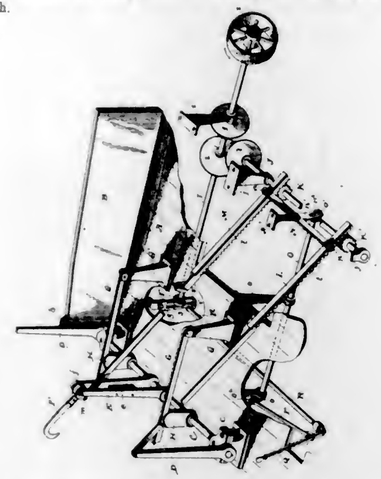
3. The combination, with the pivoted raising-bar, a guide for said bar, a toothed bar bifurcated, bent, and pivoted to the raising-bar in the manner described, and a support for holding the bar inclined while at rest, of a rock-shaft having a fixed arm, mechanism for rocking the shaft, and a link pivoted at its lower end to the raising-bar and detachably connected at its upper end to the arm on the rock-shaft, substantially as described.

448,591. LOG LIFTER AND TURNER. FLAVEL SIMONSON, Milwaukee, Wis., assignor to George H. Chamberlain, same place. Filed Feb. 13, 1890. Renewed Nov. 22, 1890. Serial No. 372,293. (No model.)

Claim.—1. The combination, with the rock-shaft, the push-arms and the hook-arms secured thereon, and the hook pivoted to the hook-arms, of a shaft bearing two pinions, mechanism for turning said shaft in either direction at will, a rack-bar pivoted to the hook and adapted to engage with one of the pinions, a rack-bar pivoted to one of the push-arms and adapted to engage with the other pinion, and means for throwing either of the rack-bars out of and the other into engagement with the pinions at will, for the purposes set forth.

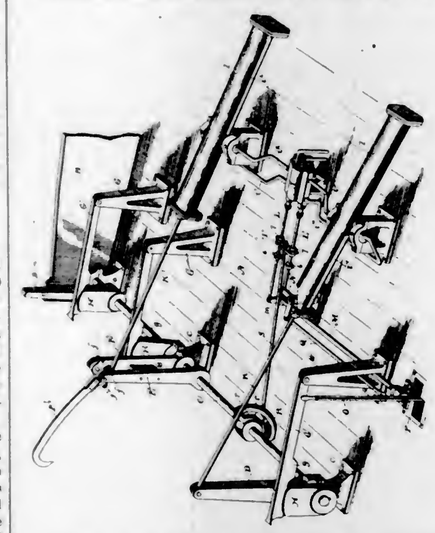
2. The combination, with the rock-shaft, the push-arms and the hook-arms secured thereon, and the hook pivoted to the hook-arms, of a shaft bearing two pinions, mechanism for turning said shaft in either direction at the will of the operator, two flanged rack-bars adapted to engage with said pinions, one of said bars being pivoted to the hook and the other to one of the push-arms, a pivoted yoke whose ends are in engagement with the flanges of the rack-bars, and mechanism for rocking the yoke, for the purposes set forth.

3. The combination, with the pinion-shaft carrying two pinions and capable of being rotated in either direction at the will of the operator, and the two rack-bars pivoted as described and adapted to engage with the pinions, of the centrally-pivoted yoke in engagement with the rack-bars at its ends and provided with a downwardly-extending slotted arm, a shaft cranked at each end, the crank on one end engaging with the slot in the yoke-arm, a pivoted lever, and a link one end of which is journaled on the other crank on the said cranked shaft, its other end being pivoted to the lever, for the purposes set forth.



4. The combination, with the power-shaft bearing friction-wheels 1 2 and disk T, of shaft J, bearing friction-wheel 3 and pinions K K', rack-bars L M, pivoted as described, yoke N, provided with slotted arm n', shaft O, having cranks o and o', shaft R, having crank r, the slotted plate S, pivoted as described, lever Q, pivoted to shaft R, and link P, connecting lever Q and shaft O, all arranged substantially as described, and for the purposes set forth.

448,592. LOG LIFTER AND TURNER. FLAVEL SIMONSON, Milwaukee, Wis., assignor to George H. Chamberlain, same place. Filed Feb. 13, 1890. Renewed Nov. 22, 1890. Serial No. 372,294. (No model.)



Claim.—1. In a log lifting and turning machine, the combination, with pivoted lifting-bars, a rock-shaft carrying push-arms, hook-arms, and cams for raising the lifting-bars, and a hook pivoted to the hook-arms, of two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively, a steam-supply for the cylinders, and mechanism for governing the admission of steam to either cylinder at will, for the purposes set forth.

2. The combination, with pivoted lifting-bars, a rock-shaft carrying push-arms, hook-arms, and cams for raising the lifting-bars, and a hook pivoted to the hook-arms, of two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively, a steam-chest common to both cylinders, and mechanism controlled by a single lever for admitting steam to either cylinder at will, for the purposes set forth.

3. The combination, with the rock-shaft carrying the push-arms and the hook-arms, and a hook pivoted to the hook-arms, of two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively, a steam-chest common to both cylinders and having two valve-stems, a yoke having limited movement on said stems, a quadrant having an adjustable plate, and a pitman connecting the yoke and the quadrant, for the purposes set forth.

4. In a log lifting and turning machine of the class described, the combination, with two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively, and a steam-chest having two valve-stems, of a cranked shaft pivotally connected to one of the valve-stems, a lever to which the other end of said shaft is pivoted, a bell-crank to one arm of which the other valve-stem is pivoted, and a link pivotally connecting the lever and the bell-crank, for the purposes set forth.

5. In a log lifting and turning machine, the combination, with a rock-shaft carrying push-arms and cams, of lifting-bars whose rear ends are pivoted to fixed supports, their free ends resting on the cams, each of said bars having a projection upon its under side, the front end of which recedes to a level with the bar in a curve coincident with the arc described by the cam, for the purposes stated.

6. In a log lifting and turning machine of the class described, the combination, with the rock-shaft and means for operating it, of a hook-support secured on said shaft, a hook concave on its outer side near the point and convex on its inner side opposite said concavity, pivoted to said support, and a reciprocatory rod or bar pivoted to the hook, for the purposes stated.

7. In a log lifting and turning machine of the class described, the combination, with the rock-shaft and means for operating it, of the hook-arms secured on said shaft, a hook having a bifurcated butt pivoted between the upper ends of the hook-arms, each branch of the butt having an outwardly-projecting lug, and a reciprocatory rod or bar pivoted to the hook, for the purposes stated.

448,593. LOG LIFTER AND TURNER. FLAVEL SIMONSON, Milwaukee, Wis., assignor to George H. Chamberlain, same place. Filed May 26, 1890. Renewed Feb. 24, 1891. Serial No. 382,323. (No model.)

Claim.—1. In a log lifting and turning machine of the class described, the combination, with the rock-shaft bearing rigidly-attached cams and push-arms, mechanism for rocking the shaft, and pivoted lifting-bars operated by said cams, of a hook-carrier loosely mounted on the rock-shaft, stops for limiting the movements of the hook-carrier, and mechanism for turning said carrier upon the shaft and operating the hook, substantially as described.

2. In a log lifting and turning machine of the class described, the combination, with the rock-shaft bearing rigidly-attached cams and push-arms, mechanism for rocking the shaft, and pivoted lifting-bars operated by said cams, of two recessed collars rigidly fixed on the rock-shaft, two hook-arms joined at their lower ends to a hub loosely mounted on said shaft between the collars, the hub having lugs resting in the recessed portions of the collars, a hook pivoted between the upper ends of the hook-arms, and mechanism for turning the hook arms upon the shaft and operating the hook, substantially as described.

3. In a log lifting and turning machine of the class described, the combination, with the rock-shaft and a hook-carrier mounted on said shaft, of a hook having a horn on its curved end, and mechanism for operating the hook, for the purpose set forth.

4. The combination, with the rock-shaft bearing rigidly-attached cams and push-arms and a loosely-mounted hook-carrier, and pivoted lifting-bars operated by said cams, of two steam-cylinders, each having a piston-rod, one pivoted to the hook and the other pivoted to one of the push-arms, a steam-chest for each cylinder, provided with an adjustable valve-stem, two quadrants upon the rock-shaft with which the valve-stems are connected, and lever mechanism for operating the valve-stems, substantially as described.

448,594. METHOD OF MAKING PLATED WIRE. CHARLES R. SMITH, Providence, R. I., assignor to the C. R. Smith Plating Company of Kentucky. Filed Dec. 24, 1890. Serial No. 375,711. (No model.)



Claim.—1. The improved process of making plated wire herein described, consisting in depositing upon a metallic rod by electroplating a thin layer or film of another metal, then placing upon said electroplated rod a metallic shell or tube, then subjecting the whole to heat sufficient to fuse said electro-deposited metal, thereby soldering the shell or tube to the rod, and then reducing the same to wire by any of the usual methods for that purpose, substantially as specified.

2. The improved process of making plated wire herein described consisting in depositing upon a metallic rod by electroplating a thin layer or film of another metal, then coating said rod with a fluxing material, then placing upon said electroplated and fluxed rod a metallic shell or tube, then subjecting the whole to heat sufficient to fuse said electro-deposited metal, thereby soldering the shell or tube to the rod, and then reducing the same to wire by any of the usual methods for that purpose, substantially as specified.

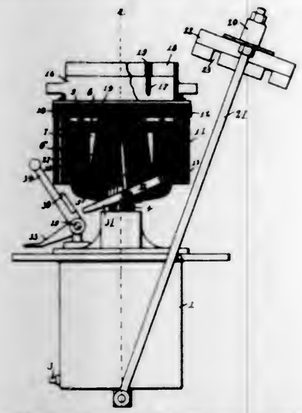
448,595. PROCESS OF CURING TOBACCO. WILLIAM H. SNOW, High Point, N. C., assignor to the Modern Tobacco Barn Company, of North Carolina. Filed Dec. 23, 1889. Serial No. 334,747. (No specimens.)

Claim.—1. The herein-described process of preparing ripened green tobacco-leaves, consisting of the following several and successive steps: first, supporting the leaves separated from each other and in a closed chamber, and sweating and yellowing the same therein at a practically uniform temperature of about 80° Fahrenheit for a period of twenty-four to thirty-six hours; second, drying out the dampness of the leaves and fixing the color thereof by a gradual raising of the temperature in said chamber to a maximum of 115° Fahrenheit during a period of about ten hours, and, finally, curing the leaves by subjecting them to a moving current of radiated hot dry air at a gradually-raised maximum temperature of 140° Fahrenheit for the period of time and in the manner set forth, substantially as described.

2. The herein-described process of preparing ripened green tobacco-leaves, consisting of the following several and successive steps: first, supporting the leaves separated from each other and in a closed chamber and sweating and yellowing the same therein at a practically uniform temperature of about 80° Fahrenheit for a period of twenty-four to thirty-six hours; second, drying out the dampness of the leaves and fixing the color thereof by a gradual raising of the temperature in said chamber to a maximum of 115° Fahrenheit during a period of about ten hours; thirdly, curing the leaves by subjecting them to a moving current of radiated hot dry air at a gradually-raised maximum temperature of 140° Fahrenheit for the period of time and in the manner set forth, and, finally, again drying the separated leaves at a reduced temperature of about 70° Fahrenheit in a dry atmosphere for a maximum period of about twenty-four hours, and then dampening the same by absorption, substantially as described.

448,596. MOLDING-MACHINE. HARRIS TABOR, Elizabeth, N. J., assignor to the Tabor Manufacturing Company, New York, N. Y. Filed Dec. 15, 1890. Serial No. 374,830. (No model.)

Claim.—1. In metal-founding apparatus, the combination, substantially as set forth, with a press and pattern support, of a stripping-plate supported by the pattern-support, and mechanism for moving the pattern-support and stripping-plate simultaneously, but at differing velocities.



2. In metal-founding apparatus, the combination, substantially as set forth, with a press and a pattern-supporting press-head moved thereby, of a stripping-plate supported by the press-head, a lever pivoted to the press-head, a link connecting the lever with the stripping-plate, and a movable toe to obstruct the movement of one end of the lever.

3. In metal-founding apparatus, the combination, substantially as set forth, of a box-like press-head, a pattern-frame carried thereby, a stripping-plate frame carried by the press-head, a stool-plate within the press-head, hangers connecting the stool-plate with the stripping-plate frame, a follower, and means for independently moving the pattern-frame and stripping-plate frame as the press opens.

4. In metal-founding apparatus, the combination, substantially as set forth, of a press-head arranged to support a pattern and provided with guide-sockets, a stripping-plate frame provided with guide-studs engaging said guide-sockets, a follower, and means for pressing said press-head and follower toward each other.

5. In metal-founding apparatus, the combination, substantially as set forth, of a press-head provided with guide-sockets having air-ports, a stripping-plate frame having guide-studs engaging said guide-sockets, a follower, and means for pressing said press-head and follower toward each other.

6. In metal-founding apparatus, the combination, substantially as set forth, with a press-head, a follower, and means for pressing them toward each other, of a pattern-frame supported by the press-head and provided with upwardly-projecting spurs, and a stripping-plate supported by said spurs.

7. In metal-founding apparatus, the combination, substantially as set forth, of a press, a pattern-frame having a closed cavity, and a steam-pipe communicating with such cavity.

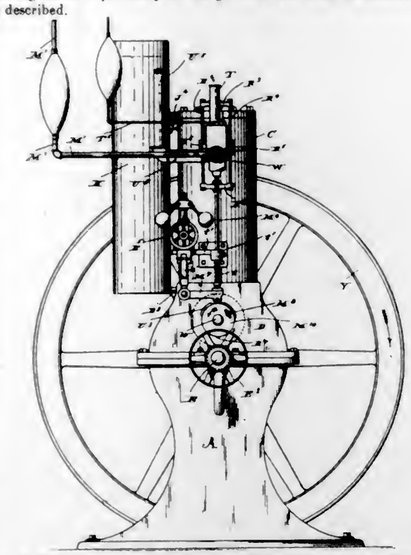
8. In metal-founding apparatus, the combination, substantially as set forth, of a steam-cylinder, a piston therein, a pistoo-rod having through it a passage communicating with the steam-space of the cylinder, a pattern-frame carried by the piston-rod and having a closed cavity communicating with the passage in the piston-rod, and a follower.

9. In metal-founding apparatus, the combination, substantially as set forth, of a press-head, a half-flask thereon provided with a cross-bar, a sand-box disposed over the half-flask and provided with a cross-bar over and of greater thickness than the cross-bar of the half-flask, a follower arranged to enter the sand-box, and means for pressing the follower and press-head toward each other.

448,597. **GAS-ENGINE.** BENJAMIN C. VANDUSEN, Winton Place, Ohio, assignor of one-half to Ezra W. Vandusen, Newport, Ky. Filed Feb. 2, 1888. Serial No. 262,812. (No model.)

Claim.—1. The inlet-passage communicating with the exploding-chamber, a reciprocating valve P, having a stem with side grooves and a head within the inlet-passage, and igniting means above the valve-stem, whereby the flame from outside may communicate along the valve-stem to the inlet-passage, in combination, substantially as described.

2. The combination, with the inlet-passage, of a valve, as P, having a head in the passage and a grooved stem, a chamber above said valve P, a valve reciprocating in and controlling said chamber, and igniting means in proximity to the grooved valve-stem, substantially as described.



3. The combination of the inlet-passage, the valve P, having a head in said passage and a grooved stem, a chamber above said valve-stem which is opened or closed by a reciprocating valve R, and a burner in proximity to said chamber and in position to ignite the gas escaping around the grooved stem when the chamber is opened by movement of valve R, substantially as described.

4. The combination of the inlet-passage, the valve P, having a grooved stem and a head in said passage, igniting means near the valve-stem, and an adjustable support for the valve, whereby its initial position is determined.

5. The combination, with the inlet-passage, of an inlet or supply-controlling valve M, a rod extending from said valve, a rotating cam in proximity to said rod, said cam having actuating-surfaces of different lengths, and an intermediate lever between the cam and rod, said lever movable into position to lift the valve-rod and valve for a longer or shorter time, according to the cam-surface which actuates it, substantially as described.

6. The combination of the supply-controlling valve and its stem, a moving cam in proximity to said stem having bearing-surfaces of different lengths, a lever between the cam and valve-stem, the governor, and a connection from the governor to said lever, whereby the governor determines the position of the lever and the lever determines the length of cam-surface (and therefore of time) which is operative to open the valve.

7. The combination of the inlet-controlling valve, its stem, and operating-cam, an intermediate lever cut away at one side, and operative connections from the governor to said lever, whereby the lever is shifted entirely out of contact with the valve-stem when the engine stops, so that the valve will be closed automatically, substantially as described.

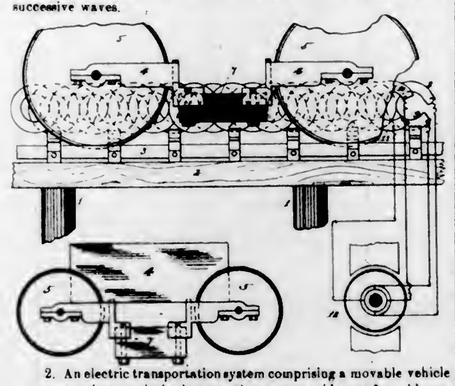
8. The combination of the supply-valve, stem, and controlling-cam having surfaces of different lengths to operate said stem, the exhaust-valve and a cam to operate the same, and the ignition-controlling valve and cam, said cams being in proximity and having the described relation to the different valve-stems, substantially as described.

9. The combination, with the valve P, having its head in the supply-passage, of the adjusting-screw S, extending into the valve-chamber and forming a rest for said valve P, substantially as described.

10. The combination of the cam R^1, lever R^4, stem R^2, and valve R, having a yoke connected to said stem, and means for depressing said valve R, substantially as described.

448,598. **ELECTRIC TRANSPORTATION SYSTEM.** SCHUYLER S. WHEELER and CHARLES S. BRADLEY, New York, N. Y., assignors to said Wheeler, trustee. Filed July 29, 1889. Serial No. 319,001. (No model.)

Claim.—1. An electric transportation system comprising a movable vehicle or car carrying a magnetic mass, a guideway for said car, and an inductor along the guideway, the mass and inductor being continuously in inductive relation and connection with a source of energy for propagating along the guideway a succession of polar waves, whereby a movement of translation will be imparted to the car by the successive waves.



2. An electric transportation system comprising a movable vehicle or car carrying a polarized magnetic mass, a guideway for said car, and an inductor along the guideway, the mass and inductor being continuously in inductive relation and connection with a source of energy for propagating along the guideway a succession of polar waves, whereby a movement of translation will be imparted to the car by the successive waves.

3. An electric transportation system comprising a movable car carrying an inductive mass, a line of way containing a continuous inductor, and a generator supplying currents differing in time phase for propagating over the inductor by the combined action of the impulses differing in time phase a series of magnetic waves, whereby a motion of translation will be imparted to the car by the effort of the inductive mass to follow the wave.

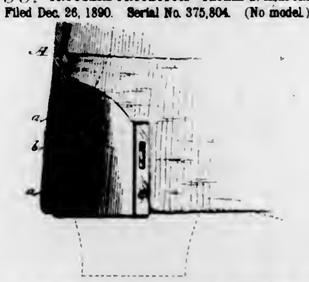
4. An electric transportation system comprising a movable vehicle carrying an inductive mass in operative relation to an inductor fixed along the guideway for the vehicle, an alternating-current generator, and circuit-connections for establishing a progressive consequent polar field along the inductor by the combined effort of two currents differing in time phase.

5. An electric transportation system comprising a movable vehicle or car carrying a magnetic mass, a guideway for said car, an inductor arranged along such way, two independent supply-circuits therefor, and a stationary source of current adapted to deliver to said supply-circuits alternating currents differing in phase.

6. In an electric transportation system, a railway and a car traveling thereon carrying a magnetic mass, in combination with a continuous bar or beam of iron wound with insulated conductor, and means for propagating along such bar of iron a succession of polar waves.

7. In an electric transportation system, a railway and a car traveling thereon carrying a magnetic mass, in combination with a continuous bar or beam of iron wound with insulated conductor, two independent supply-circuits suitably connected to such conductor, and a stationary source or current adapted to deliver to said supply-circuits alternating currents differing in phase.

448,599. **TROUSERS-PROTECTOR.** THOMAS B. ASHFORD, Kinston N. C. Filed Dec. 26, 1890. Serial No. 375,804. (No model.)



Claim.—A protector for pantaloons and means for securing it thereto, consisting of metal brace or stay plates extending across the face and over the edges of the protector, said plate having a central tongue and two end tongues, the former for attaching the plate to the protector and the latter for attaching the protector to the pantaloons, substantially as and for the purpose specified.

448,600. **PROCESS OF UTILIZING GALVANIZED WASTE.** RICHARD J. BRICK, Brooklyn, N. Y., assignor of one-half to Daniel Culhane, same place. Filed Apr. 1, 1890. Serial No. 346,294. (No specimens.)

Claim.—1. The process of treating sal-ammoniac skimmings, which consists in fusing them and gradually adding the fused mass to a quantity of water heated to about the boiling-point, substantially as set forth.

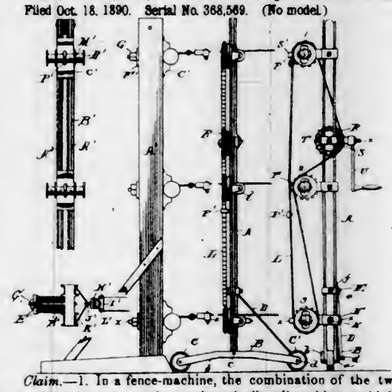
2. The process of treating sal-ammoniac skimmings, which consists in fusing them, separating the metallic zinc from the remaining portion of the fused mass, substantially as set forth, gradually adding said remaining portion to a quantity of water heated to about the boiling-point, precipitating the zinc by adding milk of lime, and separating the products by running off the solution, all substantially as set forth.

3. The process of treating sal-ammoniac skimmings, which consists in fusing them, separating the metallic zinc from the remaining portion of the fused mass, substantially as set forth, gradually adding said remaining portion to a quantity of water heated to about the boiling-point, precipitating the zinc by adding milk of lime, separating the products by running off the solution, and drying the precipitate, substantially as set forth.

4. The process of treating sal-ammoniac skimmings, which consists in fusing them, separating the metallic zinc from the remaining portion of the fused mass, substantially as set forth, gradually adding said remaining portion to a quantity of water heated to about the boiling-point, precipitating the zinc by adding milk of lime, adding zinc-ashes, and driving off excess of moisture, as set forth.

5. The process of treating sal-ammoniac skimmings, which consists in fusing them, separating the metallic zinc from the remaining portion of the fused mass, substantially as set forth, gradually adding said remaining portion to a quantity of water heated to about the boiling point, precipitating the zinc by adding milk of lime, separating the products by running off the solution, adding zinc-ashes, as set forth, and drying, all substantially as described.

448,601. **FENCE-MACHINE.** JOHN H. BURKHOLDER and JESSE L. CLARK, Ashland, Ohio; said Burkholder assignor to David F. Shearer. Filed Oct. 18, 1890. Serial No. 368,569. (No model.)



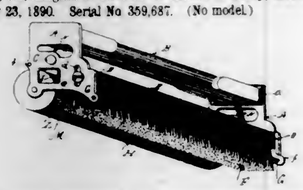
Claim.—1. In a fence-machine, the combination of the twister-frame, the twisters secured to and vertically adjustable on said frame, mechanism for operating the twisters, the tension-frame having the grooves or channels in one face thereof, the blocks having the tongues arranged in the grooves of the tension-frame, the spools secured to said blocks, and the wire-clamps connected to said spools, all arranged and adapted to operate for the purpose stated.

2. In a fence-machine, the combination of the loop-shaped twister-frame, the twisters secured to and adjustable on said frame, said twisters consisting of the plate having the rim and the toothed disks, the mechanism for operating the twisters, the tension-frame or upright having the grooves or channels in one face thereof, the blocks having tongues fitting in said grooves, the spools carried by said blocks, and the wire-clamps, all arranged, whereby the fence-wires may be arranged different distances apart.

3. In a fence-machine, the combination of a twister-frame, twisters secured to and adjustable on said frame, said twisters consisting of an attaching-plate having a rim, a disk having sprocket-teeth on the periphery and teeth on the inner face, a disk having teeth on the inner

face and guide-pulleys on the outer face, a sprocket-chain for operating said twisters, a tension-frame having grooves in one face thereof, blocks having tongues fitting in said grooves, spools carried by said blocks, clamping-rods for securing the blocks in the desired position, and wire-clamps connected to the spools, all arranged and adapted to operate as described.

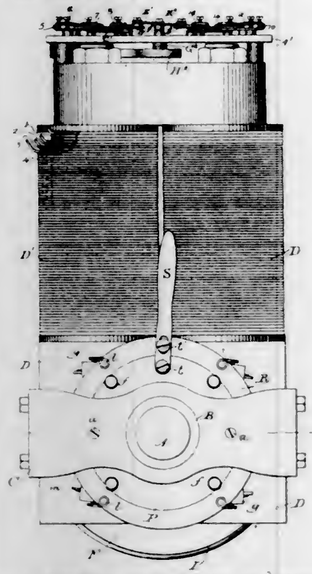
448,602. LAUNDRY AND SCRUBBING BRUSH. CHARLES A. BUTT, Northeast, Pa., assignor of one-half to Martin V. Sickly, Macon, Mich. Filed July 23, 1890. Serial No. 359,687. (No model.)



Claim.—1. The combination, in a laundry and scrubbing brush, of a vertically-adjustable brush and a pressure-roller mounted in a frame, with a vertically-movable scraper mounted in said frame between the brush and the roller, substantially as set forth.

2. The combination, in a laundry and scrubbing brush, of a frame constructed of end frames A A, an operating-handle B on the upper part thereof, and a rod C for securing the same together, with a vertically-adjustable brush E F and a pressure-roller H, mounted in said frame at opposite sides of the lower part thereof, a transverse rod G for supporting the outside of the brush, and a vertically-moving scraper I J L, substantially as set forth.

448,603. ELECTRO-MAGNETIC MOTOR. EDWIN D. CHAPLIN, Holliston, assignor to Eugene Humphrey, trustee, Boston, Mass. Filed Aug. 21, 1889. Serial No. 321,459. (No model.)



Claim.—1. In an electric-motor mechanism, the combination, with a central operative shaft, of a motor having its armature constructed and arranged to revolve around the central shaft, a non-revolving gear H, fixed central to the axis of said shaft, and a system of speed-varying gearing arranged to revolve in connection with and in part around gear H, and through which gearing the actuating-armature imparts rotary motion to the central shaft, substantially as and for the purposes specified.

2. In an electric-motor mechanism, the combination, with a central operative shaft, of a motor having its armature secured to a sleeve E, arranged to revolve about the axis of said shaft, a carrier F, also secured to said sleeve and carrying pinions J and J', a fixed gear H, central to the axis of said shaft and engaging with pinion J, and a gear G, arranged to engage with pinion J' and to revolve upon or with the central shaft, all as and for the purposes specified.

3. In an electro-magnetic motor, and in combination with the circuit thereof, the described speed-regulating device, comprising table A', the double series of plates 5 6 7 8 and 10 12 14 16, mounted thereon and severally connected with the respective coils of the field-magnet, the levers B' and B², pivotally mounted upon the table and arranged to respectively make contact through their long arms successively with said plates, and the actuating-lever H², pivoted to the table and connected with levers B' and B² by links E', E², and G², united on a stud F², guided in a slot G', so that by the manipulation of lever H² the long arms of levers B' and B² are simultaneously moved from plate to plate, as and for the purposes specified.

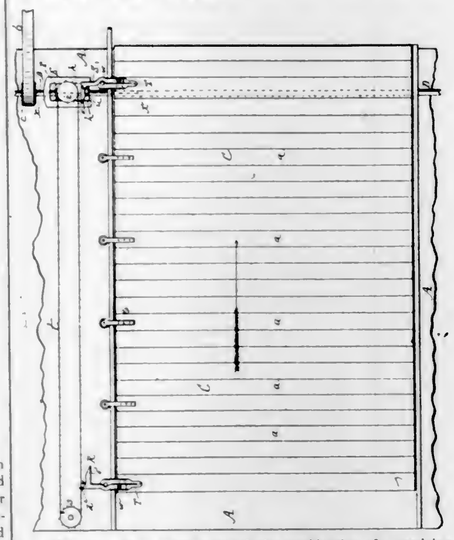
448,604. ELECTRIC CABLE. WILLIAM A. CONNER, Pittsburg, Pa., assignor to the Standard Underground Cable Company, same place. Filed Nov. 8, 1890. Serial No. 371,005. (No model.)



Claim.—1. An electric cable consisting of a number of conductors, each covered with a fibrous insulating material, the conductors being grouped together to form a core, the core being provided with water-proof covering and a sheathing of material capable of withstanding a comparatively high degree of heat, and an exterior protective coating of lead, substantially as described.

2. An electric cable consisting of a number of conductors covered with fibrous insulating material, the conductors being grouped together to form a core, and having interstices or air-spaces between the conductors, as set forth, a covering consisting of a tape or tube of water-proof material surrounding the conductors, a sheathing of fibrous material saturated with hydrocarbon having a comparatively high melting-point surrounding the water-proof covering, and a protective covering of lead, substantially as described.

448,605. ELEVATOR-GUARD. ABRAHAM ELLIOTT, Rochester, N. Y., assignor to the Fee Brothers, same place. Filed May 29, 1890. Serial No. 353,586. (No model.)



Claim.—1. In an elevator-guard, the combination of a revolving shaft, two gears fixedly attached to the shaft, a vertically-movable slide, a center gear attached to the slide and alternately engaging with the fixed gears as the slide is moved up and down, a sprocket-wheel attached to the slide, a second sprocket-wheel attached to the well over the door, a drive-chain running on the sprocket-wheels and connected with the door, a cam attached to the car, and mechanism connected with the slide and operated upon by the cam to give vertical movement to the slide, as herein shown and described.

2. The combination of the slide F, provided with the center gear *k*, the connecting-rod P, rock-lever N, connecting-rod L, crank-arm K, sliding rod I, and spring-cam G, arranged to operate in the manner and for the purpose specified.

3. The combination of the spring-cam G, pivoted at its top and free at its bottom, the link *m*, pivoted thereto, and the cam H, provided with an eccentric-rib *e*, which engages with a stud *l* on the link, as shown and described, and for the purpose specified.

4. In an elevator-guard, the combination, with the slide F, provided with the lug *u*, of the cams R and S, attached to the door on opposite sides, and means for vertically adjusting the same for the purpose of adapting them to the position of the lug in setting up the machine, as described.

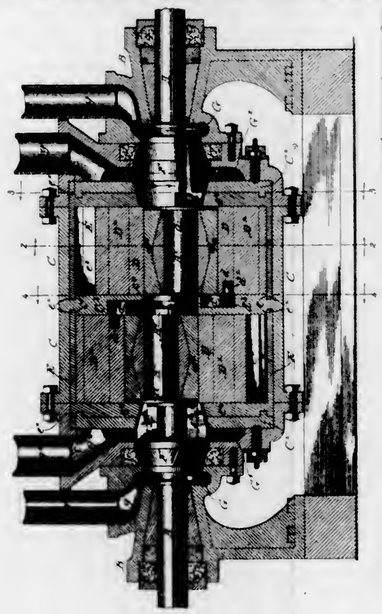
448,606. HAND-STAMP. JAMES T. FOX, Sherman, Tex., assignor of one-half to Samuel W. Porter, same place. Filed Oct. 18, 1890. Serial No. 368,602. (No model.)



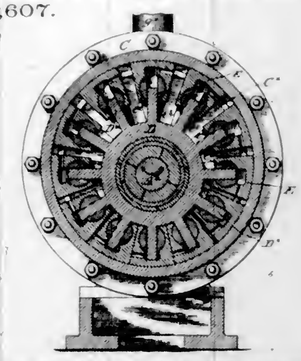
Claim.—The hand-stamp comprising the polygonal block or disk having some of its edges provided with rubber type-strips securely fastened thereto, its other edges cut away to form shoulders, spring-metal guides or holders secured in said cut-away portions, and type-strips removably secured in said guides or holders, substantially as described.

448,607. ROTARY ENGINE. ELLICK H. GOLLINGS, Chicago, Ill. Filed Oct. 11, 1890. Serial No. 367,786. (No model.)

Claim.—1. The combination of a cylindric shell, a revoluble shaft having an eccentric within the shell, a gyrating wheel or hub mounted loosely on the eccentric portion of the shaft, a series of blocks held in contact with the inner circumference of the shell and arranged to slide in the curved direction of said circumference, a corresponding series of wings permanently connecting the several blocks with the hub, said wings having a telescoping connection with one of these parts and having also pivotal connection with said blocks, and a part



448,607.



having two ports which communicate with the shell interior, one on one side and the other on the other side of the plane of the eccentric.

2. The combination of a cylindric shell, a revoluble shaft having an eccentric portion within said shell, a gyrating wheel or hub mounted loosely on the eccentric portion of the shaft, a series of segmental blocks arranged to slide in contact with the curved inner surface of the shell, said blocks being of suitable size to practically touch each other and the hub on that side of said hub at which the hub most nearly approaches the shell, a series of wings connecting the several sliding blocks with the hub and having pivotal connection with said blocks, and a part having two ports which communicate with the interior of the shell on opposite sides of the plane of the eccentric.

3. The combination of a cylindric shell, a revoluble shaft having an eccentric portion within said shell, a gyrating wheel or hub mounted loosely on said eccentric portion of the shaft, a series of wings fitted to slide in radial slots in the hub or wheel, a corresponding series of blocks held in contact with the inner circumference of the shell and adapted to slide along such surface, said blocks being pivotally connected with the wings, and means for introducing steam or other fluid into the shell on one side of the plane of the eccentric and for taking such steam or fluid from the shell on the opposite side of said plane.

4. The combination of a cylindric shell, an axial revolable shaft having an eccentric portion within the shell, a gyrating wheel or hub mounted loosely on said eccentric portion of the shaft, a series of blocks held in contact with the inner periphery of the shell and adapted to slide thereon, a series of wings movably connecting the blocks severally with the hub, one head of the cylinder being provided with a series of ports opening into the shell, and means for delivering steam or other fluid into the ports which communicate with said shell interior on one side of the plane of the eccentric and for discharging the fluid from the ports communicating with the shell interior on the other side of said plane.

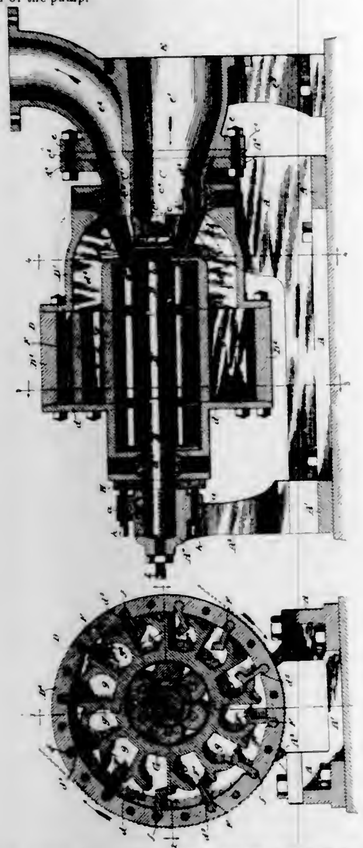
5. The combination of a cylindric shell, a revoluble axial shaft having an eccentric portion in said shell, a gyrating hub or wheel mounted loosely on said eccentric portion of the shaft, a series of blocks held movably in contact with the periphery of the shell, a corresponding series of wings movably connecting the blocks with the hub and permanently dividing the annular space between the hub and shell into a corresponding number of minor spaces, each having a separate passage leading thereto, and a revolving part containing two ports, one of which is for the introduction of steam and communicates with less than the whole number of said passages on one side of the plane of the eccentric, being those passages adjacent to the eccentric, and the other of which is for the exhaust of steam and communicates with the passages on the opposite side of said plane.

6. In combination with a cylindric shell, an axial shaft having an eccentric portion within the shell, and a winged wheel or hub loosely mounted on the eccentric, one or more cranks having the same throw as the eccentric and engaged with the head of the shell and also with the hub or wheel, whereby the latter is held from rotation and is caused to gyrate within the shell.

7. In a double rotary engine of the general character described, the combination, with the double eccentric shaft and the central division-plate of the shell, of an axial bearing portion of the shaft between the two eccentrics and resting in said central division of the shell, said bearing being provided with a peripheral groove for oil and the shell-partition having an oil-passage therein leading to the groove of the bearing.

448,608. ROTARY PUMP. ELLICK H. GOLLINGS, Chicago, Ill., assignor to the Gollings Bi-Centric Pump Company, same place. Filed Dec. 14, 1889. Renewed Jan. 8, 1891. Serial No. 377,172. (No model.)

Claim.—1. In a rotary pump of the general character described, the combination, with a rotating shell and a therein-contained eccentric wheel, of a non-rotating pipe passing through one of the rotating heads of the shell and containing both a supply-passage and a discharge-passage, whereby the supply and discharge take place at the same end of the pump.



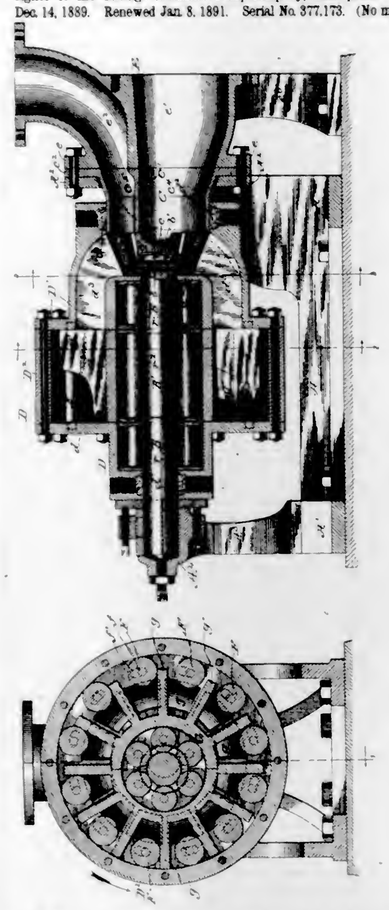
2. In a rotary pump of the general character described, the combination, with the rotating shell and the therein-contained rotating eccentric wheel, of a non-rotating tubular part C, having a diaphragm or partition dividing it into two pipes or passages communicating severally with the several compartments of the pump.

3. In combination with the non-rotating shaft having an eccentric portion and the rotating shell and wheel mounted thereon, said shell having a head provided with passages *p*, a non-rotating tube provided with a diaphragm or partition, and a socket-piece supporting the adjacent part of the shaft and forming an extension of the diaphragm.

4. In combination with a non-rotating shaft having concentric and eccentric portions, substantially as described, a rotating shell provided at its inner periphery with hinged wings F, having flanges F' near their inner extremities and directed rearwardly with respect to the direction of rotative motion of said shell, supporting-surfaces on the shell limiting the swinging movement of said wings, a wheel rotating on the eccentric portion of the shaft, rigid wings *g'* on the periphery of the wheel, and rearwardly-directed flanges g^3 near the outer ends of said rigid wings, said rigid wings being adapted for contact with the rim of the shell and with the hinged wings for the division of the space between the shell and the wheel into two compartments, and also adapted for contact with the hinged wings for the propulsion of the eccentric wheel through such contact, substantially as described.

5. In a rotary pump, the combination, with a non-rotating axial tube provided with a projecting part having tapered sides, of the rotating shell having a chambered head provided with wings, the ends of which are divergent to fit the tapered sides of the stationary tapered part, and means for adjusting the shell in the direction of its axis.

448,609. ROTARY PUMP. ELLICK H. GOLLINGS, Chicago, Ill., assignor to the Gollings Bi-Centric Pump Company, same place. Filed Dec. 14, 1889. Renewed Jan. 8, 1891. Serial No. 377,173. (No model.)



Claim.—1. In a rotary pump of the general character described, the combination, with a rotating shell having suitable inlet and discharge passages and with an interior eccentrically-supported rotating wheel provided with a series of peripheral wings, of a series of movable parts supported in contact with the periphery of the shell and engaged with said shell, while having a limited movement in a direction substantially parallel with the periphery of the shell and adapted to bear against the wings of the eccentric wheel.

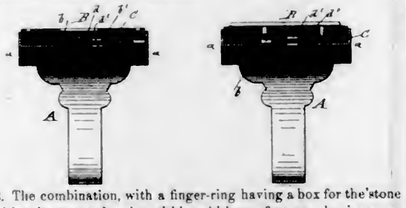
2. In a rotary pump of the general character described, the combination, with the rotating shell having suitable inlet and outlet passages and with an interior eccentrically-supported rotating wheel provided with a series of peripheral wings, of a series of rollers supported in contact with the periphery of the shell and engaged with the shell, said rollers having a limited movement substantially at right angles to the wings of the eccentric wheel and being adapted to bear against said wings, substantially as and for the purpose set forth.

3. In a rotary pump, the combination, with the shell, the end plates of which have slots *f'*, and with an eccentric wheel provided with wings *g'*, of the series of rollers F, provided with gudgeons occupying the slots *f'*, substantially as and for the purpose set forth.

4. The rim D^2 of the shell, provided with transverse depressions d^5, in combination with the eccentric wheel having wings *g'* and the rollers F, substantially as described.

448,610. FINGER-RING. CHARLES GOSLING, Brooklyn, assignor to Stern Brothers & Co., New York, N. Y. Filed Jan. 7, 1891. Serial No. 376,945. (No model.)

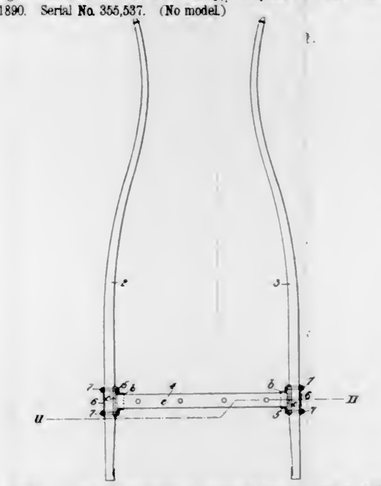
Claim.—1. The combination, with a finger-ring having a box and a keeper within said box, of a stone having a sliding latch guided at the under side of the stone and adapted to engage the keeper of the ring portion, substantially as set forth.



2. The combination, with a finger-ring having a box for the stone and with a keeper and a slot within said box, of a stone having a recess at the under side of the keeper, and a latch guided at the under side of the stone and provided with a pin projecting into the slot of the box, so that the latch can be readily withdrawn from or inserted into the keeper for interchanging the stone, substantially as set forth.

3. The combination, with a finger-ring having a box, a transverse keeper in said box, and a slot at right angles to said keeper, of a stone having a recess at the under side for the keeper, a longitudinal guide-recess at right angles to said recess, and a latch guided in said recess and provided with a pin which projects by its upper end into a shorter recess of the stone, while its lower end is guided in the slot of the box, substantially as set forth.

448,611. VEHICLE-SHAFT. ROBERT GRACEY, Allegheny, assignor of one-half to Charles B. Gracey, Coraopolis, Pa. Filed June 16, 1890. Serial No. 355,537. (No model.)



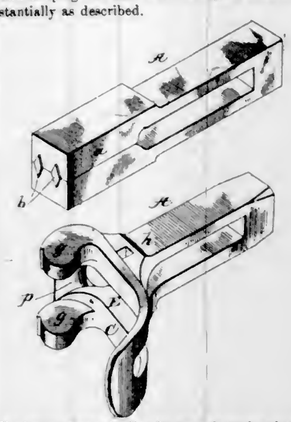
Claim.—1. The combination of vehicle-shafts, a cross-bar extending between them, and a clamping device consisting of a two-part clamp, the parts of which are fitted to the inner and outer sides of the shaft, and the inner part having a lateral socket directed toward the side of the other shaft and adapted to hold the end of the cross-bar, and means for drawing the parts of the clamp together tightly on the interposed shaft, substantially as and for the purposes described.

2. As a device for uniting a cross-bar to vehicle-shafts, the combination of a two-part clamp adapted to fit on opposite sides of the shaft, a double socket for receiving the end of a compound cross-bar, and means for drawing the parts of the clamp together on the interposed shaft, substantially as and for the purposes described.

448,612. MANUFACTURE OF DRAW-BARS. JOHN GREEN, Renovo, Pa., assignor of one-half to William L. Holman and John McCord, both of same place. Filed Dec. 8, 1890. Serial No. 373,953. (No model.)

Claim.—1. The method of manufacturing draw-bars, which consists in forming a blank with a thickened end, upsetting said end and forming a head integral with the body portion, then forming lugs on the face of one end of said head, said lugs projecting at a right angle to the face of the head, and then placing the blank in a die and bending and shaping the head with its lugs into the form substantially as described.

2. The method of manufacturing draw-bars, which consists in forming a blank with a thickened end, upsetting said end and forming a head thereon, then punching the link-slot in the head, giving an initial bend to said head, forming lugs on the face of one end of the head, said lugs projecting at a right angle to the face of the head, and then bending and shaping the head with its lugs in suitable dies into the form substantially as described.



3. The improvement in dies for manufacturing draw-bars, having a cavity to receive the body portion of the draw-bar and a slot crossing the die, and the overlapping wedges for passing through the body portion of the draw-bar and die, substantially as described.

4. Dies for manufacturing draw-bars, consisting of a lower die having a cavity for the body portion of the draw-bar and a curved recess for shaping the rear surface of the head, in combination with an upper die having a shaping-face for the outer surface of the head and cavities for shaping the lugs thereon, substantially as described.

5. Dies for manufacturing draw-bars, consisting of a lower die provided with an oblique cavity for the body portion of the draw-bar and a recess for shaping the rear surface of the head, in combination with an upper die having a shaping-face for the outer surface of the head, substantially as described

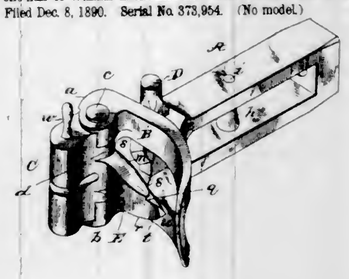
6. Dies for manufacturing draw-bars, consisting of a lower die provided with an oblique cavity for the body of the draw-bar and a curved recess for shaping the rear surface of the head, in combination with an upper die having a guiding-tongue to enter the link-slot in the head, a shaping-face for the outer surface of the head, and cavities for shaping the lugs on said face, substantially as described.

7. Dies for manufacturing draw-bars, consisting of a lower die provided with a recess for the body portion of the draw-bar, a cavity with a depression therein for shaping the rear surface of the head and forming a swell or bulge thereon, in combination with an upper die having a shaping-face for the outer surface of the head, a tongue, a projection on one side of said tongue and cavities on one side of said tongue, and cavities on both sides of the projection for shaping lugs on the face of the head, substantially as described.

8. A forged blank for draw-bars, consisting of a body portion and a head formed integral therewith and provided with projecting lugs on one end thereof, substantially as described.

9. A forged blank for draw-bars, consisting of a body portion and a tapering head formed integral therewith and provided with projecting lugs on one end thereof, substantially as described.

448,613. CAR-COUPLING. JOHN GREEN, Renovo, Pa., assignor of one-half to William L. Holman and John McCord, both of same place. Filed Dec. 8, 1890. Serial No. 373,954. (No model.)



Claim.—1. A draw-bar having an opening in the rear side of its head, in combination with a swinging hook having a tongue constructed to automatically remove foreign matter from the interior of the head through said opening in the rear side thereof in the act of coupling.

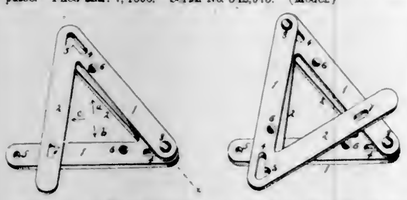
2. A draw-bar having an opening in the rear side of the head and a rectangular slot in the upper side of the bar, an aperture in the lower side, and a trip-pin having a rectangular upper portion and a projection around said pin to cut ice and form a supporting-seat for the pin on the lower side of the draw-bar, in combination with a swinging hook constructed to push ice out of the draw-head automatically in the act of coupling.

3. A draw-bar having an opening in the rear side of its head and provided with a transverse swell or projection on said rear side between the upper and lower bars, in combination with a swinging hook having a tongue constructed to rest upon the inner surface of said swell and extending beyond the same to remove foreign matter from the interior of the head through the opening therein.

4. A draw-bar having an opening in the rear side of its head, in combination with a swinging hook having a tongue provided with a plain working or contact surface, a rounded top and rear surface, and a flat cutting-bottom, the whole constructed to remove foreign matter from the interior of the head automatically in the act of coupling.

5. A draw-bar having an opening in the rear side of the head, in combination with a swinging hook having a tongue provided with a plain working or contact surface, a rounded top and rear surface, and a bottom surface inclined upward at its end, for the purpose set forth.

448,614. BAG-TIE. MORRIS R. HASKINS, Belvidere, Ill., assignor of two-thirds to Eugene E. P. Truesdell and Floyd Hopkins, both of same place. Filed Mar. 7, 1890. Serial No. 342,973. (Model.)

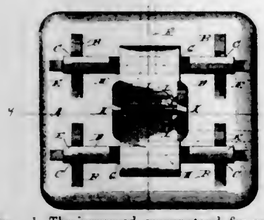


Claim.—1. A bag-tie composed of a series of sections, the apex of one section connected at or near its center by a pivot to one of the free arms of the next succeeding section, each section composed of two arms continuously radiating from the apex, the angularity of the arms of the sections being such that the overlying arms of the different sections will each come in contact with the bag before the mouth of the bag-tie is opened, substantially as set forth.

2. A bag-tie composed of a series of V-shaped sections having a slip-joint connection with each other by means of an L-shaped slot and pivot, substantially as set forth.

3. A bag-tie composed of a series of V-shaped sections, the apex of each section being provided with an L-shaped slot, and a pivot for uniting one end of each section to the apex of the adjacent section through the said slot, whereby a slip-joint is formed.

448,615. CORNER-STAND FOR WEIGHING-SCALES. HALVOR O. HEM, Kansas City, Kans., assignor to Horatio N. Strait, same place. Filed Sept. 22, 1890. Serial No. 365,311. (No model.)



Claim.—1. The improved corner-stand for weighing-scales, consisting of the casting having the base-plate provided with two pairs of vertical extensions B, two parallel swings D, the connecting link-plate I, and adjustable knife N, substantially as described.

2. In a corner-stand for weighing-scales, the combination, with a casting having a base-plate provided with integral extensions B, having the concave bearings in the upper surface, of the parallel swings D, connected by the link-plate I, substantially as and for the purpose set forth.

3. In a corner-stand for weighing-scales, the combination, with two parallel swings G, having edged cross-bars, of a connecting-link having V-shaped notches in its lower face to receive the said cross-bars, as described.

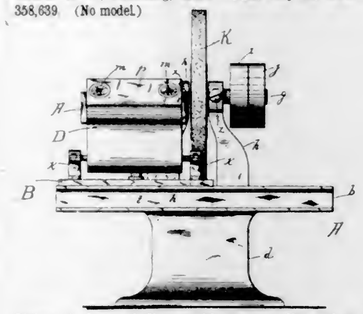
4. In a corner-stand for weighing-scales, the connecting link-plate I, provided with the vertical side extensions K, the guide-lugs L on their inner sides, forming between them the guide-slots M, and the transverse shoulder I', convex on its upper surface in the direction described, substantially as and for the purpose set forth.

5. The combination, with a self-adjustable and removable knife N, of the cross-bar R, the cross-beam P, provided with V-shaped grooves P', engaging and operating with said knife-point, substantially as described.

6. The combination and arrangement, with the link-plate I, of the cross-bar R through the medium of the adjustable and removable knife N, substantially as described.

7. The combination, with a platform, of cross-ties at its opposite ends connected rigidly thereto, a tie connecting the said cross-ties, links I, having removable knives therein carrying the said cross-ties, and parallel swings carrying the said links, as described.

448,616. FEED MECHANISM FOR KNIFE-GRINDING MACHINES. CHARLES E. HUDSON, Leominster, assignor of one-half to C. S. Tolman & Co., Fitchburg, Mass. Filed July 14, 1890. Serial No. 358,639. (No model.)



Claim.—1. In a grinding-machine, a stop disposed at each side of the grinding-wheel in position to be engaged by the blades, substantially as and for the purpose set forth.

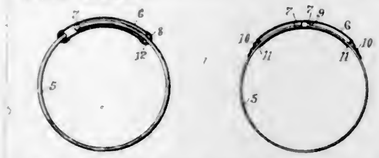
2. An automatic feed device for knife-grinding machines, comprising adjustable stops mounted on the machine-frame adjacent to the working-face of the grinder and in position to be engaged by the blades as they pass said grinder, substantially as described.

3. In a device of the character described, the combination of the grinding-wheel and reciprocating carriage with a tilting blade-carrier on said carriage, a stop for said carrier, and stops disposed adjacent to said wheel for determining the fall of the carrier at each reciprocation of the carriage, substantially as described.

4. In a device of the character described, the rotary grinding-wheel and adjustable blade-stops, in combination with a horizontally-reciprocating carriage, a gravity blade-carrier pivoted thereon, and an adjustable stop for said carrier, substantially as described.
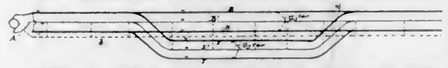
5. The wheel K and adjustable stops *x z*, in combination with the reciprocating carriage B, provided with the adjustable stop *r*, and the blade-carrier D, pivoted on said carriage.

448,617. BRACELET. THOMAS C. HUDSON, Providence, R. I., assignor to George L. Vose, same place. Filed May 22, 1888. Serial No. 274,722. (No model.)



Claim.—A bracelet consisting of a resilient hoop having a stop or enlargement at one or both ends and an ornamental box or center provided with a concealed groove, and a slit at one or both ends smaller in area than the groove, constructed to receive the end or ends of the hoop and permit of the enlargement of the hoop and its automatic contraction, as and for the purpose set forth.

448,618. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Original application filed Sept. 23, 1886, Serial No. 214,309. Divided and this application filed Sept. 1, 1890. Serial No. 363,636. (No model.)



Claim.—1. In an electric railway, the combination of a looped track forming a return-circuit and connecting with one pole of the generator, a looped conductor extended along the railway electrically independent of the rails of the track and having its opposite ends connected with the other pole of the generator, an electrically-propelled vehicle having a motor mechanically connected to rotate the axle, a current-collecting device supported by the vehicle and making a traveling connection with the conductor, and a motor-circuit carried upon the vehicle, including the motor and connecting the collector device with the rails.

2. In an electric railway, the combination of a track forming a return-circuit and connecting with one pole of the generator, a conductor extending along the railway electrically independent of the rails of the track and connected with the other pole of the generator, an electrically-propelled vehicle having a motor mechanically connected to rotate the axle, a laterally-movable current-collecting device supported wholly by the vehicle and making a traveling connection with the conductor, a motor-circuit carried upon the vehicle, including the motor and connecting the collector device with the rails, and a current-regulator upon the vehicle for controlling the current passing through the motor-circuit and motor.

3. In an electric railway, the combination of the track-rails forming the return circuit and electrically connected with one pole of the generator, a suspended conductor arranged at a considerable elevation above the track-rails and receiving current from the other pole of the generator, an electrically-propelled vehicle having a roof and provided with an electric motor mechanically connected to rotate its axle, a current-regulator for controlling the current delivered to the motor, and a long upwardly-extending current-collecting device having a grooved roller carried by the vehicle above its roof out of reach of passengers and making a continuous contact with the suspended conductor, and an electric circuit between the current-collecting device and rails, including the electric motor and current-regulator.

4. In an electric railway, the combination of the track-rails forming the return-circuit and electrically connected with one pole of the generator, a, suspended conductor extending along the railway at a different elevation from the rails and electrically independent thereof and electrically connected with the other pole of the generator, an electrically-propelled vehicle having an electric motor mechanically connected to rotate the axle, a laterally-movable current-collecting device carried by the vehicle and making an underrunning contact with the conductor, and a circuit extending from the current-collecting device to the rails, including the electric motor.

5. The combination of two or more railway-tracks the rails of which are electrically connected together and with one pole of the generator, a separate conductor for each railway-track arranged at a different elevation than the railway-tracks and electrically independent of the rails and also electrically counected together and with the other pole of the generator, an electrically-propelled vehicle having an electric motor mechanically connected to rotate the axle, a current-collecting device making a continuous contact with the conductor, which is independent of the rails, and a circuit carried by the car, including the electric motor and connecting the current-collecting device with the rails.

6. The combination of two or more railway-tracks the rails of which are electrically connected together and with one pole of the generator, a separate suspended conductor for each railway-track electrically independent of the rails and also electrically connected together and with the other pole of the generator, an electrically-propelled vehicle having an electric motor mechanically connected to rotate the axle, a current-collecting device making a continuous contact with the suspended conductor, carried by the vehicle and provided with an underrunning contact part moving in connection with the under surface of the suspended conductor, which is independent of the rails, and a circuit carried by the car, including the electric motor and connecting the current-collecting device with the rails.

7. In an electric railway, the combination of two or more tracks the rails of which form return-conductors and are electrically connected together and with one pole of a generator, with a separate suspended conductor arranged at an elevation above each of the tracks and also electrically connected together and with the other pole of the generator, one or more electrically-propelled vehicles for said railway-tracks, provided with an electric motor mechanically arranged to rotate the axle, an upwardly-extending current-collecting device making a running contact with the suspended conductor, and an electric circuit on the vehicle, including the motor and connecting the current-collecting device with the rails.

8. In an electric railway, the combination of two or more tracks the rails of which form return-conductors and are electrically connected together and with one pole of a generator, a separate suspended conductor arranged at an elevation above each of the tracks and also electrically connected together and with the other pole of the generator, one or more electrically-propelled vehicles for said railway-tracks, provided with an electric motor mechanically arranged to rotate the axle, a current-collecting device consisting of an upwardly-extending arm arranged above the roof of the vehicle and provided with a grooved contact portion (in the groove of which the conductor rests) for making an underrunning contact with the suspended conductor, and an electric circuit on the vehicle, including the motor and connecting the current-collecting device with the rails.

9. The combination of two or more railway-tracks the rails of which are electrically connected together and with one pole of the generator, a separate suspended conductor for each railway-track and electrically independent of the rails and also electrically connected together and with the other pole of the generator, an electrically-propelled vehicle having an electric motor mechanically connected to rotate the axle, a current-collecting device making a continuous contact with the conductor, carried by the vehicle and provided with an underrunning contact part moving in connection with the under surface of the suspended conductor, which is independent of the rails, a circuit carried by the car, including the electric motor and connecting the current-collecting device with the rails, and a supply-conductor extending along the railway out of reach of the suspended conductor and electrically connected at intervals with the conductor or conductors with which the contact device makes connection.

10. In an electric railway, the combination of two or more tracks the rails of which form return-conductors and are electrically connected together and with one pole of the generator, with a separate suspended conductor arranged at an elevation above each of the tracks and also electrically connected together and with the other pole of the generator, one or more electrically-propelled vehicles for said railway-tracks, provided with an electric motor mechanically arranged to rotate the axle, an upwardly-extending current-collecting device making an underrunning contact with the suspended conductor, an electric circuit on the vehicle, including the motor and connecting the current-collecting device with the rails, and a supply-conductor extending along the railway out of reach of the current-collecting device and electrically connected with the conductor or conductors with which the contact device makes connection.

11. In an electric railway, the combination of a track forming a return-circuit and connecting with one pole of a generator, a suspended conductor extending along the railway electrically independent of the rails of the track and connected with the other pole of the generator, an electrically-propelled vehicle having a motor mechanically connected to rotate the axle, a current-collecting device supported wholly by the vehicle and making a traveling connection with the suspended conductor, a motor-circuit carried upon the vehicle, including the motor and connecting the collector device with the rails, and a supply-conductor extending along the railway out of reach of the current-collecting device and electrically connected with the conductor with which the contact device makes connection.

12. In an electric railway, the combination of the track-rails forming a return-circuit and connected with one pole of the generator, a suspended conductor electrically independent of the rails and having its lower surface unobstructed, an electrically-propelled vehicle provided with an electric motor mechanically connected with its axle to rotate it, an under-moving contact with the vehicle and making an electrical connection with the under surface of the suspended conductor, an electrical circuit carried by the car, including the motor and connecting the current-collecting device with the rails, and a supply-conductor extending along the railway out of reach of the current-collecting device and connected electrically with the suspended conductor with which the contact device makes connection.

13. The combination of two or more railway-tracks the rails of which are electrically connected together and with one pole of the generator, a series of poles arranged along the railway-tracks, suspended conductors for each of the railway-tracks electrically independent of the rails, but supported from said posts and electrically connected together and with the other pole of the generator, one or more electrically-propelled vehicles for said railway-tracks, provided with contact devices for making a contact with the suspended conductors and supply current to the motors of the vehicles, and one or more supply-conductors extending along the railway-track and electrically connected with the suspended conductors at intervals.

14. The combination of two or more railway-tracks the rails of

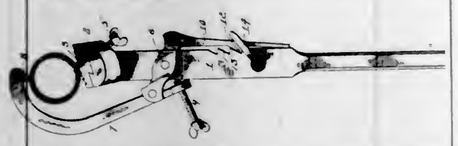
which are electrically connected together and with one pole of the generator, a series of poles arranged along the railway-tracks, suspended conductors for each of the railway-tracks electrically independent of the rails, but supported from said posts and electrically connected together and with the other pole of the generator, one or more electrically-propelled vehicles for said railway-tracks, provided with contact devices consisting of an upwardly-extending arm arranged above the roof of the vehicle and carrying a grooved contact-wheel for making an underrunning contact with the conductors and supplying current to the motor on the vehicle, and one or more supply-conductors supported upon the posts and extending along the railway-track out of reach of the current-collecting devices and electrically connected with the suspended conductors at intervals.

15. In an electric railway, the combination of a main track and turn-out railway-track the rails of which are electrically connected together and with one pole of the generator, in combination with a suspended conductor for the railway-track, and also a separate suspended conductor for the turn-out track electrically connected together and with the other pole of the generator, but electrically independent of the rails, an electrically-propelled vehicle, an upwardly-extending current-collecting device making contact with either of the suspended conductors of the two tracks, and a circuit carried upon the car, including the electric motor and connecting the current-collecting device with the rails.

16. In an electric railway, the combination of a main track and turn-out railway-track the rails of which are electrically connected together and with one pole of the generator, with a suspended conductor for the railway-track, and also a separate suspended conductor for the turn-out track electrically connected together and with the other pole of the generator, but electrically independent of the rails, an electrically-propelled vehicle, an upwardly-extending current-collecting device making contact with either of the suspended conductors of the two tracks, and consisting of an upwardly-extending arm arranged above the roof of the car and provided with a grooved contact, in the groove of which the suspended conductor rests and is guided, and a circuit carried upon the car, including the electric motor and connecting the current-collecting device with the rails.

17. In an electric railway, the combination of two tracks having their rails looped at one end and electrically connected together and with one pole of the generator, a separate suspended conductor for each of the tracks, said conductors also being looped to correspond with the tracks and electrically connected together and with the other pole of the generator, an electrically-propelled vehicle, a contact device carried by the vehicle, making a running contact with either of the suspended conductors, and a circuit carried by the vehicle, including the electric motor and connecting the contact device with the rails.

448,619. PIPE-WRENCH. CHARLES F. WEST, Alvordton, assignor of one-half to Lewis R. Connell, Pioneer, Ohio. Filed Sept. 1, 1890. Serial No. 363,873. (No model.)



Claim.—1. In a pipe wrench or cutter, the combination, with the shank having a stationary jaw or cutter, a series of teeth, and an oscillating block pivoted thereto, of the arm carrying the movable jaw pivoted to one end of said block, and an arm pivoted to the other end of said block, having a shoulder engaging with the teeth on the shank, substantially as described.

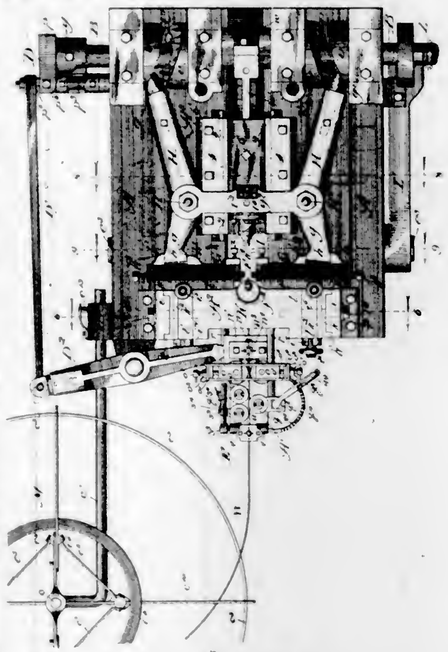
2. In a pipe wrench or cutter, the combination, with the shank 1, having a stationary jaw or cutter, teeth 13, and pivoted block 6, of the arm 7, pivoted to said block, having jaw 8 and set-screw 9, the arm 10, provided with shoulders 12, and the bail 14, pivoted to the shank, substantially as described.

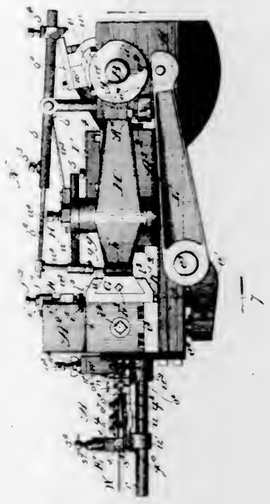
448,620. WIRE-NAIL MACHINE. JOSEPH VON SERKEY, Chicago, Ill., assignor of three-fourths to Rockwell King, same place. Filed June 13, 1890. Serial No. 355,378. (No model.)

Claim.—1. In a wire-nail machine, the combination, with the rotary power-shaft, of a reciprocating carriage suitably connected with the power-shaft and supporting wire straightening and feeding mechanism and reciprocating in the opposite directions by the rotation of the shaft at different rates of speed—namely, slower for the straightening and faster for the feeding—with a varying stroke according to the length of wire to be fed, substantially as described.

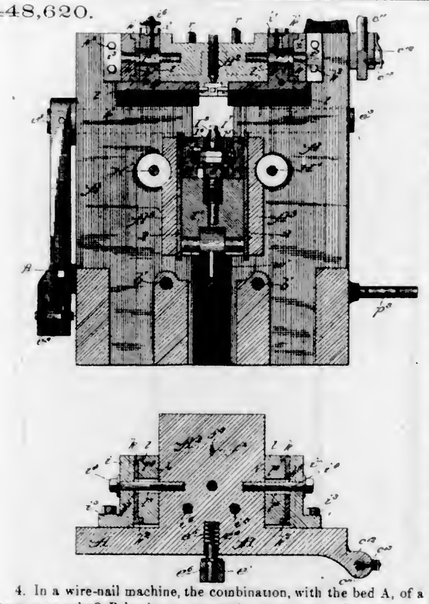
2. In a wire-nail machine, the combination, with the rotary power-shaft, of a reciprocating carriage suitably connected with the power-shaft and supporting wire-straightening rollers, and wire barbing or feeding rollers operated by the backward movement of the carriage, the said shaft in its rotation operating through the medium of its said connection with the carriage to reciprocate the latter in the opposite directions at different rates of speed—namely, slower for the straightening and barbing operations and faster for the feeding—and with a varying stroke according to the length of wire to be fed, substantially as described.

3. In a wire-nail machine, the combination, with the bed A, of a rotary power-shaft, an angular rocking head D, pivotally supported at its angle and connected from its arm p with the power-shaft eccentrically thereof, and a reciprocating carriage A′, supporting the wire straightening and feeding mechanism and connected with the arm p' of the said head D, substantially as described.





448,620.



4. In a wire-nail machine, the combination, with the bed A, of a rotary power-shaft B, having an eccentric y near one end, an angular rocking head D, formed with an arm p, having a guide, and an arm p', and pivotally supported on the bed between the two said arms, a washer y' in the guide of the arm p and connected with the eccentric y, a reciprocating carriage A′, carrying the wire straightening and feeding mechanism at the rear end of the machine, a lever D^2, fulcrumed between its extremities and engaging at one end with the said carriage, and a link D′, connecting the said lever from its opposite end with the arm p' of the rocking head D, substantially as described.

5. In a wire-nail machine, the combination, with the bed A, of a rotary power-shaft B, having an eccentric y near one end, an angular rocking head D, formed with arms p and p', containing guides, and pivotally supported on the bed between the two said arms, a washer y' in the guide of the arm p and connected with the eccentric y, a nut v^5 on a screw p^4 in the guide of the arm p', a reciprocating carriage A′, carrying the wire straightening and feeding mechanism at the rear end of the machine and provided with a hollow head m in a recess m', a lever D^2, fulcrumed between its extremities and engaging at one end with the head m, and a link D′, connecting the said lever from its opposite end with the nut p^5, substantially as described.

6. In a wire-nail machine, the combination, with the bed A, supporting the wire severing and heading mechanisms, of a reciprocating carriage A′ and a wire-straightening attachment E for straightening the wire in a vertical direction, pivotally supported on the carriage and adjustable on its support through a vertical plane to different angles from its normal perpendicular position, substantially as described.

7. In a wire-nail machine, the combination, with the bed A, supporting wire severing and heading mechanisms, of a reciprocating carriage A′ and a wire-straightening attachment E, comprising a frame t, pivotally supported on the carriage to permit its adjustment by swinging it on its pivot from its normal perpendicular position through a vertical plane, and having journaled within it rollers s and s', one above the other, at opposite sides of the line of feed of the wire W, substantially as described.

8. In a wire-nail machine, the combination, with the bed A, supporting wire severing and heading mechanisms, of a reciprocating carriage A′, a wire-straightening attachment E, comprising a frame t, journaled on the carriage to permit its adjustment through a vertical plane and having journaled within it rollers s and s', one above the other in adjustable bearings s^4 and s^5, provided with means for adjusting them, a handle s^6 on a supporting journal of the frame t, and a vertically-disposed segmental rack s^9, engaged by the handle, substantially as described.

9. In a wire-nail machine, the combination, with the bed A, supporting wire severing and heading mechanisms, of a reciprocating carriage A′, supporting a pair of horizontally-disposed straightening-rollers q' at one side of the line of feed of the wire W, and at the opposite side thereof a similarly-disposed roller q on a sliding bearing q^2, having a rectangular opening q^6 in its outer end, and an eccentric confined in the said opening and controlled from a handle q^8, substantially as described.

10. In a wire-nail machine, the combination, with the bed A, supporting wire severing and heading mechanisms, of a reciprocating carriage A′, supporting a pair of horizontally-disposed straightening-rollers q' at one side of the line of feed of the wire W, and at the opposite side thereof a similarly-disposed roller q in a sliding bearing q^2, having a rectangular opening q^6 in its extension q^4, a head q^4, confined in the said opening and provided eccentrically with a pivot-pin q^7, a handle q^8 for the head, and a horizontally-disposed segmental rack q^{10} for securing the handle, substantially as described.

11. In a wire-nail machine, the combination, with the bed A, supporting wire severing and heading mechanisms, of a reciprocating carriage A′, a wire-straightening attachment E for straightening the wire in a vertical direction, and comprising a frame t, journaled on the carriage to permit its adjustment through a vertical plane, and having journaled within it rollers s and s', one above the other, at opposite sides of the line of feed of the wire W, and horizontally-disposed straightening-rollers, comprising a pair q' at one side of the said line of feed and an intermediate roller q at the opposite side thereof on a sliding bearing q^3, and an eccentric engaging the sliding bearing q^3 and provided with a handle q^8, from which to control the adjustment of the roller q, substantially as described.

12. In a wire-nail machine, the combination, with the bed A, supporting wire severing and heading mechanisms, of a reciprocating carriage A′, provided with wire-straightening rollers and supporting in advance of the straightening-rollers a pair of horizontally-disposed barbing-feed rollers o, journaled in slidingly-adjustable bearings in a recess o^2, formed transversely in the carriage-bed and terminating at its opposite ends in box-shaped bearings o^3, having upward-projecting tongues o^4, a confining-ring o^6, surrounding the said tongues o^4, and set-screws o^7, extended against the said sliding bearings through the ends of the bearings o^3, substantially as described.

13. In a wire-nail machine, the combination, with the bed A and rotary power-shaft B, supported thereon, of the vertical clamping-die K and vertically-reciprocating clamping-die K′, and a cam L, having differential peripheral cam-surfaces d, d', and d^3, straight or substantially straight where they merge one into the other, thereby to avoid pounding, the differential cam-surfaces controlling the degree of clamping effect with relation to the line of feed of the wire W of the die K′ through suitable intermediate lever mechanism, substantially as described.

14. In a wire-nail machine, the combination, with the bed A, supporting a rotary power-shaft B, wire severing and heading mechanisms, and a reciprocating carriage A′, carrying wire straightening and feeding devices, of a vertical clamping-die K, extending toward the upper side of the line of feed of the wire W, a vertically-reciprocating clamping-die K′ below the die K at the opposite side of the said line of feed, a rock-shaft e^3, eccentrically from which the die K is supported, an arm L′, extending from the rock-shaft to the power-shaft B, and a cam L on the power-shaft engaging with the arm L′ and having the differential peripheral cam-surfaces d, d', and d^3, substantially as and for the purpose set forth.

15. In a wire-nail machine, the combination, with the bed A, supporting a rotary power-shaft B, wire severing and heading mechanisms, and a reciprocating carriage A′, carrying wire straightening and feeding devices, of a stationary vertically-adjustable clamping-die K, extending toward the upper side of the line of feed of the wire W, a vertically-reciprocating clamping-die K′ below the die K at the opposite side of the said line of feed, a rock-shaft e^3, having an arm e' extending from it and supporting the die K′ and elastically controlled by a spring e^5 near its free end, an arm L′, extending from the rock-shaft to the power-shaft B and provided with a roller e^9, and a cam L on the power-shaft engaging with the roller e^9 and having the differential peripheral cam-surfaces d, d', and d^3, substantially as described.

16. In a wire-nail machine having the cutting-dies, their operating-levers, and the driving-shaft, the cams herein described, having a gradual and uniform increase in pitch, changing at a predetermined point on the cam to a slight pitch in the same direction and then gradually decreasing in pitch, whereby the operation of the cutting-dies in one direction is first rapid and then slow to perform the cutting and severing operation at a slower speed than the remaining movement of the dies, substantially as described.

17. The combination of a severing-die F for a wire-nail machine and a die-block G therefor, having a socket h^3 for the die, and an outward-flaring opening in its face leading into the die-socket, substantially as and for the purpose set forth.

18. The combination of a severing-die P for a wire-nail machine, a die-block G therefor, having a socket h^2 for the die, and an outward-flaring opening in its face leading into the die-socket, a set-screw h^4 for controlling the die in a transverse direction, and a set-screw h^3, bearing against the rear end of the die, substantially as described.

19. A wire-nail machine comprising, in combination, a bed A, supporting the rotary power-shaft B, having a crank *w* between its extremities, a cam L near one end, provided with differential peripheral cam-surfaces *d*, *d'*, and *d²*, an eccentric *y* at its opposite end, and intermediate cams C and C', an angular rocking head D, pivotally supported at its angle and having its arm *p* engaged by the said eccentric *y* through the medium of the sliding washer y^1, a reciprocating carriage A', supported at the rear end of the machine and carrying straightening and feeding devices, a lever D^3, engaging at one end with the carriage and connected from its opposite end by a link D' with the arm *p'* of the device D, a vertical clamping-die K, and a vertical spring-controlled reciprocating clamping-die K', a rock-shaft c^3, having an arm *r'*, supporting the die K', and an arm L', extending from the said rock-shaft into engagement with the cam L, cutting-dies F, supported in reciprocating die-blocks G, and levers H, fulcrumed between their extremities and engaging at corresponding ends with the die-blocks and provided at their opposite ends with rollers *g'*, engaging the cams C and C', the whole being constructed and arranged to operate substantially as described.

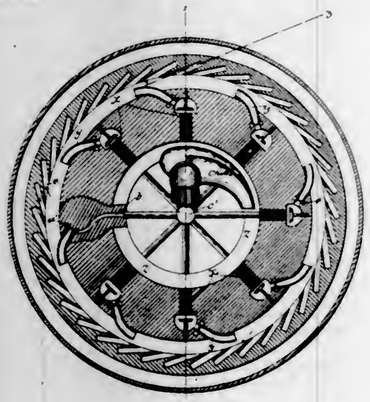
20. In a wire-nail machine, the combination, with the bed A, supporting the power-shaft B, of a header comprising a reciprocating head I', having a head I extending from it and provided at its extremity with a plate I^3, having screw-holes I^3, a plate I^4, having screw-holes I^5 larger in diameter than the screw-holes I^3 and bolted through said holes to the plate I^3, and a socket I^7 on the plate I^4 for the header-tool I^8, substantially as described.

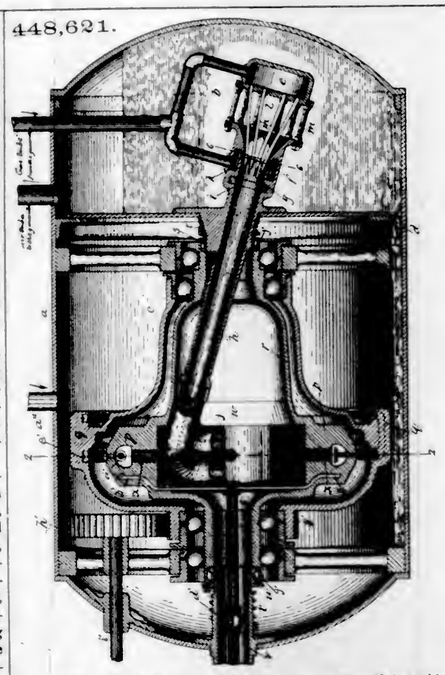
21. In a wire-nail machine, the combination, with the bed A, supporting the power-shaft B, reciprocating carriage A', provided with the wire straightening and feeding devices, the header, clamping-dies, severing-dies engaged by the levers H, fulcrumed on posts H', and means for actuating the said mechanism from the rotary power-shaft, all co-operatively arranged substantially as described, of a striker device N, comprising a pivotally-supported rod *b*, provided with an extension-rod b^2, carrying the knock-off tool *a* on a suitable support a^2, guided in a socket a^3 on a rod *a'*, supported and longitudinally adjustable in a socket g^3 on a cross-bar g^2, connecting the posts H', a spring a^4, extending against the rod *b*, a cam b^4, adjustably supported on the rod *b* near the shaft B, and a finger b^5, supported on a link *w'*, connecting the header with the power-shaft, the whole being constructed and arranged to operate substantially as described.

22. In combination with a wire-nail machine, a reel M for the supply-coil of wire W, having a core for the coil and supported on a suitable bar c^{11}, extending to the location for the reel from the machine and adjustably secured in a bearing c^{12} on the frame A, to permit the bar to be turned on its axis for adjusting the reel to a vertical or a horizontal position, substantially as described.

23. In combination with a wire-nail machine, a reel M for the supply-coil of wire W and formed with a central post *c* in hub *c'*, having radial arms c^9, supporting-posts c^4, braced toward their upper ends, and arms c^{10}, pivotally supported on posts c^4, and a bar c^{11} for supporting the reel, extending to the location for the reel from the machine and adjustably secured to permit turning thereof on its axis at one end in a bearing c^{12} on the frame A and secured at its opposite end to the hub *c'*, the whole being constructed and arranged to operate substantially as described.

448,621. ART OF OBTAINING MOTIVE POWER. GEORGE J. ALTHAM, Swansea, Mass. Filed Jan. 3, 1891. Serial No. 376,584. (No model.)





Claim.—1. The art of obtaining motive power from fluids, which consists in reducing the density of a fluid by intermixing therewith a second fluid of less density, both under pressure, whereby the energy of the lighter fluid may be imparted to the heavier fluid by permitting the flow of the fluids so intermixed toward a space of less pressure, as set forth.

2. The art of obtaining motive power from fluids, which consists in reducing the density of a fluid by intermixing therewith a second fluid of less density, both under pressure, whereby the energy of the lighter fluid may be imparted to the heavier fluid by permitting the flow of the fluids so intermixed toward a space of less pressure, separating the fluids and increasing the pressure of the heavier fluid by centrifugal tendency, as set forth.

3. The art of obtaining motive power from fluids, which consists in imparting the energy of a lighter fluid to a heavier fluid, permitting the energy to take the form of velocity, and transforming the velocity of the heavier fluid into pressure by centrifugal tendency, as set forth.

4. The art of obtaining motive power from fluids, which consists in imparting the energy of a lighter fluid to a heavier fluid, permitting the energy to take the form of velocity, separating the fluids and discharging the fluid of lighter density and transforming the velocity of the heavier fluid into pressure by centrifugal tendency, as set forth.

5. The art of obtaining motive power from fluids, which consists in imparting the energy of a lighter fluid to a heavier fluid, permitting the energy to take the form of velocity, separating the fluids and discharging the fluid of lighter density and transforming the velocity of the heavier fluid into pressure by centrifugal tendency, and employing the pressure as a source of power, as set forth.

6. The art of obtaining motive power from fluids, which consists in imparting the energy of a lighter fluid to a heavier fluid, permitting the energy to take the form of velocity, separating the fluids and discharging the fluid of lighter density and transforming the velocity of the heavier fluid into pressure by centrifugal tendency and employing the pressure as a source of power, and returning the said heavier liquid to be again energized, as set forth.

7. The art of obtaining motive power from fluids, which consists in reducing the density of a fluid by intermixing the same with a lighter fluid, both under pressure, transforming the potential energy of the mixture into kinetic energy, developing the kinetic energy of the mixture into pressure of the heavier liquid, and at the same time restoring the original density of the heavier liquid, as set forth.

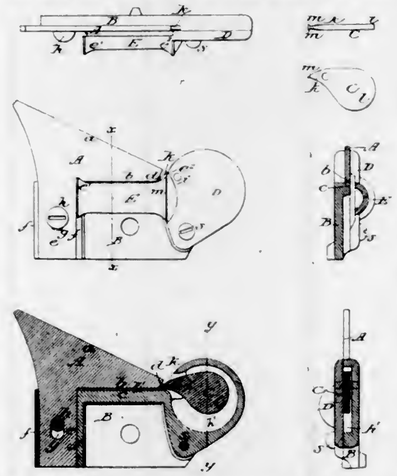
8. The art of obtaining motive power from fluids, which consists in reducing the density of a fluid by intermixing the same with a lighter fluid, both under pressure, transforming the potential energy of the mixture into kinetic energy, developing the kinetic energy of the mixture into pressure of the heavier liquid and at the same time restoring the original density of the heavier liquid, and employing the pressure as a source of power, as set forth.

9. The art of obtaining motive power from fluids, which consists in reducing the density of a fluid by intermixing the same with a lighter fluid, both under pressure, transforming the potential energy of the mixture into kinetic energy, developing the kinetic energy of the mixture into pressure of the heavier liquid and at the same time restoring the original density of the heavier liquid, and employing the pressure as a source of power, and returning the heavier liquid to be used again, as set forth.

10. The art of obtaining motive power from fluids, which consists in imparting the energy of a lighter fluid to a heavier fluid, permitting the energy to take the form of velocity, separating the fluids and discharging the fluid of lighter density and transforming the velocity of the heavier fluid into pressure by centrifugal tendency, employing the pressure as a source of power, intermixing air with the liquid, and permitting the air to be discharged with the liquid, as set forth.

11. The art of obtaining motive power from fluids, which consists in imparting the energy of a lighter fluid to a heavier fluid, permitting the energy to take the form of velocity, separating the fluids and discharging the fluid of lighter density and transforming the velocity of the heavier fluid into pressure by centrifugal tendency, employing the pressure as a source of power, compressing air to the working pressure of the apparatus by intermixing the air with the liquid, and permitting the air to be discharged therewith, as set forth.

448,622. YARN-CLEANER FOR SPOOLING-MACHINES. JOHN M. CURTICE, Lowell, Mass., assignor to himself and the Lowell Machine Shop, same place. Filed May 31, 1881. Serial No. 34,576. (No model.)



Claim.—1. The automatic or gravitating stop-gate provided with a spur or spurs projecting from its nose, substantially as and for the purpose specified.

2. The support-piece chambered to receive the automatic stop-gate, in combination with the cap of the chamber having the yarn-supporter extended from it, as represented.

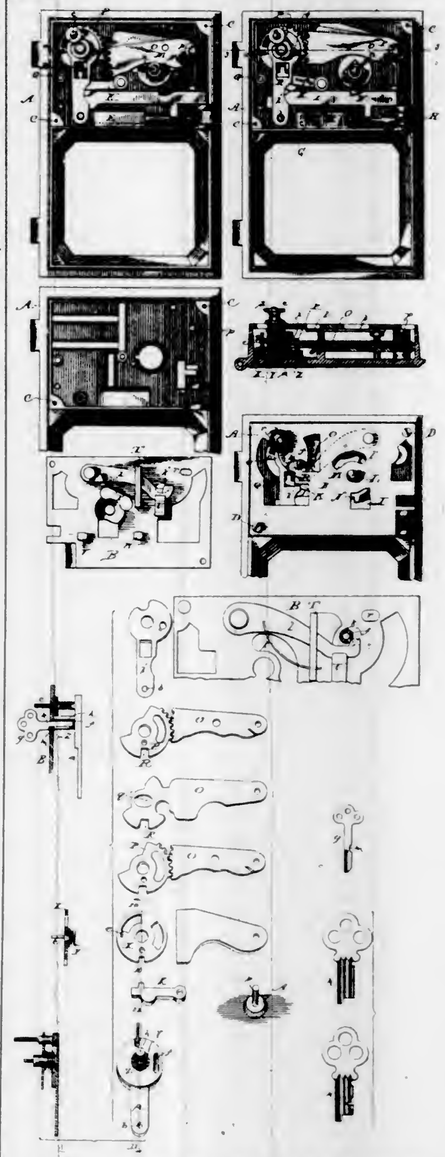
3. The combination of the support-piece B and supporter E, having inclines e' e^3 at its end, with the adjustable portion A fitted to the support-piece, substantially as shown and described.

REISSUES.

11,152. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Apr. 21, 1890. Serial No. 348,923. Original No. 403,706, dated May 21, 1889.

Claim.—1. In a changeable-combination key-lock having two-part tumblers, the combination, with a movable seat which supports one part of said tumblers, of an auxiliary key which disengages one part of the tumbler or tumblers from the other, and a cap-plate through which said key passes, whereby said key cannot be removed from the lock until said parts are in engagement, substantially as described.

2. In a changeable-combination key-lock having two-part tumblers, the combination of an auxiliary key with the gated parts of the tumblers and a spring-actuated carrier upon which said parts are mounted, whereby said parts, when separated from the spring-actuated parts, tend to move against said auxiliary key, acting as a stop until the gatings of said tumblers are brought in line, substantially as described.



3. The combination, with the circular parts of the tumblers, of a pivoted frame for supporting them, adapted to be swung to one side or the other, so as to engage and disengage the circular parts of the tumblers with the other parts, substantially as set forth.

4. The combination of the oscillating seat Z, the carrier, the circular parts of the tumblers, pivot-post *h*, the slotted key-post, the cap-plate, the thumb-nut *d*, and the spring-latch *l*, substantially as set forth.

5. The combination, with the slotted key-post, of the cap-plate

provided with the slots *k k* and the key *g*, tapered at its end, and notch *m*, substantially as set forth.

6. In a changeable-combination key-lock, the combination of a main locking-key and a rotary key-hub with tumblers made in separable parts and connected together at all times except when the combination is to be changed, substantially as set forth.

7. In a changeable-combination key-lock, the combination, with separably-connected tumblers, one set of which is mounted on a pivoted frame, of the lock-bolt, the slide I, and the key-hub L, which, when the key has set the tumblers and the rotation of the key-hub is continued, will engage with the slide I and cause the fence to enter the gatings of the tumblers and retract the lock-bolt without separating the tumblers, substantially as set forth.

8. In a changeable-combination key-lock with separably connected tumblers, the combination of the locking device for keeping the tumblers in contact and the auxiliary key for releasing them when the lock is to be set by a different main key, substantially as set forth.

9. In a changeable-combination key-lock provided with separably-connected tumblers which are always connected except when the combination is to be changed, the combination of a fence and a lock bolt or latch which can be retracted independently of the tumblers without the tumbler-fence entering the gating, and which can be withdrawn by the key when the gatings become properly set for the tumbler-fence to enter them, substantially as set forth.

10. In a changeable-combination key-lock provided with separably-connected tumblers which are always connected together except when the combination is to be changed, a section of tumblers, and means independent of the motion of the operating-key for automatically bringing their fence-gatings into alignment to be connected with the other section of tumblers, substantially as set forth.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE SAWN.

Decided March 9, 1891.

1. REDUNDANCY OF CLAIMS.

The question of redundancy or mutplilicity of claims is one of form and not one involving the merits; hence the proper remedy is by petition to the Commissioner.

2. SAME.

The matter to be determined is not whether the several claims standing alone would be patentable as against the public. It is conceivable that each one of the claims standing alone would be an entirely valid claim, and yet that sound principle would require that not all of them should be allowed.

3. DIVISION—FOLDING-MACHINE AND ADDRESSING ATTACHMENT.

A device which has obtained a distinct status in the industries and trade should be the subject-matter of a separate application.

ON petition.

MACHINES FOR FOLDING AND MAILING NEWSPAPERS.

Application of Joseph E. Sawn filed August 5, 1890, No. 361,040.

Messrs. C. A. Snow & Co. for the applicant.

MITCHELL, *Commissioner:*

This is a petition from the action of the Primary Examiner holding (1) that claims 4, 5, 6, 7, and 10 are alike and that but one of them can be allowed, and (2) that claims 12, 13, and 14 are for an invention which should be made the subject-matter of a separate application.

The petitioner prays that the Examiner's decision as to the points involved in the petition be overruled. In his answer the Examiner states that the applicant has, as to the first clause of the petition, mistaken his remedy; that the objection based upon redundancy of claims is a matter for appeal to the Examiners-in-Chief.

The order of the Commissioner transmitting petitions for answer requires that the—

answer shall exhibit the reasons, if any, why the request of the petition hereto attached should not be granted.

While it is proper to call attention to the want of jurisdiction of the Commissioner under the rules in cases where the appeal lies to the Examiners-in-Chief, the answer should proceed further and set forth the reasons for the Examiner's action. It is for the Commissioner to decide whether he will entertain the petition in whole or in part, and the answer should be sufficiently comprehensive to enable him to reach a satisfactory conclusion whether or not he agrees with the Examiner upon the question of jurisdiction. Of course an exception may be recognized where a long-established practice of the Office has placed the question of jurisdiction entirely beyond the debatable line.

In support of the position that the appeal should be to the Examiners-in-Chief *ex parte Rodwell* (44 MS. Dec., 149) is cited. The practice generally does not seem to be in accord with the decision mentioned. (See *ex parte Perry and Lay*, C. D., 1869, 3; *ex parte Hahn*, C. D., 1875, 109; *ex parte Shippen*, C. D., 1875, 126; *ex parte Woodruff*, C. D., 1880, 90.) In the recent case of *ex parte Johnson* (54 O. G., 505) the present Commissioner, after affirming the doctrine of *ex parte Woodruff, supra*, said:

It is not intended herein to express an opinion upon the question whether the Examiner's conclusion that two or more claims are alike should take expression in the form of an objection or in the form of a rejection.

That precise question, however, arises in the present case, and it would seem from the standpoint of principle that the better practice is the one which recognizes the question as one of form. The matter to be determined is not whether the several claims standing alone would be patentable as against the public. It is certainly conceivable that each one of the claims standing alone would be an entirely valid claim, and yet that sound principle would require that not all of them should be allowed. As was said in *ex parte Woodruff, supra*, there is no justification for setting out the invention in a series of claims which all mean the same thing. The better practice would seem to be for the Examiner to state definitely which of the claims he regards as coming within the objection of redundancy, and to give the applicant his election to say which one of the claims so related should be prosecuted. Thereupon the applicant, if dissatisfied, should petition the Commissioner for relief.

In the present case I find that claim 4 contains four elements; that claim 5 contains the same elements as claim 4, with two additional elements; that claim 6 contains the same elements as claim 5, with one additional element; that claim 7 contains the same elements as claim 6, with still another additional element, and that claim 10 contains six elements, omitting one element contained in each of the other claims and one other element contained in claims 6 and 7. I must therefore overrule the objection based upon alleged redundancy or multiplicity of claims.

The second branch of the petition is for relief from the requirement of division. The invention has for its object to fold and address newspapers, and it consists of a folding-machine with an addressing attachment. The addressing attachment is arranged to present a freshly cut and gummed label to be pressed against the folded paper. The Examiner does not take the

position that there is no combination between certain elements of the machine and certain elements of the attachment. Indeed, certain of the claims are drawn with reference to covering such combinations. He holds, however, that claims 12, 13, and 14, relating to the subject-matter of the attachment only, belong to a distinct class of inventions, so recognized by the trade. No claim to the contrary is made by the applicant. It is elementary that the claims pertaining exclusively to the addressing-machine, inasmuch as they relate to a device which has obtained a distinct status in the industries and trade, should be the subject-matter of a separate application.

The first objection of the Examiner is overruled. The second objection is sustained.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

WATERMAN *v.* MACKENZIE *et al.*

Decided February 2, 1891.

1. ASSIGNMENT.

An assignment is an instrument in writing, conveying either (1) the whole patent, comprising the exclusive right to make, use, and vend the invention throughout the United States; or (2) an undivided part or share of that exclusive right; or (3) the exclusive right under the patent within and throughout a specified part of the United States.

2. SAME—TITLE—RIGHT TO SUE.

Such an instrument vests in the assignee a title in so much of the patent itself, with a right to sue infringers, alone in the first and third cases and jointly with the assignor in the second.

3. LICENSE—RIGHT TO SUE.

Any other transfer is a mere license, giving the licensee no title in the patent and no right to sue at law in his own name for an infringement.

4. SAME—SAME.

A grant, by the owner of a patent, of the sole and exclusive right and license to manufacture and sell the patented article throughout the United States does not include the right to use such patented article, at least if manufactured by third persons, and is therefore a mere license.

5. MORTGAGE.

The recording of a mortgage of a patent right in the Patent Office is equivalent to a delivery of possession and makes the title of the mortgagee complete toward all other persons, as well as against the mortgagor; and the mortgagee is the only person who can thereafter sue for an infringement of the patent by third persons.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

STATEMENT OF THE CASE.

This was a bill in equity, filed April 24, 1886, against James A. Mackenzie and Samuel R. Murphy, by Lewis E. Waterman, claiming to be the sole and exclusive owner of a patent granted to him by the United States on February 12, 1884, for an improvement in fountain-pens, and of the invention thereby secured; alleging an infringement thereof by the defendants, and praying for an injunction, a discovery, an account of profits, and damages. The defendants filed a plea, which alleged that the plaintiff, at the time of filing the bill, was not possessed, either of the patent or of an exclusive right under it to the whole or any specified part of the United States; for, that certain assignments in writing under seal of the patent and invention from the plaintiff to Sarah E. Waterman, his wife, from her to the firm of Asa L. Shipman's Sons, and from that firm to Asa L. Shipman, were made by the parties thereto, and were recorded in the Patent Office, at the dates stated below, and that Shipman continued to be possessed of the patent and invention until and including the time of the filing of the bill. The plaintiff filed a general replication. At the hearing on the issue thus joined, the following instruments, executed in New York by and between citizens of that State, were duly proved: (1) An assignment, made February 13, 1884, and recorded March 27, 1884, from Lewis E. Waterman, the plaintiff, to Sarah E. Waterman, his wife, of the whole patent and invention. (2) A "license agreement," made between Mr. and Mrs. Waterman on November 20, 1884, and never recorded, by which she granted to him "the sole and exclusive right and license to manufacture and sell fountain-pen holders, containing the said patented improvement throughout the United States," and he agreed to pay her "the sum of twenty-five cents as a license fee upon every fountain-pen holder so manufactured by him." (3) An assignment, made November 25, 1884, and recorded November 29, 1884, from Mrs. Waterman to the firm of Asa L. Shipman's Sons, of the whole patent and invention, expressed to be made in consideration of the payment of the sum of $6,500, and containing this provision:

> The consideration of this assignment is that, whereas the said Lewis E. Waterman and the said Sarah E. Waterman have on this 25th day of November, 1884, made a joint note of hand for the sum of $6,500, payable to the said Asa L. Shipman's Sons three years from this date, with interest at six per cent.; now, if the said Lewis E. Waterman and myself, or either of us, shall well and truly pay the said note, according to its tenor, then this assignment and transfer shall be null and void, otherwise to be and remain in full force and effect.

It also contained covenants of full right to assign, and against all incumbrances—

> except a license to the said Lewis E. Waterman to manufacture and sell pens

under the patent, being the license above mentioned. (4) An assignment, made November 25, 1884, in consideration of the payment of the sum of $6,500, and recorded November 29, 1884, from the firm of Asa L. Shipman's Sons to Asa L. Shipman, of all the right and title acquired by the assignment made to them by Mrs. Waterman, as well as the promissory note thereby secured. (5) An assignment, made April 16, 1886, and recorded April 22, 1886, from Mrs. Waterman to the plaintiff of all her right, title, and interest in the patent and invention, and all her claims or causes of action for the infringement of the patent, and rights to damages or profits by reason thereof. The circuit court allowed the plea, for reasons stated in its opinion, as follows:

> The transfer to Asa L. Shipman is in language so emphatic and exact that there is little opportunity for misapprehension. It matters not what the instrument is called. It matters not that it may be defeated by the payment of $6,500 on November 25, 1887. The fact remains that by virtue of this assignment or mortgage the title to the patent was on April 24, 1886, when this action was commenced, outstanding in Asa L. Shipman. If it was not absolute, it was a present, existing title, defeasible upon a condition subsequent. On April 16, therefore, when Sarah E. Waterman assigned all her right, title, and interest to the complainant, she had nothing to assign which could at all change the legal *status* of the parties. She could no vest a clear title to the patent in the complainant, for the obvious reason that she had previously disposed of it, and did not own it. The agreement of November 20, 1884, being a license and nothing more, does not enable the complainant to maintain this action without joining the holder of the legal title. The suggestion that, irrespectively of the Shipman assignment, the complainant is entitled to prosecute for infringements alleged to have occurred between February 12 and November 25, 1884, is equally unavailing; for, assuming such a right of action to exist, it could only be maintained on the law and not on the equity side of the court. The plea is allowed. The complainant may amend, upon payment of costs, within ten days. (39 Fed. Rep., 316.)

The plaintiff not having filed an amended bill within the ten days, a final decree was entered dismissing his bill, with costs, and he appealed to this Court.

Mr. Walter S. Logan for the appellant.

Mr. Justice GRAY, after stating the facts as above, delivered the opinion of the Court.

Every patent issued under the laws of the United States for an invention or discovery contains "a grant to the patentee, his heirs and assigns, for the term of seventeen years, of the exclusive right to make, use, and vend the invention or discovery throughout the United States and the territories thereof." (Rev. St., sec. 4884.) The monopoly thus granted is one entire thing, and cannot be divided into parts, except as authorized by those laws.

The patentee or his assigns may, by instrument in writing, assign, grant, and convey, either (1) the whole patent, comprising the exclusive right to make, use, and vend the invention throughout the United States; or (2) an undivided part or share of that exclusive right; or (3) the exclusive right under the patent within and throughout a specified part of the United States. (Id., sec. 4898.) A transfer of either of these three kinds of interests is an assignment, properly speaking, and vests in the assignee a title in so much of the patent itself, with a right to sue infringers. In the second case, jointly with the assignor. In the first and third cases, in the name of the assignee alone. Any assignment or transfer, short of one of these, is a mere license, giving the licensee no title in the patent, and no right to sue at law in his own name for an infringement. (Id., sec. 4919; *Gayler* v. *Wilder*, 10 How., 477, 494, 495; *Moore* v. *Marsh*, 7 Wall., 515.) In equity, as at law, when the transfer amounts to a license only, the title remains in the owner of the patent; and suit must be brought in his name, and never in the name of the licensee alone unless that is necessary to prevent an absolute failure of justice, as where the patentee is the infringer, and cannot sue himself. Any rights of the licensee must be enforced through or in the name of the owner of the patent, and perhaps, if necessary to protect the rights of all parties, joining the licensee with him as a plaintiff. (Rev. St., sec. 4921; *Littlefield* v. *Perry*, 21 Wall., 205, 223; *Paper Bag Cases*, 105 U. S., 766, 771; *Birdsell* v. *Shaliol*, 112 U. S., 485–487, 5 Sup. Ct. Rep., 244; and see *Renard* v. *Levinstein*, 2 Hem. & M., 628.) Whether a transfer of a particular right or interest under a patent is an assignment or a license does not depend upon the name by which it calls itself, but upon the legal effect of its provisions. For instance, a grant of an exclusive right to make, use, and vend two patented machines within a certain district is an assignment, and gives the grantee the right to sue in his own name for an infringement within the district, because the right, although limited to making, using, and vending two machines, excludes all other persons, even the patentee, from making, using, or vending like machines within the district. (*Wilson* v. *Rousseau*, 4 How., 646, 686.) On the other hand, the grant of an exclusive right under the patent within a certain district, which does not include the right to make, and the right to use, and the right to sell, is not a grant of a title in the whole patent-right within the district, and is therefore only a license. Such, for instance, is a grant of "the full and exclusive right to make and vend" within a certain district, reserving to the grantor the right to make within the district, to be sold outside of it. (*Gayler* v. *Wilder*, above cited.) So is a grant of "the exclusive right to make and use," but not to sell, patented machines within a certain district. (*Mitchell* v. *Hawley*, 16 Wall., 544.) So is an instrument granting "the sole right and privilege of manufacturing and selling" patented articles, and not expressly authorizing their use, because, though this might carry by implication the right to use articles made under the patent by the licensee, it certainly would not authorize him to use such articles made by others. (*Hayward* v. *Andrews*, 106 U. S., 672, 1 Sup. Ct. Rep., 544. See, also, *Oliver* v. *Chemical Works*, 109 U. S., 75, 3 Sup. Ct. Rep., 61.) An assignment of the entire patent, or of an undivided part thereof, or of the exclusive right under the patent for a limited territory, may be either absolute or by way of mortgage, and liable to be defeated by non-performance of a condition subsequent, as clearly appears in the provision of the statute, that—

> an assignment, grant, or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration without notice, unless it is recorded in the Patent Office within three months from the date thereof. (Rev. St., sec. 4898.)

Before proceeding to consider the nature and effect of the various instruments given in evidence at the hearing in the circuit court, it is fit to observe that, (as was assumed in the argument for the plaintiff,) by the law of the State of New York, where all the instruments were made and all the parties to them resided, husband and wife are authorized to make conveyances and contracts of and concerning personal property to and with each other, in the same manner and to the same effect as if they were strangers. (*Armitage* v. *Mace*, 96 N. Y., 538; *Adams* v. *Adams*, 91 N. Y., 381.)

By the deed of assignment of February 13, 1884, the plaintiff assigned to Mrs. Waterman the entire patent-right. That assignment vested in her the whole title in the patent, and the exclusive right to sue, either at law or in equity, for its subsequent infringement.

The next instrument in order of date is the "license agreement" between them of November 20, 1884, by which she granted to him—

> the sole and exclusive right and license to manufacture and sell fountain pen-holders containing the said patented improvement throughout the United States.

This did not include the right to use such pen-holders, at least if manufactured by third persons, and was therefore a mere license, and not an assignment of any title, and did not give the licensee the right to sue alone, at law or in equity, for an infringement of the patent. (*Gayler* v. *Wilder*, *Paper Bag Cases*, and *Hayward* v. *Andrews*, above cited.) The plaintiff not having amended his bill, pursuant to the leave granted by the circuit court, by joining the licensor as a plaintiff, this point requires no further notice. Nor is it doubted that the circuit court rightly held that, if the plaintiff was entitled to recover only for infringements occurring between February 12 and November 25, 1884, his remedy was at law. (*Root* v. *Railway Co.*, 105 U. S., 189.)

The remaining question in the case, distinctly presented by the plea, and adjudged by the circuit court, is of the effect of the deed of November 25, 1884, by which Mrs. Waterman assigned to the firm of Asa L. Shipman's Sons all her right, title, and interest in the invention and the patent, with an express provision that the assignment should be null and void if she and her husband, or either of them, should pay at maturity a certain promissory note of the same

date made by them, and payable to the grantees. This instrument, being a conveyance made to secure the payment of a debt, upon condition that it should be avoided by the subsequent payment of that debt at a time fixed, was a mortgage, in apt terms, and in legal effect. (*Conard* v. *Insurance Co.*, 1 Pet., 386, 446, 447.) On the same day, the mortgagees assigned by deed to Asa L. Shipman all their title under the mortgage, and the promissory note thereby secured. Both assignments were recorded in the Patent Office within three months after their date, and the title thereby acquired by Shipman was outstanding in him at the times of the subsequent assignment of the patent-right by Mrs. Waterman to the plaintiff, and of the filing of this bill. This last assignment was therefore subject to the mortgage, though not in terms so expressed. By a mortgage of personal property, differing in this respect from a pledge, it is not merely the possession or a special property that passes; but, both at law and in equity, the whole title is transferred to the mortgagee, as security for the debt, subject only to be defeated by performance of the condition, or by redemption on bill in equity within a reasonable time, and the right of possession, when there is no express stipulation to the contrary, goes with the right of property. (Story, Bailm., sec. 287; 2 Story, Eq. Jur., secs. 1030, 1031; *Conard* v. *Insurance Co.*, 1 Pet., 386, 441; *Casey* v. *Cavaroc*, 96 U. S., 467, 477; *Boise* v. *Knox*, 10 Metc., Mass., 40, 43; *Brackett* v. *Bullard*, 12 Metc., Mass., 308, 310.) A mortgage of real estate has gradually, partly by the adoption of rules of equity in courts of common law, and partly by express provisions of statute, come to be more and more considered as a mere security for the debt, creating a lien or incumbrance only, and leaving the title in the mortgagor, subject to alienation, levy on execution, dower, and other incidents of a legal estate; but the rules upon the subject vary in different States, and a mortgage is everywhere considered as passing the title in the land, so far as may be necessary for the protection of the mortgagee, and to give him the full benefit of his security. (*Stelle* v. *Carroll*, 12 Pet., 201; *Van Ness* v. *Hyatt*, 13 Pet., 294; *Hutchins* v. *King*, 1 Wall., 53, 58; *Probst* v. *Brock*, 10 Wall., 519, 529, 530.) After the mortgagee has taken possession, the mortgagor has no power to lease, and the mortgagee is entitled to have, and is bound to account for, the accruing rents and profits, damages against trespassers, timber cut on the premises, and growing crops. (*Keech* v. *Hall*, 1 Doug., 21; *Turner* v. *Coal Co.*, 5 Exch., 932; *Dawson* v. *Johnson*, 1 Fost. & F., 656; *Fairclough* v. *Marshall*, 4 Exch. Div., 37, 47, 49; *Scruggs* v. *Railroad Co.*, 108 U. S., 368, 375, 2 Sup. Ct. Rep., 780; *Teal* v. *Walker*, 111 U. S., 242, 4 Sup. Ct. Rep., 420; *Hutchins* v. *King*, above cited; *Gore* v. *Jenness*, 19 Me., 53; *Bagnall* v. *Villar*, 12 Ch. Div., 812.) Even against a mortgagor in possession, the mortgagee may obtain an injunction or damages for such cutting of timber as tends to impair the value of the mortgage security, or as is not allowed by good husbandry or by express or implied license from the mortgagee. (*Robinson* v. *Litton*, 3 Atk., 209, 210; *Farrant* v. *Lovel*, Id., 723; *Hampton* v. *Hodges*, 8 Ves., 105; *Humphreys* v. *Harrison*, 1 Jac. & W., 581; *King* v. *Smith*, 2 Hare, 239; *Kountze* v. *Hotel Co.*, 107 U. S., 378, 395, 2 Sup. Ct. Rep., 911; *Verner* v. *Betz*, 46 N. J. Eq., 256, 267, 268; *Page* v. *Robinson*, 10 Cush., 99; *Searle* v. *Sawyer*, 127 Mass., 491; *Waterman* v. *Matteson*, 4 R. I., 539.) A mortgagee of a leasehold or other personal property has the like right to an injunction to stay waste by the mortgagor. (*Farrant* v. *Lovel*, above cited; *Brown* v. *Stewart*, 1 Md. Ch., 87; *Parsons* v. *Hughes*, 12 Md., 1.) The right of action against a stranger for an injury to goods mortgaged, generally, though not always, depends upon the right of possession. When the right of possession is in the mortgagor, he is usually the proper party to sue. (*Sellick* v. *Smith*, 11 Moore, C. P., 459, 475; *Brierly* v. *Kendall*, 17 Q. B., 937; *Luse* v. *Jones*, 39 N. J. Law, 707; *Copp* v. *Williams*, 135 Mass., 401.) But even a mortgagee out of possession may sometimes maintain an action for an injury to his interest. (*Gooding* v. *Shea*, 103 Mass., 360; *Manning* v. *Monaghan*, 23 N. Y., 539, and 28 N. Y., 585; *Woodside* v. *Adams*, 40 N. J. Law, 417, 421, 422.) And when the right of possession, as well as the general right of property, is in the mortgage, the suit must be brought by the mortgagee, and not by the mortgagor or any one claiming under a subsequent conveyance from him. (*Conard* v. *Insurance Co.*, 1 Pet., 386; *Wood* v. *Weimer*, 104 U. S., 786; *Clapp* v. *Campbell*, 124 Mass., 50; *Watson* v. *Macquire*, 5 C. B., 836, 844.) When it is provided by statute that a mortgage of personal property shall not be valid against third persons, unless the mortgage is recorded, a recording of the mortgage is a substitute for, and (unless in case of actual fraud) equivalent to, a delivery of possession, and makes the title and the possession of the mortgagee good against all the world. (*Aldrich* v. *Ætna Co.*, 8 Wall., 491, 497; *Robinson* v. *Elliott*, 22 Wall., 513, 521; *Bullock* v. *Williams*, 16 Pick., 33; *Coles* v. *Clark*, 3 Cush., 399, 401.) A patent-right is incorporeal property, not susceptible of actual delivery or possession: and the recording of a mortgage thereof in the Patent Office, in accordance with the act of Congress, is equivalent to a delivery of possession, and makes the title of the mortgagee complete toward all other persons, as well as against the mortgagor. The right conferred by Letters Patent for an invention is limited to a term of years, and a large part of its value consists in the profits derived from royalties and license fees.

In analogy to the rules governing mortgages of lands and of chattels, and with even stronger reason, the assignee of a patent by a mortgage duly recorded, whose security is constantly wasting by the lapse of time, must be held (unless otherwise provided in the mortgage) entitled to grant licenses, to receive license fees and royalties, and to have an account of profits or an award of damages against infringers. There can be no doubt that he is "the party interested, either as patentee, assignee, or grantee," and as such entitled to maintain an action at law to recover damages for an infringement; and it cannot have been the intention of Congress that a suit in equity against an infringer to obtain an injunction and an account of profits, in which the court is authorized to award damages, when necessary to fully compensate the plaintiff, and has the same power to treble the damages as in an action at law, should not be brought by the same person. (Rev. St., secs. 4919, 492; *Root* v. *Railway Co.*, 105 U. S., 189, 212.) The necessary conclusion appears to us to be that Shipman, being the present owner of the whole title in the patent under a mortgage duly executed and recorded, was the person, and the only person, entitled to maintain such a bill as this; and that the plea, therefore, was rightly adjudged good. In the light of our legislation and decisions, no weight can be given to the case of *Van Gelder* v. *Society*, (44 Ch. Div., 374,) in which, upon pleadings and facts similar to those now before us, the mortgagor of a patent was treated as a mortgagor in possession, and was allowed to maintain a suit for infringement, under the provisions of the English judicature act of 1873 and patent act of 1883. (St. 36 & 37 Vict., c. 66, sec. 25; 46 & 47 Vict., c. 57, secs. 23, 46, 87.) Whether, in a suit brought by the mortgagee, the court, at the suggestion of the mortgagor, or of the mortgagee, or of the defendants, might, in its discretion, and for the purpose of preventing multiplicity of suits or miscarriage of justice, permit or order the mortgagor to be joined, either as a plaintiff or as a defendant, need not be considered, because no such question is presented by this record.

Decree affirmed.

Mr. Justice Brown, not having been a member of the Court when this case was argued, took no part in its decision.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 12. TUESDAY, MARCH 24, 1891. PRICE---$5 per year.

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Patent Centennial.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 21, 1891.

The Commissioner of Patents in his report to Congress for the year ending December 31, 1890, called attention to the movement being made for the celebration at Washington of the Beginning of the Second Century of the American Patent System.

This movement has progressed so successfully that a celebration worthy of the great occasion and having the sanction and co-operation of the Government is now assured.

It is therefore directed that notice be given by the publication in the OFFICIAL GAZETTE of the United States Patent Office that such celebration will take place at Washington on the 8th, 9th, and 10th days of April, 1891, the last date being the anniversary of the signing by President Washington of the first American patent law, and that the co-operation of all inventors and persons interested in the protection of inventions be cordially and earnestly invited.

C. E. MITCHELL,
Commissioner.

Price of Certified Copies of Specifications and Drawings.

(ORDER NO. 675.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 18, 1891.

In the act approved March 3, 1891, making appropriations for the executive, legislative, and judicial expenses of the Government for the year ending June 30, 1892, the following provision appears, in connection with the appropriation for photolithographing or otherwise producing copies of drawings or weekly issues of patents:

And certified copies of such drawings and specifications may be furnished by the Commissioner of Patents to persons applying therefor upon payment of the present rates for uncertified copies, and twenty-five cents additional for each certification.

It is hereby directed that under this provision the fee for certified copies of patents will be as follows:

Grant	50
Specifications and drawings (not written)	25
Certificate	25
Total	$1 00

C. E. MITCHELL,
Commissioner.

Notice.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., December 23, 1890.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

C. E. MITCHELL,
Commissioner.

Issue of March 24, 1891.

Patents	476	No. 448,623 to No. 449,098, inclusive.
Designs	49	No. 20,591 to No. 20,639, inclusive.
Trade-Marks	31	No. 19,200 to No. 19,230, inclusive.
Labels	4	No. 6,477 to No. 6,480, inclusive.
Reissues	2	No. 11,153 to No. 11,154, inclusive.
Total issue	562	

To citizens of the United States: Patents and Designs—478; Trade-Marks and Labels—30.

To citizens of foreign countries: Patents and Designs—47; Trade-Marks and Labels—5

DESIGNS.

20,591.—HANDLE FOR SPOONS &c.—*William B. Durgin*, Concord, N. H. Application filed February 18, 1891. Serial No. 381,972. Term of patent 7 years.

20,592.—CARPET.—*Robert F. Doherty*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Application filed February 7, 1891. Serial No. 380,648. Term of patent 3½ years.

20,593.—CARPET.—*James L. Folsom*, Brooklyn, N. Y., assignor to *The Hartford Carpet Company*, Hartford, Conn. Application filed January 12, 1891. Serial No. 377,557. Term of patent 3½ years.

20,594 and 20,595.—HANDLE FOR SPOONS, &c.—*Louis R. Horton*, Providence, R. I., assignor to *J. B. & S. M. Knowles*, same place. Applications filed February 5, 1891. Serial Nos. 380,359 and 380,360. Term of patents 7 years.

20,596.—CARPET.—*John B. Moffat*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Application filed February 7, 1891. Serial No. 380,652. Term of patent 3½ years.

20,597 to 20,607, inclusive.—CARPET.—*Henry W. Parton*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Applications filed February 7, 1891. Serial Nos. 380,664 to 380,674, inclusive. Term of patents 3½ years.

20,608 to 20,612, inclusive.—CARPET.—*Henry W. Parton*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Applications filed February 16, 1891. Serial Nos. 381,713 to 381,717, inclusive. Term of patents 3½ years.

20,613 to 20,618, inclusive.—CARPET.—*Paul Pigmot*, of Hastings, assignor to *The Alex. Smith & Sons Carpet Company*, Yonkers, N. Y. Applications filed February 7, 1891. Serial Nos. 380,658 to 380,663, inclusive. Term of patents 3½ years.

20,619 to 20,622, inclusive.—CARPET.—*George J. Stengel*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Applications filed February 7, 1891. Serial Nos. 380,653 to 380,656, inclusive. Term of patents 3½ years.

20,623 and 20,624.—CARPET.—*George J. Stengel*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Applications filed February 16, 1891. Serial Nos. 381,711 and 381,712. Term of patents 3½ years.

20,625.—HANDLE FOR SPOONS, &c.—*Frederick H. Sloan*, Hartford, Conn. Application filed January 22, 1891. Serial No. 378,702. Term of patent 7 years.

20,626.—CARPET.—*Walter Thomas*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Application filed February 7, 1891. Serial No. 380,650. Term of patent 3½ years.

20,627 and 20,628.—CARPET.—*Walter Thomas*, Yonkers, N. Y., assignor to *The Alex. Smith & Sons Carpet Company*, same place. Applications filed February 16, 1891. Serial Nos. 381,707 and 381,708. Term of patents 3½ years.

20,629.—BOTTLE.—*Horace Coleman, Jr.*, Ellsworth, Kans. Application filed February 18, 1891. Serial No. 381,971. Term of patent 7 years.

20,630.—PLATE, &c. *Charles Ed. Haviland*, Limoges, France. Application filed February 24, 1891. Serial No. 382,635. Term of patent 14 years.

20,631 and 20,632.—DISH.—*Charles Ed. Haviland*, Limoges, France. Applications filed February 24, 1891. Serial Nos. 382,636 and 382,637. Term of patents 14 years.

20,633.—DISH.—*Charles Edward Haviland*, Limoges, France. Application filed December 26, 1889. Serial No. 335,630. Term of patent 14 years. Patented in France July 11, 1889, No. 270.

20,634.—CUFF.—*Fredrique E. Lewis*, Worcester, Mass., assignor to *Wood & Lewis*, Troy, N. Y. Application filed February 25, 1891. Serial No. 382,825. Term of patent 3½ years.

20,635.—ROOFING TILE. *George H. Babcock*, Plainfield, N. J. Application filed October 28, 1890. Serial No. 369,619. Term of patent 14 years.

20,636.—SPOON, &c.—*Charles Osborne*, New York, N. Y., assignor to *The Whiting Manufacturing Company*, same place. Application filed December 26, 1890. Serial No. 375,905. Term of patent 3½ years.

20,637.—CURTAIN OR PORTIÈRE.—*Adam Markgraf*, Eden, Pa., assignor to *The Eden Manufacturing Company*, same place. Application filed February 16, 1891. Serial No. 381,705. Term of patent 3½ years.

20,638.—FLOWER-FRAME.—*Nicholas Steffens*, New York, N. Y. Application filed February 5, 1891. Serial No. 380,361. Term of patent 7 years.

20,639.—CASING FOR OIL-CANS.—*Andrew J. Duncan*, Youngstown, Ohio. Application filed October 9, 1890. Serial No. 367,596. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,101 and upward are registered under the act of March 3, 1881.]

19,200.—IMITATION DIAMOND JEWELRY.—*Bernard E. Arons*, Pittsburg, Pa. Application filed February 18, 1891. Used since December, 1888.
"The word 'VOLTAIC.'"

19,201.—REMEDY FOR RHEUMATISM, NEURALGIA, AND SIMILAR AILMENTS.—*Reuben H. Andrews*, Washington, D. C. Application filed February 5, 1891. Used since January 1, 1875.
"The word 'SPEKSLIKE.'"

19,202.—REMEDY FOR THE CURE OF STOMACH, BLOOD, LIVER, AND KIDNEY TROUBLES.—*Reuben H. Andrews*, Washington, D. C. Application filed February 5, 1891. Used since January 1, 1875.
"The words 'TINCTURE OF LIFE.'"

19,203. WATCH-CASES.—*Brooklyn Watch Case Company*, Brooklyn, N. Y. Application filed April 8, 1886. Used since February, 1886.
"The word 'WINDSOR.'"

19,204.—REMEDY FOR CONSTIPATION.—*Emma Angeline Derby*, Boston, Mass. Application filed August 11, 1890. Used since November 10, 1888.
"The word 'STARTERS.'"

19,205.—GAMES, PUZZLES, AND TOYS.—*William Robert Graham*, Everton, England. Application filed February 20, 1891. Used since October 21, 1890.
"The words 'THE CHRISTOPHER COLUMBUS.'"

19,206. PHOSPHATE FOR USE IN MANUFACTURING SUGAR.—*Provident Chemical Works*, St. Louis, Mo., and New York, N. Y. Application filed January 22, 1891. Used since June, 1890.
"The word 'CLARIPHOS.'"

19,207.—MALT LIQUORS.—*Alfred M. Rickerby*, Brooklyn, N. Y. Application filed February 19, 1891. Used since February 1, 1891.
"The words 'BLACK AND TAN.'"

19,208.—MALT LIQUORS.—*Alfred M. Rickerby*, Brooklyn, N. Y. Application filed February 19, 1891. Used since January 10, 1891.
"The letters and character 'B & T.'"

19,209.—SHIRTS, DRAWERS, PANTALOONS, OVERALLS, JERSEYS, SUSPENDERS, AND NECKTIES.—*Leon B. Smith*, Houston, Tex. Application filed January 24, 1891. Used since 1888.
"The representation of an anchor bearing two crossed cannon."

19,210.—CORN-SALVE.—*Noel W. Stiles*, Boston, Mass. Application filed February 10, 1891. Used since October, 1890.
"The words '24-HOUR CORN CURE' and the representation of a human foot, showing the picture of a little pig upon each toe."

19,211.—COTTON FABRICS.—*The Eddystone Manufacturing Company, Limited*, Philadelphia, Pa. Application filed November 21, 1890. Used since November, 1886.
"The word 'BRANDENBURG.'"

19,212.—FLOUR AND MEAL.—*Henry William Fry*, London, England. Application filed February 11, 1891. Used since September 8, 1880.
"The word 'CYCLONE.'"

19,213.—RIBBONS.—*Giron Frères*, St. Etienne, France. Application filed February 14, 1891. Used since 1858.
"The letters 'G. F.'"

19,214.—FLAVORING EXTRACTS FOR FOODS.—*John T. Gilbert*, Chicago, Ill. Application filed January 15, 1891. Used since May 1, 1890.
"The words 'THE OLD ESSENCE MAN'S' and the portrait of an old man."

19,215.—CUTLERY, INCLUDING SHEARS, SCISSORS, AND RAZORS.—*Northfield Knife Company*, Litchfield, Conn. Application filed February 14, 1891. Used since 1876.
"The letters 'U N X L D.'"

19,216.—BRAIDS.—*Henry Newman*, New York, N. Y. Application filed February 18, 1891. Used since December 15, 1890.
"The representation of a Chinese pagoda."

19,217.—REMEDY FOR THE BLOOD.—*J. Potter & Co.*, Clinton, Mass. Application filed January 9, 1891. Used since November, 1889.
"The words 'CHLOE'S SALT RHEUM CURE AND BLOOD PURIFIER' and the representation of a Grecian woman."

19,218.—CERTAIN NAMED REMEDIES.—*The Warren-Brown Company*, Chicago, Ill. Application filed February 7, 1891. Used since June 3, 1890.
"The word 'SANO.'"

19,219.—CERTAIN NAMED REMEDIES.—*The Warren-Brown Company*, Chicago, Ill. Application filed February 7, 1891. Used since June 3, 1890.
"The word 'VIAVI.'"

19,220.—BICYCLES, TRICYCLES, AND PARTS THEREOF.—*The Eagle Bicycle Manufacturing Company*, Stamford, Conn. Application filed February 25, 1891. Used since 1888.
"The word 'EAGLE.'"

19,221.—SPOONS, FORKS, AND ARTICLES KNOWN AS FLAT WARE.—*H. M. Hill & Co.*, Lynn, Mass. Application filed February 24, 1891. Used since February 16, 1891.
"The words 'DUNGEON ROCK.'"

19,222.—SPOONS, FORKS, AND ARTICLES KNOWN AS FLAT WARE.—*L. Kimball & Son*, Haverhill, Mass. Application filed February 14, 1891. Used since January 28, 1891.
"The representation of the statue or figure of the Hannah Duston monument."

19,223.—TOY TORPEDOES.—*Klueber Manufacturing Co.*, Brooklyn, N. Y. Application filed February 2, 1891. Used since January 15, 1891.
"The representation of a man in oriental costume at one end of a label, a special flag at the other end, and a monogram and the words 'JAPS TORPEDOES' between the two."

19,224.—WORSTED AND MUSLIN GARMENTS, UNDERWEAR, AND KNIT GOODS.—*Russ, Eveleth & Ingalls*, Boston, Mass., and New York, N. Y. Application filed February 9, 1891. Used since February, 1879.
"The representation of a stag's head."

19,225.—EMULSIONS AND LIKE PREPARATIONS.—*Scott & Bowne*, New York, N. Y. Application filed February 20, 1891. Used since November 1, 1878.
"The words 'SCOTT'S EMULSION' and a triangle above the same."

19,226.—VULCANIZABLE RUBBER FOR USE IN DENTISTRY.—*James, Walker & Co.*, London, England. Application filed February 5, 1891. Used since October 1, 1888.
"A circular disk inclosed in an annulus having a granulated or stippled surface."

19,227.—DISINFECTANT. *Alvarez Disinfectants Company*, Washington, D. C., and Chicago, Ill. Application filed February 18, 1891. Used since 1877.
"The word 'ALVAREZ' shown as an autograph."

19,228.—CEMENT. *Eastburn Lloyd*, Chicago, Ill. Application filed February 24, 1891. Used since March 1, 1890.
"The expression 'LLOYD'S POWER TRANSMITTER CEMENT.'"

19,229.—MUSTARD.—*Tode Bros.*, New York, N. Y. Application filed February 26, 1891. Used since January 1, 1884.
"The words 'I. SELLNERS DÜSSELDORFER WEIN-SENF.'"

19,230.—TIN AND TERNE PLATES.—*Joshua Williams & Co., Limited*, Neath, England. Application filed February 26, 1891. Used since 1872.
"The word 'CAMARET.'"

LABELS.

6,477.—Title: "THE OLD ESSENCE MAN'S EXTRACT OF LEMON."—*John T. Gilbert*, Chicago, Ill. Application filed January 15, 1891. (Trade-Mark Registered.)

6,478.—Title: "RINN'S CLEANSING COMPOUND."—*Joseph F. Rinn*, Chicago, Ill. Application filed December 26, 1890.

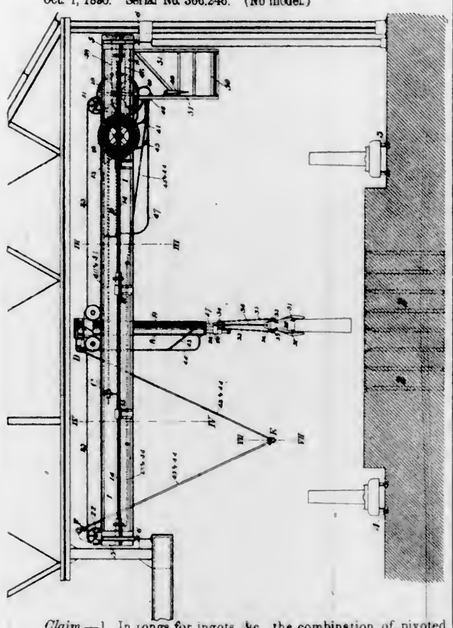
6,479.—Title: "MARIENBAD OBESITY PILLS."—*Burwell & Lacey*, Boston, Mass. Application filed February 18, 1891.

6,480.—Title: "SEAMLESS TUBE RUBBER HOSE."—*Cleveland Rubber Company*, Cleveland, Ohio. Application filed February 25, 1891.

PATENTS

GRANTED MARCH 24, 1891.

448,623. **MILL APPLIANCE.** HENRY AIKEN, Pittsburg, Pa. Filed Oct. 1, 1890. Serial No. 366,246. (No model.)



Claim.—1. In tongs for ingots, &c., the combination of pivoted upright tong-arms, a cross-head pivotally connecting the ends of said arms above their fulcra, and two sets of supporting devices, such as chains, connected with the cross-head and with the fulcra of the arms, respectively, substantially as and for the purposes described.

2. In tongs for ingots, &c., the combination of a frame, upright tong-arms pivoted to said frame, a cross-head and links connecting the arms, and two sets of supporting devices, such as chains, connected with the cross-head and with the fulcra of the arms, respectively, substantially as and for the purposes described.

3. The combination, with the tongs having gripping-jaws, of two sets of supporting devices, such as chains, connected with the tongs and adapted to open and close them, respectively, and two cylinders having plungers connected with said supporting devices, substantially as and for the purposes described.

4. The combination, with tongs, of two cylinders having plungers connected with the tongs to support the same and to operate the jaws, said plungers being provided with a loose connection, whereby the plungers are capable of moving in unison, and are capable, also, of independent motion limited in extent, substantially as and for the purposes described.

5. The combination, with tongs, of two cylinders having plungers connected with the tongs to support the same and to operate the jaws, and cross-heads fired, respectively, to one plunger and fitting loosely around the other, whereby the plungers are capable of moving in unison, and are capable, also, of independent motion limited in extent by the cross-heads, substantially as and for the purposes described.

6. The combination of the trolley and a motor for moving the trolley, said motor comprising two cylinders having piston-heads therein, a toothed bar connecting the piston-heads, a chain connected with the trolley, and driving mechanism connected with the chain and in gear with the toothed bar, substantially as and for the purposes described.

7. The combination of the traveling bridge and a motor mounted on the bridge, comprising two cylinders having piston-heads therein, and a toothed bar connecting the piston-heads and in gear with the driving mechanism of the bridge, substantially as and for the purposes described.

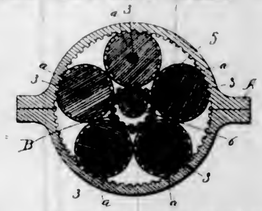
8. The combination of the traveling bridge mounted on wheels, a hydraulic cylinder on the bridge, and a rack-bar actuated by the cylinder and in gear with the bridge-wheels for driving the same, substantially as for the purposes described.

9. The combination, with a traveling hydraulic apparatus, such as a traveling crane, of water-pipes leading thereto, and a swinging crane supporting the pipes, substantially as and for the purposes described.

10. The combination, with a traveling hydraulic apparatus, such as a traveling crane, of jointed swinging supporting-arms connected therewith, and water-pipes carried by the arms having swiveled joints whose axes are coincident with the axes of the joints of said arms, substantially as and for the purposes described.

11. The combination, with a traveling hydraulic apparatus, such as a traveling crane, of water-pipes leading thereto, and a swinging crane supporting the pipes, said crane comprising a mast, a jib, and a jointed arm 38, substantially as and for the purposes described.

448,624. **JOURNAL-BEARING.** MARION A. ANDREWS, Syracuse, N. Y., assignor of one-half to James M. Andrews, same place. Filed June 19, 1890. Serial No. 356,019. (No model.)



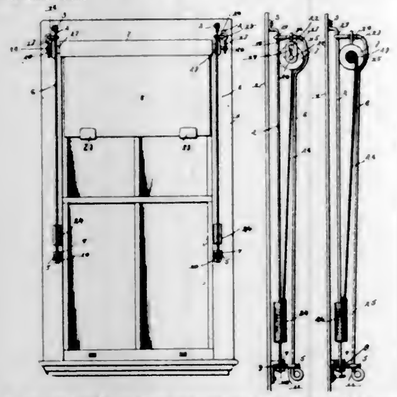
Claim.—1. A sectional journal-casing having an endless geared trackway upon its inner wall, a loose ring geared internally and externally, and geared idlers meshing with the geared trackway within the casing and with that upon the periphery of the ring, in combination with the axle and the gear thereon passing loosely through the ring and meshing with the gear upon its inner wall.

2. A sectional journal-casing having an endless geared trackway upon its inner wall, a loose ring geared internally and externally, geared idlers mounted upon separate arbors and meshing with the geared trackway within the casing and with that upon the periphery of the ring, and annular rings carrying the arbors of the idlers, in combination with the axle and the gear thereon passing loosely through the ring and meshing with the gear upon its inner wall.

448,625. **CURTAIN-FIXTURE.** FRED. H. BASSETT, Saranac Lake, N. Y. Filed July 31, 1890. Serial No. 360,497. (No model.)

Claim.—1. In a curtain-fixture, the combination of the guide-rod provided at the upper end with an eye, the operating-rod provided at its upper end with an eye or loop to receive the guide-rod and enable

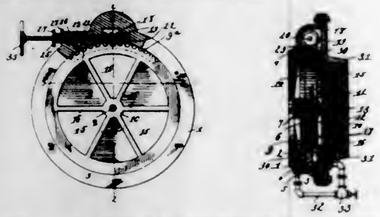
the operating-rod to move vertically thereon, said operating-rod being curved at 15 and provided with a bend 16, the curtain-roller suspended from the operating-rod and moving therewith, and suitable means for securing the ends of the operating and guide rods, substantially as described.



2. In a curtain-fixture, the combination of the guide-rod, the operating-rod provided at its upper end with an eye or loop to receive the guide-rod and being curved at 15, the curtain-roller suspended from the operating-rod, and the spring-catch provided at its inner end with a perforation adapted to receive the guide-rod and having the lower end of the latter secured to it and provided with spring-arms adapted to receive and retain the free end of the operating-rod, substantially as described.

3. In a curtain-fixture, the combination of the guide-rod, the operating-rod provided at its upper end with an eye or loop to receive the guide-rod and being curved at 15 and provided with the bend 16, the link-plate suspended from the bend 15 and having its upper portion arranged at right angles to its lower portion and provided with an opening, the lower portion being provided with a slot 19, the curtain-roller provided with a journal arranged to engage the slot, and suitable means for securing the lower ends of the operating and guide rods, substantially as described.

448,626. STEAM-VALVE. GILBERT S. BELL, Mobile, Ala. Filed Dec. 16, 1890. Serial No. 374,896. (No model.)



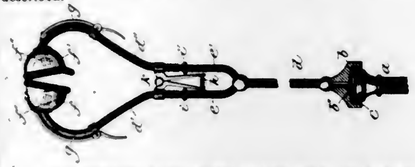
Claim.—1. In a device of the class described, the combination of the valve-casing 1, having annular flanges 2 3 and shoulders 4 and 5, the valve-seat mounted on the shoulder 4 and having pin 8, the valve mounted on said pin and having a bearing on the shoulder 5, and means for operating the valve, substantially as described.

2. In a device of the class described, the combination of the valve-casing 1, having annular flanges 2 3 and shoulders 4 5, the valve-seat mounted on the shoulder 4 and having pin 8, the valve mounted on said pin and having a bearing on the shoulder 5, the flange 30, bolted to the flange 3 and having a threaded rim, a valved pipe connecting the flange 30 with the casing in rear of the valve-seat, and means for operating the valve, substantially as set forth.

448,627. TELEPHONIC AUDITORY APPARATUS. GEORGE V. BENJAMIN, Ithaca, N. Y. Filed June 20, 1889. Serial No. 315,027. (No model.)

Claim.—1. In an instrument made to be used between the ear and a telephone, a cap of cartilaginous consistency and with a shape adapted to fit the head about the ear, in combination with a tube connecting the cap and the telephone, as described.

2. In a telephonic structure used between the ear and a telephone, the cap provided with a sound preventing and deadening material packed about the edges of the cap and excluding external sounds, as described.

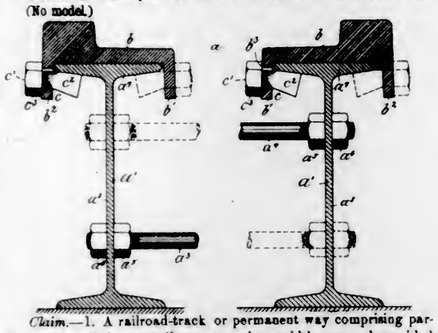


3. In a telephonic structure used between the ear and a telephone, the valve *g*, adjusted on the cap or on the tube near the cap, as described.

4. In a structure used between the ear and a telephone, the cap and ear end of the tube provided with screw-threads, whereby adjustment is made of the aural end of the tube into but not in contact with the ear, as described.

5. In an instrument for telephonic hearing used between the ear and a telephone, the combination of the ear-cap and of its tube-extension into but not in contact with the ear, and the packing about the edges of the cap and the sound-conveying tube extending to the telephone, there being a connection of the tube with the telephone, as described.

448,628. RAILROAD RAIL AND SLEEPER OR STRINGER. LEO BERGMARK, Philadelphia, Pa. Filed Nov. 29, 1890. Serial No. 373,021. (No model.)



Claim.—1. A railroad-track or permanent way comprising parallel courses of I-beams, rails superposed on said beams and provided with side flanges, and bolts passing horizontally through said flanges and having the heads thereof in engagement with the under side of the upper flange of said beams, substantially as and for the purposes set forth.

2. A railroad-track or permanent way comprising parallel courses of I-beams, tie-rods attached thereto, rails superposed on said beams and secured thereto by means of side flanges, and bolts passing through said flanges and provided with wedge-shaped heads contacting with said beams, substantially as and for the purposes set forth.

3. A railroad-track or permanent way comprising parallel courses of I-beams joined together, tie-rods attached thereto, rails superposed upon said courses and extending over said joints, side flanges on said rails, and bolts passing horizontally through said flanges and provided with heads contacting with said beams, substantially as and for the purposes set forth.

4. A railroad-track or permanent way comprising parallel courses of I-beams, two series of tie-rods attached, respectively, to the top and bottom of the webs thereof, rails superposed on said beams and secured thereto by means of side flanges and bolts, substantially as and for the purposes set forth.

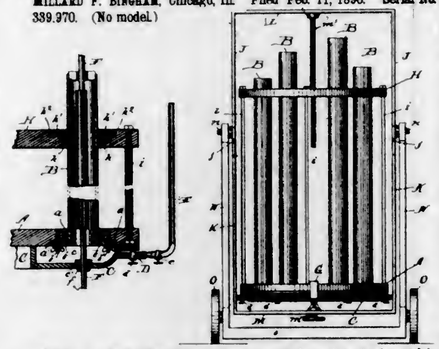
5. A railroad-track or permanent way comprising parallel courses of I-beams with tie-rods bolted to the respective webs thereof, rails superposed on said beams and provided with flanges, and bolts passing horizontally through said flanges and having the heads thereof in contact with said beams, substantially as and for the purposes set forth.

6. The combination, in a railroad-track or permanent way, of an I-beam, a rail provided with side flanges, and a series of bolts passing horizontally through one of said side flanges and engaging the upper flange of said beam on one side of the web thereof, substantially as and for the purposes set forth

7. the combination, in a railroad-track or permanent way, of an I-beam, a rail provided with side flanges, apertures in said side flanges having the peripheries thereof above the under side of the upper flange of said beam, and bolts passing through said apertures and provided with wedge-shaped heads contacting with said beam and adapted to be drawn into said apertures, substantially as and for the purposes set forth.

8. The combination, in a railroad-track or permament way, of an I-beam, a rail provided with side flanges, and a bolt passing horizontally through one of said flanges and provided with a head contacting with said beam, substantially as and for the purposes set forth.

448,629. APPARATUS FOR CASTING PRINTERS' ROLLERS. MILLARD F. BINGHAM, Chicago, Ill. Filed Feb. 11, 1890. Serial No. 339,970. (No model.)



Claim.—1. The roller-casting apparatus adapted to be heated in hot chambers or by immersion in hot water, consisting of a series of molds, an apertured plate for supporting the molds, suitable skeleton frame-work for holding the upper ends of the molds in position, and a supplemental bottom plate through which the molds may be filled, in combination with pivots upon which the apparatus may be rotated, and trunnioned supports permitting its being tipped.

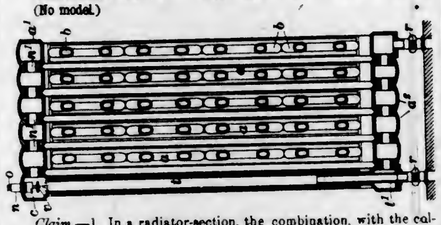
2. In a roller-casting apparatus, a mold-supporting plate and a mold-positioning head, both adapted to receive molds of various sizes, substantially as set forth.

3. The combination, with the casting apparatus, of the surrounding vertical frame having pivots *m m'*, and trunnion-supports for said frame, substantially as set forth.

4. The combination, with the casting apparatus, of the surrounding frame having pivots *m* and *m'*, and the supports upon which said frame is mounted, said frame having one part hinged to the other part and one of said pivots being movable, substantially as set forth.

5. The roller-casting apparatus adapted to be heated in hot chambers or by immersion in hot water, consisting of a series of molds, an apertured plate for supporting the molds, suitable skeleleton frame-work for holding the upper ends of the molds in position, and a supplemental bottom plate through which the molds may be filled, in combination with trunnioned supports upon which the apparatus may be tipped, substantially as set forth.

448,630. RADIATOR. GEORGE C. BLACKMORE and LAWRENCE R. BLACKMORE, Newark, N. J. Filed June 11, 1890. Serial No. 355,106. (No model.)



Claim.—1. In a radiator-section, the combination, with the columns *a a*, united at the ends by the heads *a'* and a^3, of the series of inclined tubes *b*, as and for the purpose set forth.

2. The combination, with a series of radiator-sections, each consisting of the columns *a a*, heads *a'* and a^3, and inclined tubes *b*, of an end section consisting in the vertical columns *a a*, united at the ends by the heads a^1 and a^3, the intermediate inlet-tube *t*, and the tube *t'*, connecting the heads and formed integral therewith, fitted to the interior of the same and extended through the lower head a^3 to connect with the supply-pipe, substantially as shown and described.

4. The combination, with a radiator-section having an upright inlet-tube *t*, provided with the valve-seat *s* at its upper end, of the valve *v*, with threaded stem *v'*, the cup *c*, applied to the upper end of the section and provided with the upwardly-projecting sleeve *m*, threaded internally and inclosed therein, and the guard *n* and knob *o*, applied to the upper end of the valve-stem, as and for the purpose set forth.

5. The combination, with a vertical radiator-section having rabbets formed in its lower end with grooves *g* therein, of feet *i*, having sockets fitted to the rabbets in the head a^3 and provided with ribs *j* to engage the grooves *g*, substantially as shown and described.

448,631. CORSET-CLASP. FRANK I. BOWLES, Detroit, Mich. Filed Oct. 21, 1890. Serial No. 368,835. (No model.)



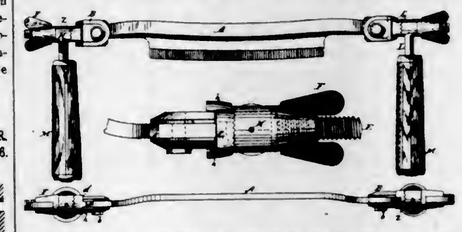
Claim.—The combination, with the corset-steels A A', the tongue portion B, having the tongue b^3 and arms *b*, and the loop portion C, having the loop c^3 and arms *c*, of the clips or staples D, respectively embracing the arms of the tongue and loop portions and having their extremities passed through perforations in the corset-steels and clinched to the under side thereof, substantially as described.

448,632. CEMENT. JOHN F. BOYNTON, Syracuse, N. Y., assignor to Caroline H. Boynton. Filed Apr. 9, 1888. Serial No. 270,105. (No specimens.)

Claim.—1. The herein-described compound, consisting of ground quartz or sand, pulverized silex, anhydrous selenite, lime carbonate, alumina, silicate of magnesia, amylaceous silicate of soda, and carbonate of magnesia.

2. The herein-described compound, consisting of ground quartz or sand, pulverized silex, anhydrous selenite, lime carbonate, alumina, silicate of magnesia, amylaceous silicate of soda, carbonate of magnesia, and ground tissues of plants containing silex, cellulose, and amyloid substances, substantially as set forth.

448,633. DRAWING-KNIFE. JOHN S. CANFIELD, Boston, Mass. Filed Apr. 28, 1886. Renewed Aug. 30, 1890. Serial No. 363,467. (No model.)



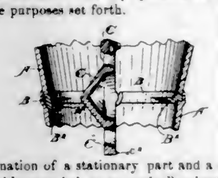
Claim.—1. A drawing-knife constructed and arranged with handles, each having near the blade two reversible joints made to operate in different planes, whereby each handle may be moved into any desired position in reference to the blade, substantially as described and shown.

2. In a drawing-knife, the combination of the blade A, two holders, each consisting of a jaw B, the haft D, and screw E, two nuts F F, two collars G G, and two handles M M, each constructed with a sleeve H, having teeth to engage with those on the collars G G, whereby is formed between each handle and the blade two reversible joints operating in different planes, substantially as shown and described.

448,634. GRATE. LEONIDAS W. CLAYTON, Indianapolis, Ind. Filed May 24, 1890. Serial No. 352,978. (No model.)

Claim.—1. The combination, in a grate, of a stationary part having two projections, one upon each side of its pivot-points or axis of oscillation, and a movable part pivoted to said stationary part at the rear and provided with an operating device at the front and adapted to rest upon said two projections and be thereby held to stationary.

position or be moved from one of said projections, as desired, substantially as and for the purposes set forth.



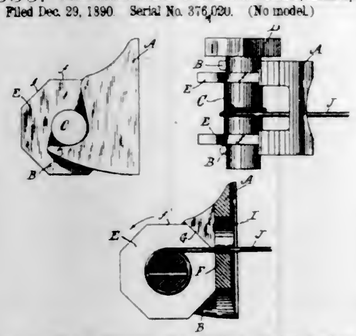
2. The combination of a stationary part and a movable part of a grate, said movable part being eccentrically pivoted and said stationary part having projections extending under the movable part, whereby both sides of said movable part may be supported when in one position, but whereby one side may be permitted to escape from engagement therewith when in the other position, substantially as set forth.

3. The combination, with a stationary part and a movable part of a grate, of projections extending from the sides of said stationary part at the point of engagement with said projections toward the center of the grate and under said movable part, one of which said projections is longer than the movement of said movable part and the other of which is shorter, said movement being limited to correspond to the length of said projections, substantially as described, and for the purpose specified.

4. The combination, in a grate, of a stationary part surrounding the movable part and provided with projections on its sides, which extend inwardly toward and facing each other, one of which is provided with a small engaging catch or lip, and a movable part mounted in bearings on said stationary part at the sides not carrying said projections and provided at one side with a corresponding small engaging catch or lip adapted to engage with the catch or lip on the stationary part, said parts being arranged and operating substantially as set forth.

5. The combination, in a grate, of a stationary part in the form of an annular ring having a recess or socket at its rear, projections extending inwardly from its opposite sides toward and facing each other and a depression at its front, a movable part having a projection resting in said socket, whereby it is permitted a pivotal movement therein, a handle or operating part extending to the front through said depression and adapted to rest upon and be controlled by said projections, substantially as described, and for the purpose set forth.

448,635. WIRE-STRETCHER. JOHN B. CLEAVELAND, Indianapolis, Ind. Filed Dec. 29, 1890. Serial No. 376,020. (No model.)

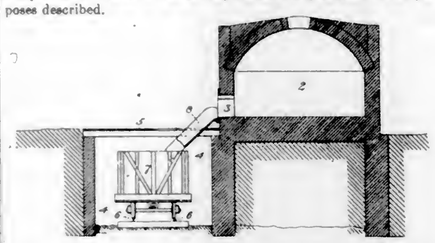


Claim.—1. The combination of a windlass, consisting of a shaft having a flange formed thereon whose periphery consists of a series of straight surfaces forming equal angles, and a bracket adapted to support said windlass and having formed thereon vertical and inclined bearing-surfaces, said bearing-surfaces forming together an inner angle adapted to receive and fit the angles of the flanges, substantially as and for the purpose set forth.

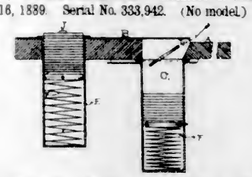
2. As a new article of manufacture, the above-described wire-stretcher, consisting of a windlass which consists of a shaft having a pair of flanges formed thereon, the peripheries of said flanges being provided with a series of straight surfaces which form equal angles, and a bracket consisting of a pair of arms projecting from a common base and adapted to support said windlass and having a pair of angular bearings formed thereon and adapted to receive and fit the angles of the windlass-flanges, as and for the purpose set forth.

448,636. COKE-OVEN PLANT. ALVA C. COCHRAN, Stauffer, Pa. Filed Aug. 21, 1890. Serial No. 362,670. (No model.)

Claim.—In a coke-oven plant, the combination, with a series or line of coke-ovens having discharging-doors, of a platform in front of the doors and about at the level thereof, a subway beneath the platform, and a chute leading in a downwardly-inclined direction through the platform to a car in the subway, substantially as and for the purposes described.



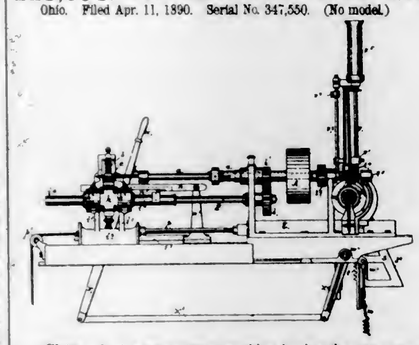
448,637. MONEY-CHANGER. HORATIO G. COOKE, Warsaw, Ill. Filed Dec. 16, 1889. Serial No. 333,942. (No model.)



Claim.—1. The combination, with the board A, having the raised portion B and the slots D, of two interchangeable sets of coin-holders provided with the springs F, the disks thereon and means for securing said disks down against the force of the springs, and supporting devices for removably securing the sets of coin-holders respectively beneath the slots D and in the surface of the board in rear thereof, whereby one set of coin-holders is in position to receive the incoming coin and the other presents the coin at the surface of the board, where it may be paid out in change, substantially as described.

2. The combination, with the board A, having the raised portion B and the slots D, of two interchangeable sets of coin-holders provided with springs F and disks thereon, slots H and lateral notches therein, said disks being provided with projections adapted to slide up and down in said slots or to engage with said notches, and supporting devices for removably securing the sets of coin-holders respectively beneath the slots D and in the surface of the board in rear thereof, whereby one set of coin-holders is in position to receive the incoming coin and the other presents the coin at the surface of the board, where it may be paid out in change, substantially as described.

448,638. SCREW-CUTTING MACHINE. HENRY E. COY, Toledo, Ohio. Filed Apr. 11, 1890. Serial No. 347,550. (No model.)



Claim.—1. A screw-cutting machine having the rotary toothed cutter *c*, adapted, by means of the mechanism substantially as described, to feed in the direction of the length of the bolt to be cut at a variable rate of speed, substantially as shown and described, and for the purpose specified.

2. In a screw-cutting machine, the rotary toothed cutter and its supporting mechanism, substantially as described, in combination with the frame or cam having a face or faces adapted to give forward motion to such cutter at a variable rate of speed, substantially as shown and described, for the purpose specified.

3. In a screw-cutting machine, the cam or frame *s*, having face *s'*, adapted to bring the cutter rapidly forward to the end of the bolt, face s^2, adapted to cause the cutter to move slowly forward while the point on the screw is forming, and face s^3, adapted to cause the cutter to advance more rapidly during the remainder of the cut, substantially as shown and described, for the purpose specified.

4. In a screw-cutting machine, the rotary toothed cutter and its carriage, in combination with cam or frame *s*, having rack *t*, and the train of gearing intermediate the driving-pulley of said machine and said rack, substantially as shown and described, for the purpose specified.

5. In a screw-cutting machine, the rotary toothed cutter *c* and its train of gearing intermediate said cutter and the driving-pulley, in combination with the cam or frame *s* and its train of gearing intermediate said cam or frame and the driving-pulley of said machine, substantially as shown and described, for the purpose specified.

6. In a screw-cutting machine, the rotary cutter and its carriage, the cam or frame adapted to give forward motion to such cutter, and a clutch in the train of gearing intermediate said cam or frame and the driving-pulley of said machine, in combination with suitable tripping mechanism adapted to disengage said clutch when said cutter has completed its cut, whereby said carriage and cam or frame are permitted to return to their starting-point, substantially as shown and described, for the purpose specified.

7. In a screw-cutting machine, the rotary cutter and its carriage, the cam or frame adapted to give forward motion to said cutter, and a clutch in the train of gearing actuating said cam or frame, in combination with a hand-lever adapted to simultaneously start said cam or frame forward and to throw into gear said clutch, substantially as shown and described, for the purpose specified.

8. In a screw-cutting machine, the rotary cutter *c* and cam or frame *s*, in combination with bell-crank lever t^4, adapted through adjustable connections intermediate said lever and said cam or frame to throw into or out of gear a clutch in the train of gearing actuating said cam or frame, substantially as shown and described, for the purpose specified.

9. In a screw-cutting machine, the rotary toothed cutter *c*, adapted, by means of the mechanism substantially as described, to advance toward and recede from bolt *b* laterally, the former *n*, and the mechanism intermediate said former and said cutter, in combination with the cam or frame *s*, adapted, by means of the mechanism substantially as described, to impart forward motion to said cutter at a variable rate of speed, substantially as shown and described, for the purpose specified.

10. In a screw-cutting machine, the rotary toothed cutter having in its driving-gear a worm-wheel, said cutter being adapted, by means of the mechanism substantially as described, to cut a thread of such lead that said cutter and said worm-wheel may roll together, each upon its own screw, as a pinion upon a fixed rack, substantially as shown and described, for the purpose specified.

11. In a screw-cutting machine, the rotary toothed cutter *c*, adapted, by means of the mechanism substantially as described, to slip upon its bearings, substantially as shown and described, for the purpose specified.

12. In a screw-cutting machine, the combination of the rotary toothed cutter *c* with seat c', friction-block c^3, adjusting-nut c^3, and spring c^4, substantially as shown and described, for the purpose specified.

13. In a screw-cutting machine, the rotary toothed cutter adapted, by means of the mechanism substantially as described, to slip upon its bearings and to cut a thread of substantially the same lead as the worm-gear in its driving mechanism, substantially as shown and described, for the purpose specified.

14. In a screw-cutting machine, the rotary toothed cutter *c*, adapted, by means of the mechanism substantially as described, to slip on its bearings and to cut a thread of the same lead as the lead of the worm-gear in its driving mechanism, in combination with the cam or frame *s*, adapted, by means of the mechanism substantially as described, to give variable forward feed to said cutter, substantially as shown and described, for the purpose specified.

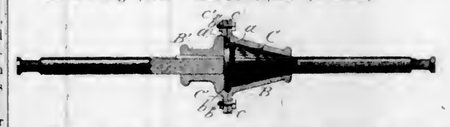
15. In a screw-cutting machine, the rotary toothed cutter *c*, adapted, by means of the mechanism substantially as described, to slip on its bearings and to cut a thread uniform in its lead with the lead of the worm-gear in its driving mechanism, in combination with the cam or frame *s*, adapted, by means of the mechanism substantially as described, to give a variable forward feed to said cutter, and the former *n*, adapted, by means of its conformation, to give lateral motion to said cutter and suitable taper to the finished screw, substantially as shown and described, for the purpose specified.

16. In a screw-cutting machine, the rotary toothed cutter *c*, in combination with worm-gearing *e f*, the worm *f* having the same lead as the screw-thread designed to be cut by said cutter and said worm extending along its shaft as far as the screw is designed to be cut, substantially as shown and described, for the purpose specified.

17. In a screw-cutting machine, the rotary toothed cutter *c* and its carriage, in combination with the cam or frame *s*, adapted, by means of the mechanism substantially as described, to give a variable forward feed to said cutter, and cord and weight *p'*, adapted, by means of the mechanism substantially as described, to draw said carriage back to its starting-point upon its release from the pull of said cam or frame, substantially as shown and described, for the purpose specified.

18. In a screw-cutting machine, the rotary toothed-cutter *c*, adapted, by means of the mechanism substantially as described, to slip on its bearings and to cut a thread of the same lead as the lead of its driving worm-gear, in combination with pulley A and the train of gearing intermediate said pulley and said cutter, spindle *a*, brace and guide-block *b'*, cam or frame *s*, having faces *s'*, s^2, and s^3, and the train of gearing actuating said cam or frame, the tripping mechanism adapted, by means of the mechanism substantially as described, to release said frame from its said train of gearing, lever *x*, adapted, by means of the mechanism substantially as described, to engage said frame with its train of gearing, and cord and weight *p'*, substantially as shown and described, for the purpose specified.

448,639. CAR-AXLE. SAMUEL L. DENNEY, Chicago, Ill., assignor of one-half to Hugh Kirkwood, Minneapolis, Minn. Filed June 23, 1888. Renewed Aug. 7, 1890. Serial No. 361,389. (No model.)

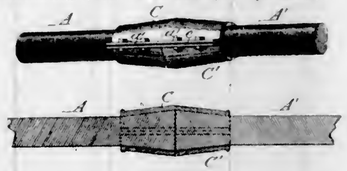


Claim.—1. As an improvement in divided car-axles, the combination of the conical-ended part of the axle and its loose coned sleeve with the cylindrical part, its sleeve firmly secured thereon and the bolts uniting such sleeves to form a coupling for the two parts of the axle, as set forth.

2. As an improvement in divided car-axles, the part A, having a conical enlargement and radial flange *a* at its inner end, in combination with the sleeve B, inclosing said conical enlargement and having a recess *a'* to receive the radial flange *a* of the axle, substantially as specified.

3. As an improvement in divided car-axles, the part A, having a conical enlargement, and the sleeve B, inclosing said enlargement, in combination with the part A' and sleeve B', provided with recessed flange *c'* to receive the radial flange *a* of the part A, all arranged substantially as shown and described.

448,640. CAR-AXLE. SAMUEL L. DENNEY, Chicago, Ill., assignor of one-half to Hugh Kirkwood, Minneapolis, Minn. Filed June 22, 1888. Renewed Aug. 7, 1890. Serial No. 361,390. (No model.)



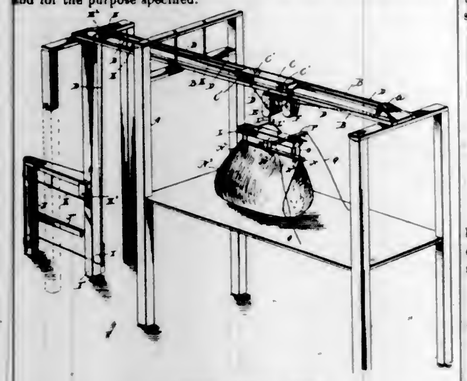
Claim.—1. As an improvement in car-axles, an axle divided near its mid-length, each end of the adjoining parts enlarged to form the frustum of two cones with their bases contiguous to each other, in combination with a sleeve-coupling having its parts formed to fit the cones of the axle, the flanges of said coupling being in axial line with the axle and bolted together to retain the two parts of the axle in their proper relative positions, substantially as shown and described.

2. In a car-axle, the two conically-ended parts A and A', in combination with the flanged coupling-sleeve composed of the parts C C', the bolts *a' a'* for securing the parts of said coupling together, and the metallic strips *e e*, interposed between the flanges, all arranged to allow each part of the axle to rotate independently of the other part and compensate for wear, substantially as and for the purpose set forth.

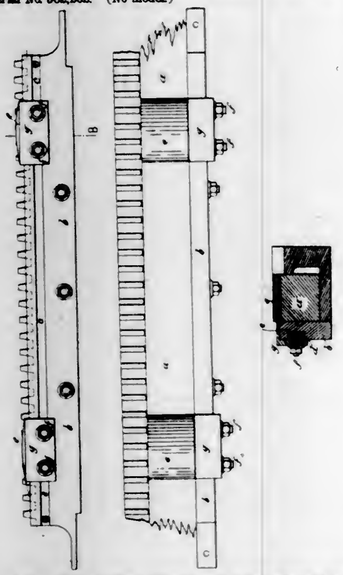
448,641. COTTON OR HAY ELEVATOR. JESSE J. DRAFFIN and WILLIAM P. NELSON, Idaville, Tenn. Filed Dec. 9, 1890. Serial No. 374,036. (No model.)

Claim.—The combination, with the main frame, the carriage, track, drum, and rope connections between the carriage and drum, of the timber L, suspended beneath the carriage, the shaft N, sleeved within the loops or supports M depending from the timber L, the

hooks N' upon the shaft N, the arm O, rising from the forward end of the shaft N, and mechanism, substantially as described, connected with the timber L, for locking and releasing the shaft N, substantially as and for the purpose specified.



448,642. STONE-PROTECTOR FOR LITHOGRAPHIC PRINTING-PRESSES. JOSEF EBERLE, Vienna, Austria-Hungary. Filed Mar. 7, 1889. Serial No. 302,262. (No model.)



Claim.—1. In a lithographic printing-press, a stone-frame having grooved side bars with adjustable angle-pieces *g*, and cheeks *d*, substantially as described.

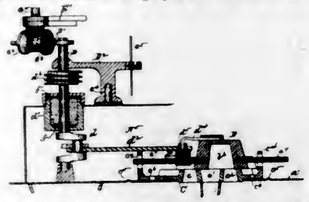
2. In a lithographic printing-machine, the combination, with the sides of the stone-frame having longitudinal grooves *c*, of the angle-pieces *g g*, adjustably secured to the frame, substantially as described.

448,643. GAS-METER. ADAM EHRHALD, New York, N. Y. Filed May 5, 1890. Serial No. 350,689. (No model.)

Claim.—1. In a meter, the combination, with a slide-valve and the arm pivotally connected therewith, of the pivot-lug having the longitudinal socket and the key having one end removably seated in said socket and the other end secured to the slide-valve, substantially as specified.

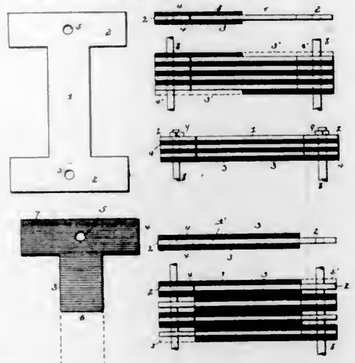
2. In a gas-meter, the combination, with the flag-wire having the metal bearing-bulb, of the stuffing-box therefor having a seat for the bulb, a cover therefor engaging the outer side of the box, and cork washers surrounding the flag-wire within the stuffing-box, the said washers having a coating of oil and paraffine, substantially as specified

3. In a gas-meter, the combination, with the flag-wire, of the stuffing-box therefor, the cork washers within said box, a flexible washer surrounding the flag-wire above the cover, and a weight loosely mounted on the wire and bearing upon the washer, substantially as specified.



4. In a meter, the combination, with the flag-wire, of the bearing-bulb thereon, a stuffing-box having a cup-bearing for said bulb, the cork washers within the body of the stuffing-box, and a packing in said box, substantially as specified.

448,644. ELECTRIC CONVERTER. MOSES G. FARMER, Eliot, Me. Filed Oct. 11, 1890. Serial No. 367,785. (No model.)



Claim.—1. A core for an electrical converter or inductorium, composed of laminæ of tinned iron with laminæ of non-magnetic metal interposed between them, substantially as set forth.

2. A core element for an electrical converter or inductorium, consisting of a sheet of non-magnetic metal having one or more laminæ of iron fused to its surface or surfaces, substantially as described.

3. A core element for an electrical converter or inductorium, consisting of a thin sheet of non-magnetic metal formed with a shank and a cross-head at each end, in combination with two laminæ of iron, each formed with a shank having half the length of the shank of the sheet of non-magnetic metal and a single cross-head and fused to the sheet of non-magnetic metal, substantially as set forth.

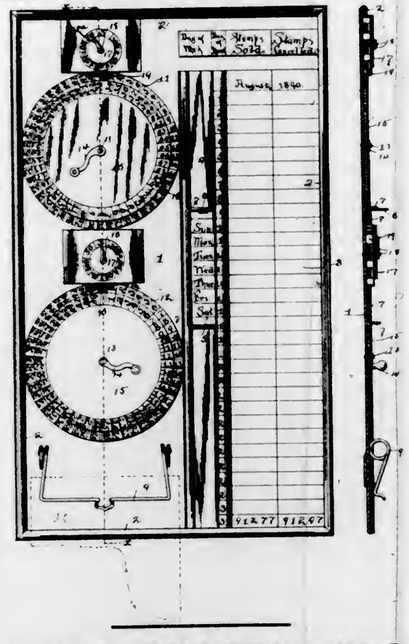
4. A core element for an electrical converter or inductorium, consisting of an I-shaped lamina of non-magnetic metal, in combination with two T-shaped laminæ of magnetic metal fused to and covering the non-magnetic lamina, substantially as described.

5. In an electrical converter or inductorium, the combination of a laminated core having free polar terminals with a magnetic shield composed of two flanged angle-irons closely fitting the poles of the core and each other, substantially as set forth.

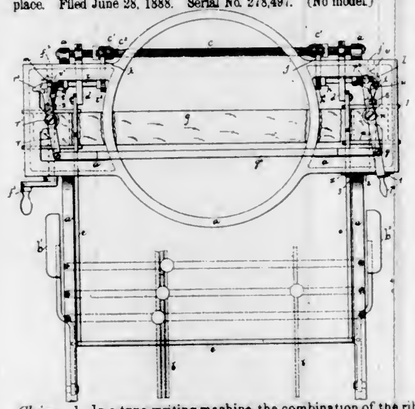
448,645. REGISTER FOR STAMPS SOLD AND CANCELED, &c. JAMES M. FERRELL, New Freeport, Pa. Filed Aug. 14, 1890. Serial No. 361,969. (No model.)

Claim.—1. In a device of the class described, the combination, with a base, a circular fixed disk, a rotatable shaft passing through the center of the same, and a movable dial mounted upon the shaft over the disk and smaller than the same, the dial and disk each divided into corresponding divisions and bearing numerals of a corresponding nature, and said dial provided with a pointer opposite its zero-space, of a raised dial divided into divisions, each of which indicates one rotation of the dial before mentioned, a shaft mounted in said raised dial, a pointer mounted on the shaft and moving over the face of the dial, and a toothed wheel mounted on the shaft in the path of the indicating-finger and adapted to be actuated one tooth at each contact of the finger, substantially as specified.

2. In a recorder of the class described, the combination, with the base, and a way secured upon the same and provided at one side with a series of numerals indicating the days of the month, of a plate mounted for movement in the way and provided with the days of the week, a knob mounted on the plate, and a spring-frame secured to the plate and having frictional contact with the way, substantially as specified.



448,646. TYPE-WRITING MACHINE. GRAHAM I. FRANCIS, Hartford, Conn., assignor to the American Writing Machine Company, same place. Filed June 28, 1888. Serial No. 278,497. (No model.)



Claim.—1. In a type-writing machine, the combination of the ribbon-spool, the ribbon-spool shaft provided with a worm-gear, the worm-shaft, means for turning the same, the lifting-rod, a switch for raising the same, a pitman, a ratchet-wheel, a crank or wrist pin, and a driving-pawl connected to the switch, whereby the said switch is adapted to raise the worm-shaft and simultaneously turn the ratchet-wheel and move the ribbon-spool, substantially as set forth.

2. In a type-writing machine, the combination of the ribbon-spool shaft provided with a worm-gear, the worm-shaft, the lifting-rod, and means, substantially as described, for raising said rod and disengaging the worm-shaft.

3. In a type-writing machine, the combination of the ribbon-spool shaft provided with a worm-gear, the worm-shaft provided with a ratchet-wheel, the lifting-rod, the switch provided with a cam, and the rocking arm provided with a push-pawl.

4. In a type-writing machine, the combination of the ribbon-spool shafts provided with worm-gears, the worm-shafts, the lifting-rods, the switch-levers provided with oppositely-disposed cams, and the connecting-rod between said levers.

5. In a type-writing machine, the combination of the ribbon-spool shafts provided with worm-gears, the worm-shafts provided with ratchet-wheels, the lifting-rods, the switch-levers provided with oppositely-disposed cams, the connecting-rod between said levers, and the rocking arms provided with push-pawls.

6. In a type-writing machine, the combination of a ribbon-spool shaft, a ribbon-spool adapted to slide endwise thereof, a pitman connected at one end to said ribbon-spool, a horizontally-arranged ratchet-wheel, a crank or wrist pin connected thereto and engaging with said pitman, a horizontally-arranged hand-lever, and a driving-pawl thereon for engaging with said ratchet-wheel, whereby the ribbon-spool may be moved back and forth, substantially as described.

7. In a type-writing machine, the combination of the ribbon-spools, the ribbon-spool shafts, the pitmen, the ratchet-wheels, the crank or wrist pins, the connected switch-levers, and the push-pawls.

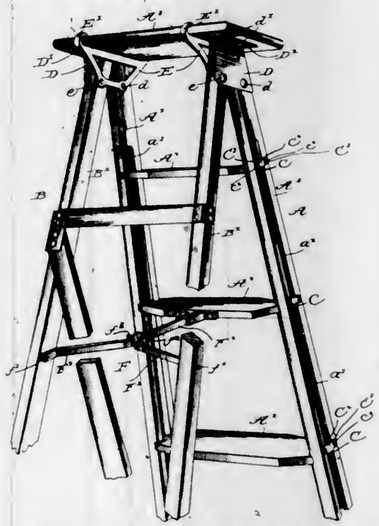
448,647. TOOTH-PICK. CHARLES C. FREEMAN, Dixfield, Me. Filed Oct. 3, 1885. Renewed June 23, 1890. Serial No. 356,318. (No model.)

Claim.—1. As a new article of manufacture, a wooden tooth-pick compressed to a rounded form and tapering point, substantially as set forth.

2. A tooth-pick made of soft wood compressed to a rounded form in cross-section and to a tapering point at both ends, substantially as set forth.

3. A wooden tooth-pick compressed to a rounded form in cross-section and to a tapering form at both ends and having its surface polished, substantially as above described.

448,648. STEP-LADDER. JAMES C. GARDNER, Chicago, Ill. Filed Apr. 7, 1890. Serial No. 346,815. (No model.)



Claim.—1. The combination, with the ladder A and support B, having respectively the side rails A' and B', of a top step A^3, parts D, applied against the sides of said side rails, and having the horizontal portion D' secured to the lower face of the top step and irons E applied against the sides of said side rails opposite the parts D, and having prongs E' engaging the edges of the top step, and rivets securing said parts D and irons E to the side rails A', and rivets or bolts *e*, extending through said parts D, side rails B', and irons E, substantially as shown and described.

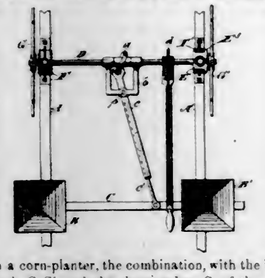
2. The combination, with the members A and B, hinged to each other substantially as set forth, of a folding brace consisting of two arms F' F', each hinged by one end to one of said members, and an

arm F^3, hinged to the other of said members by one end and having the other end extending between the ends of the arms F' and hinged thereto, said arm F^3 extending beyond said hinge and being there upturned, and said upturned end supporting a laterally-directed lug or lugs above the upper edge of the arms F', substantially as shown and described.

3. The combination, with the members A and B, hinged to each other substantially as set forth, of a folding brace consisting of two arms F' F', each hinged by one end to one of said members, and an arm F^3, hinged to the other of said members by one end and having the other end extending between the ends of the arms F' and hinged thereto, said arm F^3 extending beyond said hinge and being there upturned, and a pin f^3, extending through said upturned end above the upper edge of the arms F', substantially as shown and described

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448,649. CORN-PLANTER. EDWARD GODDEN and GEORGE R. WHITEHURST, Clarksburg, assignors to James M. Thomas, Chillicothe, Ohio. Filed Mar. 17, 1890. Serial No. 344,270. (No model.)



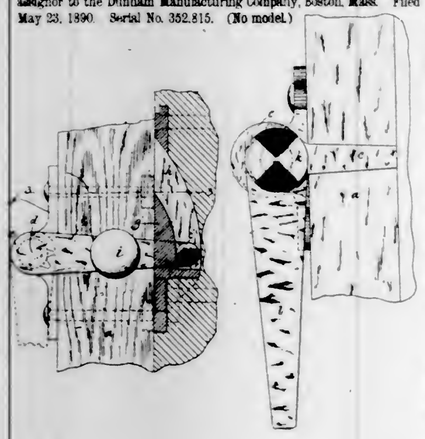
Claim.—In a corn-planter, the combination, with the independent axle D, the wheels G G', and the dropper-bar C, of the connections between said axle and bar, consisting of the cam *a* and lever *c*, carried in the yoke-frame *b*, loosely journaled on the axle D, said lever engaging the cam at one end and the dropper-bar at the other end, substantially as described

448,650. WHIP. FRANK GRANT, Westfield, Mass. Filed Sept. 19, 1890. Serial No. 365,458. (No model.)



Claim.—A whip having a tapering central core, a layer of rubber of uniform thickness adherent to the central core and vulcanized thereon, and a covering of braid over said rubber, substantially as described.

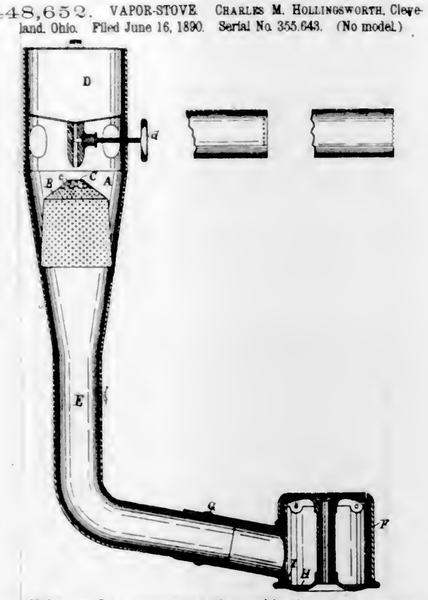
448,651. SLIDING-DOOR LOCK. OLIVER P. HIX, Rockland, Me., assignor to the Dunham Manufacturing Company, Boston, Mass. Filed May 23, 1890. Serial No. 352,815. (No model.)



Claim.—1. In a car-door fastener, the combination of a socket *f*, adapted for attachment to the door, the stud *d*, journaled in said socket and provided at one end with an arm *c*, formed to extend across the rear edge of the door, said arm having a laterally-projecting stud or offset *c'* on its swinging end, and being longer than the thickness of the door, so that the stud on the swinging end of the arm is behind the door when the arm is in its operative position, and a plate *g*, adapted to be attached to the side of the car and having a flange *g'*, provided with a curved inner face which is eccentric to the path in which the stud *c'* swings, and with a vertical slot or recess at one side of said flange for the reception of the lever *c*, said slot having an enlargement or recess above the flange for the reception of the stud *c'*, the lever being arranged so that when swung downwardly from a raised position the stud *c'* will enter the slot and bear on the eccentric inner face of the flange and thereby press the door inwardly, as set forth.

2. The combination of the pivoted lever *c*, having a stud or offset at its swinging end, adapted to engage a flange or shoulder on the body of a car, the cam *k*, located within a socket at the pivoted end of said lever, and the lever *l*, attached to said cam, whereby endwise pressure may be exerted on the lever *c*, as set forth.

448,652. VAPOR-STOVE. CHARLES M. HOLLINGSWORTH, Cleveland, Ohio. Filed June 16, 1890. Serial No. 355,643. (No model.)



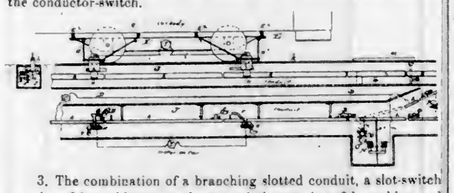
Claim.—1. In a vapor-stove, the combination of a vaporizing-chamber and means for admitting air and a regulated supply of liquid hydrocarbon thereto with a burner formed with a depression in its bottom and a conducting-pipe connecting said chamber and burner, having a continuously-downward inclination, the lower end of said pipe entering the burner-shell and being provided with a downwardly-turned lip, substantially as and for the purpose specified.

2. In a vapor-stove, in combination, a vaporizing-chamber and means for admitting air and a regulated supply of liquid-hydrocarbon thereto, a burner, and a conducting-pipe connected therewith, having a continuously-downward inclination, the sections forming said conducting-pipe being constructed and connected in the following manner, to wit: the upper section is inserted in the lower section, and the lower section is provided with an externally-turned annular bead in the lapping part and back from its edge, substantially as and for the purpose specified.

448,653. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Filed Mar. 24, 1887. Serial No. 232,352. (No model.)

Claim.—1. The combination, with the sectional conductor, of two or more electric locomotives, each bridging a break in said conductor, and rotary horizontally-swinging switches, controlling connection between sections of said conductor and adapted to be operated by the said locomotives.

2. The combination of a branching slotted conduit, a slot-switch at point of branching, a conductor-switch at point of branching and pointing in the opposite direction to the slot-switch, and electrically-actuated means actuated by the passing car to automatically operate the conductor-switch.



3. The combination of a branching slotted conduit, a slot-switch at point of branching, a conductor-switch at point of branching and pointing in the opposite direction to the slot-switch, and means actuated by the passing car to automatically operate the conductor-switch and the slot-switch.

4. The combination, in a series electric railway, of a sectional main conductor, a series of switches in a slotted conduit, a branching railway with a corresponding sectional branch conductor and switches, two contact devices adapted to either conductor, connected to the two terminals of a propelling-motor on the railway, and always bearing on the conductor on opposite sides of a break therein, a movable conductor-guide at the branching-point for leading the two contacts from main to branch conductor, an electric motor to operate said conductor guide or switch, and means controlled by the passing electrically-propelled vehicle to put said switch electric motor into or out of action.

5. In an electric railway, a conductor made in sections with switches to electrically connect or disconnect said sections upon the passage of a car, in combination with a generator connected with said conductor-sections in series and auxiliary cut-out circuits to cut out of action a portion of said conductor-sections which may not be in use.

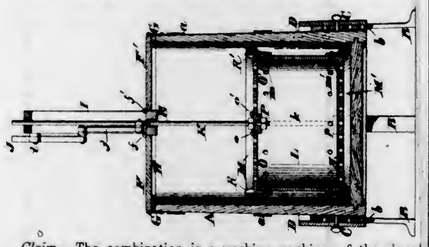
6. In an electric railway, a conductor made in sections with switches to electrically connect or disconnect said sections upon the passage of a car, in combination with a generator connected with said conductor-sections in series, auxiliary cut-out circuits to cut out of action a portion of said conductor sections which may not be in use, and means to insert a resistance into the line-circuit equal to that portion of the line cut out of circuit.

7. In an electric railway, a line conductor made in sections, in combination with horizontally-movable switches to connect or disconnect said sections, whereby they are connected in series, a traveling electrically-propelled vehicle having two collectors separated a distance not less than the length of one of the sections and making contact therewith, means carried by the vehicle to operate said switches so as to cause the current to pass through the collectors, and suitable springs to hold said switches open or closed, as the case may be.

8. The combination of conductor-sections A in series, switch B', connected to one section and adapted to make contact with the next and having faces *b'* near its pivot-point, spring B^3, adapted to press against the faces *b'* and hold the switch open or closed, an electrically-propelled vehicle receiving electricity from separate sections, and means carried by the vehicle to operate said switches B'.

9. A slotted conduit, in combination with a sectional conductor located therein, switches to connect said sections in series, a car, an electric motor on said car, current-collecting devices carried by the car entering the conduit and making contact with the conductor, and switch-operating devices carried by the current-collecting devices.

448,654. WASHING-MACHINE. GUSTAV H. JANTZ, Cincinnati, Ohio. Filed Jan. 20, 1890. Serial No. 337,438. (No model.)



Claim.—The combination, in a washing-machine, of the closed cylindrical tub A, a rod K, traversing the top of said tub and carrying a hollow plunger L, which plunger has a perforated bottom N, a pair of perforated lids O O', hinged to its top at *o o'*, an upwardly and outwardly inclined packing M, secured near its upper end, and a downwardly and outwardly sloping packing M', attached near its bottom, all as herein described, and for the purpose set forth.

448,655. VELOCIPEDE. THOMAS B. JEFFERY, Chicago, Ill. Filed May 14, 1890. Serial No. 351,730. (No model.)



Claim.—1. In a velocipede, in combination, substantially as set forth, the pieces of metal tubing A A, joined surface to surface longitudinally for a distance *a* to form the stem of a fork, and each bent to offset them in opposite directions from the plane of such junction to form the arms of the fork, the band B, encircling the joined portion of said pieces of tubing near the limit of such junction and before they commence to diverge, and a bearing-head in which the stem of such fork is journaled, stopped at its lower end by said encircling band, substantially as set forth.

2. In a velocipede, in combination, substantially as set forth, the pieces of metal A A, joined surface to surface longitudinally for a distance *a* to form the stem of a fork, and each bent to offset them in opposite directions from the plane of such junction to form the arms of the fork, the cross-brace A^2 spanning the interval between such arms and rigidly joined to the diverging portions next to the stem, and the band B, encircling the joined portion of said pieces of tubing near the limit of such junction and before they commence to diverge.

3. In a velocipede, in combination with a fork joined surface to surface for a distance to form the stem and having the remainder of their length offset from the plane of such junction to form the arms of the fork, a hollow T-fitting folded up from sheet metal and having its cross member encircling such stem and the other member made of two projections from the cross member formed concave toward each other and brought together and rigidly joined, substantially as set forth.

4. In a velocipede, in combination with a fork which is comprised of pieces of metal tubing joined surface to surface for a distance to form the stem and having the remainder of their length offset from the plane of such junction to form the arms of the fork, a bearing-head for such fork-stem, consisting of a hollow T-fitting folded up from sheet metal and having its cross member encircling such stem and the other member made of two projections from the cross member formed concave toward each other and brought together and rigidly joined, said bearing-head being strengthened by an interior band E at the end, which constitutes the bearing-surface for the stem, substantially as set forth.

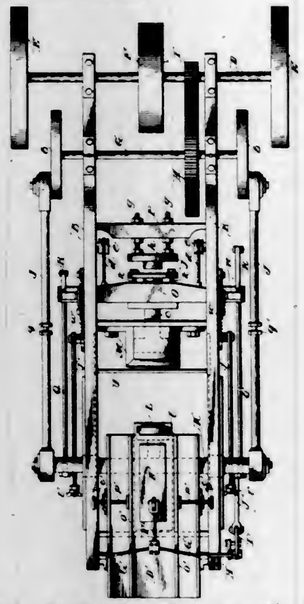
5. In a velocipede, in combination with a fork which is comprised of pieces of metal tubing joined surface to surface for a distance to form the stem and having the remainder of their length offset from the plane of such junction to form the arms of the fork, a bearing-head for such fork-stem, consisting of a hollow T-fitting folded up from sheet metal and having its cross member encircling such stem and the other member made of two projections from the cross member formed concave toward each other and brought together and rigidly joined, said bearing-head being strengthened by an interior band E at the end, said band constituting the bearing-surface for the stem, said fork being strengthened by an exterior band at the base of the stem encircling the said joined pieces of tubular metal and constituting a stop for the head against longitudinal movement on the stem, substantially as set forth.

6. In a velocipede, in combination with a fork which is comprised of pieces of metal tubing joined surface to surface for a distance to form the stem and having the remainder of their length offset from the plane of such junction to form the arms of the fork, a bearing-head for such fork-stem, consisting of a hollow T-fitting folded up from sheet metal and having its cross member encircling such stem and the other member made of two projections from the cross member formed concave toward each other and brought together and rigidly joined, said bearing-head being strengthened by an interior band E at the end, which constitutes the bearing-surface for the stem, said interior band having a flange extending past the end of said head, said fork being strengthened by an exterior band at the base of the stem encircling the said joined pieces of tubular metal and constituting a stop for the head against longitudinal movement on the stem, said flange E' abut-

ting upon such stop, and said stop and flange being provided with corresponding grooves for a ball-bearing, substantially as set forth.

7. In a velocipede-frame, a hollow T-fitting or junction-piece folded from a sheet-metal blank, which comprises a member C^{10}, having the members C^{11} C^{11} projecting laterally from its opposite edges, the central member C^{10} being folded cylindrically about a line transverse to the direction in which the members C^{11} project, said members C^{11} being folded concavo-convex and brought together with their concave surfaces facing each other by the cylindrical folding of the member C^{10}, as described, substantially as set forth.

448,656. **MACHINE FOR COMPRESSING AND STAMPING SOAP.** JAMES B. LAWTON, Cincinnati, Ohio, and JOHN A. MERGENTHAL, Newport, Ky.; said Mergenthal assignor to said Lawton. Filed Dec. 9, 1890. Serial No. 374,025. (No model.)



Claim.—1. The combination, with the compress-box M and its contained die N, of the cross-head carrying the die N, the stop-plate h, buffer *j* between said stop-plate and cross-head, and retracting and resetting weights for said cross-head and die, substantially as described.

2. The combination of the compress-box M, die N, stem *e*, recessed cross-head O, spring *i*, buffer *j* in contact with said spring, adjustable stop-plate *h*, rollers *c*, ropes *d*, and weights *f*, substantially in the manner and for the purpose specified.

3. The combination of the reciprocating cross-head K, carrying the die L, the compress-box M, its contained die N, carried by the cross-head O, the rods Q, carried by the cross-head K and provided with pivoted dogs R to engage the cross-head O on the downstroke of the cross-head K, releasing-shoulders *n* for the dogs, and retracting and resetting weights *f* for the cross-head O and die N, substantially in the manner and for the purpose specified.

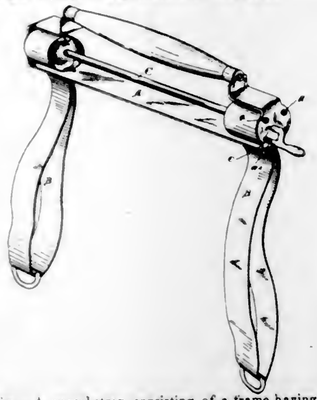
4. The combination, with the compress-box and its contained die, of the soap-carrying die carried by a reciprocating cross-head, gripping-bars in front of the mouth of said compress-box, swinging and sliding jaws carrying said gripping-bars, mechanism connecting said cross-head and gripping-jaws to cause the bars to grasp the partially-ejected soap cake and remove it from the compress-box, and mechanism for resetting said jaws and bars and releasing the soap cake, substantially as described.

5. The combination, with the compress-box and its contained die, of the jaws T, carrying the bars U, the sliding plate S, to which the jaws T are pivoted, the sliding plate V, carrying rollers *a' a''* for swinging the jaws, the rods *b'* for the plates V, the rods *f'* for the plates S, the reciprocating cross-head K for actuating said rods in one direction, and the spring-actuated resetting-levers *u g'* for actuating said plates and rods in the opposite direction, substantially in the manner and for the purpose specified.

6. The combination, with the reciprocating cross-head and its die L and shelf *l*, of the feed-trough C, feed-box D', plunger E', and connecting mechanism between said plunger and cross-head for reciprocating the former, substantially as described.

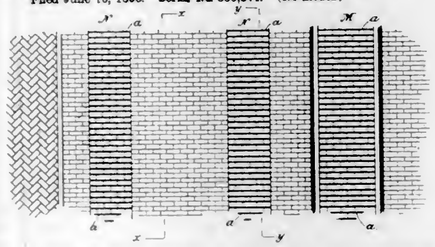
7. The combination of the reciprocating cross-head K, with its die L and shelf *l*, the feed-trough C, feed-box D', plunger E', pitman F', crank G', arms H' I', and rod J', substantially in the manner and for the purpose specified.

448,657. **PARCEL-STRAP.** FRED H. LOVELESS, Lafayette, Ind. Filed May 17, 1890. Serial No. 352,240. (No model.)



Claim.—A parcel-strap consisting of a frame having a shaft or roller journaled therein, to which the straps are attached, said roller being mounted to slide longitudinally in its bearings, and provided on its outer end with a turned-down portion having an inward-projecting point adapted to engage with perforations provided in the adjacent end of the frame, substantially as set forth.

448,658. **STREET-PAVEMENT.** JOHN LYNCH, Washington, D. C. Filed June 16, 1890. Serial No. 355,571. (No model.)



Claim.—A street-pavement made with reversible bricks having ledges running lengthwise of the bricks at the middle line thereof and laid with the narrow edges of the bricks uppermost on sections designed for horse travel and with the edges of the bricks alternately reversed on sections designed for wheel travel, substantially as and for the purpose set forth.

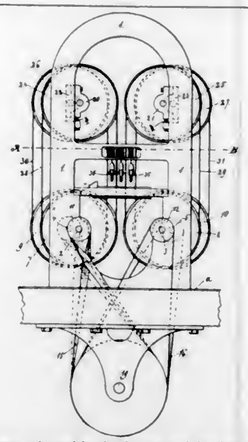
448,659. **BAND SAWING-MACHINE.** DE WITT C. MARKHAM, Collinsville, N. Y. Filed May 20, 1889. Serial No. 311,503. (No model.)

Claim.—1. The combination, in a gang band sawing-machine, of a frame 1, a table, and four pairs of saw-bearing wheels 7 and 24, 9 and 26, 8 and 25, and 10 and 27, all of the same diameter and mounted on the frame, two pairs of which are in the same vertical plane and two pairs in an adjacent parallel plane, and the centrals of all the upper and lower wheels being in the same horizontal plane, respectively, and the four band-saws, all of substantially the same length, running on each pair of wheels, respectively, substantially as set forth.

2. The combination, with a band sawing-machine, of the frame, the table, and the presser-roller adjacent to or between the saws,



448,659.

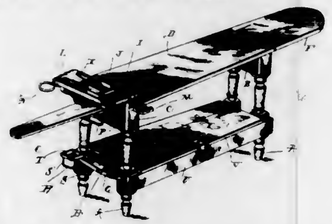


mounted upon a lever pivoted in the frame, and having its free end weighted and movable between guides, substantially as described.

448,660. **COMPOUND FOR COATING ROASTED COFFEE.** FRANK MENOWN, Kansas City, Mo. Filed Nov. 10, 1890. Serial No. 370,954. (No specimens.)

Claim.—The compound for coating roasted coffee, consisting of cocoa-shells, chicory, water, starch or rice-flour, flour, glucose, and salicylic acid.

448,661. **IRONING-TABLE.** LOWIS W. MILLER, Bear, Ark. Filed Feb. 24, 1890. Serial No. 341,453. (No model.)



Claim.—1. The combination of the ironing-board, the extension hinged to the end of the same and provided with a spring-latch on the under side of the same, and a U-shaped sliding keeper mounted on the under side of the ironing-board and having its shoulder adapted to engage the spring-latch, as set forth.

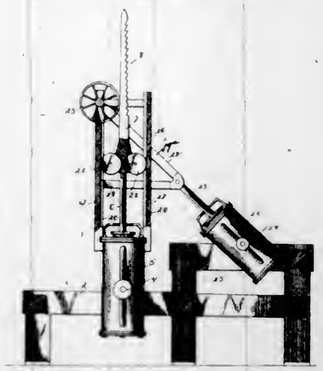
2. The combination of the legs, the cross-bar secured thereto, and the bracket R, formed of a single piece of wire curved into the form shown, having the flanged plate T secured upon it, having its bent ends mounted in eyes on the side of one of the legs, and having two vertical shoulders S S', one adapted to impinge against the cross-bar and the other against the leg, as set forth.

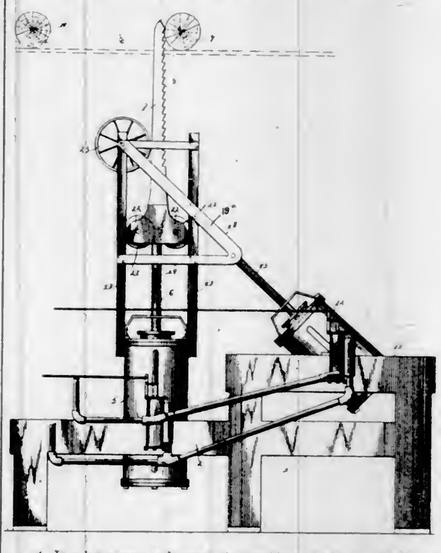
448,662. **LOG-TURNER.** JOHN MILLS and CYRUS W. ZIMMERMAN, Brewton, Ala. Filed Sept. 3, 1890. Serial No. 363,855. (No model.)

Claim.—1. In a log canter and turner, the combination of the frame, the cylinder 5, provided with trunnions journaled in the frame, the cant bar or stock mounted upon the outer end of the piston of the cylinder 5 and forming an extension and continuation of the said piston, and the cylinder 12, arranged at an angle to the cylinder 5 and provided with trunnions journaled in the frame and having its piston-rod connected with the cylinder 5, substantially as described.

2. In a log canter and turner, the combination of the frame, the cylinder 5, having trunnions journaled in the frame, the frame 16, mounted on the cylinder 5 and having parallel guide-bars, the cant bar or stock secured to the end of the piston of the cylinder 5 and forming an extension or continuation of said piston and provided with rollers engaging the guide-bars, and the cylinder 12, arranged at an angle to the cylinder 5 and journaled in the main frame and having its piston-rod connected to the frame 16, substantially as described.

3. In a log canter and turner, the combination of the main frame, the cylinder 5, journaled in the frame, the frame 16, mounted upon the cylinder and composed of the parallel groove guide-bars and the angular braces connecting the guide-bar, the cant bar or stock secured to the end of the piston of the cylinder 5 and forming an extension or continuation of said piston and provided with ears 22, the rollers mounted between the ears and arranged in the grooves of the guide-bars, and the cylinder 12, arranged at an angle to the cylinder 5 and journaled in the frame and having its piston-rod connected to the frame 16, substantially as described.





4. In a log canter and turner, the combination of the main frame, the cylinder 5, journaled in the frame, the frame 16, mounted upon the cylinder 5, the cant-bar secured to the end of the piston of said cylinder, and the bearing-wheel 23, journaled in the frame and adapted to support the cant bar or stock, substantially as described.

5. In a log canter and turner, the combination of the main frame, the cylinder 5, journaled in the frame and having its piston-rod carrying the cant bar or stock forming an extension or continuation of the piston, and the cylinder 12, arranged at an angle to the cylinder 5 and journaled in the frame connected with and adapted to actuate the cylinder 5, substantially as described.

6. In a log canter and turner, the cylinder 5, pivoted as described, the frame mounted on the cylinder and movable therewith, the cant-bar mounted upon the piston-rod of the cylinder and guided within the frame and forming a continuation or extension of the piston, and the cylinder arranged at an angle to the cylinder 5 and having its piston-rod connected with the frame on the cylinder 5 to actuate the same, as set forth.

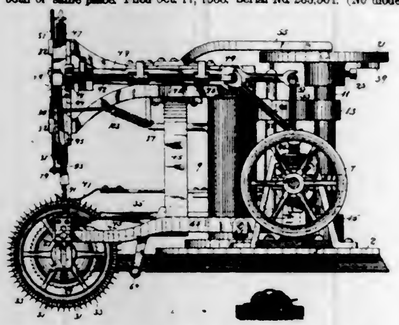
448,663. TOILET-CASE. WILLIAM C. MOORE and WILLIAM E. GARRARD, Kansas City, Mo. Filed May 24, 1890. Serial No. 352,970. (No model.)



Claim.—1. The combination, with a casing, of a roller in the base thereof and a vertically-moving towel-holder within the said casing above the said roller, the said holder having two rollers thereon, as described.

2. The combination, with a casing, of a towel-holder therein, the said holder consisting of a transverse bar having cross-bars upon its ends, a roller carried by the said cross-bars upon each side of the longitudinal bar, a fixed roller in the base of the said casing, and a counterpoise contained within the said casing and connected with the said holder, as described.

448,664. CROCHETING-MACHINE. GEORGE D. MUNSING, Minneapolis, Minn., assignor of one-half to Edgar J. Couper and A. C. Paul, both of same place. Filed Oct. 17, 1888. Serial No. 288,301. (No model.)



Claim.—1. In a crochet-machine, the combination of a stitch-forming mechanism provided with a thread-carrier and a looper movable laterally of the line of feed and co-operating in different planes to form and unite successive loops, a finger or horn over which said loops are formed, and an intermittingly-acting feed mechanism operating to advance the fabric after the formation of two or more loops, substantially as described.

2. In a machine substantially such as described for forming a scallop or shell-like border upon the edges of fabrics, the combination of the following co-operating parts or mechanisms: a stitch-forming mechanism having a thread-carrier and a looper co-operating to form stitches, a finger or horn located adjacent the edge of the fabric around which the stitches are formed, and a feeding mechanism operating upon the fabric to advance the latter after a series of stitches have been completed at one point by the stitch-forming mechanism, for the purpose set forth.

3. In a crochet-machine, the combination of the following co-operating parts or mechanisms: a stitch-forming mechanism having a thread-carrier and a looper co-operating to form stitches, a horn or finger located in proximity to the path traversed by the stitch-forming devices, and an intermittently-acting feed mechanism provided with a spurred feed-wheel having points for penetrating the material or fabric, said feed-wheel serving to sustain the fabric against lateral displacement during the formation of the stitches, substantially as described.

4. In a crochet-machine, the combination of a stitch-forming mechanism comprising a thread-carrier and a looper movable laterally of the line of feed to lay loops at an angle thereto, a horn or finger located intermediate the path traversed by looper and thread-carrier in forming the stitches, an intermittently-acting feed mechanism provided with spurs or pins upon which the fabric is impaled and held, and a presser foot for holding the fabric on the spurs or pins, substantially as described.

5. In a crochet-machine, the combination of a stitch-forming mechanism movable laterally of the line of feed and provided with a thread-carrier and a looper, a horn or finger supported between the planes in which the looper and thread-carrier have lateral movement, and a spurred feed-wheel for engaging the fabric to advance the latter and sustain it during the lateral movements of the stitch-forming mechanism.

6. In a crochet-machine, the combination of a stitch-forming mechanism reciprocating laterally of the line of feed and provided with a thread-carrier and a looper co-operating in different planes to draw loops around a support, a horn or finger around which said loops are drawn, and a feed mechanism provided with spurs upon which the fabric is impaled, said spurs being located to one side of and projecting vertically beyond the said horn or finger.

7. In a crotchet-machine, the combination of a stitch-forming mechanism provided with a thread-carrier and a looper and movable laterally of the line of feed, a finger or horn on which the loops are formed, and a spurred feed-wheel beneath said horn or finger and having its spurs or pins projecting above said horn or finger.

8. In a crochet-machine, the combination of a stitch-forming mechanism movable laterally of the line of feed, an intermittingly-acting feed mechanism, and a cam mechanism controlling the lateral movements of the stitch-forming mechanism and operating to vary the extent of movement during the formation of successive stitches.

9. In a machine such as described, the combination of a stitch-forming mechanism having a thread-carrier and a looper, the latter engaging the thread in the carrier and drawing loops on alternately-opposite sides of the fabric and interlooping said loops to form stitches on or near the edge of the fabric, and a feeding mechanism operating upon the fabric to advance the latter after a series of stitches have been completed by the stitch-forming mechanism.

10. In a crochet-machine, the combination, with a reciprocating latch-needle movable laterally of the line of feed, of a rotary and laterally-movable thread-carrier with which the needle co-operates at the extremes of its lateral movement, and an intermittingly-acting feed mechanism.

11. In a crochet-machine, the combination, with the intermittingly-acting spurred feed-wheel and the presser-foot opposite the periphery of said wheel and provided with a horn or finger, of the reciprocating and laterally-movable needle and the laterally-movable thread-carrier, substantially as described.

12. In combination with a reciprocating and laterally-movable latched needle, a thread-carrier oscillating about an axis substantially parallel with the needle and mounted upon a laterally-reciprocating support.

13. In combination with a reciprocating and laterally-movable latched needle, a laterally-movable thread-carrier having a rotary motion about the needle.

14. In combination with a longitudinally and laterally reciprocating latched needle, a spurred feed-wheel mounted upon an axis transverse to the needle, and an oscillatory thread-carrier movable toward and from the feed-wheel.

15. In combination with a reciprocating latched needle, a thread-carrier rotated about the needle in a plane transverse to the axis of the needle, said thread-carrier and needle being mounted upon supports reciprocating laterally of the line of feed, and a loop-holder movable laterally of the needle and between the latter and the thread-carrier.

16. A stitch-forming mechanism provided with a thread-carrier and a looper movable laterally of the line of feed and co-operating in different planes, the looper engaging the thread borne by the carrier to form loops thereof and interloop the latter, thereby forming stitches, in combination with an intermittingly-acting feed mechanism operating to advance the material after the formation of two or more complete stitches by the stitch-forming mechanism, whereby two or more stitches are made in the interval between successive feed movements, substantially as described.

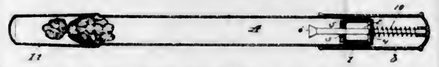
17. A stitch-forming mechanism provided with a reciprocating latch-needle movable laterally of the line of feed, and a thread-carrier also moving laterally of the line of feed to present the thread to the latch-needle in different planes to form successive loops and interloop the latter, in combination with an intermittingly-acting feed mechanism operating to advance the material after the formation of two or more stitches and remaining idle during the formation of successive stitches by the stitch-forming mechanism, substantially as described.

18. The combination of a stitch-forming mechanism movable laterally of the line of feed, and comprising a thread-carrier and a looper, the latter co-operating with the thread-carrier to grasp the thread carried thereby and form and interloop loops thereof, a variable shifting mechanism controlling the lateral movements of the stitch-forming mechanism and determining the length of successive loops, and an intermittingly-acting feed mechanism, substantially as described, whereby successive stitches varying in length may be formed at substantially the same point in the interval between successive actions of the feed mechanism.

19. The combination, with a stitch-forming mechanism provided with a thread-carrier and a looper engaging the thread in the carrier at intervals, said carrier and looper co-operating at intervals and in different planes and being moved laterally of the line of feed and an intermittingly-acting feed mechanism, of actuating devices controlling the lateral movements of the stitch-forming mechanism and operating to vary the extent of movement for successive stitches, substantially as described.

20. The combination, with a needle reciprocating in two planes, the one longitudinally of the needle and the other laterally thereof, a support movable laterally of the needle, and an oscillating thread-carrier mounted upon said support to oscillate about a vertical axis and operating to present the thread to the needle at or near opposite extremes of its lateral movements, substantially as described.

448,665. MUCILAGE-HOLDER. WILLIAM O. NELSON, Baltimore, Md., assignor of one-half to Thomas C. Balderston, Philadelphia, Pa. Filed Aug. 25, 1890. Serial No. 362,944. (No model.)



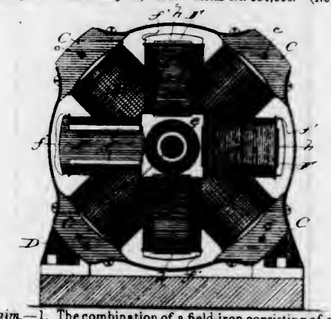
Claim.—1. The combination, with a barrel having an opening in one end for the discharge of its contents, of a plug for closing the other end and a movable cap fitted to the end, said cap having a stem which passes loosely through the plug, substantially as set forth.

2. The combination, with a barrel having an opening in one end with a dauber therein and a plug for closing the opposite end, of a cap fitted to this end, said cap having a stem which extends loosely through the plug, and means for locking the plug and stem together temporarily, substantially as set forth.

3. The combination, with a barrel having a sponge in one end and open at the opposite end, of a plug composed of telescoping shells fitted in the open end, a cap loosely mounted on this end of the barrel, a stem secured to the cap and passing loosely through the plug, a spring on the stem between the plug and cap, and means for locking the plug and stem together, substantially as set forth.

4. The combination, with a barrel having an opening in each end, of a plug for closing one end and a movable cap having connection with the plug and fitted to the tube and adapted to increase and decrease the air-space in the barrel by being slid back and forth, substantially as set forth.

448,666. DYNAMO-ELECTRIC MACHINE. SAMUEL E. NUTTING, Chicago, Ill., assignor to the Nutting Electric Manufacturing Company, same place. Filed May 13, 1890. Serial No. 351,668. (No model.)



Claim.—1. The combination of a field-iron consisting of a hub and four cores for field-coils projecting radially at right angles to each other from the hub and in the same plane, polar extensions projecting from the outer ends of the cores at right angles with their plane, and an armature adapted to rotate within a circle partly inclosed by the polar extensions and in a plane parallel to the plane of the cores, substantially as described.

2. The combination of two sets of field-irons, each consisting of a hub and four cores for field-coils projecting radially at right angles to each other from the hub and in the same plane, polar extensions projecting from the outer ends of the cores of one set at right angles with their plane and connecting with the outer ends of the cores of the other set, and an armature adapted to rotate within a circle partly inclosed by the polar extensions and in a plane parallel to the plane of the cores of the two sets and between them, substantially as described.

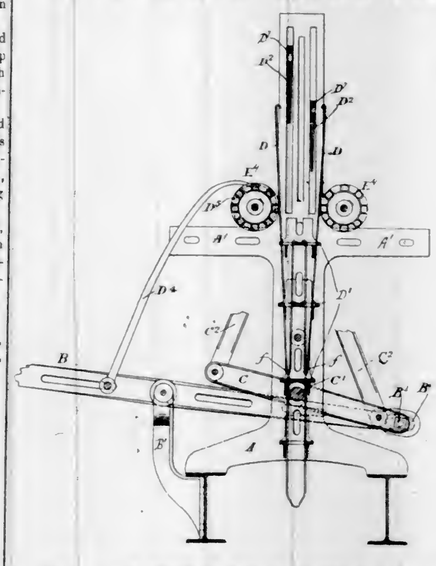
3. In an armature-core, the combination of an armature-shaft, a series of thin strips of magnetic material centrally mounted on the shaft, and a series of thin strips of magnetic material centrally mounted on the shaft at right angles to and alternating with the series of strips first above mentioned, substantially as described.

448,667. WHITEWASH-BRUSH. JOHN W. ORAM, Baltimore, Md., assignor to Charles W. Lord & Co., same place. Filed June 22, 1888. Renewed Aug. 28, 1890. Serial No. 363,248. (No model.)



Claim.—In a whitewash-brush, the block thereof having tufts of bristles, as shown, combined with a bristle-band formed of two flexible strips with a layer of bristles cemented between them with their butts exposed at the edge and secured together with a row of stitches, the said band being fastened to the exterior of the said block, substantially as and for the purpose specified.

448,668. DOBBY FOR LOOMS. GEORGE PARKER, Preston, County of Lancaster, England, assignor of one-third to James H. Lancaster, New York, N. Y. Filed Oct. 11, 1887. Serial No. 252,069. (No model.)



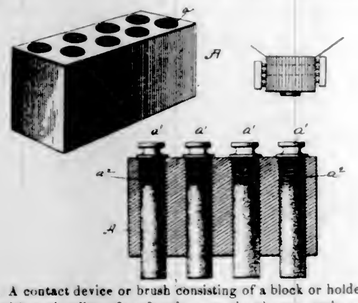
Claim.—1. The combination, with the uprights, each provided at its upper end with slots to permit of the movement of the lifters, of the lifters, the streamers connected to the lifters, the levers carried by a shaft journaled in the uprights, connecting-arms pivoted to the ends of the levers and formed with elongated slots, bolts passed through said slots and adjustably securing the streamers and arms, an actuating-lever, slotted as described, and a pin on one of the said levers working in a slot in the actuating-lever, substantially as described.

2. The combination, substantially as shown and described, consisting of the frames A; the upright B', the lever B, fulcrumed to said upright, the forward end of said lever B being provided with a slot, the levers C, one of which is provided with a wrist-pin entering said slot, the shaft C', the arms C^2, each provided with an elongated slot *a*, bolts *a'*, the streamers D^2, lifters D^3, the extensions B^2, provided with racks and secured to projecting portions of the frames A, the sprocket-wheels E^4, driving-gears E', and ratchet-wheel D^5, the pawl-arm D^4, the ratchet *h*, the pawl-arm F', the wires D, having loops *f*, and the staves D^6, substantially as shown and described.

448,669. ELECTRIC CONTACT DEVICE. FRANK A. PERRET, Brooklyn, N. Y., assignor to the Elektron Manufacturing Company, same place. Filed June 28, 1890. Serial No. 357,085. (No model.)

Claim.—1. A contact device or brush consisting of a block or holder provided with two rows of perforations or chambers, the perforations or chambers of each row located opposite the spaces between the perforations or chambers of the other row, the diameter of the

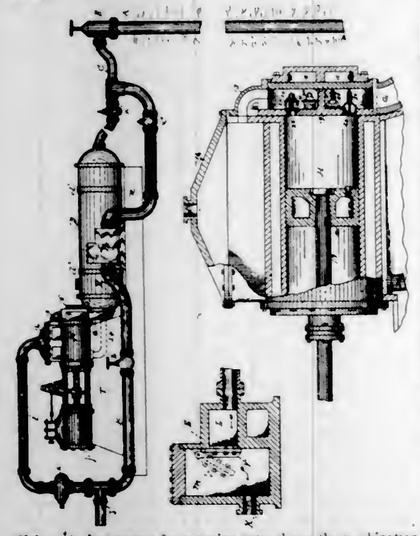
perforations or chambers being greater than the spaces between the same.



2. A contact device or brush consisting of a block or holder provided with a plurality of perforations or chambers, a carbon pencil in each perforation or chamber, a spring for each pencil, and a separate adjusting device for each spring for varying the tension.

3. The combination, with a commutator, of a pair of brushes, each consisting of a holder and a row of pencils, the brushes being set with the pencil of one brush standing opposite the spaces between the pencils of the other brush, so that the wear on the commutator will be even instead of in grooves.

448,670. SYSTEM OF PUMPING NATURAL GAS. JOSEPH N. PEW, Pittsburg, Pa. Filed Feb. 25, 1889. Serial No. 301,056. (No model.)



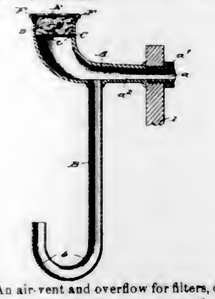
Claim.—1. In a system for pumping natural gas, the combination of a receiving-tank connected with the field, a pump adapted to receive gas under pressure on both sides of the piston and connected with said receiving-tank, an engine working said pump, a delivery-main leading from said pump to the point of supply, and a by-pass connecting said delivery-main with the field-line, the whole system being provided with suitable valves, all substantially as and for the purposes set forth.

2. In a system for pumping natural gas, the combination of a receiving-tank connected with the field, a pump adapted to receive gas under pressure into the pump-cylinder and connected with said receiving-tank, an engine working said pump, a delivery-main leading from said pump to the point of supply, and a by-pass connecting said delivery-main with the field-line, the whole system being provided with suitable valves, all substantially as and for the purposes set forth.

3. In a system for pumping natural gas, the combination of a receiving-tank connected with the field, a pump adapted to receive gas under pressure on both sides of the piston and connected with said receiving-tank, an engine working said pump, and a delivery-main leading from said pump to the point of supply, the whole system being provided with suitable valves, all substantially as and for the purposes set forth.

4. In a system for pumping natural gas, the combination of a receiving-tank connected with the field, a pump adapted to receive gas under pressure into the pump-cylinder and connected with said receiving-tank, an engine working said pump, and a delivery-main leading from said pump to the point of supply, the whole system being provided with suitable valves, all substantially as and for the purposes set forth.

448,671. ANTISEPTIC AIR-VENT AND OVERFLOW FOR FILTERS. CHARLES G. PURDY, Brooklyn, N. Y. Filed June 6, 1890. Serial No. 354,494. (No model.)



Claim.—1. An air-vent and overflow for filters, comprising a tubular or hollow body adapted for connection to a filter and provided at its outer part with an air-sterilizing substance, and an overflow-pipe connected to the body, substantially as described.

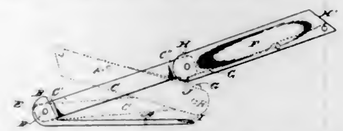
2. An air-vent and overflow for filters, comprising a tubular or hollow body adapted for connection to a filter and provided at its outer part with an air-sterilizing substance, and an overflow-pipe connected to the body and provided with a fluid-seal trap, substantially as described.

3. An air-vent and overflow for filters, comprising a tubular or hollow body adapted for connection to a filter and having a stem and an upturned outer part provided with an air-sterilizing substance above the level of the stem-opening, and an overflow-pipe connected to the body and provided with a fluid-seal trap, substantially as described.

4. In a filter, the combination, with the filtered-fluid reservoir, of an air-vent and overflow device comprising a tubular or hollow body fitted to the reservoir and provided at its outer part with an air-sterilizing substance, an overflow-pipe connected to the body and provided with a fluid-seal trap, and a drain-pipe connected to the outer end of the trap, substantially as described.

5. An air-vent and overflow device consisting of a tubular or hollow body A, adapted for connection to a fluid-reservoir and having an upturned end, perforated plates C E in the body, sterilized cotton or substance D between said plates, a cap F, retaining the parts C D E, and an overflow-pipe B, connected to the body-stem and having a fluid-seal trap, substantially as described.

448,672. POCKET TOBACCO-CUTTER. HARRISON T. REED, Revere, Mass. Filed Oct. 27, 1890. Serial No. 369,432. (No model.)

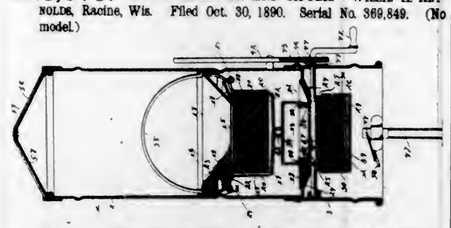


Claim.—1. In a pocket tobacco-cutter, the supporting-base provided with a re-entering angle for the reception of the blade-heel and an upturned bifurcated pivot-rest, in combination with the blade thereto attached and the inclosing handle pivoted to said blade, substantially as specified.

2. In a tobacco-cutter, the supporting-base provided with a recess I for the reception of the blade-heel and the bifurcated pivot-rest B, in combination with the blade thereto attached and the inclosing handle pivoted to said blade, substantially as specified.

3. In combination with a cutting-blade, a handle thereto pivoted, provided with a retaining-spring, said handle being further provided with a terminal incline H', adapted to and co-operating with the incline on the bifurcated pivot-rest B, forming an integral part of said base supporting the blade and handle, as herein set forth.

448,673. FLOUR RECEIVER AND SIFTER. WILLIE H. REYNOLDS, Racine, Wis. Filed Oct. 30, 1890. Serial No. 369,849. (No model.)



Claim.—1. The combination, with a flour-receiver, of the stationary sieve, the agitator, and the vibrating sieve suspended above the agitator and arranged to be actuated thereby, substantially as described.

2. The combination, with the agitator of a flour receiver and sieve, of a vibrating sieve suspended above the agitator and arranged to be actuated thereby, substantially as described.

3. The combination, in a flour receiver and sieve, of the casing, the agitator mounted therein, a removable conical hopper, and the sieve suspended from the hopper and arranged to be engaged by the agitator, substantially as described.

4. The combination, in a flour receptacle and sieve, of the casing, the removable conical hopper, the sieve suspended from the hopper, and the agitator arranged below the sieve and engaging the same, substantially as described.

5. The combination, in a flour receptacle and sieve, of the casing, the conical hopper provided at its upper edge with the band, the sieve arranged below the hopper and provided at its sides with sockets, the wire arranged in the sockets and passing across the bottom of the sieve and provided below the bottom of the sieve with a loop and having its ends secured to the hopper and provided between the same and the sieve with coils, and the agitator arranged below the sieve and adapted to engage the loop, substantially as described.

6. In a flour receptacle and sieve, the combination of the casing, the conical hopper, the vibrating sieve arranged below and consisting of a curved gauze bottom, the semicircular sides, and the flaring flange ranged at the upper edge of the sieve and formed integral with the sides, and means for vibrating the sieve, substantially as described.

7. In a flour receptacle and sieve, the combination of the casing, the conical hopper provided around its upper edge with a circumferential flange or band, the curved wire having its ends secured to the hopper and being arranged above the same to serve as a handle, the vibrating sieve arranged below and consisting of a curved gauze bottom, the semicircular sides, and the flaring flange arranged at the upper edge of the sieve and formed integral with the sides, and suitable means for vibrating the sieve, substantially as described.

8. In a flour receptacle and sieve, the combination of the casing provided with a flange and having a rectangular box depending therefrom, the stationary sieve supported by the flange, the shaft, the agitator mounted upon the shaft and composed of the disks, the wires connecting the disks and having their ends secured in perforations of the same, and the spout hinged to the box and adapted to close the same, substantially as described.

9. In a flour receptacle and sieve, the combination of the casing, the stationary sieve, the shaft journaled in the casing, the agitator mounted upon the shaft, the rectangular box surrounding the sides of the sieve and provided at one side with a curved bar having at its lower end the stop, and the spout hinged to the box and provided with the rod arranged to engage the curved bar, whereby the spout is held in its closed position, substantially as described.

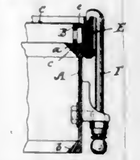
10. In a flour receptacle and sieve, the combination of the casing, the stationary sieve, the box surrounding the sides of the stationary sieve and provided at one side with the curved bar having at its lower end the hook, and the spout hinged to the box and provided with a rigid journal and the spring-journal and having the rod arranged to engage the curved bar of the box, substantially as described.

11. In a flour receptacle and sieve, the combination of the casing composed of two sections hinged together and provided with the flange, the stationary sieve supported on the flange and adapted to be removed therefrom, the removable shaft journaled in the casing, means for securing the shaft in the bearings, and the agitator removably mounted on the shaft, substantially as described.

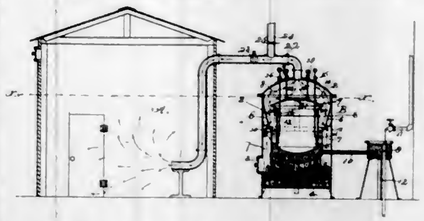
448,674. BANJO. GAD ROBINSON, Boston, Mass. Filed Oct. 11, 1890. Serial No. 367,850. (No model.)

Claim.—1. In a banjo, a metallic ring or hoop A, having an inward projection at its upper and lower edges and a groove or recess in the upper projection, substantially as set forth.

2. In a banjo, a metallic ring or hoop having an inward projection at its upper and lower edges and a groove or recess in the upper projection, in combination with a metallic resonant ring resting in said groove, a head, and a tightening ring and screws for stretching said head, substantially as set forth.



448,675. MANUFACTURE OF ARTIFICIAL STONE. JAMES L. ROWLAND, Troy, N. Y. Filed Jan. 3, 1888. Renewed Aug. 28, 1890. Serial No. 363,266. (No model.)



Claim.—1. An apparatus for simultaneously generating carbonic dioxide and aqueous vapors and commingling the same therein, consisting of a close chamber containing a fire-box, a water-holder, and a close vessel centrally located in said water-holder, as and for the purpose herein specified.

2. The generating apparatus herein described, consisting of a close casing containing a fire-box, a water-holder, and a close vessel suspended in said water-holder, the water-holder being arranged within said casing to form an annular passage for the products of combustion from the fire-box, and said vessel being arranged to form within said water-holder an annular passage for the aqueous vapors from the latter, and above said water-holder a commingling-chamber in which the carbonic dioxide and aqueous vapors will be commingled and interdiffused before leaving the casing of the generating apparatus, as and for the purpose herein specified.

3. In a generating apparatus, the combination of a close casing containing a fire-box, a water-holder centrally fixed in said casing, and a close vessel centrally suspended in said water-holder and provided with adjusting-screws by which the altitude of said vessel can be regulated, said vessel having a cover which is fitted to slide telescopically in its upper end and which is provided with adjusting-screws for raising and lowering said cover without changing the altitude of said vessel, and an externally-located water-tank provided with an adjustable overflow-pipe and connected to said water-holder, all substantially as and for the purpose herein specified.

4. In a generating apparatus, the combination of a water-holder and an imperforate vessel centrally suspended in said water-holder by means of adjusting-bolts, whereby said vessel may be adjusted either upwardly or downwardly to increase or diminish the stratum of water contained in said water-holder and lying directly underneath the area of the suspended vessel, as and for the purpose herein specified.

448,676. METER FOR ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Mar. 13, 1890. Serial No. 343,704. (No model.)

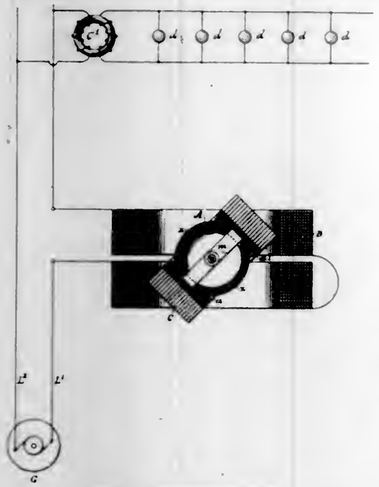
Claim.—1. The combination, with an alternating-current electric circuit, of a meter having a primary coil, a secondary coil placed at an angle therewith, and a rotating armature acted upon by the inductive influence of the currents traversing said coils, said armature having dead-points, substantially as described.

2. In an electric meter for alternating currents, an armature constructed with dead-points, substantially as described.

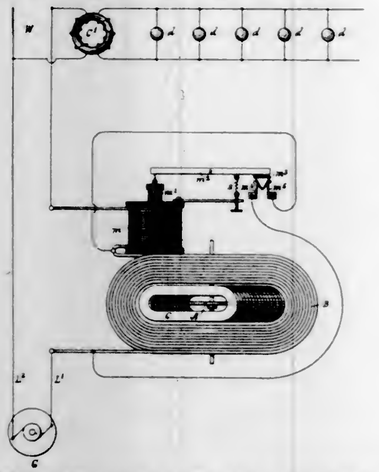
3. In an electric meter for alternating currents, a primary inducing-coil, a secondary coil placed at an angle therewith, and an armature in the inductive field of both of said coils, circular in form, but flattened at one or more points, substantially as described.

4. The combination, in an electric meter for alternating electric currents having a primary inducing-coil, a secondary coil at an angle therewith, and an armature in inductive relation to both of said coils.

of an independent band of conducting material surrounding said armature.



448,677. METER FOR ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor, by mesne assignments to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Mar. 13, 1890. Serial No. 343,705. (No model.)



Claim.—1. The combination, with a meter for alternating electric currents, having a primary inducing-coil, a secondary coil in inductive relation thereto, and an armature acted upon by currents traversing the two coils, of a short-circuiting device applied to the primary inducing-coil and automatically operated by the currents traversing the circuit to which the meter is applied.

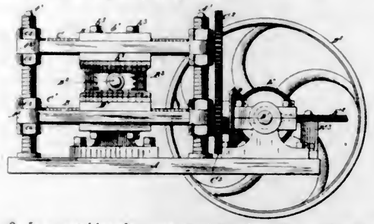
2. The combination of a meter for electric currents and a short-circuiting device for the meter, connected in the circuit with the meter, substantially as described.

3. The combination, with a meter for electric currents, of a primary coil B, the solenoid *m*, connected in series therewith, the shunt-circuit around the coil B, and the short-circuiting device operated by the shunt-circuit.

448,678. MACHINE FOR ORNAMENTING TUBULAR RECEPTACLES. LOUIS T. SHEFFIELD, New York, N. Y., and THOMAS M. SINCLAIR, Newark, N. J. Filed June 19, 1890. Serial No. 355,984. (No model.)

Claim.—1. In a machine for ornamenting tubes, the combination, with driving mechanism, of a reciprocating form and a support for a tube rotated by the movement of the form, substantially as specified.

2. In a machine for ornamenting tubes, the combination, with driving mechanism, of reciprocating forms moving in opposite directions and a support for a tube rotated from and during the movement of said forms, substantially as specified.



3. In a machine for ornamenting tubes, the combination, with driving-gear having shifting mechanism, of forms deriving reciprocating motion from the driving-gear and a rotary support deriving motion from the reciprocating forms, substantially as specified.

4. The combination, with the rotary support for a tube, of the vertically-adjustable forms and mechanism for imparting a reciprocating movement to said forms, substantially as specified.

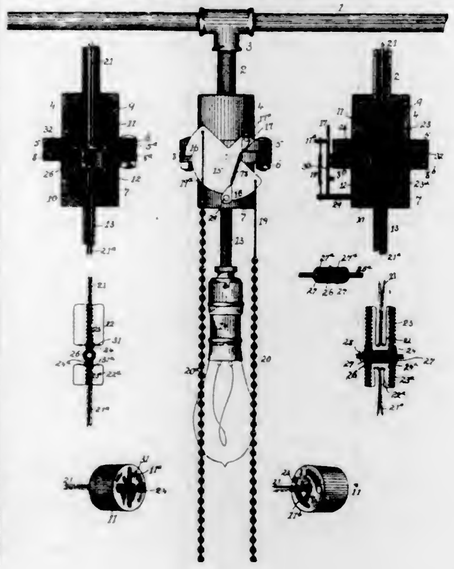
5. The combination of the rotary carriers, reciprocating forms moved by said carriers, intermeshing gear-wheels on the carriers, a gear-wheel on one of said carriers engaging with gear-wheels loosely mounted on a driving-shaft, a clutch mechanism on the driving-shaft, and a rotary support for a tube, substantially as specified.

6. The combination, with movable forms and mechanism, substantially such as described, for imparting movement to the forms, of a rotary support for a tube and a gear-wheel on said support engaging with racks on the forms, substantially as specified.

7. The combination, with the base, of the posts extending therefrom, the guide-frames adjustable on said posts, reciprocating forms moving in said guide-frames, mechanism, substantially such as described, for imparting motion to the forms, and a support for a tube extending transversely to the movement of the forms and rotated by said forms, substantially as specified.

8. In a machine for ornamenting tubes, the combination, with reciprocating forms and a rotary support for a tube, of the threaded shafts geared together, a bevel-gear on one of said shafts, a driving-shaft, bevel-gears loosely mounted on said driving-shaft and meshing with the first-named bevel-gear, and a clutch-sleeve rotating with the driving-shaft, but movable lengthwise thereon to alternately engage with the bevel-gears on said shaft, substantially as specified.

448,679. WATER-PROOF COMBINED COUPLING AND CUT-OUT FOR ELECTRIC CIRCUITS. FRANK SHLAUDEMAN, Decatur, Ill. Filed Nov. 3, 1890. Serial No. 370,162. (No model.)



Claim.—1. The combination, with the two sockets, the interposed gasket, and the coupling-bolts, of the cut-out cylinder having bearings in one of the two sockets, a gasket around the projecting end of the cylinder-shaft, a spring bearing against the cylinder and acting indirectly on the gasket thereof, and circuit-wire terminals bearing against the cylinder on opposite sides of the same, as set forth.

2. In electric cut-outs, the combination of the insulating-cylinder, the conducting-rings in the cylinder, having segments depressed, and circuit-terminals, wider than the conducting-rings, bearing against the cylinder in line with the rings, as set forth.

3. In electrical cut-outs, the combination of the cut-out cylinder, the plate 15 on the shaft thereof, having the stop projections 16 16 and the extension 17, the pin 17*, projecting from the extension 17, the stop-pin 29, the spring connecting pins 17 and 29, and the lines connected with the plate at opposite sides thereof, as set forth.

448,680. CONNECTOR FOR ELECTRIC WIRES. FRANK SHLAUDEMAN, Decatur, Ill. Filed Nov. 3, 1890. Serial No. 370,163. (No model.)

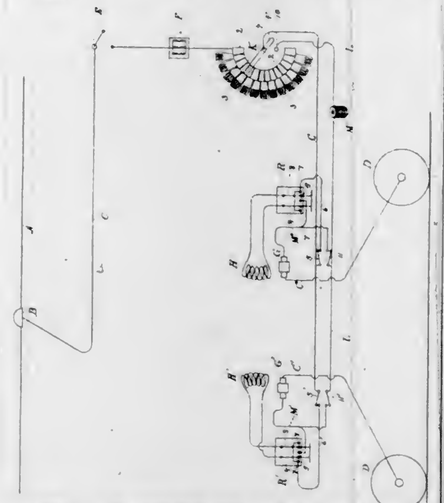


Claim.—1. A coupling for a jointed water-proof electric circuit, consisting in the combination of socket 2, insulating-washer 12 at the bottom of the socket, insulating guide-block 5, adapted to the socket, and circuit-wires extending circuitously through holes in the guide-block and terminating in protruding spiral coils, as set forth.

2. In couplings for jointed water-proof circuits, the combination of a water-proof socket, an elastic spiral terminal projecting normally beyond the face of the socket and bearing against an insulator, an opposing socket, and an elastic terminal therein bearing against an insulator, projecting normally beyond the face of the socket, and having a guide-pin adapted to the hollow of the opposing spiral, as set forth.

3. The combination, with a water-proof socket, of an insulating guide-block, a spiral coil extending from front to back through a hole in the guide-block, a wire extending from the rear end of the coil through a separate hole in the guide-block to the face of such block, and a main circuit-wire extending through still another hole in the guide-block and connecting with the wire of the spiral on the face or outer end of the block, as set forth.

448,681. SPEED-REGULATOR FOR ELECTRIC MOTORS. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Oct. 10, 1890. Serial No. 367,724. (No model.)



Claim.—1. The combination, with an electric motor and an adjustable rheostat, of a speed branch composed of a resistance-shunt on the field and switching means for said branch controlled by the means for adjusting the rheostat and arranged to send current through said branch when the rheostatic resistance is reduced or cut out, substantially as described.

2. The combination, with an electric motor and an adjustable rheostat, of a speed branch composed of a resistance-shunt around the whole series field, switching means for said branch, and a reversing-switch for the said field, substantially as described.

3. The combination, with a number of electric motors, of an adjustable rheostat in series with all said motors, a speed branch forming a shunt on the series field of each motor, and switching means for said branch, substantially as described.

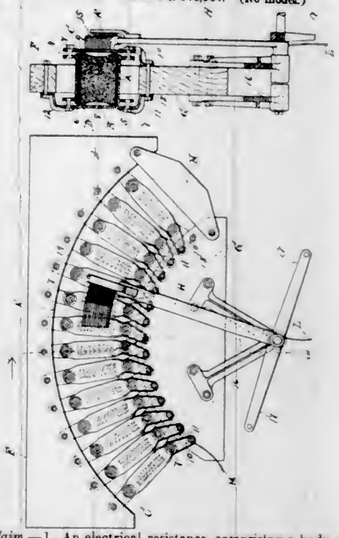
4. The combination, with a number of electric motors, of an adjustable rheostat, a speed branch, switching means for said branch, and individual switches for each motor, substantially as described.

5. The combination, with a number of series electric motors in multiple-arc branches of the main line, of a speed shunt-line around all the motors and branches from the speed-line, each including the armature of a motor and shunting the field of the same, and a switch for each motor for closing the shunt branch, substantially as described.

6. The combination, with a number of series electric motors in multiple-arc branches of the main line and a speed shunt-line around all the motors, of branches from the speed-line, each including the armature of a motor and shunting the field of the same, and a reversing-switch for each motor, substantially as described.

7. The combination, with a charged main line and a number of series electric motors in multiple-arc branches thereof, of a rheostat in the main line, a speed shunt-line around all the motors normally open at the rheostat, branches from the shunt-line, including the armatures of the motors, and a switch-lever for the rheostat arranged to close the speed shunt-line when all resistance is cut out, substantially as described.

448,682. ADJUSTABLE RHEOSTAT. SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Nov. 15, 1890. Serial No. 371,507. (No model.)



Claim.—1. An electrical resistance comprising a body of subdivided conducting material—like carbon-powder, for example—held in an insulating-casing, and metallic end plates in contact with the subdivided conducting material and provided with a number of conducting projections which penetrate said material, in combination with switching means, substantially as described.

2. An adjustable rheostat comprising a number of electrical resistances, each consisting of a body of subdivided conducting material—like carbon-powder, for example—held in an insulating-casing, and electrodes or end plates in contact with the subdivided conducting material and provided with a number of conducting projections which penetrate said material, in combination with switching means and electrical connections, whereby said resistances may be progressively included in an exterior circuit, substantially as described.

3. An electrical resistance comprising, in combination with a body of subdivided conducting material held in an insulating-casing, an end

plate in contact with the subdivided material and having one or more tapering wedge-shaped conducting projections which penetrate said material, and switching means, substantially as described.

4. An electrical resistance comprising, in combination with a body of subdivided conducting material held in an insulating-casing, an end plate having one or more elongated flat or fin-like conducting projections which penetrate said body, substantially as described.

5. In an electrical resistance, an insulating-receptacle for holding the resistance material, composed of a skeleton frame of metal provided with an interior lining of insulating material and subdivided conducting material held within the lining, substantially as described.

6. An electrical resistance comprising an exteriorly-ribbed casing of metal lined with insulating material, a body of subdivided conducting or resistance material in said casing, and conducting end plates in contact with the resistance material, substantially as described.

7. An adjustable rheostat comprising a number of electrical resistances, each composed of a body of subdivided conducting material in an exteriorly-ribbed casing of metal lined with insulating material and provided with electrodes, in combination with switching means, substantially as described.

8. The combination, with an insulating-casing and a body of subdivided conducting material therein, of an end plate having a projection which fits said casing and bears upon said body, and provided also with one or more projections which penetrate the said body, said end plate being bolted to the casing, substantially as described.

9. In combination with switching means, a resistance comprising subdivided conducting material in an insulating-receptacle and an electrode or end plate provided with a contact integral therewith for the said switching means, substantially as described.

10. The combination, with switching means, of subdivided conducting material constituting an electrical resistance interposed between two plates, one of which is provided with a contact thereon and integral therewith and in operative relation to the said switching means, substantially as described.

11. In combination with switching means, a number of electrical resistances, each composed of subdivided conducting material and interposed between two plates, one of which is provided with a contact integral therewith and in operative relation to the switching means, substantially as described

12. A number of electrical resistances, each composed of subdivided conducting material interposed between two plates, with a contact on one of said plates and integral therewith, in combination with a traveling contact and electrical connections whereby said resistances may be included in or cut out of circuit progressively, substantially as described.

13. A number of electrical resistances, each comprising a body of subdivided conducting material, and an electrode-plate provided with a contact thereon and integral therewith, in combination with electrical connections and a traveling contact movable over the aforesaid contacts, substantially as described.

14. An oblong insulating-casing filled with subdivided conducting material and provided with lugs on the narrow sides, in combination with oblong end plates making contact with the subdivided material and having projections above said lugs to which they are bolted, substantially as described.

15. An electrical resistance composed of subdivided conducting material, in combination with an insulating-casing inclosing said conductor, and end plates or electrodes in contact with the subdivided conductor and having bracket-extensions integral with said end plates or electrodes, substantially as described.

16. An electrical resistance comprising an insulating-casing, a body of subdivided conducting material therein, and end plates provided with bracket-extensions integral therewith, in combination with an insulating-block interposed between said extensions, which are fastened thereto, substantially as described.

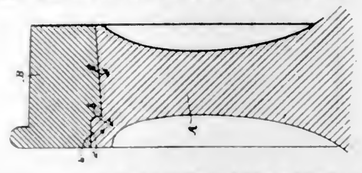
17. A resistance comprising an insulating-casing, a body of subdivided conducting material therein, and end plates provided with bracket-extensions, in combination with insulating-blocks between which the resistance is placed and to which said extensions are fastened, substantially as described.

18. The traveling contact composed of a series of pivoted plates on edge, in combination with one or more electrical resistances provided with opposing contacts and a spring for each traveling contact-plate for maintaining electrical connection with the opposite contacts, substantially as described.

19. A resistance provided with convex contacts, in combination with a traveling contact composed of pivoted plates on edge and a separate spring for each plate for impelling the same against the convex contacts, substantially as described.

20. A series of connected electrical resistances provided with convex contacts, in combination with a traveling contact composed of pivoted mounted plates on edge and a spring for each plate for impelling the same against the convex contacts, substantially as described.

448,683. CAR-WHEEL. WILLIAM H. SILVERTHORN, Cleveland, Ohio. Filed Nov. 24, 1890. Serial No. 372,427. (No model.)



Claim.—1. A car-wheel center formed with an annular groove in its periphery, having one side inclined toward the center of the wheel and having one abutting side, substantially as set forth.

2. A car-wheel center formed in its periphery with an angular groove having one side inclined toward the center and one side at a right angle to the axial line of the wheel, substantially as set forth.

3. A car-wheel center formed upon its periphery with an annular rib or flange at a right angle to the plane of the wheel and a face inclined toward the center, the shoulder of said rib or flange and said inclined face forming a groove, substantially as set forth.

4. A car-wheel tire formed with an annular rib upon its inner periphery, having one face inclined tward the center and having one abutting-face, substantially as set forth.

5. A car-wheel tire formed upon its inner periphery with an annular rib having a face inclined toward the center and an annular face at a right angle to the axial line of the tire, substantially as set forth.

6. A car-wheel tire formed in and upon its inner periphery with a right-angled annular recess and a face inclined toward the center of the wheel, substantially as set forth.

7. The combination, with a car-wheel center formed with a peripheral groove having one inclined and one abutting side, of a tire formed with an annular rib having one inclined and one abutting face upon its inner periphery, and secured upon said center by shrinking, substantially as set forth.

8. The combination, with a car-wheel center formed with a peripheral groove having one side inclined toward the center of the wheel and one side at a right angle to the axial line of the wheel, of a tire formed upon its inner periphery with an annular rib having a face inclined toward the center of the wheel and an annular face at a right angle to the axial line of the tire and secured upon said center by shrinking, substantially as set forth.

9. The combination, with a car-wheel center formed upon its periphery with an annular rib or flange having its outer face at a right angle to the plane of the wheel and a face inclined toward the center, of a tire formed in and upon its inner periphery with a right-angled annular recess and a face inclined toward the center and secured upon said center by shrinking, substantially as set forth

448,684. FIRE-ALARM SIGNAL-BOX. WILLIAM F. SINGER, Carthage, assignor to the Singer Fire-Alarm Company of Buffalo, Limited, Buffalo, N. Y. Filed Mar. 11, 1889. Serial No. 302,875. (No model.)

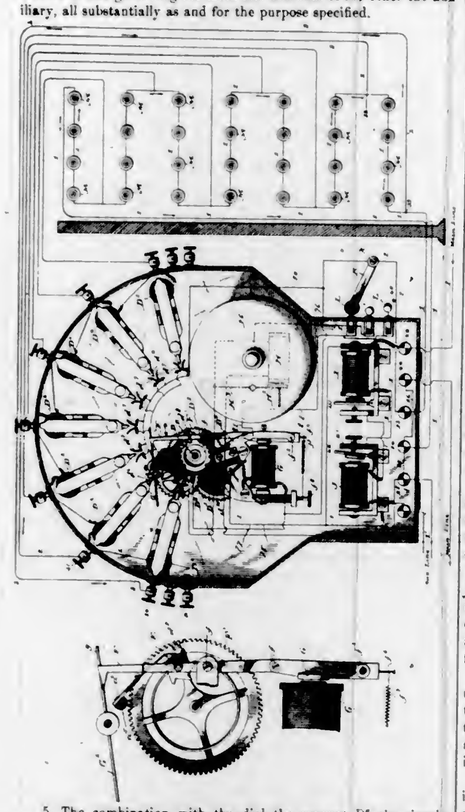
Brief.—Normal circuit: main line 1 I 21 42 1 D^8 D, frame L K 23, thermostats 24 22, main line. Upon break in main line, the circuit becomes auxiliary line J 41 1 D^8 through box, as above, to 24 25, auxiliary line. Upon break in any thermostat, the current traverses the corresponding story-shunt and operates magnet D^8 therein, closing circuit through the frame, magnet G' 77 d^6 d^7, magnet H' 78, thus releasing signal-train and releasing also a pointer which turns till stopped at the story-magnet. Signal is also released when, on K being thrown between upper and lower points L, it contacts with middle point L, the circuit closed being from the frame through magnet G K', middle point L, magnet H' 78, and thence out.

Claim.—1. A fire-alarm system provided with a main and an auxiliary circuit, signal-boxes connected by both circuits, and a relay in each signal-box to automatically cut in the auxiliary circuit upon rupture of the main circuit.

2. In a fire-alarm system, the combination of a thermostatic circuit through an equipped building normally connected through its signal-box in the main circuit, a high-resistance magnet in a shunt around the thermostatic circuit, a normally-open short-circuit, including the box-releasing magnet around the thermostatic circuit, and a circuit-closer controlled by the high-resistance magnet to close the short circuit when a thermostat operates.

3. In a fire-alarm system, the combination of a normally-closed thermostatic circuit through an equipped building, a high-resistance shunt around each story, a circuit-closer controlled by a story-magnet in each shunt, and a normally-open short circuit around the entire thermostatic circuit of the building, adapted to be closed upon the operation of any story-magnet.

4. In an automatic fire-alarm system, the combination, with a plurality of thermostats and a call-box, of the main line through all of said thermostats, a branch line, as described, the auxiliary line, a visual and audible indicator, and the relays I and J, one in each circuit, the armature of one being closed while the other is open and the armature of one governing the main line and that of the other the auxiliary, all substantially as and for the purpose specified.



5. The combination, with the dial, the magnet D^8, the circuit-wires, the pointer, a shunt-magnet, its armature, and the pin d^9, carried by the tail-piece of the armature and provided with a head d^9, adapted to project through an opening in the dial, of the contact-springs on the rear of the dial, and the pin d^6 on the end of the armature and adapted to engage said springs when the armature is attracted by said magnet, substantially as described.

6. The combination, with the apertured dial, its pointer, and the stop thereof adapted to project through a hole in the dial, of the shunt-magnet, its armature, a pin carried by the tail-piece of said armature, and a releaser for said stop, substantially as described.

7. The combination, with the apertured dial, the oscillating pointer, a shunt-magnet, its armature, and the pin d^9, carried by the tail-piece of the armature and adapted to project through an opening in the dial, of a circuit-breaker and a stop for said pointer actuated by the shaft carrying the said circuit-breaker, substantially as described.

8. The combination, with the apertured dial, the oscillating pointer, its stop, the shunt-magnet, and its armature, of the pin d^9, carried by the armature, the releasing-magnet, the circuit-wires, a circuit-breaker the shaft of which actuates said stop, the contact-springs d^7, and the pin d^6, carried by said armature, substantially as described.

9. The combination, with the vibrating pointer and the rotary circuit-breaker, of a stop for said pointer, having a beveled end and actuated by a shaft of the wheel-train driving said circuit-breaker, substantially as described.

10. The combination, with the spring-actuated vibrating pointer, of the rotating circuit-breaker and the spring-actuated stop moving with said circuit-breaker and having a beveled end actuated by the circuit-breaker shaft, substantially as and for the purpose specified.

11. The combination, with the dial, the pointer, and the circuit-breaker, of the sleeve on the shaft of said breaker and the pin sliding in said sleeve and having a beveled end, substantially as described.

12. The combination, with the dial, the pointer, and the circuit-breaker, of the sleeve on the shaft of the circuit-breaker, the bolt sliding within said sleeve and having a beveled end, the said bolt having a longitudinal slot, the set-screw c^7, and the spring in said sleeve beneath the bolt, substantially as shown and described.

13. The combination, with the dial having apertures, as shown, the armature, and stop-pins carried by said armature, of the guard over said apertures and the pointer vibrating beneath said guard, substantially as shown and described.

14. The combination, with the circuit-breaker and the frame D^4, of a train of gear-wheels, the lever F, and the star-wheel E on said lever and adapted to make a complete revolution and actuated by one of the train of gear-wheels, substantially as described.

15. The combination, with the circuit-breaker and the frame D^4, of a train of gear-wheels, a pin d^8, projecting laterally from one of said wheels, the piroted lever F, and star-wheel E, journaled on said lever, substantially as described.

16. The combination, with the circuit-breaker and the frame D^4, of a train of gear-wheels, a pin d^8, projecting laterally from one of said wheels, the magnets G' and their armature, the lever carried by said armature, and the star-wheel journaled on said lever, substantially as described.

17. The combination, with the circuit-breaker and the frame D^4, of a train of gear-wheels, a pin d^8, projecting laterally from one of said wheels, the coil-spring on the shaft of the first mover of said train of gear-wheels, the vibrating fan, pivoted lever, and the star-wheel journaled on said lever, substantially as and for the purpose specified.

18. The combination, with the lever, the projection f^4 thereon, the train of gear-wheels, and the pin d^8, projecting laterally from one of said wheels, of the star-wheel journaled on said lever and provided with the pin e, projecting therefrom parallel with the axis of the star-wheel, substantially as and for the purpose specified.

19. The combination, with the train of gear-wheels, one of which is provided with a guard-flange having notch d^{10}, of the pivoted lever, the projection f^4, and the star-wheel journaled on said lever and formed with pin e, a rear extension d^5, and a laterally-projecting pin d^8, substantially as and for the purpose specified.

20. The combination, with the lever F, provided with the offset f^3, and a projection f^4 on the rear side of the lever in said offset, of the star-wheel journaled on said lever, the spring f^5 around the shaft of said star-wheel, and the pin e on said star-wheel parallel with the axis of said wheel and engaging said projection, substantially as and for the purpose specified.

21. In a fire-alarm system, the combination, with outlying signal-boxes and a central office, of two independent circuits extending throughout all exposed parts of the system, a single thermostatic circuit through a protected building, and an electro-magnetic circuit-changer at the outlying stations for connecting the thermostatic with the auxiliary circuit when the main circuit breaks or becomes inoperative.

22. The combination of two independent circuits, transmitting instrument, connections therefrom to one of said circuits, a relay in said circuit, a contact constituting the terminal of the other of said circuits, another contact, and connections independent of said circuits from said last-named contact to said transmitting-instrument, said contacts being controlled by said relay, substantially as described.

23. The combination of a closed circuit, including a circuit-controller, a shunt around said circuit-controller, including a magnet, contact-points controlled by said magnet, a motor, a controlling-magnet therefor, a branch from one leg of said circuit to said controlling-magnet and to one of said contact-points, and a second branch from the other contact-point to the other leg of said circuit, substantially as described.

448,685. PLOTTER. VALENTINE H. SMITH, Sherly, Tex. Filed Sept. 11, 1890. Serial No. 364,611. (No model.)

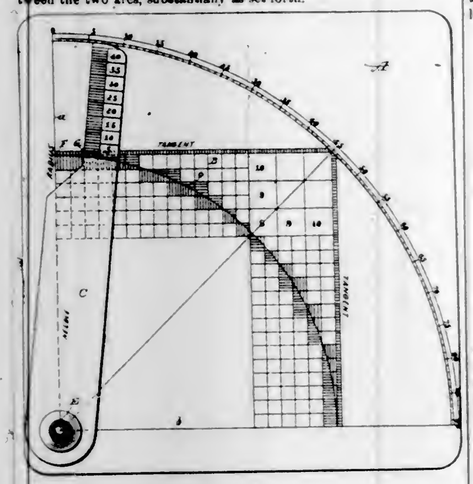
Claim.—1. In a surveying-instrument, the combination, with a quadrant, of a square located therein and a neeedle pivoted at the meeting-point of the radii of said quadrant, said square and needle being graduated, substantially as set forth.

2. In a surveying-instrument, the combination, with a quadrant having two arcs and a square within said quadrant, of a needle pivoted at the meeting-point of the radii of the quadrant, said arcs, square, and needle having graduations thereon, substantially as set forth.

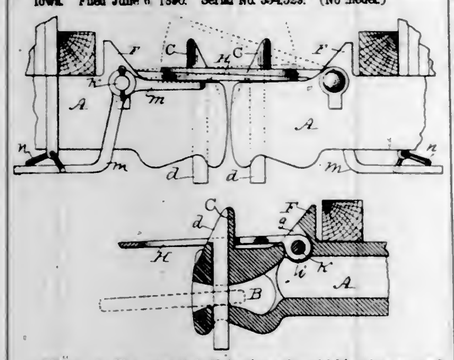
3. In a surveying-instrument, the combination, with a quadrant having two graduated arcs, of a graduated square in said quadrant and a needle pivoted at the meeting-point of the radii of the quadrant, that portion of the needle between the arcs being provided with graduations representing a certain number of equal parts, substantially as set forth.

4. In a surveying-instrument, the combination, with a quadrant having an inner and an onter arc, of a square located in said quadrant, the tangents formed by said square being divided into a number of equal parts representing units (hundredths) and the radii of the inner

are being divided into a number of divisions corresponding with the divisions of the tangent-lines, and a needle pivoted at the meeting-point of the radii of the quadrant and provided with gradnations between the two arcs, substantially as set forth.



448,686. CAR-COUPLING. STEPHEN H. SPRINGER, Des Moines, Iowa. Filed June 6, 1890. Serial No. 354,529. (No model.)



Claim.—1. The open link H, having a knuckle *i* at its rear end, in combination with a draw-bar having a vertical projection F, and a socket in said vertical projection adapted to receive the knuckle, in the manner set forth, for the purposes specified.

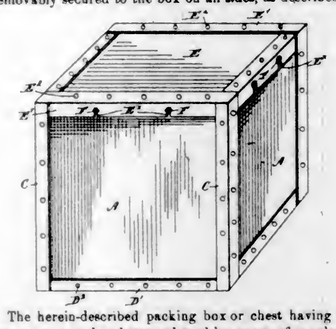
2. The combination of the lever *m*, the pin *k*, and the link H, having a knuckle *i*, with the draw-bar A, having a projection F, and a socket *g* in said projection to operate the hinged link H, substantially as and for the purposes stated.

3. The combination of the lever *m* and the rock-shaft *n*, for the purposes stated.

4. The improved automatic car-coupling comprising the draw-bar A, having a link-cavity B, vertical projections C and F, the hinged link H, having a knuckle *i*, the pin *d*, the lever *m*, and rock-shaft *n*, arranged and combined with a car to operate in the manner set forth, for the purposes stated.

448,687. BOX-CLOSURE. JOHN C. STANLEY and LEONARD B. WRIGHTSON, London, England. Original application filed Dec. 18, 1889, Serial No. 334,195. Divided and this application filed Oct. 6, 1890. Serial No. 367,218. (No model.) Patented in England June 20, 1888, No. 9,023, in India Mar. 1, 1889, No. 420, and in Ceylon Apr. 24, 1889, No. 309.

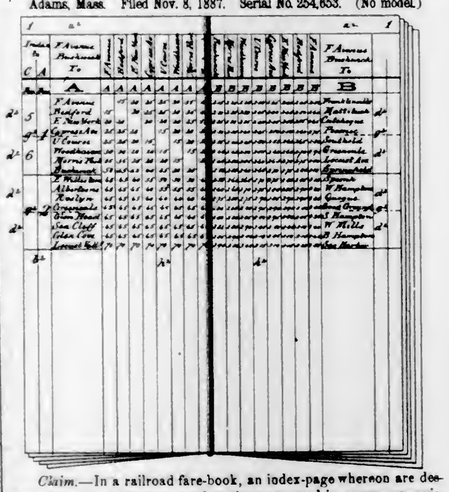
Claim.—1. The herein-described packing box or chest having its edges and corners strengthened and protected by means of metallic pieces secured thereto, and the sides of said box being thickened or re-enforced at their upper edges, in combination with a lid adapted to rest upon the upper thickened edges of the sides, said lid being provided at all of its four edges with angular metallic strips which are adapted to extend over the outer faces of all the sides of the box, and screws passing through the portions of the said strips which extend over the sides and into the thickened portions of the latter, whereby said lid is removably secured to the box on all sides, as described.



2. The herein-described packing box or chest having its edges and corners protected and strengthened by means of angular metallic pieces secured thereto, and the sides of the box being thickened or re-enforced at their upper edges, in combination with a lid adapted to rest upon the upper thickened edges of the sides, said lid being provided with angular metallic strips adapted to fit over the sides of the box and slotted, and screws passing through the slots of said strips and the thickened portion of the sides of the box, as and for the purpose specified.

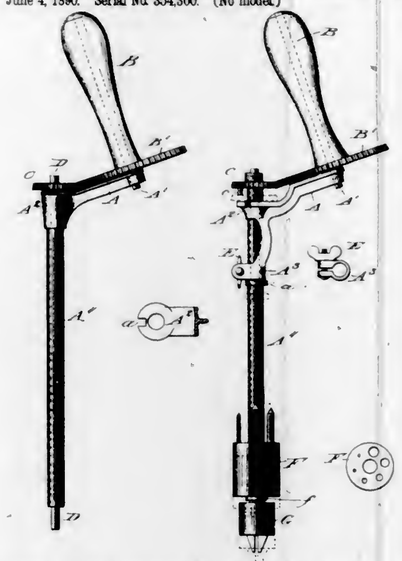
3. The herein-described packing box or chest having its edges and corners protected and strengthened by means of angular metallic pieces secured thereto, the sides of the box being thickened or re-enforced at their upper edges, in combination with a lid adapted to rest upon the upper thickened edges of the sides, said lid being provided with angular metallic strips adapted to fit over the sides of the box and slotted, and screws provided with squared beads at their inner ends adapted to fit within recesses formed in the thickened portion of the sides, said screws also passing through the slots in the strips on the lid and the sides of the box, and nuts upon the outer ends of said screws, as and for the purpose specified.

448,688. RAILROAD FARE-BOOK. SAMUEL F. STEVENS, North Adams, Mass. Filed Nov. 8, 1887. Serial No. 254,653. (No model.)



Claim.—In a railroad fare-book, an index-page whereon are designated and listed the names of stations arranged in groups comprising a number of the stations and having page-indicating numerals arranged opposite each group, and provided with additional pages having arranged upon each of the facing surfaces of two leaves a column of names of stations, with fare-columns arranged upon the face of each page adjacent to the said station-column, with one of the groups of stations on the left-hand page of the book arranged in its order at the head of the fare-column of said left-hand list and the other group of said left-hand-page column of station-names arranged in reversed order at the tops of the fare-columns of the station-list upon the right-hand leaf of the book, substantially as and for the purpose specified.

448,689. HAND-DRILL. JOHN F. STEWARD, Chicago, Ill. Filed June 4, 1890. Serial No. 354,300. (No model.)



Claim.—1. The crank having the diagonal twist, the sleeve upon the wrist thereof and having the gear B' secured thereto, and the shaft D, having the pinion C, all combined substantially as described.

2. The crank, the sleeve upon the wrist thereof and having the gear B' secured thereto, and the shaft having the pinion C and adapted by a sliding movement to lock to the said crank, all combined substantially as described.

3. The crank, the sleeve upon the wrist thereof and having the gear B' secured thereto, and the shaft having the pinion adapted by a sliding movement to be thrown into mesh with the gear and also to lock to the crank at will, all combined substantially as described.

4. In a hand-drill, the combination of the crank having the diagonal wrist and forming a journal-bearing for the shaft D, and the handle B, the said handle permitted to rotate thereon, the said shaft and handle connected by gearing, whereby the orbital movement of said sleeve or handle produces rotation of the shaft, substantially as described.

5. The crank A, the handle B, tube A^4, shaft D, and gearing connecting the said shaft and handle, all combined substantially as described.

6. The crank A, the tube A^4, adapted to slide relative thereto, the shaft journaled in said tube, and mechanism, substantially as described, for securing said tube in its positions of adjustment, substantially as set forth.

7. The combination of the crank, the longitudinally-movable shaft, the sleeve B of said crank connected to said shaft by suitable gearing, and the sleeve F, substantially as described.

8. The combination, with the drill-stock, of the sleeve F as a tool-holder, substantially as described.

448,690. TYPE-BAR HANGER. GEORGE F. STILLMAN, Syracuse, N. Y. Filed Apr. 25, 1890. Serial No. 349,454. (No model.)



Claim.—1. A type-bar hanger consisting of two sections, each composed of a base and an upturned side, the base of one lying upon the base of the other, the sides standing vertical and substantially parallel, and means for securing the bases together adjustably.

2. A type-bar hanger consisting of two parts, each having a base and upturned side radially slotted, and means for securing them together and to the type-bar ring, as set forth.

3. The combination of a type-bar hanger consisting of two sections, each having a base and upturned side, diverging rock-shafts mounted therein, and means for securing the sections of the hanger together and to the type-bar ring, as set forth.

4. The combination of a type-bar hanger consisting of two sections, each having a base and upturned side radially slotted to form adjustable points, diverging rock-shafts mounted in the adjustable points created by the slotway in said sides, and means for securing the sections together and to the type-bar ring, as set forth.

5. A type-bar ring, a hanger consisting of two sections, each having a base and upturned side, adjustable bearings in the sides of the hanger-sections, means for securing them together and to the type-bar ring, multiple rock-shafts mounted in said adjustable bearings, and type-bars secured to the rock-shafts, in combination, as set forth.

448,691. BED-PAN. MARY ST. JOHN, New York, N. Y. Filed Oct. 23, 1890. Serial No. 369,019. (No model.)

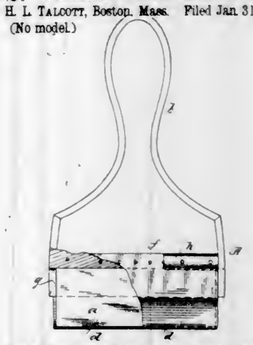


Claim.—1. In a bed-pan, the bowl A, having the nozzle C, cap C', and aperture D, in combination with the folding-platform extension B, attached by hinges to the nose end of the bowl, so as to form a platform-support when unfolded and a cover to the aperture D when folded, substantially in the manner and for the purpose described.

2. In a bed-pan, the bowl A, having the nozzle C, cap C', and aperture D, in combination with the cover B, having the folding handle and support E, substantially as and for the purpose set forth.

3. In a bed-pan, the bowl A, having the nozzle C, cap C', aperture D, and hose-pipe C'', carrying handle F, in combination with the cover B, having the folding handle and support E, and sliding bolt D', substantially in the manner and for the purpose described.

448,692. IMPLEMENT FOR MOUNTING PICTURES ON GLASS. RICHARD H. L. TALCOTT, Boston, Mass. Filed Jan. 31, 1890. Serial No. 338,752. (No model.)



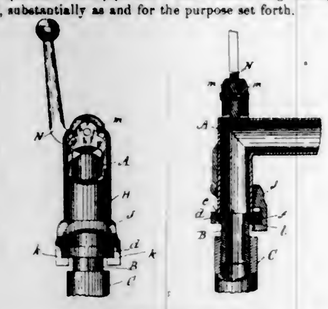
Claim.—1. An implemeot for mounting picture-sheets on glass, consisting of a suitable handle or stock having secured on and projecting from its forward portion a metallic plate having a thin and continuous rigid edge, and a sheet of rubber by its intermediate portion overlying said edge and by its terminal portions extended therefrom and under tension confined upon the opposite sides of the stock, substantially as described.

2. An implement for mounting picture-bearing sheets on glass, consisting of the carrying body or stock provided with the kerf, the metallic blade or tongue inserted in said kerf, and the sheet-rubber by its intermediate portion covering the edge of said tongue and by its terminal portions confined upon the opposite sides of the stocks, substantially as described.

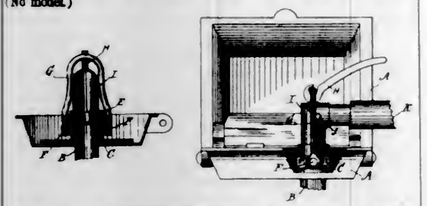
448,693. HOSE-COUPLING. GEORGE W. TINSLEY, Columbus, Ind. Filed July 30, 1890. Serial No. 360,381. (No model.)

Claim.—1. In a hose-coupling, the combination, with the pipe-elbow and the hose-fitting having an annular head, of the sleeve adapted to receive one member of the elbow and to slide longitudinally thereon, said sleeve being provided at one end with hooks which project beyond the end of the elbow and are adapted to engage said annular head, and the cam-lever pivoted to the opposite end of the sleeve and arranged to rest upon the elbow, whereby the hose-fitting is clamped to the pipe-elbow, in the manner set forth.

2. As a new article of manufacture, the hose-coupling clamp consisting of the semi-cylindrical sleeve H, having the lugs I I projecting from its open side, the cylindrical portion J, having hooks *k k* and *l*, lugs *m m*, and the cam-lever N pivoted thereto, all combined and arranged to co-operate with a pipe-elbow and a hose-fitting having an annular head, substantially as and for the purpose set forth.



448,694. HOSE-COUPLING FOR STREET-WASHERS. GEORGE W. TISELET, Columbus, Ind. Filed July 30, 1890. Serial No. 360,382. (No model.)



Claim.—1. The hose-coupling consisting of the hollow nut having in one side a screw-threaded recess and in the opposite side an annular recess, the annular elastic washer arranged in said recess, the yoke pivoted to said nut, the cam-lever mounted on said yoke, and the pipe-elbow, all combined and arranged to co-operate substantially as set forth.

2. In a hose-coupling for street-washers, the combination of the street-washer box, the water-supply pipe leading thereto, the hollow nut having in one side a screw-threaded recess adapted to fit the water-supply pipe, and an annular elastic washer embedded in the opposite side, the yoke pivoted to the nut and adapted to embrace a pipe-elbow, and the cam-lever mounted on the yoke, said yoke and cam-lever being arranged to fold within the box, substantially as set forth.

448,695. TUCK-MARKER FOR SEWING-MACHINES. EDWIN J. TOOF, New Haven, Conn. Filed July 26, 1887. Serial No. 245,394. (Model.)

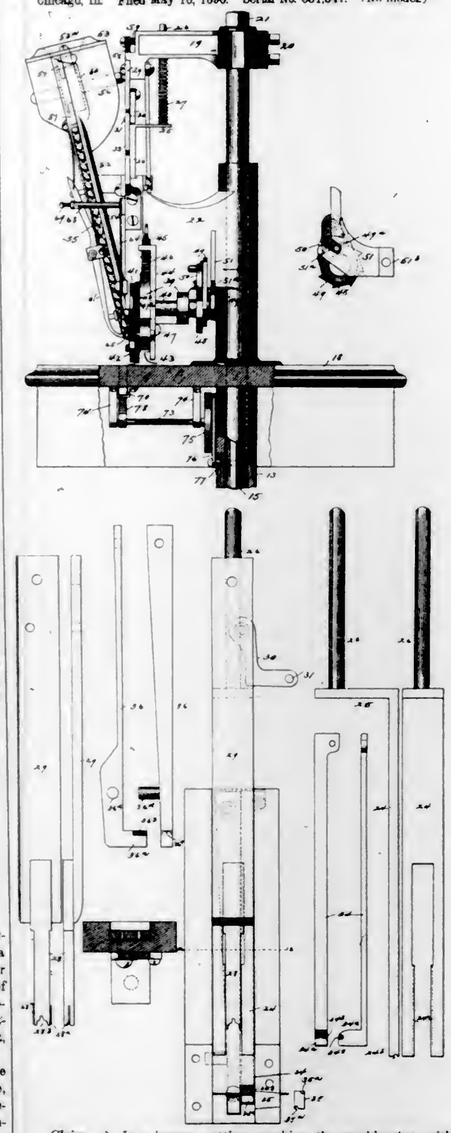


Claim.—1. In a tuck-marker, the combination, with an attaching-plate and a semi-tubular extension serving as a supporting-frame, a rocking bar secured above said semi-tubular extension, and an upper marking device adapted to be operated by the contact therewith of the said rocking bar, of an edge-guide and a marking-point, each provided with a supporting-shank and a screw for acting on said supporting-shanks, provided with a wedge-shaped head and an adjusting-nut, substantially as and for the purpose set forth.

2. A tuck-marking attachment consisting of an attaching-plate provided with a semi-tubular extension serving as a supporting-frame, guide, and cover for the adjustable parts of the attachment, an edge-guide attached to a sliding rod, the latter being provided with an indicating-point, arranged substantially as set forth, a marking device, and an adjusting-screw provided with a wedge-shaped head and a nut and adapted to adjustably hold said edge-guide and said marking device by compressing the shank parts of each of the same against the inner wall of said semi-tubular extension, substantially as described, and for the purpose set forth.

3. A tuck-marker consisting of the following parts in combination: an attaching-plate with a semi-tubular extension serving as a supporting-frame, a gage, and a marking device, each provided with a supporting rod or shank located and adapted to operate and slide in said semi-tubular extension, a screw for acting on said rods or shanks, provided with a wedge-shaped head and an adjusting-nut, and a smoothing device, substantially as described, and for the purpose set forth.

448,696. BUTTON-SETTING MACHINE. THEODORE H. TRAVER, Chicago, Ill. Filed May 10, 1890. Serial No. 351,347. (No model.)



Claim.—1. In a button-setting machine, the combination, with means for feeding the buttons singly in position to receive a staple-wire, of means for feeding said wire intermittently through the eye of the button, a cutting and bending bar for severing the wire into a staple length and forming it into a staple, and a setting-bar for driving the legs of the staple with the button attached through the fabric and clinching it beneath, an anvil whereon the legs of the staple are clinched, a fabric-feeding and button-spacing mechanism comprising a reciprocating feed-bar having a feeding-dog and an extension adapted to be engaged by a cam, a shaft bearing a cam to engage the extension, a disk on said shaft having an eccentric-pin, and a pitman connected to the pin and to the shaft, which drives the cutting and bending and setting bars and adapted to actuate said feed after the button has been set, substantially as described.

2. In a button-setting machine, the combination, with a chute or passage-way in which the buttons are formed in column, of means for separating said buttons, a pivoted lever having an end adapted to impinge on the head of the lower button of the column, a spring adapted to normally press said end against the button, a releasing device comprising an arm secured at one end with a moving part of the mechanism and its other end adapted to engage the upper end of the pivoted lever during the upstroke, and a set-screw in said engaging end, whereby the movement of the pivoted lever may be regulated, substantially as described.

3. In a button-feeding device for button-setting machines, the combination, with a casing to provide a button-receptacle, said receptacle having a transverse partition extending across between its side walls from the opening to near its bottom, whereby to divide the receptacle into two compartments having communication through the opening, of a rock-shaft journaled in said casing transversely to the partition and having brushes operating within one of the compartments to sweep the buttons passing through the aperture below the partition into the chute or passage-way, and means for operating the shaft, substantially as described.

4. In a button-feeding device for button-setting machines, the combination, with a casing to provide a button-chamber, of a rock-shaft journaled in said chamber and provided with brushes, a slotted link pivotally connected to the rock-shaft, and a pin connected with a moving part of the machinery and adapted to work in the slot of the link, whereby to rock said shaft within the chamber, substantially as described.

5. In a button-setting machine, the combination, with a chute or passage-way in which the buttons are formed in column, of a separating device comprising a pivoted lever having a foot adapted to be projected between the lower button of the column and the one next above it, and said lever having above its pivot a cam-slot and a pin connected with a moving part of the mechanism and projected into said slot, whereby the foot is projected between the buttons to separate them, substantially as described.

6. In a button-setting machine, the combination, with a staple cutting and bending bar, of a setting-bar and means for locking said bars together during a portion of their stroke, said means comprising a fixed arm having a cam-slot therein, and a bell-crank lever having one member thereof provided with a pin adapted to enter the slot in the bar, its other member connected with the setting-bar and its shoulder adapted to rest on the top of the cutting and bending bar, substantially as described.

7. In a button-setting machine, the combination, with the cutting and bending bar, of a former adapted to support a staple length of wire while being formed into a staple, said former comprising an arm constructed from a resilient material and having a foot at its lower end adapted to normally project into the path of the cutting and bending bar in position to support the staple length, and a tripping device comprising an arm secured with a moving part of the machine and having its end adapted to engage with the bar, carrying the former on the downstroke of the machine, whereby to withdraw its foot after the staple has been formed, substantially as described.

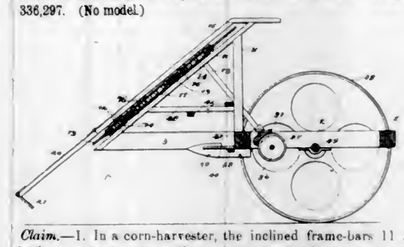
8. In a button-setting machine, the combination, with means for feeding the buttons singly in position to receive a staple-wire, means for feeding said wire intermittently through the eye of a button, a cutting and bending bar for severing the wire into staple lengths and forming it into staples, and a setting-bar for driving the legs of the staple through the fabric, and an anvil whereon the legs of the table are clinched, of a feeding and spacing mechanism comprising a reciprocating feed-bar having a feed-dog secured therewith, said bar being connected to and actuated by the power which sets the button, and an adjustable stop whereby to regulate the feed, substantially as described.

9. In a machine for attaching buttons by means of wire staples cut from a continuous wire, the combination of means for feeding the wire intermittently through the eye of the button, with a reciprocating cutting and bending bar, a shearing-block secured at the side of the path of said bar, said block being grooved on two or more of its faces, whereby it is adapted to be reversed when worn, a setting-bar for driving the legs of the staple through the fabric, and an anvil whereon the legs are clinched, substantially as described.

10. In a button-setting machine, the combination, with means for feeding the wire forward intermittently to form a staple, a cutting and bending bar for severing the wire into staple lengths and forming the staple, and a reciprocating setting-bar for driving the staple down with the button attached and forcing its legs through the fabric, and an anvil whereon said legs are cliuched, of means for preventing the working of the machine except upon a full stroke, said means comprising, in combination with the operating-treadle, a pivoted dog adapted to slide freely over an adjacent fixed part of the downstroke and adapted to swing on its pivot at the close of said stroke, whereby to permit the return of the treadle, substantially as described,

11. In a button-setting machine, the combination, with means for feeding the wire forward intermittently to form a staple, a cutting and bending bar for severing the wire into staple lengths and forming the staple, and a reciprocating setting-bar for driving the staple down with the button attached and forcing its legs through the fabric, and an anvil whereon said legs are clinched, of the treadle, a pivoted dog and a pin to limit the swing of said dog, an adjacent fixed part against which one end of the dog is adapted to impinge on the downward stroke, and a spring secured with the frame-work of the machine and adapted to return the dog to normal position at the close of the upstroke, substantially as described.

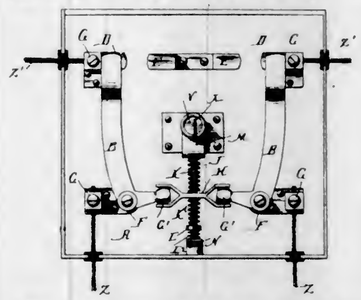
448,697. CORN-HARVESTER. WALTER E. TREADWELL and CORYDON W. BLACK, Anthony, Kans. Filed Jan. 8, 1890. Serial No. 336,297. (No model.)



Claim.—1. In a corn-harvester, the inclined frame-bars 11 and the fenders 15, having the endless carriers mounted between the said frame-bars and fender, in combination with the guards hinged to the lower ends of the fenders, having flaring inner sides and provided at their lower ends with shoes or runners adapted to ride over inequalities in the ground, substantially as described, for the purpose set forth.

2. In a corn-harvester, the combination of the frame having the forwardly-extending brackets 3 6 and the uprights 8 8, the inclined frame-bars connecting the upper ends of said uprights with the front ends of said brackets, the fenders supported upon and parallel to said inclined frame-bars, the endless carriers mounted between said frame-bars and fenders, and the guards hinged to the lower ends of the fenders and having flaring inner sides, and provided at their lower ends with shoes or runners adapted to ride over rocks and other obstructions upon the ground, substantially as set forth.

448,698. ELECTRIC SWITCH. DONLEE B. TURNER, Chicago, Ill. Filed June 18, 1890. Serial No. 355,884. (No model.)



Claim.—1. In a switch, the combination of two elbow crank-levers with suitable contacts for their long ends, a reciprocating piece connected with their short ends, and a lock having a movable part which controls the reciprocations of such piece.

2. In a switch, the combination of pivoted elbow crank-levers with suitable contacts for one set of their ends, a cross-piece connecting the other ends, itself elastically connected with a reciprocating bar, and a key-controlled lock or piece to reciprocate said bar.

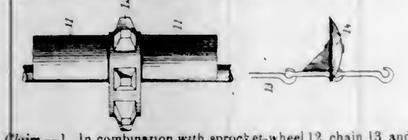
3. In a switch, the combination of a movable piece which throws the circuit-making arms, with springs on the opposite sides thereof, a pivoted bar with a lug which alternately engages the opposite sides of

such piece, and a pivoted cam on the piece and a lug on the bar adapted by their engagement to compress such springs and trip such arms.

4. In a switch, the combination of two elbow crank-levers with suitable contacts for two of their ends, a reciprocating piece connecting their other ends, and a lock having a movable part which controls the reciprocations of such piece, and thus rocks the levers to make or break circuit.

5. In a switch, the combination of two elbow crank-levers with suitable contacts for two of their ends, a lock, and a connection from such lock to the other ends of said levers, whereby the operation of the lock will move the levers on their pivots to make or break the circuit.

448,699. ELEVATOR. THOMAS J. UNDERWOOD, Decatur, Ill. Filed Sept. 15, 1890. Serial No. 364,965. (No model.)

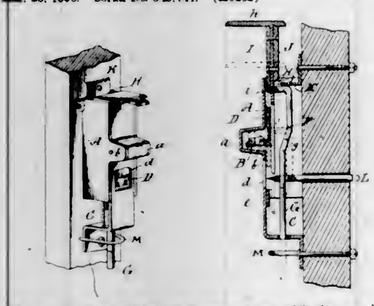


Claim.—1. In combination with sprocket-wheel 12, chain 13, and overshot buckets 14, the curved plate 11, slotted to receive the wheel and following the periphery thereof to a point in vertical alignment with its center, as set forth.

2. In combination with a sprocket-chain, a drag-bucket rigidly secured to a side of a link of the chain in line with the lower pivot thereof, as set forth.

3. In combination with chain 13, the concavo-convex bucket 14, having the central elevation 14^a, hole 14^b, and recess 14^c, as set forth.

448,700. SEAL-LOCK. WILLIAM WALKER, Scandia, Kans. Filed Mar. 28, 1890. Serial No. 345,741. (Model.)



Claim.—1. In a seal-lock, the combination, with the case having a sight-opening and having an opening in its top, the plate having the locking-bolt attached thereto adapted to slide through the said opening in the top of the case, and the seal-breaking devices, of a seal adapted to be inserted in the opening in the top of the case, and a movable stop arranged over the sight-opening and adapted to permit the passage of the seal between it and the said plate and automatically project within the path of the seal after the same has passed by and hold it from withdrawal, substantially as described.

2. The combination, with the case having sight-opening *d*, and having a support, as *e*, below the opening and the movable stop above the sight-opening, of the seal held from vertical displacement by the said stop, the sliding plate F, adapted to support the seal from the rear and having the locking-bolt attached thereto, and the seal-breaking devices operated by the said rod, substantially as described.

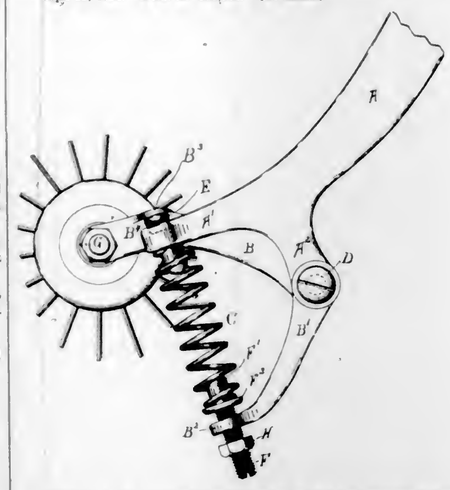
3. The combination, with a case having a sight-opening and having a support *e* below the opening, the stop, and the seal, of the sliding plate having shoulder *i* to engage with the seal and push it by the stop, and having the locking-bolt attached thereto, and the seal-breaking devices, substantially as set forth.

4. The combination, with a lock-case having a sight-opening and the seal exposed through said opening, of the sliding rod G, having a cam portion, and the rod L, arranged at right angles to rod G and to the front of the case and adapted to be engaged by the cam portion of rod G, and having a breaking-point to destroy the seal, substantially as specified.

5. The combination, with the case having sight-opening *d*, the stop B, and the seal, of the sliding plate F, the rod G, connected with the said plate and having a cam portion, and the rod L, having a breaking-point and arranged at right angles to rod G and adapted to be moved longitudinally by the cam portion on rod G to destroy the seal, substantially as and for the purpose described.

6. The combination, with the case having sight-opening *d* and opening H at its top, the stop K, the seal, and the seal-breaking mechanism, of the sliding plate F for operating the seal-breaking device and projecting the locking-bolt, the plate I on the front side of the plate F to hold the seal down, and the plate J on the rear side of plate F, and three plates filling opening H when the plate F is at its lowest position, and the plate J adapted to rest upon stop K when the plate F is at its highest position, substantially as set forth.

448,701. BICYCLE. CHARLES F. WATKINS, Buffalo, N. Y. Filed Sept. 22, 1890. Serial No. 365,861. (No model.)



Claim.—1. In a bicycle having each of the two prongs of the steering-fork pinioned for its bearing on a frame at B' and the two-arm frame-piece attached to the axle G at B^4, the combination therewith of the spring C when connected at one of its ends rigidly to the arm of the frame at B^3, the projection at A' rigidly holding the other end of the spring C to the prong's end between the bearing at D on A^3 and axle G, the stop B^3, and the rubber E, all substantially as and for the purpose set forth.

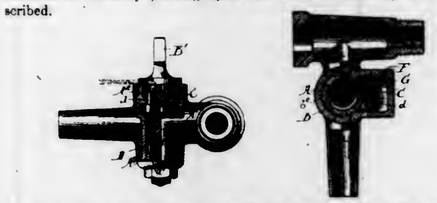
2. In a Safety bicycle, the combination of the two-arm frame-piece B B' B^3 B^3 B^4, constructed as described, the improved adjusting-screw F F' F^3 when threaded into the lower end of the frame-piece B^3 and rigidly fastened by set-out H and connecting the lower end of the spring C rigidly to the frame B and the projection on the prong at A' when rigidly holding the upper end of said spring with other parts of the steering device, when all are constructed and arranged adapting the end of the prong at A' to work free of frictional contact with any part or frame-piece between the axle G and the bearing of the prong at A^3 on the pinion D, all substantially as and for the purpose set forth.

3. As an improvement on my improvement in bicycles patented December 17, 1889, No. 417,655, the combination, with other parts, of steering device, the two-arm frame-piece B B' B^3 B^3 B^4, the improved adjusting-screw F F' F^3, threaded in the frame B^3, the set-nut H, the projection on the prong A', the rubber E, and the stop B^3, when all are constructed and arranged adapting the spring C and end of the prong A' to be firmly held to operate free of any frictional contact with the frame or other part between axle G and the bearing of the prong at pinion D, all substantially as and for the purpose set forth.

448,702. LOCKING STOP-COCK. HENRY F. WILSON, Chicago, Ill., assignor to the Crane Company, same place. Filed Dec. 5, 1890. Serial No. 373,677. (No model.)

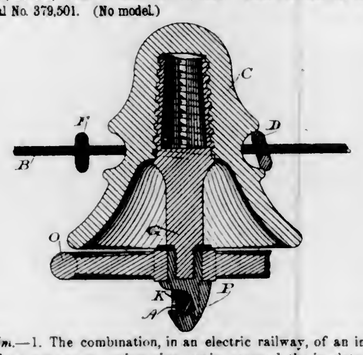
Claim.—1. A locking stop-cock the body of which is provided with an extension A', cast in one piece therewith, and having a chamber that communicates with the usual opening of the body A, that receives the plug B, a pivoted latch C, of a size adapting it to be passed through the plug-opening and into the body of said extension A', said latch being provided with a lug *c*, a stem D for said latch, whereby it may be turned, and a plug B, provided with a seat or notch to receive the lug of the latch C, substantially as described.

2. A locking stop-cock the body A of which is provided with a chamber or extension A', cast in one piece therewith, communicating with the usual opening in the body A, that receives the plug B, a pivoted latch C, of a size adapting it to be passed through the plug-opening and into the body of said chamber A' and provided with a suitable lug *c*, a plug B, provided with a seat or notch for said lug *c*, a stem D, passing through said latch, and a spring held within said chamber for normally pressing upon said latch, substantially as described.



3. A locking stop-cock the body A of which is provided with an extension A', the chamber whereof communicates with the usual opening of the body A, that receives the plug B, and provided also with a perforated extension A^3, a latch C within said extension A' and having a lug *c*, a stem D, extending through said extensions A' and A^3 and through the latch C, said stem being provided with an irregular end, a spring located within the extension A' and bearing upon the outer end of the latch C, and a plug B, provided with a seat or notch to receive the lug of the latch, substantially as described.

448,703. SUPPORT FOR ELECTRIC LINE-WIRES. HERBERT C. WIRT, Boston, Mass. Filed Mar. 17, 1890. Renewed Jan. 29, 1891. Serial No. 379,501. (No model.)



Claim.—1. The combination, in an electric railway, of an insulator and transverse supporting-wire passing around the insulator, a clamp secured at its ends to the wire so that the insulator is surrounded and held between the wire and clamp, and a line conductor suspended from the insulator, as set forth.

2. The combination, in an electric railway, of the transverse supporting-wire and clamp attached thereto, with the insulator held by and between the wire and clamp, a metallic shank seated in the insulator, and a line conductor suspended by the shank, as set forth.

3. The combination, with a line-wire for an electric railway, of a transverse supporting-wire, and an intermediate insulator secured to the said transverse wire by means of a clamp attached to the transverse wire at one side of the insulator and at the other side of the insulator held by means of a connecting-bolt adapted to draw the clamp tightly around the insulator.

4. The combination, with a line-wire for an electric railway, of a transverse supporting-wire and an intermediate insulator, a connection from the under side of the insulator to the line-wire, and a protecting-guard for the insulator.

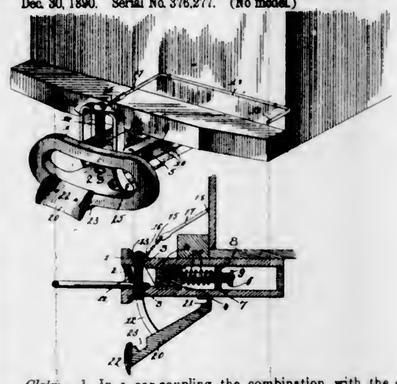
5. The combination, with a line-wire of an electric railway, of a supporting-insulator therefor, a connection between the line-wire and the said insulator, and a protecting-guard of metal attached to the said connecting device.

6. The combination, with a line-wire of an electric railway, of supporting-insulator and an intermediate connecting device consisting of an arch and a clamping-piece for bending the wire into the said arch, and a protecting-guard for the insulator attached to the said arch.

7. The combination, with an electric line conductor, of a transverse supporting-wire, an intermediate insulator secured to the said transverse wire, a screw-shank entering the said insulator, and arch on the lower end of shank, having its ends resting upon the line-wire, and an intermediate clamp embracing the line-wire and adapted to be drawn into the arch by a screw connection.

8. The combination, with an electric line-wire, of a supporting-insulator and an intermediate connection consisting of an arch having its end resting on the line-wire and a clamp embracing the line-wire and adapted to bend the said line-wire into the said arch.

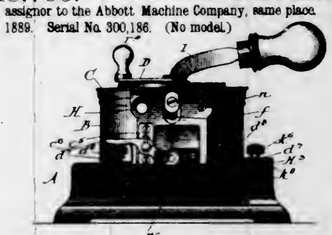
448,704. CAR-COUPLING. JACOB ZILIUS, Huntingdon, Pa. Filed Dec. 30, 1890. Serial No. 376,277. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head, a block mounted therein and extending beyond the side of the same, and a spring for pressing the block to the front, of an inverted-U-shaped bail loosely embracing the head in front of the block, provided with shoulders adapted to be engaged by the block and with a pin-opening, a pin mounted in the opening, and means for elevating said bail, substantially as specified.

2. In a car-coupling, the combination, with the draw-head provided upon the inner side of its roof and bottom with longitudinal guide-ribs, a block mounted for movement between the ribs, provided with a concaved front face laterally extended beyond the head and terminating at its rear end in a stem passing through a perforation formed in a transverse partition of the head, and a coiled spring interposed between the head and partition, of a guide-apron hinged to the under side of the head and terminating at its front end in a guide-plate for the link, an inverted-U-shaped gravity-bail embracing the head, having its arms shouldered at their rear sides to engage with the block, pivoted at their lower ends to the sides of the apron, and at its center having a pin-hole, a pin mounted in the hole and having its head resting upon the plate, a rock-shaft terminating at its outer end in a handle and at its inner end in an arm or crank, and a chain connecting said crank with the bail, substantially as specified.

448,705. CHECK-PROTECTOR. EDWIN O. ABBOTT, Chicago, Ill., assignor to the Abbott Machine Company, same place. Filed Feb. 16, 1889. Serial No. 300,186. (No model.)



Claim.—1. In a paper-feeding mechanism, the combination of a roller mounted in fixed bearings and devices for operating the same with a roller mounted upon a spring-pressed journal-pin and having a central bushing with a cylindrical bore of larger diameter than said journal-pin, substantially as described.

2. The roller W, having the central bushings r^4, shorter than the roller, and the journal-pin r^5, said bushing having a cylindrical bore of larger diameter than said journal-pin and constituting a separable bearing for the roller on said pin, substantially as described.

3. In a perforating-stamp, the punch a^4, having a flattened head which is wider in one direction and narrower in another than the body of the punch, substantially as described.

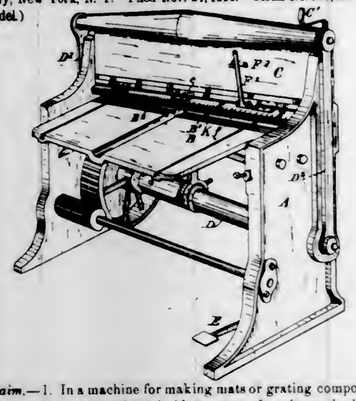
4. In a perforating-stamp, the punches a^4, having flattened heads which are wider in one direction than the body of the punch, in combination with the plate R, having perforations to receive and hold said punches, substantially as described.

5. In a perforating-stamp, the combination, with a punch-wheel having a series of punches mounted therein and a series of projections intermediate the punches, of a centering and latching device for the punches and a plunger independent of said device for depressing the punches, said projections being adapted to lock said plunger against depression except when a punch is properly centered, substantially as set forth.

6. In a perforating-stamp, a punch-wheel having a series of punches mounted therein and a series of projections arranged intermediate the punches, said punches projecting above the upper flange of the wheel and said projections extending upward slightly more than the punches, substantially as described.

448,706. MACHINE FOR MAKING MATS OR GRATINGS.

HENRY BRISHEIM, Rochester, assignor to the New York Steel Mat Company, New York, N. Y. Filed Nov. 21, 1890. Serial No. 372,211. (No model.)



Claim.—1. In a machine for making mats or grating composed of strips, the combination, with a suitable support, of a strip-carrier having the longitudinal and the transverse slots therein, substantially as described.

2. In a machine for making mats or gratings composed of strips, the combination, with a suitable support, of a strip-carrier having the longitudinal and the transverse slots and a spacing-bar having slots corresponding with the transverse slots in the carrier, substantially as described.

3. The combination, with the support or table having the gage thereon, of the reciprocating bar and the strip-carrier thereon having the longitudinal and the transverse slots, substantially as described.

4. The combination, with the support or table, of the reciprocating bar and the strip-carrier pivoted thereon and adapted to be swung out from beneath the bar, having the longitudinal and the transverse slots, substantially as described.

5. The combination, with the support or table, of the reciprocating bar and the strip-carrier adapted to be moved out from beneath the bar and having the longitudinal and transverse slots, substantially as described.

6. The combination, with the support or table, of the reciprocating bar, a strip-carrier thereon, the presser, and the spacing-bar on the table, substantially as described.

7. The combination, with the support or table, of the reciprocating bar, the strip-carrier pivoted thereto, and the gage having the slotted end, substantially as described.

8. The combination, with the support or table, of the reciprocating strip-carrier having the longitudinal and the transverse slots and the pivoted spacing-bar having slots corresponding with those in the carrier, substantially as described.

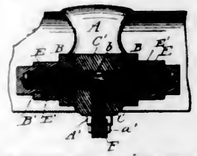
9. The combination, with the support or table, of the reciprocating bar, the strip-carrier pivoted thereto, having the operating-handle, and the catch for retaining said handle when the carrier is raised, substantially as described.

10. The combination, with the strip-carrier having the longitudinal slot, of the spring-operated catches projecting into said slot for holding the strip, substantially as described.

11. The combination, with the reciprocating bar, of the strip-carrier thereon adapted to be moved beneath the bar, having the longitudinal slot and the spring-operated catches projecting into said slot for holding the strip, substantially as described.

448,707. THILL-COUPLING.

PETER BROADBOOKS, Batavia, N. Y. Filed Mar. 28, 1890. Renewed Jan. 15, 1891. Serial No. 377,887. (No model.)



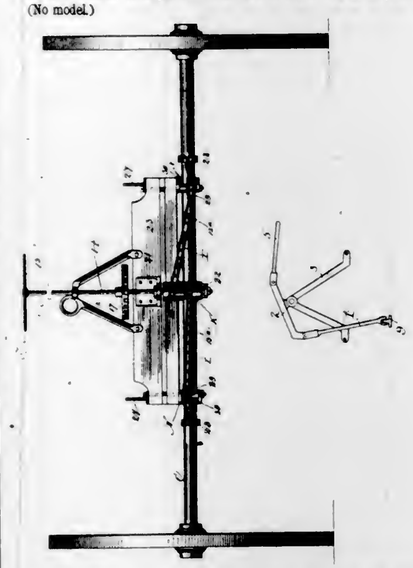
Claim.—1. The combination, with the thill draft-iron, of the coupling-clip, the laterally-extending collars permanently secured to the draft-ears, whereby a long bearing is secured, the coupling-pin passing entirely through the whole, and the capped pin-retaining nuts screw-threaded upon either collar, for the purpose described, and substantially as herein set forth.

2. The combination, with the thill draft-iron, of the coupling-clip having the laterally-extending collars permanently secured to the draft-ears, the peripheral screw-thread upon the collar, the coupling-pin provided with the rounded ends extending through and beyond each collar, and the capped nut, the inner side of which cap is made conformable to the rounded end of the coupling-pin and capable of direct impingement thereagainst, for the purpose described, and substantially as herein set forth.

3. The combination, with the thill draft-iron, of the set-screw in the eye thereof, the coupling-clip provided with the laterally-extending collars upon either draft-ear, the coupling-pin capable of passing through the whole, the peripheral groove centrally of the pin, and within which groove the inner end of the set-screw enters, for the purpose described, and substantially as herein set forth.

448,708. MACHINE FOR MAKING AND REPAIRING ROADS.

MORTON G. BUNNELL, Chicago, Ill., assignor, by mesne assignments, to Anna B. Austin, same place. Filed Nov. 3, 1890. Serial No. 370,236. (No model.)



Claim.—1. The combination, substantially as and for the purpose hereinbefore set forth, in a machine for making and repairing roads, of a body-frame, a short horizontally-swinging front axle whereon the body-frame is pivotally held at a point midway of the ends of said axle, a diagonally-adjustable scraper-blade arranged below the body-frame so as to extend across the space between the front and rear wheels and pivotally held so that it can be swung to an extent to position its respective ends alternately ahead, and a long horizontally-swinging rear axle adjustable independently of the body-frame in its said movement about its longitudinal middle in both directions and to an extent to attain the hereinbefore-described relative adjustments between the rear and front wheels, body-frame, and scraper-blade.

2. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally held upon a short horizontally-swinging axle, a draft-bar pivotally held at the forward end of the machine, a diagonally-adjustable scraper-blade pivotally held upon the laterally-swinging draft-bar, so as to extend across the space between the front and rear wheels and swing to an extent to position its respective ends alternately ahead, and a long horizontally-swinging rear axle adjustable independently of the body-frame in its said movement about its longitudinal middle in both directions and to an extent to attain the hereinbefore-described relative adjustments between the rear and front wheels, body-frame, draft-bar, and scraper-blade, for the purpose specified.

3. The combination, substantially as hereinbefore set forth, in machines for making and repairing roads, of a body-frame, a diagonally-adjustable scraper-blade arranged to extend across the space between the front and rear wheels, and front and rear swinging axles of unequal length, the body-frame being pivoted upon the front axle midway of the wheels thereon, and the rear axle being arranged to swing independently of the body-frame and in both directions, so that its ends can be alternately swung forward to an equal extent.

4. A road-scraper provided with a scraper-blade and means for setting and holding it in different inclined positions horizontally, with front and rear axles each centrally pivoted, the rear wheels having a greater spread than the front ones, substantially as set forth.

5. A road-scraper having a scraper-blade and means for reversing its horizontal position and devices for shifting it longitudinally, with front and rear swinging axles and means for changing their angles to the line of the body, substantially as set forth.

6. A road-scraper provided with a scraper-blade, with means for setting the blade horizontally in reverse inclined positions, devices for raising the ends thereof, and appliances for shifting it longitudinally, and with front and rear swinging axles, substantially as set forth.

7. The combination, with a road-scraper, of a diagonally-adjustable scraper-blade and devices for setting the same in reversely-inclined horizontal positions and for raising and lowering either end and for adjusting the same longitudinally, and front and rear swinging axles, the rear wheels having a greater spread than the front wheels, substantially as set forth.

8. A road-scraper provided with a diagonally-adjustable scraper-blade, and with devices for raising and lowering each end and for reversing the angle horizontally and for shifting the blade longitudinally, and with a pivoted rear axle, substantially as set forth.

9. A road-scraper provided with centrally-pivoted front and rear axles, the rear wheels having a greater spread than the front ones, and with a scraper-bar, with devices connected to the said bar to shift it to different positions horizontally and to different heights, substantially as set forth.

10. A road-scraper having a centrally-pivoted rear axle longer than the front axle and a vertically-adjustable and horizontally-reversible scraper-bar, substantially as set forth.

11. The combination, in a road-scraper, of a body, front and rear axles pivoted to the body, the rear axle being the longest, a vertically and diagonally adjustable and reversible scraper-bar, and appliances whereby the attendant may change the vertical and diagonal positions of the bar, substantially as described.

12. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally held upon the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle adjustable independently of the body-frame in its said movement about its longitudinal middle in both directions, and guide-bearings rigid with the body-frame and providing horizontal ways through which the end portions of the horizontally-swinging rear axle are extended, said guideways being proportional in length to the herein-described extent of swing in both directions on the part of said end portions of the rear axle, for the purpose specified.

13. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally held at its forward end upon the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the rear wheels, a horizontally-swinging rear axle pivotally connected with the body-frame, a hand-wheel shaft supported upon the body-frame, and chain or like flexible connection between the hand-wheel shaft and the end portions of the horizontally-swinging rear axle.

14. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of a body-frame pivotally held upon the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle pivotally connected with the body-frame, a hand-wheel shaft supported upon the body-frame, chain or like flexible connections between the hand-wheel shaft and the end portions of the horizontally-swinging rear axle and guide rolls or pulleys for said chain connections supported upon the body-frame forward of the end portions of the rear axle.

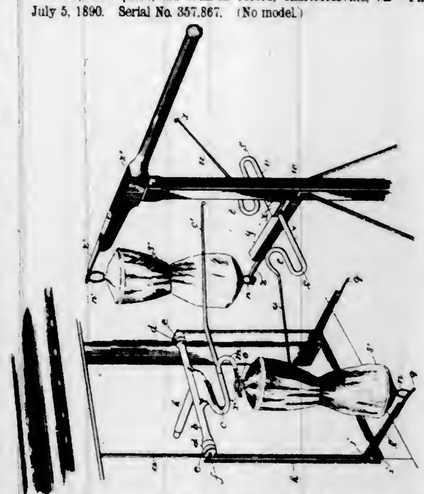
15. The combination, substantially as hereinbefore set forth, in a machine for making and repairing roads, of the body-frame pivotally held upon the front axle, a diagonally-adjustable scraper-blade carried below the body-frame and arranged to extend across the space between the front and rear wheels, a horizontally-swinging rear axle pivotally connected with the body-frame, a hand-wheel shaft supported upon the body-frame, chain or like flexible connections between the hand-wheel shaft and the end portions of the rear axle, a notched wheel upon the hand-wheel shaft, and a foot-latch arranged for engaging said notched wheel.

16. The combination, in a four-wheeled road making and repairing machine provided with a diagonally-adjustable scraper-blade arranged to extend across the space between the front and rear wheels, of the horizontally-swinging long rear axle pivotally connected with the body-frame, a spirally-grooved winding drum or shaft K, supported upon the body-frame, and chain or like flexible connections between said winding-drum or shaft and the end portions of the rear axle.

17. In a road-making and road-reparing machine comprising a wheeled body-frame and a diagonally-adjustable scraper-blade, the segment F, substantially +-shaped in cross-section, bent as described and formed of a single piece of continuous angle-iron, said segment being secured to the circle along its part-circular portion 31, and carrying the blade which is attached to its arm 32, substantially as set forth.

448,709. DEVICE FOR CATCHING AND DELIVERING MAIL-BAGS.

WALTER BURKS, Lynchburg, Va., assignor of two-thirds to Wm. T. Goode, same place, and Wm. A. Moore, Charlottesville, Va. Filed July 5, 1890. Serial No. 357,867. (No model.)



Claim.—In a catching and delivering device for mail-bags, the combination of a post or standard provided with a lever and with an arm hinged to said post below said lever, bag-holding devices upon the free end of the arm and upon the short arm of the lever, and a pair of receiving-hooks hinged to the post between said lever and arm in such juxtaposition as to interfere with raising the arm when the latter is down and to rest upon it when up, in the manner and for the purpose substantially as described.

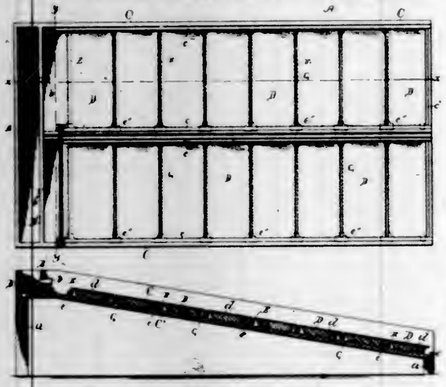
448,710. ORE-RIFFLE.

GEORGE H. CHICK, Kansas City, Mo. Filed Feb. 8, 1890. Serial No. 339,694. (No model.)

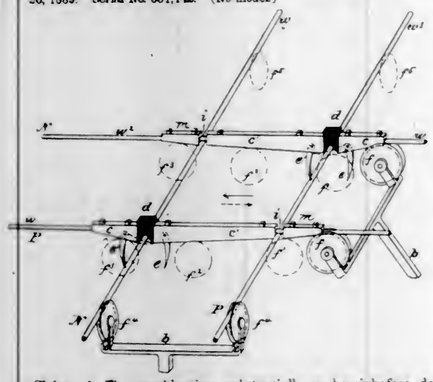
Claim.—1. An ore-riffle composed of the main box or riffle C, provided at its upper end with a box B, through which the ores are fed into said riffle, the said riffle being built on an incline, having the metallic plates D secured to the plates *d* and projecting over each edge of the plates *d*, said plates *d* having their edges beveled, as shown, thereby forming chambers or spaces between the plates *d*, in which the ores are collected as they pass down the riffle, substantially as described.

2. An ore-riffle having the plates D secured on the beveled plates *d* and held in position by cleat *c*, in combination with the pipes E, arranged in the spaces between the plates D, having their upper edges

perforated for throwing a constant stream of water against the descending ores, thereby cleansing them, substantially as specified.



448,711. OVERHEAD CROSSING APPLIANCE FOR ELECTRIC RAILWAYS. ISAIAH H. FARNHAM, Wellesley, assignor to the New England Telephone and Telegraph Company, Boston, Mass. Filed Nov. 20, 1889. Serial No. 331,142. (No model.)



Claim.—1. The combination, substantially as hereinbefore described, of intersecting electric-supply conductors for an electric railway, with one or more automatically-operated conducting bridging sections therefor electrically connected with one of the said conductors, each bridge being a movable section of the upper trolley-conductor, of suitable length and shape, hanging in the path of the traveling contact, which movable section is adapted to be struck by the said traveling contact and thereupon forced into a position to complete the track for the passage thereof, but acting at all other times by its own gravity to fall away from said track and to maintain the discontinuity of said trolley-track, for the purposes specified.

2. In an electric railway having overhead supply-wires and at a crossing-point thereof, the combination of supply-conductors crossing or intersecting each other upon different levels or planes, and means for conducting the trolley traversing the upper conductor around the lower conductor and for continuously maintaining the electrical connection of said trolley with its said supply-conductor, substantially as and for the purposes specified.

3. In an electric railway, the combination of crossing power-conductors, an insulating separating-block fixed between the said conductors at the point of intersection, a self-acting bridge-piece in electrical connection with the upper conductor and actuated by the passage of a traveling contact over said conductor to form a movable and temporary section of said conductor bridging around the lower conductor and the interposed insulation for the passage and feed of said traveling contact, whereby the said traveling contact may pass from one side to the other of the crossing-conductor without interfering with the continuity thereof and without being disconnected from its own conductor, and a protecting hood or weather-guard mounted on said insulating-block and adapted to shed water and maintain the insulation of the apparatus, substantially as described.

4. The combination, in an electric railway, of a supply-conductor adapted to be engaged by a traveling contact, a second supply-conductor crossing the first at an angle, means, such as a non-conducting block, for permanently separating the said conductors, and a movable section of the first conductor capable of bridging the said separating medium and the second conductor and adapted to be brought into position so as to serve by the passage of the traveling contact, and thereupon to furnish a conducting-path for the said contact, but normally hanging from the first supply-conductor at one side of the point of intersection, whereby the traveling contacts of the second supply may pass without being obstructed by the said movable section, substantially as described.

5. In a double-trolley electric railway, direct and return electric conductors or power-lines crossing a similar double-wire system at an angle, each conductor of both sets being suitably insulated by an interposed non-conducting block from its crossing conductor of opposite polarity, and automatic bridging devices at the said insulated intersections adapted to establish for the transit of the traveling contacts of the conductors of the higher plane a temporary path around and under their crossing conductors, substantially as and for the purposes specified.

6. The combination, in an electric railway, of a supply-conductor adapted to be engaged by a travelling contact, a second and similar supply-conductor crossing the first at an angle therewith and on a lower horizontal plane, a non-conducting block interposed between said conductors at the point of intersection, the first conductor passing through and supporting the same and the second passing in a transverse groove or recess in the lower surface thereof, clamps holding the said insulating-block in place and forming inclined planes from the conducting-surface of the first supply-conductor on either side of the said block to the plane of the lower surface of said block, movable conducting-sections pivoted to the said clamps and capable of being swung in a vertical direction therefrom, the said sections being normally hung out of the line of the transverse second supply-conductor, for the purpose specified, but adapted to be swung into connection with the opposite clamp by the transit of a traveling contact, and thereupon to bridge the said insulating-block and the transverse conductor, embedded therein, and to constitute, in combination with the said inclined planes on either side, a conducting-path across the lower surface of said insulating-block for the passage of said traveling contact, substantially as described.

7. The combination, in an electric-railway crossing, of an electric conductor or power-line divided into two parallel branches, one of the said branches being permanently closed or continuous and the other being normally open, a second power-line crossing the first at an angle and passing between the closed and normally-open branches thereof, a non-conducting mass electrically separating the said two power-lines and grooved across its lower surface for the reception of the said second power-line, traveling contacts for the first lines, and means, substantially as indicated, actuated thereby for closing the normally-open branch thereof and for maintaining the same closed during the passage of said traveling contact over the crossing, whereby the said branch is formed into a path for the said contact over the face of said insulating-block and around and on a plane below the said crossing conductor, for the purposes specified.

8. The combination of two sets of double conductors or power-lines crossing each other and each adapted to be traversed by a traveling contact, the positive wire of each set being suitably insulated or prevented from coming in contact with the negative wire of the other set, with pivoted conducting-levers at the said insulated intersections hanging from the uppermost conductors, the said levers normally being hung upon one or both sides of the line of the intersecting conductor, so as to leave the said line free for the passage of its traveling contacts and being, when displaced, capable of automatically resuming their normal position and being adapted to be actuated by the traveling contacts of their own lines and to be swung thereby in a vertical plane into a substantially horizontal position, establishing the continuity of said line, and a path for the passage of the said actuating contacts below and around the crossing conductors, whereby such crossings may be effected without liability to short-circuiting and without impairing the continuity of the lower main conductors.

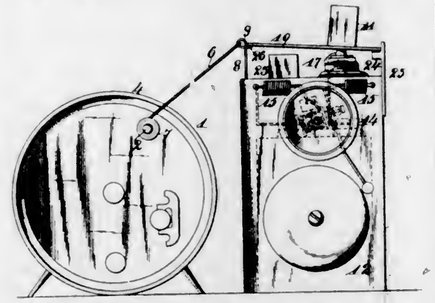
9. In combination with two sets of crossing conductors or power-lines of electric railways, each set comprising a positive and a negative conductor, the conductors of the one set passing under those of the other and both adapted to be engaged by underrunning trolleys or traveling contacts, a temporary automatically established and disestablished conducting-path connected with the conductors of the higher plane and extending below the conductors of the lower plane at the intersections of the positive conductor of each set with the negative conductor of the other, whereby the underrunning trolleys of the said higher set of conductors are enabled to pass under the said lower set of conductors, substantially as described.

10. In an electric railway having for each track two overhead main conductors or power-lines, the combination, with two sets of such power-lines crossing each other at an angle, of an insulating-block interposed between the positive conductor of each set and the negative conductor of the other set at the intersections thereof, the lower plane conductor being depressed below the inferior surface of said insulating-block, and a temporary conducting-trolley path for the trolley of the conductor of the higher plane below and around the conductor of the lower plane, established during the passage of said trolley, the said conducting-path being composed of conducting inclined-plane abutments in connection on either side of said insulation with the higher conductor, and a self-acting bridge-piece normally suspended by one end from the said abutments to leave the crossing-conductor unbridged, but adapted to have its free end thrown up and brought into contact with the opposite abutment, and thereby to complete the said conducting-trolley path when required, substantially as set forth.

11. In an electric railway having for each track two overhead main conductors or power-lines, the combination, with two sets of such power-lines crossing each other at an angle, of an insulating-block interposed between the positive conductor of each set and the negative conductor of the other set, the lower plane conductor being depressed below the under surface of said insulation, conducting inclined-plane abutments affixed to the higher conductor and in electrical connection therewith, the said planes forming a trolley-path to the plane of the lower conductor for the traveling contact of the upper conductor, and a freely-moving conducting bridge-piece suspended by one of its ends from one or both of said abutments and adapted to bridge across the insulating-surface and crossing conductor when struck by the traveling contact of the said upper conductor, and thereby to complete the said trolley-path between the two opposing abutments, whereby the trolley of the upper conductor is enabled at crossings to pass below the lower conductor without being disconnected from its supply-line and to automatically fall through the influence of gravity to its normal position, leaving clear the path of the lower conductor for its traveling contacts after the said upper contact has passed.

12. In an electric railway having overhead supply-wires and at a crossing-point thereof, the combination of continuous supply-conductors crossing or intersecting each other upon different levels or planes, and means for conducting the trolley traversing the upper conductor around the lower conductor and for continuously maintaining the electrical connection of said trolley with its said supply-conductor, substantially as specified.

448,712. ELECTRIC TIME-ALARM. JOHN J. GALLAGHER, St. Louis, Mo. Filed Nov. 28, 1890. Serial No. 372,901. (No model.)

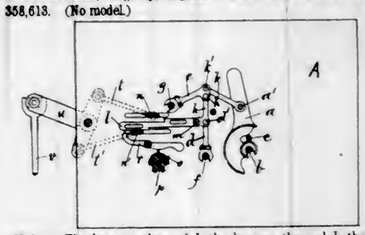


Claim.—1. In an electric alarm for clocks, the combination of a drop-weight 11, a trigger 8, provided with an eyelet 9 and catch 26 for setting said weight, a connecting-cord 6, secured in said eyelet and adapted to be operated by an alarm-shaft 2 for tripping said weight, and a circuit-closing device adapted to be operated by the same, substantially as set forth.

2. In an electric alarm for clocks, the combination of a drop-weight 11, a trigger 8, provided with an eyelet 9 and catch 26 for setting said weight, an alarm-shaft 2, a spool 7, adapted to be received on the end of said shaft, a connecting-cord 6, secured to said trigger and said spool for tripping said weight, and a circuit-closing device adapted to be operated by the same, substantially as set forth.

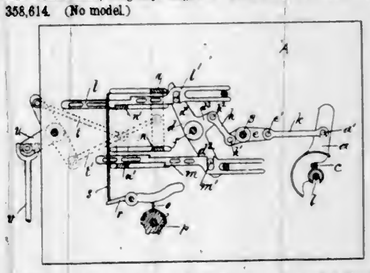
3. The combination of a battery 13, a receptacle 12 for the reception of said battery, an electric bell 14, secured to said receptacle, an alarm-clock 1, provided with an alarm-shaft 2, a detachable spool 7, adapted to be received on said shaft, contact-springs 16 and 20, situated apart and one above the other, a drop-weight 11, located above said springs a trigger 8 for setting said weight, and a connecting-cord 6, attached to said alarm-shaft and to said trigger for tripping said weight, substantially as set forth.

448,713. MECHANICAL MOVEMENT. RICHARD L. HATTERSLEY and JAMES HILL, Keighley, England. Filed July 14, 1890. Serial No. 358,613. (No model.)



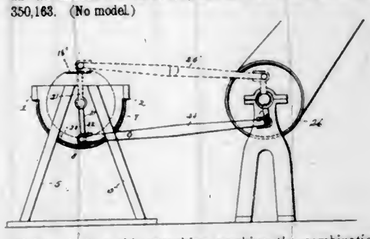
Claim.—The lever *a*, the rod *k*, the lever *e*, the rod *h*, the lever *d*, the shafts *f* and *g*, the hooked jack *l*, the bars *n* and *n'*, the rods *t* and *t'*, and the lever *u*, in combination, all these several parts being mounted, constructed, and arranged to operate substantially as specified.

448,714. MECHANICAL MOVEMENT. RICHARD L. HATTERSLEY and JAMES HILL, Keighley, England. Filed July 14, 1890. Serial No. 358,614. (No model.)



Claim.—The lever *a*, the rod *k*, the lever *e*, the rod *h*, the lever *d*, having arms d^2, d^3, and d^4, the hooked jacks *l* and *m*, the bars *n* and *n'*, the rods *t* and *t'*, and the lever *u*, in combination, all these several parts being mounted, constructed, and arranged to operate substantially as specified.

448,715. SHIRT-STARCHING MACHINE. WILLIAM S. HERNDON and LEVERETTE C. BUCKLAND, Tyler, Tex. Filed May 1, 1890. Serial No. 350,163. (No model.)



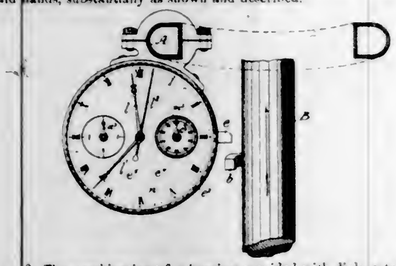
Claim.—1. In a shirt-starching machine, the combination, with the starch-holding receptacle provided in its bottom with longitudinal rubbers, of the shirt-holder journaled in bearings formed on the starch-holding receptacle and provided with an opening closed by a hinged door having recesses formed in its edges, and means, substantially as described, for imparting an oscillatory motion to the shirt-holder, substantially as described.

2. In a shirt-starching machine, the combination, with the semi-cylindrical starch-holder provided in its bottom with longitudinal rubbers and mounted upon suitable legs, of the cylindrical shirt-holder flattened upon one of its sides to engage the door, divided into compartments, and journaled in bearings formed in the starch-holder, provided with a longitudinal opening closed by a hinged door having recesses formed in its edges, and mechanism, substantially as shown and described, for imparting an oscillatory motion to the shirt-holder, substantially as specified.

448,716. ODOMETER. JOHN S. HILLIARD, Philadelphia, Pa. Filed Nov. 24, 1890. Serial No. 372,446. (No model.)

Claim.—1. A combined cyclometer and clock provided with dials, indices, and hands comprising a housing adapted to contain a train of recording-wheels actuating the indices, mechanism, as described, for

actuating the hands, a sleeve communicating with the interior of said housing, a ratchet-wheel mounted on the sleeve and provided with a finger meshing with one of the train of wheels, a spring-actuated lever mounted on said sleeve and provided with a pawl engaging said ratchet-wheel, and arbors passing through said sleeve and attached to said hands, substantially as shown and described.



2. The combination of a housing provided with dials, a train of recording-wheels mounted on arbors, indices attached to said arbors, a sleeve, a ratchet-wheel mounted on a shaft and provided with a finger engaging one of said train of wheels, a lever mounted on said shaft and provided with a spring-actuated pawl engaging said ratchet-wheel, and a spring attached to said lever and housing, substantially as shown and described.

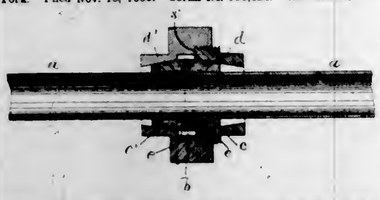
3. The combination of a housing provided with dials, a train of recording-wheels comprising crown-wheels provided with an extra tooth or dog, indices attached to certain of said crown-wheels, a sleeve, a ratchet-wheel provided with a finger, a spring-controlled lever protruding through said housing and mounted on said sleeve, and a pawl attached to said lever and adapted to engage said ratchet-wheel, substantially as shown and described.

4. The combination, with the front fork and wheel of a bicycle, tricycle, or velocipede, of a lug attached to said wheel, a housing attached to said fork and provided with dials, a train of recording-wheels and indices therefor, a sleeve, a ratchet-wheel for actuating said train of wheels, and a spring-controlled lever mounted on said sleeve and having one extremity protruding through said housing and adapted to contact with said lug and having the other extremity provided with a pawl, substantially as and for the purposes set forth.

5. The combination of a vehicle-wheel provided with a lug, a stationary housing provided with dials, a train of recording-wheels and indices, a sleeve, a ratchet-wheel for actuating said train, a spring-controlled lever mounted on said sleeve and adapted to contact with said lug at each revolution of the wheel, and a pawl attached to said lever and adapted to engage said ratchet-wheel, substantially as and for the purposes set forth

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448,717. FLANGE-AND-COLLAR COUPLING. JOHN J. HOGAN, New York, N. Y., assignor to the Hogan Engineering Company, of New York. Filed Nov. 18, 1889. Serial No. 330,820. (No model.)

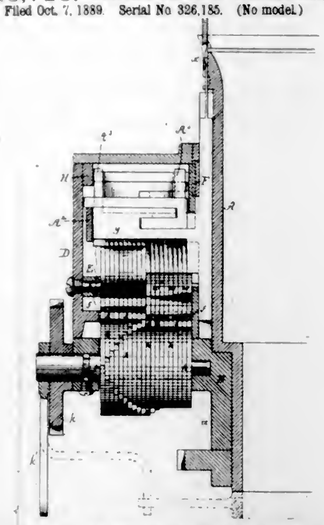


Claim.—1. In a pipe-coupling, the combination, with a flange bent abruptly outward upon the end of the pipe, of a ring having cylindrical bore and conical exterior applied to the exterior of the pipe behind the flange and a coupling-sleeve fitted to the conical exterior of the said ring and operated to press the flange against an opposed fitting, as and for the purpose set forth.

2. In a pipe-coupling, the combination, with a flange bent abruptly outward upon the end of the pipe, of a solid ring having cylindrical bore and conical exterior applied to the exterior of the pipe behind the flange and a coupling-sleeve fitted to the conical exterior of the said ring and operated to press the flange against an opposed fitting, as and for the purpose set forth

3. In a pipe-coupling, the combination, with a flange bent abruptly outward upon the end of the pipe, of a solid ring having cylindrical bore and conical exterior applied to the exterior of the pipe behind the flange, a coupling-sleeve fitted to the outside of such conical ring and provided with an internal screw-thread, an opposed fitting adapted to receive the outer face of the flange, a screw-thread to fit the interior of such sleeve, and a shoulder or stop to limit the movement of the sleeve, as and for the purpose set forth.

448,718. KNITTING-MACHINE. BENJAMIN HOLT, Camden, N. J. Filed Oct. 7, 1889. Serial No. 326,185. (No model.)



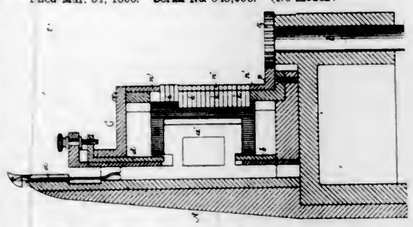
Claim.—1. The combination of the needle-carrier having needles with graded bits with a needle-operating cam composed of a series of sections free to move independently of each other to operative or inoperative position and means to effect such movement, whereby the needles having graded bits may be thrown into or out of action by the movement of the sections of the cam, substantially as specified.

2. The combination of the needle-carrier having needlea with bits graded in length with a needle-operating cam composed of sections movable independently of each other to operative or inoperative position and a stepped lifter for acting upon the sections successively and moving them into operative or inoperative position, substantially as specified.

3. The combination of the needle-carrier having needles with bits graded in length, a needle-operating cam composed of sections movable independently of each other to operative or inoperative position, blocks for acting on said cam-sections, and stepped disks for actuating said blocks, substantially as specified.

4. The combination of the lifting and drawing-down cams, the needles having jacks with portions movable into and out of range of the drawing-down cam, and cams for acting upon said movable portions of the jacks to so move them into and out of range, substantially as specified.

448,719. KNITTING-MACHINE. BENJAMIN HOLT, Camden, N. J. Filed Mar. 31, 1890. Serial No. 345,958. (No model.)



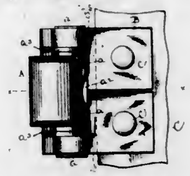
Claim.—1. The combination, with the needle-carrier and cam-box of the machine, the needles, and their jacks, of movable slides on said jacks having graduated bits, a knitting-cam for acting upon said movable slides, means for moving the said slides out of range of the knitting-cam, and a sectional cam for throwing said movable slides into operative position, substantially as specified.

2. The combination of the needle-carrier and cam-box with the needles and their jacks, having movable slides with graduating bits, lifting and drawing-down cams for acting upon said movable slides, means for moving the said slides out of range of the knitting-cams, and a sectional cam acting on said movable slides to adjust them to operative position, substantially as specified.

3. The combination of the needle-carrier and cam-box with the needles and their jacks, movable jack-slides having graduated bits, means for moving said slides out of operative position, sectional cams for acting upon said slides to move them into operative position, springs acting upon each of said cam-sections to throw it outward, and a stepped plate acting on the cam-sections to throw them inward, substantially as specified.

4. The combination of the needle-carrier and cam-box with the needles and their jacks, having movable slides with graduated bits, cams for moving said slides out of range of the knitting-cams, sectional cams for moving the slides into range of said knitting-cams, and means for operating the sections of said cams, substantially as specified.

448,720. BRAKE-BLOCK. JOHN A. JEWELL, Washington, D. C., assignor of one-half to James E. Beardsley, same place. Filed May 7, 1890. Serial No. 350,903. (No model.)

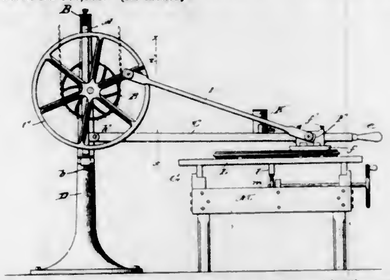


Claim.—1. A brake-block having its back re-enforced by inwardly-extended pivotal projections and a screw-regulator, as specified.

2. A brake-block constructed with a re-enforced back transverse rib-bearing and pivotal lateral extensions thereof, as specified.

3. The combination, with a brake-block having pivotal projections, of separable or half-bracket bearings therefor, constructed substantially as described.

448,721. SANDPAPERING, RUBBING, AND POLISHING MACHINE. WILLIAM J. MADDOX, Jamestown, N. Y. Filed Nov. 6, 1890. Serial No. 370,508. (No model.)



Claim.—1. In a machine such as described, the combination, with the frame mounted on vertically-arranged centers to swing horizontally and having the drive-wheel and pulleys thereon mounted in bearings at right angles to the centers on which the frame is hung, of the guide bar or frame pivotally connected thereto to swing vertically, the reciprocating rubber mounted on said bar or frame, and means, substantially as described, for communicating motion from the drive-wheel to said rubber, substantially as set forth.

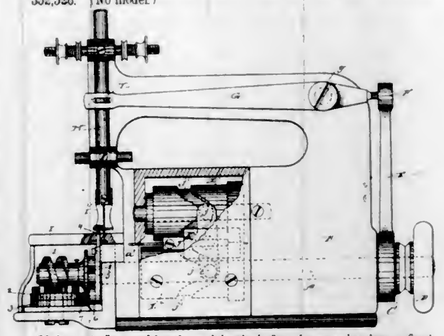
2. In a machine such as described, the combination, with the frame having the drive and power wheels thereon, mounted on vertically-disposed centers to swing horizontally, of the guide bar or frame pivotally connected to the bottom of said first-mentioned frame to swing vertically, the handle on the outer end of said bar, the reciprocatory rubber mounted on said bar, the crank-pin on the drive-wheel, and the pitman connecting the reciprocatory rubber and crank-pin, substantially as described.

3. In a machine such as described, the combination, with the frame having the drive and power wheels thereon, mounted on vertically-disposed centers to swing horizontally, of the guide bar or frame pivotally connected to the bottom of said first-mentioned frame to swing vertically, the handle on the outer end of said bar, the reciprocatory rubber mounted on said bar, the adjustable crank-pin on the drive-wheel, and the pitman connecting the reciprocatory rubber and crank-pin, substantially as described.

4. In a machine such as described, the combination, with the horizontally-swinging frame carrying the drive-wheel, the guide bar or frame pivoted thereto to swing vertically, the carriage mounted on said bar, the crank-pin, and pitman connecting said crank-pin and carriage to reciprocate the latter, of the rubber loosely connected to said carriage, whereby it may accommodate itself to inequalities in the surface being operated upon, and the handle on the guide bar or frame for controlling the rubber, substantially as described.

5. In a machine such as described, the combination, with the standard having the vertically-disposed set-screws, the frame held between said screw to swing horizontally, and the power and drive wheels mounted on said frame, of the bifurcated guide bar or frame pivoted to said first-mentioned frame to swing vertically, the rubber carriage mounted on said bar or frame, the adjustable crank on the drive-wheel, the pitman connecting said crank-pin and carriage, and the handle on the end of said guide bar or frame for moving the same, substantially as described.

448,722. FEEDING MECHANISM FOR CROCHET-MACHINES. JOSEPH M. MERROW, Merrow, Conn. Filed May 20, 1890. Serial No. 352,526. (No model.)



Claim.—1. In combination with stitch-forming mechanism, a feed-dog and carrier pivotally connected to a vertically-movable support, a cam engaging said support to elevate the feed-dog, an eccentric and pitman or equivalent actuating device connected to the feed-dog carrier and operating to reciprocate the latter upon its support, and worm-gearing intermediate the driving-shaft and said cam, substantially as described.

2. The combination, with a stitch-forming mechanism, of a reciprocating feed-dog and carrier pivotally supported upon a vertically-movable lever, a cam engaging said lever, a wheel connected to said cam, and a worm secured to the driving-shaft and engaging said wheel to rotate the cam, substantially as described.

3. The herein-described improved feed mechanism, consisting, essentially, of a rotating worm and eccentric, a wheel engaged by the worm and connected to a cam, a lever engaging said cam, a feed-dog carrier pivoted upon said lever, and a pitman connecting the eccentric and the feed-dog carrier, the whole combined substantially as and for the purpose specified.

4. In a feed mechanism such as described, the combination, with the wheel and its cam, the lever bearing the feed-dog carrier, and devices engaging the latter to reciprocate it, of the driving-worm provided with straight and inclined sections, substantially as described.

5. In a feed mechanism such as described, the combination, with the worm and the feed-dog mounted upon a vertically and horizontally movable support, of the cam for elevating said support and the wheel provided with a series of pins greater in number than the elevating-sections of the cam-wheel, substantially as described.

6. In a machine such as described, the combination, with the stitch-forming mechanism and the main driving-shaft thereof, of the worm and eccentric applied to said shaft, the pin-wheel and cam-disk, and the vertically-movable and horizontally-reciprocating feed-dog carrier and its support, said support engaging the cam-disk, while the feed-dog carrier is connected to and operated by the eccentric, substantially as described.

7. In a machine such as described, the combination, with the needle and needle-bar, the crochet-hook, its carrier and actuating-cams, and the main driving-shaft carrying one of said cams and connected to the needle-bar, of the worm and eccentric secured to the main drive-shaft, the wheel driven by said worm, a cam-disk connected to said wheel and provided with an elevating-section or protuberant portion, a lever or bar engaging said cam-disk, and a feed-dog carrier supported upon said lever or bar and connected to the eccentric by a pitman, substantially as described.

8. The combination, with the main drive-shaft, its worm and eccentric, and a vertical feed-dog carrier, of the pitman connecting said carrier and eccentric, the lever supporting the carrier and pivoted at one side of the main shaft, a cam engaging said lever between its pivot and point of attachment to the carrier, and a pin-wheel connected to the cam and engaged by the worm on the drive-shaft, substantially as described.

448,723. **PENCIL-SHARPENER.** JOHN D. MILLS, Cincinnati, Ohio, assignor to George C. McDermott, same place. Filed Dec. 8, 1890. Serial No. 373,925. (No model.)



Claim.—1. In a pencil-sharpener, the combination, with the frusto-conical abrading-wheel, of the rotary chuck mounted to rotate in movable bearings substantially parallel with the axis of the abrading-wheel, substantially as described.

2. In a pencil-sharpener, the combination, with the frusto-conical abrading-wheel, of the chuck-frame pivoted to swing toward and away from said wheel and the chuck mounted to rotate in bearings in said frame substantially parallel with the axis of the abrading-wheel, substantially as described.

3. In a pencil-sharpener, the combination, with the rotary abrading-wheel, of the chuck-frame pivoted to swing in a plane at right angles to the axis of the wheel and the chuck journaled in bearings in said frame substantially parallel with the said axis, substantially as described.

4. In a pencil-sharpener, the combination, with the rotary abrading-wheel, the pivoted chuck-frame, and chuck, of the chuck drive-wheel in frictional contact with the abrading-wheel, and the elastic band connecting said drive-wheel and chuck, substantially as described.

5. In a pencil-sharpener, the combination, with the rotary abrading-wheel, the pivoted chuck-frame, and chuck, of the pivoted chuck drive-wheel frame and drive-wheel journaled thereon and engaging the abrading-wheel, and the elastic belt connecting the chuck drive-wheel and chuck, substantially as described.

6. In a pencil-sharpener, the combination, with the rotary abrading-wheel, the pivoted chuck-frame, and chuck, of the pivoted chuck drive-wheel frame and drive-wheel journaled therein, having the elastic surface making frictional contact with the abrading-wheel, and the elastic belt connecting the chuck drive-wheel and chuck, substantially as described.

7. In a pencil-sharpener, the combination, with the rotary abrading-wheel having the forwardly-extending flange and the chuck, of the chuck drive-wheel engaging said flange and the band connecting said drive-wheel and chuck, substantially as described.

8. In a pencil-sharpener, the combination, with the rotary abrading-wheel having the forwardly-extending flange and the chuck mounted in a pivoted frame, of the pivoted chuck drive-wheel frame, the drive-wheel journaled therein and resting on the flange on the abrading-wheel, and the elastic band uniting said drive-wheel and chuck, substantially as described.

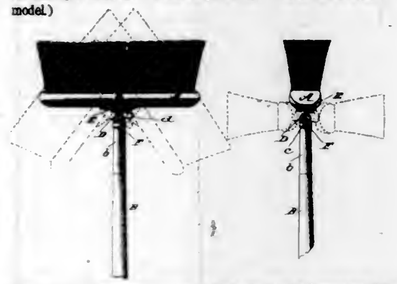
9. In a pencil-sharpener, the combination, with the frusto-conical abrading-wheel having the forwardly-extending flange, the pivoted chuck frame, and chuck journaled therein in bearings substantially parallel with the axis of the abrading-wheel, of the pivoted chuck drive-wheel frame, the drive-wheel journaled therein and resting on the flange on the abrading-wheel, and the elastic belt connecting the said drive-wheel and chuck, substantially as described.

10. In a pencil-sharpener, the combination, with the rotary abrading-wheel, of the chuck journaled in bearings substantially parallel with the axis of the abrading-wheel and rotated in a direction opposite to the direction of rotation of said wheel, whereby the surface of the pencil being acted upon and the surface of the abrading-wheel will move in the same direction, substantially as described.

11. In a chuck for pencil-sharpeners, the combination, with the elastic disk, of the holding-jaws secured thereon, substantially as described.

12. In a chuck for pencil-sharpeners, the combination, with the elastic disk, of the holding-jaws consisting of the metallic pieces inserted in an opening in the disk and having their ends turned in to grasp the disk, substantially as described.

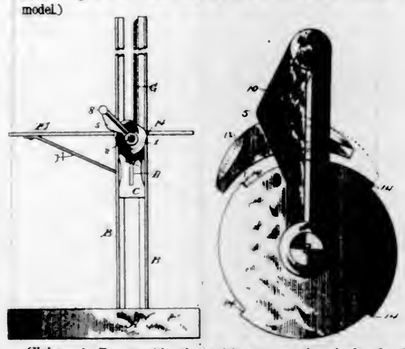
448,724. **ADJUSTABLE BRUSH-HANDLE.** CHARLES F. MYERS, McKinstry's Mills, Md. Filed July 16, 1890. Serial No. 358,993. (No model.)



Claim.—1. The combination, with a slotted ball connected to the brush and provided on its surface with a series of circular grooved seats, of a screw-threaded stem hung or pivoted within the slot of the ball, an interiorly-threaded handle-socket, and a grip-ring interposed between the socket and the ball, substantially as shown and described.

2. The combination of the recessed plate E, the slotted ball having a swiveling flange fitting therein and circular grooved seats, a clamp-screw for the swiveling flange, the screw-stem C, hung or pivoted within the ball, the screw-threaded handle-socket, and the grip-ring interposed between the handle-socket and the ball, substantially as shown and described.

448,725. **LOCKING DEVICE FOR SHAFTS.** FRANK G. MCCOLM, Forestburg, S. D. Filed Aug. 28, 1890. Serial No. 363,340. (No model.)



Claim.—1. The combination, with an operating-shaft, of a fixed disk or plate, a crank-arm rigid with the shaft, and means, substantially as described, adapted to engage the disk for locking the crank-arm against rotation, as and for the purpose described.

2. The combination, with an operating-shaft, of a fixed disk or plate, a crank-arm rigid with said shaft and having the slotted portion at its outer end, a handle for rotating the crank-arm, and a pivoted dog or detent carried by the crank and connected with the handle and adapted to contact with the periphery of said disk or plate, as and for the purpose described.

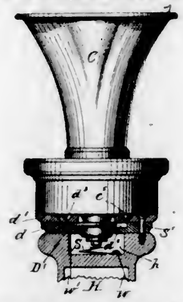
3. The combination, with the operating-shaft, of a fixed disk or plate, a crank-arm having a slotted portion, a handle pivoted to the crank at said slotted portion thereof, a dog or detent, and connections intermediate of the handle and detent for operating said detent to release and force the same upon the periphery of the fixed plate, for the purpose described, substantially as set forth.

4. The combination, with an operating-shaft, of a crank-arm rigid with the shaft, a locking device carried by said crank-arm, and a rocking handle connected to the crank-arm and to the locking device, for the purpose described, substantially as set forth.

5. The combination, with an operating-shaft, of a toothed disk or plate, a crank-arm rigid with the shaft, a rocking handle pivoted to the crank-arm, a swinging arm rigid with the rocking handle, and a detent pivoted centrally to the swinging arm, substantially as described.

448,726. **TELEPHONE-TRANSMITTER.** THORSTEIN OEYAN, Christiania, Norway. Filed Oct. 25, 1890. Serial No. 369,305. (No model.) Patented in Norway Mar. 24, 1890, No. 1,768, and in Germany Apr. 12, 1890, No. 55,605.

Claim.—1. In a phonic transmitter, a microphone-casing and a holder therefor connected together so as to revolve about their axes and to alternately recede from and approach each other when one of said parts is continuously revolved in the same direction or when both parts are continuously revolved in opposite directions, for the purpose set forth.



2. In a phonic transmitter of the class described, the combination, with the microphone-casing provided with a projection or projections on its under side, of a holder for said casing, provided with depressions on its outer face in register with said projection or projections, said parts being adapted to revolve one upon the other, whereby a reciprocating motion is imparted thereto when so revolved, for the purpose set forth.

3. In a phonic transmitter of the class described, the combination, with the microphone-casing provided with a projection or projections on its under side, of a holder for said casing, provided with depressions on its outer face in register with said projection or projections, said parts being adapted to revolve one upon the other, and a resilient connection between said casing and holder, substantially as and for the purpose specified.

4. In a phonic transmitter of the class described, a pair of electrodes composed of a compound electrode of metal and carbon in the form of a metallic diaphragm coated with carbon on one side and a carbon electrode composed of a solid disk of carbon and loose granular carbon, said compound electrode being arranged relatively to the loose carbon of the carbon electrode, so that its carbon-coated side will face the carbon electrode, for the purpose set forth.

5. In a phonic transmitter of the class described, the combination, with the microphone-casing provided on its under side with a knob c, having the throat c', and with a stud c^3, of the holder H, having conical sockets d^3 formed in its upper face, and the spring D', connected with the holder and arranged to encircle the throat c' of the knob c of the casing, substantially as and for the purpose set forth.

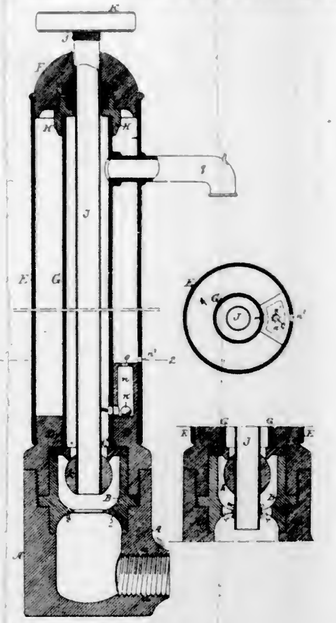
6. In a phonic transmitter of the class described, the combination, with the microphone-casing C, provided on its under side with a knob c, having throat c', and with a conical stud c^3, of the socketed holder H, the disks d and d', secured to the socketed end of said holder, said disk d having an annual recess formed around its axial aperture and said disk d' having conical sockets d^3 formed in its face, and the spring D', arranged in the annular groove formed between said plates $d\,d'$ by said annular recess, the free end of said spring encircling the throat of the knob c, substantially as and for the purpose set forth.

7. In a phonic transmitter of the class described, the microphone-casing C, provided on its under side with a knob c, having throat c', and with a stud c^3, the copper diaphragm D, the microphone composed of a disk of carbon and of loose or granulated carbon, and the screw s, extending through said knob, said carbon disk and screw being insulated from the casing, as set forth, and the felt ring encompassing the carbon disk, the socketed holder H, the contact-spring S, secured in the socket of the holder and adapted to contact with the end of the screw s, the metallic disks d and d', said disk d having an annular recess formed around its axial aperture, and said disk d' having a circular row of conical sockets formed around its axial aperture, and the spring D', arranged in the groove formed between the two disks $d\,d'$ by said annular recess, the free end of said spring encircling the throat of the knob c, substantially as and for the purpose set forth.

448,727. **HYDRANT.** SAMUEL H. ORWIG, Lewisburg, Pa. Filed May 24, 1890. Serial No. 353,039. (No model.)

Claim.—1. The combination, in a hydrant, of the base A, the valve-chamber B, valve-seat C, clamping-nut D, water-pipe G, threaded top piece F, the tube J within said water-pipe, a valve k, carried thereby, an operating-handle on said tube, said tube being threaded at or near its upper end and adapted to engage with the threaded top piece F, substantially as specified.

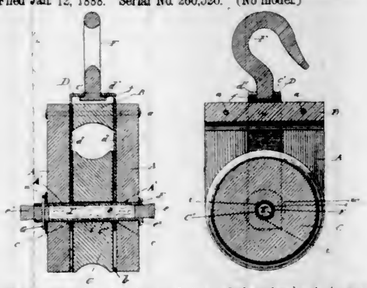
2. The combination, in a hydrant, of the base A, the chamber N therein, having at its upper end an escape-port, the water-pipe G, a passage from said pipe to the chamber N, said passage being above the main valve, and a floating valve in the said chamber, adapted to close the escape-outlet when the hydrant is open, substantially as specified.



448,728. **LINIMENT.** PHILIBERT F. PERRIN, Brunswick, Ga. Filed July 31, 1890. Serial No. 360,556. (No specimens.)

Claim.—In a medical compound, the combination of alum, water of ammonia, camphor, whisky, salt, Cayenne pepper, ginger, and water, in substantially the proportions specified.

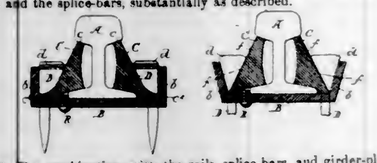
448,729. **PULLEY-BLOCK.** JOHN L. REED, Canajoharie, N. Y. Filed Jan. 12, 1888. Serial No. 260,520. (No model.)



Claim.—A pulley-block consisting of the cheeks A A, provided with perforations A' A', and sheave C, having a corresponding perforation C', the removable axle E, corresponding with said perforations A' and C' and provided with the central longitudinal chamber e, and with ports i, communicating from said chamber to the perforation C' in sheave C, and having end openings communicating from the same chamber to the outside, the holding devices above described applied to the outer ends of said axle and bearing against the said cheeks, and stoppers removable at will and closing the open ends of the said chamber e, substantially as and for the purposes set forth.

448,730. **RAIL-JOINT SUPPORT.** JOHN T. RICHARDSON, Harrisburg, assignor of one-half to Alexander H. Ege, Mechanicsburg, Pa. Filed Oct. 9, 1890. Serial No. 367,532. (No model.)

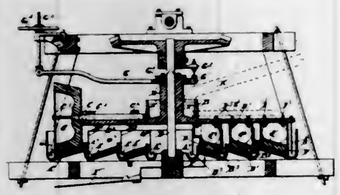
Claim.—1. The combination, with the rails, splice-bars, and girder-plates having side flanges, of the spikes having wedge-shaped heads, said spikes being interposed between the side flanges of the girder-plates and the splice-bars, substantially as described.



2. The combination, with the rails, splice-bars, and girder-plates having side flanges, of spikes having wedge-shaped heads and suitable inclined bearings upon the splice-bars for said wedge-shaped heads, substantially as described.

3. The combination, with the rails, splice-bars having inclined outer faces and girder-plates having side flanges, of the spikes having wedge-shaped heads, substantially as and for the purpose described.

448,731. **GRINDING AND AMALGAMATING PAN.** WILLIAM ROBERTS, Petersham, near Sydney, New South Wales, assignor to himself and Howard Raymond Belden, same place. Filed Jan. 10, 1890. Serial No. 336,520. (No model.) Patented in Victoria Nov. 29, 1889, No. 7,310, and in Queensland Feb. 27, 1890, No. 884.



Claim.—1. An ore grinding and amalgamating machine comprising a plurality of concentric pan-sections having comparatively shallow partition-walls, the height of which decreases successively from the outer to the inner pan-section, grinding-surfaces for said pan-sections that incline outwardly in a radial direction, and an amalgamating-well at the foot of and encompassing the grinding-surfaces, said wells lying in the same horizontal plane, in combination with grinding devices operating in conjunction with said inclined grinding-surfaces, substantially as and for the purposes set forth.

2. An ore grinding and amalgamating machine comprising a plurality of concentric pan-sections having comparatively shallow partition-walls, the height of which decreases from the outer to the inner pan-section, grinding-surfaces for said pan-sections that incline outwardly in a radial direction, and an almalgamating-well at the foot of and encompassing the inclined grinding-surfaces, said wells lying in the same horizontal plane, in combination with mullers having the form of a truncated cone, and drags arranged to co-operate with the inclined grinding-surfaces to reduce the material fed thereto, substantially as and for the purposes set forth.

3. In an ore grinding and amalgamating pan, a plurality of concentric pan-sections, an annular amalgamating-well for each of said sections, and grinders operating in the pan-sections, in combination with revoluble circular splash-boards dipping into the mercury-well of the outer pan-section, for the purposes set forth.

4. In an ore grinding and amalgamating pan, a plurality of concentric pan-sections, an annular amalgamating-well for each of said sections, grinders operating in the pan-sections, and circular splash-boards B^4, in combination with teasers or traveling stirrers, substantially as and for the purpose set forth.

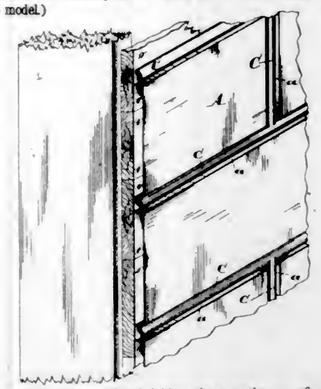
5. The combination, with the shaft B and the sleeve B′ thereon carrying the muller and drag-arms, of the lever G, connected with said sleeve so as to admit of its revolution with the shaft, and the elevating-screw G^3, substantially as and for the purpose set forth.

6. In an ore grinding and amalgamating apparatus, a series of concentric intercommunicating pan-sections, an amalgamating well for each of said sections, a feeding device for feeding the material to the outer pan-sections, and a central discharge, as and for the purpose set forth.

7. In an ore grinding and amalgamating apparatus, a series of concentric intercommunicating pan-sections, an amalgamating-well for each of said sections, a feeding device for feeding the material to the outer pan-sections, a central discharge, and a mercury-well arranged in said central discharge, as and for the purposes set forth.

8. The combination, with the grinding and amalgamating pan, constructed as set forth, of the shaft B, the sleeve B′, adjustable on and adapted to revolve with the shaft, the reservoir E′, the distributing-pipes E^3, connected with said reservoir and discharging into the outer annular pan-section, and the grinders supported from said sleeve, substantially as and for the purposes set forth.

448,732. **METALLIC FACING FOR BUILDINGS.** LONGLEY L. SAGENDORPH, Philadelphia, Pa. Filed Oct. 25, 1890. Serial No. 369,316. (No model.)



Claim.—1. A metallic finishing-plate made up of rectangular blocks or figures A, each of which is surrounded with a groove having therein a bead convex with the outer face of said blocks, for the purposes set forth.

2. A metallic finishing-plate made up of blocks A, each block being surrounded by the vertical sides and ends *a*, the metal between said sides being formed into a corrugated bead C, as set forth.

3. A metallic finishing-plate made up of figures A, each of which is surrounded by a beaded groove, said groove consisting of the vertical sides *a a*, acute angles B B, and convex bead C, substantially as and for the purposes specified.

448,733. **METALLIC FACING-PLATE.** LONGLEY L. SAGENDORPH, Philadelphia, Pa. Filed Nov. 26, 1890. Serial No. 372,686. (No model.)



Claim.—1. A metallic plate having at one side an offset or ledge *a*, terminating in a flange *a′*, differing in plane from the face of the plate, the said ledge having an opening a^2 therein, the opposite side of said plate having a tongue a^3, for the purposes set forth.

2. As a new article of manufacture, a metallic facing-plate wider at one end than at the opposite end to form an arch.

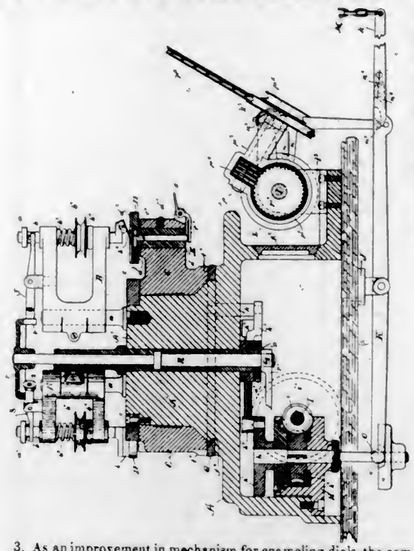
3. A metallic facing-plate having at one side and one end the ledge *a* and flange *a′*, the opposite side and end of said plate having the ledge *a* and tongues a^3, the ledges on the flange side and end of the plate having the openings a^2 therein, for the purposes set forth.

4. A metallic facing-plate wider at one end than at the opposite end, one side of said plate having a flange *a′* and ledge *a*, the latter having an opening a^2 therein, the opposite side of said plate having a ledge *a* and tongue a^3, as and for the purposes specified.

448,734. **MACHINE FOR ENAMELING SMALL DIALS.** THOMAS F. SHERIDAN, Springfield, Ill. Filed Mar. 3, 1890. Serial No. 342,498. (No model.)

Claim.—1. As an improvement in mechanism for enameling dials, the combination of a series of rolls and spatulas which are adapted by successive action to roll and smooth the enamel, a holder or series of holders for dials, and mechanism for rotating said holder or holders from roll to roll and spatula to spatula, substantially as and for the purpose shown and described.

2. As an improvement in mechanism for enameling dials, the combination of a series of rolls and spatulas and operating mechanism thereof, substantially as described, a series of dial-holders which are adapted to present a series of dials simultaneously to said rolls and spatulas, and mechanism for moving the series of holders simultaneously to bring each into position under the next roll or spatula of the series, substantially as and for the purpose shown and described.



3. As an improvement in mechanism for enameling dials, the combination of a series of rolls and spatulas and operating mechanism, substantially as described, a rotary carriage or table having secured thereon a series of dial-holders, and mechanism alternating in its action with said roll and spatula mechanism to partially rotate said table and bring each holder into position under the next roll or spatula of the series, substantially as and for the purpose set forth and described.

4. As an improvement in mechanism for enameling dials, an organized machine in which are combined the following elements: one or more spindles, each provided with a roll, one or more spindles, each provided with a spatula, three or more holders, each adapted to hold a dial-blank, mechanism whereby said holders may be successively moved into position under each roll or spatula, and mechanism whereby said holders may be securely locked in said position, substantially as and for the purpose shown and described.

5. As an improvement in dial-enameling machines, a machine in which are combined several revolving rolls and spatulas arranged around a part of a circle, an annular table adapted to rotate under said rolls and spatulas, dial-holders exceeding in number the said rolls and spatulas and rotating with said table, a reciprocable ring that is journaled under said table, means whereby said ring automatically unlocks said table and rotates it forward one step, means whereby said table is automatically locked in said position, and mechanism, substantially as described, whereby said rolls and spatulas are operated a limited time only when said table is at rest and are automatically stopped and raised from contact with dials during the rotation of said table, substantially as and for the purpose shown and described.

6. As an improvement in the enameling of dials, an automatic organization in which are combined a series of rolls and spatulas that are adapted by their successive action to roll down and smooth-finish the moistened enamel on a dial-copper, a series of dial-holders which exceed said rolls and spatulas in number and secured within a table adapted to have a step-by-step rotation around its axis, mechanism whereby said rolls are lowered into contact with the dials when the said table is at rest and automatically raised from such contact when said table is about to rotate, mechanism whereby the operation of said rolls and spatulas is limited and their revolution stopped, and mechanism, substantially as shown, whereby when said rolls and spatulas are raised and at rest the table C is being rotated, substantially as and for the purpose shown and described.

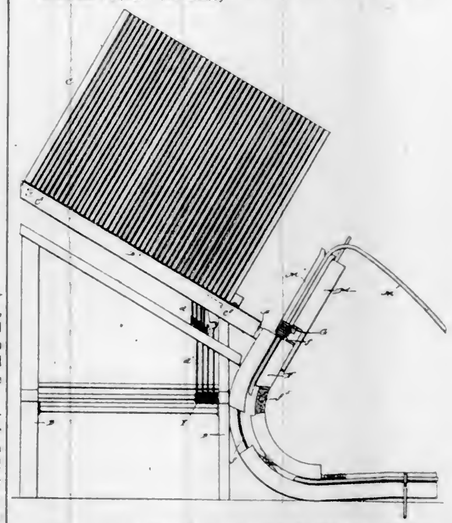
7. The combination of the base A, the vertical studs *a*, the frames B, holding the rolls and spatulas *b′*, with their spindles *b*, the table C, supported by and capable of being rotated on said base, the holders D, each adapted to hold a dial-copper and rotate with said table, and the ring G, fitted around said base and adapted to automatically disengage the pawl F from said table and rotate said table one step, substantially as and for the purpose specified.

8. As a means for holding the dial to be enameled, the combination of the holder D, with its cupped recess d^2 a little deeper than the dial, the plunger E, with the flanged head *e*, and the lever *e′* and e^2, substantially as and for the purpose shown and described.

9. As a means for raising and lowering the rolls and spatulas, the combination of the cam-plate *h′*, the levers *r′*, roll r^3, and flat spring r^2, the spindle R, the multiple cam-plate *r*, the levers S, with their rolls *s*, the spindles *b*, with their collars *a′*, and springs b^3, substantially as and for the purpose shown and described.

10. As a means for limiting the time of operating the roll and spatula spindles *b*, the combination of the disk L, the pin *n*, the lever *n′*, the compound lever K, the chain M, the double lever *m*, the rod m^5, and the spring-lever *m*, with its shipping-rod *k′*, and the countershaft m^3, with its tight and loose pulleys, substantially as and for the purpose set forth.

448,735. **TYPE SETTING OR COMPOSING MACHINE.** EMMET C. STANDIFORD and SAMUEL A. HYERS, Chicago, Ill. Filed Mar. 26, 1890. Serial No. 345,345. (No model.)



Claim.—1. In a machine of the character specified, the combination, with the raceway, type files or cells, and key-levers controlling the discharge of types from said files or cells, of the type-channel for receiving the assembled line, and a reciprocating packer, substantially as described, operated by the key-levers during their downward movements only and making a complete reciprocation during each of said downward movements, whereby the packer is removed from the type-channel before the descent of the type, substantially as described.

2. In a machine of the character specified, the combination, with the inclined raceway, the series of files, and the series of key-levers controlling the discharge of type therefrom, of the type-channel intersecting said raceway and curved forward to present the assembled type in convenient position for further manipulation, and the plunger controlled by the key-levers and working in the mouth of the channel, substantially as described.

3. In a machine of the character specified, the combination, with the raceway, the series of files, and a series of key-levers controlling the discharge of type therefrom, of the type-channel intersecting said raceway at substantially right angles and curving forwardly and upwardly, whereby the weight of the type therein is balanced and the assembled type presented in convenient position for further manipulation, and the packer controlled by the key-levers working in the mouth of said channel.

4. In a machine of the character specified, the combination of the raceway, the series of files, and the series of key-levers controlling the discharge of types therefrom, of the type-channel having the straight portion intersecting the raceway at substantially right angles and the forwardly-curved portion for bringing the assembled types into convenient position for further manipulation, and the packer controlled by the key-levers for advancing the type within the channel, substantially as described.

5. In a machine of the character specified, the combination of the inclined raceway, the series of files, and the series of key-levers controlling the discharge of type therefrom, of the type-channel having the straight portion intersecting the raceway at substantially right

angles and the forwardly-curved and upwardly-inclined portion for bringing the assembled types into convenient position for further manipulation and balancing the line and preventing the falling forward of individual types, and the packer controlled by the key-levers for advancing the type within the channel.

6. In a machine of the character specified, the combination of the raceway, the series of files, and series of key-levers for discharging type therefrom, of the type-channel intersecting said raceway and curved toward the front to present the face of the type uppermost, and the retarder for preventing the rear ends of the type from dropping out of line, substantially as described.

7. In a type-setting machine, the combination, with the raceway, the files, key-levers for discharging the type therefrom, and type-channel in which the line is assembled, of a packer working in said channel to advance the line being formed, and connections between said packer and key-levers, whereby the packer is operated by any one of the key-levers, having a trip interposed therein for releasing the packer before the key-lever has completed its movement, substantially as described.

8. In a type-setting machine, the combination, with the raceway, files, the key-levers controlling the discharge of type therefrom, and type-channel, of the packer working in said channel to advance the line being formed, a trip or latch controlled by said key-levers and engaging the packer to depress the same, and a stop for throwing said latch out of engagement at a predetermined moment, substantially as described.

9. In a type-setting machine, the combination, with the raceway, files, key-levers controlling the discharge of types therefrom, and type-channel, of the packer working in said channel to advance the line being formed, a trip or latch controlled by said key-levers and engaging the packer to depress the same, and an adjustable stop for throwing said latch out of engagement at a predetermined moment, substantially as described.

10. In a type-setting machine, the combination, with the raceway, files, key-levers controlling the discharge of type therefrom, and type-channel, of the spring-pressed packer working in said channel to advance the line being formed, a trip or latch controlled by said key-levers to depress the packer against the tension of its spring and advance the line being assembled, and a stop for throwing said latch out of engagement, substantially as described.

11. In a type-setting machine, the combination, with the raceway, files, key-levers controlling the discharge of type therefrom, and type-channel, of the upright guide over said channel, the spring-pressed packer working in said guides, the reciprocating bar controlled by the key-levers, the latch pivoted on said bar and engaging the packer to depress the same, and a stop for releasing said latch, substantially as described.

12. In a type-setting machine, the combination, with the raceway, files, key-levers controlling the discharge of types therefrom, and type-channel, of the two parallel upright guides and bearings over said channel, the spring-pressed packer working in one of said guides, the reciprocating bar controlled by the key-lever working in the other guide, the latch pivoted on said bar and engaging the packer to depress the same, and an adjustable stop for releasing said latch, substantially as described.

13. In a type-setting machine, the combination, with the raceway, files, key-levers controlling the discharge of type therefrom, and type-channel, of the upright guide and bearings over said channel, the spring-pressed packer working in one of said guides, reciprocating bar working in the other guide and having the latch engaging a projection on the packer, a frame extending beneath the key-levers, and a link connecting said frame and reciprocating bar.

14. In a type-setting machine, the combination, with the raceway, files, key-levers controlling the discharge of types therefrom, and type-channel, of the reciprocating packer having the hinged lower end, substantially as and for the purpose set forth.

15. In a type-setting machine, the combination, with the raceway, files, key-levers controlling the discharge of type therefrom, and type-channels, of the spring-pressed reciprocating packer having the hinged spring-pressed lower end and controlled by the key-levers, substantially as and for the purpose set forth.

16. In a type-setting machine, the combination, with the files and mechanism for discharging the types therefrom, of the raceway down which said types are slid, having the depressed central portion, whereby the tendency of the type to work toward the edges is prevented, substantially as described.

17. In a type-setting machine, the combination, with the files and mechanism for discharging the types therefrom, of the raceway down which said types are slid, having the substantially V-shaped upper portion and the flat lower portion, substantially as described.

18. In a type-setting machine, the combination, with the files and mechanism for discharging the types therefrom, of the raceway down which the types are slid, having the depressed center and the central partition or rib, substantially as described

19. In a type-setting machine, the combination, with the files and the mechanism for discharging the types therefrom, of the raceway down which the types are slid, having the upper centrally-depressed portion and flat lower portion, the central partition, and the converging guides at the lower end, substantially as described.

20. In a type-setting machine, the combination, with the raceway, files, mechanism for discharging the types therefrom, type-channel for receiving said type and packer, of the line-spacers, line-indicator moved thereby, and the stop for releasing said indicator.

21. In a type-setting machine of the character specified, the combination, with the type-channel, packer, and line-spacers, of the movable indicator having the latch engaging said spacers, a stop for tripping said latch at the end of the line, and a spring for returning the indicator to first position.

22. In a type-setting machine of the character specified, the combination, with the type-channel and packer, of the line-spacers and the guide for said spacers conforming to the general shape of the channel, substantially as described.

23. In a type-setting machine of the character specified, the combination, with the type-channel and packer, of the continuous line-spacer guide conforming at the bottom to the general shape of the channel and the line-spacers mounted loosely on said guide.

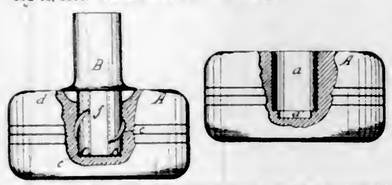
24. In a type-setting machine, the combination of the raceway, files, mechanism for discharging the types therefrom, and type-channel intersecting said raceway, of the laterally-movable line-spacers, and the plunger and key-lever for moving said line-spacers laterally into position in the mouth of the type-channel, substantially as described.

448,736. HOOF-SPREADING HORSESHOE. WILLIAM TORY, Guysborough, Canada. Filed May 29, 1890. Serial No. 353,663. (Model.)



Claim.—The plates E E, integrally connected at the rear and provided in front with the calk D and clip F, in combination with the two pivoted sections A A and the two-armed spring C, the latter held by a pivot G in the space between the plates E E and sections A A, substantially as shown and described.

448,737. DOOR-KNOB. JOSEPH TRICKEL, Reading, Pa. Filed Oct. 10, 1890. Serial No. 367,673. (No model.)



Claim.—1. The herein-described knob-shank for socketed knobs of wood or equivalent material, said shank being mainly cylindrical in form and provided with a spiral rib or ribs *c* and one or more flat faces *f*, substantially as set forth.

2. The herein-described knob-shank for socketed knobs of wood or equivalent material, said shank being mainly cylindrical in form and provided with a spiral rib or ribs *c* and one or more lugs *d* at the junction of said knob-shank with its neck, substantially as and for the purpose set forth.

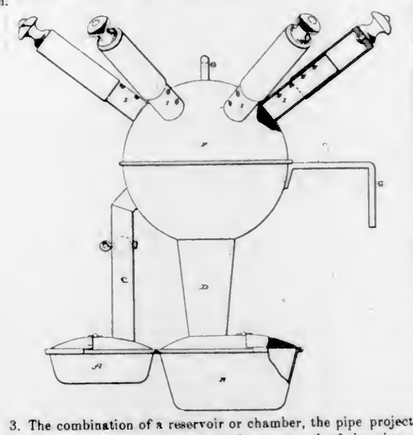
3. The combination, with a knob of wood or equivalent material having a socket with reduced portion *a'*, of a cylindrical knob-shank provided with a spiral rib or ribs *c* and a notched or serrated end *e* to engage said reduced portion of the socket, substantially as and for the purpose set forth.

4. The combination, with a knob of wood or equivalent material having a socket with reduced portion *a'*, of a cylindrical knob-shank provided with a spiral rib or ribs *c*, one or more lugs *d* at the junction of said knob-shank with its neck, and a notched or serrated end *e* to engage said reduced portion of the socket, substantially as and for the purpose set forth.

448,738. FRUIT-TREE PROTECTOR. WILLIAM T. YANDOW, Winooski, Vt. Filed June 13, 1890. Serial No. 355,342. (No model.)

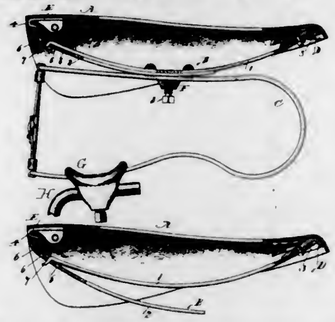
Claim.—1. The combination of a reservoir or chamber in which a smoke or odor is produced, a pipe extending therefrom, a chamber connected to the upper end of the pipe, and distributing-pipes projecting from the upper portion of this chamber, substantially as described.

2. The combination of two reservoirs or chambers, pipes extending therefrom, a chamber connected to the upper ends of the pipes, and perforated pipes projecting from the chamber, substantially as set forth.



3. The combination of a reservoir or chamber, the pipe projecting therefrom, a chamber connected to the upper end of the pipe, a series of perforated pipes extending from the chamber, and sleeves, collars, or covers placed upon the pipes, substantially as specified.

448,739. VELOCIPEDE-SADDLE. WILLIAM J. EDWARDS, Chicago, Ill. Filed May 19, 1890. Serial No. 352,419. (No model.)



Claim.—1. A stretching-spring for a velocipede-seat, comprising a couple of leaves attached to one another and respectively to the opposite ends of the saddle, said leaves overlapping each other for a portion of their length, and a clip for holding said overlapping portions together.

2. A stretching-spring for a velocipede-saddle, comprising a couple of leaves adjustably attached to one another and respectively connected with opposite ends of the saddle, so as to stretch the same proportionally to the adjustment of one leaf upon the other, and a clip embracing said two leaves and adjustable thereon.

3. A stretching-spring for a velocipede-saddle, comprising a couple of leaves adjustably attached to one another and respectively connected with the opposite ends of the saddle, said leaves overlapping each other for a portion of their length, and a clip for holding said overlapping portions together, the connection between one of said leaves and the saddle being a hinge connection, for the purpose set forth.

4. A stretching-spring for a velocipede-saddle, comprising a couple of leaves respectively connected with opposite ends of the saddle, said leaves being attached to one another by a hinge connection, and one of them being connected with the saddle by a hinge connection, for the purpose set forth.

5. A stretching-spring for a velocipede-saddle, comprising a couple of leaves respectively connected with opposite ends of the saddle, said leaves being attached to one another by an adjustable hinged connection, and one of them being connected with the saddle by a hinge connection, for the purpose set forth.

6. The combination, substantially as hereinbefore set forth, with the saddle, of the stretching-spring comprising a leaf 2, hinged to the saddle and provided with a set of apertures 6, and a leaf 1, attached to the saddle and provided with a hook 7 for engaging in any of said perforations.

7. The combination, with the saddle, of the stretching-spring B, applied thereto and comprising leaves 1 and 2, the leaf 2 being hinged to the saddle by a hook-and-eye connection, and the leaf 1 being hinged to the leaf 2 by a similar connection, for the purpose set forth.

8. The combination of the saddle, the adjustable stretching-spring comprising a couple of leaves respectively connected with opposite ends of the saddle and adjustably attached to one another, the seat-spring C, and a clip embracing the upper arm of the seat-spring and the two leaves of the stretching-spring, substantially as and for the purpose set forth.

9. The herein-described arrangement of the seat-spring C, adjustably and removably applied to a holder, and the saddle provided with a two-part adjustable stretching-spring B, which is removably held upon said seat-spring, whereby the stretching-spring can be transferred from its support on the seat-spring to the support for the latter after the seat-spring has been removed from its allotted holder, for the purpose set forth.

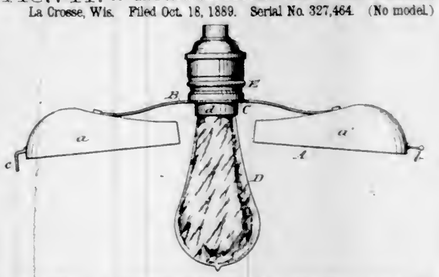
448,740. PLOW. JOHN E. MITCHELL and ELMA M. MITCHELL, Salem, Iowa. Filed Aug. 30, 1890. Serial No. 363,496. (No model.)



Claim.—1. A plow mold-board consisting of a series of parallel bars or sections curved to conform to the shape of a concave mold-board and relatively arranged, substantially as described, to form a plow-point and to present a series of disconnected points at the lower ends of the bars.

2. The combination, with a standard and supporting-braces, of a mold-board consisting of a series of independent curved bars secured upon said braces, the lower ends or points of said bars arranged to form an inclined cutting-edge consisting of disconnected points, as set forth.

448,741. COVER FOR INCANDESCENT LAMPS. EMIL T. MUELLER, La Crosse, Wis. Filed Oct. 18, 1889. Serial No. 327,464. (No model.)



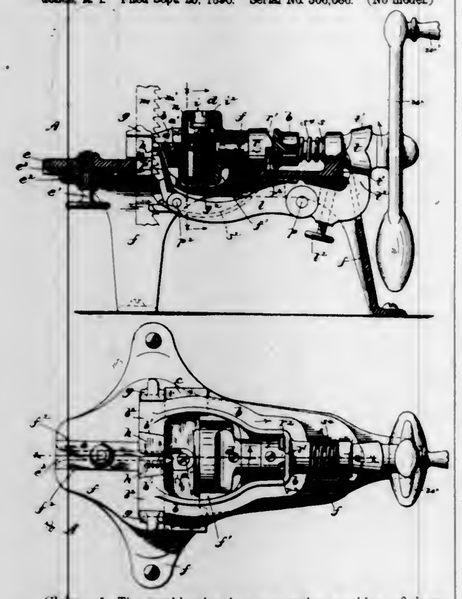
Claim.—1. A covering attachment for incandescent lamps, consisting of the similar and equal sized opaque parts *a a'* and the spring B, which extends down over said parts and permanently connects them as well as holds them normally separated, the spring being adapted for attachment to the upper portion of the lamp, substantially as set forth.

2. The combination, with the incandescent lamp, of the parts *a a'* and the spring B, which is permanently attached to and connects them, the said spring being attached to the upper portion of the lamp and holding the parts *a a'* normally separated and extended horizontally, as shown and described.

3. As an improved article of manufacture, an incandescent-lamp cover formed of two similar halves *a a'*, the connecting spring B, the stud *b*, and the catch *c*, substantially as specified.

A. An incandescent-lamp cover formed of the cover half *a*, provided with a reflecting-surface and a catch *c*, the cover half *a'*, provided with a reflecting-surface and with a stud *b*, and the spring B, attached to the halves *a a'*, substantially as specified.

448,742. SAW-SETTING MACHINE. LOUIS L. NORTHUP, Providence, R. I. Filed Sept. 25, 1890. Serial No. 366,086. (No model.)



Claim.—1. The combination, in a saw-setting machine, of clamping and releasing mechanism arranged to intermittingly engage the saw-blade, a feeding device adapted to successively engage each saw-tooth and advance the blade, a swaging-plate, as c, carrying a removable setting-die, and a rotary driving-head connecting with said swaging-plate, provided with mechanism for varying the stroke or movement of the plate, substantially as hereinbefore described, and for the purpose specified.

2. In a saw-setting machine, the combination, with intermittingly-operating saw feeding, gripping, and releasing mechanism, of a die-carrying plate mounted to reciprocate transversely of the machine and saw-blade, and a driving-head having means for adjusting the stroke of said plate, substantially as described.

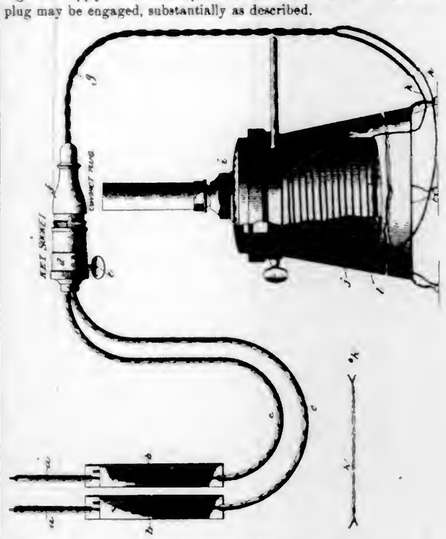
3. In a saw-setting machine, the combination, with a reciprocating swaging or setting die and saw-feeding mechanism, of jaws *h*, a guided two-arm clamping-lever *b*, provided with a spring adapted to normally maintain it in contact with said jaws, and a double cam secured to the driving-shaft, adapted in revolving to intermittingly and automatically force the clamping-lever rearwardly, thereby releasing the jaws and permitting the saw to be advanced one tooth, substantially as set forth.

4. In a saw-setting machine, the combination, with a reciprocating swaging or setting die and intermittingly-operating saw-releasing mechanism, of a saw-feeding device consisting of a pivotally-mounted lever *l*, provided with an adjustable stop, a rotary double-acting cam *t*, arranged to engage and actuate said lever, and a yielding or spring pawl *u*, jointed to the front end of the lever, adapted to engage the saw-teeth, substantially as set forth.

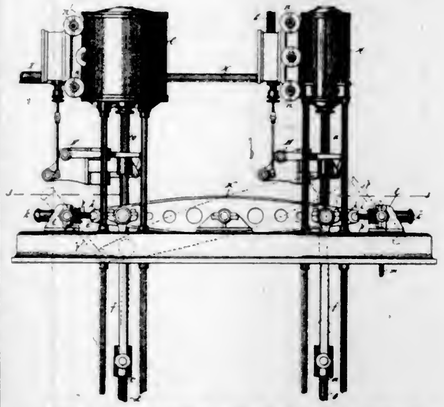
5. A saw-setting machine having the forward portion of its frame provided with an open slot communicating with the space formed by the lateral separation of the saw-clamping jaws, an adjustably-mounted gage-plate *c*, a clamping-plate c^4, having beveled sides engaging similarly-inclined surfaces formed on the under side of the said frame contiguous to the slot, and a binding-screw passing through said plates, substantially as described.

448,743. ELECTRIC HEATER FOR DENTAL VULCANIZERS. JEREMIAH O'MEARA, New York, N. Y. Filed Oct. 22, 1890. Serial No. 368,960. (No model.)

Claim.—The combination, substantially as shown and described, of a dental vulcanizer having a steam-generator, a surrounding incombustible jacket, and an electric heating-coil placed around said jacket, with an electric conductor, a plug to which it is attached, and leading-in or supply-circuit wires provided with a socket with which the plug may be engaged, substantially as described.



448,744. DIRECT-ACTING ENGINE. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed May 17, 1888. Serial No. 274,138. (No model.)



Claim.—1. The combination, with two main steam-cylinders, as A C, of a rocking beam connecting the piston-rods of the two cylinders, and a compensating cylinder or cylinders *k*, having a piston or pistons acting upon said beam and arranged to offer a gradually-decreasing resistance to the pistons of the main cylinders during the first part of their strokes and a gradually-increasing assistance during the last part of their strokes, substantially as described.

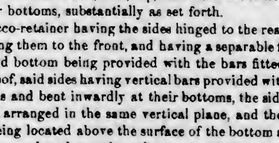
2. The combination, with two vertical main cylinders, as A C, of a rocking beam connecting the piston-rods of the two cylinders, and a compensating cylinder and piston acting upon each end of the beam and arranged to offer a gradually-decreasing resistance to the pistons of the main cylinders during the first part of their strokes and a gradually-increasing assistance during the last part of their strokes, substantially as described.

3. The combination, with four vertical main steam-cylinders forming the two sides of a duplex engine, of rocking beams K L, connecting the piston-rods of the two cylinders forming each side of the engine, and compensating cylinders having pistons acting upon each of said beams and arranged to offer a gradually-decreasing resistance to the pistons of the main cylinders during the first part of their strokes and a gradually-increasing assistance during the last part of their strokes, substantially as described.

4. The combination, with two main steam-cylinders, as A C, of a rocking connection between the piston-rods of the two cylinders, whereby power exerted upon one piston-rod is transferred to the other, and a compensating cylinder or cylinders *k*, having a piston or pistons arranged to offer a gradually-decreasing resistance to the pistons of the main cylinders during the first part of their strokes and a gradually-increasing assistance during the last part of their strokes, substantially as described.

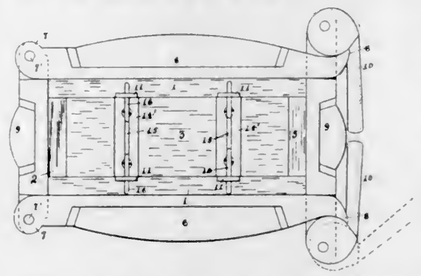
5. The combination, with two main steam-cylinders, as A C, of a rocking connection between the piston-rods of the two cylinders, whereby power exerted upon one piston-rod is transferred positively to the other, and a compensating cylinder or cylinders *k*, having a piston or pistons arranged to offer a gradually-decreasing resistance to the pistons of the main cylinders during the first part of their stokes and a gradually-increasing assistance during the last part of their strokes, substantially as described.

448,745. ARTIFICIAL TOOTH. JOEL F. WRIGHT, Hartford, Conn. Filed Jan. 5, 1891. Serial No. 376,703. (No model.)



Claim.—An artificial tooth made of porcelain or its equivalent, and having its crown provided with a surface of enamel, and having the surface and interior of its root formed and made porous, substantially as described.

448,746. TOBACCO GUM OR RETAINER. JOEL T. ASHWORTH, Richmond, Va., assignor of one-half to Joseph G. Ross, same place. Filed Oct. 4, 1890. Serial No. 367,102. (No model.)

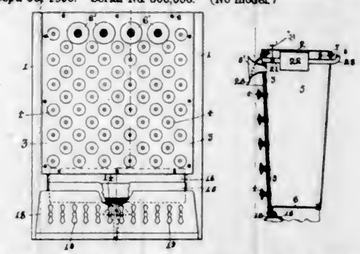


Claim.—1. A tobacco-retainer having its sides hinged to its rear and bearing on the edges of the bottom and provided with locking devices for securing them to the front, its top and front being removable, and devices for fastening the top against the edges of the sides, whereby the exact size of the lump as it comes from the press is retained, and whereby the sides can be swung away from the bottom and the top and front can be entirely removed to give access to the tobacco lump for the purpose of sliding it off from the bottom, substantially as set forth.

2. A tobacco-retainer having its sides hinged to its rear and bearing on the edges of the bottom and provided with locking devices for securing them to the front, its top, front, and bottom being removable, and devices for fastening the top against the edges of the sides, whereby the exact size of the lump as it comes from the press is retained, and whereby the sides can be swung away from the bottom and the top and bottom can be entirely removed to give access to the tobacco lump for the purpose of sliding it off from the bottom, and whereby before such latter operation the sides, rear, top, and front are at liberty to be used with other bottoms, substantially as set forth.

3. A tobacco-retainer having the sides hinged to the rear, and devices for securing them to the front, and having a separable front, top, and bottom, said bottom being provided with the bars fitted into the under side thereof, said sides having vertical bars provided with loops at their upper ends and bent inwardly at their bottoms, the side and bottom bars being arranged in the same vertical plane, and the bends of the side bars being located above the surface of the bottom and under said bottom bars, and wedges adapted to enter the loops and fasten the top upon the sides, substantially as set forth.

448,747. GAS-STOVE. EDWARD BOURKE, Allegheny, Pa. Filed Sept. 30, 1890. Serial No. 366,680. (No model.)



Claim.—1. In a gas-stove, the combination of the frame and overhanging front radiating-plate inclosing an air-heating chamber, said plate having the gas-burner located at the foot thereof and having a burner-slit extending about the whole width of the plate, said front plate being provided with exits for warm air near its top and with radiating stems extending into the air-heating chamber, whereby heat is conducted through the front plate to the air-heating chamber, substantially as set forth.

2. In a gas-stove, the frame and front plate inclosing the air-heating chamber, a gas-burner having the plate 16 attached to the foot of said front plate, an exit below the same, and a deflecting-plate 15, arranged in front of the front plate and directed toward the same, all combined for the purpose set forth.

3. In a portable gas-stove, the frame provided with an overhanging front plate and having its sides extending downwardly below said plate to constitute supporting-legs, a burner having plate 16 attached to the foot of the front plate and a deflector 15 directed toward the same, and a perforated fender in front of the deflecting-plate, substantially as set forth.

4. In a gas-stove, a radiating front plate, a gas-inlet pipe and a burner located at the foot of said plate, a hood near the top of the same, a frame, said frame and plate inclosing an air-heating chamber, an exit-pipe extending from below the point of attachment of the hood through the air-chamber, said chamber having a perforated bottom, and outlet-pipes 6', extending through the hood and being in communication with the space about the gas-exit pipe 23, substantially as set forth.

5. In a gas-stove, a radiating front plate, a gas-inlet pipe, a burner located at the foot of said plate, a hood near the top of the same, a frame, said frame and plate inclosing an air-heating chamber, and air-outlet pipes 6', extending through the hood and communicating with the air-chamber, substantially as set forth.

448,748. METHOD OF AND MACHINE FOR MAKING CUP-SHAPED ARTICLES. WILLIAM R. COMINGS, New Britain, Conn. Filed July 9, 1890. Serial No. 358,213. (No model.) Patented in England Nov. 4, 1887, No. 15,053; in France Sept. 5, 1888, No. 192,804; in Austria-Hungary Sept. 7, 1888, No. 36,934, and in Germany Sept. 15, 1888, No. 47,719.

Claim.—1. The method of forming cup-shaped articles of material in sheet form, which consists in corrugating by plaiting the portion to be shaped and drawing the plaited portion into tube form, substantially as described.

2. The method of forming cup-shaped articles of material in sheet form, which consists in corrugating by box-plaiting the portion to be shaped and drawing the box-plaited portion into tube form, substantially as described.

3. The method of forming cup-shaped articles of paper, which consists in corrugating by plaiting the portion to be shaped and drawing the plaited portion to consolidate the same, substantially as described.

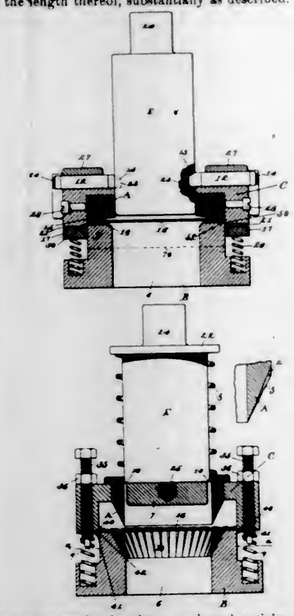
4. The method of forming cup-shaped articles of paper, which consists in first treating the paper with adhesive substance, next corrugating by plaiting the treated portion to be shaped, and drawing the treated and plaited portion to be shaped under the action of heat to consolidate the same, substantially as described.

5. In mechanism for forming cup-shaped articles, the combination, with lower and upper drawing-dies, of the lower and upper corrugating-dies surrounding the drawing-dies and having interlocking plait-forming corrugations, substantially as described.

6. In mechanism for forming cup-shaped articles, the combination, with lower and upper drawing-dies, of the conical upper and lower corrugating-dies surrounding said drawing-dies and having interlocking plait-forming corrugations, substantially as described.

7. In mechanism for forming cup-shaped articles, the combination, with upper and lower drawing-dies, of the upper and lower corrugating-dies surrounding said drawing-dies and having interlocking

plait-forming corrugations, the ribs of said corrugations being cuneiform and the corresponding grooves of substantially uniform width throughout the length thereof, substantially as described.



8. In mechanism for forming cup-shaped articles, the combination, with drawing-dies, of the corrugating-dies surrounding the drawing-dies, and cutting-out dies surrounding the corrugating-dies, whereby the blank is successively cut out, corrugated, and drawn, substantially as described.

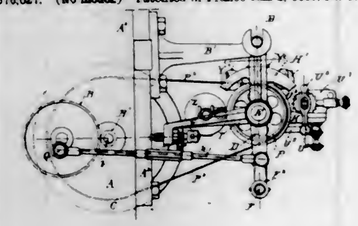
9. In mechanism for forming cup-shaped articles, the combination, with drawing-dies, of corrugating-dies surrounding the drawing-dies, cutting-out dies surrounding the corrugating-dies, and a lifting-plate, substantially as described, coacting with the outer cutting-die, substantially as described.

10. In mechanism for forming cup-shaped articles, the combination, with the upper and lower drawing-dies and with the upper and lower corrugating-dies, of the cutting-out dies surrounding the corrugating-dies, the upper corrugating-die being movably supported in the upper cutting-out die, whereby the same is positively lifted, and means, substantially as described, acting between the upper drawing-die and said upper corrugating-die to force down said corrugating-die on the descent of said drawing-die.

11. In mechanism for forming cup-shaped articles, the combination with the drawing-dies and the surrounding corrugating-dies, of the spring-actuated latches operating the upper corrugating-die from the drawing-die by engagement therewith, substantially as described.

12. In mechanism for forming cup-shaped articles, the combination with the drawing-dies and with the surrounding corrugating-dies of the cutting-out dies surrounding the corrugating-dies, and spring-actuated latches operating the cutting-out dies by engaging the drawing-dies, substantially as described.

448,749. **INKING MECHANISM FOR PRINTING-MACHINES.** AMÉDÉE FATOU, Bordeaux, France. Filed Dec. 29, 1890. Serial No. 376,027. (No model.) Patented in France Jan. 2, 1889. No. 195,139.



Claim.—1. The loose frame B D D', suspended from supports fixed to the frame A^3 of the press, in combination with the rotary table T, the ink-holder U', the ink-roller U, the receiving-roller V, the distributing-rollers Y Y', and spreading-roller Z, and means, substantially as described, for actuating said rollers, as specified.

2. The combination, in a printing-press inker, of the frame B D D', loosely suspended from supports fixed to the frame A^3 of the press, and the rocking forked roller-bearing L and rods M F, with the ink-reservoir U', the ink-roller U, the receiving-roller V, the table T, the distributing-rollers Y Y', the type-inking roller Z, the eccentric Q, the adjustable connecting-rod N, and the crank F^3, all arranged substantially as herein shown and described.

3. The combination of the rotary ink-table T, and means, substantially as herein shown and described, for supporting and revolving it, with the ink-reservoir U', rocking bifurcated bearing-pieces L L, means, substantially as described, for oscillating them, and with the roller V, hung in said bearings L, all arranged to lift the roller V off the table T when in contact with the roller U, substantially as herein shown and described.

4. The combination of the rotary ink-table T, and means, substantially as described, for supporting and revolving it, with the ink-reservoir U', ink-roller U, rocking bifurcated bearing-pieces L L, rollers V Y, hung therein, and inclined tracks H', adapted to shift the roller Y lengthwise during the oscillation of the bearings L, substantially as herein shown and described.

448,750. **BICYCLE.** WILLIAM W. KENFIELD, Rochester, N. Y., assignor to the Rochester Cycle Manufacturing Company, same place. Filed Oct. 17, 1890. Serial No. 368,417. (No model.)



Claim.—1. The combination, in a bicycle, of the handle-bar tube D, provided with internal projection or collar S, the fork C, connected to the lower end of the handle-bar tube by a pivoted joint located in rear of the tube and provided with a lug or projection entering the lower end of the tube and forming a stop to limit the movement of the fork, and a compression-spring concealed within the tube and bearing at its upper end against the internal projection S and at its lower end against the fork, substantially as described.

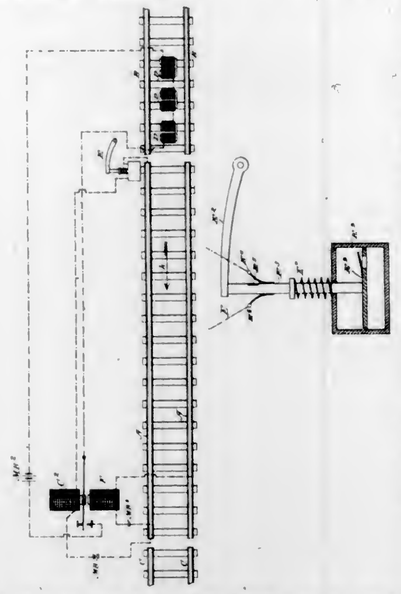
2. The combination, in a bicycle, of the handle-bar tube D, provided with internal projection or collar S and rearwardly-projecting perforated eye O, the fork C, having lug P engaging in the lower end of the tube, the ears N N', the pivot F, and compressible spring R, concealed within the tube, substantially as described.

3. The combination, in a bicycle, of the handle-bar tube D, provided with internal projection or collar S, the fork C, connected to the lower end of the handle-bar tube by a pivoted joint located in rear of the tube and provided with a lug or projection entering the lower end of the tube and forming a stop to limit the movement of the fork, the springs R and U, located within the tube above and below the collar S, and the rod T, passing through the springs and connected with the fork, substantially as described.

4. The combination, in a bicycle, of the handle-bar tube D, the fork C, jointed to the lower end of the tube by a pivoted joint located on the rear side of the tube and having a lug P, which projects into the lower end of the tube and is smaller than the opening therein, and a spring arranged to press the fork away from the tube, substantially as described.

448,751. **RAILWAY-CIRCUIT FOR SIGNALING AND CONTROLLING TRAINS.** FRANK E. KINSMAN, Plainfield, N. J. Filed June 11, 1890. Serial No. 355,006. (No model.)

Claim.—1. In an apparatus for controlling the movement of railway-trains, the combination, with a controlling-magnet in a normally-charged circuit, and means for interrupting such charged circuit to set the apparatus in "danger" condition, of a supplemental magnet or magnet-coil for keeping the apparatus in "danger" condition, and a circuit therefor independent of that used in setting the apparatus, said circuit being through the rails and car wheels and axles of a section of road upon which the train moves while the apparatus requires to remain in "danger" condition.



2. The combination, with an electro-magnet, of a circuit therefor controlled by a train on entering a section, and an opposing magnet-coil in a circuit completed through the car wheels and axle on said section, as and for the purpose described.

3. The combination, with the magnet on a normally-closed circuit, of means for interrupting the flow of current therein, so as to throw the armature to "danger" position when a train enters a section, a circuit completed through the rails of said section and car wheels and axle in said section, and means controlled by said circuit for keeping the armature in "danger" position, as and for the purpose described.

4. The combination, with the magnet having a circuit formed through the rails and normally closed, of a circuit-breaker at the entrance of a section of track, and means for keeping the armature of said magnet in "danger" position controlled by a circuit formed over the track and the car axle and wheels of any car on said section.

5. The combination, with the magnet on a normally-charged circuit, of a circuit-breaker operated by a passing train, and a magnet-coil for keeping the armature of the first-named magnet in "danger" position, said magnet-coil being in a circuit formed through the wheels and axles of any car on the section of track protected.

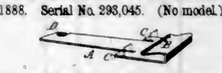
6. The combination, with a magnet in a normally-charged circuit including the rails, of a mechanically-operated circuit-breaker actuated by a passing train for setting the armature or equivalent portion of the magnet to "danger" position, and a magnet or magnet-coil for keeping the apparatus in "danger" position while the train is on a section of track, said magnet being in a circuit completed through the rails and car wheels and axles on the said section.

7. The combination, substantially as described, with a magnet in a circuit normally charged or closed and including the rails of a railroad-track, and an armature or equivalent device controlling signaling or other appliances, as described, of means for interrupting the circuit of said magnet, and a supplemental magnet or magnet-coil for holding the apparatus in "danger" position, or position into which it is placed by the interruption of the circuit for the field-magnet, said magnet or magnet-coil being in a circuit which includes the rails of a section of track and the car axles and wheels on said section.

448,752. **COMPOSITION FOR SHARPENING RAZORS.** LOUIS C. MAURER, Brooklyn, N. Y. Filed Oct. 1, 1890. Serial No. 366,775. (No specimens.)

Claim.—A sharpening compound consisting of emery, tallow, and oleic acid, in the proportions substantially as specified.

448,753. **GRIPPER-FINGER.** EDWARD L. MEGILL, Brooklyn, N. Y. Filed Dec. 8, 1888. Serial No. 293,045. (No model.)

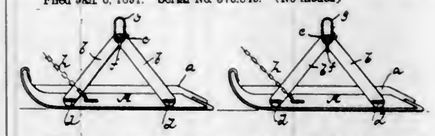


Claim.—1. A gripper-finger having a gripping-finger and spring-attaching clamp adapted to surround the ordinary gripper, substantially as herein described.

2. A gripper-finger having a gripping-finger with a cord-attaching hook and spring-attaching clamp adapted to surround the ordinary gripper, substantially as herein described.

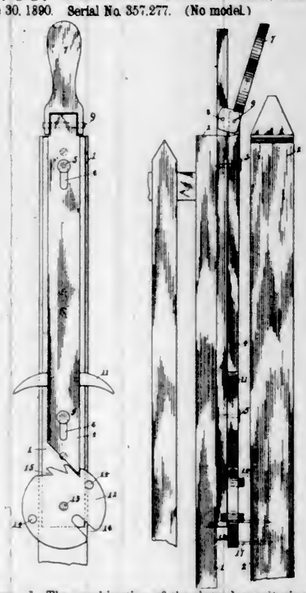
3. A gripper-finger having a laterally-extending gripping-finger and spring-attaching clamp adapted to surround the ordinary gripper, substantially as herein described.

448,754. **SLEIGH-RUNNER.** JOHN RADLEY, Jersey City, N. J. Filed Jan. 6, 1891. Serial No. 376,849. (No model.)



Claim.—In a device of the character described, the combination, with the runners, the legs or supports secured to the runners by the thumb-screws, the side plates, the cross-bar having the loop and pivotally connected to said legs, the strap engaging said loop, and the stay-chains, all substantially as and for the purpose set forth.

448,755. **GATE-LATCH.** WILLIAM H. TYLER, Aldie, Va. Filed June 30, 1890. Serial No. 357,277. (No model.)



Claim.—1. The combination of the slotted gravitating detent, the supporting-pins passing through the slots, the bent lever pivoted to said detent and to a gate, and the latch provided with a ratchet and with a radial slot adapted to engage a pin and having a stop to limit the rotation of the latch, substantially as set forth.

2. A gate-latch pivoted at one side of its center of gravity and provided with a ratchet and with a radial slot, the side to the rear of the ratchet and slot being the heaviest, and having a laterally-extending stop adapted to engage the gate-post, whereby the latch when free to move on its pivot automatically turns to and is stopped at a predetermined position, in combination with a detent and with a latch-

engaging pin secured to a post in the path of the latch and on a level with the mouth of the slot, substantially as set forth.

3. The combination of the pivoted gravitating latch having a ratchet and pin-engaging slot with the gravitating detent and with stops extending through the latch, whereby either side of the latter is adapted to be applied to a gate, and whereby in either situation the latch is stopped in two directions, substantially as set forth.

448,756. **OVERSHOE ATTACHMENT.** MARCUS M. BEEMAN, Syracuse, N. Y. Filed Apr. 18, 1890. Serial No. 348,574. (No model.)

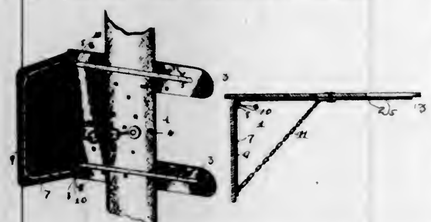


Claim.—1. An overshoe attachment consisting of a base, having vertical side arms and a vertical rear bar, all provided with inwardly and downwardly bent spring-arms, as set forth.

2. An overshoe attachment consisting of a base, prongs or teeth upon its periphery, vertical side bars having inwardly and downwardly projecting arms, and a rear vertical bar having the spring-arm extending downward, in combination, as set forth.

3. An overshoe attachment consisting of a base, having teeth upon its edges, a rear vertical bar projecting up from its base and provided with an eye, and a spring-arm 9, extending through the said eye, as set forth.

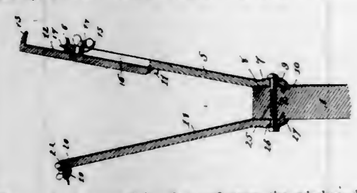
448,757. **STALLION-SHIELD.** IRVING W. BENEDICT, Gloversville, N. Y. Filed June 17, 1890. Serial No. 355,751. (No model.)



Claim.—1. In an appliance to prevent masturbation in stallions, a shield and means for attaching the same under the belly of the animal, said shield being provided with a depending guard adapted to fold up under the shield, substantially as specified.

2. In an appliance to prevent masturbation in stallions, the belly-shield and means of attaching the same to the animal, the shield being provided at its front edge with a pair of eyes, and the guard-plate provided at its upper edge with similar eyes for interlocking with those of the shield, substantially as specified.

448,758. **WINDOW-WASHER.** JOHN W. DIXON, Carlisle, Ohio. Filed Sept. 13, 1890. Serial No. 364,880. (No model.)



Claim.—As a new article of manufacture, the window-cleaner, comprising the pole, the washer 4, and drier or scraper 3, diverging from the pole and having their inner ends enlarged and concaved and fitting the sides of the pole and having perforations and provided with spurs engaging the pole, the outer ends of said washer and drier or scraper being provided with adjustable jaws to receive the washing and drying material, and the bolt passing through the said perforations and the pole, substantially as described.

448,759. **AWNING.** JAMES H. DYETT, Ilion, N. Y. Filed Aug. 22, 1890. Serial No. 362,749. (No model.)

Claim.—1. In combination with the spring-roller, the arms, the cord-guides at the outer ends of the arms, the awning secured to the roller, and the actuating-cord extending from the cord-guides on the arms to the awning and within reach of the operator, all substantially as shown and described.



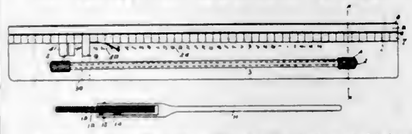
2. In combination with the spring-roller, the arms below the same, the awning secured to the roller, and the cord passing from one of the arms upward to the awning, thence downward to the opposite arm, and finally to within reach of the operator.

3. In combination with the spring-roller and the awning secured thereto, the arms, the adjustable blocks carried thereby, and the cord or connection, arranged substantially as shown and described.

4. In combination with the spring-roller A, the awning B, secured at one end to the roller and provided at its opposite end with wheels or pulleys *b b'*, arms E E', and a cord D, secured at one end to arm E, passing thence over the pulleys *b b'*, thence to arm E', and finally within reach of the operator.

5. In combination with the spriog-roller and the awning, the hinged or jointed arms, and the cord D passing from the arms to the awning.

448,760. **TYPE-WRITING MACHINE.** MIERS FISHER, Denver, Colo. Filed Sept. 1, 1890. Serial No. 363,722. (No model.)



Claim.—1. A type-writer consisting of a plate or card 1, having a row of characters formed thereon and provided with a slot cut through the plate or card at one extremity of the row of characters, in combination with a pen or stylus consisting of a handle and a disk pivoted thereon, the disk being provided with raised characters on its periphery, said characters corresponding with those on plate 1 but arranged on the disk in the reverse order or position, the disk being adapted to rotate on the handle as the pen or stylus is moved across the plate with the periphery of the disk in contact therewith, substantially as and for the purpose set forth.

2. In a type-writer, a plate having a row of characters formed thereon, a cogged, recessed, or toothed rack alongside said row of characters, and an opening in the plate at one extremity of said rack, in combination with a pen or stylus provided with a rotating disk having raised characters on its periphery, said characters corresponding with those on plate 1, but arranged on the disk in the reverse order or position, substantially as and for the purpose set forth.

3. In a type-writer, a plate having a row of characters formed thereon, a cogged, recessed, or toothed rack alongside said row of characters, a recess being opposite each character, and an opening cut through the plate at one extremity of the rack, in combination with a stylus or pen consisting of a hollow handle terminating at one extremity in a fork, a disk supported in said forked extremity and adapted to rotate therein, said disk being provided with raised characters on its periphery, said characters corresponding with those of the plate 1, but arranged on the disk in the reverse order or position, each raised character forming a projection adapted to enter a recess of the rack, a coiled spring located in the hollow handle, one extremity of said spring being connected with an eccentric or drum secured upon the disk, while the other extremity is connected with a button or its equivalent outside the free extremity of the handle, substantially as described.

4. In a type-writer, a plate having a row of characters formed thereon, a recess opposite each character forming in effect a rack, a slot or opening formed in the plate at one extremity of the rack, and suitable means of moving the plate forward in a direct line, in combination with a pen or stylus consisting of a disk with a pointer marked thereon indicating on the periphery the initial point of rotation, the periphery being provided with raised characters forming projections adapted to engage the recessed rack, said characters corresponding with those on plate 1, but arranged in the reverse order or position, a handle one extremity of which is fashioned for the reception of the

disk and within which it rotates, and suitable means of maintaining the disk normally in a uniform position, substantially as and for the purpose set forth.

5. In a type-writer, a plate having characters formed thereon, a rack alongside the characters with a recess opposite each, a slot or opening at one end of the rack, and a roller journaled upon the plate and provided with a toothed spacing-cylinder secured to each extremity thereof, said cylinders protruding through suitable openings formed in the plate, in combination with a pen or stylus provided with a rotating disk having raised characters formed on its periphery corresponding with the characters on the plate, but arranged in the reverse order or position, and suitable spring mechanism whereby the disk is normally maintained in a uniform position, substantially as and for the purpose set forth.

6. A type-writer consisting of a plate having a row of characters thereon, an opening or slot at one extremity of said row, a roller journaled upon the plate and provided with a fluted spacing-cylinder secured to each extremity thereof, said cylinders protruding through suitable openings formed in the plate, and a cap covering said roller and provided with a finger-opening, as shown, in combination with a pen or stylus provided with a rotating disk having raised characters on its periphery, said characters corresponding with those on the plate, but arranged in the reverse order or position, and a pointer indicating on the periphery of the disk the initial point of rotation, and suitable means of normally maintaining the disk in a uniform position, substantially as and for the purpose set forth.

7. A type-writer consisting of a plate 1, having a row of characters thereon, an opening or slot at one extremity of said row, the plate being provided with a padded groove for inking the stylus, said groove extending, preferably, parallel with the row of characters, in combination with a pen or stylus provided with a rotating disk having raised characters on its periphery, said characters corresponding with those on plate 1, but arranged on the disk in the reverse order or position, substantially as and for the purpose set forth.

8. A type-writer consisting of a plate having a row of characters thereon, an opening or slot at one extremity of said row, in combination with a stylus consisting of a handle and a disk pivoted thereon, the disk being provided with raised characters, said characters corresponding with those on the plate, but arranged in the reverse order or position, the disk being adapted to rotate on the handle as the pen is moved across the plate with its periphery in contact therewith, and suitable means for inking the stylus, substantially as and for the purpose set forth.

9. A type-writer consisting of a plate having a row of characters formed thereon, a slot or opening cut through the plate at one extremity of said row, and a recess across the under side of the plate in line with said opening, in combination with a stylus consisting of a rotating disk and a handle, the disk being pivoted on the handle and provided with raised characters on its periphery, said characters corresponding with those on the plate, but arranged in reverse order or position, the disk being operated by placing its periphery in contact with the plate and moving the stylus forward, substantially as and for the purpose set forth.

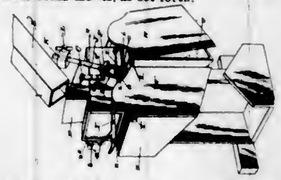
10. A type-writer consisting of a plate having a row of characters formed thereon, a printing slot or opening 9, cut through the plate at one extremity of said row, and one or more line-spacing slots cut through the plate above slot 9, in combination with a stylus consisting of a handle and a disk or its equivalent having printed characters formed on its periphery, said characters corresponding with those on the plate, but arranged in reverse order or position, the stylus being operated by placing the periphery of the disk in contact with the plate and moving the same forward thereon, substantially as and for the purpose set forth.

11. A type-writer consisting of a plate having a row of characters formed thereon, a slot or opening 9, cut through the plate at one extremity of said row, and a guide-flange 40, extending backward from slot 9, in combination with a stylus provided with a disk or its equivalent having printing characters formed on its periphery, said characters corresponding with those on the plate, but arranged in the reverse order or position, substantially as and for the purpose set forth.

12. A pen or stylus consisting of a handle, a disk pivoted thereon and having its periphery provided with raised characters adapted to print as the disk is rolled over a suitable surface, and means for returning the disk to the same relative position upon the handle after each printing act, as described.

448,761. **GRAIN-SCALE.** GEORGE C. FLAGG, Lewistown, Ill. Filed Oct. 15, 1890. Serial No. 368,587. (No model.)

Claim.—1. In a grain-weighing machine, the combination, with the pivoted funnel-shaped hopper and the divider below the hopper, of the scale-beam having an adjustable weight, the boxes pivotally supported thereby at either side of said divider, the vertical arm mounted on the supporting-shaft of said beam and carrying a roller at its upper end, and a cam on the hopper adapted to be struck by said roller when the scale-beam moves, as set forth.



2. In a grain-weighing machine, the combination, with the scale-beam mounted on a pivot, the pivoted hopper, and connections between said beam and hopper for moving the latter on its pivots, of the boxes pivotally supported by said scale-beam and having hinged fronts, toggle-levers pivotally connected at one end to said fronts and near their rear ends to said boxes and having upwardly-extending arms at their rear end, a horizontal arm keyed to the pivotal shaft of said scale-beam, and rollers on the extremities thereof, each engaging between the rear end and the upwardly-extending arm of one of said toggle-levers, as and for the purpose set forth.

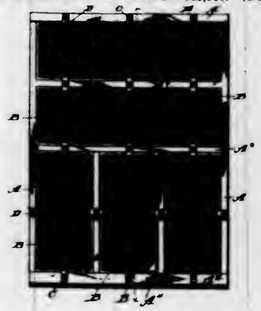
3. In a grain-weighing machine, the combination, with the pivoted scale-beam, levers pivoted thereto near its supporting-pivot and provided with knife-edged bearings at their lower ends, a catch sliding longitudinally on said beam and having notches engaging the upper ends of said levers, and a means for locking said catch, of boxes mounted upon said knife-edged bearings, a pivoted hopper, and connections between the scale-beam and hopper for moving the latter on its pivots, as and for the purpose set forth.

4. In a grain-weighing machine, the combination, with the pivoted scale-beam, an adjustable weight thereon, levers pivoted to said scale-beam near its supporting-pivot and having reduced upper ends, knife-edged bearings at the lower ends of said levers, a slotted catch sliding longitudinally on said beam and having inner and outer pairs of notches engaging said reduced ends, a pin in the beam loosely engaging the slot in the catch, and a set-screw passing through a slot in the beam and taking into the catch, of boxes mounted upon said knife-edged bearings, links pivotally connecting said boxes with the casing, a pivoted hopper, and connections between said hopper and scale-beam for moving the mouth of the hopper alternately over the boxes, substantially as and for the purpose set forth.

5. In a grain-weighing machine, the combination, with the pivoted funnel-shaped hopper, a cam thereon, the scale-beam keyed to an oscillating shaft, an upright arm keyed to said shaft and having a roller engaging said cam, a transverse arm integral with said upright arm, and rollers at the extremities of said transverse arm, of boxes pivotally connected to said scale-beam and having hinged fronts, a toggle-lever connecting each front with its box, the rear end of said toggle-lever standing below the roller at one end of said transverse arm, and an inclined arm secured to said lever and having an upright bend standing above such roller, the whole operating substantially as described.

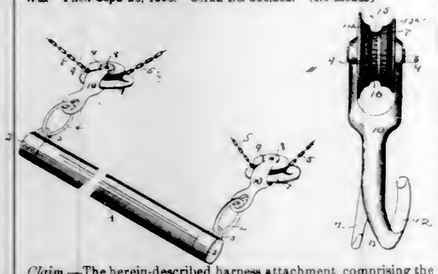
6. In a grain-weighing machine, the combination, with the pivoted scale-beam, the boxes connected thereto with their bottoms inclining inwardly and forwardly, hinged fronts to said boxes, an oscillating hopper, and means, substantially as described, for simultaneously opening one front and shifting the hopper from that box when filled, of a delivery-chute pivotally connected to the casing below and in front of the lower edge of said fronts, said chute having a raised front, all substantially as and for the purpose hereinbefore set forth.

448,762. **ORE-SCREEN.** THOMAS J. GRIER, Lead City, (Dak. Ter.,) S. D. Filed June 24, 1889. Serial No. 315,389. (No model.)



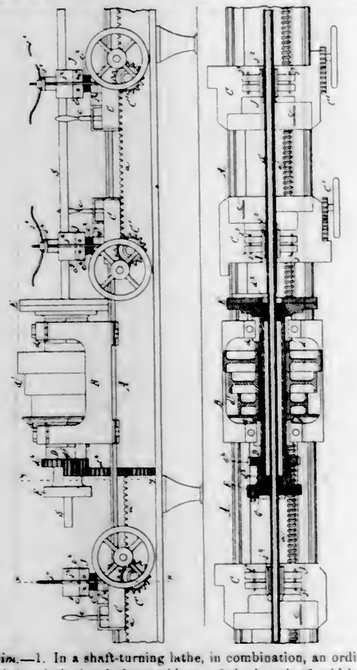
Claim.—A stamp-mill screen or sieve comprising a main frame divided into vertical series of compartments, and independently-removable screens and screen-frames fitting said compartments, whereby any one section of the screening material may be removed independent of the others as it becomes worn, substantially as described.

448,763. HARNESS ATTACHMENT. GEORGE A. HARRIS, Racine, Wis. Filed Sept. 26, 1890. Serial No. 366,282. (No model.)



Claim.—The herein-described harness attachment, comprising the pulley having a curved groove 15 and a supplemental groove 16 in the bottom of the other groove and provided at each side with an annular flange, one of the flanges being enlarged and forming a shield, and the pulley-block provided with a pair of integral diverging hooks forming a part of the block, one of the hooks being C-shaped and terminating at the end of the block and the other hook being spirally formed and provided with a portion extending inward and arranged directly opposite the other hook and forming a loop, substantially as specified.

448,764. LATHE FOR TURNING SHAFTS. EVAN W. JONES, Portland, Oreg. Filed May 10, 1890. Serial No. 351,289. (No model.)



Claim.—1. In a shaft-turning lathe, in combination, an ordinary lathe-bed A, a lathe-head about midway of the length of said bed, a hollow spindle having a tool-holding-disk at each end and being connected to the said head, and a number of shaft-feeding lathe-carriages having suitable clamps for holding the shaft, substantially as described.

2. In a shaft-turning lathe, the intermediate lathe-head, in combination with a hollow spindle D, bushings d^3 d^3, disk E, having adjustable roughing-tools H, disk F, having buttons *f*, removable disk G, having adjustable finishing-tools I, gear-wheels d^4 d^5 d^6, lead-screw d', and clamping-carriage C, substantially as described.

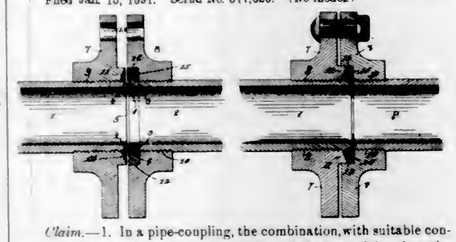
3. In a lathe for turning shafts, in combination, a revolving hollow tool-carrying and shaft-centering spindle, a longitudinally-moving lathe-carriage having attached to it a clamp adapted for clamping, and, in conjunction with said spindle, centering-shafts of different diameters, the same consisting of a lower vertically-adjustable saddle portion or jaw and an upper adjustable jaw, suitable means for adjusting the said clamping portion, and suitable mechanism for moving in a longitudinal direction the said carriage and the shaft clamped to it, substantially as described.

4. The combination of a longitudinally-moving lathe-carriage having a screw-threaded formation c', a vertically-adjustable centering and clamping lower saddle-like portion, a screw-plug c^3 of tubular form and having a perforated head c^4 and fitted in the screw-threaded formation c', a detachable shank *j*, having jaw j^3, and fitted tightly in the lower saddle-like portion, an upper vertically-adjustable centering and clamping portion, devices for adjusting said clamping portions above the lathe-carriage, and suitable means for moving the said carriage, substantially as described.

5. The shaft-clamp comprising lower screw-threaded tube formation c', elevating-plug c^3, set-screw c^5, removable V-shaped jaw j^3, clamp j^3, bolts j^3, nuts j^3, and pivots j^7, all applied upon a lathe-carriage C, substantially as described.

6. The combination of disk F, having a polygonal depression, removable tool-holding disk G, fitted into said depression, and the eccentric buttons *f*, substantially as described.

448,765. PIPE-COUPLING. FREDRICK KAISER, Knoxville, Tenn. Filed Jan. 13, 1891. Serial No. 377,629. (No model.)



Claim.—1. In a pipe-coupling, the combination, with suitable connecting-flanges and bolts connecting the said flanges, of the pipes the meeting ends of which are respectively square to form a flat shoulder or seat and beveled to form a sharp cutting-edge, and a compressible washer mounted between the meeting ends of said pipes and connecting-flanges, substantially as and for the purpose set forth.

2. In a pipe-coupling, the combination of the connecting-flanges the meeting faces of which are provided, respectively, with an annular collar having a beveled end and a recess to receive said collar, a compressible washer mounted in said recess, the pipes having their ends screwed into said flanges, one of said pipes having a squared end, forming a flat seat or shoulder, and the end of the other pipe being beveled exteriorly and interiorly to form a sharp circular edge, and the connecting-bolts, all arranged and operating substantially as and for the purpose set forth.

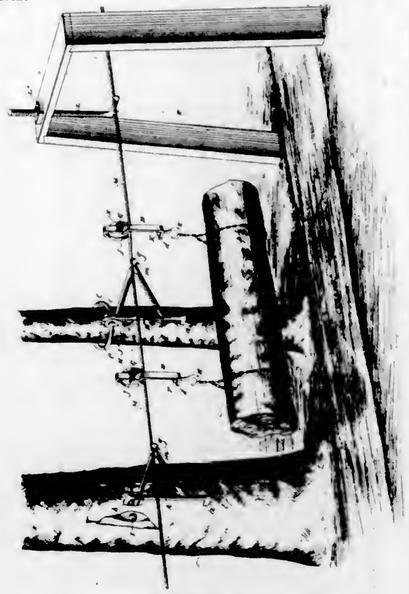
448,766. LUMBER-CARRIER. ALFRED T. KELLIHER, Bethel, Me. Filed July 12, 1890. Serial No. 358,566. (No model.)

Claim.—1. In a lumber-carrier, the combination, with the carriage, of hangers carried by suitable supports and having grooves *g* in the outer ends of their feet and vertical holes through said feet, the wire track-rope M, resting in said grooves, and the fastenings inserted through said holes and engaging the strands of the track-rope, substantially as described.

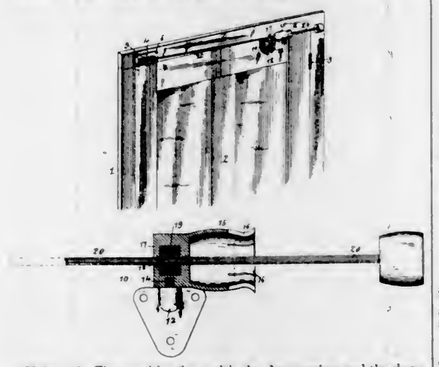
2. In a lumber-carrier, the combination, with the carriage, of hangers having eyes at their upper ends, connections between said eyes and the hanger-supports, points at the lower ends of said hangers entering said supports, and a track-rope M, carried by the feet of said hangers, as and for the purpose set forth.

3. In a lumber-carrier, the combination, with the carriage, of hangers B, having eyes *b* at their upper ends and points *a* at their lower ends, grappling-hooks C, having eyes c in their butt-ends, a bolt J, passing through all said eyes, said hooks embedding the sides and said point, the face of suitable hanger-supports, and a track-rope M, carried by the feet of the hangers, as set forth.

4. In a lumber-carrier, the combination, with the carriage, of hangers carried by suitable supports and having grooves *g* in the inner faces of the outer ends of their feet and holes *h* through said feet, the wire track-rope M, resting in said groove, the fastening-arms m^3, pivoted on pins m' in said holes, having grooved upper ends *g'* embracing certain strands of said rope opposite the grooves in the feet and having eyes i in their lower ends, and the clips Q', adjustably connecting said eyes with the feet of the hangers, substantially as hereinbefore set forth.



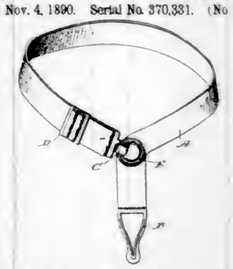
448,767. DOOR-CHECK. BARNUM RENTZ, Waco, Nebr. Filed July 11, 1890. Serial No. 358,891. (No model.)



Claim.—1. The combination, with the door-casing and the door, of a bracket secured to the casing and a bracket provided with a bracket-arm terminating in a bearing secured to the door, a cylindrical socket, the mouth of which is contracted and provided with a series of slits, and provided at its rear end with an opening and mounted upon the bearing of the arm, and a plunger-rod pivoted to the bracket of the casing, passing through the socket and beyond the same and provided at its free end with a cylindrical buffer slightly larger than the contracted mouth of the socket and adapted to fit within the socket in rear of the mouth, substantially as specified.

2. The combination, with the door-casing and the door, of a bracket having a securing-plate provided with a pair of parallel perforated flanges, a bracket secured to the door and provided with a forwardly-projecting bracket-arm terminating in a bearing, a friction-box pivotally mounted on the bearing and provided with a friction-packing and at one side with a cylindrical socket having a reduced mouth provided with a series of spring-tongues, and a plunger-rod passing through the socket and friction-box and adjustably pivoted at its inner end between the flanges of the bracket, and a buffer secured to the free end of the rod, being of slightly greater diameter than the contracted mouth and adapted to fit the socket in rear of said contracted mouth, substantially as specified.

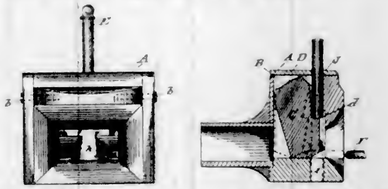
448,768. HOSE-SUPPORTER. CHRISTOPHER C. SHELBY, Paterson, N. J. Filed Nov. 4, 1890. Serial No. 370,331. (No model.)



Claim.—1. In a hose-supporter, the combination, with the continuous elastic web having the clasp at one end and the hook attached at the opposite end, of the eyelet inserted in said web at a point near the clasp end, said eyelet having the top plate and the extended bottom plate with its edges bent around the edges of the fabric and embracing the edges of the top plate, substantially as and for the purpose set forth.

2. In a hose-supporter, the combination, with the continuous web having the clasp at one end, of the hook at the opposite end of said web and the eyelet with which said hook is adapted to engage, inserted in the body of and clamping said web at a point between said hook and clasp, substantially as described.

448,769. CAR-COUPLING. DANIEL H. YOUNG, Fort Pierre, S. D. Filed Oct. 24, 1890. Serial No. 369,179. (No model.)

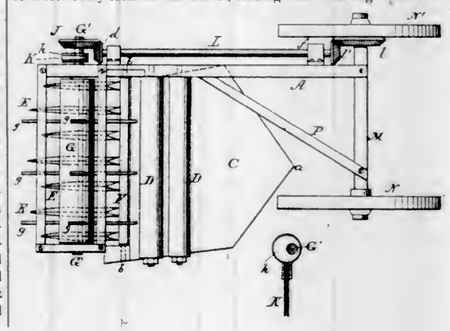


Claim.—In a car-coupler, the combination of the buffer A, having an enlarged portion B, a dog C, pivoted within the same and having the concaved portion *g* and *h* for the purpose mentioned and with a shoulder *d* for supporting the pin, substantially as set forth.

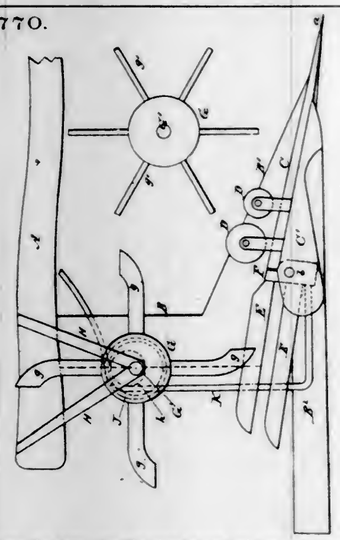
448,770. COMBINED PLOW AND PULVERIZER. JAMES C. ARRINGTON and WILLIS N. ARRINGTON, Tishomingo, assignor of one-half to Clement A. Hancock, Caddo, Ind. Ter. Filed Oct. 2, 1890. Serial No. 366,903. (No model.)

Claim.—1. A combined shovel-plow and soil-pulverizer comprising a draft-beam, a standard, an inclined shovel-plow, vibrating knives, and rotary knives, all arranged and adapted to operate substantially in the manner and for the purpose specified

2. In a combined shovel-plow and soil-pulverizer, the combination of a forwardly-inclined flat shovel, feeding and crushing rollers ar-

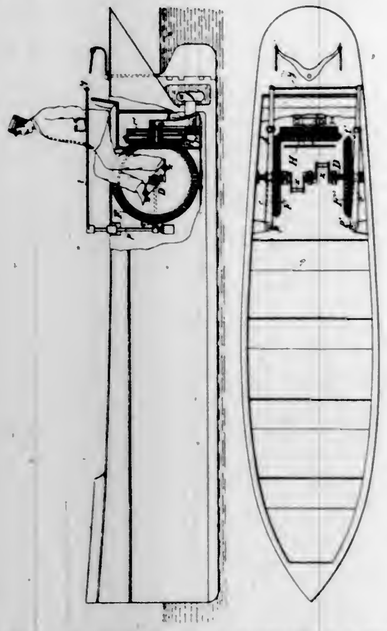


448,770.



ranged over the same, the vibrating knives and rotary knives, operated by means substantially as described.

448,771. APPARATUS FOR PROPELLING BOATS. FRITZ BAUER, Hamburg, Germany. Filed Dec. 5, 1890. Serial No. 373,666. (No model.)

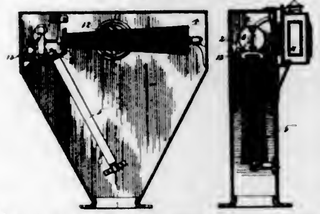


Claim.—The combination, with the propeller-shaft *m*, of the shaft *b*, parallel to and geared with the propeller-shaft and furnished with a bevel-toothed wheel, the pedal-crank shaft D, arranged transversely to said shaft *b* and furnished with bevel-toothed wheels F F', movable lengthwise upon it, and the reversing apparatus consisting of the upright spindles *p p'*, the arms *c c'* on said spindles, engaging with the said wheels F F' on the crank-shaft, and the connected hand-levers *l l'* on said spindles, all substantially as herein set forth.

448,772. SILICATE COMPOUND. MARC W. BEYLIKOT, New York, N. Y., assignor of one-half to Charles J. Everett, Tenafly, N. J. Filed Nov. 19, 1890. Serial No. 371,959. (No specimens.)

Claim.—The within-described alkaline-magnesian-silicate solution, in which the silicate has the general formula $7(Na_20,5SiO_4),2(Mg"OSiO_4)$.

448,773. RAILWAY-SIGNAL. EDWARD C. CARTER, Chicago, Ill. Filed Dec. 2, 1890. Serial No. 373,361. (No model.)



Claim.—1. A railway-signal comprising two or more signaling devices or arms permanently occupying different axial positions and adapted to be exposed to view and concealed, thereby giving an indication by the position of the exposed device, substantially as set forth.

2. A railway-signal comprising two or more signaling devices or arms permanently occupying different axial positions and rotatable on longitudinal axes and adapted by said rotation to be exposed to view or concealed, substantially as set forth.

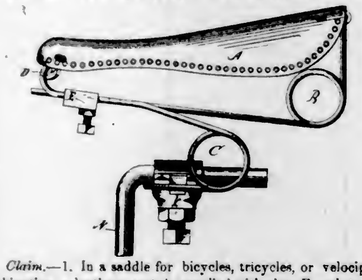
3. The combination, substantially as set forth, of a casing provided with slots occupying different angular positions in its face with movable arms opposite each slot adapted by their movement to render the slots visible or invisible, thereby giving an indication by the position of the visible slot.

4. The combination, substantially as set forth, of the casing provided with slots, as 2 3, occupying different positions in its face, with the rotatable arms, as 4 5, behind said slots, and an electric motor, as 7, to rotate said arms.

5. In a railway-signal, two or more arms or signaling devices permanently occupying different axial positions and adapted to be exposed and concealed, in combination with a counter-weight to normally exhibit the danger-signal, substantially as set forth.

6. The combination, substantially as set forth, of the light with a signaling-arm in front of it adapted to be turned edgewise or flatwise to the light to vary the signal given.

448,774. SADDLE FOR BICYCLES. LUTHER S. COPPER, Cleveland, Ohio. Filed Sept. 19, 1890. Serial No. 365,562. (No model.)



Claim.—1. In a saddle for bicycles, tricycles, or velocipedes, in combination, a leathern seat A, supplied with plate F, and straps H H, which buckle together under middle of plate F and serve to tension seat A laterally.

2. In a saddle for bicycles, tricycles, and velocipedes, in combination, a leathern seat A, supplied with plate G, having hooks to engage sloping arms of spring D and to move back or forward, if required.

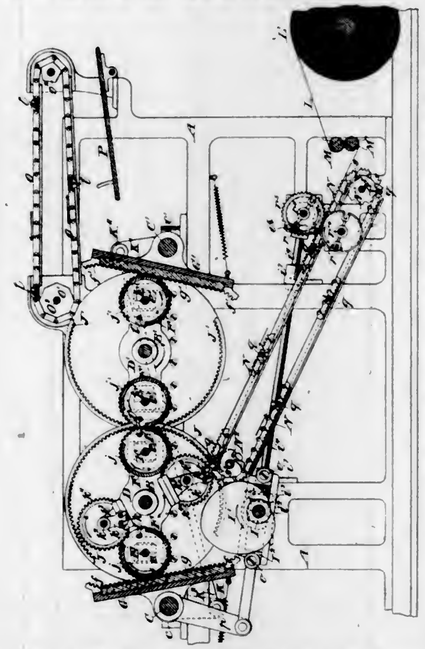
3. In a saddle for bicycles, tricycles, or velocipedes, in combination, spring B, with or without coil, having raised end for the support of the front end of leathern seat A, and with arms reaching full length thereof and passing through holes in plate E, and secured at proper place by set-screws 1 1, and serving for tensioning seat A to give elasticity thereto and at the same time to allow of a forward elastic action to compensate the backward tilt of spring C.

4. In a saddle for bicycles, tricycles, and velocipedes, in combination, spring D, the ends of which engage in sockets in plate E, having sloping arms to engage hooks of plate G and to allow a movement thereof to take up unequal stretching of sides of leathern seat A.

5. In a saddle for bicycles, tricycles, or velocipedes, in combination, spring C, formed with loops to engage bar-clamp *k*, having coils and long arms reaching backward, passing through holes in plate E, and secured therein by set-screws 2 2, the arms permitting of forward or backward shifting of plate E, and one of the arms being systematically scaled to indicate the position of plate E for different weights.

6. In a saddle for bicycles, tricycles, or velocipedes, in combination, plate E, having holes to engage springs B and C, with set-screws 1 1 2 2 for securing them, and with sockets for engaging spring D, for purposes and substantially as described.

448,775. PRINTING-MACHINE. CALVERT B. COTTRELL, Westerly, R. I. Filed May 28, 1890. Serial No. 353,495. (No model.)



Claim.—1. The combination, in a printing-machine, of a rotary impression-cylinder, the axis of which is caused to revolve about a fixed axis, and an oscillating form-carrier for presenting a printing-form to said cylinder, substantially as herein described.

2. The combination, in a printing-machine, of a revolving cylinder-carrier, a rotary impression-cylinder journaled in said carrier at a distance from the center thereof, and an oscillating bed or form-carrier for presenting a printing-form to said cylinder during the rotation of the latter on its own axis and its revolution with the first-named carrier, substantially as herein described.

3. The combination, in a printing-machine, of a revolving impression-cylinder carrier, a rotary impression-cylinder journaled in said carrier at a distance from the axis thereof, an oscillating bed or form-carrier, a stationary interrupted circular rack, a rack on the said bed or form-carrier adapted to connect with said stationary rack, and a gear on said cylinder for running in said two racks, substantially as herein set forth.

4. The combination, in a printing-machine, of a revolving impression-cylinder carrier, a rotary impression-cylinder journaled in said carrier at a distance from the axis thereof, and a cam-actuated form-bed for presenting a printing-form to said impression-cylinder, substantially as herein described.

5. The combination, in a printing-machine, of a revolving impression-cylinder carrier, a rotary impression-cylinder journaled in said carrier, and an oscillating bed or form-carrier having a way in one side thereof to engage with a portion of said impression-cylinder carrier to maintain the said bed or form-carrier in proper relation to the cylinder for printing, substantially as herein set forth.

6. The combination, in a printing-machine, of a revolving impression-cylinder carrier, a plurality of rotary impression-cylinders journaled in said carrier at a distance from the axis thereof, and an oscillating bed or form-carrier, which is caused during every revolution of said carrier to oscillate back and forth as many times as there are cylinders in said carrier, substantially as herein set forth.

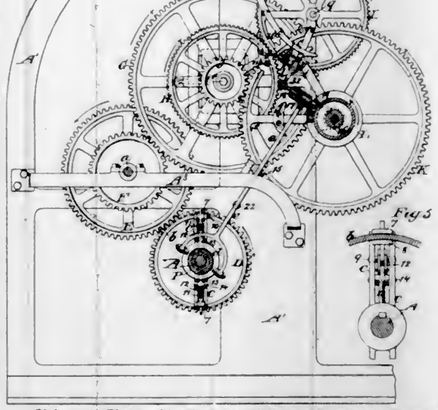
7. The combination, in a printing-machine, of two oscillating form-beds, two revolving impression-cylinder carriers, one for each of said beds, a rotary impression-cylinder journaled in one of said carriers distant from the axis thereof for printing one side of a sheet from a form on one of said beds, and a rotary impression-cylinder journaled in the other of said carriers distant from the axis thereof for printing the other side of said sheet from a form on the other of said beds, substantially as herein set forth.

8. The combination, in a printing-machine, of two oscillating form-beds, two revolving impression-cylinder carriers, one for each of said beds, rotary impression-cylinders journaled in said carriers, a cam for imparting motion to one of the said beds, and a connection, substantially as herein described, between the said beds, whereby one is caused to derive motion from the other.

9. The combination, in a printing-machine, of a revolving impression-cylinder carrier, a rotary impression-cylinder journaled in said carrier at a distance from the axis thereof, an oscillating bed, a rotary gripper-carrying shaft journaled in said carrier and geared with said impression-cylinder, and grippers carried by said shaft for presenting sheets to said impression-cylinder, substantially as herein set forth.

10. The combination, in a printing-machine, of a revolving impression-cylinder carrier, a rotary impression-cylinder journaled in said carrier at a distance from the axis thereof, a form-bed, and an endless carrier for feeding the paper to be printed, a rotary gripper-carrying shaft journaled in said impression-cylinder carrier, and grippers carried by said shaft for transferring sheets from said endless carrier to said cylinder, substantially as herein set forth.

448,776. MEANS FOR TRANSMITTING ROTARY MOTION AT DIFFERENT SPEEDS. CALVERT B. COTTRELL, Westerly, R. I. Filed Jan. 9, 1891. Serial No. 377,192. (No model.)



Claim.—1. The combination of a driving-shaft and a shaft to be driven, two differently-proportioned trains of gearing between said shafts, clutches for producing the simultaneous engagement with and disengagement from one of said shafts of one and the other of the two trains of gearing, a lever for operating said clutches, and a cam geared with and driven by one of said shafts to actuate said lever periodically to effect the changes of engagement and disengagement of said trains of gearing for changing the speed of the driven shaft, substantially as herein set forth.

2. The combination, with a driving-shaft and a shaft to be driven, two differently-proportioned trains of gearing between said shafts, and clutches for simultaneously engaging either one and disengaging the other of said trains of gearing with and from one of said shafts, of a lever for operating said clutches, a cam geared with and driven by one of said shafts to actuate said lever periodically, and an automatically-operated engaging and disengaging device between said lever and cam, substantially as herein set forth

3. The combination, with a driving-shaft and a shaft to be driven, two differently-proportioned trains of gearing between said shafts, and clutches for simultaneously engaging either one and disengaging the

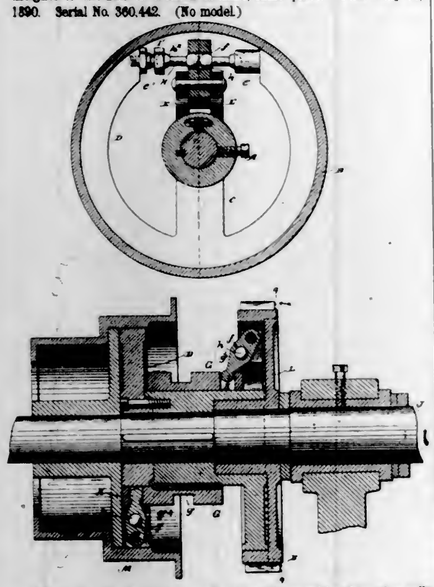
other of said trains of gearing with and from one of said shafts, of a lever for operating said clutches, a cam geared with and driven by one of said shafts to actuate said lever periodically, an automatically-operated engaging and disengaging device between said lever and cam, a locking device for locking the said engaging device out of engagement with said cam, a spring for throwing said engaging device into such engagement, and a revolving tappet for throwing said locking device out of engagement with said engaging device, substantially as herein set forth.

4. The combination, with the shafts A C and the two trains of gearing for transmitting motion from one to the other at different speeds, and the clutches and clutch-lever for engaging either one and disengaging the other of said trains, and the cam L for operating the clutch-lever, of the pin 18 and roller 17, movable within the clutch-lever for engaging it with and disengaging it from said cam, the spring-actuated lever *p* for throwing said pin and roller into engagement, the spring-actuated locking-lever *o* for locking said pin and roller out of engagement, the gears H and I, having different numbers of teeth, the tappet-lug *m*, and the sliding tappet *l* on said gear for actuating the locking-lever to liberate the lever *p*, all substantially as herein described.

5. The combination of the shaft C, the clutch-lever *e*, the cam L, the pin 18 and roller 17 on said lever, the spring-actuated lever *p*, connected with said pin, the spring-actuated locking-lever *o*, the gears H and I, the tappet-lug *m* and tappet *l*, carried by said gears, and the cam-tappet *j*, carried with said cam L for operating on said lever *p* to produce the disengagement of the clutch-lever *e* from the cam L, all substantially as herein set forth

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448,777. FRICTION-CLUTCH. GEORGE W. DRAKE, Cleveland, Ohio, assignor of one-half to William S. Lane, same place. Filed July 31, 1890. Serial No. 360,442. (No model.)



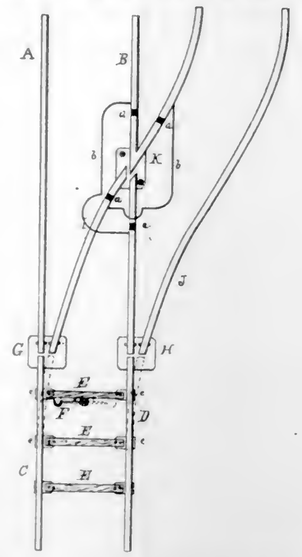
Claim.—1. In a friction-clutch pulley, the combination of a split expansible friction-ring, a pivoted lever formed with a transverse opening entirely through it and having means for rocking it, and toggle-arms having bearing-points upon the arms of said ring and having their inner ends directly bearing against each other within the opening in said lever, substantially as described.

2. In a friction-clutch pulley, the combination of a split expansible friction-ring, a lever pivoted upon the hub of said ring and formed with a transverse opening through its inner end, toggle-arms bearing against the arms of said ring and having their inner ends directly abutting against each other within the opening of said lever, and a conical sliding sleeve bearing with its incline against the outer end of said lever, substantially as described.

3. In a friction-clutch pulley, the combination of a split expansible friction-ring, a pivoted lever formed with a transverse opening through it and having means for rocking it, a socket-piece secured longitudinally adjustable in one arm of said ring, and toggle-arms having their inner ends bearing against one another in the opening of said lever and having their outer ends, respectively, bearing against said socket-piece and the opposite arm of said ring, substantially as set forth.

4. In a friction-clutch pulley, the combination of a split expansible friction-ring formed with opposite sockets in its arms, a socket-piece in one of said sockets, an adjustable socket-piece screw-threaded in the opposite socket, a pivoted lever formed with a transverse opening through it and having means for rocking it, and toggle-arms bearing against one another with their inner ends and against said socket-pieces with their outer ends, substantially as described.

448,778. ELECTRIC RAILWAY. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 7, 1882. Serial No. 68,650. (No model.)



Claim.—1. In an electric railway, two main-line conductors, in combination with a source of electric energy therefor, and two branch-line conductors connected to the main-line conductors in permanent multiple-arc connection, substantially as set forth.

2. In an electric railway, two rails of a main track, in combination with a source of electric energy connected therewith, and two rails of a branch or side track electrically connected with the main rails in permanent multiple-arc connection, substantially as set forth.

3. In an electric railway, the combination of a main-line conductor, a branch-line or side-track conductor extending therefrom, and a conducting switch-plate joining the extremities of said conductors, substantially as set forth.

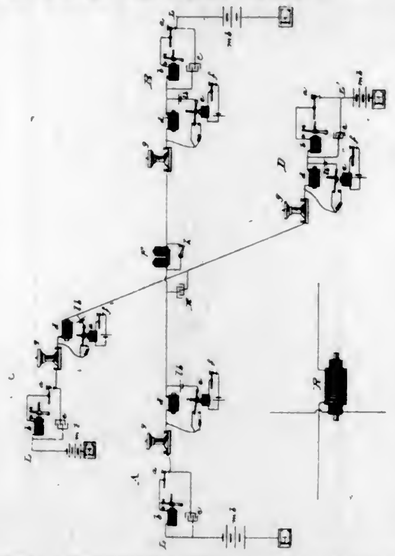
4. In an electric railway, the combination of a broken main-line conductor, a conducting switch-plate connecting the meeting extremities of the separated portions, and a branch-line or side-track conductor connected with and extending from the same switch-plate, substantially as set forth.

5. In an electric railway, the combination of a broken main-line conductor, a conducting switch-plate, the meeting ends of the separated portions of said conductor extending upon the surface of said switch-plate, and a branch-line or side-track conductor also extending from the surface of said switch-plate, substantially as set forth.

6. In an electric railway, the combination of a broken main-line conductor, a conducting switch-plate, the meeting ends of the separated portions of said conductor extending upon the surface of said switch-plate, and a branch-line or side-track conductor also extending from the surface of said switch-plate, the end of one of said conductors being movable laterally upon the switch-plate, substantially as set forth.

7. In an electric railway, the combination of a main-line conductor, a conducting switch-plate upon the surface of which the said conductor and a main-line conductor extend and a branch-line or side-track conductor extending from the other end of said switch-plate, the end of the first-mentioned main-line conductor being movable laterally upon the switch-plate, substantially as set forth.

448,779. TELEGRAPH. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 19, 1886. Serial No. 208,359. (No model.)

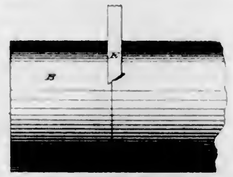


Claim.—1. The combination, with two or more telegraph-lines, each having ordinary Morse sets and induction sets, of one or more induction-connections between such lines and one or more retarding or damming magnets to divert the induction-signals from portions of such lines, substantially as set forth.

2. The combination, with two or more telegraph-lines, each having ordinary Morse sets and induction sets, of one or more induction-connections between such lines, one or more retarding or damming magnets to divert the induction-signals from portions of such lines, and one or more switches for modifying the effect of such retarding or damming magnet or magnets, substantially as set forth.

3. The combination of a telegraph-line provided at two or more points with signaling-keys and receivers, and provided also at one or more points with induction sets in series with said keys and receivers, a branch or crossing line provided with similar instruments, said lines being inductively connected, a retarding-magnet in the first line, and a retarding-magnet in the branch or crossing line, substantially as set forth.

448,780. DEVICE FOR TURNING OFF PHONOGRAM-BLANKS. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Phonograph Company, of New Jersey. Filed July 7, 1888. Serial No. 279,322. (No model.)

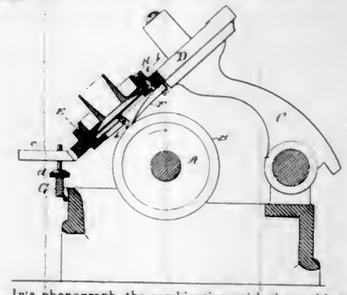


Claim.—1. The combination, in a phonograph, of a phonogram-blank for the reception of the record, means for making the record, and a cutting-tool with an edge oblique to the track of record, substantially as set forth.

2. The combination, in a phonograph, of a phonogram-blank and means for turning the same, a recording-point bearing on the surface of the blank and making a record thereon, and the turning-off tool supported on the recorder-carrying arm and having a cutting-edge oblique to the track of record, substantially as described.

448,781. TURNING-OFF DEVICE FOR PHONOGRAPHS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 30, 1888. Serial No. 281,455. (No model.)

Claim.—1. In a phonograph, the combination of a cutting-knife mounted rigidly and without an adjustment on the machine and a recorder adjustable with relation to said cutting-knife, substantially as set forth.



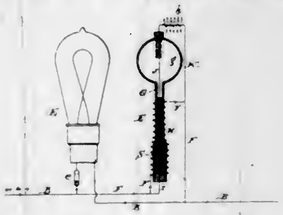
2. In a phonograph, the combination, with the rocking holding arm, the guide-rest, and the guide-rest adjustment, of a recorder carried by a frame supported by the rocking holding-arm and the guide-rest, said frame having an adjustment toward and away from the recording-surface, and said recorder having an adjustment toward and away from the recording-surface additional to the adjustment of said frame, substantially as set forth.

3. In a phonograph, the combination, with the rocking holding-arm, the guide-rest, and the guide-rest adjustment, of a cutting-knife and a recorder supported from said rocking holding-arm and said guide-rest, said cutting-knife mounted rigidly and without adjustment on the machine, and said recorder being independently adjustable with relation to said cutting-knife, substantially as set forth.

4. In a phonograph, the combination, with the swinging spectacle-frame carrying the recorder, of the cutting-knife mounted upon such swinging spectacle-frame, substantially as set forth.

5. In a phonograph, the combination, with the rocking holding-arm, the swinging spectacle-frame, the guide-rest, and the guide-rest adjustment, of the cutting-knife secured to such swinging spectacle-frame and having a fixed position thereon and the recorder adjustably held by said swinging spectacle-frame, substantially as set forth.

448,782. ELECTRIC LIGHTING. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Dec. 30, 1890. Serial No. 376,201. (No model.)

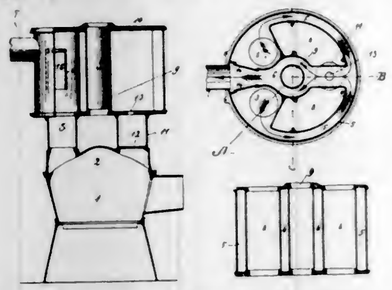


Claim.—1. The combination of a line-circuit, an electric lamp connected therein in series, a shunt-circuit in the line-circuit about said electric lamp, a heating-coil arranged in said shunt-circuit, a receptacle having fixed terminals connecting with the line-circuit, and an expansible fluid-conducting substance in said receptacle adapted to be expanded upon an excessive current passing through the heating-coil for the purpose of reducing the resistance to the passage of current in the line in case the lamp should burn out.

2. The combination of a line-circuit, an electric lamp arranged in series connection therewith, a shunt-circuit around the lamp and connecting with the line-circuit and including a heating-resistance, a receptacle inclosing said resistance, and an expansible substance within the receptacle adapted to be heated upon an excessive current being passed through the resistance by breakage of the lamp.

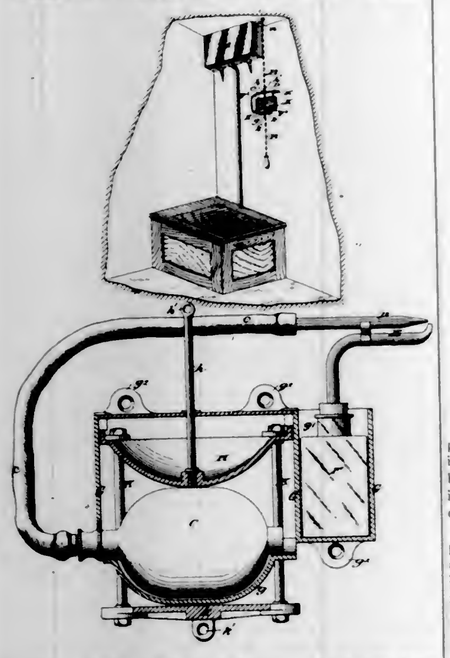
3. The combination of a line-circuit, an electric lamp in series therein, a shunt-circuit around the lamp, whereby the line-current is divided and part passed through the lamp and part through the shunt-circuit, a resistance in the shunt-circuit, a closed vessel having two fixed terminals connecting with the line on opposite sides of the resistance, and an expansible fluid-conducting substance in the receptacle adapted to reduce the resistance between the two terminals upon the resistance in the shunt circuit upon becoming abnormally heated upon breakage of the lamp.

448,783. HOT-AIR FURNACE. FRANCIS KERNAN, Jr., and WILLIAM H. LANDERS, Utica, N. Y., assignors to the Kernan Furnace Company, of New York. Filed July 23, 1890. Serial No. 359,616. (No model.)



Claim.—The combination, in a furnace, of a fire-pot, dome, and radiator having an encircling flue, a cross-flue communicating with the encircling flue at one side of the radiator and extending diametrically across the radiator to the smoke-exit, being divided to surround a vertical central air-passage through the radiator and cutting off the encircling flue at the smoke-exit, the encircling flue having an enlarged portion at each end and next to the smoke-exit, the automatically outwardly-opening dampers closing openings in the enlarged ends of the encircling flue and the two equal flues between the furnace-dome and radiator and opening into the enlarged end of the encircling flue of the radiator adjacent to the smoke-exit, substantially as set forth.

448,784. ATOMIZER FOR WATER-CLOSETS. COLIN LIGHTBODY, Brooklyn, N. Y. Filed Apr. 9, 1890. Serial No. 347,175. (No model.)

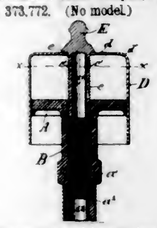


Claim.—1. The combination, with an atomizer and a seat for its bulb, of a follower having a movement toward and away from the bulb, a flushing-valve, and a device for operating the valve, the said follower forming a connection between two parts of the operating device, substantially as set forth.

2. The combination, with a flushing-valve and its operating device, of a casing provided with seats for the bulb of an atomizer and for the liquid-supply reservoir, and a follower to engage the bulb of the atomizer, the said follower connected with the valve-operating device, substantially as set forth.

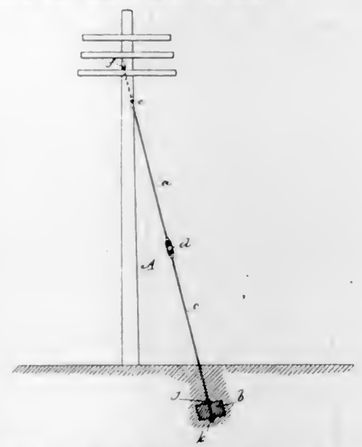
3. The combination, with the casing provided with a concave seat for the bulb of the atomizer, of the convex follower provided with guide rods or posts, the atomizer, and means for operating the follower, substantially as set forth.

448,785. LUBRICATOR. WILLIAM P. MILLER, Brooklyn, N. Y., assignor to the William P. Miller Company, same place. Filed Dec. 6, 1890. Serial No. 373,772. (No model.)



Claim.—A lubricator comprising a piston having a tubular stem screw-threaded interiorly, and a cup or shell adapted to receive the piston therein with a close sliding fit and provided with a tubular stem screw-threaded to register with the interior thread in the piston-stem, the stem connected with the cup or shell being provided with openings through its walls, through which communication is established between its interior and the interior of the cup or shell, substantially as set forth.

448,786. BRACE FOR TELEGRAPH-POLES. HENRY OGDEN, Fall River, Mass., assignor of one-half to James H. Ogden, same place. Filed Oct. 29, 1890. Serial No. 369,668. (No model.)



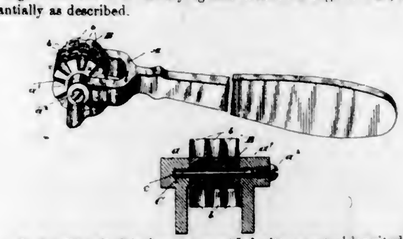
Claim.—1. The combination, with a telegraph-pole, of a rigid two-part brace attached at one end to the upper part of said pole and having the adjacent ends of its two parts screw-threaded, a nut or turn-buckle adjustably connecting said parts, and an anchoring-piece *b*, set in the ground near the base of said pole and to which the lower end of said brace is secured.

2. The combination, with the telegraph-pole A, of the rigid two-part brace *a c*, having its adjacent ends screw-threaded and provided at its upper end with the nuts *e f*, by which it may be rigidly but adjustably attached to the said pole, and having, also, the nuts *j k* near its lower end, the nut or turn-buckle *d*, adjustably connecting the two parts of said brace, and the anchoring-piece *b*, as set forth.

448,787. REVOLVING EMERY-WHEEL DRESSER. EDWIN C. PALMER and SUMNER G. RYDER, Cleveland, Ohio, assignors to the Standard Tool Company, same place. Filed Aug. 11, 1890. Serial No. 361,653. (No model.)

Claim.—1. In an emery-wheel dresser, a solid cylindrical cutter bored longitudinally to receive a central spindle and from the periphery radially toward the hub to form cutting-edges, substantially as described.

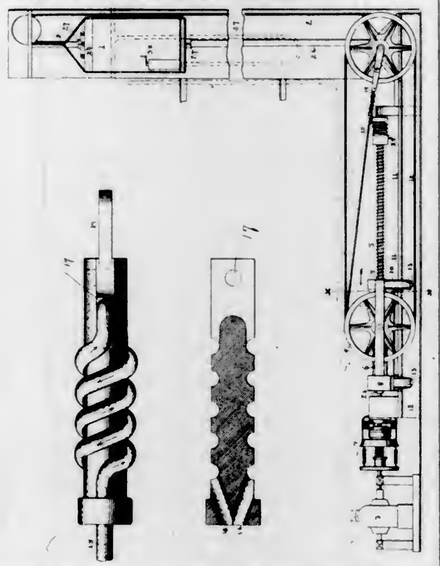
2. In an emery-wheel dresser, a solid cylindrical cutter in one piece bored longitudinally to receive a central spindle and radially from the periphery to the hub to form cutting-edges, said radial boring being arranged regularly and in close juxtaposition to form separating membranes *b* of unvarying thickness from edge to base, substantially as described.



3. A solid cylindrical cutter provided with a central longitudinal spindle-bearing, radial borings extending from the periphery toward the center, but leaving a thickened portion for a hub, thick and thin membranes separating the cavities, the thin membranes having substantially parallel sides and a suitable spindle for the same, substantially as described.

4. A solid cylindrical cutter for dressing emery-wheels centrally and longitudinally bored to receive a spindle, and provided with radial and permanent cavities extending from the periphery toward the central cavity, sufficient space being left integral to form a hub, in combination with deep-seated slots upon the periphery, substantially as described.

448,788. ELEVATOR. CHARLES R. PRATT, New York, N. Y. Filed Apr. 25, 1890. Serial No. 349,473. (No model.)



Claim.—1. The combination, of an elevator-hoisting screw held from longitudinal movement, a nut with anti-friction bearings on said screw, a safety-nut connected to and movable with the first nut, and a frame moved by said nut to raise and lower the elevator-car, said safety-nut bearing against the frame, substantially as described.

2. The combination, with a screw, of a working-nut and a safety-nut the thread of which is wider than the thread of the screw and normally out of contact therewith, the working and safety nuts being secured together, substantially as described.

3. The combination of a working-nut, a safety-nut connected to the working-nut by a connection capable of slight longitudinal movement, and a spring between the working and safety nuts, substantially as described.

4. The combination, in an elevator-hoisting apparatus, of the cross-head, the screw-shaft, the working and safety nuts thereon exterior to the cross-head for controlling movement thereof, and a friction-surface between the safety-nut and cross-head, substantially as described.

5. The combination, in an elevator apparatus, of the cross-head, a friction-bearing on said cross-head, a safety-nut bearing against and co-operating with said bearing, and a working-nut connected to said safety-nut, substantially as described.

6. The combination, with a central track, of the frame-carrying sheaves for the elevator-cable on each side of the track and having bearings movable along the central track, and means for holding the frame thereon, substantially as described.

7. The combination, with a frame comprising the cross-heads and connecting side pieces and carrying the inclined cable-sheaves, of a screw passing through the cross-heads, the nut for said screw bearing against one of the cross-heads and the track directly below the frame and narrower than the frame, whereby space is economized, substantially as described.

8. The combination, with a car and a hoisting-cable consisting of several ropes passing around the car, of a clamp or binding device for the ropes comprising sleeve 30 and wedge 32, substantially as described.

9. The combination of the guide-piece 26, the guides on one edge of the elevator-car, grooves in the guide-sockets, and the hoisting-cable passing through said grooves, substantially as described.

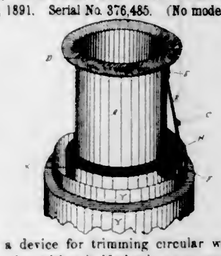
10. The combination, with an elevator-hoisting cable, of an anchor therefor consisting of a body with two parallel grooves, said body having at one end perforations, through which the cable and the free end of the cable pass, respectively, and at the other end a slot for the cable, substantially as described.

11. A cable-anchor consisting of a body having two parallel grooves and at one end a head with two perforations and at the other a slot, whereby a cable may be inserted through one perforation and wound in one of said grooves, thence through said slot, and back through the second groove, the cable end passing through the second perforation and there terminating, substantially as described.

12. A cable-anchor consisting of a body having two parallel grooves of a size to receive the cable, and means for securing the cable in said grooves at each end of the body, substantially as described.

13. The combination of cable 15, the anchor comprising a body with two parallel grooves, a head at one end having two perforations, the other end a slot through which the cable passes, and link 19, substantially as described.

448,789. WICK-TRIMMER. CLEMENT ROSEBERRY, Pottsville, Pa. Filed Jan. 2, 1891. Serial No. 376,485. (No model.)



Claim.—In a device for trimming circular wicks, a cylindrical stock, in combination with a knife having a concave blade-edge and said blade having a rim and a spring back or stem, substantially as shown and described.

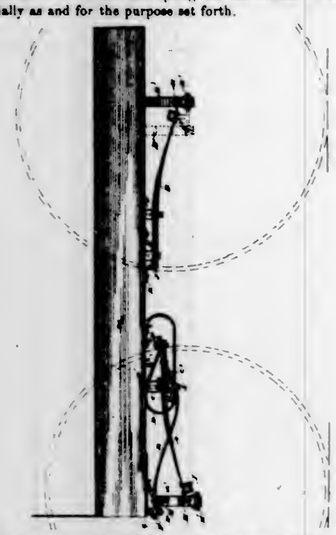
448,790. PLATFORM-SPRING FOR ROAD-WAGONS. CYRUS W. SALADEE, Cleveland, Ohio. Filed Oct. 13, 1890. Serial No. 368,054. (No model.)

Claim.—1. In combination with a front spring-platform for road-wagons, side springs forwardly attached to the axle at widely-separated points and obliquely extended therefrom to and connected with a spring-frame, which is rearwardly supported by a king-bolt coupling connecting said frame to the bottom of the body and forwardly sustained upon a transverse spring carried by said axle, substantially as set forth.

2. The combination, in a spring-platform for road-wagons, of side springs obliquely extended from the bottom of the body to the axle, and a transverse spring arranged parallel to said axle having its terminal ends suspended therefrom upon shackle-bearings pivotally engaging the outer ends of said side springs, substantially as set forth.

3. The combination, in a front spring-platform for road-wagons, of side springs obliquely extended to the axle from a spring-frame secured to the bottom of the body by a fifth-wheel device, and a transverse spring-support arranged parallel to said axle and having its terminal ends suspended therefrom upon shackle-bearings pivotally engaging the outer ends of said oblique springs, substantially as set forth.

4. The combination, in a front spring-platform for road-wagons of side springs obliquely extended from a fifth-wheel device secured at the bottom of the body to the axle, a transverse spring carried by said axle, and a friction or roller bearing interposed between the elevated center portion of said transverse spring and the bottom of the body, substantially as and for the purpose set forth.



5. In combination with a front spring-platform of the character described, the longitudinal central bar E rearwardly extended from the elevated center portion of the transverse spring A' and engaging the king-bolt N, substantially as set forth.

6. In combination with a front spring-platform of the character described, the segment-plate G, secured to the bottom of the body, and the same being adapted to ride upon a friction or roller bearing F, secured to the elevated center portion of the transverse spring-support A', substantially as set forth.

7. In combination with a front spring-platform of the character described, the longitudinal central bar having its front end constructed to such requisite form as will admit of its rigid attachment to the elevated center portion of the transverse spring A', and to pivotally sustain the roller F, substantially as shown and described.

8. In a rear spring-platform for road-wagons, side springs having their inner ends secured to the bottom of the body and obliquely extended therefrom to the axle, in combination with a transverse spring arranged parallel to said axle, its terminal ends suspended therefrom upon shackle-bearings pivotally engaging the outer ends of said side springs, and having its elevated center portion suitably connected to the rear end of said body, substantially as set forth.

448,791. **BAG-HOLDING APPARATUS.** JUSTUS A. TRAUT and CHARLES R. RIECKER, New Britain, Conn.; said Riecker assignor to said Traut. Filed Sept. 29, 1890. Serial No. 366,526. (No model.)

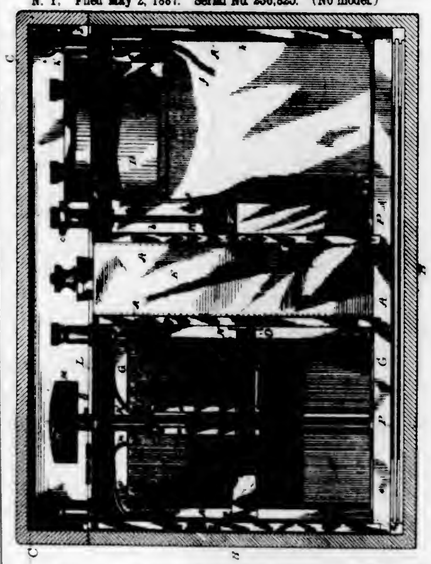


Claim.—1. In bag-holding apparatus, the combination, with the frame consisting of bars having at the ends thereof upwardly-projecting hooks, of the bag-holder 10, consisting of a wire bent to engage a pair of said hook-provided bars and having puncturing-needles and means for locking closed the needles.

2. In bag-holding apparatus, the combination, with the frame consisting of bars having at the ends thereof hooks, substantially as described, of the bag-holder consisting of a wire bent to engage a pair of said hook-provided bars and having puncturing-needles and a guard for locking closed the needles and guarding the points thereof.

3. In bag-holding apparatus, the combination, with means, substantially as described, for supporting the bag-holder, of a bag-holder consisting of a bar 10, continned and bent to form the spring-loops 12 and 14 and having the oppositely-disposed puncturing-needles 13 and 15, and a guard, substantially as described, fixed on said bar and arranged for holding closed said needles and guarding the points thereof.

448,792. **ELECTRICAL INDICATOR.** CHARLES WIRT, New York, N. Y. Filed May 2, 1887. Serial No. 236,835. (No model.)



Claim.—1. In an adjustable resistance, the combination of a turning drum or cylinder, wire coils wound longitudinally thereon, bared for a portion of their length, transverse windings at the side of said bared portion to hold the coils in place, and a stationary contact bearing on the bared section of said coils, substantially as set forth.

2. In an adjustable resistance, the combination of a supporting-frame, a drum or cylinder turning in bearings in said frame and having resistance-coils wound upon it and bared for a portion of their length, and a contact-spring extending from one side of the frame to the other and bearing on said bared portion, substantially as set forth.

3. In an adjustable resistance for electrical indicators, the combination of a turning-spindle, a drum or cylinder carried thereby and carrying resistance-coils, a stationary contact bearing on said coils at a point where the insulation is removed, a graduated scale, and a pointer on said spindle traveling over said scale, substantially as set forth.

4. In an electrical indicator, the combination of the frame supporting the adjustable resistance and the flat resistance-coils secured to the bottom of said frame and constituting a fixed resistance cooperating with the adjustable resistance in said indicator, substantially as set forth.

5. The connecting device comprising a hollow insulating-stem for receiving conductors and two springs projecting from each side of said stem, each conductor being connected to the two springs on one side, substantially as set forth.

448,793. **WHEEL-TIRE.** WILLIAM E. BARTLETT, Edinburgh, Scotland. Filed Nov. 13, 1890. Serial No. 371,858. (No model.)

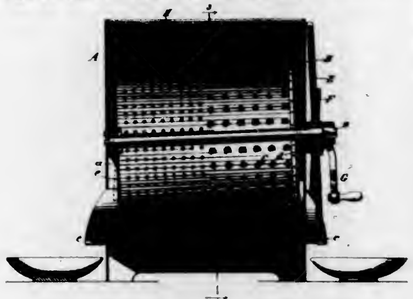
Claim.—1. A wheel having a vulcanized india-rubber tire of cylindrical form when free and without joint after vulcanization, and held upon the wheel in a form trough-like in section, and there retained by inwardly-inclined flanges upon the wheel.

2. A wheel having a rim formed with inwardly-inclined flanges, and a vulcanized india-rubber tire without joint formed from a cylinder of rubber bent and held upon the wheel in a trough-like form.

3. A wheel whose felly is of a trough-like section, the sides of the trough inclining toward each other, and whose tire consists of a cylinder of india-rubber, or other elastic material, of greater length than the width of the trough, so that when in place it assumes an arched form, the two ends of the cylinder abutting against the bottom of the trough, while the ends of the sides of the cylinder abut against the inclined sides of the trough.



448,794. **CULINARY GRATER.** BURTON H. COOK, Brooklyn, N. Y. Filed Dec. 24, 1890. Serial No. 375,679. (No model.)



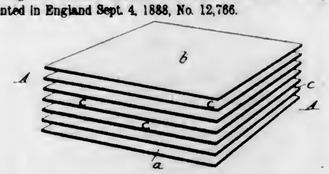
Claim.—1. In a grater, the combination of a casing having two compartments with discharge-spouts from each and two grating-cylinders mounted to turn in said compartments, a crank for turning them simultaneously, and gearing constructed to rotate one cylinder faster than the other.

2. In a grater, the combination of a casing having two compartments with discharge-spouts for the respective compartments opening at opposite ends of the casing, two grating-cylinders mounted to turn in said compartments, arranged on inclined axes inclined in opposite directions and directed downward toward the respective spouts, and a crank for driving the cylinders.

3. In a grater, the combination, with a casing, of a grating-cylinder consisting of a cone mounted to turn in the casing with its upper side approximately level, whereby its axis is inclined from the horizontal and its lower side is inclined to twice the extent, and constructed with its larger and lower end open, and the casing formed with an inclined bottom sloping in the same direction as the lower side of the cylinder and terminating at its lower end in a discharge-spout.

4. In a grater, the combination, with a casing, of a grating-cylinder consisting of a cone mounted to turn in the casing with its upper side approximately level, whereby its axis is inclined from the horizontal, and its lower side is inclined to twice the extent, and constructed with its larger and lower end open, said cylinder formed with relatively-fine grating-teeth toward one end and with relatively-coarse grating-teeth toward the other end, and said casing formed with an elongated opening in its upper part exposing the upper and level portion of the cylinder and adapted to permit a substance to be grated to be pressed against either the coarse or fine toothed end thereof.

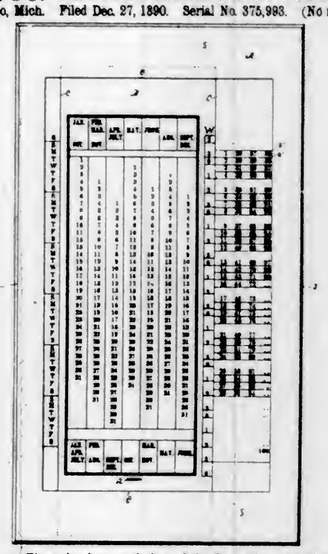
448,795. **SHADED DENTAL RUBBER.** ALFRED J. GEAR, London, England. Filed Oct. 23, 1889. Serial No. 327,943. (No specimens.) Patented in England Sept. 4, 1888, No. 12,766.



Claim.—1. A strip, sheet, or block formed of separate sheets or strips of rubber, each of a solid color, united and having a light strip at one end and a comparatively dark strip at the other, and strips variously colored or tinted in regular order from light to dark between the end strips.

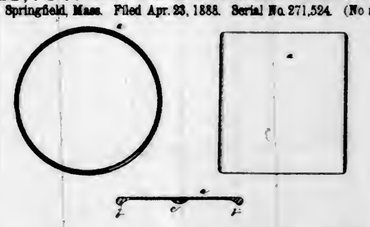
2. The process herein described of manufacturing shaded dental rubber, which consists in arranging in regular gradation of color a number of sheets of differently-tinted rubber, each having a solid color, pressing the sheet into a block, and then cutting the block transversely into strips, substantially as described.

448,796. **PERPETUAL CALENDAR.** ALEXANDER HADLOCK, Kalamazoo, Mich. Filed Dec. 27, 1890. Serial No. 375,993. (No model.)



Claim.—The calendar consisting of the frame bearing the column of letters indicating the days of the week and the table of numbers indicating the years of any century, the relative position of said column of letters and table of numbers being as described, and consisting, further, of the central slide having sliding bearings in said frame and having seven columns of numbers representing the days of each month of the year, arranged as described, and having the names of the months at the head of the columns for common years and at the foot of the columns for leap-years, and said slide having, also, the remainders 2 3 0 1, representing the centuries, recurring in a column, as described, and occupying the position described relative to the other columns of the slide, all substantially as set forth.

448,797. **SHELL FOR MUSICAL INSTRUMENTS.** JOHN HEALD, Springfield, Mass. Filed Apr. 23, 1888. Serial No. 271,524. (No model.)



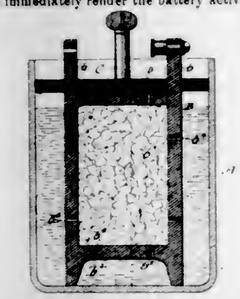
Claim.—1. A shell for cylindrical musical instruments, composed of papier-maché having beaded or molded edges *b*, and an intermediate strengthening-rib *c*, substantially as specified.

2. A shell for cylindrical musical instruments, composed of papier-maché, formed with beaded or molded edges *b*, substantially as specified.

448,798. **GALVANIC BATTERY.** CHARLES J. HIRLIMANN, Fort Lee, N. J. Filed Nov. 26, 1890. Serial No. 372,713. (No model.)

Claim.—In a galvanic battery, a porous vessel made of molded carbon and filled with manganese or other depolarizing agent and having a concaved bottom, the said bottom being provided with perforations, whereby when the vessel is inserted into the solution the latter

will be forced through the perforations into contact with the depolarizing agent and immediately render the battery active.



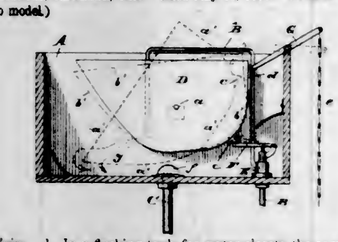
448,799. SPOOL-HOLDER. EDWARD S. JACKSON, Newark, N. J. Filed Dec. 23, 1890. Serial No. 375,551. (No model.)



Claim.—1. As an improved article of manufacture, the herein-described spool-holder, consisting, essentially, of a continuous piece of spring-wire bent at one end into a spool-holding arm a, bent downwardly into an arm a', and formed into backwardly-projecting spring-arms a^3, a^5, a^9, and a^{11}, connected by loops a^4 and a^{10} for clamping the same upon an article of furniture, said arm a^{11} being bent upward into an arm a^{12} and horizontally therefrom into an arm a^{13}, formed at its opposite ends into an upwardly-projecting arm a^{17}, provided with a hook a^{18} at its extreme end, with which the free end of the arm a is forced into holding engagement, for the purposes set forth.

2. As an improved article of manufacture, the herein-described spool-holder, consisting, essentially, of a continuous piece of spring-wire bent at one end into a spool-holding arm a, bent downwardly into an arm a', and formed into backwardly-projecting spring-arms a^3, a^5, a^9, and a^{11}, connected by loops a^4 and a^{10} for clamping the same upon an article of furniture, said arm a^{11} being bent upwardly around and above arm a^3, forming arm a^{12}, and beneath and around arm a^5, forming an upwardly-projecting arm a^{17}, provided with a hook, with which the free end of the arm a is forced into holding engagement, and a plate d, secured to said arms a^3 and a^5, as and for the purposes set forth.

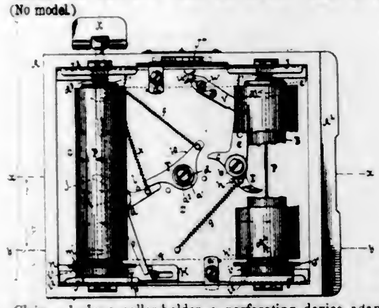
448,800. FLUSHING-TANK FOR WATER-CLOSETS. FERDINAND L. MEYER, Cincinnati, Ohio. Filed July 12, 1890. Serial No. 358,505. (No model.)



Claim.—1. In a flushing-tank for water-closets, the combination, with the outer tank, of a receiving-vessel pivoted within the same, arranged to be upset and to discharge its contents into the outer vessel, inlet-pipe connected therewith, inlet-valve thereto balanced so as to open under the pressure of the water in said inlet-pipe, and lever to operate said valve, said inner receiving-vessel being so balanced that the weight of the water in said vessel when filled will bring said vessel into contact with said lever to operate the same and thus close the inlet-valve, substantially as shown and described.

2. In a flushing-tank for water-closets, the combination, with the outer tank, of a receiving-vessel pivoted within the same, inlet-pipe to supply water to the receiving-vessel, inlet-valve therein balanced so as to open under the pressure of the water in said inlet-pipe, lever to operate said valve, discharge-pipe for conducting the water to the closet, with lever for upsetting said vessel, said inner vessel being so balanced that the weight of the water in said vessel when filled will bring same into contact with the valve-lever to close same and thus shut off the water, substantially as shown and described.

448,801. PHOTOGRAPHIC ROLL-HOLDER. HERMANN G. RAMSPERGER, New York, N. Y. Filed Feb. 18, 1890. Serial No. 340,862. (No model.)



Claim.—1. In a roller-holder, a perforating device adapted to penetrate the film and a measuring device adapted to enter the perforations, substantially as described.

2. In a roller-holder, a perforating device adapted to penetrate the film and a measuring device held in contact with the film by spring-pressure and adapted to enter the film, substantially as and for the purpose specified.

3. In a roller-holder, a perforating device arranged to penetrate the film and a device co-operating with the perforating device to measure off the film and to lock the same, substantially as described.

4. In a roller-holder, a perforating device arranged to penetrate the film, a measuring device co-operating with the perforating device, and a lock engaging with one of the rolls, substantially as described.

5. In a roller-holder, a perforating device, a measuring device co-operating with the perforating device, and a lock constructed to act simultaneously with the film-measuring device, substantially as described.

6. In a roller-holder, a perforating device, a measuring device co-operating with the perforating device, and a lock actuated by the movement of the measuring device to lock one of the rolls, substantially as described.

7. The combination, with the supply and receiving rolls and the film-support, of a perforating and measuring device acting at opposite edges of the film-support, substantially as and for the purpose specified.

8. The combination, with the supply and receiving rolls and the film-support, of a perforating device, a measuring device, and a common tumbler or its equivalent for actuating the perforating device and for withdrawing the measuring device, substantially as described.

9. In a roller-holder, a perforating device, a measuring device co-operating with the perforating device, and a counter, substantially as described.

10. In a roller-holder, a perforating device, a measuring device co-operating with the perforating device, and a counter actuated by the movement of the perforating device, substantially as described.

11. In a roller-holder, the supply and receiving rolls, in combination with sliding plates for supporting said rolls capable of being moved in and out independently of the film-support, substantially as described.

12. In a roller-holder, the supply and receiving rolls, in combination with the hinged sliding bearing-plates, substantially as described.

13. In a roller-holder, a sliding bearing-plate provided with a hinged follower and a center, substantially as described.

14. In a roller-holder, a detachable film-support provided with attached perforating and measuring devices, all removable with said film-support, and bearings for the rolls guided in the casing and separate from the film-support, said bearings remaining in the casing on the removal of the film-support, substantially as described.

15. In a roller-holder, a perforating device, a measuring device, a tumbler engaging with the same, as described, and a key for engaging and actuating said tumbler, substantially as described.

16. In a roller-holder, a perforating device, a measuring device, a tumbler, and a spring-supported key secured to the cover of the case, substantially as described.

17. In a roller-holder, the slotted tumbler for engaging the perforating and measuring devices, in combination with the spring-supported key having flat termination c' and head l', substantially as described.

18. In a roller-holder, a case provided with opposite guideways, bearing-plates fitted into the guideways, followers hinged to said bearing-plates, and stops for limiting the movement of the followers, substantially as described.

19. In a roller-holder, a counter consisting of gears J and S, toothed wheel t, and lever v, provided with spring-pawl u, substantially as described.

20. In a roller-holder, the combination of the receiving-roll, the sliding lock H, provided with tooth m, wheel n, and lever G, engaging with the lock H, substantially as described.

21. In a roller-holder, the combination of a roll, the rubber friction-disks bearing against each other and secured, respectively, to the roll and to a stationary part of the holder, and a spring, substantially as described.

22. The combination, with a bearing-plate having a projecting center, of the friction-disk i' i^3, and plate n, arranged upon said center, and a bearing-plate arranged opposite and provided with a projecting center and a spring, substantially as described.

23. The roll C, provided with longitudinal groove p', in combination with the spring-clip capable of being swung about its end to permit the insertion or removal of the film, substantially as described.

24. The roll C, provided with longitudinal groove p', in combination with the spring-clip q', secured to one end of the roll and pin r', and recess for securing the free end of the clip, substantially as described.

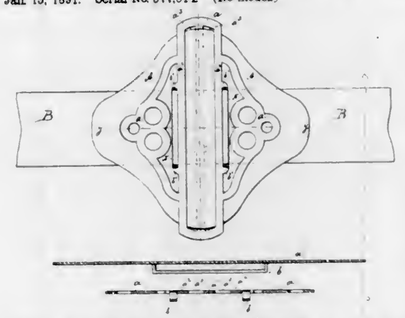
25. The roll C, provided with longitudinal groove p' and recesses s' s' and t' t', in combination with the spring-clip q', substantially as described.

26. The roll C, provided with spring-clip q', having neck u', in combination with plate u, having cheeks r' r', substantially as described

448,802. PROCESS OF REFINING ZINC. JOSEPH W. RICHARDS, Philadelphia, Pa. Filed Sept. 27, 1890. Serial No. 366,359. (Specimens.)

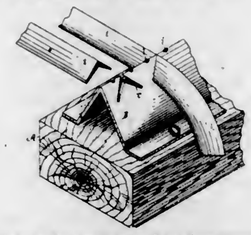
Claim.—The hereinbefore-described process of refining zinc, which consists in diffusing metallic aluminum throughout a bath of melted zinc, permitting said composite bath to stand in a melted condition for the subsidence of impurities, and finally removing the stratum of refined zinc, substantially as set forth.

448,803. BUCKLE. SIMON SCHEUER, New York, N. Y. Filed Jan. 15, 1891. Serial No. 377,814. (No model.)



Claim.—A buckle composed of a face-plate a, bars a' a^3, and rearwardly-projecting bars b, having forwardly and inwardly bent ends b', that are secured to bars a^2, substantially as specified.

448,804. SURFACE CATTLE-GUARD. JACOB K. WAGNER, Kalamazoo, Mich. Filed Oct. 10, 1890. Serial No. 367,745. (No model.)

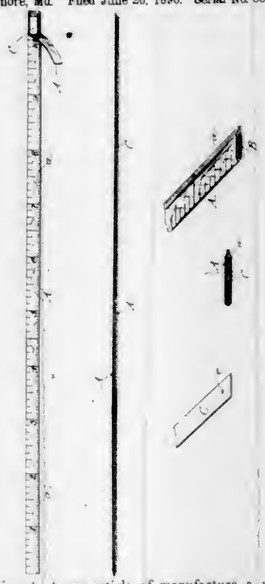


Claim.—1. In a surface cattle-guard, sections composed of longitudinal bars in the form of an inverted V in cross-section, transverse bars having transverse slots corresponding to the shape of said longitudinal bars, and the rivets or bolts attaching the projections above the apex of the slots to the longitudinal bars, substantially as set forth.

2. In a surface cattle-guard, sections composed of longitudinal bars in the form of an inverted V in cross-section and having their sides tapered from the apex to the base, and transverse bars having transverse slots corresponding to the shape of said longitudinal bars, and the rivets or bolts attaching the projection above the apex of the slots to the longitudinal bars, substantially as set forth.

3. In a surface cattle-guard, sections composed of longitudinal bars in the form of an inverted V in cross-section and having their sides tapered from the apex to the base, and transverse bars having transverse slots corresponding to the shape of said longitudinal bars, substantially as set forth.

448,805. FLEXIBLE SCALE-MEASURE. ABRAHAM S. ADLER, Baltimore, Md. Filed June 26, 1890. Serial No. 356,750. (No model.)

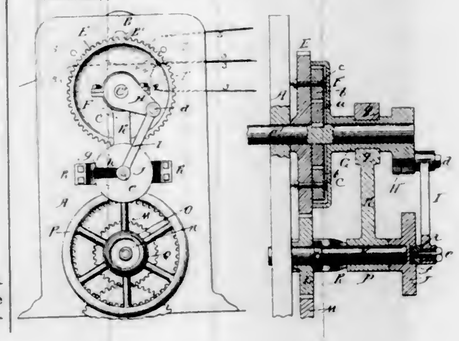


Claim.—1. As an article of manufacture, a measuring-scale of textile material having a metallic strip secured within it, substantially as herein described.

2. A flexible scale consisting of a textile outer covering containing designating characters, such as inches and fractions thereof, and a thin steel strip secured within the fold of the outer covering, substantially as herein described.

3. A scale of textile material having a pocket extending throughout its length and a flexible strip within said pocket, substantially as herein described.

448,806. PAPER-CUTTING MECHANISM FOR PRINTING-PRESSES. LEONARD E. BROOKES, Chicago, Ill., assignor to himself and William H. Smith, same place. Filed Dec. 2, 1889. Serial No. 332,349. (No model.)



Claim.—1. The combination, with the cutting-cylinders, of a rotary disk, a sliding block carried by the disk, a crank, a rod connecting the sliding block and the crank, an oscillating internal gear, and a driving-gear for the cutting-cylinders, substantially as and for the purposes specified.

2. The combination, with the cutting-cylinders, of a rotary disk, a sliding block carried by the disk, a crank, a rod connecting the sliding block and crank, and an oscillating connecting-gear for driving the cutting-cylinders, substantially as and for the purposes specified.

3. The combination, with two rotary cutting-cylinders, of a gearing for rotating the cylinders, and an oscillating gear having a variable range of movement, substantially as specified.

4. The cutting-cylinders B C, gear E, pinions *a b*, and gear F, in combination with the crank H, rod I, disk J, and block *f*, substantially as and for the purposes specified.

5. The feeding-rolls S, cutting-cylinders B C, gear E, pinions *a b*, and gear F, in combination with the crank H, rod I, disk J, and block *f*, substantially as and for the purposes specified.

6. The gear E, pinions *a b*, and gear F, in combination with the crank H, rod I, rotary disk J, and sliding block *f* for rotating the cutting-cylinders to produce sheets of varying lengths, substantially as specified.

7. The gear E, pinions *a b*, gear F, and crank H, in combination with the rod I, disk J, sliding block *f*, rotating shaft K, and gear L, substantially as and for the purposes specified.

8. The combination, in a paper-cutting mechanism for printing-presses, of a gear-wheel driving the gear-wheel of the cutting-cylinders and having an extension at its hub to form a sleeve, a gear-wheel loosely mounted on the sleeve, and a connection for the sleeve for moving the gear-wheel without moving the loose gear-wheel, substantially as and for the purposes specified.

9. The combination, in a paper-cutting mechanism for printing-presses, of a gear-wheel driving the cutting-cylinders and having an extension at its hub to form a sleeve, a loose gear-wheel mounted on the sleeve, a connection for the sleeve for moving its gear-wheel without moving the loose gear, and a lock for tightening the loose gear to revolve the sleeve, substantially as and for the purposes specified.

10. The combination, in a paper-cutting mechanism for printing-presses, of a gear-wheel driving the cutting-cylinders and having an extension at its hub to form a sleeve, a loose gear mounted on the sleeve, and a hand-wheel attached to the sleeve for moving its gear-wheel without moving the loose gear, substantially as and for the purposes specified.

11. The combination, in a paper-cutting mechanism for printing-presses, of a gear-wheel driving the cutting-cylinders and having an extension at its hub to form a sleeve, a loose gear mounted on the sleeve, a hand-wheel attached to the sleeve, and a locking-yoke for uniting the gear-wheel, its sleeve, and the loose gear-wheel, substantially as and for the purposes specified.

12. The combination, in a paper-cutting mechanism for printing-presses, of a gear-wheel driving the cutting-cylinders and having an extension at its hub to form a sleeve, a spindle on which the wheel and sleeve are mounted, a loose gear-wheel mounted on the sleeve, a hand-wheel attached to the sleeve, a yoke clamping the sleeve gear-wheel and the loose gear-wheel, and a set-screw for operating the yoke, substantially as and for the purposes specified.

13. The combination, in a paper-cutting mechanism for printing-presses, of a changeable-speed gear for the cutting-cylinder, a gear wheel driving the main gear-wheel of the changeable-speed gear and having an extension at its hub to form a sleeve, a loose gear mounted on the sleeve, and a connection for the sleeve for moving the loose gear, substantially as and for the purposes specified.

14. The combination, in a paper-cutting mechanism for printing-presses, of a changeable-speed gear for the cutting-cylinders, a gear-wheel driving the main gear-wheel of the changeable-speed gear and having an extension at its hub to form a sleeve, a loose gear mounted on the sleeve, a connection for the sleeve to move the cutting-cylinders without moving the loose gear, and a lock for uniting the loose gear-wheel and the gear-wheel of the sleeve, substantially as and for the purposes specified.

15. The cutting-cylinders B C, gear-wheel E, pinions *a b*, gear-wheel F, crank H, rod I, rotary disk J, with sliding block *f*, shaft K, gear-wheel L, gear-wheel M, and sleeve M′, in combination with the hand-wheel P, substantially as and for the purposes specified.

16. The gear-wheel E, gear-wheel L, and gear-wheel M, having the sleeve M′, in combination with the gear-wheel O, loosely mounted on the sleeve M′, and hand-wheel P, secured to the sleeve M′ for adjusting the cutting-cylinders without rotating the wheel O, substantially as and for the purposes specified.

17. The gear-wheel E, gear-wheel L, and gear-wheel M, having the sleeve M′, in combination with the gear-wheel O, loosely mounted on the sleeve M′, hand-wheel P, attached to the sleeve M′, and yoke Q, clamping the gear-wheel M to the gear-wheel O, substantially as and for the purposes specified.

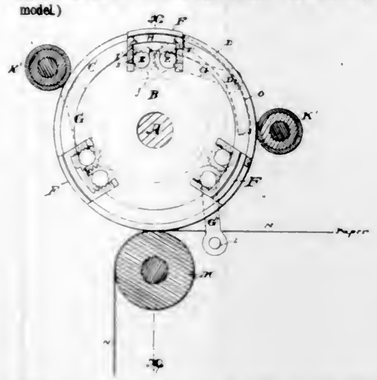
18. The gear-wheel E, gear-wheel L, gear-wheel M, having the sleeve M′ and spindle N, in combination with the gear-wheel O, loosely mounted on the sleeve M′, hand-wheel P, attached to the sleeve M′, and yoke Q, clamping the gear-wheels M and O together, substantially as and for the purposes specified.

19. The gear-wheel M, having the sleeve M′, and gear-wheel O, loosely mounted on the sleeve M′, in combination with the hand-wheel P, attached to the sleeve M′, for moving the wheel M without moving the wheel O, substantially as and for the purposes specified.

20. The wheel M, having the sleeve M′, and wheel O, loosely mounted on the sleeve M′, in combination with the hand-wheel P, attached to the sleeve M′, the yoke Q, clamping the wheels M and O together, substantially as and for the purposes specified.

21. The wheel M, having the sleeve M′, spindle N, and wheel O, loosely mounted on the sleeve M′, in combination with the hand-wheel P, attached to the sleeve M′, and yoke Q, clamping the wheels M and O together, substantially as and for the purposes specified.

448,807. CHROMATIC-PRINTING MACHINE. CHARLES W. DICKINSON, Belleville, N. J. Filed May 16, 1890. Serial No. 352,034. (No model.)

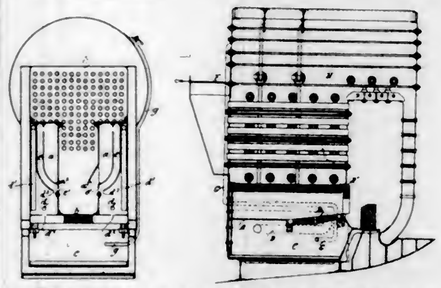


Claim.—1. In a stereotype-printing press, the combination of a support for a small independent color stereotype-plate, gear-shafts connected to said support, and a lever adapted to turn said shafts to raise and depress said supports, as described, and for the purposes set forth.

2. In a printing-machine, the combination, with the main stereotype-cylinder and small stereotype-plate, of a lever and a grooved cam adapted to operate said lever, a shaft E, and a connection between said shaft and plate, as described, and for the purposes set forth.

3. In a printing-machine, the combination of a body-printing surface and a supplemental surface, a lifter having toothed prongs, rock-shafts with teeth to engage said prongs and geared together to move in unison, and means for operating said rock-shaft, substantially as set forth.

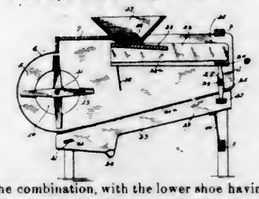
448,808. STEAM-BOILER OR OTHER FURNACE. JOHANN GASTIGER, Vienna, Austria-Hungary. Filed Apr. 22, 1890. Serial No. 348,985. (No model.)



Claim.—1. A steam-boiler or other furnace having fire-bars on which a glowing fire is to be maintained, a closed space or chamber without grate-bars away from the fire for containing coal to be distilled, a passage from such space or chamber conveying the gas arising from the distillation to the fire over the fire-bars, an ash-pit below the fire-bars, a boiler heated by the fire, a pipe for admitting steam from the boiler to the ash-pit below the fire-bars, and air-admission pipes heated by the fire for admitting air for supporting combustion.

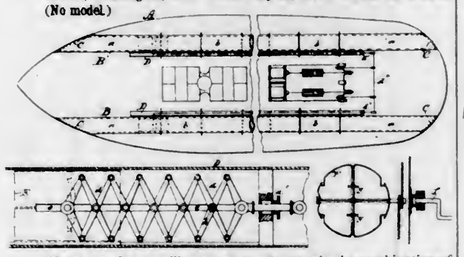
2. A steam-boiler or other furnace having a central combustion-chamber provided with fire-bars on which a glowing fire is to be maintained, a closed chamber at each side of the fire for containing coal to be distilled, a passage between these chambers for the products of combustion from the fire on the grate-bars, pipes or passages conveying gas arising from the distillation in the closed chamber and delivering it to the fire above the grate-bars, an ash-pit below the fire-bars, and air-admission pipes heated by the fire for admitting air for supporting combustion.

448,809. FANNING-MILL. JOSHUA S. SHAFER, West Plains, Mo., assignor of two-thirds to Joe R. Davidson and Robert G. Green, both of same place. Filed Sept. 3, 1890. Serial No. 363,843. (No model.)



Claim.—The combination, with the lower shoe having a slot 32 in each side near the lower end, of the supporting-frame provided with pins 31, projecting into said slots, the spring supporting the upper end of said shoe, and the rock-shaft engaging said shoe at its upper end, substantially as described.

448,810. PROPELLING APPARATUS FOR VESSELS. JOSEPH WIRTH, Washington, D. C. Filed July 29, 1890. Serial No. 360,304. (No model.)



Claim.—1. In propelling apparatus for vessels, the combination of cylinders containing pistons provided with revoluble frames having hinged valves, and said pistons operated by lazy-tongs connecting-rods arranged in casings secured to said cylinders, as shown.

2. The combination of one or more cylinders and the pistons provided with revoluble frames having hinged valves operated as described, with the lazy-tongs connecting-rods placed in casings having removable covers and attached to the sides of the cylinders, all constructed as shown and specified.

3. The combination of the cylinders made in sections with flanges, and the casings containing lazy-tongs connecting-rods and provided with removable covers to gain access thereto, and the hollow elongated pistons made in halves, bolted together, and provided with revoluble frames carrying hinged valves, all as and for the purpose specified.

4. The combination of cylinders extending from bow to stern of a vessel, the revoluble frames arranged in hollow elongated pistons and provided with semicircular hinged valves having their shafts extending through stuffing-boxes, and the springs to assist in opening said valves, all arranged as shown and set forth.

5. The combination of lazy-tongs connecting-rods placed in casings having removable covers, and said rods connected to the side of the hollow pistons provided with revoluble frames having hinged valves and arranged to facilitate the vessel to go in either direction.

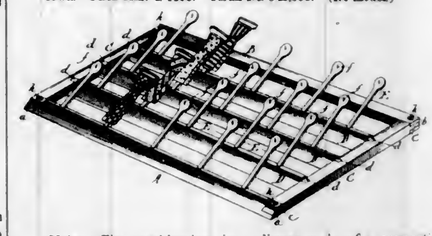
6. The lazy-tongs connecting-rods arranged in a rectangular casing and connected to hollow elongated pistons provided with revoluble frames having pivoted valves, in combination with cylinders extending from bow to stern and provided with drop-valves at each end, all arranged as and for the purpose set forth.

7. The combination of one or more cylinders extending from bow to stern and provided with drop-valves at each end with hollow elongated pistons provided with friction-rollers, and revoluble frames having hinged valves and operated by lazy-tongs connecting-rods placed in a casing having a longitudinal slot in its side for the pin of the piston, as shown and specified.

8. The combination of coupled cylinders having rails at their base for the rollers of the pistons and the casings in which the lazy-tongs operate and by their end links connected to said pistons, and said cylinders provided with openings for pumping out the water when the drop-valves are closed, as set forth.

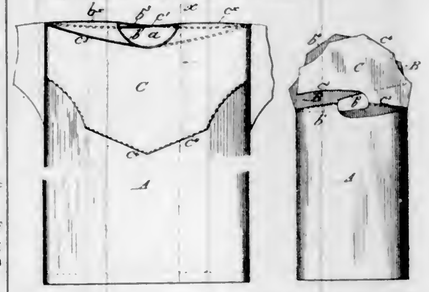
9. The propelling apparatus herein described as an entirety, consisting of one or more cylinders extending from bow to stern, having hollow pistons with revoluble frames to which the valves are hinged and said pistons operated by lazy-tongs placed in casings, and the cylinders provided with drop-valves at each end, all constructed and operating as for the purpose specified.

448,811. DISPLAY-RACK. LOUIS E. ARMSTRONG, Fort Dodge, Iowa. Filed Mar. 4, 1890. Serial No. 342,553. (No model.)



Claim.—The combination, in a display-rack, of a supporting-frame, cross-bars set inclined in the frame, and a series of rigid standards for each cross-bar, each standard having an upwardly-projecting slender sharp point at its upper end for entering the material and retaining the article on the standard, substantially as specified.

448,812. SHIRT. GOTTLIEB BENGER, Stuttgart, Germany. Filed July 18, 1890. Serial No. 359,173. (Model.)



Claim.—1. A shirt comprising a body portion and re-enforcing flaps, as B C, extending across the front and back, respectively, of the body portion, the outer end of the upper edges of each of said flaps being attached to the upper edges of said body portion, one at each side thereof, the remaining portion of said upper edges of the re-enforcing flaps being free and extending in opposite directions from the neck-opening and the lower edges of the flaps being attached to the body portion, substantially as set forth.

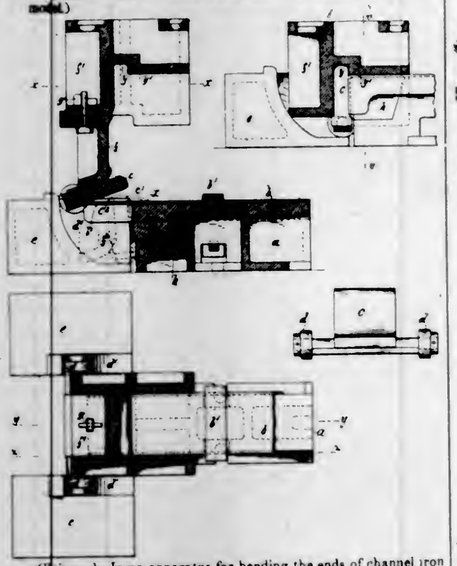
2. A shirt comprising a body portion and re-enforcing flaps, as B C, extending across the front and back, respectively, of the body portion, the outer end of the upper edges of each of said flaps being attached to the upper edges of said body portion, one at each side thereof, the remaining portions of said upper edges of the re-enforcing flaps being free and extending in opposite directions from the neck-opening, the said flaps being, moreover, attached to the body portion at the outer sides of its front and back, respectively, substantially as set forth.

448,813. COLLAPSIBLE PAPER BOX. FREDERICK V. BOWMAN, Huntington, Conn. Filed Oct. 20, 1890. Serial No. 368,671. (No model.)



Claim.—A paper box consisting of three independent collapsible tubular sections, one constituting the main body portion and the other sections constituting the ends of the box and fitting and sliding upon said body-section, and each having closing and securing flaps at one end, substantially as described.

448,814. APPARATUS FOR BENDING AND FORGING STEEL. SAMUEL FOX, Leeds, England, assignor to the Fox Solid Pressed Steel Company, Chicago, Ill. Filed Dec. 4, 1890. Serial No. 373,595. (No model.)



Claim.—1. In an apparatus for bending the ends of channel iron or steel, the combination, with the pressing member and die, of an independent bender traveling in guides and operating to force down the end of the beam, substantially as described.

2. The combination, in an apparatus for bending the ends of channel iron or steel, of a mandrel, a traveling bender, a presser, and a finishing die-block, substantially as described.

3. The combination, in a machine for bending channel iron or steel, of the stationary die for receiving the channel iron or steel, a press operating a traveling bender for bending the end of the channel-beam, and a spreading wedge-die located within the beam for the purpose of insuring the rectangular shape of the beam, substantially as described.

4. The combination, in a pressing-machine, of the die *b*, the bender *c*, and the presser *f*, substantially as described.

5. The combination, in a pressing-machine, of the die *b*, the bender *c*, the removable presser *f*, and the finishing-die to which it is attached, substantially as described.

6. The combination of the die *b*, presser *f*, and the bender *c*, traveling in curved guides, substantially as shown and described.

7. The bender *c* provided with wheels *d d*, traveling in curved guides, in combination with the presser and die, substantially as described.

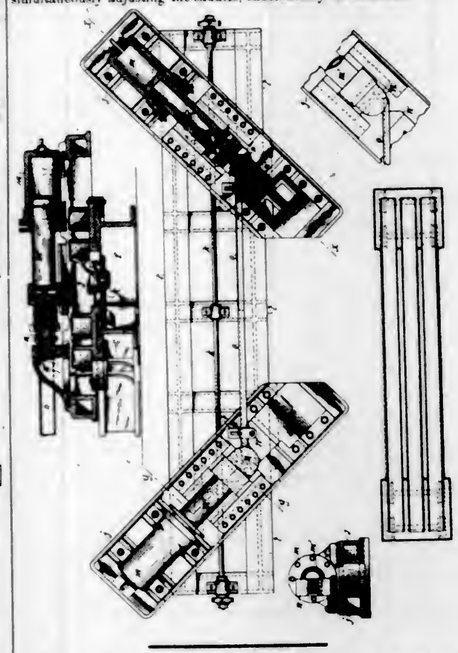
8. The process of forming closed channel-beams, which consists of preliminarily bending the end of the beam, thereby causing the spreading of the metal at the sides and top of the beam in position, and in, secondly, reducing the end to a rectangular box shape by a separate die, substantially as described.

448,815. APPARATUS FOR BENDING AND FORGING STEEL. SAMUEL FOX, Leeds, England, assignor to the Fox Solid Pressed Steel Company, Chicago, Ill. Filed Dec. 4, 1890. Serial No. 373,596. (No model.)

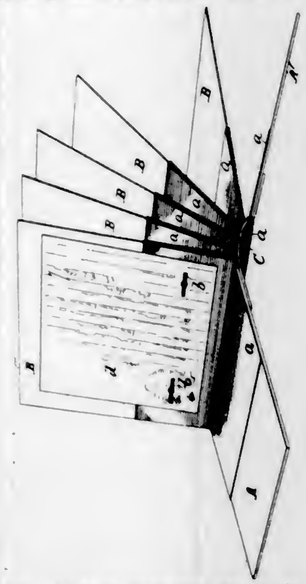
Claim.—1. The combination, in an apparatus for simultaneously bending both ends of a channel-iron, of two dies and an apparatus for advancing them in a line at an obtuse angle to the length of the channel-iron, substantially as described.

2. The combination, in an apparatus for simultaneously bending both ends of a channel-beam, of the bed-plate and two saddles adjustably mounted thereon, substantially as described.

3. The combination of the bed-plate, two saddles mounted thereon at an angle to the bed-plate, and a right and left handed screw for simultaneously adjusting the saddles, substantially as described.



448,816. FILE OR PORTFOLIO. JOHN J. HANLON, Chicago, Ill. Filed Oct. 22, 1890. Serial No. 368,921. (No model.)



Claim.—In a file of the character described, the combination of the filing-leaves, the backing-strip providing a space between the adjacent edges of said leaves and back, and the binding-strips overlapping the adjacent surfaces of the filing-leaves and joined together between the edge and back and also joined to the backing-strip, substantially as set forth.

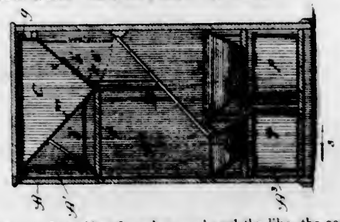
448,817. ART OF TREATING TUBULAR KNITTED FABRICS. WILLIAM A. HARDER, Lansingburg, assignor of one-half to Charles A. Brown, Troy, N. Y. Filed June 20, 1890. Serial No. 356,110. (No model.)



Claim.—1. The herein-described method of treating tubular knitted fabric, which consists in washing and drying the fabric, stretching widthwise and uniformly dampening the dried fabric, winding the stretched and dampened fabric in a roll, and drying the wound fabric in the roll, substantially as described.

2. The herein-described method of treating tubular knitted fabric, which consists in washing and drying the fabric, stretching the fabric widthwise, admitting live steam into the stretched portion of the fabric for the purpose of uniformly dampening the same, winding the stretched and dampened fabric in a roll, and drying the wound fabric in the roll, substantially as described.

448,818. COAL-SIFTER. EDWIN W. HUMPHREYS, Chicago, Ill. Filed Dec. 9, 1890. Serial No. 374,095. (No model.)



Claim.—1. In a sifter for ashes, coal, and the like, the combination of a case containing an inclined screen and provided with a door above the screen, a receptacle for the material to be sifted, removable from the case for supplying it with the said material and replaceable therein through the said door, and a valve on the receptacle, provided with means for securing it in place when closed, projecting into position to be opened by closing the door of the case when the receptacle is inserted therein, whereby the contents of the receptacle are emptied upon the screen and escape of dust from the case is prevented in the sifting operation, substantially as described.

2. In a sifter for ashes, coal, and the like, the combination of a case containing an inclined screen and provided with a door above the screen, a receptacle for the material to be sifted, removable from the case and replaceable therein through the said door and formed with inclined sides converging at the bottom, one of the said sides being opened and closed by a valve C, a catch *l* upon the receptacle, a pivotal latch *k* upon the valve, and a longitudinally-movable bar *i*, with which the latch is pivotally connected, extending beyond the side of the receptacle, whereby when the receptacle is placed in the case the bar *i* will extend into the path of the door of the case and be moved by closing of said door to withdraw the latch and permit the valve to be opened by the weight of the contents of the receptacle, which are thus discharged upon the screen, substantially as and for the purpose set forth.
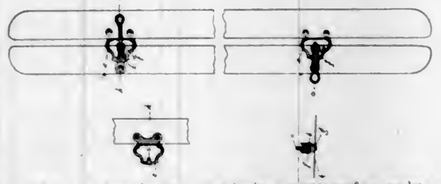
448,819. LEGGIN. CLARENCE R. MACOMBER, Worcester, Mass. Filed Nov. 20, 1890. Serial No. 371,991. (No model.)



Claim.—1. As an improved article of manufacture, a leggin or protective covering adapted to fit loosely over and encircle the lower part of the ordinary trouser, and consisting of an upper part covering the trouser-leg and a lower part extending over the upper part of the shoe, said upper and lower parts stitched or cemented together to make a tight joint extending entirely around the covering, for the purpose stated, substantially as set forth.

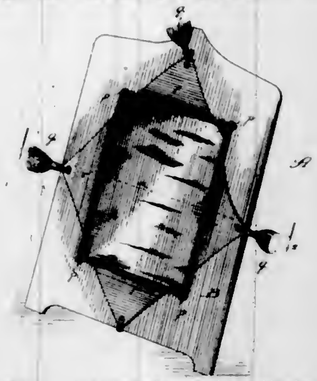
2. In a leggin, the combination, with the upper covering 1 and means for supporting the same in place, of the lower covering 4, having its upper part extending within the lower part of the covering 1 and stitched or cemented thereto and its front and rear edges inclined toward each other to leave a space between said covering 4 and the lower part of the covering 1, for the purpose stated, substantially as set forth.

448,820. CORSET-FASTENING. MAYER MAY, Paris, France. Filed Sept. 8, 1890. Serial No. 364,376. (No model.) Patented in France Aug. 17, 1889, No. 200,242.



Claim.—A fastening for corset-busks, consisting of an eyelet *e*, bent upward and outward, as stated, and provided with an inward lip *i*, in combination with a bent lever *c*, a spring *b*, arranged to bear against it, and a plate *a*, provided with bearing-plates *f*, perforated to receive the lateral pivots of said lever, substantially as set forth.

448,821. PICTURE-FRAME. JOHN F. MCBRIDE, Chicago, Ill. Filed Jan. 7, 1891. Serial No. 376,952. (No model.)



Claim.—1. In a picture-frame A, the combination of a back C, a front B, formed of a sheet of suitable flexible material cut to form sections bent back to produce the display-opening, having convex bulging margins *r*, and ornamental fastenings *q*, securing the sections at their free ends to the frame, substantially as described.

2. In a picture-frame A, the combination of a back C, a front B, formed of a sheet of suitable flexible material severed by a cross-cut through the center, forming V-shaped sections bent back to produce the display-opening, having convex bulging margins *r*, and ornamental fastenings *q*, securing the sections at their free ends to the frame, substantially as described.

3. As a new article of manufacture, a picture-frame A, having the back C, the front B, of sheet-celluloid severed by a cross-cut through the center, thereby forming V-shaped sections bent back to produce the display-opening, having convex bulging margins *r*, and ornamental fastenings *q*, securing the sections at their apexes to the frame, substantially as described.

4. As a new article of manufacture, a picture-frame A, comprising, in combination, a back C, a front B, of sheet-celluloid severed between defining-apertures *p* by a cross-cut through the center, thereby forming V-shaped or substantially V-shaped sections bent back to produce the display-opening, having convex bulging margins *r*, ornamental fastenings *q*, securing the sections at their free ends to the frame, and a sheet D of transparent celluloid interposed between the back and front and covering the display-opening, substantially as described.

448,822. PAPER-CLAMP. JOSEPH B. MCGIER, Washington, D. C. Filed May 14, 1889. Serial No. 310,697. (No model.)

Claim.—1. A paper-holder adapted to removably fit on the edge of a base or board, formed integral, and having a rigid vertical arm and lateral paper-holding arm, the lower portion forming a continua-

tion of said vertical arm and bent to form a spring, and an arm to bear against the under face of the base or board, substantially as and for the purpose set forth.



2. The combination, with a board, of one or more paper-holding clips upon the edge of the same, each clip comprising a paper-holding arm on the upper surface of the board, and a spring portion beneath and bearing against the under surface of the board and connected with said arm and holding the same down on the board, substantially as set forth.

3. The combination, with a board having a transverse groove in its edge, of a paper-holding clip fitted on said edge and comprising a paper-holding arm, a spring portion bearing against the under face of the board, and an arm in said groove carried by the spring portion and carrying said arm, substantially as set forth.

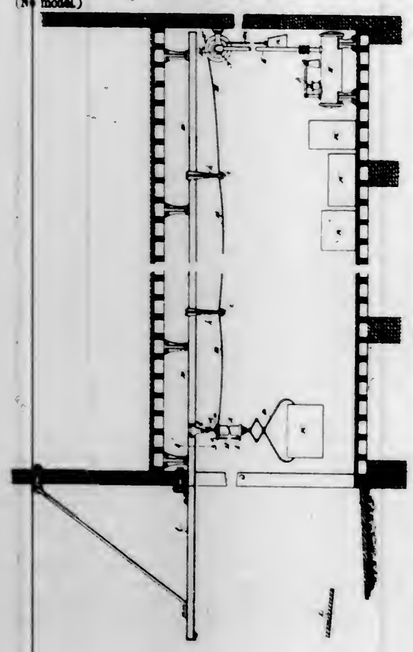
4. As an article of manufacture, a paper-holding clip to fit on the edge of a board, comprising a spring portion bearing against the under surface of the board and the paper-holding arm carried by said spring portion and held thereby, bearing down on the upper face of said board, and having its engaging surface roughened, substantially as and for the purpose set forth.

5. As a new article of manufacture, a paper-holding clip formed in one piece and consisting of a long spring-arm to bear against the under surface of a board, and the arm extending at right angles from the movable end of said spring and having the lateral paper-holding arm at its free end, substantially as and for the purpose set forth.

6. A paper-holding clip to fit the edge of a board, substantially as described, consisting of a spring-arm adapted for rigid connection with a board, and a paper-holding arm carried by the free end of said spring-arm and maintaining the same relative position thereto at all times, as set forth.

7. A paper-holding clip for application to the edge of a board, substantially such as herein described, comprising a yielding spring-arm adapted for rigid connection at one end with a board and a rigid paper-holding arm arranged substantially parallel with the sprig-arm and supported by a vertical part which joins the spring-arm at its free end, as set forth.

448,823. **HOISTING AND CONVEYING APPARATUS.** CARLETON W. MASON, New York, N. Y. Filed June 28, 1887. Serial No. 242,726. (No model.)



Claim.—1. In a hoisting and conveying apparatus, the combination, with an overhead track and a carriage adapted to run thereon, of the cylinder and piston suspended from the carriage and provided with means for attachment to a package or article, the flexible tube E for supplying fluid to the cylinder, and the drum P for receiving the tube, substantially as described.

2. In a hoisting and conveying apparatus, the combination, with the track, the carriage, and the cylinder and piston suspended from the carriage, of the flexible tube, the drum for receiving the same, and a retractile for rewinding the tube, substantially as described.

3. In a hoisting and conveying apparatus, the combination, with the track and the carriage adapted to run thereon, of the cylinder and piston suspended from the carriage, the flexible tube connected to the cylinder to admit a fluid thereto, and pulleys arranged adjacent to the track to receive and support said tube, substantially as described.

4. In a hoisting and conveying apparatus, the combination, with a curved track and a carriage adapted to run thereon, of a cylinder and piston suspended from said carriage, the flexible tube connected to the cylinder to admit a fluid thereto, and inclined pulleys arranged adjacent to said track to receive and support the tube, substantially as described.

5. A traveling hoisting-cylinder and a source of fluid-supply, in combination with a flexible pipe and a reel for supporting said pipe, substantially as described.

6. A traveling hoisting-cylinder and a source of fluid-supply, in combination with a flexible pipe and an automatically-winding reel, substantially as described.

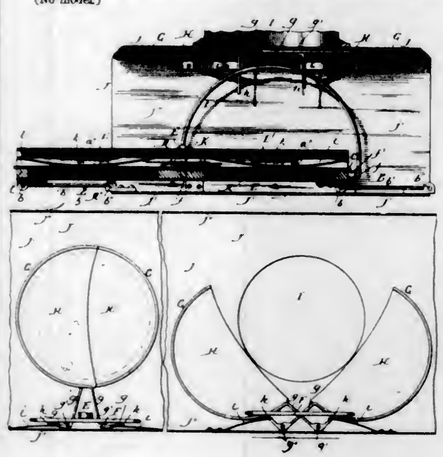
448,824. **KNOCKDOWN PAPER BOX.** EBEN M. SCOTT, Huntington, Conn. Filed Oct. 20, 1890. Serial No. 368,700. (No model.)



Claim.—1. A collapsible box-section consisting of the body portion and side and end sections, the end sections having slits *i i*, and the side sections terminating in independent flaps *f g*, cross-slits *h* in the flaps *f*, adapted to engage and interlock with said slits *i i*, and the flaps *g* serving as interior braces or stops for the end sections, substantially as and for the purpose described.

2. A collapsible box-section consisting of the body portion and side and end sections, the end sections having slits *i i*, and the side sections terminating in independent end flaps *f g* of unequal width, the flaps *g* having beveled corners and the flaps *f* having cross-slits *h*, said flaps *f* and *g* being adapted to receive between them said end sections, and the flaps *f* interlocking with the latter from the exterior, while the flaps *g* serve as interior braces or stops, substantially as and for the purpose described.

448,825. **DISSOLVING-SHUTTER FOR MAGIC LANTERNS.** JOHN SHANNON, Wixom, Mich. Filed Dec. 4, 1889. Serial No. 332,600. (No model.)



Claim.—1. A frame for receiving and displaying pictures in a magic lantern, such frame having an advance and sidewise movement in either direction for bringing its ends alternately in position for display purposes, substantially as specified.

2. A frame having a movement forward and back and endwise in either direction and adapted to receive pictures for display, in combination with a movable shutter actuated through the movements of the frame, substantially as and for the purposes specified.

3. The frame A, adapted to receive pictures for display in a magic lantern, in combination with the swinging arms B for supporting the frame and giving the frame forward, back, and end movement, substantially as and for the purposes specified.

4. The frame A, adapted to receive pictures for display in a magic lantern, and swinging arms B, carrying the frame A, in combination with the actuating-rod C for giving the frame forward, back, and end movement, substantially as and for the purpose specified.

5. The frame A, adapted to receive pictures for display in a magic lantern, and swinging arms B, carrying the frame A, in combination with the actuating-rod C, and handle D for moving the frame forward, backward, and endwise, substantially as and for the purposes specified.

6. The frame A, swinging arms B, and foot E, in combination with the yoke F for moving the cut-off shutters in a magic lantern, substantially as specified.

7. The frame A, swinging arms B, foot E, and yoke F, in combination with the arms G, each carrying a shutter H for opening and closing the shutters, substantially as and for the purposes specified.

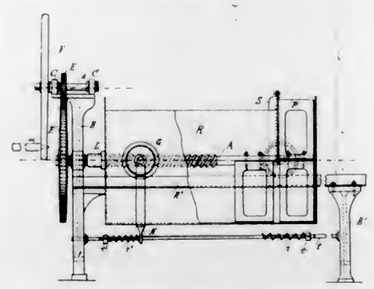
8. The frame A, swinging arms B, foot E, and yoke F, in combination with the arms J, each carrying a shutter H, and springs *i* for operating the shutters, substantially as and for the purposes specified.

9. The frame A, and swinging links B, in combination with the springs K, frame L, and springs M for holding pictures for display in a magic lantern and enabling the pictures to be changed, substantially as and for the purpose specified.

10. A frame adapted to receive pictures for display in a magic lantern, and swinging links carrying such frame, in combination with movable shutters actuated through the movements of the frame, substantially as and for the purposes specified.

11. A frame adapted to receive pictures for display in a magic lantern, and swinging links carrying such frame, in combination with a depressing-yoke, and movable shutters actuated by the yoke from the movements of the frame, substantially as and for the purposes specified.

448,826. **KNEADING-MACHINE.** EMILE VIOLLET, Paris, France. Filed Sept. 19, 1890. Serial No. 365,500. (No model.) Patented in France Mar. 3, 1890, No. 204,096.

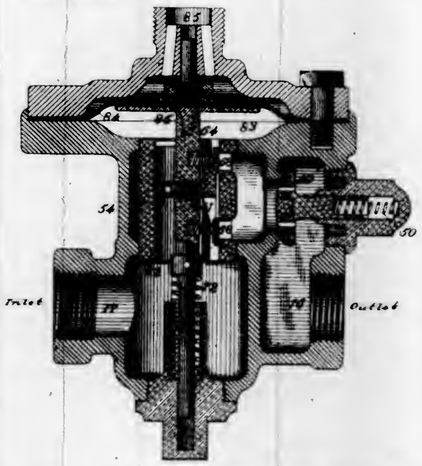


Claim.—1. In combination with a screw-headed shaft and gearing for driving the same, a trough provided with an internally-screw-threaded sleeve which engages the thread on said shaft, rollers attached to said trough, rails on which said rollers run, and kneading-blades turning within said trough, substantially as set forth.

2. In combination with a longitudinally-traveling trough having rollers, a rigid arm, and a screw-threaded sleeve, a track on which said rollers run, a screw-threaded shaft and its driving-gear, kneading-blades mounted on and turning with said shaft, and springs bearing, as explained, against said arm to force the said sleeve into engagement with the thread on said shaft, the latter passing through said sleeve and having smooth parts near each end, for the purpose set forth.

3. In combination with a screw-threaded shaft smooth near its ends and carrying kneading-blades, a trough provided with rollers and a screw-threaded sleeve receiving said shaft, a track on which said rollers run, and a divider or partition D, which may be inserted between the kneading-blades, the trough being moved longitudinally or left stationary, at will, as set forth.

448,827. **AIR-BRAKE.** GEORGE WESTINGHOUSE Jr., Pittsburg, Pa. Original application filed Oct. 1, 1887, Serial No. 251,196. Divided and this application filed Jan. 20, 1888. Serial No. 261,370. (No model.) Patented in France Dec. 3, 1887, No. 187,385; in Belgium Dec. 3, 1887, No. 79,737; in Germany Dec. 4, 1887, No. 46,849; in England Jan. 6, 1888, No. 275; in Sweden Jan. 24, 1888, No. 1,583; in Victoria Mar. 1, 1888, No. 5,659; in South Australia Mar. 5, 1888, No. 980; in Queensland Mar. 7, 1888, No. 440; in New Zealand Mar. 19, 1888, No. 2,869; in India Apr. 17 and May 4, 1888, 42/557; in Austria-Hungary May 17, 1888, No. 4,702 and No. 16,292; in Spain May 18, 1888, No. 7,824, and in West Australia July 12, 1888.



Claim.—1. In a fluid-pressure-brake apparatus normally operated by a triple-valve device, the combination, with such an apparatus, of a valvular appliance having a casing provided with supply and discharge passages or connections, and a valve controlling an exhaust-port from the supply-passage to the discharge-passage for quickly releasing pressure in the supply-passage, said valve being actuated to open the exhaust-port by a greater than normal reduction of pressure in the supply-passage independently of the action of the triple-valve device, substantially as set forth.

2. The combination, with a triple-valve mechanism, of a discharge-valve controlling an exhaust-port from a supply-passage to a discharge-passage for quickly releasing the pressure in the supply-passage, said valve being actuated to open the exhaust-port by fluid-pressure in an auxiliary reservoir on reduction of pressure in the supply-passage below the normal degree in whatever position the slide-valve of the triple-valve mechanism may be brought by such reduction, substantially as set forth.

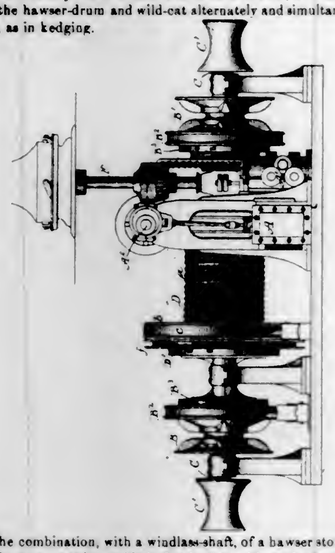
3. The combination, with a triple-valve mechanism, of a discharge-valve controlling an exhaust-port from a supply-passage to a discharge-passage for quickly releasing the pressure in the supply-passage, said valve being actuated to open the exhaust-port by fluid-pressure in an auxiliary reservoir on reduction of pressure in the supply-passage below the normal degree in whatever position the slide-valve of the triple-valve mechanism may be brought by such reduction, and an independent valve controlling the discharge-passage, substantially as set forth.

4. In a fluid-pressure-brake apparatus normally operated by a triple-valve device, the combination, with such an apparatus, of a valvular appliance having a casing provided with supply and discharge passages or connections, a valve controlling an exhaust-port from the supply-passage to the discharge-passage, and a second valve located between the supply and discharge passages and normally closing communication between said passages, said valve being adapted to be opened by the pressure in the supply-passage when the valve first specified is opened by a reduction of pressure in the supply-passage, substantially as set forth.

448,828. **SHIP-WINDLASS.** EDWIN H. WHITNEY, East Providence, R. I., assignor to the American Ship Windlass Company, same place. Filed Dec. 22, 1890. Serial No. 375,471. (No model.)

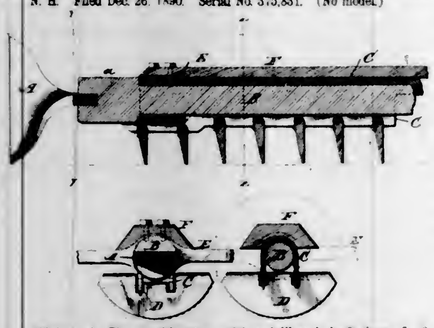
Claim.—1. In a ship-windlass, the combination, substantially as hereinbefore described, of the windlass-shaft, a wild-cat and means for coupling it to and uncoupling it from said shaft, and a brake for controlling its rotation when uncoupled, a hawser storage or housing drum

also mounted on said shaft and detachably coupled thereto, and a brake for controlling the rotation of said drum when uncoupled from the shaft, whereby the hawser-drum and the wild-cat may be separately operated and controlled or both used simultaneously and the hawser-drum permitted to yield to undue strains on a hawser, as while towing, and the hawser-drum and wild-cat alternately and simultaneously operated, as in kedging.



2. The combination, with a windlass-shaft, of a hawser storage or housing drum mounted on said shaft, a brake and lever for controlling the backward rotation of said drum, a reel rotative with the drum, and a brake-line connected, respectively, with said reel and said lever, substantially as described, whereby, when said drum has been unduly rotated by strain on a hawser attached to and partially coiled on the drum, the brake-line will be tightened and the brake automatically applied for checking further rotation of the drum.

448,829. COAL-MINING MACHINE. HORACE B. WYMAN, Dover, N. H. Filed Dec. 26, 1890. Serial No. 375,831. (No model.)



Claim.—1. The combination, with a drill and shaft thereof, of a plurality of swinging scrapers located immediately under said drill-shaft in the path of the drill and pivoted or hinged to suitable supports, substantially as and for the purpose described.

2. The combination, with the drill and shaft thereof, of a saddle-iron extending over the shaft, and a plurality of scrapers pivoted or hinged to the saddle-iron, substantially as and for the purpose specified.

3. In a mining-machine, a plurality of drills, and the shafts thereof suitably connected together, in combination with saddle-irons extending over the drill-shafts, and scrapers pivoted or hinged thereto, and a shield located over the saddle-iron, substantially as and for the purpose set forth.

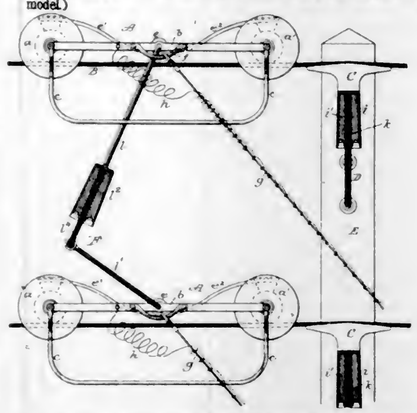
4. The combination, with a drill and shaft thereof, of a saddle-iron located over said shaft, and a plurality of segmental-shaped scrapers pivoted or hinged to the saddle-iron, substantially as and for the purpose described.

448,830. BALE-TIE. WALLACE B. CURTIS, Pomeroy, Ohio. Filed Dec. 31, 1890. Serial No. 376,374. (No model.)



Claim.—A bale-tie consisting of a metal plate having two slots on line with each other, with their ends tapering, substantially as and for the purpose specified.

448,831. TROLLEY FOR ELECTRIC RAILWAYS. RUDOLF EICKEMEYER, Yonkers, N. Y. Filed July 19, 1890. Serial No. 359,245. (No model.)



Claim.—1. The combination, with the wheels of an electric trolley or traveling contact, of constantly-applied braking mechanism, substantially as described.

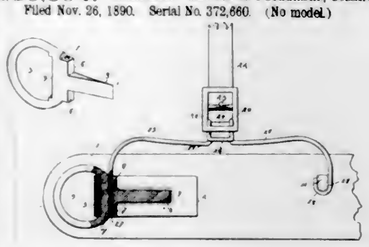
2. In a system of electric locomotion, the combination, substantially as hereinbefore described, of a line-wire, a traveling contact or trolley, and braking mechanism for checking or retarding the speed of the trolley on the line-wire upon the slackening of speed by a motor connected with the trolley

3. In a system of electric locomotion, the combination, substantially as hereinbefore described, of a pair of line-wires, a trolley on each wire, and a complex link which couples said trolleys together, is flexible in one direction and rigid in the opposite direction, and maintains both trolleys in a vertical position on the line-wires, permits them to freely move toward and from each other, and also permits each to freely travel independently of the other within prescribed limits.

4. In a system of electric locomotion, the combination, substantially as hereinbefore described, of a pair of line-wires, a pair of trolleys on said wires, and an intermediate complex link having a central hinge-joint and coupled to both trolleys by other hinge-joints, all of said joints being rigid in the line of their axes, and all of said axes being parallel.

5. In a system of electric locomotion, the combination, substantially as described, of two line-wires, one above the other, a grooved wheel-trolley on each wire, and a complex link having a central hinge-joint, coupled to the two trolleys by other hinge-joints, the axes of the wheels in both trolleys being parallel with the axes of the several hinge-joints.

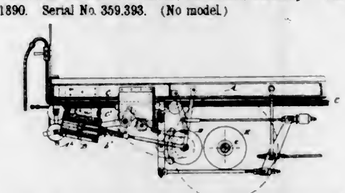
448,832. HARNESS. NEWTON H. FETHERMAN, Bossardsville, Pa. Filed Nov. 26, 1890. Serial No. 372,660. (No model.)



Claim.—1. The D connection secured to one end of the breeching-strap and having a rearwardly-disposed stiffening-blade interposed and secured between the layers of the leather forming the strap, substantially as specified.

2. The breeching-strap consisting of the inner strap 1 and outer strap 2, secured to the outer surface thereof and terminating short of the end of the breeching-strap and bent inwardly to form the loop 3, combined with the D connection 5, engaging the loop and provided with the rearwardly-disposed tapered tongue 8, and the wire stay bent at its centers to form the opposite terminals, one of which is connected with the D connection and the other of which is secured between the straps 1 and 2, said brace being doubled at its bent center, the buckle-frame having the cross-bar 24 for engaging the doubled portion, and the hip-strap 22, engaging the buckle, substantially as specified.

448,833. RAILWAY-BRAKE OPERATING BY AIR-PRESSURE OR VACUUM. ERNST HARTMANN, Düsseldorf, Germany. Filed July 21, 1890. Serial No. 359,393. (No model.)

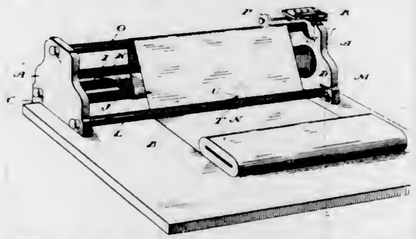


Claim.—1. In a mechanism for actuating brakes, the double-working pneumatic or vacuum cylinder A^2, with its inclosed piston B, and connections from the latter to control the brake mechanism, in combination with the car A, conduit or main pipe C and hose or pipes connecting therefrom to each end of the cylinder, and the two cocks C' and C^2, adapted to allow of operating equally by vacuum or by pressure by opening one or the other cock, as herein specified.

2. In mechanism for actuating brakes, the by-pass passage *a* in the cylinder A^2, having both its ends opening into the cylinder near the mid-length, in combination with the main pipe C and branch pipes leading therefrom to each end of the cylinder controlled by cocks C' C^2, and with the piston B and connecting mechanism for controlling the brake action by the motion of the latter, all substantially as herein specified.

3. In mechanism for operating car-brakes, the combination, with the axle *e* and drum E, fixed thereupon, of the wheel D, adapted to be thrown in and out of engagement with said drum, conduit C, cylinder A, having by-passage *a*, cocks $C'C^2$, controlling branch pipes leading from said conduit to the two ends of said cylinder, double-operating piston B, and connections therefrom to the wheel, all arranged to operate substantially in the manner and for the purpose set forth.

448,834. MACHINE FOR REBLOCKING CLOTH OR OTHER MATERIAL. HENRY HUTCHINSON, Toronto, Canada, assignor to Samuel John Moore, same place. Filed Apr. 24, 1890. Serial No. 349,277. (No model.)



Claim.—1. The fixed roller O and the journaled roller L, in combination with the rollers J and K, fixed to the revoluble disk D, provided with locking mechanism, substantially as and for the purpose specified.

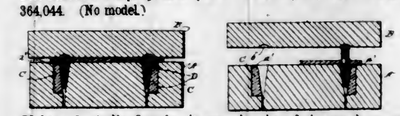
2. The fixed roller O and the journaled roller L, provided with a catch M, in combination with the rollers J K, fixed to the revoluble disks D, provided with locking mechanism, substantially as and for the purpose specified.

3. The fixed rollers I and O and the journaled roller L, in combination with the rollers J K, fixed to the revoluble disks D, provided with locking mechanism, substantially as and for the purpose specified.

4. The rollers J K, mounted on the disks D, the roller O above said rollers J K, and the roller L below the same, in combination with the roller P, having ratchet-teeth formed on its periphery and connected to the spindle Q of the counter R, substantially as and for the purpose specified.

5. The combination, with the revoluble roller, of a clip T, having a spring-finger U, substantially as and for the purpose specified.

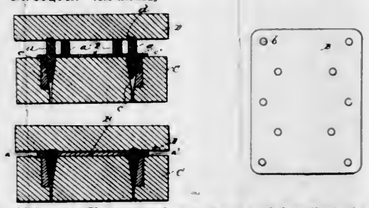
448,835. DIE FOR MAKING BELT-FASTENERS. GILBERT P. KENEHAN, Cleveland, Ohio, assignor, by mesne assignments, to the Steel Belt Fastener Company, same place. Filed Sept. 5, 1890. Serial No. 364,044. (No model.)



Claim.—1. A die for simultaneously chamfering and upsetting the teeth of belt-fasteners, the die having a hole for each tooth, such hole being approximately of the shape and size of the chamfered portion of the finished tooth and having a recess communicating with said hole, whereby the material that is chamfered off the tooth is upset into said recess, and a shoulder formed on the tooth, substantially as set forth.

2. A pair of dies for simultaneously chamfering, upsetting, and fastening the teeth of belt-fastening, one of the dies having holes and recesses communicating therewith for chamfering and upsetting the teeth and the other die having as many depressions for riveting the teeth, the two dies being adapted to act simultaneously, substantially as set forth.

448,836. PROCESS OF MAKING BELT-FASTENERS. GILBERT P. KENEHAN, Cleveland, Ohio, assignor, by mesne assignments, to the Steel Belt Fastener Company, same place. Filed Sept. 5, 1890. Serial No. 364,045. (No model.)

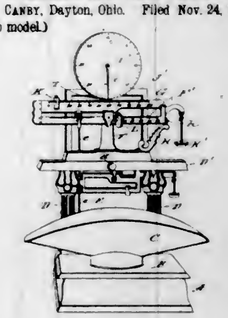


Claim.—1. The process herein shown and described of manufacturing the teeth of belt-fasteners, and consisting, first, in cutting or rolling the blank tooth approximately tapering or conical a portion of its length, and, secondly, in simultaneously chamfering and upsetting the tooth, substantially as set forth.

2. The process herein shown and described of manufacturing belt-fasteners, and consisting, first, in cutting or rolling the blank tooth approximately tapering or conical a portion of its length, and, secondly, in simultaneously chamfering and upsetting the tooth and fastening the same to the body of the belt-fastener, substantially as set forth.

3. The process herein shown and described of manufacturing belt-fasteners, and consisting, first, in cutting or rolling the blank tooth approximately tapering or conical a portion of its length; secondly, in simultaneously chamfering and upsetting the tooth, and, thirdly, in riveting the tooth, substantially as set forth.

448,837. WEIGHING AND PRICE SCALE. ORANGE O. OZIAS and EDWARD CANBY, Dayton, Ohio. Filed Nov. 24, 1890. Serial No. 372,520. (No model.)



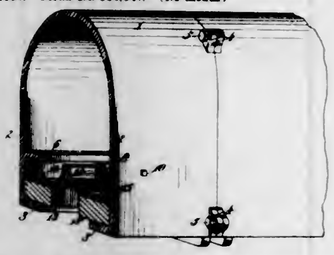
Claim.—1. In a price-scale, the combination, with the platform, connecting-rod, horizontally-movable fulcrum, and price-beam mounted on said fulcrum to move therewith, of the stationary piece, dial, rotary pointer, and mechanism for moving said pointer connected to the longitudinally-movable fulcrum, substantially as and for the purpose specified.

2. In a price-scale, the combination, with the platform, connecting-rod, longitudinally-movable fulcrum, and price-beam mounted on said fulcrum to move therewith to vary the distance between the point of engagement of the connecting-rod and fulcrum, of the stationary dial having the units of price and fractions thereof indicated thereon, the pointer, and the rack-bar connected to the fulcrum of the price-beam for moving the pointer, substantially as described.

3. In a price-scale, the combination, with the platform, connecting-rod, longitudinally-movable fulcrum, and price-beam mounted thereon, of the stationary dial having the units of price and fractions thereof marked thereon, the pointer, the rack-bar connected to and movable with the fulcrum, and the gear-wheel interposed between said rack-bar and gear-wheel connected to said pointer, substantially as described.

4. In a price-scale, the combination, with the platform, supplemental base-frame F, movable longitudinally therewith, price-beam fulcrumed on said frame, and connecting-rod having an adjustable connection with said beam, of the stationary dial having the units of price and fractions thereof marked thereon, the pointer and gear-wheel connected thereto journaled in the center of said dial, the elevated frame having the rack-bar mounted on the longitudinally-movable frame F, and the gear-wheel interposed between said rack-bar and gear-wheel on the pointer, substantially as described.

448,838. **INSULATOR FOR ELECTRICAL CONDUCTORS FOR MINES.** FRANCIS A. POCOCK, Scranton, Pa., assignor of two-thirds to Elmer H. Lawall and Rufus J. Foster, both of same place. Filed June 26, 1890. Serial No. 356,847. (No model.)



Claim.—1. In the insulation of electrical conductors for the gangways of mines, the combination, with a conduit or casing having a longitudinal or extension rail for supporting the collector of the motor, of insulating-blocks secured within the conduit or casing and supporting the main conductor or main feed-wire, and flexible sheets which close an open side of the conduit or casing and permit the passage of the collector-arm, substantially as described.

2. In the insulation of electrical conductors for mines, the combination, with a conduit or casing having inwardly-extending flanges or wings and provided on its inside with a longitudinal extension or rail for the travel of one side of the collector of a motor, of internal insulating-blocks carrying the live conductor or main feed-wire and flexible sheets connected at one edge to the flanges or wings of the casing or conductor and having their opposite edges bearing against each other to permit the passage of the collector-arm and instantly close against each other, substantially as described.

3. In the insulation of electrical conductors for mines, the combination of a conduit or casing containing the live conductor or main feed-wire and provided with flexible sheets or mediums which are opened by the passage of the collector-arm and close in rear thereof, an air-pipe to lead from the surface of the ground and communicate with the conduit or casing, and air-forcing mechanism for creating a current of air through the air-pipe and conduit or casing which by leaking through any interstices in the latter excludes inflammable mine-gases, substantially as described.

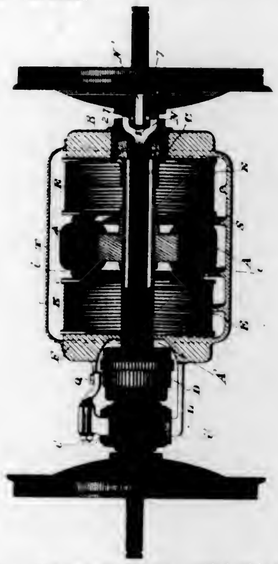
448,839. **PENCIL-SHARPENER.** FRIEDRICH W. SABEL, Coblentz, Germany. Filed Oct. 28, 1890. Serial No. 369,558. (No model.) Patented in Germany May 26, 1889, No. 50,694, and in France Sept. 23, 1889, No. 200,911.

Claim.—1. In a pencil-sharpener, the combination of a carriage mounted on wheels with a pencil-holding tube journaled under said carriage at right angles to its motion and in such a manner as to drop one end to the level of the surface upon which said wheels are running, a spring to keep said holder down on said surface, a connection between said holder and one of said carriage-wheels, whereby said holder is rotated, and a roughened surface upon which said carriage moves, all substantially as set forth.



2. In a pencil-sharpener, the combination of a carriage mounted on wheels with a pencil-holder journaled thereto in a slanting position and in such a manner as to allow its angle of inclination to be altered, a connection between said holder and one of said carriage-wheels, whereby said holder is rotated, an eccentric collar mounted on said holder, a finger pivoted so as to engage with said collar and raise said holder twice during every revolution, and a roughened surface upon which said carriage moves, all substantially as set forth.

448,840. **PROTECTING MOTOR MECHANISM OF ELECTRIC CARS.** SIDNEY H. SHORT, Cleveland, Ohio, assignor to the Short Electric Railway Company, same place. Filed Nov. 15, 1890. Serial No. 371,509. (No model.)



Claim.—1. The car-motor frame provided with a pan integral therewith, substantially as described.

2. The motor-frame comprising yokes from which field-magnets project and provided with an underlying pan integral with said yokes, substantially as described.

3. A car-motor frame formed by the yokes of an electric motor, with a pan constituting an integral part of the yokes and extending below the space for the armature and field-magnets, substantially as described.

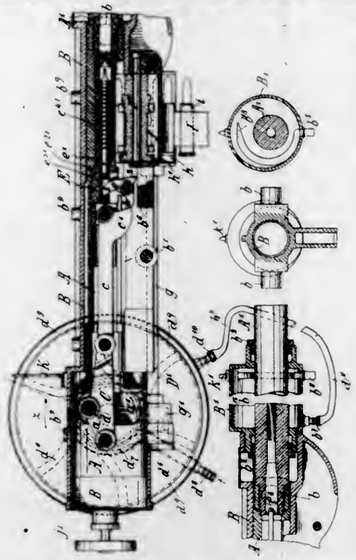
4. A car-motor frame formed by the yokes of an electric motor, with a pan constituting an integral part of the yokes and extending below the space for the armature and field-magnets, in combination with a casing secured to the yokes, substantially as described.

5. A car-motor frame formed by the yokes of an electric motor, with a pan constituting an integral part of the yokes and extending below the space for the armature and field-magnets, in combination with a magnetic casing inclosing the whole motor and secured to the yokes, substantially as described.

6. The combination, with a car and an electric motor for propelling the same mounted on a driving-axle and extending below the same, of a projecting pan below the motor and curved in the direction of the travel of the motor-car, substantially as described.

7. The combination, with a car and an electric motor mounted on the car-axle and extending below the same, of a pan below the motor and constituting an integral part of the yokes of the field-magnets and curved in the direction of the travel of the car, substantially as described.

448,841. **QUICK-FIRING GUN.** EMIL R. VON SKODA, Pilsen, Austria-Hungary. Filed July 24, 1890. Serial No. 359,814. (No model.)



Claim.—1. In a breech-loading machine-gun, the combination, with the gun and breech-bolt adapted to have a rectilinear motion in their bearings, of a power-storing device and a connection between said device, the breech-bolt, and the gun, adapted to impart to the power-storing device a continuous rotary motion in one direction, for the purposes set forth.

2. In a breech-loading machine-gun, the combination, with the gun and the breech-bolt, said parts being adapted to have endwise motion in their bearings, of a power-storing device and a variable-speed connection connecting the power-storing device with the gun and breech-bolt and adapted to impart to the power-storing device a continuous rotary motion in one direction, for the purposes set forth.

3. In a breech-loading machine-gun, the combination, with the gun and breech-bolt adapted to have a rectilinear motion in their bearings, of a power-storing device and a connection between the latter, the breech-bolt, and gun, adapted to impart to the power-storing device a continuous rotary motion in one direction and to vary the relative rectilinear speed of the gun and breech-bolt, for the purposes set forth.

4. In a breech-loading machine-gun, the combination, with the gun and breech-bolt adapted to have a rectilinear motion in their bearings, of a fly-wheel, a crank adapted to revolve with and about the axis of said fly-wheel, and a lever-and-link connection connecting the crank with the breech-bolt and gun and adapted to impart a continuous rotary motion to the crank and therethrough to the fly-wheel, for the purposes set forth.

5. In a breech-loading machine-gun, the combination, with the gun and its receiver, the latter provided with a vertically-slotted enlarged extension and adapted to have a rectilinear motion with the gun in its bearings, and the breech-bolt having a like motion in its bearings, of a fly-wheel, a crank revoluble with and about the axis of the fly-wheel, said crank extending through the vertical slot in the receiver, and a connection between said receiver, breech-bolt, and crank, adapted to convert the rectilinear motion of said parts into rotary motion, for the purposes set forth.

6. In a breech-loading machine-gun, the combination, with the gun, its receiver, and breech-bolt, said parts having endwise motion in their bearings, of a fly-wheel, a crank adapted to revolve with and about the axis of said wheel, and a variable-speed connection between the receiver and crank and between the crank and the breech-bolt, adapted to impart a continuous rotary motion to the crank and therethrough to the fly-wheel, for the purposes set forth.

7. In a breech-loading machine-gun, the combination, with the gun-barrel, its receiver, and the breech-bolt, of a fly-wheel, a crank adapted to revolve with and about the axis of the wheel, a two-armed lever having arms of unequal length connected with the crank, a connection between the shorter arm of the lever and the receiver, and a connection between the longer arm of the said lever and the breech-bolt, for the purposes set forth.

8. In a breech-loading machine-gun, the combination, with the gun and breech-bolt adapted to have a rectilinear motion in their bearings, of a power-storing device, a connection between said device, the gun, and breech-bolt, adapted to impart a continuous rotary motion to the power-storing device, and a speed-controlling device operating to control the relative rectilinear speed of the gun and breech-bolt, for the purposes set forth.

9. In a breech-loading machine-gun, the combination of a stationary cooling-jacket provided with a suitable exhaust-port, a pump, and a connection between the pump and cooling-jacket with the gun adapted to have a rectilinear motion in its bearings and in said cooling-jacket and a connection between the gun and pump-piston, adapted to operate the same, for the purposes set forth.

10. In a breech-loading machine-gun, the combination, with the gun adapted to have a rectilinear motion in its bearings, a pump comprising a pump-barrel provided with suction and exhaust ports, and a rotary pump-piston and a connection between the piston and gun, adapted to convert the rectilinear motion of said gun into rotary motion of the piston, of a cooling-jacket encompassing the gun-barrel, and a connection between the said jacket and the exhaust-port of the pump-barrel, for the purposes set forth.

11. In a breech-loading machine-gun, the combination, with the gun adapted to have a rectilinear motion in its bearings, a pump comprising a cylindrical barrel or casing provided with suction and exhaust ports and a cylindrical piston adapted to revolve in said casing, a crank adapted to revolve with and about the axis of the piston, and a connection between said crank and the gun, adapted to convert its rectilinear motion into rotary motion, of a cooling-jacket encompassing the gun, and a connection between said jacket and the exhaust-port of the piston-casing, for the purposes set forth.

12. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have a rectilinear motion in its bearings, of a pump comprising a cylindrical barrel or casing provided with suction and exhaust ports and a cylindrical piston adapted to revolve in said casing, a crank adapted to revolve with and about the axis of the piston, a lever-connection between said crank and the receiver of the gun, adapted to convert the rectilinear motion of the latter into rotary motion, a cooling-jacket encompassing the gun, and a connection between said jacket and the exhaust-port of the pump-casing, for the purposes set forth.

13. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have a rectilinear motion in their bearings and the breech-bolt adapted to have a like motion in the receiver, of a pump comprising a cylindrical barrel or casing provided with suction and exhaust ports and a cylindrical piston adapted to revolve in said casing, a crank adapted to revolve with and about the axis of the piston, a lever connecting the receiver with the crank, a link connecting the lever with the breech-bolt, a cooling-jacket encompassing the gun, and a connection between the jacket and the exhaust-port of the pump-casing, for the purposes set forth.

14. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have a rectilinear motion in their bearings and the breech-bolt adapted to have a like motion in the receiver, of a pump comprising a cylindrical barrel or casing provided with suction and exhaust ports and a cylindrical piston adapted to revolve in said casing, a crank adapted to revolve with and about the axis of the piston, a lever connected with the crank, said lever having arms of unequal length, a connection between the shorter arm of the lever and the receiver, a connection between the longer arm of said lever and the breech-bolt, a cooling-jacket encompassing the gun, and a connection between said jacket and the exhaust-port of the pump-casing, for the purposes set forth.

15. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have a rectilinear motion in their bearings, the breech-bolt adapted to have a like motion in the receiver, a spring-actuated firing-pin contained in the receiver, and a sear pivoted to the breech-bolt and provided with two arms and a connection between one of the arms of the sear and the firing-pin, of a revolnble power-storing device, a crank adapted to revolve with and about the axis of the device, a lever connected with the crank and receiver, and a link connected with said lever and with the breech-bolt, said lever being provided with a downwardly-projecting nose c', adapted to enter between the arms of the sear, for the purposes set forth.

16. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have a rectilinear motion in their bearings, the breech-bolt adapted to have a like motion in the receiver, a spring actuated firing-pin contained in the breech-bolt, and a sear pivoted to the breech-bolt and adapted to move said firing-pin against

the stress of its spring, of a power-storing device and a variable-speed connection between said device, the gun, and the breech-bolt, adapted to impart a continuous rotation to the power-storing device and to control the movements of the sear, for the purposes set forth.

17. In a breech-loading machine-gun, the combination, with the gun having endwise motion in its bearings, of a cooling-chamber encompassing the barrel, a rotary pump, a pipe-connection between the exhaust-port thereof and the cooling-jacket, a connection between a revoluble element of the pump and the gun, adapted to convert the rectilinear motion thereof into rotary motion, and a speed-controlling device operating to control the travel of the gun and therethrough the operation of the pump, for the purposes set forth.

18. In a breech-loading machine-gun, the combination, with the gun, its receiver, and the breech-bolt, said parts having endwise motion in their bearings, of a cooling-jacket encompassing the gun, a rotary pump, a pipe-connection between the exhaust-port of the pump and the cooling-jacket, and a variable-speed connection connecting a revoluble element of the pump with the receiver and breech-bolt, for the purposes set forth.

19. In a breech-loading machine-gun, the combination, with the gun, its receiver, and breech-bolt, said parts having endwise motion in their bearings, of a cooling-jacket encompassing the gun, a centrifugal pump, a pipe-connection between the exhaust-port of the pump and the cooling-jacket, a variable-speed connection connecting a revoluble element of the pump with the receiver and breech-bolt, and a speed-controlling device adapted to control the movements of the variable-speed connection and therethrough those of the gun, the breech-bolt, and pump, for the purposes set forth.

20. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have a longitudinal motion in their bearings, the breech-bolt adapted to have a like motion in the receiver, a spring-actuated firing-pin contained in the breech-bolt, and a sear pivotally connected with said bolt, said sear having three arms 1, 2, and 3, of which the arm 3 is in perpetual engagement with the firing-pin, of a revoluble power-storing device and a crank adapted to revolve with and about the axis of said device, a lever connecting said crank to the receiver, a link connecting the lever to the breech-bolt, said link having at its forward end a downwardly-projecting nose c', and a stationary abutment in the path of the arm 2 of the sear, substantially as and for the purposes set forth.

21. In a breech-loading machine-gun, the combination of the housing B, the pump-casing a^6 on one side at the rear end of said housing, the cooling-jacket B' at the outer end of said housing, said cooling-jacket being provided with an inlet-port b^7, and a connection between said port and the exhaust-port of the pump-casing with the gun adapted to have a rectilinear motion in the housing, a combined pump-piston and fly-wheel adapted to revolve in the casing, a crank connected with the piston, and a connection between said crank and the gun, adapted to convert the rectilinear motion thereof into rotary motion, for the purposes set forth.

22. In a breech-loading machine-gun, the combination, with the gun adapted to have a rectilinear motion in its bearings and a cooling-jacket encompassing the gun, of a rotary pump, a pipe-connection between the same and the cooling-jacket, and a connection between the pump-piston and the gun, adapted to convert the rectilinear motion of said gun into rotary motion, for the purposes set forth.

23. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have rectilinear motion in their bearings and a revoluble cartridge-feeding cylinder arranged below the receiver, of a revoluble power-storing device, a connection between the same and the gun, adapted to convert the rectilinear motion of the latter into rotary motion, revoluble transmitting mechanism, and transmitting-gearing connecting the power-storing device with the cartridge-feeding cylinder, for the puposes set forth.

24. In a breech-loading machine-gun, the combination, with the gun, its receiver and breech-bolt adapted to have a rectilinear motion in their bearings, and a revoluble cartridge-feeding cylinder arranged below the receiver, of a revoluble power-storing device, a connection between said device, the receiver, and breech-bolt, adapted to convert the rectilinear motion thereof into rotary motion, and revoluble transmitting-gearing operated by the power-storing device and operating to revolve the cartridge-feeding cylinder, for the purposes set forth.

25. In a breech-loading machine-gun, the combination, with the gun, its receiver and breech-bolt adapted to have a rectilinear motion in their bearings, and a revoluble cartridge-feeding cylinder arranged below the receiver, of a revoluble power-storing device, a variable-speed connection between said device, the receiver, and breech-bolt, adapted to convert the rectilinear motion thereof into rotary motion and vary their relative speed, and revoluble transmitting-gearing operated by the power-storing device and operating to revolve the cartridge-feeding cylinder, for the purposes set forth.

26. In a breech-loading machine-gun, the combination, with the gun, its receiver and breech-bolt adapted to have a rectilinear motion in their bearings, a revoluble cartridge-feeding cylinder arranged below the receiver, a revoluble power-storing device, a crank adapted to revolve with and about the axis of the power-storing device, a variable-speed connection consisting of a two-armed lever on said crank having its shorter and longer arms connected with the receiver and breech-bolt, respectively, and a grooved disk mounted on the shaft of the power-storing device, of transmitting mechanism consisting of a transmitting-shaft and gearing connecting said shaft with the grooved disk and cartridge-feeding cylinder, respectively, for the purpose set forth.

27. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to be moved in a rectilinear direction in their bearings by the explosive force of the charge and a revoluble cartridge-feeding cylinder arranged below the receiver, of a converting mechanism for converting the rectilinear motion of the gun into rotary motion and transmitting mechanism adapted to transmit said rotary motion to the cartridge-feeding cylinder, as set forth.

28. In a breech-loading machine-gun, the combination, with the gun, the receiver, and the breech-bolt adapted to have a rectilinear motion in their bearings, said receiver being provided with a lateral opening and a fixed abutment diametrically opposite said opening and projecting into the path of the cartridge-rim, and said breech-bolt having a spring-hook on the side of the opening in the receiver to engage the rim of the cartridge and lock it to said bolt, of a revoluble power-storing device, a connection between the same and the receiver adapted to convert the rectilinear motion thereof into rotary motion, and a connection between the power-storing device and breech-bolt, for the purposes set forth.

29. In a breech-loading machine-gun, the combination, with the gun, the receiver, and the breech-bolt adapted to have a rectilinear motion in their bearings, said receiver being provided with a lateral opening and a fixed abutment diametrically opposite said opening and projecting into the path of the cartridge-rim, and said breech-bolt having a spring-hook on the side of the opening on the receiver to engage the rim of the cartridge and lock it to said bolt, of a revoluble power-storing device and variable-speed connections respectively connecting the receiver and breech-bolt with the power-storing device and adapted to vary the relative speed of the receiver and bolt and convert their rectilinear motion into rotary motion, for the purposes set forth.

30. In a breech-loading machine-gun, the combination, with the gun and its receiver adapted to have a rectilinear motion in their bearings, said receiver being provided with an opening in its under side, a revoluble drum arranged in said opening, and a pinion connected with the drum, of a revoluble power-storing device, a connection between the same and the gun, adapted to convert the rectilinear motion thereof into rotary motion, transmitting-gearing comprising a disk adapted to be revolved by the power-storing device and provided with a peripheral groove, and a transmitting-shaft carrying a pinion at each end, said pinions being in engagement with the groove in the said disk and with the said drum-pinion, respectively, for the purposes set forth.

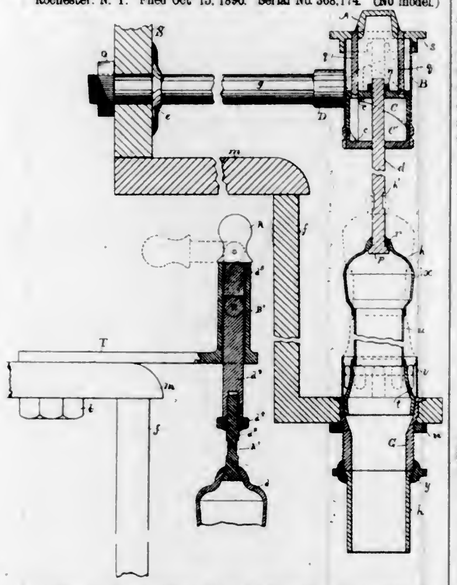
31. In a breech-loading machine-gun, the combination, with the receiver, the cartridge-feeding drum F and its pinion h', and the cartridge-belt I, provided with the cartridge-holders i, of segmental form in cross-section, of the shaft g, the gear-wheel h, in gear with the pinion h', and a guide and feed wheel g^3, arranged in proximity to the drum F and relatively to the belt so that two of the wheel-spokes will lie in front of a cartridge-holder, substantially as and for the purpose set forth.

32. In a breech-loading machine-gun, the combination, with the receiver, the cartridge-feeding drum F and its pinion h', and the cartridge-belt I, provided with cartridge-holders i, of segmental form in cross-section, of the shaft g, the gear-wheel h, in gear with the pinion h', and a guard-wheel on said shaft g, arranged relatively to the belt so that one of its spokes or teeth will always be in engagement with the lower side of one of the cartridge-holders i, substantially as and for the purpose set forth.

33. In a breech-loading machine-gun, the combination, with the gun, the breech-bolt and its firing-pin adapted to have a reciprocating motion in their bearings, a continuously-revolving power-storing device controlled by the recoil of the gun, means for automatically locking the firing-pin into position for firing, and means for automatically releasing the said pin, said means being controlled by the reciprocating movements of the gun, of a speed-regulating device adapted to regulate the rectilinear movements of the gun, and thereby the rapidity of the firing, substantially as set forth.

34. In a breech-loading machine-gun, the combination, with the gun, the breech-bolt and its firing-pin adapted to have a reciprocating motion in their bearings, a revoluble power storing device controlled by the recoil of the gun, an automatic cartridge-feeding mechanism, means for automatically locking the firing-pin into position for firing, and means for automatically releasing the said pin, said mechanism and means being controlled by the reciprocating movements of the gun, of a speed-regulating device adapted to regulate the speed of the movements of the gun, and thereby the rapidity of the firing and feeding of the cartridges, substantially as set forth.

448,842. OVERFLOW AND WASTE PIPE. HENRY F. STOWELL, Rochester, N. Y. Filed Oct. 15, 1890. Serial No. 368,174. (No model.)



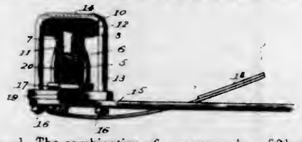
Claim.—1. In combination with a wash-basin or like receptacle, a waste-pipe provided with a strainer secured to its upper end, an overflow-pipe having its bottom fitted to the interior of the waste-pipe below the strainer, said strainer being located above the bottom of the basin and outside the foot of the overflow-pipe, and devices for raising the said overflow, substantially as set forth.

2. In combination with a wash-basin or like receptacle, a waste-pipe provided with a strainer secured to its upper end, an overflow-pipe having its bottom fitted to the interior of the waste-pipe below the strainer, said strainer being located above the bottom of the basin and outside the foot of the overflow-pipe, and devices for raising the said overflow-pipe, said devices being provided with a stop to prevent raising the foot of the overflow above the strainer, substantially as set forth.

3. The combination, with a wash-basin or like receptacle, of a waste-pipe, an overflow-pipe having its lower part fitted to a seat in the waste-pipe, a bail attached to the overflow-pipe and provided at its highest part with a slotted socket forming a part of the bail, a bar having an enlarged and rounded head with a diameter greater than the width of the slot in the socket and having above said head a notched part with a diameter less than that of said slot, said overflow-pipe being movable vertically on the bar and independently thereof, and devices for raising and lowering the bar, substantially as set forth.

4. In combination with a wash-basin or like receptacle, an overflow-pipe, an elevating rod made in jointed sections and loosely connected to said pipe, a cylindrical tube adapted to receive said rod, and a support for the said tube, the upper rod-section above the tube being enlarged, whereby it forms a stop, substantially as set forth.

448,843. FIFTH-WHEEL FOR WAGONS. ABNER E. BISHOP, Medina, Ohio. Filed Dec. 16, 1890. Serial No. 374,939. (No model.)

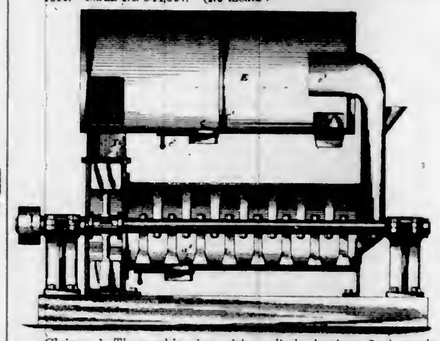


Claim.—1. The combination of a wagon-axle, a fifth-wheel having a grooved upper plate mounted thereon, a reach passing beneath the axle and connected with the said grooved plate by a hanging bolt or stirrup and a downward-curved piece from the axle bearing upon the reach, substantially as described.

2. The combination of a wagon-axle, a fifth-wheel thereon, a reach passing under the axle, stirrup-connection between the reach and fifth-wheel, and a spring between the reach and axle, substantially as described.

3. The combination of a fifth-wheel having a plate vertically bored as a bearing and mounted upon an axle, a king-bolt fitted to the said bore and terminating above the axle and provided with a cross-grooved plate to fit upon the plate first named, a reach having lateral arms at its forward end passing beneath the axle, a stirrup connecting the said reach and arms with the king-bolt, and springs hung at their forward ends upon the said arms, substantially as described, whereby the springs may be hung beneath the axle in connection with the fifth-wheel above the axle without the king-bolt penetrating the axle.

448,844. DISINTEGRATING AND SEPARATING APPARATUS. JOHN P. BURNHAM and OLIVER G. BURNHAM, Chicago, Ill. Filed Mar. 18, 1890. Serial No. 344,367. (No model.)



Claim.—1. The combination, with a cylinder having a feed-opening at one end, a peripheral discharge-opening near that end of the cylinder having the feed-opening, and a central discharge-opening at its opposite end, of a rotating shaft carrying beaters within the cylinder and means for producing an outward air-current through the central discharge-opening.

2. The combination, with a cylinder provided with an inlet-opening through one of its heads, a central discharge-opening, and a peripheral discharge-opening, of a gate applied to said peripheral opening, a fan connected with the central discharge-opening, and a rotating shaft provided with beaters within the cylinder.

3. The combination of a cylinder A, provided with a feed-opening through one of its heads, with a central discharge-opening at the opposite end, a rotating shaft provided with beaters arranged within the cylinder, a horizontally-arranged pneumatic collector provided with one or more peripheral openings, a tube connecting the inlet-opening of the collector with the central discharge-opening of the cylinder, and a fan arranged in said tube, substantially as described.

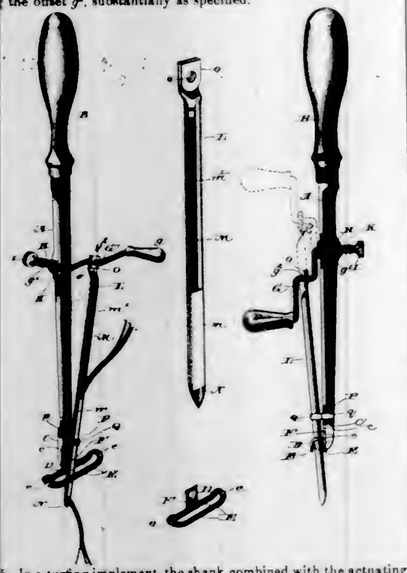
448,845. TURFING IMPLEMENT. CHARLES E. COE, St. Louis, Mo., assignor of one-half to T. J. Cheney, same place. Filed Dec. 13, 1888. Serial No. 293,480. (No model.)

Claim.—1. In a turfing implement, the elliptical-shaped foot D, consisting of the parallel separated bars E, curving upwardly at their ends, where they are joined by the curved end bars e, the whole forming an unobstructed guideway for the needle, said presser-foot being constructed of flat metal set edgewise and having an ear F extending from one of the bars E, by means of which the presser-foot is removably secured in place.

2. In a turfing implement, the combination, with a shank provided with a suitable presser-foot, of the crank provided with a spindle mounted in a bearing in the shank, the thumb-nut engaging the threaded projecting end of the said spindle, the spring coiled on the said spindle between the thumb-nut and the shank, and the needle connected at its rear end to the crank, substantially as specified.

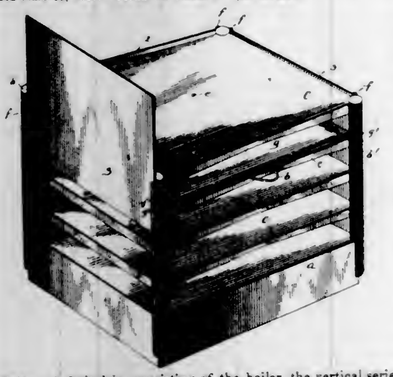
3. The combination, with the shank A, provided with a presser-foot on its outer end and a handle on its inner end, of the crank G, provided with an offset g^3 and a spindle g', mounted in a bearing in the shank, the tension-spring connected to the projecting end of the said spindle and bearing against the rear side of the shank, and the needle provided at its inner end with an aperture engaging the offset g^3, substantially as specified.

4. The combination, with the shank A, provided with a presser-foot on its outer end and a handle on its inner end, of the crank G, formed of a single piece of wire provided with an offset g^3 and a spindle g', which is passed through and mounted in a bearing in the shank, and the needle provided at its inner end with an aperture engaging the offset g^3, substantially as specified.



5. In a turfing implement, the shank combined with the actuating mechanism, the hollow turfing-needle connected with the actuating mechanism and made substantially semicircular in cross-section, with the flat inner side and the round outer side, and having the lower or outer portion of the bore of the needle covered, as at *m*, and terminating in the eye or aperture N, the upper or inner portion being open, as at *m'*, substantially as set forth.

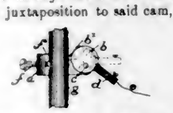
448,846. **FRUIT-DRIER.** ARTHUR CONKLIN, Grant's Pass, Oreg. Filed June 13, 1890. Serial No. 355,277. (No model.)



Claim.—A fruit-drier consisting of the boiler, the vertical series of steam-chambers forming the intervening heating-spaces, the hollow vertical posts supporting and located at the exterior corners of said chambers and opening into the boiler and said chambers, and the vertically-adjustable side plates at their edges confined in vertical ways on said posts, said sides inclosing said heating-spaces and forming spaces open at the top at the ends of the steam-chambers and heating-spaces.

448,847. **CLAMP FOR ELECTRIC-BATTERY ZINCS.** JAMES H. LEAKIN, Baltimore, Md. Filed Dec. 24, 1890. Serial No. 375,658. (No model.)

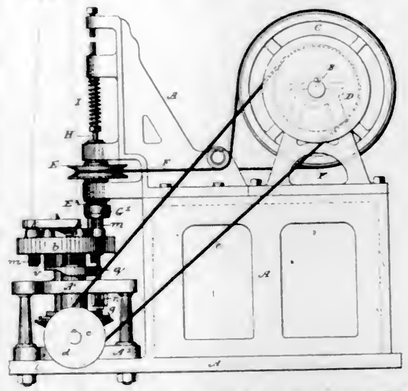
Claim.—1. In a clamp, the combination of a collar, a cam pivotally connected thereto, and an adjustment-screw extending through said collar and located in juxtaposition to said cam, substantially as described.



2. A clamp and wire-connector for electric-battery zincs, the same comprising a collar to contain the zinc, a cam pivoted to the collar in such position as to take against the zinc and clamp it in the collar, and means of connection between the cam and the connecting-wire.

3. A clamp and wire-connector for electric-battery zincs, the same comprising a collar to contain the zinc, a cam pivoted to the collar in such position as to take against the zinc, an adjustment-screw extending through said collar and adapted to take against the opposite side of the zinc, and means of connection between the cam and the connecting-wire.

448,848. **MACHINE FOR TRIMMING BUTTONS.** JOSEPH NAYLOR, Bloomfield, N. J. Filed June 10, 1890. Serial No. 354,977. (No model.)



Claim.—1. The combination, with the rotating trimmer, of the intermittently-rotating table *b*, the series of lifters *m*, mounted in and carried by said table and adapted to slide in bearings therein and to be brought in succession under said trimmer by the intermittent rotation of the table, and means, substantially as described, for elevating the lifter while under the trimmer.

2. The combination, with the rotating trimmer, of the intermittently-rotating table *b*, the series of lifters *m*, mounted in said table and adapted to be brought in succession under said trimmer by the intermittent rotation of the table, and the means for elevating said lifters, comprising the rocking lever *n*, the pins *o* and $o^{\times}$, which rest on the respective ends of said lever, and the rotating cam *p*, adapted to depress the pin $o^{\times}$, substantially as set forth.

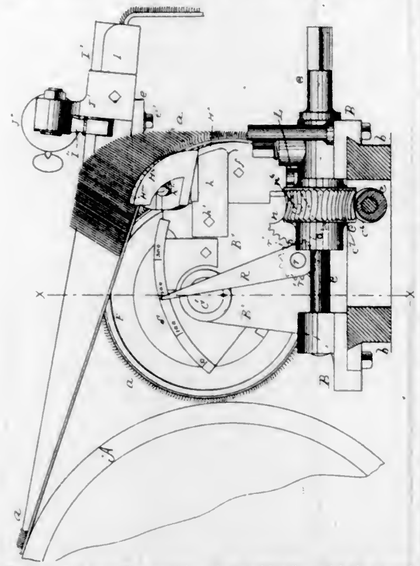
3. The combination, with the intermittently-rotating table *b*, provided with a series of pins *v*, the series of lifters *m*, mounted in said table, and the cam *r* for raising said lifters, of the discharging device comprising the sweep *s*, its shaft *t*, the retracting-spring *u*, and the cam-arm *w*, arranged in the path of the pins on the table, substantially as set forth.

4. The combination, with the apertured table *b*, of the series of tubular sockets *k*, set removably therein, and the series of lifters *m*, mounted in said sockets and carried by said table, whereby the machine is adapted to operate on articles of different sizes, as set forth.

5 In a trimming-machine for buttons and the like, the combination, with the tubular shaft $E^{\times}$ and the rod H within the same, of a holder on the end of said shaft and the ring-like trimmer G, of emery composition, coned both interiorly and exteriorly and secured to the end of said shaft by said holder, the rod H being adapted to play through said trimmer.

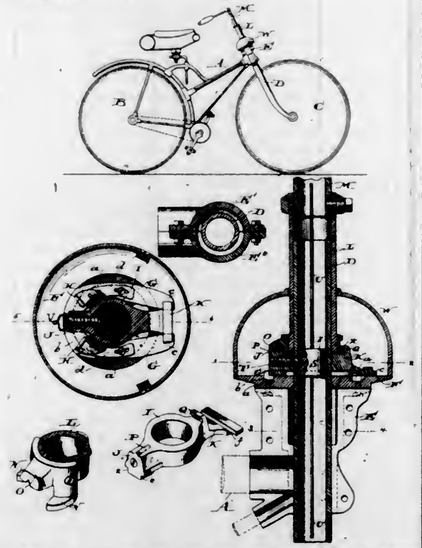
448,849. **CARD-MOUNTING MACHINE.** WALTER C. POWERS, Fall River, Mass. Filed July 14, 1890. Serial No. 358,707. (No model.)

Claim.—1. In a card-mounting machine, the combination, with the saddle and trough, arranged substantially as specified, of the drum E and friction-disks F, said drum being mounted on the shaft C and provided with mechanism, as D, whereby the said friction-disks may be pressed against the ends of said drum, substantially as set forth.



2. In a card-mounting machine, the combination, with the trough and drum, of the saddle provided with the tension-weighing mechanism described, and consisting, essentially, of the springs P P' P'', post L, provided with the block N and extending through the bottom of the saddle, foot L', provided with a curved surface, index R and scale S, and mechanism intermediate said foot and said scale and index, whereby the amount of lift of said foot as produced by the tension of the fillet as it passes over the saddle is indicated, substantially as described.

448,850. **STEERING DEVICE FOR VELOCIPEDES.** RUDOLPH W. RIESS, Philadelphia, Pa. Filed Dec. 17, 1890. Serial No. 374,976. (No model.)



Claim.—1. In a steering apparatus, the combination of a movable rod, a steering part carried thereby, a lock to prevent the movement of said rod, and a key connected with the steering-handle to unlock said lock when turned and rotate the rod.

2. In a steering apparatus, the combination of a movable rod, a steering part carried thereby and movable therewith, a movable locking-piece normally acting as an obstruction to the movement of said rod, and a key connected with the steering-handle to move said locking-piece and rod.

3. In a steering apparatus, the combination of a movable rod having a projecting portion, a steering part carried by said rod and movable therewith, a locking-piece arranged in the path of said projecting portion of the rod to normally lock the rod against movement, and a key connected with the steering-handle to move said lock against the projecting portion and turn the rod.

4. The combination, in a steering apparatus, of a movable rod provided with a projecting portion, a steering part connecting with said rod and moved by it, a grooved plate adjacent to said rod, a locking-piece in said groove in the path of said projecting portion, said projecting portion acting against said locking-piece out of line with the groove and tending to jam the locking-piece therein, and a key acting upon the locking-piece in line with said groove to move it therein against the projecting portion of the rod to turn said rod.

5. In a steering apparatus, the combination of a steering-head provided with a disk having an annular groove, a rotatable rod extending through said steering-head and projecting beyond said disk, a movable locking-piece having a lug guided in said groove, a projecting part carried by said rod and arranged adjacent to said locking-piece out of line with said annular groove, and a key acting upon said movable locking-piece in line with said groove to turn it and rotate the rod.

6. In a steering apparatus, the combination of a rotatable rod, a steering part carried thereby and movable therewith, the disk F, through which said rod projects, provided with an annular groove *a*, the movable locking-pieces G G, provided with lugs *b b*, guided in said groove *a*, and with the projections H H, a projecting part carried by said rod and acting upon said movable pieces G G out of line with the groove *a*, and a key L, connected with the steering-handle and having lugs N N acting upon the projections H H in line with the groove *a* to turn the pieces G G and the movable rod.

7. In a steering apparatus, the combination of a rotatable rod, a steering part carried thereby and movable therewith, the disk F, through which said rotatable rod projects, provided with an annular groove *a*, the curved locking-pieces G G, arranged one on each side of the rotatable rod, the collar I, carried by the rotatable rod and having the projections J and K, arranged, respectively, between the forward and rear ends of said pieces G G and acting against them out of line with said groove *a*, and a key L, connected with the steering-handle and acting upon said pieces G G in line with the groove *a* to move said pieces and cause the rod to rotate.

8. In a bicycle, the combination of the wheel-fork, a steering-head through which said wheel-fork extends, a lock carried by said steering-head and normally locking said wheel-fork against rotation in every position in which it is turned, and a key connected with the handle-bar to unlock said lock and rotate the wheel-fork.

9. In a bicycle, the combination of a steering-head, a wheel-fork movable therein, a handle-bar unconnected with said wheel-fork, a lock to normally lock said wheel-fork to the steering-head in all positions, and a key carried by said handle-bar to unlock said wheel-fork and rotate it.

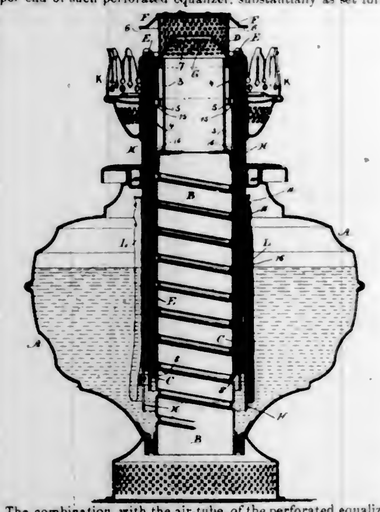
10. In a bicycle, the combination of a steering-head, a wheel-fork having a tubular extension extending through said steering-head, a collar I, having a projection, a locking-piece arranged in the path of said projection to lock the wheel-fork against rotation, a block S within the wheel-fork, and a screw or pin T, connecting said collar I and block S through the tubular extension of the wheel-fork, substantially as and for the purpose specified.

11. In a bicycle, the combination of a steering-head, a wheel-fork having a tubular extension extending through said steering-head, a collar I, having a projection, a locking-piece arranged in the path of said projection to lock the wheel-fork against rotation, a block S within the wheel-fork, and a screw or pin T, connecting said collar I and block S through the tubular extension of the wheel-fork and the adjusting-wire U, substantially as and for the purpose specified.

448,851. **ARGAND LAMP.** LEWIS J. ATWOOD and FREDERICK W. TOBEY, Waterbury, Conn., assignors to the Plume & Atwood Manufacturing Company, same place. Filed July 6, 1889. Serial No. 316,661. (No model.)

Claim.—1. The combination, with the air-tube B, contracted at its upper end, of the cylinder 4, fastened at its lower end to the air-tube and forming a continuation of the same and having inwardly-projecting tongues 5, the perforations 15 in said cylinder, the perforated equalizer fitting inside the cylinder 4 and resting upon the tongues, and a de-

flector or flame-spreader having a conical rim that descends around the upper end of such perforated equalizer, substantially as set forth.



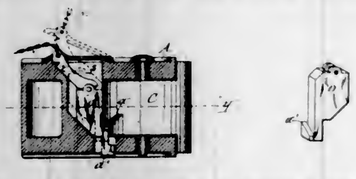
2. The combination, with the air-tube, of the perforated equalizer forming a continuation of the air-tube, and the deflector F, attached to the equalizer and having a conical rim that descends around the upper portion of the perforated equalizer to spread the flame and insure the proper supply of air within the same, substantially as set forth.

3. The combination, with the cylindrical perforated equalizer having a deflector at the upper end with a conical downwardly-projecting rim, of the conical perforated distributer G within the equalizer and having an open upper end, substantially as and for the purposes set forth.

4. The combination, with the air-tube and the wick-tube outside the wick, of a wick-raising thimble moving spirally on the air-tube and within the wick and upon which the lower end of the wick is received, and two or more equidistant sheet-metal strips connected at their lower ends to the wick-raiser and extending up around the wick and held thereto by the wick-tube and having claws that penetrate the wick, whereby the movement given to the wick-raiser is transmitted equally to all parts of the wick, substantially as specified.

5. The combination, with the wick-raiser having a projection and the central air-tube having a screw to act upon the wick-raiser, of the wick-tube surrounding the wick and adapted to be rotated and having a slot for the projection on the wick-raiser and slots through the same near the upper end, and a capillary wick permanently fastened around the outside of the wick-tube at its upper end, so that the fibers of the wick are forced into the slots in the wick-tube and come into contact with the wick, substantially as set forth.

448,852. CAR-COUPLING. CHARLES O. BARNES and LUCIEN BARNES, Jr., Syracuse, N. Y. Filed Jan. 7, 1891. Serial No. 376,939. (No model.)

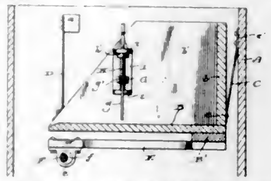


Claim.—1. In a twin-jaw car-coupler, the combination, with the draw-head and coupling-knuckle connected thereto, of a key sliding vertically in the draw-head and adapted to lock the knuckle in its coupled position and a cam on said key arranged to throw the knuckle into its open position by the movement of said key beyond its release of the knuckle, as set forth.

2. In a twin-jaw car-coupler, the combination, with the draw-head and coupling-knuckle, of a knuckle-locking key and knuckle-opening cam formed in one piece and in positions to successively release the knuckle from its locked position and throw the same into its open position, as set forth.

3. In combination with the draw-head, the knuckle C, formed with the inclined shoulder *a*, and the key *o*, formed with the cam *a'*, substantially as and for the purpose set forth.

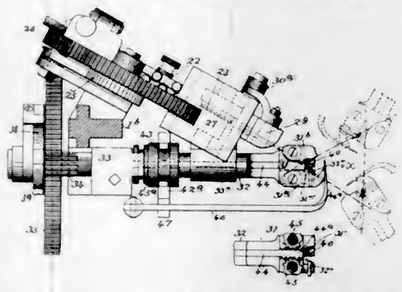
448,853. FEED-REGULATOR FOR ROLLER-MILLS, &c. CHARLES A. COREY, Watertown, Wis. Filed Aug. 23, 1890. Serial No. 362,806. (No model.)



Claim.—1. The combination, with a shaker having an open front and an actuating eccentric shaft for said shaker, of brackets carried by the shaker, a spreader-bar provided with spreader fingers or teeth, and adjusting-screws working in said brackets and threaded through said bar, substantially as set forth.

2. An improved feed-regulator for roller-mills, &c., comprising a reciprocatory shaker and a spreader consisting of a fingered bar adjustably connected at its ends to the ends of the shaker, substantially as set forth.

448,854. BOTTLE-WIRING MACHINE. CHARLES L. CURTIS, Brooklyn, N. Y., assignor to the N. B. Abbott Machine Company, of New York. Filed Dec. 31, 1890. Serial No. 376,373. (No model.)



Claim.—1. In a machine for wiring bottles and the like, the combination, with a holder for the bottle, of feeding mechanism for placing the strands of wire to form the sides of an angular plane figure about the axis of the bottle-holder, twisters radially arranged about said axis, one at each angle of said figure, said twisters being adapted to twist the adjacent strands at each angle together in couples, thus forming the band and branches of the retainer, and the cutters for severing the wires, situated between the respective twisters and the wire-feeding mechanisms and operating after the twisting thereof.

2. In a machine for wiring bottles and the like, the combination, with the centering-holder for the bottle-neck and three or more wire-feeders arranged about said holder and adapted to feed the wires from one twister to that next adjacent, whereby the bottle-neck is embraced by substantially straight wires forming the sides of a plane figure, of the twisters, one adjacent to each feeder, said twisters being adapted to twist together the adjacent wires at each angle in pairs to form the band and branches of the wire retainer, and cutters for severing the wires, situated between the respective twisters and the wire-feeding mechanisms and operating after the twisting thereof.

3. In a machine for wiring bottles and the like, the combination, with a centering-holder for the neck of the bottle and the twisters radially arranged about said holder, of the wire-feeders, one arranged at each twister and adapted to feed the wire from said twister into the twister next adjacent, whereby the several wires are crossed within the twisters in pairs as set forth, and the cutters for the wires arranged adjacent to and operating in connection with the feeders.

4. In a bottle-wiring machine, means for bending the branches of the retainer into position about the stoppered end of the bottle, a gripper-head having radial slots to receive said branches, and a central abutment at the point of convergence of said slots, grippers adapted to play in said slots in the head and to clamp the respective branches firmly against the central abutment, and means for actuating said grippers, all combined and arranged to operate substantially as set forth.

5. In a machine for wiring bottles and the like, the combination, to form the bottle-holder, of the shaft 7, the knuckled jaws 8, mounted pivotally on the same, the spring which draws said jaws together, the sliding collar 13 on the shaft 7, a spring for sliding said collar upward on the shaft, the links connecting said collar with the jaws 8, the rock-shaft 17, provided with a stud engaging an oblique groove in the collar 13, the said stud, the finger 18 on the shaft 17, the fingers 18^a, mounted on the frame of the holder, the cross-bar 20 on the shaft 17, and the links coupling the respective ends of said cross-bar to the fingers 18^a, substantially as set forth.

6. In a machine for wiring bottles and the like, the combination, to form a twister, of a rotatively-mounted shaft 32, capable of endwise movement in its bearings, the jaws pivotally mounted on said shaft, and provided each with a mutilated gear 45, the rack-bar 44, mounted in a longitudinal slot in said shaft, means for rotating said shaft, and means for moving said shaft longitudinally independent of said rack-bar, whereby the jaws are closed by said endwise movement of the bar.

7. In a machine for wiring bottles and the like, the combination, with three radially-arranged twisters, of three wire-feeders, one adjacent to each twister, the axis of the feeder being at an angle to that of the twister and said angle being such that the wire fed through the twister intersects the axis of the twister between the jaws of the latter, substantially as set forth.

8. In a machine for wiring bottles and the like, the combination of three radially-arranged twisters placed at uniform distances apart about the axis of the bottle-holder, said bottle-holder, and three wire-feeders, one arranged adjacent to each twister, the axis of the wire-feeder being at an angle of thirty degrees with that of the adjacent twister, substantially as and for the purpose set forth.

9. As a means for imparting intermittent rotation to the bottle-holder, the combination, with the shaft 7, which carries said holder, and the toothed wheel 68 on said shaft, of the rotatively-mounted toothed wheel 72 and its shaft, the train of wheels between the wheels 68 and 72, whereby the latter drives the former, a crank 73, ratcheted on the shaft of the wheel 72, whereby each vibration of said crank imparts a rotary forward impulse to said wheel, a lever 74, pivoted to the frame at one end and coupled to said crank at the other end, and means, substantially as described, for imparting a vibrating movement to said lever at each wiring operation.

10. In a bottle-wiring machine, the combination, with an intermittently-rotating holder for the bottle and means for placing and twisting the wires of the retainer about the neck of the bottle, of the slotted gripper-head arranged over the cork of the bottle and provided with a central abutment 51^a, the gripper-jaws pivotally mounted on said head and adapted to enter the respective slots in the same, and means, substantially as set forth, for operating said jaws.

11. The combination, with the slotted gripper-head 51 and its stem 52, of the slide-bar 53, the compression-spring 55 between said slide-bar and head, whereby the bar may continue to descend after the head shall have met a resistance, the gripper-jaws 56, carried by said head, and means whereby the said jaws are closed by the independent downward movement of said slide-bar, as set forth.

12. The combination, with the slotted gripper-head and its stem, the slide-bar 53, provided with a ratchet, and the compression-spring between said slide-bar and head, of the operating-lever 60, the springs 61, connecting said lever and the slide-bar, the pawl 62, carried by the lever and engaging the ratchet on the slide-bar, and means, substantially as described, for disengaging the said pawl when the lever rises, substantially as and for the purposes set forth.

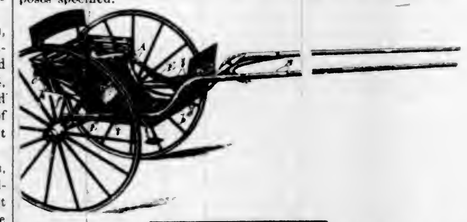
13. The combination, with the gripper-head and its stem, the latter provided with a ratchet, the slide-bar, and the compression-spring between said head and slide-bar, of the lifting-lever 66, the pawl 67, carried by said lever, and the lever 60, which actuates the slide-bar, the lever 66 being in the path of the lever 60, whereby when the latter descends it will strike the lever 66 and cause the pawl 67 to engage the stem of the gripper-head and lift the latter, substantially as and for the purpose set forth.

14. The combination, with the gripper-head, of the trimmer for the top twist mounted thereon, said trimmer comprising the vibrating arm 82, the fixed jaw 82^a on said arm, the movable jaw 82^b, pivoted on said arm, and the link 83, coupled to the tail of the movable jaw and pivotally attached to the head, substantially as set forth.

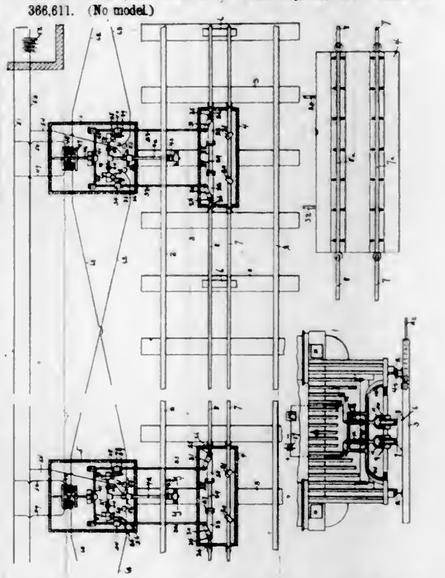
448,855. ROAD-CART. JOSIAH D. DORT, Flint, Mich. Filed Dec. 6, 1890. Serial No. 373,762. (No model.)

Claim.—1. In a road-cart, the following conjoined elements: the axle, the thills mounted thereon, the springs mounted on said thills, their free ends extending over the axle, the crank-rod journaled in the ends of said springs, the crank-rod journaled in supports mounted on the thills, and the body mounted pivotally on said crank-rods, substantially as set forth.

2. In a vehicle, the combination of the axle and thills, the latter having straight rear end portions and central upwardly-curved parts, the springs mounted on the rear end portions of the thills and extending rearwardly over the axle, the crank-rod journaled in the free ends of said springs, the rear end of the body being journaled on said crank-rods, the plates mounted on the upwardly-curved portions of the thills, and the crank-rod journaled therein, the forward portion of the body being journaled on said crank-rod, as and for the purposes specified.



448,856. ELECTRIC SIGNALING APPARATUS FOR RAILWAYS. EDWIN D. GRAFF, New York, N. Y. Filed Sept. 29, 1890. Serial No. 366,611. (No model.)



Claim.—1. A railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending continuously throughout the length of the block along the line of the railway, a switch forming a part or continuation of one of said conductors, and means arranged in proximity to one of the rails adapted to be acted upon by one of said locomotives to move said switch to connect with the other of said conductors, so that the locomotive following in the same direction may have its circuit completed through said conductors and switch when said switch is in its abnormal or shifted position, while the bell of the locomotive which effected the movement of said switch, and which has passed to the succeeding section or block, is prevented from being rung by reason of the open condition of one of said conductors in its rear, due to the shifting of said switch, substantially as set forth.

2. A railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending continuously throughout the length of the block along the line of the railway, a switch forming a part or continuation of one of said conductors, means arranged within proximity to one of the rails adapted to be acted upon by one of said locomotives to move said switch to connect it with the other of said conductors and break the continuity of the conductor of which it forms a part, and means adapted also to be acted upon by said locomotive to subsequently disconnect said conductors and restore the switch to its initial position, substantially as set forth.

6. A railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending continuously throughout the length of the block along the line of the railway, a series of switches arranged at suitable intervals to divide the road into blocks or sections, said switches forming portions or continuations of one of said conductors, means arranged in proximity to one of the rails and at each of said switches adapted to be successively acted upon by a passing locomotive to connect said conductors through said switches, and means adapted also to be acted upon by said locomotive to subsequently and successively disconnect said conductors, substantially as set forth.

7. In a railway signal block system in which the locomotives are provided with open bell-circuits, the combination of suitable conductors extending continuously throughout the block along the line of the railway and on the road-bed thereof, said bell-circuits being in electrical connection with said conductors during the time said locomotives are moving as well as when at a standstill, a switch forming a part or a continuation of one of said conductors, a tripping-arm arranged alongside of one of the rails to be actuated by the passing train, and connections between the tripping-arm and the switch for transmitting the movement of the former to the latter, substantially as set forth.

8. In a railway signal block system in which the locomotives are provided with bell-circuits, the combination of a suitable conductor extending continuously throughout the length of the block along the line of the railway, a switch forming a part or continuation of said conductor and adapted to contact with another parallel conductor, a protecting box or casing for said switch, a tripping-arm arranged alongside of one of said rails to be acted upon by the locomotive, and means, substantially as described, connected with said tripping-arm and extending into said box or casing to actuate said switch as the tripping-arm is actuated by the locomotive, substantially as set forth.

9. A railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending lengthwise of the railway, a switch for connecting said conductors, a tripping-arm adapated to be actuated by the train, a rock-shaft connected to said tripping-arm, a sliding rod connected to said switch, and means, substantially as described, for converting the oscillations of said shaft into reciprocatory movements of said rod, substantially as set forth.

10. A railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending lengthwise of the railway, a series of switches arranged at suitable intervals along the road and to divide the same into blocks or sections, a series of tripping-arms adapted to be moved by the passing trains, a series of sliding rods connected one to each switch and to each tripping-arm, so that each switch may be moved to connect said conductors as its tripping-arm is actuated, a catch for holding said rod when the switch has been moved to connect the conductors, a spring for returning said rod, an electric circuit extending lengthwise of the road and provided at each switch locality with an electro-magnet and armature connected to the switch-operating rod in a manner to release the catch and permit the spring to restore the switch and the tripping-arm to their normal positions when the train has arrived at the next block and has actuated the succeeding tripping-arm there, substantially as set forth.

8. In a railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending lengthwise of the railway, a series of switches arranged at suitable intervals along the road to divide the same into blocks or sections, a series of tripping-arms adapted to be moved by passing trains, a sliding rod for each switch, a rock-shaft for each tripping-arm, connections between the rod and the shaft, an electric circuit extending lengthwise of the road and provided at each switch locality with an electro-magnet and armature, and a contact movable with some part of the switch-actuating mechanism of each switch for closing the circuit through the magnet at the immediately preceding switch for the purpose of enabling its mechanism to be restored to its normal condition when the train which actuated it originally has passed onto the next or succeeding block or section, substantially as set forth.

9. A railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending lengthwise of the railway, the switches 22 and 23, the independent sliding rods 32 and 33, a rock-shaft having a tripping-arm adapted to be actuated by the passing trains, and connections between the rock-shaft and the rods 32 and 33, whereby either of the latter may be moved forward to operate its switch according to the direction of movement of the tripping-arm, substantially as set forth.

10. In a railway signal system, substantially as described, the combination, with an electric switch, as 22, and means, substantially as described, actuated by the passing trains for moving it from one conductor to another, of a tripping arm located at a suitable distance from said switch and adapted to be actuated by the passing trains, an electric circuit extending from the switch-actuating mechanism to the distant tripping-arm, and a movable contact adapted to close said circuit when the distant tripping-arm has been actuated for the purpose of energizing the electro-magnet at the switch-operating mechanism, and causing it to start the return of the switch to its normal position, substantially as described.

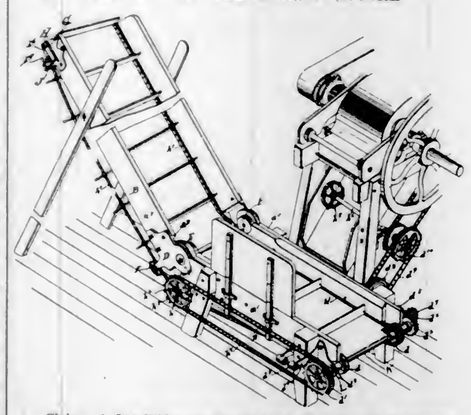
11. In a railway signal block system in which the locomotives are provided with bell-circuits, the combination of a suitable conductor extending along the line of the railway and between the rails thereof, a series of switches forming parts or continuations of said conductor and adapted to contact with another parallel conductor, a series of protecting boxes or casings for said switches, a series of track-instruments and boxes therefor arranged exteriorly of the tracks and opposite the series of switch-boxes, electric circuits connecting said series of track-instruments, a series of tripping-arms arranged alongside of one of the rails and between the switches and the track-instruments, and means, substantially as described, connected with said tripping-arm and extending between the track-instruments and the switches, substantially as set forth.

12. In a railway signal block system in which the locomotives are provided with bell-circuits, the combination of suitable conductors extending throughout the length of the block along the line of the railway, a series of switches arranged to be moved by one of said locomotives to connect said conductors, and a series of resistance boxes or coils connected to said conductors, substantially as set forth.

13. In a railway signal block system and in combination, locomotives provided with open bell-circuits, including each a battery, suitable conductors extending continuously throughout the length of the block along the line of the railway, and a switch forming a part or continuation of one of said conductors, constructed and arranged to be moved by a passing train through intermediate devices to connect both said conductors and complete the bell-circuit of the following train and leave a broken or open conductor in its rear as it passes onto the next block or section, substantially as set forth.

14. In a railway signal block system and in combination, locomotives provided with open bell-circuits, including each a battery, suitable conductors extending continuously throughout the length of the block along the line of the railway, and a switch forming a part or continuation of one of said conductors at the end of each block or section, constructed and arranged to be moved by a passing train through intermediate devices to connect said conductors when said train passes to or upon a new block or section, and adapted, by means substantially as described, to be restored to its initial position when said train passes from or off of said new block or section, whereby one train may make and break the circuit of a train immediately following, and may also leave a broken or disconnected conductor in its rear to prevent ringing of its own bell when the block in advance is clear or unoccupied, substantially as set forth.

448,857. FODDER-CARRIER. WILLIAMSON R. HARRISON, Canton, Ohio. Filed June 13, 1890. Serial No. 355,379. (No model.)

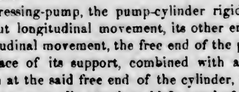


Claim.—1. In a fodder-carrier, the hinge-plates C and D, the former having the flange a^2, recess a^3, central boss a^4, and shoulder a^5, and the latter having the flange a^9, perforation a^{10}, and arm b^2, the sprocket-wheel F, and roller E, substantially as described, and for the purpose set forth.

2. In combination with the hinge portion of a two-part fodder-carrier, the cross-shaft h, having mounted thereon sprocket-wheels h^2 and h^3, roller E, chain K, arm b^2, and sprocket-wheel F, by which the slack of the chain K may be taken up and let out as the outer end of the carrier is raised or lowered, substantially as described.

3. The combination, with the carrier, of the sprocket-wheel d^6, mounted on the shaft d^5, placed at the side of the carrier, gear-wheel d^7, mounted on said shaft d^5, shaft K, transverse to the length of the said carrier, which shaft has mounted thereon a gear-wheel d^8 to engage the wheel d^7, rollers d, and a sprocket-wheel d', a cross-shaft h, having sprockets h^3 mounted thereon interjacent its ends to engage the chain K, a sprocket-wheel h^2, mounted on the end of said shaft, a chain h^4 to engage the wheels d' and h^3, whereby power may be transmitted about the carrier-frame to a point between the ends of the carrier to engage the carrier-chain K to drive the carrier, substantially as described, and for the purposes set forth.

448,858. COPYING-PRESS. WILLIAM HASTIE, Glasgow, Scotland. Filed Sept. 1, 1890. Serial No. 363,658. (No model.) Patented in England May 23, 1888, No. 7,569.



Claim.—The combination of the board or plate 10, provided at its opposite ends with slotted guide-lugs 16, the board or plate 11, fitted between said guide-lugs to be guided thereby, the eccentrically-slotted levers 18 19, pivoted to said lugs 16, and the pins 15 on said plate 11, passing through the slots of the guide-lugs and engaging with the eccentric-slots of the levers, substantially as herein described.

448,859. AIR-COMPRESSOR. EBENEZER HILL, South Norwalk, Conn. Filed Dec. 17, 1888. Serial No. 293,822. (No model.)



Claim.—1. In an air-compressor, the combination of a principal double-acting air-compressing cylinder, mechanism substantially such as described to impart reciprocating movement to the piston of said principal cylinder, a receiver into which the said double-acting cylinder discharges, a pair of single-acting cylinders of equal capacity, but arranged to operate in opposite directions and in connection with the mechanism by which the piston of the principal cylinder is operated, connection from the said receiver to each of the said single-acting cylinders, whereby one of said single-acting cylinders draws from the said receiver in one direction and the other single-acting cylinder draws from the receiver in the opposite direction, and the said two single-acting cylinders operating to deliver air on the return-strokes, but in the opposite direction, substantially as described.

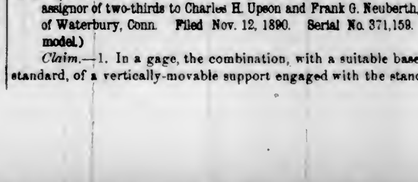
2. In an air-compressor, the combination of a principal double-acting cylinder, and a second double-acting cylinder arranged in line with each other, a cross-head arranged between said two cylinders in longitudinal parallel guides, mechanism substantially such as described to impart reciprocating movement to said cross-head, the piston-rod of each of said cylinders in connection with said cross-head, and whereby the reciprocating movement of the cross-head imparts like reciprocating movement to the pistons of the respective cylinders, a receiver into which the said principal cylinder discharges, a connection from said receiver of the principal cylinder to the second cylinder, a second receiver into which the said second cylinder discharges, a pair of single-acting pumps arranged upon opposite sides of said cross-head and parallel with the double-acting cylinders, the pistons of said single-acting cylinders connected at opposite points to the said cross-head with connections from each of said single-acting cylinders with the second receiver, whereby each of said cylinders in its turn draws from the said second receiver and both discharge in opposite directions, substantially as described.

3. In a compressing-pump, the pump-cylinder rigidly supported at one end without longitudinal movement, its other end supported, but free for longitudinal movement, the free end of the pump extending beyond the face of its support, combined with a stuffing-box around the piston at the said free end of the cylinder, the said stuffing-box recessed corresponding to the said free end of the cylinder, and so that the said free end of the cylinder may enter the said stuffing-box, the box secured to the face of the support around the cylinder, the end of the said cylinder forming one end of the chamber in the stuffing-box, and the said chamber of the stuffing-box provided with a packing, substantially as described.

4. In a compressing-pump, the combination of the pump-cylinder supported rigidly at one end against longitudinal movement, that end of the cylinder extending beyond the face of its support, the head for that closed end of the cylinder arranged to bear directly upon the projecting end of the cylinder, but secured to the surrounding surface without contact therewith, the other end of said cylinder arranged in a support free for longitudinal movement, a stuffing-box at the said free end of the cylinder, and a packing within said box around the piston, substantially as described.

448,860. WITHDRAWN.

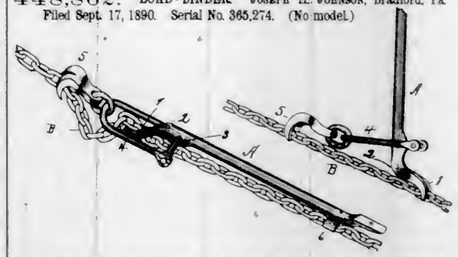
448,861. HOPPER AND SHOE FOR GRAIN-DRILLS. WILL. F. HOYT, Dowagiac, Mich. Filed Oct. 16, 1890. Serial No. 368,847. (No model.)



Claim.—1. The combination, with the hopper having the horizontal nose, the vertical central shank V-shaped in cross-section, the horizontally-projecting shoulders, and the vertical grain-opening terminating with the rearwardly-inclined channel-discharge in the rear of the shank, of the shoe, the opening in its rear upper face, and the shank of the hopper filling said opening, the shoe being riveted to the shank and having the angle portions u n forming side wings to the grain-discharge, substantially as specified

2. A hopper and shoe for grain-drills, comprising the hopper having the side overhanging flanges t and central shank V-shaped in cross-section with hole therein, the seed-opening passing through the hopper and terminating with the rearwardly-inclined channel formed in the shank, combined with the shoe riveted thereto, said shoe having the side wings, said wings having the angles u n, and the draft-rods attached to the front of the shoe, substantially as specified.

448,862. LOAD-BINDER. JOSEPH H. JOHNSON, Bradford, Pa. Filed Sept. 17, 1890. Serial No. 365,274. (No model.)



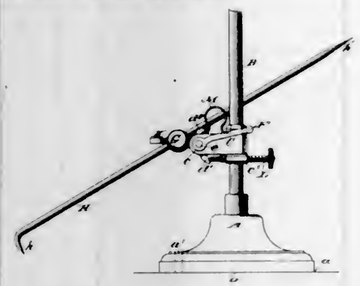
Claim.—1. A device for taking up the slack in chains, consisting of a lever having a downwardly and outwardly extending claw at one end and provided near said end with downwardly and laterally extending arms rigidly secured thereon, a clevis loosely secured to said arms, and a claw-hook secured to the clevis, substantially as described for the purposes set forth.

2. The combination of a binding-chain and means for taking up the slack thereof, consisting of a lever having a downwardly and outwardly extending claw at one end and provided near said end with downwardly and laterally extending arms rigidly secured thereon, a clevis loosely secured to said arms, and a claw-hook secured to said clevis, the opposite end of said lever being provided with a guard to hold the same in the line of draft, as set forth.

448,863. SURFACE-GAGE. GEORGE E. NEUBERTH, Torrington, assignor of two-thirds to Charles H. Upson and Frank G. Neuberth, both of Waterbury, Conn. Filed Nov. 12, 1890. Serial No. 371,159. (No model.)

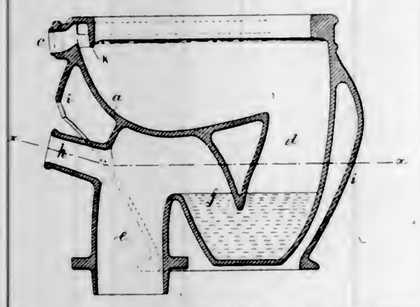
Claim.—1. In a gage, the combination, with a suitable base and standard, of a vertically-movable support engaged with the standard,

a swinging piece carried by the vertically-movable support, an indicator-bar carried by the swinging piece, a clamping device for securing the support to the standard and the swinging piece to the support, a clamping device for locking the indicator-bar to the swinging piece, and an adjusting device seated in the support and engaged with the swinging piece, substantially as set forth.



2. In a gage, the combination, with a suitable base and standard, of a vertically-adjustable support engaged with the standard, the said support comprising a pair of springing jaws terminating in a sleeve fitted to the standard, a bolt and nut for closing the jaws, a rocking piece pivoted on said bolt, and an indicator-bar carried by said rocking piece, the engagements of the jaws and sleeve with the rocking piece and standard being so timed that the sleeve will be forced into contact with the standard in advance of the clamping of the pivotal piece between the jaws, substantially as set forth.

448,864. PORCELAIN WASH-OUT CLOSET. JOHN REID, Yonkers, assignor to The J. L. Mott Iron Works, New York, N. Y. Filed Sept. 20, 1890. Serial No. 365,630. (No model.)

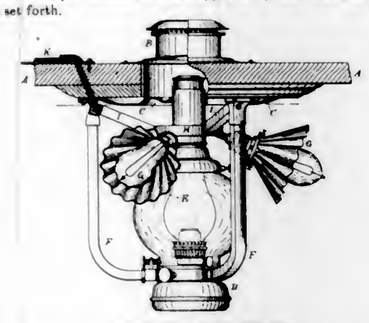


Claim.—1. The water-closet formed of one piece of porcelain having a bowl with a surrounding and supporting skirt with an opening at the rear, the water-supply connection at the back, the downtake-leg *d* at the front and within the skirt, and the leg *e* of the trap adjacent to the opening at the rear of the skirt, substantially as set forth.

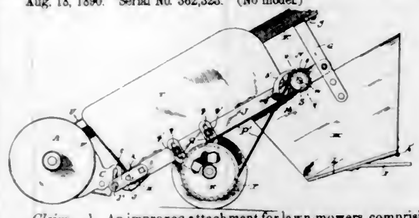
2. The water-closet formed of one piece of porcelain having a bowl *a*, surrounded and supported by the skirt, in which skirt is an opening in the back, the downtake-leg *d* at the front part of the closet and within the skirt, the leg *e* of the trap at the back part of the closet and adjacent to the opening of the skirt, the supply-pipe connections *c*, and the ventilating-pipe *h* upon the upper part of the leg *e* and extending to the rear, substantially as set forth.

448,865. LAMP FOR ELECTRIC-RAILWAY CARS. CHARLES G. SMITH, Brooklyn, N. Y., and LOUIS PFLUGST, Boston, Mass. Filed Feb. 26, 1890. Serial No. 341,864. (No model.)

Claim.—The combination, in an electric-railway car, of the reflector connected to the roof at an opening through the roof, a cap above the opening, a lamp and hanging frames extending from the reflector to the lamp, a hollow ring around the lamp-chimney, and hollow arms extending from the ring to the hanging frames, electric conductors passing through the hollow arms and ring, and incandescent electric lamps connected to and supported by such ring, substantially as set forth.



448,866. LAWN-MOWER. WENDEL STOREY, Grafton, Wis. Filed Aug. 18, 1890. Serial No. 362,323. (No model.)

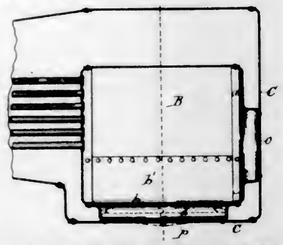


Claim.—1. An improved attachment for lawn-mowers, comprising a receptacle for cut grass, provided with a movable bottom hinged at its rear edge to the lower edge of the back wall of the receptacle and provided with a rearwardly-extending weighted arm serving to retain the bottom normally in upper closed position, substantially as set forth.

2. An improved lawn-mower comprising rearwardly-extending handle, a traction-actuated cutting mechanism carried at the front end of the handle, side bars located beneath the handle and connected at their front ends to the frames of the cutting apparatus, a roller mounted in stationary bearings in the front ends of said side bars, another roller mounted in bearings at the rear ends of said bars adjustable toward or from the roller at the front of the bars, an apron leading over said rollers, a traction-roller located beneath said side bars, and a belt extending around a pulley on the axle of said traction-roller and also around a pulley on the movable roller, substantially as set forth.

3. An improved lawn-mower comprising a rearwardly-extending handle, a traction-actuated cutting mechanism carried at the front end of said handle, side bars mounted beneath the handle, rollers journaled in the front and rear ends of said side bars, an endless apron extending around said rollers, a traction-roller adjustably journaled beneath said side bars, a pawl-and-ratchet mechanism operatively connected to the upper apron-roller, and a belt connecting the axle of said apron-roller with the axle of the traction-roller, substantially as set forth.

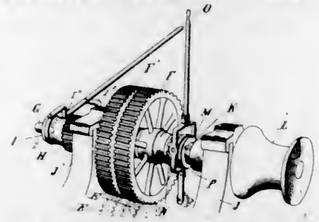
448,867. STEAM-BOILER. JOHN J. TONKIN, Oswego, N. Y., assignor to Thomson Kingsford, same place. Filed July 25, 1890. Serial No. 359,881. (No model.)



Claim.—1. In combination with the outer shell C, having its bottom plate formed with the opening *p*, the inner shell B, having its bottom plate *b* formed with the inner side plate sections *b' b'* and downwardly and reversed curved portions *c' c'*, all in one piece and riveted directly to the bottom plate of the outer shell without the intervention of an extra water-ring, as set forth.

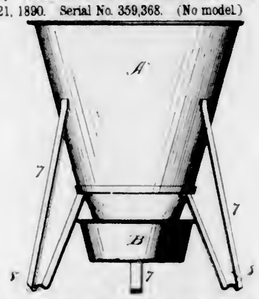
2. In combination with the outer shell C, having its front plate provided with the opening *o*, the inner shell B, having its front plate *a* formed with the outwardly and reverse curved portions *c c*, all in one piece with said front plate and riveted directly to the front plate of the outer shell along the edges of its opening, substantially as described and shown.

448,868. WINDING-DRUM. EDWARD N. WICKES, East Saginaw, Mich. Filed June 2, 1890. Serial No. 354,022. (No model.)



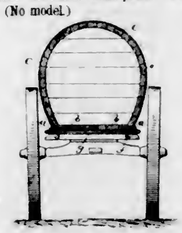
Claim.—The combination, with two standards, of a horizontal shaft mounted therein, a sleeve on the shaft extending through one of the standards and formed with a feather thereon, a winding-drum secured on the outer end of the sleeve, a sliding clutch-collar on the sleeve, a loose and a rigid gear-wheel on the shaft, clutch projections on the loose gear with which the clutch-collar engages, a lever for moving the clutch, and means for actuating the gears, substantially as described.

448,869. MILK-COOLER. WILLIAM WIGHTMAN, Pulaski, N. Y. Filed July 21, 1890. Serial No. 359,368. (No model.)



Claim.—A milk-cooler comprising a reservoir, a strainer in its lower end, a tubular threaded extension below the reservoir, a disk having a central aperture removably mounted within the extension, a pan detachably suspended from the extension and having a perforated bottom, and legs to support the cooler, in combination, as set forth.

448,870. WATER-TANK. FRANK F. WILCOX, South Bend, Ind., assignor to Studebaker Brothers, same place. Filed May 28, 1890. Serial No. 353,508. (No model.)

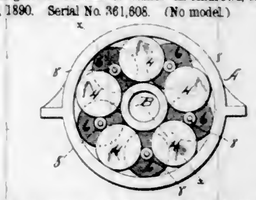


Claim.—1. A water-tank built of staves, having in cross-section a form which is the segment of a curved figure, substantially as described, and provided with a base-frame *a*, rabbeted at *d* to seat the adjoining staves of bottom and side clamping-hoops *e*, which pass around said tank and through said frame, and tie-bolts *g*, which pass through said frame below said tank.

2. A water-tank constructed with a bed-frame rabbeted at *d*, bottom staves *b*, laid in said frame, side staves *c*, erected on said frame and resting in said rabbet, and hoops *e*, the ends whereof pass through said frame and compress the staves, as set forth.

3. A water-tank for sprinkling-carts, composed of a bed-frame *a*, each side bar whereof is rabbeted along its inner upper corner, a bottom having beveled edges composed of staves *b* arranged horizontally in said frame, side staves *c*, beveled to fit edges of the bottom within said rabbets and erected therefrom in the segment of a curved figure, and hoops *e*, the ends whereof pass through said bed-frame to compress said staves, as set forth.

448,871. JOURNAL-BEARING. MARION A. ANDREWS, Syracuse, N. Y., assignor of one-half to James M. Andrews, same place. Filed Aug. 11, 1890. Serial No. 361,808. (No model.)



Claim.—1. A journal-bearing consisting of a casing, a central loose ring, and single and double rollers disposed alternately and interlacing and traveling upon the inner wall of the casing and the periphery of the ring, in combination with an axle grooved to its end to receive the loose ring and of smaller diameter than the ring.

2. A journal-bearing consisting of a casing, a central loose ring, single and double rollers disposed alternately and interlacing and traveling upon the inner wall of the casing and the periphery of the ring, and idlers mounted loosely upon the arbors of the single rollers on either side of each single roller, in combination with an axle grooved to receive the loose ring and of smaller diameter than the ring.

3. The combination, with the double rollers, each comprising two disks connected by an axle, of the single rollers interlacing with the double rollers and provided with side arbors, and idlers loose upon the arbors and engaging with the disks of the adjacent double rollers.

448,872. RETAINING DEVICE FOR TUNING-PEGS. RUDOLPH C. BOOKSER, Buffalo, N. Y. Filed Nov. 1, 1890. Serial No. 370,064. (No model.)



Claim.—1. A retaining device for tuning-pegs, consisting of a bar or plate bearing against the side of the peg, and a clamping-screw whereby the bar or plate is forced against the peg, substantially as set forth.

2. A retaining device for a tuning-peg, consisting of clamping-bars applied to opposite sides of the peg, and a clamping-screw connecting said bars, whereby the same are caused to grasp the pegs, substantially as set forth.

3. A retaining device for a tuning-peg, consisting of clamping-bars applied to opposite sides of the peg and provided with a bearing or collar which grasps the peg, and a clamping-screw connecting said bars, substantially as set forth.

4. A retaining device for tuning-pegs, consisting of clamping-bars having peg bearings or collars and made adjustable lengthwise, and a clamping-screw whereby the bars are drawn against the peg, substantially as set forth.

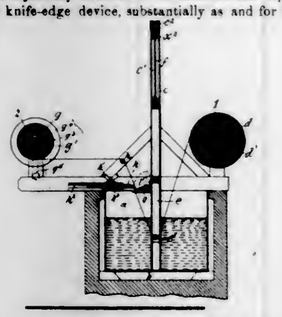
5. A retaining device for tuning-pegs, consisting of two pairs of clamping-bars, each pair forming a separate clamping-frame and being provided with a clamping-screw, and an adjusting-screw connecting the two clamping-frames, substantially as set forth.

448,873. APPARATUS FOR COATING OR SATURATING AND FINISHING ROOFING FABRICS. HERMANN BORMANN, Philadelphia, Pa., assignor to J. Walter Douglass, same place. Filed June 2, 1890. Serial No. 353,946. (No model.)

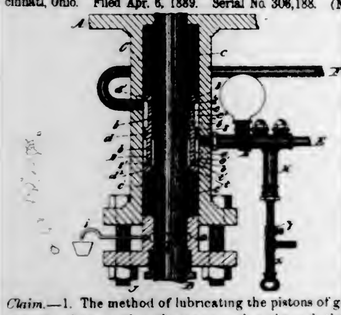
Claim.—1. The combination, with a machine for coating or saturating roofing fabrics, provided with a tank and means for drawing the fabric therethrough, of a knife-edge device adjustably attached to the machine and superposed upon the hinged knife-edge device, substantially as and for the purposes set forth.

2. The combination, with a machine for coating or saturating roofing fabrics, provided with a tank and means for drawing the fabric

thereth rough onto a laying-up roll, of a knife-edge device hinged to the machine and adapted to be upwardly turned, and a horizontal knife-edge device adjustably attached to the machine and superposed upon the hinged knife-edge device, substantially as and for the purposes set forth.



448,874. GAS-COMPRESSION PUMP. WESLEY S. BREWER, Cincinnati, Ohio. Filed Apr. 6, 1889. Serial No. 306,188. (No model.)



Claim.—1. The method of lubricating the pistons of gas-compression pumps and recovering the gas escaping through the piston-rod orifice, consisting in maintaining a continuous independent and positively-forced flow of oil upward around the piston-rod within an open chamber of the stuffing-box, trapping the escaping gas therein, and carrying the said gas outward with and by means of said flow of oil, substantially as set forth.

2. The method of lubricating the piston-rods of gas-compression pumps and preventing the escape of gas through the stuffing-box, consisting in providing and maintaining a continuous independent and positively-forced flow of oil upward around the piston-rod within the stuffing-box from and to an external reservoir, thereby lubricating the piston-rod in its packing, and "trapping" the escaping gas therein by means of said oil and carrying the same outward, and finally separating the gas and oil in the return-passage to the oil-reservoir and returning the gas to the suction side of the pump, substantially as set forth.

3. In a gas-compression pump, the combination, with its stuffing-box and piston-rod, of an annular oil-chamber surrounding the piston-rod within the stuffing-box, a supply and an exit pipe connecting said chamber, respectively, at the lower and upper parts with an oil-reservoir, an oil-reservoir so connected, an oil force-pump in the line of the supply-connection, and an oil-separator in the exit or return connection arranged to maintain a continuous positive flow of oil through said stuffing-box chamber, substantially as set forth.

4. In a gas-compression pump, in combination with its stuffing-box and piston-rod, a sleeve adapted to surround the rod within the stuffing-box, constructed with two annular concentric chambers, the outer one bounded outside by the stuffing-box and the inner one by the piston-rod, both chambers divided horizontally by a partition fitting the stuffing-box closely and shutting off communication between the two divisions of the outer chamber except through the inner chambers, substantially as set forth.

5. In a gas-compression pump, in combination with the stuffing-box and contained oil-sleeve, the oil-reservoir, supply and return pipes connecting said oil-sleeve mediately with said reservoir, the oil-pump in the line of said supply-pipe, the sight-feed chamber in the line of the return-pipe, and the gas-separating chamber having a valved connection with the sight-feed chamber and communicating with the suction side of the pump, substantially as set forth.

6. In a gas-compression pump, the combination, with the oil-chamber within the stuffing-box, the independent oil-reservoir, the supply-pipe and its pump, and the return-pipe and its separator, of the gas-conduit provided with the perforated check-valve and extending from the gas-separator to the suction-pipe, substantially as set forth.

7. In a lubricating and gas-trapping apparatus of the character described, the combination of the oil-chamber, pipes E F, pump H, valves E' F', auxiliary hand-pump, valves E² F², oil-reservoir, gas-separator, sight-feed oil-passage, and sight-feed gas-passage, substantially as set forth.

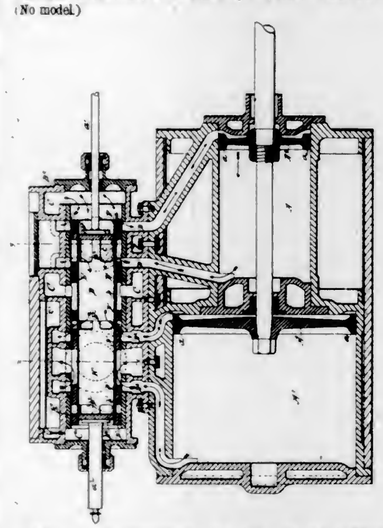
448,875. TYPE LEVER AND HANGER FOR TYPE-WRITING MACHINES. WILLIAM H. BRIGGS, Springfield, Mass. Filed July 19, 1886. Renewed Jan. 7, 1891. Serial No. 376,973. (No model.)



Claim.—1. A type-lever having a transverse perforation therethrough intersecting with the pivot-hole of said lever, and sockets in the opposite sides thereof surrounding said hole, combined with a hanger between the arms of which said lever is hung, having conical bosses entering the sockets in said lever, and a pivot-screw passing through said arms and said lever, having one or more transverse perforations thereto opposite the perforation which intersects the pivot-hole in said lever, substantially as set forth.

2. A type-bar hanger, a screw passing through the arms of said hanger, having one or more transverse perforations therethrough, a type-bar hung to vibrate between the arms of said hanger through the bearing portion of which said screw passes, having an opening opposite the screw-hole therein for the insertion of an instrument to engage with said screw, combined and operating substantially as set forth.

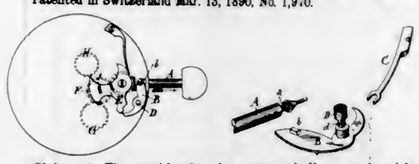
448,876. BALANCED VALVE FOR STEAM-ENGINES. HOBART CANFIELD, Morristown, N. J. Filed Sept. 25, 1890. Serial No. 366,053. (No model.)



Claim.—1. The combination, with high and low pressure cylinders having ports substantially such as described, of a steam-chest arranged above or opposite the high-pressure cylinder, another steam-chest arranged above or opposite the low-pressure cylinder and communicating with the first-named steam-chest through a conduit of reduced area, and a reciprocating hollow piston-valve having ports allowing the passage of steam through its interior and receiving a pressure of steam at its ends within said steam-chests, substantially as specified.

2. The combination, with the cylinders, the valve-casing, and the steam-chests, of the reciprocating hollow valve having the end closures, a valve-rod extending from one of said closures, and a tail rod extending from the other of said closures, the said tail rod having a greater diameter throughout its length than the valve-rod, whereby the pressure area on that end of the valve is decreased, substantially as specified.

448,877. STEM WINDING AND SETTING WATCH. ALBERT CHOPARD, Moutier-Grandval, Switzerland, assignor to the Société Industrielle, same place. Filed Oct. 24, 1890. Serial No. 369,159. (No model.) Patented in Switzerland Mar. 13, 1890, No. 1,970.



Claim.—1. The combination, in a stem-winding watch, with the stem A, having a notch *a*, of the pivoted lever B, having a pin *b* for engaging the notch *a*, a pivot-stem D, permanently secured at one end to the lever B and passing through and movable longitudinally in the watch-plates, and a spring engaging the movable stem for maintaining the stem A and lever B in engagement, substantially as specified.

2. The combination, in a stem-winding watch, with the stem A, having a notch *a*, of the pivoted lever B, having a pin *b* for engaging the notch *a*, a notched pivot-stem D, permanently secured at one end to the lever B and passing through and movable longitudinally in the watch-plates, and a fork-ended spring engaging the notch of the longitudinally-movable stem D for maintaining the stem A and lever B normally in engagement, the parts being disengaged by endwise pressure on the stem D, substantially as specified.

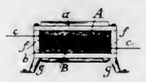
448,878. GAME APPARATUS. SAMUEL W. CLARKE, Wood's Holl, Mass. Filed Dec. 4, 1890. Serial No. 373,539. (No model.)



Claim.—1. A game apparatus consisting of an elastic ball having the hollow stem *d* secured to it and having the wings *e* secured in said stem and supported by the spring-wires *f*, and a bat or racket for driving said winged ball.

2. A game apparatus consisting of a hollow elastic ball having an opening in one side, the edge of said opening secured between the flange of the tube *b* and the thimble *d*, an inwardly-opening valve secured to the flange of the tube *b*, wings *e*, supported by spring-wires *f*, projecting from said thimble *d*, and a bat or racket for driving said winged ball, having a tally-scale *k*, provided with pointer *l*, attached to it, as shown and described.

448,879. ELECTRIC-HEATING APPARATUS. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed Jan. 20, 1890. Serial No. 337,452. (No model.)



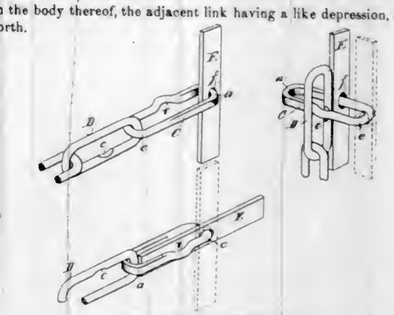
Claim.—1. In an electric-heating apparatus, a suitable metallic case, one or more resistances or heat-developing electric conductors within said case and formed in layers, metallic plates between the layers, a fibrous refractory material in contact with and enveloping or covering the conductor or conductors, and means to maintain said material in close and constant contact with the said conductor or conductors.

2. In an electric-heating apparatus, a corrugated or ribbed metallic case, one or more resistances or heat-developing electric conductors supported in said case, and a fibrous refractory material enveloping or covering the conductors and in continuous contact with the same.

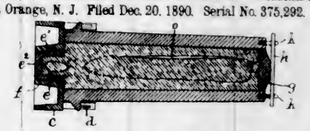
448,880. BOOM-LOCKING CHAIN. CHRISTIAN A. HANSEN, Charlevoix, Mich. Filed Nov. 24, 1890. Serial No. 372,404. (No model.)

Claim.—1. In combination with the boom having a hole therethrough, the chain having on its end link a bar, said bar having an oblong hole fitting said link, said end link being square in cross-section at one end and round in cross-section at the opposite end and having a depression in the inner face near the center of the link and the adjacent link having a depression in its inner face, substantially as specified.

2. For the purposes specified, the chain having on the end thereof the bar, said bar having the oblong hole, the link loosely filling said hole, said link being square in cross-section at one end and round in cross-section at the opposite end and having the transverse depression in the body thereof, the adjacent link having a like depression, as set forth.

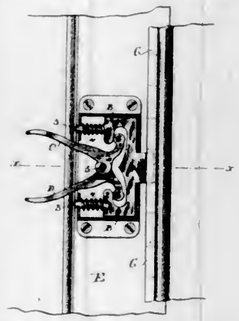


448,881. PROCESS OF CASTING INGOTS. WILLIAM R. HINSDALE, East Orange, N. J. Filed Dec. 20, 1890. Serial No. 375,292. (No model.)



Claim.—The process of forming ingots of cast-steel, which consists in first casting the metal in a mold; secondly, chilling the surface of the metal, and, thirdly, placing the ingot in an inclined position and flowing the metal against such chilled end to distribute the shrinkage-cavity along one side of the ingot.

448,882. SASH-FASTENER. JOHN C. HOWE, Worcester, Mass. Filed July 17, 1890. Serial No. 359,078. (No model.)



Claim.—1. The combination, with the case B, of the latch A, having inwardly-projecting horns 2, studs 3, and springs 4, acting to project the latch, and the two curved or angular levers C D, pivoted at 5 and having heads that act against the horns 2 for withdrawing the latch, substantially as set forth.

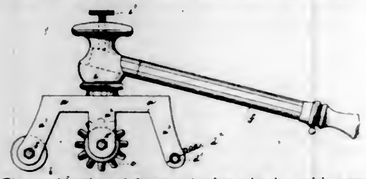
2. The latch-case B, in combination with the latch A, having a beveled end and the inwardly-projecting horns 2, the studs 3, and springs 4 for projecting the latch, the two curved or angular levers C D, pivoted at 5 and acting upon the horns 2 for withdrawing the latch, and the rack-plate G, against which the beveled end of the latch acts for pressing the sash outwardly and tightening the same, substantially as set forth.

3. The window governing and supporting latch having an end that is beveled in a vertical plane at an inclination to the window, in combination with the spring to project the latch, and a plate upon the sash-frame against which the latch acts to press the sash outwardly, substantially as specified.

4. The window governing and supporting latch having a beveled and channeled end, in combination with a plate upon the sash-frame, having an edge notched to correspond to the channels upon the beveled end of the latch, substantially as specified.

448,883. MASSAGE APPARATUS. ARTHUR KAHN, Jersey City, N. J. Filed Aug. 1, 1890. Serial No. 360,637. (No model.) Patented in Germany Jan. 28, 1889, No. 44,861, and in England Oct. 30, 1889, No. 15,614.

Claim.—1. The combination of a frame with a smooth roller and a warty roller journaled to the frame, substantially as specified.

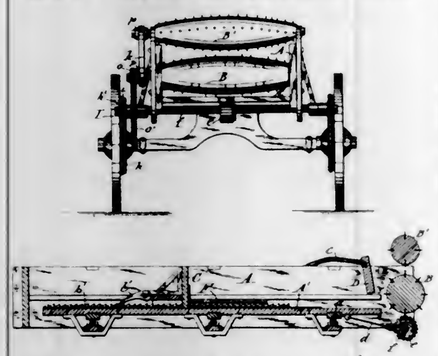


2. The combination of frame *a*, having a knob *e*, with a smooth soft rubber roller and a warty soft rubber roller journaled to the frame, substantially as specified.

3. The combination of frame *a* with a smooth roller *b*, a warty roller *c*, and a metal band *d*, carried by the frame, substantially as specified.

4. The combination of frame *a* with a smooth roller and a warty roller journaled thereto, and with perforated knob *e* and handle *f*, adapted to be locked to the knob, substantially as specified.

448,884. **MANURE-SPREADER.** DANIEL B. MERRELL, Canandaigua, N. Y. Filed Oct. 30, 1890. Serial No. 369,768. (No model.)



Claim.—1. The combination, with the vehicle-body, distributer, and conveyer in said body and movable toward said distributer, of a breast in front of the latter to pack the manure preparatory to being acted upon by the distributer, as set forth.

2. In combination with the vehicle-body, distributer connected to the end of said body and conveyer in the body and movable toward the distributer, and a breast in front of the latter and sustained movably vertically, as set forth.

3. In combination with the vehicle-body, distributer connected to the end of said body and conveyer in the body and movable toward the distributer, arms pivoted to the sides of the body, and a breast connected to said arms and extending across the interior of the body in front of the distributer, substantially as described and shown.

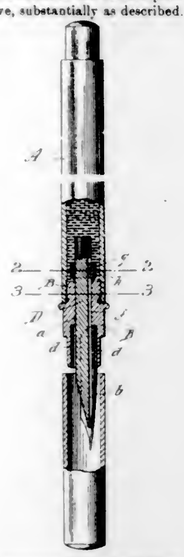
4. In a manure-spreader, the combination, with the vehicle-body, of a beater extending across the rear end of the body and tapered longitudinally from the center to opposite ends, as set forth and shown.

5. In a manure-spreader, the combination, with the vehicle-body and reciprocating floor A', of the end-board arranged movably upon said floor, and the false floor-section F, attached to and extending rearward from said end-board, substantially as described and shown.

448,885. **FOUNTAIN-PEN.** MORRIS W. MOORE, Springfield, assignor, by mesne assignments, to Joseph E. Chase, Holyoke, Mass. Filed Sept. 17, 1890. Serial No. 365,242. (No model.)

Claim.—1. In a fountain-pen, the combination, with the reservoir-barrel provided with a tip having the writing-pen therein and with the longitudinal passage through same, of a feed-bar practically filling said passage and extended into the reservoir above the tip and also forward to a contact on the pen, having the longitudinal groove and valve consisting of a collar encircling and movable on said feed-bar and provided with a tongue which fits within said feed-bar groove, substantially as and for the purpose set forth.

2. A feeder for a fountain-pen, consisting of a bar having a groove therein and running longitudinally thereof to its forward end and a collar encircling and movable on the bar and provided with the tongue which fits said groove, substantially as described.



448,886. **APPARATUS FOR BAKING, ROASTING, AND STEAMING.** WILTON H. PERRY, Brooklyn, N. Y. Filed July 16, 1890. Serial No. 358,942. (No model.)



Claim.—1. The combination, with the pan A, of the water-chamber B and one or more removable water-vessels C, arranged contiguous to the sides of the pan, substantially as shown and described.

2. The combination, with the pan A, of the water-chamber B, one or more removable water-vessels C, arranged contiguous to the sides of the pan, and the tube L, substantially as shown and described.

3. The combination, with the pan A, of the water-chamber B, one or more removable water-vessels C, arranged contiguous to the side of the pan, and the removable and reversible bottom F, substantially as shown and described.

4. The combination, with the pan A, of the water-chamber B, one or more removable water-vessels C, arranged contiguous to the side of the pan, the removable and reversible bottom F, and the tube L, substantially as shown and described.

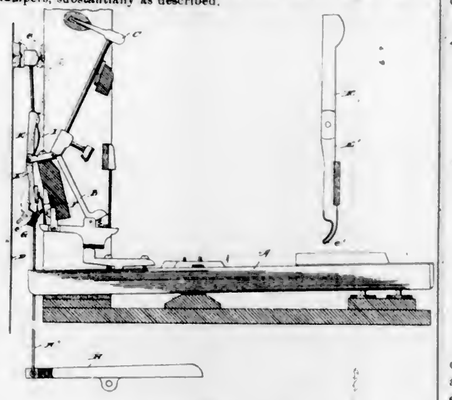
5. The combination, with a pan A, of the water-chamber B, one or more removable water-vessels C, arranged contiguous to the side of the pan, the removable and reversible bottom F, and the support H, substantially as shown and described.

6. The combination, with the pan A, of one or more removable water-vessels C, arranged contiguous to the side of the pan, and the tube L, substantially as shown and described.

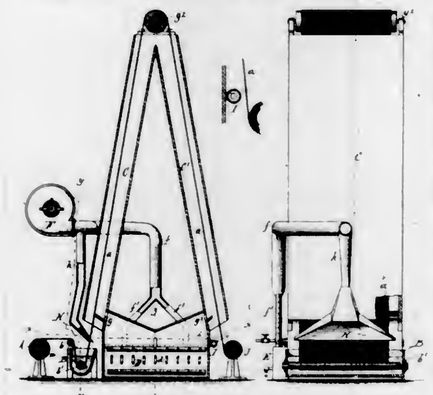
7. The combination, with the pan A, of one or more removable water-vessels C, arranged contiguous to the sides of the pan, the removable and reversible bottom F, and the tube L, substantially as shown and described.

448,887. **TONE-SUSTAINING DEVICE FOR PIANOS.** ADOLPH PFERDNER, Chicago, Ill., assignor to Patrick J. Healy, same place. Filed Mar. 13, 1890. Serial No. 343,708. (No model.)

Claim.—A tone-sustaining device for upright pianos, comprising, in combination with damper-levers having their lower ends outwardly curved to adapt them for ready engagement by a sustaining-rod, of said sustaining-rod having a straight middle portion adapted to engage the curved ends of said levers and cranked ends mounted in suitable bearings on the frame, a foot-pedal within reach of the performer, and a rod connecting the pedal with one of the cranks of the sustaining-rod, whereby the latter may be rocked to cause its straight portion to engage the damper-levers and hold them out of contact with the dampers, substantially as described.



448,888. **APPARATUS FOR DRYING WIRE-CLOTH.** POMEROY L. SALMON, Rochester, N. Y., assignor to the Steam Gauge and Lantern Company. Filed Aug. 20, 1886. Serial No. 211,381. (No model.)

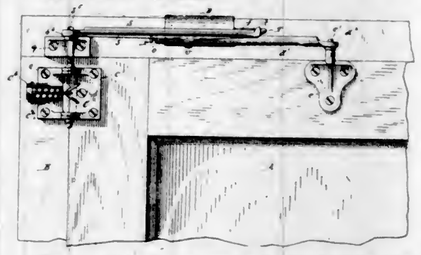


Claim.—1. In an apparatus for drying painted wire-cloth, the combination, with the primary and secondary drying-chambers both opening into the external atmosphere, of an air-heating chamber arranged between the lower portions of the drying-chambers and communicating therewith, a fan whereby air is delivered into the heating-chamber and caused to pass into the lower portion of the drying-chambers and upwardly through the same, and rollers whereby the wire-cloth is guided upwardly through the primary drying-chamber and downwardly through the secondary drying-chamber, substantially as set forth.

2. In an apparatus for drying painted wire-cloth, the combination, with the primary and secondary drying-chambers both opening into the external atmosphere, of an air-heating chamber, a fan whereby air is delivered into said heating-chamber and caused to pass through the drying-chambers, rollers whereby the wire-cloth is guided upwardly through the primary drying-chamber and downwardly through the secondary drying-chamber, and a blast-nozzle arranged below the secondary drying-chamber, whereby a current of cold air is delivered against the cloth issuing from said drying-chamber, substantially as set forth.

3. In an apparatus for painting and drying wire-cloth, the combination, with the primary and secondary drying-chambers, of a paint-trough arranged below the primary drying-chamber, a blast-nozzle arranged between the paint-trough and the primary drying-chamber whereby a blast is directed through the freshly-painted cloth for removing the surplus paint, an air-heater whereby heated air is caused to flow through the drying-chambers, rollers which guide the cloth through the paint-trough and the drying-chambers, and a blast-nozzle arranged below the exit of the secondary drying-chamber, whereby a cold blast is delivered upon the cloth for cooling the same, substantially as set forth.

448,889. **PNEUMATIC DOOR-CHECK.** OBADIAH SEELY, Syracuse, N. Y., assignor to E. C. Stearns & Co., same place. Filed Apr. 4, 1890. Serial No. 346,582. (No model.)



Claim.—1. In a pneumatic door-check, the combination, with the cylinder provided at one end with a pivot-extension and the piston and piston-rod, of a pivoted frame connected at one end with the outer end of the piston-rod and supporting the free end of said cylinder, substantially as set forth.

2. The combination, with the cylinder provided at one end with a pivot-extension and the piston and piston-rod, of a pivoted frame attached at one end to the piston-rod and provided with a depressed cross-bar, which supports the free end of the cylinder, substantially as set forth.

3. The combination, with the cylinder provided at one end with a pivot-extension having straight upper sides and the piston and piston-rod, of a pivoted frame attached to the piston-rod and guided upon the upper sides of the extension of the cylinder, substantially as set forth.

4. The combination, with the cylinder provided at one end with a pivot-extension forming a continuation of the lower part of the cylinder and the piston and piston-rod, of a pivoted frame provided with side bars on opposite sides of the cylinder, and an end bar resting upon the pivot-extension of the cylinder and attached to the piston-rod, substantially as set forth.

5. The combination, with the cylinder provided at one end with a pivot-extension and a piston and piston-rod, of a pivoted frame connected at one end to the piston-rod and provided with side bars on both sides of the cylinder, a cross-bar for supporting the free end of the cylinder, and stops to limit the longitudinal movement of the cylinder, substantially as set forth.

6. The combination, with the cylinder provided at one end with a pivot-extension, the piston, and a piston-rod provided with a hooked or notched outer end, of a pivoted frame having a cross-bar which is provided with two diagonal shoulders, whereby it is connected with the piston-rod, substantially as set forth.

7. The combination, with the cylinder provided at one end with a pivot-extension, the piston, and a piston-rod provided with a flat-sided portion and a hooked or notched outer end, of a pivot-frame having a cross-bar provided with a diagonal opening forming an upper shoulder which receives the hooked end of the piston-rod and a lower shoulder provided with a flat-sided socket adapted to receive the flattened portion of the piston-rod, substantially as set forth.

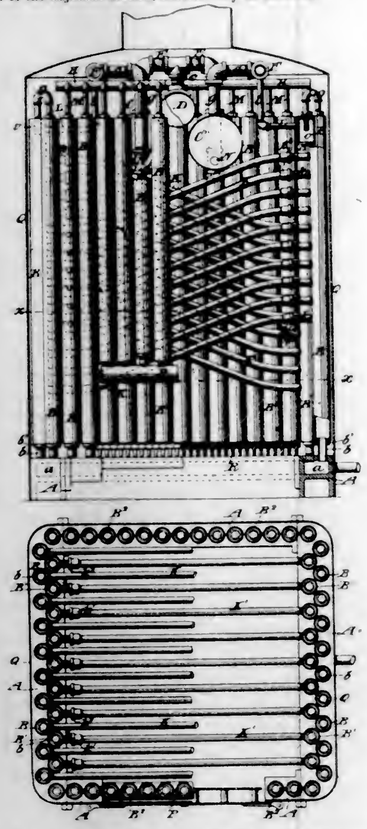
8. The combination, with the cylinder and its air-outlet opening, of a split screw-plug arranged in said opening, whereby spring-arms are formed on said screw-plug which hold the plug in place and also permit the air to escape, substantially as set forth.

448,890. **TUBULAR BOILER.** HALCYON SKINNER, Yonkers, N. Y. Filed Apr. 5, 1890. Serial No. 346,713. (No model.)

Claim.—1. The combination, with series of tubes arranged upon opposite sides of the boiler and connected by cross-tubes, one of the series upon one side of the boiler receiving the upper ends of the cross-tubes and another series on the same side receiving the lower ends of the cross-tubes, of return-bends connecting the tops of the series which receive the upper ends of the cross-tubes with the tops of the series of tubes which receive the lower ends of the cross-tubes, substantially as set forth.

2. In a steam boiler, a series of intercommunicating boiler-sections, each section consisting of two vertical tubes located at opposite sides of the combustion chamber, and a series of bent inclined cross-tubes connecting the two vertical tubes, and a water-base with which the vertical tubes communicate, the vertical tubes of one section being

located in practical contact with and in staggered relation to the vertical tubes of the adjacent section, substantially as set forth.



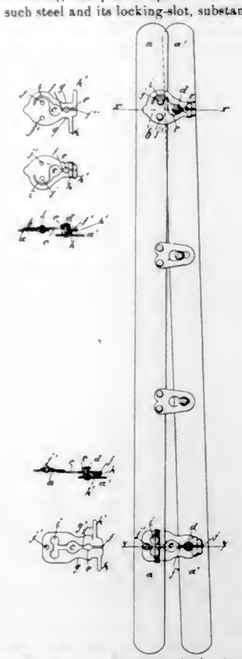
3. In a steam-boiler, two series of vertical tubes arranged upon one side of the boiler and two corresponding series of tubes arranged upon the opposite side, the tubes of one of the two series on each side of the boiler being located opposite the spaces between the individual tubes of the other series and in practical contact with the adjacent tubes of the other series, the distance between two successive tubes of a series being less than the diameter of one of the tubes, and cross-tubes connecting each of the series on one side of the boiler with a series upon the opposite side of the boiler, substantially as set forth.

4. The combination, with two series of vertical tubes and outlet-pipes extending from below the upper ends of one of the series of tubes to a steam-chamber, of return-bends extending from the tops of the other series of tubes up, over, and down into the upper ends of the series of tubes with which the outlet-pipes engage, the ends of the return-bends projecting downwardly into said tubes below the said outlet-pipes, substantially as set forth.

5. The herein-described boiler, comprising a base having a water-chamber extending around the lower margin of the boiler, vertical tubes arranged in double series at the sides of the boiler and in single series at the front and back of the boiler, cross-tubes connecting the series of vertical tubes at the sides of the boiler and having an upward slant alternately in opposite directions, separating-drums located above the cross-tubes, a steam-dome located centrally above the separating-drums, tubes extending parallel with the drums at the upper portion of the boiler and connected with the vertical tubes by branch tubes, tubes extending transversely to the separating-drums and connected with the upper portions of the front and back, vertical tubes, and connections between the said tubes at the top of the boiler, the separating-drums, and the steam-dome, substantially as set forth.

448,891. CORSET-CLASP. FREDERICK B. SPOONER, Brooklyn, N. Y. Filed July 18, 1890. Serial No. 359,215. (No model.)

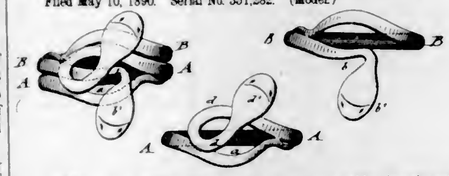
Claim.—1. A corset-clasp composed of a single piece of sheet metal, each of its free and open ends containing a leg overlapping and bent over the other free end, in combination with the two corset-steels and the locking-stud placed upon one of said steels for locking the clasp to such steel and its locking-slot, substantially as described.



2. A corset-clasp composed of a single piece of sheet metal slotted at its outer end, forming two free ends, each of said ends formed with a lateral leg, each of which legs overlaps and is bent over the other free end, and a slot placed at the rear of the slot, through which the locking-stud upon one of the steels passes, in combination with the two corset-steels and the locking-stud and its locking-slot, substantially as described.

3. A corset-clasp secured to one of the steels by passing through a slot made in such steel and riveted to the steel at rear of said slot, such slot being longer than the width of the clasp, in combination with the two corset-steels and the locking-stud placed upon the other of said two steels and its locking-slot, substantially as described.

448,892. FINGER-RING. CHRISTOPH STAIGER, Brooklyn, N. Y. Filed May 10, 1890. Serial No. 351,282. (Model.)

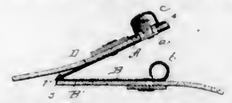


Claim.—1. A finger-ring formed of two separable ring-shaped members, one of which is provided with an elongated loop, while the other is provided with an arm bent at right angles, or nearly so, to the plane of the ring, said arm being adapted to be inserted through the loop so as to interlock therewith, substantially as set forth.

2. A finger-ring formed of two separable ring-shaped members A and B, the member A having an elongated loop *a*, while the other member has a rectangularly-bent arm *b*, extending at right angles, or nearly so, to the plane of the ring-shaped portion of said member, said bent arm having an enlarged head, which is passed through the loop of the first member, so as to interlock therewith, substantially as set forth.

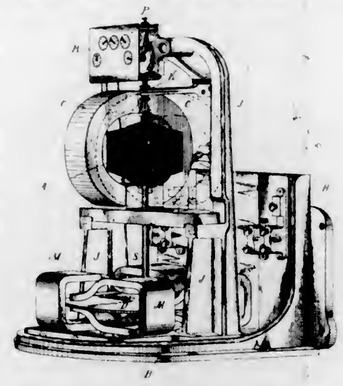
448,893. CLASP. WILLIAM H. THOMPSON, East Stroudsburg, Pa. Filed Dec. 29, 1890. Serial No. 376,065. (No model.)

Claim.—1. In combination, the plate B, formed of sheet metal, having one end turned back upon itself to form a spring projection at one end, and having an extension with a turned-up end, the plate A, also formed of sheet metal, having an opening at one end to receive the spring projection, and an extension unattached to the material for engaging the hook of the lower plate, substantially as described



2. In combination, the sheet-metal plate B, having its end turned back upon itself to form a spring projection, and an extension provided with a hook, the plate A, also of sheet metal, having an opening for the spring projection and an extension unattached to the material and adapted to engage the hooked extension, and a socket located over the opening in the plate A and having tangs passing through said plate and bent aside for holding the socket in place, substantially as described.

448,894. ELECTRIC METER. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 26, 1890. Serial No. 366,204. (No model.)



Claim.—1. The combination, in an electric meter, of an electric motor, a register mechanism for counting the movements of said motor, and a commutator for said motor, having both its moving and stationary conducting-surfaces made of pure silver, as and for the purpose described.

2. In an electric meter, an electric motor having a commutator the brushes and segments of which are both made of pure silver, as and for the purpose described.

3. In an electric meter, an electric motor having its commutator constructed of as small diameter as practicable and from some non-oxidizing material, in combination with commutator-brushes of non-oxidizable material bearing thereon with light pressure, as and for the purpose described.

4. The combination, with the armature shaft or spindle S, of the commutator-cylinder consisting of a number of strips of thin sheet metal fastened directly upon a thin layer of insulating material encircling the shaft and having their free ends bent outwardly for attachment of electric conductors.

5. The herein-described improvement in constructing commutators, consisting in slitting a tube longitudinally by slits extending a sufficient distance to complete the separate commutator-segments leaving one or both ends of the tube unslit, thereby completely forming the desired number of commutator-segments, binding the slit portion of the tube at or near both ends down upon the shaft over an interposed layer of insulating material, and then cutting off the unslit end or ends.

6. The herein-described improvement in constructing commutators of small diameter, consisting in taking a tube of greater length than necessary to form the complete commutator, dividing the same by longitudinal slits sufficient in length to complete commutator-segments of the desired width in the direction of its axis, leaving at one end of said tube an unslit portion, applying the tube thus formed to the commutator spindle or shaft over an interposed continuous layer of insulating material, applying binding-rings over the tube at its slit portion and near the opposite ends of the slits, and then removing the unslit end, as and for the purpose described.

7. The combination, in an electric meter, of a retarder consisting of a closed conductor in moving relation to a magnet adjustable, as described, so as to change the distance of the poles of such magnet from the center of the movable disk.

8. The combination, in an electric meter, of a retarding mechanism consisting of a disk or plate of copper and a magnet in moving relation to one another, one of said parts being adjustable in a plane parallel with the other for the purpose of changing the relative speed of traverse of the one part with relation to the other, and thereby varying the retarding effect.

9. The combination, with the retarding disk or plate D, of a pivoted magnet M, adapted to swing in a plane parallel with the plane of the disk.

10. In an electric meter, the combination, with a motor and a registering mechanism, of a retarding device consisting of a plate or conductor and a series of magnets the poles of which embrace the plate and alternate in polarity, as and for the purpose described.

11. In an electric meter, a motor-armature structure consisting of two disks of insulating material, having polygonal outline and fastened together by pillars of non-magnetic material, and electric coils wound over such disks with ventilating-spaces between the coils, as and for the purpose described.

12. In an electric meter, the combination, with an electric motor and a register for counting the movements thereof, of an artificial resistance external to the motor and placed in the circuit of such motor wherein a constant current is to be maintained, such resistance being the larger part of the total resistance of such motor-circuit.

13. The combination, with an electric meter operated by alternating currents, of a non-inductive artificial resistance placed in that portion of the meter-circuits wherein a constant current is maintained and made to form the larger part of the resistance of said circuit.

14. The combination, with an electric motor operated by alternating currents, of a register for counting the movements of said motor, and a non-inductive artificial resistance external to the motor and placed in the meter circuit including the armature and commutator, such artificial resistance being made large in proportion to the resistance of the normal resistance of the armature and commutator.

15. The combination, in an electric meter, of an electric motor having its field traversed by current varying with the consumption and an armature for such motor placed in a constant-current circuit in combination with an artificial resistance placed in the armature-circuit external thereto.

16. The combination, substantially as described, of an electric motor field-coil, an electric-motor armature-coil provided with a commutator and placed in an alternating-current circuit, including a non-inductive resistance external to the armature and commutator, as and for the purpose described.

17. In an electric meter for measuring alternating electric currents, the combination, with that part of the motor which is included in a constant alternating-current circuit, of a non-inductive resistance external to such part of the motor and made large in amount in proportion thereto.

18. In an electric meter, the combination, with the armature-shaft, of a cup-shaped extension at or near the lower end thereof and a screw-support P^3, consisting of a nut upon a screw-standard which carries the pivot bearing for the shaft, as and for the purpose described.

448,895. APPARATUS FOR SCALDING VEGETABLES OR FRUIT. THEOPHILUS VAN KANNEL, Philadelphia, Pa. Filed May 1, 1890. Renewed Jan. 28, 1891. Serial No. 379,381. (No model.)

Claim.—1. A scalding device consisting of a box or casing projecting into a water-chamber, which forms a trap or seal at the lower end of said casing, in combination with an elevator located within the casing and extending down into the water in said chamber, and means for admitting steam to the casing, substantially as specified.

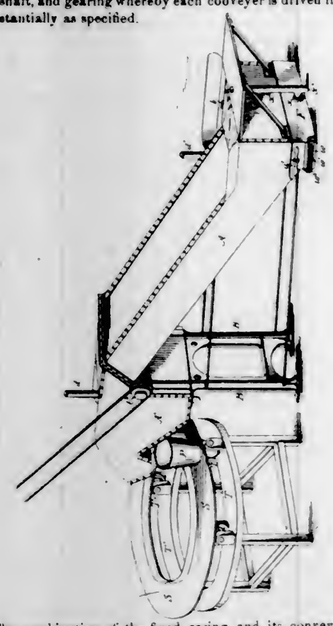
2. A scalding device consisting of a box or casing having a steam-tight closure at the upper or discharge end and projecting into a water-chamber at the lower end, in combination with an elevator located within the casing and extending down into the water in said chamber, and means for admitting steam to the casing, substantially as specified.

3. A scalding device consisting of a casing containing a conveyer and having at top and bottom water-chambers sealing the upper and lower ends of said casing, and pipes for causing a circulation of steam through the chamber between the two seals, substantially as specified.

4. A scalding device consisting of upper and lower casings, each containing a conveyer and each having a water-chamber at the lower end, that of the upper casing forming a seal for the upper end of the lower casing, in combination with a pipe for admitting steam to the space between the upper and lower seals, substantially as specified.

5. The combination of the upper and lower casings and their water-chambers forming seals with the endless-chain conveyers in each casing.

a driving-shaft, and gearing whereby each conveyer is driven from said shaft, substantially as specified.



6. The combination of the fixed casing and its conveyer and a water-chamber forming a lower seal with the upper casing, likewise having a conveyer, and a water-chamber forming an upper seal, said upper casing being pivoted, so as to be separated from the fixed casing to permit access thereto, substantially as specified.

7. The combination of the fixed casing and its conveyer with the upper movable casing having a hood which incloses the upper end of the fixed casing and provides for the sealing of the same by the water contained in said upper section of the casing, substantially as specified.

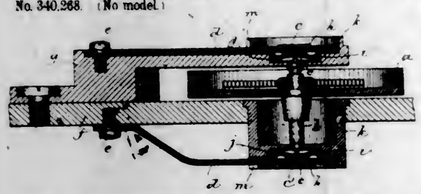
8. The combination of the casing, the endless-chain conveyer therein, and pivoted plates carrying the bearings for one of the sets of carrying-wheels of said conveyer and having ratcheted edges, with pawls for engaging said ratchets, so as to provide for the tightening of the chains, substantially as specified.

9. The combination of the casing, the sediment-box below the casing, valves for closing communication between the casing and said sediment-box, a sediment-tray in said box, and a detachable cap for closing the end of the sediment-box, substantially as specified.

10. The combination of the casing with the double-branched discharge-pipe and a valve closing the outlet branch and having an operating-stem extending through the other branch to a point above the water-level of the casing, substantially as specified.

11. The combination of the casing, the endless-chain conveyer therein, and the sprocket-wheel shaft having a bearing at one end in a socket-plate on one side of the casing and passing at the other end through a stuffing box at the other side of the casing, substantially as specified.

448,896. **JEWEL-SUPPORT FOR BALANCE-STAFFS OF WATCHES.** JULES VILLON, Lima, Peru. Filed Feb. 13, 1890. Serial No. 340,268. (No model.)



Claim.—1. In a watch-movement, the combination, with the compensation-balance and its staff, of the socketed jewels receiving the pivots of the staff, the settings containing said jewels and provided with beveled peripheries, the supports having circular recesses which present annular seats on which said beveled peripheries bear, and springs arranged to hold the settings on their seats with a yielding pressure, as set forth.

2. In a watch-movement, the combination, with the compensation-balance and its staff, of yielding cap-jewels movable endwise of the staff, the hole-jewels contained in settings, which are independently movable crosswise to the movement of the cap-jewels, springs yieldingly supporting said jewels, said springs being positively attached to the cap-jewels and bearing on the settings of the hole-jewels without positive connection therewith, whereby the hole-jewels are adapted to yield or move independently, and the supports having circular recesses presenting annular seats on which the beveled peripheries of the hole-jewels are yieldingly held by the springs, as set forth.

3. In a watch-movement, the combination, with the compensation-balance and its staff, of the cap-jewels movable endwise of the staff, the springs holding said cap-jewels in their free ends, the hole-jewels socketed to receive the pivots of the staff, the beveled settings holding the hole-jewels and movable edgewise therewith, and the supports having the recesses *j j'* constituting seats which support the beveled peripheries of said settings, the said springs bearing loosely at their free ends on the settings of the hole-jewels and holding the same yieldingly against their seats, as set forth.

448,897. **HORSE-DETACHER FOR VEHICLES.** CHARLES J. WALSER, Milwaukee, Wis. Filed Apr. 24, 1890. Serial No. 349,236. (No model.)



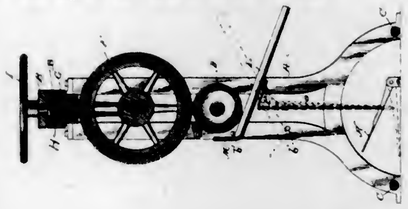
Claim.—1. In a horse-detacher, the combination, with the whiffletree, of trace-fastenings, each consisting of a socket adapted to be secured upon the end of the whiffletree, a sleeve at the outer end of said socket provided with an overhanging hook and with an inclined or spiral slot in one side thereof, a pin movable lengthwise in said sleeve, a stud fixed to said pin and projecting through said slot, and a strap or its equivalent attached to said stud and leading back into the vehicle, substantially as and for the purposes set forth.

2. In a horse-detacher, the combination, with the whiffletree, of trace-fastenings attached to the ends thereof and each consisting of a sleeve provided with an overhanging hook, a pin movable lengthwise in said sleeve, a stud secured in said pin and projecting through an inclined or spiral slot in said sleeve, a washer placed on said stud so as to bear against the outer edges of said slot, and a spring bearing against said washer and forcing it against the edges of said slot, substantially as and for the purposes set forth.

3. In a horse-detacher, a trace-fastening composed of a sleeve provided with an overhanging hook perforated in line with the opening in said sleeve, a pin movable lengthwise in said sleeve and provided with a stud projecting outwardly through an inclined or spiral slot in said sleeve, a tapering washer placed loosely on said stud and bearing against the outer edges of said slot, an adjusting-nut on said stud, and a spring interposed between said washer and adjusting-nut, substantially as and for the purposes set forth.

4. In a horse-detacher, the combination, with the whiffletree, of trace-fastenings, each consisting of a metallic sleeve adapted to be attached to the end of the whiffletree and provided with an overhanging hook, a pin inclosed and movable lengthwise in said sleeve, a stud secured to said pin and projecting through an inclined or spiral slot in the side of the sleeve, and a strap or other flexible connection attached to the protruding end of said stud and leading back therefrom to the vehicle, substantially as and for the purposes set forth.

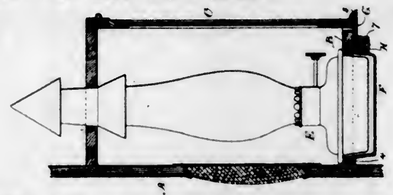
448,898. **IRONING-MACHINE.** LEWIS H. WATSON, Chicago, Ill. Filed Aug. 13, 1888. Serial No. 282,550. (No model.)



Claim.—1. The combination, with an ironing-machine, of a freely-tipping chute placed immediately below the lower roll and normally held at an inclination toward the rear of the machine, a foot-lever, and a connection having one end connected to the chute and its opposite end to the lever, whereby a pressure upon the foot-lever will cause the article ironed to be returned to the front of the machine, substantially as specified.

2. The combination, with an ironing-machine, of a freely-tipping chute placed immediately below the lower roll and provided with a vertical portion at one end, the said chute normally held at an inclination, a foot-lever, and connection between the lever and chute for tipping it out of its normal position, substantially as described.

448,899. **LAMP-BOX FOR CARS.** JAMES H. WHITE, New York, N. Y., assignor to the Manhattan Brass Company, same place. Filed Nov. 11, 1890. Serial No. 371,054. (No model.)

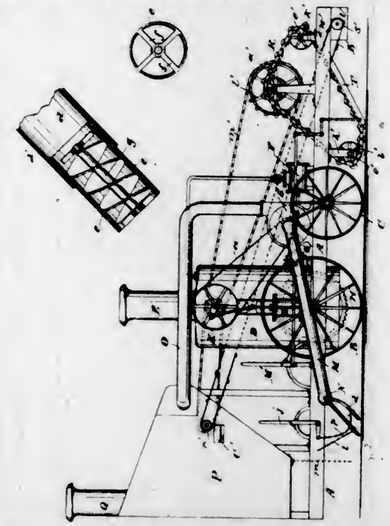


Claim.—1. The combination, with the lamp-box and the metallic cup connected with its bottom, of a spring-latch, and a latch-box receiving the inner end of the spring-latch and attached below the flange of the cup at the front edge thereof, substantially as set forth.

2. The combination, with the lamp-box and the metallic cup connected with its bottom, of a spring-latch, and a latch-box receiving the inner end of the latch and to the bottom of which such latch is attached, and a spring within the box and beneath the spring of the latch, substantially as set forth.

3. The combination, with the lamp-box, of a sheet-metal cup having a flange attached to the under side of the lamp-box, and a spring-latch beneath the flange and having the back end secured in place outside the cup, substantially as specified.

448,900. **STREET-CLEANING MACHINE.** HARVEY R. WOLFE, Louisville, Ky., assignor to the Wolfe Manufacturing Company, same place. Filed June 27, 1890. Serial No. 356,946. (No model.)



Claim.—1. In a street-cleaning machine, the combination, with a series of suction-tubes extending along the surface of the street, of exhaust-fans and dirt-receptacle, with suction-pipes connecting the same, substantially as shown and described.

2. In a street-cleaning machine, the combination, with dirt-receptacle, exhaust-fans, and exhaust-pipes, in connection with each other, of suction-pipes, dirt-drum, and suction-tubes dragging on the ground and extending in series the entire width of the machine, the whole arranged so that the dirt will be drawn up and deposited in the receptacle by the direct action of the inrushing current of air, substantially as shown and described.

3. In a street-cleaning machine, a series of scrapers to loosen and scrape up the stiff dirt, in combination with mud-chest, screw conveyer therein, bucket-conveyer, and dirt-receptacle, substantially as shown and described

4. In a street-cleaning machine, a series of endless-chain scrapers running separately from each other, and mud-chest to receive the dirt, arranged substantially as shown and described.

5. In a street-cleaning machine, two or more radiate plates arranged on a shaft or pin pivoted within the links of an endless chain and forming a scraping-wheel, and a spring to hold said wheel rigid until an obstruction is met, said wheels arranged in series on an endless chain to form endless-chain scrapers, substantially as shown and described.

6. In a street-cleaning machine, revolving screws pivoted longitudinally within the drag ends of the suction-tubes, so as to revolve under the action of the inrushing air, and thus keep the nozzles of the suction-tubes free from dirt, substantially as shown and described

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448,901. **HAIR-CLIPPER.** RICHARD C. WRIGHT, Koleen, Ind. Filed Dec. 6, 1890. Serial No. 373,779. (No model.)



Claim.—1. In a hair-cutter, a frame having an upper and lower plate, one of said plates having projecting teeth, levers pivoted between the plates having projecting cutters, which extend over the teeth, and a pressure-bar between one of the said plates and the cutters, the parts combined to operate substantially as shown.

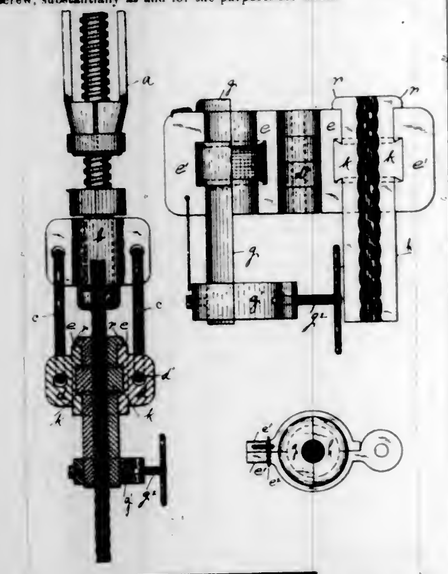
2. The combination of a base-plate having a comb formed upon its outer end, a top plate, a clamping-bolt which passes through the two plates and holds the parts in position, the pivoted levers provided with cutters upon their front ends, the pressure-bar, and a set-screw for regulating the pressure of the bar upon the cutters, substantially as described.

448,902. **ROPE-CLAMP.** PATRICK YORKE, Washington, Pa. Filed Aug. 11, 1890. Serial No. 361,727. (No model.)

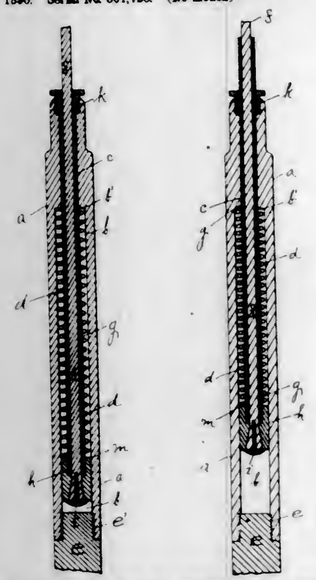
Claim.—1. In apparatus for drilling Artesian wells, the combination of a sleeve or collar composed of two parts hinged together and having an annular dovetailed recess therein, and a clamp formed of two clamping-pieces journaled within said collar and having dovetailed projections engaging with and turning within the dovetailed recess of the collar, substantially as and for the purposes set forth.

2. In apparatus for drilling Artesian wells, the combination of a sleeve or collar composed of two parts hinged together and having an annular dovetailed recess therein, a clamp formed of two clamping-pieces journaled within said collar and having dovetailed projections engaging with and turning within the dovetailed recess of said collar,

one of said clamping-pieces carrying a clamping-arm, and a clamping-screw, substantially as and for the purposes set forth.



448,903. ROPE-SOCKET. PATRICK YORKE, Washington, Pa. Filed Aug. 11, 1890. Serial No. 361,728. (No model.)

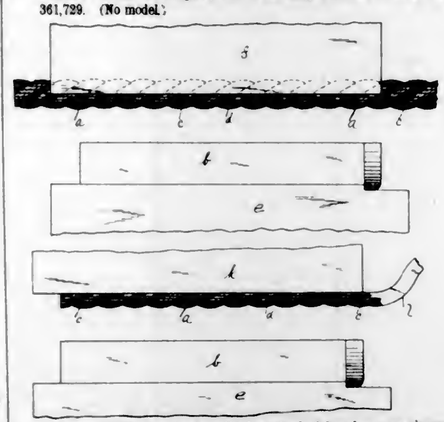


Claim.—1. In a rope-socket, the combination, with a socket-body having a connection for the tools at the base thereof, a central seat above the same, a central journal or guide passage above the central seat, and an annular shoulder forming the upper end of the seat at the base of said passage, of a wire rope extending through said guiding-passage and having a guiding-collar secured at the base thereof and fitting within said central seat, and a spring confined between said collar and said annular shoulder, substantially as and for the purposes set forth.

2. In a rope-socket, the combination of the socket-body having a journal or passage *c* and the central seat or passage *b*, having the annular shoulder *b'*, the rope *f*, having the collar *h* secured at its lower end and having the tube *g* passing through the journal *c*, and the spring *d*, confined between the collar *h* and annular shoulder *h'*, substantially as and for the purposes set forth.

3. In a rope-socket, the combination of the socket-body having the journal or passage *c* and the central seat *b*, provided with the annular shoulder *b'*, the rope *f*, having the collar *h* secured at its lower end and having the tube *g* passing through the journal *c*, the spring *d*, confined between the collar *h* and annular shoulder *b'*, and the stuffing-box *k* around said tube *g* at the upper end of the socket-bed, substantially as and for the purposes set forth.

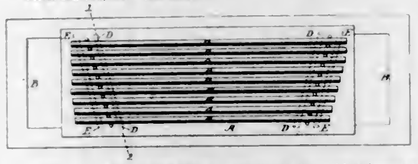
448,904. METHOD OF MAKING CLAMPS FOR WIRE ROPE. PATRICK YORKE, Washington, Pa. Filed Aug. 11, 1890. Serial No. 361,729. (No model.)



Claim.—1. The herein-described method of forming rope-clamps, consisting in heating a blank and then forcing a wire rope into the heated blank and so forming therein a seat which is the counterpart of the rope, substantially as and for the purposes set forth.

2. The herein-described method of forming rope-clamps, consisting in heating a blank and then forcing a wire rope into the heated blank and so forming therein a seat which is the counterpart of the rope, then heating a bar and forcing such heated bar into the impression in the blank, formed by the wire rope, so forming a mandrel corresponding to the rope, and then forging like seats or impressions in rope-clamps with such mandrel, substantially as and for the purposes set forth.

448,905. PROCESS OF NOTCHING AND CUTTING HOOPS FOR BARRELS. MARIA E. BEASLEY, Philadelphia, Pa. Filed Feb. 8, 1890. Serial No. 339,706. (No model.)



Claim.—1. The process herein described of notching hoops, said process consisting, first, in placing the hoop-blanks to be cut in line upon a table; second, arranging the angle of the notching-knife bar to the bilge of the barrel, and, third, cutting the notches in the series of hoops simultaneously, substantially as set forth.

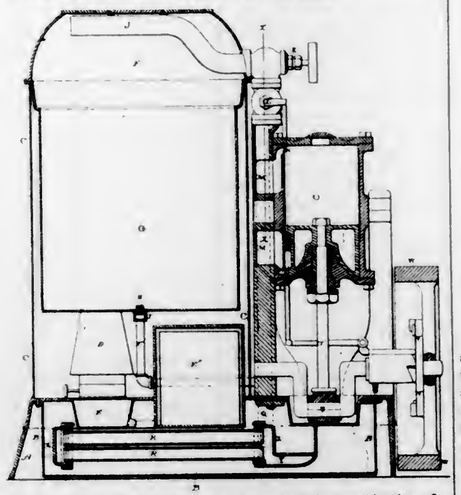
2. The process herein described of notching and cutting hoops, said process consisting in, first, arranging the hoops for one end of a barrel upon the cutting-table; second, arranging the notching and cutting knives at the proper angle for the bilge of the barrel, and, third, severing the hoops on said angle simultaneously, substantially as described.

448,906. RAILWAY SIGNAL-TORCH. WALTER C. BECKWITH, Fostoria, Ohio. Filed Aug. 19, 1890. Serial No. 362,418. (No model.)



Claim.—A torch consisting of a tube in which the illuminating material is placed, an outer ferrule at its lower end, a plug placed therein, a fusee extending from the illuminating material beyond the end of the said tube, a cover H, which incloses the upper end of the tube, a short tube I, placed in the upper end of the cover and which forms a stop therefor, and a removable plug in the upper end of the said short tube, which is provided with chemical substance upon its inner end with which to light the fusee, all combined to make a strong and safety signal-torch, substantially as specified.

448,907. VACUUM-ENGINE. LUCIEN A. BROTT, Groton, N. Y. Filed May 17, 1890. Serial No. 352,194. (No model.)



Claim.—1. In a condensing steam-engine, the combination of a boiler having a supporting-base which extends to one side thereof, a condenser within the said base and exteoding to one side of the boiler, a cylinder-frame upon the said extension directly over the said condenser and having exhaust-channels which communicate with the boiler, and the boiler and cylinder, whereby all of the parts are compactly assembled, substantially as shown and described.

2. In a condensing steam-engine, the combination of a boiler having a base which extends to one side thereof, a horizontal water-chamber within the said base and which extends to one side of the boiler, horizontal pipes within the said water-chamber having a chamber Y, which extends under the extended end of the said base, a pump having its lower end resting upon and directly communicating with the said chamber Y, a cylinder-frame upon the said extension having an exhaust-channel which communicates with the chamber Y, and an inlet channel which communicates with the boiler and the cyclinder, substantially as specified.

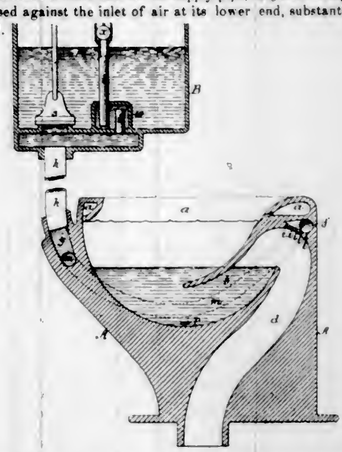
3. In a condensing steam-engine, the combination of the boiler having a series of vertical pockets, a pipe extending transversely across their lower ends and communicating therewith, a cylinder and chambers communicating with the boiler and cylinder, a condenser and channels communicating therewith and with the cylinder, and a pump connected with the condenser and the said pipe, whereby the water from the condenser is distributed throughout the pockets, substantially as described.

4. In a condensing steam-engine, the combination of the boiler having a base, the cylinder, a condensing-chamber within the base below the boiler, a series of lamps having reservoirs which extend into the condensing-chamber, whereby the fluid is kept cool, and communication between the cylinder, boiler, and condenser, substantially as described.

5. In a condensing steam-engine, the combination of the boiler, a water-chamber, the condenser therein, the cylinder, a cooler, and the pump which has its lower end connected with the condenser and the boiler and its upper end with both the water-chamber and the cooler, and valves within the said communications, whereby water is forced from the water-chamber to the cooler and from the condenser to the boiler, substantially as specified.

448,908. WATER-CLOSET. JAMES G. BRYAN, Philadelphia, Pa. Filed Nov. 6, 1890. Serial No. 370,518. (No model.)

Claim.—1. The combination of the bowl having a flushing-rim, the supply-reservoir, the valved pipe conducting water from the reservoir to the bowl, but sealed against the inlet of air at the upper end when the valve is closed, and a curved pipe or passage connecting the supply-pipe and flushing-rim and forming a bend below the latter, so as to constitute a water seal for the supply-pipe, the latter being otherwise closed against the inlet of air at its lower end, substantially as specified.



2. The combination of the bowl having a siphon discharge-pipe and jet-chamber therefor, a supply-reservoir, the valved pipe conducting water from the reservoir to the bowl, but sealed against the inlet of air at the upper end when the valve is closed, and a curved pipe or passage connecting the supply-pipe and jet-chamber, and forming a bend below the latter, so as to constitute a water seal for the supply-pipe, the latter being otherwise closed against the inlet of air at its lower end, substantially as specified.

3. The combination of the bowl having a flushing-rim, a siphon discharge-pipe and a jet-chamber for the latter, a water-reservoir, a valved pipe conveying water from said reservoir to the bowl, but sealed against the inlet of air at the upper end when the valve is closed, and curved pipes or passages connecting the supply-pipe respectively with the flushing-rim and jet-chamber of the bowl, but forming bends below the same, so as to retain the water and constitute seals whereby any entrance of air to the lower end of the supply-pipe is prevented, substantially as specified.

4. The combination of the bowl, the supply-reservoir, the valved pipe conveying water from the reservoir to the bowl, but sealed against the inlet of air at its upper end when the valve is closed, a curved pipe or passage connecting the supply-pipe with an outlet at the top of the bowl and forming a bend below said outlet, but above the bottom of the bowl, so as to retain the water and seal the lower end of the supply-pipe, and a drainage-passage leading from the lower portion of the bend into the bowl, substantially as specified.

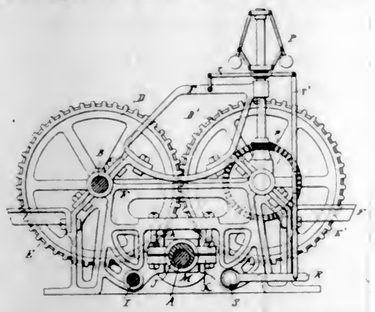
448,909. REVERSING AND BRAKE MECHANISM FOR HOISTING APPARATUS. CHARLES A. CASE, New York, N. Y. Filed May 22, 1890. Serial No. 352,762. (No model.)

Claim.—1. The combination of a frame and a power-shaft carrying a friction-wheel with two friction-wheels indirectly geared to each other through intermediate gear-wheels, and adjustable eccentric-bearings for the power-shaft, whereby the friction-wheel on the power-shaft may be brought into driving contact with either of the geared friction-wheels, substantially as described.

2. The combination of a frame and a power-shaft carrying a friction-wheel with two friction-wheels geared together indirectly through intermediate gear-wheels, eccentric-bearings for the power-shaft, and stationary but adjustable bearings for the said eccentric-bearings, substantially as described.

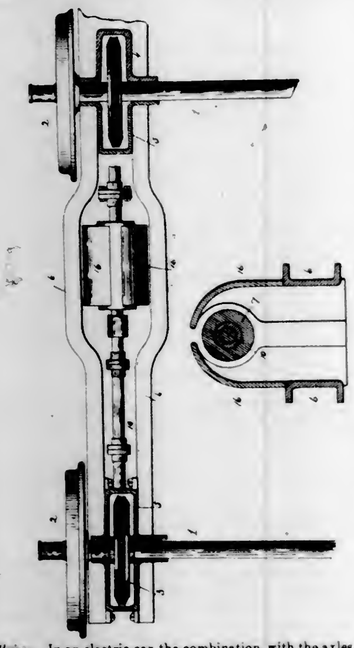
3. The combination of a frame and a power-shaft carrying a friction-wheel with two friction-wheels, a brake-wheel for one of the latter, gear-wheels connecting said two friction-wheels, eccentric-bearings for the power-shaft, and levers controlling the brake for the brake-wheel and the said eccentric-bearings, substantially as described, whereby the driving friction-wheel can be moved into and out of contact with either of the geared friction-wheels, and the brake will be applied to the brake-wheel as the driving friction-wheel is disengaged from either of the geared friction-wheels.

4. The combination of a frame and a power-shaft carrying a friction-wheel with two friction-wheels geared together indirectly through intermediate gear-wheels and mounted to turn in bearings in the frame, a brake wheel for one of the friction-wheels, a brake-strap for the latter, and a cross-shaft having an eccentric to apply the brake-strap to the wheel and controlling the adjustment of the eccentric-bearings for the power-shaft to throw the driving friction-wheel into or out of contact with either of the geared friction-wheels, substantially as described.



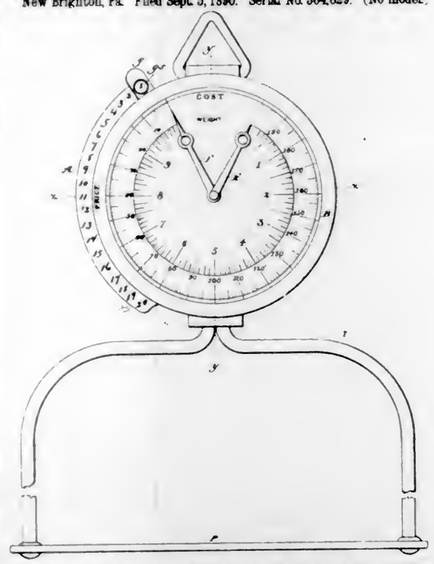
5. The combination of a power-shaft having a friction-wheel and eccentric-bearings for the shaft with two friction-wheels, with either of which the driving friction-wheel may be brought into contact, a cross-shaft having a brake-shoe for one of the geared friction-wheels, and a centrifugal governor controlling the said brake-shoe, all substantially as described.

448,910. **ELECTRIC STREET-CAR DRIVING-GEAR.** CONRAD M. CONRADSON, Madison, Wis. Filed Dec. 3, 1890. Serial No. 373,451. (No model.)



Claim.—In an electric car, the combination, with the axles having worm-gears mounted thereon, said gears being provided with surrounding casings journaled on the axles and having extensions on which the ends of the armature-shaft are journaled, of the channel-bars connecting said casings, and an electric motor mounted on said channel-bars in an inclined position, the inclined armature-shaft having oppositely-acting worms at each end engaging with the worm-gears at points above and below the axles, respectively, substantially as described.

448,911. **WEIGHING AND PRICE SCALE.** JOHN W. CULMER, New Brighton, Pa. Filed Sept. 5, 1890. Serial No. 364,029. (No model.)



Claim.—1. In a combined weighing and price scale, the combination, with the counterbalanced weight-receiving platform, a dial provided with a weight-indicating and a money-value scale, and pointers adapted to travel over the respective weight-indicating and money-value graduations, of two sectors pivotally supported at their opposite ends and having overlapping portions, each sector having connection with and constructed to control the movements of its respective pointer, and one of the sectors having connection with the said weight-receiving platform, and a connection between the overlapping portions of the sectors, whereby a movement of one is transmitted to the other, substantially as described, for the purpose specified.

2. In a combined weighing and price scale, the combination, with the counterbalanced weight-receiving platform, a dial provided with a weight and a money-value indicating scale, and pointers constructed to travel over the said weight and money-value graduations, respectively, of two sectors connected with and adapted to control the movements of the respective pointers, one of the sectors having connection with the said weight-receiving platform, and a variable connection between the sectors to govern the relative movements of the pointers, substantially as set forth.

3. The combination, with the counterbalanced weight-receiving platform, a dial having a money-value and a weight indicating scale, and pointers adapted to travel over the respective scales, of two sectors, each having connection with and adapted to control the movements of the respective pointers, a connection between one of the sectors and the weight-receiving platform, a connection between the sectors, and mechanism for positively and properly adjusting the connection between the sectors, whereby the relative movement of the aforesaid pointers can be regulated according to a predetermined scale, substantially as set forth.

4. The combination, with the counterbalanced weight-receiving platform, a dial provided with a money-value and a weight indicating scale, pointers constructed to travel over the said respective scales, and two sectors, one having connection with the weight-receiving platform and each having connection with and constructed to control the movements of its respective pointer, of a connection between the sectors, an adjusting device for moving the said connection, and an arm adapted to move over a graduated arc and having a portion thereof constructed to engage with the said adjusting device and operate the same to change the position of the said connection between the sectors, substantially as set forth, for the purpose described.

5. The combination, with the counterbalanced weight-receiving platform, pointers for indicating the money-value and weight on suitable scales, two sectors for controlling the movements of the pointers, respectively, and a connection between the sectors, of a feed-screw having engagement with the said connection, a graduated arc, and an arm concentric with the arc and having a segment which is adapted to engage with and effect a movement of the said feed-screw, substantially as described, for the purpose specified.

6. The combination, with the counterbalanced weight-receiving platform, pointers for indicating the weight and the money-value on suitably-graduated scales, and two sectors having engagement with and adapted to control the movements of the respective pointers, one of the sectors having connection with the weight-receiving platform, of a connection between the sectors, a feed-screw journaled at its inner end to one of the sectors, a short shaft journaled in a bearing near the pivot-support of the said sector and having a ball-and-socket connection with the outer end of the feed-screw, and provisions, as the cog-segment and pinion, for engagement with and rotating the said short shaft, substantially as set forth.

7. The combination, with the counterbalanced weight-receiving platform, weight and money-value indicating scales, pointers adapted to move over the respective scales, and two sectors, one having connection with the weight-receiving platform, and each having connection with and adapted to operate its respective pointer, of a connection between the sectors, a feed-screw having attachment with the said connection, a short shaft having a pinion and having attachment with the said feed-screw, and a toothed segment meshing with the said pinion and having an arm by which it is operated, said arm moving over a graduated arc, substantially as set forth.

8. The combination, with the counterbalanced weight-receiving platform, a dial provided with a money-value and a weight indicating scale, and two sectors pivotally supported at their opposite ends and constructed to operate and move pointers over the respective weight and money-value graduations, and having overlapping portions that are provided with slots, one of said sectors being in connection with the weight-receiving platform, of a connection between the sectors, having its ends projected into the said slots therein, and instrumentalities for moving the said connection in the said slots in the sectors according to a predetermined scale, whereby the relative movement of the pointers over the money-value and weight indicating graduations can be varied, as required, substantially as described, for the purpose specified.

9. The combination, with the case provided with a money-value and a weight indicating scale, a shaft having a pointer on its outer end and a pinion on its inner portion, a boss or sleeve mounted on the shaft and having a pinion on its inner end and a pointer on its outer end, the pointers being arranged to travel over the respective scales, and a counterbalanced weight-receiving platform, of two sectors pivoted at their opposite ends and having engagement with the respective pinions, one of the sectors having connection with the said weight-receiving platform, and the said sectors having overlapping portions, which are slotted, and a connection between the sectors, having portions projected into the slots in the said sectors, the said connection being adjustable between the sectors, substantially as described, for the purpose specified.

10. The combination of the case having a stud a' projecting inward from its back plate, and having a money-value and a weight indicating set of graduations on its face, a shaft stepped in said stud and projected through the face and having a pointer on its outer end and having a pinion on its inner end, a boss or sleeve mounted on the said shaft and having a pinion on its inner end and a pointer on its outer end, a counterbalanced weight-receiving platform, two sectors, one having engagement with the said weight-receiving platform, and each meshing with its respective pinion, the sectors having overlapping portions that are slotted, a connection between the overlapping portions, having portions projected into the slots therein, a feed-screw, a toothed segment mounted on the stud a' and meshing with the feed-screw, and having an arm, and a graduated arc for the arm of the toothed segment to move over, substantially as described, for the purpose specified.

11. The combination, with two oppositely-disposed dials, each having a money-value and a weight indicating scale, two sets of pointers, one set for each dial, and a counterbalanced weight-receiving platform, of three sectors, the middle sector having connection with the weight-receiving platform and adapted to directly control the movements of corresponding pointers on the dials, the outer sectors having independent attachment with the other pointer on the dial, and a variable connection between the middle and the side sectors, substantially as described, for the purpose specified.

12. In a weighing and price scales, the combination of concentric dial-scales indicating the weight, the cost, and the price, the indicators therefor, a counterbalanced weight-receiving platform substantially such as described for connecting the weight and cost indicators with said platform, and mechanism substantially such as described for connecting the price-indicator with the said weight and cost connecting indicators, for the purpose stated.

13. In weighing and price scales, the combination of concentric dial-scales indicating the weight, the cost, and the price, indicators therefor, a counterbalanced weight-receiving platform, mechanism substantially such as described for connecting the weight and cost indicators with said platform, mechanism substantially such as described for connecting the price indicator with said weight and cost indicators, and mechanism substantially such as described whereby the relations of the weight and cost indicators can be fixed, changed, and regulated, for the purpose stated.

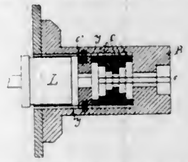
14. In a weighing and price scales, the combination of concentric dial-scales indicating the weight, cost, and the price, a counterbalanced platform, the indicators k' and l', their actuating-pinions K and L, the toothed and slotted sectors E and F, the screw I, the nut i^3, having the arms i in the slot of said sectors and engaging said nut, the socket-shaft O, connecting said screw, the pinion h on said socket-shaft, and the segment-rack $G\,g^3$, engaging said pinion and having the indicator for the price-scale, the said slotted sector E having a pivoted connection with the said platform, for operating in the way described.

15. The combination of the counterbalanced platform, dial-scales indicating the weight, cost, and the price, indicators therefor, and a device for connecting these indicators for operation in the way described, consisting of the slotted toothed sectors E and F, the pinions K and L, the screw I, the nut i^3, engaging said screw and the slots of said sectors, the shaft O, having the pinion h, a ball-and-socket connection for said screw and shaft, the link M, and the segment-rack $G\,g^3$, engaging said pinion, substantially as described.

16. The combination of a counterbalanced platform, a dial-scale indicating the weight, cost, and price of the article in money-values, weight, and costs, pointers rotating upon such dial-scale, mechanism for operating said pointers, mechanism to control and regulate the relation of the weight pointer to the cost-pointer, the price-scale A, the segmental rack g^3 and indicator g^2, and the pinion h, connecting and operating said controlling and regulating mechanism in the way described, and the link M, connecting said platform with the rotating pointers and their controlling and regulating mechanism.

17. In weighing and price scales, the central shaft k, the fixed and loose pinions K L thereon, the pointers k' l', the toothed sectors engaging said pinions, pivoted upon fixed studs r s and having radial slots in lapping relation to each other, the screw I, arranged between the slotted sector parts and pivotally mounted in the sector E, the nut i^3, engaging said screw and the slots of said sectors, the shaft O, mounted in the fixed stud t and having the pinion h and connected by ball-joint with said screw, the toothed segment g^3, mounted upon the fixed boss a' and having the indicator g^2, the counterbalanced platform, the link M, connecting it with the sector E, and the weight, cost, and price indicating dial scales, for operation as described.

448,912. **LOCK.** CHARLES E. A. A. DENY, Paris, France. Filed June 9, 1890. Serial No. 354,855. (Model.) Patented in France Mar. 9, 1889, No. 196,585, and in England May 3, 1890, No. 6,873.



Claim.—1. A lock having a bolt and at the side a barrel with a slotted opening and a notched chamber and a key with like bits on both sides of the stem to correspond with the notches in the chamber, whereby the key may make a complete rotation in the barrel, substantially as described.

2. A lock having a bolt, and also a barrel provided with a slotted opening and a notched chamber to correspond with the bits of the key, and a fixed ring or washer having a slot at an angle to the slot in the barrel, as and for the purposes set forth.

3. A lock having a bolt and a barrel provided with a slotted opening and washers, each washer having a central opening to correspond to one of the bits of the key, and a radial slot, substantially as and for the purposes set forth.

4. A lock having a bolt and a barrel provided with a slotted opening and washers, each washer having a central opening to correspond to one of the bits of the key, a radial slot, and one or more warded disks, substantially as set forth.

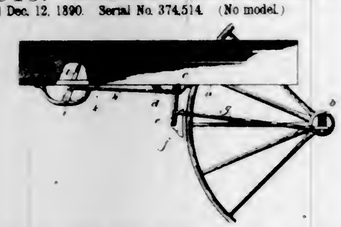
5. A lock having a bolt and a barrel having a slotted opening and washers, each of which has a central opening and two radial slots, one to correspond with the slot in the barrel and the other at an angle to the first slot.

6. A lock having a bolt, a barrel provided with a slotted opening and a fixed washer having a central opening and a slot at an angle to the slot in the barrel, and additional washers, each having a central opening and two radial slots, one to correspond with the slot in the barrel and the other to correspond with the slot in the fixed washer, all substantially as and for the purposes set forth.

7. A lock having a bolt and a barrel provided with a slotted opening and washers, each having a central opening, two radial slots, one to correspond with the slot in the barrel and the other at an angle thereto, and a lantern-piece into which the key is adapted to pass to operate the bolt, all substantially as and for the purpose set forth.

8. A lock having a bolt and a barrel provided with a slotted opening and a fixed washer having a central opening and a slot at an angle to the slot in the barrel, additional washers, each having a central opening and two radial slots, one to correspond with the slot in the barrel and the other to correspond with the slot in the fixed washer, and a lantern provided with a radial slot to receive the key to operate the bolt.

448,913. **VEHICLE-BRAKE.** ERNST ENDERES, Little Port, Iowa. Filed Dec. 12, 1890. Serial No. 374,514. (No model.)



Claim.—In a vehicle-brake, the combination of the loop-brackets *d d* secured to the body, the sliding cranked brake-rod, the braces *g g*, connecting the vertical arms *c c* of the sliding brake-rod with the axle, and suitable connections for operating the brake-rod, as shown and described.

448,914. **FILAMENT FOR INCANDESCENT ELECTRIC LAMPS.** GEORG ERLWEIN and FRIEDRICH G. A. HELLER, Berlin, Germany, assignors to Siemens & Halske, same place. Filed July 22, 1890. Serial No. 359,545. (No specimens.)



Claim.—1. A filament for electric lamps, composed of a carbon core and a hardly-fusible coating consisting, essentially, of a compound of carbon and manganese, substantially as described.

2. A filament for electric lamps, composed of a carbon core and a coating of carbide of manganese, substantially as described.

448,915. **FILAMENT FOR INCANDESCENT ELECTRIC LAMPS.** GEORG ERLWEIN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed July 22, 1890. Serial No. 359,546. (No specimens.)

Claim.—1. In incandescent electric lamps, a glow-body consisting of a carbon filament for a core, and a coating of nitride of silicon inclosing the said core, substantially as described.

2. The process of preparing a filament for incandescent electric lamps by heating to incandescence a carbon filament in an atmosphere of volatile silicon compounds with nitrogen compounds free of oxygen, whereby silicon and nitrogen are simultaneously eliminated, and combining as nitrides are deposited in the filament, forming a tough and refractory coating therefor, substantially as described.

3. The process of preparing a filament for incandescent electric lamps by heating to incandescence a carbon filament in an atmosphere of volatile silicon compounds with ammonia, whereby silicon and nitrogen are simultaneously eliminated, and combining as nitrides are deposited in the filament, forming a tough and refractory coating therefor, substantially as described.



4. The process of preparing a filament for incandescent electric lamps by heating to incandescence a carbon filament in an atmosphere of silicic chloride with ammonia, whereby silicon and nitrogen are simultaneously eliminated, and combining as nitrides are deposited in the filament, forming a tough and refractory coating therefor, substantially as described.

448,916. **FILAMENT FOR INCANDESCENT ELECTRIC LAMPS.** GEORGE ERLWEIN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Oct. 25, 1890. Serial No. 369,356. (No model.)



Claim.—1. A filament for electric lamps, composed of a carbon core and a coating consisting of phosphorus, combined with a hardly-fusible metal, substantially as described.

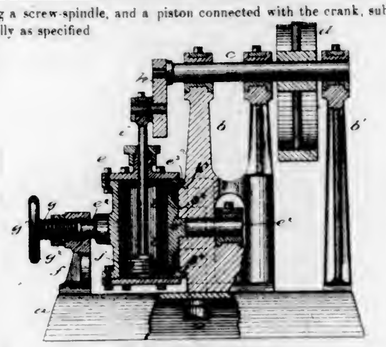
2. A filament for electric lamps, composed of a carbon core and a coating consisting, essentially, of phosphorus and iron, substantially as described.

3. A filament for electric lamps, composed of a carbon core and a coating of phosphide of iron, substantially as described.

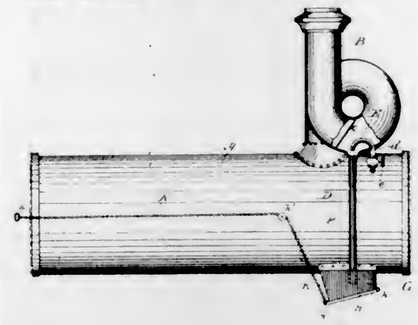
4. The process of preparing filaments for electric lamps, which consists in soaking a carbon core in a solution of some salt of iron and heating the soaked core in an atmosphere of vaporized phosphorus, substantially as described.

448,917. **STEAM-ENGINE.** FRANK. M. GARLAND, New Haven, Conn. Filed Aug. 1, 1890. Serial No. 360,653. (No model.)

Claim.—In an oscillating engine, in combination, a bed supporting standards bearing a shaft with a pulley and crank, one of said standards being provided with exhaust and live steam chambers and a port-face having a circular shoulder provided with a groove having an opening into the exhaust-chamber, a cylinder with a port-face having an annular flange fitting and projecting over the shoulder on the standard, supported by integral trunnions one passing through and held by the standard and the other passing into a threaded support bearing a screw-spindle, and a piston connected with the crank, substantially as specified.



448,918. **SPARK-ARRESTER FOR SMOKE-PIPES.** WILLIAM B. HALE and ROBERT E. DURINGER, Fort Worth, Tex.; said Hale assignor to Benjamin C. Evans, same place. Filed Nov. 24, 1890. Serial No. 372,448. (No model.)



Claim.—1. In attachments for steam-boilers, the combination of a bent smoke-pipe having one complete turn downward, a cinder-pipe opening into the lowest portion of said turn, and a steam-jet actuated by hand for blowing down said cinder-pipe, substantially as described.

2. In attachments for steam-boilers, the combination of a bent smoke-pipe having one complete turn downward, a cinder-pipe opening into the lowest portion of said turn, and a steam-jet actuated by hand for blowing down said cinder-pipe, a receptacle beneath said cinder-pipe for the cinders, said receptacle having a hinged door for dumping the said cinders, substantially as described.

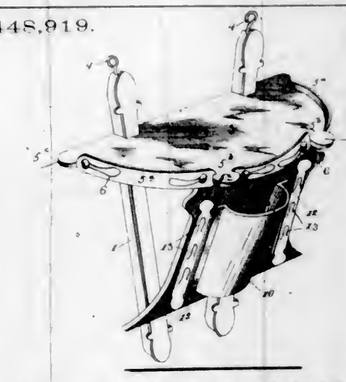
3. In attachments for steam-boilers, the combination of a bent smoke-pipe having one complete turn downward, a cinder-pipe opening into the lowest portion of said turn, a coarse wire screen tilted backward and overhanging said pipe, and a steam-jet actuated by hand for blowing down said cinder-pipe, a receptacle beneath said cinder-pipe for the cinders, said receptacle having a slanting bottom hinged at the upper end and secured at the lower end by means of a chain passing over a suitable roller and leading to the rear of the boiler, substantially as described.

4. In attachments for steam-boilers, the combination of a bent smoke-pipe having one complete turn downward, a cinder-pipe opening into the lowest portion of said turn, and a coarse wire screen tilted backward and overhanging said turn, a receptacle having a slanting bottom hinged at the upper end and secured at the lower end by means of a chain passing over a suitable roller and leading to the rear of the boiler, substantially as and for the purposes described.

448,919. **COMBINED SHELF-BRACKET, &c.** MATTHEW HEPPERNAN, Newburg, Ohio. Filed June 12, 1890. Serial No. 355,206. (No model.)

Claim.—The herein-described combined shelf, broom-receiver, and card and paper holder, consisting of the vertical bars, with means for attaching them to a wall, the semicircular shelf having the outwardly-projecting lugs, the upwardly-projecting rims, the depending wall, the curved tapering strip secured thereto, forming an open-ended broom-receiver, and the spring-clamps for holding cards and other articles, substantially as described.

448,919.



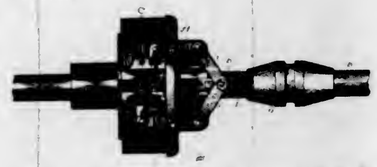
448,920. **FILAMENT FOR INCANDESCENT ELECTRIC LAMPS.** FRIEDRICH G. A. HELLER, Berlin, Germany, assignor to Siemens & Halske same place. Filed July 22, 1890. Serial No. 359,544. (No model.)



Claim.—1. A filament for electric lamps, consisting, essentially, of a small carbon rod or core with a covering of metallic chromium deposited upon the outside thereof, substantially as described.

2. A filament composed, essentially, of carbon and chromium, substantially as described.

448,921. **FRICTION-CLUTCH.** JOHN F. HOLMES and JEROME P. TOMPKINS, Waterford, N. Y. Filed Dec. 9, 1890. Serial No. 374,047. (No model.)



Claim.—1. In a clutch, a split ring provided with flanges, levers pivotally connected between their ends to the two parts of the ring, respectively, and having one of their ends engaging the said flanges, and a sliding collar for operating the opposite ends of the said levers, substantially as specified.

2. In a clutch, a split ring provided with flanges, connecting-bolts, levers pivoted between their ends in the ends of the bolts and each of said levers having one end engaging the said flanges, and a sliding collar which operates the opposite ends of the levers, for the purpose described.

3. The combination of the hub, the split ring provided with flanges, the connecting-bolts, levers provided with cams upon their ends, a sliding collar, and a toggle-joint connection between the collar and the levers, substantially as set forth.

4. In a clutch, a hub, a split ring having flanges, levers pivoted between their ends and having one end engaging the said flanges, a lever L, pivoted upon the hub, links connecting the lever L and the adjacent ends of the said levers, and a sliding collar which operates the lever L, substantially as set forth.

448,922. STEEL AND LITHOGRAPH PLATE RULING MACHINE. JOHN HOPE, Jr., Providence, R. I. Filed Oct. 14, 1890. Serial No. 368,145. (No model.)



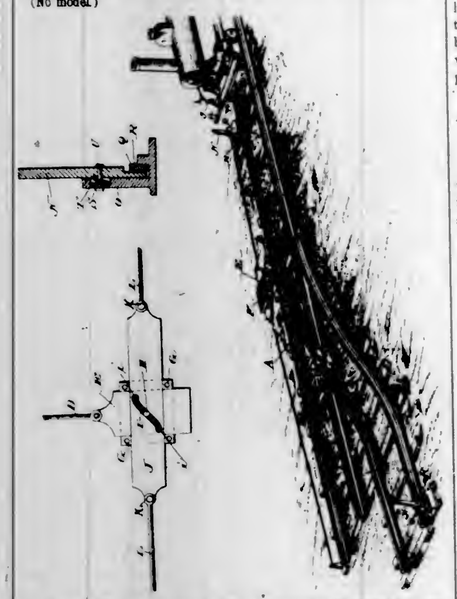
Claim.—1. In a ruling-machine, the combination, with a feeding-table, the track, and the carriage, of two or more laterally-adjustable pivoted arms provided with ruling-points arranged one behind the other and offset laterally, so as to rule the desired parallel lines upon the proper movement of the carriage, substantially as described.

2. In a ruling-machine, the combination, with the feeding-table, the track, and the carriage, of two or more laterally-adjustable pivoted arms provided with ruling-points arranged one behind the other and offset laterally, so as to rule the desired parallel lines upon the proper movement of the carriage, and means for raising the ruling-points from the work preparatory to their backward movement, substantially as described.

3. In a ruling-machine, the combination, with the feeding-table, the track, and the carriage, of the sliding bars, the arms pivoted to the sliding bars, the ruling-points attached to the pivoted arms, and the graduated screws whereby the lateral position of the said bars and ruling-points can be adjusted for ruling parallel lines at a specified distance apart, substantially as described.

4. The combination, with the feeding-table, the track, and the carriage carrying two or more ruling-points arranged one behind the other and offset, as described, of the operating-screw and the index which is graduated to cause the movement of the feeding-table through a space which is one space greater than the number of spaces between the ruling-points employed, substantially as described

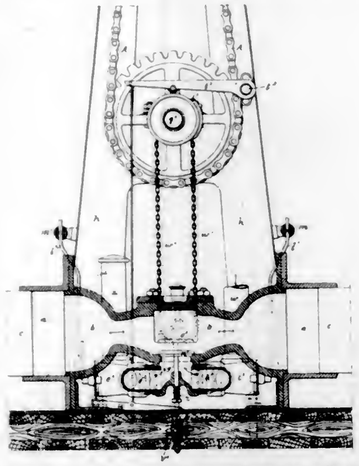
448,923. AUTOMATIC RAILROAD-SWITCH. EDWIN S. KASE and ALBERT F. BORDEN, Danville, Pa. Filed Nov. 28, 1890. Serial No. 372,890. (No model.)



Claim.—The combination of the switch-lever, its upright or support having a recess near its upper end, a fulcrum-bolt passing through said upright and lever, a spring located in said recess and having its ends secured to the upright and lever, respectively, and a recessed bar sliding horizontally in a groove in the base of the lever-support and engaging loosely the lower end of the lever, substantially as described.

448,924. GAS-ENGINE. OSSIBLAW KOSTOVITS, St. Petersburg, Russia. Filed June 22, 1888. Serial No. 277,388. (No model.) Patented in England June 6, 1888, No. 8,273.

Claim.—1. In a gas or other engine, the combination of two cylinders containing pistons with an intermediate exploding-chamber connecting the two cylinders, and an electric igniting device contained within this intermediate explosion-chamber, substantially as herein set forth.



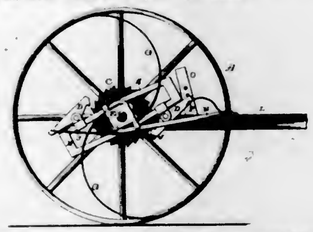
2. In a gas or other engine, the combination of two cylinders with an intermediate exploding-chamber provided with an igniting device therein, and inlet and outlet valves, said chamber enlarging at each end into a semi-globular shape, forming the end of the cylinder, substantially as set forth.

3. In a gas or other engine, the combination of two cylinders in line with each other, an exploding-chamber between them, with pistons, piston-rods, and a crank-shaft, connecting-rods, and walking-beams connecting the piston-rods with the crank-shaft, one of the walking-beams being straight and the other oblique, as and for the purposes set forth.

448,925. TOBACCO SUBSTITUTE. LEVI H. MILLER, Dublin, Tex., assignor of one-half to William P. Rose, same place. Filed Jan. 17, 1891. Serial No. 378,135. (No specimens.)

Claim.—A compound as a tobacco substitute, consisting of gentian-root, licorice extract, sassafras-bark, prickly-ash bark, horse-radish root, calamus, and jaboraudi-bark, in or about the proportions specified.

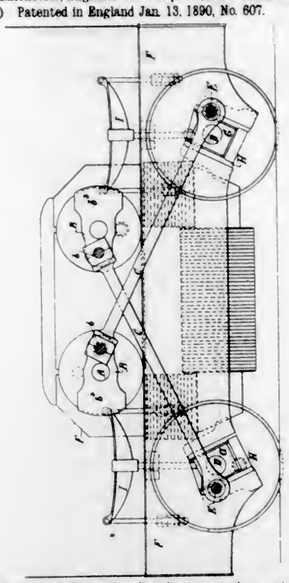
448,926. HAY-RAKE. JOHN M. PARONTO, Hoyt, Kans. Filed Dec. 23, 1890. Serial No. 375,617. (No model.)



Claim.—1. The combination of the driving-wheels, the revolving axle secured to and revolving with the wheels, and a ratchet-wheel rigidly secured to the axle, with a sleeve or frame placed upon the axle and provided with two sets of rake-teeth, a frame, two spring-actuated pawls mounted upon opposite ends of the frame and connected together, and an operating-lever provided with a stop for the pawls to strike against, substantially as shown.

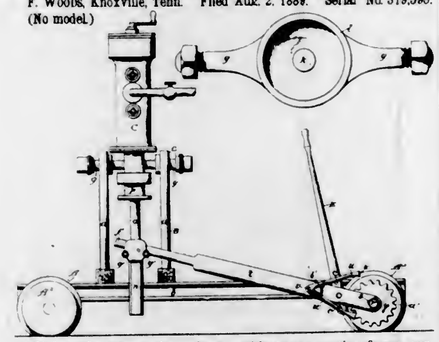
2. The combination of a revolving axle, the driving-wheels rigidly secured to the axle and causing it to revolve, a ratchet-wheel rigidly secured to the axle, a sleeve or frame applied to the axle and formed into separate parts, a frame for uniting the two parts of the frame rigidly together, two spring-actuated pawls mounted upon the frame and connected together, an operating-lever provided with a stop for the pawls to strike against, and two sets of rake-teeth secured to the sleeve, substantially as described

448,927. LOCOMOTIVE-ENGINE. RALPH PEACOCK and HERMANN L. LANGE, Manchester, England. Filed Sept. 20, 1890. Serial No. 365,603. (No model.) Patented in England Jan. 13, 1890, No. 607.



Claim.—In vehicles driven by electric motors, the combination of the shaft or shafts of the armature or armatures of the motor and the driven axle or axles of the vehicle with cranks and diagonally-disposed connecting-rods connecting the said shaft or shafts with the said axle or axles, and axle-boxes and guides in an inclined position, substantially as and for the purposes set forth.

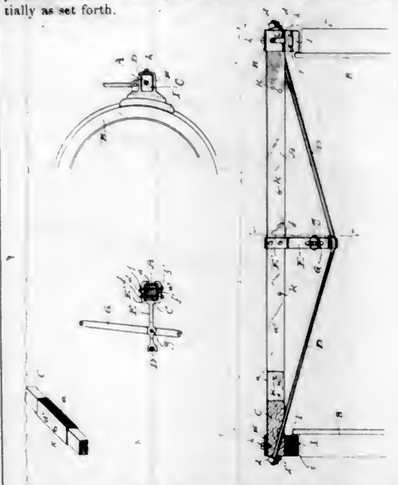
448,928. STONE-CHANNELER. WILLIAM P. SCATES and JAMES F. WOODS, Knoxville, Tenn. Filed Aug. 2, 1889. Serial No. 319,595. (No model.)



Claim.—In a stone channeling machine, a supporting-frame, supporting-wheels, a cylinder mounted thereon, a piston-rod carrying a cutter, a ratchet upon one of the shafts of the said supporting-wheels, a lever pivoted at one end upon the said shaft and its opposite end being loosely connected with the piston-rod, a pawl upon the lever for turning the ratchet-wheel in one direction, a second pawl upon the lever for turning the ratchet-wheel in the opposite direction, and a lever which when turned in one direction disengages one pawl from the said wheel and allows the other pawl to engage it, and vice versa when turned in the opposite direction, the parts combined to operate in substantially the manner shown and described.

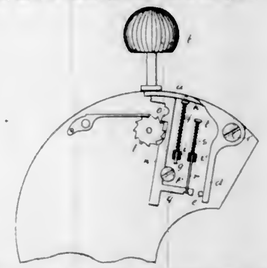
448,929. BRAKE-BEAM. GEORGE N. SCHETS, Milwaukee, Wis. Filed Oct. 17, 1890. Serial No. 368,444. (No model.)

Claim.—1. An improved brake-beam comprising an outer portion consisting of a three-sided open-ended sheet of metal, in combination with a continuous wood filler formed of a single piece and held to the outer portion by a series of bolts passing transversely through the opposite sides of the outer portion and the interposed filling, substantially as set forth.



2. An improved brake-beam consisting of a three-sided open-ended metallic sheet in combination with a continuous wood filler formed of a single piece, a series of bolts passing transversely through the opposite sides of said metallic sheet and through the wood filler, a central brace secured to and projecting from the said brake-beam, and a truss bearing against said brace and having its ends passed through the uncovered side and ends of the said wood filler and secured by nuts, substantially as set forth.

448,930. STOP-WATCH. ROBERT BRAGGE, Aston, England. Filed July 26, 1890. Serial No. 360,329. (No model.) Patented in England Feb 22, 1890, No. 2,856, and in Switzerland Apr. 9, 1890, No. 2,009.



Claim.—1. In stop-watches, the combination of the push-piece *a*, working upon a fulcrum *c*, and having a tail-piece *d* operating against a stop-piece *e*, with the sliding pawl-bar *n* and ratchet-wheel *l*, substantially as described and shown, and for the purpose specified.

2. The combination, in stop-watches, with the push-piece *a*, of a spiral return-spring *f*, stud *i*, and pin *g*, constructed, arranged, and operating substantially as shown and described.

3. In stop-watches, the combination, with the ratchet-wheel *l* and push-piece *a*, of the sliding pawl-bar *n*, having pawl-tooth *o*, arm *q*, and a return-spring, substantially as shown, and for the purposes specified.

4. The combination, with the sliding pawl-bar *n*, tooth *o*, and arm *q*, of the spiral spring *s*, stud *i'*, and pin *r*, substantially as described and shown, and for the purpose specified.

5. The cleft claw-stud *i* or *i'*, having an open slot *j*, and overhanging claws *k k*, in combination with their respective springs or carrier-pins, substantially as described and shown, and for the purpose specified.

6. The combination, with the fly-back pallets *u* and *v* and starting and stopping pallet *w*, of the coil-spring *x*, acting upon studs *y* and *z*, substantially as described and shown, and for the purposes specified.

7. The combination, with the fly-back pallets *u* and *v*, eyelet *a'*, and spring *x*, of the loosely-fitting pressure or following-up connecting-pin *y*, substantially as described and shown, and for the purpose specified.

8. The combination, with the fly-back pallets *u* and *v* and the

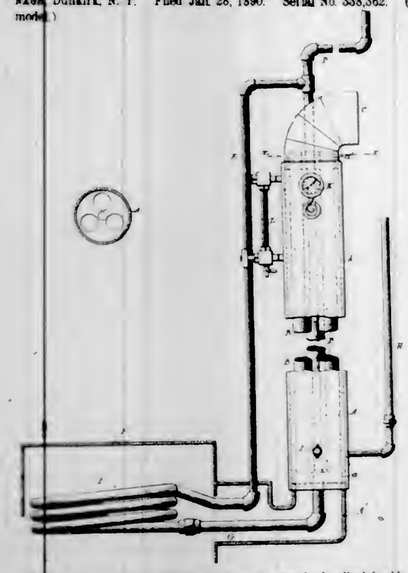
loosely-fitting pressure or following-up connecting-pin *y*, eyelet *a'*, and spring *x*, of the adjusting-screw *c'*, substantially as described and shown, and for the purposes specified.

448,931. CARRIAGE-TOP. GEORGE J. CARPENTER, Bridgeport, Conn., assignor to Hincks & Johnson, same place. Filed Oct. 25, 1890. Serial No. 369,329. (No model.)



Claim.—A carriage-body comprising a frame 1, a top piece 2, and side and back panels 5, with joints 7 and 8 between the said top piece and frame and between the said frame and panels, respectively, the said panels being grooved at their upper ends endwise of the grain of the wood outside of the said joint 8 at 9, a cloth covering extending over the said joint 8 and having its outer edges secured in the groove of the panels, and an enamel surface formed in the usual manner over the cloth and panels, substantially as set forth.

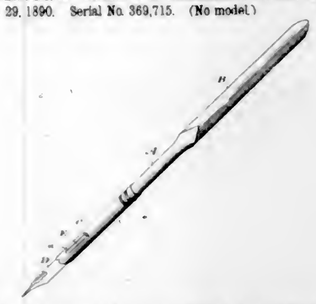
448,932. STEAM-HEATING APPARATUS. BARTHOLOMEW CAVANAGH, Dunkirk, N. Y. Filed Jan. 28, 1890. Serial No. 338,362. (No model.)



Claim.—1. In combination with a stove, a vertical cylindrical boiler closed at its lower end by an inwardly-projecting head and fitting over the stove-pipe flange of said stove, and closed at its upper end by an outwardly-projecting head fitting within the stove-pipe, and fire tubes or flues tapped through both of said heads and communicating with the stove and stove-pipe, substantially as shown and described, as and for the purpose set forth.

2. In combination with a stove, a vertical cylindrical boiler A, closed at its lower end by a head *a*, located above the lower edge of the cylinder forming the boiler, and adapting said cylinder to fit over the stove-pipe flange, and closed at its upper end by an outwardly-projecting head *a'*, fitting within the stove-pipe, fire tubes or flues B, tapped through both of said heads and communicating with the stove and stove-pipe, a steam-exit pipe D, return-pipe H, a coil F, located within the stove, the pipe G, connecting the coil with the bottom of the boiler, and a pipe E, connecting said coil with the pipe D, all constructed and arranged substantially as shown and described, and for the purpose set forth.

448,933. COMBINED PEN-HOLDER, PEN-NIB EXTRACTOR, AND PAPER-KNIFE. THOMAS B. A. CHAMBERLAIN, Toronto, Canada. Filed Oct. 29, 1890. Serial No. 369,715. (No model.)

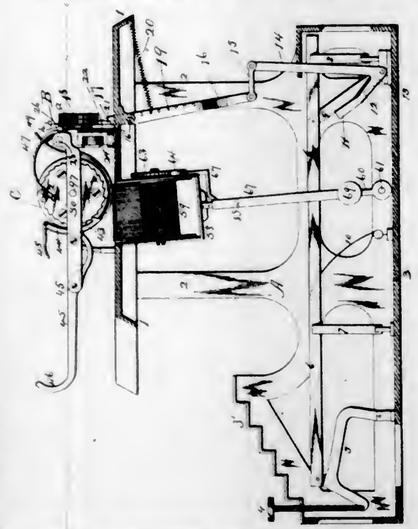


Claim.—1. A pen-extractor consisting of a movable inner supplemental barrel split so as to clamp the pen between it and the main barrel, and a button attached to the same projecting through a slot in the main barrel, whereby it is moved, substantially as described.

2. The combination of the pen-nib extractor, consisting of the inner supplemental barrel, the button attached to the same, and slot made in barrel of holder, with the paper-knife blade formed at the upper end of holder, substantially as and for the purpose specified.

3. A pen-extractor consisting of a movable inner supplemental barrel, a slot in the upper face thereof adapted to receive the lower end of the button F, having lugs passing through the opening in the supplemental barrel, said button passing through a slot in the main barrel and serving as a means for operating the supplemental barrel the said button being detachably connected to the supplemental barrel whereby the said barrel may be entirely removed, substantially as described.

448,934. TYPE-WRITING MACHINE. CHARLES M. CLINTON and JAMES MCNAMARA, Ithaca, N. Y., assignors of two-thirds to Charles M. Titus, same place. Filed Apr. 25, 1890. Serial No. 349,573. (No model.)



Claim.—1. The combination, in type-writing machines, of a series of draw-bars 6, mounted at one end on pivoted braces 9 and connected each with a type-key, a feed-rack 21, mounted on levers 16, pivoted to swing the rack transversely, a cross-bar 11, fixed to elbow-levers 13 and located beneath the braces 9, and connections between the levers 13 and 16, substantially as described.

2. The combination of the draw-bars 6, the braces 9, supporting one end thereof, the elbow-levers 13, provided with the cross-bar 11, the feed-rack 21, mounted on levers 16, the latter being connected with the elbow-levers 13 and provided with a series of holes 19, and a spring 20, adapted to engage the lever 16 at any one of said holes.

3. The combination of a feed-rack, gear-wheels mounted on the carriage to engage the said rack continually and a ratchet upon one of the said wheels, a detent pivoted upon the carriage to engage the said ratchet, and a latch fitted to slide upon the carriage and to disengage the detent from the ratchet while moving in the direction to resist the feed-cord.

4. The combination of a spring feed-wheel journaled to the frame transversely to the line of the carriage, ribbon-spools mounted to oscillate in the said transverse direction, and a crank-and-pitman connection between the spring feed-wheel and spool-supports, substantially as described.

5. The combination of the feed-wheel D, the ratchet-wheels 52 and 54, mounted freely on the journal thereof, a pawl 53 on the wheel D to engage the wheel 52, a detent 55, hung to a picture of the frame to engage wheel 54, a ribbon-spool 59, journaled in a pivoted yoke 58, and a pitman 57, connecting the said yoke with the wheel 54.

6. The combination of a carriage-feed wheel, a ratchet-wheel freely mounted on the shaft thereof and provided with a crank, a pawl-and-ratchet connection between the said crank-wheel and the feed-wheel, a detent to engage the crank-wheel, yokes for ribbon-spools hung for lateral movement, and a pitman connecting one of said yokes with the aforesaid crank.

7. The combination of two spool-yokes provided with arms fixed at the opposite ends of a rock-shaft, a ratchet-wheel for each spool journaled in the said yokes, a feed-lever pivoted upon the arm of each yoke, a weighted pawl upon the said lever and a detent upon the yoke adapted to engage the said ratchet-wheel, a wedge fixed transversely upon the frame to engage one arm of the said lever, a spring pressing the feed-lever to engage the wedge, and means for reciprocating the yokes transversely.

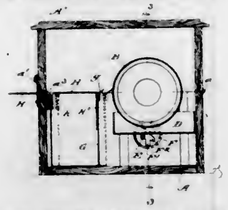
8. The combination of a yoke having an arm mounted on a rock-shaft, a ribbon-spool journaled in said yoke and provided with a ratchet-wheel, a feed-lever pivoted upon the said arm and having two upward arms, on one of which a pawl is pivoted to engage the said ratchet-wheel, a detent pivoted upon the yoke and having a downward arm to be engaged by the other of the said two lever-arms, the said pawl having a forwardly-projecting arm to be engaged by the said detent, and means for operating the feed-lever, substantially as described.

9. The combination of two spool-yokes having arms mounted on a rock-shaft, feed-levers pivoted upon the said arms, wedges fixed transversely to the frame to engage the respective feed-levers, springs for the feed-levers, a shifter-rod fitted to slide through the two mounted arms and through the said feed-levers and provided with knobs to engage the latter, and, further, having two annular grooves, and a spring fixed to alternately engage the same, whereby either one of the feed levers may be set to work and the other restrained.

10. The combination of a spool-yoke mounted for transversely-reciprocating movement, a feed-lever pivoted upon an attachment of the yoke, a wedge fixed transversely upon the frame, and a spring to press the feed-lever against the wedge.

11. The combination of two spool-yokes mounted for transverse reciprocating movement, two feed-levers, and a shifter-rod upon the same mountings, the rod being adapted to put one feed-lever into service and the other out by the same movement, substantially as described.

448,935. ICE-CREAM FREEZER. FREDERIC B. COOBRAN, New York, N. Y. Filed Dec. 18, 1890. Serial No. 375,086. (No model.)



Claim.—1. In an ice-cream freezer, the combination, with the case and the revolving cylinder, of a cream-pan mounted beneath the cylinder, slotted plates secured in opposite ends of the case and provided with a series of shelves of different heights, and a supporting-rod extending beneath the pan and through the slotted plates, substantially as described.

2. In an ice-cream freezer, the combination, with the case and the vertically-adjustable rod extending through the case, of a pan mounted on the rod and provided with projecting lugs to enter recesses of the case, substantially as described.

3. In an ice-cream freezer, the combination, with the revoluble cylinder and the sliding receptacle arranged at one side of the cylinder, of a handle having depending strips to engage one side of the receptacle and a bent end to press against the opposite side thereof, substantially as described.

4. In an ice-cream freezer, the combination, with the case, the revoluble cylinder mounted therein, and the sliding receptacle at one side of the cylinder, of the handle extending through a slot in the case and shaped to clasp one side and press against the opposite side of the receptacle, substantially as described.

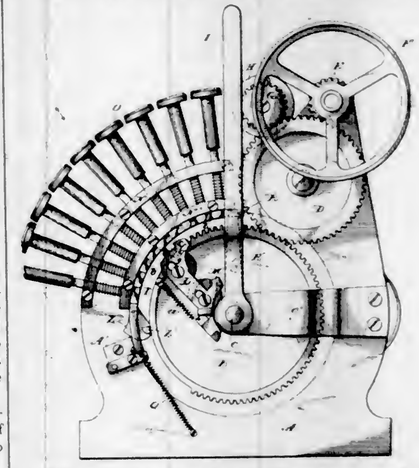
448,936. ELECTROLYTE FOR GALVANIC BATTERIES. JOHN J COLLINS, Washington, D. C. Filed Sept. 30, 1890. Serial No. 366,651. (No specimens.)

Claim.—1. The electrolyte consisting of an alkali, bichromate of potash or bichromate of soda, blue-stone, an exciting-acid, sulphur and sulphate of mercury.

2. An electrolyte comprising an alkali, an exciting-acid, blue-stone, and bichromate of soda or potash, substantially as described.

3. An electrolyte comprising an alkali, an exciting-acid, blue-stone, bichromate of soda or potash, and sulphate of mercury.

448,937. CASH REGISTER AND INDICATOR. HUGO COOK, Dayton, Ohio. Filed Jan. 9, 1891. Serial No. 377,225. (No model.)



Claim.—1. In a cash register and indicator, the combination of a main actuator, an oscillating shaft, means for automatically connecting the shaft and actuator, a series of keys of different values for automatically disconnecting the shaft and actuator at different points, and a lock for preventing movement of the shaft until a key has been operated.

2. In a cash register and indicator, the combination of a main actuator, an indicator-wheel geared thereto, an oscillating shaft, a latch for automatically connecting the shaft and actuator, and a series of keys for tripping the latch at different points to disconnect the shaft and actuator.

3. In a cash register and indicator, the combination of a main actuator, an indicator geared thereto, an oscillating shaft, a latch for automatically connecting the shaft and actuator, a series of keys for tripping the latch at different points, and a lock for preventing movement of the shaft until a key has been operated.

4. In a cash register and indicator, the combination of a main actuator, an indicator geared thereto, an oscillating shaft, a latch for automatically connecting the shaft and actuator, a series of keys for tripping the latch at different points, and a movable trip controlled by said keys to disconnect the shaft and actuator when no key has been operated.

5. In a cash register and indicator, the combination of a main actuator, an indicator-wheel geared thereto and a register operated thereby, an oscillating shaft, a latch for automatically connecting the shaft and actuator, and a series of keys for tripping the latch at different points to disconnect the shaft and actuator.

6. In a cash register and indicator, the combination of the gear B, the oscillating shaft C, the arm J, tight on the shaft C and provided with the lug K, the latch-plate L, carried by the gear B, and the keys

O, co-operating with said plate, substantially as and for the purpose described.

7. In a cash register and indicator, the combination of the gear B, the oscillating shaft C, the arm J, tight on the shaft C and provided with the lug K, the latch-plate L, carried by the gear B, the keys O, co-operating with the plate L, and the detent-plate P, co-operating with the keys, substantially as and for the purpose described.

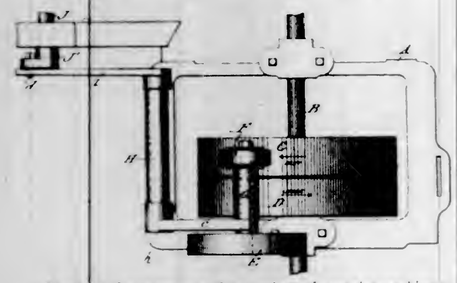
8. In a cash register and indicator, the combination of the gear B, the indicator-wheel F, geared thereto, the oscillating shaft C, the arm J, tight on the shaft C and provided with the lug K, the latch-plate L, carried by the gear B, and the keys O, co-operating with said plate, substantially as and for the purpose described.

9. In a cash register and indicator, the combination of the gears B D, pinion E, and indicator-wheel F, pinion G and register-wheel H, with ratchet-and-pawl connection between them, oscillating shaft C, arm J, tight on the shaft C and provided with lug K, latch-plate L, carried by gear B, keys O, co-operating with the plate L, and detent-plate P, co-operating with the keys O, substantially as and for the purpose described.

10. In a cash register and indicator, the combination of the gear B, the indicator-wheel F, geared thereto, oscillating shaft C, arm J, tight on the shaft C and provided with lug K, latch-plate L, carried by gear B, keys O, detent-plate P, and plate Z, carried by plate P, substantially as and for the purpose described.

11. In a cash register and indicator, the combination of the gear B, indicator-wheel F, geared thereto, oscillating shaft C, arm J, tight on shaft C and provided with lug K, latch-plate L, keys O, detent-plate P, locking-plate S, tight on shaft C, and dog T, co-operating with plate S and pin U on detent-plate P, substantially as and for the purpose described.

448,938. **BACK-UP MOTION FOR PRINTING-PRESSES.** JOHN H. CRANSTON, Norwich, Conn. Filed Dec. 8, 1890. Serial No. 373,918. (No model.)



Claim.—1. In an apparatus for stopping and reversing machinery, the combination, with the driving-shaft and the fast and loose pulleys, of a vibrating frame carrying a shaft provided with a frictionally-acting wheel, and means whereby said shaft may be driven with a constant positive rotation by suitable power independent of the fast and loose pulleys, said frictional wheel being adapted by the vibration of its frame to be brought into contact at certain times with the fast pulley, substantially as described.

2. The combination, with the driving-shaft and the fast and loose pulleys, of a vibrating frame carrying a shaft which is provided at one end with a pulley belted to a suitable driving power and at the other end with a frictionally-acting wheel adapted to be brought into contact with the periphery of the fast pulley, which frictionally-acting wheel is thus kept constantly rotating and is designed to stop or reverse the fast pulley, substantially as described.

3. The combination of the frame of the printing or other machine, the driving-shaft, the fast and loose pulleys thereon, the vibrating frame having the tubular bearing G, the shaft *b*, carried in said tubular bearing, the pulley E on one end of said shaft, and the wheel F on its other end, said pulley E being kept constantly rotated by means of belt *a* and said wheel F being adapted to be applied to the periphery of the fast pulley, substantially as described.

4. The combination of the frame A, the drive-shaft B, fast and loose pulleys C D, carried thereon, the vibrating frame consisting of the pivoted part H, having arms I and *c* said arm *c* carrying tubular bearing G, the shaft *b* in said bearing, pulley E on one end of said shaft actuated by the belt *a* and the wheel F on the other end thereof, adapted to be brought into contact with the periphery of the fast pulley C, substantially as described.

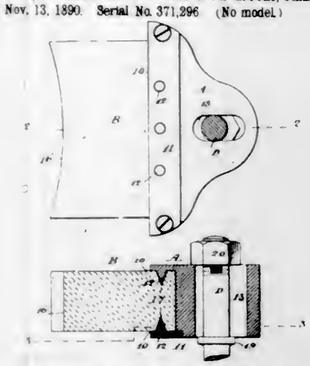
448,939. **FOUNTAIN-PEN.** HENRY M. CRONKHITE, U. S. Army. Filed Dec. 3, 1890. Serial No. 373,506. (No model.)

Claim.—1. In a fountain-pen, the combination of a cylindrical ink-reservoir having an ink canal or duct in its lower end, said duct being triangular in cross-section and tapering toward its outer end, a disk-shaped controlling-valve having a triangular valve-aperture co-acting with the ink-canal, means for operating said valve, and a piston or follower located within the ink cylinder or reservoir and adapted to automatically force the ink into the canal, substantially as shown and described.



2. In a fountain-pen, the combination of a cylindrical ink-reservoir having the lower head curved or tapered on its outer side, the pen-holding flange formed therewith, the ink canal or duct formed therein and being triangular in cross-section, tapering toward its outer end, the disk-valve having a triangular aperture therein and coacting with the ink-canal, means for operating said valve, an inward projection on said valve adapted to engage oppositely-disposed projections on the interior to check the movement of the valve, and a spring-actuated piston or follower located within the cylindrical reservoir and adapted to automatically force the ink through the canal when the valve is open, all constructed, arranged, and operating substantially as shown and described.

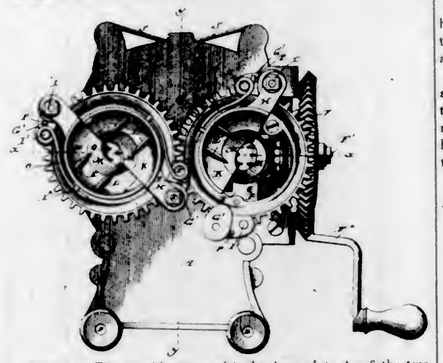
448,940. **BRAKE-SHOE.** JOHN J. DAVENPORT, Philadelphia, Pa. Filed Nov. 13, 1890. Serial No. 371,296. (No model.)



Claim.—1. The improved brake-block holder, constructed with its top and bottom and one perpendicular side face projecting to form three sides of the block-socket, such side face having spurs 12 and all said parts being formed integrally, as specified, and the removable section 11, fitting in a rabbet of the holder proper, all combined as shown and described.

2. A brake device consisting of a holder having a front opening, a detachable section, spurs projecting inward from the body of the holder and the section, the said holder being also provided with a horizontal elongated opening extending through from side to side, and a block fitted in the opening of the holder and provided with cavities to receive the spurs, substantially as specified.

448,941. **CORN-SHELLER.** OTIS E. DAVIDSON, Nashville, Tenn., assignor to Mattie Vermont Davidson, same place. Filed June 24, 1890. Serial No. 356,569. (No model.)



Claim.—1. The combination, with the base-plate A, of the two gears C, meshed together, as described, and each bearing a pair of co-operating shelling-jaws, and the pinion F for imparting rotation to said gears C, substantially as described.

2. The combination of the base-plate A, the gears C C, meshed together, as described, and each having a flange projecting part way through the base-plate A, with the ring D, having the flange secured to the flange of one of the gears C, and the driving-gear F and its crank or handle, substantially as described.

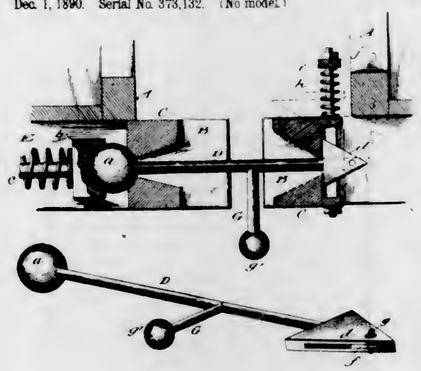
3. The combination of the base-plate A, the gears C C, meshed together, as described, and each having a flange projecting part way through the base-plate A, with the ring D, having the flange secured to the flange of one of the gears C, the bevel-gear, with the flange secured to the other wheel C, and the driving-gear F and its crank or handle, substantially as described.

4. In a corn-sheller, the combination, with the rotating gears C, of the co-operating hinged shelling-jaws mounted thereupon, each having the feeding-ribs M, the curved flange K, formed integral therewith to prevent the corn from flying out laterally, and the stripping-ribs L, formed on the inner surface of the flange K, substantially as described.

5. The combination, with the meshed gears C, each having a pair of hinged shelling-jaws mounted upon and rotating with it, and each jaw being provided with stripping-ribs L, of the spiral feeding-ribs M, substantially as described.

6. The combination, with the two meshed gears C, each having a pair of hinged shelling-jaws mounted upon and rotating with it, and each jaw being provided with stripping-ribs L, of two spiral feeding-ribs M, the lower rib being narrower than the upper one, substantially as described.

448,942. **CAR-COUPLING.** PETER DEVNEY, Boston, Mass. Filed Dec. 1, 1890. Serial No. 373,132. (No model.)



Claim.—1. A coupling-rod having at one end an arrow-head recessed, as and for the purpose specified.

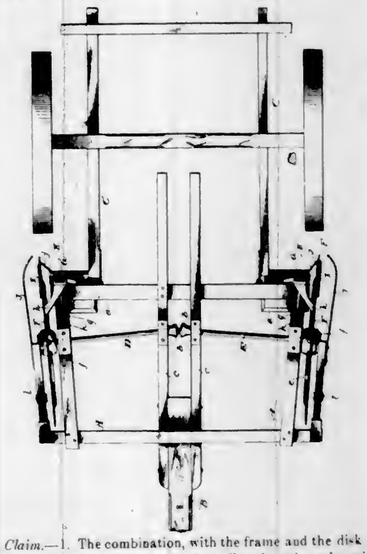
2. A coupling-rod having at one end a recessed head, combined with a removable triangular portion fitted within the recess and provided with a hole, substantially as specified.

3. A coupling-rod having at one end a ball, at the other a recessed arrow-head, and between its ends provided with a weighted arm, substantially as specified.

4. The combination, with a draw-head and a spring-actuated block having a curved seat, of a coupling-rod having at one end a ball adapted to said seat, at the other end an arrow-head, and between its ends with a weighted arm, as set forth.

5. The combination, with a draw-head and a coupling-rod having at one end a ball-and-socket connection with a movable block and at the other end provided with an arrow-head, of a weighted arm connected to the rod between its ends and adapted to turn the arrow-head from a vertical to a horizontal position, and vice versa, substantially as specified.

448,943. **DISK CORN-PLANTER.** CLARENCE H. DOOLEY and HARRY L. DOOLEY, Bloomington, Ill. Filed Dec. 8, 1890. Serial No. 373,912. (No model.)



Claim.—1. The combination, with the frame and the disk wheels, of the spouts arranged to move laterally, the triangular wire connecting the spout and frame, and the springs bearing upon the spouts, substantially as and for the purpose specified.

2. The combination, with the frame and the disk wheels, of the spouts arranged to move laterally, and the springs on the frame and bearing on the spouts, and provision for adjusting the tension of the springs, substantially as specified.

3. The combination, with the frame and the disk wheel, of the laterally-movable spout and the scraper carried thereby and having a loop embracing the wheel, and the triangular wire *g*, connecting the spout and frame, substantially as specified.

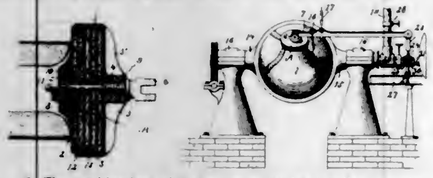
4. The combination, with the frame and the disk wheel, of the laterally-movable spout having its lowest point in contact with the wheel, the triangular wire secured to the spout and working loosely through staples on the frame, and the scraper carried by the said spout, substantially as shown and described.

5. The combination, with the frame and the disk-wheel, of the spout arranged to move laterally, the spring bearing against the spout, the lower extension of the spout bearing against the wheel, and the scraper carried by the spout and having a loop embracing the wheel, substantially as specified.

448,944. **APPARATUS FOR REMOVING GASES FROM MOLTEN METAL.** WILLIAM F. DURFEE and NOEL B. WITTMAN, Birdsborough, Pa. Filed Mar. 17, 1890. Serial No. 344,136. (No model.)

Claim.—1. A muzzle-stopper for converters, consisting of a cylindrical cap having a hub, infusible yielding material—for example, alternate layers of clay and asbestus cloth—within the cap and exposed

and adapted to rest directly upon the edge of the mouth of the converter, a metal washer on the outer side of the filling, and a shank passing through said washer, the cap, and the filling, whereby said parts are compressed together, as and for the purpose set forth.

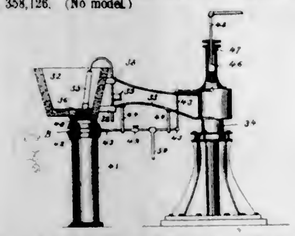


2. The combination, with a converter having a hollow trunnion, a suitable stopper, a lever by which said stopper is carried, a chain by which said lever is suspended, and a hook 18 to engage said lever, of a threaded sleeve at the other end of said lever, a screw engaging said sleeve and acting to close the stopper against the converter, a fixed stop for said screw, a vacuum-chamber, pipes 19, 20, and 30, connecting the converter with an air forcing or blast device and with said vacuum-chamber and suitable valves in said pipes, substantially as described.

3. A muzzle-stopper for converters, consisting of a cylindrical cap having a hub, layers of compressible material within the cap and exposed and adapted to rest directly upon the edge of the mouth of the converter, a metal washer on the outer side of the filling, and a shank passing through said washer, the cap, and the filling, whereby said parts are compressed together, as and for the purpose set forth.

4. In combination with a vessel for receiving molten metal, a yielding closing device or valve comprising a rigid backing or support and alternate layers of clay and asbestus exposed and adapted to rest on the edge of the mouth of the vessel, substantially as set forth.

448,945. VACUUM CASTING APPARATUS. WILLIAM F. DURFEE and NOEL B. WITTMAN, Birdsborough, Pa. Filed July 9, 1890. Serial No. 358,126. (No model.)



Claim.—1. An exhausting-ring for use in casting ingots, having dovetail grooves in its upper and lower faces, and lying in said grooves a yielding refractory material comprising alternate layers of clay and asbestus cloth, said ring having a pipe leading from one side thereof, as and for the purpose set forth.

2. The combination, with a casting-ladle having a tap-hole and a stopper and an ingot-mold, of an exhausting-ring interposed between said casting-ladle and mold and having yielding fillings in its upper and lower sides, a vacuum-chamber, and a pipe leading from said exhausting-ring to the vacuum-chamber and provided with a suitable valve, whereby when said valve is opened air and gases contained in the mold will pass therefrom into the vacuum-chamber, and also air and gases contained in molten metal, while being poured into the mold.

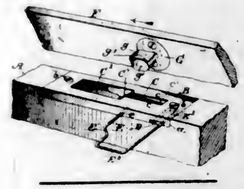
3. The combination, with the casting-ladle, the crane-arm, the ingot-mold, and the exhausting-ring, of a vacuum-chamber, intermediate stuffing-box concentric with the axis of the crane-arm, and pipes leading from the exhausting-ring through the stuffing-box to the vacuum-chamber, and a valve in one of said pipes, substantially as described.

4. An exhausting-ring for use in casting ingots, having dovetail grooves in its upper and lower faces and lying in said grooves layers of compressible material, said ring having a pipe leading from one side thereof, as and for the purpose set forth.

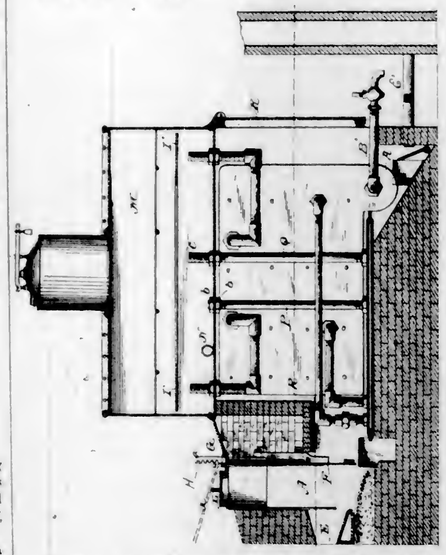
5. An exhausting-ring for use in casting ingots, having dovetail grooves in its upper and lower faces and lying in said grooves a yielding refractory material, said ring having a pipe leading from one side thereof, substantially as set forth.

448,946. COFFIN-FASTENER. JOSEPH E. EVERISS, Adrian, Mich. Filed June 6, 1889. Serial No. 313,305. (No model.)

Claim.—In a fastening device for coffins, a plate B, secured in the upper edge of the side of a coffin, a longitudinal slot C in said plate, terminating in an enlarged aperture C' and having flanges c on each side of said slot, a transverse recess D in one end of said plate, a screw or pin *b*, passing through said recess D, a locking key or pin E, mounted in a hole *c* in said plate, said key or pin extending outside of the coffin and being bent to form a handle portion E^3, and a loop E^2, mounted in the recess D and surrounding the screw or pin *b*, in combination with a stud or button *g*, projecting from the under side of the lid of the coffin and having a flanged head *g'*, adapted to engage with the flanges *c* and to be held in position by the key or pin E, substantially as shown and described.



448,947. METHOD OF AND APPARATUS FOR GENERATING STEAM. EDWARD FALES, Boston, Mass. Filed Dec. 26, 1890. Serial No. 375,838. (No model.)



Claim.—1. In a device for generating steam, an upper boiler or tank in which the steam and water are used for heating and engine purposes, said boiler or tank connecting with a lower steam-generating chamber O and with a series of said steam-generating chambers by upper and lower pipes, in the manner and for the purpose set forth.

2. In a steam-generating and heating device, an upper chamber or boiler in which the water and steam are stored, said chamber or boiler communicating with a lower water-chamber by means of pipes or tubes, the tops of which are slightly above the bottom of the boiler, and other tubes which also connect the lower water-chamber with the boiler, the last-mentioned tubes being projected up into the boiler above the ends of the first-mentioned pipes or tubes, whereby the lower chamber is freed from air upon the introduction of water into the said chamber, as set forth.

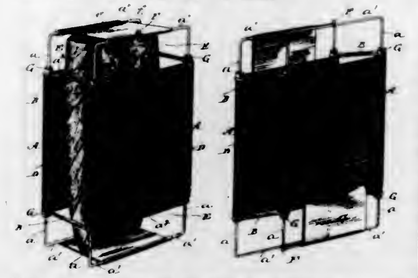
3. In a steam-generating and heating device, an upper chamber or boiler connecting directly with a lower water-chamber, and a series of steam-generating chambers connecting with the lower water-chamber and with the boiler by means of pipes at the bottom and top of such generators, whereby the water is admitted to the lower part of said generators from the chamber O and the steam through the upper pipes to the boiler or chamber M, as set forth.

4. In a device for generating steam, a series of vertical generators located in the path of the products of combustion and separating the same into chambers or flues, each of said generators being provided with a depressed portion at its rear end, which connects with blow-off pipes to relieve the same of mud and sediment, as set forth.

5. In a device for generating steam, a series of generators located in the path of the products of combustion, a series of converging flues communicating with the spaces between the generators and with the stack, and a controlling-damper, all arranged as set forth.

6. In a device for generating steam, an upper chamber for water and steam, which communicates with steam-generating chambers by means of pipes, and a fender or baffle plate I', arranged above the entrance of the tubes in the upper chamber, said tubes being arranged so as to project vertically above the bottom of the upper shell, as set forth.

448,948. CIGAR-CASE. JACOB H. FAWKES, Chicago, Ill. Filed June 7, 1890. Serial No. 354,654. (No model.)



Claim.—1. As an improved article of manufacture, the collapsible cigar-case herein described, consisting of the front and back frames, the edge connections extended between and pivotally united to the sides of the said frames, and the end suitably supported, all substantially as set forth.

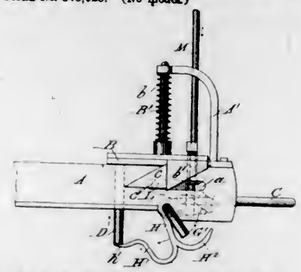
2. A cigar-case consisting of the side frames, the edge connections pivoted to said side frames, and the end pieces hinged at one edge to the ends of the side frames and arranged at their opposite edges to engage the opposite side frame, substantially as set forth.

3. An improved cigar-case consisting of the side frames, the edge connections pivotally united to the side frames, and the end connected with the side frames, the said side frames being disconnected at their ends, whereby to provide the side openings E, all substantially as described, and for the purposes set forth.

4. The improved cigar-case herein described, consisting of the side frames formed of rods $a\,a'\,a^3$ and wire-gauze covers D, the connections B B, extended between and pivotally secured at their ends to the side frames, and the end pieces connected with the side frames, all constructed, arranged, and adapted for use substantially as set forth.

5. An improved cigar-case, substantially as described, consisting of the side frames formed of rods $a\,a'\,a^3$ and provided on rods *a* with sleeves G, the closure D, secured to said sleeves, the edge connections extended between and pivotally secured at their ends to the side frames, and the ends C, all substantially as and for the purposes set forth.

448,949. CAR-COUPLING. WILLIAM R. FIKE, Wilsonville, assignor of one-half to William H. Penland, Newport, Tenn. Filed Dec. 8, 1890. Serial No. 373,923. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head, of the spring-actuated slotted slide therein, the spring-actuated plate carrying the coupling-pin and an auxiliary pin, the link, and a leverage acting on the auxiliary pin.

2. In a car-coupler, the combination, with the draw-head, of the spring-actuated slotted slide therein, the spring-actuated plate carrying the coupling-pin and an auxiliary pin, the coupling-link, the rock-shaft journaled transversely in the draw-head, and a two-armed lever connected to said shaft and operating on the auxiliary pin.

3. In a car-coupler, the combination of the draw-head, the slotted slide therein, the plate carrying near the rear end the downwardly-projecting auxiliary pin and near the forward end a coupling-pin, said plate having a vertical movement, the coupling link, the vibrating shaft journaled transversely in the draw-head, and the two-armed lever connected to said shaft and having the end of one of its arms operating beneath the aforesaid auxiliary pin, substantially as described.

4. The combination of the draw-head, the spring-actuated sliding bar therein, the plate on top of the draw-head, provided with a spring and having a downwardly-projecting coupling-pin and an auxiliary pin, a coupling-link, a transverse rock-shaft in the draw-head, a two-armed lever connected thereto and having the end of one of its arms operating beneath the auxiliary pin, and a pivoted link-lifting latch below the link and operated upon by the end of the other arm of the said lever, substantially as described.

5. The combination of the draw-head, the spring-actuated sliding bar therein, the plate on the top of the draw-head, having the upwardly-extending post provided with a spring and connecting with a standard on the draw-head, said plate having also a coupling-pin and an auxiliary pin connected thereto and extending downwardly through the draw-head, a coupling-link, a rock-shaft adapted to be operated either from the side or top of the car by suitable connections, and a lever connected to said shaft and operating beneath the bottom end of the auxiliary pin, substantially as described.

6. The combination of the draw-head, the spring-actuated slotted sliding bar therein, the spring-actuated vertically-movable plate on the top of the draw-head and provided with the downwardly-extending coupling-pin and auxiliary pin, a coupling-link, a block in the base of the draw-head, having a pin-hole adapted to receive the coupling-pin, a link-lifting latch pivoted to said block, a rock-shaft journaled transversely in the draw-head, and a lever connected to said draw-head and having two arms, one of which operates beneath the lower end of the aforesaid auxiliary pin and the other operates beneath the link-lifting latch, substantially as described.

7. The combination of the draw-head, the spring-actuated sliding bar therein, the spring-actuated plate carrying a downwardly-projecting coupling pin and the auxiliary pin, an inclined projection on the side of said plate, and another inclined projection on the sliding bar, which projections operate in connection with each other, substantially as described.

8. The combination of the draw head having an open mouth and a side slot and suitable perforations at top and bottom, a spring-actuated slotted sliding bar provided with a projection working through the said slot of the draw-head, which projection carries an incline, a spring-actuated plate on the top of the draw-head, movable vertically and carrying the downwardly-projecting coupling-pin and auxiliary pin, said plate having an inclined projection operating in connection with the other incline, the coupling-link, the rock-shaft, and the two-armed lever, the end of one of which arms operates beneath the auxiliary pin, substantially as described.

9. The combination of the draw-head, the sliding bar therein, the spring-actuated plate carrying the coupling-pin and auxiliary pin, the coupling-link and the rock-shaft, with the two-armed lever connected thereto, the arms of said lever being suitably curved, one projecting forwardly and the other rearwardly, the tip of the rearwardly-projecting arm operating beneath the auxiliary pin, while the tip of the forwardly-projecting arm is adapted at the proper time to operate beneath the link-lifting latch for the purpose of adjusting the horizontality of the link.

10. The combination of the draw-head, the sliding bar therein, the plate B, carrying the upwardly-projecting post B' and the downwardly-projecting coupling-pin E, pin D, the curved standard A' on the draw-head, perforated at one end to permit the passage therethrough of the post B', the spring *b*, coiled around said post, the link C, and the two-armed lever, substantially as described.

11. The combination, with the draw-head A, having the spring-actuated slotted slide-bar therein and provided at its forward end with curved faces and a shoulder, and the vertically-movable spring-actuated plate carrying the downwardly-projecting coupling-pin and the auxiliary pin, the link C, the transverse shaft G, having crank ends and a connection with the top of the car, and the two-armed lever H, having arms H' and H^3, substantially as described.

12. The combination, with the draw-head and the spring-actuated sliding bar therein, of the link C, the pivoted link-lifting latch J, and the rock-shaft G, carrying the two-armed lever H, the forwardly-extending arm H^3 of which operates beneath the latch J.

13. The combination of the draw-head A, the coupling-pin E, block I, having a pin-hole i^3, the link-lifting latch J, pivoted to the projection *i* of said block, the link C, resting on said latch J, and the shaft G, having the two-armed lever H connected rigidly thereto, the forward arm H^3 of which operates beneath the latch J, substantially as described.

14. The combination of the draw-head A, the spring-actuated slot-

ted sliding bar therein, the spring-actuated vertically-movable plate B, carrying the pin E and the pin D, the link C, and the rock-shaft G, together with the two-armed lever H, having arms H' and H², the tip end *k'* of which arm H' operates beneath the pin D, substantially as described.

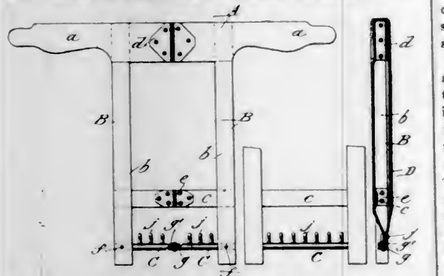
15. The combination of the draw-head A, the spring-actuated bar F, plate B, having upwardly-extending post B', enveloped by spring *b*, and having the downwardly-projecting coupling-pin E and the pin D, the block I, having the pin-hole i², rock-shaft G, and the two-armed vibratory lever H, having arms H' and H², substantially as described.

448,950. **HEATING ATTACHMENT FOR LAMP-CHIMNEYS.** WILLIAM F. FISHER, Trenton, N. J. Filed Aug. 4, 1890. Serial No. 360,942. (No model.)



Claim.—The lamp-chimney heater attachment herein described, formed of a single or continuous wire with a flat top in two disconnected parts 1 1, horizontal offsets 5 to rest on top of the chimney, and straight diverging elastic legs 7, adapted to bear from end to end with outward pressure against the inner surface of the chimney.

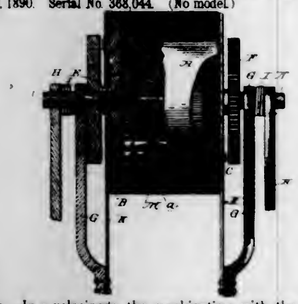
448,951. **DRYING-BOARD.** MICHAEL H. FOGARTY, Amsterdam, N. Y. Filed Sept. 6, 1890. Serial No. 364,148. (No model.)



Claim.—1. In a drying-board, the main frame made in two sections, each section composed of a long horizontal upper arm, the long vertical portion mortised therein, and the short lower arm suitably mortised in the vertical portion, said sections being hinged together and the hooked rods or bars fastened to the lower ends of the vertical portions of the main frame and suitably connected together, so that the said device may be folded or unfolded, substantially as described.

2. In a drying-board, the combination of the main frame A, made in two sections, each section consisting of the parts *a b c*, provided with the bars C, having hooks *j* thereon, said bar being flattened at its inner end and perforated for the passage therethrough, of a suitable rivet or other hinging device, the sections and rods being connected together substantially as described.

448,952. **VELOCIPEDE.** FRELING C. FOSTER, Chicago, Ill. Filed Oct. 13, 1890. Serial No. 368,044. (No model.)



Claim.—In a velocipede, the combination, with the frame, of a crank-axle, a boxing surrounding the same, a spring interposed between the boxing and axle, a series of cogs on the boxing, cog-wheels meshing therewith, sprocket-wheels having cog-wheels on their inner ends meshing with the said other cog-wheel, cranks on the axle, springs for normally raising the crank, and pawls for engaging the axle, substantially as described.

448,953. **ELECTRIC BELT.** WILLIE C. FULLER, Kirwin, Kans. Filed Jan. 21, 1891. Serial No. 378,579. (No model.)



Claim.—1. In an electric belt, the combination of a battery formed of tubular zinc cells, each cell having a tongue Z', links B, which pass through the said tubular cells and are connected thereto by means of the tongues Z', which latter are turned over the said links, coppers arranged within the zinc cells and connected to the link B from the zinc of the next succeeding cell, and absorbent material placed within the zinc cells around the said coppers and saturated with a suitable electrolyte, with means for connecting the said battery with contact-plates upon a belt, substantially as described.

2. In an electric belt, the combination of a battery formed of tubular zinc cells, each cell having a tongue Z', links B, which pass through the said tubular cells, and are connected thereto by means of the tongues Z', which latter are turned over the said links, coppers arranged within the zinc cells and connected to the link B from the zinc of the next succeeding cell, absorbent material placed within the zinc cells around the said coppers and saturated with a suitable electrolyte, with a casing for inclosing the said battery, contact-disks upon the said casing, and means for connecting the poles of the said battery to the said contact-disks and for holding the said casing upon the body, substantially as described.

3. In an electric belt, the combination of a battery consisting of a number of cells suitably connected together, connecting pieces secured to the opposite ends of the said battery, sleeves upon the said connecting-pieces, and springs coiled around the said sleeves and extending through slots therein, with contact-disks having studs projecting inwardly therefrom, upon which the sleeves are adapted to be held by means of the springs, substantially as described.

4. In an electric belt, the combination of a battery consisting of a number of cells suitably connected together, connecting-pieces secured to the opposite ends of the said battery, sleeves upon the said connecting-pieces, springs coiled around the said sleeves and extending through slots therein, with contact-disks, and studs projecting inwardly from said disks, said studs having grooves around them in which the springs G are adapted to engage when the sleeves are in position, substantially as described.

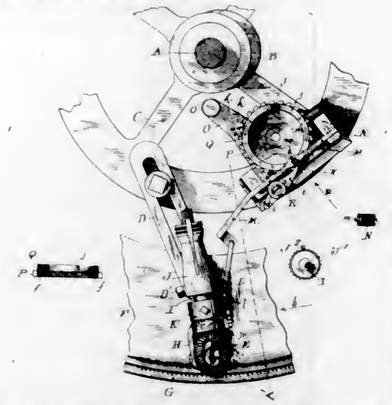
5. In an electric belt, the combination of a battery consisting of a number of cells suitably connected together, connecting-pieces secured to the opposite ends of the said battery, sleeves upon the said connecting-pieces, springs coiled around the said sleeves and extending through slots therein, with a casing for inclosing the said battery, contact-disks upon the said casing, and studs projecting inwardly from the contact-disks through the casing, the said studs having grooves around them, the sleeves of the connecting-pieces being adapted to fit upon the said studs and be held thereon by means of the spring G to electrically connect the terminals of the battery with the contact-disks, substantially as described, for the purpose specified.

448,954. **CIRCULAR-KNITTING MACHINE.** FRANK H. GATES, Ware, Mass., assignor to the Otis Company, same place. Filed June 4, 1890. Serial No. 354,204. (No model.)

Brief.—In knitting the stronger portion or body of the fabric the wheels bear against the needles, this being their normal position; but when colored or tender yarn comes into action in producing the design the wheels are moved back from the needles to relieve the pressure and prevent said yarn from breaking.

Claim.—1. In a knitting-machine, an intermittent laterally-reciprocating knocking-over wheel, in combination with a rocking lever engaging at one end with the bearing of said wheel, a swinging lever engaging with said rocking lever, a ring mounted on a ratchet-wheel, engaging with said swinging lever, said ratchet-wheel, its pawl, a lever upon which said pawl is mounted and which engages with a cam on the upright shaft, and said cam, substantially as and for the purpose set forth.

2. In a knitting-machine, the combination of rotary knocking-over wheel E, its movable support H, and spring-actuated lever L, pivoted to a suitable support and connected with said part H, with lever M, operatively connected with a cam on the upright shaft through a ratchet-wheel, its pawl, a ring on said wheel, and a cam-lever and said cam, whereby the inner end of said lever L is intermittently depressed, substantially as and for the purpose set forth.



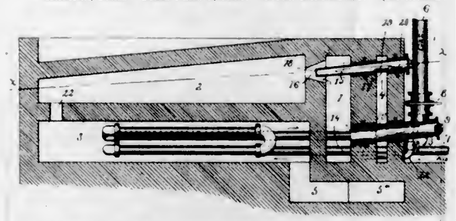
3. In a knitting-machine, the combination of lever L, pivoted to a suitable support and having means for imparting vertical movements to its inner end, with the movable frame or bearing H and knocking-over wheel E, substantially as and for the purpose set forth.

4. In a knitting-machine, the combination of lever M and means, substantially as described, for operating the same, including a cam on the upright shaft, with a lever L, whose outer end L' is adapted to engage with a pin on frame H, said frame H fitted to work toward and from the needles G, and knocking-over wheel E, fitted to turn on said frame H, substantially as and for the purpose set forth.

5. In a knitting-machine, the combination of knocking-over wheel E, its support, and lever L, with lever M, having the projection or pin *k* and pivoted upon frame N, said frame, ratchet-wheel P and its ring Q, means for holding the ratchet-wheel against back action, spring-actuated pawl R, its lever O, and cam B on shaft A, substantially as and for the purpose set forth.

6. A device for automatically operating the usual knocking-over wheel of a knitting-machine, comprising, in combination with a cam on the upright shaft, a lever O, the spring-actuated pawl R, mounted on its outer end, ratchet-wheel P, having means for holding it against back action, adjustable ring Q, mounted on said ratchet-wheel, and having a notch *j* in its upper side, lever M, having the projection or pin *k*, lever L, collar K, movable frame H, mounted on the usual knocking-over spindle I, and knocking-over wheel E, fitted to turn on said movable frame, substantially as shown and specified.

448,955. **GAS-FURNACE.** JOSEPH F. GILPIN and JOHN ELLIOT, Ansonia, Conn. Filed June 9, 1890. Serial No. 354,761. (No model.)

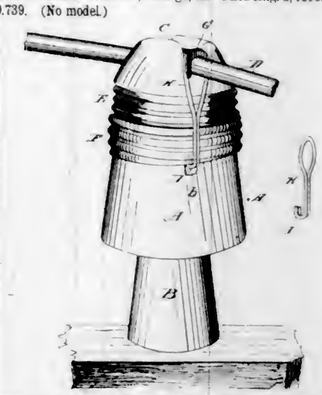


Claim.—1. In a gas-furnace, the combination of the heating-chamber, the combustion-chamber at the front of the same, a connecting-passage between said chambers, the air-heating chamber situated beneath the main heating-chamber and connected therewith, the air-chamber situated in front of the combustion-chamber; air-pipes leading from a suitable blast device through said air-heating chamber and delivering into the said air-chamber, pipes leading from the air-chamber to the lower part of the combustion-chamber, a gas-supply pipe communicating with the combustion-chamber, and a secondary air-pipe leading from the air-chamber through the combustion-chamber to the said connecting-passage, substantially as set forth.

2. In a gas-furnace, the combination of the heating-chamber 2, the combustion-chamber 1 at the front of the same, the passage 16, connecting said chambers, the air-heating chamber 3, situated beneath the chamber 2, communicating therewith and having air-pipes 7 leading from a suitable blast device passing through the chamber 3 and delivering into the chamber 4, pipes 12, leading from the latter chamber to the chamber 1 and having valves 13, a gas-supply pipe communicating with the combustion-chamber, and a secondary air-pipe leading from chamber 4 and having a perforated nozzle situated in line with the passage 16, substantially as set forth.

3. In a gas-furnace, the combination of the heating-chamber 2, the combustion-chamber 1 at the front of the same, the passage 16, connecting said chambers, the air-heating chamber 3, situated beneath the chamber 2, communicating therewith and having air-pipes 7 leading from a suitable blast device passing through the chamber 3 and delivering into the chamber 4, pipes 12, leading from the latter chamber outside the furnace and thence to the chamber 1 and having valves 13, a gas-supply pipe communicating with the combustion-chamber, and a secondary air-pipe leading from the outside of the furnace through chambers 4 and 1, having a perforated nozzle situated in line with the passage 16, and having a valved communication with chamber 4, substantially as set forth.

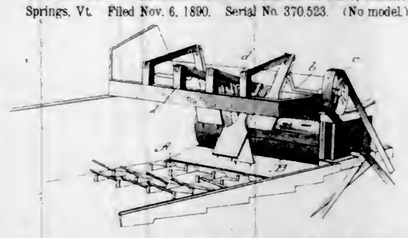
448,956. **ELECTRIC INSULATOR.** GEORGE H. GRAHAM, Ridgeland, and THOMAS GANNANE, Chicago, Ill. Filed Aug. 2, 1890. Serial No. 360,739. (No model.)



Claim.—1. An externally-screw-threaded insulator provided with a transverse groove in the end thereof, a screw-threaded collar fitted to the threaded portion of the insulator, and a loop or loops for clamping the conductor in the groove of the insulator, substantially as specified.

2. A telegraphic insulator provided with the externally-screw-threaded portion E and a groove C, a collar fitted to the threaded portion, a block G, fitted to the groove C and adapted to bear upon the conductor, and one or more loops arranged to bear upon the block G and provided with hooks for engaging the ring F, substantially as specified.

448,957. **ATTACHMENT FOR THE SEPARATORS OF THRASHING-MACHINES.** LEONIDAS GRAY and ALBERT Y. GRAY, Middletown Springs, Vt. Filed Nov. 6, 1890. Serial No. 370,523. (No model.)

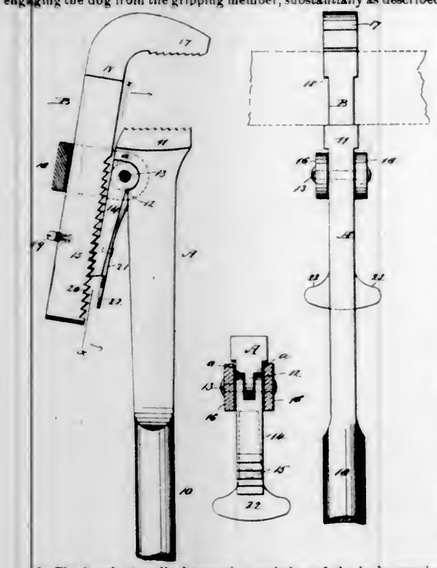


Claim.—In combination with the separator of a thrashing-machine, an attachment therefor located above the bed of the separator and in rear of the cylinder, consisting of a series of broad-bladed paddles suitably supported, and means for operating them, substantially as described.

448,958. **WRENCH.** ROBERT HABERTHUR and JOHN M. STOWELL, New York, N. Y. Filed Apr. 11, 1890. Serial No. 347,496. (No model.)

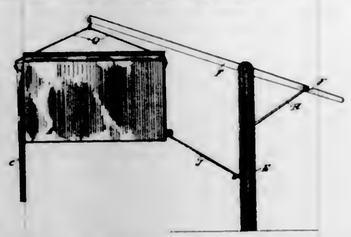
Claim.—1. An improved wrench consisting of a body member formed with a jaw at one end and provided with a handle, a yoke

pivoted to the body member adjacent to the jaw thereof, a gripping member fitted to slide in the yoke, formed with a jaw at one end and having teeth on the under side of its shank, a dog pivoted to the body member by the pivot of the yoke and provided with teeth on its upper surface, and a spring for pressing the dog into engagement with the gripping member, secured to the dog, and serving as a means for disengaging the dog from the gripping member, substantially as described.



2. The herein-described wrench, consisting of the body member A, formed with the jaw 11, the knuckle 12, adjacent to the jaw, the dog 14, pivoted to the knuckle and having teeth on its upper surface, the spring 21, secured to the dog and having its inner end engaging the body member and its outer end provided with the finger-piece 22, the yoke 16, pivoted to the body member by the pivot of the dog 14, and the gripping member B, fitted to slide in the yoke and provided with the jaw 17, the shoulder 18, and teeth 20, substantially as herein shown and described.

448,959. CHICKEN-COOP. CHARLES A. HARP, Rice, Tex. Filed Dec. 17, 1890. Serial No. 374,990. (No model.)



Claim.—1. The combination of the cage and devices for raising and lowering the same, with a door for the cage having a depending leg by which it is caused to open when the cage is lowered, substantially as described.

2. The combination of the post, the lever fulcrumed thereon, and the device for fastening the lever, with the cage suspended from one end of the lever, the vertically-movable door thereof having depending legs, and the stays connected to the cage and posts, substantially as set forth.

448,960. BICYCLE. FREDERICK J. H. HAZARD, Toronto, Canada. Filed Sept. 6, 1890. Serial No. 364,126. (No model.)

Claim.—1. A bicycle having a rigid frame, two spring-rods connected by their opposite ends to said rigid frame, and a seat supported on said rods, substantially as described.

2. Two or more horizontal spring-rods connected to the rigid frame of a bicycle by means of pivot-blocks or crank-arms, in combination with a bifurcated standard connected to the spring-rods and to the seat-standard, substantially as and for the purpose specified.



3. Two or more horizontal spring-rods L, each supported at its rear end by a block M, pivoted on the rear fork of the machine and at its front end to a crank-arm O, pivoted to the front portion Q of the frame, in combination with a bracket K, bifurcated standard H, bracket C, and seat-pillar B, substantially as and for the purpose specified.

4. The seat-pillar B, passing through the bracket C, to which it is adjustably connected by means of the set-screw D, a tube E, connected to the bracket C and movably fitted into the sleeve F, which is fixed to the backbone G, in combination with a bifurcated standard H, connected to the seat-pillar B by the bracket C and to the spring-rods L by means of the brackets K, substantially as and for the purpose specified.

448,961. ORE-CONCENTRATOR. GOTTLIEB D. HUSEMANN, St. Louis, Mo. Filed Nov. 21, 1890. Serial No. 372,214. (No model.)

Claim.—1. In an ore-concentrator, an inclined screen provided with a series of angular pockets having reticulated bottoms and the upper half of their upper sides being imperforate, as and for the purpose specified.

2. In an ore-concentrator, a screen provided with a series of transverse angular pockets having reticulated bottoms and upper sides, which are longer and less inclined than the lower and also imperforate in the upper portion, as shown and described.

3. In an ore-concentrator, the combination, with the inclined screen having a series of pockets whose lower portions are reticulated and the rear portions of their upper sides imperforate in the upper half, of a bellows on which said screen is secured and from which an air-blast is directed up through said pockets, as shown and described.

4. In an ore-concentrator, the combination, with a bellows having an upper portion which vibrates vertically, and a fixed central portion provided with the opening, and a valve *d*, and means for connecting the latter with such vibrating portion, of a screen secured thereon and having a series of reticulated pockets through which an air-blast is forced by said bellows, as shown and described.

5. In an ore-concentrator, the combination, with the bellows having an upper portion that vibrates both vertically and laterally, of a pocket-screen secured thereon, and thus participating in its compound movement, as shown and described.



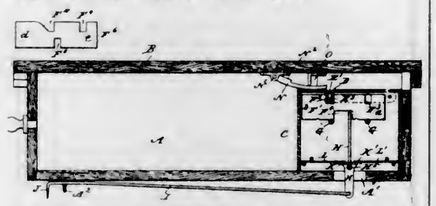
6. In an ore-concentrator, the combination, with the vibrating bellows, of a screen D, secured thereon, and having a series of reticulated pockets, and the combined air-distributer and screen F, composed of a sheet of fabric and a stretcher-frame, which is interposed between said bellows and screen D, as shown and described.

7. In an ore-concentrator, the combination, with a screen, of a bellows having two compartments and an upwardly-opening valve in their separating-diaphragm, and a means of connection between such valve and the vibrating frame of the upper compartment, whereby the valve is automatically opened to relieve an excess of pressure, as shown and described.

8. In an ore-concentrator the combination, with a screen, of the bellows and the rocking bar on which its lower end is pivoted, and means for vibrating the bellows laterally and vertically, as shown and described.

9. In an ore-concentrator, the combination, with a screen and the rocking bar K, of the bellows pivoted thereto at its lower end and having an anti-friction roller located on either side of the pivot, the crank-shaft, and the cam-wheel H, which is fixed on said shaft and engages a bifurcated projection on the rear end of said bellows, a rod pendent from the crank-shaft, and rigid arm loosely attached thereto, as shown and described.

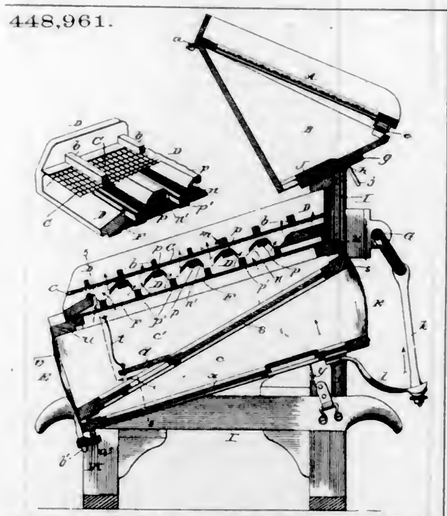
448,962. TILL-LOCK. CHARLES T. JEARLES, Binghamton, N. Y. Filed June 11, 1890. Serial No. 355,080. (Model.)



Claim.—1. In a combination lock and alarm, the combination, with a casing having a transverse slot in its top and secured in a till, of a locking-bar pivoted on the said casing and adapted to pass into the said slot, and an arm pivoted on the table and adapted to engage an aperture in the said locking-bar, substantially as shown and described.

2. In a combination lock and alarm, the combination, with a casing having a transverse slot and secured in the till, of a locking-bar pivoted on the said casing and adapted to pass into the said slot, an arm pivoted on the table and adapted to engage an aperture in the said locking-bar, and slotted tumblers held to slide longitudinally in the said casing and adapted to be engaged by the said locking-bar, substantially as shown and described.

448,961.



3. In a combination lock and alarm, the combination, with a casing having a transverse slot and secured in the till of a locking-bar pivoted on the said casing and adapted to pass into the said slot, an arm pivoted on the table and adapted to engage an aperture in the said locking-bar, slotted tumblers held to slide longitudinally in the said casing and adapted to be engaged by the said locking-bar, levers pivoted in the said casing and serving to shift the said tumblers, and rods extending along the outside of the till and connecting with the said levers, substantially as shown and described.

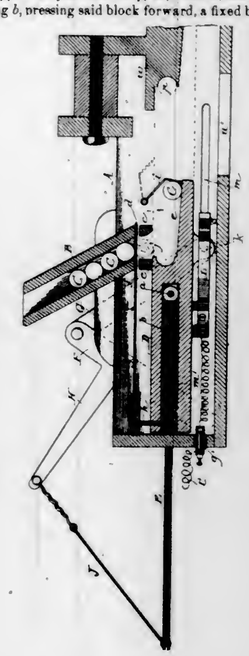
4. In a combination lock and alarm, the combination, with a casing having a transverse slot and secured in a till, of a locking-bar pivoted on the said casing and adapted to pass into the said slot, an arm pivoted on the table and adapted to engage an aperture in the said locking-bar, slotted tumblers held to slide longitudinally in the said casing and adapted to be engaged by the said locking-bar, levers pivoted in the said casing and serving to shift the said tumblers, rods extending along the outside of the till and connected with the said levers, and finger-pieces secured on the front ends of the said rods for operating the latter, substantially as shown and described.

5. In a combination lock and alarm, the combination, with a casing having a transverse slot and secured in the till, of a locking-bar pivoted on the said casing and adapted to pass into the said slot, slotted tumblers held to slide longitudinally in the said casing, levers pivoted in the said casing and engaging the said slotted tumblers, rods for operating the said levers and held on the outside of the till, and springs engaging the said levers, so as to hold the latter in an upright position, substantially as shown and described.

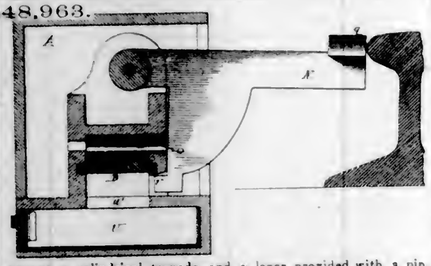
6. In a combination lock and alarm, the combination, with a casing having a transverse slot and secured in the till, of slotted tumblers held to slide longitudinally in the said casing, a locking-bar pivoted on the said casing and adapted to pass into the said transverse slot and into the slots of the said tumblers, an arm pivoted to the table and adapted to engage an aperture in the said locking-bar, a fixed projection held on the said table, and a gravity-lever fulcrumed on the said locking-bar, a striker held on the said locking-bar and engaged by the said gravity-lever, and a bell secured to one side of the said casing and operated on by the said striker, substantially as shown and described.

448,963. RAILWAY ALARM-SIGNAL. JOHN R. JONES and JOHN W. SCOTT, Arlington, Ill. Filed Mar. 17, 1890. Serial No. 344,206. (No model.)

Claim.—1. A box provided with a chamber for torpedoes, in combination with a sliding block partly cut away at its forward end and adapted to support a cylindrical torpedo, a rod E, connected with such block, a spring *b*, pressing said block forward, a fixed block *w*, adapted



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to engage a cylindrical torpedo, and a lever provided with a pin adapted to fire a torpedo held by the sliding block and fixed block, substantially as specified.

2. A box A, having a chamber for torpedoes, in combination with a sliding block partly cut away at its forward end, a rod E, fixed block *w*, a stop, as *i*, to hold a torpedo at the forward end of the sliding block, and a lever for firing a torpedo, substantially as and for the purposes specified.

3. A box provided with a chamber for torpedoes, in combination with a sliding block D, a rod E, spring *b*, sliding slotted plate *d*, screw or pin *h*, fixed block *w*, stop *i*, toggle-levers F G, arms H, connections between the arms H and rods E, and a lever for firing a torpedo, substantially as and for the purposes specified.

4. A box having a chamber for torpedoes, in combination with a sliding block, a sliding plate *d*, a firing-lever K, and a spring to act on the heel of such lever, substantially as and for the purposes specified.

5. A box having a chamber for torpedoes, in combination with a sliding block D, a sliding plate *d*, rod E, spring *b*, toggle-levers F G, arms H, connections between the arms and rod E, firing-lever K, and a connection from the rod E to a switch, substantially as and for the purposes specified.

6. The combination, with a sliding block D, a firing-lever, and a spring to act on the heel of such lever, of a rod E, a chain connecting the rod E and a switch, and a spring *b*, whereby the sliding block is moved into firing position, and the firing-lever is raised, substantially as specified.

7. A box having a chamber for torpedoes and provided with slots *s*, in combination with a sliding block, toggle-levers F G, one F pivoted at one end to the box and the other G pivoted at one end to the sliding block, arms H, connections between the arms and rod E, and a firing-lever arranged to be operated by a wheel of a passing locomotive, substantially as and for the purposes specified.

8. A box having a chamber for torpedoes, a sliding block D, a firing-lever, connections from the block D to a switch, in combination with binding-posts connected with said box, electric wires running from the box to depot, and one or more contact-pieces connected with the sliding block D, substantially as and for the purposes specified.
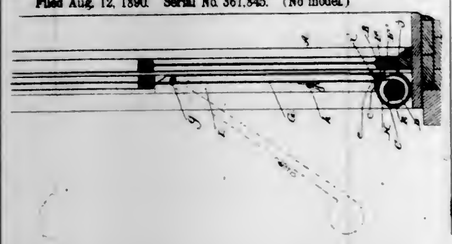
448,964. BALE-TIE. WILLIAM A. KILNER, Newburk, N. Y. Filed Sept. 12, 1890. Serial No. 364,725. (No model.)



Claim.—1. The bale-tie hook herein shown and described, having the bends A' A^3 A^3, and the eye arranged in the bend A' and embracing both the wires forming the point of the hook, substantially as specified.

2. The hook herein shown and described, consisting of the wire having the bends A' A^3 A^3, the depression D', and the eye E, embracing the wires forming the point of the hook between the bends A^3 A^3, substantially as specified.

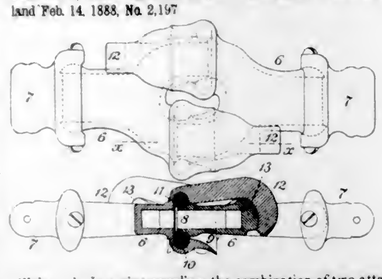
448,965. WINDOW-SCREEN. JAMES KNOWLES, Jamestown, N. Y. Filed Aug. 12, 1890. Serial No. 361,845. (No model.)



Claim.—1. The combination, with the window-frame having pivotal screws or nails *g* at its upper end, of the channel-bars G, hung thereupon and provided with bolts *h*, and the spring-roller and netting carried upon the lower ends of said channel-bars and adapted to be swung out about its upper pivotal point, substantially as shown and described.

2. The combination, with the channel-bars G G, the spring-roller, and the netting wound thereon, of the cross-bar composed of wooden strip F and metal frame F', having lip *e*, hollow chamber *e*, and projecting ends *d d*, sliding on the channel-bars, substantially as shown and described.

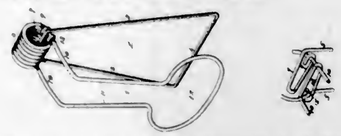
448,966. PIPE-COUPLING. PHILIP C. LAWLESS, Wilmerding, Pa. Filed Oct. 2, 1890. Serial No. 366,858. (No model.) Patented in England Feb. 14, 1888, No. 2,197.



Claim.—1. In a pipe-coupling, the combination of two attachable and detachable sections, each having a spigot end adapted to fit a bowl end on the other, and a rigid clamping-hook formed integral with each bowl end and adapted to engage a cam-face formed on the back of and in line with the passage through the spigot end of the other section in line longitudinally with the joint of the adjacent bowl and spigot ends, substantially as set forth.

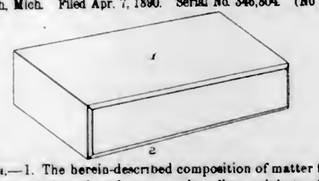
2. In a pipe-coupling, the combination of two attachable and detachable sections, each having a bowl and a spigot end on opposite sides, and a single internal passage or fluid-way extending from the openings of said ends to an opening at the opposite end of the section, and a clamping-hook and cam-face located on opposite sides of the section and respectively in front and in rear of its bowl and spigot ends, the spigot ends fitting into the bowl ends and being adapted to partially rotate therein in the plane of the clamping-hook when the cam-face and hook are being engaged or disengaged, substantially as set forth.

448,967. TIDY-HOLDER. PAUL G. LEISTNER, St. Louis, Mo. Filed Dec. 9, 1889. Serial No. 333,087. (No model.)



Claim.—In a tidy-holder, the combination of the pendent clamping-loops, the single multiple-coil spring of said clamping-loops, the suspension-rests 7 and 13, passing through the coil, the underlay-wires 8 and 14, extending from parts 7 and 13, and the tie-hooks 9 and 15 at the ends of the underlay-wires, substantially as and for the purpose set forth.

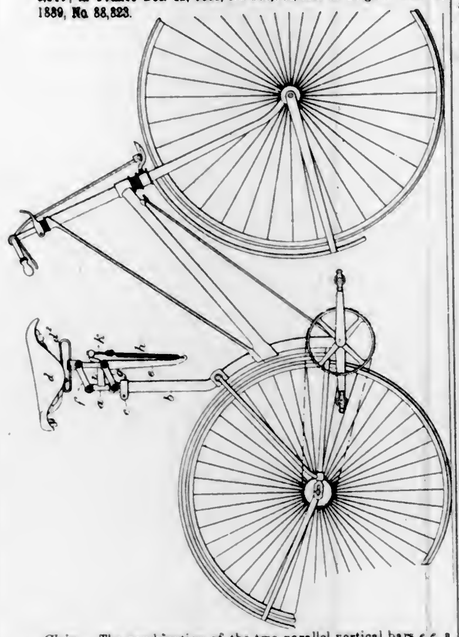
448,968. ARTIFICIAL BUILDING-STONE. EUGENE H. LEWIS, St. Joseph, Mich. Filed Apr. 7, 1890. Serial No. 346,804. (No model.)



Claim.—1. The herein-described composition of matter for building-blocks, consisting of sand, cement, alum, lime, sulphate of iron, bichromate of potash, and carbonate of magnesia, substantially as described.

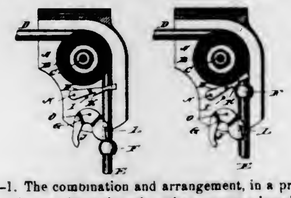
2. The herein-described composition of matter for an artificial building block or brick, consisting of cement, sand, a solution of water, alum, lime, and sulphate of iron, another solution of water, bichromate of potash, and carbonate of magnesia, sugar or equivalent saccharine matter, and water, substantially in the proportions specified, for the purpose set forth.

448,969. SEAT FOR VELOCIPEDES. WALTER J. LLOYD and WILLIAM PRIMER, Birmingham, England. Filed Nov. 29, 1890. Serial No. 373,086. (No model.) Patented in England May 13, 1889, No. 8,311; in France Dec. 12, 1889, No. 202,544, and in Belgium Dec. 12, 1889, No. 88,823.



Claim.—The combination of the two parallel vertical bars *e e*, a seat or saddle connected with the upper ends of said bars, the post *a*, having cross-arms a^2 a^3 and provided with a forwardly-projecting arm *i*, extended between and in front of the bars *e e*, the two pairs of links *f f* and *g g*, that connect said vertical bars *e e* with the cross-arms a^3 a^3 of the post *a*, and an adjustable spring or springs *h*, connecting the forwardly-curved lower ends of the bars *e e* with the end of the forwardly-projecting arm *i* of the post *a*, substantially as shown and described.

448,970. AUTOMATIC SUPPORTING-LOCK. JAMES A. LOUNSBURY, Chicago, Ill., assignor, by direct and mesne assignments, to George Cutter, same place. Filed June 6, 1890. Serial No. 354,534. (No model.)

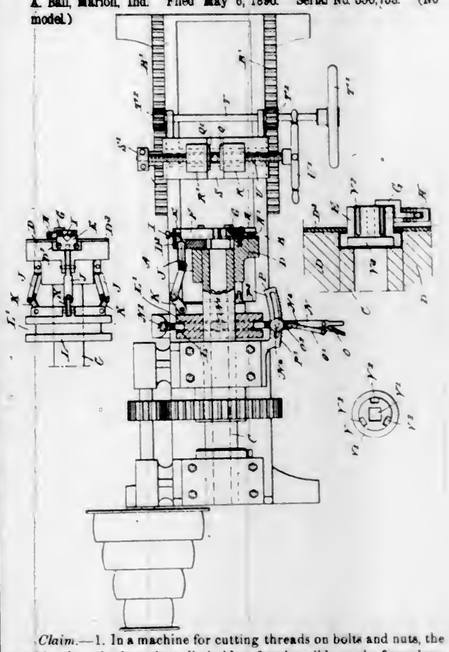


Claim.—1. The combination and arrangement, in a proper housing, of two pawls, one above the other, the upper one loosely attached near one end to the housing and provided with a locking-shoulder on its lower side, the lower one in a bent form and loosely attached at or near the apex of its angle to the housing, one end provided with an interlocking shoulder and at or near the other end with a seat, so that when the front end is elevated the two shoulders will interlock, and a seat is provided for the support of the suspended weight.

2. The combination, in a proper housing, of two pawls, one having one end bifurcated and the other having both ends bifurcated, each provided with interlocking shoulders, one having a seat for the support of the suspended weight, and a suitable cord provided with a knob or knot, all so arranged that by elevating the suspended weight a certain distance the locking device holds it fixedly in suspense, and by elevating the weight a short additional distance the locking device is unloosened, allowing the weight to be freely lowered.

3. The combination and arrangement, in a proper housing, of mechanism consisting of shouldered and bifurcated pawls made to freely move and interlock, one provided with a seat for supporting the suspended weight, and a sheave, whereby by applying power to the same cord or rope the device is locked and holds the weight in suspense, and continuing the application of power the device is unlocked and the suspended weight is freely allowed to be lowered.

448,971. MACHINE FOR CUTTING THREADS ON BOLTS AND NUTS. THOMAS L. LUMBY, Delphos, Ohio, assignor to himself, and Charles A. Ball, Marion, Ind. Filed May 6, 1890. Serial No. 350,738. (No model.)



Claim.—1. In a machine for cutting threads on bolts and nuts, the combination of a face-plate, die-holders fitted to slide on the face-plate, dies adjustably secured to the die-holders, a sliding collar, a link connection between the die-holders and collar, and a graduated operating mechanism connected with the sliding collar, substantially as herein shown and described.

2. In a machine for cutting threads on bolts and nuts, the combination of a face-plate, die-holders fitted to slide on the face-plate, dies adjustably secured to the die-holders, a sliding collar, a link connection between the die-holders and collar, an operating-lever connected to the collar, a graduated segment, and a spring-actuated pawl carried by the operating-lever and engaging the segment, substantially as herein shown and described.

3. In a bolt and nut cutting machine, the combination, with a die-holder provided with recesses to receive the dies, of an arm adapted to pass over the front of the holder to engage the die and a spring-pressed lever pivoted on the said holder and carrying the said arm, substantially as shown and described.

4. In a bolt and nut cutting machine, the combination, with a die-holder provided with recesses to receive the dies, of an arm adapted to pass over the front of the holder to engage the die, a spring-pressed lever pivoted on the said holder and carrying the said arm, and set-screws held in the said holder and passing into the said recesses to engage the outer ends of the dies, substantially as shown and described.

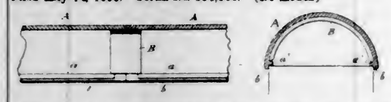
5. In a bolt and nut cutting machine, the combination, with a face-plate provided with radial slots, of die-holders fitted to slide in the said slots and supporting the dies, levers fulcrumed on the said face-plate and engaging the said die-holders, a collar fitted to slide and pivotally connected with the said levers, and a graduated lever under the control of the operator for shifting the said collar, substantially as shown and described.

6. In a bolt and nut cutting machine, the combination, with a face-plate provided with radial slots, of die holders fitted to slide in the

said slots and supporting the dies, levers fulcrumed on the said face-plate and engaging the said die-holders, a collar fitted to slide and pivotally connected with the said levers, a shifting-lever connected with the said collar to move the latter longitudinally toward or from the face-plate, a pawl held to slide on the said shifting-lever, and a toothed segment adapted to be engaged by the said pawl, substantially as shown and described.

7. In a machine for cutting threads on bolts and nuts, the combination, with a face, of die-holders held to slide radially on the face-plate, means for operating the die-holders, and tap-holders adapted to be placed centrally on the face-plate and provided with notches adapted to be engaged by blank dies held in the said holders.

448,972. TILE FOR COPINGS. JOHN LYNCH, Washington, D. C. Filed May 14, 1890. Serial No. 351,800. (No model.)

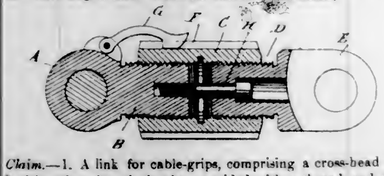


Claim.—1. As an improvement in wall-copings, the tiles herein described having longitudinal ribs and short end spaces, and the joints located in said spaces and bearing against said ribs, substantially as set forth.

2. As an improvement in wall-copings, the tiles herein described having longitudinal ribs and short end spaces and provided with roughened surfaces, and the joints fitting within said end spaces and also provided with roughened surfaces and bearing against said ribs, substantially as and for the purpose set forth.

3. The herein-described improvement in the manufacture of coping-tiles, consisting in forming the same in pairs with the joint-sections placed within their ends while being burned, as and for the purpose set forth.

448,973. LINK FOR CABLE-GRIPS. VERNON T. LYNCH, Chicago, Ill. Filed Aug. 8, 1890. Serial No. 361,436. (No model.)



Claim.—1. A link for cable-grips, comprising a cross-head provided with a thread, a clevis also provided with a thread, and a nut engaging the two threads, and the internal longitudinally-extending bolt connecting said two screw-threaded portions, substantially as shown and described.

2. The herein-described link, comprising the cross-head A, having externally-threaded portion B and a threaded bore, the clevis E, having a central bore in two diameters and the externally-threaded portion D, the bolt H, passing through the clevis-bore into the internal threaded bore of section A, the head of the bolt engaging the shoulder formed by the two diameters, the nut screwed on the parts B E, and a lock for said nut, substantially as set forth.

3. In a link for cable-grips, the combination, with a cross-head provided with a thread, of a clevis provided with a thread running in the opposite direction to the thread on the said cross-head, a nut provided with two threads running in opposite directions and adapted to screw on the said two threads of the cross-head and clevis, and a pawl fulcrumed on the said cross-head and engaging with its free end one of a series of longitudinal grooves formed in the said nut, substantially as shown and described.

4. In a link for cable-grips, the combination, with a cross-head provided with a thread, of a clevis provided with a thread running in the opposite direction to the thread on the said cross-head, a nut provided with two threads running in opposite directions and adapted to screw on the said two threads of the cross-head and clevis, a pawl fulcrumed on the said cross-head and engaging with its free end one of a series of longitudinal grooves formed in the said nut, and a bolt connecting the cross-head and clevis, substantially as shown and described.

448,974. PUZZLE. LEONARD M. LYON, Bethel, Conn. Filed Jan. 16, 1891. Serial No. 377,996. (No model.)

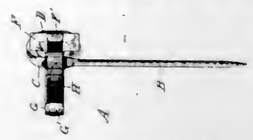
Claim.—1. A puzzle consisting of a holder comprising two portions lying at right angles to each other, said parts having circular openings and recesses in their inner peripheries, a ring held in position by said recesses and turning freely therein and being itself provided with recesses in its inner periphery, a ring engaging said recesses and turning freely therein and provided on its inner periphery with other recesses, another ring engaging the recesses in said second ring, the central openings in said secood and third rings being of the same diameter, and a ball removably held in position between said second and third rings, substantially as described.



2. A puzzle consisting of a suitable holder, a ring adapted to turn within said holder and having recesses on its inner periphery opposite to each other, another ring engaging said recesses and adapted to be rotated in a plane at right angles to the first ring, said second ring having itself recesses upon its inner periphery, and a third ring engaging the recesses on the inner periphery of the second ring and being free to be rotated in a plane at right angles thereto, the inner diameter of the second and third rings being substantially the same, and a ball normally held in position by the second and third rings, but which is adapted to be removed therefrom by tilting said rings slightly in the recesses by which they are held.

3. A puzzle consisting of a suitable holder and a series of rings, each ring being held in position by the ring outside of it and capable of rotation in a plane at right angles to said outer ring, the two smaller rings having substantially the same inner diameter, and a ball held normally in position within the series of rings by said two smaller rings, but being adapted to be removed therefrom by tilting the rings slightly, substantially as described.

448,975. FLOWER-HOLDER. JAMES MARTIN, Temecal, Cal. Filed June 17, 1890. Serial No. 355,716. (No model.)



Claim.—1. The herein-described flower-holder, comprising the shank or pin having its upper end curved outward and downward to form a jaw and thence laterally across the shank and forming an arm, and a spring-pressed clamping-jaw opposite the first-named jaw, and having an arm crossing and rocking on the shank behind the first-named jaw, substantially as set forth.

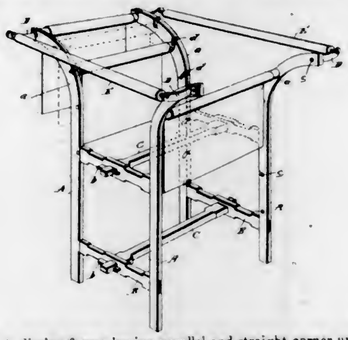
2. In a flower-holder, the combination, with a shank provided with a flattened part continuing into a jaw having an arm, of a second jaw arranged opposite the first jaw and provided with an arm extending in line with the first-named arm, and a spring held on the said second jaw and arm and passing over the flattened end of the shank, substantially as shown and described.

3. In a flower-holder, the combination, with a shank provided with a flattened part continuing into a jaw having an arm, of a second jaw arranged opposite the first jaw and provided with an arm extending in line with the first-named arm, a spring held on the said second jaw and arm and passing over the flattened end of the shank, and flanges held on the said second jaw and its arm to retain the spring in place, substantially as shown and described.

448,976. DISPLAY-FRAME. GODFREY MARTY, Omaha, Nebr. Filed Sept. 24, 1890. Serial No. 365,968. (No model.)

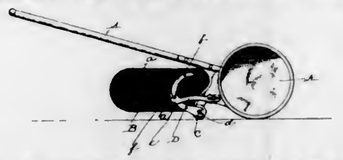
Claim.—1. The display-frame composed of the corner uprights, which uprights are parallel and straight for the greater portion of their length and have their upper roller-bearing portions curved outwardly at *a* and provided on their inner sides with means to seat the journal ends of rollers, the cross-bar B, rigidly securing the uprights in pairs, and the cross-bars C, having their ends tenoned to enter slots in the bars B, and the keys *b*, inserted in slots in the tenoned ends of the cross-bar C, whereby the frame may be readily taken apart to ship knockdown, substantially as shown and specified.

2. The combination of the corner uprights having their ends curved outwardly and their inner sides adapted to receive the journal ends of rollers, the brackets secured to the upper curved ends of the uprights, and the pole journaled in said brackets, substantially as specified.



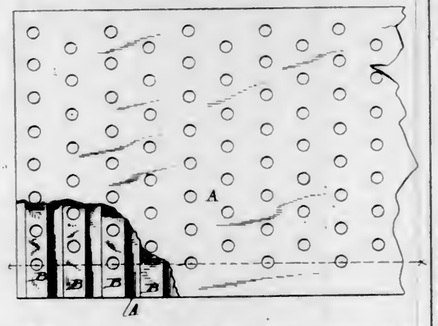
3. A display-frame having parallel and straight corner uprights with their upper ends curved outwardly in an overhanging manner and having their inner sides provided with means to seat the journal ends of rollers, in combination with brackets on the outer sides of said curved uprights also adapted to receive the journal ends of display-rollers, substantially as specified.

448,977. LAWN-MOWER ATTACHMENT. CHARLES C. MAXWELL, Watertown, S. D. Filed Dec. 19, 1890. Serial No. 375,187. (No model.)



Claim.—The combination, with mower A and forked arms D, of basket B, forked arms *b*, and pintles *f*, as set forth.

448,978. CARPET-LINING. ALFRED H. MEECH, Chatham, N. Y. Filed Aug. 7, 1890. Serial No. 361,300. (No specimens.)



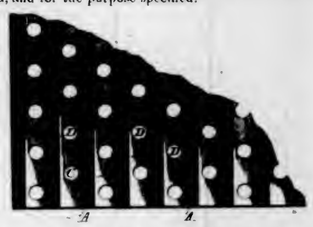
Claim.—1. A paper fabric for carpet-linings, consisting of two outer layers with intervening strips secured thereto, with spaces between the strips, substantially as described.

2. A paper fabric for carpet-linings, consisting of two outer layers with intervening strips secured thereto, with spaces between the strips and perforated through and through the strips and fabric, substantially as described.

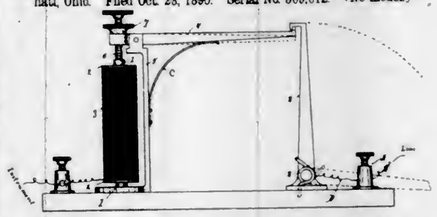
448,979. CARPET-LINING, &c. ALFRED H. MEECH, Chatham, N. Y. Filed Aug. 7, 1890. Serial No. 361,301. (No specimens.)

Claim.—1. A felt or paper fabric consisting of an upper or outer surface and independent strips secured thereto and perforated through and through the strips and fabric, substantially as described.

2. A felt or paper fabric consisting of an upper or outer surface provided with independent strips arranged at suitable distances apart, having a convex bearing-surface, said strips being provided with perforations extending through the same and the fabric, substantially as described, and for the purpose specified.



448,980. ELECTRICAL PROTECTOR. ISAAC N. MILLER, Cincinnati, Ohio. Filed Oct. 28, 1890. Serial No. 369,612. (No model.)



Claim.—1. An excessive-current protector consisting of the heat-coil having an expansive core, a lever pivoted in juxtaposition to one end to form a long and short arm, a screw-rod engaging the short arm of the lever and bearing against one end of the expansive core, and a pivoted contact-lever having a detachable engagement with the long arm of the screw-rod-carrying lever and released from engagement therewith by the expansion of the core, substantially as described.

2. An excessive-current protector consisting of the heat-coil having an expansive core, a lever pivoted in juxtaposition to one end to form a short arm and a long arm having a hooked end, a screw-rod engaging the short arm of the lever and bearing against one end of the expansive core, and a pivoted contact-lever having a hook in detachable engagement with the hooked end of the long arm of the screw-rod-carrying lever and released from engagement therewith by the expansion of the core, substantially as described.

448,981. KEY-GUIDE FOR LOCKS. FRANK W. MIX, New Britain, Conn. Filed Jan. 11, 1890. Serial No. 336,697. (No model.)



Claim.—A rotatable key-guide consisting of two disks and an interior neck integral with one of said disks, the neck adapted to occupy an opening in the face-plate of the lock, and the said disks adapted to occupy opposite sides of said plate and secured together, substantially as set forth.

448,982. STATION-INDICATOR. FRANK MOORE, Pittsburg, Pa. Filed May 16, 1890. Serial No. 352,009. (No model.)

Claim.—1. The combination of a line of pneumatic train-signaling pipe, a signaling-valve communicating therewith and actuated by reduction of pressure therein, with a station-indicating mechanism and a fluid-pressure-operating device, both located upon a car of the train, said fluid-pressure-operating device being connected with the signaling-line and actuated by increase of pressure therein, an independent direct air-supply pipe leading into the signaling-line, and an actuating-valve on the locomotive controlling said direct air-supply pipe, substantially as set forth.

2. The combination of a pair of carrying-rollers, a web of flexible material connected at its ends thereto and bearing a series of station-indications, ratchet-wheels connected to the rollers and provided with oppositely-inclined teeth, respectively, longitudinally-movable bear-

ings, each supporting an end journal of one of the rollers, sheaves mounted loosely on said bearings and connected thereto by oppositely-coiled springs, respectively, pawls pivoted to said sheaves and adapted to be engaged with and disengaged from the teeth of the adjacent ratchet-wheels, a fluid-pressure cylinder, a valve controlling the inlet-port thereof, a piston fitting said cylinder, a pivoted lever abutting against the stem of said piston, and a flexible connection coupling the free end of the lever with one of said sheaves, substantially as set forth.



448,983. STEAM-BOILER. WALLACE A. MORSE, St. Louis, Mo., assignor of one-half to John O'Brien, same place. Filed Aug. 20, 1890. Serial No. 362,501. (No model.)

Claim.—1. In combination with a boiler and a furnace having a hollow bridge-wall having openings 7, a feed-water heater located in said bridge-wall and having flues 6, communicating with opening 7 in the bridge-wall, substantially as and for the purpose set forth.

2. The combination of a furnace, a boiler having water-legs connected to both ends of the boiler and extending directly from its bottom downward, tubes connecting the inner walls of the legs beneath the body of the boiler and above the bridge-wall of the furnace, and flues connecting the outer walls of the legs, the space between said water-legs being unobstructed throughout the whole extent of the said tubes, substantially as and for the purpose set forth.

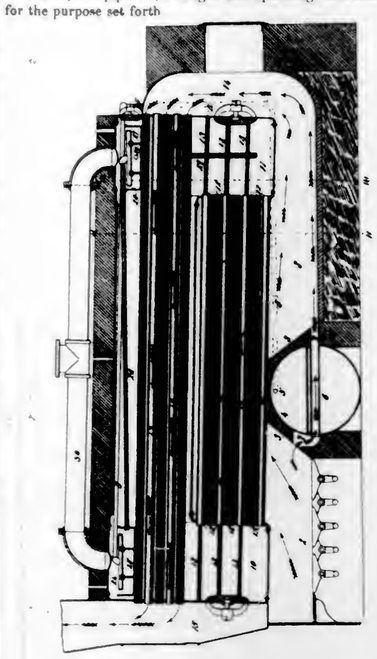
3. The combination of a furnace, a boiler having water-legs forming, respectively, a part of each end of the boiler and each being in direct communication with its respective end, tubes connecting the inner walls of the legs beneath the body of the boiler and over the bridge-wall of the furnace, and flues connecting the outer walls of the legs and passing through said tubes, substantially as and for the purpose set forth.

4. The combination, with the furnace, the combustion-chamber, and chamber 14, of a boiler arranged above said furnace, the partitions 18, extending throughout the length of the boiler, water-legs extending above and below said partitions, and flues leading through said water-legs above said partitions, substantially as set forth.

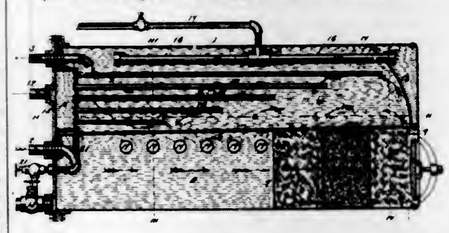
5. The combination of a furnace having a chamber 14, a boiler having water-legs and a breeching 15, flues 13 and 19, passing through the water-legs and forming a communication between said chamber and breeching, flues passing through the body of the boiler and forming a communication between said chamber and breeching, and the partitions 18, arranged below the flues 19 and extending throughout the length of the boiler, substantially as and for the purpose set forth.

6. In a boiler having a water-leg, the receiving-pan 28 and pipes 29, for carrying the water from the pan to the bottom of the leg, substantially as set forth.

7. In a boiler having a water-leg, pans 24 and 25, pipe 26, pans 27 and 28, and pipes 29, arranged and operating substantially as and for the purpose set forth



448,984. FEED-WATER HEATER AND PURIFIER. WALLACE A. MORSE, St. Louis, Mo., assignor of one-half to John O'Brien, same place. Filed Aug. 20, 1890. Serial No. 362,502. (No model.)



Claim.—1. In a feed-water heater, the combination of a shell, a diaphragm arranged horizontally within the shell forming upper and lower water-chambers and having an opening for the passage of the water, an induction-pipe communicating with the lower chamber and eduction-pipe communicating with the upper chamber, and transverse heating-pipes 19, traversing said lower chamber, substantially as set forth.

2. In a feed-water heater, the combination of a shell, a diaphragm arranged horizontally within the shell forming upper and lower water-chambers, induction and eduction pipes, and a pan 20, located on said diaphragm and having its side flanges fitting against the walls of the boiler, as shown, and said diaphragm having an opening for the passage of water at the end of said pan remote from the said eduction-pipe, substantially as and for the purpose set forth.

3. In a feed-water heater, the combination of the shell having induction and eduction pipes and the tubes 10, arranged within the shell and having communication with the interior thereof and with a heating-pipe for discharging the heating medium throughout the water, substantially as and for the purpose set forth.

4. In a feed-water heater, the combination of the shell having induction and eduction pipes, and the tubes 10, varying in length and communicating with a heating-pipe and with the interior of the shell for discharging the heating medium throughout the water, substantially as and for the purpose set forth.

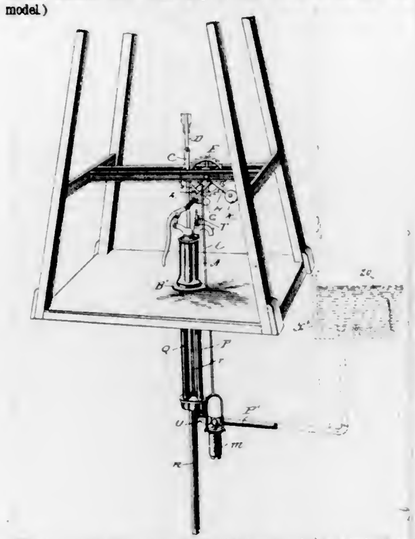
5. In a feed-water heater, the combination of the shell having induction and eduction pipes and an enlarged chamber 11, a heating pipe communicating with said chamber, and tubes 10, located within the boiler and communicating with the interior thereof and with said chamber and terminating below the water-line, substantially as and for the purpose set forth.

6. In a feed-water heater, the combination of the shell having induction and eduction pipes and a chamber 11, a heating-pipe communicating with said chamber by an opening presented in a downward direction, and tubes 10, communicating with said chamber and with the interior of the heater and having their extremities arranged in an oblique line, substantially as and for the purpose set forth.

7. In a feed-water heater, the combination of the shell having a diaphragm 4 and induction and eduction pipes, the tubes 10, open at their inner ends and communicating with a heating-pipe, and the deflecting-plate 14, substantially as and for the purpose set forth.

8. In a feed-water heater, the combination of the shell, the chamber 11, located at one end of said shell, the deflecting-plate 14, located at the other end of said shell, the tubes 10, open at both ends, extending from said chamber 11 toward said deflecting-plate and being of various lengths, an induction-pipe below said tubes, an eduction-pipe above said tubes, and a heating-pipe discharging into said chamber 11, substantially as set forth.

448,985. REGULATOR FOR WINDMILL-PUMPS. PHILIP A. MYERS, Ashland, Ohio. Filed May 27, 1890. Serial No. 353,298. (No model.)



Claim.—1. In combination with the pump-rod of a windmill and a force-pump connected therewith, and with an operating connection to the windmill, arranged to turn it out of the wind, a loose connecting device between the pump-rod and the windmill connection capable of being engaged and disengaged with the windmill connection by means of controlling mechanism, and the said controlling mechanism operated by the pressure of the water within the pump, substantially as described.

2. In combination with the pump-rod of a windmill and a pump connected therewith, a rope or chain for turning the wheel out of the wind, a ratchet-wheel and drum for drawing upon said rope, a pawl on the pump-rod, and mechanism actuated by the water-pressure to control the pawl, substantially as described.

3. In combination with the pump-rod of a windmill and a pump connected therewith, a connection for turning the wheel out of the wind, a ratchet-wheel and drum for drawing upon said connection, a pawl on the pump-rod, mechanism actuated by the water-pressure to control the pawl, and a holding-pawl, substantially as described.

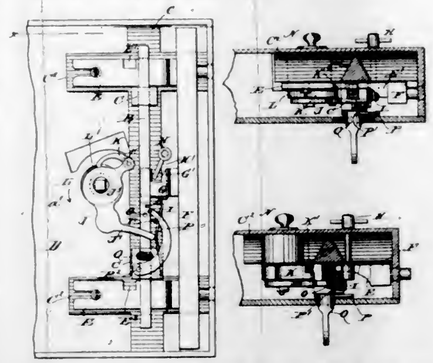
4. In combination, the pump-rod, the pawl C, the ratchet-wheel and drum, and the cord to draw the wind-wheel out of the wind, the weighted lever arranged to operate upon the pawls, and connections between said lever and the pump, whereby said lever is actuated by the pressure of the water, substantially as described.

5. In combination with the pump-rod and the ratchet-wheel and drum, the gravity-pawls, the weighted lever arranged to act upon both pawls and hold them out of connection with the wheel when down, the pressure-cylinder, and a connection between said lever and the pressure-cylinder, substantially as described.

6. In combination, the reciprocating pump-rod of the windmill, a connection leading to the wheel for throwing the same out of the wind, a pawl carried by the pump-rod to act upon said connection, means for holding the said pawl out of engagement, and means operated by the back-pressure of water to release said holding means, whereby the pawl will act and operate the connections to the wind-wheel to throw the same out of the wind, substantially as described.

7. In combination, the pump-rod, connections leading to the windmill for throwing the same out of the wind, a loose connectiog device between the windmill connection and the pump-rod and carried by the said pump-rod, and controlling means for said loose connecting device operated by the back-pressure of water in the pump, whereby the pump-rod is utilized as the primary means for throwing the wheel out of the wind, substantially as described

448,986. LOCK. WILLIAM A. MCCANN, Jacksonville, Fla. Filed June 18, 1890. Serial No. 355,868. (Model.)



Claim.—1. In a safe-lock, triangular-shaped bars forming bearings on one face for bolts and locking-bar and secured to the door with one corner abutting on the inner face thereof, substantially as shown and described.

2. In a lock, the combination, with a bar fitted to slide vertically and adapted to engage the locking-bolt, of a spring-catch adapted to engage the said bar and controlled from the combination-lock, substantially as shown and described.

3. In a lock, the combination, with a bar fitted to slide vertically and adapted to engage the locking-bolts, of a spring-catch adapted to engage the said bar, and a bell-crank lever for disengaging the said spring-catch from the said bar and moving the latter upward and provided with a pawl connecting it with the combination-lock, as set forth.

4. The combination, with the horizontal bolts notched in their upper edges, a vertical bar rigidly connected at its ends to said bolts and provided between its ends with the arm G, having a notch G', and a knob provided with a bit entering said notch, of a vertically-movable bar having lugs to enter the bolt-notches, a spring-catch to lock the bar from being raised, and means for releasing the catch and raising the bar from the combination-lock, substantially as set forth.

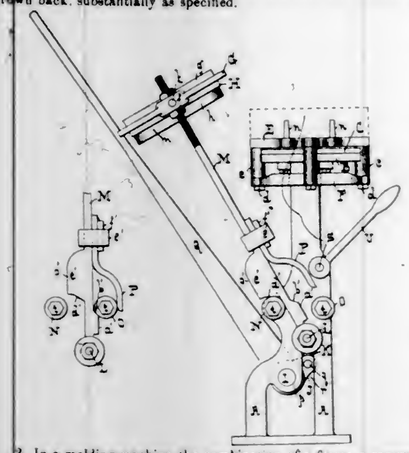
5. In a lock, the combination, with a bar fitted to slide vertically and adapted to engage the locking-bolts, of a spring having a lug adapted to engage a notch in the said bar, a pin projecting from the said bar, and a bell-crank lever adapted to engage the said spring and the said pin and controlled by the combination-lock, substantially as shown and described.

6. In a lock, the combination, with the bolt, the locking-bar therefor, and a spring-catch to engage said locking-bar, of a pivoted arm adapted to engage the free end of the said spring-catch to release it and hold it out of engagement with the bar, and an eccentric knob adapted to engage the said pivoted arm, substantially as shown and described.

448,987. MOLDING-MACHINE. JOHN E. MCCANNA, Baltimore, Md. Filed Dec. 8, 1890. Serial No. 373,885. (No model.)

Claim.—1. In a molding-machine, the combination of a frame, a rammer, bars attached at their upper ends to the said rammer, a cross-head, to which the lower ends of the said bars are pivoted, a projection on the forward side of the said bars having an inclined upper face, and a roller in the path of the said projections, whereby in the elevation

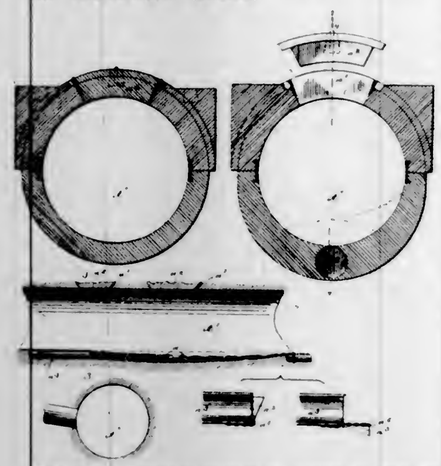
of the cross-head the inclined surfaces of the said projections come in contact with the said rollers, and the said bars with the rammer are thrown back, substantially as specified.



2. In a molding-machine, the combination of a frame, a rammer, bars attached at their upper ends to the said rammer, a cross-head, to which the lower ends of the said bars are pivoted, a projection on the rearward side of the said bars having an inclined under surface, and a roller in the path of the said projections, whereby in the depression of the said cross-head the inclined surfaces of the said projections come in contact with the said rollers, and the said bars with the rammer are thrown forward, substantially as specified.

3. In a molding-machine, the combination of a frame, a rammer, a pair of bars attached at their upper ends to the said rammer, a cross-head to which the lower ends of the said bars are pivoted, hooks on the forward side of the said bars, and rollers in the path of the points of the said hooks when the said bars are in a backward inclined position or approaching a vertical position, which hooks as the cross-head is depressed pass over the said rollers and draw the said bars to a vertical position, substantially as specified.

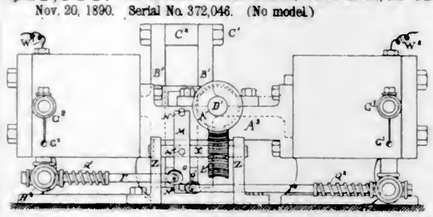
448,988. **SEWERAGE SYSTEM.** JOHN C. MCGOWAN, Washington, D. C., assignor of one-half to W. D. Colt, of same place. Filed Feb. 11, 1890. Serial No. 339,988. (No model.)



Claim.—1. In a system of sewerage for draining low lands, the combination of a reservoir having its bottom lower than the land to be drained, a conduit or main sewer extending from the reservoir to a point higher than the bottom of the reservoir and having catch-basins arranged at intervals, man-hole openings above the catch-basins, a jet or flushing pipe located adjacent to the head of each catch-basin, so as to direct its jet or flow upon the sediment at the head of the basin and over the floor of the latter to wash said sediment out of the basin from its head to its exit end in direction of the mouth of the sewer, and a water-supply for each said jet-pipe independent of the waters in the sewer, substantially as set forth.

2. In a system of sewerage for draining low lands, the combination of a reservoir having its bottom lower than the land to be drained, a conduit or main sewer extending from the reservoir to a point higher than the bottom of the reservoir and having catch-basins arranged at intervals for each catch-basin, a jet or flushing pipe located at the head of said basin and adjacent to the floor of the basin, a valve on the end of said pipe, and devices for closing said valve and holding it closed until the water-pressure in the pipe opens said valves, substantially as set forth.

448,989. **GAS-ENGINE.** ERNEST NARJOT, San Francisco, Cal. Filed Nov. 20, 1890. Serial No. 372,046. (No model.)



Claim.—1. In a gas-engine, the combination of the open-ended cylinders A′ and A², the shaft D′, the yoke, and the sliding bearing S, together with the worm-pinion K and tangent wheel L, substantially as described.

2. In a gas-engine, the two open-ended cylinders A′ and A², connected by the struts A³, the latter forming bearings for the crank-shaft D, a crank and yoke to produce rotary motion of the shaft, a worm-pinion K and tangent wheel L to operate the exhaust-valves of both cylinders, operating in the manner and for the purposes substantially as herein set forth.

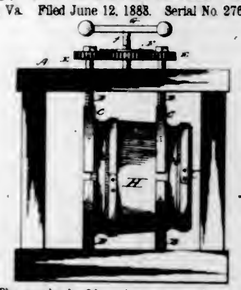
3. In a gas-engine, the worm-pinion K, tangent wheel L, shaft X, and disk wheel M, the latter provided with tappets N for opening the exhaust-valves H′ and H², in positive and proper sequence for the two engines, constructed and operating substantially as shown and described.

4. In a gas-engine, the disk M, provided with the tappets N, the rollers O and O′, and reciprocating rods I′ and I², provided with coil-springs Q′ and Q², so arranged that the exhaust-valves H′ and H² are opened at the proper point and closed automatically, in the manner substantially as set forth and described.

5. In a gas-engine, the combination of the open-ended cylinders A′ and A², connected by the struts A³, the latter forming bearings for the crank-shaft D, a worm-pinion K, tangent wheel L, disk M, and tappets N, together with the yoke-pieces B′, electrodes F′ and F², and the electrodes E within the cylinder, arranged to make and break the electric circuit at each forward stroke of the piston D², substantially as described.

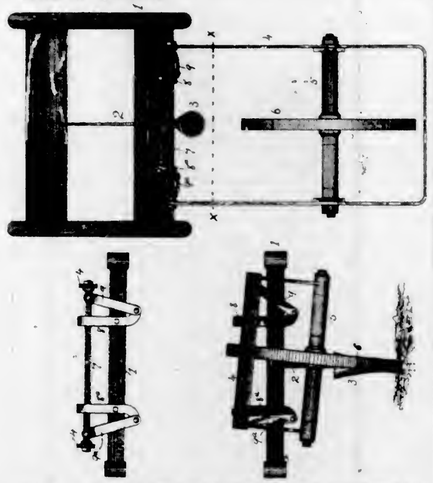
6. In a gas-engine, the two open-ended cylinders A′ and A², connecting-struts A³, a cranked shaft D′ between, a worm-pinion K, and tangent wheel L, the disk M, and tappets N, the whole combined and operating in the manner substantially as shown and specified herein.

448,990. **HOOPING WOODEN VESSELS.** THOMAS K. PARRISH, Richmond, Va. Filed June 12, 1888. Serial No. 276,807. (No model.)



Claim.—The method of hooping coopered or staved vessels, consisting in the forming a groove in the vessel for the reception of the hoop, compressing the vessel in the vicinity of said groove, passing a hoop over the body of the vessel and into said groove, and finally allowing the vessel to expand and tighten the hoop, substantially as described.

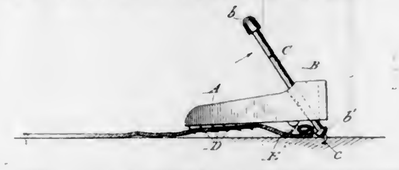
448,991. **GRAIN-DRILL.** HARVEY J. PHELPS, Havana, Ill., assignor of one-half to O. B. Thorp, same place. Filed Dec. 1, 1890. Serial No. 373,243. (No model.)



Claim.—1. In grain-drills, the combination of a runner-frame, a wheel-frame, and a link connected pivotally with the runner-frame at its lower end, extended obliquely upward and outward, and connected at its upper end with the wheel-frame, as set forth.

2. In grain-drills, the combination, with a runner-frame and a wheel-frame, of slotted standards rising from the runner-frame and receiving the front bar of the wheel-frame, and oblique links having their upper outer ends connected with the wheel-frame and their lower inner ends connected with the runner-frame in a pivotal manner, as set forth.

448,992. **CARPET-STRETCHER.** WILLIAM A. POOL, Statesville, N. C. Filed Dec. 22, 1890. Serial No. 375,453. (No model.)

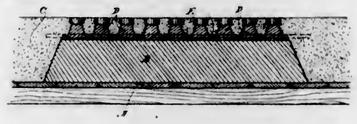


Claim.—1. In a carpet-stretcher, in combination, the stretching-block provided with stretching-teeth inclined in a direction from the toe toward the heel of the block and having at its heel end an oblong slot, and a claw-lever the claw of which enters the floor in a reverse direction to that in which the stretching-teeth enter the carpet, substantially as described.

2. The combination of the stretching-block provided with stretching-teeth, and a retaining-claw having its point turned opposite to the stretching-teeth, and a claw-lever fitted in an upwardly-flared oblong slot, said lever having its fulcrum in the lower part of the slot and being capable of vibrating in the upper part of the slot and also sliding up and down therein, substantially as described.

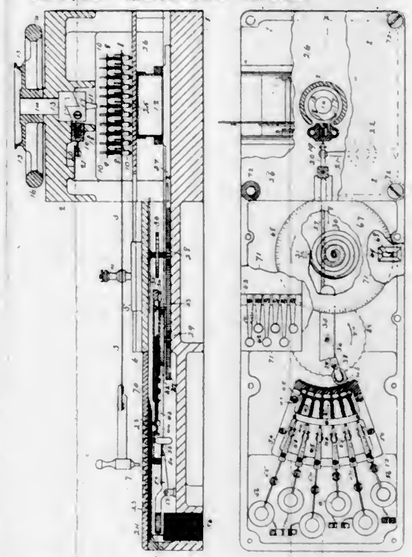
3. The combination of the stretching-block having stretching-teeth, and a retaining-claw, and a claw-lever, the said lever having a shoulder near its lower end below the block, whereby the lever is allowed to slide up and down in the slot and limited in its upward movement, substantially as described.

448,993. **ILLUMINATING-PANEL IN CONCRETE FLOORS.** ERNEST L. RANSOME, San Francisco, Cal. Filed Feb. 12, 1890. Serial No. 340,192. (No model.)



Claim.—The monolithic concrete floor having illuminating-panels provided with lenses, said panels being thinner than the body of the floor and strengthened by a net-work of metallic rods embedded therein, substantially as set forth.

448,994. **MATRIX-MAKING MACHINE.** CASPER L. REDFIELD, Chicago, Ill., assignor to the Chicago Matrix Machine Company. Filed Feb. 13, 1890. Serial No. 340,323. (No model.)



Claim.—1. In a matrix-machine, a scapo-wheel, a reciprocating bar carrying a holding-dog, a lever pivoted to the bar carrying a pawl and turning with the wheel, and plungers for engaging the bar to reciprocate it and to release the holding-dog.

2. A matrix-feed escapement comprising a scape-wheel, a holding-pawl, a reciprocating bar carrying it, a series of spring devices for reciprocating the bar to free its pawl, and a lever carrying the second pawl and arranged to be moved by the wheel to disengage the bar from the acting spring device and cause a re-engagement of the holding-pawl, substantially as set forth.

3. In a feed-escapement for a matrix-machine, a scape-wheel, a bar transverse thereto carrying a holding-pawl, a spring-plunger for engaging the bar to release the pawl, a second pawl, and a lever carrying the same adapted to turn with the wheel and to engage the acting spring-plunger and move it away to permit re-engagement of the holding pawl, substantially as set forth.

4. In a matrix-feed escapement, a scape-wheel, a holding-dog, a reciprocating bar carrying it, spring-plungers in radial arrangement for reciprocating the bar to release the pawl, a lever carrying a second pawl and pivoted to turn with the wheel and arranged to move the engaging-plunger from the bar, and springs for returning both the bar and lever to their initial positions, substantially as set forth.

5. In a matrix-feed escapement, a scape-wheel and means for rotating it, a bar over the wheel carrying the holding-dog, a lever pivoted to the bar carrying a pawl and turning with the wheel, spring-plungers in radial arrangement for severally moving the bar to release the dog, means on the lever for engaging the acting plunger to return it, and springs for giving the bar a return reciprocation to engage its dog and return the released lever, substantially as set forth.

6. In a matrix-feed escapement, a scape-wheel, a reciprocating bar carrying a holding-dog, a rotating lever carrying a pawl, a series of radially-arranged spring-plungers for moving the bar to release its dog, catches for holding the plungers, and means for separately releasing such catches, substantially as set forth.

7. In a matrix-feed escapement, the combination, with the scape-wheel and a holding-dog and moving pawl, of a sliding bar for the former and a pivoted lever for the latter, spring-plungers for moving the bar to cause a release of the dog and engagement of the pawl, means for disengaging the plungers by the lever movement, and notches for holding the plungers from engagement, substantially as set forth.

8. The combination, with the scape-wheel, its pawls, and the re-

ciprocating bar and pivoted lever, of the radially-arranged spring-plungers, the spring-catches therefor, and the spring-hammers for releasing them, substantially as set forth.

9. The combination, with the scape-wheel, of the reciprocating bar and its holding-dog, the spring devices for moving it to release the dog and the spring for returning it to cause the dog to re-engage the lever pivoted to the bar and the spring therefor, and the sliding portion of the lever having the inclined surface, for the purpose set forth.

10. The combination, with the matrix-feed escapement, of the radially-arranged spring-plungers for causing the engagement and release of the pawls, the spring-catches therefor, the releasing-hammers, and means for operating them, substantially as set forth.

11. In a matrix-feed escapement, the combination, with the reciprocating bar carrying the holding-dog, of the lever pivoted thereto, carrying the moving pawl, and the connected lever having the incline and pivoted to the scape-wheel spindle, substantially as set forth.

12. In a matrix-machine, a variable feed mechanism, radially-arranged releasing devices therefor, spring-hammers for operating them, a series of pivoted levers for actuating the hammers, and means, substantially as described, for operating the levers.

13. In a matrix-machine, the combination, with a variable matrix-feed mechanism controlled by releasing devices, of spring-hammers for operating the releasing devices, levers supported by and arranged to actuate the hammers, and devices, substantially as described, supported by the levers and adapted to operate them, substantially as and for the purpose set forth.

14. In a matrix-machine having a variable feed-escapement, a reciprocating detent-carrier carrying also a pivoted lever provided with a pawl and adapted to turn with the wheel when engaged, plunger devices for reciprocating the carrier to release the detent and limit the travel of the pivoted lever, and means for causing the pressure of the lever on the plunger to retract them and permit re-engagement of the detent, substantially as set forth.

15. In a feed-escapement for a matrix-machine, a scape-wheel, a holding-dog and its carrier, reciprocating devices for moving the carrier to release the dog, a pawl, and a swinging carrier therefor movable with the wheel and arranged to engage said reciprocating devices to retract them and permit re-engagement of the holding-dog with the wheel, substantially as set forth.

16. In a matrix-machine, a circuit-closing pin co-operating with an index-plate, a series of conducting-plates coinciding with the indexes, a variable feed-escapement, releasing devices therefor consisting of a series of plungers adapted to be separately projected to reciprocate the carrier of a holding-dog, and electro-magnets having circuit connections severally with said conducting-pipes for operating said releasing devices, substantially as set forth.

17. In a feed mechanism for a matrix-machine, the combination, with mechanism for moving and holding the same, of electrically-operated releasing devices for engaging the same to permit variable feed movements, and means for causing the movements of the feed mechanism to return the releasing devices to normal position, substantially as set forth.

18. The combination, with a variable feed-escapement for a matrix-carriage, of a reciprocating detent-carrier, a series of reciprocating devices adapted to operate separately upon the carrier to free the detent, and devices operated by the scape-wheel movements to cause the retraction of such reciprocating devices to permit re-engagement of the detent, substantially as set forth.

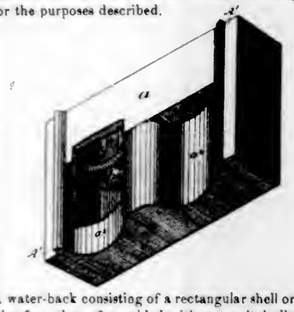
19. In a feed-escapement for a matrix-machine, a scape-wheel, a detent for holding it, a series of plungers arranged radially in the plane of the wheel for separately releasing the detent, and a cam arranged to be carried with the scape-wheel when the latter rotates and to be free when it stops and adapted to engage the plungers to retract them and allow the detent to re-engage the wheel, substantially as set forth.

448,995. WATER-BACK. JESSE REYNOLDS, Philadelphia, Pa., assignor to William T. Reynolds, same place. Filed Nov. 25, 1890. Serial No. 372,633. (No model.)

Claim.—1. The herein-described water-back provided with a face having a flat or plain surfaced overhanging portion a and a partially-depressed portion a^3, the construction being such that recesses are formed on both sides or surfaces of the partially-depressed portion beneath the roof a' of said overhanging portion, for the purposes set forth.

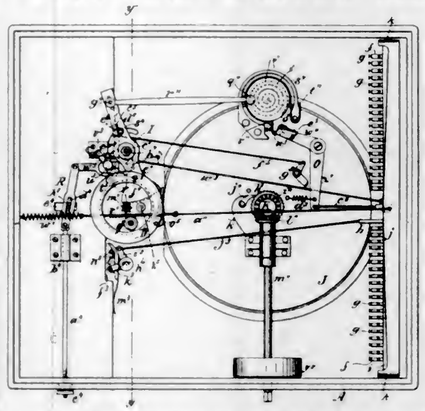
2. A water-back consisting of a shell or hollow casing provided with an overhanging and corrugated or ribbed face and with an internal partition extending transversely to the sides of the shell or casing and nearly to the end walls thereof, substantially as described.

3. The combination of a shell or casing having a face provided with an overhanging part and corrugated or ribbed part, an inlet, an outlet, and an internal partition located between the inlet and outlet and connected with the side walls of the shell or casing, substantially as and for the purposes described.



4. A water-back consisting of a rectangular shell or hollow casing having the face thereof provided with extremital ribs and with an overhanging upper portion formed integral with a corrugated or ribbed lower portion, inlet and outlet openings, and an internal partition interposed between the same and secured to the side walls of the shell or casing and extending nearly to the end walls thereof, substantially as described.

448,996. TYPE-WRITING MACHINE. JAMES RICHARDSON, North Tarrytown, N. Y. Filed June 15, 1886. Serial No. 205,230. (No model.)



Claim.—1. The combination, in a type-writer, of a spindle having a reciprocating rotary motion, an oscillatory type-wheel loosely mounted on the spindle, and means, substantially as herein shown and described, for disengaging the type-wheel from the spindle at any time in the rotation of the spindle and re-engaging the type-wheel on the return of the spindle to the point of disengagement.

2. In a type-writing machine, the combination of a spindle having a reciprocating rotary motion, an oscillatory type-wheel mounted loosely on the spindle, means, substantially as described, for engaging the type-wheel during a portion of or the whole of a revolution of the spindle and disengaging the type-wheel during any further rotation of the spindle, and brake mechanism, substantially as described, for arresting the motion of the type-wheel when disengaged from the spindle, substantially as shown and described.

3. The combination, in a type-writing machine, of a type-wheel-carrying spindle provided with a pinion and an oscillating lever furnished with a toothed sector adapted to engage the pinion of the type-wheel-carrying spindle, the power-driven crank and a rod connecting the crank with the oscillating lever, and an escapement for securing the releasing and stopping of the crank at the beginning and end of each revolution, substantially as shown and described.

4. In a type-writing machine, the combination, with the oscillatory type-wheel-operating lever, of a hollow drum mounted loosely on a power-driven shaft, a spring connecting the drum with the shaft, an escapement for permitting successive isolated revolutions of the drum, and mechanism, substantially as described, intermediate between the drum and the oscillating type-wheel-actuating lever.

5. In a type-writing machine, the combination of the spindle F, arranged to rotate alternately in opposite directions, and the sleeve G, mounted loosely on the spindle, the type-wheel H, carried by the sleeve and provided with rows of type or characters, the latch b', pivoted in the spindle and adapted to engage the sleeve G during a part or the whole of a revolution, the capitalizing-key G', and intermediate devices, substantially as described, for shifting the position of the sleeve G and type-wheel H, substantially as shown and described.

6. The combination, with the type-wheel H, having a downwardly-projecting rim, of the turret C, grooved circumferentially near its upper end, a slit annular spring m, placed in the groove of the turret, and means, substantially as described, for expanding the slit spring against the inner surface of the rim of the type-wheel, substantially as shown and described.

7. In a type-writing machine, the combination, with the rotating type-wheel, the circumferentially-grooved turret C, and the spring m, provided with inwardly-projecting pins n, of the rod q, having a wedge-shaped head, and means, substantially as described, for moving the rod q upward and bringing the wedge-shaped head into engagement with the pins of the annular spring.

8. In a type-writer, the combination, with the brake-spring m, of the type-wheel brake-operating rod q, provided with the nut t, mounted on the threaded portion of the rod, the spring u, suspended from the nut and surrounding the rod, the collar v, attached to the free end of the spring u and surrounding the rod q, forming a yielding contact for the rod-operating arm, and means, substantially as described, for moving the collar v, substantially as shown and described.

9. In a type-writing machine, the combination of the type-wheel H, the spindle F, provided with longitudinal slots a' h'', arranged at right angles with each other, the latch b', pivoted in the slot a' and provided with an offset slot d', the circumferentially-grooved collar f', surrounding the spindle and provided with the pin g', passing through the slot h'' of the spindle and through the slot d' of the latch b', the arm j', encircling the collar f' and provided with a forked end loosely embracing the rod q, the rod k', supported parallel with the spindle the spirally-grooved shaft p', swiveled to the rod k', the pinion t', provided with the pin u', entering the spiral groove of the shaft p', and the pinion n' on the spindle F, arranged to mesh with the pinion t', substantially as shown and described.

10. In a type-writing machine, the combination of the split spring m, provided with the pins n, the rod q, provided with the wedge-shaped head s, the nut t, spring u, and collar v, the arm j', the rod k', carrying the arm, the spirally-grooved shaft p', the pinion t', provided with the pin u', projecting into the groove of the shaft, the pinion n', engaging the pinion t', the spindle F, the rotating type-wheel, and mechanism for imparting alternate rotary motions to the spindle F, substantially as shown and described.

11. In a type-writing machine, the combination, with the rod k', the spirally-grooved shaft p', and the pinion t', provided with the pin u', projecting into the spiral groove of the shaft p', of the elongated pinion q', attached to or formed on the shaft p', the spring-retracted rack-bar v', the connecting-wire a'', the swinging bar j, the series of key-levers a, and the type-wheel having rows of type or characters, spindle F, and means, substantially as set forth, for operating said spindle, substantially as shown and described.

12. In a power-driven type-writing machine, the combination, with the ratchet-bar f^3, the power-actuated oscillating lever I, the arm o^3, carried thereby, and the connecting-rod r'', and spring-actuated crank-wheel o'', of the spring-acted pawl q^3, arranged to engage the ratchet-bar, substantially as shown and described.

13. The combination, with the ratchet-bar f^3 and bent pawl q^3, arranged to engage the ratchet-bar, and means, substantially as described, for reciprocating the pawl, of the rock-shaft u^3, provided with the finger t^3, the arm v^3, the notched bar h, connecting-rod, and the series of key-levers a, whereby the time of the disengagement of the pawl q^3 from the ratchet-bar f^3 is varied according to the width of the letter to be printed, substantially as shown and described.

14. The combination, with the lever I and the arm p^3, connected therewith, of the slotted lever R, the adjustable fulcrum-rod a^4, the link w^3, connecting the lever R and the arm p^3, the sleeve g^4, journaled in fixed supports, the arm h^3, carried by the sleeve and entering the slot of the lever R, and the grooved rock-shaft S, journaled in the paper-carriage, the arms f^4, and the paper-roller T, substantially as described.

15. The combination, with the paper-roller T, of the ratchet w^3, the forked angled lever s^5, pivoted to the arm f^4 and provided with a hooked pawl for engaging the ratchet, and the adjustable stud x^5, projecting from the arm f^4 through the forked end of the lever s^5, substantially as shown and described.

16. The combination, with the paper-carriage Q and lever O, of an adjustable stud b^3, carried by the ratchet-bar f^3, the rock-shaft c^3, journaled in the casing A and provided at its upper and lower ends with arms d^3 e^3, the arm d^5 extending into the path of the stud b^3, an angled lever g^3, pivoted to the head of the drum J, and a wire f^5, connecting the arm e^3 with the lever g^3, substantially as described.

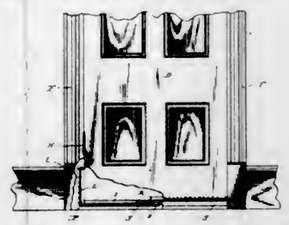
17. The combination, with the pinion of the type-wheel-shifting mechanism, of the rack-bar v', the spring-acted eccentric-lever o^3, and the oscillating lever I, the eccentric-lever extending into the path of the oscillating lever I, substantially as described.

18. In a power-driven type-writer, the combination, with a type-wheel and the impression devices acting in connection therewith, of a main driving-spring, an intermediate spring connected with and kept under tension by said mainspring, and mechanism connecting the said intermediate spring with the said type-wheel and impression devices, substantially as set forth.

19. In a type-writing machine, the combination, with the printing mechanism, substantially as described, and a lever I for operating it, of the paper-carriage having a rock-shaft on which it slides, a lever R, operated by the lever I and connected with the said rock-shaft for rocking it, and an adjustable fulcrum for said lever R, whereby its throw may be adjusted and rock-shaft rocked to a greater or less degree thereby, substantially as set forth.

20. In a type-writing machine, the combination, with the paper-carriage Q, of a rock-shaft S, movable with the paper carriage and roller-platen T, a centrally-arranged sleeve g^4, journaled in fixed supports and receiving the rock-shaft S, and the arm h^3, attached to the sleeve g^4, substantially as shown and described.

448,997. WEATHER-STRIP. WARREN C. ROCKWELL, Mount Carmel, Pa., assignor to David Camp and George McFee, both of same place. Filed June 11, 1890. Serial No. 355,061. (No model.)



Claim.—1. The herein-described weather-strip, the same comprising an L-shaped lever pivoted at its angle in the door-frame and having a forwardly-bent upper end adapted to be struck by the rear edge of the door, a yoke centrally mounted on a transverse pivot in the lower end of said lever, and a strip carried by said yoke and adapted to be borne upwardly against the door, as set forth.

2. The herein-described weather-strip, the same comprising an L-shaped lever pivoted at its angle in the door-frame and having a forwardly-bent upper end adapted to be struck by the rear edge of the door, a yoke centrally pivoted to the lower end of said lever, a strip carried by said yoke, the door-sill having a longitudinal groove in which said lever member, yoke, and strip are seated, and a flexible strip or packing in the lower edge of the door, the whole adapted to operate as hereinbefore set forth.

3. The herein-described weather-strip, the same comprising an L-shaped lever pivoted at its angle in the door-frame and having a forwardly-bent upper end adapted to be struck by the rear edge of the door, a yoke centrally pivoted to the lower end of said lever, a strip of T shape cross-section carried by said yoke, the door-sill having a longitudinal groove in which said lever member, yoke, and strip are seated, and holes through its base, and a flexible strip of packing in the lower edge of the door, the whole adapted to operate as hereinbefore set forth.

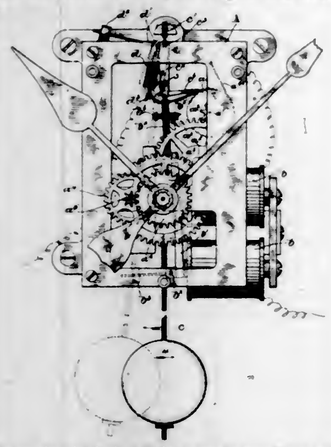
448,998. INDEPENDENT ELECTRIC CLOCK. WILLIAM S. SCALES, Everett, assignor of two-thirds to Joseph H. Clark, Quincy, and John B. Humphrey, Boston, Mass. Filed July 19, 1890. Serial No. 359,304. (No model.)

Claim.—1. In an electric clock, a step-by-step train, a driving-pawl, and an electro-magnet and its armature that moves said driving-pawl, a pendulum or equivalent and driving-pawl moved by it, a propeller, and a circuit-closer, substantially as described.

2. In an electric clock, a train, a driving-pawl, and electro-magnet and its armature that moves said driving-pawl, a pendulum, a propeller therefor located in juxtaposition to the armature and pendulum to be moved by the former to accumulate a force which is given to the latter, and a circuit-closer for the circuit of said electro-magnet, one of the members of which is carried by the pendulum and the other by the propeller, and the driving-pawl also moved by said pendulum, substantially as described.

3. In an electric clock, a train, a step-by-step driving mechanism therefor, and an electro-magnet and its armature that controls the operation of said driving mechanism, combined with a regulating member for the clock that also controls the operation of said driving

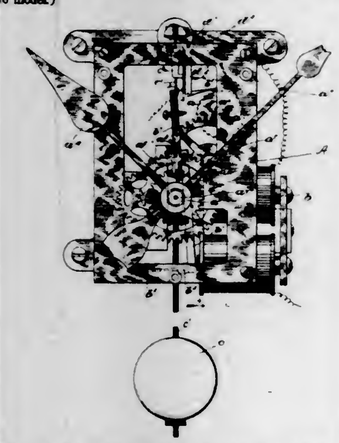
mechanism independent of the electro-magnet, substantially as described.



4. In an electric clock, a train, a step-by-step driving mechanism therefor, and an electro-magnet and its armature that actuates said driving mechanism, combined with a regulating member for the train which actuates said driving mechanism in case the armature of the electro-magnet fails, substantially as described.

5. In an electric clock, a train, a step-by-step driving mechanism therefor, an electro-magnet and its armature that actuates said driving mechanism, and a regulating member for the train which actuates said driving mechanism in case the armature fails, combined with a propeller for said regulating member, and a circuit-closer for the electro-magnet moved in one direction by the regulating member and in the other direction by the armature, substantially as described.

448,999. SECONDARY ELECTRIC CLOCK. WILLIAM S. SCALES, Everett, assignor of two-thirds to Joseph H. Clark, Quincy, and John B. Humphrey, Boston, Mass. Filed Oct. 20, 1890. Serial No. 368,872. (No model.)



Claim.—1. In an electric clock, a train and a step-by-step driving mechanism therefor, consisting of a ratchet-wheel and pawl, combined with an electro-magnet and its armature and a regulating member for the clock, both the armature and regulating member being adapted to actuate said pawl, substantially as described.

2. In an electric clock, a train, a regulating member therefor, an electro-magnet and its armature, and a step-by-step driving mechanism for the train, consisting of a ratchet-wheel and pawl, combined with a propeller for the regulating member which carries said pawl, substantially as described.

3. In an electric clock, a train, a regulating member therefor, an electro-magnet and its armature, and a step-by-step driving mechanism for the train, combined with a propeller for the regulating member and a circuit-closer, one member of which is operated by the propeller and the other member by the armature, substantially as described.

449,000. BICYCLE-SPOKE-NIPPLE WRENCH. ALEXANDER K. SCHAAP, Richmond, Va. Filed Jan. 15, 1891. Serial No. 377,877. (No model.)

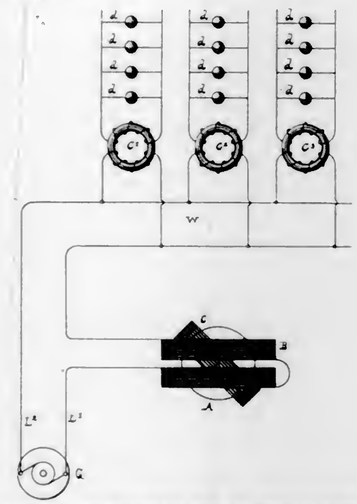


Claim.—1. A spoke-nipple wrench for bicycles, consisting of a bar provided with means for turning it, and a pair of slotted lugs projecting from its face at right angles to its horizontal axis and adapted to engage the spoke-nipple, all substantially as set forth.

2. A spoke-nipple wrench for bicycles, provided with a pair of separated ears adapted to engage the spoke, and a spring between the ears adapted to normally press against the spoke and hold the wrench thereon, all substantially as set forth.

3. A spoke-nipple wrench for bicycles, provided with means for engaging and turning the spoke, and a spring adapted to bear upon the surface of the spoke and hold the wrench at any point thereon, all as set forth.

449,001. METHOD OF MEASURING ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Dec. 26, 1888. Serial No. 294,568. (No model.)

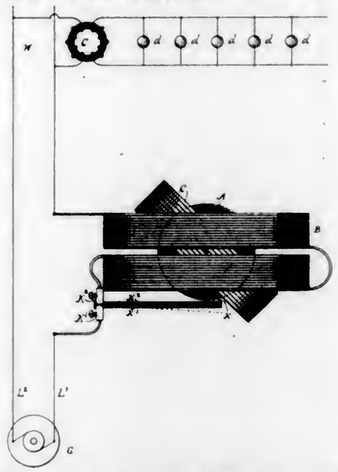


Claim.—1. The hereinbefore-described method of measuring the currents consumed in doing useful work in alternating-current electric circuits, which consists in employing the leakage-current of the circuit to overcome the inertia of the meter and in operating the meter by the current flowing in excess of such leakage-current.

2. The hereinbefore-described method of measuring the currents consumed in doing useful work in an electric circuit, which consists in employing the leakage-current of the circuit to place the meter in condition to be operated, operating the meter by the current flowing in excess of such leakage-current, and in causing the rate of movement of the meter to be proportionate to the current consumed in operating the translating devices by causing the rate of movement thereof to increase under an increase of current by an amount proportionately greater than the increase of current sufficient to compensate for the varying ratio between the leakage in the meter and the current flowing.

449,002. METER FOR ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Mar. 3, 1890. Serial No. 342,526. (No model.)

Claim.—1. The combination, with a meter for electric currents, of a thermostatic brake, substantially as described.



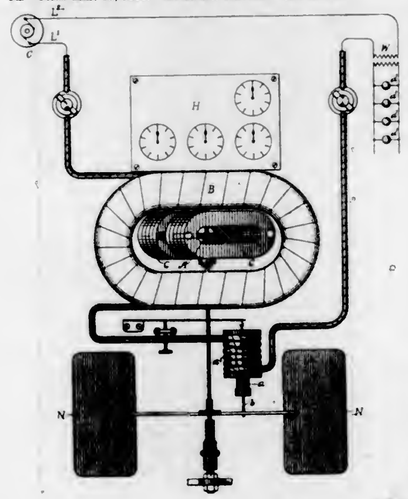
2. The combination, with a meter for electric currents, of a thermostatic brake connected in circuit therewith and operated by currents traversing it to release the meter under influence of currents of a predetermined value.

3. The combination, with a meter having a primary inducing-coil, a secondary coil, and an armature acted upon by the resultant effects of the two coils, of a thermostatic brake therefor connected in circuit with one of the said coils and normally arresting the movements of the armature and releasing the armature under the influence of a current of given strength flowing therethrough.

4. The combination, with a meter having the coils or circuits B and C and armature A, of a thermostatic device normally arresting the armature and connected in circuit with the coil B and caused to bend under the influence of currents of a predetermined strength traversing its component strips and thereby release the armature, substantially as described.

5. The hereinbefore-described method of measuring electric currents by an electric meter, which consists in normally holding the meter at rest, developing heat by the currents flowing to the meter, and releasing the meter by the heat developed by currents of predetermined value.

449,003. METER FOR ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Mar. 13, 1890. Serial No. 343,706. (No model.)



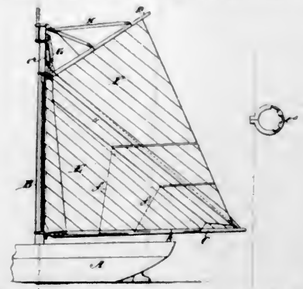
Claim.—1. The combination, with an alternating-current electric meter having an electric motor for actuating it, of an arresting device for normally preventing the operation of the electric motor, and a releasing device for operating said arresting device and brought into action by the currents traversing the motor when they exceed a predetermined valve.

2. The combination, with an electric meter having an actuating electric motor with a rotating armature, of an arresting device for preventing the tendency of the armature to rotate under the influence of currents of less than a given value, and a releasing device for said arresting device brought into action by the currents exceeding such value.

3. The combination, with an electric meter having an actuating electric motor with a rotating armature, of a device for preventing the rotation of the armature under the influence of currents of less than a predetermined value, and a core or armature acted upon by currents exceeding that value to release the meter, substantially as described.

4. In an electric meter, the combination, with the armature A, its including coils B and C, and the projection or brake *b*, normally pressing against the surface of the armature, of the core *a*, acted upon by the currents flowing to the meter and brought into operation by currents of a predetermined value to release the armature from the detent *b*.

449,004. SAIL. GEORGE SKINNER, Cambridge, Mass. Filed Apr. 16, 1890. Serial No. 348,273. (No model.)



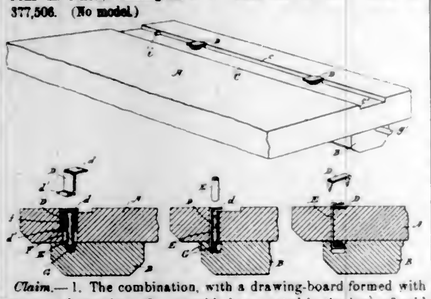
Claim.—In combination with the sail-section E, provided with the travelers *c*, sliding upon the rail *c'*, the sail-section F, secured to the gaff D, and the hinged traveler I, secured to the gaff and sliding upon the rail *c²*, said sections E F having separate halyards and adapted to be hoisted and lowered independently of each other, substantially as described, and for the purpose specified.

449,005. CIRCULAR SAW. TRIPLETT L. SLAUGHTER, Saline, assignor of one-half to Laura Smith Drew, Bienville, La. Filed Sept. 16, 1890. Serial No. 365,142. (No model.)



Claim.—The saw described, having cutting-teeth B and two planer-teeth C arranged diametrically opposite each other, each planer-tooth being formed by cutting off a cutting-tooth at an angle, with its acting edge within the periphery of the saw and with its acting edge beveled upon one side only, with a curved throat between each planer-tooth and the next tooth in advance thereof, said throat being beveled, with the bevel thereof conforming to and joining with the bevel of the acting face of the planer-tooth, substantially as shown and described.

449,006. DRAWING-BOARD. GEORGE T. SMALLWOOD and REXFORD M. SMITH, Washington, D. C. Filed Jan. 12, 1891. Serial No. 377,506. (No model.)



Claim.—1. The combination, with a drawing-board formed with a groove or depression, of a movable jaw located in the base of said groove or depression, and a fixed jaw located in the path of said movable jaw, substantially as and for the purpose described.

2. The combination, with a drawing-board formed with a groove on its upper face and provided with a jaw overhanging said groove, of a bar placed beneath the groove and operating to clamp the paper, as explained.

3. A device for securing a sheet of paper on a drawing-board, said device consisting of two jaws applied to and in combination with a drawing-board, and a bar or rod operating in connection with said jaws, whereby they are adapted to co-operate to clamp the paper between them, as specified.

4. The combination, with a drawing-board formed with a groove or depression, of a clamping device secured thereto and consisting of two separate and independent jaws, one located in the path of the other, and the notched or cam-rod operating in connection with said jaws to clamp the edge of a drawing-sheet, substantially as described.

5. The combination, with a drawing-board, of a movable jaw and a cam-rod or bar for operating said movable jaw to clamp the paper, as described.

6. A drawing-board having a depression in its face, in combination with a jaw overlying said depression, a jaw located beneath the same, and means, operating in connection with said jaws, by which they are adapted to co-operate to clamp a sheet of paper between them.

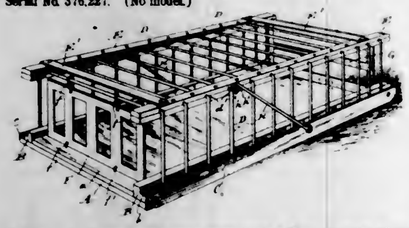
7. A drawing-board having a depression or groove in its surface, in combination with a fixed jaw or lip overlying said depression, a movable jaw located beneath the same, and a rod located beneath said depression, by the adjustment of which the movable jaw is actuated toward the fixed jaw, for the purpose described.

8. A drawing-board having a groove or recess in its surface and provided with perforations extending through the same, in combination with movable jaws working in said perforations and other jaws located in the paths of said movable jaws, and means for adjusting said movable jaws, for the purpose described.

9. The combination, with a drawing-board formed with a recess or depression in its face, of a stop or projection *i*, located in said recess, substantially as and for the purpose described.

10. The combination, with a drawing-board formed with a recess or depression in its face, of a device for securing the edge of a drawing-sheet therein, and a stop for gaging the position of the drawing-sheet on said board.

449,007. FOLDING CRATE. JOB SPAIN, Belle Centre, Ohio, assignor of one-half to Charles Mains, same place. Filed Dec. 30, 1890. Serial No. 376,227. (No model.)



Claim.—1. A coop and crate comprising a floor, a series of rods pivoted thereon and shaped to form the sides and top of the crate, corner-plates uniting the rods at their upper portions, and a suitable end board and door, substantially as described.

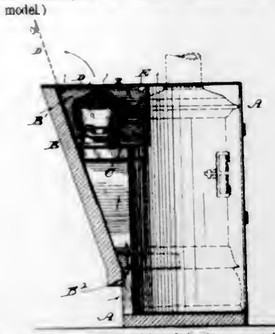
2. A coop and crate comprising a floor having sills on opposite sides thereof, a series of rods pivoted to the sills and shaped to form the sides and top of the crate, corner-plates mounted on the upper portions of the rods, and a suitable end board and door secured to the end rods and floor, substantially as described.

3. A coop and crate comprising a floor, a series of rods pivoted thereon and shaped to form the sides and top of the crate, corner-plates mounted on the upper portions of the rods, a suitable end board and door for the crate, and means for holding the rods and corner-plates in an elevated position, substantially as described.

4. A coop and crate comprising a floor, a series of rods pivoted thereon and shaped to form the sides and top of the crate, corner-plates mounted on the upper portions of the rods and connected together, as shown, an end board pivoted on one of the rods and suitably secured to the floor, a door pivoted on a rod at the opposite end of the crate, and a hook and eye for holding the top of the crate in a raised position, substantially as described.

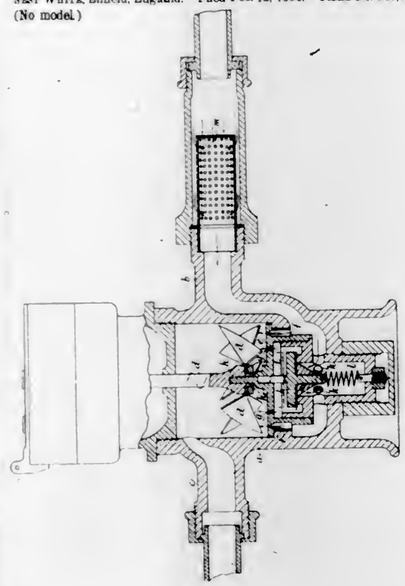
5. In a coop and crate, the combination, with the floor, the sills, and the pivoted rods connecting the sills with the crate-top, the sills being recessed, as described, of the side strips secured to the floor and sills, substantially as described.

449,008. BOX OR CASING FOR STREET-CAR STOVES. JAMES SPEAR, Philadelphia, Pa. Filed July 31, 1890. Serial No. 360,562. (No model.)



Claim.—A frame at the side of the box or casing of a car-stove, a floor in said frame, and a lid at or about the top of the same, forming a concealed receptacle for a coal-hod, substantially as described.

449,009. ROTARY FLUID-METER. HENRY H. SPORTON and ERNEST WHITE, Enfield, England. Filed Feb. 12, 1890. Serial No. 340,109. (No model.)

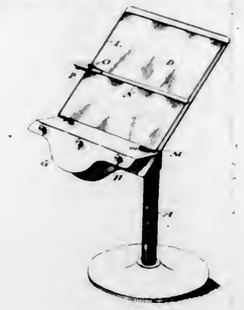


Claim.—1. In a fluid-meter, the combination, with a fan, of a part provided with a separate series of large and small openings, each series having a different radial position in respect to said fan, and automatic means for controlling the series of larger openings, substantially as described.

2. In a fluid-meter, the combination, with a fan, of a part provided with a separate series of large and small openings, said series of large openings being located nearer the axis of the fan, and an automatic valve controlling the said series of larger openings, substantially as described.

3. The combination, with the registering devices of an actuating-fan therefor, of a plate having a separate series of large and small openings discharging against said fan, the series of larger openings being located nearer the axis of the fan than the series of smaller openings, and an automatic valve controlling said series of larger openings, substantially as described.

449,010. COPY-HOLDER. WILLIAM J. STILL, Toronto, Canada. Filed Nov. 28, 1890. Serial No. 372,771. (No model.)



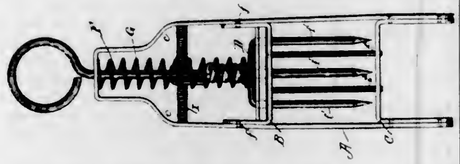
Claim.—1. A desk having pivoted thereon a clamp actuated by a spring, in combination with a frame independently pivoted on the said clamp and set so that a portion of it will be in contact with the surface of the desk when the gripping-edge of the clamp is resting thereon, and the frame and clamp adapted to move together, substantially as and for the purpose specified.

2. A desk having pivoted thereon a clamp actuated by a spring, in combination with a frame independently pivoted on the said clamp and provided with a spring by which it is held in contact with the surface of the desk when the gripping-edge of the clamp is resting thereon, and the frame and clamp adapted to move together, substantially as and for the purpose specified.

3. A desk having pivoted thereon a clamp actuated by a spring, in combination with a frame pivoted on the said clamp and a spring arranged to act on the said pivoted frame, which is set so that its sides are held clear of the desk by its upper end, substantially as and for the purpose specified.

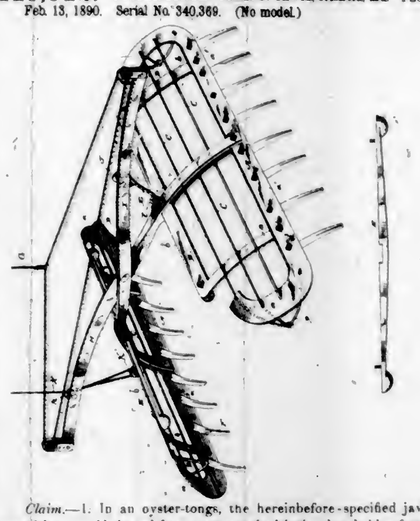
4. A bar or marker N, provided with a plate P, having jaws O formed on it to hook upon the frame L, in combination with a spring designed to hold the frame L between it and the jaws O in such a manner that the marker cannot practically be moved without compressing the spring, substantially as and for the purpose specified.

449,011. GOPHER-TRAP. LEWIS A. SYVERUD, Canton, S. D. Filed Sept. 22, 1890. Serial No. 365,855. (Model.)



Claim.—An impalement-trap having an elongated frame, a forked rod extending therethrough, a spring encircling said rod above the fork, and a transverse rod supporting a bell-crank-shaped dog, one tooth of which engages the forked end of the rod, the opposite tooth thereof engaging a trigger which extends vertically in the path of a rodent, substantially as set forth.

449,012. OYSTER-TONGS. JAMES B. TAWES, Crisfield, Md. Filed Feb. 13, 1890. Serial No. 340,369. (No model.)



Claim.—1. In an oyster-tongs, the hereinbefore-specified jaw, comprising two U-shaped frames arranged with the closed side of one frame opposite the open side of the other frame, and the bent ends of the smaller frame being secured to the closed side of the larger frame, substantially as described.

2. In an oyster-tongs, the hereinbefore-specified jaw, comprising two U-shaped frames, the closed end of one frame being opposite the open side of the other frame, the ends of the smaller frame being threaded and passed through openings in the closed side of the larger frame, and nuts placed on said threaded ends, substantially as described.

3. In an oyster-tongs, the combination, with the jaw composed of two U-shaped frames arranged as described, of the wires C, extending between and secured to the extreme end bars, substantially as described

4. In an oyster-tongs, the combination, with the jaws, of end guards projecting at right angles from the faces of the jaws and forming an integral part of the guard-wires, substantially as described.

5. In an oyster-tongs, the combination, with the jaw having two U-shaped frames placed as described, of wires placed between and secured to the extreme end bars, said wires being extended and bent to form end guards, substantially as described.

6. In an oyster-tongs, the combination, with the levers having jaws, of weighted bars E E, rigidly secured to each of the said jaws, the bulk of the weight being at the ends of the said bars to distribute the weight evenly and balance the tongs, substantially as and for the purpose described.

7. In an oyster-tongs, the combination, with the levers having jaws, of the releasing-cord attached to the lever and passing over a sheave on the jaw and through a guide-eye on the lever, substantially as described.

449,013. ROLLS FOR ROLLING GIRDER-RAILS. HENRY W. THOMAS, Danville, Pa., assignor to the North Branch Steel Company, same place. Filed May 1, 1889. Serial No. 309,174. (No model.)

Claim.—1. In rolls for rolling side-bearing flanged girder-rails, rolls having an oblique dummy pass, whereby the laterally-projecting tram is acted upon from about its junction with the web to its outer end, substantially as described.

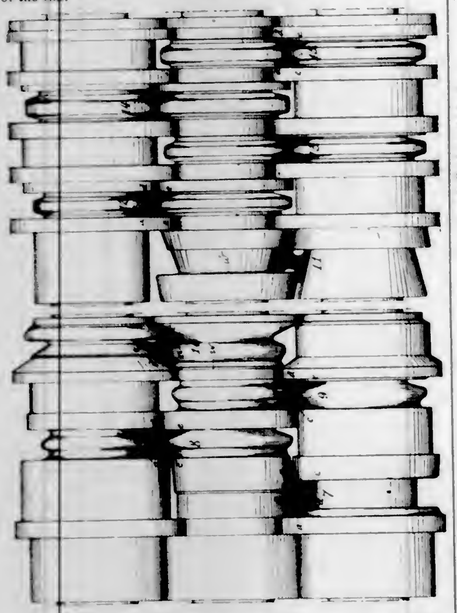
2. In rolls for rolling side-bearing flanged girder-rails, rolls having an oblique dummy pass of a contour substantially as described, whereby a laterally-projecting portion of the top of the rail and an opposite laterally-projecting portion at the base of the rail are simultaneously acted upon, substantially as specified.

3. In rolls for rolling side-bearing flanged girder-rails, rolls having an oblique dummy pass with beveled corner, substantially as specified.

4. In rolls for rolling side-bearing flanged girder-rails, rolls having the oblique dummy pass 11 with beveled corner *w*, against which the end of the head portion of the bar bears, substantially as specified.

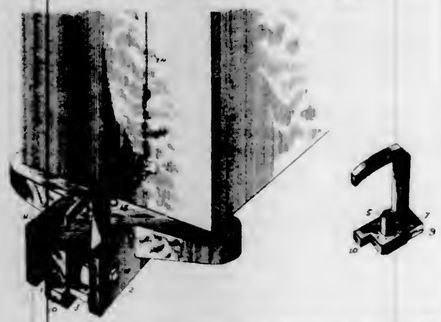
5. In rolls for rolling side-bearing flanged girder-rails, rolls having edging-passes combined with an oblique dummy pass to act upon the laterally-projecting tram from about its junction with the web to its outer end.

6. In rolls for rolling side-bearing flanged girder-rails, rolls having edging-passes combined with an oblique dummy pass to act simultaneously upon the tram and the diagonally-opposite flange at the base of the rail.



7. In rolls for rolling side-bearing flanged girder-rails, rolls having two or more oblique dummy passes, one to act simultaneously upon the tram and the diagonally-opposite flange at the base of the rail and the other to act simultaneously upon the head and the diagonally-opposite flange at the base of the rail, in combination with edging-passes preceding and succeeding the oblique dummy passes.

449,014. CAR-COUPLING. JAMES A. M. THOMPSON, San Antonio, Tex. Filed Aug. 6, 1890. Serial No. 361,207. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head provided with two slots which open through the front thereof, a hook pivotally secured in one of the slots, a transverse bar secured across the other slot in rear of the forward open end thereof, and a slide having a portion of its forward end extending beyond the face of the draw-head, said slide being fitted within suitable grooves in the side walls of one of the slots and engaging with the rear end of the coupling-hook, as and for the purpose set forth.

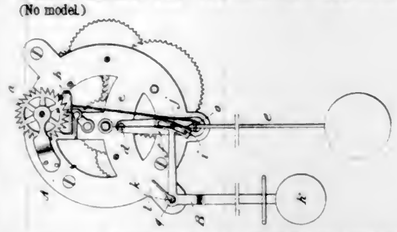
2. In a car-coupler, the draw-head having the longitudinal slots, the transverse pivotal bar in one of said slots, and the parallel grooves below said pivotal bar, in combination with a slotted slide fitted in said grooves and having an extension at its forward end, and the coupling-hook fitted on the pivotal bar and engaging with the slotted slide, as and for the purpose described.

449,015. SPRING ATTACHMENT FOR BUCKLES. CHARLES B. UNDERHILL, Lancaster, N. Y. Filed Nov. 10, 1888. Renewed Feb. 24, 1891. Serial No. 382,340. (No model.)



Claim.—As an improved article of manufacture, the herein-described spring attachment for buckles, consisting of a buckle having a shank semicircular in cross-section and an outwardly-projecting lug *c'* at its lower end, a loop having a shank semicircular in cross-section and an outwardly-projecting lug *c* at its upper end, said shanks lapping each other with their flat faces, and a coiled spring disposed about the said shanks between the lugs *c c'*, all arranged substantially as and for the purpose described.

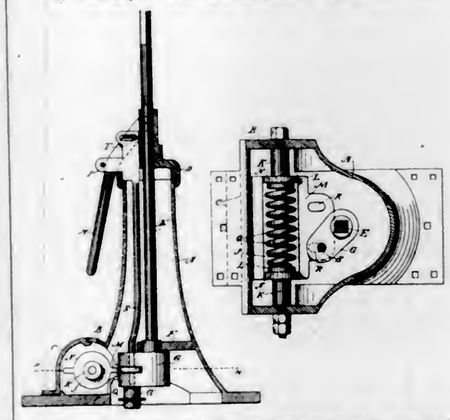
449,016. PENDULUM ADJUSTMENT FOR CLOCKS. FRANK M. WAKEMAN, Nantucket, Mass. Filed Oct. 21, 1890. Serial No. 368,796. (No model.)



Claim.—1. The combination, with the pallets and pendulum-rod of a pendulum-clock, of an angled weighted lever provided with a cam adapted to move the point of suspension of the pendulum or pallets, substantially as specified.

2. In a pendulum-adjuster, the combination, with the pendulum-rod, of a pivoted suspension arm having a stud projecting from the face thereof, and an angled weighted lever provided with a slotted cam, substantially as specified.

449,017. SWITCH-STAND. JOHN H. WALLACE, San Francisco, Cal. Filed May 28, 1890. Serial No. 353,476. (No model.)

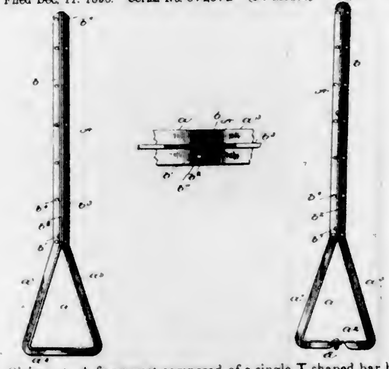


Claim.—1. A switch-stand having the movable head, crank-shaft, and crank fixed thereon and connected with the switch-rail, a horizontal yielding plate having vertical slots or holes in line with the crank, a vertical rod or pin passing through the crank and adapted to engage with either one or the other of the holes in the plate, a lever fulcrumed to the movable head and connected with the locking pin or rod, so that by moving the lever this locking-rod may be disengaged or engaged with the holes in the plate, and a spring for returning the plate after it has been forced outward by heavy pressure, substantially as herein described.

2. A switch-stand having the rotary head, crank-shaft, and the crank connected with the switch-rail, a horizontally-movable plate having holes made in it, a vertically-moving rod passing through the crank and adapted to engage the holes in the plate, so as to lock the crank and switch-rail, in combination with a horizontal shaft, a spiral spring surrounding said shaft and engaging disks or stops upon the horizontal plate, so as to retain the plate immovably against ordinary pressure, but yielding so as to allow the plate, crank, and switch-rail to be moved by heavy pressure, and acting to return the parts to place as soon as the pressure is removed, substantially as herein described.

3. A switch-stand having the rotary head, crank-shaft, and the crank connected with the movable switch-rail, the horizontal plate, one edge of which fits into a corresponding slot in the crank, a vertically-moving locking pin or rod passing through the crank and adapted to engage corresponding holes made in that portion of the horizontal plate, disks formed upon each end of the plate having holes through them, a horizontal shaft passing through said holes, a slotted opening made in the plate between the disks, a spiral spring surrounding the shaft and lying within this opening, and collars interior to the disks at the ends of the plate against which the ends of the spring abut, whereby the pressure of car-wheel flanges upon the switch-rail will act to move it away from the main rail and will move the crank and with it the horizontal plate by compressing the spring, said spring acting to return the rail to its position as soon as the pressure is removed from the switch-rail, substantially as herein described.

449,018. FENCE-POST. EDWIN D. WATKINS, Lima, N. Y., assignor of two-fifths to William L. Vary and Thomas F. Ashe, same place. Filed Dec. 11, 1890. Serial No. 374,374. (No model.)



Claim.—1. A fence-post composed of a single T-shaped bar having a lower pyramidal or triangular anchor end and upper parallel vertical portions united together, the central right-angular flange of said bar being outward throughout the entire length of the bar, as set forth.

2. A fence-post composed of a single T-shaped bar having a lower pyramidal or triangular anchor end and upper parallel vertical portions having holes or apertures in their parallel flanges, and means for connecting said flanges, substantially as set forth.

3. A fence-post composed of a single T-shaped bar having a lower pyramidal or triangular anchor end and upward parallel vertical portions placed back to back and having holes or apertures in their parallel flanges, and rivets passed through said holes or apertures, as set forth.

4. A fence-post composed of a single continuous bar having a lower pyramidal or triangular anchor end and upper parallel vertical portions united together and provided with holes or apertures for the fence-wires, as set forth.

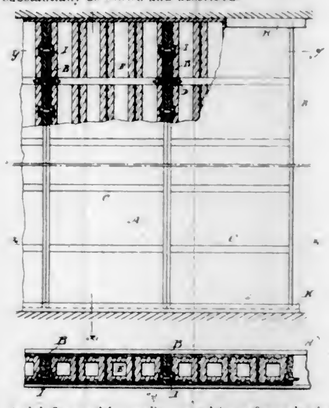
5. The herein-described improved fence-post, consisting of a single bar of T shape bent at its lower portion to form a pyramidal or triangular anchor and having parallel vertical portions placed back to back, the rivets passed through the parallel side flanges of said bar, and the series of holes or apertures in the central right-angular flanges, substantially as set forth.

449,019. FIRE-PROOF PARTITION. CHARLES W. WHITE, New York, N. Y. Filed May 3, 1890. Serial No. 350,499. (No model.)

Claim.—1. A partition-wall made up of a series of connected slabs, each slab having an independent frame and plaster-body with passage-ways throughout their length, substantially as shown and described, whereby a complete wall may be readily placed in position.

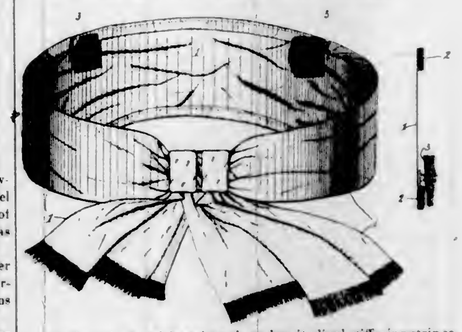
2. A partition-wall made up of a series of connected slabs, each slab constructed with an independent frame and plaster-body having passage-ways throughout their length, and tubes placed to line the said passage-ways, substantially as shown and described, whereby conduits for electric wires and pipes are formed in the wall.

3. A slab for partition-walls, comprising a frame with side bars arranged parallel with an intervening space, and cross-bars having their ends bent to overlap, the bent portions being secured to the side bars by bolts, and a body of fire-proof material supported by said frame, substantially as shown and described.



4. A slab for partition-walls, comprising a frame having side bars and connecting cross-bars, a body of fire-proof material supported by said frame, and a sheet of perforated metal secured to the frame and inclosing the body, substantially as shown and described.

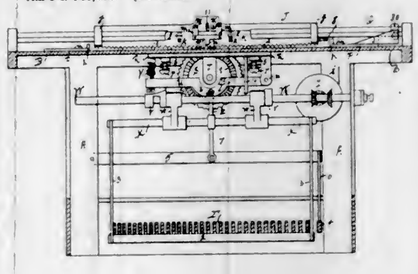
449,020. TENNIS-SASH. EDWARD W. WHITTAKER, New York N. Y. Filed Feb. 3, 1891. Serial No. 380,062. (No model.)



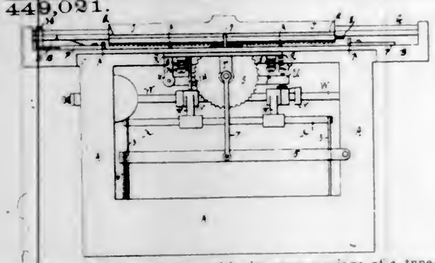
Claim.—1. A tennis-sash having a longitudinal stiffening-strip secured along an edge thereof and adapted to be folded within the sash, substantially as described.

2. A tennis-sash having longitudinal stiffening-strips secured along the edges thereof and adapted to be folded within the sash, substantially as described.

449,021. TYPE-WRITING MACHINE. HERBERT A. WRIGHT, Detroit, assignor, by direct and mesne assignments, of two-thirds to Walter M. Reason, Timothy C. Quinn, Arthur T. Slaght, Luke H. Corcoran, and John F. Seeley, all of Caro, Mich. Filed Feb. 12, 1890. Serial No. 340,202. (No model.)



449,021.



Claim.—1. In combination with the paper-carriage of a type-writing machine, a rack-bar fastened to said carriage and vertically movable in its fastenings, a spring normally urging said rack-bar upward, a ratchet-bar carried on the frame of the machine, and a spring-pin vertically movable in the carriage and adapted to be raised by the rack-bar in its vertical motion, substantially as shown and described.

2. In combination with the vertically-movable rack-bar K, the spring L, the cams M, pressing upon said rack-bar and having downwardly-extending arms *m*, a cross-bar N, having the lug *n*, and the two adjustable plates P, each having a lug *p*, substantially as shown and described.

3. In combination with the paper-carriage of a type-writing machine, having thereon the rack-bar K and spring-actuating pin 10, a wheel S, mounted in vertically-movable bearings, a ratchet-bar S, carried on the frame in which wheel S is journaled, and a key-lever connected to the frame of said wheel, by which said lever S and ratchet-bar 9 may be simultaneously depressed, substantially as shown and described.

449,022. SLIDING GATE FOR DRAW-BRIDGES. WILLIAM I. ADAMS and ALBERT ROTHEL, Kensington, Ill. Filed June 24, 1890. Serial No. 356,549. (No model.)

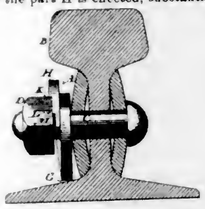


Claim.—1. The combination, with a swinging bridge carrying rack-bars *a a*, of abutments having cog-wheels *b b*, and gate-supports D, extending across the roadway and beyond the abutments B, said gates carrying flexible rack-bars and jointed sections, substantially as set forth.

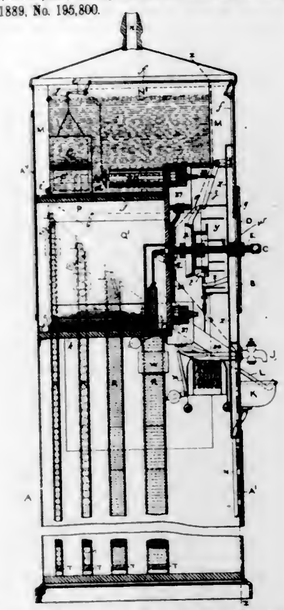
2. The combination, with a swinging bridge having curved rack-bars *a*, suitably-supported cog-wheels *b b*, *c c*, and *c' c'*, arranged as shown, so as to be in a line with the rack-bars *a*, of sliding gates E, a portion thereof being made up of jointed or hinged sections, flexible supporting-plates carrying toothed sections F, projecting gate-supports D D, having rollers *d*, and guides *g g* for supporting the gate-sections when beyond the roadway, substantially as shown, and for the purpose set forth.

449,023. NUT-LOCK. MARCELLUS S. ALEXANDER, Birmingham, Ala. Filed May 29, 1889. Renewed Aug. 28, 1890. Serial No. 363,242. (No model.)

Claim.—A nut-lock consisting of a metallic piece bent or coiled, as described, and adapted to be applied around a bolt between its nut and a bar, plate, or beam, and a resilient part H, tending to press at all times against the bottom of the nut and provided with one or more shoulders adapted to engage with the vertical sides of the nut as it is turned to place, whereby substantially a pawl-and-ratchet action between the nut and the part H is effected, substantially as set forth.



449,024. AUTOMATIC MACHINE FOR DELIVERING ARTICLES IN EXCHANGE FOR COIN. SAMUEL S. ALLIN, London, England. Filed Oct. 12, 1888. Serial No. 287,877. (No model.) Patented in England Jan. 21, 1888, No. 983, and Nov. 14, 1888, No. 16,559; in Germany Oct. 17, 1888, No. 47,912; in Belgium Jan. 31, 1889, No. 84,832, and in France Feb. 1, 1889, No. 195,800.



Claim.—1. In a coin-operated machine for delivering merchandise, the combination of the series of fixed receptacles for solid or liquid refreshments, or both, a series of coin-chutes and coin-operated levers, and a central delivery mechanism common to all of said receptacles and arranged to be set to deliver different articles by the insertion of different coins, substantially as and for the purpose described.

2. A coin-operated vending-machine consisting of a casing, a series of fixed receptacles for solid or liquid articles, a dial upon the outside of the casing for indicating the articles contained in the machine, a series of coin levers and chutes, a central delivery device common to all the receptacles formed with an operating-handle, and a pointer, said device arranged to revolve on a central axis, whereby its pointer can be turned to the desired article, and whereby such device will be in position to be drawn out to deliver the article as the proper coin is placed in the proper chute, all arranged substantially as and for the purpose described.

3. In a coin-operated vending-machine, the circular casting *p*, mounted to rotate on a central shaft within the machine simultaneously with the movement of a pointer outside of the machine, and having a cylindrical surface *r* and a conical surface *s*, adapted to act upon the locking and releasing mechanism as said casting is rotated, substantially as set forth.

4. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E, and the pointer D on said shaft movable over the dial B outside of the machine, of the circular casting *p*, mounted on the inner end of said shaft and provided with the finger *v* in alignment with said pointer, adapted as the pointer is placed over the name of an article on said dial to pass to position for actuating the lever for delivering said article, substantially as set forth.

5. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E, pointer D on said shaft, and the dial B, of the circular casting *p*, mounted on the inner end of said shaft and provided with the finger *v* and the fingers 55, whereby as a delivery-lever is actuated by the finger *v* to deliver a solid article the fingers 55 act to deliver a liquid immediately thereafter, substantially as set forth.

6. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E, and the circular casting *p* on the inner end of said shaft, provided with the finger *v*, of the fixed guard-ring *y*, concentric with the shaft E, whereby the finger *v* is prevented from being drawn forward, except when it is over the end of one of the coin-levers, substantially as set forth.

7. In a coin-operated machine for delivering merchandise, the combination, with the plate *x*, the revoluble sliding shaft E, the circular casting, and the disk *q*, of a guard mechanism between the plate *x* and said disk, consisting in a circular series of openings concentric with said shaft, and a bar or finger, whereby when any one of the openings and the bar or finger register the shaft may be drawn out, substantially as set forth.

8. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E and the coin-levers 4 5 6, of the circular casting *p* on the inner end of said shaft, having the conical surface *s*, adapted as said casting is revolved to engage and depress said coin-levers and discharge the coin therefrom, substantially as set forth.

9. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E and the circular casting *p* thereon, having the conical surface *s* and cut into steps, of the detent *t*, having steps t^a, t^b, and t^c thereon, adapted to engage the conical surface of said casting and lessen the idle movement or stroke of said shaft, substantially as set forth.

10. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E and the circular casting *p* thereon, of the detent *t* and the coin-levers 4 5 6, whereby as coins fall upon said levers the latter withdraw the detent to varying distances from said casting, substantially as set forth.

11. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E and the circular casting *p* on said shaft, having a conical surface cut in steps of varying height, comprising the normal surface *s*, the recesses 17, and the projections 18, of the coin-levers 4 5 6 and the vertically-movable stepped detent *t*, adapted to engage the steps on said casting, whereby as said casting is revolved it is released by variations in the descent of said detent corresponding to the varying value of the coins dropped upon said levers, substantially as set forth.

12. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E, the stepped casting *p* thereon, the stepped detent *t*, and the coin-levers 4 5 6, of the spring 14, adapted to support said levers when depressed by a coin to hold said detent withdrawn from the casting until the desired article is delivered, and to then further yield and permit the discharge of the coin from said levers, substantially as set forth.

13. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E, having the handle C, and the circular casting *p* on said shaft, having the disk-surface *q*, of the lever 43, pivoted on the back of the plate *x* at the front of the machine, the arms 44 45, carried by said lever and projecting through said plate, the shutters 46 47, carried by the arm 44, and the shutter 48, carried by the arm 45, whereby as the casting is drawn toward said plate said shutters are lowered to close the coin-slots, substantially as set forth.

14. In a coin-operated machine for delivering merchandise, the combination, with the revoluble shaft E, having the handle C, the circular casting *p* on said shaft, having the disk-surface *q*, and the lever 43, pivoted on the back of the plate *x* at the front of the machine and carrying the arms 44 45, said arms projecting through said plate and carrying the shutters 46 47 48, of the spring 49 and the weight 50, connected to the inner end of said shaft, whereby the shaft is drawn into the machine and the shutters are raised to open the coin-slots, substantially as set forth.

15. In a coin-operated vending-machine, the combination, with the cisterns N, N', N^2, Q, and Q' for containing hot and cold liquids and having a bottom formed with a well for said liquids, and a series of coin-operated levers arranged to be put in connection with said cisterns by the different coins, of a central delivery-operating device common to all the cisterns and coin-levers, said device arranged whereby it can be turned and set for operation with the coin-levers and any particular one of said cisterns, substantially as and for the purpose described.

16. In a coin-operated vending-machine, the combination, with the fixed cisterns N, N', N^2, Q, and Q' for containing hot and cold liquids, and measuring devices placed in said cisterns, said devices connected with the delivery-pipes, and the coin-operated levers, of a central delivery-operating device common to all the cisterns and arranged for connection with all the measuring devices, said delivery-operating devices mounted to turn on a central axis, whereby it can be turned and set to operate any one of the cisterns and its measuring devices when the proper coin is inserted, substantially as and for the purpose described.

17. In a coin-operated vending-machine, the combination, with the cisterns N, N', N^2, Q, and Q' for hot and cold liquids, the measuring devices held in said cisterns formed with valve-rods 24, and the coin-operated levers, of the delivery-operating mechanism formed with a series of levers *z*, connected with said valve-rods 24, said mechanism adapted to be set in operative connection with the coin-levers when the proper coin is inserted, whereby the levers *z* will act on the valve-rods 24, substantially as and for the purpose described.

18. In a coin-operated vending-machine, the combination, with the cisterns N N' N^2 for containing hot liquids, of a float or floats held in said cisterns, having a definite range of motion therein, and a delivery-operating device common to all the cisterns, said device arranged to bleed off said cisterns when released and adjusted, a burner or other heating device arranged beneath said cisterns, and intermediate crank-lever connections between said floats and the valves of the burners or heaters, said connections adapted to automatically cut off the burners when the liquid in the cistern is automatically emptied by means of the delivery-operating devices, substantially as and for the purpose described.

19. In a coin-operated vending-machine, the combination, with the cisterns N N' N^2 Q Q', having wells *a* in their bottoms, and a delivery-operating device common to all the cisterns, of floats operating in said cisterns, a shutter having the words "Full" and "Empty" arranged on the outside of the dial of the machine, and intermediate bell-crank-lever devices between the floats and said shutter, whereby the shutter will be moved to display the word "Full" when the cisterns are filled and "Empty" when the fluid is automatically drawn off by the operation of the delivery apparatus, substantially as and for the purpose described.

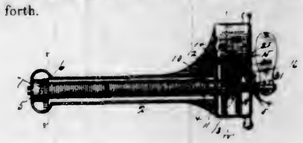
20. In a coin-operated machine for delivering merchandise, the combination, with the goods-receptacles R for holding dry and solid articles and in which the same fit loosely, upwardly-pressing followers or bottoms T, operating to normally force said articles upward, and stops on the upper ends of the receptacles for limiting the upward movement of said articles, of the delivery-operating disk *p*, formed with a series of projections 1, a series of levers *z*, pivoted to the front frame, and weighted pusher arms or pawls 39, connected with the levers *z*, said arms adapted to engage the uppermost article in said receptacles R and force the same into the delivery-chute as said pawls 39 are operated by the operation of the disk *p* and its connection with the levers *z*, all arranged substantially as and for the purpose described.

21. In a coin-operated machine for delivering merchandise, the combination, with a series of casings R, constructed and arranged substantially as described and shown, of the chute S, constructed in a series of inclined steps, adapted to receive the articles discharged from said casings and conduct them to the external delivery-slide L, substantially as shown and described.

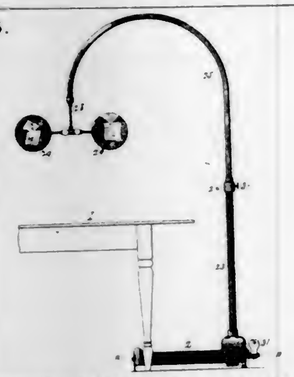
22. In a coin-operated machine for delivering merchandise, the combination, with a series of fixed receptacles for solid and liquid articles, the central shaft E, the circular stepped casting *p* on said shaft carrying the fingers *v* and 55, and the guard-ring *y*, secured to the inner face of the machine concentric with said shaft, of the series of levers *z*, grouped around said guard-ring and working in suitable slots therein, and each adapted to deliver goods from a different receptacle, substantially as herein set forth.

449,025. FAN. WILLIAM H. AMES and MONROE GRIER, St. Louis, Mo. Filed Aug. 26, 1890. Serial No. 363,130. (No model.)

Claim.—1. The combination of a shaft carrying a fan, an inclosing tube, a base supporting the tube, a rod traversing the base, a spring surrounding said rod, a clutch connecting the spring and rod, a sleeve loose on said rod connected to the spring, and gearing located between said sleeve and shaft, substantially as and for the purpose set forth.



449,025.

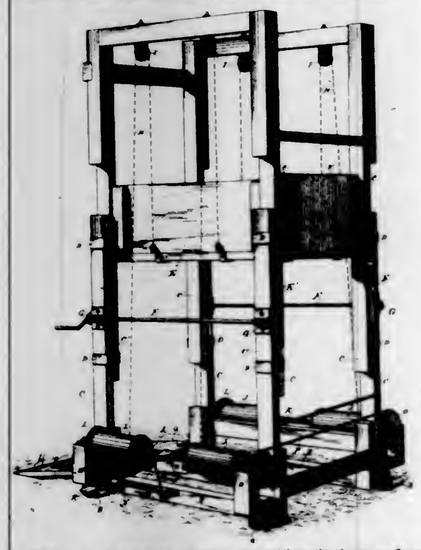


2. The combination of a shaft, a fan secured to the shaft, a tube inclosing the shaft, a base, a rod traversing the base, a spring surrounding the rod, a clutch having one member secured to the spring and the other member secured to the rod, a treadle secured to said rod for winding said spring, a spring for returning said treadle to normal position, and gearing located between said spring and shaft, substantially as and for the purpose set forth.

3. The combination of a shaft, a fan secured to said shaft, the base, a rod traversing said base, a spring surrounding the rod, a clutch having one member 6 secured to said spring and the other member 7 secured to said rod, a notched flange on said member 6, a pawl engaging the notches of said flange, a treadle secured to said rod, and gearing loose on the said rod and connected to said spring and shaft, substantially as set forth.

4. The combination of a shaft, a fan secured to the shaft, a tube inclosing the shaft, a base, a rod traversing the base, a spring surrounding the rod, the notched flange 8, secured to the spring, a pawl engaging said flange, a clutch forming a connection between the spring and rod, a sleeve loose on said rod connected to the spring, and gearing located between said sleeve and shaft and consisting of gear-wheels 13, 16, and 18, pinions 14, 17, and 19, and bevel-wheels 20 and 21, substantially as and for the purpose set forth.

449,026. PORTABLE ELEVATOR. NICKALAUS ANDERSON, Marysville, Cal. Filed Aug. 12, 1890. Serial No. 361,827. (No model.)

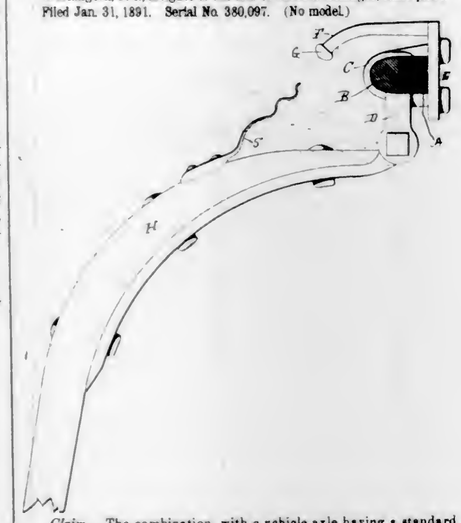


Claim.—1. A portable elevator comprising the base or framework, the vertical guides formed of two parts, one of which is stationary and fixed to said base and provided with pinions and the other sliding upon the fixed portions and carrying racks adapted to engage said racks, whereby the upper portion of the frame is adjusted, a cage or platform adapted to travel between said guides, suspending-ropes attached to said cage or platform and passing over pulleys in the top of the movable guide, and the double series of winding-drums around which the ropes are passed, substantially as herein described.

2. A portable elevator comprising a base or frame-work having the caster wheels or rollers upon which it is supported, vertical guides consisting of two parts, one of which is fixed to the base and the other movable on the fixed portion, racks on the movable portions of said guides and crank-shafts mounted on the fixed portions, having pinions engaging said racks for adjusting the movable portions of the guides, a cage or platform having suspending-ropes passing over guide-pulleys in the top of the movable portions of the guides, winding-drums for the ropes, the crank-shafts, pinions and gears through which motion is transmitted to rotate the drums, sprocket-wheels upon each drum-shaft, and a connecting-chain whereby both shafts turn in unison, substantially as herein described.

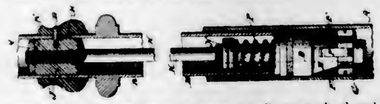
3. A portable elevator comprising a base mounted upon caster wheels or rollers, vertical two-part guide-posts, the lower portions of which are fixed to the base or frame and the upper portions adapted to slide vertically upon the lower portions, racks fixed upon the movable portions of the guides, and crank-shafts upon the stationary portions, with pinions which engage the racks, so that by turning the crank-shafts the guides may be extended or shortened, substantially as herein described.

449,027. THILL-SUPPORT FOR VEHICLES. JERE J. BARKER, Washington, D. C., assignor of one-half to Jacob B. Bellinger, same place. Filed Jan. 31, 1891. Serial No. 380,097. (No model.)



Claim.—The combination, with a vehicle-axle having a standard clipped thereto and provided with a cross-head T-shaped, of a thill having a supporting or holding spring provided with one or more transversely-disposed corrugations adapted to engage the cross-head of the standard, substantially as specified.

449,028. ADJUSTABLE STAND FOR LAMPS. FRIEDRICH BEILMANN, Philadelphia, Pa., assignor to Reinhold G. Ledig, same place. Filed June 11, 1890. Serial No. 354,989. (No model.)

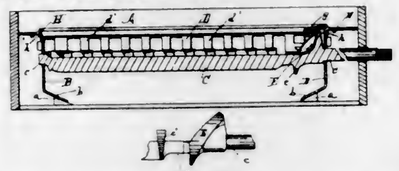


Claim.—1. In an adjustable stand, a hollow standard and a tube telescopically fitted therein, in combination with a cone connected to the lower end of said tube and carrying packing, a spring actuated rod extending through said tube and cone, a collar carried by the lower end of said rod below said cone, a dog pivoted to the said collar, and a sliding sleeve mounted on said tube and connected to the upper part of said rod, substantially as described.

2. In an adjustable stand, an outer hollow standard and a tube telescopically fitted thereto, in combination with a cone connected to the lower end of said tube and carrying packing, a spring-actuated rod extending through said tube and cone, a collar carried by the lower end of said rod, to which dogs are pivoted, and an adjustable plug at the upper end of said rod, and a sliding sleeve movably mounted on said tube and connected to said plug, substantially as described.

3. In an adjustable stand, a hollow standard and a tube telescopically fitted in said standard, in combination with a spring-actuated rod extending through said tube and having a collar with a pivoted dog on its lower end to bite against said standard, and a sliding sleeve on the upper part of said tube having a pin passing through a slot in the tube, in connection with said rod to operate the same, substantially as described.

449,029. GRATE. JUSTUS BEISHEIM, Rochester, N. Y. Filed Oct. 3, 1890. Serial No. 366,945. (No model.)



Claim.—1. In a grate, the combination, with the central rotary oscillatory section having the cam or disk thereon, of the two side sections reciprocating lengthwise of and relative to the central section and actuated by the cam thereon, substantially as described.

2. In a grate, the combination, with the two side sections arranged to slide in straight bearings, of the central rotary oscillatory section having the cutting fingers or edges and the cam or disk thereon co-operating with the side sections and causing their reciprocation, substantially as described.

3. In a grate, the combination, with the two side sections arranged to slide in straight bearings and having the fingers thereon, of the central rotary oscillatory section having the cam or disk and the cutting teeth or edges, substantially as described.

4. In a grate, the combination, with a rotary oscillatory section having a cam or disk thereon, of a reciprocatory section arranged at the side of said rotary section and co-operating with the cam thereon, whereby the rotary movement of the first-mentioned section will cause a reciprocation of the latter relative to it, substantially as described.

5. In a grate, the combination, with an inclined longitudinally-reciprocatory grate-section, of a rotary oscillatory grate-section having cutting teeth or edges arranged below said first-mentioned section and having a cam or disk co-operating therewith for causing its reciprocation when the rotary section is moved, substantially as described.

6. In a grate, the combination, with a longitudinally-reciprocatory grate-section having curved fingers thereon, of a rotary oscillatory grate-section having a dished or hollowed cam or disk thereon co-operating with the curved fingers on the first-mentioned section, substantially as described.

7. In a grate, the combination, with the reciprocatory grate-sections having the end extensions, the plates in which they slide having the flanges for protecting said ends, of the central rotary section having the cam or disk thereon co-operating with and operating the reciprocatory sections, and the covering-plate having the flange for protecting said cams, substantially as described.

8. In a grate, the combination, with the main frame or casing, the plates B, and the reciprocatory sections having their bearings therein, of the central rotary section having the cam or disk co-operating with the other grate-sections journaled in said plates, and the cover-plate co-operating with the plates B, substantially as described.

9. In a grate, the combination, with a reciprocating grate-section having the fingers, of the central rotary section having the cam or disk having the slot *e* therein and co-operating with and reciprocating the first-mentioned section, substantially as described.

10. In a grate, the combination of the main frame, the vertical plates, the grate-sections having bearings therein, and the cover-plate co operating with the vertical plates and having the engaging lugs on one side co-operating with the main frame, substantially as described.

449,030. DUMPING-CAR. WILLIAM F. BENNETT, Peoria, Ill. Filed Nov. 8, 1890. Serial No. 370,817. (No model.)

Claim.—1. A dumping push-car consisting in a truck-frame comprising two longitudinally-extending sections, each having a platform-section, the inner edges of which abut independent truck-wheels journaled on the frame-sections beneath the platform, and fastenings connecting the abutting ends of the end bars of the two frame-sections, substantially as set forth.

2. A dumping-car consisting in a truck-frame having a flat platform divided into two longitudinal sections journaled at their ends near their longitudinal centers in the end bars of the frame, and fastenings detachably connecting the outer ends of the frame ends with the outer corners of the platform-sections, substantially as set forth.



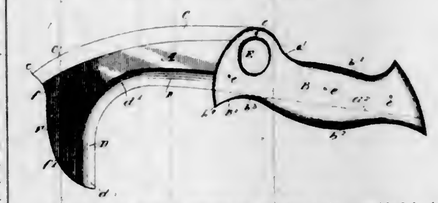
3. A dumping push-car having its body and platform divided throughout the length thereof centrally and longitudinally, and means for detachably locking the two body-sections together, the two platform-sections being pivoted at their ends to the ends of the respective body-sections to dump parallel with the track, and means for locking the two platform-sections on the respective body-sections, substantially as set forth.

4. In a dumping-car, the half-sections A A', formed with truck-wheels, said sections detachably connected, whereby a complete car-body is formed, and locking devices for holding said sections together, pivotal platforms supported on said sections, their pivotal axis arranged slightly inside their longitudinal centers, and means for holding said platforms from tilting, substantially as and for the purpose described.

5. The combination, with the longitudinal car-sections A A', each carrying a pair of independently-journaled truck-wheels, and means for detachably holding said sections together, of the dumping-platforms B B', pivoted for transverse movement in said sections A A', their longitudinal axis arranged slightly to one side of the center of said platforms, and a locking device between the outer edges of the platforms and the sections A A', said device consisting of staples formed on the ends of the sections, and locking-bars hinged to the outer edges of the platforms, substantially as and for the purpose described.

6. The combination, with the sections A A', carrying the pivoted dumping-platforms, as shown, of the trough-like plates *g*, secured to inner ends of the section A, the outer end *g'* thereof formed with inclined notches n^3 and an aperture g^3, the projections b^3 b^3, formed in the ends of the section A', arranged to engage said inclined slats and the aperture, substantially as and for the purpose described.

449,031. TOBACCO-KNIFE. PETER J. BERNARD, Union Hall, Va. Filed Nov. 1, 1890. Serial No. 370,065. (No model.)



Claim.—1. A tobacco cutting or pruning knife provided in its handle with a transverse forefinger-receiving opening, substantially as described.

2. A tobacco cutting or pruning knife having a blade whose tang extends along the handle, said handle having a forefinger-receiving opening which extends also through the blade-tang, which tang re-enforces the handle at said opening, substantially as described.

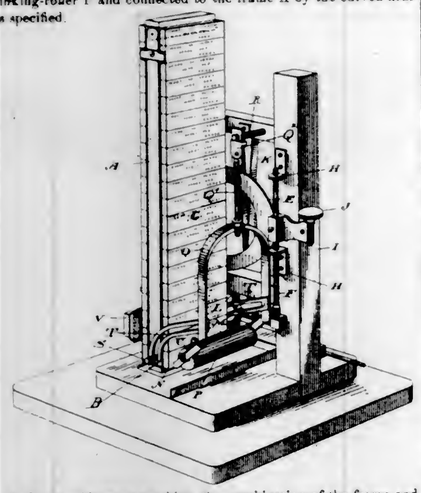
449,032. ADDRESSING-MACHINE. WILLIAM P. BONSALL, Toronto, Canada. Filed June 7, 1889. Renewed July 5, 1890. Again renewed Feb. 7, 1891. Serial No. 380,558. (No model.)

Claim.—1. In an addressing-machine, a rectangular roller B, journaled on the end of the reciprocating moving frame A and having a string of type-blocks C carried around it, and the block M, fixed to the spindle of the roller B and having a notch *d* made near each of its corners, in combination with the guide-plate l_3 and plate O, substantially as and for the purpose specified.

2. In an addressing-machine, a roller B, journaled on the end of the reciprocating moving frame A and having a string of type-blocks C carried around it, and the block M, fixed to the spindle of the roller B, in combination with the guide-plates l_1 and Z, substantially as and for the purpose specified.

3. A series of type blocks or plates C, carried on endless cords or

belts D, supported by rollers journaled in the reciprocating moving frame A, in combination with the pivoted forked support Q, carrying the inking-roller P and connected to the frame A by the curved arm T, as specified.



4. In an addressing-machine, the combination of the frame and type-blocks, the quadrant-plate for elevating and lowering the frame, the forked support carrying the inking roller, the arms connecting the forked support with the frame, and the spring-pressed distributing-pad, substantially as described.

5. In an addressing-machine, the combination of the frame having round and rectangular rollers, the type-blocks traveling on said rollers, the plates for guiding and turning the rectangular roller to present the type-plates, the pivoted support carrying the inking-roller and connected loosely with the frame, and the quadrant for moving the frame, substantially as described.

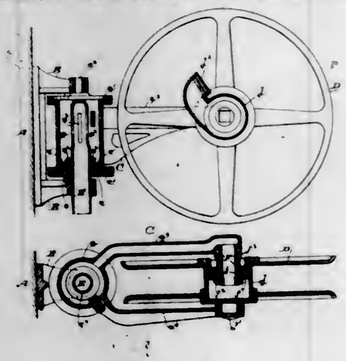
6. In an addressing-machine, the combination of the vertically-movable frame, the type-blocks traveling around said frame, the pivoted support carrying the inking-roller, the arms connecting the support and frame, the ink-distributing pad, and the devices for guiding and revolving the type-blocks, substantially as described.

7. In an addressing-machine, the combination of a vertically-movable frame carrying the chain of type-blocks, the pivoted forked support, the spring-actuated arms carrying the inking-roller and connected to the forked support, the segment for moving the frame, the arms connected to the frame and the forked support, the guide for the type-blocks, and the plate for rotating the same, all constructed to operate for the purpose described.

8. In combination with endless belts or cords, as D, a series of type-blocks having openings near their ends, arranged substantially at right angles to the face of said blocks, substantially as described.

9. As a new article of manufacture, a type-block for addressing-machines, having a printing-face and a loop or cord-clasp at each end, running substantially at right angles to said face, as and for the purpose specified.

449,033. **SWINGING HOSE-REEL.** WILLIAM F. BOWERS, San Francisco, Cal. Filed Mar. 27, 1890. Serial No. 345,582. (No model.)



Claim.—1. In a swinging hose-reel, the fixed bearing B, in combination with the reel-carrying bracket and the pivotal connection between them, consisting of the hollow head of the bracket, the gudgeon on one end journaled in one end of the bearing, the fixed water-pipe fitted in the other end of the bearing and extending into and forming the journal for the other end of the bracket-head and on which said head turns, and the collars and intervening washer on said pipe within the bracket-head, substantially as herein described.

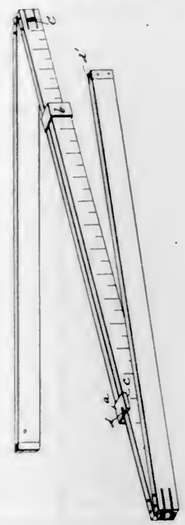
2. The swinging hollow head c, in combination with the fixed water-pipe extending into one end of said head and having its end abutting against the other end of the head, said pipe being provided with openings within said head, and the collars and intervening washer on said pipe within the hollow head and bearing against its first end, substantially as herein described.

3. In a swinging hose-reel, the pivotally-connected bracket having a hollow head and hollow arm, in combination with the reel having a hollow hub and the joint between the bracket and reel, consisting of the fixed pipe F, connected with the hollow arm and extending into and forming the bearing for the reel-hub, and the collars and washer on said pipe and within the reel-hub, substantially as herein described.

4. In a swinging hose-reel, the pivotally-connected bracket having a hollow head and arms, one of which is hollow and communicates with the head, in combination with the reel having a hollow hub and the joint between the bracket and reel, consisting of the gudgeon on one end of the reel-hub, journaled in one arm of the bracket, the fixed pipe F, connected and communicating with the hollow arm of the bracket and passing into the other end of the hollow hub, forming the bearing on which said hub turns, and the collars and washer on the pipe and within the hub, substantially as herein described.

5. In a swinging hose-reel, the fixed bearing B, the bracket having a hollow head and hollow arm, and the reel having a hollow hub, in combination with the joint between the bearing and bracket, consisting of the fixed water-pipe on which the bracket-head is journaled and the collars and washer on said pipe within the head, and the joint between the bracket and reel, consisting of the fixed pipe F, carried by the hollow arm of the bracket and on which the reel-hub is journaled, and the collars and washer on said pipe within the reel-hub, substantially as herein described.

449,034. **SCALE-MEASURE.** EDWARD T. BURROWES, Portland, Me. Filed Oct. 11, 1890. Serial No. 367,787. (No model.)



Claim.—1. A rule comprising two sections, each consisting of two hinged members, the inner members of the two sections lying face to face and each provided with a guide loosely embracing the opposite member, and the distal ends of the outer members of the two sections being disconnected and free to swing in opposite directions, substantially as set forth.

2. A rule comprising sliding sections, each carrying a guide that loosely embraces the opposite sections, and each of such sections consisting of hinged members the hinges of which space the sections apart for accommodating the sliding guides, substantially as described.

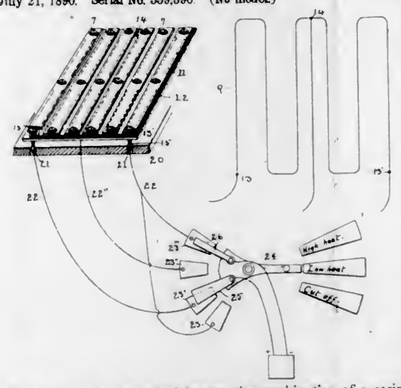
3. A rule comprising two sliding sections, one of said sections having a movable stop-pin for engaging the opposite section, substantially as described.

4. A rule comprising sliding sections, each composed of hinged members, one of said sections having a movable stop that engages the opposite section, substantially as described.

5. A rule comprising sliding sections, each having a guide or keeper that embraces the opposite section, and each of said sections being formed of hinged members having hinges of a width less than that of the rule members, and the above-named guides or keepers being formed with openings, enabling them to move past said hinges, substantially as described.

6. The combination, in a rule, of main sliding sections, each carrying a guide or keeper embracing the opposite section, said keepers having openings, and each of the sections consisting of hinged members the hinges of which are sufficiently narrow to pass the guides, and a stop-pin, as *d*, at the end of one of the sections, adapted to engage a slot in the keeper on the opposite section, substantially as described.

449,035. **ELECTRICAL HEATER.** JOHN V. CAPEK, New York, N. Y., assignor of one-half to Edward H. Johnson, same place. Filed July 21, 1890. Serial No. 359,396. (No model.)



Claim.—1. In an electrical heater, the combination of a casing or oven, a removable cover therefor, and a removable bottom consisting of the heating-conductor and its supporting devices, substantially as described.

2. In an electrical heater, the combination of a casing or oven, a removable cover, a removable bottom consisting of the heating-conductor and its supports, and an interior cooking-vessel slightly smaller than the oven, the bottom of the vessel being over the heating conductor, substantially as described.

3. In an electrical heater, the combination of an oven, a removable cover, a removable bottom consisting of the heating-conductor and its supports, and an interior cooking-vessel smaller than the oven and having a projecting flange resting on the oven, substantially as described.

4. An electrical heater consisting of strips of heat-resisting material provided with teeth or pins on its edges and a heating electrical conductor wound back and forth across one face of the strip around the teeth, substantially as described.

5. An electrical heater consisting of a strip of heat-resisting material provided with teeth or pins on its edges and a heating electrical conductor wound back and forth across one face of the strip and around the teeth, spaces being left at intervals to accommodate fastening devices for the strip, substantially as described.

6. An electrical heater consisting of a strip of heat-resisting material of asbestus hardened by sulphate of copper or similar material provided with teeth on its edges and a heating electrical conductor wound back and forth across one face of the strip, substantially as described.

7. In an electrical heater, the combination, with a bottom plate and a covering of asbestus or similar material, of a heater consisting of strips of heat-resisting material, on one surface of which is mounted a heating-conductor with terminals for connection to a suitable circuit, substantially as described.

8. The combination, with a support in which are mounted circuit-terminals, of the bottom plate of the heater, the heating-conductor supported thereon, and the terminal extensions passing below but insulated from the plate and making contact with the first-mentioned terminals, substantially as described.

9. The combination, in a heater, of the metal plate 11, the coating of prepared asbestus 12, the strips 7, with heating-wire wound thereon, as described, and the terminals 13 13', insulated from the metal plate, substantially as described.

10. The combination of a plate or similar support having a hole therein for the passage of a screw, a screw having a slot for the reception of circuit-terminals, and a clamping-nut, substantially as described.

11. The combination of screw or bolt 15, having a slot near the end thereof, the wire or wires passing through said slot, the insulating nuts or washers 16 17, and clamping-nut 18, substantially as described.

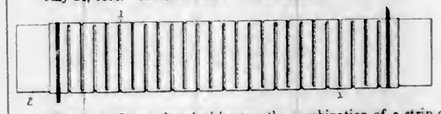
12. The combination of an electrical heater having within it heating conductors or sections adapted to be connected in different ways to the supply-circuit, a switch for controlling said connections, and an indicator operated by movement of the switch to indicate how the connections stand, substantially as described.

13. A heating-conductor for electrical heaters, consisting of German silver or other suitable conductor having a coating of oxide, substantially as described

14. The combination, with an electrical heater, of the plate immediately over the heater, one face of which is coated with copper oxide, substantially as described.

15. The method of preparing asbestus for supporting the heating-conductor of an electrical heater or similar purpose, consisting in treating asbestus with a non-hygroscopic and heat-resisting material, such as copper sulphate, and drying the same under pressure, substantially as described.

449,036. **ELECTRICAL HEATER.** JOHN V. CAPEK, New York, N. Y., assignor of one-half to Edward H. Johnson, same place. Filed July 21, 1890. Serial No. 359,397. (No model.)



Claim.—1. In an electrical heater, the combination of a strip of heat-resisting insulating material and a flat zigzag heating-conductor on one face of said strip, substantially as described.

2. In an electrical heater, the combination of a strip of heat-resisting insulating material and a flat zigzag heating-conductor on one face of said strip and bent over the edges thereof, whereby it is held in place, substantially as set forth.

3. In an electrical heater, the combination of a strip of heat-resisting insulating material and a flat zigzag heating-conductor on one face of said strip and a re-euforcing strip of heat-resisting material upon the second face of the first-mentioned strip, substantially as described.

4. In an electrical heater, the combination, with a base, of several heating-conductors in separate groups thereon and a thin metal grate placed over the same, substantially as set forth.

5. In an electrical heater, the combination, with a base, of several heating-conductors in separate groups thereon and a thin metal grate holding the same in place, substantially as described.

6. In an electrical heater, the combination, with a base, of heating-conductors thereon, a metal grate placed over the same, and the extended and insulated circuit-wires, substantially as described.

7. In an electrical heater, the combination, with a base, of heating-conductors thereon, a metal grate placed over the same, and a metal frame under the same, the several parts being connected together and the lower frame being insulated from the grate, substantially as described.

8. An electrical heater-conductor of German silver or other suitable metal covered with an electroplating of different metal, substantially as described.

9. A conductor for electrical heaters, consisting of a thin sheet of foil slitted alternately from opposite edges, whereby a zigzag conductor is produced, substantially as described.

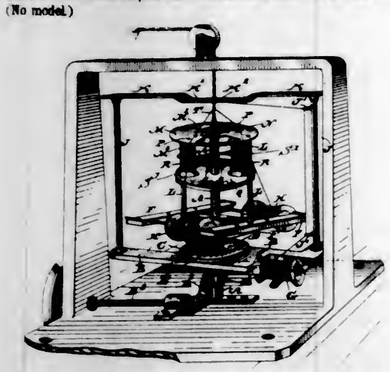
10. A conductor for electrical heaters, consisting of a thin sheet of foil slitted alternately from opposite edges and covered with a layer of a different metal, substantially as described.

449,037. **WOOD-SCREW.** GEORGE T. CHAPMAN, White Plains, N. Y. Filed July 23, 1890. Serial No. 359,590. (No model.)



Claim.—The improved wood-screw having a nick wider below the surface of the head than thereat and curved from side to side in the bottom, substantially as described.

449,038. **MACHINE FOR MAKING ORNAMENTAL CORD.** ALBERT W. DUER, Philadelphia, Pa. Filed Dec. 21, 1889. Serial No. 334,431. (No model.)



Claim.—1. In a machine for making ornamental cord, a stationary shaft having a projecting end over which core-threads are fed, a disk revolving around said shaft, an enveloping-thread support below the disk having a rotary movement, and to which the said disk is rigidly attached, a rotary frame supporting the binding-thread and freely rotating around said shaft, and a main driving-shaft having suitable gearing connected with said parts to move the binding-thread-supporting frame reversely to the enveloping-thread support, substantially as described.

2. In a machine for making ornamental cord, a stationary core-thread support, a revolving binding-thread support having an annular gear secured thereto, an idler engaging therewith, and an enveloping-thread support having a pinion meshing with said idler to revolve the same in a reverse direction to said binding-thread support, and having a disk connected to and located above the core of the thread-support, said disk controlling the position of feed of the enveloping thread, substantially as described.

3. In a machine for making ornamental cord, a stationary shaft with a projecting end, a disk adjacent to, revolving around, and unengaged by said shaft end, and a guide-plate with an opening therein beyond said shaft end to provide for a regular feed at one point for one of the threads, combined with a core-thread support, and reversely-rotating enveloping and binding thread supports, the said disk controlling the position of feed of the enveloping threads, substantially as described.

4. In a machine for making ornamental cord, a stationary shaft having a tapered point, a rotating disk with openings therein for passage therethrough of enveloping threads, and a guide above the said tapered point of the shaft, the said guide having an opening therein for passage of the completed cord, combined with a stationary core-thread support and reversely-rotating enveloping and binding thread supports, substantially as described.

5. In a machine for making ornamental cord, a stationary shaft having a tapered point, a disk adjacent to said tapered point with openings therein for the passage of enveloping threads therethrough, and a guide-plate having a depression to feed a binding-thread at a uniform distance above the said point, and an opening therein for the passage therethrough of the completed cord, combined with a stationary core-thread support and reversely-rotating enveloping and binding thread supports, substantially as described.

6. In a machine for making ornamental cord, a revolving table for the binding-thread, supporting a strip with a depression and an opening therein, said strip revolving with said table, a stationary core-thread support, and a frame for the enveloping threads, revolving reversely to the binding-thread table and supporting a feed-disk, substantially as described.

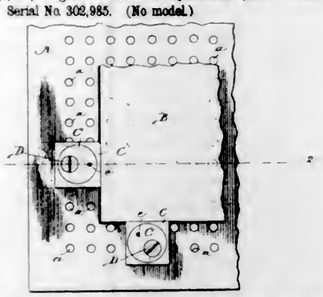
7. In a machine for making ornamental cord, a horizontally-disposed revoluble table for the binding-thread, a horizontal revoluble enveloping-thread frame above said table and supporting a disk for feeding the enveloping threads, a stationary core-thread support above the said enveloping-thread frame, a supporting-shaft having a tapered point, and a guide-plate attached to and revolving with the binding-thread table and located above said point of the shaft for continuously guiding the binding-thread to a point of winding, substantially as described.

8. In a machine for making ornamental cord, the combination of a shaft having a projecting end, a disk adjacent to, revolving around, and unengaged by said shaft, means for supporting the core-threads, means for supporting the enveloping thread, means for supporting the binding-thread, and a guide-plate supported at a point beyond the shaft end and connected to and revolving with the binding-thread-supporting means, substantially as described.

9. In a machine for making ornamental cord, a support for the core-thread spools, a shaft with projecting end, and to which said core-thread support is connected, a disk adjacent to, revolving around, and unengaged by said shaft end and having openings for the placing upon and the removal of the aforesaid spools, an enveloping-thread support, and a binding-thread support, substantially as described.

10. In a machine for making ornamental cord, a shaft, a core-thread support, a disk, an enveloping-thread support, and a binding-thread support having posts or pillars supporting a guide strip or plate above the end of said shaft, substantially as described.

449,039. **STEREOTYPE-PLATE HOLDER.** HERMAN FIETSCH, Jr., Chicago, Ill., assignor to Daniel W. Ryan, same place. Filed Mar. 12, 1889. Serial No. 302,985. (No model.)



Claim.—The combination, with the form-block provided with threaded holes regularly spaced and arranged in check or cross rows, of printing-plate clamps consisting of an outer plate provided with a circular rabbeted or tapering opening and an inner plate or disk adapted to fill said circular opening and bear upon the rabbeted or tapering surface thereof and having a screw-hole eccentrically placed therein and screw for securing the same to the form-block, substantially as specified.

449,040. **LEAD-PENCIL.** RHODOLPH H. FRANKLIN, Brooklyn, N. Y., assignor of one-half to Charles C. Cummings, same place. Filed May 14, 1888. Serial No. 273,884. (No model.)



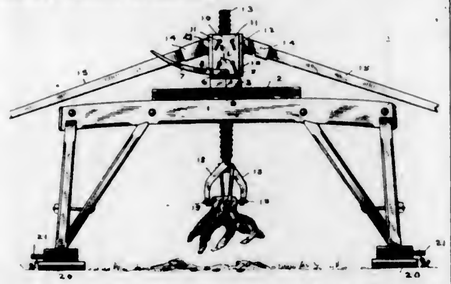
Claim.—1. The improved lead-pencil stock consisting of these elements only, in combination: a wood shaft having the angular channel for the lead larger than said lead, and the revoluble screw-threaded lead-feeding chuck fitted on one end of said shaft, substantially as described.

2. The improved lead-pencil consisting of these elements only, in combination: a wood shaft having the angular channel for the lead larger than said lead, the revoluble screw-threaded lead-feeding chuck fitted on one end of said shaft, and the lead having the angular head movable along but not revoluble in the channel, substantially as described.

3. The combination, in a lead-pencil, of the hollow stock for the lead, the lead-feeding chuck attached to the stock and having a screw-die adapted for feeding the lead by the running of the die-threads directly on the lead, the cap on the upper end of the stock, and the lead-pressing spring in the hollow of the stock, substantially as described.

449,041. **STUMP-EXTRACTOR.** FRIEDRICH W. GRUELLICH, Indianapolis, Ind., assignor of one-half to Johann G. Ries, same place. Filed Feb. 5, 1891. Serial No. 380,354. (No model.)

Claim.—1. In a stump-extractor, a lifting-screw, grapples connected at the lower end thereof, a divided nut in which the screw moves, slotted plates moving upon the opposite sides of the nut, locking-pins passing through such plates into the halves of the nut for locking the parts in operative position, main levers for revolving the nut and raising the screw, and auxiliary levers pivoted to the slotted plates for raising the same and effecting the division of the nut, so as to release the parts thereof from engagement with the screw, allowing the latter to drop, in combination with a supporting frame-work, substantially as shown and described.



2. In a stump-extractor, a nut formed in two halves, a lifting-screw adapted to engage with the same when united, a supporting frame-work, a collar loosely mounted on the screw below the nut bearing upon friction-balls resting in a grooved collar sliding upon tracks above the frame-work, slotted metal plates moving loosely on opposite sides of the divided nut, guide-pins passing through such slots into the halves of the nut, and means, such as auxiliary levers, pivoted to the slotted plates for raising the same, thereby separating the halves of the nut and freeing them from engagement with the lifting-screw, in combination with a supporting-frame and grapples connected to the lower end of the screw for carrying the load, substantially as shown and described.

3. In a stump-extractor, a divided nut 12, composed of two parts, the screw 13, having grapples 18, connected at its lower end, such screw working in the nut when the halves are locked together, the collar 5, loosely mounted upon the screw below such nut bearing on friction-balls 6, supported on a sliding collar 3, the latter supported upon tracks 2, resting upon a frame-work 1, in combination with operating-levers 15, entering sockets 14, connected with the sides of the nut, substantially as shown and described.

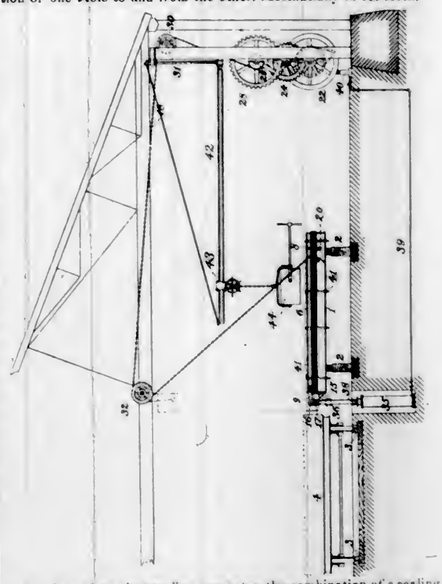
449,042. **WINDOW-CURTAIN GUIDE.** ALFRED M. HASWELL, Chicago, Ill. Filed Dec. 26, 1889. Serial No. 335,002. (No model.) Patented in Canada Aug. 8, 1887, No. 27,366, and in England Sept. 21, 1887, No. 12,809.



Claim.—As an article of manufacture, the herein-described window-curtain guide, the same comprising a stiff wire hook H, adapted to engage the ordinary curtain-fixture and having an eye *h* at its lower end, a guide-wire W, depending from said eye, a guide K, detachably connected to the curtain-stick and sliding loosely on said wire, and a tension device comprising a lower L-shaped member secured to the window-frame, an upper L-shaped member sliding against said frame above the lower member, and a screw passing loosely through a hole in said upper member and taking into a threaded hole in the lower, the whole constructed and arranged as and for the purpose hereinbefore specified.

449,043. **PLATE-GLASS-SEALING APPARATUS.** JAMES M. HOWARD, Mifflin, assignor of two-thirds to Abner U. Howard and Hartley Howard, both of Pittsburg, Pa. Filed Nov. 5, 1890. Serial No. 370,428. (No model.)

Claim.—1. In a plate-glass-sealing apparatus, the combination of a sealing bed or table, a slate or polishing table, a hoist for swinging said tables vertically into and out of positions for connection and detachment, and fluid-pressure-adjusting mechanism for maintaining the normal relation of the faces of the tables in the application and separation of one table to and from the other, substantially as set forth.



2. In a plate-glass-sealing apparatus, the combination of a sealing bed or table, a slate or polishing table, a hoist for swinging said tables vertically into and out of positions for connection and detachment, fulcrums or bearings on which said tables are supported during their movements by the hoist, and fluid-pressure mechanism connected to and acting to adjust said bearings vertically, substantially as set forth.

3. In a plate-glass-sealing apparatus, the combination of a sealing bed or table, a slate or polishing table, a hoist for swinging said tables vertically into and out of positions for connection and detachment, hinge-pivots coupled to each of said tables, fluid-pressure cylinders provided with pistons and connected rods, and bearings fixed to the piston-rods of said cylinders and fitted to receive the hinge-pivots of the table, substantially as set forth.

4. In a plate-glass-sealing apparatus, the combination of a sealing bed or table, a slate or polishing table, two pairs of hinge-arms, one pair being connected to each table, a fluid-pressure cylinder fixed in line with each hinge-arm, piston-rods or plungers working in said cylinders, hinge-pivot bearings fixed to said piston-rods, hinge-pivots adapted to fit in the hinge-arms and bearings, a pair of lifting-pins connected to each of the tables adjacent to the side opposite that to which the hinge-arms are connected, a pair of lifting-chains adapted to be coupled to the lifting-pins of either of the tables, clamps for connecting the tables, guide-pulleys carrying the lifting-chains, chain-drums to which the lifting-chains are connected, and driving mechanism for rotating the chain-drums, substantially as set forth.

5. In a plate-glass-sealing apparatus, the combination of a sealing bed or table, fixed supports therefor, a slate or polishing table, a transfer-car adapted to support both tables and to convey the polishing-table to a different location, a hoist adapted to be connected to either table to swing the polishing-table from the transfer-car to the sealing-table, and to swing both tables from the fixed supports to the transfer-car, and fluid-pressure-adjusting mechanism for maintaining the normal relation of the faces of the tables in the application and separation of one table to and from the other, substantially as set forth.

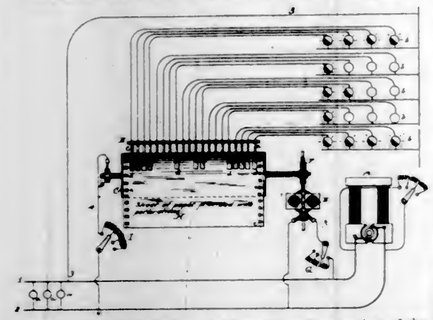
6. In a plate-glass-sealing apparatus, the combination of a metallic polishing-table frame, angle-braces connecting the side and end members of said frame, a pair of hinge-arms having vertical slots and horizontal eyes at their outer ends, and bolts connecting said hinge-arms detachably to the angle-braces and end members of the frame, substantially as set forth.

7. In a plate-glass-sealing apparatus, the combination of a metallic table-frame, a facing fixed thereon, hinge-arms connected to said frame and provided with vertical slots and horizontal eyes at their outer ends, hinge-pivots fitting the eyes of the hinge-arms, and fluid-

pressure-piston rods provided with socketed or recessed ends fitting the slots of the hinge-arms and receiving the hinge-pivots, substantially as set forth.

8. In a plate-glass-sealing apparatus, the combination of a sealing bed or table, a crane fitted to swing above the surface of the sealing-table, and a plaster-box suspended from and fitted to traverse longitudinally on said crane, substantially as set forth.

449,044. **ELECTRIC-LIGHTING SYSTEM.** EDWARD H. JOHNSON, New York, N. Y., assignor to the Edison General Electric Company, same place. Filed Jan. 10, 1884. Serial No. 117,047. (No model.)



Claim.—1. The combination of a main circuit, a number of electric lamps divided between two or more multiple-arc branches of said circuit, a circuit-controller in said branches, having contacts arranged in a predetermined order for making and breaking the several branches to produce the desired visual effects, and an electric motor, also connected with the main circuit, for operating the circuit-controller, substantially as described.

2. The combination of a main circuit, a number of electric lamps divided between two or more branches of the main circuit and mounted on a suitable structure, an electric motor for revolving the structure, also connected to the main circuit, and an automatic circuit-controller or switch moved by the motor for throwing the lamps into and out of circuit in a predetermined order, substantially as described.

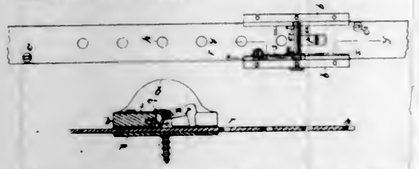
3. The combination of a number of electric lamps divided between two or more circuits, a revolving cylinder, an electric motor for revolving such cylinder, and circuit-controlling devices operated automatically by the revolution of such cylinder for closing circuit to such lamps as will produce the desired visual effect, substantially as set forth.

4. The combination of a number of electric lamps divided between two or more circuits, a revolving cylinder, means for revolving the cylinder, circuit-controlling devices operated automatically by the revolution of such cylinder for closing circuit to such lamps as will produce the desired visual effects, and means for varying the intensity of the lamps in circuit, substantially as set forth.

5. The combination of a revolving structure carrying electric lamps divided between two or more circuits, and circuit-controllers operated by the movement of said structure for automatically closing circuit to such lamps as will produce the desired visual effect, substantially as set forth.

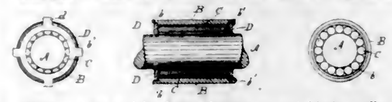
6. The combination of a revolving structure carrying electric lamps divided between two or more circuits, an electric motor revolving such structure, and circuit-controllers operated by the movement of such structure for closing circuit to such lamps as will produce the desired visual effect, substantially as set forth.

449,045. **CHECKREIN-HOOK.** VIRGIL A. KREPPS, Kensico, N. Y., assignor to William H. Rumbforth, Rutherford, N. J. Filed Apr. 14, 1890. Serial No. 347,761. (No model.)



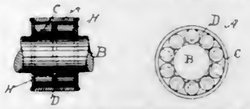
Claim.—A checkrein-holder consisting of a plate or support, a pawl supported upon said plate and pivoted to swing vertically, and two tripping-lugs secured to said pawl, but in different lateral and circumferential positions, in combination with a checkrein provided with one or more stops arranged to register with the engaging end of said pawl, an independent tripping-lug arranged to register with one only of the tripping-lugs connected to the pawl, and a second tripping-lug arranged to register only with the second tripping-lug upon the pawl, said two rein-lugs being located at points differing both in lateral and longitudinal position, all substantially as and for the purpose specified.

449,046. **ANTI-FRICTION ROLLER-BEARING.** MELVIN N. LOVELL, Erie, Pa., assignor to the Lovell Manufacturing Company, Limited, same place. Filed Dec. 19, 1890. Serial No. 375,194. (No model.)



Claim.—As an article of manufacture, an anti-friction roller-bearing adapted to be transported and handled as an article of commerce and applied to the journals of various machines, consisting of a cylindrical case or barrel B, having at its ends internal ledges or rabbets *b*, rings or washers D, seated in said rabbets and held firmly in place by the upset ends of the cylinder overlapping the same, as at *b'*, and anti-friction rollers C, contained within said case between the said rings.

449,047. **ANTI-FRICTION ROLLER-BEARING.** MELVIN N. LOVELL, Erie, Pa., assignor to the Lovell Manufacturing Company, Limited, same place. Filed Jan. 2, 1891. Serial No. 376,456. (No model.)



Claim.—As an article of manufacture, an anti-friction roller-bearing adapted to be transported and handled as an article of commerce and applied to the journals of various machines, consisting of a plain cylindrical case or barrel A, having at its ends internal ledges or rabbets, end rings H, seated in said rabbets and firmly secured therein, anti-friction rollers C within said case, which rollers are grooved around their middle, and a radially-notched ring D of less diameter than the barrel-caliber, which ring yokes over said rollers at their grooved spaces.

449,048. **PIANO ATTACHMENT.** CHARLES L. E. LUGENBUEHL, New York, N. Y. Filed Dec. 13, 1890. Serial No. 374,594. (No model.)



Claim.—1. A piano attachment consisting of a stamped-up bearing provided with a socket for the reception of a rod, pin, or pivot, and a soft bushing and having a recess or groove specially formed in one side of said socket to hold the bushing in position, substantially as described.

2. A bearing for piano-damper and other rods provided with a socket for the reception of said rod and a bushing, and a groove or recess running through said socket for the reception of a portion of said bushing, substantially as described.

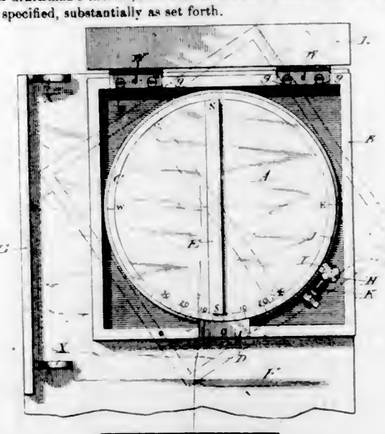
3. The stamped-up bearing having a flange D, with the ends of said flange bent upon each other and also having a socket E, and a groove or recess G, extending through the length of said socket and at one side thereof to form a seat for a portion of a bushing, substantially as described.

449,049. **MERIDIAN DRAWING-BOARD.** JOSIAH B. MCELROY, Charlestown, W. Va. Filed Jan. 20, 1890. Serial No. 337,565. (No model.)

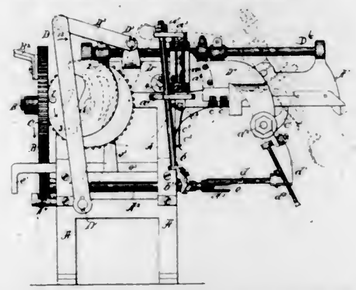
Claim.—1. The combination, in a meridian drawing-board, of a large protractor C, embedded in the face of and virtually being a part of the revolving board A, a case B, to which the vernier D is fixed and the tangent screw-standard at c is fastened, a reversely-cut tangent-screw K, and clamp-screw H, with a T-square, all substantially as set forth.

2. In a meridian drawing-board, the combination of a meridian-strip E, attached to the board A, set in the case B, which case, by means of the center-pin N, fixed to circular piece O, the head-plate R, and the clamp-screw S, is adjustable and clamped to any angle of the line of the strip E and the line of the strip G, attached to the table F, substantially as described.

3. The combination, in a meridian drawing-board, of an adjustably-revolving board A and protractor C, having a meridian-strip E thereon, a clamp-screw H, a reversely-cut tangent-screw K, a vernier D, an adjustable case B, and clamp-screw S, with a T-square, a quadrant, a draftsman's table F, and an attachment G thereto, for the purposes specified, substantially as set forth.



449,050. **FRUIT PARER AND CORER.** WILLIAM A. C. OAKS, Antrim, N. H., assignor to the Goodell Company, same place. Filed June 20, 1890. Serial No. 356,125. (No model.)



Claim.—The sliding carriage to support a carrier containing the paring-knife, a radius-bar having a series of cam projections, and means to connect the said radius-bar and carriage, combined with a rotating wheel having studs of different lengths, substantially as described, to act upon the different projections of the radius-bar and impart fast and slow movements to the carriage at desired times, as and for the purpose set forth.

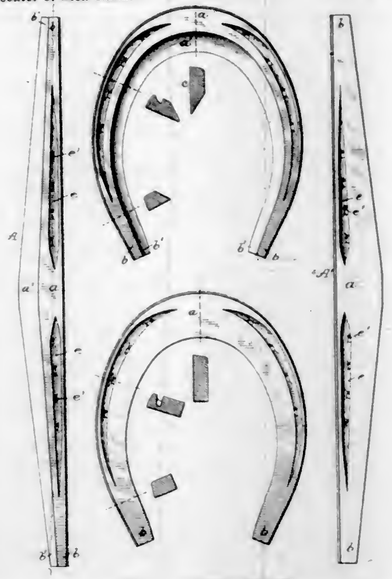
449,051. **MANUFACTURE OF HORSESHOE-BARS.** CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Horse Shoe Company, same place. Filed Aug. 14, 1890. Serial No. 361,963. (No model.)

Claim.—1. The method or process of manufacturing blank-bars containing blanks for toe-weighted horseshoes, which consists in rolling a straight bar of metal and then forming therein two series of nail-scores, which in one series are offset with relation to laterally-adjacent scores, substantially as described, whereby the bar may be divided on lines diagonal or inclined to the longitudinal center of each blank.

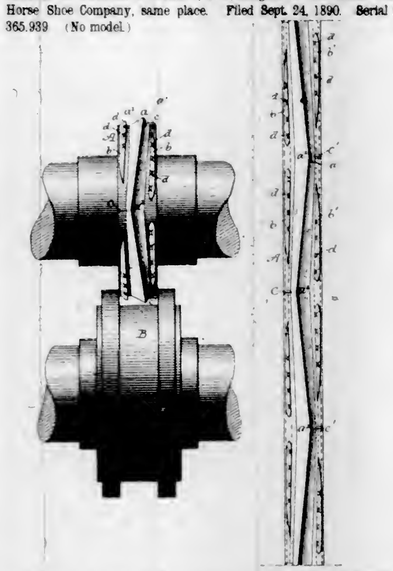
2. The method or process of manufacturing blanks for toe-weighted horseshoes by forming in a bar of metal nail-scores appropriate for each blank and then dividing said bar on lines diagonal or inclined with reference to the longitudinal center of each blank, substantially as described.

3. The method or process of manufacturing blanks for toe-weighted horseshoes, which consists in forming in a bar of metal nail-scores appropriate to each blank and a longitudinal zigzag groove variably beveled at its sides and then dividing said bar on the zigzag line at the center or bottom of said groove.

4. The method or process of manufacturing blanks for toe-weighted horseshoes, which consists in forming in a metal bar nail-creases which are offset with relation to the next laterally-adjacent nail-creases for locating the heel portions of each two of the blanks laterally opposite the toe portion of an adjacent blank and then dividing the bars on lines which are diagonal or inclined to the longitudinal center of each blank.



449,052. **DIE-ROLL FOR MAKING HORSESHOE-BLANK BARS.** CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Horse Shoe Company, same place. Filed Sept. 24, 1890. Serial No. 365,939. (No model.)



Claim.—1. A die-roll for forming bars containing toe-weighted horseshoe-blanks, having adjacent to each edge of its working-face a series of nail-score creasers arranged in pairs, and with the pairs of creasers in either series alternating in position with the pairs in the other series.

2. A die-roll for forming tapered horseshoe-blanks in bars having a zigzag grooving-tongue, which at its periphery for a distance equal to the length of blank desired is inclined to and fro with respect to the edges of the working-face of the roll.

3. In a die-roll, a zigzag grooving-tongue which is variably beveled at its sides, substantially as described, for variably beveling one edge of each horseshoe-blank in a blank-bar.

4. In a die-roll for forming tapered horseshoe-blanks, two series of heel-marking studs or spurs located at the edges of the working-face of the roll and having the spurs of either series alternating in position with those of the other series, the distance between the spurs of each series being equal to the length of blank desired.

5. A die-roll for forming bars containing toe-weighted horseshoe-blanks, having the two series of nail-creasers arranged in pairs, the pairs in one series alternating in position with those of the other series, and also having a zigzag grooving-tongue located between the two series of creasers.

6. A die-roll for forming bars containing toe-weighted horseshoe-blanks, having a zigzag grooving-tongue located between the edges of the working-face of the roll, and two series of heel-marking studs or spurs located at the edges of said face, the studs in one series alternating in position with those in the other series for defining the length of the blanks.

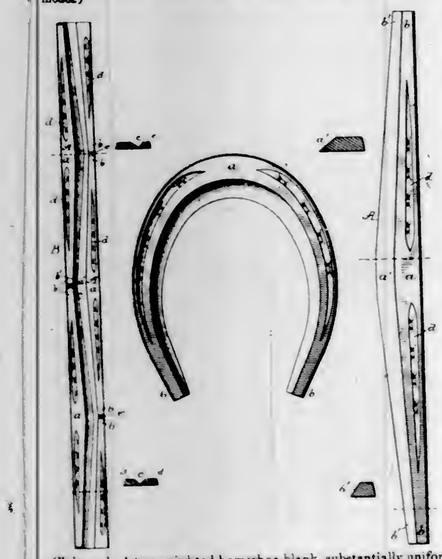
7. A die-roll having between the edges of its working-face a zigzag grooving-tongue, two series of nail-creasers, and two series of heel-marking studs or spurs

8. A die-roll having a zigzag grooving-tongue which at its periphery inclines to and fro once within the length of a horseshoe-blank, in combination with a grooved co-operating roll.

9. A die-roll having a zigzag grooving-tongue and two series of nail-creasers arranged in pairs, the pairs in one series alternating in position with those in the other series, in combination with a grooved co-operating roll, substantially as described.

10. In combination with a grooved roll, a die-roll co-operating therewith, provided with a zigzag grooving-tongue, two series of nail-creasers, and two series of heel-marking studs, substantially as described.

449,053. HORSESHOE-BLANK AND BLANK-BAR. CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Horseshoe Company, same place. Filed Sept. 26, 1890. Serial No. 366,213. (No model.)



Claim.—1. A toe-weighted horseshoe-blank, substantially uniform in thickness, having one straight edge, a wide toe portion and narrow heel portions, tapered in both directions from the center of said toe portion, variably beveled at its inner or inclined edge and provided with appropriate nail-scores.

2. A blank-bar containing toe-weighted horseshoe-blanks in two series, separate from each other by a zigzag groove, and each blank having appropriate nail-scores.

3. A blank-bar containing toe-weighted horseshoe-blanks in two lines or series, separated by a zigzag groove having variably-beveled sides affording a wide beveled edge at the toe portion of each blank, and a narrow bevel at the heels, said toe portion being opposite the two heel portions of adjacent blanks.

449,054. HORSESHOE-BLANK BAR. CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Horse Shoe Company, same place. Filed Sept. 29, 1890. Serial No. 366,534. (No model.)



Claim.—1. A straight-edged blank-bar containing toe-weighted horseshoe-blanks, said bar having on one side near both edges appropriate nail-scores, the nail-prints in the scores near one edge being diagonally opposite the laterally-adjacent scores.

2. A blank-bar affording blanks for making plain toe-weighted horseshoes, said bar being of uniform thickness and width, appropriately scored near each edge on one side, and having those portions of the scores which are to be occupied by nail-heads near one edge of said bar offset with relation to corresponding portions of the scores near the opposite edge, said bar being adapted to be cut in zigzag lines between the two lines of scores and locating opposite the toe portion of each blank two heel portions of laterally-adjacent blanks.

3. A straight-edged blank-bar provided with nail scores near and parallel with both edges, and gage-marks which at one edge are diagonally opposite the adjacent gage-marks at the opposite edge, said marks defining the ends of blanks and indicating a parting-line from each gage-mark to the nearest gage-mark at the opposite edge of the bar.

4. A straight-edged blank-bar of uniform and proper thickness for toe-weighted horseshoes and having a width equal to the combined width of the broad toe of a shoe and of its narrow heel scored on one side near and parallel with both edges and affording blanks in two lines, the toe portion of each being opposite the heel portions of two laterally-adjacent blanks.

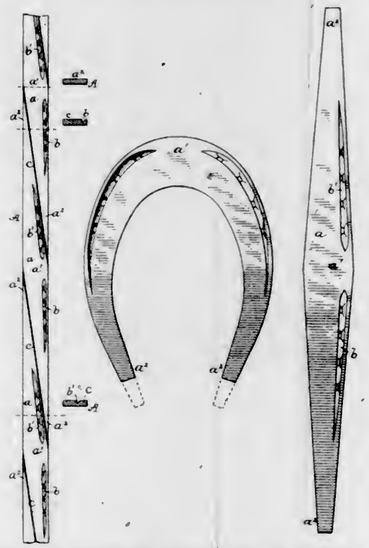
449,055. HORSESHOE-BLANK BAR. CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Horse Shoe Company, same place. Filed Oct. 1, 1890. Serial No. 366,723. (No model.)

Claim.—1. A toe-weighted horseshoe-blank bar containing a single line of blanks, each having one straight edge and one edge reversely inclined from the middle toward the ends, and each provided with appropriate nail-scores, substantially as described.

2. A toe-weighted horseshoe-blank bar containing a single line of blanks, each having one straight edge, one edge reversely inclined from the middle toward the ends and beveled at one of its edges, substantially as described.



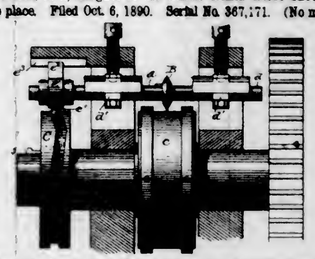
449,056. HORSESHOE-BLANK AND BLANK-BAR. CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Horse Shoe Company, same place. Filed Oct. 2, 1890. Serial No. 366,862. (No model.)



Claim.—1. A toe-weighted horseshoe-blank having both of its edges inclined from the center toward its ends, and having nail-scores which are inclined with reference to each other but are parallel with the adjacent edge of the blank.

2. A blank-bar scored on one side adjacent to one edge, and also scored at intervals diagonally across the bar, substantially as described, said bar being divisible on diagonal lines for producing blanks for toe-weighted horseshoes.

449,057. METAL-SLITTING MACHINE. CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Horse Shoe Company, same place. Filed Oct. 6, 1890. Serial No. 367,171. (No model.)

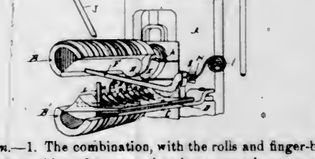


Claim.—1. In a metal-slitting machine, the combination, substantially as hereinbefore described, of a rotative circular slitting tool or cutter free to move laterally to and fro, and a co-operating bed for delivering or presenting metal to the cutter in a right line, whereby the metal may be slitted in zigzag lines in accordance with the lateral movements of the cutter during the progressive delivery of the metal thereto.

2. In a metal-slitting machine, the combination, substantially as hereinbefore described, of a positively-driven grooved bed for delivering the metal to be slit in a right line, and a circular slitting tool or cutter which is free to revolve and to move bodily to and fro laterally for cutting metal in zigzag lines while passing between said grooved bed and the cutter.

3. In a metal-slitting machine, the combination, substantially as hereinbefore described, of a positively-driven bed, a circular cutter which is rotative and free to be moved bodily to and fro laterally, and means for controlling and guiding said bodily movement for enabling the cutter to operate in slitting the metal on zigzag lines during its passage between the bed and the cutter.

449,058. FORK-ROLLING MACHINE. JAMES B. PHILLIPS, Miles Grove, Pa., assignor of one-half to William J. Dougherty, same place. Filed Nov. 28, 1890. Serial No. 372,926. (No model.)



Claim.—1. The combination, with the rolls and finger-board of a fork-rolling machine, of a cam and spring-actuated scraper at the rear of the finger on the finger-board, substantially as and for the purpose set forth.

2. The combination, in a fork-rolling machine, of a vibrating scraper at the rear of the fingers on the finger-board, with cam mechanism for raising said scraper at each revolution of the rolls, and spring mechanism for actuating said scraper in its downward movement, substantially as and for the purpose set forth.

3. The combination, in a fork-rolling machine, of an air-blast forcing a current of air between the rolls, and a vibrating scraper striking down upon the blank and finger-board behind the fingers on said finger-board, with cam mechanism for raising said scraper at each revolution of the rolls, and spring mechanism for actuating said scraper in its downward movement, substantially as and for the purpose set forth.

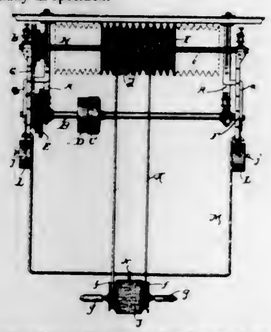
4. The combination, in a fork-rolling machine, of the semicircular rolls B and B', a cam I, secured to the axle of the roll B, a vibrating scraper F, mounted in a bearing G at one end of the finger-board D, with the spring-actuated arm H, coupled to the end g of said scraper F and engaging with the cam I on the roll B, and the air-blast pipe J, substantially as and for the purpose set forth.

5. The combination, with the division-blocks e of the finger-board of a fork-rolling machine, of curved springs E, secured thereto, substantially as and for the purpose set forth.

449,059. POLISHING-MACHINE. HENRY TROST, Cohoes, N. Y., assignor to Caroline R. Trost, same place. Filed Nov. 21, 1890. Serial No. 372,203. (No model.)

Claim.—1. The combination, with the suspended pivoted frame, of the actuating-pulley traveling longitudinally on a shaft carried by said frame, and the roll operated by belt directly from the said pulley, as set forth.

2. The combination, with the suspended frame pivoted between its front and rear ends, of the actuating-pulley carried thereby at its forward end, means for revolving the said pulley, and the roll supported by belts passed over the actuating-pulley and revolved by the same belts, substantially as specified.



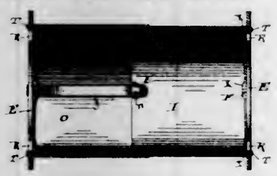
3. The combination, with the swinging frame, of the grooved actuating-pulley, the roll, and the belts arranged in grooves in the pulley and in the roll, as set forth.

4. The combination, with the pivoted suspended frame, of the weights at the rear end thereof, the actuating-pulley at the front end and movable endwise upon its shaft, and the roll supported and driven by belts passed around the actuating-pulley, substantially as specified.

5. The combination, with the hangers formed with arms extended outward and downward, of the drive-shaft journaled in the hangers, the frame pivoted in the arms, the cone-pulleys and belts connecting them, the grooved actuating-pulley carried by a shaft on the pivoted frame, the roll, and the belts connecting the pulley and roll and supporting the latter, substantially as specified.

6. The combination, with the shaft having longitudinal grooves, of the pulley having at its end beveled wheels traveling in said grooves, substantially as specified.

449,060. STOVE-PIPE THIMBLE. ELBRIDGE G. WEST, Canandaigua, N. Y., assignor of one-half to Alasco C. Robison, same place. Filed Sept. 9, 1890. Serial No. 364,483. (No model.)

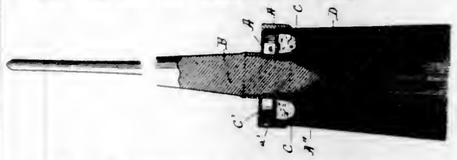


Claim.—1. In a stove-pipe thimble, the combination, with the annular end pieces E, each having an inwardly-projecting flange F, with extensions X on its inner edge, and each being provided with narrow slits N outside and rectangular holes R inside said extensions, of inner and outer sleeves I and O, each fitting around said flange and having integral tongues T passing outwardly through said slits and returning through said holes, flexible strips S upon certain of said tongues resting upon the inner faces of said extensions and extending nearly the length of the outer sleeve, their free ends inclining toward the axis, and guides in the inner sleeve loosely embracing said free ends, as and for the purpose set forth.

2. In a stove-pipe thimble, the combination, with the annular end pieces E, each having an inwardly-projecting flange F, with extensions X on its inner edge, and each being provided with slits N outside and holes R inside said extensions, of inner and outer sleeves I and O, each fitting around one of said flanges and secured to the end piece, flexible strips S passing inwardly from certain of said slits, bending over, returning through the holes, resting upon the inner faces of said extensions and extending nearly the length of the outer sleeves with their free ends inclining toward the axis, and guides in the inner sleeve loosely embracing said free ends, as and for the purpose set forth.

3. In a stove-pipe thimble, the combination, with the two annular end pieces E and the inner sleeve I, secured to one end piece, said sleeve having cuts C through its body near its inner end, with the metal of the sleeve inside said cuts bent inwardly, of the outer sleeve O, secured to and projecting inwardly from the other end piece, and flexible strips S, secured to the latter end piece and extending within and nearly the length of the outer sleeve, with their free ends inclining toward its axis and frictionally engaging said cuts C in the inner sleeve, as and for the purpose hereinbefore set forth.

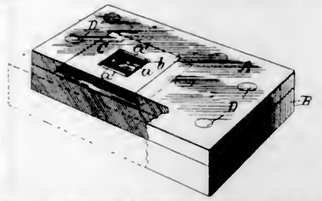
449,061. BRUSH AND MODE OF MAKING THE SAME. ARTHUR H. WOLCOTT, Winthrop, assignor to John L. Whiting & Son, Boston, Mass. Filed July 3, 1890. Serial No. 357,627. (Model.)



Claim.—1. The combination, in a brush, of the metallic head formed integral with a pendent ferrule having a shoulder on its inner surface, the metallic plate seated against said shoulder having a central perforation and formed integral with pendent bristle-expanders which enter the brush-bristles between the central perforation in the said metallic plate and the inner surface of the ferrule, and the brush-handle extending through the metallic head and the perforation in the metallic plate, substantially as described.

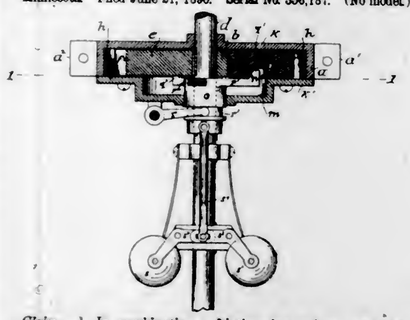
2. A brush consisting of the metallic head A, formed integral with the pendent hollow bristle-expander A″, and the ferrule A′, having its internal surface provided with the shoulder *a*′, the metallic plate C′, resting against the shoulder, having a central perforation through which the hollow expander extends and formed integral with the bristle-expanders C, entering the bristles between the ferrule and the hollow expander, and the handle B, passing through the metallic head and engaging the hollow expander, substantially as described.

449,062. TYPE-FOUNDER'S MATRIX. ALBERT F. ALLEN, Chicago, Ill., assignor of two-thirds to Charles E. Walker and John West, both of same place. Filed Mar. 20, 1890. Serial No. 344,621. (No model.)



Claim.—A type-founder's matrix consisting of the recessed top plate of soft metal, a hard casting-surface embedded in said recessed plate and forming the matrix proper, and the back plate rigidly secured to the top or matrix plate, substantially as described.

449,063. SPEED-CONTROLLING DEVICE. WILLIAM C. BAIRD, Brooklyn, N. Y., assignor to the Wilson Manufacturing Company, of Minnesota. Filed June 21, 1890. Serial No. 356,187. (No model.)



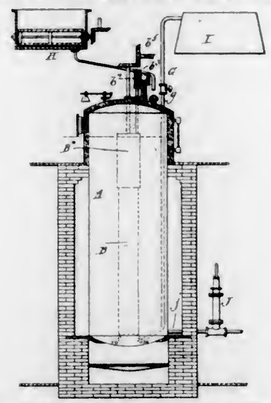
Claim.—1. In combination, a friction-ring and an arm, respectively fixed and movable about an axis relatively to one another, a piece adapted to wedge between the arm and the friction-ring when the parts are in motion, and mechanism whereby said piece may be withheld from its wedging position, substantially as described.

2. In combination, a fixed friction-ring, a rotatable arm, a block carried around by the rotation of the arm and adapted to wedge between the arm and the friction-ring, and mechanism whereby the block may be held toward the center so as to be inoperative, substantially as described.

3. In combination, a rotatable arm, a fixed friction-ring, a block adapted to wedge between the two, mechanism whereby said block may be withheld from its wedging position, and a governor controlling said last-mentioned mechanism by the speed of the machine, substantially as described.

4. A rotatable shaft and a retarder having an arm fixed to the shaft and a friction-block, by the co-operation of which the latter is wedged against the friction-ring, in combination with a sleeve on the shaft, and a finger connected with said sleeve, whereby the friction-block is held away from the friction-ring when the retarder is not in operation, substantially as described.

449,064. ART OF MANUFACTURING BORAX. NEWTON M. BELL, San Francisco, Cal. Filed Mar. 26, 1890. Serial No. 345,321. (No model.)



Claim.—1. The herein-described method or process of manufacturing borax from borate of lime and carbonate of soda, which consists in mixing the borate of lime with the carbonate-of-soda solution, then boiling the mixture in a closed vessel under pressure and keeping the contents of the vessel in constant agitation or circulation until decomposition takes place, and finally drawing off the resulting liquid and solid contents into settlers and crystallizers, wherein the operations of separating the insoluble carbonate-of-lime product and of obtaining the borate-of-soda crystals are carried on.

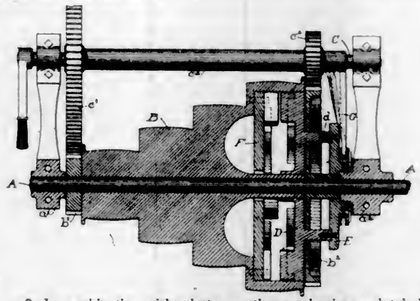
2. In the manufacture of borax from borate of lime and carbonate of soda, the herein-described method of treating and operating on the borates, which consists in dividing the whole quantity or charge of borates into separate grades or portions of coarse particles and finer particles, then introducing the charge or quantity composed of the coarse particles into carbonate-of-soda solution prepared of the full strength that would be required to work the whole charge or quantity of borates at once, then boiling the mixture, and afterward introducing the portion or charge of borates which is composed of the finer particles while the operation of boiling continues, substantially as hereinbefore set forth.

3. The herein-described improvement in the art of manufacturing borax from borate of lime and carbonate of soda, which consists in subjecting a solution of these materials to pressure in a closed vessel during boiling and keeping the same in a state of active agitation, substantially as set forth.

449,065. LATHE. GEORGE H. BENNETT, Cincinnati, Ohio, assignor of one-half to Francis M. Dillie, same place. Filed Apr. 19, 1890. Serial No. 348,669. (No model.)

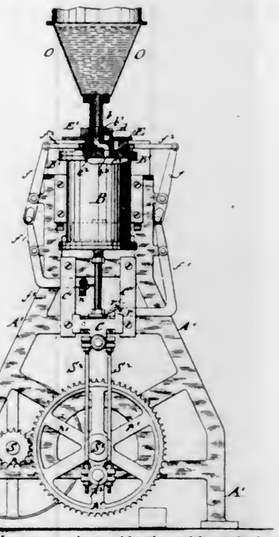
Claim.—1. In a lathe, in combination with its back gear, a spindle, a loose driving-pulley thereon provided with a face having clutch recesses and projections, a laterally-adjustable clutch-disk having permanent rotative engagement with the spindle and a face with corresponding clutch recesses and projections, and means, substantially as set forth, for simultaneously shifting the back gear into and out of engagement with the spindle and the clutch-disk out of and into engagement with the driving-pulley, substantially as set forth.

2. In a lathe, in combination with its back-gear mechanism, a laterally-adjustable clutch-disk at the pulley side of the spindle-gear, a shifting-sheave at the outside of the spindle-gear, rigid concentric arms uniting the clutch disk and sheave through the spindle-gear, a corresponding clutch-disk at the inner face of the cone-pulley, and a cam upon the back-gear shaft, engaging the shifting-sheave to adjust the clutches into or out of engagement coincidently with the engagement or disengagement of the back gears with those of the spindle, substantially as set forth.



3. In combination with a lathe or other mechanism, a clutch device embodying the following construction, to wit: corresponding clutch-disks engaging by lateral adjustment upon the same shaft, each disk having a series of equidistant concentric teeth with recesses flanking the teeth at both sides and ledges of lesser height intervening between the recesses, substantially as set forth.

449,066. VACUUM-PUMP. ALBERT BERRENBERG, Boston, Mass., assignor, by mesne assignments, to the Berrenberg Manufacturing Company, of New York. Filed Feb. 26, 1889. Serial No. 301,184. (No model.)



Claim.—1. In a pump, the combination, with a cylinder provided with an inlet port or passage and a piston, of an intermittently-reciprocating slide-valve provided with ports to register with the said inlet-port, a valve-cap having ports, and an oil-reservoir communicating with one of said ports in the valve-cap.

2. In a pump, the combination, with a cylinder provided with an inlet port or passage and a piston, of a slide-valve provided with ports to register with the said inlet-port, a valve-cap having ports, an oil-reservoir communicating with one of said ports in the valve-cap, and a double set of levers connected with opposite sides of said valve to intermittently reciprocate it.

3. In a pump, the combination, with a cylinder provided with an inlet port or passage and a piston in said cylinder, of a valve fitted to its seat and provided with ports to register with the said inlet-port, a valve-cap having ports and fitted on said valve, a closed reservoir to contain atmospheric air and oil communicating with a port in said valve-cap, and valve-actuating mechanism for moving said valve to establish communication between said reservoir and cylinder and thereafter to cut off said communication.

4. In combination with a cylinder covered with a head having an inlet and a piston fitted in said cylinder, a valve apparatus having ports to register with the inlet of the said cylinder, and a reservoir to contain liquid and air, having a passage capable of being opened and closed through said valve, the said liquid being adapted to flow from said reservoir into and through said valve apparatus into said cylinder and upon said piston.

5. The combination, with a vertical pump cylinder and piston, of a cylinder-head having a single port, an oil-chamber above the cylinder, an air-suction pipe, a top plate having two ports connected, respectively, with the oil-chamber and air-suction pipe, and an intermittently-reciprocated slide-valve guided between the cylinder and top plate, said slide-valve having a straight port and an S-shaped port, substantially as set forth.

6. The combination of a vertical pump-cylinder having a head with a single port, of an oil-chamber above the pump-cylinder, an air-suction pipe, a top plate having two ports connected, respectively, with the oil-chamber and air-suction pipe, a slide-valve guided between the top plate and cylinder-head and provided with a straight port and an S-shaped port, and a double set of levers connected to opposite ends of the slide-valve and actuated by a cam-head of the piston-rod, so as to intermittently reciprocate the slide-valve, substantially as set forth.

7. The combination of a pump-cylinder, a cylinder-head having a port, guideways on said head, a reciprocating slide-valve having ports communicating with the port in the cylinder-head, and spring-cushioned retaining-lugs fulcrumed to said ways and projecting laterally over the slide-valve at opposite sides thereof, substantially as set forth.

8. The combination, with a pump-cylinder, of a slide-valve guided in ways of the cylinder-head, two sets of fulcrumed levers connected to opposite ends of the slide-valve, one of said levers having a nose at the lower end, and inclined cams attached to the cross-head of the piston-rod, said cams engaging the lower ends of the fulcrumed levers, one of said cams being spring-cushioned and guided in a socket of the cross-head, so as to pass over the lower end of one set of levers during the upstroke of the piston but engage it by the downstroke of the same, substantially as set forth.

9. In a pump, the combination, with a cylinder provided with an inlet port or passage and a piston, of an intermittently-reciprocating slide-valve provided with ports to register with said inlet-port, a valve-cap having ports, an oil-reservoir communicating with one of said ports in the valve-cap, an air-suction pipe connected with the other port in said valve-cap, and an auxiliary slide-valve located in the suction-pipe and provided with two ports, one connecting with the suction-pipe and the other with the atmosphere, substantially as described.

449,067. **ARTIFICIAL STONE.** EDWARD C. BRICE, Washington, D. C. Filed Jan. 4, 1890. Serial No. 335,907. (No specimens.)

Claim.—The hereinbefore-described mode of making artificial stone, the same consisting, first, in reducing sand, lime, and caustic soda to a liquid condition by the application of heat and the fumes of common salt dissolved in sulphuric acid; next, in thinning the semi-liquid material by the addition of water; third, in mixing therewith clay and Portland cement, all substantially as described.

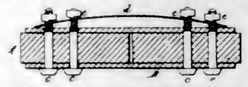
449,068. **FLEXIBLE SHAFT.** JOHN S. CAMPBELL, London, England, assignor to the Carroll Aluminum Manufacturing Company, New York, N. Y. Filed July 11, 1890. Serial No. 358,452. (No model.)



Claim.—1. A driving-shaft for dental engines, consisting of the coil-shaft A and flexible cable B, the cable B telescoping within the coil-shaft A and adapted to be locked at one end with the coil-shaft or with the tool-holder shaft, substantially as and for the purpose set forth.

2. The coil-shaft A, fixed at one end to the interiorly-arranged and slotted tubular heading F and at the opposite end to the slotted tubular connection G of the wrist-piece D, in combination with the cable B, provided with the feathered sleeve E, substantially as and for the purpose set forth.

449,069. **LOCK-UP NUT.** SAMUEL F. CLOUSER, Brooklyn, assignor of fifty-one one-hundredths to Richard N. Peterson, New York, N. Y. Filed Oct. 13, 1890. Serial No. 368,021. (No model.)

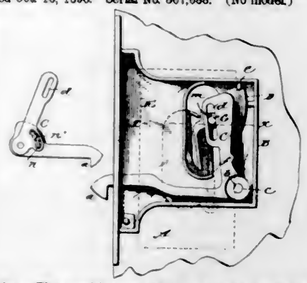


Claim.—1. In a nut-lock, the combination of the following elements: a screw-bolt, a spring-washer having an oblong slot of greater length than the diameter of the bolt, and a nut provided with a tooth or teeth adapted to take against the inner faces of the slot, substantially as described.

2. The combination of the following elements: one or more fish-plates, a pair of rails provided with bolt-holes near their ends, two or more bolts, a spring-washer made of a single piece of metal and having an oblong slot for each bolt, and a nut for each bolt, provided with teeth or lugs adapted to take against the inner faces of the slots as the nuts are driven home, substantially as described.

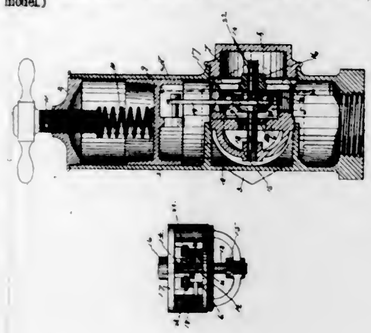
3. The combination of the following elements: a spring-washer having two or more oblong slots located in the direction of its length, two or more bolts, one for each slot, a pair of rails provided with bolt-holes corresponding to the bolts, one or more fish-plates, and nuts for each bolt, each of said nuts being provided with a pair of inclined teeth or lugs having faces adapted to take against the opposite walls of the slots, substantially as shown.

449,070. **SLIDING-DOOR LATCH.** GEORGE A. COLTON, Chicago, Ill., assignor to the Munger-Colton Manufacturing Company, same place. Filed Oct. 10, 1890. Serial No. 367,683. (No model.)



Claim.—The combination, with an angular lever adjustable at its angle, of the escutcheon-plate and the pivoted straight pull engaging the said lever, substantially as described.

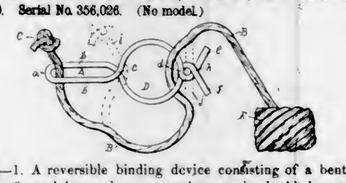
449,071. **PRESSURE-REDUCER FOR STEAM OR OTHER FLUIDS.** ERNEST C. FASOLDT, Albany, N. Y., assignor of one-half to John Boyd Thacher, same place. Filed Sept. 29, 1890. Serial No. 366,583. (No model.)



Claim.—1. In a pressure-reducer, a casing provided with inlet and outlet openings, a valve interposed between said inlet and outlet openings and provided with spirally-formed cam-faces, said valve being fitted to receive a combined oscillating and reciprocating motion, and fixed bearings fitted to take against said cam-faces, in combination with a piston or diaphragm which is connected to said valve for the purpose of imparting an oscillatory motion to the latter, as herein specified.

2. In a pressure-reducer, the combination of a casing provided with an internal chamber, an inlet-opening leading into said chamber, a valve for opening and closing the communication between said chamber and the interior of the casing, said valve provided with spirally-formed cam-faces, bearings which are held in a fixed position to take against said cam-faces during the oscillatory movement of said valve, a spring-resisted piston or diaphragm connected to said valve for the purpose of imparting an oscillating movement thereto, and a spring fitted to bear against said piston for the purpose of resisting the pressure of the fluid thereon, substantially as specified.

449,072. **FODDER-BINDER.** CHARLES W. GILLIS, Dayton, assignor of one-half to Christian B. Funk, Collinsville, Ohio. Filed June 19, 1890. Serial No. 356,026. (No model.)

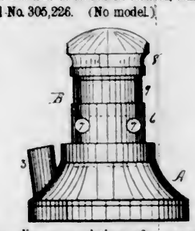


Claim.—1. A reversible binding device consisting of a bent or doubled wire formed into a loop or retainer at the doubled portion and having the ends of the wire formed into interlocking hooks which terminate in the extended plane of the body of the device, substantially as described.

2. A binding device consisting of a wire bent or doubled to form a body portion and having its ends formed into hooks which interlock loosely and without contact, whereby the cord may be inserted before it is severed from the ball, substantially as described.

3. A binding device consisting of a wire bent or doubled to form a loop with substantially parallel sides and a substantially circular body portion, the wires being crossed without contact between the loop and the body portion, and the ends of the wire being extended from the body portion and formed into interlocking hooks, substantially as described.

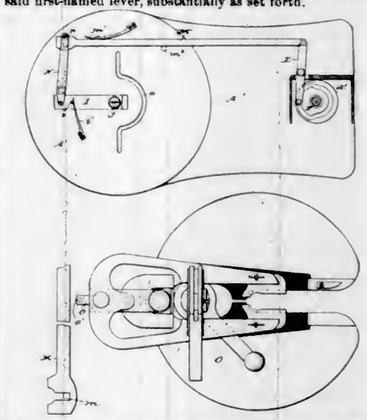
449,073. **CIGAR-CLIPPER.** ARTHUR B. GUINNIP, Seneca Falls, N. Y., assignor of one-half to Rouse H. Arnold, same place. Filed Mar. 29, 1889. Serial No. 305,226. (No model.)



Claim.—A cigar-clipper consisting of a recessed base provided with mortises 2, opening into the recess on opposite sides and having grooves in the edge of the recess between the mortises, and a clipping mechanism comprising a tubular body provided with a transverse bar having projecting ends adapted to enter the mortise and grooves and provided with a vertical rod secured to a handle and passing through the cross-bar, a spring upon the rod between the handle and the cross-bar, a circular knife secured to the handle and fitting closely into the top of the body and movable vertically within it and beveled through the body, and a match-receiver mounted upon the base, as shown and described.

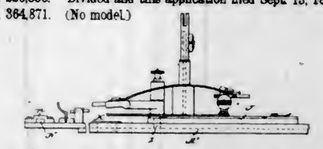
449,074. **BUTTON-HOLE SEWING-MACHINE.** JOHN Q. A. HOUGHTON, Washington, D. C., assignor to The Singer Manufacturing Company of New Jersey. Original application filed Feb. 3, 1887, Serial No. 226,336. Divided and this application filed Sept. 13, 1890. Serial No. 364,870. (No model.)

Claim.—1. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and its feeding mechanism, of a guiding-button for said work-clamp, a sliding plate by which said button is carried, a lever jointed at one end to said sliding plate and provided with a pin at its opposite end, an operating-rod arranged above the work-plate and having a slot at its forward end to engage said pin, a lever to which the rear end of said rod is jointed, a rotating cam for operating said last-named lever, a spring to press against said rod, and a roller-stud or projection on the said work-clamp to engage said rod and move it into position to engage the pin on said first-named lever, substantially as set forth.



2. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism, the work-clamp having the pin or roller o', and the feeding mechanism for said clamp, of the sliding plate I, the guiding-button J, carried thereby, the lever N, jointed to said sliding plate and having the pin n, the operating-rod M, having the slot m with wide and narrow portions, as shown, the spring m', the stop-pin m^3, the lever L, the cam d', the shaft D, the driving-shaft C, and the gears d and c, substantially as set forth.

449,075. **BUTTON-HOLE SEWING-MACHINE.** JOHN Q. A. HOUGHTON, Washington, D. C., assignor to The Singer Manufacturing Company of New Jersey. Original application filed Feb. 3, 1887, Serial No. 226,336. Divided and this application filed Sept. 13, 1890. Serial No. 364,871. (No model.)



Claim.—1. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp, and its feeding mechanism, of a pivoted work-plate carrying a clamp-guiding button and a latch or catch, a slide guided in ears on said work-plate and provided with a notch, an extension or projection on said clamp to strike said catch or latch and cause it to engage said notch, and means for reciprocating said slide, substantially as set forth.

2. In a button-hole sewing-machine, the combination, with a stitch-forming mechanism, a work-clamp J, having a projection or extension j, and feeding mechanism for said work-clamp, of the pivoted work-plate A, having the catch or latch o, the guiding-button i and the ears n, the slide N, guided in said ears and having the notch n', the vertical shaft D, having the cam d, and the lever L, operated by said cam and connected with said slide, substantially as set forth.

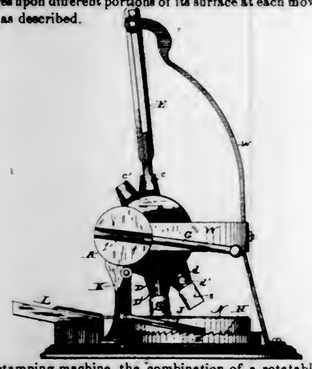
449,076. **HAND-STAMP.** HENRY HOWARD, Brookeville, Md., assignor of one-half to Thomson H. Alexander, Washington, D. C. Filed July 17, 1890. Serial No. 359,051. (No model.)

Claim.—1. In a stamping-machine, a revoluble shaft, a stamp-pad, and an ink-pad all lying in substantially parallel planes, in combination with an eccentrically-mounted stamp so arranged that the revolution of the shaft causes the stamp to impinge both upon the inking-pad and the stamp-pad, substantially as specified.

2. In a stamping-machine, the combination of a revoluble shaft, a stamp eccentrically mounted thereon, and a guide-rod so arranged that when the shaft is revolved the stamp will impinge upon the inking-pad and stamping-pad, substantially as specified.

3. In a stamping-machine, a revoluble shaft carrying two or more eccentrically-mounted socket-pieces, to which different stamps may be attached, substantially as described.

4. In a stamping-machine, the combination of a revoluble shaft, a stamp eccentrically mounted thereon at right angles thereto, and an inking-pad mechanism whereby when the shaft is revolved to operate the stamp the inking-pad is simultaneously revolved, so that the stamp impinges upon different portions of its surface at each movement substantially as described.



5. In a stamping-machine, the combination of a rotatable shaft and an ink-pad with a stamp eccentrically mounted on said shaft and standing at right angles thereto and operated by the rotation thereof so as to alternately contact with the pad and make an impression, and a guide for said stamp, substantially as described.

6. In a stamping-machine, the combination of a horizontal rotatable shaft and horizontal ink-pad, with a stamp-holder eccentrically mounted on said shaft and moving in a vertical plane, and a guide therefor, substantially as set forth.

7. In a stamping-machine, the combination of a revoluble shaft, ink-pad, and stamp-pad lying in substantially parallel planes with a stamp-holder eccentrically mounted on said shaft and operated thereby so as to alternately contact the stamp with the stamp-pad and ink-pad, said stamp moving and lying in a plane at right angles to those of the shaft and pads, and a guide for said holder, substantially as and for the purpose described.

8. The combination of the revoluble shaft and a disk eccentrically mounted thereon with a stamp-holder consisting of an annulus and socket-pieces attached thereto, suspended on said disk, and operated thereby, substantially as specified.

9. The combination of the revoluble shaft, the stamp-holder consisting of an annulus and diametrically-opposite socket-pieces attached thereto, and the eccentric for operating said holder, with the movable rod for guiding said holder, substantially as set forth.

10. The combination of the revoluble shaft, a disk eccentrically mounted thereon, and a stamp-holder comprising an annulus, suspended on said disk, and socket-pieces attached to said annulus, with a guide-rod adapted to engage one of the socket-pieces, substantially as and for the purpose described.

11. The combination of a stamp-holder having diametrically-opposite socket-pieces, substantially as set forth, with a guide-rod therefor engaging an upper socket-piece, and the supporting and operating devices for said holder, as and for the purpose set forth.

12. The combination of the stamp-holder having diametrically-opposite socket-pieces adapted to be respectively engaged by a guide-rod and to retain the stamp-blocks with the shaft and eccentric-disk for sustaining and swinging said holder and the guide-rod, all substantially as specified.

13. The combination of the spring-controlled shaft, the stamp-holder having diametrically-opposite socket-pieces, and the reciprocating and oscillating guide-rod therefor, with the devices for operating said shaft, substantially as set forth.

14. The combination of the shaft, the disk eccentrically mounted thereon, and the stamp-holder connected to and operated by said disk, consisting of an annulus having radial socket-pieces attached thereto, for the purpose and substantially as described.

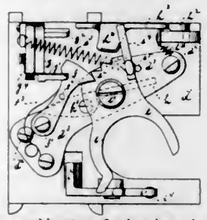
15. The combination of the shaft, the disk eccentrically attached thereto, and the stamp-holder comprising an annulus, and socket-pieces attached thereto, suspended from and operated by said disk, with the ink-pad and impression-table, substantially as specified.

16. The combination of the shaft, the disk thereon, and the annulus having diametrically-opposite socket-pieces with the movable guide-rod, the ink-pad, and impression-table, all substantially as specified.

17. The combination of the spring-controlled shaft, a disk eccentrically mounted thereon, an annulus surrounding said disk and having socket-pieces attached to its periphery to receive the stamp-blocks, with the ink-pad dish, the devices for revolving the same from the shaft, and the devices for impartiug rotatory movements to the shaft substantially as described.

18. The combination of the spring-controlled shaft, a disk eccentrically mounted thereon, a stamp-holder consisting of an annulus mounted on said disk and having radially-projecting diametrically-opposite socket-pieces attached to its periphery, the guide-rod adapted to engage an upper socket-piece, an ink-pad, and an impression-table, all substantially as and for the purpose specified.

449,077. LOCK. MAURICE JACOBS, New York, N. Y., assignor to Esther Jacobs, same place. Filed July 2, 1890. Serial No. 357,481. (No model.)



Claim.—1. The combination of a bracket adapted to straddle a faucet, with an arm projecting upwardly therefrom and a lock adapted to slide on the arm, substantially as specified.

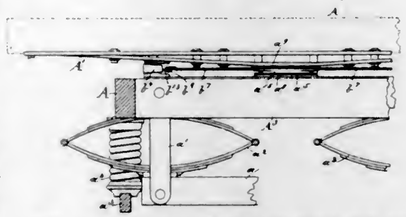
2. The combination of sectional bracket *b* with the screws *b'*, adapted to draw it together, and with slotted arm b^2, having slide b^4, and with a lock adapted to slide on the arm, substantially as specified.

3. The combination of a bracket with a lock consisting of a pivoted fork *e*, a pawl *f*, and a locking-plate h^3, the pawl being adapted to lock the fork and the locking-plate being adapted to lock the key, substantially as specified.

4. The combination of bracket-arm b^2 with a lock having socket *c*, pivoted fork *e*, and a lever *i*, one arm *i'* of which is in the way of the fork and the other arm i^3 of which is adapted to enter the socket, substantially as specified.

5. The combination of a bracket with a lock consisting of a pivoted fork *e*, a stop *g*, a plate *h*, a pawl *f*, engaged by such plate, and a locking-plate h^3, engaged by the fork, substantially as specified.

449,078. ANTI-FRICTION BEARING. LUTHER K. JEWETT, Boston, Mass., assignor to the Jewett Supply Company, Portland, Me. Filed Aug. 11, 1890. Serial No. 361,648. (No model.)



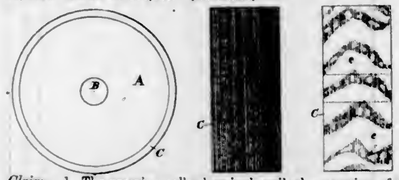
Claim.—1. The combination, with an anti-friction center bearing composed of two flat or plane bearing-surfaces and intermediate anti-friction devices provided with arbors, and a spacing-frame movable with the said arbors, of an anti-friction side bearing consisting of an upper and lower bearing-surface and an interposed anti-friction device provided with arbors, a frame movable with said arbors, and an intermediate connection between the said movable frames, substantially as described.

2. In an anti-friction bearing, the combination, with two plane or flat bearing-surfaces, of an interposed anti-friction device provided with arbors, a frame movable with said arbors, and means provided with ears resting upon said arbors to lock the anti-friction device to the said frame, substantially as described.

3. In an anti-friction bearing, the combination, with two plane or flat bearing-surfaces provided with a hardened face *c*, of an interposed anti-friction device provided with arbors, and a frame movable with said anti-friction device, substantially as described.

4. In an anti-friction bearing, the combination, with two plane or flat bearing-surfaces provided with a hardened face *c*, of an interposed anti-friction device provided with arbors, and a frame movable with said anti-friction device and provided with ears bent about the arbors to lock the anti-friction device to the frame, substantially as described.

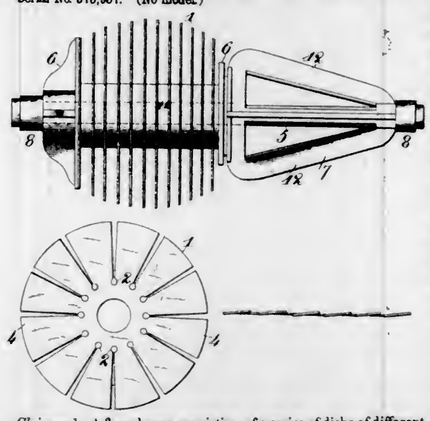
449,079. GRAINING-ROLLER. WILLIS H. LANDON, Baltimore, Md., assignor of one-half to Benjamin F. Hunt, same place. Filed June 21, 1890. Serial No. 356,220. (No model.)



Claim.—1. The graining-roller herein described, consisting of the metal core A, provided with a steel band or rim cover C, having a design for an imitation wood grain on its surface, said design being a lined surface *d* in relief, said surface being substantially of the same height and having its lines extending in substantially the same direction, as set forth.

2. The method of preparing a graining-roller, consisting in first placing the roller in a lathe and turning it and cutting a continuous spiral line over the entire surface, and then with a suitable cutting or routing tool removing portions of the said lined surface, leaving the design formed by the spiral line in relief, as set forth.

449,080. FLUE-CLEANER. JAMES T. MACKAY, St. Louis, Mo., assignor of one-half to John A. Scott, same place. Filed Dec. 27, 1890. Serial No. 375,957. (No model.)



Claim.—1. A flue-cleaner consisting of a series of disks of different dimensions, the larger of which are situated in the center of said cleaner and adapted to be removed therefrom, thereby reducing the diametrical dimensions of said cleaner, substantially as set forth.

2. A flue-cleaner consisting of a series of circular plates of different diameters mounted upon a spindle, each of the said plates being radially slotted, forming a series of sectors, each of the said sectors being bent at an angle to the body of the plate and to the length of the spindle, as described.

3. A flue-cleaner consisting of a spindle, a series of circular plates of different diameters mounted thereon, each of the said plates being radially slotted, forming a series of sectors, each of the said sectors being bent at an angle to the body of the plate, and the length of the spindle and skeleton guide having outwardly and rearwardly inclined ribs mounted upon the said spindle at one end of the said series of plates, as described.

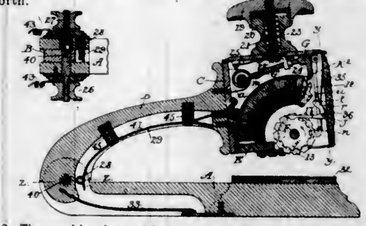
4. A flue-cleaner having a series of metallic disks provided with slots terminating in circular perforations, substantially as set forth.

5. A flue-cleaner having a series of metallic disks provided with V-shaped slots terminating in circular perforations, substantially as set forth.

6. A flue-cleaner having a series of metallic disks of different diameters, the larger of which are situated in the center of the said cleaner and adapted to be removed therefrom, thereby reducing the diameter of said cleaner, substantially as set forth.

449,081. ELECTRIC TIME-STAMP. WARREN B. MARTINDALE, Kenosha, Wis., and ERNST R. MALMBORG, St. Louis, Mo., assignors, by direct and mesne assignments, to the Electric Date and Time Stamp Company, of Illinois. Filed Aug. 23, 1889. Serial No. 321,685. (No model.)

Claim.—1. The combination, with the case of a time-stamp and the indicating mechanism therein, of an electro-magnet having a segmental form secured at one end to the lower plate of the case, an arm pivoted to the case above the magnet to extend in a direction parallel with its length above its upper or convex side to and beyond its upper end, and an armature carried by said arm to oscillate in a direction at right angles to the core of the magnet and actuate the indicating mechanism, substantially in the manner and for the purpose herein set forth.



2. The combination, with the case of a time-stamp and with a series of time-wheels revolving upon a common axis in said case, of an electro-magnet fixed in the case and bent in a segmental form, having the axis of said wheels as its center, an armature oscillating in a direction at a right angle with the core of the magnet, an arm carrying said armature and extending from the front of the magnet above it in a direction parallel with the length thereof to a pivotal point at the rear of the head, and pawls coupled to said armature and engaging said time-wheels to actuate them by the movement of the armature, substantially in the manner and for the purpose herein set forth.

3. The combination, in an electrical time-stamp, of the base-plate, the hinged arm, the case carried by said arm, the electro-magnet inclosed in said case, the train of registering-wheels actuated by the movements of the armature of the magnet, and the binding-posts electrically connected mediately with the coil of the magnet, the one through the arm of the stamp and the other through a conductor insulated from the stamp and its base, substantially in the manner and for the purpose herein set forth.

4. The combination, in an electrical time-stamp, of its electro-magnet, the armature moved thereby, the train of registering-wheels actuated by the movements of said armature, the spring-supported stamping-arm carrying said wheels and electro-mechanical devices, a yielding spring-seated knob mounted in the end of the stamping-arm, and a spring-actuated catch normally retracted and held out of engagement with the armature of the magnet by said knob, substantially in the manner and for the purpose herein set forth.

5. The combination, with an electro-magnet, an armature actuated thereby, and the time indicating and registering mechanism operated by the movement of said armature, substantially as herein described, of a second armature in position to be actuated by the magnet and when normally at rest to lock and prevent a movement of the first armature, substantially in the manner and for the purpose herein set forth.

449,082. CASH-CARRIER. GUSTAVE A. MILBRADT, St. Paul, Minn., assignor of one-half to Charles Treadwell, same place. Filed May 12, 1890. Serial No. 351,570. (No model.)

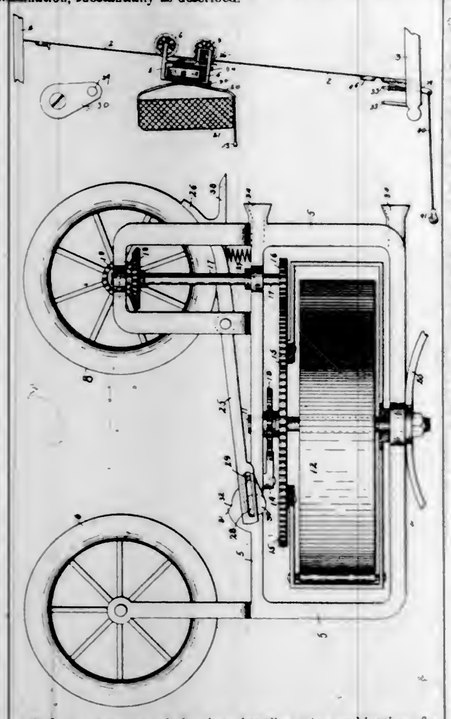
Claim.—1. In a cash-carrier adapted to run upon an inclined wire, the combination of a drive wheel, automatic mechanism for actuating the same, an idler carrying-wheel, and mechanism for automatically throwing the idler-wheel off and the drive-wheel onto the wire, substantially as and for the purposes set forth.

2. In a cash-carrier adapted to run upon a fixed inclined wire, the combination of a drive-wheel having a rubber tire thereon for propelling the carrier up the incline, an idler-wheel adapted to transport it by force of gravity down the wire, automatic driving mechanism actuating the drive-wheel, and mechanism for automatically throwing the idler-wheel off and the drive-wheel onto the wire as the carrier descends, substantially as and for the purposes set forth.

3. In a cash-carrier apparatus, the combination, with its driving-wheel, of means for automatically actuating said drive-wheel to propel the carrier in one direction, a loose wheel adapted to support and transport said carrier in the opposite direction by force of gravity, and means for automatically shifting the loose wheel off and the drive-wheel onto the wire, as and for the purposes set forth.

4. In a cash-carrier, the combination, with its drive-wheel adapted to transport the carrier along the track or wire, of a mainspring, a train of gears connecting said spring with said drive-wheel, a vertical winding-shaft for said spring, and a receptacle or basket connected to and supported by said shaft in such manner that by the rotating of the basket the shaft is turned to wind the spring, substantially as described

5. In an apparatus of the class described, the combination of a fixed inclined track-wire, a drive-wheel to run upon the same and transport the carrier upon the incline, spring-actuated mechanism for turning the drive-wheel, a brake for said drive-wheel, a spring normally holding said brake upon said wheel, locking mechanism for holding the brake off the wheel, and means for automatically tripping said locking mechanism to apply the brake when the carrier has reached its destination, substantially as described.



6. In an apparatus of the class described, the combination of a drive-wheel for carrying it up an inclined track and a loose wheel for carrying it down the track, spring-actuated mechanism for turning said drive-wheel, a spring-controlled brake normally bearing upon the drive-wheel, locking mechanism to hold the brake off the wheel, means for automatically tripping said locking mechanism when the carrier has reached its destination, so as to stop the same and to conserve the energy of the driving-spring, and means for automatically throwing the wheel off and the drive-wheel onto the track when the carrier has nearly reached its other destination, so that the momentum of the carrier is gradually checked by the sliding of the drive-wheel along the wire as held by its brake, substantially as and for the purposes set forth.

7. In a carrier of the class described, the combination, with its frame, of the shaft 9, journaled therein, the drive-wheel 8, rigidly secured to said shaft, and the wheel 7, journaled on said shaft, an automatic brake attachment to said drive-wheel, the mainspring 12, geared to said drive-wheel, a winding-shaft 11, connected to said spring, and the basket-supporting bail 20, rigidly secured to said shaft 11 and adapted to be rotated to wind said shaft, substantially as and for the purposes set forth.

8. In a carrier of the class described, having a drive-wheel and means for automatically actuating the same, the combination therewith of a brake adapted to bear upon said drive-wheel, a spring acting upon said brake to press it against the drive-wheel, and means for automatically locking said brake when thrown off from said wheel, substantially as described.

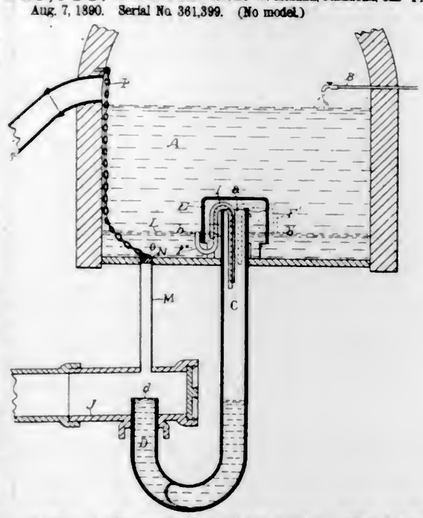
9. In an apparatus of the class described, the combination of a drive-wheel running upon the supporting-track, a mainspring and connecting train of gears for actuating said drive-wheel, a vertical winding-shaft for said spring serving also as a support for the carrier-receptacle, so that by the rotating of the receptacle the spring is wound, a brake for said drive-wheel, and an automatic means for applying the same to stop the movement of the carrier and conserve the energy of the mainspring, substantially as described.

10. In a carrier of the class described, adapted to be propelled by means of a driving-wheel bearing upon the wire and actuated by automatic mechanism, the combination, with said drive-wheel, of a spring-controlled brake, self-locking mechanism engaging said brake when thrown off, means for automatically tripping said locking mechanism to apply said brake and stop the driving mechanism, and means for throwing off said brake and releasing said driving mechanism, substantially as described.

11. In apparatus of the class described, the combination, with a stationary inclined track-wire and its carrier, of the carrier drive-wheel supported on said wire, a similar loose wheel also adapted to support the carrier upon the wire, automatic actuating mechanism for the drive-wheel, a brake, a spring normally holding said brake in engagement with said drive-wheel, automatic locking mechanism for holding said brake out of engagement with said wheel, means for automatically tripping said locking mechanism at the carrier's destination at the upper end of said wire, means for automatically shifting the loose carrier-wheel from the wire and the drive-wheel onto the wire at the lower carrier-station, and means for throwing off the brake, substantially as and for the purposes set forth.

12. The combination of the inclined wire 2, the carrier drive-wheel 8, adapted to run upon said wire, the spring 12 and its connecting train of gear for actuating said drive-wheel, the ratchet-controlled shaft 11 for winding said spring, the bail 20 for supporting the carrier-basket and turning the shaft 11, the brake-lever 25, having the spring 27 and automatic locking mechanism, the loose wheel 7, adapted to run upon said wire and support the carrier thereon, the brake-releasing mechanism secured to the upper end of said wire, the clamp 45 at the lower end of said wire, the rack-bar 37, adapted to engage and lock said brake-lever, the prongs 33, adapted to engage the frame of the carrier, and the pivoted lever 39, adapted to throw said brake-lever out of engagement with said rack-bar, substantially as and for the purposes set forth.

449,083. **FLUSH-TANK.** SIDNEY W. MILLER, Pasadena, Cal. Filed Aug. 7, 1890. Serial No. 361,399. (No model.)



Claim.—1. The combination of a reservoir, a siphon having a trapped heavily-sealed discharge-pipe, and means for suddenly removing from the seal a quantity of water for the purpose of starting the siphon into action.

2. The combination of a reservoir, a siphon having a trapped heavily-sealed discharge-pipe, and means for suddenly removing from the seal a sufficient quantity of water to so shorten the column of water therein that it will cease to counterbalance the column of water in the reservoir limited between the plane at which the air within the siphon becomes confined by the rising water and the level of the water in the reservoir at the time when said removal of the water takes place.

3. The combination of a reservoir and a siphon comprising a trapped heavily-sealed discharge-pipe provided with an ascending intaking-limb having between the receiving-mouth of the discharge-limb and the water-level of the reservoir at which the air within said intaking-limb and discharge-limb becomes confined a capacity greater than the capacity of that portion of the efficient seal of the trap adjacent to the intaking-mouth of the discharge-limb and limited between the upper level of the water within the trap and a vertical plane passing through the lowest point of said trap.

4. The combination of a reservoir and a siphon comprising a trapped heavily-sealed discharge-pipe provided with an ascending intaking-limb having between the receiving-mouth of the discharge-limb and the water-level of the reservoir at which the air within said intaking-limb and discharge-limb becomes confined a capacity greater than the capacity of that portion of the efficient seal of the trap adjacent to the intaking mouth of the discharge-limb and limited between the upper level of the water within the trap and a vertical plane passing through the lowest point of said trap, the discharge end of the discharge-limb of the trap being so constructed as to allow ample overflow for the immediate and efficient escape of that water from the trap which is forced up and raised above the mouth or overflow of said discharge end by the ascending air escaping from within the siphon.

5. The combination of a reservoir, a siphon comprising a trapped heavily-sealed discharge-pipe provided with an ascending intaking-limb having between the receiving-mouth of the discharge-limb and the water-level of the reservoir at which the air within said intaking-limb and discharge-limb becomes confined a capacity greater than the capacity of that portion of the efficient seal of the trap adjacent to the intaking-mouth of the discharge-limb and limited between the upper level of the water within the trap and a vertical plane passing through the lowest point of said trap, and the T branch or similar vessel with the discharge end of the discharge-pipe projecting freely above the floor thereof

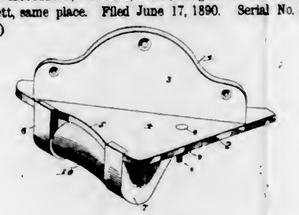
6. The combination of the reservoir, the siphon comprising the trapped heavily-sealed discharge-pipe provided with an ascending intaking-limb having between the receiving-mouth of the discharge-limb and the water-level of the reservoir at which the air within said intaking-limb and discharge-limb becomes confined a capacity greater than the capacity of that portion of the efficient seal of the trap adjacent to the intaking-limb and limited between the upper level of the water within the trap and a vertical plane passing through the lowest point of said trap and the siphon-breaking device.

7. The combination of the reservoir, the siphon comprising the trapped heavily-sealed discharge-pipe provided with an ascending intaking-limb having between the receiving-mouth of the discharge-limb and the water-level of the reservoir at which the air within said intaking-limb and discharge-limb becomes confined a capacity greater than the capacity of that portion of the efficient seal of the trap adjacent to the intaking-limb and limited between the upper level of the water within the trap and a vertical plane passing through the lowest point of said trap, the siphonage-breaking S-pipe arranged with one end opening into the reservoir slightly above the mouth of the intaking-limb and its other end opening into the discharge-pipe below the lowest bend of the S.

8. The combination of the reservoir, the siphon comprising the trapped heavily-sealed discharge-pipe provided with an ascending intaking-limb having between the receiving-mouth of the discharge-limb and the water-level of the reservoir at which the air within said intaking-limb and discharge-limb becomes confined a capacity greater than the capacity of that portion of the efficient seal of the trap adjacent to the intaking-limb and limited between the upper level of the water within the trap and a vertical plane passing through the lowest point of said trap, and the siphonage-breaking S-pipe arranged with one end opening into the reservoir slightly above the mouth of the intaking-limb and its other end opening into the discharge-pipe below the lowest bend of the S, and the auxiliary siphon having one end opening from the intaking-limb below the level of the sealing-mouth of the S, as set forth.

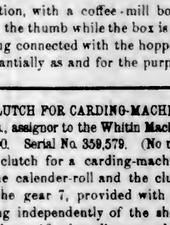
9. The flush-tank comprising the T branch of the sewer-pipe closed at one end and sloping therefrom, the trapped discharge-pipe having its discharge end extending upward into and terminating above the floor of such T branch, the drain and trap supply pipe leading from the bottom of the tank proper through the T branch and opening directly above the mouth of the discharge-pipe, and plug and chain.

449,084. **COMBINED STEP AND FENDER FOR VEHICLES.** ARCHIBALD MCCULLOCH, Pittsfield, Mass., assignor of one-half to Alexander Vinett, same place. Filed June 17, 1890. Serial No. 355,747. (No model.)



Claim.—A guard and step attachment for vehicles, the same consisting of a bracket formed of two right-angularly disposed pieces, one of which is triangular in shape and extends forward, forming a step, said step being provided on one side with a concavity, and a roller situated immediately beneath said concavity and journaled in lugs on either side thereof, one of the lugs being detachably connected to step and roller, substantially as described.

449,085. **LINE-TIGHTENER.** CHARLES H. PETTAY, Akron, Ohio, assignor to William W. Alexander, same place. Filed Mar. 22, 1890. Serial No. 344,999. (No model.)



Claim.—1. A line-tightener for light flexible lines, consisting of a handle having a reduced portion and a head in alignment, a hook projecting from the reduced portion, and a rod passing transversely through said head and bent at each end substantially parallel with the axis of the handle, substantially as shown and described.

2. The combination, with the handle A, having the reduced portion and head C, of the hook D and bent rod B, all constructed and arranged, as shown, and for the purpose specified.

449,086. **COFFEE-MILL.** AVERY E. PHILLIS, New Brighton, Pa., assignor to the Logan & Strobridge Iron Company, same place. Filed July 14, 1890. Serial No. 358,705. (No model.)



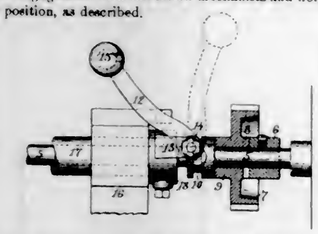
Claim.—1. The combination, with a coffee-mill box of rectangular horizontal section, of a thumb-piece set on the top of the box substantially opposite to one of the corners thereof, substantially as and for the purposes described.

2. The combination, with a coffee-mill box, of a thumb-piece adapted to be held by the thumb while the box is grasped by the hand, said thumb-piece being connected with the hopper-flange by a projection and recess, substantially as and for the purposes described.

449,087. **CLUTCH FOR CARDING-MACHINES.** JOHN E. PRENT, Whitinsville, Mass., assignor to the Whitin Machine Works, same place. Filed July 23, 1890. Serial No. 359,579. (No model.)

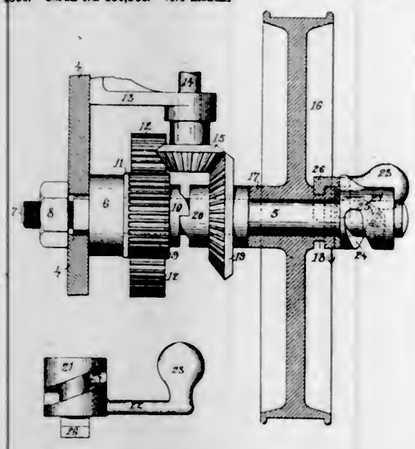
Claim.—1. In a clutch for a carding-machine, the combination, with the shaft of the calender-roll and the clutch-sleeve 6, rigidly secured thereto, of the gear 7, provided with the clutch-tooth 8, the sleeve 9, revolving independently of the shaft 5 and having the groove 10, and the lever 12, pivotally secured to the arm 13, provided with the pin 11 and weight 15, constructed to slide the gear into

and out of engagement with the clutch mechanism and hold the same in either position, as described.



2. The combination, with the support 16, the sleeve-bearing 17, the shaft 5, and the clutch-sleeve 6, rigidly secured to said shaft, of the gear 7, having the clutch-tooth 8, the sleeve 9, having the groove 10, independently rotatable on the shaft 5, the collar 18, provided with the arm 13 and adapted to be secured to the sleeve, and the weighted lever 12, pivoted on the arm 13 and provided with the pin 11, constructed to connect or disconnect the calender-roll of a carding-machine with or from the driving mechanism, as described.

449,088. CARDING-ENGINE. JOHN R. PREST, Whitinsville, Mass., assignor to the Whitin Machine Works, same place. Filed July 23, 1890. Serial No. 359,580. (No model.)



Claim.—1. In a device for stopping and starting the feed-rolls and doffer mechanism of a carding-engine, the combination, with the band-wheel 16, revolving on the shaft 5, the beveled gear 19, and clutch-tooth 20, of shaft 14, the beveled pinion 15, gears 9 and 12, clutch-tooth 10, and a shipper device constructed to move the band-wheel along its shaft, as described.

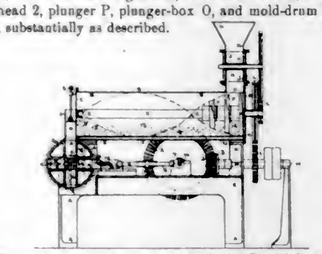
2. The combination, with the spindle 5, the gear 9, provided with the clutch-tooth 10, and the shaft 14, provided with the beveled pinion 15, of the band-wheel 16, the beveled gear 19, the clutch-tooth 20, and the shipper consisting of the tube 21, provided with the way 24, the spline 26, and weighted arm 22, and connected with the spindle by the pin 25, as described.

3. The shipper device herein shown and described, the same consisting of the tube 21, provided with the spiral way 24, the arm 22 and handle 23, in combination with the spindle or shaft 5 and the pin 25, constructed to operate as and for the purpose described.

449,089. MACHINE FOR THE MANUFACTURE OF BRICKS AND BRIQUETS. NINIAN PROCTOR, CHARLES E. FRASER, and HAROLD M. CARTER, Leeds, and ARTHUR MIDDLETON, Ben Rhydding, England. Filed Sept. 16, 1889. Serial No. 324,097. (No model.) Patented in England Jan. 9, 1889, No. 490.

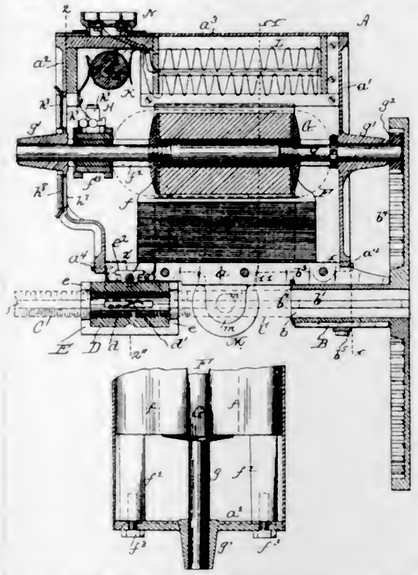
Claim.—1. In a brick and briquet machine, the combination, with a drum provided with a plurality of chambers, of a cylinder, and steam-chest provided with perforations, and driving-shaft M, whereby motion is imparted through suitable gearing to both the cylinder and drum at the same time, substantially as set forth.

2. In a brick and briquet machine, the combination of a crank or disk V, hooked connecting-rod X, bell-crank lever Z, vertical rods 1, cross-head 2, plunger P, plunger-box O, and mold-drum S with its molds R, substantially as described.



3. The combination of supports A, cylinder B, with its end covers C and D, shaft E, feeders or mixers F, hopper G, with its revolving chambered drum J, gearing L, driving-shaft M, plunger-box O, plunger P, revolving drum S, with its molds R, and trunnions T, bearings U, disk or crank V, cross-shaft W, hooked connecting-rod X, disk S', pins or studs Y, bell-crank lever Z, vertical rods 1, cross-head 2, gearing 3, plates 4, rod or rods 5, plunger 6, crank 7, connecting-rod 8, slide-block 9, spring 10, steam-chest 11, and openings or perforations 12, forming the brick and briquet machine, substantially as described.

449,090. ELECTRIC ROCK-DRILL. WILLIAM M. SCHLESINGER, Philadelphia, Pa., assignor to Charles F. Van Horn, same place. Filed Nov. 17, 1888. Serial No. 291,140. (No model.)



Claim.—1. The combination of a rotating and longitudinally-feeding drill-rod, a support therefor, an electric motor having a rotating armature-shaft on said support, gearing between said armature-shaft and drill-rod, feeding mechanism for the drill-rod, and devices for disengaging said feeding mechanism from the drill-rod to admit of a quick return of the drill-rod independently of said feeding mechanism, substantially as set forth.

2. The combination of a rotating and longitudinally-feeding drill-rod, a support therefor, an electric motor having a rotating armature-shaft on said support, gearing between said armature-shaft and drill-rod, an electric switch, resistance-box, and circuit-connections for the electric motor, substantially as set forth.

3. The combination, with a rotating and longitudinally-feeding drill-rod, a support therefor, an electric motor having a rotating armature-shaft and the field-magnets of the motor forming a part of said support, gearing between said armature-shaft and the drill-rod, feeding mechanism for the drill-rod, devices for disengaging said feeding mechanism from the drill-rod to admit of a quick return of the drill-rod independently of said feeding mechanism, and a casing for said motor, substantially as set forth.

4. In combination with a support or column P, the casing A, an electric motor, electrical switch, resistance-box, and circuit-connections therefor, all supported on and located within said casing, a rotating drill-rod C, mounted on said casing and in gear with the motor, and feeding mechanism for the feed-rod, substantially as set forth.

5. In combination with a column or support P, a base-plate a, swiveled to said support and composed of sections, each section having an electro-magnet secured thereto, a casing on said bed-plate, an armature for said magnets, an armature-shaft suitably mounted in said casing, a drill-rod supported on the bed-plate, and gear connection between the drill-rod and the armature-shaft, substantially as set forth

6. The combination of the bed-plate a, ends a' a^3, secured thereto, cap a^3, connecting said ends and bed-plate and forming a closed casing A, electromotor F within said casing A, and a drill-rod C, supported on said bed-plate and having gear connections with said motor, substantially as set forth.

7. The combination of bed-plate a, ends a' a^3, metal cap a^3, openings h^7 in end a^3, doors or covers for said ends and forming a casing A, electric motor F within said casing A, a drill-rod C, and gear connection between said motor and rod, substantially as set forth.

8. In combination with a drill-rod support, a closed casing A, made in sections, one of which is removable from the other, an electric motor within said casing, an electric switch, one part of which is secured to the fixed casing-section and the other part to the removable casing-section, substantially as set forth.

9. In combination with drill-rod C, a support therefor, electric motor F in gear with said drill-rod, resistance-box L, switch K, circuit-connections for said motor, switch, and resistance-box, and a closed casing A for said motor, switch, and resistance-box, substantially as set forth.

10. In combination with the base-plate a, having the ends a' a^3, drill-rod C, metal cap a^3, having secured thereto a resistance-box, part of an electric switch, and a coupling-section for the ends of the line-wire, the other part of said switch being connected to one of the ends a' a^3, an electric motor within said cap and ends, and a drill-rod C in gear with said motor, substantially as set forth.

11. In combination with the sectional bed-plate a, having sectional sleeve B, drill-rod C in said sleeve, field-magnets f, secured to said bed-plate sections, ends a' a^3, secured to said plate, an armature mounted in said ends, drill-rod C, and gearing between the rod and armature shaft, substantially as set forth.

12. In combination with bed-plate a, drill-rod C, ends a' a^3, secured to said bed-plate, an electric motor the field-magnet poles of which have end horns or lugs f^3, connected to ends a' a^3, cap a^3, and gearing between said feed-rod and motor, substantially as set forth.

13. In combination with drill-rod C, an electric motor in gear with said rod, a switch-bar K', having ratchet-wheel l', a spring-pawl l^3, engaging with said ratchet-wheel, resistance-box L, circuit-connections, and a closed casing A, substantially as set forth.

14. The combination of a rotating and longitudinally-feeding drill-rod having exterior screw-threads, a sectional threaded nut on said drill-rod, and adjustable jaws for supporting said sectional nut for engaging the latter with the drill-rod, and for imposing an adjustable friction or clamping contact between the sectional nut and the jaws, substantially as set forth.

15. The combination of a rotating and longitudinally-feeding screw-threaded drill-rod, a sectional screw-nut on said rod, friction devices for said nut, which act to hold the sectional nut stationary to feed the drill-rod when there is no back-pressure on it, and which permit the nut to rotate to vary the feed of the drill-rod when subject to back-pressure, substantially as set forth.

16. The combination of a rotating and longitudinally-feeding drill-rod exteriorly threaded, a sectional nut on the drill-rod, adjustable jaws for supporting said nut, and spring-actuated devices between the nut-sections for spreading them apart out of engagement with the threads on the drill-rod when the adjustable jaws are moved apart, substantially as set forth.

17. In a rock-drill, the combination of a rotating and longitudinally-feeding drill-rod C, the sectional feeding-nut D, loose upon and engaging with said rod, and adjustable clamping devices for said nut to hold it in a fixed position and admit of said nut rotating with the rod C to vary its feed, substantially as set forth.

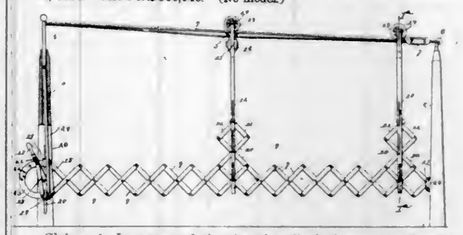
18. In a rock-drill, the combination, with a rotating and longitudinally-feeding rod C, the sectional nut D, loose on said rod C, clamping and supporting jaws E E, and adjusting devices for moving said jaws to impart a clamping-friction between the jaws and nut without creating friction or clamping contact between the nut and drill-rod, substantially as set forth.

19. In combination with bed-plate a, the rotating and longitudinally-sliding drill-rod C, sliding jaws E E, having adjusting mechanism, and sectional nut D, interposed between the jaws and rod, which nut is stationary for feeding the rod at a given feed and rotates with the rod to vary said feed, substantially as set forth.

20. In a rock-drill, the combination of the drill-rod C, the sectional nut D, springs interposed between the meeting edges of the nut-sections, movable jaws E E for supporting said nut-sections on rod C, and adjusting mechanism for said jaws, substantially as set forth.

21. In a rock-drill, the combination of a motor-shaft, a feeding drill-rod separate from and driven by the motor-shaft, a feeding device for the drill-rod, a clamp for said feeding device to hold the latter stationary to feed the drill when there is no back-pressure on it to permit the feeding device to rotate for varying the feed of the drill-rod when subject to back-pressure and to disengage the feeding device from the drill-rod to admit of its quick return independent of said feeding device, substantially as set forth.

449,091. GATE. GEORGE W. SMITH, Union City, Ind. Filed Oct. 3, 1890. Serial No. 366,940. (No model.)

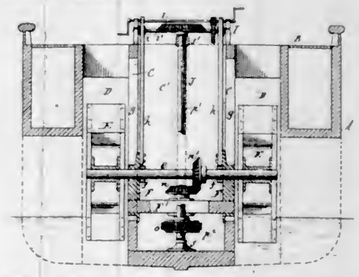


Claim.—1. In a gate of the class described, the combination of the main post, the vertically-sliding rod in the latter, the track connecting the upper end of said rod with the upper end of a supplemental post, the guides, the vertically-sliding sleeves mounted thereon, the lazy-tongs gate connected with said sleeves, an operating-lever, links connecting the latter with the ends of the lazy-tongs, hangers connected with the gate and having rollers traveling upon a track, and a rod connecting one of the sliding sleeves with the vertically-sliding rod, substantially as set forth.

2. The combination, with a lazy-tongs gate, of the track and the hangers, each composed of two rods connected at their upper ends by a pin, upon which a supporting-roller is journaled and spread apart below the supporting-track to receive a signal-lantern, substantially as set forth.

3. The combination of two lazy-tongs gates, arranged on opposite sides of a railroad-crossing, each being provided with hangers traveling upon tracks, the posts supporting the said tracks at one end, the rods arranged to slide vertically in the main posts and having the other ends of the tracks attached thereto, the operating-levers, the links connecting said operating-levers with vertically-sliding sleeves, the rods connecting said sleeves with the vertically-sliding rods supporting the ends of the tracks, and ropes or chains passing over suitable guide-pulleys and connecting said operating-levers to transmit motion between them, substantially as set forth.

449,092. CANAL-BOAT. CHARLES H. TURVER, Buffalo, assignor to Frank Browning, Tonawanda, N. Y. Filed May 23, 1890. Serial No. 352,847. (No model.)



Claim.—The combination, with a canal-boat provided at its stern with upright walls and a closed bottom forming a well, of a vertically-movable frame sliding in ways in said upright walls, and provided with elevating mechanism, a horizontal paddle-shaft supported on said frame and provided with a gear-wheel, an upright driving-shaft arranged in said well, a gear-wheel sliding upon said shaft and provided with projecting flanges, and an intermediate upright shaft also arranged in said well, provided with a gear-wheel meshing with the gear-wheel of the paddle-shaft, and a gear-wheel engaging with said movable wheel between the flanges thereof, substantially as set forth.

449,093. JOINT OR OTHER FASTENING FOR TRAMWAY-RAILS. REINHARD VIOL, Frankfort-on-the-Main, Germany, assignor, by mesne assignments, to the Lewis & Fowler Girder-Rail Company, Brooklyn, N. Y. Filed Jan. 26, 1891. Serial No. 379,122. (No model.) Patented in Germany July 8, 1886, No. 38,854.



Claim.—1. The combination of a rail or rails A and an underlying part B, having lateral flanges *a d*, a pair of hook-plates or clamps C, having wedging-flanges matching said lateral flanges and coacting therewith, and fastening-bolts D, passing through said clamps below the bottom of the rail or rails, substantially as hereinbefore specified.

2. The combination, with the adjoining ends of two rails having lateral flanges beveled on top, of an underlying part in the form of a fish-plate having lateral flanges beveled at bottom projecting beneath and outward to the same or substantially the same vertical planes as the rail-flanges, a pair of hook-plates or clamps extending across the joint and having internally-beveled wedging-flanges that engage with said lateral flanges at the respective sides of the rails, and bolts passing through said clamps below the bottom of the rails, substantially as hereinbefore specified.

3. The combination of a rail or rails of U shape in cross-section having lateral flanges or feet at bottom, an underlying part having opposing flanges or projections, which extend outward to the same or substantially the same vertical planes and having a projection which extends upward between the rail-webs, a pair of hook-plates or clamps having wedging-flanges which coact with said lateral flanges, and a bolt or bolts passing through said clamps and through the upward projection of said underlying part, substantially as shown and described.

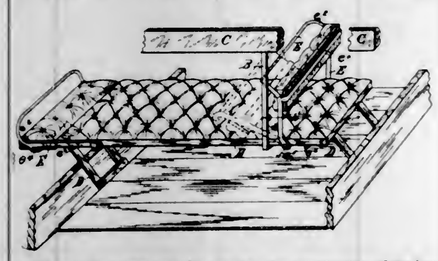
449,094. TUBULAR LANTERN. FREDERICK K. WRIGHT, Syracuse, N. Y. Filed Nov. 20, 1890. Serial No. 372,002. (No model.)



Claim.—1. The combination, with the oil-pot, of an air-chamber provided with a bottom flange resting on the oil-pot, and means whereby the bottom flange of the air-chamber is secured to the oil-pot, substantially as set forth.

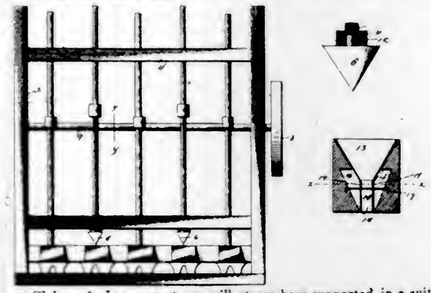
2. The combination, with the oil-pot, of an air-chamber provided with a bottom flange and a burner-socket, whereby the bottom flange is secured to the oil-pot, substantially as set forth.

449,095. JUMP-SEAT FOR VEHICLES. CHARLES COMSTOCK, Indianapolis, Ind. Filed Apr. 22, 1890. Serial No. 349,017. (No model.)



Claim.—In a jump-seat for vehicles, the combination of the bottom A, supported upon pivoted legs, the U-shaped frames E, pivoted one to each end of the bottom A, to form an extension therefor, and having the outer portion bent up to form arm-rests *e*, the cross-bars *e'*, secured to or formed integral with the U-frames E and extending in the direction of the width of the seat and projected down from the frame E to allow for the thickness of the cushion, as shown, and the cushions secured directly to said cross-bars, substantially as described.

449,096. ORE CRUSHER AND SIZER. WILLIAM L. IRELAND and PHILIP R. STANHOPE, Dumont, Colo. Filed July 14, 1890. Serial No. 358,764. (No model.)

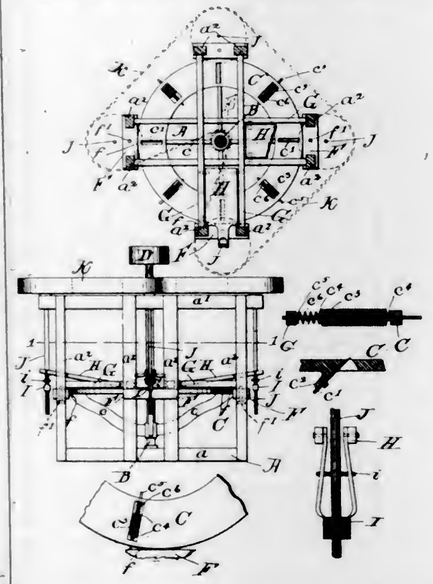


Claim.—1. In an ore stamp-mill, stamp-bars supported in a suitable frame and provided with heads 6, removably secured thereto, sockets or mortars within which heads 6 are adapted to fit, said sockets being provided with outlet-opening 14, wings or pockets 15, cut in the walls of said sockets 13, communicating with said opening 14, and means for alternately raising and releasing bars 5, substantially as described.

2. In an ore-crusher, the stamp-bars 5, provided with heads 6, suitably secured in a frame-work, sockets 13, provided with wings or pockets 15, outlet-opening 14, bar 16, extending across socket 13, wings 15, pieces 18, placed beneath outlet-opening 14, and suitable means for alternately raising and releasing bars 5, substantially as described.

3. In an ore crusher and sizer, the stamp-bars 5, provided with conical heads 6, suitably secured in a frame-work, sockets 13, fashioned to receive heads 6 and provided with one or more wings or pockets 15 communicating with outlet-opening 14, centrally located, and suitable means for alternately raising and releasing bars 5, substantially as described.

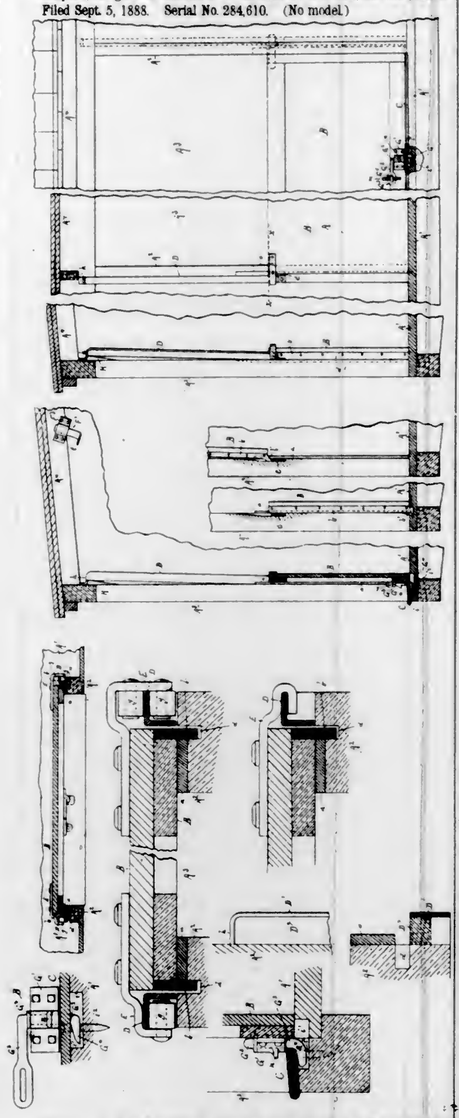
449,097. EXCELSIOR-MACHINE. VIRGIL L. WILLIAMS, Clarkston, Ga. Filed May 23, 1890. Serial No. 352,934. (No model.)



Claim.—In a slivering-machine, the combination of the shaft B, the frame carrying said shaft, the wheel C, mounted on said shaft, the knives and scorers carried by said wheel, the plate H, hinged between the bars G of the frame, the block F, the regulating-screw carried by said block, the screw J, the split nut I, suspended from the outer end of the plate H and surrounding the said screw J, and the ring i for

bringing the nut I in engagement with the screw J, substantially as and for the purpose specified.

449,098. GRAIN-DOOR FOR CARS. RICHARD W. THICKINS, Minneapolis, assignor of one-third to Edward R. Harroun, St. Paul, Minn. Filed Sept. 5, 1888. Serial No. 284,610. (No model.)



Claim.—1. In a freight-car, the car-body having a door-opening and vertical fixed guides on opposite sides of the door-opening within the car-body, said guides having their operative edges disposed in opposite directions from each other and away from said opening, in combination with a vertically-sliding door closing said opening and located between said guides, said door having on opposite sides runners co-operating with said guides, each runner extending back of one guide around its inner edge and having a portion extending between said guide and the adjacent side of the car-body, substantially as set forth.

2. In a freight-car, the car-body having a door-opening, the sill or threshold of said door-opening having a cavity *i'* and a catch or pin i^3 in said cavity, in combination with a vertically-sliding car-door adapted to said door-opening and a combined locking and tightening hook and wedge G^3 G^4, carried by said door near its bottom edge and co-operating with said catch or pin i^3, substantially as set forth.

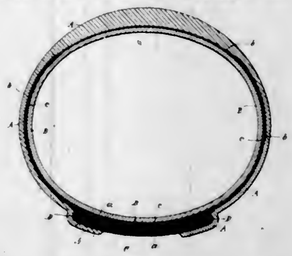
3. In a freight-car, the car-body having a door-opening and vertical grooves *d d* on each side of and parallel with the edges of said door-opening, vertical metallic facing-strips *a a*, extending on each side of the door-opening between the edges thereof and the said grooves, and fixed vertical guides on each side of said door-opening located farther away from the opening than said grooves, in combination with a vertically-sliding door adapted to said door-opening, its vertical side margins seating against said facing-strips, outwardly-extending vertical flange-plates *b b* on each side of said door fitting in said grooves *d d*, respectively, and runners E E on each side of said door engaging said guides, respectively, substantially as set forth.

4. In a freight-car, the car-body having a door-opening and vertical grooves *d d* on each side of and parallel with the edges of said door-opening, vertical metallic facing-strips *a a*, extending on each side of the door-opening between the edges thereof and the said grooves, sockets in the floor of the car, horizontal catches or stops *e* across said grooves *d d*, and fixed vertical guides on each side of said door-opening located farther away from the opening than said grooves, in combination with a vertically-sliding door adapted to said door-opening, its vertical side margins seating against said facing-strips, outwardly-extending vertical flange-plates *b b* on each side of said door fitting in said grooves *d d*, respectively, said flange-plates having inclined lower ends *b'*, which engage said floor-sockets and said catches or stops *e*, and runners E E on each side of said door engaging said guides, respectively, substantially as set forth.

5. In a freight-car, the car-body having a door-opening, vertical fixed guides on either side of said door-opening, and a vertically and inwardly swinging car-door having runners engaging said guides, in combination with an inclined catch F', sliding in inclined guides fixed within the car near its top, said catch having foot *f*, upon which is supported the lower edge of the door when the latter is swung inward, substantially as set forth.

REISSUES.

11,153. WHEEL-TIRE FOR CYCLES. JOHN B. DUNLOP, Belfast, Ireland. Filed Jan. 26, 1891. Serial No. 379,186. Original No. 435,995, dated Sept. 9, 1890. Patented in England Mar. 8, 1889, No. 4,116.



Claim.—1. A wheel-tire for cycles and other vehicles, consisting of a hollow expansible tube, in combination with a non-expansible strengthening and confining cover, of canvas or the like, and an outer or bearing surface of india-rubber, as set forth.

2. A wheel-tire for cycles and other vehicles, consisting of a hollow expansible tube, in combination with a non-expansible strengthening and confining cover, of canvas or the like, and an outer covering of india-rubber thickened at that portion which comes in contact with the ground, as set forth.

3. The combination with the wheel-tire of a cycle or other vehicle, of an inflated expansible tube, a strengthening and confining cover, of canvas or a like material, enveloping said tube, said cover being formed or provided with edges or flaps enveloping and secured to the inner face of the rim, as set forth.

4. The combination, with the rim of a cycle-wheel and an inflated expansible tubular tire, of a tubular non-expansible confining envelope surrounding the said tire, and formed or provided with flaps or free edges turned over and cemented to the inner face of the rim, as set forth.

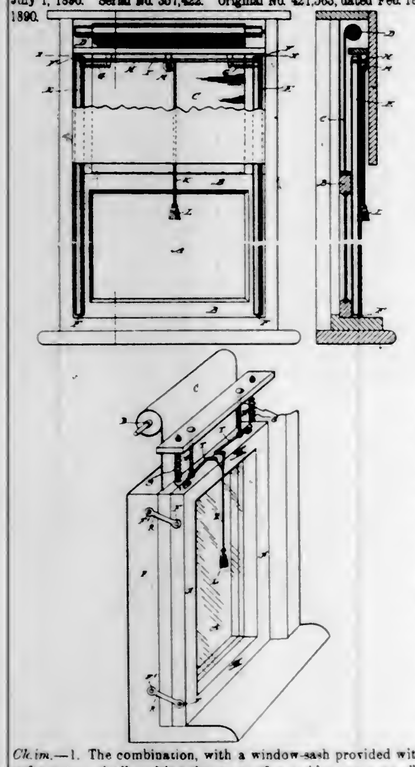
5. The combination, with the rim of a cycle-wheel and an inflated expansible tubular tire, of a tubular non-expansible confining envelope surrounding said tire and provided with flaps or free edges secured to the rim, and an outer protective covering of india-rubber, the edges of which are secured to the inner face of the rim, as set forth.

6. The combination, with the rim of a cycle-wheel, of an inflated expansible tubular tire, a strengthening-strip *c*, secured to the periph-

ery of the rim, a strip *b*, of canvas or like material, around the tire and rim, said strip being united to and forming with a strip *c* a non-expansible envelope for the tire, as set forth.

7. The combination, with the rim C, of an inner expansible tube B, and outer protective covering A, and strengthening folds or layers *b c*, of cloth, canvas, or linen, and protective strips D, of caoutchouc, interposed between the edges of the rim and the strengthening folds or layers *c*, as set forth.

11,154. WINDOW. OLIVER M. EDWARDS, Johnstown, N. Y. Filed July 1, 1890. Serial No. 357,422. Original No. 421,563, dated Feb. 18, 1890.



Claim.—1. The combination, with a window-sash provided with means for automatically raising the same, of movable stops normally bearing against the sash, substantially as shown and described.

2. The combination, with a window-sash provided with means for automatically raising the same, of stops pivoted at the sides thereof and arranged to be withdrawn from or pressed against the sash, substantially as shown and described.

3. The combination, with a window-sash provided with means for automatically raising the same when released, of a cord connected with a movable stop mechanism arranged to be withdrawn from or pressed against the edges of the sash, substantially as and for the uses and purposes shown and described.

4. The combination, with a window-sash provided with means for automatically raising the same, of stops eccentrically mounted at the sides thereof, substantially as shown and described.

5. The combination, substantially as set forth, of a sash, two movable stops arranged one at each of two edges of one side of the sash, a spring or springs, and means connecting the two stops together, whereby the movable stops are held in contact with the side of the sash by the spring or springs and are moved together by the connecting means.

6. The combination, substantially as set forth, of a sash, two movable stops arranged one at each of two edges of one side of the sash, a spring or springs pressing the stops against the side of the sash, and means for moving the stops together against the stress of the spring or springs, whereby the movable stops are held in contact with the side of the sash by the spring or springs and the sash is relieved from such contact.

7. The combination, substantially as set forth, of a sash, two pivoted movable stops arranged one of each at each of two edges of one side of the sash, two stationary stops arranged at corresponding edges of the opposite side of the sash, and a spring or springs whereby the sash is held in contact with both the movable and stationary stops.

8. The combination, substantially as set forth, of a sash, two movable stops arranged one at each of two edges of one side of the sash, two stationary stops arranged at corresponding edges of the opposite side of the sash, a spring or springs, and means connecting the movable stops together, whereby the sash is held in contact with both the movable and stationary stops and the movable stops are moved together to release the sash from such contact.

9. The combination, substantially as set forth, of a sash, two pivoted movable stops arranged one at each of two edges of one side of the sash, a spring or springs, and means connecting the stops together, whereby the movable stops are held in contact with the side of the sash by the spring or springs and are moved on their pivots by the connecting means.

10. The combination, substantially as set forth, of a sash, two pivoted movable stops arranged one at each of two edges of one side of the sash, a spring or springs, and means for moving the stops together against the stress of the spring or springs, whereby the movable stops are held in contact with the side of the sash by the spring or springs and the sash is released from such contact.

11. The combination, substantially as set forth, of a sash, two movable stops arranged one at each of two edges of one side of the sash and to move with the initial movement of such sash, a spring or springs arranged to press the stops against the side of the sash, and means for moving the stops together against the stress of the spring or springs, whereby the sash is held by the stops from moving in one direction and is released from the stops to permit it to move in the same direction.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

STANLEY *v.* SLATTERY.

Decided February 24, 1891.

1. INTERFERENCE.

Where A conceived the invention in issue in September, 1885; tested it in an experimental apparatus and became satisfied that he had made an invention of value and importance in the same month; set up a plant embodying the invention in March, 1886, which was operated continuously until June of the same year; extensively introduced the invention thereafter, and applied for a patent in August, 1888, and B conceived the same invention in June, 1886, reduced it to practice in December of the same year, and obtained a patent in July, 1888, *Held* that A was the first inventor.

2. PUBLIC USE—ANTICIPATION.

In determining whether A should receive a patent the record should be carefully examined by the Primary Examiner with reference to the question whether more than two years of public use preceded his application, and in view of certain prior printed publications the Examiner should inquire whether the claims of A are anticipated.

APPEAL from Examiners-in-Chief.

SYSTEM OF ELECTRICAL DISTRIBUTION.

Application of William Stanley, Jr., filed August 15, 1888, No. 282,808. Patent granted Marmaduke M. M. Slattery July 31, 1888, No. 386,936.

Messrs. Charles A. Terry and *Marcellus Bailey* for Stanley.

Mr. R. S. Taylor for Slattery.

MITCHELL, *Commissioner:*

The issues in controversy are as follows:

1. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters electrically connected with the main-line conductors in multiple arc and organized to transform the current in the main conductors into currents of less potential and greater quantity in the secondaries, each converter made with a primary coil containing such length of wire exposed to magneto-electric induction that when operated by the dynamo with which it is to be used with its secondary circuit open the electrical pressure and counter-pressure in its primary circuit shall be equal, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

2. In a system of electrical distribution, an alternating-current dynamo, and converters organized to transform the current in the main conductors into currents of less potential and greater quantity in the secondaries electrically connected with the main conductors in multiple arc, the dynamo and the converters of the system so adjusted to each other by mutual adaptation of their magnetic fields and the lengths of wire upon the armature of the dynamo and the primary coils of the converters, respectively, that when supplied with the full normal current of the dynamo, the secondary circuits of the converters being open, the electrical pressure and counter-pressure in their primary circuits shall be equal, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

3. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption electrically connected with the main-line conductors in multiple arc and having their primary circuits constantly closed, each adapted to the dynamo operating the system by making its primary coil of such length that when supplied with its full proportionate share of the entire normal current of the machine, its secondary circuit being open, the electrical pressure and counter-pressure in its primary circuit shall be equal, with translating devices in the secondary circuits of the converters to be cut out of the circuit when not in use without the introduction of any resistance in the place of them, substantially as and for the purposes set forth.

4. In a system of electrical distribution and in combination, an alternating-current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption electrically connected with the main line conductors in multiple arc and having their primary circuits constantly closed and their secondary circuits constantly open, except when and as closed through translating devices at work, each converter containing a soft iron core weighing substantially two pounds for each ampère of current normally produced in its secondary circuit, and adapted to the dynamo operating the system by making its primary coil of such length that when supplied with its full proportionate share of the entire normal current of the machine its secondary circuit being open, the electrical pressure and counter-pressure in its primary circuit shall be equal, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

5. In a system of electrical distribution and in combination, an alternating current dynamo, and converters organized to transform the current generated by the dynamo into currents of less potential and greater quantity at or near the points of consumption electrically connected with the main-line conductors in multiple arc and having their primary circuits constantly closed and their secondary circuits constantly open, except when and as closed through translating devices at work, each converter containing a soft iron core weighing two pounds for each ampère of current normally produced in its secondary circuit, and containing in its primary coil a length of wire exposed to effective magnetic induction substantially equal to the electrical or circuit length of wire exposed to like effective magnetic induction on the armature of the dynamo operating the system, with incandescent lamps or other translating devices in the secondary circuits, substantially as and for the purposes set forth.

Slattery is a patentee; his patent bearing date July 31, 1888. Stanley's application was filed August 15, 1888, thereafter. The burden of proof is therefore upon Stanley. In determining whether he has discharged that burden it is necessary in the first place to ascertain a proper construction of the several issues. There seems to be no dissent from the proposition that the following elements enumerated in each of the combinations are to be regarded as old, both severally and in combination: (1) An alternating-current dynamo; (2) converters electrically connected with the main-line conductors in multiple arc and organized to transform the current in the main conductors into currents of less potential and greater quantity in the secondaries; (3) incandescent lamps or other translating devices in the secondary circuits of the converters.

The limitation, qualification, or feature which seems to be relied upon to impart novelty to the combination is referred to in the first issue in the following language:

> Each converter made with a primary coil containing such length of wire exposed to magneto-electric induction that when operated by the dynamo with which it is to be used with its secondary circuit open the electrical pressure and counter-pressure in its primary circuit shall be equal.

Similar language of supposed limitation is to be found in each of the remaining issues, and in the fourth and fifth issues it is required that each converter shall contain—

> a soft-iron core weighing two pounds for each ampère of current normally produced in its secondary circuit.

The issues differ in other minor features, which may be disregarded for all purposes of this inquiry.

It is clear that the feature or limitation of having the counter electro-motive force or counter-pressure produced in the primary coil of the converter equal to the applied electro-motive force when the secondary circuit is open is essential to the issues, and it is equally clear that the primary coil of the converter must contain such length of wire exposed to magneto-electric induction as will bring about this equality of pressure and counter-pressure. I do not understand, however, that this equality of pressure and counter-pressure need be equal in an absolute sense. The specification of Slattery, referring to the equality of primary pressure and counter-pressure in the primary coil, says:

In this condition an ammeter will show no current whatever in the circuit of the primary when the secondary circuit is open.

Stanley's application, however, only requires approximate equality, and states that—

when so constructed an ammeter will practically show no current when the secondary circuit is open.

I therefore understand that the issues severally are satisfied by substantial equality of applied and counter electro-motive force when the secondary circuit is open.

The principal evidence relied upon by Stanley in discharging the burden of proof relates to a plant erected at Great Barrington, Mass., which is referred to in his preliminary statement in the following language:

In March, 1886, I erected an experimental plant at Great Barrington in which I had seven converters arranged in multiple arc and supplying over one hundred lamps, having a capacity of two hundred 16-candle-power lamps. This plant was first started on March 16, 1886, and continued to operate successfully until June 17, 1886. It embodied the issues of this interference.

This Great Barrington plant is claimed to have been made in accordance with the principle set forth in an old specification prepared by Stanley, dated November 26, 1885, and known in the case as Stanley's Exhibit No. 1. This proposed specification, which was never filed in the Patent Office, in its suggested claim distinctly calls for—

a counter E. M. F. opposing the E. M. F. applied to their primary circuit of sufficient value to practically obstruct the flow of current between the mains when their secondary circuits are open,

and it also exhibits a rough drawing corresponding with the drawing of the application, and, referring thereto, states that when the secondary circuit is open the current flowing through the primary circuit of the converter will be reduced from that due to the ohmic resistance by the amount of induced resistance developed within the converter, dependent, among other things, upon the number of turns or lengths of wire wrapping the converter-core. This paper makes it difficult to avoid the inference that Stanley contemplated making the counter electro-motive force practically equal to the applied electro-motive force when the secondary circuit should be open, and that he also perceived and recognized the relation to the accomplishment of that result of the number of turns or lengths of wire in the primary coil.

It should be noted, too, that the second paragraph of the claim of this old specification sets forth the fact that the core of the converter must be of sufficiently low magnetic resistance to allow of equal or proportionate magnetic absorption throughout its working limits, and that Stanley testifies that the invention described in this specification, marked Exhibit No. 1, was embodied in an apparatus constructed and tested at Pittsburg in September, 1885, before the work of constructing the Great Barrington plant was entered upon. He further testifies that he considered that the apparatus designed by him and used in the Pittsburg test was a complete embodiment of the invention described and claimed in his application in interference, and that he considered at the time he had made an invention of value and importance. The proofs show that the Great Barrington plant was set up in March, 1886, and that it consisted of an alternating-current dynamo and seven converters connected to the main in multiple arc; that from these converters lights were distributed to a dozen or more consumers; that this plant was operated until June 17, 1886, at which time, for some unexplained cause, the dynamo-machine operating the system "went to pieces." It is distinctly stated that the electrical pressure and counter-pressure in the primary circuit of the converter used at Great Barrington were approximately equal, and that the approximation was so close that the counter-pressure approached in value the pressure applied within one two-hundredth part of its value.

The precise method employed for the purpose of ascertaining how many turns in the primary coil were necessary to produce the requisite equality when the secondaries were open, does not seem to be given. But inasmuch as the issues cover combinations, the decisive question seems to be whether the apparatus as intelligently constructed by Stanley did or did not contain the qualification, limitation, or feature of having the primary coil contain such length of wire exposed to the magneto-electric induction that the opposed pressures were equal when the secondaries were open. This fact does not seem to be denied, excepting as it is disputed from a theoretical standpoint, to which attention will now be given.

It appears that of the seven converters used in the Great Barrington plant six varied in the length of active wire in their primaries from 480 to 625 feet, and in one converter the active wire consisted of 292 feet only. It is thereupon strenuously insisted that inasmuch as the several conductors were substantially of the same construction, apart from the length of the primary coil, the present invention, as it has been defined, could not have been in the mind of Stanley or embodied in his apparatus.

Professor Barker, having stated that he had read the deposition of Stanley and the witnesses examined in his behalf, says:

Although I have read the record referred to with considerable care, I have not been able to find therein any statement to the effect that Mr. Stanley ever adapted any of his converters to the dynamo with which they were to be used by the method disclosed in the issues to this interference and which is characteristic of Mr. Slattery's invention, to wit: by placing the converter or converters in the circuit of the said dynamo, the secondary being open, and by varying the length of the primary until the pressure and counter-pressure were reduced to a practical equality. It seems to me, therefore, that there is not disclosed in the record on behalf of Mr. Stanley any evidence that his work embodies the invention described and claimed in Slattery's patent and defined in the issues of this interference.

I cannot concur in the peculiar interpretation of the Slattery patent which is incorporated into the foregoing answer, and made the basis upon which an opinion is given that what Mr. Stanley had done did not involve the issues in the interference. The Slattery patent is for a combination. The issues specify combinations, and when the elements specified are present, having the specified features and capacities, the invention is present, irrespective of the method, whether by computation or trial, by which the combining was originally effected. It does not seem to be seriously questioned that the applied electro-motive force and the counter-electro-motive force in the converters of the Great Barrington plant were substantially equal when the secondaries were open; or, in other words, that the primary coil of shortest length was of sufficient length to bring the converter within the requirements of the issue, which was all that could be said of the primary coils of greater lengths.

It is, however, a noticeable fact that the coils of the primaries differ in length, and for this reason witnesses on behalf of Stanley were called in rebuttal, not only to show that the converters all had practically the same counter electro-motive force and could be operated in circuit with one dynamo, but to explain how it was that the differences alluded to existed. The explanation thus given is that the object of the experiments at Great Barrington was to ascertain to what extent leakage of circuit could be permitted in favor of self-regulation without impairing the commercial economy of the system. This position seems to be corroborative of the other claim of Stanley that so far as the present issues are concerned the apparatus used in the experiments of September, 1885, at Pittsburg, had constituted a complete embodiment thereof, and that he considered at that time he had made an invention of value and importance. The Great Barrington apparatus seems to have contained the invention of the issues, and in a form of demonstrated success, but experiment was deemed to be still necessary to determine how far absolute equality of pressures when the secondaries were open might be sacrificed in the interest of satisfactory regulation. For this purpose the various converters, although all of them satisfied the conditions of these issues, were made to have primary coils of varying lengths, the experimental hypothesis being that the utmost possible approximation to perfect equality of electro-motive pressures created an amount of resistance in the primary coil inconsistent with the conditions upon which good regulation depends.

It is apparent from the foregoing that I see no adequate reason to dissent from the conclusion of the Examiner of Interferences and of the Examiners-in-Chief in holding that priority must be awarded to Stanley. I cannot, however, overlook the fact that Stanley's application was filed August 15, 1888; that he has distinctly sworn that he had tested the invention of the issues in an experimental apparatus at Pittsburg in September, 1885; that he considered at that time he had made an invention of value and importance, and that he has now explained the variations in the primary coils of the Great Barrington plant upon a theory which is at least consistent with his having regarded the invention, so far as relates to these issues, to be a perfected invention, not needing further experiment, when the Great Barrington plant was first established. All the Great Barrington converters were provided with primary coils within the present issues. The range of experiment seems not to have contemplated the overstepping of the present issues, but appears to have assumed them as accomplished facts.

Exhibit No. 7, being a letter from Stanley to George Westinghouse, Jr., dated May 28, 1886, states that—

six converters were placed down town in different stores and are in commercial operation every day. No coil has been returned to the laboratory for any reason whatever and no repairs have been made, although some of the installations have been in continuous use for four months. The light has never given out because of the failure of any of the electrical appliances and general satisfaction is expressed by all the consumers. I am in receipt of inquiries daily from other towns for plants of this description.

Later on he says:

I feel empowered to assure you that this part of the system is ready for manufacture and believe it may be left in its present condition without fear of trouble arising.

Again, and in the same letter, he says:

In fine, I have finished the converter work for the present and now suggest the following paths to be pursued in this branch of the business.

The expression "this branch of the business" seems to have referred to an entirely different subject—a motor system.

The record should be examined carefully by the Primary Examiner with reference to the question whether Stanley's application should be rejected on the ground of more than two years' public use before his application. The Examiner should also carefully inquire whether the descriptions by Rankin Kennedy, and by Zipernowsky and Deri, referred to in the proofs, anticipate whatever is patentable in the claims of Stanley, as based upon the specification preceding the claims. Since this interference proceeding was instituted a method patent has been granted by the Office to Rankin Kennedy for the invention supposed to be described in the articles referred to in the testimony, and the patent thus granted therefore in some sense measures the scope of invention recognized by the Office to be disclosed in the Rankin Kennedy articles.

Inasmuch as Slattery did not conceive the invention prior to June, 1886, nor reduce it to practice before December of the same year, it follows that the decision of the Examiners-in-Chief adjudicating priority to William Stanley, Jr., must be affirmed.

DEPREZ AND CARPENTIER *v.* BERNSTEIN *v.* HUNTER *v.* GAULARD AND GIBBS.

Decided February 21, 1891.

1. INTERFERENCE—BURDEN OF PROOF

When one of the parties to an interference is a patentee the burden of proof is heavily upon his opponents, and, unless the evidence is such as would be held sufficient by a court to invalidate the patent already granted, the decision will be in favor of the patentee.

2. INVALIDATING PATENTS—NOVELTY.

Novelty is not negatived by any prior patent or printed publication, unless the information contained is full enough and precise enough to enable any person skilled in the art to which it relates to perform the process or make the thing covered by the patent sought to be anticipated.

3. REDUCTION TO PRACTICE—FOREIGN PATENT.

A foreign patent is evidence of perfected invention, if the description contained therein is sufficiently clear and definite, and reduction to practice is not necessary to consummate a title to receive an American patent based upon it.

4. PRIOR INVENTION—FOREIGN PATENT.

Where a foreign patent exclusively relied upon as evidence of priority on behalf of an applicant as against a patentee, failed to fully, clearly, and exactly disclose the invention of the issue, *Held* that it could not avail the applicant as proof of prior invention; and *Held*, further, that if the claim of the applicant when limited to that which was set forth as his invention in the foreign patent, contained anything patentable over the prior art, his right to a patent thereon was in no way affected by the granting of the subsequent patent.

APPEAL from Examiners-in-Chief.

ELECTRICAL DISTRIBUTION.

Application of Marcel Deprez and Jules Carpentier filed November 27, 1888, No. 292,016. Application of Alexander Bernstein filed August 4, 1887, No. 246,105. Application of Rudolph M. Hunter filed June 18, 1887, No. 241,729. Patent granted Lucien Gaulard and John D. Gibbs October 26, 1886, No. 351,589.

Mr. Joseph Lyons for Deprez and Carpentier.

Mr. Howard C. Levis for Bernstein.

Mr. R. M. Hunter pro se.

Mr. T. B. Kerr and *Mr. Charles A. Terry* for Gaulard and Gibbs.

(*Interference No.* 13,581.)

MITCHELL, *Commissioner:*

The issue involved in this case is declared in the following language:

The improvement in the art of transmitting electrical energy to and utilizing it at a distance from the source, which consists in generating maintained and practically uniform currents of high tension at one station, and sending the same over a line of conductors to another station, and generating maintained and practically uniform currents of lower tension at the second station by the inductive influence of the high-tension currents.

The Examiner of Interferences decided the question of priority in favor of Deprez and Carpentier. From this decision Hunter and Gaulard and Gibbs severally appealed. Bernstein took no appeal, and the contest is now confined to the three remaining parties.

The Examiners-in-Chief reversed the decision of the Examiner of Interferences, and held that Gaulard and Gibbs were the prior inventors.

The senior applicants, Gaulard and Gibbs, are patentees, their patent having been granted October 26, 1886, on an application filed March 6 of the same year. The burden of proof is therefore heavily upon their opponents, and unless the evidence is such as would be sufficient in a court to invalidate the patent already granted the decision must be in favor of the patentees.

Deprez and Carpentier, whose application was filed more than two years after the issue of the patent already referred to, undertake to discharge the burden imposed upon them by showing that a French patent was granted to them on the 30th day of April, 1881, based upon an application filed on the 3d day of March of the same year, and the question whether or not they are the original and first inventors depends upon the further question whether the French patent clearly discloses the controverted invention.

The claim of the Gaulard and Gibbs patent which is included in the declaration of interference is in the following language:

1. The hereinbefore-described art or method of electrical distribution and conversion, which consists in establishing in a closed electric circuit a current of alternate and equal positive and negative potential, producing by the influence of such current an inductive field of alternate polarity, and thereby inducing, in translating devices situated in an independent closed circuit traversing such field, a similar alternating secondary current of greater quantity and less potential than the originating or producing current.

It had been customary in this country until about the year 1885-'86 to operate electric-lighting plants, including those employing incandescent burners, by means of currents continuous in direction. Since that date another system has come into competition with the former, employing an alternating-current electric generator, developing currents of a much higher tension than the lamps require, and then transforming such currents of high tension into currents of low tension in secondary circuits containing the lamps. Although germs of this system are found scattered through a considerable period of time, yet not until recent years has it been commercially developed, and the proofs in the case are claimed to show that the inauguration of the system in the United States was the practical result of the invention of Gaulard and Gibbs. It is this invention which is described in the Gaulard and Gibbs patent.

It appears by the record that it was only upon appeal to the Examiners-in-Chief that the Gaulard and Gibbs application was allowed. Several references were cited by the Primary Examiner, among them a patent to Maiche, No. 243,451, dated June 28, 1881, and a patent to Edison, No. 278,418, dated May 29, 1883. The Examiners-in-Chief, after distinguishing the invention of Gaulard and Gibbs from those described in the references, said:

The merit of applicants' device may be thussummed up. They generate high-tension currents of alternating polarity directly, thus getting a high-tension line-current, with moderate-sized conductors, capable of acting upon the induction apparatus without the interposition of any rheotomes, commutators, or other devices for wasting energy and destroying plant. This they translate directly into the low-tension currents required, without the use of power or any apparatus except the local inductoriums. The changes over existing devices may seem simple and obvious after the fact, but this is a charge often brought against the most meritorious inventions, the telegraph and the speaking-telephone not being exceptions. In the two latter conspicuous instances the courts have so far found invention in the light of the vastly important results, and we do not hesitate to find invention in this case.

The passage which I have quoted indicates well enough the nature of the invention, which must be found in a prior patent in order to negative novelty.

The construction and operation of the apparatus of the French patent to Deprez and Carpentier are not entirely clear, but it sufficiently appears that the invention described therein does not possess the characteristics in virtue of which the Gaulard and Gibbs application was allowed by the Examiners-in-Chief. The passage already quoted shows that one of the features recognized as possessing novelty was the fact that the high-tension currents were generated—

directly, thus getting a high-tension line-current, with moderate-sized conductors, capable of acting upon the induction apparatus without the interposition of any *rheotomes*, commutators, or other devices for wasting energy and destroying plant.

In the French patent the high-tension current was not generated directly, but was produced indirectly by transformation from a low-tension battery-current. Again, a rheotome was employed in the battery-circuit, while the capacity of the patented method to dispense with the rheotomes was one of its recognized sources of patentability, as appears by the passage already quoted from the decision of the Examiners-in-Chief granting the Gaulard and Gibbs patent.

The following passage is from the French patent:

If through the thick wire of a Ruhmkorff coil a "quantity" current of electricity is passed, coming, for instance, from one or more Bunsen elements, a "tension" current of electricity is produced in the small wire, which current can overcome great resistance, and can be sent to a very great distance without a sensible loss of power. If, then, this "tension" current is received at the other end of its path in a second coil, it generates in the thick wire a "quantity" current which has very nearly the same energy as the "quantity" current which has acted upon the first coil. The Ruhmkorff coil is thus reversible.

Now the name "Ruhmkorff coil" implies the use of a *rheotome*, and a *rheotome* would be indispensable in the battery-circuit at least.

That the French patent discloses the broad philosophical or scientific idea of transforming a primary battery-current of low tension and greater quantity into a line current of high tension and less quantity, and again transforming that current of high tension into one of greater quantity and less potential, is clear enough. But the claim that it discloses or describes the practical method of electrical distribution dependent upon a line current of alternate and equal positive and negative potential directly generated, described in the patent to Gaulard and Gibbs, cannot be conceded. Again, it is claimed that the entire description of the French patent is vague and unsatisfactory. No advantage can be derived from recapitulating what is said upon that subject by the Examiners-in-Chief. Whatever may be true as to the claim thus made, I am very clear that the novelty of the Gaulard and Gibbs method, as established by the decision of the Examiners-in-Chief already referred to, is not negatived by what it contains. The law upon the subject of invalidating a patent by the production of an earlier patent is somewhat exacting. Walker says, (Walker on Pats., sec. 57:)

Novelty is not negatived by any prior patent or printed publication, unless the information contained therein is full enough and precise enough to enable any person skilled in the art to which it relates to perform the process or make the thing covered by the patent sought to be anticipated.

(See also *Seymour* v. *Osborne*, 11 Wall., 516; *Cohn* v. *U. S. Corset Company*, 93 U. S., 366; *Eames* v. *Andrews*, 122 U. S., 40.)

The principal exception taken by Deprez and Carpentier to the decision below complains that it was held that Deprez and Carpentier must prove reduction to practice in this country in order to prevail. It is undoubtedly true that a foreign patent is evidence of perfected invention, if the description contained therein is sufficiently clear and definite, and that reduction to practice is not necessary to consummate a title to receive an American patent based upon it; but the position of Deprez and Carpentier is not made more advantageous by that fact. If a patent or printed publication, foreign or domestic, were evidence of conception only, the law would extend to it that tolerance and generosity which are extended to private drawings and descriptions representing the inceptive stages of an invention. It is because a patent or a printed publication is evidence, when it is evidence at all, of a perfected invention, that it is required to speak in unequivocal language, and fully, clearly, and exactly describe the invention against which it is urged, whether as a bar to a patent granted or as a basis for a patent asked.

It is impossible to hold, in view of established principles, that the French patent of Deprez and Carpentier discloses the invention of the issue, as I understand it, and it follows that the decision in favor of Gaulard and Gibbs must be affirmed.

Hunter's drawings disclose and his specification describes substantially the same method patented to Gaulard and Gibbs and embraced in the issue. The alternating current of high potential is generated directly from an alternating-current dynamo and is capable of acting on the—

induction apparatus without the interposition of any rheotomes, commutators, or other devices for wasting energy and destroying plant.

In his preliminary statement Hunter swears that he conceived of this invention about July, 1881; that August 2d of the same year he made clear and comprehensive drawings disclosing the invention; that he subsequently made other drawings illustrating it, and that he put it into operation in the month of April, 1883, again in the month of January, 1884, and again in the month of April of the same year.

The proofs seem to establish conception substantially as averred in the preliminary statement. More than one of the drawings which are ascribed to the year 1881 show an alternating-current generator in connection with a line-wire for producing currents of high tension and low quantity, such line-wire constituting the primary of a converter or converters, the secondaries of which are supplied with lamps. Said drawings are accompanied by brief descriptive memoranda, which leave little, if any, doubt in the mind that the local circuits were to be of coarse wire traversed by currents of high quantity and low potential.

It is not claimed, however, that the devices of these drawings were ever reduced to practice; but it is claimed that a certain telephonic apparatus, disclosed in Exhibit Drawing No. 11, was constructed in May, 1883; and operated in the presence of a number of witnesses; also that another telephonic apparatus was made and operated in January, 1884. Hunter swears also to still further embodiments of the principle in telephonic apparatuses at subsequent dates. It must be held, however, that the issue as defined excludes methods of telephonic and telegraphic transmission. Although in Hunter's case certain of his drawings indicate the conception of the invention in 1881, the several embodiments relied upon to prove reduction to practice are not embodiments of the inventions so represented.

In the application of Deprez and Carpentier the following language is used to distinguish their currents from those employed in transmitting telegraphic signals or telephonic messages:

As distinguished from currents used in the transmission of telegraphic signals or telephonic messages which are variably pulsating or undulating and intermittent, they are practically uniform and continuous, and, in order to distinguish the currents generated and utilized by our method from such telegraphic or telephonic currents, they will hereinafter be referred to as "maintained and practically uniform currents."

The foregoing extract, as well as the history of proceedings since the issue was defined, shows that the Office, by incorporating the words last quoted in the issue, intended to exclude and did exclude from the controversy all methods and apparatuses for telegraphic and telephonic transmission, and it follows that what was done by Hunter in the way of setting up telephonic apparatuses, as recited in his testimony,

must be held to be outside of the issue and as not tending to show reduction to practice of the inventions within the issue represented by his drawings of 1881.

It is unnecessary to inquire whether the various objections made to the practical utility of Hunter's telephonic apparatuses are well founded. It is of course fatal to his claims that such apparatuses and the methods underlying them, whether operative or otherwise, are outside of the issue.

It will be observed that I have followed the Examiners-in-Chief in interpreting the issue as limited to that which was held to be patentable in connection with the application of Gaulard and Gibbs. Of the course of the Examiners-in-Chief in so doing Deprez and Carpentier complain and say that, their claim being broader than that of Gaulard and Gibbs, they are practically prevented from proving priority of the invention thereof by them. It is undoubtedly true that the invention disclosed in the French patent of Deprez and Carpentier came into being before the invention patented to Gaulard and Gibbs, and that the former are entitled to the benefit of that fact, either through an interference or without an interference, and it follows that if the application of Deprez and Carpentier, when limited to that which is set forth as their invention in the French patent, contains anything that is patentable over the prior art, their right to a patent thereon is in no way affected by the patent issued to Gaulard and Gibbs. In this connection, however, it should be remembered that the patent to Maiche, granted June 28, 1881, and patented in France in 1880, contains the combination, with the telephonic-line wire, of (1) an induction-coil having its secondary circuit connected with said line; (2) a local battery and a circuit-closing key included in a circuit with the primary coil of said induction-coil, which circuit is normally open; (3) a rheotome arranged to rapidly make and break said circuit when said key is closed; and (4) a receiving-instrument connected with the primary coil of an induction-coil, the secondary coil of which is connected with said line, whereby said receiving-instrument may be operated by a quantity-current of low tension to produce the practical equivalent of dots and dashes, or makes and breaks, of varying lengths, the dashes being each formed by a series of rapidly-consecutive pulsations over the line. It should also be remembered that Maiche says in his patent:

> The object of my invention is to dispense with heavy batteries on telegraph-lines, and this I accomplish by transforming at the station of departure a battery-current of quantity and weak tension into an induced current of high tension capable of overcoming the resistance of the line, and then retransforming at the receiving station this induced current into a current of quantity, which actuates directly a receiving instrument for sounding or registering the "makes" and "breaks" or dots and dashes.

Other patents appear in the record, among them that to Rossetti, dated December 7, 1880, which, although relating to telephony, does, nevertheless, contemplate the employment of an intermediate line-wire of high tension to transform and transport and retransform, by means of converters, a quantity-current at the home station into a quantity-current at a distant station. Indeed, the patent on its face contemplates telephonic transmission "for a distance of three thousand miles," and prescribes the amount of resistance of the helix of the telephone together with that of the closed primary circuit which would be adapted to that distance. The question of patentability, in view of the references, however, is a question for the Primary Examiner, subject to the usual appeals, and one upon which I therefore do not wish to be understood as attempting to pass in this connection.

The decision of the Examiners-in Chief adjudicating priority in favor of Gaulard and Gibbs is affirmed.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 54---No. 13. TUESDAY, MAROH 31, 1891. PRICE---$5 per year.

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PATENT CENTENNIAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 28, 1891.

The Commissioner of Patents in his report to Congress for the year ending December 31, 1890, called attention to the movement being made for the celebration at Washington of the Beginning of the Second Century of the American Patent System.

This movement has progressed so successfully that a celebration worthy of the great occasion and having the sanction and co-operation of the Government is now assured.

It is therefore directed that notice be given by the publication in the OFFICIAL GAZETTE of the United States Patent Office that such celebration will take place at Washington on the 8th, 9th, and 10th days of April, 1891, the last date being the anniversary of the signing by President Washington of the first American patent law, and that the co-operation of all inventors and persons interested in the protection of inventions be cordially and earnestly invited.

The following program of the order of exercises has been furnished for publication by the Committee in charge.

C. E. MITCHELL,
Commissioner.

CONGRESS

OF

INVENTORS AND MANUFACTURERS

OF

PATENTED INVENTIONS

FOR THE

CELEBRATION OF THE BEGINNING OF THE SECOND CENTURY OF THE AMERICAN PATENT SYSTEM.

Washington, D. C., April 8, 9 and 10, 1891.

FIRST PUBLIC MEETING.

WEDNESDAY, APRIL 8, 2 P. M.

Presided over by the

PRESIDENT OF THE UNITED STATES.

HON. CHARLES ELIOT MITCHELL, of Connecticut, Commissioner of Patents.
"The Birth and Growth of the American Patent System."

HON. O. H. PLATT, LL. D., of Connecticut, U. S. Senator.
"Invention and Advancement."

HON. CARROLL D. WRIGHT, M. A., of Massachusetts, Commissioner of Labor.
"The Relation of Invention to Labor."

HON. SAMUEL BLATCHFORD, LL. D., Justice of the Supreme Court of the United States.
"A Century of Patent Law."

HON. ROBERT S. TAYLOR, of Indiana.
"The Epoch Making Inventions of America."

SECOND PUBLIC MEETING.

WEDNESDAY, APRIL 8, 7.30 P. M.

Presided over by the Hon. JOHN W. NOBLE, Secretary of the Interior.

HON. JOHN W. DANIEL, LL. D., of Virginia, U. S. Senator.
"The New South as an Outgrowth of Invention and the American Patent Law."

HON. EDWIN WILLITS, of Michigan, Assistant Secretary of Agriculture.
"The Relation of Invention to Agriculture."

SPECIAL RECEPTION

To Inventors and Manufacturers, and the ladies who accompany them,
AT THE PATENT OFFICE,
April 8, 9 to 11.30 P. M., by the Secretary of the Interior and the Commissioner of Patents.

THIRD PUBLIC MEETING.

THURSDAY, APRIL 9, 2 P. M.

To be presided over by HON. FREDERICK FRALEY, LL. D., President of the National Board of Trade and of the American Philosophical Society, and Charter Member of Franklin Institute.

HON. BENJAMIN BUTTERWORTH, of Ohio, U. S. House of Representatives.
"The Effect of our Patent System on the Material Development of the United States."

OCTAVE CHANUTE, of Illinois, President of the American Society of Civil Engineers.
"The Effect of Invention upon the Railroad and other means of Intercommunication."

HON. A. R. SPOFFORD, LL. D., Librarian U. S. Congress.
"The Copyright System of the United States: its Origin and its Growth."

THOMAS GRAY, C. E., B. Sc., F. R. S. E., of Indiana, Professor of Dynamic Engineering, Rose Polytechnic Institute, Terre Haute.
"The Inventors of the Telegraph and Telephone."

COL F. A. SEELY, of Pennsylvania, Principal Examiner U. S. Patent Office.
"International Protection of Industrial Property."

FOURTH PUBLIC MEETING.

THURSDAY, APRIL 9, 8 P. M.

To be presided over by PROF. S. P. LANGLEY, LL.D., Secretary of the Smithsonian Institution.

WILLIAM P. TROWBRIDGE, Ph.D., LL.D., of New York, Professor of Engineering School of Mines, Columbia College.
"The Effect of Technological Schools upon the Progress of Invention."

ROBERT H. THURSTON, A. M., LL.D., Doc. Eng., of New York, Director and Professor of Mechanical Engineering, Sibley College, Cornell University.
"The Invention of the Steam-Engine."

CYRUS F. BRACKETT, M. D., LL.D., of New Jersey, Henry Professor of Physics, College of New Jersey, Princeton.
"The Effect of Invention upon the Progress of Electrical Science."

PROF. F. W. CLARKE, S. B., of Ohio, Chief Chemist U. S. Geological Survey.
"The Relations of Abstract Scientific Research to Practical Invention, with Special Reference to Chemistry and Physics."

MAJ. CLARENCE E. DUTTON, Ordnance Department, U. S. A.
"The Influence of Invention upon the Implements and Munitions of Modern Warfare."

ANNIVERSARY DAY, APRIL 10.

Anniversary of the signing of the first American Patent Law,

"AN ACT TO PROMOTE THE PROGRESS OF THE USEFUL ARTS"—*By George Washington.*

9 A. M.—Excursion to Mount Vernon, where an address will be delivered by J. M. TONER, M. D., of Washington.
"Washington as an Inventor and Promoter of Improvements."

2 P. M.—Inspection of Ordnance Shops, Washington Navy-Yard, by invitation of the Secretary of the Navy.

4.30 P. M.—Review and parade of Regular Troops, National Guard, High School Cadets, and other organizations.

FIFTH PUBLIC MEETING.

FRIDAY, APRIL 10, 8 P. M.

To be presided over by PROF. ALEXANDER GRAHAM BELL.

Hon. WILLIAM T. HARRIS, Commissioner of Education.
"The Relation of Invention to the Communication of Intelligence and the Diffusion of Knowledge by Newspaper and Book."

PROF. OTIS T. MASON, Ph.D., of Virginia, Curator U. S. National Museum.
"The Birth of Invention."

DR. JOHN S. BILLINGS, Curator U. S. Army Medical Museum.
"American Invention and Discoveries in Medicine, Surgery, and Practical Sanitation."

EDWARD ATKINSON, Ph.D., LL.D., of Massachusetts.
"Invention and its Effects upon Household Economy."

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Issue of March 31, 1891.

Patents	554—No.	449,099 to No. 449,652, inclusive.
Designs	19—No.	20,640 to No. 20,658, inclusive.
Trade-Marks	42—No.	19,231 to No. 19,272, inclusive.
Labels	9—No.	6,481 to No. 6,489, inclusive.
Reissues	None.	
Total issue	624	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	....	Nevada	....	....
Arizona Territory	....	....	New Hampshire	6	....
Arkansas	6	....	New Jersey	25	1
California	14	....	New Mexico Terr'y	....	....
Colorado	5	....	New York	101	11
Connecticut	15	1	North Carolina	....	....
Delaware	1	....	North Dakota	....	....
District of Columbia	7	1	Ohio	41	3
Florida	1	....	Oregon	4	....
Georgia	4	....	Pennsylvania	51	3
Idaho	1	....	Rhode Island	12	....
Illinois	53	1	South Carolina	....	....
Indiana	14	1	South Dakota	....	....
Indian Territory	....	....	Tennessee	5	....
Iowa	12	1	Texas	8	1
Kansas	7	....	Utah Territory	1	....
Kentucky	3	2	Vermont	....	....
Louisiana	1	....	Virginia	5	....
Maine	3	....	Washington	....	....
Maryland	15	1	West Virginia	1	....
Massachusetts	53	2	Wisconsin	10	....
Michigan	6	....	Wyoming	....	....
Minnesota	9	....	U. S. Army	....	....
Mississippi	2	....	U. S. Navy	....	....
Missouri	15	2			
Montana	2	....	Total to citizens of the United States	527	32
Nebraska	6	1			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries	Patents and Designs.	Trade-Marks and Labels.
Austria-Hungary	2	..	Mexico	....	....
Barbadoes	....	..	Netherlands	....	....
Belgium	....	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	1	....
Brazil	....	....	New Zealand	....	....
Canada	9	....	Norway	....	....
Chili	....	....	Queensland	....	....
Colombia	....	....	Russia	....	....
Cuba	....	11	Scotland	2	....
Denmark	....	..	South Australia	....	....
Ecuador	....	..	Spain	1	....
England	17	7	Sweden	....	....
France	6	....	Switzerland	1	....
Germany	7	1	Victoria	....	....
Gautemala	....	....			
Ireland	....	....	Total to citizens of foreign countries	46	19
Italy	....	....			

DESIGNS.

20,640.—APPAREL-BELT.—*John Bigelow*, New York, N. Y. Application filed January 17, 1891. Serial No. 378,153. Term of patent 7 years.

20,641.—FRUIT-BASKET.—*John A. Doty*, Oakville, Canada. Application filed January 29, 1891. Serial No. 379,580. Term of patent 14 years.

20,642.—ORNAMENTATION OF A NECKSCARF.—*Shye Finkelstein*, New York, N. Y. Application filed December 20, 1890. Serial No. 375,363. Term of patent 7 years.

20,643.—DENTAL CABINET.—*Timothy J. Collins*, Toledo, Ohio, assignor to *Ransom & Randolph*, same place. Application filed January 19, 1891. Serial No. 378,358. Term of patent 14 years.

20,644.—HANDLE FOR SPOONS, FORKS, &c.—*William B. Durgin*, Concord, N. H. Application filed February 16, 1891. Serial No. 381,704. Term of patent 7 years.

20,645.—BADGE.—*Charles F. Irons*, Providence, R. I. Application filed February 2, 1891. Serial No. 379,920. Term of patent 14 years.

20,646.—TOY BANK.—*Russel Frisbie*, Cromwell, Conn., assignor to *The J. & E. Stevens Company*, same place. Application filed March 5, 1891. Serial No. 383,910. Term of patent 3½ years.

20,647.—HANDLE FOR KNIVES, &c.—*Keyes A. Hathaway*, Rockford, Ill. Application filed January 29, 1891. Serial No. 379,583. Term of patent 7 years.

20,648.—FURNACE.—*Francis Kernan, Jr.*, Utica, and *William H. Landers*, Syracuse, assignors to *The Kernan Furnace Company*, Utica, N. Y. Application filed January 14, 1891. Serial No. 377,770. Term of patent 14 years.

20,649.—HANDLE FOR SPOONS, &c.—*Robert Leding*, Washington, D. C. Application filed March 5, 1891. Serial No. 383,915. Term of patent 7 years.

20,650.—SPOON, &c.—*Robert Leding*, Washington, D. C. Application filed March 5, 1891. Serial No. 383,916. Term of patent 7 years.

20,651.—LAMP-SHADE.—*Andrew Howard*, Beaver Falls, Pa. Application filed January 22, 1891. Serial No. 378,706. Term of patent 3½ years.

20,652.—EMBROIDERY.—*Philip Kleeberg*, New York, N. Y. Application filed February 19, 1891. Serial No. 382,125. Term of patent 3½ years.

20,653.—SPOON OR FORK HANDLE.—*Haverley Brooks Swart*, Worcester, Mass. Application filed February 9, 1891. Serial No. 380,829. Term of patent 3½ years.

20,654.—WRAPPING-PAPER, &c.—*Horatio Woodford Burtch*, Chicago, Ill. Application filed December 9, 1890. Serial No. 374,114. Term of patent 14 years.

20,655.—SPOON.—*Erwin C. Baumgras*, Washington, D. C., assignor to *Jacobs Brothers*, same place. Application filed March 9, 1891. Serial No. 384,352. Term of patent 3½ years.

20,656.—BOTTLE.—*John L. Dawes*, Pittsburg, Pa. Application filed March 9, 1891. Serial No. 384,351. Term of patent 7 years.

20,657 and 20,658.—SPOON, &c.—*Edwin Harris*, Washington, D. C. Applications filed March 5, 1891. Serial Nos. 383,913 and 383,914. Term of patents 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

19,231.—REMEDY FOR RHEUMATISM, NEURALGIA, AND LIKE DISEASES. *John D. Groves*, Philadelphia, Pa. Application filed February 18, 1891. Used since 1849.
"The portrait of Dr. M. F. Groves."

19,232.—PILLS.—*Elmir Krauth*, Toledo, Ohio. Application filed February 14, 1891. Used since September 1, 1890.
"The word 'NERVITIS.'"

19,233.—LINIMENT.—*Patrick Morris Murray*, Hillsborough, Texas. Application filed February 18, 1891. Used since April, 1879
"The words 'IRISH LINIMENT.'"

19,234.—MEAL.—*Clemens Oskamp*, Omaha, Nebr. Application filed December 12, 1890. Used since October 1, 1890.
"The words 'OSKAMP'S INDIAN GERM SLAP JACK.'"

19,235.—HOSE-SUPPORTERS.—*George Frost & Co.*, Boston, Mass. Application filed February 28, 1891. Used since January, 1891.
"The word 'VEKLIP.'"

19,236.—SHEARS AND SCISSORS, AND TABLE, POCKET, AND SHAVING CUTLERY.—*Andrew J. Jordan*, St. Louis, Mo. Application filed February 27, 1891. Used since September 26, 1884.
"The word 'RIVER.'"

19,237.—SHEARS AND SCISSORS, AND TABLE, POCKET, AND SHAVING CUTLERY.—*Andrew J. Jordan*, St. Louis, Mo. Application filed February 27, 1891. Used since December 27, 1890.
"The arbitrary figures and word '20TH CENTURY.'"

19,238.—HEATING AND COOKING STOVES.—*Frank A. Klaine*, Cincinnati, Ohio. Application filed February 28, 1891. Used since January 1, 1880.
"The words 'GOOD WILL.'"

19,239.—CANNEL-COAL.—*Macfarlane & Mordue*, Louisville, Ky. Application filed February 28, 1891. Used since January 1, 1891.
"The words 'OLD KENTUCKY BOGHEAD' and the representation of a block of coal."

19,240.—TOILET SOAP.—*Ostrom & Lincoln*, Bridgeport, Conn. Application filed February 10, 1891. Used since January 1, 1891.
"The word 'ANCHORED.'"

19,241.—PREPARED RICE.—*The Crystal Rice Milling Company*, Marion, Ind. Application filed February 12, 1891. Used since September 10, 1890.
"The word 'CRYSTAL.'"

19,242.—HAIR-RESTORATIVE.—*Jennie T. Fay*, New York, N. Y. Application filed February 26, 1891. Used since January 15, 1891.
"The word 'OLIVINE' and the representation of an olive branch."

19,243.—BLACK PAINT.—*Henry S. Fassett & Co.*, Washington, D. C. Application filed March 2, 1891. Used since 1885.
"The word 'EBONY.'"

19,244.—TOILET SOAPS AND LOTIONS.—*Emma Rimmer*, Chicago, Ill. Application filed January 30, 1891. Used since January 1, 1891.
"The word 'DANDRUFFINE.'"

19,245.—TIN PLATES AND TERNE PLATES.—*The Copper Miners Tinplate Company, Limited*, Cwmavon, England. Application filed March 2, 1891. Used since September 1, 1878.
"The words 'OLD STYLE' and the representation of an arrow and target."

19,246.—TIN PLATES.—*The Copper Miners Tinplate Company, Limited*, Cwmavon, England. Application filed March 2, 1891. Used since August 1, 1877.
"The letters 'E C C' inclosed in the representation of a crown."

19,247.—TIN PLATES, TERNE PLATES, AND TIN TAGGERS.—*The Old Castle Iron and Tinplate Company, Limited*, Llanelly, England. Application filed March 2, 1891. Used since January 1, 1867.
"The words 'OLD CASTLE.'"

19,248.—TIN PLATES AND TERNE PLATES.—*The Pontypool Iron and Tinplate Company, Limited*, Pontypool, England. Application filed March 2, 1891. Used since January 1, 1877.
"The representation of a crown and the word 'ALYS.'"

19,249.—TIN PLATES AND TERNE PLATES.—*The Pontypool Iron and Tinplate Company, Limited*, Pontypool, England. Application filed March 2, 1891. Used since January 1, 1872.
"The representation of a crown and the letters 'O. F. P. P.'"

19,250.—TIN PLATES.—*The Pontypool Iron and Tinplate Company, Limited*, Pontypool, England. Application filed March 2, 1891. Used since January 1, 1872.
"The representation of a crown and the word 'PONTPOOL.'"

19,251.—TIN PLATES.—*The Pontypool Iron and Tinplate Company, Limited*, Pontypool, England. Application filed March 2, 1891. Used since January 1, 1872.
"The representation of a crown and the word 'OSBORNE.'"

19,252.—AUTOMATIC SPRINKLERS.—*Robert Wood*, Syracuse, N. Y. Application filed January 26, 1891. Used since September 1, 1890.
"The representation of a three-way pipe."

19,253.—TOPICAL REMEDY.—*Albert I. Babendreier*, Baltimore, Md. Application filed February 27, 1891. Used since December 24, 1890.
"The word 'ELECT,' the circle or ring and spray or twig extending partly around the circle or ring, and the signature, 'A. I. BABENDREIER.'"

19,254.—WOOLEN SHAWLS.—*Friedrich T. Bauch*, Greiz, Germany. Application filed December 9, 1890. Used since December 1, 1870.
"The representation of registrant's coat of arms, consisting of a shield that is divided by intersecting lines into four panels, the upper left-hand panel containing the representation of a crown, the upper right hand panel five stars, the lower left-hand panel horizontal bars, and the lower right-hand panel the representation of a decoration in the shape of a Maltese cross and the bow from which it is suspended, and the words 'MULTA MULTIS,' arranged, respectively, above and below the shield."

19,255.—SEEDS, BULBS, PLANTS, TREES, AND SHRUBBERY.—*John Lew. Chil s*, Floral Park, N. Y. Application filed February 12, 1891. Used since January 1, 1890.
"The representation of a shield crossed by a chevron having two falcons above and one below it, a falcon immediately above the same, and a banner with the phrase 'IMITARE QUAM INVIDERE' thereon."

19,256.—BIRD-SEED.—*French, Richards & Co.*, Philadelphia, Pa. Application filed October 25, 1890. Used since October 1, 1888.
"The word 'KEYSTONE.'"

19,257.—PORCELAIN ORNAMENTS AND TOILET AND TABLE WARE.—*Haviland & Co*, New York, N. Y. Application filed February 24, 1891. Used since 1860.
"The letters 'H. & Co.,' accompanied by the letter 'L' and the word 'FRANCE,' the letter 'L' being between the letters 'H. & Co.' and the word 'France.'"

19,258.—PORCELAIN ORNAMENTS AND TOILET AND TABLE WARE.—*Haviland & Co.*, New York, N. Y. Application filed February 24, 1891. Used since 1890.

"The words 'HAVILAND & Co.' arranged in a curved line above the word 'LIMOGES.'"

19,259.—DETERGENT COMPOSITION RESEMBLING SOAP.—*Hyde Carpet Cleaner and Moth Exterminating Co.*, Des Moines, Iowa. Application filed December 13, 1890. Used since January, 1889.

"The letters and word 'H AND H.'"

19,260.—REMEDY FOR BLOOD AND LIVER DISEASES.—*David G. Potts*, Philadelphia, Pa. Application filed February 16, 1891. Used since April 22, 1890.

"The capital letter 'S,' bearing on its face the word 'Sarsaparilla,' so displayed thereon that the first letter of said word shall be at one extremity of said letter 'S,' while the last letter thereof shall be at the opposite extremity of said letter 'S.'"

19,261.—WINES AND ALCOHOLIC LIQUORS.—*Horace S. Woodbury*, Boston, Mass. Application filed March 7, 1890. Used since December 23, 1889.

"The representation of lace."

19,262.—CIGARS.—*Justo Alvarez & Co.*, Havana, Cuba. Application filed February 26, 1891. Used since 1879.

"The words 'LA COSMOPOLITANA.'"

19,263.—CIGARS.—*Sebastian Azcuio y Meana*, Havana, Cuba. Application filed February 26, 1891. Used since 1888.

"The words 'LA DONCELLA.'"

19,264.—CIGARS.—*V. Bustillo & Brother*, Havana, Cuba. Application filed February 25, 1891. Used since 1884.

"The words 'LA ALTEZA.'"

19,265.—CIGARS.—*J. S. Murias & Co.*, Havana, Cuba. Application filed February 26, 1891. Used since 1885.

"The name 'ADELINA DE E. S. R Y CA.'"

19,266.—CIGARS.—*J. Vallamil & Co*, Havana, Cuba. Application filed March 2, 1891. Used since 1887.

"The word 'NENÉ.'"

19,267.—CIGARS.—*V. Bustillo & Brother*, Havana, Cuba. Application filed February 25, 1891. Used since 1886.

"The words 'LA LINDA.'"

19,268.—CIGARS.—*V. Bustillo & Brother*, Havana, Cuba. Application filed February 25, 1891. Used since 1883.

"The words 'FLOR DE VICENTE SUAREZ.'"

19,269.—CIGARS.—*V. Bustillo & Brother*, Havana, Cuba. Application filed February 25, 1891. Used since 1883.

"The words 'FLOR DE LAS ROSAS.'"

19,270.—CIGARS.—*V. Bustillo & Brother*, Havana, Cuba. Application filed February 25, 1891. Used since 1883.

"The word 'VIRGINIA' and a monogram of the letters 'L G.'"

19,271.—CIGARS.—*V. Bustillo & Brother*, Havana, Cuba. Application filed February 25, 1891. Used since 1886.

"The words 'LA BONDAD.'"

19,272.—CIGARS.—*V. Bustillo & Brother*, Havana, Cuba. Application filed February 25, 1891. Used since 1884.

"The word 'MASCARITA.'"

LABELS.

6,481.—Title: "BOTANIC KIDNEY CURE."—*John F. Seaman*, New York, N. Y. Application filed March 4, 1891.

6,482.—Title: "RETSOF LUMP SALT."—*Retsof Mining Company*, York and New York, N. Y. Application filed March 7, 1891. (Trade-Mark Registered.)

6,483.—Title: "RETSOF LUMP ROCK SALT."—*Retsof Mining Company*, York and New York, N. Y. Application filed March 7, 1891. (Trade-Mark Registered.)

6,484.—Title: "RETSOF PURE ROCK SALT."—*Retsof Mining Company*, York and New York, N. Y. Application filed March 7, 1891. (Trade-Mark Registered.)

6,485.—Title: "RETSOF PURE SALT.—*Retsof Mining Company*, York and New York, N. Y. Application filed March 7, 1891. (Trade-Mark Registered.)

6,486.—Title: "RETSOF SALT."—*Retsof Mining Company*, York and New York, N. Y. Application filed March 7, 1891. (Trade-Mark Registered.)

6,487.—Title: "STRETCH'S PENETRATING LINIMENT."—*David E. Stretch*, Trenton, N. J. Application filed March 7, 1891.

6,488.—Title: "DR. A. S. DAVIS' BALM."—*The Davis Manufacturing Company*, Columbus, Ohio. Application filed March 9, 1891.

6,489.—Title: "DR. A. S. DAVIS' LINIMENT FOR HORSES.—*The Davis Manufacturing Company*, Columbus, Ohio. Application filed March 9, 1891.

DISCLAIMERS.

314,884.—*Isaac D. Smead*, Toledo, Ohio. IMPROVEMENT IN DRY CLOSETS, &c. Patent dated March 31, 1885. Disclaimer filed March 24, 1891, by *The Smead Warming and Ventilating Co.*, assignee for the States of Maine, New Hampshire, Vermont, Rhode Island, and all those parts of the States of Massachusetts and Connecticut which lie east of the Connecticut river.

Enters its disclaimer to claim 1 in said patent which is in the following words:

"1. The combination and arrangement of one or more ducts for the removal of the foul air from a room or rooms of a building, a vault for receiving and retaining the fecal deposits, connected with said duct or ducts, and a ventilating or exit shaft connected with said vault, whereby the warm air from within the building is made to desiccate or dry the deposit in the vault and remove all odors therefrom to the outer air, as set forth."

303,971.—*Isaac D. Smead*, Toledo, Ohio. IMPROVEMENT IN DRY CLOSETS. Patent dated May 31, 1887. Disclaimer filed March 24, 1891, by *The Smead Warming and Ventilating Co.*, assignee for the States of Maine, New Hampshire, Vermont, Rhode Island, and all those parts of the States of Massachusetts and Connecticut which lie east of the Connecticut river.

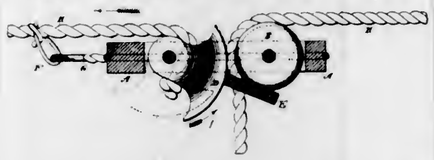
Enters its disclaimer to claim 2 of said patent, which is in the following words:

"2. In combination with the vault D of a dry closet, the transverse absorbent partition C, with an air-space both above and below it for the passage of air, substantially as shown and described."

PATENTS

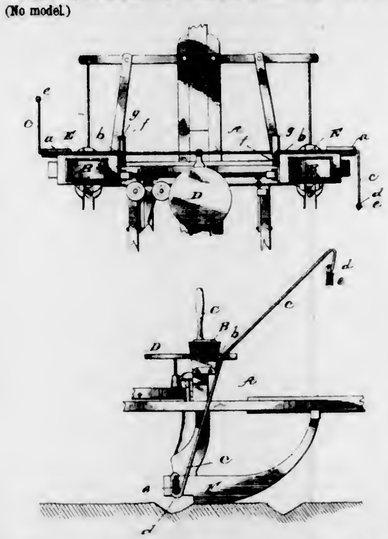
GRANTED MARCH 31, 1891.

449,099. CLOTHES-LINE FASTENER. ERNESTO ABBIATI, New York, N. Y. Filed Sept. 30, 1890. Serial No. 366,642. (No model.)



Claim.—The combination of the frame A, having loop G, with the pulley B, eccentric D, and rope H, which is secured to said eccentric, said loop G connecting with the rope by eye F, as set forth.

449,100. DROPPER'S GUIDE FOR CORN-PLANTERS. ANDREW P. ALDRIDGE, North Fork, Va. Filed Dec. 6, 1890. Serial No. 373,787. (No model.)

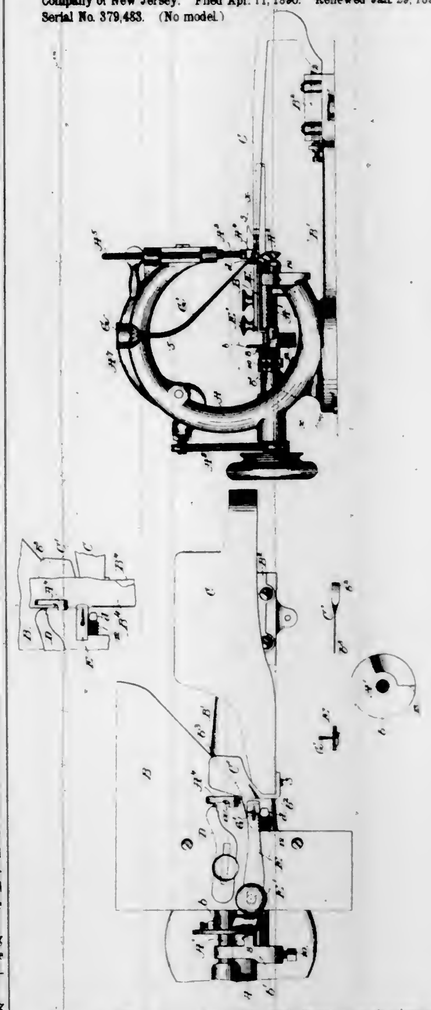


Claim.—1. A dropper's guide for corn-planters, consisting of a rod projecting from one side of the machine and provided with a depending signal supported out of contact with the ground in a plane parallel with the runner and terminating in the vertical plane of the end of the seed-conductor, substantially as described.

2. A dropper-guide for corn-planters, consisting of a rod crossing the machine, pivotally secured thereon and projecting from one side thereof, and provided with an arm having a signal thereon out of contact with the ground, substantially as described.

3. A dropper's guide for corn-planters, consisting of a rod having a depending arm with a signal thereon out of contact with the ground for designating furrows, and an arm at the opposite end of the rod for supporting the guide, substantially as described.

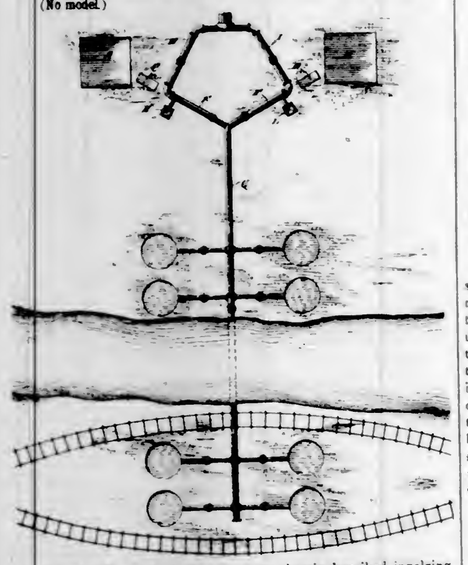
449,101. MACHINE FOR SEWING AND BEATING OUT SEAMS. EDWARD B. ALLEN, Portland, Me., assignor to The Singer Manufacturing Company of New Jersey. Filed Apr. 11, 1890. Renewed Jan. 29, 1891. Serial No. 379,483. (No model.)



Claim.—1. The combination, with stitch-forming mechanism and moistening devices to moisten the edges of the material, of beating-out mechanism to beat out the moistened seam, substantially as described.

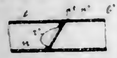
2. The cloth-plate, the horn having a plate one part of which constitutes an anvil and another a separator, combined with a hammer or beating-out device and with a cam and spring to actuate it, and with stitch-forming mechanism, to operate substantially as described.

449,102. METHOD OF TRANSPORTATION. WALLACE C. ANDREWS, New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,900. (No model.)



Claim.—The method of transportation herein described, involving the following operations: first, providing an inclosed stream of running liquid; second, reducing the material to be transported if too large or of too great specific gravity by comminution to a condition in which it will be carried by the momentum of the liquid; third, introducing into the running stream the material to be transported, and, finally, separating the same from the liquid at the place of destination, substantially as described.

449,103. BRACELET. CARL BACHEM, Pforzheim, Baden, Germany. Filed Oct. 10, 1890. Serial No. 367,747. (No model.)



Claim.—In a bracelet, the combination of the two branches of the bracelet, the ends opposite the hinge being sloping and covered by oblique plates, one of which is provided with a nose or equivalent fastening device and the other with a slit, the nose being adapted to enter the slit, substantially as set forth.

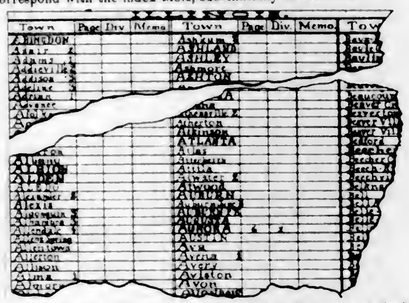
449,104. PROCESS OF COLORING AND FINISHING FABRICS. VICTOR G. BLOEDE, Baltimore, Md. Filed Oct. 18, 1888. Serial No. 288,476. (No specimens.)

Claim.—1. The herein described process of improving the durability and permanency of the finish or color, or both, of a starched fabric or yarn by treating the starched fabric or yarn with a solution of caustic lime or other equivalent compound which has the power of rendering the starch insoluble.

2. The method herein described of finishing or coloring and finishing fabrics, which consists of applying to or impregnating the fabric with starch or a mixture of starch and coloring-matter, and then treating the fabric thus impregnated with a solution of caustic lime or other equivalent compound, which has the power of rendering the starch insoluble.

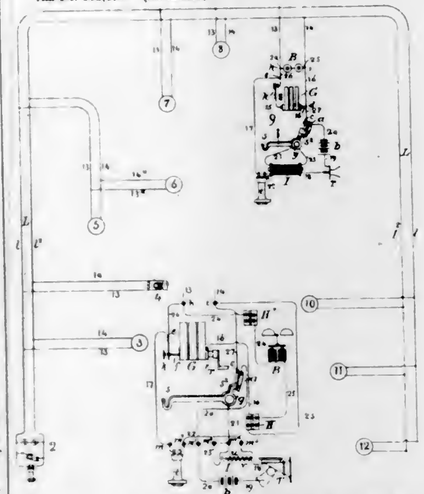
449,105. COMBINED INDEX AND REGISTER. JAMES H. CARPENTER, Chicago, Ill. Filed Dec. 16, 1889. Serial No. 333,883. (No specimens.)

Claim.—1. An index-table having a column of names of towns alphabetically arranged, the kind and style of letter in which the name of each town, as described, is printed designating approximately the population thereof, and each of such towns forming the heading of a series of columns, a series of intersecting columns, and marks at the point of intersection indicating the combined meaning designated by the heading of each of the columns intersecting and by the marks themselves, in combination with a register-of-names book paged to correspond with the index-table, substantially as described.



2. A column of names of towns alphabetically arranged, the kind and style of letters in which the name of each town is printed designating approximately the inhabitants of such town, as described, with the names of towns of less than five hundred inhabitants printed in a uniform style of type, but with figures following the names of such towns of less than five hundred and more than one hundred inhabitants, such figures designating the number of hundreds of inhabitants in such town, and the name of each of such towns forming the heading of a series of columns, a series of intersecting columns, and marks at the point of intersection indicating the combined meaning designated by the heading of each of the columns intersecting at the point where such marks are made and by the marks themselves, in combination with a register-of-names book paged to correspond with the index-table, substantially as described.

449,106. TELEPHONE CIRCUIT AND APPARATUS. JOHN J. CARTY, New York, N. Y., assignor, by mesne assignments, to the American Bell Telephone Company, Boston, Mass. Filed Aug. 16, 1890. Serial No. 362,152. (No model.)



Claim.—1. A multiple-station telephone-circuit, a call-bell magnet of relatively high resistance, as specified, at each station included in a branch circuit uniting the two sides of said telephone-circuit, and a generator of electricity for sending calls at each of said stations, adapted when operated to be connected between the two sides of said telephone-circuit in multiple arc with the call-bell magnet, substantially as described.

2. The combination, substantially as hereinbefore described, of a metallic telephone-circuit extending between a number of telephone-stations, a permanently-closed bridge or cross conductor at each station, uniting the two main conductors and including the call-bell magnets of said station, a normally-open bridge or cross conductor also at each station, including the call-sending generator, and means for closing the said generator-bridge in multiple arc with the permanent bridge-connection of said bell-magnets.

3. The combination, substantially as described herein, of a metallic telephone-circuit extending between a number of sub stations, a permanently-closed bridge-connection therefor at each station, call-bell magnets having a high coefficient of self-induction included therein, a normally open or discontinuous bridge or cross conductor also at each station, including an electrical transmitting-instrument, and adapted when closed to unite the two wires of said metallic circuit through the said transmitting-instrument and in multiple arc with the permanent bridge, and a circuit-closer arranged to close the said normally-open cross-conductor in the act of communication.

4. A metallic telephone-circuit extending by both of its main conductors to a number of telephone-stations, a permanently closed or continuous bridge or cross conductor at each station, uniting the said main conductors, call-bell magnets at each station included in said cross-conductor, a normally-open branch circuit at each station, adapted to unite when closed the said main conductors in parallel circuit with the said closed bell-magnet bridge, a telephone included therein, and a circuit-closing switch therefor, substantially as described.

5. A metallic telephone-circuit extending by both of its main conductors to a number of stations, in combination with a permanently-closed bridge-conductor uniting the said main conductors, call-bell magnets having a high coefficient of self-induction included in said permanent bridge, a normally-open telephone branch circuit adapted when closed also to form a bridge uniting the said two main conductors, whereby the telephones thereof are connected with said circuit in multiple arc with said bell-magnets, and a switch for closing the said normally-open telephone-branch, substantially as and for the purposes specified.

6. The combination of a metallic telephone-circuit extending by both of its main conductors to a number of stations with a permanently-closed bell-magnet branch united at its terminals with the two main conductors, respectively, and two normally-open or discontinuous bridge-conductors or branch circuits adapted also to unite the said two main conductors in multiple arc with the said permanently-closed bell-magnet bridge, a call-sending generator in one and a telephone in the other of said normally-open branch circuits, and independent circuit-closing devices controlling the said normally-open branch circuits.

7. The combination, substantially as hereinbefore set forth, with a metallic telephone-circuit extending by both of its main conductors to a number of stations, of a normally-open call-generator-bridge circuit adapted when closed to unite the two main wires through said generator, a circuit-closer therefor, an independent discontinuous telephone-bridge circuit adapted when closed to unite the said two main wires through the telephones, an independent and automatic circuit-closer for said telephone-bridge, and a permanently-closed bridge uniting the said two main wires and having in its circuit the call-bell magnets, the said magnets constituting a high inductive resistance in parallel circuit with the said generator or telephone bridges when the said bridges are brought into action, for the purposes specified.

8. A telephone-station apparatus comprising a permanently-continuous conductor uniting the main-line terminals of said apparatus, an electro-magnetic call-instrument included in the circuit of said permanent conductor, two normally open or discontinuous branch circuits also extending between the said terminals and adapted when closed to form additional connections between them in parallel circuit with the said permanent conductor, a call-generator included in one and a telephone included in the other of said normally-open branch circuits, means, as indicated, for closing the generator branch circuit, and other means for independently closing the telephone branch circuit, substantially as described, and for the purposes set forth.

9. The combination, in a metallic-circuit station apparatus, of a call-bell having its electro-magnet included in circuit with a permanently closed or continuous conductor uniting the two line-terminals of said apparatus, a call-generator for sending signals included in a normally open or discontinuous conductor or branch circuit also extended between the said terminals, a circuit-closer adapted to close the said generator branch in parallel circuit with the permanently-closed bell-magnet conductor, transmitting and receiving telephones included in an independent normally open or discontinuous conductor or branch circuit also extending between said terminals, and an automatic switch actuated by the removal of the receiving-telephone to close the said telephone branch circuit as a shunt or in parallel with the permanently-closed bell-magnet branch, substantially as described.

10. In a metallic-circuit station apparatus, the combination of a permanently closed or continuous conductor uniting the two line-terminals of said apparatus, a call-bell provided with electro-magnets having a high coefficient of self-induction included in said continuous conductor and adapted thereby to be connected in circuit between the two main wires of a metallic circuit and to form a bridge therefor, and two normally open or discontinuous branch circuits including, respectively, a call-generator and telephones, each being independently provided with a circuit-closer whereby it may be connected with the main line in multiple arc with the bell-magnets, substantially as described.

11. The combination, in a telephone-station apparatus for metallic multiple-station circuits, of terminals adapted, respectively, to connect with the two conductors of the main metallic circuit and three branch circuits extending through the apparatus from one of the said terminals to the other, two of the said branch circuits being normally open and one permanently closed, with a magneto-generator and a circuit-closer in one of the said open branch circuits, a telephone and an independent and automatic circuit-closer in the other open branch circuit and call-bell electro-magnets in the permanently-closed branch circuit, constituting therewith an electro-magnetic shunt for both generator and telephone branches when the said branches are closed, substantially as described.

12. The combination of a metallic multiple-station telephone-circuit with an apparatus at each station of the said circuit containing a normally-open branch circuit extending from terminal to terminal of the said apparatus, and telephones included therein and forming part thereof, means actuated by the removal of the telephone from its support for automatically closing the same and for thereupon forming a closed bridge including the telephones between the two main-line wires, an independent and alternative normally-discontinuous branch circuit, a magneto-electric call-generator included therein and forming part thereof, and an independent circuit-closer for connecting the said generator between the said two main-line wires, and a permanently-continuous branch circuit having a high coefficient of self-induction and forming normally the sole conductive path between the said terminals and constituting a permanent electro-magnetic shunt for the said generator and telephone branch circuits, respectively, when the said branch circuits are closed, substantially as herein described.

13. The combination of a metallic multiple-station telephone-circuit and at each station an apparatus including the following instrumentalities: a normally-open branch circuit extending between the said two wires of said metallic circuit, including telephones, and adapted when closed to form a bridge through said telephones between said wires, an independent and alternative normally open branch circuit also extended between the said two main wires, including signal-sending devices, and adapted when closed to form a bridge uniting said main wires through said signal-sending devices, and a closed branch circuit having a high coefficient of self-induction permanently uniting said main wires and forming normally the sole conductive path at said station between said main wires, and thereby constituting a permanent electro-magnetic shunt for the said telephones and call-sending appliances when their branch circuits, respectively, are closed for operation.

14. A telephone-circuit extending between and connecting a number of stations, a ringer-magnet of relatively high resistance, as specified, at each station included in a branch circuit uniting the two sides of said telephone-circuit, a generator of electricity at each station for sending outgoing calls, adapted when operated to be connected in an independent branch circuit between the two sides of said telephone-circuit in multiple arc with its associated ringer-magnet, and a telephone at each station also adapted when in operation to be connected between the two sides of said telephone-circuit, substantially as described.

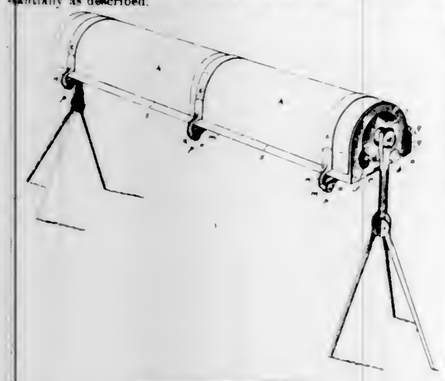
15. In a telephone-station, a combined telephone apparatus comprising, substantially as hereinbefore described, a call-bell magnet of relatively high resistance in a branch circuit uniting the terminals of said apparatus, an electrical generator for sending outgoing calls in a normally-discontinuous independent branch circuit extending between the same apparatus terminals in multiple arc with its associated bell-magnet and adapted to be closed when the said generator is operated, and a telephone normally disconnected, but adapted to be connected when in operation between the said terminals of said apparatus.

449,107. EAVES-TROUGH MACHINE. WILLIAM A. COLSTEN, Great Bend, Pa. Filed Sept. 24, 1889. Serial No. 324,905. (No model.)

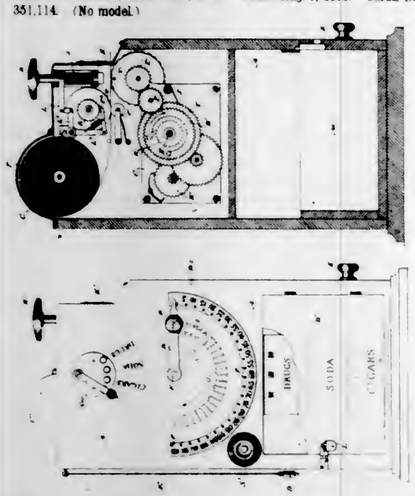
Claim.—1. The combination, in a tool for making eaves-troughs of a forming-block pivoted to rotate upon standards, a pair of sections adapted to embrace the block, one of said sections consisting of a bar bent to fit the block, a plate upon the under side of the block, a cleat on the bar to engage the plate, and a locking cam-lever, all arranged and adapted to operate as specified.

2. In a tool for making eaves-troughs, the combination of a forming-block, a pair of hinged sections surrounding the same, one of these sections being normally held in stationary adjustment upon the block and having its end projecting away from and beyond the edge of the block, and the other being adapted to swing backward away from the block and provided with a hook to receive the projecting end of

the stationary section, and a cam-lever for engaging said end and locking the parts together, in the manner and for the purpose substantially as described.



449,108. ELECTRIC CASH INDICATOR AND RECORDER. WILLIAM F. Z. DESANT, New York, N. Y. Filed May 9, 1890. Serial No. 351,114. (No model.)



Claim.—1. A cash-register having check-preparing mechanism, in combination with electrical recording and indicating mechanism, and electrical and mechanical connections, whereby the act of setting the indicating mechanism so as to indicate the purchase simultaneously causes the recording mechanism to make a permanent record thereof, and the check-preparing mechanism to assume a position preparatory to making the check, substantially as described.

2. A cash-register having a check-stamping device for preparing a check, in combination with an electrical recording or indicating device and mechanical connections between the two mechanisms whereby the setting of the recording or indicating mechanism places the check-preparing mechanism in position to be actuated, substantially as described.

3. An electrical recording or indicating mechanism having mechanical connections with a check-preparing device provided with type or characters, in combination with an indicator-scale and indicator or pointer therefor, the characters on the indicator-scale being equal in number to those of the check-preparing device, substantially as described.

4. In a cash-register, a mechanically-impelled gear-train geared to a dial-arm shaft and to a type-wheel shaft carrying a type or impression-wheel having devices for preparing a check, in combination with an electrical indicator and electrical connections, whereby a correct record of a sale may be kept and a check prepared which corresponds to the record, substantially as described.

5. A cash-register having check-preparing devices, in combination with an indicator having an electro-magnetic recording or indicating mechanism and mechanical and electrical connections between the indicator and the check-preparing devices, whereby a record or indication is made on the indicator, which agrees with the check prepared, substantially as described.

6. A cash-register having two or more indicators and a single check-preparing mechanism and mechanical and electrical connections, whereby a record may be made on either indicator for a check made on the single check-preparing device, substantially as described.

7. A cash-register having an indicating dial-arm, and a dial with numerals or equivalent characters, in combination with two or more independent electro-magnetic recording or indicating devices having electrical connections with the dial-shaft, whereby a record or indication may be made on either recorder or indicator as desired, substantially as described.

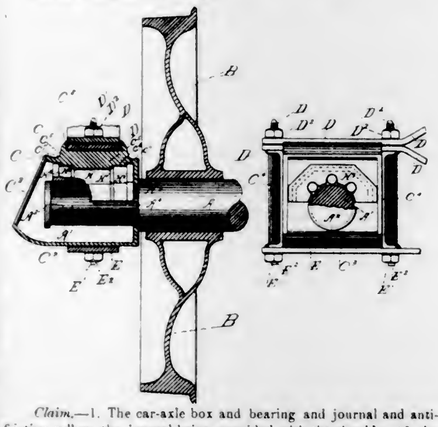
8. A cash-register having an indicating dial-arm and a dial with numerals or equivalent characters, in combination with two or more independent electro-magnetic recording or indicating devices having electrical connection with the dial mechanism and a single check-preparing mechanism geared to the shaft which carries the dial-arm, whereby a record or indication may be made on either indicator, and a check prepared to correspond thereto by the single check-preparing mechanism, substantially as described.

9. A cash-register having two or more recording or indicating mechanisms controlled each by an individual electro-magnet, a dial having numerals or equivalent characters, a dial-arm and shaft geared to a train of gear and carrying a contact-arm adapted to bear on a series of contact-plates, and a type-wheel having characters equal in number to and corresponding with those of the dial and geared to the same train of gearing, in combination with an electrical generator and circuit and switch connections, as described, whereby a record may be made on either indicator and a check prepared on the single check-preparing mechanism, substantially as described.

10. An electrical cash-register having a dial provided with numbers or characters, a dial-pointer, a contact maker and breaker, an electrically-controlled recorder or indicator, a switch, a check-preparing mechanism, and mechanical and electrical connections, substantially as described.

11. A cash-register having circuit making and breaking segments, a contact-arm mechanically connected to a dial-arm, a dial having numerals or characters, one for each circuit making and breaking segment, one or more electro-magnetic indicators, a battery, a switch, a push-button, and circuit-connections, as described, whereby the indicator is actuated only after it is set and the push-button closed, substantially as described.

449,109. JOURNAL-BEARING FOR RAILROAD-AXLES. MORRIS H. DEVORE, Birmingham, Ala., assignor of two-thirds to Peter G. Fisher and Thomas F. Rider, both of same place. Filed Apr. 25, 1890. Serial No. 350,225. (No model.)

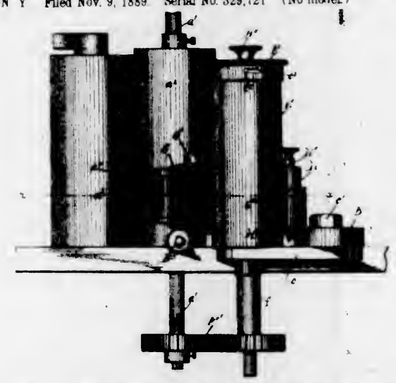


Claim.—1. The car-axle box and bearing and journal and anti-friction rollers, the journal being provided with the shoulder A^3, the bearing provided with grooves H^3, in which the respective rollers K are respectively located, the rollers being of the same length as the bearing, a portion of the bearing and the rollers fitting snugly between the said shoulder A^3 of the journal and the rear end or wall of the box, the rollers being interposed between the bearing and the journal, substantially as and for the purposes specified.

2. The axle-box, journal A', having abutting shoulders A^3, bearing H, having grooves H^3 in its interior surface, rollers K, interposed between the journal and bearing, each of said grooves receiving one of said rollers, the upper portion of said bearing and the under surface of the saddle having corresponding interfitting elevations and depressions, the bearing H and rollers K being located between the front shoulder or flange A^3 and a rear abutment, substantially as and for the purposes specified.

3. The axle-box, journal A', having abutting shoulders A^3, bearing H, having grooves H^3 in its interior surface, rollers K, interposed between the journal and bearing, each of said grooves receiving one of said rollers, the said bearing having end shoulders or flanges H^3, depressions H^3, located between said flanges H^3 and central depressions H', and saddle C, having end depressions C^7 and central elevation C^6 and elevation C^8, respectively located at the respective sides of the elevation C^6 and inside of the depressions C^7, the elevation C^8 entering the depression H' of the bearing, and the elevations C^6 respectively entering the respective depressions H^3, and the elevations H^3 respectively entering the respective depressions C^7, and oil-box C^9, substantially as and for the purposes specified.

449,110. INKING DEVICE. MATTHEW J. DOLPHIN, Brooklyn, N. Y. Filed Nov. 9, 1889. Serial No. 329,721. (No model.)



Claim.—1. The combination of a marker, a loosely-mounted ink-feeding roller, a bearing for said roller adjustable toward said marker, one or more intermediary rollers mounted on said bearing for conveying motion to the ink-feeding roller and for conveying the ink from the feeding-roller to the marker, power-transmitting mechanism between said marker and one or more of the intermediary rollers for positively driving the same, and means, substantially as described, for adjusting one or more of said intermediary rollers toward said ink-feeding roller, substantially as and for the purpose set forth.

2. The combination of a marker, a supporting-spindle, a loosely-mounted ink-feeding roller detachably mounted on said spindle, one or more intermediary rollers for conveying motion to the ink-feeding roller and for conveying the ink from the feeding-roller to the marker, power-transmitting mechanism between said marker and one or more of the intermediary rollers for positively driving the same, and means, substantially as described, for adjusting said ink-feeding roller toward one of said rollers, substantially as and for the purpose described.

3. The combination of a rotating marker, a loosely-mounted ink-feeding roller, two or more intermediary rollers, one of said rollers being driven positively and the other or others by frictional contact, and means, substantially as described, for adjusting the ink-feeding roller toward said positively-driven intermediary roller and for adjusting the frictionally-driven roller toward the marker, substantially as and for the purpose specified.

4. The combination of a marker, a loosely-mounted ink-feeding roller, one or more intermediary rollers for conveying the ink from the ink-feeding roller to the marker, means, substantially as described, for adjusting one of said intermediary rollers toward the marker, and a yielding evening-roller for effecting a uniform feeding of the ink, substantially as described.

5. The combination of a marker, a loosely-mounted ink-feeding roller, one or more intermediary rollers for conveying the ink from the feeding-roller to the marker, power-transmitting mechanism, substantially as described, between said marker and one of the intermediary rollers for positively driving the same, an evening-roller bearing against the ink-feeding roller and revolved by frictional contact therewith, and means, substantially as described, for adjusting the ink-feeding roller toward said positively-driven intermediary roller and for adjusting the frictionally-driven roller toward the marker substantially as specified.

6. The combination of a marker, a bracket movable toward said marker, adjusting means, substantially as described, for adjusting the bracket toward the marker, a loosely-mounted ink-feeding roller supported on said bracket, one or more intermediary rollers supported on said bracket for conveying the ink from the ink-feeding roller to the marker, and power-transmitting mechanism, substantially as described between said marker and one of said intermediary rollers, substantially as and for the purpose set forth.

7. The combination of a marker, a supporting-bracket movable toward said marker, means, substantially as described, for adjusting the supporting-bracket toward the marker, a loosely-mounted ink-feeding roller supported on said bracket, two or more intermediary rollers supported on said bracket with one of said rollers driven positively and the other by frictional contact, and a movable support guided in said bracket and forming a journal for said frictionally-driven intermediary roller, substantially as and for the purpose described.

8. In an inking-roller, the combination of the two-part frame, one within the other, openings through the wall of one of said parts for forming a feeding-surface, openings through the wall of the other of said parts adapted to register with said former openings, said latter openings being of less combined area than the former openings, and grooves leading from one of the latter openings for conveying the feed of the ink, substantially as and for the purpose specified.

9. In an inking-roller, the combination of the two-part frame, one within the other, openings in said separate parts adapted to register with each other, and grooves leading from one or more of the openings in one of said parts, said grooves gradually decreasing in area as they recede from the opening from which they extend for varying the feed of the ink, substantially as and for the purpose set forth.

10. In an inking-roller, the combination of two sleeves movable one within the other, a guideway e^3 in one of said sleeves having its extremity extending to the edge of said sleeve, a pin in the other sleeve movably mounted within said guide, and openings through the wall of said sleeves adapted to register with each other for feeding the ink, substantially as and for the purpose described.

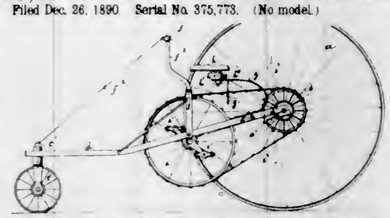
11. In an inking-roller, the combination of two sleeves movable one within the other, a guide in one of said sleeves, a pin in the other sleeve movably mounted within said guide, openings through the wall of said sleeves adapted to register with each other for feeding the ink and grooves leading from one or more of the openings in one of said sleeves, said grooves gradually decreasing in area, substantially as and for the purpose specified.

12. In an inking-roller, the combination of a pair of sleeves movable within each other and having openings in their wall for feeding the ink, a partition in one of said sleeves for closing the inking-roller and formed with an opening for allowing the inlet of the ink, and a cap removably secured over said opening for closing the same, substantially as and for the purpose described.

13. The combination of a marker, a bracket, a spindle mounted on said bracket, an ink-feeding sleeve detachably connected to said spindle, and a second sleeve movable within the former sleeve, separate openings in the wall of the separate sleeves for feeding the ink, substantially as and for the purpose specified.

14. In an inking-roller, the combination of an outer shell or sleeve having openings in its periphery for feeding the ink to the outside thereof, an inner shell or sleeve having an interior ink-containing cavity and opening in its wall for feeding the ink from said cavity to said former openings, and grooves leading from one or more of the latter openings, said grooves gradually decreasing in depth and in width for varying the feed of the ink, and means, substantially as described, for adjusting the separate shells or sleeves, substantially as and for the purpose set forth.

449,111. VELOCIPEDE. JOSEPH EDELSTEIN, New York, N. Y. Filed Dec. 26, 1890. Serial No. 375,773. (No model.)

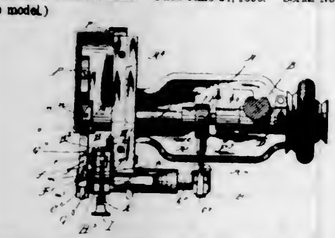


Claim.—1. The combination, in a tricycle, of a pair of wheels *b c*, with a frame, a U-shaped slotted spring *g*, secured thereto between the wheels, a chain passing through the slotted spring and surrounding the wheels, and with a seat *h*, substantially as specified.

2. The combination, in a tricycle, of axle *a'*, with a frame, chain-wheels *b c*, a slotted U-shaped spring *g*, secured to the frame, and with stop-bars *g'* and seat *h*, substantially as specified.

3. The combination, in a tricycle, of axle *a'*, with a frame, chain-wheels *b c*, slotted U-shaped spring *g*, stop-bars *g'*, and with a seat *h*, which is laterally and vertically adjustable upon the spring, substantially as specified.

449,112. RUFFLER FOR SEWING-MACHINES. WILLIAM A. BETAVER, Worcester, Mass. Filed June 21, 1890. Serial No. 356,295. (No model.)



Claim.—1. The combination, with the main shaft E of the sewing machine and rock-shaft B^4, provided with head B^3, of eccentric E' strap F', projecting arm F^3, connecting-arm A^3, standard or post B^2, provided with a bifurcated end B', upright arm C', ruffling-bar G' and ruffling-finger G'', substantially as and for the purposes set forth.

2. The combination, with the main shaft E and eccentric E' and strap F', of projecting arm F^3, head B^3, provided with set-screw C^4, adjustable standard $B' B^2$, adjustable connecting-arm A^3, provided with check-nut A^3, rock-shaft B^4, upright arm C', and ruffling-bar G' and ruffling-finger G'', substantially as and for the purposes set forth.

3. The combination, in a sewing-machine and with its bed-plate, of upright arm C', ruffling-bar G', ruffling-finger G'', bar G' being provided on its under side with cam-shoulder *e* and two horizontal bearing-surfaces, one in front and the other in rear of cam-shoulder *e*, the latter bearing-surface projecting down below the front bearing-surface the depth of cam-shoulder *e*, slotted bearing-piece H, with friction-roll *f* on pin *e'*, all arranged below the bed-plate of the machine, and rock-shaft B^4 for giving to the ruffling-finger G'' its several described motions, substantially as and for the purposes set forth.

4. The combination, with rock-shaft B^4, upright arm C', ruffling-bar G', and ruffling-finger G'', of slotted bearing-piece H, sliding block *g g'* cam-shoulder *e*, and pin *e'*, of friction-roll *f* and adjusting-screw I, substantially as and for the purposes set forth.

5. The combination, with the bed-plate of a sewing-machine, stitch-forming mechanism, and ruffle-forming mechanism, of two parallel ruffler-throats *s s'* in the top plate, one on each side of the needle-path, narrow bridge T, needle-throat *t*, ruffling-finger G'', slot *o*, and ruffling-points *n n'*, substantially as and for the purposes set forth.

6. The combination, with ruffling-bar G', ruffling-finger G'', and mechanism for operating the same, of adjusting-screw I, slotted bearing-piece H, sliding block *g g'*, cam-shoulder *e*, pin *e'*, friction-roll *f*, gib-piece *p*, and adjusting-screws *p' p'*, substantially as and for the purposes set forth.

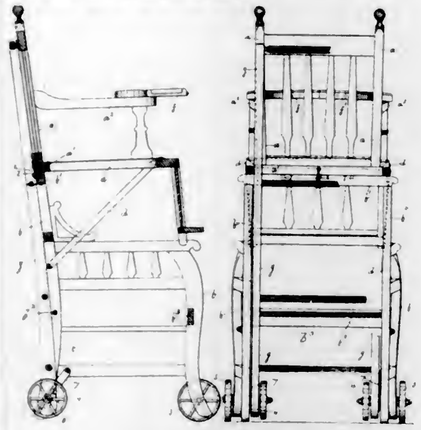
449,113. GARMENT-SUPPORTER. SHERWOOD B. FERRIS, Lakewood, N. J. Filed July 27, 1889. Serial No. 318,880. (No model.)



Claim.—The supporter A, constructed of the upper cross-piece *b*, inwardly-curved sides *d*, and curved loop *c*, connecting the same, so as to form between the parts *b*, *d*, and *c* the wide opening *a*, the said loop *c* being close to and parallel with the sides *d*, where it joins the same, but diverging therefrom near its middle, thereby forming the flaring mouths, and slots *f*, said loop and adjacent sides *d* being laterally bent, substantially as described.

449,114. CHAIR. ERASTUS S. FRENCH, Princeton, assignor to Gilman Waite, Baldwinsville, Mass. Filed Aug. 6, 1888. Serial No. 282,085. (No model.)

Claim.—The chair above described, composed of chair-frame *a*, supporting-frame *b*, provided with supports *b' b^2 b^3* and braces *d d*, the braces *d d* being connected at one end to a portion of the supporting-frame *b* and at the other end to a portion of the chair-frame *a* to allow the chair-frame *a* to swing downward on supports *b^2 b^3* to form a low chair, and support *b'* being at an upper rear portion of frame *b* to support the rear of the chair-frame *a* when it is in position to serve as a high chair, the above combined with a device for locking frames *a* and *b* together when frame *a* is in position for a high chair, all substantially as and for the purpose set forth.



449,115. FASTENER FOR FISH-PLATES FOR RAILS. JOHN S. GARY, Bellevue, Tex. Filed July 21, 1890. Serial No. 359,365. (No model.)



Claim.—The combination, with the fish-plates and rail, of the washers between the plates and rail, the bolt slotted as shown, the wedge-shaped key provided with thin bendable portion, and the washer on the bolt between the key and fish-plate, substantially as shown and described.

449,116. RUCHING. ERNEST H. GOSEWISCH, Chicago, Ill. Filed Apr. 16, 1890. Serial No. 348,254. (No model.)



Claim.—1. The herein-described ruching, consisting of loops of ribbon whose planes are transverse to the longitudinal axis of the ruching, and stitching by which said loops are secured together, the stitched portions of the loops being arranged to overlap.

2. The herein-described ruching, consisting of loops of ribbon whose planes are transverse to the longitudinal axis of the ruching, arranged in a plurality of rows extending side by side, and stitching by which said loops are secured together, the stitched portions of said loops being arranged to overlap.

3. The herein-described ruching, consisting of loops of ribbon whose planes are transverse to the longitudinal axis of the ruching, and stitching by which said loops are secured together, the opposite sides or folds of the loops being arranged to break joints at their stitched portions.

4. The herein-described ruching, consisting of loops of ribbon whose planes are transverse to the longitudinal axis of the ruching, arranged in a plurality of rows extending side by side, and stitching by which said loops are secured together, the loops of one row being arranged to break joints with the loops of the next row at their stitched portions.

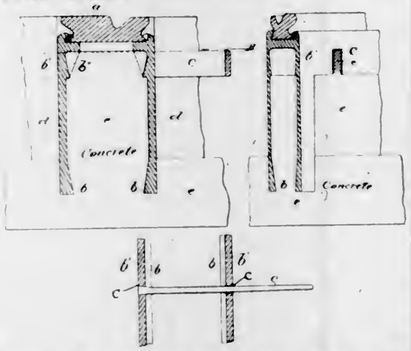
5. The herein-described ruching, consisting of loops of ribbon whose planes are transverse to the longitudinal axis of the ruching, the ribbon being in one continuous strip, and stitching by which said loops are secured together, the loops being arranged to overlap at their stitched portions.

6. As a new article of manufacture, the ruching, substantially as herein described, consisting of a strip of ribbon coiled, providing a number of loops having coincident axes, and stitching by which said loops are secured together, the opposite sides or folds of the said loops breaking joints on the line of the stitching.

7. As a new article of manufacture, the ruching, substantially as herein described, consisting of a coiled strip of material folded transversely, providing two rows of loops extending side by side, and stitching by which the rows of loops are sewed together.

8. As a new article of manufacture, the ruching, substantially as herein described, consisting of a coiled strip of material folded transversely, providing two rows of loops extending side by side, one row of loops breaking joint with the other row of loops, and stitching by which the rows of loops are sewed together.

449,117. CONSTRUCTING STREET-RAILWAY TRACKS. THEODORE G. GRIBBLE, London, England. Filed Jan. 13, 1891. Serial No. 377,620. (No model.)



Claim.—1. The combination, with the bed of concrete or like material, of a box-like longitudinal support open more or less at the bottom and top, the lower parts of web and side walls being provided with enlargements adapted to underlie and engage with part of the concrete bed, as set forth.

2. A metallic gage-bar having wedge-shaped or tapered ends and fitting with slots contained in a metallic longitudinal support for railway-tracks, in combination with a bed of concrete and a box-shaped longitudinal support for railway-rails, as set forth, said gage-bar being held in place without the use of bolts, spikes, or rivets, or other attachments, except the aforesaid slots and the cohesion of concrete.

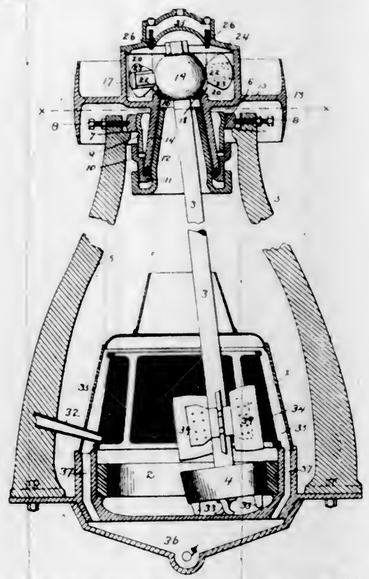
449,118. MILL AND POWER MECHANISM. EDWIS C. GRIFFIN, West Newton, Mass. Filed Oct. 29, 1890. Serial No. 369,652. (No model.)

Claim.—1. The combination, in a mill, of an annular die located in the grinding-chamber, a pulley supported horizontally above the grinding-camber, and a roll-shaft and roll suspended from the pulley and directly connected therewith by means of a universal coupling, whereby the roll-shaft and roll are at liberty to swing in any direction, and when the pulley is revolved the roll is carried or rotated around the annular die and held in contact therewith by centrifugal force, substantially as shown and described.

2. In a pulverizing-mill, the combination of an annular die located in the pulverizing-chamber, a pulley supported horizontally above the grinding-chamber, and a radially-movable roller-shaft and roll suspended therefrom on a line with the axis thereof and directly connected therewith by a universal coupling whereby when the pulley is revolved the roll is gyrated around the annular die and held in contact therewith by centrifugal force, substantially as shown and described.

3. In a pulverizing-mill, the combination, with an annular die, of a radially-movable roll-shaft and roll, and a pulley from which the roll-shaft is suspended on a line with its axis, the pulley and roll-shaft being connected by a universal joint or coupling, substantially as shown and described.

4. In a pulverizing-mill, the combination of an annular die located in the pulverizing-chamber, a pulley arranged horizontally above said grinding-chamber, provided with a central opening and recesses at the sides thereof, a radially-movable roll-shaft extending through said opening and provided with journals or trunnions adapted to enter said recesses, and a roll mounted on the roll-shaft, substantially as shown and described.



5. In a pulverizing-mill, the combination of an annular die located in the pulverizing-chamber, a pulley mounted horizontally above said chamber, provided with a central opening and recesses on opposite sides thereof, a radially-movable shaft, as 3, provided with a ball or sphere having journals or trunnions on its opposite sides adapted to enter the recesses, an annular ring or bearing on which the sphere rests and by which it is supported, and a roll mounted on the radially-movable shaft and adapted to travel around the annular die, substantially as shown and described.

6. In a mill, the combination, with the supports 5, of the hollow supporting stud or sleeve 12, connected with said supports 5, the pulley provided with the conical or cylindrical hub 14, revolubly mounted on said stud, and the roll-shaft suspended from the pulley by means of a universal coupling, substantially as shown and described

7. The combination, in a pulverizing-mill, of the annular die located in the grinding-chamber, the supports 5, the hollow support 12, adjustably connected with said support, the pulley revolubly mounted on said stud, and the roll-shaft and roll, the former of which is suspended from said pulley on a line with its axis and connected therewith by a universal joint or coupling, substantially as shown and described.

8. In a mill, the combination, with an annular die located in the grinding-chamber, of a pulley revolubly mounted above the grinding-chamber, and a radially-movable roll-shaft and roll suspended from said pulley on a line with its axis and connected directly therewith by a universal coupling, substantially as shown and described.

9. In a mill, the combination, with an annular die, of a pulley revolubly mounted above the die, and a radially-movable roll-shaft and roll suspended from said pulley and connected directly therewith by a universal coupling, the pulley being vertically adjustable on its supports, substantially as shown and described.

10. In a mill, the combination, with an annular die, of a pulley revolubly mounted above the die, and a roll-shaft and roll suspended from said pulley and connected therewith by a universal coupling, the pulley being laterally and vertically adjustable on its supports, substantially as shown and described.

11. The combination of the pulley 13, having the central opening 16 and journal-box casing 17, the recesses within which are provided with vertical side walls forming journal-bearings, with the shaft 3, having the ball 19, provided with the journals 22, substantially as shown and described.

12. The combination of the pulley 13, having the journal-box casing 17 and central opening, with the shaft 3 extending through said opening, provided with the ball 19 and trunnions or journals on opposite sides thereof, an annular concave seat on which said ball rests, an

annular ring or cap 27 resting upon said ball, and means for holding the ring or cap in position, substantially as shown and described.

13. The combination of the pulley 13, having the journal-box casing 17 and central opening, with the shaft 3 extending through said opening, provided with the ball 19 and trunnions or journals on opposite sides thereof, an annular concave seat on which said ball rests, an annular ring or cap 27 resting on said ball, and means for exerting a yielding pressure on the cap or ring, substantially as shown and described.

14. The combination of the pulley 13, having the central opening 16, and recesses 20, of the shaft 3, provided with the ball 19, and journals 22 and gibs 23, substantially as shown and described.

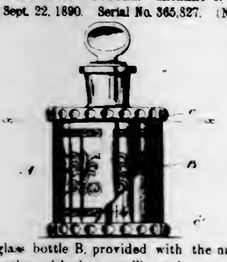
15. The combination of the pulley 13, having the recesses 20, with the shaft 3, provided with the ball 19, having the journals adapted to enter the recesses, a cap or ring 27, adapted to seat upon the ball, and means for holding it in contact therewith independent of the means by which the shaft and ball are supported, substantially as shown and described.

16. In a mill, the combination, with an annular die located in the grinding-chamber, of a pulley revolubly mounted above the grinding-chamber, a radially-movably roll-shaft and roll suspended from said pulley and connected therewith by a universal coupling, and means for preventing the elevation or lifting of the roll-shaft when the mill is in operation, substantially as shown and described.

17. In a mill, the combination of the annular die, the supports 5, the bosses 6, the annular rings or supports 9 and 10, the stud or sleeve 12, and the pulley revolubly mounted on said stud and the roll shaft and roll connected with said pulley by a universal coupling, substantially as shown and described.

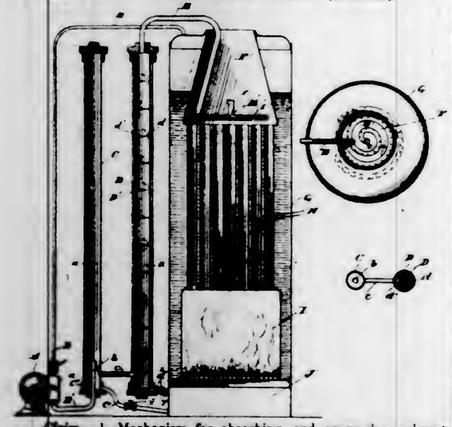
18. The combination, with the hollow stud 12, of the pulley 13, revolubly mounted thereon, and the radially-movable shaft 3, connected with said pulley by a universal coupling, substantially as shown and described.

449,119. **METAL-CASED BOTTLE.** ZACHARY T. HALL, Philadelphia, Pa. Filed Sept. 22, 1890. Serial No. 365,827. (No model.)



Claim.—The glass bottle B, provided with the narrow vertical groove *b*, in combination with the metallic casing A, with its locked seam *d* embedded and concealed in the said groove *b*, substantially as shown.

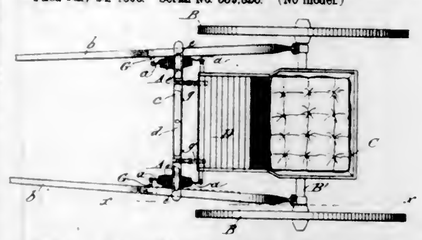
449,120. **STEAM-MUFFLER.** CALEB E. HEALY, New London, Ohio. Filed Oct. 15, 1890. Serial No. 368,167. (No model.)



Claim.—1. Mechanism for absorbing and consuming exhaust-steam from an engine, consisting of the enlarged condensing-chamber C, provided with the discharge-pipe *c'*, the jacketed chamber D, provided with connecting and discharge pipes *c*, *d*², and E, in combination with the superheating and perforated coil E', arranged to operate substantially as described.

2. In means for condensing, superheating, and consuming exhaust-steam, a condensing-chamber C, an exhaust-pipe extending into this chamber, a drain-pipe *c'*, a steam-connection with a jacketed chamber D, perforated partitions with openings arranged on alternate sides of the jacketed chamber, a vent exhaust-pipe leading from this chamber, and a perforated coil extending from this pipe and situated in close juxtaposition to the mouths of the boiler-flues, substantially as described.

449,121. **ROAD-CART.** SAMUEL B. IRWIN, West Hebron, N. Y. Filed July 24, 1890. Serial No. 359,820. (No model.)



Claim.—1. In a road-cart or other vehicle, the combination, with the thills and the body, of springs connecting the thills with the body, said springs being supported by means of clips secured beneath the cross-bar, and straps attached to the forward end of the body and the cross-bar.

2. In a road-cart, the combination, with the thills or shafts, the cross-bar having clips, and the cart-body, of the springs held within said clips, pivotally connected to the cart-body and also connected to the thills, substantially as described.

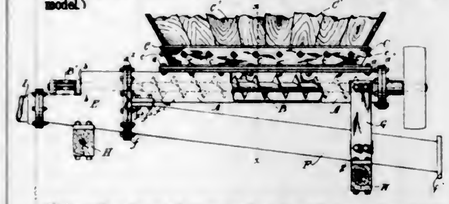
3. In a road-cart, the combination of the cart-body and the thills, the springs consisting of longitudinal coils, the clips surrounding said springs and connected to the cross-bar for the purpose of supporting the springs, the irons for connecting the ends of the springs to the thills, and the irons for connecting the opposite ends of the springs to the body, substantially as described.

4. The combination, with the thills and the cart-body, of the intermediate springs supported by the cross-bar, said springs having the wire of which they are composed formed at each end with loops or eyes, the irons on the thills bolted to the eyes on one end of the springs, and the irons secured to the body and pivotally connected to the other ends of the springs.

5. In a road-cart, the combination of the thills, the cart-body, the coiled springs connected at one end to the thills and at the other end to the cart-body, said springs being supported by the cross-bar, and the straps secured at one end to the forward part of the body and at the other end to the cross-bar, substantially as described.

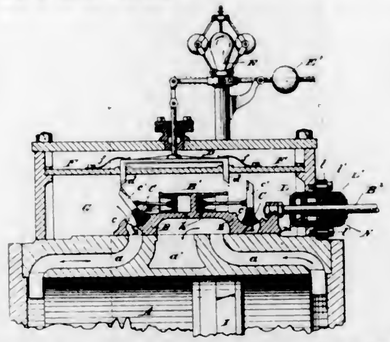
6. In a road-cart, the combination of the thills, the cart-body, the cross-bar having clips, the springs supported by said clips, said springs being pivotally connected at one end to the cart-body and adjustably connected at the other end to the thills and having both a lateral and direct motion, and the adjustable straps fastened to the cart-body at its forward end and also to the cross-bar.

449,122. **MEANS FOR MOVING SLACK COAL.** EDGAR D. JOHNSTON, Connersville, Ind. Filed May 24, 1890. Serial No. 352,975. (No model.)



Claim.—In a device for moving slack coal, the combination, substantially as hereinbefore set forth, of the conveyer, a hopper mounted thereon to supply said conveyer, an enlarged receiving-chamber connected to the discharge end of the conveyor to receive the slack and having a tapered end to connect to a discharge-pipe, and a blast-pipe leading from a force-blower and connected to the enlarged chamber.

449,123. **CUT-OFF VALVE.** JOHN H. KING, Cincinnati, Ohio, assignor of one-half to John O. Sloan, same place. Filed June 9, 1887. Serial No. 240,689. (No model.)



Claim.—1. The combination, substantially as specified, of a slide-valve B, having ports *b* and seats *c c*, with the segmental cut-off valves C C, journaled to said slide-valve upon opposite ends and having arms *c' c'*, and suitable tripping devices, such as shown, controlled by the governor and adjustable in the path of said arms, for the purpose set forth.

2. The combination, substantially as set forth, of the steam-chest, the slide-valve having admission-ports near each end, the cut-off valves to control said ports and carried by said slide-valve, with tripping devices, such as shown, located in the path of the cut-off valves to open said ports, the cylinders B', carried by the slide-valve, the pistons H, and links *h* to close the admission-ports *b b* when the cut-off valves are released by the tripping devices.

3. The combination of the steam-chest, the cut-off valves C c, cylinders B, carried by the slide-valve, the pistons H, linked to the valve-arms, and the vertically-sliding angle-bar D *d d*, located in the path of the valve-arms and controlled by the governor, substantially as and for the purpose set forth.

449,124. **WRAPPER-PASTER.** CHARLES Y. KNIGHT, Minneapolis, Minn., assignor to Frank Crowell, same place. Filed Nov. 24, 1888. Renewed Feb. 9, 1891. Serial No. 380,728. (No model.)



Claim.—1. In a device of the class described, the combination of the roll 5, adapted to rest upon the wrappers to be pasted, the paste-receptacle 3, adapted to convey the paste to the surface of said roll, the spring 9, adapted to press said roll firmly upon said wrappers, and the spring 15, secured underneath said receptacle 3 and adapted to press upon said wrappers and as each wrapper is removed from the machine to carry the one underneath slightly forward with it, substantially as described.

2. In a device of the class described, the combination of a paste-receptacle pivotally supported above its base, a paste-roll journaled therein in contact with the inclosed paste and bearing upon said base, and a spring connected to said base and to said receptacle and adapted to hold said roll with elastic pressure upon the articles placed underneath it, substantially as and for the purposes set forth.

3. The combination of a suitable base, a paste-receptacle arranged above and transverse of said base having spring-controlled pivoted connection with the same, a paste-roll journaled upon the same with its surface in contact with the inclosed paste and bearing with elastic pressure upon said base, and a spring secured to said receptacle and adapted to bear upon the paper placed underneath said roll and as the upper sheet of the package of paper is withdrawn to cause the next sheet below the same to be carried forward, substantially as and for the purposes set forth.

449,125. **ELASTIC METALLIC POLE FOR ELECTRIC WIRES.** CHARLES A. LIEB, New York, N. Y. Filed Nov. 3, 1890. Serial No. 370,158. (No model.)

Claim.—1. A pole having more than one thickness of metal extending longitudinally along its concave side when under strain, substantially as set forth.

2. A pole re-enforced against buckling on its concave side when under strain, substantially as set forth.

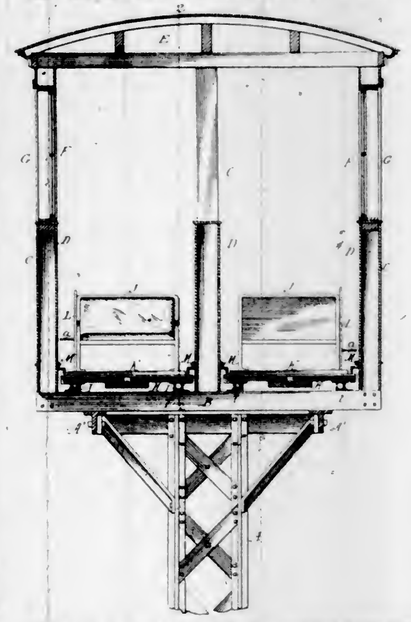


3. A metallic pole constructed and arranged to have two or more opposing faces or surfaces adapted to movement relative to each other, which, when in contact, stiffen the pole, substantially as set forth.

4. A metallic pole composed of a strip of metal folded or bent in such manner as to have detached opposing surfaces, which, when the pole is under strain, approach each other, substantially as set forth.

5. A metallic pole composed of a strip of metal folded or bent in such manner as to have detached opposing surfaces, which, when the pole is subjected to sufficient strain, abut or press against each other substantially as set forth.

449,126. **RAILWAY.** ROBERT H. LITTLE, Cyprus River, Canada, assignor to himself and Edward P. Donnell, Chicago, Ill. Filed Sept. 23, 1889. Renewed Sept. 4, 1890. Serial No. 363,894. (No model.)



Claim.—1. In a passenger-railway, the combination of a continuously-moving carrier and its supporting-rails with a removable seat, substantially as and for the purpose specified.

2. In a passenger-railway, the combination of the continuously-moving carrier and its supporting-rails with a covered passage-way, whereby the use of covered carriages is avoided, substantially as specified.

3. In a passenger-railway, a continuously-moving carrier, in combination with landings or platforms provided with means for receiving and landing passengers, substantially as specified.

4. The combination, with a base K, having a pin *e*, with the landing-frame O P, and hooked bar *b* and link *c*, substantially as specified.

5. The combination of the base K, having the bar L and pin *a*, with the lever *g*, constructed and operating substantially as specified.

6. The combination of the platform N and bar Q with the bar R, hinged bar R", and lever R"', substantially as specified.

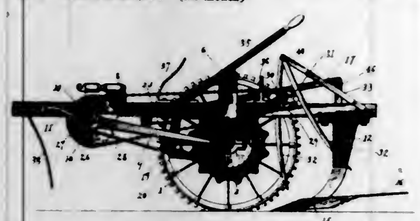
7. The combination of the bars S S' with the wheels or drums V W, cord and spring Z, constructed and operating substantially as specified.

8. The combination of the drum D', having the vertical flange and side opening D", with the pivoted lever or bar E', substantially as and for the purpose specified.

9. The driving-wheel B", having the cogs or projections *b'*, with the spaces between them, in combination with the sections *k'*, having the castings *i'*, substantially as specified.

10. The combination of the sections *k'* and *l'* with the rope R', substantially as and for the purpose specified.

449,127. POTATO-DIGGER. DANIEL B. MERRELL, Canandaigua, assignor of one-half to Milton E. Benedict, Perry, N. Y. Filed Dec. 4, 1890. Serial No. 373,594. (No model.)



Claim.—1. The combination, with the rotating shaft or axle, of a standard, an opening share or blade having the rearwardly-extending arms or fingers and pivoted on a laterally-extending pivot on the standard, and connections between the share and shaft for causing the oscillation of the former by the latter, whereby the share will be moved easily through the ground and the earth on the fingers sifted, substantially as described.

2. The combination, with the beam and the standard extending downward and forward therefrom, of the share pivoted to the lower end of the standard, having the pointed end and the rearwardly-extending arms or fingers on opposite sides of the standard, and means for oscillating the share on its pivot, substantially as described.

3. The combination, with the supporting wheels and axle, of the plates mounted on the axle, the two bolts connecting them, the frame journaled on the axle, the beam pivotally connected to the frame and extending between the bolts on the plates, and the lever pivoted on the beam and co-operating with one of the bolts, substantially as described.

4. The combination, with the beam and the standard, of the share pivoted on the standard, the cam-wheel and connections between it and the share for actuating the latter in one direction on its pivot, and the spring connected to said share for actuating it in the other direction, substantially as described.

5. The combination, with the beam and the standard, of the share having the fingers thereon pivoted on the standard, the cam-wheel and connections between it and the share for actuating the latter in one direction on its pivot, and the spring connected to said share actuating it in the other direction, substantially as described.

6. The combination, with the beam and the standard, of the share pivoted on the standard, the cam-wheel, the pivoted lever connected to said share, having one end engaging the cam-wheel, and the spring operating to hold the lever in engagement with said wheel, substantially as described.

7. The combination, with the axle and supporting-wheels, the beam, and the frame pivoted to the axle and beam, of the standard, the share pivoted thereon, the cam-wheel on the axle, the lever on the frame engaging the cam-wheel and connected to the share, and the spring for actuating the share in one direction, substantially as described.

8. The combination, with the beam, the standard, and the share pivoted thereon, of the cam-wheel, the lever connected to the share and engaging the cam-wheel, and the spring on the beam connected to the lever and capable of adjustment toward and from the pivot thereof, substantially as described.

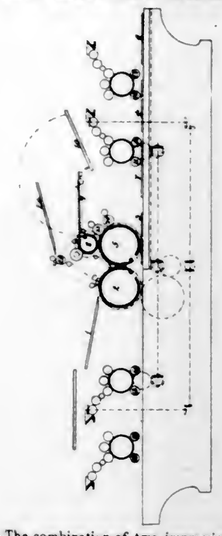
9. The combination, with the supporting-wheels and axle, the beam, and the frame pivotally connected to the axle and beam, the wheel mounted on the pivotal center between the beam and frame, a wheel on the axle and connections between it and the last-mentioned one, of the standard, a share or shovel thereon, a shaft on the beam and arms connected thereto arranged to operate on material on the share, and connections between said shaft and the wheel on the pivotal center of the beam and frame, substantially as described.

10. In a potato-digger, the combination, with a digging blade or share having the rearwardly-extending arms or fingers, of the vibratory separating arms or teeth and guiding-links for causing them to move downward at the rear of the blade proper, rearward to operate on the soil on the fingers and forward again, substantially lengthwise, whereby the material on the fingers will be separated by the combined action of the teeth and fingers, as set forth.

11. The combination, with the oscillating digging-share having the rearwardly-extending arms or fingers, of the vibratory separating arms or teeth for operating on the soil on the fingers on the share, substantially as described.

12. The combination, with the beam, the standard, the digging-share pivoted thereon, and means, substantially as described, for oscillating said share, of the shaft on the beam, the cranks thereon, the separating-arms on the cranks, and the links for guiding them, as set forth.

449,128. CHROMATIC-PRINTING MACHINE. JULES MICHAUD, Paris, France. Filed Feb. 10, 1890. Serial No. 339,864. (No model.)



Claim.—The combination of two impression-cylinders provided with grippers, a bed carrying two series of forms, the forms of each series alternating with those of the other series, those of one set serving to produce impressions on one side of a sheet of paper while such sheet is on one cylinder, while the forms of the other set produce the impressions on the opposite side of the sheet when same has been transferred to the other cylinder, the alternate forms being caused to pass under the cylinder with which they are not required to act without coming in contact therewith, all substantially as set forth.

449,129. MONKEY-WRENCH. VINCENT J. MCDONNELL, Philadelphia, Pa. Filed May 12, 1890. Serial No. 351,431. (No model.)



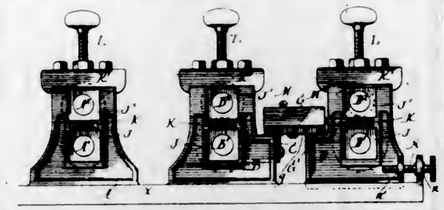
Claim.—1. In a wrench, in combination with a main shank having a screw-threaded longitudinal groove and a fixed jaw, a movable jaw movable on the main shank, a spindle or rod provided at one end with a screw-thread screwed into the movable jaw, said rod parallel with the main shank and journaled thereto in a fixed journal-bearing, said rod adapted to slide to and fro when the mutilated screw is disengaged, movable horizontally and rotatively in the said journal-bearing, a mutilated screw, and a lever fixedly provided on said rod adapted to turn the said rod when rotated and to turn the screw on the end of the said rod in the screw-threads provided on the movable jaw, in the manner and for the purpose substantially as hereinbefore set forth and described.

2. In a wrench, the combination of the shank A, fixed jaw a', the movable jaw a, screw-threaded groove a^2, provided longitudinally in the main shank A, the rod B, journaled in a fixed journal-bearing parallel with the main shank A, provided on its inner end with a screw-thread s, screwed into screw-threads provided in movable jaw a, mutilated screw C, secured on rod B, adapted to slide to and fro when the mutilated screw is disengaged, a lever l, adapted to rotate the said mutilated screw C, and rod B, substantially as hereinbefore set forth and described.

449,130. SASH-BAR MACHINE. WILLIAM H. NOAKES, Chicago, Ill. Filed Dec. 24, 1890. Serial No. 375,663. (No model.)

Claim.—1. The combination of a hollow former consisting of two blocks having grooves therein adjustably held together, whereby an adjustable former having a flaring mouth at the receiving end and a smaller mouth at the delivery end thereof is obtained, with a form suspended at one end thereof in the hollow former near the receiving end of such hollow former, such form extending beyond the delivery

end of the hollow former and having prongs thereon adapted to extend within a hollow space to the sides of that portion of the periphery of forming-rollers rotatably held in a frame therefor, which grasp the center of the strip of sheet metal passing through the former and between such rollers, whereby the external and internal shape of a strip of sheet metal forced through the adjustable hollow former is determined by such hollow former and form therein, and the forming-rollers and prongs extending between them, substantially as described.

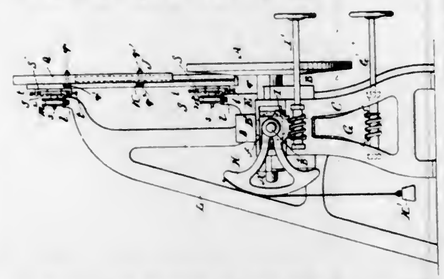


2. The combination of the hollow former G, provided with a flaring mouth or opening at one end thereof, the form G', suspended at one end thereof in the hollow former G by adjustable screw M, the form G' extending beyond the hollow former at one end thereof and such extension provided with prongs adapted to extend into the hollow space between the periphery of forming-rollers rotatably held in a frame therefor, whereby the external and internal shape of a strip of sheet metal forced through the hollow former is determined by such hollow former and form therein, and the forming-rollers and prongs extending between them, substantially as described.

3. In a machine for making sheet-metal sash-bars for constructing ornamental glass windows, the combination of adjustable forming-rollers between which a strip of sheet metal passes, forming-rollers behind the first-named forming-rollers, between which also the partially-shaped sash-bar passes, a flaring hollow former through which the partially-shaped sash-bar is forced, a form suspended within the hollow former near the large end thereof, such form having prongs thereon extending beyond the hollow former to forming-rollers behind such form, and forming-rollers behind such suspended form between which the sash-bar passes, and by which, in combination with the prongs of the form, the completed external shape of the sash-bar and the internal shape of the hollow sides thereof are given thereto, substantially as described.

4. In a machine for making sheet-metal sash-bars for constructing ornamental glass windows, the combination of adjustable forming-rollers between which a strip of sheet metal passes, adjustable forming-rollers, behind the first-named forming-rollers, between which also the partially-shaped sash-bar passes, an adjustable hollow former through which the partially-shaped sash-bar is forced, a form adjustably contained within the hollow former, having prongs thereon extending therefrom to adjustable forming-rollers behind such form, and adjustable forming-rollers behind such adjustable form, between which last-named forming-rollers the sash-bars pass and by which the completed external shape thereof is given thereto, substantially as described.

449,131. BEVELING-MACHINE. MICHAEL O'GORMAN, Jersey City, N. J., assignor of one-half to M. A. Cuming, New York, N. Y. Filed June 18, 1890. Serial No. 355,853. (No model.)



Claim.—1. The drive-shaft for the grinding-disk, journaled at the center of a sliding plate held on a carriage mounted in a main frame on trunnions which work in slots in the main frame, substantially as described.

2. The carriage B, provided with trunnions at its ends and having central bearings for the shaft which carries the grinding-disk, in combination with the main standards provided with boxes or elongated bearings for the trunnions and means for shifting the trunnions, substantially as described.

3. The carriage formed or provided with ways and the plate A^3, fitted therein, in combination with the main standards and the shaft A', journaled in or upon said plate, substantially as described.

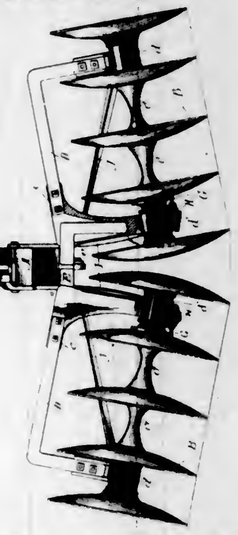
4. The carriage formed or provided with ways and the plate A^3 fitted therein and formed with a rack B^3, in combination with the shaft B^4, fitted in the hollow trunnion, and the gear-wheel B^4, segment I, and worm I', substantially as described.

5. The carriage B and shaft A', journaled in the center thereof, in combination with the arm H, weight H', attached thereto, the segment I, and worm-shaft I', substantially as described.

6. The carriage B, having segment G attached thereto, in combination with the shaft A', grinding-disk A, and worm G', substantially as described.

7. The plate K, provided with plates S', in combination with the plates S, screws s', which work in slots s^3, gudgeon s, and adjusting-screws t at the ends of the plates S', substantially as and for the purposes set forth.

449,132. DISK HARROW. JOHN F. PACKER, Chicago, Ill., assignor to The David Bradley Manufacturing Company, same place. Filed Apr. 16, 1890. Serial No. 348,286. (No model.)



Claim.—1. In a disk harrow, the combination, with adjoining disk gangs and a socket on each gang, of a yoke whose arms are adapted to enter said sockets and prevent the ends of the gangs from rising, substantially as and for the purpose specified.

2. In a disk harrow, the combination, with adjoining disk gangs, of a socket on each gang, each socket having two bearing-points e f and a yoke E, substantially as and for the purpose specified.

3. In a disk harrow, the combination, with adjoining disk gangs and a yoke, of a socket on each gang, each socket having two bearing-points e f and having its opening widened at the top, substantially as and for the purpose specified.

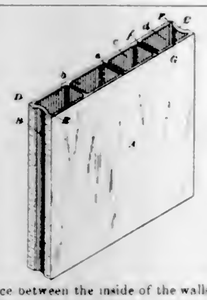
4. In a disk harrow, the combination of a yoke with the adjoining disk gangs and a socket on each gang to receive the arms of said yoke and engage therewith on one side and prevent the rising of the ends of the gangs by the action of the disks on the ground and adapted to permit the opposite ends of said gangs to rise, substantially as specified.

449,133. BUILDING-TILE. JOSEPH PAJEAU, Chicago, Ill. Filed Nov. 21, 1890. Serial No. 372,160. (No model.)

Claim.—In a building-tile, dividing the interior of the tile into compartments by means of double partitions, said partitions having spaces e and f between said partitions, said spaces being longer than

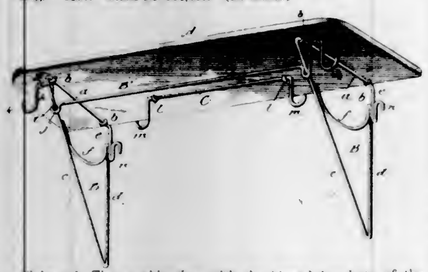


449,133.



the normal distance between the inside of the walls of the tile, for the purpose described

449,134. BRACKET. CHARLES PORTER, Fort Worth, Tex. Filed Aug. 7, 1890. Serial No. 361,263. (No model.)

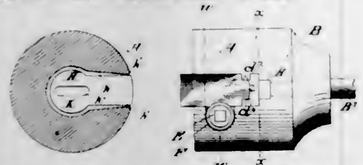


Claim.—1. The combination, with the hinged brackets, of the hinged wire B', hinged to swing at right angles to the movement of the brackets, having bends to receive the inclined portions of the brackets when extended, substantially as specified.

2. The combination, with the hinged brackets, of the longitudinal wire B', hinged to a support, as a shelf, and formed with bends to receive the inclined portions of the brackets, and with hooks at its outer ends, substantially as specified.

3. The combination, with the shelf and the brackets hinged to the under side thereof and provided with eyes or hooks *n*, of the wire B', having horizontal portions hinged to the under side of the shelf and formed with bends to receive the inclined portions of the brackets and at its ends with hooks, substantially as specified.

449,135. DRILL-CHUCK. CHARLES T. PRATT, New Hartford, N. Y. Filed July 31, 1890. Serial No. 360,464. (No model.)



Claim.—1. In a chuck, a chamber extending outwardly from the axis of rotation of the chuck, and a slotted piece movably inserted in the said chamber, and the piece having a center of movement which is eccentric to the axis of rotation of the chuck, as herein described.

2. In a drill-chuck, a chamber contracted outwardly from the axis of rotation of the said chuck, and a slotted piece movably inserted in said chamber and slightly rotatable about the point of greatest contraction of the said chamber as a center, as herein described.

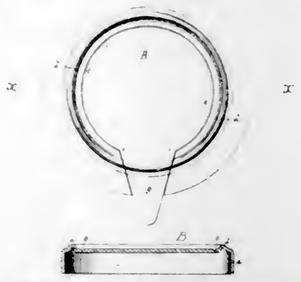
3. In a drill-chuck, a chamber enlarged centrally in the chuck and contracted outwardly from the center of the chuck, and a slotted piece movably inserted in the said chamber and slightly rotatable about the point of greatest contraction as a center, as herein described.

4. In a drill-chuck, a movable piece inserted in a chamber in the chuck and having an enlarged part concentric to the axis of the chuck, and an arm extending outwardly from the enlarged part, and a slot for a drill end formed in the said enlarged part, as herein described.

5. In a drill-chuck, and in combination with means for gripping and aligning a drill, a chamber extending outwardly from the axis of rotation of the chuck, and a piece slotted for a drill end and movably inserted in said chamber, and the said piece having a center of movement in the chuck which is eccentric to the axis of rotation of the chuck and also eccentric to the slot, as described.

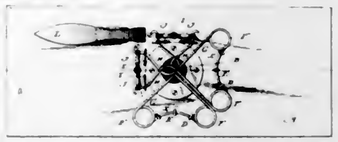
6. The combination of a chuck having a chamber with an enlarged part concentric to the axis of rotation of the chuck and a lateral passage connecting with the said chamber, a slotted piece movably inserted in said chamber and rotating about a point eccentric to the axis of rotation of the chuck, and a drill having a flattened end for insertion in the slotted piece, as herein described.

449,136. METAL CAN. FREDERIC REISET and GUSTAVUS A. WAEBER, New York, N. Y. Filed Jan. 25, 1890. Serial No. 338,070. (No model.)



Claim.—A sheet-metal can, box, or other receptacle having in one of its ends a circumferential or partly-circumferential incision made partially through the metal, in combination with a circumferential or partly-circumferential rib or corrugation adjacent to and independent of the incision, substantially in the manner and for the purpose set forth.

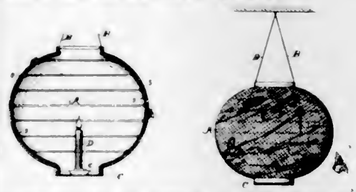
449,137. DEVICE FOR STRIPPING LEAVES FROM SUGAR-CANE. RICHARD ROHR, Millstadt, Ill. Filed Dec. 12, 1890. Serial No. 374,434. (No model.)



Claim.—1. The stripper formed from a single spring-wire having a central portion or base, coils at the ends of the said base, and arms extending from said coils and provided with overlapping bends, substantially as set forth.

2. The combination of the spring stripper-arms having overlapping bends, the lever, and connections between the lever and the ends of the arms, whereby when the lever is depressed the bends of the arms will be moved apart, as set forth.

449,138. INSECT-TRAP. JOHN G. ROTH, South Bend, Ind. Filed June 23, 1890. Serial No. 356,455. (No model.)

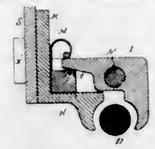


Claim.—1. A fly-trap consisting of a paper lantern open at top and bottom and coated externally and internally with a sticky adhesive substance, and the suspending-cords, substantially as specified.

3. The herein-described fly-trap, consisting of a paper lantern open at top and bottom and coated with a sticky adhesive substance, and suspending-cords, and the transverse bottom strip C, all substantially as and for the purpose described.

449,139. CABLE-GRIP. EMIL SCHALK, Piermont, N. Y. Filed May 1, 1888. Serial No. 272,422. (No model.)

Claim.—1. The combination of the jaw H, having bearings A', with the jaw I, shafts K K', links Q, and plates S, springs M', and lugs *s*, all as described.



2. The combination of the cable D and jaws H and I, shafts K K', lugs *s*, springs M', and plates S, all as described.

3. The combination of the jaw H, having bearings A', shaft K, and jaw I, and cable D, all as described.

4. The combination of the jaw H, having bearings A', shaft K, jaw I, lugs *s*, springs M', and cable D, all as described.

5. The combination of the jaws H and I, cable D, links Q, and plates S, all as described.

6. The combination of the jaws H and I, cable D, links Q, plates S, and guides S', all as described.

7. The combination of the car Z, guides S', plates S, jaws H and I, links Q, shafts K K', and cable D, all as described.

8. The combination of the obstruction *i*, lever *e*, cable D, and jaws H and I, all as described.

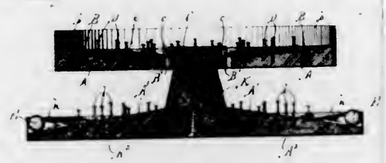
9. The combination of the obstruction *i*, lever *e*, plates S, guides S', jaws H and I, bearings A', shafts K K', links Q, lugs *s*, and cable D, all as described.

10. The combination of the pawl *u*, ratchets *x*, lever T, plates S S, guides S' S', jaws H and I, bearings A', shafts D K', links Q, lugs *s*, and cable D, all as described.

11. The combination of the pawl *u*, ratchets *x*, lever T, plates S, guides S', jaws H and I, bearings A', shafts K K', links Q, lugs *s*, lever *e*, rod *d*, cable D, and obstruction *i*, all as described.

12. The combination of the car Z, jaws H and I, cable D, and lever *e*, all as described.

449,140. GAME. ROYAL R. SCOTT, Canandaigua, and JOTHAM R. HILLMAN, Shortsville, N. Y. Filed Apr. 7, 1890. Serial No. 346,852. (No model.)



Claim.—1. The herein-described game, the same consisting of a pair of beds, one above the other, said beds being arranged with one inclining downwardly from its outer edge inwardly and the other inclining in the opposite direction, a traveling member, an aperture extending through the upper bed from the foot of its incline to the upper part of the incline on the other bed, whereby the traveling member moves in one direction on one bed and vice versa on the other, obstructions adjacent to the extremity of said passage, and a series of resting points or pockets at the lower edge of the lower bed, whereby the traveling member rests in one or the other of said pockets, substantially as set forth.

2. The herein-described game, consisting of a pair of beds, one above the other and inclined in opposite directions, passages leading from the center of the upper to the lower bed, obstructions in front of the exit of said passages, and a traveling member, substantially as set forth.

3. The herein-described game, consisting of a pair of beds, one above the other and provided with curving ways, one of which inclines transversely to the center and the other away from the center, passages between the two beds, and a traveling member, substantially as and for the purpose set forth.

4. The herein-described game, consisting of a pair of beds, one above the other, passages between said beds, inclined ways upon the upper bed leading to the entrance of said passages and inclined ways on the lower bed leading from the exit of said passages, obstructions upon said inclined ways, and a traveling member, substantially as and for the purpose set forth.

5. The herein-described game, consisting of a pair of beds, one above the other, passages between said beds, inclined ways upon the upper bed leading to the entrance of said passages and inclined ways on the lower bed leading from the exit of said passages, obstructions upon said inclined ways, a traveling member having a starting-point or rest on one of said beds, and an actuating member for setting said traveling member in motion and adapted also to pass through the said passages to the lower bed, substantially as set forth.

6. The herein-described game, consisting of a pair of beds, one above the other, passages between said beds, inclined ways upon the upper bed leading to the entrance of said passages and inclined ways on the lower bed leading from the exit of said passages, obstructions upon said inclined ways, a traveling member having a starting-point or rest on one of said beds, an actuating member for setting said traveling member in motion and adapted also to pass through the said passages to the lower bed, and receiving-pockets on the lower bed for receiving said moving members, said pockets being marked with symbols of varying degree, substantially as and for the purpose described.

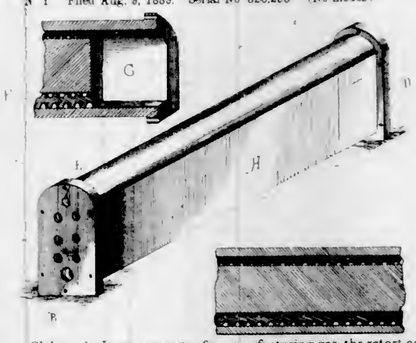
449,141. SUSPENDERS. WILLIAM J. STEWART, Williamsport, Pa., assignor of three-fourths to Isaac C. Smith, Joseph Kunkel, and Jonas Parker, all of same place. Filed Nov. 1, 1890. Serial No. 370,031. (No model.)



Claim.—1. The combination, with a suspender-web, of a folded metal-plate clamp, a hook-ring secured to the end of the web by said clamp, a slide or buckle arranged on the web and having a hook for engaging said ring, and suspender-tugs having a web-loop, through which the web of the suspenders passes, substantially as and for the purposes specified.

2. The combination, with a suspender-web, of a loop or ring end, a clamp-slide having a hook, with which the loop or ring end engages, and a tug having a web-loop for the passage of the suspender-web substantially as and for the purposes specified.

449,142. GAS-RETORT. ALEXANDER M. SUTHERLAND, New York, N. Y. Filed Aug. 9, 1889. Serial No. 320,290. (No model.)



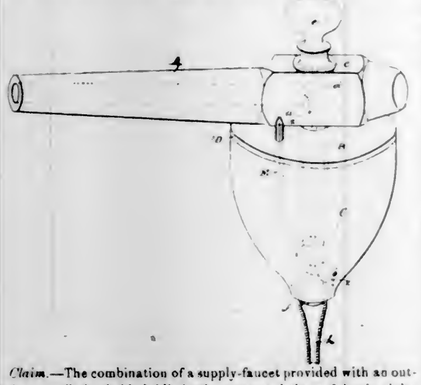
Claim.—1. In an apparatus for manufacturing gas, the retort consisting of an inlet-tube, a commingling-chamber, and two or more outlet-tubes arranged substantially parallel with the inlet-tube, whereby the vapor is introduced through the inlet-pipe, commingled in a chamber, and returned through a number of pipes, and thereby brought into contact with a large amount of surface to insure fixing, substantially as described.

2. In apparatus for manufacturing gas, the retort consisting of the inlet-pipe, the commingling-chamber, and the outlet-tubes arranged substantially parallel with the inlet-tube and smaller in diameter than the inlet-tube, all the tubes having spiral ribs placed therein, substantially as described.

3. In apparatus for manufacturing gas, the retort consisting of the inlet-tube, the commingling-chamber, the outlet-tubes of smaller diameter than the inlet-tube and arranged substantially parallel with the inlet-tube, and spiral ribs having a continuous twist throughout placed in the tubes, substantially as described.

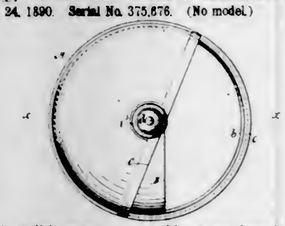
4. In apparatus for the manufacture of gas, the retort consisting of the inlet-tube, the commingling-chamber having the removable end, and the return-tubes of smaller diameter than the inlet-tube and arranged substantially parallel with the inlet-tube, substantially as described.

449,143. MEASURING-FAUCET. HARRY THACKER, Lake Villa, Ill. Filed Nov. 21, 1890. Serial No. 372,141. (No model.)



Claim.—The combination of a supply-faucet provided with an outlet-tube or cylinder held rigidly in the outer end thereof, having inlet and outlet apertures, a solid vertically-moving plunger therein, and a centrally-apertured cap on the top of the said outlet tube or cylinder, through which the said plunger moves, with a measure inclosing the said outlet tube or cylinder, provided with a tap having a floating indicator passing through and held therein, substantially as described.

449,144. DISH-COVER. VINCENT P. TOMMINS, New York, N. Y. Filed Dec. 24, 1890. Serial No. 375,676. (No model.)



Claim.—1. A dish-cover constructed in two sections pivotally connected together at their apexes, one being adapted to rotate horizontally around the other, and each of said sections having an annular strip secured to its base portion, one of which serves as a support and guide to the other, substantially as described.

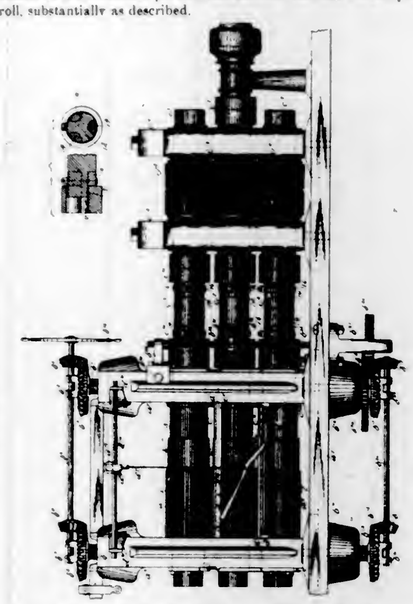
2. A dish-cover composed of a stationary section, and a rotary section pivoted to and adapted to rotate around the said stationary section, the latter having an annular strip secured to its base provided with an upwardly-extending flange around its outer edge, and the rotary section having an annular strip secured to its base and provided with a downwardly-extending flange around its inner edge and fitting the flange of the stationary section, substantially as described.

3. The combination, with the stationary section B, having an annular strip *b*, provided with a flange *b'*, secured to its base and having a sleeve b^3 projecting from its apex, of the rotary section C, having an annular strip *c* to rest on the strip *b*, and provided with a flange c^3, fitting the flange *b'*, secured to its base, and also having a finger-piece c^4, fitting the said sleeve b^3, and secured thereto by a bolt and nut, substantially as described.

449,145. METHOD OF AND APPARATUS FOR REDUCING METALS. WILLIAM WARELY, Taunton, Mass. Filed Apr. 26, 1890. Serial No. 349,616. (No model.)

Claim.—1. The herein-described process of forming sheets of yellow and like metal, which consists in casting the metal into a mold to form an ingot or cake, passing the said cake or ingot while in a heated condition between reducing-rolls to reduce the said ingot or cake directly into the form of a slab without reheating of the ingot, dividing the said slab into pieces of suitable size to produce a finished sheet, and passing the said pieces between rolls to reduce the said pieces directly into sheets of the required thickness, size, and weight, substantially as described.

2. In a three-height rolling mill or apparatus, the combination, with a middle roll a', provided with a reduced portion and with a collar c^6 of substantially the same diameter as the unreduced portion of the said roll, and fixed or stationary bearings for the said roll, of a movable upper roll *a*, provided with a reduced portion and with a collar c^6 of substantially the same diameter as the unreduced portion of the said roll, movable bearings for said roll, a lower roll a^3, provided with a reduced portion and with a collar c^6 of substantially the same diameter as the unreduced portion, and movable bearings for said lower roll, substantially as described.



3. In a three-height rolling mill or apparatus, the combination, with a middle roll a', provided with a series of reduced portions of varying diameter and with a collar c^6 of substantially the same diameter as the unreduced portion of the said roll, and fixed or stationary bearings for the said roll, of a movable upper roll *a*, provided with a series of reduced portions co-operating with the reduced portions of the roll a' and having a collar c^6 of substantially the same diameter as the unreduced portion of the said roll, movable bearings for the roll *a*, a lower roll a^3, provided with a series of reduced portions co-operating with the reduced portions of the roll a' and having a collar c^6 of substantially the same diameter as the unreduced portion of the roll, movable bearings for the said roll, and means to move the bearings of the upper and lower rolls, substantially as described.

4. In a three-height rolling-mill, the combination, with a middle roll having fixed or stationary bearings, of an upper and lower roll provided with movable bearings, auxiliary bearings for the upper and lower rolls, levers to support said auxiliary bearings, and means connected to said levers to keep the auxiliary bearings in contact with said rolls, substantially as described.

5. In a three-height rolling-mill, the combination, with a middle roll having fixed or stationary bearings a^8 a^7, of an upper roll provided with movable bearings a^{10} a^{12} and a lower roll provided with movable bearings a^{13} a^{14}, threaded rods *b b'* to move the upper and lower rolls toward the middle roll, counterbalanced levers pivoted to the frame of the mill, and auxiliary bearings for said upper and lower rolls adjustable on the said levers, substantially as described.

6. The combination, with a three-height rolling-mill having its middle roll provided with fixed or stationary bearings and its upper and lower roll provided with movable bearings, of a carrier or supporting-frame provided with a pivoted portion d^{30}, an elevated rod or track supported by the frame of the rolling-mill, and means movable on said track to which the pivoted portion d^{30} is connected, substantially as described.

7. The combination, with a three-height rolling-mill having its middle roll provided with fixed or stationary bearings and its upper and lower roll provided with movable bearings, of a carrier or supporting-frame provided with a pivoted portion d^{30} and a stationary portion d^4, a movable carriage to support the stationary portion of the carrier, a rod or track $d^{\times}$, extended across the face of the machine, a pulley movable on said track, and means to connect the movable portion of the carrier or supporting-frame with the pulley, to operate substantially as described.

8. The combination, with a three-height rolling-mill having its middle roll provided with fixed or stationary bearings and its upper and lower roll provided with movable bearings, of a carrier or supporting-frame provided with a pivoted portion d^{30}, an elevated rod or track supported by the frame of the rolling-mill, means movable on said track to which the pivoted portion d^{30} is connected, and a turn-table provided with a series of pivoted molds, to operate substantially as described.

449,146. SOUNDING TOY. DAVID W. WATROUS, East Hampton, Conn. Filed Mar. 29, 1890. Serial No. 345,865. (No model.)



Claim.—1. The combination of two bells placed mouth to mouth, tubing holding them apart, and a hollow rivet passing through both bells and tubing, upset at each end so as to hold the parts together.

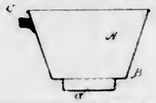
2. The combination of a wheel having a recess on each side, and two bells, the bells being within the recesses of the wheel and the wheel passing between the bells, substantially as described.

3. The combination of a wheel, two bells, one on each side thereof, tubing holding the bells at certain distances from the wheel, and a rivet holding all the parts together, substantially as described.

4. The combination of the wheel E, the bells A A, the tubing B B, holding the bells at a certain distance from the wheels, the rivet C, and the draft-bar, substantially as described.

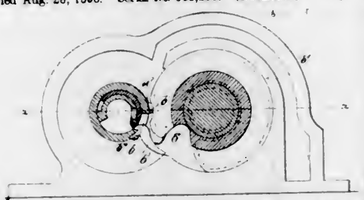
5. In a toy, the wheel E, having a tire made by bending projections on its periphery so that they are parallel to the axis of the wheel, substantially as described.

449,147. COMBINATION HOUSEHOLD UTENSIL. SAMUEL WELCH, Chicago, Ill., assignor of one-half to Thomas Ballentyne, same place. Filed Oct. 4, 1890. Serial No. 367,114. (No model.)



Claim.—As an improved article of manufacture, a combination household utensil consisting of the vessel A, having the scale a', the screw-threaded extension B, having the opening *a* and handle C, and the screw-threaded cap F, having the opening c^3 and flanges *c c'* for securing a disk strainer or funnel to the vessel when it is desired to convert it into a dipper, strainer, or funnel, substantially as set forth.

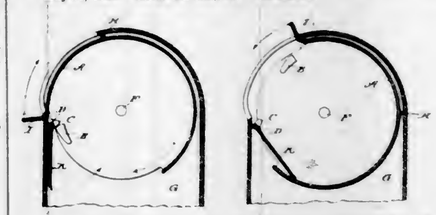
449,148. ROTARY ENGINE. GEORGE H. WESTON, Boston, Mass. Filed Aug. 28, 1890. Serial No. 363,299. (No model.)



Claim.—1. In a rotary engine, the combination, with an inclosing case provided with a bearing, of an abutment having a re-entrant portion and a groove or channel a^7 on its periphery extended axially, a shaft for said abutment, a piston-valve provided with an arm to enter said re-entrant portion and with a lip *b'* to enter said groove or channel, and a shaft for said piston-valve, substantially as described.

2. In a rotary engine, the combination, with an inclosing case provided with a bearing, of an abutment having a re-entrant portion and a groove or channel a^7 on its periphery extended axially, a shaft for said abutment, a gear a^{10} on said shaft, a hollow piston-valve provided with an arm to enter said re-entrant portion and with a lip *b'* to enter said groove or channel, a shaft for said piston-valve, and a gear a^{13} on said shaft in mesh with the gear a^{10}, the point of contact of the teeth of said gears being in a direct line with the centers of the gears, substantially as described.

449,149. LETTER-BOX. CHARLES A. WHELAN, Aspen, Colo. Filed May 21, 1890. Serial No. 352,678. (No model.)

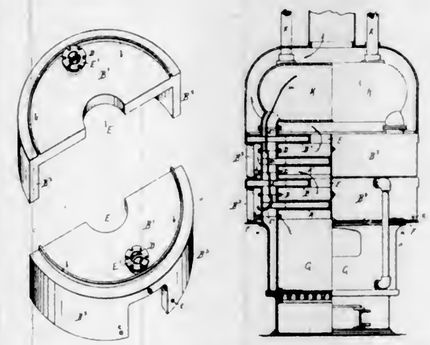


Claim.—1. The combination, with the box or outer casing, of an oscillating cylinder hung upon trunnions or pivots at its ends and having one side open, and a hinged cut-off door, arranged substantially as described, to be connected to and thrown inside of said cylinder by the rotation of the latter.

2. The combination, with the box or outer casing, of an oscillating cylinder hung upon trunnions or pivots at its ends and having one side open and cams B at its ends, and a hinged cut-off door K, having toes or projections C above its fulcrum, arranged to be struck by the cams to throw the cut-off door inside the cylinder, substantially as shown and described.

3. The combination, with the box or casing having a cylindrical top with one side thereof open, a cylinder A, hung upon pivots or trunnions at its ends and having one side open, with a lip or flange I, a head H, and cams B, and the cut-off door K, hinged to the casing and having above its fulcrum toes C, arranged to be struck by the cams of the cylinder, substantially as shown and described.

449,150. STEAM AND HOT-WATER GENERATOR. DANIEL A. DICKINSON, St. Paul, Minn. Filed Aug. 7, 1890. Serial No. 361,334. (No model.)



Claim.—1. In a steam or hot-water generator, a series of hollow horizontal disks formed of separate segmental sections B', with central openings E, and a series of horizontal hollow disks formed of separate segmental sections A and of smaller diameter than said sectional disks B', said series of sectional disks A being arranged alternately with said sections B' and united by branches D, in combination with hollow upright sections B^3, formed integral with said sections B' and projecting between them and outside of the said sections A, whereby a hollow water jacket or wall is formed around the sections, substantially as and for the purpose set forth.

2. In a steam or hot-water generator, a series of hollow alternating sections A B', united by branches D, each of said sections B' having hollow extensions B^3 integral therewith, and partitions E' within said branches and extending into the interior of said sections B', and also into said extension B^3, whereby the circulation of the water therein is insured, substantially as and for the purpose set forth.

3. In a steam or hot-water generator, a series of alternating sections A B', united by branches D, and with a partition E' in each branch and forming its interior into two separate compartments, said partition being placed farther outward within the branches from the lowermost toward the uppermost section, so as to increase the area of the inner compartment in each branch upward, and correspondingly increase the area of the outer compartments downward, whereby means are provided for the free passage of the volume of the flowing currents, substantially as and for the purpose set forth.

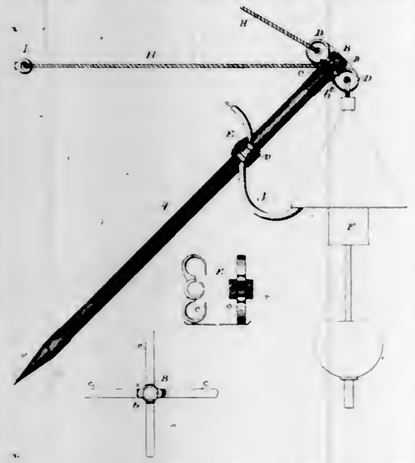
449,151. ARTIFICIAL-STONE COMPOSITION. LOUIS ENRICHT, New York, N. Y., assignor to the Enricht Manufacturing Company, same place. Filed June 24, 1889. Serial No. 315,430. (No specimens.)

Claim.—A composition of matter consisting of magnesium chloride in solution, magnesium oxide, and fluor-spar, in substantially the proportions specified.

449,152. ARTIFICIAL STONE. LOUIS ENRICHT, New York, N. Y., assignor to the Enricht Manufacturing Company, same place. Filed May 15, 1890. Serial No. 351,959. (No specimens.)

Claim.—The herein-described composition of matter, which consists of magnesium oxide, calcium oxide, (lime,) magnesium chloride, sodium silicate, and water.

449,153. HANGER FOR ELECTRIC LAMPS. HORATIO A. FOSTER, New York, N. Y., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 1, 1890. Serial No. 360,685. (No model.)



Claim.—1. The combination of the hanger for electric lamps, having one end fastened to a building or like support and provided with an insulated point of attachment for the lamp, with a guy wire or wires attached to and sustaining its outer end by means of one or more insulators, as described.

2. A hanger for electric lamps, consisting of a rod or pole having a driving-tang at one end and a cap-piece at the other end, provided with insulators to which the lamp and supporting guy-wires are to be attached.

3. The hanger for supporting and insulating arc lights and conducting-leads, comprising a supporting rod or pole, a grooved closed ring-insulator, and an attaching part having a socket embracing the pole and a malleable clamp bent around the insulator.

4. A hanger for electric lamps, consisting of a rod or pole provided with a driving-tang at one end, a cap-piece at its other end, having leaves of malleable material bent around and holding suitable insulators, and the collar having insulators through which the conductors leading to the lamps are adapted to pass.

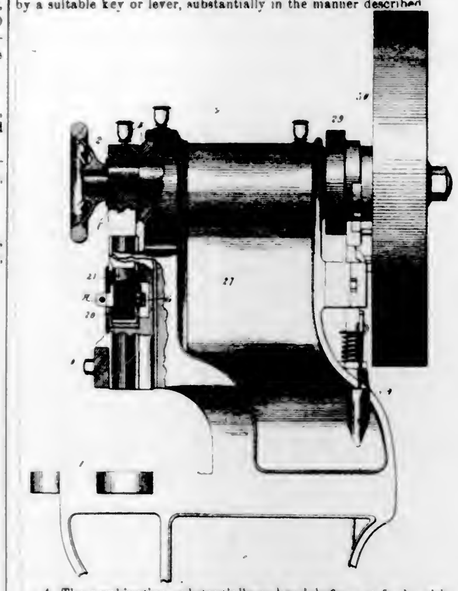
5. The combination of the hanger-rod provided with a driving tang at one end and insulators for insulating the lamp and conducting leads from the building to which the hanger is to be attached, with the guy-wires for sustaining the outer end of the hanger, as described.

449,154. PUNCHING-MACHINE. WILLIAM FRECH, Chicago, Ill. Filed June 12, 1890. Serial No. 355,161. (No model.)

Claim.—1. In a punching-machine, an adjustable connection between the pitman and tool-holder for the purpose set forth, a split nut carried by the tool-holder and arranged to clamp upon a threaded portion of the pitman, so that by loosening the nut it can be operated to adjust the tool-holder and by tightening it upon the pitman it can be held rigid thereon.

2. The combination, with the pitman, of the split nut adjustably applied thereto and carried by a suitable tool-holder, and a clamp applied to the nut for the purpose of contracting and loosening the same.

3. The combination, substantially as hereinbefore set forth, with the pitman and a suitable tool-holder, of the split nut applied to a threaded portion of the pitman and provided with a set of recesses which are exposed so as to permit the nut to be engaged and operated by a suitable key or lever, substantially in the manner described.



4. The combination, substantially as hereinbefore set forth, with the pitman and tool-holder, of the split nut carried by the tool-holder and the clamp G, applied to the nut for contracting and loosening the same upon the pitman and provided with bearings 26 for a clamp-screw.

5. The combination, substantially as hereinbefore set forth, with the pitman, and a suitable tool-holder, of an adjustable pivotally-arranged connecting device between the two comprising a pivot block or bearing pivotally connected with the tool-holder and provided with an adjusting-nut which is adjustably connected with the pitman.

6. The combination, substantially as hereinbefore set forth, with the pitman and a suitable tool-holder, of the recessed pivot block or bearing having a movable connection with the pitman and pivotally connected with the tool-holder, and a split nut confined within the said pivot block or bearing and applied to and adapted to clamp upon a threaded portion of the pitman.

7. The combination, with the pitman and a suitable tool-holder, of the recessed pivot block or bearing pivotally held within a bearing in the tool-holder and receiving the lower end of the pitman, and a split nut applied to and arranged to clamp upon a threaded portion of the pitman, said nut being confined within the pivot-block, but accessible at one side thereof.

8. The combination, with the pitman and tool-holder, of the pivot-block E, arranged within a circular recess in the tool-holder and having a movable connection with the pitman, the split clamp-nut confined within the pivot-block and applied to a threaded portion of the pitman, and the cap-ring 24 for holding the pivot-block within its allotted recess and at the same time exposing the nut.

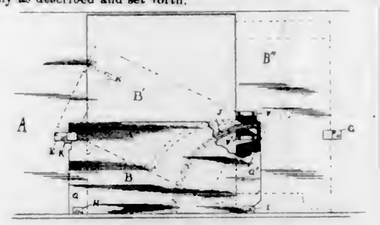
9. The combination, substantially as hereinbefore set forth, with the pitman having a lower threaded end portion, of the tool-holder, the pivot-block E pivotally applied to the tool-holder, and having a vertical bore 18 to receive the pitman and a horizontally-arranged opening to receive a clamping device adjustably held on the threaded end portion of the pitman.

10. The combination, substantially as hereinbefore set forth, of the pitman C, operated by the crank-shaft, the sliding tool-holder D, a pivot-block having a movable connection with the pitman and pivotally applied to the tool-holder, and a split nut F, confined within said pivot-block and applied to a threaded portion of the pitman.

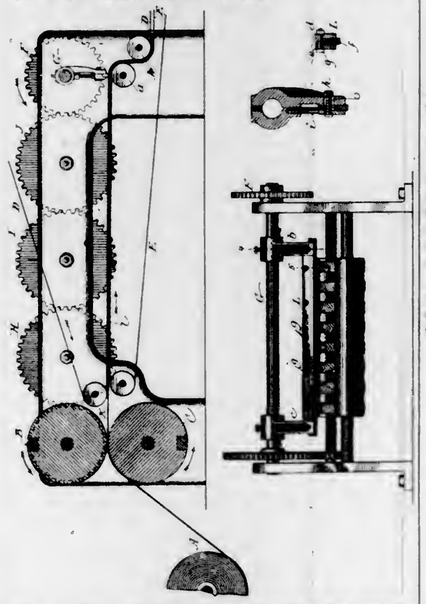
449,155. CAR-DOOR. GEORGE G. GEIGER, Peoria, Ill. Filed Mar. 27, 1890. Serial No. 345,623. (No model.)

Claim.—1. In combination with a car, the door B, provided with the cleats *a a'*, the catch K, the arc-shaped T-rail J, having the stops *k* at its respective ends, the sections F F', bolted to the edge of the opening in the car and forming the clamp in which the said T-rail J bears and travels, all substantially as described and set forth.

2. In a car-door, the frame part B, having the cleats *a a'*, the catch K, the arc-shaped T-rail J, the sections F F', forming the bearing in which the T-rail travels, the clamps H G, the stops H I, all substantially as described and set forth.



449,156. PRESS DELIVERY APPARATUS. SAMUEL G. GOSS, Chicago, Ill., assignor to the Goss Printing Press Company, same place. Filed Mar. 5, 1890. Serial No. 342,778. (No model.)



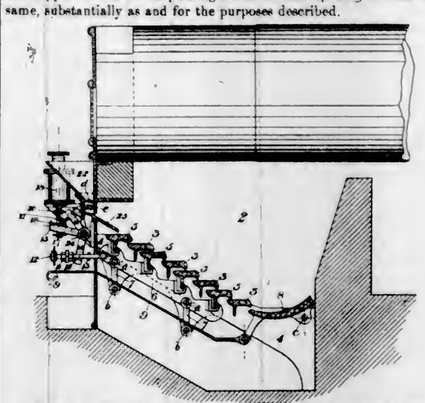
Claim.—1. The combination, with perforating-cylinders, tapes for carrying a web forward, and means for accelerating the speed of the tapes, of a shaft rotating in unison with the perforating-cylinders, a rotating roller over which the tapes and web pass, and a clamp projecting from and rotating with the shaft and provided with an acting face, which at intervals as the clamp rotates presses all the tapes and the web upon the rotating roller for causing the web to travel with the clamp at the accelerated speed of the tapes, which are pressed by such clamp on the rotating roller, substantially as described.

2. The combination, in a press delivery apparatus, of tapes for carrying a web forward, a revolving shaft G, arms *b c*, secured to and revolving with the shaft, the clamping-bars *d e* on the arms, and the rubber *f*, clamped between the bars, substantially as described.

3. In a press delivery apparatus, a shaft G, carrying arms *b c*, in combination with bars *d e*, rubber *f*, and screws *i*, substantially as and for the purpose specified.

449,157. AUTOMATIC STOKER. ALEXANDER M. GOW, Pittsburg, Pa. Filed Feb. 1, 1890. Serial No. 338,848. (No model.)

Claim.—1. The combination of a combustion-chamber, an inclined grate composed of movable bars arranged to cause the fuel to progress down the incline, a feed-hopper communicating with the combustion-chamber, and a hopper-bottom movable to and from the opening from the combustion-chamber to the hopper and delivering the fuel through said opening to the upper end of the incline, said hopper-bottom being mechanically connected with the grate-bar mechanism and movable therewith, the extent of motion communicated being sufficient to move the hopper-bottom on its pushing-stroke to said opening to close the same, substantially as and for the purposes described.

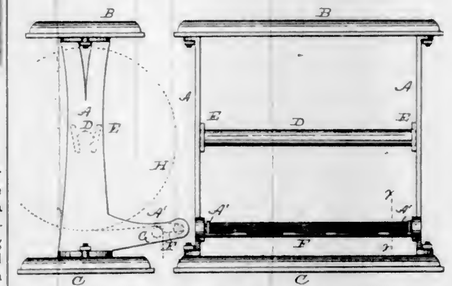


2. The combination, with movable grate-bars, of a piston for operating the same, a rock-shaft, and levers connecting the piston-rod with the rock-shaft and with the grate-bars and having loose connections therewith, and mechanism by which the extent of loose motion is regulable, substantially as and for the purposes described.

3. The combination, with a combustion-chamber having a projecting slide or chute 25, of a feed-hopper communicating with the combustion-chamber, and a movable hopper-bottom having a portion *d* closing the base of the hopper and a portion *e* closing the opening into the combustion-chamber and serving at the same time to push the coal forward on the slide or chute into the combustion-chamber, substantially as and for the purposes described.

4. The combination, with a movable grate-frame, of an oscillatory rock-shaft adjustably connected therewith, a movable hopper-bottom supported on said shaft and adjustably connected therewith, substantially as and for the purposes described.

449,158. ROLL-PAPER HOLDER AND CUTTER. WALTER G. HAAS, Dayton, Ohio. Filed July 18, 1890. Serial No. 359,196. (No model.)



Claim.—In a paper-roll holder and cutter, the combination of the standards A A with arms A' A', provided with orifices in their ends, the guide G, and knife F, with pivots on a line with the cutting-edge, substantially as described.

449,159. COLLAPSIBLE LADDER. WILLIAM W. HARRIS, Charlestown, N. H. Filed Oct. 13, 1890. Serial No. 367,892. (No model.)

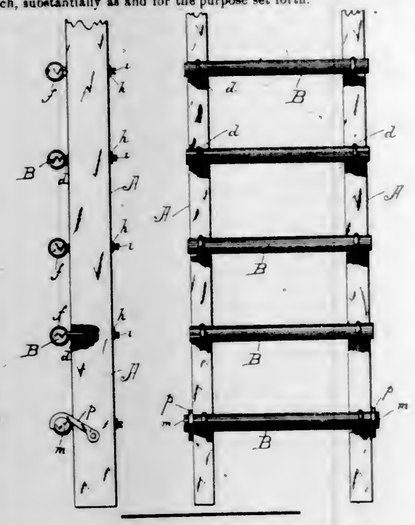
Claim.—1. A collapsible ladder comprising side bars and rungs pivoted thereto by split pins, arranged substantially as specified.

2. In a collapsible ladder, the side bars in combination with grooved rungs, and the split pins *d*, having an eye *f* for receiving said rungs, all being arranged to operate substantially as described.

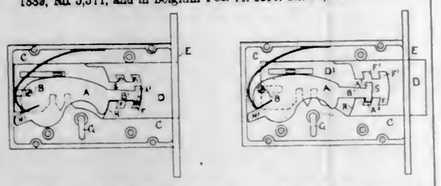
3. In a device of the character described, the side bars A, in combination with the rungs B, provided with the grooves *g*, the pins *d*, fitted to rotate in said side bars and provided with an eye *f*, and the rungs *h* for securing said pins.

4. In a collapsible ladder, the side bars connected by rungs pivoted thereto by split pins passing through said bars, one or more of

the said rungs being extended beyond the bars to receive a hook or catch, substantially as and for the purpose set forth.



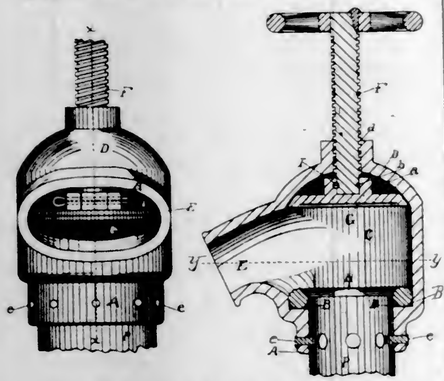
449,160. LOCK. JOSEPH KAYE, Leeds, England. Filed June 28, 1890. Serial No. 357,030. (No model.) Patented in England Mar. 28, 1889, No. 5,311, and in Belgium Feb. 11, 1890. No. 89,483.



Claim.—1. Locks in which are combined a series of levers A, having projections A' and A^2 for engaging in notches F and F', cut in the lock-bolt D, for the purpose hereinbefore described.

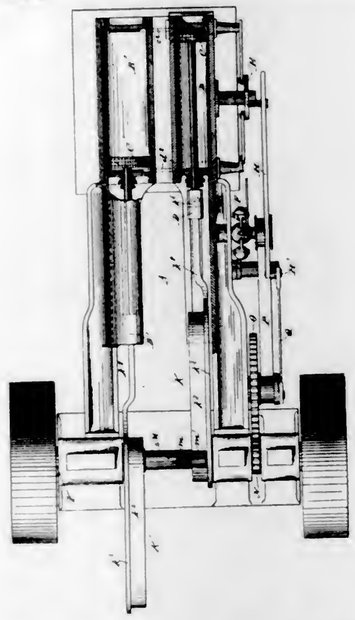
2. Locks in which the levers A act as direct support to the lock-bolt D, by one end engaging in a recess or in contact with the lock-bolt and the other end against some portion of the lock-case, substantially in the manner shown and hereinbefore described.

449,161. IRRIGATING-HYDRANT. WILLIAM LACY, Jr., Los Angeles, Cal. Filed June 10, 1890. Serial No. 354,920. (No model.)



Claim.—The irrigating-hydrant set forth, comprising the combination of the ordinary valve-stem, the ordinary valve-plate detachably secured thereto, and an integral head provided with the discharge-chamber larger in internal cross-sectional area than the valve-plate, the neck adapted for attachment to the hydrant service-pipe and smaller in internal cross-sectional area than the valve-plate, and the discharge-spout having its greatest internal diameter parallel with and substantially equal to the diameter of the valve-plate.

449,162. CONVERTING DEVICE FOR STEAM-ENGINES. PAUL W. LEVYLER, Minneapolis, Minn. Filed Mar. 10, 1890. Serial No. 343,224. (No model.)



Claim.—1. The combination, with a reciprocating engine, of an elongated endless rack secured to the engine-piston, a pinion on the power-shaft engageable with the rack, and a pivoted guide loosely mounted on the power-shaft adjacent to the pinion, adapted to hold the pinion in engagement with the rack and shaft, the rack to effect continuous motion of the pinion in the same direction.

2. The combination, with a reciprocating engine, of an elongated endless rack pivotally connected to the piston, a pinion on the power-shaft engageable therewith, and a pivoted guide on the power-shaft for holding the pinion and rack in engagement and shifting the rack to engage the opposite sides of the pinion at the ends of the stroke, substantially as and for the purpose set forth.

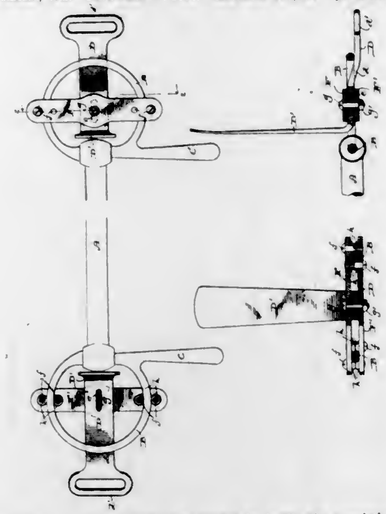
3. The combination, with a reciprocating engine, of an elongated endless rack secured to the piston and provided with a guideway or track, a pinion on the power-shaft, and a pivoted guide loosely mounted on said power-shaft and provided with a head movable over said track, substantially as and for the purpose set forth.

4. The combination, with an engine-piston, of an elongated endless internally-toothed rack provided with a guide-track on its exterior surface and projecting ribs or shoulders on its interior edges, a pinion on the power-shaft having shoulders or ribs engageable with the rack, and a pivoted guide loosely mounted on said shaft, having a projecting head movable on said track, substantially as described.

5. The combination, with a reciprocating engine, of an elongated endless rack secured to the piston and provided with a guideway or track, a pinion on the power-shaft, and a pivoted guide loosely mounted on said shaft, having an anti-friction roller movable on said track, substantially as described.

6. The combination, with a compound engine, of a pair of elongated endless racks pivotally connected respectively one to each piston, and provided with a guideway or track, a pair of pinions spaced apart on the power-shaft engageable one with each of said racks, and a sleeve loosely mounted on said shaft between said pinions, having crank-arms set opposite to each other, provided with a projecting head movable one in each of said guideways for effecting the proper engagement of the racks with the pinions, substantially as described.

449,163. ATTACHMENT FOR BRIDLE-BITS. ALONZO LOBDELL, Racine, Wis. Filed June 17, 1890. Serial No. 355,737. (No model.)

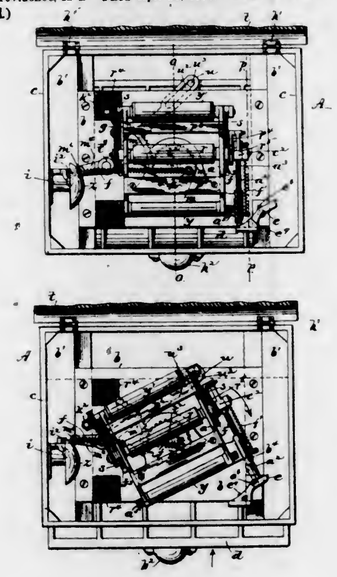


Claim.—1. An improved attachment for bridle-bits, consisting of a pair of plates secured to each ring of the bit and a pair of L-shaped bars secured to said plates, the inner arms of said bars projecting parallel to the animal's jaws and the outer arms of said bars being bent and extending across the outer side of said rings, the extreme outer ends of the said bars being formed to receive the head ends of the driving-reins, substantially as set forth.

2. An improved attachment for bridle-bits, comprising an L-shaped bar having a slot in its lower arm and a pair of plates embracing said arm and designed to embrace the ring of a bit, and a bolt or pin extending through the plates and slot, substantially as described.

3. The combination, with a bridle-bit, of a pair of bridge-pieces embracing a ring of the bit, and an L-shaped cheek-plate having its lower arm secured adjustably between said bridge-pieces, substantially as described.

449,164. CASH AND SALES REGISTER. JOSEPH P. MANTON, Jr., Providence, R. I. Filed Apr. 28, 1890. Serial No. 349,750. (No model.)



Claim.—1. A cash register or indicator of the class hereinbefore described, having a money-drawer adapted to be opened and closed and having a pivotally-mounted frame carrying feeding and take-up mechanism for the sales-paper, and a slotted plate, said frame, mechanism, and plate being rotated or vibrated by the act of opening and closing the money-drawer.

2. In a cash-register, the combination, with an apertured or slotted plate, paper-feeding mechanism, and a mounted frame adapted to rotary movement carrying said plate and feeding mechanism, of a bell or alarm, a movable money-drawer, and mechanism connecting the drawer with the said frame, whereby the act of opening and closing the drawer sounds the alarm, operates the feeding device, and rotates the slotted plate, substantially as hereinbefore set forth.

3. The combination, with a pair of pivotally-mounted intergearing gears having unequal radii, and a spring attached to both gears at points beyond their centers, of a frame portion secured to and vibrating in unison with the smaller gear, supply and rewinder rolls and positively-driven feed-rolls mounted in said frame, a slotted plate detachably secured to and surmounting the frame, and a money-drawer connected with and adapted to actuate the larger gear, whereby the act of opening and closing the drawer actuates the several rolls a certain angular distance and revolves said frame and slotted plate one-half of a revolution from its normal position and back again, substantially as set forth.

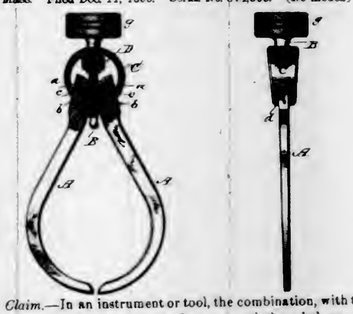
4. The combination, with a pivotally-mounted frame, an apertured disk or slotted plate secured thereto, a supply-roll, a yielding take-up or rewinder-roll, geared feed-rolls intergearing with and actuating the rewinder-roll and all mounted in said frame, of a stationary cam and spring push-rod actuating a ratchet-wheel secured to one of the feed-rolls, and a money-drawer connected with an actuating device or mechanism, whereby the said frame is vibrated back and forth one-half a revolution by the act of opening and closing the drawer, substantially as hereinbefore set forth.

5. A cash-register having a slotted top plate, a web of check or sales paper mounted on supply and rewinder rolls, mechanism for feeding the web of paper, a money-drawer, a spring-restrained lever, and gearing connected with and actuated by the drawer, whereby the act of opening and closing the money-drawer causes the slotted plate and its supporting-frame, &c., to revolve back and forth, substantially as and for the purpose set forth.

6. A cash-register having a slotted plate, a pivotally-mounted frame, and mechanism connected therewith and with the slotted plate adapted to receive a web of paper and intermittingly pass it across the plate's aperture, and a money-drawer arranged and adapted to vibrate said frame and plate back and forth by the act of opening and closing the drawer, substantially as described.

7. A cash-register provided with a pivotally-mounted frame carrying paper-feeding mechanism, and a slotted plate attached to and surmounting the frame, in combination with a money-drawer mounted and arranged to convert the reciprocating movement of the drawer, as in opening and closing, into a vibratory angular movement of said frame, slotted plate, &c., and an auxiliary spring, as *f*, mounted and adapted to assist in operating the drawer to its limit, substantially as set forth.

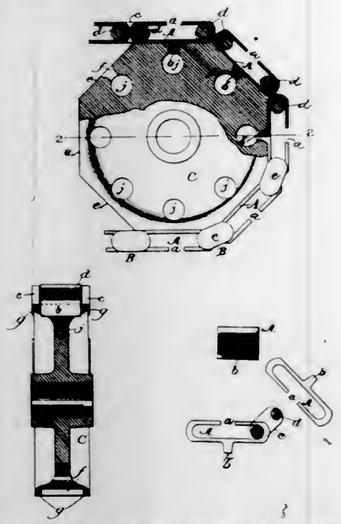
449,165. CALIPERS AND DIVIDERS. NELSON MARSH, Amherst, Mass. Filed Dec. 11, 1890. Serial No. 374,366. (No model.)



Claim.—In an instrument or tool, the combination, with two arms or legs having at their upper ends segmental threaded grooves, of a spring split ring engaging with the ends of the arms or legs, and an adjusting-screw extending down through the band of said ring and engaging the threads of the grooves, substantially as and for the purpose set forth.

449,166. BELT-GEARING. THOMAS H. MCCRAY, Chicago, Ill. Filed May 20, 1890. Serial No. 352,549. (No model.)

Claim.—1. A belt-gearing composed of elliptical links A and rectangular links B, said elliptical links A each having a cog *b* on one side and an opening *a* on the opposite side, and said rectangular links B each consisting of side pieces c and cross-bars *d*, said cross-bars being constructed to bring the adjoining ends of the links A in contact, substantially as specified.



2. A detachable link for a drive-belt, formed with curved ends to constitute bearing-faces against contiguous links, having a cog *b* on its inner side centrally between its curved ends and provided with the rectilinear plane outer side located opposite the cog, and having the open slot *a* for engaging and disengaging the link at will with the coupling-links of the drive-belt, substantially as described.

3. A belt consisting of alternate elliptical links A and rectangular links B, said links A being provided with a slot *a* on one side and a cog *b* on its opposite side midway of its length, in combination with a wheel having cog-recesses at regular intervals, substantially as specified.

4. The detachable link for a drive-belt formed with curved extremities to constitute turning bearing-faces against contiguous links, having a cog *b* on its inner side centrally between its curved extremities, and provided with a rectilinear plane outer side located opposite the cog, substantially as described

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449,167. **STAY FOR BOOTS OR SHOES.** WILLIAM A. NEELY, Lynn, Mass. Filed July 7, 1890. Serial No. 357,965. (No model.)



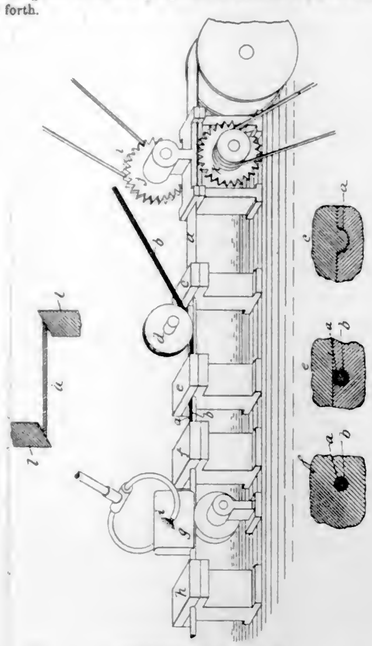
Claim.—1. The stay herein described, consisting of a central longitudinal core with a convex outer face, a central stitch-receiving groove, and thin edges or faces formed integral with the core and adapted as a covering for it

2. The stay herein described, consisting of a core having a stitch-receiving groove and thin facings adapted to be wrapped around and serve as a covering for the core, substantially as described.

449,168. **ART OF COVERING ELECTRIC WIRES.** THOMAS W. NORMAN, Boston, Mass. Filed Apr. 29, 1890. Serial No. 349,973. (No model.)

Claim.—1. The improvement in the art of covering insulated wire, &c., with lead or other suitable metal, which consists in taking a flat strip or ribbon of the metal, scarfing the edges thereof, feeding the wire and metallic covering-strip forward, continuously inclosing or encircling the former in the latter during the forward movement by a series of differential steps gradually inclosing the covering over the wire, and soldering the meeting scarfed edges of said covering, substantially as set forth.

2. As a means for covering wire with a metallic strip or ribbon of metal, the combination of scarfing-wheels to act upon the edges of the strip, formers for wrapping the strip around the wire, and a heated soldering-iron for soldering together the meeting edges of the strip, as set forth.



449,169. **PIPE TESTER, CLOSER, AND CLEAN-OUT.** WILLIAM P. O'BRIEN, St. Paul, Minn. Filed Sept. 18, 1890. Serial No. 365,422. (No model.)

Claim.—1. In a pipe-closer, the combination, with the spider having the set-screws for engaging the interior of the pipe, of the central stem, the cover fitting over the end of the pipe and having the central perforation, through which the stem passes, and the nut for holding the cover in place, substantially as described.

2. In a pipe-closer, the combination, with the spider having the set-screws for holding the same in place within the pipe and the central stem, of the cover for the pipe, having the central perforation for the passage of the stem, the elastic gasket, and the nut on the stem for holding the cover in place, substantially as described.

3. In a pipe closer and tester, the combination, with the spider having the set-screws for holding the same in place within the pipe and the central tubular stem, of the cover having the central perforation, through which the stem passes, the nut for holding the cover in place, and the cap for closing the central stem, substantially as described.

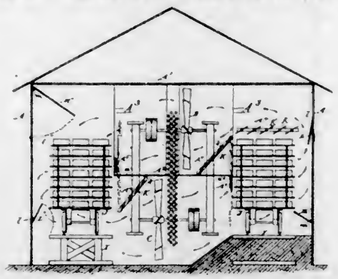
4. In a pipe closer and tester the combination, with the spider formed by the cross-pieces, one of which has its ends turned up and tapped for the reception of set-screws, set-screws passing through said ends and engaging the pipe, and the central tubular stem screw-threaded on the upper end, of the cover having the central perforation for the stem, the gasket beneath the cover, the nut on the stem for holding the cover, and the cap for closing the stem, substantially as described.

5. In a pipe closer and tester, the combination, with the pipe, of the spider having the set-screws with cup-shaped ends engaging the pipe, the central stem extending up from said spider and having its upper end screw-threaded, the cover having the gasket and central perforation, the nut screwing on the stem for holding the cover in place, and the cap fitting on the stem, substantially as described.

6. In a pipe closer and tester, the combination, with the flanged

end of the pipe, of the spider formed by the cross-pieces resting on the seat formed by the flange, one of said cross-pieces having its ends turned up and tapped for the reception of set-screws, set-screws passing through said upturned ends, the upwardly-extending central tubular stem having its upper end screw-threaded, the cover having the flanges on the under side, the gasket fitting between said flanges, said cover also having a central perforation for the passage of the central stem, the nut on said stem for holding the cover in place, and the cap for closing the stem, substantially as described.

449,170. **DRYING APPARATUS.** SIMEON G. PHILLIPS, Woodbridge, N. J. Filed Apr. 14, 1890. Serial No. 347,816. (No model.)



Claim.—1. In a drying apparatus, the partial flooring A^3, with spaces at the sides between its edges and the sides of the building, and means, as fan-wheels and vertical oblique partitions extending across the building, for inducing currents of air to move obliquely across the building above the flooring a^3, and in opposite directions below said flooring, and with two lines of cars J carrying articles to be dried and moved gradually in the direction opposite to the endwise movement of the air, and with the heating-pipes G H, all combined and arranged substantially as described, so that the air heated by its contact with the warm bricks being discharged is subsequently traversed obliquely across the building alternately in opposite directions in contact with the heating-pipes, and is presented to the material on the cars successively throughout the length of the building, substantially as herein specified.

2. In a drying apparatus, a floor A', with provision for allowing the freshly-received air to traverse longitudinally over it, in combination with a partial flooring A^3, arranged at a lower level, with spaces at the sides between its edges and the sides of the building, and means, as the fan-wheels and vertical partitions extending across the building in oblique positions, for inducing currents of air to move obliquely across the building above the flooring A^3 and in opposite directions below said partitions, and with the two lines of cars J carrying articles to be dried and moved gradually in the direction opposite to the endwise movement of the air, and with the heating-pipes G H, all combined and arranged substantially as described, so that the air will be slightly heated above the flooring A', further heated by its contact with the warm bricks being discharged, and subsequently traversed obliquely across the building alternately in opposite directions in contact with the heating-pipes, and presented to the material on the cars successively the length of the building, substantially as herein specified.

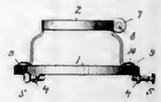
3. In a drying apparatus, the partial flooring or horizontal partition A^3 and air-impelled means B C, combined with the two lines of cars J upon opposite sides of the air-impelling means, and the adjustable air-guides K, mounted above and to the left of the cars on the right side and below and to the right of the cars on the left side, substantially as herein specified.

4. In a drying apparatus, the oblique vertical partitions A^3, in combination with a partial flooring or horizontal partition A^3, the air-impelling means B C, arranged to move the air across the building in one direction above and in the other below said partition, and with the two lines of cars J and air-heating means G H, all arranged for joint operation substantially as herein specified.

5. In a drying apparatus, the horizontal partial partition A^3, air-impelling means B C, and air-heating means G H, combined with the lines of cars J, arranged upon the right and left sides, and the adjustable screens M, mounted below and to the right of the car on the right-hand side and to the left and above the car on the left side, substantially as herein specified.

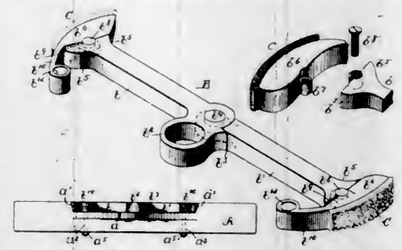
449,171. **SHADE OR GLOBE HOLDER.** THOMAS W. PRITCHARD, Waterbury, Conn., assignor to the Steele & Johnson Manufacturing Company, same place. Filed Oct. 25, 1890. Serial No. 369,304. (No model.)

Claim.—1. A shade or globe holder consisting of a suitable shade or globe ring and a clasping-ring and arms blanked out in a single piece, the arms being riveted to the shade-ring and the clasping-ring provided with enlargements at its ends, and a clasping-screw passing through one enlargement and engaging the other, by which the holder is secured in place.



2. A shade or globe holder consisting of a suitable ring, to which the shade or globe is secured, and which is provided with enlargements 6, and a clasping-ring and arms 3, blanked out in a single piece, the clasping-ring having at its ends enlargements 7, one of which is threaded to receive the clasping-screw, and the arms having at their lower ends enlargements 9, bent to correspond with enlargements 6, the arms and shade-ring being rigidly secured together by rivets passing through the enlargements.

449,172. **IRONING-BOARD ATTACHMENT.** LAVERN REYNOLDS, Kansas City, Mo. Filed Aug. 2, 1890. Serial No. 360,755. (No model.)



Claim.—1. A lever composed of separate longitudinal parts or bars having the adjacent ends of the separate bars hinged together and the other ends provided with rocking shoes hinged thereto, substantially as and for the purpose described.

2. A lever composed of separate longitudinal parts or bars having a stop-hinge connected with and between the adjacent end portions of the separate bars and the other or outer end portions of each of said bars provided with a rocking shoe hinged thereto, and a pad upon the outer surface of said shoe, substantially as described.

3. A lever composed of separate longitudinal parts or bars having the adjacent ends of the separate bars hinged together, and laterally-extended flanges upon the other ends of said bars, rocking shoes hinged to said flanged end portions of said bars, and a thimble-plate and thimble connected with said shoes, substantially as and for the purpose described.

4. In an ironing-board having a depression in its upper surface, and sides to said depression adapted to receive the neckband of a garment, the combination of a hinge-jointed lever extending from one to the other side of such depression having hinged rocking shoes to clamp the neckband, substantially in the manner described.

5. In an ironing-board having a depression in its upper surface, and sides to said depression, the combination of a jointed lever composed of separate longitudinal parts or bars having a stop-hinge connected with and between the adjacent ends of the separate bars and the other ends of said bars provided with rocking shoes, substantially as and for the purpose described.

6. In an ironing-board having a depression in its upper surface, and sides to said depression adapted to receive the neckband of a garment, the combination of a jointed lever composed of separate longitudinal parts or bars having a stop-hinge connected with and between the adjacent ends of the separate bars and flanges upon the sides of the other extended ends of said bars, and rocking blocks or shoes hinged to said extended ends of said bars provided with yielding pads, substantially as and for the purpose described.

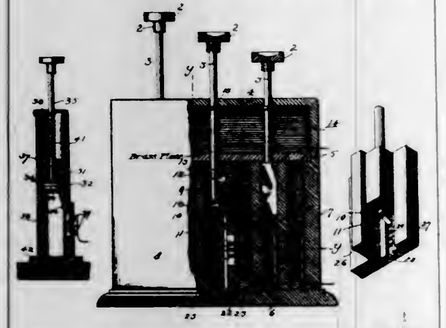
7. In an ironing-board having a depression in its upper surface and sides to said depression adapted to receive the neckband of a garment, the combination of a jointed lever composed of separate longitudinal parts or bars having a stop-hinge connected with and between the adjacent ends of the separate bars and flanges upon the sides of the other extended ends of said bars, rocking shoes hinged to said extended flanged ends of said bars having a thimble-plate and thimble pivotally connected with said ironing-board, and a pad upon the outer surface of said segments and a ring connected with one of said bars near said stop-hinge, substantially as and for the purpose described.

449,173. UMBRELLA RACK OR STAND. CHARLES R. RISDON, New York, N. Y. Filed July 14, 1890. Serial No. 358,675. (No model.)



Claim.—The improved umbrella-rack, constructed substantially as described, of the back plate, the side plates fixed thereto, the detachable drip-cup fitting in the recess at the lower end of the rack, inclosed by the back plates and side plates, and the sliding front plate seated in grooves in the side plates and made to drop down upon and overlap with its lower edge the upper front edge of the drip-cup, substantially in the manner and for the purpose herein set forth.

449,174. TELEGRAPH-TRANSMITTER. HARRY G. ROBBINS, Minneapolis, Minn. Filed Nov. 29, 1890. Serial No. 373,010. (No model.)



Claim.—1. The combination, in a telegraph-transmitter, of a plunger with a spindle adapted to move therein and through the medium of which said plunger is adapted to be moved, a contact-stud provided in said plunger and adapted to make contact with said spindle when said spindle is moved positively, a contact brush or point extending from said plate, and a secondary plate or series of plates arranged in the path of said brush and adapted to make contact therewith when said plunger is operated, whereby, said spindle forming one terminal of an electric circuit and said secondary plates the other terminal, said circuit is closed upon the operation of said plunger.

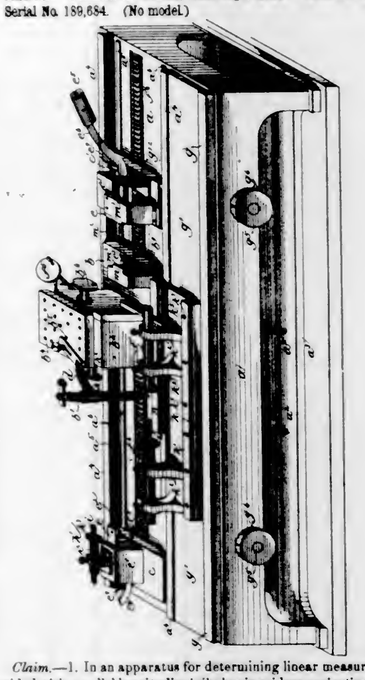
2. The combination, in a telegraph-transmitter, of a series of circuit-closers adapted to be operated by keys upon a suitable key-board, said circuit-closers consisting each in a plunger, a spindle upon which said plunger is loosely secured, a contact-stud upon said plunger with which said spindle is adapted to make contact, a contact device provided on said stud, and a plate or a series of plates normally insulated from said contact device, but adapted to make contact therewith when said spindle is operated to move said plunger, substantially as described.

3. The combination, in a telegraph-transmitter, of a series of circuit-closers adapted to be operated by keys upon a key-board similar to that of a type-writer, each of said circuit-closers consisting in a spindle provided with a spring, against the force of which said spindle is adapted to be operated, a plunger-head upon said spindle, a stud on said plunger with which said spindle is adapted to make contact when operated, a contact device extending from said stud, guides wherein said spindle and said plunger are adapted to move, and a plate or series of plates representing dots and dashes, and with which said contact device on said plunger is adapted to make contact when said spindle is operated through the medium of one of said keys, all of the spindles of the several circuit-closers forming one terminal of the telegraph-circuit and all of the plates or series of plates forming the other terminal of said circuit, substantially as described.

4. The combination, in a device of the class described, of a spindle with a plunger provided with a stud with which said spindle is adapted to make contact, a tubular guide wherein said plunger is adapted to move longitudinally, a contact device extending from said stud, and a secondary plate or series of plates provided in the path of said contact device, but normally insulated therefrom, said tubular guide forming one terminal of the circuit in which said device is included and said secondary plate or plates forming the opposite terminal of said circuit, substantially as described.

5. The combination, in a telegraph-transmitter, of the spindles 3, having the keys 2, the metal plate 5, the springs 14, plungers on the lower ends of said spindles, the studs in said plungers, said spindles adapted to make contact with said studs when forced down, said plunger being adapted to move longitudinally on said spindle and being at all times retained thereon, guides adapted to retain said plungers in lateral position, contact-brushes extending from said plates or studs, and secondary plates and series of plates provided in the paths of said brushes and adapted to make contact therewith as the keys are successively depressed, all of said secondary plates connected together to form one terminal of the circuit in which the transmitter is included and said plate 5 forming the opposite terminal, substantially as and for the purpose specified.

449,175. APPARATUS FOR DETERMINING MINUTE MEASUREMENTS. WILLIAM A. ROGERS, Cambridge, Mass. Filed Jan. 25, 1886. Serial No. 189,684. (No model.)



Claim.—1. In an apparatus for determining linear measures, a bed provided with parallel longitudinal ribs having ridges projecting toward one another and ridges projecting upward from the bed between the said ribs, combined with a microscope-carriage having a base or platform resting on said upright ridges and fitted between the lateral ridges and normally pressed against one of the latter, a caliper-stop connected with said carriage and having a plane surface at right angles to its line of movement, and a corresponding stop and support therefor fastened upon said bed, substantially as described.

2. In an apparatus for determining linear measures, a bed provided with ways and stops fixed with relation to said bed, and a microscope movable with relation to the said bed and having its movement toward the said stop limited by engagement therewith, combined with a gravity-lock, by which the microscope-carriage is drawn toward the stop and held in engagement therewith, with a definite pressure derived from the force of gravity, substantially as described.

3. In an apparatus for providing standards of linear measure, a co-operating pair of caliper-stops, one movable with relation to the other and each composed of a plate having front and rear plane faces at right angles to the line of movement of one stop from the other, and means for referring the movement of one stop relative to the other to a graduated-line-measure bar, substantially as described.

4. The caliper-stops consisting of shanks and flanges at the ends thereof, each having plane front and rear faces at right angles to the axis of the shank, and the said shanks being of equal size and shape in cross-section and constituting the rest for the jaws of the calipers spanning the distance between the rear faces of the flanges, substantially as described.

5. The combination of a pair of stops having plane contact-surfaces, with the supporting-bar immediately below the said surfaces rabbeted or recessed to receive a line-measure bar and support the same with its graduated surface immediately below the contacting faces of the stops, substantially as described.

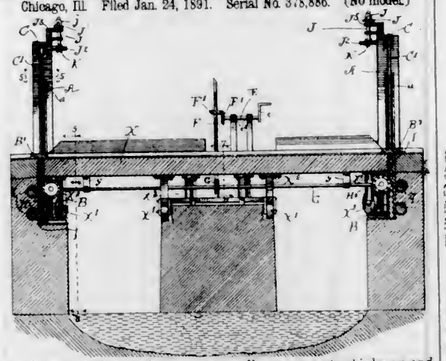
6. An apparatus for providing standards of linear measure, comprising a bed and ways or guides, and the microscope-carriage having a linear movement on the said ways, combined with a supplementary bed having stop-carriages longitudinally movable therein, and means to clamp or fasten each of the said carriages, and connections between one of the said stop-carriages and the microscope-carriage, whereby the said stop-carriage accompanies the microscope-carriage in its rectilinear movement, which is referred by the microscope to a standard of linear measure, substantially as described.

7. The combination of the bed and ways or guides thereon with the microscope-carriage movable on said ways and provided with a hollow upright, and the microscope-supporting platform provided with a foot fitted and vertically adjustable in the upright of the said carriage, substantially as described.

8. The combination of a pair of stops each having a plane surface and a rectilinear guideway, on which one or both of said stops are movable one with relation to the other, and supports for said stops located at the sides of their path of movement, whereby a space is afforded immediately below the said stops for a line-measure bar along the surface of which the said stops are free to move, substantially as and for the purpose described.

9. The combination of the bed and ways with the microscope-carriage movable on said ways and provided with a hollow upright, and a microscope-supporting platform having a foot fitted in said upright, and the adjusting device for raising and lowering the said microscope-platform, substantially as described.

449,176. SAFETY-GATE FOR DRAW-BRIDGES. HENRY J. ROBLF, Chicago, Ill. Filed Jan. 24, 1891. Serial No. 378,886. (No model.)



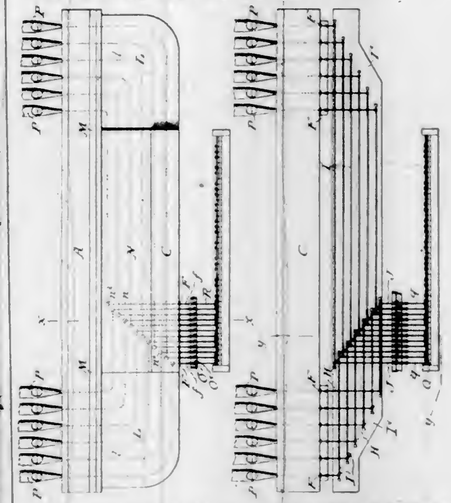
Claim.—1. In a safety-gate extending across the highway and adapted to be raised into the highway or depressed therefrom into a trench provided therefor, the combination of a gate, posts forming guides for the gate and supports for counterbalance-weights attached by cords to the gate, pulleys over which such cords pass and by which the pulleys are rotated, a vertical rotatable shaft actuated by the pulley, and a horizontal table secured on the upper end of the vertical shaft and rotatable therewith and adapted to have a lantern placed thereon, substantially as described

2. The combination of a vertically-movable gate, posts forming guides for the gate and supports for pulleys over which cords attached at one end to the gate and at the other end to counterbalance-weights therefor pass, a rack secured to the gate, a horizontal shaft underneath the roadway of the highway, a cog-wheel on such horizontal shaft intermeshing with the rack on the gate, a shaft above the roadway of the highway connected to and adapted to actuate the first-named shaft, and an overhanging head secured to the upper edge of the gate and adapted to form a part of the roadway of the highway when the gate is depressed in the guides therefor on the posts, substantially as described.

3. The combination of a vertically-movable gate, posts forming guides for the gate and supports for pulleys over which cords attached at one end to the gate and at the other end to counterbalance-weights therefor pass, a rack secured to the gate, a horizontal shaft underneath the roadway of the highway, a cog-wheel on such horizontal shaft intermeshing with the rack on the gate, a shaft above the roadway of the highway connected to and adapted to actuate the first-named shaft, a vertical rotatable shaft actuated by a pulley over which the cord connecting one of the counterbalance-weights and the gate passes, and a horizontal table secured on the upper end of the vertical shaft and rotatable therewith, substantially as described.

4. The combination of a vertically-movable gate, posts forming guides for the gate and supports for pulleys over which cords attached at one end to the gate and at the other end to counterbalance-weights therefor pass, a rack secured to the gate, a horizontal shaft underneath the roadway of the highway, a cog-wheel on such horizontal shaft intermeshing with the rack on the gate, a shaft above the roadway of the highway connected to and adapted to actuate the first-named shaft, a vertical rotatable shaft actuated by the pulley over which the cord connecting one of the counterbalance-weights and the gate passes, a horizontal table secured on the upper end of the vertical shaft and rotatable therewith, and an overhanging head secured to the upper edge of the gate and forming a part of the roadway of the highway when the gate is depressed in the guides therefor on the posts, substantially as described.

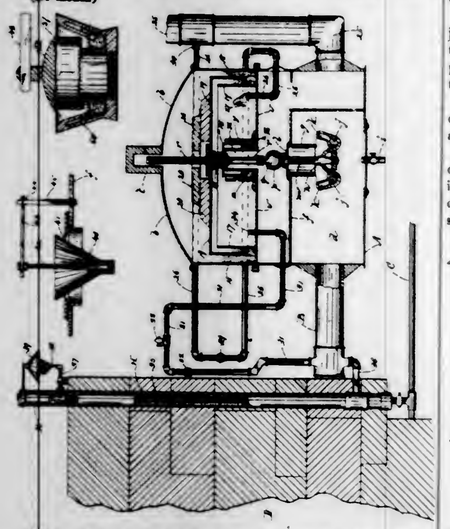
449,177. ORGAN. FRANK ROOSEVELT, New York, N. Y. Filed Oct. 5, 1889. Serial No. 326,119. (No model.)



Claim.—1. In a pipe-organ, in combination with a wind-chest embodying valveways, a pallet-box of width inferior to the wind-chest existing as a separate structure remote from said chest and provided with valve-throats, a wind-chest channel-board embodying a series of channels converging toward its central portion and as to their upper ends in communication with the aforesaid valveways, a key-scale channel-board embodying another series of channels each opening into one of the channels of the wind-chest channel-board and also into one of the valve-throats, a series of puppet-valves, manual keys, and mechanical connections between said keys and valves, substantially as set forth.

2. In combination with the wind-chest, the pallet-box, the wind-chest channel-board, the key-scale channel-board, the coupling-piece, the puppet-valves, and the manual keys connected with said valves, substantially as set forth.

449,178. AUTOMATIC GAS-SUPPLY SHUT-OFF AND REGULATOR. WILLIAM C. ROSSETT, Hyde Park, assignor of one-half to Michael J. Scanlan, Boston, Mass. Filed Oct. 6, 1890. Serial No. 367,177. (No model.)



Claim.—1. In a device of the character described, a gas-pressure regulator comprising a body or casing provided with a main supply-pipe, a discharge-pipe, a valve, and connected gas-actuated mechanism, in combination with a pipe connecting the discharge-pipe with said valve mechanism, and a pipe connecting said mechanism directly with the main supply-pipe, substantially as and for the purpose set forth.

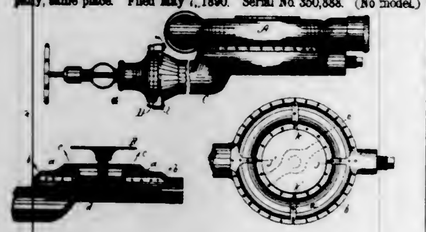
2. In a device of the character described, a gas-pressure regulator provided with a main supply-pipe, a discharge-pipe, and a cut-off valve interposed between said pipes, in combination with a liquid-sealed hood on the stem of said valve, a pipe connecting said hood with the discharge-pipe, a spring-cushioned swinging valve in the mouth of said pipe, and a pipe connecting said supply-pipe with the hood, substantially as described.

3. In a device of the character described, the combination of a gas-pressure regulator, a supply and a discharge pipe therefor, a pressure-regulating cut-off valve in said regulator, a pipe connecting the discharge-pipe and valve-actuating mechanism, a pipe connecting said supply-pipe with the valve-actuating mechanism, and a cock and vent in said pipe, substantially as described.

4. In a device of the character described, a gas-pressure regulator and gas supply and discharge pipe therefor, in combination with a pipe connecting said discharge with the pressure-regulating mechanism, and a pipe connecting said supply with said mechanism, substantially as and for the purpose set forth.

5. In a device of the character described, the body A, provided with supply and discharge pipes, the valve *j*, hood 19, and respective seats, arranged substantially as specified, in combination with the pipe 26, provided with a valve 27 and connecting the discharge-pipe with said hood, the pipe 31, connecting the hood and supply-pipe and provided with a cock 32 and vent 33, substantially as described.

449,179. WATER-BACK GAS COOKING-STOVE. HENRY RUPPEL, Cleveland, Ohio, assignor to the Dangler Stove and Manufacturing Company, same place. Filed May 7, 1890. Serial No. 350,885. (No model.)



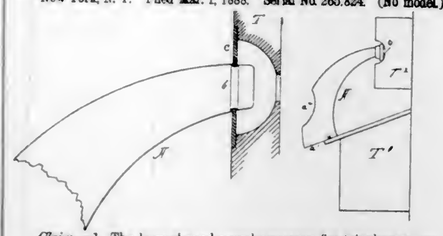
Claim.—1. In combination, a burner having an inner and an outer row of jets and formed with a seat between said jets, and a water-pipe resting upon said burner on the seat between the jets, substantially as described.

2. In combination, a burner having an inner and an outer row of jets, a central spreader acting upon the inner row of jets for deflecting the same outward, and a water-pipe extending about the burner and in position to be struck by the deflected flame from the inner jets and the flame from the outer row of jets, substantially as described.

3. In combination with a burner having a depression *a* with jets on each side of the same, the water-pipe resting in said depression against the burner, substantially as described.

4. In combination with a burner having an inner and an outer row of jets, the water-pipe extending between the jets, the said burner having grooves extending beneath the water-pipes from the inner to the outer row of jets, said grooves having perforations substantially as described.

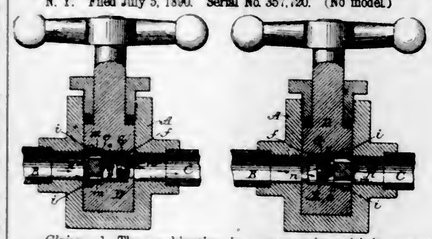
449,180. TELEPHONE SOUND-TRANSMITTER. ADAM E. SCHATZ, New York, N. Y. Filed Mar. 1, 1888. Serial No. 265,824. (No model.)



Claim.—1. The horn-shaped sound-conveyer for telephones, provided with an opening a^3 in its convex side near the large open end thereof, substantially as described.

2. A sound-conveyer for telephones, consisting of a horn-shaped mouth-piece open at both ends and having an opening in its convex side intermediate of its ends, the small end being provided with an elastic tip, substantially as described.

449,181. ROTARY VALVE. FRIEDRICK SCHNEIDER, New York, N. Y. Filed July 5, 1890. Serial No. 357,720. (No model.)

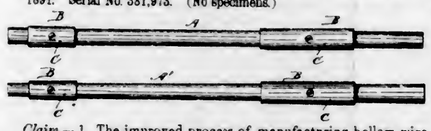


Claim.—1. The combination, in a rotary valve, with its rotatable plug and the transverse opening therein, of a movable perforated disk mounted to play axially in said opening, and a clearing-pin fixed to project opposite thereto to register with the perforation in the disk and enter and project through the same when by a reversal of the valve-plug the disk is driven toward it and to be withdrawn therefrom when the disk is carried in the opposite direction in the regular action of the valve, substantially in the manner and for the purpose herein set forth.

2. The combination, with the plug in a rotary-valve, of a movable disk playing axially in the transverse opening through the plug, a stationary disk closing one end of said opening, one or more supply-apertures in one of said disks, a delivery-aperture of reduced area in the opposite disk, and a pin projecting from the first disk in position to enter and project through the reduced aperture in the second disk when by a reversal of the valve the one disk is driven toward the other and to be withdrawn therefrom in the ordinary action of the valve, substantially in the manner and for the purpose herein set forth.

3. The combination, with the rotatable plug in a rotary valve and the opening through said plug, of a transverse disk or diaphragm fixed at one end of said opening and having one or more apertures through it, a pin projecting centrally inwardly from said diaphragm, a movable disk fitted to play in said opening in front of said diaphragm and having a central perforation therein of less area than the area of the apertures through the fixed diaphragm in position to be entered and closed by the pin when the disk is carried toward the diaphragm, and a spring interposed between the movable disk and diaphragm to hold them normally apart, substantially in the manner and for the purpose herein set forth.

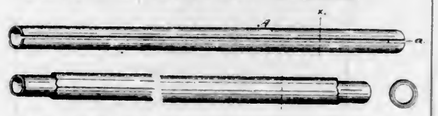
449,182. PROCESS OF MANUFACTURING SEAMLESS HOLLOW WIRE. CHARLES R. SMITH, Providence, R. I., assignor to the C. R. Smith Plating Company, of Kentucky. Filed July 24, 1890. Renewed Feb. 18, 1891. Serial No. 381,973. (No specimens.)



Claim.—1. The improved process of manufacturing hollow wire herein described, consisting in the formation of a longitudinally-split metallic tube, the use of a steel arbor having short metallic sleeves, covering said arbor with oil, placing said tube upon said arbor with said sleeves abutting the ends of said tube, respectively, passing said tube, arbor, and sleeves horizontally with a rotary and longitudinal movement through the flame of blow-pipes, so as to melt said tube and fuse its split edges together, drawing said tube so in position through a draw-plate for a finish, withdrawing said sleeves, and removing the tube from the arbor, substantially as specified.

2. The improved process of manufacturing hollow wire herein described, consisting in the formation of a longitudinally-split metallic tube, the use of a steel arbor covered with oil, placing said tube on the arbor, passing said tube and arbor horizontally with a rotary and longitudinal movement through the flame of blow-pipes, so as to melt said tube and fuse its split edges together, drawing said tube so in position through a draw-plate for a finish, and withdrawing said tube from said arbor, substantially as specified.

449,183. PROCESS OF MANUFACTURING SEAMLESS GOLD-PLATED WIRE. CHARLES R. SMITH, Providence, R. I., assignor to the C. R. Smith Plating Company, of Kentucky. Filed July 24, 1890. Renewed Feb. 18, 1891. Serial No. 381,974. (No specimens.)



Claim.—1. The improved process of manufacturing seamless gold-plated hollow wire herein described, consisting of the formation of a tube of base metal and a tube of gold stock, placing the latter upon the former to surround the same longitudinally with a fluxing material between them, subjecting the same so in position to heat sufficient to fuse the gold tube upon the base-metal tube, and finishing the compound tube so formed by drawing it through a draw-plate or in any known manner, substantially as specified.

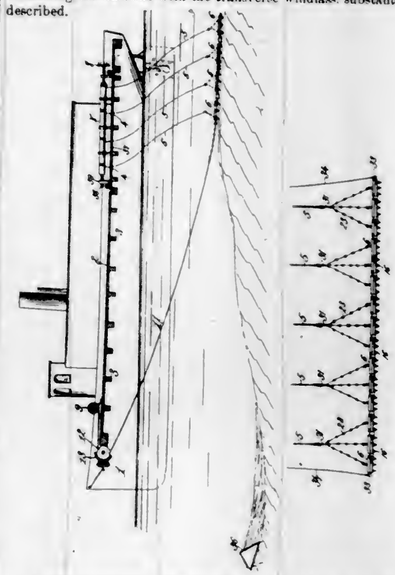
2. The improved process of manufacturing seamless gold-plated hollow wire herein described, consisting of the formation of a longitudinally-split tube of base metal and a longitudinally-split tube of gold stock, covering the former with a fluxing material, slipping the gold tube upon the base-metal tube to cover the same, but so that the openings of said tubes shall not be coincident with each other, subjecting the compound tube to heat sufficient to fuse the gold tube upon the base-metal tube and at the same time to flow the melted gold into the openings of said tubes to close the same, and finishing the compound tube by drawing it through a draw-plate or in any known manner, substantially as specified.

449,184. RIVER-CHANNEL PLOW. DANIEL H. SOLOMON, Glenwood, Iowa. Filed July 17, 1889. Serial No. 317,836. (No model.)

Claim.—1. The combination, with two hulls or vessels connected side by side a suitable distance apart and an intermediate deck or platform supported by said hulls, of a group of flexibly-connected river-bar harrows or plows, cables for suspending said harrows from the platform, and draft-cables for drawing the group of harrows when lowered onto the river-bed, substantially as described.

2. The combination, with two hulls or vessels connected side by side a suitable distance apart and an intermediate deck or platform supported by said hulls and provided in its rear portion with a rectangular group of vertical holes, of a series of parallel windlasses located on the deck or platform adjacent to said group of holes, a group of flexibly-connected river-bar harrows or plows, and cables passed through the holes in the deck and connecting the harrows and windlasses, substantially as described.

3. The combination, with two hulls or vessels connected side by side and an intermediate deck or platform supported by said hulls and provided in its rear portion with a rectangular group of vertical holes, of a series of parallel windlasses located on said deck adjacent to said group of holes, a windlass located transversely on the forward portion of said deck, a transverse series of sheaves located in the deck in front of the transverse windlass, a group of river-bar harrows or plows, hoisting-cables passed through the group of holes in the deck and connecting said harrows with the parallel windlasses, and draft-cables passed over the sheaves in the forward part of the deck and connecting the harrows with the transverse windlass, substantially as described.



4. The combination, with two hulls or vessels connected side by side and an intermediate deck or platform provided with holes or openings, of windlasses located on said deck, a group of flexibly-connected river-bar harrows or plows, and cables passed through the deck and connecting the windlasses and group of harrows, substantially as described.

5. The combination, with two hulls or vessels connected side by side and an intermediate deck or platform, of windlasses located on said deck, a group of flexibly-connected river-bar harrows or plows, cables connecting said windlasses and harrows, and cables attached to the outer sides of the group of harrows for supporting the uppermost outer row of harrows in line with any inclination that may be given to the entire group of harrows, substantially as described.

6. The combination, with two hulls or vessels connected side by side and an intermediate deck or platform, of a group of flexibly-connected river-bar harrows or plows arranged in transverse rows, in which the harrows of each row alternate with those of the adjoining rows, and cables extending through the deck to the harrows, substantially as described.

7. The combination, with two hulls or vessels connected side by side, an intermediate deck or platform, and windlasses located thereon, of a group of flexibly-connected river-bar harrows or plows arranged in transverse rows, in which the harrows of each row alternate with those of adjoining rows, cables for lowering and hoisting the harrows, chains for connecting said cables and harrows, some of said harrows being arranged in pairs alternating with single harrows of the same row and adjoining rows, and draft-cables connected with the forward harrows, substantially as described.

8. The combination of the group of river-bar harrows or plows 6, the draft-cables 11, the hoisting-cables 5, the chains 23, rings 31, connecting the harrows and hoisting-cables, and guards 32, substantially as described.

9. The combination of the group of river-bar harrows or plows 6, consisting of frames 14, provided with loops 15, the diagonal links 24, the chains 23, hoisting-cables 5, and draft-cables 11, substantially as described.

10. The combination of the group of river-bar harrows or plows 6, having loops 15, the links 24 and 29, the hoisting-cables 5, and the draft-cables 11, substantially as described.

11. The combination of the group of flexibly-connected river-bar harrows or plows 6, arranged in transverse rows, in which the harrows of each row alternate with the harrows of adjoining rows, the chains 23 and 26, and the cables 5 and 11, substantially as described.

12. The combination of the group of weighted and flexibly-connected river-bar harrows or plows 6, the eyebolts 21, the chains 23, hoisting-cables 5, and draft-cables 11, substantially as described.

13. The combination of the deck 2, having a rectangular group of openings 4, the windlasses 7, parallel with each other and with the said openings and having screw-threaded axles 38, the axle-boxes 39, cables 5, and plows or harrows 6, substantially as described.

14. The combination, with the deck 2 and river-bar plows or harrows 6, of the removable deck-section 37, adapted to be lifted above said deck and provided with the group of openings 4, the windlasses 7, supported on said section 37, and the cables 5, connecting the windlass-cylinders with the plows or harrows, substantially as described.

15. The combination of the deck 2, the vertically-movable deck-section 37, having openings 4, the rotary and longitudinally-movable windlass-cylinders 7, the cables 5, and the group of river-bar harrows or plows 6, substantially as described.

449,185. DEVICE FOR PREVENTING BANKS FROM CAVING.

DANIEL H. SOLOMON, Glenwood, Iowa. Filed July 17, 1889. Serial No. 317,837. (No model.)



Claim.—1. In an apparatus for protecting the banks of rivers from cutting and erosion, a protector adapted to be suspended vertically from the bank and composed of independent parallel and vertical chains, mats or mattresses attached to and extended between said chains, and vertical wings or screens attached to said chains and extended outward at an angle to the mats, substantially as described.

2. In a hanging protector for the banks of rivers, the combination, with a series of parallel suspended chains composed of alternate long and short links, of mats or mattresses extended between and supported by said chains, substantially as described.

3. In a hanging protector for the banks of rivers, the combination, with a series of parallel suspended chains composed of alternate long and short links, of mats and mattresses arranged in sections, each of which is attached to two or more long links of said chain, substantially as described.

4. In a hanging protector for the banks of rivers, the combination, with two or more parallel vertically-suspended chains and a submerged mat or mattress attached to and extended between said chains, of an apron or border attached to the lower portions of said chains and mat and extended downward and outward below the same to protect the toe of the bank, substantially as described.

5. In a hanging protector for the banks of rivers, the combination, with two or more independent parallel vertically-suspended chains at a point above the river-bottom and a mat or mattress attached to and extended between said chains, of weights attached to the lower ends of the chains to maintain the protector in a vertical position, substantially as described.

6. In a hanging protector for the banks of rivers, the combination, with parallel vertically-suspended chains, weights attached to the lower ends of said chains, and mats or mattresses attached to and extended between the chains, of a border or apron attached to the lower portions of the chains and mat in the rear of said weights and extended downward and forward below the weights, substantially as described.

7. In a hanging protector for the banks of rivers, the combination, with parallel vertically-suspended and weighted chains and a mat or mattress attached to and extended between said chains, of a border or apron attached to the lower portions of said chains and mat, and a drawing-cord for temporarily attaching the lower edge of said border or apron to the front of the mat, whereby when the apparatus is submerged the said drawing-cord can be withdrawn to release the border or apron and cause it to spread outward in front of the toe of the bank to protect the same, substantially as described.

8. In a hanging protector for the banks of rivers, the combination, with parallel suspended chains, of woven mats or mattresses having the warp-threads or fibers thereof free at their ends to serve as a means of attachment of said mats or mattresses to the said chains, substantially as described.

9. In a hanging protector for the banks of rivers, the combination, with weighted and vertically-suspended chains, of vertical screens attached at one end to said chains, and a snub-post and cable for supporting the other ends of said screens, substantially as described.

10. In a hanging protector for the banks of rivers, the combination, with vertically-suspended chains and mats or mattresses attached to and extended between said chains, of vertical screens or wings attached at their inner ends to said chains and extended outward in and across the pool in front of the bank, substantially as described.

11. In a hanging protector for the banks of rivers, the combination, with weighted chains suspended vertically from the banks and mats or mattresses attached to and extended between said chains, of borders or aprons attached to the lower portions of said chains and mats, wings or screens attached at their inner ends to the chains and extended outward in the pool in front of the bank, and borders or aprons attached to the lower edges of said screens, substantially as described.

12. In a hanging protector for the banks of rivers, the combination, with weighted vertically-suspended chains and mats or mattresses attached to and extended between said chains, of wings or screens attached at one end to said vertical chains, cables connected with the other ends of said wings or screens, and a snub-post to which said cables are connected for supporting the screens in the water, substantially as described.

13. In a hanging protector for the banks of rivers, the combination, with a series of supports located on the bank, and each provided with a pulley or grooved wheel, of a hanging protector composed of vertical chains, and mats or mattresses attached to and extended between said chains, and cables passed over said pulleys and attached to the said chains for the purpose of lowering, supporting, and raising said hanging protector, substantially as described.

14. The combination of the supports 1, provided with pulleys 9, the cables 38, passed over said pulleys, the chains 10, attached to and suspended from said cables, and the mats or mattresses 11, attached to and extended between the said chains, substantially as described.

15. The combination of the vertically-suspended chains 10, the mats or mattresses 11, attached to and extended between said chains, the wings or screens 28, attached at their inner ends to the chains 10 and extended outward from the mats or mattresses 11, the cables 33, connected with the outer ends of said screens, and a stake or stakes for attachment of said cable to support the said screens in the water, substantially as described.

16. The combination, with the vertically-suspended chains 10, weights 17, and mats or mattresses 11, of the borders or aprons 25, substantially as described.

17. The combination, with the vertically-suspended and weighted chains 10 and the wings or screens 28, of the borders or aprons 36, substantially as described.

18. The combination of the vertically-suspended and weighted chains 10, mats or mattresses 11, wings or screens 28, bridles 31, cables 33, snub-post 34, and guy-ropes 37, substantially as described.

19. The combination of the vertically-suspended chains 10, composed of long double links 12 and short links 13, the weights 17, and the mats or mattresses 11, attached to and extended between said chains, substantially as described.

20. The combination, with the vertically-suspended chains 10, and mats or mattresses 11, attached to and extended between said chains, of the detachable weights 17, provided with eyes 19, and the open links 20, provided with bolts 23 for connecting said chains and weights, substantially as described.

21. The combination, with a screen 28, of a weighted chain 10 forsuspending the screen at one end adjacent to the bank of a river, and a snub-post 34 and cable 33 for supporting the screen at the other end, substantially as described.

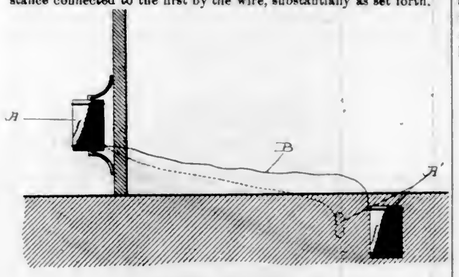
449,186. THERMO-ELECTRIC BATTERY.

JOHN N. WEBB, Birmingham, Ala. Filed July 19, 1890. Serial No. 359,315. (No model.)

Claim.—1. A portable thermo-electric battery, the ends, plates, or parts of which for heating or cooling are of relatively great size to the intermediate connector, which is a suitable flexible connection, substantially as described.

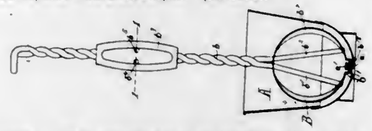
2. A plate for a thermo-electric battery, composed of a sheet of tin or other suitable substance folded upon itself in convolutions, provided with interposed separating-pieces and a metallic binder, substantially as shown.

3. The combination of a plate for a thermo-electric battery composed of a sheet of some relatively thermo-electro positive substance folded upon itself in convolutions, a relatively thermo-electro negative substance in the form of wire, and again a thermo-electro positive substance connected to the first by the wire, substantially as set forth.



449,187. EGG-BEATER.

ALBERT WHITE, Lowell, Mass. Filed Mar. 16, 1889. Serial No. 303,525. (No model.)



Claim.—1. The combination of the holder provided with a stud on the inside of the bottom thereof, said stud having an enlarged head, and the beater provided with a slot or hole to engage said stud below said head, as and for the purpose specified.

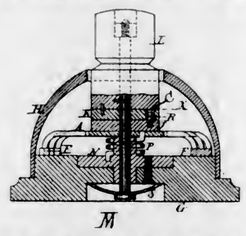
2. The combination of the holder provided with a stud having an enlarged head, and the beater having an agitator provided with a slot extending from the middle of the bottom of the same laterally outward, said slot having at its outer end an enlargement of sufficient diameter to admit the head of said stud, as and for the purpose specified.

3. The combination of the holder provided with a stud having an enlarged head, and the beater having an agitator provided with a downward offset and with a slot extending from the middle of the bottom of said agitator laterally outward, said slot being partly in the offset portion of said agitator and having at its outer end beyond said offset an enlargement of sufficient diameter to admit the head of said stud, as and for the purpose specified.

4. The beater provided with an agitator consisting of a hoop arranged in a vertical plane and having sides convex on their inner faces and concave on their outer faces to draw the material beaten toward the center of said agitator and to allow the air to pass down in the concavities of said sides and to mix with said material, as and for the purpose specified.

449,188. ELECTRIC SWITCH.

WILLIAM WHITE, London, England. Filed Dec. 3, 1889. Serial No. 332,411. (No model.)



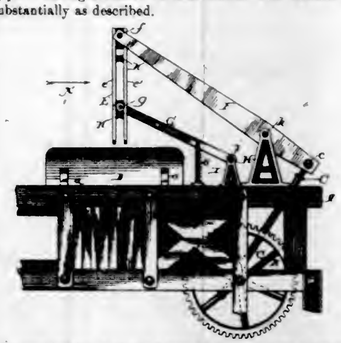
Claim.—1. An electric switch consisting of central spindle M, movable longitudinally, on which are fitted an insulating-handle L, having a circular slot C, and a metal strip A, having its ends stepped and divided and having a pin R engaged in a slot C, in combination with springs S and P and with stepped contact-plates F, the whole mounted on an insulating-base G, substantially as described.

2. In an electric switch, stepped contact-plates having the edges of their steps sloped downward, in combination with correspondingly-stepped contact-arms and a shaft movable longitudinally and having a friction head or shoulder, substantially as described.

449,189. BALING-PRESS.

ANDREW WICKEY, Chicago, Ill. Filed Oct. 3, 1890. Serial No. 366,973. (No model.)

Claim.—1. In combination with the frame of a baling-press, a feeder carried by two levers F G, the lever F being provided with suitable means for oscillating the same and being rigidly pivoted to the feeder, and lever G being connected with said feeder by means of a sliding pivot having a limited vertical motion with relation to the latter, substantially as described.



2. In combination with the frame of a baling-press, a feeder operated by means of two levers, one of which F is rigidly pivoted to the frame of the machine at *h* and to the feeder at *f* and provided with suitable connections for oscillating it upon its pivot, and the other G is rigidly pivoted to the frame of the machine between the pivot *h* and the feeder, and adapted to guide the feeder in its stroke by means of a pivot *g*, which has a limited vertical movement with respect thereto, substantially as described.

3. In combination with the frame of a baling-press and suitable driving mechanism, a pitman C, reciprocated by said driving mechanism, a lever F, pivoted to the frame and oscillated by said pitman, a feeder E, composed of the parts *e e'*, pivoted to said lever, a lever G, also pivoted to the frame, and a guiding pin or roller *g*, carried by the free end of the lever G and adapted to move up and down between the parts *e e'*, substantially as described.

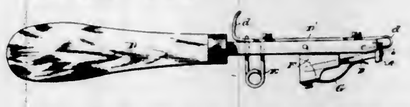
4. In a baling-press, the combination of the feeder E, composed of the parts *e e'* K, the lever F, pivoted thereto and to the frame of the machine, the pitman-rod C, pivoted to said lever F, the lever G, pivoted to the frame of the machine and bearing at its free end the rollers *g*, and the spring S, tending to draw the lever G downward toward the top of the press, substantially as described.

5. In combination with the frame of a baling-press and suitable driving mechanism, a feeder E, a bracket H, secured to the frame, a pitman C, reciprocated by the driving mechanism, a lever F, fulcrumed upon the bracket H and pivoted at its ends to the feeder E and the lever F, respectively, a bracket I, also secured to the frame, an arm G, pivoted at one end to the bracket I and at the other end, by means of a sliding pivot, to the feeder E, and a rest *a*, also secured to the frame, substantially as described.

6. In combination with the frame of a baling-press and suitable driving mechanism, a pitman C, reciprocated by said driving mechanism, a bracket H, secured to the frame, a feeder E, a lever F, fulcrumed upon said bracket and pivoted at its ends to the pitman and the feeder, respectively, a bracket I, also secured to the frame, an arm G, pivoted at one end to the bracket I and engaged at its other end with the feeder by means of a sliding pivot, a spring S, and a rest *a*, substantially as described.

449,190. TOOL FOR CLAMPING TYPE TO TYPE-BARS.

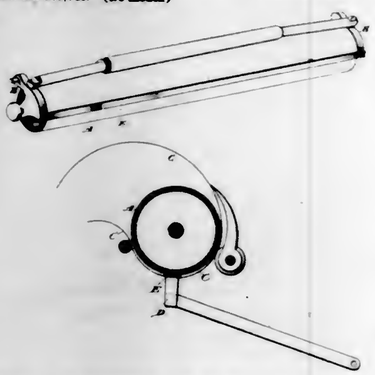
HENRY ABBOTT, Newark, N. J. Filed Oct. 5, 1888. Renewed Sept. 2, 1890. Serial No. 363,747. (No model.)



Claim.—1. The tool described, in which the spring-operated clamp for confining the type in a vertical position, the inclined grooved block for receiving the bar, and the spring for holding said bar within such grooved block are combined, substantially as and for the purpose specified.

2. The tool described, in which the spring-operated clamp for engagement with a type, the grooved block for the reception of a type-bar, the pin for engagement with the pivotal opening in said bar, and the bar-confining spring are combined, substantially as and for the purpose shown.

449,191. PLATEN FOR TYPE-WRITING MACHINES. HENRY ABBOTT, Newark, N. J. Filed Oct. 5, 1888. Renewed Sept. 2, 1890. Serial No. 363,748. (No model.)



Claim.—1. The combination, with the main platen of a type-writing machine, of a supplemental platen supported independently of the main platen that is adapted to receive the immediate impact of the printing-types and adjust the plane of its face to the plane of the face of the type, substantially as and for the purpose specified.

2. The combination, with the main platen of a type-writing machine, of a supplemental platen having a support independent of the main platen, that has the plane of its face automatically adjusted to the plane of the face of a type by the impingement of the latter upon it, substantially as and for the purpose set forth.

3. The combination, with the main platen of a type-writing machine, of a supplemental platen having a support independent of the main platen, which is adapted to be turned transversely to insure parallelism between its face and the face of an impinging type, substantially as and for the purpose shown.

4. The combination, with the paper-carrying and impact-receiving roller of a type-writing machine, of a supplemental platen having a plane face to receive the direct impact of the blow from the printing-type, substantially as and for the purpose shown and described.

5. The combination, with the paper-carrying and impact-receiving roller of a type-writing machine, of a supplemental platen consisting of an independently-supported yielding bar having a plane face to receive the direct impact of the blow from the printing-type, substantially as and for the purpose specified.

6. As an improvement in type-writing machines, a platen consisting of a bar composed of flexible material, which automatically adjusts its face to the plane of the face of an impinging type, substantially as and for the purpose shown.

7. As an improvement in type-writing machines, a platen consisting of a bar supported at its extremities and constructed so as to automatically adjust its face to the plane of the face of an impinging type, substantially as and for the purpose set forth.

8. The combination, with the paper-carrying roller and the carriage of a type-writing machine, of a platen consisting of a bar supported by said carriage and capable of adjusting its impact-receiving face to the face of an impinging type, substantially as and for the purpose set forth.

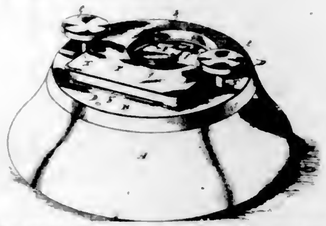
9. The combination, with the main platen of a type-writing machine, of a supplemental platen consisting of a bar composed of flexible material, which is adapted to receive the immediate impact of the printing-type and adjust its face to the plane of the face of an impinging type, substantially as and for the purpose specified.

449,192. APPARATUS FOR RECORDING MEASUREMENTS OF TIME, SPACE, OR QUANTITY. HENRY ABBOTT, Newark, N. J. Filed Nov. 21, 1888. Renewed Sept. 2, 1890. Serial No. 363,749. (No model.)

Claim.—1. In a machine for measuring intervals, a rotatable dial provided upon its face with a series of progressive characters and an independently-moving pointer, substantially as and for the purpose specified.

2. In a machine for measuring and recording intervals, the combination of a rotatable die that is provided with a series of progressive printing characters and a pointer, and mechanism whereby said characters and pointer may be separately printed upon a card or ticket, substantially as and for the purpose shown.

3. In a machine for measuring and recording intervals of time, the combination of a rotatable printing-die that is provided with an annular series of progressive numeral-type, a second die which is combined rotatively with the numeral-type die and is provided with a pointer-type that is in juxtaposition with the zero-numeral of the series, a time-train that is adapted to rotate said dies with a predetermined velocity, and mechanisms, substantially as described, which are adapted to move said dies separately against a suitably-supported ticket, substantially as and for the purpose set forth.



4. In a machine for measuring and recording intervals of time, the combination of two rotatable printing-dies, each of which is provided with an annular series of progressive numeral-type and contains a second die that is combined therewith rotatively and has a pointer-type that is in juxtaposition with the zero-numeral of the series, a time-train which is adapted to rotate said dies with different relative velocities, a mechanism, substantially as described, that is adapted to simultaneously raise said numeral-dies against a suitably-supported ticket, and another mechanism, substantially as described, which is adapted to simultaneously and independently raise said pointer-dies against such ticket, substantially as and for the purpose shown.

5. In a machine for measuring and recording intervals of time, the combination of a rotatable printing-die that is provided with an annular series of progressive numeral-type, a second die which is contained within and combined rotatively with the numeral-type die and is provided with a pointer-type that is in juxtaposition with the zero-type of the series, a time-train that is adapted to rotate said dies with a predetermined velocity, mechanisms, substantially as described, which are adapted to move said dies separately against a ticket, and a yielding backing or bed for such ticket, substantially as and for the purpose set forth.

6. In a machine for measuring and recording intervals of time, the combination of two rotatable printing-dies, each of which is provided with an annular series of progressive numeral-type and contains a second die that is combined therewith rotatively and has a pointer-type that is in juxtaposition with the zero-numeral of the series, a time-train that is adapted to rotate said dies with different relative velocities, a mechanism, substantially as described, that is adapted to simultaneously raise said numeral-dies against a suitably-supported ticket, a second mechanism which is adapted to simultaneously and independently raise said pointer-dies against such ticket, and a yielding backing or bed for the latter, substantially as and for the purpose shown and described.

7. In a machine for measuring and recording intervals of time, the combination of a rotatable printing-die that is provided with an annular series of progressive numeral-type, a second die which is contained within and combined relatively with the numeral-type die and is provided with a pointer-type that is in juxtaposition with the zero-type of the series, a time-train that is adapted to rotate said dies with a predetermined velocity, mechanisms which are adapted to move said dies separately against a ticket, a mechanism that is adapted to form a backing or bed for such ticket, and an automatically-movable inked ribbon which is interposed between said dies and ticket, substantially as and for the purpose specified.

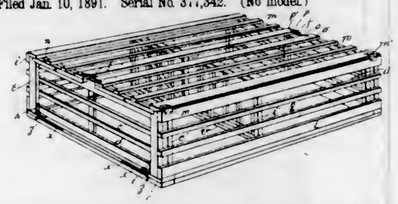
8. In a machine for measuring and recording intervals of time, the combination of two rotatable printing-dies, each of which is provided with an annular series of progressive numeral-type and contains a second die that is combined therewith rotatively and has a pointer-type that is in juxtaposition with the zero-numeral of the series, a time-train which is adapted to rotate said dies with different relative velocities, a mechanism that is adapted to simultaneously raise said numeral-dies against a suitably-supported ticket, a second mechanism which is adapted to simultaneously and independently raise said pointer-dies against such ticket, a mechanism that is adapted to form a backing or bed for the same, and an inked ribbon which is interposed between said dies and ticket, substantially as and for the purpose shown.

9. In a machine for measuring and recording intervals of time, the combination, in a housing for inclosing the operative parts thereof, of a hollow body, a top plate to which said operative parts are secured and by which they are supported, said plate being secured to said body by fastenings placed in or removed from position from within the body, and a bottom consisting of a removable plate, which, when in place, may be secured to the body by means of a lock, substantially as and for the purpose shown.

10. In a machine for measuring and recording intervals of time, the combination, in a housing for inclosing the operative parts thereof, of an annular body provided with a rabbet in its lower side, a top plate to which said operative parts are secured and by which they are supported, said plate being secured to said body by fastenings placed in or removed from position from within the body, and a bottom consisting of a plate that may be contained within the rabbet in the lower side of the annular body and secured therein by means of a lock, substantially as and for the purpose set forth.

11. In a ribbon-stamp, in combination with an inked ribbon, a stationary bearing-strip which is arranged upon the top plate adjacent to the dies and operates to support a card or ticket above and hold the same out of contact with the face of said ribbon while being placed in or removed from position for stamping, substantially as and for the purpose shown and described.

449,193. FOLDING CRATE. ERNST H. BARTELS, Dieterich, Ill. Filed Jan. 10, 1891. Serial No. 377,342. (No model.)

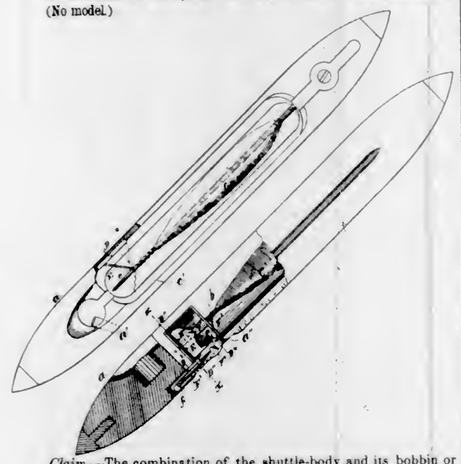


Claim.—1. In a folding poultry-coop, the combination of the bottom provided with strips on its upper side at its edges, the ends, hinges secured to the ends and the side strips of the bottom, so that the ends may fold inwardly, the sides, hinges secured to the sides and the end strips of the bottom, so that the sides may fold inwardly upon the folding ends, and the outwardly-folding top sections hinged to the sides, substantially as set forth.

2. In a folding poultry-coop, the combination of the bottom provided at each end with a pair of pivoted hooks, the inwardly-folding ends and sides hinged to the bottom, and the outwardly-folding top sections provided at each end with staples to be engaged by said hooks when the coop is folded, as set forth.

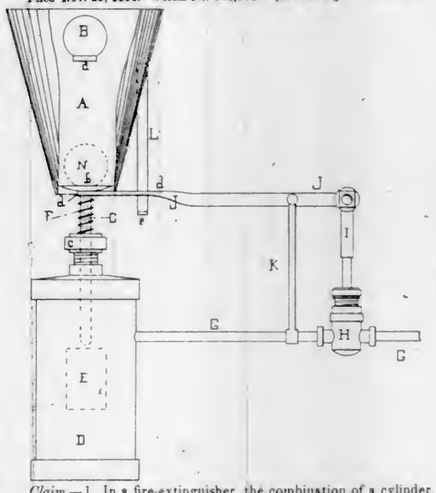
3. In a poultry-coop, the combination of the bottom, ends, and sides with the folding top sections hinged to the sides, doors hinged to said top sections, so that when swung down they will separate the coop into compartments, and a pair of cleats extending across the bottom and receiving between them the lower ends of the doors, substantially as set forth.

449,194. FLOAT-DETECTING ATTACHMENT FOR LOOM-SHUTTLES. HERMANN BAUMANN, Adams, Mass., assignor of one-half to Robert N. Richmond, same place. Filed Apr. 23, 1890. Serial No. 349,075. (No model.)



Claim.—The combination of the shuttle-body and its bobbin or cop-spindle, the case or frame D, secured to the shuttle-body and having a spring D', the filling-thread breaker E, pivoted to said frame and having a lock projection *e*, and a spring-pressed gate holding and releasing lever F, having a hook F'' for retaining the gate E in its normal position and having a stop projection F'' adapted to rest normally against a projection D' on the frame D, substantially as and for the purpose set forth.

449,195. FIRE-EXTINGUISHER. JACOB D. BERRY, Camden, N. J. Filed Nov. 25, 1890. Serial No. 372,581. (No model.)

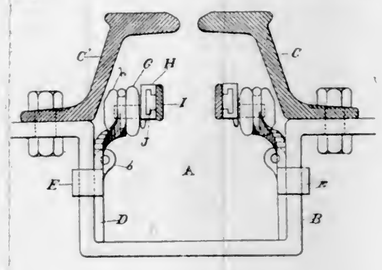


Claim.—1. In a fire-extinguisher, the combination of a cylinder, an acid-receptacle in the cylinder, a hopper arranged above the cylinder, a bolt adapted to move vertically in the hopper and cylinder, a ball supported in the hopper and adapted to fall on the upper end of the bolt to drive the same against the acid-receptacle in the cylinder, and a coiled spring to return the bolt to its normal position, substantially as and for the purpose described.

2. In a fire-extinguisher, the combination, with a bolt arranged to move vertically in a cylinder and a ball supported above the bolt and adapted to drop thereon to drive the same against and break an acid-receptacle in the cylinder, of a pipe connected with the cylinder, a valve in said pipe, and a lever connected to the bolt and the valve-stem and arranged to operate the valve when the bolt is depressed to allow the gas generated in the cylinder to escape, substantially as shown and described.

3. In a fire-extinguisher, the combination of a hopper, a cylinder containing an acid-receptacle, a bolt adapted to be driven against said acid-receptacle, a retracting-spring for elevating the bolt, a pipe provided with a stop-cock and connected with the cylinder, a lever having its fulcrum supported on said pipe and connected at its ends to the bolt and the valve-stem, whereby the valve is opened when the bolt is driven against the acid-receptacle in the cylinder and the gas generated in said cylinder is permitted to escape, and a spring-catch secured to the hopper and arranged to engage with the lever when depressed to hold the valve open, substantially as shown and described.

449,196. ELECTRIC-RAILWAY CONDUIT. FRANCIS O. BLACKWELL, New York, N. Y., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Mar. 5, 1889. Serial No. 301,851. (No model.)



Claim.—1. The combination, in an electric-railway conduit, of the transverse yoke and slot-rails with a clamp having clamping-faces engaging the yoke and an insulated supply-conductor attached to the clamp.

2. The combination, in an electric-railway conduit, of a transverse yoke and slot-rails with a clamp having clamping-faces engaging said yoke and an insulated supply-conductor supported by the clamp in the upper part of the conduit.

3. The combination, in an electric-railway conduit, of the transverse yoke and slot-rails with an upwardly-projecting metallic clamp having flanges engaging said yoke and a supply-conductor supported by but insulated from said clamp.

4. The combination, in an electric railway, of the supply-conductor, the insulator, and the metallic clamp to which the supply-conductor is secured and furnishing means for attaching it to a suitable support, said clamp consisting of sections adapted to embrace the support, and a fastening device for holding said sections in place.

5. The combination, in an electric-railway conduit, of the transverse yoke and slot-rails with the clamp having clamping-faces engaging said yoke made in sections, fastening devices holding said sections together when in place, and an insulated supply-conductor supported by said clamp.

6. The combination, in an electric-railway conduit, of a clamp resting at its lower end upon the conduit and provided with side flanges holding it in position and an insulated conductor supported by the clamp.

7. The combination, in an electric railway, of a supply-conductor with a clamp made in sections having clamping-faces engaging with a suitable support, the said sections when in place forming a holder for the supply-conductor.

8. The combination, in an electric railway, of a support, a supply-conductor, and an intermediate clamp with a common fastening device securing both the clamp to the support and the conductor to the clamp.

9. The combination, in an electric railway, of a conduit and a supply-conductor with a holder embracing an insulator connected to the supply-conductor and having at its lower end a clamp attachment to the conduit.

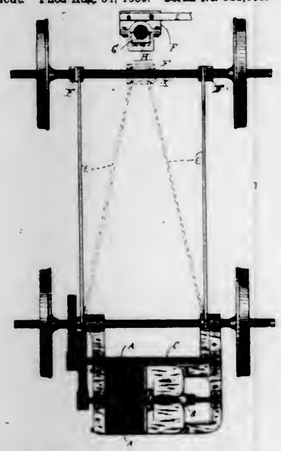
10. The combination, in an electric-railway conduit, of the transverse yoke, the slot-rail, and supply-conductor with a metallic holder having at one end the insulator for the supply-conductor and a clamp attachment to the yoke at its other end.

11. The combination, in an electric railway, of the inclined slot-rail with an insulator beveled to correspond with the slot-rail and the supply-conductor connected to the insulator.

12. In an electric railway, the combination of the supply-conductor with the porcelain or similar non-combustible insulator and a metallic extension from the insulator, embracing a lug upon the supply-conductor.

13. The combination, in an electric-railway conduit, of the clamp D, having clamping-faces engaging the conduit, the insulator G, and the supply-conductor.

449,197. ELECTRIC-MOTOR TRUCK. FRANCIS O. BLACKWELL, New York, N. Y., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 31, 1889. Serial No. 322,635. (No model.)



Claim.—1. The combination, with a driven axle, of a motor having a bearing thereon, and a single supplementary supporting-bearing on the opposite axle.

2. The combination, with a driven axle, of a motor journaled thereon, having its field-magnet and armature both parallel to the axle, and a support for the free end of the motor attached directly to the opposite axle.

3. The combination, with a driven axle, of a motor having its field-magnet and its armature both parallel with the axle and provided with a bearing thereon and a journal-box on the opposite axle supporting the free end of the motor.

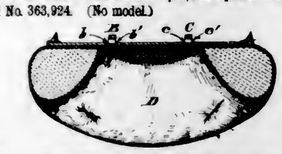
4. The combination, with a driven axle, of a motor having two bearings thereon and geared thereto, with a single bearing upon the opposite axle supporting the free end of the motor.

5. The combination, with a driven axle, of a motor having its field-magnet parallel with the axle and geared thereto, bearings for the said motor upon the axle, and a support for its free end, provided with a spring or elastic bearing resting directly upon the opposite axle.

6. The combination, with a driven axle of a car-truck, of an electric motor outside the axle journaled thereon and a single supplementary supporting-bearing on the opposite axle, as set forth.

7. The combination, in an electric-motor truck, of a motor having the axis of its field-magnets and its armature parallel with the axle and provided with extensions from its yoke, and pole-pieces journaled on the axle, with means for supporting the motor in position, as described.

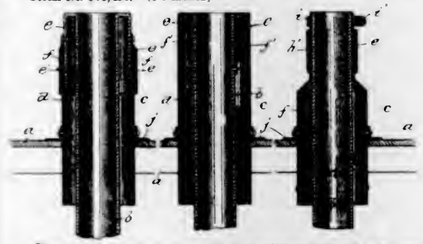
449,198. HARNESS-PAD. FRANK M. BORING, Dayton, Ohio, assignor of one-half to Edward F. Cooper, same place. Filed Sept. 4, 1890. Serial No. 363,924. (No model.)



Claim.—1. The combination, in a harness-pad, of the cap A, pierced at *a a'*, the cushion-covering H, the cushion proper D, confined between said cap and covering, the center piece I, secured to said covering and provided with a series of holes J, arranged in pairs, and a binder K, wherewith said center piece and covering are temporarily coupled to said cap, all as herein described.

2. The combination, in a harness-pad, of cap A, cushion D, and a covering H, having its central portion immovably secured to the under side of cap A, as at *m*, and having its margin doubled back on itself, as at *h*, and the edge of said cap bent inwardly at *a''* and crimped against this doubled part of said covering, all as herein described.

449,199. SELF-ADJUSTING FROST-PROTECTOR FOR VENTILATING-PIPES. THOMAS C. BOYD, Chicago, Ill. Filed Jan. 20, 1891. Serial No. 378,459. (No model.)



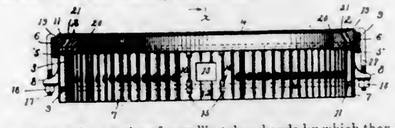
Claim.—The combination, with a ventilating-pipe, of a surrounding air-inclosing sectional jacket consisting of two concentric cylindrical flanges extending in one direction and a cylinder extending in an opposite direction to fit loosely but closely between said concentric flanges, whereby a tight but yielding telescoping jacket may be formed around the upper end of the pipe, substantially as shown and set forth.

449,200. BANJO. BYRON E. BOYDEN, Bridgeport, Conn. Filed Aug. 14, 1890. Serial No. 361,950. (No model.)

Claim.—1. In a banjo, a rim consisting of a series of metallic tubes held together by suitable bands and provided with sound-openings on their inner sides.

2. In a banjo, a rim consisting of a series of metallic tubes held in position by bands passed through openings in the tubes, said tubes being closed at their lower ends and provided with sound-openings on their inner sides.

3. In a banjo, a rim consisting of a series of metallic tubes, bands threaded at their ends by which said tubes are held in position, a head-block having longitudinal openings to receive the ends of the bands and transverse openings to receive nuts which engage the threaded ends of the bands, substantially as described.



4. In a banjo, a series of metallic tubes, bands by which they are held together and which are threaded at their ends, in combination with a staff and a head-block having an opening to receive the staff, openings to receive the ends of the bands, and other openings to receive nuts which engage the ends of the bands, substantially as described.

5. In a banjo, a rim consisting of a series of metallic tubes, a portion of which are provided with lugs 8, in combination with a head, a tightening-ring by which the head is stretched, and hooked bolts which engage the tightening-ring and the threaded lower ends of which engage the lugs, substantially as described.

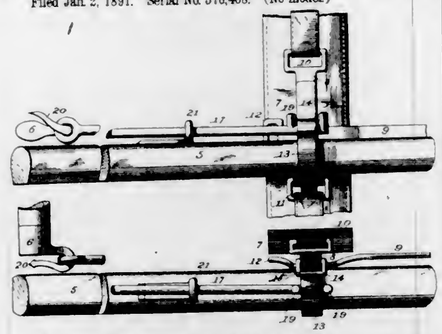
6. The combination, with the tubes, the holding-ring having a flange resting within the tubes, and bands by which the tubes are held together, of a head-block having openings to receive the ends of the bands, and nuts engaging the ends of the bands and acting to draw the tubes together and against the flange.

7. The combination, with the tubes, some of which are provided with lugs, the holding-ring resting within the tubes and having sound-openings registering with the tubes, and means, substantially as described and shown, for holding the tubes together, of a head, a tightening-ring, hooked bolts engaging the tightening-ring, and passing through the lugs, and nuts upon said bolts, whereby the head is tightened.

8. In a banjo, a holding-ring for the head, having a rounded bearing-surface at its outer edge and sound-openings through it, the top of the ring inclining downward and inward from the bearing-surface, so as to leave a space between the ring and head, substantially as described.

9. In a banjo, the combination, with the head and tightening-ring, of a rim consisting of metallic tubes, some of which are provided with lugs 8, and hooked bolts engaging the tightening-ring and the lugs.

449,201. HARNESS. GEORGE O. BREWER, Shenandoah, Iowa. Filed Jan. 2, 1891. Serial No. 376,468. (No model.)



Claim.—1. The combination of a trace adapted at its rear end to be connected with a whiffletree and at its forward end to rest upon a thill, and a thill-supporter having a hook portion hinged at its lower end to a fixed portion of the harness and adapted to encircle both a thill and the free forward end of the said trace, the latter being provided with one or more studs adapted to engage the said hook, substantially as described.

2. The combination of a trace having a stiff forward end adapted to lie upon a thill, and provided with one or more projecting studs, and a thill-supporter having a hinged hook adapted to carry the thill, and having an upward curve wherein the trace may rest freely, the said stud or studs adapted to engage the said hook, substantially as described.

449,202. FISHING-TACKLE. ISRAEL BUSHONG, New Holland, Pa. Filed May 5, 1890. Serial No. 350,668. (No model.)

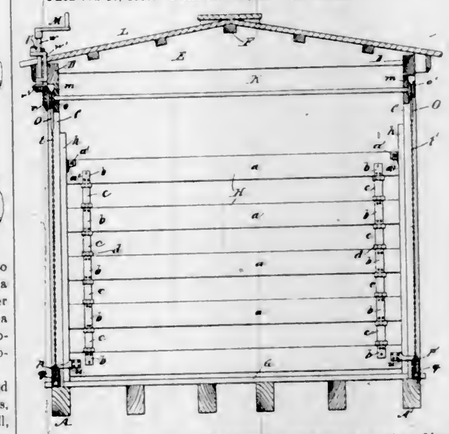
Claim.—1. The herein-described fishing-tackle, the same consisting of a rod adapted to be inserted in the ground, an alarm-bell, and a flexible laterally-movable connection between the upper end of the rod and the support for the bell, substantially as and for the purpose set forth.



2. The herein-described fishing-tackle, the same consisting of a rod reduced at one end, whereby it is adapted to be inserted into the ground, and consisting of rigid sections flexibly connected at their adjacent ends, so that one of said sections may vibrate relatively to the other, the upper section being provided with an alarm or bell and by reason of its connection adapted to vibrate, substantially as specified.

3. The rod composed of upper and lower separate sections and the spring-coil connecting the adjacent ends of the same, the upper section, by reason of said spring connection, being adapted to vibrate laterally, the cleat-pins secured to the upper section, the line secured to the pins and adapted to wind thereon, and the bell-standard located at the upper end of the upper section and the bell loosely suspended therein.

449,203. CATTLE-CAR. FERDINAND E. CANDA, New York, N. Y. Filed Oct. 16, 1885. Serial No. 180,092. (No model.)

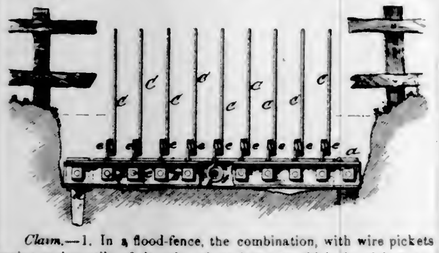


Claim.—1. The gate or partition H, consisting of a series of bars united by links, said links being united by pintles or bolts, substantially as set forth.

2. The gate or partition H, consisting of bars united by links *b c*, which are connected by hinge-joints, the links *b* being secured to the said gate-bars, substantially as described.

3. A gate or partition for a stock-car, consisting of a series of bars or slats united by spacing-links that are hinged at each end to said slats or bars, substantially as described.

449,204. **FLOOD-FENCE.** HERALD CATLETT and EDWIN ROBERTSON, Fairmount, Ill. Filed Oct. 21, 1890. Serial No. 368,872. (No model.)

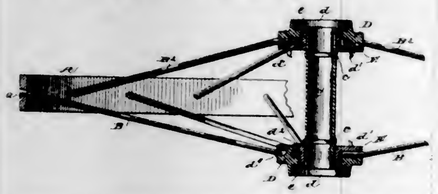


Claim.—1. In a flood-fence, the combination, with wire pickets having spring-coils, of clamping-plates between which the pickets are held and means for anchoring said plates upon the bed of the stream, substantially as and for the purpose set forth.

2. In a flood-fence, the combination, with independently-adjustable pickets, of clamping-plates between which the pickets are held, one of said plates having a notched flange to form seats for the wire pickets, substantially as and for the purpose specified.

3. In a flood-fence, the combination, with the pickets having coiled springs and eyes, of clamping-plates held together by suitable bolts, which pass through the plates and the eyes of the pickets, one of said plates having a notched flange, substantially as and for the purpose set forth.

449,205. **WHEEL FOR VEHICLES.** JOSEPH N. CLOUSE, St. Louis, Mo. Filed May 12, 1890. Serial No. 351,550. (No model.)



Claim.—1. In a metal wheel for vehicles and other uses, the head-piece D, with its sand-band *d*, series of two or more wedges terminating in tangs d^2 and d^3, its grooves d^3 d^3, and valley d^4, in combination with the spokes B B and B^3 B^3 and the rim or tire A, substantially as described and specified.

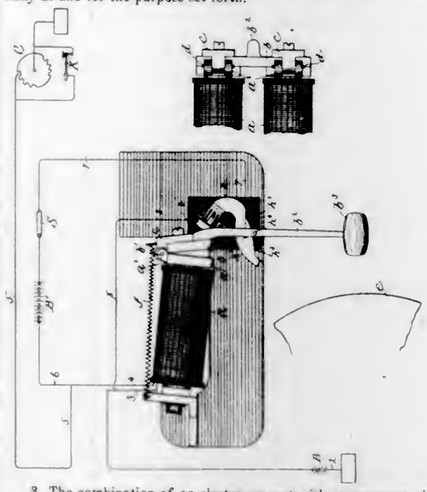
2. In a metal wheel for vehicles and other uses, the flanged cap-plate E, with its flange-extension *e*, its series of two or more elongated slots or openings e' e', and corresponding series of beveled depressions e^2 e^2, in combination with the rolled-metal box C, substantially as described and set forth.

3. In a hub for metal wheels, the head-piece D, with its sand-band *d*, series of two or more wedges terminating in tangs d^2, (and d^3 clinched,) and its grooves d^3 d^3 and valley d^4, in combination with the flanged cap-plate E, with its flange-extension *e*, its series of two or more elongated slots or openings e' e', and corresponding series of beveled depressions e^2 e^2, into which the tangs d^2 are clinched firmly, securely holding the two parts together, substantially as specified.

449,206. **ELECTRO-MAGNETIC DEVICE.** MOSES G. CRANE, Newton, Mass. Filed July 16, 1888. Serial No. 280,041. (No model.)

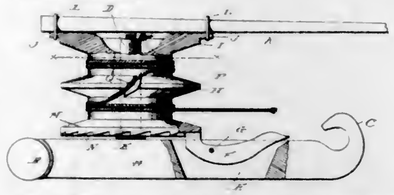
Claim.—1. The combination of an electro-magnet and its armature pivoted to vibrate back and forth before the poles of the said magnet and normally when the said magnet is demagnetized, remaining in an intermediate position between its extreme forward and backward positions, combined with a main circuit through the said magnet, and a local circuit through the said magnet, and a circuit-closer in said local circuit, arranged with relation to said armature as described, whereby the said circuit-closer in the local circuit remains open when the armature is in its normal intermediate position and is closed when the armature moves backward beyond said normal intermediate position, substantially as and for the purpose described.

2. The combination of an electro-magnet and its armature normally remaining when unattracted in an intermediate position between its nearest and most remote positions with relation to the magnet-poles, and a local circuit through said magnet and circuit-closer therein, combined with and arranged with relation to said armature as described—namely, being open when said armature is in its normal intermediate position and closed when said armature moves backward beyond said intermediate position, and a main circuit through said magnet and current-interrupter therein, the interruptions produced by which occupy a time substantially equal to or less than the time occupied by a complete to-and-fro vibration of the armature, substantially as and for the purpose set forth.



3. The combination of an electro-magnet with an armature pivoted to vibrate back and forth before the poles of said magnet and adjusted to remain in an intermediate position between its extreme forward and backward positions when unattracted, and an electric circuit through said magnet, and a circuit-closer therein arranged with relation to the said armature as described, being engaged and closed by said armature when it moves backward beyond its normal position of rest, substantially as described.

449,207. **STUMP-PULLER SPOOL.** THOMAS C. CUNNINGHAM and LUCIUS A. FUNK, Sigourney, Iowa. Filed Nov. 12, 1890. Serial No. 371,210. (No model.)

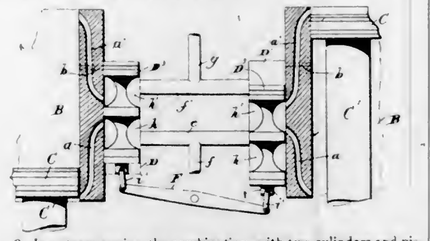


Claim.—The improved stump-puller described, consisting, essentially, of the base-frame having a longitudinal slot in one of the branches thereof, the lever fulcrumed in said slot, the spindle rising from said frame, the drum mounted on the spindle and composed of the upper flange I, the intermediate beveled flange P, provided with the obliquely-arranged beveled slots Q, and the base-flange M, having the beveled teeth on its lower side adapted to engage the lever fulcrumed in the main frame, and the sweep K, secured to the upper flange of the drum, all substantially as shown and described.

449,208. **STEAM-ENGINE.** EDWARD W. CURTISS, Portland, Oreg. Filed Dec. 11, 1890. Serial No. 374,283. (No model.)

Claim.—1. In a steam-engine, the combination, with two cylinders, of a piston in each cylinder, a valve for each cylinder, a walking-beam or rock-shaft connecting said valves, and ports for admitting steam between the heads of the valve-chambers and the adjacent ends of the valves for actuating the latter in one direction, substantially as set forth.

2. In a steam-engine, the combination, with two cylinders and pistons therein, of a valve-chest for each cylinder, a piston-valve in each valve-chest, each piston-valve having two annular grooves, a rock-shaft connecting said piston-valves, and steam-ports for admitting steam to the valve-chests near one end of the latter for actuating the valves in one direction, substantially as set forth.



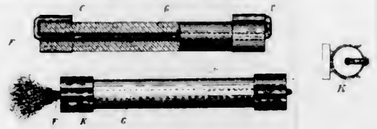
3. In a steam-engine, the combination, with two cylinders and pistons therein, of a valve-chest for each cylinder, two dipes connecting said valve-chests, an inlet-pipe communicating with one of said connecting-pipes and an exhaust-pipe communicating with the other connecting-pipe, valves in said valve-chests, and a rock-shaft connecting said valves, substantially as set forth

4. In a steam-engine, the combination, with two cylinders and pistons, of a valve-chest for each cylinder, said cylinders being provided with ducts connecting the ends of the cylinders with the valve-chests, and each cylinder being provided with a duct adapted to connect the cylinders and valve-chests in proximity to the upper ends of the latter and piston-valves in said valve-chests, substantially as set forth.

5. In a steam-engine, the combination, with two cylinders and pistons therein, of valve-chests for said cylinders, piston-valves in said valve-chests, a link connected to each valve, and a rock-shaft pivoted at its center and connected at its ends to said links, substantially as set forth.

6. In a steam-engine, the combination, with two cylinders and pistons therein, of a valve-chest for each cylinder, each valve-chest being provided with annular recesses, pipes connecting said valve-chests and communicating with said recesses, a piston-valve in each valve-chest, a rock-shaft connecting said piston-valves, and steam-ports for admitting steam to the valve-chests near one end of the latter for actuating the valves in one direction, substantially as set forth.

449,209. **ELECTRIC FUSE.** GEORGE F. CURTISS, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed June 20, 1890. Serial No. 356,148. (No model.)



Claim.—1. In an electric fuse, the combination of the fuse-wire with an inclosing tube having a bore of such diameter that the wire fills the tube with slight, if any, clearance for the purpose of causing the sudden expulsion of the wire when melted, as described.

2. In an electric fuse, the combination of the fuse-wire with an inclosing tube of insulating material having a bore of such diameter that the wire fills the tube with slight, if any, clearance, and terminals exterior to the tube for making connection with the electric circuit to be protected

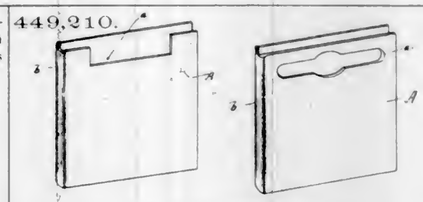
3. The combination, in an electric fuse, of the inclosing tube and a fusible conductor of such diameter as will fill the tube with slight, if any, clearance bent back at its ends, with metallic collars external to the tube, with which the ends of the conductor are in electrical connection, as described

4. The combination, with the inclosing tube, of a fuse-wire therein bent back at its ends, and the metallic collars C C around the ends of the tube, shaped to leave spaces between the collar and tube, into which are inserted the ends of the fuse-wire, as described

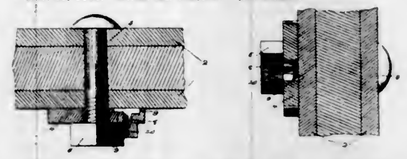
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449,210. **NEWSPAPER-COVER.** JOSEPH DAVIS, San Francisco, Cal. Filed Aug. 12, 1890. Serial No. 361,829. (No model.)

Claim.—A cover or file for newspapers and other circulating publications, consisting of two leaves and a back or connecting portion uniting said leaves along one edge, said leaves being adapted to receive printed matter upon them and having an opening slit or slot in its front leaf exposing the title or heading of the newspaper or other publications which it contains, as set forth.



449,211. **NUT-LOCK.** FRANCIS M. DIFANY, Marion, Ohio. Filed Nov. 28, 1890. Serial No. 372,875. (No model.)

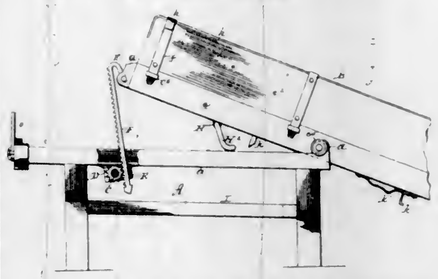


Claim.—1. The combination, with the bolt, nut, and washer, the latter provided with an opening at one side of the nut, said washer being provided upon its inner face at opposite sides of the opening with shallow recesses, of a key provided at one end with a head adapted for contact with one of the faces of the nut and at its other or inner end provided with a head for taking in the recesses, the upper sides of the head having oppositely-inclined faces or shoulders, substantially as specified.

2. The combination, with the bolt, the nut, and the washer, the latter provided with an oblong opening located about in a plane with the face of the nut and provided at its inner end at opposite sides with recesses having oppositely-inclined bottoms, of a key comprised of a rectangular head, one corner of which is rounded, a cylindrical reduced shank extending rearwardly from the head and terminating in a T-head at the other end, the inner faces of which are provided with inclined drawing-shoulders adapted to engage the inclined bottoms of the recesses, substantially as specified

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449,212. **DUMPING-WAGON.** JOSEPH W. DUNHAM, Englewood, and GEORGE W. KISINGER and FRANK P. KISINGER, Danville, Ill. Filed Oct. 3, 1890. Serial No. 366,947. (No model.)



Claim.—1. The combination, with a wagon bed and a body, of a shaft journaled to the bed, a pinion on the shaft, and a rack-bar connected to the shaft and wagon-body, so that when said shaft is turned in one direction the body will be moved longitudinally and when turned in the other direction one end of said body will be raised, substantially as set forth.

2. The combination, with a wagon bed and a body, of a shaft journaled to the bed, a pinion on the shaft, a rack-bar connected to the wagon-body and to the shaft, and a crank-shaft for maintaining said rack-bar normally parallel with the bottom of the wagon-body, substantially as set forth

3. The combination, with a wagon bed and a body, of a shaft journaled thereon, a pinion on said shaft, a rack-bar pivoted at one end to the wagon-body, and a bracket or loop loosely mounted on the shaft, through which said rack-bar is adapted to slide, substantially as set forth.

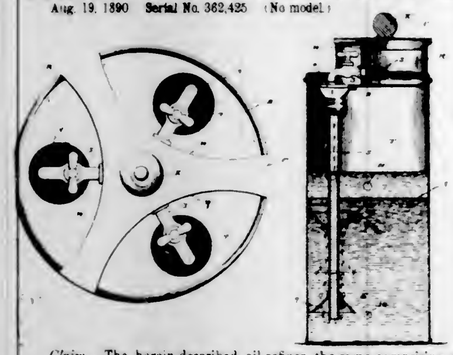
4. The combination, with a wagon bed and a body, of a shaft journaled to the bed, a pinion on said shaft, a rack-bar pivoted at one end to the wagon-body and loosely connected to the shaft, and a slotted bar or reach for guiding the rack-bar, substantially as set forth.

5. The combination, with a wagon bed and a body, of a shaft journaled in the bed, a pinion on said shaft, a rack-bar having a loop at one end and pivotally connected to the wagon-body and connected with the shaft, and a bolt on the bed and adapted to enter the loop of the rack-bar and lock the body, substantially as set forth.

6. The combination, with a wagon-body, of metallic plates on the side-boards thereof having hooks at the rear ends, a tail-board, a metallic plate on the tail-board having perforations in its ends to receive the hooks on the plates on the side-boards, bolts for locking said tail-board to the body, and a lever for manipulating said bolts, substantially as set forth.

7. In a wagon, the combination, with the bed, of a body mounted thereon and adapted to slide forwardly, and inclined blocks or plates on said body at or near the rear end thereof and adapted to rest on said bed and maintain the body in a horizontal position when in its forward position, substantially as set forth.

449,213. REFINING OILS. JOHN D. EDWARDS, Decatur, Ind. Filed Aug. 19, 1890. Serial No. 362,425. (No model.)



Claim.—The herein-described oil-refiner, the same comprising a tank T, adapted to be partially filled with water, an oil-cock 11 therein above the water-level S, a reservoir R, having its bottom B closing the top of the tank and provided with the curved side W, a tube 5, leading from the bottom B downwardly within said tank to a point below the water-level, the drip-cock 3, leading from the reservoir to the upper end of the tube, a conical deflector 6 upon said tube near its lower end, provided with a number of holes 9, and an upwardly-flaring funnel-shaped deflector 7 upon said tube above said perforated deflector, but below the water-level, all as and for the purpose hereinbefore set forth.

449,214. MANUFACTURE OF ARTIFICIAL STONE. LOUIS ENRIGHT, New York, N. Y., assignor to the Enright Manufacturing Company, same place. Filed May 14, 1890. Serial No. 351,779. (No specimens.)

Claim.—1. An artificial stone composed of a mixture of hydrate of lime, a solution of magnesium chloride of about 35° Baumé, burnt dolomite, and a solution of sodium silicate of about 26° Baumé, about in the proportions hereinbefore specified.

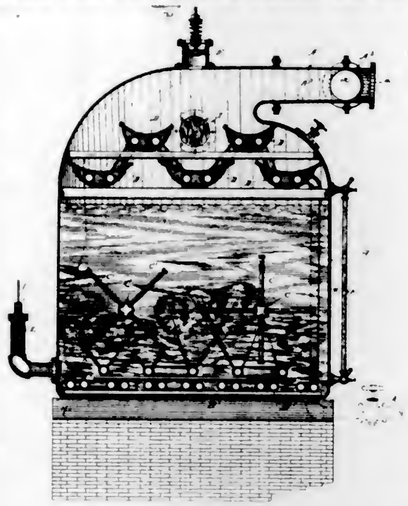
2. The within-described process for producing artificial stone, which consists in decomposing a quantity of burnt dolomite by the action of hydrochloric acid, then mixing the hydrate of lime and magnesium chloride solution obtained by said decomposition with burnt dolomite, and exposing the mixture to the action of an aqueous solution of sodium silicate, substantially as above described.

449,215. APPARATUS FOR EVAPORATING NAPHTHA. JOHN W. EVANS, Cleveland, Ohio. Filed May 10, 1890. Serial No. 351,275. (No model.)

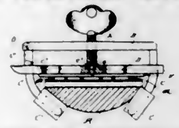
Claim.—1. The combination, with an evaporator, of one or more horizontal steam-heated troughs located internally along the upper section of the evaporator and adapted to catch and retain condensed vapor and revaporize the same, substantially as set forth.

2. The combination, with an evaporator, of horizontal troughs located in the evaporator, substantially as indicated, and adapted to catch and retain condensed vapor and revaporize the same, such troughs having double walls inclosing steam-chambers, and pipes connected with these chambers for supplying steam thereto, substantially as set forth.

3. The combination, with an evaporator having a heating-coil and perforated steam-pipes arranged substantially as indicated, of agitators comprising axial pipes having attached hollow radial arms with appliances for introducing steam to such agitators, the latter being intergeared to turn in opposite directions, substantially as set forth.



449,216. CAPODASTRO FOR GUITARS. ARTHUR L. GASSETT, Cleveland, Ohio. Filed Nov. 20, 1890. Serial No. 372,055. (No model.)



Claim.—In a capodastro, the combination, with curved jaws connected by means of a cross-bar, of a presser-bar adapted to embrace and close the jaws, and a screw or cam combined with the two bars for forcing them apart and simultaneously closing the jaws and applying the presser-bar to the strings, such cam or screw being located at the central portion of the presser-bar, whereby the latter may adjust itself to the strings of the instrument, substantially as set forth.

449,217. POLISHING-CONE. ARTHUR T. GOOD, Hamilton, Ohio. Filed Nov. 6, 1886. Serial No. 218,168. (Model.)



Claim.—1. A rotary polishing-cone the main portion of which is substantially a right cylinder, one end of which is cut off substantially square and the opposite end is gradually tapered to a point, the exterior of said cone being provided with regularly-arranged pockets, the walls of which are thin and yielding, substantially as described.

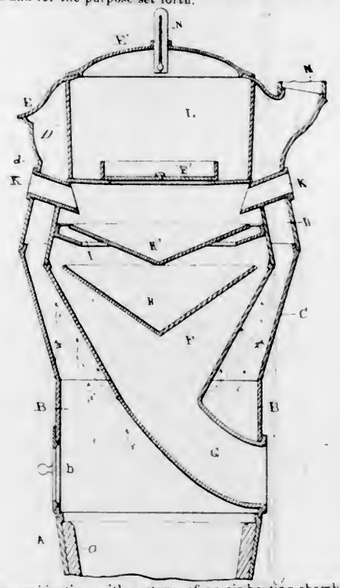
2. A rotary polishing-cone the main portion of which is substantially a right cone, one end of which is cut off square and the opposite end is gradually tapered to a point, the exterior of the cone being provided with pockets gradually decreasing in size toward the tip, and each pocket being provided with a short husk or fuzz, substantially as described.

3. As a new article of manufacture, a rotary polishing-cone consisting of the tip end of a corn-cob, the base of which is cut off square and the surface of the cob being trimmed off, so as to leave only a portion of the wall and husk in the pockets remaining, whereby the pockets upon the exterior of the cob are adapted to receive and retain a polishing material, substantially as described.

449,218. STOVE. CHARLES O. GRAVES, Washington, Kans. Filed Apr. 15, 1889. Serial No. 307,298. (No model.)

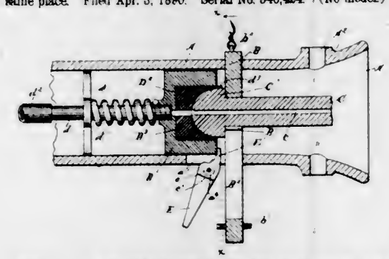
Claim.—1. The combination, with a stove, of an air-heating chamber F inside thereof, two or more inverted conical deflectors H H' within the air-heating chamber, and the inwardly-projecting downwardly-inclined baffle-plate I, located between and substantially parallel with the deflectors, substantially as described.

2. The combination, with a stove, of an air-heating chamber F, located inside thereof and directly above the fire-pot, a curved air-inlet flue G entering the stove above the fire-pot and communicating with the lower end of the air-chamber, exit-flues K, leading from the upper part of the chamber, an inverted conical deflector H, suspended inside the air-chamber with its apex substantially in line with the center of the mouth of the flue G and its base lying near to and substantially parallel with the walls of the air-chamber, and an oven L, located above the air-chamber and extending to the top of the stove, the top of the air-chamber forming the bottom of the oven and being provided with an opening closed by a cover F' for the passage of heated air into the oven, as and for the purpose set forth.



3. The combination, with a stove, of an air-heating chamber F, located inside thereof and directly above the fire-pot, a curved air-inlet flue G entering the stove above the fire-pot and communicating with the lower end of the air-chamber, an inverted conical deflector H, suspended inside the air-chamber with its apex substantially in line with the center of the mouth of the flue G and its base lying near to and substantially parallel with the walls of the air-chamber, and an oven L, located above the air-chamber and extending to the top of the stove, the top of the air-chamber forming the bottom of the oven, substantially as described.

449,219. COMBINED CAR AND PIPE COUPLING. ARTHUR C. GROVER, Willoughby, Ohio, assignor of one-half to Edward J. Dickey, same place. Filed Apr. 3, 1890. Serial No. 346,424. (No model.)



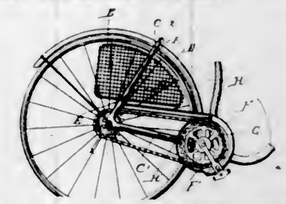
Claim.—1. A combined automatic car and pipe coupler comprising a hollow coupling-pin having rounded enlarged head, a draw-bar having an internal spring-actuated head adapted to engage the rounded ends of such coupling-bar, and a gravity coupling-slide adapted to lock the coupling-bars, substantially as set forth.

2. The combination, with hollow coupling-bars having enlarged semi-spherical heads, of a draw-bar having an internal spring-actuated head adapted to engage the coupling-bar, forming a ball-and-socket joint therewith, said head having a pipe attachment in open relation with the bore of the coupling-bar, and a gravity coupling-slide adapted to lock the coupling-bar, substantially as set forth.

3. The combination, with a hollow coupling-bar having enlarged rounded heads, and a draw-bar having an internal spring-actuated head adapted to engage such coupling-bar, such head being provided with forwardly-projecting pins, of a gravity coupling-slide having recessed sections adapted, respectively, to engage the coupling-bar and to admit the head of the coupling-bar, such coupling-bar having internal shoulders adapted to engage and rest on the pins of the head for holding the coupling-slide elevated, substantially as set forth.

4. The combination, with hollow coupling-bar and draw-bar having an internal spring-actuated sliding head having a seat adapted to engage the head of the coupling-bar, of a gravity-arm pivoted to and depending from the draw-bar and having a tongue extending inside the draw-bar in advance of the sliding head, and a gravity coupling-slide having pins to engage the shoulders of such gravity-arm for holding the slide elevated, substantially as set forth.

449,220. VELOCIPEDE. THOMAS B. JEFFERY, Chicago, Ill. Filed May 6, 1890. Serial No. 350,807. (No model.)



Claim.—1. In a velocipede having the frame of the driving-wheel pivotally connected to the remainder of the frame at a horizontal pivot, whereby said two parts may have vertical movement independently of each other, in combination with the drive-wheel frame and the drive-wheel journaled therein, the crank-shaft and the sprocket-wheels on said crank-shaft and drive-wheel shaft, respectively, the chain which communicates power between them, and the chain dress-guard F, overhanging said chain supported by connection solely with the drive-wheel frame, substantially as set forth.

2. In a velocipede, in combination with a drive wheel, the crank-shaft, and the fork which connects said shaft to the drive-wheel axle, the sprocket-wheels on said crank-shaft and drive-wheel shaft, respectively, and the chain which communicates power between them, the dress-guard over such chain extending partly around the driving sprocket-wheel and having the extension F', consisting of a rod rigid with said dress-guard above and below said sprocket-wheel, and a post extending from said fork at the side of the driving sprocket-wheel toward the drive-wheel axle and rigidly connected to said extension F', whereby said fork supports the chain dress-guard, substantially as set forth.

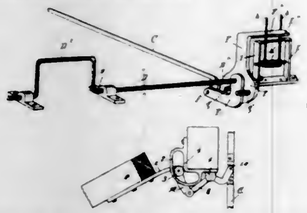
3. In a velocipede, in combination with the fork which extends from the crank-shaft to the drive-wheel shaft and the fork which upholds the mud-guard, the sprocket-wheels on said shafts, respectively, and the chain which communicates power between them, the chain dress-guard F, overhanging said chain and extending half-way around the driving sprocket-wheel and secured at one end to the fork which upholds the mud-guard and at the other end having the extension F', consisting of a rod rigid with said chain-wheel guard and extending outside of the vertical plane of the driving sprocket-wheel around the portion of said wheel not covered by the guard F, and the post H, jutting horizontally from the fork and secured to said extension F', substantially as set forth.

4. In a velocipede, in combination with the forks C and C', the removable dress-guards A B and the bolts which secure them to the fork C, and the chain dress-guard F, having its upper end secured to the fork C by one of the bolts which fastens the dress-guard A B to said fork, substantially as set forth.

449,221. FARM-GATE. LEUNE J. JOHNSTON, Petaluma, Cal. Filed May 19, 1890. Serial No. 352,402. (No model.)

Claim.—1. The combination of the bearing-plate having an angular groove or slot adapted to take the pintle-roller 3, the draw-rod C, the lever S, having one end connected to the pintle and the other end connected to the draw-rod, and the wheel-irons D D', having the plates F fixed to their outer ends and provided with studs or pins *g g*.

pieces E, connected to the ends of the draw-rod, as described, and the springs H, applied to bring back the wheel-irons into position after being depressed, substantially as described.

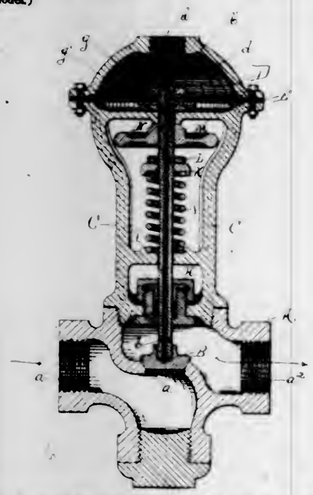


2. In combination with the wheel-iron D D×, the plate fixed to the end of said iron having studs or pins *g g* set to engage the piece E, which forms a connection between said iron and draw-rod, as described, the projecting bar F× on the top, and the double-acting spring H, having standing ends *h h*, arranged to act on opposite sides of the projecting bar and the stop I×, substantially as described.

3. In mechanism for opening and closing gates, the stationary bearing-plate having an angular track or guide-face for the pintle of the gate-hinge to travel on and the guard-plate adapted to confine said pintle to such surface, a pin or lug 9 at one end of said track, a horizontal lever 8, centered on said pin or lug 9, and a link or curved arm 12, connected to one end of said lever and to the gate-pintle, in combination with said gate-pintle and strap connecting it to the gate, and with a draw-rod connected to the outer end of lever 8, as set forth.

4. In mechanism for opening and closing gates, the combination of the swinging pintle 3, the bent lever 8, single draw-rod C, the wheel-irons D D×, connecting-pieces E, the double-crank arms F, fast on the wheel-irons, having studs *g g*, and projecting bar F, and the spring H, applied, substantially as described, to restore the wheel-iron to upright position after the vehicle-wheels have passed over it.

449,222. FLUID-PRESSURE GOVERNOR. GRANVILLE KIMBALL and HENRY S. TEAL, Chicago, Ill. Filed June 5, 1890. Serial No. 354,408. (No model.)

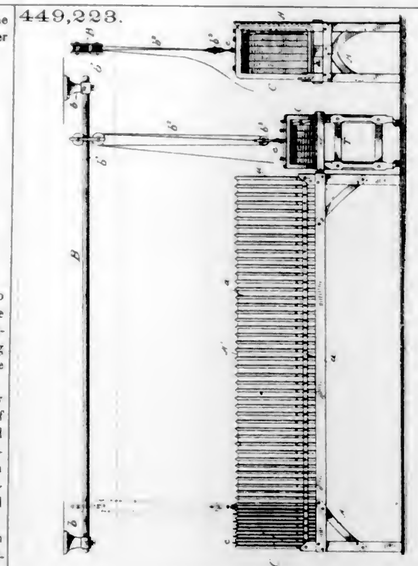


Claim.—In combination, the valve-casing and valve, the isolated diaphragm-casing and diaphragm, the connecting valve-stem bored to form a possible connection between the interiors of the two casings, and a screw-plug *b'*, adapted to close the bore in the valve-stem, substantially as described.

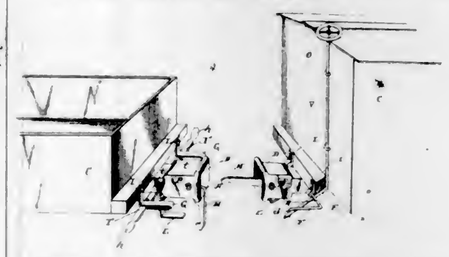
449,223. PRINTING-OFFICE APPARATUS. JOHN L. KNIGHT, New York, N. Y. Filed May 31, 1890. Serial No. 353,812. (No model.)

Claim.—A rack for type-forms made up of a rest and division-pieces, each consisting of an L-shaped bar having the outer end of its horizontal portion turned up, in combination with a strip connecting all the said ends together and secured to their outer sides, substantially as described.

449,223.



449,224. CAR-COUPLING. EUGENE F. LONG, Scranton, Pa. Filed Jan. 13, 1891. Serial No. 377,637. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head having an open bottom and a hook mounted on a horizontal pivot in said draw-head and having a catch at its upper end, of a lifter hinged at one end beneath the draw-head and its other end adapted to pass through the bottom thereof and means, substantially as described, for moving said lifter from remote points, as and for the purpose set forth.

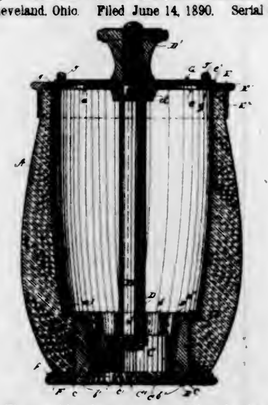
2. In a car-coupling, the combination, with a draw-head having an open bottom and a hook mounted on a horizontal pivot in said draw-head and having a catch at its upper end, of an L-shaped lifter hinged at one end to the draw-head and its other end adapted to pass through the bottom thereof, a bar moving in guides beneath the hinge of said lifter, and handles at the outer ends of said bar at each side of the car, substantially as described.

3. In a car-coupling, the combination, with a draw-head having an open bottom and a hook mounted on a horizontal pivot in said draw-head and having a catch at its upper end, of an L-shaped lifter hinged at one end to the draw-head and its other end adapted to pass through the bottom thereof, a bar moving in guides in a plane beneath the hinge of said lifter, handles at the outer ends of said bar at each side of the car, a vertical rod mounted in eyes on the end of the car and having an operating-handle at its upper end and an elbow at its lower end, and a sleeve connected to said elbow and loosely engaging said bar, substantially as described.

4. In a car-coupling, the combination, with a draw-head having an open bottom and a hook mounted on a horizontal pivot in said draw-head and having a catch at its upper end, of an L-shaped lifter hinged at one end to the draw-head and its other end adapted to pass through the bottom thereof, a longitudinal bar moving in guides in a plane beneath the hinge of said lifter, and transverse bar sections having handles at their outer ends at the sides of the car, pivoted between their ends to the bottom of the car, and their inner ends loosely engaging a staple in said longitudinal bar, substantially as described.

5. In a car-coupling, the combination, with a draw-head having an open bottom and a hook mounted on a horizontal pivot in said draw-head and having a catch at its upper end, of an L-shaped lifter hinged at one end to the draw-head and its other end adapted to pass through the bottom thereof, a longitudinal bar moving in guides in a plane beneath the hinge of said lifter, transverse bar-sections having handles at their outer ends at the sides of the car, pivoted between their ends to the bottom of the car, and their inner ends loosely engaging a staple in said longitudinal bar, a vertical rod mounted in eyes on the end of the car and having an operating-handle at its upper end and an elbow at its lower end, and a sleeve sliding on one of said sections and connected to said elbow, substantially as hereinbefore described.

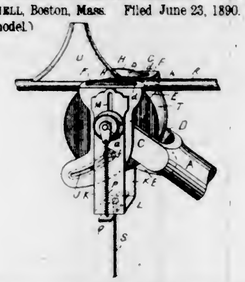
449,225. COMBINED CONTAINER AND GRINDER. HERMAN L. MAREACH, Cleveland, Ohio. Filed June 14, 1890. Serial No. 355,407. (No model.)



Claim.—1. The combination, with a container having an internal annular ledge near its lower end, a sleeve having a flange at one end adapted to rest on this ledge, screw-threads at its opposite end, and a cap threaded to screw on this threaded end of the sleeve, whereby the latter is securely held in place, of a grinder, a stem secured thereto, and means attached to the stem for turning the latter, substantially as set forth.

2. The combination, with a container having an internal annular ledge and a sleeve having a flange adapted to rest on the ledge, said sleeve having a funnel-shaped bore from its top nearly to its lower end, with a fluted wall, and conical from this point to the bottom and serrated internally, of a grinder comprising an approximately S-shaped breaker C and grinder proper with diagonal teeth adapted to coact with the serrations on the sleeve, a stem on the grinder, a thumb-disk connected with the stem, said disk having holes therein, and a cover for opening and closing the holes, substantially as set forth.

449,226. GUARD FOR ELECTRIC-RAILWAY TROLLEYS. ANDREW W. MITCHELL, Boston, Mass. Filed June 23, 1890. Serial No. 356,425. (No model.)



Claim.—1. The combination, with a trolley-wheel, of two arms, each having a flange extending over the wheel and provided with a slit or opening in line with and for the rim or edge of the wheel to project through, for the purpose specified.

2. The combination, with a trolley-wheel, of two arms, each having a flange extending over the wheel, and a slit or opening in said flange in line with and for the rim or edge of the wheel to project through, each flange being cut away from its central portion to each end, for the purpose specified.

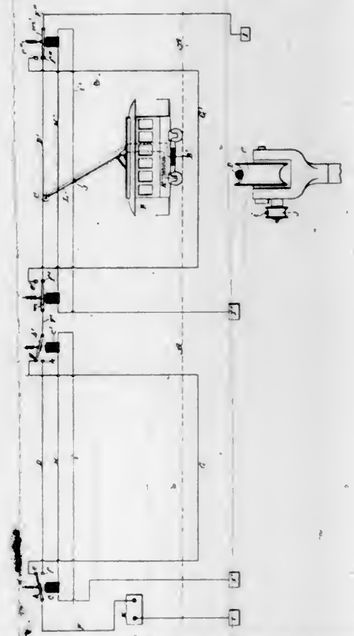
3. The combination, with a trolley-wheel, of two arms pivoted on its journal-pin, each having a curved slot, and a flange extending over the wheel, an arm at its side having a pin engaging with said curved slot, and a slot engaging with the journal-pin of the trolley-wheel, for the purpose specified.

4. The combination, with a trolley-wheel, of two arms pivoted on its journal-pin, each having a curved slot, and a flange extending over the wheel, an arm at its side having a pin engaging with said curved slot, a slot engaging with the journal-pin of the trolley-wheel, and a spring or springs connected to said latter arms, for the purpose specified.

5. The combination, with a trolley-wheel, of two arms pivoted on its journal-pin, each having a curved slot, a flange extending over the wheel, and a slit or opening in said flange in line with and for the rim or edge of the wheel to project through, an arm at its side having a pin engaging with said curved slot, and a slot engaging with the journal-pin of the trolley-wheel, for the purpose specified.

6. The combination, with a trolley-wheel, of two arms pivoted on its journal-pin, each having a curved slot, a flange extending over the wheel, and a slit or opening in said flange in line with and for the rim or edge of the wheel to project through, an arm at its side having a pin engaging with said curved slot, and a slot engaging with the journal-pin of the trolley-wheel, and a spring or springs connected to said latter arms, for the purpose specified.

449,227. ELECTRICAL RAILWAY SYSTEM. SAMUEL F. B. MORSE, Brooklyn, N. Y. Filed Oct. 29, 1890. Serial No. 369,653. (No model.)



Claim.—1. In an electrical railway system, the combination of an overhead trolley-conductor and an insulated or underground conductor, both being divided into corresponding and independent sections, switch-levers or devices at the junctions of said sections for connecting a conductor of one section with a conductor of another, whereby a section of one circuit may be substituted for its corresponding section in the other, electro-magnets for operating said switch-levers, and supplemental circuits coextensive with and corresponding to the sections of the main conductor, including such magnets, and adapted to be controlled by the movements of the cars along the line of the conductors, as set forth.

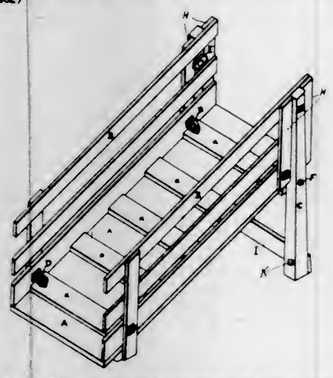
2. In an electrical railway system having an overhead trolley conductor divided into independent disconnected sections, the combination, with each section of the same, of a corresponding insulated or underground section, a supplemental trolley-wire forming part of a circuit coextensive with such section, switch-levers for connecting the ends of the conductors with those of conductors in adjacent sections,

whereby any overhead section may be substituted for its corresponding underground section or conversely, and electro-magnets in the supplemental circuits for operating and controlling said switch-levers, as and for the purpose set forth.

3. In an electrical railway system, the combination, with a sectional overhead trolley-conductor, a sectional underground conductor, and supplemental trolley-circuits for controlling the connections between the two sectional conductors, of columns supporting the trolley-conductor and supplemental circuits and carrying junction-boxes, into which the trolley and underground conductor-sections and supplemental circuits are led, as set forth.

4. In an electrical railway system, the combination, with main and supplemental trolley-conductors divided into sections and an underground conductor divided into corresponding sections, of two electrically-connected contact-levers adapted to be shifted over the terminals of two adjacent sections of the main trolley and underground conductors, and electro-magnets, one connected with each of the adjacent supplemental conductors, for shifting said levers, as set forth.

449,228. ANIMAL-CHUTE. LEWIS H. MYERS and SAMUEL H. ARMSTRONG, Canton, Ill. Filed Mar. 3, 1890. Serial No. 343,211. (No model.)



Claim.—1. The animal chute or gangway having its sides hinged to its floor, and means for locking the same in an upright position with relation to said floor, consisting of supporting-legs pivotally secured to the floor and a button on each of the legs adapted to engage a side, substantially as set forth.

2. The animal chute or gangway having its sides hinged to its floor, and means for locking the same in an upright position with relation to said floor, consisting of supporting-legs pivotally secured to the floor and a button on each of the legs adapted to engage a side, said side having uprights adapted to receive a leg between them, substantially as set forth.

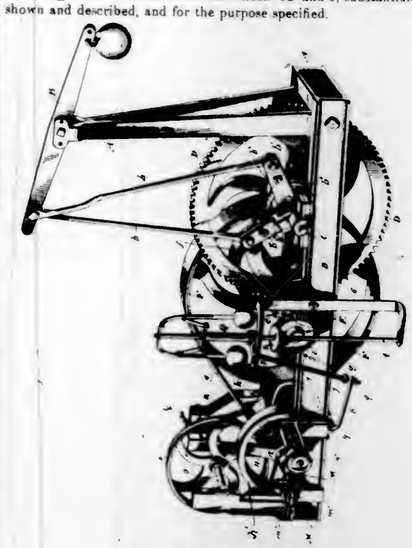
3. The animal-chute having inwardly-folding hinged sides and having legs provided with pivots which have their axes transverse to the side pieces of the floor and in the same plane therewith, substantially as set forth, whereby the sides can be folded down upon the floor and the legs placed parallel with the same.

449,229. GRINDING-MILL. JESSE M. NICHOLS, Ansley, Nebr. Filed Dec. 12, 1890. Serial No. 374,488. (No model.)

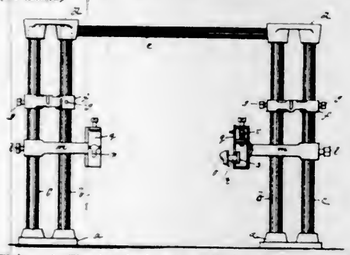
Claim.—1. The combination, with the mill, mechanism for operating the mill, and the shaft O, having the feed-wheel P, of a governor in gear with the mill-operating mechanism, the rod 7 on the governor-shaft, and the adjustable lever 8 and its wheel 11, adapted to automatically throw the feed mechanism in and out of gear with the mill-operating mechanism, substantially as described, and for the purpose specified.

2. The combination, with the mill and the feed mechanism, including the friction-wheels 12 and *o*, of the governor in gear with the mill-operating mechanism, the rod 7, the lever 8, means for adjustably connecting one end of the lever with the rod 7, and the wheel 11 on the other end of the lever and adapted to bear against the wheels 12 and *o* to connect the feed mechanism with the mill-operating mechanism, substantially as described.

3. In combination, the hopper, the shaft H, the burrs J and L, the shaft E in gear with the shaft H, having the wheel 12, the shaft O, having the wheel *o* and the feed-wheel P, the governor in mesh with the shaft E, the rod 7, the lever 8 adjustably connected with the rod 7, and the wheel 11 on the free end of the lever 8 and adapted to be brought into contact with the wheels 12 and *o*, substantially as shown and described, and for the purpose specified.



449,230. DISPLAY-RACK FOR CARPETS, OIL-CLOTHS, &c. LAWRENCE PATY, Beaver Falls, Pa. Filed June 25, 1890. Serial No. 356,682. (No model.)



Claim.—1. The herein-described display-rack, consisting of the standards *b c* and base-plates *a*, the cross-bar *e* and top plates *d*, the bearings *f*, adjustably secured on the said standards and each having a fork *h* journaled therein, the adjustable brackets *m*, provided with journaled forks *o*, and the lock-bearings *n*, substantially as set forth and described.

2. In a display-rack, the combination of two pairs of standards, the vertically-adjustable cross-pieces adapted to be rigidly clamped thereto, and the rotatable forks loosely journaled in suitable bearings on said adjustable cross-pieces, substantially as described.

3. In a display-rack, the combination of the standards, the vertically-adjustable brackets rigidly secured to said standards, the swiveled arms carried by said brackets, and the rotatable forks loosely journaled in the swiveled arms, substantially as described.

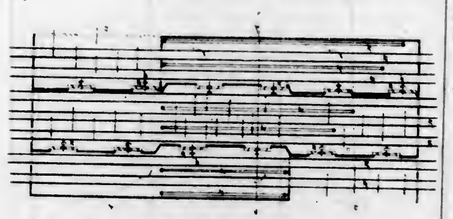
4. In a display-rack, the combination of the standards, the supports rigid with said standards, the swiveled arms carried by said supports and provided with bearings, and the rotatable forks loosely journaled in said bearings and removably secured thereto, substantially as described.

5. In a display-rack, the combination of two pairs of upright standards, the vertically-adjustable supports *f*, rigidly clamped to said standards and carrying the rotatable forks, and the brackets *m*, also clamped to the standards and having the swiveled bearings provided with rotatable forks *o*, substantially as described.

449,231. DRYING APPARATUS. SIMEON G. PHILLIPS, Woodbridge, N. J. Filed Sept. 11, 1890. Serial No. 364,684. (No model.)

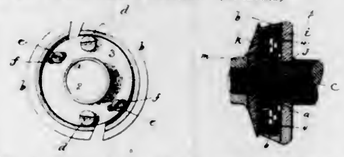
Claim.—1. In a drying apparatus, the partial ceiling A^3, heating-pipes E, and means, as the fan-wheels D, for inducing a current of air transversely under the ceiling in one direction and above the ceiling

in another direction, advancing longitudinally toward the end of the apparatus at which the air is discharged, substantially as herein specified.



2. In a drying apparatus, the partial ceiling A^3, heating-pipes E, and means, as the fan-wheels D, for inducing a current of air transversely under the ceiling in one direction and above the ceiling in another direction, advancing longitudinally toward the end of the apparatus at which the air is discharged, in combination with means, as the tracks B and cars B', for traversing the bricks longitudinally of the structure in the opposite direction and transversely to the motion of the air, the heating means being reduced where the air is received, so that it will be partly warmed by the heat in the outgoing bricks, all arranged for joint operation substantially as herein specified.

449,232. RAND-TRIMMER. JOHN W. PLUMMER, Somerville, Mass. Filed May 9, 1890. Serial No. 351,125. (No model.)



Claim.—1. In a rand-trimmer, the combination, with a rotary shaft and with a rest for the previously-trimmed portion of the heel, of a holder separable from the shaft and rest and composed of a sleeve formed to receive the shaft, an outwardly-projecting flange on said sleeve, a series of knives adjustably attached to the said flange and projecting outside of the periphery thereof, each knife having a sharpened flange 5, provided with a rand-lip, and a base or seat 4, formed to bear on the flange of the holder and secured thereto, the flange of the holder being narrower than the rest and having its margin arranged inside the cutting-edges of the knives, whereby when the said holder and knives are separated as one piece from the shaft and rest openings are provided across the cutting-edge of each knife for the reception of a grinding-tool, so that the knives may be ground without being moved or displaced with relation to each other, as set forth.

2. In a rand-trimmer, the combination, with the holder composed of the shaft-receiving sleeve and the knife-holding flange thereon, said flange having segmental slots, of the knives composed of the flat bases or seats 4, pivotally connected at their rear ends with said flange by screws *d* and adjustably connected with said flange near their cutting ends by screws *e*, which are movable in said slots, and the sharpened flanges 5, provided with rand-lips, as set forth.

3. In a rand-trimmer, the combination of the shaft, the rest for the previously-trimmed portion of the heel, the knife-holder having a shaft-receiving sleeve, the knives having the flat seats or bases adjustably secured to said sleeve, and the rand guard and nut, whereby said holder is detachably secured to the shaft, as set forth.

449,233. MUCILAGE HOLDER AND SPREADER. JAMES H. PORTER, Hartford, Conn. Filed Sept. 19, 1890. Serial No. 365,512. (No model.)



Claim.—As a new article of manufacture, a pencil for adhesive compounds, consisting of a tube with one end closed by a roll formed of a yielding material with a number of longitudinal slits in its periphery, the edges of the slits being normally in contact, whereby the periphery of the roll is smooth, substantially as specified.

449,234. TIRE-TIGHTENER. ALEXANDER M. REEVES, Buda, Tex. Filed Oct. 25, 1890. Serial No. 369,382. (No model.)

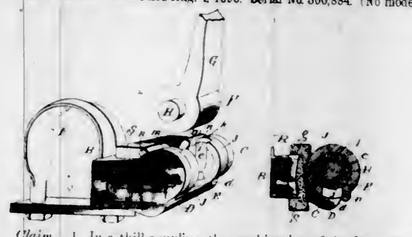


Claim.—1. A wedge for tightening vehicle-tires, consisting of a body portion provided with longitudinal ridges or webs, substantially as set forth.

2. A wedge for tightening vehicle-tires, consisting of a body portion provided with longitudinal tapering ridges or webs, substantially as set forth.

3. The combination, with a wheel-rim, of clamps arranged in pairs upon each side of the felly-joint, said clamps consisting of plates having a fluted or corrugated inner surface, and provided at one end with an angular upward extension and at the opposite end with a downward extension, the extension of the registering plates being connected by transverse bolts, substantially as set forth.

449,235. THILL-COUPLING. HENRY C. ROSE and THOMAS J. THOMPSON, Leadville, Colo. Filed Aug. 4, 1890. Serial No. 360,884. (No model.)



Claim.—1. In a thill-coupling, the combination of the draw-irons, blocks or boxes projecting from their inner adjacent faces and provided with open recesses or depressions, the thill-iron arranged to fit between said boxes, trunnions on said thill-iron adapted to be contained in said recesses, and loose sleeves fitting over said boxes and provided with openings adapted to register with the recesses in the latter, and arranged to be turned to close said recesses, as set forth.

2. In a thill-coupling, the combination of the draw-irons, blocks projecting from the adjacent faces of the same and provided with open recesses, the thill-iron arranged to fit between said blocks, trunnions on said thill-iron fitting in said recesses, loose sleeves arranged on said blocks and provided with openings to register with the recesses in the blocks, and limiting-lugs on said sleeves, which also serve as means for turning the latter, as set forth.

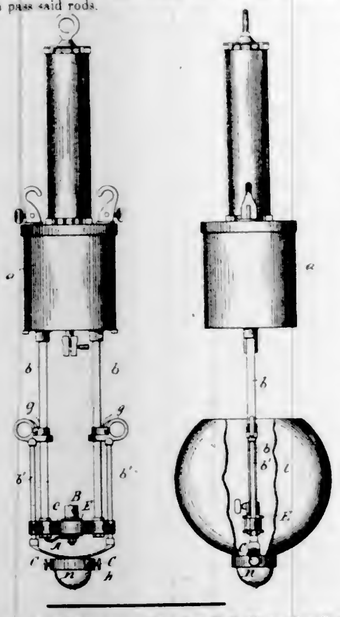
3. In a thill-coupling, the combination of the draw-irons, blocks projecting from the adjacent faces of the same and provided with open recesses, the thill-iron having trunnions fitting said recesses and finding bearings therein, rubber blocks in said recesses above the trunnions, and loose sleeves fitting over said blocks and provided with openings adapted to register with the recesses of the blocks, said sleeves arranged to be turned to close said recesses, as set forth.

4. In a thill-coupling, the combination of draw-irons connected by a suitable cross-bar, projections from the adjacent faces of said draw-irons having recesses, a rubber block arranged to be inserted between said projections, and the cross-bar connecting the draw-irons, and being formed with thickened upper and lower edges projecting over the upper and lower surfaces of said cross-bar, respectively, loose sleeves fitting on said projections from the draw-irons and bearing against said rubber block, and the thill-iron having trunnions, which find bearing in the recesses of said draw-iron projections, as set forth.

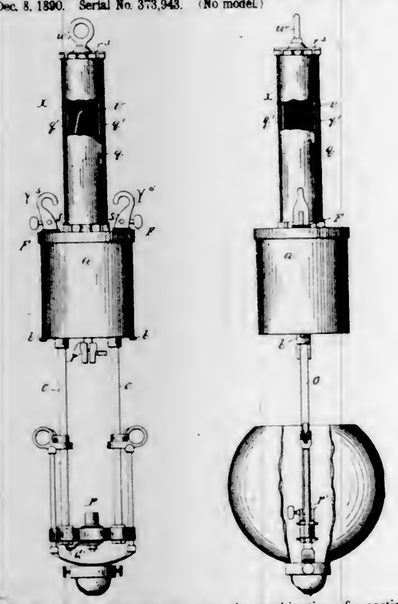
449,236. ELECTRIC-ARC LAMP. JOHN H. R. WARD, New York, N. Y., assignor to the Universal Arc Lamp Company, same place. Filed Dec. 8, 1890. Serial No. 373,942. (No model.)

Claim.—An electric-arc-lamp globe-holder consisting of the combination of a globe-socket, elastic and flexible rods carried thereon, two rings at the opposite end of each rod at right angles to each other,

tubes suspended from the lamp parallel to each other and said rods and passing through one of the rings on each rod, hooks attached to the remaining rings, supports, such as pins *g*, attached to said tubes for the purpose, as described, of supporting said hooks, and a cross-piece connecting the lower ends of said tubes and provided with holes through which pass said rods.



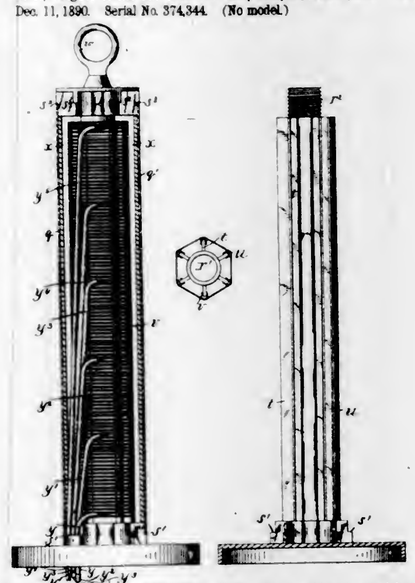
449,237. ELECTRIC-ARC LAMP. JOHN H. R. WARD, New York, N. Y., assignor to the Universal Arc Lamp Company, same place. Filed Dec. 8, 1890. Serial No. 373,943. (No model.)



Claim.—1. In an electric-arc lamp, the combination of a casting *d*, forming a cover to the mechanism of the lamp, provided with a tubular projection *r*, upon which are radial projections or ribs *s*, provided with steps *s'*, the said elements *r*, *s*, and *s'* forming an integral part with the casting *d*, a vertical tube *r'*, having its lower end screwed into the tube *r* and provided with longitudinal ribs *t* at substantially equal distances from each other, fire-proof strips *u*, of insulating material, extending along the outer edges of the ribs *t*, a coil of wire *v*, of German silver or of similar material having a high resistance, wound upon said strips *u* and around the tube *r'* and divided into sections whose terminals are *y y' y''*, &c., means, such as a screw-plug C, for connecting one or more of the sections of the coil in circuit with the carbon-holders *p'* and *p* of the said lamp, a tubular cap *r*, screwed upon the upper end of the tube *r'*, and provided with radial ribs *s''*, having steps *s'''*, and a cylindrical casing *g*, provided with an interior lining of a heat-insulating substance of fire-proof material, the said casing having its ends pressing, respectively, upon the steps *s'* and *s'''*.

2. In an electric-arc lamp, the combination of a base-plate or casting *c*, containing a disk of heat-insulating material, such as slate *c'*, whose interior diameter is less than the interior diameter of the casting *c*, a frame *m*, carrying the lamp mechanism, and lamp-magnet mounted upon and secured to said disk for the purpose, as described, of insulating the magnet H of the lamp as to heat from all metal portions of the lamp except the frame *m*, pillars *e*, having external and internal screw-threads upon their lower ends and internal screw-threads upon their upper ends, screws *f*, passing through the casting *c* into the lower ends of said pillars, screw-rings *g*, located upon the said external screw-threads and pressing upon both said disks and said casting, and an upper casting *d*, supported upon said pillars and secured thereto by screws *f''*, passing through said cover and into the upper ends of said pillars, and a cylindrical casing *a*, whose upper end fits within said casting *d*, and whose lower end surrounds the lower casting *c*, means, such as rotary projections or buttons *b*, being provided on the lower part of said casting *c* for the purpose, as described, of supporting said casing *a*.

449,238. ELECTRIC-ARC LAMP. JOHN H. R. WARD, New York, N. Y., assignor to the Universal Arc Lamp Company, same place. Filed Dec. 11, 1890. Serial No. 374,344. (No model.)



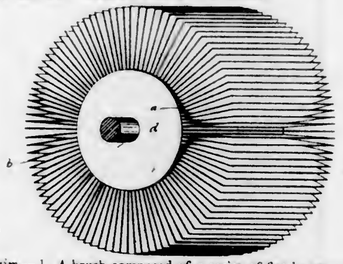
Claim.—1. In an electric-arc lamp, the combination, with the regulating resistance-coil and operating-magnet H, of a resistance-coil H^4 in circuit with said coil *v* and magnet H, the resistance of the coil H^4 being substantially two-thirds that of the magnet H.

2. In an electric-arc lamp, the combination, with the regulating resistance-coil and operating-magnet H, of a resistance coil H^4 in circuit with said coil *v* and magnet H, the resistance of the coil H^4 being such that it becomes heated more rapidly than the magnet H with a given current.

3. In an electric-arc lamp, the combination, with the regulating resistance-coil and operating-magnet H, of a resistance-coil H^4 in circuit with said coil *v* and magnet H, the resistance of the coil H^4 being such that it becomes heated more rapidly than the magnet H with a given current, the said coil H^4 being inclosed in a box *a'*.

4. In an electric-arc lamp, the combination, with the regulating resistance-coil and operating-magnet H, of a resistance-coil H^4 in circuit with said coil *v* and magnet H, the resistance of the coil H^4 being such that it becomes heated more rapidly than the magnet H with a given current, the said coil H^4 being inclosed in a box *a'* and magnet H being in the path of a draft from the outside air to the chimney of the lamp.

449,239. CLEANING AND POLISHING BRUSH. HAROLD A. WEBSTER, Haverhill, assignor to George H. P. Flagg, Boston, Mass. Filed Sept. 20, 1890. Serial No. 365,688. (No model.)

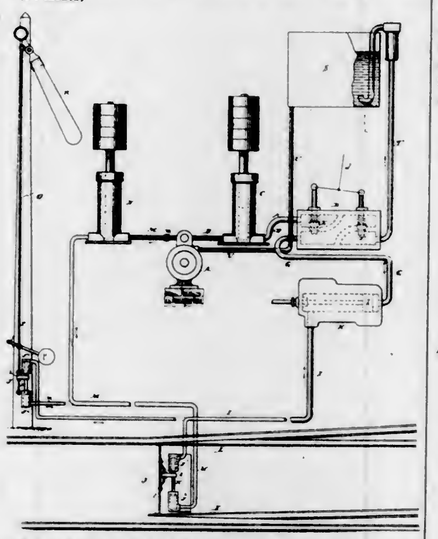


Claim.—1. A brush composed of a series of flat leaves or sheets forming brush-strips of flexible material and a movable holder to which the inner edges of said leaves or sheets are attached, the outer edges thereof being arranged substantially at right angles to the direction of movement of the brush, as set forth.

2. The improved brush composed of a cylinder or pulley and the series of brush-strips, consisting each of a continuous sheet of flexible material attached to the periphery of the pulley and radiating therefrom, the free outer edges of said strips being substantially parallel with the axis of the cylinder and substantially at right angles to the direction of motion of the brush, as set forth.

3. The improved brush herein described, composed of a series of brush-strips, which consists each of a continuous flat leaf or sheet having its inner angular or bent edge attached to a hub or carrier and arranged parallel with each other, substantially as set forth.

449,240. HYDRAULIC SWITCH AND SIGNAL APPARATUS. JOHAN A. ZINN, Altoona, Pa. Filed Oct. 18, 1887. Serial No. 252,695. (No model.)



Claim.—1. In a switch or signal operating device, the combination of the switch or signal, a plunger or piston for actuating said switch or signal, a pipe-line for supplying a pressure-liquid to one side or end of the plunger or piston, a pipe-line for supplying a pressure-liquid to the other side or end of the plunger or piston, a pressure device to supply said liquid to each of said lines of pipe, but under different pressures, an overflow stand-pipe, and a valve device for allowing the liquid from the pipe having the greatest operative pressure to pass into the overflow-pipe, reducing the pressure in the pipe having the greatest operative pressure.

2. In a switch or signal operating device, the combination of the switch or signal, a plunger or piston for actuating said switch or signal a pipe-line for supplying a pressure-liquid to one side or end of the plunger or piston, a pipe-line for supplying a pressure-liquid to the other side or end of the plunger or piston, a pressure device to supply said liquid to each of said lines of pipe, but under different pressures, an overflow stand-pipe, a valve device for allowing the liquid from the pipe having the greatest operative pressure to pass into the overflow stand-pipe, reducing the pressure in the pipe having the greatest operative pressure, and valve mechanism to admit or cut off a fresh supply of liquid under a high pressure to the pipe having the greatest operative pressure.

3. The combination of a switch or signal, a differential hydraulic operating mechanism for directly operating said switch or signal, two lines of pipe for supplying liquid under different pressures, an accumulator to each of said pipes, but of different powers, an overflow stand-pipe, and a valve device to cut off the stronger accumulator from its pipe and open the pipe to the overflow stand-pipe.

4. The combination of a switch or signal, a differential hydraulic operating mechanism for directly operating said switch or signal, two lines of pipe for supplying liquid under different pressures, an accumulator to each of said pipes, but of different powers, an overflow stand-pipe, a valve device to cut off the stronger accumulator from its pipe and open the pipe to the overflow stand-pipe, a force-pump to supply liquid under pressure to the stronger accumulator, and a supply-connection from the tank to the pump.

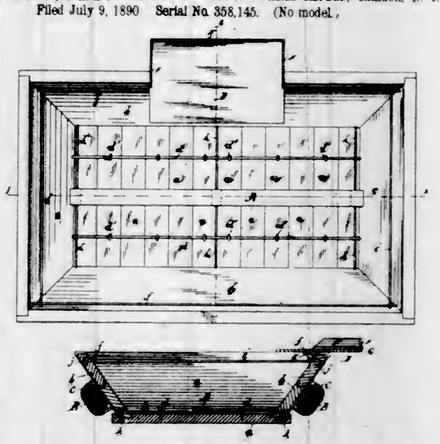
5. The combination of a switch or signal, a differential hydraulic operating mechanism for directly operating said switch or signal, two lines of pipe for supplying liquid under different pressures, an accumulator to each of said pipes, but of different powers, a cylinder in the pipe in connection with the stronger accumulator, and a piston in said cylinder receiving on one side the liquid which extends to the switch or signal and on the other the liquid which extends to the accumulator.

6. The combination of a switch or signal, a differential hydraulic operating mechanism therefor, pipes I, G, and B, including the valve-box D and accumulator C, and pipe M, including the accumulator N the accumulator N being of less power than M.

7. The combination of a switch or signal, a differential hydraulic operating mechanism therefor, pipes I, G, and B, including the valve-box D, cylinder H, having the piston *h* and accumulator C, and pipe M, including the accumulator N, the accumulator N being of less power than M.

8. The combination of a switch or signal, a differential hydraulic operating mechanism therefor, pipes I, G, and B, including the valve-box D and accumulator C, pipe M, including the accumulator N, the accumulator N being of less power than M, overflow stand-pipe T, tank S therefor, pump A for pumping liquid into the accumulator C, and a pipe U to supply liquid from tank S to the pump.

449,241. SEPARABLE BOAT. JAMES ASPORN, Camden, N. J. Filed July 9, 1890. Serial No. 358,145. (No model.)



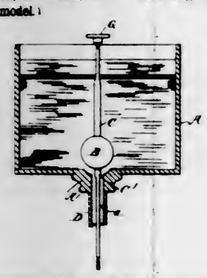
Claim.—1. The herein-described separable boat, consisting of a bottom constructed of tongue-and-grooved planks, in combination with ends and sides, substantially as described, and rods and nuts by means of which the bottom, sides, and ends are held together.

2. In a separable boat and in combination, the bottom, sides, and ends formed of tongue-and-grooved planks and adapted to be calked when put together, as described, and the longitudinal and transverse rods and nuts by means of which the several planks forming the boat are held in place, substantially as described.

3. In combination with the bottom planks *a*, end pieces *c*, and rods and nuts for drawing these planks and end pieces together, the screw eyes or staples *d'*, secured to said planks *a*, and through which said rods pass, substantially as and for the purposes set forth.

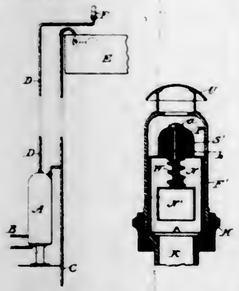
4. The combination, with a boat, of a tilting table hinged to the sides of the boat and furnished with perforated raised sides at its outer end, as and for the purposes set forth.

449,242. FLOAT-VALVE FOR TANKS. JOHN C. BEEKMAN and HERMAN G. HUSEMER, New York, N. Y. Filed Aug. 21, 1890. Serial No. 362,690. (No model.)



Claim.—In combination with a tank having a bottom outlet forming a valve-seat and an elevated bar extending from side to side, the reversible float-valve consisting of a float-ball fixed on a stem, the ends of said stem extending one up through the cross-bar and the other down into the outlet, both ends of the stem being shouldered and one shoulder being nearer the ball than the other, all for the purpose stated and substantially as described.

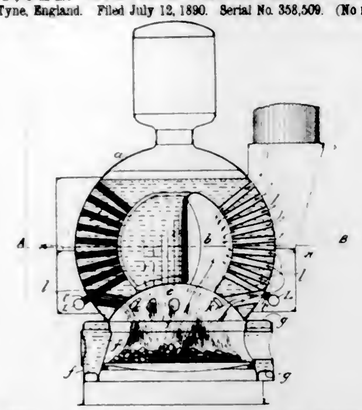
449,243. SAFETY-VALVE FOR EXPANSION-PIPES. ALEXANDER BRYANT and WILLIAM J. CROW, New York, N. Y. Filed Oct. 9, 1890. Serial No. 367,509. (No model.)



Claim.—1. The combination, in the water-supply system for a building, with the hot-water boiler, its cold-water-supply pipe and its expansion-pipe, a valve-casing fitted upon the upper end of the expansion-pipe and having a contracted valve-opening at the top, and a valve adapted to close said opening carried upon the upper closed end of a hollow cylinder left open at its lower end and fitted to play loosely within said casing, of a central vent-opening through the valve, a spring-actuated valve closing said vent, and an auxiliary float placed within the hollow cylinder and attached to the vent-valve to open it against the stress of its spring, substantially in the manner and for the purpose herein set forth.

2. The combination, with the expansion-pipe D, the valve-casing F', fitted thereto, having an opening in its outer end, and the hollow cylinder N, playing loosely in said casing, of the central tube S', secured to project from the upper closed end of the cylinder N, the rubber valve P, encircling said tube and adapted to close the outer end of the valve-casing when fitted thereto, a spindle *b*, fitted loosely in the tube, a valve *a*, fitted upon the outer end of the spindle to drop upon and close the end of the tube, an inverted cup or float N', playing loosely with the cylinder N and secured to the spindle, and an interposed spring W, all substantially in the manner and for the purpose herein set forth.

449,244. STEAM-BOILER. HENRY B. BUCKLAND, Newcastle-upon-Tyne, England. Filed July 12, 1890. Serial No. 358,509. (No model.)



Claim.—1. In a boiler, the combination, with the spherical shell, of the spherical combustion-chamber, the dished furnace-crown, and the radial fire-tubes inclined upwardly and downwardly from a central point and secured between the said combustion-chamber and shell, substantially as set forth.

2. In a boiler, the combination, with the spherical shell, of the spherical combustion-chamber, the dished furnace-crown, the radial fire-tubes *j*, arranged in separate series, and the water spaces, tubes, or legs inside the combustion-chamber with their ends between the series of tubes, substantially as and for the purpose set forth.

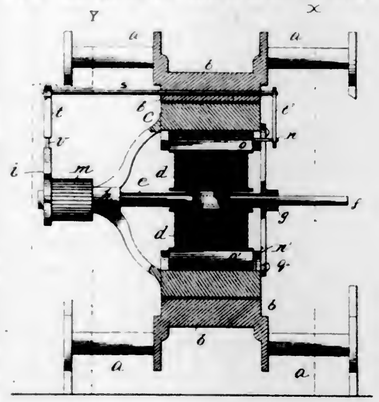
3. In a boiler, the combination, with the spherical shell, of the spherical combustion-chamber, the dished furnace-crown, the radial fire-tubes *j*, and the tubes *k*, connecting the said crown with the outer shell, substantially as set forth.

4. In a boiler, the combination, with the spherical shell, of the spherical combustion-chamber, the radial fire-tubes *j*, a smoke-box inclosing the outer ends of the said tubes, and the pipes L, provided with branches for introducing air through the lowest tubes, substantially as set forth.

5. In a boiler, the combination, with the spherical shell, of the spherical combustion-chamber, the dished furnace-crown, the radial fire-tubes *j*, the tubes *k*, connecting the furnace-crown direct with the outer shell, and the smoke-box inclosing the ends of all the tubes and divided by a partition *n*, substantially as and for the purpose set forth.

6. In a boiler, the combination, with the spherical shell, of the truncated fire-box at the base of the shell, the spherical combustion-chamber, the dished crown-plate, the radial fire-tubes inclined upwardly and downwardly from a central point and secured between the combustion-chamber and the outer shell, and a water-jacket encircling the fire-box and communicating with the main water-space of the boiler, substantially as and for the purpose set forth.

449,245. DYNAMO-REGULATOR. BURNETT H. FISHER, New York, N. Y. Filed Sept. 15, 1890. Serial No. 365,077. (No model.)



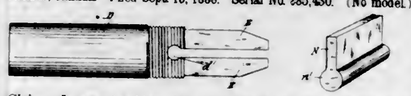
Claim.—1. A dynamo consisting of the combination of stationary and movable field-magnets, commutator-brushes, and means for communicating motion from the movable field-magnet to the said brushes.

2. A dynamo consisting of the combination of stationary and movable field-magnets, commutator-brushes, and means for communicating motion from the movable field-magnet to the said brushes, said means consisting of an arbor engaging both with the movable field-magnet and with the said brushes.

3. A dynamo consisting of the combination of stationary and movable field-magnets, commutator-brushes, and means for communicating motion from the movable field-maguets to the said brushes, said means consisting of an arbor engaging both with the movable field-magnet and with the said brushes and passing through a pole-piece of the stationary magnet.

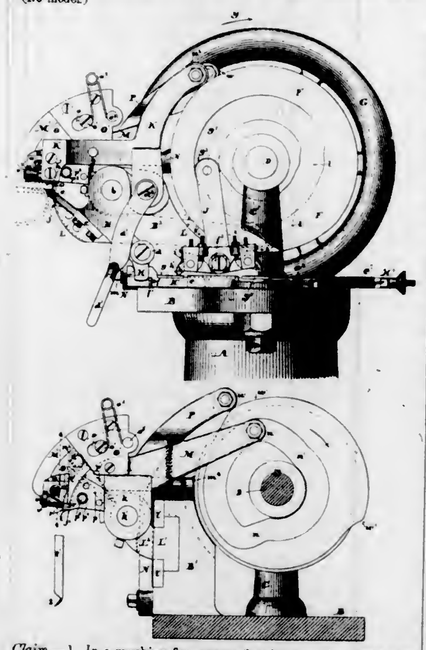
4. A dynamo consisting of the combination of stationary field-magnets having pole-pieces, a ring-armature between and in inductive relation to said pole-pieces, an internal field-magnet loose upon the armature-shaft, pins projecting from the pole-pieces of the said internal field-magnet and connected, respectively, with a suspended weight, and an arbor which has a crank engaging with the brushes of the motor.

449,246. BORING-TOOL HOLDER. SIMON P. GRAHAM, Brantford, Ontario, Canada. Filed Sept. 13, 1888. Serial No. 285,430. (No model.)



Claim.—In a tool-holder, the combination of the jaws having a transverse recess at the inner end of the mouth larger in cross-section than the opening between the jaws, a clamping-sleeve, and a stop, the said stop having a body part fitting the enlarged transverse recess and a wing part to fit the opening between the jaws, substantially as and for the purpose described.

449,247. MACHINE FOR CHANNELING AND TRIMMING BOOT-SOLES, &c. JOHN B. HADAWAY, Brockton, Mass., assignor of one-half to Morrill E. Briggs, same place. Filed Dec. 22, 1890. Serial No. 375,431. (No model.)



Claim.—1. In a machine for channeling boot or shoe soles after they are secured upon the last, the combination of a work-support to receive the welt side of the sole-edge a presser-foot to rest upon the tread surface of the sole, a channel-cutting tool, a holder for said tool provided with two bearing-surfaces independent of the main presser-foot arranged to rest upon the sole, one near its edge and the other nearer the center of its width, said tool-holder being mounted upon a pivot located above said bearing-surfaces with its axis in a vertical plane between said bearings, whereby said tool-holder is made to automatically accommodate itself to the varying surface of the sole and maintain the channel-cutting tool at a uniform angle to the surface of said sole, substantially as described.

2. In a machine for channeling boot or shoe soles while secured upon the last, the combination of a work-support, a main presser-foot arranged to bear upon the sole opposite to the work-support, a vibrating lever provided with a nose-piece or supplementary presser-foot, a spur to enter the sole carried by said nose-piece, a channel-cutting tool, a stock or holder for said cutting-tool pivotally mounted and provided with a gage-lug to bear upon the sole near its edge, and a roll or trunk mounted upon said stock and arranged to bear upon the sole at a distance from said gage-lug toward the center of the sole.

3. In a sole-channeling machine, the combination of an automatically-adjustable work-support, the vertically-reciprocating presser-foot h^3, provided with the spur i^3, the lever M M', the nose-piece or supplementary presser-foot *r*, carried by said lever, a cam for vibrating said lever, the slide O, carried by said lever M M', a spring for pressing said slide downward, the channel-cutting tool *t t'*, the tool-carrier *u u'*, pivoted to the slide O and provided with the gage-lug v^3, and the truck *v'*, all constructed, arranged, and adapted to operate substantially as described.

4. In a machine for channeling and trimming the edges of boot or shoe soles after being secured upon the last, the combination, with an automatically-adjustable and locked work support or table, of the presser-foot h^3, the lever K, carrying said presser-foot, a cam for vibrating said lever, the lever M M', mounted upon a horizontally-movable fulcrum, the segmental slide O, mounted in a bearing in said lever, a spring for pressing said slide downward, a stop to limit said downward movement, a nose-piece or secondary presser-foot formed upon or carried by said lever, a cam for vibrating said lever, a channel-cutting tool, the tool-carrying stock *u u'*, pivoted to the slide O and provided with the gage-lug v^3, and the roll *v'*, mounted upon said stock, a trimming-knife *j'*, carried by the lever M M', the lever L, the trimming-knife *j*, carried by said lever L, a cam for vibrating said lever, and a cam and lever for moving said lever M M' laterally, substantially as described.

5. In a machine for channeling boot or shoe soles, the combination of a pivoted and oscillating work support or table, a movable bar connected thereto and provided with two sets of ratchet-teeth the shoulders of which face in opposite directions, a spring connected to said bar and arranged and adapted to move said bar and work-support in one direction, a pawl-lever, a cam for vibrating said lever, and two pawls mounted upon opposite ends of said pawl-lever, with their operating ends facing in opposite directions, whereby the said work-support may be automatically locked in a raised or depressed position.

6. The combination, in a sole-channeling machine, of the pivoted work-support H *c*, the bar H', connected to said support, the spring *c'*, the hand-lever *d'* and roll *d* for moving the work-support against the tension of said spring, the two opposing sets of ratchet-teeth *g* and *g'*, formed upon or secured to the bar H', the lever J, the two opposing pawls *k* and *k'*, carried by said lever J, a cam for vibrating said lever, the slide L', the lever M M', carried by said slide, a cam for vibrating said lever, a cam and lever for reciprocating said slide and moving said lever laterally, the segmental slide O, mounted in a curved bearing in said lever M M', the nose-piece *r r'*, carried by said lever, the knife stock or holder *u u'*, pivoted to the lower end of the slide O and provided with the gage-lug v^3, the channel-knife *t* and the roll *v'*, carried by said stock or holder, the spring o^3, the lever P, provided with the spring-arm P', a cam for vibrating said lever P, the stud $n' n^3$, set in the slide O and engaged by the spring P, and a fixed stop constructed and arranged to limit the downward movement of said slide O, substantially as described.

449,248. CASH-REGISTER. ROBERT E. NELSON, Jr., Columbia, Va. Filed Aug. 15, 1890. Serial No. 362,061. (No model.)

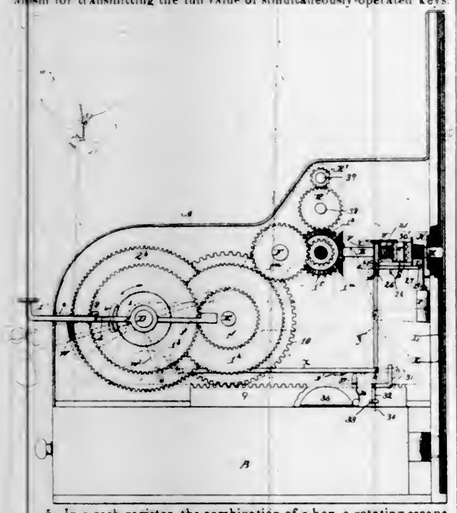
Claim.—1. In a cash-register, the combination of a series of keys, a register, a rotating indicator, and connecting mechanism adapted to transmit at all times to said register and indicator the full value of simultaneously-operated keys of said series.

2. In a cash-register, the combination of a series of keys, a register, an indicator, and a rotating escapement mechanism for simultaneously operating said register and indicator.

3. In a cash-register, the combination of a series of keys, a register, an indicator, and an escapement mechanism operating both and adapted to transmit to both said register and indicator the full value at all times of simultaneously-operated keys.

4. In a cash-register, the combination of a series of keys, a regis-

ter, and an indicator operated by said register, and connecting mechanism for transmitting the full value of simultaneously-operated keys.



5. In a cash-register, the combination of a key, a rotating escapement mechanism and an indicator operated by said escapement mechanism, and means for resetting said indicator to a predetermined position.

6. In a cash-register, the combination of a key, a rotating escapement mechanism, a register and indicator operated by said escapement mechanism, and means for resetting said indicator to a predetermined position.

7. In a cash-register, the combination of a series of keys, a register and indicator operated by the register, and connecting mechanism whereby upon the simultaneous operation of two or more keys the indicator will be first returned to a predetermined position and then their full value will be registered and indicated.

8. In a cash-register, the combination of a key, a register, escapement-connections between said key and said register, an indicator, operating connections between said register and said indicator, and means whereby said indicator is reset before said key begins to operate said register.

9. In a cash-register, the combination of an operating-key, an escapement mechanism controlled thereby, a register, and means for arresting said key just before the registration takes place.

10. In a cash-register, the combination of an operating-key, an indicator, an escapement mechanism controlling the same, and mechanism for arresting such key when its stroke is partially completed and holding it until the indicator is reset to a predetermined position.

11. In a cash-register, the combination of an operating-key, a register and indicator, an escapement device for controlling both said register and indicator, and mechanism for arresting such key when partially operated until the indicator is reset to a predetermined position and before the registration takes place.

12. In a cash-register, the combination of an operating-key, an escapement mechanism controlled by the same, and means for arresting said key in its downward motion and for automatically releasing the same to operate said escapement mechanism after a brief interval of time.

13. In a cash-register, the combination of an operating-key, an indicator, an escapement mechanism controlling said indicator, and mechanism for arresting such key in its downward motion and for automatically releasing said key and resetting said indicator after a brief interval of time.

14. In a cash-register, the combination of an operating-key, an escapement mechanism, a register, an indicator operated by said register, and mechanism for arresting said key in its downward motion and for automatically releasing said key and resetting said indicator after a brief interval of time and before it begins its registering stroke.

15. In a cash-register, the combination of a key, a register escapement, connections between said key and said register, an indicator, operating connections between said register and said indicator, and means whereby upon the depression of said key it releases said indicator and stops until the same is at a predetermined position and upon the further depression of said key it actuates both said register and indicator to its full value.

16. In a cash-register, the combination of an operating-key, a cash-drawer, and a power and an escapement mechanism connecting said key and drawer, adapted to be put under tension upon the opening of said drawer and to be relieved from strain upon the closing of the same.

17. In a cash-register, the combination of an operating-key, a power-transmitting mechanism controlled by the key, a cash-drawer, and connections between said drawer and said mechanism, adapted to render the latter inactive while said drawer is closed and to render it active upon the opening of the same.

18. In a cash-register, the combination of a power mechanism, a drawer, an escapement mechanism, and connections between the drawer and power mechanism, whereby the escapement mechanism is inactive while the drawer is closed.

19. In a cash-register, the combination of a series of pivoted keys, a power mechanism, and connections between the keys and the power mechanism, whereby all the keys are reset at predetermined times.

20. In a cash-register, the combination of a series of pivoted keys, a power mechanism, a drawer, and connections between the keys and the power mechanism, whereby all the keys are reset after the drawer has opened a predetermined distance.

21. In a cash-register, the combination of a series of keys, a power mechanism, a drawer, and connections between the keys and power mechanism, whereby the keys are reset and locked while the drawer is opened a predetermined distance.

22. In a cash-register, the combination of a series of keys, a power mechanism, an escapement mechanism operated thereby, and a cash-drawer, whereby said power mechanism is automatically rewound and the escapement mechanism is rendered inactive upon the closing of said drawer.

23. In a cash-register, the combination of a series of keys, a power mechanism, a cash-drawer for putting said power mechanism under tension, and a resetting and bell-ringing mechanism for said keys, operated by said power mechanism.

24. In a cash-register, the combination of a series of keys of different values, a transmitting mechanism, a totalizing-register consisting of a series of loosely-mounted register-wheels, and carrying-pinions adapted to add up the full value of simultaneously-operated keys.

25. In a cash-register, a totalizing-register consisting of a series of loosely-mounted register-wheels R^2 R^3 R^4 R^5, carrying-pinions R^8 R^9 R^{10} R^{11}, and intermediate gearing P^2 P^3, substantially as described.

26. In a cash-register, the combination of a series of keys, an indicator, a clutch mechanism, and a tripping device adapted to unclutch the indicator and allow it to reset to a predetermined position and to then clutch said indicator and allow it to indicate the full value of an operated key or keys.

27. In a cash-register, the combination of a series of keys, an indicator, a clutch mechanism, a tripping mechanism, and a shoving device adapted to insure the reclutching of the indicator before it begins its indicating movement.

28. In a cash-register, the combination of the series of primary, secondary, tertiary, and quaternary summation-gears, the finger-keys and devices to operate the said primary gears, the weight-wheel having stop 21 and internal teeth 19, the wheel 14, having a pawl 22 to engage stop 21, the rack-and-pinion devices connecting said wheel to the drawer, the gear connected to the intermediate wheel of the quaternary summation-gear and having the pawl 20, engaging teeth 19, substantially as described.

29. In a cash-register, the combination of the indicating-disk shafts, the registering mechanism geared thereto, the pinion-moving wheels and gearing connecting them to disk-shafts, the clutches on the latter, the weight device to return the disks to zero, the keys to operate the prime-moving wheels, the trip-bar operated by the said keys, the trip-rod and trip-lever connecting the trip-bar and the clutches to be tripped when the keys are depressed, and springs to immediately re-engage the clutches, substantially as described.

30. In a cash-register, the combination of the indicating-disk shafts, the prime-moving wheels and intermediate gearing connecting them to the registering mechanism and disk-shafts, the weight devices to return the disks to zero, the trip-bar operated by the finger-keys, the trip-lever to disengage the clutches and connected to the trip-bar, and the yoke-lever connected to the trip-lever and adapted to engage the clutches for the purpose set forth, substantially as described.

31. In a cash-register, the combination of the prime-moving wheels, the weight or spring devices geared thereto, for moving them when released, the rack and pinions connecting the drawer to said weight or spring devices to wind them, as described, the indicating-disk shafts and intermediate gears connecting them to the prime-moving wheels, weight devices to return the disk to zero, the clutches on the disk-shafts, the finger-keys and devices to operate the prime-moving wheels, the trip-bar operated by the keys, the trip-lever to disengage the clutches, the trip-rod connecting said lever to the trip-bar and having the spring-stop Y^3, and the annulus connected to the pinion and having the notch to engage said stop.

32. In a cash-register, the combination of the series of summation-gears, the finger-keys and escapements to operate them, the registering mechanism, indicating-disk shafts geared to the series of summation-gears, the weight or spring wheel for turning the gears, the rack and pinion connecting it to the drawer, the annulus, the indicating-disks and the weights to return them to zero, the clutches on the disk-shafts, the trip-lever and the yoke to disengage and re-engage the clutches, the finger-keys and escapements to operate the prime-moving wheels of the summation-gears, the trip-bar operated by the keys, and the trip-rod connecting said bar with the trip-lever and having the stop to engage the annulus, substantially as described.

33. In a cash-register, the disk-shafts geared to the operating and registering mechanisms, the cents and dollars disk respectively sleeved to and fixed on one of said shafts, the gears connecting said shafts and having the weight or spring devices to return the disks to zero, the clutches on the disk-shafts to free and lock the disks, the trip-lever and connection to disengage and re-engage the clutches when the finger-keys are operated, and the guide-bar attached to the trip-lever and having the stop to control the movement of the trip-lever, substantially as described.

34. In a cash-register, the trip-bar operated by the keys, a trip-rod attached thereto for the purpose set forth, the drawer, the bell-ringing lever in the path of the trip-rod, the bell-crank lever in the path of the trip-rod, and bolt attached to said lever and adapted to unlock the drawer upon the partial operation of the lever and to ring the bell upon the full operation thereof.

35. In a cash-register, the combination of a rotating indicator, a register for operating same, and a weight automatically rewound up proportional to the actuation of said indicator.

36. In a cash-register, the combination of an indicator, a weight for automatically resetting the same, a cash-drawer, and a power mechanism operated thereby for rewinding the weight.

37. In a cash-register, the combination of an indicator, a weight for operating the same, and a power mechanism for automatically rewinding the weight.

38. In a cash-register, the combination of a drawer, a power mechanism operated thereby, a register operated by the power mechanism, an indicator, and a weight rewound by said power mechanism for resetting said indicator.

39. The combination of a key, a rotating escapement, a register operated thereby, a power mechanism, and a cash-drawer carrying a rack for rewinding the power mechanism.

40. In a cash-register, the combination of a register, a weight for operating the same, a cash-drawer, and means whereby upon the closing of said drawer the weight is automatically restored to a predetermined position after being released varied distances.

41. In a cash-register, the combination of a weight, and escapement mechanism for releasing the same varied distances, a cash-drawer and connections whereby upon the operation of the drawer the weight is always rewound to a predetermined position.

449,249. ELECTRIC CASH-REGISTER SYSTEM. ROBERT E. NELSON, Jr., Columbia, Va. Filed Aug. 21, 1890. Serial No. 362,652. (No model.)

Claim.—1. In a cash-register system, the combination of a series of groups of keys of different values, a single register at a distant point, and connecting mechanism, whereby upon the simultaneous operation of one or more keys in each group their full value will always be added on said register.

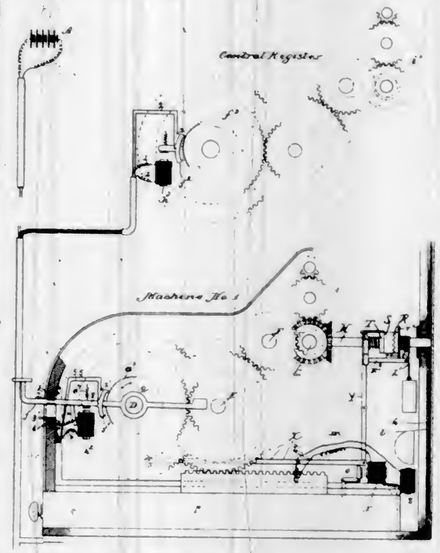
2. In a cash-register system, the combination of a series of groups of keys of different values, a single register at a distant point, and connecting mechanism, whereby upon the simultaneous operation at any time of two or more keys in the same group their full value will be added on said register.

3. In a cash-register system, the combination of series of machines, each having a series of keys and an indicator, a central register, and connecting mechanism adapted to transmit at all times unaltered to said central register the full value of any two or more simultaneously-operated keys of the system and to indicate the value of the keys on their respective machines.

4. In a cash-register system, a combination of a series of maches, in each having a series of keys, a register, and an indicator, a central register, and connecting mechanism adapted to transmit to said central register the full value of any two or more simultaneously-operated keys of the system and to indicate and register the value of the keys on their respective machines.

5. In a cash-register system, the combination of a central register, a machine having a series of keys, a register, and an indicator, and mechanism adapted to transmit from the machine to said central register the full value of an operated key and to transmit from said central register to the machine the same value.

6. In a cash-register system, a combination of a central register, a machine having a series of keys, an indicator, and a register, and mechanism adapted to transmit from the machine to the central register the full value of two or more simultaneously-operated keys and to transmit from said central register to the register and indicator of the machine the same value.



7. In a cash-register system, the combination of a central register, a series of machines, each having a series of keys, an indicator, and a register, and mechanism adapted to transmit from said machines to said central register the full value of any two or more simultaneously-operated keys of the system and to transmit from said central register to each individual machine the values of their respectively-operated keys.

8. In a cash-register system, the combination of a series of machines, each having a series of keys and a register, a central register at a distant point, and mechanism adapted to transmit to said central register the full value of any operated key and for arresting said key for a brief interval of time just before the registration takes place.

9. In a cash-register system, the combination of a series of machines, each having a series of keys, a register, and an indicator, a central register, and mechanism whereby upon the simultaneous operation of any two keys they will be arrested in their motion, their full value will be transmitted to said central register, and their respective indicators reset.

10. In a cash-register, the combination of a series of machines, each having a series of keys, a register, an indicator, and a cash-drawer, a central register, and mechanism whereby upon the operation of any keys of the system their full value will be transmitted to said central register and will be added and indicated on their respective machines, and the drawers of each will be released.

11. In a cash-register system, the combination of a series of groups of keys of different values, a central register, and mechanism whereby upon the simultaneous operation of two or more keys of the same value in the different groups only the key in a predetermined group will actuate said register.

12. In a cash-register system, the combination of a series of groups of keys of different values, a central register, and mechanism whereby upon the simultaneous operation of several keys of the same value in different groups only those in a predetermined group will actuate the central register.

13. In a cash-register system, a combination of a series of groups of keys of different values, a register connected therewith, and a cutting-out mechanism whereby upon the operation of two or more keys of the same value, but in different groups, all but one of said keys will be disconnected from said register.

14. In a cash-register system, the combination of a central register, a series of machines, each having a series of keys, a register, and a bell, and mechanism whereby upon the simultaneous operation of two keys of the same value in different machines each key will actuate said central register and ring their bells in succession.

15. In a cash-register system, the combination of a central register, a series of machines, each having a drawer, and mechanism whereby said drawer is released only after the registration has taken place on said central register and on its individual machine.

16. In a cash-register system, the combination of a series of complete machines, a central register operated from any one of said machines, and an additional register at a distant point operated from said central register, substantially as described.

17. In a cash-register system, the combination, with a central register having its escapement-magnets arranged in parallel arc, of a local register, also having its escapement-magnets arranged in parallel arc, a bell and drawer-releasing magnets arranged in series, and means for successively energizing said escapement-magnets.

18. In a cash-register system, the combination of a central register and two or more local registers having their escapement-magnets all arranged in parallel arc, and contact-keys for actuating the escapements of the central register from said local register, substantially as described.

19. In electric cash-register systems, the combination, with a central register, of a series of local cash-registers connected therewith in electric circuit, the keys of the local cash-registers constituting circuit-closers and adapted to transmit always to said central register their full value when simultaneously operated, substantially as described.

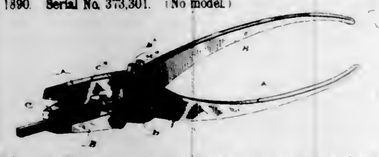
20. In electric cash-register systems, the central register, the local registering-machines connected in circuit therewith and having the circuit-closing keys, the electric locking device, and the electrically-operated shunt-switches to operate the locking device and hence prevent the drawer of the local machine from being opened until after registration takes place, substantially as described.

21. In an electric cash-register, the combination of the prime moving gear, the escapement to release it, the finger-key, and the connected electro-magnet to operate the escapement, and the electric locking device for the drawer, connected in shunt-circuit with the escapement, substantially as described.

22. In a cash-register system, the combination of one or more local registers and indicators and a central register connected to and operating said local registers and indicators.

23. In an electric cash-register system, the combination of one or more local cash registers and indicators and a central register electrically connected therewith and adapted to be operated from said local registers and indicators and to operate said local registers and indicators from itself.

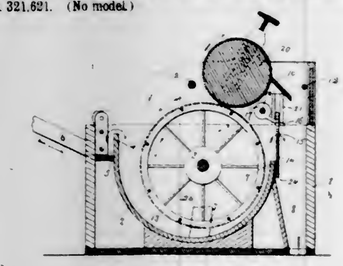
449,250. PLIERS. THEODORE F. VANDEGRIFT, Noah, assignor to the Vandegrift Manufacturing Company, Shelbyville, Ind. Filed Dec. 2, 1890. Serial No. 373,301. (No model.)



Claim.—1. The combination, in pliers, of the two jaws and a face-plate pivoted centrally to one of said jaws, with its body somewhat apart from said jaw, whereby the pliers are constituted double pliers, substantially as set forth.

2. The combination, in pliers, of the two gripping or holding jaws, the face-plate pivoted to one of said jaws, and projections forming cutting-pliers, whereby combined automatically-adjustable gripping and cutting pliers are provided in a single instrument, substantially as shown and described.

449,251. APPARATUS FOR REGULATING THE CONSISTENCY OF WOOD PULP. JOHN A. DECKER and JOHN GOEBEL, Berlin Falls, N. H., said Decker assignor to Clara L. Decker. Filed Aug. 22, 1889. Serial No. 321,621. (No model.)

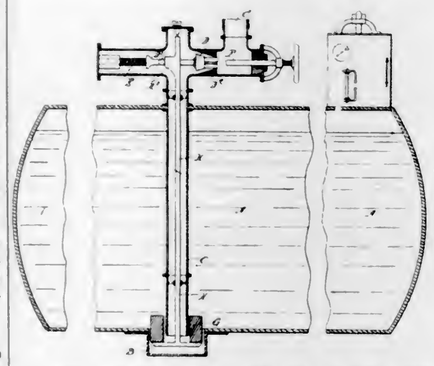


Claim.—1. The combination, with a receptacle 1, a vat 2, a wire-cloth-covered revoluble cylinder 3, a delivery side 4, feed-trough 5, connected to said vat by said delivery side, a discharge side 7, and an emptying-spout 8, united to said vat thereby, of a movable gate 14, its rocking shaft 18, and the lever 19, by which adjustment of said gate is effected, substantially as set forth.

2. The receptacle 1, a vat 2, a foraminous revoluble cylinder 3, and feed and discharge spouts connecting with opposite sides of said vat, in combination with the movable gate 14, its guides 21, the lever 19, and the actuating-rod 18, having prongs 16, which engage said gate, said lever holding the gate in any position to change the horizontal plane of discharge, substantially as set forth.

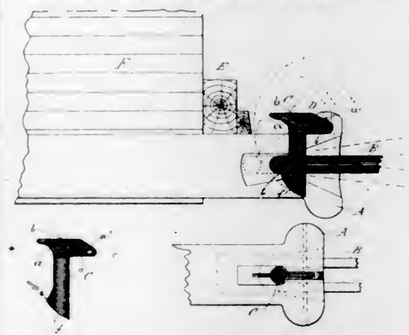
3. In combination with a vat and a wire cylinder revolving therein, a spout 8, a pivotal frame 9, a couch-roll 20, supported by said frame in contact with said cylinder, and a doctor 10 upon the rear side of said cylinder, discharging any pulp received into the spout 8, substantially as set forth.

449,252. WATER-ELEVATOR. JULIAN FAGOAGA, Barcelona, Spain. Filed July 8, 1890. Serial No. 358,110. (No model.) Patented in France Jan. 8, 1890, No. 203,041; in Belgium Jan. 28, 1890, No. 89,330; in Spain Feb. 21, 1890, No. 10,289, and in Italy Feb. 21, 1890, No. 27,027.



Claim.—The combination of a closed tank A, adapted to receive water under pressure of compressed air, a pipe C, descending to near the bottom of said tank, a rod H, passing upward through said pipe, a float G, connected to said rod, and a valve D in said pipe, adapted to be closed simultaneously with the fall of said float, for the purpose set forth.

449,253. CAR-COUPLING. PORTER B. HAND, Handsborough, Miss. Filed Mar. 22, 1890. Serial No. 344,925. (No model.)



Claim.—As an improved article of manufacture, the coupling-bolt C, formed with vertical shank with straight front face, a head having angular rounded front end with elongated slot near its lower forward end, a square shoulder *b'* at the junction of the head and shank at the front, and at the rear face a curve from the top rear end of the head to near its lower end, forming a curved ledge *c*, which forms a continuation of said curve, and from the said ledge curved to the lower end of the front face on the arc of a circle, substantially as shown and described.

449,254. TELEPHONE. WILLIAM HUMANS, Cambridge, Mass., assignor to the American Magnetic Electric Company, Jersey City, N. J. Filed July 23, 1885. Serial No. 172,434. (No model.)



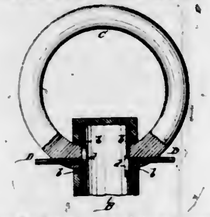
Claim.—1. A telephone consisting of a permanent magnet whose elements are connected pole to pole to form a case, a diaphragm extending across the open end of that magnetic case, and one or more pole-pieces and coils within that magnetic case, all substantially as described.

2. In combination, the magnets recessed at f^2, the insulator $f f'$, and means for holding the magnets together, whereby they act as clamps for the insulators, all substantially as and for the purpose set forth.

3. In combination, the magnets A A' A² A³, recessed at f^2, and the hoop B, with the insulator f or f'' or its equivalent, and means for holding the magnets together, substantially as shown, whereby the magnets serve as clamps, as a case, and as magnets, all substantially as described.

4. The magnets A A' A² A³, in combination with the clamping-lugs *a* and pole-pieces a^3, whereby the magnets are not only held together in pairs, but those pairs are also held together.

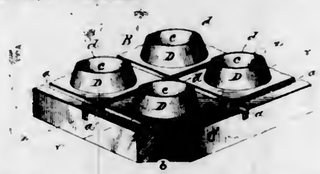
449,255. WATCH-BOW FASTENER. EMIL KLAHN, Jersey City, N. J., assignor to the Keystone Watch Case Company, Philadelphia, Pa. Filed Jan. 2, 1891. Serial No. 376,536. (No model.)



Claim.—1. A device for fastening watch-bows, consisting of a hollow pendant of a watch-case with two holes, a bow having screw-holes terminating in the surfaces of its ends, and screws or pins with eccentric-heads screwed or pushed into the holes of the bow, which heads, when turned, press against the inner borders of the holes in the neck, substantially as and for the purpose specified.

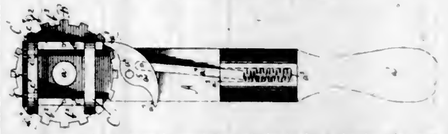
2. In a watch-bow fastener, the combination, with the pendant, of a watch-case having apertures upon opposite sides, a bow, and hands journaled in an eccentric position upon the ends of said bow adapted to be turned, when the bow ends are inserted in the apertures of the pendant, so as to project beyond said apertures on the inside, substantially as and for the purpose specified.

449,256. DIE FOR THE MANUFACTURE OF MARBLES. MATTHEW LANG, Akron, Ohio, assignor, by mesne assignments, of one-half to the East-End Marble Company, same place. Filed Aug. 23, 1890. Serial No. 362,821. (No model.)



Claim.—In a die for forming spherical bodies of plastic material, the combination of two opposite die-sections, each consisting of a base and a plurality of cutting-dies extending beyond the plane thereof, one or both of said sections having a series of horizontal channels upon the inner side of its base which pass between the dies and cross each other and extend out through the sides of the base to form issues for the plastic material around each die, and a series of vertical discharge-openings extending through the base and communicating with the channels at their point of juncture, substantially as and for the purpose set forth.

449,257. WRENCH. GEORGE L. MCCAULEY, Pleasant Plains, Ark. Filed Dec. 3, 1890. Serial No. 373,482. (No model.)

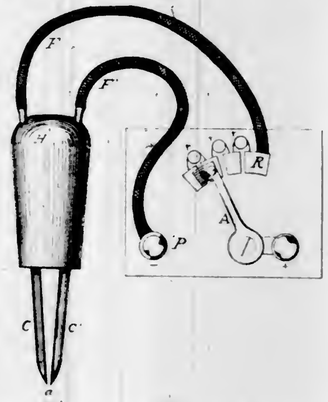


Claim.—1. A wrench consisting of the body A, having the perforation *a*, handle *a'*, and enlargement provided with the socket a^2, double pawl a^3, pivoted to the body A, and having the arms a^7 and a^8, rod a^4, one end pivoted to the pawl a^3, and the other end extending into socket a^2, spring a^5, its lower end resting on the bottom of socket a^2, and its upper end engaging the lower end of rod a^4, ratchet-wheel B, having the extension *b*, passing through the perforation *a*, and held therein by the nut *b'*, and guides b^2, having the lugs b^3, sliding jaws C and C, having suitable perforations for the threaded bolts c^2, threaded bolts c^3, having on one end the cog-wheels *c*, and cog-wheels *c'*, adapted to mesh with both cog-wheels *c*, substantially as shown and described, and for the purposes set forth.

2. In combination with a wrench having the sliding jaws C and C', body A, and double pawl a^3, the perforated ratchet-wheel B, having the perforated extension *b*, and guides b^2, all made in one solid piece, substantially as shown and described, and for the purposes set forth.

3. In combination with a wrench, substantially as shown and described, the sliding jaws C' and C, operated by the two threaded bolts c^3, each having on one end a cog-wheel *c*, and the cog-wheel *c'* meshing with the cog-wheel *c*, substantially as shown and described, and for the purposes set forth.

449,258. METHOD OF AND APPARATUS FOR ELECTRIC SOLDERING. ALMON ROBINSON, Lewiston, Me. Filed Apr. 18, 1890. Serial No. 348,584. (No model.)



Claim.—1. The process of electric soldering, which consists in passing an electric current through the solder to be used, thereby melting the solder solely or principally by the heating effect, which is proportional to its own ohmic resistance, and thereafter applying the melted solder to the joint to be made, all as set forth.

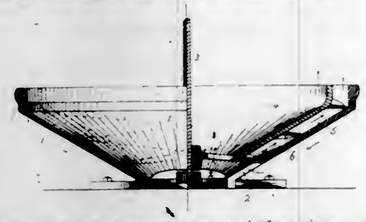
2. The process of electric soldering, which consists in melting the solder by placing two metallic conductors in contact with it, and thereby making it a part of an electric circuit, applying these conductors with their adhering solder to the metal to be joined, heating this metal by the combined effect of the melted solder and of the electric current, and regulating the heat throughout by varying the current, all as set forth.

3. In apparatus for electric soldering, a pair of metal rods whose points are held at a predetermined distance apart by an insulating handle, in combination with each other and with a source of electricity which is capable of sending a heating-current through them when the circuit is completed by either solid or fluid solder between the points of the rods, all as set forth.

4. In apparatus for electric soldering, the combination, with a

source of electricity, of a pair of metal rods whose points are separated by a capillary space of such dimensions that melted solder will rise into it, all as and for the purpose set forth.

449,259. MIXING APPARATUS. RICHARD SMITH, Sherbrooke, Canada. Filed May 26, 1890. Serial No. 353,226. (No model.)

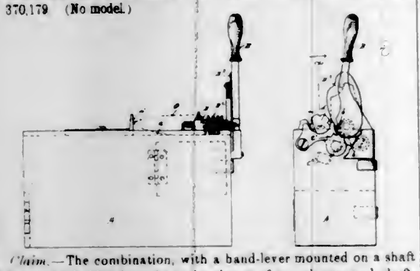


Claim.—1. A mixing apparatus composed of a stationary receptacle or outwardly-flaring circular vessel with inlet-apertures at the bottom, a revoluble shaft centrally thereof, and a stirrer secured thereto similar in cross-section to that of the inclosing vessel, and the inlet-openings connecting with the bottom of the fixed receptacle to create two currents, one within the stirrer, the other exteriorly of said stirrer and between the latter and the receptacle, substantially as herein set forth.

2. The combination, with a stationary saucer-shaped circular casing, its inlet-openings, and a similarly-shaped rotary stirrer furnished with feed-openings at the bottom, which connect with the casing, of the lifting-blades exteriorly of the rotary stirrer, substantially as described.

3. The stationary flaring vessel, its bottom inlet-openings, a rotary shaft, and the revolving stirrer with flaring sides and bottom openings, combined with the helical blades exteriorly upon said stirrer, the edges of the blades being adjacent, but non-contiguous to the inclosing walls of the stationary vessel, substantially as specified.

449,260. MACHINE FOR TRIMMING AND BRANDING CIGARS. WOLF GARRETSON, Cleveland, Ohio. Filed Nov. 3, 1890. Serial No. 370,179. (No model.)

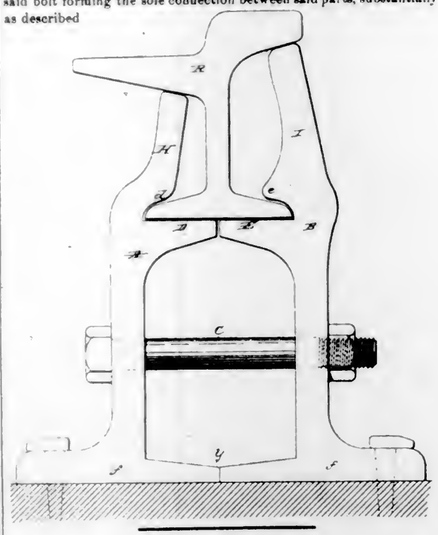


Claim.—The combination, with a band-lever mounted on a shaft and bearing a knife adapted to trim cigars, of a rock-arm and shaft, the former bearing a brand, the knife mechanism and the branding mechanism being intergeared or operatively connected, so that in operating the knife the brand is thereby operated in the reverse direction, substantially as set forth

449,261. RAIL-CHAIR. ALFRED HEYN, New York, N. Y. Filed July 31, 1890. Serial No. 360,439. (No model.)

Claim.—1. A rail-chair formed of two parts, each having an inwardly-extending projection adapted to engage the bottom of the foot of the rail and support the same, and with upwardly-extending projections lying out of contact with the web of the rail, adapted to engage and support the flange of the rail, said upwardly-extending projections having inwardly-extending portions for engaging the top of the foot of the rail, and a bolt passing through said parts below the foot of the rail for forcing said parts into engagement with the flange and foot of the rail, substantially as described.

2. A rail-chair formed of two parts, each of said parts having a supporting projection to engage and support the foot of the rail, and an upwardly-extending projection lying wholly out of contact with the web of the rail, having an inclined upper end to engage an inclined portion of the flange of the rail and support the same, said inwardly-extending projections having inwardly-extending inclined portions adapted to engage inclined portions of the foot of the rail and force it down upon said supporting projections, and a bolt lying below the plane of the foot of the rail for drawing said parts upon the foot and flange of the rail and forcing said inclined portions together, said bolt forming the sole connection between said parts, substantially as described



449,262. HAND-SUPPORT FOR CARS. FREDERIC A. MORLEY, Brooklyn, N. Y. Filed Nov. 7, 1890. Serial No. 370,770. (No model.)

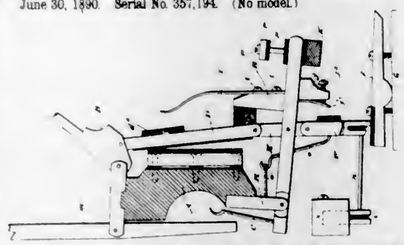


Claim.—1. The combination of loop A with loop B by means of link E and spring C, as hereinbefore described.

2. The combination of suspended loop A with the loop B, capable of being extended or drawn down to link E, in order to form one continuous and complete support.

3. The combination of the automatically-returning loop B with the suspended loop A by means of the extension-spring C, all substantially as described and set forth.

449,263. PIANO-ACTION. SAMUEL R. PERRY, Scranton, Pa. Filed June 30, 1890. Serial No. 357,194. (No model.)



Claim.—1. In a piano-action, the double link fulcrumed to the actuating-lever and having its connecting ends extending above and below said lever, substantially as shown and described.

2. The actuating-lever having its end and central portion cut through to receive the double link, the spring, and the regulating screw, substantially as shown and described.

3. The double link fulcrumed to the actuating-lever and extending below the same, having its upper end connected to the hammer-butt by means of the long link, substantially as shown and described.

4. The double link fulcrumed to the actuating-lever, its lower end extending through the same and pivoted to the connecting-rod or pitman, in the manner shown and for the purpose described.

5. The actuating-lever having a post or stud attached to its under face, adapted by means of an adjustable device to engage the extension or pitman rod, substantially as shown and described.

6. The link fulcrumed to the actuating-lever and extending below said lever and the bottom or actuating lever carrying the post upon its upper face, said post being provided with an adjustable strip and screws and adapted to engage the long link, substantially as shown and described.

7. The rail K, adapted to support the actuating-lever and its adjusting-screws in the manner and for the purposes described.

8. The rail carrying on its upper surface a screw and adjusting-pad, in combination with the actuating-lever having its forward end slotted and clothed vertically, substantially as shown and described.

9. The pitman-rod provided with the spring and loop and attached to the actuating-lever by means of the double link, substantially as shown and described.

10. The adjustable check-strip *a*, attached and combined with the action-rail A, adapted to act in holding the link connected to the hammer-butt, substantially as shown and described.

11. The double link fulcrumed upon the actuating-lever and extending below the same and having its upper end pivoted to the long link, said link adapted to engage the adjustable check-strip on the rail, substantially as shown and described.

12. The double link pivoted to the actuating-lever and extending below the same, combined with the damper-actuating lever by means of a spoon attached to said actuating-lever at its upper rear end, substantially as shown and described.

13. The actuating-lever provided with a vertical slot in its forward end to receive the adjusting-screw on rail K, substantially as shown and described.

14. The actuating-lever cut through to receive the spring of the pitman-rod, substantially as shown and described.

15. The double link fulcrumed to the actuating-lever, the same being slotted and bushed, in combination with the rail K and the regulating-screw P, substantially as shown and described.

16. The extension-lever or pitman attached to the lower end of the double link, said link fulcrumed to the actuating-lever and connected at its upper end to lever D, all arranged substantially as shown and described.

17. The longitudinal bar *x*, provided with a series of slotted and bushed dowels for holding the connecting-wire and attaching the pitman-rod to said rail or bar, substantially as shown and described.

449,264. WHEEL-HUB. MARTIN W. FORD, Jr., Manchester, N. H., assignor of one-half to Fred. S. Bean, same place. Filed Jan. 13, 1891. Serial No. 377,627. (No model.)

Claim.—The wheel *a* and hub *b*, combined with the yielding rubber band or ring *c* on the outer end of and completely encircling said hub *b*, substantially as and for the purposes set forth.

449,265. DUMPING-WAGON. JAMES A. KLEES, Reading, Pa., assignor to the Keystone Wagon Company, same place. Filed Nov. 22, 1890. Serial No. 372,319. (No model.)

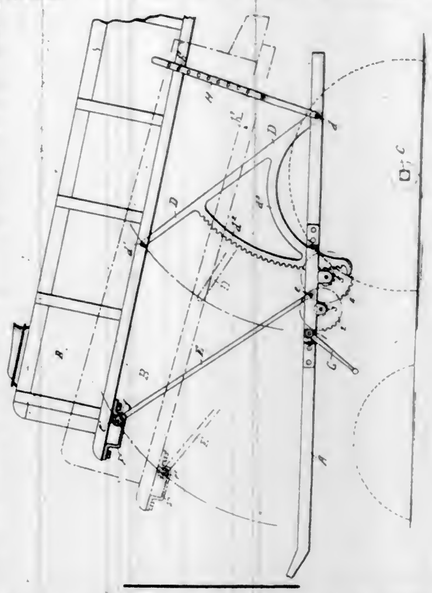
Claim.—1. A dumping-wagon provided with an elevating arm or arms and a pivoted stay operating in connection therewith, substantially as described, whereby the wagon-bed is elevated automatically, first at the front and thereafter at front and back simultaneously, by the continued operation of said arm, substantially as set forth.

2. In a dumping-wagon having elevating-arms pivoted to the wagon-bed at a point forward of its center, mechanism for lifting said arms, and pivoted stays having their free ends loosely carried for a limited distance by the front portion of the wagon-bed, whereby said front portion is first raised a limited distance alone and thereafter the whole body by the continued operation of said lifting mechanism, substantially as set forth.

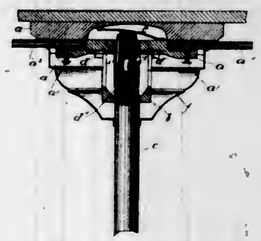
3. In a dumping-wagon, the combination, with the frame, of the movable bed connected therewith by elevating-bars pivoted at their rear ends near the rear of the frame and at their front ends to the bed forward of its center, and the stays pivoted at their rear ends to the frame and having their forward ends loosely carried for a limited distance by the forward end of the bed and adapted to serve thereafter as a fulcrum for elevating the rear end, substantially as set forth.

4. In a dumping-wagon having an elevating-arm pivoted to the wagon-bed at a point forward of its center and mechanism for lifting said arm, the pivoted stays having their free ends carried for a limited distance by the front end of the wagon-bed, and a locking mechanism to prevent tilting of said bed when raised, substantially as set forth.

5. In a dumping-wagon, the combination, with the frame A and movable bed B, of elevating-arms D, multiple gearing for operating said arms, pivoted stays E, carriers F for said arms, and a locking mechanism H, all arranged and adapted to operate substantially as set forth.



449,266. HANGER-BOARD FOR ELECTRIC FIXTURES. GEORGE R. LEAN, Boston, Mass., assignor to the Bernstein Electric Company, Portland, Me. Filed June 9, 1890. Serial No. 354,697. (No model.)



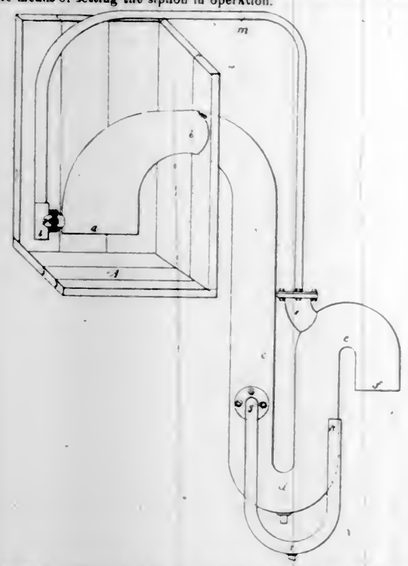
Claim.—1. In a hanger-board for electric fixtures, the base *a*, two line-wire blocks *a' a'* on the base *a* and adapted to receive and hold the line-wires, and the internally-screw-threaded yoke *b*, combined with the screw-threaded fixture-rod *c* and cylindrical insulated end portion having on it two conducting-plates 2 3, adapted to contact with the line-wire blocks *a' a'*, and the inside wires connected to said conducting-plates 2 3, substantially as described.

2. In a hanger-board for electric fixtures, the base *a*, two line-wire blocks *a' a'* on the base *a* and adapted to receive and hold the line-wires, and the internally-screw-threaded yoke *b*, combined with the screw-threaded fixture-rod *c* and cylindrical end portion having on it two conducting-plates 2 3, adapted to contact with the line-wire blocks *a' a'*, and the inside wires connected to said conducting-plates 2 3, and the switch *c*, connected to one of the line-wire blocks and adapted to contact with the other when the fixture-rod, with its projecting insulated end portion, is removed, substantially as described.

449,267. SIPHON INTERMITTENT DEVICE. ALBERT W. MARAUN, Berlin, Germany. Filed Oct. 31, 1889. Renewed Feb. 24, 1891. Serial No. 382,341. (No model.)

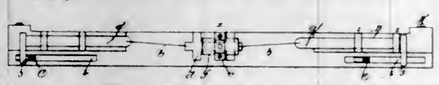
Claim.—1. A drainage apparatus comprising the special features, to wit: a pipe *a b c d e*, the inlet-arm *a b* of which is connected to the outlet-arm *d e* by means of a regulating-pipe, and to the main arm of which is attached a water-closing pipe *k i g* in such a way that when the water rises in the inlet-arm the air in the pipe is compressed and causes a certain pressure, which forces out the water through the water-closing pipe, and then a balancing of air takes place, which con-

sequently forces the dammed water in the reservoir A into the pipe and is the means of setting the siphon in operation.



2. The combination, with the reservoir, of a pipe bent as at *b*, *d*, and *e*, having the auxiliary bent pipe *g i k* and provided with the regulating-pipe *l m o*, connected therewith, substantially as and for the purposes set forth.

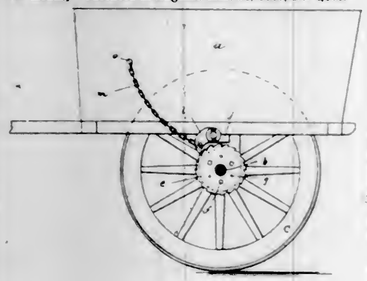
449,268. PICKER-STAFF CHECK FOR LOOMS. JAMES T. MARSDEN, Lewiston, Me., assignor of two-thirds to John and Joseph F. Marsden, both of same place. Filed Aug. 16, 1888. Serial No. 282,859. (No model.)



Claim.—1. The lay, the leather friction-plate, and the friction-pad acting against the plate, combined with the metallic frames D, an ear 8, extended from each at right angles thereto to lap against the lay, the loops or guides integral with said frames, the slide-bars having projections to cross the path of the picker-sticks, and connectors between the said slide-bars and the ends of the friction-plate, to operate substantially as described.

2. The lay and picker-sticks, the metallic guides having ears and bolted to the lay, the slide-bars having projections extended therefrom across the path of movement of the picker-sticks, and the bridge, combined with the friction-plate extended through the bridge, the bent spring friction-pad *f*, notched to form a reduced central portion embraced and held by the bridge, and the connectors between the opposite ends of the plate and the said slide-bars, substantially as described.

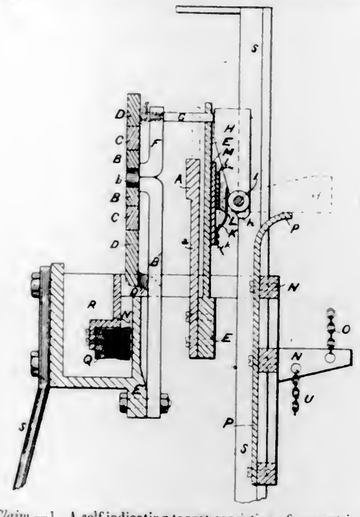
449,269. SCOTCHING DEVICE FOR CART-WHEELS. EDWARD MURGATROYD, Colne, England. Filed Nov. 19, 1888. Serial No. 291,302. (No model.) Patented in England Mar. 31, 1888, No. 4,883.



Claim.—The combination of the ratchet wheels or plates *e*, affixed to the bosses of the wheels of carts, wagons, and other vehicles, with pawls *l*, mounted upon the axletrees or other stationary part of such vehicles and capable of engaging with said ratchet wheels or plates and so to act as automatic scotching apparatus to prevent the vehicle running backward in ascending an incline, and of a chain *m*, adapted to lift and hold the pawl out of gear, as and for the purposes described

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449,270. SELF-INDICATING TARGET. JAMES PATERSON, London, England, assignor of one-half to the Patent and Industrial Development Syndicate, Limited, same place. Filed Nov. 20, 1890. Serial No. 372,090. (No model.) Patented in England July 29, 1890, No. 11,991.



Claim.—1. A self-indicating target consisting of concentric value-plates supported by flexible pillars, each plate carrying a striker G, an unequally-pivoted contact-making lever H to each value-plate, operated by the said striker on the longer arm of the said lever H, a spring-contact-making device operated by the shorter arm of the said lever H, and a sliding frame operated from the firing position to return the contact-levers to their normal position, substantially as described.

2. In combination with a self-indicating target having contact-levers H, a spring electrical contact device, and sliding frame N, the brush Q, carried by the sliding frame N, and box R, into which the said brush Q dips, substantially as described.

449,271. FILTER FOR SIRUPS AND JUICES IN SUGAR-WORKS. KAREL PROKS, Prague, Austria-Hungary. Filed Aug. 28, 1890. Serial No. 363,281. (No model.) Patented in Germany Mar. 15, 1887, No. 42,355; in Austria-Hungary Apr. 27, 1887, No. 2,155; in Belgium Apr. 30, 1887, No. 77,081; in France Aug. 12, 1887, No. 182,291; in England Nov. 9, 1887, No. 15,322; in Spain Mar. 20, 1888, No. 12,210; in Mauritius Apr., 1889, and in Russia July 20, 1889, and August 1, 1889, No. 8,375.

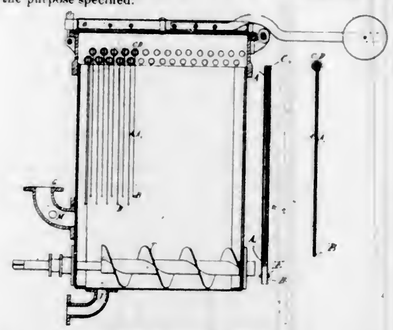
Claim.—1. In a filter for filtering sirup and juice-filtering frames composed of corrugated or undulated plates A A', inserted in tubes C D and covered with filtering-cloth, substantially as set forth with reference to the accompanying drawings.

2. In a filter for filtering sirup and juice, the combination, with corrugated and undulated plates A A', inserted in tubes C D and adapted to receive a filtering-cloth, ferrules E on said tubes, and elastic washers *e*, of means for compressing said washers, and a conveyer T, substantially as set forth.

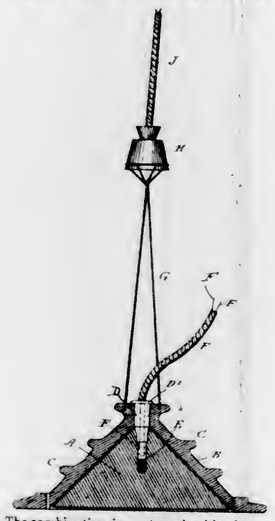
3. In a filter for filtering sirup and juice, the combination, with filtering-frames composed of corrugated or undulated plates A A', inserted in tubes C D and covered with filtering-cloth, of ferrules E on said tubes, elastic washers *e*, and means for compressing said washers, substantially as and for the purpose set forth.

4. In a filter for filtering sirup and juice, the combination, with the valved entrance-tube G, of filtering-frames composed of corrugated or undulated plates A A', inserted in tubes C D and adapted to receive

a filtering-cloth, and steam and water pipes M M', substantially as and for the purpose specified.



449,272. SUBMARINE BLASTING. THEODER PUSKAS, Buda-Pesth, Austria-Hungary. Filed June 14, 1890. Serial No. 355,472. (No model.)



Claim.—The combination, in a submarine-blasting system, with the primary explosive having a superposed or surrounding covering with flanges or rings C, of a secondary explosive located above said primary explosive and connected with said covering, and independently-controllable circuits to said primary and secondary explosives, substantially as described.

449,273. SHOE-FASTENING. PIERRE A. RAYMOND, Grenoble, France. Filed Aug. 11, 1890. Serial No. 361,669. (No model.) Patented in France June 28, 1890, No. 206,681, and in England July 3, 1890, No. 10,315.

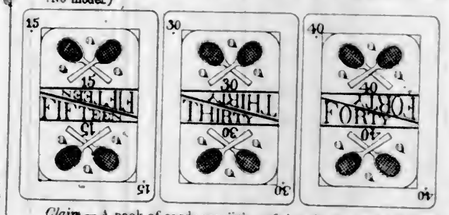


Claim.—1. In a fastening device for shoes and the like, the combination, with an eyelet set in the material and a flanged cap-plate which embraces the inner clinched end or flange of said eyelet, of a retainer for the lacing-cord, which retainer projects through the eyelet and has a base which is clamped between the cap-plate and the inner flange of the eyelet.

2. In a fastening device for shoes and the like, the combination, with the retainer for the lacing-cord, provided with feet, as described, of the eyelet set in the material, and the cap-plate provided with a keeper for the feet of the retainer, said retainer projecting outwardly through the eyelet and having its feet clamped between the said cap-plate and the inner flange of the eyelet, whereby the retainer is secured to the eyelet and through it to the material.

3. In a fastening device for shoes and the like, the combination, with a hook to form a retainer for the lacing-cord, provided with feet, as described, of the eyelet set in the material, and a cap-plate provided with a keeper for the feet on the hook, said cap-plate embracing said fingers and the lower flange of the eyelet, whereby said hook is secured to the eyelet and therethrough to the material.

449,274. PLAYING-CARD. ALEXANDER H. RUDD and WALTER P. MENDENHALL, Media, Pa. Filed Nov. 7, 1890. Serial No. 370,620. (No model.)



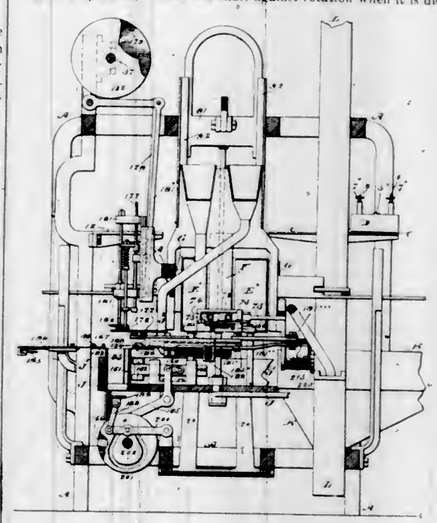
Claim.—A pack of cards consisting of six suits, each of five cards marked, respectively, "15," "30," "40," "Advantage," and "Game," and an additional card or cards.

449,275. PACKAGE MAKING AND FILLING MACHINE. HENRY E. SMYSER, Philadelphia, Pa. Filed Sept. 14, 1887. Serial No. 249,709. (No model.)

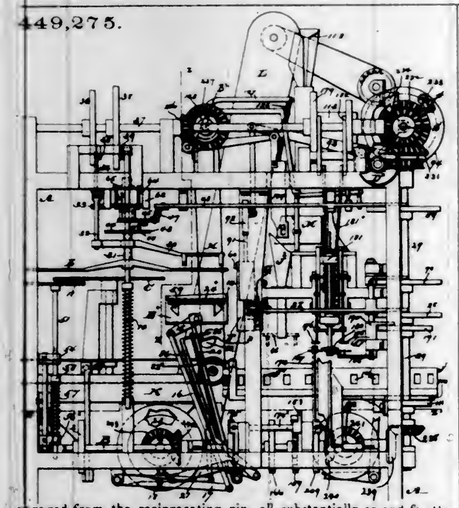
Claim.—1. The combination, with a rotatable and vertically-movable shaft carrying pasters and carriers, as E, of mechanism for giving said carriers an intermittent rotary and vertical motion, as described, an intermittently-rotating paste-table C, a blank-table 11, a table 12, arranged opposite the paste-table, and a depositing-platform, as matrix E×, all substantially as and for the purpose specified.

2. The combination, with a rotatable and vertically-movable shaft carrying pasters and carriers, as E, of mechanism for giving said carriers an intermittent rotary and vertical motion, as described, an intermittently-rotating paste-table C, a blank-table 11, a table 12, arranged opposite the paste-table, a matrix E×, having wings 14 arranged to receive a blank from the carrier, a paper-holder, as H, adapted to hold the blank on the matrix as the carrier arises therefrom, and mechanism arranged, as described, to turn the matrix down and move it forward to deliver its blank to the former

3. In combination with a rotatable and longitudinally-movable shaft having pasters and carriers attached thereto, mechanism for intermittently raising and lowering said shaft, a reciprocating pin, as 45, arranged to engage the shaft, as by slotted plate 43, as it rises and to rotate it through a determined arc, and one or more locking-pins arranged, as specified, to hold the shaft against rotation when it is dis-



449,275.



engaged from the reciprocating pin, all substantially as and for the purpose specified.

4. In a machine for forming bags, the combination, with rotating mechanism, substantially as specified, for applying paste to and transporting sheets of paper, of a mold F, a movable matrix adapted to move from a substantially horizontal to a vertical position and to move to and from the mold, as described, and so that the said matrix will receive a sheet of paper in its horizontal position and then turn up and move toward the mold to fold the sheet about the same, and folders, as G G, reciprocating on the back of the mold and acting to fold the ends of the blank over the same to form a tube.

5. In a machine, substantially as specified, the combination of a mold or former F, formed of relatively adjustable sections, so as to adapt it for tubes of varying size, a matrix E×, and reciprocating folders G, arranged and adapted, as described, to fold a blank around the former.

6. In a machine, substantially as specified, the combination of a mold or former F, formed of relatively adjustable sections, so as to adapt it for tubes of varying size, a matrix E×, having an adjustable back plate 24××, and folders G, arranged and adapted, as described, to fold a blank around the former.

7. In a machine for forming bags, the combination, with a mold or former F, of a folder-blade adapted to move under the front end of the mold and fold in the paper overlapping the same, a pair of reciprocating and rotatable angular blades 72, adapted to engage the overlapping side edges of the tube and fold them out and in, as described, a folder 85, adapted to fold in the back overlapping edge of the blank, and mechanism for operating said folders, as described, and so that the back-folder 85 operates after the outward and before the inward movement of the angular side-folders.

8. In a machine for forming bags, the combination, with a mold or former F and mechaniam, substantially as specified, for folding and pasting a bag around the same, of a plunger 90, having an actuating-rod extending through the former and adapted to move to and from the bottom of said former, as described, and a plunger or presser-plate 96, adapted to clamp the folded bottom of the bag against plate 90 and to move down with said plate as the bag is thereby removed from the former.

9. In a machine for forming and filling bags, the combination, with a mold or former F and mechanism, substantially as specified, for folding and pasting a bag around the same, of a plunger 90, having an actuating-rod extending through the former and adapted to move to and from the bottom of said former, as described, a plunger or presser-plate 96, adapted to clamp the folded bottom of the bag against plate 90 and to move down with said plate as the bag is thereby removed from the former, and a series of rotating pockets, as 95, through which the plungers move and which carry off the bags, as described, from between said plungers.

10. In a machine for filling bags, the combination, with a bag former or mold F, having a plunger at its bottom adapted to move from and to the same, of a table J, a plunger situated beneath the former F, adapted to coact with the former plunger, as described, and to remain normally flush, or nearly so, with table J, and a series of intermittently-rotating pockets moving over the face of the table and through which the plungers move to place a bag in each pocket.

11. In a machine for filling bags, substantially as described, the intermittently-rotating series of pockets, in combination with a table J, over which said pockets move, an opening *j*, formed in the table in the path of the pockets, the bridge 154, crossing said opening, and a filling-chute, as J^3, situated over or in advance of the opening, all substantially as and for the purpose specified.

12. In a machine for filling bags, a series of intermittently-rotating pockets, each adapted to contain a bag, a table, as J, over which said pockets move and upon which the bags rest, a spout, as J^3, situated in the path of the pockets and adapted to fill the bags, a shaking device, as pin or pins 155, situated in the table J at a point in advance of spout J and over which the pockets rest in their intermittent rotation, and mechanism for intermittently actuating said shaker, as described, and so that it will remain out of action except when a pocket comes to rest over it.

13. In a machine for packing bags, the device for closing the end flaps thereof, consisting of tucker-blades, as 185 and 193, adapted to act on opposite sides thereof, reciprocating and reciprocally-rotating angular blades, as 184, adapted to operate, as described, to fold the side flaps of the bag end, a reciprocating paste-table moving in and out over the end of the bag, and pasters 176, situated at the sides of the bag and over the folders 184 when they are turned outwardly, and mechanism for actuating said pasters, folders, and paste-table, substantially as described, and so that the pasters will alternately take up paste and deposit it upon the outwardly-turned side flaps of the bag.

14. In a device for closing the end of a filled bag, the combination, with mechanism for folding down the end of the bag, substantially as described, of a pocket, as 95, adapted to hold the bag in place, a reciprocating plate or platform, as 198, for supporting the bag, and mechanism for actuating said plate, as described, and so that the bag is gradually raised as the folding mechanism acts upon the upper end thereof.

15. In a device for closing the end of a filled bag, the combination, with the folding plate or tucker 185 and the reciprocating and reciprocally-rotating folder 184, of the folder-plate 192, secured to a reciprocating spring-arm 194×, and the plunger 180, arranged as described, to press said folder-plate down against the top of the bag after it has partly folded the front flap down thereon

16. In a machine for packing bags, the combination of a series of intermittently-moving pockets, a table, as J, over which said pockets move, mechaniam for closing the top of the bag, substantially as described, comprising a tucker-blade 185 and reciprocating and reciprocally-rotating side-folders 184, an opening in table J, situated beneath the said mechanism, a vertically-movable plate or plunger 198, situated in line with said opening and movable to and below the same, and mechanism for actuating said plate, as described, and so as to lower the bag below table J as it comes upon said table and then raise it again as the said folding-blades operate upon its upper end.

17. In a device for closing the ends of filled paper bags, the combination of a pocket, as 95, for holding the bag in place, a vertically-reciprocating plate or plunger 198, upon which the bag rests, folder 185, the side-folders 184, operating, as described, during the upward movement of plate 198, the folder 192, held on reciprocating spring-arm 194×, and the plunger 180, arranged, as described, to press plate 192 down on the top of the bag, all substantially as and for the purpose specified.

18. In a device for closing the ends of filled paper bags, the combination of a pocket, as 95, for holding the bag in place, having a movable section, a vertically-reciprocating plate or plunger 198, upon which the bag rests, folder 185, the side-folders 184, operating, as described, during the upward movement of plate 198, mechanism arranged to press in the movable section of the pocket as the plunger raises the bag to its highest position and thus compress the package, the folder 192, held on reciprocating spring-arm 194×, and the plunger 180, arranged, as described, to press plate 192 down on the top of the bag, all substantially as and for the purpose specified.

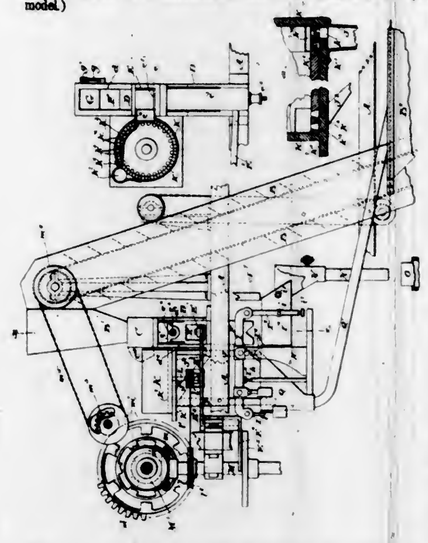
19. In a machine for packing bags, the combination of a series of intermittently-moving pockets, having a movable side, the table J, over which said pockets move, mechaniam for delivering bags into the pockets and for filling said bags, folding mechanism for closing the tops of the filled bags, a device for moving in the movable side of the pocket and compressing the package arranged to operate prior to the closure of the top thereof, and mechanism arranged to draw out the movable side of the pocket prior to its reception of another bag, all substantially as and for the purpose specified.

20. In a machine for packing bags, the combination of the intermittently-rotating series of pockets, the table J, and a drier, as 203, arranged above the path of the pockets and between which and table J the bags are carried.

21. In a machine for packing bags, the combination of the intermittently-rotating series of pockets, the table J, the plunger 206, arranged, as described, to force a package from each pocket, the belt 215, the finger 222, and the slide 216, having a simultaneously-recip

rocating movement longitudinally and laterally, all substantially as described, and for the purpose specified

449,276. AUTOMATIC WEIGHING-MACHINE. HENRY E. SMYSER, Philadelphia, Pa. Filed Aug. 5, 1890. Serial No. 361,073. (No model.)



Claim.—1. In an automatic weighing-machine, the combination, with a scale pan or pans, of a measure adapted to receive a measured and uniform bulk of material and positively-actuated mechanism acting to fill said measure and dump the same at intervals into the pan or pans, substantially as and for the purpose specified.

2. In an automatic weighing-machine, the combination, with a scale pan or pans, of a measure adapted to receive a quantity of the material to be weighed and dump it into the pan or pans, and an independently-supplied chute or chutes leading into the pan or pans, the delivery of which is controlled by the position of the scale, all substantially as and for the purpose specified.

3. In an automatic weighing-machine, a measure adapted to alternately receive and deliver measured quantities of the material to be weighed, a hopper arranged to receive the contents of the measure and having two or more delivery-chutes, a deflector arranged in the hopper and adapted to open each delivery-chute in turn, and a series of scales situated beneath the delivery-chutes so as to receive material therefrom, all substantially as and for the purpose specified.

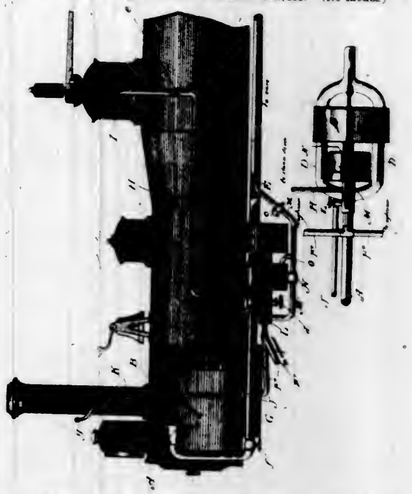
4. In an automatic weighing-machine, a measure adapted to alternately receive and deliver measured quantities of the material to be weighed, a hopper arranged to receive the contents of the measure and having two or more delivery-chutes, a deflector arranged in the hopper and adapted to open each delivery-chute in turn, a series of scales situated beneath the delivery-chutes so as to receive material therefrom, and independent chutes leading to each scale from a supply-hopper, the delivery of which is regulated by the position of the scale-beam.

5. In an automatic weighing-machine, the combination, with a platform d^3, having an opening *d*, of a reciprocating measure E, means for filling said measure, and a scale or scales situated beneath the opening *d*, and means for directing the contents of the measure into said pan or pans, all substantially as and for the purpose specified.

6. In an automatic weighing-machine, a hopper-box, as K, having one or more perforations in its bottom, in combination with a revolving false bottom having a series of disconnected perforations arranged to register with the hole or holes in the true bottom, a chute or chutes arranged to receive the material fed through the hopper-bottom, and a scale or scales arranged at the delivery end of said chutes.

7. In an automatic weighing-machine, a hopper-box, as K, having two or more perforations through its bottom at varying distances from its center, in combination with a revolving false bottom having two or more series of perforations adapted to register with the holes in the hopper-bottom, a series of receiving-chutes, and a series of scales adapted to receive the contents of said chutes and adapted, as specified, to cut off the delivery by the movement of the scale-beams.

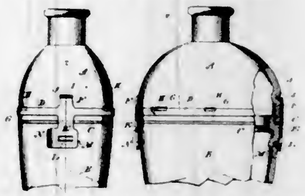
449,277. HEATING APPARATUS. NELSON E. AUSTIN, Danbury, Conn. Filed Aug. 30, 1889. Serial No. 322,415. (No model.)



Claim.—1. The combination of the blower-motor C, flue A, conduit E, branch pipes D, connecting said flues and conduit, pipes F, leading from the cylinders to the motor, pipe M, leading from the front of the motor around the same into the conduit, valve N and blow-off c in said pipe, connection O between the rear of the motor and the pipe M, supply-pipe H from the dome to the blower, and exhaust J, leading from the motor up into the smoke-stack, substantially as shown and described.

2. The combination, with the main conduit, of the pipes diverging from said conduit at the ends of the car and extending beneath the floor of the latter, the boxes inclosing said pipes, registers from said boxes into the car, external ventilating-doors in said boxes, and upright pipes inclosed by boxes and leading from the heating-pipes beneath the car up through the latter and out of the roof thereof, substantially as shown, and for the purposes set forth

449,278. NURSING-BOTTLE. CLYDE C. BALSTON, Brooklyn, N. Y. Filed Dec. 20, 1890. Serial No. 375,057. (No model.)



Claim.—1. The nursing-bottle composed of the separable sections, combined with the band connected with and carried by one section and having the arms which extend upon and at their ends by means of lugs engage the other section, substantially as and for the purposes set forth.

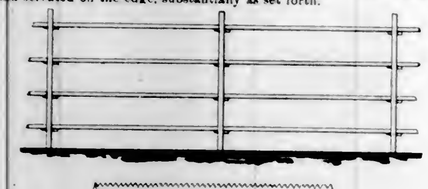
2. The nursing-bottle composed of the separable sections, combined with the band having lugs engaging recesses in one of said sections and arms which extend upon and engage the other of said sections, substantially as set forth.

3. The nursing-bottle composed of the separable sections, combined with the metallic band D, having lugs G engaging one section, and provided with the arms E E, extending upon and engaging the other section, substantially as and for the purpose set forth

449,279. MATERIAL FOR MAKING WIRE FENCES. JAMES Beresford, Chorlton-cum-Hardy, near Manchester, England. Filed July 23, 1890. Serial No. 359,587. (No model.)

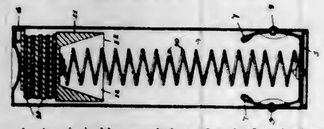
Claim.—1. As an improved article of manufacture, wire for fencing or telegraphic purposes, having a triangular cross-section and serrated on the edge, substantially as set forth.

2. As an improved article of manufacture, wire for fencing or telegraphic purposes, having a triangular cross section with concave sides and serrated on the edge, substantially as set forth.



3. The combination, with the posts having apertures, of the wire having a triangular cross-section and inserted in the apertures and wedges bearing upon the broad face of the wire and forcing the edge of the latter opposite said face into the side or surface of the apertures, substantially as set forth.

449,280. COIN-HOLDER. HENRY M. BRIGHAM, Brooklyn, N. Y. Filed Nov. 26, 1890. Serial No. 372,678. (No model.)



Claim.—1. A coin-holder consisting of a single tube having end pieces by which it is closed at both ends and provided with a slot or guide through which the coins are inserted, one of the end pieces being automatically released by the pressure of the coins when a predetermined number is inserted in the operation of filling the holder, substantially as shown and described.

2. A coin-holder consisting of a single tube having a fixed cover and a removable bottom and means whereby the coins may be inserted, the bottom being automatically released by the pressure of the coins when a predetermined number is inserted, substantially as shown and described.

3. A coin-holder composed of a single tube having a fixed cover and a removable bottom, in combination with locking devices for holding the bottom in its normal position and a follower or movable plug which is depressed as the holder is filled and by which the locking devices are operated and the bottom released, substantially as shown and described.

4. A coin-holder consisting of a single tube having a fixed cover and a removable bottom, in combination with locking devices for holding the bottom in its normal position and a movable spring-supported plug or follower which is depressed as the holder is filled and by which the locking devices are operated and the bottom released, substantially as shown and described.

5. In a coin-holder, the combination, with a single tube having a fixed and a removable end and means for locking the removable end in its normal position, of a movable plug which is depressed as the holder is filled and by which the removable end is released, substantially as shown and described.

6. In a coin-holder, the combination, with a single tube having a fixed cover and a removable bottom and locking devices for holding the bottom normally in position, of the spring-supported follower or plug which is depressed in the operation of filling the holder and by which the locking devices are operated and the bottom released, substantially as shown and described.

7. In a coin-holder, the combination of the tube 1, having the slot 4, the bottom 5, having the springs 6, the spring 10, and the follower 11, substantially as shown and described.

8. A coin-holder consisting of a single tube having a fixed cover, a removable bottom, a longitudinal slot, as 16, covered by a transparent strip, as 17, and means whereby the coins may be inserted, the bottom being automatically released by the pressure of the coins when a predetermined number is inserted, substantially as shown and described.

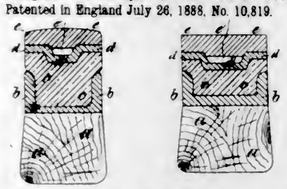
9. A coin-holder consisting of a single tube having a fixed and a removable end piece, an opening for the admission of coins, a scale for measuring the amount of coins within the holder, and means for releasing the removable end piece and discharging the coins only when the requisite number has been inserted, substantially as shown and described.

10. A coin-holder consisting of a single tube having a fixed and a removable end piece, an opening for the admission of coins at or near the fixed end, and releasing devices operated when a predetermined number of coins is inserted to release the removable end piece and discharge the coins, substantially as shown and described.

11. A coin-holder consisting of a tube having a fixed and a removable end piece, an opening for the admission of coins at or near the fixed end, and releasing devices operating, in connection with the column of coins, to release the removable end piece and discharge the coins only when a predetermined number has been inserted.

12. A coin-holder consisting of a single tube having a fixed and a detachable end, an opening for the insertion of the coin at the fixed end, and means for detaching the detachable end and discharging the coin only when the requisite number has been inserted.

449,281. TIRE FOR VEHICLE-WHEELS. CHARLES CHALLINER, Longsight, England. Filed Sept. 30, 1890. Serial No. 366,703. (No model.) Patented in England July 26, 1888, No. 10,819.



Claim.—1. In a vehicle-wheel, the combination of a grooved or trough-shaped rim, a compound tire consisting of a rubber ring *c* and an inclosing metallic hoop *d*, and an outer metallic tire shrunk in place over the said hoop, substantially as set forth.

2. In a vehicle-wheel, the combination of a grooved or trough-shaped rim, a compound tire consisting of a divided rubber ring *c*, and an inclosing divided metallic hoop *d*, vulcanized thereto, and an outer metallic tire shrunk in place over the said hoop, substantially as set forth.

3. In a vehicle-wheel, the combination of a grooved or trough-shaped rim, a compound tire consisting of a rubber ring *c* and a metallic hoop *d*, having a recess *d'*, and an outer metallic tire having a projection *c'*, and shrunk in place over said hoop, substantially as set forth.

4. The combination of a rim having a peripheral groove or recess, a rubber ring *c* therein, an outer metallic tire encircling said ring, and elastic cushions *k*, interposed between the sides of said metallic tire and the flanges or sides of the recessed rim, substantially as set forth.

5. The combination, with a rim having a peripheral groove or recess, one side or flange of which is shrunk upon the main portion of the rim, of a rubber ring *c*, an inclosing metallic divided hoop *d*, and an outer tire shrunk upon said hoop, substantially as set forth.

449,282. ELECTRIC SWITCH. HORACE T. CLARK, Bridgeport, Conn. Filed Feb. 25, 1891. Serial No. 382,815. (No model.)



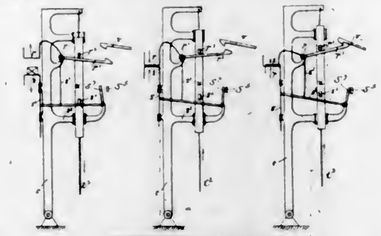
Claim.—1. The combination, with the base, of the terminal-blocks having opposed faces, the contact-brushes having their ends secured to the rear side of the blocks and extending over the ends of said blocks and then obliquely downward and outward therefrom, and a circuit-closer in the form of a truncated wedge, and means for driving it downward between the terminals.

2. The terminal-blocks 2, having projections 3, in combination with the springs 4, secured to the rear sides of said blocks, as at 5, and extending downward over the faces of said blocks, as shown, and the circuit-closer having oblique convergent faces, and means for forcing it into engagement, substantially as and for the purpose specified.

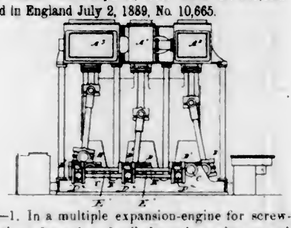
3. The combination, with the base, of the terminal-blocks 2, having upward projections rounded upon their top ends, contact-springs secured at the rear side of the projections and following the contour thereof over their ends and then extending downward and outward in a line tangent to their curves, and a circuit-closer in the form of a truncated wedge, and means for driving it down between the terminals, substantially as and for the purpose set forth.

449,283. WEFT STOP-MOTION FOR LOOMS. ANTOINE F. DEVIONE and JEAN P. DURAND, La Cour-du-Pin, France. Filed June 20, 1890. Serial No. 356,169. (No model.) Patented in France Oct. 27, 1886, No. 179,169; in Belgium Nov. 13, 1886, No. 75,223; in England Dec. 30, 1886, No. 17,094; in Italy Dec. 31, 1886, XLI, 227; in Spain Jan. 3, 1887, No. 10,314, and in Germany Nov. 19, 1887, No. 51,464.

Claim.—In a weft stop-motion for looms, the combination of two vertically-movable grids *r* and *s*, the upper grid *r* being adapted to drop by gravity and the lower grid *s* being sliding with the spring s^9, lever s^3, its tail-piece s^7, stop s^5, the slide-bar *u*, having the stops r^3 and s^4, and the lever r^3 and catch *v*, substantially as herein shown and described.



449,284. MULTIPLE EXPANSION-ENGINE. HUGH DUNSMUIR, Govan, Scotland. Filed Sept. 25, 1889. Serial No. 325,104. (No model.) Patented in England July 2, 1889, No. 10,665.



Claim.—1. In a multiple expansion-engine for screw-propulsion, the combination of a series of cylinders, the main screw-shaft, one or more separate shafts C, making with the main shaft a shaft for each cylinder, a crank on each shaft, a pitman-connection between the piston of each cylinder and its crank, crank-pins D', connected with and carried by said shafts, other differently-situated crank-pins D^2, also carried by the shafts, and connecting-rods E E', joining said pins, substantially as set forth.

2. In a multiple expansion-engine for twin-screw propulsion, the combination of two cylinders, shafts and main cranks set at different angles with which the pitmen of said cylinders are connected, an intermediate shaft and main crank set at a different angle from the first-mentioned cranks, a third intermediate cylinder having its pitman connected with the latter crank and the double connecting-rods E E', and corresponding auxiliary cranks set at an angle to each other, and wrist-pins by which said intermediate shaft is connected with the other shafts, substantially as set forth.

449,285. CAR STARTER AND BRAKE. WILLIAM GIFFARD, Salford, England. Filed Aug. 28, 1890. Serial No. 363,284. (No model.)

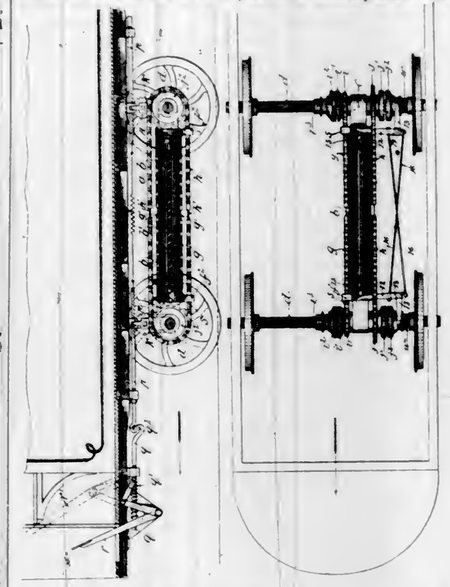
Claim.—1. The improved apparatus for stopping and starting tram-cars, omnibuses, and other wheeled vehicles, consisting of a spring *a* or series of springs confined in a case and acted upon by blocks or pistons *e*, connected to sliding muffs *f*, operated by endless chains passing over chain-pulleys, which operate clutches capable of being manipulated by the driver or person in charge, so as to compress the spring or springs during the stopping of the vehicle and to utilize the power thus stored for restarting the vehicle, substantially as hereinbefore described and illustrated.

2. In apparatus of the indicated nature, the spring *a* and case *b*, in combination with the sliding muffs *f* and chains *g* and *h* for the purposes, and arranged and acting substantially as hereinbefore described and shown.

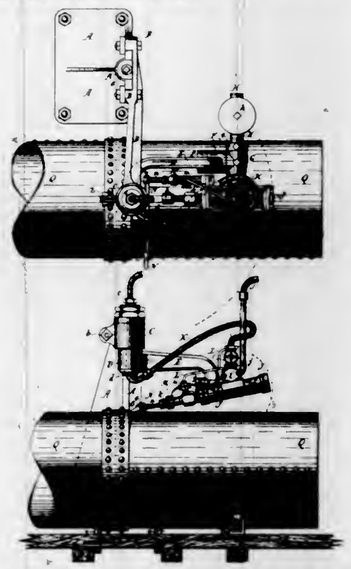
3. The means for throwing the clutch-halves i' i^2 into and out of gear, said means consisting of the combination of the foot-lever *r* or hand-lever *r'* and parts, the hook-bar *q* and springs *q'*, the hook-bars *p*, racks *p'*, spring p^3, nut-wheel *n*, screwed studs *m*, and fork *k*, arranged and acting substantially as described and shown.

4. The means for seizing the chain *h* and moving it with the muffs *f* during the compression of the spring, said means consisting of the finger *t*, stud *t'*, lever *u*, and bowl *w*, acting in concert with the tappet-catch *v*, with the objects, and substantially as described and shown.

5. The means for throwing both front and rear clutches into gear simultaneously and thus retarding, stopping, and restarting the car through both axles, consisting of the combination, with the movable parts of said clutches, of operating-levers engaging the same, the rod *p* connections between the latter and one of said levers, a rod-and-lever mechanism connecting said clutch-operating levers, and a spring and tie for restoring said levers to position, substantially as set forth.



449,286. MACHINE FOR CALKING SEAMS AND JOINTS OF STEAM-BOILERS. GEORGE J. HOSKINS and CHARLES H. HOSKINS, Sydney, New South Wales. Filed Oct. 13, 1890. Serial No. 367,894. (No model.) Patented in New South Wales Aug. 29, 1889, No. 1,699, and in England Apr. 28, 1890, No. 6,499.



Claim.—1. In machines for calking seams of boilers and other similar constructions, the arm E, which is capable of being moved in a horizontal plane around a vertical axis and carrying at its free end the necessary hammering apparatus, as herein set forth, and for the purposes stated.

2. In machines for calking seams of boilers and other similar con-

structions, the combination of the sleeve F and the T-sleeve G, for the purpose of permitting the hammering-tool to be moved in two vertical planes at right angles to each other, as herein described and explained.

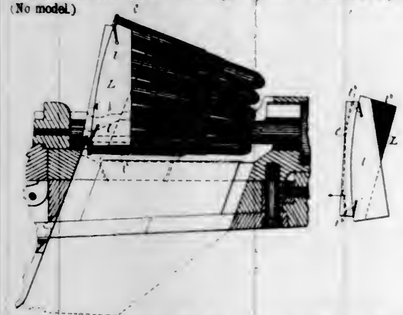
3. In machines for calking seams of boilers and other similar constructions, the combination of the arm E with the two sleeves F and G and the steam-hammer, as herein specified, and as illustrated in the drawings.

4. In machines for calking seams of boilers and other similar constructions, the combination of parts forming the steam-spring M, the same being attached to the hammering apparatus for the purpose of keeping the calking-tool in close contact with its work, as herein specified, and as shown in the drawings.

5. In machines for calking seams of boilers and other similar constructions, the combination of a steam-hammer which is capable of being moved in horizontal and vertical planes, as described, with a calking-tool, as and for the purpose herein set forth.

6. The general construction, arrangement, and combination of parts in our improved tool for calking seams or joints in steam-boilers or other analogous constructions, as herein specified, as illustrated in the drawings, and for the purposes set forth.

449,287. CARTRIDGE-CRAMP FOR MAGAZINE-GUNS. KARL KRNKA, London, England, assignor to the Krnka Repeating Rifle Company, Limited, same place. Filed Apr. 26, 1890. Serial No. 349,632. (No model.)



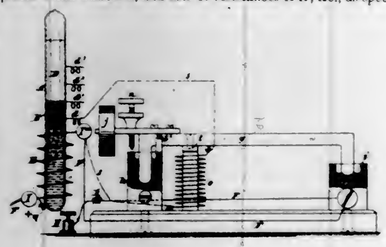
Claim.—A cartridge-cramp in which a trough-shaped back is extended in a lateral wing on either side, embracing the sides of the cartridge, the said wings being wide at one end and narrow at the other, alternated at either side, so that the cramp may be used equivalently either side upward, the upper and lower edges l^2 l^3 of the said wings being turned inward at right angles to automatically throw the cramp out of the receiver when the last cartridge has been pressed into the magazine, substantially as set forth.

449,288. REGULATING APPARATUS FOR ELECTRIC CURRENTS. WILHELM LAHMEYER, Aix-la-Chapelle, Germany. Filed Feb. 9, 1888. Serial No. 263,496. (No model.) Patented in Germany May 29, 1886. No. 38,871, and in Belgium Dec. 10, 1887, No. 79,869.

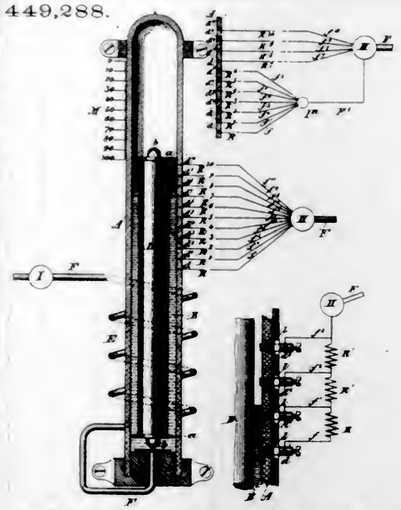
Claim.—1. An electric apparatus consisting of a cistern A of mercury, floats D, and multiple contacts d d', combined with the series of relays arranged on high-resistance shunts, successively thrown into action by varying strength of current in the main lead, and by their action throwing into the main circuit one by one a series of resistances, so as to cause the resistance of the main lead to diminish as the strength of current increases, and the reciprocal, substantially as herein shown and described.

2. The combination of the cistern A and mercury B with the float D, having guide-plates a and buffers b, substantially as described.

3. The combination of the cistern A, mercury B, float D, having guide-plates a and buffers b, and sets of resistances R R', &c., as specified.



449,288.



4. The combination, with the cistern A, mercury B, float D, and conductors d d', &c., entering the vertical wall of said cistern, of a series of magnets e e', &c., in shunt-circuits, arranged to operate a series of levers g g', &c., a series of resistance-coils R R', &c., and the levers g g', &c., all arranged substantially as herein shown and described, so that each lever when depressed will short-circuit a corresponding resistance-coil, thus diminishing the resistance of the main circuit, substantially as set forth.

449,289. FUSE FOR ELECTRIC CIRCUITS. FRANCIS W. MAYSTADT, Chicago, Ill. Filed Jan. 10, 1891. Serial No. 377,367. (No model.)



Claim.—1. A safety-fuse for electric circuits, comprising, in combination, a plate r, of insulating material, having a strip q, of metal, sufficiently attenuated to be fused by a current having the power of at most about one-half an ampère and cemented to one side of the said plate to extend lengthwise thereof, and metal-foil contact-strips p, cemented to the plate r near its opposite ends and covering the ends of the fuse-strip, substantially as described.

2. In combination, a safety-fuse A, comprising the plate r, having cemented to one side the strip q, of metal, sufficiently attenuated to be fused by a current having the power of at most about one-half an ampère and provided at opposite ends with metal-foil contacts p, cemented in place to cover the ends of the strip q, and a holder B, comprising an insulating-block n and spring-clamps m and m', adapted to form the terminals of an electric circuit and to receive between them the contact ends of the plate r and compress the said contacts and fuse-strip ends together, substantially as described.

449,290. FEED-GAGE FOR PRINTING-PRESSES. EDWARD L. MEGILL, Brooklyn, N. Y. Filed Nov. 21, 1888. Serial No. 291,421. (No model.)



Claim.—1. In a feed-gage, the combination of the base provided with means for securing it to the paper on the platen, and the adjustable gage mounted on said base and provided with a head.

2. In a feed-gage, the combination, with a supporting-plate for the gage-head, provided with guides for the latter, of the said gage-head mounted on said supporting-plate, and an eccentric mounted rotatively on the supporting-plate for setting the gage-head to register, substantially as and for the purposes set forth.

3. In a feed-gage, the combination, with a base adapted to be

fixed to a platen, of a carrier-plate mounted on and pivotally attached to said base, an eccentric d, mounted rotatively on the base for adjusting the carrier-plate laterally at its free end, and an adjustable gage-head mounted on said carrier-plate, all arranged to operate substantially as set forth.

4. In a feed-gage, the combination, with a base adapted to be secured to a press-platen, of the carrier-plate c, pivotally attached at its front end to said base and provided with a lateral adjuster at its free end, and the gage-head e, mounted in guides on the plate c and provided with a longitudinal adjuster, substantially as set forth.

5. A feed-gage having a solid base provided with a cell or cells for the storage of adhesive material, substantially as set forth.

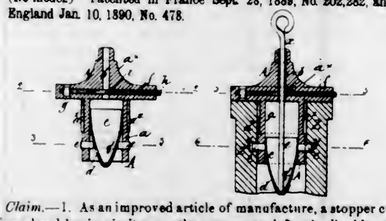
6. In a feed-gage, the combination, with a gage-head, of a base a, elastically held to the said gage-head and having storage-cells for adhesive material, substantially as set forth.

7. In a feed-gage, the combination, with the base provided with storage-cells for adhesive material, of the gage-head e, mounted on and held down elastically to the base, the face-plate of said head extending normally below the lower cellular surface of the base, substantially as and for the purposes set forth.

8. A feed-gage consisting of a base adapted to be secured to the press-platen, an adjustable gage-head, an eccentric for adjusting the gage-head to register, and an eccentric for adjusting said head laterally for purposes of rectification.

9. In a feed-gage, the combination of a base adapted to be secured to a press-platen, a carrier-plate mounted adjustably on said base, and a gage-head mounted adjustably on said carrier-plate.

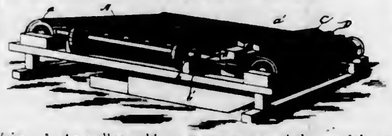
449,291. STOPPER AND LIQUID-DROPPER FOR BOTTLES. VICTOR C. MONETTE, Paris, France. Filed Nov. 1, 1890. Serial No. 370,047. (No model.) Patented in France Sept. 28, 1889, No. 202,282, and in England Jan. 10, 1890, No. 478.



Claim.—1. As an improved article of manufacture, a stopper comprising a head having in it an outlet or passage b for the liquid, a hollow plug provided with a sliding piece or with pieces c set in apertures in its sides and projecting normally into the hollow of the plug, and an apertured wedge e, arranged within said hollow in the plug and adapted to drive said pieces outward when forced down, substantially as set forth.

2. As an improved article of manufacture, a stopper A, having a head with an outlet-passage in it, and means, substantially as described, for controlling the flow of liquid therethrough, a hollow plug having sliding pieces c mounted in apertures in its walls and projecting normally into the hollow of the plug, and an apertured wedge e, arranged within the said hollow and adapted to drive said pieces outward when forced down, substantially as set forth.

449,292. ORE-CONCENTRATOR. FRANK B. MORSE, Murphy's, Cal. Filed Aug. 7, 1886. Serial No. 210,365. (No model.)

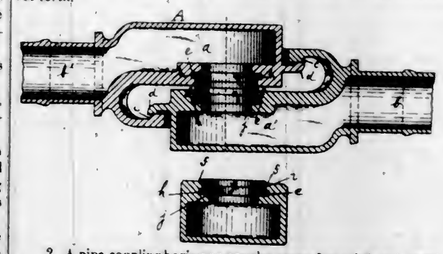


Claim.—1. An endless rubber ore-concentrator belt containing a series of surface corrugations integral with the belt, constructed transversely of the belt and contiguous to each other, substantially as described.

2. In an ore-concentrator machine having mechanisms, substantially as described, adapted, respectively, to support, drive, and oscillate horizontally an inclined endless traveling belt, the combination, with said mechanisms, of a belt constructed with a series of surface corrugations extending transversely of the belt and contiguous to one another, substantially as described.

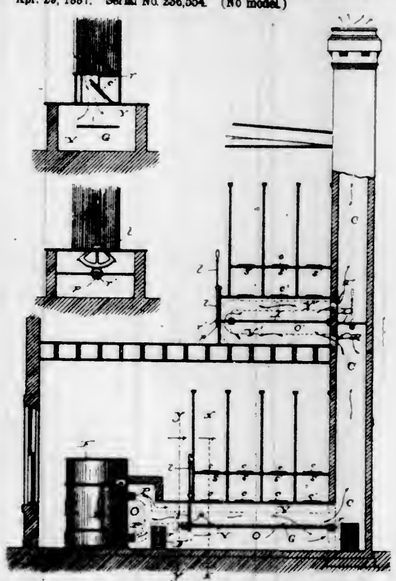
449,293. PIPE-COUPLING. FRANK J. MCGUIRE, Allegheny, Pa. Filed Aug. 7, 1890. Serial No. 361,321. (No model.)

Claim.—1. A pipe-coupling formed of two parts or sections, having side openings therein adapted to coincide with each other, said sections having solid back portions opposite said openings, rubber washers having flanges thereon fitting in annular recesses formed within said sections, and rings of copper or other expansible metal engaging with the interior faces of said washers, substantially as and for the purposes set forth.



2. A pipe-coupling having an annular recess formed therein, a rubber washer having a flange thereon, said flange adapted to fit within said annular recess, and a ring of copper or other expansible metal engaging with an annular depression formed on the interior face of the washer, substantially as and for the purposes set forth.

449,294. DRY CLOSET. IRA J. ORDWAY, Chicago, Ill. Filed Apr. 29, 1887. Serial No. 236,554. (No model.)



Claim.—1. The combination, with a privy-seat, of a chamber beneath the same, open at both ends, a heater at one end thereof, a chimney-flue at the opposite end, an imperforate horizontal partition arranged within said chamber to receive the fecal deposits, said partition being provided at either end with projecting pivot-rods, and a lever in operative connection with one of said pivot-rods and extending upwardly therefrom, whereby the support may be tilted from the outside of the chamber, substantially as described.

2. The combination, with a privy-seat, of a chamber beneath the same, open at both ends, a heater at one end thereof, a chimney-flue at the opposite end, an imperforate horizontal partition arranged within said chamber to receive the fecal deposits, said partition being provided at either end with projecting pivot-rods, a pinion secured upon one of said rods, and an upwardly-extending lever provided on its lower end with a toothed sector adapted to engage the pinion, whereby the support may be tilted from the outside of the chamber, substantially as described.

3. The combination, with a heater and a chimney-flue in connection therewith, of a damper in said flue, a privy-seat, a chamber be-

neath the seat for receiving the fecal deposits, communicating with the chimney both above and below the damper, and a horizontal excrement-holding plate within said chamber between the openings, said plate dividing the chamber into two parts, communicating at their ends remote from the chimney.

4. The combination, with a heater and a chimney in communication with the fire-box thereof, of a damper in said chimney, a privy-seat and an excrement-receiving chamber beneath the seat, having openings communicating with the chimney above and below said damper, and the excrement-holding dumping-plate in said chamber between said openings, substantially as described.

5. The combination, with a heater and a chimney-flue in communication therewith, of a damper in said chimney, a privy-seat, a chamber beneath the same, having openings communicating with the chimney above and below the damper, a pivoted imperforate excrement-holding plate arranged horizontally in said chamber and dividing the same into two parts, communicating at their ends remote from the chimney, and a closed pipe leading from the opening below the damper through both portions of said chamber to the upper opening.

449,295. FOUNTAIN-PEN. HUGH T. REED, Chicago, Ill. Filed Oct. 21, 1890. Serial No. 368,786. (No model.)

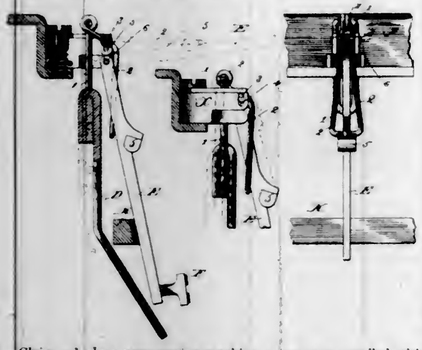


Claim.—1. An ink-feeding device for fountain-pens, comprising a solid plug or core, a tube surrounding the plug or core, and a feeding-prong, said plug or core being provided with a slit for the pen and an external longitudinal groove or grooves, both for the exit of ink and the inflow of air, terminating at the inner surface of the feeding-prong, said slit for the pen extending into the groove or grooves, substantially as described.

2. An ink-feeding device for fountain-pens, in which the ink-conduit is formed in part within a revoluble plug or core by means of an external longitudinal groove therein closed by the surrounding tube and in part by a passage which is equally eccentric relatively to the plug or core, whereby the parts of the ink-conduit may be made either continuous or non-continuous by turning said plug or core, substantially as described.

3. An ink-feeding device for fountain-pens, comprising two plugs or cores arranged with their end surfaces in contact and each provided with an eccentric longitudinal ink-passage, and a tube surrounding said plugs or cores, one of said plugs or cores being revoluble without endwise movement in the said tube to enable the ink-passage to be closed, substantially as described.

449,296. TYPE-WRITING MACHINE. ARTHUR B. REID, Chicago, Ill., assignor of one-half to Larsen Filstrup, same place. Filed July 1, 1889. Serial No. 316,252. (No model.)



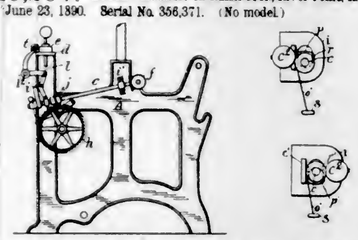
Claim.—1. In a type-writing machine, a type-arm supplied with metal or other type at or near its lower extremity, said type-arm constructed with a cam-shaped projection, as indicated by 5, in combination with an operating-clutch so constructed as to intermittently engage said cam-shaped projection, substantially in manner and form herein specified.

2. In a type-writing machine, the combination of a key, as indicated by B, a lever, as indicated by C, a spring, as indicated by I, a draw-bar, as indicated by D, a connecting-loop, as indicated by 1, a forked clutch, as indicated by 2, and an independent type-arm, as indicated by E, all combined to act and co-operate substantially in the manner and for the purpose herein specified.

3. In a type-writing machine, an independent type-arm constructed with a cam upon its shank, an operating-rod, and an intervening clutch, as specified.

4. In a type-writing machine, a disconnected type-arm having a projection 5, a draw-bar and clutch, said clutch connected to the draw-bar by a loop, as indicated by 1, passing through an eye at upper end of clutch, said clutch passing through and operating upon a barrel-pivot, as indicated by 3, and said pivot playing in a perpendicular eye, as indicated by 4, said clutch so constructed as to engage the projection (indicated by 5) upon type-arm when operated by depression of draw-bar, and as depression continues the forked extension of said clutch to travel around the lower curved surface of said projection as the type-arm raises, releasing its engagement upon said projection when the type attached to said arm reaches the striking or printing point, and said clutch being so constructed and combined with the above-specified parts that it may be allowed to recede nearly back to its original position without again engaging the said type-arms, all substantially in manner, structure, and operation as above set forth, shown, and described.

449,297. LOOM. HORATIO A. REMINGTON, River Point, R. I. Filed June 23, 1890. Serial No. 356,371. (No model.)

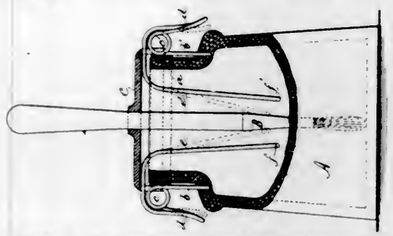


Claim.—1. The shafts *cg*, the gears *f*, worm *j*, and collar *r'*, with its eccentric end, in combination with the wheel *h* and pawl *s*, connected with the collar *r'* by chain *o'*, substantially as and for the purpose set forth.

2. The combination of the shaft *c*, worm *j*, and wheel *h*, and jointed pawl *s*, with the jointed connections *n m*, arm *l*, rocker-shaft *i*³, arm *t*, spring or bar *b*, yoke *o*, and cast-off lever *e*, substantially as described.

3. The combination, with the shaft *c*, worm *j*, wheel *h*, and means for lifting the shaft when it is desired to disengage the worm from the worm-wheel, of the spring or bar *b'*, jointed connection *m n*, and shipper-handle-disengaging devices, having the arm *l* in operative connection therewith, substantially as described, whereby the shaft cannot be lifted while the loom is running without causing it to stop.

449,298. SCRAPER FOR MUCILAGE-BOTTLES. JOSEPH C. ROSNECHT, New York, N. Y. Filed Jan. 5, 1891. Serial No. 376,886. (No model.)



Claim.—1. The combination, with a mucilage-bottle, of spring-wire arms adapted to be connected to the bottle and having coils *c c'*, grasping-arms *d d'*, arms *e e'*, extending down into the bottle, and bent ends *f f'*, substantially as set forth

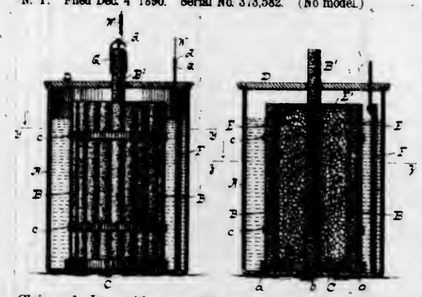
2. The combination, in a mucilage-bottle, with a band of metal encircling the neck, of spring-wire arms connected to the band at opposite sides and extending over and into the bottle and adapted to engage the sides of the brush to remove the surplus mucilage, substantially as set forth.

3. The combination, in a mucilage-bottle, with a band of metal encircling the neck, of spring-wire arms connected to the band at opposite sides and having the coils *c c'* and arms *d d'* outside the bottle, and arms *e e'* and bent ends *f f'* inside the bottle, substantially as set forth.

4. The combination, in a mucilage-bottle, with a band of metal encircling the neck, of spring-wire arms connected to the band at opposite sides and having the portions *b b'*, extending down outside the neck with the lower ends received into openings in the bottle, the coils *c c'*, arms *d d'*, formed in said wire outside the bottle, and arms *e e'* and bent ends *f f'* within the bottle, substantially as set forth.

5. The combination, with a mucilage-bottle, of two spring-wire arms connected at opposite sides of the bottle-neck and extending over and down into the bottle and having nearly-horizontal ends opposite to each other adapted to be brought into engagement with the sides of the brush to remove the surplus mucilage, substantially as set forth.

449,299. GALVANIC BATTERY. HENRY P. STOECKER, New York, N. Y. Filed Dec. 4 1890. Serial No. 373,582. (No model.)



Claim.—1. In combination with the pole and the wire arranged lengthwise upon the same, a threaded sleeve screwed upon the pole and bearing upon the wire to clamp the same to the pole, substantially as described.

2. In combination with the pole and the wire arranged lengthwise upon the same, a threaded sleeve screwed upon the pole and bearing upon the wire to clamp the same to the pole, said sleeve terminating in an eye about which the wire is looped, substantially as described.

3. A cathode formed of a series of carbon rods arranged in contact one with the other, and a filling of broken carbon and a depolarizing agent, substantially as described.

4. A cathode formed of a series of carbon rods, an inner carbon rod, and an intermediate filling of broken carbon and a depolarizing agent, substantially as described.

449,300. PROCESS OF MAKING BRIDLE-BITS. THOMAS E. VAN NESS, Newark, and ROLLIN C. W. LEWIS, Jersey City, N. J. Filed Aug. 11, 1890. Serial No. 361,641. (No model.)



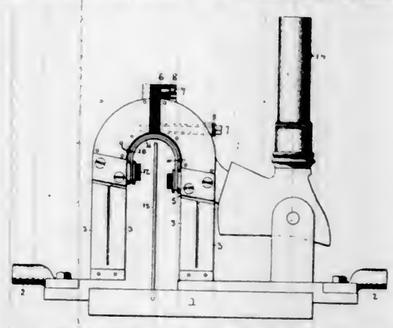
Claim.—1. The method or process of manufacturing bridle-bits, which consists in forming the mouth-piece and check-pieces to fit one another while said parts are yet independent of one another, and afterward joining said parts and subjecting the metal adjacent to said joint of one of said parts to pressure, whereby the said metal is forced to form a stop without affecting the metal forming the joint, substantially as set forth.

2. The method or process of manufacturing bridle-bits, which consists in forming on the mouth-piece an eye and on the check-piece a close-fitting cylindrical portion longer than said eye, joining said parts, and forcing the projecting metal of said cylindrical portion against said check-piece to hold the same, substantially as set forth.

3. The method of manufacturing bridle-bits, which consists in forming the mouth-piece, as described, while separated from one another, the check being provided with an open rein-ring, then arranging said mouth-piece on said check-piece, and closing said rein-ring, substantially as set forth.

449,301. CUT-OUT. CHARLES S. VAN NUIS, New Brunswick, N. J. Filed Aug. 18, 1890. Serial No. 362,349. (No model.)

Claim.—1. The combination of terminals adapted to be connected to a circuit, a non-conducting switch-arm having contacts co-operating with the circuit-terminals, a fusible conductor connecting the contacts, and a single screen between the terminals and extending between the ends of the fusible conductor, substantially as described.

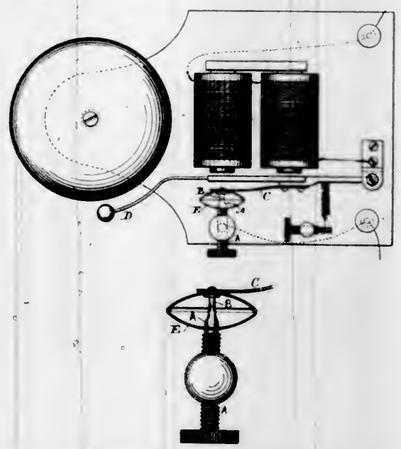


2. The combination, in a switch, of circuit-terminals, a switch-arm having a bent portion, contacts carried thereby, a fusible conductor connecting the contacts, and a screen between the terminals and extending within the bend of the switch-arm and between the contacts and ends of the fusible conductor, substantially as described.

3. The combination, in a switch, of circuit-terminals, a switch-arm having a bent portion carrying contacts co-operating with the circuit-terminals, said arm consisting of two parts secured together, but having an interposed insulating-piece, and a fusible conductor carried within the bend and connecting the contacts, substantially as described.

4. The combination, in a switch, of circuit-terminals, a switch-arm for connecting or disconnecting said terminals, an insulating-plate carried by the arm, and a fusible conductor carried by the switch-arm and separated therefrom by said insulating-plate, substantially as described.

449,302. ELECTRIC-CONTACT PROTECTOR. RICHARD VARLEY, Jr., Englewood, N. J. Filed Nov. 28, 1890. Serial No. 372,842. (No model.)

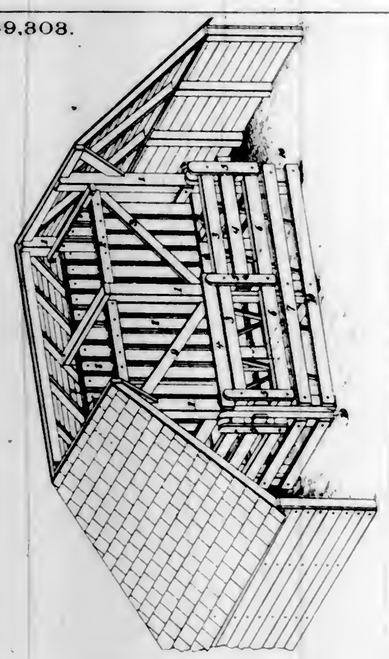


Claim.—An electric-contact protector formed of two disks of flexible material connected together around their edges and having central openings for the electrodes.

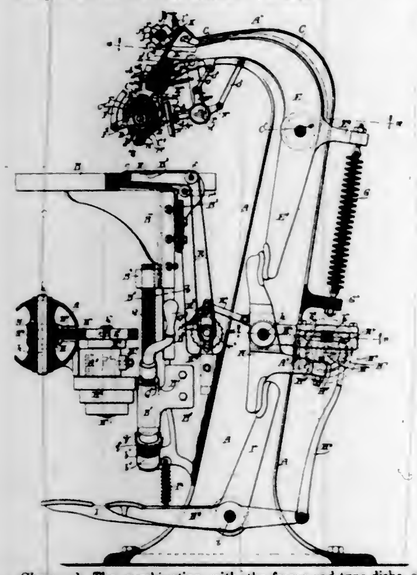
449,303. FEED-RACK. SAMUEL H. WARREN, Keosauqua, Iowa. Filed Apr. 4, 1889. Serial No. 306,036. (No model.)

Claim.—In a feed-rack, the combination of a horizontal slatted manger having openings therein through which the feed is taken, slides for opening and closing the openings, a feed-holder above the manger, formed of a size less than the manger and with vertical slats, a shed inclined from the top of the holder, and inclined retaining-stakes 12 in the manger, substantially as described.

449,303.



449,304. PAGING-MACHINE. SAMUEL K. WHITE, Chicago, Ill. Filed Oct. 23, 1888. Serial No. 288,960. (No model.)



Claims.—1. The combination, with the frame and type-disks, of means for sustaining and giving motion to the disks, consisting of a supporting-arm pivoted upon the frame and affording the sole support for the disks and an actuating-arm pivoted upon the frame independently of the supporting-arm and having elastic or yielding connection with the said supporting-arm, and means for giving bodily movement to the disks connected with said actuating-arms, substantially as described.

2. The combination, with the machine-frame and type-disks, of means for sustaining and giving motion to the disks, consisting of an oscillating arm pivoted to the frame and supporting the disks at its free end and an actuating-arm pivoted upon the frame independently of the supporting-arm and having elastic or yielding connection with the supporting-arm, said frame being provided with an overhanging rigid arm having lateral guides adjacent to the free end of the supporting-arm and engaging the sides of the said supporting-arm for guiding the latter and the type-disks in their vertical movement, substantially as described.

3. The combination, with the machine-frame and type-disks, of a supporting-arm pivoted to the frame, a plate C^3, attached to the end of said arm, at the lower end of which plate the type-disks are mounted, said plate being provided with a recess in its rear or inner surface, an actuating-arm also pivoted to the said frame and engaged at its free end with the recess in said plate C^3, and a spring inserted in said recess beneath the free end of said actuating-arm, substantially as described.

4. The combination, with the type-disks and machine-frame, of a reciprocating disk-supporting plate provided with a single arm having a stud upon which the type-disks are mounted, and devices for turning the disks located at that side of the said disks nearest the said supporting-arm, substantially as described.

5. The combination, with the type-disks and machine-frame, of a reciprocating disk-supporting plate provided with a single arm having a stud upon which the type-disks are mounted, and means for turning the said disks, comprising an oscillating lever mounted upon the said stud between the type-disks and the arm and provided with a pawl for actuating the disks, substantially as described.

6. The combination, with the machine-frame and type-disks, of a reciprocating plate for supporting the disks, provided with a supporting-arm located at one side of the disks only and having a horizontal stud on which the disks are mounted, devices for turning the disks, comprising an oscillating lever mounted upon the stud between the disks and the said supporting-arm, and a removable cap or collar for holding the disks upon the stud, whereby the disks may be removed from the machine by slipping them endwise from the said stud, substantially as described.

7. The combination, with the type-disks and a stud supporting the same, of a sleeve interposed between said stud and the disks and provided with collars at its ends for holding the disks upon the sleeve, said sleeve being adapted to turn freely on the stud, and a catch or locking device consisting of interlocking parts upon the said stud and sleeve constructed to engage each other at one position only of the sleeve for detachably holding said sleeve from turning upon the said stud when the disks are in working position, substantially as described.

8. The combination, with the type-disks and the machine-frame of a reciprocating plate provided with a single arm having a stud upon which the type-disks are mounted and provided with collars or shoulders to hold the disks upon the sleeves, a sliding pin mounted in the said arm and engaging a notch or recess in the said sleeve, a spring applied to move said pin in a direction to engage the sleeve, and means for holding the said pin free from the sleeve against the action of the spring, substantially as described.

9. The combination, with the type-disks and machine-frame, of a reciprocating plate provided with a single arm having a stud upon which the type-disks are mounted, a sleeve interposed between the stud and the disks and provided with collars or shoulders at its ends to hold the disks upon the sleeve, and means for turning the disks, comprising an oscillating lever mounted upon the stud between the said disks and the arm and provided with a pawl for turning the disks, substantially as described.

10. The combination, with the machine-frame and type-disks, of means for turning the disks, embracing an oscillating spring-pawl and a repeating device comprising a movable cam-plate adapted to engage and hold the said pawl out of action in one position of the said cam-plate, a rotating notched disk, means for giving a partial rotation to the notched disk at each reciprocation of the type-disks, and a finger movable toward and from the said notched disk and hold yieldingly against the periphery of the same, said finger being connected with and adapted to actuate the said cam-plate, substantially as described.

11. The combination, with the type-disks and oscillating pawl turning the same, of a repeating device comprising a movable cam-plate adapted to hold the pawl out of action in one position of said cam-plate, a series of rotating notched disks movable bodily with the type-disks, means for giving a partial rotation to the notched disks at each reciprocation of the type-disks, a slide-bar movable toward and from the said notched disks, and an adjustable finger movable endwise upon said bar and adapted to engage either of said disks as desired, said bar being connected with and giving motion to the said cam-plate, substantially as described.

12. The combination, with the machine-frame, the type-disks, and a plate C^3, supporting the same, of means for turning the disks, comprising an oscillating pawl and a repeating device comprising a series of notched disks mounted upon said plate C^3, a finger movable toward and from the notched disks, a movable cam-plate adapted to engage the said pawl and hold the same out of action in one position of said plate, and a lever pivoted upon the plate C^3 and supporting the said cam-plate, said lever being provided with a slide-bar, upon which said finger is mounted, substantially as described.

13. The combination, with the machine-frame and type-disks, of a plate C^3, supporting the type-disks, means for turning the disks, comprising an oscillating pawl and a repeating mechanism comprising a movable cam-plate engaging the said pawl and holding said pawl out of action in one position of the cam-plate, a lever pivoted to the plate C^3, attached at one end to the said cam-plate, a notched disk mounted upon the said plate C^3, said disk being provided with main notches and secondary or smaller notches j^3 j^3, means for turning said notched disk, and a finger adapted to engage the periphery of the said notched disk and connected with the said lever, and a spring holding the finger in contact with the notched disk, substantially as described.

14. The combination, with the machine-frame, the type-disks, and a reciprocating plate C^3, supporting the type-disks, of means for turning the disks, comprising an oscillating pawl and a repeating device consisting of a notched disk mounted upon the plate C^3, a movable cam-plate adapted to engage the pawl and arranged to hold said pawl out of action in one position of the cam-plate, a lever pivoted to the said plate C^3 and attached at one end to said cam-plate, a finger engaging the periphery of the said notched disk and connected with the said lever, a ratchet-wheel mounted on the said plate C^3 and connected with the said notched disk, and a pawl upon the machine-frame engaging and turning said ratchet-wheel in the reciprocatory motion of the plate, substantially as described.

15. The combination, with the machine-frame and type-disks, of a plate C^3, supporting the type-disks, means for turning the type-disks, comprising a pawl provided with an arm F^4, extending rearwardly from its pivot, and a repeating device comprising a cam-plate movable toward and from the axis of the type-disks, and adapted to engage and press inwardly the said arm F^4 of the pawl, a pivoted lever supporting said cam-plate, a notched disk, means for turning the notched disk, and a finger movable toward and from the said notched disk and engaging the periphery of the latter, said finger being connected with and adapted to actuate the said pivoted lever which supports the said cam-plate, substantially as described.

16. The combination, with the machine-frame, type-disks, and a pivotally-supported actuating-arm therefor, of means for actuating said arm both by power and by the foot of the operator, comprising a pivoted lever H, engaging and giving motion to the actuating-arm, said lever H being provided with a rigid arm H^3, an oscillating arm H^4, located over and adapted to engage the said arm H^3, a crank-pin giving oscillatory movement to said oscillating arm, a spring applied to move the actuating-arm in one direction, and a foot-lever engaged with said lever H and adapted to actuate the same independently of the power-driving devices, substantially as described.

17. The combination, with the machine-frame, type-disks, and pivotally-supported actuating-arm, of a spring moving said arm in one direction, a lever H, engaged with said actuating-arm, provided with a rigid arm H^3, a horizontally-arranged shaft H′, provided with a crank-pin, an oscillating arm H^4, adapted to engage said arm H^3 and provided with a longitudinal slot engaged with said crank-pin, and a foot-lever engaging said lever H, substantially as described.

18. The combination, with the type-disks, of a machine-frame embracing a hollow or tubular standard, provided with an overhanging arm or goose-neck at its upper end, a curved actuating-arm E, pivoted at the upper end of the hollow standard within the same and extending through the goose-neck, said actuating-arm being provided with a depending arm E^2, extending below its pivotal point, a vertically-arranged lever H, pivotally supported within the hollow standard and engaged at its upper end with the arm E^2 of the actuating-arm, a spring applied to move said actuating-arm in one direction, and a foot-lever I, pivoted at the base of the frame and extending upwardly within the tubular standard and engaged with the said lever H, substantially as described.

19. The combination, with the machine-frame and type-disks, a reciprocating plate supporting the disks, and an inking-disk, of an inking-roller, an arm M′, supporting said roller, a pin m' upon the said reciprocating plate adapted to engage said arm for moving the inking-roller, and a spring applied to and acting on said arm M′ to give further movement to said arm and to the inking-roller after the pin has left the same, substantially as described.

20. The combination, with the machine-frame and type-disks, a reciprocating plate supporting the disks, and an actuating-arm giving movement to said plate, of an oscillating inking-roller, an inking-disk N, a block or hub N^2, supporting said inking-disk and provided with arms N^3 N^4, a swinging arm O, having pivotal connection with the frame and affording support for said hub N^2, a link O′, connecting the arm N^4 with the machine-frame, and a second link O^2, connecting the arm N^3 with the actuating-arm E, substantially as described.

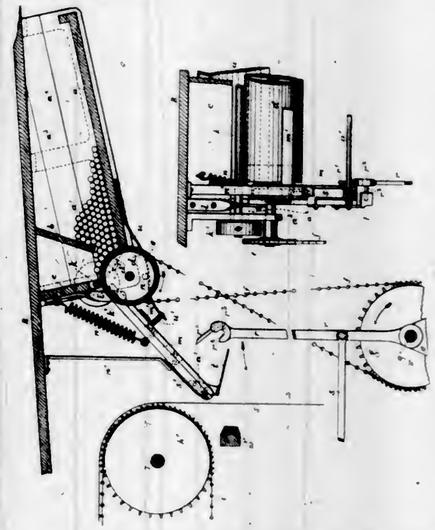
21. The combination, with an inking-disk and a support upon which the disk is mounted and turns, of means for supplying ink to the disk, comprising an ink-receptacle and a passage leading therefrom through said support to the surface of the inking-disk, substantially as described.

22. The combination, with an inking-disk, of means for feeding ink to the same, comprising an ink-receptacle and a tube attached to the receptacle and extending through the disk to the working-face thereof, the end of said tube being flush with the said working-face of the disk, substantially as described.

23. The combination, with an inking-disk and a tubular arm affording pivotal support for the same, of a removable ink-supplying device comprising an ink-receptacle, and a tube attached to the receptacle and extending through said tubular arm and communicating at its end with the working-face of the disk, substantially as described.

24. The combination, with the machine-frame and type-disks, of an oscillating ink-roller and inking-disk, a block or hub N^2, provided with a swinging tubular arm affording pivotal support for said inking-disk, means connected with said block or hub for giving oscillatory motion to the inking-disk, an ink-supplying device comprising an ink-receptacle, and a tube attached to the receptacle and adapted for insertion through said hub and tubular arm, said tube being in communication with the working-face of the disk, and a locking device upon the hub engaging said tube, substantially as described.

449,305. MACHINERY FOR HANDLING PRINTED SHADE FABRICS. JOSEPH N. WIGGIN, Orange, N. J., and JOHN E. RATHBUN, Brooklyn, N. Y., assignors to said Wiggin. Filed July 5, 1890. Serial No. 357,731. (No model.)



Claim.—1. The combination, with a hopper for holding sticks, of a drum located partially within said hopper and grooved longitudinally, mechanism for imparting a partial rotary movement to said drum to engage and deliver one stick at a time, and with mechanism for engaging the respective ends of the sticks and presenting them for receiving in a loop the delivered shade fabric, substantially as set forth.

2. The combination, with a hopper for holding sticks, of a drum located partially within said hopper and having a single longitudinal groove to receive a single stick, an inclined retaining-partition *b*, the end board c, the weighted roller-shaft *k*, and mechanism, substantially as specified, for imparting a forward and backward movement to the drum, substantially as set forth.

3. The combination, with the hopper *a* for holding sticks, the drum *d*, and its operating sprocket-wheel and chain, of the slideways *m*, a spring *n*, and stop *n′* for holding up and limiting the movement of the slideways, pins for intercepting the descent of the sticks, and spring-fingers for stopping and holding the sticks at the lower end of the slideways, and mechanism, substantially as specified, for removing the sticks, substantially as set forth.

4. The combination, with the hopper *a* for sticks and the grooved drum *d*, of the sprocket-wheels *e g* and chain *f*, the arms *r*, having recessed upper ends, the sprocket-wheels and chains for delivering lengths of printed shade fabric, and a rest-block, and mechanism, substantially as specified, for delivering the shade-sticks one at a time from the grooved drum to the arms *r*, substantially as set forth.

5. The combination, with the hopper *a* for sticks and the inclined slideways *m*, of the drum *d*, located partially within the hopper and having a longitudinal groove, the springs *u*, the pins *u'*, working in openings in the slideways, and studs 12 on the respective ends of the drums for depressing the springs and pins, substantially as set forth.

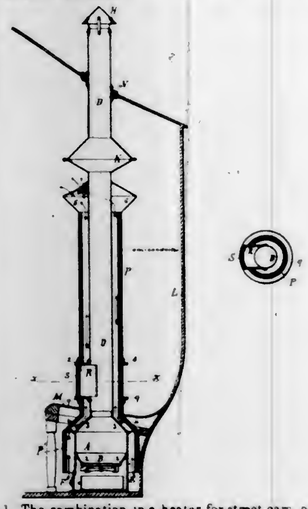
6. The combination, with the hopper *a* for sticks, the grooved drum *d*, and movable arm *r*, and mechanism, substantially as set forth, for moving the parts in unison, of the hangers *l*, the slideways *m*, springs *n*, stops *n'*, the stick-retaining springs *s*, the inclined foot-plates *t*, and the finger or pin r^4, substantially as set forth.

7. The combination, with the hopper *a* for sticks, of a drum located partially within said hopper and having a single longitudinal groove to receive a single stick at a time, the roller or shaft *k*, having slotted bearings and resting adjacent to the drum for insuring the delivery of every stick, and mechanism, substantially as specified, for imparting a rotary reciprocating movement to the drum, substantially as set forth.

8. The combination, with the pivoted slideways *m*, and springs *n* for holding up the same and springs *s* for holding the sticks, of the inclined foot-plates *t*, the arms *r*, the pins r^4 for drawing down the slideways, and projecting fingers *r'* for removing the sticks, substantially as set forth.

9. The combination, with the hopper *a* for sticks and the drum *d*, of the slideways *m*, connected to the hopper, springs *s* at the lower end of the slideway for holding the sticks, the arms *r*, and projecting fingers connected to and operating with the movement of the arms *r* for engaging the sticks and depositing them in the ends of the arms *r*, substantially as specified.

449,306. **CAR-HEATER.** WILLIAM C. BAKER, New York, N. Y., assignor to the Baker Heater Company, same place. Filed Oct. 18, 1888. Serial No. 288,460. (No model.)

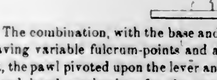


Claim.—1. The combination, in a heater for street-cars, of a fire-pot below the seat and above the floor, with a grate and ash-pit and a contracted upper end to such fire-pot, a flue-pipe rising above the fire-pot and passing through the seat and the roof of the car, a casing around the fire-pot, open at the lower end and also around the smoke-flue, a lining of non-conducting material, there being an air-space between the fire-pot and flue-pipe and said non-conducting lining, and a fuel-supplying opening passing through the casing, lining, and flue-pipe above the seat and a door to said opening, substantially as specified.

2. The combination, in a car-heater, of a fire-pot having a grate and a conical upper end, in combination with the ascending smoke-flue that passes off through the top of the car, a casing surrounding the smoke-flue and forming an annular channel for the ascending heated air, the shield surrounding the fire-pot and connected at the upper part with the lower end of the non-conducting casing, a non-conducting lining to the casing and to the shield for preventing them becoming heated by radiation or the ascending circulating air, and the double truncated conical drum in the smoke-flue to deflect such air laterally within the car, substantially as specified.

3. The combination, in a heater for street-cars, of a fire-pot below the seat and above the floor, with a grate and ash-pit and a contracted upper end to such fire-pot, a flue-pipe rising above the fire-pot and passing through the seat and the roof of the car, a casing around the fire-pot, open at the lower end and also around the smoke-flue, a lining of non-conducting material, there being an air-space between the fire-pot and flue-pipe and said non-conducting lining, a perforated conical upper end to the casing around the flue-pipe, a fuel-supplying opening passing through the casing, lining, and flue-pipe above the seat, and a door to said opening and guides around the casing in which the door is slid, substantially as specified.

449,307. **BINDING-POST FOR ELECTRIC WIRES.** HENRY P. BALL, Brooklyn, assignor to the Edison General Electric Company, New York, N. Y. Filed Dec. 16, 1890. Serial No. 374,880. (No model.)



Claim.—1. A connector consisting of a member having a groove or depression across its face, the sides of the groove being inclined, a second member having inclined or beveled sides corresponding to the inclined sides of the groove, and means for clamping the two members together, substantially as described.

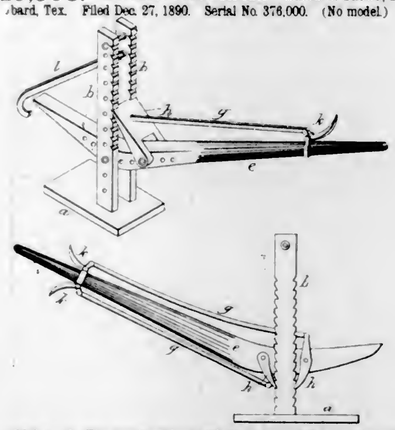
2. A connector consisting of a member having a groove across its face, the sides of the groove being inclined at an angle of substantially forty-five and thirty degrees, respectively, a second member having inclined or beveled sides corresponding to the inclined sides of the groove, and means for clamping the two members together.

3. A connector consisting of a member having a groove or depression across its face, the sides of the groove being inclined, a second member having inclined or beveled sides corresponding to the inclined sides of the groove, and means for clamping the two members together, one of said members having longitudinal movement in relation to the other, substantially as described.

4. A connector consisting of a member having a groove across its face, the sides of the groove being inclined, a second member having inclined or beveled sides corresponding to the inclined sides of the groove and having a length equal to the length of the said groove, and means for clamping the two members together, substantially as described.

5. The combination, with the metal base-plate connected to or adapted to be connected to an instrument or circuit-terminal, said base-plate having a groove across its face, the side of the groove being inclined and having a screw-hole, of a clamping-plate for a wire, the plate having beveled ends and having an elongated screw-hole and a screw passing through said screw-holes, substantially as described.

449,308. **RAILROAD-TRACK LIFTER.** HIRAM D. BROWN, Hubbard, Tex. Filed Dec. 27, 1890. Serial No. 376,000. (No model.)



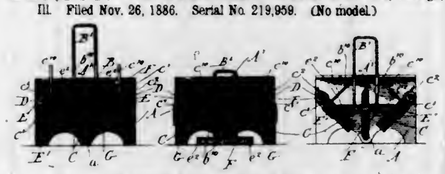
Claim.—1. The combination, with the base and the upright, of the pointed lever having variable fulcrum-points and adjustably mounted upon the upright, the pawl pivoted upon the lever and engaging notches of the upright, and hand mechanism for the operation of the pawl extending to the hand portion of the lever, as set forth.

2. The combination of the base, the upright, the lever, and the two pawls engaging notches of the upright, as set forth.

3. The combination of the base, the upright, the lever, the two pawls, and hand mechanism for operating the pawls, as set forth.

4. The combination of the base, the upright, the lever adjustably mounted upon the upright, the two pawls, and mechanism for operating the pawls, extending back to the hand portion of the lever, as set forth.

449,309. **SELF-INKING STAMP.** CHARLES S. BURTON, Chicago, Ill. Filed Nov. 26, 1886. Serial No. 219,959. (No model.)



Claim.—1. In combination with the frame, the ink-pad holder pivoted to the frame, the axis of its pivot being horizontal, a spring which actuates the pad-holder to rock it about its pivot, and the die-holder reciprocating vertically in the frame and operated upwardly by the ink-pad holder, substantially as set forth.

2. In combination with the frame, the ink-pad holder pivoted thereto and rocked about a horizontal axis, the die-holder reciprocating vertically in the frame past the axis of the pad-holder, a spring actuating the pad-holder and rocking it about its pivot, the pad-holder having a flange c^{9}, which engages the edge of the die-holder, the distance of the pivot of the pad-holder from the path of reciprocation of the proximate edge of the die-holder being greater than the width of the flange, whereby the spring which actuates the pad-holder through said pad-holder actuates the die-holder, substantially as set forth.

3. In combination with the frame and the die-holder reciprocating therein, the ink-pad holder pivoted to the frame and swinging up against the printing-face of the die and having a projection, as the tooth c^{10}, at an angle with the inking-surface engaging the die-holder, substantially as and for the purpose set forth.

4. In combination with the frame and the die-holder reciprocating therein, the two ink-pad holders pivoted on opposite sides of the path of reciprocation of the die-holder and folding up against the printing-face of the die and meeting edge to edge, substantially as set forth.

449,310. **WATCH-MAKER'S PLIERS.** EDWIN E. COBLE, Elizabethtown, Pa. Filed June 10, 1890. Serial No. 354,972. (No model.)



Claim.—1. The combination of a bifurcated jaw and a jaw having a pin, lug, or teat formed on the inner face thereof opposite the slot dividing the ends of the bifurcated jaw, substantially as specified.

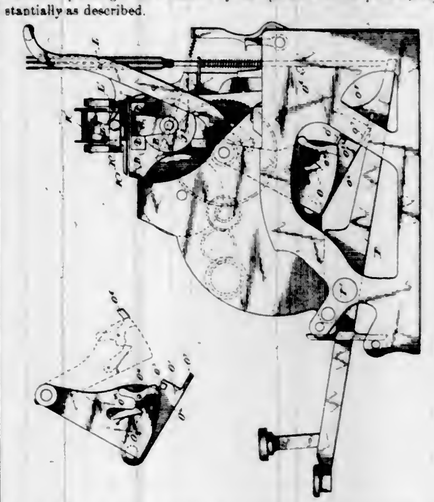
2. In pliers, the combination of a lower bifurcated jaw adapted to take under the hands of a time-piece and embrace the center post thereof, and an upper jaw constructed to hold the hands of said time-piece on the lower jaw as said hands are removed from the center post, substantially as specified.

449,311. **CASH REGISTER, RECORDER, AND INDICATOR.** HUGO COOK, Dayton, Ohio. Filed Nov. 3, 1890. Serial No. 370,100. (No model.)

Claim.—1. In a registering-machine, the combination of a type-wheel, an operating handle or key, a printer co-operating with the type-wheel, and a lock which, after the key has been operated to set the type-wheel, locks said key until the printer is operated to effect the printing and is released by the operation of the printer, substantially as and for the purpose described.

2. In a registering-machine, the combination of a type-wheel, an operating handle or key, a register, a printer co-operating with the type-wheel, and a lock which locks said key after it has been operated to set the type-wheel and prevents another operation of it until the printer is operated to effect the printing and is released by the operation of the printer, substantially as described.

3. In a registering-machine, the combination of a type-wheel, an operating handle or key, a register, an indicator, a printer co-operating with the type-wheel, and a lock which, after the key has been operated to set the type-wheel, locks said key until the printer is operated to effect the printing and is released by the operation of the printer, substantially as described.



4. In a registering-machine, the combination of a type-wheel, an operating handle or key, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during the operation of the key to set the type-wheel, substantially as described.

5. In a registering-machine, the combination of a type-wheel, an operating handle or key, a register, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during the operation of the key to set the type-wheel and register its value, substantially as described.

6. In a registering-machine, the combination of a type-wheel, an operating handle or key, a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel, and a lock which locks the key after it has set the type-wheel and prevents a second operation of it until the printer is operated to do the printing, substantially as described.

7. In a registering-machine, the combination of a type-wheel, a register, an operating handle or key, a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel and register its value, and a lock which locks the key after it has set the type-wheel and prevents a second operation of it until the printer is operated to do the printing, substantially as described.

8. In a registering-machine, the combination of a type-wheel, a series of operating-keys of different values common to said wheel, the operation of any one of which sets said type-wheel at a number representing the value of such key, a printer co-operating with the type-wheel, and a lock which, after the operation of any key to set the type-wheel, locks all of the keys until the printer is operated to print the value of the operated key, substantially as and for the purpose described.

9. In a registering-machine, the combination of a type-wheel, a register, a series of operating-keys of different values common to said wheel, the operation of any one of which sets the type-wheel at a number corresponding to the value of such key and registers such value, a printer co-operating with the type-wheel, and a lock which, after the operation of any key to set the type-wheel and register its value, locks all of the keys until the printer is operated to print the value of the operated key, substantially as described.

10. In a registering-machine, the combination of a type-wheel, a series of operating-keys of different values common to said wheel, the operation of any one of which sets said type-wheel at a number corresponding to the value of such key, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during the operation of the key to set the type-wheel, substantially as described.

11. In a registering-machine, the combination of a type-wheel, a register, a series of operating-keys of different values common to said wheel, the operation of any one of which sets said wheel at a number representing the value of such key, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during

the operation of the key to set the type-wheel and register its value, substantially as described.

12. In a registering-machine, the combination of a type-wheel, a series of operating-keys of different values common to said wheel, the operation of any one of which sets said type-wheel at a number representing the value of such key, a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel, and a lock which locks all the keys after the type-wheel has been set and prevents the operation of any of them until the printer is operated to do the printing, substantially as described.

13. In a registering-machine, the combination of a type-wheel, a register, a series of operating-keys of different values common to the type-wheel, the operation of any one of which sets said wheel at a number representing the value of such key and adds its value on the register, a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel and register its value, and a lock which locks all the keys after the type-wheel has been set and prevents the operation of any of them until the printer is operated to do the printing, substantially as described.

14. In a registering-machine, the combination of a type-wheel, a printer co-operating therewith, and a series of keys of different values common thereto, the simultaneous operation of two of which keys sets said type-wheel at a number representing the sum of their values, substantially as described.

15. In a registering-machine, the combination of a type-wheel, a register, and a series of keys of different values common thereto, the simultaneous operation of two of which keys sets the type-wheel at a number representing the sum of their values and effects the registry thereof, substantially as described.

16. In a registering-machine, the combination of a type-wheel, a register, an operating handle or key whose operation in setting the type-wheel also effects the registry of the number at which the type-wheel is set, a resetting-spring for the type-wheel, and a printer which releases the type-wheel when its number has been printed and permits its spring to restore it to normal position, substantially as described.

17. In a registering-machine, the combination of a type-wheel, a series of keys of different values common to said wheel, the operation of any one of which sets the wheel at a number representing its value, a resetting-spring for the type-wheel, and a printer which releases the type-wheel when its number has been printed and permits its spring to restore it to normal position, substantially as described.

18. In a registering-machine, a spring-impelled motor under the control of the operating-keys, in combination with a type-wheel capable of being connected with and disconnected from said motor, substantially as and for the purpose described.

19. In a registering-machine, a motor, a series of operating-keys, and an escapement mechanism interposed between said keys and motor and regulating the movements of the latter under the operations of the keys, in combination with a type-wheel capable of being connected with and disconnected from the motor, substantially as and for the purpose described.

20. In a registering-machine, the combination of a motor, a series of operating-keys, an escapement mechanism interposed between said keys and motor and regulating the movements of the latter under the operations of the keys, a type-wheel capable of being connected with and disconnected from the motor, and a resetting-spring, against the tension of which the type-wheel is moved by the motor, and which restores said wheel to normal position when it is disconnected from the motor, substantially as described.

21. In a registering-machine, the combination of a motor, a series of operating-keys, an escapement mechanism interposed between said keys and motor and regulating the movements of the latter under the operations of the keys, a type-wheel capable of being connected with and disconnected from the motor, a resetting-spring for the type-wheel, and a printer whose operation disconnects the type-wheel from the motor after the printing is effected and permits the spring to restore it to normal position, substantially as described.

22. In a registering-machine, the combination of a motor-wheel, as I, a toothed wheel, as F, driven thereby, a type-wheel, as A, a detent, as J^7, moving with the type-wheel and co-operating with the toothed wheel, and a resetting-spring for the detent and type-wheel, substantially as and for the purpose described.

23. In a registering-machine, the combination of a motor-wheel, as I, a laterally-movable toothed wheel, as F, geared thereto, a type-wheel, as A, a suitably-supported detent, as J^7, moving with the type-wheel and co-operating with the toothed wheel, a coiled resetting-spring, as J^8, for the detent and type-wheel, and means for moving the toothed wheel laterally to disengage it from the detent, substantially as and for the purpose described.

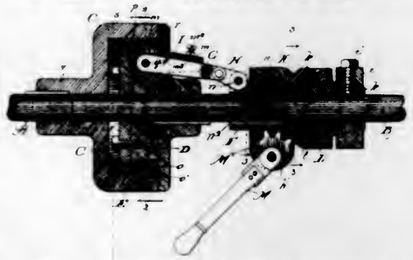
24. In a registering-machine, the combination of the motor-wheel I, the laterally-movable toothed wheel F, geared thereto, the shaft B, the type-wheel A, and the detent J^7, tight upon said shaft, said detent co-operating with the wheel F, the coiled spring J^8, the lever M for shifting the wheel F, the impression-frame co-operating with the type wheel, and the printing-lever L, operating the impression-frame and the shifting-lever M, substantially as and for the purpose described.

25. In a registering-machine, the combination of the impression-frame, its operating-lever L, the operating-keys P, the vibrating bars O', overlying them, and the locking-plate O, moving with the lever L, substantially as and for the purpose described.

26. In a registering-machine, the combination of the operating-keys P and vibrating bar O' with the lever L, locking-plate O, and locking-dog O^4, substantially as and for the purpose described.

27. In a registering-machine, the combination of a type-wheel and an impression-plate, two inking-ribbons passed between them, and a recording-strip passed between the inking-ribbons, the impression-plate and adjacent ribbon being arranged to receive between them a check or ticket, whereby by a single impression the type-numbers may be printed both upon the recording-strip and upon the check or ticket, substantially as described.

449,312. FRICTION-CLUTCH. WILLIAM H. CUMMINGS, Chicago, Ill. Filed Nov. 3, 1890. Serial No. 370,101. (No model.)



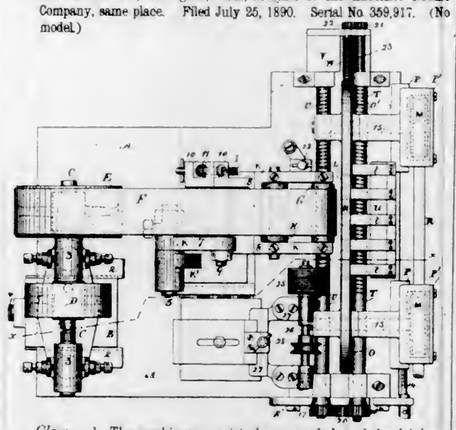
Claim.—1. A friction-clutch comprising, in combination, a wheel provided with an annular inner face, a collar D, supported in the wheel upon a shaft, a divided expansion-ring about the collar normally out of frictional contact with the said annular face of the wheel, its ends forming a recess p' between them, a lever G, fulcrumed at one end on the collar D, a wedge-shaped spreader I, adapted to expand the ring against the said annular face of the wheel, pivoted toward its forward end and extending into the recess p', being supported toward its rear end by the lever G, adjusting means, as the set-screw m^3, for raising and lowering the spreader upon its pivot to govern the extent of its projection beyond the fulcrum of the lever G, and actuating mechanism upon the shaft connected with the lever G for swinging it upon its fulcrum to advance or retract the spreader, whereby frictional contact between the expansion-ring and wheel may be produced or released at will, substantially as described.

2. A friction-clutch comprising, in combination, a wheel provided with an annular inner face, a collar D, supported in the wheel upon a shaft, a divided expansion-ring about the said collar normally out of frictional contact with the said annular face of the wheel, its ends forming between them a recess p', a sliding collar F on the shaft, provided with annular teeth n, a spreader connected with the sliding collar and adapted to enter the said recess to expand the ring against the said annular face of the wheel, and an actuating-lever M for the collar F, fulcrumed upon the shaft, to be non-rotary therewith, but held against longitudinal movement thereon, and provided with a head M', having teeth which engage the annular teeth n of the collar, whereby movement of the lever moves the collar F and spreader, and whereby frictional contact between the expansion-ring and wheel may be produced or released at will, substantially as described.

3. A friction-clutch comprising, in combination, a wheel provided with an annular inner face, a collar D, having a recess q^3, supported in the wheel upon a shaft, a divided expansion-ring about the said collar normally out of frictional contact with the said annular face of the wheel, its ends forming a recess p' between them in line with the recess q^3, a lever G, pivoted in the recess q^3, a spreader I, also pivoted in the recess q^3 and movable with the lever G and having a wedge-shaped head m extending into the recess p' and adapted to expand the ring into frictional contact with the said annular face of the wheel, and actuating mechanism upon the shaft for turning the lever G and spreader upon their pivots, substantially as and for the purpose set forth.

4. A friction-clutch comprising, in combination, a wheel provided with an annular inner face, a collar D, having a recess q^3, supported in the wheel upon a shaft, a divided expansion-ring about the said collar normally out of frictional contact with the said annular face of the wheel, its ends forming a recess p' between them in line with the recess q^3, a lever G, pivoted in the recess q^3, a spreader I, also pivoted in the recess q^3, having a body portion m' extending along the lever and adjustable toward and from the same, and a wedge-shaped head m, extending into the recess p' and adapted to expand the ring into frictional contact with the said annular face of the wheel, and actuating mechanism upon the shaft for turning the lever G and spreader upon their pivots, substantially as and for the purpose set forth.

449,313. MACHINE FOR POLISHING NEEDLE-POINTS. WILLIAM H. DAYTON, Torrington, Conn., assignor to the Excelsior Needle Company, same place. Filed July 25, 1890. Serial No. 359,917. (No model.)



Claim.—1. The combination, with the emery-belt and the driving-pulley E for the same, of the two rolls G and H, around which the belt passes, the compound lever K, pivoted at 5 and supporting the rolls G and H, means for adjusting the angle of the second joint or arm of the lever to the first, and means, substantially as specified, for supporting and rotating the needle-blanks while being acted upon by the emery-belt, substantially as set forth.

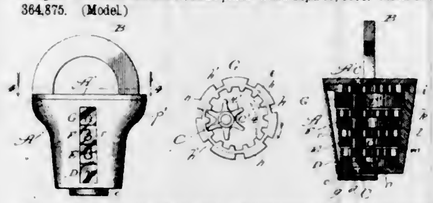
2. The compound lever K, having arms 7 and 8, in combination with the wheel I upon the joint 9, the screw-pinion 11 and its supporting-lugs for varying the position of the second joint to the first arm of the compound lever, the emery-belt F, the driving-pulley D, and the rolls G and H upon the compound lever, substantially as set forth.

3. The combination, with the emery-belt, the driving-pulley, the compound lever, and the belt-rolls supported by the same, of the endless belt N, belt-wheel, adjustable stocks, driving-shaft, and screw-pinions and wheels for giving motion to the endless belt, substantially as set forth.

4. The combination, with the feed-screws T and U, of the table V, a supply-screw W, and the rest L for the needles at the end of the supply-screw, substantially as and for the purposes set forth.

5. The combination, with the feed-screws T and U, the table V, and supply-screw W, of the rest L for the needles at the end of the supply-screw W, the endless belt N above the rest for the needle-blanks, the wheels and mechanism for driving the endless belt, a trough and springs for pressing the endless belt upon the needle-blanks, and an emery-belt and its driving-pulley and rolls for acting upon the points of the needle-blanks, substantially as set forth.

449,314. INDICATOR-LOCK. JOSEPH M. EDGAR, Kansas City, Mo., assignor to John Z. Rorsback, same place. Filed Sept. 13, 1890. Serial No. 364,875. (Model.)



Claim.—1. In an indicator-lock, the combination, with a suitable case and a bolt, of rings supported one above the other and independently revoluble in the case and provided on their inner sides with teeth t, differing in number on the respective rings, and externally with characters, a pinion for each ring, supported eccentrically within the series of rings in engagement with the teeth t and accessible to permit rotation thereof and thereby produce rotation of the rings from without the case, and means, substantially as described, for locking the bolt, substantially as and for the purpose set forth.

2. In an indicator-lock, the combination of a case A, provided internally with seats arranged one above the other, a bolt, rings supported and independently revoluble on the seat and provided on their inner sides with teeth t, differing in number on the respective rings, and externally with characters, a pinion for each ring supported eccentrically within the series of rings in engagement with the teeth t and accessible to permit rotation thereof and thereby produce rotation of the rings from without the case, and means, substantially as described, for locking the bolt, substantially as and for the purpose set forth.

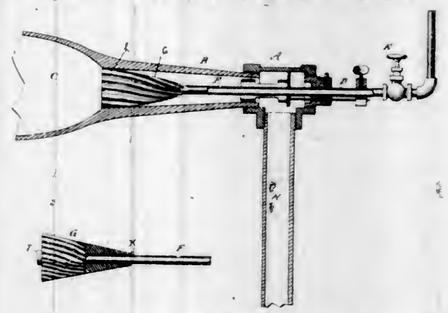
3. In an indicator-lock, the combination, with a suitable case and a bolt, of rings supported one above the other and independently revoluble in the case and provided on their inner sides with teeth t, differing in number on the respective rings, and externally with characters, a pinion for each ring supported eccentrically within the series of rings in engagement with the teeth t and accessible to permit rotation thereof and thereby produce rotation of the rings from without the case, means, substantially as described, for locking the bolt, and a stop for preventing backward turning of the rings, substantially as and for the purpose set forth.

4. In an indicator-lock, the combination, with a case A, having a bolt B, of rings supported one above the other and independently revoluble in the case and provided on their inner sides with teeth t, differing in number on the respective rings, and externally with characters, the outermost ring forming a tumbler to engage and lock the bolt, a pinion-shaft C, journaled in the case to extend eccentrically through the rings and having pinions C' engaging the teeth t, and a stop for preventing backward turning of the rings, substantially as and for the purpose set forth.

5. An indicator-lock comprising, in combination, a case A, having a bolt B, rings supported one above the other and independently revoluble in the case and provided on their inner sides with teeth t, differing in number on the respective rings, and externally with characters, the outermost ring having a notched flange h to engage and lock the bolt, a pinion-shaft C, journaled in the case to extend through an end thereof and eccentrically through the rings and having pinions C' engaging the teeth t, a key-seat in the exposed said end of the shaft C, and a stop for preventing backward turning of the rings, substantially as and for the purpose set forth.

6. An indicator-lock comprising, in combination, a case A, having a bolt B, rings supported one above the other and independently revoluble in the case and provided on their inner sides with teeth t, differing in number on the respective rings and externally with characters, the outermost ring having a notched flange h to engage and lock the bolt, a pinion-shaft C, journaled in the case to extend through one end thereof and eccentrically through the rings and having pinions C' engaging the teeth t, a key-seat in the exposed said end of the shaft C, a permeable shield d, secured to cover the said key-seat, and a stop for preventing backward turning of the rings, substantially as and for the purpose set forth.

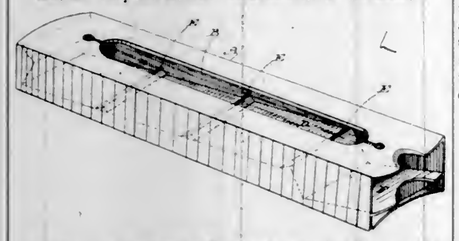
449,315. HYDROCARBON-BURNER. BYRON H. ELWOOD, Fort Plain, N. Y. Filed Aug. 8, 1889. Serial No. 320,074. (No model.)



Claim.—In a hydrocarbon-burner, the combination, with a casing having an air-inlet pipe, of a burner proper comprising a tube secured at one end to the said casing and carrying at its other end a bell-shaped mouth, an oil-pipe passing through the inner end of said casing into the said burner-tube, and a flaring grooved spool or head located at the extremity of the oil-pipe, supported thereby, and extending along

the said burner-tube to the inner end of the bell-shaped mouth and receiving oil from said oil-pipe, substantially as shown and described.

449,316. CARD-SHUFFLER. EDWIN FALKINGHAM, San Francisco, Cal. Filed Nov. 20, 1890. Serial No. 372,079. (No model.)



Claim.—1. A device for shuffling cards, consisting of a case within which the cards may be allowed to slide from end to end, said case having an inclined floor provided with V-shaped obstructions for periodically checking the passage of the cards, substantially as herein described.

2. A device for shuffling cards, consisting of a case having the V-shaped obstructions fitted to the bottom at intervals between the ends, and the V-shaped end piece against which the cards strike when allowed to slide to the end of the case, substantially as herein described.

3. A card-shuffling device consisting of a case having the bottom inclined, with transverse obstructing strips fixed across it, as shown, an opening at one end for the introduction of the cards, and an incline F extending from this opening to the base of the first obstruction, substantially as herein described.

449,317. METALLIC FENCE-POST. HERMANN FISCHER, Prairieville, Ill. Filed Aug. 21, 1890. Serial No. 362,575. (No model.)



Claim.—1. The combination of the tube A and the tapered plug B, provided with the reduced end C and external annular recess D, and a series of short additional tubes or sleeves E around the lower end of the post, the interior diameter of the inner sleeve being such as to pass over the part A from the top, and the diameter of each succeeding sleeve being such as to pass over the preceding one, substantially as shown, and for the purpose described.

2. The combination, in a fence-post, of a tube A, a pointed plug B, secured in its lower end, of the same diameter as the post, and a sleeve surrounding the post of such a length as to extend from the surface of the ground to the lower end of the post, said sleeve being adapted to be driven down over the post and force the earth outwardly therefrom and increase the area of the resisting-surface of the post from the surface of the ground to the bottom of the post, substantially as described.

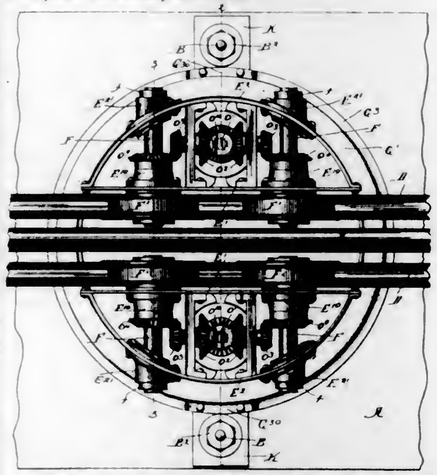
449,318. TRUCK FOR SUSPENDED CARS. ROBERT C. FORSYTH, Chicago, Ill. Filed Dec. 26, 1890. Serial No. 375,766. (No model.)

Claim.—1. In an overhead truck for a suspended car, the upright axle-pillars located at the opposite or remote sides of the track and extending up past the same, the wheel-axles journaled in said pillars, and the wheels at the inner ends of the axles, respectively, between the pillars and overhanging the rails, substantially as set forth.

2. In an overhead truck for a suspended car, upright axle-pillars located at the opposite or remote sides of the track and extending up past the same, the wheel-axles journaled in said pillars, the wheels at the inner ends of the axles between the pillars overhanging the rails and provided with flanges at their edges remote from the pillars, respectively, substantially as set forth.

3. In an overhead truck for a suspended car, axle-pillars located at opposite or remote sides of the track and connected together by a rigid cross-neck below the track and extending up past the track, the wheel-axle journaled in said pillars, and the wheels at the inner ends of the axles between the pillars overhanging the rails and provided with flanges at their edges remote from the pillars, respectively, the width of said flanges being greater than the vertical play between the cross-neck and the under side of the track, whereby the wheels are prevented from jumping the track, substantially as set forth.

4. In an overhead truck for a suspended car, the upright axle-pillars located at the opposite or remote sides of the track and extending up past the same, said pillars being in the form of cylindrical segments with their bases facing each other, the axles journaled in said pillars, respectively, transversely to the segmental bases and having the wheels at their inner ends between such bases and provided with stops outside the pillars at the opposite ends from the wheels, whereby lateral movement of the car tending to cause longitudinal movement of the axles with respect to the pillars is resisted by the horizontally-arched walls of the pillars, substantially as set forth.



5. In an overhead truck for a suspended car, the upright axle-pillars located at the opposite or remote sides of the track and extending up past the same, said pillars being in the form of segments of a vertical cylinder and having their bases facing each other, the wheel-axles journaled in said pillars transversely to said bases and having stops outside the pillars against the base and curved side, respectively, whereby longitudinal movement of the axles in said pillars is prevented, the wheels at the inner side of said axles between the bases of the pillars overhanging the track and provided with flanges on their edges remote from their pillars, respectively, substantially as set forth.

6. In combination with the axle-supporting pillars, the axles journaled therein at the upper part having the wheels at their inner ends between the pillars in position to overhang the track, and having at the lower end an annular flange projecting horizontally, an annulus having a flange which overhangs said annular flange of the pillars, said flanges having corresponding annular grooves in their surfaces facing each other, and balls located in said grooves constituting rolling-bearings between said flanges, and the car suspended from said annulus, substantially as set forth.

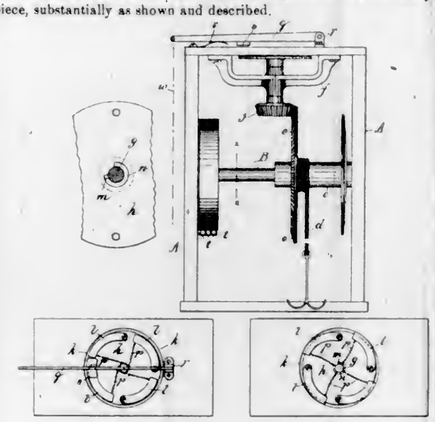
7. In combination with the truck, the rods B, suspended therefrom, the springs C, suspended on the lower ends of the rods, the car supported by said springs, and the buffer-springs M M, interposed between the top of the car and the truck, substantially as set forth.

8. In combination with the truck, the rods B, suspended therefrom loosely, springs C, suspended on the lower ends of the rods, the car supported by the springs, the springs M M, arranged in a circle about the vertical axis of the truck and interposed between said truck and the top of the car, substantially as set forth.

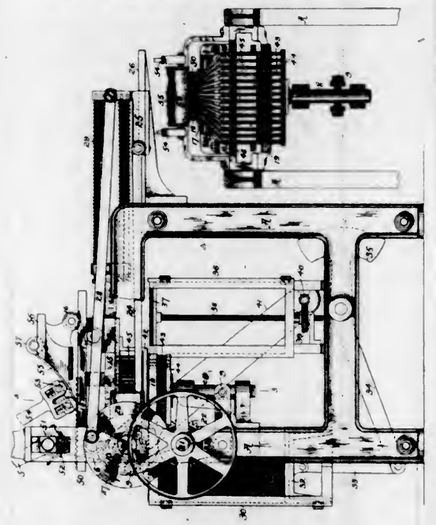
449,319. FIRE-ESCAPE. GEORGE F. GOLDTHWAIT, Somerville, Mass. Filed July 9, 1890. Serial No. 358,149. (No model.)

Claim.—1. A fire-escape having a drum or spool for the rope, a main shaft operated when the drum is revolved, a secondary shaft geared to said main shaft, a regulator device on said secondary shaft, consisting of a disk secured thereon and having a movement relative thereto, said disk having pivoted arms thereon, a stationary piece co-operating with said arms, chains connecting the free ends of said arms with said secondary shaft, and an additional brake device and means for operating the same, whereby the operation of the mechanism may be stopped or its movement controlled, for the purposes and substantially as shown and described.

2. A regulator device for fire-escapes, consisting of the combination, with a shaft which is operated when the drum which holds the rope is revolved, of a disk secured thereto and having a movement relative thereto, said disk having pivoted arms thereon, a stationary piece co-operating therewith, and chains connecting the free ends of said arms with the said shaft, whereby as the movement of said shaft is reversed the arms will be held out of contact with the stationary piece, substantially as shown and described.



449,320. ADDRESSING-MACHINE. CHARLES E. HADLEY, New York, N. Y. Filed Nov. 22, 1890. Serial No. 372,311. (No model.)



Claim.—1. The combination, with a plurality of type-carriers, each bearing a like series of characters, of a previously-perforated card, a plurality of series of plungers coacting therewith and adapted to pass through the perforations of the card to determine the position of the type-carriers, inking mechanism for the characters, and an impression-block, substantially as described.

2. The combination, with a plurality of type-carriers, each bearing a like series of characters, and a reciprocating carriage common to said type-carriers for moving the same, of a previously-perforated card, a plurality of series of plungers coacting therewith and adapted to pass through the perforations of the card to limit the movement imparted to the type-carriers, inking mechanism for the characters, and an impression-block, substantially as described.

3. The combination, with a plurality of type-carriers, each bearing a like series of characters, a reciprocating carriage for moving the type-carriers, and yielding connections between said carriers and the carriage, of a previously-perforated card, a plurality of series of plungers coacting therewith and adapted to pass through the perforations of the card to limit the movement of the type-carriers, inking mechanism for the characters, and an impression-block, substantially as described.

4. The herein-described series of type-carriers rigid throughout their length, each carrier provided with a supplemental bar connected thereto at various angles, whereby the carriers may lie contiguous to one another while the supplemental bars are spread apart.

5. The combination, with a type-carrier bearing a series of characters, of a reciprocating carriage for moving the type-carrier, its connecting-bar 29, and intermediate springs, said connecting-bar having a head to return the type-carrier positively to its normal position, substantially as described.

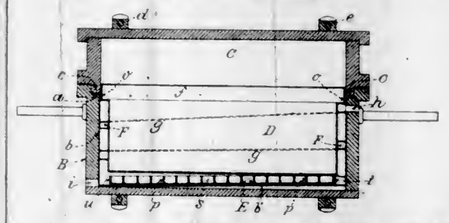
6. The combination, with a plurality of type-carriers, each bearing a like series of characters, a plurality of series of intermediate plungers, and another plurality of series of plungers in alignment with the other series of plungers, a previously-perforated card adapted to be interposed between the two series of plungers, inking mechanism for the characters, and an impression-block, substantially as described.

7. The combination, with a plurality of type-carriers, each bearing a like series of characters, of a receptacle for a stack of previously-perforated cards, an automatic feeder for said cards, a plurality of series of plungers coacting with each card and adapted to pass through the perforations of the card to determine the position of the type-carriers, inking mechanism for the characters, and an impression-block, substantially as described.

8. The combination, with a plurality of type-carriers, each bearing a like series of characters, of a receptacle for a stack of perforated cards, an automatic feeder for moving the cards one by one into operative position, a plurality of series of intermediate plungers, and another plurality of series of plungers, between which the cards are fed, inking mechanism for the characters, and an impression-block, substantially as described.

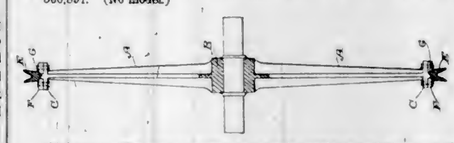
9. The combination, with a plurality of type-carriers, each bearing a like series of characters, of a previously-perforated card, a plurality of series of plungers coacting therewith to determine the position of the type-carriers, inking mechanism for the characters, an impression-block, and a pair of carrying and supporting guards, substantially as described.

449,321. VAT AND CHURN. JAMES HANSEN, Delavan, Wis. Filed Apr. 11, 1890. Serial No. 347,559. (No model.)



Claim.—The herein-described apparatus for making butter, the same consisting of a churn-box B, having an inside lining *b*, with an inclined bottom *b'*, a removable cover C for said box, a cream-vat D, contained within the latter and spaced from the sides and bottom thereof, an inclined strip *g*, contained in the side spaces thus formed and adapted to convey water introduced through an orifice *h* in said churn-box around the vat, and a water-pan E, resting on said inclined bottom lining *b'* and adapted to receive water from said inclined strip *g* and lead it through a tortuous channel formed by partitions P, discharging through an orifice *f* in the lower portion of the churn-box, all arranged and adapted to operate in the manner and for the purpose described.

449,322. SECTIONAL ROPE-SHEAVE. JAMES W. HARRIS and THOMAS J. THOMAS, San Francisco, Cal. Filed Oct. 2, 1890. Serial No. 366,891. (No model.)

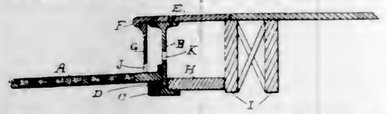


Claim.—1. The improvement in wheels consisting of the central hub with the radial arms, the transversely-projecting lugs at the outer ends of the arms, a wheel-rim formed in sections, provided with similar transverse lugs adapted to fit upon said arms, bolts passing through holes in the lugs, so as to secure the rim-sections to the arms, and cen-

rally-disposed ribs upon the ends of the arms and a corresponding groove in the rim to fit said ribs, substantially as herein described.

2. In a wheel composed of a central hub and radial arms and independent rim-sections, the lugs upon the ends of the arms, corresponding lugs upon the rim-sections, and bolts by which they are secured together, and the supplemental lugs I upon the abutting ends of the rim-sections, with holes and bolts whereby they are secured together, substantially as herein described.

449,323. CONSTRUCTION OF BUILDINGS. PETER H. JACKSON, San Francisco, Cal. Filed Dec. 23, 1890. Serial No. 375,633. (No model.)

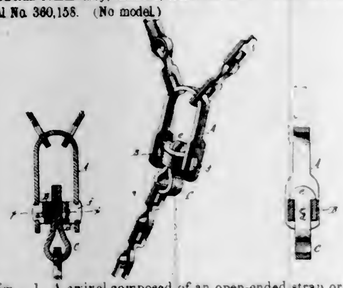


Claim.—1. In a building, the beam extending parallel with the front, forming an offset between the cover of the area-way and the sidewalk, with a flange at the bottom, the illuminating-tiles or sidewalk supported directly upon the outer bottom flange of said beam, and the inclined or tapering filling-piece interposed between the sidewalk and the beam-flange, substantially as herein described.

2. In a building, the beam extending parallel with the building-front, having the bottom flange, a sidewalk or illuminating-tiles, the inner-edge of which is supported directly upon the outer bottom flange of the beam, a filling-piece interposed between the flange and the sidewalk to form a support for the latter and tapered to correspond with the grade of said sidewalk, together with the riser fitting between the sidewalk and the nosing of the area-cover, substantially as herein described.

3. In a building, the beam lying parallel with the building-front, forming the offset between the cover of the area-way and the sidewalk, a bottom flange projecting outwardly from said beam, upon which the inner edge of the sidewalk is supported, with an intermediate filling-piece tapered to correspond with the grade of the sidewalk, a correspondingly-tapered riser extending from the sidewalk surface to the area-cover between the beam and the nosing of the area-cover, perforations made between the riser, and corresponding perforations made through the web of the beam, substantially as herein described.

449,324. SWIVEL. HARRY E. KELLEY, Niagara Falls, assignor to the Oneida Community, Limited, Kenwood, N. Y. Filed July 28, 1890. Serial No. 360,158. (No model.)



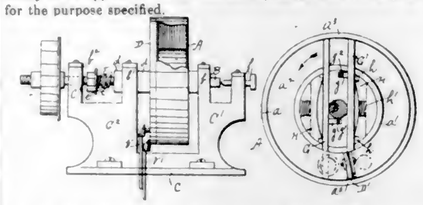
Claim.—1. A swivel composed of an open-ended strap or link, a split or divided collar formed separate from the strap and secured between the ends of the strap in apertures therein, and a loop having a neck swiveled in the collar and a head formed integrally with said neck, substantially as set forth.

2. The combination, with a link or strap having its ends provided with openings, of a divided eye or collar having lugs secured in the openings of the link and a loop swiveled in said eye, substantially as set forth.

449,325. ROTARY ENGINE. WITMER J. KENDIG, Lancaster, Pa. Filed Apr. 7, 1890. Serial No. 346,860. (No model.)

Claim.—1. The combination, with a cylindrical steam-chest, of a cylinder located in the steam-chest and forming a steam-passage about the wall of the steam-chest, the said cylinder having two slots cut entirely across the same, a plate located in each of said slots, and mechanism whereby the said plates are moved entirely across said steam-chest, to alternately close opposite sides of the steam-passage, substantially as specified.

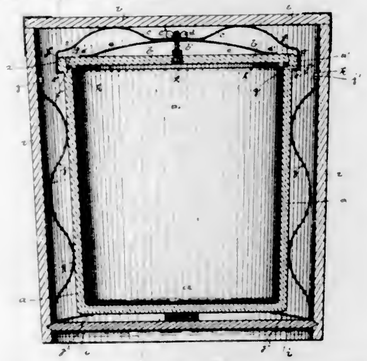
2. The combination, with a cylindrical steam-chest, of a closing-plate having an eccentrically-shaped groove formed therein, a cylinder located in the steam-chest and forming a steam-passage about the wall of the steam-chest, the said cylinder having two slots cut entirely across the same, a plate operating in each of said slots, and spindles secured to said plates and constructed to engage in the groove in the closing-plate, the movement of the spindles in said groove being adapted to force said plates successively entirely across said steam-chest, to alternately close opposite sides of the steam-passage, substantially as and for the purpose specified.



3. The combination, with a cylindrical steam-chest, of a closing-plate having an eccentrically-shaped groove formed therein, a cylinder located in the steam-chest and forming a steam-passage about the wall of the steam-chest, the said cylinder having two slots cut entirely across the same on opposite sides of and equidistant from the center, a plate operating in each of said slots, wings formed on the inner sides of the plates, and spindles located on the wings on a median line between the plates and constructed to engage in the groove in the closing-plate, the movement of the spindles in said groove being adapted to force said plates successively entirely across said steam-chest, to alternately close opposite sides of the steam-passage, substantially as and for the purpose specified.

4. The combination, with a sliding plate having spindles formed thereon, of the closing-plate D, having a recess formed therein, a filling-plate R, adapted to fit said recess and having a portion thereof cut away to form a recess, and a plate r', of less size but of the same shape as the recess in the plate R, fitted into said recess so as to form a groove between the sides thereof and the sides of the recess in the plate R, all constructed and operating substantially as and for the purpose specified.

449,326. BUTTER-JAR. JOHN W. KENNEDY, Des Moines, Iowa, and BRADNER L. HARRIS, Pittsburg, Pa., assignors, by direct and mesne assignments, to John W. Kennedy, trustee. Filed Dec. 23, 1890. Serial No. 375,599. (No model.)



Claim.—1. A jar or pail having a clamping-band engaging with the upper edge of said jar on opposite sides thereof, said clamping-band being secured to the lid of said jar, and an auxiliary spring interposed between said clamping-band and the upper face of said lid, said auxiliary spring being adapted to be turned at any angle with relation to said clamping-band, substantially as and for the purposes set forth.

2. A jar having a clamping-band engaging with the upper edge of said jar at opposite sides thereof, a bolt secured to the lid of said jar and engaging with the said clamping-band, and an auxiliary spring engaging with said bolt and interposed between said clamping-band and the upper face of the lid, substantially as and for the purposes set forth.

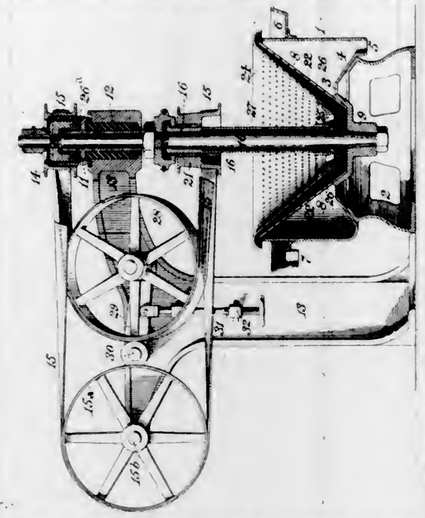
3. A jar having a clamping-band engaging with an annular flange on the upper edge of said jar, a bolt secured to the lid of said jar and engaging with said clamping-band, an auxiliary spring engaging with said bolt, said auxiliary spring being interposed between the primary clamping-band and the upper face of the lid, and a thumb-nut upon said bolt for regulating the tension of said spring-bands, substantially as and for the purposes set forth.

4. A jar having a clamping-band engaging with an annular flange formed around the upper edge of said jar, a bolt secured to the lid of said jar, said bolt engaging with the said clamping-band, an auxiliary spring interposed between said clamping-band and the upper face of the lid, an annular seat or recess formed around the mouth of said jar, and a gasket fitting in said recess, substantially as and for the purposes set forth.

5. A jar having a clamping-band engaging with an annular flange formed around the upper edge of said jar, a bolt secured to the lid of said jar, said bolt passing through said clamping-band and through an auxiliary spring interposed between said clamping-band and the lid, an annular seat or recess formed around the mouth of said jar, a gasket fitting therein, and a depending flange on said lid and extending below the gasket, substantially as and for the purposes set forth.

6. A jar having a clamping-band engaging with an annular flange formed around the upper edge of said jar, a bolt secured to the lid of said jar, said bolt passing through said clamping-band and through an auxiliary spring interposed between said clamping-band and the lid, an annular seat or recess formed around the mouth of said jar said annular seat or recess having a rounded groove therein and a rounded gasket fitting in said groove, and a depending flange on said lid and extending below said gasket, substantially as and for the purposes set forth.

449,327. CENTRIFUGAL MACHINE. HUGH W. LAFFERTY, Wilmington, Del. Filed June 20, 1890. Serial No. 356,066. (No model.)

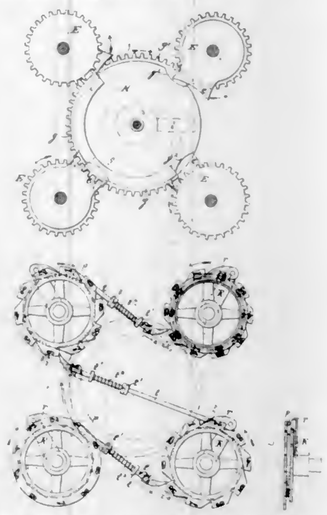


Claim.—1. In a centrifugal machine, the combination of an outer casing, a conical separating drum or basket and a conical receiving-vessel secured concentrically upon independent shafts within the casing, a cone-pulley fixed upon the shaft of the receiving-vessel, a pulley fixed upon the shaft of the separating-basket, an idle-pulley rotating in an arm pivoted to a fixed standard, and a driving-belt passing around said idle-pulley and around the pulleys of the shafts of the receiving-vessel and separating-basket, substantially as set forth.

2. In a centrifugal machine of the class herein described, the combination of an arm pivoted to a fixed standard, an idle-pulley journaled in the free end of said arm, an adjusting-stem coupled to said arm, and a driving-belt passing around the idle-pulley and around a cone-pulley and a plain pulley fixed, respectively, on the two shafts of the machine, these members being combined for joint operation in effecting coincident variation of speed of one of the driven shafts and maintenance of normal tension of the driving-belt, substantially as set forth.

449,328. CASH REGISTERING AND INDICATING MACHINE. MATTHIAS R. LONGACRE, Philadelphia, Pa., assignor to the Longacre Company, Limited, same place. Filed May 15, 1890. Serial No. 351,894. (No model.)

Claim.—1. In an indicating and registering machine, the combination of two or more indicators and two or more corresponding registering-wheels with a driving-gear device common to the said registering-wheels, and having a movement first in one direction and then in the reverse direction, and adapted to operate the registering-wheels on both of said movements, as and for the purpose set forth, and means to actuate the said driving-gear device.



2. In an indicating and registering machine, the combination of two or more indicators and two or more corresponding wheels with a driving gear-wheel common to the said registering-wheels, and having a movement first in one direction and then in the reverse direction, and adapted to operate the registering-wheels on both of the said movements, as and for the purpose set forth, and a cash-drawer or other handled device to impart a positive motion to the said driving-wheel.

3. Two or more indicating mechanisms having movable indicators and a series of keys determining their extent of movement and registering-wheels to correspond with the indicators, in combination with a driving gear-wheel common to the several indicating and registering mechanisms and a cash-drawer or other handled device positively moving the said driving-wheel first in one direction to make a part of the registries and then in the reverse direction to make the remainder of the registries.

4. The combination of two or more indicating mechanisms with movable indicators, and sets of controlling-keys determining their extent of movement and having corresponding registering-wheels, and a driving-gear device common to the said indicators and registering-wheels, and moving first in one direction and then in the reverse direction, and adapted to make indications on one of these movements and to operate the corresponding registering-wheels part in one and part in the other of these movements, as and for the purpose set forth, and means to operate the driving-gear device.

5. The combination of two or more registering-wheels, each having an operating-wheel, with a common driving-wheel having one or more racks to gear with the said several operating-wheels, each rack being adapted to rotate two of said operating-wheels in succession.

6. The combination of two or more indicating-wheels, each having a corresponding registering-wheel and an operating-wheel, with a common driving-wheel to gear with the said several operating-wheels and rotate them first in one direction to make indications and part of the corresponding registries and then in the reverse direction to return the indicating parts to their normal positions and make the remaining registries.

7. The combination of two or more indicating-wheels, each having a corresponding registering-wheel and an operating-wheel therefor, with a common driving-wheel to gear with the several operating-wheels, and having a movement first in one direction and then in the other, and operating some of the registering-wheels on one of the movements and some on the other, and devices for transmitting motion from one such registering-wheel to another.

8. The combination of two or more indicating-wheels, each having a corresponding registering-wheel and an operating-wheel, with a common driving-wheel having one or more racks to turn some of the operating-wheels at different times, and a safety device, substantially as described, to lock one or more of the operating-wheels while the driving-wheels rotate the others.

9. The combination of two or more indicating mechanisms and a common driving gear-wheel therefor with a ratchet-wheel moving with the said driving-wheel, a pawl adapted to engage with the said ratchet-wheel and means to disengage it at the end of the movement of the driving-wheel in making an indication, and a cash-drawer or other handled device to move the driving-wheel.

10. The combination of two or more movable indicators, operating wheels therefor, and a series of controlling-keys determining the extent of movement of the indicators, and a common driving-wheel for the said operating-wheels with a ratchet-wheel moving with the said driving-wheel, and a pawl adapted to be engaged with the said ratchet-wheel on the operation of a key and to be disengaged at the end of the movement of the driving-wheel in making an indication.

11. The combination of two or more indicating and registering mechanisms, each having a series of controlling-keys determining the extent of movement of its indicator, and a common driving-wheel for the indicators and corresponding registering-wheels with a ratchet-wheel moving with the said driving-wheel and a pawl adapted to be engaged with the ratchet-wheel on the operation of a key and to be disengaged at the end of the movement of the driving-wheel in making an indication.

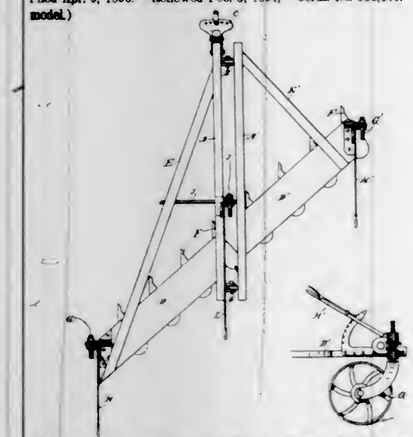
12. The combination of two or more indicating mechanisms, each having a series of controlling-keys determining the extent of movement of its indicator, an operating-wheel therefor, and a driving-wheel common to the several operating-wheels with a rachet-wheel moving with the said driving-wheel, a pawl pivoted to the frame, a wheel controlling the engagement of the pawl with the said ratchet-wheel operated by the keys of any system, and with an arm to disengage the pawl when the driving-wheel completes its movement in making an indication, all substantially as described.

13. Two or more indicating-wheels and corresponding registering-wheels, and an operating-wheel to move the said indicators and their corresponding registry-wheels, in combination with a common driving-wheel adapted to gear with the several operating-wheels to move the said indicators and make corresponding registries in part when the indicators are moved to make their indications and in part when the various parts are returned to their normal positions, and a drawer or other handled device to operate the said driving-wheel.

14. The combination of indicating and registering mechanisms with a driving-shaft therefor having a pinion and a cash-drawer having a rack to gear into the said pinion, but out of gear therewith when the drawer is entirely closed.

15. The combination of indicating and registering mechanisms with a driving-shaft therefor having a pinion, and a cash-drawer having a rack, and a safety device, substantially as described, to lock the shaft as its pinion passes out of gear with the rack, all substantially as described.

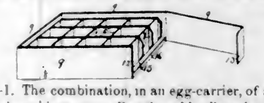
449,329. GANG-PLOW. JAMES PATERSON and WILLIAM PATERSON, Stockton, assignors to the Benicia Agricultural Works, Benicia, Cal. Filed Apr. 9, 1890. Renewed Feb. 3, 1891. Serial No. 380,079. (No model.)



Claim.—1. A gang-plow comprising the two triangular sections having the parallel adjacent sides united together by hinges, the rear sides standing at an angle or inclination with the central timbers and in line with each other and having plows secured thereto, a fixed support or attachment for the front end of the plow-frame, and the central and exterior bearing-wheels for the rear and plow-beam, substantially as herein described.

2. A gang-plow consisting of the two triangular frames having their adjacent parallel timbers hinged together, the rear timbers forming a plow-beam fixed diagonally across the hinged timbers so as to stand in line with each other, an adjustable clevis forming a rigid connection with the engine or source of power at the front of the frame, wheels journaled upon axles at the outer ends of the plow-beams and between the hinged timbers of the frame, respectively, and levers whereby said axles may be turned so as to raise or depress either end from the center of the frame independently, substantially as herein described.

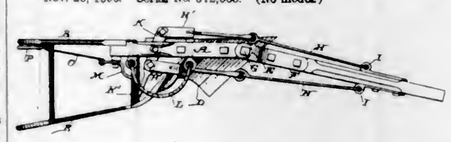
449,330. EGG-CARRIER. THEODORE E. PERKINS, Tunkhannock, Pa. Filed Aug. 1, 1890. Serial No. 360,724. (No model.)



Claim.—1. The combination, in an egg-carrier, of a series of egg-carrying cells, box sides surrounding the said cells and projecting above and below their level, and a top and bottom, each provided with a flange and adapted to fit within the said sides and to be secured thereto flange outward, substantially as described.

2. The combination, in an egg-carrier, of a series of cells adapted to closely inclose one egg each, a top and bottom therefor, and side surrounding the said cells, top and bottom, and projecting above the body of the top and below the body of the bottom and fastened to both, substantially as described.

449,331. PLOW. GEORGE W. PHINNEY, Guerneville, Cal. Filed Nov. 20, 1890. Serial No. 372,083. (No model.)



Claim.—1. A plow having the beam jointed so that the front end may turn about a vertical axis with relation to the rear portion, a lever fulcrumed to turn in a horizontal plane upon the rear portion of the beam, flexible connections extending from the opposite ends of said lever to corresponding sides of the front and movable portion of the beam, and a device for holding the lever so that the beam may be turned to either side and maintained at an angle with the rear portion, substantially as herein described.

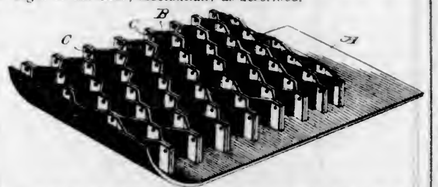
2. In a plow, the beam having a joint in its length about which the front portion may be turned from side to side, a lever fulcrumed to the rear portion of the beam so as to turn in a horizontal plane, jointed or flexible rods having the front ends connected with opposite sides of the front portion of the plow-beam and the rear ends connected with corresponding ends of the lever, and a movable latching device adapted to engage the lever so that the front end of the beam may be turned to either side by the movement of the lever and retained at an angle with the rear portion, substantially as herein described.

3. In a plow, the beam having a joint in its length about which the front portion turns in a horizontal plane, a lever fulcrumed to the rear portion of the beam, flexible rods connecting the ends of said lever with the front portion of the beam so that by movement of the lever the beam may be turned to one side or the other, coupling ends by which the rods are united with the lever and screw-threaded connections for the same, whereby the rods may be lengthened or shortened, and the latch or holding device by which the lever is engaged so as to retain the beam at either side of the central line and throw the draft upon the inner rod, substantially as herein described.

4. In a plow, a beam having a joint in its length about which the front portion turns in a horizontal plane, a lever fulcrumed to the rear portion, flexible adjusting-rods connecting the front portion of the beam with the ends of the lever so that the beam may be bent to either side by moving said lever, a curved rack hinged to the rear portion of the beam and adapted to engage and hold the lever in any position, a lever-connecting rod, and hand mechanism whereby the hinged rack may be disengaged from the lever so as to allow it to move and the beam to be turned, substantially as herein described.

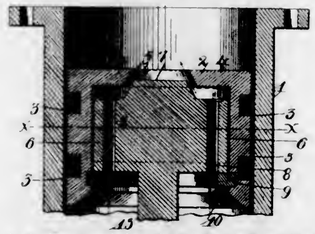
449,332. CELL-CASE. DENNIS QUINLAN, Burdette, Kans. Filed Nov. 15, 1890. Serial No. 371,433. (No model.)

Claim.—1. A cell-case consisting of a flexible backing and a series of united collapsible transverse rows of cells secured to the backing and adapted to be rolled up spirally, the respective rows being united at their upper edges, their united width when extended being less than the length of the back, substantially as described.



2. A spiral cell-case consisting of a flexible back, and a series of cells secured to the back and united to each other at their upper edge only, substantially as described.

449,333. PISTON FOR PNEUMATIC PUMPS. CHARLES H. ROBINSON, Huntsville, Tex. Filed Feb. 6, 1891. Serial No. 380,475. (No model.)



Claim.—1. A piston consisting of a tubular shell provided with a conical aperture and an internal circular recess, a cylindrical valve provided with gas-passages and a conical projection, which projection is adapted to fit in said conical aperture as a valve-seat, and an expanding ring placed or adapted to be placed in said circular recess for retaining said valve in its downward motion or stroke in said shell, substantially as set forth.

2. A piston consisting of a tubular shell provided with a conical aperture and an internal circular recess, a cylindrical valve provided with gas-passages and a conical projection, which projection is adapted to fit in said conical aperture as a valve-seat, an expanding ring placed or adapted to be placed in said circular recess for retaining said valve in its downward stroke in said shell, and a wedge-shaped plug for expanding and holding said ring in its normal position in said recess, substantially as set forth.

3. A piston consisting of a tubular shell provided with a conical aperture and an internal circular recess, a cylindrical valve provided with gas-passages and a conical projection, which projection is adapted to fit in said conical aperture as a valve-seat, and an expanding ring placed or adapted to be placed in said circular recess for retaining said valve in its downward stroke in said shell, a wedge-shaped plug for expanding and holding said ring in its normal position in said recess, and a piston-rod for operating said valve, and consequently said piston, substantially as set forth.

449,334. MECHANICAL MOVEMENT. JOHN Z. ROEABACK, Kansas City, Mo. Filed Aug. 22, 1890. Serial No. 362,780. (No model.)



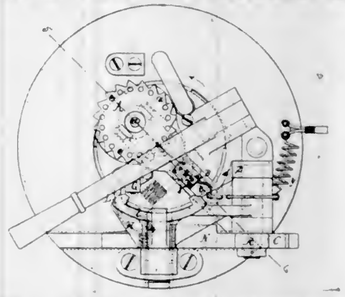
Claim.—1. A new mechanical movement comprising, in combination, a driving-wheel B on one center and having a peripheral recess *l* and an eccentric stud *h* and a notched wheel A on another center, extending at its periphery beyond and adapted between its notches to receive the periphery of the driving-wheel, and rotated by the engagement of the stud *l* with one side of a notch and obstructed against rotation by the engagement of the stud with the opposite side of a notch, substantially as described.

2. A new mechanical movement comprising, in combination, a wheel A on a center C and provided with notches *r* in its periphery, having corresponding sides in radial lines with the center and the opposite sides extending in the directions of segmental lines on the wheel the latter being peripherally depressed between the notches, and a driving-wheel B on a center C and provided with a peripheral recess *l* and an eccentric stud *h*, supported adjacent to the recess *l*, substantially as described.

3. A new mechanical movement comprising, in combination, a wheel A on a center C and provided with notches *r* in its periphery, having corresponding sides in radial lines with the center and the opposite sides extending in the directions of segmental lines on the wheel, the latter being peripherally depressed between the notches, and a driving-wheel B on a center C and provided with a base-flange *m* extending under the wheel A, and a peripheral recess *l* and a stud *h* on the flange *m* to one side of the center of the recess *l*, substantially as described.

4. A new mechanical movement comprising, in combination, a wheel A on a center C and provided with peripheral notches *r*, having the corresponding radial sides *p* and the corresponding sides *q*, extending at acute angles to the sides *p*, and concave bases *n*, widening toward the sides *q*, the wheel A being peripherally concaved between the notches, and a driving-wheel B on a center C and provided with a base-flange *m*, extending under the wheel A, and a semicircular peripheral recess *l* and a stud *h* on the flange *m*, to one side of the center *o*, from which the recess *l* is struck, the whole being constructed and arranged to operate substantially as described.

449,335. BREECH-LOADING ORDNANCE. HENRI SCHNEIDER, Paris, France. Filed June 17, 1890. Serial No. 355,796. (No model.)



Claim.—1. In breech-loading guns, the combination of the breech-screw with a removable disk pivoted in the breech-screw, the said disk provided with a series of primers, and means for automatically rotating the disk; substantially as and for the purpose set forth.

2. In breech-loading guns, the combination of a rotary toothed disk carried by the breech-screw and provided with a series of primers, with a breech-screw support provided with a spring-pawl to engage the teeth on the disk, as and for the purpose set forth.

3. The combination of a breech-loading gun with a breech-screw and a disk provided with a series of primers, means controlled by the breech-screw for automatically rotating the disk, and means for moving it longitudinally in the breech-screw as the latter is rotated, substantially as set forth.

4. In breech-loading guns, the combination of a breech-screw, a rotating disk provided with a series of primers, with an oscillating lever engaging the disk, and means for automatically oscillating the lever from the breech-screw, as the latter is rotated, as and for the purpose set forth.

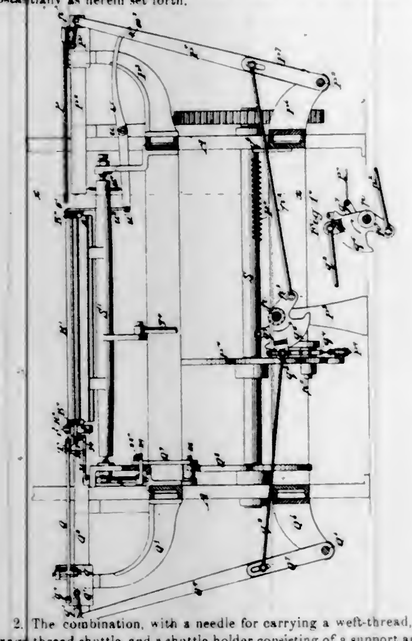
5. In breech-loading guns, the combination of a rotating disk provided with a series of primers and a breech-screw support provided with a helical groove, with a lever, one end of which engages the disk, and the other end is adapted to slide in the helical groove, as and for the purposes set forth.

6. In a breech-loading ordnance, the combination of a pivoted breech-screw support with a charging-plate in the breech, and means for automatically raising and lowering the plate by the said support as the latter is turned, substantially as and for the purpose set forth.

7. In breech-loading ordnance, the combination of a pivoted breech-screw support, with a charging-plate in a cavity of the breech, the said plate provided with an incline, a rack-bar having an incline engaging the incline on the charging-plate, and a toothed quadrant fixed on the pivot of the breech-screw support and engaging the teeth of the rack, substantially as and for the purpose set forth.

449,336. NEEDLE-LOOM. HALCTON SKINNER and FRANK H. CONNOLLY, Yonkers, N. Y. Filed July 29, 1890. Serial No. 360,307. (No model.)

Claim.—1. The combination of a hooked needle for pulling the looped weft-thread through the warp, a carriage for said needle with which the latter is capable of moving lengthwise and to which it is pivoted to oscillate laterally, means for giving the said carriage and needle a reciprocating motion to produce the lengthwise movement of the needle, means for producing the pivotal oscillating movement of the needle, and a selvage-thread shuttle over which the loops of the weft are caused to pass by the pivotal oscillation of the needle, all substantially as herein set forth.



2. The combination, with a needle for carrying a weft-thread, a selvage-thread shuttle, and a shuttle-holder consisting of a support and a cap or cover, of a lifter engaging with said cap or cover to remove its pressure from the shuttle during the passage of the loops of the weft-thread over the shuttle, substantially as and for the purpose herein described.

3. The combination, with a needle for carrying a weft-thread, a selvage-thread shuttle, and a shuttle-holder consisting of a support and a cap or cover, of a lifter engaging separately with said shuttle and said cap or cover to remove the pressure of the latter from the shuttle and tip up or lift the shuttle from its support for the purpose of allowing the free passage of the loops of the weft-thread between the shuttle and the support and cover of the holder, substantially as herein set forth.

4. The combination, substantially as herein described, of a forked needle on one side of the loom and a reciprocating carriage for the same for carrying a weft-thread, a hooked needle on the other side of the loom for taking the said thread from the forked needle, a reciprocating carriage for said hooked needle to which the said needle is pivotally connected, a selvage-thread shuttle on the same side of the loom with the hooked needle, means, substantially as described, of giving the hooked needle an oscillating motion on its carriage to pass the loop of the weft-thread over the shuttle, and means, substantially as described, of producing the reciprocating movements of the said needles, whereby the said movement of the hooked needle is nearly suspended during its oscillating movement.

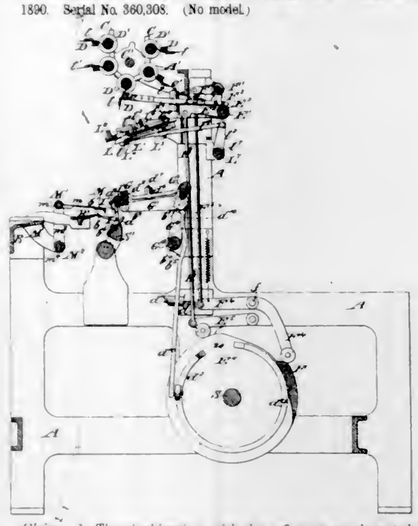
5. The combination, with the selvage-carrying shuttle and the hooked needle having its point 27 projecting beyond and thinner than its hook 26, of the stationary cast-off fork having its prongs 37 obliquely arranged relatively to the selvage line and having the space between said prongs wide enough throughout a part of their length for the passage of the hook, but having their ends constructed to leave a space between them only large enough for the point 27, substantially as and for the purpose herein set forth.

6. A weft-inserting needle for a loom, having in its point or end a longitudinal slot 21, which is open on both sides, having a prolonged point 22 on one side of said slot, having a second longitudinal slot 23 at right angles to the slot first mentioned, but open on one side only, and having a bridge 24 across the first-mentioned slot, substantially as and for the purpose herein described.

7. The combination, with a forked weft-inserting needle, of a weft-finger arranged on that side of the loom at which said needle enters the warp and capable of a movement in a plane parallel with the selvage for the purposes of taking up the slack of the weft and beating the weft into the fork of said needle, and mechanism for producing movements of the said needle and weft-finger, substantially as herein set forth.

8. The combination, with the needle P and its carriage and the arm P^4, which operates the said carriage, of the weft-finger *s*, pivoted at one side of the loom, the lever U, having a fixed fulcrum *u* and connected at one end with said finger, and the projection u^3, provided on said lever-arm P^4 to operate upon said lever U and through it on the weft-finger *s*, substantially as herein set forth.

449,337. LOOM FOR WEAVING TUFTED PILE FABRICS. HALCYON SKINNER and FRANK H. CONNOLLY, Yonkers, N. Y. Filed July 29, 1890. Serial No. 360,308. (No model.)



Claim.—1. The combination, with the tuft-yarn spools and their carriages, the movable supports for said carriages, and spool-carriage holders for taking the said carriages from said supports and replacing them therein, of nippers for taking the tuft-yarn from said spools, cutters for cutting off the yarn from said spools in pieces to form tufts, mechanism for moving said nippers toward said spool-carriage holders to receive the yarns from the spools therein, mechanism for drawing back the spool-carriage holders from said nippers to draw off the yarn from the spools, and mechanism for operating said cutters after the drawing off of the yarn by the movement of the spool-carriage holder, all substantially as herein described.

2. The combination, with nippers for the insertion into the warp of one end of each of a series of tuft-pieces and returning the said ends through the warp and a weft-carrying needle, of a reed having its dents open at the bottom and arranged to enter the warp from above for the purpose of drawing up one shot of weft-thread to the fell after its insertion into the warp behind the tuft-pieces and holding said shot while the said ends are returned and while a second shot of filling is inserted, and mechanism for operating the said reed, the said nippers, and said weft-carrying needle, all substantially as herein described.

3. The combination, with nippers for inserting into the warp one end of each of a series of tuft-pieces and returning the said ends through the warp, of a bar which carries the said nippers, a frame in which said bar is capable of rocking and which is itself capable of swinging upward and downward and also backward and forward, and mechanism for producing the said rocking movement of said bar and the said swinging movement and said backward and forward movements of said frame, all substantially as herein set forth.

4. The combination, with the nipper-carrying bar G and attached nippers, of the swinging frame G', in which said bar is pivoted, the rock-shaft G^2, having fixed bearings and provided with arms in which the said swinging frame is pivoted, and mechanism for producing the upward and downward movement of the said swinging frame and the oscillation of said rock-shaft, all substantially as herein described.

5. The combination, with a nipper-carrying bar, of tuft-nippers consisting each of two elbows which are pivoted together at their angles and each of which has a jaw at one end and one of which is secured rigidly to said bar at its other end, substantially as herein described.

6. The combination, with the nipper-carrying bar G and the elbow-shaped nippers, one member of each of which is attached rigidly at one end to said bar, of the backwardly and forwardly sliding bar *d*, with which the corresponding end of the other member engages for producing the opening and closing movement, the longitudinally-sliding bar d^4, engaging with said bar *d* by pins and oblique surfaces in one and the other, and mechanism for producing the longitudinal movement of said bar d^4, all substantially as herein set forth.

7. The combination of the cutter-stock L^3, provided with hooks l^3, the cutter L, secured fixedly in said stock, the fixed guides L^3 for said stock, the cutter-arms L^6 and attached cutters L', pivoted to said stock, the levers L^4, having fixed fulcrums 21 and provided with projections l^{13} to be acted upon by the cutter-arms L and with hooks l^8 to engage with the hooks l^3, the springs *l* for drawing back the stock L^3, the stops l^{14} for the said levers, and mechanism for giving movement to the cutter-arms L^6, all substantially as herein described, and for the purposes herein set forth.

8. The combination, with the tufting-nippers, the open-topped reed, and a weft-inserting needle, of a weft-finger pivoted at a fixed point on that side of the loom from which said needle enters and capable of a forward movement for pushing the weft-thread forward in the warp, and means for operating said nippers, needle, and weft-finger, all substantially as herein set forth.

449,338. SELF-CLOSING GAS-BURNER. WILLIAM TEN EYCK, Oakland, Cal. Filed Aug. 22, 1890. Serial No. 362,778. (No model.)



Claim.—1. In a self-closing gas-burner, the combination of a gas-inlet, a reservoir connected therewith, a burner upon said reservoir, a main valve controlling the entrance to said burner, said valve having central ports, a secondary valve controlling said ports, and means to unseat said secondary valve and thereby secure an initial flow of gas to said burner, substantially as set forth.

2. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom, a main valve controlling the entrance to said burner and provided with central ports, a secondary valve controlling said ports and having an annular groove, means for unseating said secondary valve, and spring-catches adapted to engage said groove and hold said valve away from its seat, substantially as set forth.

3. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom, a main valve controlling the entrance to said burner and provided with central ports, a spring-actuated secondary valve controlling said ports, and spring-catches adapted to be engaged alternately by said main and secondary valves, said catches engaging first said secondary valve and being afterward disengaged therefrom by said main valve, substantially as and for the purposes set forth.

4. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom, a main valve controlling the entrance to said burner and provided with central ports, a spring-actuated valve controlling said ports and having an annular groove, spring-catches adapted to engage said groove and thereby hold said last-named valve away from its seat, and means to unseat said main valve and thereby disengage said catches from said groove, substantially as and for the purposes set forth.

5. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom, a main valve controlling the entrance to said burner and provided with central ports, a secondary valve controlling said ports, an expansible plate connected with said main valve and adapted to control the same through expansibility and contractibility, and means for unseating said secondary valve and thereby secure an initial flow of gas to the burner, whereby the heating of the plate is secured, substantially as set forth.

6. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom, a main valve controlling the entrance to said burner and having central ports, the valve-stem thereof passing through the upper end of said reservoir, a spring-actuated secondary valve controlling said ports and having its stem passing through the lower end of the reservoir, and an expansible plate connected with the first-named valve-stem and adapted to control the same through expansion and contraction, substantially as set forth.

7. In a self-closing gas-burner, the combination of a reservoir having a burner projecting therefrom, a main valve controlling the entrance to said burner and having central ports, the valve-stem thereof passing through the upper end of said reservoir, a spring-actuated secondary valve controlling said ports and having its stem passing through the lower end of said reservoir, a non-expansible rod secured to the reservoir and having its upper end bent inwardly, and an expansible plate connecting said rod and said upper valve-stem, substantially as set forth.

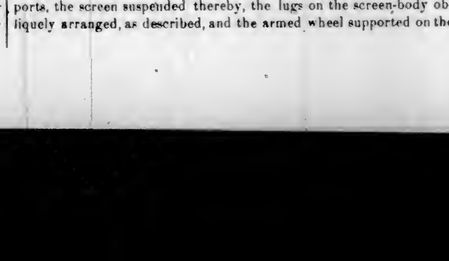
449,339. SHOE-BLACKING. GEORGE P. TIPTON, Hot Springs, Ark. Filed May 16, 1890. Serial No. 352,089. (Specimens.)

Claim.—1. In a shoe-blacking, the combination of the herein-described Arkansas graphite (graphitic shale) with the oils and acids of an ordinary shoe-blacking, substantially as and for the purposes set forth

2. The herein-described composition of matter for polishing boots and shoes, consisting of the herein-described Arkansas graphite, (graphitic shale,) molasses, glycerine, tartaric acid, citric acid, and neat's-foot oil, prepared in substantially the proportions specified

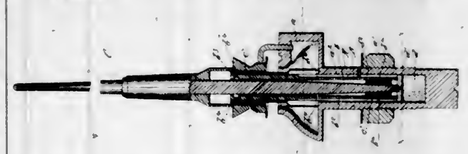
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449,340. OVERSHOE. MARTIN S. VARLEY, Chicago, Ill. Filed Jan. 5, 1891. Serial No. 376,788. (No specimens.)



Claim.—As a new article of manufacture, an overshoe having an elastic strap B extending from near the forward end of the heel portion about the same and shorter than the said heel portion to extend inside the plane thereof, and a strap D, connecting the strap B from near its center with the back of the said heel portion, substantially as and for the purpose set forth.

449,341. STEP-BEARING FOR SPINNING-SPINDLES. JOSEPH W. WATTLES, Canton, Mass. Filed Aug. 5, 1890. Serial No. 361,055. (No model.)



Claim.—1. A step-bearing for spindles, composed of a soft, yielding, and elastic body and a plate of hard unyielding material arranged therein, substantially as described.

2. A step-bearing for spindles, composed of a soft, yielding, and elastic filamentous body and a plate of metal arranged therein substantially parallel to its upper end, essentially as specified.

3. A step-bearing for spindles, composed of a felt body and a plate of metal inserted in the same substantially parallel to its upper end, as and for the purposes described.

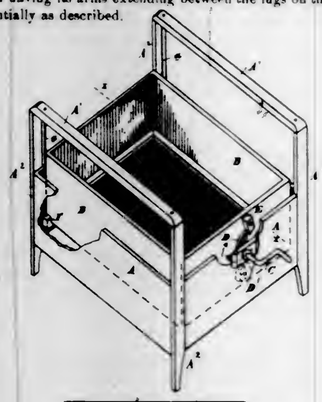
4. The combination, with a bolster-holder, a bolster-tube, and a spindle, of a step-bearing composed of a soft, yielding, and elastic body, with a plate of hard unyielding material inserted therein, substantially as described.

449,342. SIFTER OR SCREEN. JARVIS B. WHITE, Millbury, Mass. Filed Jan. 8, 1891. Serial No. 377,130. (No model.)

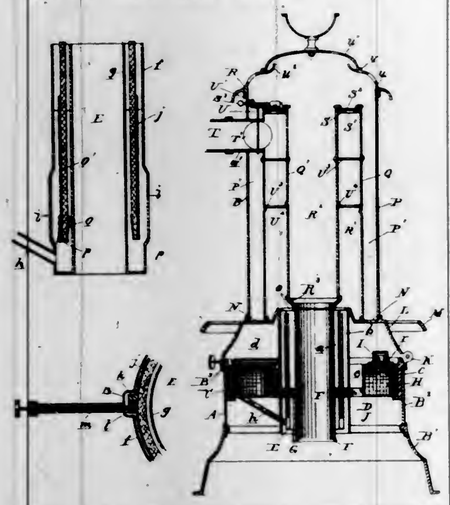
Claim.—1. The screen or sifter sustained by cords or rods so as to swing from a suitable support, lugs on the body of the screen, and an armed wheel having its arms in position to engage the said lugs as the wheel rotates in combination.

2. The combination of the frame or casing having pendulous supports, the screen suspended thereby, the lugs on the screen-body obliquely arranged, as described, and the armed wheel supported on the

casing and having its arms extending between the lugs on the screen, all substantially as described.



449,343. OIL-STOVE. LEWIS T. WILCOX, Jackson, Mich. Filed Apr. 4, 1890. Serial No. 346,623. (No model.)



Claim.—1. In an oil-stove, the combination, with the oil-tank, of a screw-threaded supply-nozzle, an aperture at the base thereof, a flange *q* around said nozzle forming a well I, and a cap *t*, substantially as described.

2. In an oil-stove, the combination, with an oil-tank and its supply-nozzle, of the downwardly-projecting inclined flange *r'* within the nozzle, substantially as and for the purpose described.

3. In an oil-stove, a wick-tube having an inside and an outside vertical wall, the outer wall having enlargements or chambers formed on its lower end, substantially as described.

4. In an oil-stove, a wick-tube having a series of enlargements *i* therein formed around the base thereof, arranged below the bottom of the oil tank, substantially as described.

5. In an oil-stove, the combination, with the wick-tube, of the sleeve *j*, having the spring *p* and the clamping-ring *o*, substantially as described.

6. In an oil-stove, the combination, with the wick-tube having the offset *n*, the sleeve *j*, having rack-bar *k*, adapted to move in said offset, the clamping-ring *o*, wick *o'*, and spring *p*, substantially as described.

7. In a stove of the kind described, the combination, with the base and burner, of the top having an annular combustion-chamber, a central air-flue within said combustion-chamber, and an annular flue, both flues outside of and surrounding the combustion-chamber in contact with the walls of the combustion-chamber substantially as described.

8. In a stove of the kind described, the combination, with the base, of a central wick-tube in the base, a central air-flue within said wick-tube, a top having an annular combustion-chamber, a central air-flue forming a continuation of the central air-flue, and an outer air-flue, both in contact with the walls of the combustion-chamber, substantially as described.

9. In an oil-stove, the combination, with the base having an annular wick-tube, and an air-flue F, formed within and the chamber *d* outside the wick-tube, of the top having an annular combustion-chamber above the wick-tube, a central air-flue communicating with the air-flue F, and an annular air-flue surrounding the combustion-chamber and communicating with the chamber *d*, substantially as described.

10. In an oil-stove, the combination, with the annular combustion-chamber, of the perforated top therefor, the correspondingly-perforated damper S^3 and handle S^3, the exit-pipe T, communicating with said combustion-chamber, and a damper T', having the shaft U and the crank U' connected with and operated by the handle S^3 of the damper S^3, substantially as and for the purpose described.

11. In a stove of the kind described, the combination, with the base and the hinged top, of the perforated top casting *u*, having the inwardly-projecting arms *u''* and the annular flange *v* of the perforated cover *u'*, the parts constructed substantially as and for the purpose described.

12. In a stove of the kind described, the combination of the following elements: a base-casting B', the casing B^3, the annular top rim B^3, the top hinged to said rim, the downwardly-projecting brackets C, and the oil-tank supported thereon, substantially as and for the purpose described.

449,344. BRUSH. MCCLINTOCK YOUNG, Frederick, Md. Filed June 26, 1890. Serial No. 356,850. (No model.)



Claim.—1. In a brush, the combination of the body having a tuft-hole therein, the folded tuft inserted in the said hole, and a U-shaped fastener inserted in the hole and within the tuft, the ends of its arms being presented toward the mouth of the hole and seated in its side walls, substantially as described, whereby the fastener is given the effect of an inverted arch.

2. As a new article of manufacture, a tuft-fastener for use in brushes, consisting of a single piece of wire presenting a straight middle portion, with the two ends turned upward at substantially right angles thereto, said device of a size adapted for introduction into an ordinary tuft-receiving hole.

3. The tuft-fastener consisting of the wire bent into U shape and beveled at its two ends, whereby it is adapted to firmly engage the walls of the hole in which it is inserted.

449,345. ELECTRIC BELT. DUANE P. ANDRUS, St. Louis, Mo. Filed Nov. 7, 1890. Serial No. 370,680. (No model.)



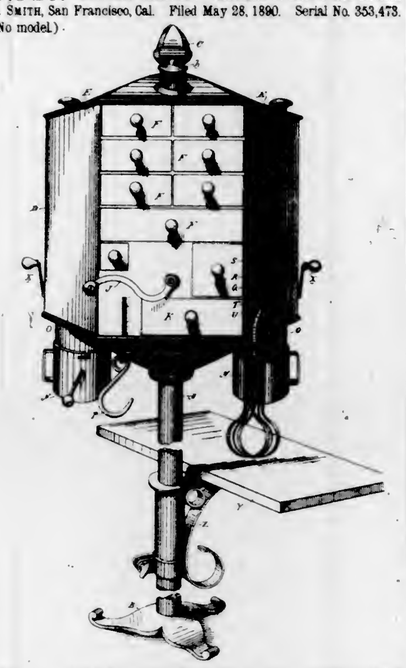
Claim.—1. In an electric belt, a voltaic couple composed of a zinc plate 20, provided with a perforation 18 and a depression 19, forming one element, a T-shaped copper plate provided with a perforation 8, and the stem of which bent upon itself and adapted to be slipped over one side of said zinc plate through perforation 18 forming the other element, and suitable layers of dielectric absorbent material to contain the exciting-fluid interposed between the folds of said copper and zinc plates, substantially as set forth.

2. A galvanic battery composed of cells 11, each having its copper element bent upon itself, so it can be directly slipped over the zinc element of an adjacent cell and secured thereto, perforations in said copper plates, spring-hooks 7, electrically secured to connecting-cords and adapted to pass through said perforations, whereby electrical connection is effected between said battery and said conducting-cords, substantially as set forth.

3. In an electric belt, the battery composed of cells each of which is made of a T-shaped copper plate, the upper part of which is folded or bent upon itself, with layers of dielectric absorbent material interposed between the folds thereof, a zinc plate provided with a perforation 18 and depression 19, wrapped around and forming the exterior covering of said cells, and the stem of said copper plate bent upon itself, whereby it can be slipped over said zinc plate, by which electrical connection is effected between said cells, substantially as set forth.

4. In an electric belt, a galvanic cell composed of a T-shaped copper plate, the upper part of which is folded upon itself, with layers of dielectric absorbent material containing the exciting-fluid interposed between the folds thereof, and the stem of said copper plate bent to receive the zinc element of an adjacent cell, and a zinc plate provided with a perforation 18 and depression 19, wrapped around the folded or bent portion of the copper plate, with a layer or layers of dielectric absorbent material containing the exciting-fluid interposed between said copper and zinc plates, substantially as set forth.

449,346. KITCHEN-CABINET. MILLARD F. BROWN and THOMAS E. SMITH, San Francisco, Cal. Filed May 28, 1890. Serial No. 353,473. (No model.)



Claim.—1. A kitchen-cabinet consisting of an exterior casing having the receptacles and drawers fitted therein around a central sleeve, which extends vertically through the case and has a step at the upper end, a standard fixed at the bottom and projecting upwardly into said sleeve, with the upper end fitted into the step at the top of the casing, discharge-openings with controlling-gates fitted to the bottoms of the receptacles in the casing, and a table having a bracket fitted to slide upon the supporting-standard, and a holding and adjusting screw, whereby the table may be fixed at any point beneath the discharge-openings, substantially as herein described.

2. A kitchen-cabinet consisting of the casing having receptacles, an egg-beater secured to said casing, and an adjustably-secured bracket having a table below the egg-beater, substantially as herein described.

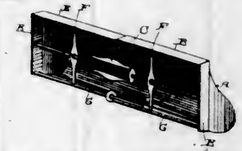
3. In a kitchen-cabinet, the casing having a lip or flange projecting from one side thereof, a clamping-plate hinged thereto, a locking-screw for said plate, and an egg-beater having a handle portion removably fixed upon the side of the casing, substantially as herein described.

4. A kitchen-cabinet consisting of the casing supported upon a fixed vertical standard and the egg-beater removably fixed upon the side of the casing, so as to stand vertically below the same, in combination with a table having a bracket adapted to slide upon the standard and a locking-screw whereby the table may be fixed beneath the egg-beater and at any suitable height with relation thereto, substantially as herein described.

5. A kitchen-cabinet consisting of a casing rotating about a central vertical standard, a series of containing-receptacles, discharge-openings and gates at the bottoms of the receptacles, and a table sliding upon the standard beneath the casing and adjustable with relation thereto, substantially as herein described.

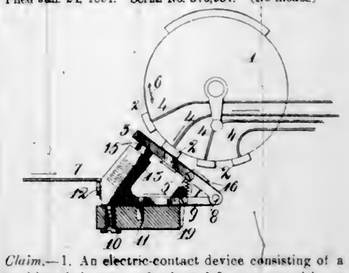
449,347. HOOD FOR FIRE-PLACES. LEONARD E. CLAWSON, San Francisco, Cal. Filed Oct. 31, 1890. Serial No. 369,967. (No model.)

Claim.—1. A hood attachment for grates and fire-places, consisting of the overlapping sections having the top and end flanges B and an open bottom, the overlapping adjustable rods G, and the threaded rods and turn-buckle for adjustably securing the sections, substantially as herein described.



2. A hood for grates and fire-places, consisting of the sections A, adapted to telescope upon each other, and the rods extending within said sections having the turn-buckle or device whereby they may be extended so as to cause the ends of the sections to bind within the grate or fire-place, substantially as herein described.

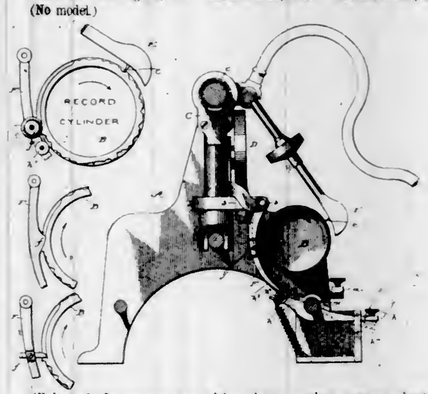
449,348. ELECTRIC CONTACT. OTIS J. DEPP, St. Louis, Mo. Filed Jan. 24, 1891. Serial No. 378,937. (No model.)



Claim.—1. An electric-contact device consisting of a base-plate, an arm hinged thereto and adapted for contact with a co-operating contact, a rigid arm provided with a bore secured to the same, a spiral spring located in said bore, and an insulating-plug located in the same and mounted on said spring for deflecting the current and preventing the same from passing through said spring, substantially as set forth.

2. An electric-contact device consisting of a base-plate, an arm hinged thereto, adapted to come in contact with a co-operative contact, a rigid arm provided with a bore, and a resting-plate secured to the same, the latter of which tends to hold said hinged arm in a horizontal position when the device is in functional operation, a spiral spring located in said bore, and an insulating-plug located in the same and mounted on said spring for deflecting the current and preventing the same from passing through said spring, substantially as set forth

449,349. ERASING ATTACHMENT FOR PHONOGRAPHS. PHILIP T. DODGE, Washington, D. C. Filed Oct. 29, 1890. Serial No. 369,743. (No model.)



Claim.—1. In combination with a phonograph, an eraser adapted to act on and to obliterate a single line of the record at a time, and means whereby the attendant may throw the same into and out of action at will.

2. In a phonograph, the combination of a grooved record or phono-

gram, a reproducer having a style arranged to travel in the record-groove, as usual, and an eraser arranged to act in the record-groove immediately behind the reproducer-style, and means for throwing said eraser into and out of action at will, whereby the attendant, listening to the reproduction of the words upon the cylinder, is enabled to select and obliterate from the record the particular words desired.

3. In a phonograph, the combination of the revolving record-cylinder, the traveling carriage having the reproducer attached, the eraser also attached to said carriage, a finger-key, and intermediate connections through which said key acts to throw the eraser into action during the operation of the machine.

4. In a phonograph, an eraser consisting of a sharp-edged wheel or roller mounted to act within the record-groove to obliterate the inequalities and produce a smooth surface, to the end that the style may remain inactive while traversing such smooth surface.

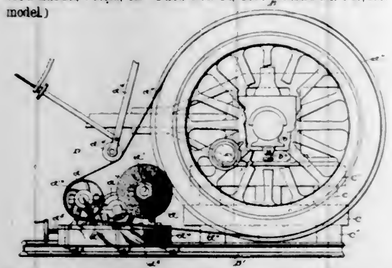
5. In a phonograph, and in combination with the record-cylinder, a spring-sustained eraser adapted to act within the record-groove, substantially as described.

6. In a phonograph, the combination of a record-cylinder, an eraser mounted to travel lengthwise of said cylinder and adapted to act in a single groove or convolution of the groove at a time, means for throwing said eraser into action, and a stop device to control the depth of its action in the cylinder.

7. In combination with the rotary record-cylinder, the traveling carriage having the reproducer attached, the line-eraser also connected to the carriage, and means, substantially as described, for adjusting said eraser laterally to secure and maintain its alignment with the reproducer-style.

8. In combination with the rotary cylinder, the traveling carriage, the eraser-arm jointed to the carriage, and the rocking frame having a rod or support parallel with the cylinder to operate and sustain the eraser-arm.

449,350. MEANS FOR TRUING LOCOMOTIVE-WHEELS. JOSEPH ELDER, Peoria, Ill. Filed Feb. 14, 1890. Serial No. 340,463. (No model.)



Claim.—1. In combination with a locomotive-engine, means for sustaining the same with its driving-wheels clear of the track and free to be turned by the usual piston connections, a rotary grinder with a driving-pulley, means for securing the same in position to actuate one of the locomotive driving-wheels, and connections for imparting motion from the locomotive to the pulley of the grinder.

2. In combination with a locomotive-engine, supports sustaining its frame and also sustaining the driving-axles within the frame, that the devices may be turned by the usual piston connections, in combination with a rotary grinder having a driving-pulley, means for securing the grinder in position, and a driving-belt from the grinder to the driving-wheel, whereby the action of the engine is caused to effect the truing of its driver.

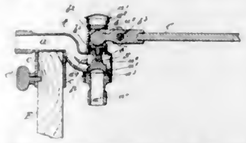
3. In combination with a locomotive-engine, supports sustaining its frame and sustaining its driving-axles within the frame with their wheels clear of the track, in combination with a rotary grinder in position to act on the locomotive-driver, a driving-pulley in rear of the grinding-wheel, and a belt connecting the driving-wheel and the pulley and inclosing the grinding-wheel, as shown, whereby the grinder is driven from the surface on which it acts.

4. In a grinder for truing locomotive-wheels, a base-plate provided with clips for securing it in place, in combination with a grinding-wheel, a driving-pulley, and intermediate speeding-gear, all mounted thereon.

5. The grinder for locomotive-wheels, consisting, essentially, of a base-frame provided with clips for securing the same to the track-rails, a rotary grinding-wheel and suitable driving-gear therefor, a support for said wheel and gear mounted to slide on the base, and means for adjusting said sliding support.

6. The base-plate provided with clips, in combination with the sliding plate and its adjusting device, the driving-pulley, its shaft and grooved pulley, the grooved idler and its adjustable support, and the grinding-wheel, its shaft, and the grooved pulley thereon.

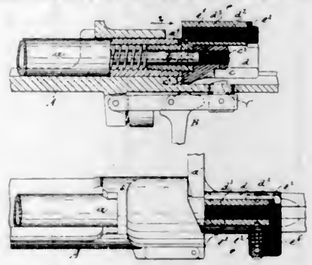
449,351. BALL COCK-VALVE. THOMAS R. KEYWORTH, Jr., New York, N. Y., assignor of three-fourths to Andrew G. Myers, same place, and William C. Keyworth, Paterson, N. J. Filed Nov. 22, 1890. Serial No. 372,276. (No model.)



Claim.—1. The combination, with a shell or casing having both an induction and an eduction orifice, a partition arranged in said induction-orifice transversely thereof, a plunger-socket, and a seat, of a plunger arranged in such socket and provided with a flange at its lower end, a lever for raising and lowering said plunger, and means through which such lever may be operated, said partition terminating at its outer end within the induction-orifice and forming two distinct channels, each of which communicates at its outer end with such induction-orifice, substantially as described.

2. The combination, with a shell or casing A, having an induction-orifice a and eduction-orifice a', a partition a^3, arranged in said induction-orifice transversely thereof, a socket a^3, a seat a^3, and ears a^5, of a plunger B, arranged to move in said socket and provided with a flange at its lower end and with a slot at its upper end, and a lever C, pivoted to said ears and engaging with its short arm the slot in the plunger and carrying at the outer end of its long arm a ball float, the said partition terminating at its outer end within the induction-orifice and forming two distinct channels, each of which communicates at its outer end with such induction-orifice, substantially as described.

449,352. SAFETY-LOCK FOR BREECH-BOLTS OF GUNS. PAUL MAUSER, Oberndorf-on-the-Neckar, Germany, assignor to Waffenfabrik Mauser, same place. Filed Nov. 12, 1889. Serial No. 330,065. (No model.) Patented in Belgium June 15, 1889, No. 86,375; in England Sept. 30, 1889, No. 15,371; in Italy Dec. 10, 1889, No. 26,450/137; in Germany Jan. 15, 1890, No. 50,384; in Spain Feb. 1, 1890, No. 10,226, and in Austria-Hungary Mar. 29, 1890, No. 48,072 and No. 3,578.

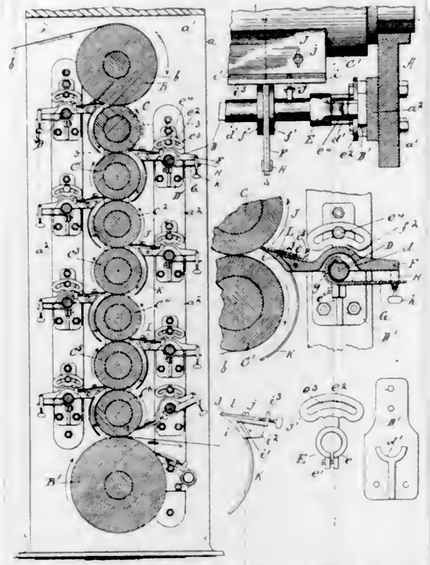


Claim.—The combination, with the breech-case, an oscillatory bolt working therein, a firing-pin working in said bolt, and a small lock connected to said firing-pin and swiveled to the end of said bolt, said small lock so connected to the firing-pin that the latter can move longitudinally relatively thereto, of a lock carried by said small lock and constructed to engage with said bolt and said firing-pin, and when in one position to prevent an oscillatory movement of said bolt and a forward movement of said firing-pin, and when in the other position to permit such movements, said lock consisting of an oscillatory cylindrical shaft e', mounted in said small lock and having a thumb-piece e^4 and a snap-catch e^5 for holding it in position.

449,358. CALENDER-ROLL LEADER. ROBERT MCALPINE, Marinette, Wis., assignor to Louis A. McAlpine, same place. Filed June 20, 1890. Serial No. 356,145. (No model.)

Claim.—1. In a paper-calendering machine, the calender-rolls, in combination with the main supporting-rods D, the supporting-levers F, set loosely on said rods by circular recesses in the under side of each doctor-plate carried by said supporting-levers, and springs connected to both the rods and the respective levers, and adapted both to hold the said levers upon the rods and to turn the doctor-plates against their respective rolls, substantially as and for the purposes specified.

2. The main supporting-rods D, in combination with the supporting-levers F, provided with concave seats f and an interior groove f^3, the springs G, bent at their inner ends and arranged within the said groove and fastened to the main rods, and the swinging loop H, arranged to receive the outer end of said springs and provided with set-screw h, substantially as and for the purposes specified.



3. The main supporting-rods D, in combination with the doctors mounted thereon, the open-socket brackets D', and a spring-arm fastened to the rods at one end and detachably secured at the other end to the said brackets, substantially as and for the purposes specified.

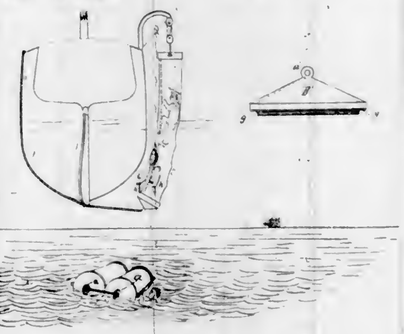
4. The main supporting-rods D, which carry the doctors, in combination with the doctors mounted thereon, the open-socket brackets D', fastened to the stack-frame, and the fastening-arms E, provided with clamping-arms e at one end, and a slotted T-head e^3 at the other end, substantially as and for the purposes specified.

5. The supporting-levers F, free to turn on their supports, in combination with the doctors secured to said levers and the angular bar I, the web i of which is curved to correspond to the curvature of the rolls, while the other web i' is adapted to receive the doctor-plates, substantially as and for the purposes specified.

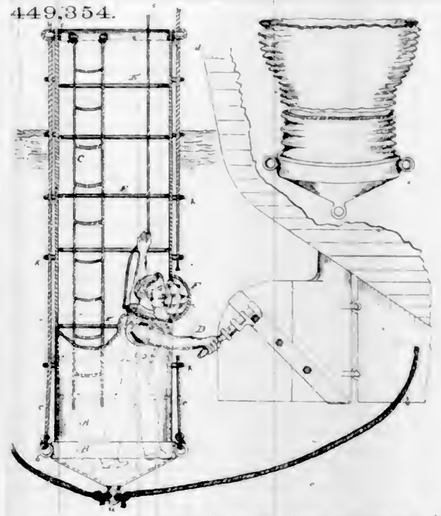
6. The freely-vibrating supporting-levers F, in combination with the angular bars I, attached thereto and having the curved web i and straight web i', the doctor-plates J, adjustably secured to the web i' of the bars, and the adjusting-screws j', substantially as and for the purposes specified.

7. The freely-vibrating supporting-levers F, in combination with the angular bars I, provided with a curved web i, the doctor-plates J, mounted on said bars, the curved rods K, fastened to the curved web i, and the calender-rolls of the stack, substantially as and for the purposes specified.

449,354. COMBINED DIVING APPARATUS AND LIFE-SAVING RAFT. JOHN SPEIRS, Jersey City, N. J., assignor of one-half to George Franklin Richardson, New York, N. Y. Filed May 23, 1890. Serial No. 352,963. (No model.)



449,354.

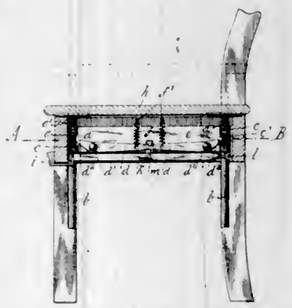


Claim.—1. A convertible diving and life-saving apparatus, the same comprising a flexible tube provided with bracing-hoops, caps for closing each end of the tube, one of said caps being removable, rings at the apexes of the caps, and ropes or stays passing through the rings for securing the tube to the side of a vessel or to another tube of similar construction, substantially as set forth.

2. A flexible tube A, provided with rings inside and outside and permanently closed at one end by cap B, and having arms D and window F, in combination with the cap B'.

3. The combination of the tube, closed at one end by the cap B, constituting the floor, and having a threaded band e at the opposite end, with the flexible arms D above the floor, window F, and ladder C.

449,355. CHAIR. THEODOR SUCHLAND, Berlin, assignor to Valentin Landsberg, Posen, Germany. Filed Aug. 27, 1888. Serial No. 283,887. (No model.) Patented in Germany Feb. 10, 1888, No. 44,874.



Claim.—1. In a vertically-adjustable chair-seat, the combination, with the seat and frame, the tubes b, the sleeves c c', and the rods a, working therein, of the levers d, having the hardened sharp tips d^3 engaging with said rods by biting therein, whereby the seat is held at the desired height, substantially as described.

2. In a vertically-adjustable chair-seat constructed as above described, the combination, with the sliding rods a and levers d, engaging therewith, of the bent lever or hinged rail k, provided with the lug m, and bolt or stud n, engaging with the levers d, whereby the seat is lowered when desired, substantially as described.

449,356. MANUFACTURING CHAINS BY ELECTRIC-WELDING PROCESSES. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Apr. 23, 1890. Serial No. 349,156. (No model.)



Claim.—1. The herein-described improvement in manufacturing chains, which consists in constructing each link as a single continuous piece of metal, the ends of which are abutted at the joint of the loop or link, heating the joint and the continuous part of the link opposite thereto by an electric current, and then subjecting the link to pressure in a line transverse to the line connecting the chain and the opposite continuous heated portion, as and for the purpose described.

2. The herein-described improvement in manufacturing chains, consisting in forming each loop from a single continuous piece of metal, the opposite ends of which are abutted at the side of the loop, passing an electric current through the link longitudinally, so as to heat the metal at the joint and at the opposite continuous portion of the link, and then subjecting such link to endwise pressure, so as to weld the abutted portions and to upset the metal at the opposite side of the link.

3. The herein-described improvement in manufacturing chains, which consists in bending a continuous piece of metal into the form of the link, with its ends abutting at one side thereof, passing a heating electric current through the link longitudinally, so as to heat the abutted ends, as well as the opposite continuous side of the link, and then subjecting the link to end pressure, as and for the purpose described.

4. The herein-described improvement in manufacturing chains, which consists in constructing each link of a single continuous piece of metal, the opposite ends of which abut, while the continuous portion of the metal at the opposite side of the link is reduced in cross-section, passing a heating electric current through both sides of the link, and then subjecting the link to pressure, as and for the purpose described.

5. The herein-described improvement in manufacturing links, which consists in forming each link of a continuous piece of metal, the opposite ends of which are abutted at the joint, while the opposite continuous portion of the link is of reduced cross-section, passing an electric current through both sides of the link simultaneously, and then subjecting such link to end pressure, as and for the purpose described.

6. The herein-described improvement in making rings, links, or other metal objects of endless form, consisting in bending or forming a piece of metal to the shape desired, with its ends abutting, passing a heating-current of electricity through the joint and through the portion of the blank diametrically opposite the joint, and then subjecting the object to endwise pressure, so as to weld the joint and at the same time upset the metal at a continuous part of the object.

7. The herein-described process of making chains, which consists in first constructing a suitable length of chain of links connected together without joint or weld and subsequently thereto welding the links to form a complete welded chain of high tensile strength.

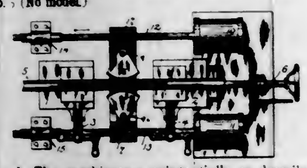
8. The herein-described method or process of making chains, which consists in first constructing a chain the members of which are threaded or linked together without joint or weld and subsequently thereto passing a heating electric current through the link at the point where the joint or weld is to be formed and subjecting the link to pressure suitable to produce the weld.

9. The herein-described process of making chains, consisting in cutting off sections of metal, bending them and linking them together to form a chain, and afterward welding the links by the passage of an electric current through the meeting ends of each bent link.

10. The herein-described method of making a chain, consisting in bending the separate pieces to form links and at the same time threading each one through a previously-formed link, and then welding the joint in the link by electricity, either while the chain is being formed or after a certain length of chain has been formed by the bending operation.

11. The herein-described improvement in manufacturing chains, consisting in cutting off suitable sections of metal of desired length, bending and threading the same together, and welding the bent ends of each link together as each is formed or after the formation of a suitable length of chain of unwelded links, as and for the purpose described.

449,357. BURR-PREVENTER FOR ELECTRIC-WELDING MACHINES. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Aug. 15, 1890. Serial No. 362,106. (No model.)



Claim.—1. The combination, substantially as described, with a metal-working apparatus having means for imparting end pressure to the work, so as to tend to upset or enlarge the same, of a number of compressing-rockers, segments, or fans adapted to engage simultaneously with the piece of metal and pivoted so as to rock or swing individually in planes transverse to the general plane including them, and a support or supports for said rockers adapted to be reciprocated or moved in a direction transverse to said general plane.

2. The combination, substantially as described, with a metal-working apparatus having means for imparting end pressure to the work, so as to tend to upset or enlarge the same, of a series of rockers arranged in the circumference of a circle including the work and a reciprocatory frame or support in which said rockers are pivoted, so that they may rock or swing in individual planes transverse to the general plane including them, as and for the purpose described.

3. The combination, substantially as described, with a metal-working apparatus having means for imparting end pressure to the work, so as to tend to upset or enlarge the same, of a series of compressing or conforming rockers or segments S, having their compressing or forming surfaces arranged to bear simultaneously upon the work and each adapted to swing in a plane transverse to the common plane in which they lie, and a frame or support 7, carrying said rockers and adapted to be reciprocated, as and for the purpose described.

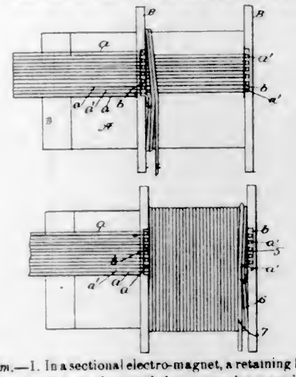
4. The combination, substantially as described, of an electric metal-working apparatus having means for applying end pressure to the work heated by the current, compressing or forming rockers or segments mounted around the work and swinging on axes transverse to the line of pressure, and a support or supports for said rockers adapted to be reciprocated in a line parallel to the line of pressure.

5. The combination, substantially as described, with a metal-working apparatus having means for imparting end pressure to the work, so as to tend to upset or enlarge the same, of the segments or rockers arranged around the work and adapted to rock or swing in planes transverse to the general plane including them, a support 7, carrying a rocker or rockers, and a cylinder and piston for reciprocating said support in a direction transverse to said general plane, as and for the purpose described.

6. The combination, substantially as described, of an electric metal-working apparatus having means for imparting end movement to the work, compressing or forming segments or rockers arranged around the work and pivoted to swing in planes transverse to the general plane including them, a frame carrying said segments, a piston and cylinder for moving the same in a line parallel to the line of movement imparted to the work, and an automatic valve mechanism connected with said cylinder and piston, as and for the purpose described.

7. The combination, substantially as described, with an electric-welding apparatus having means for imparting welding-pressure to the work, of rockers or segments arranged to engage with the work at the weld and adapted to rock in planes transverse to the general plane including them, a movable support for said rockers, and means for reciprocating the same in a line parallel to the line of welding-pressure.

449,358. ELECTRO-MAGNET. FERDINAND A. WESSEL, Brooklyn, N. Y. Filed Nov. 19, 1890. Serial No. 371,908. (No model.)



Claim.—1. In a sectional electro-magnet, a retaining head or flange for the coils, having an elongated slot or opening near its inner edge and parallel to the face of the pole or core, in combination with leading-wires for the coil-sections passing through said slot and resting upon the pole-face in a single flat layer.

2. In a sectionally-wound electro-magnet, leading-wires resting upon the core or carrier upon which the coils are wound beneath said coils and extending across or transversely to the coils from one edge to the other of the coil-space.

3. In a sectionally-wound electro-magnet in which each layer of wire constitutes a separate section, leading-wires for the alternate sections extending beneath all the windings to the opposite side of the magnet-coil.

4. In a sectionally-wound electro-magnet, leading-wires assembled in a parallel plane upon the core or carrier for the coils and connected alternately to the windings at opposite edges of the coil.

5. In a sectional electro-magnet, leading-wires passing through the coil head or flange near the core or carrier, the alternate wires being extended across to the opposite edge of the coil for connection with the edge of a layer of the winding.

6. In a sectional electro-magnet, a series of leading-wires connected to the coil-sections and carried beneath the coils between the same and the core or carrier upon which they are wound.

7. The herein-described method of constructing a sectional electro-magnet, consisting in placing the leading-wires in position upon the core or carrier for the coils, with free ends at opposite sides of the space to be occupied by the said coils, winding the wire upon the carrier as a continuous coil, and during the operation connecting the leading-wires to the same at the edges of the layers.

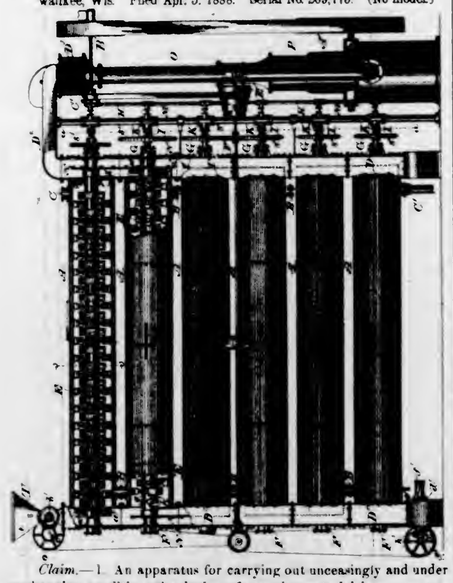
8. The herein-described method of constructing a sectional electro-magnet, by placing the leading-wires in position with their ends upturned at the edge of the coil-space, winding the wire as a continuous coil, and on the completion of a layer bending down an upturned end of a leading-wire in a plane parallel to the plane of winding and connecting to the coil at the edge thereof.

9. The herein-described improvement in constructing a sectional electro-magnet, consisting in placing the leading-wires in position, winding the coil, and making connection to the leading-wires as the winding progresses.

10. The herein-described improvement in constructing sectional magnetic coils, consisting in placing the leading-wires in position with the alternate wires extending across the pole-space, applying the coil-winding, and connecting the edges of the layers alternately to the free end of the leading-wires at opposite sides of the coil-space.

11. In a sectional electro-magnet, spool-heads or flanges provided with recesses *b* next the coil-windings to receive the ends of the leading-wires.

449,359. DESICCATING APPARATUS. RICHARD BIRKHOLZ, Milwaukee, Wis. Filed Apr. 5, 1888. Serial No. 269,773. (No model.)



Claim.—1. An apparatus for carrying out unceasingly and under unchanging conditions the drying of granular material *in vacuo*, comprising, in combination, a closed retort with a heating-jacket, a constantly-acting exhauster to remove the air and vapors, a constantly-acting agitator to aid the flow of the material through the retort, the feed-hopper, the chambered power-driven valve communicating alternately with the hopper and retort to introduce the wet material and exclude the air, and the power-driven air-excluding discharge-valve, whereby the material is automatically and constantly passed through the apparatus subject to unchanging conditions as to speed, temperature, and vacuum.

2. In an apparatus for drying materials *in vacuo*, the combination of a closed retort, a jacket for heating the same, a constantly-acting exhaust apparatus for removing the air and vapors from the retort, a feed-valve, substantially as shown, for admitting the material and excluding the air, a discharge-valve, substantially as shown, for delivering the dry product and excluding the air, and a train of driving-gear, substantially as described, for continuously operating said valve mechanisms, whereby the delivery of the material into and through the apparatus is carried on automatically and unceasingly.

3. In combination with an exhausted retort and a feed-hopper, an intermediate rotary valve in the form of a cylinder having closed ends and a side opening, as described.

4. In an apparatus for carrying on a uniform and unceasing operation of drying *in vacuo*, the series of stationary horizontal retorts provided with heating-jackets, an exhaust mechanism to remove the air and vapors from the retorts, weirs at the delivery end of the retorts to maintain the level of the material therein, agitators within the retorts to facilitate the flow of the material therethrough, the chambered feed-valve opening alternately to the interior and the exterior of the retort, and the discharge-valve having the cylinder, piston and end valve, substantially as shown, whereby the wet material may be introduced into and passed with constant progression through the retort and the dry product delivered therefrom without impairing the vacuum in any part of the apparatus.

5. In a drying apparatus, a retort, a cylinder communicating with the delivery end of said retort, an outwardly-opening valve closing the entire outer end of said cylinder, a piston within said cylinder, and suitable mechanism for reciprocating said piston, whereby the dry product may be forcibly delivered from the apparatus against the external air-pressure and without permitting the inflow of air.

6. In combination with an exhausted retort, the cylinder *d*, opening at one side to the retort, an outwardly-opening valve *l*, covering the delivery end of the cylinder, and the piston adapted to pass over and close the opening to the retort and to drive the contents of the cylinder outward past the valve.

7. In a vacuum drier, a horizontal retort provided with the elevated discharge-opening, the short rotary feeder a^3 at the receiving end, and the central shaft provided with agitator-arms, whereby the material is kept in a loose condition, that it may flow under the influence of the feeder to the outlet, and that the heat may be more advantageously applied.

8. In combination with a retort, an internal rotating tubular shaft with tubular stirrer-arms and a steam-inlet, a pipe rotating with said shaft, one end projected horizontally to the outside and the other end fashioned into a scoop lying close to the inside of the shaft, whereby it is caused to dip into and lift the water of condensation to the exterior at each revolution.

9. In combination with a closed retort, a central tubular shaft with tubular stirrer-arms and a tubular steam-admission journal, and a rotary water-delivery pipe passed through said journal and carried at its inner end in helical form close to the inner surface of the shaft, whereby the steam and water are passed through one and the same end of the shaft and its opposite end left intact.

10. In a vacuum drier, a retort connected with an exhausting apparatus and closed against the entrance of air, a central rotary stirrer-shaft located within the retort and provided at one end with a projected journal and an inclosing bearing, through which the journal passes, said bearing comprising a wearing-surface of dry lubricating material, and a gland or stuffing-box to prevent leakage, whereby the admission of air is prevented and the employment of fluid lubricants and consequent injury to the material under treatment are avoided.

11. In combination with the rotary tubular valve with side opening, the internal independently-movable agitator, substantially as shown, to facilitate the inflow and outflow of the material.

12. In combination with an exhausted retort, the rotary tubular valve, the concentric independently-rotative agitator or scraper, the pulley and belt to give a continuous rotation to the agitator, and the pawl-and-ratchet mechanism to rotate the valve intermittingly.

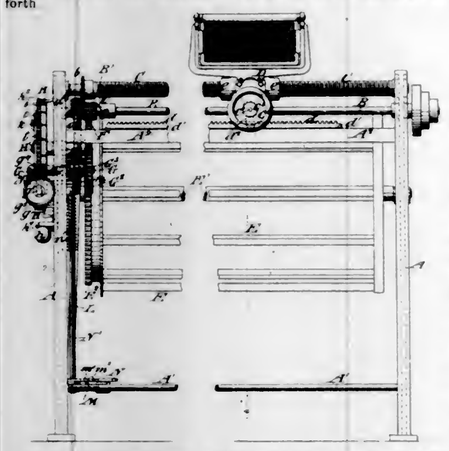
13. In combination with the cylinder having the lateral inlet-throat, the self-closing valve at its end, and the reciprocating piston, whereby the piston is enabled to discharge the contents of the cylinder automatically and the cylinder automatically closed on the retreat of the piston to prevent the admission of air.

449,360. REELING-MACHINE. EDWARD E. BRADLEY, Stoneington, Conn., assignor to the Atwood Machine Company, same place. Filed Jan. 11, 1890. Serial No. 336,649. (No model.)

Claim.—1. The combination, with the reel, of a traverse-screw for moving a reed-carriage lengthwise of the reel, fixed bearings in which said screw is journaled, and a reed-carriage supported on said screw and free to slide lengthwise thereof, substantially as herein set forth.

2. The combination, with the reel and the supporting-frame there-

for, of a fixed toothed rack arranged lengthwise of the reel, a traverse-screw journaled in the said frame parallel with said rack, mechanism, substantially as described, for turning said screw, a reed-carriage supported on said screw and free to slide thereon independently of the rotation thereof, a shaft journaled in said carriage, a worm-gear on said shaft engaging with said screw, and a spur-gear on said shaft gearing with said rack, substantially as and for the purpose herein set forth



3. The combination, with the reel, the traverse-screw, and mechanism, substantially as described, for operating them, and the fixed rack, of the reed-carriage supported on said screw, the shaft journaled in said carriage, the worm-gear gearing with said screw, and the spur-gear gearing with said rack, one of said gears being fast and the other loose on said shaft, a clutch and means for engaging and disengaging the same between said spur-gear and worm-gear, and a hand-gear fast to said spur-gear, all substantially as herein described, to provide for traversing the carriage either by means of the screw or by hand.

4. The combination, with the reel and the end frames or standards, of a traverse-screw and journal-boxes therefor supported by said frames or standards, a reed-carriage supported on said screw and free to slide thereon independently of the rotation thereof, a stationary girt carrying a toothed rack between said frames or standards, a shaft on said carriage, a spur-gear and a worm-gear on said shaft gearing, respectively, with said rack and screw, and a guide on the said girt to direct the carriage on the traverse-screw in proper relation to the reel, all substantially as herein set forth.

5. A registering-wheel for a reeling-machine having on its peripherical face a scale of measurements and having teeth on its periphery for driving it, in combination with a drive-shaft having a swinging movement toward and away from the periphery of the wheel and provided with a worm adapted to engage the teeth on the periphery of the wheel, substantially as herein described.

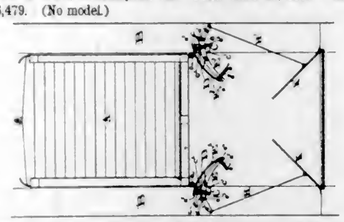
6. The combination, with a reel, a drive-shaft, a register-wheel, gear for transmitting the motion of the said shaft to the reel, and worm-gear for transmitting the motion of said shaft to the registering-wheel, the worm forming a part of said worm-gear having a swinging movement toward and away from the registering-wheel, of a stop-motion between the registering-wheel and the aforesaid drive-shaft and a finger carried by said registering-wheel for disengaging said stop-motion after a given quantity of warp-thread has been reeled, substantially as set forth.

7. The combination, with the registering-wheel of a reeling-machine, having on its periphery a scale and a projection at the zero-line of said scale, of a fixed finger on the framing of the machine, substantially as described, the said finger serving as a stop to the said projection, a permanent starting-point for the wheel, and an index to the scale, as herein set forth.

8. The combination, with the main shaft B, the traverse-screw C, and the bevel-gear *b* thereon, and the registering-wheel H, having a scale on its peripherical face and teeth *t* on its periphery, of the shaft G, geared with the main shaft B, substantially as described, the two intermediate shafts g' a' between said shaft G and the registering-wheel H, and traverse-screw C, respectively, the two endless screws g^4 G^3 on the said shaft G, the worm-wheel g^3 on the said shaft g', gearing with the endless screw g^4, the endless screw on the shaft g', gearing with the teeth *t* on the registering-wheel H, the worm-wheel *a* on the shaft a', gearing with the endless screw G^3, and the bevel-gear a^3 on the said shaft a', gearing with the bevel-gear *b* on the traverse-screw, substantially as herein set forth.

449,361. ELEVATOR-HATCHWAY-OPERATING MECHANISM.

DAVID B. CLEM, Philadelphia, Pa. Filed June 23, 1890. Serial No. 356,479. (No model.)



Claim.—1. The combination, with an elevator-hatchway, of one or more hatchway-doors, a curved lever connected at one end with each door and at the other projecting into the pathway of the elevator, and a laterally-adjustable arm or bracket for each lever, upon which the same is pivoted, substantially as and for the purpose specified.

2. The combination, with an elevator-hatchway, of one or more hatchway-doors, a curved lever connected at one end with each door and at the other projecting into the pathway of the elevator, a laterally-adjustable arm or bracket for each lever, upon which the same is pivoted, and a base-plate for each arm having thereon a box with a transverse opening therein for the reception of said arm or bracket, substantially as and for the purpose specified.

3. The combination, with an elevator-hatchway, of one or more hatchway-doors, a curved lever suitably supported connected at one end with each door and at the other end projecting into the pathway of the elevator, and a metallic strip or plate adjustably secured on each of the last-mentioned ends, substantially as and for the purpose specified.

4. The combination, with an elevator-hatchway, of one or more hatchway-doors, a suitably-supported curved lever connected at one end with each door and at the other end projecting into the pathway of the elevator, and a metallic strip or plate having depending slotted legs or extensions adjustably secured on each of the last-mentioned ends by bolts passing through the slots, substantially as and for the purpose specified.

5. The combination, with an elevator-hatchway, of one or more curved levers connected at one end with each door and at the other end projecting into the pathway of the elevator, a metallic strip or plate adjustably secured on each of the last-mentioned ends, and an adjustable support for each lever, upon which the same is pivoted, substantially as and for the purpose specified.

6. The combination, with an elevator-hatchway, of one or more hatchway-doors, a curved lever connected at one end with each door and at the other end projecting into the pathway of the elevator, a metallic strip or plate adjustably secured on each of the last-mentioned ends, and a laterally-adjustable arm or bracket for each lever, upon which the same is pivoted, substantially as and for the purpose specified.

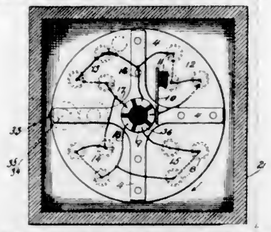
7. The combination, with an elevator-hatchway, of one or more hatchway-doors, a curved lever connected at one end with each door and at the other end projecting into the pathway of the elevator, a metallic strip or plate adjustably secured on each of the last-mentioned ends, a laterally-adjustable arm for each lever, upon which the same is pivoted, and a base-plate for each arm, having thereon a box with a transverse opening therein for the reception of said arm, substantially as and for the purpose specified.

8. The combination, with an elevator-hatchway, of one or more hatchway-doors, a curved lever connected at one end with each door and at the other end projecting into the pathway of the elevator, a metallic strip or plate having depending slotted arms adjustably secured on each of the last-mentioned ends by bolts passing through the slots, a laterally-adjustable arm for each lever, upon which the same is pivoted, and a base-plate for each arm, having thereon a box with a transverse opening therein for the reception of said arm, substantially as and for the purpose specified.

9. The combination, with an elevator-hatchway, of one or more hatchway-doors, a curved lever connected at one end with each door and at the other end projecting into the pathway of the elevator, a metallic strip or plate having depending slotted arms adjustably secured on each of the last-mentioned ends by bolts passing through the slots, a laterally-adjustable arm for each lever, upon which the same is pivoted, a base-plate for each arm, having thereon a box with a transverse opening therein for the reception of said arm, and a bolt or bolts sustained in the box and impinging on the arm, substantially as and for the purpose specified.

449,362. ELECTRIC SWITCH-BOX.

JAMES H. DEAN, Minneapolis, Minn., assignor, by direct and mesne assignments, to Barron D. Southard, same place, and William Perkins, Armada, Mich. Filed Nov. 4, 1890. Serial No. 370,328. (No model.)



Claim.—1. The combination, in an electric switch-box, of a central shaft provided with a contact-brush, a contact-ring, a resistance-drum provided on said shaft, an armature provided on said drum, and an electro-magnet adapted to magnetically engage said armature, and means whereby said shaft when not held by the electro-magnet or by the switch-lever is turned back and held in its normal position, substantially as and for the purpose described.

2. In a switch-box, the combination, with the shaft, of a contact-lever with which said shaft is adapted to turn, a contact-ring arranged in connection with said lever, an armature arranged in connection with said shaft, and an electro-magnet provided in the circuit in which said ring and switch-lever are included and adapted to magnetically engage said armature, whereby said shaft with the switch-lever is held while current is passing through said electro-magnet and released when current ceases to flow through the same, substantially as described.

3. The combination, in a device of the class described, of the central shaft with the switch-lever, the contact-ring having the insulating-segment, the resistance-drum provided with several sets of resistance devices, a commutator provided on said shaft, but insulated therefrom and connected with said resistance devices, and a contact-brush adapted to press on said commutator, substantially as described.

4. The combination, in a device of the class described, of the contact-ring having the insulating-segment with the switch-lever adapted to make contact with said contact-ring, a central shaft upon which said switch-lever is pivoted, a spring adapted to restore said shaft with the switch-lever to their normal positions after being rotated forward, a resistance-drum arranged on said shaft in connection with a suitable commutator, a brush adapted to bear on the surface of said commutator, an armature provided on the end of said resistance-drum, and an electro-magnet adapted to magnetically engage said armature, substantially as described.

5. The combination, in a device of the class described, of the central vertical shaft with switch lever arranged thereon, the contact-ring having the insulated segment upon which said switch-lever normally bears, the arms provided on said shaft, the disks of insulating material arranged thereon, resistance-coils extending between said disks, the commutator provided on said shaft but insulated therefrom, the segments of said commutator being connected with corresponding sets of resistance-coils, a contact-brush adapted to bear on the surface of said commutator, the lower end of the said shaft provided in a suitable journal, a clock-spring arranged in connection with said end of the shaft, an armature arranged on one of said disks, and an electro-magnet adapted to engage said armature, substantially as described.

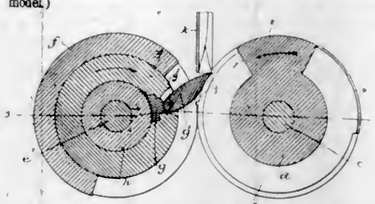
6. The combination, in an electric switch-box, of the central shaft 2, with the arms 4 and 5 provided thereon, the disks 6 and 7, resistance-coils extending between said disks, the commutator 9, made up of insulated segments, said segments being connected with corresponding sets of resistance-coils, and a contact-brush adapted to bear on said commutator, substantially as described.

7. The combination, in an electric switch-box, of the shaft 2, with the journal 19, the clock-spring 22, arranged in connection with said shaft and tending to rotate the same backwardly, the switch-lever 28, pivoted on said shaft and by means of which said shaft may be revolved in a forward direction, the contact-ring 25, with which said lever 28 is adapted to make contact, the insulating or insulated segment 26 of said ring, the arms 4 and 5, the disks 6 and 7, the commutator 9, the resistance-coils arranged in connection with the segments in said commutator, the brush 10, adapted to bear on the surface of said commutator, said commutator-segments being insulated from each other and from the shaft, and means whereby said disks, shaft, and switch-lever are magnetically held in position, substantially as and for the purpose specified.

8. The combination, in an electric switch-box, of the contact-ring having the insulated segment and arranged in connection with a source of electricity, the switch-lever 28, having the contact-brush 27, adapted to bear on said contact-ring, the shaft 2, upon which said switch-lever is pivoted, said shaft being connected with the field-coils of the motor, the electro-magnet 23, included between said field-coils and the opposite pole of said source of electricity, the arms 4 and 5, the disks 6 and 7 of insulating material, the resistance-coils S, connected in sets with corresponding segments of said commutator, the contact-brush 10, connected with one side of the armature, the other side of the armature being connected with the last segment of said commutator, the clock-spring 22, arranged in connection with the lower end of said shaft 2, the armature 35, and a stop arranged to engage said switch-lever when in either of its extreme positions, substantially as described.

449,363. MACHINE FOR MARKING MAIL-MATTER.

FRANK N. ETHERIDGE, Boston, Mass., assignor to the American Postal Machine Company, same place. Filed Nov. 1, 1890. Serial No. 370,069. (No model.)



Claim.—1. In a machine for marking mail-matter, the combination, as a means for printing and positively feeding letters, &c., of a rotating shaft or driver, a roll normally loose thereon and provided with a shaft-engaging clutch and an operating-arm therefor projecting from the periphery of the roll, said arm being adapted to be moved by a letter advancing toward it, a rotating roll or head arranged to co-operate with the first-mentioned roll and provided with two operating-surfaces, one of which is within and the other upon its periphery, said surfaces being arranged to co-operate, as described, with the clutch-operating arm in alternately engaging the clutch with and disengaging it from said shaft or driver, a printing-form attached to one of said rolls, and a segmental impression-surface on the other roll, as set forth.

2. In a machine for marking mail-matter, the printing and positive-feeding mechanism consisting of a rotating shaft or driver, an impression-roll normally loose thereon and provided with a shaft-engaging clutch and an operating-arm therefor projecting from the periphery of the roll, said arm being adapted to be moved by a letter advancing toward the impression-roll, and a rotating head arranged to co-operate with said roll and provided with a printing-form and with two operating-surfaces, one of which is within the periphery of the head and acts on the arm after its movement by a letter to engage the clutch and the impression-roll with its shaft, the other operating-surface being on the periphery of said head and acting on the arm to disconnect the impression-roll from its shaft and stop the rotation of said roll, all combined substantially as set forth.

3. The combination, with the letter-printing and positive-feeding mechanism comprising the rotating shaft or driver, the loose impression-roll thereon provided with a clutch and with a clutch-operating arm, and a rotating head having a printing-form and two clutch-operating surfaces, as described, of the feed-pulley affixed to the impression-roll-operating shaft above said roll, and a letter-feeding device arranged to co-operate with said pulley in presenting a letter to the clutch-operating arm and to the meeting-point of the impression-roll and head, as set forth.

4. In a machine for marking mail-matter, a circular head affixed to a rotating shaft and provided with a segmental printing-form constituting a part of the periphery of the head, said head having a peripheral recess interrupted by a shoulder within the periphery of the head and a peripheral surface forming a part of the said periphery, combined with a rotating shaft in suitable proximity to said head, an impression-roll loosely mounted on said shaft and carrying a clutch adapted to engage the said roll with and disengage it from the shaft and an arm or lever pivoted to the said roll and engaged at its inner end with the clutch, its outer end projecting outside the periphery of the roll within the path of a letter approaching the said head and roll said lever being arranged to be moved by the approaching letter into the path of the shoulder on the head and by said shoulder into position to engage the clutch with the shaft supporting the impression roll, whereby the impression-roll is rotated with the head and printing-form until the said peripheral surface of the head meets the lever and through the latter disengages the clutch from shaft and stops the rotation of the impression-roll, as set forth.

5. In a machine for marking mail-matter, the combination of a supporting bed or table, letter-printing and positive-feeding mechan-

sm located over the table and composing a rotating printing-form and a rotating impression-bed, a yielding letter-feed consisting of a spiral conveyer arranged partly below and partly above said table, its axis being substantially at right angles with the path of a letter between said printing-form and impression-roll, and means for rotating said conveyer, whereby its convolutions are caused to yieldingly present letters dropped between them to the printing and positive-feeding mechanism, as set forth

6. The combination of a bed or table, a printing and positive-feeding mechanism above said table, comprising a rotating head having a printing-form, an impression-roll, a rotating shaft on which said roll is loosely mounted, and a movable arm or lever projecting from the periphery of the impression-roll to operate a clutch which connects said roll with and disconnects it from the shaft, the printing-head having surfaces arranged to co-operate, as described, with said arm, a spiral conveyer arranged partly below and partly above said table and arranged as described relatively to the printing mechanism, and means for rotating said conveyer, whereby its convolutions are caused to yieldingly press a letter dropped between them first against the said arm to displace the latter and then to the point where the head and roll grasp the letter, as set forth

7. In a machine for marking mail-matter, the combination of a bed or table, two spiral conveyers arranged with their convolutions partly below and partly above said table, their axes being substantially parallel, one of said conveyers constituting a yielding letter-feed and the other a packer, and a printing and positive-feeding mechanism located between said conveyers and comprising a rotating head having a printing-form and a rotating impression-roll, said mechanism being arranged to receive letters from the feeding-conveyer and to present the letters after printing to the packing-conveyer, as set forth

8. In a machine for marking mail-matter, the combination of the rotating shaft or driver, the normally-loose impression-roll upon said shaft, having a clutch adapted to connect it with and disconnect it from the shaft and an outwardly-projecting clutch-operating arm, the letter-feeding pulley or disk affixed to the said shaft or driver above the impression-roll, the continuously-rotating head arranged to co-operate with the impression-roll in grasping and positively-feeding a letter, said head having a printing form constituting a part of its periphery, a peripheral groove above said form adapted to receive the said clutch-operating arm and two surfaces interrupting said groove, one being a shoulder within the periphery of the head and the other a portion of said periphery, said surfaces being adapted to co-operate, as described, with the clutch-operating arm in engaging the impression-roll with and disengaging it from its shaft or driver, a bed or table arranged to support the lower edge of a letter in suitable relation to said head and impression-roll, a spiral conveyer located partly below said table and presenting portions of its convolutions above the table, and means for rotating said conveyer, whereby it is caused to feed a letter forward to the said feeding pulley or disk and to co-operate with the latter, first, in pressing the letter against the clutch-operating arm to force the latter into the grove in the rotating head, and, secondly, in presenting the letter to the meeting-point of the impression-roll and head after the impression-roll has been set in motion, as set forth

9. The letter-supporting bed or table, the spiral conveyer arranged with its convolutions partly above said table, and the letter-printing and positive-feeding devices arranged above said table to receive letters fed forward by said conveyer, combined with a guide or hopper located above said conveyer and adapted to guide letters into the spaces between the convolutions of the conveyer, as set forth

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449,364. DOOR-OPENER. DAVID HAWKSWORTH, Plattsmouth, Nebr. Filed Apr. 24, 1890. Serial No. 349,247. (No model.)

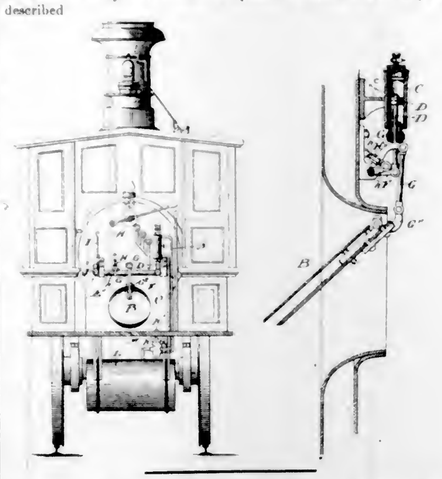
Claim.—1. In a door-opener, the combination of a double-acting cylinder, a piston therein operated by fluid-pressure on both sides, an inwardly-opening door, and means whereby the door is opened and closed by the movement of the piston, substantially as described

2. The combination of a shaft E, having a cam *j*, an inwardly-opening door B, connected to such shaft, a lever mounted upon the shaft, having a lug *i*, and a stop H, secured to such shaft, substantially as described

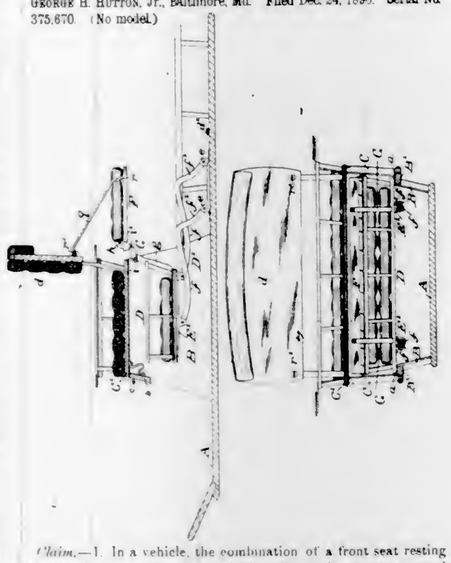
3. The combination of a shaft E, having a cam *j*, an inwardly-opening door B, connected to such shaft, and a lever mounted on the shaft, having a lug *i*, whereby as the lever is operated the lug engages with the cam to turn the shaft and open the door, substantially as described

4. The combination of a shaft E, carrying arm G and cam *j*, a door B connected to the arm G, a lever I, having a lug *i* mounted on the shaft, and a quadrant J, whereby the door may be opened and held in any desired position, substantially as described.

5. The combination of a shaft E, carrying arms F and G, a cylinder C, a piston D, the rod whereof is attached to the arm F, and an inwardly-opening door connected to the arm G, whereby as the piston is moved in the cylinder the door is opened or closed, substantially as described



449,365. CONVERTIBLE VEHICLE. GEORGE H. HUTTON and GEORGE H. HUTTON, Jr., Baltimore, Md. Filed Dec. 24, 1890. Serial No. 375,670. (No model.)



Claim.—1. In a vehicle, the combination of a front seat resting on a stationary support, but movable therefrom, a jump-seat mounted on pivotal legs behind said front seat and adapted to be jumped forward beneath the latter and maintain its horizontal position, and a lazy-back jointed to said jump-seat and adapted to be turned rearward to a horizontal position, where it constitutes a seat.

2. In a vehicle, the combination of a front seat resting on a stationary support, but movable therefrom, a jump-seat mounted on pivotal legs behind said front seat and adapted to be jumped forward beneath the latter, and a lazy-back secured to said jump-seat by double-jointed irons and adapted to be turned forward upon the seat, and also turned rearward to a horizontal position behind the front seat to constitute a seat with its back to the said front seat

3. In a vehicle, the combination of a front seat C, resting on a stationary support C, but movable therefrom, four parallel legs of equal length pivoted to the body-bottom behind said front seat, and a rear seat pivotally mounted on said four legs, each of which comprises an upright long arm *f*, a short base portion *f'*, and a stop bend *d'* between the said long arm and the base portion.

4. In a vehicle, the combination of a body having outwardly-inclined sides, each provided with outward-projecting top plates B', seat-

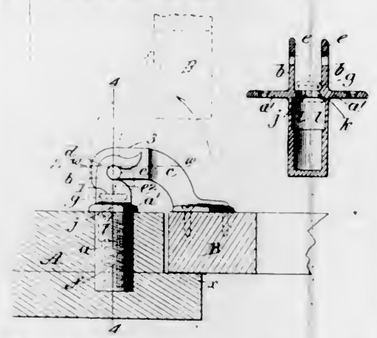
standards C, rising from said projecting top plates and leaving thereon inside shoulders *a*, a front seat resting on said standards and movable therefrom, and a rear jump-seat adapted to be jumped forward between the said standards and rest upon the said inside shoulders, as set forth

5. A double-jointed iron for the lazy-backs of vehicle-seats, comprising a standard-iron rigidly secured to the seat, a back-iron secured to the lazy-back, and a link-bar connecting the two irons, whereby the lazy-back may be turned forward and backward, as set forth.

6. A double-jointed iron for the lazy-backs of vehicle-seats, comprising a standard-iron rigidly secured to the seat and having at its upper end a joint-ear and stop-shoulders, a back-iron secured to the lazy-back and having a rigid joint-arm, and link-bars and two pivots *i i'*, connecting the seat-iron, joint-ear, and the back-iron joint-arm, for the purpose set forth.

7. A double-jointed iron for the lazy-backs of vehicle-seats, comprising a standard-iron *g*, rigidly secured to the seat and having at its upper end a joint-ear *k*, with a front rounded part and provided with a rear projecting angular corner *l*, an iron *h*, secured to the lazy-back and having a rearward-projecting joint-arm *n*, provided with a hook or beak *o* to engage said angular corner, and a link-bar connecting the said two irons by pivots in the manner and for the purpose set forth.

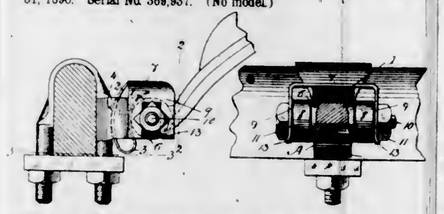
449,366. SPRING-HINGE. FRANK N. KELSEY, Florence, assignor of one-half to George L. Loomis, Northampton, Mass. Filed Oct. 31, 1890. Serial No. 369,936. (No model.)



Claim.—1. A spring-hinge consisting of two members *a* and *c*, the one comprising the socketed casing open at its outer end and provided thereat with the hook-shaped lugs *e e*, standing at opposite sides of the socket, the other member *c* carrying the pin *d* for engaging said hook-lugs, and the spiral spring disposed in said casing and exerting an outward forcing action in relation to the member *c*, substantially as described.

2. A spring-hinge consisting of two members *a* and *c*, the one comprising the casing-socket open at its one end and provided at opposite sides of the mouth with lugs and internally provided with the grooves *j j* and the other member provided with the flat portions 1, 2, and 3 and the pivot-forming pin *d*, the bushing *g*, having the studs, and the spring, all combined for operation substantially as described.

449,367. THILL-COUPLING. FRANK N. KELSEY, Florence, assignor of one-half to George L. Loomis, Northampton, Mass. Filed Oct. 31, 1890. Serial No. 369,937. (No model.)



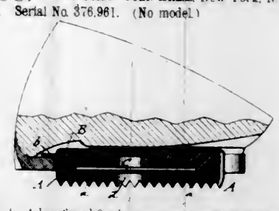
Claim.—1. The combination, with a thill-coupling, of an anti-rattler device integrally formed from a single piece of thin metal comprising the tongue formed by the spring-reacting leaves 1 and 2, adapted to be inserted between the front of the clip and the eye of the thill-iron, and the portion 7, to which one of said leaves is connected, provided with the pending portions 9, having the legs 11 and 12, which have an outward spring-reaction and which straddle the coupling-bolt, substantially as described.

2. An anti-rattler device integrally formed from a single piece of thin metal and consisting of a tongue formed of spring-reacting leaves 1 and 2, and the portion 7, to which one of said leaves is connected, provided with the pending portions 9, having the legs 11 and 12, which have an outward spring-reaction, substantially as described

3. An anti-rattler device comprising a tongue formed by spring-reacting leaves 1 and 2, the portion 7, to which one of said leaves is connected and which at each side is provided with the pending bifurcated portions 9, adapted to straddle the coupling-bolt, and one of the legs having the curved or upset extremity 13 to constitute a click or detent, substantially as and for the purpose described

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449,368. HOOF-PAD. JOHN KRESS, New York, N. Y. Filed Jan. 7, 1891. Serial No. 376,961. (No model.)

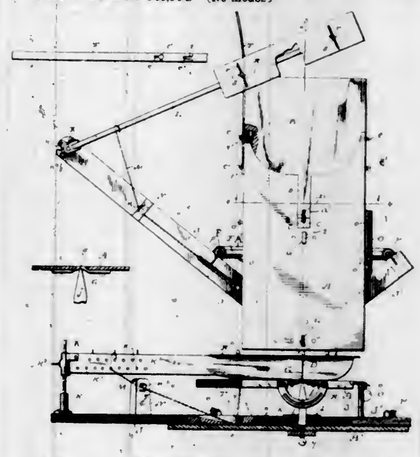


Claim.—1. A hoof-pad for horses, composed of an elastic pad having transverse ribs at its under side, projecting lugs out of its front end and sides, a cavity at its middle portion, and a longitudinal pin secured to the pad and extended centrally through the cavity, substantially as set forth.

2. A hoof-pad for horses, consisting of a pad of elastic material having transverse ribs at its under side, an arc-shaped plate embedded into the front part of the pad and provided with projecting lugs at the front and sides, a cavity at the middle portion of the pad, and a longitudinal pin embedded in the pad and extending centrally through said cavity, substantially as set forth

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449,369. SAW-TABLE GAGE. RUDOLPH KUEHNE, Milwaukee, Wis., assignor of one-half to Bernhardt A. Kipp, same place. Filed Apr. 3, 1890. Serial No. 346,504. (No model.)



Claim.—1. In a sawing-machine, a laterally-tilting guide-table, in combination with a swinging arm extending normally across the path of the work on said table, and connections, substantially as described, for causing the movement of the arm to tilt the table, for the purpose set forth.

2. In a sawing-machine, a laterally-tilting guide-table, in combination with a swinging arm extending normally across the path of the work on said table, and a flexible connection between the table and the swinging arm, substantially as described.

3. In a sawing-machine, a laterally-tilting table, in combination with a reversible swinging arm arranged to extend normally across the path of the work from either side of the table, and a flexible, connection between the arm and the table, substantially as set forth

4. In a sawing-machine, a counterweighted laterally-tilting guide-table, in combination with a swinging lever extending normally across the path of the work on said table, and a flexible connection between said arm and table, substantially as described.

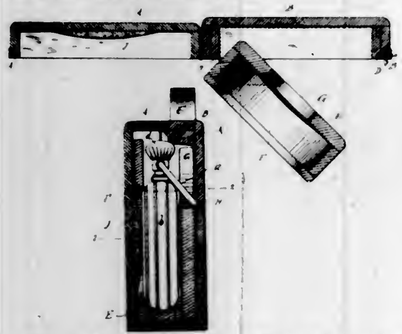
5. In a sawing-machine, a laterally-tilting guide-table, in combination with a swinging arm extending normally across the path of the work on the table, and a flexible connection between the table and arm adjustably connected to the latter, substantially as set forth.

6. In a sawing-machine, a laterally-tilting guide-table, in combination with a swinging lever extending normally across the path of the work on the table and having an adjustable section against which the work abuts to tilt the table, substantially as described.

7. In a sawing-machine, a guide-table constructed in two sections, one of which is cut inward at its rear end to receive the outwardly-extending end of the opposing section, the latter having a recessed tongue to enter a corresponding inlet of the first-named table-section, and thus removably inclose the saw, substantially as set forth.

8. In a sawing-machine, a laterally-tilting table, in combination with a removable swinging arm arranged to extend normally across the path of the work, a flexible connection between the arm and the table, and a bar removably set on the opposite side of the table and having a stop to limit the tilt of the latter, substantially as set forth.

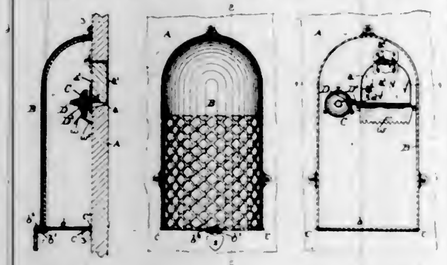
449,370. TRAVELER'S WATCH-CASE. EDWARD A. LAUTEN, Mount Vernon, assignor to Albert Wittnauer, New York, N. Y. Filed Nov. 4, 1890. Serial No. 370,262. (No model.)



Claim.—1. The combination, with a case formed of two hinged sections, of a watch-holding pocket hinged along the center of one of its sides to the outer side edge of one of the sections and adapted to be swung in and out of said section, which watch-holding pocket is provided with an aperture through which the dial of the watch is visible.

2. The combination, with a case formed of two hinged sections, of a watch-holding pocket hinged at one side to one side of one section, and a cushion or stop for the crown secured to the top of the interior of that section to which the watch-holding pocket is hinged, substantially as set forth.

449,371. HOUSE-DOOR LETTER-BOX. EDWARD MARKELL, Baltimore, Md. Filed Dec. 11, 1890. Serial No. 374,310. (No model.)

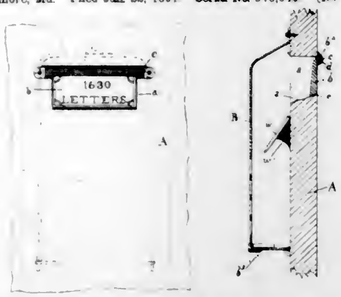


Claim.—1. In a letter-box, the combination of a hinged lid opening into the box, a bell located at one side of the said lid and having a clapper attached to the end of a spring on the exterior of the bell, said clapper projecting over the edge of the hinged lid, whereby when the latter is opened back its edge engages the clapper and pushes it away from the bell against the action of the spring and then trips the said clapper and allows the spring to return it against the bell, the said clapper normally standing off from the bell and having a curved back surface over which the edge of the lid rides when the latter closes.

2. The combination of the door A, having a suitable opening *a*, a spring-actuated hinged lid closing said opening, a box secured to the door and including said lid, and a bell in the box at one side of said lid having a spring-clapper on its exterior projecting over the edge of the lid and normally standing off from the bell and provided with a curved back surface, for the purpose described.

3. The combination of the door A, having a suitable opening *a*, a spring-actuated hinged lid closing said opening, a box secured to the door and including said lid, and a serrated guard-plate hinged to the door below the said opening and held in an inclined position by a suitable prop, for the purpose described.

449,372. HOUSE-DOOR LETTER-BOX. EDWARD MARKELL, Baltimore, Md. Filed Jan. 22, 1891. Serial No. 378,646. (No model.)



Claim.—1. A letter-box having a receiving-slot in one side provided with a beveled lower side, and a swinging flapper pivoted in said slot and adapted to open back into the box and provided with a beveled lower edge which coincides with the beveled lower side of the said receiving-slot and is adapted to abut against the same, the pivot of said swinging flapper being located in front of the outside surface of the side of the box in which the receiving-slot is made, for the purpose specified.

2. A letter-box having a receiving-slot in one side provided with a beveled lower side, and a swinging flapper pivoted in said slot and adapted to open back into the box and provided with a beveled lower edge which coincides with the beveled lower side of the said receiving-slot and is adapted to abut against the same, the pivot of said flapper being located in front of the outside surface of the side of the box in which the receiving-slot is made and also in front of the face of the flapper, whereby when the latter is closed its front surface is flush with that of the said box side which has the receiving-slot.

3. The combination of the door A, having a receiving-slot with a beveled lower side, a box B, secured to said door, a swinging flapper hung in said slot and opening back into the said box and having suitable trunnions projecting from its opposite ends and a beveled lower edge which abuts against the said beveled lower side of the receiving-slot in the door, and a hanger-plate secured on the outside of the said door and extending across the upper portion of the slot in the latter and having boxes at its opposite ends in which the trunnions of the flapper are journaled, the said hanger-plate covering the upper portion of said flapper.

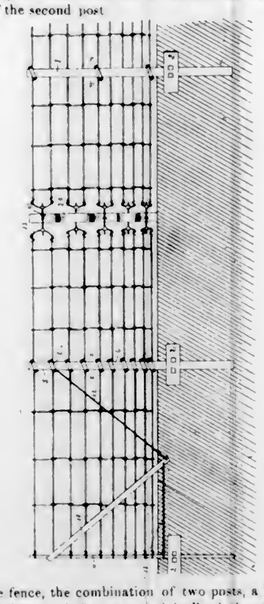
449,373. WIRE FENCE. PETER MAST, Waterville, Ohio. Filed June 14, 1890. Serial No. 355,498. (No model.)

Claim.—1. In a wire fence constructed in sections, a series of curved resilient tension-plates, each perforated centrally and at its ends, the latter perforations to receive two of the longitudinal wires in the same section, in combination with a right-and-left-hand-threaded bolt passing loosely through the said central perforations, and threaded winged nuts embracing the plates and engaging the said bolt.

2. In a wire fence constructed in sections, a series of tension devices to which the wires forming the fence are secured, in combination with a bar arranged alternately in front of and in rear of the respective bolts of the tension devices and having means for engaging the bolt of the upper tension device, for the purposes set forth.

3. As a new article of manufacture, a tension device for wire fences, comprising two curved resilient plates, each perforated centrally and at its ends, a right-and-left-hand-threaded bolt engaging the central perforation, and winged nuts on said bolt adapted to embrace the said plates.

4. In a wire fence, the combination of two vertical posts, a rigid bar connected with the top portion of the first post and inclined therefrom, a flexible connection attached horizontally to the said post and to the brace-bar near their lower ends, and an upwardly-inclined flexible support connecting with the lower end of the said bar and with the upper portion of the second post.

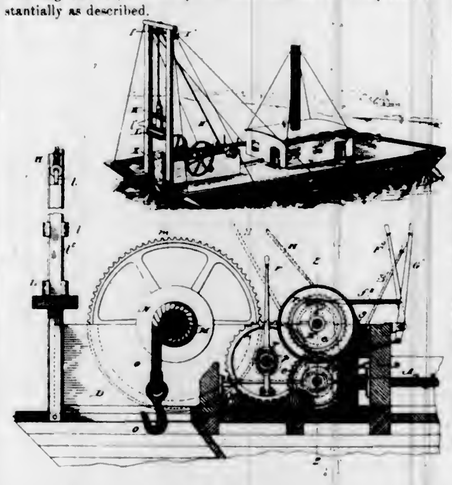


5. In a wire fence, the combination of two posts, a rigid brace-bar connected with one of the posts and inclined therefrom, and a flexible connection uniting the lower end of the brace-bar with the lower portion of one post and the upper portion of the other post.

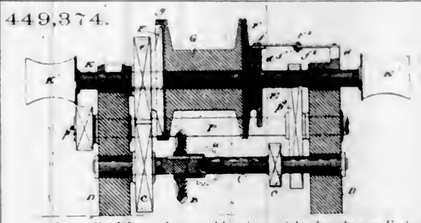
449,374. MACHINE FOR DRIVING AND PULLING STAKES AND HANDLING THE SAME. JOSEPH P. MERRIAM, Sandusky, Ohio. Filed July 5, 1890. Serial No. 357,860. (No model.)

Claim.—1. An organized machine for driving and pulling piles and the like, consisting of a boat provided with the shaft E, of the face-plates F F', the spool G, the collar *f*, the toggle-lever F³, connected with the collar *f*, and the handle F⁵ for operating the toggle, substantially as described.

2. The combination, with the shaft E, of the face-plate F, secured thereto, the face-plate F', splined thereon, the collar *f*, having the ear *f'*, the toggle F³, attached to said ear, the bracket *d*, having a notch receiving said ear, and the spool G between the two face-plates, substantially as described.



449,374.



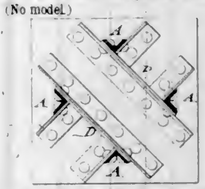
3. In a pile-driver, the combination, with the shears K, having the guides *k*, of the hammer L, having the shank *l*, the cleats *l'*, overlapping the guides, and the filling-pieces *l²* between the shank and the guides, substantially as described.

4. The combination, with a boat having a recess, of the shears K erected on each side of said recess and serving as guideways for a vertically-movable hammer, substantially as described.

5. The combination, with a boat having a recess, of a hoisting drum located over said recess, and means for operating said drum substantially as described.

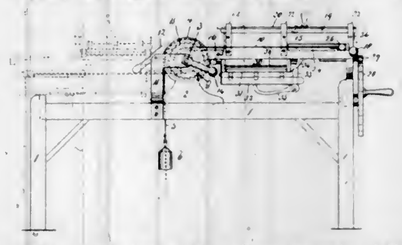
6. The combination, with a boat having a recess, of the shaft M, extending over said recess and carrying the drum N, and provided with one or more spur-gears *m*, the shaft C and intermediate gearing connecting the two shafts, substantially as described.

449,375. POLE FOR ELECTRIC WIRES. JULIUS MEYER, New York, N. Y., and CARL BINDER, Chicago, Ill. Filed Oct. 3, 1890. Serial No. 366,969. (No model.)



Claim.—A pole for electric wires, composed of two or more angle-pieces of iron or steel that converge from the base toward the upper end, transverse pieces or plates for connecting the angle-pieces, a base plate or shoe, and angle-irons for attaching the lower ends of the converging angle-pieces to the base plate or shoe, substantially as set forth.

449,376. MACHINE FOR FILLING MATCH-RACKS. GEORGE H. MILLER, DENIS CASEY, and JOSEPH H. MANTION, Hull, Canada. Filed Sept. 25, 1890. Serial No. 366,156. (No model.)



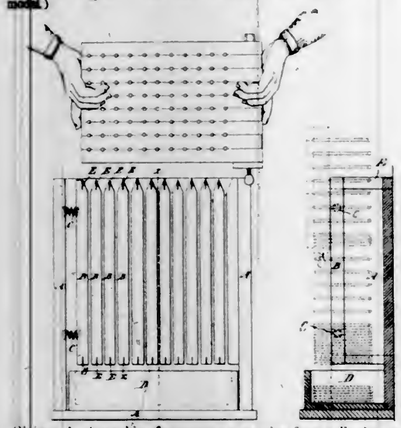
Claim.—1. In a match-rack-filling machine, a splint-box 15, hinged at one end to a supporting-frame 1, and having a door 19 and a bottom provided with rows of holes 23, an exterior rack-holder 30, having a door 31 and a presser bar or follower 25 within the splint-box, whereby the splints in the splint-box are transferred through the holes in the bottom to the match-rack when the splint-box is overturned as set forth.

2. The combination, with a supporting-frame having a shaft 3, carrying a pulley 4, winding and unwinding a strap 5, suspending a gravitating weight 6, of the splint-box 15, sleeved at one end on said shaft to turn over the pulley, and having a perforated bottom 23, and exterior rack-holder 30, covering said perforations, a follower 25, extending through slots in the splint-box, straps 8 and 10, attached to the ends of the followers, and pulleys of said shaft winding the straps to automatically maintain a constant tension on the follower, and a pawl and ratchet 12 13, to hold the shaft and loosen the tension of the straps when the shaft is reversed, as set forth, for the purpose described.

3. The combination, with the splint-box 15, having an exterior

rack-holder and provided with a door 31, having a bifurcated bar 32 extending therefrom, of the locking-bar 33, pintled at one end to brackets 34 outside said box, and the opposite end hinged to the eccentric end of a handle 35, whereby the eccentric end of the handle presses down and locks the door, as set forth.

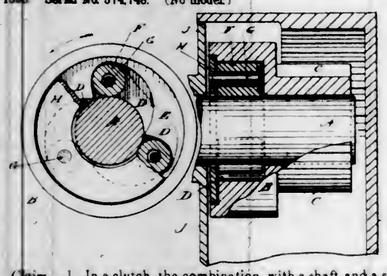
449,377. **MACHINE FOR REMOVING MATCHES FROM DIPPING-RACKS.** GEORGE H. MILLER, DENIS CASEY, and JOSEPH H. MANTION, Hull, Canada. Filed Sept. 25, 1890. Serial No. 366,157. (No model.)



Claim.—1. A machine for removing matches from a dipping-rack, composed of a rectangular frame or body A, having a back and sides, and at the front a series of separated parallel vertical bars B, independently connected to the back by springs E to permit the bars to move laterally, as set forth, for the purpose described.

2. The combination, with the frame or body A, of the parallel vertical bars B, springs E, connecting said bars independently to the back of the body, and side springs C, intervening said body and bars, as set forth, for the purpose described.

449,378. **CLUTCH.** JOHN C. MILLER, Springfield, Ohio, assignor to the Thomas Manufacturing Company, same place. Filed Dec. 15, 1890. Serial No. 374,748. (No model.)

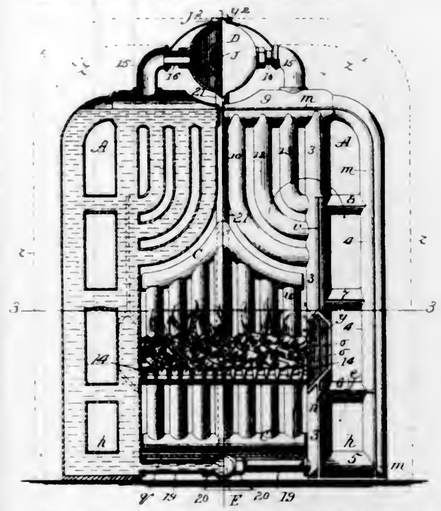


Claim.—1. In a clutch, the combination, with a shaft and a sleeve loosely mounted thereon and having converging recesses, of an interposed gripping-piece having an opening and located within each recess, and a common support having projections adapted to loosely fit said openings in the gripping-pieces and retain them approximately in their relative positions, yet allow a sufficient movement of each piece to and from the shaft and thus secure a gripping action thereon.

2. In a clutch, the combination, with a shaft and a sleeve loosely mounted thereon and having converging recesses, of a gripping-roller having a central opening and located within each recess, and arbors for said rollers loosely fitting the openings therein and supported at fixed distances apart, whereby the said rollers are retained approximately in their relative positions, yet are allowed sufficient movement to and from the said shaft to effect a gripping engagement between the said sleeve and shaft.

3. In a clutch, the combination, with a shaft and a sleeve loosely mounted thereon and having converging recesses, of interposed gripping-pieces mounted in said recesses and each having an opening therein, a rotatable plate adjacent to said gripping-pieces, and pins inserted in said plate at fixed distances apart and loosely fitting the openings in said gripping-pieces and adapted to retain them in said plate in approximately their relative positions.

449,379. **SECTIONAL BOILER.** JOHN H. MILLS, Boston, Mass. Filed Nov. 15, 1890. Serial No. 371,609. (No model.)



Claim.—1. A metallic boiler-section A, consisting of the integral combination of the following members, forming one unit of a sectional boiler, viz: the main vertical pipes 3 4, having horizontal cross-pipes 5, 6, 7, and 8, the said pipes 3 and 4 uniting in a crown-pipe 9, and the curved pipes 10 12 13, whereby is formed the requisite interconnecting internal water-passages, and, in a group of said sections, the external vertical and horizontal flues to receive and conduct the products of combustion over the entire surface thereof before their exit to a chimney, substantially as set forth.

2. A sectional boiler consisting of a number of hollow metallic sections arranged in two independent groups on opposite sides of the fire-box, each of said groups having therein at the lower end thereof below the fire-grate an independent horizontal smoke-flue communicating with the chimney and receiving the products of combustion through openings in its upper side, the surrounding walls of which flue are composed of grouped portions of said hollow sections, substantially as set forth.

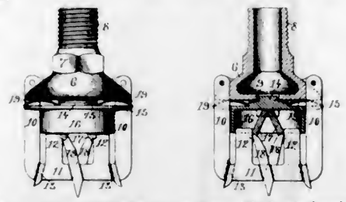
3. A sectional boiler consisting of a number of hollow metallic sections arranged vertically side by side in two independent groups on opposite sides of the fire-box, each of said groups having therein at the lower end thereof below the fire-grate an independent horizontal smoke-flue communicating with a chimney and receiving the products of combustion through openings in its upper side, the surrounding walls of which flue are composed of grouped portions of said hollow sections, substantially as set forth.

4. A sectional boiler consisting of a number of hollow metallic sections arranged in two groups on opposite sides of the fire-box, each of said groups having therein at the lower end thereof below the fire-grate a horizontal smoke-flue communicating with a chimney and receiving the products of combustion, the surrounding walls of which are composed of grouped portions of said hollow sections, combined with a hollow bridge-wall arranged vertically at the rear of the ash-pit and fire-box, and a flow and a return drum, with which said sections are connected, substantially as set forth.

5. In a sectional boiler, a receiving and a discharge drum, one above the other in axial alignment, to which said sections are connected, combined with a vertical hollow bridge-wall section located at the rear of the grate-bars, having water-circulating connections with said drums, substantially as set forth.

6. In a sectional boiler, a receiving and a discharge drum, one above the other in axial alignment, to which said sections are connected, combined with a vertical hollow bridge-wall section located at the rear of the grate-bars, having variable water-circulating connections with said drums, whereby the bridge-wall section may be set at different distances from the front side of the fire-box, substantially as set forth.

449,380. **AUTOMATIC FIRE-EXTINGUISHER.** ROBERT W. NEWTON, Providence, R. I. Filed Sept. 22, 1890. Serial No. 365,775. (No model.)



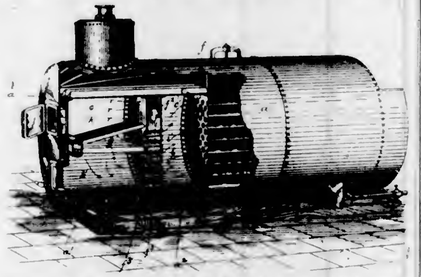
Claim.—1. The combination, in an automatic fire-extinguisher, with the head 6, provided with the outlet-opening 9, surrounded with a valve-seat, and the deflector-disk 15, provided with the valve 14, of the supporting-frame consisting of the pendent arms 10, the cross-piece 11, the supports 12, the channels 13, and a device for holding the valve against the outlet-opening, as described.

2. In an automatic sprinkler, the combination, with the valve, of a device for holding the valve in the closed position, consisting of the levers 18, the lower ends of which are secured by solder fusible at a low temperature, and the levers 17, extending from the upper ends of the levers 18 to the valve-disk, as described.

3. The combination, in an automatic sprinkler, with the sprinkler-head and the deflector provided with a valve, of the pendent arms 10, secured to the head, the cross-piece 11, the supports 12, the levers 17, and the levers 18, secured at their lower ends to opposite sides of the cross-piece 11 by solder, as described.

4. The combination, as herein set forth, with the head 6, the valve 14, and deflector-disk 15, of the cylindrical rim 16, the pendent arms 10, the cross-piece 11, the supports 12, the grooves or channels 13, and the locking device consisting of the levers 17 and 18, the latter secured to the two sides of the cross-piece by solder, as described.

449,381. **DOWNDRAFT TUBULAR BOILER.** DENNIS V. O'BRIEN, Boston, Mass. Filed Jan. 3, 1891. Serial No. 376,593. (No model.)

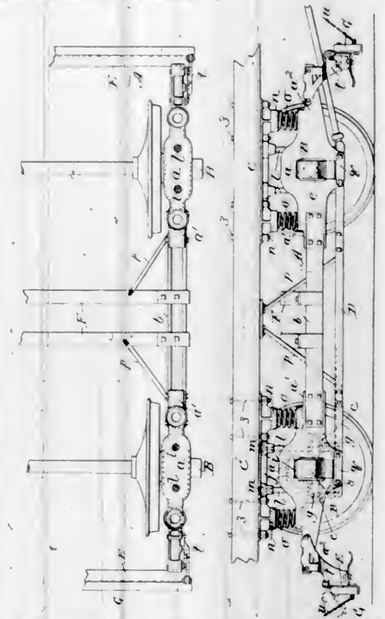


Claim.—The improved downdraft tubular boiler having the inclined grate, the tube-sheet located at a distance from the rear end of the grate and supporting the forward ends of the ordinary tubes, the short tubular boiler-section interposed between the grate and the flue-sheet at the rear end of the grate and composed of the tube-sheets extending entirely across the inner shell of the boiler, vertically as well as horizontally, and the short tubes in said sheets located below the grate, said short tubular section being separated from the tube-sheet by a chamber, into the lower portion of which the products of combustion pass through the tubes of the tubular section, the tubes and tube-sheets composing said section presenting large areas of heating-surface to the highly-heated products of combustion close to and below the grate, as set forth.

449,382. **TRUCK FOR RAILWAY-CARS.** LOUIS PFINGST, Boston, and SUMNER A. BEMIS, Springfield, Mass. Filed Dec. 17, 1890. Serial No. 375,042. (No model.)

Claim.—1. The combination, in a truck, with the axle-boxes provided with the steps, of a yoke, cushion-supported from the axle-box and provided with extensions, springs which are applied longitudinally beyond said cushion-supports and between the yoke-extensions and the body of the car, and vertical posts or bolt-rods extended from the car-body downwardly and having an engagement, as described, with the said yoke and axle-box steps, for the purpose set forth.

2. The combination, with axle-boxes at one side of the truck, of united yokes supported thereon, the car-body spring-supported from said yokes and provided with posts or bolt-rods having an engagement, as described, whereby there is only a vertical motion of said rods relative to said yoke, and the tie-beam D, uniting the posts and pairs thereof, substantially as described.



3. The combination, with the axle-box provided with the steps *c c* vertically apertured, and the yoke-cushion supported from the said journal-box steps and vertically apertured, as described, of the car-body having the sill-plate C, provided with the sockets 7 7, let in from the upper side thereof, and having toward the ends of said plate from said sockets the socketed bosses *n n*, the bolt-rods *l l*, by their extremities entered and engaged in said sill-plate sockets 7 7, as described, and passed downwardly through the apertured yoke and axle-box steps, and the springs forwardly and rearwardly of said bolt-rods and between the yoke-extensions and said socketed bosses *n n*, substantially as described.

4. In a truck, the combination, with the axle-box, of a yoke saddled thereon and provided with pairs of cheek-pieces forward of and at the rear of the axle-box, and tie-braces *q q*, uniting side pairs of said cheek-pieces, substantially as described.

5. A yoke consisting of side pairs of cheek-pieces, each side pair separated by the aperture *e*, said cheek-pieces merging into a hood or dome-shaped top for the yoke, horizontal supports or rests transversely uniting side pairs of said cheek-pieces and forward and rearward extensions *a'* and *a*[2].

6. In a truck, the combination, with an axle-box having steps *c c*, of a yoke consisting of side pairs of cheek-pieces, each side pair separated by the aperture *e*, within which the axle-box proper is disposed, and between the lower portions of which cheek-pieces the axle-box steps are disposed, and the said cheek-pieces merging into a hood for the top of the yoke for covering the axle-box, and the horizontal supports or rests *f f* above the axle-box steps, substantially as described.

7. In a truck, the combination, with an axle-box having steps *c c*, of a yoke consisting of side pairs of cheek-pieces, each side pair separated by the aperture *e*, within which the axle-box proper is disposed and between the lower portions of which cheek-pieces the axle-box steps are disposed, and the said cheek-pieces merging into a hood for the top of the yoke for covering the axle-box and the horizontal supports or rests *f f* above the axle-box steps and the cushions *g g* between the said steps and said rests, substantially as described.

8. A yoke consisting of side pairs of cheek-pieces, each side pair separated by the aperture *e*, the said cheek-pieces merging into a hood for the top of the yoke, the transverse web *j* and the rests *f f* transversely uniting side pairs of said yokes, combined with the axle-box, having steps *c c*, and the cushions *i* and *g g*, substantially as described.

9. A yoke consisting of side pairs of cheek-pieces, each side pair separated by the aperture *e*, the said cheek-pieces merging into the hood or dome-shaped top for the yoke, the transverse rests *f f*, and

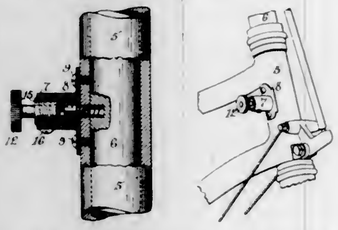
the forward and rearwardly extended extensions $a' a^3$, all integrally cast, substantially as described.

10. In a truck, the combination, with the pair of axle-boxes at each side of the truck, each having the steps *c c*, provided with the sockets *d*, yokes saddled on each journal-box, each consisting of side pairs of cheek-pieces separated by the aperture through which the journal-box proper passes, said cheek-pieces merging into a hood forming the top of the yoke for covering the axle-box, and the horizontal supports or rests above said steps c and the forward and rearward extensions $a' a^3$, and a beam connecting side pairs of said yokes, and the cushions *g g* of the car-body provided with the sill-plate, and the bolt-rods *l l* engaged therewith and extended downwardly through apertures in the top of the yoke and in said rests *f f* and said steps, the springs *o o*, forward and to the rear of said bolt-rods and supporting the car-body from said yoke-extensions, and the tie-beams D D uniting the bolt-rods of each pair and also uniting side pairs of said bolt-rods, all substantially as described, for the purposes set forth.

11. The combination, with a car-body provided with the pending bolt-rods *l l*, of the axle-boxes and the yoke-frame supported thereon, and through which yoke the said bolt-rods pass, as described, the supporting-springs *o o* between the yoke-frame and the car-body, the tie-beams D uniting the bolt-rods, as described, and the brace or truss rods *p p* connected between said tie-beams and the car-body.

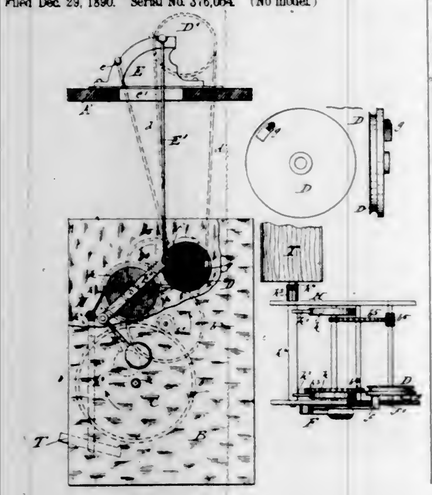
12. In a truck, the combination, with a suitable frame thereof, of a guard transversely applied and pivotally connected on said truck-frame, and having a chain or other flexible connection secured thereto, whereby through said chain said transverse guard may be swung at will into and out of proximity to the trackway, substantially as described.

449,383. **VELOCIPEDE.** JOHN O. RATHBUN, Providence, R. I. Filed July 1, 1890. Serial No. 357,348. (No model.)



Claim.—The combination, with the tube 5 and the spindle 6, provided with the hole 11, of the flange 8, the tube 7, open at its outer end, the cup 15, the locking-pin 10, provided with the thumb-piece 12, and the ring 13, provided with the pin 14, the cup 15 being provided with a slot and recess for the pin 14 and secured in the tube 7 by the screw 16, as described.

449,384. **SPRING-MOTOR.** BRUNO REICHELT, South Bend, Ind. Filed Dec. 29, 1890. Serial No. 376,054. (No model.)

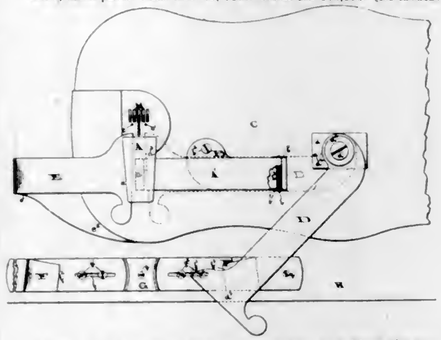


Claim.—1. The combination, with a spring-motor and its transmitting train of gear-wheels, of a starting and stopping device composed of an arc-shaped plate having notches or recesses located on the table of the machine to be driven, a lever-rod adapted to engage one of said notches, a fulcrumed and weighted elbow-lever connected to the lower end of the lever-rod and provided at its upper end with a lateral lug, and an elastic buffer located on the transmitting-pulley of the motor, said lug being adapted to be placed by the lever-rod in or out of the path of the buffer, so as to produce the stopping or starting of the motor, substantially as set forth.

2. The combination, with a spring-motor and its transmitting train of gear-wheels, of brake-disks applied to the shaft of one of said gear-wheels, brake-arms adapted to be placed in or out of contact with said disks, and a treadle supported on the pendent rods pivoted to the supporting-frame and connected with the shaft of the brake-arms, so as to apply or remove the same from the disks by the forward or backward action of the treadle, substantially as set forth.

3. The combination, with a spring-motor and its transmitting gear-wheels, of brake-disks applied to the shafts of one of the transmitting gear-wheels, brake-arms applied to an oscillating shaft supported in the frame or housing of the spring-motor, pendent rods pivoted to the frame of the machine to be driven, one of said rods being attached to the oscillating shaft of the brake-arms, and a treadle attached to the lower ends of the pendent rods, substantially as set forth.

449,385. **BOSOM-PLAITING ATTACHMENT FOR SEWING-MACHINES.** EMIL A. SAUBER, Philadelphia, Pa., assignor to Hagedorn & Merz, same place. Filed Nov. 22, 1890. Serial No. 372,302. (No model.)



Claim.—1. In a plaiting attachment for sewing-machines, the combination, with the cloth-plate, of a stationary and a horizontally-swinging arm, with their free ends normally opposite in the same horizontal plane and in the line of feed, the facing edges of said ends converging toward the needles, and a spreader projecting over said edges, substantially as and for the purpose specified.

2. In a plaiting attachment for sewing-machines, the combination, with the cloth-plate, of a stationary and a horizontally-swinging arm, with their free ends normally opposite in the same horizontal plane and in the line of feed, said free ends being widened laterally and their facing edges converging toward the needles, and a T-shaped spreader with its shank interposed between and its head projecting over said edges, substantially as and for the purpose specified.

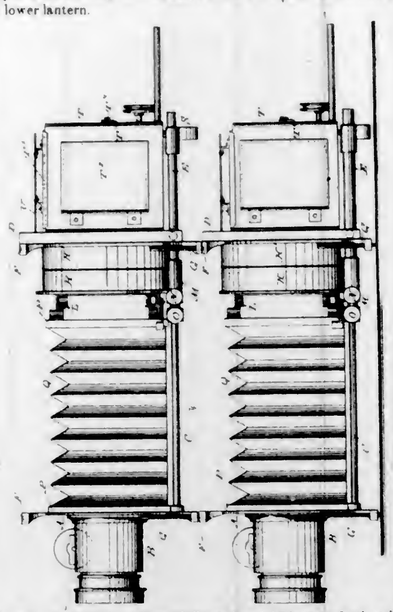
3. In a plaiting attachment for sewing-machines, the combination, with the cloth-plate, of a stationary and a horizontally-swinging arm, with their free ends normally opposite in the same horizontal plane and in the line of feed, said free ends being widened laterally and their facing edges converging toward the needles, and a vertically-swinging spring-controlled arm, with a T-shaped spreader thereon, with its shank interposed between and its head projecting over said edges, substantially as and for the purpose specified.

4. In a plaiting attachment for sewing-machines, the combination, with the cloth-plate, of a stationary and a horizontally-swinging arm, with their free ends normally opposite in the same horizontal plane and in the line of feed, the facing edges of said ends converging toward the needles, a spreader projecting over said edges, and a guide for the fabric in front of said arms and spreader, substantially as and for the purpose specified.

449,386. **MAGIC LANTERN.** FREDERICK SCHEIDIG, New York, N. Y. Filed Nov. 20, 1890. Serial No. 372,006. (No model.)

Claim.—1. A stereopticon comprising two similar lantern-frames, both provided on the bottom with feet and both on the top with feet-engaging steps, the feet and steps of each fitting the steps and feet, respectively, of the other, substantially as shown and described.

2. In a stereopticon, the combination, substantially as hereinbefore set forth, of two superposed lantern-frames, each comprising front and rear standards provided both with adjustable screw-feet and on top with steps, the screw-feet on both the front and rear standards of the upper lantern fitting into the steps on the front and rear standards of the lower lantern.



3. The combination, substantially as hereinbefore set forth, with the lantern-frame, of two separate condenser-shell sections mounted on the frame, one section carrying the front lens and the other section the rear lens, the two said sections and their lenses being wholly disconnected save through their mountings on the frame.

4. The combination, substantially as hereinbefore set forth, with the lantern-frame, of two independent condenser-shell sections, one mounted on the frame and the other shell-section carried by a slide which is free to work lengthwise on the frame.

5. The combination, substantially as hereinbefore set forth, with the lantern-frame, of two separate condenser-shell sections, each carrying one lens and each section with its lens having an independent mounting on the frame, the front section being mounted to slide with its lens to and from the rear section and lens.

6. The combination, substantially as hereinbefore set forth, with the separable lens-holding sections of the condenser-shell of the lantern, and the rear lens resting against the back of the rear shell-section, of a spring-arm on the rear shell-section bearing on the front of said rear lens.

7. The combination, substantially as hereinbefore set forth, with the lantern-frame, of two separate condenser-shell sections having independent mountings on the frame, one shell-section being mounted to slide to and from the other, and a binding-screw to hold the said sliding section in place.

8. The combination, substantially as hereinbefore set forth, with the lantern-frame having longitudinal guides, of a condenser-shell comprising two separable lens-holding sections, one of which is mounted on the frame and the other section carried by tubular slides working on the said guides.

9. In a lantern, the combination, substantially as hereinbefore set forth, with the bellows adjustably connecting the condenser with the objective, of a frame for the end of the bellows, comprising an inner frame which the end of the bellows surrounds, and an outer frame within a recess in the face of which both the inner frame and the end of the bellows are secured.

10. The combination, substantially as hereinbefore set forth, with the condenser-standard of the lantern-frame, of hood, side, and top plates hinged to the standard, and hood back plates hinged to said side plates, so that side, top, and back plates can all be folded flatwise against the standard.

11. The combination, substantially as hereinbefore set forth, with the condenser-standard of the lantern-frame, the lantern-burner having horizontal guides on either side, and the hood inclosing the burner at the top and sides, of a bottom cover-plate to slide in the guides on the burner, and having an edge opening-slot into which the burner passes and through which it projects.

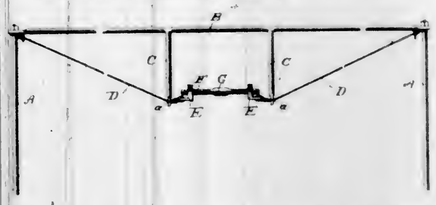
12. The combination, substantially as hereinbefore set forth, with the condenser-standard of the lantern-frame, of the hood-top plate hinged thereto, and a spring-catch to engage and sustain the top plate as it is swung upward.

13. The combination, substantially as hereinbefore set forth, with the lantern-frame having vertical guides, of a burner-carrier working on said guides, a burner adjustable horizontally on the burner-carrier, and a rack-and-pinion gear for raising and lowering the burner-carrier.

14. The combination, substantially as hereinbefore set forth, with the lantern-frame comprising a standard D, of a burner-carrier consisting of a vertically-slotted plate with horizontal burner-guides mounted to slide vertically on the standard D, a burner adjustable horizontally on said guides on the carrier, means for raising and lowering the burner-carrier, and set-screws projecting from the standard D through the vertical slots in the carrier-plate.

15. The combination, substantially as hereinbefore set forth, with the lantern-frame comprising a standard D and the condenser, of a burner-carrier comprising a plate S^9, sliding vertically on the standard D and having an opening S^{10}, a shaft S^8, carrying a pinion S^6, and a toothed rack S^9.

449,387. **AWNING.** FREDERICK SCHREIBER, Bridgeport, Conn., assignor of one-half to Charles L. Gaylord, same place. Filed May 27, 1890. Serial No. 353,357. (No model.)



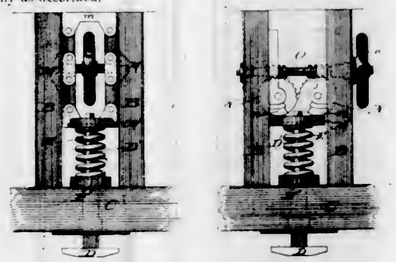
Claim.—1. In an awning-frame, the combination of the side irons, the cross-bar secured thereto, the brace-arms extending from said cross-bar, the brace-wires secured at their outer ends to the side irons and extending over the terminals of said arms, and a nut-and-screw connection interposed between and secured to the respective inner ends of said wires, whereby the latter are drawn taut, substantially as set forth.

2. In an awning-frame, the combination, with the side irons and cross-bar, of the brace-arms extending from said cross-bar and having eyes in their extremities, the brace wires secured at their outer ends to the side irons and extending through said eyes, the nuts connected to the inner ends of said wires and having right and left threads, respectively, and the screw having right and left threads adapted to engage with the respective nuts, substantially as shown and set forth.

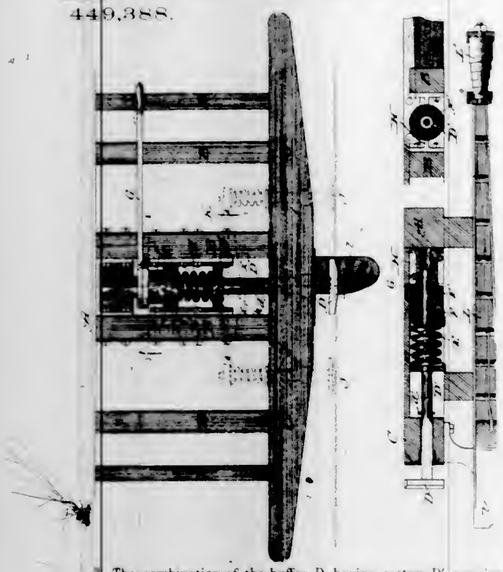
449,388. **DEVICE FOR RELIEVING THE TENSION OF CAR-BUFFERS.** CHARLES A. SCHROYER and EDGAR P. THOMPSON, Chicago, Ill. Filed May 24, 1890. Serial No. 352,987. (No model.)

Claim.—1. The combination of a buffer D, having a stem D', a two-part clutch mounted upon such stem, a buffer-spring bearing against one part of such clutch, and means whereby the two parts of the clutch are brought into engagement to release the tension of the draw-bar or are disengaged, substantially as described.

2. The combination of a buffer D, having a stem D', a collar E', a two-part clutch F F', a buffer-spring E, mounted upon the buffer-stem between the collar and the clutch, guides I I, in which the collar E' and the clutch-follower F slide, sleeve-casting H, and lever G, substantially as described.



449,388.



3. The combination of the buffer D, having a stem D', a spring mounted upon such stem, a follower mounted upon such stem in the rear of the spring and against which such spring bears, and means whereby the follower is allowed to move backward or is forced forward, substantially as described.

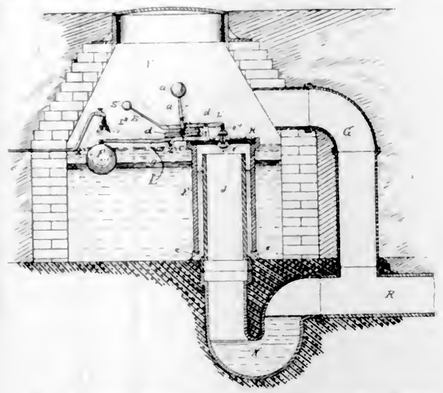
449,389. SHOE. GEORGE L. SHEPARD, North Adams, Mass. Filed Aug. 5, 1890. Serial No. 361,131. (No model.)



Claim.—In a shoe or boot, the combination, with the back piece or quarter *a*, composed of a single piece and crimped in form at B, of the crimp-staying piece C, applied to the inner side of said back-piece and having its portion at the middle of its length out of close contact with the concave inside surface of the crimped portion of said back-piece, and the vertical rows *s s* of stitchings, uniting the two pieces at lines off from the middle of the bend of said crimped back, and the horizontal rows *s' s'* of stitchings, securing the lateral side portions of the said crimp-staying piece closely with the side portions of said crimped back-piece, while its middle portion is out of contact at the bow of the crimped or concave portion B, substantially as and for the purposes set forth.

449,390. VALVE-OPERATING MECHANISM FOR FLUSHING SIPHONS. CHARLES SULLIVAN, Wichita, Kans. Filed Dec. 2, 1890. Serial No. 373,309. (No model.)

Claim.—1. The combination, with the tank, its supply and exit pipes *g* R, and the trap N, of the siphon comprising the discharge-leg in communication with the trap, the intaking-leg supported on standards off the tank-bottom and encircling and extending above the discharge-leg, the head-plate H, provided with the central aperture and with the standard I to one side from said aperture and being seated into and sealed in the upper end of the intaking-leg above the discharge-leg, the valve V, seated into and adapted to close said aperture at the under side of said head-plate and provided with the stem V', extending up through said aperture above the plate, the weighted lever S, fulcrumed to said plate-standard and pivotally connected with the valve-stem for holding the valve seated, the lever L, likewise fulcrumed to said plate-standard and provided with the portion L', overreaching the plate H and having the float F at its opposite end, the stop for arresting the downward movement of the outer end of said lever, and the weighted upright pivoted standard *a*, having a cross trip-bar *d* arranged parallel with and above said float-lever, adapted to be operated by said lever to tilt said weighted standard, thereby causing said trip-bar to engage and operate the valve-lever to lower the valve, substantially as set forth.



2. The siphon described, comprising, in combination, the discharge and intaking legs and the head-plate H, the latter provided with the air-port or central aperture and with pivotal bearings to one side of said port for supporting the valve-actuating mechanism and seated into and sealed in the upper end of the intaking-leg above the discharge-leg, the valve seated in said port at the under side of the head-plate and provided with the stem extending up through the plate, the weighted lever S, fulcrumed to said plate and pivotally connecting the valve-stem, the float-lever fulcrumed to said plate, the pivoted weighted standard *a*, provided with the cross trip-bar *d*, adapted to be operated by the float-lever to tilt the pivoted weighted standard, and thereby cause said trip-bar to strike the valve-lever and open the valve and the trap N, and the exit-pipe R and vent-pipe G, substantially as set forth.

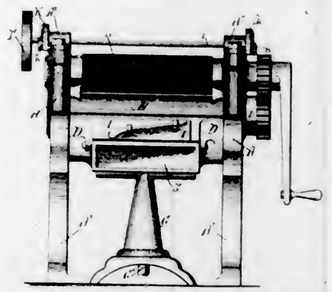
3. In a flushing device for sewers, the combination, with the intaking and discharge legs and the head-plate of the siphon thereof, of the valve seated to close a central aperture of said plate, a lever connected with the valve at one end and weighted at its opposite end and fulcrumed between said connection and weight, a float-lever adjacent the valve-lever and provided with a float at its outer end, and a pivoted weighted standard provided with a cross trip-bar arranged above the float-lever and adapted to be operated to tilt the weighted standard by said float-lever and to strike and operate the valve-lever to open the valve when said weighted standard tilts in one direction and to disengage said lever so the weight thereof may close the valve when the said standard tilts in the opposite direction, wherein said valve-actuating mechanism is automatically operated by the rising and falling of water in the tank, substantially as set forth.

4. In a flushing-siphon for sewers, the combination, with the intaking and discharge legs and the head-plate of the intaking-leg, the latter provided with a central aperture and a valve seated therein with a stem extending up through the plate, of the valve-actuating mechanism consisting of the valve-lever S, weighted at its free end and connected with the valve-stem at its opposite end, the float-lever provided with the float at its outer end, and the weighted pivoted tilting standard provided with the cross trip-bar adapted to be engaged and operated by the float-lever and to engage and operate the valve-lever to open the valve by the tilting of said weighted standard, arranged in the manner substantially as set forth.

5. In a siphon of a sewer-flushing tank, the air-valve-actuating mechanism consisting of a lever connected with the valve and weighted to hold the valve closed, a float-lever independent from said valve-lever, and a tilting standard weighted at its free end and provided with a cross trip-bar against which the float-lever may bear to tilt the weighted standard, wherein the tilting of said standard in one direction causes the trip-bar to strike and operate the valve-lever to open the valve and the tilting in the opposite direction causes the said bar to disengage the valve-lever and permit its weight to close the valve, substantially as and for the purpose set forth.

449,391. BURNISHER. SAMUEL O. TUERK, Syracuse, N. Y. Filed Dec. 2, 1889. Serial No. 332,263. (No model.)

Claim.—1. In a burnisher, the combination of a burnisher-roller, a heating-chamber inclosing said roller, a heater for passing a heated current within said chamber, and an outlet-opening in said chamber, whereby a continuous heated current is forced through said chamber and the roller is heated, substantially as and for the purpose set forth.



2. In a burnisher, the combination of a burnishing-roller, a heating chamber inclosing said roller, a heater for passing a heated current into said heating-chamber, an outlet-opening in the chamber, whereby a continuous heated current is passed therethrough, and a jacket interposed between said roller and heating-chamber for preventing direct contact of the heat with the roller, substantially as and for the purpose specified.

3. The combination of the feed-roller, a hollow burnishing-roller, a heating-chamber inclosing said roller, a heater for passing a heated current into said chamber, and an outlet-opening therein, whereby a continuous heated current is passed through said chamber, substantially as and for the purpose specified.

4. In a burnisher, the combination of a feed-roller, a hollow burnishing-roller, a heating-chamber inclosing said roller, a heater for passing a heated current of air into said chamber, an outlet-opening in said chamber forming a vent therefor, and a jacket interposed between said hollow burnishing-roller and heating-chamber, whereby the direct contact with the roller of the heated current within the said chamber is prevented, substantially as and for the purpose set forth.

5. In a burnisher, the combination of a burnishing-roller, a heating-chamber inclosing said roller, a heater for passing a heated current within said chamber, an outlet-opening in said chamber forming a vent therefor and insuring a constant current through the chamber, and a thermometer attached to said heating-chamber for indicating the heat thereof, substantially as and for the purpose set forth.

6. In a burnisher, the combination of an adjustable roller, a heating-box for said roller, a rotary cam bearing upon said box, worm-teeth upon said cam, and a worm for engaging said teeth, substantially as and for the purpose specified.

7. In a burnisher, the combination of an adjustable roller, separate journal-boxes for the opposite extremities of said roller, rotary cams bearing upon said boxes, worm-teeth provided upon said cams, worms for engaging said teeth, and a connection between said roller-wheels, whereby both are operated uniformly at the same time, substantially as and for the purpose specified.

8. In a burnisher, the combination of an adjustable roller, a heating-box for said roller, a rotary cam bearing upon said box, worm-teeth upon said cam, a worm for engaging said teeth, a rack or notched plate, and a dog or catch for engaging said rack or plate, substantially as and for the purpose set forth.

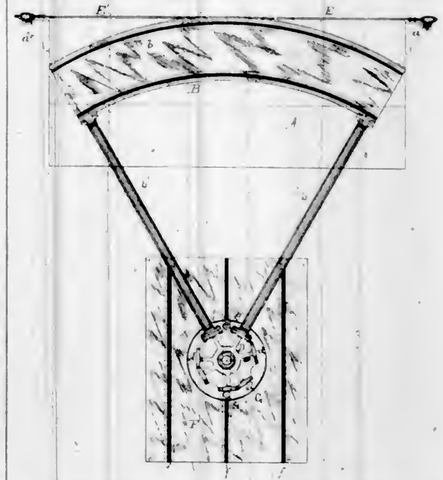
9. In a burnisher, the combination of an adjustable roller, separate journal-boxes for the opposite extremities of said roller, rotary cams bearing upon said boxes, worm-teeth provided upon said cams, worms for engaging said teeth, a connection between said roller-wheels, whereby both are operated uniformly at the same time, a rack or notched plate, and a dog or catch for engaging said rack or plate, substantially as and for the purpose specified.

449,392. LATHE AND PLANER ATTACHMENT. JOHN WALKER, Cleveland, Ohio. Filed Oct. 6, 1890. Serial No. 367,172. (No model.)

Claim.—1. The combination of the pivoted supplemental table B, having a curved periphery, the reciprocating table A or its equivalent, and the flexible bands E E', secured at their ends to said tables A and B, respectively, substantially as and for the purpose specified.

2. The combination of a pivoted and substantially sector-shaped table, and a reciprocating table upon which the outer end of said pivoted table is supported with two flexible bands, each of which is secured at one end to the pivoted table and at the other end to brackets on the reciprocating table, substantially as and for the purpose specified.

3. The combination, with a reciprocating table A, having the brackets *a a'*, of the pivoted supplementary table having its side farthest from the pivot in the form of an arc of which its pivot is the center, two flexible bands secured to opposite ends of said curved surface and one above the other, and adjustable connections between the other ends of said bands and the said brackets, substantially as and for the purpose specified.



4. The combination of the reciprocating table of a lathe or planer and brackets secured at opposite ends thereof with a substantially sector-shaped table resting on said reciprocating table and pivoted to a suitable support at one side thereof, the two flexible steel bands E E', the screw-threaded rods *e e*, secured to the ends of said bands and passing through said brackets, and the nuts e^2 e^2, substantially as and for the purpose specified.

5. The combination, with a reciprocating table of a lathe or planer, of a supplemental table thereon, a standard movable toward and from the reciprocating table, a vertically-adjustable stud secured to said standard and serving as the pivot of said supplemental table, and suitable mechanism for oscillating said table upon its pivot, substantially as and for the purpose specified.

6. The combination, with the reciprocating table of a lathe or planer, of a supplemental table resting thereon, a standard movable toward and from the reciprocating table, a screw-threaded stud to which one end of said supplemental table is pivoted, a collar on said stud, and suitable means for oscillating said supplemental table upon its pivot, substantially as and for the purpose specified.

7. In an attachment for lathes and planers, a hub having a number of spoke-sockets lying at different angles to each other, a curved bed, and arms connecting said bed with two of the spoke-sockets, whereby the same hub may be used with beds of any curvature and representing any common fraction of a circle, substantially as and for the purpose specified.

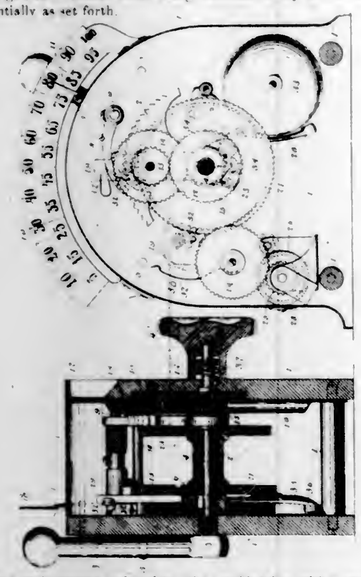
449,393. CASH INDICATOR AND REGISTER. LOUIS T. WEISS, Brooklyn, assignor to Murtha & Burns, New York, N. Y. Filed Apr. 29, 1890. Serial No. 349,987. (No model.)

Claim.—1. In a cash counter and register, the combination, with the casing and the plate 10, bearing a series of numerals, as described, of the rock shaft 2, mounted in said casing, the arm 3 on said shaft, furnished with a pointer which traverses the plate 10, the dial 16, mounted loosely on the shaft 2 and marked with conspicuous numerals adapted to be brought before a sight-aperture in the casing by the rotation of said dial, the gear-wheel 12 on shaft 2, the gear-wheel 15, fixed to the dial, and the intermediate gear-wheels 13 and 14, whereby a quarter-rotation of the shaft 2 effects a complete rotation of said dial, substantially as set forth.

2. In a cash counter and register, the combination, with the casing and the tubular rock-shaft 2, which actuates the setting mechanism, of the rock-shaft 4, which actuates the adding mechanism, mounted on the said shaft 2, the arm 19, mounted loosely on the shaft 2, and the key 6, which engages the shaft 4 and arm 19, said key playing in an opening in the side of the tubular shaft 2, substantially as set forth.

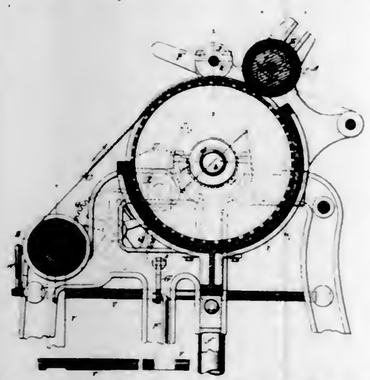
3. In a cash counter and register, the combination, with the casing, of the tubular shaft 2, the stop-pin 18, carried by and moving

with said shaft, the rock-shaft 4, arranged within the tubular shaft 2, the pawl-arm 19, connected to and actuated by said shaft 4, the pawl 20, carried by said arm, and the ratchet-wheel 21, with which said pawl engages, said ratchet-wheel being mounted loosely on the shaft 2, substantially as set forth.



4. In a cash counter and register, the combination, with a casing having a sight-aperture 17 and a quadrant-plate 10 mounted thereon and having numbered graduations on its face, of the rock-shaft 2, the operating-arm 3 thereon provided with a pointer 11, which traverses plate 10, the dial 16, mounted loosely on shaft 2 and having conspicuous numerals on its face adapted to be brought to the sight-aperture in the casing by rotation of said dial, and mechanism, substantially as described, whereby the rocking of the shaft 2 imparts a rotary movement to said dial, substantially as set forth.

449,394. TOBACCO STRIPPING AND BOOKING MACHINE. JOHN R. WILLIAMS, Newark, N. J., assignor to the John R. Williams Company, New York, N. Y. Filed Oct. 16, 1888. Serial No. 288,257. (No model.)



Claim.—1. In a machine for stripping the stems from tobacco-leaves, the two pairs of rollers and the porous aprons arranged to move from one pair of said rollers to the other, combined with the perforated rotary cylinders connected with an air-exhaust and the pairs of rotary cutters for removing the stems, substantially as and for the purposes set forth.

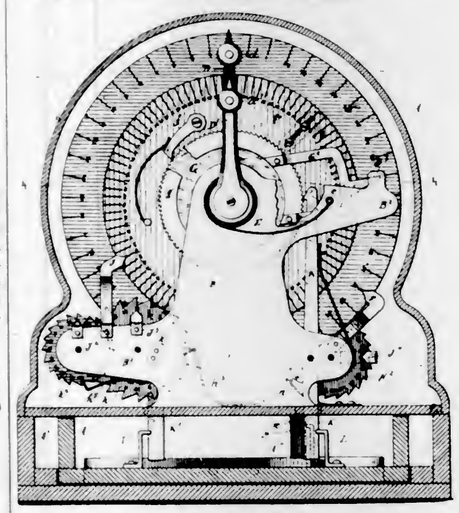
2. In a machine for stripping the stems from tobacco-leaves, the perforated rotary cylinders mounted upon the hollow axle and the central cutters, one pair of the cutters being carried by said cylinders, combined with an air-exhaust in communication with said axle and cylinders, a pair of porous aprons traveling across said cylinders, and rollers for said aprons, substantially as set forth.

3. In a machine for stripping the stems from tobacco-leaves, the perforated rotary cylinders mounted upon the hollow axle and the central cutters, one pair of the cutters being carried by said cylinders and one of said cylinders being adjustable upon said axle, combined with an air-exhaust in communication with said axle and cylinders, a pair of porous aprons traveling across said cylinders, and rollers for said aprons, substantially as set forth.

4. In a machine for stripping the stems from tobacco-leaves, the perforated rotary cylinders, the central cutters, one pair of the cutters being carried by said cylinders, and the non-perforated bands along the rear and lower sides of said cylinders, combined with the air-exhaust in communication with the interior of said cylinders, a pair of porous aprons traveling across said cylinders, and rollers for said aprons, substantially as set forth.

5. In a machine for stripping the stems from tobacco-leaves, the perforated rotary cylinders carrying the cutters on the periphery of their facing ends and the revolving cutter-wheel arranged to act in conjunction with said first-mentioned cutters, combined with an air-exhaust in communication with said cylinders, a pair of porous aprons traveling across said cylinders, and rollers for said aprons, substantially as set forth.

449,395. CASH-REGISTER. JOHN H. AHRENS, Brooklyn, N. Y. Filed Oct. 21, 1890. Serial No. 368,851. (No model.)



Claim.—1. In a cash registering and adding machine, the combination, with a casing, of a drawer, two independent concentric adding-disks, means for rotating them independently of each other, an independent locking-disk connected with each adding-disk, a locking-lever engaging both of said locking-disks, and a projection on the drawer engaging said locking-levers, substantially as set forth.

2. In a cash registering and adding machine, the combination, with two independent concentric adding-disks, of independent means for rotating them, a toothed wheel connected with each disk, a lever engaging said toothed wheel, and a drawer in the casing and cam projections in the drawer, said cam projections being adapted to act on the pawl-levers, substantially as set forth.

3. In a cash registering and adding machine, the combination, with two independent concentric adding-disks, of a locking-disk connected with each adding-disk, a locking lever adapted to engage both adding-disks, a drawer in the casing supporting the adding mechanism, a shouldered lug adapted to engage the locking-lever, a toothed wheel connected with each adding-disk, a pawl-lever engaging each toothed wheel, and independent cam projections in the drawer adapted to act on said pawl-levers, substantially as set forth.

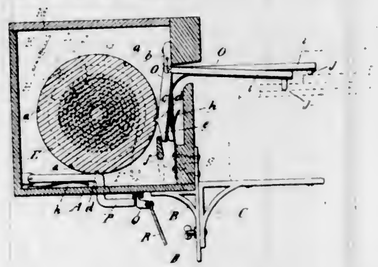
4. In a cash registering and adding machine, the combination, with two independent concentric adding-disks, of a sleeve on which one disk is mounted, an arbor passing through said sleeve and on which the other disk is mounted, a spring connected with the sleeve, a spring connected with the arbor, means for turning said sleeve and arbor independently of each other, toothed wheels connected with the adding-disks, pawl-levers engaging said toothed wheels, and a sliding drawer and projections on the drawer adapted to act on said pawl-levers, substantially as set forth.

5. In a cash registering and adding machine, the combination, with the sleeve C and arbor C', of the disks F F', mounted to turn on the sleeve and arbor, the toothed wheels G g on the sleeve C, the toothed wheels G' g' on the arbor C', the spring-pawls f f' on the disks F F', engaging the toothed wheels G G', the springs E and E', acting on the sleeve and arbor, the stop-lugs B^3 G^4, against which said arms can rest, the pawl-levers K, a sliding drawer, and projections in the drawer adapted to act on the pawl-levers, substantially as set forth.

6. In a cash registering and adding machine, the combination, with two concentric and independent adding-disks F F', of the independent hands D D' for turning said disks, the pointers J J', projecting over the faces of said disks, the counting-wheels h h^3, operated from the disk F, the pointers J^3 and J^5, projecting over said wheels h h^3, the wheel H^3, operated from the disk F', and the pointer J^4, projecting over said wheel H^3, substantially as set forth.

7. In a cash registering and adding machine, the combination, with a casing, of a drawer, a spring for throwing the drawer outward, a counting mechanism, a lever engaging said counting mechanism, which lever serves for locking the drawer in closed position, and a cam projection in the drawer adapted to engage said lever, substantially as set forth.

449,396. KEY-BOARD PLAYING ATTACHMENT FOR MUSICAL INSTRUMENTS. JOHN P. BECKER, Detroit, Mich. Filed May 1, 1890. Serial No. 350,124. (No model.)



Claim.—1. In a device of the kind described, the combination, with a roll having a series of indentations on its periphery, of a series of spring-actuated bell-crank levers normally held in contact with the surface of said roll, being pivoted in a different plane from the roll, and having pins beveled on their upper face, adapted to enter said indentations, and a rock-arm for throwing the levers out of engagement with the roll, substantially as described.

2. In a device of the kind described, the combination, with a roll having indentations on its surface, of a series of spring-actuated bell-crank levers normally held in contact with said rolls, having pins on their lower inner ends, adapted to enter said indentations, and extending out at right angles thereto, a rock-shaft for disengaging said bell-crank levers, and mechanism for rotating the roll, substantially as described.

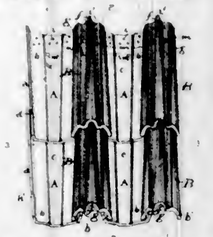
3. In a device of the kind described, the combination, with the roll having indentations on its surface, of spring-actuated bell-crank levers in front of said roll, adapted to be raised and lowered by pins entering said indentations and strike and release the keys of a piano or organ, and spring-actuated arms, normally held in contact with the roll, having connected thereto a lever, said lever being connected by means of a link to the pedal and operating the same when the spring-actuated lever enters an indentation, substantially as described.

4. In a device of the kind described, the combination of the case A, the bracket B adjustably supported upon the bracket C, the roll E, the spring-actuating mechanism therefor, the indentations a, the bell-crank levers O, having the actuating-arm provided with pins, and the striker-arm provided with a bearing, the parts being arranged to operate substantially as described.

5. In a device of the kind described, the combination, with the roll provided with a series of indentations a in its exterior surface, of a lever P extending in proximity thereto, having a pin d, adapted to enter the indentations a, and connecting mechanism to the pedal, substantially as described.

6. The combination, with the spring-actuated roll having a series of indentations, of a series of bell-crank levers having pins on their lower inner faces adjacent to and resting normally against the roll, journals at the angles of the levers supporting the same, springs for pressing the levers against the roll, and bearings on the under outer faces of the bell-cranks, substantially as described.

449,397. ROOFING-TILE. EDWIN BENNETT, Baltimore, Md. Filed Nov. 18, 1890. Serial No. 371,831. (No model.)



Claim.—1. The combination of trough-shaped overlapping foundation-tiles provided with central water-courses, and covering-tiles B, each having a central ridge f and a water-course g on each side of the ridge, said tiles B fitting over adjacent sides of said foundation-tiles, substantially as described.

2. A trough-shaped foundation-tile A, having oblique sides a and sloping bottom b, provided with a central water-course c, and feet d on the under side of said sloping bottom, which seat upon the roof and are of such increasing height as to elevate the lower end of the tile so that it will overlap the next tile below it.

449,398. SPEED-MEASURE. GEORGE BERRY, Baltimore, Md. Filed Jan. 2, 1891. Serial No. 376,476. (No model.)



Claim.—1. In a speed-indicator, the combination of a sliding spindle free to revolve in opposite directions for receiving and transmitting the rotary movement of the part of machinery whose speed is to be taken, mechanism for registering the revolutions of said part actuated by the rotary movement of the said spindle, and time-measuring stop mechanism having a push-pin c, which is actuated by the sliding movement of the said spindle.

2. In a speed-indicator, the combination of a sliding spindle free to revolve in opposite directions for receiving and transmitting the rotary movement of the part of machinery whose speed is to be taken, mechanism for registering the revolutions of the said part actuated by the rotary movement of the said spindle, time-measuring stop mechanism having a push-pin c, and a spring-pressed push-rod which slides, but does not revolve, and has a connection with the said push-pin.

3. In a speed-indicator, the combination of a sliding revoluble spindle for receiving and transmitting the rotary movement of the part of machinery whose speed is to be taken, mechanism for registering the revolutions of the said part, a worm through which said spindle slides, but which revolves with the spindle and actuates said registering mechanism, a spring-pressed push-rod F, which is actuated by the sliding movement of the spindle, and time-measuring stop mechanism having a push-pin, which is connected to the said push-rod.

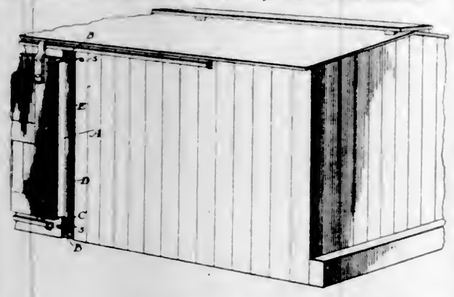
4. In a speed-indicator, the combination of a sliding spindle free to revolve in opposite directions for receiving and transmitting the rotary movement of the part of machinery whose speed is to be taken, mechanism for registering the revolutions of the said part actuated by the rotary movement of the said spindle, time-measuring stop mechanism having a push-pin c, a spring-pressed push-rod which slides, but does not revolve, and has a connection with the said push-pin, and a spring-arm adapted to take behind the said push-rod when the same is pressed in and hold it in such position, for the purpose described.

449,399. WEATHER-STRIP FOR FREIGHT-CAR DOORS. WILLIAM R. BETHAM, Chicago, Ill. Filed Sept. 13, 1890. Serial No. 364,901. (No model.)

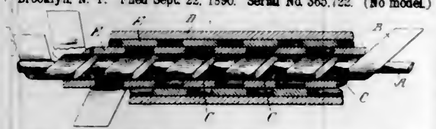
Claim.—1. The herein-described weather-strip, consisting of the combination, with the car-body and the sliding door, of the flat strip A, having its inner edge hinged to the body of the car at the rear edge of the closed door and arranged to swing back flat against the car-body to allow the door to slide freely over it, and the springs S S or similar device for automatically swinging to said strip and retaining its outer edge against the rear edge of the door, all substantially as shown and described.

2. The herein-described weather-strip, consisting of the combination, with the car-body and sliding door, of the strip A, having the

curled edge E, the rod C, running through the latter, the brackets B B, in which the rod C is pivoted, the groove D, into which the edge E sets, and the springs S S, all substantially as shown and described.



449,400. INSULATED ELECTRIC CONDUCTOR. JAMES D. BISHOP, Brooklyn, N. Y. Filed Sept. 22, 1890. Serial No. 365,722. (No model.)

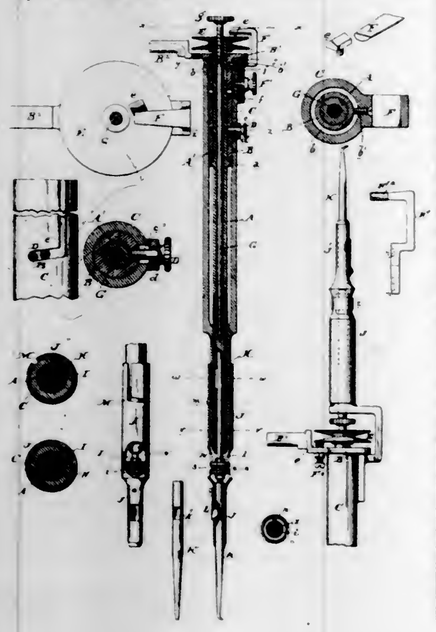


Claim.—1. An electric conductor comprising a conducting-core wound with a paper ribbon the spiral edges of which are separated by a spiral air-space and inclosed within a protective sheath.

2. An electric conductor comprising a conducting-core, an external protective sheath, and a separating insulating medium wound spirally with intervening air-spaces between its sides, the ends of the conductor being solidly closed to prevent entrance of moisture to the air-spaces.

3. An electric conductor wound with a paper spiral composed of multiple layers of ribbon, the edges of the spiral being separated by air-spaces.

449,401. HAND-PIECE FOR DENTAL OR SURGICAL ENGINES. WILLIAM G. A. BONWILL, Philadelphia, Pa. Filed Sept. 13, 1890. Serial No. 364,834. (No model.)



Claim.—1. In a hand-piece for a dental or surgical engine, the combination of a chuck or holder for holding a drilling-tool having a long shaft or spindle, a socket-piece for holding a plugging or other tool made detachable on the hand-piece, and power mechanism for simultaneously reciprocating and rotating the chuck and its shaft or spindle, whereby the said shaft or spindle may be caused during its rotation to strike the plugging-tool.

2. In a hand-piece for a surgical and dental engine, a cylindrical tubular part adapted to be held in the hand, in combination with a central shaft or spindle longitudinally movable and carrying on its end a chuck or holder for a rotating tool, means at the other end of the shaft or spindle exterior to the casing of the hand-piece to rotate and reciprocate the shaft or spindle, and a removable socket-piece separate from the hand-piece arranged to fit over the chuck end of the hand-piece and adapted to hold a plugging-tool in line with the spindle or shaft.

3. In a hand-piece for a dental or surgical engine, a sleeve supporting a bearing longitudinally adjustable in the sleeve, in combination with a rotating shaft or spindle journaled in said bearing, a power-applying wheel secured to the shaft at one end, a chuck or tool-holder secured to the shaft at the other end, a projection rotating with the shaft or spindle, and an arm in the path of the projection secured to the sleeve, whereby the rotation of the shaft or spindle causes a longitudinal reciprocation of the said shaft or spindle.

4. In a hand-piece for a dental or surgical engine, a sleeve supporting a bearing longitudinally adjustable in the sleeve, in combination with a rotating shaft or spindle journaled in said bearing, a power-applying wheel secured to the shaft at one end, a chuck or tool-holder secured to the shaft at the other end, a projection rotating with the shaft or spindle, an arm in the path of the projection secured to the sleeve, whereby the rotation of the shaft or spindle causes a longitudinal reciprocation of the said shaft or spindle, a socket-piece adapted to be secured upon the end of the sleeve and formed to hold a plugging-tool, and an intermediate piece carried by the chuck adapted to strike the end of the plugging-tool during the reciprocation of the shaft or spindle.

5. In a hand-piece for a dental or surgical engine, a sleeve supporting a bearing longitudinally adjustable in the sleeve, in combination with the clamping and adjusting screw working through an oblique slot in the sleeve for adjusting the bearing longitudinally within the sleeve, a rotating shaft or spindle journaled in said bearing, a power-applying wheel secured to one end of the shaft, a chuck or tool-holder secured to the other end, a projection rotating with the shaft or spindle, and an arm in the path of the projection secured to the sleeve, whereby the rotation of the shaft or spindle causes a longitudinal reciprocation of the said shaft or spindle.

6. In a hand-piece for a dental or surgical engine, the combination of a sleeve, a bearing contained within said sleeve, a long rotating and reciprocating shaft or spindle journaled in said bearing and having one end extending beyond the sleeve for receiving the power-applying devices and also being provided with a projection, a chuck or holder carried by the lower end of the shaft or spindle, and an obstruction in the path of the projection on the shaft or spindle secured to the sleeve, whereby the rotation of the shaft or spindle causes the projection to strike the obstruction and reciprocate the said shaft or spindle during its rotation.

7. In a hand-piece for a dental or surgical engine, the combination of a sleeve, a bearing contained within said sleeve longitudinally adjustable in the sleeve, a rotating and reciprocating shaft or spindle journaled in said bearing and provided with a collar working against the lower end of said bearing, a grooved power-applying pulley secured to the upper end of said shaft or spindle and above the upper end of the bearing, a chuck or holder carried by the lower end of the shaft or spindle, a projection carried by the grooved pulley on the shaft or spindle, and an arm in the path of the projection and secured to the sleeve, whereby the rotation of the shaft causes the projection to strike the arm and reciprocate the said shaft during its rotation.

8. In a hand-piece for a dental or surgical engine, the combination of a long sleeve provided at one end with a bearing, a long rotating and reciprocating shaft journaled in said bearing, a chuck or tool-holder secured to the lower end of the shaft, a power-wheel secured to the upper end of the shaft, a projection carried with the rotating shaft, an obstruction in the path of said projection during its rotation to cause the shaft to be reciprocated, and a plugging-tool carried upon the end of the sleeve below the chuck, whereby a tool held in the chuck is caused to strike the end of the plugging-tool.

9. In a hand-piece for a dental or surgical engine, the combination of a long sleeve provided at one end with a bearing, a long rotating and reciprocating shaft journaled in said bearing, a clutch or tool-holder secured to the lower end of the shaft, a power-wheel secured to the upper end of the shaft, a projection carried with the rotating shaft, an obstruction in the path of said projection during its rotation to cause the shaft to be reciprocated, a plugging-tool carried upon the end of the sleeve below the chuck, whereby a tool held in the chuck is caused to strike the end of the plugging-tool, means to control longitudinal reciprocation of the shaft and hold its projection away from the obstruction or arm during the rotation of the said shaft, and a detachable connection between the plugging-tool and the end of the sleeve.

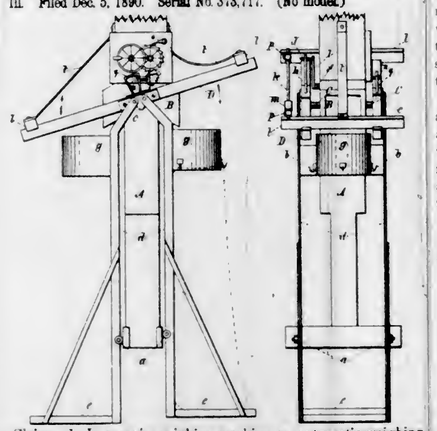
10. In a hand-piece for a dental or surgical engine, the combination of a rotating and reciprocating shaft provided with a projection, an obstruction in the path of said projection which is struck thereby to impart the reciprocation to said shaft, a chuck or tool-holder carried by said shaft, a plugging-tool holder arranged in line with the rotating and reciprocating shaft, whereby the reciprocations of said rotating shaft are employed to impart a reciprocation to the hammer or mallet tool.

11. In a hand-piece for a dental or surgical engine, the combination of a rotating shaft provided with projecting portions on one end and a chuck or holder upon the other end for holding a hammer-tool, with adjustable connections in the path of the projections of the rotating shaft, whereby the said shaft may be forcibly projected forward or backward, as desired, a socket-piece adapted to be fitted to the hand-piece, and a plugging-tool carried by the socket-piece and held thereby against the rotation and adapted to be operated by the hammer-tool during its reciprocations.

12. In a hand-piece for a dental or surgical engine, the combination of a rotating and reciprocating shaft having a chuck or holder upon its end, a socket-piece for carrying a plugging-tool fitted to the end of the hand-piece and provided with one or more apertures in its side, a plugging-tool carried by said socket-piece, a hammer-tool carried by the chuck or holder and adapted to strike the plugging-tool, and a head loosely supported upon the hammer-tool and arranged within the openings in the socket-piece, whereby the finger may be pressed upon said head to control the action of the hammer-tool during its reciprocations.

13. In a hand-piece for a dental or surgical engine, a sleeve supporting a bearing longitudinally adjustable on the sleeve, in combination with a rotating shaft or spindle journaled in said bearing, a power-applying device secured to the shaft at one end, a chuck or tool-holder secured to the shaft at the other end, a projection rotating with the shaft or spindle, an arm in the path of the projection secured to the sleeve, whereby the rotation of the shaft or spindle causes a longitudinal reciprocation of the said shaft or spindle, and a roller or sleeve loosely supported upon the arm and adapted to be struck by the projection of the shaft or spindle, whereby a more steady action and less wear result.

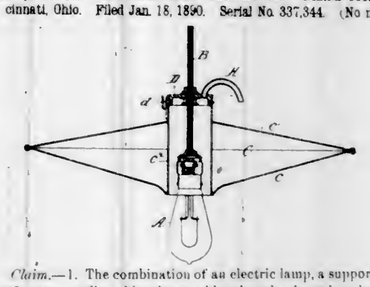
449,402. GRAIN-WEIGHING MACHINE. SAMUEL E. BROWN, Kane, Ill. Filed Dec. 5, 1890. Serial No. 373,717. (No model.)



Claim.—1. In a grain-weighing machine, an automatic weighing device comprising a vertical frame surmounted by a two-way delivery-spout, a rectangular frame adapted to oscillate upon an axis journaled centrally between the outlet-orifices of said two-way spout, a yoke or slotted arm mounted upon said oscillating frame and adapted to engage with a crank-arm secured upon the end of a rock-shaft, to which is attached a dividing leaf located within the delivery-spout and adapted to direct the flow of the grain from one outlet to the other, sack-supporting platforms, hooks, and bars, the latter pivotally secured to and depending from the said oscillating frame, a curved bar secured to said oscillating frame, so as to oscillate therewith, a balance-weight supported upon anti-friction rollers adapted to travel upon said curved bar, and adjustable stops for limiting the travel of said balance-weight, all of said parts constructed, combined, and adapted to each other for co-operative action, substantially as and for the purpose set forth.

2. The combination, with the oscillating frame D, of mechanism for actuating the counting and registering dials, comprising a yoke or loop *q*, secured to the upper side of said frame D, a plate secured to the front of the two-way spout and provided with a slot *r*, a pawl adapted to travel in said slot, and a check-pawl *o*, all of said parts constructed and adapted to operate substantially as and for the purpose set forth.

449,403. ELECTRIC-LAMP REFLECTOR. FRANK COOLEY, Cincinnati, Ohio. Filed Jan. 18, 1890. Serial No. 337,344. (No model.)



Claim.—1. The combination of an electric lamp, a supporting-rod therefor, a cap adjustable along said rod and adapted to be locked thereto by set-screws and elastic washers, whereby a water-tight connection is made therewith to prevent the admission of water underneath said cap, and a reflector supported thereby, substantially as and for the purpose specified.

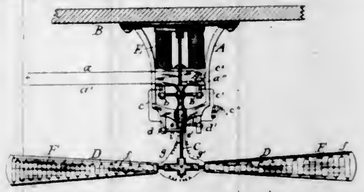
2. The combination of an electric lamp, a supporting-rod therefor, a cap adjustable along said rod and adapted to be locked thereto by set-screws and elastic washers, whereby a water-tight connection is made therewith to prevent the admission of water underneath said cap, and a detachable reflector supported thereby, the reflecting-surface thereof being paint, substantially as and for the purpose specified.

3. The combination of an electric lamp, a supporting-rod therefor, a flanged cap adjustable along said rod and having a water-tight connection therewith, a detachable reflector supported by the cap, and a curved sheath for the electric wires, the parts being so arranged as to prevent the admission of water underneath the reflector to the lamp, substantially as and for the purpose specified.

4. The combination of an electric lamp, a supporting-rod therefor, a hub carrying a reflecting-surface, and a cap adjustable along said rod and adapted to be locked thereto by means of set-nuts *b b* and washers *b' b'* and to be locked to the hub by the lugs *d d* taking into the recesses c^3 c^3, the parts being so arranged as to prevent the admission of water underneath the cap to the lamp, substantially as and for the purpose specified.

5. The combination of an electric lamp, a supporting-rod therefor, a hub c^3, carrying a roof c' and a reflecting-surface *c*, a cap adjustable along said rod and adapted to be locked thereto by set-nuts *b b* and washers *b' b'* and to be locked to the hub by means of lugs *d d* and recesses c^3 c^3, and a sheath for the electric wires, the parts being so arranged as to prevent the admission of water underneath the cap to the lamp, substantially as and for the purpose specified.

449,404. ELECTRIC HEATING APPARATUS. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed Apr. 28, 1890. Serial No. 349,794. (No model.)



Claim.—1. The combination of an exposed electric heater and a ventilating-fan mounted upon the same support or frame.

2. The combination of a ventilating-fan and an electric heater mounted upon and carried by said fan.

3. The combination of an electric heater and a motor connected therewith to move the same.

4. The combination of an electrically-heated conductor and a blade of a ventilating-fan to carry said conductor

5. The combination, with a ventilating-fan and a motor to operate the same, of an electrically-heated conductor mounted upon the blades of said fan.

6. The combination, with a rotary ventilating-fan and a motor to operate the same, of an electrically-heated conductor mounted upon said fan.

7. In an electric heating apparatus, one or more exposed heat-developing electric conductors suitably supported to be moved and a motor connected to said conductors to move the same.

8. In an electric heating apparatus, one or more heat-developing electric conductors suitably supported to be rotated and connected in circuit with a source of electricity and a motor connected to and arranged to rotate said conductors, for the purpose described.

9. The combination of a perforated or open-work fan-blade, a heating-conductor, and an electric conductor connected with the same.

10. The combination of a fan-blade constructed of perforated or open-work electric conducting material, and electric conductors connecting said blade with a suitable source of electricity.

11. The combination, with a ventilating-fan, a motor to operate the same, and an electric heater mounted thereon, of an inductional transformer, a secondary circuit of said transformer connected with the heater, a pulsator in the primary circuit, operated by the motor operating the fan, and a source of direct current for the primary circuit.

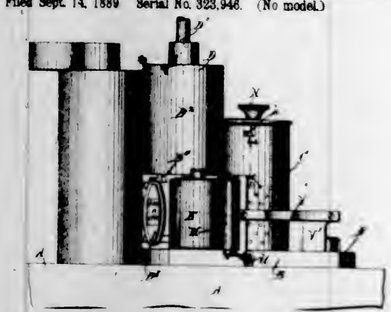
12. The combination, with a ventilating-fan, a motor to operate the same, and an electric heater mounted thereon, of an inductional transformer, a secondary circuit of said transformer connected with the heater, and a source of electricity for the primary circuit.

13. In an electric heating apparatus, one or more heat-developing electric conductors and a movable means to displace or remove the heated air from said conductor or conductors.

14. In an electric heating apparatus, one or more exposed heat-developing electric conductors, means to displace or remove the heated air from said conductor or conductors, and means for controlling the current passing through said conductor or conductors and the removal of air therefrom indepeodently of each other.

15. The combination of an electric heater, an electric motor supplied with means for removing the heat from said heater, and electric conductors connected to both the heater and motor to supply electricity thereto.

449,405. INKING DEVICE. MATTHEW J. DOLPHIN, Brooklyn, N. Y. Filed Sept. 14, 1889. Serial No. 323,946. (No model.)



Claim.—1. The combination of an intermittently-operating marker, a continuously-operating ink-feeding roller, and connecting means, substantially as described, between said marker and ink-feeding roller, substantially as and for the purpose specified.

2. An ink-feeding roller consisting of a hollow sleeve having feeding-passages leading through its wall from the inside to the outside thereof, and a regulator for adjusting the feed of said passages, said regulator having a less number of openings than said sleeve, substantially as specified.

3. The herein-described ink-feeding roller, consisting of an outside feeding-sleeve, a number of openings through the wall of said outer sleeve, an inner ink-containing sleeve movable within the former sleeve, and feeding-passages through the wall of the latter sleeve, said latter openings being of less combined areas than the former openings, substantially as and for the purpose described.

4. An ink-feeding roller consisting of a hollow sleeve, feeding-passages leading from the interior to the outside thereof, a regulator for adjusting the amount of opening of said passages, and having a less number of openings than said sleeves, and a gage for setting the regulator at any desired point, substantially as and for the purpose set forth.

5. An ink-feeding roller consisting of an outer sleeve, an inner sleeve guided within said outer sleeve, feeding-passages provided in the separate sleeves, with a less number of openings in the inner sleeve than the other, guide-pins for guiding the inner sleeve within the outer sleeve, and a device for adjusting the inner sleeve to the desired position within the outer sleeve, substantially as and for the purpose described.

6. In an ink-feeding roller, the combination of an outer distributing-sleeve revolving in a vertical plane, feeding-passages provided in said sleeve, and an inner ink-containing sleeve detachably secured to the outer sleeve and having openings in the latter sleeve of less combined area than the openings in the former sleeve, substantially as set forth.

7. The combination of a marker, a hollow ink-feeding sleeve having feeding-passages and an inner ink-containing sleeve having a less number of openings than the former sleeve for governing the feed of the ink, and a distributing-roller for conveying the ink from the ink-feeding roller to the marker, substantially as described.

8. The combination of a continuously-operating ink-feeding roller, a marker normally at rest, mechanism, substantially as described, for intermittently operating said marker, two or more intermediary ink-distributing rollers between said marker and ink-feeding roller, one of which is loosely mounted and projects slightly into the path of the said marker, substantially as and for the purpose specified.

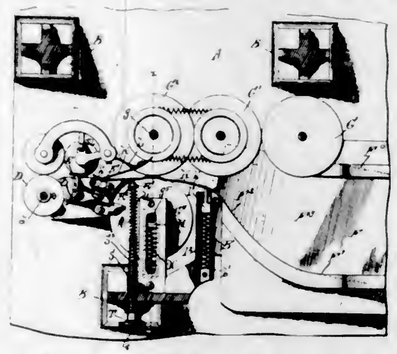
9. The combination, with a marker rotating in fixed bearings, of a supporting-bracket, an inker mounted upon said bracket, and an adjusting device for adjusting the bracket to the desired position in relation to the marker, and means, substantially as described, for retaining said bracket in its adjusted position, substantially as and for the purpose described.

10. The combination of a marking-roller rotating in fixed bearings, a swinging bracket, means, substantially as described, for retaining said bracket in its adjusted position, an ink-feeding roller mounted upon said bracket, a distributing-roller for feeding ink from the ink-feeding roller to the marker, said distributing-roller being adjustably mounted on said bracket for adjusting the same toward the ink-feeding roller substantially as and for the purpose specified.

11. The combination of a marking-roller rotating in fixed bearings, a supporting-bracket, an ink-feeding roller mounted upon said bracket, a distributing-roller for feeding ink from the ink-feeding roller to the marker, said distributing-roller being adjustable toward the ink-feeding roller, an adjusting device for adjusting said bracket toward the marker, and means, substantially as described, for retaining said bracket in its adjusted position, substantially as and for the purpose described.

12. In an inking device, the combination of a supporting-bracket, an ink-feeding roller, a distributing-roller for feeding ink from the ink-feeding roller to the marker, and a yielding spreader or evener bearing against the distributing-roller, substantially as and for the purpose set forth.

449,406. LETTER-MARKING MACHINE. MATTHEW J. DOLPHIN, Brooklyn, N. Y. Filed Sept. 14, 1889. Serial No. 323,947. (No model.)



Claim.—1. The combination of a feeding-roller for feeding the letters, a yielding or moving guide movable toward said feeding-roller for forcing the letters against the same, and a separating-roller back of said yielding guide, with a portion of its face projecting beyond said guide and arranged adjacent to the feeding-roller for preventing the feeding of more than one letter at a time, substantially as specified.

2. The combination of a feeding-roller, a yielding guide having a cut-out, and a separating-roller projecting through said cut-out and arranged opposite to the feeding-roller, substantially as set forth.

3. The combination of a feeding-roller, a yielding separating roller, and a yielding guide for the letter restrained by the separating roller, substantially as and for the purpose specified.

4. The combination of a feeding-roller, a separating-roller arranged opposite to the feeding-roller, and a yielding guide for the letter, said guide extending from the separating-roller in the direction in which the letters are fed to the feeding-roller, substantially as and for the purpose set forth.

5. The combination of a feeding-roller, a yielding guide, a yieldingly-mounted separating-roller arranged oppositely to the feeding-roller, and a connection from the yielding guide to the said yielding separating-roller, substantially as set forth.

6. The combination of a feeding-roller, a yielding guide, a yieldingly-mounted separating-roller oppositely arranged to the feeding-roller, and an adjustable connection between the yielding guide and said yielding separating-roller, substantially as and for the purpose set forth.

7. The combination of adjacently-mounted rollers having their contiguous faces revolving in opposite directions and a yielding guide interposed between said rollers, substantially as and for the purpose specified.

8. The combination of a feeding-roller, a separating-roller adjacent to the feeding-roller, said rollers having their contiguous faces revolving in opposite directions, a yielding guide arranged opposite to the feeding-roller, and a device for adjusting said guide toward the feeding-roller, substantially as and for the purpose set forth.

9. The combination of the feeding-roller, a guide opposite to the feeding-roller and provided with a cut-out, a separating-roller projecting through said cut-out beyond the yielding guide, and an adjusting device for governing the amount of projection of the separating-roller beyond the said yielding guide, substantially as and for the purpose described.

10. The combination of interlapping feeding-rollers, a yielding separator-roller, and an oscillating guide for preventing the crumpling of the restrained letters, substantially as and for the purpose described.

11. The combination of feeding-rollers, a separating-roller, an oscillating guide for the letters, a spring for adjusting the separating-roller, and a regulating device for varying the tension of the spring, substantially as described.

12. The combination of a feeding-roller, a yielding guide movable toward said feeding-roller for forcing the letters against the same, and a second yielding guide for forcing the letter toward the former guide, substantially as and for the purpose specified.

13. The combination of a letter-receptacle having a discharge-opening, a belt for feeding the letters toward said discharge-opening, feeding-rollers for feeding the letter, a separating-roller adjacent to the feed-roller for preventing the feeding of more than one letter at a time, and a guide for preventing the crumpling of the letters restrained by the separating-roller, substantially as specified.

14. The combination of a feeding-roller for feeding the letters, a yielding guide oppositely arranged to said feeding-roller and movable toward the same, cut-outs in the upper and lower portion of said guide, and separating-rollers back of said guide, with a portion of their face projecting through said cut-outs for preventing the feeding of more than one letter at a time, substantially as described.

15. The combination of a feeding-roller for feeding the letters, a yielding guide oppositely arranged to said feeding-roller and movable toward the same, cut-outs in the upper and lower portion of said guide, separating-rollers back of said guide, with a portion of their face projecting through said cut-outs for preventing the feeding of more than one letter at a time, and an adjusting device for governing the amount of projection of the separating-rollers beyond the said yielding guide, substantially as specified.

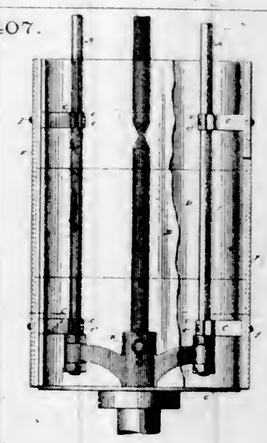
16. The combination, with a pair of feeding-rollers, of a pair of movable guides oppositely arranged to the respective feeding-rollers and movable toward the same, and a separating-roller back of one of said guides and having a portion of its periphery projecting beyond the same and adjacent to one of the feeding-rollers, substantially as and for the purpose set forth.

17. The combination of a letter-receptacle having a discharge-opening, a belt for feeding the letters toward said discharge-opening, feeding-rollers for feeding the letter, a yielding guide I, oppositely arranged to one of said rollers, a separating-roller adjacent to the other of said rollers, and a yielding guide interposed between said separating-roller and latter feeding-roller, substantially as and for the purpose described.

449,407. SHADE FOR ELECTRIC LIGHTS. JAMES W. EASTON, New York, N. Y., assignor to P. Minturn Smith, Plainfield, N. J., and William D. Perry, Brooklyn, N. Y. Filed Mar. 20, 1890. Serial No. 344,593. (No model.)

Claim.—In a shade for electric lights, the combination of the segmental sections D, provided with the outwardly-projecting flanges *d*, the separators E, placed between said flanges, the clips F, inclosing said flanges, and the arms C, connecting said clips and separators with the side rods of the lamp, substantially as and for the purposes set forth.

449,407.



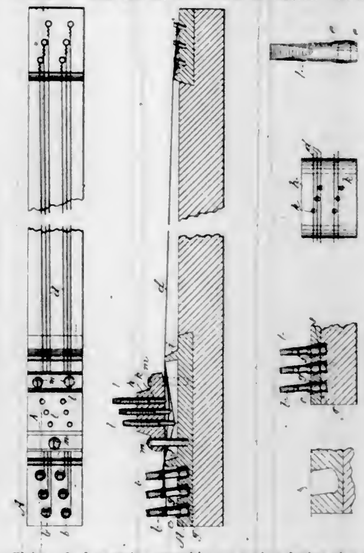
449,408. DENTAL TOOL FOR SHAPING TOOTH-CROWNS. GEO. EVANS, New York, N. Y. Filed Oct. 9, 1890. Serial No. 367,588. (No model.)



Claim.—1. As a new article of manufacture, the herein-described tool for expanding and shaping tooth-crowns, consisting of forcep-jaws provided with handles in the usual manner and having their ends shaped to form counterparts of the surface of the crown they are designed to work upon, substantially as specified.

2. In expanding or shaping tools for operation on the interior of tooth-crowns, forcep-jaws having the points that come in contact with the grinding section or third of the crown shaped to form a counterpart of the said grinding section or third, and the parts that come in contact with the middle section or third shaped to form counterparts of the said middle section or third, substantially as specified.

449,409. PIANO-TUNING APPARATUS. ABRAHAM FELLDIN, Auburn, N. Y. Filed Mar. 28, 1890. Serial No. 345,768. (No model.)



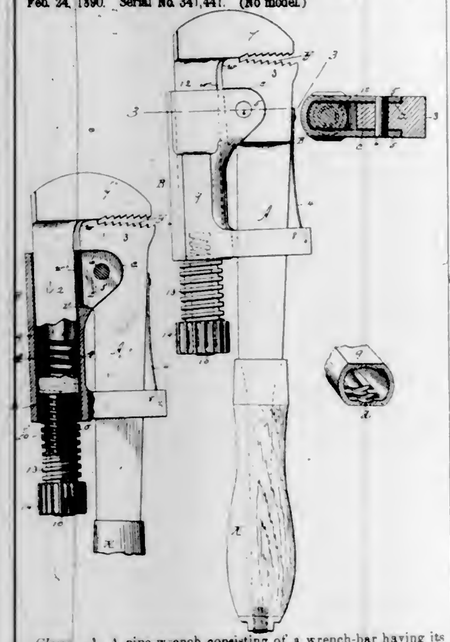
Claim.—1. In a string stretching or tuning device, the combination, with the metallic supporting bar or frame having a plain bored hole for each pin, of a pin for each hole of uniform size throughout its length having a plain section inserted in the hole having bearings

at the points therein where it has contact by the pull of the strings, substantially as described.

2. In a string stretching or tuning device, the combination, with the metallic supporting bar or frame having a plain bored hole of uniform size throughout its length for each pin, of a pin for each hole having a plain section of the lower end shorter than the depth of the hole and larger than the portion of the pin directly above it and having bearings at the angles of the larger section where it has contact by the pull of the strings, substantially as described.

3. The combination, with the strings, of the auxiliary tension-bar placed over the strings and bored through for the pins and adjusting-screws, the loose pins in said holes and projecting from the lower side of the bar and bearing on the strings, and the adjusting-screws in said holes above the pins, substantially as described.

449,410. WRENCH. HENRY HAMMOND, New Haven, Conn. Filed Feb. 24, 1890. Serial No. 341,441. (No model.)

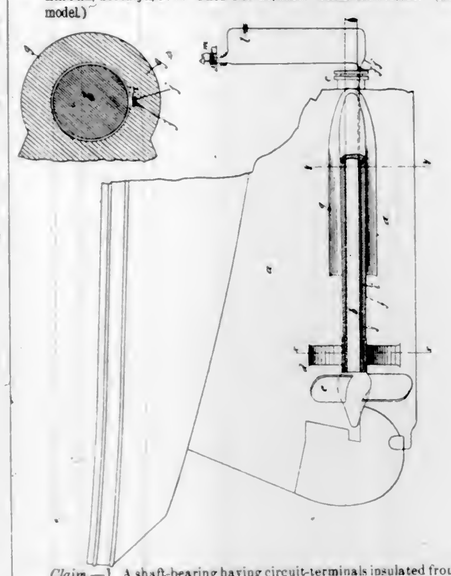


Claim.—1. A pipe-wrench consisting of a wrench-bar having its outer end serrated to form a fixed jaw or head, combined with a tubular and internally-screw-threaded clamp-frame pivoted to said bar, having toward the handle end a laterally-extended yoke through which the wrench-bar passes, the movable head having an externally-screw-threaded shank thereon loosely passed through said clamp-frame, a tubular nut both internally and externally screw threaded and having simultaneously a screw-thread engagement with said frame and shank, and a spring acting between the wrench-bar and yoke for normally maintaining the forward end of the clamp-frame toward the wrench-bar, for the purpose set forth.

2. A pipe or analogous wrench consisting of a wrench-bar having its outer end serrated to form a fixed head and having a portion of its inner edge serrated, as at *w*, combined with an internally-screw-threaded clamp-frame pivoted to and opposite one edge of said bar, having a yoke near its lower end through which the wrench-bar passes, the movable head having a shank thereon loosely entering said clamp-frame, the end portion of which is externally screw-threaded, and having its inner edge toward the head serrated, as at *w'*, a tubular nut externally screw-threaded and provided internally with a thread-engaging projection, as *o*, substantially as described, and said nut having a screw-threaded engagement simultaneously with said frame and shank, whereby said movable head is actuated, and a spring to swing the lower end of said frame toward the wrench-bar, substantially as set forth.

3. A pipe or analogous wrench consisting of a wrench-bar having its outer end serrated to form a fixed head, combined with an internally-screw-threaded clamp-frame pivoted to and opposite one edge of said bar, having a yoke near its lower end, through which the wrench-bar passes, said bar and frame having, respectively, an inter-engaging shoulder *z* and abutment *z'*, the movable head having a shank thereon entering said clamp-frame, the end of which is screw-threaded, a tubular nut, substantially as described, engaging simultaneously with said frame and shank, whereby said movable head is actuated, and a spring to swing the lower end of said frame toward the wrench-bar, substantially as set forth.

449,411. ELECTRIC ALARM FOR SHAFT-BEARINGS. GEORGE HANNAH, Brooklyn, N. Y. Filed Dec. 24, 1890. Serial No. 375,662. (No model.)



Claim.—1. A shaft-bearing having circuit-terminals insulated from each other below the normal-wearing-surface, and an electric circuit connected to said terminals.

2. A shaft-bearing having circuit-terminals insulated from each other below the normal wearing-surface, and an electric circuit connected to said terminals, containing an alarm.

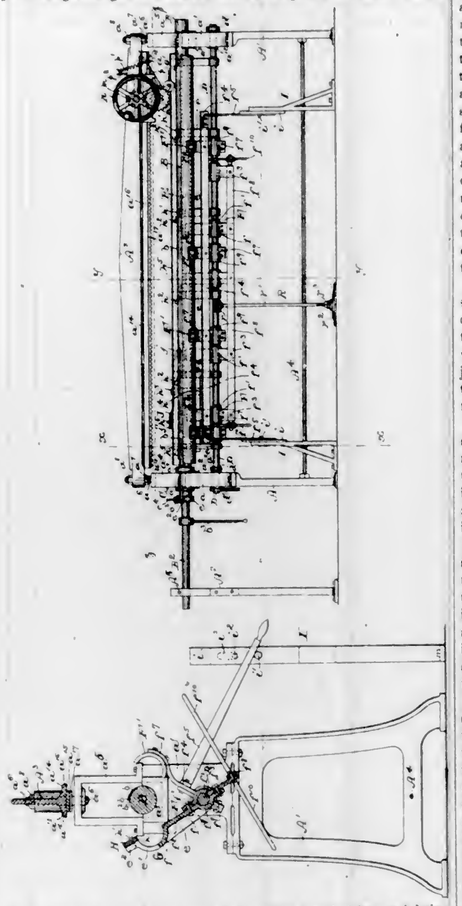
449,412. PIPE-FORMING MACHINE. SIMEON HARTLEY, Newark, N. J., assignor to the Newark Sheet Metal Ware Company, of New Jersey. Filed Dec. 20, 1890. Serial No. 375,323. (No model.)

Claim.—1. In a machine for forming leader-pipes, the combination of a mandrel removably arranged in bearings in the supports of the machine, formers for bending the metal sheet around the mandrel, clamping or holding jaws on either side of said mandrel, said formers and clamping or holding jaws being arranged on the same shaft, arranged in the same vertical plane, passing through the central axis of the mandrel, but each being independent in its action from the other, said formers being keyed to said shaft and operated thereby, while said clamping or holding jaws rotate loosely on the same shaft, said clamping or holding jaws being provided with handles for forcing them against the sheet metal being formed on the mandrel, and a bending-down device to close the joint in the leader-pipe, all of the operations of said forming, clamping, and bending-down devices following consecutively without removing the metal sheet from the machine, for the purposes set forth.

2. In a machine for forming leader-pipes, the combination of a mandrel removably arranged in bearings in the supports of the machine, formers for bending the metal sheet around the mandrel, clamping or holding jaws on either side of said mandrel, a depressor-bar working in slots in said formers provided with means for depressing the same, said formers and clamping or holding jaws being arranged on the same shaft but each being independent in its action from the other, and a bending-down device to close the joint of the leader, all of the operations of said forming, clamping, depressing, and bending-down devices following consecutively without removing the metal sheet from the machine, for the purposes set forth.

3. In a machine for forming leader-pipes, the combination of a mandrel provided with a slot extending longitudinally therein, into which the sheet metal is inserted and said mandrel being removably

arranged in bearings in the supports of the machine, formers for bending the metal sheet around the mandrel, clamping or holding jaws on either side of said mandrel, said formers and clamping or holding jaws being arranged on the same shaft, arranged in the same vertical



plane, passing through the central axis of the mandrel, but each being independent in its action from the other, said formers being keyed to said shaft and operated thereby, while said clamping or holding jaws rotate loosely on the same shaft, said clamping or holding jaws being provided with handles for forcing them against the sheet metal being formed on the mandrel, and a bending-down device to close the joint of the leader-pipe, all of the operations of said forming, clamping, and bending-down devices following consecutively without removing the metal sheet from the machine, for the purposes set forth.

4. In a machine for forming leader-pipes, the combination of a mandrel provided with a longitudinal slot into which the sheet metal is inserted and said mandrel being removably arranged in bearings in the supports of the machine, formers for bending the metal sheet around the mandrel, clamping or holding jaws on either side of said mandrel, said formers and clamping or holding jaws being arranged on the same shaft, arranged in the same vertical plane, passing through the central axis of the mandrel, but each being independent in its action from the other, said formers being keyed to said shaft and operated thereby, while said clamping or holding jaws rotate loosely on the same shaft, said clamping or holding jaws being provided with handles for forcing them against the sheet metal being formed on the mandrel, a bending-down device to close the joint in the leader-pipe, all of the operations of said forming, clamping, and bending-down devices following consecutively without removing the metal sheet from the machine, means for turning said mandrel in its bearings, and a holding or locking device for locking the mandrel in the desired position, for the purposes set forth.

5. In a machine for forming leader-pipes, the combination of a mandrel provided with a longitudinal slot into which the sheet metal is inserted and said mandrel being removably arranged in bearings in the supports of the machine, formers for bending the metal sheet around the mandrel, clamping or holding jaws on either side of said mandrel, said formers and clamping or holding jaws being arranged on the same shaft, arranged in the same vertical plane, passing through the central axis of the mandrel, but each being independent in its action from the other, said formers being keyed to said shaft and operated thereby, while said clamping or holding jaws rotate loosely on the same shaft, said clamping or holding jaws being provided with handles for forcing them against the sheet metal being formed on the mandrel, a bending-down device to close the joint of the leader-pipe, all the operations of said forming, clamping, and bending-down devices following consecutively without removing the metal sheet from the machine, means for turning said mandrel in the bearings, and a holding or locking device for locking the mandrel in the desired position, and means on the shaft upon which the formers and clamping devices are arranged, engaging with a handle or lever on said shaft for locking or holding the same in the desired position, for the purposes set forth.

6. In a machine for forming leader-pipes, the combination, with a slotted mandrel provided with a locking mechanism on one end thereof consisting, essentially, of a slotted wheel and a toothed lever pivoted to one of the mandrel-supports, of formers secured to a shaft provided with means for rotating the same, said formers having upwardly-projecting portions to which is secured a depressor-bar adapted to force the sheet metal down upon the mandrel, as and for the purposes set forth.

7. In a machine for forming leader-pipes, the combination, with a slotted mandrel, of formers secured to a shaft provided with means for rotating the same, said formers having upwardly-projecting portions to which is secured a depressor-bar by means of pins or bolts working in slots in said bar, and a handle pivoted between two of said former-arms to operate said bar, whereby the latter receives a downwardly-inclined movement, for the purposes set forth.

8. In a machine for forming leader-pipes, the combination, with a slotted mandrel, of formers secured to a shaft provided with means for rotating the same, said formers having upwardly-projecting portions to which is secured a depressor-bar by means of pins or bolts working in slots in said bar, and a handle pivoted between two of said former arms to operate said bar, whereby the latter receives a downwardly inclined movement, and means on said handle on the former bearing-shaft for locking the same in the desired position, for the purposes set forth.

9. In a machine for forming leader-pipes, the combination, with a slotted mandrel loosely turning in bearings and adapted to be removed therefrom, and a shaft arranged in the same vertical plane passing through the central axis of the mandrel and permanently secured in the supports of the machine, of forming and clamping devices on said shaft, each working independent of the other and each constructed and arranged to form the sheet metal around the mandrel and hold the same thereon and cause the edges of said metal to interlock, said formers being keyed to said shaft and operated thereby, while said clamping or holding jaws rotate loosely on the same shaft, said clamping or holding jaws being provided with handles for forcing them against the sheet metal being formed on the mandrel, and a bending-down device arranged and working on a rack in the machine directly above the mandrel, said device being adapted to move along said rack and engage with the seam formed in the leader-pipe, whereby said seam is closed down, for the purposes set forth.

10. In a machine for forming leader-pipes, the combination, with a slotted mandrel arranged in bearings in the supports of the machine, a cross-bar A^3, connecting said supports and formers and clamping or holding devices, and a depressor-bar secured to said formers for forming the leader-pipes around the mandrel and causing the edges of the sheet metal to interlock, of means constructed and arranged to be moved along the rack on said cross-bar and engage with the seam formed in the pipe, whereby said seam is tightly closed down, for the purposes set forth.

11. In a machine for forming leader-pipes, the combination of a mandrel arranged in bearings in the supports of the machine, formers for bending the metal sheet around the mandrel, clamping-jaws on either side of said mandrel, a depressor-bar working in slots in said formers and provided with means for depressing the same, said formers and clamping-jaws being arranged on the same shaft, and a slotted wheel on said mandrel, and a toothed lever pivotally attached on one of said supports adapted to engage with said wheel to hold the slotted mandrel in its normal and inoperative position, as and for the purposes set forth.

12. In a machine for forming leader-pipes, the combination, with the mandrel B, of shaft D, formers E, and a lever for operating said shaft provided with a spring-actuated and pivoted arm, one end of which passes through a perforation in said lever and is adapted to en-

gage with a hole in a plate adjustably secured in a support on one of the machine-supports, for the purposes set forth.

13. In a machine for forming leader-pipes, the combination, with mandrel B, shaft D, formers E, a lever d' for operating shaft D, and a spring-actuated arm pivotally secured to said lever d', of a plate d^9, adjustably secured by means of bolts in slots in a support d^8, and the ends d^{12} of the arm on lever d' being adapted to engage with a perforation in said plate d^9, for the purposes set forth.

14. In a machine for forming leader-pipes, the combination, with the mandrel B and shaft D, of formers E, consisting of arms e, secured on said shaft, provided with recessed portions e', adapted to embrace the mandrel, said arms e being provided at their upper ends with an adjustable depressor-bar, and means secured between two of said arms on a connecting-piece for adjusting said depressor-bar, as and for the purposes set forth.

15. In a machine for forming leader-pipes, the combination of a mandrel, with formers, holding or clamping jaws, and a depressor-bar adjustable in relation to each other to form the sheet metal around the mandrel, and curved plates adapted to be secured within the curved portions of the said formers, and clamping-jaws, whereby they are made to fit a variety of such mandrels, for the purposes set forth.

16. The herein described machine for forming leader-pipes, consisting, essentially, of two supports A and A', provided with heads a and a', having removable bearings therein, a recessed or slotted mandrel removably arranged in said bearings, a slotted wheel secured on said mandrel in locking engagement with a toothed lever pivoted on said support A, and a handle on said mandrel for operating the same when said toothed lever has been released from the holding engagement with said slotted wheel, a shaft B, supported in bearings in said frame-supports A and A', operated by means of a handle, and means thereon for locking said shaft in the desired position, formers keyed on said shaft, and two sets of clamping arms or jaws loosely arranged on said shaft, but operating independently by means of handles, a depressor-bar H, secured to said formers, as set forth, all of the operations of said formers, clamping-arms, and depressor following consecutively and bending the sheet metal into form and interlocking the edges and forming a seam, a cross-bar A^3, connecting supports a^4 and a^5 on the frames A and A', respectively, said bar being provided on opposite sides with ways or guides and on its under side with a rack, and a bending-down device sliding on said ways, being provided with gear mechanism for operating a pinion in engagement with the teeth on said rack and having a wheel operated by spring-actuated lever to cause the same to be depressed upon the seam of the pipe and rotate thereon as said bending-down device moves forward on the cross-bar A^3, whereby said seam is firmly closed down, and a support or gallows A^9 at one end of the machine, provided with a pin A^5 for the insertion of a wedge between said pin and the mandrel, whereby the latter can be held in an inclined position for the removal of the completed leader-pipe from the raised end of the mandrel, as and for the purposes set forth.

17. In a machine for forming leader-pipes, the combination, with the mandrel B and shaft D, of formers E, consisting of arms e, secured on said shaft and provided with recessed portions e', adapted to embrace the mandrel, said arms e being provided with an adjustable depressor-bar, and arms F, loosely arranged on said shaft D and connected by a bar f^6, and handles f^{10} for operating the same and causing the curved ends of the arms F to clamp the sheet metal on the mandrel, for the purposes set forth.

18. In a machine for forming leader-pipes, the combination, with the mandrel B and shaft D, of formers E, consisting of arms e, secured on said shaft and provided with the recessed portions e', adapted to embrace the mandrel, said arms e being provided with an adjustable depressor-bar, and a clamping device F', comprising therein arms f^7, loosely arranged on said shaft D and connected by means of a bar f^4, provided with levers or handles f^2, as set forth.

19. The combination, in a machine for forming leader-pipes, with the mandrel B and the shaft D, of a clamping device F', comprising therein arms f^7, loosely arranged on the said shaft and connected by means of a bar f^4, provided with handles or levers f^2, said handles being in close sliding contact with standards or frames I, provided with a pin i, whereby the levers and the clamping device can be held in a desired position, as and for the purposes set forth.

20. The herein-described machine for forming leader-pipes, consisting, essentially, of two supports A and A', provided with heads a and a', having removable bearings therein, a recessed or slotted mandrel removably arranged in said bearings, a slotted wheel secured on said mandrel in locked engagement with a toothed lever pivoted on said support A, and a handle on said mandrel for operating the same when said toothed lever has been released from its holding engagement with said slotted wheel, a shaft D, supported in permanent bearings in said frame-supports A and A', operated by means of a handle, and means thereon for locking said shaft in a desired position, formers keyed to said shaft, and two sets of clamping arms or jaws loosely arranged on said shaft, but operating independently by means of handles, a depressor-bar H, secured to said formers, as set forth, all of the operation of said formers, clamping-arms, and depressor following consecutively and bending the sheet metal into form and interlocking the edges and forming a seam, a cross-bar A^3, connecting supports a^4 and a^5 on the frames A and A', respectively, said bar being provided on opposite sides with ways or guides and on its under side with a rack, and a bending-down device sliding on said ways, being provided with gear mechanism for operating a pinion in engagement with the teeth on said rack and having a wheel operated by a spring-actuated lever to cause the same to be depressed upon the seam in the pipes and rotate thereon as said bending-down device moves forward on the cross-bar A^3, whereby said seam is firmly closed down, as and for the purposes set forth.

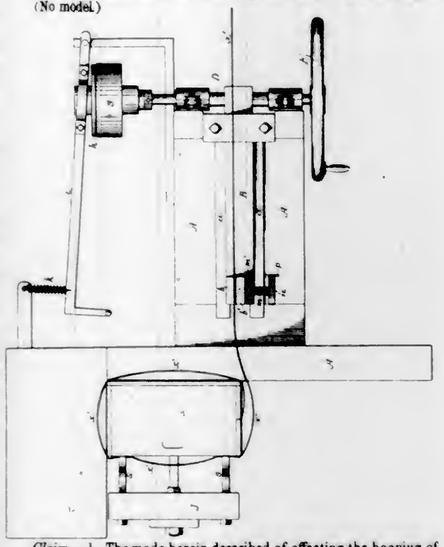
21. In a machine for forming leader-pipes, the combination, with a mandrel adapted to rotate in bearings and upon which the leader-pipe is formed, its supports, and the cross-beam A^3, provided with ways or guides on opposite sides and a rack on its under side, of a bending-down device adapted to slide on said ways and provided with a depressible seam-closing wheel, as and for the purposes set forth.

22. In a machine for forming leader-pipes, the combination, with the mandrel B, the cross-beam A^3, provided with ways or guides on opposite sides and a rack on its under side, of a bending-down device consisting of plates l and l', secured to the guides by plates l^2, a pinion m on one of said plates operated by a hand-wheel n, said pinion engaging with a gear-wheel m' on a spindle m^2, provided with a pinion m^3, meshing with the teeth of the rack, arms m^4 and m^5 on said spindle provided with a seaming-wheel o', having a groove in its circumference, and a spring-actuated handle p, secured to one of said arms for depressing said seaming-wheel upon the interlocked edges of the sheet-metal pipe and firmly closing the seam, as and for the purposes set forth.

23. In a machine for forming leader-pipes, in combination with a mandrel adapted to rotate in bearings and upon which the leader-pipe is formed, its supports, and the former-arms e, a plate s, secured in the curved recess e' of each arm by means of a bolt, as and for the purposes set forth.

24. In a machine for forming leader-pipes, the combination, with a mandrel and a shaft D, of formers provided with a depressor-bar H, a bar l, secured thereto by means of blocks l', said formers consisting of arms e, to which said depressor-bar is adjustably secured, and means connected to said depressor-bar for adjusting the same, as and for the purposes set forth.

449,413. MANUFACTURE OF HOOPED BOXES. HOWARD H. HIGHAM, Philadelphia, Pa. Filed Apr. 24, 1890. Serial No. 349,370. (No model.)



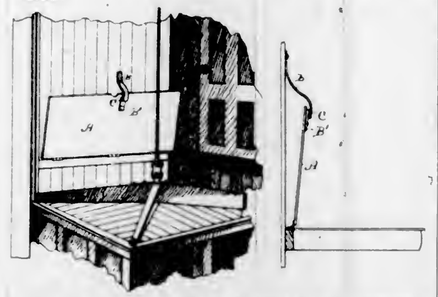
Claim.—1. The mode herein described of effecting the hooping of boxes having metal hoops, said mode consisting in first applying the hoop to the box while drawn so tightly that it remains permanently under tension and then nailing the hoop, whereby the nails, owing to the tension upon the hoop, can be driven either singly or in series without any previous puncturing of the hoop, substantially as specified.

2. The combination of a box-supporting device, a movable bar carrying a vise, means for reciprocating said bar, a friction-clutch for operating the same, and a holder for maintaining the hoop in position on the box before it is drawn tight, substantially as specified.

3. The combination of the box-support, a movable bar carrying a vise, a screw-stem acting on the movable jaw of the vise and having an arm, and a projection acting on said arm to effect the automatic opening and closing of the vise as the bar carrying the same is moved to and fro, substantially as specified.

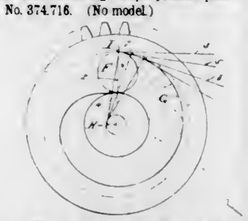
4. The combination of a box holder or support, a movable bar carrying a vise, means for operating said bar, and a frame swinging beyond the box and engaging with a hoop which surrounds said box, whereby said hoop is supported in position upon the box before being drawn tight, substantially as specified.

449,414. FUSIBLE SUPPORT FOR HATCH-DOORS, &c. CHARLES C. HINE, Newark, N. J. Filed Dec. 6, 1888. Serial No. 292,861. (No model.)



Claim.—A device for supporting a hatchway-door, consisting of a flat plate adapted to be secured to the under side of the door, a reversely-curved plate extending over the edge of the door and adapted to be secured to the wall beyond, and a mass of fusible solder interposed between the adjacent ends of the plates and uniting them, all substantially as described.

449,415. CLUTCH. DANIEL B. HISER, Springfield, Ohio, assignor to the Thomas Manufacturing Company, same place. Filed Dec. 15, 1890. Serial No. 374,716. (No model.)



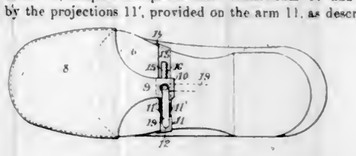
Claim.—1. In a clutch, the combination of a shaft, a sleeve loosely mounted thereon, and interposed gripping-pieces, said sleeve being provided with recesses, each having an outer wall converging forward toward the shaft at one end of said recess and curving inward and forward in the same direction as the said outer wall to form a pocket at the other end and adapted to project forward under the gripping-piece, substantially as shown, to break the binding contact of the said gripping-piece with said shaft and support it out of contact with the shaft under the reverse movement of the operative member.

2. In a clutch, the combination of a shaft, a sleeve, and an interposed binding-piece, the said sleeve having the herein-described bearing-surface G gradually approaching the center, a tangent line 5 to the surface G, making an angle of approximately four degrees with the line 3, perpendicular to the radial line 2 at the point of contact of said gripping-piece with the surface G, and so on successively, whereby the binding action of said piece is secured.

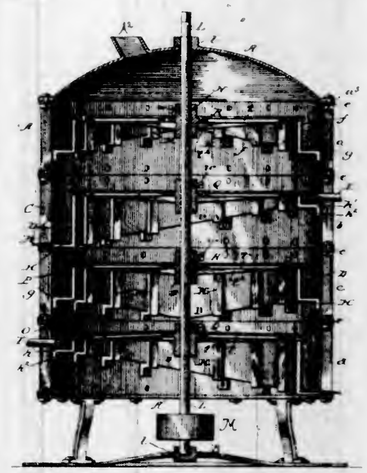
449,416. SHOE-PROTECTOR. CHARLES E. HOWLAND, Providence, R. I. Filed Jan. 12, 1891. Serial No. 377,502. (No model.)

Claim.—1. In a shoe-protector, the combination, with the sheet-metal toe-piece 7, sole-piece 8, and tongue 9, of the stationary arm 11, having the bent end 12, the ratcheted arm 13, having the bent end 14, and the ratchet-cam 17, adapted to operate the arm 13, as described.

2. In a shoe-protector provided with a toe-piece, the combination, with the stationary arm 11, ratchet-arm 13, and ratchet-cam 17, of the lever 19, adapted to operate the ratchet-cam 17 and to be locked by the projections 11', provided on the arm 11, as described.



449,417. SAND AND GRAVEL CLEANING MACHINE. FRED J. HOYT, Chicago, Ill. Filed July 23, 1890. Serial No. 359,612. (No model.)



Claim.—1. In a screening apparatus, the closed cylindrical casing composed of two or more separate sections of metal detachably secured together, in combination with a trough secured to the inner wall of said cylinder, the trough having an inclined floor and an inner vertical wall, a water-inlet at the highest point of said trough for discharging water both ways into the incline of the trough, a disk screen held above and extending slightly beyond the edge of the said wall of the trough, a vertical rotary shaft to which said screen is attached, and a discharge-spout at the lowest point of said trough, substantially as described.

2. In a screening apparatus composed of a cylinder built of separate and detachable sections, in combination with a horizontal revolving screen, an inclined stationary double-channeled trough provided with an inner vertical wall surrounding said screen and secured to the inner wall of the cylinder, a discharge-spout, and a water inlet or inlets discharging water in opposite directions into said trough or channel, whereby material falling from the screen into said trough is washed and carried out by the water, substantially as described.

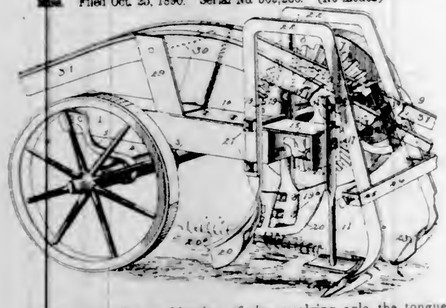
3. A screening apparatus composed of a cylinder built of separate and detachable sections, each section provided with an inclined trough composed of a channel on each side thereof, said trough with its double channel rigidly secured to and running entirely around its inner wall, in combination with an inlet and a discharge-spout and a revolving screen for each section, substantially as described.

4. In a screening apparatus, the combination, with a closed cylinder built up in separate detachable sections, of horizontal screens, a central vertical rotating axis to which said screens are secured, said screens increasing in fineness of mesh from top to bottom, a bottom-closed disk to receive the finest sifted material, said cylinder provided with a screen and disk separately and detachably secured to said axis, a hopper through the top of the cylinder to receive the material to be screened, and a discharge-spout at the bottom of each section of said cylinder, substantially as described.

5. A cylindrical screen-casing built up in sections, which sections are each provided with a flange on its outer edge, by which they are secured together, said casing mounted on legs, and a spider-frame to which said legs are secured, in combination with a vertical rotating axis, horizontal rotary disk screens secured thereto, and a bottom-

closed disk also secured to said axis, and a discharge-spout leading from said bottom disk, substantially as described.

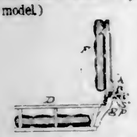
449,418. COTTON-CULTIVATOR. HENRY C. HUGHES, Gillsburg, Miss. Filed Oct. 25, 1890. Serial No. 369,286. (No model.)



Claim.—1. The combination of the revolving axle, the tongue mounted thereon and having the longitudinal opening 1ª in its rear end, the removable bracket 16, the large bevel-wheel adjustably secured on the axle, the bevel-pinion 9, mounted on a removable supporting-arm formed with the series of radial threaded openings 10 and having the bearing-plate 12 secured to it, the removable crank-shaft, the connecting-pitman having the pivot-bolt at its outer end, and the reciprocating hoe adapted to be mounted on the rear end of the crank-shaft, substantially as set forth.

2. In a cultivator, the combination of the U-shaped frames 22, secured at their forward ends to the machine and having the blades at their lower ends, the bracket 24, connecting the rear part of said frames, and the adjusting-screws 25, working in the ends of the bracket and bearing against the frames 22, substantially as set forth.

449,419. JOINTED IRON FOR VEHICLE-SEATS. GEORGE H. HUTTON and GEORGE H. HUTTON, Jr., Baltimore, Md. Filed Dec. 24, 1890. Serial No. 375,671. (No model.)



Claim.—1. A double-jointed iron for the lazy-backs of vehicle-seats, comprising two sections secured to the back and seat, respectively, and connected by two joints, one of which is brought into play when turning the lazy-back to its forward position and the other when turning it to its backward position.

2. An iron for the lazy-backs of vehicle-seats, comprising two sections *h g*, secured to the back and seat, respectively, with an end of one section proximate to an end of the other, and two joints *i i'* between the two sections, one of said joints being at the front side of the iron and the other at the rear side, as set forth.

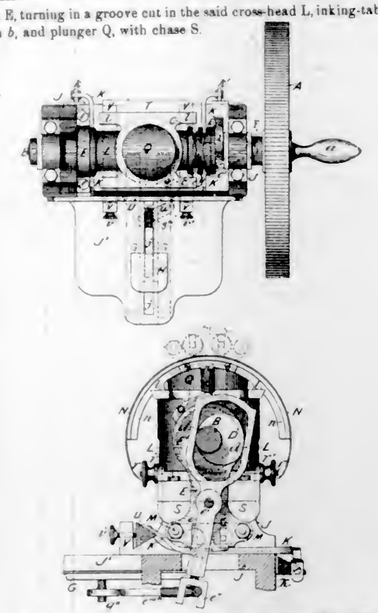
3. An iron for the lazy-backs of vehicle-seats, comprising two sections *h g*, secured to the back and seat, respectively, with an end of one section proximate to an end of the other and one of said proximate ends having a rearward-projecting arm *n* and two joints *i i'* between the said proximate ends, the pivot of one of the joints passing through the said rearward-projecting arm, as set forth.

4. A double-jointed iron for the lazy-backs of vehicle-seats, comprising two sections secured to the back and seat, respectively, and each provided with a rearward-projecting joint-arm, the one lapping across the other and connected by two removable pivot-pins *s s'*, substantially as and for the purpose described.

449,420. CARD-PRINTING MACHINE. JOHN JORDAN, London, England. Filed Sept. 10, 1887. Serial No. 249,343. (No model.) Patented in England Aug. 25, 1887, No. 11,585; in France Sept. 3, 1887, No. 185,637; in Germany Sept. 8, 1887, No. 43,206, and in Belgium Sept. 12, 1887, No. 78,850.

Claim.—1. The combination of uprights J J, to one of which is secured cross-head L, main shaft B, with roller-arm E' attached thereto, roller-arm E, turning in a groove cut in the said cross-head L, and inking-table N.

2. The combination of uprights J J, to one of which is secured cross-head L, main shaft B, with roller-arm E' attached thereto, roller arm E, turning in a groove cut in the said cross-head L, inking-table N, cam *b*, and plunger Q, with chase S.

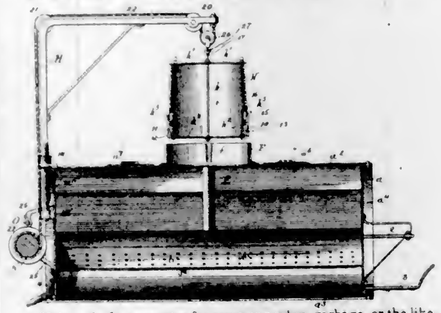


3. The combination of inking-table N, roller-arms E' and E³, shuttle O, and cam C for imparting to the said inking-table reciprocating motion, with rotary shaft B, carrying said roller-arms and cam.

4. The combination of the fence U, guides V, with set-screws *v'*, the fence and guides being arranged as described, so that the said guides may be held in any lateral position by means of the set-screws and also thereby pressed down upon the platen.

5. The combination of main shaft B, cam D, strap *d*, with forked lever *c'*, rocking lever *c''*, slide *g*, and pusher H, substantially as described and shown.

449,421. APPARATUS FOR REMOVING GARBAGE. PATRICK J. KEARNEY, Chicago, Ill., assignor of one-half to Thomas Ryan, same place. Filed Jan. 12, 1891. Serial No. 377,411. (No model.)



Claim.—1. In apparatus for removing ashes, garbage, or the like, a wagon-body having the double-inclined false bottom B and provided with side doors, substantially as described.

2. In apparatus for removing ashes, garbage, or the like, a wagon-body formed with sides *a a'*, top a^3, bottom a^2, and ends a^4 and a^5, and having a supplemental double-inclined bottom B and side doors, substantially as described.

3. In apparatus for removing ashes, garbage, or the like, a wagon-body having a double supplemental perforated bottom plate B and a rear end plate a^5, provided with a discharge opening or door a^4, substantially as described.

4. In apparatus for removing ashes, garbage, or the like, a wagon-body having a double-inclined bottom B, a transverse division-plate E, having an opening in its top above said division-plate E, and having side doors, substantially as described.

5. In apparatus for removing ashes, garbage, or the like, a wagon-body having double-inclined bottom B, side doors C, and chutes D, substantially as described.

6. In apparatus for removing ashes, garbage, or the like, a wagon-body having a top formed with an opening provided with a dumping-ring about said opening, substantially as described.

7. In apparatus for removing ashes, garbage, or the like, the combination, with the wagon-body having an opening in its top, of a dumping-ring about said opening, said ring being provided with suitable guide-recesses, substantially as described.

8. In apparatus for removing ashes, garbage, or the like, the combination, with a wagon-body provided with an opening in its top, of a dumping-ring F about its opening and a supplemental dumping-ring G, substantially as described.

9. In apparatus for removing ashes, garbage, or the like, the combination, with a wagon-body, of a crane M, pivotally mounted thereon, a winding-drum carried by the working-body, and a lifting-rope passing over said crane and drum, substantially as described.

10. In apparatus for removing ashes, garbage, or the like, the combination, with a wagon-body having an opening in its top and having a transverse division-plate, of a box H, transversely divided, and suitable means for guiding said box to bring its division-plate in alignment with the division-plate of the wagon-body, substantially as described.

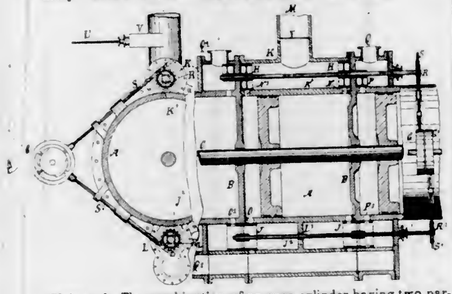
11 In apparatus for removing ashes, garbage, or the like, the combination, with a wagon-body having an opening in its top and having a dumping-ring about said opening, of a box H, having hinged bottom plates and suitable catches adapted to normally hold said bottom plates in position, said catches extending in position to be struck by the dumping-ring when the box is lowered therein, substantially as described.

12. In apparatus for removing ashes, garbage, or the like, a box having a transverse division-plate *h* and having bottom plates h^2 and h^3 and suitable catches for holding said bottom plates in position, substantially as described.

13. In apparatus for removing ashes, garbage, or the like, a box H, having a transverse division-plate *h*, and having hinged bottom plates h^2 h^3 and one or more lugs 16', and having suitable catches 10 and 11 for holding said bottom plates in position, substantially as described.

14. In apparatus for removing ashes, garbage, or the like, a box H, having a transverse division-plate and hinged bottom plates h^2 and h^3, and having seats or indentations 13 and spring-catches 10 and 11, arranged within said seats and adapted to normally hold said bottom plates in closed position, substantially as described.

449,422. STEAM-ENGINE. IWAN KENTNOWSKI, Sohrau, Germany. Filed Dec. 1, 1890. Serial No. 373,158. (No model.)



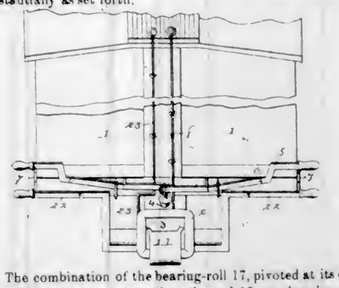
Claim.—1. The combination of an open cylinder having two partitions with a triple piston, divided boxes K L, and rotary valves within such boxes, substantially as specified.

2. The combination of an open divided cylinder with a triple piston, boxes K L, valves H J within said boxes, and with the eccentrics G G', racks S S', pinions R R', and rods K^3 J^3 for actuating said valves, substantially as specified.

3. The combination of an open divided cylinder with a triple piston, boxes K L, valves H J, eccentrics G G', having gabs W W', and a lifter W^3, and with racks S S', pinions R R', and rods K^3 J^3 for actuating the valves, substantially as specified.

449,423. CAR-COUPLING DEVICE. EDWARD A. MORROW, Chester, Ark. Filed Nov. 19, 1890. Serial No. 371,930. (No model.)

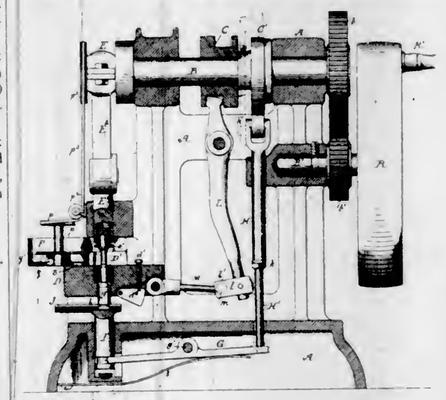
Claim.—1. The combination of the rod pivotally supported at its inner end and capable of vertical movement at its outer end, the angled plate 11, secured on the outer end of said rod, the horizontal levers 22, pivoted on the end of the car and having the slotted inner ends which engage the outer end of the rod 13, and the vertical lever 23, having the curved lower end extending under the outer end of the rod 13, substantially as set forth.



2. The combination of the bearing-roll 17, pivoted at its ends and formed with the transverse opening, the rod 13, passing through said roll and through vertical slots in the cross-pieces 16, the spiral springs 18 20, arranged as specified, the angled plate 11, secured on the outer end of the rod 13, the horizontal levers 22, pivoted on the end of the car and having the slotted inner ends which engage the outer end of the rod 13, and the vertical lever 23, having the curved lower end and extending under the outer end of the rod 13, substantially as set forth

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449,424. PILL-MACHINE. JOSEPH A. MCFERRAN, Philadelphia, Pa. Filed Jan. 5, 1889. Serial No. 295,512. (No model.)



Claim.—1. The combination, in a machine for compressing powdered substances, of the die-carrier adapted to reciprocate in a horizontal plane, the die therein, an ejector carried by said die-carrier having an independent vertical movement, with a plunger for compressing the substance, and a hopper, said die-carrier having a movement from under the plunger-die to the hopper, substantially as described

2. The combination of the die-carrier, its die, the plunger, the hopper, the ejector, arranged substantially as set forth, adapted to an orifice in said die-carrier, a grooved slideway in which the base of the ejector slides the lever, and a cam for operating said lever for raising the slideway and ejector, substantially as described.

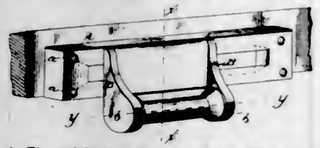
3. The combination of a reciprocating die-carrier, vertically-operating plunger, an ejector, a vertically-operated slideway, the ejector adapted to slide on the slideway, but move vertically therewith, whereby it can be forced in or removed from the die, substantially as specified.

4. The combination of a reciprocating die-carrier, die therein, means for operating the carrier, the vertically-operated plunger, the ejector adapted to the die, a grooved slideway for said ejector, and an adjustable depression device mounted on the die-carrier and operating to depress the said slideway, substantially as specified.

5. The combination of a reciprocating die-carrier, die therein, means for operating the carrier, vertically-operated plunger, the ejector, a vertically-operated slideway controlling said ejector, and means for

adjusting the slideway for the purpose of forming different-sized pills or tablets, substantially as described.

449,425. RUB-IRON FOR WAGON-BEDS. GEORGE A. NELSON, Woods, Tex. Filed Oct. 11, 1890. Serial No. 367,772. (No model.)

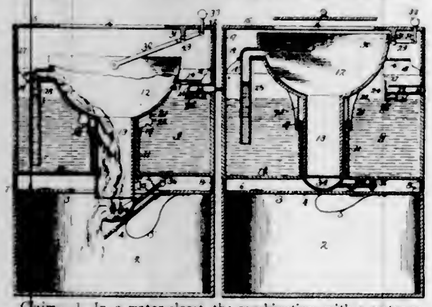


Claim.—1. The anti-friction device consisting of the body A, having the longitudinal slot in which is mounted the sliding bearings, the roller loosely secured in said bearings and adapted to slide with the pressure of the wheels, substantially as set forth.

2. The combination of the body having the longitudinal slot, the sliding bearings having the transverse triangular rib adapted to fit said slot, the roller loosely mounted in the bearings and having each end thereof properly enlarged, so as to engage and retain the wheels, substantially as set forth.

3. The rub-roller herein described and shown, consisting of the bearings having the triangular rib, the body A, provided with the longitudinal slot, the roller having the enlarged ends loosely mounted between the extended ends of the bearings, substantially as set forth.

449,426. PORTABLE WATER-CLOSET. ARTHUR J. NILES, Lancaster, N. H. Filed Aug. 5, 1890. Serial No. 361,139. (No model.)



Claim.—1. In a water-closet, the combination, with a water-receptacle, of a vertically-movable hopper contained therein, a suitable connection between the hopper and the sides of the receptacle which renders that portion of the latter containing water virtually air-tight, and an inlet-pipe leading from the water to the hopper, whereby the downward movement of the latter forces the water into its interior, as and for the purpose described.

2. In a water-closet, the combination, with a water-receptacle, of a vertically-movable hopper contained therein, a flexible diaphragm connecting said hopper and the sides of the receptacle above the water contained in the latter, and an inlet-pipe leading from the receptacle into said hopper, whereby the downward movement of the latter forces the water into its interior, as and for the purpose described.

3. In a water-closet, the combination of a water-receptacle, a stationary guide within the same, a hopper consisting of a bowl and pipe leading therefrom, the latter fitting said guide, a lateral flange extending from the bowl of said hopper, a flexible connection between said flange and the inside of the water-receptacle, mechanism, substantially as described, for forcing said hopper and flange down upon the air and water in said receptacle, and a suitable inlet-pipe leading from the latter into the hopper, as and for the purpose set forth.

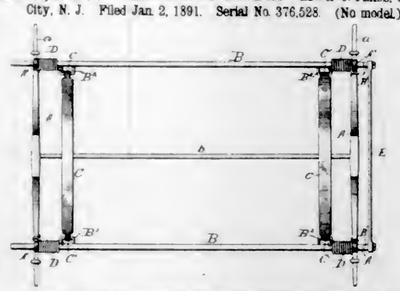
4. In a water-closet, the combination of a water-receptacle, a stand-pipe within the same, a hopper consisting of a bowl and pipe leading therefrom, the latter telescoping with said stand-pipe, a flexible connection between the bowl of said hopper and the inside of the water-receptacle, a similar connection between said bowl and said stand-pipe, mechanism, substantially as described, for forcing the hopper and connections down upon the air and water in said receptacle, and a suitable inlet-pipe leading from the latter into the hopper, as and for the purpose set forth.

5. In a water-closet, the combination of a water-receptacle, a stand-pipe within the same, a suitable cover to said receptacle, a hopper consisting of a bowl and pipe leading therefrom, the latter telescoping with said stand-pipe and the former being provided with a lateral flange, a flexible connection between said flange and said receptacle-cover, a ring fitting over the upper end of said stand-pipe, a flexible connection between said ring and the hopper-bowl, a pipe leading from the latter to the lower part of the water-receptacle, a lever operating to force the hopper and connections down upon the air and water contained in said receptacle, and springs disposed beneath said hopper and arranged to return the latter to its normal position, as set forth.

6. In a water-closet, the combination of a water-receptacle, a vertically-movable hopper contained therein and arranged to be forced down upon the air and water in said receptacle, a fresh-air tube opening out of the latter and closed at its inner end by a spring actuated lid, and a flexible connection between said lid and the hopper, whereby the former is automatically opened, as and for the purpose described.

7. In a water-closet, the combination of a water-receptacle, a vertically-movable hopper contained therein and arranged to be forced down upon the air and water in said receptacle, and a basin or trap hinged to the bottom of said receptacle and closing the lower end of said hopper, said basin arranged to be tipped by said hopper in its downward movement, as set forth.

449,427. VEHICLE RUNNING-GEAR. EDWIN O. PEASE, Jersey City, N. J. Filed Jan. 2, 1891. Serial No. 376,528. (No model.)



Claim.—1. In a running-gear, the combination, with end bars A, having the end bearings A', of the oscillating side bars B and the spiral springs arranged as described, and the flat springs C, pivotally connected at their ends with the oscillating side bar, substantially as set forth.

2. The combination, in a running-gear, with end bars A, having the end bearing A', of the side bars formed with the cranked forward ends and having the bows B^3, the spiral springs arranged as described, the equalizing-bar E, pivotally connected at its ends with the cranked forward ends of the side bars, and the flat springs C, connected at their ends with the bows B^3 of the side bars, substantially as set forth.

449,428. METHOD OF MAKING SEAMLESS PLATED WIRE. IRA F. PECK, Providence, R. I. Filed Nov. 20, 1890. Serial No. 372,082. (No model.)

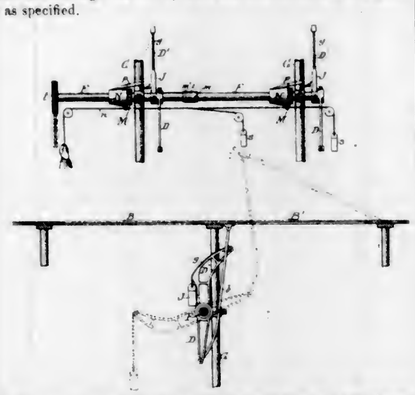


Claim.—1. The method of preparing an ingot-bar for the manufacture of seamless plated wire, which consists in casting a hollow shell of the plating metal, then drawing the plating-metal tube so formed to an extended length upon a mandrel, then removing the same from the mandrel and inserting the base-metal core into the cavity of the plating-tube with either fluxing material or solder, then drawing the plating-tube to a smaller diameter upon the core, and then heating the ingot-bar so formed to cause the union of the metal surfaces, as set forth.

2. The method of manufacturing seamless plated wire, which consists in casting a hollow shell of the plating metal, then drawing the plating-metal tube so formed to an extended length upon a mandrel, then removing the same from the mandrel and inserting the base-metal core into the cavity of the plating-tube with either fluxing material or solder, then drawing the plating-tube to a smaller diameter upon the core, then heating the ingot-bar so formed to cause the union of the metal surfaces, and then further drawing the cooled bar to form a seamless plated wire of the required size, as set forth.

449,429. TRANSOM-LIFTER. ABRAHAM L. PENNOCK, Lansdowne, Pa. Filed Jan. 20, 1891. Serial No. 378,463. (No model.)

Claim.—1. The combination of the hinged ventilating-sash of a greenhouse or other building with an operating-lever therefor, a rod connecting one arm of said lever to the free end of the sash, and a counterbalance-weight carried by the other arm of the lever, substantially as specified.



2. The combination of the hinged ventilating-sash of a greenhouse or other building with an operating-lever therefor, a rod connecting one arm of said lever to the free end of the swinging sash and a counterbalance-weight carried by the other arm of the lever, the connecting-rod and lever being so disposed that when the sash is closed the point of connection will be beyond the center line of the lever and the sash will be locked, substantially as specified.

3. The combination of the hinged ventilating-sash of a greenhouse or other building with an operating-lever therefor, a rod connecting one arm of said lever to the free end of the hinged sash, and a weight suspended from the other arm of the lever and having, as the lever swings, points of bearing on the arm at different distances from the fulcrum of the lever, substantially as specified.

4. The combination of the hinged ventilating-sash of a greenhouse or other building with an operating-lever therefor, an arm connecting one arm of said lever to the free end of the sash, and a weight suspended from the other arm of the lever by two or more cords, which are attached to the arm at different distances from the fulcrum of the lever, substantially as specified.

5. The combination of the hinged sash and the operating-lever therefor comprising two arms independently secured to a fulcrum-shaft, a rod connecting one of said arms to the free end of the sash, and a counterbalance-weight carried by the other arm, substantially as specified.

6. The combination of the swinging ventilating-sash, the operating-arm therefor and its connecting-rod, the shaft carrying said arm, the supporting-post with bearing for said shaft, and a clamp whereby said bearing is adjustably secured upon the supporting-post, substantially as specified.

7. The combination of the hinged ventilating sash or sashes, the operating-arms therefor and their connecting-rods, a shaft carrying said arms and composed of sections with universal-joint connections, and bearings for said shaft-sections, substantially as specified.

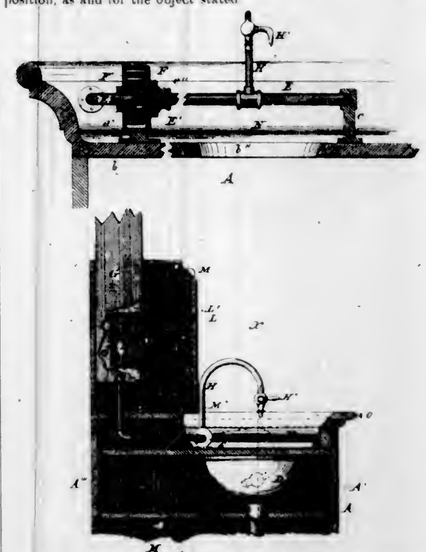
8. The combination of the hinged ventilating sash or sashes, the operating-arms therefor and their connecting-rods, the shaft carrying said arms, and means for locking said shaft at different points in its length, substantially as specified.

9. The combination of the hinged ventilating sash or sashes, the arms for operating the same and their connecting-rods, the shaft carrying said arms, and locking devices for said shaft comprising a ribbed sleeve on the shaft, and a non-rotating but longitudinally-movable sleeve for engaging with said sleeve on the shaft, substantially as specified.

449,430. COMBINATION FURNITURE. CHARLES POLAKOFF and RUDOLF LANGK, Buffalo, N. Y. Filed Jan. 2, 1891. Serial No. 376,446. (No model.)

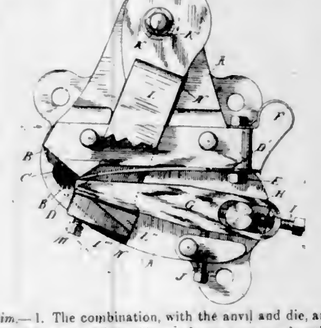
Claim.—1. The improved combined wash-stand, bureau, writing-desk, and safe hereinbefore described, consisting, essentially, of the base having a waste-water receptacle and a partition, to which is affixed a wash-basin, a journaled water-supply pipe having a stuffing-box and a faucet-pipe and faucet, a spring mechanism on said supply-pipe to keep the faucet-pipe in an erect position, hinged leaves to cover the depression in the base containing the water-supply pipe, a catch to retain the leaves and faucet-pipe in a depressed position, and a water-reservoir in the top portion of the furniture and connected with the supply-pipe, as and for the object stated.

2. In a combined wash-stand and writing-desk, a journaled supply-pipe having a standard on one end and a spring-casing on the other end, a spiral spring within said casing attached with one end to the casing and with the other end to the supply-pipe, and a cover and catch, as described, to hold the faucet-pipe and faucet in a depressed position, as and for the object stated.



3. In a combined wash-stand and writing-desk, the combination, with the base having the waste-water receptacle, a water-supply, and a wash-basin, of two covers hinged one to the other, as described, the top structure having the water-reservoir and a depression therein supplied with a strong box, and the doors on the top structure, as and for the object set forth.

449,431. SAW-SWAGING MACHINE. JAMES B. RHODES, Grand Rapids, Mich. Filed July 24, 1890. Serial No. 359,822. (No model.)



Claim.—1. The combination, with the anvil and die, arranged as described, of the yoke L', having pendent arms engaging the die and the eccentric shaft for moving the yoke, arranged substantially as set forth.

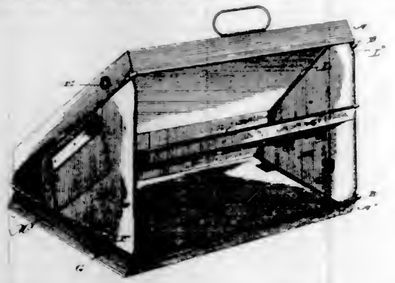
2. The combination, with the anvil and die, of the tooth-stop D and the stop-screw J, for adjustment of said tooth-stop, as described.

3. The combination, with the anvil and die, of the yoke L', having pendent arms L L and adjusting-screws M M, substantially as set forth.

4. The combination, with the anvil and die, of the tooth-stop D, yoke L', having the pendent arms L L, provided with the adjusting-screws M M, substantially as set forth.

5. The herein-described saw-tooth swage, consisting of a frame composed of a bed-plate A and cap A', anvil B', inserted in a stock B, tooth-stop D, having a slot D' and spring F, the die G, provided with adjusting-screw I, the yoke L', having arms L L, provided with adjusting-screws M M, in contact with the die, and the eccentric-shaft K, arranged as described.

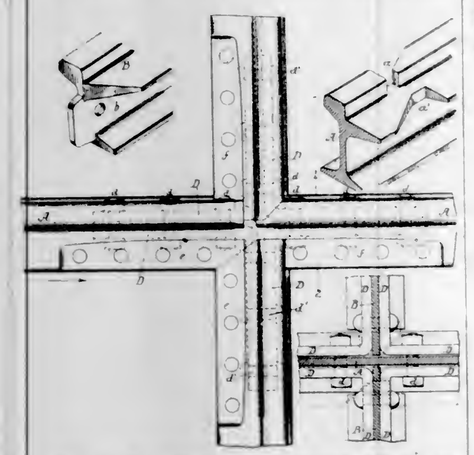
449,432. DOMESTIC OVEN. JAMES WATSON, Marinette, Wis. Filed June 7, 1890. Serial No. 354,561. (No model.)



Claim.—1. A box baker or domestic oven consisting of the similar rectangular hinged sections, the leaves hinged at their lower edges to the lower section having their upper edges inclined to support the upper section, the raised portions on the outer faces of the leaves, the fastenings engaging said raised portions to retain them in a vertical position, and the cleats hinged to the inner faces of the leaves for supporting a pan, substantially as described.

2. A box baker or domestic oven consisting of the similar rectangular hinged sections, the leaves having the lower straight edge hinged to the lower section inside the rim thereof, and the upper inclined edge for supporting the upper section, the fastenings on the lower section for securing the leaves in an upright position and for securing the upper section when the sections are closed, the cleats hinged on the inner faces of the leaves, and the pan supported on the leaves.

449,433. STREET-RAILWAY CROSSING. VICTOR ANGERER, Philadelphia, Pa., assignor to William Wharton, Jr., and Company, Incorporated, same place. Filed Jan. 5, 1891. Serial No. 376,749. (No model.)



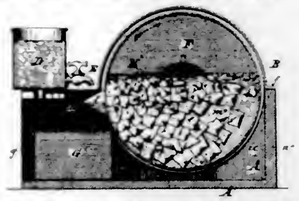
Claim.—1. The combination, in a street-railway crossing, of sectional cross-rails, an unbroken main rail notched for the reception of the ends of the cross-rails, and means for securing the cross-rails to the main rail, substantially as set forth.

2. The combination, in a street-railway crossing, of the unbroken main rail, notched substantially as described, the sectional crossing-rails, the ends of which are so formed as to fit said notches, and angular brackets secured to the main rail and crossing-rails, substantially as set forth.

3. The combination of the main rail having a tapering notch, a section of a crossing-rail adapted to said tapered notch, and means for securing the crossing-rail to the main rail, substantially as described.

4. The combination of the notched main rail, the sectional crossing-rail having ends adapted to the notches in the main rail, means for securing said rails together, and an angular wagon-tread plate at the junction of the rails and secured to both the main and cross rails, substantially as set forth.

449,434. ICE-CREAM FREEZER. THOMAS H. BESSE, Buffalo, N. Y. Filed Dec. 20, 1890. Serial No. 375,358. (No model.)

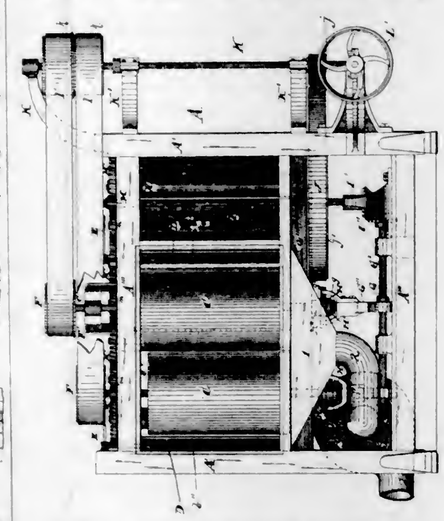


Claim.—1. The improved ice-cream freezer hereinbefore described, consisting, essentially, of a box-shaped case A, having one of its ends open and upon its top a cross-piece C, the reservoir D upon said cross-piece and provided with a faucet E, the incline H, having the two upwardly-projecting sides I' I'', forming a feeding-trough I, the drum F upon the shafts I, J and arranged with its periphery against the incline and its side pieces, a sealed filling-opening in one of the heads of the drum, projecting flanges *f f''* on said drum, and a receiver G below the incline, as and for the object stated.

2. In an ice-cream freezer, a drum journaled upon bearings, as described and provided with laterally-projecting flanges on its heads, in combination with a feeding-trough having upwardly-projecting sides, the ends of which and of the incline are in contact with the periphery of the drum between said flanges, as set forth.

3. In an ice-cream freezer, the combination, with a rotatable refrigerant-cylinder, of a feeding-trough having an inclined bottom, the lower edge of which is in contact with the periphery of the cylinder, so as to act as a scraper for the frozen cream, as stated.

449,435. SANDPAPERING-MACHINE. VALENTINE BROTZ, Buffalo, N. Y. Filed Sept. 24, 1890. Serial No. 365,966. (No model.)



Claim.—1. In a sandpapering-machine, the combination, with the sandpapering-rolls and a series of feed-rolls located between the sandpapering-rolls and with their periphery in the same vertical plane, of a series of pressure-rolls journaled within yielding bearings affixed to a plate O, composed of the top and bottom rails O' O'', side rails *o' o''*, and back plate R', said plate O being provided with screw-threaded studs in the top and bottom rails having sprocket-wheels U, connected by a chain V, and the yielding bearings consisting of the steel blades P', fastened with one end within recesses S in the rails O' O'' and having the bearing for the shafts of the pressure-rolls and an elastic cushion R at the other end, as and for the object stated.

2. In a sandpapering-machine, an adjustable pressure-roll device consisting of a frame composed of the rails O', O'', *o'*, and *o''* and plate R', secured thereto, recesses S in the rails O' O'', yielding bearings in said recesses, composed of steel blades P', fastened with one end in said recesses and having on their other free end the bearings for the shafts of the pressure-rolls and elastic cushions R underneath the same,

the pressure-rolls *o*, revolving in said yielding bearings, and mechanism, substantially as described, for adjusting the pressure-plate, as and for the purpose set forth.

3. In a sandpapering-machine, the yielding bearings for the pressure-rolls, consisting in the combination, with the top and bottom rails having the recesses S, of the steel blades P'', secured within the recesses with one end, bearings for the shafts of the pressure-rolls on the other end, and elastic cushions R, located within recesses in said rails and supporting the free end of said steel blades underneath said bearings, as set forth.

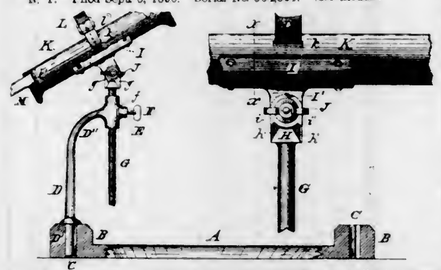
4. In a sandpapering-machine, the combination, with the horizontal cross-timbers A'', having the bearings for the horizontal shaft G', of the shaft G', the eccentrics G upon said shaft and having straps G'' surrounding the same, the upper half of said straps being provided with yokes *g*, having the bearings *g'*, the sand-paper rolls C, the shaft C' of said rolls, the sleeves H upon the lower ends of said shafts, provided with oppositely-located pivots *g''*, engaging the bearings *g'*, and the fixed collars H' H'' upon said shafts above and below said sleeves, as and for the object stated.

5. In a sandpapering-machine, the combination, with the timbers *a'' a'''*, having the apertured lugs *d d'* extending from the sides thereof, of a sand-paper-roll frame consisting of the top and bottom bars *b b'*, having the lateral ribs *e e'*, the side bars *b'' b'''*, the openings *c* in said bars for the reception of the lugs *d d'*, the bosses B' at the corners of said frame and having the internal chambers B'' B''', the rods D D', passing through the lugs *d d'*, the chambers B'' B''', and the eccentrics D'' D''', secured to said rods and operating in said chambers, as and for the object set forth.

6. The combination, with the frame A, having the longitudinal cross-timbers *a'' a'''* within the same, of the sand-paper-roll frame B, having lateral horizontal ribs *e e'* at the upper and lower ends thereof to support said sand-paper frame upon said beams, the bearings C'' on said frame, the shafts C', journaled therein, the sand-paper rolls C on said shafts, the pulleys F, and means, as described, for rendering the whole frame adjustable, as described.

7. The combination, with the frame having the beams extending longitudinally across the interior thereof, a sand-paper-roll frame supported from said beams and having chambered bosses at its corners, apertured lugs extending from the side of said beams and engaging said frame, and rods passing through said chambered bosses on said roll-frame and through said apertured lugs and having eccentrics engaging said chambers in said bosses, said rods having handles E, as set forth.

449,436. FRACTURE APPARATUS. BYRON H. DAGGETT, Buffalo, N. Y. Filed Sept. 8, 1890. Serial No. 364,391. (No model.)



Claim.—1. The portable support hereinbefore described, consisting of the base A, having aperture C, the standard D, having tenon D' and socket E, with set-screw F, the rod G, having lug *g* and inclined projection H, and the leg-splint having the lug I', provided with projecting lugs, said lug I' being pivoted to the head of the rod G, as and for the object set forth.

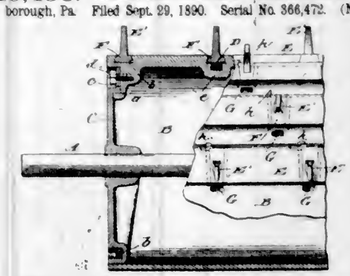
2. In a leg-splint support, the combination, with a suitable base and standard, of the carrier pivoted to the rod G, supported by said standard, and provided with stops to limit the movement of said carrier, said leg-splint having the straps, as and for the object stated.

3. In a leg-splint support, the combination, with the rod G, having the lug *g* and inclines *h h'*, of the curved plate I, having the lug I' provided with the projections *i i'*, as set forth, and the connecting-bolt J, as and for the purposes mentioned.

449,437. TANNER'S OIL. WILLIAM B. DAVIS, Newport, N. Y. Filed May 27, 1890. Renewed Mar. 2, 1891. Serial No. 383,377. (No specimens.)

Claim.—The tanner's oil herein described and shown, consisting of stearine, tallow, raw linseed-oil, and oil of citronella in the proportions stated.

449,438. THRASHING-CYLINDER. CHRISTIAN FRANTZ, Waynesborough, Pa. Filed Sept. 29, 1890. Serial No. 366,472. (No model.)



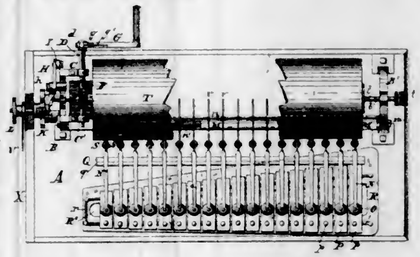
Claim.—1. A thrashing-cylinder provided with a dovetail keyway, a tooth having a correspondingly-shaped base to engage the keyway, and a block arranged in a depression or pocket beneath the said base, as set forth.

2. A thrashing-cylinder provided with a dovetail keyway, a block in a pocket within the keyway, a tooth having a dovetail base to fit the keyway, and a clinching-lug arranged and operating substantially as specified.

3. A thrashing-cylinder provided with ribs having dovetail keyways, pockets, and depressions, blocks in the pockets with their outer faces projecting beyond the face of the keyway, teeth with dovetail bases, and a soft-metal lug for each keyway, adapted to be bent against the base after the latter is placed in the keyway, substantially as and for the purpose specified.

4. A thrashing-cylinder provided with interior enlargements with pockets, a head having cups fitted in said pockets, and securing-bolts screwed into said enlargements with their heads seated in recesses in the head, as set forth.

449,439. MUSICAL INSTRUMENT. EMIL FREINER, Buffalo, assignor to Francisca Freiner, Hamburg, N. Y. Filed Jan. 2, 1890. Serial No. 355,572. (No model.)



Claim.—1. In mechanical musical instruments, the mechanism for moving the roller (carrying the pins) longitudinally, consisting of a spindle carrying a wheel having in its face a series of steps jointed by inclines, in combination with the pin-roller having its spindle bearing against said steps, whereby by revolving said step-wheel the pin-roller is moved longitudinally, as and for the object set forth.

2. In mechanical musical instruments, the combination, with the mechanism for moving the pin-roller longitudinally, of mechanism for depressing the key board with its keys prior to moving said pin-roller and returning the key-board to its normal position as soon as the longitudinal movement is completed, as set forth.

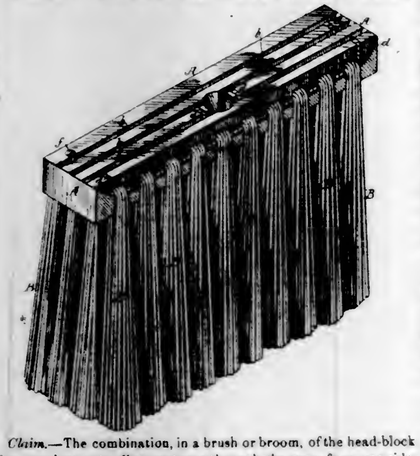
3. In mechanical musical instruments, the combination, with a base having standards, as described, of the shaft D, having the worm E, the pin-roller T, having the shaft *f* and star-wheel F, the shaft L', provided with the hand-wheel L and the notched wheel K, having in its face the series of steps *k'*, the lever H, having the roller J, engaging the notches in said wheel K, the connecting-rod I, and the key-board M, with its keys, the whole being constructed and combined to operate in conjunction with suitable metallic plates, as and for the object set forth.

4. In metallophones having a series of metallic bars struck by hammers, as described, mechanism for lifting and dropping said hammers, consisting of a roller having on its periphery a series of concentrically-arranged pins engaging keys, having inclined ends on one end and the shanks fitted with balls on the other end, means for revolving said roller, and further means for moving the same longitudinally and returning the same as soon as the lateral movement of the roller for changing the tune is completed, and mechanism for automatically de-

pressing the key-board before the said roller is being moved longitudinally, as and for the purpose set forth.

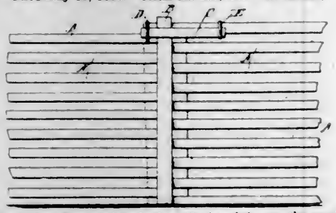
5. In mechanical musical instruments, the combination, with the crank-shaft, of a crank having a pawl engaging a notch in said main shaft, whereby said shaft may be revolved in one direction only, as and for the purpose set forth.

449,440. STABLE OR STREET BROOM. ALBERT T. GERIKE, Camden, N. J. Filed Oct. 22, 1890. Serial No. 368,920. (No model.)



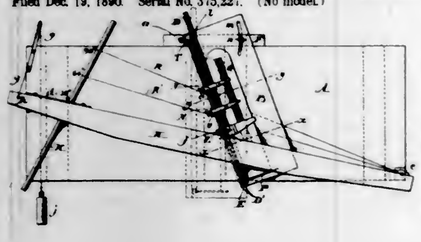
Claim.—The combination, in a brush or broom, of the head-block having openings extending part way through the same from one side, and a saw-kerf in the other side of much less width than the diameter of the openings but extending a considerable distance below the tops of the same with knots or bunches of splints inserted into the openings in the head-block and seated against shoulders at the tops of said openings, and with a cord running along the base of each saw-kerf and engaging with the folded portions of the knots or bunches of splints some distance below the shoulders against which said splints have their bearing, substantially as specified.

449,441. FENCE CONSTRUCTION. NATHANIEL GILLHAM, Otwell, Ind. Filed July 15, 1890. Serial No. 358,797. (No model.)



Claim.—In a fence as herein described and shown, the combination of the rails, the posts secured on each side of said rails, the loop D, engaging the inner ends of the levers C, the levers C, arranged to lock the posts B securely against the meeting ends of the rails, and the loop E, adapted to hold the free ends of said levers closely to the rails, substantially as described, and for the purpose specified.

449,442. THERMOMETER-GRADUATING MACHINE. JOHN D. HALL, Philadelphia, Pa., assignor to Thomas C. Balderston, same place. Filed Dec. 19, 1890. Serial No. 375,227. (No model.)



Claim.—1. In a thermometer-graduating machine, the combination of the hand-lever and a rack engaged thereby, a pivoted plate movably supported upon said lever and containing the thermometer-back, and index and ruling devices, whereby the running-scale is produced, substantially as described.

2. In a thermometer-graduating machine, the combination of the hand-lever, a rack engaged thereby, a pivoted plate movably supported and containing the thermometer-back, index and ruling devices, and a sliding slotted tube or bar which forms a rest for the thermometer-back and enables the adjustment of the freezing-point of the thermometer to its proper position in the machine whatever its distance from the bottom of the thermometer.

3. In a thermometer-graduating machine, the combination of the hand-lever, a rack engaged thereby, a pivoted plate movably supported, and the index or setting plates adapted for adjustment in relation to surface-lines drawn from the pivot of said lever to certain points on the rack, whereby to enable the operator to readily find the position on the machine for the graduation of any thermometer, whether the scale be short or long, or slowly or rapidly increasing.

4. In a thermometer-graduating machine, the combination of the hand-lever, a rack engaged thereby, a pivoted plate movably supported and containing the thermometer-back, the index or setting plates having index-points, the surface-lines drawn from the pivot of said lever to certain points on the rack to determine the position of said index-points, and a ruling-plate, substantially as described.

5. In a thermometer-graduating machine, the index and the ruling plates provided with double joints formed by a loosely-jointed section, the joints standing transverse, for the purpose stated.

6. In a thermometer-graduating machine, the combination of the hand-lever, a rack engaged thereby, a pivoted plate movably supported and containing the thermometer-back and the index-plates, and means for adjusting said index-plates in relation to surface-lines extending from the pivot of said lever to certain points on the rack.

7. In a thermometer-graduating machine, the combination of the hand-lever, a rack engaged thereby, a pivoted plate movably supported and containing the thermometer-back, and the index-plates, means for adjusting said index-plates, and adjustable points carried thereby in relation to surface-lines extending from the pivot of said lever to certain points on the rack, for the purpose stated.

8. In a thermometer-graduating machine, the combination of the table, the lever, and the rack, the pivoted table-plate, having a ruling-plate provided with a stud bearing upon said lever, for the purpose stated.

9. In a thermometer-graduating machine, the combination of the table, the lever, and the rack, the table-plate pivoted to a slide-bar and having a ruling-plate provided with a stud bearing upon said lever, for the purpose stated.

10. In a thermometer-graduating machine, a table having the lever H, the rack K, and the surface-lines R R′, in combination with a plate carrying the thermometer-back and adapted to have both a sliding and a swinging movement upon said table, and suitable index and ruling devices carried by said plate, for operation in the way described.

11. In a thermometer-graduating machine, the combination of a table, a hand-lever, and a rack, the pivoted table-plate having provisions which render it and the thermometer to be graduated capable of being adjusted and fixed in any desired position to suit both the length and the run of the scale, substantially as described.

12. In a thermometer-graduating machine, the combination, with the lever and the rack engaged thereby, of the pivoted table-plate, the adjustable index-plates, the adjustable slotted bar D, provided with the rest P for the thermometer-back, and a stud upon said plate bearing upon said lever, substantially as described.

13. In a thermometer-graduating machine, the combination of the table, the lever, and the rack, the plate B, made adjustable upon the table, and the bar E, made adjustable upon the said plate, for the purpose stated.

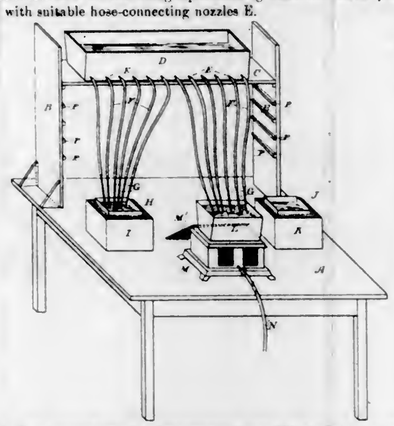
14. In a thermometer-graduating machine, the combination of the adjustable plate B, the adjustable bar E, the adjustable slotted bar D, the adjustable index and ruling devices, the table provided with the lines R R′, and the rack K, substantially as described.

449,443. THERMOMETER-TUBE-FILLING APPARATUS. JOHN D. HALL, Philadelphia, Pa., assignor to Thomas C. Balderston, same place. Filed Dec. 19, 1890. Serial No. 375,228. (No model.)

Claim.—1. The combination, in a thermometer-tube-filling machine or apparatus, of the hot and cold water containing vessels, the filling-liquid-holding vessel or vessels, the heating device, and the connecting-pipes, substantially as and for the purpose set forth.

2. The combination, in a thermometer-tube-filling machine or apparatus, of the hot and cold water containing vessels, the filling-liquid-holding vessels, and the flexible tube-connections.

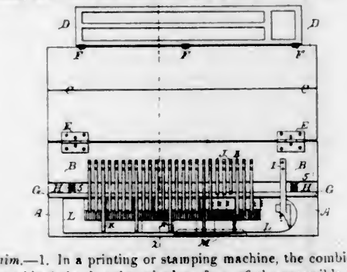
3. The combination, in a thermometer-tube-filling machine or apparatus, of the hot and cold water containing vessels and the flexible tube-connections with the filling-liquid-holding vessel or vessels provided with suitable hose-connecting nozzles E.



4. The combination, in a thermometer-tube-filling machine or apparatus, the hot and cold water containing vessels and the filling-liquid-holding vessel or vessels provided with the flexible tube-connections, and the shelf-adjusting standards B.

5. The combination, in a thermometer-tube-filling machine or apparatus, of the shelf-adjusting standards, the hot and cold water containing vessels, the filling-liquid-holding vessel or vessels, the heating device, and the safety-screen M, substantially as and for the purposes set forth.

449,444. THERMOMETER-PRINTING MACHINE. JOHN D. HALL, Philadelphia, Pa., assignor to Thomas C. Balderston, same place. Filed Dec. 19, 1890. Serial No. 375,229. (No model.)



Claim.—1. In a printing or stamping machine, the combination, with the table A, having the raised surface, of the reversible hinged section B, having type-holders composed of separate thin spring-strips J, secured in parallel relation to the surface thereof, projecting over and beyond its non-hinged edge, and having suitable type at their unattached ends, the said hinged section B arranged to carry all its separate spring-strips over onto a support and to be reversed to hold them in level positions above the table for printing in the way described.

2. In a printing or stamping machine, the combination of the hinged type-carrier provided with flexible or spring type-holders, and an open hinged type-protecting frame arranged relatively to permit them to be folded, the said frame over and upon the type-holders, for the purpose stated.

3. In a printing or stamping machine, the combination of the hinged type-carrier provided with flexible or spring type-holders arranged to project transversely from one side of said hinged holder, an open type-protecting frame arranged at one side of said hinged type-carrier, and a gage arranged at the other side of said hinged type-carrier, for operation substantially as described, for the purpose stated.

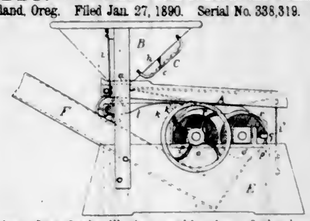
4. In a printing or stamping machine, a hinged type-carrier having composite type-holders secured to and projecting transversely over and beyond one edge thereof in parallel relation to each other, the type being secured at their free ends.

5. In a printing or stamping machine, a hinged reversible type-carrier provided with flexible or spring type-holders arranged to project transversely from one side of said hinged carrier, of unequal length, and having suitable type at their free ends.

6. In a printing or stamping machine, a hinged type-carrier provided with flexible or spring strips projecting transversely over and beyond one edge thereof, secured thereto by a clamping-bar, and having suitable type at their free ends.

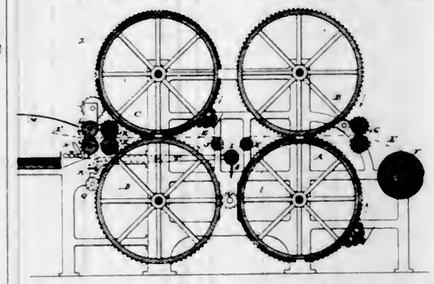
7. In a printing or stamping machine, the hinged type-carrier provided with flexible or spring strips standing out in inclined relation to the surface of said carrier, parallel to each other, crosswise of said hinged carrier, extending beyond one edge thereof, and having suitable type at their free ends, in combination with an open type-protecting frame at one side of said hinged type-carrier and a gage-bar at the other side of said type-carrier, substantially as described.

449,445. FEED-MILL. JONAS D. HENRY and WILLIAM E. WOOD, Portland, Oreg. Filed Jan. 27, 1890. Serial No. 338,319. (No model.)



Claim.—In a feed-mill, the combination of the hopper, the adjustable sliding gate *b*, and the adjusting mechanism therefor, consisting of the rack C, lever *c*, provided with a spring *h*, pressing it against such rack, and arm *f*, by which said lever is attached to the gate, the hopper being supported over an inclined vibrating board *a* on the shoe A, which coacts therewith and constitutes its bottom, all as herein substantially described.

449,446. PERFECTING PRINTING-MACHINE. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Feister Printing Company, same place. Filed Dec. 29, 1887. Serial No. 259,349. (No model.)



Claim.—1. In a perfecting printing-press to print upon a web of paper, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face and the other pair being adapted to print upon the opposite face of the web of paper, feed-rollers to feed the paper to the first pair of printing and impression cylinders, variable-speed feed-rollers to feed the paper through the second pair of type and impression cylinders, and suitable means to vary the speed of the last-mentioned feed-rollers, substantially as and for the purpose specified.

2. In a perfecting printing-press to print upon a web of paper, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face and the other pair being adapted to print upon the opposite face of the web of paper, feed-rollers to feed the paper to the first pair of printing and impression cylinders, variable-speed feed-rollers to feed the paper through the second pair of type and impression cylinders, cutting-cylinders geared to run at a uniform surface speed with the impression-cylinders, and suitable means to vary the speed of the last-mentioned feed-rollers, substantially as and for the purpose specified.

3. In a perfecting printing-press to print upon a web of paper, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face and the other pair being adapted to print upon the opposite face of the web of paper, feed-rollers to feed the paper to the first pair of printing and impression cylinders, variable-speed feed-rollers to feed the paper through the second pair of type and impression cylinders, and suitable means automatically controlled by the paper web to vary the speed of the last-mentioned feed-rollers, substantially as and for the purpose specified.

4. In a perfecting printing-press to print upon a web of paper, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face and the other pair being adapted

to print upon the opposite face of the web of paper, feed-rollers to feed the paper to the first pair of printing and impression cylinders, feed-rollers for drawing the paper between the second pair of type and impression cylinders, a tension guide-roller over which the paper web passes before reaching the last-mentioned feed-rolls, variable-speed-controlling devices to vary the speed of said last-mentioned feed-rolls, and connecting devices between said tension guide-roller and variable-speed-controlling devices, substantially as set out, whereby any lengthening or shortening of the paper may be compensated for and a perfect register in the second impression obtained.

5. In a perfecting printing-press to print upon a web of paper, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face and the other pair being adapted to print upon the opposite face of the web of paper, feed-rollers to feed the paper to the first pair of printing and impression cylinders, feed-rollers for drawing the paper between the second pair of type and impression cylinders, a tension guide-roller over which the paper web passes before reaching the last-mentioned feed-rolls, variable-speed-controlling devices, substantially as set out, to vary the speed of said last-mentioned feed-rolls, connecting devices, substantially as set out, between said tension guide-roller and variable-speed-controlling devices, whereby any lengthening or shortening of the paper may be compensated for and a perfect register in the second impression obtained, and cutting-cylinders to cut the web into sheets as it leaves the feed-rollers.

6. In a perfecting prioting-press to print upon a web of paper, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face and the other pair being adapted to print upon the opposite face of the web of paper, feed-rollers to feed the paper to the first pair of printing and impression cylinders, feed-rollers K K, driving conical pulley Q, conical pulley P, carried by one of the rollers K, belt R, passing around said pulleys, belt-shifter *r*, tension guide-roller I, around which the paper passes in its transit between the two pairs of type and impression cylinders, and connecting devices between the said roller I and belt-shifter, substantially as and for the purpose specified.

7. In a perfecting printing-press to print upon a web of paper, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face and the other pair being adapted to print upon the opposite face of the web of paper, feed-rollers to feed the paper to the first pair of printing and impression cylinders, feed-rollers K K, driving conical pulley Q, conical pulley P, carried by one of the rollers K, belt R, passing around said pulleys, belt-shifter *r*, tension guide-roller I, around which the paper passes in its transit between the two pairs of type and impression cylinders, and connecting devices, substantially as set out, between the said roller I and belt-shifter, and cutting-cylinders L, geared together and having the same surface speed as the impression-cylinders, substantially as and for the purpose specified.

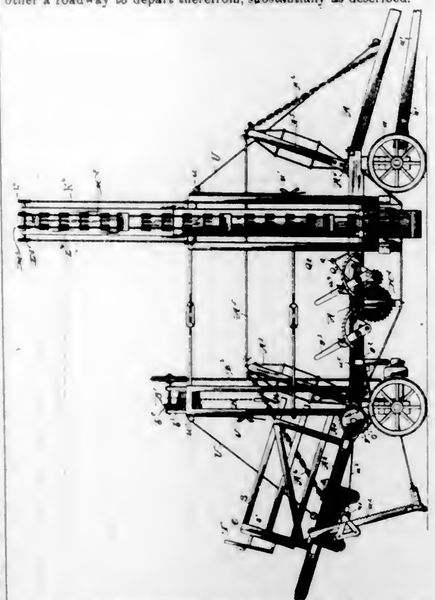
8. In a perfecting printing-press, the combination of two pairs of type and impression cylinders, one pair being adapted to print upon one face of the paper and the other pair being adapted to print upon the other face of the paper, and suitable feed-rollers to feed a web of paper between the pairs of impression and type cylinders in succession, and variable-speed-controlling devices, substantially as herein set out, to vary the speed of the paper passing between one pair of cylinders with reference to the paper passing through the other pair of cylinders

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449,447. PORTABLE ELEVATOR AND WAGON-UNLOADER. ROBERT S. KIRKPATRICK, Harlan, Iowa, assignor of one-fourth to R. P. Dammand, same place. Filed May 12, 1890. Serial No. 351,519. (No model.)

Claim.—1. The portable elevator and wagon-unloader consisting of a platform mounted on wheels, elevating-aprons extending upward from the sides of the platform and adapted to raise grain or corn dumped into a well in the platform, combined with an approach platform and an exit platform pivoted, respectively, at each end of the mounted platform, such pivoted approach and exit platforms being connected together so that the outer end of one shall be raised when the outer end of the other is lowered and shall partially counterbalance when pivotally mounted, one of such pivoted platforms adapted to form a roadway over which a team and loaded wagon may be driven upon the mounted platform and the other a roadway over which the team and wagon may be driven from the platform, substantially as described.

2. A portable elevator and wagon-unloader consisting of a platform mounted on wheels, elevating-aprons extending upward, one from each side of the platform, and adapted to raise grain dumped into a pit in the platform, combined with pivoted platforms secured to each end of the platform mounted on wheels, a rotatable apron forming a tread in one of the pivoted platforms, such pivoted platforms being connected together so that the outer end of one shall be raised when the outer end of the other is lowered and shall partially counterbalance each other when pivotally moved, and one of such pivotal platforms adapted to form a roadway to mount upon the platform and the other a roadway to depart therefrom, substantially as described.

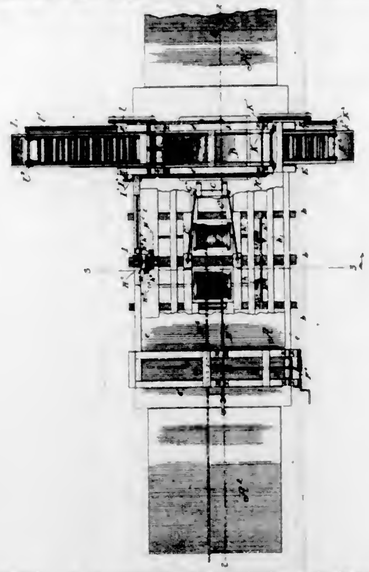


3. In a portable elevator and wagon-unloader, the combination of a platform mounted on wheels, a well in the platform, the door covering the well forming when placed thereover a portion of the floor of the mounted platform, platforms pivoted to the mounted platform and adapted to have the free ends thereof rest upon the ground, one of such pivoted platforms thereby forming a passage-way to and the other a passage-way from the mounted platform for teams, elevating-apron extending from the bottom of the well to receptacles adapted to be filled by the contents of the wagon driven upon the platform, and such elevating-apron having wires extending outward therefrom forming fingers, and the well having holes in the lower part of the casing thereof adapted to allow shelled corn to pass through, but not adapted to permit larger substances, as corn on the ear, to pass through, substantially as described.

4. A portable elevator and wagon-unloader consisting of a platform mounted on wheels, elevating-aprons extending upward and adapted to raise grain dumped into a pit in the platform, combined with pivoted platforms secured to each end of the mounted platform, a rotatable apron forming a tread in one of the pivoted platforms, such pivoted platforms being connected together so that the outer end of one shall be raised when the outer end of the other is lowered and shall partially counterbalance each other when pivotally moved, an elevating-chain adapted to be secured to the front end of a wagon on the platform, whereby a loaded wagon may be driven upon the platform, the team being upon the tread formed by the rotatable apron in the elevated pivoted platform forming when lowered an exit from the mounted platform, and the forward end of the wagon raised and the contents thereof dumped into the pit in the platform and raised from such pit by the horses on the tread to receptacles provided for such contents of the wagon, substantially as described

5. A portable elevator and wagon-unloader consisting of a platform, mounted on wheels, elevating-aprons extending upward from the sides of the platform, pivoted platforms secured one to each end of the mounted platform, a rotatable apron forming a tread in one of the pivoted platforms, such pivoted platforms being connected together so that the outer end of one shall be raised when the outer end of the other is lowered and shall partially counterbalance each other when pivotally moved, the frames in which the elevating-aprons move having a joint therein, the lower portion of such frame being rigidly secured to the mounted platform and the upper portion having an arm extending inward, a loose pulley on one of such arms, and a rope rigidly secured to the other of such arms, one end of such rope passing over the loose pulley in the other arm and from thence to the mounted platform, the other end of the rope extending directly to the mounted platform, substantially as described.

449,448. UNLOADING APPARATUS. ROBERT S. KIRKPATRICK, Harlan, Iowa, assignor of one-fourth to R. P. Dammand, same place. Filed Oct. 31, 1890. Serial No. 369,990. (No model.)



Claim.—1. In a combined wagon unloader and elevator, a mounted platform having an approach at one end and an exit at the other pivoted thereto, an elevator-frame pivoted to the mounted platform by the shaft carrying the driving-pulley of the elevator-apron in such elevator-frame, a frame rigidly secured to the mounted platform, a shaft journaled on the frame, arms pivoted together on a shaft having pulleys thereon, one of the arms pivoted at one end to a rotatable shaft mounted on the rigid frame and the other of the arms pivoted at one end to a rotatable shaft mounted in the elevator-frame near the upper part thereof, and such shaft having a pulley thereon, and driving-belts connecting the pulleys on such shafts, whereby the elevator-apron frame may be pivotally moved and the elevator-apron contained therein be driven in any of its possible positions by such shafts, pulleys, and belts, substantially as described

2. In a combined wagon unloader and elevator, a mounted platform having an approach at one end and an exit at the other pivoted thereto, in combination with an elevator-frame pivoted to the mounted platform by the shaft carrying the driving-pulley of the elevator-apron in such elevator-frame, a frame rigidly secured to the mounted platform, a shaft journaled on the frame, arms pivoted together on a shaft having pulleys thereon, one of the arms pivoted at one end to a rotatable shaft mounted on the rigid frame and the other of the arms pivoted at one end to a rotatable shaft mounted in the elevator-frame near the upper part thereof, and such shaft having a pulley thereon, and a lever pivoted to the apron-frame and having a rack thereon extending into the rigid frame, and a catch on the rigid frame adapted to intermesh with the rack and retain the elevator-frame in a given position, with driving-belts connecting the pulleys on such shafts, whereby the elevator-apron frame may be pivotally moved and secured and the elevator-apron contained therein be driven in any of its possible positions by such shafts, pulleys, and belts, substantially as described

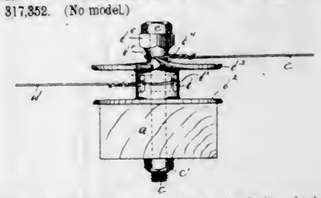
3. In a combined wagon unloader and elevator, a mounted platform having an approach at one end and an exit at the other end pivoted thereto, in combination with drums underneath the mounted platform, such drums geared together, so that when one thereof is rotated in one direction the other thereof is rotated in the other direction, ropes secured to such drums, whereby the unwinding of one of the ropes from one of the drums will wind the other of the ropes around the other of the drums, and each of such drums connected by a pulley on the shaft thereof, with belts extending over such pulley to pulleys loosely mounted on a third shaft, a ratchet-dog on such pulleys intermeshing with a ratchet-wheel rigidly secured to the shaft on which the pulleys are loosely mounted, so that the turning of either one of such pulleys in a forward direction will turn such ratchet-wheel and shaft therewith, and an elevator-apron frame pivoted to the mounted platform and having therein an elevator-apron driven by a belt passing over a pulley on the upper shaft on which the elevator-apron runs and over a pulley on intermediate shafts which are driven by the shaft on which is mounted a ratchet-wheel and pulleys, substantially as described.

449,449. LACING-HOOK. IRA F. PECK, Providence, R. I. Filed Apr. 14, 1890. Serial No. 347,863. (No model.)



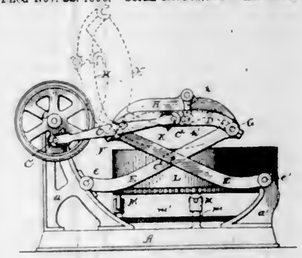
Claim.—A lacing-hook made from a single piece of metal, comprising an attaching-eyelet, a concave head and a hollow post formed of inwardly-turned divergent wings, the extended edges of which project into the eyelet and head, respectively, and bear against the inner surfaces of the eyelet and the head, substantially as described.

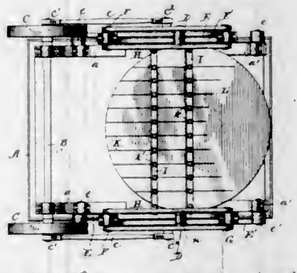
449,450. TIGHTENER AND FASTENER FOR FENCE-WIRES. ADELBERT L. THOMPSON, East Avon, N. Y. Filed July 12, 1889. Serial No. 317,352. (No model.)



Claim.—A wire-tightener consisting of a hub or body *b*, having the transverse orifice *b'*, the inner and outer flanges b^4 and b^3, formed as described, the neck b^5, and the head b^6, all integral with each other, in combination with the wood-screw or bolt C and nut C, all substantially as shown.

449,451. ROCKING MEAT-CUTTER. JOSEPH TRITZ, Burlington, Iowa. Filed Nov. 22, 1890. Serial No. 372,354. (No model.)





Claim.—1. The meat-chopper having the bars pivoted at their ends to the upper ends of bars or arms, in turn pivoted at their lower ends, in combination with the knife-bearing bars connected to pivots between the aforesaid bars and adapted to rest at their free ends upon other pivots between the latter bars, substantially as set forth.

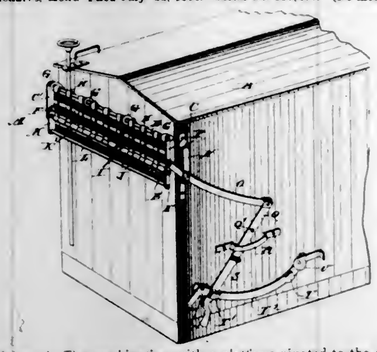
2. The meat-chopper having the bars adapted to support the knife-bearing bars and supported themselves upon pivoted crossing bars and operated by pitmen connected to the crank-wheels, substantially as set forth.

3. In a meat-chopper, the knife-bearing bars H, pivoted at one end and at the other supported upon a shaft, whereby when desired, as for sharpening the knives, said bars H can be lifted up and the knives properly exposed.

4. In a meat-chopper, the combination, with the bars E E', pivoted and adapted to be operated as set forth, of the bars D, having a pin A' on the sides, and the knife-bearing bars H, having hooks A, whereby the said bars D and H can be locked together when the knives are to be operated or disconnected from each other when desired.

5. In a meat-chopper, as described, the knives K, fixed and adjusted in position, as set forth, whereby the said knives are arranged so that the ends of the outer ones project forward farther than the next ones and through the series, and said ends are thus arranged on the arc of a circle.

449,452. PLATFORM FOR FREIGHT-CARS. THOMAS C. TYRRELL, Glendive, Mont. Filed July 22, 1890. Serial No. 359,477. (No model.)



Claim.—1. The combination, with a platform pivoted to the end of the car, of a link pivotally connected with one side of the said platform, a lever pivoted to the side of the car and connected with the said link, and a locking mechanism, substantially as described, for locking the said lever in position when the platform is extended or folded onto the end of the car, substantially as set forth.

2. The combination, with a platform pivoted to the end of the freight-car, of a link pivotally connected with one side of the said platform, a lever fulcrumed on one side of the car and connected with the said link, a handle hinged on the said lever, and two locks adapted to alternately engage the said handle to lock the said lever in position when the platform extends horizontally or is folded onto the end of the car, substantially as shown and described

3. The combination, with a platform pivoted to the end of the freight-car, of an extension pivoted to the end of the said platform and extending in line with the same and adapted to swing upward, substantially as shown and described.

4. A platform for cars, comprising side bars, transverse rods connecting the side bars together, plates connecting the rods together, and strips on the said plates, substantially as described.

5. A platform for cars, comprising side bars, transverse rods connecting the side bars together, plates connected to the rods, and corrugated strips on the said plates, substantially as described.

6. A platform for cars, consisting of side bars, transverse rods connecting the side bars together, plates connecting the rods together, strips on the plates, and auxiliary side bars pivoted to one of the transverse rods and connected together by rods and a plate, substantially as herein shown and described.

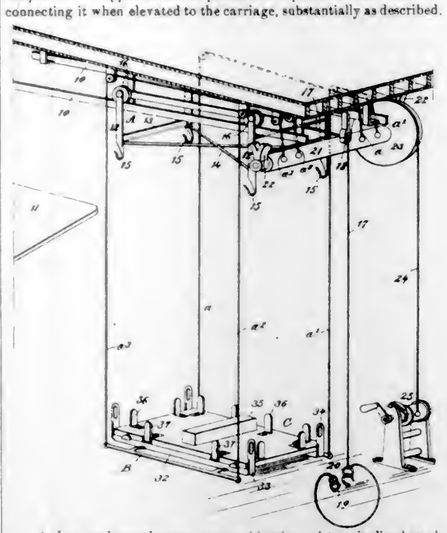
7. The combination, with a platform pivoted to the end of a car, of a jointed link pivoted to the platform, a hinged and pivoted lever pivoted to the link, a bar provided with flanges to receive the lever, and pivoted cam-levers for locking the lever in the flanges of the bar, substantially as herein shown and described.

449,453. PACKAGE-ELEVATOR. BURTIS VAN HENNIK, New York, N. Y. Filed Aug. 1, 1890. Serial No. 360,695. (No model.)

Claim.—1. In a package-elevator, the combination, with a carriage adapted to travel upon suspended tracks, of an elevator and a package-carrying table adapted to be supported by the elevator-platform and to be engaged by the carriage when raised, whereby provision is made for raising the package-carrying table and transferring it from the elevator-platform to the carriage, substantially as described

2. In a package-elevator, the combination, with a carriage adapted to travel upon suspended tracks, of a platform and means for raising and lowering said platform and a package-carrying table adapted to be supported upon the platform and provided with means for engaging the carriage when elevated, substantially as herein shown and described.

3. In a package-elevator, the combination, with a carriage adapted to travel upon suspended tracks, of a platform, a drum, means for operating the drum, cords attached to the drum, passed over pulleys, and attached to the said platform, and a package-carrying table adapted to be supported on the platform and provided with means for connecting it when elevated to the carriage, substantially as described.



4. In a package-elevator, the combination, with an inclined track and a carriage traveling on said track and provided with hooks, of a platform, a drum, cords attached to the drum, passed over pulleys, and connected to the platform, a package-carrying table adapted to be supported on the platform and provided with standards having openings to engage the hooks of the carriage, and means for operating the drum and carriage, substantially as herein shown and described.

5. In a device of the character described, the combination, with a carriage capable of lateral movement and an elevator, of a package-carrying table adapted for removable engagement with the elevator and with the carriage and studs pivotally attached to the table, as and for the purpose specified.

6. In a device of the character described, the combination, with inclined tracks and a carriage held to travel upon the tracks, of a table comprising a platform-section and a supporting frame-section, the latter section being provided with means for automatic engagement with the carriage, as and for the purpose specified.

7. In a device of the character described, the combination, with a carriage capable of lateral movement, of a package-carrying table comprising a platform-section and a supporting frame-section, the latter section being provided with means for automatic engagement with the carriage, and an elevating mechanism, as and for the purpose set forth.

449,454. PROCESS OF DEGUMMING AND PREPARING FIBERS. WALTER R. WADE, Brooklyn, N. Y. Filed May 22, 1890. Serial No. 352,781. (No specimens.)

Claim.—1. The herein-described process of degumming and preparing fibers, consisting in boiling them in an alkaline solution containing saponine.

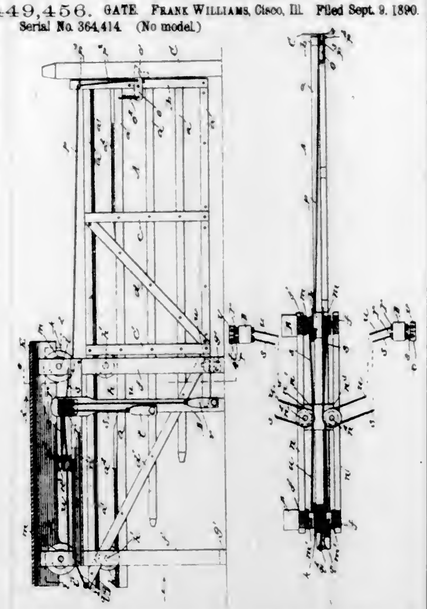
2. The herein-described process of degumming and preparing raw fibers, consisting in boiling the raw fiber in an alkaline solution of potash or soda and saponine and subjecting the fiber thus boiled to the action of a bath of acidulated water.

3. The herein-described process of degumming and preparing raw fibers, consisting in dissolving the gum by the action of an alkaline solution of potash or soda containing saponine, washing out the solution and the dissolved gum, subjecting the washed fiber to a bath of acidulated water, and boiling the fiber in a slightly-alkaline bath containing soft soap or other saponaceous material.

449,455. PROCESS OF DEGUMMING AND PREPARING FIBERS. WALTER R. WADE, Brooklyn, N. Y. Filed May 22, 1890. Serial No. 352,782. (No specimens.)

Claim.—The herein-described process of degumming and preparing raw fiber, consisting in boiling them in an alkaline solution containing quillaia-bark or a decoction or extract thereof.

449,456. GATE. FRANK WILLIAMS, Cisco, Ill. Filed Sept. 9, 1890. Serial No. 364,414. (No model.)

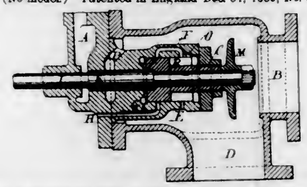


Claim.—1. The combination, with a gate having two main posts, a frame on each post, gate-supporting rollers on said frames, and a guard-post toward which the gate may slide, of a pulley revolubly mounted in each gate-supporting frame, two ropes secured at one end of each to the gate and at their other ends to the respective pulleys, and a rigging of cords adapted to revolve the pulleys and draw either end of the gate to open or close it, substantially as set forth.

2. The combination, with a gate having two main posts, a frame on each post, gate-supporting rollers on said frames, and guides on the gate engaging said rollers, of a guard-post removed from the main posts and toward which the gate may slide, a spring-actuated latch-bar on the gate adapted to hook fast to the guard-post, a flanged pulley revolubly mounted on each gate-supporting frame, a rope on each pulley secured thereto and to the ends of the gate, and a rigging of cords secured to the revolvible supports of the flanged pulleys and adapted to revolve said pulleys and open or close the gate from either side, substantially as set forth.

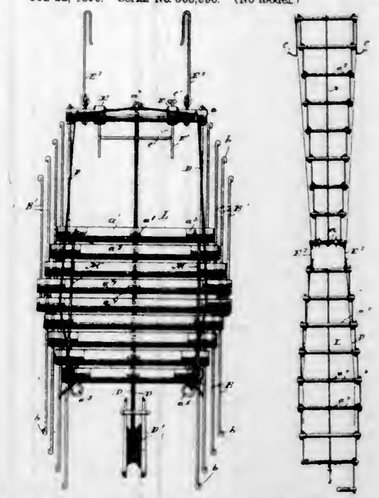
3. The combination, with a gate having guides on its rails and two main posts, gate-supporting frames on the sides of the main posts, grooved rollers on the frames engaging said guides, a latch-bar on the outer end of the gate, and a guard-post toward which the gate may slide and be latched thereto, of two flanged pulleys secured on transverse shafts revolubly supported on the gate-supporting frames, a rope attached by one end to one pulley and by its other end to the gate-latch, a similar rope connected by its ends to the other flanged pulley and to the rear end of the gate, two posts laterally removed from and aligning with one of the main gate-posts, grooved rollers on said posts, cords on said rollers, and weights on one end of said cords adapted to rotate the flanged pulleys when one of the weights is drawn upon, so as to move the gate to open or close it, substantially as set forth.

449,457. STARTING-VALVE FOR COMPOUND ENGINES. WILLIAM B. YEO, Manchester, England. Filed Oct. 28, 1890. Serial No. 369,601. (No model.) Patented in England Dec. 31, 1889, No. 20,910.



Claim.—In a starting-valve for compound engines, the combination of the shouldered valve-rod K L with the passages A P, the piston R, its grooved boss C, and the ports and passages E F O H G, arranged and operating substantially as and for the purposes set forth.

449,458. FIRE-ESCAPE. ROBERT M. YORKS, St. Paul, Minn. Filed Oct. 22, 1890. Serial No. 368,890. (No model.)



Claim.—1. In a fire-escape, the combination, with the collapsible ladder, of sleeves mounted on the rungs of the ladder, said sleeves being connected, as shown, and provided with inwardly-extending arms, and means for holding the sleeves in a fixed position, substantially as described.

2. A fire-escape comprising a window-bar adapted to extend across a window-frame, a series of rungs suspended from the window-bar, said rungs being slidably connected together by rods, as shown, and hooks attached to the lower rung-supports and adapted to engage staples on the window-bar, substantially as described.

3. In a fire-escape, the collapsible ladder comprising two rungs rigidly connected and a series of graduated rungs suspended from the lower of the connected rungs, said rungs having rods fixed to the ends so as to extend through holes of the adjacent rungs, and ropes extending through a keeper on the upper rung, the upper ends of the ropes being attached to the lower rungs of the ladder, substantially as described.

4. A fire-escape comprising a window-bar adapted to extend across the window-frame and a collapsible ladder suspended from the window and consisting of two upper rungs rigidly connected and a series of graduated rungs having supporting-rods attached to the ends and extending through holes in the adjacent rungs, and braces mounted upon the rungs and provided with inwardly-extending arms, substantially as described.

5. In a fire-escape, the combination, with the collapsible ladder of the character described, of the cross-bar fixed to the wall of the building, and the ladder suspended from the cross-bar and fixed to one end of the collapsible ladder, substantially as described.

449,459. GROOVE-CUTTING MACHINE FOR OIL OR GAS WELLS. JOSEPH L. ADDISON, Quaker City, Ohio. Filed Dec. 31, 1890. Serial No. 376,418. (No model.)

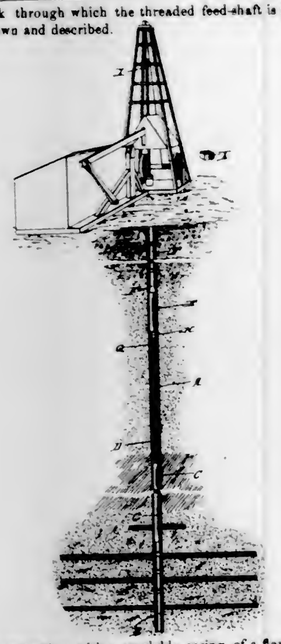
Claim.—1. The combination, with a revoluble cylindrical casing, of a flexible chain arranged within the casing and provided with a cutting implement at its free or outer end, a feed-shaft connected with the inner end of the chain to force the said chain laterally outward from the casing, substantially as shown and described.

2. The combination, with a revoluble cylindrical casing, of a flexible chain provided with a cutting implement, a feed-shaft connected to the flexible chain, and a drive-rod for operating the feed-shaft, substantially as shown and described.

3. The combination, with a revoluble cylindrical casing, of a flexible chain, the feed-shaft connected therewith, the drive-rod for operating the feed-shaft, and the drive-shaft for operating the drive-rod, substantially as shown and described.

4. The combination, with a revoluble casing, of a flexible chain arranged therein and carrying a cutting implement at its free or outer end, a threaded feed-shaft connected with its upper or inner end, and

a threaded block through which the threaded feed-shaft is fed, substantially as shown and described.



5. The combination, with a revoluble casing, of a flexible chain arranged therein and carrying a cutting implement at its free or outer end, a threaded feed-shaft swiveled to the inner or upper end of said chain, a threaded block arranged within the casing and through which the feed-shaft is fed, and a revoluble shaft adapted to turn and feed the feed-shaft, substantially as shown and described.

6. The combination, with a revoluble casing, of a flexible chain arranged therein and carrying a cutting implement at its free or outer end, a threaded feed-shaft swiveled at its upper or inner end, said shaft being serrated or grooved longitudinally, a threaded block through which the feed-shaft turns, a revoluble shaft, and gear connected therewith adapted to mesh with the longitudinal serrations or grooves of the feed-shaft and turn said shaft, whereby it is fed through the threaded block and forces the chain from the casing, substantially as shown and described.

7. The combination, with a revoluble cylindrical casing, of a flexible chain arranged therein and carrying a cutting implement at its free or outer end, a threaded feed-shaft swiveled to its upper or inner end, a threaded block rigid within the casing and through which the feed-shaft turns, a revoluble shaft adapted to operate the feed-shaft, and a support upon which the casing revolves, substantially as shown and described.

8. The combination, with a revoluble casing, of a support upon which said casing revolves, a flexible chain arranged within the casing, a threaded feed-shaft attached to the said chain, a threaded block, and revoluble shaft for operating said feed-shaft, and a chain-guiding trough or plate arranged in the bottom of the casing, substantially as and for the purposes described.

9. The combination, with a revoluble cylindrical casing having an opening in one side of the same, of a flexible chain arranged within the casing and adapted to be forced through the said opening, a threaded feed-shaft swiveled to the upper end of said chain, a threaded block through which said shaft is fed, a dependent chain-guiding rod secured to the under side of the said block, and a chain-guiding trough or plate arranged near the bottom of the cylinder, substantially as shown and described.

10. The combination, with a revolving cylinder having a hole in one side, of a support for said cylinder, a flexible chain arranged within the cylinder and carrying a cutting implement at its free or outer end, a threaded feed-shaft swiveled to the upper or inner end of said chain, a threaded block through which said feed-shaft turns, a revoluble shaft carrying a gear adapted to mesh with the feed-shaft and turn the same through the threaded block, the dependent chain-guide rod secured to the under side of the threaded block, and the chain-guiding trough or plate arranged in the bottom of the casing, substantially as shown and described.

11. The combination, with the drive-rod, of the holder, the screw held thereiu, the revoluble cylindrical casing, the drive-rod, feed-shaft, and flexible chain carrying a cutting implement upon its free or outer ends, substantially as shown and described.

12. The flexible chain carrying a cutting implement at its free or outer end, said chain consisting of a series of central links, each link having a transverse groove at one end and a transverse tongue at the opposite end, the shoulders of the tongues and grooves being reduced or cut away upon the forward or upper side of the links, and each link being provided with two transverse apertures, and a series of side links similar in construction to the central links, which side links are arranged to break joints with the central links, and the bolts for connecting the central and side links, substantially as shown and described.

13. The combination, with the supporting-rods, of the revoluble cylindrical casing, threaded block, feed-shaft, flexible chain, revoluble shaft having spurs thereon and the tubular screw working in the casing and revolving the same, and a grooved collar carried by the screw, through which the revoluble shaft works, substantially as shown and described.

14. The combination, with the revoluble casing, of the threaded block carrying the drilling appliances, the slide-rods holding the said block, the revoluble shaft, the cap for casing and annular collar confined thereby, the said collar and cap having openings adapted to register and permit the passage of the slide-bars, a shoulder attached to the collar, the screw, holder, and hanger, all arranged substantially as shown and described.

15. The combination, with the holder having the dogs and ratchet-faced recesses, of the screw-carrying pawls, the revoluble shaft passing through the screw and having spirally-arranged spurs, a grooved collar carried in the screw, the revoluble casing in which the screw works, and the threaded block in which the revoluble shaft is journaled and to which are connected the drilling appliances, substantially as shown and described.

16. The combination of the revoluble casing carrying the flexible chain and apparatus for operating the same, the revoluble shaft, a chisel carried upon said shaft and resting above the chain, the screw adapted to contact with said chisel, the holder, and drive-rods, all arranged substantially as shown and described.

17. The combination of the drive-rods, holder, screw, revoluble shaft, grooved collar in the screw, casing having a threaded upper portion, cap and collar, constructed as described, the threaded block, feed-shaft, slide-bars, flexible chain, chain-guide rod, chain-trough, and supporting-rods, all arranged and adapted to operate as shown and described.

449,460. OIL-CAN HOLDER FOR BICYCLES. LORING H. BANNISTER, Youngstown, Ohio. Filed Aug. 7, 1890. Serial No. 361,298. (No model.)



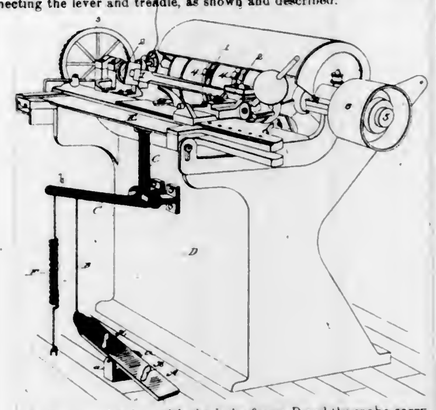
Claim.—1. An oil-can holder for a cycle, comprised of a single plate of sheet metal cut and bent to form a clamp which will embrace an upright of a cycle-frame, two pairs of clasp-limbs that are adapted to removably retain an oil-can and its cap, and means to clamp the device upon a cycle-frame, substantially as set forth.

2. An oil-can holder for a cycle, comprised of a single plate of elastic metal, having integral clasp-limbs formed in pairs on its edges, its median portion bent into substantially cylindrical form to embrace a standard on a cycle, integral webs between the clamp and clasp limbs, and screw bolts and nuts to retain the device in place on a cycle-frame, substantially as set forth.

3. The combination, with the standard of a cycle-frame and an oil-can of elongated cylindrical form having a longitudinally-fluted cap-piece, of an oil-can holder comprised of a single plate of elastic sheet metal cut to produce two pairs of clasp-limbs, and base-flanges on one pair of the clasp-limbs, the median portion of the holder being bent to embrace a cycle-standard, and the clasp-limbs adapted to removably hold an oil-can seated on the base-flanges, and screw bolts and nuts which retain the holder and oil-can upon a cycle-frame, substantially as described.

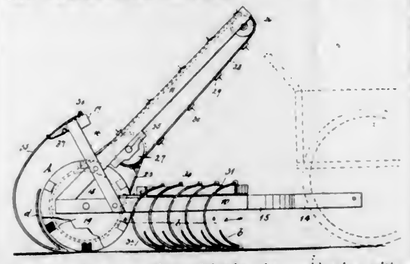
449,461. TABLE-OPERATING MECHANISM FOR LATHES. MARTIN C. BOLLENBACHER, Bloomington, Ind. Filed Sept. 15, 1888. Renewed Feb. 28, 1891. Serial No. 383,146. (No model.)

Claim.—1. The combination, with the lathe-frame D and the spoke-carrying table E, sliding on said frame, of the elbow-lever C, jointed at its angle to the front of said frame and loosely connected with the sliding table, the foot-treadle pivoted at or about its middle and arranged parallel to the front of said frame, and the rod connecting the lever and treadle, as shown and described.



2. The combination, with the lathe-frame D and the spoke-carrying table E, sliding on said frame, of the elbow-lever C, jointed at its angle to the front of said frame and loosely connected with the sliding table, the foot-treadle pivoted at or about its middle and arranged parallel to the front of said frame, the rod connecting the lever and treadle, and the spring connecting outer arm of lever with the floor, as shown and described.

449,462. HAY RAKE AND LOADER. VAN RENSSELAER COLE, Republic, and CHARLES W. NEIKIRK, West Lodi, Ohio. Filed Apr. 9, 1890. Serial No. 347,204. (No model.)

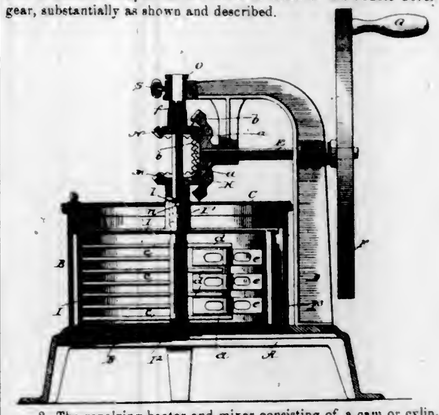


Claim.—1. In a hay rake and loader, the combination, with a frame provided with an elevating mechanism and a supporting and driving reel journaled in said frame beneath said mechanism, of a rear rake the teeth of which are carried downward over and beneath the reel, the lower ends of said teeth being formed with two members, the inner members of which are concentric with the reel, and forwardly and outwardly disposed side rake-heads attached to the side bars of the frame and provided with teeth having their lower ends formed with two members, the inner members of which teeth are given a lateral and inward inclination, as and for the purpose specified.

2. A hay rake and loader comprising a frame formed of a horizontal portion and a forwardly-inclined portion, a driving and supporting-reel journaled in the rear part part of the horizontal portion of the frame, an endless elevator-belt mounted in the inclined portion of the frame, means for operating the endless belt from the reel, rake-teeth carried by standards of the frame and having their lower ends formed with two members, the inner one of which is concentric with the reel, and forwardly and outwardly projecting rake-heads secured to the side bars of the frame and provided with teeth formed with two members, the inner members of which incline laterally, substantially as herein shown and described.

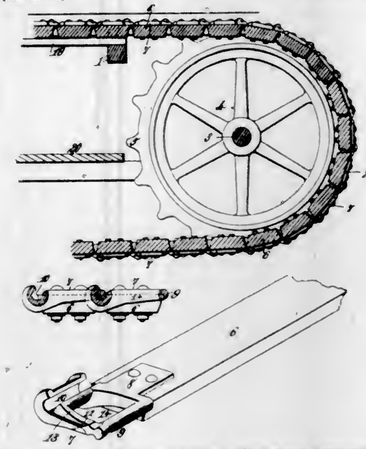
449,463. BEATER AND MIXER FOR CONFECTIONERS' USE. JOHN W. CONDON, Rochester, Ind. Filed Aug. 7, 1890. Serial No. 361,388. (No model.)

Claim.—1. The combination, with the reversely-revolving shaft and frame of a beater and mixer, of a drive-shaft provided with a bevel-gear having a double row of teeth, of different diameters and in different planes, and interchangeable sets of bevel-gears detachably locked to said frame and shaft and having their hubs and diameters of variable dimensions adapted to the series of teeth of the double bevel-gear, substantially as shown and described.



2. The revolving beater and mixer consisting of a cam or cylinder, a revolving frame I, and a central shaft having a vertical series of arms or teeth *d*, and a vertically-arranged and freely-revolving stirrer K, journaled in the upper and lower arms *d* and provided with radial blades *e*, arranged to pass between the arms *d*, substantially as shown and described.

449,464. CARRIER FOR FEEDING BAGASSE-FURNACES. FREDERIC COOK, New Orleans, La. Filed Sept. 17, 1890. Serial No. 365,209. (No model.)



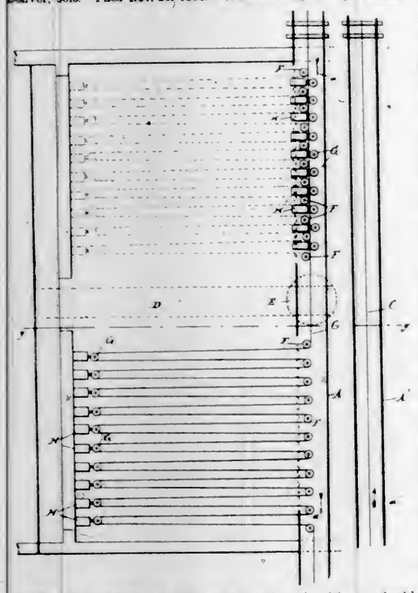
Claim.—A carrier in the form of an endless apron composed of a series of transverse slats having their ends connected to sprocket-links, so that their longitudinal edges abut to form a continuous plane surface, said abutting edges being acutely beveled, as described, to maintain close contact in passing over and between the sprocket-drums, substantially as described.

449,465. WEED ATTACHMENT FOR PLOWS. WILLIAM D. CROWELL, Weston, Ky. Filed Dec. 16, 1890. Serial No. 374,940. (No model.)



Claim.—The combination of the beam with a rod which has its ends secured thereto, the front end of the rod being bowed and provided with a point or extension and having its rear end curved downward, the main portion of the rod being straight and placed at a suitable inclination to the side of the beam, its front end diverging farthest therefrom, substantially as shown.

449,466. SYSTEM FOR CABLE RAILROADS. LEONARD CUTSHAW, Denver, Colo. Filed Nov. 20, 1890. Serial No. 372,047. (No model.)



Claim.—1. A system for still-cable roads, comprising a double track and an endless still cable laid in the said track, substantially as shown and described.

2. A system for still-cable roads, comprising a double track, an endless still cable laid in the said track, and weights connected with the said cable for taking up the slack of the cable incident to taking on and off cars, substantially as shown and described.

3. In a system for still-cable roads, a still endless cable, substantially as shown and described.

4. In a system for still-cable roads, the combination, with an endless still cable, of fixed pulleys over which is adapted to pass the said cable and a second set of pulleys arranged between the other pulleys and carrying weights, substantially as shown and described.

5. In a system for still-cable roads, the combination, with an endless still cable, of means for clamping the cable in place, substantially as shown and described.

6. In a system for still-cable roads, the combination, with an endless still cable, of a clamping device provided with self-acting jaws adapted to clamp the said cable, substantially as described.

7. In a system for still-cable roads, the combination, with an endless still cable, of a clamping device provided with self-acting jaws adapted to clamp the said cable, the said jaws being hung on pivots to permit of opening the jaws by the pilot-wheel of the car, substantially as shown and described.

8. In a system for still-cable roads, the combination, with a double track, of an endless still cable laid in the said track and a revoluble winding-drum carried by the car and adapted to wind up the said cable to propel the car, substantially as described.

9. In a system for still-cable roads, the combination, with a double track, of an endless still cable laid in the said track, a revoluble winding-drum carried by the car and adapted to wind up the said cable to propel the car, and means for taking up the slack of the cable incident to taking the cable off the said drum, substantially as shown and described.

10. In a system for still-cable roads, the combination, with a double track, of an endless still cable laid in the said track, a revoluble winding-drum carried by the car and adapted to wind up the said cable to propel the car, and means, substantially as described, for placing the said cable onto the said drum, as set forth.

11. In a system for still-cable roads, the combination, with a double track, of an endless still cable laid in the said track, a revoluble winding-drum carried by the car and adapted to wind up the said cable to propel the car, and means, substantially as described, for throwing the cable off the drum, as set forth.

12. In a system for still-cable roads, the combination, with a double track, of an endless still cable laid in the said track, a revoluble winding-drum carried by the car and adapted to wind up the said cable to propel the car, and clamping devices, substantially as described, for clamping the said cable in the track, as set forth.

13. In a system for still-cable roads, a winding-drum adapted to be thrown into an angular position, substantially as described.

14. In a system for still-cable roads, the combination, with an endless still cable, of a winding-drum adapted to wind up the said cable and adapted to be thrown in an angular position to the said cable, substantially as described.

15. In a system for still-cable roads, the combination, with a cable, of a winding-drum adapted to wind up the said cable and adapted to be thrown in an angular position to the said cable, and means, substantially as described and under the control of the operator, for throwing the said drum into an angular position, as set forth.

16. In a system for still-cable roads, a winding-drum hung on a universal joint, substantially as described.

17. In a system for still-cable roads, the combination, with the drum-shaft mounted to turn, of a winding-drum and a universal joint for connecting the said shaft with the said drum, substantially as described.

18. In a system for still-cable roads, the combination, with a winding-drum hung on a revoluble universal joint, of means for throwing the said drum into an angular position, substantially as described.

19. In a system for still-cable roads, the combination, with a winding-drum and a revoluble shaft universally connected with the said drum, of means for throwing the said drum into an angular position relative to the axis of the said shaft, substantially as set forth.

20. In a system for still-cable roads, the combination, with a revoluble shaft, a drum, and a universal joint connecting the said shaft with the said drum, of a frame mounted to swing and friction-rollers held on the said frame and engaging one face of the said drum at opposite sides of the universal joint to throw the said drum into a right-angular or angular position relative to the axis of the said shaft, substantially as shown and described.

21. In a system for still-cable roads, the combination, with a revoluble shaft, a drum, and a universal joint connecting the said shaft with the said drum, of a frame mounted to swing friction-rollers held on the said frame and engaging one face of the said drum at opposite sides of the universal joint to throw the said drum into a right-angular or angular position relative to the axis of the head-shaft, and fixed friction-rollers engaging the face of said drum at right angles to the other friction-rollers, substantially as described.

22. In a system for still-cable roads, the combination, with a revoluble shaft, a drum, and a universal joint connecting the said shaft with the said drum, of a frame mounted to swing, friction-rollers held on the said frame and engaging one face of the said drum at opposite sides of the universal joint to throw the said drum into a right-angular or angular position relative to the axis of the said shaft, and mechanism, substantially as described and under the control of the operator, for shifting the said frame, as set forth.

23. In a system for still-cable roads, a revoluble winding-drum provided on one face with a pulley and having a slot in its rim leading to said pulley, substantially as described.

24. In a system for still-cable roads, the combination, with an endless still cable, of a revoluble winding-drum having in its rim a slot adapted to receive the said cable and a grooved pulley held on the face of the said drum next to the said slot and adapted to receive the said cable, substantially as described.

25. In a system for still cable roads, the combination, with an endless still cable, of a compensating device for the extra amount of cable for the winding-drums, substantially as described

26. In a system for still-cable roads, the combination, with an endless still cable, of a compensating device for automatically taking care of the extra amount of cable for the winding-drums, the said device comprising two sets—namely, light and heavy weights—pulleys on the said weights and adapted to engage the said cable, and fixed pulleys adapted to engage the cable on the opposite side of the weight-pulleys, substantially as described.

27. In a system for still-cable roads, a compeosating device for the cable, comprising two sets, heavy and light weights, pulleys held on the said weights and adapted to engage the cable, and a second set of fixed pulleys adapted to engage the said cable opposite the said weight-pulleys, substantially as described.

28. In a system for still-cable roads, the combination, with a double track containing the cable groove or slot, of an endless still cable laid in the said slot and having an extra length extending out of the said slot and for use around the winding-drums of the cars, substantially as described.

29. In a system for still-cable roads, the combination, with a double track containing the cable groove or slot, of an endless still cable laid in the said slot and having an extra length extending out of the said slot and for use around the winding-drums of the cars, and a compensating mechanism, substantially as described, for taking care of this extra amount of cable out of the slot or groove, substantially as described.

30. In a system for still-cable roads, the combination, with a double track containing the cable groove or slot, of an endless still cable laid in the said slot and having an extra length extending out of the said slot and for use around the winding-drums of the cars, and a compensating mechanism, substantially as described, for taking care of this extra amount of cable out of the slot or groove, the said mechanism comprising a series of fixed pulleys engaging the table on one side and a second set of weighted traveling pulleys engaging the opposite side of the cable and arranged alternately with the said fixed pulleys, substantially as described.

31. In a system for still-cable roads, the combination, with a double track containing the cable groove or slot, of an endless still cable laid in the said slot and having an extra length extending out of the said slot and for use around the winding-drums of the cars, and a compensating mechanism, substantially as described, for taking care of this extra amount of cable out of the slot or groove, the said mechanism comprising a series of fixed pulleys engaging one side of the cable, a series of traveling pulleys engaging the said cable on the other side, and a set of light weights and a set of heavy weights hung on the said traveling pulleys, substantially as described.

32. In a system for still-cable roads, the combination, with an endless cable, of a set of fixed pulleys arranged on one side of the said cable and over which the cable passes, a second set of pulleys arranged upon the opposite side of the cable and engaging the same, and trucks adapted to travel on an inclined track arranged at right angles to the movement of the cable, the said trucks supporting the last-named pulleys, substantially as shown and described.

33. In a system for still-cable roads, the combination, with an endless cable, of a set of fixed pulleys arranged on one side of the said cable and over which the cable passes, a second set of pulleys arranged upon the opposite side of the cable and engaging the same, trucks adapted to travel on an inclined track arranged at right angles to the movement of the cable, the said trucks supporting the last-named set of pulleys, and means, substantially as described, for locking the truck in an uppermost position, substantially as shown and described.

34. In a system for still-cable roads, the combination, with an endless cable, of a set of fixed pulleys arranged on one side of the said cable and over which the cable passes, a second set of pulleys arranged upon the opposite side of the cable and engaging the same, trucks adapted to travel on an inclined track arranged at right anglee to the movement of the cable, the said trucks supportiog the last-named pulleys, and means for pushing the pulleys into an uppermost locked position when arriving near the upper end of its track, substantially as described.

35. In a system for still-cable roads, the combination, with a truck adapted to travel on an inclined track, of a draw-bar fulcrumed on the front end of the said truck, and a pulley supported by the said draw-bar, over which passes the endless still cable, substantially as shown and described.

36. In a system for still-cable roads, the combination, with a truck adapted to travel on an inclined track, of a draw-bar fulcrumed on the front end of the said truck and provided with teeth, a pulley supported by the said draw-bar and over which passes the endless still cable, and a spring-pressed toothed bar adapted to engage the teeth of the said draw-bar, substantially as shown and described.

37. In a system for still-cable roads, the combination, with a truck adapted to travel on an inclined track, of a draw-bar fulcrumed on the front end of the truck and provided with teeth, a pulley supported by the said draw-bar, over which passes the endless still cable, a spring-pressed toothed bar adapted to engage the teeth of said draw-bar, and a fixed spring to deflect the said draw-bar, substantially as shown and described.

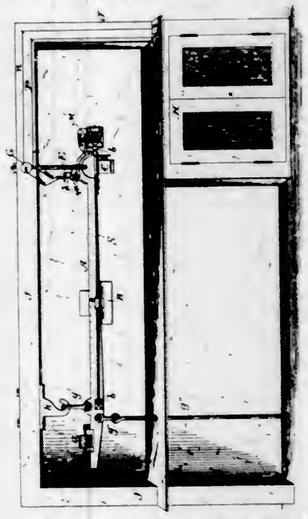
449,467. RIBBON-CLASP. JAMES E. DAVENNY, Greenville, Pa. Filed Oct. 31, 1890. Serial No. 369,916. (No model.)

Claim.—The combination, with a ribbon spool or reel having a stud or button fixed to one side, of an elastic cord fastened by one end to the side of the spool opposite the stud and having a loop *d* in its free end adapted to be caught on said stud when the cord is bent transversely over the periphery of the spool, thereby clasping the ribbon without drags or rollers, substantially as and for the purpose set forth.

449,467.



449,468. AUTOMATIC ELECTRIC WEIGHING-SCALE. JOHN V. DAVIS, Ashland, Ky., assignor to the Automatic Electric Scale Company, same place. Filed May 17, 1890. Serial No. 352,152. (No model.)



Claim.—1. The combination, with the scale-beam and its poise, of an electric motor arranged in shunt-circuit with a part of the current going through the field-magnets constantly and a part through the armature, contacts for making and breaking the armature-circuit between the points of balance, and gears connecting the electric motor with the poise for adjusting the latter, substantially as described.

2. The combination, with a scale-beam and its poise, and an electric motor mounted upon the scale-beam in fixed relation thereto and geared to the poise to adjust it, as described, of a set of contacts carried by the scale-beam and connected to the poles of the motor, and two sets of contacts, one set arranged above and the other below the scale-beam, the two sets having their poles reversed, substantially as shown and described.

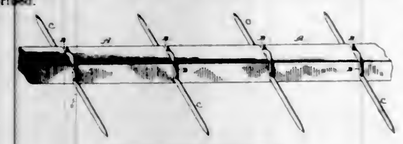
3. The combination, with a scale-beam and its poise, of a shunt-circuit electric motor mounted upon the scale-beam, gears for connecting the motor with the poise for adjusting it, a set of mercury-cups for establishing connection between the outside circuit-wires and the field-magnets of the motor, and a set of contacts with reversed poles for transmitting a reversed current to the armature of the motor, substantially as shown and described.

4. The combination, with scale-beam A and its poise B, of the screw-shaft S, the electric motor M M', having its armature-shaft aligned with and connected to the screw-shaft, the stationary frame E, having circuit-wires *n p* and *x x'*, mercury-cups *m m*, and stationary reverse contacts 1 2 3 4, the cross-bar *f* on the scale-beam bearing rods *d d*, dipping in the mercury-cups and having insulated contacts *k k'*, connected to the poles of the armature and playing between the stationary contacts, substantially as shown and described.

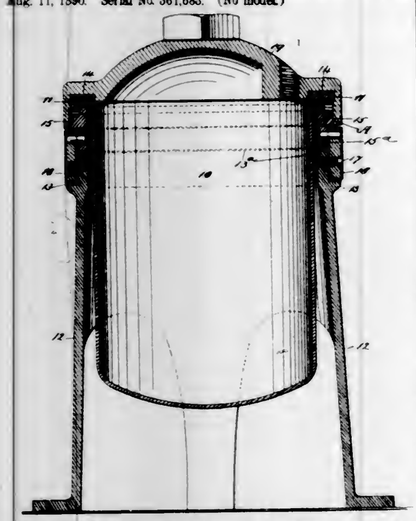
449,469. TOBACCO-STICK. THOMAS H. ELLINGTON, Rice's Depot, Va. Filed June 27, 1890. Serial No. 356,955. (Model.)

Claim.—As a new article of manufacture, a tobacco-stick consisting of a stick having a series of transverse inclined recesses, and a

series of wires having angular bent portions which fit in said recesses and horizontally-projecting sharpened ends, substantially as shown and described.



449,470. VULCANIZER. JAMES FERGUS, Philadelphia, Pa. Filed Aug. 11, 1890. Serial No. 361,683. (No model.)



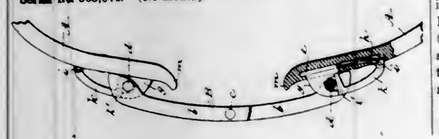
Claim.—1. In a vulcanizer, the combination, with a base-ring provided with a rib upon its upper face, of a bowl provided with an upper outwardly-extending annular flange having its outer edge projected vertically downward, whereby an undercut recess is formed for the reception of the said rib, substantially as shown and described.

2. In a device of the character described, the combination, with a base, of an exteriorly-threaded ring removably attached to the base, a bowl adapted to be supported by the ring, and a cap suitably threaded for engagement with the threaded surface of the ring, substantially as shown and described.

3. In a device of the character described, the combination, with a base or stand and a ring removably attached thereto, provided with an upper peripheral rib and an exteriorly-threaded surface, of a bowl the upper edge of which is carried outward and downward, forming an under groove adapted to receive the rib of the ring, and a threaded cap adapted to be screwed upon the ring, substantially as shown and described.

4. In a device of the character described, the combination, with a stand or base provided with upper exterior recesses, a ring adapted for engagement with the upper surface of the stand, provided with an exterior thread and an annular rib integral with its upper edge, and lugs connected with the ring, entering the recesses of the base and attached to said base, of a bowl the upper edge of which is carried outward and provided with a groove in its under surface adapted to receive the rib of the ring, and an interiorly-threaded cap adapted to be screwed upon the ring over the pulley, as and for the purpose specified.

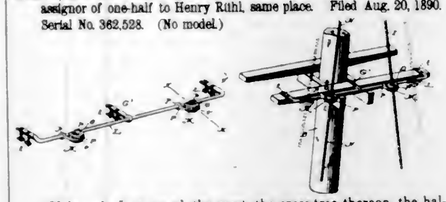
449,471. BREAST-COLLAR. THOMAS W. FISHER, Helena, Mont., assignor of one-half to Jacob J. Leiser, same place. Filed Sept. 23, 1890. Serial No. 365,870. (No model.)



Claim.—1. The combination, with two breast-collar sections which are attached to traces by their rear ends and a supporting shoulder-strap, of a link-bar which is curved edgewise, bifurcated at its ends, and provided with transverse pins between the parallel end walls of the link-bar, and two similar latching devices that are adapted to detachably engage the transverse pins of the link-bar, substantially as set forth.

2. The combination, with two breast-collar sections and a link-bar that is curved edgewise and has forked ends that are provided with transverse pins, of two similar latching devices, each comprised of a frame, an integral hook-shaped lug, a latch-dog pivoted on the frame and adapted to rock and engage the lug, and a finger-spring which holds the dog in engagement with the hook-shaped lug, substantially as set forth.

449,472. SHIP'S RIGGING. HIRAM FOLLETT, Baltimore, Md., assignor of one-half to Henry Rithl, same place. Filed Aug. 20, 1890. Serial No. 362,528. (No model.)

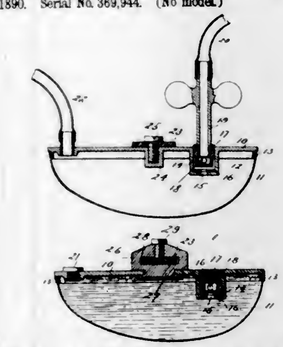


Claim.—1. In a vessel, the mast, the cross-tree thereon, the halyard secured to the sail, and the shifting-block mounted on the mast above the cross-tree to receive the halyard, in combination with a guide mounted on the cross-tree, adapted to maintain the halyard out of contact with the cross-tree, substantially as described.

2. In a vessel, the combination of the cross-tree, the supporting-bar secured thereto and maintained at a slight distance therefrom, the yoke provided at its ends with eyes encircling the bar, and the collar embraced by the yoke and secured thereby between the same and the bar.

3. In combination with the mast, the cross-tree thereon, the sail supported by the boom and gaff, the bar M, secured to the cross-tree, the sliding guides thereon, the blocks secured to the mast, and the peak and throat halyards passing, respectively, through the blocks and sliding guides.

449,473. TRUSS-PAD. JOSEPH GARCIA, Paterson, N. J. Filed Oct. 31, 1890. Serial No. 369,944. (No model.)

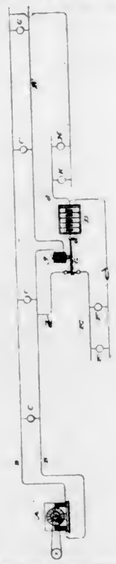


Claim.—1. In a truss-pad, the combination, with the face-plate 10, having an integral threaded well 14 on its inner face provided with an aperture in its bottom, of a tubular valve-plug adapted to screw into the well 14 flush with the outer face of the plate 10 and having a lateral opening and a closed inner end to close the opening 15, an annular space being formed between the lower portion of the plug and well, and the upper end of the bore of the plug being angular to receive a turning-key, substantially as set forth.

2. In a truss, the combination, with the face-plate 10, having on its inner or lower face an integral well 14, provided with an opening 15 and an apertured gasket 16, of the tubular plug 17, screwed into the well flush with the upper side of the plate 10 and having a lateral aperture 18 and a closed lower end, an annular space being formed in the lower part of the well around the plug, and the bore of the plug at its upper open end being squared, and the removable tubular key 19, open at both ends and squared at its lower end to enter the said plug, substantially as set forth.

3. The combination, with the apertured face-plate 10 and the bag or sack secured thereto, of the nut 26, swiveled in the aperture of the face-plate and having a transverse opening 28, and a set-screw 29 intersecting the same, the shell 27 on the inner face of the plate 10 inclosing the inner end of the nut, substantially as set forth.

449,474. ELECTRIC-LIGHTING SYSTEM. GEORGE GIBBS, Milwaukee, Wis. Filed Aug. 14, 1890. Serial No. 362,000. (No model.)



Claim.—1. In an electric-lighting system, two main leads from the generator and the main lights connected to and between said leads, in combination with a storage-battery, conductors connecting said battery with the two leads, a resistance in one of said conductors between the battery and the main lead, an auxiliary circuit containing lamps and connected with the storage-battery, and an automatic switch mechanism, whereby the battery is held normally in circuit with the leads and the auxiliary circuit held open, but on the cessation of the current through the main circuit the auxiliary current is completed through the battery.

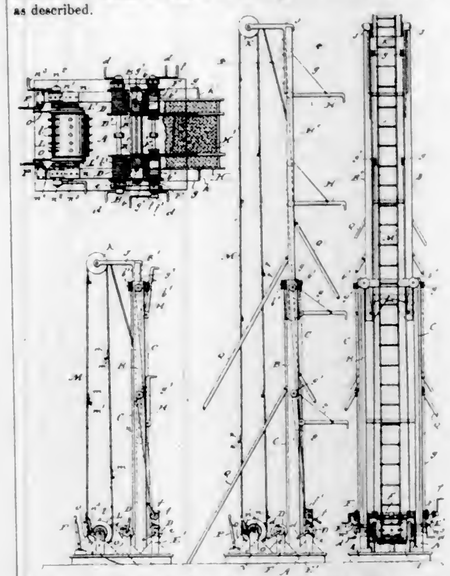
2. In an electric-lighting system, a generator, main-circuit leads therefrom, and lamps lighted from said leads, in combination with a storage-battery, conductors connecting the same with the aforesaid lighting-leads, one or more lamps between the battery and the main lead to serve as a resistance, an auxiliary circuit connected with the battery and containing lamps, and a switch mechanism adapted to complete the charging-circuit through the battery, and at the same time interrupt the auxiliary circuit or interrupt the charging-circuit and complete the auxiliary circuit, as occasion may demand, whereby the auxiliary lamps may be kept out of action and the battery charged from the main circuit during the action of the main lamps, but the battery discharged through the auxiliary lamps in the event of the failure of the main lamps.

3. In an electric-lighting system, the generator, the main leads therefrom, and the main lamps connected with said leads, in combination with the storage-battery and the lamps H, through which the battery is connected with the main leads, the auxiliary circuit and its lamps, and the magnetic switch controlled by the main circuit and acting to close the two circuits alternately through the battery.

449,475. FIRE-ESCAPE. CARL G. GRUNZ, Grand Island, Nebr. Filed Sept. 24, 1890. Serial No. 365,946. (No model.)

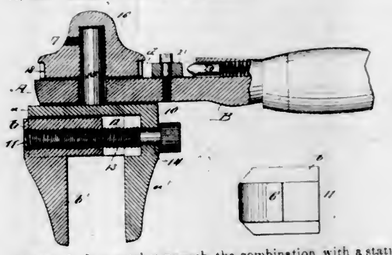
Claim.—1. A fire-escape comprising an extensible frame with the upper member mounted to slide in the lower member, a frame mounted on the extensible frame and having a drum pivoted therein, a drum at the base of the extensible frame, means for turning the drums, and a rope ladder extending over the drums, said ladder being made in sections connected by hooks and eyes, substantially as described.

2. A fire-escape comprising an extensible frame with the upper portion arranged to slide in the lower portion, drums and cables for operating the frame, bridges pivoted to the extensible frame, drums and cables for operating the bridges, a frame fixed to the extensible frame and extending laterally therefrom, a drum mounted in the fixed frame, a drum at the base of the extensible frame, a ladder extending over the two drums, and means for turning the drums, substantially as described.



3. The combination, with the extensible frame having means, as shown, for raising and lowering it, and having laterally-extending bridges pivoted thereto, of a laterally-extending frame fixed to the upper end of the extensible frame, a drum pivoted on the laterally-extending frame, a drum pivoted near the base of the extensible frame and provided with projecting pins, a rope ladder connecting the two drums, said ladder being made in sections connected by hooks and eyes, as shown, and means for turning the drums and ladder, substantially as described.

449,476. RATCHET-WRENCH. WILLIAM H. HAIRE, Morristown, Tenn., assignor of one-half to George K. Turner, same place. Filed Dec. 18, 1890. Serial No. 375,069. (No model.)



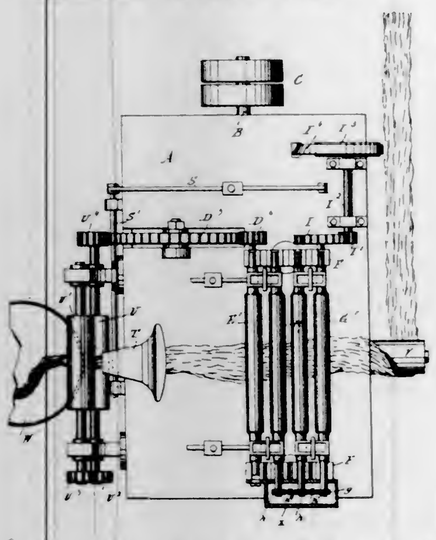
Claim.—1. In a ratchet-wrench, the combination, with a stationary jaw, a movable opposed jaw, an adjusting-screw held to turn in the fixed jaw and fitted to a threaded opening in the movable jaw, and a stud projected upward from the fixed jaw, of a handle held to revolve around the stud, a cap-block secured to the upper end of the stud and provided with a toothed periphery, and a spring-pressed dog pivoted upon the handle provided with two spurs adapted for engagement with the toothed periphery of the cap-block, as and for the purpose specified.

2. In a ratchet-wrench, the combination, with a head comprising two jaws, a fixed jaw consisting of a horizontal block-section having a stud integral with its upper face, an essentially T-shaped recess formed in its under face and at one end, and a gripping or clamping section extending vertically down from the block-section, and a movable jaw consisting of a horizontal block-section adapted to slide in the recess of the corresponding section of the fixed jaw, and a downwardly-extending clamping-section, and a screw held to turn in the

horizontal section of the fixed jaw, the threaded surface whereof is fitted to the aperture in the movable jaw, of a handle held to loosely turn upon the stud, a cap-block secured to the outer end of the stud, provided with a toothed peripheral surface, and a spring-pressed essentially triangular dog pivoted upon the handle provided with two spurs adapted for engagement with the toothed surface of the cap-block, as and for the purpose specified.

3. In a ratchet-wrench, the combination, with two jaws, one sliding in the other, an adjusting-screw held to loosely turn in one jaw and fitted to a threaded opening in the opposite jaw, a post projected upward from the fixed jaw, and a cap-block secured upon the upper end of the post and provided with a toothed peripheral surface, of a handle held to freely turn around the post between the jaws and the cap-block, an essentially triangular dog pivoted upon the handle provided with two spurs adapted for engagement with the toothed surface of the cap-block, and a spring-pressed bolt located in the handle and having a bearing against the dog, as and for the purpose specified.

449,477. RAILWAY DRAWING-HEAD. SAMUEL W. HILDRETH, Voluntown, Conn., assignor to himself and Irving F. Chase, same place. Filed Sept. 12, 1889. Serial No. 323,767. (No model.)

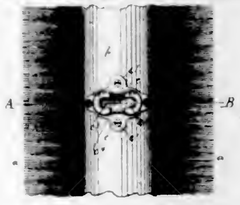


Claim.—1. In a railway-head, the combination of a driving-shaft provided with a cone-pulley, a second shaft provided with a cone-pulley, a belt passing over said cone-pulleys, a trumpet, a belt-shifter, means under the control of the trumpet for operating the belt-shifter, the front rolls, a train of gearing connecting the lower front roller with the driving-shaft, the back rolls, the lower one of which is provided with a gear-wheel, a third shaft provided with a gear-wheel meshing with the gear-wheel of the lower back roll, and pulleys and a belt for operating the third shaft from the lower cone-pulley shaft, substantially as described.

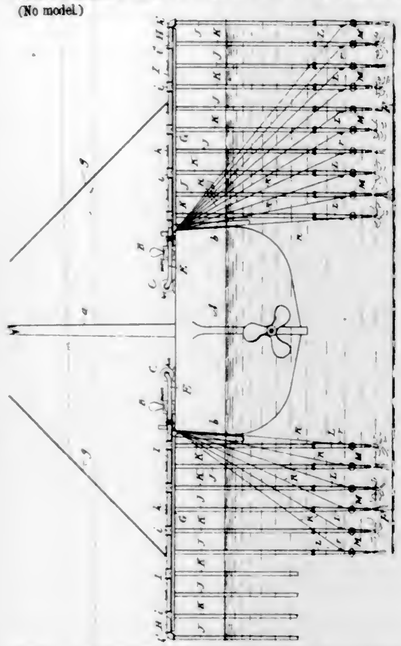
2. In a railway-head, the combination, with the shaft B, provided with the cone-pulley N, the shaft J, provided with the cone-pulley K, the belt L, passing over the cone-pulleys, the trumpet T, the belt-shifter O, and means under the control of the trumpet for operating the belt-shifter, of the front rolls E E', the back rolls G G', the gear-wheels D D' D^2 D^3, connecting the shaft B with the lower front roll E, the shaft I^2, the gear-wheels I I', connecting the shaft I^2 with the lower back roll G, the pulley I^3 on the shaft I^2, pulley I^3 on the cone-shaft J, and the crossed belt I^4, passing around said pulleys I^3 I^3, substantially as herein shown and described.

449,478. BRUSH HANDLE. MELVIN B. HINDS, Everett, Mass. Filed July 5, 1888. Serial No. 279,011. (No model.)

Claim.—The combination, with a brush-head *b* and the clamp-plate *c*, having the central square orifice c^4, the bifurcated slots c^2, and the opposite rectilinearly-inclined faces c', of the screw-nut c^3, located in the clamping-plate and removable and replaceable through the said central orifice, the handle *d*, and the screw-bolt *e*, having at one end the screw-thread e' engaging the handle, and at the opposite end the screw-thread e'' engaging the nut, substantially as described.



449,479. APPARATUS FOR SCOURING WATER-WAYS. ELBRIDGE G. HOLDEN, Fulton, Tex. Filed Nov. 17, 1890. Serial No. 371,882. (No model.)



Claim.—1. An attachment for tugs and other vessels, consisting in a horizontal boom or frame adapted to be connected at its inner end with a vessel, two pipes extending along said boom, flexible pipes depending from said two pipes and provided at their lower ends with discharge-nozzles, and separate pumps or forcing apparatus connected to the inner ends of said two first-named pipes and adapted to force air and water, respectively, therethrough and out of the said nozzles, substantially as set forth.

2. The combination, in a dredging apparatus, of a float or support, water and air pumps or forcing devices thereon, a laterally-projecting boom on said support, pipes connected to the water and air forcing devices and sustained by the boom, and pipes pendent from the boom-supported pipes and discharging water and air, respectively, at or near the bottom of a water-way, substantially as described.

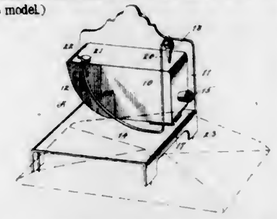
3. The combination, in a dredging apparatus, of a float or support, water and air pumps or forcing devices thereon, a laterally-projecting boom on said support, pipes connected to the water and air forcing devices and sustained by the boom, and flexible pipes pendent from the boom-supported pipes and discharging water and air, respectively, at or near the bottom of the water-way, substantially as described.

4. The combination, in a dredging apparatus, of a vessel or float, water and air pumps or forcing devices thereon, a lateral boom projecting from each side of said vessel or float, pipes connected to the water and air pumps or forcing devices and sustained by the booms, and pipes pendent from the boom-supported pipes and discharging water and air, respectively, at or near the bottom of a water-way at or from both sides of the vessel or float, substantially as described.

5. In dredging apparatus, the combination, with a vessel, float, or support, and water and air forcing devices thereon having discharge-pipes D E, respectively, of a laterally-supported boom G, projecting from said support, pipes H I on the boom and connected to the pipes D E, and pendent pipes J K, coupled to the pipes H I, respectively, and provided with weighted discharge-nozzles, substantially as described.

6. In dredging apparatus, the combination, with the pendent jet-pipes, of counter-weights on the pipe-nozzles, consisting of one or more lateral arms M, chains N, connected thereto, and weights O on the chains, substantially as described.

449,480. DEVICE FOR MOISTENING THE GUM ON ENVELOPES. EDWARD E. KINGSLEY, Portland, Oreg. Filed Jan. 9, 1891. Serial No. 377,214. (No model.)



Claim.—1. A moistener for envelopes, stamps, and the like, consisting of a frame, a reservoir connected with the frame, provided with a vent-opening in its top, an opening in its bottom having an absorbent material inserted therein, and a spring-arm extending downward below the under edge of the reservoir, which arm is provided with a plug adapted to slide in the vent-aperture, as and for the purpose set forth.

2. In a device of the character described, the combination, with a reservoir provided with a vent-aperture and an opening in its lower face, and absorbent material fitting said opening and extending within and without the reservoir, of a spring-arm extending downward below the lower end of the reservoir, and a plug attached to the said arm and held to cover and uncover the vent-aperture, as and for the purpose specified.

3. A moistener for envelopes, stamps, and similar articles, consisting of a frame, a reservoir attached to the frame, having one convexed end and provided with a vent-aperture in its upper face, an opening in the lower face, and an inlet-aperture at one end, a pad of absorbent material projecting beyond the lower face of the reservoir and upward within the same through the opening in its under face, a spring-arm attached at one end to the reservoir, the said arm being curved downward below the lower edge of the reservoir and upward, and a plug attached to the upper end of the arm, which plug enters the vent-aperture, as and for the purpose set forth.

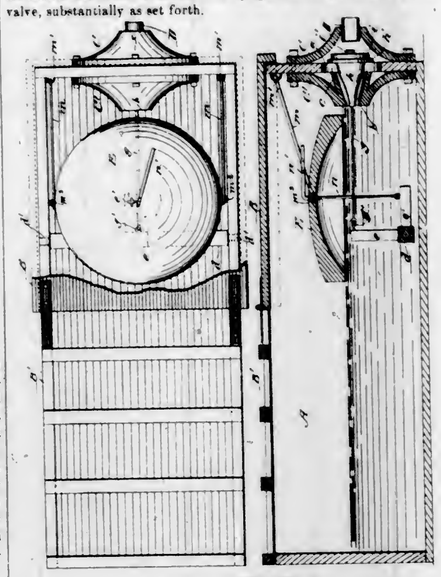
4. In a device of the character described, the combination, with an essentially L-shaped frame, the horizontal member whereof is provided with an opening near the vertical member, of a reservoir attached to the vertical member of the frame having one convexed end surface and provided with an inlet-aperture in the opposite end, a vent-aperture in its upper face, and an opening in its lower face over the opening in the frame, a pad of absorbent material extending from within the reservoir downward through the opening in its under face and essentially into the opening in the frame, a spring-arm secured at one end to the reservoir, curved downward below the lower edge thereof and extending upward beyond the upper edge, and a plug secured to the upper end of the arm and fitted to the vent-aperture, as and for the purpose set forth.

449,481. WATER-TROUGH. BERNHARD KOEPPE, Kearney, Nebr. Filed Dec. 19, 1890. Serial No. 375,176. (No model.)

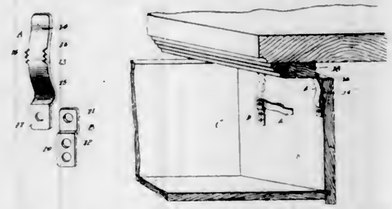
Claim.—1. The combination, with a water-trough apertured in its end wall and a water-supply pipe supported in a dished plate opposite the trough aperture, of an apertured plate having a valve-seat secured opposite the aperture of the trough within, a valve, a float, and mechanism which connects the valve and float, substantially as shown and described.

2. The combination, with a water-trough having an aperture, a centrally-perforated dished plate over the trough aperture, and a pipe for water-supply in said plate, of an aligning apertured dished plate having a flaring valve-seat on it, a valve which may engage the valve-seat, a float within the trough, which will be moved vertically by fluctuations of water-level in the trough, and a device which connects the float with the valve and is adapted to close the valve when water is at a maximum height in the trough, substantially as set forth.

3. The combination, with a water-trough apertured at one end, a slatted cover therefor, a dished and apertured plate which is secured over the inlet aperture in the trough, and an aligning dished and centrally-apertured plate within the trough, having a conical valve-seat projecting toward the trough aperture, of a valve which controls the passage for water into the trough, a float within the trough, rods that connect the float and trough, a transverse rock-shaft below the float, having two bell-crank arms, and bars that connect the float with the horizontal bell-crank arm and the upright bell-crank arm with the valve, substantially as set forth.



449,482. DRAWER-STOP. SAMUEL H. LEVY, Chicago, Ill. Filed Dec. 18, 1890. Serial No. 375,074. (No model.)



Claim.—1. As an improved article of manufacture, a drawer-stop consisting of a strip of spring metal bent, essentially, in the form of a compound curve, the central convex face of the strip being toothed, as and for the purpose specified.

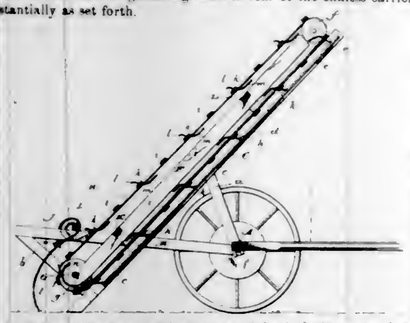
2. As an improved article of manufacture, a stop for drawers, consisting of a strip of spring metal bent, essentially, to the shape of a compound curve and provided upon its central convex face with teeth and at its lower end with a straight apertured shank-section, as and for the purpose set forth.

3. In a drawer-stop, the combination, with an angular bracket, of a strip of spring metal bent, essentially, to the shape of a compound curve provided with teeth upon its central convex surface, and a straight shank-section integral with its lower end, which shank-section is pivoted to the bracket, as and for the purpose set forth.

449,483. HAY RAKE AND LOADER. ALEXANDER B. LIVINGSTON, Clark's Fork, Idaho. Filed May 8, 1890. Serial No. 351,087. (No model.)

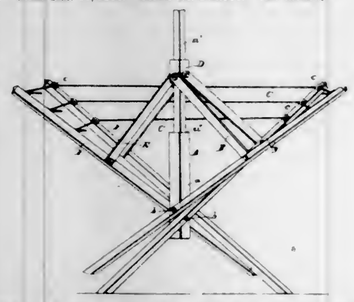
Claim.—1. The combination, in a hay-loader, of an inclined supporting-frame, a slatted platform C carried thereby, transverse shafts at the upper and lower ends of the frame having pulleys, endless belts connected to each other by transverse slats, carrying-teeth attached to said slats, a central bar F, having a curved lower end, spring-plates carried by the transverse slats so as to abut against the under side of

the bar F, and rake or gathering teeth in rear of the endless carrier, substantially as set forth.



2. The combination, in a hay rake and loader, of a supporting-frame constructed substantially as shown, and provided with a central bar F, having an upwardly-curved portion at its lower end, an inclined platform C beneath said guide-bars, transverse shafts located at the upper and lower ends of the frame, said shafts carrying a series of pulleys, an endless carrier made up of a series of belts and transverse slats, said slats carrying curved elevating-teeth *l* and on the under side spring-plates *m*, which extend in an opposite direction from the elevating-teeth, spring rake-teeth located rear of the endless carrier, and a driving-belt, substantially as shown, and for the purpose set forth.

449,484. CLOTHES-DRIER. GEORGE W. LLEWELLYN, Glen Moore, Pa. Filed Dec. 17, 1890. Serial No. 374,995. (No model.)



Claim.—The within-described clothes-drier, consisting of a vertical post A, having a lower portion *a* and a reduced upper portion *a'*, having a shoulder *a''* at the junction of said portions and angular in cross-section throughout its length, and the series of pieces B, constituting the legs and arms of the drier and pivoted near their lower ends to the post near the lower end and to the respective sides thereof, with the angular runner D fitted on part *a'* of the post, and the links E, pivoted by their upper ends to the sides of the runner and by their lower ends to the inner sides of pieces E above the pivotal points of connection of the latter to the post and extending tangentially to the runner when opened, and the cords or wires C, strung between the pieces E, substantially as described

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449,485. HORSE-TRAINING BLIND. BREWSTER A. LONG, Troy, Pa. Filed Oct. 4, 1890. Serial No. 367,132. (No model.)

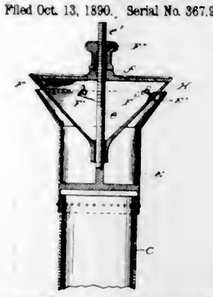


Claim.—1. In a training-blind, a main portion consisting of a straight longitudinal piece curved transversely, provided at its lower edge with a rearwardly-projected padded flange or supporting piece having its rear edge conformed to the contour of the front side of the animal's head just below the eyes and arranged and adapted at such rear edge to bear snugly against the animal's head, and provided with devices by which it may be secured in place, all substantially as and for the purposes set forth.

2. A training-blind, substantially as described, having a main piece or portion provided at its lower edge with a rearwardly-projected flange or portion and having along the edge of such flange or portion a cushion of fibrous-like material, whereby to fit closely against the face of the animal, and devices by which to secure the blind in place, substantially as set forth.

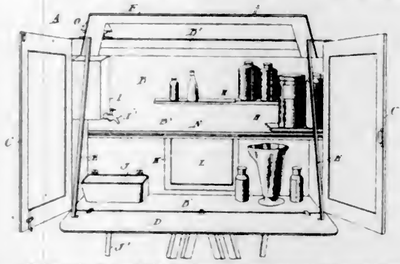
3. The improved training-blind herein described, consisting of the main portion A, made straight longitudinally and bent or curved laterally, the flange piece or portion B projected rearwardly from the lower edge of the piece A and having its rear edge conformed generally to the contour of the horse's face shortly below the eyes, the fibrous-like cushion secured along the said rear edge, the straps C, having loops C', and the straps D, all substantially as and for the purposes set forth.

449,486. DRAFT OR AIR FORCING DEVICE. GEORGE W. LORD, Boston, Mass. Filed Oct. 13, 1890. Serial No. 367,944. (No model.)



Claim.—In an air-draft apparatus, the combination, with air-forcing mechanism and an air-conducting pipe connected therewith and having a flaring delivery-mouth, of an immovable screw-spindle rigidly connected with the air-conducting pipe and rising through its flaring delivery-mouth, an axially-rotating funnel-shaped or conical cap having a screw-nut engaging the screw-spindle, whereby the rotation of the cap causes it to move vertically in the flaring mouth, a series of regulating-screws engaging the cap and the flaring delivery-mouth for evenly adjusting the former relatively to the latter, and a nut engaging the screw-spindle above and bearing against the top of the cap to lock the latter after adjustment, substantially as described.

449,487. PORTABLE DARK-ROOM. JAMES H. MARKLEY, Brooklyn, N. Y. Filed June 12, 1889. Serial No. 314,074. (No model.)



Claim.—1. A portable dark-room comprising a casing open at one side, hinged doors at its ends to close said side, an extension hinged to the bottom of the casing at its open side, and a hood-supporting frame hinged to the top of the casing at its open side, the said frame and extension being constructed to swing toward each other and be concealed by the said doors when closed, substantially as described.

2. A portable dark-room comprising a casing open at one side and provided in its opposite side with a colored-glass window, the hinged end doors closing the open side, the extension hinged to the bottom at the open side of the casing, and the hood-supporting frame hinged to the top of the casing at its open side, substantially as described.

3. A portable dark-room having the hood-supporting frame, doors for closing its open side, shelves for bottles, &c., a water-reservoir, and a tank hinged at the upper edge of the rear wall of the casing under the said reservoir, substantially as described.

4. A portable dark-room comprising a casing having an extension-bottom, a frame pivoted to the upper end of the said casing, rods hinged on the said extension-bottom and supporting the said frame,

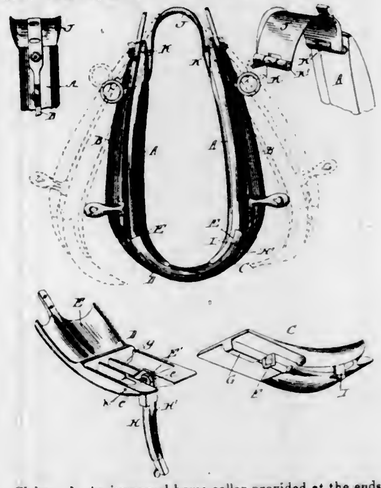
and a hood secured to the said frame and adapted to close the open face of the said casing, substantially as shown and described.

5. A portable dark-room comprising a casing having an extension-bottom, a frame pivoted to the upper end of the said casing, rods hinged on the said extension-bottom and supporting the said frame, a hood secured to the said frame and adapted to close the open face of the said casing, and means, substantially as described, for ventilating the interior of the said casing, as set forth.

6. A portable dark-room comprising a casing having an extension-bottom, a frame pivoted to the upper end of the said casing, rods hinged on the said extension-bottom and supporting the said frame, a hood secured to the said frame and adapted to close the open face of the said casing, and means, substantially as described, for supplying the said casing with fresh air, as set forth.

7. A portable dark-room comprising a casing having an extension bottom, shelves arranged in the said casing, doors adapted to close the face of the said casing, a pane of colored glass arranged in the back of the said casing, a water-tank secured in the said casing and provided with a faucet, a tray located below the said faucet and connected with a waste-pipe leading to the outside of the casing, a frame hinged to the upper end of the said casing, rods supporting the said frame from the said extension-bottom, and a hood secured to the said frame and adapted to close the face of the casing when the said doors are open, substantially as shown and described.

449,488. HORSE-COLLAR. SILAS T. MARLETTE, Niagara Falls, N. Y. Filed May 3, 1890. Serial No. 350,544. (No model.)



Claim.—1. An improved horse-collar provided at the ends of its sides with connection-pieces C and D, the connection D being provided with a socket *g* and a hook E, and the connection C being provided with a projection G to enter socket *g* and with a bearing F for engagement by the hook E. all substantially as and for the purposes set forth.

2. In a horse-collar, the combination of the connection-piece C, provided with a bearing F, the connection-piece D, and the fastening-bar pivoted to said piece D and provided with a hook E and side lugs *e*, substantially as set forth.

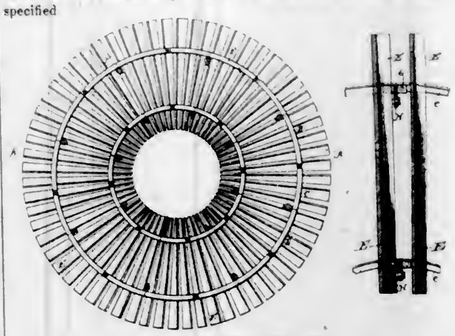
3. In a horse-collar, the combination of the connection-piece D, having a socket *g*, and connection-piece C, having a bearing F and a projection G to enter the socket *g*, the fastening-bar pivoted to the piece D and having a hook E, side lugs *e*, and handle H', and the spring-catch I, all substantially as and for the purposes set forth.

4. In a horse-collar, the combination of the side pieces A, the hames, the cap-piece, and the bolts hinged at their inner ends to the cap-piece, extended thence outward through the hames and secured, all substantially as and for the purposes set forth.

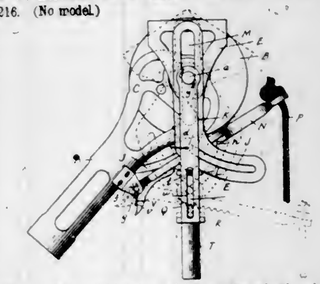
449,489. WIND-WHEEL. FLORY MILLER, Napoleon, Ohio. Filed Feb. 12, 1891. Serial No. 381,186. (No model.)

Claim.—1. A wind-wheel having the flanged rim-pieces provided with the inclined slots in the opposing edges thereof, the blades fitted in said slots, and bolts for drawing the opposing rim-pieces tightly against the edges of the blades, substantially as shown and described.

2. A sectional wind-wheel comprising the flanged rim-pieces provided with the inclined slots in their opposing edges, the blades fitted in said slots, the end pieces secured to the flanges of the rim-pieces and provided with the integral apertured projections, and the bolts for uniting the end pieces of one section to the end pieces of the adjoining wheel-sections, substantially as shown and described, for the purpose specified



449,490. GUARD FOR ELECTRIC-RAILWAY TROLLEYS. ANDREW W. MITCHELL, Boston, Mass. Filed Dec. 1, 1890. Serial No. 373,216. (No model.)



Claim.—1. The combination, with a trolley-wheel and two arms, a cross-bar connecting the arms together, each arm having a curved slot and a flange extending over the wheel, an arm at its side having a pin engaging with said curved slot, and a slot engaging with the journal-pin of the trolley-wheel, of a lever pivoted to the trolley-rod and engaging with the cross-bar of the flange-arms, for the purpose specified.

2. The combination, with the trolley-wheel and two arms, each having a curved slot and a flange extending over the wheel, an arm Q at its side pivoted to the journal-pin having a pin engaging with said curved slot, and a slot engaging with the journal-pin of the trolley-wheel, of a lever pivoted to the trolley-rod, a cross-bar on the flange-arms, provided with a downwardly-projecting pin, a cross-bar R on the arms Q, provided with a socket for said pin, and a spring, for the purpose specified.

3. The combination, with a trolley-wheel and two arms, a cross-bar connecting the arms together, each arm having a curved slot and a flange extending over the wheel, an arm Q at its side having a pin engaging with said curved slot, and a slot engaging with the journal-pin of the trolley-wheel, of a lever pivoted to the trolley-rod, provided with ratchet-teeth on its under side, the cross-bar on the flange-arms, having a sharp edge *r* for engagement with the ratchet-teeth, for the purpose specified.

449,491. SNAP-HOOK. WILLIAM T. MORRIS, Paris, Ark. Filed July 22, 1890. Serial No. 359,500. (No model.)

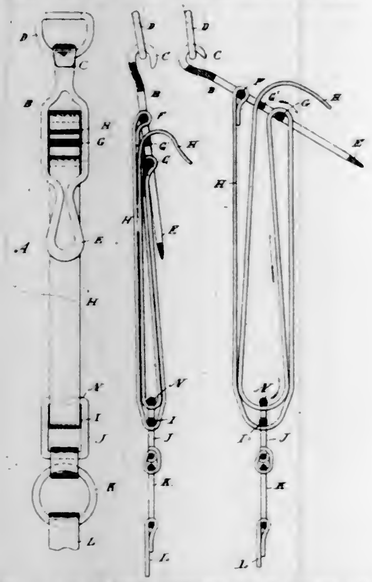


Claim.—1. A safety snap-hook consisting of a loop, a hook depending from the loop and having its end bent laterally and then in-

wardly toward and under the loop, and a spring secured to the body of the hook and having its free end projecting downward toward the outer member thereof, substantially as described.

2. A safety snap-hook consisting of the loop *d*, the downwardly-projecting body portion 1, having the upwardly-bent limb 2, the laterally-projecting limb *g*, and the terminal end portion i, projecting under the loop *d*, and the spring *m*, secured to the body portion, substantially as herein shown and described.

449,492. **GIRTH-FASTENER.** WILLIAM T. MCFARLANE, Stockton, Utah. Filed July 10, 1890. Serial No. 358,241. (No model.)



Claim.—1. A girth-fastener comprising an arm provided with a hook adapted to be hooked onto a saddle-tree, a strap secured by one end on said arm, and a frame separate and independent of and below said arm and having cross-bars under which passes the said strap, which latter also passes over cross-bars in said arm, substantially as shown and described.

2. A girth-fastener comprising a handled arm having a hook adapted to be hooked on the saddle-tree, and also provided with cross-bars, a strap secured by one end to one of the said cross-bars and adapted to pass over the other cross-bar, and a frame connected with the belly-band and provided with cross-bars under which passes the said strap, substantially as shown and described.

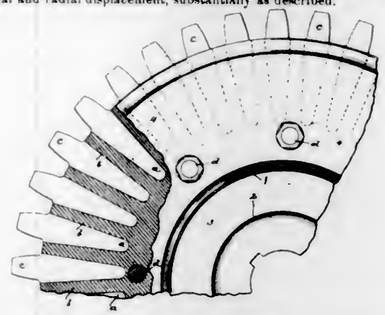
3. In a girth-fastener for general application, the combination, with a handled arm having cross-bars and a hook adapted to engage the saddle-tree or any other object, of a strap secured by one end to one of the said cross-bars of the said arm, a frame having cross-bars under which passes the said strap, which latter also passes over the second cross-bar on the said arm, and links for connecting the said frame with the belly-band, substantially as shown and described.

449,493. **REMOVABLE TOOTHED GEAR.** ROBERT D. NUTTALL, Allegheny, Pa. Filed Nov. 19, 1890. Serial No. 371,961. (No model.)

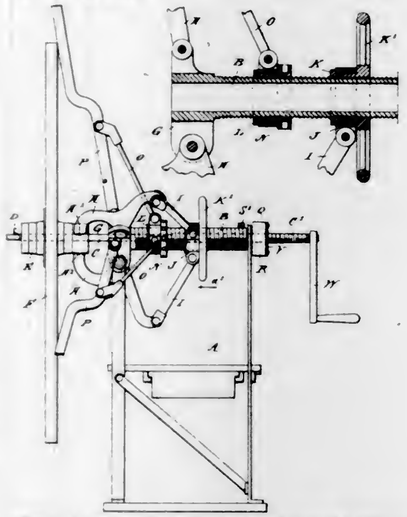
Claim.—1. A gear-wheel consisting of a core having peripheral open-sided kerfs or sockets containing laterally-removable teeth and a removable clamping-ring secured to said core and abutting against the edge of the socketed portion of each tooth, the teeth and clamping-ring being formed the one with a projecting portion and the other with a corresponding depressed portion, whereby the teeth and clamping-ring are interlocked and the teeth secured against radial and lateral displacement, substantially as described.

2. In a gear-wheel, the combination, with a core having peripheral open-sided kerfs and laterally-removable teeth with widened bases, of dished or depressed clamping-rings secured to the core and embracing the bases of said teeth, substantially as described.

3. A gear-wheel consisting of a core having open-sided peripheral kerfs or sockets with removable teeth, and a clamping ring or rings interlocking with the edges of said teeth and securing the same from lateral and radial displacement, substantially as described.



449,494. **HUB-BORING MACHINE.** THEOPHILE PAQUETTE and FREDERICK R. CHILD, Webster, Mass. Filed July 5, 1890. Serial No. 357,828. (No model.)



Claim.—1. The combination, with a boring-tool and a stationary externally-threaded tube, of alternating jaws and arms pivoted thereon, two nuts on said tube provided with loose bands or collars, and links connecting the jaws and arms with the respective collars, substantially as set forth.

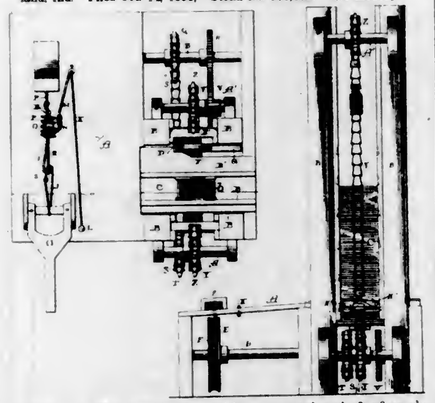
2. The combination, with the frame, the stationary externally-threaded tube mounted therein, and clamping-jaws pivoted to the front end of the tube and having an operating-nut traveling on said tube, of a nut and a screw-threaded boring-tool spindle passed through the nut and tube, substantially as set forth.

3. In a hub-boring machine, the combination, with a threaded tube, of arms pivoted to one outer end of the said tube and adapted to engage the face of the wheel, links pivotally connected with the said arms, a ring pivotally connected with the said links, and a nut adapted to screw on the said threaded tube and carrying the said ring, substantially as shown and described.

4. The combination, with the tube S, having the parallel longitudinally-projecting pins U on one end, of the two jaws or nut-sections T, between the adjacent edges of which the said two pins project, and the cam-arms T' on the peripheries of said jaws and lying in the planes thereof, the rotary casing R, turning on said tube and having internal cam-surfaces R' to operate on the outer surfaces of cam-arms T', and intermediate projections R^3 to engage the inner surfaces of said cam-arms, substantially as set forth.

5. A hub-boring machine comprising the frame A, the externally-threaded tube mounted between the frame-uprights, the short tube S, extending into inner end of the tube and provided with an annular flange on its outer end, the clamping jaws and arms pivoted on the outer end of the screw-threaded tube and the operating-nuts, the expansible nut comprising a casing R, turning on the flange S and having internal cams R' and projections R^3 and the jaws or nut-sections T within the casing R and having peripheral cam-arms T', substantially as set forth.

449,495. **COAL OR GRAIN ELEVATOR.** MILTON T. ROSE, Orland, Ind. Filed Oct. 14, 1890. Serial No. 368,133. (No model.)



Claim.—1. The combination, with an operating-shaft of an elevator apparatus having a drum and a rope which passes around the drum, of a catch connected to the outer end of the said rope and a stop which trips the said catch at a predetermined point, for the purpose shown and described.

2. The combination of the drum, a rope which passes around the drum, a catch connected to the outer end of the rope, a vehicle with which the catch is connected, and a tripping-rope rigidly connected at one end and its opposite end connected with a trip for releasing the catch when the end of the rope is reached, substantially as described.

3. A detaching device for the purpose described, connected to the end of an elevator-rope, consisting of a rod, which is connected at one end to the outer end of the said rope, a lever loosely connected at one end to the outer end of the said rod, a sliding spring-actuated block placed upon the said rod, which engages the free end of the said lever, and a tripping-stop, which operates the said block for releasing the free end of the lever, substantially as shown and described.

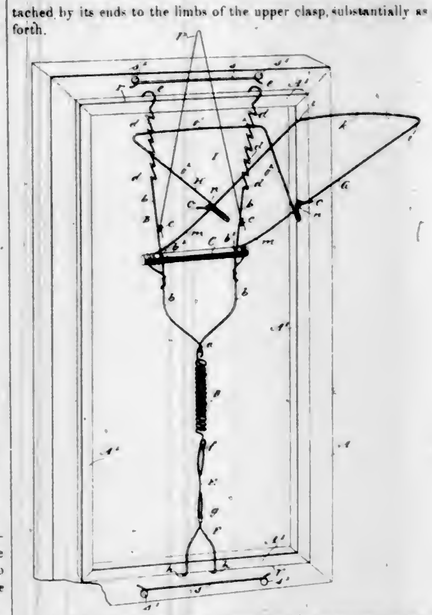
4. The combination of the uprights, the car which is placed between them, the mechanism for raising and lowering the car, the automatically-acting catches, which support the elevator at any desired height, and which overlap each other at their inner ends, a lever for operating the catches, a friction wheel and lever for regulating the descent of the car, and a rod connecting the friction-lever and the lever which operates the catches, combined to operate in the manner substantially as described.

5. In an elevator, the combination of the operating shaft D, the uprights, the car, wheels at the upper ends of the uprights, a sprocket and a gear wheel upon the shaft D, a shaft at the lower end of the uprights adjacent to the said operating-shaft having a gear-wheel, which engages the gear on the operating-shaft, and a sprocket-wheel, a shaft at the opposite lower end of the uprights carrying sprocket-wheels, vertical chains, which pass around the said wheels and are secured to the car, and a horizontal chain, which connects the lower sprocket-wheel and the said operating-shaft sprocket-wheel, substantially as shown and described.

449,496. **HANGER FOR PICTURE OR MIRROR FRAMES.** DAVID G. RULON, Monmouth, Ill. Filed Nov. 8, 1890. Serial No. 370,805. (No model.)

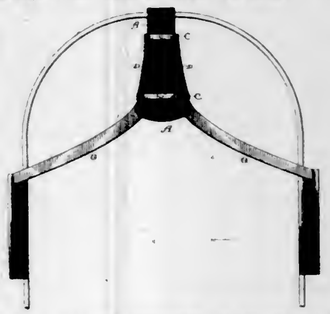
Claim.—1. A frame-hanger comprised of two furcated clasps having hooks on the ends of their limbs which will engage projections from the rear side of a frame, a spring and a link intermediate of the clasps and loosely connected thereto, a prop-piece loosely secured to one clasp and adapted to project at an angle therefrom, and a hanging cord or wire strand, substantially as set forth.

2. In a frame-hanger, the combination, with a furcated clasp having hooks on the ends of its limbs, which limbs are provided with series of ratchet-teeth, a spiral spring on the lower end of this clasp, a lower furcated clasp having hooks on the ends of its limbs, and a link between the clasps, of a prop-piece loosely secured to the upper clasp and adapted to diverge therefrom, a brace jointed to the prop-piece and engaging the teeth on the limbs, and a hanger wire or cord attached by its ends to the limbs of the upper clasp, substantially as set forth.



3. The combination, with a frame having projections on its rear side, of a hanger therefor comprised of a clasp having two limbs which are serrated and have hooks on their ends, a spring on the clasp, a link on the spring, a lower clasp on the link having limbs with hooks on their ends, a stay-bar on the upper clasp, a prop-piece on the stay-bar, a rocking brace on the prop-piece which engages with the serrations of the clasp-limbs, and a hanger cord or wire on the limbs of the upper clasp, substantially as set forth.

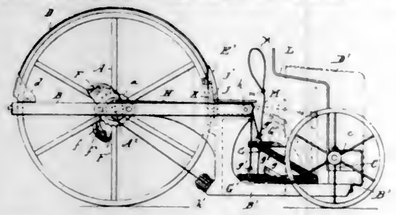
449,497. **WINKER ATTACHMENT.** MACK SANSOUCY, Kenosha, Wis., assignor to Lorenzo D. Jones and Louis Thiers, both of same place. Filed Sept. 8, 1890. Serial No. 364,382. (No model.)



Claim.—1. In a winker attachment, the combination, with a frame having transverse loops and a projection H, which extends laterally from the base of the frame, of the braces which are connected at their upper ends and placed over the said projection, and the strap A, which passes through the loops and outside of the projection and the upper ends of the braces, whereby the braces are held in place by the strap, substantially as shown.

2. In a winker attachment, the combination, with a frame having transverse loops, a projection H, which extends laterally from the base of the frame, and a projection at the lower end of the frame which extends laterally therefrom, of the braces which are connected at their upper ends and placed over the projection H and upon opposite sides of the said projection at the lower end of the frame, and the strap A, which passes through the said loops and outside of the said projections and the upper ends of the braces, whereby the braces are held in place by the said strap, substantially as shown and described.

449,498. VELOCIPEDE. ANDREW W. SCHEIDING, Turner's Falls, Mass. Filed July 29, 1890. Serial No. 360,281. (No model.)



Claim.—1. A velocipede comprising a frame, driving and steering wheels, a pawl-and ratchet operating mechanism, and two vertically-swinging foot-treadles connected with said pawls and constructed to lie in horizontal planes when the operator desires to stand on them and to be swung up into vertical position when the operator desires to push upon them in a forward direction with his feet when seated, substantially as set forth

2. A velocipede comprising the frame, the steering-wheels at the front end thereof, the axle A^3, having two pulleys F, each formed of spaced plates having connecting-pins f^*, the inner plates having extensions F', provided with spring-pressed pawls f on their inner faces, the driving-wheel A, having a hub loose on the axle and provided with two ratchet-wheels engaged by said pawls, treadles, and a flexible connection between the two axle-pulleys and the treadles, substantially as set forth.

3. The combination, with a velocipede having a seat E, provided with a back E' just in front of the main driving-wheel, of a depending brake K, pivoted at its upper end to the rear of the seat-back, a crank J between the back and brake to throw the latter against the periphery of the drive-wheel, and a rod J, projecting from the crank within reach of the operator, substantially as set forth.

4. A velocipede comprising a frame, a driving-wheel mounted in one end of the frame and having each end of its hub provided with a ratchet-wheel, a pair of wheels pivoted to the opposite end of the frame and provided with a steering-rod, pulleys journaled at each end of the driving-wheel hub, said pulleys having pawls thereon to engage the ratchet-wheel, a pair of treadles pivoted in the machine-frame, and a single continuous cable connecting the two treadles, said cable passing over suitable pulleys h h' h h' and around the pawl-pulleys, substantially as described.

5. In a velocipede, the operating-treadle G, having rearwardly-extending side pieces g, between which is pivoted a pedal G', a lug g', pivoted to the end of the outer side piece g and a similar longer lug g^3, pivoted to the outer side piece near its center, substantially as set forth.

6. In a velocipede, the combination, with the driving-wheel having each end of its hub provided with a ratchet-wheel, of pulleys journaled at each end of the driving-wheel hub and provided with pawls to engage the ratchet-wheels, treadles pivoted in the machine-frame and provided with pivoted pedals and pivoted lugs, rear and central lugs g' g^3, of different lengths, as shown, and a cable connecting the lugs of the treadles, said cable passing over suitable friction-pulleys and around the pawl-pulleys, substantially as described.

449,499. POCKET-KNIFE. WILLIAM SCHMACHTENBERG, New York, N. Y. Filed Dec. 11, 1890. Serial No. 374,303. (No model.)

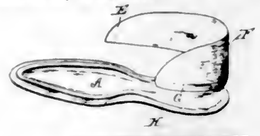


Claim.—1. The combination, with the side lining-plates of a knife-handle having a back plate between them and springs resting on the back plate, of a non-corrosive finishing-plate on the springs within and held in place by an intermediate lining-plate that is secured to the side lining-plates, substantially as set forth.

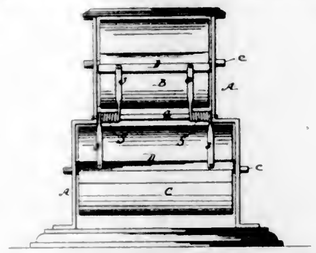
2. The combination, with two side-lining plates and an integral back plate, of an intermediate lining-plate engaged at one end with a lip on the back plate, blades held by a transverse rivet, springs for the blades which are engaged at one end by the blades and near the other end by a transverse key-pin, and said key-pin which passes through the lining-plates and presses the springs against the blades, substantially as set forth.

449,500. SHOE. GUSTAV SCHULTZ, New York, N. Y. Filed Dec. 4, 1890. Serial No. 373,555. (No model.)

Claim.—A shoe having its sole extending outward at its inner edge beyond the line of a normal sole and provided with a heel-stiffener, the inside of which is extended forward to the ball portion and terminates thereat, substantially as described.



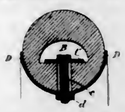
449,501. ROLL-PAPER HOLDER AND CUTTER. EZRA E. STANINGER, West Salem, Ill. Filed Dec. 19, 1890. Serial No. 375,270. (No model.)



Claim.—1. In a paper holder and cutter adapted to carry two rolls of paper one above the other, the combination of independent knives for said rolls, and springs common to both knives for keeping up a continuous pressure on them against both rolls of paper.

2. In a paper holder and cutter adapted to carry upper and lower rolls of paper of different widths, respectively, the combination, with the main frame and the independent knives D D, of the intermediate bar G and the coiled springs S S, having reverse extended terminal portions s s applied to carry and control said knives, essentially as shown and described.

449,502. RUBBER TIRE FOR VEHICLES. ALEXANDER STRAUS, New York, N. Y., assignor to the New York Belting and Packing Company, same place. Filed Oct. 22, 1890. Serial No. 368,907. (No model.)



Claim.—1. The described method of constructing rubber tires and attaching the same to the rims of wheels, said method consisting in molding the tire with an interior space or channel having a flat bottom, and a groove communicating with the said space or channel, inserting a holding-band with attached bolts into said channel, so that the bolts project through the groove and the band rests on the bottom of said channel and securing said bolts to the rim of the wheel, as set forth.

2. A rubber tire having an interior space of approximately semi-elliptical shape in cross-section, and a longitudinal groove extending from the straight side or bottom of said space or channel to the inner surface of the tire, substantially as described.

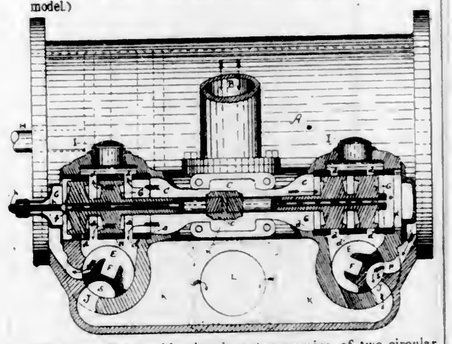
3. The combination of the tire formed with an interior space or channel and a longitudinal groove extending from the same to the inner surface of the tire, the bolding-band inserted in the said space or channel, and the bolts attached to said band, the said channel being of sufficient size to leave a space above the band for the purpose of cushioning, substantially as described.

4. A rubber tire having the shape in cross-section of a segment of a circle with a semicircular depression or rib of smaller diameter on the under side, said tire being provided with an interior channel and a groove extending through the depression or rib to said channel, substantially as described.

449,503. PROCESS OF BREWING MALT LIQUORS. BASIL W. VALENTIN, Birmingham, England, assignor, by direct and mesne assignments, to Frederick Twinch, Alfred E. J. Tovey, and Francis Wyatt, all of New York, N. Y. Filed May 6, 1890. Serial No. 350,784. (No specimens.) Patented in England Mar. 10, 1888, No. 3,754.

Claim.—The process herein described of treating unhopped malt liquors, &c., which consists in, first, heating the unhopped wort after it has left the mash-tun to a temperature below the boiling-point, but at which certain nitrogenous substances coagulate—namely, to a temperature about 180° Fahrenheit—and in then quickly cooling the wort to a temperature at which these nitrogenous substances become insoluble—namely, about 150° Fahrenheit—and in then spraying said wort and filtering through the grain, as specified.

449,504. VALVE FOR STEAM-ENGINES. JULIUS E. WATEROUS, Brantford, Canada. Filed May 16, 1890. Serial No. 352,111. (No model.)

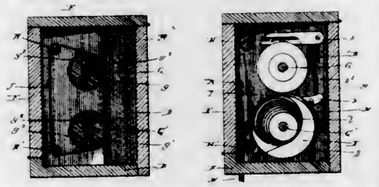


Claim.—1. The combination, in a steam-engine, of two circular exhaust-valves F F, placed in separate steam-chests E E, one at each end of the cylinder at right angles to its bore, with two admission and cut-off valves G G of the piston type contained in one steam-chest placed on the side of the cylinder immediately above and connected to and forming a part of the steam-chests containing the exhaust-valves, all substantially as set forth.

2. The combination of two hollow piston-valves G G, placed in one steam-chest C on the side of an engine-cylinder, each having two ports or steam-passages d d with and leading directly into the steam-chests E E, containing the exhaust-valves F F, in such a manner that the inflowing steam passes through the admission-valves into the steam-chests E, over the exhaust-valves F, and into the steam-port p on its way to the cylinder, substantially as described.

3. The combination of two admission and cut-off valves G G in one steam-chest placed on and operated by one spindle h, and connected to each other with an extension-nut e, fitted to the stem of the valves by a right and left hand screw in such a way that the valves can be extended or drawn together, as required, all substantially as set forth.

449,505. STATION CALL AND SIGNAL. ABRAM A. WEAVER and JOHN W. BROOKS, Warrensburg, Mo. Filed Nov. 8, 1890. Serial No. 370,788. (No model.)



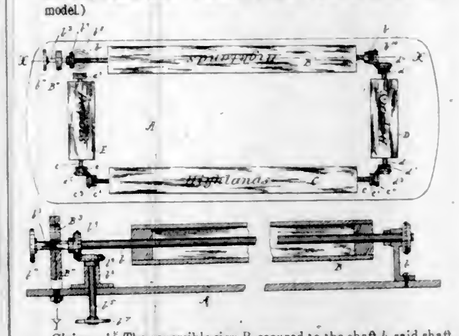
Claim.—1. In a station-indicator, the combination, with the name-strip and the name-strip-operating mechanism, of an alarm and a releasing device to be operated on by the name-strip-operating mechanism and provided with an arm which operates on the escapement of the alarm-movement, substantially as described.

2. In a station-indicator, the combination, with the name-strip and name-strip-operating mechanism, of the alarm, the rod Q, having an arm to engage with the escapement of the alarm-movement, and the bar R, in contact with the rod Q and adapted to be operated on by the name-strip-operating mechanism, substantially as described, for the purpose specified.

3. In a station-indicator, the combination, with the shafts and means for operating one of the shafts, of a name-strip having the names printed on both sides thereof and rollers having the ends of the name-strip connected therewith and adapted to be slipped on or off the said shafts and adapted to be fastened to the said shafts, so as to revolve therewith, substantially as set forth.

4. In a station-indicator, the combination of the shafts G and G', mechanism for operating shaft G, the removable spool adapted to be held on the said shafts to turn therewith, the name-strip printed on both sides, the brake-wheels on the shafts, and the brake-shoes connected and caused to press upon the brake-wheels by a spring, substantially as set forth.

449,506. REVERSIBLE SIGN FOR HORSE-CARS. FREDERIC E. WEBB, Boston, Mass. Filed Dec. 9, 1890. Serial No. 374,104. (No model.)



Claim.—1. The reversible sign B, secured to the shaft b, said shaft being loosely journaled in one end in the bearing b', and having its other end b^3 made square and vertically adjustable, combined with the bracket B'', having the recess B' for receiving the square portion of the said spindle, and the enlarged perforation B^3, into which the spindle is raised while being turned for adjusting or reversing the sign, substantially as and for the purpose set forth.

2. The reversible sign B and its spindle b, secured together, said spindle being loosely journaled in one end in the bearing b', and having its other end square and adapted to be locked and vertically adjustable in the bracket B'', having the recess B' and enlarged perforation B^3, as described, in combination with the gear b^3, secured to the spindle b, and the gear b^5, meshing in the former and secured to the spindle b^5, said spindle being journaled in the bearing b^4, capable of longitudinal adjustment therein and provided with a hand-wheel or handle b^7, substantially as and for the purpose set forth.

3. The reversible sign B and its spindle b, secured together, said spindle being loosely journaled in one end in the bearing b', and adapted to be vertically adjustable in its other end in the bracket B'', in combination with indicators b^4 b^4 at the end of the sign corresponding to the lettering of the faces of said sign, substantially as and for the purpose set forth.

4. The reversible sign B and its spindle b, secured together, said spindle being loosely journaled in one end in the bearing b', and adapted to be vertically adjustable in its other end in the perforated recessed bracket B' B'' B^3, in combination with one or more reversible signs C D E, having spindles journaled in bearings, said spindles being all positively geared together, substantially as and for the purpose set forth.

449,507. GAS-ENGINE. GEORGE J. WEBER, Kansas City, Mo. Filed Apr. 8, 1890. Serial No. 347,088. (No model.)

Claim.—1. In a gas-engine, the combination of the drive-shaft 14, double right and left hand screw 15 on the shaft, pivoted rocking lever 16, having its upper end engaging the screw, and having friction-rollers on its lower end for the purpose of operating valve-gear, substantially as described, and for the purpose set forth.

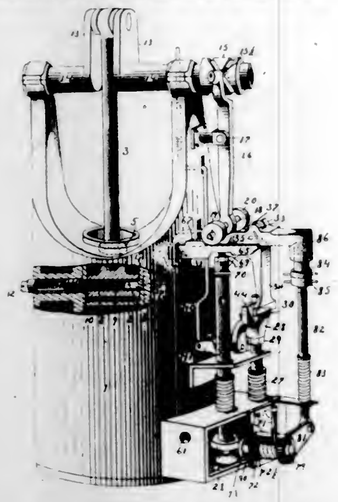
2. In a gas-engine, the combination of the main shaft 14, double screw located thereon, rocking lever engaging the double screw at its upper end, friction-rollers journaled to the lower end of the rocking lever, and pivoted arms with which said rollers engage to operate valve-gear.

3. In a gas-engine, the combination of the main shaft 14, double screw on the shaft, rocking lever engaging the double screw at its upper end, friction-roller 20, journaled to the lower end of the rocking lever, and a pivoted arm 31, having a V-shaped projection 33, against which the roller bears in order to depress the same, substantially as described, and for the purpose set forth.

4. In a gas-engine, the combination of the rocking lever, means for operating the same, roller 20 on the lower end of the rocking lever, pivoted arm 31, and a weighted arm 34, pivoted to the arm 31 for the purpose of operating valve-gear, substantially as described, and for the purpose set forth.

5. In a gas-engine, the combination of the rocking lever, means

for operating the same, roller 20 on the lower end of the rocking lever, pivoted arm 31, V-shaped projection 33 on the arm 31, weighted arm 34, pivoted to the arm 31, projection 37 on the arm 34, against which the roller 37 bears in order to throw the lower end of the arm 34 into contact with a collar 28 on the rod 26 of the gas-admission valve 25, in order to depress said rod and valve and to admit a charge of gas, substantially as described, and for the purpose set forth.



6. In a gas-engine, the combination of the pivoted arm 31, means for depressing the same, weighted arm 34, pivoted to the arm 31, means for vibrating the arm 34 and throwing it into contact with an adjustable shoulder 28 on a rod 26, said rod being connected to a gas-supply valve 25, and a spring on said rod for holding the valve in its closed position, substantially as described, and for the purpose set forth.

7. In a gas-engine, the combination of the weighted arm 34, having a pivoted support, valve-rod 26, having an adjustable collar 28, and a pivoted dog 44, which may be automatically thrown into position to prevent the arm 34 from engaging the collar 28, substantially as described, and for the purpose set forth.

8. In a gas-engine, the combination of the arm 34, having a pivoted support, valve-rod 26, having an adjustable collar 28, a dog 44, secured to a pivoted shaft 42, crank-arm 41 on said shaft, and a rod 40, connecting the crank-arm 41 with the engine-governor, whereby the dog 44 may be automatically thrown into position to prevent the arm 34 from engaging the collar 28 on the valve-rod 26, substantially as described, and for the purpose set forth.

9. In a gas-engine, the combination of the governor 39, dog 44, rod 40, connecting the dog with the governor, collar 51 on the governor-frame having a pin 53, and a spring 55 for raising the collar 51 and causing the pin 53 on the same to engage a collar 56 on the rod 40, causing said rod to rise and thus operate the dog 44, substantially as described, and for the purpose set forth.

10. In a gas-engine, the combination of the collar 51 on the governor-frame, spring 55 for raising the collar, lever 48, pivoted to the collar, pulley 47 on the outer end of the lever, pulley 49 on the governor-frame, pulley 45 on the engine's drive-shaft, and a belt 46, traveling on all said pulleys, whereby the tension of the same on the pulley 47 will cause the lever 48 to hold the collar 51 in its normal position, substantially as described, and for the purpose set forth.

11. In a gas-engine, the combination of the pivoted arm 31, means for depressing the same, a rotary disk 73, situated in the chamber 23, ignition-valves 74, located in the disk, and an adjustable rod 82, connecting the disk with the arm 31, whereby the depression of said arm will cause said disk to rotate, substantially as described, and for the purpose set forth.

12. In a gas-engine, the combination of the main shaft, the ignition-tube, the disk 73, secured to a shaft 79, valves 74, located in said disk for closing said tube, arm 81, secured to the opposite end of the shaft 79, a spring 80, interposed between the arm 81 and the shaft-bearing, and a pivoted arm connected to arm 81 and adapted to receive motion from the main shaft, substantially as described, and for the purpose set forth.

13. In a gas-engine, the combination of the bonnet 72½, having an opening 72 for the admission of gas to a tube 71, a rotary disk 73, having an opening 78, and valves 74 in the disk for closing the opening 72, substantially as described, and for the purpose set forth.

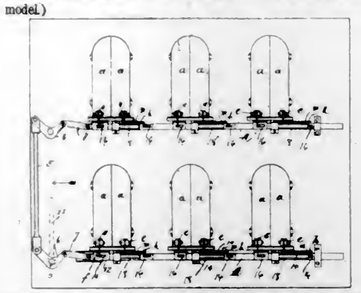
14. In a gas-engine, the combination of the bonnet 72½, valve secured to the bonnet, and an opening 90, surrounding the bonnet, said opening being for the circulation of water to prevent the same from becoming overheated, substantially as described, and for the purpose set forth.

15. In a gas-engine, the combination of the bonnet 72½, and a valve secured to the bonnet, said bonnet having an opening 87 for the lubrication of said valve, substantially as described, and for the purpose set forth.

16. In a gas-engine, the combination of the exhaust-valve 62, rod 63, connected to said valve, spring 64 on the rod for holding the valve in its closed position, pivoted arm 65, having a projection 67 on its upper side, and an adjustable collar on its under side, whereby when said arm 65 is depressed said rod will be depressed and the exhaust-valve opened, substantially as described, and for the purpose set forth.

17. In a gas-engine, the cylinder having openings within the same for the circulation of water and a yielding substance placed in said openings, whereby if the water should freeze such substances would yield and thus prevent the cylinder from breaking, substantially as described, and for the purpose set forth.

449,508. SHUTTER-WORKER. CHARLES R. WELLS and BENJAMIN K. LEWIS, Lynn, Mass. Filed Apr. 29, 1890. Serial No. 349,886. (No model.)



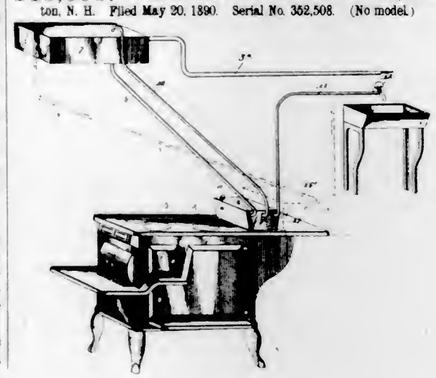
Claim.—1. In combination, the pair of shutters, a bar A for operating the members of the pair simultaneously in opposite directions, the fixed cam, and pivoted cams on the bar A, substantially as described.

2. In combination, the series of shutters, a bar A sliding longitudinally for operating said shutters, and the cams for operating the shutters from the bar, said cams being carried by supports 12, arranged to slide on the bar A, substantially as described.

3. In combination, the two series of shutters located in different horizontal planes, a bar A for each series with cam connections to the shutters, and the operating connections, as 5, 6, and 7, between the bars A of the two series, whereby the operating of one bar will move the other simultaneously, substantially as described.

4. In combination, the shutter, the sliding bar A, the pivoted cam 10, carried thereby and engaging with the shutter-bolt, and pin *m* for moving the cam on its pivot, substantially as described.

449,509. WATER-HEATING DEVICE. ROYAL P. WHITE, Littleton, N. H. Filed May 20, 1890. Serial No. 352,508. (No model.)

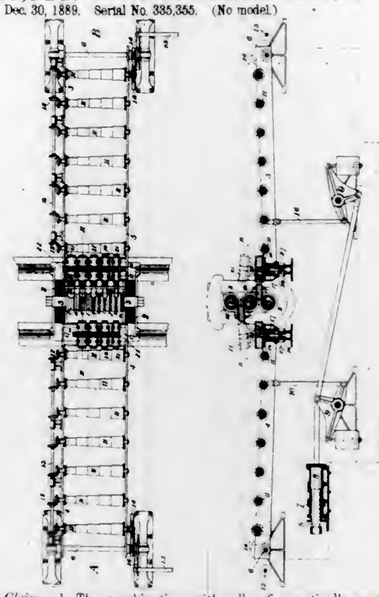


Claim.—The combination, with the stove, of a movable boiler inserted therein and provided with a draw-off cock or pipe and with a series of transversely-disposed fire-tubes, a supply-tank located near the boiler, a feed-pipe leading from the lower end of the supply-tank and terminating within and near the bottom of the boiler, and a pressure-pipe leading from the upper end of the boiler to that of the tank, substantially as specified.

449,510. PROCESS OF MANUFACTURING CEMENT. GEORGE WILLIAMS, Winnipeg, Canada. Filed Nov. 13, 1890. Serial No. 371,348. (No specimens.)

Claim.—The process of making hydraulic cement, which consists in reducing carbonate of lime to a powder by steam, under pressure, produced from a solution of silicate of soda and water in the proportions named, adding to the powder so produced alumina and silex and a thin paste of chloride of calcium, unslaked lime, and warm water, molding it into convenient forms, which are burned to a white heat, so as to produce a clinker, which is then ground to a fine condition, all substantially as described.

449,511. ROLLING-MILL. HENRY AIKEN, Pittsburg, Pa. Filed Dec. 30, 1889. Serial No. 335,355. (No model.)



Claim.—1. The combination, with rolls, of a vertically-movable feed-table adapted to be used in conjunction therewith and a guide situate on the feed-table and movable laterally thereon, substantially as and for the purposes described.

2. The combination, with rolls, of stationary guides opposite the passes thereof and turning guides which are movable laterally into register with the stationary guides, substantially as and for the purposes described.

3. The combination, with rolls, of a series of laterally-movable guides set on opposite sides of the rolls, and mechanism connected therewith and adapted to shift said guides respectively in opposite directions, substantially as and for the purposes described.

4. The combination, with rolls, of vertically-movable feed tables on opposite sides of the rolls, guides carried by each of said tables, and mechanism connected with the guides and adapted to shift the same laterally in respectively opposite directions as the tables are moved, substantially as and for the purposes described.

5. The combination, with the rolls, of a vertically-movable feed-table, guides mounted on the table and laterally movable thereon, and a mechanical connection between said guides and a point off the table, whereby vertical motion of the table will shift the guides laterally, substantially as and for the purposes described.

6. The combination, with rolls, of a laterally-sliding carriage set opposite thereto, turning guides mounted thereon, a rack, pinions connecting the guides and rack, and mechanism for moving the carriage laterally, whereby on such lateral motion the guides will be shifted and by action of the rack and pinions will be turned, substantially as and for the purposes described.

7. The combination of rolls, stationary guides opposite to the passes thereof, a series of laterally-movable guides, and mechanism connected therewith and adapted to shift said movable guides laterally into register with the stationary guides and to transfer the metal to the several roll-passes, substantially as and for the purposes described.

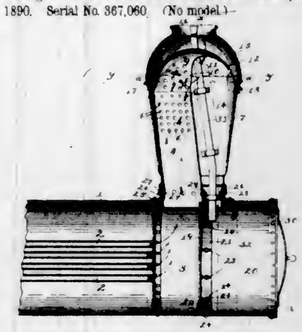
8. The combination, with rolls, of vertically-movable feed-tables on opposite sides of the rolls, guides carried by said tables, and mechanism connected with the guides and adapted to turn and shift the same laterally in respectively opposite directions as the tables are moved, substantially as and for the purposes described.

9. The combination, with rolls, of a vertically-movable feed-table, a laterally-movable carriage mounted thereon, turning guides on the carriage, a mechanical connection, substantially as described, between the carriage and a point off the table, whereby when the table is moved vertically the carriage will be shifted automatically, and gearing by which on shifting the carriage the guides will be turned, substantially as and for the purposes described.

10. The combination, with three-high rolls having vertically-movable feed-tables on both sides thereof, of stationary guides at the upper passes on one side of the rolls and at the lower passes on the other side, and laterally-movable guides carried by the table and adapted to shift the metal and to deliver it to the stationary guides, substantially as and for the purposes described.

11. The combination, with the feed-table having driven feed-rollers, of a roller journaled in bearings movable toward the feed-rollers to engage the metal thereon, substantially as and for the purposes described.

449,512. SPARK-ARRESTER. GEORGE R. ANDERSON, Roanoke, Va., assignor of one-half to Daniel Richardson, same place. Filed Oct. 4, 1890. Serial No. 367,060. (No model.)

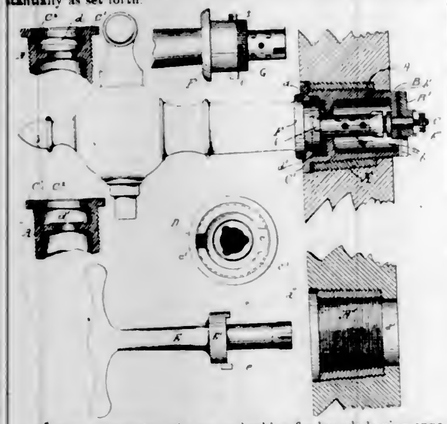


Claim.—1. In a spark-arrester, the boiler, an adjustable diaphragm having a flange 21, and means whereby the said diaphragm may be adjusted longitudinally within the said boiler dividing the exhaust-compartment from the cinder-box, the size of the exhaust-compartment being regulated by the adjustment of said diaphragm, the smoke-stack communicating with both the exhaust-compartment and the cinder-box, the deflector in the smoke-stack to deflect the cinders and sparks as they ascend the smoke-stack from the exhaust-compartment into the cinder-box, the pipe 33, arranged within the smoke-stack, the lower end of the said pipe opening into the cinder-box, and the upper end thereof being secured rigidly to the inner face of the smoke-stack and opening through the upper end of the same, so as to be inclosed by the latter, and to form an unobstructed outlet for all gases which may accumulate in the cinder-box, substantially as described.

2. In a spark-arrester, the boiler having an adjustable diaphragm dividing the exhaust-compartment from the cinder-box, the smoke-stack communicating with the exhaust-compartment and the cinder-box, the said smoke-stack comprising an inclosing case opening into the cinder-box, a smoke-stack proper situated within the said inclosing case and communicating with the exhaust-chamber, perforations 6 in the sides of the said smoke-stack proper, the deflector curved over the smoke-stack and provided with the perforations 13, and having its sides cut away, as shown at 11, to allow the smoke and gases to pass upward, but to deflect the sparks and cinders down through the inclosing case into the cinder-box, substantially as described.

449,513. FAUCET FOR BARRELS. MARK ANTHONY, Berkeley, assignor to the Golden Gate Faucet Company, San Francisco, Cal. Filed Mar. 29, 1890. Serial No. 345,846. (No model.)

Claim.—1. The combination of a barrel having the bung-hole thereof threaded and provided with an annular cut-away portion terminating at a point removed from the inner surface bordering the bung-hole and forming an annular seat, and a thimble provided with exterior and interior threads, said thimble fitted in the cut-away portion and resting upon the annular seat and of less length than the cut-away portion, thus leaving the outer and inner edges of the barrel extending beyond the corresponding ends of the thimble, and a bushing having exterior threads throughout its length for a distance corresponding with the threads of the thimble, and also provided at its outer end with an annular flange resting upon the top of the thimble and against the contiguous surface of the barrel which borders the bung-bole, substantially as set forth.



2. The combination of a tap or bushing for barrels having opposite narrow and wide semicircular grooves, said grooves provided with diametrically-opposite openings intersecting the same, one of said openings being wider than the other, and a faucet provided with opposite lugs, the lugs being of different widths, so as to correspond to the varying widths of the openings intersecting the grooves, substantially as set forth.

3. The combination of a tap or bushing for barrels having opposite narrow and wide semicircular grooves, said grooves provided with diametrically-opposite openings intersecting the same, one of said openings being wider than the other, and an operating-key having a laterally-projecting lug corresponding to the narrow opening intersecting one of the semicircular grooves, substantially as set forth.

4. The combination, with a tap or bushing provided with an interior seat and also having opposite narrow and wide semicircular grooves, said grooves provided with diametrically-opposite openings intersecting the same, the openings being of varying widths, of an operating-key having a laterally-projecting lug corresponding to the narrow opening and an opposite foot or projection which bears upon the seat of the bushing, substantially as set forth.

5. The combination, with a tap or bushing provided with an interior seat having an annular ridge, and also having opposite narrow and wide semicircular grooves, said grooves provided with diametrically-opposite openings intersecting the same, said openings being of varying widths, of an operating-key having a laterally-projecting lug corresponding to the narrow opening, and an opposite foot or projection which bears upon the seat and is guided by the annular ridges thereof, substantially as set forth.

6. The combination of a tap or bushing for barrels having opposite narrow and wide semicircular inclined grooves, said grooves provided with diametrically-opposite openings, one of said openings being wider than the other, and an operating-faucet provided with lateral oppositely inclined or beveled lugs of varying widths, so as to correspond to the varying widths of the openings, substantially as set forth.

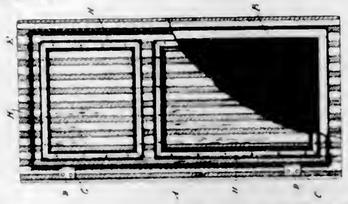
7. The combination of a valve and valve-spindle, a bushing having opposite narrow and wide semicircular inclined grooves, said grooves provided with diametrically-opposite openings, one of said openings being wider than the other, and an operating-faucet adapted to engage the valve-spindle and provided with lateral oppositely inclined or beveled lugs of varying widths, so as to correspond to the varying widths of the openings, substantially as set forth.

8. The combination of a tap or bushing for barrels having opposite narrow and wide semicircular inclined grooves, said grooves provided with diametrically-opposite openings, one of said openings being wider than the other, an operating-faucet provided with lateral oppositely inclined or beveled lugs of varying widths, so as to correspond to the varying widths of the openings, and a washer upon the reduced end of the faucet adapted to be compressed in the semicircular grooves as the faucet is turned, substantially as set forth.

9. The combination of a valve and valve-spindle, a bushing having opposite narrow and wide semicircular inclining grooves, said grooves provided with diametrically-opposite openings, one of said openings being wider than the other, an operating-faucet adapted to engage the valve-spindle and provided with lateral oppositely inclined or beveled lugs of varying widths, so as to correspond to the varying widths of the openings, and a washer fitted in the inner reduced end of the faucet and adapted to be compressed in the semicircular groove as said faucet is turned, substantially as set forth.

10. The combination, with a tap or bushing for barrels having opposite narrow and wide semicircular grooves, said grooves provided with diametrically-opposite openings intersecting the same, one of said openings being wider than the other, and also provided at its outer end with an inwardly and outwardly extending flange, the former on a plane below the plane of the outer portion of the flange and forming the outer bordering surface of the grooves, of a faucet provided with opposite lugs of different widths, so as to correspond to the varying widths of the openings intersecting the grooves, substantially as set forth.

449,514. DOOR OR WINDOW SCREEN ATTACHMENT. MARIAM A. BALDWIN, Pueblo, Colo. Filed Apr. 17, 1890. Serial No. 348,350. (No model.)



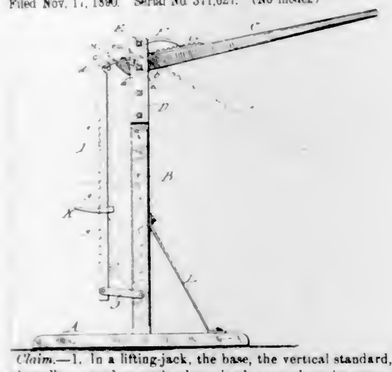
Claim.—1 The combination, with a door or window screen, of a fabric casing inclosing the said screen and strips secured to the screen on opposite sides thereof and outside of the casing, substantially as and for the purpose set forth.

2. The combination, with a door or window screen, of a fabric casing inclosing the said screen and having flanges on its ends and sides, said flanges forming weather-strips, and strips secured to the opposite sides of the screen within the frame and outside of the casing, substantially as herein shown and described.

3. The combination, with a door or window screen, of the fabric casing A, inclosing the screen and provided with flanges on its sides and ends, the strips H on opposite sides of the casing within the screen-frame, and the split nails I for securing the strips in place, substantially as described

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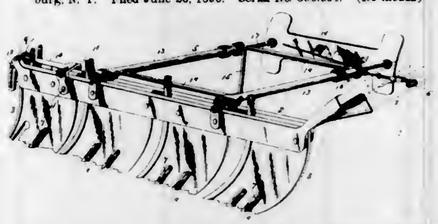
449,515. LIFTING-JACK. HARRISON BILLINGS, Jamestown, N. Y. Filed Nov. 17, 1890. Serial No. 371,627. (No model.)



Claim.—1. In a lifting-jack, the base, the vertical standard, and the pivotally-secured operating-lever having a rack on its upper side, in combination with a vertically-disposed ratchet-bar suspended from the end of the lever, the links upon each side of the standard, pivotally secured thereto and also to the lower end of the ratchet-bar, a step mounted upon the ratchet-bar, having a hole through which said bar passes, and a retaining-pawl for the operating-lever, substantially as herein described.

2. An improved lifting-jack consisting of a base, a vertical standard fixed thereto, the plates D, bolted to the upper end of the standard and extending beyond its top, the operating-lever pivoted between said plates, having a rack-plate secured to its upper surface, a plate H, also secured to said surface, projecting beyond the front of the lever and formed with an eye *c*, a pawl pivotally hung between the plates D and adapted to engage the rack-plate on the lever, a bar suspended by a hook from the end of the plate H, and having its front face formed with ratchet-teeth, two parallel links at the lower end of the bar pivotally secured thereto and to the standard, and a step on the ratchet-bar, having an opening through which the bar passes, substantially as herein described.

449,516. ICE CUTTER OR PLOW. HENRY BODENSTEIN, Staatsburg, N. Y. Filed June 26, 1890. Serial No. 356,851. (No model.)



Claim.—1. In an ice plow or cutter, the combination, with the frame, of the transverse bars or tubes, the longitudinal and inclined brace-bars, the marker having the rods adjustable with relation to the said bars or tubes, the pivoted rod for engaging the marker proper to retain the same at a desired point, and the handle or lever for throwing the marker to opposite sides of the frame.

2. In an ice plow or cutter, the combination, with the frame having the perforated lugs at the front end, of the bar having the lugs at its inner end pivoted to the frame and the arm at its front end provided with a series of openings to receive a bolt or pin and lugs on its upper side for attachment of the draft-animal, substantially as described.

449,517. CUTTER FOR ICE-PLOWS. HENRY BODENSTEIN, Staatsburg, N. Y. Filed June 26, 1890. Serial No. 356,852. (No model.)



Claim.—1. A cutter or blade for ice-plows, having a series of oblong throats having their side walls beveled the full length thereof, teeth fitting in said throats and having their upper ends split, forming lips, and screws passing through said lips for securing the teeth in the throats, said teeth being thicker than the blade and having their lower ends inclined to provide the front sharp cutting-edge, as shown.

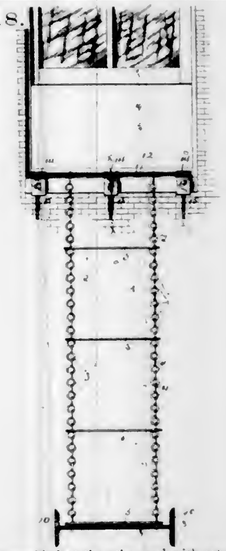
2. A cutter or blade for ice-plows, consisting of the blade proper having a series of oblong or rectangular throats inclined with reference to the blade, oblong teeth thicker than the blade fitting in said throats and having their upper ends split or bifurcated and their lower ends inclined to form a cutting-edge, and screws or bolts engaging the split ends of the teeth to secure them in the blade, as stated.

449,518. FIRE-ESCAPE OR CHAIN LADDER. NATHANIEL BUTTERFIELD, Monroe, Wis. Filed Nov. 20, 1890. Serial No. 372,095. (No model.)

Claim.—The combination, with a chain ladder, of the rod 12, passing through the links, and the approximately U-shaped clips arranged at intervals on the rod and provided at one end with eyes to receive

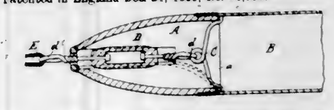


449,518.



the rod and provided at the other end with set-screws adapted to engage a window-sill or the like, substantially as described.

449,519. ARTIFICIAL FISHING-BAIT. MORRIS CARSWELL, Glasgow, Scotland. Filed Mar. 1, 1890. Serial No. 342,227. (No model.) Patented in England Dec. 21, 1889, No. 20,559.



Claim.—In a minnow or other like spinning bait, the combination of a head and body secured together, a cross-bar extending entirely across the inside of and secured at the rear of said head, and a swivel connected with said cross-bar, substantially as specified.

449,520. BENZO-RHODAMINE. MAURICE CERESOLE, Neuville, France, assignor to the Badische Anilin and Soda Fabrik, Ludwigshafen, Germany. Filed Oct. 9, 1890. Serial No. 367,580. (Specimens.)

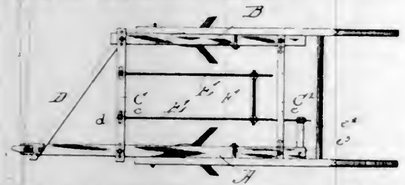
Claim.—As a new article of manufacture, the hereinbefore-described red dye-stuff benzo-rhodamine, which is characterized by the following properties: It is soluble in cold water, more soluble in hot, readily soluble, even when slightly impure, in water containing a little hydrochloric acid, readily soluble in alcohol, the red solution showing the striking yellowish-orange fluorescence, insoluble in ether and benzine, soluble in concentrated sulphuric acid with an orange-yellow color, and in hydrochloric acid giving a scarlet-red solution.

449,521. CUTTER-BAR. GEORGE B. CLARK, Bethesda, Ohio. Filed Oct. 25, 1890. Serial No. 369,334. (No model.)



Claim.—The fastening and tightening device for mower and harvester knives, comprising the longitudinal bar or plate D, adjustably pivoted at one end to the knife-bar and provided at its intermediate portion with the transverse marginal slots *f*, in combination with the knife-bar having the headed pins or studs which engage and lock the knives in position, said studs or pins registering with and adapted to enter said perforations or slots, and means for locking the parts in such adjustment, substantially as specified.

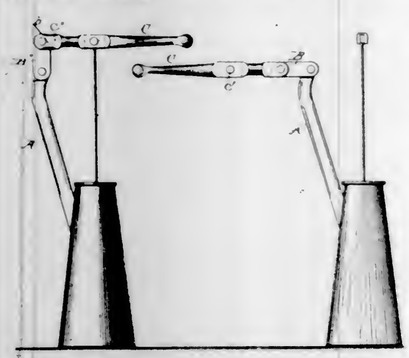
449,522. CULTIVATOR. WILLIAM S. COOK, Jackson, Ga. Filed Dec. 24, 1890. Serial No. 375,761. (No model.)



Claim.—1. In a device of the class specified, the beam A, having a laterally-extending bar secured thereto and the fender-plate partially secured to said bar and extending backwardly, carrying on its back end an elongation reduced in size, and the bracket secured to the back end of a plow and having a vertically-slot-looped portion wherein the said elongated reduced portion of the fender-plate works, its downward motion being limited by the bolt e' passing through said slot, all combined, arranged, and operating substantially as and for the purpose specified.

2. In a device of the class specified, the beams A and B, held relatively stationary and having a cross-bar C, and the plates E, depending from said cross-bar, their back ends being held relatively stationary by means of a bolt F, secured at each end to one of said plates, and the hanger or bracket e^3, substantially as shown and described, for the purpose specified.

449,523. CHURN. JAMES H. COOKUS, Cameron, Mo., assignor of one-half to William H. Lang, same place. Filed Aug. 7, 1890. Serial No. 361,395. (No model.)



Claim.—The combination, with a churn-body, of the standard mounted thereon, the knuckle-section B, pivotally secured to the standard and formed with the inclined locking end b^2, adapted to automatically lock and support the operating-lever in a horizontal position when the latter is swung outward, and the operating-lever having the central slot pivoted to the locking end of the knuckle and formed with the inclined bearing-seat c, adapted to engage with the inclined locking end b of the pivoted knuckle-section B, substantially as and for the purpose set forth.

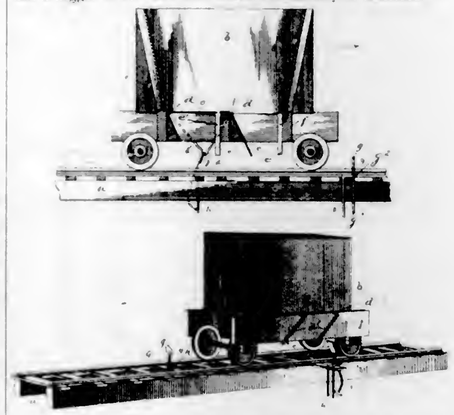
449,524. DUMPING-CAR. WILLIAM T. COOPER, Nashville, Tenn. Filed Oct. 18, 1890. Serial No. 368,510. (No model.)

Claim.—1. A dumping-car having the vertically-swinging bottom door pivoted at one transverse edge, the vertical trigger beneath the car, pivoted near its upper end to a beam thereof, with its lower end projecting below the car to engage a trip on the track to swing the trigger, the upper end of said trip being arranged to swing beneath the free edge of the door and uphold the same, as set forth.

2. A dumping-car having a swinging bottom door and a pivoted trigger to hold the same closed and raised, said trigger swinging in a plane parallel with the direction of movement of the car, in combination with a vertical swinging trip on the track to engage and operate said trigger to release the door and allow the contents of the car to discharge.

3. A dumping-car having a swinging bottom door, a trigger to hold the door closed, and an arm connected with the door to close the same, in combination with mechanism, substantially as described, located beside the track, to operate said arm to close the door.

4. A dumping-car having a swinging bottom door provided with lateral journals, a lateral closing-arm rigid with one of said journals, and a trigger to hold said door closed, substantially as described.



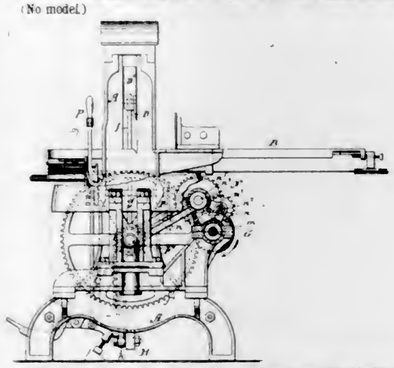
5. A dumping-car having a swinging trigger to hold its bottom door closed, in combination with a trip on the track to operate said trigger to release the door, said trip consisting of a swinging arm pivotally mounted on a frame secured to a support free to move in one direction and a stop to limit its movements in the other direction.

6. In a dumping-car, the combination of the swinging bottom door provided with the lateral journals, one of the said journals being extended through the side of the car and bent laterally and downwardly at the exterior thereof to form a closing-arm, with a swinging trigger to uphold said door, substantially as described.

7. The combination, with a support, of a frame secured thereto having downwardly-extending legs and a bend at its upper end, and the vertical trip-arm pivotally mounted between its ends in said bend and provided with a head, so that its swing in one direction will be limited, as set forth.

8. The combination of a car having a swinging bottom door, a swinging trigger to movably uphold the same, and a swinging trip on the track to engage and operate said trigger and a stop to limit the swing of said trip in one direction, substantially as described.

449,525. PAPER-CUTTING MACHINE. CHARLES R. ELY, Champlain, N. Y., assignor to Theodore W. Sheridan, Brooklyn, N. Y., and Charles B. Sheridan, Orange, N. J. Filed Oct. 23, 1890. Serial No. 369,113. (No model.)



Claim.—1. In a paper-cutter, the combination, with a knife-stock D', a clamp C, a driving-shaft G, a traveling shaft F, and devices actuated by the driving-shaft to operate the knife-stock and clamp, of an intermediate shaft N, swinging brackets n n', hung on the driving-shaft and supporting the intermediate shaft, swinging straps f^3 f^3, hung on the traveling shaft and connected with the intermediate shaft, and gearing between the traveling, intermediate, and driving shafts, substantially as and for the purpose described.

2. In a paper-cutter, the combination, with the knife-stock D', the clamp C, the driving-shaft G, and the traveling shaft F, of the intermediate shaft N, having its bearings in brackets n n', which swing upon the driving-shaft, the straps f^3 f^3, which connect the traveling shaft and the intermediate shaft, the cog-wheel f', mounted on the traveling shaft, the pinion n^5, mounted upon the intermediate shaft and meshing into the cog-wheel f', the pinion n^3, mounted on a stud in the bracket n and meshing into pinion n^4 and also into the pinion m, mounted loosely on the driving-shaft G, the cog-wheel n^5, mounted on the intermediate shaft and gearing into the pinion m', mounted loosely on the driving-shaft, and the clutch mechanism between the pinions m and m', substantially as described.

3. In a paper-cutter, the combination, with the knife-stock, the clamp, the driving-shaft, and mechanism for imparting to the knife-stock and to the clamp a reciprocating motion, of two pinions m m', mounted loosely upon the driving-shaft, a clutch mechanism between the two pinions, a strap O, extending round the hub of the pinion m', a dog o for compressing the strap around the hub, and a wedge o^2, which acts upon the dog and is actuated by the clutch-lever l', substantially as described.

449,526. MACHINE FOR FORGING NAILS. CHARLES W. EMERY, Boston, Mass., assignor to the Putnam Nail Company, same place. Filed Jan. 15, 1891. Serial No. 377,804. (No model.)



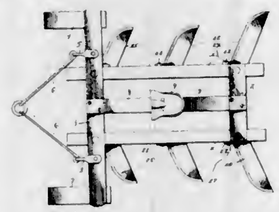
Claim.—1. The herein-described combination of vibrating hammers a a' b b' in pairs, the pivots of one pair being nearer the heads of the hammers than the pivots of the other pair, substantially as and for the purpose set forth.

2. The herein-described combination of two pivoted hammers, each having a projection, one of which engages with the other, and one of the hammers being heavier than the other, substantially as and for the purpose set forth.

3. The herein-described combination of two pairs of hammers, each hammer having a projection which engages with the projection on its companion, and one hammer of each pair being heavier than its mate, all substantially as and for the purpose set forth.

4. The herein-described combination of vibrating hammers a a' b b' in pairs, each hammer having a projection which engages with the projection on its companion, and the pivots of one pair being nearer the heads of the hammers than the pivots of the other pair, substantially as and for the purpose set forth.

449,527. LISTED-CORN CULTIVATOR. JAMES W. EPPERSON, Great Bend, Kans. Filed Nov. 12, 1890. Serial No. 371,222. (No model.)

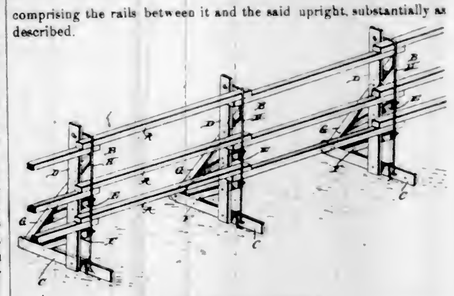


Claim.—1. In a cultivator, the combination, with a pair of runners, cutters located at the opposite sides of the runners and arranged one above the other, of a transverse bar connecting the runners and terminating at its outer ends in shoes, substantially as specified.

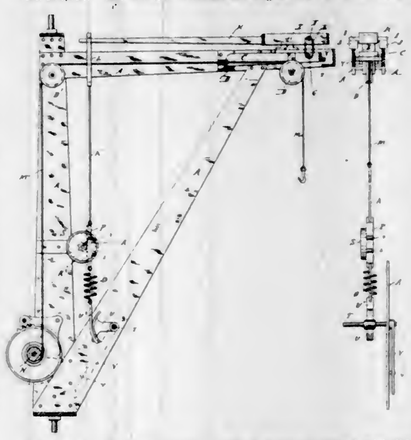
2. In a cultivator of the class described, the combination, with opposite runners, of a series of laterally-disposed cutters or knives having curved cutting-edges and arranged one above the other, the rear cutter having a concaved upper face and adapted to throw soil in rear of the runners, substantially as specified.

449,528. FENCE. JOHN FIGERT, New Philadelphia, Ohio. Filed Nov. 13, 1890. Serial No. 371,373. (No model.)

Claim.—A fence composed of rails and supports, the latter comprising a base, an upright, lateral braces G and F, the supplemental brace E between the braces G and F and bearing on the brace G, the ends of the braces projecting beyond the upright to form supports for the rails, and the wire H, extending parallel with the upright and comprising the rails between it and the said upright, substantially as described.



449,529. CRANE FOR LIFTING WEIGHTS. JAMES GASKELL, Burnlem, England. Filed Feb. 10, 1890. Renewed Jan. 14, 1891. Serial No. 377,736. (No model.) Patented in England Feb. 10, 1888, No. 2,017.



Claim.—1. The combination, with a crane provided with lifting mechanism and a head-sheave for the lifting-rope to pass over, of a pivoted lever supporting said sheave with its free end projecting beyond it and normally resting against a stop-plate on the crane-frame, weighing mechanism operatively connected to said lever, and a hand-lever operatively connected to said weighing mechanism for bringing it into action and simultaneously raising the end of said lever from the stop-plate, thereby permitting the weight of the load on the lifting-rope to be indicated by the weighing mechanism, substantially as and for the purpose set forth.

2. The combination, with a crane provided with lifting mechanism, of a lever pivoted at the head of the crane and normally resting against a stop-plate, a head-sheave journaled in said lever, a steelyard pivoted above said sheave, a link connecting one end of said steelyard with the free end of said lever, weight-registering mechanism, such as a spring-balance, operatively connected to the other end of the steelyard, and a hand-lever adapted to raise the end of the lever supporting the head-sheave, thereby permitting the weight on the lifting-rope to be indicated, substantially as and for the purpose set forth.

449,530. BENGAL-LIGHT COMPOUND. CHARLES GERHARD, Jersey City, N. J. Filed Jan. 22, 1891. Serial No. 378,700. (No specimens.)

Claim.—1. A compound for Bengal lights, consisting of copal, ether, alcohol, nitrate of strontia, and chlorate of potash, substantially in the proportion above described.

2. A compound for Bengal lights, consisting of copal, ether, alcohol, nitrate of strontia, chlorate of potash, and shellac solution or varnish, substantially in the proportion above described.

449,531. OPERA-GLASS HOLDER. JOSEPH U. GEROW, Brooklyn, N. Y. Filed Oct. 9, 1890. Serial No. 367,573. (No model.)

Claim.—1. An opera-glass holder consisting of a handle having near one end an internally-threaded socket and a guide-sleeve arranged in advance of the socket, and a clutch-plate having its two

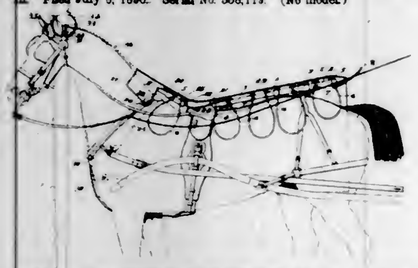
extremities provided with longitudinal sections of a screw, which are adapted to be guided by the sleeve into engagement with the socket, said sleeve also serving to abut a part of the opera-glass for clamping the latter and firmly connecting it with the handle, substantially as described.



2. An opera-glass holder consisting of a telescopic handle having the outer extremity of its innermost telescopic section provided with an internally-screw-threaded socket, a guide-sleeve engaged with the telescopic section in advance of the socket, and a clutch-plate provided at its extremities with the longitudinal sections of a screw, which are adapted to be guided by the sleeve into engagement with the socket for connecting the handle with an opera-glass, substantially as described.

3. An opera-glass holder consisting of a clutch-plate having two elastic and approximately parallel arms adapted to lie upon the opposite flattened sides of the opera-glass frame, and each provided at one extremity with the longitudinal section of a screw arranged in alignment with such elastic arm, and a handle provided at one end with an internally-screw-threaded socket provided with an edge which abuts the opera-glass frame when the screw-sections are engaged with the screw-threaded socket, substantially as described.

449,532. HORSE-PROTECTOR. SAMUEL P. HODGEN, Pittsfield, Ill. Filed July 8, 1890. Serial No. 358,119. (No model.)



Claim.—1. In a protector of the class described, the combination, with a back-brace formed in sections, each of which is hollow, and one of said sections being adapted to slide within the other, of a series of pairs of clips secured to the upper sides of the brace and a series of arms of spring-wire bent to form loops and sprung between each pair of clips, substantially as specified.

2. In a protector of the class described, the back-band of a harness, a central brace provided with protector-supporting arms, a protector mounted on the arms, and a clasp removably secured to the brace and to the said back-band, substantially as specified.

3. In a protector of the class described, the combination, with a back section and the shoulder-braces, each of said braces being formed of two sections telescopically connected, the front section of the shoulder-brace being provided with perforations and the rear section with a bolt for taking into any one of said perforations, of a series of transverse arms, a protector or cover mounted on the arms, and a loose link connecting the ends of the braces, substantially as specified.

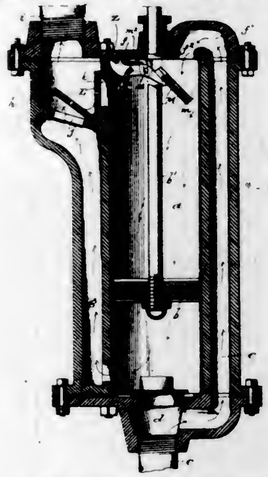
4. In a protector of the class described, the combination, with a pair of hame-sections having screw-eyes, of a central back-section adapted to be secured to the harness and provided with protector-supporting arms, a curved rectangular frame, the side bars of which are provided with offsets for engaging the eyes, and a cover supported by the arms and said rectangular frame, substantially as specified.

5. In a protector of the class described, the combination, with the main central brace, the secondary brace, the link connecting the two, and the arms projecting from said braces, of the crown-strap of the bridle, provided with opposite pairs of clips, a spring-wire frame mounted in the clips and having opposite upturned end portions forming a bonnet-frame, a bonnet mounted on said frame, and a cover or protector mounted on the arms, substantially as specified.

6. The protector-brace provided with lateral supporting-arms, the cover mounted on the same, and the herein-described fastening device, the same consisting of the base-plate provided with the depending T-lug for connecting with the back-strap, the upwardly-diverging leaves, one of which terminates in curved prongs, and a leaf hinged to the opposite prong and oppositely notched and adapted to be sprung over and between said prongs, substantially as specified.

7. The back-strap of a harness, provided near its front and rear ends with clasps 9, the herein-described protector-frame, the same comprising a central longitudinal main section and a series of laterally-disposed arms 6, and the protector mounted over the arms, substantially as specified.

449,533. PUMP-VALVE. ANDREW J. HOPKINS, Beaver Falls, Pa. Filed Jan. 17, 1891. Serial No. 378,075. (No model.)



Claim.—1. The combination of the cap provided with the perforated depending lugs and the valve mounted between said lugs and provided with perforations registering with those in the lugs, together with the spring-wire bent into proper shape and provided with the in-projecting ends which extend through the adjacent perforations in the lugs and valve, respectively, so as to afford pivots for said valve, substantially as described.

2. In a pump, the combination of the cap provided with the perforated depending lugs, the valve-plate, and the rearwardly-extending arms thereon, said arms mounted between the lugs and provided with perforations registering with those in the lugs, together with the U-shaped spring-wire bearing against the under side of said cap, and having the in-projecting ends which extend through the adjacent perforations in the lugs and arms, respectively, substantially as described.

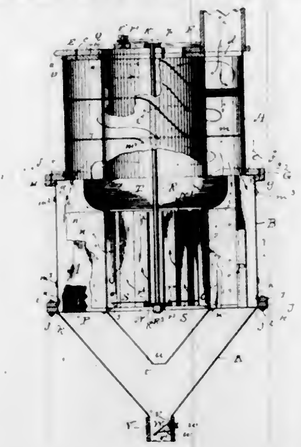
449,534. METHOD OF INSERTING SPRINGS IN TRAPS. EDWARD S. HOTCHKISS, Bridgeport, Conn. Filed Feb. 27, 1888. Serial No. 265,462. (No model.)



Claim.—1. The herein-described method of inserting the springs in that class of traps in which the springs are held under tension by yokes secured thereto, which consists in bending the ends of the springs B away from the coils to form the clinches 5, then inserting said clinches 5 through the openings 3 in the trap-body, then turning the springs so as to press the coils down against the body and the clinches 5 against the under side of the body, the springs being held in the trap by the tension produced by the yokes, substantially as described.

2. The herein-described method of inserting the springs in traps, which consists in bending the ends 5 of the springs B away from the coils to form the clinches, then inserting said clinches 5 through the openings 3 in the trap-body, then turning the springs so as to press the coils down against the body and the clinches 5 against the under side of the body, and securing the ends of the yoke to the spring, substantially as described.

449,535. DUST-COLLECTOR. ANDREW HUNTER, Milwaukee, Wis. Filed Mar. 14, 1890. Serial No. 343,824. (No model.)



Claim.—1. In a dust-collector, the combination, with a dust-collecting chamber, of a double cylinder above the same, the upper portion of said cylinder being of less diameter than the lower part, a central open-ended vertical tube within said upper part, a circuitous air-trunk surrounding said tube and communicating with said lower part of the double cylinder, and a series of radial partitions extending toward the center of said lower part, substantially as set forth.

2. In a dust-collector, the combination, with a dust-collecting chamber, of a double cylinder above the same, the upper portion of said cylinder being of less diameter than the lower part, a central open-ended tube within said upper part, a circuitous air-trunk surrounding said tube and communicating with said lower part of the double cylinder, a series of radial partitions extending toward the center of said lower part, a series of gates or valves hinged to the inner edges of said radial partitions, and a shifting-lever and a series of rods connecting said gates or valves therewith for simultaneously operating said gates or valves, and thereby controlling the openings between the central chamber and the chambers formed by the said radial partitions, substantially as set forth.

3. In a dust-collector, the combination, with a dust-collecting chamber, of a double cylinder above the same, the upper portion of said cylinder being of less diameter than the lower part, a central open-ended tube within said upper part, a circuitous air-trunk surrounding said tube and communicating with said lower part of the double cylinder, a series of radial partitions extending toward the center of said lower part and having gates or valves hinged to their inner edges, a cross-piece above said upper part of the double cylinder, a rod suspended therefrom and extending down through the center of both parts thereof, a plate on the bottom thereof, a series of rods connecting said plate with the said hinged gates, and an operating-lever on the suspended rod, substantially as set forth.

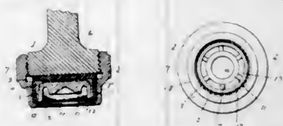
4. In a dust-collector, the combination, with an upper cylinder containing an air-tube and surrounding air-trunk, of a communicating lower cylinder containing a series of radially-arranged vertical partitions and a dead-air chamber below said lower cylinder, substantially as set forth.

5. In a dust-collector, the combination, with an upper cylinder containing an open ended air-tube and surrounding air-trunk, of a communicating lower cylinder of increased diameter containing a series of radially-arranged vertical partitions and a series of vertical angular projections extending from said partitions, substantially as set forth.

6. In a dust-collector, the combination, with an upper cylinder containing an air-tube and surrounding air-trunk, of a communicating lower cylinder of increased diameter containing a series of radially-arranged vertical partitions having a series of gates or valves hinged to their inner edges, and a rod and lever, and connecting-rods for simultaneously operating the same, substantially as set forth.

7. In a dust-collector, the combination, with a dust separating and collecting section, of a cylinder above the same, a central open-ended vertical tube within said cylinder, a circuitous air-trunk occupying the space between said cylinder and tube and communicating with the section below, a series of gates or valves within said air-trunk, a rod extending through said cylinder and secured to said gates or valves, and an operating-lever on said rod, substantially as set forth.

449,536. CRIMPER FOR CARTRIDGE-SHELLS. GEORGE D. HUNTER, Auburn Park, Ill. Filed Oct. 3, 1890. Serial No. 366,988. (No model.)



Claim.—1. A crimper for cartridge-shells, provided with a main holder, an auxiliary holder, and a glass crimping-disk arranged and secured within the latter, substantially as described.

2. A crimper for cartridge-shells, provided with a main holder, an auxiliary holder secured therein and formed with a flat bottom, and a glass crimping-disk arranged and secured within the latter, substantially as described.

3. A crimper for cartridge-shells, provided with a main holder, an auxiliary holder secured therein, a layer of cement in the latter, and a glass crimping-disk firmly seated or embedded in said cement, substantially as described.

4. A crimper for cartridge-shells, provided with a main holder, an auxiliary holder secured therein, a layer of cement in the latter, and a glass crimping-disk firmly seated or embedded in said cement and formed with a series of small ribs or grooves on or in its rear surface, substantially as and for the purpose described.

5. A crimper for cartridge-shells, provided with a main holder, an auxiliary holder secured therein, an inturned flange around the front end of said main holder, and a glass crimping-disk arranged and secured within said auxiliary holder, substantially as described.

6. A crimper for cartridge-shells, provided with a main holder, an auxiliary holder secured therein, a layer of cement in the latter, a glass crimping-disk seated or embedded in said cement and formed with a series of small ribs or grooves on or in its rear surface, and an inturned flange around the front end of said main holder, substantially as and for the purpose described.

7. A crimper for cartridge-shells, provided with a main holder, an auxiliary holder secured therein by screw-threads, and a glass crimping disk arranged and firmly secured within the latter, substantially as described.

8. A crimper for cartridge-shells, provided with a main holder having an inturned flange around its front end, an interiorly-screw-threaded rear portion, an exteriorly-screw-threaded and removable shaft-head therein, an auxiliary holder, and a glass crimping-disk firmly secured within the same, substantially as described.

9. A crimper for cartridge-shells, provided with a main holder having an inturned flange around its front end, an interiorly-screw-threaded rear portion, an exteriorly-screw-threaded and removable shaft-head therein, an auxiliary holder, and a glass crimping-disk firmly secured within the same in a layer of cement and formed with a series of small ribs or grooves on or in its rear surface, substantially as and for the purpose described.

449,537. CRIMPER FOR CARTRIDGE-SHELLS. GEORGE D. HUNTER, Auburn Park, Ill. Filed Oct. 3, 1890. Serial No. 366,989. (No model.)



Claim.—1. A crimper for cartridge-shells, provided with a glass crimping-disk, substantially as described.

2. A crimper for cartridge-shells, provided with a holder having a recess or chamber in its front end or face and a glass crimping-disk secured in said chamber, substantially as described.

3. A crimper for cartridge-shells, provided with a holder having a recess or chamber in its front end or face, a layer of cement therein, and a glass crimping-disk seated or embedded in said cement, substantially as described.

4. A crimper for cartridge-shells, provided with a holder having a recess or chamber in its front end or face, a layer of cement therein, and a glass crimping-disk seated or embedded in said cement and formed with a series of small ribs or grooves on or in its rear surface, substantially as and for the purpose described.

5. A crimper for cartridge-shells, provided with a holder having a recess or chamber in its front end or face, an inturned flange at its front end, and a glass crimping-disk within said chamber, substantially as described.

6. A crimper for cartridge-shells, provided with a holder having

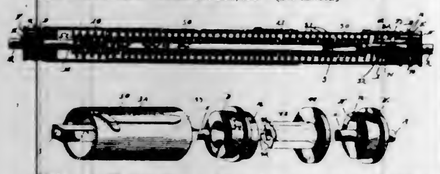
a recess or chamber in its front end or face, a layer of cement therein, and a glass crimping-disk seated or embedded in said cement and formed with a series of small ribs or grooves on or in its rear surface and an inturned flange at its front end, substantially as and for the purpose described.

7. A crimper for cartridge-shells, provided with a holder having a recess or chamber in its front end or face, an inturned flange at its front end, a glass crimping-disk within said chamber, an interiorly-screw-threaded rear portion, and an exteriorly-screw-threaded and removable shaft-head, substantially as described.

8. A crimper for cartridge-shells, provided with a holder having a recess or chamber in its front end or face, an inturned flange at its front end, a glass crimping-disk within said chamber, an interiorly-screw-threaded rear portion, an exteriorly-screw-threaded shaft-head, and a rubber plate arranged intermediate of the rear face of said glass disk and the front face of said shaft-head, substantially as described.

9. A crimper for cartridge-shells, provided with a holder having a recess or chamber in its front end or face, an inturned flange at its front end, a glass crimping-disk within said chamber, an interiorly-screw-threaded rear portion, an exteriorly-screw-threaded shaft-head, a rubber plate arranged intermediate of the rear face of said glass disk and the front face of said shaft-head, and an annular channel formed in the inner surface of said holder, substantially as and for the purpose described.

449,538. **SASH-BALANCE.** FRANK P. JOHNSON, Eyers Grove, Pa. Filed Oct. 30, 1890. Serial No. 369,839. (No model.)



Claim.—1. The herein-described spring-roller, the same comprising an inner member consisting of a rod with a drum fixed upon each end thereof, means for adjusting said rod in length, an outer tubular member surrounding said rod and having drums at its ends turning upon the inner member inside the drums thereon, and a coiled spring connected at one end to the rod and at the other end to the tube, as and for the purpose set forth.

2. The herein-described spring-roller, the same comprising an inner member consisting of a rod with a drum fixed upon each end thereof, an outer tubular member surrounding said rod and having drums at its ends turning upon the inner member inside the drums thereon, means for adjusting each member in length, and a coiled spring connected at its opposite ends to the members of the said roller, as and for the purpose set forth.

3. In a spring-roller, the combination, with the inner member thereof consisting of a rod in two sections, having drums fixed thereon near its outer ends, and means for substantially adjusting said inner member in length, of an outer member comprising two tubes, each having a drum at its outer end turning upon the inner member inside the drums thereon, the inner tube sliding within the outer and being provided with a series of holes, a catch upon the outer tube passing through its body and engaging one of said holes, and a coiled spring connected at its opposite ends to the members of said roller, substantially as described.

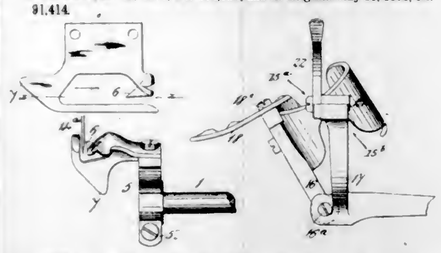
4. In a spring-roller, the combination, with the outer member thereof consisting of two tubes, one sliding upon the other, means for retaining them in longitudinally-adjusted positions, and drums at the outer ends of said member, of an inner member comprising a rod in two sections, one section being square and the other tubular and fitting upon the square section, and each section turning in a hole through the drum at its end of the roller, outer drums fixed upon said sections just outside said inner drum, and a coiled spring connected at its opposite ends to the members of said roller, substantially as described.

5. In a spring-roller, the combination, with the inner member thereof comprising a rod in two sections, one section being square and the other tubular and fitting upon the square section, and outer drums fixed upon said sections near their outer ends, of the outer member comprising two tubes, each having a drum at its outer end turning upon the inner member inside the outer drums thereon, the inner tube sliding within the outer and being provided with a series of holes, a spring-catch on the outer face of the outer tube whose tip passes through the body of said tube and engages one of said holes, and a coiled spring connected at one end to the inner member and at its outer end to the outer member, its body extending from said points of connection along within the outer member and around the inner member in a double helix, substantially as described.

6. In a spring-roller, the combination, with a rod and an outer drum thereon, of a disk having a hub turning on the rod adjacent said drum, ratchet-teeth on said hub, an inner drum surrounding said hub, means for connecting this drum with the hub, and a spring surrounding the rod and connected at one end thereto and at the other end to the hub, as and for the purpose set forth.

7. In a spring-roller, the combination, with a rod and an outer drum thereon, of a disk having a hub turning on the rod adjacent said hub, ratchet-teeth on the outer face of said hub, an inner drum surrounding said hub and having a hole through its body, a tube one end of which embraces the inner end of said inner drum, a spring-catch on said tube, its tip removably inserted through the body of the tube and through said hole and engaging said teeth, and a spiral spring connected at one end to the rod and at the other end to the hub, substantially as described.

449,539. **SEWING-MACHINE.** DANIEL JONES, Cardiff, England. Filed Nov. 4, 1889. Serial No. 329,243. (No model.) Patented in England June 1, 1889, No. 9,089; in Switzerland Nov. 23, 1889, No. 1,709; in France Mar. 12, 1890, No. 204,321, and in Belgium July 28, 1890, No. 91,414.



Claim.—1. In a two reel lock-stitch sewing-machine, the combination of a reel-carrier S, provided with a projecting part 20, a holder 15 to receive said carrier, an articulated arm 16, to which said holder is secured, and which is capable of being turned outward from beneath the bed-plate of the machine, a catch 18, pivoted to said arm, formed with a notch to receive the projecting part of said reel-carrier, and with projecting ears arranged to overlap the top of said reel-carrier when in its closed position, and a catch 22, pivoted to a fixed part of the machine and capable of holding said catch 18 and said arm 16 in their closed positions for use, substantially as herein described.

2. In a lock-stitch sewing-machine, the combination of an open cylindrical holder 15, split or open at one side at 15ª and having diametrically-opposite recess 15ᵇ, a reel-carrier, a swinging arm 16, pivoted to a support and carrying said holder, and catch 22, arranged to hold said arm and holder in normal position, substantially as described.

3. In a sewing-machine, the combination of the rotary looper, the open cylindrical holder, a swinging arm carrying said holder and pivoted to a support, means, substantially as described, for locking said arm in its normal position, the reel-carrier within said holder having projection 19, and the swinging catch 18, pivoted to said swinging arm to receive said projection and hold the carrier in the holder, substantially as described.

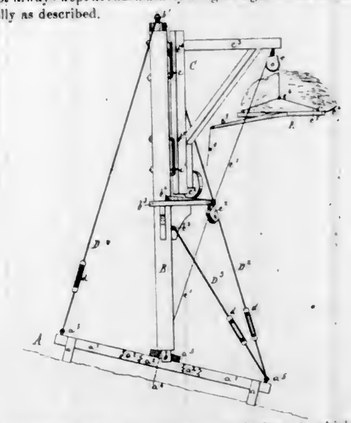
4. In a sewing-machine, the combination of a needle, take-up mechanism, substantially as described, lower reel-carrier and holder therefor, and the rotary looper and its shaft, said looper consisting of the arm extending beside and rotating around said reel-carrier and having the rear inturned hook on its under side projecting in the direction of rotation and the front nose 7, as set forth.

5. In a sewing-machine, the combination of a needle, a reel-carrier and its holder, a looper arranged to revolve around said carrier and having the inturned hook on its rear side projecting in the direction of rotation, and the guard for said hook, a take-up device, substantially as described, and a cam mechanism to operate said take-up to disengage a loop from the hook and to draw up a portion only of said loop.

6. The combination of a needle, reel-carrier, and its holder, the rotary looper revolving around said carrier and consisting of rear hook 6 and forward guard and nose 7, shaft 1, driving same, shaft 14, cam mechanism 13, and take-up 9, operated by said cam mechanism, substantially as set forth.

449,540. **HAY-STACKER.** JOHN H. JUNKINS, Upper Sandusky, Ohio. Filed Sept. 8, 1890. Serial No. 364,393. (No model.)

Claim.—1. In a hay-stacker, in combination, a movable platform A, which is adjustable from a horizontal to an inclined position and from an inclined to a horizontal position, a derrick-supporting post B, loosely connected at its lower end to said platform, an elevating derrick, and means for connecting the platform and post, whereby the platform may be set inclined to or kept parallel with the horizon and the post always kept at substantially a right angle to the horizon, substantially as described.



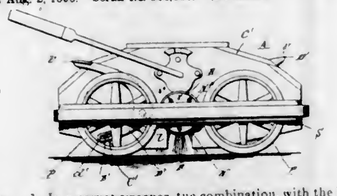
2. In a hay-stacker, in combination, a platform A, which is adjustable from a horizontal to an inclined position and from an inclined to a horizontal position, extensible and contractible guys or stays, the derrick-post B, and a derrick, the said guys being connected to the platform and to the post and said post being attached loosely to the platform, so as to allow the platform to be adjusted in the manner stated while it (the post) remains vertical, substantially as described.

3. In a hay-stacker, in combination, a platform which is adjustable from a horizontal to an inclined position and from an inclined to a horizontal position, a derrick-post, a derrick-supporting track-plate having an inclined track, a derrick, a friction-roller, vertically-accommodating hinge connections between the derrick and post, suitable rope-blocks, and a fork, substantially as described.

4. In a hay-stacker, in combination, an adjustable platform A, a derrick-supporting post B, loosely connected to the platform, adjusting and connecting means between the platform and post, a derrick, a derrick-supporting track-plate, and suitable ropes, blocks, and a device for handling the hay, substantially as described.

5. In a hay-stacker, in combination, a platform A, a post B, track-plate having inclined track, a derrick, a friction-roller, a vertically-accommodating hinge connection between the derrick and post, suitable means for connecting the post and platform, operating-rope, blocks, and a device for handling the substance to be elevated.

449,541. **CARPET-SWEEPER.** GEORGE W. KELLEY, Goshen, Ind. Filed Aug. 2, 1890. Serial No. 360,825. (No model.)

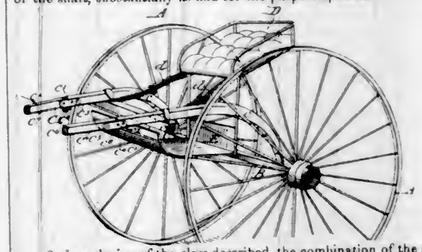


Claim.—1 In a carpet-sweeper, the combination, with the brush-shaft and driving-wheels, of the resilient pulley, said pulley consisting of the elastic rim loosely mounted on the mandrel or shaft of the brush and secured thereon by disks or plates on said mandrel, substantially as described.

2. In a carpet-sweeper, the frictional pulley at the ends of the brush-shaft, comprising a centrally-perforated rubber band having internal axial grooves or sockets adapted to engage between disks, corresponding ribs, or ridges of the mandrel, substantially as described.

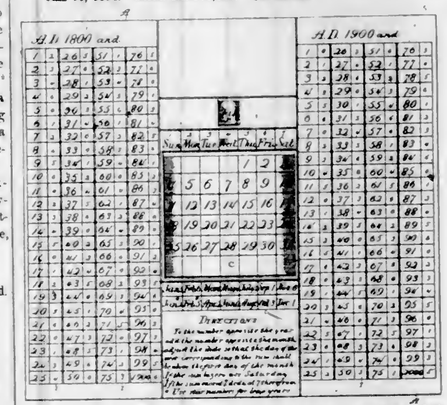
449,542. **SULKY.** JOHN W. KELLEY, Columbus, Ga. Filed Nov. 12, 1890. Serial No. 371,260. (No model.)

Claim.—1. In a device of the class specified, the shaft divided intermediately and pivotally connected by means of the plate secured to the under side of the rear part of the said shaft and having an offset which is bent downwardly and forwardly, the buffer supported by the said offset, the bolt passing through the offset, buffer, and shaft, the plate attached to the under side of the rear end of the forward end of the shaft, the front end of the said plate being extended and seated between the buffer and the front end of the rear part of the shaft, and the plates attached to the sides of the adjacent ends of the two parts of the shaft, substantially as and for the purpose specified.



2. In a device of the class described, the combination of the axle B, the shafts C, secured to the said axle, the cross-bar c^4, secured to the said shafts, the springs d, having their front ends secured to their respective shafts in front of the cross-bar and extending backwardly and over the same, the seat secured to the rear ends of the said springs, the said shafts consisting of two parts which are pivotally connected by means of the plates secured to the sides of the adjacent ends of the parts, the offset formed by extending the end of the upper leaf of the spring d and bending it downwardly and forwardly, the buffer c^5, secured between the said offset and the end of the rear part of the shaft, and the plate c^7, secured to the under side of the rear end of the forward part of the shaft, the plate having its end projecting and seated between the buffer and the end of the rear portion of the shaft, substantially as and for the purpose specified.

449,543. **CALENDAR.** CARLOS C. KELLY, Claysville, Ohio. Filed Jan. 16, 1891. Serial No. 378,022. (No model.)



Claim.—A calendar having printed upon it the numbers of the years, the names of the days of the week, and the months of the year, and provided with separate strips upon which the names of the months and the days of the month are printed, and which strips are adjusted back and forth through slits or openings in the calendar, there being also numbers which run from 0 to 6 opposite the numbers of the years and the names of the months, substantially as shown and described.

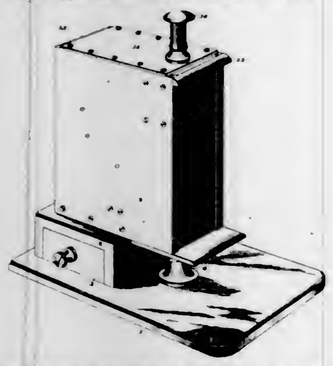
449,544. **STAMP-AFFIXING MACHINE.** WILLIAM H. KING, Bolivar, N. Y. Filed Feb. 19, 1890. Serial No. 341,079. (No model.)

Claim.—1. In a machine of the class described, a plunger terminating in a head provided with opposite pivoted depending fingers, the lower ends of which are curved inwardly, guides mounted in the opposite fingers and depending at each side of the head, and springs for yieldingly maintaining the fingers in position, substantially as specified.

2. In a machine of the class described, opposite guides, a carriage mounted movably in the guides, a dampening-pad pivotally connected with the carriage, a cross-bar projecting from the same, opposite guides mounted at the sides of the carriage in the path of the cross-bar, a spring for yieldingly maintaining the carriage in an advanced position, and means for causing a retraction of the carriage against the spring, substantially as specified.

3. In a machine of the class described, the combination, with

guides, a carriage mounted therein, a forwardly-projecting pivoted plate connected with the carriage and terminating in a water-box provided with a pad, and a cross-bar, of cams mounted on the guides, a bell-crank yoke pivoted upon the same and having its lower ends connected with the carriage, springs for operating the carriage in one direction, and a plunger mounted above the water-box and pivotally connected to the upper end of the yoke, substantially as specified.



4. In a machine of the class described, the combination, with the plunger and the feed-shaft, of a feed-roll mounted on the same, the roll being fixed to the shaft, a clutch having a toothed wheel loosely mounted on the shaft and adapted to rotate the same in one direction, a pawl meshing with the wheel, and a pivoted yoke connected with the pawl and with the plunger, substantially as specified.

5. In a machine of the class described, a feed shaft and roll and a locking-wheel rigidly mounted thereon, in combination with a clutch mounted on and adapted for rotating the shaft in one direction, a pivoted yoke, mechanism between the yoke and clutch whereby the latter is operated by the former, and a plunger for operating said yoke, and a rock-shaft journaled above the feed-shaft and provided with rock-arms, one of which interlocks with the locking-wheel and the other of which is loosely connected and operated by the yoke, substantially as specified.

6. In a machine of the class described, the combination, with opposite guides, of a carriage mounted for reciprocation therein, a bifurcated stud mounted on the carriage, a cross-bar passed transversely through the bifurcations, opposite coiled springs connected to the ends of the cross-bar and to the casing and serving to draw the carriage forwardly, a plate pivoted between the bifurcations and having its forward end downwardly curved and provided with a water-box having a reticulated bottom and an absorbent pad below the same, a cross-bar mounted on the plate and overlapping the guides, and opposite cams mounted on the guides in the path of the cross-bar, a plunger, and a pivoted bell-crank yoke mounted in the case and actuated by the plunger and having its lower ends bifurcated and connected to the cross-shaft of the carriage, substantially as specified.

7. In a machine of the class described, the combination, with a feed-roll and its shaft, of a ratchet-wheel loosely mounted on the shaft, so as to move independent of the shaft in one direction, an arm pivoted on the shaft and carrying a pawl for operating the ratchet in that direction, a spring for moving the shaft after each operation of the pawl, a pivoted yoke having a cross-bar and a connecting-rod connecting the same with the pivoted arm, and a plunger pivoted to the forward end of the yoke, substantially as specified.

8. In a machine of the class described, the combination, with a plunger, of a reciprocating carriage, a spring for drawing the carriage in one direction, a moistening-pad connected with the carriage and arranged in the path of the plunger, and pivoted connections between the carriage and the plunger, substantially as specified.

9. In a machine of the class described, a plunger terminating in a head provided with opposite pivoted fingers, the lower ends of which are curved, and springs for locking the fingers in the closed position, substantially as specified.

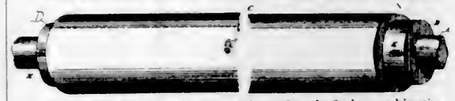
10. In a machine of the class described, the combination, with guides, a carriage mounted therein, a horizontal forwardly-projecting perforated pivoted plate connected with the carriage and terminating in a water-box provided with a pad, springs for operating the carriage in one direction, and a plunger mounted above the water-box and pivotally connected to the carriage, substantially as specified.

11. In a machine of the class described, the combination, with the plunger and the feed-shaft, of a feed-roll mounted on the same and provided at one side with a locking-wheel, a clutch adapted to rotate the shaft in one direction, a pawl meshing with the wheel and pivotally connected with the plunger, and mechanism connected with the yoke for locking the wheel during a downward movement of the plunger, substantially as specified.

12. In a machine of the class described, the combination, with opposite guides, of a carriage mounted for reciprocation therein, opposite coiled springs serving to draw the carriage forwardly, a plate pivoted to the carriage and having its forward end downwardly curved and provided with a water-box having a reticulated bottom and an absorbent pad below the same, a plunger, and a pivoted yoke mounted in the case and actuated by the plunger and having its lower ends connected to the carriage, substantially as specified.

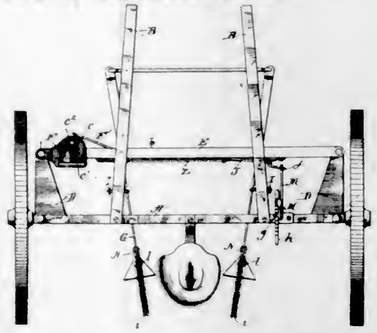
13. The carriage carrying the reciprocating water-box having a reticulated bottom and an absorbent pad, combined with the plunger to actuate the carriage, as set forth.

449,545. **WRINGER-ROLLER.** CHARLES A. KOHL, Cleveland, Ohio, assignor to himself, Martin Kohl, F. William Kohl, and Edward Kohl, all of same place. Filed Jan. 10, 1891. Serial No. 377,359. (No model.)



Claim.—A wringer-roller consisting of a shaft, in combination with a hollow tube covered with rubber or other suitable material and mounted upon said shaft and provided with screw-threaded ends, retaining-nuts adapted to be screwed upon the ends of the tube, and set-screws mounted in said nuts and engaging the shaft, substantially as shown and described.

449,546. **CULTIVATOR.** JACOB W. KRAUS, Sterling, Ohio. Filed Dec. 22, 1890. Serial No. 375,473. (No model.)



Claim.—1. In a cultivator, the combination, with the short axles having fixed arms standing horizontally and at right angles thereto and connected together by a connecting bar or yoke, of a plate fixed to said yoke and adapted with the aid of suitable means to effect the differential adjustment or retention in a fixed position of said short axles, substantially as specified.

2. In a cultivator, the combination, with the yoked or connected short axle-arms, of the beams and the bell-crank lever linked to the hanger guide bars of said beams and to the yoke or connection between said arms, and means for actuating said lever, substantially as specified.

3. In a cultivator, the combination, with the short axles and the arms having a fixed connection therewith and connected together by a bar or yoke, of the beams suspended from arms of rock-shaft, the hanger guide-bars having their lower ends passing down through eyes or stirrups projecting from said beams, the bell-crank lever pivoted at its fork to said yoke or bar and having its prongs or branches connected by links to said hanger guide-bars, and the right-angled hand-lever having a link-rod connection with the handle portion of said bell-crank lever, substantially as described.

4. In a cultivator, the combination, with the short axles and their fixed arms, of the connecting bar or yoke having the holding-plate provided with differential slots and an aperture, and the hook adapted to engage said slots and aperture, substantially as set forth.

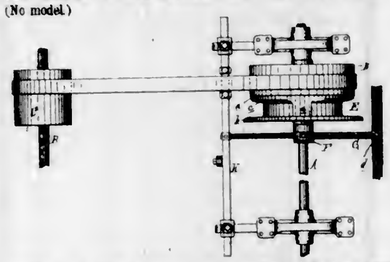
449,547. **COMPOSITION FOR USE IN THE MANUFACTURE OF STEEL.** JAMES MACKINTIRE, Sheffield, England. Filed Dec. 6, 1890. Serial No. 373,813. (No specimens.) Patented in England Jan. 6, 1890, No. 213.

Claim.—1. A compound for use in the manufacture of iron and steel, consisting of carbonate and phosphate of calcium, black oxide of manganese, tannic acid or tannin, vegetable soot, and animal charcoal or bone-black, taken in substantially the proportions stated.

2. A compound for use in the manufacture of steel and iron, consisting of carbonate and phosphate of calcium, black oxide of manganese, tannic acid or tannin, vegetable soot, animal charcoal or bone-black, and tar, taken in substantially the proportions stated.

3. The process of forming an alloy for use in the manufacture of steel and iron, consisting in combining with pig-iron carbonate and phosphate of calcium, black oxide of manganese, tannic acid or tannin, vegetable soot, animal charcoal, and tar, in substantially the proportions stated.

449,548. **BELT-SHIFTER.** ORIEN B. MARTIN, Akron, assignor, by direct and mesne assignments, of one-half to Thomas Hale, Mogadore, Ohio. Filed Nov. 21, 1889. Renewed Mar. 7, 1891. Serial No. 384,092. (No model.)

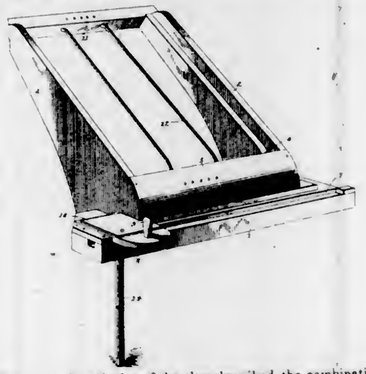


Claim.—1. A loose pulley having an elliptical face, an annular flange upon one side which is flush with the face of the pulley on the longest diameter of the ellipse, said flange being approximately of the same circumference as the driving-pulley with which the loose pulley is mated, and a flange on the opposite face of the loose pulley, substantially as described.

2. The combination of a loose pulley, having an elliptical face and flanges, with the driving-shaft and a fast pulley, said loose pulley being mounted upon the driving-shaft and adapted to be thrown into contact with the fast pulley, substantially as shown and described.

3. The combination of a loose pulley, having an elliptical face and flanges, with a drive-pulley, a belt-shifter, and a swinging arm attached to said belt-shifter and adapted to force the loose pulley into frictional contact with the driving-pulley, substantially as specified.

449,549. **PICKET-FEEDER FOR FENCE-MAKING MACHINES.** JOSEPH F. MAUCK, White Cloud, Kans. Filed Nov. 11, 1890. Serial No. 371,048. (No model.)



Claim.—1. In a device of the class described, the combination of the bed or table, the inclined supporting-brackets, the cross-piece connecting the upper ends of the latter, the supporting-rods connecting the said cross-piece with the table, and an adjustable gage-bar secured detachably to the said cross-piece, substantially as and for the purpose set forth.

2. In a device of the class described, the combination of the bed or table having a longitudinal groove, the inclined supporting-brackets having shoulders or brackets on their inner sides, the curved shield connecting the lower ends of said supporting-brackets, the slide mounted to reciprocate in the longitudinal groove of the table, and the plate secured to the upper side of said slide and extending under the curved shield of the supporting-brackets, substantially as and for the purpose set forth.

3. In a device of the class described, the combination of the longitudinally-grooved bed or table, the inclined supporting-brackets having curved lower ends, the cross-piece connecting the upper ends of said brackets, the curved shield at the lower ends of the latter, the supporting-rods, and the reciprocating slide in engagement with the groove, having a suitable handle and provided on its upper side with a plate extending under the curved shield and adapted to push the pickets supported upon the brackets through a notch or opening at the lower edge of one of said brackets, substantially as and for the purpose set forth.

449,550. **BROOM.** JESSE M. MEADOR, New Concord, Ky. Filed July 7, 1890. Serial No. 357,938. (No model.)

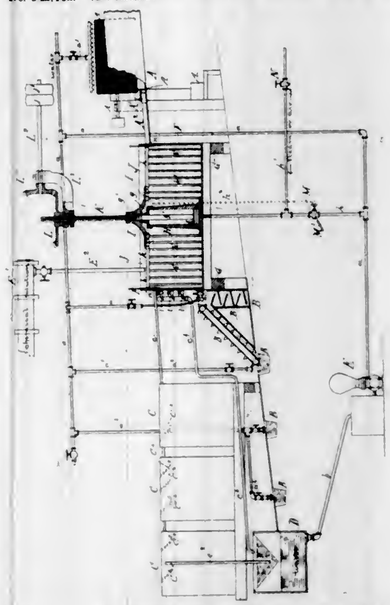


Claim.—A broom consisting of the handle having a central bore and provided with a nut at its upper end, a screw-threaded rod, a receiver, a holder secured thereto, consisting of a series of annular rings connected together by wires, a wedge through which the screw-rod passes, and the straw and the ring encircling the same, substantially as described.

449,551. **DIHYDROXYNAPHTHALENE.** EUGENE MENTHA, Ludwigshafen-on-the-Rhine, Germany, assignor to the Badische Anilin and Soda Fabrik, same place. Filed Dec. 12, 1890. Serial No. 374,492. (Specimens.)

Claim.—The new dihydroxynaphthalene, which melts at a temperature of 160° to 161° centigrade, and which is slightly soluble in cold water, readily soluble in hot water, alcohol, ether, and fusel-oil, slightly soluble in benzine and petroleum ether, and which yields an intensely blue coloration with ferric chloride solution, all substantially as hereinbefore described.

449,552. **SETTLING AND AMALGAMATING PAN FOR MACHINERY FOR EXTRACTING GOLD OR OTHER PRECIOUS METALS.** WILLIAM A. MERRALLS, Kansas City, Mo. Filed Feb. 27, 1890. Serial No. 342,182. (No model.)



Claim.—1. An amalgamating apparatus consisting of a pan, a centrally-located upright cylinder attached to the bottom of the pan.

a piston having a rod formed with an axial end, a sliding and operating shaft constructed separately from the piston-rod, a spider carrying stirrers and connected removably to said shaft and by said shaft connected detachably to the axial end of the piston-rod, gearing for operating and stopping the shaft and stirrers, and water, steam, or air conducting pipes having suitable cocks and connected to the upright cylinder, all substantially as described.

2. An amalgamating apparatus consisting of a pan, a centrally-located upright cylinder provided with inlet and outlet passages for either water, air, or steam, and attached to the bottom of the pan, a piston having a rod with its upper end constructed as an axle for a stirrer to revolve upon a sliding and operating shaft constructed separately from the piston-rod and connected thereto so as to be removed from the pan independently of the piston, and a spider carrying stirrers, and means for revolving the stirrers, said spider being connected removably to the said pistou-rod, substantially as described.

3. An amalgamating apparatus consisting of a pan, a cylinder attached to the bottom of the pan, a piston and piston-rod, and means for admitting fluid-pressure, such as steam, water, or air, both below and above the piston, substantially as described.

4. The combination of an amalgamating and deoxidizing pan F, cylinder H, attached to said pan, piston *f*, having piston-rod with an axial end and working in said cylinder, stirrer J, having all of its arms attached to one spider and revolving horizontally on the axial end of the piston-rod, gearing for operating the stirrer, fluid-pressure pipes having cocks and connected to the upright cylinder, and a chemical-solution chamber E', having conducting-pipe leading into the pan, substantially as described.

5. The settling and amalgamating pan F, provided with drain-cocks *l*, inlet and outlet passages *n n'*, discharge-cock *m*, cylinder H, piston *f*, stirrer J, having sliding shaft K, gearing for operating the stirrer, and pipes having cocks for admitting fluid-pressure to the piston *f*, substantially as described.

6. The combination of the settling and amalgamating pan F, cylinder H, attached to its bottom, piston *f*, having piston-rod *f'*, stirrer J, having shaft K, gearing for operating the stirrer, pipes having cocks for admitting fluid-pressure to the piston, and a concentrating mechanism, substantially as described.

7. The combination of the amalgamating and settling pan F, provided with cylinder H, piston *f*, having piston-rod *f'*, stirrer J, having shaft K, gearing for operating the stirrer, pipes having cocks for admitting fluid-pressure to the piston, and an amalgamator, substantially as described.

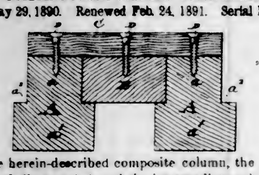
8. The combination of the amalgamating and settling pan F, its stirrer J, cylinder, piston, fluid-conducting pipe having suitable cocks, and the settling-boxes C, substantially as described.

9. The combination of the settling and amalgamating pan F, having drain-cocks *l*, its stirrer J, cylinder, piston, fluid-pressure pipes having suitable cocks, pipes e^4, and filter D, substantially as described.

10. The combination of the settling and amalgamating pan F, its stirrer J, the cylinder, piston, fluid-pressure pipes having suitable cocks, a concentrator, an amalgamator, pump E, and pipes $a\ a'\ a^3\ a^3\ a^4$, substantially as described.

11. The combination of the settling and amalgamating pans F F', their stirrers J J', cylinders, pistons, fluid-pressure pipes having suitable cocks, gutters $A^2\ A^3$, gate A', and a concentrating apparatus, substantially as described.

449,553. BUILDING-FRONT COLUMN. FRANK MESKER, St. Louis, Mo. Filed May 29, 1890. Renewed Feb. 24, 1891. Serial No. 382,651. (No model.)



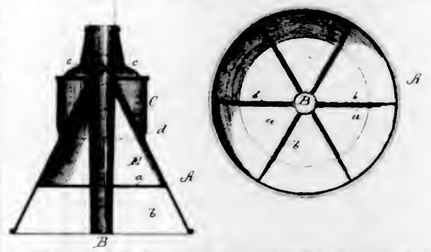
Claim.—The herein-described composite column, the same consisting of a pair of pilasters A A and the intermediate sub-column B, united by the cross-strips C, substantially as described.

449,554. BUILDING-FRONT COLUMN. FRANK MESKER, St. Louis, Mo. Filed May 29, 1890. Renewed Feb. 24, 1891. Serial No. 382,652. (No model.)



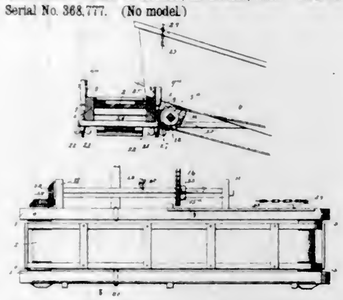
Claim.—The herein-described building-front column, which consists of the metallic front A and the extension E, said extension projecting rearwardly from the column sides to form offsets $e^3\ e^3$, as described.

449,555. CLOTHES-POUNDER. FRANKLIN P. MIGHELL, Sugar Grove, Ill. Filed Dec. 18, 1890. Serial No. 375,127. (No model.)



Claim.—In a clothes-pounder, the combination of an outer frustum-shaped shell A, having secured to its upper end a tube B, with perforations *c*, vertical walls *b*, secured to the lower portion of the shell, to the central tube, and to a transverse wall *a* within the shell, so as to form a dead-air space E, a cap secured to the shell A and provided adjacent to said shell with perforations *d*, a cover for the cap C, secured to said cap and to the upper end of the tube B, substantially as shown, whereby an air-passage is provided through the tube B and cap C for the purpose set forth.

449,556. STRAW-STACKING ATTACHMENT FOR THRASHING-MACHINES. AMOS P. MILLER, El Dorado, Ohio. Filed Oct. 21, 1890. Serial No. 368,777. (No model.)



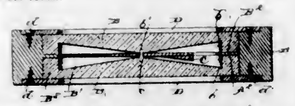
Claim.—1. As an improvement in straw-stackers, the herein-described endless carrier, the frame of which is provided at one side with laterally-extending brackets, in combination with a shaft journaled in said brackets and having a longitudinally-adjustable sprocket-wheel, and provided at one end with a bevel-gear meshing with a pinion upon the shaft at one end of said endless carrier, substantially as set forth.

2. In a straw-stacker for thrashing-machines, the combination of the frame consisting of side pieces connected by a suitable bottom piece, the shafts journaled at the ends of said side pieces and having drums or pulleys, the endless bands mounted upon the latter and connected by transverse slats, the guard-rails having stakes adapted to engage staples upon the side pieces, brackets extending laterally from the latter, a shaft journaled in said brackets and having a longitudinally-adjustable sprocket-wheel, and a bevel-gear mounted upon one end of said shaft and meshing with a pinion upon the shaft at one end of the frame, substantially as set forth.

3. The combination, with a thrashing-machine having a rearwardly-extending arm or bracket, of a straw-stacker mounted adjustably upon said bracket transversely to the thrashing-machine, the bolts 21 and chain 23 for securing the said stacker-frame adjustably upon the said bracket, and a sprocket-wheel mounted adjustably upon the drive-shaft of the carrier and adapted to receive motion from the thrashing-machine, substantially as set forth.
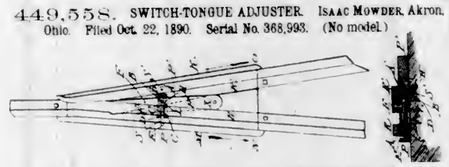
449,557. PLUMB-LEVEL. BENJAMIN A. MOUNTS, Cairo, Ill. Filed Oct. 28, 1890. Serial No. 369,552. (No model.)

Claim.—1. The combination, with a rule having a central opening, of the two glass disks B, formed on their inner sides with the annular recesses B', which increase in depth as they extend outward and having the central recesses *b'*, and the weighted needle having the central transverse pivot fitting in the recesses *b'* of the glass disks, substantially as set forth.



2. The combination of the rule formed with the central opening A and the annular strip A^3 in said opening, the glass disks B, formed on their inner sides with the annular recesses B', which increase in depth as they extend outward and having the scales E marked upon them, and the weighted needle pivotally supported between the glass disks, substantially as set forth.

449,558. SWITCH-TONGUE ADJUSTER. ISAAC MOWDER, Akron, Ohio. Filed Oct. 22, 1890. Serial No. 368,993. (No model.)



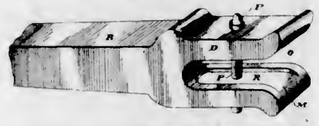
Claim.—1. The combination of the bar fixed in the under plate, the sleeve and post, the switch-tongue, and the means to actuate the said parts, as set forth.

2. The combination of the bar, the sleeve and post, the tongue, and a spring to actuate the said parts, as set forth.

3. The combination of the plate recessed in its under side, the bar, the sleeve and post, and the tongue, as set forth.

4. The combination of the recessed plate, the bar, the sleeve and post, the tongue, and the spring arranged to normally press and hold the tongue to one side, as set forth.

449,559. CAR-COUPLING. CHARLES F. MOWLL, East Cambridge, Mass. Filed Jan. 16, 1891. Serial No. 378,009. (No model.)



Claim.—In a car-coupling, the combination, with a draw-head having a vertical pin-opening, a transverse opening entirely through the draw-head intersecting said pin-opening, and a recess in the bottom of said opening, of a pin passing vertically through said pin-opening and a link of a size to fit in said recess and to project beyond the end of the draw-head, as and for the purpose hereinbefore set forth.

449,560. TYPE-WRITING MACHINE. BARTLEY T. MULLIGAN, Brooklyn, N. Y. Filed Aug. 7, 1890. Serial No. 361,242. (No model.)

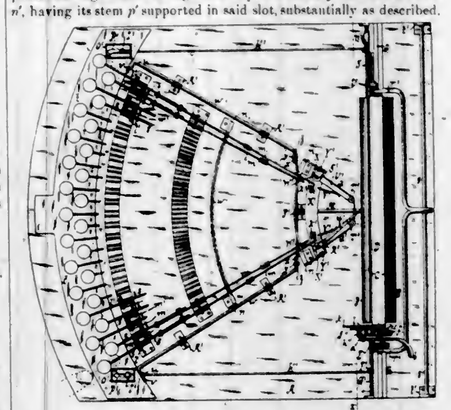
Claim.—1. In a type-writing machine, the combination of concentric guides arranged in two tiers and converging to a common point, the upper and lower type-bars adapted to slide in said guides, a rotary platen, and a vertically-movable support for said platen, substantially as described.

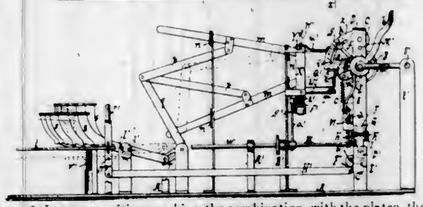
2. In a type-writing machine, the combination, with type-bars provided with two or more types and suitable guides, in which said bars move, of a vertically-movable platen and bracing-arms *r'* for holding said platen against backward motion, said arms *r'* being jointed to a suitably-supported bar or pivot *s'*, substantially as described.

3. In a type-writing machine, the combination, with concentric guides arranged in two tiers and made to converge toward a common point, and type-bars made to slide in said guides and each provided with two or more types, of a rotary platen, a vertically-movable support for said platen, and bracing-arms for holding said platen against backward motion, substantially as described.

4. In a type-writing machine, the combination, with the type-bars, the rotary platen, the frame D, in which the platen is mounted, and the ratchet *f* and pawl *d* for rotating said platen, of the plate *k*, supported by the frame D and provided with a curved slot *i*, the pointer *g*, loosely mounted on the axle of the platen, the shield *l*, carried by the pointer and arranged to control the engagement of the pawl and ratchet, and the set-screw *h*, supported in the slot *i* to adjustably clamp the pointer and shield, substantially as described.

5. In a type-writing machine, the combination, with the platen, the platen-carriage, and the hammer *o'*, secured to said carriage, of the platen-carriage track having the slot *q'*, and the adjustable alarm-bell *n'*, having its stem *p'* supported in said slot, substantially as described.





6. In a type-writing machine, the combination, with the platen, the platen-carriage, and a feed-rack and dog for said platen-carriage, said rack provided with the vertically-inclined slots O O, of the slide Q, having studs P P engaging said slots, a lever or handle for actuating the slide, and the spring R, attached to the platen-carriage and having one end engaged with the slide, substantially as described.

7. In a type-writing machine, the combination, with the platen, the platen-carriage, and a feed-rack and dog for said platen-carriage, of the slide Q for raising said feed-rack out of its operating position, the vertically-inclined slot-and-pin connection O P for connecting said slide and rack, a lever and connections for actuating the platen and slide together, and a lever for actuating the slide independent of the platen, substantially as described.

8. In a type-writing machine, the combination, with an ink-ribbon and feed-rollers R' S' for said ribbon, of ratchets actuated by pawls *b' c'*, alternating shields *d' d'* for putting first one and then the other pawl out of operation, a slide *h'* for actuating said shields, a link *i'*, connected to said slide and provided with a pin *g'*, and a screw-thread *f''*, engaged by said pin and connected to one of the feed-rollers, substantially as described.

9. In a type-writing machine, the combination, with the platen, the type-bars, the inking-ribbon, and the feed-rollers R' S' for said ribbon, of the ribbon-roller frame X', provided with pivoted arms U' and pointer *u'*, the tension-rollers T', and the springs V', substantially as described.

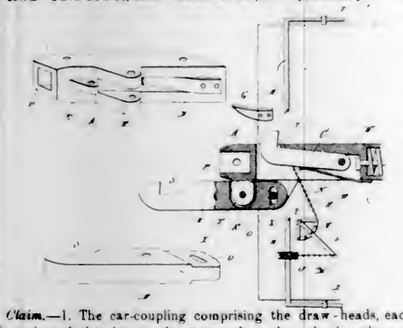
10. In a type-writing machine, the combination, with a platen and a vertically-adjustable track for said platen, of a bell-crank and slide H' for raising and lowering said track, an actuating-lever I' for said slide, and a setting-plate having engaging notches for fixing the lever I' in the desired position, substantially as described.

11. In a type-writing machine, the combination, with the platen, the feed-rack and dog, and the rock-shaft M, having arms *z*, of the spacing-key *t*, extended along under the key-levers, and the rock-shafts *w*, having arms *v* and *x* for connecting the spacing-key with the arms of said rock-shaft, substantially as described.

12. In a type-writing machine, the combination, with the key-levers *s* and the type bars *m*, of the levers *q*, pivotally supported at their lower ends, the links *p*, connecting said levers with the type-bars, and the levers *r*, connecting the type-bar levers *q* with the key-levers, substantially as described.

13. In a type-writing machine, the combination of an ink-ribbon, feed-rollers for said ribbon, pawls *b' c'* for actuating said rollers, an arm or slide Z' for actuating the pawls and a rock-shaft M for actuating the slide Z', and a spacing-key and restoring-spring *v'* for actuating the rock-shaft, substantially as described.

449,561. CAR-COUPLING. CHARLES F. MURRAY, Cedar Falls, Iowa. Filed Dec. 11, 1890. Serial No. 374,321. (No model.)



Claim.—1. The car-coupling comprising the draw-heads, each having pivoted therein a spring-actuated catch projecting through opposite sides of the two heads, said draw-heads also having pivoted to their outer sides a hooked coupling-bar adapted to engage the pivoted spring-actuated catch of the opposite head, substantially as specified.

2. The car-coupling comprising the draw-heads having on their outer faces the pivot-lugs, hooked coupling-bars pivoted in such lugs in such a manner as to allow a limited lateral movement of the said bars, each bar having a hooked head adapted to engage a spring-actuated catch pivoted in the opposite draw-head, and means for retracting the spring of said catch, substantially as described.

449,562. WINDOW-SASH. LAVINIA H. MCCLELLAN, Bristol, Tenn. Filed Oct. 16, 1890. Serial No. 368,318. (No model.)



Claim.—1. The combination, with vertically-sliding guide-pieces and a window-sash pivotally suspended between the same, of a strip of molding or other material hinged to each of the guide-pieces and adapted to be folded over the joint between the latter and the sash, said strips being carried by the guide-pieces through the movement of the latter, substantially as and for the purpose set forth.

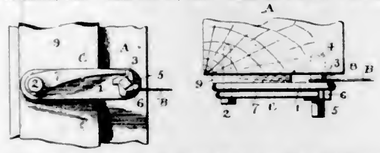
2. The combination, with vertically-sliding guide-pieces and a window-sash pivotally suspended between the same, of a strip of molding or other material hinged to each of the guide-pieces and adapted to cover the joint between the same and the sash, for the purpose described, and catches for locking said strips to the latter, substantially as set forth.

3. The combination, with vertically-sliding guide-pieces and a window-sash pivotally suspended between the same, said guide-pieces and sash having a rabbet at their inner opposing edges, forming conjunctively a longitudinal groove or recess at each side of the sash, of a strip hinged to each of the guide-pieces and adapted to be received by said grooves or recesses, and means for locking the strips within the latter, substantially as set forth.

4. The combination, with vertically-sliding guide-pieces, a window-sash pivotally suspended between the same, and strips adapted to cover the joints between the guide-pieces and the sash, of hinges connecting the guide-pieces and the strips and having extended inner members projecting over the edges of the sash, and catches for securing said extended members to the sash, substantially as set forth.

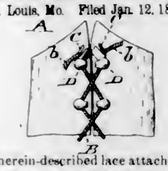
5. The combination, with vertically-sliding guide-pieces and a window-sash pivotally suspended between the same, said guide-pieces and sash having a rabbet at their inner opposing edges, forming conjunctively a longitudinal groove or recess at each side of the sash, of strips adapted to be received by said grooves or recesses, hinges connecting the guide-pieces and strips and having extended inner members projecting over the side edges of the sash and provided with slots, and catches provided with flat heads extending at one side, said heads being adapted to be received by the slots and engage the outer face of the hinges to lock the strips in closed position, substantially as and for the purpose set forth.

449,563. FENCE-WIRE TIGHTENER. HIRAM G. MCDANIEL, Archbold, Ohio. Filed Dec. 27, 1890. Serial No. 375,944. (No model.)



Claim.—The combination, with a fence-post, of a wire-tightening device consisting of a turning pin revolubly mounted in the post, said pin being provided with a ratchet-wheel and having a squared outer end, a spacing-strip secured to the post, a headed pin passed through said strip and fixed in the post, a supporting-link connecting both pins, and a pawl pivoted to the fixed pin and engaging with the ratchet-wheel, the turning pin having a transverse perforation between the supporting-link and the post, substantially as described.

449,564. ATTACHMENT FOR SHOES, GLOVES, &c. BERNARD A. MCFADDEN, St. Louis, Mo. Filed Jan. 12, 1891. Serial No. 377,533. (No model.)

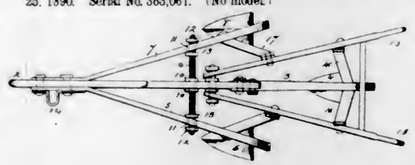


Claim.—1. The herein-described lace attachment, consisting of the tubular form, open at the outer end, perforated at the opposite inner end, and slotted in its side, said slot extending from said outer end of the attachment toward the inner end thereof to enable the lace to be drawn longitudinally through said attachment and the lace end to be fastened by drawing it into said slot, as described.

2. The herein-described lace attachment, consisting of the tubular form, open at the outer end, perforated at the opposite inner end, and slotted in its side, said slot extending from said outer end of the attachment toward the inner end thereof, and at its inner end being narrowed to a width narrower than the diameter of the lace end to enable the lace to be drawn longitudinally through said attachment and the lace end to be fastened by drawing it into the narrowed portion of said slot, as described.

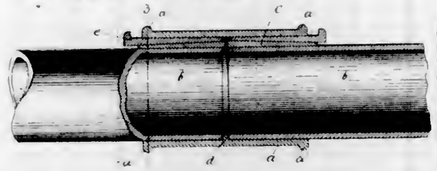
3. The tie attachment perforated longitudinally to receive the tie and having its side slotted, said slot extending from the outer end of the attachment toward the inner end thereof and thence sidewise, and being narrowed at its inner end, substantially as described.

449,565. PLOW. JAMES A. MCIVER, Enders, Ark. Filed Aug. 25, 1890. Serial No. 363,061. (No model.)



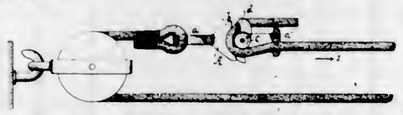
Claim.—The combinaton of the center beam 1, the removable curved section 3, having an end blade, the removable side beam 7, having an end blade, and the removable side beam 5, having an end blade and having the side clevis 14 secured to the side of its forward end, substantially as set forth.

449,566. PIPE-COUPLING. HENRY B. NICHOLS, Boston, Mass., assignor of one-half to John W. Linzee, Jr., same place. Filed June 18, 1890. Serial No. 355,835. (No model.)



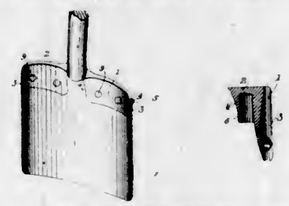
Claim.—The herein-described means for connecting pipe-sections, consisting of the continuous sleeve or collar *a*, adapted to fit partially around the sections when brought end to end and provided with an internal rib or flange *d*, extending around that portion of the interior of the sleeve or collar which fits upon the pipe-sections, and having its innermost edge or surface coincident with the interior surface of the pipe-sections, and means, substantially as described, including a wedge-block fitting around the portion of the exterior of the pipe not closely embraced by the collar and a wedge, both interposed between said sections and that part of the sleeve or collar which does not fit upon the outer surface of the pipe-sections for securing said collar upon said sections, as set forth.

449,567. LINE OR ROPE HOLDER. NICOLAS NIEF and PIERRE COTTE, West Hoboken, N. J. Filed Jan. 3, 1891. Serial No. 376,644. (No model.)



Claim.—A line or rope holder consisting of the housing having at one end an eye and at the opposite end a ring-guide and intermediate such eye and ring-guide provided with a laterally-projecting shoulder, and a rotating cylindrical drum having its axis in line with the orifice of the ring-guide and provided with a projecting tooth, whereby the eye serves for the attachment of one end of a line or rope and the ring-guide serves to support and guide the opposite end portion of the line or rope in advance of the rotating drum, substantially as described.

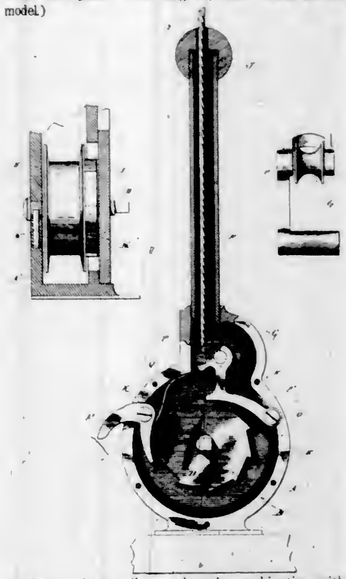
449,568. SHOVEL-PROTECTOR. JOHN T. OMLOR, Cassella, Ohio. Filed Aug. 25, 1890. Serial No. 362,939. (No model.)



Claim.—1. As an article of manufacture, a protector attachment for shovels, the same formed in a single piece and consisting of an upper broad flat bearing-surface 2 and opposite front and rear terminals 3 and 4, respectively, the latter shorter than the former, and each tapered upon its outer face from the edge of the bearing-surface 2 to its lower edge and terminating in a sharp edge, said flanges being adapted to form continuous unbroken surfaces of the front and back of the shovel, substantially as specified.

2. A shovel the crown portion of which is provided at opposite sides of its handle with U-shaped protectors curved to fit the same and consisting of upper flat bearings 2 and front and rear flanges 3 and 4, respectively, the former perforated and riveted to the blade, the flanges of each protector combining to form an intermediate recess gradually increasing in width toward its inner end to receive the swell of the blade, substantially as specified.

449,569. AUTOMATIC TROLLEY-CATCHER FOR ELECTRIC RAILWAYS. BYRON J. PARSONS, Omaha, Nebr., assignor to Fred. W. Fitch, same place. Filed Aug. 27, 1890. Serial No. 363,234. (No model.)



Claim.—1. In a trolley-catcher, the combination, with the trolley and its flexible connection, of the spring-actuated winding cylinder or drum and the holding or releasing mechanism thereto substantially as specified.

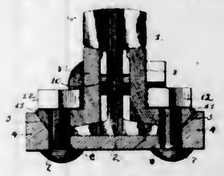
2. The trolley-catcher comprising the box or casing, the winding drum or cylinder journaled therein, an actuating-spring in said drum or cylinder, a ratchet on the end of the drum-shaft and a pawl in engagement therewith, a trip for said pawl, and a flexible connection with the trolley-rope, substantially as specified.

3. The trolley-catcher having the spring-actuated drum or cylinder, a ratchet connected therewith, a pawl normally held away from said ratchet, a second pawl normally in engagement therewith, and a trip actuated by the trolley-rope for relessing the latter pawl, substantially as specified.

4. The combination, with the box or casing, the spring-actuated drum or cylinder journaled therein, its ratchet, and the pawls engaging and adapted to engage said ratchet and its shaft, of the trip carried by the engaging pawl and adapted to release the same under the action of the trolley-rope and its extension, substantially as specified.

5. In a trolley-catcher, the combination of a spring-actuated winding cylinder or drum for the trolley-rope slack and a device for setting said spring and drum in operation.

449,570. RAIL-CHAIR. WILLIAM A. PEARSON, Jr., Scranton, Pa. Filed Apr. 17, 1890. Serial No. 348,288. (No model.)



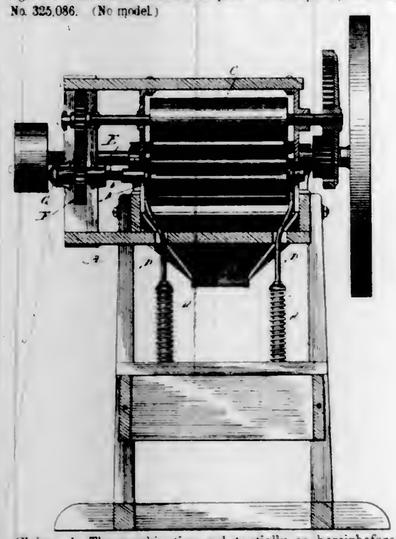
Claim.—The combination, with the rails, of the chair 2, having the recess to receive the rail and provided along its edges with the vertical flanges 4, having their inner opposed faces beveled or inclined outwardly, the fish-plates 8, provided with horizontal flanges 11, having their outer edges inwardly beveled and conforming to the inclination of the faces of the flanges 4, the horizontal bolts 10, passing through the fish-plates and the webs of the rails, and the bolts 7, passing through the chair, the bottom flanges at both sides of the rails and the fish-plates and adapted to force the latter against the rails and securely clamp the same, substantially as described.

449,571. REVERSIBLE ROTARY CUTTER. JOHN BARNES, Rockford, Ill., assignor to the W. F. & John Barnes Company, same place. Filed Feb. 28, 1889. Serial No. 301,468. (No model.)



Claim.—A reversible rotary cutter consisting of a series of cutting-disks, one of the disks having a diameter on one face at the cutting-edge different from the diameter on the other face of the cutting-edge and the diameter on each face of the other disks at the cutting-edge corresponding to one of the above-mentioned diameters.

449,572. FEED-CUTTER. ARTHUR CAMERON, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Sept. 25, 1889. Serial No. 325,086. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with the feed-roll B in a feed-cutter, of the gear F, provided with a hollow axle journaled at opposite sides of the gear, the flexible and elastic wire-cable journal attached to the feed-roll and extended through the hollow axle of the gear, and the cap or plug fitted to one end of the hollow axle and rigidly connected with one end of the flexible and elastic wire-cable journal, for the purpose described.

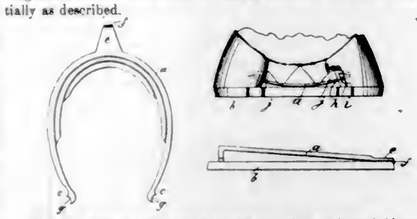
2. The combination, with the upper feed-roll C in a feed-cutter, of the lower spring-supported feed-roll B, a gear F, provided with a hollow axle which is journaled at opposite sides of the gear, and the flexible elastic wire-cable journal E, secured at one end to the lower feed-roll and extended through the hollow axle of the gear and rigidly connected therewith beyond the point where it enters the same, for the purpose described.

3. The combination, substantially as hereinbefore set forth, with the shaft I in a feed-cutter, of a fly-wheel having a portion of its central opening enlarged, so as to provide it with an internally-arranged shoulder, a hub or sleeve K, extending through the opening in the fly-wheel and having an enlargement *k*, which is received within the enlarged portion of said opening and fitted against the shoulder within the wheel, and the cap-plate M, bolted to the wheel and fitting against said enlargement of the sleeve, which said sleeve is held rigid upon the shaft, for the purpose set forth.

449,573. HEEL-EXPANDER FOR HORSES. GEORGE T. CHAPMAN, White Plains, assignor of one-half to William Harvey Merritt, New York, N. Y. Filed Aug. 3, 1889. Serial No. 320,170. (No model.)

Claim.—1. The graduated U-shaped spring-expander having the upright legs at the heel and laterally-projecting feet thereof, and being pointed at the extremities of the feet, substantially as described.

2. The combination, with a horseshoe, of a graduated U-spring hoof-expander interposed between the upper inner margin of the shoe and the hoof to which the shoe is attached, and having the hooked tongue-extension of the middle to engage the toe of the shoe, substantially as described.

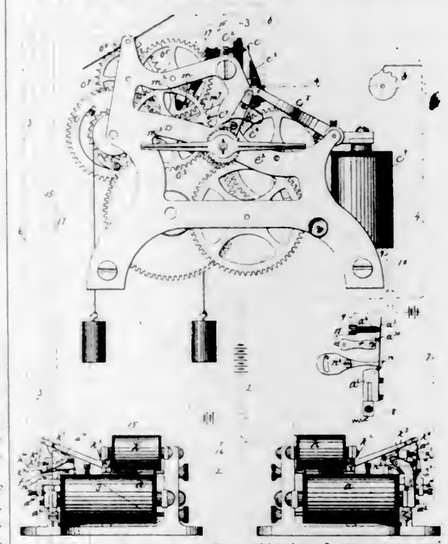


3. The combination, with a horseshoe, of a graduated U-spring hoof-expander interposed between the upper inner margin of the shoe and the hoof to which the shoe is attached, and having the notches of the heel extremities and the hooked tongue-extension of the middle, substantially as described.

4. The graduated U-spring hoof-expander having the tongue-extension of the middle and the perforations for nailing said spring to the hoof, substantially as described.

5. The graduated U-spring expander having the tongue-extension of the middle and the feet and legs at the heel and the perforations for nailing the spring to the hoof, substantially as described.

449,574. REPEATER. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed May 12, 1890. Serial No. 351,441. (No model.)



Claim.—1. In a repeater, the combination of two or more main relays, each in a separate main circuit, armatures therefor, a locking device for each armature, and a governing electro-magnet for each locking device with a circuit-changer for the circuit of said governing electro-magnets and a controlling member therefor movable quickly in one direction and slowly in the other direction, substantially as described.

2. In a repeater, the combination of two or more relays, each in a separate main circuit, and armatures therefor, a motor and detent therefor controlled by the armatures of said relays, with a governing-magnet for each main relay and a circuit for the governing-magnets, a circuit-changer in said circuit, and a controlling member therefor movable quickly in one direction and slowly in the other direction, substantially as described.

3. In a repeater, the combination of two or more main relays, each in a separate main circuit, and armatures therefor, with governing-magnets for said main relays and a circuit for said governing-magnets, and circuit-changer therein, and a timed controlling member for said circuit-changer, whereby the circuit of said governing-magnets may be held in an abnormal condition a longer time than the longest change in the main circuit produced in transmitting a signal, substantially as described.

4. In a repeater, the combination of two or more main relays, each in a separate main circuit, with governing-magnets for said relays, armatures for said relays and magnets, and a locking device for each main-relay armature moved by but made independent of the armature of said governing-magnet, substantially as described.

5. In a repeater, a main-relay magnet, its armature, and a circuit-controlling contact operated by it, combined with a governing-magnet and its armature and a switch, both members of which are connected with the main-relay armature and accompany its movements without relative change, and one of the two members of which is moved with relation to the other by the governing-magnet armature, substantially as described.

6. In a repeater, two or more main-relay magnets, each in a separate main circuit, a governing-magnet for each main-relay magnet, a circuit for said governing-magnets, a circuit-controller therefor, a motor and detent therefor, and an electro-magnet for said detent, and a local circuit for said electro-magnet, combined with two circuit-controllers for said local circuit, one of which is controlled by the main-relay magnet and the other by the governing-magnet, substantially as described.

7. In a repeater, the combination of two or more main-relay magnets, each in a separate main circuit, with a governing-magnet for each main-relay magnet, a locking-lever operated by each governing-magnet, a circuit for said governing-magnet, and a timed circuit-controller in said circuit to maintain it in its abnormal condition for a predetermined length of time, substantially as described.

8. In a repeater, the combination of two or more main relays, each in a separate main circuit, with governing-magnets for said relays, armatures for said relay-magnets, and a locking device for each main-relay armature moved by but made independent of the armature of said governing-magnet, and a circuit-controller in each main circuit controlled by the armatures of the governing-magnets, substantially as described.

9. In a repeater, the combination of two or more main-relay magnets, each in a separate main circuit, and a governing-magnet for each main-relay magnet, combined with two circuit-controllers in each main circuit, one of which, as *c*, is controlled by the main-relay magnet, the other of which is controlled by the governing-magnets, substantially as described.

10. In a repeater, the combination of two or more main-relay magnets, each in a separate main circuit, with circuit-controllers, as *c*, in said main circuits controlled by said main-relay magnets, a governing-magnet for each main-relay magnet, and circuit-controllers, as *f*, in each main circuit controlled, respectively, by the co-operation of the corresponding main-relay and governing magnet, substantially as described.

11. A telegraphic repeater apparatus comprising two or more main-relay magnets in main circuits disconnected from one another, a local circuit governed by the armatures of said relay-magnets, and a detent and controlling magnet therefor in said local circuit, combined with a motor governed by said detents and circuit-closers, one for each main circuit, operated by said motor at each movement permitted by the detent-controlling magnet, a number of governing-magnets, one to each main relay, and a circuit for said governing-magnets controlled by said motor, substantially as described.

12. The combination of a main-relay magnet and armature with a governing-magnet and armature included in a separate circuit from said main relay, and a movable lock for said main-relay armature disconnected from but adapted to be engaged and operated by a movable engaging part connected with said governing-magnet armature, whereby the said main-relay armature is locked in normal position if the circuit of the governing-magnet is changed from normal condition before that of the corresponding main relay is so changed, said engaging part of the governing-magnet armature being in position to be acted upon by the main-relay armature, so as not to operate the lock if the main-relay armature is changed from normal position before the governing-magnet armature is so changed, substantially as described.

13. The main-line circuit and two independently-operating circuit-controllers, as *f* and *c*, each having one member connected with one terminal of said main circuit and its other member connected with the other terminal of said main circuit, and the main-relay magnet included in said circuit, combined with a governing-magnet and armature provided with a movable engaging device co-operating with one only of said circuit-controllers, the said engaging device being operated by the main-relay armature to shift it from the position to act upon said circuit-controller, substantially as described.

14. The main-relay magnet and armature and circuit-controlling contact operated by the latter constituting one member of a circuit-controller, combined with a governing-magnet and armature, and an independently-operating switch adapted to afford electrical connection between the members of said circuit-controller when not in contact with one another, and a switch-actuator operatively connected with the said governing-magnet armature, whereby said switch may be operated to close the circuit controlled by the main-relay armature independently of the latter, substantially as described.

15. The combination of two or more main relays in main circuits disconnected from one another, a motor and detent therefor controlled by the armature of said relays, a number of governing-magnets, one to each relay, and circuit therefor, and a circuit-closer in said circuit and motor for operating the same governed by the detent mechanism of the first-mentioned motor, substantially as described.

16. The combination of the main-relay magnet and armature with a governing-magnet and armature therefor, a pendant connected with said governing-magnet armature, but being independently movable thereon and adapted to be engaged by the main-relay armature, and a lock for said main-relay armature engaged by said pendant when the governing-magnet armature is moved while the main-relay armature remains in normal position, substantially as described.

17. The combination of the main-relay magnet and armature with a governing-magnet and armature therefor, a pendant connected with said governing-magnet armature engaged by the main-relay armature, and a circuit-closer in the main-relay circuit engaged by the said pendant when the governing-magnet armature is moved while the main-relay armature is in normal position, but not otherwise, substantially as described.

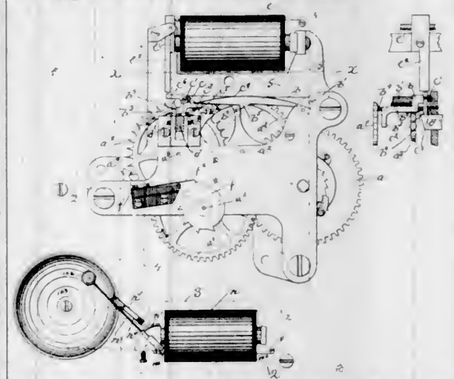
18. The combination of the main-relay magnet and armature with a governing-magnet and armature therefor, a pendant connected with said governing-magnet armature engaged by the main-relay armature, and a switch engaged by said pendant when the governing-magnet armature is moved while the main-relay armature is in abnormal position, substantially as described.

19. The combination of the contact-carrier, as c^3, with an actuating-motor and detent therefor, and an eccentric rotated by said motor when its detent is released, and connections between said eccentric and contact-carrier, whereby the latter is vibrated at each movement of the motor, substantially as described.

20. The combination of a contact-screw, as c^{30}, forming one member of a circuit-closer, with a forked spring-plate, the prongs of which engage with said screw in the threads thereof, thereby maintaining electrical contact with said screw while permitting the same to be adjusted longitudinally, substantially as described.

449,575. NON-INTERFERENCE SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed June 9, 1890. Serial No. 354,684. (No model.)

Brief.—The position of the armature-lever c^4 is controlled by a switch operated by the lagging armature-lever n^5. If the pull is operated while the magnet *c* is energized, arm c^5 of the holder is dislodged from *d*, locking-lever *b* falls, and the train is released; but if arm c^5 does not engage with the end of c^4 the train is not released.



Claim.—1. In a signal-box, a signaling-train, a locking-lever, and a holder therefor, combined with a pull and a box-controller between which the holder is interposed, substantially as described.

2. In a signal-box, a signaling-train, a locking-lever, a spring-controlled holder therefor, and a pull and a box-controller between which the said holder is placed, substantially as described.

3. In a signal-box, a signaling-train, a locking-lever, a pivoted holder therefor, a pull for moving said holder bodily, a box-controller for moving said holder on its pivot, and a non-interference magnet controlling the engagement of the box-controller and holder, substantially as described.

4. In a signal-box, a signaling-train, a locking-lever, and holder therefor, combined with a pull and a box-controller between which the holder is interposed, and a restoring device for the locking-lever, the movable member of which is carried by one of the wheels of the train, substantially as described.

5. In a signal-box, a signaling-train, a locking-lever and holder for it, and a pull and a box-controller between which the said holder is placed, combined with a restoring device for the locking-lever and holder, the movable member of which is carried by one of the moving parts of the train, substantially as described.

6. In a signal-box, a signaling-train, a locking-lever and actuating-spring *d* therefor, a holder for said locking-lever, a pull on which said holder rests and by which it is moved against the tension of its actuating-spring, and a box-controller for also moving said holder to disengage it from the pull, substantially as described.

7. In a signal-box, a signaling-train, and a non-interference magnet, as *c*, controlling its operation, combined with a shunt-circuit closer for said non-interference magnet, an armature-lever for operating said shunt-circuit closer, and a separate electro-magnet, as *n*, for said armature-lever, substantially as described.

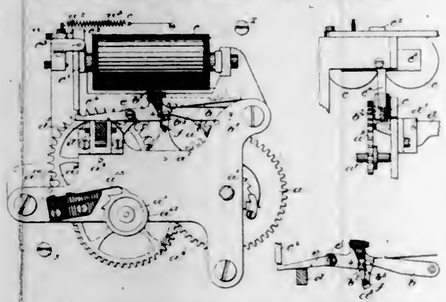
8. In a non-interference signal-box, a signaling-train, and non-interference magnet, as *c*, and a shunt-circuit closer therefor, combined with an armature-lever responsive only to long closures in the circuit for opening said shunt-circuit closer, and a separate electro-magnet, as *n*, for said armature-lever, substantially as described.

9. In a signal-box, a signaling-train, a non-interference magnet, as *c*, and a switch for disabling it, combined with a separate electro-magnet, as *n*, and its armature and armature-lever, by means of which the said switch is operated, substantially as described.

10. In a signal-box, a signaling-train, a non-interference magnet, and a shunt therefor, combined with a lag-switch for said shunt and a separate electro-magnet controlling the operation of said lag-switch, substantially as described.

11. In a signal-box, a signaling-train, a non-interference magnet, as *c*, and a switch for disabling it, combined with a separate electro-magnet, as *n*, and an armature therefor which controls the operation of said switch, substantially as described.

449,576. NON-INTERFERENCE SIGNAL-BOX. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed Oct. 20, 1890. Serial No. 368,663. (No model.)



Claim.—1. In a non-interference signal-box, signaling mechanism, a non-interference magnet, and its armature, combined with a locking-arm, and a fulcrum-lever, and fulcrum therefor, the position of which is controlled by said armature, substantially as described.

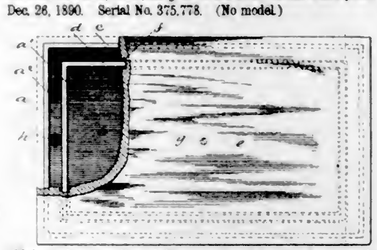
2. In a non-interference signal-box, a signaling mechanism, a non-interference magnet, and its armature, and a box-controller, combined with a locking arm or lever, and a shunt-circuit changer moved bodily by said locking arm or lever, and a pin on one of the members of the signaling mechanism for closing said shunt-circuit changer, substantially as described.

3. In a non-interference signal-box, a signaling mechanism, a non-interference magnet and its armature, and a box-controller, combined with a lever, as *n*, independent of the armature, which is moved by the box-door when closed, and a retractile spring for the armature attached at one end to said lever *n*, substantially as described.

4. In a non-interference signal-box, a signaling mechanism, a non-interference magnet, and its armature, and a box-controller, combined with a retractile spring for the armature attached at one end to a support, and a piece independent of the armature to which the other end of said spring is attached, substantially as described.

5. A magnet and its armature, combined with a retractor for said armature, and means for moving said retractor independent of the armature, substantially as described.

449,577. COOLING-SLAB FOR CONFECTIONERS. GEORGE S. COLLUM, Hartford, Conn., assignor to Annie K. Collum, same place. Filed Dec. 26, 1890. Serial No. 375,778. (No model.)

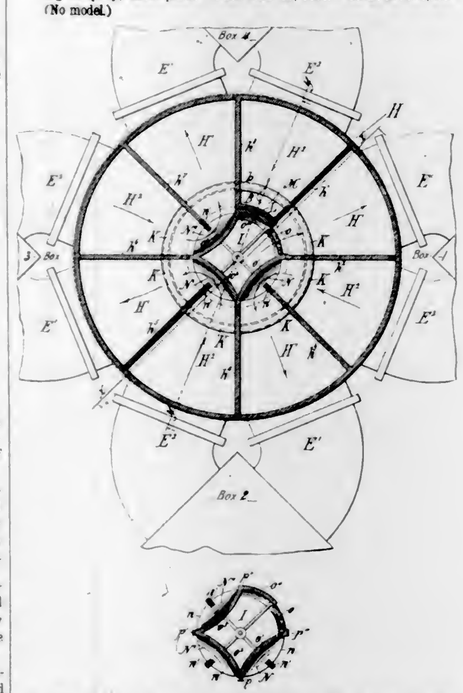


Claim.—1. A cooling-slab consisting of an interior chamber having an inlet-opening and an exterior chamber having an outlet-opening, with a plate of uniform thickness resting loosely upon the walls of the receptacle, substantially as described, and for the purpose specified.

2. A cooling-slab consisting of an interior chamber having an inlet-opening and an exterior chamber having an outlet-opening, with a plate resting upon the uneven upper edge of the walls of the interior chamber, substantially as described, and for the purpose specified.

3. A cooling-slab consisting of a receptacle formed of an interior chamber having an inlet-opening and an exterior chamber having an outlet-opening, and a plate provided with a groove in its under surface resting loosely upon the walls of the interior chamber of the receptacle, so that said walls project into the groove above the level of the lower surface of the plate, substantially as described, and for the purpose specified.

449,578. CENTER-SEAL AND BY-PASS VALVE. WILLIAM CRIGHTON, Fort Wayne, Ind., assignor to the Kerr-Murray Manufacturing Company, same place. Filed Jan. 19, 1891. Serial No. 378,263. (No model.)



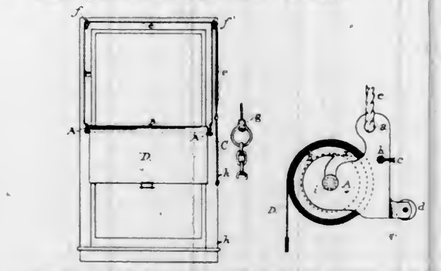
Claim.—1. In a center-seal valve, a turning cap divided by radial partitions into suitable compartments and provided with a central hollow plug provided with an opening in its wall connecting its interior with one of the compartments of the cap, and also provided with by-pass recesses for connecting inlet and outlet compartments of the cap in pairs or sets of two, substantially as described.

2. In a center seal for gas-purifying boxes, the turning-cap section provided with a central opening containing a hollow plug and also provided with radial partitions extending from said hollow plug to its outer wall and dividing it into suitable inlet and outlet compartments, said hollow plug having an opening in its side wall forming a passage from its interior into a compartment of the cap and also having two or more by-pass recesses in its wall connecting adjacent inlet and outlet compartments of the cap in pairs or sets of two, substantially as described.

3. The cap-section divided by radial partitions into inlet and outlet compartments and having a central vertical opening, in combination with a hollow plug seated in said central opening and having three re-entrant walls connecting with three circumferential posts arranged to register with alternate radial partition-plates of the cap and forming by-pass recesses connecting adjacent inlet and outlet compartments, said plug also having an opening in its side wall for the passage of gas from its interior into the inlet compartments of the cap, substantially as described.

4. In a center seal for gas-purifying boxes, the combination of the gas-inlet pipe with the valve-chamber located above the same and divided by suitable partition-walls to direct the flow of gas and containing a hollow plug connecting directly with the inlet-pipe, said plug having four walls, one of which fits snugly within the inner wall of the valve-chamber and having an opening to direct the flow of gas into the compartments of the valve-chamber and the others formed re-entrant and each of a width equal to the distance between alternate partitions of the valve-chamber, whereby one or all of the series of boxes can be put into operation.

449,579. SHADE-ADJUSTER. HARRY DU FRESNE, Portland, Oreg. Filed May 27, 1890. Serial No. 353,342. (No model.)



Claim.—1. In an adjustable shade-fixture, the combination of the roller-bracket having lugs in which is secured an anti-friction wheel *d*, such brackets being fixed on a transverse connecting-rod and provided with suitable suspending appliances, substantially as and for the purposes described.

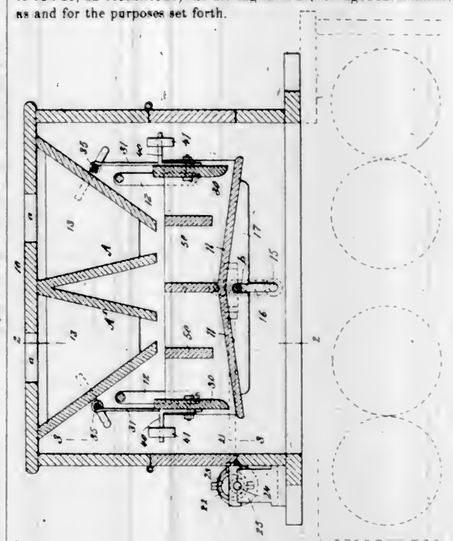
2. In an adjustable shade-fixture, the combination of the roller-brackets A, having lugs in which is secured an anti-friction wheel *d* on the transverse connecting-rod *b'*, passing through perforations in the inner lugs, and its threaded ends being secured in the threaded perforations in the outer lugs, the same being provided with suitable suspending appliances, all as substantially described.

449,580. FEED-REGULATOR. GEORGE L. DUTCHER, Douglas, and CHARLES W. BOYLE, Bradley, assignors, by direct and mesne assignments, to Charles H. Adams and Edward T. Van Ostrand, both of Allegan, Mich. Filed Jan. 9, 1890. Serial No. 336,340. (No model.)

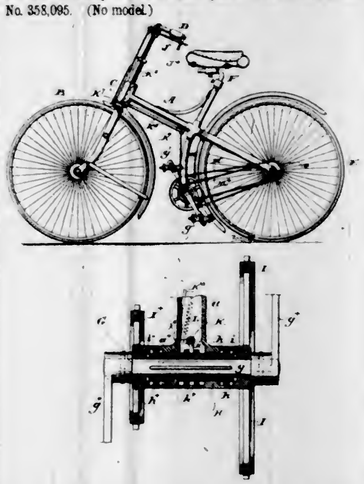
Claim.—1. In a feed-regulator for roller-mills, and in combination with a suitable hopper and inclosing casing, shaking-trays 11, provided with strips 50, arranged underneath said hopper, a means of shaking the trays, plates 30, arranged near the free end of the trays provided with adjustable weights 41, arranged as described, arms 31, secured to said plates, rock-shafts 35, journaled in said casing and provided with handles 36, arranged outside of said casing, and means for securing the said handles and rock-shafts in any adjusted position, substantially as described, and for the purposes herein set forth.

2. In a feed-regulator for roller-mills, and in combination with a suitable hopper and casing-blocks 13, arranged in the hopper, shaking-trays 11, provided with strips 50, arranged underneath said hopper, a means of shaking the trays, plates 30, provided with arms 31, and rock-shafts 35, journaled in the casing, adjustable connections between the arms and plates, arms that extend outward from the plates, and weights carried by the levers adapted to move toward and away from the plates, substantially as set forth.

3. In feed-regulators for roller-mills, and in combination with a double hopper and a suitable inclosing casing, blocks 13, arranged within the hoppers, trays 11, provided with strips 50, arranged beneath the hoppers, a flange 17, secured to the under side of the trays, rock-shafts arranged underneath the trays, having a crank 16, engaging said flange, a lever 18, carried by rock-shafts provided with a number of apertures adapted to receive a coupling-pin 19, a connecting-rod 21, provided with a socket 20, having corresponding sockets adapted to pin 19 for the regulation of the stroke, an eccentric-strap 22, secured to rod 21, an eccentric 23, and driving-shaft 24, arranged substantially as and for the purposes set forth.



449,581. BICYCLE. JOHN B. EVANS, Philadelphia, Pa., assignor of one-half to Henry Schwartz, same place. Filed July 8, 1890. Serial No. 358,095. (No model.)



Claim.—1. In combination with a bicycle having a driving-wheel, a crank-axle, driving-pedals mounted on said axle, two sprocket-wheels loosely mounted on said axle, a clutch adapted to make engagement with either of said sprocket-wheels, but so influenced by a spring as to be normally in engagement with the smaller of said wheels, substantially as set forth.

2. In combination with a bicycle having a driving-wheel, a crank-axle, driving-pedals mounted on said axle, two sprocket-wheels mounted upon said axle, a clutch mounted upon said axle and adapted to be set in engagement with either of said sprocket-wheels, said axle and clutch

being together mounted in a boxing, and means for shifting said clutch, substantially as set forth.

3. In combination with a bicycle having a driving-wheel, a crank-axle, driving-pedals mounted upon said axle, two sprocket-wheels mounted upon said axle, a clutch mounted upon and keyed to said axle and adapted for engagement with either of said sprocket-wheels, an inclosing-boxing in which said axle and clutch are mounted, within which they are provided with ball-bearings, and means for occasioning the throw of the clutch, substantially as set forth.

4. In combination with a bicycle having a driving-wheel, a crank-axle, driving-pedals mounted upon said axle, two sprocket-wheels mounted upon said axle, a clutch keyed upon and seated to said axle and adapted for engagement with either of said sprocket-wheels, an inclosing-boxing in which said axle and clutch are mounted for rotation, a bushing situated within the boxing, and circumscribing the clutch, balls constituting a ball-bearing existing betweeen the said clutch and said bushing, and means for occasioning the throw of said clutch, substantially as set forth.

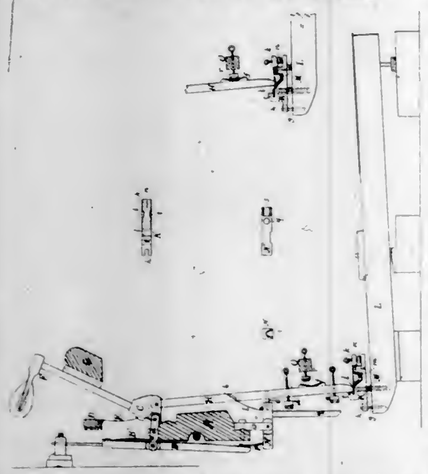
5. In combination with a bicycle having a driving-wheel, a crank-axle, driving-pedals mounted upon said axle, two sprocket-wheels mounted upon said axle, a clutch seated upon and keyed to said axle in such manner as to be free for limited longitudinal movement with reference to it, and adapted for engagement with either of said sprocket-wheels, an inclosing-boxing in which said axle and clutch are mounted for rotation, a bushing situated within the boxing and circumscribing the clutch, held by being keyed to the boxing from rotation with the clutch, but held to the clutch in such manner as to move longitudinally with it, recesses in the exterior of the clutch, corresponding recesses in the interior of the bushing, balls situated within said recesses, and means for occasioning the throw of the clutch and bushing, substantially as set forth.

6. In combination with a bicycle having a driving-wheel, a crank-axle, driving-pedals mounted upon said axle, a clutch seated upon and keyed to said axle in such manner as to be free for limited longitudinal movement with reference to it, and adapted for engagement with either of said sprocket-wheels, an inclosing-boxing in which said axle and clutch are mounted for rotation, a two-part bushing situated within the boxing, and circumscribing the clutch, held by being keyed to the boxing from rotation with the clutch, but held to the clutch in such manner as to move longitudinally with it, balls between said clutch and said bushing, and a bell-crank lever, one member of which is engaged in a recess in the bushing, substantially as set forth.

7. As an article of manufacture, a composite wheel for a Safety bicycle of the character described, consisting of a body the hub of which embodies a clutch-face, and a removable sprocket-equipped rim of any desired thickness having a flange fitting and adapted to be secured to the body of said wheel, substantially as set forth.

449,582. WITHDRAWN.

449,583. UPRIGHT-PIANO ACTION. GEORGE M. GUILD, Boston, Mass. Filed June 23, 1890. Serial No. 356,473. (No model.)



Claim.—1. In an action for upright pianos, the combined lifter rod and jack pivoted to the hammer-heel and provided with the spring-bearing *b*, the pin *c*, buttons *d* and *e*, and back-stop *f*, as and for the purpose explained.

2. In an action for upright pianos, the combined lifter rod and jack pivoted to the hammer-heel and provided with the spring-bearing *b*, pin *c*, an adjustable button, and a back-stop *f*, as and for the purpose set forth.

3. In an action for upright pianos, the lever N, provided with the arms *p* and *q*, the notch *s*, and spring I, fulcrumed to a flange-piece, essentially as shown.

4. In an action for upright pianos, the combination of a lever N, provided with arms *p* and *q*, a notch *s* and spring I, said lever fulcrumed to the flange-piece *o*, with the combined lifter rod and jack H, pivoted to the hammer-heel and provided with a bearing for the said spring I, a pin *c*, one or more adjustable buttons, and a back-stop, essentially as shown and set forth.

5. In an action for upright pianos, the combination of the combined lifter rod and jack pivoted to the hammer-heel and provided with a spring-bearing *b*, a pin *c*, one or more adjustable buttons, and a back-stop with an adjustable back-check *r*, the latter supported substantially as shown and set forth.

6. In an action for upright pianos, the jack-butt K, provided with the stop *t*, seat *l*, ears *i*, lever *k*, pivoted to said ears, the adjustable button *n*, the spring *m*, and slot *h*, in combination with the key, provided with the pin *g*, and the right and left threaded screw M, as and for the purpose explained.

7. An action for upright pianos, substantially as described, it consisting of the flange-piece *a*, the damper and hammer pivoted thereto, the damper-spring B', the combined lifter rod and jack H, provided with a spring-bearing *b*, a pin *c*, one or more adjusting-buttons, and a back-stop, the adjustable back-check *r*, the lever N, provided with arms *p* and *q*, a notch *s* and spring I, the flange-piece *o*, supporting said lever, the jack-butt K, provided with the stop *t*, seat *l*, ears *i*, lever *k*, button *n*, spring *m*, and slot *h*, and the key provided with the guide-pin *g* and the right and left threaded screw M, connecting said butt to the key, all arranged and supported essentially as represented.

8. In an action for upright pianos, the combined lifter rod and jack pivoted to the hammer-heel and provided with inclined pin *c*, one or more adjusting-buttons, and a doubly-inclined back-stop, essentially as represented.

9. In an action for upright pianos, the combined lifter rod and jack provided with the doubly-inclined back-stop *f*, essentially as represented.

10. In an action for upright pianos, the lever N, provided with arms *p* and *q*, and the notch *s*, provided with the inclined bottom, as and for the purpose explained.

11. In an action for upright pianos, the combination of the damper B and spring B', the lever N, provided with arms *p* and *q*, and a notch having an inclined bottom, the combined lifter rod and jack pivoted to the hammer-heel and provided with the inclined pin *c*, one or more adjusting-buttons, and a doubly-inclined back-stop *f* and the adjustable back-check *r*, all arranged and supported essentially as represented.

12. In an action for upright pianos, the jack-butt K, provided with the stop *t*, seat *l*, ears *i*, lever *k*, fulcrumed to said ears, the adjusting-button *n*, and the spring *m*, in combination with the key supporting said butt, essentially as and for the purpose explained.

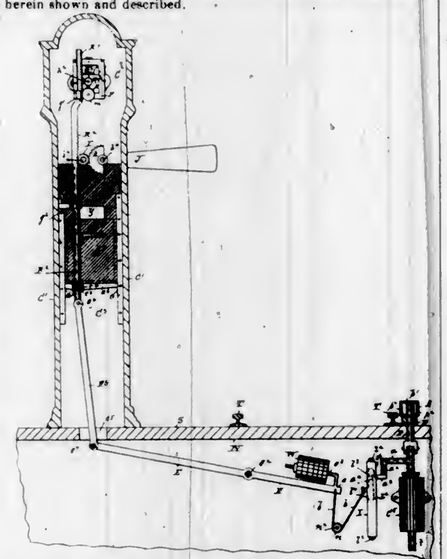
13. In an action for upright pianos, the combined lifter rod and jack pivoted to the hammer-heel and provided with a spring-bearing *b*, a pin *c*, and one or more adjustable buttons, arranged essentially as shown.

14. In an action for upright pianos, the combined lifter rod or jack provided with a back-stop, the working-face of which is inclined, for the purpose explained.

449,584. RAILWAY TIME-SIGNAL. FRED B. IDE, Troy, N. Y., assignor to Ettie M. Ide, same place, William Griffin, West Troy, and Nathan D. Ide, Corinth, N. Y. Filed Dec. 26, 1890. Serial No. 375,855. (No model.)

Claim.—1. In an apparatus for automatically indicating the time at which railway-trains pass stations, the combination, with a clock indicating time in the ordinary manner and arranged upon the side of the track, of a minute-dial arranged upon the case of said clock below the latter, a pointer for said dial, and a rack-bar constructed with a rack operated to connect with said clock mechanism by the truck of a passing car, with said rack-bar operated by said clock to communicate motion to said pointer to indicate minutes upon said minute-dial, substantially as shown and described.

2. The combination, with a clock located at the side of a railway-track, of a rack-bar provided with a rack operated to rise and engage with the mechanism of said clock by a passing rail-truck and operated to descend by the engagement of said rack with the clock mechanism, substantially as described, a translucent panel having minute-designating figures thereon and arranged in the front face of the clock and rack-rod inclosure, and a slide-plate having a red-glass panel behind said translucent panel, said slide-plate being connected to said rack-rod to be moved downwardly by said clock mechanism, substantially as herein shown and described.



3. The combination, with a clock located at the side of a railway-track, said clock having upon it a gear-wheel adapted to be moved by its minute-hand shaft one tooth a minute and to be reversed without engagement with the clock mechanism, substantially as described, of a rack-bar having a rack at its upper end and constructed to be moved upwardly to engage with said gear-wheel by a passing car-truck and operated to be moved downwardly by the connection made with said gear-wheel and its connection with said clock mechanism, a second rack arranged upon said rack-bar below the before-named rack, said second rack being constructed to engage with a pinion arranged on the clock case or inclosure interior, a dial indicating minutes arranged on the front of said clock-case below the clock, and a pointer having a segmental gear on its shaft adapted to mesh into said pinion and be operated thereby to indicate minutes on said dial, substantially as shown, and for the purposes set forth.

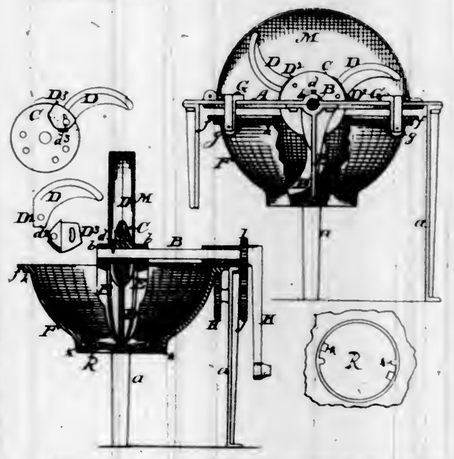
4. The combination, with the gear-wheel w^2, arranged upon and constructed to be moved by the minute-hand shaft t^4 of the clock C^9, substantially as described, of the pinion h, having a shaft h^2 in the clock-frame, the gear-wheel w^2, made with a ratchet-wheel r^4 and arranged on the shaft m^2 and adapted to mesh into said pinion, the wheel m, made with a spring-pawl m^3 and arranged on said shaft m^2 in front of the wheel w^2, the rack-bar B^2, made with the edge groove g^2, and interiorly-placed rack R, constructed and arranged to be operated substantially in the manner as and for the purposes set forth.

5. The combination, with the cylinder C^8, arranged at the side of a railway-track, made with the vent-passage O^3, of the piston P^3, having the piston-rod P, interior chamber v^2, vent-passage O^3, valve V, the tube t, having an air-passage O^4, the spring S^4, arranged between said piston and the cylinder-head h^4, the spring-plate A, connected to the top of the piston-rod, and the wheel M, arranged on an outrigger-shaft projected laterally from a car-truck, substantially in the manner as and for the purposes set forth.

6. The combination, with the cylinder C^8, of the piston P^3, having a piston-rod P, made with an arm a and constructed to be moved elastically within said cylinder, substantially as described, the spring-plate A, connected to said piston-rod and adapted to be operated by a passing car-truck, substantially as described, the latch L^2, the rack-bar B^2, connecting-rod E^2, lever E, made with a counterpoise, and the chain b, connecting the lever E with the latter, substantially as and for the purposes set forth.

7. The combination of a cylinder having a piston that is provided with an arm and constructed to be operated to elastically descend and rise within said cylinder by the truck of a passing railway-car, a slide-latch operated by said piston, a clock located at the side of the railway-track, a rack-bar operated to rise and connect within said clock and operated to descend and actuate a timing mechanism by said clock, a pivoted lever provided with a counterpoise connected at one of its ends by means of a rod with said rack-bar, and the other end of said lever connected by a chain with said latch, substantially in the manner as and for the purposes set forth.

449,585. MEAT-CUTTER. SAMUEL T. JULL, Meadville, Pa., assignor to Farnum T. Fish, same place. Filed June 26, 1890. Serial No. 356,918. (No model.)



Claim.—1. In a meat-cutting machine, the combination, with bowl F and frame A, of the adjustable brackets G G, having rollers *g g*, latch-bolts g^3, and spring g^2, substantially as and for the purpose specified.

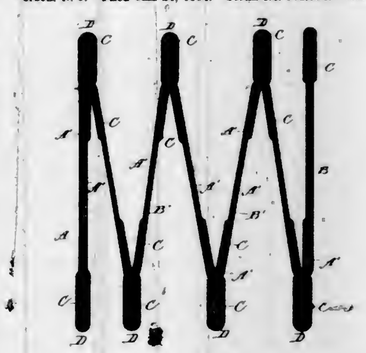
2. In a meat-cutting machine, the combination, with the shaft B, of the disk C C, comprising a hub, the knives D D, having shanks D^3, the blocks D^4, having stud d^3, and a slot and clamp-bolts d^2, as and for the purpose specified.

3. In a meat-cutting machine, the combination, with the rotative bowl F, having bottom opening and provided with lugs *r r*, of the closure R, having notches and inclines by which the said bottom is removably held in place, substantially as and for the purpose specified.

449,586. ART OF PRODUCING GROUND WOOD PULP. EDWARD F. MILLARD, Jackson, Mich. Filed Sept. 8, 1890. Serial No. 364,330. (No specimens.)

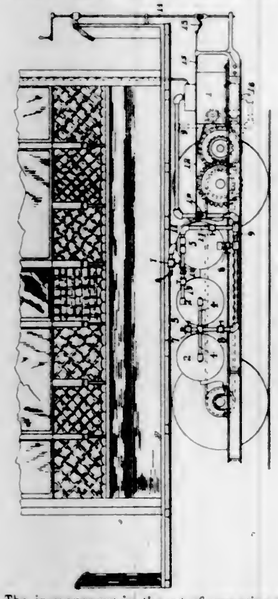
Claim.—The process of producing ground wood pulp, which consists in subjecting sticks of suitable wood under light pressure to the disintegrating action of a sharp stone, substantially as set forth.

449,587. BELLOWS-FOLD COUPLING. EDWARD L. PERRY, Paterson, N. J. Filed Jan. 21, 1891. Serial No. 378,531. (No model.)



Claim.—As an improved article of manufacture, a bellows-fold device composed of strips of rubber and textile fabric, the latter being continuous at the apex of the angle of the folds, substantially as specified.

449,588. METHOD OF AND APPARATUS FOR PROPELLING STREET-CARS. WILLIAM EDGAR PRALL and WILLIAM EDGAR PRALL, Jr., Washington, D. C.; said William Edgar Prall, Jr., assignor to said William Edgar Prall. Filed Feb. 3, 1891. Serial No. 380,096. (No model.)



Claim.—1. The improvement in the art of operating engines to propel cars or like vehicles, which consists in storing an air-tank to be carried in the car with compressed air, in storing a water-tank with highly-heated water under pressure, conveying such air and water to an engine-cylinder on the car and introducing them into the same, permitting the water to heat the air and the air to expand in the cylinder, thereby driving the engine and cooling the fluids, and then exhausting the air and water from the cylinder, substantially as set forth.

2. The combination of a tank of compressed air, a tank of highly-heated water under pressure, said tanks being located on and adapted to be carried with a car or other vehicle and being disconnected from a heating and compressing apparatus, an engine having a cylinder provided with an exhaust-port in its bottom, a pipe or pipes leading from the tanks to the engine-cylinder, all as specified, whereby air and water can be supplied to the cylinder, and air and water can be subsequently exhausted, substantially as set forth.

3. The combination of a tank of compressed air, a tank of highly-heated water under pressure, an engine having a cylinder provided with an exhaust-port in its bottom, a pipe or pipes leading from the tanks to the engine-cylinder, whereby air and water can be supplied to the cylinder, and air and water can be subsequently exhausted, and a pipe leading from the air-tank to the upper part of the water-tank to maintain pressure therein, substantially as set forth.

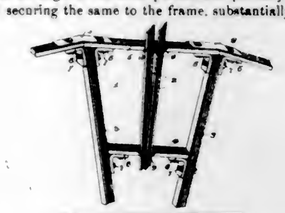
4. The combination of the air and water tanks, and pipes leading therefrom to the engine-cylinder, the water-pipe communicating with the lower part of the water-tank, a pipe leading from the air-tank to the upper part of the water-tank to maintain pressure therein, and a pipe leading from the upper part of the water-tank to the cylinder to convey air and steam, substantially as set forth.

5. The combination of the air and water tanks, and pipes leading therefrom to the engine-cylinder, the water-pipe communicating with the lower part of the water-tank, a pipe leading from the air-tank to the upper part of the water-tank to maintain pressure therein, and a pipe leading from the upper part of the water-tank to the cylinder to convey air or steam, said cylinder having an exhaust-port in its bottom, substantially as set forth.

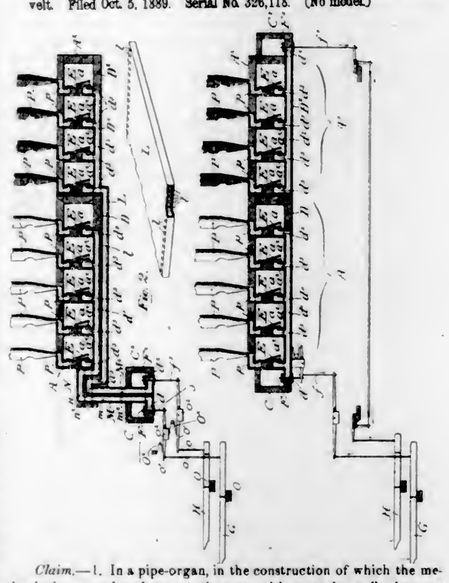
6. The combination of a tank stored with highly-heated water under pressure with an engine having a cylinder provided with an exhaust-port in its bottom, said tank being located on and adapted to be carried with a car or other vehicle and disconnected from a heating-furnace, substantially as set forth.

449,589. WIND-WHEEL. MICHAEL C. ROBBINS, Freeman, Md. Filed Jan. 21, 1891. Serial No. 378,576. (No model.)

Claim.—In a wind-wheel, the combination of a suitable frame, the blades, and the angle hook-bolts having the inner portions 11, forming bolts proper and secured to the frame by nuts or their equivalents, said angle hooks-bolts being provided with an outer portion or hook 10, arranged at an angle to the inner portion and partially encircling the blade and securing the same to the frame, substantially as described.



449,590. ORGAN. FRANK ROOSEVELT, New York, N. Y., and WILLIAM N. ELBERT, Philadelphia, Pa.; said Elbert assignor to said Roosevelt. Filed Oct. 5, 1889. Serial No. 326,118. (No model.)

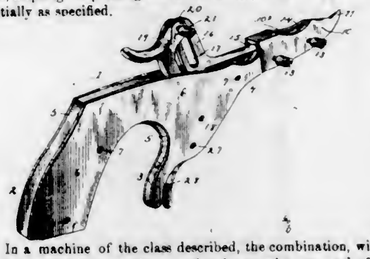


Claim.—1. In a pipe-organ, in the construction of which the mechanical connections between the manual keys and a pallet-box are simplified and shortened by reason of the location of the pallet-box at a point in proximity to said manual keys, as a means for placing said pallet-box in pneumatic connection with a wind-chest occupying its usual position in the organ, but distant from the pallet-box and structurally independent thereof, an elongated board-like wooden structure embodying a series of channels, supported in any desired manner, and the channels of which open respectively into the wind-chest and pallet-box, substantially as set forth.

2. In a pipe-organ, in combination with a swell-organ wind-chest, embodying valveways, a pallet-box situated at a point in adjacency to the organ-manual, and having a vertically-extended side piece embodying a series of valveways, and having also a series of valve-throats in communication with its valveways, pallets mounted in the valve-throats, a key-manual, a mechanical connection between the keys and pallets, and a channel-board by means of which the valveways of the wind-chest and those of the pallet-box side piece are placed in communication, substantially as set forth.

449,591. MACHINE FOR BUDDING TREES. WILLIAM M. ROWELL, Fort Meade, assignor to James A. Harris, Citra, Fla. Filed Feb. 4, 1890. Serial No. 339,149. (Model.)

Claim.—1. In a machine for the purpose described, the combination, with a casing terminating at one end in a hand-grip and at the other end in a tapered neck, of a removable U-shaped cap or hood mounted over the neck and terminating in a point and provided with a bud-receiving channel, a plunger mounted in the channel and of a contour in cross-section agreeing therewith and terminating at its rear end in a plate having a cam-slot, a spring-pressed hammer pivoted in the casing and having its hammer end bifurcated and embracing the slotted plate, and a set-screw passing through the slot and the bifurcations of the hammer, and a trigger for locking and releasing the hammer, a spring for pressing the same, and a pivot for supporting it, substantially as specified.

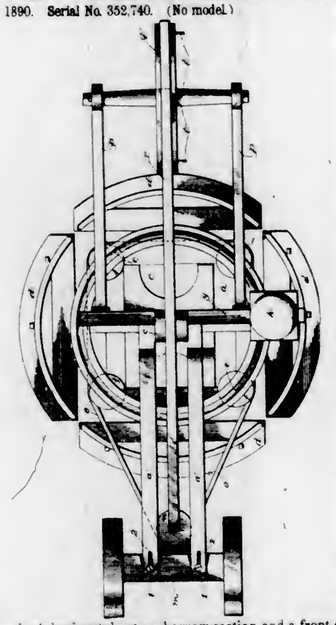


2. In a machine of the class described, the combination, with a case, of a removable tapered cap or hood secured to one end of the same and having an internal channel or bore, a plunger corresponding in shape to and mounted in the bore, and mechanism for operating the plunger and removably connected therewith, substantially as specified.

3. In a machine of the class described, the combination, with a case, of a removable tapered cap or hood secured to one end of the same and having an internal channel or bore, and a bud-receiving slot in the top thereof, a plunger mounted in the bore, and mechanism for operating the plunger, substantially as specified.

4. In a machine of the class described, the case forming a hand-grip and inclosing the trigger mechanism, the plunger having the cam-slot at its rear end acted upon by the trigger mechanism, and the removable tapered cap or hood secured to the case and having an internal channel for the passage of the plunger, and a bud-receiving channel at the top, as set forth.

449,592. HARROW. SAMUEL SCHRECKENGOST, Meadville, Pa. assignor of one-fourth to Charles F. Moore, Huntersville, W. Va. Filed May 22, 1890. Serial No. 352,740. (No model.)



Claim.—1. A horizontal rotary harrow-section and a front draft-truck therefor, in combination with the flexible draft-connection connecting said truck and harrow-section and passing loosely around said section to allow rotation thereof and so that the draft is evenly distributed thereon.

2. The rotary harrow-section, and the vertical post upon which the same rotates, in combination with the front draft-truck connected to said post to allow independent movement in line of draft, and the flexible endless draft-connection from said truck to the rotary harrow-section, as set forth.

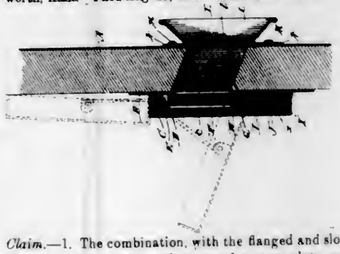
3. The truck having a horizontal pulley, and the rotary harrow-section having a series of horizontal pulleys around the upper portion thereof, in combination with the endless flexible draft-connections passing around the pulleys of said truck and harrow, substantially as described.

4. A horizontal rotary harrow-section and a front draft-truck, in combination with the endless flexible draft-connection connecting said truck and harrow and passing around the harrow-section, substantially as and for the purpose set forth.

5. The rotary harrow-section and the vertical post in which it is journaled, in combination with the front truck and rear wheel, both attached to said post, and the lever mounted on said post to raise said truck and rear wheel, substantially as described.

6. In combination, the rotary harrow-section, the vertical post to which the same is mounted, the front draft-truck connected to said post to allow vertical swing, the rear guiding-wheel loosely connected to said post to allow vertical swing, and the lever fulcrumed on said post and connected to the front truck and provided with means for connection with said rear wheel and arranged to lift the truck and wheel from the ground.

449,593. HOUSE-DOOR LETTER-BOX. WILLIAM SCOTT, Leavenworth, Kans. Filed Aug. 23, 1890. Serial No. 362,861. (No model.)



Claim.—1. The combination, with the flanged and slotted door or base plate and a beveled lug thereon, of a name-plate and links connecting the two plates, substantially as described.

2. The combination, with the slotted door or base plate, outwardly-turned flanges surrounding the upper side and the ends of the slot, and a beveled lug located on the plate below the slot, of a name-plate and links connecting said plates, said name-plate being provided with flanges adapted to overlap the flanges on the door-plate, substantially as described.

3. In a combined name-plate and mail-receptacle, plate B, having slot *b* therein, the horizontal and vertical flanges C and c c outstanding therefrom and surrounding at a suitable distance the slot *b*, and the outstanding ears D, the plate J, the links connecting said ears and plate, and inclined lug X of the door-plate, substantially as described.

4. In a combined door plate and mail-receptacle, the connecting-links F F, journaled at either end on the pins E and G between the ears D and the side walls c of the door-plate and ears H and side or end walls I of the name-plate J, substantially as described.

5. The combination of a door provided with a slot *a*, the upper and lower walls of which are inclined as described, the mouth-piece L, provided with the aligned slot *l*, the flanges N, by which it is secured to the door, and the flaring mouth-piece L, round which is secured the spring P, secured at the upper end of the bag or mail-receptacle T, substantially as described.

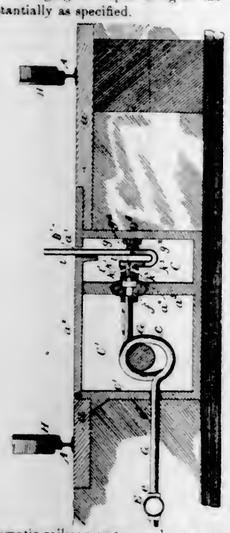
6. In a mail-bag constructed of woven wire or other suitable material, having secured at its upper end the spring P to conform in shape to the flaring mouth of mouth-piece L, said spring having outstanding ears *p* and *p'*, provided with a staple Q and slot, respectively, and adapted when closed to be engaged by the padlock S, said bag being also provided with a lining of suitable material U to within a short distance of its lower end, substantially as and for the purpose set forth.

7. The combination of a door-plate provided with the vertical walls *c*, the lower end thereof forming an abutment or stop, and a lug X, having an inclined upper surface, with a name-plate, the flange or wall K' thereof resting under and upon the walls c and lug X, respectively, substantially as described.

449,594. PNEUMATIC RAILWAY. ELIEL L. SHARPNECK and JOHN W. BAILEY, Denver, Colo. Filed May 4, 1888. Renewed Aug. 30 1890. Serial No. 363,468. (No model.)

Claim.—1. In a pneumatic-railway system, a line-pipe constantly charged with compressed air and placed contiguous and parallel to the car-track, a supply-station in connection with said line-pipe, a valve placed at and adapted to slide or travel throughout its entire length of movement longitudinally of and parallel to said station and provided with an interior valve constructed to be closed by the pressure of the air, a flexible tubular connection between said sliding valve and the line-pipe, combined with a car-reservoir and a pipe depending

therefrom, having a lower valve-face adapted to be brought by the travel of the car in contact with the sliding or retreating valve, whereby communication is established between the line-pipe and car-reservoir for the charging or replenishing of the latter with compressed air, substantially as specified.



2. In a pneumatic-railway system, a box arranged contiguously to and the full length of the track and having a continuous slot, connecting supply-stations at suitable distances apart, a line-pipe, a sliding valve at each of said supply-stations, and a flexible connection between the said line-pipe and valve, combined with a pipe depending from the car-reservoir and extending within the slot and having a valve-face adapted to make contact with and on such contact open the sliding valve, and means for bringing said pipe and sliding valve in and out of contact, substantially as set forth.

3. In a pneumatic-railway system, a line-pipe and a connecting supply-station, combined with a sliding valve at said station, a flexible coiled-hose connection between said valve and line-pipe, and a bar or rod upon which the hose is adapted to slide, substantially as set forth.

4. In a pneumatic-railway system, a line-pipe, a supply-station, a valve adapted to slide throughout its entire length of movement longitudinally of and parallel to said station and containing an interior valve closing with the pressure from the line-pipe, and a flexible sliding connection between the line-pipe and said valve, combined with a pipe depending from the car-reservoir, having a face adapted to come in contact with the sliding valve and on contact therewith to open the interior valve, substantially as set forth.

5. The combination of the line-pipe E, addition C', having the slot c^4, the sliding valve f, the bar or rod c, and the coiled hose or flexible connection G, substantially as set forth.

6. In a pneumatic-railway system, the continuous box C, having the slot b', the addition C', sliding valve f, line-pipe E, and flexible connection G, combined with the pipe i, having a valve-face and a lug g^3, and the projection g, having the inclined ends g', substantially as set forth.

7. In a pneumatic-railway system, the line-pipe E, extra storage air-receiver E', addition C', sliding valve f, adapted to move throughout its entire length of movement longitudinally of and parallel to the line-pipe at the station, and flexible sliding connection G, combined with the pipe i, having a face adapted to make contact with that of the valve f, an open and interior valve, thus opening communication between the line-pipe E and pipe i, and means for automatically making and releasing such contact, substantially as set forth.

8. In a pneumatic-railway system, the valve f, adapted to slide in a seat a^4 throughout its entire length of movement longitudinally of and parallel to the line-pipe at the station, and a catch at each end of the seat, combined with the pipe i, having a valve-face adapted to make contact with the face of the valve f, and means for automatically causing and releasing such contact, substantially as set forth.

9. In a pneumatic-railway system, the continuous slotted box C, combined with additions C', both adapted to be secured to or to secure the ties of the track, substantially as set forth.

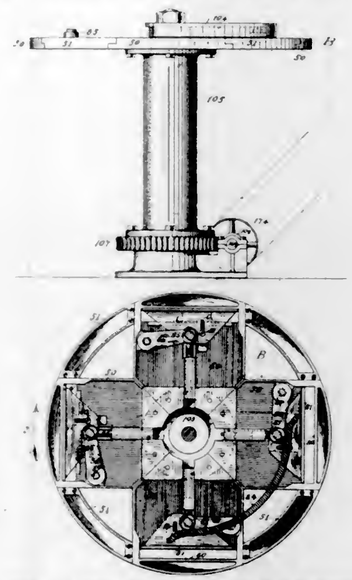
10. The slotted box C, having the addition C', separated therefrom by the partition or side a^3, combined with the valve f, sliding in seats in said side, the flexible connection G, and the line-pipe E, substantially as set forth.

11. In a pneumatic-railway system, the valve f, adapted to move throughout its entire length longitudinally of and parallel to the line-pipe at the station and to slide in a seat h^4, having a catch at each end, combined with a flexible tubular connection between the valve and line-pipe E, and with the pipe i having an operative valve-face for making contact with and opening the valve f, and means for causing and breaking such contact, substantially as set forth.

12. The combination of the line-pipe E, extra storage air-receiver E', flexible sliding connection G, valve f, adapted to move throughout its entire length longitudinally of and parallel to the line-pipe at the station, and car-reservoir inlet-pipe i, substantially as set forth.

13. The addition C', having the side or partition a^3 provided with seats for the valve f, combined with said valve and its flexible tubular connection, and the hinged cover a^5, provided to admit of the examination of said valve.

449,595. BOOK-BINDER'S MACHINE. ROBERT W. SMITH, New York, and HORACE L. ARNOLD, Brooklyn, N. Y., assignors, by direct and mesne assignments, to said Arnold, and Ferdinand W. Roebling, Trenton, N. J. Filed July 26, 1890. Serial No. 359,981. (No model.)



Claim.—1. A rotary book-carrier provided with an automatically-operated grasping device, substantially as described.

2. An intermittently-rotated book-carrier provided with an automatically-operated grasping device, substantially as described.

3. The combination, with a rotary book-carrier provided with a grasping device, of means for automatically opening and closing the grasping device, substantially as described.

4. The combination, with a book-carrier provided with a grasping device, of means for rotating said carrier intermittently, and means for automatically opening and closing the grasping device, substantially as described.

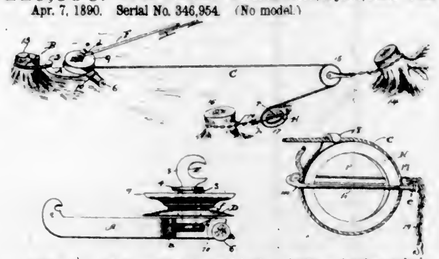
5. The combination, with a rotary book-carrier provided with a plurality of grasping devices, of means for automatically opening and closing each grasping device, substantially as described.

6. The combination, with a book-carrier provided with a plurality of grasping devices, of means for rotating said carrier intermittently, and means for automatically opening and closing each grasping device, substantially as described.

7. The combination, with a book-carrier provided with a plurality of grasping devices, of means for automatically opening and closing each grasping device in succession, substantially as described.

8. The combination, with a book-carrier provided with a plurality of grasping devices, of means for rotating said carrier intermittently, and means for automatically opening and closing each grasping device in succession, substantially as described.

449,596. STUMP-PULLER. WILLIAM SMITH, Mystic, Iowa. Filed Apr. 7, 1890. Serial No. 346,954. (No model.)



Claim.—1. The combination, with the platform having tubular stub-shaft 3, of the windlass mounted on said shaft, and the rest 8, inserted within the said shaft, substantially as set forth.

2. The combination, with the platform having the tubular stub-shaft 3, of the windlass mounted on said shaft, the sweep-rest having eccentric flange D inserted in the said shaft, the sweep, and the link connecting the sweep with the windlass, substantially as described.

3. The combination, with the platform having shaft 3, of the windlass having groove f and having an opening through its flange leading from the said groove f, substantially as set forth.

4. The combination, with the windlass, of the stud G and the ring g, mounted thereon and having hook g', substantially as set forth.

5. The herein-described rope-grab, comprising a grooved sheave having hook 18, the bar P, passing through openings in diametrically-opposite sides of the sheave, and the fly-link k, substantially as described.

6. The combination, with the grooved sheave having slots n n, of the bar P passed through the said slots, and the fly-link hinged at one end to the bar P and having its other end held to bar P by the link c, substantially as set forth.

7. The hereinbefore-described stump-puller, composed of the platform having hook 2, flanges 10, recess a, and tubular stub-shaft 3, the cross-pole bolted to flanges 10, the windlass mounted on the stub-shaft and having groove f to receive the first coil of the rope and an opening in its flange, and having stud G and hooked rings g g', the sweep-rest 8, having eccentric flange D and recessed head E inserted in the said stub-shaft, and sweep F, having its inner end placed in the recess in the head E and held to the windlass by link d, substantially as described.

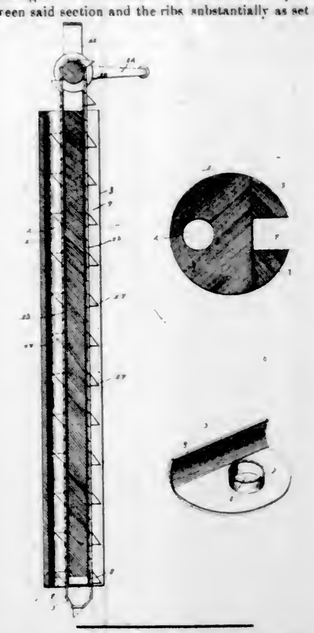
449,597. CORRUGATED HOOP FOR BARRELS, &c. GEORGE SOUTHER, Boston, Mass. Filed Feb. 21, 1889. Serial No. 300,678. (No model.)



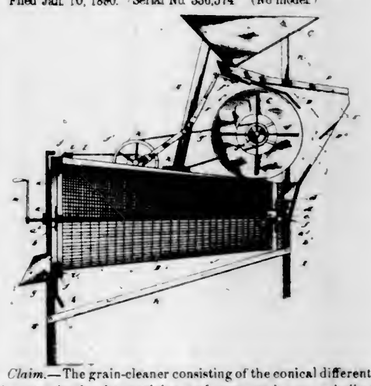
Claim.—A barrel or other hoop consisting of a corrugated wire having the corrugations at one end directly engaged with the corrugations at the opposite end, and the divided band of flexible metal surrounding the wire and holding the end corrugations in locking engagement with each other, substantially as described.

449,598. CHAIN-PUMP. BEVERLY B. SPENCE, Midland, Tenn. Filed Sept. 15, 1890. Serial No. 365,046. (No model.)

Claim.—The herein described piping for a chain-pump, the same constructed of a section provided with a bore, ribs applied to said section so as to form a longitudinal groove, and a friction-plate applied to the lower end of the piping and having an opening surrounded by a flange fitting in the lower end of the bore and an upturned lip fitting between said section and the ribs, substantially as set forth.



449,599. GRAIN-CLEANER. SCOTT STEWART, Riversville, W. Va. Filed Jan. 10, 1890. Serial No. 336,574. (No model.)

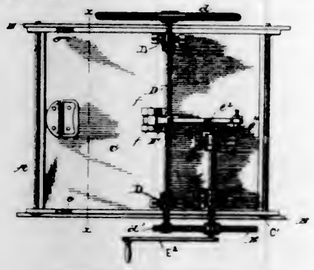


Claim.—The grain-cleaner consisting of the conical different-sized-mesh screen having its receiving end supported upon a hollow fixed journal and actuated by a handled shaft suitably journaled and fixed to said screen, the feeding-hopper supported in a fixed position, the riddle hung by hangers from said hopper and having a downwardly-deflected lower board or deflector, the inclined board or deflector disposed opposite to the aforesaid deflector and secured to the shoe, the downward-tapering chute arranged to receive the grain striking the latter deflector or board and discharging into the hollow journal, the obtuse-angled lever or pitman actuating said riddle, the fan suitably mounted in the shoe, and the driving-pulley shaft bearing two different-sized pulleys, the belt encompassing one of said pulleys and driving the fan and a second belt encompassing the other of said pulleys and passing around an idler and around a grooved circular rim of the conical screen, substantially as set forth.

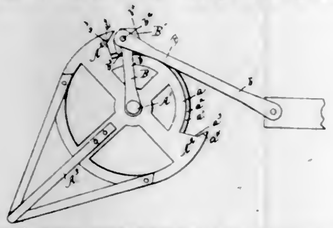
449,600. WASHING-MACHINE. LEWIS F. STOUT and NATHAN STOUT, Star City, Ind. Filed June 27, 1890. Serial No. 356,997. (No model.)

Claim.—In a washing-machine, the combination, with the shaft D, having a cog-wheel and fly-wheel secured on its ends, respectively,

of a shaft E, terminating in a crank-arm e' at one end and having a gear-wheel secured to the other end, a rubber rod, and rubber, said rubber rod being pivoted in bearings on the lid and connected with the crank arm e' by means of pitman e^3, whereby said rubber is given a reciprocating motion.



449,601. REBOUNDING-PLUNGER PRESS. THOMAS J. STRAIT, Williamsport, Pa. Filed Nov. 21, 1890. Serial No. 372,209. (No model.)

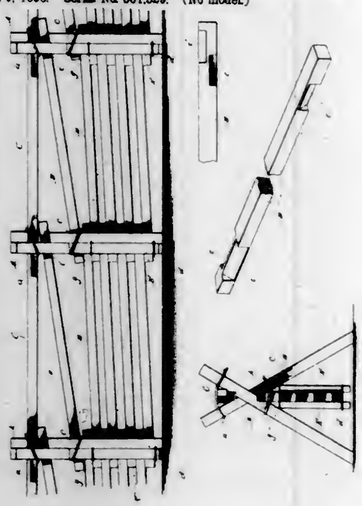


Claim.—1. In a press of the kind described, the combination of a wheel having an arc-shaped recess in its periphery, and a toggle-lever the hinge-pintle of which is held by the arms of the toggle in said recess and is moved by contacting with the stops at the ends of said recess when the wheel is moved.

2. In a press of the kind described, the combination of a wheel having an arc-shaped recess and track in its periphery, and a toggle-lever having on its hinge-pintle a block which rests upon said track and is moved by the ends of the recess contacting therewith when the wheel is moved.

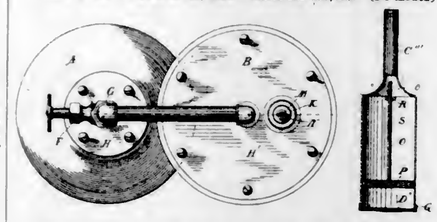
3. In a press of the kind described, the combination of a wheel having the recess with the overlapping lips at the end, and a toggle-lever having a pintle in the same arc of the circle that the recessed part of the wheel moves in.

449,602. FENCE. WILLIAM S. SUTTON, Boundary City, Ind. Filed Aug. 9, 1890. Serial No. 361,529. (No model.)



Claim.—The herein-described fence, comprising the overlocking stakes or posts, the top notched riders wired in the upper crotch thereof, the inclined lower riders having the oppositely-beveled notches cut in either side of each end, said notches corresponding to the incline of said stakes and having one end resting in the upper crotch of one pair of said overlocking stakes, its opposite end wired in the lower crotch of the succeeding pair and resting on the rails proper, the beveled notches in said rider engaging the said stakes, the vertical rail holding posts E on either side, the supporting-wire *d*, and the binding-wire *c*, securing said vertical posts, the overlocking stakes, and the lower end of the inclined rider, substantially as specified.

449,603. APPARATUS FOR MAKING EXTRACTS. STEPHEN C. THRALL, Elk Rapids, Mich., assignor of one-half to William B. Chandler, same place. Filed June 23, 1890. Serial No. 356,499. (No model.)



Claim.—1. In an apparatus for extracting from vegetable or other substances their soluble properties, the combination, with an air-tight heating-vessel, of an air-tight containing-vessel connected therewith and provided with a cover formed with an opening, a steam-valve in said opening having a hollow stem and an opening registering with the opening in said stem, and an air-valve closing the opening in said steam-valve and having a stem extending through the stem of said steam-valve, substantially as shown and described.

2. In an apparatus for extracting from vegetable or other substances their soluble properties, the combination, with an air-tight heating-vessel, of an air-tight containing-vessel connected therewith and provided with a cover formed with an opening, a valve-casing secured to said cover over said opening and having ports, and a threaded opening in its top, a nut within the opening in the top of said valve-casing and having threads engaging the threads thereof, a steam-valve within the opening in said cover, said valve having a hollow stem projecting through said valve-casing and an opening registering with the opening through said stem, a spring surrounding said valve-stem, and an air-valve closing the opening in said steam-valve and having a stem extending through the stem thereof.

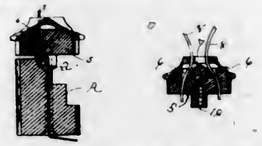
3. An apparatus for extracting from vegetable or other substances the soluble properties thereof, consisting of an air-tight heating-vessel, an air-tight containing-vessel provided with air and safety valves, and a strainer located within said containing-vessel and having communication with the interior of said heating-vessel, said strainer comprising a cylinder having a perforated bottom and a perforated piston having a piston-rod located within said cylinder.

4. In an apparatus for extracting from vegetable or other substances their soluble properties, the combination of an air-tight heating-vessel A and an air-tight containing-vessel B, having safety and air valves, with an inverted-U-shaped pipe connecting the lower portions of the interior of said vessels, and a strainer within said containing-vessel and consisting of a cylinder having a perforated bottom, and a perforated piston and a piston-rod located within said cylinder.

5. In an apparatus for extracting from vegetable or other substances their soluble properties, the combination, with an air-tight heating-vessel A, and an air-tight containing-vessel B, provided with a safety-valve I and an air-valve J, of an inverted-U-shaped connection between said vessels, said connections comprising three pipes, one of which passes through the cover of vessel A, and is provided with a valve F, another passes through the cover of vessel B, and has its lower end located in a plane below that of the lower end of the section within the heating-vessel and provided with a strainer, and the other section connects together the upper ends of said sections of pipe.

449,604. INCANDESCENT-ELECTRIC-LAMP SOCKET. FRANKLIN A. WELLER, Boston, Mass., assignor to William S. Hadaway, Jr., trustee, same place. Filed Aug. 11, 1890. Serial No. 361,752. (No model.)

Claim.—1. In a holder or socket for electric lamps, the combination, with the internal casing containing the contacts and provided with an opening through its walls to the inner mechanism, of the outer jacket or casing surrounding the inner casing, movable thereon, and having an opening registering with the opening therein, and the key journaled in the inner casing and projecting through the outer casing, substantially as described.



2. In an electric-lamp holder or socket, the combination, with the internal casing containing the contacts and provided with an opening through its walls to the inner mechanism, of the outer jacket or casing surrounding the inner casing, movable thereon, and having an opening registering with the opening therein, and the key journaled in the inner casing and projecting through said opening in the outer casing, substantially as described.

3. In an electric-lamp holder or socket, the combination, with the central core-block carrying the contacts, the guide-block having the apertures therein for the leading-in wires, and the casing surrounding said blocks, of the screw passing through the core-block and engaging the guide-block, and the thumb-key journaled in the core-block and casing, substantially as described.

4. In an electric-lamp holder or socket, the combination, with the central core-block, the contacts thereon having shoulders, with adjacent spaces into which the ends of the leading-in wires may project beyond the contacts, and the guide-block having the apertures therein for the leading-in wires, of the independent screw uniting said blocks for drawing them toward each other, whereby the ends of the leading-in wires may be passed beyond the faces of the contacts, the blocks turned to bend the wires over said shoulders, and finally the screw tightened to clamp them in contact, substantially as described.

449,605. EYEGLASSES. WALTER C. WESTAWAY, Decorah, Iowa, assignor of one-half to Harry C. Goddard and George L. Leonard, both of same place. Filed Aug. 25, 1890. Serial No. 362,940. (No model.)

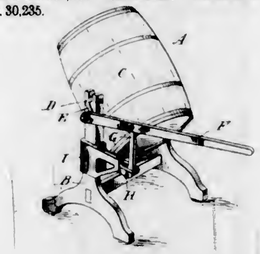
Claim.—1. A pair of eyeglasses having a spring-actuated bow pivotally connected to one of the glasses, and a connection extending to the outer end of the latter glass, by means of which the bow may be turned on its pivotal point, substantially as set forth.

2. The combination of the bow rigidly connected to one glass and pivotally connected to the other glass, a spring arranged to operate on said pivoted bow, the flat thumb-piece secured to the outer end of the latter glass, and a finger-piece extending above the thumb-piece F and connected to the pivoted bow, substantially as set forth.

3. The combination of the glasses A and A′, the bow B, having the upwardly-extending end B′, and pivotally connected to the glass A′, the spring G, the flat thumb-piece F, secured to the outer end of the glass A′, the pivoted finger-lever E, and the fine chain D, connecting the free end of the bow with the finger-lever, substantially as set forth.

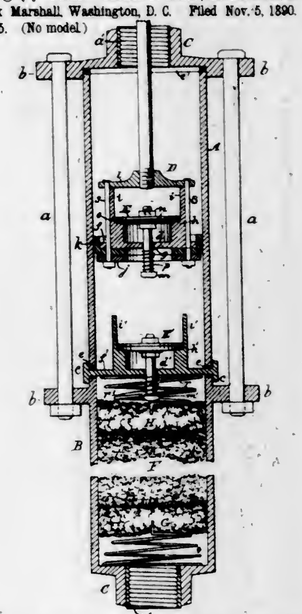
4. The combination of the glasses A and A′, the nose-plate C, secured to the glass A′, the bow B, having the nose-plate C at one end, having the upwardly-extending end B′, and pivoted at *c* to the nose-plate C of the other glass, the spring G, the flat thumb-piece F, secured to the outer end of the glass A′, the pivoted finger-lever E, and the fine chain D, connecting the free end of the bow with the finger-lever, substantially as set forth.

449,606. DRIVING MECHANISM. THOMAS S. BARWIS, Calgary, Canada, assignor of one-half to John Lee Bowen, same place. Filed Oct. 4, 1890. Serial No. 367,046. (No model.) Patented in Canada Nov. 20, 1888, No. 30,235.



Claim.—In a driving mechanism, the combination, with a crank-arm secured on one of the trunnions of the device to be driven, of a lever pivotally connected with the said crank-arm, a link pivotally connected with the said lever between the crank-arm and its handle end, and a fixed bracket, on which the said link is pivoted, substantially as shown and described.

449,607. PUMP. GEORGE F. BEEBE, Hornellsville, N. Y., assignor to MAX MARSHALL, Washington, D. C. Filed Nov. 5, 1890. Serial No. 370,395. (No model.)



Claim.—1. An attachment provided with a tubular casing adapted for connection at its extremities with the tubing of devices for drawing water, a pump-cylinder formed within said casing, and a plunger provided with a spring-valve and placed in said cylinder, a valve-seat fixed in said casing below said cylinder and provided with vertical guides, a valve provided with a stem and placed loosely in said seat, said valve being provided with a retaining-spring, filtering material placed within said casing below said valve, and devices adapted to prevent said filtering material clogging said valve and the water-passage at the lower end of the casing, substantially as and for the purposes described.

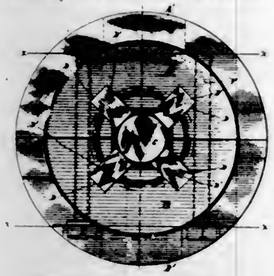
2. An attachment provided with a tubular casing adapted for connection at its extremities with the tubing of devices for drawing water, a valve-seat in said casing, a spring-valve provided with a stem and resting in said seat with the stem extending downward through a guide, suitable filtering material in said casing below said valve, and devices placed in the casing adapted to prevent the filtering material clogging the valve and the water-passage, substantially as set forth and described.

3. The combination, with the casing formed of parts A and B, of an annular plate *f*, provided with outer flanges *c* and packing *e*, a circular valve-seat *h*, with guides *i* surrounding said seat and perforated bar *d*, a valve E, provided with a stem which extends downward through said bar *d* and a retaining-spring on said stem, a filling or filtering material in case B, sponge being placed above and below said material, and springs *q* and *r* for keeping the filtering material and sponge in place, substantially as and for the purposes described.

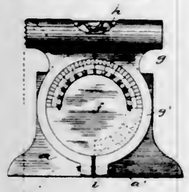
449,608. SPLIT PULLEY. JOHN B. CORNWALL, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed July 14, 1890. Serial No. 358,597. (No model.)

Claim.—1. In a split pulley, the combination of the opposite solid or spokeless halves having central recesses on their meeting edges forming an opening for the passage of the shaft, and radiating transverse channels or sockets communicating with the recesses, and clamping-blocks fixed in said sockets and projecting into the recesses, with the bolts and nuts for securing the halves together and upon the shaft, substantially as and for the purpose described.

2. In a split pulley, the combination of the half A, having a recess C on its meeting edge, sockets D, communicating with said recess, and wooden clamping-blocks D', fixed in said sockets and projecting into said recess with the half B, having a removable portion B' and recess C, sockets D and blocks D', similar and opposite to those of half A, and the uniting bolts and nuts, substantially as specified



449,609. SPIRIT-LEVEL. HENRY GREEN, Hartford, Conn., assignor, by mesne assignments, to John J. Tower, New York, N. Y. Filed Aug. 5, 1890. Serial No. 361,032. (No model.)

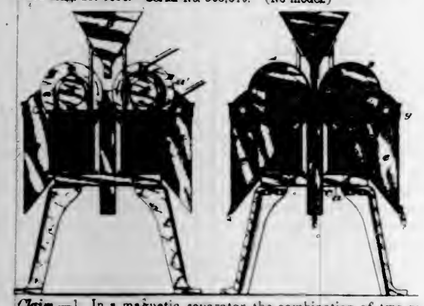


Claim.—1. In a spirit-level, in combination, a back plate having a circular boss on one face, a frame holding a spirit-glass, with a split annular rim encircling the boss, and a clamp-screw joining the split ends of the rim of the frame, substantially as specified.

2. In a spirit-level, in combination, a back plate having a circular boss with an undercut edge on one face, a frame holding a spirit-glass, with a split annular rim encircling the periphery of the boss, and a clamp-screw joining the split ends of the rim of the frame, substantially as specified.

3. In a spirit-level, in combination, a back plate having a circular boss on one face and a rearward-projecting angular arm bearing a clamp screw on the opposite face, a frame holding a spirit-glass, with a split annular rim encircling the boss, and a graduated plate attached to the boss, with its edges overlying the edges of the rim, substantially as specified.

449,610. MAGNETIC SEPARATOR. RICHARD R. MOFFATT, New York, assignor to himself and Sylvester Chichester, Brooklyn, N. Y. Filed Aug. 25, 1890. Serial No. 363,019. (No model.)



Claim.—1. In a magnetic separator, the combination of two rotating drums with a stationary electro magnet or magnets located outside of the drums and having pole pieces or extensions within the drums, substantially as specified.

2. In a magnetic separator, the combination of two rotating drums mounted horizontally and having an open space between them with a stationary magnet or magnets located outside of the drums and having pole-pieces or pole-extensions within the drums, substantially as specified.

3. In a magnetic separator, the combination of two rotating drums with an electro magnet or magnets located outside of the drums and having a stationary pole-piece within each drum, said pole-piece being magnetically connected with the magnet-core through the axis of the drums, substantially as specified.

4. In a magnetic separator, the combination of two rotating drums with a stationary electro magnet or magnets located outside the drums and provided with pole-pieces within the drums, with which they make magnetic contact through the axis of the drums, said pole-pieces extending from the axis of the drums toward each other, reducing the space between them to produce a strong magnetic field, substantially as specified.

5. In a magnetic separator, the combination of two rotating drums with a stationary electro magnet or magnets located outside of the drums and provided with a pole-piece in each drum, which is constructed in such a manner as to serve as an axle or shaft upon which the drums are mounted and rotate, substantially as specified.

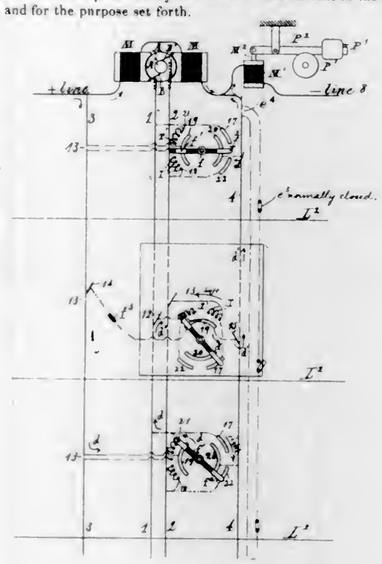
6. In a magnetic separator, the combination of two rotating drums mounted horizontally and having an open space between them, with a stationary electro magnet or magnets located outside and having a pole-piece of opposite polarity within each drum, said pole-piece arranged in a manner so as to produce a condensation of lines of force in the lower part of the drums, being most intense at a point where the surfaces of the drums are nearest each other, substantially as herein specified.

7. In a magnetic separator, the combination of two rotating drums having an open space between them with a stationary compound electro-magnet, the helix-coils of which are located on the outside of the drums with their consequent poles located within the drums in such a manner that the pole in each drum will be of an opposite nature to that in the other, so as to produce a magnetic field in the open space between the drums, substantially as herein specified.

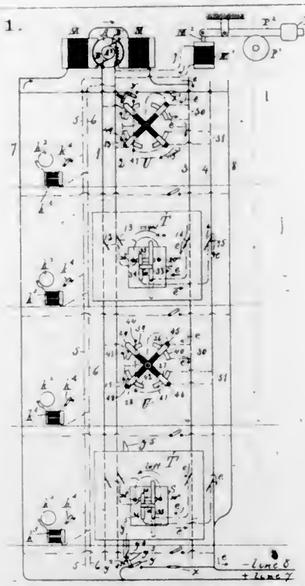
449,611. SYSTEM OF OPERATING ELECTRIC ELEVATORS. WILLIAM BAXTER, Jr., Baltimore County, Md. Filed Mar. 17, 1888. Serial No. 267,524. (No model.)

Claim.—1. In an electric-elevator system in which the motion of an electric motor is transmitted to the car by means of a hoisting-pulley, intermediate mechanism, and a hoisting-rope, the combination, with the motor-circuit, of a switch located upon the car and arranged and operated to reverse the motion of the car by reversing the motor and to stop the car by stopping the motor, substantially as herein set forth.

2. In an electric-elevator system, the combination, with a suspended car moving in a hoistway provided with landings, of hoisting mechanism operated by an electric motor, electrical conductors, and a circuit connecting the motor with the car and with the said landings, and switches upon the car and upon the landings connected with said circuit and provided each with contacts and with a movable lever or connector adapted to vary the course of the current in the motor, as and for the purpose set forth.



449,611.



3. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, electrical conductors, and a circuit connecting the motor with the car, a car-switch located therein to control the movements of the hoisting mechanism, and a door-switch located in a branch of such circuit and operated by the opening of the door to stop the motor, as and for the purpose set forth.

4. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit supplied with a current of constant strength, circuits interposed between one or both of the terminals of the field and the armature and between the armature and one or both of the terminals of the line, and one or more switches located therein and arranged in or along the path of the car and operated to reverse or stop the movement of the armature, as herein set forth.

5. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit supplied with a current of constant strength, a car-switch located therein to control the movements of the hoisting mechanism, and a landing-switch located in such circuit and operating normally to complete said circuit, as and for the purpose set forth.

6. In an electric-elevator system operated by a constant current, the combination, with a suspended car moving in a hoistway having landings and landing-doors, of an electric motor and hoisting mechanism operated thereby, a motor-circuit, and door-switches arranged in the said circuit and operated by the opening of the doors to short-circuit the motor and to thus stop the same until the door is closed, substantially as set forth.

7. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, an electric circuit for operating the motor, a car-switch located therein and operating normally to stop the said motor and when moved in opposite directions to close reverse circuits through the motor-armature, and a door-switch located in a branch of such circuit and operating, substantially as described, to stop the car by the opening of the door when the car is moved to such door by the shifted car-switch, and adapted when the door is closed to complete the circuit through such shifted car-switch and start the car in the same direction, substantially as herein set forth.

8. In an electric-elevator system, the combination, with a suspended car moving in a hoistway provided with landings, of hoisting mechanism operated by an electric motor, electrical conductors fixed in the hoistway and connected with an electric generator and with the motor, moving contacts pressed on such conductors and affixed to the car, a switch upon the car connected with such moving contacts, a branch circuit connected with the conductors beyond the movement of such contacts, a switch c^4 in said circuit, and a connection from the switch to each landing adapted to actuate the switch by the opening of the door at each landing to prevent the starting of the motor until the door is closed, substantially as set forth.

9. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit supplied with a current of constant strength, a car-switch located therein to control the movements of the hoisting mechanism, and a landing-switch located in such circuit and operating normally to complete said circuit and provided with additional contacts adapted when opening the circuit to close a branch circuit and to thereby avoid an open circuit in any position of the said switch, as set forth.

10. The combination, with a suspended car moving in a hoistway of hoisting mechanism operated by an electric motor, a motor-circuit supplied with a current of constant strength, a car-switch located therein to control the movements of the hoisting mechanism, and a landing-switch located in such circuit and operating normally to complete said circuit and operating when moved to close branch circuits for actuating the hoisting mechanism, as set forth.

11. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit supplied with a current of constant strength, a car-switch located therein to control the movements of the hoisting mechanism, and a landing-switch located in such circuit and operating normally to complete said circuit and operating when moved in opposite directions to close branch circuits through the motor-armature in opposite directions, as set forth.

12. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit supplied with a current of constant strength, a car-switch located therein to control the movements of the hoisting mechanism, and a series of landing-switches located in said circuit and provided with suitable contacts to normally close said circuit and to connect them in series and operating each when moved to close a branch circuit through the motor-armature, as set forth.

13. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit supplied with a current of constant strength, a car-switch located therein to control the movements of the hoisting mechanism, and a series of landing-switches located in said circuit and provided with suitable contacts to normally close said circuit and to connect them in series, and the said switches being provided with other contacts to close branch circuits in opposite directions through the motor-armature for actuating the hoisting mechanism, substantially as set forth.

14. In an electric-elevator system operated by an electric motor, the combination, with a hoistway provided with landings, and landing-doors, of a door-lock having a bolt operating normally to secure the door, an electro-magnet for operating or retracting the door-bolt and having its coils in a branch of the motor-circuit and a switch in such branch circuit operated by the car when at the landing, as and for the purpose set forth.

15. In an electric-elevator system, the combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit with a landing-switch located therein, an electrical indicator located at the landing, and a derived circuit connected with the same and adapted to operate the electrical indicator, as set forth, and an indicator-switch at the landing for opening and closing such indicator-circuit, substantially as described.

16. In an electric-elevator system, the combination, with a suspended car moving in a hoistway, hoisting mechanism operated by an electric motor, a landing provided with a landing-switch in the motor-circuit for regulating the motion of the motor, an electric indicator located at the landing, a circuit derived from the motor-armature and adapted to operate the electric indicator, as set forth, and an indicator-switch located in such circuit at the landing for opening and closing such derived circuit to operate the electric indicator, as and for the purpose set forth.

17. In an electric-elevator system, the combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, a motor-circuit with a landing-switch located therein, an electrical indicator located at such landing and connected electrically with the commutator-brushes of the motor, and an indicator-switch at the landing for opening and closing such indicator-circuit, substantially as set forth.

18. In an electric-elevator system, the combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, electrical conductors fixed in the hoistway and connected with an electric generator and with the motor, moving contacts pressed on such conductors and affixed to the car, and a switch upon the car connected with such moving contacts and adapted to vary the current through the motor to vary its movements in the desired manner, substantially as set forth.

19. In an electric-elevator system, the combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, electrical conductors fixed in the hoistway and connected electrically with a generator and with the motor, moving contacts pressed on such conductors and affixed to the car, a switch upon the car connected with such moving contacts, and one or more of the conductors being interrupted with connections at each side of the break for a landing-switch, and a landing-switch operating normally

to maintain the circuit through such broken conductor, as and for the purpose set forth.

20. In an electric-elevator system, the combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, four electrical conductors fixed in the hoistway, four moving contacts attached to the car and adapted to press on said conductors, two of the said conductors being connected electrically with the commutator-brushes of the motor and the other two being connected directly or indirectly with the positive and negative wires from the generator, and a switch upon the car connected with such contacts and adapted to reverse the current through the commutator, substantially as set forth.

21. In an electric-elevator system, the combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, four electrical conductors fixed in the hoistway, four moving contacts attached to the car and adapted to press on said conductors, two of the said conductors being connected electrically with the commutator-brushes of the motor, one with the end of the field-coils and the other with one end of the line-wire, and a switch upon the car connected with such contacts and adapted to connect each of the commutator-brushes alternately with the field-coils and with the said line-wire, substantially as set forth.

22. In an electric-elevator system, the combination, with a hoistway provided with one or more landings, of hoisting mechanism operated by an electric motor, four electrical conductors fixed in the hoistway, one or more of said conductors being broken at a landing, but adapted for the passage of a moving contact, four contacts upon the car pressed upon such conductors, a circuit connecting the motor with the car through certain of said conductors, a car-switch connected with said contacts and operating normally to close the circuit around the motor-armature, and a landing-switch operating to normally close the circuit around the break in the broken conductor and provided with additional contacts adapted when opening the circuit at the break to close a circuit through the other conductors and through the motor to operate the same, substantially as set forth.

23. In an electric-elevator system, the combination, with a hoistway provided with a series of landings, of hoisting mechanism operated by an electric motor, four electrical conductors fixed in the hoistway, one or more of said conductors being broken at each landing, but adapted for the passage of a moving contact, four contacts upon the car pressed upon such conductors, a circuit connecting the motor with the car through certain of said conductors, a car-switch connected with said contacts and operating normally to close a circuit around the motor-armature, and a series of switches located at the landings and operating normally to close the circuit around the several breaks in the broken conductors and provided with additional contacts adapted to close branch circuits in opposite directions through the motor-armature, as and for the purpose set forth.

24. In an electric-elevator system, the combination, with a hoistway provided with a series of landings, of hoisting mechanism operated by an electric motor, four electrical conductors fixed in the hoistway, one or more of said conductors being broken at each landing, but adapted for the passage of a moving contact, four contacts upon the car pressed upon such conductors, a car-switch connected with said contacts and operated normally to close a circuit around the motor-armature, and a series of switches located at the landings and operating normally to close the circuit around the several breaks in the broken conductor or conductors, and the car contact for the broken conductor being arranged to move from the break in opposite directions when the car moves from the landing up and down, so as to cut off the car-switch from the main circuit, except through the landing-switch connected around such break, substantially as set forth.

25. In an electric-elevator system operated by a constant current, the combination, with a suspended car moving in a hoistway having landings and landing-doors, of door-switches arranged and operated by the opening of the doors to short-circuit the motor and to thus stop the same until the door is closed, substantially as set forth.

26. The combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, an electric circuit for operating the motor, a car-switch located therein and operating normally to stop the said motor and when moved in opposite directions to close reverse circuits through the motor-armature, and a door-switch located in a branch of such circuit and operating, substantially as described, to stop the car when moved to such door with the car-switch shifted and adapted when the door is closed to complete the circuit through such shifted car-switch to start the car in the same direction, substantially as herein set forth.

27. In an electric-elevator system, the combination, with a suspended car moving in a hoistway provided with landings, of hoisting mechanism operated by an electric motor, electrical conductors fixed in a hoistway and connected with an electric generator and with the motor, moving contacts affixed to the car and pressed upon such conductors, a switch upon the car connected with such moving contacts, a break in one of the conductors beyond the movement of such contacts, a branch circuit connected with the broken conductor at the opposite sides of such break, and a door-switch held normally open in such branch circuit at each landing and closed by the opening of the door at such landing to prevent the starting of the motor until the door is closed, substantially as herein set forth.

28. In an electric-elevator system operated by a constant current, the combination, with a suspended car moving in a hoistway having landings and landing-doors, of door-switches actuated by the opening and closing of the doors to close and open a circuit between the main line on one side of the motor and the main line on the opposite side of the motor and thus operating to short-circuit the motor when any of the said doors is open, substantially as set forth.

29. In an electric-elevator system, the combination, with a suspended car moving in a hoistway provided with landings, of hoisting mechanism operated by an electric motor, electrical conductors and a circuit connecting the motor with the car and with the said landings, and switches upon the car and upon the landings connected with said circuit and provided each with contacts and with a movable lever or connector adapted to reverse the motion of the car by reversing the motor and to stop the car by stopping the motor, substantially as herein set forth.

30. In an electric-elevator system in which the motion of an electric motor is transmitted to the car by means of a hoisting-pulley, intermediate mechanism, and a hoisting-rope, the combination, with a hoistway provided with landings, of a motor-circuit, a switch located upon the car, and one or more switches located upon the landings, all of the said switches being located in the motor-circuit and arranged and operated to reverse the motion of the car by reversing the motor and to stop the car by stopping the motor, substantially as herein set forth.

31. In an electric-elevator system in which the motion of an electric motor is transmitted to the car by means of a hoisting-rope, the combination, with such rope, of a hydraulic cylinder with piston and rod for actuating such rope, a reversible pump actuated by the electric motor for operating such hydraulic piston, a motor-circuit, and a car-switch located in said circuit and operating to reverse or to stop the motor and to thereby reverse and stop the hydraulic pump, as and for the purpose set forth.

32. In an electric-elevator system in which the motion of an electric motor is transmitted to the car by means of a hoisting-rope, the combination, with such rope, of a hydraulic cylinder with piston and rod for actuating such rope, a reversible pump actuated by the electric motor for operating such hydraulic piston, a hydraulic accumulator connected with the cylinder and operated to overbalance the weight of the car, a motor-circuit, and a car-switch located in said circuit and operating to reverse or to stop the motor to thereby reverse and stop the hydraulic pump, as and for the purpose set forth.

33. The combination, with a stationary electric motor, hoisting mechanism actuated thereby, and a suspended car moved by such hoisting mechanism, of a primary circuit to actuate said motor, a motor-switch in such circuit provided with contacts to stop or reverse the motion of the motor, an electro-magnet with movable magnetic armature for moving the said switch, an independent electrical circuit connected with such electro-magnet, and one or more switches arranged in or near the path of the car in such independent circuit and provided with contacts to reverse the current through such electro-magnetic device and to thereby actuate the motor-switch, substantially as herein set forth.

34. In an electric-elevator system in which a car or platform hoisting device is operated by a stationary electric motor and the motor is stopped and started to stop and start the hoisting mechanism, the combination, with the motor-circuit, of a magnetically-operated brake applied to the hoisting mechanism and having its magnet-coils in the motor-circuit, and a switch located in the said circuit and constructed and operated to close the circuit simultaneously through the motor and through the brake-magnet, as and for the purpose set forth.

35. In an electric-elevator system in which a car or platform hoisting device is operated by a stationary electric motor and the motor is stopped and started to stop and start the hoisting mechanism, the combination, with the motor-circuit, of a brake pressed normally upon the hoisting-pulley, an electro-magnet for withdrawing the brake and having its coils in the said motor-circuit, and a switch located in the said circuit and constructed and operated to remove the brake from the hoisting-pulley when starting the motor by simultaneously closing the circuit through the motor and the brake-magnet, substantially as herein set forth.

36. In an electric-elevator system, the combination, with a moving car and a hoistway provided with landings and landing-doors, of hoisting mechanism operated by an electric motor, a magnetically-operated brake applied to the hoisting mechanism, electrical conductors fixed in the hoistway, contacts pressing on such conductors and affixed to the car, a switch upon the car connected with such sliding contacts

adapted to reverse the motor when desired, a circuit through the electric motor and the brake-magnet, and landing-switches connected with such circuit and connected also with the car-switch through the conductors and provided with contacts adapted to close the circuit through the car-switch, the motor, and the brake-magnet when the landing-switches are in their neutral position and the car-switch in operation, substantially as set forth.

37. In an electric-elevator system in which a car or platform hoisting device is operated by a stationary electric motor, the combination, with the electric motor and the car or platform moved thereby, of an operative electric circuit and a switch actuated by the movement of the car at the extreme opposite ends of its travel to stop the car at such points, substantially as herein set forth.

38. In an electric-elevator system in which a car or platform hoisting device is operated by a stationary electric motor, the combination, with the electric motor and the car or platform moved thereby, of an operative electric circuit, electrical conductors for conveying the current to and from the moving car, and a switch upon the car connected with said conductors and provided with contacts to reverse the electric current and actuated by the movement of the car at the extreme opposite ends of its travel to stop the car at such points, substantially as herein set forth.

39. In an electric-elevator system, the combination, with the electric motor and with the conductors 1, 2, 3, and 4 connected thereto to shut off or reverse the current through the same, of the breaks 30 and 31 provided at the landings in the conductors 3 and 4, and landing-switches provided each with fixed contacts electrically connected with the conductor 3 above and below the break 30 with fixed contacts electrically connected with the conductor 4 above and below the break 31, a fixed contact connected with the conductor 2 and a fixed contact connected with the conductor 1, and four movable springs or contact-plates 26 27 28 29, the several contacts being arranged and operated when the four movable contacts are moved in one direction to connect the conductor 3 above the break 30 with the conductor 1, as shown at the lower switch in Fig. 7, and to cut off the current from conductor 3 below the break 30, and at the same time to connect the conductor 4 below the break 31 with the conductor 2 and to cut off the current in the conductor 4 above the break 31, and the stationary contacts being arranged when the four movable contacts are turned in the opposite direction to reverse the connections of the conductors 3 and 4 with the conductors 1 and 2 to reverse the current through the motor, and the movable contacts being adapted when in their intermediate position to connect the conductor 3 above the break 30 with the same conductor below the break and the conductor 4 above the break 31 with the same conductor below the break, as and for the purpose set forth.

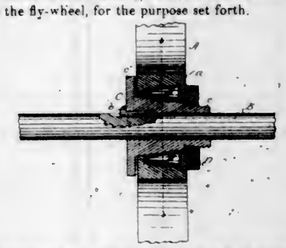
40. In an electric-elevator system in which a car or platform hoisting device is operated by a stationary electric motor, the combination, with the electric motor and the car-platform moved thereby, of an electric circuit, electrical conductors for conveying the current in said circuit to and from the car, a switch upon the car connected with said conductors through contacts adapted when the switch is in its neutral position to stop the hoisting mechanism actuated by the motor, and a projection from the switch actuated at the ends of the hoistway by dogs adapted to throw the switch into its neutral position and to thereby automatically stop the car at the proper limits of its travel, substantially as herein set forth.

41. In an electric-elevator system, the combination, with a hoistway provided with landings and landing-doors, of a door-bolt projected normally through the door-frame into the door, a lever applied to such bolt and extended into the hoistway, and a projection upon the car adapted to operate upon such lever or extension to withdraw the bolt when the car is at the landing adjacent to such door, as and for the purpose set forth.

42. In an electric-elevator system in which the electric motor is connected in a circuit supplied with a regulated current derived from a central station for the distribution of power, as described, the combination, with a suspended car moving in a hoistway, of hoisting mechanism operated by an electric motor, electrical conductors, and a circuit connecting the motor with the car, and one or more switches located in such circuit and provided with a movable lever or connector and with contacts adapted to maintain the circuit, as required, when the connector is moved and to vary the course of the current in the motor to stop or start the same, as and for the purpose set forth.

449,612. FRICTION LOCK OR CLUTCH FOR FLY-WHEELS OF FEED-CUTTERS. ARTHUR CAMERON, Chicago, Ill., assignor, by mesne assignments, to Anna B. Austin, same place. Filed June 12, 1890. Serial No. 355,267. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the fly-wheel arranged upon a conical bearing on the shaft and provided with a set of pockets and a set of cone-shaped rolls arranged about the conical bearing on the shaft and confined within said pockets in the fly-wheel, for the purpose set forth.



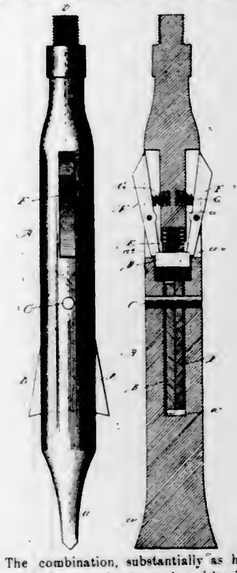
2. The combination, substantially as hereinbefore set forth, of the fly-wheel arranged upon a conical bearing on the shaft and provided with a set of pockets, a set of cone-shaped rolls arranged about said conical bearing and confined within said pockets, and a nut fitted upon a threaded bearing on the shaft and arranged for adjusting the fly-wheel upon its conical bearing.

3. The combination, substantially as hereinbefore set forth, of the conical sleeve threaded at one end and keyed upon a shaft, the fly-wheel arranged upon the conical sleeve, and a set of cone-shaped rolls which are contained within the hub of the fly-wheel and arranged to bear upon the conical surface of the sleeve.

4. The combination, substantially as hereinbefore set forth, of the shaft provided with a conical bearing for the fly-wheel, the fly-wheel having a conical bore fitted to said bearing and provided with laterally-arranged recesses tapered reverse to the taper of the conical bearing, and wedges arranged within said tapered recesses.

5. The combination, with the shaft, of the conical sleeve C, flanged at its larger end and threaded at its smaller end, the fly-wheel containing a set of conical rolls E bearing upon the conical sleeve, and a nut D, fitted upon the threaded portion of said sleeve, the fly-wheel being arranged upon the conical sleeve and confined between the flange e of the sleeve and the nut D, substantially as and for the purpose set forth.

449,613. EXPANSION DRILL FOR WELL-SINKING. ARTHUR CAMERON, Chicago, Ill., assignor, by mesne assignments, to Anna B. Austin, same place. Filed June 21, 1890. Serial No. 356,179. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the cutters, both pivoted to a stock and having their upper ends adapted to provide a pair of jaws above the point whereat the cutters are pivoted, a movable stop adapted to wedge between and open the jaws, so as to expand the cutters, and an automatic locking device for engaging and locking the stop when the latter is in position to hold the jaws open.

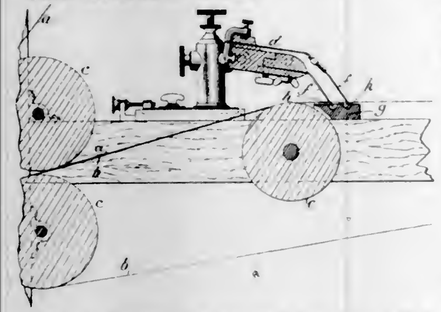
2. The combination, substantially as hereinbefore set forth, of the

cutters pivoted to a stock and having their upper ends adapted to provide a pair of jaws above the point whereat the cutters are pivoted, a movable spring-controlled stop adapted for wedging between and opening the jaws, so as to expand the cutters, and an automatic locking device for automatically engaging and locking the stop when the latter is in position for holding the jaws open.

3. The combination, substantially as hereinbefore set forth, of the cutters pivoted to a stock and provided with jaws, a movable stop adapted to wedge between and open the jaws, and a pair of locking-levers pivoted to the stock and subject to spring-power applied to normally throw out their upper ends and contract their lower ends within the stock to an extent to engage and lock down the stop when the latter is in position for holding open the jaws and cutters.

4. The combination, substantially as hereinbefore set forth, of the cutters pivoted to the stock and provided with jaws, a spring-stop adapted to wedge between and open the jaws, so as to expand the cutters, and a pair of spring-latches or locking-levers, which normally lock down the stop when the latter is in position to hold the jaws and cutters open, as aforesaid.

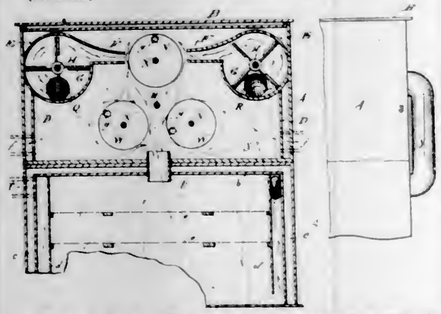
449,614. PAPER-RULING MACHINE. ANDREW J. CARLETON, Springfield, Mass., assignor to Edwin J. Piper, same place. Filed Dec. 4, 1890. Serial No. 373,536. (No model.)



Claim.—1. In a paper-ruling machine, the combination, with the carrier-cords, the pen-bar, and pens, of a fixed rest under the carriers and under the points of the pens, serving as a substantially solid support for the paper under the pens and having suitable recesses therein to permit of the depression of the points of the pens thereinto and below the upper paper-supporting surface of said rest, substantially as and for the purpose set forth.

2. In a paper-ruling machine, the combination, with the carrier-cords, the pen-bar, and one or more series or gangs of pens thereon, of a fixed bar *g*, traversing the machine under the carriers and under the points of the pens and having one or more grooves *h* in its upper side under and coinciding with the one or more series of pens, substantially as and for the purpose set forth.

449,615. COOLING OR REFRIGERATING APPARATUS. SAMUEL B. CLEMMENS, Springfield, Ohio. Filed May 12, 1890. Serial No. 351,549. (No model.)



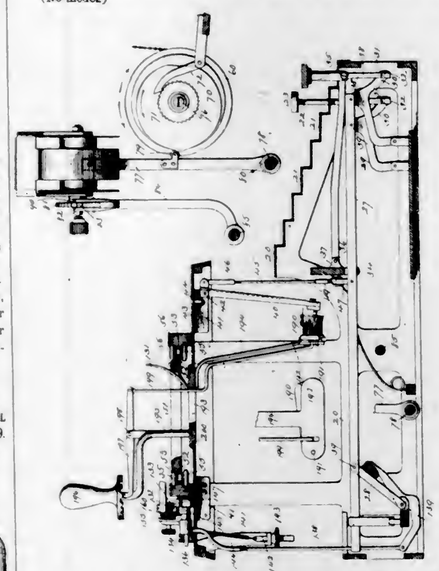
Claim.—1. In a cooling apparatus, the combination, with the casing, of separate blast-producing mechanisms mounted within the said casing, conduits for conducting the blasts, cooling-chambers arranged to deflect said blasts and adapted to contain a cold-producing substance and having a capped opening in each chamber adapted to communicate with the outside of the said case through suitable openings therein normally closed, whereby access may be had to each chamber to allow of filling and emptying the same, and suitable air inlet and outlet openings in said case for said air-blasts.

2. In a cooling apparatus, the combination, with a casing, of fan-blowers mounted in the upper portion of each end and having each a conduit leading toward the center of the casing, a plurality of rotatable cylindrical metallic cooling-chambers adapted to contain a cold-producing substance and located one between said conduits and the others beneath and all arranged to oppose said currents, and suitable inlet and outlet openings.

3. In a cooling apparatus, the combination, with the casing, of a driving-shaft mounted therein, a fan-blower also mounted near the upper part of either end and belted to said shaft, a plurality of shafts geared to said driving-shafts and each carrying a metallic cylindrical cooling-chamber adapted to contain a cold-producing substance, conduits leading from said fans to one of the chambers, and suitable inlet and outlet openings.

4. In a cooling apparatus, the combination, with the casing, a fan-blower near the upper portion of each end, a conduit leading from each fan-blower, and a plurality of revoluble metallic cooling-chambers adapted to contain a cooling substance and to which said conduits lead, whereby the disposition of the cooling-chambers causes them to oppose the air-blasts, of a refrigerator upon which the casing is mounted, a communication between the casing in proximity to the cooling-chambers and the upper part of the refrigerator, air-conduits in the refrigerator, exits near the upper ends of said conduits, and a pipe leading from one of said exits to one of said fan-blower casings, substantially as shown and described.

449,616. TYPE-WRITING MACHINE. CHARLES M. CLINTON and JAMES MCNAMARA, Ithaca, N. Y. Filed Dec. 15, 1890. Serial No. 374,746. (No model.)



Claim.—1. The combination of a type-writer key-button dish-shaped in its under side and having solid lugs of penetrable material projecting within the circle of the dish, and a key-stem head of thin metal having wings shaped to enter the said dish between the lugs and chisel-edged on their radial edges, substantially as described, whereby the said wings may be forcibly turned into the said solid lugs to secure the knob removably upon the stem-head.

2. The combination of a dish-shaped key-button having solid lugs of penetrable material projecting within the circle of the dish and a stem-head having wings to engage the said dish and lugs, the wings having sharp wedge-shaped radial edges adapted to penetrate the said lugs, whereby the head will be forced firmly to the bottom of the dish, as described.

3. The combination of a long spacing-key secured midway upon an arm having a T-shaped head and connected at its lower end with mechanism whereby the spacing device is operated, the cross of the T being in the same direction as the length of the key, and bearings having fixed connection with the machine-frame and pivotally connected with the arms of the said T-shaped head, substantially as described.

4. The combination of a connecting-rod screw-threaded at one end and bent and pointed at the other end to form a pivot, and a sleeve fitted to slide upon the said rod and having a spring-arm indented or perforated to engage the said pivot, substantially as described.

5. The combination of a connecting-rod adapted at one end to revolve in its bearing and provided with a lateral pivot at the other end, and a sleeve fitted to slide upon said rod and having an arm to extend over the end of said pivot, substantially as described.

6. The combination of a carriage having V-shaped parallel edges, a pair of fixed rails having each one or more grooves, and three or more sets of rollers, each set comprising three rollers journaled to revolve independently of each other upon a traveling shaft, the middle roller of each set adapted to roll upon the edge of the carriage without touching the rail, and the end rollers of each set adapted to roll upon the rail without touching the carriage, substantially as described.

7. The combination of a carriage having a rollway on each of its parallel edges, rollers to fit the said rollways, a pair of rails located at the sides of the carriage and having rollways on the edges adjacent to and parallel with the carriage-rollways, and rollers fitted to the rollways of the rail and mounted upon the same journals as the first-named rollers in groups of three therewith, each roller being free to revolve independently of the others and each roller fitted to roll upon one of the opposite members, the carriage or a rail, without touching the other member, substantially as described.

8. The combination of a carriage having rollways, rollers shaped to fit the said ways, side rails having rollways, rollers shaped to fit said rollways and mounted upon the same shafts as the first-named rollers—three rollers upon each shaft—a stop at the end of each rail in the path of the rollers, and pairs of stops located on the edges of the carriage in the path of the rollers which fit the same, the rollers which engage the carriage being smaller than the rollers which engage the rails and the pairs of stops being located much nearer together upon the carriage than upon the rails, whereby the rollers may be prevented from all gathering at one end of the machine, and whereby any roller will be returned to its proper path whenever it chances to meet an end stop.

9. The combination of a carriage shaped as a rollway at its edge, a rail beside the carriage and shaped as a rollway at its adjacent edge, and three rollers mounted independently of each other upon the same shaft, two of the said rollers fitted to roll upon one of the said rollways and not touch the other, and the third roller fitted to roll upon the said other without touching the first, substantially as described.

10. The combination of a toothed disk mounted on a journal, a wheel mounted on the same journal beside the disk and adapted to wind up a carriage-feeding chain, a winding-spring attached at one end to the said wheel and at the other end to the disk, and a pinion journaled in a fixture of the frame to engage the teeth of the said disk and provided with a handle, whereby it may be actuated to wind or unwind the said spring at any time without interrupting the service of the feeding-wheel or revolving the said journal.

11. The combination of a carriage-feeding wheel and a toothed disk mounted upon the same shaft, a feeding-spring attached to the wheel and disk, a pinion journaled to engage the disk teeth, and a tension-spring acting between the pinion and a fixture of the frame, whereby the pinion may resist the strain of the carriage-feeding spring, as described.

12. The combination of a carriage-chain wheel, a heart-shaped cam mounted freely upon the wheel-shaft and having a ratchet-wheel fixed to its outer face, a detent hung to the frame to engage the said ratchet-wheel, a pawl-and-ratchet-wheel connection between the chain-wheel and the cam, and connections between the cam and spool-frame, whereby the latter is moved crosswise of the line of the ribbon.

13. The combination of a pair of ribbon-spool carriers rigidly fixed upon a shaft journaled to rock in the frame, a heart-shaped cam mounted freely on a shaft, a roller upon one side of the spool-carrier to engage the cam, and a spring acting against the opposite side of the carrier pressing it to engage the cam, and means, substantially as described, for revolving the cam in one direction only.

14. The combination of a spool-carrier mounted for transverse movement and provided with a ratchet-wheel on its shaft, a brace fixed to a shaft journaled in the frame to rock in the direction of the spool's cross movement, a pawl hung on the brace to engage the ratchet-wheel, and ears of the brace extending at both sides of the ratchet-wheel, whereby the brace and pawl are caused to move in unison with the spool-carrier.

15. The combination of a spool-carrier mounted for transverse movement and provided with a ratchet-wheel on its shaft, a brace fixed to a shaft journaled in the frame to rock in the direction of the spool's cross movement, a pawl hung on the brace to engage the ratchet-wheel, and ears of the brace extending both sides of the ratchet-wheel beyond the end of the pawl, whereby the brace will continue in engagement with the ratchet-wheel when its body is drawn far enough away to disengage the pawl.

16. The combination of a spool having a ratchet-wheel upon its shaft, a brace, and a pawl hung thereon to engage the said wheel, the brace adapted to be moved, carrying the pawl out of engagement, and a pin or shoulder upon the pawl limiting its forward movement when disengaged, substantially as described.

17. The combination of two ribbon-spools at the opposite ends of a machine and provided with ratchet-wheels whose teeth face in opposite directions, a pair of braces fixed upon a rock-shaft journaled to rock and slide endwise in the frame and carrying pawls to engage the said ratchet-wheels, respectively, and means, substantially as described, for retaining the rock-shaft and its appendages in either of its endwise positions.

18. The combination of a spool frame or carrier having two journal-bearings, a separable shaft having one of its parts journaled irremovably in one of the said bearings, the other part having a body adapted to pass through a spool, and a head to bind the spool, the said head being fitted as a journal in the other of the carrier-bearings, substantially as described.

19. The combination of a type-writer impression-cylinder journaled upon a shaft, a frame comprising end beams and longitudinal rods, in which frame the cylinder-shaft is fixed to project beyond the beams, the said frame being provided with trunnions above and to the rear of the cylinder-shaft, and open Y-shaped bearings fixed rigidly to or integral with the carriage to receive the said shaft and trunnions, substantially as described.

20. The combination of a type-writer carriage having two fixed bearings at each end, and a cylinder-carriage having a shaft and a trunnion projecting at each end to removably engage the said fixed bearings, substantially as described.

21. The combination of a carriage having an open Y-shaped bearing at each end, also having a second bearing below each of the first-named bearings, one side of each second bearing being formed as a segment of a circle concentric with the first-named bearings and rising somewhat above said first bearings, and a cylinder frame having shafts or trunnions to engage the said bearings, substantially as described.

22. The combination of a carriage formed with a pair of Y-shaped bearings, and with a second pair of bearings having a segmental side concentric with the first, and a segmental hook pivoted to the carriage and having a notch forming a shoulder adjacent to one of the second bearings and a spring acting upon the said hook, whereby a cylinder-carriage having two pairs of trunnions or shafts may be removably supported, substantially as described.

23. The combination of a carriage having two pairs of open bearings, a cylinder-frame having shafts or trunnions to fit removably therein, and a hook of segmental form pivoted to the carriage, the upper end of the hook being adapted to prevent the removal of the cylinder-frame, substantially as described.

24. The combination of a carriage having two pairs of open bearings, a cylinder-frame provided with trunnions or shafts to fit therein, a segmental hook having a lever-arm pivoted to the carriage, a spring to engage the said arm, and a tension-screw for said spring, substantially as described.

25. The combination of a carriage having one pair of open bearings and a second pair of bearings with a segmental side concentric with the first, and a cylinder-frame having trunnions or shafts to engage the said bearings, that horn of each of the first-named bearings adjacent to the said segment projecting above a radial line which coincides with the top of the segment, substantially as described.

26. The combination of a cylinder-frame having end beams provided with curved convex bearing-surfaces and an apron having arms plane upon one side to engage the said surfaces, and binding-screws at each edge of said arms, whereby they may be rocked upon and fixed to the bearings, substantially as described.

27. The combination of a cylinder-frame and an apron, the bearings between the apron and frame having one curved side, and binding-screws whereby the apron may be rocked upon the bearings and adjustably fixed thereto, substantially as described.

28. The combination of a cylinder journaled in a frame, a rock-shaft journaled in the same frame and provided with arms, one of which extends forward as a thumb-lever, a pressure-roller journaled in the said arms, and a spring acting on the thumb-lever to press the roller upon the cylinder independent of the apron, substantially as described.

29. The combination of a cylinder-frame adapted to be turned up for inspecting its under side or paper thereon, and a paper-guide fixed to the frame adjacent to the lower forward quadrant of the cylinder and of segmental form nearly parallel with the cylinder when in service, substantially as described.

30. The combination of a cylinder-frame adapted to be turned up for inspection, a paper-guide fixed on the cylinder-frame, and another paper-guide fixed to the machine-frame adjacent to the lower forward quadrant of the cylinder and slotted midway as a passage-way for the first-named guide, substantially as described.

31. A carriage-escapement comprising a rack upon the carriage with downward-facing teeth, two detents, one a little ahead of the other, pivoted to the frame and lying in the direction of and close up to the rack, and provided with rearward arms, a spring impelling the rear detent into engagement with the rack, a shaft journaled in a fixture of the frame and provided with a forward-projecting arm adapted to engage in arm of the spring-detent, and further provided with a rearward-projecting wiper or cam to engage the forward detent, and means for rocking the shaft at each stroke of a spacer or type, whereby the spring-detent will be released and the forward detent be pushed up to engage the same tooth, and upon releasing the spacer-type key the forward detent is withdrawn from engagement and the rear detent is permitted to spring into engagment with the next tooth, substantially as described.

32. The combination of a feed-rack, two detents pivoted to engage the same, one ahead of the other, and a shaft having cams to engage the two detents, also having an arm engaged by an adjustable spring and connected with the spacing-keys, substantially as described.

33. The combination of an escapement-shaft provided with cams and an arm, a spring attached at one end to said arm, a square or flat-sided screw passing freely through a similarly-shaped hole in a hanger and connected with the other end of the spring, and a nut upon the screw, substantially as described.

34. The combination of a carriage, a rib fixed thereto and having holes in it corresponding with letter-spaces, a lug fitted to slide upon the rib and provided with a screw to engage any one of the said holes and having a downward projection with an abrupt rear shoulder and a forward incline, a latch pivoted to a bracket, and a spring impelling it into the path of the said lug, substantially as described.

35. The combination of a carriage having a feed-rack, a detent impelled continually to engage said rack, a shifter-bar having a smooth edge adjacent to the detent and perforated with diagonal slots adapted to engage screws or studs in the carriage, a spring impelling the shifter-bar away from the detent, and a finger-lever pivoted to the carriage to engage the shifter-bar, substantially as described.

36. The combination of a carriage, a marginal stop-lug attached adjustably to the carriage, a latch pivoted to a bracket to engage the said lug, a diagonally-slotted bar attached to the carriage by means of screws in said slots, a lifting-spring for the shifter-bar, and a finger-lever adapted to engage the said bar, substantially as described.

37. The combination of a carriage having a feed-rack, a stop-lug adjustably fixed to the carriage, a spring-latch pivoted to a bracket and having one portion of its free end normally in the path of the said lug and another portion in line of said detent, a shifter-bar hung to engage both the latch and detent, and means for operating the same, substantially as described, whereby the thumb and finger of the operator in grasping the carriage at the point to slide it to and fro will set the carriage free by the same act.

38. The combination of a pair of fixed pins or studs, a shifter-bar having diagonal slots to engage the same, whereby its ends will be guided to rise and fall together from force applied at but one end, means for operating the bar, and a detent or latch to be disengaged thereby, substantially as described.

39. A type-writer shifter-bar having diagonal slideways near its ends and connections between it and the detent, substantially as described.

40. The combination of a feed-detent, operating rock-shaft having a projecting arm adapted to move at each step of the carriage-feed and a lug adjustably attached to the carriage and having a portion fitted to engage the said rock-shaft arm and stop its movement, substantially as described.

41. The combination of a toothed feed-rack, a spring-detent normally engaging the rack, a device adapted to be moved to disengage said detent from the rack by each stroke of a key, and a lug adjustably fixed to the attachment of the carriage to travel therewith into the path of the said moving device, substantially as described, whereby the movement of the disengaging device will be interrupted to stop the machine at a prearranged point.

42. The combination of a toothed feed-rack, a spring-detent normally engaging the same, a device adapted to communicate motion from the keys to disengage the said detent from the rack, an alarm-bell, and a lug adjustably attached to a portion of the carriage and adapted to trip the alarm device and afterward to interrupt the action of the said communicating device, substantially as described, whereby the alarm will be sounded at a fixed number of spaces before the machine is stopped.

43. The combination of a paper-carrying cylinder having a ratchet-wheel attached to one end, a spring-detent to engage the teeth of the wheel, a line-spacing lever pivoted to the carriage, a pawl pivoted to the lever with its weight on the side of the pivot to tip it into engagement with the said ratchet, a chin upon the pawl at its weighted side, and a shelf fixed at the rear end of the path of the pawl to engage the said chin, whereby the pawl is normally held wholly disengaged from the ratchet, substantially as described.

44. The combination of a toothed cylinder, a line-spacing lever, a pawl pivoted thereon to engage said teeth and having an arm projecting on the same side of the pivot at its point, but not in the path of the point, and a stop-lug adapted to engage said arm, whereby the pawl is stopped in its forward movement and at the same time is rigidly forced into engagement with the teeth to hold the cylinder from being thrown past the stop, substantially as described.

45. The combination of a ratchet-wheel, a pawl mounted to engage and revolve the same and having a projecting arm, and a stop-lug adapted to engage the said arm to pitch the pawl firmly into the ratchet in the act of stopping the pawl, substantially as described.

46. The combination of a ratchet-toothed cylinder, a pawl mounted to revolve the same and having a forward-projecting arm, and a pivoted stop having two lugs and a lever-arm, substantially as described, whereby either of the stops may be set into the path of the pawl-arm.

47. The combination of a ratchet-toothed cylinder, a pawl mounted to revolve the same, and a pivoted stop having two lugs and a lever-arm, whereby the stop may be turned to bring either lug into the path of the pawl, the said arm being formed also as a shelf on which the pawl normally rests and by which it is held disengaged, substantially as described.

48. The combination of a type-writing machine, top plate extending inward from the type-hangers and having a central circular aperture as a bearing and a brush mounted on a frame having a journaled shoulder to removably engage the said plate-bearing and fitted to revolve therein, and further having a handle above the bearing, the brush extending below the bearing in position to engage the type-faces when in their normal circle of rest, substantially as described.

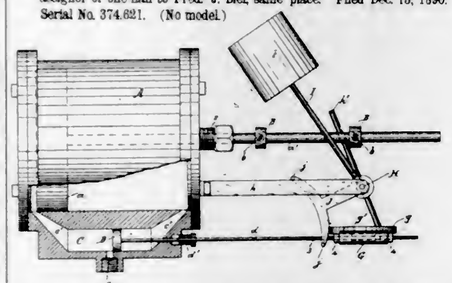
49. The combination of a circular-apertured top bearing-plate and a brush mounted on a frame having a journaled shoulder to fit and revolve in the said bearing, and further having a handle above the said bearing, whereby the brush may be revolved, substantially as described.

50. The combination of a brush-frame, a bearing in a type-writer machine for the same to revolve in, a brush pivoted near one end to the said frame, a crank-handle for the frame, a knob journaled upon the crank and having a ruffled edge, and connections between the brush and ruffled edge, substantially as described, whereby a vibrating motion is communicated to the brush by revolving the same with the crank.

51. The combination of a brush-frame, a bearing in a type-writer for the same to revolve in, a brush mounted in said frame for vertical movement, a crank-handle to the frame, a knob journaled upon the crank and having a ruffled edge, and connections between said ruffled edge and brush, substantially as described, whereby a vertically-reciprocating motion is given to the brush by revolving it with the crank.

52. The combination of a type-writer top plate having a central circular open bearing, a brush-frame having a disk provided with a shoulder journaled to fit the said bearing, and further having a shoulder at one edge to engage the under side of the plate, a brush hung to a downward arm, and a crank-handle upon said frame above the bearing, whereby the brush may be revolved with more or less pressure against the type-faces, substantially as described.

449,617. PISTON METER. JOHN B. DEEDS, Terre Haute, Ind., assignor of one-half to Fred. J. Biel, same place. Filed Dec. 13, 1890. Serial No. 374,621. (No model.)



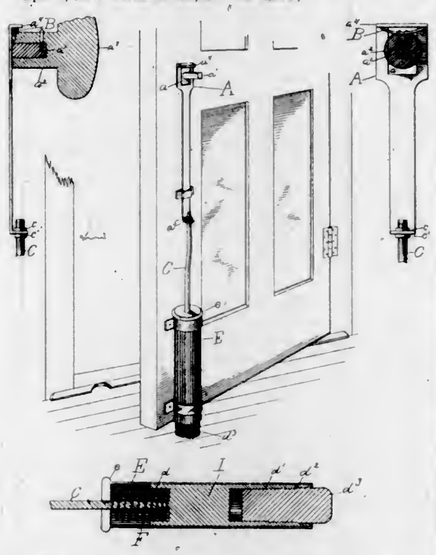
Claim.—1. The combination, with the measuring-cylinder, of the inlet-valve chamber provided with an inlet-opening and ports connecting the ends of the said chamber with the same ends of the cylinder, the outlet-valve chamber provided with an outlet-opening and ports connecting the ends of the outlet-valve chamber with the opposite ends of the cylinder, the inlet and outlet valves working back and forth over the said openings, and intermediate operating mechanism, substantially as set forth, whereby the positions of the valves in their chambers may be reversed at each end of the stroke of the piston in the measuring-cylinder.

2. The combination, with the cross-head provided with a plate and a longitudinal slot in the plate, of the inlet and outlet valve rods, provided with screw-threaded ends and nuts for adjusting the positions of the valves and securing the rods to the ends of the cross-head, and an oscillatory lever engaging with the said slot, whereby both valves may be operated simultaneously, substantially as and for the purpose set forth.

3. The combination, with the measuring-cylinder, the inlet and outlet valves, and the valve-chambers provided with openings and with ports connecting the ends of the respective chambers with the same ends and the opposite ends of the cylinder, substantially as set forth, of the oscillatory shaft, the weighted arm secured to the shaft, stops for limiting the motion of the shaft, a cross-head provided with a longitudinal slot and secured to the rods of the said two valves, and a lever secured to the said shaft and adapted to be operated by tappets on the piston-rod and by the said weighted arm, substantially as and for the purpose set forth

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449,618. DOOR-CHECK. JOHN DREES, Little Rock, Ark. Filed Apr. 10, 1890. Serial No. 347,412. (No model.)



Claim.—1. In combination with a door-knob and spindle, the plate A, having a slot *a*, upper flange a^4, the lower perforated flange a^5, crescent-lever B, secured to the spindle of the knob a^3, its ends resting against the lower face of the flange a^4, rod C, its upper end secured in the flange a^5, and bolt D, working in cylinder E, substantially as shown and described.

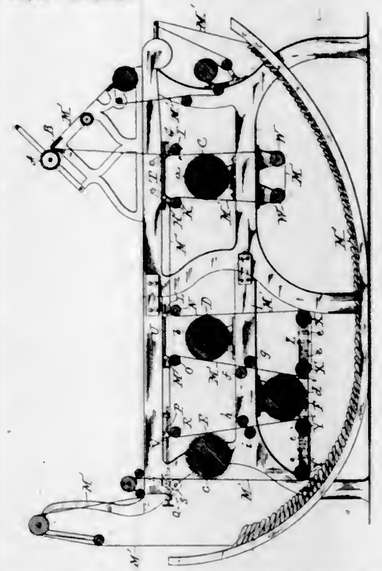
2. In a door-check, the combination of the bolt D, having the cups *d d'* and rod C, adjustable rubber plug d^3, screwing into said cup *d'*, spiral spring F, working in cup *d* and against cup *e*, cylinder E, secured to a door and incasing said parts, said bolt operated by a suitable plate A and lever B, substantially as shown and described, and for the purposes set forth.

3. In a door-check, the combination of the plate A, having a slot *a*, upper flange a^4, and lower perforated flange a^5, crescent-lever B, secured to the spindle of a knob a^3, rod C, its upper end secured in the flange a^3 and its lower end to the bolt D, and bolt D, incased in the cylinder E and provided with the spiral spring F and adjustable rubber plug d^3, substantially as shown and described, and for the purposes set forth.

449,619. ARTIFICIAL STONE OR CEMENT. LOUIS ENRIGHT, New York, N. Y. Filed May 16, 1890. Serial No. 352,072. (No specimens.)

Claim.—The process of producing artificial stone or cement, which consists in boiling silicate of magnesium in hydrochloric acid, then adding magnesium oxide, and thoroughly mixing the ingredients together, substantially as described.

449,620. COMBINED GIGGING AND SHEARING MACHINE. HENRY S. GREENE, Lawrence, Mass. Filed Oct. 21, 1889. Serial No. 327,639. (No model.)



Claim.—1. The improved machine for finishing cloth, consisting of a series of rotary cylinders for breaking, combing the nap or loops, and gigging, respectively, in combination with rotary shears for cutting the nap and guide-rollers for guiding the cloth to said rollers and shears, as set forth.

2. The combination of the three rotary cylinders C, D, and E, with their respective straight teeth *a*, needle-like teeth *b*, and teasel-shaped teeth *c*, with guide-rollers in proper positions to guide the surface of the cloth to the teeth of said cylinders, all as set forth.

3. In combination with the three rotary cylinders C, D, and E and their respective straight teeth *a*, needle-like teeth *b*, and teasel-shaped teeth *c*, the rotary shearer and guide-rollers in proper positions to guide the surface of the cloth to the teeth of said cylinders and to the shears, all as set forth.

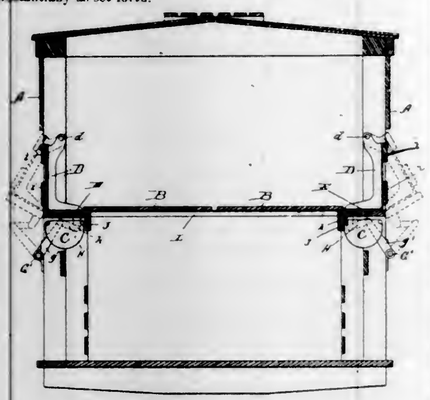
4. In combination with the series of rotary cylinders for breaking, combing, and gigging, respectively, a cylinder having pointed teeth on its periphery for gigging the under surface of the cloth simultaneously with the operation of the series of cylinders, and guide-rollers for guiding the cloth to the cylinders, substantially as set forth.

449,621. DOUBLE-DECK STOCK-CAR. BOHN C. HICKS, Minneapolis, Minn., assignor, by mesne assignments, to the Hicks Stock Car Company, Chicago, Ill. Filed Feb. 17, 1890. Serial No. 340,786. (No model.)

Claim.—1. In a stock-car, the side posts thereof, watering-troughs located between said side posts, and a removable upper deck located when in position for use in substantially the same horizontal plane as said troughs, in combination with brackets pivoted between each pair of side posts, the pivotal points of said brackets being located above said troughs and said brackets being so pivoted that their lower ends swing outwardly, each pair of brackets carrying at their lower ends a plank or lid which when said brackets occupy their normal position serves both as a cover for the trough therebeneath and as an extension between the side posts of the upper deck, said brackets being capable of swinging outwardly far enough to uncover said troughs, substantially as set forth.

2. In a stock-car, the side posts thereof, watering-troughs located between said side posts, and a removable upper deck located when in position for use in substantially the same horizontal plane as said troughs, in combination with a pair of brackets pivoted between each

pair of side posts, the pivotal points of said brackets being located above said troughs and said brackets being so pivoted that their lower ends swing outwardly, each pair of brackets carrying at their lower ends a plank or lid which when said brackets occupy their normal position serves both as a cover for the trough therebeneath and as an extension between the side posts of the upper deck, said brackets being capable of swinging outwardly far enough to uncover said troughs, and said brackets carrying slats *i i*, which constitute when the brackets are in their normal position part of the exterior boarding of the car, substantially as set forth.

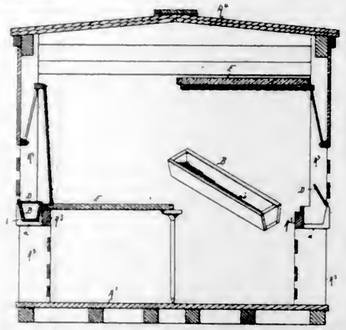


3. In a stock-car, the side posts thereof, watering-troughs located between said side posts, and a removable upper deck located when in position for use in substantially the same horizontal plane as the said watering-troughs, in combination with a pair of brackets pivoted between each pair of side posts, the pivotal points of said brackets being located above said troughs, and said brackets being so pivoted that their lower ends swing outwardly, each pair of brackets carrying at their lower ends a plank or lid which when said brackets occupy their normal position serves both as a cover for the trough therebeneath and as an extension between said side posts of the upper deck, said brackets being capable of swinging outwardly far enough to uncover said troughs, and longitudinal slats *i i*, extending along the sides of the car, said slats being secured to the outer edges of a plurality of said pairs of brackets, whereby said slats perform a threefold function, to wit: first, they constitute when the brackets are in their normal position a portion of the side walls of the car; second, they enable a plurality of the pairs of brackets to be operated simultaneously, and, third, they constitute stops to prevent the inward swinging of the brackets, substantially as set forth.

4. In a stock-car, the side posts thereof and watering-troughs located between said side posts, in combination with outwardly-swinging covers or lids, one for each of said troughs, each cover or lid being pivotally connected with and between two of the side posts, a longitudinal shaft journaled along the side of the car and common to a plurality of said lids or covers, a plurality of crank-arms on said shaft, and links connecting said crank-arms and said lids or covers, substantially as set forth.

5. In a stock-car, the side posts on opposite sides thereof, watering-troughs located between said side posts on both sides of the car and a removable upper deck located when in position for use in substantially the same horizontal plane as said troughs, in combination with a pair of brackets pivoted between each pair of side posts, the pivotal points of said brackets being located above said troughs and said brackets being so pivoted that their lower ends swing outwardly, each pair of brackets carrying at their lower ends a plank or lid which when said brackets occupy their normal position serves both as a cover for the trough therebeneath and as an extension between said side posts of the upper deck, said brackets being capable of swinging outwardly far enough to uncover said troughs, longitudinal slats *i i*, extending along each side of the car, said slats on each side of the car being secured to the outer edges of a plurality of said pairs of brackets, whereby said slats perform a threefold function, to wit: first, they constitute when the brackets are in their normal position a portion of the side walls of the car; second, they enable a plurality of the pairs of brackets to be operated simultaneously, and, third, they constitute stops to prevent the inward swinging of the brackets, a longitudinal shaft G on each side of the car, a plurality of crank-arms *g'* on each shaft, a plurality of links H, connecting said crank-arms and said brackets, an operating-wheel *f* on the end of the car, crank-arms *g* on the end of each shaft, and links G, connecting said crank-arms *g* with said wheel *f*, substantially as set forth.

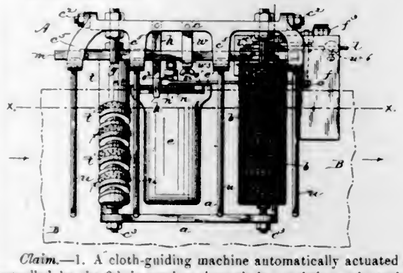
449,622. WATERING-TROUGH FOR STOCK-CARS. BORN C. HICKS, Minneapolis, Minn., assignor, by mesne assignments, to the Hicks Stock Car Company, Chicago, Ill. Filed Mar. 18, 1890. Serial No. 344,294. (No model.)



Claim.—1. In a stock-car, watering-troughs located within the spaces between adjacent side posts or stanchions and supported removably therebetween, in combination with removable double-deck sections located when in position for use substantially in the same horizontal plane with said troughs, the outer longitudinal edges of said deck-sections being wholly inside said side posts, whereby spaces are left between said side posts which are not covered by said deck-sections, and covers or lids pivotally connected to the frame-work of the car, which swing over said troughs and form shields thereto, said covers or lids also bridging said spaces between the side posts along the longitudinal edges of said double-deck sections, substantially as set forth.

2. In a stock-car, watering-troughs located within the spaces between adjacent side posts or stanchions and supported removably therebetween, in combination with covers or lids which swing over said troughs and which are pivotally connected to the frame-work of the car, substantially as set forth.

449,623. MACHINE FOR GUIDING THE EDGES OF WEB FABRICS. LOUIS HOLLINGWORTH, Providence, R. I., assignor, by direct and mesne assignments, to Benjamin F. Tillinghast, Charles R. Earle, and Amos W. C. Arnold, all of same place. Filed Mar. 27, 1890. Serial No. 345,544. (No model.)



Claim.—1. A cloth-guiding machine automatically actuated and controlled by the fabric passing through it, consisting, substantially, of a dog-carrying feed-roll, a frictionally-resisted temple having a series of loosely-mounted narrow inclined spur-carrying wheels, a rack adapted to simultaneously engage said temple and dogs to change the relative inclination of the spur-wheels to the fabric, and governors controlling the radial movement of said dogs and their engagement with the rack, all constructed and arranged whereby any lateral variation of the traveling fabric from a true or normal line is automatically corrected.

2. An automatically-operating cloth-guiding machine having a normally-stationary temple-carrying arbor mounted horizontally, its axis being parallel with the cloth transversely, in combination with a cloth-driven feed-roll carrying a series of dogs adapted to engage a rack, mounted governors connected with and controlling the longitudinal movement of said dogs, and a double-acting rack arranged to engage the dogs and also arranged to engage with and actuate the temple-arbor in an axial direction, thereby changing the relation of the temple to the traveling cloth and correcting any lateral variation of the latter from its true or normal line.

3. A cloth-guiding machine provided with a temple having its arbor fitted with a series of loosely-turning spur-carrying rings mounted to revolve at an inclined plane or angle to the axis of the normally-stationary arbor, which latter is mounted parallel with the cloth transversely, in combination with a cloth-driven feed-roll and dogs, cloth-actuated governors connected with said dogs, and a double-acting rack or rod, as *m*, engaging the temple-arbor and also adapted to engage said dogs, substantially as hereinbefore described, and for the purpose set forth.

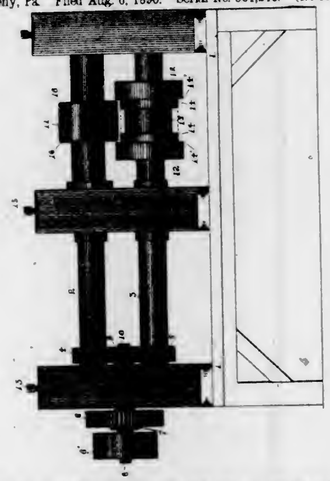
4. A cloth-guiding machine having a frictionally-resisted temple automatically operated and controlled by the passage of cloth through the machine and having normally-stationary transversely-arranged guides *u* secured to a frame jointed to the outer portion of the machine, whereby the guides may be raised so as to readily introduce and remove the cloth, substantially as hereinbefore set forth.

5. The combination of a mounted frictionally-resisted temple having spur-carrying rolls arranged to engage and divert the cloth, a mounted rack engaging the temple, a roughened feed-roll over which the fabric passes, provided with radially-mounted dogs, a counterweighted lever having said dogs connected therewith, and governors located between the temple and feed-roll, connected with the said lever, all constructed and arranged whereby any variation of the traveling fabric from a true line is automatically corrected, substantially as hereinbefore described.

6. In combination, a suitably-mounted normally-stationary frictionally-resisted arbor having inclined freely-revolving spur-carrying wheels mounted thereon, a roughened surface feed-roll having dogs mounted therein to travel transversely, the independently-mounted governors having roughened surfaces adapted to engage the under side of fabrics, a counterweighted lever connected with said governors and dogs, a mounted toothed rack or bar, as *m*, arranged to connect with the dogs, a toothed wheel secured to the temple-arbor and having the said rack intergearing therewith, whereby the traveling fabric is enabled to produce an intermittent movement of the rack to and fro in either direction, and a table or stationary rest, and guides adapted to press against the fabric, substantially as hereinbefore set forth.

7. A cloth-guiding machine having a normally-stationary temple-arbor mounted transversely of and below the cloth and having said arbor provided with a series of loosely-mounted roughened or spur-carrying wheels arranged to engage the fabric, the axes of rotation of said wheels being at an angle with the arbor's axis, a double acting rack or rod engaging the temple arbor, a cloth-driven feed-roll provided with dogs adapted to engage and operate the rack, and cloth-actuated governors connected with and controlling the movement of said dogs.

449,624. SHEET-METAL-FLANGING MACHINE. JOHN A. KURTZ, Allegheny, Pa. Filed Aug. 6, 1890. Serial No. 361,218. (No model.)



Claim.—1. In a flanging-machine, the roll 11, having a beveled edge, in combination with the roll 12, having a depression 14 of greater length than the roll first named, and a depression 15, adapted to permit the passage of a narrow flange or projection on the end of the blank, the surface of said roll being arranged in the depression first above named, substantially as set forth.

2. In combination with the rolls, one of which has a depression 15, a guide-table having a similar depression, substantially as set forth

3. The combination, with the rolls adapted to form a ring of sheet metal, of a hinged bar located at one side of a plane which passes between the rollers, said bar being adapted to be held at an inclination to said plane, substantially as set forth.

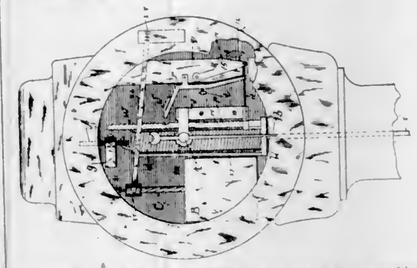
449,625. SLATE-PENCIL SHARPENER. ELIPHALET R. LOVETT, Lynn, Mass., assignor of part, by direct and mesne assignments, to Maynard O. Davis, Artemas S. Carr, and Josiah H. Preble, same place, and Lewis G. Peabody, Peabody, Mass. Filed Aug. 23, 1890. Serial No. 362,854. (No model.)



Claim.—1. A slate-pencil sharpener comprising a common hub or head and a plurality of V-shaped cutting-blades formed in one piece therewith and diverging therefrom at equal angles to the axis of the tool, said blades being entirely separated from each other from their junction with said common hub to their free ends.

2. In a slate-pencil sharpener, the combination of the hub or stock *b*, provided with the milled or roughened head *c*, and a series of V-shaped cutting-blades *a*, formed in one piece with said hub and extending therefrom in directions oblique to each other and to the axis of said hub, substantially as shown and described.

449,626. COIN-OPERATED PLATFORM WEIGHING-SCALE. NATHANIEL M. LOWE, Boston, Mass., assignor to himself, Frank P. Stone, and Charles A. Shaw, same place. Filed May 22, 1890. Serial No. 352,779. (No model.)



Claim.—1. In a coin-operated weighing-scale, the combination of a tank for containing a liquid, a helically-fluted shaft extending into said tank, a paddle or paddles disposed in said tank on said shaft, a nut fitted to work on said shaft, and mechanism connecting said nut with the scale, whereby the paddle-shaft is rotated during the weighing operation, substantially as described.

2. In a coin-operated weighing-scale, the combination of a tank for containing a liquid, a helically-fluted shaft extending into said tank, a paddle or paddles disposed in said tank on said shaft, a nut fitted to work on said shaft, a lever connected with said nut, a standard onto which said lever is pivoted, and a balance-spring plate supporting said standard and connected with the weighing mechanism, substantially as described.

3. In a coin-operated scale, the combination of a vertically-movable rack connected with the weighing mechanism and provided on its inner face with plain teeth and on its outer face near its upper end with upwardly-inclined teeth and near its lower end with downwardly-inclined teeth, an index-finger engaged by said plain teeth, a coin-chute, a gravity-lever pivoted at the discharge of said chute, a rod pivoted to said lever and adapted to engage said downwardly-inclined teeth for locking the rack, a coin-lever pivoted to said chute and projecting into the path of the coin, and a pawl on the upper arm of said lever in position to be engaged by said upwardly-inclined teeth on the ascent of the rack, substantially as described.

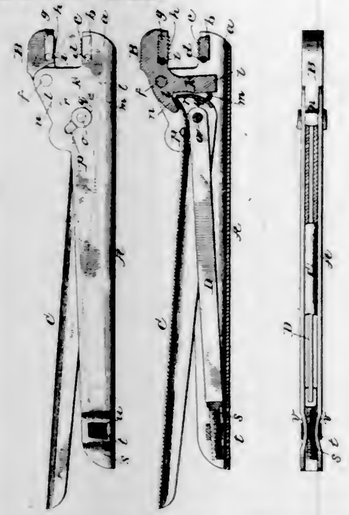
4. The combination of the case A, gravity-rack *p*, the chute *q*, weighted lever 15, rod 17, and lever *r*, provided with the pawl *v*, substantially as described.

5. The combination of the case A, balance-spring *d*, rack *p*, the standard 27, the lever 26, pivoted thereto, the tank B, the helically-fluted shaft C, provided with paddles 23, and the nut 25 on said shaft and connected to said lever, substantially as described.

6. A rack-locking device for the index-rack of a coin-operated weighing-scale, comprising the index-rack, two levers pivoted to the

coin-chute and adapted to support the coin, one of said levers having a determined gravity-force and being provided with a pivoted arm for locking said rack, and the companion lever provided with a pawl engaging teeth on said rack, substantially as described.

449,627. PIPE-WRENCH. MILTON H. MCNAIR, Meadville, Pa., assignor of one-half to Edward Smith, same place. Filed Jan. 26, 1891. Serial No. 379,074. (No model.)



Claim.—1. A pipe-wrench consisting of a main lever formed of sheet metal U shape in cross-section and provided with a fixed jaw, a compound lever fulcrumed in the main lever, and a separate movable jaw operated by the latter lever.

2. A wrench consisting of a main lever and a compound lever, both of which are formed of sheet metal bent into shape substantially as shown, and the latter fulcrumed in the former, and a fixed and a movable jaw.

3. A wrench consisting of a main lever of sheet metal having a jaw and an upward extension at its front end, a movable jaw pivotally secured in said extension, and a compound lever of sheet metal having a movable fulcrum in the main lever.

4. A wrench consisting of a main lever of sheet metal having a jaw, an extension, and angular slots in the sides of the lever at the front end thereof, a movable jaw pivotally secured to said lever, and a compound lever for operating the jaw, in combination with an adjusting-rod connected to the fulcrum of the compound lever.

5. A wrench consisting of a main lever of sheet metal provided with a fixed jaw and having an adjusting-rod incased in the lever, a movable jaw, and a compound lever having an adjustable fulcrum and constructed to close into the main lever and over the adjusting-rod.

6. A wrench consisting of a sheet-metal main lever having slots and depressions in its sides at the rear end, a compound lever having an adjustable fulcrum, and a movable jaw, in combination with an adjustable rod provided with a nut projecting through the slots in the sides of the main lever.

7. A wrench consisting of a main lever having a fixed jaw formed thereon, a movable jaw having a depending arm, a compound lever for operating the latter jaw, and a resilient body interposed between the compound lever and the arm of the movable jaw.

8. A wrench consisting of a main lever having a fixed jaw formed thereon, a movable jaw having a depending arm provided with a pocket, a spring in said pocket, and a compound lever pivotally secured to the main lever.

9. A wrench consisting of a main lever having a fixed jaw formed thereon, an adjustable lever having a fixed jaw formed thereon, an adjustable lever within the main lever, and a movable jaw pivotally secured in said lever, in combination with an adjusting-rod also within the main lever and attached to the fulcrum of the compound lever.

10. A wrench consisting of a main lever having a fixed jaw thereon, a movable jaw pivoted in said lever and provided with a rearward extension, in combination with a compound lever provided with a curved upward extension.

11. A wrench provided with toothed blocks in its jaws, the ends of said teeth being cut away, substantially as and for the purpose set forth.

449,628. HINGE. GEORGE W. NIEDRINGHAUS and CHRISTIAN GEISS, St. Louis, Mo., assignors to the St. Louis Stamping Company, same place. Filed Dec. 20, 1890. Serial No. 375,289. (No model.)



Claim.—The combination of the handle, lid, hinge, and solder, said handle being recessed and perforated, as described, and said hinge having the folded part *c* and wires *c'* *c'* shaped to form the ends c^2 c^2, the middle portions c^3 c^3, and the shouldered ends c^4 c^4, substantially as described.

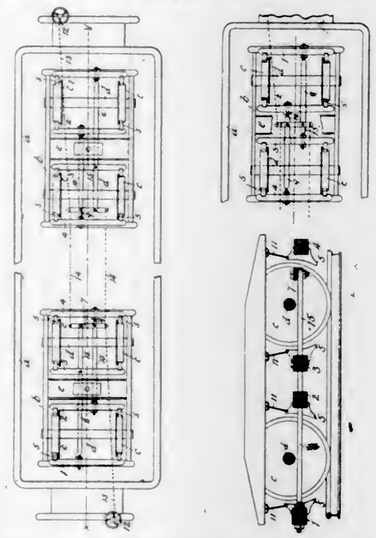
449,629. BLACK DYE. JAKOB SCHMID, Basle, Switzerland, assignor to the Society of Chemical Industry, same place. Filed Jan. 15, 1891. Serial No. 377,876. (No specimens.) Patented in France Aug. 16, 1890, No. 207,656.

Claim.—As a new product, the dark brown powder derived from monoalkylized derivatives of beta-naphthylamine and a diazo compound of the formula

$$C_{10}H_3(SO_3Na)_3(\alpha)=N-N-C_{10}H_4N=NCl(\alpha)$$

which is easily soluble in water, difficultly soluble in alcohol, and insoluble in benzine, and its aqueous solution is not changed by the addition of caustic alkalies, but precipitated by the addition of mineral acids.

449,630. CAR-BRAKE. WILLIAM R. SEIDERS, Reading, Pa., assignor of one-half to John F. McGlinn, same place. Filed Dec. 15, 1890. Serial No. 374,714. (No model.)

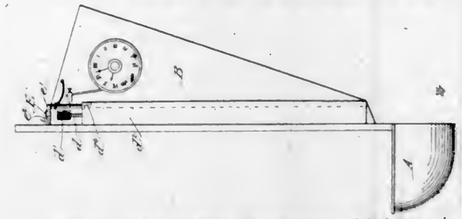


Claim.—1. In a car-brake, the combination, with brake-beams suspended in front and rear of each pair of wheels, of the brake-lever 7, connected with all of said brake-beams by means of tension and compression rods pivoted thereto on opposite sides of the car center line, and mechanism for rocking said lever, substantially as set forth.

2. In a car-brake, the combination, with brake-beams suspended in front of each pair of wheels, of the brake-lever 7, connected with all of said brake-beams by means of tension and compression rods pivoted thereto on opposite sides of the car center line, the sole support for said lever being from the brake-beams by means of said connecting-rods, and mechanism for rocking said lever, substantially as set forth.

3. In a car-brake, the combination, with brake-beams suspended in front and rear of each pair of wheels, of the brake-lever 7, located between the front and rear beams for one pair of wheels and connected with all of said brake-beams by means of tension and compression rods pivoted thereto on opposite sides of the car center line, substantially as set forth.

449,631. AUTOMATIC STOCK-FEEDER. JAMES H. CARPENTER, West Point, Ga., assignor of one-half to Morris Herzberg and James A. Erwin, same place, Charles R. King, Atlanta, Ga., and Kit Williams, New Orleans, La. Filed Sept. 18, 1890. Serial No. 365,433. (No model.)

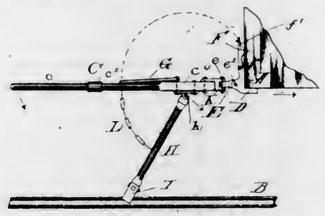


Claim.—1. In a stock-feeder, the combination of the hopper, the sliding cover, the rollers journaled in the sides of the hopper, the weights attached to the lower end of the door by cords passing over the rollers, the shaft journaled between the upper ends of the sides of the hopper and provided with levers adapted to engage with the top edge of the door, and the pin seated with its lower end on a sustaining-bracket and having a lever of the shaft resting on its upper end, substantially as described.

2. In a device of the class specified, the hopper B, and the door C, normally forming one side of said hopper and adapted to be opened, and the shaft E, having levers e^3 bearing on or over the door, and means for preventing the revolution of said shaft, substantially as and for the purpose specified, and a feed-trough suitably placed.

3. In a device of the class specified, the hopper B, and the door C, normally forming one side of said hopper and adapted to be opened, and the shaft E, having levers e^3 bearing on or over the door, and means for preventing the revolution of said shaft, consisting of the lever *e'*, secured thereto, and the pin *e*, substantially as and for the purpose specified, and a feed-trough suitably placed.

449,632. CAR-PUSHER. JOHN M. JONES, Atlanta, Ga., assignor to Geo. W. Henderson, same place. Filed Aug. 7, 1890. Serial No. 361,370. (No model.)



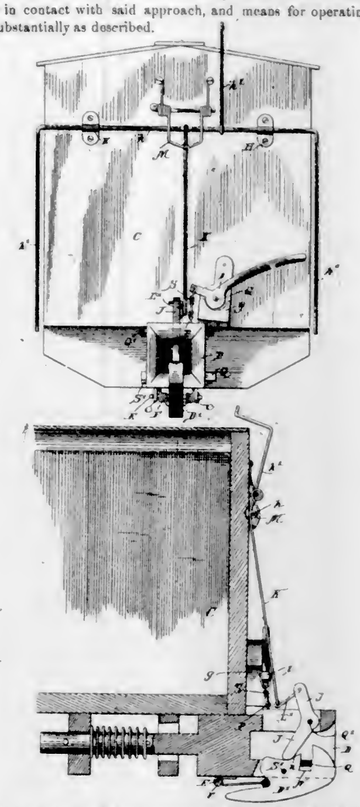
Claim.—1. In a car-mover, the combination of the lever C, arm H, block D, pivoted to said lever C, and bracket K, having the flange *k'* for the purpose of bracing said bracket K and preventing the same from turning in its place, substantially as shown and described.

2. In a car-mover, the combination of the block D, the spike F, hinged to the said block, the lever C, connected with the block D by the link E, the said lever consisting of the parts *c*, c^4, and K, the parts *c* and c^4 being hinged together and the cuff *c'* covering said parts at their connecting ends and the part K being connected to the part c^4 by the pin *k*, the link G, secured to the part c^4, the arm H, the bifurcated plate I, and the plates J, secured to the arms of the said bifurcated plate, substantially as specified.

449,633. CAR-COUPLING. FRANK MILLER, Batesville, Ohio, assignor of one-half to W. J. Shively and James R. Keenan, both of same place. Filed Dec. 5, 1890. Serial No. 373,684. (No model.)

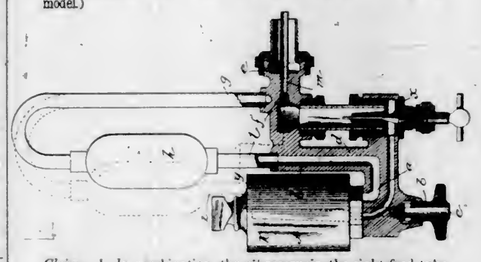
Claim.—1. In a car-coupling, the combination, with a draw-head loosely supported beneath the car, a lever pivoted to the end of the car, and a chain connecting said lever with the draw-head, of a pin pivoted in said draw-head, a shaft journaled across the end of the car and carrying operating-handles, a lever connected to and depending from said shaft, and a link connecting said lever with the pin, substantially as described.

2. In a car-coupling, the combination, with a draw-head, a spring-actuated link-lifter pivoted in the bottom of said draw-head and having a deep notch in its upper face, whose rear approach is beveled, and a bar through the draw-head normally resting in said notch, of a pin pivoted in the upper side of the draw-head with its lower end normally in contact with said approach, and means for operating said pin, substantially as described.



3. In a car-coupling, the combination, with a draw-head loosely supported beneath the car, a lever pivoted to the end of the car, a chain connecting said lever with the draw-head, a spring-actuated link-lifter pivoted in the bottom of the draw-head and having a deep notch near its front end in its upper face, the rear approach to said notch being beveled, and a bar through the draw-head resting in said notch, of a pin pivoted in the upper side of the draw-head with its lower end normally in contact with said approach, a pin-operating lever, a spring pressing the same to the rear, a link connecting the lower end of said lever with the coupling-pin, and handles for operating said lever, all substantially as and for the purpose hereinbefore set forth.

449,634. LUBRICATOR. THOMAS B. MCNIECE and WILLIAM H. BLOOM, Mansfield, Ohio. Filed Oct. 9, 1890. Serial No. 367,529. (No model.)

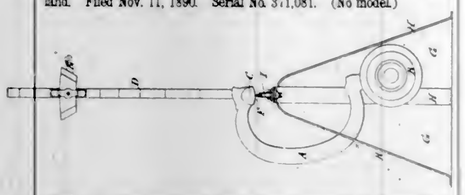


Claim.—1. In combination, the oil-reservoir, the sight-feed tube and condenser, a vertical bracket having lateral branches extending on one side having removable fittings, the said sight-feed tube being arranged vertically and removably between the said horizontal branches, one of which is extended and screw-threaded to connect with the steam-pipe, the said bracket also having an extension *a* for the oil-

reservoir, and valves controlling passages through the bracket for the steam and oil, substantially as described.

2. In combination, the oil-reservoir, the sight-feed tube and condenser, the vertical bracket having a passage for the water of condensation and having a lateral extension *a* at its lower end for the oil-reservoir and an oil-passage, a second lower extension for the lower end of the sight-feed tube, and an extension at its upper end for the upper end of the sight-feed tube, which is removably fitted between the upper and lower lateral extensions, the said upper extension being threaded for connection with the steam-pipe and having valved passages for the oil and steam communicating with the sight-feed tube and condenser, substantially as described.

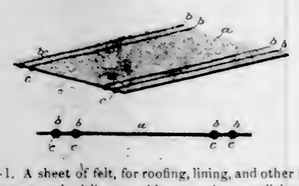
449,635. METRONOME. ARTHUR G. PINFOLD, Cleckheaton, England. Filed Nov. 11, 1890. Serial No. 371,081. (No model.)



Claim.—1. The improved metronome consisting of a curved or bent frame weighted at its lower end and provided with a bearing-surface on the under side of the top thereof by which it can be suspended, and a bar or slide projecting up from the top of such frame and carrying a weight the position of which can be adjusted in order to regulate the duration of the beats or oscillations of the instrument, substantially as specified.

2. The improved metronome consisting of a curved or bent frame weighted at its lower end and provided with a bearing-surface on the under side of the top thereof, and a bar or slide projecting up from the top of such frame and carrying an adjustable weight, such bar or slide being capable of either sliding through the top of the frame or of folding down in relation thereto, substantially as specified.

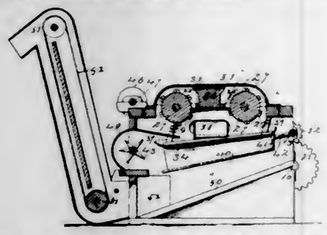
449,636. ROOFING AND LINING FELT. JOSEPH A. SMITH, Boonton, N. J., assignor to the Powerville Felt Roofing Company, (Limited,) New York, N. Y. Filed Oct. 23, 1890. Serial No. 369,051. (No model.)



Claim.—1. A sheet of felt, for roofing, lining, and other purposes, having one or more raised lines or ridges running parallel to the edge of the sheet, substantially as and for the purpose set forth.

2. A sheet of felt, for roofing, lining, and other purposes, having one or more raised lines or ridges running parallel to the edge of the sheet and formed by incorporating in the sheet threads or similar material, substantially as described, whereby a portion of the felt-surface is caused to bulge and form guide-lines, substantially as and for the purpose set forth.

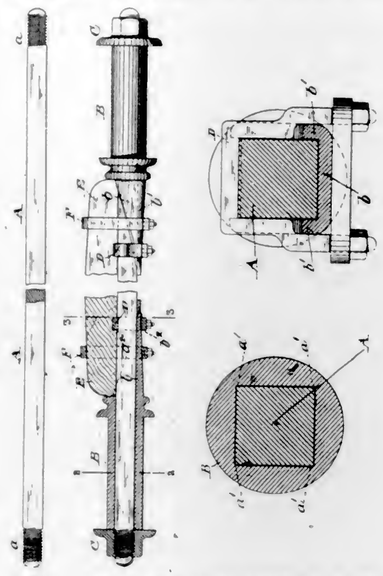
449,637. CORN-SHELLER. WILLIAM F. STEINBAUGH, Platte Centre, Nebr., assignor of one-third to Henry Reuting, same place. Filed Sept. 11, 1890. Serial No. 364,694. (No model.)



Claim.—1. The combination, in a corn-sheller, of two cylindrical drums having spirally-arranged teeth, in connection with the sheller-bar arranged to operate between the drums and formed with flanges projecting laterally on its upper and lower edges, as set forth.

2. The combination, in a corn-sheller, of two toothed cylindrical drums having arranged between them a central flanged sheller-bar within a shelling-chamber having a feed and discharge end, as and for the purpose set forth.

449,638. AXLE. JOHN A. STEWART, Houston, Tex., assignor of one-half to Lewis R. Tebbetts, St. Louis, Mo. Filed Oct. 27, 1890. Serial No. 369,506. (No model.)



Claim.—1. The combination, with the angled bar, of the skeins having the tapering shanks and the clips engaging notches in the upper surfaces of said bar and notches in the under surface of said shank, substantially as set forth.

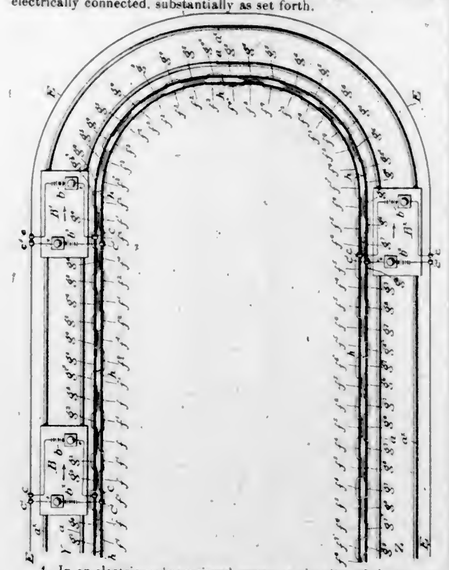
2. The combination, with the angled bar, of the skeins having the tapering shanks, the clips engaging notches in the upper surface of said bar and notches in the under surface of said shanks, the wooden bar, and the clips clasping said wooden bar and engaging notches in the under surface of said skeins, substantially as set forth.

449,639. ELECTRIC RAILWAY-SIGNAL. STONEWALL TOMPKINS, Knoxville, Tenn., assignor of one-half to Charles E. Vawter, Crozet, Va. Filed Dec. 9, 1889. Serial No. 333,089. (No model.)

Claim.—1. In an electric-railway-signal system, a series of aligned conductor-sections, electrically connected into groups, a second series of aligned conductor-sections similarly connected into groups, the arrangement being such that each section exists between sections belonging to a group or groups other than its own, and groups in one series being connected with the respective groups of the other series, substantially as set forth.

2. In an electric-railway-signal system, a plurality of series of electric conductors each composed of a succession of conductor-sections, non-adjacent members of one series of conductor-sections being electrically connected to form a number of groups, the sections of each of such groups being interdisposed with the sections of other groups of the series, non-adjacent members of another series of conductor-sections being similarly connected to form a number of groups, the sections of each of such groups being similarly interdisposed with the sections of other groups of the series, groups in different series being electrically cross-coupled, substantially as set forth.

3. In an electric-railway-signal system, a plurality of electric conductors each composed of a succession of conductor-sections, non-adjacent members of one succession or series being electrically connected to form a number of groups, the sections of the several distinct groups being interdisposed or alternated with each other, non-adjacent members of another succession or series being similarly connected to form a number of groups, the sections of the several distinct groups being similarly interdisposed or alternated with each other, groups in different series and abreast of different portions of the railroad-track being electrically connected, substantially as set forth.



4. In an electric-railway-signal system, a plurality of electric conductors which consist each of a series of sections, individual sections in different series being electrically cross-coupled, a continuous conductor, a railway-vehicle, brushes or contact devices carried by said railway-vehicle, each adapted to make contact with the sections of a selected conductor-series, a battery and bell carried by said railway-vehicle, in circuit with each other, connected with one of said brushes, said battery having its positive pole in communication with said continuous conductor, a second battery and bell also carried by said railway-vehicle, in a separate circuit, also connected with one of said brushes and having its negative pole in communication with said continuous conductor, substantially as set forth.

5. In an electric-railway-signal system, a plurality of conductors, one of which is continuous, and others of which each consist of a series of sections, individual sections in different series being electrically cross-coupled, all being normally out of circuit, a railway-vehicle, a battery and bell mounted on said vehicle, in circuit with each other, in circuit with the continuous conductor, and with one section of one series of sections, a second battery and bell mounted on said vehicle, in circuit with each other, in circuit with the continuous conductor, and with one section of a second series of sections, by which arrangement two circuits contemporaneously exist, one being the forward circuit existing in the continuous conductor, a sectional conductor abreast of the engine, and the first battery and bell and their connections, the second circuit, being the rear circuit, existing in the continuous conductor, a sectional conductor abreast of the engine, and the second battery and bell and their connections, substantially as set forth.

6. In an electric-railway-signal system, a plurality of electrical conductors, a railway-vehicle, brushes mounted free for lateral movement upon opposite sides of said vehicle, yokes each uniting two brushes which respectively exist upon opposite sides of the vehicle, and mechanism connected with both yokes, whereby their contemporaneous shifting respectively in opposite directions may be effected to occasion the contact of the brushes with selected conductors, substantially as set forth.

7. In an electric-railway-signal system, a plurality of conductors, one of which is continuous, and others of which consist each of a series of sections, individual sections in different series being electrically cross-coupled, all said conductors being normally out of circuit, a railway-track, a railway-vehicle, a battery and bell in circuit with each other supported upon said vehicle, said battery being as to its positive pole in circuit with the continuous conductor, and as to its negative pole in circuit with a sectional conductor, a second battery and bell in circuit with each other and supported upon said vehicle, said battery being as to its negative pole in circuit with the continuous conductor, and as to its positive pole in circuit with another of the sectional conductors, the arrangement being such that the ringing of one bell indicates the presence of an engine in front and the ringing of the other bell indicates the presence of an engine in the rear, because of the presence in said engines in front or rear of circuit-closing arrangements, substantially as described.

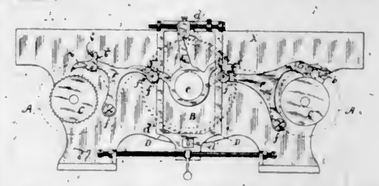
8. In an electric-railway-signal system, a plurality of conductors each composed of a series of conductor-sections, non-adjacent members of one series of conductor-sections being electrically connected to form a number of groups, the sections of each of such groups being interdisposed with the sections of other groups or another group of the series, non-adjacent members of another series of conductor-sections being similarly connected to form a number of groups, the sections of each of such groups being similarly interdisposed with the sections of other groups or another group of the series, groups in different series being electrically cross-coupled, a continuous conductor, a railway-vehicle, a battery and bell supported upon said vehicle, electric connections by which one pole of the battery is placed in circuit with the continuous conductor, and the other pole of the battery is placed in circuit with a selected one of the series of conductor-sections, substantially as set forth.

9. In an electric-railway-signal system, a plurality of conductors each composed of a succession of conductor-sections, non-adjacent members of one series of sections being electrically connected to form a number of groups, the sections of each group being interdisposed or alternated with the sections of other groups, non-adjacent members of another series of conductor-sections being similarly connected to form a number of groups, the sections of each group being similarly interdisposed or alternated with sections of other groups, groups in different series being cross-coupled, a continuous conductor, a railway-vehicle, brushes carried by said railway-vehicle, respectively adapted to make contact with the sections of different conductor-series, a battery and bell carried by said railway-vehicle, in circuit with each other, connected with one of said brushes, said battery having its positive pole in communication with said continuous conductor, a second battery and bell also carried by said vehicle, in a separate circuit from that first named, also connected with one of said brushes, said battery having its negative pole in communication with said continuous conductor, substantially as set forth.

10. In an electric-railway-signal system, a series of conductor-sections, half of which are of one length and half of a different length, which sections are axially aligned and so arranged as to be of successively dissimilar lengths, said sections being by conducting connections formed into groups, the individual sections composing a group being non-adjacent and existing each between sections belonging to a group or groups other than its own, substantially as set forth.

11. In an electric-railway-signal system, a railroad-track, a railroad-vehicle, a series of electrical conductors, brushes carried by said vehicle adapted to make contact with said conductors, two batteries carried by said vehicle, one of which batteries is in circuit with one half of the said brushes, and the other of which batteries is in circuit with the other half of said brushes, said batteries having their poles arranged in opposite directions, substantially as set forth.

449,640. TYPE-WRITING MACHINE. HENRY H. UNZ, Philadelphia, Pa., assignor to the National Type Writer Company, of Pennsylvania. Original application filed May 19, 1887, Serial No. 238,719. Divided and this application filed Dec. 7, 1887. Serial No. 257,260. (No model.)



Claim.—1. In combination, a letter-spacing frame, a reciprocating dog-carrying frame operated by said letter-spacing frame, ribbon-spools, and intermediate mechanism, substantially as described, between said reciprocating dog-carrying frame and the ribbon-spool, whereby, when the reciprocating frame is operated, one of the ribbon-spools is revolved.

2. In combination, a letter-spacing frame, a reciprocating dog-carrying frame operated by said letter-spacing frame, ribbon-spools, and operating-levers between said ribbon-spools and said reciprocating dog-carrying frame.

3. In combination, a letter-spacing frame, a reciprocating dog-carrying frame operated by said letter-spacing frame, ribbon-spools, operating-levers normally engaged in said frame, and means, substantially as described, to render either of said levers inactive.

4. In combination, a reciprocating dog-carrying frame, ribbon-spools, friction driving-wheels connected with said ribbon-spools, oper-

ating-levers having driving-shoes, and means, substantially as described, to render either of said operating-levers inactive.

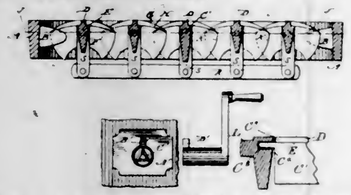
5. In combination, a reciprocating dog-carrying frame, ribbon-spools, friction driving-wheels connected with said ribbon-spools, operating-levers having driving-shoes and friction-pulleys at their ends, said pulleys being normally engaged with said frame, and means, substantially as described, to disengage either of said levers.

6. In combination, a reciprocating dog-carrying-frame, ribbon-spools, operating-levers, and an anchor adapted to render either of said levers inactive.

7. In combination, a ribbon-spool, a shaft with which said spool revolves, said shaft having a hollow end, a projection on the main frame which fits in said shaft, and a removable connection between said projection and shaft.

8. In combination, a ribbon-spool, a shaft with which said spool revolves, said shaft having a hollow end, a projection on the main frame which fits in said shaft, and a spring-tooth which passes through the hollow part of said shaft and rests in a detent on the projection.

449,641. GRATE. EDWIN D. VAN STONE, Utica, N. Y., assignor to Russell Wheeler and Frank C. Wheeler, same place. Filed Apr. 15, 1890. Serial No. 347,977. (No model.)



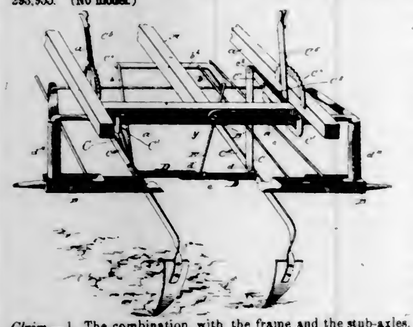
Claim.—1. A grate-bar having laterally-extending fingers, the upper surface of both the bar and the fingers consisting of a rib raised above the bar and the fingers, respectively, the rib on the bar being not lower than that on the fingers, and shoulders below the ribs, substantially as set forth.

2. A grate-bar having laterally-extending fingers, the upper surface of both bar and fingers consisting of a raised rib narrower than the body of the bar and the fingers, respectively, and the rib on the bar being not lower than that on the fingers, and the upper surface of the fingers being curved, so that the extremities of the fingers on opposite sides of the bar are approximately in the same plane as the center of the axis of the bar, substantially as set forth.

3. A grate comprising, essentially, side bars provided with laterally-extending fingers, which are journaled in closed sockets in the grate-frame, a central grate-bar having less longitudinal movement than the side bars, depending arms from all of the bars, and a connecting-bar uniting all of the said depending arms, substantially as set forth.

4. The combination, in a heating apparatus, of a grate having rocking bars, depending arms therefrom, a connecting-bar attached to the depending arms and adapted to support or truss the grate-bars between their ends, and means whereby the shaker cannot be removed unless the connection between the connecting-bar and the depending arms is at or near the same vertical plane with the center of the grate-bars, substantially as set forth.

449,642. CULTIVATOR. JACOB W. KRAUS, Sterling, assignor to the Akron Tool Company, Akron, Ohio. Filed Dec. 18, 1888. Serial No. 293,365. (No model.)

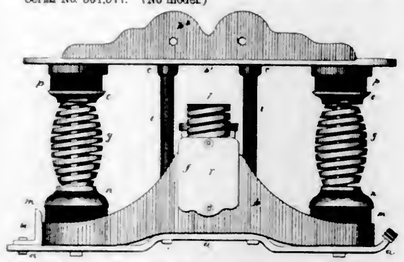


Claim.—1. The combination, with the frame and the stub-axles, of the L-shaped lever or bar, the divergent rods *b b'*, the bars D D, the depending bars C, and the drag-bars C×, substantially as described.

2. As an improvement in cultivators, the coiled-spring rod secured at its center to the frame, the V-shaped bars secured at their rear ends to the ends of said rod, the parallel links or arms, the depending bars C C, and the drag-bars, substantially as described.

3. The combination, with the frame, of the coil-spring rod, the transverse rod C⁴, the parallel arms C³, secured thereto, the bars C C, the drag-bars, the lever, and the rack-bar, substantially as set forth.

449,643. RAILWAY-CAR GEAR. JOHN M. BLONDELL, Baltimore, Md., assignor to Frederick E. Tobe, same place. Filed Aug. 7, 1890. Serial No. 361,377. (No model.)



Claim.—1. In combination, in a railway-car gear, the axle-box, the posts *d*, the sleeves *i*, the pedestal-sill, stay-brace plates *b' a*, and the carrying-springs, the said posts having screw-threaded shouldered ends supporting said plates and the said sleeves forming the guide and wear bearings for the box, as shown and described.

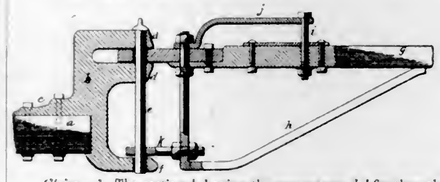
2. In a railway-car gear, the combination, with the axle-box and the pedestal, of the box guide-posts, their wear-sleeves, and the wear-plates removably secured to said box.

3. In a railway-car gear, the combination, with the axle-box and the pedestal, of the box guide-posts and the box removable wear-plates.

4. In a railway-car gear, the combination, with the axle-box, the pedestal, and its posts, of the stay-brace having an abutment for the pedestal.

5. In a railway-car gear, the axle-box having its lid formed with dovetail guide-ribs on its inner side, in combination with a bearing-plate secured within said guide-ribs and the axle, as shown and described.

449,644. DRAW-IRON FOR HORSE-CARS. JOHN M. BLONDELL, Baltimore, Md., assignor to Frederick E. Tobe, same place. Filed Aug. 7, 1890. Serial No. 361,378. (No model.)



Claim.—1. The casting *b*, having the upper arms *d d* for the pole and the lower arm *f* for the pole-rest, the said several arms having coincident openings, in combination with a coupling-pin *e*, having a length sufficient to engage the pole-arms *d d* and the pole-rest arm *f*, as shown and described, whereby the said pin is made to engage the pole and the pole-rest.

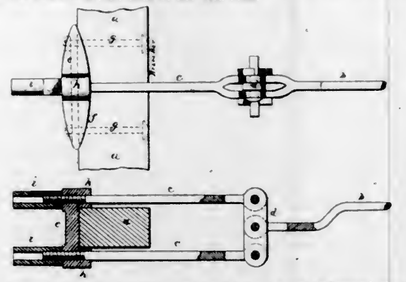
2. A draw-iron having the upper arms *d d* for the pole and the lower arm *f* for the pole-rest and having coincident holes, in combination with a coupling-pin engaging the said pole-arms and the said pole-rest arm and a pole having an arm *k* engaging the lower end of said coupling-pin, as shown and described, whereby the same pin couples the pole and its stay-brace-coupling arm.

449,645. RAILWAY-CAR BRAKE. JOHN M. BLONDELL, Baltimore, Md., assignor to Frederick E. Tobe, same place. Filed Aug. 7, 1890. Serial No. 361,379. (No model.)

Claim.—1. In a railway-car brake, the combination, with the brake-bar and the brake-operating rod, of a device connecting these parts pivotally connected to the brake-operating rod and secured to the brake-bar by a connection freely sliding thereon longitudinally within certain limits, substantially as described, for the purpose specified.

2. In a railway-car brake, the combination of the brake-bar and the brake-operating rod with a device for coupling these two parts,

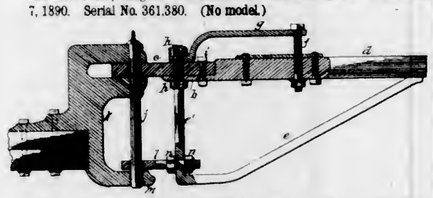
consisting of rods above and below the bar, a link connecting their inner ends and the said brake-operating rod, a plate secured to said car having openings through which said coupling-rods pass, and nuts upon the non-connected ends of the said rods.



3. In a railway-car brake, the brake-bar having a flanged plate secured on its outer side and having openings at each flanged side, in combination with rods passing through said openings, having screw-sleeves on their outer ends, a link connecting their inner ends, and the brake-operating rod connected to said link between its end connections, for the purpose stated.

4. The combination, in a railway-car brake, the brake-bar having a flanged strengthening-plate secured to its outer side, the brake-operating rod, and independent coupling-rods above and below said bar suitably jointed to said brake-operating rod, having a free sliding connection within said bar-plate, and provided with nuts.

449,646. DRAFT-POLE FOR HORSE-CARS. JOHN M. BLONDELL, Baltimore, Md., assignor to Frederick E. Tobe, same place. Filed Aug 7, 1890. Serial No. 361,380. (No model.)

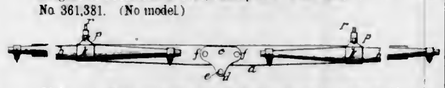


Claim.—1. The combination, with a draft-pole, of a coupling-iron therefor composed of a strapped part terminating in a socket end, an eyed part fitting said socket, and a stay-brace having a vertical arm passing through and bolted to the socket-connected parts.

2. The combination, with a draft-pole, of a stay-brace having a coupling-iron, means for vertically adjusting said stay-brace, and means for horizontally adjusting said coupling-iron.

3. The combination, with a draft-pole, of a stay-brace having a vertical screw-threaded arm, the nuts for securing it to said pole, and a screw-threaded coupling-iron on said stay-brace having double nuts, whereby a vertical and horizontal adjustment may be made of the supplemental coupling parts.

449,647. WHIFFLETREE. JOHN M. BLONDELL, Baltimore, Md., assignor to Frederick E. Tobe, same place. Filed Aug. 7, 1890. Serial No. 361,381. (No model.)

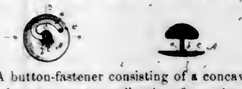


Claim.—1. The combination of the doubletree *a*, its attaching device consisting of the plates *c c*, each having an abutment *d d'*, arranged against and covering the front side of said doubletree and having vertical coincident holes *e e* to receive the bolt, which couples it to the pole, whereby the pull of the doubletree is against the abutments in front of the tree and is sustained by the abutments, as shown and described.

2. In a draft-whiffletree, the combination of the double and single trees, the coupling device therefor consisting of the casting *g*, formed of a sleeve-band adapted to be driven upon the doubletree, one side of said band having formed thereon the eyed part *h* and the socket part *i*, and the casting *k*, formed of a sleeve-band adapted to be driven upon the singletree, one side of said band having formed thereon the knuckle part *l* and the bolt *p*, whereby the said sleeve-bands re-enforce and strengthen the trees at the points of draft.

3. In a draft-whiffletree, the combination of the doubletree, the singletrees, and their coupling-knuckle sleeve parts having an eyed shoulder or projection at the side of the tree, the loop, and the coupling-bolt for securing the loop to the knuckled coupling parts.

449,648. BUTTON-FASTENER. HOWARD S. ROCKWOOD, Providence, R. I., assignor to the Holmes Manufacturing Company, same place. Filed Oct. 14, 1890. Serial No. 368,096. (No model.)



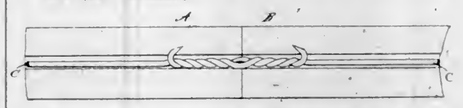
Claim.—A button-fastener consisting of a concave disk provided with an integral tongue cut centrally therefrom, the said tongue extending forward from its connecting-point, then curving to one side and backward, and terminating in an upturned end, substantially as described.

449,649. HARROW. DE WANE B. SMITH, Deerfield, assignor to Charles H. Poole, Oneida, N. Y., and the National Harrow Company, of New York. Filed Jan. 30, 1890. Serial No. 338,868. (No model.)



Claim.—The herein-described harrow, the same being composed of intersecting frame-bars secured together, a leveling-bar rigidly connected to said frame-bars with a space between the two, and spring harrow-teeth secured to said frame-bars and having a downwardly-extending bend or loop extending beneath the frame-bars for forming a runner, and a yielding digging-point below the plane of said leveling-bar, substantially as described.

449,650. RUBBER TIRE FOR WHEELS. DANIEL P. JEFFERIES and ARTHUR W. GRANT, Springfield, Ohio. Filed Nov. 14, 1890. Serial No. 371,445. (No model.)



Claim.—1. The combination, with a yielding wheel-tire having interior passages in its adjoining ends, of an interior core adapted to fit in said passages and provided with barbs, spurs, or projections, whereby the said adjoining ends may be slipped over the core and be held in their adjoining position by said barbs, spurs, or projections.

2. The combination, with a rubber wheel-tire having a longitudinal opening therein, of a wire core fitted into the said opening, the ends of the core being overlapped and twisted together and the extreme terminations bent toward each other and sharpened to form spurs, barbs, or projections, over which the tire can be pressed to bring its ends together and which prevent the separation of said ends.

3. The combination, with a yielding wheel-tire, of overlapping wires having barbs, spurs, or projections adapted to engage with said tire and connected by being twisted in opposite directions from a point intermediate of their ends.

4. The combination, with a yielding wheel-tire, of a plain wire core for said tire and of a constant length after the connection of its joining ends, and barbs, spurs, or projections carried by said core near the adjoining ends of the said tire and adapted to penetrate the tire to prevent the separation of the said adjoining ends.

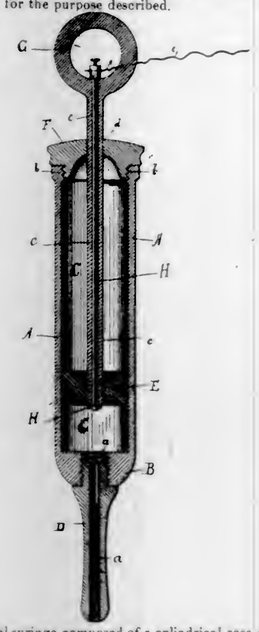
5. The combination, with a yielding wheel-tire and a wire core running therethrough, the ends of the wire being lapped and twisted together and the extreme terminations bent to form barbs, spurs, or projections adapted to engage with the tire to prevent the separation of the adjoining ends thereof.

449,651. ELECTRO-THERAPEUTIC SYRINGE. EDWIN BARTSCH, San Francisco, Cal. Filed June 28, 1890. Serial No. 357,127. (No model.)

Claim.—1. A medical syringe composed of a cylindrical case or shell having a chamber formed therein, and suitable means to charge said chamber with electricity, substantially as set forth, and for the purpose described.

2. A medical syringe composed of a cylindrical case or shell having a chamber formed therein, a cut-away end, a suction-aperture, and

suitable means to charge said chamber with electricity, substantially as set forth, and for the purpose described.



3. A medical syringe composed of a cylindrical case or shell having a chamber formed therein, a cut-away end, a suction-aperture, a piston provided with a rod or plunger working in said chamber, and suitable means to charge said chamber with electricity, substantially as set forth, and for the purpose described.

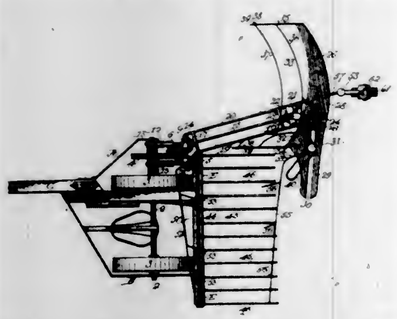
4. A medical syringe composed of a cylindrical case or shell having a chamber formed therein, a suction-aperture, a piston provided with a rod or plunger working in said chamber, an electric conductor placed in said chamber, and means to connect said conductor to an electric battery, substantially as set forth, and for the purpose described.

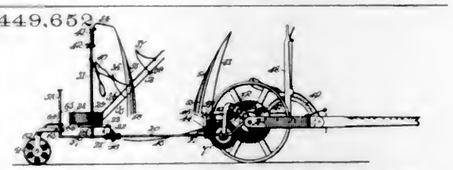
5. A medical syringe composed of a cylindrical case or shell having a chamber formed therein, an electric conductor placed in said chamber, a suction-aperture, a suitably-shaped nozzle adapted thereto and rigidly secured within said aperture and connected therewith, substantially as set forth, and for the purpose described.

6. A medical syringe constructed in any suitable manner and of any suitable material, having means to electrify fluid within the syringe for medical treatment, substantially as set forth, and for purpose described.

449,652. CORN-HARVESTER. JOHN KEYS, Beloit, Kans., assignor to the Keys Corn Harvester and Machinery Manufacturing Company, Denver, Colo. Filed Sept. 17, 1889. Serial No. 324,274. (No model.)

Claim.—1. In a corn-harvesting machine, the combination, with a suitable frame-work and a main shaft with driving-wheels mounted





thereon, of a knife 25, provided with a flange 28 opposite its cutting-edge and a tail-piece 29, provided with a longitudinal slot 30, stationary grooved ways for the opposite edges of slot 30, a rotating crank-arm to one extremity of which the knife is pivoted, and suitable means for propelling said crank-arm, substantially as described.

2. In a corn-harvesting machine, the combination, with a suitable frame-work, a main shaft and driving-wheels mounted thereon, of a knife 25, provided with a flange 28 opposite its cutting-edge and a tail-piece 29, having a longitudinal slot 30, a rack 33, hinged to the knife and constructed of upright bars 34 and 35, a plural number of ribs connecting said bars, and an irregularly-curved way or guide 40, a stationary standard 31, passing through guide 40 and provided with grooved ways for the edges of slot 30, a crank-arm, to which the knife is pivoted, and suitable mechanism for rotating said crank-arm, substantially as described.

3. In a corn-harvesting machine, the combination, with a frame-work and a main shaft with driving-wheel mounted thereon, of a knife 25, provided with a tail-piece 29, having a longitudinal slot 30, a rack 33, hinged to the knife and consisting of upright bars 34 and 35, each of said bars having a sleeve adjustably secured to its upper portion, rib 36, connecting bars 34 and 35 below the sleeves, and rib 37, connecting the adjustable sleeves on said bars, and an irregularly-curved way or guide 40, attached to rib 36, a stationary standard 31, passing through guide 40 and provided with grooved ways for the opposite edges of slot 30, a crank-arm, to which the knife is pivoted, and suitable mechanism for rotating said crank-arm, substantially as described.

4. In a corn-harvesting machine, the combination, with a knife 25, provided with a flange 28 opposite its cutting-edge, a tail-piece 29, having a slot 30, an adjustable rack 33, hinged to the knife and provided with the irregularly-curved guide or way 40, the standard 31, which passes through guide 40, and is provided with grooved ways for the edges of slot 30, a rotating crank-arm 24, to which the knife is pivoted, and mechanism for rotating said crank-arm, substantially as described.

5. In a corn-harvesting machine, an adjustable platform or dropper adapted to receive the corn after being cut and carried thereto by the knife, said dropper consisting of a bar 44, hinged to the frame-work of the machine, fingers independent from each other, and a bar E, rigidly connected with bar 44 and extending underneath the fingers and in contact therewith, bar E being located in the rear of bar 44, and suitable mechanism for raising and lowering the dropper, in combination with a rack located just forward of the dropper and consisting of an upright bar 51 adjustably secured within a suitable stationary base, a top bar, and a plural number of fingers attached to the top bar and extending downward therefrom, substantially as described.

6. In a corn-harvesting machine, an adjustable platform or dropper adapted to receive the corn as it is delivered from the knife, said dropper consisting of a bar 44, hinged to the stationary frame-work of the machine, fingers 45, hinged to bar 44, said fingers being separate and independent from each other, and suitable mechanism for raising and lowering the dropper, in combination with a rack 54, suitably and adjustably supported above the rear extremity of the dropper-fingers and consisting of a top bar 55, and fingers 56, attached to said top bar and extending downward therefrom, substantially as described.

7. In a corn-harvesting machine, a knife 25, provided with an aperture 27, the knife being pivoted to a rotating crank-arm through this aperture, an adjustable rack 33, hinged to the knife, said rack being provided with an irregularly-curved guide or way 40, a standard 31, suitably supported and passing through way or guide 40, in combination with a dropper adapted to receive the corn as it is delivered from the knife, said dropper consisting of a bar 44, hinged to the stationary frame-work of the machine, and fingers hinged to bar 44, and suitable means for raising and lowering said dropper, substantially as described.

8. In a corn-harvesting machine, an adjustable platform or dropper adapted to receive the corn after being cut and carried thereto by the knife, said dropper consisting of a bar 44, hinged to the frame-work of the machine, fingers 45, hinged to bar 44 and independent from each other, and suitable means for raising and lowering the dropper, in combination with an adjustable rack 50, located just forward of the dropper, and an adjustable rack 54, located just in the rear thereof, substantially as described.

THE HORR'S PETERS CO., PHOTO-LITHO WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

GARRISON *v.* HÜBNER.

Decided July 19, 1890.

1. RULE 114—MOTIONS.
When a judgment upon the record has been entered under Rule 114, and the Examiner of Interferences has lost jurisdiction by reason of the expiration of the limit of appeal, a motion made before the Commissioner for permission to file a motion to dissolve the interference should be supported by affidavits setting forth the facts relied upon, both in excuse for the failure to file the same within the time specified in the rule and in justification for the granting of the motion.

2. SAME.
A judgment upon the record under Rule 114 is a judgment rendered before the Office has had the benefit of the views of counsel for either party upon the questions involved therein, and if a mistake has been made the entire public, as well as the injured party, is interested to have the mistake corrected.

3. VACATION OF JUDGMENT.
On the granting of a motion to dissolve the interference after judgment upon the record the Examiner of Interferences will vacate the judgment of priority.

ON motion.

VALVES FOR PUMPS FOR MOVING GASEOUS BODIES.

Application of William F. Garrison filed July 13, 1889, No. 317,402. Application of Ernst Hübner filed June 27, 1887, No. 242,684.

Messrs. Brown & Seward for Garrison.

Messrs. H. & W. Pataky and *Messrs. Dodge & Sons* for Hübner.

MITCHELL, *Commissioner:*

Garrison moves that the above-entitled interference be dissolved on the ground that no interference in fact exists, and in support of his motion files affidavits excusing his failure to file the motion within the time limited for appeal from the action of the Examiner of Interferences in rendering judgment upon the record. Garrison's preliminary statement was filed March 4, 1890, and approved March 10, 1890. On the same day judgment on the record was rendered against him by the Examiner of Interferences.

Rule 114 provides for the bringing of any of the motions permitted by the rules within the period fixed as the limit of appeal from the judgment upon the record. The statute, section 4904, provides that the appeal shall be taken within such time, not less than twenty days, as the Commissioner shall prescribe. Within the period that may be limited for appeal, whether twenty days or more, the motions "permitted by the rules" may be made as of right, and their transmission may of right be demanded, if they are in proper form. If the motion to dissolve the interference filed before the expiration of the limit of appeal, having been transmitted to the Primary Examiner, is granted, the Examiner of Interferences makes the proper entry of record, including an order vacating the judgment previously rendered.

When, however, the limit of appeal has expired and the Examiner of Interferences has lost jurisdiction, a motion should be made before the Commissioner for permission to file a motion to dissolve the interference, which motion should be accompanied by an affidavit stating the facts relied upon, both in excuse of delay and in justification of the granting of the motion at a later date than that specified in Rule 114. If the facts relied upon are sufficient, permission is granted and the jurisdiction of the Examiner of Interferences is restored, who thereupon transmits the motion, and in case it is granted makes the proper order vacating the judgment in the same manner as if the motion had been filed within the time originally limited for appeal.

The affidavit in this case discloses the fact that Brown & Griswold were the attorneys of record of Garrison; that Brown & Griswold dissolved partnership on the 26th day of February last; that the present firm of Brown & Seward immediately thereafter forwarded the necessary papers to Mr. Garrison in order to have him authorize them to act as his attorneys; that Mr. Garrison was in Europe and very ill; that immediately on the receipt of the power of attorney on April 25, 1890, steps were taken to examine into the case, and this motion was brought at the earliest moment possible; that the motion is made in good faith and not for the purposes of delay, and that if not granted the interests of Mr. Garrison will suffer much harm.

It is contended on behalf of Hübner that the facts stated in the affidavit disclose no sufficient reason why the motion for dissolution was not made within the proper time, his contention being that the dissolution of the firm did not prevent the partner remaining in the firm from representing the interests of Mr. Garrison before the Office. In support of this view the case of *Downs v. Allen* (22 Fed. Rep., 805) is cited.

In disposing of this motion it must be remembered that a judgment upon the record under Rule 114 is a judgment rendered before the Office has had the benefit of the views of counsel for either party upon the questions involved therein. The interference is declared by the Office while each party is in ignorance of the nature of his opponent's application. The preliminary statements are prepared, filed, and accepted while the same state of things exists. If the Office

has made a mistake, the entire public, as well as the injured party, is interested to have the mistake corrected.

Such being the case, I think the present showing should be regarded as sufficient, and that an opportunity should be afforded to obtain a ruling of the Office upon the question whether an interference in fact exists.

Certain it is that Garrison himself could not make the motion within the time limited, and even though the rights of Brown & Griswold may have remained in Brown after the dissolution of the firm, neither he nor the firm subsequently organized so supposed, and it would be adopting a harsh rule to hold Garrison responsible for the error, if error it is conceded to be.

The jurisdiction of the Examiner of Interferences is restored, who will transmit the motion of Garrison to the Primary Examiner, as if the same had been filed within the period mentioned in Rule 114, and will, in case of a decision favorable to the moving party on the motion to dissolve, vacate the judgment of record heretofore rendered. Unless the motion is granted the judgment will remain undisturbed.

EX PARTE LEWIS.

Decided March 14, 1891.

1. MANUFACTURE—DESIGN.

The word "manufacture," as used in section 4929 of the statute relating to Designs, is to be construed so as to have the same meaning as the word "manufacture" in the prior statutes relating to mechanical patents.

2. SAME—SAME.

The word "manufacture" in the patent statutes has never been construed to include real estate, and it must be limited to manufactured articles—that is, those made by hand, machinery, or art, from raw or prepared materials.

3. SAME—SAME.

A dwelling-house is not a "manufacture" in the statutory sense, and a Design for the exterior of a dwelling-house is not patentable.

4. SAME—SAME.

Articles which are manufactured and sold with reference to becoming a part of a house ultimately, such as mantels, are "manufactures" within the meaning of the statute relating to Designs.

IN the matter of the application of Theresa Lewis for patent on a Design for the Exterior of a Country House, filed February 5, 1891, Serial No. 380,362.

MITCHELL, *Commissioner:*

I am asked to affix my signature to a patent for a Design for the exterior of a country house. The specification of the proposed patent contains the following passage:

Figure 1 represents a perspective view of a country house, showing my design. Fig. 2 represents a side view of the same as shown at C, Fig. 3; and Fig. 3, a plan view showing the outline shape of the first and second stories, which are substantially alike in horizontal section. Fig. 4 is a side elevation in section, showing an ornamental column with end view of side porch and balcony.

Similar letters designate corresponding parts in all the figures.

This design is for the exterior of a country house; and it consists in its essential features of two stories, having a tower-room or third story over the cylindrical corner portion of the front and a central gabled portion at right angles to the main body, with its projecting roof resting upon ornamental columns, as shown in the drawings.

The claim is—

The design for the exterior of a country house, as herein described and shown.

Section 4929 of the Revised Statutes authorizing the granting of Design patents reads as follows:

Any person who, by his own industry, genius, efforts, and expense, has invented and produced any new and original Design for a *manufacture*, bust, statue, alto-relievo, or bas-relief; any new and original design for the printing of woolen, silk, cotton, or other fabrics; any new and original impression, ornament, patent, (pattern,) print, or picture to be printed, painted, cast, or otherwise placed on or worked into any *article of manufacture*; or any new, useful, and original shape or configuration of any *article of manufacture*, the same not having been known or used by others before his invention or production thereof, or patented or described in any printed publication, may, upon payment of the fee prescribed, and other due proceedings had the same as in cases of inventions or discoveries, obtain a patent therefor.

It is apparent upon any reading—careful or cursory—of the section of the statute which I have quoted, that the exterior of a country house is not the subject of a Design patent, unless a country house is a "manufacture" within the meaning of that word as employed in the statute.

The word "manufacture" has been employed in statutes relating to the granting of patents ever since the passage of the statute relating to monopolies in the reign of James the First. That statute provided for the granting of patents for the "sole working or making of any manner of new *manufactures*." The American statute of 1790 provides for the patenting of "any useful art, *manufacture*, engine, machine, or device." The statute of 1793 provides for the granting of a patent to any one who has invented any "new or useful art, machine, *manufacture*, or composition of matter." The statute of 1836 and all subsequent statutes employ the language last quoted from the statute of 1793.

The word "manufacture" has therefore been employed in all the statutes specifying the things for which patents may be granted during the entire period covered by public acts relating to patents, and it is believed that no case can be found in which it has ever been construed to include any article not classifiable as personal property. It is true that as employed in the English statute the word "manufactures" was given considerable latitude of construction, making it to include not only things made, but methods of making them, (Eyre, C. J., in *Boulton and Watt* v. *Bull*, 2 H. Bl., 463, 3 Ves., 140;) but no latitude of judicial construction under any statute, foreign or domestic, has extended it to include realty.

When therefore the American statute relating to patents was amended by the act of 1842, providing for the granting of Design patents, and the word "manufacture" was studiously employed and repeated therein, the fundamental rules of construction required that the same meaning should be ascribed to the word as used therein which had been associated with it, not only as found in the statute directly amended, but in all preceding statutes relating to Letters Patent and employing the same word. So construed the word "manufacture" must be limited to manufactured articles—that is to say, articles made by hand, machinery, or art, from raw or prepared materials—and any construction that will make it include a dwelling house or any other article of realty would involve such a departure from the received signification of the word as employed in statutes relating to patents as to be wholly inadmissible.

Many articles, such as mantels, are manufactured and sold with reference to ultimately becoming a part of a house. Such articles are manufactures, and the foregoing reasoning does not apply to them.

I must hold that a patent cannot be lawfully granted for a Design for a country house, and decline to affix my signature.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

THE WALTER A. WOOD MOWING AND REAPING MACHINE COMPANY, PLAINTIFF IN ERROR, *v.* SMITH A. SKINNER.

Decided March 23, 1891.

1. FEDERAL JURISDICTION—WRIT OF ERROR.

In order to give the Supreme Court jurisdiction by writ of error to a State court, it must appear affirmatively, not only that a Federal question was presented for decision to the highest court of the State having jurisdiction, but that its decision was necessary to the determination of the case, and that it was actually decided, or that the judgment as rendered could not have been given without deciding it.

2. SAME—SAME.

Where the action was upon an agreement by the defendant that, in consideration of the right to the exclusive use of complainant's patented device, it would use it upon all mowing and reaping machines and would pay a reasonable value for such use, and the value of such use was the only question of fact, and neither the construction nor the validity of the complainant's patent was regarded as material by the trial court, and it did not appear upon what ground the highest court of the State proceeded in affirming the judgment below, but it did appear that the case might properly have been determined upon a ground broad enough to support the judgment without resort to a Federal question, *Held* that the Supreme Court had no jurisdiction.

IN ERROR to the Supreme Court of the State of New York.

On motion to dismiss or affirm.

STATEMENT OF THE CASE.

This action was originally brought in the Supreme Court of the State of New York by Skinner, the defendant in error, for a breach of contract on the part of defendant (plaintiff in error), in refusing to account and pay for the use of a certain patented invention, known as an improvement in oil-hole covers for journals, described in Letters Patent No. 124,092, and reissue of the same, No. 10,064. The case was referred to a referee, who found substantially the following facts in his report:

1st. That the plaintiff and defendant entered into an agreement whereby it was agreed on the part of the plaintiff that defendant should have the exclusive right of using plaintiff's oiler on mowing and reaping machines; and should have the right, but not exclusive, to use it on other machines: and on the part of the defendant, that it would use the oiler on its mowing and reaping machines, and would pay the plaintiff the reasonable value of such use. 2d. That defendant proceeded to make and apply to its mowing and reaping machines a device exactly similar to the plaintiff's oiler, except that in the plaintiff's oiler the periphery of the conical head of the spring-plug was scalloped, while in the device made and applied to such machines by the defendant such periphery was circular and not scalloped. 3d. That the defendant's oiler was a mechanical equivalent for the plaintiff's oiler. 4th. That prior to any invention by the plaintiff, an oiler was illustrated and described in Webster's Dictionary, edition of 1869, substantially similar to defendant's oiler, and was represented as fitted to perform the same functions, and in substantially the same way. 5th. That the said making and application of defendant's oiler was so done in pursuance of the license obtained from the plaintiff by virtue of such agreement, and was in fact a use of plaintiff's oiler under such license. 6th. That the value for such use was five cents for each of 233,081 machines upon which it was applied. Judgment having been entered upon the finding of the referee, an appeal was taken to the court in general term, by which an opinion was rendered and filed affirming the judgment. An appeal was then taken to the Court of Appeals, by which the judgment was again affirmed, no opinion having been delivered or filed. Thereupon the defendant sued out a writ of error from this court, assigning as error, first, that the claim of the patent, upon which plaintiff sought to recover royalties, was limited to a conical-headed and *scalloped* spring-plug, and that the patent particularly set forth the scalloping of the conical head, the defect in the device improved upon, and how the same was obviated by such scalloping; and that the said courts erred in holding that the claim was not for a scalloped head, but for the combination, with other elements, of a conical head, whether the same was or was not scalloped. Second. That the referee found that the defendant promised to pay the plaintiff the reasonable value of the patented device, and also found that if the claim for the patent was for nothing more than a scalloped conical head, in combination with other elements, the same was worthless, and that plaintiff ought not to recover; and that said courts erred in holding that, because the claim was substantially for a conical head, whether said head was or was not scalloped, defendant was liable for more than nominal damages. Third. That the State courts also erred in their conclusion that defendant had actually used plaintiff's invention, it being found by the referee that defendant had not used such device, unless the claim of the patent was for a conical headed spring-plug, with or without scallops. Fourth. That such holdings were an erroneous construction of the Letters Patent, and necessarily involved the legal effect of the patent laws of the United States.

A motion was thereupon made by the defendant in error to dismiss for want of jurisdiction, coupled with a motion to affirm.

Mr. Esek Cowen for the plaintiff in error.

Mr. James Lansing for the defendant in error.

Mr. Justice BROWN delivered the opinion of the Court.

It is well settled by a long series of adjudications that, in order to give the Supreme Court jurisdiction by writ of error to a State court, it must appear affirmatively, not only that a Federal question was presented for decision to the highest court of the State having jurisdiction, but that its decision was necessary to the determination of the case, and that it was actually decided, or that the judgment as rendered could not have been given without deciding it. (*De Saussure* v. *Gaillard*, 127 U. S., 216.)

Now, while the trial court appears to have held the defendant liable upon the ground that it had agreed to use the plaintiff's device upon all of its machines, and also upon the ground that it had in fact used them, or their mechanical equivalent, it is very evident from an examination of the opinion of the general term, which we are at liberty to consult, (*Philadelphia Fire Association* v. *New York*, 119 U. S., 110,) that neither the construction nor the validity of the plaintiff's patent was regarded as material. The court found the agreement on the part of the defendant to be that, in consideration of the right to the exclusive use of the plaintiff's device, it would use it upon all

mowing and reaping machines, and would pay a reasonable value for such use.

By the terms of the agreement,

said the court,

it was not incumbent upon the plaintiff to show that the defendant did actually use it upon such machines. It was sufficient for him to show the number manufactured during the existence of the agreement. Neither can the defendant evade liability by proving that it did not use it, because his agreement was, in effect, that he would pay a reasonable value for its use upon all mowing and reaping machines manufactured, and it cannot now be permitted to escape payment, as provided by the agreement, by proof that, without the knowledge of the plaintiff, it omitted to place the attachment upon machines manufactured by it. * * * The views thus expressed render it unnecessary to consider the question discussed by the referee, as to whether or not the defendant did use plaintiff's device upon its machines.

Under this view, the only question of fact was the value of the use of the device, which the referee fixed at five cents, and his finding upon that point is conclusive.

The defense to the case was that the defendant did not make use of the plaintiff's spring-plug, which had a scalloped head, but did make use of an oiler shown in Webster's Dictionary, which was practically the same, except that it did not have a scalloped head, its contention being that the scalloping of the head was immaterial and useless, and that the device so far as it was useful had been anticipated. But the referee found that, by accepting the license and agreeing to use the plaintiff's patented device, the defendant was estopped to deny the validity of the patent to the full extent of its claim, and if, as he found, the defendant made use of the device set forth in the claim of the patent, or its mechanical equivalent, it was liable, though in an action for infringement of such claim, it might have been adjudged invalid. But, as before stated, the general term found it unnecessary to determine whether the defendant had actually made use of the device or its equivalent, and held it to be liable upon the ground that it had agreed to use it upon all its machines, and was, therefore, bound to pay its value as fixed by the referee.

It does not appear upon what ground the court of appeals proceeded in affirming this judgment, but as the case might properly have been determined upon a ground broad enough to support the judgment without resort to a Federal question, this Court has no jurisdiction. (*Beaupré* v. *Noyes*, 138 U. S.; *Johnson* v. *Risk*, 137 U. S., 300.)

The writ of error must, therefore, be dismissed for want of jurisdiction.

U. S. Circuit Court—Southern District of Ohio.

HATFIELD *v.* SMITH *et al.*

Decided November 7, 1890.

1. ASSIGNMENT—LICENSE.

An instrument which is in terms a transfer by complainant to defendant of the exclusive right "to manufacture and sell and vend" certain patented articles, the purchasers to have the right to use the articles, which expresses that it is intended for the purpose of vesting in defendants all the rights of complainant in the manufacture and sale of such articles, but which expressly provides that complainant shall retain the ownership of the patent, and in which defendants stipulate for payment of royalties and to do all reasonable things for the successful manufacture and sale of the patented articles, is a mere license.

2. SAME—ESTOPPEL.

Where defendants admit that they have manufactured and sold under such license, and that they have assigned whatever rights they had thereunder, they will not be permitted to plead that they were led to make the contract by complainant's false and fraudulent representations, nor that the patent was invalid, as complainant knew.

Messrs. Parkinson & Parkinson for the complainant.

Messrs. Peck & Rector and *Mr. E. W. Kittredge* for the respondents.

SAGE, *J.*:

1. The contention of the defendants that the contract forming the basis of the bill is not a mere license, but is a grant of the entire equitable title in and to the patent, with the right to the grantees to assign at pleasure, subject to the conditions of the contract, is not, in my opinion, well founded. The contract is nothing more than a license. It is in terms a transfer of the sole and exclusive right "to manufacture and sell and vend" the patented improvements throughout the United States, the purchasers to have the right to use. It expresses that this grant is intended for the purpose of vesting in the defendants all the rights of the complainant in the manufacture and sale of said improvements throughout the United States under said inventions, but it is expressly provided that the complainant shall retain the ownership of the patent. Now, while it is true that the transfer of an exclusive right to make and use and sell may be an assignment, and not a mere license, it is also true that the "right to manufacture, the right to sell, and the right to use are substantive rights and may be granted or conferred separately by the patentee," (*Adams* v. *Burke*, 17 Wall., 456,) and that the conveyance of all these rights is necessary to make the transfer an assignment and not a license. The right to use is not, under the contract, conveyed to the defendants, only the right to manufacture and sell. Moreover, the express provision of the contract retaining the ownership of the patent in the complainant is not to be overlooked, nor is its significance to be disregarded, nor are the stipulations of the defendants to do all reasonable things for the successful manufacture or sale of the patented articles and for the payment of royalty.

2. The defendants admitting, as they do, that they manufactured and sold under the license, and that they have assigned whatever rights they had thereunder to the parties named in the bill and in the answer, they will not be permitted to plead that they were led to make the contract by false and fraudulent representations of the complainant, nor that the patent was invalid, as the complainant well knew. It has been held that if the licensee, under the assumed protection of the patent, has enjoyed advantages of which, without the license, he would have been deprived, he is subject to the obligations of the license and continues so to be until he is disturbed in his enjoyment by a superior patent, or until the patent under which he acts has been declared invalid or annulled. (3 Rob. Pat., section 1251, and cases there cited.) The amended answer differs from the answer, to which exceptions were sustained, only in that it avers that the complainant falsely and fraudulently represented that he was the inventor of the patented article described in the license. The amendment does not, in my opinion, add anything to the legal effect of the answer.

Leave to file the amended answer is therefore refused.

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OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

OFFICIAL GAZETTE—January–March, 1891.

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OF THE

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OFFICIAL GAZETTE—January–March, 1891.

DIGEST OF DECISIONS.

[Decisions of United States courts designated by an asterisk (*), and of the Secretary of the Interior by a dagger (†).

AFFIDAVITS.

(See Interference, 7.)

AGGREGATION.

(See Invention, 1.)

AMENDMENTS.

(See Priority of Invention, 1; Withdrawal of Case from Issue, 1, 2.)

ANALOGOUS DEVICES.

(See Infringement, 2.)

ANALOGOUS USE.

(See Invention, 3; Patentability.)

ANTICIPATION.

(See Priority of Invention, 4.)

APPEAL FROM PRIMARY EXAMINER.

(See Interference, 3.)

1. APPEALS—RULE 124 (3) CONSTRUED.
Questions involving "the merits of an invention" are questions concerning the meritorious or unmeritorious attitude of an alleged invention to the antecedent rights of the public; or, in other words, questions other than questions of "form" arising between the applicant and the Office. The presence in Rule 124 of the words quoted means no more than that the questions which go to the Examiners-in-Chief, when they arise *directly* under Rule 133, go to the same tribunal when they arise *collaterally* under Rule 124.
[Zeidler *et al.* v. Leech *et al.*, 503.

2. SAME—SAME.
All appeals in which, under the rule, the party only "whose claim is affected" has a right to be heard lie to the Examiners-in-Chief, and if decided adversely by them, to the Commissioner, and if by him decided adversely, to the Supreme Court of the District of Columbia. All appeals from the Examiner's decision upon motions to dissolve upon which both parties have the right to be heard go directly to the Commissioner, and from his decision there is no further appeal. [Id.

APPEAL TO THE SUPREME COURT OF THE UNITED STATES.

(See Subsequent Patents, 4.)

APPEAL—BOND.
An appeal with no other bond than a bond for costs does not act as a *supersedeas*.
[Daniels v. Morgan, 1113.

APPLICATION.

(See Division of Application; Forfeiture of Application; Infringement, 1.)

ASSIGNMENTS.

(See Licenses; Parties to Suit.)

1. ASSIGNMENT.
An assignment is an instrument in writing, conveying either (1) the whole patent, comprising the exclusive right to make, use, and vend the invention throughout the United States; or (2) an undivided part or share of that exclusive right; or (3) the exclusive right under the patent within and throughout a specified part of the United States.
[*Waterman v. Mackenzie *et al.*, 1562.

2. SAME—TITLE—RIGHT TO SUE.
Such an instrument vests in the assignee a title in so much of the patent itself, with a right to sue infringers, alone in the first and third cases and jointly with the assignor in the second.
[*Id.

3. LICENSE—RIGHT TO SUE.
Any other transfer is a mere license, giving the licensee no title in the patent and no right to sue at law in his own name for an infringement. [*Id.

BILL IN EQUITY.

(See Suits in Equity, 1, 3.)

BOND.

(See Appeal to the Supreme Court of the United States.)

BURDEN OF PROOF.

(See Damages and Profits, 4; Infringement, 1; Interference, 6.

CLAIMS.

(See Division of Application, 2, 3; Interference, 2, 4; Subsequent Patents, 1, 2.)

1. DUPLICATE CLAIMS—DUTY OF THE OFFICE WITH RESPECT TO.
Where a simple invention is made the subject of numerous claims, differing in mere methods of expression with no corresponding difference in the concrete subject-matter, the Office should insist that one claim only be allowed for a given subject-matter of invention, and that mere differences in phraseology shall not be regarded when urged in defense of a needless multiplication of claims.
[*Ex parte* Johnson, 505.

2. REDUNDANCY OF CLAIMS.
The question of redundancy or multiplicity of claims is one of form and not one involving the merits; hence the proper remedy is by petition to the Commissioner.
[*Ex parte* Sawn, 1561.

3. SAME.
The matter to be determined is not whether the several claims standing alone would be patentable as against the public. It is conceivable that each one of the claims standing alone would be an entirely valid claim, and yet that sound principle would require that not all of them should be allowed. [Id.

COMBINATIONS.

(See Division of Application, 2, 4, 5.)

COMITY.

(See Injunction, 2.)

COMMISSIONER OF PATENTS.

(See Appeal from Primary Examiner, 2; Copies of Pending Applications; Interference, 1, 4, 7; Subsequent Patents, 4.)

CONCEPTION OF INVENTION.

(See Interference, 5; Priority of Invention, 2, 3.)

CONSTRUCTION OF RULES.

(See Appeal from Primary Examiner; Interference, 1, 7.)

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Demurrer; Designs, 1; Infringement; Invention; Reissues, 1.)

1. Construction of Letters Patent No. 147,827, Granted February 24, 1874, to Matthias Day, for Electric Lamps.
The first claim of said patent requires that each electrode-holder—that is, the upper and lower holders—shall be arranged to carry at least two carbons or electrodes, and it is necessarily a law of the machine that the same movement to establish the arc and feed the carbons toward each other is imparted to all the carbons at once—that is, the two or more lower carbons move together and alike and the two or more upper carbons move together and alike.
[*Seeley *et al.* v. The Brush Electric Company *et al.*, 661.

2. The Result or Operation of the Day and Brush Lamps Widely Different.
The result or operation of the two lamps held to be widely different; the complainants' lamp burns its carbons by alternate arcs between each pair, necessarily producing a light unsteady and unsatisfactory and varying in intensity, because the increase of distance between the burning carbons causes the light to weaken and finally to form the arc between the other pair of carbons, to repeat the same process of weakening the light until it shifts back to the first pair, and so on, while in defendants' lamp the light burns steadily until the pair of carbons between which it is first produced are wholly consumed, when it shifts to the other pair and consumes those. [*Id.

CONSTRUCTION OF STATUTES.

(See Forfeited Cases; Copies of Pending Applications; Designs, 4, 5, 6, 7; Limitation of United States Patent by Foreign Patent Previously Granted; Practice in the Courts, 2; Reissues, 2; Subsequent Patents, 4; Suits for Infringement, 4; Trade-Marks, 1, 3; Use and Sale of Patented Articles.)

COPIES OF PENDING APPLICATIONS.

Commissioner not Required or Authorized to Furnish Copies of Pending Applications—Section 892, Revised Statutes of the United States, Construed.
Section 892, Revised Statutes of the United States, providing for the obtaining of certified copies of any records, books, papers, or drawings belonging to the Patent Office, does not require or authorize the Commissioner of Patents to furnish copies of pending applications for patents, or of papers connected with such applications.
[*United States *ex rel.* United States Electric Lighting Company v. Commissioner of Patents, 267.

CROSS-BILLS.

(See Suits in Equity, 1, 2.)

DAMAGES AND PROFITS.

(See Suits for Infringement, 2.)

1. Infringement—Exception to Master's Report—Liability of Infringer for Profits.
The exceptions to the master's report as to the liability of the defendants for profits upon reargument overruled, and *Held* that upon the facts presented the defendants were not accountable for any part of their profit upon the material when it was ready for the loom included in its market value at that time, or for any part of the seller's profit in the increased production. Case of *Webster* v. *Carpet Co.* (9 O. G., 203; 2 Ban. & A., 67) not followed.
[*The Webster Loom Company v. Higgins *et al.*, 388.

2. Same—Accounting Between Patentee and Infringer—Same.
In settling an account between a patentee and an infringer the liability of the latter for profits is measured by the advantage which he has gained by the use of the patented invention. [*Id.

3. Same—Same—Advantage Gained by Use of Patented Invention.
The advantage gained by the infringer who makes and vends a patented article is measured by the value which the invention contributes to the market value of the article, and he is held accountable to that extent, unless his net profit in making and selling the article is less than the value of the invention. [*Id.

4. Same—Same—Same—Burden of Proof upon Patentee.
If the invention invests the article with its whole value as a marketable commodity, his entire gains are attributed to the invention. If it contributes only a subsidiary value, this value segregated from the independent market value of the article is the advantage for which he is accountable; and it is incumbent upon the patentee to show affirmatively what this advantage is worth by reliable evidence, however difficult it may be to do so. [*Id.

5. Damages for Infringement.
Defendants who infringed a patented valve by the manufacture of valves commercially worthless but for the infringed invention are liable for the profits realized by them, though the form of their valves is different from those manufactured by complainants.
[*Consolidated Safety Valve Company v. Crosby Steam Gage & Valve Company, 663.

6. Same.
Where the valves manufactured by defendants also infringed another later patent, likewise owned by complainants, no injustice is done defendants in acceding to complainants' claim that all profits realized by defendants during the life of the earlier patent were solely due to the invention covered by that patent, especially in view of the fact that defendants contended that the invention embodied in the later patent is worthless; and hence, in an action for the infringement of the earlier patent, it is unnecessary for the master to find how much of defendants' profits are due to the later invention. [*Id.

7. Same—Estoppel.
Complainants after contending for and accepting a finding in an action for the infringement of the earlier patent that defendants' profits arising from the manufacture and sale of valves infringing both patents were due solely to the earlier invention cannot be permitted to recover more than nominal damages in an action for the infringement of the later patent alone, brought after the expiration of the earlier one. [*Id.

8. Exceptions to Master's Report—Liability of Infringer for Profits.
The infringing corporation held liable for whatever profit is derived from the manufacture and sale of the chemical preparation of plaintiff's patent, notwithstanding it might have made and sold the ingredients of said preparation if it had chosen to do so, and at the same or even larger profit.
[*Am Ende v. Seabury & Johnson, 1268.

9. Same—Calculation of Profits—"Factory Cost."
The master held to have properly refused to allow the defendant corporation, as an element of the "factory cost" of the article infringed, interest on its capital invested in the business. [*Id.

10. Same—Same—Same.
The master held to have properly disallowed a certain sum for salary of the president of the defendant as an element of cost, it not being shown that the president was a salaried officer. [*Id.

11. Same—Same—Same.
The master properly found that the percentage for selling expenses, which should be added to the factory cost of all the goods sold by the defendant, exclusive of certain goods named, was twenty-nine per cent. [*Id.

12. Same—Infringement—Damages.
The loss entailed upon plaintiff by reason of his being compelled to reduce his price in consequence of the reduction of price made by the defendant, who was the only competitor of the plaintiff in the market, was a proper item of damages. [*Id.

DATE OF FILING APPLICATION.

(See Infringement, 1; Priority of Invention, 1; Suits for Infringement, 4.)

DATE OF PATENT.

(See Suits for Infringement, 4.)

DECREE OF COURT.

(See Subsequent Patents, 4.)

DEFENSE.

(See Suits for Infringement, 3.)

DEMURRER.

Demurrer to Bill.
With reference to claims 2 and 3, *Held* that as they might fairly be regarded as confining the patentee to the specific Design shown and described in the patent, the demurrer to the bill should have been overruled.
[*The New York Belting and Packing Company v. The New Jersey Car Spring and Rubber Company, 135.

DESIGNS.

1. Rubber Mats.
Whether the peculiar effect—"a sort of kaleidoscope effect"—produced by the particular Design in question impressed upon the substance of india-rubber would constitute a quality of excellence which would give to the Design a specific character and value and distinguish it from other similar designs that have not such an effect, *quære*.
[*The New York Belting and Packing Company v. The New Jersey Car Spring and Rubber Company, 135.

2. Jewelry-Pins—Novelty.
A Design for jewelry-pins, consisting of a piece of metal in the shape of a spoon or fork two inches long, precisely similar in appearance to common spoons or forks six inches long, lacks the novelty necessary to support a Design patent.
[*Foster v. Crossin *et al.*, 1115.

3. Invention.
In order to support a patent for a Design, as for any other subject, under the acts passed by Congress in the exercise of its constitutional power to secure to inventors the exclusive right to their discoveries, there must be some invention, and not a mere application to a new material of something already known. [*Id.

4. The word "Manufacture"—Sec. 4929.
The word "manufacture," as used in section 4929 of the statute relating to Designs, is to be construed so as to have the same meaning as the word "manufacture" in the prior statutes relating to mechanical patents.
[*Ex parte* Lewis, 1890.

5. Same—Real Estate.
The word "manufacture" in the patent statutes has never been construed to include real estate, and it must be limited to manufactured articles—that is, those made by hand, machinery, or art, from raw or prepared materials. [Id.

6. Same—Dwelling Houses.
A dwelling-house is not a "manufacture" in the statutory sense, and a Design for the exterior of a dwelling-house is not patentable. [Id.

7. Same—Same.
Articles which are manufactured and sold with reference to becoming a part of a house ultimately, such as mantels, are "manufactures" within the meaning of the statute relating to Designs. [Id.

DILIGENCE.

(See Interference, 5; Priority of Invention, 2, 3.)

DIVISIBILITY OF INVENTION.

(See Division of Application; Subsequent Patents, 1, 2.)

DIVISION OF APPLICATION.

1. Joinder of Inventions—Process and Apparatus.
The practice of the Office recognizes the right of an inventor to secure protection in one patent for an apparatus and a process under certain conditions, but applicant has the right, if he so elects, to file separate applications for such inventions.
[*Ex parte* Hopkinson, 264.

2. Division—Claims for Combinations and Claims for Elements and Sub-Combinations.
Where in an application for a patent describing a series of mechanisms in one machine performing certain functions in succession, the applicant made certain claims for combinations which were not limited in their scope to either one of the mechanisms of the series, and also other claims for elements and sub-combinations which were limited to one of the mechanisms of the series, but were also contained in the broader combinations not so limited, *Held* that division could not be required until it had been determined whether the broader combinations were true combinations within the meaning of the law.
[*Ex parte* Speckbauch, 1265.

3. Same—Claims for Various Improvements for Performing Different Functions in an Old Machine.
Where the machine improved upon is as a whole an old and well-known machine performing in succession a series of separate and distinct functions and some of the improvements are limited in their scope to the mechanism performing one function, the remaining improvements being limited to other mechanism performing different functions, division should be required and the claims should be grouped with reference to the mechanisms to which they pertain. [Id.

4. Same—Combinations, Elements and Sub-Combinations.
Where a combination of elements is held to be legitimate, the elements and sub-combinations may be claimed in the same application, unless they have acquired a definite status in the arts, industries, and trades—that is to say, pertain to and are improvements upon parts or devices which have acquired such status. [Id.

5. Same—When Combination as a Whole is Patentable, what is Requisite to Necessitate Division.
In order to necessitate the dividing out of elements, when the combination as a whole is held to be patentable, it must appear, *first*, that the elements or parts of the invention which are to be divided out have obtained a definite place in art and manufacture, and, *second*, that they can be used in other relations. [Id.

6. Same—Folding-Machine and Addressing Attachment.
A device which has obtained a distinct status in the industries and trade should be the subject-matter of a separate application.
[*Ex parte* Sawn, 1561.

EMPLOYÉ.

Invention by Government Employé—Use by Government.
The Chief of the Government Bureau of Printing and Engraving, being requested by his superior officer to devise an internal-revenue stamp, conceived the idea of a self-canceling stamp, and, under his direction, the employés of the bureau, using Government property and machinery, prepared a die for printing. Recommending the adoption of this stamp, he stated to the Commissioner of Internal Revenue that he would make no charge for its use because he was in the Government employ, and used Government machinery in producing it. He however applied for a patent, which was issued December 21, 1869, to his assignee who brought suit for the use of said stamp. *Held*, that the Government had a right to use the stamp without making any compensation therefor. (Affirming 21 Ct. Cl., 479, and 22 Ct. Cl., 335.)
[*Solomons v. United States, 265.

ENLARGEMENT OF CLAIMS.

(See Reissues.)

ESTOPPEL.

(See Damages and Profits, 7; Licenses, 3.)

EVIDENCE OF INVENTION.

(See Priority of Invention, 5, 6.)

EVIDENCE OF PRIORITY OF INVENTION.

(See Priority of Invention, 1.)

EXAMINATION OF APPLICATION.

(See Appeal from Primary Examiner, 1; Claims; Division of Application, 2, 3, 4.)

EXAMINER.

(See Appeal from Primary Examiner, 2; Interference, 1, 3; Public Use.)

EXAMINER OF INTERFERENCES.

(See Interference, 7, 9; Motion to Reopen Interference.)

EXAMINERS-IN-CHIEF.

(See Appeal from Primary Examiner, 1, 2; Interference, 1.)

EXPIRATION OF PATENTS.

(See Damages and Profits, 7; Injunction, 1.)

FEES.

(See Trade-Marks, 1.)

FOREIGN PATENTS.

(See Limitation of United States Patent by Foreign Patent Previously Granted; Priority of Invention, 5, 6.)

FORFEITED CASES.

(See Withdrawal of Case from Issue, 1, 2.)

Practice upon Forfeiture of Application for Process—Section 4897, Revised Statutes of the United States.
When applicant seeks protection for the process in a separate application, which he subsequently allows to become forfeited, his relief is to be found in section 4897 of the Revised Statutes, which provides that applicant may file a second or renewed application for such invention or discovery within two years after the allowance of the original application. A specific relief having been thus provided, the statute would seem to impliedly prohibit relief by other methods.
[*Ex parte* Hopkinson, 264,

FORMER DECISIONS AFFIRMED.

(See Subsequent Patents, 3; Withdrawal of Case from Issue, 3.)

FORMER DECISIONS REVERSED.

(See Damages and Profits, 1.)

FUNCTION.

(See Division of Application, 2, 3.)

GENERIC CLAIMS.

(See Subsequent Patents, 1, 2.)

IMPROVEMENTS.

(See Division of Application, 3, 4; Subsequent Patents, 3.)

INFRINGEMENT.

(See Assignments, 3; Construction of Specifications and Patents, 2; Damages and Profits; Injunction; Parties to Suit; Suits in Equity, 2; Suits for Infringement.)

1. Priority of Invention—Date of Application as Evidence—Burden of Proof.
Where in a suit for infringement it appeared that the patent in suit was granted August 13, 1889, on an application filed December 2, 1887, and renewed March 28, 1889, and that the defendants manufactured and sold the alleged infringing machine made in accordance with Letters Patent issued to defendants' assignor December 4, 1888, on an application filed September 8, 1888, *Held*, assuming that defendants' machine embodied substantially the same invention claimed and described in the patent in suit, and that the device of said patent possessed patentable novelty, that, under the circumstances and in the absence of other evidence, the court would not presume that plaintiff's assignor was the first inventor, simply because his application for a patent was first filed. *Held*, further, that the burden was on the plaintiff to establish that he was the first inventor; that such fact had not been shown, and that it was just as reasonable to infer that defendants' assignor was the first inventor.
[*American Roll Paper Company *v.* Knopp *et al.*, 139.

2. Analogous Devices.
Said patent is infringed by a device whose only difference from the patented machine is that its trip-rod receives the stroke of the hammer in its backward instead of its forward motion.
[*Walker *v.* City of Terre Haute, 507.

3. The Operative Parts of the Day and Brush Lamps not the Same.
The Brush lamp held not to contain the elements of the combination contained in the first claim of the patent in suit.
[*Seeley *et al.* *v.* The Brush Electric Company *et al.*, 661.

4. Same.
The defendants' lamp held not to contain two electrode holders, as called for by the first claim of the Day patent, but to contain three electrode-holders, and to show the lower electrode-holder or carbon-holder with sockets for two electrodes, but with no capacity for movement up or down; as all the movements for establishing the arc and feeding are confined to the upper carbons or electrodes, which move independently of each other, entirely unlike the movement of the carbons in the complainants' upper holder. [*Id.

INJUNCTION.

(See Suits in Equity, 2, 3.)

1. Dissolution of Injunction—Expiration of Patent.
After a patent, the infringement of which has been enjoined, expires, the injunction will be dissolved without reference to such articles as were manufactured while the patent was alive. The patentee may recover damages for such acts of infringement.
[*Westinghouse *v.* Carpenter, 140.

2. Injunction—Suits for Infringement—Issue of Threatening Circulars.
A defendant in a patent suit who was the manufacturer of certain articles claimed to be an infringement of plaintiff's patent sought to obtain an order enjoining the prosecution of three suits begun in other districts against its customers, as well as the commencement of new suits, and the sending of letters and circulars to others engaged in the trade threatening prosecution for selling articles made by the defendant. *Held*, first, that the prosecution of suits in other districts should not be enjoined, because such suits were begun before this suit, and because comity demanded that application should be made to the court in which such suits were pending.
[*Kelley *v.* Ypsilanti Dress-Stay Manufacturing Company, 669.

3. Same—Irreparable Injury.
Held, further, that as the plaintiff might recover substantial damages against the defendant's vendees, in addition to those which he would be entitled to recover against the defendant as manufacturer, the commencement of new suits should not be enjoined unless irreparable injury was threatened to defendant's business, or there was evidence of malice or bad faith on the part of the plaintiff in commencing such suits.
[*Id.

4. Same.
And *Held*, further, that plaintiff had a right to notify persons using his device of his claim and to call attention to the fact that by selling or using it they were making themselves liable to prosecution, and that an injunction would not be ordered unless the language of his letters or circulars was false, malicious, offensive, or opprobrious, or they were used for the willful purpose of inflicting an injury. [*Id.

5. Infringement—Preliminary Injunction.
A preliminary injunction should not issue in a suit for infringement where upon the issue of priority of invention the evidence is merely oath against oath.
[*Mack *v.* Spencer *et al.*, 1418.

INTERFERENCE.

(See Motion to Reopen Interference; Priority of Invention, 2, 3; Public Use; Subsequent Patents, 4; Suits in Equity, 2.)

1. Motion to Dissolve for Want of Interference in Fact—Appeal.
The appeal from a decision of the Primary Examiner denying a motion to dissolve on the ground that no interference in fact exists lies directly to the Commissioner and not to the Examiners-in-Chief. (Rule 124.)
[Zeidler *et al. v.* Leech *et al*, 508.

2. Same—Question Raised by such Motion.
The only question raised by a motion to dissolve for want of interference in fact is whether an interference in fact exists between allowable claims, and the only inquiry arising on such a motion is one which assumes that the claims are allowable.
[Id.

3. Same—What the Examiner Decides on such Motion.
The question presented by such motion cannot be transformed into any other question by *obiter dicta* contained in the decision of the Primary Examiner; neither can the appellate jurisdiction be deflected by reasons of appeal which are not warranted by the nature of the question presented by the motion. In other words, the Examiner decides nothing but the question raised by the motion, and the appeal brings up nothing for review but the decision and the motion decided.
[Id.

4. Motion to Vacate Judgment.
Where, after a judgment of priority by the Commissioner, and after the claims of the defeated party had been rejected under Rule 132, it appeared that certain of said claims were clearly special to his structure and would not be infringed by anything contained in the device of the prevailing party, *Held* that said judgment should be vacated as to said claims. *Held*, further, that as to another of said claims, which was liable to be construed so as to embrace matter common to the organization of the structures of both parties, the judgment should not be vacated.
[Ehrlich *v.* Van Horn, 506.

5. Reduction to Practice.
Where in an interference proceeding it appeared that the senior party was the first to conceive and disclose the invention, but did nothing whatever toward adapting and perfecting the invention until six months after the time when the junior party entered the field without adequate excuse for his inaction, the junior party having meanwhile reduced the invention to practice also, *Held* that the junior party was the first inventor.
[Christie *v.* Seybold, 957.

6. Burden of Proof.
When one of the parties to an interference is a patentee the burden of proof is heavily upon his opponents, and, unless the evidence is such as would be held sufficient by a court to invalidate the patent already granted, the decision will be in favor of the patentee.
[Deprez and Carpentier *v.* Bernstein *et al.*, 1711.

7. Rule 114—Motions.
When a judgment upon the record has been entered under Rule 114, and the Examiner of Interferences has lost jurisdiction by reason of the expiration of the limit of appeal, a motion made before the Commissioner for permission to file a motion to dissolve the interference should be supported by affidavits setting forth the facts relied upon, both in excuse for the failure to file the same within the time specified in the rule and in justification for the granting of the motion.
[Garrison *v.* Hübner, 1889.

8. Same.
A judgment upon the record under Rule 114 is a judgment rendered before the Office has had the benefit of the views of counsel for either party upon the questions involved therein, and if a mistake has been made the entire public, as well as the injured party, is interested to have the mistake corrected.
[Id.

9. Vacation of Judgment.
On the granting of a motion to dissolve the interference after judgment upon the record the Examiner of Interferences will vacate the judgment of priority. [Id.

INTERFERING PATENTS.

(See Suits for Infringement, 3, 4.)

INVENTION.

(See Designs, 1, 2, 3; Patentability; Subsequent Patents, 1, 2.)

1. Aggregation.
There is no invention in aggregating in a single vendible commodity magnesium adapted to use for flash-light purposes and put up in a case or shell and a time-fuse attached to said case or shell for communicating fire to the magnesium. The improvement may possess commercial advantages, but it lacks the quality of invention.
[*Ex parte* White, 387.

2. Mechanical Skill.
Where it appeared that all that applicant professed to do was to take an old and well-known bolt and nut and to screw them together in the ordinary way, and then to take an old and well-known chisel and make an incision in the bolt lengthwise and nearest the upper surface of the nut in order to prevent the bolt from rotating, *Held* that applicant had only displayed the expected skill of the calling and accomplished what a skilful mechanic would do whenever required.
[*Ex parte* Shields, 387.

3. Analogous Use.
The application of an old process, machine, or device to a like or analogous purpose, with no change in the mode of application and no result substantially different in its nature, will not sustain a patent, even if the new form of result has not before been contemplated.
[*Consolidated Roller-Mill Company *v.* Walker, 1415.

4. Improvements.
The mere carrying forward of an original conception, resulting in an improvement in degree simply, is not invention.
[*Id.

INVENTION BY EMPLOYÉ.

(See Employé.)

JOINDER OF INVENTION.

(See Division of Application, 1.)

JUDGMENT.

(See Interference, 4.)

JUDGMENT UPON THE RECORD.

(See Interference, 7, 8, 9.)

JURISDICTION.

(See Motion to Reopen Interference.)

1. Federal Jurisdiction—Writ of Error.
In order to give the Supreme Court jurisdiction by writ of error to a State court, it must appear affirmatively, not only that a Federal question was presented for decision to the highest court of the State having jurisdiction, but that its decision was necessary to the determination of the case, and that it was actually decided, or that the judgment as rendered could not have been given without deciding it.
[*The Walter A. Wood Mowing and Reaping Machine Company *v.* Skinner, 1891.

2. Same—Same.
Where the action was upon an agreement by the defendant that, in consideration of the right to the exclusive use of complainant's patented device, it would use it upon all mowing and reaping machines and would pay a reasonable value for such use, and the value of such use was the only question of fact, and neither the construction nor the validity of the complainant's patent was regarded as material by the trial court, and it did not appear upon what ground the highest court of the State proceeded in affirming the judgment below, but it did appear that the case might properly have been determined upon a ground broad enough to support the judgment without resort to a Federal question, *Held* that the Supreme Court had no jurisdiction. [*Id.

LICENSES.

(See Assignments, 1, 3.)

1. License to Manufacture and Sell.
A grant, by the owner of a patent, of the sole and exclusive right and license to manufacture and sell the patented article throughout the United States does not include the right to use such patented article, at least if manufactured by third persons, and is therefore a mere license.
[*Waterman *v.* Mackenzie *et al.*, 1502.

2. License to Manufacture, Sell, and Use.
An instrument which is in terms a transfer by complainant to defendant of the exclusive right "to manufacture and sell and vend" certain patented articles, the purchasers to have the right to use the articles, which expresses that it is intended for the purpose of vesting in defendants all the rights of complainant in the manufacture and sale of such articles, but which expressly provides that complainant shall retain the ownership of the patent, and in which defendants stipulate for payment of royalties and to do all reasonable things for the successful manufacture and sale of the patented articles, is a mere license.
[*Hatfield *v.* Smith *et al.*, 1892.

3. Same—Estoppel.
Where defendants admit that they have manufactured and sold under such license, and that they have assigned whatever rights they had thereunder, they will not be permitted to plead that they were led to make the contract by complainant's false and fraudulent representations, nor that the patent was invalid, as complainant knew. [*Id.

LIMITATION OF UNITED STATES PATENT BY FOREIGN PATENT PREVIOUSLY GRANTED.

1. Duration of Patent—Revised Statutes United States Section 4887.
Under section 4887 of the Revised Statutes, a United States patent runs for the term for which the foreign patent was granted, notwithstanding the lapse or forfeiture of the foreign patent by the non-observance of a condition subsequently prescribed by the foreign patent law.
[*Consolidated Roller-Mill Company *v.* Walker, 136.

2. Same—Same.
By the Austrian patent law the "longest duration of privileges is fixed at fifteen years," and every patentee whose privilege has been granted for a shorter period than the longest may claim its prolongation for one or more years within the fixed longest period, provided such prolongation be demanded before the privilege has become extinct. In the original grant of an Austrian patent the allowance of the franchise was for one year, but on request it was four times extended, from year to year, and at the end of the fifth year the franchise was suffered to expire. A United States patent to the same patentee, and for the same invention, was issued after the Austrian patent was granted and during the first year it was in force. *Held*, that by the original grant of the Austrian patent the patentee was invested with the right, at his mere option, to have the patent prolonged for the full term of fifteen years, and that, under section 4887 of the Revised Statutes, the United States patent ran for that term, notwithstanding the expiration of the Austrian patent at the end of its fifth year. [*Id.

3. Decision of Foreign Patent Office.
Under the Austrian patent law the ministry of commerce, in deciding the question of the length of the term which appertains to every Austrian patent, exercises a judicial function, and its opinion on that subject will be followed here, agreeably to the established rule that the courts of the United States adopt the construction of a statute of a foreign country made by the courts of that country. [*Id.

MACHINES.

(See Division of Application, 1, 2, 3, 6.)

MASTER'S REPORT.

(See Damages and Profits, 1, 8, 9, 10, 11; Suits for Infringement, 2.)

MEASURE OF DAMAGES.

(See Damages and Profits, 2, 3.)

MECHANICAL SKILL.

(See Invention, 2.)

MISTAKE.

(See Interference, 8.)

MODE OF OPERATION.

(See Construction of Specifications and Patents, 1, 2.)

MORTGAGE ON PATENT RIGHT.

(See Parties to Suit.)

MOTION TO DISSOLVE AN INTERFERENCE.

(See Appeal from Primary Examiner, 2; Interference, 1, 2, 3, 7, 8, 9.)

MOTION TO REOPEN.

(See Suits for Infringement, 1, 2.)

MOTION TO REOPEN INTERFERENCE.

MOTION TO REOPEN—JURISDICTION.

The decision of Examiner of Interferences dismissing a motion to reopen the interference for want of jurisdiction overruled, and *Held* that the motion being noticed for hearing within the time originally limited for appeal operated to stay the running of the time limited, and therefore the Examiner had jurisdiction to hear and act upon the motion.

[Shinn v. McElroy, 1115.

MOTION TO VACATE JUDGMENT.

(See Interference, 4.)

NEWLY-DISCOVERED EVIDENCE.

(See Suits for Infringement, 1.)

NEW USE.

(See Invention, 3; Patentability.)

OATH.

(See Injunction, 5.)

OLD DEVICE.

(See Division of Application, 3, 5; Invention, 2, 3.)

OLD ELEMENT.

(See Division of Application, 4.)

OLD PROCESS.

(See Patentability.)

PARTICULAR PATENTS.

(See Construction of Specifications and Patents, 1; Reissues, 1.)

1. DAY—BRUSH—ELECTRIC LAMPS.

The first claim of Letters Patent No. 147,827, granted February 24, 1874, to Matthias Day, for an improvement in electric lamps, declared not to be infringed by the defendants' lamp, constructed according to the drawings and specification of Letters Patent No. 219,308, granted September 2, 1879, to Charles F. Brush.

[*Seeley *et al.* v. Brush Electric Company *et al.*, 661.

2. GRAY—ROLLER GRINDING-MILL—MECHANICAL SKILL.

The first claim of Letters Patent No. 228,525, granted June 8, 1880, to William D. Gray, for an improvement in roller grinding-mills, declared invalid, as evincing only the exercise of ordinary mechanical or engineering skill.

[*Consolidated Roller-Mill Company v. Walker, 136, 1415.

3. SAME—PRIOR STATE OF ART—CONSTRUCTION OF CLAIM.

In view of the terms of the specification and the prior state of the art, said claim must be limited to the specific organization shown and described and could not be so construed as to cover a roller-mill manufactured in accordance with Letters Patent No. 334,460, granted January 19, 1886, to John T. Obenchain. [*Id., 136.

4. WOFFENDEN—DESIGN FOR RUBBER MATS.

The first claim of Letters Patent No. 11,208, granted George Woffenden, May 27, 1879, for a Design for a rubber mat, declared invalid as being too broad in view of old and well-known instances of producing contrasts and variations in light and shade or stereoscopic effects by depressions or elevations in the surface of materials.

[*New York Belting and Packing Company v. New Jersey Car Spring and Rubber Company, 135.

PARTIES TO SUIT.

(See Assignments, 2, 3.)

MORTGAGE.

The recording of a mortgage of a patent right in the Patent Office is equivalent to a delivery of possession and makes the title of the mortgagee complete toward all other persons, as well as against the mortgagor; and the mortgagee is the only person who can thereafter sue for an infringement of the patent by third persons.

[*Waterman v. Mackenzie, 1562.

PATENTABILITY.

(See Designs, 1; Invention; Subsequent Patents, 1, 2.)

ANALOGOUS USE.

The application of an old process, machine, or device to a like or analogous purpose, with no change in the mode of application and no result substantially different in its nature, will not sustain a patent, even if the new form of result has not before been contemplated.

[*Consolidated Roller-Mill Company v. Walker, 136.

PATENTS.

(See Construction of Specifications and Patents; Priority of Invention, 1; Subsequent Patents, 1, 2, 4; Suits for Infringement, 3, 4; Use and Sale of Patented Articles.)

PETITION TO COMMISSIONER.

(See Claims, 2.)

PLEADINGS.

(See Practice in the Courts, 2.)

PRACTICE IN THE COURTS.

(See Damages and Profits, 2, 3, 4, 7, 9, 10, 11; Demurrer; Infringement, 1, 3; Injunction, 5; Suits in Equity; Suits for Infringement, 1, 2, 3.)

1. JOINDER OF COUNT FOR INFRINGEMENT AND COUNT UNDER SECTION 4918, REVISED STATUTES OF THE UNITED STATES, IN THE SAME BILL.

There appears to be no objection to joining in the same bill a count for infringement and a count under section 4918, Revised Statutes of the United States.

[*American Roll Paper Company v. Knopp *et al.*, 391.

2. ACTIONS FOR INFRINGEMENTS—PLEADINGS.

Revised Statutes United States, section 4919, provides that damages for infringement of a patent may be recovered by an action on the case. Section 4920 prescribes the nature of pleadings to be used in the action, and was passed in 1874. Section 914, which provides that the practice, pleadings, etc., in the Federal courts shall conform as near as may be to those "in like causes" in the State courts of the State where such Federal courts are held, was passed in 1872. *Held* that, as actions for infringements of patents are within the exclusive jurisdiction of the Federal courts, the pleadings therein are governed by section 4920, and a declaration in such an action, conforming to a common-law declaration in an action on the case, is sufficient, though a different form is prescribed by the statutes of the State where the court is held, and that the answer in such an action should comply with the common-law pleadings in actions on the case in form covering one or more of the defenses permitted in section 4920.

[*Myers *et al.* v. Cunningham *et al.*, 1417.

PRACTICE IN THE PATENT OFFICE.

(See Appeal from Primary Examiner, 1, 2; Claims; Copies of Pending Applications; Division of Application; Forfeiture of Application; Interference; Motion to Reopen Interference; Public Use; Trade-Marks, 1; Withdrawal of Case from Issue.)

PRINTED PUBLICATIONS.

(See Priority of Invention, 4; Public Use.)

PRIORITY OF INVENTION.

(See Infringement, 1; Interference, 5; Public Use; Subsequent Patents, 4.)

1. DATE OF APPLICATION AS EVIDENCE.

Where in a suit for infringement it appeared that the application of the patent sued on was filed December 2, 1887, and the application of the defendants' patent was filed September 8, 1888, and that there was no evidence that the original application of the patent in suit was modified or amended in any respect after it was filed, *Held* that it must be conceded in the absence of other evidence that plaintiff's assignor was presumptively the first inventor.

[*American Roll Paper Company v. Knopp *et al.*, 391.

2. DILIGENCE.

If the first person to conceive would prevail in a contest of priority over his rival, who has first reduced the invention to practice, he must show that he was using reasonable diligence in adapting and perfecting the invention at the time when his competitor entered the field. He must show that his diligence antedates the inceptive invention of his rival if he would prevail over him, and he must show that his diligence extends back to his own conception if he would carry his invention back to the date of that conception.

[Christie v. Seybold, 957.

3. INTERFERENCE.

Where A conceived the invention in issue in September, 1885; tested it in an experimental apparatus and became satisfied that he had made an invention of value and importance in the same month; set up a plant embodying the invention in March, 1886, which was operated continuously until June of the same year; extensively introduced the invention thereafter, and applied for a patent in August, 1888, and B conceived the same invention in June, 1886, reduced it to practice in December of the same year, and obtained a patent in July, 1888, *Held* that A was the first inventor.

[Stanley v. Slattery, 1709.

4. INVALIDATING PATENTS—NOVELTY.

Novelty is not negatived by any prior patent or printed publication, unless the information contained is full enough and precise enough to enable any person skilled in the art to which it relates to perform the process or make the thing covered by the patent sought to be anticipated.

[Deprez and Carpentier v. Bernstein *et al.*, 1711.

5. REDUCTION TO PRACTICE—FOREIGN PATENT.

A foreign patent is evidence of perfected invention, if the description contained therein is sufficiently clear and definite, and reduction to practice is not necessary to consummate a title to receive an American patent based upon it. [Id.

6. PRIOR INVENTION—SAME.

Where a foreign patent exclusively relied upon as evidence of priority on behalf of an applicant as against a patentee, failed to fully, clearly, and exactly disclose the invention of the issue, *Held* that it could not avail the applicant as proof of prior invention; and *Held*, further, that if the claim of the applicant when limited to that which was set forth as his invention in the foreign patent, contained anything patentable over the prior art, his right to a patent thereon was in no way affected by the granting of the subsequent patent. [Id.

PRIOR PATENTS.

(See Priority of Invention, 4.)

PROCESS AND APPARATUS.

(See Division of Application, 1; Withdrawal of Case from Issue, 1.)

PUBLIC USE.

ANTICIPATION.

In determining whether A should receive a patent the record should be carefully examined by the Primary Examiner with reference to the question whether more than two years of public use preceded his application, and in view of certain prior printed publications the Examiner should inquire whether the claims of A are anticipated.

[Stanley v. Slattery, 1709.

REDUCTION TO PRACTICE.

(See Interference, 5; Priority of Invention, 2, 3.)

REFUNDMENT OF FEES.

(See Trade-Marks, 1.)

REHEARING.

(See Suits for Infringement, 1.)

REISSUES.

1. FIRE-ALARMS—REISSUE.

Letters Patent issued July 13, 1875, to Robert Bragg, for the combination, with a fire-alarm gong, of mechanism which automatically releases the fire-engine horses from their stalls simultaneously with the alarm, contained the following claim: "The rod I with its knob E and the oscillating lever C, for the purpose of releasing a suspended weight by the direct action of a gong-hammer, substantially as and for the purpose herein described." The reissued patent, No. 6,831, issued January 4, 1876, contained these claims: "The trip-rod D, arranged as described, and the oscillating lever C, for the purpose of releasing a suspended weight by the movement of a gong-hammer, substantially as and for the purpose described," and "the trip-rod D, oscillating lever C, and suspended weight B, in combination with the hammer of a gong, for the purpose of operating mechanism distant from the gong, substantially as above described." *Held* that the claims of the reissue were fairly embraced in the claim of the original.

[*Walker v. City of Terre Haute, 507.

2. REVISED STATUTES, UNITED STATES, SECTION 4916.

The Supreme Court has never so construed the statute which authorizes reissues as to deny to a patentee, on application made in due time and before adverse rights have accrued, the right to obtain a reissue broad enough to cover his entire invention as originally described and as he intended to claim it.

[*Id.

REMEDY AT LAW.

(See Suits in Equity, 3.)

RENEWAL OF FORFEITED CASES.

(See Forfeited Cases.)

RESULT.

(See Patentability.)

RIGHT TO MANUFACTURE PATENTED ARTICLES.

(See Use and Sale of Patented Articles.)

SEPARATE PATENTS.

(See Division of Application, 6; Subsequent Patents, 1.)

STATE COURTS.

(See Jurisdiction; Practice in the Courts, 2.)

STATE OF THE ART.

(See Public Use.)

SUBSEQUENT PATENTS.

(See Priority of Invention, 6; Suits for Infringement, 4.)

1. INDIVISIBILITY OF INVENTION—SPECIFIC AND GENERIC CLAIMS.

An invention embodied in a given structure and restrictedly claimed does not become a different invention when claimed more broadly or generically.

[*Ex parte* Edison, 263.

2. EXTENSION OF MONOPOLY—SAME.

To grant a patent upon an application claiming an invention broadly or generically after a patent has been granted to the same inventor for the same invention embodied in the same structure and more restrictedly stated would be in effect to grant a reissue of the previous patent and at the same time extend its term: [Id.

3. PRESENT CASE DISTINGUISHED FROM CASES RELATING TO SPECIFIC IMPROVEMENTS.

The case to be clearly distinguished from that of *ex parte* Edison, (C. D., 1889, 234; 49 O. G., 1491,) a case relating to specific improvements. [Id.

4. PRIORITY OF INVENTION—DECREE OF CIRCUIT COURT ON A BILL IN EQUITY BROUGHT UNDER THE REVISED STATUTES OF THE UNITED STATES, SECTION 4915, EFFECT OF.

Where, after priority had been adjudicated by the Patent Office to one of two parties in an interference proceeding, and a patent had been issued in accordance therewith, it appeared that the circuit court, upon a bill in equity filed by the other party under section 4915 of the Revised Statutes, had decreed that the plaintiff was the original, first, and sole inventor of the invention in controversy and entitled to a patent therefor, and that a certified copy of said decree had been filed in the Patent Office in accordance with the provisions of the statute referred to, *Held* that the Commissioner was authorized by such adjudication to issue a patent to the plaintiff, notwithstanding it appeared that defendant had duly appealed to the Supreme Court of the United States and had filed a bond for the payment of costs.

[Daniels v. Morgan, 1113.

SUITS FOR INFRINGEMENT.

(See Assignments, 2; Damages and Profits, 6, 7; Injunction, 2, 3, 4; Parties to Suit; Practice in the Courts; Priority of Invention, 1.)

1. ACTION FOR INFRINGEMENT—NEWLY-DISCOVERED EVIDENCE.

Where in an action for infringement it appeared that the defendants had introduced evidence in respect to a certain device at the close of a long and expensive hearing before the master, and that while plaintiff's counsel had not brought themselves without question within the rules which ordinarily govern the reopening of a hearing to admit newly-discovered evidence, the plaintiff had not presented that part of its case and had not had a full opportunity to do so, and it appeared that it would be inequitable to say that it never should present it, *Held* that a motion to reopen by plaintiff for the purpose of introducing new testimony in respect to said device should be granted.

[*Webster Loom Company v. Higgins *et al.*, 390.

2. SAME—MASTER'S REPORT.
Where in action for infringement the master in his report on the question of damages sustained by plaintiff did not specifically find as to the alleged superiority of a non-infringing loom over the one infringed, and it appeared that he did not intend to state his conclusions in regard to said non-infringing loom, although he might have thought that its superiority was proved, *Held* that the case should be recommitted to him in order for him to state his own conclusions from his patient study and accurate knowledge of the evidence, rather than that they should be spelled out from the answers to the defendants' requests. [*Id.

3. INFRINGEMENT—INTERFERING PATENT.
In the ordinary case of a bill for infringement filed by the holder of a senior patent against the holder of a junior patent, the claims whereof conflict, it is no defense that the defendant is acting under a patent.
[*American Roll Paper Company *v.* Knopp *et al.*, 391.

4. SAME—SAME—SECTION 4918, REVISED STATUTES OF THE UNITED STATES.
Where in a suit for infringement it appeared that the defendants held and were operating under a patent granted before plaintiff's patent was granted, *Held* that it was incumbent on the plaintiff to proceed in the first instance under section 4918, Revised Statutes of the United States, to have the invalidity of the defendants' patent, in whole or in part, judicially ascertained and declared, although the application upon which plaintiff's patent was granted was filed before that on which the defendants' patent issued. [*Id.

SUITS IN EQUITY.

1. CROSS-BILL—OBJECT OF.
The purpose of a cross-bill is to obtain discovery of facts in aid of the defense to the original bill, or to obtain full relief to all parties touching the matter of the original bill.
[*International Tooth Crown Company *v.* Carmichael, 1116.

2. SAME—NOT FOR INDEPENDENT UNLAWFUL ACT.
The defendant in an equity suit for infringement of patent cannot file a cross-bill to enjoin the complainant from publishing the fact of infringement, and thus interfering with his trade or business. In such case, the fact sought to be presented by cross-bill being at most merely an independent unlawful act by the complainant, would neither throw light upon the subject, nor avail to defeat the patent or justify an infringement of it, if valid. [*Id.

3. ORIGINAL BILL—PUBLICATIONS INJURIOUS TO BUSINESS NOT ENJOINABLE.
It is more than doubtful if an original bill will lie to enjoin publications injurious to one's trade or business; and this upon the ground that the injured party has a complete remedy at law. [*Id.

SUPREME COURT OF THE DISTRICT OF COLUMBIA.

(See Appeal from Primary Examiner, 2.)

SUPREME COURT OF THE UNITED STATES.

(See Jurisdiction, Subsequent Patents, 4.)

TECHNICAL TERMS.

(See Appeal from Primary Examiner, 1; Designs, 4, 5, 6, 7.)

TERM OF PATENT.

(See Limitation of United States Patent by Foreign Patent Previously Granted.)

TITLE TO PATENT.

(See Assignments.)

TRADE-MARKS.

1. REJECTED APPLICATION FOR REGISTRATION OF TRADE-MARK—REPAYMENT OF FEES.
There is no authority for the repayment of fees paid in Trade-Mark cases where registration is refused:
[*Ex parte* Thayer, 957.

2. TRADE-MARK FOR USE IN DEALING IN REAL ESTATE.
A Trade-Mark adopted for use in dealing in real estate is not proper subject for registration.
[*Ex parte* Roy and Nourse, 1267.

3. SAME.
Where the mark sought to be registered was affixed to billheads, letter-heads, cards, and circulars which applicants used in their business, *Held* that such a use did not come within the statute. [Id.

4. TRADE-MARKS—REGISTRATION OF SIGNS OR SYMBOLS PROVIDED FOR, WHEN.
Registration of signs or symbols is provided for only when they are applied to transportable articles of commerce—that is, "goods, wares, and merchandise." [Id.

USE AND SALE OF PATENTED ARTICLES.

(See Employé; Injunction, 3, 4; Licenses.)

RIGHT OF PATENTEE TO REFRAIN FROM MAKING, USING, AND SELLING HIS INVENTION.
Where in a suit for infringement it appeared that plaintiff was not manufacturing and had not manufactured or sold any machines under the patent in suit, but manufactured a machine made under an earlier patent and seemed to be using the latter patent merely to keep other manufacturers out of the market, *Held* that, whatever its technical right to make use of the patent might be, its conduct evidently deprived the public of whatever advantage the patent in suit possessed, contrary to the true policy of the patent laws.
[*American Roll Paper Company *v.* Knopp *et al.*, 139.

VALID PATENTS.

(See Reissues, 1.)

VOID PATENTS.

(See Particular Patents, 4.)

WITHDRAWAL OF CASE FROM ISSUE.

1. WITHDRAWAL FROM ISSUE—INCORPORATION OF CLAIMS OF A FORFEITED APPLICATION FOR PROCESS IN AN APPLICATION FOR THE APPARATUS.
A petition to be allowed to withdraw an application for an apparatus from the issue, and to amend it by incorporating therein the claims of an application for a process which has been permitted to become forfeited for non-payment of the final fee within six months from notice of allowance, must be denied. Such action would in effect revive the forfeited claims without the payment of the fee required by law.
[*Ex parte* Hopkinson, 264.

2. WITHDRAWAL FROM ISSUE—ADDING AMENDED CLAIMS.
Where an application has been passed to issue, permitted to become forfeited by failure to pay the final fee, thereafter renewed and again allowed, a petition to withdraw such application from the issue to add amended claims, unaccompanied by any showing of "hardship or irreparable injury," was denied.
[*Ex parte* Meyer *et al.*, 265.

3. SAME.
The necessity of advancing the work of the Office compels conformity to the rule laid down in *ex parte Myers*, (49 O. G., 131.) [Id.

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING MARCH 31, 1891.

[Claims and drawings of Designs do not appear in the Monthly Volumes or the Gazette. Separate indexes for Designs, Trade-Marks, Labels, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Volume.	Official Gazette. Page.
Abbe, Charles C., Brooklyn, assignor to Abbe Steam Engine Company, New York, N. Y. Multiple-cylinder engine	444,901	Jan. 20	1483	383	54	306
Abbé, Richard W. F., Belleville, N. J. Pressure-regulator	444,082	Jan. 6	160	40	54	34
Abbe Steam Engine Company. (See Abbe, Charles C., assignor.)						
Abbiati, Ernesto, New York, N. Y. Clothes-line fastener	449,099	Mar. 31	2957	749	54	1717
Abbott, Edwin O., assignor to Abbott Machine Company, Chicago, Ill. Check-protector	448,705	Mar. 24	2347	588, 589	54	1591
Abbott, Francis H., assignor of one-half to M. A. Abbott, Chrisney, Ind. Saw-gumming machine	444,870	Jan. 20	1436	373	54	297
Abbott, Henry, Newark, N. J. Tool for clamping type to type-bars	449,190	Mar. 31	3104	782	54	1743
Abbott, Henry, Newark, N. J. Platen for type-writing machines	449,191	Mar. 31	3105	783	54	1744
Abbott, Henry, Newark, N. J. Apparatus for recording measurement of time, space, or quantity	449,192	Mar. 31	3106	783, 784	54	1744
Abbott Machine Company. (See Abbott, Edwin O., assignor.)						
Abbott Machine Company, N. B. (See Curtis, Charles L., assignor.)						
Abbott, Martin A. (See Abbott, Francis H., assignor.)						
Abeli, Bernard M., New York, N. Y. Means for ornamenting sheet-metal articles	444,413	Jan. 13	683	179	54	143
Acnenback, Lewis, *et al.* (See Dunn, John P., assignor.)						
Ackerman, William J., Malcolm, Wis. Ox-yoke	448,104	Mar. 10	1351	346	54	1383
Ackert, Charles H., *et al.* (See Emerson, Charles H., assignor.)						
Acme Button Hole Attachment Company. (See Palmer, John H., assignor.)						
Acorn Steam Boiler and Heating Company. (See Bosart, Timothy L., assignor.)						
Acorn Steam Boiler and Heating Company. (See Nesom, Thomas, assignor.)						
Acton, John, New York, N. Y. Fluid-pressure regulator	444,263	Jan. 6	451	114	54	89
Adams, Asa B., Worcester, Mass. Type-distributing holder	447,124	Feb. 24	2642	655, 656	54	1052
Adams, Charles F. (See Gorenflo, Louis T., assignor.)						
Adams, Charles H., *et al.* (See Dutcher and Boyle, assignors.)						
Adams, Chauncey K., assignor to T. Trimble, Montreal, Canada. Ballot-paper or voting-ticket	448,403	Mar. 17	1864	469	54	1491
Adams, Cyril B. (See Cronin and Adams.)						
Adams, David S. (See Machin, Miller, assignor.)						
Adams, Fred. L., assignor of one-half to J. F. Kilroy, Prophetstown, Ill. Checkrein-hook	444,264	Jan. 6	453	114	54	89
Adams, George Q., Quincy, Ill., assignor to Adams Power Fence Machine Company. Reel for fence-making machines	445,296	Jan. 27	2106	545	54	435
Adams, George Q., Quincy, Ill., assignor to Adams Power Fence Machine Company. Roller-feet for power-fence machines	445,297	Jan. 27	2107	546	54	435
Adams, George W., Boston, Mass. Electric alarm	447,998	Mar. 10	1198	303, 304	54	1352
Adams, Horace B., Owego, N. Y. Dinner-pail	444,215	Jan. 6	380	95	54	76
Adams, John F., Aledo, Ill. Churn	448,491	Mar. 17	2003	501	54	1517
Adams, Joseph P., Ozark, Mo. Test-tram or leveling device for leveling or tramming rolls	446,764	Feb. 17	2041	509	54	929
Adams, Lizzie B. (See Adams and Maret, assignors.)						
Adams Power Fence Machine Company. (See Adams, George Q., assignor.)						
Adams, Robert L. (See Davis, William H., assignor.)						
Adams, William I., and A. Rotzel, Kensington, Ill. Sliding gate for draw-bridges	449,022	Mar. 24	2833	719	54	1684
Adams, Willis, Jr., and J. Maret, Mount Vernon, Ky.; said Adams assignor to L. B. Adams. Apparatus for preserving fish alive	445,131	Jan. 20	1849	479	54	377
Adant, Gustave, Brussels, Belgium. Manufacture of sugar	444,107	Jan. 6	199	49	54	41
Addison, Joseph L., Quaker City, Ohio. Groove-cutting machine for oil or gas wells	449,450	Mar. 31	3576	901	54	1829
Adler, Abraham S., Baltimore, Md. Foot-measuring machine	447,098	Feb. 24	2600	646	54	1044
Adler, Abraham S., Baltimore, Md. Flexible scale-measure	448,805	Mar. 24	2502	628	54	1621
Aeolian Organ and Music Company. (See Chase and Tracy, assignors.)						
Aeolian Organ and Music Company. (See Pain, Robert W., assignor.)						
Agee, Kennon, Magnolia, Ala. Copy-holder	447,651	Mar. 3	612	151	54	1233
Ahrens, John H., Brooklyn, N. Y. Cash-register	449,395	Mar. 31	3464	872, 873	54	1808
Aiken, Henry, Pittsburg, Pa. Rolling mill	444,389	Jan. 6	637	165	54	125
Aiken, Henry, Pittsburg, Pa. Shears	448,192	Mar. 17	1503	383	54	1423
Aiken, Henry, Pittsburg, Pa. Mill appliance	448,623	Mar. 24	2223	557, 558	54	1567
Aiken, Henry, Pittsburg, Pa. Rolling-mill	449,511	Mar. 31	3650	918	54	1845

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Aikins, Frederick T., Toronto, Canada. Mucilage-scraper	448,492	Mar. 17	2005	502	54	1517
Ainsworth, Napoleon B., *et al.* (See Wiley, Edgar C., assignor.)						
Akester, William H., Fulham, England. Compound for frosting glass	445,528	Feb. 3	1	.....	54	511
Akron Tool Company. (See Kraus, Jacob W., assignor.)						
Aktiebolaget Lactoserin, (Lactoserin Company, Limited.) (See Rehnström, Albert W., assignor.)						
Aktiebolaget Separator. (See Jönsson, Johan L., assignor.)						
Aktiebolaget Separator. (See Laval, Gustaf de, assignor.)						
Alberger, Louis R., assignor to W. A. Perry and C. C. Worthington, New York, N. Y. Surface-condenser	447,285	Mar. 3	1	1	54	1119
Albert, Henry, Crescent City, assignor of one third to T. R. Hayes, Pasadena, Cal. Can-labeling machine	445,418	Jan. 27	2283	593	54	472
Albro, Harry C. (See Dellinger, John, assignor.)						
Alden Type Machine Company. (See Low, Abbot A., assignor.)						
Aldoes, David B. (See Hemingway and Aldoes.)						
Aldrich, Addie, Cincinnati, Ohio. Reticule or pocket-book	444,414	Jan. 13	685	179	54	143
Aldrich, Albert T., Worcester, Mass. Combined cut-out and lightning-arrester	444,892	Jan. 20	1469	380	54	301
Aldrich, George W., assignor of five-eighths to J. L. Spence, Brooklyn, N. Y. Street-washer box	447,503	Mar. 3	394	96	54	1192
Aldridge, Andrew P., North Fork, Va. Dropper's guide for corn-planters	449,100	Mar. 31	2957	740	54	1717
Aldridge, James G. W., Southampton, England. Berth and seat for ships or railway-cars	447,020	Feb. 24	2477	616	54	1019
Alexander, Frederick G., *et al.* (See Swett, Sullivan C., assignor.)						
Alexander, Marcellus S., Birmingham, Ala. Nut-lock	449,023	Mar. 24	2834	719	54	1684
Alexander, Oliver G. (See Legg, Alexander, and Legg.)						
Alexander, Phoebus H. (See Field, Stephen D., assignor.)						
Alexander, Thomson H. (See Howard, Henry, assignor.)						
Alexander, William R. H. (See Wigginton, John R., assignor.)						
Alexander, William W. (See Pettay, Charles H., assignor.)						
Algonquin Manufacturing Company. (See Chase, Oliver R., assignor.)						
Allardyce, Archibald A., Toronto, Canada. Baby-carriage	446,726	Feb. 17	1085	405	54	917
Allen, Albert F., assignor of two-thirds to C. E. Walker and J. West, Chicago, Ill. Type-founder's matrix	449,062	Mar. 24	2896	735	54	1686
Allen, Benjamin B., assignor to himself, W. H. Wilson, and E. Weisbaum, Hanford, Cal. Whiffletree	448,105	Mar. 10	1352	346	54	1383
Allen, Edward B., Portland, Me., assignor to Singer Manufacturing Company of New Jersey. Machine for sewing and beating out seams	449,101	Mar. 31	2959	749	54	1717
Allen, Elbridge G., New Haven, Conn. Sleeping car	445,870	Feb. 3	588	144	54	627
Allen, Elbridge G., New Haven, Conn. Sleeping-car	446,315	Feb. 10	1346	328	54	778
Allen, Fred H., Auburn, Me. Plate printing press	445,150	Jan. 27	1895	489	54	395
Allen, Herbert F., and D. N. Gibbs, Gratton, Mass. Boot or shoe	445,529	Feb. 3	2	1	54	511
Allen, Jeremiah M., assignor to Hartford Steam Boiler Inspection and Insurance Company, Hartford, Conn. Steam-boiler setting	448,576	Mar. 17	2124	532	54	1541
Allen, John H. (See Morton, Edwin W., assignor.)						
Allen, Thomas G., Jr., Ferguson, Mo., W. L. Sachtleben, Alton, Ill., and J. F. Walters, Bayswater, England. Luggage carrier for cycles	444,642	Jan. 13	1032	268	54	212
Alliance Twine Company. (See Lowry, George A., assignor.)						
Allin, Samuel S., London, England. Automatic machine for delivering articles in exchange for coin	449,024	Mar. 24	2835	719, 720, 721, 722	54	1684
Allington & Curtis Manufacturing Company. (See Kutsche, Oswald, assignor.)						
Allis Company, Edward P. (See Gray, William D., assignor.)						
Allis Company, Edward P. (See Reynolds, Shaw, and Trout, assignors.)						
Allis, John, Lowville, N. Y. Watering-trough for stock	444,324	Jan. 6	537	139	54	107
Allis, Thomas V., New York, N. Y. Barbed metallic fencing	446,557	Feb. 17	1731	425	54	868
Allis, Thomas V., New York, N. Y. Barbed metallic fencing	446,558	Feb. 17	1732	425	54	868
Allison, Jesse H., New Vienna, Ohio. Broom-holder	444,998	Jan. 20	1651	423	54	339
Allison, Jo. W., trustee. (See Crowdus, Walter A., assignor.)						
Allison Manufacturing Company. (See Sylvester, Davis L., assignor.)						
Alston, John S., Dover, N. J. Apparatus for heating railway-cars	445,709	Feb. 3	320	84, 85	54	575
Altham, George J., Swansea, Mass. Obtaining motive power	448,021	Mar. 17	2214	554	54	1558
Althen, Dan, *et al.* (See Dunn, John P., assignor.)						
Alford, Clinton, Worcester, Mass. Loom	447,652	Mar. 3	612	151	54	1233
Amhruster, William, St. Louis, Mo. Mane holder for horses	445,485	Jan. 27	2381	619	54	490
American Bell Telephone Company. (See Beach, Franklin G., assignor.)						
American Bell Telephone Company. (See Carty, John J., assignor.)						
American Bell Telephone Company. (See White, Anthony C., assignor.)						
American Cigar Vender Company. (See Wheeler, Orrin A., assignor.)						
American Electric Exercise Machine Company. (See Gardiner, Joseph B., assignor.)						
American Electric Railway Signal Company. (See Rosenfeld, William W., assignor.)						
American Heeling Machine Company. (See Pope, Joseph H., assignor.)						
American Magnetic Electric Company. (See Humans, William, assignor.)						
American Manufacturing Export Company. (See Bugg, Owen T., assignor.)						
American Phosphate and Chemical Company. (See Glaser, Charles, assignor.)						
American Postal Machine Company. (See Ethridge, Frank N., assignor.)						
American Railway Tricycle Company. (See Brady, Frank, assignor.)						
American Roll Paper Company. (See Cornelison, John H., assignor.)						
American Roll Paper Company. (See Ehrlich, Leo, assignor.)						
American Roll Paper Company. (See Friede, Samuel M., assignor.)						
American Roll Paper Company. (See Knight, Edward S., assignor.)						
American Roll Paper Company. (See Pickles, Charles K., assignor.)						
American Saw Company. (See Brooke, William E., assignor.)						
American Semaphore Company. (See Stitzel and Weinedel, assignors.)						
American Ship Windlass Company. (See Whitney, Edwin H., assignor.)						
American Shoe Tip Company. (See Merrill, Hollis W., assignor.)						
American Steel Barge Company. (See McDougall, Alexander, assignor.)						
American Whip Company. (See Mullen, Henry, assignor.)						
American Writing Machine Company. (See Frances, Graham I., assignor.)						
Ames, William H., and M. Grier St. Louis, Mo. Fan	449,025	Mar. 24	2842	723	54	1685
Amos, George W., assignor to S. S. Miles, Chicago, Ill. Spring-hinge	446,617	Feb. 17	1809	447, 448	54	883
Amos, William, Providence, R. I. Car-switch	448,570	Mar. 17	2116	530	54	1539
Anstutz, Noah S., Cleveland, Ohio. Process of and apparatus for electrically reproducing irregular or undulating surfaces	448,404	Mar. 17	1865	469	54	1491

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Anable, Henry B., assignor to G. H. Treadwell, Albany, N. Y. Interchangeable die	444,682	Jan. 13	1099	284	54	225
Anck, John M., Philadelphia, Pa. Bicycle-support	447,125	Feb. 24	2644	656	54	1052
Anderson, Andrew R., New York, N. Y. Carpet or oil-cloth stretcher	444,415	Jan. 13	686	179	54	143
Anderson Band Cutter and Self Feeder Company. (See Anderson, Oliver, assignor.)						
Anderson, Charles A., Caseyville, Ky. Gate	447,441	Mar. 3	279	70	54	1170
Anderson, George R., assignor of one-half to D. Richardson, Roanoke, Va. Spark-arrester	449,512	Mar. 31	3654	918	54	1845
Anderson, Hans J., Lake Mills, Wis. Butter-worker	444,270	Jan. 6	461	117, 118	54	91
Anderson, Harry N., assignor to W. S. Rowe, Boston, Mass. Cigar-blank	444,624	Jan. 13	1003	261	54	207
Anderson, James A. (See Wolford, James A., assignor.)						
Anderson, Nickalaus, Marysville, Cal. Portable elevator	449,026	Mar. 24	2843	723	54	1686
Anderson, Oliver, assignor to Anderson Band Cutter and Self Feeder Company, Racine, Wis. Band-cutter and feeder	444,478	Jan. 13	777	202, 203	54	163
Anderson, William, Erith, assignor to Revolving Purifier Company, Limited, London, England. Apparatus for purifying water	444,772	Jan. 13	1244	323	54	251
Anderson, William B. (See Fant, Anderson, and Richard.)						
Anderson, William B., *et al.* (See Nickum, George S., assignor.)						
Anderson, William F. (See Gustafson, Axel R., assignor.)						
Andrews, Adolphus Y., Philadelphia, Pa. Pocket-book	445,216	Jan. 27	1995	514	54	414
Andrews, Donald, Lockport, N. Y. Heating and ventilating buildings	445,486	Jan. 27	2382	619, 620	54	490
Andrews, George F., Riverside, Cal. Extensible tree-prop	445,151	Jan. 27	1896	489	54	395
Andrews, Harry, 25 New Road, Woolwich, county of Kent, and J. A. Norton, 49 Curtain Road, county of Middlesex, England, assignors of one-half to E. W. Creecy, Washington, D. C. Range-finding and sighting apparatus	444,406	Jan. 6	665	173	54	131
Andrews, J. Milford. (See Copeland, David W., assignor.)						
Andrews, James M. (See Andrews, Marion A., assignor.)						
Andrews, Marion A., assignor of one-half to J. M. Andrews, Syracuse, N. Y. Car-wheel	447,531	Mar. 3	439	107	54	1200
Andrews, Marion A., assignor of one-half to J. M. Andrews Syracuse, N. Y. Journal-bearing	448,624	Mar. 24	2226	558, 559	54	1567
Andrews, Marion A., assignor of one-half to J. M. Andrews, Syracuse, N. Y. Journal-bearing	448,871	Mar. 24	2615	657	54	1641
Andrews, Wallace C., New York, N. Y. Method of transportation	449,102	Mar. 31	2960	750	54	1718
Andrus, Duane P., St. Louis, Mo. Electric belt	449,345	Mar. 31	3371	850	54	1790
Andrus, Rolla L. (See Wooster and Andrus.)						
Angell, Albert, East Orange, assignor of two-thirds to J. O. Ward, Orange, and W. Huntington, Montclair, N. J. Hemp-brake	448,493	Mar. 17	2006	502	54	1518
Angell, Edwin E. (See Burton and Angell.)						
Angerer, Victor, assignor to W. Wharton, Jr., and Company, Incorporated, Philadelphia, Pa. Street-railway crossing	449,433	Mar. 31	3533	890	54	1822
Angier, Oscar M. (See Wilder, Frank E., assignor.)						
Ansley, George W., and J. H. Boyd, Medical Lake, Wash.; said Boyd assignor to said Ansley. Clothes-drier	447,551	Mar. 3	465	115	54	1205
Anthony & Company, E. & H. T. (See Barker, Erastus B., assignor.)						
Anthony, Mark, San Francisco, Cal. Divider attachment for mowers	446,316	Feb. 10	1347	328	54	779
Anthony, Mark, Berkeley, assignor to Golden Gate Faucet Company, San Francisco, Cal. Faucet for barrels	449,513	Mar. 31	3655	919	54	1846
Anthony, William A., Manchester, Conn. Electric motor	444,416	Jan. 13	687	179	54	144
Applequist, Charles J., assignor of one-half to N. T. Holte, Ellendale, N. D. Anti-friction hub	446,409	Feb. 10	1496	369	54	869
Arbegust, Thomas O. (See Mesker and Arbegust.)						
Arbtin, John, Des Moines, Iowa. Smoking-pipe	447,653	Mar. 3	614	151	54	1230
Archer, Frank, and A. S. Bowley, London, England, assignors to Overman Wheel Company, Chicopee Falls, Mass. Velocipede	447,099	Feb. 24	2603	646	54	1045
Archer, John, Radcliffe, England. Doctor employed in the printing of textile fabrics	447,126	Feb. 24	2645	656	54	1052
Arencibias, Joseph, New Orleans, La. Arm-rest for guitars	446,806	Feb. 17	2106	524	54	943
Argabite, G. W., *et al.* (See Hartigan, Joseph F., assignor.)						
Argerbright, Daniel, Troy, Ohio. Carriage-curtain attachment	448,106	Mar. 10	1353	346	54	1384
Arkell, James, Canajoharie, N. Y. Machine for making tubular bag-blanks	447,065	Feb. 24	2557	634	54	1035
Arld, Heinrich, Nuremberg, Germany. Electric-conductor connection	446,655	Feb. 17	1873	464	54	896
Armit, Robert H., assignor of one-half to T. McCulloch, London, England. Machine gun	446,807	Feb. 17	2106	524	54	943
Armitstead, Thomas E., Mazomanie, Wis., assignor of one-half to W. H. Merritt, New York, N. Y. Puzzle	448,577	Mar. 17	2125	532	54	1541
Armour, Jonathan O. (See Coleman, Arnold D., assignor.)						
Armour, Perley P., Burlington, Wis. Horse-collar fastener	444,625	Jan. 13	1004	262	54	207
Armstrong, Charles D., Pittsburg, Pa. Cork-grinding machine	447,860	Mar. 10	965	242	54	1308
Armstrong, Charles G. (See Cutter and Armstrong.)						
Armstrong, Frederic N., assignor to Smith & Richardson, Minneapolis, Minn. Gang edger	445,647	Feb. 3	307	55	54	553
Armstrong, Henry C., D. E. Bigelow, and G. L. Osborn, Ashland, Wis. Kitchen-cabinet	448,494	Mar. 17	2007	502	54	1518
Armstrong, Louis E., Fort Dodge, Iowa. Display rack	448,811	Mar. 24	2517	630	54	1623
Armstrong, Samuel H. (See Myers and Armstrong.)						
Armstrong, William H. (See Fidler and Armstrong.)						
Arnd, Julius. (See Wyland, William H., assignor.)						
Arnett, William D., Caldwell, Idaho. Machine for destroying sage-brush	444,417	Jan. 13	689	180	54	144
Arnold, Addison, *et al.* (See Arnold, Oliver, assignor.)						
Arnold, Amos W. C., *et al.* (See Hollingworth, Louis, assignor.)						
Arnold, Anna M. (See Arnold, Satterlee, assignor.)						
Arnold, Horace L. (See Smith and Arnold.)						
Arnold, Leonard G., Menasha, Wis. Car-brake	446,504	Feb. 17	1651	403	54	852
Arnold, Oliver, Leicester, assignor of one-half to W. Richardson and A. Arnold, Worcester, Mass. Wire-cutter	447,999	Mar. 10	1202	305	54	1352
Arnold, Phineas, Canal Dover, Ohio. Anti-friction bearing	444,311	Jan. 6	518	135	54	104
Arnold, Rouse H. (See Guinnip, Arthur B., assignor.)						
Arnold, Satterlee, assignor to A. M. Arnold, Montclair, N. J. Shaft-bearing table-leg	446,576	Feb. 17	1751	432	54	873
Arnold, Thomas L., Brooklyn, N. Y. Automatic double topping-lift	445,530	Feb. 3	2	1	54	511
Arnold, Whiting, New York, N. Y. Fruit-picker's ladder	445,487	Jan. 27	2381	620	54	490
Arnoldi, Charles, Berwick, Ohio. Kneeling-bench	446,577	Feb. 17	1755	432	54	873
Arrington, James C. and W. N., Teshomingo, assignors of one-half to C. A. Hancock, Caddo, Indian Ter. Combined plow and pulverizer	448,770	Mar. 24	2458	614, 615	54	1611
Arrington, Willis N. (See Arrington, James C. and W. N.)						
Ash, John E., Carthage, assignor of one-half to C. A. Sauttmyer, Cincinnati, Ohio. Lawn-mower	444,643	Jan. 13	1033	269	54	212
Ashe, Thomas F., *et al.* (See Watkins, Edwin D., assignor.)						
Ashbaugh, John I., assignor of one-half to D. G. Curtis, Chattanooga, Tenn. Electric heater	447,143	Feb. 24	2705	670	54	1062

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ashford, Thomas R., Kinston, N. C. Trousers-protector	448,599	Mar. 17	2171	542	54	1549
Ashley, Frank M., assignor to himself and J. J. Ashley, Brooklyn, N. Y. Alarm for steam-generators	445,488	Jan. 27	2385	620	54	491
Ashley, John J. (See Ashley, Frank M., assignor.)						
Ashton, Herbert F. (See Willson, Walter Y. H., assignor.)						
Ashworth, Joel T., assignor of one-half to J. G. Ross, Richmond, Va. Tobacco gum or retainer	448,746	Mar. 24	2422	606	54	1605
Aspden, James, Camden, N. J. Separable boat	449,241	Mar. 31	3176	801	54	1757
Assheton, William, Baltimore, Md. Combined cash drawer and recorder	445,489	Jan. 27	2386	621	54	491
Atherton, Robert. (See Scheffler, Theodore, assignor.)						
Atkinson, William H., Brooklyn, N. Y. Combined ruler and paper-cutter	445,009	Jan. 20	1666	427	54	341
Atratt, John C. F., Mattapoisett, Mass. Device for automatically regulating combustion in hot-water and hot-air heating apparatus. (Reissue)	11,139	Jan. 13	1293	335	54	261
Atwood, Crawford Company. (See Morrison, John H., assignor.)						
Atwood Electric Company. (See Atwood, La Motte C., assignor.)						
Atwood, La Motte C., assignor to Atwood Electric Company, St. Louis, Mo. Electric-arc lamp	448,107	Mar. 10	1354	347	54	1384
Atwood, Leonard, Philadelphia, Pa. Cog-wheel	447,552	Mar. 3	466	115	54	1205
Atwood, Lewis J., and F. W. Tobey, assignors to Plume & Atwood Manufacturing Company, Waterbury, Conn. Argand lamp	448,851	Mar. 24	2583	649	54	1635
Atwood Machine Company. (See Bradley, Edward E., assignor.)						
Auberlin, Charles, *et al.* (See Auberlin, William, assignor.)						
Auberlin, Gustave, *et al.* (See Auberlin, William, assignor.)						
Auberlin, Herman, *et al.* (See Auberlin, William, assignor.)						
Auberlin, William, assignor of three-fourths to C., H., and G. Auberlin, Detroit, Mich. Street-sweeping machine	444,683	Jan. 13	1100	284, 285	54	225
Aucoin, Joseph F., Plattenville, La. Cane-scraper	446,805	Feb. 17	2105	524	54	913
Austin, Anna B. (See Bunnell, Morton G., assignor.)						
Austin, Anna B. (See Cameron, Arthur, assignor.)						
Austin, Frederick C. (See Cameron, Arthur, assignor.)						
Austin, Josiah, near East Liberty, Ohio. Boiler-feeder	446,411	Feb. 17	1505	371	54	823
Austin, Nelson E., Danbury, Conn. Drill-chuck	444,586	Jan. 13	954	247	54	198
Austin, Nelson E., Danbury, Conn. Motor	445,593	Feb. 3	116	29	54	534
Austin, Nelson E., Danbury, Conn. Heating apparatus	449,277	Mar. 31	3240	819, 820	54	1769
Automatic Cigar Seller Company. (See Thompson, Charles H., assignor.)						
Automatic Electric Scale Company. (See Davis, John V., assignor.)						
Avery, Henry W., Cleveland, Ohio. Stake-pocket	444,375	Jan. 6	612	157	54	121
Avis, Edward S. (See Hartigan, James W., assignor.)						
Aycock, John A. (See Aycock, William C. and J. A.)						
Aycock, William C. and J. A., assignors of one-third to J. A. Brooks, Griffin, Ga. Blind-stile boring and mortising machine	447,270	Feb. 24	2923	726, 727	54	1106
Ayers, Albert, Rahway, N. J. Sash-holder	448,108	Mar. 10	1356	347	54	1384
Aylworth, George H., Brighton, Ill. Gate	444,325	Jan. 6	538	140	54	108
Ayres, Allen T., *et al.* (See Ludwig, John C., assignor.)						
Ayres, Hiram J., *et al.* (See Ludwig, John C., assignor.)						
Babbe, Friedrick H. B., San Francisco, Cal. Bed	448,000	Mar. 10	1203	305	54	1353
Babbitt, Edmond H., St. Louis, Mo., and E. T. Harvey, Chicago, Ill. Roller-shelf bookcase	447,238	Feb. 24	2870	712	54	1095
Babcock, Caleb S., and D. A. Gourlay, Mount Vernon, N. Y. Voting-booth	447,239	Feb. 24	2871	712, 713	54	1095
Babcock, Charles W., Crescent City, Cal. Shingle or shake machine	445,742	Feb. 3	372	96	54	586
Babcock, Josiah W., San Diego, Cal. Positive shuttle-motion for looms	447,038	Feb. 24	2513	624	54	1026
Bachem, Carl, Pforzheim, Baden, Germany. Bracelet	449,103	Mar. 31	2961	750	54	1718
Bachler, Christian F., Philadelphia, Pa. Atomizer	447,599	Mar. 3	544	131	54	1218
Backof, William C., *et al.* (See Brown, Lewis A., assignor.)						
Bacon, Byron R., East Orange, N. J. Closet-cistern	447,534	Mar. 3	441	108	54	1200
Bacon, Byron R., East Orange, N. J., assignor to himself, and T. R. Sully, Buffalo, N. Y. Bin or holder for coffee, &c	447,532	Mar. 3	439	108	54	1200
Bacon, Byron R., East Orange, N. J., assignor to himself, and T. R. Sully, Buffalo, N. Y. Cuff holder and distender	447,533	Mar. 3	440	108	54	1200
Bacon, Sherman B., Waterbury, Conn., assignor of one-half to C. M. Upson. Clasp	446,564	Feb. 17	1741	428	54	870
Bader, Nicholas C., Marits, Ohio. Hog-trap	446,215	Feb. 10	1165	286	54	742
Badische Anilin and Soda Fabrik. (See Ceresole, Maurice, assignor.)						
Badische Anilin and Soda Fabrik. (See Julius, Paul, assignor.)						
Badische Anilin and Soda Fabrik. (See Mentha, Eugène, assignor.)						
Baer, George B., Cloverdale, Cal. Separating cross-head tie-wires	445,828	Feb. 3	528	128	54	614
Baer, George B., Cloverdale, Cal. Mailing-machine	446,702	Feb. 17	1945	485	54	909
Bagley & Sewall Company. (See Latimer and Fletcher, assignors.)						
Baier, Fred, and D. R. Hart, assignors to Brownell Car Company, St. Louis, Mo. Street-car	447,240	Feb. 24	2873	713	54	1095
Bailey, Edward S., and J. M. Coons, Orrick, Mo. Cultivator attachment	445,871	Feb. 3	589	144	54	627
Bailey, Hiram S. (See Montague and Bailey.)						
Bailey, John W. (See Sharpneck and Bailey.)						
Bailey, Samuel R., Amesbury, Mass. Carriage	447,752	Mar. 10	769	191	54	1271
Bailey, Stephen, Ansonia, Ohio. Whiffletree-hook	448,193	Mar. 17	1505	384	54	1423
Bailey, Welford S., and W. M. Stevenson, Cleveland, Ohio. Butter-lifter	447,286	Mar. 3	3	1	54	1119
Bailey, Wesley E., Detroit, Mich. Split link	446,317	Feb. 10	1348	328	54	779
Bailey, Lorenzo D. Geneva, Nebr. Catarrh remedy	446,412	Feb. 17	1506	.....	54	823
Bain, Forée, Chicago, Ill. Electrode for secondary batteries	444,969	Jan. 20	1609	411	54	329
Bainbridge, Richard W., Brooklyn, N. Y. Envelope	444,092	Jan. 6	176	44	54	37
Baird, John, New York, N. Y. Compound steam-engine	447,929	Mar. 10	1081	271	54	1330
Baird, John, New York, N. Y. Compound steam-engine	448,001	Mar. 10	1204	305, 306	54	1353
Baird, William C., Brooklyn, N. Y., assignor to Wilson Manufacturing Company, of Minnesota. Speed-controlling device	449,063	Mar. 24	2897	735	54	1696
Baker, Albert R. (See Brown, John F., assignor.)						
Baker, Charles H., New York, N. Y. Oil-cup	445,490	Jan. 27	2388	621	54	491
Baker, Daniel B., San Jacinto, Cal. Sad-iron	444,418	Jan. 13	691	180	54	144
Baker, Frank. M., assignor to J. M. Cohn, New York, N. Y. Cording attachment for sewing machines	445,361	Jan. 27	2204	571	54	456
Baker, George W., Colmesneil, Tex. Shears	444,970	Jan. 20	1610	412	54	330
Baker, George W., Colmesneil, Tex. Mechanical movement	446,318	Feb. 10	1349	329	54	779
Baker, Haydn M., Brooklyn, N. Y. Composition for combustible briquets	446,505	Feb. 17	1653	.....	54	853

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Baker Heater Company. (See Baker, William C., assignor.)						
Baker, Henry, *et al.* (See Coombs, Edwin T., assignor.)						
Baker, Henry W., Keyser, W. Va. Portable house	444,604	Jan. 13	976	253	54	202
Baker, Isaac F. (See Cahoon and Baker.)						
Baker, Isaac F., Lynn, and R. Booth, Malden, Mass., assignors to Thomson-Houston Electric Company, of Connecticut. Snow-sweeper	444,871	Jan. 20	1437	374	54	297
Baker, Isaac F., Lynn, and R. Booth, Malden, Mass., assignors to Thomson-Houston Electric Company, of Connecticut. Snow-broom	444,872	Jan. 20	1440	374	54	297
Baker, James, St. Louis, Mo. Cooking and heating stove	446,413	Feb. 17	1506	371	54	823
Baker, John L., Greensborough, N. C. Transom-lifter	447,174	Feb. 24	2754	681	54	1072
Baker, Louis E., San Francisco, Cal. Type-writing machine	445,152	Jan. 27	1897	489	54	395
Baker, Owen T., assignor of one-half to T. E. Stanley and C. D. Gulley, Fort Worth, Tex. Wagon-brake	446,565	Feb. 17	1742	428, 429	54	870
Baker, Walter, Ilion, assignor to Remington Standard Type Writer Manufacturing Company, New York, N. Y. Type-bar and manufacturing the same	446,414	Feb. 17	1508	371	54	823
Baker, William C., assignor to Baker Heater Company, New York, N. Y. Car-heating apparatus	447,100	Feb. 24	2605	647	54	1045
Baker, William C., assignor to Baker Heater Company, New York, N. Y. Car-heater	449,306	Mar. 31	3294	831	54	1778
Baker, William E. (See Macloskie and Baker.)						
Balbin, Gabriel, Brooklyn, N. Y. Implement for testing the burning qualities of cigars	448,194	Mar. 17	1507	384	54	1424
Balch, Frank C. (See Spaulding, Frank M., assignor.)						
Balderston, Thomas C. (See Hall, John D., assignor.)						
Balderston, Thomas C. (See Nelson, William O., assignor.)						
Baldinger, William H., Galveston, Tex. Bottle-filling machine	447,056	Feb. 24	2540	631	54	1032
Baldwin, Alexander P. (See Spangler, Jacob R., assignor.)						
Baldwin, Byron, Brooklyn, N. Y. Sash-fastener	447,753	Mar. 10	771	191	54	1271
Baldwin, Daniel M., Florence, Cal. Seeding-machine	444,573	Jan. 13	939	243, 244	54	194
Baldwin, Elbert T., and J. H. Stimpson, Gilman, Colo. Combined rolling-pin and cake-cutter	448,311	Mar. 17	1717	435	54	1464
Baldwin, George R., Montreal, Canada. Electric locomotive	446,245	Feb. 10	1235	302	54	757
Baldwin, John P., Baldwin, La. Weighing apparatus for liquids	446,844	Feb. 24	2171	541	54	965
Baldwin, Mariam A., Pueblo, Colo. Door or window screen attachment	449,514	Mar. 31	3659	919	54	1846
Baldwin, Thomas. (See Davis and Baldwin.)						
Baldwin, William, Great Bend, Pa. Tubular lantern	448,002	Mar. 10	1205	306	54	1353
Ball, Albert, assignor to Sullivan Machine Company, Claremont, N. H. Conveying steam	444,549	Jan. 13	897	233	54	186
Ball, Albert, assignor to Sullivan Machine Company, Claremont, N. H. Sand-band	447,287	Mar. 3	5	1,2	54	1119
Ball, Albert, assignor to Sullivan Machine Company, Claremont, N. H. Sand-band	447,288	Mar. 3	6	2,3	54	1119
Ball, Alfred F., Rock Hill, Tex. Plow	447,521	Mar. 3	421	103	54	1197
Ball, Charles A. (See Lumby, Thomas L., assignor.)						
Ball, Deville, Laona, N. Y. Wire-stretcher	444,036	Jan. 6	86	23	54	20
Ball, Henry P., Brooklyn, assignor to Edison General Electric Company, New York, N. Y. Binding-post for electric wires	449,307	Mar. 31	3296	833	54	1778
Ball, Royal E., New York, N. Y. Regulator for dynamo-electric machines	444,587	Jan. 13	955	248	54	198
Ball, Thomas H., *et al.* (See Gardner, Marshall, assignor.)						
Ballard, Edward G., Chester, England. Actinometer	445,743	Feb. 3	374	96	54	587
Ballentyne, Thomas. (See Welch, Samuel, assignor.)						
Balston, Clyde C., Brooklyn, N. Y. Nursing-bottle	449,278	Mar. 31	3241	820	54	1769
Balston, Clyde C., and J. W. Rose, assignors to Health Nursing Bottle Company, Brooklyn, N. Y. Nursing-bottle	446,091	Feb. 10	947	232	54	703
Bancroft, George J., Denver, Colo. Spur	444,407	Jan. 6	667	174	54	132
Band, Henry F. (See Thorp, Thomas J., assignor.)						
Bandman, Isidore C., Atlanta, Ga. Artificial fuel	446,845	Feb. 24	2173	..	54	905
Banks, Charles R., Boston, Mass. Fruit-gatherer	444,037	Jan. 6	87	23	54	20
Bannatyne, Archibald, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-pinion	444,684	Jan. 13	1102	285	54	225
Bannier, Otto F. C., Hamburg, Germany. Device for turning music-sheets	444,390	Jan. 6	638	166	54	125
Bannister, Loring H., Youngstown, Ohio. Oil-can holder for bicycles	449,460	Mar. 31	3580	901	54	1830
Barber, Arthur J. (See Rogers and Barber.)						
Barber, Edwin L., Henrietta, Tex. Soldering-tool	446,765	Feb. 17	2043	509	54	929
Barber, Emmet N., Kent, Ohio. Lumber-measure	448,291	Mar. 17	1680	426, 427	54	1456
Barber, Hiram, Chicago, Ill. Spring-draft attachment	447,289	Mar. 3	7	3	54	1120
Barbour, George O., Rockland, Mass. Water-conductor iron	446,506	Feb. 17	1653	403	54	853
Barbour, William H., Colorado Springs, Colo. Shirt-collar and tie-holder	444,516	Jan. 13	846	220	54	177
Barckdall, Daniel, assignor of one-half to W. J. Woodward, Indianapolis, Ind. Car-axle box	447,271	Feb. 24	2926	727	54	1106
Barclay, Richard, Sodom, Ohio. Device for attaching horseshoes	447,312	Mar. 17	1718	435	54	1464
Bard, William. (See Gram and Bard.)						
Barden, Merritt C., West Pawlet, Vt. Powder-distributer	447,175	Feb. 24	2755	681	54	1072
Bareis, Karl G., Madison, Wis. Check-hook	446,277	Feb. 10	1286	314	54	766
Barker, Erastus B., Newark, N. J., assignor to E. & H. T. Anthony & Company, New York, N. Y. Photographic camera	444,806	Jan. 13	1292	335	54	261
Barker, Jere J., assignor of one-half to J. B. Bellinger, Washington, D. C. Thill-support for vehicles	449,027	Mar. 24	2845	721	54	1686
Barker, Jeremiah J., Washington, D. C., assignor to A. B., S. D., and M. V. Webb. Shaft-support for vehicles	445,277	Jan. 27	2086	538	54	431
Barker, John F., Springfield, Mass. Crucible-furnace	444,658	Jan. 13	1052	273	54	216
Barker, John L., Racine, Wis. Brake lever and lock	447,600	Mar. 3	535	131	54	1218
Barker, Lewis A., *et al.* (See Cleveland, Lewis W., assignor.)						
Barker, William, Newport, Ky. Machine for grinding lathe-centers	447,553	Mar. 3	467	115	54	1205
Barlet, Harwin T., Lebanon, Pa. Nut-lock	445,029	Jan. 20	1688	434	54	346
Barlow, Heman G. and J. B., Grand Rapids, Mich. Removable binding	445,031	Jan. 20	1691	434	54	346
Barlow, John B. (See Barlow, Heman G. and J. B.)						
Barlow, John H., New Haven, Conn. Bullet-mold	446,178	Feb. 10	1107	271	54	701
Barlow, S. H. (See Davis, George H., assignor.)						
Barnard & Leas Manufacturing Company. (See Cornwall, John B., assignor.)						
Barnes, Charles J. (See Thorp, Thomas J., assignor.)						
Barnes, Charles O. and L., Sr., Syracuse, N. Y. Car-coupling	445,768	Feb. 3	420	105	54	595
Barnes, Charles O. and L., Sr., Syracuse, N. Y. Car-coupling	448,852	Mar. 24	2584	649	54	1636
Barnes Company, W. F. & John. (See Barnes, John, assignor.)						
Barnes, David L., assignor to F. H. Clark, Chicago, Ill. Car-coupling	448,003	Mar. 10	1207	306, 307	54	1354
Barnes, Edward M., assignor of one-half to J. A. Davies, Cleveland, Ohio. Car-brake	447,272	Feb. 24	2927	727, 728	54	1107

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Barnes, Elbridge F., New Haven, Conn. Boring attachment for sawing-machines	448,195	Mar. 17	1508	384	54	1424
Barnes, Gilbert F., Chicago, Ill. Folding hat and clothes rack	444,933	Jan. 20	1549	397	54	318
Barnes, Horace H. and J. S., Detroit, Mich. Tack-driver	444,685	Jan. 13	1103	285	54	226
Barnes Iron Fence Company. (See Barnes, Lewis, assignor.)						
Barnes, Isaac A. (See Blodgett, William E., assignor.)						
Barnes, John, Paxton, Ill. Engine reversing-gear	444,971	Jan. 20	1610	412	54	330
Barnes, John, assignor to W. F. & J. Barnes Company, Rockford, Ill. Reversible rotary cutter	449,571	Mar. 31	3733	938	54	1860
Barnes, John S. (See Barnes, Horace H. and J. S.)						
Barnes, Lewis, Belvidere, N. J., assignor to Barnes Iron Fence Company, of New Jersey. Fence	445,531	Feb. 3	3	1	54	511
Barnes, Loren. (See Richardson, Albert C., assignor.)						
Barnes, Lucien, Sr. (See Barnes, Charles O. and L., Sr.)						
Barnett, William D., *et al.* (See Hamilton, Alexander R., assignor.)						
Barnett, William H. (See Dean and Barnett.)						
Barnett, William I. (See Davis, Stockley, and Barnett.)						
Barney, Richard W., Hornellsville, N. Y. Vulcanizing apparatus	446,216	Feb. 10	1167	286	54	742
Barnhart, Robert L., Pittsburg, Pa. Plotter	448,109	Mar. 10	1357	348	54	1384
Barr, Fredric E., Saratoga, Ark. Planter	444,228	Jan. 6	405	100, 101	54	80
Barrett, Albert, Kansas City, Mo. Thermal cut-out	445,217	Jan. 27	1996	515	54	414
Barrett, Alfred, *et al.* (See Graf, Adolph J. C., assignor.)						
Barrett, Charles A., *et al.* (See Graf, Adolph J. C., assignor.)						
Barrett, Frederick W., Springfield, assignor to D. D. Clayton, Upper Sandusky, Ohio. Statistic-book	444,060	Jan. 6	124	30, 31	54	27
Barrett, James O., assignor to Meadville Vise Company, Limited, Meadville, Pa. Vise	444,326	Jan. 6	539	140	54	108
Barrett, Sidney H., assignor to Barrett Storage Battery Company, Springfield, Mass. Electrode for secondary batteries	445,872	Feb. 3	590	144	54	627
Barrett Storage Battery Company. (See Barrett, Sidney H., assignor.)						
Barron, Adolph M., Kansas City, Mo. Thermostat	446,846	Feb. 24	2173	541	54	965
Barron, James. (See Fitzgerald, James H., assignor.)						
Barron, John J., Valmont, Colo. Cotton-chopper	445,461	Jan. 27	2343	609	54	483
Barron, Walter J., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	441,873	Jan. 20	1441	375	54	298
Barry, Charles, Corning, N. Y. Railway time-signal	444,327	Jan. 6	541	140	54	108
Barstow, Clark M., Bryan, Ohio. Book-mark	448,470	Mar. 17	1968	494, 495	54	1511
Bartels, Ernst H., Dieterich, Ill. Folding crate	449,193	Mar. 31	3110	785	54	1745
Bartholomew, George E., assignor of one-half to E. R. Edwards, Cincinnati, Ohio. Spring-gear for vehicles	446,656	Feb. 17	1874	465	54	896
Bartholomew, John B., Des Moines, Iowa. Grain-conveyer	446,566	Feb. 17	1743	429	54	871
Bartholomew, Thomas W., Danville, Pa. Shutter-bower	447,290	Mar. 3	10	4	54	1120
Bartlett, Frank L., Portland, Me. Machine for making pulp-cylinders	447,455	Mar. 3	304	76	54	1175
Bartlett, Lewelen, Yates Center, Kans. Weighing-scoop	446,179	Feb. 10	1108	271	54	731
Bartlett, Theron F., Denver, Colo. Grass-receptacle for lawn-mowers	448,188	Mar. 10	1480	378	54	1409
Bartlett, William E., Edinburgh, Scotland. Wheel-tire	448,703	Mar. 24	2493	624	54	1618
Barton, Edwin W., Lawrence, Mass. Jordan engine for grinding pulp	444,644	Jan. 13	1034	269	54	213
Bartsch, Edwin, San Francisco, Cal. Electro-therapeutic syringe	449,651	Mar. 31	3884	972	54	1887
Barwis, Thomas S., assignor of one-half to J. L. Bowen, Calgary, Canada. Driving mechanism	449,606	Mar. 31	3794	952	54	1871
Basom, Ransford W., Pittsburg, Kans. Steam-engine	445,967	Feb. 10	739	181	54	667
Bassett, Fred. H., Saranac Lake, N. Y. Curtain-fixture	448,625	Mar. 24	2227	559	54	1567
Bassinger, Stephen, assignor of one-half to W. D. Morton, Italy, Tex. Animal-trap	448,313	Mar. 17	1719	435, 436	54	1464
Bataille, Achille, New York, N. Y. Metal door or gate	448,314	Mar. 17	1722	436	54	1464
Batcheldder, Albion C., *et al.* (See Leach, Rufus, assignor.)						
Batcheller, Justin, Wallingford, Vt. Flush-hinge for tables, desks, &c	445,532	Feb. 3	5	1	54	511
Batdorf, Frank W., Grand Rapids, Mich. Toy game	444,112	Jan. 6	212	51	54	43
Bates, Charles C., and C. D. Wren, Centreville, Miss. Hand fertilizer-distributer	448,004	Mar. 10	1210	307	54	1354
Bates, Charles J. (See Wegmann and Bates.)						
Bates, Eddo V., Dracut, Mass. Carding machinery	444,720	Jan. 13	1147	295	54	234
Bates, Francis G., Philadelphia, Pa. Steam-boiler-furnace	445,419	Jan. 27	2289	593, 594	54	473
Bates, Louis, Jersey City, N. J. Electric door-opener	448,110	Mar. 10	1358	348	54	1384
Bates, Willard A., Princeton, Me. Machine for splitting leather strips	445,744	Feb. 3	377	96	54	587
Bätjer, Fritz, Hamburg, Germany. Apparatus for propelling boats	448,771	Mar. 24	2459	615	54	1612
Battelle, John G., Covington, Ky. Door-mat	447,456	Mar. 3	306	77	54	1175
Baughman, Josiah. (See Kring and Baughman.)						
Baughman, Sherman E., Taylorville, Ill. Vehicle running-gear	446,415	Feb. 17	1509	371, 372	54	824
Baum, Henry C., assignor of one-half to J. H. Ferguson, Denver, Colo. Manufacturing Portland cement	446,911	Feb. 24	2305	.....	54	980
Baum, Jacob, Cincinnati, Ohio. Permutation-lock	446,657	Feb. 17	1875	465	54	896
Baum, John R. (See Parkinson, Thomas J., assignor.)						
Baum, Josephus, Ridge Farm, Ill. Pitman connection for harvesters	447,930	Mar. 10	1082	271	54	1330
Baumann, Henry. (See Krantter, August, assignor.)						
Baumeister, Albert G., and N. Meinz, Sandusky, Ohio. Turning-machine	445,032	Jan. 20	1692	435	54	346
Baumgarten, Albert. (See Morgan, Edgar H. and C., assignors.)						
Baumgarten, Albert, *et al.* (See Redlinger, Michael, assignor.)						
Baumgarten, Herman, Washington, D. C. Tag	444,739	Jan. 13	1196	309	54	242
Bannach, John, Newark, N. J. Traveling-bag fastening	444,205	Jan. 6	368	91	54	74
Bausch, Edward, G. Hommel, and A. Wollensak, assignors to Bausch & Lomb Optical Company, Rochester, N. Y. Photographic shutter	444,083	Jan. 6	161	40, 41	54	35
Bausch & Lomb Optical Company. (See Bausch, Hommel, and Wollensak, assignors.)						
Bausch, William, Rochester, N. Y. Lens-grinding machine	445,349	Jan. 27	2186	566, 567	54	453
Baxter, William, Jr., Baltimore, Md. System of operating electric elevators	449,611	Mar. 31	3799	954, 955, 956, 957	54	1872
Baxter, William H., Leeds, England. Elevator and screen for crushing-machines	446,319	Feb. 10	1350	329	54	779
Bayles, James C., East Orange, N. J. Flexible metallic hose	445,153	Jan. 27	1898	490	54	395
Bayley, Richard W., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Air-brake. (Reissue)	11,145	Feb. 17	2166	539	54	955

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Bayorgeon, Joseph, *et al.* (See De Loria, Louis, assignor.)						
Beach, Charles A., Albany, N. Y. Street-railway tie	448,005	Mar. 10	1211	308	54	1355
Beach, Clifton B., Cleveland, Ohio. Machinery for forming car-wheels	445,238	Jan. 27	2023	522	54	419
Beach, Franklin G., Chicago, Ill., assignor to American Bell Telephone Company, Boston, Mass. Telephone-exchange apparatus	447,485	Mar. 3	364	90	54	1187
Beach, Fred H., Rochester, N. Y. Machine for attaching stays to the corners of boxes	447,225	Feb. 24	2841	704, 705	54	1089
Beach, James W., Fernwood, Ill. Pneumatic conveyer	444,038	Jan. 6	90	23, 24	54	21
Beach, Oscar W., assignor of one-half to J. P. Curry, Fort Morgan, Colo. Vehicle-axle	446,416	Feb. 17	1511	372	54	824
Beach, Ralph H., assignor to himself and W. Carpenter, St. Paul, Minn. Combined electric motor and lamp-socket	444,807	Jan. 20	1297	337	54	271
Beacham, Alexander T., Laredo, Tex. Water-cooler	445,667	Feb. 3	241	65, 66	54	559
Beacon Vacuum Pump and Electrical Company. (See Berrenberg, Adolph, assignor.)						
Beacon Vacuum Pump and Electrical Company. (See Berrenberg and Nickerson, assignors.)						
Beacon Vacuum Pump and Electrical Company. (See Nickerson and Berrenberg, assignors.)						
Beall, John N., Greenfield, Ill. Sash-fastener	445,033	Jan. 20	1093	435	54	347
Beals, Ebenezer, Norwich, N. Y. Tool for twisting wire	444,808	Jan. 20	1298	337	54	271
Beals, Joseph J. (See Pool and Beals.)						
Bean, Fred S. (See Ford, Martin W., Jr., assignor.)						
Beane, De Witt C., Newark, N. J. Pipe-stock	444,686	Jan. 13	1104	285	54	226
Beardsley, James E. (See Jewell, John A., assignor.)						
Beardsley, William H., and L. M. Hosea, Cincinnati, Ohio. Adding-machine	447,457	Mar. 3	307	77	54	1175
Beasley, Maria E., Philadelphia, Pa. Notching and cutting hoops for barrels	448,905	Mar. 24	2664	668	54	1650
Beaumann, Hermann, assignor of one-half to R. N. Richmond, Adams, Mass. Float-detecting attachment for loom-shuttles	449,194	Mar. 31	3111	785	54	1745
Beaupre, Bruno, St. Paul, Minn. Journal-bearing	448,196	Mar. 17	1509	385	54	1424
Becannon, Charles W., New York, N. Y. Adjustable book rest or support	446,278	Feb. 10	1287	315	54	766
Becher, James A., Mishawaka, Ind. Drill-chuck	445,533	Feb. 3	6	2	54	512
Bechman, Henry F., assignor to Schniedewend & Lee Company, Chicago, Ill. Inking device for printing-presses	447,021	Feb. 24	2479	617	54	1020
Beck, Frederick. (See Palmer, James S., assignor.)						
Beck & Hopkins Manufacturing Company. (See Beck, Marshall, assignor.)						
Beck, Marshall, assignor to Beck & Hopkins Manufacturing Company, Chicago, Ill. Hay-loader	448,006	Mar. 10	1211	308, 309	54	1355
Beck, Paul, Augsburg, Germany. Apparatus for tapping beer by means of carbonic acid	445,257	Jan. 27	2063	532	54	426
Becker, Frank J. (See Deuscher and Becker.)						
Becker, John J., Fort Wayne, Ind. Clothes-drier	445,633	Feb. 3	181	47	54	547
Becker, John P., Detroit, Mich. Key-board playing attachment for musical instruments	449,396	Mar. 31	3466	873	54	1809
Becker, Joseph M., and A. Saggese, New York, N. Y. Book-protector	446,052	Feb. 10	892	216	54	693
Beckford, Edwin S. (See Cram, William E., assignor.)						
Beckwith, Walter C., Fostoria, Ohio. Railway signal-torch	448,906	Mar. 24	2664	669	54	1650
Bedell, James. (See Gorton and Bedell.)						
Beebe, Charles H., Norwich, Conn. Lock-case	446,246	Feb. 10	1237	302	54	757
Beebe, George F., Hornellsville, N. Y., assignor to M. Marshall, Washington, D. C. Pump	449,607	Mar. 31	3795	952, 953	54	1871
Beekman, John C., and H. G. Hubener, New York, N. Y. Float-valve for tanks	449,242	Mar. 31	3178	801	54	1758
Beelman, James F. (See Bodley and Beelman.)						
Beeman, Marcus M., Syracuse, N. Y. Overshoe attachment	448,756	Mar. 24	2438	610	54	1608
Beers, Charles L., Scranton, Pa. Grate-support	445,873	Feb. 3	591	145	54	698
Beers, Charles L., Scranton, Pa. Cuspidor	448,111	Mar. 10	1360	348	54	1385
Behrens, Henry R., assignor to A. M. Taft, Worcester, Mass. Leather-stretching machine	446,847	Feb. 24	2174	541, 542	54	965
Behrens, William C., New York, N. Y. Type-writer drop-cabinet	446,943	Feb. 24	2349	584	54	996
Behrman, August F., Buena Vista, Colo. Dumping-cart	447,442	Mar. 3	280	70, 71	54	1170
Beilmann, Friedrich, assignor to R. G. Ledig, Philadelphia, Pa. Adjustable stand for lamps	449,028	Mar. 24	2845	723	54	1686
Beisheim, Henry, Rochester, assignor to New York Steel Mat Company, New York, N. Y. Machine for making mats or gratings	448,706	Mar. 24	2351	589	54	1592
Beisheim, Justus, Rochester, N. Y. Grate	449,029	Mar. 24	2846	724	54	1687
Belden, Howard R. (See Roberts, William R., assignor.)						
Belding, Thomas C., assignor to Canton Steel Roofing Company, Canton, Ohio. Tube-making machine	445,517	Jan. 27	2427	633, 634	54	498
Bell, Charles R. E., London, England. Match-machine	447,931	Mar. 10	1083	271, 272, 273	54	1330
Bell, Charles W., Tecumseh, Mich. Garment-stay	444,809	Jan. 20	1299	337	54	271
Bell, Gilbert S., Mobile, Ala. Steam-valve	448,626	Mar. 24	2229	559	54	1568
Bell, Newton M., San Francisco, Cal. Manufacturing borax	449,064	Mar. 24	2899	736	54	1697
Bellamy, Charles L., Arlington, N. J. Dust-pan	446,225	Feb. 10	1179	288	54	745
Bellinger, Jacob B. (See Barker, Jere J., assignor.)						
Bemis, Sumner A. (See Pfingst and Bemis.)						
Bender, Frederick W., Narbeth Park, and F. Scheidemann, Philadelphia, Pa. Cuff-retainer	444,271	Jan. 6	463	118	54	92
Bender, Fritz, assignor to A. Leonhardt & Co., Mühlheim, Germany. Pink dye	445,684	Feb. 3	281	.....	54	568
Bender, John T., Canton, Ohio. Plow-jointer	445,281	Jan. 27	2090	530	54	432
Bender, John T., Canton, Ohio. Plow-wheel	445,282	Jan. 27	2091	540	54	432
Bender, Joseph T., *et al.* (See Polley, William, assignor.)						
Benedict, Irving W., Gloversville, N. Y. Stallion-shield	448,757	Mar. 24	2439	610	54	1608
Benedict, James F., *et al.* (See Frazer, Thornton A., assignor.)						
Benedict, Milton E. (See Merrell, Daniel B., assignor.)						
Benger, Gottlieb, Stuttgart, Germany. Shirt	448,812	Mar. 24	2519	631	54	1623
Benicia Agricultural Works. (See Paterson, James and W., assignors.)						
Benjamin, George V., Ithaca, N. Y. Telephonic auditory apparatus	448,627	Mar. 24	2230	559	54	1568
Benn, John S., San Francisco, Cal. Fly-book	444,272	Jan. 6	464	118	54	92
Benner, William, Tiffin, Ohio. Heating and ventilating the walls of buildings	446,848	Feb. 24	2178	542	54	966
Benners, Edwin H., Elizabeth, N. J. Grease-cup	448,471	Mar. 17	1969	495	54	1511
Bennett, Edwin, Baltimore, Md. Roofing-tile	449,397	Mar. 31	3468	874	54	1809
Bennett, Edwin C., and E. C. Freeze, Chicago, Ill. Universal joint for incandescent-lamp brackets	447,486	Mar. 3	369	91	54	1188
Bennett, Erastus S., Denver, Colo. Separator	448,189	Mar. 10	1482	378	54	1409
Bennett, Frederick, New York, N. Y., assignor, by mesne assignments, to Hale & Kilburn Manufacturing Company, Philadelphia, Pa. Folding bed. (Reissue)	11,137	Jan. 6	678	176	54	133
Bennett, George H., assignor of one-half to F. M. Dillie, Cincinnati, Ohio. Lathe	449,065	Mar. 24	2901	736	54	1697

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Bennett, J. C., *et al.* (See Kimpton, Charles A., assignor.)						
Bennett, Moses H. (See Prescott and Bennett.)						
Bennett, William F., Peoria, Ill. Dumping-car	449,030	Mar. 24	2848	724	54	1687
Benoit, Alphonse V., Brooklyn, N. Y. Ink or color holder	445,764	Feb. 3	414	103	54	504
Benoit, Charles H., and A. Pillot, San José, Cal. Window-screen	447,423	Mar. 3	244	62	54	1163
Bentley, Alfred. (See Bentley, Squire and A.)						
Bentley, Edward M., New York, N. Y. Electric agricultural system	444,265	Jan. 6	454	{114 / 115}	54	89
Bentley, Edward M., New York, N. Y. Electric-railway car	444,480	Jan. 13	782	204	54	164
Bentley, Edward M., New York, N. Y. Contact device for electric railways	445,634	Feb. 3	181	47	54	547
Bentley, Edward M., New York, N. Y. Electric railway and contact device therefor	446,376	Feb. 10	1432	{351 / 352}	54	796
Bentley, Edward M., New York, N. Y. Conduit electric railway	446,417	Feb. 17	1512	372	54	824
Bentley, Edward M., Brooklyn, N. Y. Electric car-controlling device	444,479	Jan. 13	780	203	54	163
Bentley, Edward M., Brooklyn, N. Y. Electric railway	444,740	Jan. 13	1196	310	54	242
Bentley, Edward M., Boston, Mass. Electric-line switch	446,418	Feb. 17	1513	373	54	825
Bentley, Edward M., Boston, Mass. Electric-railway conduit	446,419	Feb. 17	1514	373	54	825
Bentley, Edward M., Boston, Mass. Contact device for electric railways	446,420	Feb. 17	1515	373	54	825
Bentley, John T., St. Louis, Mo. Combined dresser and writing-desk	446,606	Feb. 17	1792	443	54	880
Bentley, Squire and A., assignors of one-third to R. Carroll, Paterson, N. J. Tension-regulating device for loom-shuttles	447,629	Mar. 3	583	144	54	1227
Béraud, Georges H., Maestricht, Holland. Apparatus for classifying and finishing peat fiber	444,199	Jan. 6	360	90	54	72
Berchey, Leopold, Fort Smith, Ark. Fan attachment for sewing-machines	445,743	Feb. 3	548	133	54	618
Berdan, Richard J., Paterson, N. J. Shutter-fastener	445,968	Feb. 10	742	182	54	667
Beresford, James, Charlton-cum-Hardy, near Manchester, England. Material for making wire fences	449,279	Mar. 31	3242	821	54	1769
Bergen, James V., Austin, Tex. Fountain attachment for inkstands	446,279	Feb. 10	1288	315	54	767
Berger, Ambrose B. (See Skirving and Berger.)						
Bergmann, Sigmund. (See Scott, George A., assignor.)						
Bergmann, Sigmund, New York, N. Y. Cut-out	445,362	Jan. 27	2205	572	54	456
Bergmann, Sigmund, New York, N. Y. Electric cut-out	445,363	Jan. 27	2206	573	54	457
Bergmann, Sigmund, New York, N. Y. Key for electric cut-outs	445,364	Jan. 27	2207	572	54	457
Bergmann, Sigmund, New York, N. Y. Electric-cable connector	445,365	Jan. 27	2208	572	54	457
Bergmann, Sigmund, New York, N. Y. Conduit for electric wiring in buildings	447,861	Mar. 10	966	242	54	1308
Bergmann, Sigmund, and C. J. Klein, New York, N. Y.; said Klein assignor to said Bergmann. Insulating coupling-block and cut-out	446,180	Feb. 10	1109	271	54	732
Bergmann, Theodor, Gaggenau, Germany, assignor to J. H. Volkmann, New York, N. Y. Vending apparatus	447,862	Mar. 10	968	243	54	1308
Bergmark, Leo, Philadelphia, Pa. Railway rail and sleeper or stringer	448,628	Mar. 24	2231	560	54	1568
Berlin Machine Works. (See Perry, James L., assignor.)						
Berliner Musik Instrumenten Fabrik, Aktien Gesellschaft, vormals Chas. F. Pietschmann & Söhne. (See Pietschmann, Carl, assignor.)						
Bernard, Peter J., Union Hall, Va. Tobacco-knife	449,031	Mar. 24	2849	724	54	1687
Berne, Arthur W., assignor of five-eighths to B. W. Taylor, C. A. Fish, and R. J. Lowden, New Orleans, La. Tail light for railway-trains	448,315	Mar. 17	1723	436	54	1465
Bernhard, Louis, Bloomsburg, Pa. Fountain-pen	444,985	Jan. 20	1632	419	54	334
Bernstein Electric Company. (See Lean, George R., assignor.)						
Berrenberg, Adolph. (See Nickerson and Berrenberg.)						
Berrenberg, Adolph, Somerville, Mass., assignor to Beacon Vacuum Pump and Electrical Company, Portland, Me. Vacuum-pump connection	447,275	Feb. 24	2931	{728 / 729}	54	1108
Berrenberg, Adolph, Somerville, and W. E. Nickerson, Cambridge, Mass., assignors to Beacon Vacuum Pump and Electrical Company, Portland, Me. Vacuum-pump	447,273	Feb. 24	2929	728	54	1107
Berrenberg, Adolph, Somerville, and W. E. Nickerson, Cambridge, Mass., assignors to Beacon Vacuum Pump and Electrical Company, Portland, Me. Vacuum-pump	447,274	Feb. 24	2930	728	54	1107
Berrenberg, Albert, Boston, Mass., assignor, by mesne assignments, to Berrenberg Manufacturing Company, of New York. Vacuum-pump	449,066	Mar. 24	2902	{736 / 737}	54	1697
Berrenberg Manufacturing Company. (See Berrenberg, Albert, assignor.)						
Berry, Ellen A., assignor of one-half to S. W. McDaniel, Boston, Mass. Jacket for making garment-patterns	447,554	Mar. 3	469	115	54	1206
Berry, George, Baltimore, Md. Speed-measure	449,398	Mar. 31	3469	874	54	1809
Berry, Jacob D., Camden, N. J. Fire-extinguisher	449,195	Mar. 31	3113	785	54	1745
Berry, Marcellus F., and N. Stafford, Brooklyn, N. Y. Rein-button	444,874	Jan. 20	1442	375	54	298
Bertenshaw, Silas, Black Hawk, Colo. Concentrator	445,154	Jan. 27	1899	490	54	395
Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Puncturing implement for sewing-machines	444,419	Jan. 13	692	180	54	145
Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Shuttle for sewing-machines	445,655	Feb. 3	224	61	54	556
Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Shuttle for sewing-machines	445,656	Feb. 3	226	61	54	556
Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Thread-waxing device for sewing-machines	445,657	Feb. 3	227	61	54	556
Besse, Thomas H., Buffalo, N. Y. Ice-cream freezer	449,434	Mar. 31	3533	890	54	1822
Bessonette, William T., and C. R. King, assignors of one-half to J. M. Brosius, Atlanta, Ga. Ice-cream freezer	444,790	Jan. 13	1265	328	54	255
Best, George B., *et al.* (See Reed, Franklin M., assignor.)						
Besthoff, Samuel J., *et al.* (See Nicolaus, August, assignor.)						
Betham, William R., Chicago, Ill. Weather-strip for freight-car doors	449,399	Mar. 31	3471	874	54	1809
Bettendorf, Joseph W. (See Bettendorf, William P. and J. W.)						
Bettendorf, William P. (See French and Bettendorf.)						
Bettendorf, William P. and J. W., Davenport, Iowa. Machine for die-rolling metals	445,874	Feb. 3	593	145	54	628
Betterman, Henry C. (See Everest, Laban J., assignor.)						
Bettis, Horace I. (See Ullven, Alfred W., assignor.)						
Betts, Charles L., New York, assignor to Steam Gauge and Lantern Company, Syracuse, and R. E. Dietz Company, New York, N. Y. Wire frame	445,155	Jan. 27	1902	491	54	396
Beutelsbacher, Henry, Bridgeport, Conn. Hand-rubber	448,197	Mar. 17	1510	385	54	1424
Bevington, James H., Peoria, Ill., assignor to Peoria Metal Spinning Company, of Illinois. Spinning tubes	444,721	Jan. 13	1148	{295 / 296}	54	234
Bevis, William H. (See Foster and Bevis.)						
Bew, Charles, Angola, Ind. Drink-mixer	447,654	Mar. 3	615	152	54	1234
Bew, Charles, Angola, Ind. Ice-plane	447,655	Mar. 3	616	152	54	1234
Beyer, George W., Brooklyn, assignor to H. W. Harris, New York, N. Y. Mold	447,555	Mar. 3	470	116	54	1206
Beyer, George W., Brooklyn, assignor to H. W. Harris, New York, N. Y. Producing articles of plastic material	447,556	Mar. 3	471	116	54	1206

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Beylikgy, Marc W., New York, N. Y., assignor of one-half to C. J. Everett, Tenafly, N. J. Silicate compound	448,772	Mar. 24	2460	.....	54	1612
Beyron, Jacob W., Jackson, Ohio. Rein-support	447,656	Mar. 3	617	152	54	1234
Bickel, Henry M., Larned, Kans. Knockdown crate	444,999	Jan. 20	1652	423	54	339
Bickelhaupt, George, New York, N. Y. Skylight	445,685	Feb. 3	283	75	54	568
Bickford, Caroline M. (See Crowell, Milton B., assignor.)						
Bidwell, George A., Pittsfield, Mass. Barrel-washer	445,534	Feb. 3	7	2	54	512
Bidwell, George R. (See De Wolfe, Edward R., assignor.)						
Biederman, Charles O., Bridgewater, N. Y. Pencil-clasp	448,405	Mar. 17	1569	470	54	1492
Biel, Fred. J. (See Deeds, John B., assignor.)						
Biesen, Anthony, Merrill, Iowa. Buckle-connection	445,491	Jan. 27	2388	621	54	491
Bigelow, David E. (See Armstrong, Bigelow, and Osborn.)						
Bigelow, Lucius S., Harrisburg, Pa. Paper-ruling machine	445,518	Jan. 27	2429	634	54	499
Billeaux, Rudolph, Chicago, Ill. Hammock-chair	445,492	Jan. 27	2389	621	54	492
Billerg, Carl O. C., and P. A. N. Winand, Philadelphia, Pa. Alternating-current motor	444,934	Jan. 20	1550	397	54	318
Billings, Arthur T. (See Billiugs, William G. and A. W., assignors.)						
Billings, Avery W. (See Billings, William G. and A. W.)						
Billings, Harrison, Jamestown, N. Y. Lifting-jack	449,515	Mar. 31	3660	919	54	1846
Billings, William G. and A. W., assignors of one-third to A. T. Billings, Larned, Kans. Rotary engine	447,535	Mar. 3	442	{108 / 109}	54	1201
Bills, Willis Z. (See Wilson, Edgar W., assignor.)						
Binder, Carl. (See Meyer and Binder.)						
Binder, Gottlob, Philadelphia, Pa. Ironing-machine	444,722	Jan. 13	1149	{296 / 297}	54	234
Bingham, Henry, Freshfield, near Liverpool, England. Tobacco-smoking mixture	445,438	Jan. 27	2312	.....	54	478
Bingham, Leander K., New York, N. Y. Apparatus for making printers' rollers	444,206	Jan. 6	369	92	54	74
Bingham, Millard F., Chicago, Ill. Apparatus for casting printers' rollers	448,629	Mar. 24	2233	560	54	1569
Birch, George A., East Greenbush, N. Y. Apparatus for planing and corrugating ice	447,000	Feb. 24	2434	{605 / 606}	54	1012
Bird, Charles S. (See Piper, Myron H., assignor.)						
Bird, Demoncey, Madison, Wis. Windmill	445,034	Jan. 20	1694	435	54	347
Bird & Son, F. W. (See Zimmerman, Arnold W., assignor.)						
Birkby, Henry, Chillicothe, Ill. Track-layer	447,754	Mar. 10	772	{191 / 192}	54	1271
Birkery, Cornelius. (See Shea and Birkery.)						
Birkholz, Richard, Milwaukee, Wis. Desiccating apparatus	449,359	Mar. 31	3396	{854 / 855}	54	1795
Birkmire, William H., assignor to E. G. Soltmann, New York, N. Y. Fountain ruling pen	445,944	Feb. 3	699	170	54	650
Bisaner, Jacob H., Lincolnton, N. C. Separator	448,198	Mar. 17	1510	385	54	1424
Bisceglia, Salvatore, Chicago, Ill. Adjustable pattern for drafting garments	447,932	Mar. 10	1087	273	54	1331
Bishop, A. Cushman. (See Haulenbeck, John H., assignor.)						
Bishop, Abner B., Medina, Ohio. Fifth-wheel for wagons	448,843	Mar. 24	2569	644	54	1633
Bishop, Amos D. (See Wall, Jones, and Bishop.)						
Bishop, James D., Brooklyn, N. Y. Insulated electric conductor	449,400	Mar. 31	3472	874	54	1810
Bissell, Thomas A., Buffalo, N. Y. Car-coupling	448,406	Mar. 17	1570	470	54	1492
Bittinger, Hans, Brunswick, Germany. Dust-collector	446,053	Feb. 10	893	216	54	693
Bixler, Orlando, Wellston, Ohio. Railway-switch	448,112	Mar. 10	1361	348	54	1385
Blachon, Pétrus, and E. Mimard, St. Etienne, France. Breech-loading gun	444,574	Jan. 13	941	244	54	195
Black, Corydon W. (See Tredwell and Black.)						
Black, David W., assignor to B. Masseth, Butler, Pa. Casing-spear	444,061	Jan. 6	126	31	54	28
Black, Stephen S., Pasadena, Cal. Agricultural implement for irrigating	445,510	Jan. 27	2418	631	54	496
Black, Stephen S., assignor of one-half to E. A. Cochran, Pasadena, Cal. Skate	446,421	Feb. 17	1516	373	54	826
Blackall, Robert C., *et al.* (See Murray, Thomas E., assignor.)						
Blackmer, Orlando C., Oak Park, Ill. Calendar	445,745	Feb. 3	379	97	54	588
Blackmore, George C. and L. R., Newark, N. J. Radiator	448,630	Mar. 24	2234	{560 / 561}	54	1569
Blackmore, James E., Grand Rapids, Mich. Spool-holder	444,113	Jan. 6	213	54	54	43
Blackmore, Lawrence R. (See Blackmore, George C. and L. R.)						
Blackstock, Ira B., *et al.* (See Elliott, George C., assignor.)						
Blackstock, Robert, *et al.* (See Elliott, George C., assignor.)						
Blackstock, William M., *et al.* (See Elliott, George C., assignor.)						
Blackwell, Francis O., New York, N. Y., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-motor truck	448,199	Mar. 17	1511	{385 / 386}	54	1425
Blackwell, Francis O., New York, N. Y., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-railway conduit	449,196	Mar. 31	3114	786	54	1745
Blackwell, Francis O., New York, N. Y., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-motor truck	449,197	Mar. 31	3115	786	54	1746
Blackwell, Josiah L., New York, N. Y. Conduit-inspector	444,687	Jan. 13	1105	286	54	226
Blades, Harry H., Detroit, Mich. Trolley for electric railways	444,803	Jan. 20	1474	380	54	301
Blades, Harry H., assignor to Detroit Motor Company, Detroit, Mich. Electric dental motor	447,291	Mar. 3	11	4	54	1120
Blaine, David W., Pratt, Kans. Corn-harvester	444,723	Jan. 13	1151	{297 / 298}	54	235
Blaine, George E., and P. T. South, Waynesville, Ohio. Combined fence and tree protector	446,849	Feb. 24	2179	543	54	967
Blair, David G., *et al.* (See Osborn, David L., assignor.)						
Blair, John, North Orillia, and A. G. Hunter, Dundalk, Ontario, Canada. Pyro-chemical battery	446,727	Feb. 17	1986	495	54	917
Blake, John W., Marshall, Minn. Barbed wire for fences	446,607	Feb. 17	1793	444	54	881
Blake, Rufus W., assignor to Sterling Company, Derby, Conn. Pedal attachment for pianos	445,035	Jan. 20	1695	436	54	347
Blake, William H., 2d, and E. T. Bradley, Swanton, Vt. Flexible rule	447,657	Mar. 3	617	152	54	1234
Blakely, William, Bournemouth West, England. Crank for bicycles	446,280	Feb. 10	1289	315	54	767
Blalock, David. (See Mace, Harvey A., assignor.)						
Blanchard, Milton E. (See Wood, Franklin J., assignor.)						
Blanchard, Porter H., *et al.* (See Connett, Matthew F., Jr., assignor.)						
Blank, Alois, St. Louis, Mo. Water-proof and fire-proof material for roofing, &c	448,495	Mar. 17	2009	502	54	1518
Blauvelt, James M. S., Brooklyn, N. Y. Coin-controlled weighing-scale	448,200	Mar. 17	1513	386	54	1425
Blauvelt, James N., Brooklyn, N. Y. Coin-controlled dancing figure	445,535	Feb. 3	9	2	54	512
Blessing, Charles A., Philadelphia, Pa. Siphon-valve flushing apparatus for water-closets	446,808	Feb. 17	2107	524	54	943
Bliss Company, E. W. (See Cayley and Courtman, assignors.)						
Bliss, John L., Brooklyn, N. Y. Ship's binnacle	448,201	Mar. 17	1515	386	54	1426
Block, David, New York, N. Y. Sheet-metal cabinet	445,388	Jan. 27	2237	580	54	462
Block, Israel. (See Goldstein and Block.)						
Blodgett, William E., Faribault, assignor of one-half to I. A. Barnes, Minneapolis, Minn. Holder	446,545	Feb. 17	1710	419	54	864

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Bleede, Victor G., Baltimore, Md. Coloring and finishing fabrics	449,104	Mar. 31	2 63	.....	54	1718
Blendell, John M., assignor to F. E. Tobe, Baltimore, Md. Railway-car gear	449,643	Mar. 31	3875	969, 970	54	1886
Blendell, John M., assignor to F. E. Tobe, Baltimore, Md. Draw-iron for horse-cars	449,644	Mar. 31	3877	970	54	1886
Blendell, John M., assignor to F. E. Tobe, Baltimore, Md. Railway-car brake	449,645	Mar. 31	3879	970	54	1887
Blendell, John M., assignor to F. E. Tobe, Baltimore, Md. Draft-pole for horse-cars	449,646	Mar. 31	3880	970	54	1887
Blendell, John M., assignor to F. E. Tobe, Baltimore, Md. Whiffletree	449,647	Mar. 31	3880	971	54	1887
Blood, Manrice E., Kalamazoo, Mich. Parcel-carrier for bicycles	446,748	Feb. 17	2017	504	54	924
Bloom, Samuel S. (See Page and Bloom.)						
Bloom, William H. (See McNiece and Bloom.)						
Bloominger, Nathaniel F., Rochester, Ill. Cultivator	444,986	Jan. 20	1633	419	54	335
Blum, Christian G., Collinsville, Ill. Device for use in brazing and coating stock-bells	444,288	Jan. 6	488	127	54	97
Blume, Charles A., and D. Lanum, Colfax, Ind. Steam-engine	447,292	Mar. 3	12	4, 5	54	1120
Blue, Charles E., Wellsburg, W. Va. Inkstand	446,591	Feb. 17	1775	438	54	877
Boardman, Anson P., Watertown, Wis. Polishing-machine	445,030	Jan. 20	1688	434	54	346
Bock, Henry F., Scester, Ill. Hub-attaching device for vehicle-axles	444,517	Jan. 13	847	220	54	177
Bock, William A., Chicago, Ill. Switch-stand	447,424	Mar. 3	245	62	54	1163
Bodenhamer, Levi I., Kernersville, N. C. Medicine-case	444,216	Jan. 6	383	95	54	76
Bodenstein, Henry, Staatsburg, N. Y. Ice cutter or plow	449,516	Mar. 31	3661	919, 920	54	1847
Bodenstein, Henry, Staatsburg, N. Y. Cutter for ice-plows	449,517	Mar. 31	3662	920	54	1847
Bodie, Charlie H. (See Meany and Bodie.)						
Bodley, Alfred G., and J. F. Beelman, Plymouth, Ohio. Life and property saving derailing-frog	444,039	Jan. 6	93	24	54	21
Boecher, Robert H. (See Jahr and Boecher.)						
Boecker, Martin, Friedenshütte, near Morgenroth, Germany. Gas-heating device for steam-boilers	445,420	Jan. 27	2290	594	54	473
Boehringer, John G. and J. A., Buffalo, N. Y. Printer's press-guide	447,293	Mar. 3	15	5	54	1121
Boehringer, Joseph A. (See Boehringer, John G. and J. A.)						
Boening, Ernest. (See Sundh, August, assignor.)						
Boesel, Jacob. (See Broadhead, William H., assignor.)						
Bogert, John L., Flushing, N. Y. Lathe	444,544	Jan. 13	889	231, 232	54	185
Bogue & Mills Manufacturing Company. (See Mills, Mortimer B., assignor.)						
Bohlinger, Alfred P., *et al.* (See Brown, Lewis A., assignor.)						
Bohlinger, Alfred P., St. Louis, Mo. Basket-hamper	446,578	Feb. 17	1756	432	54	873
Bohls Cigarette Machine Company. (See Bohls, Henry, assignor.)						
Bohls, Henry, San Francisco, Cal., assignor to Bohls Cigarette Machine Company, Lynchburg, Va. Cigarette-machine	445,036	Jan. 20	1696	436, 437	54	347
Bohne, Hattie C., assignor of one half to Bohne Knitting Works, Jacksonville, Ill. Knit garment	445,945	Feb. 3	700	171	54	650
Bohne Knitting Works. (See Bohne, Hattie C., assignor.)						
Boler, William G. (See Kent, Boler, and Kent.)						
Bollenbacher, Martin C., Bloomington, Ind. Table-operating mechanism for lathes	449,461	Mar. 31	3581	902	54	1830
Bolte, Frank H., assignor of one-half to P. H. Sercombe, Milwaukee, Wis. Bicycle	447,933	Mar. 10	1089	273	54	1331
Bolton, James M., Springfield, Ill. Roll-paper holder and cutter	448,113	Mar. 10	1362	349	54	1385
Boluss, Alfred R. (See Bothwell, William T., assignor.)						
Bombrake, Lewis S., Waynesburg, Ohio. Oil-can	446,809	Feb. 17	2110	525	54	944
Bond, Charles W., Ripyville, Ky. Band-cutter and feeder	445,668	Feb. 3	242	66	54	559
Bond, Elijah J., assignor to C. W. Kennard and W. H. A. Maupin, Baltimore, Md. Toy or game	446,054	Feb. 10	894	217	54	603
Bond, Nathan O., Fairfax Court-House, Va., assignor of one-half to F. W. Pratt, Washington, D. C. Tide and wave power apparatus	446,422	Feb. 17	1518	374	54	826
Bone, John A., *et al.* (See Knukle, Kenton C., assignor.)						
Bonner, Alfred, Paulding, Ohio. Hub-boring machine	444,810	Jan. 20	1300	338	54	272
Bonneville, Amable B. (See Krottnaurer, Paul, assignor.)						
Bonsall, William P., Toronto, Canada. Addressing-machine	449,032	Mar. 24	2850	725	54	1687
Bonwill, William G. A., Philadelphia, Pa. Hand-piece for dental or surgical engines	449,401	Mar. 31	3473	875	54	1810
Bookser, Rudolph C., Buffalo, N. Y. Tuning-peg for violins	444,972	Jan. 20	1612	412	54	330
Bookser, Rudolph C., Buffalo, N. Y. Retaining device for tuning-pegs	448,872	Mar. 24	2616	657	54	1641
Bookwalter, Francis M., Springfield, Ohio. Water-wheel	445,844	Feb. 3	549	134	54	619
Bookwalter, Francis M., Springfield, Ohio. Water-wheel	447,204	Mar. 3	15	5	54	1121
Bookwalter, Frank M , Springfield, Ohio. Water-wheel	445,845	Feb. 3	551	134	54	619
Booth, Alfred. (See Lauterback, Edward G., assignor.)						
Booth, James, Halifax, England. Machine for producing knitted pile fabrics	447,226	Feb. 24	2845	705, 706	54	1089
Booth, Robert. (See Baker and Booth.)						
Borden, Albert F. (See Kase and Borden.)						
Borden, Jefferson S., Valley Centre, Cal. Table	444,191	Jan. 6	349	85	54	70
Boring, Frank M., assignor of one-half to E. F. Cooper, Dayton, Ohio. Harness-pad	449,198	Mar. 31	3116	786	54	1746
Boris, Pierre J., Boston, Mass. Indicator for cars	444,040	Jan. 6	94	24	54	22
Bormann, Hermann, assignor to J. W. Douglass, Philadelphia, Pa. Apparatus for coating or saturating and finishing roofing fabrics	448,873	Mar. 24	2617	658	54	1641
Bornholdt, Adolph, assignor of one-third to J. Glatz, Brooklyn, N. Y. Vacuum-pump	446,960	Feb. 24	2372	590, 591	54	1001
Bornot, André F., Philadelphia, Pa. Machine for finishing blankets, &c	444,688	Jan. 13	1106	286	54	226
Boruff, Daniel C., Bedford, Ind. Type-writing machine	444,119	Jan. 6	222	54	54	46
Bosart, Timothy L., assignor to Acorn Steam Boiler and Heating Company, Indianapolis, Ind. Adjustable stove-back	445,421	Jan. 27	2291	594	54	474
Boss, Ella M. (See Boss, Fred E., assignor.)						
Boss, Fred E., assignor to E. M. Boss, New York, N. Y. Holder for washers, &c	444,328	Jan. 6	541	140	54	108
Boston Cash Indicator and Recorder Company. (See Webster, Jerome J., assignor.)						
Boston Cash Indicator and Recorder Company. (See Webster and Drew, assignors.)						
Bostwick, William D. (See Knukle, Erastus B., assignor.)						
Bosworth, John, Battle Creek, Mich. Fly-frightener	447,755	Mar. 10	775	192	54	1272
Bothwell, William T., Jersey City, N. J., assignor of one-half to A. R. Boluss, Norwood, Ohio. Car-brake	444,145	Jan. 6	277	66	54	57
Bothwell, William T., Jersey City, N. J., assignor of one-half to A. R. Boluss, Norwood, Ohio. Automatic pneumatic brake	444,146	Jan. 6	278	66	54	57
Bottlers' Specialty Company. (See La Casse and Wile, assignors.)						
Bottome, Turner D., Hoosick, N. Y. Asymmetrical electrical resistance	445,687	Feb. 3	285	75	54	568
Bottome, Turner D., Hoosick, N. Y. Incandescent electric lamp	445,688	Feb. 3	287	76	54	569
Bottome, Turner D., New York, assignor to J. B. Tibbits, Hoosick, N. Y. Cut-out for incandescent lamps	445,686	Feb. 3	284	75	54	568

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Bottsford, Russell, Cleveland, Ohio. Steam-boiler	445,689	Feb. 3	288	76	54	569
Bonghan, James A., Brooklyn, N. Y. Screen	447,034	Mar. 10	1090	274	54	1331
Boulton, Harold E., *et al.* (See Gabbett, Edmond R., assignor.)						
Boulton, Samuel B., *et al.* (See Gabbett, Edmond R., assignor.)						
Bourne, Edward, Allegheny, Pa. Gas-stove	448,747	Mar. 24	2424	606	54	1605
Bourne, Theodore F., Clifton, N. Y. Type-writing machine	446,850	Feb. 24	2180	543, 544	54	967
Bourque, William J., *et al.* (See Roche, Francis J., assignor.)						
Bouton Foundry Company. (See Giebermann, Rudolph, assignor.)						
Bowe, Arthur E. (See Pease, Roger S., assignor.)						
Bowen, Ephraim N., Buffalo, N. Y. Bicycle-stand	445,710	Feb. 3	321	85	54	575
Bowen, Ernest S., Auburn, N. Y. Governor for steam-engines	447,039	Feb. 24	2514	624	54	1027
Bowen, John L. (See Barwis, Thomas S., assignor.)						
Bowen, John W., Jacksonville, Ill. Folding chair	445,156	Jan. 27	1903	491	54	396
Bower, Byron B., Bainbridge, Ga. Harness	448,292	Mar. 17	1688	427	54	1458
Bower, Charles C., Birmingham, Ala., and A. B. Evans, Thompsontown, Pa. Wagon-jack	447,756	Mar. 10	777	193	54	1272
Bowers, Edward L. (See Grout and Bowers.)						
Bowers, William F., San Francisco, Cal. Swinging hose-reel	449,033	Mar. 24	2852	726	54	1688
Bowes, John E., and L. H. Harris, Aurora, Ill. Guard-rail or foot-guard for railway-frogs	444,518	Jan. 13	849	221	54	177
Bowker, William, West Medford, and R. Williams, Boston, Mass. Loom	448,202	Mar. 17	1516	386, 387, 388, 389	54	1426
Bowles, David, assignor of one-half to W. P. Hastings, Maryville, Tenn. Car-coupling	447,522	Mar. 3	422	103	54	1197
Bowles, Frank L., Detroit, Mich. Corset clasp	448,631	Mar. 24	2230	561	54	1569
Bowles, John, Washington, D. C. Saw	445,239	Jan. 27	2025	522	54	420
Bowley, Arthur S. (See Archer and Bowley.)						
Bowman, Archibald G., Jolietville, assignor of one-half to P. S. Woods, Lebanon, Ind. Clothes-pin	447,504	Mar. 3	395	96	54	1192
Bowman, Charles H., Alliance, Ohio. Hay-tedder	446,728	Feb. 17	1987	490	54	918
Bowman, Frederick V., Huntington, Conn. Collapsible paper box	448,813	Mar. 24	2520	631	54	1621
Bowman, George W., Denver, Colo. Cable railway	445,157	Jan. 27	1904	491	54	396
Boyd, Joseph H. (See Ansley and Boyd.)						
Boyd, Thomas C., Chicago, Ill. Self-adjusting frost-protector for ventilating-pipes	449 199	Mar. 31	3117	787	54	1746
Boyd, William S., Washington, D. C. Type-cleaner for type-writing machines	445,519	Jan. 27	2430	634	54	499
Boyden Brake Company. (See Boyden, George A., assignor.)						
Boyden, Byron E., Bridgeport, Conn. Banjo	449,200	Mar. 31	3118	787	54	1746
Boyden, George A , assignor to Boyden Brake Company, Baltimore, Md. Engineer's brake-valve	445,132	Jan. 20	1850	479	54	377
Boyer, Arthur G. (See Hull and Boyer.)						
Boyer, John M., Cincinnati, Ohio. Cleaning boilers	444,481	Jan. 13	783	.....	54	164
Boyle, Charles W. (See Dutcher and Boyle.)						
Boynton, Caroline H. (See Boynton, John F., assignor.)						
Boynton, Eben M., West Newbury, Mass. Electric locomotive	446,821	Feb. 17	2129	528, 529	54	948
Boynton, John F., Syracuse, N. Y., assignor to C. H. Boynton. Cement	448,632	Mar. 24	2237	.....	54	1569
Boynton, Nathaniel A., New York, N. Y. Fire-place heater	444,987	Jan. 20	1634	419	54	335
Boyrer, William, New York, N. Y. Bail-lock	445,493	Jan. 27	2390	622	54	492
Brackett, John W., Boston, Mass., and H. N. Moore, Savannah, Ga. Repeating-action for pianos	444,041	Jan. 6	95	24	54	22
Braden, Thomas, Des Moines, Iowa. Alarm attachment for door-knobs	445,218	Jan. 27	2040	515	54	414
Bradford, Charles K., Lynnfield, Mass. Sole-edge-inking device	445,158	Jan. 27	1905	492	54	396
Bradley, Charles S. (See Wheeler and Bradley.)						
Bradley, Charles S., Yonkers, N. Y., assignor to Fort Wayne Electric Light Company, Fort Wayne, Ind. Phase-indicator for alternating electric currents	444,791	Jan. 13	1266	318	54	255
Bradley, Christopher C., *et al.* (See Bunnell, Francis A., assignor.)						
Bradley Company, Milton. (See Richards, Erwin B., assignor.)						
Bradley, Edward. (See Crane, Thomas S., assignor.)						
Bradley, Edward E., assignor to Atwood Machine Company, Stonington, Conn. Reeling-machine	449,360	Mar. 31	3102	855, 856	54	1795
Bradley, Edward T. (See Blake and Bradley.)						
Bradley, Ernest W., assignor to Taplin, Rice & Company, Akron, Ohio. Cutter and reamer grinder	444,875	Jan. 20	1444	375	54	208
Bradley, John, Philadelphia, Pa. Latch	446,766	Feb. 17	2044	509	54	930
Bradley, John, North Chelmsford, Mass. Striping mechanism for knitting-machines	448,007	Mar. 10	1216	309	54	1356
Bradley Manufacturing Company, David. (See Packer, John F., assignor.)						
Bradley, William W. (See Packer and Bradley.)						
Bradley, William W., and W. N. Packer, Canton, Ohio. Electric hand-setting mechanism for clocks	444,482	Jan. 13	784	204	54	164
Bradt, Charles E., *et al.* (See Pringle, Eugene, assignor.)						
Brady, Frank, *et al.* (See McGlinchey, Charles E., assignor.)						
Brady, Frank, Chicago, Ill., assignor, by mesne assignments, to American Railway Tricycle Company, Portland, Me. Railway-velocipede	447,935	Mar. 10	1092	274	54	1332
Brady, Terrence E. (See Ferry, Frank P., assignor.)						
Braenel, John, Cleveland, Ohio. Combined furniture and extension-bedstead	446,729	Feb. 17	1989	496	54	918
Bragge, Robert, Aston, England. Stop-watch	448,930	Mar. 24	2695	680	54	1657
Brain, Robert D., and C. T. Shafer, Springfield, Ohio; said Shafer assignor to said Brain. Apparatus for applying strips to newspapers or other periodicals	444,167	Jan. 6	310	75	54	61
Branch, James R., Richmond, Va. Electric insulator	445,969	Feb. 10	742	182	54	667
Brandenburg, Anthony A., Denver, Colo. Combined sleeping and day coach	444,741	Jan. 13	1197	310, 311	54	243
Brandenburg, Anthony A., Denver, Colo. Step-ladder	448,190	Mar. 10	1485	379	54	1410
Brandt, Christopher C. F., Muscatine, Iowa. Enameling photographs and other prints	444,084	Jan. 6	165	.....	54	35
Brandt, Thorwald, Baden, Germany. Buckle for securing straps	448,496	Mar. 17	2010	503	54	1518
Brankey, John, Lemont, Ill. Machine for tapping mains	447,001	Feb. 24	2436	606	54	1013
Brannen, D. J. (See Thorp, Thomas J., assignor.)						
Branson, Edwin R., Philadelphia, Pa. Circular-knitting machine	445,690	Feb. 3	288	76	54	569
Branth, Johan F. S. (See Sprague and Branth.)						
Bray, Mellen. (See Bertrand, Joseph E., assignor.)						
Brayton, James T., Chicago, Ill., assignor to Geneva Optical Company, of Illinois. Gage for determining the radius of curvature	447,276	Feb. 24	2931	729	54	1108
Breck, Charles H., trustee. (See Smith, Archibald, assignor.)						
Bremer, Max, New Bedford, Mass. Handle for cotlins	444,973	Jan. 20	1613	413	54	330
Bremer, Otto A., San Francisco, Cal. Set-trigger	446,912	Feb. 24	2306	573	54	989

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Brenner, Frederick and J., Cincinnati, Ohio. Stave-bending machine	447,295	Mar. 3	16	6	54	1121
Brenner, John. (See Brenner, Frederick and J.)						
Brent, Henry G., Brunswick, Mo. Bridle	444,085	Jan. 6	166	41	54	35
Brent, Robert B. (See McDonald and Brent.)						
Bresnan, Peter J., New York, N. Y. Portable table	445,159	Jan. 27	1906	492	54	396
Bretney, Eugene, Indianapolis, Ind., assignor, by mesne assignments, to Cockle Separator Manufacturing Company, Milwaukee, Wis. Dust-collector	446,507	Feb. 17	1654	404	54	853
Bretzfeld, Samuel. (See Leck, Henry, assignor.)						
Brewer, George O., Shenandoah, Iowa. Harness	449,201	Mar. 31	3120	787	54	1747
Brewer, James H., assignor of one-half to G. H. Ensign, Troy, N. Y. Clothes-line connecting-plate	443,987	Jan. 6	1	1	54	3
Brewer & Smith Visual Signal Company. (See Wood, Frank B., assignor.)						
Brewer, Wesley S., Cincinnati, Ohio. Gas-compression pump	448,874	Mar. 24	2619	658	54	1642
Breyer, Friedrich, Vienna, Austria-Hungary. Filter, &c	444,483	Jan. 13	787	205	54	165
Brice, Alfred L., assignor of one-half to F. M. White, Minneapolis, Minn. Combined umbrella and cane	448,203	Mar. 17	1523	390	54	1426
Brice, Edward C., Washington, D. C. Artificial stone	449,067	Mar. 24	2905	.....	54	1698
Brice, Richard J., assignor of one-half to D. Culhane, Brooklyn, N. Y. Utilizing galvanized waste	448,600	Mar. 17	2172	.....	54	1549
Brickell, Nicholas, Poplar Grove, Ark. Burial apparatus	445,875	Feb. 3	594	146	54	628
Bridges, Frank B., *et al.* (See Mitchell, James C., assignor.)						
Bridges, W. G. (See Fisk, Joseph M., assignor.)						
Briesler, Charles W., Lincoln, Nebr. Switch-board for heat-regulating systems	445,970	Feb. 10	743	182	54	668
Briggs, Franz S., New Hampton, Iowa. Baby-carriage	444,519	Jan. 13	849	221	54	177
Briggs, Harrison T., South Bend, Ind. Wrench	448,114	Mar. 10	1363	349	54	1386
Briggs, Henry, Philadelphia, Pa. Velocipede	448,204	Mar. 17	1524	390	54	1427
Briggs, James E., Cortland, N. Y. Show-rack for windows	446,982	Feb. 24	2410	600	54	1008
Briggs, Morrill E. (See Hadaway, John B., assignor.)						
Briggs, William H., Albany, N. Y. Track-sweeper	445,219	Jan. 27	2001	515	54	415
Briggs, William H., Springfield, Mass. Type lever and hanger for type-writing machines	448,875	Mar. 24	2622	658	54	1642
Brigham, Henry M., Brooklyn, N. Y. Coin-holder	449,280	Mar. 31	3243	821	54	1770
Bright, Richard A., and W. A. Peck, Providence, R. I.; said Bright assignor to said Peck. Flexible roll for cigar machines	445,937	Feb. 3	690	168	54	648
Bright, Tom F., Detroit, Tex. Car-coupling	448,497	Mar. 17	2611	503	54	1518
Brill, George M., Philadelphia, Pa. Car-brake	445,307	Jan. 27	2120	549	54	438
Brill, John A., Philadelphia, Pa. Motor-truck for cars	445,308	Jan. 27	2123	549 / 550	54	439
Brill, John A., Philadelphia, Pa. Railway-car	446,423	Feb. 17	1520	374 / 375	54	826
Brill, John L. (See Brown, Augustus L., assignor.)						
Brinck, Wilhelm, Linden, near Hanover, Germany. Lubricating compound	444,626	Jan. 13	1005	.....	54	208
Brine, James W., *et al.* (See Garland, William H., assignor.)						
Brinkerhoff, Jacob, Auburn, N. Y. Ice-tongs	446,171	Feb. 10	1097	269	54	729
Brinkerhoff, Warren M. (See Smith, De Wane B., assignor.)						
Brinkerhoff, Warren M., Auburn, N. Y. Spring-tooth for harrows	447,936	Mar. 10	1094	274	54	1332
Brinkerhoff, Warren M., A. W. Stevens, and L. D. Swart, Auburn, N. Y. Cultivator	447,443	Mar. 3	982	71, 72	54	1171
Brinton, Henry, Philadelphia, Pa. Loop-holding mechanism for knitting-machines	445,494	Jan. 27	2391	622	54	492
Brisbin, George N., and J. Copper, Spencer, Iowa. Working body churn	448,205	Mar. 17	1526	390	54	1427
Briscoe, Henry S., Morrisonville, Ill. Horseshoe	445,000	Jan. 20	1655	424	54	330
Bristol Brass and Clock Company. (See Luce, Bartlett P., assignor.)						
Britton, Joseph A. (See Norton, Frederick, assignor.)						
Broadbent, Eli W. (See Kramer, Martin, assignor.)						
Broadbooks, Peter, Batavia, N. Y. Thill-coupling	448,707	Mar. 24	2353	589	54	1592
Broadhead, William H., assignor of two-thirds to J. Boesel, Cleveland, Ohio. Door-check	445,462	Jan. 27	2345	609	54	483
Brock, Matthias, Boston, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Lasting-machine	444,792	Jan. 13	1267	328	54	235
Brock, William E., Plainfield, N. J. Veneered lumber	444,042	Jan. 6	96	25	54	22
Brock, William E., Plainfield, N. J. Mold for veneering lumber	445,605	Feb. 3	137	35, 36	54	538
Brockman, Augustus H., Minneapolis, Minn. Wheat-heater	445,596	Feb. 3	10	3	54	513
Brockmann, Ernst, Ellrich, Germany. Show-stand	444,575	Jan. 13	942	244	54	195
Brockmann, Ernst, Ellrich, Germany. Show-stand	447,658	Mar. 3	618	153	54	1235
Brocksieper, Fredrich W., assignor to Sargent & Company, New Haven, Conn. Pliers	444,207	Jan. 6	370	92	54	74
Brodard, Joseph M., Clarksburg, W. Va. Signaling apparatus for railways	445,918	Feb. 3	656	160	54	641
Brohard, Joseph M., Clarksburg, W. Va. Sash-holder	448,498	Mar. 17	2012	503	54	1519
Broichgans, Stephan, Milwaukee, Wis. Fire indicator and extinguishing system	446,200	Feb. 10	1140	279	54	737
Bronder, Gaston A., New York, N. Y. Gas-retort-discharging apparatus	447,022	Feb. 24	2480	617	54	1020
Bronner, Edmond D. (See Lamont and Bronner.)						
Brooke, Isaac, Pottstown, Pa. Hitching-box	447,937	Mar. 10	1095	275	54	1332
Brooke, William E., assignor to American Saw Company, Trenton, N. J. Saw-tooth	446,810	Feb. 17	2111	525	54	944
Brooke, Samuel, Macksville, Kans. Corn-harvester	447,296	Mar. 3	18	6	54	1122
Brookes, Leonard E., assignor to himself and W. H. Smith, Chicago, Ill. Paper-cutting mechanism for printing-presses	448,806	Mar. 24	2508	628 / 629	54	1621
Brooks & Co., E. J. (See Brooks, Edward J., assignor.)						
Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Co., New York, N. Y. Inking-pad	447,714	Mar. 3	700	175	54	1250
Brooks, Harry S., Elmira, N. Y. Apparatus for printing in colors	444,231	Jan. 6	402	101	54	84
Brooks, James A. (See Aycock, William C. and J. A., assignors.)						
Brooks, James W., trustee. (See Glidden and Elliott, assignors.)						
Brooks, James W., trustee. (See Winter, Henry W., assignor.)						
Brooks, John, Plainfield, N. J. Registering device for printing-presses	447,536	Mar. 3	444	109	54	1201
Brooks, John W. (See Weaver and Brooks.)						
Brooks, Thomas W., San Francisco, Cal. Hydrant	444,329	Jan. 6	542	141	54	108
Brooksbank, Matthew H., West Bergen, N. J. Liquid-fuel burner	448,407	Mar. 17	1872	470 / 471	54	1493
Broomell, Albert P., York, Pa. Combined cooking and heating range	445,037	Jan. 20	1702	438	54	348
Brosius, J. M. (See Bessonette and King, assignors.)						
Brosius, Samuel G., Columbus, Ohio. Rotary steam-engine	445,038	Jan. 20	1705	438 / 439	54	348
Brosius, Samuel G., Savannah, Ga. Rotary steam-engine	445,039	Jan. 20	1708	439 / 440	54	349
Brosseau, Joseph A., Concordia, Kans. Mop-stick, mop-wringer, and scrubbing-brush holder combined	444,043	Jan. 6	97	25	54	22
Brott, George F., assignor of one-eighth to L. S. Wells, Washington, D. C. Making shoes	448,206	Mar. 17	1526	391	54	1427

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Brott, Lucien A., Groton, N. Y. Vacuum-engine	448,907	Mar. 24	2665	669 / 670	54	1651
Brotz, Valentine, Buffalo, N. Y. Sandpapering-machine	449,435	Mar. 31	3335	891 / 892	54	1822
Brough, Thomas J., Baltimore, Md. Corset-fastening	447,630	Mar. 3	584	144	54	1227
Bronse, Martin N., Billingsville, Ind. Watering-trough	446,628	Feb. 17	1827	451	54	887
Brown, Adolph G., New York, and J. P. Crosby, Flatbush, N. Y. Game-board	446,320	Feb. 10	1351	329 / 330	54	780
Brown, Alexander T., Syracuse, N. Y. Type-writing machine	445,350	Jan. 27	2189	567	54	453
Brown, Alfred M., Worcester, Mass. Bevel	445,520	Jan. 27	2434	634	54	499
Brown, Andrew H., New York, N. Y. Leak-detector for pipes	445,495	Jan. 27	2393	622	54	492
Brown, Augustus L., assignor of one-half to J. L. Brill, New York, N. Y. Musical toy	446,201	Feb. 10	1142	279	54	737
Brown, Charles A. (See Harder, William, assignor.)						
Brown, Charles F., trustee. (See Seaver and Hamm, assignors.)						
Brown, Daniel R., *et al.* (See Chevers, Aurion V., assignor.)						
Brown, David F., assignor of one half to H. F. Brown, Omaha, Nebr. Brush-scraper attachment for paint-pails	445,876	Feb. 3	597	146	54	628
Brown, Edward K., assignor to himself and G. Phillips, Brooklyn, N. Y. Dynamo-electric machine and electric motor	446,092	Feb. 10	949	233	54	704
Brown, Ellsworth, assignor of one-half to J. Haya, Dayton, Ohio. Push screw-driver	447,277	Feb. 24	2033	729	54	1108
Brown, Flora L., Chicago, Ill. Apparatus for making coffee	447,002	Feb. 24	2438	606	54	1013
Brown, Francis C., assignor to M. Brown, New Brighton, N. Y. Fountain-pen filler	446,202	Feb. 10	1143	280	54	738
Brown, Fred H., Chicago, Ill. Induction-coil	446,730	Feb. 17	1990	497	54	916
Brown, George A., Park City, Utah Ter. Plotter	444,312	Jan. 6	518	135	54	104
Brown, Harry F. (See Brown, David F., assignor.)						
Brown, Henry W., Cambridge, Mass. Centrifugal pump	445,919	Feb. 3	658	161	54	641
Brown, Hiram D., Hubbard, Tex. Railway-track lifter	449,308	Mar. 31	3297	833	54	1778
Brown, James K., Portland, Me. Heater	445,010	Jan. 20	1667	428	54	342
Brown, James O., assignor to Brown Self Sharpening Mowing Machine Company, Boston, Mass. Mowing-machine	444,238	Jan. 6	418	104 / 105	54	82
Brown, James W., *et al.* (See Swett, Sullivan C., assignor.)						
Brown, John F., Chicago, Ill., assignor to A. R. Baker, Indianapolis, Ind. Order-holder	444,811	Jan. 20	1302	338	54	272
Brown, Joseph W. (See Brown, Perry and J. W.)						
Brown, Junius W., assignor of one-half to J. W. Wells, Russellville, Ark. Baling-press	446,128	Feb. 10	1010	249	54	716
Brown, Lewis A., assignor to A. P. Bohlinger and W. C. Backof, St. Louis, Mo. Basket-hamper	446,579	Feb. 17	1757	432 / 433	54	873
Brown, Lewis J., *et al.* (See Connett, Matthew F., Jr., assignor.)						
Brown, Marie. (See Brown, Francis C., assignor.)						
Brown, Melville F., *et al.* (See Heighington, John B. and W., assignors.)	449,346	Mar. 31	3373	850	54	1791
Brown, Millard F., and T. E. Smith, San Francisco, Cal. Kitchen-cabinet	444,484	Jan. 13	791	205	54	165
Brown, Perry, Louisville, Ky. Clamp	445,877	Feb. 3	598	147	54	629
Brown, Perry, Louisville, Ky., and J. W. Brown, Memphis, Tenn. Wagon	445,829	Feb. 3	529	128	54	615
Brown, Perry, Sharonville, Ohio, and J. W. Brown, Memphis, Tenn. Wagon						
Brown, Richmond R. (See Davis and Brown.)						
Brown, Robert G., Brooklyn, assignor to Standard Multiplex Telegraph Company, New York, N. Y. Telegraphy	446,424	Feb. 17	1523	375 / 376	54	827
Brown, Robert G., Brooklyn, assignor to Standard Multiplex Telegraph Company, New York, N. Y. Telegraphy	446,425	Feb. 17	1526	376	54	828
Brown, Samuel E., Kane, Ill. Grain-weighing machine	449,402	Mar. 31	3477	875	54	1811
Brown Self Sharpening Mowing Machine Company. (See Brown, James O., assignor.)						
Brown, Seth A., Buffalo, N. Y. Bicycle	446,181	Feb. 10	1109	272	54	732
Brown, Walter M., Albany, N. Y. Shipping-can	444,659	Jan. 13	1054	274	54	216
Brown, Walter M., Albany, N. Y. Shipping-can	444,660	Jan. 13	1055	274 / 275	54	217
Brown, Walter M., Albany, N. Y. Shipping-can	444,689	Jan. 13	1108	286	54	227
Brown, Walter M., Albany, N. Y. Shipping-can	444,876	Jan. 20	1445	376	54	999
Brown, Walter M., Albany, N. Y. Ink-well for desks						
Brown, Walter S. (See Sparks and Brown.)						
Brown, William W., assignor to E. Mnehsam, New York, N. Y. Toy puzzle	447,631	Mar. 3	585	144	54	1228
Brown, William W., and M. C. Reynolds, Culbertson, Nebr. Welding compound	444,044	Jan. 6	98	.....	54	22
Browne, Charles L. (See Holcombe, Alfred G., assignor.)						
Browne, F. L., *et al.* (See Cottrell, George R., assignor.)						
Browne, Samuel G., London, England. Cabinet for filing papers, &c	446,160	Feb. 10	1079	264 / 265	54	736
Brownell Car Company. (See Baier and Hart, assignors.)						
Brownell & Wight Car Company. (See Crow, Benjamin F., assignor.)						
Browning, Frank. (See Tnrver, Charles H., assignor.)						
Brownlee, Alexander, Dallas, Tex. Garbage-furnace	448,115	Mar. 10	1364	349	54	1386
Brueckel, Heinrich. (See Plischke and Brueckel.)						
Brunhoff, Edward. (See Lehmann and Brunhoff.)						
Brunhoff, Edward, and C. Lehmann, Chicago, Ill. Cigar-tip cutter	448,116	Mar. 10	1365	350	54	1386
Brunhoff, Edward, and C. Lehmann, Chicago, Ill. File-clip	448,117	Mar. 10	1366	350	54	1386
Brunt, William. (See Gamble, John E., assignor.)						
Brush, Charles F., assignor to Brush Electric Company, Cleveland, Ohio. Secondary battery	445,422	Jan. 27	2293	595	54	474
Brush Electric Company. (See Brush, Charles F., assignor.)						
Brüstle, Andrew, Hyde Park, assignor to J. Hood and S. H. Reynolds, Boston, Mass. Dental chair	447,487	Mar. 3	370	91	54	1188
Bryan, James G., Philadelphia, Pa. Water-closet	448,908	Mar. 24	2667	670	54	1651
Bryan, William L., San Antonio, Tex. Thill-coupling	448,499	Mar. 17	2013	503	54	1519
Bryant, Alexander, and W. J. Crow, New York, N. Y. Safety-valve for expansion-pipes	449,243	Mar. 31	3179	802	54	1758
Bryant, Emery H. (See Hopkins and Bryant.)	444,724	Jan. 13	1157	298	54	236
Bryant, Herbert B., Manchester, N. H. Carrier's knife						
Bryant, Stanley A., *et al.*, administrators. (See Massey, Gideon B.)						
Bryce, Andrew, Pittsburg, assignor of one-half to J. A. McConnell, Allegheny, Pa. Apparatus for finishing or cleaning surfaces	446,961	Feb. 24	2374	591 / 592	54	1001
Bryce, Andrew, Pittsburg, assignor of one-half to J. A. McConnell, Allegheny, Pa. Finishing wood surfaces	446,962	Feb. 24	2379	592	54	1002
Bryce, James C., assignor to Nichols & Shepard Company, Battle Creek, Mich. Belt-tension device	447,444	Mar. 3	284	72	54	1171
Bryon, William J. O., Jr., New York, N. Y. Water or air cylinder	446,426	Feb. 17	1528	376	54	828
Buchanan, Albert N., Brooklyn, N. Y. Fly-delivery for bronzing or other machines	447,101	Feb. 24	2906	647	54	1045
Buchanan, Charles G., Rockaway, N. J. Ore or rock breaker	446,658	Feb. 17	1876	466	54	896
Buchanan, Charles G., New York, N. Y. Magnetic ore-separator	446,767	Feb. 17	2045	509 / 510	54	930

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Buchanan, Luther H., Pasadena, assignor of one-half to J. D. Shorb, San Gabriel, Cal. Electric-arc lamp	447,746	Mar. 3	753	188	54	1260
Bucher & Gibbs Plow Company. (See Gibbs, Lewis, assignor.)						
Buchhop, Ferdinand. (See Meyrowitz and Buchhop.)						
Buchmiller, D. F. (See Iske, Anthony, assignor.)						
Buck, Edward A., *et al.* (See Leach, Rufus, assignor.)						
Buck, James E., Lansing, Mich. Gate	447,659	Mar. 3	619	154	54	1235
Buckeye Engine Company. (See Thompson, Joseph W., assignor.)						
Buckland, Henry B., Newcastle-upon-Tyne, England. Steam-boiler	449,244	Mar. 31	3180	802	54	1758
Buckland, Leverette C. (See Herndon and Buckland.)						
Buckley, Charles E., Amenia Union, N. Y. Device for watering stock	445,920	Feb. 3	659	161	54	641
Buckley, John, Boston, Mass. Water-closet-valve regulator	444,598	Jan. 13	863	224	54	180
Buckton, Albert R., Keighley, England. Folding baby-carriage	444,086	Jan. 6	167	41, 42	54	36
Bunce, Samuel W. (See Hewitt and Bunce.)						
Bufler, John A., San Francisco, Cal. Ice-cream freezer	447,747	Mar. 3	755	188	54	1261
Bugg, Owen T., assignor to American Manufacturing Export Company, Newark, N. J. Machine for removing lint from cotton-seed	446,321	Feb. 10	1354	330	54	870
Bulger, R. R., *et al.* (See Williams, Francis M., assignor.)						
Bulger, W. H., *et al.* (See Williams, Francis M., assignor.)						
Bullard, Ezekiel W., Barre, Mass., assignor of one-half to A. N. Elliott, Philadelphia, Pa. Fire-escape	448,176	Mar. 10	1463	373	54	1406
Bumstead, William T., assignor of one-half to H. M. Hill, Beatrice, Nebr. Attachment for baby-carriages	447,660	Mar. 3	620	154	54	1235
Bunch, John N., Eugene, Oreg. Washing-machine	448,118	Mar. 10	1367	350	54	1387
Bunker, William L., La Grange, Ill. Combined chair and hammock	446,659	Feb. 17	1878	{466 / 467}	54	897
Bunnell, Francis A., assignor to C. C. Bradley and M. E. Bunnell, Syracuse, N. Y. Apparatus for purifying water	445,537	Feb. 3	12	3	54	513
Bunnell, Mary E., *et al.* (See Bunnell, Francis A., assignor.)						
Bunnell, Morton G., assignor, by mesne assignments, to A. B. Anstin, Chicago, Ill. Machine for making and repairing roads	448,708	Mar. 24	2354	{590 / 591}	54	1592
Bunting, William, Jr., Brooklyn, assignor to Meyer-Snitlen Company, Limited, New York, N. Y. Wash-basin plug and mechanism	447,863	Mar. 10	970	243	54	1309
Burdon, Levi L., assignor to Burdon Seamless Filled Wire Company, Providence, R. I. Seamless compound gold and silver wire	446,618	Feb. 17	1811	448	54	881
Burdon, Levi L., assignor to Burdon Seamless Filled Wire Company, Providence, R. I. Producing seamless compound wire	446,619	Feb. 17	1812	448	54	884
Burdon Seamless Filled Wire Company. (See Burdon, Levi L., assignor.)						
Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Knob-shank	444,557	Jan. 13	911	237	54	189
Burgess, James R., Port Huron, Mich. Rail-joint fastening	445,971	Feb. 10	745	182	54	668
Burgoyne, John Y. (See McWhirter, Robert B., assignor.)						
Burk, Howard R., New York, N. Y. Globe-holder	448,119	Mar. 10	1369	350	54	1387
Burk, John W., Coldwater, Mich. Flour and cereal testing case	447,661	Mar. 3	621	154	54	1235
Burke, Daniel C., *et al.* (See Tanner, Jesse J., assignor.)						
Burke, Stephen E., assignor of one-half to L. W. Johnson, Edon, Ohio. Road-cart	446,508	Feb. 17	1655	404	54	853
Burkhard, Thomas, Brooklyn, N. Y. Candy-cream cooler	444,147	Jan. 6	279	67	54	57
Burkholder, Alfred, Toronto, Canada. Baby-walker. (Reissue)	11,140	Jan. 20	1893	488	54	385
Burkholder, John H., and J. L. Clark, Ashland, Ohio; said Burkholder assignor to D. F. Shearer. Fence-machine	448,601	Mar. 17	2174	542	54	1549
Burks, Walter, assignor of two-thirds to W. T. Goode, Lynchburg, and W. A. Moore, Charlottesville, Va. Device for catching and delivering mail-bags	448,709	Mar. 24	2360	591	54	1593
Burlingame, Rasselas G., Hartford, Mich. Jar cover	445,921	Feb. 3	661	161	54	642
Burnett, William H., *et al.* (See Morgan and Crowley, assignors.)						
Burnham, Edgar W., San Diego, Cal. Music-leaf turner	447,040	Feb. 24	2516	{624 / 625}	54	1027
Burnham, John P. and O. G., Chicago, Ill. Disintegrating and separating apparatus	448,844	Mar. 24	2570	645	54	1633
Burnham, Oliver G. (See Burnham, John P. and O. G.)						
Burns, William H., Los Angeles, Cal. Carbon for electric lamps	446,660	Feb. 17	1879	.....	54	897
Burr, Brown & Co. (See Remington, John O., assignor.)						
Burr, Ebenezer B. (See Thorne and Burr.)						
Burr, Ebenezer B., London, England. Cigar or cigarette holder	446,377	Feb. 10	1433	352	54	797
Burr, George W., Round Lake, N. Y. Valve	444,156	Jan. 6	203	70	54	60
Burrell, Charles F. (See Burrell and Markland, assignors.)						
Burrell, Samuel J., and W. H. Markland, Brooklyn, assignors to C. F. Burrell, New York, N. Y. Electric signaling device	445,538	Feb. 3	13	3, 4	54	513
Burrell, William C., La Salle, Ill. Combined seeder and harrow	447,864	Mar. 10	972	244	54	1309
Burroughs, James S., London, England. Board or game table	448,120	Mar. 10	1370	351	54	1387
Burrows, Edward T., Portland, Me. Scale-measure	449,034	Mar. 24	2854	726	54	1688
Burrows, George H., Somerville, Mass. Ventilating apparatus	445,878	Feb. 3	599	{147 / 148}	54	620
Burrows, George H., Somerville, assignor to U. K. Pettingill, Boston, Mass. Shutter-fastener	445,366	Jan. 27	2209	573	54	457
Burrows, Leonard S. (See Zoller and Burrows.)						
Burt & Tobey. (See Tobey, Charles W., assignor.)						
Burton, Augustus G., assignor to C. E. Davis and J. W. Norris, Chicago, Ill. Clay-seal-making machine	444,232	Jan. 6	409	{101 / 102}	54	81
Burton, Charles S., Chicago, Ill. Self-inking stamp	449,309	Mar. 31	3298	834	54	1779
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric blank-heater for forging-machines	444,914	Jan. 20	1517	{390 / 391}	54	312
Busby, Nahum J., Maplewood, Mass. Alarm-gong	447,537	Mar. 3	446	110	54	1201
Busby, Nahum J., Maplewood, Mass. Alarm-gong	447,538	Mar. 3	448	110	54	1202
Busch, Richard A., Dresden, Germany. Manufacturing sheet-metal signs	446,427	Feb. 17	1530	377	54	828
Bush, James J., Newark, N. J., assignor of one-half to T. F. Powers, Brooklyn, N. Y. Steam-generator	447,865	Mar. 10	974	244	54	1310
Bush, James J., Newark, N. J., assignor of one-half to T. F. Powers, Brooklyn, N. Y. Steam-generator	447,866	Mar. 10	977	245	54	1310
Bush, John E. (See Weeks and Bush.)						
Bush, Thomas J., Lexington, Ky. Interlocking bolt	444,988	Jan. 20	1636	419	54	335
Bush, Thomas J., Lexington, Ky. Die for making bolts	445,001	Jan. 20	1656	424	54	339
Bush, Thomas J., Lexington, Ky. Die for making bolts	446,281	Feb. 10	1290	316	54	767
Bush, Thomas J., Lexington, Ky. Combined support and fastening for railway-rails	446,282	Feb. 10	1291	316	54	767
Bush, Thomas J., Lexington, Ky. Die for making bolts	446,762	Feb. 17	2046	510	54	930
Bushman, Gustav C., assignor to Pullman's Palace Car Company, Chicago, Ill. Gate for car-platforms	447,102	Feb. 24	2608	648	54	1046

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Bushong, Israel, New Holland, Pa. Suspension apparatus	445,658	Feb. 3	228	62	54	557
Bushong, Israel, New Holland, Pa. Fishing-tackle	449,202	Mar. 31	3121	787	54	1747
Bussard, William, Port Jefferson, Ohio. House-door letter-box	448,500	Mar. 17	2014	504	54	1519
Bussert, Asher, Amanda, Ohio. Threshold	448,501	Mar. 17	2015	504	54	1519
Butcher, Hezekiah. (See Welty and Leach, assignors.)						
Butler, Henry G., Kenosha, Wis. Feeding apparatus for use in burning clay	447,458	Mar. 3	309	78	54	1176
Butler, Henry G. and W., Kenosha, Wis. Feeding apparatus for use in burning clay	447,459	Mar. 3	311	78	54	1176
Butler, William. (See Butler, Henry G. and W.)						
Butler, William, and Z. G. Simmons, Jr., Kenosha, Wis. Ballast-loading apparatus	447,460	Mar. 3	313	78	54	1177
Butler, Wilson W., Lima, Ohio. Burial-case	447,662	Mar. 3	622	154	54	1235
Butt, Addison W., Springfield, Ohio. Corn-harvester	445,367	Jan. 27	2210	573	54	457
Butt, Addison W., Springfield, Ohio. Cultivator	445,846	Feb. 3	552	{134 / 135}	54	619
Butt, Addison W., Springfield, Ohio. Cultivator	445,847	Feb. 3	554	135	54	620
Butt, Charles. (See Murray, William, assignor.)						
Butt, Charles A., North East, Pa., assignor of one-half to M. Y. Sickly, Macon, Mich. Laundry and scrubbing brush	448,602	Mar. 17	2175	542	54	1550
Butterfield, George. (See Butterfield, Harman B., assignor.)						
Butterfield, Harman B., Toronto, Canada, assignor to G. Butterfield, Oconto, Wis. Combined counter check-book and directory	448,207	Mar. 17	1527	391	54	1427
Butterfield, Henry R., Waterville, Me. Vacuum-core for electrical heating devices	447,157	Feb. 24	2645	656	54	1053
Butterfield, Nathaniel, Monroe, Wis. Fire-escape or chain ladder	449,518	Mar. 31	3062	920	54	1847
Button, Benjamin G., Waterloo, Iowa. Envelope	444,045	Jan. 6	99	25	54	23
Butts, Alexander W., Celina, Tex. Grain-scale	448,316	Mar. 17	1724	436	54	1465
Buxton, Joseph L. (See Sweet, Edgar A., assignor.)						
Byler, David K., near Urbana, Ohio. Street-door letter-box	444,520	Jan. 13	851	221	54	178
Cahill, William E., Utica, N. Y. Trimmer for knitting-machines	445,423	Jan. 27	2294	595	54	474
Cahoon, James B., and I. F. Baker, Lynn, Mass., assignors to Thomson-Houston Electric Company, of Connecticut. Contact-trolley for electric railways	446,428	Feb. 17	1532	377	54	828
Cairns, Peter J., Chicago, Ill. Pen-holder	444,046	Jan. 6	100	25	54	23
Calame-Jaccard, Paul. (See Junod, Jaccard, and Calame-Jaccard.)						
Calder, George, Jr., assignor to M. H. Calder, Lancaster, Pa. Matrix-making machine	444,124	Jan. 6	234	56, 57	54	48
Calder, George, Jr., assignor to M. H. Calder, Lancaster, Pa. Matrix-making machine	444,125	Jan. 6	237	58	54	49
Calder, George, Jr., assignor to M. H. Calder, Lancaster, Pa. Matrix-making machine	445,040	Jan. 20	1713	{440 / 441}	54	350
Calder, George, Jr., assignor to M. H. Calder, Lancaster, Pa. (See Calder, George, Jr., assignor.)						
Calder, Mary H. (See Calder, George, Jr., assignor.)						
Caldwell, Andrew J. (See Worthington and Caldwell.)						
Caldwell, John, assignor of one-half to J. Foster, Beloit, Wis. Compound tool	445,672	Feb. 10	746	183	54	668
Caldwell, Lee E., Elvaston, Ill. Door-check	446,322	Feb. 10	1357	331	54	781
Call, Edward B., Peoria, Ill. Dental bridge work	445,309	Jan. 27	2131	550	54	441
Callahan Company, Cornelius. (See Callahan, Cornelius, assignor.)						
Callahan, Cornelius, assignor to C. Callahan Company, Boston, Mass. Relief-valve	445,041	Jan. 20	1718	{441 / 442}	54	351
Callahan, Cornelius, assignor to C. Callahan Company, Boston, Mass. Gong	448,008	Mar. 10	1217	309	54	1356
Callahan, James E., Philadelphia, Pa. Hydrant-valve	444,047	Jan. 6	101	26	54	23
Callahan, Owen P., assignor of one-half to L. A. Simms, Spokane Falls, Wash. Mail-bag fastening	444,289	Jan. 6	489	128	54	97
Callaway, Edward H., New York, N. Y., assignor of one-half to G. W. Sharer, Philadelphia, Pa. Sand and gravel heater	448,408	Mar. 17	1873	471	54	1493
Calvert, Charles E. (See Tilley and Calvert.)						
Cameron, Arthur, assignor to F. C. Austin, Chicago, Ill. Feed-cutter	449,572	Mar. 31	3734	939	54	1860
Cameron, Arthur, assignor, by mesne assignments, to A. B. Austin, Chicago, Ill. Friction lock or clutch for fly-wheels of feed-cutters	449,612	Mar. 31	3819	957	54	1875
Cameron, Arthur, assignor, by mesne assignments, to A. B. Austin, Chicago, Ill. Expansion-drill for well-sinking	449,613	Mar. 31	3821	958	54	1875
Camichel, John, New York, N. Y. Spring-motor for mechanical lamps, &c.	448,208	Mar. 17	1528	391	54	1427
Camp, David, *et al.* (See Rockwell, Warren C., assignor.)						
Camp, Theodore H., *et al.* (See Wright, William A., assignor.)						
Campbell, George L., assignor to C. S. Hill and J. B. H. Trainer, Williamsport, Pa. Boring-machine	447,176	Feb. 24	2756	682	54	1072
Campbell, George W., and J. D. Hough, Lowville, N. Y. Corkscrew	445,539	Feb. 3	17	4	54	514
Campbell, Harry C., Pittsburg, Pa. Incandescent burner and method of using the same	447,757	Mar. 10	778	193	54	1272
Campbell, James, Harrison, Ohio. Covering-wheel for drills, &c.	447,938	Mar. 10	1096	275	54	1332
Campbell, James W., Germantown, assignor to Ferguson Brothers, New York, N. Y. Folding screen	447,461	Mar. 3	314	78	54	1177
Campbell, John S., London, England, assignor to Carroll Aluminum Manufacturing Company, New York, N. Y. Driving-wheel for dental engines	445,879	Feb. 3	602	148	54	630
Campbell, John S., London, England, assignor to Carroll Aluminum Manufacturing Company, New York, N. Y. Flexible shaft	449,068	Mar. 24	2906	737	54	1698
Campbell Machine Company. (See Wheeler, Cephas E., assignor.)	445,368	Jan. 27	2211	573	54	458
Campbell, Malcolm Y., Milwaukee, Wis. Railway-mileage ticket	445,794	Feb. 3	465	114	54	602
Campbell, Michael, assignor of one-half to A. H. Wellbrock, Boston, Mass. Signal apparatus	449,203	Mar. 31	3122	788	54	1747
Canby, Edward. (See Ozias and Canby.)	445,922	Feb. 3	662	161	54	642
Canda, Ferdinand E., New York, N. Y. Cattle-car	447,227	Feb. 24	2847	{706 / 707}	54	1090
Canedy, William E., Downer's Grove, Ill. Device for converting motion	447,228	Feb. 24	2850	707	54	1090
Canet, Jean B. G. A., Paris, France, assignor of one-half to J. Whitworth & Company, Limited, Openshaw, England. Recoil-check for disappearing-gun carriages	448,576	Mar. 24	2623	659	54	1642
Canet, Jean B. G. A., Paris, France, assignor of one-half to J. Whitworth & Company, Limited, Openshaw, England. Breech-loading ordnance	447,806	Mar. 10	878	219	54	1291
Canfield, Hobart, Morristown, N. J. Balanced valve for steam-engines	445,648	Feb. 3	208	55	54	558
Canfield, Horace G., Akron, Ohio. Registering apparatus for street-cars	448,633	Mar. 24	2237	{561 / 562}	54	1569
Canfield, William, Hartford, Conn. Apparatus for electric branding						
Cantelo, John S., Boston, Mass. Drawing-knife	449,035	Mar. 24	2855	726	54	1689
Canterbury (N. Z.) Seed Company. (See Lees and Lester, assignors.)	449,036	Mar. 24	2857	726	54	1689
Canton Steel Roofing Company. (See Belding, Thomas C., assignor.)	444,948	Jan. 20	1573	403	54	392
Čápek, John J., assignor of one-half to E. H. Johnson, New York, N. Y. Electrical heater	448,293	Mar. 17	1689	427	54	1458
Čápek, John J., assignor of one-half to E. H. Johnson, New York, N. Y. Electrical heater	446,378	Feb. 10	1434	352	54	797
Capewell, George J., Hartford, Conn. Nail-extractor						
Capitaine, Emil, Eilenburg, Germany. Lamp for effecting the ignition of vapor in gas or other motors						
Capitol Manufacturing Company. (See Cook, Frank S., assignor.)						
Carbine, John C., Atlanta, Ga. Railway-truck jack						

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Card Concentrator Company. (See Card, William L., assignor.)						
Card, William L., La Crosse, Wis., assignor to Card Concentrator Company, of Colorado. Separator	448,472	Mar. 17	1970	495, 496	54	1511
Carey, William, assignor to himself, T. Hocking, W. Carson, and W. R. Hamilton, Montreal, Canada. Machine for uniting the soles and uppers of boots and shoes	444,126	Jan. 6	241	58, 59, 60	54	50
Carey, Wilson W., Lowell, Mass. Self-lubricating device for pulleys	444,812	Jan. 20	1303	339	54	272
Carhart, Clarence M., Plainfield, N. J. Friction-clutch	445,496	Jan. 27	2394	622, 623	54	492
Carl, Loris P., Perris, Cal. Tether-pin	444,661	Jan. 13	1057	275	54	217
Carleton, Andrew J., assignor to E. J. Piper, Springfield, Mass. Paper-ruling machine	449,614	Mar. 31	3823	958	54	1876
Carlin, David, Pittsburg, Pa. Molding apparatus	444,588	Jan. 13	957	248	54	198
Carlson, Anders V., *et al.* (See Nygren, Axel T., assignor.)						
Carlson, John E., Appleton, Minn. Draft equalizer	444,877	Jan. 20	1446	376	54	299
Carpenter, Benjamin F., Roselle, N. J. Holder for postage-stamps or other articles	447,663	Mar. 3	623	155	54	1236
Carpenter, Charles E., Minneapolis, Minn. Electro-heating apparatus	447,023	Feb. 24	2482	618	54	1021
Carpenter, Charles E., assignor to Carpenter-Nevens Electro-Heating Company, Minneapolis, Minn. Electric sad-iron	448,317	Mar. 17	1725	437	54	1465
Carpenter, Charles W., *et al.* (See Crowell, Luther C., assignor.)						
Carpenter, Clarence E., assignor of one-third to J. M. Vangorden, Horseheads, N. Y. Thill-coupling	446,323	Feb. 10	1357	331	54	781
Carpenter, Daniel H., Orlando, Fla. Combined nut and pipe wrench	446,324	Feb. 10	1358	331	54	781
Carpenter, George J., assignor to Hincks & Johnson, Bridgeport, Conn. Carriage-top	448,931	Mar. 24	2697	680	54	1658
Carpenter, James H., Ulysses, Nebr. Washing-machine	444,813	Jan. 20	1304	339	54	272
Carpenter, James H., Chicago, Ill. Combined index and register	449,105	Mar. 31	2963	750	54	1718
Carpenter, James H., assignor of one-half to M. Herzberg, J. A. Erwin, West Point, C. R. King, Atlanta, Ga., and K. Williams, New Orleans, La. Automatic stock-feeder	449,631	Mar. 31	3856	965	54	1883
Carpenter-Nevens Electro-Heating Company. (See Carpenter, Charles E., assignor.)						
Carpenter, Rolla C., Lansing, Mich. Pipe-hanger	447,297	Mar. 3	19	6	54	1122
Carpenter, Warren. (See Beach, Ralph H., assignor.)						
Carr, Artemas S., *et al.* (See Lovett, Eliphalet R., assignor.)						
Carr, Asmys J. (See King and Carr.)						
Carr, Bruce, *et al.* (See Mains, John F., assignor.)						
Carr, Walter S., Andover, N. H. Hame	445,584	Feb. 3	104	25	54	531
Carrara, Arthur, Governor Lane, Gibraltar. Apparatus for recording fares by omnibuses, &c	445,042	Jan. 20	1719	442, 443	54	351
Carrer, Leo, Dusseldorf, Germany. Paper-cutting machine	445,923	Feb. 3	662	162	54	642
Carrico, Francis A., *et al.* (See Carrico, Thomas W., assignor.)						
Carrico, Thomas W., assignor of one-third to F. A. and T. W. Carrico, San Antonio, Tex. Construction of privy-vaults	445,848	Feb. 3	557	136	54	620
Carroll Aluminum Manufacturing Company. (See Campbell, John S., assignor.)						
Carroll, Richard. (See Bentley, Squire and A., assignors.)						
Carroll, William C., and B. F. Hales, Chicago, Ill. Surgical pump	444,690	Jan. 13	1109	287	54	227
Carroll, William T., Worcester, Mass. Reversing mechanism for counter-shafts	444,814	Jan. 20	1305	339	54	272
Carson, William, *et al.* (See Carey, William, assignor.)						
Carswell, Morris, Glasgow, Scotland. Artificial fishing-bait	449,519	Mar. 31	3663	920	54	1847
Carter, Edward C., Chicago, Ill. Railway-signal	448,573	Mar. 24	2461	615	54	1612
Carter, Edward D., Celeste, Tex. Combined cotton and corn planter	445,635	Feb. 3	182	48	54	547
Carter, Harold M. (See Proctor, Fraser, Carter, and Middleton.)						
Carter, John T., North Danville, assignor to Carter Machine Company, Danville, Va. Tobacco-spraying machine	446,247	Feb. 10	1237	302, 303	54	757
Carter, Lyman. (See Carter, Willis and L.)						
Carter Machine Company. (See Carter, John T., assignor.)						
Carter, Willis and L., Spokane Falls, Wash. Rotary engine	448,121	Mar. 10	1372	351, 352	54	1388
Cartwright, David J. (See Potter and Cartwright.)						
Carty, John J., New York, N. Y., assignor, by mesne assignments, to American Bell Telephone Company, Boston, Mass. Telephone circuit and apparatus	449,106	Mar. 31	2966	750, 751	54	1718
Carver, James W., Pawlet, Vt., assignor to himself, and G. L. Kelty, Brooklyn, N. Y. Ax	445,160	Jan. 27	1907	492	54	397
Carver, Henry C., Manchester, England. Apparatus for extinguishing fires	447,601	Mar. 3	537	132, 133	54	1218
Carver, William, Scottsville, N. Y. Bean-harvester and weed-cutter	447,602	Mar. 3	540	133, 134	54	1219
Cary, Alanson, New York, N. Y., assignor to Union School Furniture Company, Battle Creek, Mich. School-desk seat	445,946	Feb. 3	701	171	54	650
Cary, William N., Mechanicsville, assignor of one-half to W. L. Haskin, Granville, N. Y. Window-blind	448,177	Mar. 10	1465	373	54	1406
Case, Charles A., New York, N. Y. Reversing and brake mechanism for hoisting apparatus	448,909	Mar. 24	2668	670	54	1651
Casey, Denis. (See Millen, Casey, and Mantion.)						
Cash, Francis C., assignor of one-half to C. B. Lord, Lynn, Mass. Gate	446,325	Feb. 10	1360	331	54	781
Cash, Lewis G., Russellville, Mo. Table-leaf support	447,758	Mar. 10	779	193	54	1273
Cashion, Patrick W., Glens Falls, N. Y. Horse-tracking device for vehicles	445,540	Feb. 3	18	4, 5	54	514
Cashman, Michael H. (See Jordan, Edmund, assignor.)						
Casler, Benjamin G., Cleveland, Ohio. Show-rack for store-windows, &c	444,815	Jan. 20	1306	339, 340	54	272
Cass, Marcus M., Jr., Watkins, N. Y. Fish-hook	446,827	Feb. 17	2138	531	54	950
Casselman, Daniel E., and E. H. Fletcher, Evening Shade, Ark. Flood-fence	446,111	Feb. 10	982	241	54	710
Casselman, George A., Fort Dodge, Iowa. Compound for calcimine	444,776	Jan. 13	1249	.....	54	252
Cassidy, Isabel, assignor to London Toilet Bazar Company, New York, N. Y. Nail-file for toilet use	448,409	Mar. 17	1875	471	54	1494
Castelnau, Marcelin, Paris, France. Ore-concentrator	446,055	Feb. 10	895	217	54	693
Castelnau, Marcelin, Paris, France. Ore-concentrator	446,963	Feb. 24	2381	592, 593	54	1002
Catlett, Herald, and E. Robertson, Fairmount, Ill. Flood-fence	449,204	Mar. 31	3124	788	54	1748
Catudal, Francis, and E. Drolet, Clyde, Kans. Letter-box	445,497	Jan. 27	2396	623	54	493
Cavanagh, Bartholomew, Dunkirk, N. Y. Steam-heating apparatus	448,932	Mar. 24	2698	680	54	1658
Cavanagh, J. Burdett. (See Kingery and Cavanagh.)						
Cavender, Thomas A., St. Louis, Mo. Lifting-jack	444,915	Jan. 20	1520	391	54	313
Cavert, William J., Albany, and W. P. Wiswall, West Troy, N. Y. Trolley for electric railways	447,632	Mar. 3	586	145	54	1228
Cayley, Claud T., and R. S. Courtman, London, England, assignors to E. W. Bliss Company, Limited, Brooklyn, N. Y. Shell	447,229	Feb. 24	2853	708	54	1091
Cayton, James C., Thornton, Tex. Planter	447,759	Mar. 10	780	193, 194	54	1273

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Ceresole, Maurice, Neuville, France, assignor to Badische Anilin and Soda Fabrik, Ludwigshafen, Germany. Benzo-rhodamine	449,520	Mar. 31	3664	.....	54	1847
Chable, August F., and E. M. Roberts, Marion, Kans., assignors to said Chable and J. C. Price, Evansville, Ind. Sad-iron heater	447,445	Mar. 3	285	72	54	1171
Chaddock, David C., Minerva, C. E. Sutton, Richmond, and A. C. McCullough, Knoxville, Ohio. Combined hay rake and loader	445,541	Feb. 3	13	5	54	514
Challiner, Charles, Longsight, England. Tire for vehicle-wheels	449,281	Mar. 31	3245	821, 822	54	1770
Chamberlain, Francis W., Bridgewater, Mass. Knife or scissors sharpener	446,551	Feb. 17	1721	422	54	866
Chamberlain, George H. (See Simonson, Flavel, assignor.)						
Chamberlain, Jacob C., New York, N. Y. Current-controlling device for electric-railway cars	447,230	Feb. 24	2854	708, 709	54	1091
Chamberlain, Thomas B. A., Toronto, Canada. Combined pen-holder, pen-nib extractor, and paper-knife	448,933	Mar. 24	2699	681	54	1658
Chamberlin, George S., New York, N. Y. Device for grating and delivering soap	445,769	Feb. 3	422	105	54	595
Chambers, Cyrus, Jr., W. Mendham, and T. C. Damberg, Philadelphia, Pa., assignors to said Chambers. Machine for folding, pasting, trimming, and covering sheets of paper	445,498	Jan. 27	2397	623, 624, 625, 626, 627	54	493
Chambers, Joseph E., St. Louis, Mo., assignor to St. Louis Car Track Cleaner Company, East St. Louis, Ill. Oscillating car-track cleaner	446,326	Feb. 10	1361	332	54	782
Chambers, Josephus C., Detroit, Mich. Electrical medical apparatus	445,636	Feb. 3	184	48, 49, 50	54	548
Chambers, Matthew C., Brooklyn, N. Y. Sheet-metal vessel or pot	445,439	Jan. 27	2313	600	54	478
Champagne, P. B., *et al.* (See Mitchell, Oliver F., assignor.)						
Chancellor, Charles W., Baltimore, Md. Apparatus for treating sewage	448,192	Mar. 10	1374	352	54	1388
Chandler, Noël, Hednesford, England. Centrifugal fan	445,043	Jan. 20	1721	443	54	352
Chandler, Noël, Hednesford, England. Cut-off gear for engines	447,603	Mar. 3	542	134	54	1219
Chandler, William B. (See Thrall, Stephen C., assignor.)						
Chandler, William H., *et al.* (See Wright, William A., assignor.)						
Chandler, William W., Long Prairie, Minn. Whiffletree-hook	444,420	Jan. 13	993	180	54	145
Chapie, Alexander, Florissant, Mo. Potato-planter	444,192	Jan. 6	350	86	54	71
Chapin, Edward J., Indianapolis, Ind. Cut-off mechanism for steam-engines	444,773	Jan. 13	1245	323, 324	54	251
Chapin, William H., Toledo, Ohio. Forging-blank for hollow-handled cutlery	445,659	Feb. 3	230	62	54	557
Chapleau, Samuel E. S., Ottawa, Canada. Rotary compound steam-engine	444,087	Jan. 6	168	42	54	36
Chaplin, Charles O. (See Murphy and Chaplin.)						
Chaplin, Edwin D., Holliston, assignor to E. Humphrey, trustee, Boston, Mass. Electro-magnetic motor	448,603	Mar. 17	2176	543, 544	54	1550
Chapman, Clarence L., Erie, Pa., assignor of one-half to H. I. Petrie, Little Falls, N. Y. Nut-tapping machine	444,062	Jan. 6	127	32	54	28
Chapman, General S., Denver, Col. Windmill	444,793	Jan. 13	1270	329	54	256
Chapman, George T., White Plains, N. Y. Wood-screw	449,037	Mar. 24	2859	727	54	1689
Chapman, George T., White Plains, assignor of one half to W. H. Merritt, New York, N. Y. Heel-expander for horses	445,463	Jan. 27	2346	610	54	484
Chapman, George T., White Plains, assignor of one-half to W. H. Merritt, New York, N. Y. Hoof-expander	446,828	Feb. 17	2139	531	54	950
Chapman, George T., White Plains, assignor of one-half to W. H. Merritt, New York, N. Y. Heel-expander for horses	449,573	Mar. 31	3736	939, 940	54	1860
Chapman, Mark C., assignor to himself and M. T. Chapman, Aurora, Ill. Wind-engine	447,066	Feb. 24	2559	635, 636	54	1035
Chapman, Matthew T. (See Chapman, Mark C., assignor.)						
Chapman, William H., assignor to Giant Electric Motor Company, Portland, Me. Electric motor	447,939	Mar. 10	1097	275, 276	54	1333
Chase, Arthur G., Boston, Mass. Combined square and bevel	445,389	Jan. 27	2237	581	54	462
Chase & Co., L. C. (See Kinder, Arthur H., assignor.)						
Chase, De Forest W. (See Morse and Chase.)						
Chase, Frank, Boston, Mass. Sewing machine	445,924	Feb. 3	663	162, 163	54	642
Chase, Frank, Boston, Mass. Sewing-machine	445,925	Feb. 3	668	163, 164	54	643
Chase, Henry A., Boston, Mass. Automatic time-stamp	445,161	Jan. 27	1908	493	54	397
Chase, Henry A., Boston, Mass. Circuit-closer for clocks	448,294	Mar. 17	1690	427	54	1458
Chase, Irving F. (See Hildreth, Samuel W., assignor.)						
Chase, James, Rochester, N. Y. Support for electric lamps	444,330	Jan. 6	543	141	54	109
Chase, John W., *et al.* (See Werner, Louis G., assignor.)						
Chase, Joseph E. (See Moore, Morris W., assignor.)						
Chase, Joseph H., and J. B. Tracy, Meriden, Conn., assignors to Aeolian Organ and Music Company, New York, N. Y. Organ	445,044	Jan. 20	1722	444	54	352
Chase, Milton. (See Morse and Chase.)						
Chase, Oliver R., Boston, assignor to Algonquin Manufacturing Company, Portland, Me. Lubricating discharge-nozzle	445,711	Feb. 3	322	85	54	576
Chase, William L., New York, N. Y. Metallic casing	447,807	Mar. 10	879	219	54	1291
Chatillon, George H., assignor to J. Chatillon & Sons, New York, N. Y. Spring-scales	444,093	Jan. 6	177	44	54	37
Chatillon & Sons, John. (See Chatillon, George H., assignor.)						
Chattaway, John J., and C. E. Owens, Philadelphia, Pa. Cat-guard	448,318	Mar. 17	1728	437	54	1466
Chatterson, Albert E. (See Copeland and Chatterson.)						
Chazal, Louis R., assignor of one-half to P. E. Chazal, Charleston, S. C. Buckle	446,629	Feb. 17	1828	452	54	887
Chazal, Philip E. (See Chazal, Louis R., assignor.)						
Cheek, Joseph, Beardstown, Ill. Oscillating valve for steam-engines	446,056	Feb. 10	897	218	54	694
Cheltra, Charles, *et al.* (See McNeal, William A., assignor.)						
Chemin, Jean C. O., Paris, France. Incandescent gas-burner	445,725	Feb. 3	344	90	54	580
Chemische Fabrik Buckau. (See Peitzsch, Bernhard, assignor.)						
Cheney, T. J. (See Coe, Charles E., assignor.)						
Chesebrough, Robert A., New York, N. Y. Coating for the protection of bottoms of vessels	447,941	Mar. 10	1098	.....	54	1333
Cheswright, Charles, London, England. Fraud-preventive in capsuled bottles	447,397	Mar. 3	201	53	54	1156
Cheswright, Henry T., Carcassonne, France. Secondary battery	445,542	Feb. 3	21	6	54	515
Chevers, Aurion V., assignor of three-fourths to F. W. Rockwell, D. R. Brown, Providence, R. I., and P. J. McElroy, East Cambridge, Mass. Pipe for wind musical instruments	445,849	Feb. 3	559	136	54	620
Chezem, Andrew, assignor of one-half to A. J. Huntley, Sergeant Bluffs, Iowa. Bridle attachment	444,048	Jan. 6	102	26	54	23

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Chicago Bicycle Company. (See Worth, William O., assignor.)						
Chicago Matrix Machine Company. (See Redfield, Casper L., assignor.)						
Chicago Nickel Works. (See Goodrich and Henry, assignors.)						
Chicago Railway Device Company. (See Gifford, Ezra N., assignor.)						
Chichester Manufacturing Company. (See Old, Ansborn P., assignor.)						
Chichester, Sylvester. (See Moffatt, Richard R., assignor.)						
Chick, George H., Kansas City, Mo. Ore-riffle	448,710	Mar. 24	2362	591	54	1593
Child, Frederick R. (See Paquette and Child.)						
Chilson, Libbens, assignor to W. R. Kendall, A. W. Hunt, and M. L. Fay, Worcester, Mass. Railway-track	446,161	Feb. 10	1080	265	54	726
Chopard, Albert, assignor to Société Industrielle, Moutier-Grandval, Switzerland. Stem winding and setting watch	448,877	Mar. 24	2624	659	54	1643
Chorlton, Isaac, and G. L. Scott, Manchester, England. Mattress-frame and bedstead	448,209	Mar. 17	1529	391, 392	54	1428
Christ, Gustave A., Grand Rapids, Mich. Fence	444,331	Jan. 6	545	141	54	109
Christian, Peter B., *et al.* (See House, Joseph L., assignor.)						
Christie, Walter, New York, N. Y. Piston-packing	447,007	Feb. 24	2445	608	54	1011
Christman, Augustus G., Reading, Pa. Washing-machine	444,421	Jan. 13	694	181	54	145
Christy, Thomas. (See Schlesinger, Harry A., assignor.)						
Chubb, Charles S., U. S. Army. Dust-pan	445,278	Jan. 27	2087	539	54	431
Chubb, William J., assignor to Vulcan Patent Smoke Consumer and Fuel Economizer Corporation, Limited, London, England. Apparatus through which air is supplied to furnaces of steam-boilers	448,178	Mar. 10	1467	374	54	1407
Clapp, Henry W., Northampton, Mass. Dining-room service apparatus	448,009	Mar. 10	1218	310, 311	54	1356
Clark, Anthony, Parkersburg, W. Va. Seal hasp-lock	447,664	Mar. 3	624	155	54	1236
Clark, Francis E., New York, and G. Wexler, Brooklyn, N. Y. Puzzle	444,239	Jan. 6	421	105	54	83
Clark, Francis L., Lee's Summit, Mo. Sewing-machine motor	446,964	Feb. 24	2383	593	54	1002
Clark, Francis L., and N. Greenlee, Lee's Summit, Mo. Feeder and band-cutter	445,973	Feb. 10	747	183, 184	54	668
Clark, Frank H. (See Barnes, David L., assignor.)						
Clark, George B., Bethesda, Ohio. Cutter-bar	449,521	Mar. 31	3665	921	54	1847
Clark, George M., Higganum, Conn. Disk harrow	444,662	Jan. 13	1058	275, 276	54	217
Clark, Gerard C., London, England. Bottle-stopper	444,200	Jan. 6	361	90	54	73
Clark, Henry A., *et al.* (See Tregurtha, James, assignor.)						
Clark, Horace T., Bridgeport, Conn. Electric switch	447,867	Mar. 10	979	245	54	1310
Clark, Horace T., Bridgeport, Conn. Electric switch	449,282	Mar. 31	3247	822	54	1770
Clark, James R., Philadelphia, Pa. Pill-machine	445,830	Feb. 3	530	128, 129	54	615
Clark, Jay W. (See Wheeler, Clarence L., assignor.)						
Clark, Jesse L. (See Burkholder and Clark.)						
Clark, John A. (See Wyman and Clark.)						
Clark, Joseph H., *et al.* (See Scales, William S., assignor.)						
Clark, Melville, Chicago, Ill. Organ-action	447,760	Mar. 10	782	191, 195	54	1273
Clark, Nathan B., Washington, D. C., and F. B. King, Baltimore, Md. Steam-boiler	446,093	Feb. 10	950	233, 234	54	704
Clark, Robert K., Newark, N. J. Thread-unwinding and tension device for sewing-machines	444,208	Jan. 6	371	92	54	74
Clark, William H., Albion, assignor to Lovell Manufacturing Company, Limited, Erie, Pa. Cash register and indicator	444,391	Jan. 6	639	166, 167	54	126
Clarke, George P., New York, N. Y. Magneto-electric machine	446,661	Feb. 17	1880	467	54	897
Clarke, Samuel W., Wood's Holl, Mass. Game apparatus	448,878	Mar. 24	2625	659	54	1643
Clarkson, Alexander R., Wilmington, assignor of one-half to J. L. Vansant, Highlands, Del. Indicator for spinning-frames or other machines	448,123	Mar. 10	1376	352	54	1388
Clarkson, Joseph T., Amesbury, Mass. Shifting-seat carriage	446,429	Feb. 17	1533	377	54	829
Clarkson, Samuel E., Philadelphia, Pa. Combined fertilizer-distributer and seeder	448,010	Mar. 10	1226	311, 312	54	1357
Claussen, Alexander E., and A. J. Jones, Scottville, Ill. Portable farm fence	446,112	Feb. 10	983	242	54	711
Claussen, Edward E. (See Lorenz and Claussen.)						
Claussen, Edward E., assignor to A. H. Walker, trustee, Hartford, Conn. Paper-bag machine	444,727	Jan. 13	1169	300	54	258
Clawson, Leonard E., San Francisco, Cal. Hood for fire-places	449,345	Mar. 31	3374	850	54	1791
Clawson, Linus G., assignor of one-half to E. G. Wheeler, Pleasant Hill, Mo. Wagon-scales	445,209	Jan. 27	2077	536	54	429
Clay, Cyrus C., Elmhurst, Pa. Nut-lock	444,816	Jan. 20	1308	340	54	273
Claypool, Charles A., Spencer, Iowa. Feed-grinder	444,742	Jan. 13	1199	311	54	243
Clayton, Duriss D. (See Barrett, Frederick W., assignor.)						
Clayton, Leonidas W., Indianapolis, Ind. Grate	448,634	Mar. 24	2238	562	54	1569
Cleaveland, John B., Indianapolis, Ind. Fence	445,746	Feb. 3	381	97	54	588
Cleaveland, John B., Indianapolis, Ind. Fence-post	447,231	Feb. 24	2859	709	54	1092
Cleaveland, John B., Indianapolis, Ind. Wire-stretcher	448,635	Mar. 24	2240	562	54	1570
Clem, David B., Philadelphia, Pa. Elevator-hatchway-operating mechanism	449,361	Mar. 31	3405	856	54	1796
Clement-Conti, Antoine, Feletto, Italy. Ore-separator	448,319	Mar. 17	1728	437, 438	54	1466
Clement, Lewis M., Oakland, Cal. Cable street-railway	446,221	Feb. 10	1173	287	54	744
Clemmens, Samuel B., Springfield, Ohio. Cooling or refrigerating apparatus	449,615	Mar. 31	3824	958	54	1876
Clemons, Joseph E. (See West, William, assignor.)						
Cleveland, Arthur, Lyons Farms, N. J. Basket-carrier	445,283	Jan. 27	2092	540	54	432
Cleveland, Lewis W., assignor of three-fourths to C. L. Marston, L. A. Barker, and D. A. Meaher, Portland, Me. Electrical door-bell pull	447,748	Mar. 3	757	189	54	1261
Cleveland, Luman M., Dustin, Nebr. Neck-yoke	448,295	Mar. 17	1692	428	54	1459
Clewis, John. (See Cobb, John W., assignor.)						
Cliff, Edward, Castleton, N. Y. Swinging or drop arm for electric lamps	444,273	Jan. 6	465	118	54	92
Clemenson, William W., Honey Brook, Pa. Holder for pencils and crayons	444,974	Jan. 20	1613	413	54	331
Cline, George J., Goshen, Ind. Sickle-grinder	448,473	Mar. 17	1977	496	54	1512
Cline, George J., and J. R. Detwiler, Goshen, Ind. Fence-machine	446,327	Feb. 10	1364	332	54	782
Cline, Godfrey H., Jersey Shore, Pa. Bifocal spectacles	447,128	Feb. 24	2646	657	54	1053
Clinton, Charles M., Ithaca, and G. W. Kirkpatrick, assignors to H. M. Kirkpatrick, Macedon, N. Y. Grain-drill	444,290	Jan. 6	490	128	54	98
Clinton, Charles M., and J. McNamara, Ithaca, N. Y. Type-writing machine	449,616	Mar. 31	3826	959, 960	54	1876
Clinton, Charles M., and J. McNamara, assignors of two-thirds to C. M. Titus, Ithaca, N. Y. Type-writing machine	448,934	Mar. 24	2700	681, 682	54	1658

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Close, Philipp C., Augusta, Ga. Grinding, drying, and incorporating machine	447,808	Mar. 10	880	219	54	1291
Closs, Peter, Wollaston, assignor of one-half to J. W. Sanborn, Boston, Mass. Book-cover	444,376	Jan. 6	613	157	54	121
Clough, William E., Oxford, Ohio. Speculum	447,761	Mar. 10	786	195	54	1274
Clouse, Joseph N., St. Louis, Mo. Wheel for vehicles	449,205	Mar. 31	3125	788	54	1748
Clouse, William L., assignor of one-half to J. D. Jones, Tiffin, Ohio. Stop-motion mechanism	447,557	Mar. 3	473	116	54	1206
Clouser, Samuel F., Brooklyn, assignor of fifty-one one-hundredths to R. N. Peterson, New York, N. Y. Lock-up nut	449,069	Mar. 24	2307	737	54	1698
Clover, Seth, assignor of one-half to T. Meyerhoefer, Erie, Pa. Sucker-rod elevator	444,332	Jan. 6	547	142	54	109
Clowes, Joseph W., New York, N. Y. Dentistry	446,769	Feb. 17	2047	510	54	930
Clyne, James B., assignor to T. H. White, Cleveland, Ohio. Automatic feed mechanism for chucks	447,144	Feb. 24	2706	671	54	1062
Coates, George H., and E. M. Long, Worcester, Mass.; said Long assignor to said Coates. Hair clipping machine	445,947	Feb. 3	702	171	54	650
Cobb, George B., Chicago, Ill. Radiator	445,926	Feb. 3	670	164	54	643
Cobb, George H., Elmira, N. Y. Photographic apparatus for holding and developing dry-plates	444,422	Jan. 13	695	181	54	145
Cobb, John W. (See Hargrave, Thomas C., assignor.)						
Cobb, John W., assignor of one-half to J. Clewis, Thomasville, Ga. Cotton-chopper	447,749	Mar. 3	758	189	54	1262
Coble, Edwin E., Elizabethtown, Pa. Watch-maker's pliers	449,310	Mar. 31	3300	834	54	1779
Coburn, Lemuel, assignor to Coburn Trolley Track Manufacturing Company, Holyoke, Mass. Trolley-support for doors	447,505	Mar. 3	396	96, 97	54	1192
Coburn Trolley Track Manufacturing Company. (See Coburn, Lemuel, assignor.)						
Cochennour, John S., and N. T. Remy, assignors to Olney Vehicle Spring Support Manufacturing Company, Olney, Ill. Vehicle-spring support	446,203	Feb. 10	1443	280	54	738
Cochran, Alva C., Stauffer, Pa. Coke-oven plant	448,036	Mar. 24	2241	562	54	1570
Cochran, Edward A. (See Black, Stephen S., assignor.)						
Cochran, Frederic B., New York, N. Y. Ice-cream freezer	448,935	Mar. 24	2703	682	54	1659
Cockle Separator Manufacturing Company. (See Bretney, Eugene, assignor.)						
Codman & Shurtleff. (See Hesse, Frank K., assignor.)						
Cody, Richard D., Winona, Minn. Combined settee and bed	444,529	Jan. 13	864	224, 225	54	180
Coe, Charles E., assignor of one-half to T. J. Cheney, St. Louis, Mo. Turning implement	448,845	Mar. 24	2572	646	54	1633
Coe, Henry I. (See McBride, John J., assignor.)						
Coes, Zoroster B., and G. T. Reiss, assignors to Niles Tool Works, Hamilton, Ohio. Filter-press	447,021	Feb. 24	2484	618	54	1021
Coffee, Robert W., Bedford City, Va. Machine for treating leaf-tobacco	445,270	Jan. 27	2079	536, 537	54	429
Coffee, Robert W., Bedford City, Va. Tobacco-stemming machine	445,637	Feb. 3	186	50, 51	54	548
Coffee, Robert W., Bedford City, Va. Machine for removing stems from tobacco-leaves	446,811	Feb. 17	2112	525, 526	54	944
Coffey, Barton H., Philadelphia, Pa. Gas-engine	446,851	Feb. 24	2187	544, 545	54	968
Coffin, John W., and W. Shoemake, Oskaloosa, Iowa. Adjustable hay shield and manger	445,162	Jan. 27	1910	493	54	397
Cofrode, Joseph H. (See Greiner, Jacob H., assignor.)						
Coggeshall, Charles P., Brooklyn, N. Y. Pantaloons-supporter	444,176	Jan. 6	325	79	54	66
Cogswell, Arthur B., Oswego, N. Y. Trousers-stretcher	447,868	Mar. 10	980	245	54	1311
Cogswell, Asa F., Humboldt, Nebr., and S. F. Woody, Kansas City, Mo. Miniature billiards	445,626	Feb. 3	170	45	54	545
Cogswell, George H., Bradford, Mass. Beating-out machine	446,990	Feb. 24	2423	602, 603	54	1010
Cohn, Julius M. (See Baker, Frank, M., assignor.)						
Cohn, Nathan. (See Knox, Charles L., assignor.)						
Colburn, Henry J., Toledo, Ohio. Variety wood-worker	448,320	Mar. 17	1731	458	54	1466
Colby, Allen, Brunswick, Me. Derrick	448,321	Mar. 17	1734	458	54	1467
Colby, Edward J., Chicago, Ill. Coin-controlled electric coil	445,220	Jan. 27	2002	515	54	415
Colby, Edward J., Chicago, Ill. Electric lock	446,509	Feb. 17	1658	404	54	853
Colby, Edward J., Chicago, Ill., assignor to Reiten Furnace Regulator Company, of Illinois. Furnace-regulator	444,691	Jan. 13	1110	287	54	227
Cole, Francis J., and E. W. Grieves, Baltimore, Md. Card-case for freight-cars	444,240	Jan. 6	422	106	54	83
Cole, Francis J., and E. W. Grieves, Baltimore, Md. Dust-guard for car-axle boxes	444,241	Jan. 6	423	106	54	83
Cole, Francis J., and E. W. Grieves, Baltimore, Md. Freight-car-door fixture	444,242	Jan. 6	424	106	54	83
Cole, Francis J., and E. W. Grieves, Baltimore, Md. Bracket-support and stop for car-doors	444,274	Jan. 6	466	119	54	92
Cole, Frank, New York, N. Y. Game apparatus	446,552	Feb. 17	1721	422	54	806
Cole, Frederick W., Newton, Mass. Signal-box	447,880	Mar. 10	982	246	54	1311
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Successive non-interference signal-box	445,795	Feb. 3	466	115	54	602
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Electric visual indicator	445,796	Feb. 3	469	115, 116	54	603
Cole, Frederick W., assignor of one half to M. G. Crane, Newton, Mass. Repeater	445,797	Feb. 3	474	116, 117	54	604
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Successive non-interference signal-box	445,798	Feb. 3	482	117	54	605
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Non-interference signal-box	445,799	Feb. 3	485	117, 118	54	606
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Successive non-interference signal-box	445,800	Feb. 3	487	118	54	606
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Successive non-interference signal-box	445,801	Feb. 3	489	118, 119	54	607
Cole, Frederick W., assignor of one half to M. G. Crane, Newton, Mass. Successive non-interference signal-box	445,802	Feb. 3	493	119	54	608
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Repeater	449,574	Mar. 31	3737	940	54	1860
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Non-interference signal-box	449,575	Mar. 31	3745	941	54	1861
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Non-interference signal-box	449,576	Mar. 31	3747	941	54	1862
Cole, Moses N., Wellington, Kans. Attachment for cooking-stoves	446,430	Feb. 17	1534	377	54	829
Cole, Van Rensselaer, and C. W. Nelkirk, Republic, Ohio. Hay-rake and loader	449,462	Mar. 31	3582	902	54	1831
Coleman, Arnold D., assignor of one-half to J. O. Armour, Chicago, Ill. Can-soldering machine	446,162	Feb. 10	1081	266	54	727
Coleman, Margaret A. (See Cummins, George W., assignor.)						
Coleman, Minor S., Cañon City, Colo. Baling-press	445,045	Jan. 20	1723	444	54	352
Coles, David H., Brooklyn, N. Y. Quilting	446,328	Feb. 10	1365	332	54	782
Collier, John J., Renault, Ill. Desk	444,663	Jan. 13	1004	277	54	218

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Collins, John J., Washington, D. C. Electrolyte for galvanic batteries	448,936	Mar. 24	2705	.....	54	1659
Collins, John W., Washington, D. C. Air-purifier	447,942	Mar. 10	1099	276	54	1333
Collins, Thomas. (See Wahlin, Lundström, and Collins.)						
Collins, William G., East Orange, N. J. Stair-carpet fastener	444,589	Jan. 13	959	249	54	199
Collum, Annie K. (See Collum, George S., assignor.)						
Collum, George S., assignor to A. K. Collum, Hartford, Conn. Cooling-slab for confectioners	449,577	Mar. 31	3749	941	54	1862
Colsten, William A., Great Bend, Pa. Eaves-trough machine	449,107	Mar. 31	2971	751	54	1719
Colt, W. D. (See McGowan, John C., assignor.)						
Colton, George A., assignor to Munger-Colton Manufacturing Company, Chicago, Ill. Sliding-door latch	449,070	Mar. 24	2908	737	54	1698
Comings, William R., New Britain, Conn. Method of and machine for making cup-shaped articles	448,748	Mar. 24	2425	{606 607}	54	1605
	447,633	Mar. 3	587	145	54	1228
Commons, Isaac, Piqua, Ohio. Mustache-trainer						
Compton, Henry T., *et al.* (See Ludwig, John C., assignor.)						
Compton, Norris M., and W. H. Longcoy, Sullivanville, N. Y. Thill-coupling	444,333	Jan. 6	547	142	54	110
Comstock, Alphonso S., Evanston, Ill. Tent	444,605	Jan. 13	979	{253 254}	54	202
Comstock, Alphonso S., Evanston, Ill. Tent	449,095	Mar. 24	2946	747	54	1706
Comstock, Charles, Indianapolis, Ind. Jump-seat for vehicles						
Comstock, H. G. (See Forgason, Henry C., assignor.)						
Comstock, Wallace B., Allendale, Mich. Wardrobe-hook	445,948	Feb. 3	703	171	54	651
Conant, William A., Paw Paw Grove, Ill. Obstetrical harness	447,870	Mar. 10	983	246	54	1311
Condict, George H., Philadelphia, Pa., assignor to Electric Car Company of America, of Pennsylvania. Commutator-brush holder for electric motors	445,521	Jan. 27	2436	635	54	500
Condon, John W., Rochester, Ind. Beater and mixer for confectioners' use	449,463	Mar. 31	3583	902	54	1831
Conklin, Arthur, Grant's Pass, Oreg. Fruit-drier	448,846	Mar. 24	2574	646	54	1634
Conley, Michael R. (See Lancaster and Conley.)						
Conly, Mahlon S., Chicago, Ill. Track-instrument for railway-signals	446,403	Feb. 10	1486	366	54	806
Connell, Lewis E. (See West, Charles F., assignor.)						
Conner, Benjamin F., Columbia, Pa. Bell and hopper for blast-furnaces	445,850	Feb. 3	560	136	54	621
Conner, William A., assignor to Standard Underground Cable Company, Pittsburg, Pa. Electric cable	448,604	Mar. 17	2179	544	54	1550
Connett, Matthew F., Jr., assignor to L. J. Brown, N. W. Warren, P. H. Blanchard, and T. W. Harford, Davenport, Iowa. Hand fence-machine	448,410	Mar. 17	1875	472	54	1494
Connolly, Frank H. (See Skinner and Connolly.)						
Conradson, Conrad M., Madison, Wis. Electric street-car driving-gear	448,910	Mar. 24	2670	671	54	1652
Conroy, Charles C., Buffalo, N. Y. Protector for jaws of wrenches	448,124	Mar. 10	1378	353	54	1389
Consolidated Car Heating Company. (See McElroy, James F., assignor.)						
Consolidated Car Heating Company of West Virginia. (See Sewall, James H., assignor.)						
Consolidated Fastener Company. (See Hall, Frank E., assignor.)						
Consolidated Safety Pin Company. (See Henry, Robert G., assignor.)						
Converse, Edmund. (See Percival, Herbert E., assignor.)						
Converse, Edmund. (See Turner, William A., assignor.)						
Conway, Harrison V., Boone, Iowa. Combined harrow, seeder, and mower	445,543	Feb. 3	22	6	54	515
Conway, Katharine, Philadelphia, Pa. Toilet-cream	444,743	Jan. 13	1240	.....	54	243
Cook, Almerin S., assignor to H. W. Leach, trustee, Cambridge, Mass. Brush for dynamos	444,794	Jan. 13	1271	329	54	256
Cook, Austin, and W. L. Harvey, assignors of one-third to T. J. Parsons, San Francisco, Cal. Separator	445,133	Jan. 20	1852	{479 480}	54	377
	448,794	Mar. 24	2494	624	54	1619
Cook, Burton H., Brooklyn, N. Y. Culinary grater	445,954	Feb. 10	750	184	54	669
Cook, Eugene, Kalamazoo, Mich. Vehicle-spring	447,665	Mar. 3	625	155	54	1236
Cook, Frank S., assignor to Capitol Manufacturing Company, Chicago, Ill. Wrench	449,464	Mar. 31	3585	903	54	1831
Cook, Frederic, New Orleans, La. Carrier for feeding bagasse-furnaces	444,817	Jan. 20	1308	340	54	273
Cook, George, Boston, Mass. Upright piano	445,747	Feb. 3	382	97	54	588
Cook, Hiram B., San Francisco, Cal. Striking-bag	444,334	Jan. 6	548	142	54	110
Cook, Hugo, Dayton, Ohio. Cash-register	445,671	Feb. 3	249	{67 68 69}	54	561
Cook, Hugo, Dayton, Ohio. Cash register and indicator	448,937	Mar. 24	2705	683	54	1659
Cook, Hugo, Dayton, Ohio. Cash register, recorder, and indicator	449,311	Mar. 31	3300	{834 835}	54	1779
Cook, James M. (See Jordan and Cook.)						
Cook, John H., Washington, D. C. Vehicle-cleaning device	447,446	Mar. 3	287	73	54	1171
Cook, John J., Columbus Junction, Iowa. End-gate fastening	444,313	Jan. 6	521	136	54	104
Cook, Moses C. (See Cook, William S. and M. C.)						
Cook, William S., Jackson, Ga. Cultivator	449,592	Mar. 31	3666	921	54	1848
Cook, William S. and M. C., South Omaha, Nebr. Electric railway-signal	446,546	Feb. 17	1710	{419 420}	54	864
Cook, William S. and M. C., South Omaha, Nebr. Railway-car telegraphy	447,943	Mar. 10	1100	276	54	1333
Cook, Horatio G., Warsaw, Ill. Money-changer	448,637	Mar. 24	2241	563	54	1570
Cookus, James H., assignor of one-half to W. H. Lang, Cameron, Mo. Churn	449,523	Mar. 31	3667	921	54	1848
Cooley, Charles H., assignor to Pratt & Whitney Company, Hartford, Conn. Grain-weigher	447,715	Mar. 3	701	175	54	1250
Cooley, Charles H., assignor to Pratt & Whitney Company, Hartford, Conn. Regulator for grain-weighers	447,721	Mar. 3	712	178	54	1252
Cooley, Charles H., and F. H. Richards, assignors to Pratt & Whitney Company, Hartford, Conn. Grain-weigher	447,762	Mar. 10	788	{195 196 197}	54	1274
Cooley, Frank, Cincinnati, Ohio. Electric-lamp reflector	449,403	Mar. 31	3478	875	54	1811
Cooley, Herbert M., Elmo, Kans. Sad-iron	445,927	Feb. 3	671	164	54	643
Coombs, Edwin T., assignor of one-half to M. H. and M. B. Stebbins and H. Baker, Sabinsville, Pa. Combined harrow and roller	447,763	Mar. 10	793	197	54	1275
Coons, James M. (See Bailey and Coons.)						
Coonse, George W., and O. E. Harris, Indianapolis Ind. Vehicle	446,172	Feb. 10	1098	269	54	730
Coop, William L., Providence, R. I. Exercising apparatus	445,726	Feb. 3	345	90	54	581
Cooper, David G., Pequabuck, Conn. Oven-thermometer	447,129	Feb. 24	2647	657	54	1053
Cooper, Dyer, Philadelphia, Pa. Milk testing and separating machine	446,348	Feb. 10	1239	303	54	757
Cooper, Edward F. (See Boring, Frank M., assignor.)						
Cooper, George N., assignor of one-half to A. S. Dinsmore, Haverhill, Mass. Hat-holder	447,278	Feb. 24	2934	729	54	1108
Cooper, Leslie A., assignor of one-half to Fiske, Coleman & Co., Boston, Mass. Lantern for regenerative gas-lamps	446,991	Feb. 24	2424	603	54	1011
Cooper, William, Traverse City, Mich. Gate	445,343	Jan. 27	2179	564	54	451
Cooper, William S., Philadelphia, Pa. Water-closet bowl	444,243	Jan. 6	425	107	54	83
Cooper, William S., Philadelphia, Pa. Water-closet reservoir	445,424	Jan. 27	2286	{595 596}	54	474

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cooper, William T., Nashville, Tenn. Dumping car	449,524	Mar. 31	3668	{921 922}	54	1848
Cope Brothers. (See Cope, Henry P., assignor.)						
Cope, Henry P., assignor to Cope Brothers, Detroit, Mich. Float-valve	444,335	Jan. 6	554	143	54	110
Copeland, Daniel T. (See Crisp and Copeland, assignors.)						
Copeland, David W., assignor of one-half to H. D. Selleck, Syracuse, N. Y. Irrigating apparatus	444,564	Jan. 13	925	241	54	191
Copeland, David W., assignor to J. M. Andrews, Syracuse, N. Y. Axle-bearing	447,298	Mar. 3	21	6	54	1122
Copeland, George M., Brockton, Mass. Tide-motor	446,057	Feb. 10	898	218	54	694
Copeland, George W. (See Crisp and Copeland.)						
Copeland, Robert J., and A. E. Chatterson, Chicago, Ill. Order-sheet binder	448,411	Mar. 17	1877	472	54	1494
Coplen, John D., Denver, Colo. Ore concentrator and amalgamator	444,275	Jan. 6	467	119	54	92
Copper, John. (See Brisbin and Copper.)						
Copper, Luther S., Cleveland, Ohio. Saddle for bicycles	448,774	Mar. 24	2462	615	54	1612
Corbin, P. & F. (See Glover, Charles, assignor.)						
Corbin, Royal, Plattsburg, N. Y. Adding-machine	445,240	Jan. 27	2026	522	54	420
Corcoran, Luke H., *et al.* (See Wright, Herbert A., assignor.)						
Corey, Charles A., Watertown, Wis. Feed-regulator for roller-mills, &c	448,853	Mar. 24	2585	649	54	1636
Corey, William J., Georgetown, Del. Cough remedy	446,058	Feb. 10	899	.....	54	695
Corliss, William, Providence, R. I. Safe or vault	447,488	Mar. 3	371	91	54	1188
Cornelison, John H., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	445,975	Feb. 10	751	184	54	669
Corning Glass Works. (See Haines, Robert D., assignor.)						
Corrman, Theodore. (See Miller, Martin B., assignor.)						
Cornwall, John B., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Split pulley	449,608	Mar. 31	3796	953	54	1871
Cornwell, Edward C., Ypsilanti, Mich. Reel	444,818	Jan. 20	1309	341	54	273
Corser, Edson J. (See Kirkpatrick and Corser.)						
Corser, Lorenzo D., Ebensburg, Pa. Leveling attachment for harrows	448,502	Mar. 17	2015	504	54	1519
Cosby, Anderson B., Richmond, Va. Hose-washing machine	447,634	Mar. 3	588	145	54	1228
Cosgrove, Ellen, administratrix. (See Cosgrove, William F.)						
Cosgrove, William F., deceased, Jersey City, N. J.; E. Cosgrove administratrix. Fuel feeder and separator	445,390	Jan. 27	2238	581	54	463
Cosper, William H., Chicago, Ill. Weather-stripping	445,544	Feb. 3	24	6	54	516
Coss, James C., Mansfield, Ohio. Bow-socket for buggy-tops	445,046	Jan. 20	1795	444	54	353
Costigan, Joseph P., Minneapolis, Minn., and T. M. Valleau, Brooklyn, N. Y. Air-space covering for steam-pipes, &c	447,243	Feb. 24	2876	714	54	1096
Coté, Louis, St. Hyacinthe, Canada. Heel-stiffener machine	447,944	Mar. 10	1103	277	54	1334
Cotte, Pierre. (See Nief and Cotte.)						
Cotter, John N., *et al.* (See Mitchell, Oliver F., assignor.)						
Cotton, Francis, *et al.* (See Preston, James B., assignor.)						
Cottrell, Calvert B., Westerly, R. I. Printing-machine	448,775	Mar. 24	2463	{616 617}	54	1613
Cottrell, Calvert B., Westerly, R. I. Means for transmitting rotary motion at different speeds	448,776	Mar. 24	2467	617	54	1613
Cottrell, George R., New York, N. Y., assignor of one-half to W. W. Dudley and F. L. Browne, Washington, D. C. Apparatus for mixing gas and air	447,999	Mar. 3	23	7	54	1123
Couch, Joel, Clayton, N. Y. Center-board for vessels	448,503	Mar. 17	2017	504	54	1520
Couper, Edgar J., *et al.* (See Munsing, George D., assignor.)						
Coursen, Robert R., Newark, N. J. Plaster slab	447,025	Feb. 24	2485	618	54	1021
Courtenay, William. (See Daggett, John S., assignor.)						
Courtman, Reuben S. (See Cayley and Courtman.)						
Courtney, John J., assignor to Minneapolis Harvester Works, Minneapolis, Minn. Mowing-machine	445,391	Jan. 27	2241	{581 582}	54	463
Covell, Allen T. (See Limbaugh, Francis M., assignor.)						
Cowell, Edward R. E., assignor of one-half to H. P. Glover, Ypsilanti, Mich. Time-chart	445,392	Jan. 27	2244	583	54	464
Cowell, Edward R. E., assignor of one-half to H. P. Glover, Ypsilanti, Mich. Time-globe	445,393	Jan. 27	2245	583	54	464
Cowles, George C., assignor of one-half to E. Germain, Saginaw, Mich. Pulley	445,047	Jan. 20	1727	444	54	353
Cowles, Lyman L., assignor to M. S. Cowles, Valley, Nebr., and C. V. Hollister, Salt Lake City, Utah Ter. Potato-planter	444,521	Jan. 13	851	222	54	178
Cowles, Mary S., *et al.* (See Cowles, Lyman L., assignor.)						
Cox, Edward T., New York, N. Y. Apparatus for making coke	445,394	Jan. 27	2246	583	54	464
Cox Stove Company, Abram. (See Mott, Abram C., assignor.)						
Cox, William H., Virden, Ill. Sliding gate	445,163	Jan. 27	1911	{493 494}	54	397
Coxe, Eckley B. (See Richards, Francis H., assignor.)						
Coy, Henry E., Toledo, Ohio. Screw-cutting machine	448,638	Mar. 24	2243	563	54	1570
Coyle, Daniel, Philadelphia, Pa. Envelope moistener and closer	447,809	Mar. 10	881	220	54	1292
Crabbs, Cyrus. (See Tweedy, Thomas A., assignor.)						
Crabbs, Cyrus, Toronto, Canada. Fence	447,539	Mar. 3	450	110	54	1202
Crabbs, Orion A., and S. Emens, Dayton, Ohio. Tug	447,050	Feb. 24	2732	629	54	1030
Crabtree, Leonard T., Oconto, assignor of one-half to G. M. Knapp and D. E. Wescott, Shawano, Wis. Train-order annunciator	448,125	Mar. 10	1379	353	54	1389
Craig, Isaac S., Somerville, assignor to Standard Rivet Company, Boston, Mass. Stop-motion for machines	448,578	Mar. 17	2126	533	54	1541
Craig, Julia W., San Francisco, Cal. Chair	446,249	Feb. 10	1240	303	54	758
Craig, William M., Santa Ynez, Cal. Windmill	446,630	Feb. 17	1829	452	54	887
Craig, William R., assignor of one-half to H. R. Stonghton, Shelby, Ala. Fluc-hole cutter	448,126	Mar. 10	1385	354	54	1390
Craige, Edward H., Brooklyn, N. Y. Binder for sewing-machines	446,843	Feb. 17	2164	538	54	955
Craighead & Kintz Company. (See Kintz, Joseph, assignor.)						
Crain, Charles S., trustee. (See Rowe, George E., assignor.)						
Crakes, Thomas, Mishawaka, Ind. Cultivating fruit-trees	446,662	Feb. 17	1881	467	54	897
Cram, Danvers, Liberty, Me. Wagon or carriage wrench	445,258	Jan. 27	2064	532	54	426
Cram, George H. (See Williams and Cram.)						
Cram, William E., Cambridge, assignor of one-half to E. S. Beckford, Quincy, Mass. Electrical annunciator	447,558	Mar. 3	474	116	54	1206
Crane Company. (See Wilson, Henry F., assignor.)						
Crane Elevator Company. (See Heermans, Thaddeus W., assignor.)						
Crane, Moses G. (See Cole, Frederick W., assignor.)						
Crane, Moses G., Newton, Mass. Non-interference signal-box	445,545	Feb. 3	25	7	54	516
Crane, Moses G., Newton, Mass. Electro-magnetic device	449,206	Mar. 31	3126	789	54	1748
Crane, Richard T., Chicago, Ill. Discharge-regulator for hydraulic elevators	445,748	Feb. 3	383	98	54	589
Crane, Richard T., Chicago, Ill. Steam-whistle	448,127	Mar. 10	1386	354	54	1390
Crane, Thomas S., East Orange, N. J., assignor to E. Bradley, New York, N. Y. Log-crosscutting machine	447,462	Mar. 3	315	79	54	1177

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Crane, Walter E. (See Johnson and Crane.)						
Crank, Nathaniel, Hill City, Kans. Apparatus for vapor-baths	445,464	Jan. 27	2347	610	54	484
Cranston, James F., and J. H. Wesson, Springfield, Mass. Loom	445,395	Jan. 27	2247	583 584	54	464
Cranston, John H., Norwich, Conn. Back-up motion for printing-presses	448,938	Mar. 24	2709	683	54	1660
Crawford, Frank, assignor of one-half to A. March, New Brunswick, N. J. Stop mechanism for knitting-machines	445,465	Jan. 27	2348	610	54	484
Crawford, Harvey F., and R. C. Lambert, Brockton, Mass.; said Lambert assignor of one-third to said Crawford. Mechanism for propelling vehicles	444,130	Jan. 6	252	61	54	52
Crawford, Harvey F., and R. C. Lambert, Brockton, Mass.; said Lambert assignor of one-third to said Crawford. Velocipede	444,131	Jan. 6	254	61	54	52
Crawford, James G., Boston, Mass. Ironing-machine	447,559	Mar. 3	476	117	54	1207
Crawford, Miley P., Logan, Ohio. Block-signal	445,928	Feb. 3	673	164 165	54	643
Crawford, Samuel E., Ripon, Wis. Hand nailing-machine	447,398	Mar. 3	204	53, 54	54	1156
Crawford, William H., Oshkosh, Wis. Valve	446,059	Feb. 10	900	218	54	695
Crawshaw, Charles R. (See Moats and Crawshaw.)						
Creecy, Edward W. (See Andrews and Norton, assignors.)						
Cregier, De Witt C. (See Cregier, Nathaniel B., assignor.)						
Cregier, Nathaniel B., assignor of one-half to D. C. Cregier, Chicago, Ill. Railway-signal	444,819	Jan. 20	1310	341	54	273
Creider, Simon S. (See McCann and Creider.)						
Creque, Allen P., New York, N. Y. Boiler-pedestal	444,692	Jan. 13	1111	287	54	227
Creque, Allen P., New York, N. Y. Stand or support for boilers	444,693	Jan. 13	1112	287	54	228
Crews, Gideon, Pacific, Mo. Hay-tedder	444,423	Jan. 13	696	181	54	145
Crider, Henry M., Knightstown, Ind. Cue-tip fastener	448,474	Mar. 17	1978	496	54	1512
Cridge, Matthew, Ross, Pa. Gage for carpentry	447,604	Mar. 3	544	135	54	1219
Crighton, William, assignor to Kerr-Murray Manufacturing Company, Fort Wayne, Ind. Center-seal and by-pass valve	448,504	Mar. 17	2019	505	54	1520
Crighton, William, assignor to Kerr-Murray Manufacturing Company, Fort Wayne, Ind. Center-seal and by-pass valve	449,578	Mar. 31	3750	942	54	1862
Cripps, David, near Iuka, Ill. Fruit-tree protector	445,048	Jan. 20	1728	445	54	353
Crisp, John A., and G. F. Webb, Jefferson, Ohio. Body-battery and attachments for the same	448,128	Mar. 10	1387	354	54	1391
Crisp, Joseph E., Somerville, and G. W. Copeland, assignors, by mesne assignments, to D. T. Copeland, Malden, Mass. Tack-driving machine	446,631	Feb. 17	1830	453	54	887
Crispell, Isaiah D., West Stockbridge, Mass. Head-rest for chairs	444,969	Jan. 20	1637	420	54	335
Crittenden, William H., Belden, Ohio. Road-scraper	448,412	Mar. 17	1879	472	54	1494
Croft, Daniel B., Sweet Water, Ill. Draft-equalizer	448,129	Mar. 10	1390	354	54	1391
Crompton Loom Works. (See Wyman, Horace, assignor.)						
Crompton Loom Works. (See Wyman and Clark, assignors.)						
Crompton Loom Works. (See Wyman and Webb, assignors.)						
Cronin, William D., and C. B. Adams, assignors to said Cronin and G. L. Horn, Philadelphia, Pa. Merry-go-round	445,134	Jan. 20	1854	480	54	378
Cronkhite, Henry M., U. S. Army. Fountain-pen	448,939	Mar. 24	2710	684	54	1660
Crooker, Wilham W., assignor to J. F. Swain, Lynn, Mass. Blacking and burnishing boots or shoes. (Reissue)	11,144	Feb. 10	1502	370	54	810
Crosby, James P. (See Brown and Crosby.)						
Crosley, John H., and D. C. Ripley, assignors to Ripley & Co., Pittsburg, Pa. Sand-blast stencil	445,241	Jan. 27	2028	.....	54	420
Crosman, James H. (See King, William R., assignor.)						
Cross, Gerome L., assignor to himself, G. K. Geiger, and W. D. McKenzie, Springfield, Mass. Coating compound for brick-work	448,179	Mar. 10	1468	.....	54	1407
Cross, William, Winnipeg, Canada. Car-axle box	448,130	Mar. 10	1390	355	54	1391
Croswell, Samuel P., West Medford, Mass. Set bowl or wash-basin	447,282	Feb. 24	2860	710	54	1092
Crotty, John F. (See Lyons, Hugh, assignor.)						
Crouch, Riley, May, Tex. Churn	447,399	Mar. 3	206	54	54	1157
Crow, Benjamin F., St. Louis, Mo., assignor to Brownell & Wight Car Company, of Missouri. Trolley-support for electric cars	448,505	Mar. 17	2022	505	54	1520
Crow, William J. (See Bryant and Crow.)						
Crowlins, Walter A., assignor to J. W. Allison, trustee, Memphis, Tenn. Galvanic battery	445,425	Jan. 27	2298	586	54	475
Crowell, Frank. (See Knight, Charles Y., assignor.)						
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Web-printing machine	446,829	Feb. 17	2140	531 532 533	54	950
Crowell, Milton B., Newport News, assignor of one-half to C. M. Bickford, Hampton, Va. Pedal attachment for organs	447,560	Mar. 3	477	117	54	1207
Crowell, William D., Weston, Ky. Weed attachment for plows	449,465	Mar. 31	3586	903	54	1831
Crowley, Joseph. (See Morgan and Crowley.)						
Cruise, Thomas H. J., Toronto, Canada. Street-car service	446,731	Feb. 17	1991	497	54	918
Cuadros, Manuel J., Liege, Belgium. Metallic cartridge	444,336	Jan. 6	554	143	54	111
Culhane, Daniel. (See Brice, Richard J., assignor.)						
Cullen, Christopher. (See Golden, Samuel, assignor.)						
Culmer, John W., New Brighton, Pa. Weighing and price scale	448,911	Mar. 24	2671	671 672	54	1652
Culp, Samuel T., Denver, Colo. Bellows	444,744	Jan. 13	1201	311	54	243
Cuming, M. A. (See O'Gorman, Michael, assignor.)						
Cummings, Charles C. (See Franklin, Rhodolph H., assignor.)						
Cummings, George L., New York, N. Y. Wood-sawing machine	446,510	Feb. 17	1659	405	54	854
Cummings, George W. (See Winsor and Cummings.)						
Cummings, Henry H., Malden, assignor to Davis-Moore Sewing Machine Company, Boston, Mass. Sewing-machine	447,008	Feb. 24	2446	608 609	54	1015
Cummings, Henry H., Malden, assignor to Davis-Moore Sewing Machine Company, Boston, Mass. Take-up for sewing-machines	447,009	Feb. 24	2449	610	54	1015
Cummings, William H., Chicago, Ill. Friction-clutch	449,312	Mar. 31	3012	836	54	1780
Cummins, George W., Vienna, N. J., assignor, by mesne assignments, of one-half to M. A. Coleman, New York, N. Y. Process of and apparatus for producing hot-rolled copper free from oxidation	445,691	Feb. 3	290	76	54	569
Cuntingham, Alexander G. (See Walsh, James R., assignor.)						
Cuntingham, George W., and J. M. Ferry, Bismarck, Ill. Replanting attachment for cultivators	448,131	Mar. 10	1391	355	54	1392
Cuntingham, Henry, *et al.* (See Smith, John P., assignor.)						
Cuntingham, Henry, Batchtown, Ill. Roofing-paper	446,145	Feb. 10	1043	.....	54	721
Cuntingham, Mary J., Boston, Mass. Bed-pan	445,011	Jan. 20	1068	428	54	342
Cuntingham, Thomas C., and L. A. Funk, Sigourney, Iowa. Stump-puller spool	449,207	Mar. 31	3129	789	54	1748

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cuno, Charles, Milwaukee, Wis. Shingle-painting machine	444,902	Jan. 20	1484	383 384	54	306
Cupples, Samuel. (See West, James, assignor.)						
Curlin, John V., Edith, Tenn. Grain-drier	448,132	Mar. 10	1393	355 356	54	1392
Carnayn, William H., Riverside, Ohio. Heading-dressing machine	445,619	Feb. 3	158	42	54	542
Currie, Horace T., Albina, Oreg. Rail-cleaning and lubricating attachment for locomotives	444,694	Jan. 13	1114	288	54	228
Currie, Stanley C. C., assignor to United Gas Improvement Company, Philadelphia, Pa. Electrode for secondary batteries	444,392	Jan. 6	642	167	54	126
Currie, Stanley C. C., assignor to United Gas Improvement Company, Philadelphia, Pa. Secondary battery	447,279	Feb. 24	2935	730	54	1108
Currier, Curtis S. (See Currier, Richard B., assignor.)						
Currier, Jacob B., and D. H. Rice, Lowell, Mass. System of electric calls	446,732	Feb. 17	1992	497 498	54	919
Currier, Richard B., assignor of one-half to C. S. Currier, Almont, Mich. Miter-box	446,431	Feb. 17	1535	378	54	820
Currier Telephone Bell Company. (See Rice, David H., assignor.)						
Curry, James P. (See Beach, Oscar W., assignor.)						
Curtice, John M., Lowell, Mass. Yarn guide and clearer	448,296	Mar. 17	1693	428	54	1459
Curtice, John M., assignor to himself and Lowell Machine Shop, Lowell, Mass. Yarn-cleaner for spooling-machines	448,622	Mar. 17	2217	555	54	1559
Curtis, Charles L., Brooklyn, assignor to N. B. Abbott Machine Company, New York, N. Y. Applying wire cork-retainers to bottles	445,803	Feb. 3	498	120	54	609
Curtis, Charles L., Brooklyn, assignor to N. B. Abbott Machine Company, New York, N. Y. Bottle-wiring machine	448,854	Mar. 24	2586	650 651	54	1636
Curtis, David G. (See Ashbaugh, John I., assignor.)						
Curtis, Gram. (See Witherow and Curtis.)						
Curtis, Henry E., Springfield, Mass., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	446,432	Feb. 17	1536	378	54	829
Curtis, Rowland K., Wabash, Ind., assignor of one-half to C. H. Lawton. Tilting barrel stand and truck	446,404	Feb. 10	1488	366	54	807
Curtis Sons & Co. (See Rhodes, William H., assignor.)						
Curtis, Theodore A. (See Johnson and Curtis.)						
Curtis, Theodore H., Cleveland, Ohio. Slaughtering apparatus	448,413	Mar. 17	1880	472 473	54	1494
Curtis, Wallace B., Pomeroy, Ohio. Bale-tie	448,830	Mar. 24	2544	638	54	1628
Curtis, Wallace B., Pomeroy, and C. Hinrod, Jackson, Ohio. Lamp shade	445,259	Jan. 27	2065	532	54	427
Curtis & Wheeler. (See Gillard, Nathaniel, assignor.)						
Curtiss, Edward W., Portland, Oreg. Steam-engine	449,208	Mar. 31	3130	789	54	1748
Curtiss, George F., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut, Electric fuse	449,209	Mar. 31	3131	789	54	1749
Curtiss, Jay C. D., Rochester, N. Y. Vessel-holder for druggists' use	447,605	Mar. 3	545	135	54	1220
Curtiss, Alexander, *et al.* (See Fottrell, John assignor.)						
Cushing, Enos L., Albion, N. Y. Suppository-mold	448,133	Mar. 10	1394	356	54	1392
Cushman, George W., New York, N. Y. Pedal for velocipedes	447,145	Feb. 24	2708	671	54	1092
Cussen, William J., Richmond, Va. Tobacco-pouch	444,291	Jan. 6	491	128	54	98
Cussen, William J., Richmond, Va. Tobacco-pouch	444,292	Jan. 6	492	128	54	98
Cussen, William J., Richmond, Va. Tobacco-pouch	444,293	Jan. 6	493	129	54	98
Cussen, William J., Henrico County, assignor of three-fifths to M. Millhiser & Co., Richmond, Va. Tobacco bag or pouch	445,881	Feb. 3	606	149	54	631
Cussen, William J., assignor of three-fifths to M. Millhiser & Co., Richmond, Va. Tobacco-pouch	447,103	Feb. 24	2609	648	54	1046
Cuthbertson, John, Lowell, Mass. Tension device for loom-shuttles	448,475	Mar. 17	1979	497	54	1512
Cutler, Henry H., Newton, Mass. Electric gas-lighting apparatus	445,727	Feb. 3	346	91	54	581
Cutler, Henry H., Newton, Mass. Electric gas-lighter	445,728	Feb. 3	349	91	54	581
Cutshaw, Leonard, Denver, Colo. System for cable railways	449,466	Mar. 31	3587	903 904	54	1832
Cutten, James H., assignor to Davis-Moore Sewing Machine Company, Boston, Mass. Thread-guard for sewing-machines	447,280	Feb. 24	2937	730	54	1109
Cutter, George. (See Lounsbury, James A., assignor.)						
Cutter, George, Chicago, Ill. Molding for electric wiring	444,377	Jan. 6	614	158	54	121
Cutter, George, and C. G. Armstrong, Chicago, Ill. Electric switch	445,310	Jan. 27	2132	550 551	54	441
D'Auria, Luigi, assignor of one-half to H. M. Robert, Philadelphia, Pa. Direct-acting pumping-engine	446,435	Feb. 17	1541	379	54	830
Daggett, Byron H., Buffalo, N. Y. Fracture apparatus	449,436	Mar. 31	3538	892	54	1823
Daggett, John S., Brooklyn, assignor of one-half to W. Courtenay, New York, N. Y. Trunk	446,812	Feb. 17	2116	526	54	945
Dagle, Ozro F. (See Ellis, Charles A., assignor.)						
Dahlquist, John, Portland, Oreg., and O. N. Dahlquist, Tucker, Wash. Water-power wheel	447,810	Mar. 10	882	220	54	1292
Dahlquist, Olof N. (See Dahlquist, John and O. N.)						
Daily, John, Marengo, Ohio. Gearing	447,447	Mar. 3	288	73	54	1172
Daily, Michael, Lebanon, N. H. Device for securing tool-handles	445,976	Feb. 10	752	184	54	699
Dale, George L., Newark, N. J. Automatic egg-boiler	447,945	Mar. 10	1105	278	54	3334
Dallis, Thomas N., Spartanburg, S. C. File or rasp	445,712	Feb. 3	323	85	54	576
Dallmer, Albert. (See Krieger and Dallmer.)						
Daluni, Julius A., New York, N. Y. Folding ladder	446,433	Feb. 17	1538	378	54	830
Daly, James W., Troy, N. Y. Pipe-coupling nipple	446,511	Feb. 17	1660	405	54	854
Daly, Michael J., Granton, N. J. Bridle-bit	446,944	Feb. 24	2351	584	54	996
Dalziel, Harvey, London, England. Backing-block for stereotype-plates	444,949	Jan. 20	1574	404	54	323
Damborg, Thorwold C. (See Chambers, Mendham, and Damborg.)						
Dammand, R. P. (See Kirkpatrick, Robert S., assignor.)						
Damon, Daniel E. (See Hamblin, Silvanus, assignor.)						
Dana, Charles H., West Lebanon, N. H. Fruit and vegetable cutter	446,379	Feb. 10	1435	352 353	54	797
Dana, Edward A., Fairhaven, Mass. Windmill	446,512	Feb. 17	1661	405	54	854
Danaher, Frederick F., Brooklyn, N. Y. Force-pump	446,283	Feb. 10	1291	316	54	768
Dane, John, Jr., Orange, N. J. Fare-recording register	443,988	Jan. 6	2	1	54	3
Dangler Stove and Manufacturing Company. (See Ruppel, Henry, assignor.)						
Daniel, John D., Mayfield, N. C. Windlass	447,764	Mar. 10	795	197	54	1276
Daniels, Fred H., Worcester, Mass. Apparatus for coiling wire rods	444,550	Jan. 13	899	233 234	54	187
Daniels, Fred H., Worcester, Mass. Apparatus for coiling wire rods	444,551	Jan. 13	902	234	54	187
Daniels, Fred H., Worcester, Mass. Mechanism for coiling wire rods	445,965	Feb. 3	732	178	54	656

Alphabetical list of patentees, January to March, inclusive—Continued.

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Daniels, James E., Paullina, Iowa, assignor of one-half to G. Hakeman and S. Harris. Fence-post	448,180	Mar. 10	1469	374	54	1407
Dankworth, William J., Gatesville, Tex. Hame-hook	444,664	Jan. 13	1065	277	54	218
Darr, Lizzie S., New York, N. Y. Postage-stamp-vending apparatus	446,434	Feb. 17	1538	378	54	830
Daus, Felix F. (See Neuhaus and Daus.)						
Davenny, James E., Greenville, Pa. Ribbon-clasp	449,467	Mar. 31	3593	905	54	1833
Davenport, John J., Philadelphia, Pa. Brake-shoe	448,940	Mar. 24	2712	684	54	1660
Davidson, Henry J. (See Williams, Henry J., assignor.)						
Davidson, Herman. (See Von Brandis and Davidson.)						
Davidson, Joe R., *et al.* (See Shafer, Joshua S., assignor.)						
Davidson, Mattie V. (See Davidson, Otis E., assignor.)						
Davidson, Otis E., assignor to M. V. Davidson, Nashville, Tenn. Corn-sheller	448,941	Mar. 24	2713	684, 685	54	1661
Davies, John A. (See Barnes, Edward M., assignor.)						
Davies, Thomas W., and G. M. Downey, Dallas, Tex. Shaft-tug	445,929	Feb. 3	674	165	54	643
Davis-Carter, Charles. (See Guenther, Karl F. W., assignor.)						
Davis, Charles E., *et al.* (See Burton, Augustus G., assignor.)						
Davis, Edward C., and T. Baldwin, London, England. Telescopic joint	445,440	Jan. 27	2314	600, 601	54	478
Davis, Francis M., Denver, Colo. Chill-mold for pulleys	444,606	Jan. 13	981	254, 255	54	203
Davis & Furber Machine Company. (See Wickers and Stone, assignors.)						
Davis & Furber Machine Company. (See Wright, Edward, assignor.)						
Davis, George. (See St. Leger and Davis.)						
Davis, George F., Collingswood, N. J. Combined partitioned and box stall for stables	447,561	Mar. 3	479	117	54	1207
Davis, George H., assignor of one-half to S. H. Barlow, Lacona, N. Y. Crupper-fastening	446,380	Feb. 10	1436	353	54	798
Davis, Henry A., *et al.* (See Magney, Joseph P., assignor.)						
Davis, John A., Buffalo, Mo. Flood-fence	446,852	Feb. 24	2190	545	54	969
Davis, John R., Racine, Wis. Whiffletree-hook	445,804	Feb. 3	499	120	54	609
Davis, John V., assignor to Automatic Electric Scale Company, Ashland, Ky. Automatic electric weighing-scale	449,468	Mar. 31	3593	905	54	1833
Davis, John W., Janesville, Wis. Shuttle-binder for looms	446,113	Feb. 10	983	242	54	711
Davis, Joseph, San Francisco, Cal. Newspaper-cover	449,210	Mar. 31	3133	790	54	1749
Davis, Maynard O., *et al.* (See Lovett, Eliphalet R., assignor.)						
Davis-Moore Sewing Machine Company. (See Cummings, Henry H., assignor.)						
Davis-Moore Sewing Machine Company. (See Cutten, James H., assignor.)						
Davis, Robert C., and R. R. Brown, Columbus, Ohio. Aerial ventilator	446,813	Feb. 17	2117	526	54	946
Davis, Spencer L., Chicago, Ill. Safety-platform for railway-cars	446,129	Feb. 10	1012	250	54	717
Davis, Stewart K., A. F. Stockley, and W. I. Barnett, Buena Vista, Colo. Mail-bag fastening	446,770	Feb. 17	2049	510	54	931
Davis, William B., Newport, N. Y. Tanner's oil	449,437	Mar. 31	3539	.....	54	1823
Davis, William H., assignor of one-half to R. L. Adams, Chapel Hill, Tex. Combination-plow	448,414	Mar. 17	1884	473	54	1495
Davis, Winfield S., Florence, Mass. Bit-stock	443,989	Jan. 6	3	1	54	3
Davisson, William W., Mineral Point, Wis. Checkrein for harness	444,975	Jan. 20	1615	413	54	331
Davy, Charles, Sheffield, England. Gear for controlling the speed of pumping-engines	447,146	Feb. 24	2709	671	54	1063
Davy, Charles, Sheffield, England. Governing-gear for the pumping-engines of hydraulic forging or other presses	447,147	Feb. 24	2711	672	54	1063
Daw, Albert W. and Z. W., Laurvig, Norway. Rock-drill	447,666	Mar. 3	627	155, 156	54	1236
Daw, Zacharias W. (See Daw, Albert W. and Z. W.)						
Dawes, Alfred, Chelsea, Mass. Electric-light support	444,424	Jan. 13	697	182	54	146
Dawes, Charles K., Trenton, N. J. Machine for drilling iron	447,502	Mar. 3	480	118	54	1207
Dawson, James L., Tuscola, Ill. Indicator	445,271	Jan. 27	2082	537	54	430
Dawson, Thomas C. (See Gaffney and Dawson.)						
Day, Benjamin H., Jr., West Hoboken, N. J. Absorbent bottle-collar	447,635	Mar. 3	589	145	54	1229
Day, John W., Baird, Tex. Harrow	448,506	Mar. 17	2023	506	54	1521
Dayton, William H., assignor to Excelsior Needle Company, Torrington, Conn. Machine for polishing needle-points	449,313	Mar. 31	3314	836	54	1781
De Barr, Milton, San José, Cal. Invalid's bathing appliance	445,327	Jan. 27	2152	558	54	446
De Berry, William G., Mount Gilead, assignor of one-half to C. C. and W. T. Wade, Wadesville, N. C. Fertilizer-distributer	448,135	Mar. 10	1397	357	54	1393
De Butts, John, near Centerville, Md. Wheel for corn-planters and markers	445,713	Feb. 3	321	86	54	576
De Clements, Eldersley D., Detroit, assignor of one-half to H. P. Glover, Ypsilanti, Mich. Metallic tie for railways	446,405	Feb. 10	1490	366	54	807
De Good, Joseph L., assignor of one-half to L. A. Randall, Detroit, Mich. Musical instrument	445,978	Feb. 10	754	185	54	670
De Haas, Thomas W., *et al.* (See Faris, Lafayette, assignor.)						
De la Roche, Charles, Paris, France, assignor of one-fourth to F. Irsch, New York, N. Y. Chemical retting and ungumming of textile fibers	446,983	Feb. 24	2412	.....	54	1009
De Lonia, Louis, assignor of one-half to J. Bayorgeon and M. Rabllard, Minneapolis, Minn. Fireman's ladder	444,878	Jan. 20	1447	376	54	299
De Mill, Peter E., Jr., Detroit, Mich. Apparatus for the manufacture of gas	447,506	Mar. 3	397	97	54	1192
De Witt, Hardenburgh, Owasco, N. Y. Neck-yoke	446,665	Feb. 17	1883	468	54	897
De Wolfe Edward R., assignor to G. R. Bidwell, New York, N. Y. Cyclometer	447,540	Mar. 3	459	110	54	1202
Dean, James H., assignor to B. D. Southard, Minneapolis, Minn., and W. Perkins, Armada, Mich. Electric switch-box	449,362	Mar. 31	3408	857	54	1797
Dean, William R., and W. H. Barnett, Ottawa, Kans.; said Barnett assignor of one-half to said Dean. Tag-fastener	445,441	Jan. 27	2315	601	54	478
Dear, Somerville. (See Lawson and Dear.)						
Dearth, William L., Frankfort, Ind. Washing-machine	448,134	Mar. 10	1396	356	54	1393
Decker, Clara L. (See Decker and Goebel, assignors.)						
Decker, Earle H., assignor to A. J. Reach, Philadelphia, Pa. Catcher's glove	447,233	Feb. 24	2862	710	54	1093
Decker, John A., and J. Goebel, Berlin Falls, N. H.; said Decker assignor to C. L. Decker. Apparatus for regulating the consistency of wood pulp	449,251	Mar. 31	3200	806, 807	54	1762
Dederick, Levi, Albany, N. Y. Extension fire-ladder	444,820	Jan. 20	1315	341, 342	54	274
Deeds, John B., assignor of one-half to F. J. Biel, Terre Haute, Ind. Piston meter	449,617	Mar. 31	3837	960	54	1878
Deen, John B., Louisville, Ky. Automatic fire-alarm	445,930	Feb. 3	675	165	54	644
Defiance Machine Works. (See Seymour, Charles, assignor.)						
Degelleke, James, assignor of one-half to W. Degelleke, Jr., Sodus, N. Y. Clothes-drier	446,853	Feb. 24	2191	546	54	969
Degelleke, William, Jr. (See Degelleke, James, assignor.)						
Deinet, Catharine, Lebanon, Pa. Rolling-pin	448,476	Mar. 17	1980	497	54	151
Deisher, Alfred, Fleetwood, Pa. Preserving eggs	445,164	Jan. 27	1915	494	54	393

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Del Valle, Elisco, Brooklyn, N. Y. Toy	447,284	Feb. 24	2843	731	54	1111
Delahunty, Joseph P., West Pittston, Pa. Dyeing-machine	446,854	Feb. 24	2192	546	54	969
Delamare-Debouteville, Edouard, and L. Malandin, Fontaine-le-Bourg, France. Means for governing or regulating the action of gas or other like explosive engines	448,136	Mar. 10	1399	357	54	1393
Delarue, Joseph. (See Westman and Delarue.)						
Dellieres, Louis, and W. H. Romick, Kansas City, Kans.; said Romick assignor of one-half to said Dellieres. Car-door	443,990	Jan. 6	4	1	54	3
Dellinger, John, assignor to H. C. Albro, Buffalo, N. Y. Ventilator-cap	445,522	Jan. 27	2438	635	54	500
Delplace, Emile and J., Aubervilliers, France. Apparatus for making sulphuric acid	446,060	Feb. 10	901	219	54	695
Delplace, Jules. (See Delplace, Emile and J.)						
Demers, Henry J., North Adams, Mass. Hame-tug	446,733	Feb. 17	1998	498	54	920
Denham, Richard F. (See Nye, Denham, and Knudson.)						
Denney, Harmer, Brooklyn, N. Y. Tube	444,233	Jan. 6	412	102	54	81
Denney, Harmer, Brooklyn, N. Y. Machine for making paper tubing	445,135	Jan. 20	1855	480, 481	54	378
Denney, Harmer, Brooklyn, N. Y. Making paper tubing	446,663	Feb. 17	1882	467	54	897
Denney, Harmer, Brooklyn, N. Y. Clutch	446,664	Feb. 17	1882	468	54	897
Denney, Harmer, assignor to Interior Conduit and Insulation Company, New York, N. Y. Machine for making tubing from paper strips	444,950	Jan. 20	1575	404, 405	54	323
Denney, Samuel L., Chicago, Ill., assignor of one-half to H. Kirkwood, Minneapolis, Minn. Car-axle	448,639	Mar. 24	2247	564	54	1571
Denney, Samuel L., Chicago, Ill., assignor of one-half to H. Kirkwood, Minneapolis, Minn. Car-axle	448,640	Mar. 24	2248	564	54	1571
Dennis, Thomas J., Newark, N. J. Shade-roller bracket	446,640	Feb. 17	1850	459	54	891
Denny, Lewis, assignor of one half to N. Graybill, Advance, Ind. Hoe	444,393	Jan. 6	644	167	54	126
Dennys, Nicholas B., London, England. Anti-fouling paint	444,665	Jan. 13	1066	.....	54	218
Denslow, William H., Ulster, Pa. Combined hot-air, steam, and hot-water heater	446,163	Feb. 10	1083	266	54	727
Densmore, Edwin, Caronado, Cal. Veneer-cutting machine	446,585	Feb. 17	1767	436	54	876
Denton, Jaret W., Henderson, Ky. Scraping and grading machine	448,415	Mar. 17	1885	473, 474	54	1495
Dény, Charles E. A. A., Paris, France. Lock	448,912	Mar. 24	2675	673	54	1653
Depp, Otis J., St. Louis, Mo. Electric contact	449,348	Mar. 31	3375	851	54	1791
Desant, William F. Z., New York, N. Y. Electric cash indicator and recorder	449,108	Mar. 31	2972	751	54	1720
Descomps, Edouard, assignor of one-half to L. Lombard, Utica, N. Y. Car-replacer	448,137	Mar. 10	1401	358	54	1394
Desmond, John, Bridgeport, Conn., assignor to Hayden & Derby Manufacturing Company, New York, N. Y. Steam-injector	445,831	Feb. 3	532	129	54	645
Detrich, Eoline, and W. J. Walker, St. Louis, Mo. Wash-boiler	448,507	Mar. 17	2024	506	54	1521
Detroit Electrical Works. (See Rae, Frank B., assignor.)						
Detroit Motor Company. (See Blades, Harry H., assignor.)						
Detwiler, Joseph R. (See Cline and Detwiler.)						
Deuscher, Henry P., and F. J. Becker, assignors to H. P. Deuscher Manufacturing Company, Hamilton, Ohio. Fertilizer-distributer	444,394	Jan. '6	644	168	54	126
Deuscher Manufacturing Company, H. P. (See Deuscher and Becker, assignors.)						
Devenport, Arthur K., assignor of one-half to S. Heyser & Sons, Jackson, Mich. Sandpapering-machine	445,749	Feb. 3	385	98	54	589
Devney, Peter, Boston, Mass. Car-coupling	448,942	Mar. 24	2714	685	54	1661
Dévigne, Antoine F., and J. P. Durand, La Cour-du-Pin, France. Weft stop-motion for looms	449,283	Mar. 31	3248	822, 823	54	1770
Devoe, Benjamin G., Lima, Ohio. Hydrocarbon-burner	445,692	Feb. 3	291	77	54	570
Devore, Levi M., Freeport, Ill. Curry-comb	445,165	Jan. 27	1915	491	54	398
Devore, Levi M., Freeport, Ill. Handle	448,477	Mar. 17	1981	497	54	1513
Devore, Morris H., assignor of two-thirds to P. G. Fisher and T. F. Rider, Birmingham, Ala. Journal-bearing for railway-axles	449,109	Mar. 31	2975	752	54	1720
Dewald, Edward G., Dayton, Ohio. Roller-mill	447,765	Mar. 10	795	198	54	1256
Dewey Corporation. (See Dewey, Mark W., assignor.)						
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric soldering and cementing cans	445,770	Feb. 3	422	105, 106	54	595
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Apparatus for soldering and cementing cans by electricity	445,771	Feb. 3	427	106	54	596
Dewey, Henry E., assignor to himself and J. H. Johnson, South Haven, Mich. Bridge-gate	447,636	Mar. 3	590	146	54	1229
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric fire-engine	446,703	Feb. 17	1946	485, 486	54	909
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric-welding apparatus	447,104	Feb. 24	2610	649	54	1046
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric heating apparatus	448,879	Mar. 24	2626	660	54	1643
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric heating apparatus	449,404	Mar. 31	3479	876	54	1811
Dewhurst, G. & R. (See Duxbury, John, assignor.)						
Dial, Wilbur F., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Sewing-machine	446,830	Feb. 17	2143	533	54	951
Dibble Manufacturing Company. (See Gallagher, John L., assignor.)						
Dick, Albert B., Chicago, Ill. Paper-file	447,067	Feb. 24	2562	636	54	1036
Dick, Robert. (See Kennedy, Rankin, assignor.)						
Dickelman, Joseph L., Forest, Ohio. Sheet-metal roofing	446,217	Feb. 10	1168	286	54	743
Dickerson, Edward N. (See Messinger and Wortmann, assignors.)						
Dickey, Edward J. (See Grover, Arthur C., assignor.)						
Dickey, James A., *et al.* (See Wiley, Edgar C., assignor.)						
Dickinson, Charles W., Belleville, N. J. Chromatic-printing machine	448,807	Mar. 24	2512	629	54	1622
Dickinson, Daniel A., St. Paul, Minn. Steam and hot-water generator	449,150	Mar. 31	3037	768	54	1731
Dickinson, Herbert Y., London, county of Middlesex, England. Figure toy	444,088	Jan. 6	170	43	54	36
Dickinson, Paul, Chicago, Ill. Chimney	445,714	Feb. 3	325	80	54	576
Dickman, George. (See Jeffervs and Dickman.)						
Dicks, James J., Toronto, Canada. Lawn-chair	445,012	Jan. 20	1669	428	54	342
Dicks, James J., Toronto, Canada. Hammock	445,049	Jan. 20	1728	445	54	353
Dickson, Charles J. (See Smith, Julius G., assignor.)						
Dieterich, William. (See Fuchs, Robert, assignor.)						
Dietz Company, R. E., *et al.* (See Betts, Charles L., assignor.)						
Dietz Company, R. E., *et al.* (See Gerber, George J., assignor.)						
Dietz Company, R. E., *et al.* (See McArthur, Warren, assignor.)						
Difany, Francis M., Marion, Ohio. Nut-lock	449,211	Mar. 31	3133	790	54	1749
Digeon, Louis, Paris, France. Call system	448,322	Mar. 17	1735	439	54	1467
Dilatush, Walter S., *et al.* (See Kunkle, Kenton C., assignor.)						
Dille, Henry H., and E. W. McGuire, assignors to Dille & McGuire Manufacturing Company, Richmond, Ind. Lawn-mower	446,329	Feb. 10	1366	332, 333	54	783

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Dille & McGuire Manufacturing Company. (See Dille and McGuire, assignors.)						
Dilleway, Alonzo A., *et al.* (See Jones, Washington S., assignor.)						
Diller, Samuel B. (See Wilfong, Joseph, assignor.)						
Dillie, Francis M. (See Bennett, George H., assignor.)						
Dillmann, Victor C. (See McHale and Dillmann.)						
Dillon, Peter, assignor of one-half to J. H. Home, Lawrence, Mass. Drying machine	448,181	Mar. 10	1470	374, 375	54	1407
Dimond, Charles. (See Goodwillie, Walter S., assignor.)						
Dinkelman, Christian H., St. Louis, Mo. Gymnastic apparatus	447,811	Mar. 10	884	220	54	1292
Dinsmore, Adriance S. (See Cooper, George N., assignor.)						
Dinsmore, Robert, assignor of one-half to A. Greenstein, Weston, W. Va. Magazine-gun with pneumatically-operated magazines	444,666	Jan. 13	1066	277, 278	54	218
	445,466	Jan. 27	2350	610	54	484
Dirksen, Richard D., Freeport, Ill. Door-hanger						
Disston & Sons, Henry. (See Wallwork, John, assignor.)						
Dittrich, George. (See Finnerty, Michael F., assignor.)						
Dixon, Alexander H., assignor to A. Dixon, Toronto, Canada. Organ	448,508	Mar. 17	2025	506, 507	54	1521
Dixon, Annie. (See Dixon, Alexander H., assignor.)						
Dixon, George E., Beacon, Iowa. Wire-reel	444,314	Jan. 6	522	136	54	105
Dixon, James. (See Lowdon and Dixon.)						
Dixon, James H. F. (See Fitler and Armstrong, assignors.)						
Dixon, John W., Carlisle, Ohio. Window-washer	448,758	Mar. 24	2440	610	54	1608
Dixon, Robert H. (See Perry and Dixon.)						
Dixon, William E., Chicago, Ill. Sash-fastener	447,068	Feb. 24	2563	636	54	1036
Dodge Coal Storage Company. (See Dodge, James M., assignor.)						
Dodge, Eugene A. (See Little, Joseph A., assignor.)						
Dodge, Horace L., Hornellsville, N. Y. Door-check	444,338	Jan. 6	557	143	54	111
Dodge, James M., Philadelphia, Pa. Machinery for handling coal	446,814	Feb. 17	2118	527	54	946
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Nangatuck, Conn. Conveyer-trough bottom	446,436	Feb. 17	1543	379	54	830
	444,976	Jan. 20	1616	413	54	331
Dodge, Miles B., San Francisco, Cal. Fuel-saving device	444,294	Jan. 6	494	129	54	98
Dodge, Philip T., Washington, D. C. Type-composing mechanism	444,337	Jan. 6	555	143	54	111
Dodge, Philip T., Washington, D. C. Mechanism for justifying matrices, type, &c.	449,349	Mar. 31	3376	851	54	1791
Dodge, Philip T., Washington, D. C. Erasing attachment for phonographs						
Dodge, Richard S., *et al.* (See Gilman, Willard H., assignor.)						
Dodge, Walter S., Washington, D. C., assignor to Remington Standard Type Writer Manufacturing Company, New York, N. Y. Type-writing machine	446,381	Feb. 10	1437	353	54	798
Dodge, William C. (See Dodge, William L. and W. C.)						
Dodge, William L. and W. C.; said William L. Dodge assignor to O. E. Mickel, Haverhill, Mass. Cylinder-cock	445,979	Feb. 10	755	185	54	670
	446,164	Feb. 10	1085	267	54	727
Doelle, Marie, New York, N. Y. Separable bath-tub	445,759	Feb. 3	402	102	54	592
Doflemyer, James J., and C. H. Wolfe, Keokuk, Iowa. Educational device	445,442	Jan. 27	2315	601	54	478
Doggett, John, Plain City, Ohio. Telegraph-key						
Dolge, Alfred. (See Millet, John W., assignor.)						
Doll, Arnold. (See Kaltenberger, Gustav, assignor.)	445,980	Feb. 10	756	185	54	670
Dolbar, William M., Henvelton, N. Y. Ladder						
Dolph Company, A. M. (See Slack, John H., assignor.)	449,110	Mar. 31	2977	752	54	1721
Dolphin, Matthew J., Brooklyn, N. Y. Inking device	449,405	Mar. 31	3481	876	54	1812
Dolphin, Matthew J., Brooklyn, N. Y. Inking device	449,406	Mar. 31	3485	876, 877	54	1812
Dolphin, Matthew J., Brooklyn, N. Y. Letter-marking machine	446,437	Feb. 17	1546	379	54	831
Dolson, John L., Charlotte, Mich. Vehicle-gearing						
Domestic Sewing Machine Company. (See Hebert, Joseph R., assignor.)						
Domestic Sewing Machine Company. (See Huntington, Thomas S., assignor.)	444,667	Jan. 13	1074	278	54	220
Donald, Frank, assignor to himself and N. S. Ernst, Denison, Tex. Hay-press	445,882	Feb. 3	607	149	54	634
Donally, Amalia M., New York, N. Y. Bottle-filling apparatus						
Donnell, Edward P. (See Grunich, Edward, assignor.)						
Donnell, Edward P. (See Little, Robert H., assignor.)	447,300	Mar. 3	26	7	54	1123
Donnellan, James S., Dubuque, Iowa. Oil-cup feeder	447,234	Feb. 24	2863	710, 711	54	1093
Donnelly, Samuel A., Chicago, Ill. Bicycle	448,509	Mar. 17	2026	507	54	1522
Donnelly, Samuel A., Chicago, Ill. Bicycle	444,229	Jan. 6	406	.....	54	80
Donovan, Robert M., Portland, Oreg. Compound for coloring broom-corn	446,831	Feb. 17	2146	533	54	952
Donovan, Thomas J., assignor to W. G. Goodrich, Chicago, Ill. Electric heater	448,943	Mar. 24	2716	685	54	1664
Dooley, Clarence H. and H. L., Bloomington, Ill. Disk corn-planter						
Dooley, Harry L. (See Dooley, Clarence H. and H. L.)	447,301	Mar. 3	27	8	54	1123
Dootson, William, Athens, Ga. Tension-regulating device for spindle-driving bands	445,426	Jan. 27	2300	596, 597	54	475
Dorman, John F. W., Baltimore, Md. Power-press for vulcanizing rubber, &c.	444,695	Jan. 13	1115	288	54	228
Dornbirer, Jacob, Sandusky, Ohio. Temporary binder	448,416	Mar. 17	1887	474	54	1496
Dorsey, Vernon M., assignor to G. G. Schroeder, Washington, D. C. Water-purifier	448,855	Mar. 24	2393	651	54	1637
Dort, Josiah D., Flint, Mich. Road-cart	447,750	Mar. 3	758	189	54	1262
Doty, Albert J., New York, N. Y. Broiling-stove						
Dougherty, William J. (See Phillips, James B., assignor.)	445,981	Feb. 10	757	185, 186	54	671
Dougine, James T., Chicago, Ill. Dumping-wagon						
Douglas, James, *et al.* (See Morgan and Crowley, assignors.)						
Douglass, J. Walter. (See Bormann, Hermann, assignor.)	455,931	Feb. 3	677	165	54	644
Douse, Thomas R., London, England. Electric fire-indicator						
Dowling, Thomas, *et al.* (See Hayes, Edward, assignor.)	446,250	Feb. 10	1242	303	54	758
Downes, William A., assignor to Pemberthy Injector Company, Detroit, Mich. Oil-cup	446,251	Feb. 10	1243	304	54	758
Downey, Alvey C., and A. H. Green, Tousey, Ky. Harrow						
Downey, George M. (See Davies and Downey.)	446,130	Feb. 10	1013	250	54	717
Downey, George W., Hyattsville, Md. Lightning-rod						
Downie, John G. (See Downie, Robert M. and J. G.)						
Downie, Robert M., New Brighton, Pa. Apparatus for molding patterns on hollow bricks, tiles, &c.	444,628	Jan. 13	1008	262, 263	54	208
	444,627	Jan. 13	1006	262	54	208
Downie, Robert M. and J. G., Beaver Falls, Pa. Pumping-engine	448,323	Mar. 17	1737	439	54	1468
Downs, James W., Bowdon, Ga. Cultivator						
Dowse, W. B. H. (See Wilson, Horace M., assignor.)						
Doyle, Edward C. (See Seror, John, assignor.)	444,094	Jan. 6	177	45	54	38
Drabble, George T., Shelburne Falls, Mass. Combined pocket-knife and pencil-guard	448,641	Mar. 24	2249	564	54	1571
Draffin, Jesse J., and W. P. Nelson, Idaville, Tenn. Cotton or hay elevator	448,777	Mar. 24	2470	617, 618	54	1614
Drake, George W., assignor of one-half to W. S. Lane, Cleveland, Ohio. Friction-clutch						

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Drake, I. N. (See Young and Robinson, assignors.)						
Draper, Eben S., assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	447,400	Mar. 3	206	54	54	1157
Draper & Sons, George. (See Draper, Eben S., assignor.)						
Draper, William F. (See White, Rollin, assignor.)						
Drees, John, Little Rock, Ark. Door-check	449,618	Mar. 31	3838	961	54	1879
Dresskell, William M., Brainerd, Minn. Electric motor	445,499	Jan. 27	2403	627	54	494
Drew, Laura S. (See Slaughter, Triplett L., assignor.)						
Drew, Oscar F., Newburyport, Mass. Can for cement	445,832	Feb. 3	534	130	54	616
Drew, William W. (See Webster and Drew.)						
Drey, Oscar, Manchester, England. Apparatus employed in the cutting of weft pile fabrics	445,620	Feb. 3	161	43	54	543
Dreyer, Robert, Halle-on-the-Saale, Prussia, Germany. Apparatus for the manufacture of lamp-black	444,315	Jan. 6	523	136, 137	54	105
Drolet, Elzear. (See Catudal and Drolet.)						
Drom, Fred, *et al.* (See Dunn, John P., assignor.)						
Drosten, Frederick W. (See Murnane and Drosten.)						
Drury, Clinton H., Hartford, Ohio. Cash-register	446,330	Feb. 10	1370	333, 334	54	783
Du Bois, Frederick N. (See Renton, George W., assignor.)						
Du Fresne, Harry, Portland, Oreg. Shade-adjuster	449,579	Mar. 31	3753	942	54	1863
Dubey, Edward A., assignor of one-half to J. Langan, Brooklyn, N. Y. Sealed reply-postal	448,478	Mar. 17	1982	497, 498	54	1513
Dubois, Austin A., assignor to M. Hart, Brooklyn, N. Y. Illuminated clock	448,510	Mar. 17	2027	507	54	1522
Dubrule, Joseph D. O., Montreal, Canada. Expanding mandrel	447,667	Mar. 3	620	156	54	1237
Duck, Joseph T., Geneva, N. Y. Hoof-pad	445,050	Jan. 20	1720	445	54	354
Dudden, Alfred, Santa Barbara, Cal. Knife-sharpener	444,582	Jan. 13	853	222	54	178
Dudley, Mason A., Buffalo Forge, Va. Railway-trog	447,235	Feb. 24	2805	711	54	1094
Dudley, Walter J., Everett, Mass. Independent electric clock	447,105	Feb. 24	2612	649	54	1047
Dudley, William W., *et al.* (See Cottrell, George R., assignor.)						
Duffield, James, Ashfield, England. Apparatus for cambering rails	447,051	Feb. 24	2533	629, 630	54	1030
Duffy, Joseph, Paterson, N. J. Spindle supporting and driving device for spinning-frames	445,500	Jan. 27	2404	628	54	494
Dugan, Rees W. (See King, John H., assignor.)						
Duhamel, Paul. (See Smitter and Duhamel.)						
Duisberg, Carl, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Violet dye	447,302	Mar. 3	29	.....	54	1123
Duisberg Carl, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Orange dye	447,303	Mar. 3	29	.....	54	1124
Dummer, Samuel R., New York, N. Y. Package-carrier	448,210	Mar. 17	1531	392	54	1428
Dunbar, Henry D., North Hartland, Vt. Extension smoke-stack for locomotives	447,106	Feb. 24	2615	649	54	1047
Dunbar, William O., Altoona, Pa. Dust and lubricant guard for journal-boxes	448,211	Mar. 17	1532	392	54	1428
Duncan, George, Liverpool, and J. Salmon, Manchester, England. Apparatus for finishing printed sheets of paper	445,938	Feb. 3	691	168	54	642
Duncan, Thomas J., and D. McManus, Leadville, Colo. Pipe-wrench	446,592	Feb. 17	1776	438	54	877
Dunckel, John F. (See Quin and Dunckel.)						
Dunham, Charles H., *et al.* (See McGlinchey, Charles E., assignor.)						
Dunham, Joseph W., Englewood, G. W. and F. P. Kisinger, Danville, Ill. Dumping-wagon	449,212	Mar. 31	3134	790	54	1749
Dunham Manufacturing Company. (See Hix, Oliver P., assignor.)						
Dunlap, James, Philadelphia, Pa. Manufacturing figured pile carpets	446,141	Feb. 10	1033	254, 255	54	719
Dunlop, John B., Belfast, Ireland. Wheel-tire for cycles. (Reissue)	11,153	Mar. 24	2052	748	54	1707
Dunn, John P., Beatrice, Nebr., assignor to J. E. Field, F. Lynde, S. T. Huebner, C. T. White, S. W. Wadsworth, W. H. Stryker, F. Drom, T. H. Fitton, J. F. Huntling, D. Althen, W. A. Watson, and L. Acheuback. Corn harvester and husker	448,417	Mar. 17	1888	474, 475	54	1496
Dunsmuir, Hugh, Govan, Scotland. Multiple expansion-engine	449,284	Mar. 31	3249	823, 824	54	1771
Duplessis, Elonild, assignor of one-half to J. Lalime and E. A. Marchildon, St. Hyacinthe, Canada. Weighing-scales for railway-cars	444,378	Jan. 6	614	158	54	121
Durand, Huguenin & Co., L. (See Mohler and Mayer, assignors.)						
Durand, Jean P. (See Dévigne and Durand.)						
Durfee, Bradford K., *et al.* (See Hartley, Charles J., assignor.)						
Durfee, William F., and N. B. Wittman, Birdsborough, Pa. Apparatus for removing gases from molten metal	448,944	Mar. 24	2717	686	54	1661
Durfee, William F., and N. B. Wittman, Birdsborough, Pa. Vacuum-casting apparatus	448,945	Mar. 24	2720	686	54	1662
Duringer, Robert E. (See Hale and Duringer.)						
Durkee, George B., assignor to Lyon & Healy, Chicago, Ill. Tail-piece for musical instruments	447,946	Mar. 10	1107	278	54	1335
Durkee, George B., assignor to Lyon & Healy, Chicago, Ill. Banjo	447,947	Mar. 10	1108	278	54	1335
Durkee, George B., assignor to Lyon & Healy, Chicago, Ill. Zither	447,948	Mar. 10	1111	279	54	1335
Durr, Albert W., Philadelphia, Pa. Machine for making ornamental cord	449,038	Mar. 24	2650	727	54	1690
Dürr, Fritz, Munich, Germany. Apparatus for the reduction of petroleum into gas	445,982	Feb. 10	760	186	54	671
Duryee, George, Orange, N. J. Device for rendering logs buoyant	447,668	Mar. 3	630	157	54	1237
Dutcher, George L., Douglas, and C. W. Boyle, Bradley, assignors to C. H. Adams and E. T. Van Ostrand, Allegan, Mich. Feed-regulator	449,580	Mar. 31	3754	942, 943	54	1863
Dutcher Temple Company. (See Littlefield, Charles A., assignor.)						
Dutcher, William L., Rome, N. Y. Bolt-cutter	448,384	Mar. 17	1738	439	54	1468
Duval Automatic Switch Company. (See Duval, Joseph N. and C. F., assignors.)						
Duval, Charles F. (See Duval, Joseph N. and C. F.)						
Duval, Joseph N. and C. F., assignors to Duval Automatic Switch Company, Boston, Mass. Switch-operating mechanism	444,426	Jan. 13	699	182, 183	54	146
Duxbury, John, assignor to G. & R. Dewhurst, Manchester, England. Machine for marking folded woven goods with trade-marks, &c.	448,212	Mar. 17	1534	393	54	1428
Dwelle, Charles W., Denver, Colo. Wooden pipe	444,339	Jan. 6	558	144	54	111
Dwelle, Charles W., Denver, Colo. Coupling-shoe	444,340	Jan. 6	560	144	54	111
Dwight, William B., Poughkeepsie, N. Y. Machine for cutting or slicing minerals	445,983	Feb. 10	761	186, 187, 188, 189, 190	54	671
Dwyer, John T., Montreal, Canada. Combined shoulder-strap bag or knapsack	447,669	Mar. 3	632	157	54	1237
Dyett, James H., Ilion, N. Y. Awning	448,759	Mar. 24	2441	611	54	1608
Egan, Richard, Syracuse, N. Y. Measuring milk-can	444,903	Jan. 20	1487	384	54	307

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Eames Vacuum Brake Company. (See Massey, Albert P., assignor.)						
Earle, Charles R., *et al.* (See Hollingworth, Louis, assignor.)						
Earle, Salver R., Belleville, Canada. Steam and air injector for furnaces	447,563	Mar. 3	482	118	54	1208
Earle, William, Boston, Mass. Cooking-rack	446,855	Feb. 24	2194	546	54	969
Earle, William L., *et al.* (See Park, Joseph, Jr., assignor.)						
Earp, Joseph. (See Swinden and Earp.)						
Easley, William A. (See Warren and Easley.)						
Eason, Thomas G., Junction City, Tex. Plow	446,965	Feb. 24	2384	593	54	1003
East End Marble Company. (See Lang, Matthew, assignor.)						
Easte, Charles H., Arlington, Mass. Combined chair and desk	446,632	Feb. 17	1833	454	54	888
Easterbrook, Thomas S., St. Paul, Minn. Signal-lantern	445,606	Feb. 3	138	36	54	538
Eastern Electrical Manufacturing Company. (See Gould, Claude C., assignor.)						
Easton, James W., New York, N. Y., assignor to P. M. Smith, Plainfield, N. J., and W. D. Perry, Brooklyn, N. Y. Electric-arc lamp	445,546	Feb. 3	27	7	54	516
Easton, James W., New York, N. Y., assignor to P. M. Smith, Plainfield, N. J., and W. D. Perry, Brooklyn, N. Y. Electric-arc lamp	448,418	Mar. 17	1890	475	54	1497
Easton, James W., New York, N. Y., assignor to P. M. Smith, Plainfield, N. J., and W. D. Perry, Brooklyn, N. Y. Shade for electric lights	449,407	Mar. 31	3488	877	54	1813
Easton, Lucien F., La Crosse, Wis. Temperature-regulator. (Reissue)	11,148	Mar. 3	765	190	54	1263
Easton, William H., Washington, D. C. Roundabout	445,851	Feb. 3	561	137	54	621
Eaton & Co., George H. (See Perkins and Norcross, assignors.)						
Eaton & Prince Company. (See Eaton, Thomas W., assignor.)						
Eaton, Thomas W., assignor to Eaton & Prince Company, Chicago, Ill. Hydraulic elevator	446,620	Feb. 17	1815	449	54	884
Eaton, Thomas W., assignor to Eaton & Prince Company, Chicago, Ill. Brake for elevators	446,621	Feb. 17	1817	449	54	884
Eaves, Louis S., Polkville, N. C. Motor for churns	447,670	Mar. 3	632	157	54	1237
Eberhardt, Ernest G., assignor to E. Lilly & Company, Indianapolis, Ind. Suppository	445,984	Feb. 10	756	190	54	674
Eberhardt, Henry E. (See Eberhardt, Ulrich and H. E.)						
Eberhardt, Ulrich and H. E., Newark, N. J. Drilling or spinning machine	447,541	Mar. 3	452	111	54	1202
Eberle, Josef, Vienna, Austria-Hungary. Stone-protector for lithographic printing-presses	448,642	Mar. 24	2251	564; 565	54	1572
Eddy, Albert. (See Lewis, Russell H., assignor.)						
Eddy, Arthur H. (See Spencer, Christopher M., assignor.)						
Eddy, Arthur H., Hartford, assignor of one-half to C. M. Spencer, Windsor, Conn. Slotting attachment for screw-machines	447,010	Feb. 24	2450	610; 611	54	1015
Eddy, Jerome. (See North, Alfred C., assignor.)						
Edelstein, Joseph, New York, N. Y. Velocipede	449,111	Mar. 31	2980	752; 753	54	1721
Eder, Eleanore, St. Louis, Mo. Fire-escape ladder	444,607	Jan. 13	982	255	54	203
Edgar, Joseph M., assignor to J. Z. Rorabaek, Kansas City, Mo. Indicator-lock	449,314	Mar. 31	3316	836	54	1781
Edgerton, Charles, Philadelphia, Pa. Steam-heating apparatus	445,396	Jan. 27	2251	584	54	465
Edgerton, Edward M., Chicago, Ill. Electric alarm-clock	448,325	Mar. 17	1740	440	54	1468
Edgren, August H., Lincoln, Nebr. Adjustable book-stand	446,331	Feb. 10	1372	334	54	784
Edinburg Foundry and Machine Company. (See Paine, Luther E., assignor.)						
Edington, James H., Eddytown, N. Y. Grape trimming and packing table	447,041	Feb. 24	2518	625	54	1027
Edison Electric Light Company. (See Edison, Thomas A., assignor.)						
Edison General Electric Company. (See Ball, Henry P., assignor.)						
Edison General Electric Company. (See Johnson, Edward H., assignor.)						
Edison Machine Works. (See Frietsch, Karl G., assignor.)						
Edison Phonograph Company. (See Edison, Thomas A., assignor.)						
Edison, Thomas A., Llewellyn Park, N. J. Leading-in wire for incandescent electric lamps	444,530	Jan. 13	866	225	54	181
Edison, Thomas A., Llewellyn Park, N. J. Telegraph	448,579	Mar. 24	2453	619	54	1615
Edison, Thomas A., Llewellyn Park, N. J. Turning-off device for phonographs	448,581	Mar. 24	2476	619	54	1615
Edison, Thomas A., Menlo Park, N. J. Locomotive for electric railways	446,667	Feb. 17	1886	468	54	898
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. System of electric lighting	446,666	Feb. 17	1884	468	54	898
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric arc light	446,668	Feb. 17	1887	469	54	898
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Manufacture of filaments for incandescent electric lamps	446,669	Feb. 17	1889	469	54	899
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric railway	448,778	Mar. 24	2472	618	54	1614
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Phonograph Company, of New Jersey. Device for turning off phonogram-blanks	448,780	Mar. 24	2475	619	54	1615
Edmonds, Robert S., Bradford, Pa. Oil-pump	446,734	Feb. 17	1999	498	54	920
Edwards, Benjamin, New York, N. Y. Lock	445,501	Jan. 27	2406	628	54	494
Edwards, Charles M., assignor to J. H. Jefferson, Bloomingburg, Ohio. Convertible spike-extractor or lifting jack	444,427	Jan. 13	701	183	54	146
Edwards, Edward R. (See Bartholomew, George E., assignor.)						
Edwards, George, and C. D. Everett, Bear, Del. Change-receiver	446,438	Feb. 17	1547	380	54	831
Edwards, John D., Decatur, Ind. Refining oils	449,213	Mar. 31	3136	791	54	1750
Edwards, Oliver M., Johnstown, N. Y. Window. (Reissue)	11,154	Mar. 24	2954	748	54	1708
Edwards, Richard J., Galena, Ill. Automatic lubricator for saws	444,696	Jan. 13	1116	288	54	229
Edwards, Robert H., Wellsborough, Pa. Reversing-gear for clutch-couplings	445,772	Feb. 3	431	106; 107	54	596
Edwards, Thomas M., assignor to T. W. Williams, New London, Conn. Regulator for electric circuits	447,177	Feb. 24	2758	682	54	1073
Edwards, William C., Holyoke, Mass. Stuff regulating apparatus for paper-machines	445,985	Feb. 10	777	190	54	674
Edwards, William C., assignor of one-half to R. M. Fairfield, Holyoke, and O. S. Greenleaf, Springfield, Mass. Magnetic pulp-separator	446,704	Feb. 17	1949	486	54	910
Edwards, William J., Chicago, Ill. Power-feed sawing-machine	447,812	Mar. 10	885	220; 221	54	1293
Edwards, William J., Chicago, Ill. Velocipede-saddle	448,739	Mar. 24	2112	603	54	1603
Ege, Alexander H. (See Richardson, John T., assignor.)						
Egg, Gustav A., assignor of one-third to J. A. Roth, Erie, Pa. Velocipede	444,341	Jan. 6	561	144	54	112
Egge, Frederick, Bridgeport, Conn. Apparatus for molding amber	445,284	Jan. 27	2093	540	54	432
Egge, Frederick, Bridgeport, Conn. Molding amber	445,285	Jan. 27	2094	541	54	432
Egley, Henry, Toledo, Ohio. Overshoe	447,564	Mar. 3	482	118	54	1208
Ehebald, Adam, New York, N. Y. Gas-meter	448,643	Mar. 24	2251	565	54	1572
Ehrlich, Leo, assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	446,332	Feb. 10	1373	334	54	784
Eich, William C., Harmonsburg, Pa. Mechanical movement	448,511	Mar. 17	2028	508	54	1522

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Eickershoff, John H., assignor to Triumph Compound Engine Company, Cincinnati, Ohio. Compound steam-engine	447,671	Mar. 3	633	157	54	1237
Eickemeyer, Rudolf, Yonkers, N. Y. Method of and apparatus for developing mechanical motion from electrical energy	448,326	Mar. 17	1742	440	54	1469
Eickemeyer, Rudolf, Yonkers, N. Y. Trolley for electric railways	448,831	Mar. 24	2545	639	54	1628
Eisenhart, John W., York, Pa. Bobbin-winding machine	445,765	Feb. 3	415	103; 104	54	594
Eisenhart, John W., York, Pa. Let-off and take-up mechanism for looms	448,327	Mar. 17	1747	441	54	1469
Eitel, Willis D., San José, Cal. Train fare-punch	444,576	Jan. 13	943	244	54	195
Elbert, William N. (See Roosevelt and Elbert.)						
Elder, Joseph, Peoria, Ill. Means for truing locomotive-wheels	449,350	Mar. 31	3378	851	54	1792
Eldredge, Marcellus, *et al.* (See Hayes, John W., assignor.)						
Electric Car Company of America. (See Condict, George H., assignor.)						
Electric Car Company of America. (See Hunter, Rudolph M., assignor.)						
Electric Construction and Supply Company. (See Ward, Barton H., assignor.)						
Electric Date and Time Stamp Company. (See Martindale and Malmborg, assignors.)						
Electric Gas Lighting Company. (See Lane, Thomas W., assignor.)						
Electric Typographic Company. (See Lee, Homer, assignor.)						
Electric Typographic Company. (See Lee and Lebrun, assignors.)						
Electrical Forging Company. (See Barton and Angell, assignors.)						
Electrical Supply Company, B. G. (See Jordan, Linwood F., assignor.)						
Electrical Supply Manufacturing Company. (See Whitney, Edwin R., assignor.)						
Elektron Manufacturing Company. (See Perret, Frank A., assignor.)						
Elfering, John H., assignor of one-third to S. H. Wagner, New Haven, Conn. Annunciator	446,641	Feb. 17	1851	459	54	892
Elgen, Louis, *et al.* (See Elgen, Magnus P., assignor.)						
Elgen, Magnus P., assignor of seven-eighteenths to T. Wilson, T. Grutling, L. Elgen, H. J. Nelson, and C. Johnke, St. Paul, Minn. Rotary engine	448,213	Mar. 17	1536	393	54	1429
Elkins, Charles, Saccarappa, Me. Insulator	444,879	Jan. 20	1448	376	54	299
Elkins, William H., Hornellsville, assignor of two thirds to H. E. Irvine, New York, N. Y. Electric-arc lamp	444,977	Jan. 20	1618	414	54	341
Elkins, William H., Cambridge, Mass., assignor of two-thirds to H. E. Irvine, New York, N. Y. Multiplex-arc lamp	445,136	Jan. 20	1857	481	54	378
Eller, James E. (See Jordan and Eller.)						
Ellert, Louis, assignor to himself and H. A. Newell, Jr., New York, N. Y. Railway axle-box	447,148	Feb. 24	2712	672	54	1063
Ellington, Thomas H., Rice's Depot, Va. Tobacco-stick	449,469	Mar. 31	3595	905	54	1833
Elliot, John. (See Gilpin and Elliot.)						
Elliott, Abraham, assignor to Fee Brothers, Rochester, N. Y. Elevator-guard	448,605	Mar. 17	2181	544; 545	54	1550
Elliott, Alvin D. (See Glidden and Elliott.)						
Elliott, Asel N. (See Bullard, Ezekiel W., assignor.)						
Elliott, George C., assignor to L. M. Elliott, Chicago, Ill., R. and I. B. Blackstock, Paxton, and W. M. Blackstock, Lafayette, Ind. Nut-lock	445,166	Jan. 27	1916	495	54	399
Elliott, Henry M., Danvers, Mass. Brake for street-cars	444,168	Jan. 6	315	76	54	64
Elliott, Luella M., *et al.* (See Elliott, George C., assignor.)						
Elliott, Schuyler C. (See Lowdon and Dixon, assignors.)						
Elliott, Sterling, Newton, Mass. Wheel	444,485	Jan. 13	792	206	54	166
Elliott, Sterling, Newton, Mass. Tricycle	446,671	Feb. 17	1893	470	54	900
Elliott, Sterling, Newton, Mass. Velocipede	446,672	Feb. 17	1897	471	54	900
Elliott, Sterling, Newton, Mass. Drive-chain	447,813	Mar. 10	887	222	54	1293
Elliott, Sterling, Newton, Mass. Making oiling-links for drive-chains	447,814	Mar. 10	888	222	54	1293
Elliott, Sterling, Newton, Mass., assignor, by mesne assignments, to Sterling Cycle Company, Kittery, Me. Tricycle	446,670	Feb. 17	1890	469; 470	54	899
Elliott, William P., Chicago, Ill. Gate for railway-tracks	447,463	Mar. 3	318	80	54	1178
Ellis, Alvirus L., Kansas City, Mo. Automatic potential regulator for electric currents	446,284	Feb. 10	1293	316; 317	54	768
Ellis, Charles A., assignor of one-half to O. F. Dagle, East Gloucester, Mass. Toy gun	446,333	Feb. 10	1373	335	54	784
Ellis, John T., Toronto, Canada. Steam-boiler furnace	446,705	Feb. 17	1951	486	54	941
Ellis, Jonathan T., Newark, N. J., assignor to E. McLean, New York, N. Y. Hand or foot warmer	444,395	Jan. 6	646	168	54	127
Ellis, Sidney R., New York, N. Y. Device for exhibition purposes	443,991	Jan. 6	5	2	54	4
Ellsworth, Lester S., Holdredge, Nebr. Lock	447,871	Mar. 10	984	246	54	1311
Elmond, William H., assignor of one-half to M. A. Pennington, Kansas City, Mo. Railbrake	448,419	Mar. 17	1892	475	54	1497
Elsey, Aaron F., Bardwell, Ky. Fence	447,672	Mar. 3	636	158	54	1238
Elwood, Byron H., Fort Plain, N. Y. Hydrocarbon-burner	449,315	Mar. 31	3319	847	54	1781
Ely, Charles R., Champlain, assignor to T. W. Sheridan, Brooklyn, N. Y., and C. B. Sheridan, Orange, N. J. Paper-cutting machine	449,525	Mar. 31	3669	922	54	1848
Ely, Edwin S., assignor of one-half to J. H. S. Quick, Chicago, Ill. Electrical station-indicator	445,773	Feb. 3	432	107	54	596
Emens, Sylvester. (See Crabbs and Emens.)						
Emerson, Charles H., Mason City, assignor to C. H. Ackert, Marshalltown, Iowa, and R. W. Green, St. Louis, Mo. Car-brake shoe	448,011	Mar. 10	1292	312	54	1357
Emerson, Loender C., assignor of one-half to C. H. Nelson, North Grafton, Mass. Sewing-machine	444,565	Jan. 13	927	241	54	192
Emerson, Richard, assignor of one-half to W. H. Pugh, Racine, Wis. Bridle-bit	441,629	Jan. 13	1010	263	54	208
Emery, Abram D., Taunton, Mass. Loom-shuttle	444,095	Jan. 6	179	45	54	38
Emery, Charles G. (See Shortt, Edward G., assignor.)						
Emery, Charles W., assignor to Putnam Nail Company, Boston, Mass. Machine for forging nails	449,526	Mar. 31	3671	923	54	1849
Emery, Thomas W., Minneapolis, Minn. Coal and grain chute	444,745	Jan. 13	1202	312	54	243
Emley, Fletcher, Rome, Ga. Tension device for slat-and-wire fences	445,547	Feb. 3	30	8	54	517
Emmer, Nicholas. (See Glassbrook and Emmer.)						
Emmons, Eugene D., Grand Rapids, Mich. Lemon-squeezer	444,063	Jan. 6	134	33	54	29
Empire Manufacturing Company. (See Packer, George W., assignor.)						
Empire Steam Gauge Company. (See McNeil, Murdock, assignor.)						
Emrich, B. F., *et al.* (See Kyle, Augustus G. and E. J., assignors.)						
Enderes, Ernst, Littleport, Iowa. Vehicle-brake	448,913	Mar. 24	2677	673	54	1654
Engelke, Julius, Cincinnati, Ohio. Antiseptic composition for treating leather	448,420	Mar. 17	1894	.....	54	1497
England, L. W. (See England, Paren, assignor.)						
England, Paren, assignor to L. W. England, Aspen, Colo. Key	447,637	Mar. 3	593	146	54	1229
English, John C. (See Orford and English.)						
Ennes, John D., Norfolk, Va. Folding parlor-bedstead	444,064	Jan. 6	135	33	54	29

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Enrich, Louis, New York, N. Y. Artificial stone or cement	449,619	Mar. 31	3839	.....	54	1879
Enricht, Louis, assignor to Enricht Manufacturing Company, New York, N. Y. Artificial stone or cement	448,512	Mar. 17	2030	.....	54	1523
Enricht, Louis, assignor to Enricht Manufacturing Company, New York, N. Y. Artificial stone or cement	448,513	Mar. 17	2031	.....	54	1523
Enricht, Louis, assignor to Enricht Manufacturing Company, New York, N. Y. Artificial stone or cement	448,514	Mar. 17	2031	.....	54	1523
Enricht, Louis, assignor to Enricht Manufacturing Company, New York, N. Y. Artificial stone composition	449,151	Mar. 31	3039	.....	54	1732
Enricht, Louis, assignor to Enricht Manufacturing Company, New York, N. Y. Artificial stone	449,152	Mar. 31	3039	.....	54	1732
Enricht, Louis, assignor to Enricht Manufacturing Company, New York, N. Y. Manufacture of artificial stone	449,214	Mar. 31	3137	.....	54	1750
Enricht Manufacturing Company. (See Enricht, Louis, assignor.)						
Ensign, George H. (See Brewer, James H., assignor.)	446,094	Feb. 10	952	234	54	704
Ensling, Phillipp, Norwich, Conn. Weft-fork for looms	445,805	Feb. 3	500	120	54	609
Entrelin, William G., Philadelphia, Pa. Photographic background						
Entwisle, Edward B., Johnstown, Pa., assignor to Johnson Company, of Kentucky. Railway crossing	447,130	Feb. 24	2649	657	54	1053
Entz, Justus B. (See Waddell and Entz.)	444,486	Jan. 13	702	206	54	166
Entz, Justus B., New York, N. Y. Dynamo-electric machinery	448,328	Mar. 17	1749	441, 442, 443	54	1470
Entz, Justus B., assignor to Waddell-Entz Electric Company, New York, N. Y. Electric railway	449,527	Mar. 31	3672	923	54	1849
Epperson, James W., Great Bend, Kans. Listed-corn cultivator	447,872	Mar. 10	985	246, 247, 248, 249, 250	54	1311
Eppler, Andrew, Jr., Newtonville, assignor to Eppler Welt Machine Company, Boston, Mass. Boot or shoe sewing machine						
Eppler, John, *et al.* (See Hottman, Charles W., assignor.)						
Eppler Welt Machine Company. (See Eppler, Andrew, Jr., assignor.)						
Erb, Louis M., San Francisco, Cal., assignor to Reversible Chair Company, of California.	448,012	Mar. 10	1228	312	54	1357
Coin-operated reversible-seat chair	445,109	Jan. 20	1818	470	54	370
Erdmen, Daniel H., Camden, N. J. Portable range	446,114	Feb. 10	984	242	54	711
Ericson, John, Sabine Pass, Tex. Pan lifter and turner	447,149	Feb. 24	2713	672, 673	54	1063
Erlenwein, Julius, Edenkoben, Germany. File-cutting machine						
Erlwein, Georg, assignor to Siemens & Halske, Berlin, Germany. Filament for incandescent electric lamps	448,915	Mar. 24	2678	674	54	1654
Erlwein, Georg, assignor to Siemens & Halske, Berlin, Germany. Filament for incandescent electric lamps	448,916	Mar. 24	2679	674	54	1654
Erlwein, Georg, and F. G. A. Heller, assignors to Siemens & Halske, Berlin, Germany. Filament for incandescent electric lamps	448,914	Mar. 24	2678	673	54	1654
Ernst, Neander S. (See Donald, Frank, assignor.)						
Erny, Jacob, Z. T. Subers, and W. Hoos, assignors to International Freezing and Refrigerating Machine Company of New Jersey, Philadelphia, Pa. Freezing apparatus	446,252	Feb. 10	1243	304	54	758
Erskine & Company, John. (See Erskine, William B., assignor.)						
Erskine, William B., assignor to J. Erskine & Company, New York, N. Y. Neck tie or scarf and making the same	444,880	Jan. 20	1149	377	54	300
Erskine, William B., assignor to J. Erskine & Co., New York, N. Y. Neckscarf	445,137	Jan. 20	1858	482	54	379
Ervin, Hugh, Chicago, Ill. Washing compound	448,421	Mar. 17	1895	.....	54	1497
Erwin, James A., *et al.* (See Carpenter, James H., assignor.)	446,253	Feb. 10	1246	304	54	759
Eschner, Louis, Philadelphia, Pa. Neckscarf	449,112	Mar. 31	2981	753	54	1722
Estaver, William A., Worcester, Mass. Ruffler for sewing-machines						
Estey Organ Company. (See Fuller, Levi K., assignor.)						
Etheridge, Harry, Pittsburg, Pa., assignor to Writing Telegraph Company, New York, N. Y. Autographic telegraph	445,715	Feb. 3	327	86	54	577
Etheridge, Harry, Pittsburg, Pa., assignor to Writing Telegraph Company, New York, N. Y. Automatic switch for autographic telegraphs	445,716	Feb. 3	329	87	54	577
Etheridge, Frank N., assignor to American Postal Machine Company, Boston, Mass. Machine for marking mail-matter	449,363	Mar. 31	3411	857, 858	54	1797
Etters, William C., assignor of one-half to J. A. Ware, Grover, N. C. Fertilizer-distributer	444,193	Jan. 6	352	86	54	71
Eureka Cigar Machine Company. (See Hagen, Ferdinand J., assignor.) (Reissue.)						
Evans, Aurelius B. (See Bower and Evans.)	445,397	Jan. 27	2252	585	54	465
Evans, Austin C., Springfield, Ohio. Check-rower						
Evans, Benjamin C. (See Hale and Duringer, assignors.)						
Evans, Charles H., Jackson, Mich., assignor to Fahnehjelm Incandescent Gas Light Company, Chicago, Ill. Gas-stove	448,579	Mar. 17	2127	533, 534	54	1542
Evans, David L., Cleveland, Ohio. Rolls for manufacturing car-axles	444,746	Jan. 13	1204	312	54	244
Evans, George, Lyon, Miss. Wagon end-gate	445,167	Jan. 27	1918	495	54	399
Evans, George, New York, N. Y. Dental thermal instrument	445,766	Feb. 3	418	104	54	595
Evans, George, New York, N. Y. Dental tool for shaping tooth-crowns	449,408	Mar. 31	3489	878	54	1813
Evans, George F., Somerville, Mass. Wire-drawing machine	448,214	Mar. 17	1539	394	54	1429
Evans, George F., Somerville, Mass. Wire-drawing machine	448,215	Mar. 17	1540	394	54	1429
Evans, George F., Somerville, Mass. Spark-arrester	448,216	Mar. 17	1541	394	54	1430
Evans, John B., assignor of one-half to H. Schwartz, Philadelphia, Pa. Bicycle	449,581	Mar. 31	3755	943	54	1863
Evans, John W., Cleveland, Ohio. Apparatus for evaporating naphtha	449,215	Mar. 31	3138	791, 792	54	1750
Evans, Thomas R., Society Hill, S. C. Automatic fan	446,204	Feb. 10	1145	280	54	738
Evans, William W., Washington, D. C. Type-writing machine	445,398	Jan. 27	2254	585, 586	54	466
Everest, Laban J., assignor of one-fourth to H. C. Betterman, Omaha, Nebr. Rotary engine	446,061	Feb. 10	903	219	54	695
Everett, Charles D. (See Edwards and Everett.)						
Everett, Charles J. (See Beyliksy, Marc W., assignor.)						
Everett, Edward. (See Thayer and Everett.)	444,342	Jan. 6	562	144	54	112
Everett, Milton, San Antonio, Tex. Ticket-reel	445,443	Jan. 27	2318	602	54	479
Everhard, Mary M., St. Joseph, Mich. Kneading-board	448,946	Mar. 24	2721	686	54	1662
Everiss, Joseph E., Adrian, Mich. Coffin-fastener	445,883	Feb. 3	609	150	54	631
Evinger, Noah, assignor of one-half to C. Wood, Terre Haute, Ind. Churn						
Ewing, Franklin, Jr., Atlantic Highlands, N. J. Apparatus for applying sheathing to the hulls of vessels, &c	445,502	Jan. 27	2409	628	54	495

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Excelsior Needle Company. (See Dayton, William H., assignor.)						
Eyelet Button Hole Attachment Company. (See Fletcher, Elmer, assignor.)						
Eynard, Louis, Paris, France. Motor	446,945	Feb. 24	2352	585	54	996
Eynon, William, and W. Seaman, Wilmington, Del. Manufacture of creased bars for horse-shoe-blanks	446,735	Feb. 17	2000	498	54	920
Faber, Eberhard, New Brighton, N. Y. Lead or crayon holder	444,148	Jan. 6	280	67	54	57
Faber, Peter. (See House, Joseph L., assignor.)						
Fager, Anthony, assignor to I. Harter and F. E. Kohler, Canton, Ohio. Saw-set	447,722	Mar. 3	713	178	54	1253
Fagoaga, Julian, Barcelona, Spain. Water-elevator	449,252	Mar. 31	3201	807	54	1702
Fahnehjelm Incandescent Gas Light Company. (See Evans, Charles H., assignor.)						
Fahnley, William J., and E. H. Taylor, Lynn, assignors to J. Q. A. Whittemore, Boston, Mass. Heel-making machine	446,334	Feb. 10	1375	335, 336	54	785
Fairbanks & Company, E. & T. (See Stromyer, John H., assignor.)						
Fairchild, Frederick S. (See Lockwood, Frederick J., assignor.)						
Fairfield, Roswell M., *et al.* (See Edwards, William C., assignor.)	448,217	Mar. 17	1543	395	54	1430
Fairman, James, New York, N. Y. Musical instrument	445,884	Feb. 3	610	150	54	631
Fales, Edward, Philadelphia, Pa. Apparatus for generating steam	448,947	Mar. 24	2722	686, 687	54	1662
Fales, Edward, Boston, Mass. Method of and apparatus for generating steam	447,766	Mar. 10	797	198	54	1276
Fales, Lewis F., Walpole, Mass. Machine for feeding and separating paper	449,316	Mar. 31	3319	837	54	1782
Falkingham, Edwin, San Francisco, Cal. Card-shuffler	447,638	Mar. 3	694	147	54	1229
Fallis, George T., St. Joseph, Mo. Toy buzzer						
Fanning, Robert C., *et al.* (See Whittier, Alcibiades J., assignor.)	445,427	Jan. 27	2301	597	54	475
Fanning, William H., Lapeer, Mich. Road-cart						
Fant, Enoch W., W. B. Anderson, and S. W. Richard, Franklin, W. Va. Tool-handle attachment	447,052	Feb. 24	2534	630	54	1031
Farbenfabriken, vormals Fr. Bayer & Co. (See Duisberg, Carl, assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Pfitzinger, William, assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Schmidt, Robert E., assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co. (See Ulrich, Moritz, assignor.)						
Faries, Royal P., Wichita, Kans. Electric-motor truck	445,051	Jan. 20	1729	445	54	354
Faris, Lafayette, assignor of one-half to T. W. De Hass and J. H. Gossett, Pricetown, Ohio. Device for securing wheels to axles	446,335	Feb. 10	1377	336	54	785
Farmer, Charles H., New York, N. Y. Buckle	445,806	Feb. 3	501	120	54	609
Farmer, Leslie P., South Orange, N. J. Railway-car	446,984	Feb. 24	2414	600, 601	54	1009
Farmer, Moses G., Eliot, Me. Electric converter	448,644	Mar. 24	2254	565, 566	54	1572
Farmer, Thomas, Jr., Bloomington, Ill. Heater	446,673	Feb. 17	1900	474	54	901
Farnham, Edwin G., Dover, Me. Cow-tail holder	444,428	Jan. 13	702	183	54	147
Farnham, Isaiah H., Wellesley, assignor to New England Telephone and Telegraph Company, Boston, Mass. Signaling apparatus	444,108	Jan. 6	204	50	54	42
Farnham, Isaiah H., Wellesley, assignor to New England Telephone and Telegraph Company, Boston, Mass. Overhead crossing appliance for electric railways	448,741	Mar. 24	2363	592	54	1594
Farnham, Reuben G., Elbridge, assignor of one-half to C. M. Warner, Jordan, N. Y. Composition for plastering	446,382	Feb. 10	1438	.....	54	798
Farnsworth, John E., assignor to Farnsworth & Williams, Bazine, Kans. Combination-lock	447,639	Mar. 3	595	147	54	1230
Farnsworth & Williams. (See Farnsworth, John E., assignor.)						
Farrand, William C., Arlington, N. J., assignor of one-half to M. Radde, New York, N. Y. Soap-bubble toy	445,807	Feb. 3	502	121	54	610
Farrar, Chilion M., Buffalo, N. Y. Reversing-gear for steam-engines	446,992	Feb. 24	2425	603	54	1011
Farrington, Clarence H., Milford, Mass. Upper-machine	446,674	Feb. 17	1901	472	54	901
Farris, Benjamin B., Rocky Ford, Ga. Wrench	448,013	Mar. 10	1230	312	54	1358
Farrow, John T., Newport, assignor of one-half to T. E. Livezey, Covington, Ky. Attachment for automatically advancing the knees of saw-mills	446,832	Feb. 17	2147	534	54	952
Farwell, Pulaski, Frederick, Ill. Lock lever	445,328	Jan. 27	2154	558	54	446
Faske, Joseph, Cincinnati, Ohio. Machine for drilling the tires and fellies of wheels of road-vehicles	446,856	Feb. 24	2195	546, 547	54	970
Fashion, Elias E., Emporia, Kans. Step for cars	447,304	Mar. 3	30	8	54	1124
Fasoldt, Ernest C., assignor of one-half to J. B. Thacher, Albany, N. Y. Pressure-reducer for steam or other fluids	449,071	Mar. 24	2909	738	54	1698
Fasoldt, Ernest M., Albany, N. Y. Mainspring for watches	448,191	Mar. 10	1486	379	54	1411
Faul, William J., Brooklyn, N. Y. Lubricator	445,013	Jan. 20	1669	428	54	342
Fawkes, Jacob H., Chicago, Ill. Cigar-case	448,948	Mar. 24	2724	688	54	1663
Fawkes, Joseph W., Sr., and J. W., Jr., Burbank, Cal. Card-exhibiting device	446,439	Feb. 17	1548	380	54	831
Fay, Edmund S., *et al.* (See Hayes, John W., assignor.)						
Fay, Milton L., *et al.* (See Chilson, Libbeus, assignor.)						
Fay, S. M. (See Julian, Gideon, assignor.)						
Fayol, Amédée, Bordeaux, France. Chromatic-printing press	447,505	Mar. 3	399	97, 98	54	1193
Fayol, Amédée, Bordeaux, France. Inking mechanism for printing-machines	447,749	Mar. 24	2429	607	54	1606
Fea, John, and W. H. Hoag, Amsterdam, N. Y. Arch-plate for steam-boiler furnaces	448,218	Mar. 17	1545	395	54	1430
Fee Brothers. (See Elliott, Abraham, assignor.)						
Fehleisen, Adolph E., assignor of one-half to C. B. Stone, Denver, Colo. Hitching-post	444,177	Jan. 6	326	79, 80	54	66
Feister, Henry P., Philadelphia, Pa. Apparatus for making leaf-hinges for books	444,821	Jan. 20	1320	342	54	275
Feister Printing Company. (See Hunter, Rudolph M., assignor.)						
Felldin, Abraham, Auburn, N. Y. Piano-tuning apparatus	449,409	Mar. 31	3490	878	54	1813
Fenton Metallic Manufacturing Company. (See Hine, James W., assignor.)						
Fergus, James, Philadelphia, Pa. Vulcanizer	449,470	Mar. 31	3596	906	54	1834
Ferguson Brothers. (See Campbell, James W., assignor.)						
Ferguson, David H., Montreal, Canada. Machine for molding pulp	444,916	Jan. 20	1521	391	54	313
Ferguson, John H. (See Baum, Henry C., assignor.)						
Ferguson, Thomas, Albert Park, near Melbourne, assignor of one-half to E. Rowlands, Melbourne, Victoria. Machine for bottling aerated water	447,508	Mar. 3	400	98	54	1193
Ferrell, James M., Freeport, Pa. Register for stamps sold and canceled, &c	448,645	Mar. 24	2256	566	54	1572
Ferris, Sherwood B., Lakewood, N. J. Garment-supporter	449,113	Mar. 31	2984	753	54	1722
Ferry, Dexter M. (See Morrow, George L. K., assignor.)						
Ferry, Frank P., assignor of one-half to T. E. Brady, Danbury, Conn. Hat-packing ring	444,343	Jan. 6	563	145	54	112
Ferry, James M. (See Cunningham and Ferry.)						
Ferst, Charles, Louisville, Ky. Barber's chair	445,014	Jan. 20	1670	429	54	342
Fessler, Henry. (See McKinney, Americus G., assignor.)						
Fetherman, Newton H., Bossardsville, Pa. Harness	448,832	Mar. 24	2547	639	54	1628
Fidler, Charles H., assignor of one-half to A. E. Rood, Monroe, Wis. Gate	447,042	Feb. 24	2519	625	54	1027
Field, Benjamin P., Babylon, N. Y. Book-holder	445,885	Feb. 3	611	150	54	632

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Field, Benjamin F., assignor to Field Patent Water Purifier Company, Chicago, Ill. Water purifier and scale-arrester. (Reissue)	11,143	Feb. 10	1500	370	54	810
Field, Herbert W., Chicago, Ill., and H. A. Fowler, Northbridge, Mass. Adjustable stub-holder	444,429	Jan. 13	703	184	54	147
Field, J. E., *et al.* (See Dunn, John P., assignor.)						
Field Patent Water Purifier Company. (See Field, Benjamin F., assignor.) (Reissue.)	448,329	Mar. 17	1751	444	54	1470
Field, Stephen D., Stockbridge, Mass. Telephone						
Field, Stephen D., Stockbridge, Mass., assignor of one-half to P. H. Alexander, New York, N. Y. Cut-out	446,966	Feb. 24	2385	594	54	1003
Fietsch, Herman, Jr., assignor to D. W. Ryan, Chicago, Ill. Stereotype-plate holder	449,039	Mar. 24	2661	727	54	1690
Fife, John F., Medford, assignor to Wainwright Manufacturing Company of Massachusetts, Boston, Mass. Feed-water heater and condenser	446,913	Feb. 24	2307	573 574	54	989
Figett, John, New Philadelphia, Ohio. Fence	449,598	Mar. 31	3673	923	54	1849
Filkins, Charles A., Amsterdam, N. Y. Apron	445,548	Feb. 3	31	8	54	517
Filstrup, Larsen. (See Reid, Arthur B., assignor.)						
Fine, Isaac. (See Heyl, Henry R., assignor.)						
Fine, William R., Wilsonville, assignor of one-half to W. H. Penland, Newport, Tenn. Car-coupling	448,949	Mar. 24	2725	688	54	1663
Finger, William F., Trenton, N. J. Heating attachment for lamp-chimneys	448,950	Mar. 24	2729	688	54	1664
Finlayson, Christopher T., Denver, Colo. Bucket-clip for wire-rope tramways	444,408	Jan. 6	668	174	54	132
Finn, William H., and J. Pappa, Oswego, N. Y. Fire-armor	446,131	Feb. 10	1014	250	54	747
Finnerty, Michael F., assignor of one-half to G. Dittrich, Brooklyn, N. Y. Car-coupling	447,640	Mar. 3	598	147	54	1230
Finney, William D., *et al.*, executors. (See West, Larkin N.)						
Fischer, Hermann, Prairieville, Ill. Metallic fence-post	449,317	Mar. 31	3320	837	54	1782
Fischer, Moses. (See Flory, Elie H., assignor.)						
Fischer, Oscar. (See Voll, Charles H., assignor.)						
Fish, Charles A., *et al.* (See Berne, Arthur W., assignor.)						
Fish, Farnum T. (See Jull, Samuel T., assignor.)						
Fish, John, Summit, N. J. Bicycle-locomotive	444,822	Jan. 20	1322	342 343	54	275
Fish, Robert J., *et al.* (See Tanner, Jesse J., assignor.)						
Fish, Samuel J., Emporia, Kans. Cultivator shovel and knife	447,305	Mar. 3	31	8	54	1124
Fishel, Charles W., and F. E. Sweet, Carbondale, Colo. Paper bag	446,771	Feb. 17	2050	511	54	931
Fisher, Burnett H., New York, N. Y. Dynamo-regulator	449,245	Mar. 31	3181	803	54	1758
Fisher, Edgar L. (See Lambden, James T., assignor.)						
Fisher, Edmund G., assignor to Fisher Specialty Manufacturing Company, Minneapolis, Minn. Coin-controlled automatic photographic apparatus	444,487	Jan. 13	703	206 207	54	166
Fisher, Edmund G., and R. McFarlane, assignors to Fisher Specialty Manufacturing Company, Minneapolis, Minn. Automatic camera	444,488	Jan. 13	707	207 208	54	167
Fisher, James W., assignor of one-half to E. W. and E. A. Jones, Palouse, Wash. Gate	445,052	Jan. 20	1731	446	54	354
Fisher, Joseph, Attleborough, Mass. Weather-strip	444,523	Jan. 13	854	222	54	178
Fisher, Miers, Denver, Colo. Type-writing machine	448,760	Mar. 24	2442	611	54	1608
Fisher, Peter G., *et al.* (See Devore, Morris H., assignor.)						
Fisher, Robert. (See Kay, Wilkinson, and Fisher.)						
Fisher Specialty Manufacturing Company. (See Fisher, Edmund G., assignor.)						
Fisher Specialty Manufacturing Company. (See Fisher and McFarlane, assignors.)						
Fisher, Theodore M., and A. Slye, Mecca Mills, Ind. Car-coupling	445,503	Jan. 27	2409	628	54	495
Fisher, Thomas W., assignor of one-half to J. J. Leiser, Helena, Mont. Breast-collar	449,471	Mar. 31	3596	906	54	1834
Fisk, Joseph M., assignor of one-half to W. G. Bridges, Greenfield, Ind. Car-coupling	448,014	Mar. 10	1231	313	54	1358
Fiske, Austin S., St. Paul, Minn. Book-mark	446,857	Feb. 24	2199	547	54	970
Fiske, Bradley A., U. S. Navy. Electrical range-finder	444,217	Jan. 6	385	96	54	77
Fiske, Coleman & Co. (See Cooper, Leslie A., assignor.)						
Fitch, Fred. W. (See Parsons, Byron J., assignor.)						
Fitch, George, Sharpsburg, Pa. Mast-arm for electric lights	445,549	Feb. 3	32	8	54	517
Fitch, Thomas W., Edgewoodville, Pa. Rod-mill	444,049	Jan. 6	102	26	54	23
Fitch, W. & E. T. (See Hubbard, George M., assignor.)						
Fitler, Harry G., and W. H. Armstrong, assignors of two-fifths to J. H. F. Dixon, Philadelphia, Pa. Nut-lock	447,509	Mar. 3	403	99	54	1194
Fitton, T. H., *et al.* (See Dunn, John P., assignor.)						
Fitzgerald, Edmund M., St. Louis, Mo. Locomotive ash-pan	446,608	Feb. 17	1795	444	54	881
Fitzgerald, James H., Langford, S. D., assignor of one-fourth to J. Barron, Minneapolis, Minn. Blank book for type-writers	446,095	Feb. 10	954	234	54	704
Fitzgerald, John F., Trenton, Tenn. Feed-rack	444,577	Jan. 13	944	245	54	195
Flagg, George C., Lewistown, Ill. Grain-scale	448,761	Mar. 24	2446	611	54	1609
Flagg, George H. P. (See Webster, Harold A., assignor.)						
Flagg, Howard W., Yonkers, N. Y. Felting fur bodies	444,209	Jan. 6	373	.....	54	75
Flagler, John H., New York, N. Y., assignor to National Tube Works Company, Boston, Mass. Vehicle-axle	444,065	Jan. 6	136	34	54	30
Flaig, Joseph. (See Krein and Flaig.)						
Flanders, Johnson B., and J. M. Smith, Toledo, Ohio. Door-hanger	444,725	Jan. 13	1159	298	54	236
Flanegin, Francis A., assignor of one-half to D. C. Reinohl, Washington, D. C. Drill	446,622	Feb. 17	1819	450	54	885
	446,096	Feb. 10	955	235	54	705
Flanigan, Timothy, Chicago, Ill. Dumping-cart						
Fleischman, Milton P. (See Harders and Fleischman.)						
Fleischmann & Co. (See Sobotka, Gustav, assignor.)						
Fleming, Samuel S., Sarversville, Pa. Steam-generator	445,760	Feb. 3	403	102	54	592
Flesher, William H. (See Walter, George P., assignor.)						
Fletcher, Addison C., New York, N. Y. Stamp or label	444,344	Jan. 6	564	145	54	112
Fletcher, Addison C., New York, N. Y. Spring-back book	446,858	Feb. 24	2200	547	54	970
Fletcher, Edwin J., New York, N. Y. Means for joining wood	446,914	Feb. 24	2208	574	54	989
Fletcher, Elisha H. (See Casselman and Fletcher.)						
Fletcher, Elmer, Needham, Mass., assignor to Eyelet Button Hole Attachment Company, Portland, Me. Button-hole attachment for sewing-machines	446,736	Feb. 17	2001	499	54	921
Fletcher, Frank A. (See Latimer and Fletcher.)						
Fletcher, James S., Rogers Park, Ill. Die-stock and die	446,915	Feb. 24	2211	574	54	989
Flinsch Machine Building Co., Ferdinand. (See Winterweber, Heinrich, assignor.)						
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Car-coupling	445,242	Jan. 27	2029	523	54	420
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Car-coupling	445,243	Jan. 27	2031	523	54	421
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Car-coupling	445,244	Jan. 27	2034	523	54	421
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Car coupling	445,245	Jan. 27	2035	523 524	54	421
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Car-coupling	445,246	Jan. 27	2038	524	54	421
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Car-coupling	445,247	Jan. 27	2039	524	54	422
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Friction-clutch	445,248	Jan. 27	2041	525	54	422
Flohr, Otto, assignor to C. A. Pooley, Buffalo, N. Y. Car-coupling						

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Flood, John F. (See Semple, Harry, assignor.)						
Florence Machine Company. (See Gould, Charles E., assignor.)						
Florsheim, Simon, *et al.* (See Gardner, Marshall, assignor.)						
Flory, Elie H., assignor of one-half to M. Fischer, Abbeville, La. Crate	446,105	Feb. 10	1086	267	54	727
Flottmann, Friedrich H., Bochum, Germany. Vacuum-pan	447,673	Mar. 3	636	158	54	1238
Flowers, Malon I., Springfield, Mo., assignor of two-thirds to J. E. Jones and C. W. Price, Oklahoma City, Oklahoma Ter. Electric time-lock	446,967	Feb. 24	2387	594	54	1003
Floyd & Sons, James R. (See Mooney, William, assignor.)						
Foehl, Charles. (See Weeks and Foehl.)						
Foehl, Charles, and C. A. Weeks, assignors to Foehl & Weeks Fire Arms Manufacturing Company, Philadelphia, Pa. Base-pin and cylinder-brake for revolvers	444,823	Jan. 20	1323	343	54	276
Foehl & Weeks Fire Arms Manufacturing Company. (See Foehl and Weeks, assignors.)						
Fogarty, Michael H., Amsterdam, N. Y. Drying board	448,951	Mar. 24	2730	689	54	1664
Foley, James S., London, England. Printing device	448,219	Mar. 17	1547	395 396	54	1431
Folger, William B., Cincinnati, Ohio. Permutation-lock	441,210	Jan. 6	373	93	54	75
Follett, Hiram, assignor of one-half to H. Rühl, Baltimore, Md. Ship's rigging	449,472	Mar. 31	3598	906	54	1834
Foos Company, G. S. (See Slager and Linn, assignors.)						
Foote, James H. (See Meitzler, George R., assignor.)						
Ford, Edward C., and G. T. Jacobs, Washington, D. C. Roll-paper holder and cutter	448,138	Mar. 10	1402	358	54	1394
Ford, Frederick A. (See Meyer and Huppmann Gerard, assignors.)						
Ford, Martin W., Jr., assignor of one-half to F. S. Bean, Manchester, N. H. Wheel-hub	449,264	Mar. 31	3215	811	54	1765
Forden, W. B. (See Stickney, Henry C., assignor.)						
Foresman, John B., Foresman, Ind. Hay-press	445,986	Feb. 10	782	190 191	54	675
Forgason, Henry C., assignor of one-half to H. G. Comstock, Oakland, Cal. Electric-arc lamp	447,767	Mar. 10	800	199	54	1277
Forker, William H., Meadville, Pa. Riding-saddle	447,723	Mar. 3	714	179	54	1253
Fornander, Per J. A., Brooklyn, N. Y. Take-up for braiding machines	447,107	Feb. 24	2016	640	54	1047
Fornander, Per J. A., Brooklyn, N. Y. Carrier for braiding-machines	447,108	Feb. 24	2018	650	54	1048
Forrest, Hamlet E., assignor to Watson & Stillman, New York, N. Y. Packing for stuffing-boxes	445,693	Feb. 3	293	77	54	570
Forrester, Philip M., Sunbury, Pa. Can for refrigerating and transporting milk	446,254	Feb. 10	1248	305	54	759
Forshaw, Joseph, St. Louis, Mo. Match-box and holding-frame therefor	446,336	Feb. 10	1378	336	54	785
Forsyth, Robert C., Chicago, Ill. Truck for suspended cars	449,318	Mar. 31	3322	837 838	54	1782
Fort Wayne Electric Light Company. (See Bradley, Charles S., assignor.)						
Fort Wayne Electric Light Company. (See Slattery, Marmaduke M. M., assignor.)						
Forward, Ross, Cincinnati, Ohio. Car-coupling	448,515	Mar. 17	2031	508	54	1523
Foster, Charles, and W. H. Bevis, Cincinnati, Ohio. Electric-conductor support	445,594	Feb. 3	117	30	54	534
Foster, Charles K., Iola, Wis. Poison or fertilizer distributer	446,772	Feb. 17	2050	511	54	931
Foster, Edward C., Ludington, Mich. Corset	446,968	Feb. 24	2390	594	54	1004
Foster, Freling C., Chicago, Ill. Velocipede	448,952	Mar. 24	2731	689	54	1664
Foster, Horatio A., New York, N. Y., assignor to Thomson-Houston Electric Company, of Connecticut. Hanger for electric lamps	449,153	Mar. 31	3040	768	54	1732
Foster, John. (See Caldwell, John, assignor.)						
Foster, John E., Ferndale, Cal. Harness	445,428	Jan. 27	2302	597	54	476
Foster, Merriam & Co. (See Hendrickson, Robert, assignor.)						
Foster, Rufus J., *et al.* (See Pocock, Francis A., assignor.)						
Fottrell, John, assignor to C. R. Griggs, S. Tebbutt, and A. Curtiss, New York, N. Y. Disinfecting paving composition	446,285	Feb. 10	1295	.....	54	768
Fowler, Arthur H., Buffalo, N. Y. Radiator	446,580	Feb. 17	1759	433	54	874
Fowler, Charles E. (See Fowler, Horace N. and C. E.)						
Fowler, Henry A. (See Field and Fowler.)						
Fowler, Horace N., Philadelphia, Pa., and C. E. Fowler, Hammonton, N. J.; said C. E. Fowler assignor to said Horace N. Fowler. Baking-machine	444,379	Jan. 6	616	158 159 160 161	54	122
Fowler, John. (See Wood and Fowler.)						
Fowler, Joseph C. (See Henkle and Fowler.)						
Fowler, Rufus B., Worcester, Mass., assignor to T. D. Sayles, Norwich, Conn. Carding-engine for making mottled yarns	448,479	Mar. 17	1983	498	54	1514
Fox, Clarence W., Saugus, Mass. Shaker for mixing drinks	447,069	Feb. 24	2364	636	54	1036
Fox, Edwin N., Winchester, Va. Lawn-mower	444,608	Jan. 13	982	255	54	203
Fox, James T., assignor of one-half to S. W. Porter, Sherman, Tex. Hand-stamp	448,606	Mar. 17	2182	545	54	1551
Fox, John B. (See Ginter, William P., assignor.)						
Fox, John H., Boston, Mass. Gate for exit-passages of railway-cars	445,809	Feb. 3	503	121	54	610
Fox, John H., assignor of one-half to D. H. Vincent, Boston, Mass. Guard for exit-passages of railway-cars	445,808	Feb. 3	502	121	54	610
Fox, Samson, Leeds, England, assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Pressed-steel beam	446,859	Feb. 24	2203	548	54	971
Fox, Samson, Leeds, England, assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Apparatus for bending and forging steel	448,814	Mar. 24	2521	631	54	1624
Fox, Samson, Leeds, England, assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Apparatus for bending and forging steel	448,815	Mar. 24	2522	632	54	1624
Fox Solid Pressed Steel Company. (See Fox, Samson, assignor.)						
Fox, William R., Grand Rapids, Mich. Dado-cutter	447,716	Mar. 3	702	176	54	1251
Foye, William H., Chicago, Ill. Apparatus for treating fermented liquors	445,168	Jan. 27	1919	495	54	309
Frame, Nathan T., Jamestown, Ohio. Railway-chair	446,633	Feb. 17	1834	454	54	888
Francis, Graham I., assignor to American Writing Machine Company, Hartford, Conn. Type-writing machine	448,646	Mar. 24	2257	566	54	1573
Francis, John C., assignor to E. M. Greene, New York, N. Y. Combined annunciator and telephone system	447,768	Mar. 10	802	199	54	1277
Frank, Henry C., *et al.* (See Negraval, Louis A., assignor.)						
Frank, Samuel B., assignor of one-half to E. B. Polk, Nashville, Tenn. Pulverizer	447,674	Mar. 3	638	158	54	1238
Frank, Samuel B., assignor of one-half to E. B. Polk, Nashville, Tenn. Brick-machine	447,675	Mar. 3	639	158 159	54	1239
Franklin, Rhodolph H., assignor to C. C. Cummings, Brooklyn, N. Y. Combined pencil and pencil-sharpening knife	448,182	Mar. 10	1473	375	54	1408
Franklin, Rhodolph H., assignor of one-half to C. C. Cummings, Brooklyn, N. Y. Lead pencil	449,040	Mar. 24	2802	727	54	1690
Franklin, Robert M., Galveston, Tex. Net for crabbing and fishing	446,440	Feb. 17	1550	384	54	832
Frantz, Christian, Waynesborough, Pa. Thrashing-cylinder	449,438	Mar. 31	3539	892	54	1823

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Frasch, Herman, Cleveland, Ohio, assignor to Solar Refining Company, of Ohio. Process of and apparatus for refining and purifying petroleum	448,480	Mar. 17	1987	498	54	1514
Fraser, Charles E. (See Proctor, Fraser, Carter, and Middleton.)						
Fraser, Edwin J., San Francisco, Cal. Device for controlling horses	448,330	Mar. 17	1754	444	54	1471
Frazer, Thornton A., Highlands, assignor of two-thirds to J. F. Benedict and G. W. Huntington, Denver, Colo. Puzzle	446,513	Feb. 17	1662	406	54	854
Frazier Franklin P. (See Frazier and Milam, assignors.)						
Frazier Joseph A., and W. A. Milam; said Milam assignor to F. P. Frazier, Corrona, Miss. Brick-machine	447,949	Mar. 10	1112	279	54	1336
Frazier, Simon F., Queenemo, Kans. Boot or shoe case	447,150	Feb. 24	2716	673	54	1064
Frech, William, Chicago, Ill. Punching-machine	449,154	Mar. 31	3041	769	54	1732
Freeman, Benjamin S., Jr., Attleborough Falls, Mass. Chain-fastening	446,593	Feb. 17	1777	438	54	877
Freeman, Charles C., Dixfield, Me. Tooth-pick	448,647	Mar. 24	2260	567	54	1573
Freeze, Elisha C. (See Bennett and Freeze.)						
Freiner, Emil, Buffalo, assignor to F. Freiner, Hamburg, N. Y. Musical instrument	449,439	Mar. 31	3540	892	54	1823
Freiner, Francisca. (See Freiner, Emil, assignor.)						
French, Alvah S., New York, N. Y. Shoe-fastener	444,824	Jan. 20	1324	343	54	276
French, Erastus S., Princeton, assignor to G. Waite, Baldwinsville, Mass. Convertible chair	445,774	Feb. 3	434	{107 108	{54 54	597
French, Erastus S., Princeton, assignor to G. Waite, Baldwinsville, Mass. Chair	449,114	Mar. 31	2985	754	54	1732
French, George W., and W. P. Bettendorf, Davenport, Iowa. Harrow	445,444	Jan. 27	2319	602	54	479
French, James C., Brooklyn, N. Y. Pavement or floor light	445,311	Jan. 27	2134	551	54	442
French, James C., Brooklyn, N. Y. Insole	445,312	Jan. 27	2134	551	54	442
French, John B., St. Louis, Mo. Automatic cable-lifter	446,337	Feb. 10	1378	336	54	785
Frerichs, Henry, Chicago, Ill. Sample or picture exhibitor	447,815	Mar. 10	889	222	54	1203
Frey, Frederick E. (See Frey, James A. and F. E.)						
Frey, James A. and F. E., assignors to Frey-Sheckler Company, Bucyrus, Ohio. Cutting-table for brick or tile machines	446,338	Feb. 10	1379	337	54	786
Frey-Sheckler Company. (See Frey, James A. and F. E., assignors.)						
Frick, Abraham O., Waynesborough, Pa. Cash-recorder	448,481	Mar. 17	1989	{498 499	{54 54	1514
Frick, Charles C., and N. P. Wood, Blue Springs, Mo. Two-wheeled vehicle	448,015	Mar. 10	1231	313	54	1358
Frick, George, Waynesborough, Pa. Threshing-machine	447,043	Feb. 24	2520	{625 626	{54 54	1028
Friesle, Samuel M., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	445,987	Feb. 10	784	191	54	675
Friedel, Robert, assignor to Stuttgart-Fürther Holz & Spiegelmannfactur, Stuttgart, Germany. Oval-grinding machine	445,169	Jan. 27	1920	{495 496	{54 54	399
Frederick, Philippe, Langley, Kans. Corn-planter	444,645	Jan. 13	1035	{269 270	{54 54	213
Friend, William, New York, N. Y. Lubricant block	445,988	Feb. 10	786	191	54	675
Friend, William, New York, N. Y. Lubricant lining for friction-bearings	445,989	Feb. 10	787	191	54	675
Friesedt, Luther P., Chicago, Ill. Vehicle axle and bolster	444,590	Jan. 13	960	249	54	199
Friesedt, Luther P., Chicago, Ill. Wagon-axle	444,591	Jan. 13	961	249	54	199
Frietsch, Karl G., Schenectady, N. Y., assignor to Edison Machine Works, of New York. Commutator-brush	448,331	Mar. 17	1755	444	54	1471
Frillman, Frederick, Jr., Chicago, Ill. Carpet-fastener	448,220	Mar. 17	1550	396	54	1431
Frisbie, Charles A., Stanberry, Mo. Sash-fastener	446,969	Feb. 24	2391	595	54	1004
Frits, Milton C., La Harpe, Ill. Bridge	446,339	Feb. 10	1382	338	54	786
Frost, Carl. (See Hagström, Anders, assignor.)						
Frost, Charles A., Western, Nebr. Mechanism for operating pumps	445,990	Feb. 10	788	192	54	675
Frost, John C., Statesville, N. C. Apparatus for casing tobacco	446,441	Feb. 17	1553	381	54	882
Frost, Leonard L., Barada, Nebr. Car-coupling	445,279	Jan. 27	2088	539	54	431
Fruehauf, Jacob, Chicago, Ill. Roundabout	446,182	Feb. 10	1110	272	54	732
Fuchs, Robert, Biberach, Germany, assignor to W. Dieterich, New York, N. Y. Combination cane and slide-gage	448,016	Mar. 10	1233	313	54	1359
Fulda, Louis P. (See Wilson, Robert R., assignor.)						
Fullenwider, M. C., *et al.* (See Werner, Louis G., assignor.)						
Fuller, Ira A., Pepin, Wis. Water-gage	444,295	Jan. 6	496	129	54	99
Fuller, Levi K., assignor to Estey Organ Company, Brattleborough, Vt. Electric-motor attachment for reed-organs	444,169	Jan. 6	316	76	54	64
Fuller, Samuel B., Pawtucket, R. I. Gate for car-platforms	446,514	Feb. 17	1663	406	54	855
Fuller, Willard H., Passaic, N. J., assignor to Scovill & Adams Company, New York, N. Y. Photographic camera	445,550	Feb. 3	32	9	54	517
Fuller, Willie C., Kirwin, Kans. Electric belt	448,953	Mar. 24	2782	689	54	1664
Fuller, Winfield L., Walker, Kans. Ventilated crematory-closet	446,340	Feb. 10	1383	338	54	786
Fullilove, A. B. (See Laws, Benjamin T., assignor.)						
Funk, Christian B. (See Gillis, Charles W., assignor.)	444,747	Jan. 13	1205	312	54	244
Funk, Christian C., Springfield, Ohio. Sewer-trap	448,332	Mar. 17	1756	444	54	1471
Funk, Daniel D., and J. P. White, Springfield, Ohio. Horse hay-rake	447,109	Feb. 24	2619	650	54	1048
Funk, Edward, Cincinnati, Ohio. Running-gear for vehicles						
Funk, Lucius A. (See Cunningham and Funk.)	444,935	Jan. 20	1552	398	54	318
Furness, Frank, Philadelphia, Pa. Fire-proof floor						
Fustian Cutting Machine Company. (See Smith, Goddard, Higginbottom, and Mannock, assignors.)	445,369	Jan. 27	2212	574	54	458
Fyler, Roman B., Worcester, Mass. Hand-rubber	447,448	Mar. 3	290	73	54	1172
Gabbert, James T. and W. D., St. Albans, W. Va. Wagon-brake						
Gabbert, William D. (See Gabbert, James T. and W. D.)						
Gabbett, Edmond R., Old Charlton, assignor of one-half to S. B. Boulton, T. B. Haywood, and H. E. Boulton, London, England. Apparatus for mixing liquids	444,345	Jan. 6	566	145	54	113
Gabbey, Robert S., Rossville, Kans. Cultivator	444,346	Jan. 6	568	145	54	113
Gäbel, Richard, Dresden, Germany. Cutting-tool	448,017	Mar. 10	1234	314	54	1359
Gaede, John W., Maroa, Ill. Automatic measuring-machine	448,018	Mar. 10	1235	314	54	1359
Gaffney, Thomas F., and T. C. Dawson, Lynn, Mass. Leather-working machine	448,422	Mar. 17	1895	{475 476	{54 54	1497
Gage, Walter H., West Fitchburg, Mass. Handle for chisels	446,442	Feb. 17	1555	382	54	883
Gage, William S., San Francisco, Cal. Coin-wrapper	445,445	Jan. 27	2320	602	54	479
Gale Manufacturing Company. (See Hickman, Edgar M., assignor.)						
Gallagher, John J., St. Louis, Mo. Electric time-alarm	448,712	Mar. 24	2368	592	54	1595
Gallagher, John L., assignor to Dibble Manufacturing Company, Trenton, N. J. Shank for knobs or handles	444,524	Jan. 13	855	223	54	179
Gallup, Silas N., Macedon, N. Y. Type-bar for type-writing machines	445,170	Jan. 27	1922	496	54	400
Galpin, William A. (See Mackey, George H., assignor.)						
Gamble, James H., Merrimac, Wis. Swinging barrel-support	444,978	Jan. 20	1618	414	54	332

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Gamble, John E., assignor of one-half to W. Brunt, East Liverpool, Ohio. Brick-kiln	448,333	Mar. 17	1758	445	54	1471
Gamble, Joseph W., Adair, Iowa. Draft-equalizer	445,638	Feb. 3	194	51	54	550
Gamble, Matthew C., Stanton, Nebr. Rein-supporting ring for harness	447,044	Feb. 24	2524	626	54	1028
Gamewell Fire Alarm Telegraph Company. (See Kirnan, William H., assignor.)						
Gemmell, Thomas, London, England. Amalgamating apparatus	446,706	Feb. 17	1952	{486 487	{54 54	911
Gammon, George C., Pawtucket, R. I. Electric cut-out	447,076	Mar. 3	640	159	54	1239
Gammon, Samuel W. (See Ingraham, Charles T., assignor.)						
Gamon, Thomas, Philadelphia, Pa. Brick-kiln	445,595	Feb. 3	119	30	54	534
Gannane, Thomas. (See Graham and Gannane.)						
Garben, Adolph F. C., Hoboken, N. J. Educational appliance	448,019	Mar. 10	1236	314	54	1359
Garcia, Joseph, Paterson, N. J. Truss-pad	449,473	Mar. 31	3569	906	54	1804
Garden City Filler Company. (See Page, Levi H., assignor.)						
Gardiner, Arthur, Terrace, Utah Ter. Snow-plow	446,286	Feb. 10	1295	317	54	768
Gardiner, Joseph B., Nyack, assignor to American Electric Exercise Machine Company, New York, N. Y. Electrical exercising-machine	444,881	Jan. 20	1451	377	54	300
Gardner, Edward V., London, England. Treating white lead	448,516	Mar. 17	2032	{508 509	{54 54	1523
Gardner, James C., Chicago, Ill. Step-ladder	448,648	Mar. 24	2260	567	54	1573
Gardner, Joanna. (See Gardner, William, assignor.)						
Gardner, Marshall, assignor to T. H. Ball and J. Stone, Aurora, and S. Florsheim, Chicago, Ill. Sewing-machine	447,306	Mar. 3	32	8, 9	54	1125
Gardner, Marshall, assignor to T. H. Ball and J. Stone, Aurora, and S. Florsheim, Chicago, Ill. Sewing-machine	447,307	Mar. 3	35	9, 10	54	1124
Gardner, Marshall, assignor to T. H. Ball and J. Stone, Aurora, and S. Florsheim, Chicago, Ill. Feeding mechanism for sewing-machines	447,401	Mar. 3	208	54, 55	54	1157
Gardner, Marshall, assignor to T. H. Ball and J. Stone, Aurora, and S. Florsheim, Chicago, Ill. Sewing-machine	447,402	Mar. 3	211	55, 56	54	1157
Gardner, William, assignor to J. Gardner, New York, N. Y. Baby-carriage	447,606	Mar. 3	546	135	54	1220
Garfield, Joel, Worcester, Mass. Pitman-head	445,775	Feb. 3	434	108	54	597
Garland, Charles F., Chelsea, assignor of one-half to J. J. Quigley, East Boston, Mass. Steam-boiler	447,308	Mar. 3	41	11	54	1125
Garland, Frank M., New Haven, Conn. Steam-engine	448,917	Mar. 24	2680	674	54	1654
Garland, William H., assignor of three-fourths to J. Nicol, Somerville, J. W. Brine, and G. A. Lloyd, Arlington, Mass. Pipe-cutting machine	445,138	Jan. 20	1460	482	54	379
Garneau, James W., St. Louis, Mo. Account-book	445,313	Jan. 27	2135	{551 552	{54 54	442
Garono, Henry. (See McCarthy, William, assignor.)						
Garrard, William E. (See Moore and Garrard.)						
Garraux, Frederick. (See Winship and Garraux.)						
Garretson, Joel G., Buffalo, N. Y. Ink-well	448,423	Mar. 17	1898	476	54	1498
Garretson, Oliver S., Buffalo, N. Y. School furniture	444,630	Jan. 13	1011	263	54	209
Garretson, Wolf, Cleveland, Ohio. Machine for trimming and branding cigars	449,260	Mar. 31	3210	810	54	1764
Garrett, James W., assignor of one-half to C. F. Johnson, Casey, Ill. Wagon-jack	444,347	Jan. 6	570	146	54	113
Garvin Machine Company. (See Sjoberg, Carl J. A., assignor.)						
Gary, John S., Bellevue, Tex. Fastener for fish-plates for rails	449,115	Mar. 31	2986	754	54	1732
Gaskell, James, Burslem, England. Crane for lifting weights	449,529	Mar. 31	3674	923	54	1849
Gassett, Arthur L., Cleveland, Ohio. Capodastro for guitars	449,216	Mar. 31	3140	792	54	1750
Gasteiger, Johann, Vienna, Austria-Hungary. Steam-boiler or other furnace	448,808	Mar. 24	2513	{629 630	{54 54	1622
Gaston, Albert A., Charlotte, N. C. Shelf for stoves	446,115	Feb. 10	985	242	54	711
Gaston, Herbert. (See McMahon, Robert, assignor.)						
Gates, Frank H., assignor to Otis Company, Ware, Mass. Circular-knitting machine	448,954	Mar. 24	2734	689	54	1664
Gates, George B., Fairport, N. Y. Adding-machine	448,921	Mar. 17	1551	396	54	1431
Gates, Lewis A., San Francisco, assignor of one-half to H. J. Postel, Sacramento, Cal. Adjustable lettering device	445,750	Feb. 3	388	98	54	589
Gathmann, Louis, assignor to Gathmann Ordnance Company, Chicago, Ill. Loading ordnance	445,399	Jan. 27	2260	587	54	467
Gathmann Ordnance Company. (See Gathmann, Louis, assignor.)						
Gatling, Robert B., Hartford, Conn. Spindle file or binder	447,565	Mar. 3	483	{118 119	{54 54	1208
Gaul, David, Denver, Colo. Refrigerator	447,403	Mar. 3	215	56, 57	54	1158
Gaunt, Thomas, Brooklyn, N. Y. Evaporating apparatus	445,776	Feb. 3	436	108	54	597
Gaunt, Thomas, Brooklyn, N. Y. Multiple-effect evaporating apparatus	447,816	Mar. 10	890	{222 223	{54 54	1293
Gaunt, Thomas, Brooklyn, N. Y. Evaporating apparatus	447,817	Mar. 10	892	223	54	1294
Gaylord, Charles L. (See Schreiber, Frederick, assignor.)						
Gaynor Electric Company. (See Gaynor, Thomas F., assignor.)						
Gaynor, Thomas F., assignor to Gaynor Electric Company, Louisville, Ky. Electro-mechanical indicator for fire-alarm telegraphs	445,901	Feb. 10	789	{192 193	{54 54	676
Gear, Alfred J., London, England. Shaded dental rubber	448,795	Mar. 24	2406	624	54	1619
Gearhart, James F., Devon, Kans. Cider press and mill	447,677	Mar. 3	641	{159 160	{54 54	1239
Gedge, Burton H., Covington, Ky. Wheel	444,430	Jan. 13	704	184	54	147
Gee, Charles E. (See Putnam, Perry, assignor.)						
Gee, Joshua N., Pleasant Grove, Va. Surveying-instrument	445,886	Feb. 3	611	151	54	632
Gehrwald, Adolph, St. Louis, Mo. Window-scaffold	447,309	Mar. 3	43	11	54	1125
Geiger, George G., Peoria, Ill. Car-door	449,155	Mar. 31	3044	769	54	1732
Geiger, Georg K., *et al.* (See Cross, Gerome L., assignor.)						
Geiss, Christian. (See Niedringhaus and Geiss.)						
Gelatt, Wallace W., Chicago, Ill. Car-coupling	444,096	Jan. 6	180	45, 46	54	38
Generelly, Fannie L. (See Lewis and Generelly.)						
Geneva Optical Company. (See Brayton, James T., assignor.)						
George, Edgar J., Joliet, Ill. Dental plugger	445,717	Feb. 3	332	87	54	578
Gerald, Amos F., Fairfield, Me. Sewing-machine cabinet	446,581	Feb. 17	1761	434	54	874
Gerber, George J., Chicago, Ill., assignor, by mesne assignments, to Steam Gauge and Lantern Company, Syracuse, and R. E. Dietz Company, New York, N. Y. Tubular lantern	445,171	Jan. 27	1922	497	54	400
Gerhard, Charles, Jersey City, N. J. Bengal light compound	449,530	Mar. 31	3675	.....	54	1849
Geries, Charles F., Dudleyville, Ill. Tree-protector	445,887	Feb. 3	613	151	54	632
Gerike, Albert T., Camden, N. J. Stable or street broom	449,440	Mar. 31	3543	893	54	1824
Germain, Edward. (See Cowles, George C., assignor.)						
Gerow, Joseph U., Brooklyn, N. Y. Opera-glass holder	449,531	Mar. 31	3675	924	54	1849
Gerstung, Henry, Jr., Elizabeth, N. J. Hose-clamp	447,818	Mar. 10	893	223	54	1294

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Getz, Henry. (See Raby, Richard, assignor.)						
Giant Electric Motor Company. (See Chapman, William H., assignor.)						
Gibbons, John. (See Meneely and Gibbons.)						
Gibbs, Daniel N. (See Allen and Gibbs.)						
Gibbs, Edward B., North Platte, Nebr., assignor of one-half to W. J. Harris, St. Louis, Mo. Spark-arrester for locomotives. (Reissue)	11,146	Feb. 17	2168	539	54	956
Gibbs, George, Milwaukee, Wis. Electric-lighting system	449,474	Mar. 31	3600	907	54	1835
Gibbs, Lewis, assignor to Bucher & Gibbs Plow Company, Canton, Ohio. Gang-plow	447,724	Mar. 3	715	179	54	1253
Gibson, Edward H., St. Louis, Mo. Wood-working machine	445,446	Jan. 27	2321	602, 603	54	479
Gibson, Jasper, London, England. Bell-buoy	448,222	Mar. 17	1553	396, 397	54	1431
Gibson, Susan, Arkansas City, Kans. Dumpling-steamer	447,678	Mar. 3	644	160	54	1240
Giddings, Albert J., Grand Rapids, Mich. Combined anti-rattler, nut-lock, and thill-support	445,527	Jan. 27	2445	637	54	501
Giebermann, Rudolph, assignor of one-half to Bonton Foundry Company, Chicago, Ill. Filter-press	445,053	Jan. 20	1732	446	54	354
Giebermann, Rudolph, assignor of one-half to Bonton Foundry Company, Chicago, Ill. Apparatus for separating gluten from slaughter-house washings	445,054	Jan. 20	1735	447	54	355
Giebermann, Rudolph, assignor of one-half to Bonton Foundry Company, Chicago, Ill. Separating gluten from slaughter-house washings	445,055	Jan. 20	1736	447	54	355
Giffard, William, Salford, England. Car starter and brake	449,285	Mar. 31	3251	824, 825	54	1771
Gifford, Ezra N., assignor to Chicago Railway Device Company, Chicago, Ill. Car-coupling	444,697	Jan. 13	1117	288, 289	54	229
Gilbert, Frederick J. (See Murch, John H., assignor.)						
Gilbert, George M. (See Gilbert, James M., assignor.)						
Gilbert, James M., Putney, Vt., assignor of one-half to G. M. Gilbert, Sioux City, Iowa. Transposing key-board	447,641	Mar. 3	599	147, 148	54	1231
Giles, Isaac, New York, N. Y. Sash-fastener	447,404	Mar. 3	217	57	54	1158
Gilfillan, Essington N., assignor to Johnston Car Seat Company, Chicago, Ill. Car-seat	448,424	Mar. 17	1898	477	54	1498
Gill, Thomas, New York, N. Y. Advertising-vehicle	448,425	Mar. 17	1900	477	54	1499
Gillard, Nathaniel, assignor to Curtis & Wheeler, Rochester, N. Y. Machine for softening leather	446,594	Feb. 17	1777	439	54	877
Gillett, Anna A. and G. L., Milwaukee, Wis. Garment-supporter	448,223	Mar. 17	1555	397	54	1432
Gillett, Garland L. (See Gillett, Anna A. and G. L.)						
Gillett, Sylvanus M. (See Isbell and Gillett.)						
Gillette, Harleigh, Highland Park, Ill. Electric gate	444,825	Jan. 20	1325	343, 344	54	276
Gillette, Wells, *et al.* (See May, Henry H., assignor.)						
Gillham, Nathaniel, Otwell, Ind. Fence-construction	449,441	Mar. 31	3543	893	54	1824
Gillis, Charles W., Dayton, assignor of one-half to C. H. Funk, Collinsville, Ohio. Fodder-binder	449,072	Mar. 24	2910	738	54	1699
Gilman, Charles C., Eldora, Iowa. Covering for steam and hot-water pipes	446,860	Feb. 24	2203	548	54	971
Gilman, Charles C., Eldora, Iowa. Underground railway-conduit	446,861	Feb. 24	2204	548	54	971
Gilman, Edward W., Madison, Wis. Telescopic satchel-harness	448,426	Mar. 17	1901	477	54	1499
Gilman, Willard H., assignor to A. W. Tice, Boston, R. S. Dodge and R. Nagle, Lynn, Mass. Cash-register	448,020	Mar. 10	1237	314, 315	54	1360
Gilman, Willard H., assignor to R. S. Dodge, A. W. Tice, Boston, and R. Nagle, Lynn, Mass. Cash-register	448,021	Mar. 10	1240	315	54	1360
Gilmer, Joseph. (See Matthews and Gilmer.)						
Gilpin, Joseph F., and J. Elliot, Ansonia, Conn. Gas-furnace	448,955	Mar. 24	2736	690	54	1665
Gingras, Timothy, Buffalo, N. Y. Axle-washer	444,218	Jan. 6	387	96	54	77
Gingras, Timothy, Buffalo, N. Y. Pulley	446,567	Feb. 17	1744	429	54	871
Ginochio, Noel B., assignor of one-half to E. M. Greene, New York, N. Y. Magneto-electric signal device	447,045	Feb. 24	2525	626, 627	54	1029
Ginter, William P., assignor of one-half to J. B. Fox, Hughesville, Pa. Meat-tenderer	448,482	Mar. 17	1991	499	54	1515
Gish, David W., San José, Cal. Bale-tie fastener	448,022	Mar. 10	1241	315	54	1360
Givin, Samuel D. (See Jeffers, Harry I., assignor.)						
Gladish, William J., Chattanooga, Tenn. Saw-mill set-works	446,440	Feb. 17	1556	382	54	833
Glaser, Charles, assignor to American Phosphate and Chemical Company, Baltimore, Md. Making alkaline phosphates	446,815	Feb. 17	2121	.....	54	946
Glass, Kallmann, New York, N. Y. Bath-tub	445,314	Jan. 27	2136	592	54	442
Glassbrook, Myron, and N. Emmer, Williamston, Mich. Power-machine	446,862	Feb. 24	2205	548	54	971
Glatz, Joseph. (See Bornholdt, Adolph, assignor.)						
Gleason, William, Rochester, N. Y. Safety attachment for lathes	447,607	Mar. 3	548	135, 136	54	1220
Gledhill, Walter, Clifton, Pa., assignor of one-half to J. Smethurst, St. Helen's, England. Nut-lock	448,183	Mar. 10	1473	376	54	1408
Glennon, John. (See Krause and Glennon.)						
Glidden, Albert S., Lake Village, N. H. Curtain-fixture	446,675	Feb. 17	1903	472	54	902
Glidden, Charles W., Lynn, and A. D. Elliott, Lawrence, assignors to J. W. Brooks, trustee, Cambridge, Mass. Heeling-machine	446,383	Feb. 10	1439	354, 355	54	798
Glockler, Charles A., Pittsburg, Pa. Latch	444,826	Jan. 20	1328	345	54	276
Glover, Charles, assignor to P. & F. Corbin, New Britain, Conn. Coat and hat hook	447,510	Mar. 3	405	99	54	1194
Glover, Charles, assignor to P. & F. Corbin, New Britain, Conn. Manufacture of coat and hat hooks	448,224	Mar. 17	1556	397	54	1432
Glover, Henry P. (See Cowell, Edward R. E., assignor.)						
Glover, Henry P. (See De Clements, Eldersley D., assignor.)						
Glynn, Michael P., Ashley, Pa. Checking and uncheeking device	445,888	Feb. 3	614	151	54	632
Goddard, Andrew. (See Smith, Goddard, Higginbottom, and Mannock.)						
Goddard, Harry C., *et al.* (See Westaway, Walter C., assignor.)						
Godden, Edward, and G. R. Whitehurst, Clarksburg, assignors to J. M. Thomas, Chillicothe, Ohio. Corn-planter	448,649	Mar. 24	2202	567	54	1574
Goe, Alice C., Stone Fort, Ill. Perch for cages	447,769	Mar. 10	803	199	54	1277
Goebel, John. (See Decker and Goebel.)						
Goebde, Richard, Hanover, Germany. Cock for mixing gas and air	446,341	Feb. 10	1384	338	54	787
Goehring, Charles L., Allegheny, Pa. Rotary cutter-head	445,335	Jan. 27	2169	562	54	449
Goetz, George W., Milwaukee, Wis. Poke-hole for gas-producers	444,631	Jan. 13	1012	263	54	209
Goetz, George W., Pittsburg, Pa. Method of and apparatus for solidifying molten metal	447,511	Mar. 3	405	99	54	1194
Goff, Samuel B., Camden, N. J. Axle-bearing	447,608	Mar. 3	550	136	54	1221
Gohlke, Theodore, St. Louis, Mo. Wind-stop	448,517	Mar. 17	2035	509	54	1523
Goldberg, Nehemiah, Philadelphia, Pa. Folding step-ladder	444,276	Jan. 6	468	119	54	93
Golden Gate Faucet Company. (See Anthony, Mark, assignor.)						
Golden, Samuel, assignor of one-fourth to C. Cullen, Buffalo, N. Y. Water-motor	445,551	Feb. 3	35	10	54	518

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Goldner, Simon, Brooklyn, N. Y. Device for making car-wires	447,405	Mar. 3	219	57	54	1159
Goldsmith, Byron B., New York, N. Y. Lead-pencil	447,310	Mar. 3	44	11	54	1125
Goldstein, Albert, Baltimore, Md. Pneumatic fire-alarm	446,863	Feb. 24	2206	549	54	971
Goldstein, Jacob, and I. Block, New York, N. Y. Oil-stove	444,748	Jan. 13	1205	313	54	244
Goldthwait, George F., Somerville, Mass. Fire-escape	449,319	Mar. 31	3325	808	54	1782
Goldy, Samuel N., San Francisco, Cal. Sash-balance	444,097	Jan. 6	184	46	54	38
Gollings Bi-Centric Pump Company. (See Gollings, Ellick H., assignor.)						
Gollings, Ellick H., Chicago, Ill. Rotary engine	448,607	Mar. 17	2183	545, 546	54	1551
Gollings, Ellick H., Lewiston, Idaho, assignor to Gollings Bi-Centric Pump Company, Chicago, Ill. Rotary pump	448,334	Mar. 17	1759	445, 446	54	1472
Gollings, Ellick H., Lewiston, Idaho, assignor to Gollings Bi-Centric Pump Company, Chicago, Ill. Rotary pump	448,335	Mar. 17	1764	446, 447	54	1472
Gollings, Ellick H., assignor to Gollings Bi-Centric Pump Company, Chicago, Ill. Rotary pump	448,336	Mar. 17	1766	447	54	1473
Gollings, Ellick H., assignor to Gollings Bi-Centric Pump Company, Chicago, Ill. Rotary pump	448,518	Mar. 17	2036	509, 510	54	1524
Gollings, Ellick H., assignor to Gollings Bi-Centric Pump Company, Chicago, Ill. Rotary pump	448,608	Mar. 17	2186	546, 547	54	1551
Gollings, Ellick H., assignor to Gollings Bi-Centric Pump Company, Chicago, Ill. Rotary pump	448,609	Mar. 17	2189	547	54	1552
Good, Arthur T., Hamilton, Ohio. Polishing-cone	449,217	Mar. 31	3141	702	54	1750
Good, William E., assignor to Southwark Foundry and Machine Company, Philadelphia, Pa. Steam-engine	448,184	Mar. 10	1474	375, 376	54	1408
Good, William E., and C. O. Lindroth, assignors to Southwark Foundry and Machine Company, Philadelphia, Pa. Link-motion for compound engines	446,444	Feb. 17	1557	382, 383	54	833
Goodacre, Henry, Lexington, Ky. Filter	446,342	Feb. 10	1387	338, 339	54	787
Goodbody, Robert, Upton, Ireland. Automatic visible-feed injector	446,749	Feb. 17	2020	504	54	924
Goode, William T., *et al.* (See Burks, Walter, assignor.)						
Goodell Company. (See Oaks, William A. C., assignor.)						
Goodman, Burkard, New York, N. Y. Elastic braid or web	446,707	Feb. 17	1954	487	54	911
Goodman, Simon, Dayton, Ohio. Lady's shoe-mirror	447,770	Mar. 10	804	199	54	1277
Goodnow, William E. and H. R. Margason, Columbus, Ind. Pipe-wrench	446,547	Feb. 17	1717	421	54	865
Goodrich, Harry C., and F. Henry, Chicago, Ill., assignors, by mesne assignments, to Chicago Nickel Works, of Illinois. Attachment-holder for sewing-machines	448,225	Mar. 17	1557	397, 398	54	1432
Goodrich, Walter G. (See Donovan, Thomas J., assignor.)						
Goodridge, James F., Boston, Mass. Cash indicator and register	446,343	Feb. 10	1388	339	54	787
Goodwillie, Walter S., Cambridge, assignor to C. Dimond, Chelsea, Mass. Furniture	445,777	Feb. 3	438	108, 109	54	597
Goodwin, Hannibal, Newark, N. J. Preparing plates or surfaces for ornamentation	444,951	Jan. 20	1586	.....	54	323
Goodwin, Hannibal, Newark, N. J. Preparing plates for utility and ornament	444,952	Jan. 20	1586	406	54	324
Goodwin, Levi H., Cincinnati, Ohio. Elevated railway	445,467	Jan. 27	2351	611	54	485
Goodwin, Zachary J., Memphis, Tenn. Dust and cinder protector	444,749	Jan. 13	1206	313	54	244
Goosen, Henry, R. J. Haly, and J. W. Kent, Brooklyn, N. Y. Paint-mill	448,226	Mar. 17	1558	398	54	1433
Goosmann, Henry, West Bend, Wis. Fire-ladder	444,632	Jan. 13	1013	264	54	209
Gordon, Abram G., Chester, Ill. Fire-escape	448,227	Mar. 17	1559	398	54	1433
Gordon, John L., Philadelphia, Pa. Combined ruler and blotting-pad holder	444,698	Jan. 13	1119	289	54	229
Gordon, William, Boston, Mass. Machine for extracting lasting-tacks	448,023	Mar. 10	1242	316	54	1360
Gorendo, Louis T., assignor to C. F. Adams, Erie, Pa. Clothes-wringer	447,609	Mar. 3	551	136	54	1221
Gorham, John W., Mount Vernon, Iowa. Swinging gate	447,819	Mar. 10	894	223	54	1294
Gorton, James L., and J. Bedell, Sing Sing, N. Y. Pencil-sharpener	444,431	Jan. 13	705	184	54	147
Gosewich, Ernest H., Chicago, Ill. Ruching	449,416	Mar. 31	2986	754	54	1722
Gosling, Charles, Brooklyn, assignor to Stern Brothers & Co., New York, N. Y. Finger-ring	448,610	Mar. 17	2190	548	54	1552
Goss Printing Press Company. (See Goss, Samuel G., assignor.)						
Goss, Samuel G., assignor to Goss Printing Press Company, Chicago, Ill. Press delivery apparatus	449,156	Mar. 31	3046	769, 770	54	1733
Gossett, John H., *et al.* (See Faris, Lafayette, assignor.)						
Gould, Charles E., Northampton, assignor to Florence Machine Company, Florence, Mass. Show-case for spool-thread	446,642	Feb. 17	1854	460	54	892
Gould, Claude C., Batavia, assignor to Eastern Electrical Manufacturing Company, Wheatfield, N. Y. Telephone-switch system	447,426	Mar. 3	246	63	54	1164
Gouldberg, Hans J., Cambridge, Minn. Running-gear for wagons	444,827	Jan. 20	1329	345	54	277
Gourlay, David A. (See Babcock and Gourlay.)						
Gove, Jesse M., *et al.* (See Whittier, Alcibiades J., assignor.)						
Gow, Alexander M., Pittsburg, Pa. Automatic stoker	449,157	Mar. 31	3046	770	54	1733
Graban, Hans E. (See Soltmann and Graban.)						
Gracey, Charles B. (See Gracey, Robert, assignor.)						
Gracey, Robert, Allegheny, assignor of one-half to C. B. Gracey, Coraopolis, Pa. Vehicle-shafts	448,611	Mar. 17	2192	548	54	1553
Graf, Adolph J. C., Hamburg, Germany, assignor to C. A. and A. Barrett, London, England. Coin-controlled machine for indicating the force of a blow or pressure	446,970	Feb. 24	2392	595, 596	54	1004
Graf, Robert R., assignor of one-half to F. W. Reis, Baltimore, Md. Incombustible waste for lubricating purposes	445,889	Feb. 3	615	.....	54	633
Graf, Robert R., assignor of one-half to F. W. Reis, Baltimore, Md. Lubricating-oil	446,344	Feb. 10	1390	.....	54	788
Graff, Edwin D., New York, N. Y. Electric signaling apparatus for railways	448,856	Mar. 24	2593	651, 652	54	1637
Graham, George H., Ridgeland, and T. Gannane, Chicago, Ill. Electric insulator	448,956	Mar. 24	2738	690	54	1665
Graham, John, Minneapolis, Minn. Water-conductor for turbines	446,287	Feb. 10	1297	317	54	769
Graham, John H., Warren, Pa. Oil-burner	445,015	Jan. 20	1672	420	54	342
Graham, Lizzie, Portland, Oreg. Floor-washing machine	446,445	Feb. 17	1558	383	54	834
Graham, Marcellus A., San Francisco, Cal. Gas-engine	445,110	Jan. 20	1818	471	54	370
Graham, Samuel, Lebeck, Mo. Draft-equalizer	448,483	Mar. 17	1992	499	54	1515
Graham, Simon P., Brantford, Ontario, Canada. Boring-tool holder	449,246	Mar. 31	3182	803	54	1759
Graham, William H., and G. R. McDonald, London, county of Middlesex, England. Wheel-locking device for baby-carriages	444,432	Jan. 13	707	185	54	148
Gram, Benjamin F., Cordelia, and W. Bard, Columbia, Pa. Nut-lock	447,311	Mar. 3	45	11	54	1126
Grand Detour Plow Company. (See Ruef, Charles S., assignor.)						
Granger, Frank E., Aberdeen, S. D. Machine for use by stenographers and short-hand writers	444,953	Jan. 20	1591	406	54	325
Granger, John W., New York, N. Y. Piano-damper	446,097	Feb. 10	957	235	54	705
Grant, Arthur W. (See Jefferies and Grant.)						
Grant, Duncan E., Quebec, Canada. Watch-case pendant	445,172	Jan. 27	1924	497	54	400

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Grant, Frank, Westfield, Mass. Whip	448,650	Mar. 24	2263	568	54	1574
Grant, John, assignor to Grant Manufacturing Company, Chicago, Ill. Machine for making timber-hangers	445,149	Jan. 20	1886	487, 488	54	384
Grant Manufacturing Company. (See Grant, John, assignor.)						
Grant, Samuel, Jr., Fort Worth, Tex. Rotary valve for steam-engines	444,066	Jan. 6	137	34	54	30
Granville, Bernard, Chicago, Ill. Type-writing machine	446,676	Feb. 17	1904	473, 474	54	902
Gratzmowsky, William, North Indianapolis, Ind. Reclining-chair	446,062	Feb. 10	904	220	54	696
Graves, Charles O., Washington, Kans. Stove	449,218	Mar. 31	3142	792	54	1750
Gray, Albert Y. (See Gray, Leonidas and A. Y.)						
Gray Company, G. A. (See Gray and Richter, assignors.)						
Gray Current Motor Company. (See Gray, Richard E., assignor.)						
Gray, George A., and E. Richter, assignors to G. A. Gray Company, Cincinnati, Ohio. Metal-planing machine	447,820	Mar. 10	895	224	54	1294
Gray, Lee L., Viola, Ark. Flood-gate	447,679	Mar. 3	645	160	54	1240
Gray, Leonidas and A. Y., Middletown Springs, Vt. Attachment for the separators of thrashing machines	448,957	Mar. 24	2738	690	54	1605
Gray, Philander R. and P. R., Jr., Elizabeth, N. J. Pressure-filter	445,890	Feb. 3	616	151	54	633
Gray, Richard E., Muncy, Pa., assignor to Gray Current Motor Company, Elgin, Ill. Water-wheel	447,725	Mar. 3	717	179, 180	54	1253
Gray, William, assignor of one-half to C. Soby, Hartford, Conn. Telephone-toll apparatus	448,024	Mar. 10	1243	316	54	1361
Gray, William D., Milwaukee, Wis., assignor to E. P. Allis Company, of Wisconsin. Roller grinding-mill	444,348	Jan. 6	571	146	54	113
Gray, William D., Milwaukee, Wis., assignor to E. P. Allis Company, of Wisconsin. Roller grinding-mill	444,349	Jan. 6	573	146	54	114
Gray, William D., Milwaukee, Wis., assignor to E. P. Allis Company, of Wisconsin. Roller grinding-mill	444,350	Jan. 6	574	146	54	114
Graybill, Nathaniel. (See Denny, Lewis, assignor.)						
Green, Aleck H. (See Downey and Green.)						
Green, Henry, Hartford, Conn., assignor, by mesne assignments, to J. J. Tower, New York, N. Y. Spirit-level	449,609	Mar. 31	3797	953	54	1872
Green, John, assignor of one-half to W. L. Holman and J. McCord, Renovo, Pa. Manufacture of draw-bars	448,612	Mar. 17	2192	548, 549	54	1553
Green, John, assignor of one-half to W. L. Holman and J. McCord, Renovo, Pa. Car-coupling	448,613	Mar. 17	2194	549	54	1553
Green, John J., Boonton, N. J. Type-writing machine	444,750	Jan. 13	1207	313, 314	54	244
Green, Robert G., *et al.* (See Shafer, Joshua S., assignor.)						
Green, Robert W., *et al.* (See Emerson, Charles H., assignor.)						
Green, William W., Chicago, Ill. Railway-car	447,053	Feb. 24	2535	630	54	1031
Green, William W., Chicago, Ill. Railway-car	447,054	Feb. 24	2536	630	54	1031
Greenamyer, Clarence V., assignor to Verner Wrench Car Mover and Power Manufacturing Company, San Francisco, Cal. Pivoted-jaw wrench	444,777	Jan. 13	1250	324	54	252
Greenamyer, Clarence V., assignor to Verner Wrench Car Mover and Power Manufacturing Company, San Francisco, Cal. Bench-clamp for pipe tongs and wrenches	444,778	Jan. 13	1251	324	54	252
Greenamyer, Clarence V., assignor to Verner Wrench Car Mover and Power Manufacturing Company, San Francisco, Cal. Adjustable pipe-wrench	444,779	Jan. 13	1252	325	54	252
Greene, Elias M. (See Francis, John C., assignor.)						
Greene, Elias M. (See Ginochio, Noel B., assignor.)						
Greene, Henry S., Lawrence, Mass. Combined gigging and shearing machine	449,620	Mar. 31	3839	961	54	1879
Greene, Mary A., Philadelphia, Pa. Game	445,016	Jan. 20	1673	430	54	343
Greene, Noble T., Providence, R. I. Safety valve-gear for steam-engines	444,699	Jan. 13	1120	289	54	229
Greene & Prunty. (See Prunty, John E., assignor.)						
Greene, William A., Berlin, Canada. Combined wash-stand, desk, and closet	444,531	Jan. 13	867	225	54	181
Greengard, Moses D., and F. Harris, St. Louis, Mo. Fare-collector	444,882	Jan. 20	1456	377	54	301
Greenhoe, James J. (See Phillips and Greenhoe.)						
Greenleaf, Oscar S., *et al.* (See Edwards, William C., assignor.)						
Greenlee, Nicodemus. (See Clark and Greenlee.)						
Greenstein, Adolph. (See Dinsmore, Robert, assignor.)						
Greenwood, Michael, Bellevue, Del., assignor to Hall Steam Pump Company, Plainfield, N. J. Valve-gear	445,810	Feb. 3	505	121	54	610
Greenwood, Michael, Bellevue, Del., assignor to Hall Steam Pump Company, Plainfield, N. J. Valve-gear	446,406	Feb. 10	1490	367	54	807
Gregory, Charles P., Stillwater, Minn. Bit for horses	444,425	Jan. 13	698	182	54	146
Gregory, Joseph P., La Fayette, Tex. Vehicle-brake	447,512	Mar. 3	408	99	54	1194
Gregory, Thomas, Southport, England. Registering and recording apparatus for tram-cars and omnibuses	444,883	Jan. 20	1458	377, 378	54	301
Greiner, Arthur, Chisinovda, Austria-Hungary. Melting metal	445,056	Jan. 20	1738	447	54	355
Greiner, Jacob H., Lancaster, assignor to J. H. Cofrode, Philadelphia, Pa. Traveling crane	447,281	Feb. 24	2038	730, 731	54	1109
Grenninger, Ulrich, St. Gall, Switzerland. Game apparatus	445,260	Jan. 27	2067	533	54	427
Gresson, James H., Knapp, Wis. Fifth-wheel	448,025	Mar. 10	1244	317	54	1361
Grey, Elmer H. (See Seymour, William S., assignor.)						
Greywack, Henry L., West Troy, N. Y. Upright piano	446,595	Feb. 17	1778	439	54	878
Gribble, Theodore G., Yonkers, N. Y. Street-railway track	446,446	Feb. 17	1560	383, 384	54	830
Gribble, Theodore G., London, England. Constructing street-railway tracks	449,117	Mar. 31	2988	755	54	1723
Grier, Monroe. (See Ames and Grier.)						
Grier, Thomas J., Lead City, S. D. Ore-screen	448,762	Mar. 24	2448	612	54	1609
Grier, William W., Hulton, Pa. Fifth-wheel for vehicles	447,312	Mar. 3	46	12	54	1126
Grieves, Edward W. (See Cole and Grieves.)						
Griffin, Edwin C., West Newton, Mass. Mill and power mechanism	449,118	Mar. 31	2988	755	54	1723
Griffin, Henry, *et al.* (See Newman and Oakley, assignors.)						
Griffin, Lawrence J., Barre, Vt. Discharge-pipe for urinals	446,345	Feb. 10	1391	339	54	788
Griffin, William, *et al.* (See Ide, Fred B., assignor.)						
Griffith, Charles H., assignor to Winchester Repeating Arms Company, New Haven, Conn. Cartridge-reloading implement	448,228	Mar. 17	1561	399	54	1433
Griffith, John T. (See Harris, Griffith, and Harris.)						
Griffith, Wilfred S., Ambler, Pa. Feeder for tanks or reservoirs	447,406	Mar. 3	221	57	54	1159
Griffith, Wilfred S., Ambler, Pa. Feeder for tanks or reservoirs	447,407	Mar. 3	222	58	54	1159
Griffiths, John, Brooklyn, N. Y. Making malt liquor	447,131	Feb. 24	2651	658	54	1054
Griggs, C. Robinson, *et al.* (See Fottrell, John, assignor.)						
Grill, Enoch, Orono, Mich. Violin attachment	448,929	Mar. 17	1563	399	54	1434

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Grimes, Charles D., assignor to National Cash Register Company, Dayton, Ohio. Cash register and indicator	445,672	Feb. 3	264	69, 70	54	564
Grimes, Phillips B., Glenwood, Mo. Nut-lock	447,771	Mar. 10	805	200	54	1278
Grimm, John H., and W. G. Pennypacker, Wilmington, Del. Apparatus for reburning animal charcoal	447,313	Mar. 3	47	12	54	1126
Grimston, George S., Greenwich, assignor to Lucigen Light Company, Limited, Westminster, England. Vapor-burner. (Reissue)	11,149	Mar. 10	1488	379	54	1411
Grist, Benjamin W., Philadelphia, Pa. Hoisting machinery	444,592	Jan. 13	962	249, 250	54	199
Griswold, Henry J., Leicester, England. Circular-knitting machine	448,337	Mar. 17	1768	417, 418	54	1470
Griswold, John B., Zanesville, Ohio. Brick-kiln	447,151	Feb. 24	2718	674	54	1064
Griswold, Matthew and M., Jr., Erie, Pa. Kettle ear and cover	447,821	Mar. 10	899	224	54	1295
Griswold, Louis W., and W. J. Van Vleck, Hudson, N. Y. Water-proof leggin	441,489	Jan. 13	805	209	54	168
Groat, Louis W., and W. J. Van Vleck, Hudson, N. Y. Water-proof leggin	445,002	Jan. 20	1656	424	54	340
Grohbrugge, Hinrich, New York, N. Y. Jewel-case	444,828	Jan. 20	1331	345, 346	54	277
Groshon, John A., New York, N. Y. Direct-acting steam-engine	444,829	Jan. 20	1333	346, 347	54	278
Groshon, John A., New York, assignor of one-half to J. Lockwood, Jamaica, N. Y. Direct-acting steam-engine	446,582	Feb. 17	1762	434, 435	54	875
Gross, David. (See Schreiber, Philip J., assignor.)						
Gross, James C., Scranton, Pa. Stopping and signaling mechanism for locomotives	446,288	Feb. 10	1297	317	54	769
Grossenbach, Hugo, Brooklyn, and W. Panhorst, New York, N. Y. Carrier or racer for braiding-machines	445,315	Jan. 27	2137	553	54	443
Grote, Ludwig, Dresden, Germany. Composition for treating articles made from paper	445,111	Jan. 20	1821	.....	54	371
Grout, Daniel F., Montpelier, Vt. Harness-tug	448,026	Mar. 10	1245	317	54	1361
Grout, William L., and E. L. Bowers, Orange, Mass. Turret-lathe	445,694	Feb. 3	294	77, 78	54	570
Grout, William L., and E. L. Bowers, Orange, Mass. Chuck for turning lathes	445,695	Feb. 3	298	78, 79	54	571
Grout, William L., and E. L. Bowers, Orange, Mass. Gripping device for lathes	445,696	Feb. 3	300	79	54	571
Grout, William L., and E. L. Bowers, Orange, Mass. Gripping device for lathes	445,697	Feb. 3	302	80	54	572
Grout, William L., and E. L. Bowers, Orange, Mass. Gripping device for lathes	444,219	Jan. 6	388	96	54	77
Grove, David, Ellsworth, Ill. Reel for winding and unwinding wire	449,219	Mar. 31	3143	793	54	1751
Grover, Arthur C., assignor of one half to E. J. Dickey, Willoughby, Ohio. Combined car and pipe coupling	444,244	Jan. 6	426	107	54	84
Grover, Leonard, Homer, Mich. Subaqueous tunneling-machine	444,120	Jan. 6	225	54	54	46
Groves, John T. (See Smith, Daniel T., assignor.)	446,226	Feb. 10	1180	289	54	745
Groves, John T., Cincinnati, Ohio. Carriage-top joint	445,429	Jan. 27	2304	598	54	476
Groves, William E., Boston, Mass. Time-alarm for culinary purposes						
Grubb, Isaac M., Glenville, Nebr. Comb-frame for bee-hives	444,633	Jan. 13	1015	264	54	209
Grubb, William S. (See Sprinkmann and Grubb.)						
Grubbs, Albert M., Forest Grove, Oreg. Railway-switch	449,041	Mar. 24	2863	738	54	1690
Grundlich, Friedrich W., assignor of one-half to J. G. Ries, Indianapolis, Ind. Stump-extractor	444,380	Jan. 6	621	161	54	122
Grün, Johann F. C., Hamburg, Germany. Device for turning music-sheets	447,314	Mar. 3	50	13	54	1127
Grunich, Edward, assignor to E. P. Donnell, Chicago, Ill. Device for clinching wire staples	449,475	Mar. 31	3602	907	54	1835
Grunz, Carl G., Grand Island, Nebr. Fire-escape						
Grutling, Theodore, *et al.* (See Elgen, Magnus P., assignor.)						
Guarantee Trust and Safe Deposit Company, trustee. (See Lowe, Thaddeus S. C., assignor.)	444,830	Jan. 20	1336	347	54	278
Guenther, Karl F. W., assignor of one-third to C. Davis Carter, Pittsburg, Pa. Flute	444,114	Jan. 6	213	51	54	43
Guenther, Rudolph, Kansas City, Mo. Fire-kindler	447,680	Mar. 3	646	160, 161	54	1240
Guerra, Elias R., Hacienda de San Matias, Jalisco, Mexico Registering-gate	448,230	Mar. 17	1564	399	54	1434
Guichard, Alexandre A., Liensaind, France. Machine for breaking stalks	449,583	Mar. 31	3758	944	54	1864
Guild, George M., Boston, Mass. Upright-piano action	445,173	Jan. 27	1926	497	54	400
Guinn, Jessee L., Neals, Miss. Cotton-cultivator	449,073	Mar. 24	2911	738	54	1690
Guinnip, Arthur B., assignor of one-half to R. H. Arnold, Seneca Falls, N. Y. Cigar-clipper						
Gulley, C. D., *et al.* (See Baker, Owen T., assignor.)						
Gulley, Needham Y. (See Kearney, Benjamin S., assignor.)	445,552	Feb. 3	37	10	54	519
Gurd, William J., Sarnia, Canada. Diaphragm-meter	446,643	Feb. 17	1854	460	54	892
Gustafson, Axel R., Ashland, Wis., assignor of one-fourth to W. F. Anderson, Negaunee, Mich. Thrashing-machine	446,644	Feb. 17	1856	460, 461	54	892
Gustafson, Axel R., Ashland, Wis., assignor of one-fourth to W. F. Anderson, Negaunee, Mich. Thrashing-machine	446,645	Feb. 17	1858	461, 462	54	893
Gustin, Frank M. (See Searles, Jackson, and Gustin.)						
Gutman, Harry J., Des Moines, Iowa. Incandescent-lamp socket	447,315	Mar. 3	51	13	54	1127
Gutmann, Emil, New York, N. Y. Suspenders	445,553	Feb. 3	740	11	54	519
Gutmann, Henry, *et al.* (See Negraval, Louis A., assignor.)						
Gutmann, Ludwig, Pittsburg, Pa. Electro-magnetic cut-out	446,515	Feb. 17	1664	406, 407	54	855
Gutmann, Ludwig, Pittsburg, Pa. Electric motor	446,864	Feb. 24	2208	549	54	972
Haarmann, William F. (See Keen and Haarman.)						
Haas, Walter G., Dayton, Ohio. Roll-paper holder and cutter	449,158	Mar. 31	3048	770	54	1733
Haberthür, Robert, and J. M. Stowell, New York, N. Y. Wrench	448,958	Mar. 24	2739	691	54	1665
Habliston, Frederick L., Richmond, Va. Door-check	445,992	Feb. 10	798	193	54	676
Hacken, Charles T., Chicago, Ill. Nipple-holder	445,940	Feb. 3	704	172	54	651
Hacker, Joseph C., Brooklyn, N. Y. Combined inkstand-receptacle and pad-holder	448,027	Mar. 10	1246	317	54	1361
Hackett, Owen, Lymansville, R. I. Tilt-up for fishing	446,596	Feb. 17	1779	440	54	878
Hadaway, John B., assignor of one-half to M. E. Briggs, Brockton, Mass. Machine for channeling and trimming boot-soles, &c	449,247	Mar. 31	3183	803, 804	54	1759
Hadaway, William S., Jr., trustee. (See Weller, Franklin A., assignor.)						
Haden, Thomas J., assignor to W. M. White, Utica, N. Y. Machine for forming and placing metal pieces on scale-board dishes	447,316	Mar. 3	52	13, 14	54	1128
Hadley, Charles E., New York, N. Y. Addressing-machine	449,320	Mar. 31	3027	839	54	1783
Hadlock, Alexander, Kalamazoo, Mich. Perpetual calendar	448,596	Mar. 24	2497	625	54	1619
Hadlund, Gustaf E., Council Bluffs, Iowa. Shoe-expander	446,063	Feb. 10	905	220	54	696
Haerst, Peter, San Francisco, Cal. Stove-top	445,729	Feb. 3	351	91	54	581
Hagedorn & Merz. (See Sauber, Emil A., assignor.)						
Hagelberg, Wolff, Berlin, Germany. Picture-card	445,174	Jan. 27	1927	498	54	400
Hagen, Ferdinand J., New York, N. Y., assignor to Eureka Cigar Machine Company, of New Jersey. Cigar-bunching machine. (Reissue)	11,150	Mar. 10	1491	380, 381	54	1412

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hagström, Anders, Eslöf, assignor of one-half to C. Frost, Malmö, Sweden. Hygroscope.	447,726	Mar. 3	720	180	54	1254
Haight, James R. (See Segur and Haight.)						
Haight, James R., Adrian, Mich. Store-service apparatus	447,178	Feb. 24	2760	682	54	1073
Haines, Burr A., Smithfield, N. J. Tenon-cutting machine	447,772	Mar. 10	806	200	54	1278
Haines, George W., Stockton, Cal. Traveling harvester	444,936	Jan. 20	1553	399	54	318
Haines, Robert D., assignor to Corning Glass Works, Corning, N. Y. Marine lens	447,727	Mar. 3	721	181	54	1254
Haire, William H., assignor of one-half to G. K. Turner, Morristown, Tenn. Ratchet-wrench	449,476	Mar. 31	3603	907	54	1835
Hakeman, George, *et al.* (See Daniels, James E., assignor.)						
Haldeman, Ephraim A., Chicago, Ill. Door-hanger	446,516	Feb. 17	1666	407	54	855
Hale & Kilburn Manufacturing Company. (See Bennett, Frederick, assignor.) (Reissue.)						
Hale, Thomas. (See Martin, Orien B., assignor.)						
Hale, William B., and R. E. Duringer, said Hale assignor to B. C. Evans, Fort Worth, Tex. Spark-arrester for smoke-pipes	448,918	Mar. 24	2681	675	54	1655
Hales, Burton F. (See Carroll and Hales.)						
Hales, Nathan E., and L. F. Reese, Williamsport, Pa. Safety-pin	444,234	Jan. 6	412	102	54	81
Hall, Alvah W., New York, N. Y. Automatic signal for railway-crossings	444,700	Jan. 13	1122	289	54	230
Hall, Charles and C. E., New York, N. Y. Bolt-machine	447,110	Feb. 24	2621	{650 651	54	1048
Hall, Charles E. (See Hall, Charles and C. E.)						
Hall, Ernest A., and A. H. Hamilton, Lehigh, Iowa. Tug	446,677	Feb. 17	1909	474	54	902
Hall, Frank E., Newton, Mass., assignor to Consolidated Fastener Company, Portland, Me. Button	445,523	Jan. 27	2439	635	54	500
Hall, George T., Moravia, assignor of one-half to E. F. Spence, Los Angeles, Cal. Combined street-car fender and brake	446,227	Feb. 10	1182	289	54	745
Hall, Harriet A. (See Hall, John A., assignor.)						
Hall, James T., Chicago, Ill. Railway cattle-guard	446,928	Feb. 10	1183	290	54	746
Hall, John A., assignor to H. A. Hall, Union, N. H. Heel-machine	447,317	Mar. 3	56	15	54	1128
Hall, John D., assignor to T. C. Balderston, Philadelphia, Pa. Thermometer-graduating machine	449,442	Mar. 31	3544	893	54	1824
Hall, John D., assignor to T. C. Balderston, Philadelphia, Pa. Thermometer tube-filling apparatus	449,443	Mar. 31	3547	893	54	1824
Hall, John D., assignor to T. C. Balderston, Philadelphia, Pa. Thermometer-printing machine	449,444	Mar. 31	3549	894	54	1825
Hall, John W., Whitehaven, England. Wheel for velocipedes	447,822	Mar. 10	900	224	54	1295
Hall, Sharon, Albany, N. Y. Fishing-rod support	448,028	Mar. 10	1246	317	54	1362
Hall Signal Company. (See Hall, William P., assignor.)						
Hall Steam Pump Company. (See Greenwood, Michael, assignor.)						
Hall, William C., and W. U. Sweetser, Oblong, Ill. Log-turner for saw-mill carriages	446,346	Feb. 10	1392	340	54	788
Hall, William H., Tiffin, Ohio. Connecting-rod for brick-machines	448,231	Mar. 17	1565	400	54	1434
Hall, William H., Tiffin, Ohio. Tedder-frame and rake-head	448,232	Mar. 17	1566	400	54	1434
Hall, William P., Greenwich, Conn., assignor to Hall Signal Company, Portland, Me. Railway-signal	447,318	Mar. 3	58	16	54	1128
Hall, William W., Elk City, Kans. Corn-harvester	444,157	Jan. 6	294	71	54	60
Hall, Zachary T., Philadelphia, Pa. Metal-cased bottle	449,119	Mar. 31	2992	756	54	1724
Hallock, Valentine H., Queens, N. Y. Weeding-machine	444,609	Jan. 13	983	{255 256	54	203
Hallowell, John K., Camden, N. J. Dust-collector	447,026	Feb. 24	2486	{618 619	54	1021
Hallowell, John K., Camden, N. J. Ore-separating apparatus	447,027	Feb. 24	2488	619	54	1022
Hallowell, John K., Camden, N. J. Ore drying and pulverizing apparatus	447,028	Feb. 24	2489	619	54	1022
Hallowell, John K., Camden, N. J. Concentrating apparatus	447,029	Feb. 24	2490	{619 620	54	1022
Hallowell, John K., Camden, N. J. Pulverizing-machine	447,030	Feb. 24	2493	620	54	1023
Hallwood, Henry S., Columbus, Ohio. Screen for gas-pipes	446,218	Feb. 10	1169	286	54	743
Hally, John. (See Roberts, George, assignor.)						
Halsey, James W. (See Stites and Halsey.)						
Halsted, Samuel H., Cincinnati, Ohio. Combined shirt and drawers	447,408	Mar. 3	224	58	54	1160
Haly, Richard J. (See Goosen, Haly, and Kent.)						
Hamblin, Silvanus, New Bedford, assignor of one-half to D. E. Damon, Plymouth, Mass. Loom-temple	445,336	Jan. 27	2151	562	54	449
Hamelehle, Adolph, Grand Rapids, Mich. Wrench	448,146	Mar. 10	1412	361	54	1396
Hamilton, Alexander R., Decatur, assignor to W. D. Barnett and G. L. Lukens, Clinton, Ill. Axle-bearing	447,513	Mar. 3	409	100	54	1195
Hamilton, Arthur H. (See Hall and Hamilton.)						
Hamilton, Cassius M., Chicago, Ill. Combined perpetual calendar and time-card	446,916	Feb. 24	2313	574	54	990
Hamilton, Charles. (See Karn, Edwin B., assignor.)						
Hamilton, Emery M., New York, N. Y., assignor, by mesne assignments, to North American Machine Company, of West Virginia. Type-writing machine	444,490	Jan. 13	806	209	54	168
Hamilton, Emery M., New York, N. Y., assignor, by mesne assignments, to North American Machine Company, of West Virginia. Type-writing machine	444,491	Jan. 13	808	210	54	169
Hamilton, George W., Boston, Mass. Transom-lifter	446,865	Feb. 24	2211	{549 550	54	972
Hamilton, Martin. (See Turner, Hamilton, and Long.)						
Hamilton, Walter W., Salem, Mass. Device for moistening and affixing postage-stamps	445,993	Feb. 10	799	194	54	677
Hamilton, William R., *et al.* (See Carey, William, assignor.)						
Hamilton Wire Cloth Company. (See Strowbridge, Clarence S., assignor.)						
Hamm, William S. (See Seaver and Hamm.)						
Hamm, William S., Newton, assignor, by mesne assignments, to Staple Fastening Machine Company, Boston, Mass. Stapling-machine	447,681	Mar. 3	647	{161 162	54	1241
Hammer, Emil G., Brooklyn, N. Y. Independent electric clock	444,433	Jan. 13	708	185	54	148
Hammer, Thorvald F., Branford, Conn. Boring and screw-cutting machine	445,175	Jan. 27	1928	498	54	401
Hammer, William H., Washington, Ohio. Flour or meal bin and sifter	444,351	Jan. 6	575	147	54	114
Hanmerle, Franz, Cambridge, Mass. Pedal-action for pianos	447,319	Mar. 3	59	16	54	1129
Hammond, Henry, New Haven, Conn. Wrench	449,410	Mar. 31	3491	878	54	1814
Hammond, Henry W., North Bergen, N. Y. Spring-bottom crate	447,320	Mar. 3	60	16	54	1129
Hanchett, John, Big Rapids, Mich. Saw-swage	445,504	Jan. 27	2410	629	54	495
Hancock, Charles, Philipsburg, Pa. Hasp and staple	446,173	Feb. 10	1098	269	54	730
Hancock, Clement A. (See Arrington, James C. and W. N., assignors.)						
Hand, Gideon D., and O. P. Sells, Chicago, Ill. Segmental resistance-board	448,338	Mar. 17	1750	448	54	1474
Hand, Porter B., Handsborough, Miss. Car-coupling	449,253	Mar. 31	3202	807	54	1762
Hand, Thomas A., Baltimore, Md. Can-soldering machine	444,831	Jan. 20	1337	347	54	278
Handforth, Benjamin, Hoboken, N. J. Cabinet exhibitor for shade fabrics, wall-papers, &c.	444,701	Jan. 13	1123	290	54	230

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Hanika, Christian, Wichita, Kans. Rail-coupling for iron fences	448,029	Mar. 10	1247	318	54	1362
Hanimann, Charles, New York, N. Y. Tube eraser	447,873	Mar. 10	990	250	54	1312
Hanlon, John J., Chicago, Ill. File or portfolio	448,816	Mar. 24	2523	632	54	1624
Hanna, James P., assignor of one-half to T. E. Hastings, Wellington, Mich. Pump	444,434	Jan. 13	711	186	54	148
Hanna, William H., Petersburg, Ill. Feeding device for sewing machines	445,468	Jan. 27	2352	611	54	485
Hannah, George, Brooklyn, N. Y. Electric alarm for shaft-bearings	449,411	Mar. 31	3493	878	54	1814
Hansen, Adolph, Brooklyn, N. Y. Shoe-tip	446,146	Feb. 10	1044	266	54	721
Hansen, Christian A., Charlevoix, Mich. Boom-locking chain	448,880	Mar. 24	2627	660	54	1643
Hansen, James, Delavan, Wis. Vat and churn	449,321	Mar. 31	3330	840	54	1783
Hanson, Dempsey B., Milwaukee, Wis. Saw-swage	447,111	Feb. 24	2626	651	54	1049
Hapgood, Lyman S. (See Robinson, John R., assignor.)						
Harden, Jesse M., Reisterstown, Md. Horse-detacher	446,866	Feb. 24	2213	550	54	973
Harder, William A., Lansingburg, assignor of one-half to C. A. Brown, Troy, N. Y. Treating tubular knitted fabrics	448,817	Mar. 24	2523	632	54	1625
Harders, Edward, and M. P. Fleischman, San Francisco, Cal. Cane, music-stand, and music-holder	448,185	Mar. 10	1477	376	54	1408
Hardie, Robert W., Albany, N. Y. Brush	445,649	Feb. 3	209	56	54	554
Hardy, Charles M. (See Sculthorp, Walter J., assignor.)						
Hardy, Edward J., Brooklyn, N. Y. Ice-machine	446,805	Feb. 10	1146	281	54	738
Harford, Theodore W., *et al.* (See Connett, Matthew F., Jr., assignor.)						
Hargrave, Thomas C., assignor of one-half to J. W. Cobb, Minneapolis, Minn. Electric matrix-making machine	447,321	Mar. 3	61	17	54	1129
Hargrave, Thomas C., assignor of one-half to J. W. Cobb, Minneapolis, Minn. Matrix-making machine	447,449	Mar. 3	291	74	54	1172
Hargreaves, Henry, London, county of Middlesex, England. Mechanical toy	445,554	Feb. 3	42	11	54	519
Haring, George T., Brooklyn, N. Y. Machine for screening shot	446,867	Feb. 24	2214	550	54	973
Harlow, Lucius, Holyoke, Mass. Automatic stop mechanism for paper-feeding machines	446,678	Feb. 17	1910	475	54	902
Harman, Ananias, Roann, Ind. Saw setting and indicating device	447,322	Mar. 3	66	18	54	1130
Harman, Stephen S., New York, N. Y. Bowling-ball	447,011	Feb. 24	2452	611	54	1016
Harney, George S. (See Rogers, George R., assignor.)						
Harnish, Zachariah T., Water Street, Pa. Draft-bail	448,030	Mar. 10	1249	318	54	1362
Harnsberger, Audley E., Staunton, Va. Type-writing machine	447,773	Mar. 10	808	{200 201 202	54	1278
Harp, Charles A., Rice, Tex. Chicken-coop	448,959	Mar. 24	2741	691	54	1666
Harper, James M., Peoria, Ill. Strip-ticket	444,149	Jan. 6	281	67	54	57
Harper, Lawrence A., assignor to J. Miller, Russellville, Ky. Churn	445,272	Jan. 27	2082	537	54	430
Harper, William E., Chicago, Ill. Wire-stapling machine	445,139	Jan. 20	1862	{482 483	54	379
Harper, William E., Chicago, Ill. Wire-stapling machine	445,140	Jan. 20	1866	{483 484	54	380
Harreld, Anderson F. (See Harreld, Benjamin E. and A. F.)						
Harreld, Benjamin E. and A. F., Hallowell, Kans. Sawing-machine	445,505	Jan. 27	2412	629	54	495
Harris, Bradner L. (See Kennedy and Harris.)						
Harris, Charles P., San Francisco, Cal. Game-puzzle	444,352	Jan. 6	576	147	54	114
Harris, Charles R., Williamsport, Pa. Clasp for suspenders	444,353	Jan. 6	577	148	54	115
Harris, Charles R., Williamsport, Pa. Clasp for suspenders	448,519	Mar. 17	2039	510	54	1524
Harris, Fradelshan. (See Greengard and Harris.)						
Harris, George A., Racine, Wis. Harness attachment	448,763	Mar. 24	2449	612	54	1610
Harris, Hiram W. (See Beyer, George W., assignor.)						
Harris, Jacob J., Highland, Ohio. Device for holding horses	444,387	Jan. 6	630	163	54	124
Harris, James A. (See Rowell, William M., assignor.)						
Harris, James W., and T. J. Thomas, San Francisco, Cal. Sectional rope sheave	449,322	Mar. 31	3331	{840 841	54	1783
Harris, John B., J. T. Griffith, and T. B. Harris, Wilkes-Barré, Pa. Safety-lamp	444,435	Jan. 13	712	186	54	149
Harris, Lander S., Detroit, Mich. Regulator for electric motors	446,229	Feb. 10	1184	290	54	746
Harris, Lorenzo H. (See Bowes and Harris.)						
Harris, Mary E., Camden, N. J. Sewing-stand	448,484	Mar. 17	1994	499	54	1515
Harris, Otto E. (See Coonse and Harris.)						
Harris, Philander A., Paterson, N. J. Suspension-loop and clamp	446,206	Feb. 10	1148	281	54	739
Harris, R. Duncan. (See Wahlin, Lundström, and Collins, assignors.)						
Harris, Richard D. (See Wahlin, Adolph, assignor.)						
Harris, Robert F., East Sharon, Pa. Stove for heating cars	446,517	Feb. 17	1671	407	54	856
Harris, Stephen, *et al.* (See Daniels, James E., assignor.)						
Harris, Thomas P. (See Harris, Griffith, and Harris.)						
Harris, W. John. (See Gibbs, Edward B., assignor.) (Reissue.)						
Harris, William D., Ottawa, Ontario, Canada. Roofed culvert	445,904	Feb. 10	800	194	54	677
Harris, William W., Charlestown, N. H. Collapsible ladder	449,159	Mar. 31	3049	771	54	1733
Harrison, Eugene L., Crookston, Minn. Electric railway signaling apparatus	448,031	Mar. 10	1250	{318 319	54	1362
Harrison, Henry C., Potomac, Md. Canal-lock	446,708	Feb. 17	1955	487	54	911
Harrison, James P., and J. L. Waring, Danville, Va. Envelope	444,979	Jan. 20	1619	414	54	332
Harrison, Williamson R., Canton, Ohio. Fodder-carrier	448,857	Mar. 24	2600	{652 653	54	1638
Harronn, Alexander, near Syracuse, N. Y. Drinking-cup	445,057	Jan. 20	1740	448	54	356
Harrono, Edward R. (See Thickins, Richard W., assignor.)						
Harsh, Samuel E., assignor of one-half to J. M. Harter, Wabash, Ind. Buckle	447,874	Mar. 10	991	250	54	1312
Hart, Daniel R. (See Baier and Hart.)						
Hart, Gerald W., assignor of one-half to G. S. Hegeman, Kansas City, Mo. Electric snap-switch	447,798	Mar. 3	722	181	54	1254
Hart, Henry C., Detroit, Mich. Calculating-machine	445,447	Jan. 27	2324	{603 604	54	480
Hart, Joel T., Foster, Mo. Vehicle-hub	446,347	Feb. 10	1393	340	54	788
Hart, Morris. (See Dubois, Austin A., assignor.)						
Hart, Myrtie E. (See Jolly, Mathias, assignor.)						
Hart, Russell A., Battle Creek, Mich. Paper-jogger	446,447	Feb. 17	1561	384	54	835
Hart, William H., Brooklyn, N. Y. Man-hole for underground electric conduits	443,992	Jan. 6	6	2	54	4
Harter, Isaac, *et al.* (See Fager, Anthony, assignor.)						
Harter, John M. (See Harsh, Samuel E., assignor.)						
Hartford, John, Chicago, Ill. Plumber's trap	444,751	Jan. 13	1209	314	54	245
Hartford Steam Boiler Inspection and Insurance Company. (See Allen, Jeremiah M., assignor.)						
Hartigan, James W., Morgantown, W. Va., assignor of one-half to E. S. Avis. Dental anodyne	445,298	Jan. 27	2108		54	436

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hartigan, Joseph F., Salem, assignor of two-thirds to M. A. Rifle & Co., Roanoke, and G. W. Argabite, Lynchburg, Va. Station-indicator	448,147	Mar. 10	1413	361	54	1396
Hartleb, Henry M., *et al.* (See McNeal, William A., assignor.)						
Hartley, Caroline, Philadelphia, Pa. Lid for frying or other pans	444,702	Jan. 13	1124	290	54	230
Hartley, Charles J., assignor of two-thirds to J. K. Warren and B. K. Durfee, Decatur, Ill. Conveyer	446,597	Feb. 17	1780	440	54	878
Hartley, Charles J., assignor of two-thirds to J. K. Warren and B. K. Durfee, Decatur, Ill. Conveyer for thrashing-machines	446,598	Feb. 17	1781	440	54	878
Hartley, Simeon, Newark, N. J., assignor to Newark Sheet Metal Ware Company, of New Jersey. Pipe-forming machine	449,412	Mar. 31	3494	579, 580	54	1814
Hartmann, Ernst, Dusseldorf, Germany. Railway-brake operating by air-pressure or vacuum	448,833	Mar. 24	2548	639, 640	54	1629
Hartmann, Valentine. (See Ridder and Hartmann.)						
Hartsfeld, Charles L., Newport, Ky. Inclining table	444,634	Jan. 13	1015	264	54	209
Hartshorn, Stewart, Short Hills, N. J. Attaching window-shades to rollers	444,532	Jan. 20	1338	347	54	279
Hartsuff, Henry, and J. Murphy, New Castle, Pa. Wire-nail feeder	445,344	Jan. 27	2180	564	54	451
Harvey, Earl T. (See Babbitt and Harvey.)						
Harvey, Earl T., Chicago, Ill. Electric railway-signal	446,917	Feb. 24	2314	575	54	990
Harvey, Francis B., Pickering, Pa. Nut-lock	445,469	Jan. 27	2354	611	54	485
Harvey, George L., Chicago, Ill. Draw-gear for railway-cars	447,323	Mar. 3	67	18	54	1131
Harvey, George L., Chicago, Ill. Draw-gear for railway-cars	447,324	Mar. 3	68	18, 19	54	1131
Harvey, John W., assignor of one-half to G. E. Wray, Cumberland, Ind. Feeder attachment for clover-hullers	448,148	Mar. 10	1415	362	54	1396
Harvey, William L. (See Cook and Harvey.)						
Haskin, Walden L. (See Cary, William N., assignor.)						
Haskins, Morris R., assignor of two-thirds to E. E. P. Truesdell and F. Hopkins, Belvidere, Ill. Bag-tie	448,614	Mar. 17	2195	549	54	1554
Hastie, William, Glasgow, Scotland. Copying-press	448,858	Mar. 24	2601	653	54	1639
Hastings, Azariah H., New York, N. Y. Upright-piano case	448,032	Mar. 10	1252	319	54	1363
Hastings, Azariah H., New York, N. Y. Key-bottom support	448,033	Mar. 10	1253	319	54	1363
Hastings, T. E. (See Hanna, James P., assignor.)						
Hastings, William P. (See Bowles, David, assignor.)						
Haswell, Alfred M., Chicago, Ill. Window-curtain guide	449,042	Mar. 24	2865	728	54	1691
Hatch, Theodosia. (See Hussey and McCann, assignors.)						
Hatcher, William A., assignor of one-fourth to M. W. Keene, Dallas, Tex. Furnace	445,249	Jan. 27	2043	525	54	422
Hathaway, Arthur K., Axtell, Nebr. Blacksmith's valve	446,348	Feb. 10	1394	340	54	789
Hathaway, Caroline F., Rockford, Ill. Ribbon-needle	445,316	Jan. 27	2138	553	54	443
Hattersley, Richard L., and J. Hill, Keighley, England. Mechanical movement	448,713	Mar. 24	2370	592, 593	54	1595
Hattersley, Richard L., and J. Hill, Keighley, England. Mechanical movement	448,714	Mar. 24	2371	593	54	1595
Hauck, Charles J., Jr., Brooklyn, N. Y. Metal box	448,034	Mar. 10	1254	320	54	1363
Haugh, Benjamin F., Indianapolis, Ind. Machine for curving iron bars or beams	446,132	Feb. 10	1015	250, 251	54	717
Hanghawout, John W., Omaha, Nebr., assignor to Leslie Brothers Manufacturing Company, Paterson, N. J. Rotary snow-plow	446,773	Feb. 17	2052	511	54	931
Haulenbeck, John H., Cleveland, Ohio, assignor to A. C. Bishop, Detroit, Mich. Detachable chair-back	447,682	Mar. 3	652	162	54	1241
Hausdörfer, Reinhold G., Zanesville, Ohio. Trammel-head	447,642	Mar. 3	602	148	54	1231
Havens, Katharine. (See Kimball, Charles M., assignor.)						
Havens, James H. (See Parry, William H., assignor.)						
Hawdon, William, Middlesbrough-on-Tees, England. Apparatus for removing slag from furnaces	447,683	Mar. 3	654	162	54	1242
Hawes, Benjamin N., Toledo, Ohio. Apparatus for refining oil	444,833	Jan. 20	1340	348	54	279
Hawken, Thomas. (See Knight and Hawken.)						
Hawkins, Frederick H., New York, N. Y. Machine for embossing designs on wood	448,485	Mar. 17	1995	500	54	1515
Hawkins, Frederick H., New York, N. Y. Machine for embossing ornamental designs on wood or other material	448,486	Mar. 17	1997	500	54	1516
Hawkins, John T., Taunton, Mass. Two-color-printing machine	445,017	Jan. 20	1673	430	54	343
Hawkins, John T., Taunton, Mass. Sheet-transfer apparatus for printing-machines	445,018	Jan. 20	1675	430	54	343
Hawkins, John T., Taunton, Mass. Perfecting printing-machine having means for preventing offset	445,058	Jan. 20	1742	448, 449	54	356
Hawkins, John T., Taunton, Mass. Multi-color-printing machine	445,059	Jan. 20	1745	449	51	356
Hawksley, Arthur F., Altrincham, England. Cigar-lighter	447,575	Mar. 10	992	250	54	1312
Hawksworth, David, Plattsmouth, Nebr. Door-opener	449,364	Mar. 31	3114	858	54	1798
Hawley, Melville C., St. Louis, Mo. Furnace	447,179	Feb. 24	2763	683, 684	54	1073
Hawley, Willard P., Watertown, N. Y. Wood-fiber digester	445,767	Feb. 3	419	105	54	595
Haworth, William H., Brooklyn, N. Y. Order-pad calendar	444,150	Jan. 6	281	67	54	58
Hay, William, Boston, Mass. Device for packing pianos	447,112	Feb. 24	2628	651	54	1049
Hayden & Derby Manufacturing Company. (See Desmond, John, assignor.)						
Hayden, Henry A., Jersey City, N. J. Suspender-fastening	447,876	Mar. 10	993	251	54	1313
Hayden, Henry A., Jersey City, N. J. Waist-belt	447,877	Mar. 10	994	251	54	1313
Hayden, Joseph L., Portsmouth, N. H. Friction-clutch	444,436	Jan. 13	713	186, 187	54	149
Haydock, W. T. (See Norwood and Rose, assignors.)						
Hayes, Edward, assignor of three-fourths to J. T. and J. J. Lennox and T. Dowling, Lynn, Mass. Leather-staking machine	447,180	Feb. 24	2764	684	54	1074
Hayes, Greta L. S., Springfield, Mass. Convertible trunk or wardrobe	445,400	Jan. 27	2261	587	54	467
Hayes, James, Cleveland, Ohio. Sliding partition	447,610	Mar. 3	552	136, 137	54	1221
Hayes, Joel A., Carson City, Nev. Electric-arc lamp	445,176	Jan. 27	1933	499, 500	54	401
Hayes, John W., assignor to himself, M. Ehlredge, and E. S. Fay, Portsmouth, N. H. Rotary engine	444,834	Jan. 20	1341	348, 349	54	279
Hayes, Thomas R. (See Albert, Henry, assignor.)						
Haynes, Charles E., Minneapolis, Minn. Car-coupling	448,427	Mar. 17	1903	478	54	1499
Haynes, Hobart R., Westminster, Mass. Folding cup	446,774	Feb. 17	2054	512	54	932
Hays, James. (See Brown, Ellsworth, assignor.)						
Hays, Lewis, *et al.* (See May, Henry H., assignor.)						
Haywood, Thomas B., *et al.* (See Gabbett, Edmond R., assignor.)						
Hazard, Arthur P., Brockton, Mass. Incubator	446,133	Feb. 10	1017	251	54	717
Hazard, Clement, San Francisco, Cal. Cable-grip	448,035	Mar. 10	1255	320	54	1363
Hazard, Frederick J. H., Toronto, Canada. Bicycle	448,960	Mar. 24	2741	691	54	1666
Hazel, William M., Georgetown, Del. Sash-holder	448,339	Mar. 17	1771	448	54	1474
Hazeltine, Ezra T. (See Taylor, John J., 2d, assignor.)						
Head, Joseph A., assignor of three-fourths to J. Irons, J. L. Smith, and E. L. McClain, Greenfield, Ohio. Dumping-wagon	447,774	Mar. 10	815	202	54	1279
Heagerty, Michael, Baltimore, Md. Hoof-expander	445,778	Feb. 3	439	109	54	598
Heald, John, Springfield, Mass. Shell for musical instruments	448,797	Mar. 24	2498	625	54	1619
Health Nursing Bottle Company. (See Balston and Rose, assignors.)						
Healy, Caleb E., New London, Ohio. Steam-muffler	449,120	Mar. 31	2992	756	54	1724
Healy, Joseph S. (See Paine, George C., assignor.)						
Healy, Patrick J. (See Pferdner, Adolph, assignor.)						
Heath, Edwin A., Milwaukee, Wis. Box-closure	444,954	Jan. 20	1592	406	54	326
Heath, George S., Springfield, Mass. Joint for mechanical elements	445,401	Jan. 27	2262	587	54	467
Heath, George S., Springfield, Mass. Connecting-rod	445,402	Jan. 27	2264	587	54	467
Heath, Mark A., Providence, R. I. Bale-covering	448,487	Mar. 17	1998	500	54	1516
Heath, Orlando F., Northville, N. Y. Cloth-measuring machine	444,354	Jan. 6	578	148	54	115
Heaton-Peninsular Button Fastener Company. (See Vinton, John H., assignor.)						
Hebert, Joseph R., Brooklyn, N. Y., assignor to Domestic Sewing Machine Company, of Ohio. Attachment-holder for sewing-machines	445,950	Feb. 3	706	172	54	651
Hébért, Placide, New Iberia, La. Liniment	445,995	Feb. 10	802	.....	54	677
Heckert, Frank L. (See Heckert, Thomas, and Heckert.)						
Heckert, William, Yonkers, N. Y. Apparatus for cleaning railway-conduits	447,181	Feb. 24	2765	684, 685	54	1074
Heckert, William, W. J. Thomas, and F. L. Heckert, Findlay, Ohio. Roasting and smelting furnace	446,971	Feb. 24	2394	596	54	1004
Heckl, Adalbert, Mannheim, Germany. Candlestick	445,555	Feb. 3	43	11	54	520
Hedges, William E., Polk Bayou, Ark. Tanning process	447,427	Mar. 3	250	.....	54	1164
Heermans, Thaddens W., Chicago, Ill., assignor to Crane Elevator Company, of Illinois. Elevator	446,679	Feb. 17	1913	475, 476	54	903
Heffernan, Edward F., Toronto, Ontario, Canada. Watch-case	446,737	Feb. 17	2003	499	54	921
Heffernan, Matthew, Newburg, Ohio. Combined shelf-bracket, &c.	448,919	Mar. 24	2682	675	54	1655
Hegeman, George S. (See Hart, Gerald W., assignor.)						
Heggem, Charles O., assignor to Russell & Company, Massillon, Ohio. Centrifugal oiler	447,282	Feb. 24	2940	731	54	1110
Heighington, John B. and W., assignors to J. Heighington and M. F. Brown, Toronto, Canada. Valve-handle	447,684	Mar. 3	655	162	54	1242
Heighington, Joseph, *et al.* (See Heighington, John B. and W., assignors.)						
Heighington, William. (See Heighington, John B. and W.)						
Heilborn, Francis F., Plainville, Mass. Button	448,428	Mar. 17	1904	478	54	1499
Heilner & Strauss. (See Kern, Ferdinand, assignor.)						
Heineken, William L., Brooklyn, N. Y. Detachable bottom for pipes	446,634	Feb. 17	1836	454	54	889
Heineman, Solomon E., assignor to Merz Capsule Company, Detroit, Mich. Gelatine capsule	447,514	Mar. 3	409	.....	54	1195
Heins, Charles L., *et al.* (See Lee, John H., assignor.)						
Heinz, Henry J., Sharpsburg, and R. Hofman, Pittsburg, Pa. Sample-exhibiting barrel-cover	445,524	Jan. 27	2440	635	54	500
Heinz, Nicholas. (See Baumeister and Heinz.)						
Heiss, Frank A., Port Jervis, assignor to A. D. Klaber, New York, N. Y. Register for duplicating apparatus	445,761	Feb. 3	405	102	54	593
Heller, Friedrich G. A. (See Erlwein and Heller.)						
Heller, Friedrich G. A., assignor to Siemens & Halske, Berlin, Germany. Filament for incandescent electric lamps	448,920	Mar. 24	2683	675	54	1655
Helming, Bernhard H., Jr., and J. M. McIntyre, Milwaukee, Wis. Horse-collar fastener	445,177	Jan. 27	1936	500	54	402
Helmstaedter, George J., Newark, N. J. Caster	445,833	Feb. 3	535	130	54	646
Helwig, John, Dubuque, Iowa. Bolt and rivet cutter	444,635	Jan. 13	1016	265	54	209
Hem, Halvor O., assignor to H. N. Strait, Kansas City, Kans. Corner-stand for weighing-scales	448,615	Mar. 17	2196	550	54	1554
Hemenway, Collier V., Wellington, Ohio. Brick-machine	446,064	Feb. 10	906	220, 221	54	686
Hemingway, Alfred C. (See Hemingway and Aldoes, assignors.)						
Hemingway, Henry N., Auburn, N. Y. Radiator	448,036	Mar. 10	1256	320	54	1363
Hemingway, John, and D. B. Aldoes; said Hemingway assignor of one-half to A. C. Hemingway, Lynn, Mass. Channel-flap-laying machine	445,613	Feb. 3	149	39	54	540
Henckel, George, Chicago, Ill. Combined laryngoscope and tongue-depressor	447,823	Mar. 10	902	225	54	1295
Henckels, Johann A., Solingen, Germany. Steam-hammer	447,824	Mar. 10	903	225	54	1296
Henderson, George W. (See Jones, John M., assignor.)						
Hendricks, Gabriel A., Bloomington, Ind. Car-coupling	444,050	Jan. 6	104	26	54	23
Hendrickson, Robert, assignor to Foster, Merriam & Co., Meriden, Conn. Spring attachment for tilting chairs	444,355	Jan. 6	580	149	54	115
Hendryx, Andrew B., assignor to A. B. Hendryx Company, New Haven, Conn. Fishing-reel	445,403	Jan. 27	2265	588	54	468
Hendryx Company, A. B. (See Hendryx, Andrew B., assignor.)						
Hengist, Oetting G. (See Hengist, Samuel W. and O. G.)	446,816	Feb. 17	2122	527	54	946
Hengist, Samuel W. and O. G., Kansas City, Mo. Door-hanger	446,738	Feb. 17	2004	499	54	921
Henkle, Edward A., and J. C. Fowler, Washington, D. C. Apparatus for the manufacture of curved linotype-bars	446,448	Feb. 17	1503	384, 385	54	835
Henley, Micajah C., and P. Sheilenback, Richmond, Ind. Pulley-lathe	446,080	Feb. 17	1916	477	54	903
Henning, Henry, Paterson, N. J. Coffee or tea strainer	445,404	Jan. 27	2266	588	54	468
Henning, Benjamin S., New York, N. Y. Driving railway-cars	446,065	Feb. 10	909	221, 222	54	697
Henning, Benjamin S., New York, N. Y. Railway-car	445,178	Jan. 27	1937	500	54	402
Henrie, Daniel S., Three Rivers, Mich. Governor						
Henry, David. (See Vernon, Nathan W., assignor.)						
Henry, Frank. (See Goodrich and Henry.)						
Henry, Jonas D., and W. E. Wood, Portland, Oreg. Feed-mill	449,445	Mar. 31	3551	894	54	1825
Henry, Robert G., Waterbury, Conn., assignor to Consolidated Safety Pin Company, Bloomfield, N. J. Buckle	447,070	Feb. 24	2565	637	54	1036
Henry, Robert P., Waddells, N. C. Hoisting apparatus	443,993	Jan. 6	7	2, 3	54	4
Henry, William, Columbia, S. C. Fire or burglar alarm	444,277	Jan. 6	469	120	54	93
Henson, Joseph W., assignor of one-half to N. E. Jennison, La Grange, Ill. Bill or letter file	448,149	Mar. 10	1416	362	54	1397
Herberg, Olaf M., Hendrum, Minn. Photograph-cabinet	445,639	Feb. 3	195	52	54	550
Herbertz, F. A. (See Sahler, Carl, assignor.)						
Herboldshimer, George D., Westernport, Md. Machine for trimming and compressing sheet metal	447,515	Mar. 3	410	100	54	1195
Herby, John, Jamestown, N. Y. Farm-wagon	444,356	Jan. 6	581	149	54	116

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hercules Iron Works. (See MacDonald, Charles A., assignor.)						
Hercules Waist Band Company. (See Spitz, Frederick, assignor.)						
Hering, Emil G. (See Pomeroy, Henry N., assignor.)						
Hernandez, José G., Havana, Cuba. Machine for decorticating fibrous plants	447,152	Feb. 24	2722	674, 675	54	1065
Herndon, William S., and L. C. Buckland, Tyler, Tex. Shirt-starching machine	448,715	Mar. 24	2372	593	54	1595
Hero Fruit Jar Company. (See Perry, Franklin W., assignor.)						
Herr, Henry C., Williamsville, N. Y. Wire-stapling machine	447,428	Mar. 3	251	63, 64	54	1165
Herr, Homer A., Philadelphia, Pa. Cash-register	443,994	Jan. 6	12	3, 4	54	5
Herrmann, Henry, New York, N. Y. Floor	445,779	Feb. 3	440	109	54	598
Hershey, Martin E., Harrisburg, Pa. Traction-engine or road-roller	444,980	Jan. 20	1621	414	54	332
Herzberg, Morris, *et al.* (See Carpenter, James H., assignor.)						
Hess, Mary E., Foristell, Mo. Remedy for coughs, &c	445,470	Jan. 27	2355	.....	54	485
Hesse, Frank K., assignor to Codman & Shurtleff, Boston, Mass. Surgical explorer	448,150	Mar. 10	1419	362	54	1397
Hesser, Albert A., Schuylkill Haven, Pa. India-rubber water-bag	446,518	Feb. 17	1672	408	54	856
Hett, Michel, Münstereifel, Germany. Priming-machine for kindling fires	445,261	Jan. 27	2067	593	54	427
Hettel, Anthony, Rochester, N. Y. Band-saw guide	446,568	Feb. 17	1745	429	54	871
Heuer, Henry F., Chicago, Ill. Railway-car	446,449	Feb. 17	1565	385	54	835
Heughes, Frederick L., Rochester, N. Y. Fire-proof arch	448,233	Mar. 17	1567	400	54	1435
Hewitt, Jackson W., Jackson, Mich. Two-wheeled vehicle	445,556	Feb. 3	45	12	54	520
Hewitt, Lansing P., and S. W. Bnence, Turner, Kans. Tire-tightener	446,869	Feb. 24	2221	552	54	974
Heyder, Herrman, Reichthal, Germany. Violin	446,450	Feb. 17	1566	385	54	835
Heyder, Herrman, Reichthal, Germany. Shoulder-brace	447,404	Mar. 3	324	81	54	1179
Heyl, Henry R., assignor to I. Fine, Philadelphia, Pa. Stapling-machine	444,178	Jan. 6	328	80	54	66
Heyn, Alfred, New York, N. Y. Rail-chair	449,261	Mar. 31	3211	810	54	1764
Heynemann, Lionel, San Francisco, Cal. Cable street-railway	444,437	Jan. 13	714	187	54	149
Heyser & Sons, S. (See Devenport, Arthur K., assignor.)						
Heysinger, Isaac W., Philadelphia, Pa. Pen-puller	445,673	Feb. 3	265	70	54	565
Heywood Brothers & Co. (See Watkins, Gardner A., assignor.)						
Hiatt, Thomas, Leesburg, Fla. Machine for wrapping oranges	446,451	Feb. 17	1566	385, 386	54	836
Hibbert, William E., and A. Mannel, Wilmington, Del.; said Mannel assignor to said Hibbert. Bicycle	446,098	Feb. 10	957	235, 236	54	705
Hickman, Edgar M., assignor to Gale Manufacturing Company, Albion, Mich. Colter-holder for plows	446,452	Feb. 17	1572	386	54	837
Hicks, Bohn C., Minneapolis, Minn., assignor, by mesne assignments, to Hicks Stock Car Company, Chicago, Ill. Double-deck stock-car	449,621	Mar. 31	3841	961, 962	54	1879
Hicks, Bohn C., Minneapolis, Minn., assignor, by mesne assignments, to Hicks Stock Car Company, Chicago, Ill. Watering trough for stock-cars	449,622	Mar. 31	3843	962	54	1880
Hicks Stock Car Company. (See Hicks, Bohn C., assignor.)						
Higbee, Clinton A., Princeton, Ky. Screw bolt and nut	447,775	Mar. 10	816	202	54	1279
Higginbottom, James, Liverpool, England. Purifier and separator	448,520	Mar. 17	2039	510	54	1524
Higginbottom, Lloyd. (See Smith, Goddard, Higginbottom, and Mannock.)						
Higgins, Edward S., and H. C. Jenkins, London, England. Type-writing machine	448,037	Mar. 10	1257	321, 322	54	1364
Higgins, Freeman, Manchester, N. H. Reversing mechanism for lathes	447,825	Mar. 10	904	225	54	1296
Higgins, John. (See Kramer, Charles F., assignor.)						
Higham, Howard H., Philadelphia, Pa. Manufacture of hooped boxes	449,413	Mar. 31	3501	880, 881	54	1816
Hildreth, Clifford A. (See Ridge, Willis G., assignor.)						
Hildreth, Henry L., Saginaw, Mich. Low-water alarm	446,453	Feb. 17	1573	387	54	837
Hildreth, Samuel W., assignor to himself and I. F. Chase, Voluntown, Conn. Railway drawing-head	449,477	Mar. 31	3605	907, 908	54	1836
Hill, Alfred B., Prairie du Chien, Wis. Cistern-cleaner	448,340	Mar. 17	1773	448	54	1474
Hill, Chet S., *et al.* (See Campbell, George L., assignor.)						
Hill, Ebenezer, South Norwalk, Conn. Stuffing-box for piston-rods	444,668	Jan. 13	1076	279	54	220
Hill, Ebenezer, South Norwalk, Conn. Governing the movements of pistons in steam-engines	446,183	Feb. 10	1113	272	54	732
Hill, Ebenezer, South Norwalk, Conn. Duplex steam-engine	448,429	Mar. 17	1905	478, 479	54	1499
Hill, Ebenezer, South Norwalk, Conn. Air-compressor	448,859	Mar. 24	2602	653, 654	54	1639
Hill, George S., Lynn, Mass., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Sewing-machine needle-guide	447,729	Mar. 3	723	181	54	1251
Hill, Henry M. (See Bumstead, William T., assignor.)						
Hill, James. (See Hattersley and Hill.)						
Hill, Loren H., Oakdale, assignor of one-half to J. K. Kendrick, Germantown, Cal. Grain-separating mechanism for traveling thrashers	445,112	Jan. 20	1822	471	54	371
Hill, Norman N., East Hampton, Conn. Bell	445,370	Jan. 27	2214	574	54	458
Hilliard, John S., Philadelphia, Pa. Odometer	448,716	Mar. 24	2373	594	54	1595
Hillman, Jotham R. (See Scott and Hillman.)						
Hillmann, Beriah T. (See Stuart, Onslow, assignor.)						
Himrod, Charles. (See Curtis and Himrod.)						
Hinckley, Howard, Trenton, N. J. Pressure-regulator for car-brakes	448,234	Mar. 17	1568	401	54	1435
Hincks & Johnson. (See Carpenter, George J., assignor.)						
Hinds, Melvin B., Everett, Mass. Brush-handle	449,478	Mar. 31	3607	908	54	1836
Hine, Charles C., Newark, N. J. Fusible support for hatch-doors, &c	449,414	Mar. 31	3592	881	54	1817
Hine, James W., Jamestown, N. Y. Book-rack	447,730	Mar. 3	724	182	54	1255
Hine, James W., assignor to Fenton Metallic Manufacturing Company, Jamestown, N. Y. Shelf-fastening	445,951	Feb. 3	707	172	54	651
Hinsdale, William R., Jersey City, N. J. Forming ingots	444,381	Jan. 6	622	161	54	123
Hinsdale, William R., Newark, N. J. Slide-valve	444,438	Jan. 13	715	187, 188	54	149
Hinsdale, William R., East Orange, N. J. Casting ingots	448,881	Mar. 24	2628	660	54	1643
Hinton, Eugene H. (See Sutphen, Clinton, assignor.)						
Hirlimann, Charles J., Fort Lee, N. J. Galvanic battery	448,798	Mar. 24	2498	625	54	1619
Hirschauer, Herman, Jamestown, N. Y. Preparing sausage	448,341	Mar. 17	1774	.....	54	1474
Hise, Philip, Cincinnati, Ohio. Door-scourer	445,273	Jan. 27	2084	537	54	430
Hiser, Daniel B., assignor to Thomas Manufacturing Company, Springfield, Ohio. Clutch	449,415	Mar. 31	3504	881	54	1817
Hiser, John J., Arcadia, La. Attachment for cotton-presses	443,995	Jan. 6	17	4	54	6
Hitchcock, Halbert K., *et al.* (See Krotz, Alvaro S., assignor.)						
Hitchen, Robert, J. T. Pearson, and T. Richmond, Burnley, county of Lancaster, England. Apparatus for the prevention of accidents to machinery	444,357	Jan. 6	583	149, 150	54	116
Hix, Oliver P., Rockland, Me. Seal-lock	447,489	Mar. 3	375	92	54	1189

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hix, Oliver P., Rockland, Me., assignor to Dunham Manufacturing Company, Boston, Mass. Car-door latch	447,182	Feb. 24	2767	685	54	1074
Hix, Oliver P., Rockland, Me., assignor to Dunham Manufacturing Company, Boston, Mass. Track for sliding doors	448,235	Mar. 17	1571	401	54	1435
Hix, Oliver P., Rockland, Me., assignor to Dunham Manufacturing Company, Boston, Mass. Sliding-door lock	448,651	Mar. 24	2264	568	54	1574
Hoag, Edwin, Harrison, Mich. Saw-swage	445,179	Jan. 27	1938	500	54	402
Hoag, William H. (See Fea and Hoag.)						
Hobbs, James J., Lagarto, Tex. Cotton-scraper	445,891	Feb. 3	618	152	54	633
Hobbs, John, Boston, Mass. Agitator for kettles or tanks	447,566	Mar. 3	484	119	54	1208
Hobbs, John E., North Berwick, and B. M. Wentworth, Berwick, Me.; said Wentworth assignor to said Hobbs. Attachable sleigh-runner	448,430	Mar. 17	1907	480	54	1500
Hobler, Edward G., Chicago, Ill. Pole or wood saw	448,038	Mar. 10	1264	322	54	1364
Hobson, Arthur E., assignor of one-half to I. J. Steane & Co., Hartford, Conn. Die for ornamenting strips of metal	444,895	Jan. 20	1347	349	54	280
Hobson, Charles R., Mount Carmel, Pa. Lamp-carrier for miners' hats	447,325	Mar. 3	69	19	54	1131
Hobson, Sherman M., Pueblo, Colo. Car-coupling	448,039	Mar. 10	1265	322	54	1364
Hochhausen, William, Brooklyn, N. Y. Electric switch and cut-out	447,826	Mar. 10	906	225, 226	54	1296
Hochhausen, William, Brooklyn, N. Y. Electric starting-switch	447,827	Mar. 10	908	226, 227	54	1297
Hochrentener, Henry, New York, N. Y. Embroidering-machine	446,184	Feb. 10	1116	273	54	733
Hock, Jacob, Deggendorf, Germany. Coin holder and package	446,185	Feb. 10	1117	273	54	733
Hockey, George H., Bristol, England. Self-feeding target-trap	446,519	Feb. 17	1672	408	54	857
Hocking, Thomas, *et al.* (See Carey, William, assignor.)						
Hodgen, Samuel P., Pittsfield, Ill. Brace for gates	443,996	Jan. 6	18	4	54	7
Hodgetts, James F., London, England. Iron-clad or other vessels	449,532	Mar. 31	3677	924	54	1850
Hodgson, John G., assignor to E. Norton, Maywood, and O. W. Norton, Chicago, Ill. Can-soldering machine	445,345	Jan. 27	2181	565	54	492
Hoe, Robert, *et al.* (See Crowell, Luther C., assignor.)	446,454	Feb. 17	1574	387	54	837
Hoebern, Heinrich, Homer, Germany. Paper-making machine	445,003	Jan. 20	1657	424	54	240
Hoechstatten, Joseph H. von, Vienna, Austria-Hungary. Safety-brake apparatus	447,740	Mar. 3	890	171	54	1249
Hoen, Ernest A., Richmond, Va. Cigarette-box	447,183	Feb. 24	2769	685	54	1075
Hoerle, Christian G., assignor to Holmes, Booth & Haydens, Waterbury, Conn. Hanger or harp for suspending lamps	445,698	Feb. 3	304	80	54	272
Hoffman, John W., Pullman, assignor to Pullman's Palace Car Company, Chicago, Ill. Electric-wire connector	445,751	Feb. 3	388	99	54	589
Hoffman, John W., assignor to Pullman's Palace Car Company, Chicago, Ill. Electric switch	445,752	Feb. 3	389	99	54	589
Hoffman, Robert. (See Heinz and Hoffman.)						
Hogan Engineering Company. (See Hogan, John J., assignor.)						
Hogan, John J., New York, N. Y., assignor to Hogan Engineering Company, of New York. Flange-and-collar coupling	448,717	Mar. 24	2375	594	54	1596
Hogan, Thomas J., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Pipe-coupling	444,179	Jan. 6	330	80	54	67
Hogan, Thomas J., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Air-brake	447,731	Mar. 3	725	182	54	1255
Hogan, William, Corinth, Ga. Tire-tightener	444,492	Jan. 13	810	210	54	169
Hogg, George, New York, N. Y. Car-ventilator	447,071	Feb. 24	2566	637	54	1037
Hohenshell, Walter B., and E. H. Overholt, Streator, Ill. Type-writing machine	444,636	Jan. 13	1017	265, 266	54	210
Holcomb, Thomas D., Brooklyn, N. Y. Leaf-turner	445,405	Jan. 27	2267	588, 589	54	468
Holcombe, Alfred G., Long Island City, assignor of one-half to C. L. Browne, New York, N. Y. Dynamo-electric machine	444,067	Jan. 6	139	35	54	30
Holden, Daniel L., New York, assignor to New Process Ice and Refrigerating Machine Company, Brooklyn, N. Y. Ice and refrigerating machine	444,532	Jan. 13	869	226	54	181
Holden, Daniel L., New York, assignor to New Process Ice and Refrigerating Machine Company, Brooklyn, N. Y. Beer-cooling apparatus	444,533	Jan. 13	872	226	54	182
Holden, Elbridge G., Fulton, Tex. Apparatus for scouring water-ways	449,479	Mar. 31	3608	908, 909	54	1836
Holden, Oliver C., Higginsport, Ohio. Grate attachment	446,681	Feb. 17	1917	477	54	903
Holladay, John M. Holladay, Va. Ax-head	447,685	Mar. 3	656	163	54	1242
Holladay John M., Holladay, Va. Bag-holder	447,686	Mar. 3	657	163	54	1242
Holland, Charles L., Revere, Mass. Razor-strop	447,184	Feb. 24	2769	685	54	1075
Hollenbeck, Frank A., Batavia, N. Y. Safety device for breech-loading guns	446,166	Feb. 10	1088	267	54	728
Hollin, John W., and T. B. Smith, New Richmond, Ind. Railway-tie	444,439	Jan. 13	717	188	54	150
Hollingsworth, Charles M., Cleveland, Ohio. Oil-feeding device for vapor-stoves	448,236	Mar. 17	1572	401	54	1436
Hollingsworth, Charles M., Cleveland, Ohio. Vapor-stove	448,652	Mar. 24	2265	568	54	1574
Hollingworth, Louis, assignor to B. F. Tillinghast, C. R. Earle, and A. W. C. Arnold, Providence, R. I. Machine for guiding the edges of web fabrics	449,623	Mar. 31	3844	962, 963	54	1880
Hollis, William. (See Waite, James F., assignor.)						
Hollister, Carrie V., *et al.* (See Cowles, Lyman L., assignor.)	445,471	Jan. 27	2355	612	54	485
Hollister, Edgar A., Welch Glade, W. Va. Plow	445,892	Feb. 3	619	152	54	633
Holloway, John M., Santa Barbara, Cal. Water-closet	447,185	Feb. 24	2770	686	54	1075
Hollweg, Carl, Barmen, Germany. Corkscrew	444,051	Jan. 6	104	27	54	24
Holman, Daniel F., Chicago, Ill. Apparatus for laying railway-tracks						
Holman, William L., *et al.* (See Green, John, assignor.)						
Holmes, Booth & Haydens. (See Hoerle, Christian G., assignor.)	447,542	Mar. 3	454	112	54	1203
Holmes, John A., Milwaukee, Wis. Velocipede	447,153	Feb. 24	2724	675	54	1065
Holmes, John B., New York, N. Y. Twine-reel	448,921	Mar. 24	2684	675	54	1655
Holmes, John F., and J. P. Tompkins, Waterford, N. Y. Friction-clutch	445,448	Jan. 27	2327	604, 605	54	480
Holmes, John H., Newcastle-on-Tyne, England. Regulator for dynamo-electric machines	446,682	Feb. 17	1917	477	54	904
Holmes Manufacturing Company. (See Rockwood, Howard S., assignor.)	448,342	Mar. 17	1774	449	54	1474
Holmes, Monroe P., Toledo, Ohio. Adjustable bracket for scaffolding	446,289	Feb. 10	1299	318	54	770
Holmes, Nathan L., Racine, Wis. Bolster-spring	448,718	Mar. 24	2376	594, 595, 596	54	1596
Holmstrom, Anders, New York, N. Y. Transposing key-board instrument	448,719	Mar. 24	2379	596	54	1596
Holt, Benjamin, Camden, N. J. Knitting machine						
Holt, Benjamin, Camden, N. J. Knitting-machine						

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Holte, Nels T. (See Applequist, Charles J., assignor.)						
Holway, Nymphus B., assignor to T. Mott and G. C. Prentiss, La Crosse, Wis. Coating shingles	448,343	Mar. 17	1777	449	54	1475
Home, John H. (See Dillon, Peter, assignor.)						
Hommel, George. (See Bausch, Hommel, and Wollensak.)						
Honold, Friedrich E. L., Binsfeldhammer, near Stolberg, Germany. Apparatus for desilverizing lead	446,455	Feb. 17	1576	387	54	838
Hood, John, *et al.* (See Bristle, Andrew, assignor.)						
Hooker, Thomas, Syracuse, N. Y. Process of and dies for making twist-drills	447,450	Mar. 3	296	75	54	1173
Hooper, Henry O., San Francisco, Cal. Reverse-movement attachment for type-writing machines	445,406	Jan. 27	2269	589	54	468
Hoos, William. (See Erny, Subers, and Hoos.)						
Hoover, Reuben, Boone, Iowa. Slat-and-wire-fencing machine	446,255	Feb. 10	1249	305	54	759
Hope, John, Jr., Providence, R. I. Steel and lithograph plate ruling machine	448,922	Mar. 24	2685	676	54	1656
Hope Webbing Company. (See Hoyt, Charles G., assignor.)						
Hopedale Elastic Fabric Company. (See Lapworth, William, assignor.)						
Hopkins, Andrew J., Beaver Falls, Pa. Pump-valve	449,533	Mar. 31	3678	924	54	1850
Hopkins & Dickinson Manufacturing Company. (See Schade, John, assignor.)						
Hopkins, Floyd, *et al.* (See Haskins, Morris R., assignor.)						
Hopkins, Henry N., Taunton, and E. H. Bryant, New Bedford, Mass. Safety-switch	447,186	Feb. 24	2571	686	54	1075
Hopkins & Sons, J. H. (See Willis, Charles, assignor.)						
Hopkinson, John, Holmwood, England, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Electric indicator	444,552	Jan. 13	904	235	54	188
Hopkinson, John, Holmwood, England, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Controlling currents upon electric circuits	444,553	Jan. 13	905	235	54	188
Hopper, Joseph N., Pawnee City, Nebr. Roofing material	446,755	Feb. 17	2055	512	54	932
Hoppes, John J., Springfield, Ohio. Feed-water purifier	445,407	Jan. 27	2271	589	54	469
Hörenz, Friedrich O., Radebeul-Dresden, Germany. Automatic damper	445,113	Jan. 20	1823	{471 472}	54	371
Hormel, August, New York, N. Y. Electric annunciator	444,245	Jan. 6	429	108	54	84
Horn, George L. (See Cronin and Adams, assignors.)						
Horn, Lewis W., and J. McArthur, Rochester, N. Y. Fruit-crate	447,687	Mar. 3	659	163	54	1243
Horn, Schooler C., Bladensburg, Ohio. Ironing-board	446,776	Feb. 17	2056	512	54	932
Hornberger, William, Elkhart, Ind. Commutator	448,040	Mar. 10	1266	323	54	1365
Hörner, Gustav, Löben, Germany. Surface-condenser	448,521	Mar. 17	2041	511	54	1525
Hosea, Lewis M. (See Beardsley and Hosea.)						
Hoskins, Charles H. (See Hoskins, George J. and C. H.)						
Hoskins, George J. and C. H., Sydney, New South Wales. Machine for calking seams and joints of steam-boilers	449,286	Mar. 31	3254	825	54	1771
Hotchkiss, Charles A. (See Ives and Hotchkiss.)						
Hotchkiss, Edward S., Bridgeport, Conn. Inserting springs in traps	449,534	Mar. 31	3680	925	54	1850
Hottinger, Gustav, Chicago, Ill. Coloring clay-ware	446,683	Feb. 17	1949	{477 478}	54	904
Hottman, Charles W., assignor to J. Eppler and J. Klenk, Philadelphia, Pa. Sausage-stuffing machine	444,052	Jan. 6	109	27	54	21
Hough, John D. (See Campbell and Hough.)						
Houghton, John Q. A., Washington, D. C., assignor to Singer Manufacturing Company of New Jersey. Button-hole sewing-machine	449,074	Mar. 24	2912	739	54	1699
Houghton, John Q. A., Washington, D. C., assignor to Singer Manufacturing Company of New Jersey. Button-hole sewing-machine	449,075	Mar. 24	2913	739	54	1699
House, James A., Bridgeport, Conn., assignor to E. A. Nichols, New York, N. Y. Bottle-washer	445,408	Jan. 27	2272	590	54	469
House, Joseph L., assignor of one-half to P. B. Christian and P. Faber, Minneapolis, Minn. Axle-nut	444,053	Jan. 6	110	28	54	25
House, Samuel M. J., Hillsborough, Va. Fence	444,382	Jan. 6	625	162	54	123
House, Warren D., Kansas City, Mo., assignor of one-half to J. C. Pennie, Washington, D. C. Bill-file	448,237	Mar. 17	1574	402	54	1436
Houston, David H., Hunter, N. D. Self-loading magnesium flash-lamp	446,918	Feb. 24	2315	575	54	990
Houston, Leonard B., San Antonio, Tex. Spring bed-bottom	444,610	Jan. 13	985	256	54	203
Howard, Abner U., *et al.* (See Howard, James M., assignor.)						
Howard, Frank. H., Irvington, N. Y. Necktie-fastener	447,326	Mar. 3	70	19	54	1131
Howard, Frank P., assignor of one-half to M. A. Pingree, Bridgton, Me. Corn-planter	445,557	Feb. 3	46	12	54	520
Howard, George C., Wallingford, Pa. Plate-printing press	446,635	Feb. 17	1837	{455 456}	54	889
Howard, Hartley, *et al.* (See Howard, James M., assignor.)						
Howard, Henry, Providence, R. I. Platform-door for cars	448,344	Mar. 17	1778	449	54	1475
Howard, Henry, Brookville, Md., assignor of one-half to T. H. Alexander, Washington, D. C. Hand-stamp	449,076	Mar. 24	2914	{739 740}	54	1659
Howard, Hiram, *et al.* (See Whiting, William F., assignor.)						
Howard, James M., Mifflin, assignor of two-thirds to A. U. and H. Howard, Pittsburg, Pa. Plate-glass-sealing apparatus	449,043	Mar. 24	2866	{728 729}	54	1691
Howard, Stephen C., *et al.* (See Whiting, William F., assignor.)						
Howe, John C., Worcester, Mass. Sash-fastener	448,882	Mar. 24	2629	660	54	1643
Howe, Thomas B., Scranton, Pa. Machine for forming glass bottles	447,451	Mar. 3	297	75	54	1173
Howe, Thomas B., Scranton, Pa. Bottle-forming machine	447,452	Mar. 3	299	75, 76	54	1174
Howell, John W., Montana, Kans. Fruit-gatherer	444,884	Jan. 20	1459	378	54	302
Howland, Charles E., Providence, R. I. Shoe-protector	449,416	Mar. 31	3505	882	54	1817
Hoyer, Frank F. (See Shuttleworth, Charles H., assignor.)						
Hoyt, Buckingham S., New York, N. Y. Ticket-holder	444,593	Jan. 13	963	250	54	200
Hoyt, Charles C., Revere, Mass., assignor of one-half to Hope Webbing Company, Providence, R. I. Woven tape	445,141	Jan. 20	1872	484	54	381
Hoyt, Charles J. (See McCloskey, William, assignor.)						
Hoyt, Dennis A., St. Cloud, Minn. Lawn-sprinkler	448,522	Mar. 17	2043	{511 512}	54	1525
Hoyt, Fred J., Chicago, Ill. Sand and gravel cleaning machine	449,417	Mar. 31	3506	{882 883}	54	1817
Hoyt, Peter C., Watseka, Ill. Hot-air furnace	446,222	Feb. 10	1174	{287 288}	54	741
Hoyt, Thomas J., Mount Clemens, Mich. Apparatus for purifying water	445,780	Feb. 3	441	109	54	598
Hoyt, Will F., Dowagiac, Mich. Grain-drill	446,230	Feb. 10	1186	{290 291}	54	746
Hoyt, Will F., Dowagiac, Mich. Hopper and shoe for grain-drills	448,861	Mar. 24	2606	654	54	1639

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hubbard, Charles W., Pittsburg, Pa. Manufacture of axes	444,836	Jan. 20	1348	350	54	280
Hubbard, George M., assignor to W. & E. T. Fitch, New Haven, Conn. Snap-hook	447,567	Mar. 3	486	119	54	1209
Hubener, Herman G. (See Beckman and Hubener.)						
Huber, Edward, Marion, Ohio. Bolt	447,516	Mar. 3	411	100	54	1195
Hübner, Ernst, Halle-on-the-Saale, Germany. Apparatus for compensating the pressure in slide-pumps for air and gases	445,966	Feb. 3	735	179	54	657
Hudec, John F., assignor of one-third to A. Roknsek, Cleveland, Ohio. Railway-rail crossing	445,781	Feb. 3	442	110	54	598
Hudson, Charles E., Leominster, Mass. Tool for fastening hose to couplings	445,894	Feb. 3	536	130	54	616
Hudson, Charles E., Leominster, assignor of one-half to C. S. Tolman & Co., Fitchburg, Mass. Feed mechanism for knife-grinding machines	448,616	Mar. 17	2198	550	54	1554
Hudson, Emma C., Seattle, Wash. Slate	446,777	Feb. 17	2056	512	54	932
Hudson, Thomas C., assignor to G. L. Vose, Providence, R. I. Bracelet	448,617	Mar. 17	2199	551	54	1554
Huebner, S. T., *et al.* (See Dunn, John P., assignor.)						
Huffman, James R. G., Beardsley, Kans. Motor	446,134	Feb. 10	1018	252	54	718
Huffman, Mark, Moorcland, Ind. Buckle for harness	447,244	Feb. 24	2878	714	54	1096
Hughes, Dana M. (See Hughes, James S., assignor.)						
Hughes, Evan E. (See Post, Henry A., assignor.)						
Hughes, Francis L. (See Kennedy, John W., assignor.)						
Hughes, Henry C., Gillsburg, Miss. Cotton-cultivator	449,418	Mar. 31	3508	883	54	1818
Hughes, James J., Philadelphia, Pa. Chenille-cutter bar	445,640	Feb. 3	197	52	54	551
Hughes, James S., assignor to D. M. Hughes, St. Paul, Minn. Trolley-wire support for electric railways	445,142	Jan. 20	1872	{484 485}	54	381
Hugoniot-Tissot, Lucien, Montcheroux, France. Pliers	446,972	Feb. 24	2496	597	54	1005
Hulett, George H., Cleveland, Ohio. Combined hoist and conveying machinery	448,297	Mar. 17	1695	{428 429}	54	1459
Hull, Benjamin F., assignor to E. Hull, Clinton, Ill. Interest-calculator	444,396	Jan. 6	647	168	54	127
Hull, Emma. (See Hull, Benjamin F., assignor.)						
Hull, John S., Baltimore, Md. Can-soldering machine	448,345	Mar. 17	1779	{449 450}	54	1475
Hull, Nicholas A., Penn, Ind. Drawer for sewing-machine attachments	444,151	Jan. 6	282	68	54	58
Hull, Sarah G., Oklahoma, Oklahoma Ter. Perspiration-powder	446,778	Feb. 17	2057	.....	54	933
Hull, Uzal, and W. W. McEwan, assignors to New York Wood Fibre Company, Belvidere, N. J. Making paper pails	445,143	Jan. 20	1874	485	54	381
Hull, Wolcott A., New York, N. Y. Cracker-cutting machine	447,113	Feb. 24	2629	652	54	1049
Hull, Wolcott A., and A. G. Boyer, New York, N. Y.; said Boyer assignor to said Hull. Machine for shaping plastic material	447,132	Feb. 24	2653	{658 659}	54	1054
Hull, Wolcott A., and A. G. Boyer, New York, N. Y.; said Boyer assignor to said Hull. Press for shaping plastic material	447,187	Feb. 24	2774	{686 687}	54	1076
Humans, William, Cambridge, Mass., assignor to American Magnetic Electric Company, Jersey City, N. J. Telephone	449,254	Mar. 31	3503	808	54	1763
Hummel, James H., Mount Vernon, N. Y. Weather-strip	446,520	Feb. 17	1675	409	54	857
Humphrey, Eugene, trustee. (See Chaplin, Edwin D., assignor.)						
Humphrey, John B., *et al.* (See Scales, William S., assignor.)						
Humphreys, Edwin W., Chicago, Ill. Coal-sifter	448,818	Mar. 24	2524	633	54	1625
Humphreys, William P., assignor, by mesne assignments, to A. M. Stinceu, San Francisco, Cal. Joint for suction-pipes of dredgers	444,098	Jan. 6	186	46	54	39
Humphreys, William P., assignor to A. M. Stinceu, San Francisco, Cal. Joint for suction-pipes	444,099	Jan. 6	187	46	54	39
Hundgeburth, Jean, New York, N. Y. Device for fastening adjustably piston-rods or other rods to their cross-heads	446,652	Feb. 17	1676	409	54	857
Hunt, Andrew W., *et al.* (See Chilson, Lilbens, assignor.)						
Hunt, Aubrey D., *et al.* (See Morgan and Crowley, assignors.)						
Hunt, Benjamin F. (See Landon, Willis H., assignor.)						
Hunt, Charles W., West New Brighton, N. Y. Car-coupling	444,594	Jan. 13	964	250	54	200
Hunt, Charles W., West New Brighton, N. Y. Car-coupling	444,955	Jan. 20	1593	406	54	326
Hunt, Charles W., West New Brighton, N. Y. Driving mechanism for car-trucks	447,114	Feb. 24	2630	{652 653}	54	1050
Hunt, Charles W., West New Brighton, N. Y. (See Petro, Samuel H., assignor.)						
Hunt, Wilson. (See Blair and Hunter.)						
Hunter, Alexander G. (See Blair and Hunter.)						
Hunter, Andrew, Milwaukee, Wis. Dust-collector	449,535	Mar. 31	3682	925	54	1851
Hunter, Christopher C., Topeka, Kans. Combined cultivator and seed-drill	447,188	Feb. 24	2778	688	54	1076
Hunter, George D., Auburn Park, Ill. Crimper for cartridge-shells	449,536	Mar. 31	3684	926	54	1851
Hunter, George D., Auburn Park, Ill. Crimper for cartridge-shells	449,537	Mar. 31	3686	926	54	1851
Hunter, George D., Auburn Park, Ill. Electrically-propelled car	446,817	Feb. 17	2123	527	54	947
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	444,397	Jan. 6	649	169	54	127
Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Current-collecting device for electric railways	444,566	Jan. 13	928	241	54	192
Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Current-collecting device for electric railways	447,283	Feb. 24	2941	731	54	1110
Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electric railway	448,782	Mar. 24	2478	620	54	1615
Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electric lighting	445,409	Jan. 27	2273	590	54	470
Hunter, Rudolph M., Philadelphia, Pa., assignor, by mesne assignments, to Thomson-Houston Electric Company, Boston, Mass. Turn-out for electric railways	445,674	Feb. 3	268	70	54	565
Hunter, Rudolph M., Philadelphia, Pa., assignor, by mesne assignments, to Thomson-Houston Electric Company, Boston, Mass. Electric railway	446,833	Feb. 17	2148	534	54	952
Hunter, Rudolph M., Philadelphia, Pa., assignor, by mesne assignments, to Thomson-Houston Electric Company, Boston, Mass. Electric railway	446,834	Feb. 17	2150	534	54	952
Hunter, Rudolph M., Philadelphia, Pa., assignor, by mesne assignments, to Thomson-Houston Electric Company, Boston, Mass. Electric railway	448,523	Mar. 17	2045	512	54	1525
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric-railway car	445,144	Jan. 20	1875	485	54	381
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	445,952	Feb. 3	708	172	54	961
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	448,618	Mar. 17	2199	551	54	1555
Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric railway	448,653	Mar. 24	2267	569	54	1574
Hunter, Rudolph M., assignor to Feister Printing Company, Philadelphia, Pa. Perfecting printing-machine	449,446	Mar. 31	3552	{894 895}	54	1825
Hunting, Nelson, Albany, N. Y. Apparatus for distilling water	448,041	Mar. 10	1267	323	54	1365

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Huntington, Glen W., *et al.* (See Frazer, Thornton A., assignor.)						
Huntington, Thomas S., New York, N. Y., assignor to Domestic Sewing Machine Company, of Ohio. Embroidery attachment for sewing-machines	445,953	Feb. 3	710	173	54	652
Huntington, Wilbur, *et al.* (See Angell, Albert, assignor.)						
Huntington, William G., Pipestone, Minn. Band-cutter and feeder	446,973	Feb. 24	2397	597	54	1005
Huntley, Andrew J. (See Chezem, Andrew, assignor.)						
Huntley, Cranson & Hammond. (See Huntley, William W., assignor.)						
Huntley, William W., assignor, by mesne assignments, to Huntley, Cranson & Hammond, Silver Creek, N. Y. Feed device for grain-cleaning machines, roller-mills, &c	447,072	Feb. 24	2567	637	54	1037
Huntting, John F., *et al.* (See Dunn, John P., assignor.)						
Huppmann-Gerard, Paul. (See Meyer and Huppmann-Gerard.)						
Hurd, Judson B., and H. H. McLane, San Antonio, Tex.; said Hurd assignor to said McLane. Single-seed planter	445,641	Feb. 3	198	52, 53	54	551
Hurrell, William E., London, England, assignor to P. H. Sercombe, Milwaukee, Wis. Velocipede	448,580	Mar. 17	2129	534	54	1542
Hurst, John C., Holton, Kans. Feed-rack	445,221	Jan. 27	2003	516	54	415
Husemann, Gottlieb D., St. Louis, Mo. Ore-concentrator	448,961	Mar. 24	2742	{691 692	54	1666
Huss, Hermann F. C., Bernburg, Germany. Apparatus for instantaneous steam generation	445,222	Jan. 27	2004	516	54	415
Hussey, Charles A., assignor to M. J. Paillard & Co., New York, N. Y. Electric music-box	446,684	Feb. 17	1920	{478 479	54	904
Hussey, Levi, and E. McCann, assignors of one-third to T. Hatch, New York, N. Y. Grease separator for steam-engines	447,327	Mar. 3	71	19, 20	54	1131
Hussey, Silvanus, Brant, N. Y. Wrench	444,937	Jan. 20	1556	399	54	319
Hutchings, John and W. N., Warrington, England. Apparatus for making extracts from tan-bark	444,068	Jan. 6	141	35	54	31
Hutchings, William N. (See Hutchings, John and W. N.)						
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Harness-motion for looms	446,553	Feb. 17	1722	{422 423	54	866
Hutchinson, Henry, assignor to S. J. Moore, Toronto, Canada. Machine for reblocking cloth or other material	448,834	Mar. 24	2550	640	54	1629
Hutchinson, Henry, and F. Madgin, Newcastle-upon-Tyne, assignors to J. C. Newey, Birmingham, England. Hook for wearing-apparel, window-curtains, &c	445,893	Feb. 3	620	152	54	634
Hutchison & Hunstis. (See McPherson, Alexander, assignor.)						
Huttenlocher, Gottlieb, and W. Ullmer, Des Moines, Iowa. Paint-distributer	444,440	Jan. 13	718	188	54	150
Huth, John, and G. Rex, Canton, Ohio. Clothes-line holder	446,522	Feb. 17	1677	409	54	857
Hutton, George H. and G. H., Jr., Baltimore, Md. Convertible vehicle	449,365	Mar. 31	3416	859	54	1798
Hutton, George H. and G. H., Jr., Baltimore, Md. Jointed iron for vehicle-seats	449,419	Mar. 31	3509	{883 884	54	1818
Hyatt, John W., Newark, N. J. Head for pressure-reservoirs	445,180	Jan. 27	1939	501	54	403
Hyatt, John W., Newark, N. J. Downward filtration	445,585	Feb. 3	105	25, 26	54	532
Hyatt, William F., Brooklyn, N. Y. Lock	444,885	Jan. 20	1461	378	54	302
Hyde, Albert W., Newton Centre, Mass. Apparatus for treating viscous rock for paving purposes	447,711	Mar. 3	692	{172 173	54	1249
Hydraulic Elevator Company. (See Ongley, Charles E., assignor.)						
Hyer, Robert S., Georgetown, Tex. Plow	447,517	Mar. 3	412	101	54	1195
Hyers, Samuel A. (See Standiford and Hyers.)						
Hyman, Sam L., Nashville, Tenn. Shirt	448,042	Mar. 10	1269	323	54	1365
Hyndman, Samuel E., Cincinnati, Ohio. Bottle-case	446,349	Feb. 10	1395	{340 341	54	789
Hynes, Martin, Hamilton, Minn. Railway-switch	446,750	Feb. 17	2021	504	54	925
Ide, Albert L., Springfield, Ill. Valve for steam-engines	447,490	Mar. 3	375	92	54	1189
Ide, Ettie M., *et al.* (See Ide, Fred B., assignor.)						
Ide, Fred B., assignor to E. M. Ide, Troy, W. Griffin, West Troy, and N. D. Ide, Corinth, N. Y. Railway time-signal	449,584	Mar. 31	3760	{944 945	54	1864
Ide, Nathan D., *et al.* (See Ide, Fred B., assignor.)						
Iden, Andrew J., Milwaukee, Wis. Bake-pan	445,996	Feb. 10	802	194	54	677
Illinois Steel Company. (See Pettigrew, Charles, assignor.)						
Illinois Steel Company. (See Treat, Francis H., assignor.)						
Ingal, Joseph. (See Ingal, Robert and J.)						
Ingal, Robert and J., Chicago, Ill. Hook	446,946	Feb. 24	2353	585	54	997
Ingersoll, Harley, Lansing, Mich. Heating device	447,115	Feb. 24	2631	653	54	1050
Ingersoll-Sergeant Rock Drill Company. (See Sergeant, Henry C., assignor.)						
Inglis, Andrew J., Milwaukee, Wis. Finger-bar	447,245	Feb. 24	2879	715	54	1096
Inglis, Thomas, and W. Schiermann, Tyler, Tex. Automatic band-brake for railway-cars	445,181	Jan. 27	1941	501	54	403
Ingraham, Charles T., Dwight, assignor of one-half to S. W. Gammon, Chicago, Ill. Tool for dehorning calves	447,611	Mar. 3	554	137	54	1221
Innes, Robert H., El Paso, Tex. Dynamometer for locomotives	444,611	Jan. 13	987	256	54	204
Innes, William E. A., Pueblo, Colo. Copying device	448,346	Mar. 17	1781	450	54	1476
Interior Conduit and Insulation Company. (See Denney, Harmer, assignor.)						
International Freezing and Refrigerating Machine Company of New Jersey. (See Erny, Subers, and Hoos, assignors.)						
Ireland, William L., and P. R. Stanhope, Dumont, Colo. Ore-crusher and sizer	449,096	Mar. 24	2947	747	54	1706
Irons, Joseph, *et al.* (See Head, Joseph A., assignor.)						
Irsch, Francis. (See De la Roche, Charles, assignor.)						
Irvine, Henry E. (See Elkins, William H., assignor.)						
Irwin, Samuel B., West Hebron, N. Y. Road-cart	449,121	Mar. 31	2994	{756 757	54	1724
Isaacs, Mo, New York, N. Y. Tag-fastener	447,688	Mar. 3	660	163	54	1243
Isbell, Ceylon, and S. M. Gillett, Homer, N. Y.; said Gillett assignor of one-half to said Isbell. Ice elevator	445,525	Jan. 27	2441	636	54	500
Isbell, Enoch B., Paris, Tenn. Dough-board	445,019	Jan. 20	1676	431	54	343
Ish, James T., San Francisco, Cal. Fruit-pitting machine	445,753	Feb. 3	390	{99 100	54	590
Ike, Albert, assignor, by mesne assignments, to Self Acting Bell Company, Lancaster, Pa. Device for operating door-bells	448,043	Mar. 10	1270	324	54	1365
Ike, Albert, assignor, by mesne assignments, to Self Acting Bell Company, Lancaster, Pa. Combined push and pull	448,044	Mar. 10	1271	324	54	1366
Ike, Albert, assignor, by mesne assignments, to Self Acting Bell Company, Lancaster, Pa. Trip for door-bells and burglar-alarms	448,045	Mar. 10	1272	324	54	1366
Ike, Anthony, assignor of one-half to D. F. Buchmiller, Lancaster, Pa. Cash-carrier apparatus	447,828	Mar. 10	911	227	54	1207
Ilin, John A., Newport News, Va. Clamp for holding chisels	447,776	Mar. 10	817	203	54	1280

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ivers & Pond Piano Company. (See Ivers, William H., assignor.)						
Ivers, William H., Dedham, assignor to Ivers & Pond Company, Boston, Mass. Agraffe for piano-fortes	448,046	Mar. 10	1273	325	54	1366
Ives, Blakeslee & Williams Company. (See Ives and Hotchkiss, assignors.)						
Ives, Charles H., Sterling, Ill. Fire-ladder	447,429	Mar. 3	256	64	54	1166
Ives, Edward R., and C. A. Hotchkiss, Bridgeport, Conn., assignors to Ives, Blakeslee & Williams Company, New York, N. Y. Registering toy money-bank	445,754	Feb. 3	393	100	54	591
Ivory, James W., Philadelphia, Pa. Dental nerve-broach	444,383	Jan. 6	625	162	54	123
Jaccard, Jules. (See Junod, Jaccard, and Calame-Jaccard.)						
Jackson, Amariah W., Chicago, Ill. Air-brake hose-coupling. (Reissue)	11,141	Jan. 27	2446	637	54	502
Jackson, Calvin, Jacksonwald, Pa. Ballot-box	448,524	Mar. 17	2047	{512 513	54	1526
Jackson, Edward S., Newark, N. J. Spool-holder	448,799	Mar. 24	2409	626	54	1620
Jackson, George F. (See Moyer and Jackson.)						
Jackson, George F. (See Searles, Jackson, and Gustin.)						
Jackson, Manetho C., Denver, Colo. Baling-press	447,950	Mar. 10	1113	{279 280	54	1336
Jackson, Peter H., San Francisco, Cal. Lengthening metallic beams	444,578	Jan. 13	945	245	54	196
Jackson, Peter H., San Francisco, Cal. Lengthening metallic beams and girders	444,579	Jan. 13	946	245	54	196
Jackson, Peter H., San Francisco, Cal. Lens for illuminating-files	446,350	Feb. 10	1396	341	54	789
Jackson, Peter H., San Francisco, Cal. Construction of buildings	449,323	Mar. 31	3333	841	54	1784
Jackson, Roger C. (See Walker, Joseph, assignor.)						
Jacobs, Comodore P., Aurora, Nebr. Car-coupling	444,493	Jan. 13	812	211	54	170
Jacobs, Esther. (See Jacobs, Maurice, assignor.)						
Jacobs, George T. (See Ford and Jacobs.)						
Jacobs, Marion, Chicago, Ill. Elevated railway	448,571	Mar. 17	2118	530	54	1539
Jacobs, Maurice, assignor to E. Jacobs, New York, N. Y. Lock	449,077	Mar. 24	2916	740	54	1700
Jacobs, Theodore, Chicago, Ill. Steam-pipe sleeve	446,685	Feb. 17	1922	479	54	904
Jacobson, John, Boston, Mass. Making watch-dials	444,894	Jan. 20	1472	381	54	304
Jacoby, Augusta, Langhorne, Pa. Sad-iron heater	444,584	Jan. 13	952	247	54	197
Jaenicke, Adolph, Davenport, Iowa. Cigar-mold	445,907	Feb. 10	803	194	54	677
Jaenicke, Adolph, Davenport, Iowa. Cigar-mold	445,998	Feb. 10	804	195	54	677
Jahr, Bernhard F. E., Milwaukee, Wis., and R. H. Boecher, Chicago, Ill. Educational appliance	445,782	Feb. 3	442	110	54	598
James, Christopher R., Jersey City, N. J. Air-brake	447,236	Feb. 24	2866	{711 712	54	1094
James, David B., San Francisco, Cal. Blasting-fuse	446,919	Feb. 24	2316	575	54	990
James, E. C., *et al.* (See Nickum, George S., assignor.)						
James, Jack W., Cuba, Tenn. Mowing-machine	445,894	Feb. 3	621	{152 153	54	634
James, Samuel, and J. K. Sanders, Lebanon, Mo. Spindle-driving device for spinning-machines	446,751	Feb. 17	2022	505	54	925
Jamison, Thomas W., assignor of one-half to T. H. Walton, Salisbury, Mo. Velocipede	447,246	Feb. 24	2880	715	54	1097
Jantz, Gustav H., Cincinnati, Ohio. Lever	445,558	Feb. 3	49	13	54	521
Jantz, Gustav H., Cincinnati, Ohio. Washing-machine	448,654	Mar. 24	2270	569	54	1575
Jaquet, Julius F., Milwaukee, Wis., and W. McAuslan, Brooklyn, N. Y. Sidewalk	446,752	Feb. 17	2024	505	54	925
Jarboe, Walter S., Allegheny, assignor to Pittsburg Mop Wringer Company, Pittsburg, Pa. Mop-wringer	447,732	Mar. 3	728	182	54	1255
Jarden, Milo F., Selkirk, Canada. Boot	444,703	Jan. 13	1125	290	54	230
Jardine, Joseph B., San Francisco, Cal. Steering apparatus	444,580	Jan. 13	948	{245 246	54	196
Jarvis, Walter C., Kansas City, Mo. Switch for overhead railways for dressed meats	445,060	Jan. 20	1547	450	54	357
Jarvis, William G., Piqua, Ohio. Fastener for furniture	447,829	Mar. 10	912	227	54	1207
Jatho, Adam, Victoria, Tex. Mosquito-canopy frame	447,878	Mar. 10	996	251	54	1313
Jeançon, John A., Newport, Ky. Aluminum alloy	446,351	Feb. 10	1397		54	789
Jearles, Charles T., Binghamton, N. Y. Till-lock	448,962	Mar. 24	2745	{692 693	54	1667
Jefferies, Daniel P., and A. W. Grant, Springfield, Ohio. Rubber tire for wheels	449,650	Mar. 31	3883	971	54	1887
Jeffers, Harry L., assignor of one-half to S. D. Givin, Lexington, Miss. Railway-tie	445,274	Jan. 27	2084	538	54	431
Jeffers, Harry L., assignor of one-half to S. D. Givin, Lexington, Miss. Railway-tie	445,275	Jan. 27	2085	538	54	431
Jefferson, James H. (See Edwards, Charles M., assignor.)						
Jeffery, Richard E., Grass Valley, Cal. Vehicle-wheel	446,559	Feb. 17	1733	{425 426	54	869
Jeffery, Thomas B., Chicago, Ill. Wheel-tire	444,069	Jan. 6	142	35	54	31
Jeffery, Thomas B., Chicago, Ill. Velocipede	448,055	Mar. 24	2271	569	54	1575
Jeffery, Thomas B., Chicago, Ill. Velocipede	449,220	Mar. 31	3145	793	54	1751
Jeffreys, John C. W., and G. Dickman, London, England, assignors to G. W. Mabie, Brooklyn, N. Y. Suspension device for pencil-cases, &c	447,879	Mar. 10	997	251	54	1313
Jeffreys, Lemuel A. (See Williams, Henry B., assignor.)						
Jenkins, Henry C. (See Higgins and Jenkins.)						
Jenkins, William H., Girard, Ill. Fence-making machine	444,752	Jan. 13	1210	{314 315	54	245
Jenkins, William P., and F. X. Mudd, assignors to Live Poultry Transportation Company, Chicago, Ill. Poultry-car	444,266	Jan. 6	456	{115 116	54	90
Jenner, Frederick, Yeovil, England, assignor to E. J. Lucas and H. Jenner, Johnstown, N. Y. Shoe-fastening	446,779	Feb. 17	2058	513	54	933
Jenner, Harry, *et al.* (See Jenner, Frederick, assignor.)						
Jennings & Co. (See Jennings, Owen, assignor.)						
Jennings, Curtis M., St. Louis, Mo. Car-roof	446,780	Feb. 17	2059	513	54	933
Jennings, Owen, assignor to Jennings & Co., Homer, La. Basket	445,783	Feb. 3	443	110	54	598
Jennison, N. Edward. (See Henson, Joseph W., assignor.)						
Jensen Can Filling Machine Company. (See Jensen, Mathias, assignor.)						
Jensen, Mathias, assignor of one-half to Jensen Can Filling Machine Company, Astoria, Oreg. Can-capping machine	448,047	Mar. 10	1274	325	54	1367
Jernberg, Gustaf, Rockford, Ill. Mower	447,328	Mar. 3	72	20	54	1132
Jerome, Samuel B., New York, N. Y. Pavement	445,114	Jan. 20	1825	472	54	371
Jesson, John B., Camden, N. J., and J. K. Weed, assignors of one-third to L. E. Ladd, Philadelphia, Pa. Machine for slotting and boring umbrella or other sticks	445,147	Jan. 20	1880	{485 486	54	383
Jester, Herbert H., Boulder, Colo. Staple	446,523	Feb. 17	1678	409	54	858
Jewell, Ammi M., San Francisco, Cal. Boring-machine	446,352	Feb. 10	1398	{341 342	54	789
Jewell, Ammi M., San Francisco, Cal. Boring-machine	446,353	Feb. 10	1399	342	54	789
Jewell, John A., assignor of one-half to J. E. Beardsley, Washington, D. C. Brake-block	448,720	Mar. 24	2380	597	54	1597

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Jewell, Omar H. (See Jewell, William M. and O. H.)						
Jewell, Omar H., Chicago, Ill. Apparatus for filtering sirups	445,371	Jan. 27	2215	574	54	458
Jewell, Robert, Battersea Park, England. Registering mechanism or counter actuated by electric currents	444,358	Jan. 6	585	151	54	116
Jewell, William M. and O. H., Chicago, Ill. Filter	447,508	Mar. 3	487	120	54	1209
Jewett & Co., Sherman S. (See Walther, Charles F., assignor.)						
Jewett, Eri F., assignor, by mesne assignments, to P. L. Jewett, Newtown, Ohio. Adding-machine	446,753	Feb. 17	2025	505	54	925
Jewett, Luther K., Boston, Mass., assignor to Jewett Supply Company, Portland, Me. Anti-friction bearing	449,078	Mar. 24	2918	740, 741	54	1700
Jewett, Percy L. (See Jewett, Eri F., assignor.)						
Jewett, Samuel R., *et al.* (See Mitchell, Clifford, assignor.)						
Jewett Supply Company. (See Jewett, Luther K., assignor.)						
Jobbins, William F. (See Van Ruymbeke, Joseph, assignor.)						
Johnke, Charles, *et al.* (See Elgen, Magnus P., assignor.)						
Johansson, Karl A., assignor of one-half to E. H. Wachs, Chicago, Ill. Automatically-compensating journal-box	446,384	Feb. 10	1444	355	54	709
Johns, Henry W., Jr., New York, N. Y. Fire-isolating apparatus	445,372	Jan. 27	2216	574, 575	54	459
Johnson, Albert E., and C. H. Porter, Brockton, Mass. Channel-cutting and flap turning attachment for sewing-machines	444,895	Jan. 20	1473	381	54	304
Johnson, Arthur T. M., East Melbourne, Victoria. Automatic-signaling target	444,494	Jan. 13	813	211, 212, 213	54	170
Johnson, Bernt M., and J. Reichert, Racine, Wis.; said Johnson assignor to said Reichert. Horse-collar fastening	446,099	Feb. 10	961	206	54	706
Johnson, Charles F. (See Garrett, James W., assignor.)						
Johnson, Claus, Aurelia, Iowa. Boot or shoe cleaner	447,116	Feb. 24	2632	653	54	1050
Johnson Company. (See Entwisle, Edward B., assignor.)						
Johnson-Crane Matrix Company. (See Johnson and Crane, assignors.)						
Johnson, David J., San Francisco, Cal. Basket-hamper	447,830	Mar. 10	943	228	54	1298
Johnson, Edward H. (See Čápek, John V., assignor.)						
Johnson, Edward H., New York, N. Y. Electric switch	448,431	Mar. 17	1910	480	54	1500
Johnson, Edward H., assignor to Edison General Electric Company, New York, N. Y. Electric-lighting system	449,044	Mar. 24	2870	729	54	1692
Johnson, Ernest, *et al.* (See Park, Joseph Jr., assignor.)						
Johnson, Ernest V., Chicago, Ill. Construction of fire-proof buildings	448,048	Mar. 10	1277	326	54	1367
Johnson, Francis A., Powhatan, Ark. Car-coupling	447,154	Feb. 24	2725	675	54	1066
Johnson, Frank A., *et al.* (See Whittingham, David L., assignor.)						
Johnson, Frank A., and W. E. Crane, assignors to Johnson-Crane Matrix Company, Minneapolis, Minn. Machine for producing printing-surfaces	445,559	Feb. 3	50	13, 14, 15	54	521
Johnson, Frank P., Eyers Grove, Pa. Sash-balance	449,538	Mar. 31	3689	926	54	1852
Johnson, James H. (See Dewey, Henry E., assignor.)						
Johnson, James M., Arneckeville, Tex. Vehicle-seat	446,754	Feb. 17	2028	505	54	926
Johnson, Jesse B., Indianapolis, Ind. Car-truck	447,430	Mar. 3	258	65	54	1166
Johnson, John, Baton Rouge, La. Stem winding and setting watch	445,182	Jan. 27	1942	502	54	403
Johnson, Joseph H., Bradford, Pa. Load-binder	448,802	Mar. 24	2607	654	54	1639
Johnson, Larence A., San Francisco, Cal. Fish-net	446,755	Feb. 17	2029	506	54	926
Johnson, Lewis W. (See Burke, Stephen E., assignor.)						
Johnson, Mathew, Chicago, Ill. Rotary engine	447,831	Mar. 10	914	228, 229	54	1298
Johnson, Robert J., New York, N. Y. Carpet-fastener	444,201	Jan. 6	362	90	54	73
Johnson, Thomas A., *et al.* (See Tregurtha, James, assignor.)						
Johnson, Walter A., Byron, Minn. Automatic grain-meter	448,238	Mar. 17	1576	402, 403	54	1436
Johnson, William, Penn Yan, N. Y. Car-coupling	446,147	Feb. 10	1045	256	54	721
Johnson, William D., New Haven, and T. A. Curtis, Hartford, Conn. Coupling for hot-water heating-pipes	447,329	Mar. 3	75	21	54	1132
Johnson, William H., Argentine, Mich. Wood-working tool	445,276	Jan. 27	2046	538	54	431
Johnson, Willie L., Lake City, Miss. Back-band	444,296	Jan. 6	497	129	54	99
Johnston, Bruce, Croydon, England. Cash register and indicator	446,599	Feb. 17	1762	441	54	878
Johnston Car Seat Company. (See Gilsillan, Essington N., assignor.)						
Johnston, Edgar D., Connersville, Ind. Means for moving slack coal	449,122	Mar. 31	2907	757	54	1724
Johnston, George, Detroit, Mich. Trial spectacle-frame	444,495	Jan. 13	817	213	54	171
Johnston, Leune J., Petaluma, Cal. Farm-gate	449,221	Mar. 31	3147	793	54	1751
Jolly, Mathias, assignor to M. E. Hart, Troy, N. Y. Oil-can	445,061	Jan. 20	1748	450	54	357
Jonasson, Meyer, *et al.* (See Lewy, Charles H., assignor.)						
Jones, Abijah. (See Odell and Jones.)						
Jones, Adoniram J. (See Claussen and Jones.)						
Jones, Aldred J. (See Jones, James and A. J.)						
Jones, Athelstan O., Zanesville, Ohio. Paving-brick	447,612	Mar. 3	555	137	54	1222
Jones, Augustus H. (See Shull, Joseph C., assignor.)						
Jones, Charles W., London, Canada. Spindle-driving mechanism for spinning-machines	448,239	Mar. 17	1578	403	54	1437
Jones, Daniel, Cardiff, England. Sewing-machine	449,539	Mar. 31	3690	927	54	1852
Jones, Edward C., Boston, Mass. Gas-fired boiler	445,999	Feb. 10	805	195	54	677
Jones, Elbert W., *et al.* (See Fisher, James W., assignor.)						
Jones, Ernest A., *et al.* (See Fisher, James W., assignor.)						
Jones, Evan W., Portland, Oreg. Lathe for turning shafts	448,764	Mar. 24	2450	612, 613	54	1610
Jones, Frank. (See Williams, George A., assignor.)						
Jones, Franklin L., assignor of one-half to J. B. Peabody, Columbia City, Ind. Nut-lock	448,432	Mar. 17	1911	481	54	1500
Jones, George H., London, England. Fountain-pen	445,317	Jan. 27	2139	553	54	443
Jones, Henry M., Denver, Colo. Vestibule-car	448,186	Mar. 10	1478	376, 377	54	1409
Jones, Herbert T. (See Middleton and Jones.)						
Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Die for swaging the threads of gimlet-pointed screws	444,554	Jan. 13	906	236	54	188
Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Manufacture of bolts or pins	446,739	Feb. 17	2005	500	54	922
Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Bolt or pin	446,740	Feb. 17	2007	500	54	922
Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Felly-screw	446,741	Feb. 17	2008	500	54	922

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Felly-screw	446,219	Feb. 10	1171	287	54	743
Jones, James and A. J., Thorold, Canada. Grinding-mill	448,347	Mar. 17	1782	450	54	1476
Jones, James E., *et al.* (See Flowers, Malon L., assignor.)						
Jones, James H., San Francisco, Cal. Injector oil-burner for boiler-furnaces	444,115	Jan. 6	214	51, 52	54	44
Jones, James H., San Francisco, Cal. Injector oil-burner for boiler-furnaces	449,632	Mar. 31	3857	906	54	1883
Jones, John D. (See Clonse, William L., assignor.)						
Jones, John M., assignor to G. W. Henderson, Atlanta, Ga. Car-pusher	448,963	Mar. 24	2747	693, 694	54	1667
Jones, John R., and J. W. Scott, Arlington, Ill. Railway alarm-signal	444,220	Jan. 6	389	97	54	78
Jones, Lorenzo D., *et al.* (See Sansoucy, Mack, assignor.)						
Jones, Mathias N., Escanaba, Mich. Switch	444,956	Jan. 20	1594	407	54	326
Jones, Maurice H., Baltimore, Md. Auger	446,456	Feb. 17	1577	388	54	838
Jones, Moses S. (See Wall, Jones, and Bishop.)						
Jones, Richard W., and H. C. Weber, Nashville, Tenn. Window-shade	447,247	Feb. 24	2881	715	54	1097
Jones, Walter F., Syracuse, N. Y. Game apparatus	445,852	Feb. 3	562	137	54	621
Jones, Washington S., assignor to himself, A. A. Dillehay, and J. T. O'Ferrall, Meridian, Miss. Planter and fertilizer-distributing attachment for plows	447,117	Feb. 24	2633	653, 654	54	1050
Jones, William H., Chicago, Ill. Elevator	447,073	Feb. 24	2568	637	54	1037
Jönsson, Johan L., assignor to Aktiebolaget Separator, Stockholm, Sweden. Milk-heater	444,957	Jan. 20	1596	407	54	326
Jordan, Edmund, Brooklyn, assignor to M. H. Cashman, New York, N. Y. Barbed fencing	448,433	Mar. 17	1913	481	54	1500
Jordan, James H., and J. M. Cook, Mountain Home Ark. Tongue-support	446,385	Feb. 10	1445	355	54	799
Jordan, John S. and J. E. Eller; said Eller assignor to W. McGinnis, Indianapolis, Ind. Folding step	445,954	Feb. 3	712	173, 174	54	652
Jordan, Linwood F., Somerville, Mass., assignor, by mesne assignments, to B. G. Electrical Supply Company, Portland, Me. Electric car-lighting	447,777	Mar. 10	818	203	54	1280
Jordan, Oswald F., and R. Potts, St. Thomas, Canada. Railway-scraper	449,420	Mar. 31	3511	884	54	1818
Jordon, John, London, England. Card-printing machine	445,373	Jan. 27	2218	575	54	459
Joseph, Charles, assignor to R. Joseph, New York, N. Y. Pocket-book	444,886	Jan. 20	1462	379	54	302
Joseph, Rose. (See Joseph, Charles, assignor.)						
Judevine, Henry W., Edgar Springs, Mo. Broom-head	446,756	Feb. 17	2030	506	54	927
Judge, William A., Santa Barbara, Cal. Index	448,049	Mar. 10	1280	326	54	1368
Judkins, Mark D., Oaklis, Minn. Clothes-drier	444,359	Jan. 6	587	151	54	117
Judy, John F., and N. H. Wilson, Huntingburg, Ind. Umbrella or parasol	446,686	Feb. 17	1922	479, 480	54	904
Julian, Gideon, assignor of one-half to S. M. Fay, Boston, Mass. Solo-rounding machine	447,189	Feb. 24	2782	.....	54	1077
Julius, Paul, assignor to Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Red dye	449,585	Mar. 31	3763	945	54	1865
Jull, Samuel T., assignor to F. T. Fish, Meadville, Pa. Meat-cutter	444,360	Jan. 6	588	152	54	117
Jungbluth, Joseph, Erie, Pa. Gage-cock	449,540	Mar. 31	3693	928	54	1852
Junkins, John H., Upper Sandusky, Ohio. Hay-stacker	445,699	Feb. 3	305	80, 81	54	572
Junod, Alfred, J. Jaccard, and P. Calame-Jaccard, assignors to A. Junod & Co., Ste. Croix, Switzerland. Musical box						
Junod & Co., Alfred. (See Junod, Jaccard, and Calame-Jaccard, assignors.)						
Kacer, Martin V. (See Yocum and Kacer.)						
Kaczander, Leopold, New York, and R. Ruddy, Mount Vernon, assignors to Nathan Manufacturing Company, New York, N. Y. Injector	445,642	Feb. 3	201	53	54	551
Kade, Charles, Chicago, Ill. Spring-holding bracket	448,240	Mar. 17	1579	403	54	1437
Kaffenberger, Gustav, assignor of one-fourth to A. Doll, Cleveland, Ohio. Digesting apparatus	448,581	Mar. 17	2129	537	54	1542
Kahn, Arthur, Jersey City, N. J. Massage apparatus	448,883	Mar. 24	2630	661	54	1643
Kahn, Herman, *et al.* (See Nicolaus, August, assignor.)						
Kaighin, Charles J. (See Watriss and Kaighin.)						
Kaiser, Frederick, Knoxville, Tenn. Pipe-coupling	448,765	Mar. 24	2452	613	54	1610
Kaiser, Joseph H., and A. B. Ledwith, Brownsville, Pa. Electric time-lock	447,409	Mar. 3	225	58, 59	54	1160
Kaldenberg, Frederick J., Tarrytown, N. Y. Pen-holder	446,646	Feb. 17	1861	462	54	894
Kane, Alonzo L. (See Kane, Charles L., assignor.)						
Kane, Charles L., New York, N. Y., assignor to A. L. Kane, Milwaukee, Wis. Warp stop-motion for looms	446,100	Feb. 10	962	236	54	706
Kane, John H., North Adams, Mass. Bicycle	446,354	Feb. 10	1400	343	54	790
Kapinos, Benjamin. (See Krejci and Kapinos.)						
Kapler, Carl G. W., Berlin, Germany. Roller grinding-mill	447,951	Mar. 10	1115	280, 281	54	1336
Kapp, John O., Poe, Ohio. Apparatus for carrying packages, &c	448,050	Mar. 10	1280	326	54	1368
Karle, John, Baltimore, Md. Ash-sifter	445,784	Feb. 3	444	111	54	509
Karn, Edwin B., Amherst, assignor of one half to C. Hamilton, Britain, S. D. Band-cutter and feeder	445,845	Feb. 3	537	131	54	616
Karr, Francis, Chicago, Ill. Pillow-sham holder	444,981	Jan. 20	1622	415	54	333
Kase, Edwin S., and A. F. Borden, Danville, Pa. Automatic railway-switch	448,923	Mar. 24	2686	676	54	1656
Kassel, Edward T., assignor of one half to C. E. Riker, New York, N. Y. Atomizer	446,256	Feb. 10	1251	305	54	759
Kastler, Nicholas, La Porte, Ind. Buggy-body	444,070	Jan. 6	143	36	54	31
Kator, Jeremiah H., Detroit, Mich. Name-plate pattern	445,785	Feb. 3	445	111	54	509
Kay, George, F. Wilkinson, and R. Fisher, Jamestown, N. Y. Roundabout	448,241	Mar. 17	1581	403, 404	54	1437
Kaye, Joseph, Leeds, England. Lock	449,160	Mar. 31	3050	771	54	1734
Kayser, Johanna. (See Kayser, Joseph, assignor.)						
Kayser, Joseph, assignor to J. Kayser, New York, N. Y. Apparatus for coating paper	445,955	Feb. 3	715	174, 175	54	652
Kearney, Benjamin S., assignor of one-half to N. Y. Gulley, Franklinton, N. C. Tobacco-stringer	446,231	Feb. 10	1188	291	54	747
Kearney, Benjamin S., assignor of one-half to N. Y. Gulley, Franklinton, N. C. Wagon end-gate	446,232	Feb. 10	1189	291	54	747
Kearney, Patrick J., assignor of one-half to T. Ryan, Chicago, Ill. Apparatus for removing garbage	449,421	Mar. 31	3514	885	54	1818
Kearns, Isaac F., Chicago, Ill. Safety-valve	447,523	Mar. 3	424	104	54	1197
Keefer, William B. (See Proctor and Keefer.)						
Keefer, William B., Philadelphia, Pa. Ingrain carpet fabric	444,837	Jan. 20	1349	350	54	280
Keeler, Calvin, Hobart, N. Y. Device to prevent railway-rails from spreading	445,449	Jan. 27	2430	605	54	480
Keeler, Ezra W., San Francisco, Cal. Panoramic device	446,524	Feb. 17	1679	410	54	858
Keely, Thomas, Memphis, Tenn. Waste-pipe	444,297	Jan. 6	498	130	54	99
Keen, William M. B., and W. F. Haarmann, assignors of one-fourth to E. Le Fevre, New York, N. Y. Manufacture of carbon filaments	445,374	Jan. 27	2219	.....	54	459
Keena, Daniel A., Eagle Grove, Iowa. Baling-press	444,194	Jan. 6	353	86, 87	54	71

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Keenan, James R., *et al.* (See Miller, Frank, assignor.)						
Keene, M. W. (See Hatcher, William A., assignor.)						
Keenholts, Alida. (See Keenholts, George, assignor.)						
Keenholts, George, assignor to A. Keenholts, Philadelphia, Pa. Spring bed-bottom	447,133	Feb. 24	2658	659	54	1055
Kees, Frederick, Minneapolis, Minn. Corner-strip	448,187	Mar. 10	1480	377	54	1409
Keesing, Stephen C., *et al.* (See Reed, Franklin M., assignor.)						
Keifel, Fred. W., Jr., assignor to E. Seamlan, Louisville, Ky. Fire place fender	445,811	Feb. 3	506	122	54	610
Keil, Henry F., New York, N. Y. Door-knob	447,613	Mar. 3	556	138	54	1222
Keith, Horace M., Commerce, Mich. Machine for separating and assorting potatoes	448,434	Mar. 17	1914	481	54	1501
Keith, Myron L., Campello, Mass. Sole-fitting machine	448,435	Mar. 17	1916	482	54	1501
Keith, Myron L., Campello, Mass. Sole-channeling machine	448,436	Mar. 17	1918	482, 483	54	1502
Keith, Truman D., South Pasadena, Cal. Wrench	447,932	Mar. 10	1117	281	54	1336
Keller, George J., Osceola, Nebr. Pump	445,560	Feb. 3	64	15	54	524
Keller, George W., Goshen, Ind. Carpet-sweeper	449,541	Mar. 31	3694	928	54	1833
Keller, Harry E., Niagara Falls, assignor to Oneida Community, Limited, Kenwood, N. Y. Swivel	449,324	Mar. 31	3334	841	54	1784
Keller, John W., Columbus, Ga. Sulky	449,542	Mar. 31	3695	929	54	1833
Keller, Samuel W., Cleveland, Ohio. Toy parachute	444,441	Jan. 13	719	188	54	150
Kelliher, Alfred T., Bethel, Me. Lumber-carrier	448,766	Mar. 24	2453	613	54	1610
Kellogg, Albert A., Holyoke, Mass. Mechanism for operating stuff-gates	444,555	Jan. 13	908	236	54	189
Kellogg, Benjamin, Peoria, Ill. Automatic car-brake and brake-governor	446,525	Feb. 17	1680	410	54	858
Kellogg, James F., Mitchell, S. D. Pole-tip	444,442	Jan. 13	720	189	54	150
Kellow, Joseph, Brooklyn, N. Y. Wash-tub	445,643	Feb. 3	202	53	54	552
Kellow, Joseph, Brooklyn, N. Y. Stone-dressing machine	445,644	Feb. 3	203	54	54	552
Kelly, Carlos C., Claysville, Ohio. Calendar	449,543	Mar. 31	3697	929	54	1833
Kelly, George, Chicago, Ill. Hanger for wire lathing	445,836	Feb. 3	539	131	54	616
Kelsey, Frank N., Florence, assignor of one-half to G. L. Loomis, Northampton, Mass. Spring-hinge	449,366	Mar. 31	3418	859	54	1799
Kelsey, Frank N., Florence, assignor of one-half to G. L. Loomis, Northampton, Mass. Thill-coupling	449,367	Mar. 31	3420	860	54	1799
Kelty, Gibbons L. (See Carver, James W., assignor.)						
Kemp, Charles W., Charleston, Ill. Engineer's order bulletin-board	444,211	Jan. 6	373	93	54	75
Kemp, John M. (See Wynkoop and Kemp.)						
Kenaga, Samuel C., Chicago, Ill. Corn-harvester	447,465	Mar. 3	324	81, 82, 83	54	1179
Kendall, Isaac N., New Westminster, Canada. Band-saw mill	447,953	Mar. 10	1118	281, 282	54	1337
Kendall, William R., *et al.* (See Chilson, Libbeus, assignor.)						
Kendig, Witmer J., Lancaster, Pa. Rotary engine	449,325	Mar. 31	3335	841	54	1784
Kendrick, James K. (See Hill, Loren H., assignor.)						
Kenehan, Gilbert P., assignor, by mesne assignments, to Steel Belt Fastener Company, Cleveland, Ohio. Die for making belt-fasteners	448,805	Mar. 24	2551	640	54	1629
Kenehan, Gilbert P., assignor, by mesne assignments, to Steel Belt Fastener Company, Cleveland, Ohio. Making belt-fasteners	448,806	Mar. 24	2552	640	54	1629
Kenfield, William W., assignor to Rochester Cycle Manufacturing Company, Rochester, N. Y. Bicycle	448,750	Mar. 24	2401	608	54	1606
Kennard, Charles W., *et al.* (See Bond, Elijah J., assignor.)						
Kennedy, De Lancy, New York, N. Y. Punching-machine	448,525	Mar. 17	2050	513	54	1526
Kennedy, John, Montreal, Canada. Apparatus for holding dredges in place	445,675	Feb. 3	269	70	54	566
Kennedy, John, Montreal, Canada. Apparatus for holding dredges in place	447,717	Mar. 3	703	176	54	1251
Kennedy, John W., assignor of one-half to F. L. Hughes, Rochester, N. Y. Bicycle-support	446,835	Feb. 17	2153	535	54	953
Kennedy, John W., Des Moines, Iowa, and B. L. Harris, Pittsburg, Pa., assignors to J. W. Kennedy, trustee. Butter-jar	449,326	Mar. 31	3337	842	54	1784
Kennedy, Julian, Latrobe, Pa. Mill appliance	446,526	Feb. 17	1683	411, 412	54	859
Kennedy, Martin, assignor to U. S. Rolling Stock Company, Chicago, Ill. Die-punch for making turn buckles	444,595	Jan. 13	965	250	54	200
Kennedy, Rankin, assignor of one-half to R. Dick, Glasgow, Scotland. Electrical transformer	447,569	Mar. 3	488	120	54	1209
Kenney, John C., assignor of one-half to E. G. Merriam, St. Louis, Mo. Railway freight-car	445,526	Jan. 27	2442	636	54	501
Kenoyer, Edmund L., Hanford, Cal. Windmill	448,348	Mar. 17	1783	450, 451	54	1476
Kent, James W. (See Goosen, Haly, and Kent.)						
Kent, Stephen S., W. G. Boler, and W. W. Kent, Macon, Ga. Cotton-chopper	447,046	Feb. 24	2528	627	54	1029
Kent, William J., St. Paul, Minn. Machine for forming horseshoe-blanks	446,066	Feb. 10	911	222	54	697
Kent, William W. (See Kent, Boler, and Kent.)						
Kentnowski, Iwan. Sohrau, Germany. Steam-engine	449,422	Mar. 31	3517	885, 886	54	1819
Kerber, Leopold. (See Mohland and Kerber.)						
Kern, Ferdinand, Newark, N. J., assignor of three-fourths to Heilner & Strauss, New York, N. Y. Shuttle-actuating mechanism for duplex-needle sewing-machines	447,880	Mar. 10	998	252	54	1313
Kernan, Francis, Jr., and W. H. Landers, Utica, N. Y., assignors to Kernan Furnace Company, of New York. Hot-air furnace	448,783	Mar. 24	2479	620	54	1616
Kernan Furnace Company. (See Kernan and Landers, assignors.)						
Kernockel, Jacob G., Kansas City, Mo. Sash-cord fastener	444,534	Jan. 13	873	227	54	182
Kerns, George A., Victoria, Tex. Stirrup	444,298	Jan. 6	499	130	54	99
Kerr Bag Manufacturing Company. (See Kerr, William H., assignor.)						
Kerr-Murray Manufacturing Company. (See Crighton, William, assignor.)						
Kerr, William, Philadelphia, Pa. Feed-water heater and purifier for boilers	447,881	Mar. 10	998	252	54	1314
Kerr, William H., Durham, N. C. Making bags	445,329	Jan. 27	2156	558	54	446
Kerr, William H., Durham, assignor to Kerr Bag Manufacturing Company, Concord, N. C., Bag-making machine	445,351	Jan. 27	2190	567, 568, 569	54	453
Kersey, Samuel B., Greensborough, N. C. Cabinet for molasses-measures	447,643	Mar. 3	603	148, 149	54	1231
Kerstetter, Thomas J., East Brady, Pa. Vehicle seat	445,853	Feb. 3	565	138	54	622
Kethledge, Seth, Norfolk, Nebr. Scale-beam	448,437	Mar. 17	1921	483	54	1502
Keyes, Benjamin B., Chelsea, assignor to J. S. Potter, Newton, Mass. Electric switch	445,146	Jan. 20	1882	486	54	383
Keys Corn Harvester and Machinery Manufacturing Company. (See Keys, John, assignor.)						
Keys, John, Beloit, Kans., assignor to Keys Corn Harvester and Machinery Manufacturing Company, Denver, Colo. Corn-harvester	449,652	Mar. 31	3886	972	54	1888

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Keystone Manufacturing Company. (See Myers, Charles H., assignor.)						
Keystone Wagon Company. (See Klees, James A., assignor.)						
Keystone Watch Case Company. (See Klahn, Emil, assignor.)						
Keyworth, Thomas R., Jr., assignor of three-fourths to A. G. Myers, New York, N. Y., and W. C. Keyworth, Paterson, N. J. Ball cock-valve	449,351	Mar. 31	3380	852	54	1792
Keyworth, William C., *et al.* (See Keyworth, Thomas R., Jr., assignor.)						
Kibler, John B., Minneapolis, Minn. Grindstone	446,920	Feb. 24	2317	576	54	991
Kidd, John S., Des Moines, Iowa. Wagon dump and elevator	447,190	Feb. 24	2783	688, 689	54	1077
Kidd, John S., Des Moines, Iowa. Wagon dump and elevator	447,191	Feb. 24	2786	689	54	1078
Kidd, Thomas A., Railway, N. J. Boiler	443,997	Jan. 6	18	5	54	7
Kierson, George F., and A. K. Young, Allegheny, Pa. Automatic burglar-alarm and door-bell	448,051	Mar. 10	1281	327	54	1368
Kiler, Charles M., assignor of one-half to R. E. Poindexter, Indianapolis, Ind. Wire fastener and tightener	445,330	Jan. 27	2157	559	54	447
Killinger, John, Wayne, Pa. Hook	445,895	Feb. 3	624	173	54	634
Killinger, Melross M., Battle Creek, Nebr. Cockeye	446,870	Feb. 24	2222	552	54	974
Kilmer, William A., Newburg, N. Y. Bale-tie	448,964	Mar. 24	2750	694	54	1668
Kilroy, John F. (See Adams, Fred. L., assignor.)						
Kimball, Charles M., Auburndale, Ohio, assignor of one-half to K. Havens, New York, N. Y. Car-pusher	444,443	Jan. 13	721	189	54	151
Kimball, Granville, and H. S. Teal, Chicago, Ill. Fluid-pressure governor	449,222	Mar. 31	3148	794	54	1752
Kimball, James L. (See Wirt, Herbert C., assignor.)						
Kimpton, Charles A., Malden, assignor of three-fourths to J. C. Bennett and F. R. White, Lynn, Mass. Apparatus for ventilating buildings	444,444	Jan. 13	722	189	54	151
Kincaid, George F., San Francisco, Cal. Photographic-camera shutter	444,361	Jan. 6	589	152	54	117
Kincaid, George F., San Francisco, Cal. Pneumatic bell	445,837	Feb. 3	540	131	54	617
Kinder, Arthur H., assignor to L. C. Chase & Co., Boston, Mass. Horse-blanket	448,151	Mar. 10	1420	363	54	1398
Kindermann, Oskar, Lindenau, Germany, assignor to H. Willford, Kingston, England. Manufacture of lithographic plates	445,650	Feb. 3	211	.....	54	554
King, Albert F. A., Washington, D. C. Pencil-sharpener	447,431	Mar. 3	260	65	54	1166
King, Charles H., *et al.* (See Walmsley, Harry B., assignor.)						
King, Charles R. (See Bessonette and King.)						
King, Charles R., *et al.* (See Carpenter, James H., assignor.)						
King, Edward A., and A. J. Carr, Chicago, Ill.; said King assignor to said Carr. Awning-brace	445,718	Feb. 3	333	87	54	578
King, Edward G., San Francisco, Cal. Compass attachment for field-glasses	444,795	Jan. 13	1272	329	54	256
King, Frank B. (See Clark and King.)						
King, George E., *et al.* (See Palmer, Samuel D., assignor.)						
King, James D., Brooklyn, N. Y., assignor to Latimer Cash Register Company, Detroit, Mich. Cash-register	448,242	Mar. 17	1582	404	54	1437
King, James M., Hebron, Nebr. Seed-drill	448,349	Mar. 17	1784	451	54	1476
King, John H., Cincinnati, Ohio, assignor of one-half to R. W. Dugan, Covington, Ky. Sand-strainer for deep wells	447,882	Mar. 10	999	252	54	1314
King, John H., assignor of one-half to E. I. Robinson, Cincinnati, Ohio. Brake for street cars	448,438	Mar. 17	1922	483	54	1502
King, John H., assignor of one-half to J. O. Sloan, Cincinnati, Ohio. Cut-off valve	449,123	Mar. 31	2997	757	54	1725
King, Robert W., Georgetown, Canada. Steam-heating apparatus	447,330	Mar. 3	77	21	54	1132
King, Rockwell. (See Serkey, Joseph von, assignor.)						
King, William C., Pittsburg, Pa. Bottle-lock	445,755	Feb. 3	395	100	54	591
King, William H., Bolivar, N. Y. Stamp-affixing machine	449,544	Mar. 31	3698	929, 930	54	1853
King, William R., assignor to J. H. Crosman, New York, N. Y. Automatic brake mechanism	446,386	Feb. 10	1446	355, 356	54	800
Kingery, William F., and J. B. Cavanaugh, Greenfield, Iowa. Derrick for slaughtering animals	448,054	Mar. 10	1285	328	54	1369
Kingsbury, Harry T., Keene, N. H. Tennis-court marker	441,384	Jan. 6	626	162	54	123
Kingsford, Thomson. (See Tonkin, John J., assignor.)						
Kingsley, Edward E., Portland, Oreg. Device for moistening the gum on envelopes	449,480	Mar. 31	3610	909	54	1837
Kinkaid, Thomas W., U. S. Navy. Rotary engine	444,938	Jan. 20	1555	399	54	319
Kinkead, Robert S., Lexington, Ky. Controlling-gear for draft-horses	446,067	Feb. 10	912	223	54	697
Kinn, Babtis B., Dunkirk, N. Y. Beer-cooler	445,115	Jan. 20	1827	473	54	372
Kinnear, William R., Columbus, Ohio. Metallic door	445,262	Jan. 27	2068	533	54	427
Kinnear, William R., Columbus, Ohio. Metallic ceiling	446,121	Feb. 10	996	245, 246	54	713
Kinney, Jacob C., Hubbard, Ark. Spool-cabinet	445,263	Jan. 27	2069	534	54	427
Kinney, John, Philipsburg, Mont. Car-brake	444,990	Jan. 20	1638	420	54	336
Kinney, William B. (See Van Nest and Kinney.)						
Kinsey, Edwin H., Buffalo, N. Y. Wrench	445,020	Jan. 20	1677	431	54	344
Kinsman, Frank E., Plainfield, N. J. Ice-harvesting machine	445,896	Feb. 3	625	153, 154	54	634
Kinsman, Frank E., Plainfield, N. J. Railway-circuit for signaling and controlling trains	448,751	Mar. 24	2432	608, 609	54	1606
Kintz, Joseph, Ballardville, Mass., assignor of one-half to Craighead & Kintz Company, New York, N. Y. Electric-light fixture	447,832	Mar. 10	916	229	54	1298
Kipp, Bernhardt A. (See Knehne, Rudolph, assignor.)						
Kirk, John, and B. Lee, Leeds, England. Machinery for finishing worsted and woolen fabrics, &c.	448,439	Mar. 17	1924	483, 484	54	1503
Kirk, William F. (See McLanahan and Kirk.)						
Kirkpatrick, George W. (See Clinton and Kirkpatrick.)						
Kirkpatrick, George W., and E. J. Corser, Macedon, N. Y. Grain-drill	446,636	Feb. 17	1841	456	54	890
Kirkpatrick, Helen M. (See Clinton and Kirkpatrick, assignors.)						
Kirkpatrick, Robert S., assignor of one-fourth to R. P. Dammand, Harlan, Iowa. Portable elevator and wagon unloader	449,447	Mar. 31	3555	895, 896	54	1826
Kirkpatrick, Robert S., assignor of one-fourth to R. P. Dammand, Harlan, Iowa. Unloading apparatus	449,448	Mar. 31	3559	897	54	1827
Kirkwood, Hugh. (See Denney, Samuel L., assignor.)						
Kirnan, William H., Brooklyn, assignor to Gamewell Fire Alarm Telegraph Company, New York, N. Y. Non-interference fire-alarm signal-box	447,074	Feb. 24	2570	638	54	1037
Kirstein, Henry E., Rochester, N. Y. Eyeglasses	444,362	Jan. 6	591	152	54	117
Kirtley, Simeon B., and H. Phillips, Columbia, Mo. Combined ledger and index	448,052	Mar. 10	1282	327	54	1369
Kisinger, Frank P. (See Dunham and Kisinger.)						
Kisinger, George W. (See Dunham and Kisinger.)						
Kisinger, William S., Bellevue, Ky., assignor to H. G. Stiebel, Cincinnati, Ohio. Water-sprinkler	447,778	Mar. 10	819	203	54	1280

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Kitselman, Alva L., Ridgeville, Ind. Fence	444,753	Jan. 13	1212	315	54	245
Klaber, Augustus D. (See Heiss, Frank A., assignor.)						
Klahn, Emil, Jersey City, N. J., assignor to Keystone Watch Case Company, Philadelphia, Pa. Watch-bow fastener	449,255	Mar. 31	3204	808	54	1763
Klahr, Davilla L., Shelbyville, Ill. Tricycle	447,331	Mar. 3	79	21, 92	54	1133
Klees, James A., assignor to Keystone Wagon Company, Reading, Pa. Dumping-wagon	449,265	Mar. 31	3215	811	54	1765
Klein, Charles J. (See Bergmann and Klein.)						
Klein, Johann, Frankenthal, Germany. Liquid-cooler	444,558	Jan. 13	912	237, 238	54	189
Klenk, John, *et al.* (See Hottman, Charles W., assignor.)						
Kleppinger, John, and W. H. Mead, Rockville, Mo. Neck-yoke	446,742	Feb. 17	2009	501	54	992
Knapp, Gilbert M., *et al.* (See Crabtree, Leonard T., assignor.)						
Knapp, Jonah W., Cross River, N. Y. Driving mechanism for hand-drills	447,614	Mar. 3	557	138	54	1222
Knecht, John, Freeport, Ill. Sash-cord guide	444,363	Jan. 6	593	152	54	118
Kneeland, George N. (See Thorp, Thomas J., assignor.)						
Kneeland, Remus A., Benton Harbor, Mich. Butter-package	443,998	Jan. 6	20	5	54	7
Kneip, Anton, Maspeth, N. Y. Tenon for blind-slats	446,781	Feb. 17	2060	513	54	933
Knickerbocker, James B., Indianapolis, Ind. Gas-meter	447,883	Mar. 10	1000	252, 253	54	1314
Knight, Charles H., Rondout, N. Y. Adjustable chair	445,183	Jan. 27	1944	502	54	404
Knight, Charles Y., assignor to F. Crowell, Minneapolis, Minn. Wrapper-paster	449,124	Mar. 31	2999	757	54	1725
Knight, Climpson M., and T. Hawken, Salem, Mass. Coupling for electric wires	447,833	Mar. 10	917	230	54	1298
Knight, Edward M., San Francisco, Cal. Filter	444,754	Jan. 13	1214	315, 316	54	246
Knight, Edward M., San Francisco, Cal. Filter	445,323	Jan. 27	2006	516, 517	54	416
Knight, Edward M., San Francisco, Cal. Filter	445,324	Jan. 27	2009	517	54	416
Knight, Edward S., assignor to American Roll Paper Company, St. Louis, Mo. Roll paper holder and cutter	445,116	Jan. 20	1828	473	54	372
Knight, John L., New York, N. Y. Printing-office apparatus	449,223	Mar. 31	3149	794	54	1752
Knight, Josiah. (See Martin, George W., assignor.)						
Knight, Margaret E., South Framingham, and H. B. Steele, Medford, Mass. Sole-cutting machine	444,982	Jan. 20	1623	415, 416, 417, 418	54	333
Knight, Walter H., New York, N. Y. Electric railway	447,332	Mar. 3	81	22	54	1133
Knight, William H., Newbury, Mass. Combined mileage-book indicator and guard	447,954	Mar. 10	1121	282	54	1338
Knowles, Jacob H., Lawrence, Mass. Weft-fork for looms	445,627	Feb. 3	171	45	54	545
Knowles, James, Jamestown, N. Y. Window-screen	448,965	Mar. 24	2751	694	54	1668
Knowles Loom Works. (See Hutchins, George F., assignor.)						
Knowlton, Mark D., Chicago, Ill. Box-jointing machine	447,955	Mar. 10	1122	282, 283	54	1338
Knowlton, Mark D., and C. F. Pease; said Pease assignor to W. C. Ritchie, Chicago, Ill. Glue-applying machine	447,012	Feb. 24	2453	611, 612	54	1016
Knox, Charles L., assignor of one-half to N. Cohn, Nashville, Tenn. Camera attachment	445,561	Feb. 3	65	15	54	524
Knox, William J., Richland, Mo. Device for operating churns	446,068	Feb. 10	914	223	54	698
Knudson, Ole. (See Nye, Denham, and Knudson.)						
Koch, August, New Orleans, La. Apparatus for distilling wood	444,704	Jan. 13	1125	291	54	231
Koch, Friedrich, Berlin, Germany. Single-delivery pill-box	448,350	Mar. 17	1786	451	54	1476
Koch, Matthias, assignor to L. Schultz, New York, N. Y. Quilting-machine	447,570	Mar. 3	491	121	54	1209
Koch, Matthias, Chicago, Ill., assignor to L. Schultz, New York, N. Y. Quilting-machine	447,571	Mar. 3	495	121, 122	54	1210
Kocher, John J., Los Angeles, Cal. Whiffletree-coupling	444,646	Jan. 13	1039	270	54	213
Koeppen, Heinrich, assignor to K. Rosa, Milwaukee, Wis. Sad-iron	445,184	Jan. 27	1946	502, 503	54	404
Koeppe, Bernhard, Kearney, Nebr. Water-trough	449,481	Mar. 31	3611	909	54	1837
Koettner, William C., and E. O. Livingston, Baltimore, Md. Steam generator and flusher	446,223	Feb. 10	1175	288	54	744
Kohl, Charles A., assignor to himself, M., F. W., and E. Kohl, Cleveland, Ohio. Wringer-roller	449,545	Mar. 31	3701	930	54	1854
Kohl, Edward, *et al.* (See Kohl, Charles A., assignor.)						
Kohl, F. William, *et al.* (See Kohl, Charles A., assignor.)						
Kohl, John, Mason, Ohio. Canopy-top	446,709	Feb. 17	1957	487	54	912
Kohl, Martin, *et al.* (See Kohl, Charles A., assignor.)						
Kohler, F. E., *et al.* (See Fager, Anthony, assignor.)						
Koszlovits, Ogneslaw, St. Petersburg, Russia. Gas-engine	448,924	Mar. 24	2688	677, 678	54	1656
Kramer, Andrew. (See Kranse and Kramer.)						
Kramer, Charles F., Mondovi, assignor of two-thirds to J. Higgins, Eau Claire, Wis. Convertible chair	447,432	Mar. 3	261	65	54	1167
Kramer, Martin, assignor to E. W. Broadbent, New York, N. Y. Sewing-machine	444,212	Jan. 6	376	93, 94	54	75
Kraus, Jacob W., Sterling, Ohio. Cultivator	449,546	Mar. 31	3702	930	54	1854
Kraus, Jacob W., Sterling, assignor to Akron Tool Company, Akron, Ohio. Cultivator	449,642	Mar. 31	3874	969	54	1886
Krause, George E., and A. Kramer, Indianapolis, Ind. Hinge	444,445	Jan. 13	723	189	54	151
Krause, Roswell F., and J. Glennon, Chicago, Ill. Grass-carrying attachment for lawn-mowers	448,440	Mar. 17	1926	484	54	1503
Krautter, August, Brussels, Belgium, assignor of one-half to H. Baumann, Brooklyn, N. Y. Lubricator	447,956	Mar. 10	1129	283, 284	54	1339
Krazeise, Paul. (See Starr and Krazeise.)						
Kreis, Ferdinand, Berlin, Germany. Vise-clamp	445,506	Jan. 27	2413	630	54	496
Krieg, John K. (See Wikle, Johan J., assignor.)						
Krieger, John G., assignor to G. G. Schroeder, L. P. Wright, and C. Newbold, Washington, D. C. Trunk-lock	447,057	Feb. 24	2541	631	54	1032
Krein, Franz, and J. Flaig, St. Louis, Mo. Die for welding and swaging links	445,346	Jan. 27	2182	565	54	452
Krejci, Wenzel, and B. Kapinos, Jackson, Minn. Draw-bridge gate	445,117	Jan. 20	1828	473, 474	54	372
Krem, John, Grand Rapids, assignor of one-half to H. Rauh, Walker, Mich. Extensible clothes-line-supporting post	448,582	Mar. 17	2132	534	54	1542
Kreppe, Virgil A., Kensico, N. Y., assignor to W. H. Rushforth, Rutherford, N. J. Check-rein-hook	449,045	Mar. 24	2872	729	54	1692
Kress, John, New York, N. Y. Hoof-pad	449,368	Mar. 31	3420	860	54	1799
Kretsinger, Frederick S., Fort Madison, Iowa. Agricultural fork	445,021	Feb. 3	102	43	54	543
Kretzschmar, Otto, Sharkey, assignor of one-third to E. A. Towes, Minter City, Miss. Cotton-picker	445,786	Feb. 3	446	111	54	599

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Krieger, Julius, and A. Dallmer, Dresden, Germany. Brake-holder for velocipedes	445,118	Jan. 20	1829	474	54	372
Kring, A. W. (See Kring and Baughman, assignors.)						
Kring, Levi, and J. Baughman, Westerville; said Baughman assignor, by mesne assignments, to A. W. Kring, Franklin County, Ohio. Stump-extractor	445,676	Feb. 3	270	71	54	566
Kruka, Karl, assignor to Kruka Repeating Rifle Company, Limited, London, England. Cartridge-cramp for magazine-guns	449,287	Mar. 31	3256	825	54	1772
Kruka Repeating Rifle Company. (See Kruka, Karl, assignor.)						
Krottnaurer, Paul, assignor of one-fifth to A. B. Bonneville, White Hall, Pa. Apparatus for the calcination of cement	447,155	Feb. 24	2727	675, 676	54	1066
Krotz, Alvaro S., Defiance, assignor to H. K. Hitchcock, E. B. Miller, and B. G. Work, Akron, Ohio. Oil-filter	448,152	Mar. 10	1421	363	54	1398
Krumm, Ralph E., Vicksburg, Mich. Hame	447,466	Mar. 3	337	83	54	1181
Kruse, Charles. (See Weiss, Carl W., assignor.)						
Kruse, Charles, New York, and C. W. Weiss, Brooklyn, N. Y. Cash indicator and recorder	447,031	Feb. 24	2495	621	54	1023
Kruse, John H., Portland, Oreg. Wiring attachment for baling-presses	446,600	Feb. 17	1784	442	54	879
Krusins, Emil, Solingen, Germany. Shears	444,983	Jan. 20	1629	418	54	334
Kubach, Charles D., Baltimore, Md. Construction of railway ties or sleepers	445,063	Jan. 20	1750	451	54	358
Kubler, John, Hot Springs, Ark., assignor to D. B. Teabeaut, Thomasville, Ga. Lock	447,957	Mar. 10	1131	284	54	1339
Kuehne, Rudolph, assignor of one-half to B. A. Kipp, Milwaukee, Wis. Saw-table gage	449,369	Mar. 31	3421	860	54	1799
Kuhn, Edmond, Brooklyn, assignor to Manhattan Watch Company, New York, N. Y. Stop-watch	445,064	Jan. 20	1751	451	54	358
Kuhn, Edmund, assignor to E. Scanlan, Louisville, Ky. Pattern for casting hooks	445,812	Feb. 3	507	122	54	611
Kükenthal, Gustav, Brunswick, Germany. Automatic wire-cleaner for brick or tile machines	448,053	Mar. 10	1285	327, 328	54	1309
Kunkel, Joseph, *et al.* (See Stewart, William J., assignor.)						
Kunkle, Allen A., *et al.* (See Kunkle, Kenton C., assignor.)						
Kunkle, Erastus B., assignor to himself and W. D. Bostwick, Fort Wayne, Ind. Safety-valve	446,757	Feb. 17	2032	506	54	927
Kunkle, Kenton C., assignor of seven-tenths to J. A. Bone, W. S. Dilatush, and A. A. Kunkle, Lebanon, Ohio. Mechanical movement	447,075	Feb. 24	2572	638	54	1038
Kurmayer, Karl, Vienna, Austria-Hungary. Electric-arc lamp	448,351	Mar. 17	1786	451	54	1477
Kurtz, John A., Allegheny, Pa. Sheet-metal flanging machine	449,624	Mar. 31	3848	963	54	1881
Kutsche, Oswald, Chicago, Ill. Refrigerator	447,467	Mar. 3	327	84	54	1181
Kutsche, Oswald, Chicago, Ill., assignor, by mesne assignments, to Allington & Curtis Manufacturing Company, of Michigan. Dust-collector	447,333	Mar. 3	82	23	54	1133
Kyle, Augustus G. and E. J., assignors to S. C. Wagner, B. F. Emrich, and R. H. Sollenberger, Newville, Pa. Vegetable-cutter	446,167	Feb. 10	1090	268	54	728
Kyle, Edward J. (See Kyle, Augustus G. and E. J.)						
La Bart, John, assignor of one-half to E. A. Page, New York, N. Y. Car-coupling	444,316	Jan. 6	527	137	54	105
La Casse, Henry, and S. Wile, assignors to Bottlers' Specialty Company, Rochester, N. Y. Compressor mechanism	444,755	Jan. 13	1216	316, 317	54	246
La Follette, Harvey M., *et al.* (See Mains, John F., assignor.)						
La Fountaine, William H., Cleveland, Ohio. Safety-guard for cars	445,897	Feb. 3	627	154	54	635
La Hatt, Sidney C., Alexandria, Minn. Boiler-cleaner	447,192	Feb. 24	2788	689	54	1078
La Monte, George, Bound Brook, N. J. Water-finishing paper	445,898	Feb. 3	627	154	54	635
Lachaunie, Jean, and J. Pasteyer, Paris, France. Shears	445,700	Feb. 3	306	81	54	573
Lacy, William, Jr., Los Angeles, Cal. Irrigating-hydrant	449,161	Mar. 31	3051	771	54	1734
Ladd, Leonard E. (See Jesson and Weed, assignors.)						
Lafayette, Edward S., North Smithfield, R. I. Cover, kettle, and plate handler	448,243	Mar. 17	1583	404	54	1437
Lafferty, Hugh W., Wilmington, Del. Centrifugal machine	449,327	Mar. 31	3339	842	54	1785
Lahmeyer, Wilhelm, Aix-la-Chapelle, Germany. Regulating apparatus for electric currents	449,288	Mar. 31	3257	826, 827	54	1772
Laird, James, Paterson, N. J. Scroll-sawing machine	444,071	Jan. 6	145	36	54	32
Lalime, Jean-Baptiste, *et al.* (See Duplessis, Elouild, assignor.)						
Lambdin, James T., assignor of one-half to E. L. Fisher, Philadelphia, Pa. Plumb-level	444,705	Jan. 13	1126	291	54	231
Lambert, Richard C. (See Crawford and Lambert.)						
Lamborn, John E., and R. Rickards, Dixon, Cal. Washing-machine	448,526	Mar. 17	2051	513	54	1527
Lamont, Robert P., and E. D. Bronner, Detroit, Mich. Roof	448,244	Mar. 17	1584	404	54	1438
Lamparter, Henry, Jr., St. Charles, Mo. Making corn-cob smoking-pipes	448,572	Mar. 17	2119	.....	54	1540
Lamplugh, James A., Birmingham, England. Bicycle-seat	446,355	Feb. 10	1400	343	54	790
Lamson, Charles H., Portland, Me. Luggage-carrier for velocipedes	444,089	Jan. 6	171	43	54	37
Lancaster, James H. (See Parker, George.)						
Lancaster, James H., New York, and M. R. Conley, Brooklyn, N. Y. Retort-furnace for deoxidizing ore	447,779	Mar. 10	820	203, 204	54	1280
Lancaster, Levi B., Massillon, Iowa. Planter	444,072	Jan. 6	147	37	54	32
Lanchester, Frederick W., London, England. Gas engine governor	445,021	Jan. 20	1678	431	54	344
Land, Abel, Hudson, Mich. Wire fence	444,364	Jan. 6	594	153	54	118
Land, Charles H., Detroit, Mich. Muffle-furnace	446,947	Feb. 24	2354	586	54	997
Landers, William H. (See Kernan and Landers.)						
Landis, Abraham B., Waynesborough, Pa. Grinding-machine	444,121	Jan. 6	226	55	54	46
Landis, Abraham B., Waynesborough, Pa. Grinding-machine	446,148	Feb. 10	1046	257	54	721
Landis, Frank F., Waynesborough, Pa. Vehicle	445,022	Jan. 20	1679	432	54	344
Landis, Frank F., Waynesborough, Pa. Screen	446,687	Feb. 17	1925	480	54	905
Landis, Frank F., Waynesborough, Pa. Thrashing-machine	447,032	Feb. 24	2499	621, 622	54	1024
Landis, Frank F., Waynesborough, Pa. Grain separator	447,433	Mar. 3	263	66, 67	54	1167
Landis, Frank F., Waynesborough, Pa. Grain-cleaning device	447,834	Mar. 10	918	230, 231	54	1299
Landis, Israel L., Lancaster, Pa. Hedge	448,527	Mar. 17	2051	513	54	1527
Landon, George W., Relay, assignor to Landon & Kent, Baltimore, Md. Apparatus for treating composition for ornamenting moldings	447,733	Mar. 3	729	183	54	1255
Landon & Kent. (See Landon, George W., assignor.)	449,079	Mar. 24	2920	741	54	1701
Landon, Willis H., assignor of one-half to B. F. Hunt, Baltimore, Md. Graining-roller						
Landsberg, Valentin. (See Suchland, Theodor, assignor.)	445,607	Feb. 3	141	36	54	538
Lane, Almeron M., Meriden, Conn. Clock striking mechanism	446,257	Feb. 10	1253	306	54	760
Lane, Ira G., New York, N. Y. Street letter-box	446,258	Feb. 10	1255	306	54	760
Lane, Ira G., New York, N. Y. House-door letter-box						
Lane, Thomas W., Boston, Mass., assignor to Electric Gas Lighting Company, of Maine. Electric gas-lighter	444,706	Jan. 13	1127	291	54	231
Lane, Thomas W., Boston, Mass., assignor to Electric Gas Lighting Company, of Maine. Automatic electric-igniting device	444,896	Jan. 20	1475	381	54	304

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lane, William S. (See Drake, George W., assignor.)						
Laney, Thomas G. (See Turton, Mordecal, assignor.)						
Laney, Thomas G., assignor of one-half to M. Turton, Lima, Ohio. Pumping mechanism for oil-wells	448,573	Mar. 17	2120	531	54	1540
Lang, Julius, Jr. (See Sweeney, John M., assignor.)						
Lang, Matthew, assignor, by mesne assignments, of one-half to East End Marble Company, Akron, Ohio. Die for the manufacture of marbles	449,256	Mar. 31	3205	809	54	1763
Lang, William H. (See Cookns, James H., assignor.)						
Langan, James. (See Dubey, Edward A., assignor.)						
Lange, Hermann L. (See Peacock and Lange.)						
Lange, Rudolf. (See Polakoff and Lange.)						
Lankford, John E. (See Lankford, William I. and J. E.)						
Lankford, William I. and J. E., Bedford City, Va. Car-coupling	446,356	Feb. 10	1403	344	54	790
Lansberg Brake Company. (See Lansberg, Frank, assignor.)						
Lansberg, Frank, assignor to Lansberg Brake Company, St. Louis, Mo. Air-brake	445,899	Feb. 3	629	155	54	635
Lanterman, Alvin P., Chicago, Ill. Mortising-chisel	444,596	Jan. 13	967	251	54	200
Lamum, David. (See Blume and Lamum.)						
Lanyon, Josiah. (See Lanyon, William, Jr., and J.)						
Lanyon, William, Jr., and J., Pittsburg, Kans. Damper for furnaces	444,958	Jan. 20	1597	407, 408	54	326
Lapworth, William, Eastlhampton, assignor to Hopedale Elastic Fabric Company, Hopedale Mass. Elastic or corded fabric	445,065	Jan. 20	1752	452	54	358
Lapworth, William, assignor to Hopedale Elastic Fabric Company, Hopedale, Mass. Weft-stop-motion for looms	445,147, 445,838	Jan. 20, Feb. 3	1883	486, 487	54	383
Larkin, Albert L., Indianapolis, Ind. Changeable sign						
Lathe, James E. (See Roberts and Lathe.)						
Lathrop, Thomas A., Canton, Ohio. Hydrocarbon vaporizer and burner	445,225	Jan. 27	2011	517	54	417
Latimer Cash Register Company. (See King, James D., assignor.)						
Latimer Cash Register Company. (See Latimer, William G., assignor.)						
Latimer, Thomas H., and F. A. Fletcher, assignors to Bagley & Sewall Company, Watertown, N. Y. Paper-making machine	448,441	Mar. 17	1927	485	54	1503
Latimer, William G., assignor to Latimer Cash Register Company, Detroit, Mich. Cash-register	448,245	Mar. 17	1585	405	54	1438
Latta, Emmit G., Friendship, N. Y. Velocipede	441,637	Jan. 13	1021	266	54	210
Latta, Emmit G., Friendship, N. Y. Velocipede	447,434	Mar. 3	266	67	54	1168
Latta, Emmit G., Friendship, N. Y. Velocipede	448,442	Mar. 17	1928	485, 486	54	1503
Laun, Henry W., Englewood, Ill. Measuring-vessel	446,259	Feb. 10	1257	306	54	760
Laurent-Cély, Arthur M. F., Paris, France, and I. A. Timmis, London, England. Secondary battery	446,527	Feb. 17	1685	412, 413	54	859
Lauten, Edward A., Mount Vernon, assignor to A. Wittnauer, New York, N. Y. Traveler's watch-case	449,370	Mar. 31	3424	860	54	1800
Lauterback, Edward G., assignor to A. Booth, Chicago, Ill. Dip-soldering machine	445,956	Feb. 3	716	175	54	653
Laval, Gustaf de, assignor to Aktiebolaget Separator, Stockholm, Sweden. Centrifugal separator	445,066	Jan. 20	1754	452	54	358
Lawall, Elmer H., *et al.* (See Pocock, Francis A., assignor.)						
Lawless, Philip C., Allegheny, Pa. Flexible piping for pneumatic brakes, &c	445,250	Jan. 27	2045	525, 526	54	423
Lawless, Philip C., Wilmerding, Pa. Pipe-coupling	448,966	Mar. 24	2752	695	54	1668
Lawley, George F., Boston, Mass. Davit for boats	446,357	Feb. 10	1404	344	54	791
Lawrence, Alvin, Lowell, Mass. Making tubes	445,854	Feb. 3	566	138	54	622
Lawrence, George R., Manteno, assignor of one-half to C. H. Oakwood, Danville, Ill. Telephone enunciator or indicator	444,780	Jan. 13	1253	325	54	233
Lawrence, William B., Columbus, Ohio. Printing-press	447,491	Mar. 3	379	92, 93	54	1189
Laws, Benjamin T., assignor of one-half to A. B. Fullilove, Vaiden, Miss. Car-coupling	446,528	Feb. 17	1689	414	54	860
Lawshe, Isaac G., Sioux Falls, S. D. Time-indicating device for musicians	445,119	Jan. 20	1830	474	54	373
Lawson, Arthur T. and F. W., and S. Dear, Leeds, England. Machine for preparing flax, hemp, jute, wool, and other fibers	443,999	Jan. 6	21	5, 6	54	7
Lawson, Charles. (See Mitchell and Lawson.)						
Lawson, Frederick W. (See Lawson and Dear.)						
Lawson, John, Michigamme, Mich. Dumping-car and operating mechanism therefor	446,758	Feb. 17	2034	506, 507	54	927
Lawson, Oscar E., Alcester, S. D. Terret and hitching-strap holder	447,958	Mar. 10	1132	284	54	1339
Lawton, Charles H. (See Curtis, Rowland K., assignor.)						
Lawton, James B., Cincinnati, Ohio, and J. A. Mergenthal, Newport, Ky.; said Mergenthal assignor to said Lawton. Machine for compressing and stamping soap	448,656	Mar. 24	2273	569, 570	54	1576
Layburn, Myron H., New Windsor, Colo. Flume or conduit	444,496	Jan. 13	818	213	54	171
Lazarus, Samuel Sherman, Tex. Means for ventilating cars	444,054	Jan. 6	111	28	54	25
Lazenis, Samuel. (See Stoner, Jacob B., assignor.)						
Le Fevre, Egbert. (See Keen and Haarmann, assignors.)						
Leach, Arthur A. (See Welty and Leach.)						
Leach, Hosea W., trustee. (See Cook, Almerin S., assignor.)						
Leach, Rufus, Clark's Island, assignor of five-eighths to E. A. Buck and A. C. Batchelder, Bangor, Me. Rotary pump	445,318	Jan. 27	2140	553	54	443
Leakin, James H., Baltimore, Md. Clamp for electric-battery zincs	448,847	Mar. 24	2575	646	54	1634
Lean, George R., Boston, Mass., assignor to Bernstein Electric Company, Portland, Me. Incandescent-lamp socket	444,567	Jan. 13	930	242	54	192
Lean, George R., Boston, Mass., assignor to Bernstein Electric Company, Portland, Me. Electric switch	445,957	Feb. 3	718	175	54	653
Lean, George R., Boston, Mass., assignor to Bernstein Electric Company, Portland, Me. Electric switch	446,623	Feb. 17	1820	450	54	885
Lean, George R., Boston, Mass., assignor to Bernstein Electric Company, Portland, Me. Hanger-board for electric fixtures	449,266	Mar. 31	3217	812	54	1765
Leavis, Thomas, Wakefield, Mass. Skirt-form	445,375	Jan. 27	2219	575	54	459
Leathers, Nathan M. (See Mitchell, Nathan J., assignor.)						
Leavitt, Frank M., Brooklyn, N. Y., assignor to E. and O. W. Norton, Chicago, Ill. Can-body-forming and side-seam-soldering machine	444,000	Jan. 6	22	6, 7, 8, 9	54	8
Lebrun, Edmund. (See Lee and Lebrun.)						
Lecellier, Leon R., Villedieu, France. Latch	448,298	Mar. 17	1698	429, 430	54	1460
Leck, Henry, assignor of one-half to S. Bretzfield, New York, N. Y. Belt	446,186	Feb. 10	1118	273	54	733
Ledig, Reinhold G. (See Beilmann, Friedrich, assignor.)						
Ledwith, Andrew B. (See Kaiser and Ledwith.)						
Lee, Benjamin. (See Kirk and Lee.)						
Lee, David T., Maidenhead, England. Boot or shoe stretcher	448,352	Mar. 17	1789	452	54	1477

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lee, Elizabeth, Little Falls, N. Y. Combined waist and skirt	444,001	Jan. 6	29	9	54	9
Lee, Homer, New York, N. Y., assignor to Electric Typographic Company, of West Virginia. Matrix-making or type-setting machine	447,135	Feb. 24	2678	664, 665, 666, 667, 668	54	1058
Lee, Homer, and E. Lebrun, New York, N. Y., assignors to Electric Typographic Company, of West Virginia. Matrix-making or type-setting machine	447,134	Feb. 24	2658	660, 661, 662, 663	54	1055
Lee, John H., assignor to himself, B. W. Mapes, Norwalk, Conn., and C. L. Heins, New York, N. Y. Soap holder and rubber	445,701	Feb. 3	308	81	54	573
Lee, Thomas B., Toronto, Canada. Fare-register	445,669	Feb. 3	244	66	54	580
Leechman, George D., London, England. Velocipede	447,845	Mar. 10	921	231	54	1299
Leeman, Horace E., assignor of one-half to H. A. Morton, Lynn, Mass. Carpet-fastener	447,959	Mar. 10	1132	284	54	1339
Leeman, Horace E., assignor of one-half to H. A. Morton, Lynn, Mass. Carpet-fastener	447,960	Mar. 10	1134	285	54	1339
Lees, Charles A., Christchurch, and S. W. Lester, Sydenham, assignors to Canterbury (N. Z.) Seed Company, Limited, Christchurch, New Zealand. Seed-sheller	444,838	Jan. 20	1351	350	54	281
Lefebvre, Edouard, Montreal, Canada. Independent electric clock	445,023	Jan. 20	1680	432	54	344
Leffler, Paul W., Minneapolis, Minn. Converting device for steam-engines	449,162	Mar. 31	3052	771, 772	54	1734
Legg, Cornelius E., O. G. Alexander, and G. W. Legg, Dunkerton, Iowa. Latch	445,562	Feb. 3	66	16	54	525
Legg, George W (See Legg, Alexander, and Legg.)						
Lehman, Joseph H., Philadelphia, Pa. Rheostatic switch	444,707	Jan. 13	1129	291	54	231
Lehmann, Charles. (See Brunhoff and Lehmann.)						
Lehmann, Charles, and E. Brunhoff, Chicago, Ill. Self-heating soldering-iron	448,055	Mar. 10	1286	329	54	1369
Leisenring, Henry G., Wayne, Nebr. Syringe	445,813	Feb. 3	508	122	54	611
Leiser, Jacob J. (See Fisher, Thomas W., assignor.)						
Leistner, Paul G., St. Louis, Mo. Tidy-holder	448,967	Mar. 24	2754	695	54	1668
Leith, Joseph H., Sand Patch, Pa. Device for dressing and jointing saws	444,446	Jan. 13	724	190	54	152
Lejeune, Camille A. (See Malhiot and Lejeune.)						
Lemp, Hermann, and L. M. Schmidt, Lynn, Mass., assignors to Thomson Electric Welding Company, of Maine. Alternating-current dynamo	444,939	Jan. 20	1559	400	54	320
Lemp, Hermann, and L. M. Schmidt, Lynn, Mass., assignors to Thomson Electric Welding Company, of Maine. Method of and apparatus for electric welding	446,974	Feb. 24	2398	597	54	1005
Lenhart, Philip F., assignor of seven-eighths to A. Stover, Brooklyn, N. Y. Commutator-pattern	445,319	Jan. 27	2142	554	54	443
Lenman, John T., Washington, D. C. Letter-box	444,638	Jan. 13	1024	267	54	211
Lennox, James T., *et al.* (See Hayes, Edward, assignor.)						
Lennox, John J., *et al.* (See Hayes, Edward, assignor.)						
Lennox, Talbot, Marshalltown, Iowa. Automatic grain-binder	445,586	Feb. 3	108	26, 27	54	532
Lenzner, Oscar, Sr., Cass City, Mich. Stringed musical instrument	447,689	Mar. 3	661	164	54	1243
Leonard, Augustus, Newell's Run, Ohio. Potato-digging attachment for plows	445,004	Jan. 20	1659	425	54	340
Leonard, George I., *et al.* (See Westaway, Walter C., assignor.)						
Leonhardt & Co., A. (See Bender, Fritz, assignor.)						
Leontin, Johanna, Chicago, Ill. Garment-fastening	447,076	Feb. 24	2573	638	54	1038
Lesher, W. W. (See Reth, George R., assignor.)						
Leslie, Arthur M., Chicago, Ill. Shuttle for sewing-machines	444,756	Jan. 13	1219	317	54	247
Leslie, Arthur M., Chicago, Ill. Mechanical movement	444,757	Jan. 13	1221	317	54	247
Leslie, Arthur M., Chicago, Ill. Sewing-machine	444,759	Jan. 13	1224	318, 319	54	248
Leslie, Arthur M., Evanston, Ill. Sewing-machine	444,758	Jan. 13	1223	317, 318	54	248
Leslie Brothers Manufacturing Company. (See Haughawout, John W., assignor.)						
Leslie, James W., Everett, Mass. Bracket or support for curtain-poles	445,628	Feb. 3	172	45	54	545
Lester, Stephen W. (See Lees and Lester.)						
Leticrq, Sinaï, Worcester, Mass. Power-shipping mechanism	447,334	Mar. 3	83	23	54	1134
Levi, Mordicai, assignor of one-third to W. T. Levi, Charleston, W. Va. Steam-boiler	447,248	Feb. 24	2883	716	54	1098
Levi, William T. (See Levi, Mordicai, assignor.)						
Levy, Samuel H., Chicago, Ill. Drawer-stop	449,482	Mar. 31	3613	909	54	1837
Lewis, Benjamin K. (See Wells and Lewis.)						
Lewis, Dio, and F. L. Generelly, Prescott, Ark. Fabric-turfing implement	444,545	Jan. 13	891	232	54	185
Lewis, Eugene F., and F. T. Whaley, Norwich, Conn. Packing for piston-rods	444,002	Jan. 6	31	9	54	9
Lewis, Eugene H., St. Joseph, Mich. Artificial building-stone	448,968	Mar. 24	2755	695	54	1668
Lewis & Fowler Girder Rail Company. (See Viol, Reinhard, assignor.)						
Lewis & Fowler Girder Rail Company. (See Wood, William C., assignor.)						
Lewis, George W. (See Wright, William H. H., assignor.)						
Lewis, Isaac N., Fort Leavenworth, Kans. Range and position finder	447,335	Mar. 3	85	23, 24, 25	54	1134
Lewis, Joseph, Winsted, Conn. Tobacco-box	447,615	Mar. 3	558	138	54	1223
Lewis, Philander H., Standard's Corners, N. Y. Car-coupling	446,358	Feb. 10	1405	344	54	791
Lewis, Rollin G. W. (See Van Ness and Lewis.)						
Lewis, Russell H., assignor to A. Eddy, Providence, R. I. Separable button	447,249	Feb. 24	2885	716	54	1098
Lewis, Walter, Philadelphia, Pa., assignor of one-half to E. L. Raborg, Baltimore, Md. Brush-drawing machine	445,855	Feb. 3	567	138	54	622
Lewy, Charles H., assignor to C. H. Lewy and M. Jonasson, New York, N. Y. Spool-rack for sewing-machines	448,928	Mar. 17	2053	514	54	1527
Libbey, Mark A., South Berwick, Me. Propelling mechanism for vehicles	447,616	Mar. 3	559	138, 139	54	1223
Lichtenstadt, Charles. (See Lichtenstadt, David and C.)						
Lichtenstadt, David and C., Chicago, Ill. Electric magnetic massage-kneader	444,597	Jan. 13	969	251	54	200
Lidster, Thomas C., Hull, England. Roundabout	447,056	Mar. 10	1288	329	54	1370
Lieb, Charles A., New York, N. Y. Elastic trolley	444,447	Jan. 13	725	190	54	152
Lieb, Charles A., New York, N. Y. Binding-post	446,871	Feb. 24	2223	552	54	975
Lieb, Charles A., New York, N. Y. Support for electric wires	448,246	Mar. 17	1586	405	54	1438
Lieb, Charles A., New York, N. Y. Elastic metallic pole for electric wires	449,125	Mar. 31	3000	758	54	1725
Lieb, Thomas, New York, N. Y. Hydraulic air-pump	447,961	Mar. 10	1134	285, 286	54	1339
Lietze, Ernst, Cincinnati, Ohio. Printing-machine	444,412	Jan. 6	675	175, 176	54	133
Lightbody, Colin, Brooklyn, N. Y. Atomizer for water-closets	448,784	Mar. 24	2480	629	54	1616
Lightner, Zachariah F., Carpenter, Del. Puzzle	446,872	Feb. 24	2224	552	54	975

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Lilly & Company, Eli. (See Eberhardt, Ernest G., assignor.)						
Limbaugh, Francis M., assignor of one-half to A. T. Covell, Woodbridge, Cal. Collar-pad	444,003	Jan. 6	32	10	54	10
Linhquist, John W., Galesburg, Ill. Tongue-support	445,024	Jan. 20	1681	432	54	344
Lindroth, Carl O. (See Good and Lindroth.)						
Link, Oliver, St. Charles, Mo. Roof	448,529	Mar. 17	2054	514	54	1527
Linn, George E. (See Slager and Linn.)						
Linzee, John W., Jr. (See Nichols, Henry B., assignor.)						
Lioret, Henri, assignor to Ossheimer Brothers, Paris, France. Advertising apparatus	446,457	Feb. 17	1579	388	54	839
Liquid Supply Company. (See Snell, Luther C., assignor.)						
Lippenard, George, assignor to Norwich Insulated Wire Company, Brooklyn, N. Y. Machine for covering wire	445,120	Jan. 20	1831	{474 475}	54	373
Lister, Alfred, deceased. Newark, N. J.; J. C. Lister executrix. Privy-vault	447,572	Mar. 3	497	122	54	1210
Lister, Joanna C., executrix. (See Lister, Alfred.)						
Little, Jeremiah H., Yellow Springs, Ohio. Means for manufacturing hominy-flakes or corn-flakes	446,759	Feb. 17	2036	507	54	928
Little, Joseph A., assignor of one-half to E. A. Dodge, Lawrence, Mass. Velocipede-saddle	446,387	Feb. 10	1450	356	54	801
Little, Robert H., Cyprus River, Canada, assignor to himself, and E. P. Donnell, Chicago, Ill. Railway	449,126	Mar. 31	3002	{758 759}	54	1725
Littlefield, Charles A., Manchester, N. H., assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple	445,148	Jan. 20	1885	487	54	384
Live Poultry Transportation Company. (See Jenkins and Mudd, assignors.)						
Livengood, Winfield S., Kansas City, Mo. Lifting-jack	445,900	Feb. 3	631	155	54	636
Livezey, Thomas E. (See Farrow, John T., assignor.)						
Livingston, Alexander B., Clark's Fork, Idaho. Hay rake and loader	449,483	Mar. 31	3614	910	54	1837
Livingston, Edwin C. (See Koetzner and Livingston.)						
Livingston, Francis M., Newark, N. J. Pencil-sharpening machine	445,677	Feb. 3	272	71	54	566
Llewellyn, George W., Glen Moore, Pa. Clothes-drier	449,484	Mar. 31	3615	910	54	1838
Lloyd, George A., *et al.* (See Garland, William H., assignor.)						
Lloyd, Walter J., and W. Priest, Birmingham, England. Seat for velocipedes	448,969	Mar. 24	2756	696	54	1669
Lobdell, Alonzo, Racine, Wis. Attachment for bridle-bits	449,163	Mar. 31	3054	772	54	1735
Lobdell, Carl, Berlin, Germany. Cement for joining the ends of driving-belts	446,458	Feb. 17	1580	.....	54	839
Locke, Arthur S. (See Merrill, Stephen A., assignor.)						
Locke Brothers. (See Locke, Nathaniel C., assignor.)						
Locke, Nathaniel C., assignor to Locke Brothers, Salem, Mass. Pressure-regulator	448,443	Mar. 17	1931	486	54	1504
Lockwood, Frederick J., assignor to F. S. Fairchild, Bridgeport, Conn. Holder for soap-powder	445,958	Feb. 3	720	176	54	653
Lockwood, John. (See Groshon, John A., assignor.)						
Loeb, Albert H., Rochester, N. Y. Tone-modulator for musical instruments	444,448	Jan. 13	726	190	54	152
Loebenbach, Hugo, Milwaukee, Wis. Combined receipt and record book	447,884	Mar. 10	1003	253	54	1315
Loftus, John, assignor of one-half to E. W. Smith, Albany, N. Y. Safety-valve	446,782	Feb. 17	2061	513	54	933
Logan & Strobridge Iron Company. (See Phillis, Avery E., assignor.)						
Logan, Thomas H., U. S. Army. Artesian-well borer	444,839	Jan. 20	1352	350	54	981
Lombard, Louis. (See Descomps, Edouard, assignor.)						
London Toilet Bazar Company. (See Cassidy, Isabel, assignor.)						
Long, Albert T. (See Turner, Hamilton, and Long.)						
Long & Allstatter Company. (See Long, John M. W., assignor.)						
Long, Benjamin, Boulder, Colo. Cartridge	448,057	Mar. 10	1289	330	54	1370
Long, Brewster A., Troy, Pa. Horse-training blind	449,485	Mar. 31	3616	910	54	1838
Long, Edward M. (See Coates and Long.)						
Long, Eugene F., Scranton, Pa. Car-coupling	449,224	Mar. 31	3150	794	54	1752
Long, John M. W., assignor to Long & Allstatter Company, Hamilton, Ohio. Balanced cultivator	446,388	Feb. 10	1451	356	54	801
Longacre Company. (See Longacre, Matthias R., assignor.)						
Longacre, Matthias R., assignor to Longacre Company, Limited, Philadelphia, Pa. Cash registering and indicating machine	449,328	Mar. 31	3340	{842 843}	54	1795
Longcoy, William H. (See Compton and Longcoy.)						
Longden, John N., New York, N. Y. Marine paint	446,818	Feb. 17	2124	.....	54	947
Longval, Oliver, Millbury, Mass. Carpenter's plane	444,897	Jan. 20	1477	362	54	305
Loomis, George L. (See Kelsey, Frank N., assignor.)						
Lopez, Moses E., *et al.* (See Memminger, Allard, assignor.)						
Lord, Arthur, trustee. (See Wright, Alexander P., assignor.)						
Lord, Charles B. (See Cash, Francis C., assignor.)						
Lord, Charles E., Boston, Mass., assignor to National Cash Register Company, Dayton, Ohio. Cash register and indicator	445,670	Feb. 3	245	67	54	560
Lord & Co., Charles W. (See Oram, John W., assignor.)						
Lord, George W., Boston, Mass. Draft or air forcing device	449,486	Mar. 31	3617	910	54	1838
Lorenz, William A., assignor to A. H. Walker, trustee, Hartford, Conn. Paper-bag machine	444,728	Jan. 13	1171	{301 302}	54	238
Lorenz, William A., and E. E. Claussen, assignors to A. H. Walker, trustee, Hartford, Conn. Paper-bag machine	444,729	Jan. 13	1177	{303 301}	54	239
Lorimer, John H., Philadelphia, Pa. Drying-machine	445,226	Jan. 27	2011	518	54	417
Loring, Charles A., Atlanta, Ga. Spring motor	445,563	Feb. 3	67	16	54	525
Loud, George W., Brooklyn, N. Y. Necktie	448,444	Mar. 17	1933	486	54	1504
Louden, William, Fairfield, Iowa. Hay-sling	444,546	Jan. 13	892	232	54	186
Louisville Chair Company. (See Westermann, William, assignor.)						
Lounsberry, Clement A., Bismarck, N. D. Metallic socket for fence-posts, &c	444,497	Jan. 13	819	214	54	171
Lounsbury, James A., assignor to G. Cutter, Chicago, Ill. Automatic supporting-lock	448,970	Mar. 24	2758	696	54	1669
Love, Henry, Creusot, France. Double-action revolver	445,511	Jan. 27	2419	631	54	497
Loveless, Fred H., La Fayette, Ind. Parcel-strap	448,657	Mar. 24	2276	570	54	1576
Lovell Manufacturing Company. (See Clark, William H., assignor.)						
Lovell Manufacturing Company. (See Lovell, Melvin N., assignor.)						
Lovell, Melvin N., Erie, Pa. Journal-bearing	447,492	Mar. 3	382	93	54	1189
Lovell, Melvin N., assignor to Lovell Manufacturing Company, Limited, Erie, Pa. Cash register and indicator	445,959	Feb. 3	721	176	54	654
Lovell, Melvin N., assignor to Lovell Manufacturing Company, Limited, Erie, Pa. Cash register and indicator	445,960	Feb. 3	725	177	54	654
Lovell, Melvin N., assignor to Lovell Manufacturing Company, Limited, Erie, Pa. Anti-friction roller-bearing	449,046	Mar. 24	2873	730	54	1692
Lovell, Melvin N., assignor to Lovell Manufacturing Company, Limited, Erie, Pa. Anti-friction roller-bearing	449,047	Mar. 24	2874	730	54	1692
Lovett, Ellphalet R., assignor of part to M. O. Davis, A. S. Carr, J. H. Preble, Lynn, and L. G. Peabody, Peabody, Mass. Slate-pencil sharpener	449,625	Mar. 31	3849	964	54	1881
Low, Abbot A., Brooklyn, N. Y. Card or ticket case	446,069	Feb. 10	915	223	54	698

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Low, Abbot A., Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type-containing channel	445,702	Feb. 3	309	82	54	573
Low, Garrett W., and W. Shakespeare, Jr., Kalamazoo, Mich. Photographic shutter	446,529	Feb. 17	1690	414	54	860
Low, Robert, London, England. Manufacture of hollow projectiles or shells	447,690	Mar. 3	662	{164 165 166}	54	1243
Lowden, Richard J., *et al.* (See Berne, Arthur W., assignor.)						
Lowdon, John C., Kansas City, Mo., and J. Dixon; said Lowdon assignor to S. C. Elliott, Kansas City, Kans. Smoke-consumer	448,530	Mar. 17	2055	514	54	1527
Lowe, John M., Butler, Ind. Wind-wheel	446,783	Feb. 17	2062	514	54	934
Lowe, Nathaniel M., assignor to himself, F. P. Stone, and C. A. Shaw, Boston, Mass. Coin-operated platform weighing-scale	449,626	Mar. 31	3850	964	54	1881
Lowe, Thaddeus S. C., Norristown, assignor to Guarantee Trust and Safe Deposit Company, trustee, Philadelphia, Pa. Apparatus for the manufacture of water-gas	445,450	Jan. 27	2331	606	54	481
Lowell Machine Shop. (See Curtice, John M., assignor.)						
Lowendahl, John, Chicago, Ill. Window-bead fastener	444,840	Jan. 20	1354	351	54	281
Lowenes, Phineas W., Orlando, Fla. Wrench	446,220	Feb. 10	1171	287	54	743
Lowry, George A., assignor to Alliance Twine Company, Des Moines, Iowa. Grain-binder	446,784	Feb. 17	2064	514	54	934
Low, Irvin W., and R. O Toole, Mechanicstown, assignors of one-third to J. E. Mathews, Baltimore, Md. Automatic circuit-closing device for railway-signals	445,564	Feb. 3	69	16	54	525
Lozier, Henry A. (See Yost and Moore, assignors.)						
Lucas, Edward J., *et al.* (See Jenner, Frederick, assignor.)						
Lucas, George W., San Antonio, Tex. Padlock	444,440	Jan. 13	727	191	54	152
Luce, Bartlett P., Boston, Mass., assignor to Bristol Brass and Clock Company, Forestville, Conn. Wick-raising mechanism for lamps	444,598	Jan. 13	970	251	54	201
Luce, Charles J., Niantic, Conn. Car brake and starter	447,780	Mar. 10	823	205	54	1281
Luce, Charles J., Niantic, Conn. Trolley-carriage and conductor	447,885	Mar. 10	1005	253	54	1315
Lucigen Light Company. (See Grimston, George S., assignor.) (Reissue.)						
Ludlow, George W., Chicago, Ill. Shoe-maker's bench	446,135	Feb. 10	1020	252	54	718
Ludlum, Albert C., Denver, Colo. Adding and writing machine. (Reissue.)	11,147	Mar. 3	762	190	54	1263
Ludwig, Heinrich, Schweinfurt, Germany. Lock	446,101	Feb. 10	964	247	54	707
Ludwig, John C., assignor of seven-eighths to H. T. Compton, L. F. Monteagle, T. Paige, G. H. Roe, San Francisco, A. T. Ayres, W. C. Mason, Oakland, Cal., and H. J. Ayres, Akron, Ohio. Apparatus for intensifying electrical undulations	448,153	Mar. 10	1422	363	54	1398
Lugenbuehl, Charles L. E., New York, N. Y. Piano attachment	449,048	Mar. 24	2855	730	54	1692
Lukens, G. L., *et al.* (See Hamilton, Alexander R., assignor.)						
Lumby, Thomas L., Delphos, Ohio, assignor to himself, and C. A. Ball, Marion, Ind. Machine for cutting threads on bolts and nuts	448,971	Mar. 24	2759	697	54	1669
Lumière, Louis, Lyons, France. Photographic apparatus	444,535	Jan. 13	874	227	54	182
Lundberg, Gustave, Logan, Utah. Weighing-scale	447,691	Mar. 3	695	166	54	1244
Lundgren, Frans, Stockholm, Sweden. Machine for filling match-boxes	448,445	Mar. 17	1934	487	54	1504
Lundgren, Peter S., Marysville, Kans. Cornstalk harvester	448,058	Mar. 10	1291	330	54	1370
Lundström, Carl J. (See Wahlin, Lundström, and Collins.)						
Lunkenheimer Brass Manufacturing Company. (See Lunkenheimer, Edmund, assignor.)						
Lunkenheimer, Edmund, assignor to Lunkenheimer Brass Manufacturing Company, Cincinnati, Ohio. Sight-feed lubricator	446,993	Feb. 24	2426	604	54	1011
Lusk, Lewis N., Kalamazoo, Mich. Lamp-filling indicator	445,565	Feb. 3	70	17	54	525
Luther, Benjamin G., Worcester, Mass. Back-gearing mechanism	446,233	Feb. 10	1190	{291 292}	54	747
Lüttke, Hans, and L. Scholvien, assignors to the firm T. D. Riedel, Berlin, Germany. Salicylate of phenyldimethylpyrazolone	444,004	Jan. 6	33	.....	54	10
Lux, Frederick E., Walla Walla, Wash. Self-cleaning weed-cutter	447,781	Mar. 10	826	205	54	1281
Lyman, William, Middlefield, Conn. Gun-sight	447,886	Mar. 10	1006	254	54	1315
Lynam, Joseph, San José, Cal. Globe	444,796	Jan. 13	1273	330	54	256
Lynch, John, Washington, D. C. Street-pavement	448,658	Mar. 24	2277	574	54	1576
Lynch, John, Washington, D. C. Tile for copings	448,972	Mar. 24	2761	697	54	1670
Lynch, Vernon T., Chicago, Ill. Link for cable-grips	448,973	Mar. 24	2762	697	54	1670
Lynde, Fred, *et al.* (See Dunn, John P., assignor.)						
Lynott, John P., Louisiana, Mo. Churn	446,948	Feb. 24	2356	586	54	997
Lyon & Healy. (See Durkee, George B., assignor.)						
Lyon, Israel W., Brooklyn, N. Y. Box for tooth-powder	445,067	Jan. 20	1755	452	54	350
Lyon, Leonard M., Bethel, Conn. Puzzle	448,974	Mar. 24	2761	697	54	1670
Lyons, Hugh, assignor of one-half to J. F. Crotty, Lansing, Mich. Combined hat conformator and stretcher	447,751	Mar. 3	760	189	54	1262
Lyons, Robert, Peiro, Iowa. Harrow and cultivator	446,624	Feb. 17	1822	450	54	885
Mabie, George W. (See Jefferys and Dickman, assignors.)						
Mac Cormack, John, and H. L. Van Zile, Albany, N. Y. Steam-boiler	446,785	Feb. 17	2065	514	54	934
MacDonald, Charles A., assignor to Hercules Iron Works, Chicago, Ill. Condenser for gas-pumps	444,385	Jan. 6	628	162	54	124
MacKellar, Smiths & Jordan Company. (See Ziegler, George H., assignor.)						
Macdonough, James, New York, N. Y. Distinctive paper	447,336	Mar. 3	91	25	54	1135
Mace, Harvey A., assignor of one-half to D. Blalock, Mount Zion, Ill. Flood-fence	448,154	Mar. 10	1425	364	54	1398
Machin, Miller, assignor of one half to D. S. Adams, Bowen, Ill. Hay-stacker	447,250	Feb. 24	2886	716	54	1098
Mack, William A., Norwalk, Ohio, assignor to Standard Sewing Machine Company, of Ohio. Feeding mechanism for sewing-machines	447,251	Feb. 24	2887	717	54	1098
Mack, William A., Norwalk, Ohio, assignor to Standard Sewing Machine Company, of Ohio. Presser-foot for sewing-machine	447,252	Feb. 24	2889	717	54	1099
Mack, William A., Norwalk, Ohio, assignor to Standard Sewing Machine Company, of Ohio. Shuttle-actuating mechanism for sewing-machines	447,253	Feb. 24	2890	717	54	1099
Mackay, James T., assignor of one-half to J. A. Scott, St. Louis, Mo. Flue-cleaner	449,080	Mar. 24	2920	741	54	1701
Mackey, George H., Milan, assignor of one-half to W. A. Galpin, Cleveland, Ohio. Harrow	448,446	Mar. 17	1936	488	54	1505
Mackintire, James, Sheffield, England. Composition for use in the manufacture of steel	449,547	Mar. 31	3703	.....	54	1854
Macloskie, Charles H., and W. E. Baker, Boston, Mass. Trolley-wire hanger	446,985	Feb. 24	2415	601	54	1009
Macomber, Clarence R., Worcester, Mass. Leggin	448,819	Mar. 24	2926	633	54	1025
Macphail, James, Rockford, Ill. Harrow	445,587	Feb. 3	110	27	54	532
Macphail, James, Rockford, Ill. Ferrule	445,596	Feb. 3	120	30	54	534
Macphail, James, Rockford, Ill., assignor to McCormick Harvesting Machine Company. Sheaf-carrier	447,468	Mar. 3	339	85	54	1181
Maev, Lewis J., Pulaski, N. Y. Aerator	447,573	Mar. 3	408	122	54	1210
Madden, Albert F., Newark, N. J., assignor, by mesne assignments, to J. M. Pendleton, New Brighton, N. Y. Machine for molding separator-plugs for battery elements	446,873	Feb. 24	2225	{553 554}	54	975
Maddox, William J., Jamestown, N. Y. Sandpapering, rubbing, and polishing machine	448,721	Mar. 24	2781	597	54	1597
Maddrix, Francis T., Crisfield, Md. Oyster-tongs	448,059	Mar. 10	1292	330	54	1370

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Madgin, Frank. (See Hutchinson and Madgin.)						
Maellener, Fridolin, Chicago, Ill. Apparatus for treating whisky	444,152	Jan. 6	284	68	54	58
Maelsen, Soren C., Sleepy Eye Lake, Minn. Photographic copying apparatus	448,447	Mar. 17	1937	488	54	1505
Magerhans, Adolph W., New York, N. Y. Bracelet	447,692	Mar. 3	668	166	54	1245
Magney, Joseph P., assignor of one-half to H. A. Davis and D. Wilson, Oakland, Cal. Sash-balance	445,376	Jan. 27	2220	576	54	459
Magnire, John O., Milwaukee, Wis. Steam-boiler	444,959	Jan. 20	1598	408	54	327
Mahler, Edward A., *et al.* (See Murray, Thomas E., assignor.)						
Mahler, Louis P., New York, N. Y. Brush	445,005	Jan. 20	1660	425	54	340
Mahler, Andrew C. (See Proctor and Mailer.)						
Main, William, Brooklyn, N. Y. Commutator-brush	447,469	Mar. 3	344	85, 86	54	1182
Mains, Charles. (See Spain, Job, assignor.)						
Mains, John F., assignor of three-fourths to B. Carr, H. M. La Follette, and E. J. Robison, Indianapolis, Ind. Mail-sack dropper	447,470	Mar. 3	346	86	54	1183
Mains, John F, assignor of three-fourths to B. Carr, H. M. La Follette, and E. J. Robison, Indianapolis, Ind. Mail-sack crane	447,471	Mar. 3	347	86	54	1183
Malandin, Léon. (See Delamar-Debouteville and Malandin.)						
Malhiot, Samuel M., and C. A. Lejeune, Albemarle, La. Steam-pressure regulator for cane-mills	445,856	Feb. 3	569	139	54	623
Mallard, William S., Darien, Ga. Station or street indicator	447,617	Mar. 3	565	{139 / 140}	54	1224
Mallebre, Henry, New York, N. Y. Pedal for pianos	446,710	Feb. 17	1958	488	54	912
Mallebre, Henry, New York, N. Y. Muffling attachment for piano-fortes	448,448	Mar. 17	1939	488	54	1505
Mallon, Peter L. (See Westwood and Mallon.)						
Malm, Alexander, New York, assignor to T. W. Sheridan, Brooklyn, N. Y., and C. B. Sheridan, Orange, N. J. Paper-cutter	446,359	Feb. 10	1407	{344 / 345}	54	791
Malmborg, Ernst R. (See Martindale and Malmborg.)						
Malsch, Andreas, Munich, Germany. Grinding-mill	445,227	Jan. 27	2013	518	54	417
Mandel, Adolf, New York, N. Y. Button	447,782	Mar. 10	827	206	54	1281
Manhattan Brass Company. (See White, James H., assignor.)						
Manhattan Watch Company. (See Kuhn, Edmond, assignor.)						
Manning, Charles E., New York, N. Y. Separator for steam	445,472	Jan. 27	2357	612	54	485
Mannock, Thomas. (See Smith, Goddard, Higginbottom, and Mannock.)						
Mantion, Joseph H. (See Millen, Casey, and Mantion.)						
Manton, Joseph P., Jr., Providence, R. I. Cash and sales register	449,164	Mar. 31	3055	773	54	1735
Manuel, Alfred. (See Hibbert and Manuel.)						
Mapel, Elijah T., Alameda, Cal. Apparatus for delivering clay to sewer-pipe presses	446,530	Feb. 17	1691	414	54	860
Mapelsden, Reuben. (See Nicholson, Francis T., assignor.)						
Mapes, Brainerd W., *et al.* (See Lee, John H., assignor.)						
Maraun, Albert W., Berlin, Germany. Siphon intermittent device	449,267	Mar. 31	3218	{812 / 813}	54	1765
Marbach, Herman L., Cleveland, Ohio. Combined container and grinder	449,225	Mar. 31	3152	795	54	1753
Marble, Lewis L., *et al.* (See Montgomery, James P., assignor.)						
March, Alfred. (See Crawford, Frank, assignor.)						
Marchildon, Emile A., *et al.* (See Duplessis, Elonild, assignor.)						
Maret, James. (See Adams and Maret.)						
Margason, Homer R. (See Goodnow and Margason.)						
Markland, William H. (See Burrell and Markland.)						
Markell, Edward, Baltimore, Md. House-door letter-box	449,371	Mar. 31	3425	861	54	1800
Markell, Edward, Baltimore, Md. House-door letter-box	449,372	Mar. 31	3426	861	54	1800
Markham, De Witt C., Collinsville, N. Y. Band sawing-machine	448,659	Mar. 24	2278	571	54	1576
Markley, James H., Brooklyn, N. Y. Portable dark-room	449,487	Mar. 31	3618	911	54	1838
Marks, Solomon, Cincinnati, Ohio. Slate-frame	445,660	Feb. 3	232	62	54	557
Marlette, Silas T., Niagara Falls, N. Y. Horse-collar	449,488	Mar. 31	3620	911	54	1839
Marlow, Claud E., Colorado, Tex. Bottle-case	446,122	Feb. 10	1000	246	54	714
Marr, Thomas, and C. W. Smith, Warrenton, Va. Drill-tooth	447,518	Mar. 3	414	101	54	1195
Marsden, James T., assignor of two-thirds to J. and J. F. Marsden, Lewiston, Me. Picker-staff check for looms	449,268	Mar. 31	3220	813	54	1766
Marsden, John, *et al.* (See Marsden, James T., assignor.)						
Marsden, Joseph F., *et al.* (See Marsden, James T., assignor.)						
Marsh, James P., Chicago, Ill. Pressure-gage	448,449	Mar. 17	1940	488	54	1506
Marsh, Nelson, Amherst, Mass. Calipers and dividers	449,165	Mar. 31	3058	774	54	1735
Marshal, Henry, Lincoln, Nebr. Wrench	444,450	Jan. 13	729	191	54	153
Marshal, Henry, Lincoln, Nebr. Railway-car	446,070	Feb. 10	917	224	54	698
Marshall, James P., Bowling Green, Ohio. End-gate	445,678	Feb. 3	274	72	54	566
Marshall, John S., *et al.* (See Preston, James B., assignor.)						
Marshall, Max. (See Beebe, George F., assignor.)						
Marston, Charles E., Dover, N. H. Boiler	445,473	Jan. 27	2358	612	54	486
Marston, Clarence L., *et al.* (See Cleveland, Lewis W., assignor.)						
Martin, Dennis B., New Haven, Conn. Syringe-tube sinker	447,574	Mar. 3	499	121	54	1211
Martin, Frank S., Hamburg, N. Y. Appliance for utilizing river currents and water-falls	447,887	Mar. 10	1008	254	54	1316
Martin, George W., Boston, Mass. Decorating glass	444,797	Jan. 13	1275	330	54	257
Martin, George W., assignor of one-half to J. Knight, Somerville, Mass. Electric signal and search-light lantern	446,142	Feb. 10	1037	255	54	720
Martin, Howard M., Tacoma, Wash. Ax-helve fastener	445,730	Feb. 3	352	91	54	582
Martin, James, Temescal, Cal. Flower-holder	448,975	Mar. 24	2764	698	54	1670
Martin, Lucien B., Fostoria, Ohio. Paper-weight	444,647	Jan. 13	1040	270	54	214
Martin, Orien B., Akron, assignor of one-half to T. Hale, Mogadore, Ohio. Belt-shifter	449,548	Mar. 31	3705	931	54	1855
Martin, Samuel M., Sidney, Ohio. Horseshoeing-rack	448,060	Mar. 10	1293	330	54	1371
Martindale, Warren B., Kenosha, Wis., and E. R. Malmborg, St. Louis, Mo., assignors to Electric Date and Time Stamp Company, of Illinois. Electric time-stamp	449,081	Mar. 24	2921	741	54	1701
Martineau, Edmund N., Holyoke, Mass. Method of and mechanism for making blank books	444,669	Jan. 13	1077	{279 / 280}	54	221
Martinot, Mary L. W., New York, N. Y. Clothes-drier	446,260	Feb. 10	1258	306	54	760
Marty, Godfrey, Omaha, Nebr. Display-frame	448,976	Mar. 24	2765	698	54	1670
Marvel, Theodore L., assignor to W. H. Phillips, Taunton, Mass. Elevator	447,435	Mar. 3	269	68	54	1168
Marymee, William C., *et al.* (See Montgomery, James P., assignor.)						
Masbach, Robert J., New York, N. Y. Scoop	447,888	Mar. 10	1010	254	54	1316
Mason, Allan, Brooklyn, N. Y. Distilling oil	444,202	Jan. 6	363	90	54	73
Mason, Allan, Brooklyn, N. Y. Apparatus for distilling oil	444,203	Jan. 6	365	91	54	73
Mason, Amor J., assignor to J. P. Mason, Norristown, Pa. Washer-punching machine	444,917	Jan. 20	1522	{391 / 392}	54	313
Mason, Burr T., Phœnix, N. Y. Chest-protector	446,531	Feb. 17	1692	414	54	861
Mason, Charles E., San Francisco, Cal. Lock-valve and faucet	447,962	Mar. 10	1137	286	54	1340

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Mason, David, New York, N. Y. Tightening device for suspended electric conductors	444,005	Jan. 6	34	10	54	10
Mason, David, New York, N. Y. Tightening device for suspended electric conductors	444,006	Jan. 6	36	10	54	10
Mason, James P. (See Mason, Amor J., assignor.)						
Mason, James P., Norristown, and S. L. Wiegand, Philadelphia, Pa.; said Wiegand assignor to said Mason. Method of and apparatus for making nuts and washers	444,918	Jan. 20	1525	392	54	314
Mason, Lewis D., Buffalo, N. Y. Temper-screw	446,994	Feb. 24	2427	604	54	1011
Mason, William C., *et al.* (See Ludwig, John C., assignor.)						
Masseth, Benjamin. (See Black, David W., assignor.)						
Massey, Albert P., Watertown, N. Y., assignor to Eames Vacuum Brake Company. Automatic valve for air-brakes	447,337	Mar. 3	92	26	54	1136
Massey, Albert P., Watertown, N. Y., assignor to Eames Vacuum Brake Company. Automatic air-brake	447,783	Mar. 10	828	206	54	1281
Massey, Gideon B., deceased, Mamaroneck, N. Y.; S. R. Massey and S. A. Bryant administrators. Ticket-printing machine	445,251	Jan. 27	2047	{526 / 527 / 528}	54	423
Massey, Gideon B., deceased, Mamaroneck, N. Y.; S. R. Massey and S. A. Bryant administrators. Ticket-printing machine	445,651	Feb. 3	211	{56 / 57 / 58}	54	554
Massey, Gideon B., deceased; S. R. Massey and S. A. Bryant, Mamaroneck, N. Y., administrators. Apparatus for printing and adding numbers	446,261	Feb. 10	1259	{307 / 308}	54	761
Massey, Gideon B., deceased; S. R. Massey and S. A. Bryant, Mamaroneck, N. Y., administrators. Cash-register and check machine	446,262	Feb. 10	1261	{308 / 309 / 310}	54	761
Massey, Sarah R., *et al.*, administrators. (See Massey, Gideon B.)						
Massonne, George. (See Newman, Peter, assignor.)						
Mast, Peter, Waterville, Ohio. Wire fence	448,061	Mar. 10	1295	331	54	1371
Mast, Peter, Waterville, Ohio. Wire fence	449,373	Mar. 31	3427	861	54	1800
Masters, Miles, Sheffield, Ill. Belt-gearing	446,407	Feb. 10	1492	{307 / 308}	54	808
Mather, Richard H., Windsor, Conn. Electric-arc lamp	446,108	Feb. 10	973	{239 / 240}	54	709
Mather, Richard H., Windsor, Conn. Arc light	446,109	Feb. 10	977	{240 / 241}	54	709
Mathews, John E. (See Loy and O'Toole, assignors.)						
Mathews, Stillman E., Fullerville, N. Y. Martingale attachment for harness	444,648	Jan. 13	1041	270	54	214
Mathushek, Victor H., New York, N. Y. Piano-forte	447,963	Mar. 10	1139	286	54	1340
Matson, German J., and J. Y. Phillips, New Buffalo, Mich. Latch	447,055	Feb. 24	2538	631	54	1031
Mattan, John, Cincinnati, Ohio. Wrench	446,143	Feb. 10	1039	257	54	720
Matteson, James A., assignor of one-third to H. B. Whitaker, River Point, R. I. Hanging and adjusting device for cords	447,889	Mar. 10	1010	255	54	1316
Matthews, Edwin S., Cincinnati, Ohio. Hydraulic valve-gear	446,836	Feb. 17	2153	535	54	953
Matthews, Jose, and J. Gilmer, Savannah, Ga.; said Matthews assignor to said Gilmer. House-door letter-box	447,254	Feb. 24	2891	718	54	1099
Matthews, Wilford L., Horton, Mich. Windmill-regulator	448,531	Mar. 17	2056	514	54	1528
Mauck, Joseph F., White Cloud, Kans. Picket-feeder for fence-making machines	449,549	Mar. 31	3706	931	54	1855
Maul, Alwin, Pine Grove, Colo. Animal-trap setter	446,921	Feb. 24	2318	576	54	991
Maule, Francis I., Philadelphia, Pa. Strainer	444,246	Jan. 6	430	108	54	84
Maupin, William H. A., *et al.* (See Bond, Elijah J., assignor.)	448,752	Mar. 24	2435	.....	54	1607
Maurer, Louis C., Brooklyn, N. Y. Composition for sharpening razors	449,352	Mar. 31	3382	852	54	1792
Manser, Paul, assignor to Waffenfabrik Manser, Oberndorf-on-the-Neckar, Germany. Safety-lock for breech-bolts of guns	446,532	Feb. 17	1693	{415 / 416}	54	861
Maxim, Hiram S., London, England. Process of and apparatus for hardening ordnance	447,524	Mar. 3	425	{104 / 105}	54	1198
Maxim, Hiram S., London, England. Automatic gun	447,525	Mar. 3	429	106	54	1198
Maxim, Hiram S., London, England. Automatic gun	447,836	Mar. 10	923	{231 / 232}	54	1300
Maxim, Hiram S., London, England. Automatic gun	447,837	Mar. 10	927	{232 / 233}	54	1300
Maxim, Hiram S., London, England. Automatic machine-gun	449,289	Mar. 31	3261	827	54	1772
Maxstadt, Francis W., Chicago, Ill. Fuse for electric circuits	448,977	Mar. 24	2766	699	54	1671
Maxwell, Charles C., Watertown, S. D. Lawn-mower attachment	444,247	Jan. 6	431	108	54	84
Maxwell, William R., Wakefield, Pa. Pole-coupling	444,100	Jan. 6	189	47	54	39
May, Gordon A., Chicago, Ill. Stretcher for carpets	444,760	Jan. 13	1230	320	54	249
May, Henry H., assignor to himself, W. Gillette, and L. Hays, New Albin, Iowa. Animal-trap	448,820	Mar. 24	2527	633	54	1625
May, Mayer, Paris, France. Corset-fastening	448,139	Mar. 10	1404	358	54	1394
Mayer, Benjamin, Philadelphia, Pa. Bag-frame	448,450	Mar. 17	1940	489	54	1506
Mayer, Carl A. (See Mohler and Mayer.)						
Mayer, George, Orange, N. J. Drawing-pen	444,158	Jan. 6	295	71	54	60
Mayer, Louis. (See Schiff and Mayer.)						
Mayfield, Daniel D., Sullivan, Ind. Gate	447,893	Mar. 10	1018	256	54	1318
McAllister & Dall. (See Shengle, John B., assignor.)						
McAlpine, George S., *et al.* (See McAlpine, James G., assignor.)						
McAlpine, James G., assignor of three-fourths to J. G., Jr., and G. S. McAlpine, Bakersfield, Cal. Wheel	449,353	Mar. 31	3384	852	54	1792
McAlpine, Louis A. (See McAlpine, Robert, assignor.)						
McAlpine, Robert, assignor to L. A. McAlpine, Marinette, Wis. Calendar-roll leader	445,187	Jan. 27	1952	505	54	405
McArthur, James. (See Horn and McArthur.)						
McArthur, Warren, Chicago, Ill., assignor to Steam Gauge and Lantern Company, Syracuse, and R. E. Dietz Company, New York, N. Y. Tubular lantern	446,263	Feb. 10	1264	310	54	761
McAuslan, William. (See Jaquet and McAuslan.)	446,264	Feb. 10	1266	310	54	762
McAvity, George, *et al.* (See McShane, William, assignor.)	448,821	Mar. 24	2528	633	54	1625
McAvity, John A., *et al.* (See McShane, William, assignor.)	447,196	Feb. 24	2793	690	54	1079
McAvity, Thomas, *et al.* (See McShane, William, assignor.)	447,785	Mar. 10	832	{207 / 208}	54	1282
McBride, James, Bavington, Pa. Churn						
McBride, James, Bavington, Pa. Stanchion						
McBride, John F., Chicago, Ill. Picture-frame						
McBride, John J., Ridgefield Park, N. J., assignor to H. I. Coe, New York, N. Y. Hatchway for elevators						
McBride, Thomas J., Winnipeg, Canada. Observatory-car						
McCaffrey, John H. (See McDonagh, Charles, assignor.)						
McCahey, John, assignor to New England Butt Company, Providence, R. I. Wire-covering machine	445,598	Feb. 3	122	31, 32	54	535

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
McCallen, Albert D., Effingham, Ill. Clothes-line	444,123	Jan. 6	233	56	54	48
McCallum, Brown. (See McLean, Silamon, assignor.)						
McCann, Edward. (See Hussey and McCann.)						
McCann, Walter R., and S. S. Creider, Sterling, Ill. Electric-light signal	447,894	Mar. 10	1019	256, 257	54	1318
McCann, William A., Jacksonville, Fla. Lock	448,986	Mar. 24	2777	702	54	1673
McCanna, John E., Baltimore, Md. Molding-machine	448,987	Mar. 24	2779	703	54	1673
McCarter, Marshall J., Norristown, Pa. Gage-cock	445,474	Jan. 27	2359	613	54	486
McCarthy, John L., assignor of one-half to S. E. Young, Olean, N. Y. Hammock-holder	448,584	Mar. 17	2134	535	54	1543
McCarthy, Lawrence A., Brooklyn, N. Y. Electric-railway car	444,539	Jan. 13	880	228	54	181
McCarthy, Oliver, assignor to Meriden Britannia Company, Meriden, Conn. Coffin-handle	446,689	Feb. 17	1927	481	54	905
McCarthy, William, assignor of one-half to H. Garono, Buffalo, N. Y. Adjustable hinge	444,455	Jan. 13	741	193	54	155
McCarty, George W. (See Smith, William B., assignor.)						
McCarty, Thomas, Charlton, Mass. Picker-staff-operating device for looms	447,841	Mar. 10	936	234	54	1302
McCauley, George L., Pleasant Plains, Ark. Wrench	449,257	Mar. 31	3207	809	54	1763
McClain, Edward L., *et al.* (See Head, Joseph A., assignor.)						
McClellan, Lavinia H., Bristol, Tenn. Window-sash	449,562	Mar. 31	3721	935	54	1858
McClintock, Orville N., Topeka, Kans. Combined letter-copying press and book	444,204	Jan. 6	368	91	54	74
McCloskey, William, assignor of one-half to C. J. Hoyt, New Orleans, La. Letter-box	448,062	Mar. 10	1296	331	54	1371
McCollin, Thomas H., Lansdowne, Pa. Artificial light for photography	445,188	Jan. 27	1953	505	54	405
McColm, Frank G., Forestburg, S. D. Locking device for shafts	448,725	Mar. 24	2388	598	54	1598
McConnell, John A. (See Bryce, Andrew, assignor.)						
McConnell, Virgil H., Buffalo, N. Y. Feed-water heater and purifier	445,933	Feb. 3	679	166	54	644
McConnell, Virgil H., Buffalo, N. Y. Feed-water heater and purifier	445,934	Feb. 3	681	166	54	645
McConway, William, Pittsburg, Pa. Car-coupling	446,602	Feb. 17	1787	442, 443	54	879
McConway, William, Pittsburg, Pa. Car-coupling	447,969	Mar. 10	1156	293	54	1343
McCool, William A., Beaver Falls, Pa. Machine for straightening and polishing metal bars, &c	445,571	Feb. 3	79	18, 19	54	527
McCord, John, *et al.* (See Green, John, assignor.)						
McCormick Harvesting Machine Company. (See Macphail, James, assignor.)						
McCoy, John, York, Pa. Machine for making card-board	448,063	Mar. 10	1297	331	54	1371
McCray, Thomas H., Chicago, Ill. Belt-gearing	449,166	Mar. 31	3059	774	54	1735
McCready, David, Perrysville, Ohio. Thill-coupling	447,786	Mar. 10	834	209	54	1253
McCulloch, Archibald, assignor of one-half to A. Vinett, Pittsfield, Mass. Combined step and fender for vehicles	449,084	Mar. 24	2932	742	54	1703
McCulloch, Thomas. (See Armit, Robert H., assignor.)						
McCullough, Alexander C. (See Chaddock, Sutton, and McCullough.)						
McCully, William H., *et al.* (See Wyeth, David G., assignor.)						
McCutchen, Charles W. (See Van Alen and McCutchen.)						
McCutchen, Charles W., Peekskill, N. Y. Gas-stove	444,056	Jan. 6	114	28	54	25
McDaniel, Albert G., Hannibal, Mo. Lamp	444,278	Jan. 6	471	120	54	93
McDaniel, Hiram G., Archbold, Ohio. Fence-wire tightener	449,563	Mar. 31	3725	935	54	1858
McDaniel, Samuel W. (See Berry, Ellen A., assignor.)						
McDermott, George C. (See Mills, John D., assignor.)						
McDonagh, Charles, assignor of one-half to J. McCaffrey, Toledo, Ohio. Flower-pot machine	444,009	Jan. 6	42	12	54	11
McDonald, Alexander J., Chicago, Ill. Railway-gate	447,080	Feb. 24	2578	640	54	1039
McDonald, Alexander J., and K. B. Brent, assignors to Pneumatic Power and Railroad Gate Company, Chicago, Ill. Motor for railway-gates	447,079	Feb. 24	2577	639	54	1039
McDonald, Charles, Norwalk, Ohio, and F. C. McDonald, Chicago, Ill. Mop-wringer	444,279	Jan. 6	473	120	54	93
McDonald, Edwin, Willow, Cal. Thrashing-machine	446,234	Feb. 10	1193	292, 293	54	748
McDonald, Fred C. (See McDonald, Charles and F. C.)						
McDonald, George R. (See Graham and McDonald.)						
McDonald, Samuel J., Gallatin, Mo. Road-cart	444,456	Jan. 13	742	194	54	155
McDonnell, Patrick E., assignor of one-half to L. H. Wilson, Chicago, Ill. Method of and apparatus for transportation	446,786	Feb. 17	2066	515	54	934
McDonnell, Vincent J., Philadelphia, Pa. Monkey-wrench	449,129	Mar. 31	3009	761	54	1726
McDonough, James W., New York, N. Y. Telephone transmission	446,188	Feb. 10	1120	274	54	733
McDougall, Alexander, Duluth, Minn., assignor to American Steel Barge Company, of New York. Anchor	445,816	Feb. 3	510	123	54	611
McElhiney, Harrison H., Nebraska City, Nebr. Flower-pot	446,460	Feb. 17	1582	389	54	839
McElroy, James F., assignor to Consolidated Car Heating Company, Albany, N. Y. Temperature-regulator	445,378	Jan. 27	2322	576	54	460
McElroy, Josiah B., Charlestown, W. Va. Meridian drawing-board	449,049	Mar. 24	2576	730	54	1692
McElroy, Patrick J., *et al.* (See Chevers, Amrion V., assignor.)						
McEntyre, Robert. (See Stnard, Charles D., assignor.)						
McEwan, William W. (See Hull and McEwan.)						
McFadden, Bernard A., St. Louis, Mo. Attachment for shoes, gloves, &c	449,564	Mar. 31	3726	936	54	1858
McFalls, David H., Ellensburg, Wash. Carpet-stretcher	444,503	Jan. 13	828	216	54	173
McFarland, John, Dedham, Iowa. End-gate	448,249	Mar. 17	1590	406	54	1439
McFarlane, Robert. (See Fisher and McFarlane.)						
McFarlane, William T., Stockton, Utah. Girth-fastener	449,492	Mar. 31	3624	912	54	1840
McFee, George, *et al.* (See Rockwell, Warren C., assignor.)						
McFerran, Joseph A., Philadelphia, Pa. Pill-machine	449,424	Mar. 31	3520	886, 887	54	1819
McGenniss, David, Amsterdam, N. Y. Commutator-truer	448,540	Mar. 17	2067	518	54	1530
McGill, William C., Washington, D. C. Cash register and indicator	446,925	Feb. 24	2322	577	54	991
McGinnis, William. (See Jordan and Eller, assignors.)						
McGirr, Joseph B., Washington, D. C. Paper-clamp	448,892	Mar. 24	2529	634	54	1625
McGlinchy, Charles E., assignor of two-thirds to C. H. Dunham and F. Brady, Chicago, Ill. Velocipede	445,125	Jan. 20	1839	476	54	374
McGlinn, John F. (See Seiders, William R., assignor.)						
McGowan, John C., assignor of one-half to W. D. Colt, Washington, D. C. Sewerage system	448,988	Mar. 24	2781	703, 704	54	1674
McGowan, John H., Cincinnati, Ohio. Back-pressure valve	446,002	Feb. 10	809	196	54	678
McGowan, John H., Cincinnati, Ohio. Finisher-press	447,003	Feb. 24	2439	606, 607	54	1013
McGriff, Thomas K. S., Chicago, Ill. Copy-holder	444,612	Jan. 13	988	256	54	204
McGuire, Elwood W. (See Dille and McGuire.)						
McGuire, Frank J., Allegheny, Pa. Pipe-coupling	449,293	Mar. 31	3266	828	54	1773
McHale, John, and V. C. Dillmann, Kansas City, Mo. Hydrocarbon-burner	448,064	Mar. 10	1298	332	54	1372

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
McHugh, Timothy, Wakefield, assignor of one-half to Smith & Anthony Stove Company, Boston, Mass. Clamp for pipes and mains	444,235	Jan. 6	413	103	54	81
McIntire, Joseph B., Galion, Ohio. Weather-strip	446,609	Feb. 17	1796	444	54	881
McIntosh, Lyman D., Ravenswood, Ill. Vaginal syringe	447,410	Mar. 3	928	59	54	1160
McIntosh, Milton J. (See Stroh and McIntosh.)						
McIntosh, William, Winona, Minn. Lubricator for locomotive-trucks	447,081	Feb. 24	2580	640	54	1039
McIntyre, John M. (See Helming and McIntyre.)						
McIver, James A., Enders, Ark. Plow	449,565	Mar. 31	3727	936	54	1858
McKay & Copeland Lasting Machine Company. (See Brock, Matthias, assignor.)						
McKeen, Thomas L., New York, N. Y., assignor to Thurmond Car Coupling Company, of West Virginia. Car-coupling	445,817	Feb. 3	511	123	54	611
McKeen, Thomas L., New York, N. Y., assignor to Thurmond Car Coupling Company, of West Virginia. Lever-bracket for car-couplings	447,578	Mar. 3	503	124	54	1212
McKeen, Thomas L., New York, N. Y., assignor to Thurmond Car Coupling Company, of West Virginia. Coupling for locomotives	447,579	Mar. 3	504	124	54	1212
McKenzie, George W., Boston, Mass. Vise	447,580	Mar. 3	506	124	54	1212
McKenzie, William D., *et al.* (See Cross, Gerome L., assignor.)						
McKenzie, William, Boston, Mass. Dust-guard for car-axles	446,003	Feb. 10	810	196	54	678
McKethan, John G., Arcadia, La. Hand fertilizer-distributer	446,787	Feb. 17	2069	515	54	935
McKim, George W., Martin's Ferry, Ohio. Wire-nail-making attachment	447,895	Mar. 10	1022	257, 258	54	1319
McKinney, Americus G., assignor of one-half to H. Fessler, Canton, Ohio. Car-replacer	444,783	Jan. 13	1258	326	54	253
McKnight, Levi G., West Gardner, Mass. Feed-roller	445,123	Jan. 20	1837	475	54	374
McLanahan, Samuel C., and W. F. Kirk, Hollidaysburg, Pa. Ore-washer	445,430	Jan. 27	2305	598	54	476
McLandsborough, Joseph, Station Fifteen, Ohio. Post-driver	448,140	Mar. 10	1404	359	54	1394
McLaughlin, William F., Chicago, Ill. Coffee-cabinet	448,453	Mar. 17	1944	489	54	1506
McLaurin, John F., and D. L. Whitaker, McColl, S. C. Fertilizer-distributer	445,189	Jan. 27	1954	505	54	405
McLane, Hiram H. (See Hurd and McLane.)						
McLean, Embury. (See Ellis, Jonathan T., assignor.)						
McLean, Silamon, assignor of one-hal. to B. McCallum, Mineral Springs, S. C. Combined plow and fertilizer-distributer	446,389	Feb. 10	1453	356	54	801
McMahon, Cormick. (See Mosher and McMahon.)						
McMahon, Patrick J., New Orleans, La. Apparatus for making anhydrous ammonia	445,331	Jan. 27	2158	559, 560, 561	54	447
McMahon, Robert, assignor of one-half to H. Gaston, Seattle, Wash. Car-coupling	447,737	Mar. 3	736	185	54	1257
McManus, Dennis. (See Duncan and McManus.)						
McMaster, Joseph M., Rochester, N. Y. Toy	447,411	Mar. 3	230	59	54	1160
McMullin, Frank, E., Hastings, Iowa. Metallic box or attachment for cultivators	444,844	Jan. 20	1360	352	54	982
McMurtry, Lillian L. W., Mattawa, Canada. Pen-holder	445,622	Feb. 3	163	43	54	543
McNair, Milton H., assignor of one-half to E. Smith, Meadville, Pa. Pipe-wrench	449,627	Mar. 31	3852	964	54	1882
McNamara, James. (See Clinton and McNamara.)						
McNamara, John C., Troy, N. Y. Pulley-block	446,461	Feb. 17	1583	389	54	840
McNeal, William A., assignor of two-thirds to H. M. Hartleb and C. Cheltra, Bath, Me. Thill-coupling	446,837	Feb. 17	2156	535	54	953
McNeil, Murdock, assignor to Empire Steam Gauge Company, Boston, Mass. Pressure-gage	445,355	Jan. 27	2198	570	54	455
McNiece, Thomas B., and W. H. Bloom, Mansfield, Ohio. Lubricator	449,624	Mar. 31	3860	966	54	1883
McPherson, Alexander, Oxford, Canada, assignor of one-half to Hutchison & Huestis, Providence, R. I. Steam-engine	446,838	Feb. 17	2157	536	54	953
McPherson, John, Wellsville, N. Y. Device for cleaning cuspidors	441,710	Jan. 13	1134	292	54	232
McRoberts, Mortimer, Chicago, Ill. Lamp-hanger	444,920	Jan. 20	1527	393	54	314
McShane, William, assignor to T., J. A., and G. McAvity, St. John, New Brunswick, Canada. Safety-valve	448 065	Mar. 10	1300	332	54	1372
McWhirter, Robert B., assignor of one-fourth to J. Y. Burgoyne, Lima, Ohio. Locomotive-gearing	448,160	Mar. 10	1437	367, 368	54	1400
Mead, Birdsall H., Cleveland, Ohio. Till-lock	444,708	Jan. 13	1131	292	54	232
Mead, Edward C., Elkhart, Ind. Wrench	445,185	Jan. 27	1948	503	54	404
Mead, Theodore H., *et al.* (See Crowell, Luther C., assignor.)						
Mead, William H. (See Kleppinger and Mead.)						
Meador, Jesse M., New Concord, Ky. Broom	449,550	Mar. 31	3707	931	54	1855
Meadows, Henry L., Wexford, Ireland. Shelter for watchmen on vessels	447,193	Feb. 24	2788	690	54	1078
Meadville Vise Company. (See Barrett, James O., assignor.)						
Meaher, Dennis A., *et al.* (See Cleveland, Lewis W., assignor.)						
Meals, Ezra S., Harrisburg, Pa. Roofer's seaming-tongs	444,498	Jan. 13	820	214	54	172
Means, Charles J., Boston, Mass. Coin controlled indicating striking-machine	447,890	Mar. 10	1011	255	54	1316
Meany, John, and C. H. Bodie, Santa Barbara, Cal. Self-closing faucet	444,912	Jan. 20	1514	389	54	312
Meats, John T., Taunton, Mass. Quilling-machine	444,499	Jan. 13	821	214, 215	54	172
Medart, Frederick, St. Louis, Mo. Exercising apparatus	448,353	Mar. 17	1789	452	54	1477
Medart, Philip, assignor of one-half to W. Medart, St. Louis, Mo. Belt-tightening mechanism	448,583	Mar. 17	2133	535	54	1542
Medart, William. (See Medart, Philip, assignor.)						
Medbery, Horace J., Ballston, N. Y. Conduit for underground trolley-wires	447,338	Mar. 3	94	26	54	1136
Mee, Charles, Cortland, N. Y. Lounge	446,874	Feb. 24	2227	554	54	976
Meech, Alfred H., Chatham, N. Y. Carpet-lining	448,978	Mar. 24	2767	699	54	1671
Meech, Alfred H., Chatham, N. Y. Carpet-lining, &c	448,979	Mar. 24	2767	699	54	1671
Meese, Johann, Leer, Prussia, Germany. Composition for treating the surfaces of metals	445,220	Jan. 27	2143	.....	54	443
Megill, Edward L., Brooklyn, N. Y. Gripper-finger	448,553	Mar. 24	2435	609	54	1607
Megill, Edward L., Brooklyn, N. Y. Feed-gage for printing-presses	449,290	Mar. 31	3202	827	54	1772
Mehaffey, Asa A., Poplar Bluff, Mo. Cuff-holder	448,532	Mar. 17	2058	515	54	1528
Méhay, Victor, Brussels, Belgium. Apparatus for opening doors	445,614	Feb. 3	150	39, 40	54	540
Meinicke, Carl A. E., Clausthal, Prussia, Germany. Sizing apparatus for slime, &c	446,149	Feb. 10	1049	258	54	722
Meise, Edward, Pittsburg, Pa. Seal-lock	445,597	Feb. 3	120	30	54	535
Meister, David A. (See Oulton and Meister.)						
Meitzler, George R., assignor to J. H. Foote, Cincinnati, Ohio. Reflecting money-till	445,566	Feb. 3	71	17	54	526
Melaas, Andrew O., Door Creek, Wis. Appliance for regulating the action of windmill-pumps	446,410	Feb. 10	1408	369	54	809
Meldrum, James J. and T. F., Manchester, England. Furnace	447,891	Mar. 10	1013	255, 256	54	1317
Meldrum, Thomas F. (See Meldrum, James J. and T. F.)						
Mellor, John E., New York, N. Y. Door check and closer	446,548	Feb. 17	1718	421	54	866
Menninger, Allard, assignor of one-half to A. I. Smythe and M. E. Lopez, Charleston, S. C. Making acid phosphates	445,567	Feb. 3	72	.....	54	526

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Mendenhall, Walter P. (See Rudd and Mendenhall.)						
Mendham, William. (See Chambers, Mendham, and Damborg.)						
Meneely, Charles D., Albany, N. Y. Roller-bearing	445,680	Feb. 3	277	73, 74	54	567
Meneely, Charles D., Albany, and J. Gibbons, assignors to Meneely Hardware Company, West Troy, N. Y. Roller-bearing	445,679	Feb. 3	275	72, 73	54	567
Meneely Hardware Company. (See Meneely and Gibbons, assignors.)						
Menges, Carles J., Kansas City, Mo. Sampler	444,887	Jan. 20	1463	379	54	302
Menown, Frank, Kansas City, Mo. Compound for coating roasted coffee	448,660	Mar. 24	2279	.....	54	1577
Mentel, Ferdinand L., Cincinnati, Ohio. Flushing-tank for water-closets	448,800	Mar. 24	2500	626	54	1620
Mentha, Eugène, assignor to Badische Anilin and Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Dihydroxynaphthalene	449,551	Mar. 31	3708	.....	54	1855
Mentzel, Henry D., Baltimore, Md. Mechanical movement	447,964	Mar. 10	1140	286, 287, 288	54	1340
Mercadier, Ernest J. P., Paris, France. Telephone	447,194	Feb. 24	2789	690	54	1078
Meredith, Edmund, assignor to Pennsylvania Globe Gas Light Company, Philadelphia, Pa. Gas and air mixer	447,784	Mar. 10	810	206, 207	54	1282
Mergenthal, John A. (See Lawton and Mergenthal.)						
Meriden Britannia Company. (See McCarthy, Oliver, assignor.)						
Merklen, Benjamin, assignor to Merklen Brothers, New York, N. Y. Lathe for making fluted wooden bodies	447,965	Mar. 10	1142	288, 289	54	1340
Merklen Brothers. (See Merklen, Benjamin, assignor.)						
Merralls, William A., Kansas City, Mo. Settling and amalgamating pan for machinery for extracting gold or other precious metals	449,552	Mar. 31	3709	931, 932	54	1855
Merrell, Daniel B., Canandaigua, N. Y. Manure-spreader	448,584	Mar. 24	2631	661	54	1644
Merrell, Daniel B., Canandaigua, assignor of one-half to M. E. Benedict, Perry, N. Y. Potato-digger	449,127	Mar. 31	3005	760	54	1726
Merrell, Isaac L., San Francisco, Cal. Fire-proof paint	446,982	Feb. 24	2319	.....	54	991
Merriam, Edwin G. (See Kenney, John C., assignor.)						
Merriam, Frederick W., North Adams, Mass. Hygienic stove	444,841	Jan. 20	1456	351	54	281
Merriam, Henry P., New York, N. Y. Explosive shell	444,536	Jan. 13	875	227, 228	54	182
Merriam, Henry P., New York, N. Y. Shell for high explosives	444,537	Jan. 13	877	228	54	183
Merriam, Joseph P., Sandusky, Ohio. Machine for driving and pulling stakes and handling the same	449,374	Mar. 31	3429	802	54	1801
Merrill, Charles A., and F. Stowe, Kansas City, Mo. Shoe	444,888	Jan. 20	1465	379	54	303
Merrill, Edwin C., Allegheny, Pa. Thermostatic regulator	446,583	Feb. 17	1764	435	54	875
Merrill, Hollis W., Lynn, assignor to American Shoe Tip Company, Boston, Mass. Shoe-tip	448,247	Mar. 17	1567	405	54	1439
Merrill, Parker, St. Louis, Mich. Railway cattle-guard	446,601	Feb. 17	1766	442	54	879
Merrill, Stephen A., Cambridge, assignor of one-half to A. S. Locke, Lowell, Mass. Culinary fork	448,155	Mar. 10	1426	364	54	1395
Merritt, Charles E., Springfield, Mass., assignor to Yost Writing Machine Company. Type-writing machine	448,248	Mar. 17	1589	406	54	1439
Merritt, Charles H., *et al.* (See Newman and Oakley, assignors.)						
Merritt, Charles H. (See Starr, Frank M., assignor.)						
Merritt, Mortimer G., Springfield, Mass., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	444,889	Jan. 20	1465	379	54	303
Merritt, William H. (See Armitstead, Thomas E., assignor.)						
Merritt, William H. (See Chapman, George T., assignor.)						
Merrow, Joseph M., Merrow, Conn. Feeding mechanism for crochet-machines	448,722	Mar. 24	2383	597	54	1597
Merrow, Oscar L., and A. E. Sanborn; said Merrow assignor and said Sanborn assignor of one-half to D. and J. O'Shea, Jr., Laconia, N. H. Stocking and making the same	445,352	Jan. 27	2195	549	54	454
Merry, Daniel B., and W. M. Sheiman, East Las Vegas, N. Mex. Ter. Spring-motor	444,073	Jan. 6	150	37	54	32
Merz Capsule Company. (See Heineman, Solomon E., assignor.)						
Mesker, Frank, St. Louis, Mo. Building-front column	449,553	Mar. 31	3713	932	54	1856
Mesker, Frank, St. Louis, Mo. Building-front column	449,554	Mar. 31	3713	932	54	1856
Mesker, Frank, and T. O. Arbegust, St. Louis, Mo. Window-sash	448,354	Mar. 17	1790	452	54	1477
Mesker, Frank, and T. O. Arbegust, St. Louis, Mo. Window-frame	448,355	Mar. 17	1791	452	54	1477
Messinger, Josef, and G. Vortmann, Aix-la-Chapelle, assignors, by mesne assignments, to E. N. Dickerson, New York, N. Y. Compound of iodine with thymol	447,875	Feb. 24	2228	.....	54	976
Messinger, William T., Boston, Mass. Pipe-coupling and valve	444,451	Jan. 13	730	191	54	153
Messmer, Andrew, Cincinnati, Ohio. Candle-holder	447,339	Mar. 3	96	26	54	1136
Metric Metal Company. (See Stidham and Wallace, assignors.)						
Meyer, August, St. Louis, Mo. Street-lamp	448,533	Mar. 17	2050	515	54	1528
Meyer, Bernhard H., and P. Huppmann-Gerard, assignors of one-third to F. A. Ford, New York, N. Y. Cigar-mold	446,000	Feb. 10	807	195	54	678
Meyer, Georg F., Brunswick, Germany. Apparatus for extracting salt from meats	444,500	Jan. 13	824	215	54	172
Meyer, George U., Providence, R. I. Seamless plated wire	445,814	Feb. 3	509	122	54	611
Meyer, John W., Rock Island, Ill. Window-shade or map exhibitor	446,743	Feb. 17	2010	501	54	922
Meyer, Julius, New York, N. Y., and C. Binder, Chicago, Ill. Pole for electric wires	449,375	Mar. 31	3430	862	54	1801
Meyer-Sniffen Company. (See Bunting, William, Jr., assignor.)						
Meyerhoefer, Tobias. (See Clover, Seth, assignor.)						
Meyrowitz, Emil B., Ridgefield, N. J., and F. Buchhop, New York, N. Y.; said Buchhop assignor to said Meyrowitz. Electric motor	447,734	Mar. 3	731	183	54	1256
Michaud, Jules, Paris, France. Chromatic-printing machine	449,128	Mar. 31	3007	760, 761	54	1726
Michener, James B., and T. L. Varns, Kokomo, Ind. Grain-meter	444,709	Jan. 13	1133	292	54	232
Mickel, Orin E. (See Dodge, William L. and W. C., assignors.)						
Middleton, Arthur. (See Proctor, Fraser, Carter, and Middleton.)						
Middleton, Robert, and H. T. Jones, Manchester, England. Selvage of cotton pile goods	445,228	Jan. 27	2014	519	54	417
Middleton, William B., Lebanon, Pa. Turn-buckle	447,077	Feb. 24	2575	639	54	1038
Middleton, William B., Lebanon, Pa. Rolls for rolling turn-buckle blanks	447,205	Feb. 24	2868	712	54	1094
Middleton, William B., Lancaster, Pa. Treating steel	448,534	Mar. 17	2060	.....	54	1528
Mighell, Frank E., Aurora, Ill. Clothes-pounder	446,625	Feb. 17	1823	456	54	896
Mighell, Franklin P., Sugar Grove, Ill. Clothes-pounder	449,555	Mar. 31	3714	933	54	1856
Milam, William A. (See Frazier and Milam.)						
Millbradt, Gustave A., assignor of one-half to C. Treadwell, St. Paul, Minn. Cash-carrier	449,082	Mar. 24	2295	742	54	1701
Miles, Purches, Brooklyn, N. Y. Wire lathing	445,353	Jan. 27	2196	570	54	455
Miles, Sidney S. (See Amos, George W., assignor.)						
Millard, Edward F., Jackson, Mich. Producing ground wood pulp	449,586	Mar. 31	3765	.....	54	1865
Millen, George H., D. Casey, and J. H. Mantion, Hull, Canada. Machine for filling match-racks	449,376	Mar. 31	3431	863	54	1801
Millen, George H., D. Casey, and J. H. Mantion, Hull, Canada. Machine for removing matches from dipping-racks	449,377	Mar. 31	3433	864	54	1802

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Millen, James H., Bloomington, Ind. Filter	445,568	Feb. 3	73	17	54	526
Miller, Amos P., El Dorado, Ohio. Straw-stacking attachment for thrashing-machines	449,536	Mar. 31	3715	933	54	1856
Miller, Cassius M., Canton, Ohio. Duplex steam-pump	448,356	Mar. 17	1791	453	54	1478
Miller, Charles W., Canton, Ohio. Burnishing-machine	446,923	Feb. 24	[redacted]	576	54	991
Miller & Company, Edward. (See Rhind, Frank, assignor.)						
Miller Company, William P. (See Miller, William P., assignor.)						
Miller, Dewitt C. (See Pedersen and Miller.)						
Miller, Edward B., *et al.* (See Krotz, Alvaro S., assignor.)						
Miller, Edwin F., Williamsburg, Mass. Wire-tightener	446,688	Feb. 17	1926	480	54	905
Miller, Ferdinand C., and J. H. Walker, Oregon City, Oreg. Middlings-purifier and dust-collector	446,876	Feb. 24	2229	554, 555, 556	54	970
Miller, Flory, Napoleon, Ohio. Wind-wheel	449,489	Mar. 31	3021	911	54	1839
Miller, Frank, assignor of one-half to W. J. Shively and J. R. Keenan, Batesville, Ohio. Car-coupling	449,633	Mar. 31	3858	966	54	1883
Miller, George W., Meriden, Conn. Jaw for clamping-tools	448,451	Mar. 17	1942	489	54	1506
Miller, George W., Meriden, Conn. Hand-vise	448,452	Mar. 17	1942	489	54	1506
Miller, Henry, Chappaqua, N. Y. Folding chair	444,101	Jan. 6	190	47	54	39
Miller, Huson V., Jonesville, Mich. Spring-tooth harrow	443,248	Jan. 6	431	108	54	85
Miller, Isaac N., Cincinnati, Ohio. Electrical protector	448,980	Mar. 24	2768	700	54	1671
Miller, James B., Kent, Ohio. Permutation-lock	446,071	Feb. 10	919	224	54	698
Miller, James B., Kent, Ohio. Permutation-lock	447,575	Mar. 3	500	123	54	1211
Miller, James B., Kent, Ohio. Permutation-lock	447,618	Mar. 3	568	140	54	1225
Miller, James K., Emporia, Kans. Rope hook	447,619	Mar. 3	569	141	54	1225
Miller, James K., Emporia, Kans. Shock-compressor						
Miller, John. (See Harper, Lawrence A., assignor.)						
Miller, John, assignor of one-half to J. G. Obermeyre, Cincinnati, Ohio. Composition for coating bricks	446,877	Feb. 24	2237	.....	54	977
Miller, John A., St. Louis, Mo. Vehicle-wrench	445,451	Jan. 27	2234	606	54	481
Miller, John C., assignor to Thomas Manufacturing Company, Springfield, Ohio. Clutch	449,378	Mar. 31	3433	864	54	1802
Miller, John E. A., San Francisco, Cal. Annunciator and indicator system	447,195	Feb. 24	2791	690	54	1079
Miller, Levi H., assignor of one-half to W. P. Rose, Dublin, Tex. Tobacco substitute	448,925	Mar. 24	2690	.....	54	1656
Miller, Lewis W., Bear, Ark. Ironing-table	448,661	Mar. 24	2279	571	54	1577
Miller, Martin B., assignor of one-half to T. Corniman, Carlisle, Pa. Well-drilling machine	444,241	Jan. 6	390	97, 98	54	78
Miller, Sidney W., Pasadena, Cal. Flush tank	449,083	Mar. 24	2929	742	54	1702
Miller, Simon, Philadelphia, Pa. Shirt	444,525	Jan. 13	857	223	54	179
Miller, Thomas S., New York, N. Y. Rope transmission	444,919	Jan. 20	1526	392	54	314
Miller, Thomas S., New York, N. Y. Hoisting and conveying apparatus	447,892	Mar. 10	1015	256	54	1317
Miller, William A., New York, N. Y. Ink-well	444,365	Jan. 6	594	153	54	118
Miller, William O., Quincy, Ill. Harness-saddle	444,761	Jan. 13	1232	320	54	249
Miller, William O., Quincy, Ill. Adjustable harness-tree	444,762	Jan. 13	1232	320	54	249
Miller, William P., assignor to W. P. Miller Company, Brooklyn, N. Y. Lubricator	448,785	Mar. 24	2481	620	54	1616
Millerick, John F. A., San Francisco, Cal. Gate	447,013	Feb. 24	2458	612, 613	54	1016
Millet, John W., assignor to A. Dolge, Dolgeville, N. Y. Fulling machine	448,535	Mar. 17	2061	515	54	1528
Millet, John W., assignor to A. Dolge, Dolgeville, N. Y. Fulling-machine	448,536	Mar. 17	2062	515, 516	54	1529
Millet, John W., assignor to A. Dolge, Dolgeville, N. Y. Fulling-machine	448,537	Mar. 17	2063	516, 517	54	1529
Millhiser & Co., M. (See Cussen, William J., assignor.)						
Mills, Lorenzo C., Stony Brook, N. Y. Thill-coupling	444,299	Jan. 6	499	130	54	100
Mills, John, and C. W. Zimmerman, Brewton, Ala. Log-turner	448,602	Mar. 24	2280	572	54	1577
Mills, John D., assignor to G. C. McDermott, Cincinnati, Ohio. Pencil-sharpener	448,723	Mar. 24	2385	597	54	1598
Mills, John H., Boston, Mass. Sectional boiler	449,379	Mar. 31	3434	864, 865	54	1862
Mills, Mortimer B., assignor to Bogue & Mills Manufacturing Company, Chicago, Ill. Track-pump apparatus	447,576	Mar. 3	501	123	54	1211
Milovanovitch-Koka, Kosta R., Vienna, Austria-Hungary. Cartridge-feed case for magazine-guns	447,577	Mar. 3	502	123	54	1211
Milwaukee Brass and Copper Works. (See Sceets, George N., assignor.)						
Mimard, Etienne. (See Blachon and Mimard.)						
Minges, George E., Atlanta, Cal. Chaff-separator for thrashers	448,357	Mar. 17	1792	453	54	1478
Minix, John H., Eaton, Ohio. Door-check	446,760	Feb. 17	2038	507	54	928
Minneapolis Harvester Works. (See Courtney, John J., assignor.)						
Minnick, Edward, Spring Hills, Ohio. Fence-post	444,781	Jan. 13	1256	325	54	233
Minns, William C., Great Yarmouth, England. Machine for cutting glazier's window-lead	446,878	Feb. 24	2237	556	54	977
Mirkil, Thomas H., Jr., assignor to Southwark Foundry and Machine Company, Philadelphia, Pa. Stuffing-box for steam-hammers	447,340	Mar. 3	97	26	54	1136
Mitchell, Andrew W., Boston, Mass. Guard for electric-railway trolleys	449,226	Mar. 31	3153	795	54	1753
Mitchell, Andrew W., Boston, Mass. Guard for electric-railway trolleys	449,490	Mar. 31	3622	911	54	1839
Mitchell, Clifford, assignor of two-thirds to P. S. Rountree and S. R. Jewett, Chicago, Ill. Producing press copies from ink impressions	444,180	Jan. 6	332	.....	54	67
Mitchell Elma M. (See Mitchell, John E. and E. M.)						
Mitchell, George P., assignor of two-thirds to C. H. Perkins and E. W. Smith, Newark, N. Y. Dinner-pail	445,961	Feb. 3	727	177	54	655
Mitchell, James C., Lancaster, assignor of two-thirds to W. C. Smith, Berlin Falls, N. H., and F. B. Bridges, Bethel, Me. Railway-car seat	444,132	Jan. 6	255	61	54	52
Mitchell, James H., Philadelphia, Pa. Treating cakes, &c.	447,966	Mar. 10	1144	289	54	1341
Mitchell, John E. and E. M., Salem, Iowa. Plow	448,740	Mar. 24	2414	603	54	1603
Mitchell, Kerr M., St. Joseph, Mo. Combined chute and hopper for charging retorts	444,249	Jan. 6	432	109	54	85
Mitchell, Kerr M., St. Joseph, Mo. Retort-charging device	444,268	Jan. 6	458	116, 117	54	91
Mitchell, Nathan J., assignor of one-half to N. M. Leathers, Philadelphia, Pa. Paint	444,842	Jan. 20	1358	.....	54	282
Mitchell, Oliver F., assignor of three-fourths to W. A. Scott, P. B. Champagne, and J. N. Cotter, Merrell, Wis. Door-plate and letter-slip	445,068	Jan. 20	1756	453	54	359
Mitchell, Robert, and C. Lawson, Montreal, Canada. Gas-meter	447,693	Mar. 3	669	167	54	1245
Mix, Frank W., New Britain, Conn. Padlock	445,121	Jan. 20	1834	475	54	373
Mix, Frank W., New Britain, Conn. Key-guide for locks	448,981	Mar. 24	2769	700	54	1671
Moats, George N., and C. R. Crawshaw, Ironton, Ohio. Railway-frog	445,839	Feb. 3	542	132	54	617
Modern Tobacco Barn Company. (See Snow, William H., assignor.)						
Moeser, Albert H. (See Moeser, Henry, assignor.)						
Moeser, Henry, assignor of one-third to A. H. Moeser, Allegheny, Pa. Tunnel	447,735	Mar. 3	733	183, 184	54	1256
Moffatt, Ansel, Indianapolis, Ind. Composition of matter	445,815	Feb. 3	509	.....	54	611

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Moffatt, George, and S. Stuttaford, assignors to Vulcan Patent Smoke Consumer and Fuel Economizer Corporation, Limited, London, England. Apparatus for consuming smoke and saving fuel in furnaces	448,156	Mar. 10	1427	364	54	1399
Moffatt, Richard R., New York, assignor to himself, and S. Chichester, Brooklyn, N. Y. Magnetic separator	449,610	Mar. 31	3798	953	54	1872
Mohawk and Hudson Manufacturing Company. (See Waldron, Asa T., assignor.)						
Mohland, Charles H., and L. Kerber, Sigourney, Iowa. Grubbing-machine	444,843	Jan. 20	1358	352	54	282
Mohler, Johannes, and C. A. Mayer, assignors to L. Durand, Huguenin & Co., Basle, Switzerland. Blue dye	444,538	Jan. 13	878	.....	54	183
Moir, Henry C., Sydney, New South Wales. Fire-escape	444,670	Jan. 13	1080	280	54	221
Mollencoff, Christopher, Malta, Ill. Horse-collar	445,069	Jan. 20	1757	453	54	359
Monerief, James A., Pawtucket, R. I. Friction-clutch	447,967	Mar. 10	1144	290	54	1341
Monette, Victor C., Paris, France. Stopper and liquid-dropper for bottles	449,291	Mar. 31	3263	827	54	1773
Monjeau, Cleophas, Middletown, Ohio. Apparatus for water-supply	444,007	Jan. 6	38	11	54	11
Monk, Thomas J., Gibsland, La. Brick-yard plant	445,939	Feb. 3	692	{168 / 169}	54	648
Monks, William J., Fall River, Mass. Shutter-fastener	447,543	Mar. 3	455	112	54	1203
Monnier, Victor, Grafton, N. D. Flour-bolting apparatus	448,538	Mar. 17	2063	517	54	1529
Monroe, Edwin P., Philadelphia, Pa. Metallic rod-packing	444,195	Jan. 6	354	87, 88	54	71
Monroe, Edwin P., Philadelphia, Pa. Metallic rod-packing	444,386	Jan. 6	629	163	54	124
Monroe, John E., Worcester, Mass. Nursing-bottle	446,116	Feb. 10	986	243	54	711
Monroe, William R., Cleveland, Ohio. Fire-curtain	445,337	Jan. 27	2171	502	54	449
Montagne, Alford L., and H. S. Bailey, Canandaigua, N. Y. Feed-cooking stove	446,879	Feb. 24	2228	557	54	977
Montvagle, Louis F., *et al.* (See Ludwig, John C., assignor.)						
Montgomerie, James C., Bitterne, near Southampton, England. Apparatus for securing together scaffold-poles	447,838	Mar. 10	932	233	54	1301
Montgomery, James P., South Pueblo, assignors of seven eighths to L. L. Marble, W. C. Maryme, and J. C. Settle, Pueblo, Colo. Pump	445,992	Feb. 3	728	178	54	655
Montross, Benjamin, Millersburg, Iowa. Stump-extractor	446,224	Feb. 10	1177	288	54	745
Mooney, Benjamin F., Olean, N. Y. Clapboard-holder	445,681	Feb. 3	279	74	54	567
Mooney, William, North Plainfield, N. J., assignor of one-half to J. R. Floyd & Sons, New York, N. Y. Rotary gas-scrubber	444,300	Jan. 6	501	{130 / 131}	54	100
Moore, Agnew, Missoula, Mont. Pier-protector	446,586	Feb. 17	1769	436	54	876
Moore, Charles F. (See Schreckengost, Samuel, assignor.)						
Moore, Charles J. (See Yost and Moore.)						
Moore, Edward Y., Milwaukee, Wis. Door-hanger	445,354	Jan. 27	2197	570	54	455
Moore, Francis M., Brooklyn, N. Y. Center-board for vessels	444,501	Jan. 13	824	215	54	172
Moore, Frank, Pittsburg, Pa. Station indicator	448,982	Mar. 24	2770	{700 / 701}	54	1671
Moore, Frank, assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Triple-valve for automatic brake mechanisms	445,963	Feb. 3	729	178	54	655
Moore, George, Boston, and J. E. Perfler, Everett, Mass. Street-car	445,661	Feb. 3	233	63	54	557
Moore, Horatio N. (See Brackett and Moore.)						
Moore, James J., Merryville, La. Explosive projectile for ordnance	446,975	Feb. 24	2400	597	54	1006
Moore, Jno. S., *et al.* (See Reed, Franklin M., assignor.)						
Moore, Josiah H., assignor to himself and Walton Plow Company, Bloomington, Ill. Harrow	447,472	Mar. 3	348	86	54	1181
Moore, Morris W., Springfield, assignor, by mesne assignments, to J. E. Chase, Holyoke, Mass. Fountain-pen	448,885	Mar. 24	2633	661	54	1644
Moore, Samuel J. (See Hutchinson, Henry, assignor.)						
Moore, Samuel J., *et al.* (See Rodwell, George J. B., assignor.)						
Moore, Thomas L., Hamersville, Ohio. Tandem bicycle	448,358	Mar. 17	1794	453	54	1478
Moore, Van Zandt M., Milwaukee, Wis. Bicycle	447,341	Mar. 3	98	27	54	1135
Moore, William A., *et al.* (See Burks, Walter, assignor.)						
Moore, William C., and W. E. Garrard, Kansas City, Mo. Toilet-case	448,663	Mar. 24	2282	572	54	1578
Moran Flexible Steam Joint Company. (See Moran, Thomas W., assignor.)						
Moran, Robert P., Glasgow, Ky. Horse-detacher	445,025	Jan. 20	1083	233	54	345
Moran, Thomas W., assignor to Moran Flexible Steam Joint Company, Louisville, Ky. Relief-valve	444,782	Jan. 13	1257	326	54	253
Morell, James F., Camden, N. J. Anti-friction bearing for vehicle-wheels	445,377	Jan. 27	2221	576	54	460
Morgan, Amos W., Buffalo, N. Y. Stop-cock box for water and gas pipes	447,078	Feb. 24	2576	639	54	1038
Morgan, Charles. (See Morgan, Edgar H. and C.)						
Morgan, Charles, *et al.* (See Redlinger, Michael, assignor.)						
Morgan, Edgar H., *et al.* (See Redlinger, Michael, assignor.)						
Morgan, Edgar H. and C., assignors of one-third to A. Baumgarten, Freeport, Ill. Coffee-mill	444,798	Jan. 13	1276	330	54	257
Morgan, Octavius, and J. Crowley; said Crowley assignor of part to J. Douglas, Los Angeles, Cal., W. H. Burnett, Ouray, Colo., A. Salter and A. D. Hunt, London, England. Signaling apparatus	444,991	Jan. 20	1639	420	54	336
Morgan, Wesley, Chicago, Ill. Grain-scouring machine	444,763	Jan. 13	1233	320	54	249
Morley, Frederic A., Brooklyn, N. Y. Hand-support for cars	449,262	Mar. 31	3212	810	54	1764
Morningstar, Joseph, New York, N. Y. Drip-catcher	445,569	Feb. 3	74	17	54	526
Morney, Thomas, *et al.* (See Shiring, Joseph L., assignor.)						
Morral, John. (See Morral, Samuel E. and J.)						
Morral, Samuel E. and J., Morral, Ohio. Walking-cultivator	445,186	Jan. 27	1949	{503 / 504}	54	404
Morrill, Osgood. (See Wells and Morrill.)						
Morris, Cornelius S., Moline, Ill. Toy	448,539	Mar. 17	2066	517	54	1530
Morris, Jonathan. (See Weaver, John R., assignor.)						
Morris, William T., Paris, Ark. Snap-hook	449,491	Mar. 31	3623	912	54	1839
Morrison, Franklin P., Big Skin Creek, W. Va. Box-lifter	446,924	Feb. 24	2321	577	54	991
Morrison, Horatio B., Britt, Iowa. Rock-reamer	444,008	Jan. 6	41	12	54	11
Morrison, James E., Urbana, Ill. Milk-can	446,949	Feb. 24	2357	586	54	998
Morrison, John C., St. Louis, Mo. Berth-support for sleeping-car seats	446,637	Feb. 17	1842	457	54	890
Morrison, John H., assignor of one-half to Atwood, Crawford Company, Pawtucket, R. I. Feeding device	445,964	Feb. 3	731	178	54	656
Morrow, Edward A., Chester, Ark. Car-coupling device	449,423	Mar. 31	3519	886	54	1819
Morrow, George L. K., assignor to D. M. Ferry, Detroit, Mich. Mowing-machine	447,342	Mar. 3	99	27	54	1137
Morse, Frank B., Murphy's, Cal. Ore-concentrator	449,292	Mar. 31	3264	828	54	1773
Morse, George D., M. and D. W. Chase, Haverhill, Mass. Automatic salesman and change-maker	447,343	Mar. 3	101	{27 / 28 / 29}	54	1137
Morse, Samuel F. B., Brooklyn, N. Y. Electrical railway system	449,227	Mar. 31	3155	795	54	1753
Morse, Wallace A., assignor of one-half to J. O'Brien, St. Louis, Mo. Steam-boiler	448,983	Mar. 24	2773	701	54	1672

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Morse, Wallace A., assignor of one-half to J. O'Brien, St. Louis, Mo. Feed-water heater and purifier	448,984	Mar. 24	2774	702	54	1672
Morse, William R., Chicago, Ill. Hasp-lock	446,187	Feb. 10	1119	274	54	733
Morton, Edwin W., White Plains, assignor, by mesne assignments, to J. H. Allen, New York, N. Y. Time registering stamp	445,570	Feb. 3	75	18	54	526
Morton, Harry A. (See Leeman, Horace E., assignor.)						
Morton, W. D. (See Bassinger, Stephen, assignor.)						
Morwitz & Co. (See Schimansky and Passelt, assignors.)						
Moscrop, John B., Urmston, England. Fishing-reel	446,102	Feb. 10	965	238	54	707
Moser, Benjamin, Brooklyn, N. Y. Cash register and indicator	446,150	Feb. 10	1051	{258 / 259}	54	722
Moser, Edmund, Pittsburg, Kans. Hand drilling-machine	444,122	Jan. 6	232	56	54	47
Mosher Arc Lamp Company. (See Mosher, John A., assignor.)						
Mosher, James A., and C. McMahon, Boston, Mass. Piston water-meter	445,070	Jan. 20	1758	453	54	359
Mosher, John A., assignor to Mosher Arc Lamp Company, Abilene, Kans. Electric-arc lamp	446,459	Feb. 17	1581	388	54	839
Mosier, Louis N., Harlem, Mo. Detector-bar	447,694	Mar. 3	670	167	54	1245
Moss, William F., Fitzpatrick's, Ala. Combined plow and fertilizer-distributer	447,156	Feb. 24	2729	676	54	1067
Mossler, Benno, Chicago, Ill. Newspaper-vending apparatus	444,502	Jan. 13	825	215	54	170
Mosters, Anton, Strasburg, Germany. Anti-snoring bandage	447,695	Mar. 3	671	167	54	1245
Mott, Abram C., assignor to A. Cox Stove Company, Philadelphia, Pa. Scale-weight	447,136	Feb. 24	2695	668	54	1060
Mott Iron Works, J. L. (See Reid, John, assignor.)						
Mott, Joseph. (See Stephens and Mott.)						
Mott, Samuel D., Passaic, N. J. Electrical sporting-indicator	444,452	Jan. 13	732	{191 / 192}	54	153
Mott, Samuel D., Passaic, N. J. Electrical sporting-indicator	444,453	Jan. 13	735	192	54	154
Mott, Samuel D., Passaic, N. J. Racing-indicator	444,454	Jan. 13	737	{192 / 193}	54	154
Mott, Theodore, *et al.* (See Holway, Nymphus B., assignor.)						
Moulton, George, Manchester, England. Pantograph engraving-machine	445,321	Jan. 27	2143	{554 / 555}	54	444
Moulton, George W., assignor of one-half to W. E. Nichols, Bridgeport, Conn. Door-check	447,839	Mar. 10	932	244	54	1301
Mounts, Benjamin A., Cairo, Ill. Plumb-level	449,557	Mar. 31	3716	933	54	1856
Mowder, Isaac, Akron, Ohio. Switch-tongue adjuster	449,558	Mar. 31	3717	933	54	1857
Mower, Samuel E., assignor to H. G. Thompson & Sons, New Haven, Conn. Electric-motor mechanism	447,255	Feb. 24	2891	718	54	1100
Mowll, Charles F., East Cambridge, Mass. Car-coupling	449,559	Mar. 31	3718	934	54	1857
Moyé, Hermann, Leipsic, Germany. Car-coupling	447,712	Mar. 3	693	173	54	1249
Moyer, Jonah W., Philadelphia, Pa. Abattoir	447,840	Mar. 10	934	234	54	1302
Moyer, Jonah W., and G. F. Jackson, Philadelphia, Pa. Overhead railway	448,157	Mar. 10	1428	364	54	1399
Moyer, Jonah W. (See Jenkins and Mudd.)						
Mudd, Frank N. (See Jenkins and Mudd.)						
Muchsam, Edward. (See Brown, William W., assignor.)						
Mueller, Emil T., La Crosse, Wis. Cover for incandescent lamps	448,741	Mar. 24	2415	604	54	1603
Mugerditchyan, Haig Der, Chicago, Ill. Cuff-holder	447,493	Mar. 3	383	93	54	1190
Muir, Thomas, Margaretville, N. Y. Butter-worker	447,157	Feb. 24	2732	676	54	1067
Mullen, Henry, assignor to American Whip Company, Westfield, Mass. Whip	444,250	Jan. 6	434	109	54	85
Muller, Gustave, Madalin, N. Y. Fire-escape	446,001	Feb. 10	807	191	54	678
Muller, Joseph. (See Pabst, George F., assignor.)						
Muller & Schweizer. (See Schweizer, Jakob, assignor.)						
Mulligan, Bartley T., Brooklyn, N. Y. Type-writing machine	449,560	Mar. 31	3719	934	54	1857
Mullins, John E., Magnolia, Ark. Car-coupling	446,976	Feb. 24	2401	598	54	1006
Mundhenk, Henry W., Gilman, Iowa. Banner	447,696	Mar. 3	672	167	54	1245
Munger-Colton Manufacturing Company. (See Colton, George A., assignor.)						
Municipal Signal Company. (See Wilson, John C., assignor.)						
Munroe, Robert, Allegheny, Pa. Man-hole cover	446,151	Feb. 10	1055	259	54	723
Munsing, George D., assignor of one-half to E. J. Couper and A. C. Paul, Minneapolis, Minn. Crocheting-machine	448,664	Mar. 24	2283	{572 / 573}	54	1578
Munson, Albert L., New York, N. Y. Cigarette-machine	447,968	Mar. 10	1145	{290 / 291 / 292}	54	1341
Munson, Albert L., New York, N. Y., assignor to Munson & Co., New Haven, Conn. Paper-box machine	448,158	Mar. 10	1429	{365 / 366 / 367}	54	1399
Munson & Co. (See Munson, Albert L., assignor.)						
Munson, David, Indianapolis, Ind. Pie-lifter	445,066	Jan. 20	1660	425	54	340
Munson, Edward A., Grand Rapids, Mich. Bolt or rod cutter	446,360	Feb. 10	1408	345	54	792
Munson Type Writer Company. (See Seifried, Samuel J., assignor.)						
Murch, John H., assignor to F. J. Gilbert, Boston, Mass. Garment-clasp	447,736	Mar. 3	736	184	54	1257
Murgatroyd, Edward, Colne, England. Scotching device for cart-wheels	449,269	Mar. 31	3222	813	54	1766
Murgueltz, Démétre, Brussels, Belgium. Extinguishing device for lamps	446,361	Feb. 10	1409	{345 / 346}	54	792
Murnane, Daniel J., and F. W. Drosten, St. Louis, Mo. Producing cylindrical printing-rollers	445,932	Feb. 3	678	166	54	644
Murphy, Daniel H., Hartford, Conn. Sad-iron	446,533	Feb. 17	1696	416	54	861
Murphy, Joseph. (See Hartsuff and Murphy.)						
Murphy, Peter D., and C. O. Chaplin, Lockport, N. Y.; said Chaplin assignor to said Murphy. Razor-guard	448,159	Mar. 10	1436	367	54	1400
Murphy, William A., Brooklyn, N. Y. Clutch	447,033	Feb. 24	2501	622	54	1024
Murphy, William C., Salem, Mass. Wagon	446,562	Feb. 17	1737	427	54	869
Murray, Charles F., Cedar Falls, Iowa. Car-coupling	449,561	Mar. 31	3722	935	54	1858
Murray, John A. (See Tregurtha, Alfred T., assignor.)						
Murray, Thomas E., assignor of two-thirds to R. C. Blackall and E. A. Maher, Albany, N. Y. Rod packing	444,055	Jan. 6	113	28	54	25
Murray, William, assignor of one-half to C. Butt, Washington, D. C. Attachment for bicycles	445,452	Jan. 27	2334	607	54	481
Murtha & Burns. (See Weiss, Louis T., assignor.)						
Muther, Lorenz, assignor to Union Special Sewing Machine Company, Chicago, Ill. Sewing machine	445,122	Jan. 20	1835	475	54	374
Myers, Andrew G., *et al.* (See Keyworth, Thomas R., Jr., assignor.)						
Myers, Charles F., McKinstry's Mills, Md. Adjustable brush-handle	448,724	Mar. 24	2387	598	54	1598
Myers, Charles H., Phelps, assignor, by mesne assignments, to Keystone Manufacturing Company, Buffalo, N. Y. Combined ratchet-wrench and screw-driver	446,072	Feb. 10	919	224	54	698
Myers, Charles H., Phelps, assignor, by mesne assignments, to Keystone Manufacturing Company, Buffalo, N. Y. Ratchet wrench and drill	446,073	Feb. 10	920	225	54	699

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Myers, Charles H., Phelps, assignor, by mesne assignments, to Keystone Manufacturing Company, Buffalo, N. Y. Attachment for metal-planers	446,074	Feb. 10	924	225	54	699
Myers, Charles H., Phelps, assignor, by mesne assignments, to Keystone Manufacturing Company, Buffalo, N. Y. Combined ratchet-wrench and boring-bit	446,075	Feb. 10	922	225	54	699
Myers, Henry S., Brooklyn, N. Y. Preparing ores for amalgamation	447,344	Mar. 3	105	.....	54	1138
Myers, Lewis H., and S. H. Armstrong, Canton, Ill. Animal-chute	449,228	Mar. 31	3157	796	54	1754
Myers, Philip A., Ashland, Ohio. Regulator for windmill-pumps	448,985	Mar. 24	2756	702	54	1673
Myers, Stephen O., Mount Vernon, N. Y. Self-closing can	444,301	Jan. 6	502	134	54	100
Nacken, Werner, Buffalo, N. Y. Machine for dampening and stretching paper	444,222	Jan. 6	394	98, 99	54	58
Nafis, George R., Brooklyn, N. Y. Bracket	446,761	Feb. 17	2038	507	54	928
Nagle Augustus F., assignor to Nagle Automatic Sprinkler Company, Chicago, Ill. Automatic sprinkler	447,004	Feb. 24	2442	607	54	1014
Nagle Automatic Sprinkler Company. (See Nagle, Augustus F., assignor.)						
Nagle, Richard, *et al.* (See Gilman, Willard H., assignor.)						
Nance, Thomas, Shelbyville, Tenn. Pen-holder	447,197	Feb. 24	2794	691	54	1080
Napier, William D., Mountain Home, Ark. Tongue-support	446,152	Feb. 10	1056	259	54	723
Narjot, Ernest, San Francisco, Cal. Gas-engine	448,989	Mar. 24	2783	704	54	1674
Nash, Frederic J., Brooklyn, N. Y. Insulation of electric conductors	447,896	Mar. 10	1026	258	54	1319
Nash, Frederic J., Brooklyn, N. Y. Electric conductor	447,897	Mar. 10	1028	258	54	1320
Nash, Ralph C., North Pembroke, Mass. Lasting-jack	448,299	Mar. 17	1699	430	54	1460
Nason, Carleton W., New York, N. Y. Hoisting and conveying apparatus	448,823	Mar. 24	2531	634, 635	54	1026
Nathan Manufacturing Company. (See Kaczander and Ruddy, assignors.)						
National Cash Register Company. (See Grimes, Charles D., assignor.)						
National Cash Register Company. (See Lord, Charles E., assignor.)						
National Cash Register Company. (See Parkhurst, Edward B., assignor.)						
National Chemical and Fertilizer Company. (See Van Ruymbeke, Joseph, assignor.)						
National Electric Head Light Company. (See Pyle, George C., assignor.)						
National Harrow Company, *et al.* (See Smith, De Wane B., assignor.)						
National Machine Company. (See Osterhout, James A., assignor.)						
National Safe and Lock Company. (See White, James, assignor.)						
National Shelving Company. (See Roberts, Benjamin F., assignor.)						
National Tube Works Company. (See Flagler, John H., assignor.)						
National Tube Works Company. (See Patterson, Peter, assignor.)						
National Type Writer Company. (See Unz, Henry H., assignor.)						
National Typographic Company. (See Scudder, Wilbur S., assignor.)						
Naylor, Joseph, Bloomfield, N. J. Machine for trimming buttons	448,848	Mar. 24	2576	646, 647	54	1034
Neavitt, Thomas J., Austin, Tex. Wall and ceiling polish	446,265	Feb. 10	1268	.....	54	762
Neely, William A., Lynn, Mass. Stay for boots or shoes	449,167	Mar. 31	3060	774	54	1736
Neff, Milroy. (See Stiles, John H., assignor.)						
Negraval, Louis A., Jersey City, N. J., assignor to H. C. Frank and H. Gutmann, New York, N. Y. Cuff-fastener	445,512	Jan. 27	2420	631	54	497
Neikirk, Charles W. (See Cole and Neikirk.)						
Neitsch, Fred. T., Houston, Tex. Cultivator	444,366	Jan. 6	595	153	54	118
Nelson, Andrew M., Galesburg, Ill. Combined trunk and folding bed	446,690	Feb. 17	1928	484	54	906
Nelson, Charles H. (See Emerson, Leander C., assignor.)						
Nelson, George A., Woods, Tex. Rub-iron for wagon-beds	449,425	Mar. 31	3522	887	54	1820
Nelson, Hans J., *et al.* (See Elgen, Magnus P., assignor.)						
Nelson, Robert E., Jr., Columbia, Va. Cash-register	449,248	Mar. 31	3187	804, 805	54	1759
Nelson, Robert E., Jr., Columbia, Va. Electric cash-register system	449,249	Mar. 31	3194	805, 806	54	1761
Nelson, William O., Baltimore, Md., assignor of one-half to T. C. Balderston, Philadelphia, Pa. Mucilage-holder	448,665	Mar. 24	2287	573	54	1579
Nelson, William P. (See Draffin and Nelson.)						
Nelson, Thomas, assignor to Acorn Steam Boiler and Heating Company, Indianapolis, Ind. Steam-boiler	445,410	Jan. 27	2276	590	54	470
Nessle, John P., Newark, N. J. Nipper or wire-cutter	444,764	Jan. 13	1235	324	54	249
Neuberth, Frank G., *et al.* (See Neuberth, George E., assignor.)						
Neuberth, George E., Torrington, assignor of two-thirds to C. H. Upson and F. G. Neuberth, Waterbury, Conn. Surface-gage	448,863	Mar. 24	2608	655	54	1639
Neuhaus, Louis, and F. F. Daus, New York, N. Y. Pad for rapid copying	445,977	Feb. 10	752	.....	54	670
Neutzacher, Allise, Mendota, Ill. Railway-rail joint	444,251	Jan. 6	435	109	54	85
New England Butt Company. (See McCahey, John, assignor.)						
New England Telephone and Telegraph Company. (See Farnham, Isaiah H., assignor.)						
New Process Ice and Refrigerating Machine Company. (See Holden, Daniel L., assignor.)						
New York Belting and Packing Company. (See Strans, Alexander, assignor.)						
New York Steel Mat Company. (See Beisheim, Henry, assignor.)						
New York Wood Fibre Company. (See Hull and McEwan, assignors.)						
Newark Sheet Metal Ware Company. (See Hartley, Simeon, assignor.)						
Newbold, Charles, *et al.* (See Krieger, John G., assignor.)						
Newcomer, Peter, Des Moines, Iowa. Elevator and endless carrier	444,540	Jan. 13	882	229	54	184
Newell, Augustus, Chicago, Ill. Tool-post	446,462	Feb. 17	1584	389	54	840
Newell, Augustus, Chicago, Ill. Bushing key-board mortises	446,463	Feb. 17	1585	389	54	840
Newell, Henry A., Jr. (See Ellert, Louis, assignor.)						
Newey, James C. (See Hutchinson and Madgin, assignors.)						
Newhall, John F., Lynn, Mass., assignor to Newhall Shutter Working Company, of Maine. Shutter-worker	445,299	Jan. 27	2109	546	54	436
Newhall Shutter Working Company. (See Newhall, John F., assignor.)						
Newkirk, Abram, Cleveland, Ohio. Device for tightening wires	445,280	Jan. 27	2089	539	54	432
Newman, Nelson, assignor of two-thirds to G. A. Sanders and S. J. Willett, Springfield, Ill. Automatic gasoline-burner	445,572	Feb. 3	81	19	54	527
Newman, Peter, assignor of one-half to G. Massonne, Indianapolis, Ind. Wood-turning lathe	444,457	Jan. 13	744	194, 195	54	156
Newman, Samuel T., Danbury, and E. C. Oakley, Bethel, assignors to H. Griffin and C. H. Merritt, Danbury, Conn. Hat-pouncing machine	447,787	Mar. 10	835	209	54	1283
Newman, William A., Blue Creek, Ohio. Clothes-drier	446,362	Feb. 10	1410	346	54	792
Newton, John. (See Quiggin, Daniel A., assignor.)						
Newton, Robert, Providence, R. I. Fuel-feeder for furnaces	447,544	Mar. 3	456	112	54	1203
Newton, Robert W., Providence, R. I. Automatic fire-extinguisher	449,380	Mar. 31	3438	865	54	1803
Nichols, George H., Galveston, Tex. Strap and buckle shield	447,158	Feb. 24	2733	676	54	1067
Nichols, Ed. A. (See House, James A., assignor.)						
Nichols, Henry B., Boston, Mass. Support for electric cables	448,359	Mar. 17	1795	453	54	1479

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Nichols, Henry B., assignor of one-half to J. W. Linzee, Jr., Boston, Mass. Pipe-coupling	449,566	Mar. 31	3728	936	54	1859
Nichols, Jesse M., Ansley, Nebr. Grinding mill	449,229	Mar. 31	3157	796	54	1754
Nichols, John F., Fall River, Mass. Top-roll-grinding machine	448,300	Mar. 17	1700	434	54	1460
Nichols & Shepard Company. (See Bryce, James C., assignor.)						
Nichols, Wilbur E. (See Moulton, George W., assignor.)						
Nicholson, Francis T., Stamford, Conn., assignor of one-half to R. Mapelsden, Brooklyn, N. Y. Machine for making envelopes	448,250	Mar. 17	1591	406, 407	54	1439
Nickerson, William E. (See Berrenberg and Nickerson.)						
Nickerson, William E., Cambridge, and A. Berrenberg, Somerville, Mass., assignors to Beacon Vacuum Pump and Electrical Company, Portland, Me. Apparatus for flashing and exhausting incandescent electric lamps	447,256	Feb. 24	2594	718	54	1100
Nickum, George S., assignor to himself, W. B. Anderson, J. A. Smith, and E. C. James, Dayton, Ohio. Fan attachment	446,584	Feb. 17	1766	436	54	875
Nicol, James, *et al.* (See Garland, William H., assignor.)						
Nicolaus, August, assignor of two-thirds to H. Kahn and S. J. Besthoff, New York, N. Y. Thermometer for sad-irons	448,066	Mar. 10	1301	332	54	1373
Nicolay, John G., Washington, D. C. Folding chair	445,190	Jan. 27	1955	506	54	406
Niedringhaus, George W., and C. Geiss, assignors to St. Louis Stamping Company, St. Louis, Mo. Hinge	449,628	Mar. 31	3853	965	54	1882
Nief, Nicolas, and P. Cotte, West Hoboken, N. J. Line or rope holder	449,567	Mar. 31	3729	937	54	1859
Nighswander, Emanuel, Welsh Run, Pa. Buggy-wrench	445,431	Jan. 27	2306	598	54	476
Nightingale, Joseph O., Paterson, N. J. Toilet-brush	448,067	Mar. 10	1302	333	54	1373
Niles, Arthur J., Lancaster, N. H. Portable water-closet	445,191	Jan. 27	1956	506	54	406
Niles, Arthur J., Lancaster, N. H. Portable water-closet	449,426	Mar. 31	3523	887	54	1820
Niles Tool Works. (See Coes and Reiss, assignors.)						
Niles Tool Works. (See Reiss, George T., assignor.)						
Nimmo Company, George. (See Nimmo, George, assignor.)						
Nimmo, George, Allegheny, Pa., assignor to G. Nimmo Company, of New Jersey. Kiln for crucibles	444,153	Jan. 6	285	68, 69	54	58
Niss, Charles, Jr., Milwaukee, Wis. Sliding Venetian blind and frame therefor	444,302	Jan. 6	503	131, 132	54	101
Nittinger, August, Sr., Philadelphia, Pa. Meat or vegetable cutter, fruit-press, &c	447,581	Mar. 3	508	125	54	1212
Nittinger, Carl, Langensalza, Germany. Brake for vehicles	446,464	Feb. 17	1587	390	54	840
Noakes, William H., Chicago, Ill. Sash-bar machine	449,130	Mar. 31	3011	761	54	1726
Noble, Oscar L., Boston, Mass. Heel-trimming tool	445,229	Jan. 27	2015	519	54	417
Noble, Patrick, San Francisco, Cal. Cable railway	444,581	Jan. 13	949	246	54	196
Nobs, Charles, Newark, N. J. Watch-regulator	444,458	Jan. 13	747	195	54	156
Noera, Frank P., Malden, Mass. Oiler	446,136	Feb. 10	1022	252	54	718
Noggle, Levi, Tarlton, Ohio. Fence	447,545	Mar. 3	458	112	54	1204
Nolan, Francis. (See Reynolds, Thomas J., assignor.)						
Nolan, Walter N., El Oro, Tultenango, Mexico. Tappet	444,649	Jan. 13	1041	271	54	214
Nolin, John B., and M. G. Young, New Pittsburg, Ohio. Shingle and picket sawing machine	446,534	Feb. 17	1697	416	54	862
Noce, Henry, Chicago, Ill. Sample-case	445,857	Feb. 3	570	139	54	623
Norcross, William H. H. (See Perkins and Norcross.)						
Noriega, Eloy, Mexico, Mexico. Telephone	445,475	Jan. 27	2360	613	54	486
Norman, Thomas W., Boston, Mass. Covering electric wires	449,168	Mar. 31	3061	774	54	1736
Norris, John W., *et al.* (See Burton, Augustus G., assignor.)						
North, Alfred C., Benton Harbor, assignor of one-third to J. Eddy, Flint, Mich. Tag	445,731	Feb. 3	353	91	54	582
North American Machine Company. (See Hamilton, Emery M., assignor.)						
North Branch Steel Company. (See Thomas, Henry W., assignor.)						
North & Company, O. B. (See Smith, Charles H., assignor.)						
Northen, John, Chicago, Ill. Hot-air register	448,141	Mar. 10	1405	359	54	1395
Northup, Emerson S., *et al.* (See Osborn, David L., assignor.)						
Northup, Louis L., Providence, R. I. Saw-setting machine	448,742	Mar. 24	2416	604	54	1604
Norton, Edwin, *et al.* (See Hodgson, John G., assignor.)						
Norton, Edwin, *et al.* (See Leavitt, Frank M., assignor.)						
Norton, Frederick, assignor of one-half to J. A. Britton, New York, N. Y. Coffee-pot	445,052	Feb. 3	215	58	54	554
Norton, Harold P., Washington, D. C. Form of leads, crayons, or pencils	445,252	Jan. 27	2053	528	54	424
Norton, Henry B., Minneapolis, Minn. Shutter for photographic cameras	446,880	Feb. 24	2249	557	54	977
Norton, John A. (See Andrews and Norton.)						
Norton, Loveatus, Escanaba, Mich. Feed-water heater	447,159	Feb. 24	2734	677	54	1067
Norton, Oliver W., *et al.* (See Hodgson, John G., assignor.)						
Norton, Oliver W., *et al.* (See Leavitt, Frank M., assignor.)						
Nowill, Stephen, Constantinople, Turkey. Fork-guard	447,644	Mar. 3	605	149	54	1232
Norwich Insulated Wire Company. (See Lispenard, George, assignor.)						
Norwood, George, Boston, Mass., and J. J. Rose, Cincinnati, Ohio, assignors to W. T. Haydock, St. Louis, Mo. Spring-connection for vehicles	444,526	Jan. 13	858	223	54	179
Norwood, William J., Albany, N. Y. Washing-machine	444,010	Jan. 6	43	12	54	12
Nothstine, Elias W., Dundee, Mo. Ironing-table	446,977	Feb. 24	2404	598	54	1007
Nottingham, Richard O., Norfolk, Va. Twine-holder	446,691	Feb. 17	1929	481	54	906
Nowland, George E., New Boston, Mich. Ladder	445,453	Jan. 27	2335	607	54	481
Noyes, Bernice J., Boston, Mass. Police signaling apparatus	447,058	Feb. 24	2543	632	54	1032
Noyes, Bernice J., Boston, Mass. Police signaling apparatus	447,059	Feb. 24	2546	632, 633	54	1033
Noyes, Bernice J., Boston, Mass. Municipal signal apparatus	447,060	Feb. 24	2549	633	54	1033
Noyes, Bernice J., Boston, Mass. Municipal signal apparatus	447,061	Feb. 24	2551	634	54	1034
Noyes, Bernice J., Boston, Mass. Signal-box	447,062	Feb. 24	2552	634	54	1034
Numeviller, William. (See Richards, George H., assignor.)						
Nuttall, Robert D., Allegheny, Pa. Removable toothed gear	449,493	Mar. 31	3625	912	54	1840
Nutting Electric Manufacturing Company. (See Nutting, Samuel E., assignor.)						
Nutting, Samuel E., assignor to Nutting Electric Manufacturing Company, Chicago, Ill. Dynamo-electric machine	448,666	Mar. 24	2258	573, 574	54	1579
Nye, Frank, R. F. Denham, and O. Knudson, Lake Park, Iowa. Hand-hold for guns	445,192	Jan. 27	1958	506	54	406
Nye, George W., Chicago, Ill. Alarm-bell for grain-elevators, &c	446,881	Feb. 24	2241	557, 558	54	977
Nygren, Axel T., assignor to A. V. Carlson and P. J. A. Nygren, Stockholm, Sweden. Portable scaffold	447,798	Mar. 10	1031	259	54	1320
Nygren, Peter J. A., *et al.* (See Nygren, Axel T., assignor.)						
Nyman, Howard S. (See Phelps, George N., assignor.)						
O'Brien, Dennis V., Boston, Mass. Downdraft tubular boiler	449,381	Mar. 31	3439	865	54	1803
O'Brien, John. (See Morse, Wallace A., assignor.)						
O'Brien, Joseph P., St. Louis, Mo. Fire-place	446,363	Feb. 10	1411	346, 347	54	792

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O'Brien, Michael F. C., Louisville, Ky. Tobacco-wagon	447,546	Mar. 3	459	113	54	1204
O'Brien, William P., St. Paul, Minn. Pipe tester, closer, and clean-out	449,169	Mar. 31	3062	775	54	1736
O'Connor, William. (See Sell and O'Connor.)						
O'Ferrall, John T., *et al.* (See Jones, Washington S., assignor.)						
O'Gorman, Michael, Jersey City, N. J., assignor of one-half to M. A. Cuming, New York, N. Y. Beveling-machine	449,131	Mar. 31	3013	761, 762	54	1727
O'Hara, John H. (See Seawell & O'Hara.)						
O'Marra, Patrick, Kingston, N. Y. Surveyor's plotting-instrument	446,882	Feb. 24	2243	558	54	978
O'Meara, Jeremiah, New York, N. Y. Electric cooking apparatus	446,174	Feb. 10	1099	270	54	730
O'Meara, Jeremiah, New York, N. Y. Rheostat	447,494	Mar. 3	384	94	54	1190
O'Meara, Jeremiah, New York, N. Y. Electric heater for dental vulcanizers	448,743	Mar. 24	2418	605	54	1604
O'Neal, James M., Dallas, Tex. Ice-cream freezer	445,072	Jan. 20	1761	454	54	360
O'Neill, Thomas, San Francisco, Cal. Sheave	445,818	Feb. 3	513	123	54	612
O'Neill, William R., Milwaukee, Wis. Bicycle	444,639	Jan. 13	1026	267	54	211
O'Shea, Dennis, *et al.* (See Merrow and Sanborn, assignors.)						
O'Shea, John, Jr., *et al.* (See Merrow and Sanborn, assignors.)						
O'Toole, Richard. (See Loy and O'Toole.)						
Oakley, Edwin C. (See Newman and Oakley.)						
Oaks, William A. C., assignor to Goodell Company, Antrim, N. H. Fruit parer and corer	449,050	Mar. 24	2876	731	54	1693
Oakwood, Charles H. (See Lawrence, George R., assignor.)						
Obermeyre, Joseph G. (See Miller, John, assignor.)						
Odell, Eugene D., and A. Jones, Darlen, assignors of one-half to Racine Malleable and Wrought Iron Company, Racine, Wis. Whip-socket	445,126	Jan. 20	1841	476	54	375
Oehlmann, Emil H. C., Berlin, Germany, assignor to United States Aërophor Air Moistening and Ventilating Company, Boston, Mass. Air-moistening apparatus	444,940	Jan. 20	1561	400, 401	54	320
Oevan, Thorstein, Christiania, Norway. Telephone-transmitter	448,726	Mar. 24	2389	598	54	1598
Office Specialty Manufacturing Company. (See Yawman, Philip H., assignor.)						
Ogden, Henry, assignor of one-half to J. H. Ogden, Fall River, Mass. Brace for telegraph-poles	448,786	Mar. 24	2482	621	54	1616
Ogden, James H. (See Ogden, Henry, assignor.)						
Ogle, Albert, Muncie, Ind. Washing-machine	445,338	Jan. 27	2172	563	54	450
Ohio Cultivator Company. (See Schofield, James D., assignor.)						
Okey, Joseph B., Indianapolis, Ind. Combined harrow and sod-cutter	445,507	Jan. 27	2414	630	54	496
Old, Ansborn F., New York, assignor to Chichester Manufacturing Company, Phœnicia, N. Y. Book-rack	448,251	Mar. 17	1598	407	54	1440
Oldham, Carrick P., Knoxville, Tenn. Brick-press	445,732	Feb. 3	354	92	54	582
Oliphant, John, Toledo, Ohio. Fountain-pen	448,360	Mar. 17	1707	454	54	1479
Oliver, Doctor F., Oakland, Cal. Derrick	444,307	Jan. 6	597	154	54	118
Oliver, George R., Cambridge, Mass. Hinge	448,301	Mar. 17	1701	431	54	1460
Olney Vehicle Spring Support Manufacturing Company. (See Cochenour and Remy, assignors.)						
Olsen, Alexander, Hallock, Minn. Crushing-mill	445,071	Jan. 20	1760	454	54	360
Olsen, Tinius, Philadelphia, Pa. Recording testing-machine	445,476	Jan. 27	2302	614, 615	54	487
Olson, Edward, Jewell Junction, Iowa. Stucco for plastering	445,264	Jan. 27	2071	.....	54	428
Olsson, Sven. (See Pearson and Olsson.)						
Onion, John T., Cassella, Ohio. Shovel-protector	449,568	Mar. 31	3730	937	54	1859
Oneida Community. (See Kelley, Harry E., assignor.)						
Oneida Community. (See Wright, Orrin D., assignor.)						
Ongley, Charles E., *et al.* (See Woolcott and Wilmot, assignors.)						
Ongley, Charles E., New York, N. Y., assignor to Hydraulic Elevator Company, of Illinois. Elevator	446,137	Feb. 10	1022	252, 253	54	718
Onion, Edward D. (See Patten, John, assignor.)						
Oram, John W., assignor to C. W. Lord & Co., Baltimore, Md. Whitewash-brush	448,667	Mar. 24	2290	574	54	1579
Orchard, Henry, Peoria, Ill. Convertible chair	444,845	Jan. 20	1360	352	54	282
Orcutt, Charles H., assignor to J. W. Pearce, Springfield, Ohio. Folding chair	444,011	Jan. 6	44	12	54	12
Orcutt, J. Marcuss, Harrisonburg, Va. Wire-and-slat-fence machine	444,559	Jan. 13	914	218	54	189
Ordway, Ira J., Chicago, Ill. Dry closet	449,204	Mar. 31	3267	828	54	1773
Orford, John M., Bridgeport, Conn. Socket for incandescent electric lamps	446,995	Feb. 24	2428	604	54	1011
Orford, John M., Bridgeport, and J. C. English, New Haven, Conn. Electric switch	447,788	Mar. 10	838	210	54	1284
Orr, James M., East Point, Ga. Combined cotton-seed planter and fertilizer-distributer	446,978	Feb. 24	2405	598, 599	54	1007
Orris, Frank, *et al.* (See Wells and Vowles, assignors.)						
Orwig, Samuel H., Lewisburg, Pa. Hydrant	448,727	Mar. 24	2392	599	54	1599
Osborn, David L., assignor of two-thirds to D. G. Blair and E. S. Northup, Kansas City, Mo. Combined aerial ladder and elevator	445,193	Jan. 27	1959	506, 507	54	406
Osborn, David L., assignor of two-thirds to D. G. Blair and E. S. Northup, Kansas City, Mo. Aerial ladder for firemen and others	446,560	Feb. 17	1735	426	54	869
Osborn, George L. (See Armstrong, Bigelow, and Osborn.)						
Osborne, Henry F., Newark, N. J. Strap-trimming tool	444,012	Jan. 6	46	13	54	12
Osgood, Isaac, Chicago, Ill. Folding bed	445,029	Feb. 3	173	45, 46	54	545
Osgood, Joseph H., Peabody, Mass. Medicinal plaster	446,610	Feb. 17	1798	444	54	892
Osgood, Joseph H., Peabody, Mass. Type-writing machine	447,789	Mar. 10	839	210	54	1284
Osgood, W. O. (See Parker, Sidney, assignor.)						
Osshsimer Brothers. (See Lioret, Henri, assignor.)						
Ostenberg, John A., Des Moines, Iowa. Automatic weighing and packing machine	446,266	Feb. 10	1368	341	54	762
Ostenberg, John A., Des Moines, Iowa. Continuous automatic starch-table	447,790	Mar. 10	841	211	54	1284
Ostergren, Otto F., and A. K. Schaap, Richmond, Va. Garment-protector	446,819	Feb. 17	2125	528	54	917
Osterhout, James A., assignor to National Machine Company, Troy, N. Y. Machine for cutting and stitching button-holes	447,791	Mar. 10	843	211, 212	54	1285
Ostrom, Charles A., H. H. Thiellesen, and S. C. Wampler, Custer City, S. D. Clothes-pin	444,303	Jan. 6	506	132	54	101
Otis, Clark, Farmer Village, N. Y. Steam-radiator	447,241	Feb. 24	2874	714	54	1086
Otis Company. (See Gates, Frank H., assignor.)						
Otis, Norton P., Yonkers, N. Y. Elevator	447,899	Mar. 10	1032	259	54	1320
Otis, Norton P., and R. C. Smith, Yonkers, N. Y. Electric elevator	444,640	Jan. 13	1027	267, 268	54	212
Otis, Norton P., and W. H. Underwood, Yonkers, N. Y. Method of and apparatus for determining the direction of sounds	448,252	Mar. 17	1599	407, 408, 409	54	1440
Ott, Frederick, Gloucester, N. J. Reed for looms	444,133	Jan. 6	256	62	54	52
Otte, Theodor, Schkenditz, assignor to the firm of J. Pohlig, Cologne, Germany. Truck for vehicles for ropeways	444,109	Jan. 6	208	50	54	43
Oulton, James W., Lynn, and D. A. Meister, Boston, Mass. Collapsible baby-carriage	445,599	Feb. 3	125	32	54	535
Outerbridge, Albert A., Philadelphia, Pa. Puzzle-ball	446,515	Feb. 17	1698	416	54	862

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Overholt, Edward H. (See Hohenshell and Overholt.)						
Overman, Albert H., Springfield, assignor to Overman Wheel Company, Chicopee Falls, Mass. Hollow wheel-rim	446,189	Feb. 10	1121	274	54	734
Overman, Albert H., Springfield, Mass., assignor to Overman Wheel Company, Hartford, Conn. Vehicle-wheel	446,692	Feb. 17	1930	481	54	906
Overman Wheel Company. (See Archer and Bowley, assignors.)						
Overman Wheel Company. (See Overman, Albert H., assignor.)						
Overman Wheel Company. (See Starley, John K., assignor.)						
Owen, Alva, Chicago, Ill. Electric appliance for trusses	444,599	Jan. 13	971	251	54	201
Owen, Edmund B., assignor of one-half to W. W. Thomas, Jersey City, N. J. Door-knob	448,454	Mar. 17	1945	490	54	1506
Owens, Charles E. (See Chattanay and Owens.)						
Ozias, Orange O., and E. Canby, Dayton, Ohio. Weighing and price scale	448,837	Mar. 24	2553	641	54	1629
Pabst, George F., assignor of one-half to J. Muller, Philadelphia, Pa. Solder	448,161	Mar. 10	1439	.....	54	1401
Pacific Gas Engine Company. (See Thompson, Edgar, assignor.)						
Packer, George W., Rock Falls, Ill., assignor to Empire Manufacturing Company, Keokuk, Iowa. Nail-machine	448,585	Mar. 17	2435	525, 526	54	1543
Packer, John F., assignor to D. Bradley Manufacturing Company, Chicago, Ill. Disk harrow	449,132	Mar. 31	3014	762	54	1727
Packer, Willard N. (See Bradley and Packer.)						
Packer, Willard N., and W. W. Bradley, Canton, Ohio. Clock-winding mechanism	445,073	Jan. 20	1762	454	54	360
Packham, Frank R., assignor to Superior Drill Company, Springfield, Ohio. Cultivator	446,563	Feb. 17	1738	432	54	870
Paddock, Howard, Albany, N. Y. Ice-water receptacle	444,013	Jan. 6	47	13	54	12
Page, Lawrence, Beaver Falls, Pa. Display-rack for carpets, oil-cloths, &c.	449,230	Mar. 31	3159	796	54	1754
Page, Albert A. (See Sargent and Page.)						
Page, Alfred, and S. S. Bloom, Philadelphia, Pa. Artificial tooth	445,230	Jan. 27	2015	519	54	418
Page, Alfred, and S. S. Bloom, Philadelphia, Pa. Artificial tooth	445,231	Jan. 27	2016	519	54	418
Page, Edward A. (See La Burt, John, assignor.)						
Page, Levi H., assignor to Garden City Filler Company, Chicago, Ill. Egg-carrier	445,074	Jan. 20	1765	455	54	360
Paige, Frederick O., Detroit, Mich. Paper bag	448,142	Mar. 10	1406	360	54	1395
Paige, Timothy, *et al.* (See Ludwig, John C., assignor.)						
Paillard & Co., M. J. (See Hussey, Charles A., assignor.)						
Pain, Robert W., assignor to Aeolian Organ and Music Company, New York, N. Y. Musical instrument	445,075	Jan. 20	1766	455	54	361
Paine, George C., assignor of one-half to J. S. Healy, Boston, Mass. Shaft-ring	446,390	Feb. 10	1454	357	54	801
Paine, Luther E., assignor to Edinburg Foundry and Machine Company, Edinburg, Ind. Weather-board sawing attachment for circular saws	448,162	Mar. 10	1439	368	54	1401
Paine, Luther E., assignor to Edinburg Foundry and Machine Company, Edinburg, Ind. Self-feed rip-sawing machine	448,163	Mar. 10	1440	368	54	1401
Paine, William H., New York, N. Y. Pneumatic tunneling apparatus	445,194	Jan. 27	1962	507	54	407
Painter, Carl T. (See Reed and Painter.)						
Painter, Samuel E., Cranberry, Pa. Can-opener	446,883	Feb. 24	2245	558	54	978
Pajeau, Joseph, Chicago, Ill. Building-tile	449,133	Mar. 31	3015	763	54	1727
Palica, Frank C., Racine, Wis. Trunk	444,944	Jan. 20	1564	401	54	321
Pallen, Edward R., Philadelphia, Pa. Milling-cutter	447,900	Mar. 10	1034	260	54	1321
Pallweber, Josef, Furtwangen, Baden, assignor to S. Stern, Frankfort-on-the-Main, Germany. Watch-case spring	447,473	Mar. 3	349	87	54	1183
Palu, Alexander A., Calico, Cal. Screen	444,272	Jan. 6	436	110	54	85
Palmer, Edwin C., and S. G. Ryder, assignors to Standard Tool Company, Cleveland, Ohio. Revolving emery-wheel dresser	448,787	Mar. 24	2483	621	54	1616
Palmer, Frank L., New London, Conn. Quilting-machine	448,253	Mar. 17	1604	409, 410	54	1441
Palmer, Henry H., *et al.* (See Palmer, Samuel D., assignor.)						
Palmer, James S., London, England, assignor to F. Beck, New York, N. Y. Composition of plastic material	447,412	Mar. 3	231	.....	54	1161
Palmer, John H., Philadelphia, Pa., assignor to Acme Button Hole Attachment Company, Limited, New York, N. Y. Button-hole attachment for sewing-machines	444,846	Jan. 20	1362	353	54	283
Palmer, Maro V., Willimantic, assignor to Willimantic Linen Company, Hartford, Conn. Thread-unwinder for sewing-machines	446,465	Feb. 17	1587	390	54	840
Palmer, Noyes F., Brooklyn, N. Y. Fountain-pen	445,600	Feb. 3	126	32	54	536
Palmer, Samuel D., assignor of two-thirds to H. H. Palmer and G. E. King, Rockford, Ill. Churn-closure	446,391	Feb. 10	1455	357	54	802
Palmer, William, Jr., Rincon, New Mexico. Windmill	445,553	Feb. 3	83	19, 20	54	527
Pancoast, Richard M., Camden, N. J. Exhaust-cowl	445,819	Feb. 3	514	123, 124	54	612
Panhorst, Wilhelm. (See Grossenbach and Panhorst.)						
Pannebaker, William A., East Waterford, Pa. Saw-mill dog	446,979	Feb. 24	2407	599	54	1007
Pappa, James. (See Finn and Pappa.)						
Paquette, Theophile, and F. R. Child, Webster, Mass. Hub-boring machine	449,494	Mar. 31	3026	912, 913	54	1840
Park, Joseph, Jr., assignor of two-thirds to E. Johnson and W. L. Earle, Tully, N. Y. Packing device	444,784	Jan. 13	1259	326	54	254
Park, William R., Taunton, Mass. Injector	448,488	Mar. 17	1909	500	54	1516
Parker, George, Preston, England, assignor of one-third to J. H. Lancaster, New York, N. Y. Dobby for looms	448,668	Mar. 24	2291	574, 575	54	1579
Parker, James O., trustee. (See Petersen, Henry, assignor.)						
Parker, John N., Coldwater, Mich. Wire-tightener	447,436	Mar. 3	270	68	54	1169
Parker, Jonas, *et al.* (See Stewart, William J., assignor.)						
Parker, Josiah A., St. Louis, Mo. Telegraph apparatus	447,198	Feb. 24	2996	691	54	1080
Parker, Sidney, assignor of two-thirds to W. O. Osgood, Chicago, Ill. Blast-furnace	446,168	Feb. 10	1092	268	54	729
Parker, Thomas, and A. E. Robinson, Wolverhampton, England. Making iodine by electrolysis	448,541	Mar. 17	2068	.....	54	1531
Parkhurst, Edward B., Woburn, Mass., assignor to National Cash Register Company, Dayton, Ohio. Cash register and indicator	444,368	Jan. 6	509	154, 155	54	119
Parkin, Joseph W., Philadelphia, Pa. Support for spinning-spindles	446,207	Feb. 10	1149	281	54	739
Parkinson, Thomas J., assignor of one-half to J. R. Baum, Pittsburg, Pa. Bed	447,257	Feb. 24	2895	719	54	1100
Parks, James H., Clarendon, Tex. Clinometer or slope-measurer	444,196	Jan. 6	356	88	54	72
Parmelee, Wolcott J., Wilkes-Barré, Pa. Machine for rolling axles	444,253	Jan. 6	437	110	54	86
Parmeter, George C., and A. G. C. Stetson, Philadelphia, Pa. Carpet-fastener	448,068	Mar. 10	1303	333	54	1373
Paronto, John M., Hoyt, Kans. Hay-rake	448,926	Mar. 24	2690	678	54	1656
Parrish, Thomas K., Richmond, Va. Hooping wooden vessels	448,990	Mar. 24	2784	704	54	1674
Parry, David M. and T. H., Indianapolis, Ind. Vehicle-spring	447,005	Feb. 24	2443	607	54	1014
Parry, George T., Philadelphia, Pa. Signal-light	448,069	Mar. 10	1304	333	54	1373
Parry, Thomas H. (See Parry, David M. and T. H.)						
Parry, William A., North Cambridge, Mass. Pug-mill	445,703	Feb. 3	310	82	54	573

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Parry, William H., assignor to J. H. Havens, New York, N. Y. Saw filing and setting machine	445,858	Feb. 3	571	139, 140	54	623
Parshall, Horace F., assignor to Wenstrom Consolidated Dynamo and Motor Company of Baltimore City, Baltimore, Md. Commutator and brush	446,536	Feb. 17	1700	417	54	892
Parsons, Byron J., assignor to F. W. Fitch, Omaha, Nebr. Automatic trolley-catcher for electric railways	449,569	Mar. 31	3731	937	54	1859
Parsons, T. J. (See Cook and Harvey, assignors.)						
Partridge, Benjamin F., Portsmouth, Mich. Carriage-cover	447,842	Mar. 10	937	235	54	1303
Pasquarelli, Oreste, Torino, Italy, assignor to C. A. Steinheil Söhne, Munich, Germany. Photographic apparatus	445,232	Jan. 27	2017	520	54	418
Passage, Hiram H., Plymouth, Mich. Spring air-gun	446,711	Feb. 17	1959	488	54	912
Passburg, Emil, Breslau, Germany. Vacuum drying apparatus	447,345	Mar. 3	106	29	54	1138
Passelt, Ludwig. (See Schimansky and Passelt.)						
Pasteyer, Joseph. (See Lachamme and Pasteyer.)						
Patent and Industrial Development Syndicate. (See Paterson, James, assignor.)						
Patent Waterproof Paper and Canvas Company. (See Williams, James, assignor.)						
Paterson, James, assignor of one-half to Patent and Industrial Development Syndicate, Limited, London, England. Self-indicating target	449,270	Mar. 31	3223	813, 814	54	1766
Paterson, James and W., Stockton, assignors to Benicia Agricultural Works, Benicia, Cal. Gang-plow	449,329	Mar. 31	3344	843	54	1786
Paterson, William. (See Paterson, James and W.)						
Patrick, Armena. (See Tousley, Miron G., assignor.)						
Patten Alternating Motor Company. (See Patten, Francis J., assignor.)						
Patten, Francis J., New York, N. Y., assignor, by mesne assignments, to Patten Alternating Motor Company, of New Jersey. Electric motor	445,623	Feb. 3	163	43, 44	54	543
Patten, Francis J., New York, N. Y., assignor, by mesne assignments, to Patten Alternating Motor Company, of New Jersey. Electric motor	445,624	Feb. 3	166	41	54	544
Patten, John, New York, N. Y., assignor of one-half to E. D. Onion, Baltimore, Md. Type-distributing machine	446,245	Feb. 10	1195	293, 294, 295, 296, 297, 298	54	748
Patten, John, New York, N. Y., assignor to J. Patten Manufacturing Company, of New York. Method of and apparatus for separating vapors from foaming concentrated solutions	447,258	Feb. 24	2896	719, 720	54	1101
Patten Manufacturing Company, John. (See Patten, John, assignor.)						
Patterson, Peter, assignor to National Tube Works Company, McKeesport, Pa. Apparatus for making tubing	444,568	Jan. 13	932	242	54	193
Patterson, Peter, assignor to National Tube Works Company, McKeesport, Pa. Apparatus for welding tubing	444,569	Jan. 13	934	242	54	193
Patterson, Robert L., assignor of one-half to H. A. Riemann, Wellington, Kans. Machine for dressing floors or the surface of lumber	447,160	Feb. 24	2735	677	54	1068
Patterson, William H., Cleveland, Ohio, assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machine	446,839	Feb. 17	2158	536, 537	54	954
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Magneto-bell	444,600	Jan. 13	971	252	54	201
Patton, Arthur L. (See Patton, John L. and A. L.)						
Patton, John L. and A. L., Panola, Ill. Wagon-brake	444,369	Jan. 6	606	156	54	120
Paul, A. C., *et al.* (See Munsing, George D., assignor.)						
Paul, Archibald, Cohoes, N. Y. Thill-coupling	446,005	Feb. 10	812	196	54	679
Paul, David S., Philadelphia, Pa. Pattern	445,859	Feb. 3	574	140	54	624
Paul, Harry B., Camden, N. J. Sulky	441,921	Jan. 20	1529	393	54	314
Paul, Lawrence H., Wyoming, Iowa. Return-pulley	447,193	Feb. 24	2708	691	54	1080
Paull, Archibald W., Wheeling, W. Va. Lamp-shade tripod	444,650	Jan. 13	1042	274	54	214
Paxson, Richard, Philadelphia, Pa. Chain	447,620	Mar. 3	570	141	54	1225
Payne, Clarence Q., Stamford, Conn. Magnetic-ore separator	444,223	Jan. 6	396	99	54	79
Payne, John J. E. H., Lipscomb, Tex. Safe	444,197	Jan. 6	357	88, 89	54	72
Peabody, James B. (See Jones, Franklin L., assignor.)						
Peabody, Lewis G., *et al.* (See Lovett, Eliphalet R., assignor.)						
Peabody, Roswell L., New York, N. Y. Pendant-set watch	447,474	Mar. 3	350	87	54	1183
Peachey, Joseph H., Allensville, Pa. Grain-register	446,788	Feb. 17	2070	516	54	935
Peacock, Edward F., Philadelphia, Pa. Rod-packing	446,364	Feb. 10	1412	347	54	792
Peacock, Ralph, and H. L. Lange, Manchester, England. Locomotive-engine	448,927	Mar. 24	2692	679	54	1657
Pearce, James, Pittsburg, Pa. Brake-beam	444,159	Jan. 6	297	71	54	60
Pearce, John W. (See Orcutt, Charles H., assignor.)						
Pearson, James T. (See Hitchen, Pearson, and Richmond.)						
Pearson, Nels, and S. Olsson, Philadelphia, Pa. Stirrup	445,411	Jan. 27	2257	591	54	471
Pearson, William A., Jr., Scranton, Pa. Rail-chair	449,570	Mar. 31	3732	938	54	1859
Pease, Charles F. (See Knowlton and Pease.)						
Pease, Edwin O., Jersey City, N. J. Vehicle running-gear	449,427	Mar. 31	3525	887	54	1820
Pease, Henry C., Worcester, Mass. Leather-cutting machine	445,588	Feb. 3	111	27	54	533
Pease, Roger S., Rose, assignor of one-half to A. E. Bowe, St. Paul, Minn. Manufacturing glass	444,560	Jan. 13	916	239	54	190
Peaslee, Charles R., Louisville, Ky. Sheet-metal-folding machine	445,589	Feb. 3	113	28	54	533
Peck, Ira F., Providence, R. I. Making seamless plated wire	449,448	Mar. 31	3526	888	54	1820
Peck, Ira F., Providence, R. I. Lacing-hook	449,449	Mar. 31	3562	897	54	1827
Peck, Melinda. (See Peck, Orrin B., assignor.)						
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Apparatus for separating particles of metallic or mineral-bearing substances of different specific gravity	444,613	Jan. 13	989	257	54	204
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Centrifugally treating particles of metallic or mineral-bearing substances	444,614	Jan. 13	990	257	54	204
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity.	444,615	Jan. 13	992	258	54	205
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity.	444,616	Jan. 13	993	258	54	205
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity.	444,617	Jan. 13	995	259	54	205
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Machinery for centrifugally treating particles of metallic or mineral-bearing substances	444,618	Jan. 13	996	259	54	206
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Machinery for centrifugally treating particles of metallic or mineral-bearing substances of different degrees of specific gravity.	444,619	Jan. 13	997	259	54	206
Peck, Walter A. (See Bright and Peck.)						
Pedersen, Peder, and D. C. Miller, Omaha, Nebr. Car-coupling	447,718	Mar. 3	704	176	54	1251

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Peel, James N. (See Waterous and Peel.)						
Peevers, William L., Detroit, Mich. Pillow-sham holder	447,118	Feb. 24	2634	654	54	1051
Pegram, George H., St. Louis, Mo. Riveting-machine	445,935	Feb. 3	683	167	54	645
Pegram, George H., St. Louis, Mo. Riveting-machine	445,936	Feb. 3	686	167	54	646
Pehrsson, Olof, Tacoma, Wash. Folding vapor-bath	445,432	Jan. 27	2307	598, 599	54	477
Peirce, William C., Providence, R. I. Railway drawing-head	447,200	Feb. 24	2709	692	54	1080
Peitzsch, Bernhard, Stassfurt, assignor to Chemische Fabrik Buckau, Magdeburg, Germany. Treating Stassfurt salts	446,267	Feb. 10	1270	.....	54	763
Pelzer John, and J. Werel, Humbird, Wis. Fanning-mill	446,365	Feb. 10	1414	347	54	793
Penberthy Injector Company. (See Downes, William A., assignor.)						
Pendery, Emma D. (See Pendery, William H., assignor.)	445,195	Jan. 27	1963	508	54	407
Pendery, William H., assignor to E. D. Pendery, Wyoming, Ohio. Bag-holder	448,254	Mar. 17	1608	410	54	1442
Pendleton, John M. (See Madden, Albert F., assignor.)	444,504	Jan. 13	881	216	54	173
Penfield, Charles R., Lansing, Mich. Cutter-head						
Penfield, Matie B., Dallas, Tex. Hot-pan lifter						
Penland, William H. (See Fine, William R., assignor.)						
Pennie, John C. (See Honse, Warren D., assignor.)						
Penniman, George D., *et al.* (See Silkman, Edward J., assignor.)	448,361	Mar. 17	1798	454	54	1479
Penniman, Russell S., Dover, N. J. Manufacturing nitrate of ammonia	448,362	Mar. 17	1801	454	54	1479
Penniman, Russell S., Dover, N. J. Preparing nitrate of ammonia	448,255	Mar. 17	1609	411	54	1442
Pennington, Charles A., Champaign, Ill. Type-writing machine						
Pennington, Martin A. (See Elmond, William H., assignor.)	449,420	Mar. 31	3527	888	54	1820
Pennock, Abraham L., Lansdowne, Pa. Transom-lifter						
Pennsylvania Globe Gas Light Company. (See Meredith, Edmund, assignor.)	445,300	Jan. 27	2110	546, 547	54	436
Penny, John T., and W. H. Richardson, Adelaide, South Australia. Machine for amalgamating gold and silver bearing ores						
Pennypacker, William G. (See Grimm and Pennypacker.)	446,138	Feb. 10	1028	253, 254	54	719
Pentz, Albert D., Elizabeth, N. J. Counter-shaft						
Peoria Metal Spinning Company. (See Bevington, James H., assignor.)	444,280	Jan. 6	473	120	54	94
Pepin, Frank, assignor of one-half to J. J. Purinton, East Liverpool, Ohio. Painter's jack	445,379	Jan. 27	2224	556, 557	54	460
Peral, Isaac, San Fernando, Spain. Reflector	445,356	Jan. 27	2199	570	54	455
Peranlt, John B., Belmont, Mass. Wrench						
Percival, Herbert E., Oklahoma, Oklahoma Ter., assignor to E. Converse, Worcester, Mass. Pinless clothes-line	446,006	Feb. 10	814	197	54	679
Percival, Herbert E., Oklahoma, Oklahoma Ter., assignor to E. Converse, Worcester, Mass. Clothes-line	446,007	Feb. 10	815	197	54	679
Perfler, Joseph E. (See Moore and Perfler.)						
Perkins, Charles A., and W. H. H. Norcross, assignors to G. H. Eaton & Co., Boston, Mass. Opera-glasses	446,611	Feb. 17	1799	445	54	882
Perkins, Charles H., *et al.* (See Mitchell, George P., assignor.)						
Perkins, Charles H., assignor to Rhode Island Horse Shoe Company, Providence, R. I. Manufacture of horseshoe-bars	449,051	Mar. 24	2878	731, 732	54	1693
Perkins, Charles H., assignor to Rhode Island Horse Shoe Company, Providence, R. I. Die-roll for making horseshoe-blank bars	449,052	Mar. 24	2884	732	54	1693
Perkins, Charles H., assignor to Rhode Island Horse Shoe Company, Providence, R. I. Horseshoe-blank and blank-bar	449,053	Mar. 24	2885	733	54	1694
Perkins, Charles H., assignor to Rhode Island Horse Shoe Company, Providence, R. I. Horseshoe-blank bar	449,054	Mar. 24	2886	733	54	1694
Perkins, Charles H., assignor to Rhode Island Horse Shoe Company, Providence, R. I. Horseshoe-blank bar	449,055	Mar. 24	2887	733	54	1694
Perkins, Charles H., assignor to Rhode Island Horse Shoe Company, Providence, R. I. Horseshoe-blank and blank-bar	449,056	Mar. 24	2888	733	54	1695
Perkins, Charles H., assignor to Rhode Island Horse Shoe Company, Providence, R. I. Metal-slitting machine	449,057	Mar. 24	2889	734	54	1695
Perkins, James W., San José, Cal. Machine for making compound paper and jute twine	446,926	Feb. 24	2027	578	54	992
Perkins, Peter. (See Reynolds and Perkins.)						
Perkins, Theodore E., Tunkhannock, Pa. Egg-carrier	449,330	Mar. 31	3345	843	54	1786
Perkins, William, *et al.* (See Dean, James H., assignor.)						
Perret, Frank A., assignor to Elektron Manufacturing Company, Brooklyn, N. Y. Electric contact device	448,669	Mar. 24	2292	575	54	1579
Perrin, Philibert F., Brunswick, Ga. Liniment	448,748	Mar. 24	2393	.....	54	1590
Perry, Albert M., Richmond, Va. Rail-brake	447,161	Feb. 24	2737	677	54	1068
Perry, Edward L., Paterson, N. J. Bellows-fold coupling	449,587	Mar. 31	3766	945	54	1865
Perry, Frank W, assignor to Hero Fruit Jar Company, Philadelphia, Pa. Bottle-stopper	448,070	Mar. 10	1306	333, 334	54	1373
Perry, Franklin W., assignor to Hero Fruit Jar Company, Philadelphia, Pa. Machine for making metal capsules	447,137	Feb. 24	2696	668	54	1060
Perry, James L., Watertown, assignor to Berlin Machine Works, Beloit, Wis. Wood-polishing machine	447,047	Feb. 24	2528	627, 628	54	1029
Perry, James W., and R. H. Dixon, Santa Rosa, Cal. Pruning implement	448,363	Mar. 17	1802	454	54	1479
Perry, Samuel R., Scranton, Pa. Piano-forte action. (Reissue)	11,138	Jan. 6	680	177	54	134
Perry, Samuel R., Scranton, Pa. Piano-action	449,263	Mar. 31	3242	811	54	1764
Perry, Thomas H., Indianapolis, Ind. Combined paper-cutter and book-mark	445,196	Jan. 27	1965	508	54	408
Perry, Thomas O., Chicago, Ill. Safety-coupling	447,413	Mar. 3	232	59	54	1161
Perry, William A., *et al.* (See Alberger, Louis R., assignor.)						
Perry, William A., *et al.* (See Schwanhausser, William, assignor.)						
Perry, William D., *et al.* (See Easton, James W., assignor.)						
Perry, Wilton H., Brooklyn, N. Y. Fruit-cleaner	447,901	Mar. 10	1035	260	54	1321
Perry, Wilton H., Brooklyn, N. Y. Apparatus for baking, roasting, and steaming	448,886	Mar. 24	2633	662	54	1644
Person, Lucius, Holyoke, Mass. Automatic animal-feeder	448,256	Mar. 17	1611	411	54	1442
Peteler, Frank C., Minneapolis, Minn. Heater	446,008	Feb. 10	816	197	54	679
Petersen, Henry, assignor to J. O. Parker, trustee, Chicago, Ill. Furnace	444,671	Jan. 13	1082	280	54	222
Peterson, Ola L., Assaria, Kans. Wheat-drill	445,076	Jan. 20	1768	455, 456	54	361
Peterson, Richard N. (See Clonser, Samuel F., assignor.)						
Petrie, Henry I. (See Chapman, Clarence L., assignor.)	446,980	Feb. 24	2408	599	54	1008
Petro, Samuel H., assignor of one-half to W. Hunt, Darlington, Ind. Incubator	449,085	Mar. 24	2933	743	54	1703
Pettay, Charles H., assignor to W. W. Alexander, Akron, Ohio. Line-tightener						
Pettengill, Asa. (See Pettengill, Walter E., assignor.)	445,077	Jan. 20	1769	456	54	361
Pettengill, Walter E., assignor of one-half to A. Pettengill, Rockville, Conn. Nail-puller	445,286	Jan. 27	2096	541	54	443
Pettigrew, Charles, Joliet, assignor to Illinois Steel Company, Chicago, Ill. Billet-conveyer						

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Pettigrew, Charles, Joliet, assignor to Illinois Steel Company, Chicago, Ill. Billet-conveyer	445,287	Jan. 27	2096	541	54	433
Pettigrew, Charles, Joliet, assignor to Illinois Steel Company, Chicago, Ill. Billet-conveyer	445,288	Jan. 27	2097	542	54	433
Pettingill, Ubert K. (See Burrows, George C., assignor.)						
Pew, Joseph N., Pittsburg, Pa. System for pumping natural gas	448,670	Mar. 24	2293	575	54	1580
Pfordner, Adolf, assignor to P. J. Healy, Chicago, Ill. Tone-sustaining device for pianos	448,887	Mar. 24	2635	662	54	1644
Pfingst, Louis P. (See Smith and Pfingst.)						
Pfingst, Louis, Boston, and S. A. Bemis, Springfield, Mass. Truck for railway-cars	449,382	Mar. 31	3440	866	54	1803
Pfitzinger, William, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Yellow dye	446,009	Feb. 10	817	.....	54	679
Pfunger, Ernest F., Akron, Ohio. Harness-rosette	444,370	Jan. 6	607	156	54	120
Pfunger, Ernest F., Akron, Ohio. Sweat-pad fastening	448,071	Mar. 10	1306	334	54	1374
Phelps, George N., Brooklyn, assignor of one-half to H. S. Nyman, New Brighton, N. Y. Ore-roasting furnace	446,996	Feb. 24	2430	605	54	1012
Phelps, Harvey J., assignor of one-half to O. B. Thorp, Havana, Ill. Grain-drill	448,991	Mar. 24	2785	705	54	1675
Phelps, Henry W., *et al.* (See Ranney, Darwin D., assignor.)						
Phelps, James R., Sacramento, Cal. Spreader for gaiting horses	444,570	Jan. 13	936	243	54	193
Phifer, George A., Harrison, Ohio. Coffee-boiler	444,014	Jan. 6	49	14	54	13
Philip, Frank, Stockport, N. Y. Scratch-awl	445,380	Jan. 27	2226	577	54	460
Phillips, Andrew G., San Francisco, Cal. Sofa-bed	446,663	Feb. 17	1788	443	54	880
Phillips, Charles E., Rochester, N. Y., assignor to H. Rogers, trustee, Boston, Mass. Heel-trimming machine	445,233	Jan. 27	2018	520	54	418
Phillips, Cornelius J., New York, N. Y. Expansible bolt-fastening device	445,332	Jan. 27	2163	561	54	448
Phillips, George. (See Brown, Edward K., assignor.)						
Phillips, Henry, Newark, N. J., assignor to Spiral Weld Tube Company, of New Jersey. Device for scouring metallic cylinders	445,197	Jan. 27	1967	508	54	408
Phillips, Hiram. (See Kirtley and Phillips.)						
Phillips, James B., assignor of one-half to W. J. Dougherty, Miles Grove, Pa. Fork-rolling machine	449,058	Mar. 24	2891	734	54	1695
Phillips, John V. (See Matson and Phillips.)						
Phillips, Judson B., Fenton, Mich. Window-screen frame	445,026	Jan. 20	1684	433	54	345
Phillips, Simeon G., Woodbridge, N. J. Drying apparatus	449,170	Mar. 31	3063	775	54	1737
Phillips, Simeon G., Woodbridge, N. J. Drying apparatus	449,231	Mar. 31	3159	797	54	1754
Phillips, Thomas A., and J. J. Greenhoe, Williamstown, Pa. Permutation-lock	447,021	Mar. 3	572	141	54	1225
Phillips, Walter, Coventry, England. Velocipede	445,574	Feb. 3	86	20	54	522
Phillips, William H. (See Marvel, Theodore L., assignor.)						
Phillis, Avery E., assignor to Logan & Strobridge Iron Company, New Brighton, Pa. Coffee-mill	449,086	Mar. 24	2933	743	54	1703
Phinney, George W., Guerneville, Cal. Plow	449,331	Mar. 31	3346	844	54	1786
Phinney, Squire Z., Pawtucket, R. I. Cigar cutting and branding machine	448,302	Mar. 17	1702	431	54	1460
Phipps, George T. (See Phipps, William, assignor.)						
Phipps, William, assignor of one-half to G. T. Phipps, Milwaukee, Wis. Check damper for stoves, &c.	445,078	Jan. 20	1770	456	54	361
Pickard, Arthur, Leeds, England. Construction of canals	448,072	Mar. 10	1307	334	54	1374
Pickles, Charles K., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	445,079	Jan. 20	1771	456	54	361
Pickles, Charles K., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	445,080	Jan. 20	1772	457	54	362
Pickles, Charles K., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	446,010	Feb. 10	818	197	54	679
Pickles, Charles K., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	446,011	Feb. 10	819	198	54	680
Pickles, Charles K., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	446,012	Feb. 10	819	198	54	680
Pickles, Charles K., assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	446,366	Feb. 10	1415	348	54	793
Pierce, George W. (See Preston, Charles A., assignor.)						
Pierce, Jesse W., Belton, Tex. Type-writing machine	446,638	Feb. 17	1843	{457, 458}	54	890
Pietschmann, Carl, Pankow, near Berlin, assignor to Berliner Musik Instrumentin Fabrik, Aktien Gesellschaft, vormals Chas. F. Pietschmann & Söhne, Berlin, Germany. Mechanical musical instrument	447,970	Mar. 10	1157	293	54	1343
Piggins, Charles R., Racine, Wis. Lifting-jack	446,537	Feb. 17	1701	417	54	862
Pigott, Michael A., St. Louis, Mo. Clothes-wringer	446,612	Feb. 17	1800	445	54	882
Pike, William L., Groton, N. Y. Road-cart	446,884	Feb. 24	2246	559	54	978
Pillot, Alexandre. (See Benoit and Pillot.)						
Pinfold, Arthur G., Cleckheaton, England. Metronome	449,635	Mar. 31	3861	967	54	1884
Pingree, Mellen A. (See Howard, Frank P., assignor.)						
Pinkham, Horace A. (See Tirrell, Jacob P., assignor.)						
Piper, Edwin J. (See Carleton, Andrew J., assignor.)						
Piper, Myron H., assignor of one-half to C. S. Bird, Walpole, Mass. Folding flower-pot	448,143	Mar. 10	1408	360	54	1395
Pitman, Aaron, Matawan, N. J. Glass blowing tube	444,160	Jan. 6	298	71	54	61
Pitt, William R., New York, N. Y. Folding gate	444,705	Jan. 13	1235	321	54	250
Pitts Agricultural Works. (See Todd, Marquis J., assignor.)						
Pittsburg Mop Wringer Company. (See Jarboe, Walter S., assignor.)						
Place, Louis de, Angers, France. Apparatus for testing metal pieces	445,860	Feb. 3	576	140	54	624
Plain, Jared W., Toledo, Ohio. Urinal	444,074	Jan. 6	152	38	54	33
Planchon, Victor, Boulogne, France. Photographic film	448,364	Mar. 17	1803	455	54	1480
Platt, Irving G., Waterbury, Conn. Rivet	446,466	Feb. 17	1588	390	54	841
Player, John, Topeka, Kans. Car-brake	446,569	Feb. 17	1747	430	54	871
Player, John, Topeka, Kans. Brake-shoe	446,570	Feb. 17	1747	430	54	872
Player, John, Topeka, Kans. Car-wheel	446,571	Feb. 17	1748	430	54	872
Plischke, Gerhard P., and H. Brueckel, Milwaukee, Wis. Clamp	447,926	Mar. 3	432	106	54	1199
Plume & Atwood Manufacturing Company. (See Atwood and Tobey, assignors.)						
Plumly, Eugene K. (See Salisbury, George P., assignor.)						
Plummer, John E., Waterville, N. Y. Gage for sorting leather	448,586	Mar. 17	2138	536	54	1544
Plummer, John W., Somerville, Mass. Rand-trimmer	449,232	Mar. 31	3162	797	54	1755
Pneumatic Power and Railroad Gate Company. (See McDonald and Brent, assignors.)						
Pocock, Francis A., Scranton, Pa. Machine for mining coal	444,116	Jan. 6	216	52, 53	54	44
Pocock, Francis A., assignor of two-thirds to E. H. Lawall and R. J. Foster, Scranton, Pa. Insulator for electrical conductors for mines	448,838	Mar. 24	2555	641	54	1630
Pohl, Henry U., Saginaw, Mich. Chair	444,992	Jan. 20	1641	421	54	336
Pohlig, J. (See Otto, Theodor, assignor.)						
Poindexter, Robert E. (See Kiler, Charles M., assignor.)						
Poindexter, Robert E., Indianapolis, Ind. Fence-post base	445,198	Jan. 27	1968	509	54	409

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Polakoff, Charles, and R. Lange, Buffalo, N. Y. Combination furniture	449,430	Mar. 31	3529	{888, 889}	54	1821
Polk, Edward B. (See Frank, Samuel B., assignor.)						
Pollard, Thomas P., Richmond, Va. Nut-lock	447,697	Mar. 3	673	168	54	1245
Polley, William, Rochester, assignor to himself, F. E. Rogers, C. F. Preston, New York, and J. T. Bender, Brooklyn, N. Y. Rotary sole-trimmer	446,013	Feb. 10	820	198	54	680
Pollock, John A., Garrison's, N. Y. Acoustic alarm for oil-cans	445,608	Feb. 3	141	37	54	538
Pomeroy, Bennard H., New York, assignor to Pomeroy Machine Co., Brooklyn, N. Y. Drill and tap scale	447,475	Mar. 3	352	87	54	1181
Pomeroy, Henry N., assignor of one-half to E. G. Hering, Cross Plains, Wis. Car-axle	444,199	Jan. 27	1969	509	54	409
Pomeroy, Henry R., assignor of two-thirds to E. E. Stont, Indianapolis, Ind. Comminuting seeds and spices	444,847	Jan. 20	1364	353	54	283
Pomeroy, Le Dru R., Syracuse, N. Y. Adjustable window-screen	444,409	Jan. 6	670	174	54	132
Pomeroy Machine Co. (See Pomeroy, Bennard H., assignor.)						
Pont, Alexandre de and S., Paris, France, assignors of two-thirds to H. L. and I. H. Storey, Lancaster, England. Manufacturing artificial ivory	444,775	Jan. 13	1248	.....	54	252
Pont, Silvius de. (See Pont, Alexandre de and S.)						
Pontius, Andrew, Cincinnati, Ohio. Automatic door and lock for elevators	445,433	Jan. 27	2309	590	54	477
Pool, Anthony B., and J. J. Beals, Boston, Mass. Car-brake	446,981	Feb. 24	2410	600	54	1008
Pool, William A., Statesville, N. C. Carpet-stretcher	448,992	Mar. 24	2786	705	54	1675
Poole, Charles H. (See Smith, De Wane B., assignor.)						
Poole, Edward, Fordyce, Ark. Spool-rack for sewing-machines	444,766	Jan. 13	1237	321	54	250
Pooley, Charles A. (See Flohr, Otto, assignor.)						
Pope, Joseph H., assignor to American Heeling Machine Company, Brockton, Mass. Heel-nailing machine	446,885	Feb. 24	2246	{559, 560}	54	978
Popp Compressed Air and Electric Power Company. (See Popp, Victor, assignor.)						
Popp, Victor, Paris, France, assignor to Popp Compressed Air and Electric Power Company, Limited. Automatic separator for compressed-air systems	446,014	Feb. 10	821	198	54	680
Port, David and S. R., Dublin, Ind. Straight rail fence	447,201	Feb. 24	2800	692	54	1084
Port, Samuel R. (See Port, David and S. R.)						
Porter, Benjamin, Jackson, Mich. Street stop-cock box	444,015	Jan. 6	50	14	54	13
Porter, Charles, Fort Worth, Tex. Bracket	449,134	Mar. 31	3016	763	54	1728
Porter, Cyrus H. (See Johnson and Porter.)						
Porter, Edward C., New Haven, Conn. Process of and apparatus for straightening carriage corner-irons	446,950	Feb. 24	2458	586	54	998
Porter, Elbert B., Penn Yan, N. Y. Fishing-reel	446,467	Feb. 17	1590	391	54	841
Porter, Henry K., Boston, Mass. Cutter for wires	444,541	Jan. 13	883	229	54	184
Porter, James H., Hartford, Conn. Mucilage holder and spreader	449,233	Mar. 31	3163	797	54	1755
Porter, Lansing, Auburn, N. Y. Hinge	447,971	Mar. 10	1158	294	54	1343
Porter, Samuel, Denver, Colo. Boiler-furnace	444,984	Jan. 20	1630	418	54	334
Porter, Samuel W. (See Fox, James T., assignor.)						
Post, Henry A., Middletown, assignor of one-half to E. E. Hughes, Meriden, Conn. Fruit-jar holder	446,190	Feb. 10	1122	275	54	734
Post, Paul W. (See Smith and Post.)						
Postel, Henry J. (See Gates, Lewis A., assignor.)						
Potter, John S. (See Keyes, Benjamin B., assignor.)						
Potter, John S., Newton, Mass. Electric cut-out	445,253	Jan. 27	2054	529	54	425
Potter, John S., Newton, and D. J. Cartwright, Boston, Mass.; said Cartwright assignor to said Potter. Electric-wire insulating cleat	444,317	Jan. 6	529	137	54	106
Potts, Robert. (See Jordan and Potts.)						
Poulin, Damase M., Boston, Mass. Smoking-pipe	447,792	Mar. 10	856	213	54	1287
Powell, Francis M., and W. H. Vickery, Hartwell, Ga. Tether	445,154	Jan. 27	2336	607	54	482
Powell, William H., assignor to D. P. Wolhaupter, Washington, D. C. Portable dry closet	445,513	Jan. 27	2422	632	54	497
Powers, Thomas F. (See Bush, James J., assignor.)						
Powers, Walter C., Fall River, Mass. Card-mounting machine	448,849	Mar. 24	2579	{647, 648}	54	1634
Powerville Felt Roofing Company. (See Smith, Joseph A., assignor.)						
Prahar, Louis B., Brooklyn, N. Y. Tablet ornament	447,692	Mar. 3	573	142	54	1225
Prall, William E. and W. E., Jr., Washington, D. C.; said W. E. Prall, Jr., assignor to said William E. Prall. Method of and apparatus for propelling street-cars	449,588	Mar. 31	3766	945	54	1866
Prather, Samuel E., *et al.* (See Sattley, Marshall, assignor.)						
Pratt, Charles R., New York, N. Y. Brake and starter for machinery	444,102	Jan. 6	192	47	54	40
Pratt, Charles R., New York, N. Y. Elevator	448,788	Mar. 24	2484	{621, 622}	54	1617
Pratt, Charles T., New Hartford, N. Y. Drill-chuck	449,135	Mar. 31	3017	763	54	1728
Pratt, Edward, Uxbridge, county of Middlesex, England. Road or field roller	444,198	Jan. 6	359	89	54	72
Pratt, Frederick W. (See Bond, Nathan O., assignor.)						
Pratt, Ransom D., assignor of two-thirds to J. P. Wood and H. J. Willard, Marlborough, Mass. Electric switch	448,365	Mar. 17	1804	455	54	1480
Pratt, Rozello F., Boston, Mass. Saw-jointer	444,848	Jan. 20	1365	353	54	283
Pratt & Whitney Company. (See Cooley, Charles H., assignor.)						
Pratt & Whitney Company. (See Cooley and Richards, assignors.)						
Pratt & Whitney Company. (See Richards, Francis H., assignor.)						
Pratt & Whitney Company. (See Sponsel, Charles W., assignor.)						
Preble, Josiah H., *et al.* (See Lovett, Eliphalet R., assignor.)						
Preiss, Albert, Norwood, South Australia. Railway-joint	448,257	Mar. 17	1642	411	54	1443
Prentiss, Guy C., *et al.* (See Holway, Nymphus B., assignor.)						
Prescott, Charles, and M. H. Bennett, Fairmount, Nebr. Sand-screen	447,162	Feb. 24	2738	678	54	1068
Prescott, Edwin, Arlington, Mass. Jack	444,849	Jan. 20	1365	353	54	283
Prescott, Samuel A., Wilkinsonville, Mass. Picker for rags and waste	444,672	Jan. 13	1083	{280, 281}	54	222
Prest, John E., Whitinsville, Mass. Flat-supporting device for carding-machines	446,015	Feb. 10	822	199	54	681
Prest, John E., assignor to Whitin Machine Works, Whitinsville, Mass. Clutch for carding-machines	449,087	Mar. 24	2934	743	54	1703
Prest, John E., assignor to Whitin Machine Works, Whitinsville, Mass. Carding-engine	449,088	Mar. 24	2935	743	54	1704
Preston, Charles A., Cambridge, assignor of three-fourths to G. W. Pierce, trustee, Boston, Mass. Passenger-car	446,554	Feb. 17	1725	423	54	867
Preston, Charles F., *et al.* (See Polley, William, assignor.)						
Preston, James B., Darlington, assignor of one-half to J. S. Marshall and F. Cotton, Sydney, New South Wales. Lathe	444,799	Jan. 13	1278	331	54	257
Preston, Leonidas A., Cheapside, Tex. Insect-powder distributer	446,626	Feb. 17	1824	451	54	886
Price, Benjamin L., Denver, Colo. Temple for spectacle frames	444,505	Jan. 13	832	216	54	174
Price, C. W., *et al.* (See Flowers, Malon I., assignor.)						
Price, James M., Philadelphia, Pa., assignor to Price Railway Appliance Company, of Pennsylvania. Rolling-mill	448,073	Mar. 10	1307	{334, 335}	54	1374

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Price, Joseph C. (See Chable and Roberts, assignors.)						
Price Railway Appliance Company. (See Price, James M., assignor.)						
Price, William C., Woodburn, Oreg. Horseshoe-gage	448,366	Mar. 17	1805	455	54	1480
Priday, Henry, Houston, Tex. Fence or gate	444,960	Jan. 20	1599	408	54	327
Prier, Anton, Kansas City, Kans. Torch-lamp for firemen and patrolmen	444,767	Jan. 13	1238	321	54	250
Priest, Joseph K., Nashua, N. H. Hair-clipper	445,081	Jan. 20	1772	457	54	362
Priest, William. (See Lloyd and Priest.)						
Priestley, John W., Philadelphia, Pa. Carpet	446,290	Feb. 10	1302	318	54	770
Prieto, Demetrio, deceased; J. I. Rodriguez, Washington, D. C., administrator. Machine for disintegrating fibrous plants	446,791	Feb. 17	2075	517 518	54	936
Pringle, Eugene, Gloversville, N. Y., assignor to M. D. Shipman and C. E. Bradt, De Kalb, Ill. Glove-fastening	445,820	Feb. 3	516	124	54	612
Pringle, Eugene, Gloversville, N. Y., assignor to M. D. Shipman and C. E. Bradt, De Kalb, Ill. Separable button	447,346	Mar. 3	108	29	54	1138
Pringle, Eugene, Gloversville, N. Y., assignor to M. D. Shipman and C. E. Bradt, De Kalb, Ill. Separable button	447,347	Mar. 3	110	30	54	1139
Pringle, Eugene, Gloversville, N. Y., assignor to M. D. Shipman and C. E. Bradt, De Kalb, Ill. Separable button	447,348	Mar. 3	112	30	54	1139
Pringle, Eugene, Gloversville, N. Y., assignor to M. D. Shipman and C. E. Bradt, De Kalb, Ill. Separable button	447,349	Mar. 3	114	30	54	1139
Pritchard, Thomas W., assignor to Steele & Johnson Manufacturing Company, Waterbury, Conn. Shade or globe holder	449,171	Mar. 31	3066	775	54	1737
Pritschau, Arthur F., Denver, Colo. Nut-lock	447,738	Mar. 3	738	185	54	1257
Probert, Hubert F., Three Rivers, Mich. Car-truck	446,392	Feb. 10	1456	357	54	802
Proctor, George G., *et al.* (See Shaw, George F., assignor.)						
Proctor, Harry H., and A. C. Mailer, De Pere, Wis. Printer's galley-lock	445,901	Feb. 3	632	155	54	636
Proctor, Josiah K., and W. B. Keefer, Philadelphia, Pa. Dyeing-vat	446,572	Feb. 17	1749	430	54	872
Proctor, Ninian, C. E. Fraser, H. M. Carter, Leeds, and A. Middleton, Ben Rhydding, England. Machine for the manufacture of bricks and briquets	449,089	Mar. 24	2936	744	54	1704
Prohs, Karel, Prague, Austria-Hungary. Filter for syrups and juices in sugar-works	449,271	Mar. 31	3224	814	54	1766
Promis, Eugene. (See Spahmer, Charles, assignor.)						
Prosch, Louis, Jr., Brooklyn, N. Y. Camera-shutter	447,902	Mar. 10	1037	260	54	1321
Prouty, John E., Baltimore, Md., assignor to Greene & Prouty. Fire-extinguishing apparatus	447,476	Mar. 3	353	88	54	1184
Pryboil, Paul, New York, N. Y. Machine for drilling to pattern	447,014	Feb. 24	2462	613	54	1017
Puckett, Florence N., Whitesborough, Tex. Conflagration-arrester	444,961	Jan. 20	1599	408	54	327
Puetz, Tillman, Jr., St. Louis, Mo. Mechanical movement	444,016	Jan. 6	51	14	54	13
Pugh, William H. (See Emerson, Richard, assignor.)						
Pugh, William J., Muscatine, Iowa. Wrench	446,291	Feb. 10	1303	318	54	770
Pulling, James G. (See Royce and Tufts, assignors.)						
Pullman's Palace Car Company. (See Bushman, Gustav C., assignor.)						
Pullman's Palace Car Company. (See Hoffman, John W., assignor.)						
Pullman's Palace Car Company. (See Sessions, Henry H., assignor.)						
Pultermacher, Albert, Sonneberg, Germany. Doll	447,034	Feb. 24	2503	622	54	1025
Pumps, William A., Detroit, Mich. Brake-beam	444,017	Jan. 6	52	15	54	13
Purdy, Charles G., Brooklyn, N. Y. Antiseptic air-vent and overflow for filters	448,671	Mar. 24	2295	576	54	1580
Purinton, J. F. (See Pepin, Frank, assignor.)						
Pursell, William W., Berwick, Pa. Hasp-lock	447,698	Mar. 3	674	168	54	1246
Pusey, Joshua, Lima, Pa. Ribbon-feed reversing mechanism for type-writing machines	446,886	Feb. 24	2252	561	54	979
Puskas, Theodor, Buda-Pesth, Austria-Hungary. Submarine blasting	449,272	Mar. 31	3225	815	54	1767
Putnam Nail Company. (See Emery, Charles W., assignor.)						
Putnam, Perry, assignor to C. E. Gee, Lowell, Mass. Sawing-machine	447,903	Mar. 10	1039	260 261	54	1322
Püttmann, Eduard, Schwelm, Germany. Decorating sheet metal for ceilings, &c	446,191	Feb. 10	1123	.....	54	734
Pyle, George C., assignor to National Electric Head Light Company, Indianapolis, Ind. Steam-engine	444,904	Jan. 20	1490	384 385	54	307
Pyle, George C., assignor to National Electric Head Light Company, Indianapolis, Ind. Shaft-coupling	446,123	Feb. 10	1000	246	54	714
Quarles, Duncan M., Jr., Howell, Ky. Permutation-lock	447,519	Mar. 3	414	101 102	54	1196
Quick, John H. S. (See Ely, Edwin S., assignor.)						
Quiggin, Daniel A., Blundell Sands, near Liverpool, assignor of one-half to J. Newton, London, England. Apparatus for evaporating sea or other water	448,542	Mar. 17	2069	518	54	1531
Quigley, John J. (See Garland, Charles F., assignor.)						
Quin, Emmet T., and J. F. Dunckel, Kansas City, Mo. Cigar-cutter	447,843	Mar. 10	938	235	54	1303
Quinlan, Dennis, Burdett, Kans. Cell-case	449,332	Mar. 31	3347	844	54	1786
Quinn, Timothy C., *et al.* (See Wright, Herbert A., assignor.)						
Raillard, Maxime, *et al.* (See De Loria, Louis, assignor.)						
Raborg, Edward L. (See Lewis, Walter, assignor.)						
Raby, Richard, assignor of one-half to H. Getz, York, Pa. Wagon-brake	444,318	Jan. 6	530	138	54	106
Race, George, Norwich, N. Y. Process of and apparatus for purifying grease	446,117	Feb. 10	987	243	54	711
Racine Malleable and Wrought Iron Company. (See Odell and Jones, assignors.)						
Radde, Marie. (See Farrand, William C., assignor.)						
Radley, John, Jersey City, N. J. Sleigh-runner	448,754	Mar. 24	2436	609	54	1607
Rae, Frank B., assignor to Detroit Electrical Works, Detroit, Mich. Controlling-switch for electric railways	446,613	Feb. 17	1801	445	54	882
Raff, Edward S., Canton, Ohio. Inkstand	445,200	Jan. 27	1970	509	54	409
Raff, Edward S., Canton, Ohio. Inkstand	445,201	Jan. 27	1971	509	54	409
Raftery, Thomas, New York, N. Y. Ship's fender	448,074	Mar. 10	1309	335	54	1375
Rahmer, Louis. (See Schumacher, William, assignor.)						
Ramage, Alexander, Idaho Springs, Colo. Cam for stamp-mills	446,693	Feb. 17	1032	262	54	906
Ramsperger, Hermann G., New York, N. Y. Photographic roll holder	448,801	Mar. 24	2502	626 627	54	1020
Rand, Charles E., assignor to Rau Manufacturing Company, Chicago, Ill. Oil-can	445,127	Jan. 20	1841	477	54	375
Randall, Bellville L., Boston, Mass. Brake for electric cars	444,110	Jan. 6	209	50	54	43
Randall, Lucina A. (See De Good, Joseph L., assignor.)						
Randall, William P., Le Roy, N. Y. Fence	448,455	Mar. 17	1946	490	54	1507
Randle, Robert W., Portland, Ind. Meat-holder	446,268	Feb. 10	1272	312	54	763
Randle, William A., Oakland, Ala. Foot-warmer	444,269	Jan. 6	460	117	54	91
Rank, Amos, Sr., Salem, Ohio. Harvesting-machine	446,292	Feb. 10	1305	319 320 321	54	770
Ranke, William, and W. Yergens, Fort Wayne, Ind. Machine for bending timber	447,202	Feb. 24	2401	692 693	54	1081
Rankin, John and T. V., Williamsdale, Ohio. Kitchen-cabinet	446,647	Feb. 17	1862	462	54	894

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Rankin, Thomas V. (See Rankin, John and T. V.)						
Ranney, Darwin D., assignor to H. W. Phelps and S. J. Ranney, Lewistown, Ill. Machine for cutting blanks for metal can-bodies	448,258	Mar. 17	1613	412	54	1443
Ranney, Sarah J., *et al.* (See Ranney, Darwin D., assignor.)						
Ransom, Albert F., Burlington, Wis. Horse-blanket	447,703	Mar. 10	858	213	54	1287
Ransome, Ernest L., San Francisco, Cal. Manufacture of bricks	447,972	Mar. 10	1150	.....	54	1344
Ransome, Ernest L., San Francisco, Cal. Illuminating-panel in concrete floors	448,993	Mar. 24	2787	705	54	1675
Rasa, August. (See Windler, Henry L., assignor.)						
Rassweiler, John K., Wheaton, Ill. Tellurian	448,075	Mar. 10	1310	335	54	1375
Rathbun, John E. (See Wiggin and Rathbun.)						
Rathbun, John H., Milwaukee, Wis. Tapping device	445,615	Feb. 3	152	40	54	541
Rathbun, John O., Providence, R. I. Velocipede	449,383	Mar. 31	3143	806	54	1804
Rau, Emanuel, Brooklyn, assignor to E. Rau Manufacturing Company, New York, N. Y. Envelope-machine	446,124	Feb. 10	1002	246 247 248	54	715
Rau Manufacturing Company. (See Rand, Charles E., assignor.)						
Rau Manufacturing Company, Emanuel. (See Rau, Emanuel, assignor.)						
Rauh, Henry. (See Krem, John, assignor.)						
Rawdon, Lucien, Windsor, Ohio. Door-check	445,455	Jan. 27	2237	607	54	482
Rawson, Kimball P., Philadelphia, Pa. Combined step-ladder and chair	448,367	Mar. 17	1807	455 456	54	1480
Ray, George W. (See Vail, Joseph C., assignor.)						
Ray, Harvey, Mobile, Ala. Inking-ribbon spool mounting for type-writing machines	445,265	Jan. 27	2072	534	54	428
Raymond, George C. (See Woodford and Raymond.)						
Raymond, George E., Grand Rapids, Mich. Vehicle-spring	448,543	Mar. 17	2071	519	54	1531
Raymond, Pierre A., Grenoble, France. Shoe-fastening	449,273	Mar. 31	3226	815	54	1767
Reach, Alfred J. (See Decker, Earle H., assignor.)						
Reader, Rice, and C. W. Weinland, Primghar, Iowa. Running-gear for vehicles	444,103	Jan. 6	194	48	54	40
Reading, John, Akron, Ohio. Cloth-measuring machine	448,368	Mar. 17	1808	456	54	1481
Reason, Walter M., *et al.* (See Wright, Herbert A., assignor.)						
Reber, Bernard, Locle, Switzerland. Repeating-watch	447,973	Mar. 10	1161	294	54	1344
Redfield, Casper L., Chicago, Ill., assignor to Chicago Matrix Machine Company. Escapement device for matrix making machines	448,587	Mar. 17	2140	537	54	1544
Redfield, Casper L., Chicago, Ill., assignor to Chicago Matrix Machine Company. Matrix-making machine	448,994	Mar. 24	2789	705 706	54	1675
Redlinger, Michael, assignor to C. Morgan, A. Baumgarten, and E. H. Morgan, Freeport, Ill. Spring-hinge	447,844	Mar. 10	939	235	54	1303
Reed, Eli S., assignor to Universal Sewing Machine Motor Attachment Company, Chattanooga, Tenn. Spring-motor	444,906	Jan. 20	1495	386	54	308
Reed, Eli S., assignor to Universal Sewing Machine Motor Attachment Company, Chattanooga, Tenn. Spring-motor	444,907	Jan. 20	1499	387	54	309
Reed, Eli S., assignor to Universal Sewing Machine Motor Attachment Company, Chattanooga, Tenn. Spring-motor	444,908	Jan. 20	1501	387 388	54	309
Reed, Eli S., and C. T. Painter, assignors to Universal Sewing Machine Motor Attachment Company, Chattanooga, Tenn. Spring-motor	444,905	Jan. 20	1492	386	54	308
Reed, Elsworth E., Taylorville, Ill. Device for fastening pad-screws, &c., in harness	444,711	Jan. 13	1135	293	54	233
Reed, Francis O., assignor of one-half to J. D. Williams, Paris, Tex. Wire-stretcher	444,075	Jan. 6	153	38	54	33
Reed, Franklin M., Anderson, assignor of part to S. C. Keesling, G. B. Best, and J. S. Moore, Muncie, Ind. Burner for natural gas	444,850	Jan. 20	1367	354	54	284
Reed, Harrison T., Revere, Mass. Pocket tobacco-cutter	448,672	Mar. 24	2297	576	54	1580
Reed, High T., Chicago, Ill. Fountain-pen	449,295	Mar. 31	3269	829	54	1774
Reed, J. Van D. (See Stowe, Benjamin L., assignor.)						
Reed, John H., Lancaster, Wis. Educational appliance	446,468	Feb. 17	1592	391	54	841
Reed, John L., Canajoharie, N. Y. Pulley-block	448,729	Mar. 24	2303	569	54	1599
Reed, Marshall J., Roann, Ind. Cultivator attachment	444,134	Jan. 6	257	62	54	53
Reed, Robert L., Washington, D. C. Lock	446,789	Feb. 17	2072	516	54	936
Reed, Robert N., Covington, Ky. Solar reflecting-camera	447,645	Mar. 3	606	149	54	1232
Reedy, Henry J., Cincinnati, Ohio. Driving mechanism for elevators	445,902	Feb. 3	633	155 156	54	636
Reese, Louis F. (See Hales and Reese.)						
Reese, Thomas, Jr., Newark, N. J., and H. W. Seller, Brooklyn, N. Y. Smoke preventing water-tube-boiler furnace	448,076	Mar. 10	1311	335 336	54	1375
Reeves, Abbott M., Decatur, Ill. Wire fabric for mats	448,489	Mar. 17	2000	501	54	1516
Reeves, Alexander M., Buda, Tex. Tire-tightener	449,234	Mar. 31	3164	797	54	1755
Reeves, James R. G., McComb, Miss. Cultivator	446,538	Feb. 17	1702	417	54	862
Regan, Daniel S., assignor to Regan Vapor Engine Company, San Francisco, Cal. Vapor-engine	448,369	Mar. 17	1810	456 457	54	1481
Regan Vapor Engine Company. (See Regan, Daniel S., assignor.)						
Rehnström, Albert W., Mölhammar, assignor to Aktiebolaget Lactoserin, (Lactoserin Company, Limited,) Stockholm, Sweden. Preparing food from milk-curd	446,887	Feb. 24	2235	.....	54	980
Reich, Isaac, assignor of one-third to C. H. Tise, Winston, N. C. Tobacco-hanger	447,699	Mar. 3	675	168	54	1246
Reichard, Theophilus, Brooklyn, N. Y. Tower	447,477	Mar. 3	355	88	54	1184
Reichelt, Bruno, South Bend, Ind. Spring-motor	449,384	Mar. 31	3444	866 867	54	1804
Reichert, John. (See Johnson and Reichert.)						
Reichmann, Joseph, Chicago, Ill. Car-brake	445,733	Feb. 3	357	93	54	583
Reid, Alban H., Philadelphia, Pa. Milk-testing device	446,469	Feb. 17	1594	394	54	842
Reid, Arthur B., assignor of one-half to L. Filstrup, Chicago, Ill. Type-writing machine	449,296	Mar. 31	3271	820	54	1774
Reid, John, Yonkers, assignor to J. L. Mott Iron Works, New York, N. Y. Porcelain wash-out closet	448,864	Mar. 24	2699	655	54	1640
Reilley, John, Jersey City, N. J. File-handle	447,904	Mar. 10	1040	261	54	1322
Reilley, John, Jersey City, N. J. Device for cleaning gas-burners	447,905	Mar. 10	1041	261	54	1322
Reilly, John C., Brooklyn, N. Y. Electric cable	445,234	Jan. 27	2018	520	54	418
Reilly, John C., Brooklyn, N. Y. Electrical subway	447,350	Mar. 3	116	30, 31	54	1139
Reilly, Patrick, Lima, Ohio. Railway brake-shoe	446,236	Feb. 10	1222	299	54	754
Reinmann, Charles F., Brooklyn, N. Y. Device for raising and lowering incandescent electric lamps	448,164	Mar. 10	1442	369	54	1401
Reinohl, David C. (See Flanegin, Francis A., assignor.)						
Reis, Ferdinand W. (See Graf, Robert R., assignor.)						
Reiseger, Marc J. (See Van Deinse and Reiseger.)	449,136	Mar. 31	3019	763	54	1728
Reiset, Frederic, and G. A. Waeber, New York, N. Y. Metal can						
Reiss & Brady. (See Sannier, Fernand, assignor.)						
Reiss, George T. (See Coes and Reiss.)						
Reiss, George T., assignor to Niles Tool Works, Hamilton, Ohio. Lubricating device	447,015	Feb. 24	2464	613	54	1018

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Reitn Furnace Regulator Company. (See Colby, Edward J., assignor.)						
Rembert, Henry, Willis, assignor to Rembert Roller Compress Company, Galveston, Tex. Apparatus for baling cotton	446,888	Feb. 24	2256	561, 562	54	980
Rembert Roller Compress Company. (See Rembert, Henry, assignor.)						
Remington, Horatio A., River Point, R. I. Loom	449,297	Mar. 31	3274	829	54	1774
Remington, John O., Hingham, assignor to Burr, Brown & Co., Boston, Mass. Curtain-pull	447,414	Mar. 3	234	60	54	1161
Remington Standard Type Writer Manufacturing Company. (See Baker, Walter, assignor.)						
Remington Standard Type Writer Manufacturing Company. (See Dodge, Walter S., assignor.)						
Remy, Noah T. (See Cochennour and Remy.)						
Renton, George W., Somers, assignor to F. N. Du Bois, New York, N. Y. Self-closing faucet	444,018	Jan. 6	53	15	54	14
Rentz, Barnum, Waco, Nebr. Door-check	448,767	Mar. 24	2435	614	54	1611
Reppy, Albert W., Oakland Pier, Cal. Electric-arc lamp	444,104	Jan. 6	194	48	54	40
Reuting, Henry. (See Steinbaugh, William F., assignor.)						
Reversible Chair Company. (See Erb, Louis M., assignor.)						
Revolving Purifier Company. (See Anderson, William, assignor.)						
Rex, George. (See Huth and Rex.)						
Reyner, Henry H., Bellefontaine, Ohio. Cover for sugar-buckets	447,082	Feb. 24	2582	640	54	1040
Reynolds, Edwin, Providence, R. I. Hand-stamp	446,587	Feb. 17	1769	436, 437	54	876
Reynolds, Edwin, Milwaukee, Wis. Disconnecting device for eccentric-rods	448,259	Mar. 17	1614	412	54	1443
Reynolds, Edwin, A. J. Shaw, and W. H. Trout, assignors to E. P. Allis Company, Milwaukee, Wis. Saw-mill set-works	448,544	Mar. 17	2072	519, 520	54	1531
Reynolds, Henry S., Brooklyn, N. Y. Tool for plugging openings in boilers, &c	447,351	Mar. 3	117	31	54	1140
Reynolds, Jesse, assignor to W. T. Reynolds, Philadelphia, Pa. Water-back	448,995	Mar. 24	2792	706	54	1676
Reynolds, Joseph W., and P. Perkins, Elkton, Ohio. Car-replacer	446,951	Feb. 24	2359	587	54	998
Reynolds, Lavern, Kansas City, Mo. Ironing-board attachment	449,172	Mar. 31	3067	775	54	1737
Reynolds, Milton C. (See Brown and Reynolds.)						
Reynolds, Stephen H., *et al.* (See Brüstle, Andrew, assignor.)						
Reynolds, Thomas. (See Wachter, Wesley N., assignor.)						
Reynolds, Thomas J., assignor of one-half to F. Nolan, Brooklyn, N. Y. Fire and water tube boiler	445,301	Jan. 27	2113	547	54	437
Reynolds, William T. (See Reynolds, Jesse, assignor.)						
Reynolds, Willie H., Racine, Wis. Flour receiver and sifter	448,673	Mar. 24	2297	576	54	1581
Rhenstrom, Moses, Cincinnati, Ohio. Closing device for bottles, &c	447,974	Mar. 10	1162	294	54	1344
Rhind, Frank, assignor of one-half to E. Miller & Company, Meriden, Conn. Lamp burner	445,082	Jan. 20	1774	457	54	362
Rhode Island Horse Shoe Company. (See Perkins, Charles H., assignor.)						
Rhodes, James B., Grand Rapids, Mich. Saw-tooth swage	445,339	Jan. 27	2173	563	54	450
Rhodes, James B., Grand Rapids, Mich. Saw-swaging machine	449,431	Mar. 31	3330	889	54	1821
Rhodes, Vernon, Memphis, Tenn. Perforated blade for plows, &c	447,437	Mar. 3	271	69	54	1169
Rhodes, William H., assignor to Curtis Sons and Co., Manchester, England. Mule and twiner for spinning and doubling cotton or other fibrous substances	448,077	Mar. 10	1313	336	54	1375
Rice, David H. (See Currier and Rice.)						
Rice, David H., Lowell, Mass., assignor to Currier Telephone Bell Company, of Massachusetts. Telephone-call	446,614	Feb. 17	1804	445, 446, 447	54	883
Rice, David H., Lowell, Mass., assignor to Currier Telephone Bell Company, of Massachusetts. Electric call-bell	446,712	Feb. 17	1961	488	54	913
Rice, Edwin W., Jr., Lynn, Mass. Mounting for electric-car motors	444,922	Jan. 20	1530	393	54	344
Rice, Edwin W., Jr., Lynn, Mass. Motor-suspension for railway work	448,260	Mar. 17	1615	412	54	1443
Rice, Edwin W., Jr., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Commutator-brush	447,352	Mar. 3	119	31	54	1140
Rice, John O., Hutchinson, Minn. Well	447,646	Mar. 3	606	149	54	1232
Rice, Nelson, New Market, Ind. Fence	448,545	Mar. 17	2076	521	54	1532
Rice, Vietta L., New York, N. Y. Grinding-mill	445,821	Feb. 3	518	124	54	612
Rice, William H., Syracuse, N. Y. Saw-guide	444,851	Jan. 20	1368	354	54	284
Rich, Charles C., Mount Vernon, N. Y. Electric heater	447,353	Mar. 3	120	32	54	1140
Richard, Elias J., Selma, Ala. Register-sheet	446,952	Feb. 24	2360	587	54	998
Richard, Samuel W. (See Fant, Anderson, and Richard.)						
Richards, Ephraim S., Marion, Ind. Band-saw mill	446,293	Feb. 10	1316	321	54	772
Richards, Erwin H., Norwalk, Ohio, assignor to M. Bradley Company, Springfield, Mass. Device for playing games of skill	448,574	Mar. 17	2121	531	54	1540
Richards, Francis H. (See Cooley and Richards.)						
Richards, Francis H., Hartford, Conn. Envelope-machine	444,852	Jan. 20	1369	354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365	54	284
Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Pneumatic motor	445,601	Feb. 3	127	33	54	536
Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Pneumatic motor	445,602	Feb. 3	128	33	54	536
Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Apparatus for supplying compressed air to pneumatic motors	446,822	Feb. 17	2130	529	54	949
Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Frictional reversing-gearing	446,927	Feb. 24	2328	578	54	992
Richards, Francis H., Hartford, assignor to Trant & Hine Manufacturing Company, New Britain, Conn. Suspenders	446,840	Feb. 17	2161	537	54	954
Richards, Francis H., assignor to Pratt & Whitney Company, Hartford, Conn. Regulator for grain-weigher	447,354	Mar. 3	121	32, 33, 34	54	1141
Richards, Francis H., assignor to Pratt & Whitney Company, Hartford, Conn. Register for grain-weighers	447,719	Mar. 3	706	176, 177	54	1251
Richards, George H., assignor of one-half to W. Nuneviller, Philadelphia, Pa. Cabinet for photographic-plate holders, negatives, and stock	445,861	Feb. 3	577	140	54	624

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Richards, Joseph W., Philadelphia, Pa. Refining zinc	448,802	Mar. 24	2505	.....	54	1021
Richards, Marcius C., assignor of one-half to Wilcox Manufacturing Company, Aurora, Ill. Door-check	444,019	Jan. 6	54	15	54	14
	445,254	Jan. 27	2055	529, 530	54	425
Richards, Willard F., Pittsburg, Pa. Fluid-graduating device	446,470	Feb. 17	1595	392	54	842
Richardson, Albert C., South Frankfort, assignor of one-half to L. Barnes, Benzonia, Mich. Churn						
Richardson, Daniel. (See Anderson, George R., assignor.)						
Richardson, George F. (See Speirs, John, assignor.)	444,304	Jan. 6	507	132	54	101
Richardson, George H., Old Town, Me. Pen-holder	446,938	Feb. 24	2330	578	54	993
Richardson, George R., Earlville, Ill. Ironing-table	448,996	Mar. 24	2793	707	54	1676
Richardson, James, North Tarrytown, N. Y. Type-writing machine	448,730	Mar. 24	2394	599	54	1599
Richardson, John T., Harrisburg, assignor of one-half to A. H. Ege, Mechanicsburg, Pa. Rail-joint support	444,853	Jan. 20	1407	366	54	291
Richardson, Robert D., Winnipeg, and C. A. Sadleir, Toronto, Canada. Indexed file	446,139	Feb. 10	1031	254	54	719
Richardson, William, *et al.* (See Arnold, Oliver, assignor.)	444,854	Jan. 20	1409	366	54	291
Richardson, William H. (See Penny and Richardson.)	447,739	Mar. 2	739	185, 186	54	1257
Richardson, William S., Boston, Mass. Fastening						
Richmond, Cassius M., New York, N. Y. Burner for lamps						
Richmond, James W., assignor of one-half to E. M. Sweeney, South Hanover, Mass. Sole-molding machine						
Richmond, Robert N. (See Banmann, Hermann, assignor.)						
Richmond, Thomas. (See Hitchen, Pearson, and Richmond.)						
Richter, Ernst. (See Gray and Richter.)	447,063	Feb. 24	2554	.....	54	1035
Richters, Engelbert, Saaran, Germany. Making artificial cryolite	444,768	Jan. 13	1239	322	54	250
Rickards, John E., Birmingham, England. Cigar-machine	447,203	Feb. 24	2803	693	54	1081
Rickards, Ross. (See Lamborn and Rickards.)	448,078	Mar. 10	1313	336	54	1376
Ricketts, William, Cranston, R. I. Gage	446,790	Feb. 17	2074	517	54	936
Riddel, Tice S., Eugene, Oreg. Fence-post						
Ridder, Mathias J., and V. Hartmann, Germantown, Nebr. Wire-stretcher						
Rider, Thomas F., *et al.* (See Devore, Morris H., assignor.)	448,261	Mar. 17	1617	412, 413	54	1444
Ridge, Willis G., assignor of one-half to C. A. Hildreth, New Haven, Conn. Pipe-coupling for railway-cars						
Ridgway, Edward A. (See Ridgway, John and E. A.)						
Ridgway, John and E. A., Stoke-on-Trent, county of Stafford, England. Applying lithographic impressions to pottery-ware	444,898	Jan. 20	1478	.....	54	305
Ridout, Donald G., trustee. (See Ripson, John D., assignor.)						
Riecker, Charles E. (See Trant and Riecker.)	444,651	Jan. 13	1043	271	54	214
Rieckert, Herman A. J., New York, N. Y. Envelope						
Riedel, T. D. (See Lütke and Schelvien, assignors.)	448,370	Mar. 17	1812	457	54	1481
Rieder, John J., Fredericksburg, Ohio. Screen						
Riedle, Frank. (See Schneider, John G., assignor.)						
Riemann, Henry A. (See Patterson, Robert L., assignor.)	444,855	Jan. 20	1410	367	54	292
Ries, Elias E., Baltimore, Md. Portable electric welding apparatus						
Ries, Johann G. (See Gruellich, Friedrich W., assignor.)	448,850	Mar. 24	2580	648	54	1635
Riess, Rudolph W., Philadelphia, Pa. Steering device for velocipedes	447,204	Feb. 24	2804	693	54	1081
Rife, John M., Troy, Ohio. Fence-post						
Riffe & Co., M. A., *et al.* (See Hartigan, Joseph F., assignor.)	448,371	Mar. 17	1813	.....	54	1482
Rigal, Louis, Roquefort, France. Perforating Roquefort and other cheeses						
Riker, Charles E. (See Kassel, Edward T., assignor.)	445,609	Feb. 3	142	37	54	539
Riley, William W., Cornwell, Conn. Life-saving apparatus						
Ripley & Co. (See Croskey and Ripley, assignors.)						
Ripley, Daniel C. (See Croskey and Ripley.)						
Ripson, John D., assignor to D. C. Ridout, trustee, Toronto, Canada. Fabric for covering moldings, &c	445,434	Jan. 27	2309	599	54	477
Risdon, Charles R., New York, N. Y. Umbrella rack or stand	449,173	Mar. 31	3069	776	54	1738
Ritchie, David A., Cambridge, Mass. Pipe-forming machine	445,202	Jan. 27	1972	510	54	409
Ritchie, William C. (See Knowlton and Pease, assignors.)						
Roach, Daniel, Fulton N. Y. Hose-nozzle	444,712	Jan. 13	1136	293	54	233
Roake, John S., Brooklyn, N. Y. Filter	446,153	Feb. 10	1057	269	54	721
Robbins, Harry G., Minneapolis, Minn. Telegraph-transmitter	449,174	Mar. 31	3070	776	54	1738
Robbins, Michael C., Freeman, Mo. Wind-wheel	449,589	Mar. 31	3768	946	54	1866
Roberge, David, Jr., New York, N. Y. Hoof-expander and frog-developer for horses	446,471	Feb. 17	1596	392	54	842
Robert, Henry M. (See D'Auria, Luigi, assignor.)						
Robert, Jesse P., Pittsburg, Pa. Vaporizer	446,953	Feb. 24	2361	587	54	998
Roberts, Anna M. (See Roberts, Charles D., assignor.)						
Roberts, Benjamin F., assignor to National Shelving Company, Fremont, Nebr. Adjustable shelving	446,472	Feb. 17	1597	392	54	842
Roberts, Charles D., Fairfield, assignor to A. M. Roberts, Wayne County, Ill. Sulky harrow and pulverizer	446,408	Feb. 10	1495	368	54	808
Roberts, Cyrus, Three Rivers, Mich. Hand-car	446,713	Feb. 17	1962	489	54	913
Roberts, Cyrus, Three Rivers, Mich. Hand-car	446,714	Feb. 17	1963	489	54	913
Roberts, Cyrus, Three Rivers, Mich. Hand-car brake	446,715	Feb. 17	1964	490	54	913
Roberts, Cyrus, Three Rivers, Mich. Hand-car	446,716	Feb. 17	1965	490	54	913
Roberts, Edward M. (See Chable and Roberts.)						
Roberts, Evelyn P., Sing Sing, N. Y. Device for disposing of surplus water impounded in reservoirs	447,083	Feb. 24	2582	641	54	1040
Roberts, George, Montreal, assignor of one-half to J. Hally, Toronto, Canada. Gas or hydrocarbon-vapor burner	446,016	Feb. 10	823	199	54	681
Roberts, Henry, Pittsburg, Pa. Apparatus for coiling metal rods	444,652	Jan. 13	1044	271	54	215
Roberts, Henry, Pittsburg, Pa. Rod-coiling apparatus	444,653	Jan. 13	1045	272	54	215
Roberts, Henry W., Cheboygan, Mich. Holdback for vehicle-poles	444,305	Jan. 6	508	132	54	101
Roberts, Henry W., Duncan, Mich. Safety attachment for vehicle-poles	446,269	Feb. 10	1273	312	54	763
Roberts, John B., Carlton, N. Y. Fence	447,355	Mar. 3	126	35	54	1141
Roberts, John N., Indianapolis, Ind. Desk-curtain	447,415	Mar. 3	235	60	54	1161
Roberts, John T., Fort Scott, Kans. Reel for raising and lowering electric lamps	445,903	Feb. 3	635	156	54	637
Roberts, Joseph S., Indianapolis, Ind. Furnace	446,539	Feb. 17	1702	417, 418	54	862
Roberts, Seymour E., Oneida, and J. E. Lathe, Vernon, N. Y. Water-alarm for steam-boilers	444,713	Jan. 13	1137	293	54	233
Roberts, Thomas, Baltimore, Md. Motor for street-cars	445,756	Feb. 3	396	100	54	591
Roberts, William, assignor to himself and H. R. Belden, Petersham, near Sydney, New South Wales. Grinding and amalgamating pan	448,731	Mar. 24	2396	599	54	1600

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Roberts, William H. (See Washington and Roberts.)						
Robertson, Edwin. (See Catlett and Robertson.)						
Robertson, George F., Morristown, Tenn. Type-writing machine	448,079	Mar. 10	1414	337, 338	54	1376
Robertson, James, Birmingham, England. Machine for making tubing	447,582	Mar. 3	508	125	54	1213
Robertson, James, Birmingham, England. Apparatus for making tube-blanks	447,583	Mar 3	511	125, 126	54	1213
Robertson, John E. (See Woodsmm, Daniel R. and F. M., assignors.)						
Robertson, Thomas W., *et al.* (See Woolcott and Wilmot, assignors.)						
Robidoux, Amable, Roxton, Canada. Remedy for corns, &c	444,601	Jan. 13	973	.....	54	201
Robinson, Alfred E. (See Parker and Robinson.)						
Robinson, Almon, Lewiston, Me. Method of and apparatus for electric soldering	449,258	Mar. 31	3208	809	54	1761
Robinson, Charles H., Huntsville, Tex. Piston for pneumatic pumps	449,333	Mar. 31	3348	844	54	1787
Robinson, Clark. (See Young and Robinson.)						
Robinson, Dighton A. (See Simpson, John, assignor.)						
Robinson, Edward I. (See King, John H., assignor.)						
Robinson, Eugene, Detroit, Mich. Railway-tie	447,356	Mar. 3	127	35	54	1141
Robinson, Fayette S., Boston, Mass. Heating soldering-irons	446,154	Feb. 10	1059	260	54	724
Robinson, Frank, Bangor, Me. Railway time-signal	444,506	Jan. 13	833	216, 217	54	174
Robinson, Gad, Boston, Mass. Banjo	448,674	Mar. 24	2300	577	54	1581
Robinson, Heber, Wanken, Iowa. Windmill-tower	446,744	Feb. 17	2011	501	54	923
Robinson, Horace, Manchester, England. Hot-air engine	445,901	Feb. 3	635	156	54	637
Robinson, John J., Brooklyn, N. Y. Burner	448,080	Mar. 10	1319	338	54	1377
Robinson, John R., Salem, assignor to L. S. Hapgood, Boston, Mass. Type-writing machine	447,357	Mar. 3	128	35	54	1142
Robinson, Martin W., Medford, Mass., assignor to Vulcan Electric Company, Kittery, Me. Galvanic battery	447,016	Feb. 24	2466	613	54	1018
Robinson Radial Car Truck Company. (See Robinson, William, assignor.)						
Robinson, Stillman W., Columbus, Ohio, assignor to Wire Grip Fastening Company, Chicago, Ill. Nailing-machine for boots or shoes	447,359	Mar. 3	135	37	54	1143
Robinson, Stillman W., and S. P. Watt, Columbus, Ohio, assignors to Wire Grip Fastening Company, Chicago, Ill. Nailing-machine	447,358	Mar. 3	130	36, 37	54	1142
Robinson, William, Boston, Mass., assignor to Robinson Radial Car Truck Company, Portland, Me. Radial car-truck	444,181	Jan. 6	333	80, 81	54	67
Robinson, William, Boston, Mass., assignor to Robinson Radial Car Truck Company, Portland, Me. Car-spring check	444,182	Jan. 6	335	81, 82	54	68
Robinson, William, Boston, Mass., assignor to Robinson Radial Car Truck Company, Portland, Me. Swing-bolster check for car-trucks	444,183	Jan. 6	337	82	54	68
Robinson, William, Boston, Mass., assignor to Robinson Radial Car Truck Company, Portland, Me. Cable car for street-railways	444,184	Jan. 6	339	82, 83	54	69
Robison, Alasco C. (See West, Elbridge G., assignor.)						
Robison, Charles W., assignor of one-half to R. B. Robison, Allegheny, Pa. Deep-well tool	448,165	Mar. 10	1443	369	54	1402
Robison, Edward J., *et al.* (See Mains, John F., assignor.)						
Robison, Robert B. (See Robison, Charles W., assignor.)						
Roche, Francis J., assignor of two-thirds to R. Sonia and W. J. Bourque, Somerville, Mass. Bit	444,161	Jan. 6	298	72	54	61
Rochester Cycle Manufacturing Company. (See Kenfield, William W., assignor.)						
Rockey, Henry F., Indianapolis, Ind. Printing device	446,929	Feb. 24	2331	578	54	993
Rockwell, Charles H., Cleveland, Ohio. Manufacturing mineral wool	447,360	Mar. 3	137	.....	54	1143
Rockwell, Frank W., *et al.* (See Chevers, Aurion V., assignor.)						
Rockwell, John. (See Weed and Rockwell.)						
Rockwell, Warren C., assignor to D. Camp and G. McFee, Mount Carmel, Pa. Weather-strip	448,997	Mar. 24	2800	708	54	1677
Rockwood, Howard S., assignor to Holmes Manufacturing Company, Providence, R. I. Button-fastener	449,648	Mar. 31	3881	971	54	1887
Rodgers, George W., Lisbon, La. Evaporator or sirup-pan	445,266	Jan. 27	2072	530	54	498
Rodgers, William H., Brooklyn, N. Y. Automatic exhibitor	445,456	Jan. 27	2338	608	54	482
Rodriguez, José I., administrator. (See Prieto, Demetrio.)						
Rodwell, George J. B., assignor of two-thirds to S. J. Moore and H. C. Secord, Toronto, Canada. Sign-letter	444,507	Jan. 13	836	217	54	174
Rodwell, George J. B., assignor to Rodwell Manufacturing Company, Toronto, Canada. Inker for rubber-stamp pads	446,889	Feb. 24	2261	562	54	981
Rodwell Manufacturing Company. (See Rodwell, George J. B., assignor.)						
Roe, George H., *et al.* (See Ludwig, John C., assignor.)						
Roebling, Ferdinand W. (See Smith and Arnold, assignors.)						
Roehr, Ludwig J., Newark, N. J. Jewelry	444,673	Jan 13	1085	281	54	232
Roepper, Charles W. (See Vogt, Axel S., assignor.)						
Roepper, Charles W., Alliance, Ohio. Brake-shoe	444,508	Jan. 13	837	217	54	175
Roessler, Hugo, Erbach-on-the-Rhine, Germany. Dredger	445,862	Feb. 3	579	141	54	625
Rogers, Frank E., *et al.* (See Polley, William, assignor.)						
Rogers, George H., and A. J. Barber, Sodus, N. Y. Stove-truck	444,020	Jan. 6	55	15	54	14
Rogers, George R., Parkersburg, Ind., assignor of one-half to G. S. Harney. Car-coupling	447,259	Feb. 24	2898	720	54	1101
Rogers, Grandison T., Jefferson City, Mo. Lock	447,623	Mar. 3	574	142	54	1226
Rogers, Homer, trustee. (See Phillips, Charles E., assignor.)						
Rogers, Seth, Ballston Spa, N. Y. Curry-comb	444,185	Jan. 6	340	83	54	69
Rogers, William A., Cambridge, Mass. Apparatus for determining minute measurements	449,175	Mar. 31	3072	776	54	1738
Rohlf, Henry J., Chicago, Ill. Safety-gate for draw-bridges	449,176	Mar. 31	3078	777	54	1739
Rohlmann, Joseph, St. Joseph, Mo. Carving-machine	444,306	Jan. 6	509	133	54	102
Rohr, Richard, Millstadt, Ill. Device for stripping leaves from sugar-cane	449,137	Mar. 31	3021	764	54	1728
Rohrsek, Albert. (See Hudec, John F., assignor.)						
Rolfe, Frank S., assignor to Sullivan Machine Company, Claremont, N. H. Sand-band	447,361	Mar. 3	137	37	54	1144
Romick, William H. (See Dellieres and Romick.)						
Rood, A. E. (See Fidler, Charles H., assignor.)						
Roosevelt, Frank, New York, N. Y. Organ	449,177	Mar. 31	3080	777	54	1739
Roosevelt, Frank, New York, N. Y., and W. N. Elbert, Philadelphia, Pa.; said Elbert assignor to said Roosevelt. Organ	449,590	Mar. 31	3769	946	54	1866
Rorback, John Z. (See Edgar, Joseph M., assignor.)						
Rorback, John Z. (See Wooley, George W., assignor.)						
Rorback, John Z., Kansas City, Mo. Mechanical movement	449,334	Mar. 31	3349	844	54	1787
Rosa, Katharina. (See Koepp, Heinrich, assignor.)						
Rose, Henry C., and T. J. Thompson, Leadville, Colo. Thill-coupling	449,235	Mar. 31	3165	798	54	1755

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Rose, Joseph J. (See Norwood and Rose.)						
Rose, Joseph W. (See Balston and Rose.)						
Rose, Milton T., Orland, Ind. Coal or grain elevator	449,495	Mar. 31	3628	913	54	1841
Rose, Thomas, Jersey City, N. J. Ice-making and refrigerating	446,076	Feb. 10	923	226	54	700
Rose, William P. (See Miller, Levi H., assignor.)						
Roseberry, Clement, Pottsville, Pa. Wick-trimmer	448,789	Mar. 24	2487	622	54	1617
Rosenbaum, Henry W., New York, N. Y. Movable table for railway-cars	445,704	Feb. 3	311	82	54	574
Rosenberg, Aaron, assignor to M. Rosenberg, Philadelphia, Pa. Liniment	444,398	Jan. 6	653	.....	54	129
Rosenberg, Morris. (See Rosenberg, Aaron, assignor.)						
Rosenfield, William W., New York, N. Y., assignor to American Electric Railway Signal Company, Jersey City, N. J. Electric railway-signal	447,906	Mar. 10	1042	261, 262	54	1322
Rosnecht, Joseph C., New York, N. Y. Scraper for mucilage-bottles	449,298	Mar. 31	3275	829	54	1774
Ross, Elmore W., Springfield, Ohio. Carrier attachment for cutting-machines	444,459	Jan. 13	748	195, 196	54	156
Ross, Joseph G. (See Ashworth, Joel T., assignor.)						
Rossberg, Herman, New York, N. Y. Riding-habit	445,203	Jan. 27	1973	510	54	410
Rossney, William C., Hyde Park, assignor of one-half to M. J. Scanlan, Boston, Mass. Automatic gas-supply shut-off and regulator	449,178	Mar. 31	3083	777	54	1740
Roth, George, Highland, Ill. Machine for liquidizing milk	446,077	Feb. 10	926	226	54	700
Roth, George R., Reading, assignor to W. W. Lesher, Messersville, Pa. Window	447,362	Mar. 3	138	38	54	1144
Roth, Jonn G., South Bend, Ind. Insect-trap	449,138	Mar. 31	3022	764	54	1728
Roth, Joseph A. (See Egg, Gustav A., assignor.)						
Rotzel, Albert. (See Adams and Rotzel.)						
Rountree, Philip S., *et al.* (See Mitchell, Clifford, assignor.)						
Rouse, Roswell R., Indianapolis, Ind. Pipe-vise	446,078	Feb. 10	927	226	54	700
Ronsseau, Auguste T., Cambridge, Mass. Piano-forte action	445,905	Feb. 3	638	157	54	637
Rouveyre, Camille A., Paris, France. Velocipede	444,620	Jan. 13	999	260	54	206
Röver, Adolph B., Binghamton, N. Y. Automatic weighing-scale and indicator	446,208	Feb. 10	1149	281, 282	54	739
Rowe, George E., Boston, assignor to C. S. Crain, trustee, Newton, Mass. Advertising-wagon	444,236	Jan. 6	415	103, 104	54	82
Rowe, Marvin L., Albany, N. Y. Dental disk-carrier	444,856	Jan. 20	1416	367	54	293
Rowe, William S. (See Anderson, Harry N., assignor.)						
Rowell, Benton C., Boston, Mass. Device for automatically operating power-car brakes	444,962	Jan. 20	1600	409	54	327
Rowell, John F., Hooksett, N. H. Wash-boiler	447,584	Mar. 3	516	126	54	1214
Rowell, William M., Fort Meade, assignor to J. A. Harris, Citra, Fla. Machine for budding trees	449,591	Mar. 31	3772	946	54	1866
Rowland, David J., Youngstown, Ohio. Adding-machine	447,363	Mar. 3	141	39	54	1144
Rowland, James L., Troy, N. Y. Manufacture of artificial stone	448,675	Mar. 24	2300	577	54	1581
Rowlands, Evan. (See Ferguson, Thomas, assignor.)						
Rowley, John T., Johnstown, Pa. Machinery for shaping iron or steel axles	445,662	Feb. 3	234	63, 64	54	558
Roy, Rosario, Richmond, Va. Rotary brush	445,083	Jan. 20	1775	457	54	362
Royal Axminster Carpet Company. (See Sinclair, Alexander, assignor.)						
Royce, Danforth H., and C. Tufts, assignors to J. G. Pulling, Columbus, Ohio. Steam-pump	445,412	Jan. 27	2278	591	54	471
Rubel, Isaac, Chicago, Ill. Range	445,289	Jan. 27	2098	542	54	433
Rubel, Levi G., Chicago, Ill. Binder	445,357	Jan. 27	2200	571	54	455
Rudd, Alexander H., and W. P. Mendenhall, Media, Pa. Playing-card	449,274	Mar. 31	3297	815	54	1767
Ruddell, George, New York, N. Y. Platform-elevator	445,610	Feb. 3	144	37	54	539
Ruddell, George, New York, N. Y. Platform-elevator	445,611	Feb. 3	145	38	54	539
Ruddy, Robert. (See Kaczander and Ruddy.)						
Rudolf, John, deceased; M. A. Rudolf administratrix, San Francisco, Cal. Piano-action	444,057	Jan. 6	115	29	54	25
Rudolf, Martha A., administratrix. (See Rudolf, John.)						
Rudolph, Paul, assignor to C. Zeiss, Jena, Germany. Photographic objective	444,714	Jan. 13	1138	293, 294	54	233
Ruef, Charles S., assignor to Grand Detour Plow Company, Dixon, Ill. Cultivator	444,186	Jan. 6	340	83	54	69
Ruef, Charles S., assignor to Grand Detour Plow Company, Dixon, Ill. Disk harrow	445,787	Feb. 3	447	112	54	599
Ruge, Frank, Woonsocket, R. I. Gate-hinge	448,456	Mar. 17	1947	490	54	1507
Rühl, Henry. (See Follett, Hiram, assignor.)						
Rulon, David G., Monmouth, Ill. Hanger for picture or mirror frames	449,496	Mar. 31	3630	914	54	1841
Runnels, George F., Waco, Nebr. Apparatus for watering hogs	448,262	Mar. 17	1620	413	54	1444
Runyan, Arthur F., Yorktown, Ind. Corn-planter	447,205	Feb. 24	2804	693, 694	54	1082
Runyon, Edwin E., Barns City, Tex. Lawn-mower	445,616	Feb. 3	154	40	54	541
Runyon, Edwin E., Pilot Point, Tex. Suspension-bridge	446,209	Feb. 10	1155	283	54	740
Rupe, Salathiel C., Carrollton, Mo. Lemon presser or squeezer	447,975	Mar. 10	1164	294, 295	54	1344
Ruppel, Henry, assignor to Dangler Stove and Manufacturing Company, Cleveland, Ohio. Water-back gas cooking-stove	449,179	Mar. 31	3085	778	54	1740
Rushforth, William H. (See Krepps, Virgil A., assignor.)						
Rusk, Hugh R., Rutherford, N. J. Coat-holder	447,976	Mar. 10	1166	295	54	1345
Russ, Alfred, assignor of one-half to J. Wessel, East Boston, Mass. Harness	445,840	Feb. 3	543	132	54	617
Russ, Augustus, *et al.*, executors. (See Weston, David M.)						
Russell & Company. (See Heggem, Charles O., assignor.)						
Russell, Edwin C., Boston, Mass. Disk-carbon holder for electric lamps	446,549	Feb. 17	1719	421	54	866
Russell & Erwin Manufacturing Company. (See Burgess, Charles M., assignor.)						
Russell & Erwin Manufacturing Company. (See Jones, Horace K., assignor.)						
Russell, George F., Lawrence, Mass. Pulp-digester	445,235	Jan. 27	2020	521	54	418
Russell, Jacob, Brooklyn, N. Y. Machine for making timber-hangers	445,007	Jan. 20	1661	425, 426, 427	54	340
Russell, Josephine, Tabor, Iowa. Fly-brush	444,963	Jan. 20	1601	409	54	328
Russell, William G., Jr., Winchester, Va. Trunk	446,890	Feb. 24	2262	562	54	981
Ryan, Daniel W. (See Fietsch, Herman, Jr., assignor.)						
Ryan, John, New York, N. Y., assignor to himself, and S. G. Smith, Plainfield, N. J. Screw-wrench	447,163	Feb. 24	2739	678	54	1068
Ryan, Thomas. (See Kearney, Patrick J., assignor.)						
Ryder, Sumner G. (See Palmer and Ryder.)						
Rymer, William, Detroit, Mich. Steering apparatus	448,963	Mar. 17	1620	413	54	1445
Sabel, Friedrich W., Coblentz, Germany. Pencil-sharpener	448,839	Mar. 24	2357	641	54	1630
Sabin, Ransom, Shelby, Mich. Portable pantry	448,372	Mar. 17	1814	457	54	1482
Sacco, Carlo, Genoa, Italy. Kneading-machine	445,204	Jan. 27	1974	510	54	410

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Sachtleben, William L. (See Allen, Sachtleben, and Walters.)						
Sadleir, Charles A. (See Richardson and Sadleir.)						
Saegmuller, George N., Washington, D. C. Equatorial mounting	448,081	Mar. 10	1321	338	54	1377
Sageldorff, Gustav R., Medford, Wis. Animal-collar	448,546	Mar. 17	2077	521	54	1532
Sagendorph, Longley L., Philadelphia, Pa. Metallic lathing	447,084	Feb. 24	2583	641	54	1040
Sagendorph, Longley L., Philadelphia, Pa. Metallic lathing	447,085	Feb. 24	2584	641	54	1040
Sagendorph, Longley L., Philadelphia, Pa. Metallic facing for buildings	448,732	Mar. 24	2398	600	54	1600
Sagendorph, Longley L., Philadelphia, Pa. Metallic facing-plate	448,733	Mar. 24	2399	600	54	1600
Saggese, Alexandre. (See Becker and Saggese.)						
Sahler, Carl, assignor to the firm of F. A. Herbertz, Cologne, Germany. Cupola smelting-furnace	445,381	Jan. 27	2227	577	54	460
Saladee, Cyrus W., Cleveland, Ohio. Platform-spring for road-wagons	448,790	Mar. 24	2488	622	54	1617
Salenius, Erik G. N., Stockholm, Sweden. Separating butter from unskimmed milk or cream and apparatus for carrying out the same	448,373	Mar. 17	1815	458	54	1482
Salisbury, George P., assignor to E. K. Plumly, Philadelphia, Pa. Pasting device	445,940	Feb. 3	695	169	54	649
Salisbury, George P., New Haven, Conn., assignor to E. K. Plumly, Philadelphia, Pa. Machine for cutting paper tubes	447,740	Mar. 3	740	186, 187	54	1258
Salisbury, Harold A., Vinson, Oreg. Clasp for connecting timbers	448,082	Mar. 10	1321	338	54	1377
Salmon, James. (See Duncan and Salmon.)						
Salmon, Pomeroy L., Rochester, N. Y., assignor to Steam Gauge and Lantern Company. Apparatus for drying wire-cloth	448,888	Mar. 24	2636	662	54	1645
Salomon, Siegmund L., New York, N. Y. Labeling-machine	447,907	Mar. 10	1047	262	54	1324
Salter, Alfred, *et al.* (See Morgan and Crowley, assignors.)						
Salter, Marvin R., Ithaca, Mich. Copy-holder	448,457	Mar. 17	1948	490	54	1507
Sampson Automatic Heel Burnishing Machine Company. (See Sampson, Winslow F., assignor.)						
Sampson, Winslow F., Goffstown, assignor to Sampson Automatic Heel Burnishing Machine Company, Manchester, N. H. Heel-burnishing machine	444,021	Jan. 6	56	16	54	14
Sampson, Winslow F., Goffstown, assignor to Sampson Automatic Heel Burnishing Machine Company, Manchester, N. H. Heel-burnishing machine	444,388	Jan. 6	631	164, 165	54	124
Samuel, Leopold S., Newark, N. J. Stiffener for flannel-shirt collars	447,364	Mar. 3	142	39	54	1144
Samuels, Jonathan H., Moline, Ill. Band and tire setting machine	444 547	Jan. 13	894	232	54	186
Sanborn, Albert E. (See Merrow and Sanborn.)						
Sanborn Exercising Machine Company. (See Sanborn, George S., assignor.)						
Sanborn, George S., Lynn, Mass., assignor to Sanborn Exercising Machine Company, Portland, Me. Exercising apparatus	444,674	Jan. 13	1086	281	54	223
Sanborn, John W. (See Closs, Peter, assignor.)						
Sanders, George A., *et al.* (See Newman, Nelson, assignor.)						
Sanders, Jeremiah K. (See James and Sanders.)						
Sansoucy, Mack, assignor to L. D. Jones and L. Thiers, Kenosha, Wis. Check-loop	445,084	Jan. 20	1776	458	54	363
Sansoucy, Mack, assignor to L. D. Jones and L. Thiers, Kenosha, Wis. Winker attachment	449,497	Mar. 31	3631	914	54	1841
Sargent & Company. (See Brocksleper, Fredrich W., assignor.)						
Sargent & Company. (See Sargent, Joseph B., assignor.)						
Sargent & Company. (See Sargent and Page, assignors.)						
Sargent & Company. (See Sargent and Stevens, assignors.)						
Sargent & Company. (See Shaw, John H., assignor.)						
Sargent & Company. (See Wright, Granville W., assignor.)						
Sargent, Edward R., and W. E. Stevens, assignors to Sargent & Company, New Haven, Conn. Coffin-handle	447,086	Feb. 24	2584	641	54	1040
Sargent, Henry B., and A. A. Page, assignors to Sargent & Company, New Haven, Conn. Cylinder-lock	446,192	Feb. 10	1124	275	54	734
Sargent, Joseph B., assignor to Sargent & Company, New Haven, Conn. Cylinder-lock	445,085	Jan. 20	1777	458	54	363
Satterthwaite, John R., Trenton, N. J. Husking pin	444,857	Jan. 20	1417	368	54	293
Sattley, Archibald, *et al.* (See Sattley, Marshall, assignor.)						
Sattley, Marshall, assignor to himself, A. Sattley, and S. E. Prather, Springfield, Ill. Harrow	447,260	Feb. 24	2599	720	54	1101
Sauber, Emil A., assignor to Hagedorn & Merz, Philadelphia, Pa. Bosom-plaiting attachment for sewing-machines	449,385	Mar. 31	3445	867	54	1804
Saunders, Thomas H., assignor to C. J. Souther, Boston, Mass. Carrier-clamp for fire-engine hose	448,458	Mar. 17	1949	491	54	1508
Saunier, Fernand, Nantes, France, assignor to Reiss & Brady, New York, N. Y. Can-capping machine	445,477	Jan. 27	2368	616, 617	54	488
Sauser, John M., Osnaburg, Ohio. Portable water-tank	445,413	Jan. 27	2279	591	54	471
Sautmyer, Charles A. (See Ash, John E., assignor.)						
Sawyer, Oliver, East Templeton, Mass. Belt guide and support	445,382	Jan. 27	2228	577	54	461
Saxon, James A., Leonard, Tex. Bank-protector	448,547	Mar. 17	2078	521	54	1532
Saxton, Thomas G., assignor of one-half to O. G. Vanderhoof, Lexington, Ky. Hand-printing device	448,264	Mar. 17	1622	414	54	1445
Sayles, Thomas D. (See Fowler, Rufus B., assignor.)						
Scaba, William S., Everett, assignor of two-thirds to J. H. Clark, Quincy, and J. B. Humphrey, Boston, Mass. Independent electric clock	448,998	Mar. 24	2801	708	54	1677
Scabs, William S., Everett, assignor of two-thirds to J. H. Clark, Quincy, and J. B. Humphrey, Boston, Mass. Secondary electric clock	448,999	Mar. 24	2803	708	54	1678
Scanlan, Edward. (See Keifel, Fred. W., Jr., assignor.)						
Scanlan, Edward. (See Kuhn, Edmund, assignor.)						
Scanlan, Michael J. (See Rossney, William C., assignor.)						
Scantlebury, Spurgeon C., Eastport, Me. Garment-supporter	446,070	Feb. 10	928	227	54	700
Scantlebury, William, Rockaway, N. J. Bicycle	446,175	Feb. 10	1100	270	54	730
Scates, William P., and J. F. Woods, Knoxville, Tenn. Stone-channeler	448,928	Mar. 24	2693	679	54	1657
Scotts, George N., Milwaukee, Wis. Brake-beam	448,929	Mar. 24	2694	679	54	1657
Scotts, George N., assignor to Milwaukee Brass and Copper Works, Milwaukee, Wis. Car-axle journal-bearing	447,327	Mar. 3	434	106	54	1199
Schaap, Alexander K. (See Ostergren and Schaap.)						
Schaap, Alexander K., Richmond, Va. Bicycle-spoke-nipple wrench	449,000	Mar. 24	2805	709	54	1678
Schade, John, assignor to Hopkins & Dickinson Manufacturing Company, Brooklyn, N. Y. Latch	446,841	Feb. 17	2162	537	54	955
Schaefer, Charles W., Cleveland, Ohio. Apparatus for shrinking cloth	448,459	Mar. 17	1950	491	54	1508
Schallibaum, Robert, Manchester, England. Cotton-opener, &c	447,365	Mar. 3	143	39	54	1145
Schalk, Emil, Piermont, N. Y. Cable-grip	449,139	Mar. 31	3022	764	54	1728
Scharf, Samuel R., Washington, D. C. Concrete-mixer	447,366	Mar. 3	144	39, 40	54	1145
Scharr, Jonathan, Philadelphia, Pa. Detergent	444,135	Jan. 6	258	.....	54	53
Schatz, Adam E., New York, N. Y. Telephone sound-transmitter	449,180	Mar. 31	3086	778	54	1740
Schatz, Joseph, Newport, Ky. Car-coupling	447,977	Mar. 10	1166	295	54	1345
Schaum, Otto W., Philadelphia, Pa. Machine for punching holes in Jacquard cards	445,340	Jan. 27	2175	563	54	451
Schaum, Otto W., assignor to Schaum & Uhlinger, Philadelphia, Pa. Spool-holding bracket for looms	445,514	Jan. 27	2424	632	54	498
Schaum & Uhlinger. (See Schaum, Otto W., assignor.)						
Scheffler, Theodore, assignor of one-half to R. Atherton, Paterson, N. J. Power-transmitting device	448,575	Mar. 17	2122	531, 532	54	1541
Scheidemann, Ferdinand L. (See Bender and Scheidemann.)						
Scheidig, Frederick, New York, N. Y. Magic lantern	449,386	Mar. 31	3447	867, 868	54	1804
Schell, Duncan M., Castleton, Vt. Thill-tug	446,694	Feb. 17	1933	482	54	906
Scheller, Heinrich, Christiania, Norway. Spewing-box for use on board ships	445,086	Jan. 20	1778	458	54	363
Schenck, William T. Y., San Francisco, Cal. Hose-reel	446,745	Feb. 17	2012	502	54	923
Scheuer, Simon, New York, N. Y. Buckle	448,503	Mar. 24	2507	628	54	1624
Schied, Charles A., Rochester, N. Y. Flour-bolt	446,155	Feb. 10	1060	260	54	724
Schieding, Andrew W., Turner's Falls, Mass. Velocipede	449,498	Mar. 31	3632	914	54	1842
Schiermann, William. (See Inglis and Schiermann.)						
Schiff, Bernhart, and L. Mayer, New York, N. Y. Watch-case pendant	447,908	Mar. 10	1050	262	54	1324
Schifferly, Conrad, Fort Wayne, Ind. Bake-pan	448,548	Mar. 17	2079	521	54	1533
Schillinger, Frederick, Toledo, Ohio. Frame for suspending buckets	445,719	Feb. 3	334	88	54	578
Schimansky, Herrmann, and L. Passelt, Berlin, Germany, assignors to Morwitz & Co., Philadelphia, Pa. Frame for holding stereotype-molds	446,695	Feb. 17	1934	482	54	906
Schimper, Rudolph J., Jersey City, N. J., assignor, by mesne assignments, to United States Fuel Company, of New Jersey. Artificial fuel	447,138	Feb. 24	2698	.....	54	1060
Schindler, Joseph, Uittwa, No. 7, near Carlsbad, Austria-Hungary. Velocipede	447,478	Mar. 3	356	88	54	1185
Schirn, Johann W. C. C., Berlin, Germany. Producing intense light by magnesium or other glowing materials	446,891	Feb. 24	2263	563	54	981
Schirmer, Edward, Cleveland, Ohio. Syringe	446,125	Feb. 10	1006	248	54	715
Schlatter, Charles, Hoboken, N. J. Stop-watch	448,549	Mar. 17	2079	522	54	1533
Schlesinger, Harry A., assignor to T. Christy, London, England. Preparing water-proof material	446,294	Feb. 10	1318	.....	54	773
Schlesinger, William M., assignor to C. F. Van Horn, Philadelphia, Pa. Electric rock-drill	449,090	Mar. 24	2937	744, 745	54	1704
Schmachtenberg, William, New York, N. Y. Pocket-knife	449,499	Mar. 31	3633	914, 915	54	1842
Schmid, Jakob, assignor to Society of Chemical Industry, Basle, Switzerland. Black dye	449,629	Mar. 31	3854	.....	54	1882
Schmid, John, Olney, Ill. Clothes-pin	446,648	Feb. 17	1865	463	54	894
Schmidt, Frederick T., Bradford, England. Apparatus for consuming smoke	447,367	Mar. 3	149	40, 41	54	1146
Schmidt, Louis M. (See Lemp and Schmidt.)						
Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Alizarine derivative	446,892	Feb. 24	2265	.....	54	981
Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Alizarine derivative	446,893	Feb. 24	2265	.....	54	981
Schneider, August, Dresden-Neustadt, Germany. Combined cane and camp-stool	444,621	Jan. 13	1000	260	54	207
Schneider, Bruno, Buchholz, Germany. Music-leaf turner	448,265	Mar. 17	1623	414	54	1445
Schneider, Friedrich, New York, N. Y. Rotary valve	449,181	Mar. 31	3087	778	54	1740
Schneider, Heinrich, Oberhausen, Germany. Note-plate for head-coverings	448,266	Mar. 17	1624	414	54	1445
Schneider, Henri, Paris, France. Breech-loading ordnance	449,335	Mar. 31	3351	845	54	1787
Schneider, John G., assignor of one-half to F. Riedle, Chicago, Ill. Street-car	445,941	Feb. 3	696	169, 170	54	649
Schnell, Friedrich, Sr., Fort Madison, Iowa. Fire-escape	446,295	Feb. 10	1319	321	54	773
Schniedewend & Lee Company. (See Bechman, Henry F., assignor.)						
Schnitger, Carl C., Berlin, Germany. Painting in oil colors	448,267	Mar. 17	1625	.....	54	1446
Schoen, Charles T., Philadelphia, Pa. Pressed-steel rail-joint	446,017	Feb. 10	825	199	54	681
Schoen, Charles T., Pittsburg, Pa. Center bearing-plate for cars	446,296	Feb. 10	1320	322	54	773
Schofield, James D., Rodgers, Tex., assignor to Ohio Cultivator Company, Bellevue, Ohio. Cotton-planter	445,734	Feb. 3	360	93	54	583
Schofield, James D., Rodgers, Tex., assignor to Ohio Cultivator Company, Bellevue, Ohio. Corn-planter	446,118	Feb. 10	990	244	54	712
Scholvien, Ludwig. (See Littke and Scholvien.)						
Schoonover, James S., assignor to C. F. Whitcher, Buffalo, N. Y. Fan-blower	447,909	Mar. 10	1052	263	54	1324
Schorr, Robert, Würtemberg, Germany. Producing colored impressions	446,004	Feb. 10	811	.....	54	678
Schrage, William, Sheboygan, Mich. Tilting chair	446,080	Feb. 10	929	227	54	700
Schram, John S., Dayton Ohio. Collar-stuffing machine	448,268	Mar. 17	1626	415	54	1446
Schreckengost, Samuel, Meadville, Pa., assignor of one-fourth to C. F. Moore, Huntersville, W. Va. Harrow	449,592	Mar. 31	3774	947	54	1867
Schreiber, Frederick, assignor of one-half to C. L. Gaylord, Bridgeport, Conn. Awning	449,387	Mar. 31	3449	868	54	1805
Schreiber, Philip J., Dayton, Ohio. Fountain-feed for moistening and sealing devices	446,081	Feb. 10	930	227	54	701
Schreiber, Philip J., assignor of one-half to D. Gross, Dayton, Ohio. Tag-fastener	444,371	Jan. 6	608	156	54	120
Schrender, Jens G. (See Westinghouse and Schrender.)						
Schrib, Juni, McGregor, Tex. Washing-machine	446,144	Feb. 10	1042	256	54	720
Schroeder, George G. (See Dorsey, Vernon M., assignor.)						
Schroeder, George G., *et al.* (See Krieger, John G., assignor.)						
Schroeder, George G., Washington, D. C. Liquid-purifier	447,585	Mar. 3	517	126	54	1214
Schroeder, George G., Washington, D. C. Traction-engine	447,978	Mar. 10	1168	296, 297	54	1346
Schroyer, Charles A. (See Thompson and Schroyer.)						
Schroyer, Charles A., and E. B. Thompson, Chicago, Ill. Device for relieving the tension of car-lifters	449,388	Mar. 31	3450	868, 869	54	1805
Schubert, George, Walnut Springs, Tex. Grain-conveyer for binders, &c	446,473	Feb. 17	1599	392	54	842
Schuett, Fred. J. J., Saginaw, Mich. Divider for mowing-machines	446,894	Feb. 24	2266	563	54	981
Schultz, Gustav, New York, N. Y. Shoe	449,500	Mar. 31	3635	915	54	1842
Schultz, Louis. (See Koch, Matthias, assignor.)						
Schultz, Louis, and T. A. Weber, New York, N. Y.; said Weber assignor to said Schultz. Quilting-machine	447,794	Mar. 10	959	213, 214	54	1287
Schulze-Berge, Hermann, Rochester, Pa. Apparatus for grinding or polishing glassware	447,700	Mar. 3	676	169	54	1246
Schulze-Berge, Hermann, Rochester, Pa. Glass-melting furnace	447,795	Mar. 10	864	215	54	1288
Schumacher, William, Brooklyn, N. Y. Die for ornamenting paper, leather, and other plastic materials	445,863	Feb. 3	580	141	54	625
Schumacher, William, assignor of one-half to L. Rahmer, Brooklyn, N. Y. Printing in colors	447,087	Feb. 24	2586	.....	54	1041
Schumacher, William, assignor of one-half to L. Rahmer, Brooklyn, N. Y. Printing in colors	447,701	Mar. 3	680	.....	54	1247
Schuster, Hermann F. E., Savannah, Ga. Pen-holder	448,083	Mar. 10	1323	339	54	1377
Schwanhausser, William, Brooklyn, assignor to W. A. Perry and C. C. Worthington, New York, N. Y. Boring-machine	446,792	Feb. 17	2078	519	54	937

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Schwartz, Henry. (See Evans, John B., assignor.)						
Schwarze, Carl J., Brooklyn, N. Y. Dynamo-electric machine	445,906	Feb. 3	639	157	54	637
Schwarze, Carl J., Brooklyn, N. Y. Electric-arc lamp	446,297	Feb. 10	1322	322	54	773
Schwarze, Carl J., Brooklyn, N. Y. Arc-light system	446,298	Feb. 10	1323	322	54	773
Schweizer, Jakob, Zurich, assignor to Muller & Schweizer, Tolothwin, Switzerland. Pivot-lathe	446,211	Feb. 10	1158	284	54	741
Scollay, George W., New York, N. Y. Paint from residuum of vegetable oils	446,018	Feb. 10	826	.....	54	681
Scollay, George W., New York, N. Y. Making paint	446,019	Feb. 10	828	.....	54	682
Scott, Alexander, Cronly, N. C. Machine for fibrillation of pine-needles	447,206	Feb. 24	2806	694	54	1082
Scott, Arthur, assignor to W. Scott, Plainfield, N. J. Rotative speed-regulating mechanism	444,136	Jan. 6	259	62	54	53
Scott, De Marquis, Goss, Mo. Grain-separator	447,845	Mar. 10	940	236	54	1303
Scott, Eben M., Huntington, Conn. Knockdown paper box	448,824	Mar. 24	2533	635	54	1626
Scott, Frank G. and G. L., Newport, R. I. Pipe-hanger	448,550	Mar. 17	2080	522	54	1533
Scott, George A., assignor to S. Bergmann, New York, N. Y. Electric cut-out	445,822	Feb. 3	520	125	54	613
Scott, George L. (See Chorlton and Scott.)						
Scott, George L. (See Scott, Frank G. and G. L.)						
Scott, Helen M., *et al.* (See Scott, William J., assignor.)						
Scott, John A. (See Mackay, James T., assignor.)						
Scott, John W. (See Jones and Scott.)						
Scott, Martha J., *et al.* (See Scott, William J., assignor.)						
Scott, Montezuma, New Brighton, Pa. Wash-board	444,022	Jan. 6	63	17	54	15
Scott, Royal R., Canandaigua, and J. R. Hillman, Shortsville, N. Y. Game	449,140	Mar. 31	3024	765	54	1729
Scott-Russell, Norman, London, England. Combined door check and spring	446,561	Feb. 17	1736	427	54	869
Scott, Walter. (See Scott, Arthur, assignor.)						
Scott, Walter, Plainfield, N. J. Cutting and feeding mechanism for printing-presses	444,137	Jan. 6	261	62, 63	54	53
Scott, Walter, Plainfield, N. J. Paper feeding and cutting mechanism for printing-machines	444,138	Jan. 6	264	63	54	54
Scott, Walter A., *et al.* (See Mitchell, Oliver F., assignor.)	446,696	Feb. 17	1934	482	54	907
Scott, William, Leavenworth, Kans. House-door letter-box	449,593	Mar. 31	3775	947, 948	54	1867
Scott, William J., assignor to H. M. and M. J. Scott, Albany, N. Y. Blacking-brush	446,393	Feb. 10	1458	358	54	892
Scovel, James D., Detroit, Mich. Roof for hot-houses	444,254	Jan. 6	438	110	54	86
Scovill & Adams Company. (See Fuller, Willard H., assignor.)						
Scranton, Alfred H. (See Scranton, Alfred L. and A. H.)						
Scranton, Alfred L. and A. H., Western Springs, Ill. Track for door-hangers	446,103	Feb. 10	966	238	54	707
Scrithorp, Walter J., Columbia Grove, assignor of one-half to C. M. Hardy, Reedy, Va. Tobacco-hanger	447,242	Feb. 24	2875	714	54	1096
Scudder, Wilbur S., Brooklyn, N. Y., assignor to National Typographic Company, of West Virginia. Machine for casting linotypes	444,090	Jan. 6	172	43	54	37
Seabury, Samuel, Bergen Point, N. J. Breech-loading ordnance	448,269	Mar. 17	1627	415, 416	54	1446
Seal, William B., Baltimore, Md. Making fertilizers	445,255	Jan. 27	2058	.....	54	425
Seaman, William. (See Eynon and Seaman.)						
Searles, Orren I., G. F. Jackson, and F. M. Gustin, Fort Madison, Iowa. Device for cleaning cisterns	447,368	Mar. 3	151	41	54	1146
Searls, Anson, assignor to Searls-Randall Company, Newark, N. J. Top-prop for carriages	446,474	Feb. 17	1602	393	54	843
Searls-Randall Company. (See Searls, Anson, assignor.)						
Sears, Charles, Chicago, Ill. Stereotype-mold	446,930	Feb. 24	2332	579	54	993
Sears, William G., Chattanooga, Tenn. Railway rail tie and track fastener	444,909	Jan. 20	1509	368	54	311
Sears, William G., Chattanooga, Tenn. Rail-tie	444,910	Jan. 20	1511	369	54	311
Seaton, Charles S., assignor of one-half to J. A. Seaton, Cleveland, Ohio. Machine for heading bolts, &c.	444,460	Jan. 13	750	196, 197	54	157
Seaton, John A. (See Seaton, Charles S., assignor.)						
Seaver, A., *et al.* (See Young, James A., assignor.)						
Seaver, Augustus, Boston, and W. S. Hamm, Newton, assignors to C. F. Brown, trustee, Reading, Mass. Lasting machine	444,858	Jan. 20	1418	368	54	293
Seaver, E. B., *et al.* (See Young, James A., assignor.)						
Seawert, Herman F., Fort Atkinson, Wis. Horse-collar fastener	447,586	Mar. 3	519	127	54	1214
Seawell, Jesse P., Clarksburg, Mo., and J. H. O'Hara, New York, N. Y. Automatic car-brake	447,207	Feb. 24	2807	695	54	1083
Sebenius, Johan L., Stockholm, Sweden. Casting	444,162	Jan. 6	299	72	54	61
Secord, Herbert C., *et al.* (See Rodwell, George J. B., assignor.)						
See, Christian, St. Paul, Minn. Horse-hitching device	448,270	Mar. 17	1632	416	54	1447
Seelar, Jacob J., Philadelphia, Pa. Controlling device for elevators	446,717	Feb. 17	1966	490	54	914
Seelbach, Arthur L., Cleveland, Ohio. Guy-rope fastener	446,020	Feb. 10	830	199	54	682
Seely, John F., *et al.* (See Wright, Herbert A., assignor.)						
Seely, Obadiah, assignor to E. C. Stearns & Co., Syracuse, N. Y. Pneumatic door-check	448,889	Mar. 24	2637	662, 663	54	1645
Seemüller, Otto, assignor of one-half to L. W. Widmann, New Haven, Conn. Propeller	446,697	Feb. 17	1937	481	54	907
Sefton, Orlando J., Sedgwick, Kans. Toe-weight and quarter-boot fastener	444,023	Jan. 6	64	17	54	15
Segur, Joseph M., and J. R. Haight, Adrian, Mich. Cash and parcel carrier	445,087	Jan. 20	1759	458	54	363
Seibert, Nicholas, Malden, Mass. Electric railway	446,475	Feb. 17	1603	393	54	843
Seibold, Albert C., Mount Vernon, N. Y. Electrode for electric-arc lamps	447,702	Mar. 3	681	169	54	1247
Seibold, Albert C., Mount Vernon, N. Y. Electrode for arc lamps	448,084	Mar. 10	1323	339	54	1377
Seilers, William R., assignor of one-half to J. F. McGlinn, Reading, Pa. Car-brake	449,630	Mar. 31	3854	961	54	1882
Seifried, Samuel J., assignor to Munson Type Writer Company, Chicago, Ill. Type-writing machine	446,394	Feb. 10	1459	358, 359	54	892
Seigle-Goujon, Adolphe, Lyons, France. Device for heating by gas or combustible vapor	448,460	Mar. 17	1951	491	54	1508
Self Acting Bell Company. (See Iske, Albert, assignor.)						
Sell, Frank A., and W. O'Connor, Red Lodge, Mont. Gravity haulage-machine	445,088	Jan. 20	1780	459	54	363
Selleck, Herman D. (See Copeland, David W., assignor.)						
Selleck, William E., Chicago, Ill. Screen	445,089	Jan. 20	1781	459	54	364
Seller, Harry W. (See Reese and Seller.)						
Sells, Osborn P. (See Hand and Sells.)						
Semple, Harry, assignor of one-half to J. F. Flood, Steubenville, Ohio. Velocipede	447,741	Mar. 3	746	187	54	1259
Semple, William F., Mount Vernon, Ohio. Map-holder	446,021	Feb. 10	831	200	54	682
Semmevoy, Augustin P. de, Paris, France. Apparatus for recutting files	448,144	Mar. 10	1409	360	54	1395
Semour, Faunt L., New Alexandria, Pa. Potato-digger	448,551	Mar. 17	2082	522	54	1533
Sermombe, Parker H. (See Bolte, Frank H., assignor.)						
Sermombe, Parker H. (See Hurrell, William E., assignor.)						
Sergeant, Charles H., New York, N. Y. Double scotch-yoke engine	444,139	Jan. 6	267	64	54	55
Sergeant, Charles H., New York, N. Y. Mining-column	444,140	Jan. 6	268	64	54	55

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Sergeant, Frederick C. L., Denver, Col. Ore-concentrator	444,785	Jan. 13	1260	326	54	254
Sergeant, Henry C., New York, N. Y., assignor to Ingersoll-Sergeant Rock Drill Company, of New York. Compressed-air-cylinder lubricator	447,910	Mar. 10	1052	263	54	1324
Serkey, Joseph von, assignor of three-fourths to R. King, Chicago, Ill. Wire-nail machine	448,620	Mar. 17	2204	551, 552, 553, 554	54	1556
Seror, John, assignor of one-half to E. C. Doyle, Cohoes, N. Y. Railway-rail-cleaning machine	444,675	Jan. 13	1087	281, 282	54	223
Serrell, Edward W., New York, N. Y. Bridge	445,302	Jan. 27	2114	547	54	437
Sessions, Henry H., assignor to Pullman's Palace Car Company, Chicago, Ill. Car-brake	447,911	Mar. 10	1054	263, 264	54	1325
Settle, John C., *et al.* (See Montgomery, James P., assignor.)	444,399	Jan. 6	653	169	54	129
Setzer, Gustav A., assignor to M. C. Setzer, Baltimore, Md. Water-coil boiler						
Setzer, Mary C. (See Setzer, Gustav A., assignor.)						
Sewall, James H., Portland, Me., assignor to Consolidated Car Heating Company of West Virginia, Albany, N. Y. Car-heating apparatus	445,090	Jan. 20	1784	459	54	364
Seybert, Harvey F., Queenstown, Pa. Device for spraying oil from the tubing of oil-wells	448,085	Mar. 10	1325	339	54	1378
Seyller, George. (See Smith, Walton D., assignor.)						
Seymour, Albert P., Syracuse, N. Y. Fuse-block	446,895	Feb. 24	2207	563, 564	54	982
Seymour, Charles, assignor to Defiance Machine Works, Defiance, Ohio. Cutter-head	446,476	Feb. 17	1604	394	54	844
Seymour, William S., assignor to E. H. Grey, Philadelphia, Pa. Woven-wire mattress	446,193	Feb. 10	1126	275, 276	54	734
Shafer, Charles T. (See Brain and Shafer.)						
Shafer, Joshua S., assignor of two-thirds to J. R. Davidson and R. G. Green, West Plains, Mo. Fanning-mill	448,809	Mar. 24	2515	630	54	1623
Shakespeare, William, Jr. (See Low and Shakespeare.)						
Shallenberger, Oliver B., Rochester, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Meter for alternating electric currents	448,676	Mar. 24	2302	577	54	1581
Shallenberger, Oliver B., Rochester, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Meter for alternating electric currents	448,677	Mar. 24	2303	577	54	1582
Shallenberger, Oliver B., Rochester, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Measuring alternating electric currents	449,001	Mar. 24	2805	709, 710, 711	54	1678
Shallenberger, Oliver B., Rochester, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Meter for alternating electric currents.	449,002	Mar. 24	2808	711	54	1678
Shallenberger, Oliver B., Rochester, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Meter for alternating electric currents.	449,003	Mar. 24	2810	711	54	1679
Shannon, John, Wixom, Mich. Dissolving-shutter for magic lanterns	448,825	Mar. 24	2534	635, 636	54	1626
Sharer, George W. (See Callaway, Edward H., assignor.)						
Sharkey, James, Fishville, Mich. Axle-lubricator	444,582	Jan. 13	950	246	54	197
Sharp, Edward P., Boston, Mass. Starting device for electric motors	445,907	Feb. 3	639	157	54	637
Sharp, Edward P., Boston, Mass. Trolley-wire holder	445,908	Feb. 3	641	157, 158	54	638
Sharp, William B., near Donaldsonville, La. Hay-rake	448,145	Mar. 10	1411	361	54	1395
Sharples, William E., Fall River, Mass. Let-off mechanism for looms	445,383	Jan. 27	2230	558	54	461
Sharples, William E., Fall River, Mass. Race-board and rest-board for looms	448,374	Mar. 17	1818	458	54	1482
Sharpneck Anti-Friction Journal Box Company. (See Sharpneck, William S., assignor.)						
Sharpneck, Eliel L., and J. W. Bailey, Denver, Colo. Pneumatic railway	449,594	Mar. 31	3777	948	54	1867
Sharpneck, William S., assignor to Sharpneck Anti-Friction Journal Box Company, Chicago, Ill. Journal-box	444,509	Jan. 13	838	217, 218	54	175
Shaver Corporation. (See Shaver, George F., assignor.)						
Shaver, George F., New York, N. Y., assignor to Shaver Corporation, of New Jersey. Device for inserting branch lines on mechanical-telephone lines	444,461	Jan 13	756	197	54	158
Shaver, George F., New York, N. Y., assignor to Shaver Corporation, of New Jersey. Mechanical-telephone exchange	444,462	Jan. 13	757	197	54	158
Shaver, George F., New York, N. Y., assignor to Shaver Corporation, of New Jersey. Mechanical-telephone exchange	444,463	Jan. 13	758	198	54	159
Shaver, George F., New York, N. Y., assignor to Shaver Corporation, of New Jersey. Molecular sound-resonator	444,464	Jan. 13	759	198	54	159
Shaw, Alton J. (See Reynolds, Shaw, and Trout.)						
Shaw, Charles A., *et al.* (See Lowe, Nathaniel M., assignor.)	447,912	Mar. 10	1056	264	54	1325
Shaw, Charles H., Brooklyn, N. Y. Stamp	447,119	Feb. 24	2635	654	54	1051
Shaw, George E., Berlin, Wis. Crimping-board	444,255	Jan. 6	440	111	54	86
Shaw, George F., Dedham, assignor of one-half to C. G. and B. F. Smith, Somerville, and G. G. Procter, Boston, Mass. Pipe-wrench	446,176	Feb. 10	1102	270	54	731
Shaw, John H., assignor to Sargent & Company, New Haven, Conn. Cylinder-lock	445,478	Jan. 27	2371	617	54	488
Shaw, John S., Durango, Colo. Pencil-holder	446,299	Feb. 10	1324	323	54	774
Shaw, William, New York, N. Y. Apparatus for printing carpet-yarns	444,111	Jan. 6	241	50	54	43
Shea, William J., and C. Birkery, Hartford, Conn. Wrench						
Shearer, David F. (See Burkholder and Clark, assignors.)	445,823	Feb. 3	521	125	54	613
Sheargren, John, Burlington, Iowa. Meat-chopping machine	447,979	Mar. 10	1170	297	54	1346
Sheets, Nial R., Dighton, Kans. Live-stock releaser						
Sheffield, Lucius T., New York, N. Y., and T. M. Sinclair, Newark, N. J. Machine for ornamenting tubular receptacles	448,678	Mar. 24	2304	578	54	1582
Shellaberger, Charles D., Indianapolis, Ind. Fence	444,170	Jan. 6	317	76	54	64
Shellenback, Peter. (See Henley and Shellenback.)						
Shellenberger, Samuel L., South McAlester, Indian Ter. Stock-guard for railways	446,793	Feb. 17	2084	519	54	939
Shelby, Christopher C., Paterson, N. J. Hose-supporter	448,768	Mar. 24	2456	614	54	1611
Shelman, William M. (See Merry and Shelman.)						
Shengle, John B., assignor to McAllister & Dall, Cleveland, Ohio. Doweling-machine	446,954	Feb. 24	2361	587, 588	54	998
Shepard, George L., North Adams, Mass. Shoe	449,389	Mar. 31	3452	869	54	1806
Shepard, Walter J., Buffalo, N. Y. Ice-cream freezer	448,375	Mar. 17	1819	458	54	1483
Shephard, Francis J., Concord, Wis. Horse-detacher	446,649	Feb. 17	1866	463	54	895
Shera, William H., College Corner, Ohio. Tellurian	446,022	Feb. 10	832	200	54	682
Sheridan, Charles B., *et al.* (See Ely, Charles R., assignor.)						
Sheridan, Charles B., *et al.* (See Malm, Alexander, assignor.)						
Sheridan, Theodore W., *et al.* (See Ely, Charles R., assignor.)						
Sheridan, Theodore W., *et al.* (See Malm, Alexander, assignor.)						
Sheridan, Thomas F., Springfield, Ill. Machine for enameling small dials	448,734	Mar. 24	2400	600, 601	54	1600

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Sherman, Albert A., Plymouth, Mass. Umbrella-bracket	444,769	Jan. 13	1241	322	54	251
Sherman, Gardner M., Springfield, Mass. Vaporizer	444,319	Jan. 6	530	138	54	166
Sherman, George C., assignor to M. L. Sherman, Alfred, N. Y. Addressing-machine	447,980	Mar. 10	1174	297	54	1346
Sherman, Martha L. (See Sherman, George C., assignor.)						
Shillinglaw, Andrew, Chicago, Ill. Moisture-protection hood for lamps	446,477	Feb. 17	1605	394	54	844
Shingleton, William, London, England. Riding-habit	444,942	Jan. 20	1565	401	54	321
Shinn, George M., Newton, Mass. House-door letter-box	448,086	Mar. 10	1326	339 340	54	1378
Shinn, John, Roxborough, assignor of one-half to W. C. Snyder, Ashbourne, Pa. Door-check	444,730	Jan. 13	1179	304	54	239
Shipman, Madison D., *et al.* (See Pringle, Eugene, assignor.)						
Shipman, Madison D., De Kalb, Ill. Glove-fastening	447,309	Mar. 3	152	41	54	1146
Shippy, Louis E., Sandy Hill, N. Y. Halter	444,993	Jan. 20	1642	421	54	337
Shirley, Joseph L., Allegheny, assignor to R. and J. Wellens and T. Moroney, Pittsburg, Pa. Hydraulic beer-pump	444,994	Jan. 20	1644	421	54	337
Shively, W. J., *et al.* (See Miller, Frank, assignor.)						
Shlaudeman, Frank, Decatur, Ill. Water-proof combined coupling and cut-out for electric circuits	448,679	Mar. 24	2306	578	54	1582
Shlaudeman, Frank, Decatur, Ill. Connector for electric wires	448,680	Mar. 24	2307	579	54	1583
Shoemake, Wesley. (See Coffin and Shoemake.)						
Sholl, William H., Hobart, Ind. Whiffletree	446,156	Feb. 10	1061	261	54	724
Shontz, Neri E., Chicago, Ill. Boiler-purge feeder	445,909	Feb. 3	642	158	54	638
Shorey, George L., Lynn, Mass. Heat-regulating apparatus	446,212	Feb. 10	1161	284 285	54	741
Shorb, J. De Barth. (See Buchanan, Luther H., assignor.)						
Short Electric Railway Company. (See Short, Sidney H., assignor.)						
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Electric connection for track-wiring	445,479	Jan. 27	2372	617	54	488
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Regulator for electrically-propelled vehicles	445,654	Feb. 3	222	60	54	555
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Coupling for the trolley-wires of electric railways	445,841	Feb. 3	545	133	54	618
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Trolley for electric railways	446,931	Feb. 24	2333	579	54	993
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Cross-over for trolley-lines	447,208	Feb. 24	2810	695	54	1083
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Turn-out and crossing for line-conductors	447,495	Mar. 3	385	94	54	1190
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Driving mechanism for dynamo-electric generators	448,303	Mar. 17	1703	431	54	1461
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Speed-regulator for electric motors	448,681	Mar. 24	2308	579	54	1583
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Adjustable rheostat	448,682	Mar. 24	2310	579	54	1583
Short, Sidney H., assignor to Short Electric Railway Company, Cleveland, Ohio. Protecting motor mechanism of electric cars	448,840	Mar. 24	2358	642	54	1630
Short, Thomas A., Edgerton, S. D. Check-punch	446,478	Feb. 17	1606	394	54	844
Shortt, Edward G., Carthage, N. Y. Rod-packing	447,261	Feb. 24	2900	720	54	1101
Shortt, Edward G., Carthage, assignor of one-half to C. G. Emery, Brooklyn, N. Y. Water-tube for steam-boilers	447,209	Feb. 24	2812	696	54	1083
Shreve, Ephraim G., Long Branch, N. J. Reel or swift	445,414	Jan. 27	2280	592	54	471
Shuler, Andrew F., Arcanum, Ohio. Hub	444,105	Jan. 6	197	48	54	41
Shull, Joseph C., assignor of one-half to A. H. Jones, Meriden, Conn. Hose-coupling	444,676	Jan. 13	1089	282	54	223
Shurmon, James D., Paint Rock, Tex. Rein-holder	447,981	Mar. 10	1176	298	54	1347
Shurtleff, Asahel M., Boston, Mass. Atomizer	447,064	Feb. 24	2555	634	54	1035
Shuttleworth, Charles H., assignor of one-half to F. F. Hoyer, Corunna, Mich. Car-coupling	448,304	Mar. 17	1705	432	54	1461
Sibley, Dennis E., Chicago, Ill. Machine for scouring grain	447,370	Mar. 3	153	42	54	1147
Sibley, Stephen J. (See Tyrrel, Alvin D., assignor.)						
Sickels, Frederick E., Kansas City, Mo. Steam and hand steering-gear	444,024	Jan. 6	65	17	54	16
Sickly, Martin V. (See Butt, Charles A., assignor.)						
Sidnall, Archibald, Ryde, assignor of one-half to E. J. Tobin, Sydney, New South Wales. Picture-hanger	445,942	Feb. 3	697	170	54	649
Siebel, John, Oskaloosa, Iowa. Pruning implement	445,480	Jan. 27	2374	618	54	488
Siegley, Jacob, Wilkes-Barré, Pa. Bench-plane	446,194	Feb. 10	1126	276	54	734
Siemens & Halske. (See Erlwein, Georg, assignor.)						
Siemens & Halske. (See Erlwein and Heller, assignors.)						
Siemens & Halske. (See Heller, Friedrich G. A., assignor.)						
Siewert, Paul, Denben, Germany. Dissolving water-glass	445,091	Jan. 20	1785	.....	54	365
Silliman, Edward J., assignor of two-thirds to G. D. Penniman and T. K. Worthington, Baltimore, Md. Electric type-writing machine	448,271	Mar. 17	1633	416 417 418	54	1147
Silvera, Herbert A., New York, N. Y. Indexed book	447,371	Mar. 3	154	42	54	1147
Silverthorn, William H., Cleveland, Ohio. Car-wheel	448,683	Mar. 24	2314	580	54	1584
Silvester, Clarence and W., Windom, Kans. Windmill-regulator	446,627	Feb. 17	1825	451	54	886
Silvester, Winfred. (See Silvester, Clarence and W.)						
Simmons, Henry T., Bloomington, Ind. Cord-receptacle	447,913	Mar. 10	1058	265	54	1325
Simmons, James L., Washington, D. C. Turning-lathe	444,465	Jan. 13	760	198	54	159
Simmons, Zalmon G. (See Butler and Simmons.)						
Simms, Lucy A. (See Callahan, Owen P., assignor.)						
Simon, Jacob J., McDonaldsville, Ohio. Seed-planter	445,205	Jan. 27	1976	511	54	410
Simonds, George F., Fitchburg, Mass. Method of and apparatus for making screw-threaded rolled forgings	446,932	Feb. 24	2334	579	54	993
Simonds, George F., Fitchburg, Mass. Device for knurling the surfaces of metal articles	446,933	Feb. 24	2337	579 580	54	994
Simonds, George F., Fitchburg, Mass. Making rolled forgings non-circular in cross-section	446,934	Feb. 24	2338	580 581	54	994
Simonds, William E., Canton, Conn. Eraser	445,092	Jan. 20	1786	459	54	365
Simonds, William E., Canton, Conn. Shirt-cuff	446,367	Feb. 10	1416	348	54	793
Simons, Levi A., Omaha, Nebr. Grain-separating apparatus	446,794	Feb. 17	2086	520	54	939
Simons, Paul, Darmstadt, Germany. Rack-rail for rack-railways	444,641	Jan. 13	1031	268	54	212
Simonson, Flavel, Milwaukee, Wis. Shaft-collar	448,087	Mar. 10	1323	340	54	1378
Simonson, Flavel, Batesville, Ark., assignor to G. H. Chamberlain, Milwaukee, Wis. Log lifting and turning machine	448,588	Mar. 17	2143	537 538	54	1544

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Simonson, Flavel, Batesville Ark., assignor to G. H Chamberlain, Milwaukee, Wis. Stop ping apparatus	448,589	Mar. 17	2146	538	54	1545
Simonson, Flavel, assignor to G. H. Chamberlain, Milwaukee, Wis. Log loader and turner	448,590	Mar. 17	2147	538	54	1546
Simonson, Flavel, assignor to G. H. Chamberlain, Milwaukee, Wis. Log lifter and turner	448,591	Mar. 17	2149	538	54	1546
Simonson, Flavel, assignor to G. H Chamberlain, Milwaukee, Wis. Log lifter and turner	448,592	Mar. 17	2150	539	54	1546
Simonson, Flavel, assignor to G. H Chamberlain, Milwaukee, Wis. Log lifter and turner	448,593	Mar. 17	2153	539	54	1547
Simpson, John, assignor of one-half to D. A. Robinson, Minneapolis, Minn. Grain-spout	445,645	Feb. 3	e204	54	54	552
Simpson, Sadie F., Saxonville, Mass. Toy	447,164	Feb 24	2740	67-	54	1069
Sinclair, Alexander, Birmingham, assignor to Royal Axminster Carpet Company, Camden, N. J. Loom for weaving chenille fabrics	446,896	Feb. 24	2269	564 565 566	54	982
Sinclair, Thomas M. (See Sheffield and Sinclair.)						
Singer Fire-Alarm Company of Buffalo. (See Singer, William F., assignor.)						
Singer, George. Coventry, England. Velocipede	444,141	Jan 6	989	64	54	55
Singer Manufacturing Company of New Jersey. (See Allen, Edward B., assignor.)						
Singer Manufacturing Company of New Jersey. (See Houghton, John Q. A., assignor.)						
Singer, William F., Carthage, assignor to Singer Fire-Alarm Company of Buffalo, Limited, Buffalo, N. Y. Fire-alarm signal-box	448,684	Mar. 24	2315	580 581	54	1584
Sisson, Harry W., Monmouth, Ill. Horse-blanket	448,376	Mar. 17	1820	459	54	1483
Sjoberg, Carl J. A., Brooklyn, N. Y., assignor to Garvin Machine Company, of New York. Type-writing machine	445,198	Jan. 20	1814	477 478	54	376
Skilton, James A., Brooklyn, N. Y. Heating and ventilating apparatus and system	445,762	Feb. 3	405	103	54	593
Skilton, James A., Brooklyn, N. Y. Heating and ventilating apparatus and system	445,763	Feb. 3	409	103	54	593
Skinner, George, Cambridge, Mass. Sail	449,004	Mar. 24	2811	712	54	1679
Skinner, Halcyon, Yonkers, N. Y. Tubular boiler	448,890	Mar. 24	2640	663	54	1645
Skinner, Halcyon, and F. H. Connolly, Yonkers, N. Y. Needle-loom	449,336	Mar. 31	3353	845 846	54	1787
Skinner, Halcyon, and F. H. Connolly, Yonkers, N. Y. Loom for weaving pile fabrics	449,337	Mar. 31	3357	846 847 848	54	1788
Skinner, Joseph J., Boston, Mass. Electric-arc lamp	444,154	Jan. 6	987	69	54	59
Skirving, Samuel M., and A. J. B. Berger, Philadelphia, Pa. Street-sweeping machine	444,025	Jan. 6	66	18	54	16
Skoda, Emil von Pilsen, Austria-Hungary. Quick-firing gun	448,841	Mar. 24	2560	642 643 644	54	1631
Slack, John H., assignor to A. M. Dolph Company, Cincinnati, Ohio. Washing-machine	448,377	Mar. 17	1821	459	54	1483
Slade, Walter, Pascoag, R. I. Friction attachment for spool-creels	447,496	Mar. 3	387	94	54	1191
Slager, Albert L., and G. E. Linn, assignors to G. S. Foos Company, Springfield, Ohio. Hay-rake	446,157	Feb. 10	1062	261	54	725
Slaght, Arthur T., *et al.* (See Wright, Herbert A., assignor.)						
Slattery, Marmaduke M. M., assignor to Fort Wayne Electric Light Company, Fort Wayne, Ind. Electrode for secondary batteries	446,104	Feb. 10	967	.....	54	707
Slaughter, Triplett L., Saline, assignor of one-half to L. S. Drew, Bienville, La. Circular saw	449,005	Mar. 24	2812	712	54	1679
Slavin, Patrick J., Waterbury, Conn. Liquid-cooler	448,552	Mar. 17	2085	523	54	1534
Slawson, George W., Davenport, Nebr. Fly-fan	445,630	Feb. 3	177	46	54	546
Sloan, David F., Mattapan, Mass. Horse-detacher	448,272	Mar. 17	1641	418	54	1449
Sloan, John O. (See King, John H., assignor.)						
Slye, Alexander. (See Fisher and Slye.)						
Smallwood, Edward, Elyria, Ohio. Stone-planing machine	447,372	Mar. 3	156	42.43	54	1147
Smallwood, George T., and R. M. Smith, Washington, D. C. Drawing-board	449,006	Mar. 24	2813	712	54	1680
Smethurst, James. (See Gledhill, Walter, assignor.)						
Smith, Andrew H., New York, N. Y. Street-sweeping machine	447,598	Mar. 3	435	107	54	1199
Smith & Anthony Stove Company. (See McHugh, Timothy, assignor.)						
Smith, Archibald, Cambridge, Mass., assignor to C. H. Breck, trustee. Hot-bed covering	444,400	Jan. 6	654	169	54	129
Smith, Benjamin F., *et al.* (See Shaw, George F., assignor.)						
Smith, Benjamin F., Somerville, Mass. Drill-stock	444,256	Jan. 6	441	111	54	86
Smith, Benjamin F., Somerville, Mass. Track-drilling device	446,028	Feb. 10	883	201	54	683
Smith, Charles G., *et al.* (See Shaw, George F., assignor.)						
Smith, Charles G., Detroit, Mich. Excelsior-cutting machine	447,846	Mar. 10	943	236 237	54	1303
Smith, Charles G., Brooklyn, N. Y., and L. Pfingst, Boston, Mass. Lamp for electric-railway cars	448,865	Mar. 24	2610	655	54	1640
Smith, Charles H., assignor to O. B. North & Company, New Haven, Conn. Hame-fastener	447,587	Mar. 3	520	127	54	1215
Smith, Charles R., Providence, R. I., assignor to C. R. Smith Plating Company, of Kentucky. Making plated wire	448,594	Mar. 17	2155	539	54	1547
Smith, Charles R., Providence, R. I., assignor to C. R. Smith Plating Company, of Kentucky. Manufacturing seamless hollow wire	449,182	Mar. 31	3088	779	54	1741
Smith, Charles R., Providence, R. I., assignor to C. R. Smith Plating Company, of Kentucky. Manufacturing seamless gold-plated wire	449,183	Mar. 31	3090	779	54	1741
Smith, Charles W. (See Marr and Smith.)						
Smith, Chauncey W., Brush Creek, Iowa. Car-coupling	447,165	Feb. 24	2741	678	54	1069
Smith, Daniel T., assignor of one-half to J. T. Groves, Auburn, N. Y. Carriage-top joint	445,631	Feb. 3	178	46	54	546
Smith, De Wane B., Deerfield, assignor of one-half to C. H. Poole, Utica, N. Y. Harness	444,401	Jan. 6	655	169 170	54	129
Smith, De Wane B., Utica, assignor, by mesne assignments, to W. M. Brinkerhoff, Auburn, N. Y. Harrow	446,820	Feb. 17	2125	528	54	947
Smith, De Wane B., Deerfield, assignor to C. H. Poole, Oneida, N. Y., and National Harrow Company, of New York. Harrow	449,649	Mar. 31	3882	971	54	1887
Smith, Edward. (See McNair, Milton H., assignor.)						
Smith, Elizabeth W., *et al.* (See Mitchell, George P., assignor.)						
Smith, Ephraim, assignor to G. Y. Willson, Pittsburg, Pa. Mowing-machine	445,347	Jan. 27	2183	565	54	492
Smith, Ezra W. (See Loftus, John, assignor.)						
Smith, George R., Buffalo, Mo. Animal-trap	446,119	Feb. 10	991	244	54	712
Smith, George W., Union City, Ind. Gate	449,091	Mar. 24	2942	745 746	54	1705
Smith, Horace A., Brooklyn, N. Y. Dumb-waiter	445,824	Feb. 3	523	125	54	613
Smith, Howard F. (See Thompson and Smith.)						
Smith, Ida, West Union, Iowa. Cooking, toasting, and shielding device for stoves	447,373	Mar. 3	158	44	54	1147

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Smith, Isaac C., *et al.* (See Stewart, William J., assignor.)						
Smith, James A., *et al.* (See Nickum, George S., assignor.)						
Smith, James E. (See Smith, John H. and J. E.)						
Smith, James H., Eccles, A. Goddard, Stockport, L. Higginbottom and T. Mannock, Manchester, assignors to Fustian Cutting Machine Company, Limited, Ordsall Lane Mills, Salford, England. Apparatus for cutting pile fabrics	448,088	Mar. 10	1330	340	54	1379
Smith, James L., *et al.* (See Head, Joseph A., assignor.)						
Smith, John A., York, Pa. Combined piano and organ	447,120	Feb. 24	2636	654	54	1051
Smith, John H. and J. E., Buford, Ala. Fertilizer-distributer	446,795	Feb. 17	2087	520	54	939
Smith, John M. (See Flanders and Smith.)						
Smith, John P., Exeter, N. H., assignor to F. M. Stevens and H. Cunningham, Boston, Mass. Tacking-machine	445,322	Jan. 27	2146	555, 556	54	444
Smith, Joseph A., Boonton, N. J., assignor to Powerville Felt Roofing Company, Limited, New York, N. Y. Roofing and lining felt	449,636	Mar. 31	3862	967	54	1884
Smith, Joshua M., Springfield, assignor of one-half to C. F. Wolf, Moorefield, Ohio. Straw-stacker	446,955	Feb. 24	2363	588	54	999
Smith, Julius G., assignor of one-half to C. J. Dickson, Margaretville, N. Y. Creamer	447,914	Mar. 10	1059	265	54	1326
Smith, Luther, Cedar Falls, Iowa. Lawn-mower	445,632	Feb. 3	179	47	54	546
Smith, Lyman, Chicago, Ill., assignor to Smith Pneumatic Transfer and Storage Company, of West Virginia. Apparatus for storing and preserving food	446,024	Feb. 10	835	201	54	683
Smith, Lyman, Chicago, Ill., assignor to Smith Pneumatic Transfer and Storage Company, of West Virginia. Apparatus for storing and preserving food	446,025	Feb. 10	837	202	54	683
Smith, Lyman, Chicago, Ill., assignor to Smith Pneumatic Transfer and Storage Company, of West Virginia. Pneumatic grain transfer, storage, and preservation station	446,026	Feb. 10	839	202, 203, 204	54	684
Smith, Lyman, Chicago, Ill., assignor to Smith Pneumatic Transfer and Storage Company, of West Virginia. Floating grain-silo	446,027	Feb. 10	845	204	54	684
Smith, Lyman, Chicago, Ill., assignor to Smith Pneumatic Transfer and Storage Company, of West Virginia. Storage of cotton	446,028	Feb. 10	846	204, 205, 206	54	685
Smith, Lyman, Chicago, Ill., assignor to Smith Pneumatic Transfer and Storage Company, of West Virginia. Pneumatic elevator and storage-station	446,029	Feb. 10	849	206, 207	54	685
Smith, Lyman D., Waterloo, Nebr. Wheel-wrench	448,553	Mar. 17	2086	523	54	1534
Smith, Nathan J., Pontiac, Mich. Apparatus for operating semaphores	446,479	Feb. 17	1608	394, 395	54	845
Smith, Orren M., Philadelphia, Pa. Decorating metallic surfaces	446,300	Feb. 10	1327	323	54	774
Smith, P. Minturn, *et al.* (See Easton, James W., assignor.)						
Smith, Peter D., Springfield, Ohio. Potato-digger	445,206	Jan. 27	1977	511	54	410
Smith Plating Company, C. R. (See Smith, Charles R., assignor.)						
Smith Pneumatic Transfer and Storage Company. (See Smith, Lyman, assignor.)						
Smith, Reuben H., Russellville, Ark. Grate	445,575	Feb. 3	87	21	54	528
Smith, Rexford M. (See Smallwood and Smith.)						
Smith, Richard, Sherbrooke, Canada. Mixing apparatus	449,259	Mar. 31	3209	809	54	1764
Smith & Richardson. (See Armstrong, Frederic N., assignor.)						
Smith, Robert W., New York, and H. L. Arnold, Brooklyn, N. Y., assignors to said Arnold, and F. W. Roebling, Trenton, N. J. Book-binder's machine	449,595	Mar. 31	3781	949	54	1868
Smith, Roswell T., Nashua, N. H. Brake-actuating device	446,935	Feb. 24	2340	581	54	994
Smith, Rudolph C. (See Otis and Smith.)						
Smith, Samuel W., New York, N. Y. Telegraph-transmitter	447,166	Feb. 24	2742	679	54	1069
Smith, Sarah G., Cleveland, Ohio. Hearth cabinet	444,076	Jan. 6	153	38	54	33
Smith, Seymour G. (See Ryan, John, assignor.)						
Smith, Thomas, Chapeltown, England. Apparatus for extracting coke from ovens	446,936	Feb. 24	2342	582	54	995
Smith, Thomas B. (See Hollin and Smith.)						
Smith, Thomas C., Philadelphia, Pa. Electric-lamp bracket	444,466	Jan. 13	763	199	54	159
Smith, Thomas E. (See Brown and Smith.)						
Smith, Thomas E., New Castle, Pa. Bracket-bed	447,167	Feb. 24	2745	679	54	1069
Smith, Thomas L., and P. W. Post, Reedsburg, Wis. Carving-machine	447,796	Mar. 10	867	215	54	1288
Smith, Valentine H., Sherly, Tex. Plotter	448,085	Mar. 24	2920	581	54	1585
Smith, Walton D., assignor of one-half to G. Seyller, Prophetstown, Ill. Paper bag	444,527	Jan. 13	802	224	54	180
Smith, William, Mystic, Iowa. Stump-puller	449,596	Mar. 31	3783	949	54	1869
Smith, William A., Philadelphia, Pa. Thumb-stamp	446,540	Feb. 17	1704	418	54	863
Smith, William B., assignor of one-half to G. W. McCarty, Atlanta, Ga. Car-axle bearing	444,943	Jan. 20	1566	401, 402	54	321
Smith, William C., *et al.* (See Mitchell, James C., assignor.)						
Smith, William F., Chicago, Ill. Combined building and water-tower	446,897	Feb. 24	2275	566, 567	54	983
Smith, William G., Binghamton, N. Y. Wagon-wrench	444,571	Jan. 13	937	243	54	194
Smith, William H. (See Brookes, Leonard E., assignor.)						
Smith, William H., Port Lavaca, Tex. Gate	447,374	Mar. 3	159	44	54	1148
Smith, William R., Exeter, N. H. Rubber boot	447,497	Mar. 3	388	94	54	1191
Smitter, Louis, and P. Duhamel, Paris, France. Telescopic scaling or fire-escape ladder	445,720	Feb. 3	335	88	54	579
Smyser, Henry E., Philadelphia, Pa. Package making and filling machine	449,275	Mar. 31	3228	816, 817, 818, 819	54	1767
Smyser, Henry E., Philadelphia, Pa. Automatic weighing-machine	449,276	Mar. 31	3237	819	54	1769
Smyth, Samuel, Ithaca, N. Y. Water-motor	445,705	Feb. 3	312	83	54	574
Smythe, Augustine I., *et al.* (See Memminger, Allard, assignor.)						
Snaman, George W., Jr., Allegheny, Pa. Combined trunk and bed	448,554	Mar. 17	2086	523	54	1534
Snell, Luther C., Detroit, Mich. Means for storing and handling petroleum oil	444,731	Jan. 13	1180	304, 305	54	239
Snell, Luther C., Detroit, Mich., assignor to Liquid Supply Company, Olean, N. Y. Device for burning crude petroleum	446,796	Feb. 17	2088	520	54	939
Snoddy, Abner, assignor to M. Snoddy, Bellefontaine, Ohio. Wheel	447,797	Mar. 10	869	216	54	1289
Snoddy, Minnie. (See Snoddy, Abner, assignor.)						
Snow, Frank A., David City, Nebr. Stove-pipe fastener	447,168	Feb. 24	2745	679	54	1070
Snow, Massena H., Sugar Grove, Ill. Plow attachment	444,715	Jan. 13	1142	294	54	293
Snow, William H., High Point, N. C., assignor to Modern Tobacco Barn Company, of North Carolina. Curing tobacco	448,595	Mar. 17	2156	.....	54	1547
Snyder, John T., Luzerne, Pa. Drill-bit	444,026	Jan. 6	69	18	54	16
Snyder, Oscar J., Shoup, Mich. Tongue attachment	446,237	Feb. 10	1223	299	54	754
Snyder, Washington C. (See Shinn, John, assignor.)						
Sobotka, Gustav, assignor to Fleischmann & Co., New York, N. Y. Guard for fermenting-vats	444,944	Jan. 20	1567	402	54	321

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Soby, Charles. (See Gray, William, assignor.)						
Sohlmemann, Johann, Berlin, Germany. Music-box	445,093	Jan. 20	1787	460	54	365
Société Industrielle. (See Chopard, Albert, assignor.)						
Society of Chemical Industry. (See Schmid, Jakob, assignor.)						
Soden, Francis H., Chicago, Ill. Electrical street and station indicator	448,378	Mar. 17	1822	459, 460	54	1483
Solar Refining Company. (See Frasch, Herman, assignor.)						
Sollenberger, R. H., *et al.* (See Kyle, Augustus G. and E. J., assignors.)						
Solmans, Alden. (See Woolson, Egbert, assignor.)						
Solomon, Daniel H., Glenwood, Iowa. River-channel plow	449,184	Mar. 31	3091	779, 780	54	1741
Solomon, Daniel H., Glenwood, Iowa. Device for preventing banks from caving	449,185	Mar. 31	3095	780, 781	54	1742
Soltmann, Edward G. (See Birkmire, William H., assignor.)						
Soltmann, Edward G., New York, N. Y., and H. E. Grabau, Hoboken, N. J. Leveling-instrument	446,956	Feb. 24	2367	589	54	999
Somers, William, Atlantic City, N. J. Clothes-line stretcher	444,320	Jan. 6	532	138	54	106
Somerville, William, Sr., Buffalo, N. Y. Horseshoe	447,416	Mar. 3	236	60	54	1162
Sommerfeld, August, St. Louis, Mo. Ironing-board	446,169	Feb. 10	1093	268	54	729
Sommerfeld, Heinrich, Canton, Kans. Car-coupling	447,375	Mar. 3	160	44	54	1148
Sonia, Raymond, *et al.* (See Roche, Francis J., assignor.)						
Soper, Joseph, Ypsilanti, Mich. Machine for sewing looped fabrics	444,859	Jan. 20	1420	368, 369	54	293
Sorensen, Niels G., Stockholm, Sweden. Handle for locks and latches	448,379	Mar. 17	1827	460	54	1484
South, Philip T. (See Blaine and South.)						
Southard, Barron D., *et al.* (See Dean, James H., assignor.)						
Southard, Frank, Southampton, England. Manufacturing pedal-cranks for velocipedes	445,303	Jan. 27	2116	548	54	437
Souther, Charles J. (See Saunders, Thomas H., assignor.)						
Souther, George, Boston, Mass. Corrugated hoop for barrels, &c	449,597	Mar. 31	3785	950	54	1869
Southwark Foundry and Machine Company. (See Good, William E., assignor.)						
Southwark Foundry and Machine Company. (See Good and Lindroth, assignors.)						
Southwark Foundry and Machine Company. (See Mirkil, Thomas H., Jr., assignor.)						
Spain, Job, assignor of one-half to C. Mains, Belle Centre, Ohio. Folding crate	449,007	Mar. 24	2815	713	54	1680
Spahmer, Charles, assignor to E. Promis, Philadelphia, Pa. Scraper for boots or shoes	444,716	Jan. 13	1142	294	54	293
Spangler, Jacob R., assignor of one-half to A. P. Baldwin, Newark, N. J. Sheet-metal-edging machine	448,380	Mar. 17	1828	461	54	1484
Spahn, Rudolph, Brooklyn, N. Y. Button-hole sewing-machine	444,467	Jan 13	763	199	54	160
Spare, George E., New Haven, Conn. Convertible carriage	447,547	Mar. 3	400	113	54	1204
Sparks, John A., and W. S. Brown, Eminence, Ky.; said Sparks assignor to said Brown. Tension device	446,842	Feb. 17	2163	538	54	955
Sparks, William H., Camden, N. J. Spring for buckboards	446,395	Feb. 10	1402	359, 360	54	803
Sparr, Benjamin F. and M. F., New York, N. Y. Screw-propeller	445,864	Feb. 3	580	141	54	625
Sparr, Millard F. (See Sparr, Benjamin F. and M. F.)						
Spaulding, Frank M., assignor of one-half to F. C. Balch, Kalamazoo, Mich. Railway-crossing gate	446,082	Feb. 10	931	228	54	701
Spaulding, Frank M., assignor of one-half to F. C. Balch, Kalamazoo, Mich. Railway-crossing gate	446,083	Feb. 10	933	228	54	701
Spear, James, Philadelphia, Pa. Box or casing for street-car stoves	449,008	Mar. 24	2817	713	54	1680
Speer, William W., Pittsburg, Pa. Plow	447,498	Mar. 3	388	95	54	1191
Speirs, John, Jersey City, N. J., assignor of one-half to G. F. Richardson, New York, N. Y. Combined diving apparatus and life-saving raft	449,354	Mar. 31	3387	853	54	1789
Spence, Beverly B., Midland, Tenn. Chain-pump	449,598	Mar. 31	3786	950	54	1869
Spence, E. F. (See Hall, George T., assignor.)						
Spence, John L. (See Aldrich, George W., assignor.)						
Spencer, Catherine E. (See Spencer, Thomas E., assignor.)						
Spencer, Christopher H. (See Eddy, Arthur H., assignor.)						
Spencer, Christopher M., Windsor, assignor of one-half to A. H. Eddy, Hartford, Conn. Screw-machine	447,017	Feb. 24	2467	614, 615	54	1018
Spencer, Thomas E., assignor to C. E. Spencer, Toronto, Canada. Water-heater	446,301	Feb. 10	1328	323	54	774
Sperry, Barton E., Batavia, Ill. Grinding and polishing machine	446,170	Feb. 10	1094	268, 269	54	729
Sperry Electric Mining Machine Company. (See Sperry, Elmer A., assignor.)						
Sperry, Elmer A., Chicago, Ill. Electric switch	446,031	Feb. 10	853	207	54	686
Sperry, Elmer A., assignor to Sperry Electric Mining Machine Company, Chicago, Ill. System of electrical distribution for mines	446,030	Feb. 10	852	207	54	686
Sperry, Timothy S., Flatbush, N. Y. Stair pad	446,213	Feb. 10	1163	285	54	742
Spery, Charles F., Hermann, Mo. Pipe-tongs	444,923	Jan. 20	1531	393	54	315
Spierling, Robert, Hildesheim, Germany. Key-hook	448,381	Mar. 17	1829	461	54	1485
Spillinger, Joseph, Philadelphia, Pa. Slicer	447,847	Mar. 10	946	237	54	1304
Spiral Weld Tube Company. (See Phillips, Henry, assignor.)						
Spiro, Charles, New York, N. Y. Type-writing machine	445,333	Jan. 27	2164	561	54	448
Spiro, Charles, New York, N. Y. Type-writing machine	447,438	Mar. 3	272	69	54	1169
Spiro, Julius. (See Wendler and Spiro.)						
Spitz, Frederick, assignor to Hercules Waist Band Company, New York, N. Y. Waist-band	446,270	Feb. 10	1274	312	54	763
Sponsel, Charles W., Hartford, Conn. Breech-loading ordnance	447,376	Mar. 3	161	44, 45	54	1148
Sponsel, Charles W., assignor to Pratt & Whitney Company, Hartford, Conn. Rifling-machine	446,898	Feb. 24	2278	567, 568, 569	54	984
Sponsel, Charles W., assignor to Pratt & Whitney Company, Hartford, Conn. Gun-barrel-drilling machine	447,713	Mar. 3	695	174, 175	54	1249
Spooner, Frederick B., Brooklyn, N. Y. Medicine-dropper	448,555	Mar. 17	2088	524	54	1534
Spooner, Frederick B., Brooklyn, N. Y. Corset-clasp	448,891	Mar. 24	2642	663	54	1046
Sporton, Henry H., and E. White, Enfield, England. Rotary fluid-meter	449,009	Mar. 24	2817	713, 714	54	1680
Spradlin, William H. H., South Fork, Mo. Sawing-machine	447,982	Mar. 10	1170	298	54	1347
Sprague, Edward W., Central Square, N. Y. Nut-lock	447,703	Mar. 3	692	169	54	1247
Sprague, Frank J., and J. F. S. Branth, New York, N. Y. Conductor-switch for electric railways	445,515	Jan. 27	2425	632, 633	54	498
Sprague & Son, Thomas S. (See Whittemore, James, assignor.)						
Spraker, Henry G., Rich Hill, Mo. Paper-cutter	444,106	Jan. 6	198	48	54	41
Springer, Alfred, Cincinnati, Ohio. Sound-board for musical instruments	444,770	Jan. 13	1242	323	54	251
Springer, Stephen H., Des Moines, Iowa. Car-coupling	448,686	Mar. 24	2921	581	54	1586

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Spelnkmann, Frederick, Milwaukee, Wis., assignor of one-half to W. S. Grubb, Chicago, Ill. Non-conducting compound	445,358	Jan. 27	2201	.....	54	456
Spoonll, John C., Bedford, Ind. Pipe-wrench	444,372	Jan. 6	609	156	54	120
St. John, Mary, New York, N. Y. Bed-pan	448,691	Mar. 24	2327	584	54	1587
St. John, Thomas C., Willoughby, Ohio. Corn-harvester	447,624	Mar. 3	577	{142 143}	54	1226
St. Legier, John de, and G. Davis, Hicksville, N. Y. Milk-can	446,573	Feb. 17	1750	431	54	872
St. Louis Car Track Cleaner Company. (See Chambers, Joseph E., assignor.)						
St. Louis Stamping Company. (See Niedringhaus and Geiss, assignors.)						
St. Pierre, George, Oakland, Cal. Bearing-box	448,462	Mar. 17	1956	492	54	1509
Stadler, James P., Sandy Spring, Md. Pressure-governor	445,348	Jan. 27	2184	566	54	452
Stafford, Nelson. (See Berry and Stafford.)						
Stafford, William A. H., New York, N. Y. Feed-stopper for mucilage-bottles	444,142	Jan. 6	270	65	54	56
Stage, Otis, Ligonier, Ind. Straw-stacker	444,732	Jan. 13	1182	{305 309}	54	240
Stahl, Edgar W. (See Stahl, John, assignor.)						
Stahl, John, assignor of one-half to E. W. Stahl, Grinnell, Iowa. Two-wheeled vehicle	447,499	Mar. 3	390	95	54	1191
Staiger, Christoph, Brooklyn, N. Y. Finger-ring	448,892	Mar. 24	2643	664	54	1646
Stamp, James C., Louisville, Ky. Boiler	448,382	Mar. 17	1830	461	54	1485
Standard Multiplex Telegraph Company. (See Brown, Robert G., assignor.)						
Standard Rivet Company. (See Craig, Isaac S., assignor.)						
Standard Sewing Machine Company. (See Mack, William A., assignor.)						
Standard Tool Company. (See Palmer and Ryder, assignors.)						
Standard Underground Cable Company. (See Conner, William A., assignor.)						
Standiford, Emmet C., and S. A. Hyers, Chicago, Ill. Type setting or composing machine	448,735	Mar. 24	2404	{601 602}	54	1601
Stanhope, Phillip R. (See Ireland and Stanhope.)						
Stanhope, Philip W., Jr., Peoria, Ill. Wheel-plow	447,647	Mar. 3	607	150	54	1232
Staninger, Ezra E., West Salem, Ill. Roll-paper holder and cutter	449,501	Mar. 31	3636	915	54	1842
Stanley Drill Power Company. (See Stanley, Thomas, assignor.)						
Stanley, John C., and L. B. Wrightson, London, England. Box-closure	448,687	Mar. 24	2322	{581 582}	54	1586
Stanley, T. E., *et al.* (See Baker, Owen T., assignor.)						
Stanley, Thomas, assignor to Stanley Drill Power Company, Pueblo, Colo. Drilling-machine	445,865	Feb. 3	581	142	54	625
Stannard, Edward M., Appleton, Wis. Locomotive-cab seat	444,654	Jan. 13	1047	272	54	215
Stannard, Ulysses G., Milton, Wis. Letter-box	444,257	Jan. 6	442	111	54	87
Stanton, Daniel P., Warwick, R. I. Pipe-wrench	447,377	Mar. 3	165	45	54	1149
Staple Fastening Machine Company. (See Hamm, William S., assignor.)						
Staples, Hiram, Battle Creek, Mich. Device for regulating the throw of connecting-rods	445,323	Jan. 27	2148	556	54	445
Stark, Andrew, Chicago, Ill. Cord-knotter for grain-binders	445,788	Feb. 3	449	112	54	600
Starley, John K., Coventry, England, assignor to Overman Wheel Company, Chicopee Falls, Mass. Monkey-wrench	444,402	Jan. 6	658	170	54	130
Starr, Charles, and P. Krazeise, Louisville, Ky. Parcel-carrier	445,735	Feb. 3	361	93	54	583
Starr, Frank M., assignor of one-half to C. H. Merritt, Danbury, Conn. Expansible cone for hat-making machines	446,396	Feb. 10	1464	360	54	803
Starrett, Laroy S., Athol, Mass. Micrometer-gage	448,089	Mar. 10	1331	341	54	1379
Steam Gauge and Lantern Company *et al.* (See Betts, Charles L., assignor.)						
Steam Gauge and Lantern Company *et al.* (See Gerber, George J., assignor.)						
Steam Gauge and Lantern Company *et al.* (See McArthur, Warren, assignor.)						
Steam Gauge and Lantern Company. (See Salmon, Pomeroy L., assignor.)						
Steane & Co., I. J. (See Hobson, Arthur E., assignor.)						
Stearns & Co., E. C. (See Seely, Obadiah, assignor.)						
Stebbins, Charles W., New Haven, Conn. Window-awning frame	446,480	Feb. 17	1610	395	54	845
Stebbins, Charles W., New Haven, Conn. Game	446,481	Feb. 17	1612	395	54	845
Stebbins, Melvin B., *et al.* (See Coombs, Edwin T., assignor.)						
Stebbins, Milford H., *et al.* (See Coombs, Edwin T., assignor.)						
Stecher, Henry W., Cleveland, Ohio. Sticky fly-paper	447,121	Feb. 24	2038	655	54	1051
Steel Belt Fastener Company. (See Kenehan, Gilbert P., assignor.)						
Steelbrooke, Joseph W., Woonsocket, R. I. Cloth scouring, rinsing and purifying machine	446,937	Feb. 24	2343	582	54	995
Steele, Albert H., Worcester, Mass. Loom-shuttle	447,500	Mar. 3	391	95	54	1191
Steele, Herbert B. (See Knight and Steele.)						
Steele & Johnson Manufacturing Company. (See Pritchard, Thomas W., assignor.)						
Steffenson, Nels P., Winchester, Wis. Whiffletree	446,615	Feb. 17	1807	447	54	883
Stein, Gustave O., Pioche, Nev. Elastic fender for vessels	445,910	Feb. 3	644	158	54	638
Steinbaugh, William F., assignor of one-third to H. Renting, Platte Centre, Nebr. Corn-sheller	449,637	Mar. 31	3863	967	54	1884
Steinberg, Max. (See Vogel, Wilhelm, assignor.)						
Steiner, Alfred, New York, N. Y. Leggin-holder	444,655	Jan. 13	1049	273	54	216
Steinheil Söhne, C. A. (See Pasquarelli, Oreste, assignor.)						
Stelzner, Alfred, Wiesbaden, Germany. Preserve-jar	447,479	Mar. 3	357	80	54	1185
Stempel, Edward, San Francisco, Cal. Anti-friction bearing	444,224	Jan. 6	398	99	54	79
Stephens, Edward A., Fremont, Ind. Winker-fork	445,736	Feb. 3	363	93	54	584
Stephens, William, Santa Rosa, Cal. Current-wheel	447,915	Mar. 10	1061	265	54	1326
Stephens, William, Redding, and J. Mott, Siskiyou County, Cal. Car-replacer	448,090	Mar. 10	1332	341	54	1379
Stephenson, Joseph, Sparland, Ill. Mining-machine	444,027	Jan. 6	70	19	54	17
Sterling Company. (See Blake, Rufus W., assignor.)						
Sterling Cycle Company. (See Elliott, Sterling, assignor.)						
Sterling, Isaac F., Marlin, Tex. Churn-dasher	446,718	Feb. 17	1968	491	54	914
Stern Brothers & Co. (See Gosling, Charles, assignor.)						
Stern, Sigmund. (See Pallweber, Josef, assignor.)						
Sternenberg, Walther T., New York, N. Y. Piano-forte pedal and guard	444,307	Jan. 6	511	134	54	102
Stetson, Alexander G. C. (See Parmeter and Stetson.)						
Stetson, Bradford, Uxbridge, Mass. Machine for drying yarns, fabrics, &c	444,860	Jan. 20	1421	{369 370}	54	293
Stevens, Abram W. (See Brinkerhoff, Stevens, and Swart.)						
Stevens, Benjamin A., Toledo, Ohio. Telephone box or cabinet	445,721	Feb. 3	337	89	54	579
Stevens, C. P. (See Van Ness, Albert, assignor.)						
Stevens, Calvin G., Watertown, N. Y. Optometer	446,032	Feb. 10	855	208	54	686
Stevens, Frank M., *et al.* (See Smith, John P., assignor.)						
Stevens, Henry A., Norristown, Pa. Car-coupling	444,890	Jan. 20	1467	380	54	303
Stevens, Levi, Trenton, N. J. Apparatus for the manufacture of gas	444,091	Jan. 6	174	44	54	37
Stevens, Nathan P., Concord, N. H. Plug and socket cutter and chuck for the same	447,048	Feb. 24	2530	628	54	1030
Stevens, Samuel F., North Adams, Mass. Railway fare-book	448,688	Mar. 24	2393	{582 583}	54	1586

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stevens, William E. (See Sargent and Stevens.)						
Stevenson, Samuel M., Bastrop, La. Fire-escape	444,308	Jan. 6	513	134	54	102
Stevenson, William H. H., Mount Washington, Md. Can-testing machine	445,706	Feb. 3	314	83	54	574
Stevenson, William M. (See Bailey and Stevenson.)						
Steward, John F., Chicago, Ill. Harvester	446,541	Feb. 17	1705	418	54	863
Steward, John F., Chicago, Ill. Hand-drill	448,689	Mar. 24	2325	583	54	1587
Stewart, John A., Houston, Tex., assignor of one-half to L. B. Tebbetts, St. Louis, Mo. Axle	449,638	Mar. 31	3864	968	54	1884
Stewart, John L., assignor to United States Light and Fuel Company, Philadelphia, Pa. Apparatus for manufacturing gas	447,916	Mar. 10	1062	266	54	1326
Stewart, Robert A., Allegheny, Pa. Underground conduit for electric railways	448,461	Mar. 17	1952	491	54	1508
Stewart, Scott, Rivesville, W. Va. Grain-cleaner	449,599	Mar. 31	3786	950	54	1869
Stewart, William J., assignor of three-fourths to I. C. Smith, J. Kunkel, and J. Parker, Williamsport, Pa. Suspenders	449,141	Mar. 31	3626	765	54	1729
Stickney, Allison M., Medford, assignor to Wellman Sole Cutting Machine Company, Boston, Mass. Machine for cutting soles, &c	446,555	Feb. 17	1728	{423 424}	54	868
Stickney, Henry C., St. Louis, Mo., assignor to W. B. Forden, Springfield, Mo. Truss	447,378	Mar. 3	166	45	54	1149
Stidham, John, Rochester, and J. B. Wallace, assignors to Metric Metal Company, Beaver Falls, Pa. Gas-meter	445,757	Feb. 3	398	101	54	591
Stiebel, Henry G. (See Kisinger, William S., assignor.)						
Stiles, David R., Ottawa, Kans. Means for supplying lubricating-oil to moving parts of engines	446,797	Feb. 17	2091	521	54	940
Stiles, David R., Ottawa, Kans. Means for supplying oil to moving parts of engines	446,798	Feb. 17	2092	521	54	940
Stiles, Elmer A., Chicago, Ill. Animal-grip	445,663	Feb. 3	236	64	54	558
Stiles, John H., assignor of one-half to M. Neff, Green Cove Springs, Fla. Wrench	447,379	Mar. 3	167	46	54	1149
Still, William J., Toronto, Canada. Copy-holder	449,010	Mar. 24	2818	714	54	1681
Stillman, George F., Syracuse, N. Y. Type-bar hanger	448,690	Mar. 24	2326	583	54	1587
Stillman, Willett D., Madison, Wis. Roaster	446,033	Feb. 10	858	208	54	687
Stimpson, Edwin B., Brooklyn, N. Y. Clamp for holding vamps and quarters for shoes	446,158	Feb. 10	1064	{261 262}	54	725
Stimpson, Edwin B., Brooklyn, N. Y. Stmp	447,917	Mar. 10	1064	266	54	1326
Stimpson, John H. (See Baldwin and Stimpson.)						
Stincen, Alice M. (See Humphreys, William P., assignor.)	447,380	Mar. 3	168	46	54	1150
Stirn, Daniel L., Milwaukee, Wis. Piano	446,034	Feb. 10	858	208	54	687
Stites, Charles F. and C. F., Cincinnati, Ohio. Can for paint, &c	445,457	Jan. 27	2240	608	54	482
Stites, George W., and J. W. Halsey, Hinesborough, Ill. Post-anchor	445,653	Feb. 3	216	{58 59 60}	54	554
Stitzel, Frederick, and C. Weinedel, assignors to American Semaphore Company, Louisville, Ky. Electric semaphore	447,848	Mar. 10	947	237	54	1304
Stock, Charles L., Fostoria, Ohio. Device for separating liquids from natural gas	444,733	Jan. 13	1184	{306 307}	54	240
Stockheim, Heinrich, Mannheim, Baden, Germany, assignor to S. and F. Uhlmann, New York, N. Y. Filtering apparatus						
Stockley, August F. (See Davis, Stockley, and Barnett.)						
Stockstrom, Louis, St. Louis, Mo. Book-shelf	448,091	Mar. 10	1334	341	54	1379
Stockwell, Millard E., Grand Rapids, Mich. Tally sheet	445,508	Jan. 27	2415	630	54	496
Stoddard, Arthur H., Boston, Mass. Vulcanizing apparatus	447,480	Mar. 3	357	89	54	1185
Stoecker, Henry P., New York, N. Y. Galvanic battery	449,299	Mar. 31	3277	830	54	1775
Stokes, Joseph C., Condit, Ohio. Bolt or rod cutter	444,924	Jan. 20	1532	394	54	315
Stokes, Samuel J., Holt's Summit, Mo. Washing-machine	445,458	Jan. 27	2240	608	54	482
Stone, Charles B. (See Fehleisen, Adolph E., assignor.)	444,861	Jan. 20	1424	370	54	294
Stone, Draper, Rochester, N. Y. Sheet-metal-stamping apparatus						
Stone, Frank P., *et al.* (See Lowe, Nathaniel M., assignor.)						
Stone, James, *et al.* (See Gardner, Marshall, assignor.)						
Stone, Joseph H. (See Wickers and Stone.)						
Stone, Walter H. (See Unekrich, Ferdinand F., assignor.)	444,058	Jan. 6	118	29, 30	54	26
Stoner, Jacob B., Kansas City, Kans., assignor to S. Lazerus, Sherman, Tex. Stock-car	444,321	Jan. 6	532	{138 139}	54	107
Stoner, Jacob G., Waynesborough, Pa. Feed mechanism for saw-mill carriages	448,556	Mar. 17	2089	524	54	1534
Stong, John N., Woodbridge, Canada. Gravitating door-closer	446,271	Feb. 10	1275	{312 313}	54	763
Storck, Ferdinand, Buena Vista, Colo. Potato-planter						
Storey, Herbert L., *et al.* (See Pont, Alexandre de and S., assignors.)						
Storey, Isaac H., *et al.* (See Pont, Alexandre de and S., assignors.)						
Storey, Wendel, Grafton, Wis. Lawn-mower	448,866	Mar. 24	2611	656	54	1640
Storm, Charles H., New York, N. Y. Means for marking cigar-boxes	446,650	Feb. 17	1867	463	54	895
Stoughton, Homer R. (See Craig, William R., assignor.)						
Stout, Edward E. (See Pomeroy, Henry R., assignor.)	448,092	Mar. 10	1335	341	54	1380
Stout, George H., Marceline, Mo. Implement for dehorning cattle	444,717	Jan. 13	1144	294	54	233
Stout, George M., Philadelphia, Pa. Snap-hook	448,273	Mar. 17	1643	{418 419}	54	1439
Stout, John V., Easton, Pa. Electrically-controlled valve	448,274	Mar. 17	1645	419	54	1450
Stout, John V., Easton, Pa. Electric temperature-regulator	449,600	Mar. 31	3787	950	54	1869
Stout, Lewis F. and N., Star City, Ind. Washing-machine						
Stout, Nathan. (See Stout, Lewis F. and N.)						
Stover, Atkins. (See Lenhart, Philip F., assignor.)						
Stover, Daniel C., Freeport, Ill. Type-writing machine	446,719	Feb. 17	1969	{491 492}	54	914
Stover, Daniel C., Freeport, Ill. Type-writing machine	446,720	Feb. 17	1976	{492 493}	54	915
Stover, Daniel C., and O. J. Ziegler, Freeport, Ill. Windmill-regulator	447,139	Feb. 24	2098	669	54	1060
Stowe, Benjamin L., Brooklyn, assignor to himself, and J. V. Reed, New York, N. Y. Joining knit belts	446,084	Feb. 10	935	229	54	702
Stowe, Benjamin L., Brooklyn, assignor to J. V. Reed, New York, N. Y. Circular loom, &c.	446,085	Feb. 10	936	{229 230 231}	54	702
Stowe, Frank. (See Merrill and Stowe.)						
Stowell, Henry F., Rochester, N. Y. Soap-holder and distributer	448,275	Mar. 17	1648	419	54	1450
Stowell, Henry F., Rochester, N. Y. Overflow and waste pipe	448,842	Mar. 24	2567	644	54	1633
Stowell, John M. (See Haberthür and Stowell.)						
Strain, William J., Jersey City, N. J. Bench-spur	447,798	Mar. 10	870	216	54	1289
Strait, Horatio N. (See Hem, Halvor O., assignor.)						
Strait, Thomas J., Williamsport, Pa. Rebounding-plunger press	449,601	Mar. 31	3788	951	54	1870
Strange, John F., assignor to himself and J. B. Winslow, New Bedford, Mass. Shade for spectacles or eyeglasses	448,276	Mar. 17	1650	419	54	1451

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Strasburger, Frank. C. H., Chicago, Ill. Measuring-faucet	448,093	Mar. 10	1336	342	54	1380
Straub, Carl, Syracuse, N. Y. Composition of matter	448,463	Mar. 17	1957	.....	54	1509
Straus, Alexander, assignor to New York Belting and Packing Company, New York, N. Y. Rubber tire for vehicles	449,502	Mar. 31	3637	915	54	1842
Straus, Gustavus E., New York, N. Y. Curtain-pole	444,230	Jan. 6	407	101	54	80
Straus, Gustavus E., New York, N. Y. Curtain-cornice	444,237	Jan. 6	417	104	54	82
Street, Arthur W., Chicago, Ill. Apparatus for sprinkling water upon hogs	444,143	Jan. 6	271	65	54	56
Streeter, Noble R., Brooklyn, N. Y. Wall-paper	444,213	Jan. 6	378	94	54	75
Stretch, Joseph, Newark, N. J. Fish-hook	444,656	Jan. 13	1050	273	54	216
Striemer, Alexander, Sleepy Eye, Minn. Electric guest-call	445,341	Jan. 27	2177	564	54	451
Stroh, Freeman, and M. J. McIntosh, Navarre, Ohio. Bolt	446,997	Feb. 24	2431	605	54	1012
Stromyer, John H., Baltimore, Md., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Poise for platform-scales	445,825	Feb. 3	525	126	54	614
Strong, Edward B., San Francisco, Cal. Case for maps or sheets	447,963	Mar. 10	1178	298	54	1348
Strong, Reed F. (See Yule, George P., assignor.)						
Strother, John W., Cherry Camp, W. Va. Sheep-shears	448,557	Mar. 17	2090	524	54	1535
Strother, William M., Lynchburg, Va. Thill-coupling	447,439	Mar. 3	277	70	54	1170
Strowbridge, Clarence S., assignor to Hamilton Wire Cloth Company, Limited, Hamilton, N. Y. Take-up and let-off mechanism for looms for weaving wire	446,035	Feb. 10	860	209	54	687
Strowger, Almon B., Kansas City, Mo. Automatic telephone-exchange	447,918	Mar. 10	1065	267	54	1326
Stryker, W. H., *et al.* (See Dunn, John P., assignor.)						
Stuard, Charles D., assignor of one-half to R. McEntyre, McNeil, Tex. Plow	444,718	Jan. 13	1145	295	54	234
Stuart, Charles E. (See Van Horn, William, assignor.)						
Stuart, Onslow, assignor of one-half to B. T. Hillman, Chilmark, Mass. Rudder-lock	444,028	Jan. 6	71	19	54	17
Stuart, Thomas M., Corning, Iowa. Car-coupling	445,576	Feb. 3	88	21	54	528
Studebaker Brothers. (See Wilcox, Frank F., assignor.)						
Stuttaford, Samuel. (See Moffatt and Stuttaford.)						
Stuttgart-Further Holz & Spiegelmanufactur. (See Friedel, Robert, assignor.)						
Subers, Zach T. (See Erny, Subers, and Hoos.)						
Suchland, Theodor, Berlin, assignor to V. Landsberg, Posen, Germany. Chair	449,355	Mar. 31	3388	853	54	1793
Sullivan, Charles, Wichita, Kans. Valve-operating mechanism for flushing siphons	449,390	Mar. 31	3453	869	54	1806
Sullivan Machine Company. (See Ball, Albert, assignor.)						
Sullivan Machine Company. (See Rolfe, Frank S., assignor.)						
Sullivan, William H., Holden, Mo. Egg-tray for incubators	448,558	Mar. 17	2091	524	54	1535
Sully, Robert M., Petersburg, Va. Seal-lock	444,322	Jan. 6	534	139	54	107
Sully, Thomas R. (See Bacon, Byron R., assignor.)						
Sulzman, Charles A., Waterford, N. Y. Steam-trap	444,214	Jan. 6	379	94, 95	54	76
Sumner, David E., Franklin, Nebr. Cleaning composition	441,187	Jan. 6	342	.....	54	69
Sundberg Brothers. (See Sundberg, Emil, assignor.)						
Sundberg, Emil, assignor to Sundberg Brothers, Eureka, Cal. Clothes-hanger	445,866	Feb. 3	582	142	54	626
Sundh, August, assignor of one-half to E. Boening, Yonkers, N. Y. Elevator	446,397	Feb. 10	1466	360	54	803
Superior Drill Company. (See Packham, Frank R., assignor.)						
Sutherland, Alexander M., New York, N. Y. Gas-retort	449,142	Mar. 31	3027	765	54	1729
Sutherland, Thomas, Stillwater, Minn. Motor	447,648	Mar. 3	609	150	54	1203
Sutley, William R., Mitchell, S. D. Trunk attachment	447,625	Mar. 3	578	143	54	1226
Sutphen, Clinton, assignor of one-half to E. H. Hinton, New York, N. Y. Transit-instrument	444,602	Jan. 13	973	252	54	201
Sutton, Charles E. (See Chaddock, Sutton, and McCullough.)						
Sutton, John W., New York, N. Y. Game-board	447,088	Feb. 24	2587	642	54	1041
Sutton, William S., Boundary City, Ind. Fence	449,602	Mar. 31	3789	951	54	1870
Swain, John F. (See Crooker, William W., assignor.) (Reissue.)	446,746	Feb. 17	2014	502	54	923
Swan, Charles, Corry, Pa. Reversing-gear for steam-engines	444,373	Jan. 6	609	157	54	120
Swan, Charles and M., Corry, Pa. Target-trap						
Swan, James. (See Swan, William B., assignor.)						
Swan, Maggie. (See Swan, Charles and M.)						
Swan, William B., assignor to J. Swan, Seymour, Conn. Draw-shave	448,464	Mar. 17	1958	492	54	1509
Swart, Christopher J., Goshen, Ind. Umbrella or parasol	446,542	Feb. 17	1706	419	54	863
Swart, Lester D. (See Brinkerhoff, Stevens, and Swart.)						
Swartz, Henry N., Milton, Pa. Window-screen	444,734	Jan. 13	1188	307	54	241
Sweeney, Edward M. (See Richmond, James W., assignor.)						
Sweeney, John F., San Francisco, Cal. Perch for bird-cages	447,006	Feb. 24	2444	608	54	1014
Sweeney, John M., Lebanon, assignor of one-half to J. Lang, Jr., Cincinnati, Ohio. Show-case	445,129	Jan. 20	1846	478	54	376
Sweet, Edgar A., assignor of one-half to J. L. Buxton, Milford, Mass. Automatic switch-board and safety cut-out for electric circuits	448,166	Mar. 10	1444	369	54	1402
Sweet, Frank E. (See Fishel and Sweet.)						
Sweet, Harlan P., Los Angeles, Cal. Metallic railway tie and chair	446,899	Feb. 24	2286	569	54	985
Sweet, Harlan P., Los Angeles, Cal. Metallic road-bed drain and safety-tie	446,900	Feb. 24	2287	569	54	985
Sweetser, William U. (See Hall and Sweetser.)						
Swett, Sullivan C., assignor of two-thirds to J. W. Brown and F. G. Alexander, Washington, D. C. Grip for elevator shifting-ropes	444,556	Jan. 13	910	236	54	189
Swift, Edgar D., New York, N. Y. Sandpapering machine	444,155	Jan. 6	299	69, 70	54	59
Swinden, Edward V., and J. Earp, Liverpool, England. Photographic apparatus	445,911	Feb. 3	644	158	54	639
Swogger, William H., New Wilmington, Pa. Gate	447,122	Feb. 24	2640	655	54	1052
Swope, Sheldon, Terre Haute, Ind. Rake	446,482	Feb. 17	1614	396	54	846
Sylvester, Davis L., Philadelphia, Pa., assignor to Allison Manufacturing Company, of Pennsylvania. Cattle or stock car	447,919	Mar. 10	1067	267, 268	54	1327
	449,011	Mar. 24	2820	714	54	1681
Syverud, Lewis A., Canton, S. D. Gopher-trap						
Tabor, Harris, Elizabeth, N. J., assignor to Tabor Manufacturing Company, New York, N. Y. Molding-machine	448,596	Mar. 17	2158	540	54	1547
Tabor Manufacturing Company. (See Tabor, Harris, assignor.)						
Taccone, Nicholas, Birmingham, Ala. Clipper	446,823	Feb. 17	2132	530	54	949
Taft, Arthur M. (See Behrens, Henry R., assignor.)						
Taintor, Giles, Worcester, Mass. Electro-magnetic cut-out	447,529	Mar. 3	436	107	54	1199
Talcott, Richard H. L., Boston, Mass. Implement for mounting pictures on glass	448,692	Mar. 24	2329	584	54	1587
Tanner, Jesse J., assignor of one-half to R. J. Fish and D. C. Burke, Oneida, N. Y. Extension-clamp	444,510	Jan. 13	839	218	54	175
Tannewitz, Edward, Grand Rapids, Mich. Vehicle-wheel	444,410	Jan. 6	673	175	54	133
Taplin, Rice & Company. (See Bradley, Ernest W., assignor.)						
Tasker, Thomas G., Wyoming, Iowa. Attachment for plows	445,267	Jan. 27	2073	535	54	428
Tattersall, William, Bradford, England. Apparatus for humidifying air	445,094	Jan. 20	1788	460	54	365
Tauber, Johann C., Plain City, Ohio. Fence	444,225	Jan. 6	400	99	54	79
Tawes, James B., Crisfield, Md. Oyster-tongs	449,012	Mar. 24	2820	714	54	1681
Tayler, Josias, New York, N. Y. Gas-mixing machine	446,086	Feb. 10	943	231	54	703

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Taylor, Brownlee W., *et al.* (See Borne, Arthur W., assignor.)						
Taylor, Carlo R., assignor of one-half to J. T. Whitcomb, Berlin, Wis. Independent check for horses	444,677	Jan. 13	1090	282	54	923
Taylor, Eugene H. (See Fahnley and Taylor.)						
Taylor, Frederick W., Philadelphia, Pa. Boring and turning mill	448,277	Mar. 17	1651	420, 421	54	1451
Taylor, James, Beaver Falls, Pa. Saw setting and filing machine	447,163	Jan. 6	301	72, 73	54	61
Taylor, John J., 2d, assignor to E. T. Hazeltine, Warren, Pa. Bottle-corking machine	445,095	Jan. 20	1789	460, 461	54	365
Taylor, Robert S., Zellwood, Fla. Gate	446,302	Feb. 10	1329	323	54	775
Taylor, Samuel C., Chicago, Ill. Window	445,384	Jan. 27	2251	578	54	461
Taylor, Samuel J., St. Thomas, N. D. Change-maker and automatic register	448,278	Mar. 17	1661	421	54	1453
Taylor, Thomas W., Brooklyn, N. Y. Photographic-plate-washing apparatus	448,383	Mar. 17	1831	461	54	1485
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Coun. Lock. (Reissue)	11,152	Mar. 17	2218	555	54	1559
Teabeaut, Daniel B. (See Kubler, John, assignor.)						
Teal, Henry S. (See Kimball and Teal.)						
Tebbetts, Lewis B. (See Stewart, John A., assignor.)						
Tebbutt, Samuel, *et al.* (See Fottrell, John, assignor.)						
Ten Eyck, William, Oakland, Cal. Self-closing gas-burner	445,612	Feb. 3	147	38	54	340
Ten Eyck, William, Oakland, Cal. Self-closing gas-burner	449,338	Mar. 31	3363	848	54	1789
Terry, Arthur H., Patchogue, N. Y. Anti-rattler for thill-couplings	446,036	Feb. 10	863	209	54	688
Terstegen, Fred, Elizabeth, N. J. Repeating mechanism for watches or other time-pieces. (Reissue)	11,151	Mar. 10	1493	381	54	1432
Tesla Electric Company. (See Tesla, Nikola, assignor.)						
Tesla, Nikola, New York, N. Y. Operating arc lamps	447,920	Mar. 10	1068	268	54	1327
Tesla, Nikola, New York, N. Y. Alternating electric-current generator	447,921	Mar. 10	1070	268	54	1327
Tesla, Nikola, assignor to Tesla Electric Company, New York, N. Y. Electro-magnetic motor	445,207	Jan. 27	1979	511	54	410
Tewes, E. A. (See Krotzschmar, Otto, assignor.)						
Thacher, John B. (See Fasoldt, Ernest C., assignor.)						
Thacker, Harry, Lake Villa, Ill. Measuring-faucet	449,143	Mar. 31	3028	766	54	1730
Thayer, Alfred I., Newark, N. J. Exercising-machine	448,305	Mar. 17	1706	432	54	1461
Thayer, Clifford P., Holbrook, Mass. Pocket-knife	445,509	Jan. 27	2417	634	54	496
Thayer, James F., Providence, R. I. Button-setting tool	445,304	Jan. 27	2117	548	54	437
Thayer, Russel A., and E. Everett, Allentown, Pa. Oscillating meter	447,140	Feb. 24	2701	669	54	1061
Theisen, Edward, Cologne, Germany. Evaporating and cooling apparatus	444,945	Jan. 20	1568	402	54	322
Theisen, Eduard, Cologne, Germany. Condensing apparatus	447,123	Feb. 24	2641	655	54	1052
Theisen, Edward, Sinzig, Germany. Condenser	445,096	Jan. 20	1792	462, 463	54	366
Theisen, Eduard, Sinzig, Germany. Evaporating apparatus	447,210	Feb. 24	2812	696	54	1084
Theuerner, Christopher J., Newark, N. J. Secret-locking box	447,984	Mar. 10	1179	299	54	1348
Thickins, Richard W., Minneapolis, assignor of one-third to E. R. Harronn, St. Paul, Minn. Grain-door for cars	449,098	Mar. 24	2950	747, 748	54	1707
Thiel, Otto H., Chicago, Ill. Apparatus for way-billing articles for shipment	447,922	Mar. 10	1072	269	54	1328
Thiellesen, Hans H. (See Ostrom, Thiellesen, and Wampler.)						
Thiemeyer, William F., Baltimore, Md. Machine for the manufacture of boxes for the transportation of bottles	448,465	Mar. 17	1959	492, 493	54	1509
Thiers, Louis, *et al.* (See Sansoucy, Mack, assignor.)						
Thom, Peter R., Appleton, Wis. Pulp-screen for paper-mills	444,862	Jan. 20	1425	370, 371	54	294
Thomas, Henry W., assignor to North Branch Steel Company, Danville, Pa. Rolls for rolling girder-rails	449,013	Mar. 24	2822	715	54	1681
Thomas, James M. (See Godden and Whitehurst, assignors.)						
Thomas, John R., assignor to S. A. Wood Machine Company, Boston, Mass. Planing-machine	448,384	Mar. 17	1833	462	54	1485
Thomas Manufacturing Company. (See Hiser, Daniel B., assignor.)						
Thomas Manufacturing Company. (See Miller, John C., assignor.)						
Thomas, Mary E., Cardington, Ohio. Voltaic insole	444,735	Jan. 13	1190	308	54	241
Thomas, Merton S., Pultney, N. Y. Police-nippers	446,616	Feb. 17	1808	447	54	883
Thomas, Thomas J. (See Harris and Thomas.)						
Thomas, William J. (See Heckert, Thomas, and Heckert.)						
Thomas, William W. (See Owen, Edmund B., assignor.)						
Thomasson, Robert G., Bumpass, Va. Poultry-crate	444,561	Jan. 13	919	239	54	190
Thompson, Adelbert L., East Avon, N. Y. Tightener and fastener for fence-wires	449,450	Mar. 31	3562	898	54	1827
Thompson, Albert T., Boston, Mass. Stereopticon	446,238	Feb. 10	1225	299, 300	54	755
Thompson, Charles H., assignor to Automatic Cigar Seller Company, Detroit, Mich. Coin-chute for vending-machines	446,303	Feb. 10	1330	324	54	775
Thompson, Edgar, San Francisco, Cal., assignor to Pacific Gas Engine Company, of California. Engine-governor	446,957	Feb. 24	2368	589	54	1000
Thompson, Edgar B. (See Schrover and Thompson.)						
Thompson, Edgar B., and C. A. Schroyer, Chicago, Ill. Piston-travel indicator	444,077	Jan. 6	154	38	54	33
Thompson, Frederic P., Fredericton, Canada. Checkrein-holder	448,094	Mar. 10	1338	342	54	1380
Thompson, James A. M., San Antonio, Tex. Car-coupling	449,014	Mar. 24	2823	715	54	1682
Thompson, John H., Collinsville, Conn. Nail-making machine	445,722	Feb. 3	339	89	54	579
Thompson, Joseph W., assignor of one-half to Buckeye Engine Company, Salem, Ohio. Wire-nail machine	445,097	Jan. 20	1795	463, 464	54	366
Thompson, Otis D., and H. F. Smith, Elkhart, Ind. Sweeper	447,381	Mar. 3	170	46, 47	54	1150
Thompson, S. S. D. (See Wadsworth, John W., assignor.)						
Thompson & Sons, Henry G. (See Mower, Samuel E., assignor.)						
Thompson, Thomas, assignor to himself and W. S. Thompson, Townsend, Mont. Draft-equalizer	448,095	Mar. 10	1339	342	54	1380
Thompson, Thomas J. (See Rose and Thompson.)						
Thompson, William E., Milwaukee, Wis. Bicycle	447,382	Mar. 3	171	47	54	1150
Thompson, William H., East Strondsburg, Pa. Clasp	448,893	Mar. 24	2644	664	54	1646
Thompson, William S. (See Thompson, Thomas, assignor.)						
Thomson, Elbert, Baltimore, Md. Can-soldering machine	444,226	Jan. 6	402	100	54	80
Thomson Electric Welding Company. (See Lemp and Schmidt, assignors.)						
Thomson Electric Welding Company. (See Thomson, Elihu, assignor.)						
Thomson, Elihu, Lynn, Mass. Electric-railway conductor	446,483	Feb. 17	1615	396	54	846
Thomson, Elihu, Swampscott, Mass. Dynamo-electric motor of generator	447,384	Mar. 3	173	47	54	1151
Thomson, Elihu, Swampscott, Mass. Electric meter	448,280	Mar. 17	1665	422	54	1453

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Lightning-arrester	444,678	Jan. 13	1091	283	54	223
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-arc lamp	444,925	Jan. 20	1533	394	54	315
Thomson, Elihu, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Electric welding	444,926	Jan. 20	1535	394	54	315
Thomson, Elihu, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Electric welding	444,927	Jan. 20	1537	394	54	316
Thomson, Elihu, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Electric welding	444,946	Jan. 20	1569	402	54	322
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-lighting system	448,279	Mar. 17	1663	422	54	1453
Thomson, Elihu, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Manufacturing chains by electric-welding processes	449,356	Mar. 31	3389	853	54	1793
Thomson, Elihu, Swampscott, Mass., assignor to Thomson Electric Welding Company, of Maine. Electric welding	444,928	Jan. 20	1539	395	54	316
Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Incandescent electric lamp	444,929	Jan. 20	1540	395	54	316
Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. System of distributing and metering electric energy	444,930	Jan. 20	1543	395	54	317
Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric meter	444,931	Jan. 20	1545	396	54	317
Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric meter	448,894	Mar. 24	2645	664	54	1647
Thomson, Elihu, Swampscott, Mass., assignor to Thomson Electric Welding Company, of Maine. Burr-preventer for electric-welding machines	449,357	Mar. 31	3391	854	54	1794
Thomson, Elihu, New Britain, Conn., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-arc lamp	447,383	Mar. 3	172	47	54	1150
Thomson-Houston Electric Company. (See Baker and Booth, assignors.)						
Thomson-Houston Electric Company. (See Blackwell, Francis O., assignor.)						
Thomson-Houston Electric Company. (See Cahoon and Baker, assignors.)						
Thomson-Houston Electric Company. (See Curtiss, George F., assignor.)						
Thomson-Houston Electric Company. (See Foster, Horatio A., assignor.)						
Thomson-Houston Electric Company. (See Hunter, Rudolph M., assignor.)						
Thomson-Houston Electric Company. (See Rice, Edwin W., Jr., assignor.)						
Thomson-Houston Electric Company. (See Thomson, Elihu, assignor.)						
Thomson-Houston Electric Company. (See Wightman, Merle J., assignor.)						
Thomson, Walter, Fargo, N. D. Bank-account book	444,583	Jan. 13	951	247	54	197
Thomson, William, Glasgow, Scotland. Valve for water, steam, &c	447,211	Feb. 24	2815	696, 697	54	1084
Thorne, James, and E. B. Burr, London, England; said Burr assignor to said Thorne. Lens for signal or other lamps	446,304	Feb. 10	1331	324	54	775
Thornton, William C., Jefferson City, Mo. Milk-can	447,923	Mar. 10	1073	269	54	1328
Thorp, O. B. (See Phelps, Harvey J., assignor.)						
Thorp, Thomas J., Chicago, Ill., assignor of one-half to H. F. Band, San Francisco, Cal. Car-coupling implement	444,548	Jan. 13	896	233	54	186
Thorp, Thomas J., Chicago, Ill., assignor of one-third to D. J. Brannen, Flagstaff, Ariz. Horse hay-rake	446,698	Feb. 17	1940	484	54	908
Thorp, Thomas J., assignor of one-third to C. J. Barnes, Chicago, Ill. Broom	446,901	Feb. 24	2290	570	54	985
Thorp, Thomas J., Chicago, Ill., assignor of one-third to G. N. Kneeland, Rochester, N. Y. Washing-machine	447,520	Mar. 3	418	102, 103	54	1196
Thorpe, Robert H., London, England. Apparatus for regulating hydraulic power	446,799	Feb. 17	2093	521, 522	54	940
Thrall, Stephen C., assignor of one-half to W. B. Chandler, Elk Rapids, Mich. Apparatus for making extracts	449,603	Mar. 31	3790	951	54	1870
Throop, Montgomery H., Jr., Chicago, Ill. Sleeping-car	444,468	Jan. 13	764	199	54	160
Thropp, William R., Trenton, N. J. Hydrant	448,096	Mar. 10	1340	343	54	1381
Thurmond Car Coupling Company. (See McKeen, Thomas L., assignor.)						
Tibbits, John B. (See Bottome, Turner D., assignor.)						
Tice, Arthur W., *et al.* (See Gilman, Willard H., assignor.)						
Tidball, Walton C., Brooklyn, N. Y. Picture-hanger	445,305	Jan. 27	2118	548	54	438
Tiffany, Albert R., assignor of one-half to W. Young, Dayton, Ohio. Tag-wiring machine	444,403	Jan. 6	659	170, 171	54	130
Tiffany, George S., Tecumseh, Mich. Brick or tile table	444,227	Jan. 6	404	100	54	80
Tilghman, Benjamin C. and R. A., Philadelphia, Pa. Manufacturing chilled-iron globules	446,986	Feb. 24	2416	.....	54	1009
Tilghman, Benjamin C. and R. A., Philadelphia, Pa. Manufacturing chilled-iron globules	446,987	Feb. 24	2417	.....	54	1010
Tilghman, Benjamin C. and R. A., Philadelphia, Pa. Chilled-iron globule	446,988	Feb. 24	2419	.....	54	1010
Tilghman, Richard A. (See Tilghman, Benjamin C. and R. A.)						
Tilley, William P., and C. E. Calvert, Portsmouth, Va. Egg-crate	448,281	Mar. 17	1667	422	54	1454
Tillinghast, Benjamin F., *et al.* (See Hollingworth, Louis, assignor.)						
Tillinghast, Pardon W., Providence, R. I. Bicycle	444,258	Jan. 6	443	111	54	87
Timmis, Illins A. (See Laurent-Cély and Timmis.)						
Tingle, Chester S., Hortonville, Ind. Weather-strip	445,459	Jan. 27	2342	609	54	483
Tinsley, George W., Columbus, Ind. Hose-coupling	448,693	Mar. 24	2330	584	54	1587
Tinsley, George W., Columbus, Ind. Hose-coupling for street-washers	448,694	Mar. 24	2331	584	54	1588
Tipton, George P., Hot Springs, Ark. Shoe-blacking	449,339	Mar. 31	3364	.....	54	1789
Tipton, Thomas L., Jerusalem, Ohio. Horseshoe	445,481	Jan. 27	2375	618	54	489
Tirrell, Jacob P., Boston, Mass., assignor to H. A. Pinkham, Philadelphia, Pa. Automatic cut-out	446,902	Feb. 24	2291	570, 571	54	986
Tirrill, Harvey, Pittsburg, N. H. Clothes-pin	444,603	Jan. 13	975	252	54	202
Tise, Charles H. (See Reich, Isaac, assignor.)						
Titus, Abraham H., Darnall, Nebr. Pump	448,282	Mar. 17	1669	423	54	1454
Titus, Charles M. (See Clinton and McNamara, assignors.)						
Titus, Edward S. and F. W. Werner, Hempstead, N. Y. Feed-water purifier	447,018	Feb. 24	2470	615	54	1019
Titus, Jonah E., Orange, Mass. Extensible bracket for electric lamps	446,037	Feb. 10	864	210	54	688
Titus, William, North Hempstead, N. Y. Banjo	447,985	Mar. 10	1180	299	54	1348
Tobe, Frederick E. (See Blondell, John M., assignor.)						
Tobey, Charles W., assignor to Burt & Tobey, New Bedford, Mass. Apparatus for attaching adhesive stamps	447,212	Feb. 24	2816	697, 698, 699, 700	54	1384
Tobey, Frederick W. (See Atwood and Tobey.)						
Tobin, Edward J. (See Siddall, Archibald, assignor.)						
Todd, Henry B., Meriden, Conn. Metal-cutter	447,849	Mar. 10	948	237	54	1304

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Todd, Marquis J., Corning, assignor to Pitts Agricultural Works, Buffalo, N. Y. Harrow	445,842	Feb. 3	546	133	54	618
Todd, Marquis J., Corning, assignor to Pitts Agricultural Works, Buffalo, N. Y. Harrow	446,105	Feb. 10	968	238	54	707
Todd, Marquis J., Corning, assignor to Pitts Agricultural Works, Buffalo, N. Y. Harrow	445,385	Jan. 27	2233	578	54	461
Todd, William A., San Francisco, Cal. Banjo	448,306	Mar. 17	1708	433	54	1462
Toler, John, Newark, N. J. Caster						
Tolman & Co., C. S. (See Hudson, Charles E., assignor.)						
Tommins, Vincent P., New York, N. Y. Dish-cover	449,144	Mar. 31	3029	766	54	1730
Tompkins, Jerome P. (See Holmes and Tompkins.)						
Tompkins, Stonewall, Knoxville, Tenn., assignor of one-half to C. E. Vawter, Crozet, Va. Electric railway-signal	449,630	Mar. 31	3865	968	54	1884
Tondeur, Cleon, Canastota, N. Y. Berry-box	447,799	Mar. 10	871	216	54	1289
Tonkin, John J., assignor to T. Kingsford, Oswego, N. Y. Steam-boiler	448,867	Mar. 24	2613	656	54	1640
Tonnar, Felix, Dülken, Germany. Shedding mechanism for looms	445,098	Jan. 20	1801	464, 465	54	367
Toof, Edwin J., New Haven, Conn. Attachment-holder for sewing-machines	444,542	Jan. 13	884	220	54	184
Toof, Edwin J., New Haven, Conn. Presser-foot for sewing-machines	445,912	Feb. 3	648	159	54	639
Toof, Edwin J., New Haven, Conn. Button-hole cutter	446,484	Feb. 17	1017	396	54	846
Toof, Edwin J., New Haven, Conn. Tuck-marker for sewing-machines	448,695	Mar. 24	2631	585	54	1588
Toof, John H., Concord, N. H. Smoothing-iron	447,049	Feb. 24	2531	698	54	1030
Topham, Richard, Chicago, Ill. Trunk-slat	444,736	Jan. 13	1190	308	54	241
Topliff, Isaac N., Cleveland, Ohio. Carriage-bow	446,938	Feb. 24	2345	583	54	995
Torrey, Joseph R., Worcester, Mass. Razor-strop	447,213	Feb. 24	2824	700	54	1086
Tory, William, Guysborough, Canada. Hoof-spreading horseshoe	448,736	Mar. 24	2409	602	54	1602
Totham, James, New Haven, Conn. Flushing-tank	446,903	Feb. 24	2294	571	54	986
Touchstone, James N., Ida, Tex. Quilting-frame for sewing-machines	447,169	Feb. 24	2747	680	54	1070
Tousley, Miron G., assignor to A. Patrick, Englewood, Ill. Ventilator	446,824	Feb. 17	2133	530	54	949
Tovey, Alfred E. J., *et al.* (See Valentin, Basil W., assignor.)						
Tower, Clinton A., Cleveland, Ohio. Double-acting engine	444,259	Jan. 6	444	112	54	87
Tower, John J. (See Green, Henry, assignor.)						
Tower, Levi L., Somerville, Mass. Binding-strap	446,110	Feb. 10	981	241	54	710
Towne, Charles D., Galesburg, Mich. Harvester-reel	447,481	Mar. 3	358	89	54	1185
Townsend, Stephen J., Sumterville, Fla. Level	446,038	Feb. 10	865	210	54	688
Tracy, James B. (See Chase and Tracy.)						
Tracy, Patrick J., Racine, Wis. Heating-drum	444,078	Jan. 6	155	39	54	34
Trainer, J. B. H., *et al.* (See Campbell, George L., assignor.)						
Trant & Hine Manufacturing Company. (See Richards, Francis H., assignor.)						
Trant, Justus A., New Britain, Conn. Trousers stretcher and hanger	445,099	Jan. 20	1803	465	54	367
Trant, Justus A., New Britain, Conn. Suspender-buckle	446,543	Feb. 17	1707	419	54	864
Trant, Justus A., New Britain, Conn. Suspender-buckle	446,721	Feb. 17	1978	493	54	916
Trant, Justus A., New Britain, Conn. Suspender-buckle	446,722	Feb. 17	1979	493	54	916
Trant, Justus A., New Britain, Conn. Suspender-buckle	447,924	Mar. 10	1074	269	54	1328
Trant, Justus A., and C. E. Riecker, New Britain, Conn.; said Riecker assignor to said Trant. Bag-holding apparatus	448,791	Mar. 24	2490	623	54	1618
Trautmann, John F., St. Louis, Mo. Horse-collar	447,649	Mar. 3	610	150	54	1233
Trautwein, Ferdinand P., Lutesville, Mo. Flour bolt and dresser	448,283	Mar. 17	1669	423	54	1454
Traver, Theodore H., Chicago, Ill. Button-setting machine	448,696	Mar. 24	2332	585, 586	54	1588
Travers, James B., Winchester, Ill. Baking-pan	448,559	Mar. 17	2092	525	54	1535
Traylor Electric Company. (See Traylor, Robert W., assignor.)						
Traylor, Robert W., assignor to Traylor Electric Company, Richmond, Va. Electric motor	447,704	Mar. 3	683	170	54	1247
Treadwell, Charles. (See Milbradt, Gustave A., assignor.)						
Treadwell, George H. (See Anable, Henry B., assignor.)						
Treat, Francis H., assignor to Illinois Steel Company, Chicago, Ill. Billet-conveyer	445,290	Jan. 27	2099	542, 543	54	433
Treat, Francis H., assignor to Illinois Steel Company, Chicago, Ill. Apparatus for stamping billets	445,291	Jan. 27	2100	543, 544	54	434
Treat, Francis H., assignor to Illinois Steel Company, Chicago, Ill. Billet-conveyer	445,292	Jan. 27	2102	544	54	434
Treat, Francis H., assignor to Illinois Steel Company, Chicago, Ill. Billet-receiving table	445,293	Jan. 27	2103	544, 545	54	434
Treat, Francis H., assignor to Illinois Steel Company, Chicago, Ill. Billet-shears	445,294	Jan. 27	2104	545	54	435
Tredwell, Walter E., and C. W. Black, Anthony, Kans. Corn-harvester	448,697	Mar. 24	2337	586	54	1589
Tregurtha, Alfred T., Everett, assignor of one-half to J. A. Murray, Boston, Mass. Switch for incandescent-lamp sockets	448,167	Mar. 10	1445	369	54	1402
Tregurtha, James, Malden, assignor to H. A. Clark and T. A. Johnson, Boston, Mass. Braiding-machine	447,262	Feb. 24	2901	721, 722, 723	54	1102
Trent, Lottie W., Denver, Colo. Remedial cosmetic	444,411	Jan. 6	674	.....	54	133
Trescott, Willis A., Fairport, N. Y. Fruit-packer	444,260	Jan. 6	447	112, 113	54	88
Tribe, Thomas, Colorado Springs, Colo. Curtain-holder	444,863	Jan. 20	1427	371	54	295
Trickel, Joseph, Reading, Pa. Door-knob	448,737	Mar. 24	2410	603	54	1602
Trimble, Thomas. (See Adams, Chauncey K., assignor.)						
Tripp, Albert H., Rago, Kans. Cultivator	444,800	Jan. 13	1280	331	54	258
Tripp, George E., Stonington, Conn. Sulky	445,758	Feb. 3	401	102	54	592
Tritz, Joseph, Burlington, Iowa. Rocking meat-cutter	449,451	Mar. 31	3563	898	54	1927
Triumph Compound Engine Company. (See Eickershoff, John H., assignor.)						
Trost, Caroline R. (See Trost, Henry, assignor.)						
Trost, Henry, assignor to C. R. Trost, Cohoes, N. Y. Polishing-machine	449,050	Mar. 24	2892	734	54	1695
Trout, Jam s C., Morrilton, Ark. Mole-trap	447,417	Mar. 3	237	60	54	1102
Trout, William H. (See Reynolds, Shaw, and Trout.)						
Troxler, Barney C., assignor of one-half to A. G. Wilson, Greensborough, N. C. Plow	445,913	Feb. 3	649	159	54	639
Truesdell, Eugene E. P., *et al.* (See Haskins, Morris R., assignor.)						
Trumbore, Samuel, Easton, Pa. Wagon-spring brace	444,469	Jan. 13	766	199	54	160
Trump, Fuller, Springfield, Ohio. Water-wheel	447,850	Mar. 10	949	238	54	1305
Tuch, Simon, New York, N. Y. Head-covering	446,762	Feb. 17	2039	508	54	929
Tucker, Charles A., East Orange, N. J. Pneumatic apparatus for operating doors	446,195	Feb. 10	1127	276, 277	54	735
Tucker, Stephen D., *et al.* (See Crowell, Luther C., assignor.)						
Tuerk, Samuel O., Syracuse, N. Y. Burnisher	449,391	Mar. 31	3455	869	54	1806
Tufts, Cyrus. (See Royce and Tufts.)						
Tunks, Gilbert S., Cardiff, England. Construction of bakers' ovens	445,826	Feb. 3	526	126, 127	54	614
Turkington, Alexander, Philadelphia, Pa. Jacquard mechanism for looms	446,039	Feb. 10	866	210, 211	54	688

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Turnbull, William H., Fort Wayne, Ind. Washing-machine	444,737	Jan. 13	1193	308, 309	54	242
Turner, Donlee B., Chicago, Ill. Electric switch	448,698	Mar. 24	2339	587	54	1589
Turner, George K. (See Haire, William H., assignor.)						
Turner, Joseph A., Passaic, N. J. Shade-roller	447,705	Mar. 3	685	170	54	1248
Turner, Samuel, New Bedford, Mass. Shuttle-operating mechanism for looms	445,682	Feb. 3	280	74	54	567
Turner, William A., assignor to E. Converse, Worcester, Mass. Machine for stamping and perforating sheet metal	445,603	Feb. 3	129	34	54	536
Turner, William B., Schenectady, N. Y. Shaft-coupling	447,925	Mar. 10	1076	269	54	1329
Turner, William R., M. Hamilton, and A. T. Long, Bowers, Ind. Washing-machine	444,964	Jan. 20	1602	409	54	328
Turton, Mordecai. (See Laney, Thomas G., assignor.)						
Turton, Mordecai, assignor of one half to T. G. Laney, Lima, Ohio. Apparatus for removing paraffine from the pipes of oil-wells	445,100	Jan. 20	1804	466	54	368
Turver, Charles H., Buffalo, assignor to F. Browning, Tonawanda, N. Y. Canal-boat	449,092	Mar. 24	2943	746	54	1705
Tuthill, Horace S., New York, N. Y. Delivery-wagon	447,440	Mar. 3	278	70	54	1170
Tweedy, Thomas A., Knightstown, Ind., assignor to C. Crabbs, Toronto, Canada. Fence	447,588	Mar. 3	521	127	54	1215
Twinch, Frederick, *et al.* (See Valentin, Basil W., assignor.)						
Twining, Allen H., Reading, Pa. Rod-packing	446,699	Feb. 17	1942	484	54	908
Twist, Thomas E., Milton, Pa. Mold	445,737	Feb. 3	363	94	54	584
Twitchell & Brother, S. (See Twitchell, Selden, assignor.)						
Twitchell, Selden, assignor to S. Twitchell & Brother, Philadelphia, Pa. Bottle-washing machine	444,261	Jan. 6	448	113	54	88
Tyden, Emil, Chicago, Ill. Planter	445,604	Feb. 3	131	34, 35	54	537
Tyler, Abel D., Jr., Brockton, Mass., assignor to Tyler Manufacturing Company, Portland, Me. Door-spring	445,101	Jan. 20	1806	466	54	368
Tyler Manufacturing Company. (See Tyler, Abel D., Jr., assignor.)						
Tyler, William E., Aldie, Va. Gate-latch	448,755	Mar. 24	2437	610	54	1607
Tyng, Francis E., Irvington, N. Y. Time-recorder	448,560	Mar. 17	2093	525	54	1535
Tyrrel, Alvin D., Dayton, Ohio, assignor of one-half to S. J. Sibley, West Springfield, Mass. Wheeled insect-destroyer	444,786	Jan. 13	1261	327	54	234
Tyrrell, Thomas C., Glendive, Mont. Platform for freight-cars	449,452	Mar. 31	3565	899	54	1828
Tyson, William H., Coffeyville, Kans. Steak-pounder	446,485	Feb. 17	1618	396	54	847
U. S. Rolling Stock Company. (See Kennedy, Martin, assignor.)						
Uhlmann, Frederick, *et al.* (See Stockheim, Heinrich, assignor.)						
Uhlmann, Simon, *et al.* (See Stockheim, Heinrich, assignor.)						
Ulmer, William. (See Huttenlocher and Ulmer.)						
Ulven, Alfred W., Beverly, assignor to H. I. Bettis, Salem, Mass. Roundabout	444,585	Jan. 13	953	217	54	197
Ulrich, Moritz, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Dioxynaphthaline-mono-sulphonic acid	444,679	Jan. 13	1093	.....	54	224
Unangst, Edward E., Nazareth, Pa. Washing-machine	446,800	Feb. 17	2096	522	54	941
Unckrich, Ferdinand F., assignor to W. H. Stone, Sandusky, Ohio. Nut-lock	448,385	Mar. 17	1835	462	54	1486
Underhill, Charles B., Lancaster, N. Y. Spring attachment for buckles	449,015	Mar. 24	2824	715	54	1682
Underwood, Thomas J., Decatur, Ill. Elevator	448,699	Mar. 24	2340	587	54	1590
Underwood, Walter H. (See Otis and Underwood.)						
Union Paper Bag Machine Company. (See Patterson, William H., assignor.)						
Union School Furniture Company. (See Cary, Alanson, assignor.)						
Union Special Sewing Machine Company. (See Muther, Lorenz, assignor.)						
Union Special Sewing Machine Company. (See Woodward, Russel G., assignor.)						
United Gas Improvement Company. (See Currie, Stanley C. C., assignor.)						
United States Aërophor Air Moistening and Ventilating Company. (See Oehlmann, Emil H. C., assignor.)						
United States Fuel Company. (See Schimper, Rudolph J., assignor.)						
United States Light and Fuel Company. (See Stewart, John L., assignor.)						
Universal Arc Lamp Company. (See Ward, John H. R., assignor.)						
Universal Sewing Machine Motor Attachment Company. (See Reed, Eli S., assignor.)						
Universal Sewing Machine Motor Attachment Company. (See Reed and Painter, assignors.)						
Upland, Herman H., Cimarron, Kans. Incubator	447,453	Mar. 3	302	76	54	1175
Upp, Henry H., Philadelphia, Pa., assignor to National Type Writer Company, of Pennsylvania. Type-writing machine	449,640	Mar. 31	3871	969	54	1885
Upson, Charles H., *et al.* (See Neuberth, George E., assignor.)						
Upson, Charles M. (See Bacon, Sherman B., assignor.)						
Vahle, Otto, Philadelphia, Pa. Cuttle-fish holder	445,415	Jan. 27	2281	592	54	471
Vail, Joseph C., Maple's Mill, assignor to himself and G. W. Ray, Bryant, Ill. Shock-compressor	444,787	Jan. 13	1262	327	54	254
Valentin, Basil W., Birmingham, England, assignor to F. Twinch, A. E. J. Tovey, and F. Wyatt, New York, N. Y. Brewing malt liquors	449,503	Mar. 31	3638	.....	54	1842
Vallean, Thomas M. (See Costigan and Vallean.)						
Valley, John N., Jersey City, N. J. Elevated railway	446,272	Feb. 10	1277	313	54	764
Valley, John N., Jersey City, N. J. Elevated railway	446,273	Feb. 10	1279	313	54	765
Valley, John N., Jersey City, N. J. Elevated railway	444,079	Jan. 6	157	39	54	34
Van, Daniel, Cincinnati, Ohio. Holder or rack for brooms, &c	444,059	Jan. 6	123	30	54	27
Van Alen, Jacob, Brooklyn, and C. W. McCutchen, Peekskill, N. Y. Oil-stove	446,486	Feb. 17	1619	397	54	847
Van Benthuysen, Frank, Albany, N. Y. Bracket for holding paper in a suspended position	444,127	Jan. 6	248	60	54	51
Van Deinse, John H. C., and M. J. Reiseger, Muskegon, Mich. Making starch	444,188	Jan. 6	342	83, 84	54	69
Van Depoele, Charles J., Lynn, Mass. Electric motor	445,102	Jan. 20	1808	467	54	368
Van Depoele, Charles J., Lynn, Mass. Electric-motor reciprocating engine	447,214	Feb. 24	2825	701	54	1086
Van Depoele, Charles J., Lynn, Mass. Multiple rock-drill	447,215	Feb. 24	2826	701, 702	54	1086
Van Depoele, Charles J., Lynn, Mass. Electric-railway system	448,561	Mar. 17	2096	525, 526	54	1536
Van Depoele, Charles J., Lynn, Mass. Electric-railway motor	448,562	Mar. 17	2101	526, 527	54	1537
Van Depoele, Charles J., Lynn, Mass. Electric locomotive	448,563	Mar. 17	2104	527, 528	54	1537
Van Dorn, Ferdinand, Basking Ridge, N. J. Cotton-harvester	444,801	Jan. 13	1281	331, 332	54	258
Van Epps, Charles H., Scott, Ind. Fence-wrench	448,564	Mar. 17	2108	528	54	1538
Van Fleet, Fred, Williamsport, Pa. Type-cleaning brush for type-writing machines	447,141	Feb. 24	2703	670	54	1061
Van Heunik, Burtis, New York, N. Y. Package-elevator	449,453	Mar. 31	3566	899	54	1828
Van Hoesen, Eugene M., Preble, N. Y. Device for catching mail-bags	446,550	Feb. 17	1720	422	54	866
Van Hoesen, George D., Brooklyn, N. Y. Weighing and packing machine	447,385	Mar. 3	175	48	54	1151
Van Horn, Charles F. (See Schlesinger, William M., assignor.)						
Van Horn, William, assignor to C. E. Stuart, Piqua, Ohio. Roll-paper holder and cutter	448,097	Mar. 10	1341	343	54	1381

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Van Horn, William C., South Pittsburg, Tenn. Separator for the precious metals	448,098	Mar. 10	1344	343	54	1381
Van Kannel, Theophilus, Philadelphia, Pa. Apparatus for scalding vegetables or fruits	448,895	Mar. 24	2649	665	54	1647
Van Ness, Albert, Beloit, assignor to C. P. Stevens, Mitchell County, Kans. Windmill	444,262	Jan. 6	449	113, 114	54	89
Van Ness, Thomas E., Newark, and R. C. W. Lewis, Jersey City, N. J. Making bridle-bits	449,300	Mar. 31	3277	830	54	1775
Van Nest, John, Jr., and W. B. Kinney, Newark, N. J. Apparatus for transferring coal to moving locomotive-tenders	444,947	Jan. 20	1570	403	54	322
Van Nuis, Charles S., New Brunswick, N. J. Cut-out	449,301	Mar. 31	3279	831	54	1775
Van Ostrand, Edward T., *et al.* (See Dutcher and Boyle, assignors.)						
Van Patten, Frederick, Auburn, N. Y. Spring-tooth harrow	445,324	Jan. 27	2149	556	54	445
Van Ruymbeke, Joseph, assignor of one-half to W. F. Jobbins, Chicago, Ill. Phosphate and making the same	446,087	Feb. 10	944	.....	54	703
Van Ruymbeke, Joseph, assignor of one-half to W. F. Jobbins, Chicago, Ill. Making phosphatic fertilizers	446,998	Feb. 24	2432	.....	54	1012
Van Ruymbeke, Joseph, assignor to National Chemical and Fertilizer Company, Chicago, Ill. Nitrogenous fertilizer	446,088	Feb. 10	945	.....	54	703
Van Ruymbeke, Joseph, assignor to National Chemical and Fertilizer Company, Chicago, Ill. Nitrogenous fertilizer	448,387	Mar. 17	1843	.....	54	1487
Van Stone, Edwin D., assignor to R. and F. E. Wheeler, Utica, N. Y. Hot-water and steam heater	444,802	Jan. 13	1283	333, 334	54	259
Van Stone, Edwin D., assignor to R. and F. C. Wheeler, Utica, N. Y. Grate	449,641	Mar. 31	3872	969	54	1886
Van Vechten, Orville R., assignor to J. E. Warner, Norwich, Conn. Machine for making braided cordage	445,256	Jan. 27	2059	530, 531, 532	54	426
Van Vleck, William J. (See Groat and Van Vleck.)						
Van Vliet, Simon, Rutherford, N. J. Scaffold-bracket	446,802	Feb. 17	2101	523	54	942
Van Zile, Harry L. (See Mac Cormack and Van Zile.)						
Vande Plancke, Désiré and G., Courtrai, Belgium. Electric regulating-clock	446,801	Feb. 17	2097	522, 523	54	941
Vande Plancke, Gustave. (See Vande Plancke, Désiré and G.)						
Vandegrift Manufacturing Company. (See Vandegrift, Theodore F., assignor.)						
Vandegrift, Theodore F., assignor to Vandegrift Manufacturing Company, Shelbyville, Ind. Wrench	444,171	Jan. 6	319	77	54	65
Vandegrift, Theodore F., Noah, assignor to Vandegrift Manufacturing Company, Shelbyville, Ind. Wrench	444,511	Jan. 13	840	218	54	175
Vandegrift, Theodore F., Noah, assignor to Vandegrift Manufacturing Company, Shelbyville, Ind. Pliers	449,250	Mar. 31	3199	806	54	1762
Vanderhoof, O. G. (See Saxton, Thomas G., assignor.)						
Vanderman, William, Willimantic, Conn. Pipe or rod cutter	444,995	Jan. 20	1646	422	54	337
Vanduzen, Benjamin C., Winton Place, Ohio, assignor of one-half to E. W. Vanduzen, Newport, Ky. Gas or gasoline engine	448,386	Mar. 17	1836	462, 463	54	1486
Vanduzen, Benjamin C., Winton Place, Ohio, assignor of one-half to E. W. Vanduzen, Newport, Ky. Gas-engine	448,597	Mar. 17	2161	540, 541	54	1548
Vanduzen, Ezra W. (See Vanduzen, Benjamin C., assignor.)						
Vangorden, John M. (See Carpenter, Clarence E., assignor.)						
Vanhorn, Joseph E., Henderson Station, Ill. Grain-apron	446,040	Feb. 10	869	211	54	689
Vannatta, Elias A., Juniata, Nebr. Wire-reel	446,487	Feb. 17	1620	397	54	847
Vanover, Joseph M., Terre Haute, Ind. Sliding gate	448,466	Mar. 17	1963	493	54	1510
Vansant, John L. (See Clarkson, Alexander R., assignor.)						
Varley, Martin S., Chicago, Ill. Overshoe	449,340	Mar. 31	3365	848	54	1789
Varley, Richard, Jr., Englewood, N. J. Electric-contact protector	449,302	Mar. 31	3280	831	54	1775
Varns, Tobias L. (See Michener and Varns.)						
Vary, William L., *et al.* (See Watkins, Edwin D., assignor.)						
Vaughn, Joseph W., Salem, Mass., assignor to Vaughn Morocco Machine Company, Portland, Me. Machine for whitening or working leather	444,164	Jan. 6	305	73	54	62
Vaughn, Joseph W., Salem, Mass., assignor to Vaughn Morocco Machine Company, Portland, Me. Leather-boarding machine	444,172	Jan. 6	319	77	54	65
Vaughn, Joseph W., Salem, Mass., assignor to Vaughn Morocco Machine Company, Portland, Me. Leather-working machine	444,173	Jan. 6	321	77, 78	54	65
Vaughn Morocco Machine Company. (See Vaughn, Joseph W., assignor.)						
Vause, Charles H., New York, N. Y. Letter-box	445,867	Feb. 3	583	143	54	626
Vawter, Charles E. (See Tompkins, Stonewall, assignor.)						
Verner Wrench Car Mover and Power Manufacturing Company. (See Greenamyer, Clarence V., assignor.)						
Vernon, Nathan W., assignor of one-half to D. Henry, Corning, Kans. Plow-bolt holder	447,706	Mar. 3	686	176	54	1248
Vickery, Charles H., Attica, N. Y. Paper sack	444,029	Jan. 6	72	19	54	17
Vickery, William H. (See Powell and Vickery.)						
Vilaseca y Velasco, Arturo, Barcelona, Spain. Game-counter	447,454	Mar. 3	303	76	54	1175
Villavaso, William N., New Orleans, La. Molasses-mixer	444,470	Jan. 13	767	200	54	160
Villon, Jules, Lima, Peru. Jewel-support for balance-staffs of watches	448,896	Mar. 24	2651	665	54	1648
Vincent, D. Howard. (See Fox, John H., assignor.)						
Vinett, Alexander. (See McCulloch, Archibald, assignor.)						
Vinton, John H., Boston, Mass., assignor to Heaton-Peninsular Button Fastener Company, Providence, R. I. Button-fastener	446,089	Feb. 10	946	232	54	703
Viol, Reinhard, Frankfort-on-the-Main, Germany, assignor, by mesne assignments, to Lewis & Fowler Girder-Rail Company, Brooklyn, N. Y. Joint or other fastening for tramway-rails	449,093	Mar. 24	2945	746	54	1706
Viollet, Emile, Paris, France. Kneading-machine	448,826	Mar. 24	2537	636, 637	54	1627
Voelker, George W., Woonsocket, R. I. Cloth-pressing machine	445,723	Feb. 3	340	90	54	580
Vogel, Wilhelm, assignor to M. Steinberg, Cologne, Germany. Pocket-knife	448,168	Mar. 10	1447	370	54	1403
Vogler, William, Somerville, Mass. Insulator	445,008	Jan. 20	1665	427	54	341
Vogler, William, Somerville, Mass. Trolley-wire clamp or support	445,103	Jan. 20	1809	467	54	369
Vogler, William, Somerville, Mass. Garment-stand	445,208	Jan. 27	1981	511	54	411
Vogt, Axel S., Altoona, Pa., assignor to C. W. Roepper, Alliance, Ohio. Brake-shoe	444,174	Jan. 6	323	78	54	66
Volkmann, John H. (See Bergmann, Theodor, assignor.)						
Voll, Charles H., assignor of one-half to O. Fischer, San Francisco, Cal. Envelope-fastener	444,932	Jan. 20	1549	396, 397	54	318
Von Brandis, Adolph, Milwaukee, Wis. Perforating-stamp	447,089	Feb. 24	2589	642	54	1041
Von Brandis, Adolph, and H. Davidson, Milwaukee, Wis., said Von Brandis assignor to said Davidson. Door-operating device	447,090	Feb. 24	2591	642, 643	54	1042
Von Culin, Clayton and E., Delaware City, Del. Incubator	446,090	Feb. 10	947	232	54	703

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Von Culin, Everett. (See Von Culin, Clayton and E.)						
Vortmann, Georg. (See Messinger and Vortmann.)						
Vose, George L. (See Hudson, Thomas C., assignor.)						
Vowles, Joseph. (See Wells and Vowles.)						
Vowles, Mary, *et al.* (See Wells and Vowles, assignors.)						
Vuillier, Aimé, Brooklyn, N. Y. Eccentric	447,386	Mar. 3	182	48	54	1153
Vulcan Electric Company. (See Robinson, Martin W., assignor.)						
Vulcan Patent Smoke Consumer and Fuel Economizer Corporation. (See Chubb, William J., assignor.)						
Vulcan Patent Smoke Consumer and Fuel Economizer Corporation. (See Moffatt and Stuttaford, assignors.)						
Wachs, Edward H. (See Johansson, Karl A., assignor.)						
Wachter, Henry, Columbus, Ohio. Game-board	447,851	Mar. 10	950	238	54	1305
Wachter, Wesley N., assignor of one-half to T. Reynolds, Springfield, Ohio. Churn	447,852	Mar. 10	952	238	54	1305
Waddell-Entz Electric Company. (See Entz, Justus B., assignor.)						
Waddell, Harvey, Chicago, Ill. Folding-bed support	447,589	Mar. 3	562	127	54	1215
Waddell, Montgomery, and J. B. Entz, New York, N. Y. Electric locomotive	444,512	Jan. 13	841	{218 219	54	175
Waddell, William H., Lexington, Va. Sectional lamp-chimney	444,864	Jan. 20	1427	371	54	295
Waddill, Andy M., Jr., Thomastown, La. Insect-powder distributer	445,482	Jan. 27	2376	618	54	489
Wade, C. C., *et al.* (See De Berry, William G., assignor.)						
Wade, James J., Chicago, Ill. Sewer-flush check-valve	447,387	Mar. 3	183	49	54	1153
Wade, John W., Lamoille, Ill. Combined hog trap and crate	444,117	Jan. 6	219	53	54	45
Wade, W. T., *et al.* (See De Berry, William G., assignor.)						
Wade, Walter R., Brooklyn, N. Y. Degumming and preparing fibers	449,454	Mar. 31	3568	.....	54	1828
Wade, Walter R., Brooklyn, N. Y. Degumming and preparing fibers	449,455	Mar. 31	3569	.....	54	1828
Wadsworth, John W., Allegheny, assignor of one-half to S. S. D. Thompson, Pittsburg, Pa. Pump	445,577	Feb. 3	89	21	54	529
Wadsworth, S. W., *et al.* (See Dunn, John P., assignor.)						
Waeber, Gustavus A. (See Reiset and Waeber.)						
Waffenfabrik, Mauser. (See Mauser, Paul, assignor.)						
Wagg, Solomon R., Appleton, Wis. Paper-pulp boiler	446,041	Feb. 10	871	{211 212	54	689
Wagg, Solomon R., Appleton, Wis. Pulp refining and dressing engine	447,853	Mar. 10	953	{238 239	54	1305
Wagner, Daniel, Unity, Ohio. Newspaper-holder	445,435	Jan. 27	2310	599	54	477
Wagner, Edward W., San José, Cal. Pessary	444,513	Jan. 13	842	219	54	176
Wagner, Henry J., Dayton, Mo. Corn-planter	444,030	Jan. 6	73	20	54	18
Wagner, Jacob K., Kalamazoo, Mich. Surface cattle-guard	448,804	Mar. 24	2507	628	54	1621
Wagner, John L., Terre Haute, Ind. Carpet-cleaning machine	445,209	Jan. 27	1981	512	54	411
Wagner, S. C., *et al.* (See Kyle, Augustus G. and E. J., assignors.)						
Wagner, S. Harrison. (See Elfering, John H., assignor.)						
Wahl, William F., Atlantic City, N. J. Overshoe	447,091	Feb. 24	2592	643	54	1042
Wahlin, Adolph, Stockholm, Sweden, assignor to R. D. Harris, New York, N. Y. Centrifugal separating apparatus	447,530	Mar. 3	437	107	54	1200
Wahlin, Adolph, C. J. Lundström, Stockholm, Sweden, and T. Collins, Winchester, N. H., assignors to R. D. Harris, New York, N. Y. Extractor-churn	446,651	Feb. 17	1868	463	54	895
Wainwright Manufacturing Company of Massachusetts. (See Fife, John F., assignor.)						
Waite, Gilman. (See French, Erastus S., assignor.)						
Waite, James F., assignor of one-half to W. Hollis, San Francisco, Cal. Brake for cable cars	446,305	Feb. 10	1332	324	54	775
Wakely, William, Taunton, Mass. Method of and apparatus for reducing metal	449,145	Mar. 31	3030	{766 767	54	1730
Wakeman, Frank M., Nantucket, Mass. Pendulum adjustment for clocks	449,016	Mar. 24	2825	716	54	1682
Waldron, Asa T., assignor to Mohawk and Hudson Manufacturing Company, Waterford, N. Y. Valve	447,590	Mar. 3	523	128	54	1215
Waldrop, Richard W., Norfolk, Va. Ventilating device for railway-cars	447,216	Feb. 24	2531	702	54	1087
Waldschmidt, Edward, assignor to Watsontown Boot and Shoe Company, Watsontown, Pa. Shoe-upper	447,263	Feb. 24	2908	723	54	1103
Walker, Albert H., trustee. (See Claussen, Edward E., assignor.)						
Walker, Albert H., trustee. (See Lorenz, William A., assignor.)						
Walker, Albert H., trustee. (See Lorenz and Claussen, assignors.)						
Walker, Arthur W., Malden, Mass. Cooking-stove	447,548	Mar. 3	461	113	54	1204
Walker, Charles E., *et al.* (See Allen, Albert F., assignor.)						
Walker, Frank, Los Angeles, Cal. Window-screen	448,467	Mar. 17	1964	494	54	1510
Walker, Henry A., Denver, Colo. Self-closing faucet	444,514	Jan. 13	843	219	54	176
Walker, Isaac, Philadelphia, Pa. Cop-spindle for reels	447,800	Mar. 10	871	216	54	1290
Walker, James, London, England. Rod-packing	447,170	Feb. 24	2748	680	54	1070
Walker, John, Cleveland, Ohio. Lathe and planer attachment	449,392	Mar. 31	3457	870	54	1807
Walker, John B., Corvallis, Oreg. Railway-rail joint	446,763	Feb. 17	2040	508	54	929
Walker, John H. (See Miller and Walker.)						
Walker, Joseph, assignor of one-half to R. C. Jackson, Trenton, N. J. Washer for spinning and twisting machines	447,388	Mar. 3	185	49	54	1153
Walker, William, Scandia, Kans. Seal-lock	448,700	Mar. 24	2341	587	54	1590
Walker, William J. (See Detrich and Walker.)						
Walker, William J., St. Louis, Mo. Car-coupling	446,239	Feb. 10	1227	300	54	755
Walker, William R., Sabula, Iowa. Land-roller	446,306	Feb. 10	1334	324	54	776
Wall, John, Connersville, Ind. Clinical thermometer	446,140	Feb. 10	1033	254	54	719
Wall, William B., M. S. Jones, Tustin, and A. D. Bishop, Orange, Cal. Fumigating trees and other plants	445,342	Jan. 27	2179	.....	54	451
Wallace, Jacob B. (See Stidham and Wallace.)						
Wallace, John H., San Francisco, Cal. Switch-stand	449,017	Mar. 24	2826	716	54	1682
Walling, Reverdy R., Frederick, Md. Shutter-bower	445,210	Jan. 27	1983	512	54	411
Wallwork, John, assignor to H. Disston & Sons, Incorporated, Philadelphia, Pa. Machine for grinding the edges of hand-saw blanks or other metallic strips	448,099	Mar. 10	1345	344	54	1382
Walmsley, Harry B., Beverly, assignor of one-half to C. H. Warren, Lynn, and C. H. King, Swampscott, Mass. Set-screw protector	447,742	Mar. 3	748	187	54	1260
Walser, Charles J., Milwaukee, Wis. Horse-detacher for vehicles	448,897	Mar. 24	2653	666	54	1648
Walsh, Francis A., Milwaukee, Wis. Die folding and seaming machine	445,738	Feb. 3	365	94	54	584
Walsh, Francis A., Milwaukee, Wis. Die-seaming machines	445,739	Feb. 3	367	95	54	585
Walsh, Francis A., Milwaukee, Wis. Die-seaming machine	445,740	Feb. 3	368	95	54	585
Walsh, James R., assignor of one-half to A. G. Cunningham, Troy, N. Y. Sash-cord guide	445,578	Feb. 3	90	21	54	529
Walsh, Thomas H., Montreal, Canada. Car-coupling	444,913	Jan. 20	1515	{389 390	54	312

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Walter, George N., Evansville, W. Va. Envelope	446,723	Feb. 17	1980	493	54	916
Walter, George P., assignor of one-half to W. H. Flesher, Brownwood, Tex. Washing-machine	446,958	Feb. 24	2370	{589 590	54	1000
Walters, John F. (See Allen, Sachtleben, and Walters.)						
Walther, Charles F., assignor to S. S. Jewett & Co., Buffalo, N. Y. Range	444,281	Jan. 6	475	121	54	94
Walther, Charles F., assignor to S. S. Jewett & Co., Buffalo, N. Y. Stove-damper-operating device	446,709	Feb. 17	1943	484	54	909
Walton, George W., Sparta, Tex. Wood-working machine	448,388	Mar. 17	1843	463	54	1487
Walton Plow Company. (See Moore, Josiah H., assignor.)						
Walton, Thomas H. (See Jamison, Thomas W., assignor.)						
Wampler, Samuel C. (See Ostrom, Thiellesen, and Wampler.)						
Ward, Barton B., New York, N. Y. Carbon for arc lights	444,471	Jan. 13	768	200	54	161
Ward, Barton B., assignor to Electric Construction and Supply Company, New York, N. Y. Electric-arc lamp	444,472	Jan. 13	769	200	54	161
Ward, Barton B., assignor to Electric Construction and Supply Company, New York, N. Y. Electric-arc lamp	444,473	Jan. 13	771	201	54	161
Ward, Barton B., assignor to Electric Construction and Supply Company, New York, N. Y. Electric-lighting system	447,482	Mar. 3	359	89	54	1186
Ward, John B., Minneapolis, Minn. Mechanical stoker	446,274	Feb. 10	1280	313	54	765
Ward, John H. R., assignor to Universal Arc Lamp Company, New York, N. Y. Electric-arc lamp	449,236	Mar. 31	3167	798	54	1755
Ward, John H. R., assignor to Universal Arc Lamp Company, New York, N. Y. Electric-arc lamp	449,237	Mar. 31	3168	{798 799	54	1756
Ward, John H. R., assignor to Universal Arc Lamp Company, New York, N. Y. Electric-arc lamp	449,238	Mar. 31	3171	800	54	1756
Ward, Josiah O., *et al.* (See Angell, Albert, assignor.)						
Wardwell, Olin N., and C. A. White, Jamaica, Vt. Horse-checking device	446,126	Feb. 10	1007	248	54	716
Ware, Charles C., Glassborough, N. J. Lock-hinge	447,986	Mar. 10	1182	299	54	1348
Ware, James A. (See Etter, William C., assignor.)						
Warfield, Solomon D., Baltimore, Md. Green-corn cutter	448,389	Mar. 17	1845	{463 464	54	1487
Waring, John, Manchester, Conn. Magnetic tachometer	446,488	Feb. 17	1621	397	54	847
Waring, John L. (See Harrison and Waring.)						
Warnant-Creon, Julien, Hoignée-Chératte, Belgium. Breech-loading gun	445,880	Feb. 3	603	{148 149	54	630
Warner, Charles M. (See Farnham, Reuben G., assignor.)						
Warner, Ernest P., Chicago, Ill. Polarized annunciator	448,169	Mar. 10	1448	370	54	1403
Warner, George W., Freeport, Ill. Spring-hinge	448,390	Mar. 17	1849	465	54	1488
Warner, John E. (See Van Vechten, Orville R., assignor.)						
Warner, Walter E., Brooklyn, N. Y. Dental-service stand	448,100	Mar. 10	1346	344	54	1382
Warnock, Lewis D., Manor Station, Pa. Measuring-vessel	445,483	Jan. 27	2377	618	54	489
Warren, Charles H., *et al.* (See Walmsley, Harry B., assignor.)						
Warren, Henry H., Massena, N. Y. Apparatus for forming spirals	446,042	Feb. 10	872	212	54	689
Warren, John K., *et al.* (See Hartley, Charles J., assignor.)						
Warren, Nathan W., *et al.* (See Connett, Matthew F., Jr., assignor.)						
Warren, Robert S., and W. A. Easley, Clinton, Ky. Stump-puller	445,460	Jan. 27	2342	609	54	480
Warren, Samuel H., Keosanqua, Iowa. Feed-rack	449,303	Mar. 31	3280	831	54	1775
Warth, Albin, Stapleton, N. Y. Cloth-cutting machine	444,282	Jan. 6	476	121	54	94
Warth, Albin, Stapleton, N. Y. Mechanical movement	444,283	Jan. 6	479	122	54	95
Warth, Albin, Stapleton, N. Y. Mechanical movement	444,284	Jan. 6	481	123	54	95
Warth, Albin, Stapleton, N. Y. Mechanical movement	444,285	Jan. 6	483	{123 124	54	96
Warth, Albin, Stapleton, N. Y. Mechanical movement	444,286	Jan. 6	485	{124 125 126	54	96
Warth, Albin, Stapleton, N. Y. Mechanical movement	444,287	Jan. 6	486	{126 127	54	97
Washburn, Isaac T., Sing Sing, N. Y. Cotton-gin rib	446,724	Feb. 17	1981	494	54	916
Washington, Luria, and W. H. Roberts, Coal Creek, Tenn. Appliance for moving railway-switches	446,904	Feb. 24	2295	571	54	986
Waterbury Clock Company. (See Bannatyne, Archibald, assignor.)						
Waterman, John H., Detroit, Mich. Boiler or stove grate	445,416	Jan. 27	2281	592	54	472
Waterous, Charles H., Jr., and J. N. Peel, Brantford, Canada. Friction-clutch pulley	447,247	Feb. 24	2832	702	54	1087
Waterous, Julius E., Brantford, Canada. Valve for steam-engines	449,504	Mar. 31	3639	916	54	1843
Waters, Henry, Aston, England. Handle for velocipedes	445,914	Feb. 3	650	159	54	640
Watkins, Charles F., Buffalo, N. Y. Bicycle	448,701	Mar. 24	2342	587	54	1590
Watkins, Edwin D., assignor of two-fifths to W. L. Vary and T. F. Ashe, Lima, N. Y. Fence-post	449,018	Mar. 24	2827	716	54	1683
Watkins, Gardner A., assignor to Heywood Brothers & Co., Gardner, Mass. Device for assembling clasps	444,996	Jan. 20	1647	422	54	338
Watriss, George C., and C. J. Kaighin, San Francisco, Cal. Cable railway	446,905	Feb. 24	2296	572	54	987
Watrous, David W., East Hampton, Conn. Sounding toy	449,146	Mar. 31	3034	767	54	1731
Watson, Edward, Grand Rapids, Mich. Composition of matter for retarding the setting of plaster	445,211	Jan. 27	1984	.....	54	412
Watson, Edward, Grand Rapids, Mich. Composition of matter for restraining the setting of plaster compounds	446,604	Feb. 17	1790	.....	54	880
Watson, James, Marinette, Wis. Domestic oven	449,432	Mar. 31	3532	890	54	1822
Watson, James B., New Brunswick, N. J. Hot-water heater	448,391	Mar. 17	1851	465	54	1488
Watson, James W., Achor, Ohio. Mowing-machine-knife grinder	446,803	Feb. 17	2102	523	54	942
Watson, Lewis H., Newark, N. J. Ironing-machine	447,987	Mar. 10	1183	{299 300	54	1348
Watson, Lewis H., Chicago, Ill. Ironing-machine	448,898	Mar. 24	2655	666	54	1648
Watson, Simeon P., Brooklyn, N. Y. Barber's indicator	448,392	Mar. 17	1852	466	54	1488
Watson & Stillman. (See Forrest, Hamlet E., assignor.)						
Watson, W. A., *et al.* (See Dunn, John P., assignor.)						
Watson, Wheeler, Strong's Station, Miss. Plow	445,027	Jan. 20	1685	433	54	345
Watson, Wheeler, Strong's Station, Miss. Machine for picking peanuts	445,664	Feb. 3	238	64, 65	54	558
Watsontown Boot and Shoe Company. (See Waldschmidt, Edward, assignor.)						
Watt, Sern P. (See Robinson and Watt.)						
Watters, James D., Belair, Md. Calendar	447,171	Feb. 24	2749	680	54	1070
Wattles, Joseph W., Canton, Mass. Step-bearing for spinning-spindles	449,341	Mar. 31	3366	848	54	1789
Watts, Thomas, Pershore, county of Worcester, England. Thill-coupling	448,284	Mar. 17	1671	423	54	1454
Wayland, James, Newark, N. J. Pneumatic semaphore-signal	447,988	Mar. 10	1185	301	54	1349

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Wayland, James, Newark, N. J. Railway time-signal	447,989	Mar. 10	1188	301, 302	54	1350
Weaver, Abram A., and J. W. Brooks, Warrensburg, Mo. Station call and signal	449,505	Mar. 31	3640	916	54	1843
Weaver, David B., Hopewell, Pa. Elevated railway	447,172	Feb. 24	2751	680, 681	54	1071
Weaver, John R., assignor of one-half to J. Morris, Waynesborough, Tenn. Car-coupling	446,556	Feb. 17	1729	425	54	868
Webb, Andrew B., *et al.* (See Barker, Jeremiah J., assignor.)						
Webb, Frank S. (See Wyman and Webb.)						
Webb, Frederic E., Boston, Mass. Reversible sign for horse-cars	449,506	Mar. 31	3642	916	54	1843
Webb, George F. (See Crisp and Webb.)						
Webb, John N., Birmingham, Ala. Thermo-electric battery	449,186	Mar. 31	3099	781	54	1742
Webb, John W., Union Springs, Ala. Gin-saw cleaner	447,218	Feb. 24	2834	703	54	1088
Webb, Martin V., *et al.* (See Barker, Jeremiah J., assignor.)						
Webb, Samuel D., *et al.* (See Barker, Jeremiah J., assignor.)						
Webb, Samuel J., Minden, La. Force pump	444,128	Jan. 6	250	60	54	51
Webber, Josiah A., Brooklyn, N. Y. Corn-husking and fodder-cutting machine	446,747	Feb. 17	2015	502, 503, 504	54	923
Webber, Wesley, Pittsburg, Pa. Well-drilling apparatus	446,588	Feb. 17	1770	437	54	876
Weber, George J., Kansas City, Mo. Gas engine and ignitor therefor	444,031	Jan. 6	78	20 21	54	19
Weber, George J., Kansas City, Mo. Gas-engine	449,507	Mar. 31	3643	917	54	1843
Weber, Henri C. (See Jones and Weber.)						
Weber, Henry, New Bedford, Mass. Nail brush and polisher	445,683	Feb. 3	281	75	54	568
Weber, Theodore A. (See Schultz and Weber.)						
Webster, Harold A., Haverhill, assignor, by mesne assignments, to G. H. P. Flagg, Boston, Mass. Machine for cleaning shoe-uppers	445,359	Jan. 27	2201	571	54	456
Webster, Harold A., Haverhill, assignor to G. H. P. Flagg, Boston, Mass. Cleaning and polishing brush	449,239	Mar. 31	3173	801	54	1757
Webster, Jerome J., Somerville, Mass., assignor to Boston Cash Indicator and Recorder Company, Bangor, Me. Cash register and indicator	447,854	Mar. 10	954	239, 240	54	1306
Webster, Jerome J., and W. W. Drew, Somerville, Mass., assignors to Boston Cash Indicator and Recorder Company, Bangor, Me. Cash register and indicator	447,264	Feb. 24	2909	723, 724	54	1103
Weed, Alfred, Tarrytown, N. Y. Manufacturing bullets	444,474	Jan. 13	773	201	54	162
Weed, Alfred, and J. Rockwell, Tarrytown, N. Y. Device for raising and lowering propellers	444,475	Jan. 13	774	201	54	162
Weed, Jacob K. (See Josson and Weed.)						
Weeks, Charles A. (See Foehl and Weeks.)						
Weeks, Charles A., and C. Foehl, Philadelphia, Pa. Lock for revolvers	447,219	Feb. 24	2834	703	54	1088
Weeks, Clayton, and J. E. Bush, Hobart, N. Y. Car-coupling	447,035	Feb. 24	2505	622	54	1025
Weeks, Thomas C., Baltimore, Md. Medicine-dropper	446,574	Feb. 17	1752	431	54	872
Wegmann, Edward, Jr., New York, N. Y., and C. J. Bates, Englewood, N. J. Railway	446,106	Feb. 10	971	238	54	708
Weichhart, John, San Francisco, Cal. Machine for forming sheet-metal lathing	446,939	Feb. 24	2345	583	54	995
Weidman, Charles O., Montville, Ohio. Windmill	446,307	Feb. 10	1335	325	54	776
Weigand, Alfred, Sheboygan, Wis. Umbrella	445,707	Feb. 3	317	84	54	575
Weimer, Asa A. (See Weimer, Peter L. and A. A.)						
Weimer, Peter L. and A. A., Lebanon, Pa. Counterbalanced jib-crane	446,043	Feb. 10	873	212, 213	54	690
Weimer, Peter L. and A. A., Lebanon, Pa. Hoisting-drum for elevators	446,044	Feb. 10	875	213	54	690
Weinedel, Charles. (See Stitzel and Weinedel.)						
Weinland, Charles W. (See Reader and Weinland.)						
Weisbaum, Edward, *et al.* (See Allen, Benjamin B., assignor.)						
Weiss, Carl W. (See Kruse and Weiss.)						
Weiss, Carl W., assignor of one-half to C. Kruse, New York, N. Y. Cash indicating, recording, and registering machine	447,036	Feb. 24	2505	623	54	1025
Weiss, Julius, Kiel, Germany. Fastening for tool-handles	447,707	Mar. 3	687	170	54	1248
Weiss, Louis T., Brooklyn, assignor to Martha & Burns, New York, N. Y. Cash indicator and register	449,393	Mar. 31	3459	870, 871	54	1807
Welch, Samuel, assignor of one-half to T. Ballentyne, Chicago, Ill. Combination household utensil	449,147	Mar. 31	3034	767	54	1731
Welch, William E., Bushton, Ill. Dumping-wagon	446,308	Feb. 10	1336	325	54	776
Weldon, William E., San Francisco, Cal. Vaginal atomizer	445,579	Feb. 3	91	22	54	529
Welivar, George F., Milton, Pa. Driving-gear for planers	444,309	Jan. 6	514	134	54	103
Wellbrock, August H. (See Campbell, Michael, assignor.)						
Wellcome, Frank O., Portland, Me. Tuning-slide for musical instruments	448,307	Mar. 17	1709	433	54	1462
Wellens, Joseph, *et al.* (See Shiring, Joseph L., assignor.)						
Wellens, Robert, *et al.* (See Shiring, Joseph L., assignor.)						
Weller, Franklin A., assignor to W. S. Hadaway, Jr., trustee, Boston, Mass. Electric-motor switch	445,741	Feb. 3	369	95	54	585
Weller, Franklin A., assignor to W. S. Hadaway, Jr., trustee, Boston, Mass. Incandescent-electric-lamp socket	449,604	Mar. 31	3792	952	54	1870
Weller, Giles W., Baker City, Oreg. Car-coupling	446,240	Feb. 10	1228	300	54	755
Welles, Fred A., Milwaukee, Wis. Surface-gage	444,865	Jan. 20	1428	372	54	295
Wellman Solo Cutting Machine Company. (See Stickney, Allison M., assignor.)						
Wells, Charles R., and B. K. Lewis, Lynn, Mass. Shutter-worker	449,508	Mar. 31	3646	917	54	1844
Wells, Harlan P., and O. Morrill, Amesbury, Mass. Carriage-seat	447,591	Mar. 3	524	128	54	1216
Wells, J. W. (See Brown, Junius W., assignor.)						
Wells, John L., New York, N. Y. Radiator	447,990	Mar. 10	1191	302	54	1351
Wells, Lewis S. (See Brott, George F., assignor.)						
Wells, William, and J. Vowles; said Wells assignor to F. Orris and M. Vowles, Milford, Mich. Scoop	448,393	Mar. 17	1853	466	54	1489
Welsh, Alexander A., Allegheny, Pa. Carpenter's gage	445,646	Feb. 3	206	55	54	553
Welty, Jacob, and A. A. Leach, assignors of one-third to H. Butcher, Hayesville, Ohio. Clover-seed recleaner	447,801	Mar. 10	872	217	54	1290
Wendel, Jacob H. R., Harrisburg, Pa. Carrier and cleaner	447,173	Feb. 24	2753	681	54	1071
Wendler, Alexander, and J. Spiro, Watertown, N. Y. Apparatus for making sulphite lye	446,652	Feb. 17	1869	464	54	895
Wenker, Raymond J., Watertown, Wis. Dental plate	444,622	Jan. 13	1001	261	54	207
Wenstrom Consolidated Dynamo and Motor Company of Baltimore City. (See Parshall, Horace F., assignor.)						
Wentworth, Barton M. (See Hobbs and Wentworth.)						
Wentworth, Charles A., Hyde Park, Mass. Sole-machine	447,389	Mar. 3	186	40	54	1153
Wentz, Charles H., South Charleston, Ohio. Sweat-pad fastener	445,590	Feb. 3	114	29	54	533
Werel, John. (See Pelzer and Werel.)						
Werner, Frederic C., Watertown, Wis. Twine-reel	444,866	Jan. 20	1430	372	54	295

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Werner, Frederick W. (See Titus and Werner.)						
Werner, Louis G., assignor of three-fifths to M. C. Fullenwider and J. W. Chase, Des Moines, Iowa. Clipping-shears	448,170	Mar. 10	1449	370	54	1403
Wescott, Dayn E., *et al.* (See Crabtree, Leonard T., assignor.)						
Weser, Calvin L., New York, N. Y. Pedal-action for piano-fortes	448,308	Mar. 17	1710	433, 434	54	1402
Wessel, Ferdinand A., Brooklyn, N. Y. Electro-magnet	449,358	Mar. 31	3394	854	54	1794
Wessel, Julius. (See Russ, Alfred, assignor.)						
Wesson, Joseph H. (See Cranston and Wesson.)						
West, Charles F., Alvordton, assignor of one-half to L. E. Connell, Pioneer, Ohio. Pipe-wrench	448,619	Mar. 17	2203	551	54	1556
West, Elbridge G., assignor of one-half to A. C. Robison, Canandaigua, N. Y. Conductor cut-off	445,516	Jan. 27	2426	633	54	498
West, Elbridge G., assignor of one-half to A. C. Robison, Canandaigua, N. Y. Stove-pipe thimble	449,060	Mar. 24	2894	734	54	1696
West, Eugene B., *et al.*, executors. (See West, Larkin N.)						
West, James, assignor of one-half to S. Cupples, St. Louis, Mo. Apparatus for delivering paper articles	448,285	Mar. 17	1672	424	54	1455
West, James R., Evansville, Wis. Card holder or slide	447,708	Mar. 3	687	171	54	1248
West, Jay H., Chicago, Ill. Knife and pencil sharpener	445,212	Jan. 27	1985	512	54	412
West, John, *et al.* (See Allen, Albert F., assignor.)						
West, John P., Osgood, Mo. Weighing-scale	446,309	Feb. 10	1337	325	54	777
West, Jonathan B., Rochester, N. Y. Gage for tire-setters	444,165	Jan. 6	307	74	54	62
West, Jonathan B., Rochester, N. Y. Tire-setting machine	444,166	Jan. 6	309	74	54	63
West, Jonathan B., Rochester, N. Y. Machine for setting tires	444,175	Jan. 6	324	79	54	66
West, Larkin N., deceased; E. B. West, Leesville, and W. D. Finney, Wrightsborough, Tex., executors. Window-curtain holder	448,565	Mar. 17	2109	528	54	1538
West, William, assignor of one-half to J. E. Clemons, Denver, Colo. Treating zinc ores	444,997	Jan. 20	1649	422	54	338
West, William, assignor of one-half to J. E. Clemons, Denver, Colo. Hearth-furnace for treating zinc ores	445,124	Jan. 20	1837	476	54	374
Westaway, Walter C., assignor of one-half to H. C. Goddard and G. I. Leonard, Decorah, Iowa. Eyeglasses	449,605	Mar. 31	3793	952	54	1871
Western Electric Company. (See Patterson, William R., assignor.)						
Westermann, William, assignor to Louisville Chair Company, Louisville, Ky. Seat-spring for cushioned seats	447,142	Feb. 24	2704	670	54	1062
Westinghouse Air Brake Company. (See Bayley, Richard W., assignor.) (Reissue.)						
Westinghouse Air Brake Company. (See Hogan, Thomas J., assignor.)						
Westinghouse Air Brake Company. (See Moore, Frank, assignor.)						
Westinghouse Electric and Manufacturing Company. (See Hopkinson, John, assignor.)						
Westinghouse Electric and Manufacturing Company. (See Shallenberger, Oliver B., assignor.)						
Westinghouse, George, Jr., Pittsburg, Pa. Air-brake	448,827	Mar. 24	2539	637	54	1627
Westinghouse, George, Jr., and J. G. Schrender, Pittsburg, Pa. Switch and signal apparatus	446,159	Feb. 10	1065	262, 263, 264	54	725
Westman, George L., and J. Delarue, Richmond, Va. Cigar-bunching machine	446,989	Feb. 24	2419	601, 602	54	1010
Weston, David M., deceased; A. Russ and M. J. Weston, Boston, Mass., executors. Creaming-machine	446,210	Feb. 10	1156	283, 284	54	740
Weston, Edward, Newark, N. J. Potential indicator	444,803	Jan. 13	1286	334	54	259
Weston, Edward, Newark, N. J. Electrical measuring-instrument	444,804	Jan. 13	1289	334, 335	54	260
Weston, Edward, Newark, N. J. Electric measuring-instrument	444,805	Jan. 13	1291	335	54	261
Weston, Edward, Newark, N. J. Rheostat	446,490	Feb. 17	1624	398	54	848
Weston, Edward, Newark, N. J. Electrical measuring-instrument	446,491	Feb. 17	1626	398	54	848
Weston, Edward, Newark, N. J. Electrical measuring-instrument	446,492	Feb. 17	1627	398	54	848
Weston, Edward, Newark, N. J. Electrical measuring-instrument	446,493	Feb. 17	1629	399, 400	54	849
Weston, Edward, Newark, N. J. Electrical measuring-instrument	446,494	Feb. 17	1632	400	54	850
Weston, Edward, assignor to Weston Electrical Instrument Company, Newark, N. J. Electrical measuring-instrument	446,489	Feb. 17	1622	397	54	847
Weston Electrical Instrument Company. (See Weston, Edward, assignor.)						
Weston, George H., Boston, Mass. Rotary engine	449,148	Mar. 31	3036	768	54	1731
Weston, Mary J., *et al.*, executors. (See Weston, David M.)						
Westwood, Amos, and P. L. Mallon, Oakland, Cal.; said Westwood assignor to said Mallon. Decorating glass and porcelain	447,991	Mar. 10	1192	.....	54	1351
Wetz, Carrie A., Dayton, Ohio. Music-book holder	445,591	Feb. 3	115	29	54	533
Wexler, George. (See Clark and Wexler.)						
Weyandt, Fred, Jr., Dunmore, Pa. Road-cart	446,310	Feb. 10	1338	326	54	777
Whaley, Frank T. (See Lewis and Whaley.)						
Wharton and Company, William, Jr. (See Angerer, Victor, assignor.)						
Wheatly, George W., Harrodsburg, Ky. Washing-machine	446,906	Feb. 24	2298	572	54	987
Wheelan, Fairfax H., Santa Barbara, Cal. Separator	448,394	Mar. 17	1854	466	54	1489
Wheeler, Cephas E., Hopkinton, Mass., assignor to Campbell Machine Company, Pawtucket, R. I. Sewing-machine	446,398	Feb. 10	1467	361	54	804
Wheeler, Clarence L., assignor of one-half to J. W. Clark, Marion, Ind. Car-seal	446,107	Feb. 10	972	239	54	708
Wheeler, Clarence L., assignor of one-half to J. W. Clark, Marion, Ind. Car-seal	446,653	Feb. 17	1870	464	54	895
Wheeler, E. G. (See Clawson, Linus G., assignor.)						
Wheeler, Frank C., *et al.* (See Van Stone, Edwin D., assignor.)						
Wheeler, Frank E., *et al.* (See Van Stone, Edwin D., assignor.)						
Wheeler, George K., Chicago, Ill. Insulator	448,395	Mar. 17	1858	466	54	1489
Wheeler, Nathan A., Alpowa, Wash. Calendar	445,484	Jan. 27	2379	619	54	489
Wheeler, Orrin A., assignor to American Cigar Vender Company, Chicago, Ill. Vending machine	447,037	Feb. 24	2510	623, 624	54	1026
Wheeler, Paris H., Washington, D. C. Puzzle	447,418	Mar. 3	238	61	54	1162
Wheeler, Roscoe B. (See Wright, William R., assignor.)						
Wheeler, Russell, *et al.* (See Van Stone, Edwin D., assignor.)						
Wheeler, Schuyler S., and C. S. Bradley, New York, N. Y., assignors to said Wheeler, trustee. Electric transportation system	448,598	Mar. 17	2167	541, 542	54	1548
Wheeler, Seth, Albany, N. Y. Toilet-paper fixture	445,436	Jan. 27	2311	600	54	477
Wheeler, Seth, Albany, N. Y. Toilet-paper fixture	447,419	Mar. 3	239	61	54	1162
Wheeler, Talton E., Garrard County, Ky. Truss	444,899	Jan. 20	1479	382	54	305
Wheeler, William H., Sciotoville, Ohio. Dredging-machine	445,268	Jan. 27	2075	535	54	429

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Wheeler & Wilson Manufacturing Company. (See Dial, Wilbur F., assignor.)						
Wheeler & Wilson Manufacturing Company. (See Hill, George S., assignor.)						
Whelan, Charles A., Aspen, Colo. Letter-box	449,149	Mar. 31	3037	768	54	1731
Whiddit, William W., Newburg, N. Y. Filter	444,623	Jan. 13	1002	261	54	207
Whipple, Chauncey F., Nevinville, Iowa. Well-boring machine	447,592	Mar. 3	525	128 / 129	54	1216
Whipple, Effinger E., St. Johns, Mich. Tooth-seat	445,104	Jan. 20	1810	467	54	369
Whitaker, David L. (See McLaurin and Whitaker.)						
Whitaker, Henry B. (See Matteson, James A., assignor.)						
Whitaker, John H., Davenport, Iowa. Horse-training harness	444,032	Jan. 6	81	21	54	19
Whitaker, John H., Davenport, Iowa. Road-cart	444,033	Jan. 6	82	21, 92	54	20
Whitcher, Charles F. (See Schoonover, James S., assignor.)						
Whitcomb, Josiah T. (See Taylor, Carlo R., assignor.)						
White, Albert, Lowell, Mass. Egg-beater	449,187	Mar. 31	3100	782	54	1743
White, Anthony C., assignor to American Bell Telephone Company, Boston, Mass. Transmitter-circuit	447,220	Feb. 24	2835	703	54	1088
White, C. T., *et al.* (See Dunn, John P., assignor.)						
White, Cassins A. (See Wardwell and White.)						
White, Charles W., New York, N. Y. Fire-proof partition	449,019	Mar. 24	2829	717	54	1683
White, Ernest. (See Sporton and White.)						
White, F. R., *et al.* (See Kimpton, Charles A., assignor.)						
White, Ferris M. (See Brice, Alfred L., assignor.)						
White, Frank P., Shallotte, N. C. Mop-head	447 650	Mar. 3	611	151	54	1233
White, Hugh. (See Wickham, Charles L., assignor.)						
White, James, assignor to National Safe and Lock Company, Cleveland, Ohio. Safe	447,709	Mar. 3	688	171	54	1248
White, James H., assignor to Manhattan Brass Company, New York, N. Y. Argand lamp	444,867	Jan. 20	1432	372	54	296
White, James H., assignor to Manhattan Brass Company, New York, N. Y. Lamp-box for cars	448,899	Mar. 24	2656	667	54	1649
White, Jarvis B., Millbury, Mass. Sifter or screen	449,342	Mar. 31	3367	849	54	1789
White, Jeremiah R., Midway, Miss. Cotton-scraper	445,827	Feb. 3	527	128	54	614
White, John P. (See Funk and White.)						
White, Otis C., Worcester, Mass. Electric-arc lamp	445,724	Feb. 3	341	90	54	580
White, Rollin, Lowell, assignor to W. F. Draper, Hopedale, Mass. Support for spinning-spindles	446,999	Feb. 24	2433	605	54	1012
White, Royal P., Littleton, N. H. Water-heating device	449,509	Mar. 31	3647	917	54	1844
White, Samuel K., Chicago, Ill. Clutch mechanism	447,019	Feb. 24	2472	615 / 616	54	1019
White, Samuel K., Chicago, Ill. Paging-machine	449,304	Mar. 31	3281	831 / 832	54	1776
White, Stewart, Greensburg, Pa. Double-acting pump	445,915	Feb. 3	652	159	54	640
White, Thomas H. (See Clyne, James B., assignor.)						
White, William, London, England. Electric switch	449,188	Mar. 31	3101	782	54	1743
White, William M. (See Haden, Thomas J., assignor.)						
White, William R., Bloomington, Ill. Gate	446,605	Feb. 17	1790	443	54	880
Whitehurst, George R. (See Godden and Whitehurst.)						
Whiteside, Sidney B., San Francisco, Cal. Mailing-machine	446,495	Feb. 17	1634	400	54	850
Whitin Machine Works. (See Prest, John E., assignor.)						
Whiting, Horace H. (See Whiting, Lewis S., assignor.)						
Whiting, Lewis S., Ashland, assignor of one-half to H. H. Whiting, Canton, Ohio. Clover-huller	447,743	Mar. 3	749	187	54	1260
Whiting & Son, John L. (See Wolcott, Arthur H., assignor.)						
Whiting, William F., assignor to H. and S. C. Howard, Providence, R. I. Separable button	447,855	Mar. 10	958	240	54	1306
Whitlock, Edward, Richmond, Va. Indicator for elevators	446,907	Feb. 24	2299	572	54	988
Whitman, Henry L., St. Louis, Mo. Baling-press	446,311	Feb. 10	1339	326 / 327	54	777
Whitney, Benjamin P., assignor of one-half to W. F. Wickenden, Los Alamos, Cal. Cultivator	447,992	Mar. 10	1193	302	54	1351
Whitney, Charles, Chicago, Ill. Photographic camera	446,368	Feb. 10	1417	349	54	793
Whitney, Charles, Chicago, Ill. Photographic camera	446,369	Feb. 10	1419	349	54	794
Whitney, Charles, Chicago, Ill. Photographic-plate holder	446,370	Feb. 10	1421	349	54	794
Whitney, Charles, Chicago, Ill. Photographic-plate holder	446,371	Feb. 10	1423	349	54	795
Whitney, Charles, Chicago, Ill. Photographic camera	446,372	Feb. 10	1424	350	54	795
Whitney, Charles, Chicago, Ill. Supply-case for roll-holders in photographic cameras	446,373	Feb. 10	1425	350	54	795
Whitney, Charles, Chicago, Ill. Photographic camera	446,374	Feb. 10	1427	350 / 351	54	795
Whitney Coupling Company. (See Whitney, Daniel D., assignor.)						
Whitney, Daniel D., Cornwall, N. Y., assignor to Whitney Coupling Company, Whitinsville, Mass. Strap-loop for carriages	445,105	Jan. 20	1812	468	54	369
Whitney, Edwin H., East Providence, R. I. Combined ship's windlass and capstan	446,825	Feb. 17	2134	530	54	949
Whitney, Edwin H., assignor to American Ship Windlass Company, East Providence, R. I. Ship-windlass	448,828	Mar. 24	2541	638	54	1627
Whitney, Edwin R., assignor to Electrical Supply Manufacturing Company, Manchester, N. H. Electric-wire support and cut-out	448,468	Mar. 17	1965	494	54	1510
Whitney, Frank, Chicago, Ill. Photographic camera	446,045	Feb. 10	876	213 / 214	54	690
Whitney, Ruel W., San Francisco, Cal. Type-writing machine	445,213	Jan. 27	1986	512 / 513	54	412
Whitney, Willie D., Clarendon, N. Y. Fence	447,420	Mar. 3	240	61	54	1162
Whittaker, Edward W., New York, N. Y. Tennis-sash	449,020	Mar. 24	2830	717	54	1683
Whittemore, James, assignor to T. S. Sprague & Son, Detroit, Mich. Store-service apparatus	444,680	Jan. 13	1094	283 / 284	54	224
Whittemore, John Q. A. (See Fahnley and Taylor, assignors.)						
Whittemore, Louis D., Jr., Boston, Mass. Tire for bicycles	447,993	Mar. 10	1194	302	54	1351
Whittier, Alcibiades J., Chelsea, assignor to himself, J. M. Gove, and R. C. Fanning, East Boston, Mass. Street-sweeper	446,046	Feb. 10	877	214	54	691
Whittier, Edwin R., Somerville, Mass. Fire-escape	448,101	Mar. 10	1347	344	54	1382
Whittingham, Charles, *et al.* (See Whittingham, David L., assignor.)						
Whittingham, David L., assignor to C. Whittingham and F. A. Johnson, Detroit, Mich. Wick-tube for lamps or oil-stoves	445,789	Feb. 3	454	113	54	600
Whitworth & Company, Joseph. (See Canet, Jean B. G. A., assignor.)						
Wickenden, W. F. (See Whitney, Benjamin P., assignor.)						
Wickers, George O., Lawrence, and J. H. Stone, assignors to Davis & Furber Machine Company, North Andover, Mass. Yarn-spooler	444,562	Jan. 13	921	240	54	191

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Wickes, Edward N., East Saginaw, Mich. Winding-drum	448,868	Mar. 24	2613	656	54	1641
Wickey, Andrew, Chicago, Ill. Baling-press	449,189	Mar. 31	3102	782	54	1743
Wickham, Charles L., assignor of one-half to H. White, Utica, N. Y. Vending-machine	446,047	Feb. 10	878	214 / 215	54	691
Wicks, Albert E., Brooklyn, N. Y. Inserting gores in shoes	445,580	Feb. 3	93	92	54	529
Widdows, Henry, Newman, Ill. Tire-tightener	447,390	Mar. 3	189	50	54	1154
Widmann, Louis W. (See Seemiller, Otto, assignor.)						
Wiederer, Peter, Stapleton, N. Y. Glass-beveling machine	446,196	Feb. 10	1131	277	54	735
Wiegand, S. Lloyd. (See Mason and Wiegand.)						
Wiggers, Albert. West Hoboken, N. J. Tray	447,221	Feb. 24	2838	703	54	1088
Wiggin, Joseph N., Orange, N. J., and J. E. Rathbun, Brooklyn, N. Y., assignors to said Wiggin. Machinery for handling printed shade fabrics	449,305	Mar. 31	3292	832 / 833	54	1777
Wigginton, John R., assignor of one-half to W. R. H. Alexander, Washington, D. C. Automatic railway-switch	448,171	Mar. 10	1450	370 / 371	54	1403
Wightman Electric Manufacturing Company. (See Wightman, Merle J., assignor.)						
Wightman, Merle J., Scranton, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Regulating apparatus for electric motors	444,900	Jan. 20	1481	382 / 383	54	305
Wightman, Merle J., assignor to Wightman Electric Manufacturing Company, Scranton, Pa. Trolley for electric railways	448,172	Mar. 10	1452	371	54	1403
Wightman, Merle J., assignor to Wightman Electric Manufacturing Company, Scranton, Pa. Trolley for electric railways	448,173	Mar. 10	1457	372	54	1405
Wightman, William, Pulaski, N. Y. Milk-cooler	448,869	Mar. 24	2614	657	54	1641
Wikle, Johan J., West Hoboken, N. J., assignor to J. K. Krieg, New York, N. Y. Pegging-jack	446,312	Feb. 10	1342	327	54	778
Wilcox, Frank F., assignor to Studebaker Brothers, South Bend, Ind. Water-tank	448,870	Mar. 24	2615	657	54	1641
Wilcox, Lewis T., Jackson, Mich. Oil-stove	449,343	Mar. 31	3368	849	54	1790
Wilcox Manufacturing Company. (See Richards, Marcius C., assignor.)						
Wilcox, Stephen, Brooklyn, N. Y. Compound engine	445,386	Jan. 27	2233	579	54	402
Wilder, Edward B., St. Louis, Mo. Faucet	444,323	Jan. 6	535	139	54	107
Wilder, Frank E., Salem, assignor to O. M. Angier, Boston, Mass. Type-writing machine	447,720	Mar. 3	709	177 / 178	54	1252
Wildhack, Louis A., Leadville, Colo. Crutch	444,189	Jan. 6	347	85	54	70
Wile, Sol. (See La Casse and Wile.)	446,313	Feb. 10	1343	327	54	778
Wiley, Edgar C., Bristol, Tenn. Electric signal system for railways	445,106	Jan. 20	1813	468	54	369
Wiley, Edgar C., assignor of two-thirds to J. A. Dickey, Bristol, Tenn., and N. B. Ainsworth, McAlester, Ind. Ter. Electric signal for railways	445,592	Feb. 3	116	.....	54	534
Wilfong, Joseph, assignor of one-half to S. B. Diller, Lancaster, Pa. Liniment	448,102	Mar. 10	1348	345	54	1383
Wilhite, Edmund S., West Salem, Ill. Band-cutter and feeder	446,725	Feb. 17	1982	494 / 495	54	916
Wilke, August, Brunswick, Germany. Car-starter	448,396	Mar. 17	1856	467	54	1489
Wilkening, Gottlieb, Dayton, Ohio. Disk harrow	444,965	Jan. 20	1603	409 / 410	54	328
Wilkin, Theodore S., Milwaukee, Wis. Gang-saw mill	446,107	Feb. 10	1133	278	54	736
Wilkin, Theodore S., Milwaukee, Wis. Gang-saw mill	447,092	Feb. 24	2593	643	54	1042
Wilkin, Theodore S., Milwaukee, Wis. Gang-saw mill						
Wilkinson, Fred. (See Kay, Wilkinson, and Fisher.)	446,496	Feb. 17	1636	401	54	850
Wilks, Frank H., Newport, R. I. Breech-loading ordnance	447,856	Mar. 10	959	240 / 241	54	1306
Will, William R., Baltimore, Md. Discount and interest calendar						
Willard, Herbert J., *et al.* (See Pratt, Ransom D., assignor.)						
Willett, Samuel J., *et al.* (See Newman, Nelson, assignor.)	445,107	Jan. 20	1815	468	54	370
Willey, Alson F., Bluff City, Tenn. Lumber-boom	445,625	Feb. 3	168	44	54	545
Willford, Henry. (See Kindermann, Oskar, assignor.)						
Williams, Charles H., Cleveland, Ohio. Turn-buckle	448,174	Mar. 10	1460	372	54	1405
Williams Company, John R. (See Williams, John R., assignor.)						
Williams, Farmer R., and G. H. Cram, Beloit, Wis. Twine	446,940	Feb. 24	2347	583	54	995
Williams, Francis M., assignor of one-half to R. R. and W. H. Bulger, Brownsville, Pa. Safe-bolt-retracting device	446,941	Feb. 24	2348	583	54	996
Williams, Francis M., assignor of one-half to R. R. and W. H. Bulger, Brownsville, Pa. Armor for safes	449,456	Mar. 31	3570	899 / 900	54	1829
Williams, Frank, Cisco, Ill. Gate	448,490	Mar. 17	2001	501	54	1517
Williams, Frederick W., Minneapolis, Minn. Device for setting engine-valves	449,510	Mar. 31	3648	.....	54	1845
Williams, George, Winnipeg, Canada. Manufacturing cement	444,572	Jan. 13	938	243	54	194
Williams, George A., assignor of one-half to F. Jones, San Francisco, Cal. Coffee-pot	446,275	Feb. 10	1282	314	54	765
Williams, George B., Portland, Oreg. Air signaling apparatus	448,309	Mar. 17	1713	434	54	1463
Williams, Harry A., Penacook, N. H. Picker-stick check for looms	446,497	Feb. 17	1637	401	54	851
Williams, Henry A., Taunton, Mass. Rolling wire	446,498	Feb. 17	1640	401	54	851
Williams, Henry A., Taunton, Mass. Roll for rolling wire						
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Draftsman's curve	447,593	Mar. 3	527	129	54	1216
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Recording mechanism for water-meters	447,594	Mar. 3	528	130	54	1216
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Water-meter	447,595	Mar. 3	529	130	54	1217
Williams, Henry F., San Francisco, Cal. Compound for paving, roofing, and building purposes	446,654	Feb. 17	1872	.....	54	896
Williams, Henry J., assignor to H. J. Davidson, New York, N. Y. Button-hole sewing-machine	448,397	Mar. 17	1857	467	54	1490
Williams, Irvin, Bonham, Tex. Plow	447,802	Mar. 10	873	217	54	1290
Williams, J. D. (See Reed, Francis O., assignor.)						
Williams, James, assignor to Patent Waterproof Paper and Canvas Company, Limited, Willesden Junction, England. Producing cellulose films	444,515	Jan. 13	845	219 / 220	54	176
Williams, John R., Newark, N. J., assignor to J. R. Williams Company, New York, N. Y. Tobacco stripping and booking machine	449,394	Mar. 31	3461	871 / 872	54	1808
Williams, Kit, *et al.* (See Carpenter, James H., assignor.)						
Williams, Percy G., Brooklyn, N. Y. Galvanic apparatus for the human body	447,857	Mar. 10	961	241	54	1307
Williams, Robert. (See Bowker and Williams.)						
Williams, Stephen P., Calloway, Tex. Step	448,566	Mar. 17	2110	528	54	1538
Williams, Thomas W. (See Edwards, Thomas M., assignor.)						
Williams, Virgil L., Clarkston, Ga. Excelsior-machine	449,097	Mar. 24	2949	747	54	1706
Willimantic Linen Company. (See Palmer, Maro V., assignor.)						
Willis, Charles, assignor to J. H. Hopkins & Sons, Limited, Birmingham, England. Machine for cutting sheet metal	446,241	Feb. 10	1230	300 / 301	54	755
Willis, Henry M., East Williston, N. Y. Road-cart	447,391	Mar. 3	190	50	54	1154

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Willson, George V. (See Smith, Ephraim, assignor.)						
Willson, Walter V. H., Troy, assignor of one-half to H. F. Ashton, West Troy, N. Y. Sand-box for cars	444,034	Jan. 6	84	22	54	20
Wilmot, Albert E. (See Woolcott and Wilmot.)						
Wilmot, Frank A. (See Wilmot, Samuel R. and F. A.)						
Wilmot, Samuel R. and F. A., Bridgeport, Conn. Seamless sheet-metal knob or handle	447,265	Feb. 24	2914	724	54	1104
Wilmot, Samuel R. and F. A., Brigeport, Conn. Attaching knobs or handles	447,266	Feb. 24	2916	724, 725	54	1104
Wilson, Arthur G. (See Troxler, Barney C., assignor.)						
Wilson, Charles H., Chicago, Ill. Laying electric cables	446,214	Feb. 10	1164	285	54	742
Wilson, Cassius M., Fairchild, Wis. Ledger leaf or sheet	445,417	Jan. 27	2282	592	54	472
Wilson, Charles E., Chicago, Ill. Electric switch	444,374	Jan. 6	611	157	54	121
Wilson, David, *et al.* (See Magney, Joseph P., assignor.)						
Wilson, David Y., Gum Tree, Pa. Railway-tie	445,325	Jan. 27	2149	556, 557	54	445
Wilson, David Y., Gum Tree, Pa. Railway-tie and fastener	445,326	Jan. 27	2151	557	54	445
Wilson, Ed. G. (See Wright, Thomas F., assignor.)						
Wilson, Edgar W., assignor of two-thirds to W. Z. Bills, Denver, Colo. Combination-lock	448,175	Mar. 10	1461	372	54	1405
Wilson, Frank S., New York, N. Y. Station-indicator	446,120	Feb. 10	992	244, 245	54	712
Wilson, Hamberry, Zanesville, Ohio, assignor to Wilson Manufactnring Company. Fire-escape	447,501	Mar. 3	392	95	54	1191
Wilson, Hardin, Buchanan, Tenn. Combined wagon-bed lifter and wire-stretcher	445,437	Jan. 27	2312	600	54	478
Wilson, Henry F., assignor to Crane Company, Chicago, Ill. Locking stop-cock	448,702	Mar. 24	2343	588	54	1590
Wilson, Horace M., Cambridge, assignor of one-half to W. B. H. Dowse, Newton, Mass. Coin-operated perfuming apparatus	446,639	Feb. 17	1848	458	54	891
Wilson, James, Merritton, Canada. Wire-rope machine	447,392	Mar. 3	192	50	54	1154
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portland, Me. Signal-box	444,144	Jan. 6	273	65, 66	54	56
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portland, Me. Signal-box	448,398	Mar. 17	1859	467	54	1490
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portland, Me. Signal-box	448,399	Mar. 17	1860	468	54	1490
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portland, Me. Signal-box	448,400	Mar. 17	1861	468	54	1491
Wilson, Jonathan, Kalamazoo, Mich. Celery-bleacher	446,499	Feb. 17	1642	401	54	851
Wilson, L. H. (See McDonnell, Patrick E., assignor.)						
Wilson, Lewis T., St. Louis, Mo. Rolling window-screen	446,242	Feb. 10	1232	301	54	756
Wilson Manufacturing Company. (See Baird, William C., assignor.)						
Wilson Manufacturing Company. (See Wilson, Hamberry, assignor.)						
Wilson, Matthew, Garrison, Iowa. Ditching-machine	444,118	Jan. 6	221	53, 54	54	45
Wilson, Matthew, Garrison, Iowa. Harvester cutting apparatus	448,567	Mar. 17	2111	529	54	1538
Wilson, Nelson H. (See Judy and Wilson.)						
Wilson, Nicholas, Becket, Mass. Eating hides	444,771	Jan. 13	1243	.....	54	251
Wilson, Robert J., Pittsburg, Pa. Apparatus for ventilating railway-cars	448,401	Mar. 17	1862	468	54	1491
Wilson, Robert R., assignor of one third to L. P. Fulda, New Orleans, La. Cane-cutter	447,994	Mar. 10	1195	303	54	1351
Wilson, Thorkild, *et al.* (See Elgen, Magnus P., assignor.)						
Wilson, William A., Nacogdoches, Tex. Rivet-set	446,048	Feb. 10	880	215	54	691
Wilson, William H., *et al.* (See Allen, Benjamin B., assignor.)						
Wilzin, Arthur, Middletown, Conn. Drop-hammer	447,093	Feb. 24	2593	643	54	1043
Winand, Paul A. N. (See Billberg and Winand.)						
Winchester Repeating Arms Company. (See Griffith, Charles H., assignor.)						
Windler, Henry L., assignor of one-half to A. Rasa, Waverly, Mo. Sieve attachment for thrashers	444,129	Jan. 6	252	60	54	52
Windus, Werner, Baltimore, Md. Toy fence	444,681	Jan. 13	1098	284	54	225
Winfield Manufacturing Company. (See Winfield, William C., assignor.)						
Winfield, William C., assignor to Winfield Manufacturing Company, Warren, Ohio. Lantern	447,549	Mar. 3	462	113, 114	54	1204
Wing, Herbert H., Buffalo, N. Y. Obtaining bromine and iodine	447,926	Mar. 10	1078	270	54	1329
Winship, George, and F. Garraux, assignors to Winship Machine Company, Atlanta, Ga. Saw cotton-gin	444,080	Jan. 6	158	39	54	34
Winship Machine Company. (See Winship and Garraux, assignors.)						
Winslow, Joshua B. (See Strange, John F., assignor.)						
Winsor, Clinton B., and G. W. Cummings, Jamestown, N. Y. Mail-bag catcher	447,094	Feb. 24	2596	644	54	1043
Winter, Henry W., Boston, Mass. Heel-trimming machine	447,744	Mar. 3	750	188	54	1260
Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	448,310	Mar. 17	1714	434, 435	54	1463
Winter, Hiram B., Tyrconnell Mines, W. Va. Indicator for post-offices	447,803	Mar. 10	875	218	54	1290
Winterweber, Heinrich, assignor to F. Flinsch Machine Building Co., Offenbach, near Frankfort, Germany. Machine for cutting tobacco and other substances	447,095	Feb. 24	2597	644, 645	54	1043
Winton, Henry D., Wellesley, Mass. Insulator	445,790	Feb. 3	456	113	54	601
Wire Grip Fastening Company. (See Robinson, Stillman, assignor.)						
Wire Grip Fastening Company. (See Robinson and Watt, assignors.)						
Wirt, Charles, Orange, N. J. Electric indicator	444,966	Jan. 20	1604	410	54	329
Wirt, Charles, New York, N. Y. Electrical indicator	448,792	Mar. 24	2491	623	54	1618
Wirt, Herbert C., Boston, Mass. Support for electric line-wires	448,703	Mar. 24	2345	588	54	1591
Wirt, Herbert C., assignor of one-half to J. L. Kimball, Boston, Mass. Detachable ceiling block or bracket for electric lamps	446,826	Feb. 17	2137	531	54	950
Wirth, Joseph, Washington, D. C. Propelling apparatus for vessels	448,810	Mar. 24	2515	630	54	1623
Wisdom, John, Chicago, Ill. Smoke-deflector	444,967	Jan. 20	1606	410	54	329
Wise, William B., Elba, Ala. Bridge	447,222	Feb. 24	2838	704	54	1089
Wiskocil, Augustin V., Milwaukee, Wis. Carpet-fastener	446,198	Feb. 10	1134	278	54	736
Wisner, Andrew J., Philadelphia, Pa. Air-brake	446,908	Feb. 24	2301	572	54	988
Wiswall, William P. (See Cavert and Wiswall.)						
Witherow, James P., Pittsburg, Pa. Process of and apparatus for vulcanizing wood	446,501	Feb. 17	1646	402	54	851
Witherow, James P., Pittsburg, and G. Curtis, Allegheny, Pa. Apparatus for vulcanizing wood	446,500	Feb. 17	1642	402	54	851
Withers, Albert Q., Victoria, Miss. Apparatus for strengthening dikes	445,028	Jan. 20	1686	433, 434	54	343
Witter, Ezra E., Milford Centre, Ohio. Machine for building picket fences	444,726	Jan. 13	1160	299, 300	54	236
Wittman, Noel B. (See Durfee and Wittman.)						
Wittnauer, Albert. (See Lauten, Edward A., assignor.)						
Witzell, Johan, New York, N. Y. Lamp-lighter	447,393	Mar. 3	194	50, 51	54	1155

Alphabetical list of patentees, January to March, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wogan, Michael, Chester, Pa. Boat-detaching apparatus	447,421	Mar. 3	241	61	54	1163
Wolcott, Arthur H., Winthrop, assignor to J. L. Whiting & Son, Boston, Mass. Brush and making the same	449,061	Mar. 24	2895	735	54	1696
Wolf, Charles F. (See Smith, Joshua M., assignor.)						
Wolf, Frederick W., Chicago, Ill. Traveling crane	444,968	Jan. 20	1606	411	54	329
Wolfe, Charles H. (See Dotflemyer and Wolfe.)						
Wolfe, Harvey R., assignor to Wolfe Manufacturing Company, Lonisville, Ky. Street-cleaning machine	448,900	Mar. 24	2657	667	54	1649
Wolfe, Jacob C., New York, N. Y. Backing for electrotype or stereotype shells	447,626	Mar. 3	579	143	54	1227
Wolfe, Jacob C., New York, N. Y. Backing for electrotype or stereotype shells	447,627	Mar. 3	580	143	54	1227
Wolfe Manufacturing Company. (See Wolfe, Harvey R., assignor.)						
Wolff, Charles W., Ausonia, Conn. Shedding mechanism for looms	445,791	Feb. 3	459	113, 114	54	601
Wolford, Christopher H., Corry, Pa., assignor of one-half to J. A. Anderson, Bedford, Ohio. Coal-mining machine	444,476	Jan. 13	775	202	54	162
Wolhaupter, Benjamin, Fenton, Mich. Cattle-guard for railways	447,394	Mar. 3	196	51	54	1155
Wolhaupter, David P. (See Powell, William H., assignor.)						
Wollensak, Andreas. (See Bausch, Hommel, and Wollensak.)						
Wollensak, John F., Chicago, Ill. Electric bell	445,295	Jan. 27	2105	545	54	435
Wolseley, Frederick Y., London, England. Holder for cutters and combs for sheep-shears, horse-clippers, and similar instruments	448,286	Mar. 17	1673	424	54	1455
Womack, Lewis L., Zephyr, Tex. Cotton-stalk puller	446,276	Feb. 10	1285	314	54	766
Wood, Alfred, Detroit, Mich. Fire-escape	444,404	Jan. 6	661	171, 172	54	131
Wood, Charles. (See Evinger, Noah, assignor.)						
Wood, Elbert E., Brooklyn, N. Y. Ironing-board	447,745	Mar. 3	752	188	54	1260
Wood, Eliza A., Easton, N. Y. Mop pail and wringer	446,909	Feb. 24	2303	573	54	988
Wood, Frank B., New York, N. Y., assignor to Brewer & Smith Visual Signal Company, New Haven, Conn. Multiple call-box	446,199	Feb. 10	1135	278	54	736
Wood, Franklin J., assignor of one-half to M. E. Blanchard, Newark, N. J. Coin-controlled vending-machine	447,267	Feb. 24	2919	725	54	1105
Wood, Fred W., and J. Fowler, Los Angeles, Cal. Guard for street-railway cars	445,236	Jan. 27	2021	521	54	419
Wood, Fred W., and J. Fowler, Los Angeles, Cal. Gripping-machine for cable roads	448,287	Mar. 17	1674	424	54	1455
Wood, George W., Philadelphia, Pa. Device for feeding boiler-furnaces	446,959	Feb. 24	2371	590	54	1000
Wood, Harry C., New Brighton, Pa. Machine for polishing glassware	445,708	Feb. 3	318	84	54	575
Wood, James, Thorntown, Ind. Game-board	446,942	Feb. 24	2340	584	54	996
Wood, Joseph, Red Bank, N. J. Lubricator	446,049	Feb. 10	882	215	54	692
Wood, Julian P., *et al.* (See Pratt, Ransom D., assignor.)						
Wood, Lizzie F., West Lebanon, N. H. Aerator for milk or other liquids	448,568	Mar. 17	2112	529	54	1539
Wood Machine Company, S. A. (See Thomas, John R., assignor.)						
Wood, Nimrod P. (See Frick and Wood.)						
Wood, Philander, Belvidere, Ill. Gate	448,402	Mar. 17	1863	469	54	1491
Wood, Walter, Philadelphia, Pa. Traveling crane. (Reissue)	11,142	Feb. 3	736	179, 180	54	657
Wood, William C., assignor to Lewis & Fowler Girder Rail Company, Brooklyn, N. Y. Railway-chair spike	447,268	Feb. 24	2921	726	54	1105
Wood, William E. (See Henry and Wood.)						
Woodard, Alonzo B., Hornellsville, N. Y. Fencing-strand	447,927	Mar. 10	1079	270	54	1329
Woodard, Edward C., Campello, Mass. Last for creasing boot or shoe uppers	445,360	Jan. 27	2203	571	54	456
Woodbury, Stephen W., Winchester, N. H. Cotton-feeder	445,916	Feb. 3	653	160	54	640
Woodcock, John C., New Lexington, Ohio. Grinding-mill	447,596	Mar. 3	530	130	54	1217
Woodford, Romanta D., and G. C. Raymond, Binghamton, N. Y. Shaping-machine	445,617	Feb. 3	155	41	54	541
Woodruff, Alonzo, Auburn, N. Y. Type-writing machine	445,214	Jan. 27	1989	513	54	413
Woodruff, Frederick D., Maywood, Ill. Fire-place heater	448,103	Mar. 10	1350	345, 346	54	1383
Woods, James F. (See Scates and Woods.)						
Woods, Phidiller S. (See Bowman, Archibald G., assignor.)						
Woodsum, Daniel R. and F. M., Harrison, Me., assignors of one-third to J. E. Robertson, Concord, N. H. Engine attachment	445,943	Feb. 3	698	170	54	649
Woodsum, Frank M. (See Woodsum, Daniel R. and F. M.)						
Woodward, Russel G., Waukegan, assignor to Union Special Sewing Machine Company, Chicago, Ill. Presser-foot for sewing-machines	446,575	Feb. 17	1753	431	54	873
Woodward, Willis J. (See Barckdall, Daniel, assignor.)						
Woody, Sidney F. (See Cogswell and Woody.)						
Woolcott, Charles M., and A. E. Wilmot, assignors to T. W. Robertson and C. E. Ongley, New York, N. Y. Circuit-controller and alarm	445,306	Jan. 27	2119	542	54	438
Wooley, George W., St. Paul, Minn., assignor, by mesne assignments, of one-half to J. Z. Roraback, Kansas City, Mo. Lock	446,375	Feb. 10	1429	351	54	796
Woolf, Ellis J., assignor to Woolf Valve Gear Company, Minneapolis, Minn. Valve-gear for engines	444,563	Jan. 13	923	240, 241	54	191
Woolf Valve Gear Company. (See Woolf, Ellis J., assignor.)						
Woolman, Augustus C., Bellefontaine, Ohio. Harness-loop press	446,804	Feb. 17	2104	523	54	943
Woolrey, Isaac C., Genesco, Kans. Book-case	447,628	Mar. 3	582	144	54	1227
Woolson, Egbert, Brooklyn, N. Y., assignor to A. Solmans, South Norwalk, Conn. Vehicle-wheel	446,910	Feb. 24	2304	573	54	988
Wooster, Frederick J., and R. L. Andrus, Waterbury, Conn. Rack for molds	447,804	Mar. 10	876	218	54	1291
Worden, George W., Lewiston, N. Y. Crate	444,657	Jan. 13	1051	273	54	216
Work, Bertram G., *et al.* (See Krotz, Alvaro S., assignor.)						
Worth, William O., assignor to Chicago Bicycle Company, Cedar Rapids, Iowa. Bicycle	444,868	Jan. 20	1633	372	54	296
Worth, William O., assignor to Chicago Bicycle Company, Cedar Rapids, Iowa. Bicycle-pedal	447,395	Mar. 3	197	51	54	1155
Worthington, Charles C., *et al.* (See Alberger, Louis R., assignor.)						
Worthington, Charles C., *et al.* (See Schwanhausser, William, assignor.)						
Worthington, Charles C., Irvington, N. Y. Accumulator	445,917	Feb. 3	654	160	54	640
Worthington, Charles C., Irvington, N. Y. Surface condenser	447,396	Mar. 3	198	52, 53	54	1156
Worthington, Charles C., Irvington, N. Y. Direct-acting engine	448,744	Mar. 24	2419	605	54	1604
Worthington, Charles C., Irvington, and A. J. Caldwell, Brooklyn, N. Y.; said Caldwell assignor to said Worthington. Duplex engine	444,543	Jan. 13	885	230, 231	54	184
Worthington, Thomas K., *et al.* (See Silkman, Edward J., assignor.)						
Wray, George E. (See Harvey, John W., assignor.)						
Wren, Charles D. (See Bates and Wren.)						
Wright, Alexander P., Boston, assignor to A. Lord, trustee, Plymouth, Mass. Conduit for electric wires	444,477	Jan. 13	776	202	54	162
Wright, Charles E., Waterbury, Conn. Band-saw guide	446,127	Feb. 10	1008	249	54	716

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Wright, Chester, Fairfield, Nebr. Potato-digger	445,868	Feb. 3	585	143	54	626
Wright, Edward, Southend, England. Latch	445,108	Jan. 20	1816	469, 470	54	370
Wright, Edward, Worcester, assignor to Davis & Furber Machine Company, North Andover, Mass. Pitman-connection for looms	444,738	Jan. 13	1194	309	54	242
Wright, Edward G., Kansas City, Mo. Composition of matter for cable-filling	446,502	Feb. 17	1650	.....	54	852
Wright, Frederick K., Syracuse, N. Y. Tubular lantern	449,094	Mar. 24	2946	746	54	1706
Wright, Granville W., assignor to Sargent & Company, New Haven, Conn. Plane	445,792	Feb. 3	463	114	54	602
Wright, Granville W., assignor to Sargent & Company, New Haven, Conn. Plane	445,793	Feb. 3	464	114	54	602
Wright, Herbert A., Detroit, assignor of two-thirds to W. M. Reason, T. C. Quinn, A. T. Slaght, L. H. Corcoran, and J. F. Seeley, Caro, Mich. Type-writing machine	449,021	Mar. 24	2830	717, 718	54	1683
Wright, Homer, Pittsburg, Pa. Manufacture of jug-tops	447,502	Mar. 3	393	96	54	1192
Wright, Joel F., Hartford, Conn. Artificial tooth	448,745	Mar. 24	2421	605	54	1605
Wright, John J., Bremen, Ind. Gate-hinge	445,387	Jan. 27	2236	580	54	462
Wright, John S., Greenfield, Mass. Balance-wheel	444,081	Jan. 6	159	40	54	34
Wright, Levi P., *et al.* (See Krueger, John G., assignor.)						
Wright, Lysander, Jr. (See Wright, Marcus L., assignor.)						
Wright, Marcus L., Newton, assignor of one-half to L. Wright, Jr., Newark, N. J. Heel-seat-forming and edge-setting machine	446,399	Feb. 10	1469	361	54	804
Wright, Orrin D., assignor to Oneida Community, Limited, Kenwood, N. Y. Wire chain-link	447,597	Mar. 3	532	131	54	1217
Wright, Richard C., Kokomo, Ind. Hair-clipper	448,901	Mar. 24	2658	667	54	1649
Wright, Robert S., Boston, Mass. Lounge	446,243	Feb. 10	1232	301	54	756
Wright, Thomas F., and E. G. Wilson, Chicago, Ill. Induction-preventive for telephones	447,858	Mar. 10	962	241	54	1307
Wright, William, Newburg, N. Y. Steam-engine	445,334	Jan. 27	2167	561	54	448
Wright, William, New York, N. Y., assignor to Wright's Denver and San Francisco Electric Light Company, of Colorado. Battery compound	446,544	Feb. 17	1709	.....	54	864
Wright, William A., Centreton, N. J., assignor of two-thirds to T. H. Camp, Brooklyn, and W. H. Chandler, New York, N. Y. Lamp	446,400	Feb. 10	1471	361	54	804
Wright, William B., Boston, Mass. Paper-carrying attachment for type-writing machines	448,288	Mar. 17	1677	425	54	1455
Wright, William H., Buffalo, N. Y. Rail for street-railway service and chair for the same	446,589	Feb. 17	1772	437	54	877
Wright, William H. H., San Francisco, assignor of one-half to G. W. Lewis, Oakland, Cal. Spring-seat for vehicles	447,928	Mar. 10	1080	270	54	1329
Wright, William R., La Grange, assignor of one-half to R. B. Wheeler, Detroit, Mich. Device for oiling windmills	446,401	Feb. 10	1472	362	54	805
Wright's Denver and San Francisco Electric Light Company. (See Wright, William, assignor.)						
Wrightson, Leonard B. (See Stanley and Wrightson.)						
Writing Telegraph Company. (See Etheridge, Harry, assignor.)						
Wyatt, Francis, *et al.* (See Valentin, Basil W., assignor.)						
Wyatt, George, Brooklyn, N. Y. Pliers	444,035	Jan. 6	86	22	54	20
Wyatt, Harry F., New York, N. Y. Mortising-machine	447,269	Feb. 24	2922	726	54	1105
Wyeth, Augustus G., *et al.* (See Wyeth, David G., assignor.)						
Wyeth, David G., assignor to A. G. Wyeth and W. M. McCully, Newark, Ohio. Sleigh	444,405	Jan. 6	664	173	54	131
Wyland, William H., assignor of one-half to J. Arnd, Pittsburg, Pa. Fire-escape	444,788	Jan. 13	1263	327	54	254
Wylie, David, Detroit, Mich. Draw-bar for passenger-cars	444,190	Jan. 6	347	85	54	70
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Loom	444,789	Jan. 13	1264	327	54	255
Wyman, Horace, and J. A. Clark, assignors to Crompton Loom Works, Worcester, Mass. Loom for weaving tufted pile fabrics	446,402	Feb. 10	1474	362, 363, 364, 365, 366	54	805
Wyman, Horace, Worcester, Mass., and F. S. Webb, Bridgeport, Conn., assignors to Crompton Loom Works, Worcester, Mass. Loom for weaving tufted fabrics	446,177	Feb. 10	1103	270, 271	54	731
Wyman, Horace B., Dover, N. H. Coal-mining machine	448,829	Mar. 24	2543	638	54	1628
Wynegar, Clyde B., Nineveh, Ind. Portable rail fence	447,223	Feb. 24	2839	704	54	1089
Wynkoop, Jehiel F., Corsica, Pa. Clothes-drier	448,289	Mar. 17	1677	425	54	1456
Wynkoop, Richard J., and J. M. Kemp, Paterson, N. J. Photographic-printing apparatus	445,581	Feb. 3	93	22	54	530
Wythe, William H. and W. W., East Orange, N. J. Cash register and indicator	445,582	Feb. 3	96	23, 24	54	530
Wythe, William W. (See Wythe, William H. and W. W.)						
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.) (Reissue.)						
Yanda, Raimund, Pittsburg, Pa. Calipers	447,805	Mar. 10	877	218	54	1291
Yandow, William T., Winooski, Vt. Fruit-tree protector	448,738	Mar. 24	2411	603	54	1602
Yankauer, Sidney, New York, N. Y. Scalpel	445,237	Jan. 27	2022	521	54	419
Yawman, Philip H., Rochester, assignor to Office Specialty Manufacturing Company, of New York. Punch	444,891	Jan. 20	1468	380	54	303
Yellott, George, Towson, Md. Hydraulic ram	447,550	Mar. 3	464	114	54	1205
Yeo, William B., Manchester, England. Starting-valve for compound engines	449,457	Mar. 31	3572	900	54	1829
Yergens, William. (See Ranke and Yergens.)						
Yocum, Harry C., and M. V. Kacer, St. Louis, Mo. Packing-case	445,869	Feb. 3	587	144	54	627
Yoder, Uriel, near West Liberty, Ohio. Pump attachment for windmills	447,096	Feb. 24	2598	645	54	1044
Yost, Charles A., Brock, Nebr. Automatic stock-watering trough	444,911	Jan. 20	1512	389	54	311
Yorke, Patrick, Washington, Pa. Rope-clamp	448,902	Mar. 24	2659	668	54	1649
Yorke, Patrick, Washington, Pa. Rope-socket	448,903	Mar. 24	2661	668	54	1650
Yorke, Patrick, Washington, Pa. Making clamps for wire rope	448,904	Mar. 24	2662	668	54	1650
Yorks, Robert M., St. Paul, Minn. Fire-escape	449,458	Mar. 31	3573	900	54	1829
Yost, George W. N., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	447,859	Mar. 10	964	242	54	1307
Yost, Joseph L., and C. J. Moore, Toledo, assignors, by mesne assignments, to said Yost, and H. A. Lozier, Cleveland, Ohio. Saddle for bicycles	448,469	Mar. 17	1966	494	54	1511
Yost, Peter, Pittston, Pa. Uterine supporter	445,665	Feb. 3	239	65	54	558
Yost, Peter, Pittston, Pa. Truss	445,666	Feb. 3	240	65	54	559
Yost Writing Machine Company. (See Barron, Walter J., assignor.)						
Yost Writing Machine Company. (See Curtis, Henry E., assignor.)						
Yost Writing Machine Company. (See Merritt, Charles E., assignor.)						
Yost Writing Machine Company. (See Merritt, Mortimer G., assignor.)						
Yost Writing Machine Company. (See Yost, George W. N., assignor.)						
Young, Alfred K. (See Kierson and Young.)						
Young, Daniel H., Fort Pierre, S. D. Car-coupling	448,769	Mar. 24	2457	614	54	1611
Young Coloring Company. (See Young, James A., assignor.)						
Young, Frank E., Canton, Ohio. Hoist	447,483	Mar. 3	361	90	54	1186
Young, James A., assignor of one-half to E. B. and A. Seaver, Boston, Mass. Apparatus for dyeing straw-goods, &c	446,051	Feb. 10	890	216	54	692

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Young, James A., Mansfield, assignor, by mesne assignments, to Young Coloring Company, Boston, Mass. Apparatus for dyeing straw goods, &c	446,050	Feb. 10	883	215, 216	54	692
Young, John, Pittsburg, Pa. Air-heating furnace	445,130	Jan. 20	1846	478	54	376
Young, Levi H., St. John, Canada. Lock-nut	447,224	Feb. 24	2840	704	54	1089
Young, Matthew G. (See Nolin and Young.)						
Young, McClintock, Frederick, Md. Brush	447,996	Mar. 10	1196	303	54	1352
Young, McClintock, Frederick, Md. Brush	449,344	Mar. 31	3370	849	54	1790
Young, Moses J., and C. Robinson, assignors of one-half to I. N. Drake, Hartley, Iowa. Hame-tug	447,995	Mar. 10	1196	303	54	1352
Young, Stephen E. (See McCarthy, John I., assignor.)						
Young, Wesley. (See Tiffany, Albert R., assignor.)						
Yule, George P., assignor of one-half to R. F. Strong, Clinton, Iowa. Ejecting bottle-cap	446,314	Feb. 10	1344	327	54	778
Zalud, Charles, New York, N. Y. Combination-check	448,299	Mar. 17	1679	425	54	1456
Zapp, John, New York, N. Y. Attachment for chairs, sofas, &c	444,719	Jan. 13	1145	295	54	244
Zeilman, Charles G., Albany, N. Y. Cistern for water-closets	444,310	Jan. 6	516	134, 135	54	103
Zeiss, Carl. (See Rudolph, Paul, assignor.)						
Zenke, Henry C., St. Paul, Minn. Toy bridge	447,492	Mar. 3	243	62	54	1163
Zgraggen, Xaver, Martin's Ferry, Ohio. Glassware	446,590	Feb. 17	1774	438	54	877
Ziegler, George H., assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Bearing	447,598	Mar. 3	533	131	54	1217
Ziegler, Leslie I., Cincinnati, Ohio. Flour-bolt	446,503	Feb. 17	1650	403	54	852
Ziegler, Oscar J. (See Stover and Ziegler.)						
Zilius, Jacob, Huntingdon, Pa. Car-coupling	448,704	Mar. 24	2346	588	54	1591
Zimer, Frederick W., London, England. Velocipede	445,618	Feb. 3	156	41	54	541
Zimmerling, Charles, Philadelphia, Pa. Game-counter	446,701	Feb. 17	1944	485	54	909
Zimmerman, Arnold W., Washington Heights, Ill. Door-bolt	444,869	Jan. 20	1434	373	54	296
Zimmerman, Arnold W., Washington Heights, Ill., assignor of one-half to F. W. Bird & Son, Walpole, Mass. Car-roofing	446,244	Feb. 10	1234	301	54	756
Zimmerman, Cyrus W. (See Mills and Zimmerman.)						
Zinn, Johan A., Altoona, Pa. Hydraulic switch and signal apparatus	449,240	Mar. 31	3174	801	54	1757
Zipernowsky, Charles, Buda-Pesth, Austria-Hungary. Rolling-stock for tramways or railways	445,563	Feb. 3	103	24, 25	54	531
Zoeller, William, Chicago, Ill. Molding-machine	445,215	Jan. 27	1991	513, 514	54	413
Zoller, Charles F., and L. S. Burrows, Foreston, Ill. Vehicle-top	447,097	Feb. 24	2599	645	54	1044
Zook, Jacob B., Xenia, Ind. Roof-paint	447,997	Mar. 10	1197	.....	54	1352
Zündorf, Heinrich, Barmen, Germany. Button-machine	448,569	Mar. 17	2113	529, 530	54	1539
Zwietusch, Otto, Milwaukee, Wis. Finishing beer	447,484	Mar. 3	361	90	54	1186

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Anderson, Lelia Z., Philadelphia, Pa. Match-safe	20,526	Feb. 24	54	963
Auld, Demas L., Columbus, Ohio. Badge	20,528	Feb. 24	54	963
Babcock, George H., Plainfield, N. J. Roofing-tile	20,635	Mar. 24	54	1566
Balsley, Theodore S., Detroit, Mich. Flower-pot	20,523	Feb. 17	54	821
Barnhart Brothers & Spindler. (See Hazlett and West, assignors.)				
Barnhart Brothers & Spindler. (See Heyer, Charles E., assignor.)				
Barnhart Brothers & Spindler. (See Schmohl and Lauschke.)				
Bascom, Henry C., Lansingburg, N. Y. Cooking-stove	20,464	Jan. 6	54	2
Bascom, Henry C., Lansingburg, N. Y. Heating-stove	20,465	Jan. 6	54	2
Bates, William A., Winchester, Mass. Handle for spoons, &c	20,576	Mar. 10	54	1270
Baumgras, Erwin C., assignor to Jacobs Brothers, Washington, D. C. Spoon	20,655	Mar. 31	54	1717
Beach, Edward P., assignor to Unger Brothers, Newark, N. J. Scarf-pin	20,508	Feb. 10	54	666
Beach, Edward P., assignor to Unger Brothers, Newark, N. J. Brooch or similar article	20,518	Feb. 10	54	666
Beeler, Charles H., Jr., assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	20,563	Mar. 3	54	1117
Beesley, James, and A. B. Benjamin, assignors to Clark Electric Company, New York, N. Y. Electric-arc lamp	20,489	Jan. 20	54	269
Benjamin, Arthur B. (See Beesley and Benjamin.)				
Bernstein, Adolph, New York, N. Y. Suspender-clasp	20,439	Jan. 6	54	2
Bigelow, John, New York, N. Y. Apparel-belt	20,640	Mar. 31	54	1716
Billard, John, assignor to T. B. Clark & Co., Honesdale, Pa. Ornamentation of glassware	20,570	Mar. 10	54	1270
Bischoff, Frederick F., Chicago, Ill. Panel for ceilings, &c	20,502	Feb. 3	54	510
Bliss Company, E. A. (See Bliss, Egerton A., assignor.)				
Bliss, Egerton A., assignor to E. A. Bliss Company, New York, N. Y. Match-safe	20,586	Mar. 17	54	1422
Block, Israel. (See Goldstein and Block.)				
Bowen, M. G., *et al.* (See Hallock, Howard B., assignor.)				
Brahadi, Abraham, Montreal, Canada. Headwear	20,441	Jan. 6	54	2
Brayer, John F., and E. J. King, assignors to Co-Operative Foundry Company, Rochester, N. Y. Stove-shelf and support	20,459	Jan. 6	54	2
Brayer, John F., and E. J. King, assignors to Co-Operative Foundry Company, Rochester, N. Y. Range back and shelf	20,482	Jan. 13	54	142
Bremer, Max, assignor to Fairpoint Manufacturing Company, New Bedford, Mass. Handle socket and plate	20,475	Jan. 13	54	142
Bromley & Sons, John. (See Petzold, Adolph, assignor.)				
Brooks, William H., Philadelphia, Pa. Badge	20,440	Jan. 6	54	2
Buck, George L., Stewartsville, Mo. Hip-terret	20,479	Jan. 13	54	142
Burtch, Horatio W., Chicago, Ill. Wrapping-paper, &c	20,654	Mar. 31	54	1717
Cahill Iron Works. (See Peterson, Charles P., assignor.)				
Cameron, Allan B., Williamsport, Pa. Panel	20,445 20,446	Jan. 6	54	2
Clark & Co., T. B. (See Billard, John, assignor.)				
Clark Electric Company. (See Beesley and Benjamin, assignors.)				
Coleman, Horace, Jr., Ellsworth, Kans. Bottle	20,629	Mar. 24	54	1566
Colestock, Daniel. (See Joy, Thaddeus C., assignor.)				
Colestock, Daniel, Titusville, Pa. Radiator	20,443 20,444	Jan. 6	54	2
Collins, Timothy J., assignor of one-half to Ransom & Randolph, Toledo, Ohio. Barber's chair	20,535	Mar. 3	54	1117
Collins, Timothy J., assignor to Ransom & Randolph, Toledo, Ohio. Dental cabinet	20,643	Mar. 31	54	1716
Collins, Timothy J., assignor to J. R. B. Ransom and T. F. Randolph, Toledo, Ohio. Dental cabinet	20,582	Mar. 17	54	1422
Cooper, William S., Philadelphia, Pa. Water-closet bowl	20,520	Feb. 17	54	821
Co-Operative Foundry Company. (See Brayer and King, assignors.)				
Copp, John L., Rochester, N. H. Bank-check	20,488	Jan. 20	54	269
Crowell, Gilbert L., Jr., Arlington, N. J., assignor to Dominick & Haff, New York, N. Y. Calendar-stand	20,442	Jan. 6	54	2
Daily, Edmond F., Anderson, Ind. Rein-holder	20,447	Jan. 6	54	2
Davis & Galt. (See Galt, Charles E., assignor.)				
Dawes, John L., Pittsburg, Pa. Bottle	20,656	Mar. 31	54	1717
Dennis, Henry H., Chicago, Ill. Box for washing-machines	20,536	Mar. 3	54	1117
Doherty, Robert F., assignor to A. Smith & Sons Carpet Company, Yonkers, N. Y. Carpet	20,592	Mar. 24	54	1565
Dole, Henry L., Haverhill, Mass. Handle for spoons, &c	20,543	Mar. 3	54	1117
Dominick & Haff. (See Crowell, Gilbert L., Jr., assignor.)				
Doty, John A., Oakville, Canada. Fruit-basket	20,641	Mar. 31	54	1716
Dueber, John C., Newport, Ky. Watch-case	20,476	Jan. 13	54	142
Duncan, Andrew J., Youngstown, Ohio. Casing for oil-cans	20,639	Mar. 24	54	1566
Dunlap & Sons, John. (See Lawton, Thomas L., assignor.)				
Durgin, William B., Concord, N. H. Spoon, &c	20,541	Mar. 3	54	1117
Durgin, William B., Concord, N. H. Handle for spoons, &c	20,542	Mar. 3	54	1117
Durgin, William B., Concord, N. H. Handle for spoons, &c	20,591	Mar. 24	54	1565
Durgin, William B., Concord, N. H. Handle for spoons, forks, &c	26,644	Mar. 31	54	1716
Eden Manufacturing Company. (See Markgraf, Adam, assignor.)				
Eitel, Emil, Chicago, Ill. Observatory	20,529	Feb. 24	54	963
Ellrich, Robert C., Southington, Conn. Bar or stock of wrenches	20,448	Jan. 6	54	2
Epple, Albert, Providence, R. I. Lace-pin	20,587	Mar. 17	54	1422
Estes, Webster C., Flatbush, N. Y. Box	20,519	Feb. 10	54	666
Finkelstein, Shye, New York, N. Y. Ornamentation of neckscarf	20,642	Mar. 21	54	1716
Fletcher, John R., Dayton, Ohio. Pole for electric wires	20,449	Jan. 6	54	2
Folsom, James L., Brooklyn, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	20,593	Mar. 24	54	1565
Fostoria Shade and Lamp Company. (See Kopp, Nicholas, assignor.)				
Frisbie, Russel, assignor to J. & E. Stevens Company, Cromwell, Conn. Toy bank	20,579	Mar. 10	54	1270
Frisbie, Russel, assignor to J. & E. Stevens Company, Cromwell, Conn. Toy bank	20,646	Mar. 31	54	1716

Alphabetical list of patentees of designs, January to March, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Galt, Charles E., assignor to Davis & Galt, Philadelphia, Pa. Handle for forks, spoons, or similar ware	20,545	Mar. 3	54	1117
Gérard, Emile, Limoges, France. Dish	20,521	Feb. 17	54	821
Goldstein, Jacob, and I. Block, New York, N. Y. Oil or gas stove	20,503	Feb. 3	54	510
Graves Company, Robert. (See Roos, Christian P., assignor.)				
Grout, Louis S., Chicago, Ill. Watch-maker's sign	20,460	Jan. 6	54	2
Hallock, Howard B., assignor to M. G. Bowen and R. N. Kirk, Chicago, Ill. Family-altar	20,522	Feb. 17	54	821
Harder, Charles N. (See Sagendorph, Longley L., assignor.)				
Harr, Dock D., Belmond, Iowa. Bottle	20,588	Mar. 17	54	1422
Harrington, Ephraim, Boston, Mass. Button	20,517	Feb. 10	54	666
Harrington, Loammi. (See Shickluna, George, assignor.)				
Harris, Charles R., Williamsport, Pa. Suspender-buckle	20,344	Mar. 3	54	1117
Harris, Edwin, Washington, D. C. Spoon, &c.	20,657 to 20,658	Mar. 31	54	1717
Hartford Carpet Company. (See Folsom, James L., assignor.)				
Hathaway, Edgar F., Hornellsville, N. Y. Fence-strand	20,512 to 20,513	Feb. 10	54	666
Hathaway, Keyes A., Rockford, Ill. Handle for knives, &c	20,647	Mar. 31	54	1716
Haviland, Charles E., Limoges, France. Plate, &c.	20,630	Mar. 24	54	1566
Haviland, Charles E., Limoges, France. Dish	20,631 to 20,633	Mar. 24	54	1566
Haynes, David F., Baltimore, Md. Ewer or jug	20,450	Jan. 6	54	2
Haynes, David F., Baltimore, Md. Covered dish	20,451	Jan. 6	54	2
Hazlett, Charles S., Boone, Iowa, and J. West, Chicago, Ill., assignors to Barnhart Brothers & Spindler, of Illinois. Font of printing-type	20,514	Feb. 10	54	666
Herrick, Mary M., Marinette, Wis. Child's toy	20,481	Jan. 20	54	269
Hever, Charles E., assignor to Barnhart Brothers & Spindler, Chicago, Ill. Font of printing-type	20,506	Feb. 3	54	510
Hoare, John, Corning, N. Y. Ornamentation of glass or other ware	20,504	Feb. 3	54	510
Holmes & Edwards Silver Company. (See Wilks, Walter L., assignor.)				
Hopcraft, Alfred, New York, N. Y. Advertising-card	20,524	Feb. 17	54	821
Horton, Louis R., assignor to J. B. & S. M. Knowles, Providence, R. I. Handle for spoons, &c.	20,594 to 20,595	Mar. 24	54	1565
Howard, Andrew, Beaver Falls, Pa. Lamp-shade	20,651	Mar. 31	54	1717
Howard, Frank H. (See Walker and Howard.)				
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	20,546 to 20,547	Mar. 3	54	1117
Irons, Charles F., Providence, R. I. Badge	20,645	Mar. 31	54	1716
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Back of brushes, &c.	20,472	Jan. 6	54	2
Jackson, William W., assignor to Mather Manufacturing Company, Philadelphia, Pa. Font of printing-type	20,589	Mar. 17	54	1422
Jacobs Brothers. (See Baumgras, Erwin C., assignor.)				
Johnston, John H., New York, N. Y. Spoon	20,493 to 20,496	Feb. 3	54	510
Jones, Frank P., Manitowoc, Wis. School-seat	20,452	Jan. 6	54	2
Jones, William B., Newburyport, Mass. Handle for spoons, &c.	20,509	Feb. 10	54	666
Joy & Co., T. C. (See Joy, Thaddeus C., assignor.)				
Joy, Thaddeus C., assignor to T. C. Joy & Co., Titusville, Pa. Radiator	20,471	Jan. 6	54	2
Joy, Thaddeus C., Titusville, Pa., assignor to T. C. Joy and D. Colestock. Radiator	20,582	Mar. 17	54	1422
Karl, Wendelin, Buffalo, N. Y. Curling-stone	20,525	Feb. 17	54	821
Kernan, Francis, Jr., Utica, and W. H. Landers, Syracuse, assignors to Kernan Furnace Company, Utica, N. Y. Furnace	20,648	Mar. 31	54	1717
Kernan Furnace Company. (See Kernan and Landers, assignors.)				
King, Edward J. (See Brayer and King.)				
King, William C., Pittsburg, Pa. Jug	20,505	Feb. 3	54	510
Kirk, R. N., *et al.* (See Hallock, Howard B., assignor.)				
Kloeberg, Philip, New York, N. Y. Embroidery-pattern	20,473	Jan. 6	54	2
Kloeberg, Philip, New York, N. Y. Embroidery	20,577	Mar. 10	54	1270
Kloeberg, Philip, New York, N. Y. Embroidery	20,652	Mar. 31	54	1717
Knowles, J. B. & S. M. (See Horton, Louis R., assignor.)				
Kopp, Nicholas, assignor to Fostoria Shade and Lamp Company, Fostoria, Ohio. Closed vessel with perforated cover	20,566	Mar. 10	54	1269
Kraetzer, Edwin J., Gloversville, N. Y. Glove-fastener socket	20,461	Jan. 6	54	2
Kramer, Edward A., New York, N. Y. Bottle	20,567	Mar. 10	54	1269
Lambert, Julius, Hoboken, N. J. Waist-belt	20,571	Mar. 10	54	1270
Landers, William H. (See Kernan and Landers.)				
Lauschke, Ernst. (See Schmohl and Lauschke.)				
Lawson, Edwin W., Elgin, Ill. Badge	20,453	Jan. 6	54	2
Lawton, Thomas L., assignor to J. Dunlap & Sons, Philadelphia, Pa. Carpet	20,454	Jan. 6	54	2
Lawton, Thomas L., assignor to J. Dunlap & Sons, Philadelphia, Pa. Carpet	20,462	Jan. 6	54	2
Leding, Robert, Washington, D. C. Handle for spoons, &c.	20,649	Mar. 31	54	1717
Leding, Robert, Washington, D. C. Spoon, &c.	20,650	Mar. 31	54	1717
Lewis, Fredrique R., Worcester, Mass., assignor to Wood & Lewis, Troy, N. Y. Cuff	20,634	Mar. 24	54	1566
Liebe, Henry L., Newark, N. J. Match or ash receiver	20,532	Feb. 24	54	963
Light, Milton K., Worcester, Mass. Badge	20,455	Jan. 6	54	2
Lipman, Lewis A., Brooklyn, N. Y. Album	20,568	Mar. 10	54	1269
MacKellar, Smiths & Jordan Company. (See Beeler, Charles H., Jr., assignor.)				
MacKellar, Smiths & Jordan Company. (See Ihlenburg, Herman, assignor.)				
Mann, Louis, New York, N. Y. Jewel-setting	20,477	Jan. 13	54	142
Markgraf, Adam, assignor to Eden Manufacturing Company, Eden, Pa. Curtain or portière	20,637	Mar. 24	54	1566
Mather Manufacturing Company. (See Jackson, William W., assignor.)				
McBride, John E., Clinton, N. Y. Dish	20,487	Jan. 20	54	269
McElroy, Charles B., and T. W. Minshull, Cleveland, Ohio. Badge	20,580	Mar. 10	54	1270
Meeker, Stephen J., Newark, N. J. Hose-reel bracket	20,530	Feb. 24	54	963
Meinecke, Christian W., Jersey City, N. J. Pot or jar	20,490	Jan. 27	54	394
Meckle, John, *et al.* (See Nicholson, John W., assignor.)				
Milliken, Benjamin D., Somerville, Mass. Cigar-lighter	20,497	Feb. 3	54	510
Minshull, Thomas W. (See McElroy and Minshull.)				
Moffat, John B., assignor to A. Smith & Sons Carpet Company, Yonkers, N. Y. Carpet	20,596	Mar. 24	54	1565
Murphy, William T., New York, N. Y. Bottle	20,469	Jan. 6	54	2
Nicholson, John W., assignor to J. Whitall, Philadelphia, Pa., J. Meckle, Millville, N. J., C. A. Tatum, New York, N. Y., J. M. Whitall, J. W. Nicholson, Philadelphia, Pa., and F. M. Underhill, New York, N. Y. Bottle	20,527	Feb. 24	54	963

Alphabetical list of patentees of designs, January to March, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Nolley, David D., Wilson, N. C. Latch	20,480	Jan. 13	54	142
Oftelie, John W., Bearden, Ark. Sign-plate	20,572	Mar. 10	54	1270
Osborne, Charles, assignor to Whiting Manufacturing Company, New York, N. Y. Handle for spoons, &c	20,466	Jan. 6	54	2
Osborne, Charles, assignor to Whiting Manufacturing Company, New York, N. Y. Spoon, &c	20,636	Mar. 24	54	1566
Ostergren, Otto F., and A. K. Schaap, Richmond, Va. Garment-protector	20,548	Mar. 3	54	1117
Pairpoint Manufacturing Company. (See Brenner, Max, assignor.)				
Parton, Henry W., assignor to A. Smith & Sons Carpet Company, Yonkers, N. Y. Carpet	20,597 to 20,612	Mar. 24	54	1565
Patek, Philippe & Co. (See Philippe, Adrien, assignor.)				
Peterson, Charles P., assignor to Cahill Iron Works, Chattanooga, Tenn. Grate	20,573	Mar. 10	54	1270
Petzold, Adolph, Philadelphia, Pa., assignor to J. Bromley & Sons. Rug	20,474	Jan. 6	54	2
Pflueger, Ernest F., Akron, Ohio. Roll-spring for collar-pad fasteners	20,456	Jan. 6	54	2
Philippe, Adrien, assignor to Patek, Philippe & Co., Geneva, Switzerland. Watch-bridge	20,483	Jan. 13	54	142
Phillips, George H., Geneva, N. Y. Heating-stove	20,467	Jan. 6	54	2
Phillips, George H., Geneva, N. Y. Cooking-stove	20,468	Jan. 6	54	2
Pignot, Paul, Hastings, assignor to A. Smith & Sons Carpet Company, Yonkers, N. Y. Carpet	20,613 to 20,618	Mar. 24	54	1565
Randolph, Thaddeus F., *et al.* (See Collins, Timothy J., assignor.)				
Ransom, John R. B., *et al.* (See Collins, Timothy J., assignor.)				
Ransom & Randolph. (See Collins, Timothy J., assignor.)				
Reed & Barton Corporation. (See Jackson, Austin F., assignor.)				
Reed, John R., Westfield, Mass. Radiator loop-pipe	20,565	Mar. 3	54	1117
Reed, John R., Westfield, Mass. Radiator	20,574	Mar. 10	54	1270
Reed, John R., Westfield, Mass. Radiator	20,581	Mar. 10	54	1270
Rheinstrom, Abraham, Cincinnati, Ohio. Bottle	20,457	Jan. 6	54	2
Roos, Christian P., assignor to R. Graves Company, New York, N. Y. Wall-paper				
Sagendorph, Longley L., Philadelphia, Pa., assignor of one-half to C. N. Harder, Philmont, N. Y. Roofing-plate	20,531	Feb. 24	54	963
Schaap, Alexander K. (See Ostergren and Schaap.)				
Schall, Ernst, Hartford, Conn. Spoon or fork	20,584	Mar. 17	54	1422
Schmid, Albert, Allegheny, Pa. Oil-box	20,481	Jan. 13	54	142
Schmidt, Henry O., New York, N. Y., assignor to Simons Brothers & Co., Philadelphia, Pa. Cane or umbrella handle	20,549 to 20,561	Mar. 3	54	1117
Schmohl, Julius, and E. Lauschke, Chicago, Ill., assignors to Barnhart Brothers & Spindler, of Illinois. Font of printing-type	20,515 to 20,516	Feb. 10	54	666
Schrader, Henry, Brooklyn, N. Y. Carpet	20,470	Jan. 6	54	2
Sherman, Elijah C., Montrose, Pa. Game-board	20,478	Jan. 13	54	142
Shickluna, George, St. Catherines, Ontario, assignor to L. Harrington, Toronto, Canada. Family altar	20,492	Jan. 27	54	394
Simons Brothers & Co. (See Schmidt, Henry O., assignor.)				
Sloan, Frederick H., Hartford, Conn. Spoon, &c	20,537	Mar. 3	54	1117
Sloan, Frederick H., Hartford, Conn. Handle for spoons, &c	20,625	Mar. 24	54	1565
Smith, Joseph R., Waterbury, Conn. Glove-fastener cap	20,463	Jan. 6	54	2
Smith & Sons Carpet Company, Alex. (See Doherty, Robert F., assignor.)				
Smith & Sons Carpet Company, Alex. (See Moffat, John B., assignor.)				
Smith & Sons Carpet Company, Alex. (See Parton, Henry W., assignor.)				
Smith & Sons Carpet Company, Alex. (See Pignot, Paul, assignor.)				
Smith & Sons Carpet Company, Alex. (See Stengel, George J., assignor.)				
Smith & Sons Carpet Company, Alex. (See Thomas, Walter, assignor.)				
Spooner, Alonzo W., Port Hope, Ontario, Canada. Metal bar	20,507	Feb. 3	54	510
Steffens, Nicholas, New York, N. Y. Flower-frame	20,533 to 20,534	Feb. 24	54	963
Steffens, Nicholas, New York, N. Y. Flower-frame	20,638	Mar. 24	54	1566
Stein, Leo, Rochester, N. Y. Burial-casket	20,491	Jan. 27	54	394
Stengel, George J., assignor to A. Smith & Sons Carpet Company, Yonkers, N. Y. Carpet	20,619 to 20,624	Mar. 24	54	1565
Stevens Company, J. & E. (See Frisbie, Russel, assignor.)				
Stilz, Louis E., assignor to Supreme Castle of the Order of the Knights of the Golden Eagle, Philadelphia, Pa. Badge	20,511	Feb. 10	54	666
Supreme Castle of the Order of the Knights of the Golden Eagle. (See Stilz, Louis E., assignor.)				
Swan, William J., Detroit, Mich. Drawer-pull	20,498	Feb. 3	54	510
Swart, Haverley B., Worcester, Mass. Spoon or fork handle	20,653	Mar. 31	54	1717
Tatum, C. Albert, *et al.* (See Nicholson, John W., assignor.)				
Tatum, Charles A., assignor to Whitall, Tatum & Co., New York, N. Y. Breast-pump	20,585	Mar. 17	54	1422
Thomas, Walter, assignor to A. Smith & Sons Carpet Company, Yonkers, N. Y. Carpet	20,626 to 20,628	Mar. 24	54	1566
Thompson, Charles E., Lansingburg, N. Y. Brush	20,486	Jan. 20	54	269
Trowbridge, Charles E., assignor to Whitinsville Spinning Ring Co., Whitinsville, Mass. Spinning-ring	20,538	Mar. 3	54	1117
Tugby, Thomas, Niagara Falls, N. Y. Watch-charm	20,485	Jan. 20	54	269
Turner, Charles A., Brooklyn, N. Y. Horse-blanket	20,539	Mar. 3	54	1117
Underhill, Francis M., *et al.* (See Nicholson, John W., assignor.)				
Unger Brothers. (See Beach, Edward P., assignor.)				
Walker, David, Newark, N. J. Stair-carpet fastener	20,499 to 20,501	Feb. 3	54	510
Walker, David, and F. H. Howard, Newark, N. J.; said Howard assignor to said Walker. Stair-carpet button	20,540	Mar. 3	54	1117
Walton, George W., Grayling, Mich. Can	20,562	Mar. 3	54	1117
Weihman, Henry A., Philadelphia, Pa. Thimble	20,590	Mar. 17	54	1422
West, John. (See Hazlett and West.)				
Whitall, James, *et al.* (See Nicholson, John W., assignor.)				
Whitall, John M., *et al.* (See Nicholson, John W., assignor.)				
Whitall, Tatum & Co. (See Tatum, Charles A., assignor.)				
Whiting Manufacturing Company. (See Osborne, Charles, assignor.)				
Whitinsville Spinning Ring Co. (See Trowbridge, Charles E., assignor.)				
Wightman, John, Nottingham, England. Collar or ruffle	20,569	Mar. 10	54	1270
Wilks, Walter L., assignor to Holmes & Edwards Silver Company, Bridgeport, Conn. Spoon	20,510	Feb. 10	54	666
Wilson, George W., Lansingburg, N. Y. Brush	20,578	Mar. 10	54	1270
Wilson, James G., New York, N. Y. Chair	20,575	Mar. 10	54	1270
Wood & Lewis. (See Lewis, Fredrique R., assignor.)				
Zimskind, Louis, New York, N. Y. Bedstead	20,458	Jan. 6	54	2

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Adams & Sons, Brooklyn, N. Y. Chewing-gum	19,088	Feb. 24	54	964
Alvarez, Casimiro, Havana, Cuba. Cigars	18,856	Jan. 20	54	270
Alvarez, Casimiro, Havana, Cuba. Cigars	18,857	Jan. 20	54	270
Alvarez, Casimiro, Havana, Cuba. Cigars	19,262	Mar. 31	54	1718
Alvarez & Co., Justo, Havana, Cuba. Cigars	19,227	Mar. 24	54	1566
Alvarez Disinfectants Company, Washington, D. C., and Chicago, Ill. Disinfectant	18,795	Jan. 6	54	3
American Cutlery Company, Chicago, Ill. Table cutlery	18,822	Jan. 13	54	142
American Herbal Medicine Company, New York, N. Y. Vegetable remedies for external and internal use	19,061	Feb. 24	54	963
Anchor Button Fastener Company, New York, N. Y. Button-fasteners	19,201	Mar. 24	54	1566
Andrews, Reuben H., Washington, D. C. Remedy for rheumatism, neuralgia, and similar ailments	19,202	Mar. 24	54	1566
Andrews, Reuben H., Washington, D. C. Remedy for the cure of stomach, blood, liver, and kidney troubles	18,829	Jan. 13	54	142
Arbuckle, Guy D., Denver, Colo. Baking-powder	18,848	Jan. 20	54	269
Arenal & Co., Lucio, Havana, Cuba. Cigars	18,849	Jan. 20	54	269
Arenal & Co., Lucio, Havana, Cuba. Cigars	18,850	Jan. 20	54	270
Arenal & Co., Lucio, Havana, Cuba. Cigars	18,851	Jan. 20	54	270
Arenal & Co., Lucio, Havana, Cuba. Cigars	19,060	Feb. 24	54	963
Arkell & Douglas, New York, N. Y. Refined petroleum	19,174	Mar. 17	54	1422
Armour Packing Co., Kansas City, Kans. Butter and butterine	19,103	Mar. 3	54	1117
Armstrong, Cator & Co., Baltimore, Md. Corsets	19,200	Mar. 24	54	1566
Arons, Bernard E., Pittsburg, Pa. Imitation diamond jewelry	19,039	Feb. 17	54	822
Assimilene Manufacturing Co., Hillsdale, Mich. Remedy for indigestion	18,964	Feb. 10	54	666
Azcano, Sebastian, Havana, Cuba. Cigars	18,965	Feb. 10	54	666
Azcano, Sebastian, Havana, Cuba. Cigars	19,263	Mar. 31	54	1718
Azcano y Meana, Sebastian, Havana, Cuba. Cigars	19,253	Mar. 31	54	1717
Babendreier, Albert I., Baltimore, Md. Topical remedy	18,966	Feb. 10	54	666
Baldwin & Company, Limited, Alfred, Panteg, near Newport, England. Tin and terne plates and black plates of Bessemer steel	19,089	Feb. 24	54	964
Baldwin & Company, Limited, Alfred, Panteg, near Newport, England. Tin plates, terne plates, and black plates	19,175	Mar. 17	54	1422
Baldwin & Company, Limited, Alfred, Panteg, near Newport, England. Tin plates, terne plates, and black plates of Siemens steel	19,096	Feb. 24	54	964
Baldwin, E. P. & W., Wilden, England. Sheet-iron and steel, and lead-coated and tin plates, terne plates, and taggers	18,967	Feb. 10	54	666
Baldwin, E. P. & W., Wilden, England. Sheet-iron, tin and terne plates, and lead-coated sheets	19,019	Feb. 17	54	821
Ball Engine Company, Erie, Pa. Automatic cut-off engines	18,830	Jan. 13	54	142
Barkhausen & Co., Bordeaux, France. Wines	18,897	Jan. 27	54	394
Barnes & Co., A. C., Westfield, Mass. Whips	18,898	Jan. 27	54	394
Barnes & Co., A. C., Westfield, Mass. Whips	19,254	Mar. 31	54	1717
Bauch, Friedrich T., Greiz, Germany. Woolen shawls	19,095	Feb. 24	54	964
Baumann's Wittwe, Johann, Amberg, Germany. Enameled sheet-metal ware	18,796	Jan. 6	54	3
Beck & Company, August, Chicago, Ill. Snuff	18,797	Jan. 6	54	3
Beck & Company, August, Chicago, Ill. Manufactured tobacco	18,883	Jan. 20	54	270
Beck & Company, August, Chicago, Ill. Smoking-tobacco	18,831	Jan. 13	54	142
Beckford, Charles A., Albany, N. Y. Sliced cured meat	19,016	Feb. 17	54	821
Bell Medicine Co., St. Louis, Mo. Remedy for lung troubles and nervous diseases	18,933	Feb. 3	54	511
Benswanger, Emanuel, Philadelphia, Pa. Bottled lager-beer	19,112	Mar. 3	54	1118
Beshore, Ellsworth S., Pottstown, Pa. Remedy for coughs, colds, and like diseases	19,040	Feb. 17	54	822
Bierman, Heidelberg & Co., New York, N. Y. Outer clothing and overcoats	18,852	Jan. 20	54	270
Billington, James H., Philadelphia, Pa. Packing for machinery	18,972	Feb. 10	54	666
Birchgrove Steel Company, Limited, Swansea, England. Tin and terne plates	18,966	Feb. 10	54	667
Birchgrove Steel Company, Limited, Swansea, England. Tin and terne plates	18,936	Feb. 3	54	511
Blackstone, Benjamin D., Martinsville, Ind. Ointments	19,097	Feb. 24	54	964
Blume & Co., John H., Walhalla, Tex. Liniments for the cure of rheumatism, neuralgia, gout, and similar ailments	19,113	Mar. 3	54	1118
Bonhard, Harry C., Milwaukee, Wis. Stove paste polish	19 018	Feb. 17	54	821
Bowers, Walter T., Saco, Me. Hats	18,932	Feb. 3	54	511
Bowie & Terhune, Rome, Ga. Cooking and heating stoves and ranges	18,823	Jan. 13	54	142
Bowker Fertilizer Company, Boston, Mass. Meal for live stock	19,017	Feb. 17	54	821
Bowker Fertilizer Company, Boston, Mass. Meal for live stock	18,843	Jan. 13	54	142
Bridgeport Brass Company, Bridgeport, Conn., and New York, N. Y. Brass and copper sheets, tubing, and wire	18,798	Jan. 6	54	3
Bridgman, Adolphus, New York, N. Y. Remedy for certain named diseases	18,815	Jan. 6	54	3
Brook Lawn Farm Company, Esopus and New York, N. Y. Unfermented and undistilled products of grapes and other fruits	19,203	Mar. 24	54	1566
Brooklyn Watch Case Company, Brooklyn, N. Y. Watch-cases	19,108	Mar. 3	54	1117
Bryant & May, Limited, London, England. Wax matches	19,137	Mar. 3	54	1118
Bryant & May, Limited, London, England. Wax matches	19,145	Mar. 3	54	1118
Bryant & May, Limited, London, England. Wax matches	19,178	Mar. 17	54	1422
Bryant & May, Limited, London, England. Safety-matches	19,179	Mar. 17	54	1422
Bryant & May, Limited, London, England. Wax matches	18,909	Jan. 27	54	394
Burkhardt, Adam E., Cincinnati, Ohio. Women's outer garments of silk plush resembling sealskin	19,104	Mar. 3	54	1117
Burns, James E., Philadelphia, Pa. Composition coffee	19,264	Mar. 31	54	1718
Bustillo & Brother, V., Havana, Cuba. Cigars	19,267	Mar. 31	54	1718
Bustillo & Brother, V., Havana, Cuba. Cigars	19,268	Mar. 31	54	1718
Bustillo & Brother, V., Havana, Cuba. Cigars	19,269	Mar. 31	54	1718
Bustillo & Brother, V., Havana, Cuba. Cigars	19,270	Mar. 31	54	1718
Bustillo & Brother, V., Havana, Cuba. Cigars	19,271	Mar. 31	54	1718
Bustillo & Brother, V., Havana, Cuba. Cigars	19,272	Mar. 31	54	1718

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Cabot, Godfrey L., Worthington, Pa. Lamp-black	18,899	Jan. 27	54	394
Caledonia Mining and Manufacturing Company, Lancaster, Pa. Powder for polishing metal	19,148	Mar. 10	54	1270
Capitol Manufacturing Company, Chicago, Ill. Wrenches, screw-drivers, tack-pullers, and similar tools	19,063	Feb. 24	54	964
Carpenter Steel Company, New York, N. Y. Iron, steel, and manufactures thereof	19,049	Feb. 17	54	822
Carver, Benjamin F., New York, N. Y. Toilet deodorant	18,778	Jan. 6	53	2
Cary-Ogden Company, Chicago, Ill. Carriage-paint	19,159	Mar. 10	54	1270
Castaing, Amédée, New York, N. Y. Liquid shoe and harness blacking	18,780	Jan. 6	54	2
Celorio & Co., B., Havana, Cuba. Cigars	18,858	Jan. 20	54	270
Celorio & Co., B., Havana, Cuba. Cigars	18,859	Jan. 20	54	270
Chapman & Meehan, New York, N. Y. Prepared soups	18,799	Jan. 6	54	3
Chase and Company Corporation, Boston, Mass. Confection-lozenges	19,030	Feb. 17	54	822
Chemische Fabrik auf Actien, vormals E. Schering, Berlin, Germany. Certain named chemicals	18,825	Jan. 13	54	142
Chemische Fabrik auf Aktien, (vorm. E. Schering,) Berlin, Germany. Ammonia preparations for medical purposes	19,064	Feb. 24	54	964
Chiles, John L., Floral Park, N. Y. Seeds, bulbs, plants, trees, and shrubbery	19,255	Mar. 31	54	1717
Christman, Thomas F., Greenville, N. C. Ointment	19,114	Mar. 3	54	1118
Clarke & Coutts, Galveston, Tex. Printing and writing paper	18,779	Jan. 6	54	2
Cochran, Frederic B., New York, N. Y. Structures or processes for freezing fluids	18,884	Jan. 20	54	270
Colgate & Co., New York, N. Y. Toilet and laundry soap	18,951	Feb. 10	54	666
Compton, William E., Redditch, England. Needles and fish-hooks	19,062	Feb. 24	54	963
Conn, Charles G., Elkhart, Ind. Musical instruments	18,939	Feb. 3	54	511
Consolidated Safety Pin Co., New York, N. Y. Safety-pins	18,832	Jan. 13	54	142
Contrexeville Manufacturing Company, Manville, R. I., and New York, N. Y. Plushes	19,065	Feb. 24	54	964
Copper Miners Tinplate Company, Limited, Cwmavon, England. Tin plates and terne plates	19,245	Mar. 31	54	1717
Copper Miners Tinplate Company, Limited, Cwmavon, England. Tin plates	19,246	Mar. 31	54	1717
Corby, Henry, Belleville, Canada. Whisky	18,835	Jan. 13	54	142
Cortina & Gomez, Havana, Cuba. Cigars	18,853	Jan. 20	54	270
Cortina & Gomez, Havana, Cuba. Cigars	18,854	Jan. 20	54	270
Cortina & Gomez, Havana, Cuba. Cigars	18,855	Jan. 20	54	270
Cortina & Gomez, Havana, Cuba. Cigars	18,836	Jan. 13	54	142
Costello & Co., Rochester, N. Y. Candies	18,824	Jan. 13	54	142
Cramp & Co., B. H., Philadelphia, Pa. Manganese bronze	18,777	Jan. 6	54	2
Creedmoor Cartridge Company, New Portage, Ohio. Cartridges for fire-arms	19,058	Feb. 17	54	822
Creedmore Cartridge Company, New Portage, Ohio. Cartridge-shells and wads	18,833	Jan. 13	54	142
Crooks & Co., Rob., Liverpool, England, and New York, N. Y. Tin and terne plates	18,834	Jan. 13	54	142
Crooks & Co., Rob., Liverpool, England, and New York, N. Y. Tin and terne plates	19,241	Mar. 31	54	1717
Crystal Rice Milling Company, Marion, Ind., Prepared rice	19,014	Feb. 10	54	667
Cwmfelin Tinplate Company, Cwmfelin and Swansea, England. Tin plates	19,015	Feb. 10	54	667
Cwmfelin Tinplate Company, Cwmfelin and Swansea, England. Tinplate in sheets	18,976	Feb. 10	54	666
Dalrymple, Warner & Co., Albany, N. Y. Remedy for catarrh and hay fever	19,067	Feb. 24	54	964
Davenport, George F., Boston, Mass. Cigars and tobacco	18,900	Jan. 27	54	394
Demuth & Co., William, New York, N. Y. Cigarette-paper	19,066	Feb. 24	54	964
Demuth & Co., William, New York, N. Y. Pipes, tobacco and snuff boxes, match-safes, cigar and cigarette holders, cigar-cases, and tobacco-pouches	19,204	Mar. 24	54	1566
Derby, Emma A., Boston, Mass. Remedy for constipation	19,139	Mar. 3	54	1118
Derbake, Bernard, Quincy, Ill. Axle grease	19,052	Feb. 17	54	822
Dersch, Sigmund, Philadelphia, Pa. Men's shirts	19,105	Mar. 3	54	1117
Diamond Compound Co., Harrison, N. J. Compound for removing boiler-scales	18,948	Feb. 3	54	511
Diamond White Grape Company, Rochester and Brighton, N. Y. Grape-vines	19,020	Feb. 17	54	821
Dickinson Bros & King, Chicago, Ill. Cement	19,138	Mar. 3	54	1118
Dunham, Buckley & Co., New York, N. Y. Underwear and hosiery	18,860	Jan. 20	54	270
Dzialynski, John, Jacksonville, Fla. Cigars	19,220	Mar. 24	54	1566
Eagle Bicycle Manufacturing Company, Stamford, Conn. Bicycles, tricycles, and parts thereof	19,211	Mar. 24	54	1566
Eddystone Manufacturing Company, Limited, Philadelphia, Pa. Cotton fabrics	19,166	Mar. 10	54	1270
Edel Bros., Richmond, Va. Whisky	18,992	Feb. 10	54	667
Edwards & Co., Daniel, Swansea, England. Tin-plate in sheets	19,004	Feb. 10	54	667
Edwards & Co., Daniel, Swansea, England. Tin-plate in sheets	19,005	Feb. 10	54	667
Edwards & Co., Daniel, Swansea, England. Tin-plate in sheets	19,006	Feb. 10	54	667
Edwards & Co., Daniel, Swansea, England. Tin-plate in sheets	19,007	Feb. 10	54	667
Edwards & Co., Daniel, Swansea, England. Tin-plate in sheets	19,008	Feb. 10	54	667
Edwards, Julia, Montreal, Canada. Remedy for dropsy	18,826	Jan. 13	54	142
Eighmie, George D., New York, N. Y. Men's shirts, collars, and cuffs	19,182	Mar. 17	54	1422
Electrical Supply Company, Chicago, Ill. Metallic wire for use in electrical work	19,194	Mar. 17	54	1422
Elliott & Son, R. H., Pontiac, Mich. Embalming fluid	18,927	Feb. 3	54	510
Ellis & Co., John, New York, N. Y. Illuminating-oil	19,068	Feb. 24	54	964
Erdman, Daniel H., Camden, N. J. Portable heaters	19,115	Mar. 3	54	1118
Etheridge & Co., A., Rome, N. Y. Japan tea	18,895	Jan. 20	54	270
Ettel, John W., New York, N. Y. Fancy cakes	18,800	Jan. 6	54	3
Eureka Fire Hose Company, New York, N. Y. Fire-hose made of woven and knitted fabric	19,167	Mar. 10	54	1270
Evans, Lescher & Webb, London, England. Medical preparation of sandal wood and copaiba	18,914	Feb. 3	54	510
Exquem, Alexandre, Bordeaux, France, and New York, N. Y. Canned and preserved foods and table delicacies	18,781	Jan. 6	54	2
Faber, Johann, Nuremberg, Germany. Pencils, pen-holders, and cases, erasers, leads, slates, chalks, and similar stationery	19,098	Feb. 24	54	964
Fassett & Co., Henry S., Washington, D. C. Black paint	19,243	Mar. 31	54	1717
Fay, Jennie T., New York, N. Y. Hair-restorative	19,242	Mar. 31	54	1717
Fisher, Charles, Louisville, Ky. Feather dusters	19,090	Feb. 24	54	964
Fithian, Josiah H., New York, N. Y. Dress-goods	18,886	Jan. 20	54	270
Fleming, George S., Pittsburg, Pa. Bitters	18,915	Feb. 3	54	510
Fleming, George S., Pittsburg, Pa. Whisky	18,952	Feb. 10	54	666
Follmer, Clogg & Co., Philadelphia, Pa., and New York, N. Y. Tight-folding umbrellas and parasols	19,106	Mar. 3	54	1117
Foster, Joseph S., Salem, Mass. Portable game	18,801	Jan. 6	54	3
Foster, Limited, W. & H., Denholme Mills, near Bradford, England. Goods of wool, worsted, or hair	19,099	Feb. 24	54	964
French, Richards & Co., Philadelphia, Pa. Bird-seed	19,256	Mar. 31	54	1717
Frost & Co., George, Boston, Mass. Hose-supporters	19,235	Mar. 31	54	1717
Fry, Henry W., London, England. Flour and meal	19,232	Mar. 24	54	1566
Gabrio & Spitz, Des Moines, Iowa. Cigars	19,146	Mar. 3	54	1118
Gate City Hat Company, Omaha, Nebr. Hats and caps	19,054	Feb. 17	54	822
Gedney Pickle Company, Omaha, Nebr. Pickled fruits and vegetables	19,053	Feb. 17	54	822
Gener, José, Havana, Cuba. Cigars, cigarettes, and manufactured tobacco	19,117	Mar. 3	54	1118
Gener, José, Havana, Cuba. Cigars, cigarettes, and manufactured tobacco	19,118	Mar. 3	54	1118
Gérard, Dufrasseix & Morel, E., Limoges, France. Porcelain, crockery, earthenware, glass, and faience	18,993	Feb. 10	54	667

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Gesellschaft für Fabrikation Diaetetischer Produkte, Ed. Loeflund & Co., Stuttgart, Germany. Certain named dietetic products	19,160	Mar. 10	54	1270
Gilbert, John T., Chicago, Ill. Flavoring extracts for foods	19,214	Mar. 24	54	1566
Gilman, George F., New York, N. Y. Coffee, tea, and spices	18,863	Jan. 20	54	270
Giron Frères, St. Etienne, France. Ribbons	19,213	Mar. 24	54	1566
Goldsborough, Charles, Baltimore, Md. Whisky	18,837	Jan. 13	54	142
Graham, William R., Everton, England. Games, puzzles, and toys	19,205	Mar. 24	54	1566
Graves & Sons, Chester H., Boston, Mass. Ale	19,119	Mar. 3	54	1118
Grether, John, Akron, Ohio. Copper polish	18,802	Jan. 6	54	3
Grenle, Albert M., Newport, Ky. Cough-drops	18,940	Feb. 3	54	511
Groves, John D., Philadelphia, Pa. Remedy for rheumatism, neuralgia, and like diseases	19,231	Mar. 31	54	1717
Gulick & Co., Terre Haute, Ind. Emulsions	19,116	Mar. 3	54	1118
Gummey, Spering & Co., Philadelphia, Pa. Tin and terne plates	18,864	Jan. 20	54	270
Gummey, Spering & Co., Philadelphia, Pa. Tin and terne plates	18,902	Jan. 27	54	394
Gurney Hot Water Heater Company, Boston, Mass. Hot-water heaters	19,070	Feb. 24	54	964
Hall, Dewitt C., New York, N. Y. Perforated buckskin underwear	19,055	Feb. 17	54	822
Hall, William H., New York, N. Y. Shaving-cream	19,168	Mar. 10	54	1270
Hansen & Smith, Wilmington, N. C. Species of wood alcohol	18,977	Feb. 10	54	666
Harder, Charles H., Pittsfield, Ill. Ointment	18,784	Jan. 6	54	3
Harnist, William D., Edwardsville, Ill. Veterinary remedies	18,938	Feb. 3	54	511
Harr, Dock D., Belmond, Iowa. Preparation for skin diseases	18,782	Jan. 6	54	2
Harter Medical Co., Sedalia, Mo. Remedy for liver and kidney diseases	18,903	Jan. 27	54	394
Haskin & Todd, Ithaca, N. Y. Poison for vermin	18,910	Jan. 27	54	394
Haviland & Co., New York, N. Y. Porcelain ornaments and toilet and table ware	19,257	Mar. 31	54	1717
Haviland & Co., New York, N. Y. Porcelain ornaments and toilet and table ware	19,258	Mar. 31	54	1718
Hayes, John J., Boston, Mass. Whisky	19,107	Mar. 3	54	1117
Hayward & Bro., Easton, Md. Remedy for cholera and other stomach complaints	19,031	Feb. 17	54	822
Henninger Bros., Havana, Ill. Yeast cakes	18,968	Feb. 10	54	666
Hetherington, John E., New York, N. Y. Remedy for diseases of the liver	18,916	Feb. 3	54	510
Hickey, Edmund J., Augusta, Ga. Hair-tonic	19,195	Mar. 17	54	1422
Hickox, William C., New York, N. Y. Beverage containing ginger	18,953	Feb. 10	54	666
Hill & Co., H. M., Lynn, Mass. Spoons, forks, and articles known as flat ware	19,221	Mar. 24	54	1566
Hochstadter, Bettie, New York, N. Y. Kümmel	18,929	Feb. 3	54	511
Hoffman, George E., Cressona, Pa. Salve	19 032	Feb. 17	54	822
Hooper, William J., Baltimore, Md. Cotton twine	18,847	Jan. 13	54	142
Hulbert, Henry C., New York, N. Y. Pure gypsum for paper-making	18,865	Jan. 20	54	270
Hulstkamp, Zoon & Molyn, Rotterdam, Netherlands. Cordials	19,071	Feb. 24	54	964
Hume, Robert D., San Francisco, Cal. Canned salmon	18,783	Jan. 6	54	2
Hume, Robert D., San Francisco, Cal. Canned salmon	18,930	Feb. 3	54	511
Hunt, Peter M., Pittsburg, Pa. Remedy for the cure of catarrh	19,154	Mar. 10	54	1270
Hyde Carpet Cleaner and Moth Exterminating Co., Des Moines, Iowa. Detergent composition resembling soap	19,259	Mar. 31	54	1718
Hyde & Sons, A. G., New York, N. Y. Silesia	19,050	Feb. 17	54	822
Irroy & Co., Ernest, Rheims, France. Champagnes	19,183	Mar. 17	54	1422
Jammes, Albert F., New York, N. Y. Corsets	18,917	Feb. 3	54	510
Jaques, Frank F., Kansas City, Mo. Baking-powder	18,978	Feb. 10	54	666
Jayne, John E., De Witt, Mich. Veterinary remedies	19,120	Mar. 3	54	1118
Johnson, Herman M., San Francisco, Cal. Liquid preparation for medicinal purposes	19,009	Feb. 10	54	667
Jones Chemical Company, Enos F., Jersey City, N. J., and New York, N. Y. Baking-powder	19,072	Feb. 24	54	964
Jones, Herbert A., Hinrods, N. Y. Nursery products, including trees, plants, scions, and fruits	18,911	Jan. 27	54	394
Jones, James W., Americus, Ga. Remedy for diseases of the blood and liver	18,866	Jan. 20	54	270
Jordan, Andrew J., St. Louis, Mo. Shears and scissors, and table, pocket, and shaving cutlery	19,206	Mar. 31	54	1717
Jordan, Andrew J., St. Louis, Mo. Shears and scissors, and table, pocket, and shaving cutlery	19,237	Mar. 31	54	1717
Justi, Henry D., Philadelphia, Pa. Artificial teeth	19,022	Feb. 17	54	821
Kahn, Benjamin, New York, N. Y. Hats and caps	19,155	Mar. 10	54	1270
Kalbe, Eugen, Berlin, Germany. Accordions	19,041	Feb. 17	54	822
Kampmann & Meyer, New York, N. Y. Fringes	18,969	Feb. 10	54	666
Kampmann & Meyer, New York, N. Y. Embroidery materials, plush and chenille ornaments, and trimmings for upholstery	18,980	Feb. 10	54	667
Kansas City Soap Company, Kansas City, Mo., and Kansas City, Kans. Laundry-soap	19,140	Mar. 3	54	1118
Kast & Ehinger, Stuttgart, Germany. Printing and lithographing inks	18,827	Jan. 13	54	142
Kelly, William E., New Brunswick, N. J. Steam-boilers	18,941	Feb. 3	54	511
Kemink, Theodore, Grand Rapids, Mich. Remedy for diseases of the blood, liver, and kidneys	19,033	Feb. 17	54	822
Kennard Novelty Company, Baltimore, Md. Toys known as talking-boards	18,919	Feb. 3	54	510
Kilmer & Co., Binghamton, N. Y. Kidney, liver, and bladder remedy	19,161	Mar. 10	54	1270
Kimball & Son, L., Haverhill, Mass. Spoons, forks, and articles known as flat ware	19,222	Mar. 24	54	1566
Klaine, Frank A., Cincinnati, Ohio Heating and cooking stoves	19,238	Mar. 31	54	1717
Klucher Manufacturing Co., Brooklyn, N. Y. Toy torpedoes	19,223	Mar. 24	54	1566
Knight and Crowther, Limited, Cookley Works, county of Stafford, England. Tin plates	18,979	Feb. 10	54	667
Knoxville Brewing Company, Knoxville, Tenn. Lager-beer	19,010	Feb. 10	54	667
Kohler Manufacturing Company, Baltimore, Md. Remedy for headache and neuralgia	18,785	Jan. 6	54	3
Kohler Manufacturing Company, Baltimore, Md. Corn-salve and cough-sirup	18,867	Jan. 20	54	270
Krauss, Otto A., New York, N. Y. Gin	18,804	Jan. 6	54	3
Krauth, Elmir, Toledo, Ohio. Pills	19,236	Mar. 31	54	1717
Krieg & Co., J. K., New York, N. Y. Boots, shoes, and shoe-laces	18,868	Jan. 20	54	270
Kring, Alfred O., St. Louis, Mo. Remedies for diseases of the throat and lungs	19,121	Mar. 3	54	1118
Krystofovitch, Paul de, Paris, France. Artificial granite for ornamental and building purposes	18,803	Jan. 6	54	3
Kuehl, George, Chicago, Ill. Game-counters	19,156	Mar. 10	54	1270
Ladd, William J., New York, N. Y. Compound for cleaning and polishing metals	18,905	Jan. 27	54	394
Laidley, Edwin T., Port Jervis, N. Y. Remedy for headache, nervousness, and insomnia	18,786	Jan. 6	54	3
Lambert, Emerson B., Port Jervis, N. Y. Vaginal suppositories	19,034	Feb. 17	54	822
Lancaster Caramel Co., Lancaster, Pa. Caramels and candies	18,942	Feb. 3	54	511
Landers, Frary & Clark, New Britain, Conn. Cutlery for household use	19 091	Feb. 24	54	964
Layton, George B., New Glasgow, Canada. Remedy for dyspepsia	18,918	Feb. 3	54	510
Lebeault & Co., P., Paris, France. Medicated wine	19,162	Mar. 10	54	1270
Lebeault & Co., P., Paris, France. Medicated wine	19,163	Mar. 10	54	1270
Lebeault & Co., P., Paris, France. Medicated wine	19,164	Mar. 10	54	1270
Leslie & Co., Charles, St. Louis, Mo. Remedy for diseases of the throat and lungs	19,122	Mar. 3	54	1118
Liebman, Mario, Brooklyn, N. Y. Cotton-seed oil	19,073	Feb. 24	54	964
Lily White Washing Compound Company, Jersey City, N. J., and New York, N. Y. Oleaginous preparation for washing clothes	18,869	Jan. 20	54	270
Linoide Manufacturing Company, Boston, Mass., and Saco, Me. Preservative for paint, wood, and metal	18,805	Jan. 6	54	3
Lion Silk Association, New York, N. Y. Silk piece-goods	18,806	Jan. 6	54	3

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

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Lloyd, Eastburn, Chicago, Ill. Cement	19,228	Mar. 24	54	1566
Low, Daniel, Salem, Mass. Articles made wholly or in part of silver	18,838	Jan. 13	54	142
Low, Daniel, Salem, Mass. Articles made wholly or partly of silver	19,099	Feb. 24	54	964
Lynde & Son Company, B. A., Warren, Pa. Laundry and toilet soap	18,954	Feb. 10	54	666
Lyon, William H., Newburg, N. Y. Table-ware technically known as flat ware	18,906	Jan. 27	54	394
Macfarlane & Mordue, Louisville, Ky. Cannel-coal	19,239	Mar. 31	54	1717
Macintosh & Company, Limited, Charles, Manchester and London, England. Rubber goods	18,788	Jan. 6	54	3
Main Belting Company, Philadelphia, Pa., and Chicago, Ill. Leather belting	18,807	Jan. 6	54	3
Majestic Perfume Co., New York, N. Y., and Nashville, Tenn. Perfumery and toilet-soap	19,190	Mar. 17	54	1422
Mandabach, P. A., Columbus, Ohio. Internal and external remedy for skin diseases	19,123	Mar. 3	54	1118
Mandel, Adolf, New York, N. Y. Candles	18,870	Jan. 20	54	270
Mandel, Salomon, New York, N. Y. Flowers and feathers for millinery	18,945	Feb. 3	54	511
Manitowoc Manufacturing Company, Manitowoc, Wis. School-desks	18,893	Jan. 20	54	270
Mansur & Tebbetts Implement Company, St. Louis, Mo. Plows and cultivators	18,787	Jan. 6	54	3
Marshall, Louise F., New York, N. Y. Toilet-soap, perfumery, powder, and hair-restoratives	19,187	Mar. 17	54	1422
Martin & Co., E. Rémy, Rouillac, France. Brandy	18,920	Feb. 3	54	510
Martin & Co., E. Rémy, Rouillac, France. Brandy	18,921	Feb. 3	54	510
Martin & Co., E. Rémy, Rouillac, France. Brandy	18,922	Feb. 3	54	510
Martin & Co., E. Rémy, Rouillac, France. Brandy	18,923	Feb. 3	54	510
Martin & Co., E. Rémy, Rouillac, France. Brandy	18,982	Feb. 10	54	667
Maurey-Deschamps, Felix A., Paris, France. Combs	19,180	Mar. 17	54	1422
Maurey-Deschamps, Felix A., Paris, France. Toilet-combs	19,181	Mar. 17	54	1422
Mayer & Loewenstein, New York, N. Y. Varnishes, japans, oil-finish, and bronzing-liquid	19,185	Mar. 17	54	1422
Mechanical Fabric Company, Providence, R. I. Card-clothing	18,887	Jan. 20	54	270
Melingriffith Company, Limited, Melingriffith Works, near Cardiff, county of Glamorgan, England. Sheet-iron, tin plates, and terne plates	18,794	Jan. 6	54	3
Melingriffith Company, Limited, Melingriffith Works, near Cardiff, county of Glamorgan, England. Sheet-iron, tin plates, and terne plates	18,816	Jan. 6	54	3
Melingriffith Company, Limited, Melingriffith Works, near Cardiff, county of Glamorgan, England. Sheet-iron, tin plates, and terne plates	18,817	Jan. 6	54	3
Melingriffith Company, Limited, Melingriffith Works, near Cardiff, county of Glamorgan, England. Sheet-iron, tin plates, and terne plates	18,818	Jan. 6	54	3
Melingriffith Company, Limited, Melingriffith Works, near Cardiff, county of Glamorgan, England. Sheet-iron, tin plates, and terne plates	18,819	Jan. 6	54	3
Membrey, John H., London, England. Pale orange bitters	19,092	Feb. 24	54	964
Menendez y Martinez, Francisco, Havana, Cuba. Cigars	18,871	Jan. 20	54	270
Menendez y Martinez, Francisco, Havana, Cuba. Cigars	18,872	Jan. 20	54	270
Menendez y Martinez, Francisco, Havana, Cuba. Cigars	18,873	Jan. 20	54	270
Metzger & Seligmann, New York, N. Y. Wines and liquors	18,955	Feb. 10	54	666
Meyer & Brother Company, Max, Omaha, Nebr. Guitars, mandolins, zithers, banjos, and like stringed instruments	18,943	Feb. 3	54	511
Meyer, Julius D., Portland, Oregon. Cigars	19,100	Feb. 24	54	964
Middlesex Manufacturing Company, Lower Jamesburg, N. J. Shirts, drawers, and overalls	18,926	Feb. 3	54	510
Mitchell, Leslie D., Brattleborough, Vt. Musical instruments known as xylophones and bells	19,149	Mar. 10	54	1270
Moore & Co., Charles H., Cincinnati, Ohio. Journal compounds and lubricating oils and grease	19,184	Mar. 17	54	1422
Moore, George A., St. John, Canada. Cough medicine	19,035	Feb. 17	54	822
Morgan & Company, D. S., Brockport, N. Y. Harrows and pulverizers	19,074	Feb. 24	54	964
Morgan & Co., W. W., Kansas City, Mo. Children's clothing	18,808	Jan. 6	54	3
Morgan, John, New York, N. Y. Mineral water	18,901	Jan. 27	54	394
Morris, George L., and W. T. Wilson, London, England. Bicycles, tricycles, and other cycles	19,157	Mar. 10	54	1270
Morrison, James L., New York, N. Y. Wire-stitching machines	19,124	Mar. 3	54	1118
Morrison, James L., New York, N. Y. Wire for stitching-machines	19,125	Mar. 3	54	1118
Mowry, George W., Rochester, N. Y. Medicine for inhalation	18,912	Jan. 27	54	394
Mullen-Blackledge Company, Indianapolis, Ind. Catsups, table-sauce, pickles, and relishes	18,906	Feb. 10	54	667
Murias & Co., J. S., Havana, Cuba. Cigars	19,265	Mar. 31	54	1718
Murray, Patrick M., Hillsborough, Tex. Liniment	19,233	Mar. 31	54	1717
National Brewing Company, Baltimore and Baltimore County, Md. Beer	18,997	Feb. 10	54	667
National Brewing Company, Baltimore and Baltimore County, Md. Beer	18,998	Feb. 10	54	667
Nenhaus, Louis, New York, N. Y. Tablets for duplicating manuscript	19,109	Mar. 3	54	1117
New Orleans Coffee Company, Limited, New Orleans, La. Coffee	18,907	Jan. 27	54	394
New York Biscuit Company, Chicago, Ill., New York, N. Y., and Cambridgeport, Mass. Biscuits, crackers, wafers, cakes, and kindred articles	18,894	Jan. 20	54	270
New York Powder Company, New York, N. Y. Powder, fuses, caps, and other articles for blasting purposes	18,913	Jan. 27	54	394
Newman, Henry, New York, N. Y. Braids	19,216	Mar. 24	54	1566
Noble & Haanel, St. Louis, Mo. Monthly publications	18,809	Jan. 6	54	3
Nolet, Arnoldus C. A., Schiedam, Holland. Gin	18,839	Jan. 13	54	142
Nonantum Worsted Company, Newton and Boston, Mass. Remedy for throat and lung diseases	19,036	Feb. 17	54	822
Norman & Bennett, Boston, Mass. Boots and shoes	18,934	Feb. 3	54	511
Northfield Knife Company, Litchfield, Conn. Cutlery, including shears, scissors, and razors	19,215	Mar. 24	54	1566
O'Meara, John C., Washington, D. C. Rock-candy flavored for use in cordials	19,126	Mar. 3	54	1118
Old Castle Iron and Tinplate Company, Limited, Llanelly, England. Tin plates, terne plates, and tin taggers	19,025	Feb. 17	54	821
Old Castle Iron and Tinplate Company, Limited, Llanelly, England. Tin plates, terne plates, and tin taggers	19,026	Feb. 17	54	821
Old Castle Iron and Tinplate Company, Limited, Llanelly, England. Tin plates, terne plates, and tin taggers	19,027	Feb. 17	54	821
Old Castle Iron and Tinplate Company, Limited, Llanelly, England. Tin plates, terne plates, and tin taggers	19,028	Feb. 17	54	822
Old Castle Iron and Tinplate Company, Limited, Llanelly, England. Tin plates, terne plates, and tin taggers	19,029	Feb. 17	54	821
Old Castle Iron and Tinplate Company, Limited, Llanelly, England. Tin plates, terne plates, and tin taggers	19,247	Mar. 31	54	1717
Orient Manufacturing Company, Long Beach and New York, N. Y. Alum	18,810	Jan. 6	54	3
Oskamp, Clemens, Omaha, Nebr. Meal	19,234	Mar. 31	54	1717
Ostrom & Lincoln, Bridgeport, Conn. Toilet-soap	19,240	Mar. 31	54	1717
Oyster Cultivation and Canning Company, Brunswick, Ga. Canned fish, fruits, and vegetables	18,789	Jan. 6	54	3
Page, James P., New York, N. Y. Sewing-machines and attachments	19,128	Mar. 3	54	1118
Paillard & Co., M. J., New York, N. Y. Music-boxes	18,775	Jan. 6	54	2
Paine, Thomas, Dallas, Tex. Line of proprietary medicines	19,037	Feb. 17	54	822
Panacea Springs and Hotel Company, Raleigh, N. C. Mineral water	18,960	Feb. 10	54	666
Pape, Charles H., St. Louis, Mo. Hair-restoratives	19,169	Mar. 10	54	1270
Parker, John H., Boston, Mass. Hosiery	18,924	Feb. 3	54	510
Patton, Alexander G., Columbus, Ohio. Kitchen-stove furniture	19,127	Mar. 3	54	1118

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Pepper & Co., James E., Lexington, Ky. Whisky	19,075	Feb. 24	54	964
Pepper & Co., James E., Lexington, Ky. Whisky	19,076	Feb. 24	54	964
Percival & Co., D. C., Boston, Mass. Vest-chains	19,011	Feb. 10	54	667
Percival & Co., D. C., Boston, Mass. Vest-chains	19,012	Feb. 10	54	667
Percival & Co., D. C., Boston, Mass. Opera, marine, and field glasses and lenses	19,023	Feb. 17	54	821
Perkins, Pembroke C., Pittsburg, Pa. Patterns for cutting garments	19,042	Feb. 17	54	822
Perré & Co., Eugène, Rheims, France. Champagne	18,790	Jan. 6	54	3
Phillips, Nanes & Co., Dafen, Llanelly, England. Tin plates	18,981	Feb. 10	54	667
Pilling & Madeley, Philadelphia, Pa. Hosiery	19,129	Mar. 3	54	1118
Pittman & Harrison, Sherman, Tex. Grain	18,937	Feb. 3	54	511
Pontypool Iron and Tinplate Company, Limited, Pontypool, England. Tin plates and terne plates	19,248	Mar. 31	54	1717
Pontypool Iron and Tinplate Company, Limited, Pontypool, England. Tin plates and terne plates	19,249	Mar. 31	54	1717
Pontypool Iron and Tinplate Company, Limited, Pontypool, England. Tin plates	19,250	Mar. 31	54	1717
Pontypool Iron and Tinplate Company, Limited, Pontypool, England. Tin plates	19,251	Mar. 31	54	1717
Pontypool Iron and Tinplate Company, Limited, Pontypool, England. Tin plates	19,191	Mar. 17	54	1422
Porous Waterproofing Co., Philadelphia, Pa. Water-proof fabrics and garments	18,999	Feb. 10	54	667
Port Talbot Tinplate Company, Limited, Port Talbot, England. Tin-plate in sheets	19,000	Feb. 10	54	667
Port Talbot Tinplate Company, Limited, Port Talbot, England. Tin-plate in sheets	19,057	Feb. 17	54	822
Port Talbot Tinplate Company, Limited, Port Talbot, England. Tin-plate in sheets	19,217	Mar. 24	54	1566
Potter & Co., J., Clinton, Mass. Remedy for the blood	19,260	Mar. 31	54	1718
Potts, David G., Philadelphia, Pa. Remedy for blood and liver diseases	18,776	Jan. 6	54	2
Prange, Leo, Brooklyn, N. Y. Glass and jet buttons	18,874	Jan. 20	54	270
Prange, Leo, Brooklyn, N. Y. Jet buttons	18,875	Jan. 20	54	270
Prange, Leo, Brooklyn, N. Y. Jet buttons	18,876	Jan. 20	54	270
Prange, Leo, Brooklyn, N. Y. Jet buttons	19,196	Mar. 17	54	1422
Printz & Co., Georg, Aachen, Prussia, Germany. Sewing-needles	19,188	Mar. 17	54	1422
Procter & Gamble, Hamilton County, Ohio. Laundry-soap	19,189	Mar. 17	54	1422
Procter & Gamble, Hamilton County, Ohio. Laundry-soap	19,170	Mar. 10	54	1270
Protection Papier Co., Philadelphia, Pa. Certain named remedies				
Provident Chemical Works, St. Louis, Mo., and New York, N. Y. Phosphate for use in manufacturing sugar	19,206	Mar. 24	54	1566
Prunine Medicine Company, North Bend, Nebr. Remedy for coughs, colds, constipation, and diseases of the blood	18,791	Jan. 6	54	3
Purtle, Catharine A., Erie, Pa. Certain named remedies	19,077	Feb. 24	54	964
Racine & Co., Jules, New York, N. Y., and Chicago, Ill. Watches	18,841	Jan. 13	54	142
Racine & Co., Jules, New York, N. Y., and Chicago, Ill. Watches	18,842	Jan. 13	54	142
Ragio, William P. T., Nashville, Tenn. Hair-tonic	19,197	Mar. 17	54	1422
Read, William F., Philadelphia, Pa. Dress-goods and umbrella-coverings	18,888	Jan. 20	54	270
Reist, Nissly & Co., Mount Joy, Pa. Butter	18,812	Jan. 6	54	3
Retsof Mining Company, York and New York, N. Y. Salt	19,141	Mar. 3	54	1118
Renther Leopold, New York, N. Y. Whisky and brandy	18,811	Jan. 6	54	3
Revere Rubber Company, Boston, Mass. Hose, belting, and packing for machinery	19,078	Feb. 24	54	964
Rheinstrom Bros., Cincinnati, Ohio. Whisky	18,983	Feb. 10	54	667
Rice & Hutchins, Boston, Mass. Boots and shoes	18,971	Feb. 10	54	666
Richards Medicine Co., A. B., Sherman, Tex. Castor-oil	18,925	Feb. 3	54	510
Richmond, Samuel A., Tuscola, Ill. Remedy for epilepsy and other nervous diseases	19,150	Mar. 10	54	1270
Rickerby, Alfred M., Brooklyn, N. Y. Malt liquors	19,207	Mar. 24	54	1566
Rickerby, Alfred M., Brooklyn, N. Y. Malt liquors	19,043	Feb. 17	54	822
Riedel, the firm of, J. D., Berlin, Germany. Antipyretics	18,970	Feb. 10	54	666
Richman & Peterson, Newark, N. J. Cigars	19,244	Mar. 31	54	1717
Rimmer, Emma, Chicago, Ill. Toilet soaps and lotions	19,051	Feb. 17	54	822
Ritchie & Eason, Manchester, England. Tracing-cloth	19,142	Mar. 3	54	1118
Robbins, Frances A., Nahant, Mass. Cough-syrup and cough-drops	18,944	Feb. 3	54	511
Roberts, Mary N., Chicago, Ill. Pomade for the complexion	18,958	Feb. 10	54	666
Robertson, John, Philadelphia, Pa. Remedy for nervous diseases	18,957	Feb. 10	54	666
Robison, Charles W. and R. B., Pittsburg, Pa. Liquid extract of beef				
Robison, Robert B. (See Robison, Charles W. and R. B.)	19,130	Mar. 3	54	1118
Rosenberg, Morris, Philadelphia, Pa. Remedy for rheumatism and kindred ailments	18,994	Feb. 10	54	667
Rosser, Son & Co., Richard, Cilfrew, near Neath, England. Tin-plate	18,995	Feb. 10	54	667
Rosser, Son & Co., Richard, Cilfrew, near Neath, England. Tin-plate in sheets	19,021	Feb. 17	54	821
Royal Remedy and Extract Company, Dayton, Ohio. Chewing-gum				
Russ, Eveleth & Ingalls, Boston, Mass., and New York, N. Y. Worsted and muslin garments, underwear, and knit goods	19,224	Mar. 24	54	1566
Rutledge, William, Boston, Mass. Ale	18,956	Feb. 10	54	666
Saavedra, José, Havana, Cuba. Cigars	18,877	Jan. 20	54	270
Saavedra, José, Havana, Cuba. Cigars	18,878	Jan. 20	54	270
Saavedra, José, Havana, Cuba. Cigars	18,879	Jan. 20	54	270
Saavedra, José, Havana, Cuba. Cigars	18,880	Jan. 20	54	270
Saavedra, José, Havana, Cuba. Cigars	18,881	Jan. 20	54	270
Saavedra, José, Havana, Cuba. Cigars	19,158	Mar. 10	54	1270
Scheel, William H., New York, N. Y. Varnish-gums	19,056	Feb. 17	54	822
Schmidt, Charles M., Buffalo, N. Y. Insect-powder	19,132	Mar. 3	54	1118
Schweppe & Co., Limited, J., London, England. Sarsaparilla beverage	19,225	Mar. 24	54	1566
Scott & Bowne, New York, N. Y. Emulsions and like preparations	18,892	Jan. 20	54	270
Scovill & Adams Company, New Haven, Conn., and New York, N. Y. Photographic cards	19,143	Mar. 3	54	1118
Sellers & Sons, John, New York, N. Y., and Sheffield, England. Razors	19,131	Mar. 3	54	1118
Sheldon, Walter P., Malden, Mass. Soda-water	18,984	Feb. 10	54	667
Silberhorn Company, Sioux City, Iowa, and Chicago, Ill. Lard	18,985	Feb. 10	54	667
Silberhorn Company, Sioux City, Iowa, and Chicago, Ill. Hams, shoulders, sides, and bacon	19,086	Feb. 24	54	964
Silicon Wall Plaster and Manufacturing Company, Kansas City, Mo. Cement and plaster	18,889	Jan. 20	54	270
Silvera & Lopez, New York, N. Y. External medicines and tonics	18,935	Feb. 3	54	511
Smith & Co., H. E., Worcester, Mass. Boots, shoes, and lasts				
Smith, Hogg & Gardner, New York, N. Y., and Boston, Mass. Fabrics of cotton, wool, or mixed cotton and wool	19,080	Feb. 24	54	964
Smith, Leon B., Houston, Tex. Shirts, drawers, pantaloons, overalls, jerseys, suspenders, and neckties	19,209	Mar. 24	54	1566
Smither, Robert K., Buffalo, N. Y. Disinfectant and insect-destroyer	19,013	Feb. 10	54	667
Southern Soda Works, Nashville, Tenn. Cooking soda	18,828	Jan. 13	54	142
Spalding & Bros., A. G., Chicago, Ill., and New York, N. Y. Bicycles and tricycles	19,172	Mar. 10	54	1270
Spalding & Bros., A. G., Chicago, Ill., and New York, N. Y. Bicycles and tricycles	19,173	Mar. 10	54	1270
St. Louis Honey-Wine Co., St. Louis, Mo. Soda-water, ginger-ale, and beverages containing honey	18,882	Jan. 20	54	270
Staab, Catharine A., Cleveland, Ohio. Plasters and salves	19,147	Mar. 3	54	1118
Standard Clothing Company, Boston, Mass. Outside garment called an ulster	18,959	Feb. 10	54	666
Standard Coal and Fuel Company, Boston, Mass. Chemicals for increasing the combustion of fuel	19,081	Feb. 24	54	964
Standard Distilling Co., Cincinnati, Ohio. Whisky	19,171	Mar. 10	54	1270

Alphabetical list of registrants of trade-marks, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Stanley Rule and Level Company, New Britain, Conn., and New York, N. Y. Wood-workers' tools and machines	18,792	Jan. 6	54	3
Stanton & Company, Chicago, Ill. Whisky	18,946	Feb. 3	54	511
Stiegerwald, Andrew S. Philadelphia, Pa. Face-powders and prepared chalk	19,087	Feb. 24	54	964
Stiles, Noel W., Boston, Mass. Corn-salve	19,210	Mar. 24	54	1566
Stoeckel, Jennie R., New York, N. Y. Stove-polish	19,082	Feb. 24	54	964
Strasburger & Co., Byron L., New York, N. Y. Watch movements and cases	19 044	Feb. 17	54	822
Strasburger & Co., Byron L., New York, N. Y. Watch movements and cases	19,045	Feb. 17	51	822
Strasburger & Co., Byron L., New York, N. Y. Watch movements and cases	19,046	Feb. 17	54	822
Strasburger & Co., Byron L., New York, N. Y. Watch movements and cases	19,047	Feb. 17	54	822
Strasburger & Co., Byron L., New York, N. Y. Watch movements and cases	19,079	Feb. 24	54	964
Suarez y Gonzalez, Benito, Havana, Cuba. Cigars	18,861	Jan. 20	54	270
Suarez y Gonzales, Benito, Havana, Cuba. Cigars	18,862	Jan. 20	54	270
Sun I See Oil Company, Racine, Wis. Medicine for external application	18,847	Feb. 3	54	511
Sunbeam Incandescent Lamp Company, Chicago, Ill. Incandescent electric lamps	18,931	Feb. 3	54	511
Superior Furnace Company, Little Falls, N. Y. Steam and hot-water heaters and furnaces	19,198	Mar. 17	54	1422
Swartwout, Emma J., Newark, N. J. Corsets, waists, and shoulder-braces	19,093	Feb. 24	54	964
Sweeting, Sherman C. (See Sweeting, William H. and S. C.)				
Sweeting, William H. and S. C., Savannah, N. Y. Headache remedy	19,038	Feb. 17	54	822
Tack, William, Hilton, N. J. Remedy for toothache, neuralgia, and other nervous diseases	19,165	Mar. 10	54	1270
Talcott, Walter O., Providence, R. I. Hooks for machine-belting	18,973	Feb. 10	54	666
Taylor, Ira, New York, N. Y. Articles treated or coated with litho-carbon	19,083	Feb. 24	54	964
Tettelbach, John, Cleveland, Ohio. Cooking-ranges	18,891	Jan. 20	54	270
Thompson Milling Company, Lockport, N. Y. Flour	18,890	Jan. 20	54	270
Thompson, Wm. & P., New York, N. Y., and Dublin, Ireland. Compound for refining, purifying, and mellowing spirituous liquors	19,024	Feb. 17	54	821
Thomson, William S., London, England. Perfumery, soaps, washes, and lotions	19,094	Feb. 24	54	964
Thomson, William S., London, England. Soap, perfumery, cosmetics, and like toilet preparations	19,151	Mar. 10	54	1270
Tilton Mills, Tilton, N. H. Woven wool fabrics	18,813	Jan. 6	54	3
Tode Brothers, New York, N. Y. Mustard	19,229	Mar. 24	54	1566
Travers Bros., New York, N. Y. Twines, lines, cords, rope, and thread	19,150	Mar. 10	54	1270
Tucker, Nathan, Mount Gilead, Ohio. Remedy for hay-fever and catarrhal diseases	18,938	Feb. 3	54	511
Underwood & Co., John, New York, N. Y. Type-writer ribbons	19,133	Mar. 3	54	1118
Underwood & Co., John, New York, N. Y. Ribbons for type-writers	19,134	Mar. 3	54	1118
Union Bag and Paper Company, Chicago, Ill. Paper bags	19,192	Mar. 17	54	1422
Union Special Sewing Machine Company, Chicago, Ill. Knit shirts and drawers	19,176	Mar. 17	54	1422
Van Buskirk, Roswell, Newark, N. J. Line of proprietary medicines	19,110	Mar. 3	54	1117
Van Houten & Zoon, C. J., Weesp, Holland. Cocoa	18,908	Jan. 27	54	394
Van Schaack & Sons, Peter, Chicago, Ill. Whisky	18,961	Feb. 10	54	666
Vernon, Richard R., New York, N. Y. Letter books and indexes	19,136	Mar. 3	54	1118
Victor Medical Association, South Bend, Ind. Suppositories for female diseases	19,101	Feb. 24	54	964
Villamil & Co., J., Havana, Cuba. Cigars	19,266	Mar. 31	54	1718
Vimenet, Jules, Brussels, Belgium. Hats and caps	19,084	Feb. 24	54	964
Vosburgh, Henry, Allegan, Mich. Remedy for rheumatism	18,949	Feb. 3	54	511
Walker & Co., James, London, England. Vulcanizable rubber for use in dentistry	19,226	Mar. 24	54	1566
Walters, Edwin, Baltimore, Md. Whisky	19,085	Feb. 24	54	964
Warren-Brown Company, Chicago, Ill. Certain named remedies	19 218	Mar. 24	54	1566
Warren-Brown Company, Chicago, Ill. Certain named remedies	19,219	Mar. 24	54	1566
Wasboe, Olaf, New York, N. Y. Cod-liver oil	19,048	Feb. 17	54	822
Water King Soap Company, Kansas City, Kans. Laundry-soap	19,144	Mar. 3	54	1118
Wankenhose Company, Portland, Me., and Boston, Mass. Hosiery	18,814	Jan. 6	54	3
Webb Manufacturing Company, Nashville, Tenn. Washing-blue	18,820	Jan. 6	54	3
Webb Manufacturing Company, Nashville, Tenn. Remedy for diseases of the stomach and children's diseases	18,821	Jan. 6	54	4
Webb, Shakspeare & Williams, Limited, Pontardulais, England. Tin plates	18,975	Feb. 10	54	666
Webb, Shakspeare & Williams, Limited, Pontardulais, England. Tin plates	18,987	Feb. 10	54	667
Webb, Shakspeare & Williams, Limited, Pontardulais, England. Tin plates	18,988	Feb. 10	54	667
Webb, Shakspeare & Williams, Limited, Pontardulais, England. Tin plates	18,989	Feb. 10	54	667
Webb, Shakspeare & Williams, Limited, Pontardulais, England. Tin plates	18,990	Feb. 10	54	667
Webb, Shakspeare & Williams, Limited, Pontardulais, England. Tin plates	18,991	Feb. 10	54	667
Webb, Shakspeare & Williams, Limited, Pontardulais, England. Tin plates	19,193	Mar. 17	54	1422
Whitehouse, Daniel, Abercarn, England. Tin-plate in sheets	19,001	Feb. 10	54	667
Whitehouse, Daniel, Abercarn, England. Tin-plate in sheets	19,002	Feb. 10	54	667
Whitehouse, Daniel, Abercarn, England. Tin-plate in sheets	19,003	Feb. 10	54	667
Whittaker & Sons, Francis, St. Louis, Mo., East St. Louis, Ill., and Wichita, Kansas. Bacon	18,963	Feb. 10	54	666
Whittaker & Sons, Francis, St. Louis, Mo., East St. Louis, Ill., and Wichita, Kans. Fresh and cured beef, hog and sheep products, including lard	19,102	Feb. 24	54	964
Wilensky, Oscher, New York, N. Y. Clothing for men and boys	18,962	Feb. 10	54	666
Wilhelm Company, A., Reading, Pa. Mixed paints	18,895	Jan. 20	54	270
Williams & Co., Limited, Joshua, Neath, England. Tin and terne plates	19,230	Mar. 24	54	1566
Wilson, Joseph, Chislehurst, England. Embrocation	18,904	Jan. 27	54	394
Wilson, William T. (See Morris and Wilson.)				
Wingren & Co., Estella, Burlington, Kans. Electric insoles	19,111	Mar. 3	54	1117
Woerner Preserving Company, Syracuse, N. Y. Mince-meat	18,793	Jan. 6	54	3
Wolf, Harris, Chicago, Ill. Ladies' and gentlemen's furnishings	19,153	Mar. 10	54	1270
Wood, Alice L. V., Minneapolis, Minn. Gloves	18,846	Jan. 13	54	142
Wood, Robert, Syracuse, N. Y. Automatic sprinklers	19,252	Mar. 31	54	1717
Woodbury, Horace S., Boston, Mass. Wines and alcoholic liquors	19,261	Mar. 31	54	1718
Woodbury, Melville, Beverly and Boston, Mass. Boots, shoes, and slippers	18,974	Feb. 10	54	666
Woods, Joseph W., Boston, Mass. Cotton fabrics	18,896	Jan. 20	54	270
Woolson Spice Company, Toledo, Ohio. Mocha, Java, and Rio coffee	19,177	Mar. 17	54	1422
Wright & Ditson, Boston, Mass. Tennis-rackets	19,186	Mar. 17	54	1422
Wunderle, Philip, Philadelphia, Pa. Confectionery	19,135	Mar. 3	54	1118
Wunsch, Eugene, Cincinnati, Ohio. Embrocation for rheumatism, neuralgia, and similar ailments	19,199	Mar. 17	54	1422
Wyckoff, Seamans & Benedict, New York, N. Y. Writing and type-writer paper	18,844	Jan. 13	54	142
Wyckoff, Seamans & Benedict, New York, N. Y. Writing and type-writer paper	18,845	Jan. 13	54	142
Yeatts & Troth, Philadelphia, Pa. Men's outfittings	18,950	Feb. 3	54	511
Young, George, Utica, N. Y. Crackers and biscuit	19,059	Feb. 17	54	822

ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
American Herbal Medicine Company, New York, N. Y. "Golden Seal Compound." (For medicine)	6,410	Jan. 13	54	142
American Herbal Medicine Company, New York, N. Y. "Quick Relief." (For medicine)	6,411	Jan. 13	54	142
Arnicarboline Co., Milwaukee, Wis. "Medicated and free from all Impurities, for Shaving and Shampooing, Fragrant and Refreshing." (For soap)	6,452	Feb. 17	54	822
Arnicarboline Co., Milwaukee, Wis. "Medicated Fragrant and Refreshing." (For soap)	6,453	Feb. 17	54	822
Barker, Moore & Mein Medicine Company, Philadelphia, Pa. "Barker's Improved Chemical & Vegetable Horse, Cattle, & Poultry Powder"	6,429	Feb. 3	54	511
Bartholomay Brewery Company, Rochester, N. Y. "The Bartholomay Bavarian." (For lager-beer)	6,406	Jan. 6	54	4
Bartholomay Brewery Company, Rochester, N. Y. "The Bartholomay Bohemian." (For lager-beer)	6,407	Jan. 6	54	4
Bartholomay Brewery Company, Rochester, N. Y. "The Bartholomay Standard." (For lager-beer)	6,408	Jan. 6	54	4
Bell Medicine Co., St. Louis, Mo. "Nervine"	6,448	Feb. 17	54	822
Bergman, Charlotte, Brooklyn, N. Y. "Mrs. Charlotte Bergman's Sore-Salve"	6,419	Jan. 20	54	270
Bergman, Charlotte, Brooklyn, N. Y. "Mrs. Charlotte Bergman's Balsam"	6,420	Jan. 20	54	270
Bergman, Charlotte, Brooklyn, N. Y. "Mrs. Charlotte Bergman's Family Medicine"	6,421	Jan. 20	54	270
Bergman, Charlotte, Brooklyn, N. Y. "Mrs. Charlotte Bergman's Bacillus Destroyer and Lung Restorer"	6,456	Feb 17	54	822
Bindley & Co., E. H., Terre Haute, Ind. "Syrup of Prunes." (For a medicine)	6,473	Mar. 10	54	1270
Burwell & Lacey, Boston, Mass. "Marienbad Obesity Pills"	6,479	Mar. 24	54	1566
Chicago Wood Finishing Company, Chicago, Ill. "Japanese Surfacing Lacquer"	6,422	Jan. 20	54	270
Cleveland Rubber Company, Cleveland, Ohio. "Seamless Tube Rubber Hose"	6,480	Mar. 24	54	1566
Clevenger Hair Balsam Co., Minneapolis, Minn. "Directions for using Clevenger's Hair Balsam"	6,472	Mar. 10	54	1270
Conday, Paul, Pittsburg, Pa. "Conday's Export Extract of Wild Cherry"	6,458	Feb. 17	54	822
Culbert & Taylor, New York, N. Y. "Culbert & Taylor Agents for Martini & Rossi." (For vermouth)	6,430	Feb. 3	54	511
Daniel, John B., Atlanta, Ga. "Winter's Life Elixir Tonic and Antiperiodic"	6,426	Feb. 3	54	511
Dannenberg, Isaac, Baltimore, Md. "Golden Colored Pure Rye Whisky"	6,461	Feb. 24	54	964
Davis Manufacturing Company, Columbus, Ohio. "Dr. A. S. Davis' Balm"	6,488	Mar. 31	54	1718
Davis Manufacturing Company, Columbus, Ohio. "Dr. A. S. Davis' Liniment for Horses"	6,489	Mar. 31	54	1718
Detchon, Irwin A., Crawfordsville, Ind. "Detchon's Compound Extract of Gravel Plant"	6,418	Jan. 13	54	142
Diamond White Grape Company, Rochester and Brighton, N. Y. "Diamond White Grapes"	6,468	Mar. 3	54	1118
Diffusible Tonic Company, Sturgis, Mich. "Diffusible Tonic"	6,434	Feb. 3	54	511
Eldredge & Co., J. B., Bridgeport, Conn. "Eldredge's Cough Remedy"	6,466	Mar. 3	54	1118
Eyes, Robert L., Nashville, Tenn. "White Pine and Mullein Cough Remedy"	6,412	Jan. 13	54	142
Faulkner, Eldridge R., Baltimore, Md. "The Perfect Fire Kindler"	6,462	Feb. 24	54	964
Fleming, George S., Pittsburg, Pa. "Fleming's Pure Rye"	6,436	Feb. 10	54	668
Fleming, George S., Pittsburg, Pa. "Jos. Fleming & Son." (For spirituous liquors)	6,445	Feb. 10	54	668
Florence Tobacco Manufacturing and Warehouse Company, Florence, S. C. "South Carolina Choice." (For plug-tobacco)	6,413	Jan. 13	54	142
Florence Tobacco Manufacturing and Warehouse Company, Florence, S. C. "Florence County." (For plug-tobacco)	6,414	Jan. 13	54	142
Frame, Charles N., Reading, Pa. "Dry Plug Pure Tobacco. (For chewing and smoking")	6,446	Feb. 10	54	668
Gedney Pickle Company, Omaha, Nebr. "Mixed Pickles"	6,460	Feb. 17	54	822
Gilbert, John T., Chicago, Ill. "The Old Essence Man's Extract of Lemon"	6,477	Mar. 24	54	1566
Goldsborough, Charles, Baltimore, Md. "Highspire." (For whisky)	6,416	Jan. 13	54	142
Groves, John D., Philadelphia, Pa. "Dr. Groves Anodyne for Infants"	6,474	Mar. 10	54	1270
Harnist, William D., Edwardsville, Ill. "Fruit Julep." (For medicine)	6,409	Jan. 6	54	4
Higgins, Charles M., Brooklyn, N. Y. "Drawing Board Mucilage"	6,437	Feb. 10	54	668
Hoenny, A. J., St. Louis, Mo. "Jelly of Roses." (For a toilet preparation)	6,441	Feb. 10	54	668
Howell, Alexander C., Hackettstown, N. J. "Non-Alcoholic Extract of Vanilla"	6,407	Mar. 3	54	1118
Jewett, Henry M., Belfast, Me. "Compound Rheumatic Oil"	6,435	Feb. 3	54	511
Joslyn & Co., F. C., Syracuse, N. Y. "Edwards' Cherry and Tolu Compound"	6,427	Feb. 3	54	511
Kimmel, William, Cleveland, Ohio. "Kimmel's Combination Copying Book"	6,443	Feb. 10	54	668
Litzenberg, William, Chillicothe, Mo. "Litzenbergs Horse Liniment"	6,459	Feb. 17	54	822
Long, Charles T., Lebanon, Ohio. "Long's Breakfast Flour"	6,438	Feb. 10	54	668
Marshall, H. P., Mohawk, Tenn. "White Pine Pectoral"	6,428	Feb. 3	54	511
Mayer & Ruehlmann, Philadelphia, Pa. "Self Opener." (For satchels)	6,451	Feb. 17	54	822
McGreevy, George L., Baltimore, Md. "G. L. McGreevy's Compound Tonic"	6,475	Mar. 17	54	1422
Murdoch, J. N., Parkersburg, W. Va. "Dr. Warren's Insomnia Cure"	6,425	Jan. 27	54	394
Ost, Henry, Newark, N. J. "Henry Ost's Prepared Castor Oil"	6,465	Mar. 3	54	1118
Osterholm & Co., A., New York, N. Y. "Sundhets-Salt." (For medical purposes)	6,457	Feb. 17	54	822
Paul, John C., Chicago, Ill. "Metal Polish"	6,423	Jan. 20	54	270
Peloubet, Alexander H., and J. L. Tobin, New York, N. Y. "Buttered Baking Powder"	6,450	Feb. 17	54	822
Price, Walter, Westerly, R. I. "Compound Tolu and Lungwort Cough Syrup"	6,440	Feb. 17	54	822
Retsof Mining Company, York and New York, N. Y. "Retsof Lump Salt"	6,482	Mar. 31	54	1718
Retsof Mining Company, York and New York, N. Y. "Retsof Lump Rock Salt"	6,483	Mar. 31	54	1718
Retsof Mining Company, York and New York, N. Y. "Retsof Pure Rock Salt"	6,484	Mar. 31	54	1718
Retsof Mining Company, York and New York, N. Y. "Retsof Pure Salt"	6,485	Mar. 31	54	1718
Retsof Mining Company, York and New York, N. Y. "Retsof Salt"	6,486	Mar. 31	54	1718
Rickerby, Alfred M., Brooklyn, N. Y. "Mixed Ale"	6,403	Jan. 6	54	4
Rickerby, Alfred M., Brooklyn, N. Y. "Half and Half." (For alcoholic beverages)	6,404	Jan. 6	54	4
Rickerby, Alfred M., Brooklyn, N. Y. "Blended Lager Beer"	6,439	Feb. 10	54	668
Rickerby, Alfred M., Brooklyn, N. Y. "Mixed Beer"	6,440	Feb. 10	54	668
Rinn, Joseph F., Chicago, Ill. "Rinn's Cleansing Compound"	6,478	Mar. 24	54	1566
Rooksby, Charles W., Philadelphia, Pa. "Mineral and Vegetable Combination." (For burning purposes)	6,454	Feb. 17	54	822
Seaman, John F., New York, N. Y. "Botanic Kidney Cure"	6,481	Mar. 31	54	1718
Soden Mineral Springs Company, Limited, New York, N. Y. "The Soden Mineral Pastilles"	6,405	Jan. 6	54	4
Spamhake, August, St. Louis, Mo. "Ointment"	6,444	Feb. 10	54	668
Stearns, Frank H., Felchville, Vt. "Stearns' Ammoniated Food for House Plants"	6,424	Jan. 27	54	394
Stern, Morris H., Milwaukee, Wis. "Stern's Oil." (For neuralgia and rheumatism)	6,431	Feb. 3	54	511
Stern, Morris H., Milwaukee, Wis. "Stern's Cream." (For throat and lung diseases)	6,432	Feb. 3	54	511
Stern, Morris H., Milwaukee, Wis. "Stern's Tonic"	6,433	Feb. 3	54	511

Alphabetical list of registrants of labels, January to March, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Stretch, David E., Trenton, N. J. "Stretch's Penetrating Liniment"	6,487	Mar. 31	54	1718
Thorns Medicine Co., Brattleborough, Vt. "Thorn's Vegetable Cough Cure"	6,447	Feb. 10	54	668
Tobin, James L. (See Peloubet and Tobin.)				
Tudor, Robert L., Maysville, Ky. "R. L. Tudor's Patent Leather and Enameled Leather Softener"	6,476	Mar. 17	54	1422
Vacuum Oil Company, Rochester, N. Y. "The Oil that Lubricates Best"	6,464	Feb. 24	54	964
Vacuum Oil Company, Rochester, N. Y. "The Oil that Lubricates Most"	6,463	Feb. 24	54	964
Vacuum Oil Company, Rochester, N. Y. "The Oils that Lubricate Most"	6,469	Mar. 3	54	1118
Vacuum Oil Company, Rochester, N. Y. "The Oil which Lubricates Best"	6,470	Mar. 3	54	1118
Vacuum Oil Company, Rochester, N. Y. "The Oil which Lubricates Most"	6,471	Mar. 3	54	1118
Wadleigh, F. R., Alton, N. H. "Wadleigh's Kidney Remedy"	6,455	Feb. 17	54	822
Warner, William R., Philadelphia, Pa. "Granular Effervescent Bromo Lithia"	6,417	Jan. 13	54	142
Wilbert, L., Chicago, Ill. "Buttermilk Toilet Soap"	6,415	Jan. 13	54	142
Young, John A., Greensborough, N. C. "Greensboro Nurseries"	6,442	Feb. 10	54	668

DISCLAIMERS.

Name, residence, and invention.	No.	Filed.	Official Gazette. Vol.	Page.
Boynton, Edward S., New York, N. Y.; disclaimer filed by assignee. Valve for pneumatic pipes or tubes	401,680	Jan. 21, 1891	54	511
Smead, Isaac D., Toledo, Ohio; disclaimer filed by assignee. Dry closets, &c	314,884	Mar. 3, 1891	54	1270
Smead, Isaac D., Toledo, Ohio; disclaimer filed by assignee. Dry closets, &c	314,884	Mar. 24, 1891	54	1718
Smead, Isaac D., Toledo, Ohio; disclaimer filed by assignee. Dry closets, &c	363,971	Mar. 3, 1891	54	1270
Smead, Isaac D., Toledo, Ohio; disclaimer filed by assignee. Dry closets, &c	363,971	Mar. 24, 1891	54	1718
Woffenden, George, Newtown, Conn.; disclaimer filed by assignee. (Design.) Rubber slat	11,208	Feb. 6, 1891	54	822

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Volume.	Official Gazette. Page.
Abattoir	J. W. Moyer	447,840	Mar. 10	934	234	54	1302
Accumulator	C. C. Worthington	445,917	Feb. 3	654	160	54	640
Acid. Apparatus for making sulphuric	E. and J. Delplace	446,060	Feb. 10	901	219	54	695
Acid. Dioxynaphthaline-mono-sulphonic	M. Ulrich	444,679	Jan. 13	1093	.....	54	224
Acid phosphate. Making	A. Memminger	445,567	Feb. 3	72	.....	54	526
Actinometer	E. G. Ballard	445,743	Feb. 3	374	96	54	587
Adding and writing machine	A. C. Ludlum. (Reissue)	11,147	Mar. 3	762	190	54	1263
Adding-machine	W. H. Beardsley and L. M. Hosea	447,457	Mar. 3	307	77	54	1175
Adding-machine	R. Corbin	445,240	Jan. 27	2026	522	54	420
Adding-machine	G. B. Gates	448,221	Mar. 17	1551	396	54	1431
Adding-machine	E. F. Jewett	446,753	Feb. 17	2025	505	54	925
Adding-machine	D. J. Rowland	447,363	Mar. 3	141	39	54	1144
Adding-machine	W. P. Bonsall	449,032	Mar. 24	2850	725	54	1687
Addressing-machine	C. E. Hadley	449,320	Mar. 31	3327	839	54	1783
Addressing-machine	G. C. Sherman	447,980	Mar. 10	1171	297	54	1346
Addressing-machine	C. H. Knight	445,183	Jan. 27	1944	502	54	404
Adjustable chair	S. Bisceglia	447,932	Mar. 10	1087	273	54	1331
Adjustable pattern for drafting garments	H. Lioret	446,457	Feb. 17	1579	388	54	839
Advertising apparatus	T. Gill	448,425	Mar. 17	1900	477	54	1499
Advertising-vehicle	G. E. Rowe	444,236	Jan. 6	415	{103 104}	54	82
Advertising-wagon	L. J. Macy	447,573	Mar. 3	498	122	54	1210
Aerator	L. F. Wood	448,568	Mar. 17	2112	529	54	1539
Aerator for milk or other liquids	R. C. Davis and R. R. Brown	446,813	Feb. 17	2117	526	54	946
Aerial ventilator	J. Hobbs	447,566	Mar. 3	484	119	54	1208
Agitator for kettles or tanks	F. S. Kretsinger	445,621	Feb. 3	102	43	54	543
Agricultural fork	E. M. Bentley	444,265	Jan. 6	454	{114 115}	54	89
Agricultural system. Electric	W. Tattersall	445,094	Jan. 20	1788	460	54	365
Air. Apparatus for humidifying	R. W. Bayley. (Reissue)	11,145	Feb. 17	2166	539	54	955
Air-brake	T. J. Hogan	447,731	Mar. 3	725	182	54	1255
Air-brake	C. R. James	447,236	Feb. 24	2866	{711 712}	54	1094
Air-brake	F. Lansberg	445,899	Feb. 3	629	155	54	635
Air-brake	G. Westinghouse, Jr	448,827	Mar. 24	2539	637	54	1627
Air-brake	A. J. Wisner	446,908	Feb. 24	2301	572	54	988
Air-brake	A. P. Massey	447,783	Mar. 10	828	206	54	1281
Air-brake. Automatic	E. Hill	448,859	Mar. 24	2602	{653 654}	54	1639
Air-compressor	H. C. Sergeant	447,910	Mar. 10	1052	263	54	1324
Air-cylinder lubricator. Compressed	J. Young	445,130	Jan. 20	1846	478	54	376
Air-heating furnace	E. H. C. Oehlmann	444,940	Jan. 20	1561	{400 401}	54	320
Air-moistening machine	J. W. Collins	447,942	Mar. 10	1099	276	54	1333
Air-purifier	V. Popp	446,014	Feb. 10	821	198	54	680
Air systems. Automatic separator for compressed	F. H. Richards	446,822	Feb. 17	2130	529	54	949
Air to pneumatic motors. Apparatus for supplying compressed							
Alarm: *See* Burglar-alarm. Electric alarm. Fire-alarm. Fire or burglar alarm. Low-water alarm. Steam-generator alarm. Time-alarm. Water-alarm.							
Alizarine derivative	R. E. Schmidt	446,892	Feb. 24	2265	.....	54	981
Alizarine derivative	R. E. Schmidt	446,893	Feb. 24	2265	.....	54	981
Alloy. Aluminum	J. A. Jeançon	446,351	Feb. 10	1397	.....	54	789
Amalgamating apparatus	T. Gemmell	446,706	Feb. 17	1952	{486 487}	54	911
Amber. Molding	F. Egge	445,285	Jan. 27	2094	541	54	432
Amber-molding apparatus	F. Egge	445,284	Jan. 27	2093	540	54	432
Ammonia. Apparatus for making anhydrous	P. J. McMahon	445,331	Jan. 27	2158	{559 560 561}	54	447
Ammonia. Manufacturing nitrate of	R. S. Penniman	448,361	Mar. 17	1798	454	54	1479
Ammonia. Preparing nitrate of	R. S. Penniman	448,362	Mar. 17	1801	454	54	1479
Anchor	A. McDougall	445,816	Feb. 3	510	123	54	611
Animal-grip	E. A. Stiles	445,663	Feb. 3	236	64	54	558
Animal-trap	S. Bassinger	448,313	Mar. 17	1719	{435 436}	54	1464
Animal-trap	H. H. May	444,760	Jan. 13	1230	320	54	240
Animal-trap	G. R. Smith	446,119	Feb. 10	991	244	54	712
Animal-trap	A. Maul	446,921	Feb. 24	2318	576	54	991
Animal-trap setter	J. H. Elfering	446,641	Feb. 17	1851	459	54	892
Annunciator	J. E. A. Miller	447,195	Feb. 24	2791	690	54	1079
Annunciator and indicator system	J. C. Francis	447,768	Mar. 10	802	199	54	1277
Annunciator and telephone system. Combined	A. Hormel	444,245	Jan. 6	429	108	54	84
Annunciator. Electric	W. E. Cram	447,558	Mar. 3	474	116	54	1206
Annunciator. Electrical	E. P. Warner	448,169	Mar. 10	1448	370	54	1403
Annunciator. Polarized	L. T. Crabtree	448,125	Mar. 10	1379	353	54	1389
Annunciator. Train-order							

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Anti-rattler, nut-lock, and thill-support. Combined	A. J. Giddings	445,527	Jan. 27	2445	637	54	501
Apron	C. A. Filkins	445,548	Feb. 3	31	8	54	517
Arc light	R. H. Mather	446,109	Feb. 10	977	240, 241	54	709
Arc-light system	C. J. Schwarze	446,298	Feb. 10	1323	322	54	773
Arch. Fire-proof	F. L. Henghes	448,233	Mar. 17	1567	400	54	1435
Atomizer	C. F. Bachler	447,599	Mar. 3	534	131	54	1218
Atomizer	E. T. Kassel	446,256	Feb. 10	1251	305	54	759
Atomizer	A. M. Shurtleff	447,064	Feb. 24	2555	634	54	1035
Atomizer. Vaginal	W. E. Weldon	445,579	Feb. 3	91	22	54	529
Auger	M. H. Jones	444,956	Jan. 20	1594	407	54	326
Automatic camera	E. G. Fisher and R. McFarlane	444,488	Jan. 13	797	207, 208	54	167
Automatic pneumatic brake	W. T. Bothwell	444,146	Jan. 6	278	66	54	57
Automatic sprinkler	A. F. Nagle	447,004	Feb. 24	2442	607	54	1014
Awl. Scratch	F. Philip	445,380	Jan. 27	3226	577	54	460
Awning	J. H. Dyett	448,750	Mar. 24	2441	611	54	1608
Awning	F. Schreiber	449,387	Mar. 31	3449	868	54	1805
Awning-brace	E. A. King and A. J. Carr	445,718	Feb. 3	323	87	54	578
Awning frame. Window	C. W. Stebbins	446,480	Feb. 17	1610	395	54	845
Ax	J. W. Carver	445,160	Jan. 27	1907	492	54	397
Ax-head	J. M. Holladay	447,685	Mar. 3	656	163	54	1242
Ax-helve fastener	H. M. Martin	445,730	Feb. 3	352	91	54	582
Axes. Manufacture of	C. W. Hubbard	444,836	Jan. 20	1348	350	54	280
Axle	J. A. Stewart	449,638	Mar. 31	3864	968	54	1884
Axle and bolster. Vehicle	L. P. Friestedt	444,580	Jan. 13	960	249	54	199
Axle-bearing	D. W. Copeland	447,298	Mar. 3	21	6	54	1122
Axle-bearing	S. B. Goff	447,608	Mar. 3	550	136	54	1221
Axle-bearing	A. R. Hamilton	447,513	Mar. 3	409	100	54	1195
Axle bearing. Car	W. B. Smith	444,943	Jan. 20	1566	401, 402	54	321
Axle box. Car	D. Barckdall	447,271	Feb. 24	2926	727	54	1106
Axle box. Car	W. Cross	448,130	Mar. 10	1390	355	54	1391
Axle box. Railway	L. Ellert	447,148	Feb. 24	2712	672	54	1063
Axle boxes. Dust-guard for car	F. J. Cole and E. W. Grieves	444,241	Jan. 6	423	106	54	83
Axle. Car	S. L. Denney	448,639	Mar. 24	2247	564	54	1571
Axle. Car	S. L. Denney	448,640	Mar. 24	2248	564	54	1571
Axle. Car	H. N. Pomeroy	445,199	Jan. 27	1969	509	54	409
Axle journal-bearing. Car	G. N. Sceets	447,527	Mar. 3	434	106	54	1199
Axle-lubricator	J. Sharkey	444,582	Jan. 13	950	246	54	197
Axle-nut	J. L. House	444,053	Jan. 6	110	28	54	25
Axle. Vehicle	O. W. Beach	446,416	Feb. 17	1511	372	54	824
Axle. Vehicle	J. H. Flagler	444,065	Jan. 6	136	34	54	30
Axle. Wagon	L. P. Friestedt	444,591	Jan. 13	961	249	54	199
Axle-washer	T. Gingras	444,218	Jan. 6	387	96	54	77
Axles. Device for securing wheels to	L. Faris	446,335	Feb. 10	1377	336	54	785
Axles. Dust-guard for car	W. McKenzie	446,401	Feb. 10	810	196	54	678
Axles. Hub-attaching device for vehicle	H. F. Bock	444,517	Jan. 13	847	220	54	177
Axles. Journal-bearing for railway	M. H. Devore	449,109	Mar. 31	2975	752	54	1720
Axles. Machinery for shaping iron or steel	J. T. Rowley	445,662	Feb. 3	234	63, 64	54	558
Axles. Rolls for manufacturing car	D. L. Evans	444,746	Jan. 13	1204	312	54	244
Baby-walker	A. Burkholder. (Reissue)	11,140	Jan. 20	1893	488	54	385
Back-band	W. L. Johnson	444,296	Jan. 6	497	129	54	99
Bag: *See* Paper bag. Shoulder-strap bag. Striking-bag. Tobacco-bag.							
Bag-blanks. Machine for making tubular	J. Arkell	447,065	Feb. 24	2557	634	54	1035
Bag fastening. Traveling	J. Baunuch	444,205	Jan. 6	368	91	54	74
Bag-frame	B. Mayer	448,139	Mar. 10	1404	358	54	1394
Bag-holder	J. M. Holladay	447,686	Mar. 3	657	163	54	1242
Bag-holder	W. H. Pendery	445,195	Jan. 27	1963	508	54	407
Bag-holding apparatus	J. A. Traut and C. E. Riecker	448,791	Mar. 24	2490	623	54	1618
Bag-making machine	W. H. Kerr	445,351	Jan. 27	2190	567, 568, 569	54	453
Bag-tie	M. R. Haskins	448,614	Mar. 17	2195	549	54	1554
Bags. Making	W. H. Kerr	445,329	Jan. 27	2156	558	54	446
Bagasse furnaces. Carrier for feeding	F. Cook	449,464	Mar. 31	3585	903	54	1831
Bail-lock	W. Boyrer	445,493	Jan. 27	2390	622	54	492
Bake-pan	A. J. Iden	445,996	Feb. 10	802	194	54	677
Bake-pan	C. Schlifferly	448,548	Mar. 17	2079	521	54	1533
Baking-machine	H. N. and C. E. Fowler	444,379	Jan. 6	616	158, 159, 160, 161	54	122
Baking-pan	J. B. Travers	448,559	Mar. 17	2092	525	54	1535
Baking, roasting, and steaming apparatus	W. H. Perry	448,886	Mar. 24	2633	662	54	1644
Balance-wheel	J. S. Wright	444,081	Jan. 6	159	40	54	34
Bale-covering	M. A. Heath	448,487	Mar. 17	1998	500	54	1516
Bale-tie	W. B. Curtis	448,830	Mar. 24	2544	638	54	1628
Bale-tie	W. A. Kilmer	448,964	Mar. 24	2750	694	54	1668
Bale-tie fastener	D. W. Gish	448,022	Mar. 10	1241	315	54	1360
Baling-press	J. W. Brown	446,128	Feb. 10	1010	249	54	716
Baling-press	M. S. Coleman	445,045	Jan. 20	1723	444	54	352
Baling-press	M. C. Jackson	447,950	Mar. 10	1113	279, 280	54	1336
Baling-press	D. A. Keena	444,194	Jan. 6	353	86, 87	54	71
Baling-press	A. Wickey	449,189	Mar. 31	3102	782	54	1743
Baling-press	H. L. Whitman	446,311	Feb. 10	1339	326, 327	54	777
Baling-press wiring attachment	J. H. Kruse	446,600	Feb. 17	1784	442	54	879
Ball: *See* Bowling-ball. Puzzle-ball.							
Ballast-loading apparatus	W. Butler and Z. G. Simmons, Jr.	447,460	Mar. 3	313	78	54	1177

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ballot-box	C. Jackson	448,524	Mar. 17	2047	512, 513	54	1526
Ballot-paper or voting-ticket	C. K. Adams	448,403	Mar. 17	1864	469	54	1491
Band and tire setting machine	J. H. Samuels	444,547	Jan. 13	894	232	54	186
Band-cutter and feeder	O. Anderson	444,478	Jan. 13	777	202, 203	54	163
Band-cutter and feeder	C. W. Bond	445,668	Feb. 3	242	66	54	559
Band-cutter and feeder	W. G. Huntington	446,973	Feb. 24	2397	597	54	1005
Band-cutter and feeder	E. B. Karn	445,835	Feb. 3	537	131	54	616
Band-cutter and feeder	E. S. Wilhite	448,102	Mar. 10	1348	345	54	1383
Band-cutter and feeder	A. Mosterts	447,695	Mar. 3	671	167	54	1245
Bandage. Anti-snoring	B. E. Boyden	449,200	Mar. 31	3118	787	54	1746
Banjo	G. B. Durkee	447,947	Mar. 10	1108	278	54	1335
Banjo	J. Robinson	448,674	Mar. 24	2300	577	54	1521
Banjo	W. Titus	447,985	Mar. 10	1180	290	54	1348
Banjo	W. A. Todd	445,385	Jan. 27	2233	578	54	461
Banjo	J. A. Saxon	448,547	Mar. 17	2078	521	54	1532
Bank-protector	D. H. Solomon	449,185	Mar. 31	3095	780, 781	54	1742
Banks from caving. Device for preventing	H. W. Mundhenk	447,696	Mar. 3	672	167	54	1245
Banner							
Bar: *See* Chenille-cutter bar. Cutter-bar. Detector-bar. Horseshoe-blank bar.							
Barber's chair	C. Ferst	445,014	Jan. 20	1070	429	54	342
Barber's indicator	S. P. Watson	448,392	Mar. 17	1852	466	54	1488
Barrel-cover. Sample-exhibiting	H. J. Heinz and R. Hoffman	445,524	Jan. 27	2440	635	54	500
Barrel stand and truck. Tilting	R. K. Curtis	446,404	Feb. 10	1488	366	54	807
Barrel-support. Swinging	J. H. Gamble	444,978	Jan. 20	1618	414	54	332
Barrel-washer	G. A. Bidwell	445,534	Feb. 3	7	2	54	512
Barrels. Notching and cutting hoops for	M. E. Beasley	448,905	Mar. 24	2664	668	54	1650
Basket	O. Jennings	445,783	Feb. 3	443	110	54	598
Basket-carrier	A. Cleveland	445,283	Jan. 27	2092	540	54	432
Basket-hamper	A. P. Bohlinger	446,578	Feb. 17	1756	432	54	873
Basket-hamper	L. A. Brown	446,579	Feb. 17	1757	433	54	873
Basket-hamper	D. J. Johnson	447,890	Mar. 10	913	228	54	1208
Bath: *See* Vapor-bath.							
Bath-tub	K. Glass	445,314	Jan. 27	2136	552	54	442
Bath-tub. Separable	M. Doellé	446,161	Feb. 10	1085	267	54	727
Bathing appliance. Invalid's	M. De Barr	445,327	Jan. 27	2152	558	54	446
Battery: *See* Body-battery. Electric battery. Galvanic battery. Pyro-chemical battery. Secondary battery.							
Battery compound	W. Wright	446,514	Feb. 17	1700		54	864
Battery elements. Machine for molding separator-plugs for	A. F. Madden	446,873	Feb. 24	2225	553, 554	54	975
Battery zincs. Clamp for electric	J. H. Leakin	448,847	Mar. 24	2575	646	54	1634
Beam. Pressed-steel	S. Fox	446,859	Feb. 24	2403	548	54	971
Beams and girders. Lengthening metallic	P. H. Jackson	444,579	Jan. 13	945	245	54	196
Beams. Lengthening metallic	P. H. Jackson	444,578	Jan. 13	945	245	54	196
Bearing	G. H. Ziegler	447,598	Mar. 3	533	131	54	12 7
Bearing. Anti-friction	P. Arnold	444,311	Jan. 6	518	135	54	104
Bearing. Anti-friction	L. K. Jewett	449,078	Mar. 24	2918	740, 741	54	1700
Bearing. Anti-friction	E. Stempel	444,224	Jan. 6	398	99	54	79
Bearing. Anti-friction roller	M. N. Lovell	449,046	Mar. 24	2873	730	54	1692
Bearing. Anti-friction roller	M. N. Lovell	449,047	Mar. 24	2874	730	54	1692
Bearing-box	G. St. Pierre	448,462	Mar. 17	1956	492	54	1509
Bearing for vehicle-wheels. Anti-friction	J. F. Morell	445,377	Jan. 27	2221	576	54	460
Bearing. Roller	C. D. Meneely	445,680	Feb. 3	277	73, 74	54	567
Bearing. Roller	C. D. Meneely and J. Gibbons	445,679	Feb. 3	275	72, 73	54	567
Bearings. Lubricant-lining for friction	W. Friend	445,989	Feb. 10	787	191	54	675
Beating-out machine	G. H. Cogswell	446,990	Feb. 24	2423	602, 603	54	1010
Bed	F. H. B. Babbe	448,000	Mar. 10	1203	305	54	1353
Bed	T. J. Parkinson	447,257	Feb. 24	2895	719	54	1100
Bed-bottom. Spring	L. B. Houston	444,610	Jan. 13	985	256	54	203
Bed-bottom. Spring	G. Keenholts	447,133	Feb. 24	2658	659	54	1055
Bed. Bracket	T. E. Smith	447,107	Feb. 24	2745	679	54	1069
Bed. Folding	F. Bennett. (Reissue)	11,137	Jan. 6	678	170	54	133
Bed. Folding	I. Osgood	445,629	Feb. 3	173	45, 46	54	545
Bed. Folding	M. J. Cunningham	445,011	Jan. 20	1068	428	54	342
Bed-pan	M. St. John	448,691	Mar. 24	2727	584	54	1587
Bed-pan	A. G. Phillips	446,603	Feb. 17	1788	443	54	880
Bed. Sofa	H. Waddell	447,589	Mar. 3	592	127	54	1215
Bed support. Folding	J. D. Ennes	444,064	Jan. 6	135	33	54	29
Bedstead. Folding parlor	I. M. Grubb	445,429	Jan. 27	2304	598	54	476
Bee-hives. Comb-frame for	P. Beck	445,257	Jan. 27	2063	532	54	426
Beer by means of carbonic acid. Apparatus for tapping	B. B. Kinn	445,115	Jan. 20	1827	473	54	372
Beer-cooler	D. L. Holden	444,533	Jan. 13	872	226	54	182
Beer-cooling apparatus	O. Zwietnsch	447,484	Mar. 3	361	90	54	1186
Beer. Finishing	N. N. Hill	445,370	Jan. 27	2214	574	54	458
Bell	J. F. Wollensak	445,295	Jan. 27	2105	545	54	435
Bell. Electric	D. H. Rice	446,712	Feb. 17	1961	488	54	913
Bell. Electric call	G. W. Nye	446,881	Feb. 24	2241	557, 558	54	977
Bell for grain-elevators, &c. Alarm	W. R. Patterson	444,600	Jan. 13	971	252	54	201
Bell. Magneto	A. Iske	448,043	Mar. 10	1270	324	54	1365
Bell-operating device. Door	G. F. Kincaid	445,837	Feb. 3	540	131	54	617
Bell. Pneumatic	L. W. Cleveland	447,748	Mar. 3	757	189	54	1261
Bell pull. Electrical door	A. Iske	448,045	Mar. 10	1272	324	54	1366
Bells and burglar-alarms. Trip for door							

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bells. Device for use in brazing and coating stock	C. G. Blum	444,288	Jan. 6	488	127	54	97
Bellows	S. T. Culp	444,744	Jan. 13	1201	311	54	243
Bellows-fold coupling	E. L. Perry	449,587	Mar. 31	3766	945	54	1865
Belt	H. Leck	446,186	Feb. 10	1118	273	54	733
Belt. Electric	D. P. Andrus	449,345	Mar. 31	3371	850	54	1790
Belt. Electric	W. C. Fuller	448,953	Mar. 24	2732	689	54	1664
Belt-fasteners. Die for making	G. P. Kenehan	448,835	Mar. 24	2551	640	54	1629
Belt-fasteners. Making	G. P. Kenehan	448,836	Mar. 24	2552	640	54	1629
Belt-gearing	M. Masters	446,407	Feb. 10	1492	367 / 368	54	808
Belt-gearing	T. H. McCray	449,166	Mar. 31	3059	774	54	1735
Belt guide and support	O. Sawyer	445,382	Jan. 27	2228	577	54	461
Belt-shifter	O. B. Martin	449,548	Mar. 31	3705	931	54	1855
Belt-tension device	J. C. Bryce	447,414	Mar. 3	984	72	54	1171
Belt-tightening mechanism	P. Medart	448,583	Mar. 17	2133	535	54	1542
Belt. Waist	H. A. Hayden	447,877	Mar. 10	994	251	54	1313
Bench: *See* Kneeling-bench. Shoe-maker's bench.							
Bench-spur	W. J. Strain	447,798	Mar. 10	870	216	54	1289
Bengal-light compound	C. Gerhard	449,530	Mar. 31	3675	.....	54	1849
Benzo-rhodamine	M. Ceresole	449,520	Mar. 31	3664	.....	54	1847
Berry-box	C. Tondeur	447,799	Mar. 10	871	216	54	1289
Berth and seat for ships or railway-cars	J. G. W. Aldridge	447,020	Feb. 24	2477	616	54	1019
Bevel	A. M. Brown	445,520	Jan. 27	2434	634	54	499
Beveling-machine	M. O'Gorman	449,131	Mar. 31	3013	761 / 762	54	1727
Bicycle	F. H. Bolte	447,933	Mar. 10	1089	273	54	1331
Bicycle	S. A. Brown	446,181	Feb. 10	1109	272	54	732
Bicycle	S. A. Donnelly	447,234	Feb. 24	2863	710 / 711	54	1093
Bicycle	S. A. Donnelly	448,509	Mar. 17	2026	507	54	1522
Bicycle	J. B. Evans	449,581	Mar. 31	3755	943	54	1863
Bicycle	F. J. H. Hazard	448,960	Mar. 24	2741	691	54	1666
Bicycle	W. E. Hilbert and A. Manuel	446,098	Feb. 10	957	235 / 236	54	705
Bicycle	J. H. Kane	446,354	Feb. 10	1400	343	54	790
Bicycle	W. W. Kenfield	448,750	Mar. 24	2431	608	54	1606
Bicycle	V. M. Moore	447,341	Mar. 3	98	27	54	1137
Bicycle	W. R. O'Neill	444,639	Jan. 13	1026	267	54	211
Bicycle	W. Scantlebury	446,175	Feb. 10	1100	270	54	730
Bicycle	W. E. Thompson	447,382	Mar. 3	171	47	54	1150
Bicycle	P. W. Tillinghast	445,258	Jan. 6	443	111	54	87
Bicycle	C. F. Watkins	448,701	Mar. 24	2342	587	54	1590
Bicycle	W. O. Worth	444,868	Jan. 20	1433	372	54	296
Bicycle attachment	W. Murray	445,452	Jan. 27	2334	607	54	481
Bicycle-crank	W. Blakely	446,280	Feb. 10	1289	315	54	767
Bicycle parcel-carrier	M. E. Blood	446,748	Feb. 17	2017	504	54	924
Bicycle-pedal	W. O. Worth	447,395	Mar. 3	197	51	54	1155
Bicycle-saddle	L. S. Copper	448,774	Mar. 24	2462	615	54	1612
Bicycle-saddle	J. L. Yost and C. J. Moore	448,469	Mar. 17	1966	494	54	1511
Bicycle-seat	J. A. Lamplugh	446,355	Feb. 10	1400	343	54	790
Bicycle-spoke-nipple wrench	A. K. Schaap	449,000	Mar. 24	2805	709	54	1678
Bicycle-stand	E. N. Bowen	445,710	Feb. 3	321	85	54	555
Bicycle-support	J. M. Auck	447,125	Feb. 24	2644	656	54	1052
Bicycle-support	J. W. Kennedy	446,835	Feb. 17	2153	535	54	953
Bicycle. Tandem	T. L. Moore	448,358	Mar. 17	1794	453	54	1478
Bicycles. Oil-can holder for	L. H. Bannister	449,460	Mar. 31	3580	901	54	1830
Billet-conveyer	C. Pettigrew	445,286	Jan. 27	2096	541	54	433
Billet-conveyer	C. Pettigrew	445,287	Jan. 27	2096	541	54	433
Billet-conveyer	C. Pettigrew	445,288	Jan. 27	2097	542	54	433
Billet-conveyer	F. H. Treat	445,290	Jan. 27	2099	542 / 543	54	433
Billet-conveyer	F. H. Treat	445,292	Jan. 27	2102	544	54	434
Billet-receiving table	F. H. Treat	445,293	Jan. 27	2103	544 / 545	54	434
Billet-shears	F. H. Treat	445,294	Jan. 27	2104	545	54	435
Billets. Apparatus for stamping	F. H. Treat	445,291	Jan. 27	2100	543 / 544	54	434
Billiards. Miniature	A. F. Cogswell and S. F. Woody	445,626	Feb. 3	170	45	54	545
Bin: *See* Flour or meal bin.							
Bin or holder for coffee, &c	B. R. Bacon	447,532	Mar. 3	439	108	54	1200
Binder	L. G. Rubel	445,357	Jan. 27	2200	571	54	455
Binder. Load	J. H. Johnson	448,862	Mar. 24	2607	654	54	1639
Binder. Order-sheet	R. J. Copeland and A. E. Chatterson	448,411	Mar. 17	1877	472	54	1494
Binder. Temporary	J. Dornbirer	444,695	Jan. 13	1115	288	54	228
Binders, &c. Grain-conveyer for	G. Schubert	446,473	Feb. 17	1599	392	54	842
Binding-post	C. A. Lieb	446,871	Feb. 24	2223	552	54	975
Binding. Removable	H. G. and J. B. Barlow	445,031	Jan. 20	1691	434	54	346
Binding-strap	L. L. Tower	446,110	Feb. 10	981	241	54	710
Binnacle. Ship's	J. L. Bliss	448,201	Mar. 17	1515	386	54	1426
Bird-cage perch	J. F. Sweeney	447,006	Feb. 24	2444	608	54	1014
Bit: *See* Bridle-bit. Drill-bit.							
Bit	F. J. Roche	444,161	Jan. 6	298	72	54	61
Bit for horses	C. P. Gregory	444,425	Jan. 13	698	182	54	146
Bit-stock	W. S. Davis	443,989	Jan. 6	3	1	54	3
Blacking. Shoe	G. P. Tipton	449,339	Mar. 31	3364	.....	54	1789
Blankets, &c. Machine for finishing	A. F. Bernot	444,688	Jan. 13	1106	286	54	226
Blast-furnace	S. Parker	446,168	Feb. 10	1092	268	54	729
Blast-furnaces. Bell and hopper for	B. F. Conner	445,850	Feb. 3	560	136	54	621
Blasting. Submarine	T. Puskas	449,272	Mar. 31	3225	815	54	1767
Blind and frame therefor. Sliding venetian	C. Niss, Jr	444,302	Jan. 6	503	131 / 132	54	101

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Blind-slat tenon	A. Kneip	446,781	Feb. 17	2060	513	54	933
Blind-stile boring and mortising machine	W. C. and J. A. Aycock	447,270	Feb. 24	2923	726 / 727	54	1106
Blind-stop	T. Gohlke	448,517	Mar. 17	2035	509	54	1524
Blind. Window	W. N. Cary	448,177	Mar. 10	1465	373	54	1406
Block: *See* Brake-block. Fuse-block. Lubricant block. Pulley-block.							
Block-signal	M. P. Crawford	445,928	Feb. 3	673	164 / 165	54	643
Blow or pressure. Coin-controlled machine for indicating the force of a	A. J. C. Graf	446,970	Feb. 24	2392	595 / 596	54	1004
Blower. Fan	J. S. Schoonover	447,909	Mar. 10	1052	263	54	1324
Board: *See* Center-board. Crimping-board. Dough-board. Drawing-board. Drying-board. Engineer's order bulletin-board. Game-board. Ironing-board. Key-board. Kneading-board. Resistance-board. Wash-board.							
Board or game table	J. S. Burroughes	448,120	Mar. 10	1370	351	54	1387
Boat: *See* Canal-boat. Separable boat.							
Boat-detaching apparatus	M. Wogan	447,421	Mar. 3	241	61	54	1163
Bobbin winding machine	J. W. Eisenhart	445,765	Feb. 3	415	103 / 104	54	594
Body-battery and attachments for the same	J. A. Crisp and G. F. Webb	448,198	Mar. 10	1387	354	54	1391
Boiler: *See* Coffee-boiler. Egg-boiler. Fire and water tube boiler. Gas-fired boiler. Paper-pulp boiler. Sectional boiler. Steam-boiler. Tubular boiler. Wash-boiler. Water-coil boiler.							
Boiler	T. A. Kidd	443,997	Jan. 6	18	5	54	7
Boiler	C. E. Marston	445,473	Jan. 27	2358	612	54	486
Boiler	J. C. Stamp	448,382	Mar. 17	1830	461	54	1485
Boiler	S. C. La Hatt	447,192	Feb. 24	2788	680	54	1078
Boiler-cleaner	J. Austin	446,411	Feb. 17	1505	371	54	823
Boiler-feeder	S. Porter	444,984	Jan. 20	1630	418	54	334
Boiler-furnace	T. Reese, Jr., and H. W. Seller	448,076	Mar. 10	1311	335 / 336	54	1375
Boiler furnace. Smoke-preventing water-tube	F. G. Bates	445,419	Jan. 27	2289	593 / 594	54	473
Boiler furnace. Steam	J. Fea and W. H. Hoag	446,705	Feb. 17	1951	486	54	911
Boiler furnace. Steam	C. Gasteiger	448,218	Mar. 17	1515	395	54	1430
Boiler furnaces. Arch-plate for steam	A. P. Creque	448,808	Mar. 24	2513	629 / 630	54	1622
Boiler or other furnace. Steam	N. E. Shontz	444,692	Jan. 13	1111	287	54	227
Boiler-pedestal	J. M. Boyer	445,909	Feb. 3	642	158	54	638
Boiler-purge feeder	M. Boecker	448,576	Mar. 17	2124	532	54	1541
Boiler setting. Steam	J. M. Allen	444,693	Jan. 13	1112	287	54	228
Boiler stand or support	A. P. Creque	447,209	Feb. 24	2812	696	54	1083
Boiler water-tube. Steam	E. G. Shortt	448,178	Mar. 10	1467	374	54	1407
Boilers. Apparatus through which air is supplied to furnaces of steam	W. J. Chubb	444,481	Jan. 13	783	.....	54	164
Boilers. Cleaning	J. M. Boyer	445,420	Jan. 27	2290	594	54	473
Boilers. Gas-heating device for steam	M. Boecker	449,286	Mar. 31	3254	825	54	1771
Boilers. Machine for calking seams and joints of steam	G. J. and C. H. Hoskins	447,351	Mar. 3	117	31	54	1140
Boilers, &c. Tool for plugging openings in	H. S. Reynolds	448,342	Mar. 17	1774	449	54	1474
Bolster-spring	N. L. Holmes						
Bolt: *See* Door-bolt. Flour-bolt. Interlocking bolt. Screw-bolt.							
Bolt	E. Huber	447,516	Mar. 3	411	100	54	1195
Bolt	F. Stroh and M. J. McIntosh	446,997	Feb. 24	2431	605	54	1012
Bolt and rivet cutter	J. Helwig	444,635	Jan. 13	1016	265	54	209
Bolt-cutter	W. L. Dutcher	448,324	Mar. 17	1738	439	54	1468
Bolt-fastening device. Expansible	C. J. Phillips	445,332	Jan. 27	2163	561	54	448
Bolt-machine	C. and C. E. Hall	447,110	Feb. 24	2621	650 / 651	54	1048
Bolt-making die	T. J. Bush	446,768	Feb. 17	2046	519	54	930
Bolt or pin	H. K. Jones	446,740	Feb. 17	2007	500	54	922
Bolt or rod cutter	E. A. Munson	446,360	Feb. 10	1408	345	54	702
Bolt or rod cutter	J. C. Stokes	444,924	Jan. 20	1532	394	54	315
Bolts and nuts. Machine for cutting threads on	T. L. Lumby	448,971	Mar. 24	2759	697	54	1669
Bolts. Die for making	T. J. Bush	445,001	Jan. 20	1656	421	51	339
Bolts. Dye for making	T. J. Bush	446,283	Feb. 10	1299	316	54	767
Bolts, &c. Machine for heading	C. S. Seaton	444,460	Jan. 13	750	196 / 197	54	157
Bolts or pins. Manufacture of	H. K. Jones	446,739	Feb. 17	2005	500	54	922
Book. Account	J. W. Garnean	445,313	Jan. 27	2135	551 / 552	54	442
Book and directory. Combined counter check	H. B. Butterfield	448,207	Mar. 17	1527	391	54	1427
Book. Bank-account	W. Thomson	444,583	Jan. 13	951	247	54	197
Book-binder's machine	R. W. Smith and H. L. Arnold	449,595	Mar. 31	3781	949	54	1868
Book case	I. C. Woolrey	447,628	Mar. 3	582	144	54	1227
Book-case. Roller-shelf	E. H. Babbitt and E. T. Harvey	447,238	Feb. 24	2870	742	54	1095
Book. Combined receipt and record	H. Loewnbach	447,884	Mar. 10	1003	253	54	1315
Book-cover	P. Closs	444,376	Jan. 6	613	157	54	121
Book-holder	B. P. Field	445,854	Feb. 3	611	150	54	632
Book. Indexed	H. A. Silvera	447,371	Mar. 3	154	42	54	1147

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Book-mark	C. M. Barstow	448,470	Mar. 17	1968	494, 495	54	1511
Book-mark	A. S. Flake	446,857	Feb. 24	2199	547	54	970
Book-protector	J. M. Becker and A. Saggese	446,052	Feb. 10	892	216	54	693
Book-rack	J. W. Hine	447,730	Mar. 3	724	182	54	1255
Book-rack	A. F. Old	448,251	Mar. 17	1598	407	54	1440
Book rest or support. Adjustable	C. W. Becannon	446,278	Feb. 10	1287	315	54	766
Book. Spring-back	A. C. Fletcher	446,858	Feb. 24	2200	547	54	970
Book-stand. Adjustable	A. H. Edgren	446,331	Feb. 10	1372	334	54	784
Book. Statistic	F. W. Barrett	444,060	Jan. 6	124	30, 31	54	27
Books. Apparatus for making leaf-hinges for	H. P. Felster	444,821	Jan. 20	1320	342	54	275
Books. Method of and mechanism for making blank	E. N. Martineau	444,669	Jan. 13	1077	279, 280	54	221
Boot	M. F. Jarden	444,703	Jan. 13	1125	290	54	230
Boot or shoe	H. F. Allen and D. N. Gibbs	445,529	Feb. 3	9	1	54	511
Boot or shoe case	S. F. Frazier	447,150	Feb. 24	2716	673	54	1064
Boot or shoe cleaner	C. Johnson	447,116	Feb. 24	2632	653	54	1050
Boot or shoe nailing machine	S. W. Robinson	447,359	Mar. 3	135	37	54	1143
Boot or shoe scraper	C. Spahmer	444,716	Jan. 13	1142	294	54	233
Boot or shoe stay	W. A. Neely	449,167	Mar. 31	3060	774	54	1736
Boot or shoe stretcher	D. T. Lee	448,352	Mar. 17	1789	451	54	1477
Boot or shoe uppers. Last for creasing	E. C. Woodard	445,360	Jan. 27	2203	571	54	456
Boot-soles, &c. Machine for channeling and trimming	J. B. Hadaway	449,247	Mar. 31	3183	803, 804	54	1759
Boots and shoes. Machine for uniting the soles and uppers of	W. Carey	444,126	Jan. 6	241	58, 59, 60	54	50
Boots or shoes. Blacking and burnishing	W. W. Crooker. (Reissue)	11,144	Feb. 10	1502	370	54	810
Borax. Manufacturing	N. M. Bell	449,064	Mar. 24	2899	736	54	1697
Boring and screw-cutting machine	T. F. Hammer	445,175	Jan. 27	1928	498	54	401
Boring and turning mill	F. W. Taylor	448,277	Mar. 17	1651	420, 421	54	1451
Boring-machine	G. L. Campbell	447,176	Feb. 24	2756	682	54	1072
Boring-machine	A. M. Jewell	446,352	Feb. 10	1398	341, 342	54	789
Boring-machine	A. M. Jewell	446,353	Feb. 10	1399	342	54	789
Boring-machine	W. Schwanhausser	446,792	Feb. 17	2078	519	54	997
Bottle-cap. Ejecting	G. P. Yule	446,314	Feb. 10	1344	327	54	778
Bottle-case	S. E. Hyndman	446,340	Feb. 10	1395	340, 341	54	789
Bottle-case	C. E. Marlow	446,122	Feb. 10	1000	246	54	714
Bottle-collar. Absorbent	B. H. Day, Jr.	447,635	Mar. 3	589	145	54	1229
Bottle-filling apparatus	A. M. Donally	445,882	Feb. 3	607	149	54	631
Bottle-filling machine	W. H. Baldinger	447,056	Feb. 24	2540	631	54	1032
Bottle-forming machine	T. B. Howe	447,452	Mar. 3	299	75, 76	54	1174
Bottle-forming machine. Glass	T. B. Howe	447,451	Mar. 3	297	75	54	1173
Bottle-lock	W. C. King	445,755	Feb. 3	395	100	54	591
Bottle. Metal-cased	Z. T. Hall	449,119	Mar. 31	2992	756	54	1724
Bottle. Nursing	C. C. Balston	449,278	Mar. 31	3241	820	54	1769
Bottle. Nursing	C. C. Balston and J. W. Rose	446,091	Feb. 10	947	232	54	703
Bottle. Nursing	J. E. Monroe	446,116	Feb. 10	986	243	54	711
Bottle scraper. Mucilage	J. C. Rosnecht	449,298	Mar. 31	3275	829	54	1774
Bottle-stopper	G. C. Clark	444,200	Jan. 6	361	90	54	73
Bottle-stopper	F. W. Perry	448,070	Mar. 10	1306	333, 334	54	1373
Bottle stopper and liquid-dropper	V. C. Monette	449,291	Mar. 31	3263	827	54	1773
Bottle-washer	J. A. House	445,408	Jan. 27	2272	590	54	469
Bottle-washing machine	S. Twitchell	444,261	Jan. 6	448	113	54	88
Bottle-wiring machine	C. L. Curtis	448,854	Mar. 24	2586	650, 651	54	1636
Bottles. Applying wire cork-retainers to	C. L. Curtis	445,803	Feb. 3	498	120	54	609
Bottles, &c. Closing device for	M. Rheinstrom	447,974	Mar. 10	1162	294	54	1344
Bottles. Feed-stopper for mucilage	W. A. H. Stafford	444,142	Jan. 6	270	65	54	56
Bottles. Fraud-preventive in capsuled	C. Cheswright	447,397	Mar. 3	201	53	54	1156
Bottling aerated water. Machine for	T. Ferguson	447,508	Mar. 3	400	98	54	1193
Bowl or wash-basin. Set	S. P. Crosswell	447,232	Feb. 24	2860	710	54	1092
Bowling-ball	S. S. Harman	447,011	Feb. 24	2452	611	54	1016
Box: See Axle-box, Ballot-box, Bearing-box, Berry-box, Car-lamp box, Cigarette-box, Cock-box, Electric switch-box, Fire-alarm signal-box, Hitching-box, Journal-box, Letter-box, Locking-box, Match-box, Metal box, Metallic box, Miter-box, Multiple call-box, Music-box, Paper box, Pill-box, Signal-box, Street-washer box, Stuffing-box, Telephone-box, Tobacco-box, Tooth-powder box.							
Box-closure	E. A. Heath	444,954	Jan. 20	1592	406	54	326
Box-closure	J. C. Stanley and L. B. Wrightson	448,687	Mar. 24	2922	581, 582	54	1586
Box-corners. Machine for attaching stays to	F. H. Beach	447,225	Feb. 24	2841	704, 705	54	1089
Box-jointing machine	M. D. Knowlton	447,955	Mar. 10	1122	282, 283	54	1338
Box-lifter	F. P. Morrison	446,924	Feb. 24	2321	577	54	991
Boxes for the transportation of bottles. Machine for the manufacture of	W. F. Thiemeyer	448,465	Mar. 17	1959	492, 493	54	1509
Boxes. Manufacture of hooped	H. H. Higham	449,413	Mar. 31	3501	880, 881	54	1816

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Brace: See Awning-brace, Gate-brace, Shoulder-brace, Telegraph-pole brace, Wagon-spring brace.	C. Bachem	449,103	Mar. 31	2961	750	54	1718
Bracelet	T. C. Hudson	448,617	Mar. 17	2199	551	54	1554
Bracelet	A. W. Magerhans	447,692	Mar. 3	668	166	54	1245
Bracelet							
Bracket: See Curtain-pole bracket, Elevator-bracket, Lamp-bracket, Scaffold-bracket, Shade-roller bracket, Spring-holding bracket, Umbrella-bracket.	G. R. Nafis	446,761	Feb. 17	2038	507	54	928
Bracket	C. Porter	449,134	Mar. 31	3016	763	54	1728
Bracket					721		
Braiding-machine	J. Tregurtha	447,262	Feb. 24	2901	722, 723	54	1102
Braiding-machine carrier	P. J. A. Fornander	447,108	Feb. 24	2618	650	54	1048
Braiding-machine take-up	P. J. A. Fornander	447,107	Feb. 24	2616	649	54	1047
Braiding-machines. Carrier or racer for	H. Grossenbach and W. Panhorst	445,315	Jan. 27	2137	553	54	443
Brake: See Air-brake, Automatic pneumatic brake, Car-brake, Hemp-brake, Rail-brake, Vehicle-brake, Wagon-brake.							
Brake-actuating device	R. T. Smith	446,935	Feb. 24	2340	581	54	994
Brake apparatus. Safety	J. H. von Hoechstatten	447,710	Mar. 3	690	171	54	1240
Brake-beam	J. Pearce	444,159	Jan. 6	297	71	54	60
Brake-beam	W. A. Pungs	444,017	Jan. 6	52	15	54	12
Brake-beam	G. N. Seeets	448,929	Mar. 24	2694	679	54	1657
Brake-beam	J. A. Jewell	448,720	Mar. 24	2850	597	54	1597
Brake-block	J. L. Barker	447,600	Mar. 3	535	131	54	1218
Brake lever and lock	W. R. King	446,386	Feb. 10	1446	355, 356	54	800
Brake mechanism. Automatic	J. J. Davenport	448,940	Mar. 24	2712	684	54	1660
Brake-shoe	J. Player	446,570	Feb. 17	1747	430	54	872
Brake-shoe	C. W. Roepper	444,508	Jan. 13	837	217	54	175
Brake-shoe	A. S. Vogt	444,174	Jan. 6	323	78	54	66
Brake-shoe	W. Cannell	445,648	Feb. 3	208	55	54	559
Branding apparatus. Electric	B. W. Valentin	449,503	Mar. 31	3658	.....	54	1842
Brewing malt liquors	J. E. Gamble	448,333	Mar. 17	1758	445	54	1471
Brick-kiln	T. Gamon	445,595	Feb. 3	119	30	54	534
Brick-kiln	J. B. Griswold	447,151	Feb. 24	2718	674	54	1064
Brick-kiln	S. B. Frank	447,675	Mar. 3	639	158, 159	54	1239
Brick-machine	J. A. Frazier and W. A. Milam	447,949	Mar. 10	1112	279	54	1336
Brick-machine	C. V. Hemenway	446,064	Feb. 10	906	220, 221	54	696
Brick-machine	W. H. Hall	448,231	Mar. 17	1565	400	54	1434
Brick-machines. Connecting-rod for	G. Kükenthal	448,053	Mar. 10	1285	327, 328	54	1369
Brick or tile machines. Automatic wire-cleaner for	J. A. and F. E. Frey	446,338	Feb. 10	1379	337	54	786
Brick or tile machines. Cutting-table for	G. S. Tiffany	444,327	Jan. 6	404	100	54	80
Brick or tile table	A. O. Jones	447,612	Mar. 3	555	137	54	1222
Brick. Paving	C. P. Oldham	445,732	Feb. 3	354	92	54	582
Brick-press	R. M. Downie	444,098	Jan. 13	1008	262, 263	54	208
Bricks, tiles, &c. Apparatus for molding patterns on hollow	G. L. Cross	448,179	Mar. 10	1468	.....	54	1407
Brick-work. Coating compound for	T. J. Monk	445,939	Feb. 3	602	168, 169	54	648
Brick-yard plant	N. Proctor, C. E. Fraser, H. M. Carter, and A. Middleton.	449,089	Mar. 24	2936	744	54	1704
Bricks and briquets. Machine for the manufacture of	J. Miller	446,877	Feb. 24	2257	.....	54	977
Bricks. Composition for coating	E. L. Ransome	447,972	Mar. 10	1159	.....	54	1344
Bricks. Manufacture of	M. C. Frits	446,330	Feb. 10	1382	338	54	786
Bridge	E. W. Serrell	445,302	Jan. 27	2114	547	54	437
Bridge	W. B. Wise	447,922	Feb. 24	2838	704	54	1089
Bridge	H. E. Dewey	447,636	Mar. 3	590	146	54	1229
Bridge-gate	W. Krejci and B. Kapinos	445,117	Jan. 20	1828	473, 474	54	372
Bridge gate. Draw	E. E. Runyon	446,209	Feb. 10	1155	283	54	740
Bridge. Suspension	H. J. Rohlf	449,176	Mar. 31	3078	777	54	1739
Bridges. Safety-guard for draw	W. I. Adams and A. Rotzel	449,022	Mar. 24	2883	719	54	1684
Bridges. Sliding gate for draw	H. G. Brent	444,085	Jan. 6	102	26	54	23
Bridle	A. Chezem	444,048	Jan. 6	102	26	54	23
Bridle attachment	M. J. Daly	446,944	Feb. 24	2351	594	54	996
Bridle-bit	R. Emerson	444,629	Jan. 13	1010	263	54	208
Bridle-bit	A. Lobdell	449,163	Mar. 31	3054	772	54	1735
Bridle-bit attachment	T. E. Van Ness and R. C. W. Lewis	449,360	Mar. 31	3277	830	54	1775
Bridle-bits. Making	H. M. Baker	446,505	Feb. 17	1653	.....	54	853
Briquets. Composition for combustible	H. H. Wing	447,926	Mar. 10	1078	270	54	1329
Bromine and iodine. Obtaining	A. N. Buchanan	447,101	Feb. 24	2606	647	54	1045
Bronzing or other machines. Fly-delivery for	J. M. Meador	449,550	Mar. 31	3707	931	54	1555
Broom	T. J. Thorp	446,901	Feb. 24	2290	570	54	985
Broom	R. M. Donovan	444,229	Jan. 6	406	.....	54	80
Broom-corn. Compound for coloring	H. W. Judevine	444,886	Jan. 20	1462	379	54	302
Broom-head	J. H. Allison	444,998	Jan. 20	1651	423	54	339
Broom-holder	A. T. Gerike	449,440	Mar. 31	3543	893	54	1824
Broom. Stable or street	D. Van	444,079	Jan. 6	157	39	54	34
Brooms, &c. Holder or rack for	R. W. Hardie	445,649	Feb. 3	209	56	54	554
Brush	L. P. Mahler	445,005	Jan. 20	1660	425	54	340
Brush	M. Young	447,996	Mar. 10	1196	303	54	1352
Brush	M. Young	449,348	Mar. 31	3370	849	54	1790
Brush and polisher. Nail	H. Weber	445,683	Feb. 3	281	75	54	568

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Brush and making the same	A. H. Wolcott	449,061	Mar. 24	2895	735	54	1696
Brush. Blacking	W. J. Scott	446,393	Feb. 10	1458	358	54	802
Brush. Cleaning and polishing	H. A. Webster	449,239	Mar. 31	3173	801	54	1757
Brush drawing machine	W. Lewis	445,855	Feb. 3	567	138	54	622
Brush-handle	M. B. Hinds	449,478	Mar. 31	3607	908	54	1836
Brush-handle. Adjustable	C. F. Myers	448,734	Mar. 24	2387	598	54	1598
Brush. Laundry and scrubbing	C. A. Butt	448,602	Mar. 17	2175	542	54	1550
Brush. Rotary	R. Roy	445,083	Jan. 20	1775	457	54	362
Brush. Toilet	J. O. Nightingale	448,067	Mar. 10	1302	333	54	1373
Brush. Whitewash	J. W. Oram	448,667	Mar. 24	2290	574	54	1579
Buckboard-spring	W. H. Sparks	446,395	Feb. 10	1462	359; 360	54	803
Bucket cover. Sugar	H. H. Reymer	447,082	Feb. 24	2582	640	54	1040
Bucket-suspending frame	F. Schillinger	445,719	Feb. 3	334	88	54	578
Buckle	L. R. Chazal	446,629	Feb. 17	1828	452	54	887
Buckle	C. H. Farmer	445,806	Feb. 3	501	120	54	609
Buckle	S. E. Harsh	447,874	Mar. 10	991	250	54	1312
Buckle	R. G. Henry	447,070	Feb. 24	2565	637	54	1036
Buckle	S. Schener	448,803	Mar. 24	2507	628	54	1621
Buckle-connection	A. Biesen	445,491	Jan. 27	2388	621	54	491
Buckle for securing straps	T. Brandt	448,496	Mar. 17	2010	503	54	1518
Buckle. Harness	M. Huffman	447,244	Feb. 24	2878	714	54	1096
Buckle. Suspender	J. A. Trant	446,543	Feb. 17	1707	419	54	864
Buckle. Suspender	J. A. Trant	446,721	Feb. 17	1978	493	54	916
Buckle. Suspender	J. A. Trant	446,722	Feb. 17	1979	493	54	916
Buckle. Suspender	J. A. Trant	447,924	Mar. 10	1074	269	54	1328
Buckles. Spring attachment for	C. B. Underhill	449,015	Mar. 24	2824	715	54	1682
Buggy-body	N. Kastler	444,070	Jan. 6	143	36	54	31
Buggy-tops. Bow-socket for	J. C. Coss	445,046	Jan. 20	1725	444	54	353
Buggy-wrench	E. Nighswander	445,431	Jan. 27	2306	598	54	476
Building and water-tower. Combined	W. F. Smith	446,897	Feb. 24	2275	566; 567	54	983
Buildings. Construction of	P. H. Jackson	449,323	Mar. 31	3393	841	54	1784
Buildings. Construction of fire-proof	E. V. Johnson	448,048	Mar. 10	1277	326	54	1367
Bullet-mold	J. H. Barlow	446,178	Feb. 10	1107	271	54	731
Bullets. Manufacturing	A. Weed	444,474	Jan. 13	773	201	54	162
Buoy. Bell	J. Gibson	448,222	Mar. 17	1553	396; 397	54	1431
Burglar-alarm and door-bell. Automatic	G. F. Kierson and A. K. Young	448,051	Mar. 10	1281	327	54	1368
Burial apparatus	N. Brickell	445,875	Feb. 3	594	146	54	628
Burial-case	W. W. Butler	447,662	Mar. 3	692	154	54	1235
Burner: Fuel-burner. Gas-burner. Gas or hydrocarbon-vapor burner. Gasoline-burner. Hydrocarbon-burner. Incandescent burner. Lamp-burner. Oil-burner. Vapor-burner.							
Burner	J. J. Robinson	448,080	Mar. 10	1319	338	54	1377
Burnisher	S. O. Tuerk	449,391	Mar. 31	3455	869	54	1806
Burnishing-machine	C. W. Miller	446,923	Feb. 24	2319	576	54	991
Butter from unskimmed milk or cream and apparatus for carrying out the same. Separating	E. G. N. Salenius	448,373	Mar. 17	1815	458	54	1482
Butter-jar	J. W. Kennedy and B. L. Harris	449,326	Mar. 31	3337	842	54	1784
Butter-lifter	W. S. Bailey and W. M. Stevenson	447,986	Mar. 3	3	1	54	1119
Butter-package	R. A. Kneeland	443,998	Jan. 6	20	5	54	7
Butter-worker	H. J. Anderson	444,270	Jan. 6	461	117; 118	54	91
Butter-worker	T. Muir	447,157	Feb. 24	2732	676	54	1067
Button	F. E. Hall	445,523	Jan. 27	2439	635	54	500
Button	F. F. Heilborn	448,428	Mar. 17	1904	478	54	1499
Button	A. Mandel	447,782	Mar. 10	827	206	54	1251
Button-fastener	H. S. Rockwood	449,648	Mar. 31	3881	971	54	1857
Button-fastener	J. H. Vinton	446,069	Feb. 10	946	232	54	703
Button-hole cutter	E. J. Toof	446,484	Feb. 17	1617	396	54	846
Button-hole cutting and stitching machine	J. A. Osterhout	447,791	Mar. 10	843	211; 212	54	1285
Button-machine	H. Zündorf	448,569	Mar. 17	2113	529; 530	54	1539
Button. Separable	R. H. Lewis	447,249	Feb. 24	2885	716	54	1098
Button. Separable	E. Pringle	447,346	Mar. 3	108	29	54	1138
Button. Separable	E. Pringle	447,347	Mar. 3	110	30	54	1139
Button. Separable	E. Pringle	447,348	Mar. 3	112	30	54	1139
Button. Separable	E. Pringle	447,349	Mar. 3	114	30	54	1139
Button. Separable	W. F. Whiting	447,855	Mar. 10	958	240	54	1306
Button-setting machine	T. H. Traver	448,696	Mar. 24	2332	585; 586	54	1588
Button-setting tool	J. F. Thayer	445,304	Jan. 27	2117	548	54	437
Button-trimming machine	J. Naylor	448,848	Mar. 24	2576	646; 647	54	1634
Cable-filling. Composition of matter for	E. G. Wright	446,502	Feb. 17	1650	.....	54	852
Cable-grip	C. Hazard	448,035	Mar. 10	1255	320	54	1363
Cable-grip	E. Schalk	449,139	Mar. 31	3022	764	54	1782
Cable-grips. Link for	V. T. Lynch	448,973	Mar. 24	2762	697	54	1670
Cable-lifter. Automatic	J. B. French	446,337	Feb. 10	1378	336	54	785
Cable roads. Gripping-machine for	F. W. Wood and J. Fowler	448,287	Mar. 17	1674	424	54	1455
Cage-perch	A. C. Goe	447,769	Mar. 10	803	199	54	1277
Cakes, &c. Treating	J. H. Mitchell	447,966	Mar. 10	1144	289	54	1341
Calcimine. Compound for	G. A. Casselman	444,776	Jan. 13	1249	.....	54	252
Calculating-machine	H. C. Hart	445,417	Jan. 27	2324	603; 604	54	480
Calculator. Interest	B. F. Hull	444,396	Jan. 6	647	168	54	127
Calendar	O. C. Blackmer	445,745	Feb. 3	379	97	54	588
Calendar	C. C. Kelly	449,543	Mar. 31	3697	929	54	1853
Calendar	J. D. Watters	447,171	Feb. 24	2749	680	54	1070

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Calendar	N. A. Wheeler	445,484	Jan. 27	2379	619	54	489
Calendar and time-card. Combined perpetual	C. M. Hamilton	446,916	Feb. 24	2313	574	54	990
Calendar. Discount and interest	W. R. Will	447,856	Mar. 10	959	240; 241	54	1306
Calendar. Order-pad	W. H. Haworth	444,150	Jan. 6	281	67	54	58
Calendar. Perpetual	A. Hadlock	448,796	Mar. 24	2497	625	54	1619
Calender-roll leader	R. McAlpine	449,353	Mar. 31	3384	852	54	1792
Calipers	R. Yanda	447,805	Mar. 10	877	218	54	1291
Calipers and dividers	N. Marsh	449,165	Mar. 31	3058	774	54	1735
Call and signal. Station	A. A. Weaver and J. W. Brooks	449,505	Mar. 31	3640	916	54	1843
Call system	L. Digeon	448,322	Mar. 17	1735	439	54	1467
Calves. Tool for dehorning	C. T. Ingraham	447,611	Mar. 3	534	137	54	1221
Camera: *See* Automatic camera. Solar reflecting-camera. Photographic camera.	C. L. Knox	445,561	Feb. 3	65	15	54	524
Camera attachment	L. Prosch, Jr	447,902	Mar. 10	1037	260	54	1321
Camera-shutter							
Can: *See* Cement-can. Measuring milk-can. Metal can. Milk-can. Oil-can. Self-closing can. Shipping-can.							
Can-bodies. Machine for cutting blanks for metal	D. D. Ranney	448,258	Mar. 17	1613	412	54	1443
Can-body-forming and side-seam-soldering machine	F. M. Leavitt	444,000	Jan. 6	22	6, 7; 8, 9	54	8
Can-capping machine	M. Jensen	448,047	Mar. 10	1274	325	54	1367
Can-capping machine	F. Sannier	445,477	Jan. 27	2368	616; 617	54	488
Can for paint, &c	C. F. and C. F. Stites	446,034	Feb. 10	858	208	54	687
Can-opener	S. E. Painter	446,883	Feb. 24	2245	558	54	978
Can-testing machine	W. H. H. Stevenson	445,706	Feb. 3	314	83	54	574
Cans. Acoustic alarm for oil	J. A. Pollock	445,608	Feb. 3	141	37	54	538
Canal-boat	C. H. Turver	449,092	Mar. 24	2943	746	54	1705
Canal-lock	H. C. Harrison	446,708	Feb. 17	1955	487	54	911
Canals. Construction of	A. Pickard	448,072	Mar. 10	1307	334	54	1374
Candy-cream cooler	T. Burkhard	444,147	Jan. 6	279	67	54	57
Candle-holder	A. Messmer	447,339	Mar. 3	96	26	54	1136
Candlestick	A. Heckl	445,555	Feb. 3	43	11	54	520
Cane and camp-stool. Combined	A. Schneider	444,021	Jan. 13	1000	260	54	207
Cane and slide-gage. Combination	R. Fuchs	448,016	Mar. 10	1253	313	54	1359
Cane-cutter	R. R. Wilson	447,994	Mar. 10	1195	303	54	1351
Cane. Device for stripping leaves from sugar	R. Rohr	449,137	Mar. 31	3021	764	54	1728
Cane-mills. Steam-pressure regulator for	S. M. Malhiot and C. A. Lejeune	445,856	Feb. 3	569	139	54	623
Cane, music-stand, and music-holder	E. Harders and M. P. Fleischman	448,185	Mar. 10	1477	376	54	1408
Cane-scraper	J. F. Ancoin	446,805	Feb. 17	2105	524	54	943
Canopy-top	J. Kohl	446,709	Feb. 17	1957	487	54	912
Capsule. Gelatine	S. E. Heineman	447,514	Mar. 3	409	.....	54	1195
Car and operating mechanism therefor. Dumping	J. Lawson	446,758	Feb. 17	2034	506; 507	54	927
Car and pipe coupling. Combined	A. C. Grover	449,219	Mar. 31	3143	793	54	1750
Car-brake	L. G. Arnold	446,504	Feb. 17	1651	403	54	852
Car-brake	E. M. Barnes	447,272	Feb. 24	2927	727; 728	54	1107
Car-brake	W. T. Bothwell	444,145	Jan. 6	277	66	54	57
Car-brake	G. M. Brill	445,307	Jan. 27	2120	519	54	438
Car-brake	J. Kinney	444,990	Jan. 20	1638	420	54	336
Car-brake	J. Plaver	446,569	Feb. 17	1747	430	54	871
Car-brake	A. B. Pool and J. J. Beals	446,981	Feb. 24	2410	600	54	1008
Car-brake	J. Reichmann	445,733	Feb. 3	357	93	54	583
Car-brake	W. R. Senders	449,630	Mar. 31	3855	965	54	1882
Car-brake	H. H. Sessions	447,911	Mar. 10	1054	263; 264	54	1325
Car-brake	B. Kellogg	446,925	Feb. 17	1680	410	54	858
Car-brake and brake governor. Automatic	C. J. Luce	447,780	Mar. 10	823	205	54	1281
Car brake and starter	J. P. Seawell and J. H. O'Hara	447,207	Feb. 24	2867	695	54	1083
Car-brake. Automatic	J. F. Waite	446,305	Feb. 10	1332	324	54	775
Car brake. Cable	B. L. Randall	444,110	Jan. 6	209	50	54	43
Car-brake. Electric	C. Roberts	446,715	Feb. 17	1964	490	54	913
Car brake. Hand	J. M. Blondell	449,645	Mar. 31	3877	970	54	1886
Car brake. Railway	C. H. Emerson	448,011	Mar. 10	1228	312	54	1357
Car-brake shoe	H. M. Elliott	444,168	Jan. 6	315	76	54	64
Car brake. Street	J. H. King	448,438	Mar. 17	1922	483	54	1502
Car brake. Street	B. C. Rowell	444,062	Jan. 20	1600	409	54	327
Car-brakes. Device for automatically operating power	H. Hinckley	448,234	Mar. 17	1568	401	54	1435
Car-brakes. Pressure-regulator for	C. A. Schroyer and E. B. Thompson	449,388	Mar. 31	3450	868; 869	54	1805
Car-buffers. Device for relieving the tension of	F. E. Canda	449,203	Mar. 31	3422	788	54	1747
Car. Cattle	D. L. Sylvester	447,919	Mar. 10	1067	267; 268	54	1327
Car. Cattle or stock	E. M. Bentley	444,479	Jan. 13	780	203	54	163
Car-controlling device. Electric	D. L. Barnes	448,003	Mar. 10	1207	306; 307	54	1354
Car-coupling	C. O. and L. Barnes, Sr	445,768	Feb. 3	420	105	54	595
Car-coupling	C. O. and L. Barnes, Sr	448,852	Mar. 24	2584	649	54	1636
Car-coupling	T. A. Bissell	448,406	Mar. 17	1870	470	54	1492
Car-coupling	D. Bowles	447,592	Mar. 3	422	103	54	1197
Car-coupling	T. F. Bright	448,497	Mar. 17	2011	503	54	1518
Car-coupling	P. Devney	448,942	Mar. 24	2714	685	54	1661
Car-coupling	W. R. Fine	448,949	Mar. 24	2725	688	54	1663
Car-coupling	M. F. Finnerty	447,640	Mar. 3	598	147	54	1230
Car-coupling	T. M. Fisher and A. Slye	445,503	Jan. 27	2409	628	54	495
Car-coupling	J. M. Fisk	448,014	Mar. 10	1231	313	54	1358
Car-coupling	O. Flohr	445,242	Jan. 27	2029	523	54	420
Car-coupling	O. Flohr	445,243	Jan. 27	2031	523	54	421

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car-coupling	O. Flohr	445,244	Jan. 27	2034	523	54	421
Car-coupling	O. Flohr	445,245	Jan. 27	2035	523 524	54	421
Car-coupling	O. Flohr	445,246	Jan. 27	2038	524	54	421
Car-coupling	O. Flohr	445,248	Jan. 27	2041	525	54	422
Car-coupling	R. Forward	448,515	Mar. 17	2031	508	54	1523
Car-coupling	L. L. Frost	445,279	Jan. 27	2088	539	54	431
Car-coupling	W. W. Gelatt	444,096	Jan. 6	180	45, 46	54	38
Car-coupling	E. N. Gifford	444,697	Jan. 13	1117	288 289	54	229
Car-coupling	J. Green	448,613	Mar. 17	2194	549	54	1553
Car-coupling	P. B. Hand	449,253	Mar. 31	3202	807	54	1762
Car-coupling	C. E. Haynes	448,427	Mar. 17	1903	478	54	1499
Car-coupling	G. A. Hendricks	444,050	Jan. 6	104	26	54	23
Car-coupling	S. M. Hobson	448,039	Mar. 10	1265	322	54	1364
Car-coupling	C. W. Hunt	444,594	Jan. 13	964	250	54	200
Car-coupling	C. W. Hunt	444,955	Jan. 20	1593	406	54	326
Car-coupling	C. P. Jacobs	444,493	Jan. 13	812	211	54	170
Car-coupling	F. A. Johnson	447,154	Feb. 24	2725	675	54	1066
Car-coupling	W. Johnson	446,147	Feb. 10	1045	256	54	721
Car-coupling	J. La Burt	444,316	Jan. 6	527	137	54	105
Car-coupling	W. I. and J. E. Lankford	446,356	Feb. 10	1403	344	54	790
Car-coupling	B. T. Laws	446,528	Feb. 17	1689	414	54	860
Car-coupling	P. H. Lewis	446,358	Feb. 10	1405	344	54	791
Car-coupling	E. F. Long	449,224	Mar. 31	3150	794	54	1752
Car-coupling	W. McConway	446,602	Feb. 17	1787	442 443	54	879
Car-coupling	W. McConway	447,969	Mar. 10	1156	293	54	1343
Car-coupling	T. L. McKeen	445,817	Feb. 3	511	123	54	611
Car-coupling	R. McMahon	447,737	Mar. 3	736	185	54	1257
Car-coupling	F. Miller	449,633	Mar. 31	3858	966	54	1883
Car-coupling	C. F. Mowll	449,559	Mar. 31	3718	934	54	1857
Car-coupling	H. Moyé	447,712	Mar. 3	693	173	54	1249
Car-coupling	J. E. Mullins	446,976	Feb. 24	2401	598	54	1096
Car-coupling	C. F. Murray	449,561	Mar. 31	3722	935	54	1858
Car-coupling	P. Pedersen and D. C. Miller	447,718	Mar. 3	704	176	54	1251
Car-coupling	G. R. Rogers	447,259	Feb. 24	2808	720	54	1101
Car-coupling	J. Schatz	447,977	Mar. 10	1166	295	54	1345
Car-coupling	C. H. Shuttleworth	448,304	Mar. 17	1705	432	54	1461
Car-coupling	C. W. Smith	447,165	Feb. 24	2741	678	54	1069
Car-coupling	H. Sommerfeld	447,375	Mar. 3	160	44	54	1148
Car-coupling	S. H. Springer	448,686	Mar. 24	2621	581	54	1586
Car-coupling	H. A. Stevens	444,890	Jan. 20	1467	380	54	303
Car-coupling	T. M. Stuart	445,576	Feb. 3	88	21	54	528
Car-coupling	J. A. M. Thompson	449,014	Mar. 24	2823	715	54	1682
Car-coupling	W. J. Walker	446,239	Feb. 10	1227	300	54	755
Car-coupling	T. H. Walsh	444,913	Jan. 20	1515	389 390	54	312
Car-coupling	J. R. Weaver	446,556	Feb. 17	1729	425	54	868
Car-coupling	C. Weeks and J. E. Bush	447,035	Feb. 24	2505	622	54	1025
Car-coupling	G. W. Weller	446,240	Feb. 10	1228	300	54	755
Car-coupling	D. H. Young	448,769	Mar. 24	2467	614	54	1611
Car-coupling	J. Zilins	448,704	Mar. 24	2646	588	54	1591
Car-coupling device	E. A. Morrow	449,423	Mar. 31	3519	886	54	1819
Car-coupling implement	T. J. Thorp	444,548	Jan. 13	896	223	54	186
Car-couplings. Lever-bracket for	T. L. McKeen	447,578	Mar. 3	503	124	54	1212
Car-door	L. Delhieres and W. H. Romick	443,990	Jan. 6	4	1	54	3
Car-door	G. G. Geiger	449,155	Mar. 31	3044	769	54	1732
Car-door fixture. Freight-	F. J. Cole and E. W. Grieves	444,242	Jan. 6	424	106	54	83
Car-door latch	O. P. Hix	447,182	Feb. 24	2767	685	54	1074
Car-doors. Bracket-support and stop for	F. J. Cole and E. W. Grieves	444,274	Jan. 6	466	119	54	92
Car. Double-deck stock	B. C. Hicks	449,021	Mar. 31	3841	961 962	54	1879
Car draft-pole. Horse-	J. M. Blondell	449,646	Mar. 31	3879	970	54	1887
Car draw-gear. Railway-	G. L. Harvey	447,323	Mar. 3	67	18	54	1131
Car draw-gear. Railway-	G. L. Harvey	447,324	Mar. 3	68	18, 19	54	1131
Car draw-iron. Horse-	J. M. Blondell	449,644	Mar. 31	3877	970	54	1886
Car driving-gear. Electric street-	C. M. Conradson	448,910	Mar. 24	2670	671	54	1652
Car. Dumping-	W. F. Bennett	449,030	Mar. 24	2848	724	54	1687
Car. Dumping-	W. T. Cooper	449,524	Mar. 31	3668	921 922	54	1848
Car. Electric-railway	E. M. Bentley	444,480	Jan. 13	782	204	54	164
Car. Electric-railway	R. M. Hunter	445,144	Jan. 20	1875	485	54	381
Car. Electric-railway	L. A. McCarthy	444,539	Jan. 13	880	228	54	183
Car. Electrically-propelled	R. M. Hunter	446,817	Feb. 17	2121	527	54	947
Car fender and brake. Combined street-	G. T. Hall	446,227	Feb. 10	1182	289	54	745
Car for street-railways. Cable	W. Robinson	444,184	Jan. 6	339	82, 83	54	69
Car gear. Railway-	J. M. Blondell	449,643	Mar. 31	3875	969 970	54	1886
Car guard. Street-railway-	F. W. Wood and J. Fowler	445,236	Jan. 27	2021	521	54	419
Car. Hand-	C. Roberts	446,713	Feb. 17	1962	489	54	913
Car. Hand-	C. Roberts	446,714	Feb. 17	1963	489	54	913
Car. Hand-	C. Roberts	446,716	Feb. 17	1965	490	54	913
Car-heater	W. C. Baker	449,306	Mar. 31	3291	833	54	1778
Car-heating apparatus	W. C. Baker	447,100	Feb. 24	2605	647	54	1045
Car-heating apparatus	J. H. Sewall	445,090	Jan. 20	1784	459	54	364
Car-indicator	P. J. Boris	444,040	Jan. 6	94	24	54	22
Car-lamp box	J. H. White	448,899	Mar. 24	2656	667	54	1649
Car-lighting. Electric	L. F. Jordan	445,954	Feb. 3	712	173 174	54	652
Car motor. Street-	T. Roberts	445,756	Feb. 3	396	100	54	591
Car motors. Mounting for electric-	E. W. Rice, Jr.	444,922	Jan. 20	1530	393	54	314
Car. Observatory-	T. J. McBride	447,785	Mar. 10	892	207 208	54	1282

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Car. Passenger-	C. A. Preston	446,554	Feb. 17	1725	423	54	867
Car platform. Freight-	T. C. Tyrrell	449,452	Mar. 31	3565	899	54	1822
Car-platform gate	G. C. Bushman	447,102	Feb. 24	2608	648	54	1046
Car-platform gate	S. B. Fuller	446,514	Feb. 17	1663	406	54	855
Car. Poultry-	W. P. Jenkins and F. X. Mudd	444,266	Jan. 6	456	115 116	54	90
Car-pusher	J. M. Jones	449,632	Mar. 31	3857	966	54	1883
Car-pusher	C. M. Kimball	444,443	Jan. 13	721	189	54	151
Car. Railway-	J. A. Brill	446,423	Feb. 17	1520	374 375	54	826
Car. Railway-	L. P. Farmer	446,984	Feb. 24	2414	600 601	54	1009
Car. Railway-	W. W. Green	447,053	Feb. 24	2535	630	54	1031
Car. Railway-	W. W. Green	447,054	Feb. 24	2536	630	54	1031
Car. Railway-	B. S. Henning	446,065	Feb. 10	909	321 322	54	697
Car. Railway-	H. F. Heuer	446,449	Feb. 17	1565	385	54	835
Car. Railway-	H. Marshal	446,070	Feb. 10	917	224	54	698
Car. Railway-	J. C. Kenney	445,926	Jan. 27	2442	636	54	501
Car. Railway freight-	H. G. Canfield	447,806	Mar. 10	1401	349	54	1291
Car registering apparatus. Street-	E. Descomps	448,137	Mar. 10	1401	358	54	1394
Car-replacer	A. G. McKinney	444,783	Jan. 13	1258	326	54	253
Car-replacer	J. W. Reynolds and P. Perkins	446,951	Feb. 24	2359	587	54	998
Car-replacer	W. Stephens and J. Mott	448,090	Mar. 10	1332	341	54	1379
Car-replacer	C. M. Jennings	446,780	Feb. 17	2059	513	54	933
Car-roof	A. W. Zimmerman	446,244	Feb. 10	1234	301	54	756
Car-roofing	W. H. La Fountaine	445,597	Feb. 3	627	154	54	635
Car safety-guard	S. L. Davis	446,129	Feb. 10	1012	250	54	717
Car safety-platform. Railway-	C. L. Wheeler	446,107	Feb. 10	972	239	54	708
Car-seal	C. L. Wheeler	446,653	Feb. 17	1870	464	54	895
Car-seal	E. N. Gilfillan	448,424	Mar. 17	1898	477	54	1498
Car-seat	J. C. Mitchell	444,132	Jan. 6	255	61	54	52
Car seat. Railway-	J. C. Morrison	446,637	Feb. 17	1842	457	54	890
Car seats. Berth-support for sleeping-	T. H. J. Crnise	446,731	Feb. 17	1991	497	54	918
Car service. Street-	E. G. Allen	445,870	Feb. 3	588	144	54	627
Car. Sleeping-	E. G. Allen	446,315	Feb. 10	1346	328	54	778
Car. Sleeping-	M. H. Throop, Jr	444,468	Jan. 13	764	199	54	160
Car. Sleeping-	W. Robinson	444,182	Jan. 6	335	81, 82	54	68
Car-spring check	A. Wilke	446,725	Feb. 17	1982	494 495	54	916
Car-starter	W. Giffard	449,285	Mar. 31	3251	824 825	54	1771
Car starter and brake	E. E. Fashion	447,304	Mar. 3	30	8	54	1124
Car-step	J. B. Stoner	444,058	Jan. 6	118	29, 30	54	26
Car. Stock-	F. Baier and D. R. Hart	447,240	Feb. 24	2873	713	54	1095
Car. Street-	G. Moore and J. E. Perller	445,661	Feb. 3	233	63	54	557
Car. Street-	J. G. Schneider	445,941	Feb. 3	696	169 170	54	649
Car-switch	W. Amos	448,570	Mar. 17	2116	530	54	1539
Car-track cleaner. Oscillating	J. E. Chambers	446,326	Feb. 10	1361	332	54	782
Car-ventilating apparatus. Railway-	R. J. Wilson	448,401	Mar. 17	1862	468	54	1491
Car ventilating device. Railway-	E. W. Waldrop	447,206	Feb. 24	2851	702	54	1087
Car-ventilator	G. Hogg	447,071	Feb. 24	2566	637	54	1037
Car. Vestibule-	H. M. Jones	448,186	Mar. 10	1478	376 377	54	1409
Car-wheel	M. A. Andrews	447,531	Mar. 3	439	107	54	1200
Car-wheel	J. Player	446,571	Feb. 17	1748	430	54	872
Car-wheel	W. H. Silverthorn	448,683	Mar. 24	2314	580	54	1584
Car-wheels	C. B. Beach	445,218	Jan. 27	2023	522	54	419
Car-wheels. Machinery for forming	J. S. Alston	447,709	Feb. 3	320	84, 85	54	575
Cars. Apparatus for heating railway-	T. Inglis and W. Schiermann	445,181	Jan. 27	1941	501	54	403
Cars. Automatic band-brake for railway-	F. J. Cole and E. W. Grieves	444,240	Jan. 6	422	106	54	83
Cars. Card-case for freight-	C. T. Schoen	446,296	Feb. 10	1320	322	54	773
Cars. Centre-bearing plate for platform-	J. C. Chamberlain	447,230	Feb. 24	2854	708 709	54	1091
Cars. Current-controlling device for electric-railway	D. Wylie	444,190	Jan. 6	347	85	54	70
Cars. Draw-bar for passenger-	B. S. Henning	445,404	Jan. 27	2266	588	54	468
Cars. Driving railway-	J. H. Fox	445,899	Feb. 3	503	121	54	610
Cars. Gate for exit-passages of railway-	R. W. Thickins	449,098	Mar. 24	2950	747 748	54	1707
Cars. Grain-door for	J. H. Fox	445,898	Feb. 3	502	121	54	610
Cars. Guard for exit-passages of railway-	F. A. Morley	449,262	Mar. 31	3242	810	54	1764
Cars. Hand-support for	S. Lazarus	444,051	Jan. 6	111	28	54	25
Cars. Means for ventilating	W. E. and W. E. Prall, Jr	449,588	Mar. 31	3766	945	54	1899
Cars. Method of and apparatus for propelling street-	H. W. Rosenbaum	445,704	Feb. 3	311	82	54	574
Cars. Movable table for railway-	W. G. Ridge	448,261	Mar. 17	1617	412 413	54	1444
Cars. Pipe-coupling for railway-	H. Howard	448,344	Mar. 17	1778	449	54	1475
Cars. Platform-door for	S. H. Short	448,840	Mar. 24	2558	642	54	1630
Cars. Protecting motor mechanism of electric-	F. E. Webb	449,506	Mar. 31	3042	916	54	1843
Cars. Reversible sign for horse-	W. V. H. Willson	444,034	Jan. 6	84	22	54	20
Cars. Sand-box for	B. F. Crow	448,505	Mar. 17	2022	505	54	1520
Cars. Trolley-support for electric	B. C. Hicks	449,622	Mar. 31	3843	962	54	1880
Cars. Watering-trough for stock-	W. M. B. Keen and W. F. Haarmann	445,374	Jan. 27	2240	.....	54	459
Carbon filaments. Manufacture of	B. B. Ward	444,471	Jan. 13	768	200	54	161
Carbon for arc lights	W. H. Burns	446,660	Feb. 17	1879	.....	54	897
Carbon for electric lamps	J. McCoy	448,063	Mar. 10	1297	331	54	1371
Card-board making machine	J. W., Sr., and J. W. Fawkes, Jr	446,439	Feb. 17	1548	380	54	831
Card-exhibiting device	J. R. West	447,708	Mar. 3	687	171	54	1248
Card holder or slide	W. C. Powers	448,849	Mar. 24	2579	647 648	54	1634
Card-mounting machine	A. A. Low	446,069	Feb. 10	915	223	54	698
Card or ticket case	A. H. Rudd and W. P. Mendenhall	449,274	Mar. 31	3227	815	54	1767
Card. Playing-	E. Falkingham	449,316	Mar. 31	3319	837	54	17-2
Card-shuffler							

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Carding-engine	J. E. Prest	449,088	Mar. 24	2935	743	54	1704
Carding-engine for making mottled yarns	R. B. Fowler	448,479	Mar. 17	1983	498	54	1514
Carding-machines. Clutch for	J. E. Prest	449,087	Mar. 24	2934	743	54	1703
Carding-machines. Flat-supporting device for	J. E. Prest	446,015	Feb. 10	892	199	54	681
Carding machinery	E. V. Bates	444,720	Jan. 13	1147	295	54	294
Carpenter's gage	A. A. Welsh	445,646	Feb. 3	396	55	54	553
Carpet	J. W. Priestley	446,290	Feb. 10	1302	318	54	770
Carpet-cleaning machine	J. L. Wagner	445,209	Jan. 27	1081	512	54	411
Carpet fabric. Ingrain	W. B. Keefer	444,837	Jan. 20	1340	350	54	280
Carpet-fastener	F. Frullman, Jr	448,220	Mar. 17	1550	396	54	1431
Carpet-fastener	R. J. Johnson	444,201	Jan. 6	362	90	54	73
Carpet-fastener	H. E. Leeman	447,959	Mar. 10	1132	284	54	1339
Carpet-fastener	H. E. Leeman	447,960	Mar. 10	1134	285	54	1339
Carpet-fastener	G. C. Parmeter and A. G. C. Stetson	448,068	Mar. 10	1303	333	54	1373
Carpet-fastener	A. V. Wiskocil	446,198	Feb. 10	1134	278	54	736
Carpet-lining	A. H. Meech	448,978	Mar. 24	2767	699	54	1671
Carpet-lining, &c	A. H. Meech	448,979	Mar. 24	2767	699	54	1671
Carpet fastener. Stair	W. G. Collins	444,589	Jan. 13	959	249	54	199
Carpet or oil-cloth stretcher	A. R. Anderson	444,415	Jan. 13	686	179	54	143
Carpet-stretcher	G. A. May	444,100	Jan. 6	189	47	54	39
Carpet-stretcher	D. H. McFalls	444,503	Jan. 13	828	216	54	173
Carpet-stretcher	W. A. Pool	448,992	Mar. 24	2786	705	54	1675
Carpet-sweeper	G. W. Kelley	449,541	Mar. 31	3694	928	54	1853
Carpets. Manufacturing figured pile	J. Dunlap	446,141	Feb. 10	1033	254 255	54	719
Carriage	S. R. Bailey	447,752	Mar. 10	769	191	54	1271
Carriage attachment. Baby	W. T. Bumstead	447,660	Mar. 3	620	154	54	1235
Carriage. Baby	A. A. Allardyce	446,726	Feb. 17	1985	495	54	917
Carriage. Baby	F. S. Briggs	444,519	Jan. 13	849	221	54	177
Carriage. Baby	W. Gardner	447,606	Mar. 3	546	135	54	1220
Carriage-bow	I. N. Topliff	446,938	Feb. 24	2345	583	54	995
Carriage. Collapsible baby	J. W. Oulton and D. A. Meister	445,599	Feb. 3	125	32	54	535
Carriage. Convertible	G. E. Spare	447,547	Mar. 3	460	113	54	1204
Carriage corner-irons. Process of and apparatus for straightening	E. C. Porter	446,950	Feb. 24	2358	586	54	998
Carriage-cover	B. F. Partridge	447,842	Mar. 10	937	235	54	1303
Carriage-curtain attachment	D. Argerbright	448,106	Mar. 10	1353	346	54	1384
Carriage. Folding baby	A. R. Buckton	444,086	Jan. 6	167	41, 42	54	36
Carriage seat	H. P. Wells and O. Morrill	447,591	Mar. 3	524	128	54	1216
Carriage. Shifting seat	J. T. Clarkson	446,429	Feb. 17	1533	377	54	829
Carriage-top	G. J. Carpenter	448,931	Mar. 24	2697	680	54	1658
Carriage-top joint	J. T. Groves	444,120	Jan. 6	225	54	54	46
Carriage-top joint	D. T. Smith	445,631	Feb. 3	178	46	54	546
Carriage-top prop	A. Searls	446,474	Feb. 17	1692	393	54	843
Carriages. Strap-loop for	D. D. Whitney	445,105	Jan. 20	1812	468	54	369
Carriages. Wheel-locking device for baby	W. H. Graham and G. R. McDonald	444,432	Jan. 13	707	185	54	148
Carrier: *See* Basket-carrier. Bicycle parcel-carrier. Braiding-machine carrier. Cash-carrier. Cash and parcel carrier. Cycle luggage-carrier. Dental disk-carrier. Egg-carrier. Fodder-carrier. Lumber-carrier. Package-carrier. Parcel-carrier. Sheaf-carrier.							
Carrier and cleaner	J. H. R. Wendel	447,173	Feb. 24	2753	681	54	1071
Cart. Dumping	A. F. Behrman	447,442	Mar. 3	280	70, 71	54	1170
Cart. Dumping	T. Flanigan	446,096	Feb. 10	955	235	54	705
Cart. Road	S. E. Burke	446,508	Feb. 17	1655	404	54	853
Cart. Road	J. D. Dort	448,855	Mar. 24	2593	651	54	1637
Cart. Road	W. H. Fanning	445,427	Jan. 27	2301	597	54	471
Cart. Road	S. B. Irwin	449,121	Mar. 31	2994	756 757	54	1724
Cart. Road	S. J. McDonald	444,456	Jan. 13	742	194	54	155
Cart. Road	W. L. Pike	446,884	Feb. 24	2246	559	54	978
Cart. Road	F. Weyandt, Jr	446,310	Feb. 10	1318	326	54	777
Cart. Road	J. H. Whitaker	444,033	Jan. 6	82	21, 22	54	20
Cart. Road	H. M. Willis	447,391	Mar. 3	190	50	54	1154
Cartridge	B. Long	448,057	Mar. 10	1289	330	54	1370
Cartridge. Metallic	M. J. Cuacros	444,336	Jan. 6	554	143	54	111
Cartridge-reloading implement	C. H. Griffith	448,228	Mar. 17	1561	399	54	1433
Cartridge-shell crimper	G. D. Hunter	449,536	Mar. 31	3684	926	54	1851
Cartridge-shell crimper	G. D. Hunter	449,537	Mar. 31	3686	926	54	1851
Carving-machine	J. Rohlmann	444,306	Jan. 6	509	133	54	102
Carving-machine	T. L. Smith and P. W. Post	447,796	Mar. 10	867	215	54	1288
Case: *See* Book-case. Boot or shoe case. Bottle-case. Burial-case. Card or ticket case. Cell-case. Cigar-case. Flour and cereal testing case. Jewel-case. Lock-case. Map or sheet case. Medicine-case. Packing-case. Piano-case. Sample-case. Show-case. Toilet-case. Watch-case.							
Cash and parcel carrier	J. M. Segur and J. R. Haight	445,087	Jan. 20	1779	458	54	363
Cash and sales register	J. P. Manton, Jr	449,164	Mar. 31	3055	773	54	1736
Cash-carrier	G. A. Millbradt	449,082	Mar. 24	2925	742	54	1701
Cash-carrier apparatus	A. Iske	447,828	Mar. 10	911	227	54	1297
Cash drawer and recorder. Combined	W. Assheton	445,489	Jan. 27	2386	621	54	491
Cash indicating, recording, and registering machine	C. W. Weiss	447,036	Feb. 24	2505	623	54	1025
Cash indicator and recorder	C. Kruse and C. W. Weiss	447,031	Feb. 24	2495	621	54	1023
Cash indicator and recorder. Electric	W. F. Z. Desant	449,108	Mar. 31	2972	751	54	1720

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cash indicator and register	J. F. Goodridge	446,343	Feb. 10	1388	339	54	787
Cash indicator and register	L. T. Weiss	449,393	Mar. 31	3459	870 871	54	1807
Cash-recorder	A. O. Frick	448,481	Mar. 17	1989	498 499	54	1514
Cash-register	J. H. Ahrens	449,395	Mar. 31	3464	872 873	54	1808
Cash-register	H. Cook	444,334	Jan. 6	548	142	54	110
Cash-register	C. H. Drury	446,330	Feb. 10	1370	333 334	54	783
Cash-register	W. H. Gilman	448,020	Mar. 10	1237	314 315	54	1360
Cash register	W. H. Gilman	448,021	Mar. 10	1240	315	54	1360
Cash-register	H. A. Herr	443,994	Jan. 6	12	3, 4	54	5
Cash-register	J. D. King	448,242	Mar. 17	1582	404	54	1437
Cash-register	W. G. Latimer	448,245	Mar. 17	1585	405	54	1438
Cash-register	R. E. Nelson, Jr	449,248	Mar. 31	3187	804 805	54	1759
Cash-register and check machine	G. B. Massey	446,262	Feb. 10	1261	308 309 310	54	761
Cash register and indicator	W. H. Clark	444,391	Jan. 6	639	166 167	54	126
Cash register and indicator	H. Cook	445,671	Feb. 3	249	67 68 69	54	561
Cash register and indicator	H. Cook	448,937	Mar. 24	2705	683	54	1650
Cash register and indicator	C. D. Grimes	445,672	Feb. 3	264	69, 70	54	564
Cash register and indicator	B. Johnston	446,509	Feb. 17	1782	441	54	878
Cash register and indicator	C. E. Lord	445,670	Feb. 3	245	67	54	560
Cash register and indicator	M. N. Lovell	445,959	Feb. 3	721	176	54	654
Cash register and indicator	M. N. Lovell	445,960	Feb. 3	725	177	54	654
Cash register and indicator	W. C. McGill	446,925	Feb. 24	2362	577	54	991
Cash register and indicator	B. Moser	446,150	Feb. 10	1051	258 259	54	722
Cash register and indicator	E. B. Parkhurst	444,368	Jan. 6	599	154 155	54	119
Cash register and indicator	J. J. Webster	447,854	Mar. 10	954	239 240	54	1306
Cash register and indicator	J. J. Webster and W. W. Drew	447,264	Feb. 24	2909	723 724	54	1103
Cash register and indicator	W. H. and W. W. Wythe	445,582	Feb. 3	96	23, 24	54	530
Cash register, recorder and indicator	H. Cook	449,311	Mar. 31	3300	834 835	54	1779
Cash-register system. Electric	R. E. Nelson, Jr	449,249	Mar. 31	3194	805 806	54	1761
Cash registering and indicating machine	M. R. Longacre	449,328	Mar. 31	3340	842 843	54	1785
Casing-spear	D. W. Black	444,061	Jan. 6	126	31	54	93
Caster	G. J. Helmstaedter	445,833	Feb. 3	5358	130	54	616
Caster	J. Toler	448,306	Mar. 17	1708	433	54	1462
Caster	J. L. Sebenius	444,162	Jan. 6	299	72	54	61
Casting	W. F. Durfee and N. B. Wittman	448,945	Mar. 24	2720	686	54	1662
Casting apparatus. Vacuum	E. Kuhn	445,812	Feb. 3	507	122	54	611
Casting hooks. Pattern for	W. R. Hinsdale	448,881	Mar. 24	2628	660	54	1643
Casting ingots	W. S. Scudder	444,090	Jan. 6	172	43	54	37
Casting linotypes. Machine for	M. F. Bingham	448,029	Mar. 24	2233	560	54	1569
Casting printers' rollers. Apparatus for	J. J. Chattany and C. E. Owens	448,318	Mar. 17	1728	437	54	1466
Cat-guard	G. H. Stout	448,092	Mar. 10	1335	341	54	1380
Cattle-dehorning implement	J. K. Wagner	448,804	Mar. 24	2507	628	54	1621
Cattle-guard. Surface	W. R. Kinnear	446,121	Feb. 10	996	245 246	54	713
Ceiling. Metallic	J. Wilson	446,409	Feb. 17	1642	401	54	851
Celery-bleacher	D. Quinlan	449,332	Mar. 31	3347	844	54	1786
Cell-case	J. Williams	444,515	Jan. 13	845	219 220	54	176
Cellulose films. Producing	J. F. Boynton	448,632	Mar. 24	2237		54	1569
Cement	P. Krottnaurer	447,155	Feb. 24	2727	675 676	54	1066
Cement. Apparatus for the calcination of	O. F. Drew	445,832	Feb. 3	534	130	54	616
Cement-can	C. Löchert	446,458	Feb. 17	1580	.....	54	839
Cement for joining the ends of driving-belts	H. C. Baum	446,911	Feb. 24	2305	.....	54	989
Cement. Manufacture of Portland	G. Williams	449,510	Mar. 31	3648	.....	54	1845
Cement. Manufacturing	J. Couch	448,503	Mar. 17	2017	504	54	1520
Center-board for vessels	F. M. Moore	444,501	Jan. 13	824	215	54	172
Center-board for vessels	W. Crighton	448,504	Mar. 17	2019	505	54	1520
Center-seal and by-pass valve	H. W. Lafferty	449,327	Mar. 31	3339	842	54	1785
Centrifugal machine	A. Wahlin	447,530	Mar. 3	437	107	54	1200
Centrifugal separating apparatus	G. de Laval	445,666	Jan. 20	1754	452	54	358
Centrifugal separator	R. Paxson	447,620	Mar. 3	570	141	54	1225
Chain	C. A. Hansen	448,880	Mar. 24	2627	660	54	1643
Chain. Boom-locking	S. Elliott	447,813	Mar. 10	887	222	54	1293
Chain. Drive	B. S. Freeman, Jr	446,593	Feb. 17	1777	438	54	877
Chain-fastening	O. D. Wright	447,597	Mar. 3	532	131	54	1217
Chain-link. Wire	E. Thomson	449,356	Mar. 31	3389	853	54	1793
Chains by electric-welding processes. Manufacturing	S. Elliott	447,814	Mar. 10	888	222	54	1293
Chains. Making oiling links for drive							
Chair: *See* Adjustable chair. Barber's chair. Convertible chair. Dental chair. Folding chair. Hammock-chair. Lawn-chair. Rail-chair. Reclining-chair. Reversible-seat chair. Tilting-chair.							
Chair	J. W. Craig	446,249	Feb. 10	1240	303	54	758
Chair	E. S. French	449,114	Mar. 31	2985	754	54	1722

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Chair	H. U. Pohl	444,992	Jan. 20	1641	421	54	336
Chair	T. Suchland	449,355	Mar. 31	3388	853	54	1793
Chair and desk. Combined	C. H. Easte	446,632	Feb. 17	1833	454	54	8-8
Chair and hammock. Combined	W. I. Bunker	446,659	Feb. 17	1878	466, 467	54	897
Chair-back. Detachable	J. H. Hanlenbeck	447,682	Mar. 3	652	162	54	1241
Chairs, sofas, &c. Attachment for	J. Zapp	444,719	Jan. 13	1145	295	54	234
Chairs. Spring attachment for tilting	R. Hendrickson	444,355	Jan. 6	580	149	54	115
Change-maker and automatic register	S. J. Taylor	448,278	Mar. 17	1661	421	54	1453
Change-receiver	G. Edwards and C. D. Everett	446,438	Feb. 17	1545	380	54	831
Channel-flap-laying machine	J. Hemingway and D. B. Aldoes	445,643	Feb. 3	149	39	54	540
Charcoal. Apparatus for reburning animal	J. H. Grimm and W. G. Pennypacker	447,303	Mar. 3	47	12	54	1126
Chart. Time	E. R. E. Cowell	445,392	Jan. 27	9244	583	54	464
Check. Combination	C. Zallud	448,290	Mar. 17	1679	425	54	1456
Check-hook	K. G. Bareis	446,277	Feb. 10	1286	314	54	766
Check-loop	M. Sansoney	445,084	Jan. 20	1776	458	54	363
Check-protector	E. O. Abbott	448,705	Mar. 24	2347	588, 589	54	1591
Check-rower	A. C. Evans	445,397	Jan. 27	9252	585	54	465
Checking and unchecking device	M. F. Glynn	445,888	Feb. 3	614	151	54	632
Checkrein for harness	W. W. Davisson	444,975	Jan. 20	1645	413	54	331
Checkrein holder	F. P. Thompson	448,094	Mar. 10	1308	342	54	1380
Checkrein-hook	F. L. Adams	444,264	Jan. 6	453	114	54	89
Checkrein-hook	V. A. Krepps	449,045	Mar. 24	2752	729	54	1692
Cheeses. Perforating Roquefort or other	L. Rigal	448,371	Mar. 17	1818	.....	54	1482
Chenille-cutter bar	J. J. Hughes	445,640	Feb. 3	197	52	54	554
Chest-protector	B. T. Mason	446,531	Feb. 17	1692	444	54	861
Chimney	P. Dickinson	445,744	Feb. 3	325	86	54	576
Chisel-handle	W. H. Gage	446,442	Feb. 17	1555	382	54	833
Chisel. Mortising	A. P. Lauterman	444,596	Jan. 13	967	251	54	200
Chopper. *See* Cotton-chopper.							
Chuck. Drill	N. E. Austin	444,586	Jan. 13	954	247	54	198
Chuck. Drill	J. A. Becher	445,533	Feb. 3	6	2	54	512
Chuck. Drill	C. T. Pratt	449,135	Mar. 31	3017	763	54	1728
Chuck for turning lathes	W. L. Grout and E. L. Bowers	445,695	Feb. 3	298	78, 79	54	571
Chucks. Automatic feed mechanism for	J. B. Clyne	447,144	Feb. 24	2706	671	54	1062
Churn	J. F. Adams	448,491	Mar. 17	2003	501	54	1517
Churn	J. H. Cookus	449,523	Mar. 31	3667	921	54	1848
Churn	R. Crouch	447,399	Mar. 3	206	54	54	1157
Churn	N. Evinger	445,883	Feb. 3	609	150	54	631
Churn	L. A. Harper	445,272	Jan. 27	9082	547	54	430
Churn	J. P. Lynott	446,918	Feb. 24	2356	586	54	997
Churn	J. McBride	446,263	Feb. 10	1264	310	54	761
Churn	A. C. Richardson	446,470	Feb. 17	1595	392	54	842
Churn	W. N. Wachter	447,552	Mar. 10	959	218	54	1305
Churn-closure	S. D. Palmer	446,391	Feb. 10	1455	357	54	802
Churn-dasher	I. F. Sterling	446,718	Feb. 17	1968	491	54	914
Churn. Extractor	A. Wahlin, C. J. Lundstrom, and T. Collins.	446,651	Feb. 17	1868	463	54	895
Churn-motor	L. S. Eaves	447,670	Mar. 3	632	157	54	1237
Churn. Working body	G. N. Brisbin and J. Copper	448,205	Mar. 17	1526	390	54	1427
Churn-operating device	W. J. Knox	446,068	Feb. 10	914	223	54	698
Chute and hopper for charging retorts. Combined	K. M. Mitchell	444,249	Jan. 6	432	109	54	85
Chute. Animal	L. H. Myers and S. H. Armstrong	449,228	Mar. 31	3157	796	54	1754
Chute. Coal and grain	T. W. Emery	444,745	Jan. 13	1202	312	54	243
Cider press and mill	J. F. Gearhart	447,677	Mar. 3	641	159, 160	54	1239
Cigar-blank	H. N. Anderson	444,624	Jan. 13	1003	261	54	207
Cigar-boxes. Means for marking	C. H. Storm	446,650	Feb. 17	1867	463	54	895
Cigar bunching machine	F. J. Hagen. (Reissue)	11,150	Mar. 10	1491	380, 381	54	1412
Cigar-bunching machine	G. L. Westman and J. Delarue	446,989	Feb. 24	2419	601, 602	54	1010
Cigar-case	J. H. Fawkes	448,948	Mar. 24	2724	688	54	1663
Cigar-clipper	A. B. Grimnip	449,073	Mar. 24	2911	738	54	1699
Cigar cutter	E. T. Quin and J. F. Dunckel	447,843	Mar. 10	998	225	54	1303
Cigar cutting and branding machine	S. Z. Phinney	448,302	Mar. 17	1702	431	54	1460
Cigar-lighter	A. F. Hawksley	447,575	Mar. 10	992	250	54	1312
Cigar machine	J. E. Rickards	444,768	Jan. 13	1239	322	54	250
Cigar machines. Flexible roll for	R. A. Bright and W. A. Peck	445,937	Feb. 3	690	168	54	648
Cigar-mold	A. Jaenicke	445,997	Feb. 10	803	194	54	677
Cigar-mold	A. Jaenicke	445,998	Feb. 10	804	195	54	677
Cigar-mold	B. H. Meyer and P. Huppmann-Gerard.	446,000	Feb. 10	807	195	54	678
Cigar or cigarette holder	E. B. Barr	446,377	Feb. 10	1433	352	54	797
Cigar-tip cutter	E. Brunhoff and C. Lehmann	448,116	Mar. 10	1365	350	54	1386
Cigar trimming and branding machine	W. Garretson	449,260	Mar. 31	3210	810	54	1764
Cigars. Implement for testing the burning qualities of	G. Balbin	448,194	Mar. 17	1507	384	54	1424
Cigarette-box	E. A. Hoen	447,183	Feb. 24	2769	685	54	1075
Cigarette-machine	H. Bohls	445,036	Jan. 20	1696	436, 437	54	347
Cigarette-machine	A. L. Munson	447,968	Mar. 10	1145	290, 291, 292	54	1341
Circuit-controller and alarm	C. M. Woolcott and A. E. Wilmot	445,306	Jan. 27	2119	548	54	438
Cistern-cleaner	A. B. Hill	448,340	Mar. 17	1733	448	54	1474
Cistern-cleaning device	O. I. Searles, G. F. Jackson, and F. M. Gustin.	447,368	Mar. 3	151	41	54	1146
Clamp: *See* Extension-clamp. Hose-clamp. Paper-clamp. Pipe and main clamp. Rope-clamp. Trolley-wire clamp. Vise-clamp.							
Clamp	P. Brown	444,484	Jan. 13	791	205	54	165

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Invention.	Name.	No.	Date	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Clamp	G. P. Plischke and H. Brueckel	447,526	Mar. 3	432	106	54	1199
Clamp for holding chisels	J. A. Islin	447,776	Mar. 10	817	203	54	1280
Clamping tools. Jaw for	G. W. Miller	448,451	Mar. 17	1942	489	54	1506
Clapboard-holder	B. F. Mooney	445,681	Feb. 3	279	74	54	567
Clasp: *See* Corset-clasp. Garment-clasp. Pencil-clasp. Ribbon-clasp. Suspender-clasp.							
Clasp	S. B. Bacon	446,564	Feb. 17	1741	428	54	870
Clasp	W. H. Thompson	448,893	Mar. 24	2644	664	54	1646
Clasp	G. A. Watkins	444,996	Jan. 20	1647	422	54	338
Clasps. Device for assembling	H. G. Butler	447,458	Mar. 3	309	78	54	1176
Clay. Feeding apparatus for use in burning	H. G. and W. Butler	447,459	Mar. 3	311	78	54	1176
Clay. Feeding apparatus for use in burning	G. Hottinger	446,683	Feb. 17	1919	477, 478	54	904
Clay-ware. Coloring							
Cleaner: *See* Boiler-cleaner. Boot or shoe cleaner. Car-track cleaner. Cistern-cleaner. Flue-cleaner. Fruit-cleaner. Grain-cleaner. Saw-cleaner.							
Cleaning composition	D. E. Sumner	444,187	Jan. 6	342	.....	54	69
Clinometer or slope-measurer	J. H. Parks	444,196	Jan. 6	356	88	54	72
Clip: *See* File-clip.							
Clipper	N. Taccone	446,823	Feb. 17	2132	530	54	949
Clipper. Hair	J. K. Priest	445,081	Jan. 20	1772	457	54	362
Clipper. Hair	R. C. Wright	448,901	Mar. 24	2658	667	54	1649
Clipping machine. Hair	G. H. Coates and E. M. Long	445,947	Feb. 3	702	174	54	650
Clipping-shears	L. G. Werner	448,170	Mar. 10	1449	370	54	1403
Clock. Electric alarm	E. M. Egerton	448,325	Mar. 17	1740	440	54	1468
Clock. Electric regulating	D. and G. Vande Plancke	446,801	Feb. 17	2097	522, 523	54	941
Clock. Illuminated	A. A. Dubois	448,510	Mar. 17	2027	507	54	1522
Clock, Independent electric	W. J. Dudley	447,105	Feb. 24	2612	649	54	1047
Clock. Independent electric	E. G. Hammer	444,433	Jan. 13	708	185	54	148
Clock. Independent electric	E. Lefebvre	445,023	Jan. 20	1680	432	54	344
Clock. Independent electric	W. S. Scales	448,908	Mar. 24	2801	708	54	1677
Clock-pinion	A. Bannatyne	444,684	Jan. 13	1102	285	54	225
Clock. Secondary electric	W. S. Scales	448,909	Mar. 24	2803	708	54	1678
Clock striking mechanism	A. M. Lane	445,697	Feb. 3	141	36	54	538
Clock winding mechanism	W. N. Packer and W. W. Bradley	445,073	Jan. 20	1762	454	54	360
Clocks. Circuit-closer for	H. A. Chase	448,294	Mar. 17	1690	427	54	1458
Clocks. Electric hand setting mechanism for	W. W. Bradley and W. N. Packer	444,482	Jan. 13	784	204	54	164
Clocks. Pendulum adjustment for	F. M. Wakeman	449,016	Mar. 24	2825	716	54	1682
Closet: *See* Crematory-closet. Dry closet. Wash-out closet. Water-closet.							
Closet-cistern	B. R. Bacon	447,534	Mar. 3	441	108	54	1200
Cloth-cutting machine	A. Warth	444,282	Jan. 6	476	121	54	94
Cloth or other material. Machine for reblocking	H. Hutchinson	448,834	Mar. 24	2550	640	54	1629
Cloth-pressing machine	G. W. Yoelker	445,723	Feb. 3	340	90	54	580
Cloth scouring, rinsing, and purifying machine	J. W. Steelbrooke	446,937	Feb. 24	2143	582	54	995
Cloth-shrinking apparatus	C. W. Schaefer	448,459	Mar. 17	1950	491	54	1508
Clothes-drier	G. W. Ansley and J. H. Boyd	447,551	Mar. 3	465	115	54	1205
Clothes-drier	J. J. Becker	445,633	Feb. 3	181	47	54	547
Clothes-drier	J. Degelleke	446,853	Feb. 24	2191	546	54	969
Clothes-drier	M. D. Judkins	448,049	Mar. 10	1280	326	54	1368
Clothes-drier	G. W. Llewellyn	449,484	Mar. 31	3615	910	54	1837
Clothes-drier	M. L. W. Martinot	446,260	Feb. 10	1258	306	54	760
Clothes-drier	W. A. Newman	446,362	Feb. 10	1410	346	54	792
Clothes-drier	J. F. Wynkoop	448,289	Mar. 17	1677	425	54	1456
Clothes-hanger	E. Sundberg	445,866	Feb. 3	582	142	54	626
Clothes line	A. D. McCallen	444,123	Jan. 6	233	56	54	48
Clothes-line	H. E. Percival	446,007	Feb. 10	845	197	54	679
Clothes-line connecting-plate	J. H. Brewer	443,987	Jan. 6	1	1	54	3
Clothes-line fastener	E. Abbiati	449,099	Mar. 31	2957	749	54	1717
Clothes line holder	J. Huth and G. Rex	446,522	Feb. 17	1677	409	54	857
Clothes-line. Pinless	H. E. Percival	446,006	Feb. 10	814	197	54	679
Clothes-line stretcher	W. Somers	444,320	Jan. 6	532	138	54	106
Clothes-line supporting post. Extensible	J. Krent	448,582	Mar. 17	2132	534	54	1542
Clothes-pin	A. G. Bowman	447,504	Mar. 3	395	96	54	1192
Clothes-pin	C. A. Ostrom, H. H. Thiellesen, and S. C. Wampler.	444,303	Jan. 6	506	132	54	101
Clothes-pin	J. Schmid	446,648	Feb. 17	1865	463	54	894
Clothes-pin	H. Tirrill	444,603	Jan. 13	975	252	54	202
Clothes-pounder	F. E. Mighell	446,625	Feb. 17	1823	450	54	886
Clothes-pounder	F. P. Mighell	449,555	Mar. 31	3714	933	54	1856
Clothes-wringer	L. T. Gorentlo	447,609	Mar. 3	551	136	54	1221
Clothes-wringer	M. A. Pigott	446,612	Feb. 17	1800	445	54	882
Clothes-wringer	L. S. Whiting	447,743	Mar. 3	749	187	54	1260
Clover-huller	J. W. Harvey	448,148	Mar. 10	1415	362	54	1396
Clover-hullers. Feeder attachment for	H. Denney	446,664	Feb. 17	1882	468	54	897
Clutch	D. B. Hiser	449,415	Mar. 31	3504	881	54	1817
Clutch	J. C. Miller	449,378	Mar. 31	3433	864	54	1802
Clutch	W. A. Murphy	447,003	Feb. 24	2501	622	54	1024
Clutch-couplings. Reversing-gear for	R. H. Edwards	445,772	Feb. 3	431	106, 107	54	586
Clutch. Friction	C. M. Carhart	445,496	Jan. 27	2394	622, 623	54	492
Clutch. Friction	W. H. Cummings	449,312	Mar. 31	3312	806	54	1780
Clutch. Friction	G. W. Drake	448,777	Mar. 24	2470	617, 618	54	1614
Clutch. Friction	O. Flohr	445,247	Jan. 27	2039	524	54	422
Clutch. Friction	J. L. Hayden	444,436	Jan. 13	713	186, 187	54	149

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Clutch. Friction	J. F. Holmes and J. P. Tompkins	448,921	Mar. 24	2684	675	54	1655
Clutch. Friction	J. A. Monerief	447,967	Mar. 10	1144	290	54	1341
Clutch mechanism	S. K. White	447,019	Feb. 24	2472	615, 616	54	1019
Coach. Combined sleeping and day	A. A. Brandenburg	444,741	Jan. 13	1197	310, 311	54	243
Coal. Machinery for handling	J. M. Dodge	446,814	Feb. 17	2118	527	54	946
Coal. Means for moving slack	E. D. Johnston	449,122	Mar. 31	2997	757	54	1724
Coal or grain elevator	M. T. Rose	449,405	Mar. 31	3628	913	54	1841
Coat and hat hook	C. Glover	447,510	Mar. 3	405	99	54	1194
Coat and hat hooks. Manufacture of	C. Glover	448,224	Mar. 17	1556	397	54	1432
Coat-holder	H. R. Rusk	447,976	Mar. 10	1166	295	54	1345
Cock box for water and gas pipes. Stop	A. W. Morgan	447,078	Feb. 24	2576	639	54	1038
Cock box. Street stop	B. Porter	444,015	Jan. 6	50	14	54	13
Cock. Cylinder	W. L. and W. C. Dodge	445,979	Feb. 10	755	185	54	670
Cock for mixing gas and air	R. Goehde	446,341	Feb. 10	1384	338	54	787
Cock. Gage	J. Jungbluth	444,360	Jan. 6	588	152	54	117
Cock. Gage	M. J. McCarter	445,474	Jan. 27	2359	613	54	486
Cock. Locking stop	H. F. Wilson	448,702	Mar. 24	2343	588	54	1590
Cockeye	M. M. Killinger	446,870	Feb. 24	2222	552	54	974
Coffee-boiler	G. A. Phifer	444,014	Jan. 6	49	14	54	13
Coffee-cabinet	W. F. McLaughlin	448,453	Mar. 17	1944	489	54	1506
Coffee. Compound for coating roasted	F. Menown	448,660	Mar. 24	2279	.....	54	1577
Coffee-making apparatus	F. L. Brown	447,002	Feb. 24	2438	606	54	1013
Coffee-mill	E. H. and C. Morgan	444,798	Jan. 13	1276	330	54	257
Coffee mill	A. E. Phillis	449,086	Mar. 24	2933	743	54	1703
Coffee-pot	F. Norton	445,652	Feb. 3	215	58	54	554
Coffee-pot	G. A. Williams	444,572	Jan. 13	938	243	54	194
Coffin fastener	J. E. Everiss	448,946	Mar. 24	2721	686	54	1662
Coffin-handle	M. Bremer	444,973	Jan. 20	1613	413	54	330
Coffin-handle	O. McCarthy	446,689	Feb. 17	1927	481	54	905
Coffin handle	E. R. Sargent and W. E. Stevens	447,086	Feb. 24	2584	641	54	1040
Cog-wheel	L. Atwood	447,552	Mar. 3	466	115	54	1205
Coiling apparatus. Rod	H. Roberts	444,653	Jan. 13	1045	272	54	215
Coiling metal rods. Apparatus for	H. Roberts	444,652	Jan. 13	1044	271	54	215
Coiling wire rods. Apparatus for	F. H. Daniels	444,550	Jan. 13	899	233, 234	54	187
Coiling wire rods. Apparatus for	F. H. Daniels	444,551	Jan. 13	902	234	54	187
Coiling wire rods. Mechanism for	F. H. Daniels	445,965	Feb. 3	732	178	54	656
Coin-holder	H. M. Brigham	449,280	Mar. 31	3243	321	54	1770
Coin holder and package	J. Hock	446,185	Feb. 10	1117	273	54	733
Coin-wrapper	W. S. Gage	445,445	Jan. 27	2320	602	54	479
Coke. Apparatus for making	E. T. Cox	445,394	Jan. 27	2246	583	54	464
Coke from ovens. Apparatus for extracting	T. Smith	446,936	Feb. 24	2342	582	54	995
Coke-oven plant	A. C. Cochran	448,636	Mar. 24	2241	562	54	1570
Collar and tie holder. Shirt	W. H. Barbour	444,516	Jan. 13	846	220	54	177
Collar. Animal	G. R. Sagelsdorff	448,546	Mar. 17	2077	521	54	1532
Collar. Breast	T. W. Fisher	449,471	Mar. 31	3596	906	54	1834
Collar fastener. Horse	P. P. Armour	444,625	Jan. 13	1004	262	54	207
Collar fastener. Horse	B. H. Helming, Jr., and J. M. McIntyre.	445,177	Jan. 27	1936	500	54	402
Collar fastener. Horse	H. F. Seavert	447,586	Mar. 3	519	127	54	1214
Collar fastening. Horse	B. M. Johnson and J. Reichert	446,099	Feb. 10	961	236	54	706
Collar. Horse	S. T. Marletto	449,488	Mar. 31	3620	911	54	1839
Collar. Horse	C. Mollencoff	445,069	Jan. 20	1757	453	54	359
Collar. Horse	J. F. Trautmann	447,649	Mar. 3	610	150	54	1233
Collar-pad	F. M. Limbaugh	444,003	Jan. 6	32	10	54	10
Collar-stuffing machine	J. S. Schram	448,268	Mar. 17	1626	415	54	1446
Collars. Stiffener for flannel-shirt	L. S. Samuel	447,364	Mar. 3	142	39	54	1144
Colored impressions. Producing	R. Schorr	446,004	Feb. 10	811	.....	54	678
Coloring and finishing fabrics	V. G. Bloede	449,104	Mar. 31	2963	.....	54	1718
Colter-holder for plows	E. M. Hickman	446,452	Feb. 17	1572	386	54	837
Column. Building-front	F. Mesker	449,553	Mar. 31	3713	932	54	1856
Column. Building-front	F. Mesker	449,554	Mar. 31	3713	932	54	1856
Comb: *See* Curry-comb.							
Combination-lock	J. E. Farnsworth	447,639	Mar. 3	595	147	54	1230
Combination-lock	E. W. Wilson	448,175	Mar. 10	1461	372	54	1405
Commutator	W. Hornberger	448,040	Mar. 10	1266	323	54	1365
Commutator and brush	H. F. Parshall	446,536	Feb. 17	1709	417	54	862
Commutator-brush	K. G. Frietsch	448,331	Mar. 17	1755	444	54	1471
Commutator-brush	W. Main	447,469	Mar. 3	341	85, 86	54	1182
Commutator-brush	E. W. Rice, Jr.	447,352	Mar. 3	119	31	54	1140
Commutator-brush holder for electric motors	G. H. Conduct	445,521	Jan. 27	2436	635	54	500
Commutator-pattern	P. F. Lenhart	445,319	Jan. 27	2142	554	54	443
Commutator truer	D. McGeniss	448,540	Mar. 17	2067	518	54	1530
Composition of matter	A. Moffatt	445,815	Feb. 3	509	.....	54	611
Composition of matter	C. Straub	448,463	Mar. 17	1957	.....	54	1509
Compound engine	S. Wilcox	445,786	Jan. 27	2233	579	54	462
Compressor mechanism	H. La Casse and S. Wile	444,755	Jan. 13	1216	316, 317	54	246
Concentrating apparatus	J. K. Hallowell	447,029	Feb. 24	2490	619, 620	54	1022
Concentrator	S. Bertenshaw	445,154	Jan. 27	1899	490	54	395
Concrete floors. Illuminating-panel in	E. L. Ransome	448,993	Mar. 24	2787	705	54	1675
Concrete-mixer	S. R. Scharf	447,366	Mar. 3	144	39, 40	54	1145
Condenser	E. Theisen	445,096	Jan. 20	1792	462, 463	54	366
Condenser. Surface	L. R. Alberger	447,285	Mar. 3	1	1	54	1119
Condenser. Surface	G. Hörner	448,521	Mar. 17	2041	511	54	1525
Condenser. Surface	C. C. Worthington	447,396	Mar. 3	198	52, 53	54	1156
Condensing apparatus	E. Theisen	447,123	Feb. 24	2041	655	54	1052
Conductors. Turn-out and crossing for line	S. H. Short	447,495	Mar. 3	385	94	54	1190
Conduit for underground trolley-wires	H. J. Medbery	447,338	Mar. 3	94	26	54	1136
Conduit-inspector	J. L. Blackwell	444,687	Jan. 13	1105	286	54	226

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Confectioners. Cooling-slab for	G. S. Collum	449,577	Mar. 31	3749	941	54	1862
Confectioners' use. Beater and mixer for	J. W. Condon	449,463	Mar. 31	3583	902	54	1831
Conflagration-arrester	F. N. Puckett	444,961	Jan. 20	1599	408	54	327
Connecting-rod	G. S. Heath	445,402	Jan. 27	2264	587	54	467
Connecting-rods. Device for regulating the throw of	H. Staples	445,323	Jan. 27	2148	556	54	445
Container and grinder. Combined	H. L. Marbach	449,225	Mar. 31	3152	795	54	1753
Convertible chair	E. S. French	445,774	Feb. 3	434	107, 108	54	597
Convertible chair	C. F. Kramer	447,432	Mar. 3	261	65	54	1167
Convertible chair	H. Orchard	444,845	Jan. 20	1360	352	54	282
Conveyer	C. J. Hartley	446,597	Feb. 17	1780	440	54	878
Conveyer. Pneumatic	J. W. Bench	444,038	Jan. 6	90	23, 24	54	24
Conveyer-trough bottom	J. M. Dodge	446,496	Feb. 17	1543	379	54	830
Cooking apparatus. Electric	J. O'Meara	446,174	Feb. 10	1099	270	54	736
Cooking rack	W. Earle	446,855	Feb. 24	2194	546	54	969
Cooler: *See* Beer-cooler. Milk-cooler. Candy-cream cooler. Water-cooler Liquid-cooler.							
Cooling or refrigerating apparatus	S. B. Clemmens	449,615	Mar. 31	3824	958	54	1876
Coop. Chicken	C. A. Harp	448,959	Mar. 24	2741	691	54	1666
Copper free from oxidation. Process of and apparatus for producing hot-rolled	G. W. Cummins	445,691	Feb. 3	290	76	54	569
Copies from ink impressions. Producing press	C. Mitchell	444,180	Jan. 6	332	.....	54	67
Copy-holder	K. Agee	447,651	Mar. 3	612	151	54	1233
Copy-holder	T. K. S. McGrift	444,612	Jan. 13	988	256	54	204
Copy-holder	M. R. Salter	448,457	Mar. 17	1948	490	54	1507
Copy-holder	W. J. Still	449,010	Mar. 24	2818	714	54	1681
Copy-holder	W. E. A. Innes	448,346	Mar. 17	1781	450	54	1476
Copying device	L. Neuhaus and F. F. Dans	445,977	Feb. 10	752	.....	54	670
Copying. Pad for rapid	W. Hastie	448,858	Mar. 24	2601	653	54	1639
Copying press	O. N. McClintock	444,204	Jan. 6	368	91	54	74
Copying press and book. Combined letter	J. A. Matteson	447,889	Mar. 10	1010	255	54	1316
Cord hanging and adjusting device	A. W. Durr	449,038	Mar. 24	2859	727	54	1690
Cord. Machine for making ornamental	H. T. Simmons	447,943	Mar. 10	1058	265	54	1325
Cord receptacle					530		
Cordage. Machine for making braided	O. R. Van Vechten	445,956	Jan. 27	2059	531	54	426
					532		
Cork-grinding machine	C. D. Armstrong	447,860	Mar. 10	965	242	54	1308
Corking machine. Bottle	J. J. Taylor, 2d	445,095	Jan. 20	1789	460, 461	54	365
Corkscrew	G. W. Campbell and J. D. Hough	445,589	Feb. 3	17	4	54	514
Corkscrew	C. Hollweg	447,185	Feb. 24	2750	686	54	1075
Corn-cob smoking-pipes. Making	H. Lamparter, Jr.	448,572	Mar. 17	2119	.....	54	1540
Corn cutter. Green	S. D. Warfield	448,389	Mar. 17	1845	463, 464	54	1487
Corn-husking and fodder-cutting machine	J. A. Webber	446,747	Feb. 17	2015	502, 503, 504	54	923
Corn-sheller	O. E. Davidson	448,941	Mar. 24	2713	684, 685	54	1661
Corn-sheller	W. F. Steinbaugh	449,637	Mar. 31	3863	967	54	1884
Corner-strip	E. Koos	448,187	Mar. 10	1480	377	54	1409
Cornice. Curtain	G. E. Strauss	444,237	Jan. 6	417	104	54	82
Corset	E. C. Foster	446,968	Feb. 24	2390	594	54	1004
Corset-clasp	F. I. Bowles	448,631	Mar. 24	2236	561	54	1569
Corset-clasp	F. B. Spooner	448,891	Mar. 24	2642	663	54	1646
Corset-fastening	T. J. Brough	447,630	Mar. 3	584	144	54	1227
Corset-fastening	M. May	448,820	Mar. 24	2527	633	54	1625
Cosmetic. Remedial	L. W. Trent	444,411	Jan. 6	674	.....	54	133
Cotton-baling apparatus	H. Rembert	446,888	Feb. 24	2256	561, 562	54	980
Cotton-chopper	J. J. Barron	445,461	Jan. 27	2343	609	54	483
Cotton-chopper	J. W. Cobb	447,749	Mar. 3	758	189	54	1262
Cotton-chopper	S. S. Kent, W. G. Boler, and W. W. Kent.	447,046	Feb. 24	2528	627	54	1029
Cotton-feeder	S. W. Woodbury	445,916	Feb. 3	653	160	54	640
Cotton-gin rib	I. T. Washburn	446,724	Feb. 17	1981	494	54	916
Cotton-gin. Saw	G. Winship and F. Garraux	444,080	Jan. 6	158	39	54	34
Cotton-opener, &c.	R. Schaellibaum	447,365	Mar. 3	143	39	54	1145
Cotton or hay elevator	J. J. Draffin and W. P. Nelson	448,641	Mar. 24	2259	564	54	1571
Cotton-picker	O. Kretzschmar	445,786	Feb. 3	446	111	54	599
Cotton-press attachment	J. J. Hiser	443,905	Jan. 6	17	4	54	6
Cotton-scraper	J. J. Hobbs	445,891	Feb. 3	618	152	54	633
Cotton-scraper	J. R. White	445,827	Feb. 3	597	148	54	614
Cotton-stalk puller	L. L. Womack	446,276	Feb. 10	1295	314	54	766
Cotton. Storage of	L. Smith	446,028	Feb. 10	846	204, 205, 206	54	685
Counter-shaft	A. D. Pentz	446,138	Feb. 10	1028	253, 254	54	719
Coupling: *See* Bellows-fold coupling. Hose-coupling. Locomotive-coupling. Car-coupling. Pipe-coupling. Car and pipe coupling. Polo-coupling. Safety-coupling. Electric-wire coupling. Shaft-coupling. Thill-coupling. Fence-rail coupling. Whiffletree-coupling. Flange and collar coupling.							
Coupling-shoe	C. W. Dwelle	444,340	Jan. 6	560	144	54	111
Cover, kettle, and plate handler	E. S. Lafayette	448,243	Mar. 17	1583	404	54	1437

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Cow-tail holder	E. G. Farnham	444,428	Jan. 13	702	183	54	147
Cowl, Exhaust-	R. M. Pancoast	445,819	Feb. 3	514	123, 124	54	612
Cracker-cutting machine	W. A. Hull	447,113	Feb. 24	2629	652	54	1049
Crane, Counterbalanced jib-	P. L. and A. A. Weiner	446,043	Feb. 10	873	212, 213	54	690
Crane for lifting weights	J. Gaskell	449,529	Mar. 31	3674	923	54	1849
Crane, Traveling	J. H. Greiner	447,981	Feb. 24	2938	730, 731	54	1109
Crane, Traveling	F. W. Wolf	444,968	Jan. 20	1606	411	54	329
Crane, Traveling	W. Wood. (Reissue)	11,142	Feb. 3	736	179, 180	54	657
Crate	E. H. Flory	446,165	Feb. 10	1086	267	54	727
Crate	G. W. Worden	444,057	Jan. 13	1051	273	54	216
Crate, Folding	E. H. Bartels	449,193	Mar. 31	3110	785	54	1745
Crate, Folding	J. Spain	449,007	Mar. 24	2815	713	54	1680
Crate, Fruit-	L. W. Horn and J. McArthur	447,687	Mar. 3	459	163	54	1243
Crate, Knockdown	H. M. Bickel	444,999	Jan. 20	1652	423	54	330
Crate, Poultry-	R. G. Thomasson	444,561	Jan. 13	949	249	54	190
Crate, Spring-bottom	H. W. Hammond	447,320	Mar. 3	60	16	54	1129
Creamer	J. G. Smith	447,914	Mar. 10	1059	265	54	1326
Creaming machine	D. M. Weston	446,210	Feb. 10	1156	283, 284	54	740
Creels, Friction attachment for spool-	W. Slade	447,496	Mar. 3	387	94	54	1191
Crematory-closet, Ventilated	W. L. Fuller	446,340	Feb. 10	1383	338	54	786
Crimping board	G. E. Shaw	447,119	Feb. 24	2635	654	54	1051
Crochet machine feeding mechanism	J. M. Merrow	448,722	Mar. 24	2383	597	54	1597
Crocheting-machine	G. D. Munsing	448,664	Mar. 24	2283	572, 573	54	1578
Crucible-furnace	J. F. Barker	444,058	Jan. 13	1052	273	54	216
Crucible-kiln	G. Nimmo	444,153	Jan. 6	285	68, 69	54	58
Crupper-fastening	G. H. Davis	446,380	Feb. 10	1436	353	54	798
Crusher: *See* Ore-crusher.							
Crushing-machines, Elevator and screen for	W. H. Baxter	446,319	Feb. 10	1350	329	54	779
Crushing-mill	A. Olsen	445,071	Jan. 20	1760	454	54	360
Crutch	L. A. Wildhack	444,189	Jan. 6	347	85	54	70
Cryolite, Making artificial	E. Richters	447,063	Feb. 24	2554	.....	54	1035
Cuff-tip fastener	H. M. Crider	448,474	Mar. 17	1978	496	54	1542
Cuff fastener	L. A. Negraval	445,512	Jan. 27	2420	631	54	497
Cuff-holder	A. A. Mehaffey	448,532	Mar. 17	2058	515	54	1528
Cuff-holder	H. D. Mugerditchyan	447,493	Mar. 3	383	93	54	1190
Cuff-holder and distender	B. R. Bacon	447,533	Mar. 3	440	108	54	1200
Cuff-retainer	F. W. Bender and F. L. Scheidemann	444,271	Jan. 6	463	118	54	92
Cuff, Shirt-	W. E. Simonds	446,367	Feb. 10	1416	348	54	793
Culinary fork	S. A. Mayrill	448,155	Mar. 10	1426	364	54	1309
Culinary purposes, Time-alarm for	W. E. Groves	446,226	Feb. 10	1180	289	54	745
Cultivator	N. F. Bloominger	444,986	Jan. 20	1633	419	54	335
Cultivator	W. M. Brinkerhoff, A. W. Stevens, and L. D. Swart.	447,443	Mar. 3	282	71, 72	54	1171
Cultivator	A. W. Butt	445,846	Feb. 3	552	134, 135	54	619
Cultivator	A. W. Butt	445,847	Feb. 3	554	135	54	620
Cultivator	W. S. Cook	449,522	Mar. 31	3666	921	54	1848
Cultivator	J. W. Downs	448,321	Mar. 17	1737	439	54	1468
Cultivator	R. S. Gabbey	444,346	Jan. 6	568	145	54	113
Cultivator	J. W. Kraus	449,546	Mar. 31	3702	930	54	1854
Cultivator	J. W. Kraus	449,642	Mar. 31	3874	969	54	1886
Cultivator	F. T. Neitsch	444,366	Jan. 6	595	153	54	118
Cultivator	F. R. Packham	446,563	Feb. 17	1538	428	54	870
Cultivator	J. R. G. Reeves	446,538	Feb. 17	1702	417	54	862
Cultivator	C. S. Ruef	444,186	Jan. 6	340	83	54	69
Cultivator	A. H. Tripp	444,800	Jan. 13	1280	331	54	258
Cultivator	B. P. Whitney	447,992	Mar. 10	1193	302	54	1354
Cultivator	C. C. Hunter	447,188	Feb. 24	2778	688	54	1076
Cultivator and seed-drill, Combined	E. S. Bailey and J. M. Coons	445,871	Feb. 3	589	144	54	627
Cultivator attachment	M. J. Reed	444,134	Jan. 6	257	62	54	53
Cultivator attachment	J. M. W. Long	446,388	Feb. 10	1451	356	54	801
Cultivator, Balanced	J. L. Guinn	445,173	Jan. 27	1926	497	54	400
Cultivator, Cotton-	H. C. Hughes	449,418	Mar. 31	3508	883	54	1818
Cultivator, Cotton-	J. W. Epperson	449,527	Mar. 31	3672	923	54	1849
Cultivator, Listed-corn	S. J. Fish	447,305	Mar. 3	31	8	54	1124
Cultivator shovel and knife	S. E. and J. Morral	445,186	Jan. 27	1949	503, 504	54	404
Cultivator, Walking-	G. W. Cunningham and J. M. Ferry	448,131	Mar. 10	1391	355	54	1392
Cultivators, Replanting attachment for	W. D. Harris	445,994	Feb. 10	800	194	54	677
Culvert, Roofed							
Cup: *See* Drinking-cup. Grease-cup. Folding cup. Oil-cup.							
Cup-shaped articles, Method of and machine for making	W. R. Comings	448,748	Mar. 24	2425	606, 607	54	1605
Current motor, Alternating-	C. O. C. Billberg and P. A. N. Winand	444,934	Jan. 20	1550	397, 398	54	318
Current-wheel	W. Stephens	447,915	Mar. 10	1061	265	54	1326
Currents and water-falls, Appliance for utilizing river-	F. S. Martin	447,887	Mar. 10	1008	254	54	1316
Currier's knife	H. B. Bryant	444,724	Jan. 13	1157	298	54	236
Curry-comb	L. M. Devore	445,165	Jan. 27	1915	494	54	398
Curry-comb	S. Rogers	444,185	Jan. 6	340	83	54	69
Curtain-fixture	F. H. Bassett	448,625	Mar. 24	2227	559	54	1567
Curtain-fixture	A. S. Glidden	446,675	Feb. 17	1903	472	54	902
Curtain guide, Window-	A. M. Haswell	449,042	Mar. 24	2865	728	54	1691
Curtain-holder	T. Tribe	444,863	Jan. 20	1427	371	54	295

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Curtain holder, Window-	L. N. West	448,565	Mar. 17	2109	528	54	1538
Curtain-pole	G. E. Strauss	444,230	Jan. 6	407	101	54	80
Curtain-pole bracket or support	J. W. Leslie	445,628	Feb. 3	172	45	54	545
Curtain-pull	J. O. Remington	447,414	Mar. 3	234	60	54	1161
Cuspidor	C. L. Beers	448,111	Mar. 10	1350	348	54	1385
Cuspidors, Device for cleaning	J. McPherson	444,710	Jan. 13	1134	292	54	232
Cut-off, Conductor	E. G. West	445,516	Jan. 27	2426	633	54	498
Cut-out	S. Bergmann	445,362	Jan. 27	2205	572	54	456
Cut-out	S. D. Field	446,966	Feb. 24	2785	594	54	1003
Cut-out	C. S. Van Nuis	449,301	Mar. 31	3279	831	54	1775
Cut-out	A. T. Aldrich	444,892	Jan. 20	1469	380	54	304
Cut-out and lightning-arrester, Combined	J. P. Tirrell	446,902	Feb. 24	2201	570, 571	54	986
Cut-out, Automatic	A. Barrett	445,217	Jan. 27	1996	515	54	414
Cut-out, Thermal	W. H. Chapin	445,659	Feb. 3	230	62	54	557
Cutlery, Forging-blank for hollow-handled							
Cutter: *See* Band-cutter. Ice-cutter. Bolt-cutter. Ice-plow cutter. Bolt and rivet cutter. Meat-cutter. Bolt and rod cutter. Meat or vegetable cutter. Bolt or rod cutter. Metal-cutter. Button-hole cutter. Milling-cutter. Cane-cutter. Paper-cutter. Cigar-cutter. Pipe or rod cutter. Cigar-tip cutter. Plug and socket cutter. Corn-cutter. Rotary cutter. Dado cutter. Tobacco-cutter. Feed-cutter. Vegetable-cutter. Flue-hole cutter. Weed-cutter. Fruit and vegetable cutter. Wire-cutter.							
Cutter-bar	G. B. Clark	449,521	Mar. 31	3665	921	54	1847
Cutter-head	C. R. Penfield	448,254	Mar. 17	1608	410	54	1442
Cutter-head	C. Seymour	446,476	Feb. 17	1604	394	54	844
Cutter-head, Rotary	C. L. Goehring	445,335	Jan. 27	2169	562	54	449
Cutting-machines, Carrier attachment for	E. W. Ross	444,459	Jan. 13	748	195, 196	54	156
Cutting-tool	R. Gäbel	448,017	Mar. 10	1234	314	54	1359
Cuttle-fish holder	O. Vahle	445,415	Jan. 27	2281	592	54	471
Cycle luggage-carrier	T. G. Allen, Jr., W. L. Sachtleben, and J. F. Walters.	444,642	Jan. 13	1032	268	54	212
Cyclometer	E. R. De Wolfe	447,540	Mar. 3	450	110	54	1202
Cylinder-lock	J. B. Sargent	445,085	Jan. 20	1777	458	54	363
Cylinder-lock	H. B. Sargent and A. A. Page	446,192	Feb. 10	1124	275	54	734
Cylinder-lock	J. H. Shaw	446,176	Feb. 10	1102	270	54	731
Dado-cutter	W. R. Fox	447,716	Mar. 3	702	176	54	1251
Damper, Automatic	F. O. Hörenz	445,113	Jan. 20	1823	471, 472	54	351
Damper for stoves, &c., Check-	W. Phipps	445,078	Jan. 20	1770	456	54	361
Damper, Furnace-	W., Jr., and J. Lanyon	444,958	Jan. 20	1597	407, 408	54	326
Damper-operating device, Stove-	C. F. Walther	446,700	Feb. 17	1943	484	54	909
Dancing figure, Coin-controlled	J. N. Blauvelt	445,535	Feb. 3	9	2	54	512
Dark-room, Portable	J. H. Markley	449,487	Mar. 31	3618	911	54	1838
Davit, Boat-	G. F. Lawley	446,357	Feb. 10	1404	344	54	791
Decorating glass and porcelain	A. Westwood and P. L. Mallon	447,991	Mar. 10	1192	.....	54	1351
Delivering articles in exchange for coin, Automatic machine for	S. S. Allin	449,024	Mar. 24	2835	719, 720, 721, 722	54	1684
Dental anodyne	J. W. Hartigan	445,298	Jan. 27	2108	.....	54	436
Dental bridge-work	E. B. Call	445,309	Jan. 27	2131	550	54	441
Dental chair	A. Bristle	447,487	Mar. 3	370	91	54	1188
Dental disk-carrier	M. L. Rowe	444,856	Jan. 20	1416	367	54	293
Dental-engine driving-wheel	J. S. Campbell	445,879	Feb. 3	602	148	54	630
Dental motor, Electric	H. H. Blades	447,291	Mar. 3	11	4	54	1120
Dental nerve-broach	J. W. Ivory	444,383	Jan. 6	625	162	54	123
Dental or surgical engines, Hand-piece for	W. G. A. Bonwill	449,401	Mar. 31	3473	875	54	1810
Dental plate	R. J. Wenker	444,622	Jan. 13	1001	261	54	207
Dental plugger	E. J. George	445,717	Feb. 3	332	87	54	578
Dental rubber, Shaded	A. J. Gear	448,795	Mar. 24	2496	624	54	1619
Dental-service stand	W. E. Warner	448,100	Mar. 10	1346	344	54	1382
Dental thermal instrument	G. Evans	445,766	Feb. 3	418	104	54	595
Dental tool for shaping tooth-crowns	G. Evans	449,408	Mar. 31	3489	878	54	1813
Dental vulcanizers, Electric heater for	J. O'Meara	448,743	Mar. 24	2418	605	54	1604
Dentistry	J. W. Clowes	446,769	Feb. 17	2047	510	54	930
Derrick	A. Colby	448,321	Mar. 17	1734	438	54	1467
Derrick	D. F. Oliver	444,367	Jan. 6	597	154	54	118
Desiccating apparatus	R. Birkholz	449,359	Mar. 31	3396	854, 855	54	1795
Desk	J. J. Collier	444,663	Jan. 13	1064	277	54	218
Desk-curtain	J. N. Roberts	447,415	Mar. 3	235	60	54	1161
Desk seat, School-	A. Cary	445,946	Feb. 3	701	171	54	650
Detector: *See* Pipe-leak detector.							
Detector-bar	L. N. Mosier	447,694	Mar. 3	670	167	54	1245
Detergent	J. Scharr	444,135	Jan. 6	258	.....	54	53
Dials, Machine for enameling small	T. F. Sheridan	448,734	Mar. 24	2400	600, 601	54	1600
Diaphragm-meter	W. J. Gurd	445,552	Feb. 3	37	10	54	519
Die: *See* Bolt-making die. Interchangeable die.							
Die folding and seaming machine	F. A. Walsh	445,738	Feb. 3	365	94	54	584
Die-stock and die	J. S. Fletcher	446,915	Feb. 24	2311	574	54	989
Digesting apparatus	G. Kaffenberger	448,581	Mar. 17	2129	534	54	1542

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Dihydroxynaphthalene	E. Mentha	449,551	Mar. 31	3708	.....	54	1855
Dikes. Apparatus for strengthening	A. Q. Withers	445,028	Jan. 20	1686	{433 434	54	345
Dining room service apparatus	H. W. Clapp	448,009	Mar. 10	1218	{310 311	54	1356
Direct-acting engine	C. C. Worthington	448,744	Mar. 24	2419	605	54	1604
Dish-cover	V. P. Tommins	449,144	Mar. 31	3029	766	54	1730
Disinfecting paving composition	J. Fottrell	446,285	Feb. 10	1295	.....	54	768
Disintegrating and separating apparatus	J. P. and O. G. Burnham	448,844	Mar. 24	2570	645	54	1633
Display-frame	G. Marty	448,976	Mar. 24	2765	698	54	1670
Display-rack	L. E. Armstrong	448,811	Mar. 24	2517	630	54	1623
Display-rack for carpets, oil-cloths, &c.	L. Paff	449,230	Mar. 31	3159	796	54	1754
Distilling apparatus. Oil-	A. Mason	444,203	Jan. 6	365	91	54	73
Distilling oil	A. Mason	444,202	Jan. 6	363	90	54	73
Distilling water. Apparatus for	N. Hunting	448,041	Mar. 10	1267	325	54	1365
Distilling wood. Apparatus for	A. Koch	444,704	Jan. 13	1125	291	54	231
Ditching-machine	M. Wilson	444,118	Jan. 6	221	53, 54	54	45
Diving apparatus and life-saving raft. Combined	J. Speirs	449,354	Mar. 31	3087	853	54	1793
Doll	A. Pulvermacher	447,034	Feb. 24	2503	622	54	1025
Door-bolt	A. W. Zimmerman	444,869	Jan. 20	1434	373	54	296
Door-check	W. H. Broadhead	445,462	Jan. 27	2345	609	54	483
Door-check	L. E. Caldwell	446,382	Feb. 10	1357	331	54	781
Door-check	H. L. Dodge	444,338	Jan. 6	557	143	54	111
Door-check	J. Drees	449,648	Mar. 31	3838	961	54	1879
Door-check	F. L. Habliston	445,992	Feb. 10	798	193	54	676
Door-check	J. H. Minix	446,760	Feb. 17	2038	507	54	928
Door-check	G. W. Moulton	447,839	Mar. 10	932	244	54	1301
Door-check	L. Rawdon	445,455	Jan. 27	2337	607	54	482
Door-check	B. Rentz	448,767	Mar. 24	2455	614	54	1611
Door-check	M. C. Richards	444,019	Jan. 6	54	15	54	14
Door-check	J. Shinn	444,730	Jan. 13	1159	304	54	239
Door check and closer	J. E. Mellor	446,548	Feb. 17	1718	421	54	866
Door check and spring. Combined	N. Scott-Russell	446,561	Feb. 17	1736	427	54	869
Door-check. Pneumatic	O. Seely	448,889	Mar. 24	2637	{662 663	54	1645
Door-closer. Gravitating	J. N. Stong	448,556	Mar. 17	2089	524	54	1534
Door-hanger	R. D. Dirksen	445,466	Jan. 27	2350	610	54	484
Door-hanger	J. B. Flanders and J. M. Smith	444,725	Jan. 13	1159	298	54	236
Door-hanger	E. A. Hableman	446,516	Feb. 17	1666	407	54	855
Door-hanger	S. W. and O. G. Hengist	446,816	Feb. 17	2122	527	54	946
Door-hanger	E. Y. Moore	445,354	Jan. 27	2197	570	54	455
Door-hanger track	A. L. and A. H. Scranton	446,103	Feb. 10	966	238	54	707
Door-lock. Sliding	O. P. Hix	448,651	Mar. 24	2264	568	54	1574
Door-mat	J. G. Battelle	447,456	Mar. 3	306	77	54	1175
Door-opener	W. R. Kinnear	445,262	Jan. 27	2068	533	54	427
Door-opener	D. Hawksworth	449,364	Mar. 31	3414	858	54	1798
Door opener. Electric	L. Bates	448,110	Mar. 10	1358	348	54	1384
Door-opening apparatus	V. Méhay	445,614	Feb. 3	150	39, 40	54	540
Door operating device	A. Von Brandis and H. Davidson	447,090	Feb. 24	2591	{642 643	54	1042
Door or gate. Metal	A. Bataille	448,314	Mar. 17	1722	436	54	1464
Door or window screen attachment	M. A. Baldwin	449,514	Mar. 31	3059	919	54	1846
Door plate and letter slip	O. F. Mitchell	445,068	Jan. 20	1756	453	54	359
Door-scenter	P. Hise	445,273	Jan. 27	2084	537	54	430
Door-spring	A. D. Tyler, Jr	445,101	Jan. 20	1806	466	54	368
Door-track. Sliding	O. P. Hix	448,235	Mar. 17	1571	401	54	1435
Doors. Pneumatic apparatus for operating	C. A. Tucker	446,195	Feb. 10	1127	{276 277	54	735
Doors. Trolley-support for	L. Coburn	447,505	Mar. 3	396	96, 97	54	1192
Double-acting engine	C. A. Tower	444,259	Jan. 6	444	112	54	87
Double scotch yoke engine	C. H. Sergeant	444,139	Jan. 6	267	64	54	55
Dough-board	E. B. Isbell	445,019	Jan. 20	1676	431	54	343
Doweling-machine	J. B. Shengle	446,954	Feb. 24	2361	{587 588	54	998
Draft attachment. Spring-	H. Barber	447,289	Mar. 3	7	3	54	1120
Draft-bail	Z. T. Harnish	448,030	Mar. 10	1249	318	54	1362
Draft-equalizer	J. E. Carlson	444,877	Jan. 20	1446	376	54	299
Draft-equalizer	D. B. Croft	448,129	Mar. 10	1390	354	54	1391
Draft-equalizer	J. W. Gamble	445,638	Feb. 3	194	51	54	550
Draft-equalizer	S. Graham	448,483	Mar. 17	1992	499	54	1515
Draft-equalizer	T. Thompson	448,095	Mar. 10	1339	342	54	1380
Draft or air forcing device	G. W. Lord	449,486	Mar. 31	3617	910	54	1838
Draftsman's curve	H. B. Williams	447,593	Mar. 3	527	129	54	1216
Draw-bars. Manufacture of	J. Green	448,612	Mar. 17	2192	{548 549	54	1553
Draw-shave	W. B. Swan	448,464	Mar. 17	1958	492	54	1509
Drawer-stop	S. H. Levy	449,482	Mar. 31	3613	909	54	1837
Drawing-board	G. T. Smallwood and R. M. Smith	449,006	Mar. 24	2813	712	54	1680
Drawing-board. Meridian	J. B. McElroy	449,049	Mar. 24	2876	730	54	1692
Drawing-knife	J. S. Cantelo	448,633	Mar. 24	2237	{561 562	54	1569
Dredger	H. Roessler	445,862	Feb. 3	579	141	54	625
Dredgers. Joint for suction-pipes of	W. P. Humphreys	444,098	Jan. 6	186	46	54	39
Dredges in place. Apparatus for holding	J. Kennedy	445,675	Feb. 3	269	70	54	566
Dredges in place. Apparatus for holding	J. Kennedy	447,717	Mar. 3	703	176	54	1251
Dredging-machine	W. H. Wheeler	445,268	Jan. 27	2075	535	54	429
Dresser and writing-desk. Combined	J. T. Bentley	446,606	Feb. 17	1792	443	54	880
Drier: See Clothes-drier. Grain-drier. Fruit-drier.							
Drill: See Grain-drill. Seed-drill. Hand-drill. Wheat-drill. Rock-drill.							
Drill-bit	J. T. Snyder	444,026	Jan. 6	69	18	54	16

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Drill-jar	F. A. Flanegin	446,622	Feb. 17	1849	550	54	885
Drill-stock	B. F. Smith	444,256	Jan. 6	441	111	54	86
Drill-tooth	T. Marr and C. W. Smith	447,518	Mar. 3	414	101	54	1195
Drills, &c. Covering-wheel for	J. Campbell	447,938	Mar. 10	1096	275	54	1332
Drills. Driving mechanism for hand	J. W. Knapp	447,614	Mar. 3	557	138	54	1222
Drilling device. Track-	B. F. Smith	446,023	Feb. 10	803	201	54	683
Drilling-machine	T. Stanley	445,865	Feb. 3	581	142	54	625
Drilling machine. Hand	E. Moser	444,122	Jan. 6	232	56	54	47
Drilling machine. Iron-	C. K. Dawes	447,562	Mar. 3	480	118	54	1207
Drilling or spinning machine	U. and H. E. Eberhardt	447,541	Mar. 3	452	111	54	1202
Drilling to pattern. Machine for	P. Prytbil	447,014	Feb. 24	2462	613	54	1017
Drink-mixer	C. Bew	447,654	Mar. 3	615	152	54	1234
Drinks. Shaker for mixing	C. W. Fox	447,069	Feb. 24	2564	636	54	1036
Drinking-cup	A. Harroun	445,057	Jan. 20	1740	448	54	356
Drip-catcher	J. Morningstar	445,569	Feb. 3	74	17	54	526
Driving and pulling stakes and handling the same. Machine for	J. P. Merriam	449,374	Mar. 31	3429	862	54	1801
Driving mechanism	T. S. Barwis	449,606	Mar. 31	3794	952	54	1871
Dropper: See Medicine-dropper.							
Druggists' use. Vessel-holder for	J. C. D. Curtiss	447,605	Mar. 3	545	135	54	1220
Drum. Heating-	P. J. Tracy	444,078	Jan. 6	155	39	54	34
Dry closet	L. J. Ordway	449,294	Mar. 31	3267	828	54	1773
Dry closet. Portable	W. H. Powell	445,513	Jan. 27	2422	632	54	497
Drying apparatus	S. G. Phillips	449,170	Mar. 31	3063	775	54	1737
Drying apparatus	S. G. Phillips	449,231	Mar. 31	3150	797	54	1754
Drying apparatus. Vacuum	E. Passburg	447,345	Mar. 3	106	29	54	1138
Drying-board	M. H. Fogarty	448,951	Mar. 24	2730	689	54	1664
Drying-machine	P. Dillon	448,181	Mar. 10	1470	{374 375	54	1407
Drying-machine	J. H. Lorimer	445,226	Jan. 27	2011	518	54	417
Drying yarns, fabrics, &c. Machine for	B. Stetson	444,860	Jan. 20	1421	{369 370	54	293
Dumb-waiter	H. A. Smith	446,824	Feb. 3	523	125	54	613
Duplex engine	C. C. Worthington and A. J. Caldwell	444,543	Jan. 13	885	{230 231	54	184
Duplicating apparatus. Register for	F. A. Heiss	445,761	Feb. 3	405	102	54	593
Dust and cinder protector	Z. J. Goodwin	444,749	Jan. 13	1206	315	54	244
Dust collector	H. Bittinger	446,053	Feb. 10	893	216	54	693
Dust-collector	E. Bretney	446,507	Feb. 17	1654	404	54	853
Dust-collector	J. K. Hallowell	447,026	Feb. 24	2486	{618 619	54	1021
Dust-collector	A. Bunter	449,535	Mar. 31	3682	925	54	1851
Dust-collector	O. Kutsche	447,333	Mar. 3	82	23	54	1133
Dust-pan	C. L. Bellamy	446,325	Feb. 10	1159	288	54	745
Dust-pan	C. S. Chubb	445,278	Jan. 27	2087	539	54	431
Dye. Black	J. Schmid	449,629	Mar. 31	3854	.....	54	1882
Dye. Blue	J. Mohler and C. A. Mayer	444,538	Jan. 13	878	.....	54	183
Dye. Orange	C. Duisberg	447,303	Mar. 3	29	.....	54	1124
Dye. Pink	F. Bender	445,684	Feb. 3	281	.....	54	568
Dye. Red	P. Julius	447,189	Feb. 24	2782	.....	54	1077
Dye. Violet	C. Duisberg	447,302	Mar. 3	29	.....	54	1123
Dye. Yellow	W. Pitzinger	446,009	Feb. 10	817	.....	54	679
Dyeing-machine	J. P. Delchanty	446,854	Feb. 24	2192	546	54	969
Dyeing straw goods, &c. Apparatus for	J. A. Young	446,050	Feb. 10	883	{215 216	54	692
Dyeing straw goods, &c. Apparatus for	J. A. Young	446,051	Feb. 10	890	216	54	692
Dyeing-vat	J. K. Proctor and W. B. Keefer	446,572	Feb. 17	1749	430	54	872
Dynamo. Alternating-current	H. Lemp and L. M. Schmidt	444,939	Jan. 20	1559	400	54	320
Dynamo-brush	A. S. Cook	444,794	Jan. 13	1271	329	54	256
Dynamo-regulator	B. H. Fisher	449,245	Mar. 31	3181	803	54	1758
Dynamometer for locomotives	R. H. Innes	444,611	Jan. 13	987	256	54	204
Ear-wires. Device for making	S. Goldner	447,405	Mar. 3	219	57	54	1159
Eaves trough machine	W. A. Colsten	449,107	Mar. 31	2971	751	54	1719
Eccentric	A. Vuillier	447,386	Mar. 3	182	48	54	1153
Eccentric-rods. Disconnecting device for	E. Reynolds	448,259	Mar. 17	1614	412	54	1443
Edger. Gang-	F. N. Armstrong	445,647	Feb. 3	207	55	54	553
Educational appliance	A. F. C. Garbin	448,019	Mar. 10	1236	314	54	1359
Educational appliance	B. F. E. Jahr and R. H. Boecher	445,782	Feb. 3	442	110	54	598
Educational appliance	J. H. Reed	446,468	Feb. 17	1592	391	54	841
Educational device	J. J. Dofflemyer and C. H. Wolfe	445,759	Feb. 3	402	102	54	592
Egg-beater	A. White	449,187	Mar. 31	3100	782	54	1743
Egg-boiler. Automatic	G. L. Dale	447,945	Mar. 10	1105	278	54	1334
Egg-carrier	L. H. Page	445,074	Jan. 20	1765	455	54	360
Egg-carrier	T. E. Perkins	449,330	Mar. 31	3345	843	54	1786
Egg-crate	W. P. Tilley and C. E. Calvert	448,281	Mar. 17	1667	422	54	1454
Eggs. Preserving	A. Deisher	445,164	Jan. 27	1915	494	54	398
Elastic braid or web	B. Goodman	446,707	Feb. 17	1954	487	54	911
Elastic or corded fabric	W. Lapworth	445,065	Jan. 20	1752	452	54	358
Electric alarm	G. W. Adams	447,998	Mar. 10	1198	{303 304	54	1352
Electric arc light	T. A. Edison	446,668	Feb. 17	1887	469	54	898
Electric battery. Thermo-	J. N. Webb	449,186	Mar. 31	3099	781	54	1742
Electric cable	W. A. Conner	448,604	Mar. 17	2179	544	54	1550
Electric cable	J. C. Reilly	445,234	Jan. 27	2018	520	54	418
Electric-cable connector	S. Bergmann	445,305	Jan. 27	2208	572	54	457
Electric-cable support	H. B. Nichols	448,359	Mar. 17	1795	453	54	1479
Electric cables. Laying	C. H. Wilson	446,214	Feb. 10	1164	285	54	742
Electric-call system	J. B. Currier and D. H. Rice	446,732	Feb. 17	1992	{497 498	54	949
Electric-circuit regulator	T. M. Edwards	447,177	Feb. 24	2758	682	54	1073
Electric circuits. Automatic switch-board and safety cut-out for	E. A. Sweet	448,166	Mar. 10	1444	369	54	1402
Electric circuits. Controlling currents upon	J. Hopkinson	444,553	Jan. 13	905	235	54	188

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Electric circuits. Fuse for	F. W. Maxstadt	449,289	Mar. 31	3261	827	54	1772
Electric circuits. Water-proof combined coupling and cut-out for	F. Shlaudeman	448,679	Mar. 24	2306	578	54	1582
Electric coil. Coin-controlled	E. J. Colby	445,220	Jan. 27	2002	515	54	415
Electric conductor	F. J. Nash	447,897	Mar. 10	1028	258	54	1320
Electric conductor connection	H. Arld	446,655	Feb. 17	1873	464	54	896
Electric conductor support	C. Foster and W. H. Bevis	445,594	Feb. 3	117	30	54	534
Electric conductors. Tightening device for suspended	D. Mason	444,005	Jan. 6	34	10	54	10
Electric conductors. Tightening device for suspended	D. Mason	444,006	Jan. 6	36	10	54	10
Electric conduits. Man hole for underground	W. H. Hart	443,992	Jan. 6	6	2	54	4
Electric connection for track-wiring	S. H. Short	445,479	Jan. 27	2372	617	54	488
Electric contact	O. J. Depp	449,348	Mar. 31	3375	851	54	1791
Electric contact device	F. A. Perret	448,669	Mar. 24	2292	575	54	1579
Electric-contact protector	R. Varley, Jr.	449,302	Mar. 31	3280	831	54	1775
Electric converter	M. G. Farmer	488,644	Mar. 24	2254	565, 566	54	1572
Electric current generator. Alternating	N. Tesla	447,921	Mar. 10	1070	268	54	1327
Electric currents. Automatic potential regulator for	A. L. Ellis	446,284	Feb. 10	1293	316, 317	54	768
Electric currents. Meter for alternating	O. B. Shallenberger	488,676	Mar. 24	2302	577	54	1581
Electric currents. Meter for alternating	O. B. Shallenberger	448,677	Mar. 24	2303	577	54	1582
Electric currents. Meter for alternating	O. B. Shallenberger	449,002	Mar. 24	2808	711	54	1678
Electric currents. Meter for alternating	O. B. Shallenberger	449,003	Mar. 24	2810	711	54	1689
Electric currents. Phase-indicator for alternating	C. S. Bradley	444,791	Jan. 13	1266	328	54	255
Electric currents. Regulating apparatus for	W. Lahmeyer	449,288	Mar. 31	3257	826, 827	54	1772
Electric cut-out	S. Bergmann	445,363	Jan. 27	2206	572	54	457
Electric cut-out	G. C. Gammon	447,676	Mar. 3	640	159	54	1239
Electric cut-out	J. S. Potter	445,253	Jan. 27	2054	529	54	425
Electric cut-out	G. A. Scott	445,822	Feb. 3	520	125	54	613
Electric cut-outs. Key for	S. Bergmann	445,364	Jan. 27	2207	572	54	457
Electric elevator	N. P. Otis and R. C. Smith	444,640	Jan. 13	1027	267, 268	54	212
Electric energy. System of distributing and metering	E. Thomson	444,930	Jan. 20	1543	395	54	317
Electric fixtures. Hanger-board for	G. R. Lean	449,266	Mar. 31	3217	812	54	1765
Electric gate	H. Gillette	444,825	Jan. 20	1325	343, 344	54	276
Electric generators. Driving mechanism for dynamo	S. H. Short	448,303	Mar. 17	1703	431	54	1461
Electric guest-call	A. Striemer	445,341	Jan. 27	2177	564	54	451
Electric heater	J. I. Ashbaugh	447,143	Feb. 24	2705	670	54	1062
Electric heater	T. J. Donovan	446,831	Feb. 17	2146	530	54	952
Electric heater	C. C. Rich	447,353	Mar. 3	120	32	54	1140
Electric indicator	J. Hopkinson	444,552	Jan. 13	904	235	54	188
Electric indicator	C. Wirt	444,966	Jan. 20	1604	410	54	329
Electric-light fixture	J. Kintz	447,832	Mar. 10	916	229	54	1298
Electric-light shade	J. W. Easton	449,407	Mar. 31	3488	877	54	1813
Electric-light signal	W. R. McCann and S. S. Creider	447,894	Mar. 10	1019	256, 257	54	1318
Electric-light support	A. Dawes	444,424	Jan. 13	697	182	54	146
Electric lights. Mast-arm for	G. Fitch	445,549	Feb. 3	32	8	54	517
Electric lighting	R. M. Hunter	448,782	Mar. 24	2478	620	54	1615
Electric-lighting system	T. A. Edison	446,666	Feb. 17	1884	468	54	898
Electric-lighting system	G. Gibbs	449,474	Mar. 31	3600	907	54	1835
Electric-lighting system	E. H. Johnson	449,044	Mar. 24	2870	720	54	1692
Electric-lighting system	E. Thomson	448,279	Mar. 17	1663	422	54	1457
Electric-lighting system	B. B. Ward	447,482	Mar. 3	359	89	54	1186
Electric-line switch	E. M. Bentley	446,418	Feb. 17	1513	373	54	825
Electric line-wires. Support for	H. C. Wirt	448,303	Mar. 24	2345	588	54	1591
Electric lock	E. J. Colby	446,509	Feb. 17	1658	404	54	853
Electric machine and electric motor. Dynamo	E. K. Brown	446,092	Feb. 10	949	233	54	704
Electric machine. Dynamo	A. G. Holcombe	444,067	Jan. 6	139	35	54	30
Electric machine. Dynamo	S. E. Nutting	448,666	Mar. 24	2288	573, 574	54	1579
Electric machine. Dynamo	C. J. Schwarze	445,906	Feb. 3	639	157	54	637
Electric machine. Magneto	G. P. Clarke	446,661	Feb. 17	1880	467	54	897
Electric-machine regulator. Dynamo	R. E. Ball	444,587	Jan. 13	955	248	54	198
Electric-machine regulator. Dynamo	J. H. Holmes	445,448	Jan. 27	2327	604, 605	54	480
Electric machinery. Dynamo	J. B. Entz	444,486	Jan. 13	702	206	54	166
Electric meter	E. Thomson	444,931	Jan. 20	1545	396	54	317
Electric meter	E. Thomson	448,280	Mar. 17	1665	422	54	1453
Electric meter	E. Thomson	448,894	Mar. 24	2645	664	54	1647
Electric motor	W. A. Anthony	444,416	Jan. 13	687	179	54	144
Electric motor	W. H. Chapman	447,939	Mar. 10	1097	275, 276	54	1333
Electric motor	W. M. Dresskell	445,499	Jan. 27	2403	627	54	494
Electric motor	L. Gutmann	446,864	Feb. 24	2208	549	54	972
Electric motor	E. B. Meyrowitz and F. Buchhop	447,734	Mar. 3	731	183	54	1256
Electric motor	F. J. Patten	445,623	Feb. 3	163	43, 44	54	543
Electric motor	F. J. Patten	445,624	Feb. 3	166	44	54	544
Electric motor	R. W. Traylor	447,704	Mar. 3	683	170	54	1247
Electric motor	C. J. Van Depoele	441,188	Jan. 6	302	83, 84	54	69
Electric motor and lamp-socket. Combined	R. H. Beach	444,807	Jan. 20	1297	337	54	271
Electric-motor mechanism	S. E. Mower	447,255	Feb. 24	2891	718	54	1100
Electric motor or generator. Dynamo	E. Thomson	447,384	Mar. 3	173	47	54	1151
Electric-motor reciprocating engine	C. J. Van Depoele	445,102	Jan. 20	1808	467	54	368
Electric-motor regulating apparatus	M. J. Wightman	444,900	Jan. 20	1481	382, 383	54	305
Electric-motor regulator	L. S. Harris	446,229	Feb. 10	1184	290	54	746
Electric-motor starting device	E. P. Sharp	445,907	Feb. 3	639	157	54	637
Electric-motor switch	F. A. Weller	445,741	Feb. 3	369	95	54	585

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Electric motors. Speed-regulator for	S. H. Short	448,681	Mar. 24	2308	579	54	1583
Electric signal device. Magneto	N. B. Ginochio	447,045	Feb. 24	2525	626, 627	54	1029
Electric snap-switch	G. W. Hart	447,728	Mar. 3	702	181	54	1254
Electric starting-switch	W. Hochhausen	447,827	Mar. 10	908	226, 227	54	1297
Electric switch	H. T. Clark	447,867	Mar. 10	979	245	54	1310
Electric switch	H. T. Clark	449,282	Mar. 31	3247	822	54	1770
Electric switch	G. Cutter and C. G. Armstrong	445,310	Jan. 27	2132	550, 551	54	441
Electric switch	J. W. Hoffman	445,752	Feb. 3	389	99	54	589
Electric switch	E. H. Johnson	448,431	Mar. 17	1910	480	54	1500
Electric switch	B. B. Keyes	445,146	Jan. 20	1882	486	54	383
Electric switch	G. R. Lean	445,957	Feb. 3	718	155	54	653
Electric switch	G. R. Lean	446,623	Feb. 17	1820	450	54	895
Electric switch	J. M. Orford and J. C. English	447,788	Mar. 10	898	210	54	1284
Electric switch	R. D. Pratt	448,365	Mar. 17	1804	455	54	1480
Electric switch	E. A. Sperry	446,031	Feb. 10	853	207	54	686
Electric switch	D. B. Turner	448,698	Mar. 24	2339	587	54	1589
Electric switch	W. White	449,188	Mar. 31	3101	782	54	1743
Electric switch	C. E. Wilson	444,374	Jan. 6	611	157	54	121
Electric switch and cut-out	W. Hochhausen	447,826	Mar. 10	906	225, 226	54	1296
Electric switch-box	J. H. Dean	449,302	Mar. 31	3408	857	54	1797
Electric-wire conduit	A. P. Wright	444,477	Jan. 13	776	202	54	162
Electric-wire connector	J. W. Hoffman	445,751	Feb. 3	388	99	54	589
Electric-wire connector	F. Shlaudeman	448,680	Mar. 24	2307	579	54	1583
Electric-wire coupling	C. M. Knight and T. Hawken	447,833	Mar. 10	917	230	54	1298
Electric-wire pole	J. Meyer and C. Binder	449,375	Mar. 31	3430	862	54	1801
Electric-wire support	C. A. Lieb	448,246	Mar. 17	1586	405	54	1438
Electric-wire support and cut-out	E. R. Whitney	448,468	Mar. 17	1905	494	54	1510
Electric wires. Binding-post for	H. P. Ball	449,307	Mar. 31	3296	833	54	1778
Electric wires. Covering	T. W. Norman	449,168	Mar. 31	3061	774	54	1736
Electric wires. Elastic metallic pole for	C. A. Lieb	449,125	Mar. 31	3000	758	54	1725
Electric wiring in buildings. Conduit for	S. Bergmann	447,861	Mar. 10	966	242	54	1308
Electric wiring. Molding for	G. Cutter	444,377	Jan. 6	614	158	54	121
Electrical energy. Method of and apparatus for developing motion from	R. Eickemeyer	448,326	Mar. 17	1742	440	54	1469
Electrical heater	J. V. Čápek	449,035	Mar. 24	2855	720	54	1689
Electrical heater	J. V. Čápek	449,036	Mar. 24	2857	720	54	1689
Electrical indicator	C. Wirt	448,792	Mar. 24	2491	623	54	1618
Electrical protector	I. N. Miller	448,980	Mar. 24	2768	700	54	1671
Electrical resistance. Asymmetrical	T. D. Bottome	445,687	Feb. 3	285	75	54	568
Electrical sporting-indicator	S. D. Mott	444,452	Jan. 13	732	191, 192	54	153
Electrical sporting-indicator	S. D. Mott	444,453	Jan. 13	735	192	54	154
Electrical subway	J. C. Reilly	447,350	Mar. 3	116	30, 31	54	1139
Electrical transformer	R. Kennedy	447,560	Mar. 3	488	120	54	1209
Electrical undulations. Apparatus for intensifying	J. C. Ludwig	448,153	Mar. 10	1422	363	54	1308
Electrically reproducing irregular or undulating surfaces. Process of and apparatus for	N. S. Amstutz	448,404	Mar. 17	1865	469	54	1492
Electro-magnetic cut-out	L. Gutmann	446,515	Feb. 17	1664	406, 407	54	855
Electro-magnetic cut-out	G. Taintor	447,529	Mar. 3	436	107	54	1199
Electro-magnetic device	M. G. Crane	449,206	Mar. 31	3126	789	54	1748
Electro-magnetic motor	E. D. Chaplin	448,603	Mar. 17	2176	543, 544	54	1550
Electro-magnetic motor	N. Tesla	445,207	Jan. 27	1959	511	54	410
Electrode for secondary batteries	F. Bain	444,969	Jan. 20	1609	411	54	329
Electrode. Secondary-battery	S. H. Barrett	445,852	Feb. 3	580	144	54	627
Electrode. Secondary-battery	S. C. C. Currie	444,392	Jan. 6	642	167	51	126
Electrode. Secondary battery	M. M. M. Slattery	446,104	Feb. 10	967		54	707
Electrolyte for galvanic batteries	J. J. Collins	448,936	Mar. 24	2705		54	1659
Electrotype or stereotype shells. Backing for	J. C. Wolfe	447,026	Mar. 3	579	143	54	1227
Electrotype or stereotype shells. Backing for	J. C. Wolfe	447,027	Mar. 3	580	143	54	1227
Elevator: *See* Coal or grain elevator. Cotton or hay elevator. Electric elevator. Hydraulic elevator. Ice-elevator. Package-elevator. Platform-elevator. Pneumatic elevator. Portable elevator. Sucker-rod elevator. Water-elevator.							
Elevator	T. W. Heermans	446,679	Feb. 17	1913	475, 476	54	903
Elevator	W. H. Jones	447,117	Feb. 24	2633	653, 654	54	1050
Elevator	T. L. Marvel	447,435	Mar. 3	269	68	54	1168
Elevator	C. E. Ongley	446,137	Feb. 10	1032	252, 253	54	718
Elevator	N. P. Otis	447,899	Mar. 10	1032	259	54	1320
Elevator	C. R. Pratt	448,788	Mar. 24	2484	621, 622	54	1617
Elevator	A. Sundh	446,397	Feb. 10	1466	360	54	803
Elevator	T. J. Underwood	448,699	Mar. 24	2340	587	54	1590
Elevator and endless carrier	P. Newcomer	444,540	Jan. 13	882	229	54	184
Elevator-brake	T. W. Eaton	446,621	Feb. 17	1817	449	54	884
Elevator controlling device	J. J. Seelar	446,717	Feb. 17	1906	490	54	914
Elevator driving mechanism	H. J. Reedy	445,902	Feb. 3	633	155, 156	54	636
Elevator-guard	A. Elliott	448,605	Mar. 17	2181	544, 545	54	1550
Elevator-indicator	E. Whitlock	446,907	Feb. 24	2299	572	54	988

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Elevator operating system. Electric	W. Baxter, Jr	449,611	Mar. 31	3799	954, 955, 956, 957	54	1872
Elevator shifting-ropes. Grip for	S. C. Swett	444,556	Jan. 13	910	236	54	189
Elevators. Automatic door and lock for	A. Pontius	445,433	Jan. 27	2309	599	54	477
Elevators. Discharge-regulator for hydraulic	R. T. Crane	445,748	Feb. 3	383	98	54	589
Elevators. Hoisting-drum for	P. L. and A. A. Weimer	446,044	Feb. 10	875	213	54	690
Embossing designs on wood. Machine for	F. H. Hawkins	448,485	Mar. 17	1995	500	54	1515
Embossing ornamental designs on wood or other material. Machine for	F. H. Hawkins	448,486	Mar. 17	1997	500	54	1516
Embroidering-machine	H. Hochreutener	446,181	Feb. 10	1116	273	54	733
Emery wheel dresser. Revolving	E. C. Palmer and S. G. Ryder	448,787	Mar. 24	2483	621	54	1616
End-gate	J. P. Marshall	445,678	Feb. 3	274	72	54	566
End gate	J. McFarland	448,249	Mar. 17	1590	406	54	1439
End gate fastening	J. J. Cook	444,313	Jan. 6	521	136	54	104
End-gate. Wagon	G. Evans	445,167	Jan. 27	1918	495	54	399
End-gate. Wagon	B. S. Kearney	446,252	Feb. 10	1189	291	54	747
Engine: *See* Carding engine. Compound engine. Direct-acting engine. Double-acting engine. Double scotch-yoke engine. Duplex engine. Electric-motor reciprocating engine. Fire engine. Gas engine. Gas or gasoline engine. Hot-air engine. Jordan engine. Locomotive-engine. Multiple-cylinder engine. Multiple expansion-engine. Pulp refining and dressing engine. Pumping-engine. Rotary engine. Rotary steam-engine. Steam-engine. Traction-engine. Vacuum-engine. Vapor engine. Wind-engine.							
Engine attachment	D. R. and F. M. Woodsum	445,943	Feb. 3	698	170	54	649
Engine reversing-gear	J. Barnes	444,971	Jan. 20	1610	412	54	330
Engine reversing-gear. Steam	C. M. Farrar	446,992	Feb. 24	2425	603	54	1011
Engine reversing-gear. Steam	C. Swan	446,746	Feb. 17	2014	502	54	923
Engines. Converting device for steam	P. W. Leffler	449,162	Mar. 31	3052	771, 772	54	1734
Engines. Cut-off gear for	N. Chandler	447,603	Mar. 3	542	134	54	1219
Engines. Cut-off mechanism for steam	E. J. Chapin	447,773	Jan. 13	1245	323, 324	54	251
Engines. Governing the movements of pistons in steam-	E. Hill	446,183	Feb. 10	1113	272	54	732
Engines. Grease-separator for steam	L. Hussey and E. McCann	447,327	Mar. 3	71	19, 20	54	1131
Engines. Link-motion for compound	W. E. Goed and C. O. Lindroth	446,441	Feb. 17	1557	382, 383	54	833
Engines. Means for governing or regulating the action of gas or other like explosive	E. Desamare-Debouteville and L. Malandin.	448,136	Mar. 10	1399	357	54	1393
Engines. Means for supplying lubricating-oil to moving parts of	D. R. Stiles	446,797	Feb. 17	2091	521	54	940
Engines. Means for supplying oil to moving parts of	D. R. Stiles	446,798	Feb. 17	2092	521	54	940
Engineer's order bulletin-board	C. W. Kemp	444,211	Jan. 6	375	93	54	75
Engraving-machine. Pantograph	G. Moulton	445,321	Jan. 27	2113	554, 555	54	444
Envelope	R. W. Bainbridge	444,092	Jan. 6	176	44	54	37
Envelope	B. G. Button	444,045	Jan. 6	99	25	54	23
Envelope	J. P. Harrison and J. L. Waring	444,979	Jan. 20	1619	414	54	332
Envelope	H. A. J. Rieckert	444,651	Jan. 13	1043	271	54	214
Envelope	G. N. Walter	446,723	Feb. 17	1980	493	54	916
Envelope-fastener	C. H. Voll	444,932	Jan. 20	1549	396, 397	54	318
Envelope-machine	E. Ran	446,124	Feb. 10	1002	246, 247, 248, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365	54	715
Envelope-machine	F. H. Richards	444,852	Jan. 20	1369		54	284
Envelope-making machine	F. T. Nicholson	448,250	Mar. 17	1591	406, 407	54	1439
Envelope moistener and closer	D. Coyle	447,809	Mar. 10	881	220	54	1292
Envelopes. Device for moistening the gum on	E. E. Kingsley	449,480	Mar. 31	3610	902	54	1837
Equatorial mounting	G. N. Saegmuller	448,081	Mar. 10	1321	338	54	1377
Eraser	W. E. Simonds	445,092	Jan. 20	1786	459	54	365
Eraser. Tube	C. Hanimann	447,873	Mar. 10	990	250	54	1312
Evaporating and cooling apparatus	E. Theisen	444,945	Jan. 20	1568	402	54	322
Evaporating apparatus	T. Gaunt	445,776	Feb. 3	436	108	54	597
Evaporating apparatus	T. Gaunt	447,817	Mar. 10	892	223	54	1294
Evaporating apparatus	E. Theisen	447,210	Feb. 24	2812	696	54	1084
Evaporating apparatus. Multiple-effect	T. Gaunt	447,816	Mar. 10	890	222, 223	54	1293
Evaporating naphtha. Apparatus for	J. W. Evans	449,215	Mar. 31	3138	791, 792	54	1750

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Evaporating sea or other water. Apparatus for	D. A. Quiggin	448,542	Mar. 17	2060	518	54	1531
Evaporator or sirup-pan	G. W. Rodgers	445,266	Jan. 27	2072	534	54	428
Excelsior-cutting machine	C. G. Smith	447,846	Mar. 10	943	236, 237	54	1303
Excelsior-machine	V. L. Williams	449,097	Mar. 24	2049	747	54	1706
Exercising apparatus	W. L. Coop	445,726	Feb. 3	345	90	54	581
Exercising apparatus	G. S. Sanborn	444,674	Jan. 13	1046	284	54	223
Exercising apparatus	F. Medart	448,353	Mar. 17	1789	452	54	1477
Exercising-machine	A. I. Thayer	448,305	Mar. 17	1706	432	54	1461
Exercising-machine. Electrical	J. B. Gardiner	444,881	Jan. 20	1451	377	54	300
Exhibition purposes. Device for	S. R. Ellis	443,991	Jan. 6	5	2	54	4
Exhibitor. Automatic	W. H. Rodgers	445,456	Jan. 27	2338	608	54	492
Exhibitor for shade fabrics, wall-papers, &c. Cabinet	B. Handforth	444,701	Jan. 13	1123	290	54	230
Exhibitor. Sample or picture	H. Frercks	447,815	Mar. 10	889	222	54	1293
Extension-clamp	J. J. Tanner	444,510	Jan. 13	839	218	54	175
Extractor: *See* Nail-extractor. Stump-extractor. Spike-extractor.							
Extracts. Apparatus for making	S. C. Thrall	449,603	Mar. 31	3790	951	54	1870
Eyeglasses	H. E. Kirstein	444,362	Jan. 6	591	152	54	117
Eyeglasses	W. C. Westaway	449,605	Mar. 31	3793	952	54	1871
Fabric: *See* Carpet fabric. Wire fabric. Elastic or corded fabric.							
Fabric-turfing implement	D. Lewis and F. L. Generelly	444,545	Jan. 13	891	232	54	185
Fabrics. Apparatus employed in the cutting of weft pile	O. Drey	445,620	Feb. 3	161	43	54	543
Fan	W. H. Ames and M. Grier	449,025	Mar. 24	2842	723	54	1685
Fan attachment	G. S. Nickum	446,581	Feb. 17	1766	436	54	875
Fan. Automatic	T. R. Evans	446,204	Feb. 10	1145	280	54	738
Fan. Centrifugal	N. Chandler	445,043	Jan. 20	1721	443	54	352
Fan. Fly-	G. W. Slawson	445,630	Feb. 3	177	46	54	546
Fanning-mill	J. Pelzer and J. Werel	446,365	Feb. 10	1414	347	54	793
Fanning-mill	J. S. Shafer	448,809	Mar. 24	2515	630	54	1623
Fare-book. Railway	S. F. Stevens	448,688	Mar. 24	2923	588, 589	54	1586
Fare-collector	M. D. Greengard and F. Harris	444,882	Jan. 20	1456	377	54	301
Fare-recording register	J. Dane, Jr	443,988	Jan. 6	2	1	54	3
Fare-register	T. B. Lee	445,669	Feb. 3	244	66	54	560
Fares by omnibuses, &c. Apparatus for recording	A. Carrara	445,042	Jan. 20	1719	442, 443	54	351
Farm-gate	L. J. Johnston	449,221	Mar. 31	3147	793	54	1751
Fastening	W. S. Richardson	446,139	Feb. 10	1031	254	54	719
Faucet	E. B. Wilder	444,323	Jan. 6	535	139	54	107
Faucet for barrels	M. Anthony	449,513	Mar. 31	3655	949	54	1845
Faucet. Measuring	F. C. H. Strasburger	448,093	Mar. 10	1336	342	54	1380
Faucet. Measuring	H. Thacker	449,143	Mar. 31	3082	766	54	1730
Faucet. Self-closing	J. Meany and C. H. Bodie	444,912	Jan. 20	1514	389	54	312
Faucet. Self-closing	G. W. Renton	444,018	Jan. 6	53	15	54	14
Faucet. Self-closing	H. A. Walker	444,514	Jan. 13	843	219	54	176
Feed-cutter	A. Cameron	449,572	Mar. 31	3734	939	54	1860
Feed-cutters. Friction lock or clutch for fly-wheels of	A. Cameron	449,612	Mar. 31	3819	957	54	1875
Feed-grinder	C. A. Claypool	444,742	Jan. 13	1199	311	54	243
Feed-mill	J. D. Henry and W. E. Wood	449,445	Mar. 31	3551	894	54	1825
Feed-rack	J. F. Fitzgerald	444,577	Jan. 13	944	245	54	195
Feed-rack	J. C. Hurst	445,221	Jan. 27	2003	516	54	415
Feed-rack	S. H. Warren	449,303	Mar. 31	3280	831	54	1775
Feed-regulator	G. L. Dutcher and C. W. Boyle	449,580	Mar. 31	3754	942, 943	54	1863
Feed-roller	L. G. McKnight	445,123	Jan. 20	1837	475	54	374
Feed-water heater	L. Norton	447,159	Feb. 24	2734	677	54	1067
Feed-water heater and condenser	J. F. Fife	446,913	Feb. 24	2307	573, 574	54	989
Feed-water heater and purifier	V. H. McConnell	445,933	Feb. 3	679	166	54	644
Feed-water heater and purifier	V. H. McConnell	445,934	Feb. 3	681	166	54	645
Feed-water heater and purifier	W. A. Morse	448,984	Mar. 24	2754	702	54	1672
Feed-water heater and purifier for boilers	W. Kerr	447,881	Mar. 10	998	252	54	1314
Feed-water purifier	J. J. Hoppes	445,407	Jan. 27	2271	589	54	469
Feed-water purifier	E. S. Titus and F. W. Werner	447,018	Feb. 24	2470	645	54	1019
Feeder and band-cutter	F. L. Clark and N. Greenlee	445,973	Feb. 10	747	183, 184	54	668
Feeder. Automatic animal	L. Person	448,256	Mar. 17	1611	411	54	1442
Feeder. Automatic stock	J. H. Carpenter	449,631	Mar. 31	3856	965	54	1883
Feeding device	J. H. Morrison	445,964	Feb. 3	731	178	54	666
Felting fur bodies	H. W. Flagg	444,209	Jan. 6	273	.....	54	75
Fence	L. Barnes	445,531	Feb. 3	3	1	54	511
Fence	G. A. Christ	444,331	Jan. 6	545	141	54	109
Fence	J. B. Cleaveland	445,746	Feb. 3	381	97	54	588
Fence	C. Crabbs	447,539	Mar. 3	450	110	54	1202
Fence	A. F. Elsey	447,672	Mar. 3	636	158	54	1238
Fence	J. Figert	449,528	Mar. 31	3673	923	54	1849
Fence	S. M. J. House	444,382	Jan. 6	625	162	54	123
Fence	A. L. Kitselman	444,753	Jan. 13	1212	315	54	245
Fence	L. Noggle	447,545	Mar. 3	458	112	54	1204
Fence	W. P. Randall	448,455	Mar. 17	1946	490	54	1507
Fence	N. Rice	448,545	Mar. 17	2076	521	54	1532
Fence	J. B. Roberts	447,355	Mar. 3	126	35	54	1141
Fence	C. D. Shellaberger	444,170	Jan. 6	347	76	54	64
Fence	W. S. Sutton	449,602	Mar. 31	3789	951	54	1870
Fence	J. C. Tauber	444,225	Jan. 6	400	99	54	79
Fence	T. A. Tweedy	447,588	Mar. 3	521	127	54	1215

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Fence	W. D. Whitney	447,420	Mar. 3	240	61	54	1162
Fence and tree-protector. Combined	G. E. Blaine and P. T. South	446,849	Feb. 24	2179	543	54	967
Fence-building machine. Picket-	E. E. Witter	444,726	Jan. 13	1160	299, 300	54	236
Fence construction	N. Gillham	449,441	Mar. 31	3543	893	54	1824
Fence. Flood-	D. E. Casselman and E. H. Fletcher	446,111	Feb. 10	982	241	54	710
Fence. Flood-	H. Catlett and E. Robertson	449,204	Mar. 31	3124	788	54	1748
Fence. Flood-	J. A. Davis	446,852	Feb. 24	2190	545	54	969
Fence. Flood-	H. A. Mace	448,154	Mar. 10	1425	364	54	1398
Fence-machine	G. J. Cline and J. R. Detwiler	446,327	Feb. 10	1364	332	54	782
Fence machine. Wire-and-slat-	J. M. Orentt	444,559	Jan. 13	914	238	54	180
Fence-machines. Roller-feed for power	G. Q. Adams	445,297	Jan. 27	2107	546	54	435
Fence-making machine	W. H. Jenkins	444,752	Jan. 13	1210	314, 315	54	245
Fence-making machines. Picket-feeder for	J. F. Mauck	449,549	Mar. 31	3706	931	54	1855
Fence-making machines. Reel for	G. Q. Adams	445,296	Jan. 27	2106	545	54	435
Fence or gate	H. Priday	444,960	Jan. 20	1599	408	54	327
Fence. Portable farm-	A. E. Claussen and A. J. Jones	446,112	Feb. 10	983	242	54	711
Fence. Portable rail	C. B. Wynegar	447,223	Feb. 24	2-39	704	54	1089
Fence-post	J. B. Cleaveland	447,231	Feb. 24	2859	709	54	1092
Fence-post	J. E. Daniels	448,180	Mar. 10	1469	374	54	1407
Fence post	E. Minnick	444,781	Jan. 13	1256	325	54	253
Fence-post	T. S. Riddel	448,078	Mar. 10	1313	336	54	1376
Fence-post	J. M. Rife	447,204	Feb. 24	2804	693	54	1081
Fence-post	E. D. Watkins	449,018	Mar. 24	2827	746	54	1683
Fence-post base	R. E. Poindexter	445,198	Jan. 27	1968	509	54	409
Fence-post. Metallic	H. Fischer	449,317	Mar. 31	3320	837	54	1782
Fence-posts, &c. Metallic socket for	C. A. Lounsberry	444,497	Jan. 13	849	214	54	171
Fence-machine	J. H. Burkholder and J. L. Clark	448,601	Mar. 17	2174	542	54	1549
Fence-machine. Hand	M. F. Connett, Jr	448,410	Mar. 17	1875	472	54	1494
Fence rail-coupling Iron-	C. Hanika	448,029	Mar. 10	1247	318	54	1362
Fence. Straight rail	D. and S. R. Port	447,201	Feb. 24	2800	692	54	1081
Fence. Wire	A. Land	444,364	Jan. 6	594	153	54	118
Fence. Wire	P. Mast	448,061	Mar. 10	1295	331	54	1371
Fence. Wire	P. Mast	449,373	Mar. 31	3427	861	54	1800
Fence-wire. Barbed	J. W. Blake	446,607	Feb. 17	1793	444	54	881
Fence-wire tightener	H. G. McDaniel	449,563	Mar. 31	3725	935	54	1858
Fence-wires. Tightener and fastener for	A. L. Thompson	449,450	Mar. 31	3562	898	54	1827
Fence-wrench	C. H. Van Epps	448,564	Mar. 17	2108	528	54	1538
Fences. Material for making wire	J. Beresford	449,279	Mar. 31	3242	821	54	1769
Fences. Tension device for slat-and-wire	P. Emley	445,547	Feb. 3	30	8	54	517
Fencing. Barbed	E. Jordan	444,957	Jan. 20	1596	407	54	326
Fencing. Barbed metallic	T. V. Allis	446,557	Feb. 17	1731	425	54	868
Fencing. Barbed metallic	T. V. Allis	446,558	Feb. 17	1732	425	51	868
Fencing machine. Slat-and-wire-	R. Hoover	446,255	Feb. 10	1249	305	54	759
Fencing-strand	A. B. Woodard	447,927	Mar. 10	1079	270	54	1329
Fender: *See* Car-fender. Ship's fender. Fire-place fender.							
Fermenting-vat guard	G. Sobotka	444,944	Jan. 20	1567	402	54	321
Ferrule	J. Macphail	445,596	Feb. 3	120	30	54	534
Fertilizer-distributer	W. G. De Berry	448,135	Mar. 10	1307	357	54	1393
Fertilizer-distributer	H. P. Deuscher and F. J. Becker	444,394	Jan. 6	644	168	54	126
Fertilizer-distributer	W. C. Etters	444,193	Jan. 6	352	86	54	71
Fertilizer-distributer	J. F. McLaurin and D. L. Whitaker	445,189	Jan. 27	1954	505	54	405
Fertilizer-distributer	J. H. and J. E. Smith	446,795	Feb. 17	2087	520	54	939
Fertilizer distributer and seeder. Combined	S. E. Clarkson	448,010	Mar. 10	1226	311, 312	54	1357
Fertilizer-distributer. Hand	C. C. Bates and C. D. Wren	448,004	Mar. 10	1210	307	54	1354
Fertilizer-distributer. Hand	J. G. McKethan	446,787	Feb. 17	2089	515	54	935
Fertilizer. Nitrogenous	J. Van Ruymbeke	446,088	Feb. 10	945	.....	54	703
Fertilizer. Nitrogenous	J. Van Ruymbeke	448,387	Mar. 17	1843	.....	54	1487
Fertilizers. Making	W. B. Seal	445,255	Jan. 27	2058	.....	54	425
Fertilizers. Making phosphatic	J. Van Ruymbeke	446,998	Feb. 24	2492	.....	54	1012
Fibers. Chemical retting and ungumming of textile	C. De la Roche	446,983	Feb. 24	2412	.....	54	1009
Fibers. Degumming and preparing	W. R. Wade	449,454	Mar. 31	3568	.....	54	1828
Fibers. Degumming and preparing	W. R. Wade	449,455	Mar. 31	3569	.....	54	1828
Fibrous plants. Machine for decorticating	J. G. Hernandez	447,152	Feb. 24	2722	674, 675	54	1065
Fibrous plants. Machine for disintegrating	D. Prieto	446,791	Feb. 17	2075	517, 518	54	936
Field-glasses. Compass attachment for	E. G. King	444,795	Jan. 13	1272	329	54	256
Fifth-wheel	J. H. Gressom	448,025	Mar. 10	1244	317	54	1361
Fifth-wheel. Vehicle	W. W. Grier	447,312	Mar. 3	46	12	54	1126
Fifth-wheel. Wagon	A. B. Bishop	448,843	Mar. 24	2569	644	54	1633
File. Bill-	W. D. House	448,237	Mar. 17	1574	402	54	1436
File. Bill or letter	J. W. Henson	448,140	Mar. 10	1416	362	54	1397
File-clip	E. Brunhoff and C. Lehmann	448,117	Mar. 10	1366	350	54	1386
File-cutting machine	J. Erlenwein	447,149	Feb. 24	2713	672, 673	54	1063
File for toilet use. Nail-	I. Cassiday	448,409	Mar. 17	1875	471	54	1494
File-handle	J. Reilley	447,904	Mar. 10	1040	261	54	1322
File. Indexed	R. D. Richardson and C. A. Sadleir	444,853	Jan. 20	1407	366	54	291
File or binder. Spindle	R. B. Gatling	447,565	Mar. 3	483	118, 119	54	1208
File or portfolio	J. J. Haulon	448,816	Mar. 24	2523	632	54	1624
File or rasp	T. N. Dallas	445,712	Feb. 3	323	85	54	576
File. Paper-	A. B. Dick	447,067	Feb. 24	2562	636	54	1036
Files. Apparatus for recutting	A. P. de Sennevoy	448,144	Mar. 10	1409	360	54	1395
Filing papers, &c. Cabinet for	S. G. Browne	446,160	Feb. 10	1079	264, 265	54	726
Filter, &c	F. Breyer	441,483	Jan. 13	787	205	54	165
Filter	H. Goodacre	446,342	Feb. 10	1387	338, 339	54	787

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Filter	W. M. and O. H. Jewell	447,568	Mar. 3	487	120	54	1209
Filter	E. M. Knight	444,754	Jan. 13	1214	315, 316	54	246
Filter	E. M. Knight	445,223	Jan. 27	2006	516, 517	54	416
Filter	E. M. Knight	445,224	Jan. 27	2009	517	54	416
Filter	J. H. Millen	445,568	Feb. 3	73	17	54	526
Filter	J. S. Roake	446,153	Feb. 10	1057	260	54	723
Filter	W. W. Whiddit	444,623	Jan. 13	1002	261	54	207
Filter for strups and juices in sugar-works	K. Proks	449,271	Mar. 31	3224	814	54	1766
Filter. Oil-	A. S. Krotz	448,152	Mar. 10	1421	364	54	1398
Filter-press	Z. B. Coes and G. T. Reiss	447,024	Feb. 24	2484	618	54	1021
Filter-press	R. Giebermann	445,053	Jan. 20	1732	446	54	354
Filter. Pressure-	P. R. and P. R. Gray, Jr.	445,890	Feb. 3	616	151	54	633
Filters. Antiseptic air-vent and overflow for	C. G. Purdy	448,671	Mar. 24	2295	576	54	1580
Filtering apparatus	H. Stockheim	444,733	Jan. 13	1184	306, 307	54	240
Filtering sirups. Apparatus for	O. H. Jewell	445,371	Jan. 27	2215	574	54	458
Filtration. Downward	J. W. Hyatt	445,585	Feb. 3	105	25, 26	54	532
Finger-bar	A. J. Inglis	447,245	Feb. 24	2879	715	54	1096
Finger-ring	C. Gosling	448,610	Mar. 17	2190	548	54	1552
Finger-ring	C. Staiger	448,892	Mar. 24	2643	664	54	1646
Finisher-press	J. H. McGowan	447,003	Feb. 24	2439	606, 607	54	1013
Finishing or cleaning surfaces. Apparatus for	A. Bryce	446,961	Feb. 24	2374	591, 592	54	1001
Fire-alarm. Automatic	J. B. Deen	445,930	Feb. 3	675	165	54	644
Fire-alarm. Pneumatic	A. Goldstein	446,863	Feb. 24	2206	540	54	971
Fire-alarm signal-box	W. F. Singer	448,684	Mar. 24	2315	580, 581	54	1584
Fire-alarm signal-box. Non-interference	W. H. Kirman	447,074	Feb. 24	2570	638	54	1037
Fire and water tube boiler	T. J. Reynolds	445,301	Jan. 27	2113	547	54	437
Fire-armor	W. H. Finn and J. Puppa	446,131	Feb. 10	1014	250	54	717
Fire-curtain	W. R. Monroe	445,337	Jan. 27	2171	562	54	449
Fire-engine. Electric	M. W. Dewey	446,703	Feb. 17	1946	485, 486	54	909
Fire-escape	E. W. Bullard	448,176	Mar. 10	1463	373	54	1406
Fire-escape	G. F. Goldthwait	449,319	Mar. 31	3325	838	54	1782
Fire-escape	A. G. Gordon	448,225	Mar. 17	1559	398	54	1433
Fire-escape	C. G. Grunz	449,475	Mar. 31	3602	907	54	1835
Fire-escape	H. C. Moir	444,670	Jan. 13	1080	280	54	221
Fire-escape	G. Muller	446,001	Feb. 10	807	195	54	678
Fire-escape	F. Schnell, Sr	446,295	Feb. 10	1319	321	54	773
Fire-escape	S. M. Stevenson	444,308	Jan. 6	513	134	54	102
Fire-escape	E. R. Whittier	448,101	Mar. 10	1347	344	54	1382
Fire-escape	H. Wilson	447,501	Mar. 3	392	95	54	1191
Fire-escape	A. Wood	444,404	Jan. 6	661	171, 172	54	131
Fire-escape	W. H. Wyland	444,788	Jan. 13	1263	327	54	254
Fire-escape	R. M. Yorks	449,458	Mar. 31	3573	900	54	1829
Fire-escape ladder	E. Eder	444,607	Jan. 13	982	255	54	203
Fire-escape or chain ladder	N. Butterfield	449,518	Mar. 31	3662	920	54	1847
Fire-extinguisher	J. D. Berry	449,195	Mar. 31	3113	785	54	1745
Fire-extinguisher. Automatic	R. W. Newton	449,380	Mar. 31	3438	865	54	1803
Fire-extinguishing apparatus	H. C. Carver	447,601	Mar. 3	537	132, 133	54	1218
Fire-extinguishing apparatus	J. E. Prunty	447,476	Mar. 3	353	88	54	1184
Fire indicator and extinguishing system	S. Broichgans	446,200	Feb. 10	1140	279	54	737
Fire indicator. Electric	T. R. Douse	445,931	Feb. 3	677	165	54	644
Fire-isolating apparatus	H. W. Johns, Jr	445,372	Jan. 27	2216	554, 555	54	459
Fire-kindler	R. Guenther	444,114	Jan. 6	213	51	54	43
Fire or burglar alarm	W. Henry	444,277	Jan. 6	469	120	54	93
Fire-place	J. P. O'Brien	446,363	Feb. 10	1411	346, 347	54	792
Fire-place fender	F. W. Keifel, Jr	445,811	Feb. 3	506	122	54	610
Fire place heater	N. A. Boynton	444,987	Jan. 20	1634	419	54	335
Fire-place heater	F. D. Woodruff	448,103	Mar. 10	1350	345, 346	54	1383
Fire-place hood	L. E. Clawson	449,347	Mar. 31	3374	850	54	1791
Fires. Priming-machine for kindling	M. Hett	445,261	Jan. 27	2067	533	54	427
Fish alive. Apparatus for preserving	W. Adams, Jr., and J. Maret	445,131	Jan. 20	1849	479	54	377
Fish-hook	M. M. Cass, Jr	446,827	Feb. 17	2138	531	54	950
Fish-hook	J. Stretch	444,656	Jan. 13	1050	273	54	216
Fishing-bait. Artificial	M. Carswell	449,519	Mar. 31	3663	920	54	1847
Fishing-reel	A. B. Hendryx	445,403	Jan. 27	2265	588	54	468
Fishing-reel	J. B. Moscrop	446,102	Feb. 10	965	238	54	707
Fishing-reel	E. B. Porter	446,467	Feb. 17	1590	391	54	841
Fishing-rod support	S. Hall	448,028	Mar. 10	1246	317	54	1362
Fishing-tackle	I. Bushong	449,202	Mar. 31	3121	787	54	1747
Fishing. Tilt-up for	O. Hackett	446,596	Feb. 17	1779	440	54	878
Flange-and-collar coupling	J. J. Hogan	448,747	Mar. 24	2375	594	54	1596
Flax, hemp, jute, wool, and other fibers. Machine for preparing	A. T. and F. W. Lawson and S. Dear	443,999	Jan. 6	21	5, 6	54	7
Flood-gate	L. L. Gray	447,679	Mar. 3	645	160	54	1240
Floor	H. Herrmann	445,779	Feb. 3	440	109	54	598
Floor. Fire-proof	F. Furness	444,935	Jan. 20	1552	398	54	318
Floor-washing machine	L. Graham	446,445	Feb. 17	1558	383	54	834
Floors or the surface of lumber. Machine for dressing	R. L. Patterson	447,160	Feb. 24	2735	677	54	1068
Flour and cereal testing case	J. W. Burk	447,661	Mar. 3	621	154	54	1235
Flour-bolt	C. A. Schied	446,155	Feb. 10	1060	260	54	724
Flour-bolt	L. I. Ziegler	446,503	Feb. 17	1650	403	54	862
Flour bolt and dresser	F. P. Trautwein	448,283	Mar. 17	1669	423	54	1454
Flour-bolting apparatus	V. Mounier	448,538	Mar. 17	2063	517	54	1529

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Flour or meal bin and sifter	W. H. Hammer	444,351	Jan. 6	575	147	54	114
Flour receiver and sifter	W. H. Reynolds	448,673	Mar. 24	2297	576	54	1581
Flower-holder	J. Martin	448,975	Mar. 24	2764	698	54	1670
Flower-pot	H. H. McIlhiney	446,460	Feb. 17	1582	389	54	839
Flower-pot. Folding	M. H. Piper	448,143	Mar. 10	1408	360	54	1395
Flower-pot machine	C. McDonagh	444,009	Jan. 6	42	12	54	11
Flue-cleaner	J. T. Mackay	449,080	Mar. 24	2920	741	54	1701
Flue-hole cutter	W. R. Craig	448,126	Mar. 10	1385	354	54	1390
Fluid-graduating device	W. F. Richards	445,254	Jan. 27	2055	529; 530	54	425
Fluid-meter. Rotary	H. H. Sporton and E. White	449,009	Mar. 24	2817	713; 714	54	1680
Flume or conduit	M. H. Laybourn	444,496	Jan. 13	818	213	54	171
Flush-tank	S. W. Miller	449,083	Mar. 24	2929	742	54	1702
Flushing siphons. Valve-operating mechanism for	C. Sullivan	449,390	Mar. 31	3453	869	54	1806
Flushing-tank	J. Totham	446,903	Feb. 24	2294	571	54	986
Flute	K. F. W. Guenther	444,830	Jan. 20	1336	347	54	278
Fly-book	J. S. Benn	444,272	Jan. 6	464	118	54	92
Fly-brush	J. Russell	444,963	Jan. 20	1601	409	54	328
Fly-frightener	J. Bosworth	447,755	Mar. 10	775	192	54	1272
Fly-paper. Sticky	H. W. Stecher	447,121	Feb. 24	2638	655	54	1051
Folder-binder	C. W. Gillis	449,072	Mar. 24	2910	738	54	1699
Folder-carrier	W. R. Harrison	448,857	Mar. 24	2600	652; 653	54	1638
Folding chair	J. W. Bowen	445,156	Jan. 27	1903	491	54	396
Folding chair	H. Miller	444,101	Jan. 6	190	47	54	39
Folding chair	J. G. Nicolay	445,190	Jan. 27	1955	506	54	406
Folding chair	C. H. Orcutt	444,011	Jan. 6	44	12	54	12
Folding cup	H. R. Haynes	446,774	Feb. 17	2054	512	54	932
Folding gate	W. R. Pitt	444,765	Jan. 13	1235	321	54	250
Folding screen	J. W. Campbell	447,461	Mar. 3	314	78	54	1177
Food storing and preserving apparatus	L. Smith	446,024	Feb. 10	835	201	54	683
Food storing and preserving apparatus	L. Smith	446,025	Feb. 10	837	202	54	683
Foot-warmer	W. A. Randle	444,269	Jan. 6	460	117	54	91
Forging machine. Nail	C. W. Emery	449,526	Mar. 31	3671	923	54	1849
Forging-machines. Electric blank-heater for	G. D. Burton and E. E. Angell	444,914	Jan. 20	1517	390; 391	54	312
Forgings non-circular in cross-section. Making rolled	G. F. Simonds	446,934	Feb. 24	2338	580; 581	54	994
Fork: *See* Agricultural fork. Culinary fork. Loom-weft fork. Winker-fork.							
Fork-guard	S. Nowill	447,644	Mar. 3	605	149	54	1232
Fork-rolling machine	J. B. Phillips	449,058	Mar. 24	2891	734	54	1695
Fracture apparatus	B. H. Daggett	449,436	Mar. 31	3538	892	54	1823
Frame: *See* Awning-frame. Bag-frame. Bucket-suspending frame. Display-frame. Mattress-frame. Mosquito-canopy frame. Picture-frame. Sewing-machine quilting-frame. Slate-frame. Spectacle-frame. Tedder-frame. Window-frame. Window-screen frame. Wire frame.							
Freezing apparatus	J. Erny, Z. T. Subers, and W. Hoos	446,252	Feb. 10	1243	304	54	758
Frog. Life and property saving derailing	A. G. Bodley and J. F. Beelman	444,039	Jan. 6	93	24	54	21
Fruit and vegetable cutter	C. H. Dana	446,379	Feb. 10	1435	352; 353	54	797
Fruit-cleaner	W. H. Perry	447,901	Mar. 10	1035	260	54	1321
Fruit-drier	A. Conklin	448,846	Mar. 24	2574	646	54	1634
Fruit-gatherer	C. R. Banks	444,037	Jan. 6	87	23	54	20
Fruit-gatherer	J. W. Howell	444,884	Jan. 20	1459	378	54	302
Fruit-packer	W. A. Trescott	444,260	Jan. 6	447	112; 113	54	88
Fruit-pitting machine	J. T. Ish	445,753	Feb. 3	390	99; 100	54	590
Fuel. Artificial	I. C. Bandman	446,845	Feb. 24	2173	.....	54	965
Fuel. Artificial	R. J. Schimper	447,138	Feb. 24	2698	.....	54	1060
Fuel burner. Liquid	M. H. Brooksbank	448,407	Mar. 17	1872	470; 471	54	1403
Fuel feeder and separator	W. F. Cosgrove	445,300	Jan. 27	2238	581	54	463
Fuel-saving device	M. B. Dodge	444,976	Jan. 20	1616	413	54	331
Fulling-machine	J. W. Millet	448,535	Mar. 17	2061	515	54	1528
Fulling-machine	J. W. Millet	448,536	Mar. 17	2062	515; 516	54	1529
Fulling-machine	J. W. Millet	448,537	Mar. 17	2063	516; 517	54	1529
Fumigating trees and other plants	W. B. Wall, M. S. Jones, and A. D. Bishop.	445,342	Jan. 27	2179	.....	54	451
Furnace: *See* Air-heating furnace. Blast-furnace. Boiler-furnace. Boiler or other furnace. Crucible-furnace. Garbage-furnace. Gas-furnace. Glass-melting furnace. Hearth-furnace. Hot-air furnace. Muffle-furnace. Ore-roasting furnace. Retort-furnace. Roasting and smelting furnace. Smelting-furnace.							
Furnace	W. A. Hatcher	445,249	Jan. 27	2043	525	54	422
Furnace	M. C. Hawley	447,179	Feb. 24	2763	683; 684	54	1073

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Furnace	J. J. and T. F. Meldrum	447,891	Mar. 10	1013	255; 256	54	1317
Furnace	H. Petersen	444,671	Jan. 13	1082	280	54	922
Furnace	J. S. Roberts	446,539	Feb. 17	1702	417; 418	54	862
Furnace-feeding device. Boiler	G. W. Wood	446,959	Feb. 24	2371	590	54	1000
Furnace-regulator	E. J. Colby	444,691	Jan. 13	1110	287	54	927
Furnaces. Apparatus for consuming smoke and saving fuel in	G. Moffatt and S. Stuttaford	448,156	Mar. 10	1427	364	54	1399
Furnaces. Apparatus for removing slag from	W. Hawdon	447,683	Mar. 3	654	162	54	1242
Furnaces. Fuel-feeder for	R. Newton	447,544	Mar. 3	456	112	54	1203
Furnaces. Injector oil-burner for boiler	J. H. Jones	444,115	Jan. 6	214	51, 52	54	44
Furnaces. Steam and air injector for	S. R. Earle	447,563	Mar. 3	482	118	54	1208
Furniture	W. S. Goodwillie	445,777	Feb. 3	438	108; 109	54	597
Furniture and extension-bedstead. Combined	J. Braenel	446,729	Feb. 17	1989	496	54	918
Furniture. Combination	C. Polakoff and R. Lange	449,430	Mar. 31	3529	888; 889	54	1821
Furniture-fastener	W. G. Jarvis	447,829	Mar. 10	912	227	54	1297
Furniture. School	O. S. Garretson	444,630	Jan. 13	1011	263	54	909
Fuse. Blasting	D. B. James	446,919	Feb. 24	2316	575	54	990
Fuse-block	A. P. Seymour	446,895	Feb. 24	2267	563; 564	54	982
Fuse. Electric	G. F. Curtiss	449,209	Mar. 31	3131	789	54	1749
Gage: *See* Carpenter's gage. Horseshoe-gage. Leather-sorting gage. Micrometer-gage. Pressure-gage. Printing-press feed gage. Saw-table gage. Surface-gage. Water-gage.							
Gage	W. Ricketts	447,203	Feb. 24	2803	693	54	1081
Gage for carpentry	M. Cridge	447,604	Mar. 3	544	135	54	1219
Gage for determining the radius of curvature	J. T. Brayton	447,276	Feb. 24	2031	729	54	1108
Galvanic apparatus for the human body	P. G. Williams	447,857	Mar. 10	961	241	54	1307
Galvanic battery	W. A. Crowdus	445,425	Jan. 27	2295	596	54	475
Galvanic battery	C. J. Hirlimann	448,798	Mar. 24	2498	625	54	1619
Galvanic battery	M. W. Robinson	447,016	Feb. 24	2466	613	54	1018
Galvanic battery	H. P. Stoecker	449,299	Mar. 31	3277	830	54	1775
Galvanized waste. Utilizing	R. J. Brice	448,600	Mar. 17	2172	.....	54	1549
Game	M. A. Greene	445,016	Jan. 20	1673	430	54	343
Game	R. R. Scott and J. R. Hillman	449,140	Mar. 31	3024	765	54	1729
Game	C. W. Stebbins	446,481	Feb. 17	1612	395	54	845
Game apparatus	S. W. Clarke	448,878	Mar. 24	2625	659	54	1643
Game apparatus	F. Cole	446,552	Feb. 17	1724	422	54	866
Game apparatus	U. Greminger	445,260	Jan. 27	2067	533	54	427
Game apparatus	W. F. Jones	447,247	Feb. 24	2881	715	54	1097
Game-board	A. G. Brown and J. P. Crosby	446,320	Feb. 10	1351	329; 330	54	780
Game-board	J. W. Sutton	447,088	Feb. 24	2587	642	54	1041
Game-board	H. Wachter	447,851	Mar. 10	950	238	54	1305
Game-board	J. Wood	446,942	Feb. 24	2349	584	54	996
Game-counter	A. Vilaseca y Velasco	447,454	Mar. 3	303	76	54	1175
Game-counter	C. Zimmerling	446,701	Feb. 17	1944	485	54	909
Game-puzzle	C. P. Harris	444,352	Jan. 6	576	147	54	114
Games of skill. Device for playing	E. H. Richards	448,574	Mar. 17	2121	531	54	1540
Garbage. Apparatus for removing	P. J. Kearney	449,421	Mar. 31	3514	885	54	1818
Garbage-furnace	A. Brownlee	448,115	Mar. 10	1364	349	54	1396
Garment-clasp	J. H. Murch	447,736	Mar. 3	736	184	54	1257
Garment-fastening	J. Leontin	447,076	Feb. 24	2573	638	54	1038
Garment-protector	O. F. Ostergren and A. K. Schaap	446,819	Feb. 17	2125	528	54	947
Garment-stand	W. Vogler	445,208	Jan. 27	1981	511	54	411
Garment-stay	C. W. Bell	444,809	Jan. 20	1299	337	54	271
Garment-supporter	S. B. Ferris	449,113	Mar. 31	2984	753	54	1722
Garment-supporter	A. A. and G. L. Gillett	448,223	Mar. 17	1555	396	54	1482
Garment-supporter	S. C. Scantlebury	446,079	Feb. 10	928	227	54	700
Gas and air mixer	E. Meredith	447,784	Mar. 10	830	206; 207	54	1282
Gas and air mixing apparatus	G. R. Cottrell	447,299	Mar. 3	23	7	54	1123
Gas. Apparatus for manufacturing	J. L. Stewart	447,916	Mar. 10	1062	266	54	1326
Gas. Apparatus for the manufacture of	P. E. De Mill, Jr.	447,506	Mar. 3	397	97	54	1192
Gas. Apparatus for the manufacture of	L. Stevens	444,091	Jan. 6	174	41	54	37
Gas. Apparatus for the manufacture of water	T. S. C. Lowe	445,450	Jan. 27	2231	606	54	481
Gas. Apparatus for the reduction of petroleum into	F. Dürr	445,982	Feb. 10	760	186	54	671
Gas-burner. Incandescent	J. C. O. Chemin	445,725	Feb. 3	344	90	54	580
Gas-burner. Natural	F. M. Reed	444,850	Jan. 20	1367	354	54	284
Gas-burner. Self-closing	W. Ten Eyck	445,612	Feb. 3	147	38	54	540
Gas-burner. Self-closing	W. Ten Eyck	449,338	Mar. 31	3363	848	54	1789
Gas-burners. Device for cleaning	J. Reilley	447,905	Mar. 10	1041	261	54	1322
Gas. Device for separating liquids from natural	C. L. Stock	447,848	Mar. 10	947	237	54	1304
Gas-engine	B. H. Coffey	446,851	Feb. 24	2187	544; 545	54	968
Gas-engine	M. A. Graham	445,110	Jan. 20	1818	471	54	370
Gas-engine	O. Kosztovits	448,924	Mar. 24	2688	677; 678	54	1656
Gas-engine	E. Narjot	448,989	Mar. 24	2783	704	54	1674
Gas-engine	B. C. Vanduzen	448,597	Mar. 17	2161	540; 541	54	1548
Gas-engine	G. J. Weber	449,507	Mar. 31	3643	917	54	1843
Gas-engine and igniter therefor	G. J. Weber	444,031	Jan. 6	78	20, 21	54	19
Gas-fired boiler	E. C. Jones	445,999	Feb. 10	805	195	54	677
Gas-furnace	J. F. Gilpin and J. Elliot	448,955	Mar. 24	2736	690	54	1665
Gas-lighter. Electric	H. H. Cutler	445,728	Feb. 3	349	91	54	581
Gas-lighter. Electric	T. W. Lane	444,706	Jan. 13	1127	291	54	931
Gas-lighting apparatus. Electric	H. H. Cutler	445,727	Feb. 3	346	91	54	581

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Gas-meter	A. Ehebald	448,643	Mar. 24	2251	565	54	1572
Gas-meter	J. B. Knickerbocker	447,883	Mar. 10	1000	252, 253	54	1314
Gas-meter	R. Mitchell and C. Lawson	447,693	Mar. 3	669	167	54	1245
Gas-meter	J. Stidham and J. B. Wallace	445,757	Feb. 3	398	101	54	991
Gas-mixing machine	J. Tayler	446,086	Feb. 10	943	231	54	703
Gas or gasoline engine	B. C. Vanduzen	448,386	Mar. 17	1836	462, 463	54	1486
Gas or hydrocarbon-vapor burner	G. Roberts	446,016	Feb. 10	823	199	54	681
Gas-pipe screen	H. S. Hallwood	446,218	Feb. 10	1169	286	54	743
Gas-producers. Poke-pole for	G. W. Goetz	444,631	Jan. 13	1012	263	54	309
Gas-retort	A. M. Sutherland	449,142	Mar. 31	3027	765	54	1729
Gas-retort-discharging apparatus	G. A. Bronder	447,022	Feb. 24	2480	617	54	1020
Gas-scrubber. Rotary	W. Mooney	444,300	Jan. 6	501	130, 131	54	100
Gas-supply shut-off and regulator. Automatic	W. C. Rossney	449,178	Mar. 31	3083	777	54	1740
Gasoline-burner. Automatic	N. Newman	445,572	Feb. 3	81	19	54	527
Gate: *See* Bridge-gate. Car-platform gate. Electric gate. End-gate. Farm-gate. Flood-gate. Folding gate. Railway-gate. Railway-crossing gate. Railway-track gate. Registering-gate. Sliding gate. Swinging gate.							
Gate	C. A. Anderson	447,441	Mar. 3	279	70	54	1170
Gate	G. H. Aylworth	444,325	Jan. 6	538	140	54	108
Gate	J. E. Buck	447,659	Mar. 3	619	154	54	1235
Gate	F. C. Cash	446,325	Feb. 10	1360	331	54	781
Gate	W. Cooper	445,343	Jan. 27	2179	564	54	451
Gate	C. H. Fidler	447,042	Feb. 24	2519	695	54	1027
Gate	J. W. Fisher	445,052	Jan. 20	1731	446	54	354
Gate	D. D. Mayfield	444,158	Jan. 6	295	71	54	60
Gate	J. F. A. Millerick	447,013	Feb. 24	2458	612, 613	54	1016
Gate	G. W. Smith	449,091	Mar. 24	2942	745, 746	54	1705
Gate	W. H. Smith	447,374	Mar. 3	159	44	54	1148
Gate	W. H. Swogger	447,122	Feb. 24	2640	655	54	1052
Gate	R. S. Taylor	446,302	Feb. 10	1329	323	54	775
Gate	W. R. White	446,605	Feb. 17	1790	443	54	880
Gate	F. Williams	449,456	Mar. 31	3570	899, 900	54	1829
Gate	P. Wood	448,402	Mar. 17	1863	469	54	1491
Gate-brace	S. P. Hodgen	443,996	Jan. 6	18	4	54	7
Gear. Removable toothed	R. D. Nuttall	449,493	Mar. 31	3625	912	54	1840
Gearing	J. Daily	447,447	Mar. 3	288	73	54	1172
Gearing. Frictional reversing	F. H. Richards	446,927	Feb. 24	2328	578	54	992
Gearing mechanism. Back	B. G. Luther	446,233	Feb. 10	1190	291, 292	54	747
Generator: *See* Electric-current generator. Steam and hot-water generator. Steam-generator.							
Gigging and shearing machine. Combined	H. S. Greene	449,620	Mar. 31	3839	961	54	1879
Girth-fastener	W. T. McFarlane	449,492	Mar. 31	3624	912	54	1840
Glass-beveling machine	P. Wiederer	446,196	Feb. 10	1131	277	54	735
Glass-blowing tube	A. Pitman	444,160	Jan. 6	298	71	54	61
Glass. Compound for frosting	W. H. Akester	445,528	Feb. 3	1	.....	54	511
Glass. Decorating	G. W. Martin	444,797	Jan. 13	1275	330	54	257
Glass. Manufacturing	R. S. Pease	444,560	Jan. 13	916	239	54	190
Glass-melting furnace	H. Schulze-Berge	447,795	Mar. 10	864	215	54	1288
Glass sealing apparatus. Plate	J. M. Howard	449,043	Mar. 24	2866	728, 729	54	1691
Glassware	X. Zgraggen	446,590	Feb. 17	1774	438	54	877
Glassware. Apparatus for grinding or polishing	H. Schulze-Berge	447,700	Mar. 3	676	169	54	1246
Glassware-polishing machine	H. C. Wood	445,708	Feb. 3	318	84	54	575
Glazier's window-lead. Machine for cutting	W. C. Minns	446,878	Feb. 24	2237	556	54	977
Globe	J. Lynam	444,796	Jan. 13	1273	330	54	256
Globe-holder	H. R. Burk	448,119	Mar. 10	1369	350	54	1387
Globe. Time	E. R. E. Cowell	445,393	Jan. 27	2245	583	54	464
Glove. Catcher's	E. H. Decker	447,233	Feb. 24	2862	710	54	1093
Glove-fastening	F. Pringle	445,820	Feb. 3	516	124	54	612
Glove-fastening	M. D. Shipman	447,369	Mar. 3	152	41	54	1146
Glue-applying machine	M. D. Knowlton and C. F. Pease	447,012	Feb. 24	2453	611, 612	54	1016
Gluten from slaughter-house washings. Apparatus for separating	R. Giebermann	445,054	Jan. 20	1735	447	54	355
Gluten from slaughter-house washings. Separating	R. Giebermann	445,055	Jan. 20	1736	447	54	355
Gold and silver bearing ores. Machine for amalgamating	J. T. Penny and W. H. Richardson	445,300	Jan. 27	2110	546, 547	54	436
Gold or other precious metal. Settling and amalgamating pan for machinery for extracting	W. A. Merralls	449,592	Mar. 31	3709	931, 932	54	1855
Gong	C. Callahan	448,008	Mar. 10	1217	309	54	1356
Gong. Alarm	N. J. Busby	447,537	Mar. 3	446	110	54	1201
Gong. Alarm	N. J. Busby	447,538	Mar. 3	448	110	54	1202
Gong. Alarm	L. A. Syverud	449,011	Mar. 24	2820	714	54	1681
Gopher-trap	D. S. Henrie	445,178	Jan. 27	1937	500	54	402
Governor	E. Thompson	446,957	Feb. 24	2368	589	54	1000
Governor. Engine	G. Kimball and H. S. Teal	449,222	Mar. 31	3148	794	54	1752
Governor. Fluid-pressure	F. W. Lanchester	445,021	Jan. 20	1678	431	54	344
Governor. Gas-engine	J. P. Stabler	445,348	Jan. 27	2184	566	54	452
Governor. Pressure	E. S. Bowen	447,039	Feb. 24	2514	624	54	1027
Governor. Steam-engine	J. E. Vanhorn	446,040	Feb. 10	869	211	54	689
Grain-apron	G. A. Lowry	446,784	Feb. 17	2064	514	54	924
Grain-binder	T. Lenox	445,586	Feb. 3	108	26, 27	54	532
Grain-binder. Automatic	A. Stark	445,788	Feb. 3	449	112	54	600
Grain-binder cord-knotter	S. Stewart	449,599	Mar. 31	3786	950	54	1869
Grain-cleaner	F. F. Landis	447,834	Mar. 10	918	230, 231	54	1299
Grain-cleaning device	W. W. Huntley	447,072	Feb. 24	2567	637	54	1037
Grain-cleaning machines, roller-mills, &c. Feed device for	J. B. Bartholomew	446,566	Feb. 17	1743	429	54	871
Grain-conveyer	J. V. Curlin	448,132	Mar. 10	1393	355, 356	54	1392
Grain-drier	C. M. Clinton and G. W. Kirkpatrick	444,290	Jan. 6	490	128	54	98
Grain-drill	W. F. Hoyt	446,230	Feb. 10	1186	290, 291	54	746
Grain-drill	G. W. Kirkpatrick and E. J. Corser	446,636	Feb. 17	1841	456	54	890
Grain-drill	H. J. Phelps	448,991	Mar. 24	2785	705	54	1675
Grain-drills. Hopper and shoe for	W. F. Hoyt	448,861	Mar. 24	2666	654	54	1639
Grain-meter	J. B. Michener and T. L. Varns	444,709	Jan. 13	1133	292	54	242
Grain-meter. Automatic	W. A. Johnson	448,238	Mar. 17	1576	402, 403	54	1436
Grain-register	J. H. Peachey	446,788	Feb. 17	2070	516	54	935
Grain-scouring machine	W. Morgan	444,763	Jan. 13	1233	320	54	240
Grain-scouring machine	D. E. Sibley	447,370	Mar. 3	153	42	54	1147
Grain-separating apparatus	L. A. Simons	446,794	Feb. 17	2086	520	54	939
Grain-separator	F. F. Landis	447,433	Mar. 3	263	66, 67	54	1167
Grain-separator	D. Scott	447,845	Mar. 10	940	236	54	1303
Grain-silo. Floating	L. Smith	446,027	Feb. 10	845	204	54	684
Grain-spout	J. Simpson	445,645	Feb. 3	204	54	54	552
Grain transfer, storage, and preservation station. Pneumatic	L. Smith	446,026	Feb. 10	839	202, 203, 204	54	684
Graining roller	W. H. Landon	449,079	Mar. 24	2920	741	54	1701
Grape trimming and packing table	J. H. Edington	447,041	Feb. 24	2518	625	54	1027
Grate	J. Beisheim	449,020	Mar. 24	2846	724	54	1687
Grate	L. W. Clayton	448,634	Mar. 24	2238	562	54	1569
Grate	R. H. Smith	445,575	Feb. 3	87	21	54	528
Grate	E. D. Van Stone	449,641	Mar. 31	3872	969	54	1896
Grate attachment	O. C. Holden	446,681	Feb. 17	1917	477	54	903
Grate. Boiler or stove	J. H. Waterman	445,416	Jan. 27	2281	592	54	472
Grate-support	C. L. Beers	445,873	Feb. 3	501	145	54	628
Grater. Culinary	B. R. Cook	448,794	Mar. 24	2494	624	54	1619
Grease-cup	E. H. Benners	448,451	Mar. 17	1969	495	54	1511
Grease. Process of and apparatus for purifying	G. Race	446,117	Feb. 10	987	243	54	711
Grinder. Cutter or reamer	E. W. Bradley	444,875	Jan. 20	1444	375	54	298
Grinding and amalgamating pan	W. Roberts	448,731	Mar. 24	2396	599	54	1600
Grinding and polishing machine	B. E. Sperry	446,170	Feb. 10	1094	268, 269	54	729
Grinding, drying, and incorporating machine	P. C. Close	447,808	Mar. 10	880	219	54	1291
Grinding-machine	A. B. Landis	444,121	Jan. 6	226	55	54	46
Grinding-machine	A. B. Landis	446,148	Feb. 10	1046	257	54	721
Grinding machine. Oval	R. Friedel	445,169	Jan. 27	1920	495, 496	54	399
Grinding machine. Top-roll	J. F. Nichols	448,300	Mar. 17	1700	431	54	1460
Grinding machines. Feed mechanism for knife	C. E. Hudson	448,616	Mar. 17	2198	550	54	1554
Grinding-mill	J. and A. J. Jones	446,219	Feb. 10	1171	287	54	743
Grinding-mill	A. Malsch	445,227	Jan. 27	2013	518	54	417
Grinding-mill	J. M. Nichols	449,229	Mar. 31	3157	796	54	1754
Grinding-mill	V. L. Rice	445,821	Feb. 3	518	124	54	612
Grinding-mill	J. C. Woodcock	447,596	Mar. 3	530	130	54	1217
Grinding-mill. Roller	W. D. Gray	444,348	Jan. 6	571	146	54	113
Grinding-mill. Roller	W. D. Gray	444,349	Jan. 6	573	146	54	114
Grinding-mill. Roller	W. D. Gray	444,350	Jan. 6	574	146	54	114
Grinding-mill. Roller	C. G. W. Kapler	447,951	Mar. 10	1115	280, 281	54	1336
Grinding the edges of band-saw blanks and other metallic strips. Machine for	J. Wallwork	448,099	Mar. 10	1345	344	54	1382
Grindstone	J. B. Kibler	446,920	Feb. 24	2317	576	54	991
Gripper-finger	E. L. Megill	448,753	Mar. 24	2435	609	54	1607
Grubbing-machine	C. H. Mohland and L. Kerber	444,843	Jan. 20	1358	352	54	282
Guard: *See* Car-guard. Car safety guard. Cat-guard. Cattle-guard. Elevator-guard. Fermenting-vat guard. Fork-guard. Railway cattle-guard. Railway stock-guard. Railway trolley-guard. Razor-guard. Sewing-machine thread-guard.							
Guitar arm-rest	J. Arencibias	446,806	Feb. 17	2106	524	54	943
Guitars. Capodastro for	A. L. Gassett	449,216	Mar. 31	3140	792	54	1750
Gun. Automatic	H. S. Maxim	447,524	Mar. 3	425	104, 105	54	1198
Gun. Automatic	H. S. Maxim	447,525	Mar. 3	429	106	54	1198
Gun. Automatic	H. S. Maxim	447,836	Mar. 10	923	231, 232	54	1300
Gun. Automatic machine	H. S. Maxim	447,837	Mar. 10	927	232, 233	54	1300
Gun-barrel-drilling machine	C. W. Sponsel	447,713	Mar. 3	695	174, 175	54	1249
Gun. Breech-loading	P. Blachon and E. Mimard	444,574	Jan. 13	941	244	54	195
Gun. Breech-loading	J. Warnant-Creon	445,880	Feb. 3	603	148, 149	54	630
Gun carriages. Recoil-check for disappearing	J. B. G. A. Canet	447,327	Feb. 24	2847	706, 707	54	1090
Gun. Machine	R. H. Armit	446,807	Feb. 17	2106	524	54	943

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gun. Quick-firing	E. von Skoda	448,841	Mar. 24	2560	642, 643, 644	54	1631
Gun-sight	W. Lyman	447,886	Mar. 10	1066	254	54	1315
Gun. Spring air	H. H. Passago	446,711	Feb. 17	1959	488	54	912
Gun with pneumatically-operated magazines. Magazine	R. Dinsmore	444,666	Jan. 13	1066	277, 278	54	218
Guns. Cartridge-cramp for magazine	K. Kruka	449,287	Mar. 31	3256	825	54	1772
Guns. Cartridge-feed case for magazine	K. R. Milovanovitch-Koka	447,577	Mar. 3	502	123	54	1211
Guns. Hand-hold for	F. Nye, R. F. Denham, and O. Knudson	445,192	Jan. 27	1958	506	54	406
Guns. Safety device for breech-loading	F. A. Hollenbeck	446,166	Feb. 10	1088	267	54	728
Guns. Safety-lock for breech-bolts of	P. Manser	449,352	Mar. 31	3382	852	54	1792
Gymnastic apparatus	C. H. Dinkelman	447,811	Mar. 10	884	220	54	1292
Halter	L. E. Shippy	444,993	Jan. 20	1642	421	54	337
Hame	W. S. Carr	445,584	Feb. 3	104	25	54	531
Hame	R. E. Krumm	447,466	Mar. 3	337	83	54	1181
Hame-fastener	C. H. Smith	447,587	Mar. 3	520	127	54	1215
Hame-hook	W. J. Dankworth	444,664	Jan. 13	1065	277	54	218
Hammer. Drop	A. Wilzin	447,093	Feb. 24	2593	643	54	1043
Hammer. Steam	J. A. Henckels	447,824	Mar. 10	903	225	54	1296
Hammock	J. J. Dicks	445,049	Jan. 20	1728	445	54	353
Hammock-chair	R. Billeaux	445,492	Jan. 27	2389	621	54	492
Hammock-holder	J. I. McCarthy	448,584	Mar. 17	2134	535	54	1543
Hand-drill	J. F. Steward	448,689	Mar. 24	2325	583	54	1587
Hand or foot warmer	J. T. Ellis	444,395	Jan. 6	646	168	54	127
Handle: *See* Brush-handle. Chisel-handle. Coffin-handle. File-handle. Lock and latch handle. Tool-handle. Valve-handle. Velocipede-handle.	L. M. Devore	448,477	Mar. 17	1981	497	54	1513
Hanger: *See* Clothes-hanger. Door-hanger. Lamp-hanger. Picture-hanger. Picture or mirror frame hanger. Pipe-hanger. Tobacco-hanger. Trolley-wire hanger. Type-bar hanger.	B. B. Bower	448,292	Mar. 17	1688	427	54	1458
Harness	G. O. Brewer	449,201	Mar. 31	3120	787	54	1747
Harness	N. H. Fetherman	448,832	Mar. 24	2547	639	54	1628
Harness	J. E. Foster	445,428	Jan. 27	2302	597	54	476
Harness	A. Russ	445,840	Feb. 3	543	132	54	617
Harness	D. B. Smith	444,401	Jan. 6	655	169, 170	54	129
Harness attachment	G. A. Harris	448,763	Mar. 24	2449	612	54	1610
Harness. Device for fastening pad-screws in	E. E. Reed	444,711	Jan. 13	1135	293	54	233
Harness. Horse-training	J. H. Whitaker	444,032	Jan. 6	81	21	54	19
Harness-loop press	A. C. Woolman	446,804	Feb. 17	2104	523	54	943
Harness. Martingale attachment for	S. E. Mathews	444,648	Jan. 13	1041	270	54	214
Harness-pad	F. M. Boring	449,198	Mar. 31	3116	786	54	1746
Harness-rosette	E. F. Pflueger	444,370	Jan. 6	607	156	54	120
Harness-tree. Adjustable	W. O. Miller	444,762	Jan. 13	1232	320	54	249
Harrow	J. W. Day	448,506	Mar. 17	2023	506	54	1521
Harrow	A. C. Downey and A. H. Green	446,251	Feb. 10	1243	304	54	758
Harrow	G. W. French and W. P. Bettendorf	445,444	Jan. 27	2319	602	54	479
Harrow	G. H. Mackey	448,446	Mar. 17	1936	488	54	1505
Harrow	J. Macphail	445,587	Feb. 3	110	27	54	532
Harrow	J. H. Moore	447,472	Mar. 3	348	86	54	1183
Harrow	M. Sattley	447,260	Feb. 24	2899	720	54	1101
Harrow	S. Schreckengost	449,592	Mar. 31	3774	947	54	1867
Harrow	D. B. Smith	446,820	Feb. 17	2125	528	54	947
Harrow	D. B. Smith	449,649	Mar. 31	3882	971	54	1887
Harrow	M. J. Todd	445,842	Feb. 3	546	133	54	618
Harrow	M. J. Todd	446,105	Feb. 10	968	238	54	707
Harrow and cultivator	R. Lyons	446,624	Feb. 17	1822	450	54	885
Harrow and pulverizer. Sulky	C. D. Roberts	446,408	Feb. 10	1495	368	54	808
Harrow and roller. Combined	E. T. Coombs	447,763	Mar. 10	793	197	54	1275
Harrow and sod-cutter. Combined	J. B. Okey	445,507	Jan. 27	2414	630	54	496
Harrow. Disk	G. M. Clark	444,662	Jan. 13	1058	275, 276	54	217
Harrow. Disk	J. F. Packer	449,132	Mar. 31	3014	762	54	1727
Harrow. Disk	C. S. Rnef	445,787	Feb. 3	447	112	54	599
Harrow. Disk	G. Wilkening	448,396	Mar. 17	1856	467	54	1489
Harrow leveling attachment	L. D. Corser	448,502	Mar. 17	2015	504	54	1519
Harrow, seeder, and mower. Combined	H. V. Conway	445,543	Feb. 3	22	6	54	515
Harrow spring-tooth	W. M. Brinkerhoff	447,936	Mar. 10	1094	274	54	1332
Harrow. Spring-tooth	H. V. Miller	444,248	Jan. 6	431	108	54	85
Harrow. Spring-tooth	F. Van Patten	445,324	Jan. 27	2149	556	54	445
Harvester	J. F. Steward	446,541	Feb. 17	1705	418	54	863
Harvester and husker. Corn	J. P. Dunn	448,417	Mar. 17	1888	474, 475	54	1496
Harvester and weed-cutter. Bean	W. Carver	447,602	Mar. 3	540	133, 134	54	1219
Harvester. Corn	D. W. Blaine	444,723	Jan. 13	1151	297, 298	54	235
Harvester. Corn	S. Brooke	447,296	Mar. 3	18	6	54	1122
Harvester. Corn	A. W. Butt	445,367	Jan. 27	2210	573	54	457
Harvester. Corn	W. W. Hall	444,157	Jan. 6	294	71	54	60
Harvester. Corn	S. C. Kenaga	447,465	Mar. 3	324	81, 82, 83	54	1179
Harvester. Corn	J. Keys	449,652	Mar. 31	3886	972	54	1888

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Harvester. Corn	T. C. St. John	447,624	Mar. 3	577	142, 143	54	1226
Harvester. Corn	W. E. Treadwell and C. W. Black	448,697	Mar. 24	2337	586	54	1589
Harvester. Corn	P. S. Lundgren	448,058	Mar. 10	1291	330	54	1370
Harvester. Cornstalk	F. Van Dorn	444,801	Jan. 13	1281	331, 332	54	258
Harvester. Cotton	M. Wilson	448,567	Mar. 17	2111	529	54	1538
Harvester cutting apparatus	J. Baum	447,930	Mar. 10	1082	271	54	1330
Harvester pitman-connection	C. D. Towne	447,481	Mar. 3	358	89	54	1185
Harvester-reel	G. W. Haines	444,936	Jan. 20	1553	399	54	318
Harvester. Traveling	A. Rank, Sr	446,292	Feb. 10	1305	319, 320, 321	54	770
Harvesting-machine	C. Hancock	446,173	Feb. 10	1098	269	54	730
Hasp and staple	W. R. Morse	446,187	Feb. 10	1119	274	54	733
Hasp-lock	W. W. Pursell	447,698	Mar. 3	674	168	54	1246
Hasp-lock	A. Clark	447,664	Mar. 3	624	155	54	1236
Hasp-lock. Seal	G. F. Barnes	444,933	Jan. 20	1549	397	54	318
Hat and clothes rack. Folding	H. Lyons	447,751	Mar. 3	760	189	54	1202
Hat conformator and stretcher. Combined	C. Cooper	447,278	Feb. 24	2934	729	54	1108
Hat holder	F. M. Starr	446,396	Feb. 10	1464	360	54	803
Hat-making machines. Expansible cone for	F. P. Ferry	444,343	Jan. 6	563	145	54	112
Hat-packing ring	S. T. Newman and E. C. Oakley	447,787	Mar. 10	835	209	54	1283
Hat-pouncing machine	C. C. Hine	449,414	Mar. 31	3502	881	54	1817
Hatch-doors, &c. Fusible support for	J. J. McBride	447,196	Feb. 24	2793	690	54	1079
Hatchway. Elevator	D. B. Clem	449,361	Mar. 31	3405	856	54	1796
Hatchway-operating mechanism. Elevator	F. A. Sell and W. O'Connor	445,088	Jan. 20	1780	459	54	363
Haulage-machine. Gravity	M. Beck	448,006	Mar. 10	1211	308, 309	54	1355
Hay-loader	F. Donald	444,667	Jan. 13	1074	278	54	220
Hay-press	J. B. Foresman	445,986	Feb. 10	782	190, 191	54	675
Hay-press	J. M. Paronto	448,926	Mar. 24	2690	678	54	1656
Hay-rake	W. B. Sharp	448,145	Mar. 10	1411	361	54	1395
Hay-rake	A. L. Slager and G. E. Linn	446,157	Feb. 10	1092	261	54	725
Hay-rake	V. Cole and C. W. Neikirk	449,462	Mar. 31	3582	902	54	1851
Hay rake and loader	A. B. Livingston	449,483	Mar. 31	3614	910	54	1837
Hay rake and loader	D. C. Chaddock, C. E. Sutton, and A. C. McCullough	445,541	Feb. 3	19	5	54	514
Hay rake and loader. Combined	D. D. Funk and J. P. White	448,332	Mar. 17	1756	444	54	1471
Hay-rake. Horse	T. J. Thorp	446,698	Feb. 17	1940	484	54	908
Hay-rake. Horse	J. W. Collin and W. Shoemake	445,102	Jan. 27	1910	493	54	397
Hay shield and manger. Adjustable	W. Louden	444,546	Jan. 13	892	232	54	186
Hay-sling	J. H. Junkins	449,540	Mar. 31	3693	928	54	1852
Hay-stacker	M. Machin	447,250	Feb. 24	2886	716	54	1098
Hay-stacker	C. H. Bowman	446,728	Feb. 17	1987	496	54	918
Hay-tedder	G. Crews	444,423	Jan. 13	696	181	54	145
Head-covering	S. Tuch	446,762	Feb. 17	2039	508	54	929
Head-coverings. Note-plate for	H. Schneider	448,266	Mar. 17	1624	414	54	1445
Head-rest for chairs	I. D. Crispell	444,989	Jan. 20	1637	420	54	335
Heading-dressing machine	W. H. Carnayn	445,619	Feb. 3	158	42	54	542
Hearth-cabinet	S. G. Smith	444,076	Jan. 6	153	38	54	33
Hearth-furnace for treating zinc ores	W. West	445,124	Jan. 20	1837	476	54	374
Heat-regulating apparatus	G. L. Shorey	446,212	Feb. 10	1161	284, 285	54	741
Heat-regulating systems. Switch-board for	C. W. Brieder	445,970	Feb. 10	743	182	54	668
Heater: *See* Car-heater. Electric heater. Electrical heater. Feed-water heater. Fire-place heater. Hot-air, steam, and hot-water heater. Hot-water heater. Hot-water and steam heater. Milk-heater. Sad-iron heater. Sand and gravel heater. Water-heater. Wheat-heater.	J. K. Brown	445,010	Jan. 20	1667	428	54	342
Heater	T. Farmer, Jr	446,673	Feb. 17	1900	471	54	901
Heater	F. C. Peteler	446,008	Feb. 10	816	197	54	679
Heater	J. A. Skilton	445,762	Feb. 3	405	103	54	593
Heating and ventilating apparatus and system	J. A. Skilton	445,763	Feb. 3	409	703	54	593
Heating and ventilating apparatus and system	D. Andrews	445,486	Jan. 27	2382	619, 620	54	490
Heating and ventilating buildings	W. Benner	446,848	Feb. 24	2178	542	54	966
Heating and ventilating the walls of buildings	N. E. Austin	449,277	Mar. 31	3240	819, 820	54	1769
Heating apparatus	J. C. F. Atsatt. (Reissue)	11,139	Jan. 13	1293	335	54	261
Heating apparatus. Device for automatically regulating combustion in hot-water and hot-air	M. W. Dewey	448,879	Mar. 24	2626	660	54	1643
Heating apparatus. Electric	M. W. Dewey	449,404	Mar. 31	3479	876	54	1811
Heating apparatus. Electric	C. E. Carpenter	447,023	Feb. 24	2482	618	54	1021
Heating apparatus. Electro-	B. Cavanagh	448,932	Mar. 24	2698	680	54	1658
Heating apparatus. Steam	C. Edgerton	445,396	Jan. 27	2251	584	54	465
Heating apparatus. Steam	R. W. King	447,330	Mar. 3	77	21	54	1132
Heating apparatus. Steam	A. Seigle-Goujon	448,460	Mar. 17	1951	491	54	1508
Heating by gas or combustible vapor. Device for	H. Ingersoll	447,115	Feb. 24	2631	653	54	1050
Heating device	H. R. Butterfield	447,127	Feb. 24	2645	656	54	1053
Heating devices. Vacuum-core for electrical	I. L. Landis	448,527	Mar. 17	2051	513	54	1527
Hedge	W. F. Sampson	444,021	Jan. 6	56	16	54	14
Heel-burnishing machine	W. F. Sampson	444,388	Jan. 6	631	164, 165	54	124
Heel-burnishing machine	J. A. Hall	447,317	Mar. 3	56	15	54	1128
Heel-machine	W. J. Fahuley and E. H. Taylor	446,334	Feb. 10	1375	335, 336	54	785
Heel-making machine							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Heel-nailing machine	J. H. Pope	446,885	Feb. 24	2246	559, 560	54	978
Heel-seat-forming and edge-setting machine	M. L. Wright	446,399	Feb. 10	1469	361	54	804
Heel-stiffener machine	L. Coté	447,944	Mar. 10	1103	277	54	1334
Heel-trimming machine	C. E. Phillips	445,233	Jan. 27	2018	520	54	448
Heel-trimming machine	H. W. Winter	447,744	Mar. 3	750	188	54	1260
Heel-trimming machine	H. W. Winter	448,310	Mar. 17	1714	434, 435	54	1463
Heel-trimming tool	O. L. Noble	445,229	Jan. 27	2015	519	54	417
Heeling-machine	C. W. Glidden and A. D. Elliott	446,383	Feb. 10	1439	354, 355	54	798
Hemp-brake	A. Angell	448,493	Mar. 17	2006	502	54	1518
Hides. Bating	N. Wilson	444,771	Jan. 13	1243	.....	54	251
Hinge	G. E. Krause and A. Kramer	444,445	Jan. 13	723	189	54	151
Hinge	G. W. Niedringhaus and C. Geiss	449,628	Mar. 31	3853	965	54	1882
Hinge	G. R. Oliver	448,301	Mar. 17	1701	431	54	1460
Hinge	L. Porter	447,971	Mar. 10	1158	294	54	1343
Hinge. Adjustable	W. McCarthy	444,155	Jan. 13	741	193	54	155
Hinge for tables, desks, &c. Flush-	J. Batcheller	445,532	Feb. 3	5	1	54	511
Hinge. Gate	F. Ruge	448,456	Mar. 17	1947	490	54	1507
Hinge. Gate	J. J. Wright	445,387	Jan. 27	2236	580	54	462
Hinge. Lock	C. C. Ware	447,986	Mar. 10	1182	299	54	1348
Hinge. Spring	G. W. Amos	446,617	Feb. 17	1809	447, 448	54	883
Hinge. Spring	F. N. Kelsey	449,366	Mar. 31	3418	850	54	1799
Hinge. Spring	M. Redlinger	447,844	Mar. 10	939	235	54	1303
Hinge. Spring	G. W. Warner	448,390	Mar. 17	1849	465	54	1488
Hitching-box	I. Brooke	447,937	Mar. 10	1095	275	54	1332
Hitching-post	A. E. Fehleisen	444,177	Jan. 6	326	79, 80	54	66
Hoe	L. Denny	444,393	Jan. 6	644	167	54	126
Hog-trap	N. C. Bader	446,215	Feb. 10	1165	286	54	742
Hog trap and crate. Combined	J. W. Wade	444,117	Jan. 6	219	53	54	45
Hoist	F. E. Young	447,483	Mar. 3	361	90	54	1186
Hoist and conveying machinery. Combined	G. H. Hulett	448,297	Mar. 17	1695	428, 429	54	1459
Hoisting and conveying apparatus	T. S. Miller	447,892	Mar. 10	1015	256	54	1317
Hoisting and conveying apparatus	C. W. Nason	448,823	Mar. 24	2531	634, 635	54	1626
Hoisting apparatus	R. P. Henry	443,993	Jan. 6	7	2, 3	54	4
Hoisting apparatus. Reversing and brake mechanism for	C. A. Case	448,909	Mar. 24	2668	670	54	1651
Hoisting machinery	B. W. Grist	444,592	Jan. 13	962	249, 250	54	199
Holdback for vehicle-poles	H. W. Roberts	444,305	Jan. 6	508	132	54	101
Holder: *See* Bag-holder. Book-holder. Broom-holder. Candle-holder. Card-holder. Checkrein-holder. Cigar and cigarette holder. Clapboard-holder. Clothes-line holder. Coat-holder. Coin-holder. Collar and tie holder. Commutator-brush holder. Copy-holder. Cow tail holder. Cuff-holder. Curtain-holder. Cuttle-fish holder. Flower-holder. Globe-holder. Hammock-holder. Hat-holder. Horse-mane holder. Ink or color holder. Jar-holder. Lead or crayon holder. Leggin-holder. Line or rope holder. Map holder. Meat-holder. Mucilage-holder. Music-book holder. Newspaper-holder. Nipple-holder. Opera-glass holder. Order-holder. Paper-holder. Pen-holder. Pencil holder. Pencil and crayon holder. Photographic-plate holder. Photographic roll-holder. Pillow-sham holder. Plow-bolt holder. Rein-holder. Sash-holder. Sewing-machine attachment-holder. Shade or globe holder. Soap-holder. Soap-powder holder. Spool-holder. Stereotype-plate holder. Stub-holder. Ticket-holder. Tidy-holder. Tool-holder. Trolley-wire holder. Twine-holder. Velocipede brake-holder.								
Holder	W. E. Blodgett	446,545	Feb. 17	1710	419	54	864
Hominy-flakes or corn-flakes. Means for manufacturing	J. H. Little	446,759	Feb. 17	2036	507	54	928
Hoof-expander	G. T. Chapman	446,898	Feb. 17	2139	531	54	950
Hoof-expander	M. Heagerty	445,778	Feb. 3	439	109	54	598
Hoof-expander and frog-developer. Horse	D. Roberge, Jr	446,471	Feb. 17	1506	392	54	842
Hoof-pad	J. T. Duck	445,050	Jan. 20	1729	445	54	354
Hoof-pad	J. Kress	449,368	Mar. 31	3420	860	54	1799
Hook: *See* Check-hook. Checkrein-hook. Coat and hat hook. Fish-hook. Hame-hook. Key-hook. Lacing-hook. Rope-hook. Snap-hook. Wardrobe-hook. Whiffletree-hook.							
Hook	R. and J. Ingal	446,946	Feb. 24	2353	585	54	997
Hook	J. Killinger	445,895	Feb. 3	624	153	54	634

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Hook for wearing-apparel, window-curtains, &c	H. Hutchinson and F. Madgin	445,893	Feb. 3	620	152	54	634
Hoop for barrels, &c. Corrugated	G. Souther	449,597	Mar. 31	3785	950	54	1869
Hooping wooden vessels	T. K. Parrish	448,990	Mar. 24	2784	704	54	1674
Horse-blanket	A. H. Kinder	448,151	Mar. 10	1420	363	54	1398
Horse-blanket	A. F. Ransom	447,793	Mar. 10	868	213	54	1287
Horse-blanket	H. W. Sisson	448,376	Mar. 17	1820	459	54	1483
Horse-blanket	O. N. Wardwell and C. A. White	446,126	Feb. 10	1007	248	54	716
Horse-checking device	J. M. Harden	446,866	Feb. 24	2213	550	54	973
Horse-detacher	R. P. Moran	445,025	Jan. 20	1683	433	54	345
Horse-detacher	F. J. Shephard	446,649	Feb. 17	1866	463	54	895
Horse-detacher	D. F. Sloan	448,272	Mar. 17	1041	418	54	1449
Horse-detacher	G. T. Chapman	445,463	Jan. 27	2346	610	54	484
Horse-heel expander	G. T. Chapman	449,573	Mar. 31	3736	939, 940	54	1860
Horse-hitching device	C. See	448,270	Mar. 17	1632	416	54	1447
Horse-mane holder	W. Ambruster	445,485	Jan. 27	2381	619	54	490
Horse-protector	S. P. Hodgen	449,532	Mar. 31	3677	924	54	1850
Horse-tracking device for vehicles	P. W. Cashion	445,540	Feb. 3	18	4, 5	54	514
Horse-training blind	B. A. Long	449,485	Mar. 31	3616	910	54	1838
Horses. Controlling gear for draft	R. S. Kinkead	446,067	Feb. 10	912	223	54	697
Horses. Device for controlling	E. J. Fraser	448,330	Mar. 17	1754	444	54	1471
Horses. Device for holding	J. J. Harris	444,387	Jan. 6	630	163	54	124
Horses. Independent check for	C. R. Taylor	444,677	Jan. 13	1090	282	54	223
Horses. Spreader for gaiting	J. R. Phelps	444,570	Jan. 13	936	243	54	193
Horseshoe	H. S. Briscoe	445,000	Jan. 20	1655	424	54	339
Horseshoe	W. Somerville, Sr	447,416	Mar. 3	236	60	54	1162
Horseshoe	T. L. Tipton	445,481	Jan. 27	2375	618	54	489
Horseshoe	C. H. Perkins	449,051	Mar. 24	2878	731, 732	54	1693
Horseshoe-bars. Manufacture of	C. H. Perkins	449,053	Mar. 24	2885	733	54	1694
Horseshoe-blank and blank-bar	C. H. Perkins	449,056	Mar. 24	2888	733	54	1695
Horseshoe-blank and blank-bar	C. H. Perkins	449,054	Mar. 24	2886	733	54	1694
Horseshoe-blank bar	C. H. Perkins	449,055	Mar. 24	2887	733	54	1694
Horseshoe-blank bar	C. H. Perkins	449,052	Mar. 24	2883	732	54	1693
Horseshoe-blank bars. Die-roll for making	W. J. Kent	446,066	Feb. 10	911	222	54	697
Horseshoe-blanks. Machine for forming	W. Eynon and W. Seaman	446,735	Feb. 17	2000	498	54	920
Horseshoe-blanks. Manufacture of creased bars for	W. C. Price	448,366	Mar. 17	1805	455	54	1480
Horseshoe-gage	W. Tory	448,736	Mar. 24	2409	602	54	1602
Horseshoe. Hoof-spreading	R. Barclay	448,312	Mar. 17	1718	435	54	1464
Horseshoes. Device for attaching	S. M. Martin	448,060	Mar. 10	1293	330	54	1371
Horseshoeing-rack	T. H. Saunders	448,458	Mar. 17	1940	491	54	1508
Hose. Carrier-clamp for fire-engine	H. Gerstung, Jr	447,818	Mar. 10	893	223	54	1294
Hose-clamp	J. C. Shull	444,676	Jan. 13	1089	282	54	223
Hose-coupling	G. W. Tinsley	448,693	Mar. 24	2330	584	54	1587
Hose-coupling	A. W. Jackson. (Reissue)	11,141	Jan. 27	2446	637	54	502
Hose-coupling. Air-brake	G. W. Tinsley	448,694	Mar. 24	2331	584	54	1588
Hose coupling for street-washers	J. C. Bayles	445,153	Jan. 27	1898	490	54	395
Hose. Flexible metallic	D. Roach	444,712	Jan. 13	1136	293	54	233
Hose-nozzle	W. T. Y. Schenck	446,745	Feb. 17	2012	502	54	923
Hose-reel	W. F. Bowers	449,031	Mar. 24	2852	726	54	1688
Hose-reel. Swinging	C. C. Shelby	448,768	Mar. 24	2456	614	54	1611
Hose-supporter	C. E. Hudson	445,834	Feb. 3	536	130	54	616
Hose to couplings. Tool for fastening	A. B. Cosby	447,634	Mar. 3	588	145	54	1228
Hose-washing machine	H. Robinson	445,904	Feb. 3	635	156	54	637
Hot-air engine	P. C. Hoyt	446,222	Feb. 10	1174	287, 288	54	744
Hot-air furnace	F. Kernan, Jr., and W. H. Landers	448,783	Mar. 24	2479	620	54	1616
Hot-air furnace	J. Northen	448,141	Mar. 10	1405	359	54	1395
Hot-air register	W. H. Denslow	446,163	Feb. 10	1083	266	54	727
Hot-air, steam, and hot-water heater. Combined	A. Smith	444,400	Jan. 6	654	169	54	129
Hot-bed covering	E. D. Van Stone	444,802	Jan. 13	1283	333, 334	54	259
Hot-water and steam heater	J. B. Watson	448,391	Mar. 17	1851	465	54	1488
Hot-water heater							
House: *See* Portable house.							
Hub	A. F. Shuler	444,105	Jan. 6	197	48	54	41
Hub. Anti-friction	C. J. Applequist	446,409	Feb. 10	1496	369	54	809
Hub-boring machine	A. Bonner	444,810	Jan. 20	1300	338	54	272
Hub-boring machine	T. Paquette and F. R. Child	449,494	Mar. 31	3626	912, 913	54	1840
Hub. Vehicle	J. T. Hart	446,347	Feb. 10	1393	340	54	788
Hub. Wheel	M. W. Ford, Jr	449,264	Mar. 31	3215	811	54	1765
Huller: *See* Clover-huller.							
Husking-pin	J. R. Satterthwaite	444,857	Jan. 20	1417	368	54	293
Hydrant	T. W. Brooks	444,329	Jan. 6	542	141	54	108
Hydrant	S. H. Orwig	448,727	Mar. 24	2392	599	54	1599
Hydrant	W. R. Thropp	448,096	Mar. 10	1340	343	54	1381
Hydrant. Irrigating	W. Lacy, Jr	449,161	Mar. 31	3051	771	54	1734
Hydrant-valve	J. E. Callahan	444,047	Jan. 6	101	26	54	23
Hydraulic elevator	T. W. Eaton	446,620	Feb. 17	1815	449	54	884
Hydraulic power. Apparatus for regulating	R. H. Thorpe	446,799	Feb. 17	2093	521, 522	54	940
Hydrocarbon-burner	B. G. Devoe	445,692	Feb. 3	291	77	54	570
Hydrocarbon-burner	B. H. Elwood	449,315	Mar. 31	3319	837	54	1781
Hydrocarbon-burner	J. McHale and V. C. Dillmann	448,064	Mar. 10	1298	332	54	1372
Hygroscope	A. Hagström	447,726	Mar. 3	720	180	54	1254
Ice and refrigerating machine	D. L. Holden	444,532	Jan. 13	869	226	54	181
Ice-cream freezer	T. H. Besse	449,434	Mar. 31	3533	890	54	1822
Ice-cream freezer	W. T. Bessonette and C. R. King	444,790	Jan. 13	1265	328	54	255
Ice-cream freezer	J. A. Buffer	447,747	Mar. 3	755	188	54	1261
Ice-cream freezer	F. B. Cochran	448,935	Mar. 24	2703	682	54	1659
Ice-cream-freezer	J. M. O'Neall	445,072	Jan. 20	1761	454	54	360
Ice-cream freezer	W. J. Shepard	448,375	Mar. 17	1819	458	54	1483

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ice cutter or plow	H. Bodenstein	449,516	Mar. 31	3661	919, 920	54	1847
Ice-elevator	C. Isbell and S. M. Gillett	445,525	Jan. 27	2441	636	54	500
Ice-harvesting machine	F. E. Kinsman	445,896	Feb. 3	625	153, 154	54	634
Ice-machine	E. J. Hardy	446,205	Feb. 10	1146	281	54	738
Ice making and refrigerating	T. Rose	446,076	Feb. 10	923	226	54	700
Ice-plane	C. Bew	447,655	Mar. 3	616	152	54	1234
Ice planing and corrugating apparatus	G. A. Birch	447,000	Feb. 24	2434	605, 606	54	1012
Ice-plow cutter	H. Bodenstein	449,517	Mar. 31	3662	920	54	1847
Ice-tongs	J. Brinkerhoff	446,171	Feb. 10	1097	269	54	729
Ice-water receptacle	H. Paddock	444,013	Jan. 6	47	13	54	12
Igniting device. Automatic electric	T. W. Lane	444,896	Jan. 20	1475	381	54	304
Incandescent burner and method of using the same	H. C. Campbell	447,757	Mar. 10	778	193	54	1272
Inclining table	C. L. Hartsfeld	444,634	Jan. 13	1015	264	54	209
Incubator	A. P. Hazard	446,133	Feb. 10	1017	251	54	717
Incubator	S. H. Petro	446,980	Feb. 24	2408	599	54	1008
Incubator	H. H. Unland	447,453	Mar. 3	302	76	54	1175
Incubators. Egg-tray for	C. and E. Von Culin	446,090	Feb. 10	947	232	54	703
Index	W. H. Sullivan	448,558	Mar. 17	2091	524	54	1535
Index and register. Combined	W. A. Judge	446,756	Feb. 17	2030	506	54	927
Indicator: *See* Barber's indicator. Car-indicator. Cash-indicator. Electric indicator. Electrical indicator. Electrical sporting-indicator. Elevator-indicator. Fire-indicator. Lamp-filling indicator. Mileage-book indicator. Piston-travel indicator. Post-office indicator. Potential indicator. Racing-indicator. Station-indicator. Station or street indicator. Street and station indicator. Visual indicator.	J. H. Carpenter	449,105	Mar. 31	2963	750	54	1718
Indicator	J. L. Dawson	445,271	Jan. 27	2082	537	54	430
Indicator-lock	J. M. Edgar	449,314	Mar. 31	3316	836	54	1781
Induction-coil	F. H. Brown	446,730	Feb. 17	1990	497	54	918
Ingots. Forming	W. R. Hinsdale	444,381	Jan. 6	622	161	54	123
Injector	L. Kaczander and R. Ruddy	445,642	Feb. 3	201	53	54	551
Injector	W. R. Park	448,488	Mar. 17	1999	500	54	1516
Injector. Automatic visible-feed	R. Goodbody	446,749	Feb. 17	2020	504	54	924
Injector. Steam-	J. Desmond	445,831	Feb. 3	532	129	54	615
Ink or color holder	A. V. Benoit	445,764	Feb. 3	414	103	54	594
Ink-well	J. G. Garretson	448,423	Mar. 17	1898	476	54	1498
Ink-well	W. A. Miller	444,365	Jan. 6	594	153	54	118
Ink-well for desks	W. M. Brown	444,876	Jan. 20	1445	376	54	299
Inking device	M. J. Dolphin	449,110	Mar. 31	2977	752	54	1721
Inking device	M. J. Dolphin	449,405	Mar. 31	3481	876	54	1812
Inking-pad	E. J. Brooks	447,714	Mar. 3	700	175	54	1250
Inkstand	C. E. Blue	446,591	Feb. 17	1775	438	54	877
Inkstand	E. S. Raff	445,200	Jan. 27	1970	509	54	409
Inkstand	E. S. Raff	445,201	Jan. 27	1971	509	54	409
Inkstand-receptacle and pad-holder. Combined	J. C. Hacker	448,027	Mar. 10	1246	317	54	1361
Inkstands. Fountain attachment for	J. V. Bergen	446,279	Feb. 10	1288	315	54	767
Insect-destroyer. Wheeled	A. D. Tyrrel	444,786	Jan. 13	1261	327	54	254
Insect-powder distributer	L. A. Preston	446,626	Feb. 17	1824	451	54	886
Insect-powder distributer	A. M. Waddill, Jr	445,482	Jan. 27	2376	618	54	489
Insect-trap	J. G. Roth	449,138	Mar. 31	3022	764	54	1728
Insole	J. C. French	445,312	Jan. 27	2134	551	54	442
Insulated electric conductor	J. D. Bishop	449,400	Mar. 31	3472	874	54	1810
Insulating-cleat. Electric-wire	J. S. Potter and D. J. Cartwright	444,317	Jan. 6	529	137	54	106
Insulating coupling-block and cut-out	S. Bergmann and C. J. Klein	446,180	Feb. 10	1109	271	54	732
Insulation of electric conductors	F. J. Nash	447,896	Mar. 10	1026	258	54	1319
Insulator	C. Elkins	444,879	Jan. 20	1448	376	54	299
Insulator	W. Vogler	445,008	Jan. 20	1665	427	54	341
Insulator	G. K. Wheeler	448,395	Mar. 17	1856	466	54	1489
Insulator	H. D. Winton	445,790	Feb. 3	456	113	54	601
Insulator. Electric	J. R. Branch	445,969	Feb. 10	742	182	54	667
Insulator. Electric	G. H. Graham and T. Gannane	448,956	Mar. 24	2738	690	54	1665
Insulator for electrical conductor for mines	F. A. Pocock	448,838	Mar. 24	2555	641	54	1630
Interchangeable die	H. B. Anable	444,682	Jan. 13	1099	284	54	225
Interlocking bolt	T. J. Bush	444,988	Jan. 20	1636	419	54	305
Iodine by electrolysis. Making	T. Parker and A. E. Robinson	448,541	Mar. 17	2068	.....	54	1531
Iodine with thymol. Compound of	J. Messinger and G. Vortmann	446,875	Feb. 24	2228	.....	54	976
Iron: *See* Car draw-iron. Sad-iron. Smoothing-iron. Soldering-iron.							
Iron bars or beams. Machine for curving	B. F. Haugh	446,132	Feb. 10	1015	250, 251	54	717
Iron globule. Chilled	B. C. and R. A. Tilghman	446,988	Feb. 24	2419	.....	54	1010
Iron globules. Manufacturing chilled	B. C. and R. A. Tilghman	446,986	Feb. 24	2416	.....	54	1009
Iron globules. Manufacturing chilled	B. C. and R. A. Tilghman	446,987	Feb. 24	2417	.....	54	1010
Ironing-board	S. C. Horn	446,776	Feb. 17	2056	512	54	932
Ironing-board	A. Sommerfeld	446,169	Feb. 10	1093	268	54	729
Ironing-board	E. E. Wood	447,745	Mar. 3	752	188	54	1260
Ironing-board attachment	L. Reynolds	449,172	Mar. 31	3067	775	54	1737
Ironing-machine	G. Binder	444,722	Jan. 13	1149	296, 297	54	234
Ironing-machine	J. G. Crawford	447,559	Mar. 3	476	117	54	1207
Ironing-machine	L. H. Watson	447,987	Mar. 10	1183	299, 300	54	1348
Ironing-machine	L. H. Watson	448,898	Mar. 24	2655	666	54	1648
Ironing-table	L. W. Miller	448,661	Mar. 24	2279	571	54	1577

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ironing-table	E. W. Nothstine	446,977	Feb. 24	2404	598	54	1007
Ironing-table	G. R. Richardson	446,928	Feb. 24	2430	578	54	993
Irrigating. Agricultural implement for	S. S. Black	445,510	Jan. 27	2418	631	54	496
Irrigating apparatus	D. W. Copeland	444,564	Jan. 13	925	241	54	191
Ivory. Manufacturing artificial	A. and S. de Pont	444,775	Jan. 13	1248	.....	54	252
Jack: *See* Lasting-jack. Lifting-jack. Painter's jack. Pegging-jack. Truck-jack. Wagon-jack.							
Jack	E. Prescott	444,849	Jan. 20	1365	353	54	283
Jacket for making garment-patterns	E. A. Berry	447,554	Mar. 3	469	115	54	1206
Jar: *See* Butter-jar. Preserve-jar.							
Jar-cover	R. G. Burlingame	445,921	Feb. 3	661	161	54	642
Jar holder. Fruit	H. A. Post	446,190	Feb. 10	1122	295	54	734
Jewel-case	H. Grobbrugge	445,002	Jan. 20	1656	424	54	310
Jewelry	L. J. Rochr	444,673	Jan. 13	1085	281	54	222
Joint: *See* Carriage-top joint. Pipe-joint. Rail-joint. Railway-joint. Railway-rail joint. Telescopic joint.							
Joint for mechanical elements	G. S. Heath	445,401	Jan. 27	2262	587	54	467
Jordan engine for grinding pulp	E. W. Barton	444,644	Jan. 13	1034	269	54	213
Journal-bearing	M. A. Andrews	448,624	Mar. 24	2226	558, 559	54	1567
Journal-bearing	M. A. Andrews	448,871	Mar. 24	2615	657	54	1641
Journal-bearing	B. Beaupre	448,196	Mar. 17	1509	385	54	1424
Journal-bearing	M. N. Lovell	447,492	Mar. 3	382	93	54	1189
Journal-box	W. S. Sharpneck	444,509	Jan. 13	838	217, 218	54	175
Journal-box. Automatically-compensating	K. A. Johansson	446,384	Feb. 10	1444	355	54	799
Journal-boxes. Dust and lubricant guard for	W. O. Dunbar	448,211	Mar. 17	1532	392	54	1428
Jug-tops. Manufacture of	H. Wright	447,502	Mar. 3	393	96	54	1192
Kettle ear and cover	M. and M. Griswold, Jr	447,821	Mar. 10	899	224	54	1295
Key: *See* Telegraph-key.							
Key	P. England	447,637	Mar. 3	593	146	54	1229
Key-board instrument. Transposing	A. Holmstrom	446,289	Feb. 10	1299	318	54	770
Key-board mortises. Bushing	A Newell	446,463	Feb. 17	1585	389	54	840
Key-board. Transposing	J. M. Gilbert	447,641	Mar. 3	599	147, 148	54	1231
Key-bottom support	A. H. Hastings	448,033	Mar. 10	1253	319	54	1363
Key-hook	R. Spierling	448,381	Mar. 17	1829	461	54	1485
Kiln: *See* Brick-kiln. Crucible-kiln.							
Kitchen-cabinet	H. C. Armstrong, D. E. Bigelow, and G. L. Osborn.	448,494	Mar. 17	2007	502	54	1518
Kitchen-cabinet	M. F. Brown and T. E. Smith	449,346	Mar. 31	3373	850	54	1791
Kitchen-cabinet	J. and T. V. Rankin	446,647	Feb. 17	1862	462	54	894
Kneading-board	M. M. Everhard	445,443	Jan. 27	2318	602	54	479
Kneading-machine	C. Sacco	445,204	Jan. 27	1974	510	54	410
Kneading-machine	E. Viollet	448,826	Mar. 24	2537	636, 637	54	1627
Kneeling-bench	C. Arnoldi	446,577	Feb. 17	1755	432	54	873
Knife: *See* Currier's knife. Drawing-knife. Pocket-knife. Tobacco-knife.							
Knife and pencil sharpener	J. H. West	445,212	Jan. 27	1985	512	54	412
Knife or scissors sharpener	F. W. Chamberlain	446,551	Feb. 17	1721	422	54	866
Knife-sharpener	A. Dudden	444,522	Jan. 13	853	220	54	178
Knit belts. Joining	B. L. Stowe	446,084	Feb. 10	935	229	54	702
Knit garment	H. C. Bohne	445,945	Feb. 3	700	171	54	650
Knitted fabrics. Treating tubular	W. A. Harder	448,817	Mar. 24	2523	632	54	1625
Knitted pile fabrics. Machine for producing	J. Booth	447,226	Feb. 24	2845	705, 706	54	1089
Knitting-machine	B. Holt	448,718	Mar. 24	2376	594, 595, 596	54	1596
Knitting-machine	B. Holt	448,719	Mar. 24	2379	596	54	1596
Knitting machine. Circular	E. R. Branson	445,690	Feb. 3	288	76	54	569
Knitting machine. Circular	F. H. Gates	448,954	Mar. 24	2734	689	54	1664
Knitting machine. Circular	H. J. Griswold	448,337	Mar. 17	1768	447, 448	54	1473
Knitting-machine loop-holding mechanism	H. Brinton	445,494	Jan. 27	2391	622	54	492
Knitting-machine stop mechanism	F. Crawford	445,465	Jan. 27	2348	610	54	484
Knitting-machine striping mechanism	J. Bradley	448,007	Mar. 10	1216	309	54	1356
Knitting-machine trimmer	W. E. Cahill	445,423	Jan. 27	2294	595	54	474
Knob alarm attachment. Door	T. Braden	445,248	Jan. 27	2000	515	54	414
Knob. Door	H. F. Keil	447,613	Mar. 3	556	138	54	1222
Knob. Door	J. Trickel	448,737	Mar. 24	2410	603	54	1602
Knob. Door	E. B. Owen	448,454	Mar. 17	1945	490	54	1506
Knob or handle. Seamless sheet-metal	S. R. and F. A. Wilmot	447,265	Feb. 24	2914	724	54	1104
Knob or handle shank	J. L. Gallagher	444,524	Jan. 13	855	223	54	179
Knob-shank	C. M. Burgess	444,557	Jan. 13	911	247	54	189
Knobs or handles. Attaching	S. R. and F. A. Wilmot	447,266	Feb. 24	2916	724, 725	54	1104
Labeling-machine	S. L. Salomon	447,907	Mar. 10	1047	262	54	1324
Labeling machine. Can	H. Albert	445,418	Jan. 27	2283	593	54	472
Lacing-hook	I. F. Peck	449,449	Mar. 31	3502	897	54	1827
Ladder	W. M. Dollar	445,980	Feb. 10	756	185	54	670
Ladder	G. E. Nowland	445,453	Jan. 27	2335	607	54	481
Ladder and chair. Combined step	K. P. Rawson	448,367	Mar. 17	1807	455, 456	54	1180

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Ladder and elevator. Combined aerial	D. L. Osborn	445,193	Jan. 27	1959	506, 507	54	406
Ladder. Collapsible	W. W. Harris	449,159	Mar. 31	3049	771	54	1733
Ladder. Extension fire	L. Dederick	444,820	Jan. 20	1315	341, 342	54	274
Ladder. Fire	H. Goosmann	444,632	Jan. 13	1013	264	54	209
Ladder. Fire	C. H. Ives	447,429	Mar. 3	256	64	54	1166
Ladder. Fireman's	L. De Loria	444,078	Jan. 20	1447	376	54	299
Ladder. Folding	J. A. Dalmmi	446,473	Feb. 17	1538	378	54	840
Ladder. Folding step	N. Goldberg	444,276	Jan. 6	468	119	54	93
Ladder for firemen and others. Aerial	D. L. Osborn	446,560	Feb. 17	1735	426	54	869
Ladder. Fruit-picker's	W. Arnold	445,487	Jan. 27	2384	620	54	490
Ladder. Step	A. A. Brandenburg	448,190	Mar. 10	1485	379	54	1410
Ladder. Step	J. C. Gardner	448,648	Mar. 24	2260	567	54	1573
Ladder. Telescopic scaling or fire-escape	L. Smitter and P. Duhamel	445,720	Feb. 3	335	88	54	579
Lamp	A. G. McDaniel	444,278	Jan. 6	471	120	54	93
Lamp	W. A. Wright	446,400	Feb. 10	1471	361	54	804
Lamp. Argand	L. J. Atwood and F. W. Tobey	448,854	Mar. 24	2583	649	54	1635
Lamp. Argand	J. H. White	444,867	Jan. 20	1432	372	54	296
Lamp-black. Apparatus for the manufacture of	R. Dreyer	444,315	Jan. 6	523	136, 137	54	105
Lamp bracket. Electric	T. C. Smith	444,466	Jan. 13	763	199	54	159
Lamp brackets. Universal joint for incandescent	E. C. Bennett and E. C. Freeze	447,486	Mar. 3	369	91	54	1188
Lamp-burner	F. Rhind	445,082	Jan. 20	1774	457	54	362
Lamp-burner	C. M. Richmond	444,854	Jan. 20	1409	366	54	291
Lamp-chimney. Sectional	W. H. Waddell	444,664	Jan. 20	1427	371	54	295
Lamp-chimneys. Heating attachment for	W. F. Finger	448,950	Mar. 24	2729	688	54	1664
Lamp cover. Incandescent	E. T. Mueller	448,741	Mar. 24	2415	604	54	1603
Lamp. Electric-arc	L. C. Atwood	448,107	Mar. 10	1354	347	54	1384
Lamp. Electric-arc	L. H. Buchanan	447,746	Mar. 3	753	188	54	1260
Lamp. Electric-arc	J. W. Easton	445,546	Feb. 3	27	7	54	516
Lamp. Electric-arc	J. W. Easton	448,418	Mar. 17	1890	475	54	1497
Lamp. Electric-arc	W. H. Elkins	444,977	Jan. 20	1618	414	54	331
Lamp. Electric-arc	H. C. Forgason	447,767	Mar. 10	800	199	54	1277
Lamp. Electric-arc	J. A. Hayes	445,176	Jan. 27	1933	499, 500	54	401
Lamp. Electric-arc	K. Kurmayer	448,351	Mar. 17	1786	452	54	1477
Lamp. Electric-arc	R. H. Mather	446,108	Feb. 10	973	239, 240	54	709
Lamp. Electric-arc	J. A. Mosher	446,459	Feb. 17	1581	388	54	839
Lamp. Electric-arc	A. W. Reppy	444,104	Jan. 6	194	48	54	40
Lamp. Electric-arc	C. J. Schwarze	446,297	Feb. 10	1322	322	54	773
Lamp. Electric-arc	J. J. Skinner	444,154	Jan. 6	287	69	54	59
Lamp. Electric-arc	E. Thomson	444,925	Jan. 20	1533	394	54	315
Lamp. Electric-arc	E. Thomson	447,383	Mar. 3	172	47	54	1150
Lamp. Electric-arc	B. B. Ward	444,472	Jan. 13	769	200	54	161
Lamp. Electric-arc	B. B. Ward	444,473	Jan. 13	771	201	54	161
Lamp. Electric-arc	J. H. R. Ward	449,236	Mar. 31	3167	798	54	1755
Lamp. Electric-arc	J. H. R. Ward	449,237	Mar. 31	3168	798, 799	54	1756
Lamp. Electric-arc	J. H. R. Ward	449,238	Mar. 31	3171	800	54	1756
Lamp. Electric-arc	O. C. White	445,724	Feb. 3	341	90	54	580
Lamp-extinguishing device	D. Murguletz	446,361	Feb. 10	1409	345, 346	54	792
Lamp filament. Incandescent-electric	G. Erlwein	448,915	Mar. 24	2678	674	54	1654
Lamp filament. Incandescent-electric	G. Erlwein	448,916	Mar. 24	2679	674	54	1654
Lamp filament. Incandescent-electric	G. Erlwein and F. G. A. Heller	448,914	Mar. 24	2678	673	54	1654
Lamp filament. Incandescent-electric	F. G. A. Heller	448,920	Mar. 24	2683	675	54	1655
Lamp-filling indicator	L. N. Lusk	445,565	Feb. 3	70	17	54	525
Lamp for effecting the ignition of vapor in gas or other motors.	E. Capitaine	448,293	Mar. 17	1689	427	54	1458
Lamp for electric-railway cars	C. G. Smith and L. Pfingst	448,865	Mar. 24	2610	655	54	1649
Lamp hanger	M. McRoberts	444,920	Jan. 20	1527	393	54	314
Lamp hanger. Electric	H. A. Foster	449,153	Mar. 31	3040	768	54	1732
Lamp. Incandescent electric	T. D. Bottome	445,688	Feb. 3	287	76	54	569
Lamp. Incandescent electric	E. Thomson	444,929	Jan. 20	1540	395	54	316
Lamp-lighter	J. Witzell	447,393	Mar. 3	194	50, 51	54	1155
Lamp. Multiplex arc	W. H. Elkins	445,136	Jan. 20	1857	481	54	378
Lamp. Safety	J. B. Harris, J. T. G. Iffith, and T. B. Harris.	444,435	Jan. 13	712	186	54	149
Lamp. Self-loading magnesium flash	D. H. Houston	446,918	Feb. 24	2315	575	54	990
Lamp-shade	W. B. Curtis and C. Himrod	445,259	Jan. 27	2065	532	54	427
Lamp-shade tripod	A. W. Paull	444,050	Jan. 13	1042	271	54	214
Lamp socket. Incandescent	H. J. Gutman	447,315	Mar. 3	51	13	54	1127
Lamp socket. Incandescent	G. R. Lean	444,567	Jan. 13	930	242	54	192
Lamp socket. Incandescent-electric	J. M. Orford	446,995	Feb. 24	2428	604	54	1011
Lamp socket. Incandescent-electric	F. A. Weller	449,004	Mar. 31	3792	952	54	1870
Lamp sockets. Switch for incandescent	A. T. Tregurtha	448,167	Mar. 10	1445	369	54	1402
Lamp. Street	A. Meyer	448,533	Mar. 17	2059	515	54	1528
Lamp support. Electric	J. Chase	444,330	Jan. 6	543	141	54	109
Lamps. Adjustable stand for	F. Beilmann	449,028	Mar. 24	2845	723	54	1686
Lamps. Apparatus for flashing and exhausting incandescent electric	W. E. Nickerson and A. Borrenberg	447,256	Feb. 24	2894	718	54	1100
Lamps. Cut-out for incandescent	T. D. Bottome	445,686	Feb. 3	284	75	54	568
Lamps. Detachable ceiling block or bracket for electric	H. C. Wirt	446,826	Feb. 17	2137	531	54	950
Lamps. Device for raising or lowering incandescent electric	C. F. Reinmann	448,164	Mar. 10	1442	369	54	1401
Lamps. Disk-carbon holder for electric	E. C. Russell	446,549	Feb. 17	1719	421	54	866
Lamps. Electrode for arc	A. C. Seibold	448,084	Mar. 10	1323	339	54	1377
Lamps. Electrode for electric-arc	A. C. Seibold	447,702	Mar. 3	681	169	54	1247
Lamps. Extensible bracket for electric	J. E. Titus	446,037	Feb. 10	864	210	54	688
Lamps. Hanger or harp for suspending	C. G. Hoerle	445,698	Feb. 3	304	80	54	572
Lamps. Lantern for regenerative gas	L. A. Cooper	446,991	Feb. 24	2424	603	54	1011

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lamps. Leading-in wire for incandescent electric	T. A. Edison	444,530	Jan. 13	866	225	54	181
Lamps. Lens for signal or other	J. Thorne and E. B. Burr	446,304	Feb. 10	1331	324	54	775
Lamps. Manufacture of filaments for incandescent electric	T. A. Edison	446,669	Feb. 17	1888	469	54	899
Lamps. Moisture-protection hood for	A. Shillinglaw	446,477	Feb. 17	1605	394	54	844
Lamps. Operating arc	N. Tesla	447,920	Mar. 10	1068	268	54	1327
Lamps. Reel for raising and lowering electric	J. T. Roberts	445,903	Feb. 3	635	156	54	637
Lamps, &c. Spring-motor for mechanical	J. Camichel	448,208	Mar. 17	1528	391	54	1427
Lamps. Swinging or drop arm for electric	E. Cliff	444,273	Jan. 6	465	118	54	92
Lamps. Wick-raising mechanism for	B. P. Luce	444,598	Jan. 13	970	251	54	201
Land-roller	W. R. Walker	446,306	Feb. 10	1334	324	54	776
Lantern	W. C. Winfield	447,549	Mar. 3	462	113, 114	54	1204
Lantern. Electric signal and search-light	G. W. Martin	446,142	Feb. 10	1037	255	54	720
Lantern. Magic	F. Scheidig	449,386	Mar. 31	3447	867, 868	54	1804
Lantern. Signal	T. S. Easterbrook	445,606	Feb. 3	138	36	54	538
Lantern. Tubular	W. Baldwin	448,002	Mar. 10	1205	306	54	1353
Lantern. Tubular	G. J. Gerber	445,171	Jan. 27	1922	497	54	400
Lantern. Tubular	W. McArthur	445,187	Jan. 27	1952	505	54	405
Lantern. Tubular	F. K. Wright	449,094	Mar. 24	2946	746	54	1706
Lanterns. Dissolving-shutter for magic	J. Shannon	448,825	Mar. 24	2534	635, 636	54	1626
Laryngoscope and tongue-depressor. Combined	G. Henckel	447,823	Mar. 10	902	225	54	1295
Lasting-jack	R. C. Nash	448,299	Mar. 17	1699	430	54	1460
Lasting-machine	M. Brock	444,792	Jan. 13	1207	328	54	255
Lasting-machine	A. Seaver and W. S. Hamm	444,858	Jan. 20	1418	368	54	293
Lasting-tacks. Machine for extracting	W. Gordon	448,024	Mar. 10	1242	316	54	1360
Latch	J. Bradley	446,766	Feb. 17	2044	509	54	940
Latch	C. A. Gloekler	444,826	Jan. 20	1328	345	54	276
Latch	L. R. Lecellier	448,298	Mar. 17	1698	429, 430	54	1460
Latch	C. E. Legg, O. G. Alexander, and G. W. Legg.	445,562	Feb. 3	66	16	54	525
Latch	G. J. Matson and J. Y. Phillips	447,055	Feb. 24	2536	631	54	1031
Latch	J. Schade	446,841	Feb. 17	2162	537	54	955
Latch	E. Wright	445,108	Jan. 20	1816	469, 470	54	370
Latch. Gate	W. E. Tyler	448,755	Mar. 24	2437	610	54	1607
Latch. Sliding-door	G. A. Colton	449,070	Mar. 24	2908	737	54	1698
Lathe	G. H. Bennett	449,065	Mar. 24	2901	736	54	1697
Lathe	J. L. Bogert	444,544	Jan. 13	889	231, 232	54	185
Lathe	J. B. Preston	444,799	Jan. 13	1278	331	54	257
Lathe and planer attachment	J. Walker	449,392	Mar. 31	3457	870	54	1807
Lathe-centers. Machine for grinding	W. Barker	447,553	Mar. 3	467	115	54	1205
Lathe for making fluted wooden bodies	B. Merklen	447,965	Mar. 10	1142	288, 289	54	1340
Lathe for turning shafts	E. W. Jones	448,764	Mar. 24	2450	612, 613	54	1610
Lathe. Pivot	J. Schweizer	446,241	Feb. 10	1158	284	54	741
Lathe. Pulley	M. C. Henly and P. Shellenback	446,448	Feb. 17	1563	384, 385	54	835
Lathe reversing mechanism	F. Higgins	447,825	Mar. 10	904	225	54	1296
Lathe safety attachment	W. Gleason	447,607	Mar. 3	548	135, 136	54	1220
Lathe. Turning	J. L. Simmons	444,465	Jan. 13	760	198	54	159
Lathe. Turret	W. L. Grout and E. L. Bowers	445,694	Feb. 3	294	77, 78	54	570
Lathe. Wood-turning	P. Newman	444,457	Jan. 13	744	194, 195	54	156
Lathes. Gripping device for	W. L. Grout and E. L. Bowers	445,696	Feb. 3	300	79	54	571
Lathes. Gripping device for	W. L. Grout and E. L. Bowers	445,697	Feb. 3	302	80	54	572
Lathes. Table-operating mechanism for	M. C. Bollenbacher	449,461	Mar. 31	3584	902	54	1810
Lathing. Hanger for wire	G. Kelly	445,836	Feb. 3	539	131	54	612
Lathing. Machine for forming sheet-metal	J. Weichhart	446,939	Feb. 24	2345	583	54	995
Lathing. Metallic	L. L. Sagendorph	447,084	Feb. 24	2583	641	54	1040
Lathing. Metallic	L. L. Sagendorph	447,085	Feb. 24	2584	641	54	1040
Lathing. Wire	P. Miles	445,353	Jan. 27	2196	570	54	455
Lawn-chair	J. J. Dicks	445,012	Jan. 20	1669	428	54	312
Lawn-sprinkler	D. A. Hoyt	448,522	Mar. 17	2043	511, 512	54	1525
Lead. Apparatus for desilverizing	F. E. L. Honold	446,455	Feb. 17	1576	387	54	838
Lead or crayon holder	E. Faber	444,148	Jan. 6	280	67	54	57
Lead. Treating white	E. V. Gardner	448,516	Mar. 17	2032	508, 509	54	1523
Leads, crayons, or pencils. Form of	H. P. Norton	445,252	Jan. 27	2053	528	54	424
Leaf-turner	T. D. Holcomb	445,405	Jan. 27	2267	588, 589	54	468
Leather. Antiseptic composition for treating	J. Engelke	448,420	Mar. 17	1894	.....	54	1497
Leather-boarding machine	J. W. Vaughn	444,172	Jan. 6	319	77	54	65
Leather-cutting machine	H. C. Pease	445,588	Feb. 3	111	27	54	533
Leather. Machine for whitening or working	J. W. Vaughn	444,164	Jan. 6	305	73	54	62
Leather-softening machine	N. Gillard	446,594	Feb. 17	1777	439	54	877
Leather-sorting gage	J. E. Plummer	448,586	Mar. 17	2138	536	54	1544
Leather-staking machine	E. Hayes	447,180	Feb. 24	2764	684	54	1074
Leather-stretching machine	H. R. Behrens	446,847	Feb. 24	2174	541, 542	54	965
Leather strips. Machine for splitting	W. A. Bates	445,744	Feb. 3	377	96	54	587
Leather-working machine	T. F. Gafney and T. C. Dawson	448,422	Mar. 17	1895	475, 476	54	1497
Leather-working machine	J. W. Vaughn	444,173	Jan. 6	321	77, 78	54	65
Ledger and index. Combined	S. B. Kirtley and H. Phillips	448,052	Mar. 10	1282	327	54	1369
Ledger leaf or sheet	C. M. Wilson	445,417	Jan. 27	2282	592	54	472
Leggin	C. R. Macomber	448,819	Mar. 24	2526	633	54	1625

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Loggin-holder	A. Steiner	444,655	Jan. 13	1049	273	54	216
Loggin. Water-proof	L. W. Groat and W. J. Van Vleck	444,489	Jan. 13	805	209	54	168
Lemon presser or squeezer	S. C. Rupe	447,975	Mar. 10	1164	294 / 295	54	1344
Lemon-squeezer	E. D. Emmons	444,063	Jan. 6	134	33	54	29
Lens-grinding machine	W. Bausch	445,349	Jan. 27	2186	566 / 567	54	453
Lens. Marine	R. D. Haines	447,727	Mar. 3	721	181	54	1254
Letter box	F. Catudal and E. Drolet	445,497	Jan. 27	2396	623	54	493
Letter-box	J. T. Lennan	444,638	Jan. 13	1024	267	54	211
Letter-box	W. McCloskey	448,062	Mar. 10	1296	331	54	1371
Letter-box	U. G. Stannard	444,257	Jan. 6	442	111	54	87
Letter-box	C. H. Vauso	445,867	Feb. 3	583	143	54	626
Letter-box	C. A. Whelan	449,149	Mar. 31	3037	768	54	1731
Letter-box. House-door	W. Bussard	448,500	Mar. 17	2014	504	54	1519
Letter-box. House-door	I. G. Lane	446,258	Feb. 10	1255	306	54	760
Letter-box. House-door	E. Markell	449,371	Mar. 31	3425	861	54	1800
Letter-box. House-door	E. Markell	449,372	Mar. 31	3426	861	54	1800
Letter-box. House-door	J. Matthews and J. Gilmer	447,254	Feb. 24	2891	718	54	1099
Letter-box. House-door	W. Scott	449,593	Mar. 31	3775	947 / 948	54	1867
Letter-box. House-door	G. M. Shinn	448,086	Mar. 10	1326	339 / 340	54	1378
Letter-box. Street	I. G. Lane	446,257	Feb. 10	1253	306	54	760
Letter-box. Street-door	D. K. Byler	444,520	Jan. 13	851	221	54	178
Letter-marking machine	M. J. Dolphin	449,406	Mar. 31	3485	876 / 877	54	1812
Lettering device. Adjustable	L. A. Gates	445,750	Feb. 3	388	98	54	589
Level	S. J. Townsend	446,038	Feb. 10	865	210	54	688
Level. Plumb-	J. T. Lambdin	444,705	Jan. 13	1126	291	54	231
Level. Plumb-	B. A. Mounts	449,557	Mar. 31	3716	933	54	1856
Level. Spirit-	H. Green	449,609	Mar. 31	3797	953	54	1872
Leveling-instrument	E. G. Soltmann and H. E. Grabau	446,956	Feb. 24	2367	589	54	999
Lever	G. H. Jantz	445,558	Feb. 3	49	13	54	521
Life-saving apparatus	W. W. Riley	445,609	Feb. 3	142	37	54	539
Lift. Automatic double topping-	T. L. Arnold	445,530	Feb. 3	2	1	54	511
Lifter:							
See Box-lifter. Butter-lifter. Cable-lifter. Log-lifter. Pan-lifter. Pie-lifter. Railway-track lifter. Transom-lifter. Wagon-bed lifter.							
Lifting-jack	H. Billings	449,515	Mar. 31	3660	919	54	1846
Lifting-jack	T. A. Cavender	444,915	Jan. 20	1520	391	54	313
Lifting-jack	W. S. Livengood	445,900	Feb. 3	631	155	54	636
Lifting-jack	C. R. Piggins	446,537	Feb. 17	1701	417	54	862
Light:							
See Electric-arc light. Signal-light.							
Light by magnesium or other glowing materials. Producing intense	J. W. C. C. Schirm	446,891	Feb. 24	2263	563	54	981
Lightning-arrester	E. Thomson	444,678	Jan. 13	1091	283	54	223
Lightning-rod	G. W. Downey	446,130	Feb. 10	1013	250	54	717
Line or rope holder	N. Nief and P. Cotte	449,567	Mar. 31	3729	937	54	1859
Line-tightener	C. H. Pettay	449,085	Mar. 24	2933	743	54	1703
Liniment	P. Hébért	445,995	Feb. 10	802	.....	54	677
Liniment	P. F. Perrin	448,728	Mar. 24	2393	.....	54	1509
Liniment	A. Rosenberg	444,398	Jan. 6	653	.....	54	129
Liniment	J. Wilfong	445,592	Feb. 3	116	.....	54	534
Link. Split	W. E. Bailey	446,317	Feb. 10	4348	328	54	779
Linotype-bars. Apparatus for the manufacture of curved	E. A. Henkle and J. C. Fowler	446,738	Feb. 17	2004	499	54	921
Liquid-cooler	J. Klein	444,558	Jan. 13	912	237 / 238	54	189
Liquid-cooler	P. J. Slavin	448,552	Mar. 17	2085	523	54	1534
Liquid-mixing apparatus	E. R. Gabbett	444,345	Jan. 6	566	145	54	113
Liquid-purifier	G. G. Schroeder	447,585	Mar. 3	517	126	54	1214
Liquors. Apparatus for treating fermented	W. H. Foye	445,168	Jan. 27	1919	495	54	399
Lithographic plates. Manufacture of	O. Kindermann	445,650	Feb. 3	211	.....	54	554
Live-stock releaser	N. R. Sheets	447,979	Mar. 10	1170	297	54	1346
Lock:							
See Bail-lock. Bottle-lock. Canal-lock. Combination-lock. Cylinder-lock. Door-lock. Electric lock. Hasp-lock. Indicator-lock. Nut-lock. Permutation-lock. Printer's-galley lock. Revolver-lock. Rudder-lock. Seal-lock. Supporting-lock. Till-lock. Time-lock. Trunk-lock.							
Lock	C. E. A. A. Dény	448,912	Mar. 24	2675	673	54	1653
Lock	B. Edwards	445,501	Jan. 27	2406	628	54	494
Lock	L. S. Ellsworth	447,871	Mar. 10	984	246	54	1311
Lock	W. F. Hyatt	444,585	Jan. 20	1461	378	54	302
Lock	M. Jacobs	449,077	Mar. 24	2916	740	54	1700
Lock	J. Kaye	449,160	Mar. 31	3050	771	54	1734
Lock	J. Knbler	447,957	Mar. 10	1131	284	54	1339
Lock	H. Ludwig	446,101	Feb. 10	964	237	54	707
Lock	W. A. McCann	448,946	Mar. 24	2777	702	54	1673
Lock	R. L. Reed	446,789	Feb. 17	2072	516	54	936
Lock	G. T. Rogers	447,623	Mar. 3	574	142	54	1226
Lock	W. H. Taylor. (Reissue)	11,152	Mar. 17	2218	555	54	1559
Lock	G. W. Wooley	446,375	Feb. 10	1429	351	54	796
Lock and latch handle	N. G. Sorensen	448,379	Mar. 17	1827	460	54	1484

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Lock-case	C. H. Beebe	446,246	Feb. 10	1237	302	54	757
Lock-lever	P. Farwell	445,398	Jan. 27	2154	568	54	446
Locks. Key-guide for	F. W. Mix	448,981	Mar. 24	2769	700	54	1671
Locking box. Secret-	C. J. Thenerner	447,984	Mar. 10	1179	299	54	1348
Locomotive ash-pan	E. M. Fitzgerald	446,608	Feb. 17	1795	444	54	881
Locomotive-bicycle	J. Fish	444,822	Jan. 20	1322	342 / 343	54	272
Locomotive-cab seat	E. M. Stannard	444,654	Jan. 13	1047	272	54	215
Locomotive-coupling	T. L. McKeen	447,579	Mar. 3	504	124	54	1212
Locomotive. Electric	G. R. Baldwin	446,245	Feb. 10	1235	302	54	757
Locomotive. Electric	E. M. Boynton	446,821	Feb. 17	2129	528 / 529	54	948
Locomotive. Electric	C. J. Van Depoele	448,562	Mar. 17	2101	526 / 527	54	1537
Locomotive. Electric	M. Waddell and J. B. Entz	444,512	Jan. 13	841	218 / 219	54	175
Locomotive-engine	R. Peacock and H. L. Lange	448,927	Mar. 24	2692	679	54	1657
Locomotive for electric railways	T. A. Edison	446,667	Feb. 17	1886	468	54	898
Locomotive-gearing	R. B. McWhirter	448,160	Mar. 10	1437	367 / 368	54	1400
Locomotive stopping and signaling mechanism	J. C. Gross	446,288	Feb. 10	1297	317	54	769
Locomotive-tenders. Apparatus for transferring coal to moving	J. Van Nest, Jr., and W. B. Kinney	444,947	Jan. 20	1570	403	54	322
Locomotive-wheels. Means for truing	J. Elder	449,350	Mar. 31	3378	851	54	1792
Locomotives. Extension smoke-stack for	H. D. Dunbar	447,106	Feb. 24	2615	649	54	1047
Locomotives. Rail-cleaning and lubricating attachment for	H. T. Currie	444,694	Jan. 13	1114	288	54	228
Log-crosscutting machine	T. S. Crane	447,462	Mar. 3	315	79	54	1177
Log lifter and turner	F. Simonson	448,591	Mar. 17	2149	538	54	1546
Log lifter and turner	F. Simonson	448,592	Mar. 17	2150	539	54	1546
Log lifter and turner	F. Simonson	448,593	Mar. 17	2153	539	54	1547
Log lifting and turning machine	F. Simonson	448,588	Mar. 17	2143	537 / 538	54	1544
Log loader and turner	F. Simonson	448,590	Mar. 17	2147	538	54	1546
Log-turner	J. Mills and C. W. Zimmerman	448,602	Mar. 24	2280	572	54	1577
Logs buoyant. Device for rendering	G. Duryee	447,668	Mar. 3	630	157	54	1237
Loom	C. Alvord	447,652	Mar. 3	612	151	54	1233
Loom	W. Bowker and R. Williams	448,202	Mar. 17	1516	386 / 387 / 388 / 389	54	1426
Loom	J. F. Cranston and J. H. Wesson	445,395	Jan. 27	2247	583 / 584	54	464
Loom	H. A. Remington	449,297	Mar. 31	3274	829	54	1774
Loom	H. Wyman	444,789	Jan. 13	1264	327	54	255
Loom, &c. Circular	B. L. Stowe	446,085	Feb. 10	936	229 / 230 / 231	54	702
Loom-dobby	G. Parker	448,668	Mar. 24	2291	574 / 575	54	1579
Loom for weaving chenille fabrics	A. Sinclair	446,896	Feb. 24	2269	564 / 565 / 566	54	982
Loom for weaving tufted fabrics	H. Wyman and F. S. Webb	446,177	Feb. 10	1103	270 / 271	54	731
Loom for weaving tufted pile fabrics	H. Skinner and F. H. Connolly	449,337	Mar. 31	3357	846 / 847 / 848	54	1788
Loom for weaving tufted pile fabrics	H. Wyman and J. A. Clark	446,402	Feb. 10	1474	362 / 363 / 364 / 365 / 366	54	805
Loom harness-motion	G. F. Hutchins	446,553	Feb. 17	1722	422 / 423	54	866
Loom Jacquard mechanism	A. Turkington	446,039	Feb. 10	866	210 / 211	54	688
Loom let-off and take-up mechanism	J. W. Eisenhart	448,327	Mar. 17	1747	441	54	1469
Loom let-off mechanism	W. E. Sharples	445,383	Jan. 27	2230	578	54	461
Loom. Needle-	H. Skinner and F. H. Connolly	449,336	Mar. 31	3353	845 / 846	54	1787
Loom picker-staff check	J. T. Marsden	449,268	Mar. 31	3320	813	54	1766
Loom picker-staff-operating device	T. McCarty	447,841	Mar. 10	936	234	54	1302
Loom positive shuttle-motion	J. W. Babcock	447,038	Feb. 24	2513	624	54	1026
Loom shedding mechanism	F. Tonnar	445,098	Jan. 20	1801	464 / 465	54	367
Loom shedding mechanism	C. W. Wolff	445,791	Feb. 3	459	113	54	601
Loom-shuttle	A. D. Emery	444,095	Jan. 6	179	45	54	38
Loom-shuttle	A. H. Steele	447,500	Mar. 3	391	95	54	1191
Loom-shuttle	J. W. Davis	446,113	Feb. 10	983	242	54	711
Loom shuttle-binder	S. Turner	445,682	Feb. 3	280	74	54	567
Loom shuttle-operating mechanism	J. Cuthbertson	448,475	Mar. 17	1979	497	54	1512
Loom-shuttle tension device	S. and A. Bentley	447,629	Mar. 3	583	144	54	1227
Loom-shuttle tension-regulating device	H. Baumann	449,194	Mar. 31	3111	785	54	1745
Loom-shuttles. Float-detecting attachment for	S. Hamblin	445,336	Jan. 27	2471	562	54	449
Loom-temple	C. A. Littlefield	445,148	Jan. 20	1885	487	54	384
Loom-temple	C. I. Kane	446,100	Feb. 10	962	236	54	706
Loom warp stop-motion	P. Ensling	446,094	Feb. 10	952	234	54	704
Loom weft-fork	J. H. Knowles	445,627	Feb. 3	171	45	54	545
Loom weft-fork	A. F. Dévigne and J. P. Durand	449,283	Mar. 31	3248	822 / 823	54	1770
Loom weft stop-motion	W. Lapworth	445,147	Jan. 20	1883	486 / 487	54	383
Loom: Weft stop-motion							

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Looms for weaving wire. Take-up and let-off mechanism for	C. S. Strowbridge	446,035	Feb. 10	860	209	54	687
Looms. Picker-stick check for	H. A. Williams	448,309	Mar. 17	1713	434	54	1463
Looms. Pitman-connection for	E. Wright	444,738	Jan. 13	1191	309	54	242
Looms. Race-board and rest-board for	W. E. Sharples	448,374	Mar. 17	1818	458	54	1482
Looms. Reed for	F. Ott	444,133	Jan. 6	256	62	54	52
Looms. Spool-holding bracket for	O. W. Schaum	445,514	Jan. 27	2424	632	54	498
Loop and clamp. Suspension	P. A. Harris	446,206	Feb. 10	1148	281	54	739
Lounge	C. Mee	446,874	Feb. 24	2227	564	54	976
Lounge	R. S. Wright	446,243	Feb. 10	1232	301	54	756
Low-water alarm	H. L. Hildreth	446,453	Feb. 17	1573	387	54	837
Lubricant block	W. Friend	445,988	Feb. 10	786	191	54	675
Lubricating compound	W. Brinck	444,626	Jan. 13	1005	.....	54	208
Lubricating device	G. T. Reiss	447,015	Feb. 24	2464	613	54	1018
Lubricating purposes. Incombustible waste for	R. R. Graf	445,889	Feb. 3	615	.....	54	633
Lubricator: *See* Air-cylinder lubricator. Sight-feed lubricator. Truck-lubricator. Axle-lubricator.							
Lubricator	W. J. Faul	445,013	Jan. 20	1669	428	54	342
Lubricator	A. Krantter	447,956	Mar. 10	1129	283, 284	54	1339
Lubricator	T. B. McNiece and W. H. Bloom	449,634	Mar. 31	3860	966	54	1883
Lubricator	W. P. Miller	448,785	Mar. 24	2481	620	54	1616
Lubricator	J. Wood	446,049	Feb. 10	882	215	54	692
Lumber-boom	A. F. Willey	445,107	Jan. 20	1815	468	54	370
Lumber-carrier	A. T. Kelliher	448,766	Mar. 24	2453	613	54	1610
Machinery. Apparatus for the prevention of accidents to	R. Hitchen, J. T. Pearson, and T. Richmond.	444,357	Jan. 6	583	149, 150	54	116
Machinery. Brake and starter for	C. R. Pratt	444,102	Jan. 6	192	47	54	40
Magnet. Electro-	F. A. Wessel	449,358	Mar. 31	3394	854	54	1794
Magnetic separator	R. R. Moffatt	449,610	Mar. 31	3798	953	54	1872
Mail-bag catcher	C. B. Winsor and G. W. Cummings	447,094	Feb. 24	2596	644	54	1043
Mail-bag-catching device	E. M. Van Hoesen	446,550	Feb. 17	1720	422	54	866
Mail-bag fastening	O. P. Callahan	444,289	Jan. 6	489	128	54	97
Mail-bag fastening	S. K. Davis, A. F. Stockley, and W. I. Barnett.	446,770	Feb. 17	2049	510	54	931
Mail-bags. Device for catching and delivering	W. Burks	448,709	Mar. 24	2360	591	54	1593
Mail-matter. Machine for marking	F. N. Ethridge	449,363	Mar. 31	3411	857, 858	54	1797
Mail-sack crane	J. F. Mains	447,471	Mar. 3	347	86	54	1183
Mail-sack dropper	J. F. Mains	447,470	Mar. 3	346	86	54	1183
Mailing-machine	G. B. Baer	446,702	Feb. 17	1945	485	54	969
Mailing-machine	S. B. Whiteside	446,495	Feb. 17	1634	400	54	850
Malt liquor. Making	J. Griffiths	447,131	Feb. 24	2654	658	54	1054
Man-hole cover	R. Munroe	446,151	Feb. 10	1055	259	54	723
Mandrel. Expanding	J. D. O. Dubrule	447,667	Mar. 3	629	156	54	1237
Manure-spreader	D. B. Merrell	448,884	Mar. 24	2631	661	54	1644
Map-holder	W. F. Semple	446,021	Feb. 10	831	200	54	682
Map or sheet case	E. B. Strong	447,993	Mar. 10	1178	298	54	1348
Marbles. Die for the manufacture of	M. Lang	449,256	Mar. 31	3205	809	54	1763
Marking folded woven goods with trade-marks, &c. Machine for	J. Duxbury	448,212	Mar. 17	1534	393	54	1428
Massage apparatus	A. Kahn	448,883	Mar. 24	2630	661	54	1643
Massage-kneader. Electric magnetic	D. and C. Lichtenstadt	444,597	Jan. 13	969	251	54	200
Mat: *See* Door-mat.							
Mats or gratings. Machine for making	H. Belsheim	448,706	Mar. 24	2451	589	54	1592
Match-box and holding-frame therefor	J. Forshaw	446,336	Feb. 10	1378	336	54	785
Match-boxes. Machine for filling	F. Lundgren	448,445	Mar. 17	1934	487	54	1504
Match-machine	C. R. E. Bell	447,931	Mar. 10	1083	271, 272, 273	54	1330
Match-racks. Machine for filling	G. H. Millen, D. Casey, and J. H. Mantion.	449,376	Mar. 31	3431	863	54	1801
Matches from dipping-racks. Machine for removing	G. H. Millen, D. Casey, and J. H. Mantion.	449,377	Mar. 31	3433	864	54	1802
Matrices, type, &c. Mechanism for justifying	P. T. Dodge	444,337	Jan. 6	555	143	54	111
Matrix-making machine	G. Calder, Jr	444,124	Jan. 6	234	56, 57	54	48
Matrix-making machine	G. Calder, Jr	444,125	Jan. 6	237	58	54	49
Matrix-making machine	G. Calder, Jr	445,040	Jan. 20	1713	440, 441	54	350
Matrix-making machine	T. C. Hargrave	447,449	Mar. 3	291	74	54	1172
Matrix-making machine	C. L. Redfield	448,994	Mar. 24	2789	705, 706	54	1675
Matrix-making machine. Electric	T. C. Hargrave	447,321	Mar. 3	61	17	54	1129
Matrix-making machines. Escapement device for	C. L. Redfield	448,587	Mar. 17	2140	537	54	1544
Matrix-making or type-setting machine	H. Lee	447,135	Feb. 24	2678	664, 665, 666, 667, 668	54	1058
Matrix-making or type-setting machine	H. Lee and E. Lebrun	447,134	Feb. 24	2658	660, 661, 662, 663	54	1055
Mattress-frame and bedstead	I. Chorlton and G. L. Scott	448,209	Mar. 17	1529	391, 392	54	1428
Mattress. Woven-wire	W. S. Seymour	446,193	Feb. 10	1126	275, 276	54	734
Measure. Flexible scale	A. S. Adler	448,805	Mar. 24	2508	628	54	1621
Measure. Lumber	E. N. Barber	448,291	Mar. 17	1680	426, 427	54	1456
Measure. Scale	E. T. Burrowes	449,031	Mar. 24	2854	726	54	1688

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Measurements. Apparatus for determining minute	W. A. Rogers	449,175	Mar. 31	3072	776	54	1738
Measurements of time, space, or quantity. Apparatus for recording	H. Abbott	449,192	Mar. 31	3106	783, 784	54	1744
Measures. Cabinet for molasses	S. B. Kersey	447,643	Mar. 3	603	148, 149	54	1231
Measuring alternating electric currents	O. B. Shallenberger	449,001	Mar. 24	2805	709, 710, 711	54	1678
Measuring-instrument. Electric	E. Weston	444,805	Jan. 13	1291	335	54	261
Measuring-instrument. Electrical	E. Weston	444,804	Jan. 13	1289	334, 335	54	260
Measuring-instrument. Electrical	E. Weston	446,489	Feb. 17	1622	397	54	847
Measuring-instrument. Electrical	E. Weston	446,491	Feb. 17	1626	398	54	848
Measuring-instrument. Electrical	E. Weston	446,492	Feb. 17	1627	398	54	848
Measuring-instrument. Electrical	E. Weston	446,493	Feb. 17	1629	399, 400	54	849
Measuring-instrument. Electrical	E. Weston	446,494	Feb. 17	1632	400	54	850
Measuring-instrument. Electrical	J. W. Gaede	448,018	Mar. 10	1235	314	54	1359
Measuring machine. Automatic	O. F. Heath	444,334	Jan. 6	578	148	54	115
Measuring machine. Cloth-	J. Reading	448,368	Mar. 17	1808	456	54	1481
Measuring machine. Cloth-	A. S. Adler	447,098	Feb. 24	2600	646	54	1044
Measuring machine. Foot-	R. Eagan	444,903	Jan. 20	1487	324	54	307
Measuring milk-can	H. W. Laun	446,250	Feb. 10	1257	306	54	760
Measuring-vessel	L. D. Warnock	445,483	Jan. 27	2377	618	54	489
Measuring-vessel	J. Sheargren	446,823	Feb. 3	521	125	54	613
Meat chopping machine	S. T. Jull	449,585	Mar. 31	3763	945	54	1865
Meat-cutter	J. Tritz	449,451	Mar. 31	3563	898	54	1827
Meat-cutter. Rocking	R. W. Randle	446,268	Feb. 10	1272	312	54	763
Meat-holder	A. Nittinger, Sr	447,581	Mar. 3	508	125	54	1212
Meat or vegetable cutter, fruit-press, &c	W. P. Ginter	448,482	Mar. 17	1991	499	54	1515
Meat-tenderer	G. F. Meyer	444,500	Jan. 13	823	215	54	172
Meats. Apparatus for extracting salt from	G. W. Baker	446,318	Feb. 10	1349	329	54	779
Mechanical movement	W. C. Eich	448,511	Mar. 17	2028	508	54	1522
Mechanical movement	R. L. Hattersley and J. Hill	448,713	Mar. 24	2370	592, 593	54	1595
Mechanical movement	R. L. Hattersley and J. Hill	448,714	Mar. 24	2371	593	54	1595
Mechanical movement	K. C. Kunkle	447,075	Feb. 24	2572	638	54	1038
Mechanical movement	A. M. Leslie	444,757	Jan. 13	1221	317	54	247
Mechanical movement	H. D. Mentzel	447,964	Mar. 10	1140	286, 287, 288	54	1340
Mechanical movement	T. Puetz, Jr	444,016	Jan. 6	51	14	54	13
Mechanical movement	J. Z. Roraback	449,334	Mar. 31	3349	844	54	1787
Mechanical movement	A. Warth	444,283	Jan. 6	479	122	54	95
Mechanical movement	A. Warth	444,284	Jan. 6	481	123	54	95
Mechanical movement	A. Warth	444,285	Jan. 6	483	123, 124	54	96
Mechanical movement	A. Warth	444,286	Jan. 6	485	124, 125, 126	54	96
Mechanical movement	A. Warth	444,287	Jan. 6	486	126, 127	54	97
Medical apparatus. Electrical	J. C. Chambers	445,636	Feb. 3	184	48, 49, 50	54	548
Medicinal plaster	J. H. Osgood	446,610	Feb. 17	1798	444	54	882
Medicine-case	L. I. Bodenhamer	444,216	Jan. 6	383	95	54	76
(Medicine.) Catarrh remedy	L. D. Bailor	446,412	Feb. 17	1506	.....	54	823
(Medicine.) Cough remedy	W. J. Corey	446,058	Feb. 10	899	.....	54	695
Medicine-dropper	F. B. Spooner	448,555	Mar. 17	2088	524	54	1534
Medicine-dropper	T. C. Weeks	446,574	Feb. 17	1752	431	54	872
(Medicine.) Remedy for corns, &c	A. Robidoux	444,601	Jan. 13	973	.....	54	201
(Medicine.) Remedy for coughs, &c	M. E. Hess	445,470	Jan. 27	2355	.....	54	485
Merry-go-round	W. D. Cronin and C. B. Adams	445,134	Jan. 20	1854	480	54	378
Metal. Apparatus for removing gases from	W. F. Durfee and N. B. Wittman	448,944	Mar. 24	2717	686	54	1661
Metal articles. Device for knurling the surfaces of	G. F. Simonds	446,933	Feb. 24	2337	579, 580	54	994
Metal bars, &c. Machine for straightening and polishing	W. A. McCool	445,571	Feb. 3	79	18, 19	54	527
Metal box	C. J. Hauck, Jr.	448,034	Mar. 10	1254	320	54	1363
Metal can	F. Reisel and G. A. Waeber	449,136	Mar. 31	3019	763	54	1728
Metal capsules. Machine for making	F. W. Perry	447,137	Feb. 24	2696	668	54	1060
Metal-cutter	H. B. Todd	447,849	Mar. 10	948	237	54	1304
Metal. Die for ornamenting strips of	A. E. Hobson	444,835	Jan. 20	1347	340	54	280
Metal. Melting	A. Greiner	445,056	Jan. 20	1738	447	54	355
Metal. Method of and apparatus for solidifying molten	G. W. Goetz	447,511	Mar. 3	405	99	54	1194
Metal pieces. Apparatus for testing	L. de Place	445,860	Feb. 3	576	140	54	624
Metal-planers. Attachment for	C. H. Myers	446,074	Feb. 10	921	225	54	699
Metal-planing machine	G. A. Gray and E. Richter	447,820	Mar. 10	895	224	54	1294
Metal slitting machine	C. H. Perkins	449,057	Mar. 24	2889	734	54	1695
Metals. Composition for treating the surfaces of	J. Meese	445,330	Jan. 27	2143	.....	54	443
Metals. Method of and apparatus for reducing	W. Wakely	449,145	Mar. 31	3030	766, 767	54	1730
Metallic box or attachment, &c	F. E. McMullin	444,844	Jan. 20	1360	352	54	282
Metallic casing	W. L. Chase	447,807	Mar. 10	879	219	54	1291
Metallic cylinders. Device for scouring	H. Phillips	445,197	Jan. 27	1967	508	54	408
Metallic facing for buildings	L. L. Sagendorph	448,732	Mar. 24	2398	600	54	1600
Metallic facing-plate	L. L. Sagendorph	448,733	Mar. 24	2399	600	54	1600
Metallic or mineral-bearing substances. Centrifugally treating particles of	O. B. Peck	444,614	Jan. 13	990	257	54	204
Metallic or mineral-bearing substances. Machinery for centrifugally treating particles of	O. B. Peck	444,618	Jan. 13	996	259	54	206

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Metallic or mineral-bearing substances of different degrees of specific gravity. Machinery for centrifugally treating particles of	O. B. Peck	444,615	Jan. 13	992	258	54	205
Metallic or mineral-bearing substances of different degrees of specific gravity. Machinery for centrifugally treating particles of	O. B. Peck	444,616	Jan. 13	993	258	54	205
Metallic or mineral-bearing substances of different degrees of specific gravity. Machinery for centrifugally treating particles of	O. B. Peck	444,617	Jan. 13	995	259	54	205
Metallic or mineral-bearing substances of different degrees of specific gravity. Machinery for centrifugally treating particles of	O. B. Peck	444,619	Jan. 13	997	259	54	206
Metallic or mineral-bearing substances of different specific gravity. Apparatus for separating particles of	O. B. Peck	444,613	Jan. 13	989	257	54	202
Metallic surfaces. Decorating	O. M. Smith	446,300	Feb. 10	1327	323	54	774
Meter: *See* Diaphragm-meter. Electric meter. Fluid-meter. Gas-meter. Grain-meter. Piston meter. Oscillating meter. Water-meter.							
Metronome	A. G. Pinfold	449,635	Mar. 31	3861	967	54	1884
Micrometer-gage	L. S. Starrett	448,089	Mar. 10	1331	341	54	1379
Middlings-purifier and dust-collector	F. C. Miller and J. H. Walker	446,876	Feb. 24	2229	554; 555; 556	54	976
Mileage-book indicator and guard. Combined	W. H. Knight	447,954	Mar. 10	1121	282	54	1338
Milk-can	J. E. Morrison	446,949	Feb. 24	2357	586	54	998
Milk-can	J. de St. Legier and G. Davis	446,573	Feb. 17	1750	431	54	872
Milk-can	W. C. Thornton	447,923	Mar. 10	1073	269	54	1328
Milk-cooler	W. Wightman	448,869	Mar. 24	2614	657	54	1641
Milk-curd. Preparing food from	A. W. Rehnström	446,887	Feb. 24	2255	.....	54	980
Milk heater	J. L. Jönsson	447,073	Feb. 24	2568	637	54	1037
Milk-liquidizing machine	G. Roth	446,077	Feb. 10	926	226	54	700
Milk refrigerating and transporting can	P. M. Forrester	446,254	Feb. 10	1248	305	54	759
Milk testing and separating machine	D. Cooper	446,248	Feb. 10	1239	303	54	757
Milk-testing device	A. H. Reid	446,469	Feb. 17	1594	391	54	842
Mill: *See* Boring and turning mill. Coffee-mill. Crushing-mill. Feed-mill. Fanning-mill. Grinding-mill. Paint-mill. Pug-mill. Rod-mill. Roller-mill. Rolling-mill. Saw-mill. Windmill.							
Mill and power mechanism	E. C. Griffin	449,118	Mar. 31	2988	755	54	1723
Mill appliance	H. Aiken	448,623	Mar. 24	2223	557; 558	54	1567
Mill appliance	J. Kennedy	446,526	Feb. 17	1683	411; 412	54	859
Milling-cutter	E. R. Pallen	447,900	Mar. 10	1034	260	54	1321
Mineral wool. Manufacturing	C. H. Rockwell	447,360	Mar. 3	137	.....	54	1143
Minerals. Machine for cutting or slicing	W. B. Dwight	445,983	Feb. 10	761	186; 187; 188; 189; 190	54	671
Miners' hats. Lamp-carrier for	C. H. Hobson	447,325	Mar. 3	69	19	54	1131
Mines. System of electrical distribution for	E. A. Sperry	446,030	Feb. 10	852	207	54	686
Mining-column	C. H. Sergeant	444,140	Jan. 6	268	64	54	55
Mining-machine	J. Stephenson	444,027	Jan. 6	70	19	54	17
Mining machine. Coal-	F. A. Pocock	444,116	Jan. 6	216	52, 53	54	44
Mining machine. Coal-	C. H. Wolford	444,476	Jan. 13	775	202	54	162
Mining machine. Coal-	H. B. Wyman	448,829	Mar. 24	2543	638	54	1628
Miter-box	R. B. Currier	446,431	Feb. 17	1535	378	54	829
Mirror. Lady's shoe-	S. Goodman	447,770	Mar. 10	804	199	54	1277
Mixing apparatus	R. Smith	449,259	Mar. 31	3209	809	54	1764
Moistening and sealing devices. Fountain-feed for	P. J. Schreiber	446,081	Feb. 10	930	227	54	701
Molasses-mixer	W. N. Villavaso	444,470	Jan. 13	767	200	54	160
Mold: *See* Bullet-mold. Cigar-mold. Stereotype-mold. Suppository-mold.							
Mold	G. W. Beyer	447,555	Mar. 3	470	116	54	1206
Mold	T. E. Twist	445,737	Feb. 3	363	94	54	584
Mold-rack	F. J. Wooster and R. L. Andrus	447,804	Mar. 10	876	218	54	1291
Molding apparatus	D. Carlin	444,588	Jan. 13	957	248	54	198
Molding-machine	J. E. McCanna	448,987	Mar. 24	2779	703	54	1673
Molding-machine	H. Tabor	448,596	Mar. 17	2158	540	54	1547
Molding-machine	W. Zoeller	445,215	Jan. 27	1991	513; 514	54	413
Moldings. Apparatus for treating composition for ornamenting	G. W. Landon	447,733	Mar. 3	729	183	54	1255
Moldings, &c. Fabric for covering	J. D. Ripson	445,434	Jan. 27	2309	599	54	477
Mole-trap	J. C. Trout	447,417	Mar. 3	237	60	54	1162
Money-changer	H. G. Cooke	448,637	Mar. 24	2241	563	54	1570
Money-till. Reflecting	G. R. Meitzler	445,566	Feb. 3	71	17	54	526
Monkey-wrench	V. J. McDonnel	449,129	Mar. 31	3009	761	54	1726
Monkey-wrench	J. K. Starley	444,402	Jan. 6	658	170	54	130
Mop-head	F. P. White	447,650	Mar. 3	611	151	54	1233
Mop-stick, mop-wringer, and scrubbing-brush holder combined	J. A. Brossean	444,043	Jan. 6	97	25	54	22
Mop-wringer	C. and F. C. McDonald	444,279	Jan. 6	473	120	54	93
Mop-wringer	W. S. Jarboe	447,732	Mar. 3	728	182	54	1255

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Mortising-machine	H. F. Wyatt	447,269	Feb. 24	2922	726	54	1105
Mosquito-canopy frame	A. Jatho	447,878	Mar. 10	996	251	54	1313
Motion at different speeds. Means for transmitting rotary	C. B. Cottrell	448,776	Mar. 24	2467	617	54	1613
Motion. Device for converting	W. E. Canedy	445,922	Feb. 3	662	161	54	642
Motive power. Obtaining	G. J. Altham	448,621	Mar. 17	2214	554	54	1558
Motor: *See* Car-motor. Churn-motor. Current-motor. Dental motor. Electric motor. Electro-magnetic motor. Pneumatic motor. Railway-motor. Railway-gate motor. Sewing-machine motor. Spring-motor. Tide-motor. Water-motor.							
Motor	N. E. Austin	445,593	Feb. 3	116	29	54	534
Motor	L. Eynard	446,945	Feb. 24	2352	585	54	996
Motor	J. R. G. Huffman	446,134	Feb. 10	1018	252	54	718
Motor	T. Sutherland	447,648	Mar. 3	609	150	54	1233
Motor	G. Jernberg	447,328	Mar. 3	72	20	54	1139
Mower	C. C. Maxwell	448,977	Mar. 24	2766	699	54	1671
Mower attachment. Lawn-	J. E. Ash	444,643	Jan. 13	1033	269	54	212
Mower. Lawn-	H. H. Dille and E. W. McGuire	446,329	Feb. 10	1366	332; 333	54	783
Mower. Lawn-	E. N. Fox	444,608	Jan. 13	982	255	54	203
Mower. Lawn-	E. E. Runyon	445,616	Feb. 3	154	40	54	541
Mower. Lawn-	L. Smith	445,632	Feb. 3	179	47	54	546
Mower. Lawn-	W. Storey	448,866	Mar. 24	2611	656	54	1640
Mower. Lawn-	M. Anthony	446,316	Feb. 10	1347	328	54	779
Mowers. Divider attachment for	R. F. Kranse and J. Glennon	448,440	Mar. 17	1926	484	54	1503
Mowers. Grass-carrying attachment for lawn-	T. F. Bartlett	448,188	Mar. 10	1480	378	54	1409
Mowers. Grass-receptacle for lawn-	J. O. Brown	444,238	Jan. 6	418	104; 105	54	82
Mowing-machine	J. J. Courtney	445,391	Jan. 27	2241	581; 582	54	463
Mowing-machine	J. W. James	445,894	Feb. 3	621	152; 153	54	634
Mowing-machine	G. L. K. Morrow	447,342	Mar. 3	99	27	54	1137
Mowing-machine	E. Smith	445,347	Jan. 27	2153	565	54	452
Mowing-machine	F. J. J. Schuett	446,894	Feb. 24	2266	563	54	981
Mowing-machine divider	J. W. Watson	446,803	Feb. 17	2102	523	54	942
Mowing-machine-knife grinder	W. O. Nelson	448,665	Mar. 24	2287	573	54	1579
Mucilage-holder	J. H. Porter	449,233	Mar. 31	3163	797	54	1755
Mucilage holder and spreader	F. T. Aikins	448,492	Mar. 17	2005	502	54	1517
Mucilage-scraper	C. H. Land	446,947	Feb. 24	2354	586	54	907
Muffle-furnace	C. E. Healy	449,120	Mar. 31	2992	756	54	1724
Muffler. Steam-	F. B. Wood	446,199	Feb. 10	1135	278	54	736
Multiple call-box	C. C. Abbe	444,901	Jan. 20	1483	363	54	306
Multiple-cylinder engine	H. Dunsmuir	449,284	Mar. 31	3249	823; 824	54	1771
Multiple expansion-engine	C. A. Wetz	445,591	Feb. 3	115	29	54	593
Music-book holder	J. Sohünemann	445,093	Jan. 20	1787	460	54	365
Music-box	C. A. Hussey	446,684	Feb. 17	1920	478; 479	54	904
Music-box. Electric	E. W. Burnham	447,040	Feb. 24	2516	624; 625	54	1027
Music-leaf turner	B. Schneider	448,265	Mar. 17	1623	414	54	1445
Music-leaf turner	O. F. C. Bannier	443,390	Jan. 6	638	166	54	125
Music-sheets. Device for turning	J. F. C. Grün	444,310	Jan. 6	621	161	54	122
Music-sheets. Device for turning	A. Junod, J. Jaccard, and P. Calame Jacard.	445,099	Feb. 3	305	80, 81	54	572
Musical box	J. L. De Good	445,978	Feb. 10	754	185	54	670
Musical instrument	J. Fairman	448,217	Mar. 17	1543	395	54	1430
Musical instrument	E. Freiner	449,439	Mar. 31	3540	892	54	1823
Musical instrument	R. W. Pain	445,055	Jan. 20	1766	455	54	361
Musical instrument	C. Pietschmann	447,970	Mar. 10	1157	293	54	1343
Musical instrument. Mechanical	O. Lenzner, Sr	447,689	Mar. 3	661	164	54	1243
Musical instrument. Stringed	J. P. Becker	449,306	Mar. 31	3466	873	54	1809
Musical instruments. Key-board playing attachment for	A. V. Chevers	445,849	Feb. 3	559	136	54	620
Musical instruments. Pipe for wind	J. Heald	448,797	Mar. 24	2498	625	54	1619
Musical instruments. Shell for	A. Springer	444,770	Jan. 13	1243	323	54	251
Musical instruments. Sound-board for	G. B. Durkee	447,946	Mar. 10	1107	278	54	1335
Musical instruments. Tail-piece for	A. H. Loebs	444,448	Jan. 13	726	190	54	152
Musical instruments. Tone-modulator for	F. O. Wellcome	448,307	Mar. 17	1709	433	54	1462
Musical instruments. Tuning-slide for	I. G. Lawshe	445,119	Jan. 20	1830	474	54	373
Musicians. Time-indicating device for	I. Commons	447,633	Mar. 3	587	145	54	1228
Mustache-trainer	G. J. Capewell	444,948	Jan. 20	1573	403	54	322
Nail-extractor	H. Hartsuff and J. Murphy	445,344	Jan. 27	2180	564	54	451
Nail feeder. Wire-	G. W. Packer	448,585	Mar. 17	2135	535; 536	54	1543
Nail-machine	J. von Serkey	448,620	Mar. 17	2204	551; 552; 553; 554	54	1556
Nail machine. Wire-	J. W. Thompson	445,097	Jan. 20	1795	463; 464	54	366
Nail-making attachment. Wire-	G. W. McKim	447,895	Mar. 10	1022	257; 258	54	1319
Nail-making machine	J. H. Thompson	445,722	Feb. 3	339	89	54	579
Nail-puller	W. E. Pettengill	445,077	Jan. 20	1769	456	54	361
Nailing-machine	S. W. Robinson and S. P. Watt	447,358	Mar. 3	130	36, 37	54	1142
Nailing machine. Hand-	S. E. Crawford	447,398	Mar. 3	204	53, 54	54	1156
Name-plate pattern	J. H. Kator	445,785	Feb. 3	445	111	54	599
Neck tie or scarf and making the same	W. B. Erskine	444,880	Jan. 20	1449	377	54	300

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Neckscarf	W. B. Erskine	445,137	Jan. 20	1858	482	54	379
Neckscarf	L. Eschner	446,253	Feb. 10	1246	304	54	759
Necktie	G. W. Loud	448,444	Mar. 17	1933	486	54	1504
Necktie-fastener	F. H. Howard	447,326	Mar. 3	70	19	54	1131
Needle-points. Machine for polishing	W. H. Dayton	449,313	Mar. 31	3314	836	54	1784
Needle. Ribbon-	C. F. Hathaway	445,316	Jan. 27	2138	553	54	443
Net. Fish-	L. A. Johnson	446,755	Feb. 17	2029	506	54	926
Net for crabbing and fishing	R. M. Franklin	446,440	Feb. 17	1550	381	54	832
Newspaper-cover	J. Davis	449,210	Mar. 31	3133	790	54	1749
Newspaper-holder	D. Wagner	445,435	Jan. 27	2310	599	54	477
Newspaper-vending apparatus	B. Mossler	444,502	Jan. 13	825	215	54	173
Newspapers or other periodicals. Apparatus for applying strips to	R. D. Brain and C. T. Shafer	444,167	Jan. 6	310	75	54	63
Nipper or wire-cutter	J. P. Nessle	444,764	Jan. 13	1235	321	54	249
Nippers. Police-	M. S. Thomas	446,616	Feb. 17	1808	447	54	893
Nipple-holder	C. T. Hacken	445,949	Feb. 3	704	172	54	651
Non-conducting compound	F. Sprinkmann	445,358	Jan. 27	2201	.....	54	456
Nozzle. Lubricating discharge	O. R. Chase	445,711	Feb. 3	322	85	54	576
Nut and pipe wrench. Combined	D. H. Carpenter	446,324	Feb. 10	1358	331	54	781
Nut-lock	M. S. Alexander	449,023	Mar. 24	2934	719	54	1684
Nut-lock	H. T. Barlet	445,029	Jan. 20	1688	434	54	346
Nut-lock	C. C. Clay	444,816	Jan. 20	1308	340	54	273
Nut-lock	F. M. Dilany	449,241	Mar. 31	3133	790	54	1749
Nut-lock	G. C. Elliott	445,166	Jan. 27	1916	495	54	399
Nut-lock	H. G. Fitler and W. H. Armstrong	447,509	Mar. 3	403	99	54	1194
Nut-lock	W. Gledhill	448,183	Mar. 10	1473	375	54	1408
Nut-lock	B. F. Gram and W. Bard	447,311	Mar. 3	45	11	54	1126
Nut-lock	H. P. Grimes	447,771	Mar. 10	805	200	54	1278
Nut-lock	F. H. Harvey	445,469	Jan. 27	2354	611	54	485
Nut-lock	F. L. Jones	448,432	Mar. 17	1911	481	54	1500
Nut-lock	T. P. Pollard	447,697	Mar. 3	673	168	54	1245
Nut-lock	A. F. Pritschau	447,738	Mar. 3	738	185	54	1257
Nut-lock	E. W. Sprague	447,703	Mar. 3	682	169	54	1247
Nut-lock	F. F. Unckrich	448,385	Mar. 17	1835	462	54	1486
Nut-lock	L. H. Young	447,224	Feb. 24	2840	704	54	1089
Nut. Lock-	S. F. Clouser	449,069	Mar. 24	2907	737	54	1698
Nut. Lock-up	C. L. Chapman	444,062	Jan. 6	127	32	54	28
Nut-tapping machine	J. P. Mason and S. L. Wiegand	444,918	Jan. 20	1525	392	54	314
Nuts and washers. Method of and apparatus for making	W. A. Conant	447,870	Mar. 10	983	246	54	1311
Obstetrical harness	J. S. Hilllard	448,716	Mar. 24	2373	594	54	1595
Odometer	B. N. Hawes	444,833	Jan. 20	1340	348	54	279
Oil. Apparatus for refining	J. H. Graham	445,015	Jan. 20	1672	429	54	342
Oil-burner	L. S. Bonbrake	446,809	Feb. 17	2110	525	54	944
Oil-can	M. Jolly	445,061	Jan. 20	1748	450	54	357
Oil-can	C. E. Rand	445,127	Jan. 20	1841	477	54	375
Oil-can	C. H. Baker	445,490	Jan. 27	2388	621	54	491
Oil-cup	W. A. Downes	446,250	Feb. 10	1242	303	54	758
Oil-cup	J. S. Donnellan	447,300	Mar. 3	96	7	54	1123
Oil-cup feeder	R. R. Graf	446,344	Feb. 10	1390	.....	54	788
Oil. Lubricating	L. C. Snell	444,731	Jan. 13	1180	304 305	54	239
Oil. Means for storing and handling petroleum	W. B. Davis	449,437	Mar. 31	3539	.....	54	1823
Oil. Tanner's	J. D. Edwards	449,213	Mar. 31	3136	791	54	1750
Oils. Refining	F. P. Noera	446,136	Feb. 10	1022	252	54	718
Oiler	C. O. Heggem	447,282	Feb. 24	2940	731	54	1110
Oiler. Centrifugal	W. R. Wright	446,401	Feb. 10	1472	362	54	805
Oiling device. Windmill-	J. U. Gerow	449,531	Mar. 31	3675	924	54	1849
Opera-glass holder	C. A. Perkins and W. H. H. Norcross	446,611	Feb. 17	1799	445	54	882
Opera-glasses	C. G. Stevens	446,032	Feb. 10	855	208	54	686
Optometer	T. Hiatt	446,451	Feb. 17	1566	385 386	54	836
Orange-wrapping machine	J. F. Brown	444,811	Jan. 20	1302	338	54	272
Order-holder	J. B. G. A. Canet	447,228	Feb. 24	2850	707	54	1090
Ordnance. Breech-loading	H. Schneider	449,335	Mar. 31	3351	845	54	1787
Ordnance. Breech-loading	S. Seabury	448,269	Mar. 17	1627	415 416	54	1446
Ordnance. Breech-loading	C. W. Sponsel	447,376	Mar. 3	161	44, 45	54	1148
Ordnance. Breech-loading	F. H. Wilks	446,496	Feb. 17	1636	401	54	850
Ordnance. Loading	L. Gathmann	445,399	Jan. 27	2260	587	54	467
Ordnance. Process of and apparatus for hardening	H. S. Maxim	446,532	Feb. 17	1693	415 416	54	861
Ore-concentrator	M. Castelnau	446,055	Feb. 10	895	217	54	693
Ore-concentrator	M. Castelnau	446,963	Feb. 24	2381	592 593	54	1602
Ore-concentrator	G. D. Husemann	448,961	Mar. 24	2742	691 692	54	1666
Ore-concentrator	F. B. Morse	449,292	Mar. 31	3264	898	54	1773
Ore-concentrator	F. C. L. Sergeant	444,785	Jan. 13	1260	326	54	254
Ore-concentrator	J. D. Coplen	444,275	Jan. 6	467	119	54	92
Ore concentrator and amalgamator	W. L. Ireland and P. R. Stanhope	449,096	Mar. 24	2947	747	54	1706
Ore crusher and sizer	J. K. Hallowell	447,028	Feb. 24	2489	619	54	1022
Ore drying and pulverizing apparatus	C. G. Buchanan	446,658	Feb. 17	1876	466	54	896
Ore or rock breaker	G. H. Chick	448,710	Mar. 24	2362	591	54	1593
Ore-riffle	G. N. Phelps	446,996	Feb. 24	2430	605	54	1012
Ore-roasting furnace	T. J. Grier	448,762	Mar. 24	2448	612	54	1609
Ore-screen	J. K. Hallowell	447,027	Feb. 24	2488	619	54	1022
Ore-separating apparatus	A. Clément-Conti	448 319	Mar. 17	1728	437 438	54	1466
Ore-separator. Magnetic	C. G. Buchanan	446,767	Feb. 17	2045	509 510	54	930
Ore separator. Magnetic-	C. Q. Payne	444,223	Jan. 6	396	99	54	79
Ore-washer	S. C. McLanahan and W. F. Kirk	445,430	Jan. 27	2305	598	54	476
Ores for amalgamation. Preparing	H. S. Myers	447,344	Mar. 3	105	.....	54	1138

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Organ	J. H. Chase and J. B. Tracy	445,044	Jan. 20	1722	444	54	352
Organ	A. H. Dixon	448,508	Mar. 17	2025	506 507	54	1521
Organ	F. Roosevelt	449,177	Mar. 31	3080	777	54	1739
Organ	F. Roosevelt and W. N. Elbert	449,590	Mar. 31	3769	946	54	1866
Organ-action	M. Clark	447,760	Mar. 10	782	194 195	54	1273
Organ-pedal attachment	M. B. Crowell	447,560	Mar. 3	477	117	54	1207
Organs. Electric-motor attachment for reed-	L. K. Fuller	444,169	Jan. 6	316	76	54	64
Oscillating meter	R. A. Thayer and E. Everett	447,140	Feb. 24	2701	669	54	1061
Oven. Domestic	J. Watson	449,432	Mar. 31	3532	890	54	1822
Ovens. Construction of bakers'	G. S. Tunks	445,826	Feb. 3	526	126 127	54	614
Overflow and waste pipe	H. F. Stowell	448,842	Mar. 24	2567	644	54	1633
Overshoe	H. Egley	447,564	Mar. 3	482	118	54	1208
Overshoe	M. S. Varley	444,340	Mar. 31	3365	848	54	1789
Overshoe	W. F. Wahl	447,091	Feb. 24	2592	643	54	1042
Overshoe attachment	M. M. Beeman	448,756	Mar. 24	2438	610	54	1608
Oyster-tongs	F. T. Maddrix	448,059	Mar. 10	1292	330	54	1370
Oyster-tongs	J. B. Tawes	449,012	Mar. 24	2820	714	54	1681
Package-carrier	S. K. Dummer	448,210	Mar. 17	1531	392	54	1428
Package-elevator	B. Van Hennik	449,453	Mar. 31	3566	899	54	1828
Package making and filling machine	H. E. Smyser	449,275	Mar. 31	3228	816 817 818 819	54	1767
Packages, &c. Apparatus for carrying	J. O. Kapp	448,050	Mar. 10	1280	326	54	1368
Packing-case	H. C. Yocum and M. V. Kaeer	445,869	Feb. 3	587	144	54	627
Packing device	J. Park, Jr	444,784	Jan. 13	1259	326	54	254
Packing for piston-rods	E. F. Lewis and F. T. Whaley	444,002	Jan. 6	31	9	54	9
Packing for stuffing-boxes	H. E. Forrest	445,693	Feb. 3	293	77	54	570
Packing. Metallic rod-	E. P. Monroe	444,195	Jan. 6	629	163	54	87, 88
Packing. Metallic rod-	E. P. Monroe	444,386	Jan. 6	629	163	54	71
Packing. Piston-	W. Christie	447,007	Feb. 24	2445	608	54	124
Packing. Rod-	E. F. Peacock	446,364	Feb. 10	1412	347	54	1014
Packing. Rod-	T. E. Murray	444,055	Jan. 6	113	28	54	792
Packing. Rod-	E. G. Shortt	447,261	Feb. 24	2900	720	54	25
Packing. Rod-	A. H. Twining	446,699	Feb. 17	1942	484	54	1101
Packing. Rod-	J. Walker	447,170	Feb. 24	2748	680	54	968
Pad: *See* Collar-pad. Harness-pad. Hoof-pad. Inking-pad. Stair-pad. Truss-pad.							1070
Padlock	G. W. Lucas	444,449	Jan. 13	727	191	54	152
Padlock	F. W. Mix	445,121	Jan. 20	1834	475	54	373
Paging-machine	S. K. White	449,304	Mar. 31	3281	831 832	54	1776
Pail and wringer. Mop-	E. A. Wood	446,909	Feb. 24	2303	573	54	988
Pail. Dinner-	H. B. Adams	444,215	Jan. 6	380	95	54	76
Pail. Dinner-	G. P. Mitchell	445,961	Feb. 3	727	177	54	655
Paint	N. J. Mitchell	444,842	Jan. 20	1358	.....	54	282
Paint. Anti-fouling	N. B. Dennys	444,665	Jan. 13	1066	.....	54	218
Paint-distributer	G. H. Huttenlocher and W. Ullmer	444,440	Jan. 13	718	188	54	150
Paint. Fire-proof	I. L. Merrell	448,922	Feb. 24	2319	.....	54	991
Paint from residuum of vegetable oils	G. W. Scollay	446,018	Feb. 10	826	.....	54	681
Paint. Making	G. W. Scollay	446,019	Feb. 10	828	.....	54	682
Paint. Marine	J. N. Longden	446,818	Feb. 17	2124	.....	54	947
Paint-mill	H. Goosen, R. J. Haly, and J. W. Kent.	448,226	Mar. 17	1558	398	54	1433
Paint-pails. Brush-scraper attachment for	D. F. Brown	445,876	Feb. 3	597	146	54	628
Paint. Roof-	J. B. Zook	447,997	Mar. 10	1197	.....	54	1352
Painter's jack	F. Pepin	444,280	Jan. 6	473	120	54	94
Painting in oil-colors	C. C. Schnitger	448,267	Mar. 17	1625	.....	54	1446
Pan: *See* Bake-pan. Baking-pan. Bed-pan. Dust-pan. Grinding and amalgamating pan. Locomotive ash-pan. Vacuum-pan.							
Pan lid. Frying or other	C. Hartley	444,702	Jan. 13	1124	290	54	230
Pan lifter and turner	J. Ericson	446,114	Feb. 10	984	242	54	711
Pan lifter. Hot-	M. F. Penfield	444,504	Jan. 13	831	216	54	173
Panoramic device	E. W. Keeler	446,524	Feb. 17	1679	410	54	898
Pantaloons-supporter	C. P. Coggeshall	444,176	Jan. 6	325	79	54	66
Pantry. Portable	R. Sabin	448,372	Mar. 17	1814	457	54	1462
Paper articles. Apparatus for delivering	J. West	448,285	Mar. 17	1672	424	54	1455
Paper bag	C. W. Fishel and F. E. Sweet	446,771	Feb. 17	2050	511	54	931
Paper bag	F. O. Paige	448,142	Mar. 10	1406	360	54	1395
Paper bag	W. D. Smith	444,527	Jan. 13	862	224	54	180
Paper-bag machine	E. E. Claussen	444,727	Jan. 13	1169	300	54	238
Paper-bag machine	W. A. Lorenz	444,728	Jan. 13	1171	301 302	54	238
Paper-bag machine	W. A. Lorenz and E. E. Claussen	444,729	Jan. 13	1177	303 304	54	239
Paper-bag machine	W. H. Patterson	446,839	Feb. 17	2158	536 537	54	954
Paper box. Collapsible	F. Y. Bowman	448,813	Mar. 24	2520	634	54	1623
Paper box. Knockdown	E. M. Scott	448,824	Mar. 24	2533	635	54	1626
Paper-box machine	A. L. Munson	448,158	Mar. 10	1429	365 366 367	54	1399
Paper-clamp	J. B. McGirr	448,822	Mar. 24	2529	634	54	1625
Paper-coating apparatus	J. Kayser	445,953	Feb. 3	715	174 175	54	652
Paper. Composition for treating articles made from	L. Grote	445,111	Jan. 20	1821	.....	54	371

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Paper-cutter	A. Malm	446,359	Feb. 10	1407	344, 345	54	791
Paper-cutter	H. G. Spraker	444,106	Jan. 6	198	48	54	41
Paper-cutter and book-mark. Combined	T. H. Perry	445,196	Jan. 27	1965	508	54	408
Paper-cutting machine	L. Carrer	445,923	Feb. 3	662	162	54	642
Paper-cutting machine	C. R. Ely	449,525	Mar. 31	3669	922	54	1848
Paper dampening and stretching machine	W. Nacken	444,222	Jan. 6	394	98, 99	54	78
Paper. Distinctive	J. Macdonough	447,336	Mar. 3	91	25	54	1135
Paper feeding and separating machine	L. F. Fales	447,766	Mar. 10	797	198	54	1276
Paper-feeding machines. Automatic stop mechanism for	L. Harlow	446,678	Feb. 17	1910	475	54	902
Paper fixture. Toilet	S. Wheeler	445,436	Jan. 27	2311	600	54	477
Paper fixture. Toilet	S. Wheeler	447,419	Mar. 3	239	61	54	1162
Paper holder and cutter. Roll	J. M. Bolton	448,113	Mar. 10	1362	349	54	1385
Paper holder and cutter. Roll	J. H. Cornelison	445,975	Feb. 10	751	184	54	669
Paper holder and cutter. Roll	L. Ehrlich	446,332	Feb. 10	1373	334	54	784
Paper holder and cutter. Roll	E. C. Ford and G. T. Jacobs	448,138	Mar. 10	1402	358	54	1394
Paper holder and cutter. Roll	S. M. Friede	445,987	Feb. 10	784	191	54	675
Paper holder and cutter. Roll	W. G. Haas	449,158	Mar. 31	3048	770	54	1733
Paper holder and cutter. Roll	E. S. Knight	445,116	Jan. 20	1828	473	54	372
Paper holder and cutter. Roll	C. K. Pickles	445,079	Jan. 20	1771	456	54	361
Paper holder and cutter. Roll	C. K. Pickles	445,080	Jan. 20	1772	457	54	362
Paper holder and cutter. Roll	C. K. Pickles	446,010	Feb. 10	818	197	54	679
Paper holder and cutter. Roll	C. K. Pickles	446,011	Feb. 10	819	198	54	680
Paper holder and cutter. Roll	C. K. Pickles	446,012	Feb. 10	819	198	54	680
Paper holder and cutter. Roll	C. K. Pickles	446,366	Feb. 10	1415	348	54	793
Paper holder and cutter. Roll	E. E. Staninger	449,501	Mar. 31	3636	915	54	1842
Paper holder and cutter. Roll	W. Van Horn	448,097	Mar. 10	1341	343	54	1381
Paper in a suspended position. Bracket for holding	F. Van Benthuysen	446,486	Feb. 17	1619	397	54	847
Paper-jogger	R. A. Hart	446,447	Feb. 17	1561	384	54	835
Paper, leather, and other plastic materials. Die for ornamenting	W. Schumacher	445,863	Feb. 3	580	141	54	625
Paper. Machine for folding, pasting, trimming, and covering sheets of	C. Chambers, Jr., W. Mendham, and T. C. Damborg.	445,498	Jan. 27	2397	623, 624, 625, 626, 627	54	493
Paper-machines. Stuff-regulating apparatus for	W. C. Edwards	445,985	Feb. 10	777	190	54	674
Paper-making machine	H. Hoeborn	445,003	Jan. 20	1657	424	54	340
Paper-making machine	T. H. Latimer and F. A. Fletcher	448,441	Mar. 17	1927	48	54	1503
Paper-mills. Pulp-screen for	P. R. Thom	444,862	Jan. 20	1425	370, 371	54	294
Paper pails. Making	U. Hull and W. W. McEwan	445,143	Jan. 20	1874	485	54	381
Paper-pulp boiler	S. R. Wagg	446,041	Feb. 10	871	211, 212	54	689
Paper sack	C. H. Vickery	444,029	Jan. 6	72	19	54	17
Paper strips. Machine for making tubing from	H. Denney	444,950	Jan. 20	1575	404, 405	54	323
Paper tubing. Machine for making	H. Denney	445,135	Jan. 20	1855	480, 481	54	378
Paper tubing. Making	H. Denney	446,663	Feb. 17	1882	467	54	897
Paper. Water-finishing	G. La Monte	445,898	Feb. 3	627	154	54	635
Paper-weight	L. B. Martin	444,647	Jan. 13	1040	270	54	214
Parcel-carrier	C. Starr and P. Krazeise	445,735	Feb. 3	361	93	54	583
Parcel-strap	F. H. Loveless	448,657	Mar. 24	2276	570	54	1576
Parer and corer. Fruit	W. A. C. Oaks	449,050	Mar. 24	2876	731	54	1693
Partition. Fire-proof	C. W. White	449,019	Mar. 24	2829	717	54	1683
Partition. Sliding	J. Hayes	447,610	Mar. 3	552	136, 137	54	1221
Pasting device	G. P. Salisbury	445,940	Feb. 3	695	169	54	649
Pattern: *See* Adjustable pattern. Name-plate pattern: Commutator-pattern.							
Pattern	D. S. Paul	445,859	Feb. 3	574	140	54	624
Pavement	S. B. Jerome	445,114	Jan. 20	1825	472	54	371
Pavement or floor light	J. C. French	445,311	Jan. 27	2134	551	54	442
Pavement. Street	J. Lynch	448,658	Mar. 24	2277	571	54	1576
Paving, roofing, and building purposes. Compound for	H. F. Williams	446,654	Feb. 17	1872	.....	54	896
Peanut-picking machine	W. Watson	445,664	Feb. 3	238	64, 65	54	558
Peat fiber. Apparatus for classifying and finishing	G. H. Bérard	444,199	Jan. 6	360	89, 90	54	72
Pegging-jack	J. J. Wikle	446,312	Feb. 10	1342	327	54	778
Pen filler. Fountain	F. C. Brown	446,202	Feb. 10	1143	280	54	738
Pen. Drawing	G. Mayer	448,450	Mar. 17	1940	489	54	1506
Pen. Fountain	L. Bernhard	444,985	Jan. 20	1632	419	54	334
Pen. Fountain	H. M. Cronkhite	448,939	Mar. 24	2710	684	54	1660
Pen. Fountain	G. H. Jones	445,317	Jan. 27	2139	553	54	443
Pen. Fountain	M. W. Moore	448,885	Mar. 24	2633	661	54	1644
Pen. Fountain	J. Oliphant	448,360	Mar. 17	1797	454	54	1479
Pen. Fountain	N. F. Palmer	445,600	Feb. 3	126	32	54	536
Pen. Fountain	H. T. Reed	449,295	Mar. 31	3269	829	54	1774
Pen. Fountain ruling	W. H. Birkmire	445,944	Feb. 3	699	170	54	650
Pen-holder	P. J. Cairns	444,046	Jan. 6	100	25	54	23
Pen-holder	F. J. Kaldenberg	446,646	Feb. 17	1861	462	54	894
Pen-holder	L. L. W. McMurtry	445,622	Feb. 3	163	43	54	543
Pen-holder	T. Nance	447,197	Feb. 24	2794	691	54	1080
Pen-holder	G. H. Richardson	444,304	Jan. 6	507	132	54	101
Pen-holder	H. F. E. Schuster	448,083	Mar. 10	1323	329	54	1377
Pen-holder, pen-nib, extractor, and paper-knife. Combined	T. B. A. Chamberlain	448,933	Mar. 24	2699	681	54	1658
Pen-puller	I. W. Heysinger	445,673	Feb. 3	265	70	54	565
Pencil and crayon holder	W. W. Clinenson	444,974	Jan. 20	1613	413	54	331
Pencil and pencil-sharpening knife. Combined	R. H. Franklin	448,182	Mar. 10	1473	375	54	1408
Pencil-cases, &c. Suspension device for	J. C. W. Jeffery's and G. Dickman	447,879	Mar. 10	997	251	54	1313

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Invention.	Name.	No.	Date	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pencil-clasp	C. O. Biederman	448,405	Mar. 17	1869	470	54	1492
Pencil-holder	J. S. Shaw	445,478	Jan. 27	2371	617	54	488
Pencil. Lead	R. H. Franklin	449,040	Mar. 24	2802	727	54	1690
Pencil. Lead	B. B. Goldsmith	447,310	Mar. 3	44	11	54	1125
Pencil-sharpener	J. I. Gorton and J. Bedell	444,431	Jan. 13	705	184	54	147
Pencil-sharpener	A. F. A. King	447,431	Mar. 3	260	65	54	1166
Pencil-sharpener	J. D. Mills	448,723	Mar. 24	2385	597	54	1598
Pencil-sharpener	F. W. Sabel	448,839	Mar. 24	2357	641	54	1630
Pencil sharpener. Slate	E. R. Lovett	449,625	Mar. 31	3849	964	54	1881
Pencil-sharpening machine	F. M. Livingston	445,677	Feb. 3	272	71	54	566
Perfuming apparatus. Coin-operated	H. M. Wilson	446,639	Feb. 17	1848	458	54	891
Permutation-lock	J. Baum	446,657	Feb. 17	1875	465	54	896
Permutation-lock	W. B. Folger	444,210	Jan. 6	373	93	54	75
Permutation-lock	J. B. Miller	446,071	Feb. 10	919	224	54	698
Permutation-lock	J. B. Miller	447,575	Mar. 3	500	123	54	1211
Permutation-lock	T. A. Phillips and J. J. Greenhoe	447,621	Mar. 3	572	141	54	1225
Permutation-lock	D. M. Quarles, Jr	447,519	Mar. 3	414	101, 102	54	1196
Perspiration-powder	S. G. Hull	446,778	Feb. 17	2057	.....	54	933
Pessary	E. W. Wagner	444,513	Jan. 13	842	219	54	176
Petroleum. Device for burning crude	L. C. Snell	446,796	Feb. 17	2088	520	54	939
Petroleum. Process of and apparatus for refining and purifying	H. Frasch	448,480	Mar. 17	1986	498	54	1514
Phonogram-blanks. Device for turning off	T. A. Edison	448,780	Mar. 24	2475	619	54	1615
Phonograph erasing attachment	P. T. Dodge	449,349	Mar. 31	3370	851	54	1791
Phonographs. Turning-off device for	T. A. Edison	448,781	Mar. 24	2476	619	54	1615
Phosphate and making the same	J. Van Ruymbeke	446,087	Feb. 10	944	.....	54	703
Phosphates. Making alkaline	C. Glaser	446,815	Feb. 17	2121	.....	54	946
Photograph-cabinet	O. M. Herberg	445,639	Feb. 3	195	52	54	550
Photographs and other prints. Enameling	C. C. F. Brandt	444,084	Jan. 6	165	.....	54	35
Photographic apparatus	L. Lumière	444,535	Jan. 13	574	227	54	182
Photographic apparatus	O. Pasquarelli	445,232	Jan. 27	2017	520	54	418
Photographic apparatus	E. V. Swinden and J. Earp	445,911	Feb. 3	644	158	54	639
Photographic apparatus. Coin-controlled automatic	E. G. Fisher	444,487	Jan. 13	793	206, 207	54	166
Photographic apparatus for holding and developing dry-plates	G. H. Cobb	444,422	Jan. 13	695	181	54	145
Photographic background	W. G. Entrekin	445,805	Feb. 3	500	120	54	609
Photographic camera	E. B. Barker	444,806	Jan. 13	1292	335	54	261
Photographic camera	W. H. Fuller	445,550	Feb. 3	32	9	54	517
Photographic camera	F. Whitney	446,045	Feb. 10	876	213, 214	54	690
Photographic camera	C. Whitney	446,368	Feb. 10	1417	349	54	793
Photographic camera	C. Whitney	446,369	Feb. 10	1419	349	54	794
Photographic camera	C. Whitney	446,372	Feb. 10	1424	350	54	795
Photographic camera	C. Whitney	446,374	Feb. 10	1427	350, 351	54	795
Photographic-camera shutter	G. F. Kincaid	444,301	Jan. 6	589	152	54	117
Photographic-camera shutter	H. B. Norton	446,880	Feb. 24	2239	557	54	977
Photographic cameras. Supply-case for roll-holders in	C. Whitney	446,373	Feb. 10	1425	350	54	795
Photographic copying apparatus	S. C. Madsen	448,447	Mar. 17	1937	488	54	1505
Photographic film	V. Planchon	448,364	Mar. 17	1803	455	54	1480
Photographic objective	P. Rudolph	444,714	Jan. 13	1138	293, 294	54	233
Photographic-plate holder	C. Whitney	446,370	Feb. 10	1421	349	54	794
Photographic-plate holder	C. Whitney	446,371	Feb. 10	1423	349	54	795
Photographic-plate holders, negatives, and stock. Cabinet for	G. H. Richards	445,861	Feb. 3	577	140	54	624
Photographic-plate-washing apparatus	E. W. Taylor	448,383	Mar. 17	1831	461	54	1485
Photographic-printing apparatus	R. J. Wynkoop and J. M. Kemp	445,581	Feb. 3	93	22	54	530
Photographic roll-holder	H. G. Ramsperger	448,801	Mar. 24	2502	626, 627	54	1620
Photographic shutter	E. Bausch, G. Hommel, and A. Wollensak.	444,083	Jan. 6	161	40, 41	54	35
Photographic shutter	G. W. Low and W. Shakespeare, Jr	446,529	Feb. 17	1690	414	54	860
Photography. Artificial light for	T. H. McCollin	445,188	Jan. 27	1953	505	54	405
Piano	D. L. Stirn	447,380	Mar. 3	168	46	54	1150
Piano-action	S. R. Perry	449,263	Mar. 31	3212	811	54	1764
Piano-action	J. Rudolf	444,057	Jan. 6	115	29	54	25
Piano action. Upright	G. M. Guild	449,583	Mar. 31	3758	944	54	1864
Piano and organ. Combined	J. A. Smith	447,120	Feb. 24	2636	654	54	1051
Piano attachment	C. L. E. Lugenbuehl	449,048	Mar. 24	2875	730	54	1692
Piano case. Upright	A. H. Hastings	448,032	Mar. 10	1252	319	54	1363
Piano-damper	J. W. Granger	446,097	Feb. 10	957	235	54	705
Piano-forte	V. H. Mathushek	447,963	Mar. 10	1139	286	54	1340
Piano-forte action	S. R. Perry. (Reissue)	11,138	Jan. 6	680	177	54	134
Piano-forte action	A. T. Rousseau	445,905	Feb. 3	638	157	54	637
Piano-forte muffling attachment	H. Mallebre	448,448	Mar. 17	1939	488	54	1505
Piano-forte pedal-action	C. L. Weser	448,308	Mar. 17	1710	433, 434	54	1462
Piano-forte pedal and guard	W. T. Sternenberg	444,307	Jan. 6	511	134	54	102
Piano-fortes. Agraffe for	W. H. Ivers	448,046	Mar. 10	1273	325	54	1366
Piano-packing device	W. Hay	447,112	Feb. 24	2628	651	54	1049
Piano-pedal	H. Mallebre	446,710	Feb. 17	1958	488	54	912
Piano pedal attachment	R. W. Blake	445,035	Jan. 20	1695	436	54	347
Piano-tuning apparatus	A. Felldin	449,409	Mar. 31	3490	878	54	1813
Piano. Upright	G. Cook	444,817	Jan. 20	1308	340	54	273
Piano. Upright	H. L. Greywack	446,595	Feb. 17	1778	439	54	878
Pianos. Pedal-action for	F. Hammerle	447,319	Mar. 3	59	16	54	1129
Pianos. Repeating-action for	J. W. Brackett and H. N. Moore	444,041	Jan. 6	95	24	54	21
Pianos. Tone-sustaining device for	A. Pferdner	448,887	Mar. 24	2635	662	54	1644
Picker: *See* Cotton-picker.							
Picture-card	W. Hagelberg	445,174	Jan. 27	1927	498	54	400

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Picture-frame	J. F. McBride	448,821	Mar. 24	2528	633	54	1625
Picture-hanger	A. Siddall	445,942	Feb. 3	697	170	54	649
Picture-hanger	W. C. Tidball	445,305	Jan. 27	2118	548	54	438
Picture or mirror frame hanger	D. G. Rulon	449,496	Mar. 31	3630	914	54	1841
Pictures on glass. Implement for mounting	R. H. L. Talcott	448,692	Mar. 24	2329	584	54	1587
Pie-lifter	D Munson	445,006	Jan. 20	1660	425	54	340
Pier protector	A. Moore	446,586	Feb. 17	1769	436	54	876
Pile-fabric-cutting apparatus	J. H. Smith, A. Goddard, L. Higginbottom, and T. Mannock.	448,088	Mar. 10	1330	340	54	1379
Pill-box. Single-delivery	F. Koch	448,350	Mar. 17	1786	451	54	1476
Pill-machine	J. R. Clark	445,830	Feb. 3	530	128 129	54	615
Pill-machine	J. A. McFerran	449,424	Mar. 31	3520	886 887	54	1819
Pillow-sham holder	F. Karr	444,981	Jan. 20	1622	415	54	333
Pillow-sham holder	W. L. Peevers	447,118	Feb. 24	2634	654	54	1051
Pin:							
See Clothes-pin. Safety-pin. Husking-pin. Tether-pin. Rolling-pin.							
Pine-needles. Machine for fibrillation of	A. Scott	447,206	Feb. 24	2806	694	54	1082
Pipe:							
See Overflow and waste pipe. Waste-pipe. Wooden pipe. Smoking-pipe.							
Pipe and main clamp	T. McHugh	444,235	Jan. 6	413	103	54	81
Pipe-coupling	T. J. Hogan	444,179	Jan. 6	330	80	54	67
Pipe-coupling	F. Kaiser	448,765	Mar. 24	2452	613	54	1610
Pipe-coupling	P. C. Lawless	448,966	Mar. 24	2752	695	54	1668
Pipe-coupling	F. J. McGuire	449,293	Mar. 31	3206	828	54	1773
Pipe-coupling	H. B. Nichols	449,566	Mar. 31	3728	936	54	1859
Pipe coupling and valve	W. T. Messinger	444,451	Jan. 13	730	191	54	153
Pipe coupling. Hot-water heating	W. D. Johnson and T. A. Curtis	447,329	Mar. 3	75	21	54	1132
Pipe-coupling nipple	J. W. Daly	446,511	Feb. 17	1660	405	54	854
Pipe-cutting machine	W. H. Garland	445,138	Jan. 20	1860	482	54	379
Pipe-forming machine	S. Hartley	449,412	Mar. 31	3494	879 880	54	1814
Pipe-forming machine	D. A. Ritchie	445,202	Jan. 27	1972	510	54	409
Pipe-hanger	R. C. Carpenter	447,297	Mar. 3	19	6	54	1122
Pipe-hanger	F. G. and G. L. Scott	448,550	Mar. 17	2080	522	54	1533
Pipe joint. Suction	W. P. Humphreys	444,099	Jan. 6	187	46	54	39
Pipe-leak detector	A. H. Brown	445,495	Jan. 27	2393	622	54	492
Pipe or rod cutter	W. Vanderman	444,995	Jan. 20	1646	422	54	337
Pipe presses. Apparatus for delivering clay to sewer-	E. T. Mapel	446,530	Feb. 17	1691	414	54	860
Pipe sleeve. Steam-	T. Jacobs	446,685	Feb. 17	1922	479	54	904
Pipe-stock	D. C. Beano	444,686	Jan. 13	1104	285	54	226
Pipe-tester, closer, and clean-out	W. P. O'Brien	449,169	Mar. 31	3062	775	54	1736
Pipe-wrench	T. J. Duncan and D. McManus	446,592	Feb. 17	1776	438	54	877
Pipe-wrench	W. E. Goodnow and H. R. Margason	446,547	Feb. 17	1717	421	54	865
Pipe-wrench	M. H. McNair	449,627	Mar. 31	3852	964	54	1882
Pipe-wrench	G. F. Shaw	444,255	Jan. 6	440	111	54	86
Pipe-wrench	J. C. Sproull	444,372	Jan. 6	609	156	54	120
Pipe-wrench	D. P. Stanton	447,377	Mar. 3	165	45	54	1149
Pipe-wrench	C. F. West	448,619	Mar. 17	2203	551	54	1556
Pipe-wrench. Adjustable	C. V. Greenamyer	444,779	Jan. 13	1252	325	54	252
Pipes, &c. Air-space covering for steam-	J. P. Costigan and T. M. Vallean	447,243	Feb. 24	2576	714	54	1096
Pipes. Covering for steam or hot-water	C. C. Gilman	446,860	Feb. 24	2203	548	54	971
Pipes. Detachable bottom for	W. L. Heineken	446,634	Feb. 17	1836	454	54	889
Pipes. Self-adjusting frost-protector for ventilating-	T. C. Boyd	449,199	Mar. 31	3117	787	54	1746
Piping for pneumatic brakes, &c. Flexible	P. C. Lawless	445,250	Jan. 27	2045	525 526	54	423
Piston meter	J. B. Deeds	449,617	Mar. 31	3837	960	54	1878
Piston-rods or other rods to their cross-heads. Device for fastening adjustably	J. Hundgeburth	446,521	Feb. 17	1676	409	54	857
Piston-travel indicator	E. B. Thompson and C. A. Schroyer	444,077	Jan. 6	154	38	54	33
Pitman-head	J. Garfield	445,775	Feb. 3	434	108	54	597
Pivoted-jaw wrench	C. V. Greenamyer	444,777	Jan. 13	1250	324	54	252
Plane	G. W. Wright	445,792	Feb. 3	463	114	54	602
Plane	G. W. Wright	445,793	Feb. 3	464	114	54	602
Plane. Bench	J. Siegley	446,194	Feb. 10	1126	276	54	734
Plane. Carpenter's	O. Longval	444,897	Jan. 20	1477	382	54	305
Planers. Driving-gear for	G. F. Welivar	444,309	Jan. 6	514	134	54	103
Planing-machine	J. R. Thomas	448,384	Mar. 17	1833	462	54	1485
Planter	F. E. Barr	444,228	Jan. 6	405	100 101	54	80
Planter	J. C. Cayton	447,759	Mar. 10	780	193 194	54	1273
Planter	L. B. Lancaster	444,072	Jan. 6	147	37	54	32
Planter	E. Tyden	445,604	Feb. 3	131	34, 35	54	537
Planter and fertilizer-distributer. Combined cotton-seed	J. M. Orr	446,978	Feb. 24	2405	598 599	54	1007
Planter. Combined cotton and corn	E. D. Carter	445,635	Feb. 3	182	48	54	547
Planter. Corn-	P. Friederick	444,645	Jan. 13	1035	269 270	54	213
Planter. Corn-	E. Godden and G. R. Whitehurst	448,640	Mar. 24	2262	567	54	1574
Planter. Corn-	F. P. Howard	445,557	Feb. 3	46	12	54	520
Planter. Corn-	A. F. Runyan	447,205	Feb. 24	2804	693 694	54	1082
Planter. Corn-	J. D. Schofield	446,118	Feb. 10	990	244	54	712
Planter. Corn-	H. J. Wagner	444,030	Jan. 6	73	20	54	18
Planter. Cotton-	J. D. Schofield	445,734	Feb. 3	360	93	54	583
Planter. Disk corn-	C. H. and H. L. Dooley	448,943	Mar. 24	2716	685	54	1661
Planter. Potato-	A. Chapie	444,192	Jan. 6	350	86	54	71
Planter. Potato-	L. L. Cowles	444,521	Jan. 13	851	222	54	178

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Planter. Potato-	F. Storck	446,271	Feb. 10	1275	312 313	54	763
Planter. Seed-	J. J. Simon	445,205	Jan. 27	1976	511	54	410
Planter. Single-seed	J. B. Hurd and H. H. McLane	445,641	Feb. 3	198	52, 53	54	551
Planters and markers. Wheel for corn-	J. De Butts	445,713	Feb. 3	323	86	54	576
Planters. Dropper-guide for corn-	A. P. Aldridge	449,100	Mar. 31	2957	740	54	1717
Plaster. Composition of matter for retarding the setting of	E. Watson	445,211	Jan. 27	1984	.....	54	412
Plaster compounds. Composition of matter for restraining the setting of	E. Watson	446,604	Feb. 17	1790	.....	54	880
Plaster slab	R. R. Coursen	447,025	Feb. 24	2485	618	54	1021
Plastering. Composition for	R. G. Farnham	446,382	Feb. 10	1438	.....	54	798
Plastering. Stucco for	E. Olson	445,264	Jan. 27	2071	.....	54	428
Plastic material. Composition of	J. S. Palmer	447,412	Mar. 3	231	.....	54	1161
Plastic material. Machine for shaping	W. A. Hull and A. G. Boyer	447,132	Feb. 24	2653	658 659	54	1054
Plastic material. Press for shaping	W. A. Hull and A. G. Boyer	447,187	Feb. 24	2774	686 687	54	1076
Plastic material. Producing articles of	G. W. Beyer	447,556	Mar. 3	471	116	54	1206
Plates for utility and ornament. Preparing	H. Goodwin	444,952	Jan. 20	1586	406	54	324
Plates or surfaces for ornamentation. Preparing	H. Goodwin	444,951	Jan. 20	1580	.....	54	323
Platform-elevator	G. Ruddell	445,610	Feb. 3	144	37	54	539
Platform-elevator	G. Ruddell	445,611	Feb. 3	145	38	54	539
Pliers	F. W. Brocksieper	444,207	Jan. 6	370	92	54	74
Pliers	L. Hugoniot-Tissot	446,972	Feb. 24	2396	597	54	1005
Pliers	T. F. Vandegrift	449,250	Mar. 31	3199	806	54	1762
Pliers	G. Wyatt	444,035	Jan. 6	86	22	54	20
Pliers	R. L. Barnhart	448,109	Mar. 10	1357	348	54	1384
Plotter	G. A. Brown	444,312	Jan. 6	518	135	54	104
Plotter	V. H. Smith	448,685	Mar. 24	2420	581	54	1585
Plotter	A. F. Ball	447,521	Mar. 3	421	103	54	1197
Plow	T. G. Enson	446,965	Feb. 24	2384	593	54	1003
Plow	E. A. Hollister	445,471	Jan. 27	2355	612	54	485
Plow	R. S. Hyer	447,517	Mar. 3	419	101	54	1195
Plow	J. A. McIver	449,565	Mar. 31	3727	936	54	1858
Plow	J. E. and E. M. Mitchell	448,740	Mar. 24	2414	603	54	1603
Plow	G. W. Phinney	449,331	Mar. 31	3346	844	54	1786
Plow	W. W. Speer	447,498	Mar. 3	388	95	54	1191
Plow	C. D. Stuard	444,718	Jan. 13	1145	295	54	234
Plow	B. C. Troxler	445,913	Feb. 3	649	159	54	639
Plow	W. Watson	445,027	Jan. 20	1685	433	54	345
Plow	I. Williams	447,802	Mar. 10	873	217	54	1290
Plow	S. McLean	446,389	Feb. 10	1453	356	54	801
Plow and fertilizer-distributer. Combined	W. F. Moss	447,156	Feb. 24	2729	676	54	1067
Plow and pulverizer. Combined	J. C. and W. N. Arrington	448,770	Mar. 24	2458	614 615	54	1611
Plow attachment	M. H. Snow	444,715	Jan. 13	1142	294	54	233
Plow attachment	T. G. Tasker	445,267	Jan. 27	2073	535	54	428
Plow attachment	N. W. Vernon	447,706	Mar. 3	686	170	54	1248
Plow-bolt holder	W. H. Davis	448,414	Mar. 17	1884	473	54	1495
Plow. Combination-	L. Gibbs	447,724	Mar. 3	715	179	54	1253
Plow. Gang-	J. and W. Paterson	449,329	Mar. 31	3344	843	54	1786
Plow. Gang-	J. T. Bender	445,281	Jan. 27	2090	539	54	432
Plow-jointer	D. H. Solomon	449,184	Mar. 31	3091	779 780	54	1741
Plow. River-channel	J. T. Bender	445,282	Jan. 27	2091	540	54	432
Plow-wheel	P. W. Stanhope, Jr	447,647	Mar. 3	607	150	54	1232
Plow. Wheel-	V. Rhodes	447,437	Mar. 3	271	69	54	1169
Plows, &c. Perforated blade for	W. S. Jones	445,852	Feb. 3	562	137	54	621
Plows. Planter and fertilizer-distributing attachment for	A. Leonard	445,004	Jan. 20	1650	425	54	340
Plows. Potato-digging attachment for	W. D. Crowell	449,465	Mar. 31	3586	903	54	1831
Plows. Weed attachment for	W. Bunting, Jr	447,863	Mar. 10	970	243	54	1309
Plug and mechanism. Wash-basin	N. P. Stevens	447,048	Feb. 24	2530	628	54	1030
Plug and socket cutter and chuck for the same	J. Hartford	444,751	Jan. 13	1209	314	54	245
Plumber's-trap	T. J. Strait	449,601	Mar. 31	3788	951	54	1870
Plunger press. Rebounding-	L. Smith	446,029	Feb. 10	849	206 207	54	685
Pneumatic elevator and storage-station	F. H. Richards	445,601	Feb. 3	127	33	54	536
Pneumatic motor	F. H. Richards	445,602	Feb. 3	128	33	54	536
Pneumatic motor	A. Y. Andrews	445,216	Jan. 27	1995	514	54	414
Pocket-book	C. Joseph	445,373	Jan. 27	2218	575	54	459
Pocket-book	W. Schmachtenberg	449,499	Mar. 31	3633	914 915	54	1842
Pocket-knife	C. P. Thayer	445,509	Jan. 27	2417	631	54	496
Pocket-knife	W. Vogel	448,168	Mar. 10	1447	370	54	1403
Pocket-knife and pencil-guard. Combined	G. T. Drabble	444,094	Jan. 6	177	45	54	28
Poison or fertilizer distributer	C. K. Foster	446,772	Feb. 17	2050	511	54	931
Pole-coupling	W. R. Maxwell	444,247	Jan. 6	431	108	54	84
Pole safety attachment. Vehicle-	H. W. Roberts	446,269	Feb. 10	1273	312	54	763
Pole-tip	J. F. Kellogg	444,442	Jan. 13	720	180	54	150
Polishing-cone	A. T. Good	449,217	Mar. 31	3141	792	54	1750
Polishing-machine	A. P. Boardman	445,030	Jan. 20	1688	434	54	346
Polishing-machine	H. Trost	449,050	Mar. 24	2892	734	54	1695
Portable elevator	N. Anderson	449,026	Mar. 24	2843	723	54	1686
Portable elevator and wagon-unloader	R. S. Kirkpatrick	449,447	Mar. 31	3555	895 896	54	1826
Portable house	H. W. Baker	444,604	Jan. 13	976	253	54	202
Portable table	P. J. Bresnan	445,159	Jan. 27	1906	492	54	396
Post:							
See Binding-post. Clothes-line-supporting post. Fence-post. Hitching-post. Tool-post.							
Post-anchor	G. W. Stites and J. W. Halsey	445,457	Jan. 27	2340	608	54	492

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Post-driver	J. McLandsborough	448,140	Mar. 10	1404	359	54	1394
Post-office indicator	H. B. Winter	447,803	Mar. 10	875	218	54	1290
Postal. Sealed reply	E. A. Dubey	448,478	Mar. 17	1982	497, 498	54	1513
Pot: *See* Coffee-pot. Flower-pot.							
Potato-digger	D. B. Merrell	449,127	Mar. 31	3005	760	54	1726
Potato-digger	F. L. Senour	448,551	Mar. 17	2082	522	54	1533
Potato-digger	P. D. Smith	445,206	Jan. 27	1977	511	54	410
Potato-digger	C. Wright	445,868	Feb. 3	585	143	54	626
Potato separating and assorting machine	H. M. Keith	448,434	Mar. 17	1914	481	54	1501
Potential indicator	E. Weston	444,803	Jan. 13	1286	334	54	259
Pottery ware. Applying lithographic impressions to	J. and E. A. Ridgway	444,898	Jan. 20	1478	.....	54	305.
Powder: *See* Perspiration-powder.							
Powder-distributer	M. C. Barden	447,175	Feb. 24	2755	681	54	1072
Power: *See* Motive power. Tide and wave power.							
Power-machine	M. Glassbrook and N. Emmer	446,862	Feb. 24	2205	548	54	971
Power-shipping mechanism	S. Letiecq	447,334	Mar. 3	83	23	54	1134
Power-transmitting device	T. Scheffler	448,575	Mar. 17	2122	531, 532	54	1541
Precious metals. Separator for the	W. C. Van Horn	448,098	Mar. 10	1344	343	54	1381
Preserve-jar	A. Stelzner	447,479	Mar. 3	357	89	54	1185
Press: *See* Baling-press. Finisher-press. Brick-press. Harness-loop press. Cider-press. Hay-press. Copying-press. Plunger-press. Filter-press. Printing-press.							
Press-delivery apparatus	S. G. Goss	449,156	Mar. 31	3046	769, 770	54	1733
Pressure-gage	J. P. Marsh	448,449	Mar. 17	1940	488	54	1506
Pressure-gage	M. McNeil	445,355	Jan. 27	2198	570	54	455
Pressure-reducer for steam or other fluids	E. C. Fasoldt	449,071	Mar. 24	2909	738	54	1698
Pressure-regulator	R. W. F. Abbé	444,082	Jan. 6	160	40	54	34
Pressure-regulator	N. C. Locke	448,443	Mar. 17	1931	486	54	1504
Pressure regulator. Fluid	J. Acton	444,263	Jan. 6	451	114	54	89
Pressure-reservoirs. Head for	J. W. Hyatt	445,180	Jan. 27	1939	501	54	403
Printed sheets of paper. Apparatus for finishing	G. Duncan and J. Salmon	445,938	Feb. 3	691	168	54	648
Printer's galley lock	H. H. Proctor and A. C. Mailer	445,901	Feb. 3	632	155	54	636
Printer's press-guide	J. G. and J. A. Boehringer	447,293	Mar. 3	15	5	54	1121
Printers' rollers. Apparatus for making	L. K. Bingham	444,206	Jan. 6	369	92	54	74
Printing and adding numbers. Apparatus for	G. B. Massey	446,261	Feb. 10	1259	307, 308	54	760
Printing carpet-yarns. Apparatus for	W. Shaw	446,299	Feb. 10	1324	323	54	774
Printing device	J. S. Foley	448,219	Mar. 17	1547	395, 396	54	1431
Printing device	H. F. Rockey	446,929	Feb. 24	2331	578	54	993
Printing device. Hand	T. G. Saxton	448,264	Mar. 17	1622	414	54	1445
Printing in colors	W. Schumacher	447,087	Feb. 24	2566	.....	54	1041
Printing in colors	W. Schumacher	447,701	Mar. 3	680	.....	54	1247
Printing in colors. Apparatus for	H. S. Brooks	444,231	Jan. 6	408	101	54	81
Printing-machine	C. B. Cottrell	448,775	Mar. 24	2463	616, 617	54	1613
Printing-machine	E. Lietze	444,412	Jan. 6	675	175, 176	54	133
Printing machine. Card	J. Jordan	449,420	Mar. 31	3511	884	54	1818
Printing machine. Chromatic	C. W. Dickinson	448,807	Mar. 24	2512	629	54	1622
Printing machine. Chromatic	J. Michaud	449,128	Mar. 31	3007	760, 761	54	1726
Printing-machine having means for preventing off-set. Perfecting	J. T. Hawkins	445,058	Jan. 20	1742	448, 449	54	356
Printing-machine inking mechanism	A. Favol	448,749	Mar. 24	2429	607	54	1606
Printing machine. Multicolor	J. T. Hawkins	445,059	Jan. 20	1745	449	54	356
Printing-machine. Perfecting	R. M. Hunter	449,446	Mar. 31	3552	894, 895	54	1825
Printing machine. Ticket	G. B. Massey	445,251	Jan. 27	2017	526, 527, 528	54	423
Printing machine. Ticket	G. B. Massey	445,651	Feb. 3	211	56, 57, 58	54	554
Printing machine. Two-color	J. T. Hawkins	445,017	Jan. 20	1673	430	54	343
Printing machine. Web	L. C. Crowell	446,829	Feb. 17	2140	531, 532, 533	54	950
Printing-machines. Paper feeding and cutting mechanism for	W. Scott	444,138	Jan. 6	264	63	54	54
Printing-machines. Sheet-transfer apparatus for	J. T. Hawkins	445,018	Jan. 20	1675	430	54	343
Printing of textile fabrics. Doctor employed in the	J. Archer	447,126	Feb. 24	2645	656	54	1052
Printing-office apparatus	J. L. Knight	449,223	Mar. 31	3149	794	54	1752
Printing-press	W. B. Lawrence	447,491	Mar. 3	379	92, 93	54	1139
Printing press. Chromatic	A. Favol	447,507	Mar. 3	399	97, 98	54	1193
Printing-press feed-gage	E. L. Megill	449,290	Mar. 31	3262	827	54	1772
Printing-press inking device	H. F. Bechman	447,021	Feb. 24	2479	617	54	1020
Printing press. Plate	F. H. Allen	445,150	Jan. 27	1895	489	54	395
Printing press. Plate	G. C. Howard	446,635	Feb. 17	1837	455, 456	54	889
Printing press. Web	W. Scott	446,696	Feb. 17	1934	482	54	907
Printing-presses. Back-up motion for	J. H. Cranston	448,938	Mar. 24	2709	683	54	1660
Printing-presses. Cutting and feeding mechanism for	W. Scott	444,137	Jan. 6	261	62, 63	54	53
Printing-presses. Paper-cutting mechanism for	L. E. Brookes	448,806	Mar. 24	2508	628, 629	54	1621

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Printing-presses. Registering device for	J. Brooks	447,536	Mar. 3	444	109	54	1201
Printing presses. Stone-protector for lithographic	J. Eberle	448,642	Mar. 24	2251	564, 565	54	1572
Printing-rollers. Producing cylindrical	D. J. Murnane and F. W. Drosten	445,932	Feb. 3	678	166	54	644
Printing-surfaces. Machine for producing	F. A. Johnson and W. E. Crane	445,559	Feb. 3	50	13, 14, 15	54	521
Privy-vault	A. Lister	447,572	Mar. 3	497	122	54	1210
Privy-vaults. Construction of	T. W. Carrico	445,848	Feb. 3	557	136	54	620
Projectile for ordnance. Explosive	J. J. Moore	446,975	Feb. 24	2400	597	54	1006
Projectiles or shells. Manufacture of hollow	R. Low	447,690	Mar. 3	662	164, 165, 166	54	1243
Propeller	O. Seemüller	446,697	Feb. 17	1937	483	54	907
Propeller. Screw	B. F. and M. F. Sparr	445,864	Feb. 3	580	141	54	625
Propellers. Device for raising and lowering	A. Weed and J. Rockwell	444,475	Jan. 13	774	201	54	162
Propelling apparatus for vessels	J. Wirth	448,810	Mar. 24	2515	630	54	1623
Propelling boats. Apparatus for	F. Bätjer	448,771	Mar. 24	2459	615	54	1612
Protector: *See* Bank-protector. Fence and tree-protector. Book-protector. Garment-protector. Check-protector. Horse-protector. Chest-protector. Pier-protector. Dust and cinder protector. Screw-protector. Shoe-protector. Electric-contact protector. Shovel-protector. Tree-protector. Electrical protector. Trousers-protector.							
Pruning implement	J. W. Perry and R. H. Dixon	448,363	Mar. 17	1802	454	54	1479
Pruning implement	J. Siebel	445,480	Jan. 27	2374	618	54	488
Pug-mill	W. A. Parry	445,703	Feb. 3	310	82	54	573
Puller: *See* Cotton-stalk puller. Pen-puller. Nail-puller. Stump-puller.							
Pulley	G. C. Cowles	445,047	Jan. 20	1727	444	54	353
Pulley	T. Gingras	446,567	Feb. 17	1744	429	54	871
Pulley-block	J. C. McNamara	446,461	Feb. 17	1583	389	54	840
Pulley-block	J. L. Reed	448,729	Mar. 24	2393	599	54	1599
Pulley. Friction-clutch	C. H. Waterous, Jr., and J. N. Peel	447,217	Feb. 24	2832	702	54	1087
Pulley. Return	L. H. Paul	447,199	Feb. 24	2798	691	54	1080
Pulley. Split	J. B. Cornwall	449,608	Mar. 31	3796	953	54	1871
Pulleys. Chill-mold for	F. M. Davis	444,606	Jan. 13	981	254, 255	54	203
Pulleys. Self-lubricating device for	W. W. Carey	444,812	Jan. 20	1303	339	54	272
Pulp. Apparatus for regulating the consistency of wood	J. A. Decker and J. Goebel	449,251	Mar. 31	3200	806, 807	54	1762
Pulp cylinders. Machine for making	F. L. Bartlett	447,455	Mar. 3	304	76	54	1175
Pulp digester	G. F. Russell	445,235	Jan. 27	2020	521	54	418
Pulp-molding machine	D. H. Ferguson	444,916	Jan. 20	1521	391	54	313
Pulp. Producing ground wood	E. F. Millard	449,586	Mar. 31	3765	.....	54	1865
Pulp refining and dressing engine	S. R. Wagg	447,853	Mar. 10	953	238, 239	54	1305
Pulp-separator. Magnetic	W. C. Edwards	446,704	Feb. 17	1949	486	54	910
Pulverizer	S. B. Frank	447,674	Mar. 3	638	158	54	1238
Pulverizing-machine	J. K. Hallowell	447,030	Feb. 24	2493	620	54	1023
Pump	G. F. Beebe	449,607	Mar. 31	3795	952, 953	54	1871
Pump	J. P. Hanna	444,434	Jan. 13	711	186	54	148
Pump	G. J. Keller	445,560	Feb. 3	64	15	54	524
Pump	J. P. Montgomery	445,962	Feb. 3	728	178	54	655
Pump	A. H. Titus	448,282	Mar. 17	1669	423	54	1454
Pump	J. W. Wadsworth	445,577	Feb. 3	89	21	54	529
Pump apparatus. Track	M. B. Mills	447,576	Mar. 3	501	123	54	1211
Pump. Centrifugal	H. W. Brown	445,919	Feb. 3	658	161	54	641
Pump. Chain	B. B. Spence	449,598	Mar. 31	3786	950	54	1869
Pump connection. Vacuum	A. Berrenberg	447,275	Feb. 24	2931	728, 729	54	1108
Pump. Double-acting	S. White	445,915	Feb. 3	652	159	54	640
Pump. Duplex steam	C. M. Miller	448,356	Mar. 17	1791	453	54	1478
Pump. Force	F. F. Danaher	446,283	Feb. 10	1291	316	54	768
Pump. Force	W. S. Brewer	444,128	Jan. 6	250	60	54	51
Pump. Gas-compression	T. Lieb	448,874	Mar. 24	2619	658	54	1642
Pump. Hydraulic air	J. L. Shiring	447,961	Mar. 10	1134	285, 286	54	1339
Pump. Hydraulic beer	R. S. Edmonds	444,904	Jan. 20	1644	421	54	337
Pump. Oil	C. A. Frost	446,734	Feb. 17	1999	498	54	920
Pump-operating mechanism	C. H. Robinson	445,990	Feb. 10	788	192	54	675
Pump piston. Pneumatic	E. H. Gollings	449,333	Mar. 31	3348	844	54	1787
Pump. Rotary	E. H. Gollings	448,334	Mar. 17	1759	445, 446	54	1472
Pump. Rotary	E. H. Gollings	448,335	Mar. 17	1764	446, 447	51	1472
Pump. Rotary	E. H. Gollings	448,336	Mar. 17	1766	447	54	1473
Pump. Rotary	E. H. Gollings	448,518	Mar. 17	2036	509, 510	54	1524
Pump. Rotary	E. H. Gollings	448,608	Mar. 17	2186	546, 547	54	1551
Pump. Rotary	E. H. Gollings	448,609	Mar. 17	2189	547	54	1552
Pump. Rotary	R. Leach	445,318	Jan. 27	2140	553	54	443
Pump. Steam	D. H. Royce and C. Tufts	445,412	Jan. 27	2278	591	54	471
Pump. Vacuum	A. Berrenberg	449,066	Mar. 24	2902	736, 737	54	1697
Pump. Vacuum	A. Berrenberg and W. E. Nickerson	447,273	Feb. 24	2929	728	54	1107
Pump. Vacuum	A. Berrenberg and W. E. Nickerson	447,274	Feb. 24	2930	728	54	1107

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pump. Vacuum	A. Bornholdt	446,960	Feb. 24	2372	590, 591	54	1001
Pump-valve	A. J. Hopkins	449,533	Mar. 31	3678	924	54	1850
Pumps. Appliance for regulating the action of wind-mill	A. O. Melaas	446,410	Feb. 10	1498	369	54	809
Pumps. Condenser for gas	C. A. MacDonald	444,385	Jan. 6	698	102	54	124
Pumps for air and gases. Apparatus for compensating the pressure in slide-	E. Hübner	445,966	Feb. 3	735	179	54	657
Pumps. Regulator for windmill-	P. A. Myers	448,985	Mar. 24	2776	702	54	1673
Pumping-engine	R. M. and J. G. Downie	444,027	Jan. 13	1006	262	54	208
Pumping-engine. Direct-acting	L. D'Auria	446,435	Feb. 17	1541	379	54	830
Pumping-engines. Gear for controlling the speed of	C. Davy	447,146	Feb. 24	2709	671	54	1063
Pumping-engines of hydraulic forging or other presses. Governing-gear for the	C. Davy	447,147	Feb. 24	2711	672	54	1063
Pumping mechanism for oil-wells	T. G. Laney	448,573	Mar. 17	2120	531	54	1540
Pumping natural gas. System of	J. N. Pew	448,670	Mar. 24	2203	575	54	1580
Punch	P. H. Yawman	444,891	Jan. 20	1468	380	54	303
Punch. Check	T. A. Short	446,478	Feb. 17	1606	394	54	844
Punch for making turn-buckles. Die	M. Kennedy	444,595	Jan. 13	965	250	54	200
Punch. Train fare	W. D. Ettel	444,576	Jan. 13	943	244	54	195
Punching holes in Jacquard cards. Machine for	O. W. Schaum	445,340	Jan. 27	2175	563	54	451
Punching-machine	W. Frech	449,154	Mar. 31	3041	769	54	1732
Punching-machine	D. Kennedy	448,525	Mar. 17	2050	513	54	1526
Punching machine. Washer	A. J. Mason	444,917	Jan. 20	1522	391, 392	54	313
Purifier and separator	J. Higginbottom	448,520	Mar. 17	2039	510	54	1524
Push and pull. Combined	A. Iske	448,044	Mar. 10	1271	324	54	1366
Puzzle	T. E. Armitstead	448,577	Mar. 17	2125	532	54	1541
Puzzle	F. E. Clark and G. Wexler	444,239	Jan. 6	421	105	54	83
Puzzle	T. A. Frazer	446,513	Feb. 17	1662	404	54	854
Puzzle	Z. F. Lightner	446,872	Feb. 24	2224	552	54	975
Puzzle	L. M. Lyon	448,974	Mar. 24	2763	698	54	1670
Puzzle	P. H. Wheeler	447,418	Mar. 3	218	61	54	1162
Puzzle-ball	A. A. Onterbridge	446,535	Feb. 17	1698	416	54	862
Pyro-chemical battery	J. Blair and A. G. Hunter	446,727	Feb. 17	1986	495	54	917
Quilting	D. H. Coles	446,328	Feb. 10	1365	332	54	782
Quilting-machine	M. Koch	447,570	Mar. 3	491	121	54	1209
Quilting-machine	M. Koch	447,571	Mar. 3	495	121, 122	54	1210
Quilting-machine	J. T. Meats	444,499	Jan. 13	821	214, 215	54	172
Quilting-machine	F. L. Palmer	448,253	Mar. 17	1604	409, 410	54	1441
Quilting-machine	L. Schultz and T. A. Weber	447,794	Mar. 10	859	213, 214	54	1287
Racing-indicator	S. D. Mott	444,454	Jan. 13	737	192, 193	54	154
Rack: *See* Book-rack. Cooking-rack. Display-rack. Feed-rack. Hat and clothes rack. Horseshoeing-rack. Mold-rack. Sewing-machine spool-rack. Show-rack. Umbrella-rack.							
Radiator	G. C. and L. R. Blackmore	448,630	Mar. 24	2224	560, 561	54	1569
Radiator	G. B. Cobb	445,926	Feb. 3	670	164	54	643
Radiator	A. H. Fowler	446,580	Feb. 17	1759	433	54	874
Radiator	H. N. Hemingway	448,036	Mar. 10	1256	320	54	1363
Radiator	J. L. Wells	447,990	Mar. 10	1191	302	54	1351
Radiator. Steam	C. Otis	447,241	Feb. 24	2874	714	54	1096
Rags and waste. Picker for	S. A. Prescott	444,672	Jan. 13	1083	280, 281	54	222
Rail-brake	W. H. Elmond	448,419	Mar. 17	1892	475	54	1497
Rail-brake	A. M. Perry	447,161	Feb. 24	2737	677	54	1068
Rail-cambering apparatus	J. Duffield	447,051	Feb. 24	2533	629, 630	54	1030
Rail-chair	A. Heyn	449,261	Mar. 31	3211	810	54	1764
Rail-chair	W. A. Peaucellier, Jr.	449,570	Mar. 31	3732	938	54	1859
Rail-joint fastening	J. R. Burgess	445,971	Feb. 10	745	182	54	668
Rail-joint. Pressed-steel	C. T. Schoen	446,017	Feb. 10	885	199	54	681
Rail-joint support	J. T. Richardson	448,730	Mar. 24	2394	599	54	1599
Rail-tie	W. G. Sears	444,940	Jan. 20	1511	389	54	311
Rails. Fastener for fish-plates for	J. S. Gary	449,115	Mar. 31	2986	754	54	1722
Rails. Joint or other fastening for tramway	R. Viol	449,093	Mar. 24	2945	746	54	1706
Railway	R. H. Little	449,126	Mar. 31	3002	758, 759	54	1726
Railway	E. Wegmann, Jr., and C. J. Bates	446,106	Feb. 10	971	238	54	708
Railway alarm-signal	J. R. Jones and J. W. Scott	448,963	Mar. 24	2747	693, 694	54	1667
Railway and contact device therefor. Electric	E. M. Bentley	446,376	Feb. 10	1432	351, 352	54	796
Railway-brake operating by air pressure or vacuum	E. Hartmann	448,833	Mar. 24	2548	639, 640	54	1629
Railway brake-shoe	P. Reilly	446,236	Feb. 10	1222	209	54	754
Railway. Cable	G. W. Bowman	445,157	Jan. 27	1904	491	54	396
Railway. Cable	P. Noble	444,581	Jan. 13	949	246	54	196
Railway. Cable	G. C. Watriss and C. J. Kaighin	446,905	Feb. 24	2296	572	54	987
Railway. Cable street-	L. M. Clement	446,221	Feb. 10	1173	287	54	744
Railway. Cable street-	L. Heynemann	444,437	Jan. 13	714	187	54	149
Railway cattle-guard	J. T. Hall	446,228	Feb. 10	1183	290	54	746
Railway cattle-guard	P. Merrill	446,601	Feb. 17	1786	442	54	879
Railway cattle-guard	B. Wolhaupter	447,394	Mar. 3	196	51	54	1155
Railway-chair	N. T. Frame	446,633	Feb. 17	1834	454	54	888

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Railway-chair spike	W. C. Wood	447,268	Feb. 24	2921	726	54	1105
Railway-circuit for signaling and controlling trains	F. E. Kinsman	448,751	Mar. 24	2432	608, 609	54	1606
Railway conductor. Electric	E. Thomson	446,483	Feb. 17	1615	396	54	846
Railway. Conduit electric	E. M. Bentley	446,417	Feb. 17	1512	372	54	824
Railway conduit. Electric	E. M. Bentley	446,419	Feb. 17	1514	373	54	825
Railway conduit. Electric	F. O. Blackwell	449,196	Mar. 31	3114	746	54	1745
Railway conduit. Underground	C. C. Gilman	446,861	Feb. 24	2204	548	54	971
Railway-conduits. Apparatus for cleaning	W. Heckert	447,181	Feb. 24	2765	684, 685	54	1074
Railway-crossing	E. B. Entwisle	447,130	Feb. 24	2649	657	54	1053
Railway-crossing gate	F. M. Spaulding	446,082	Feb. 10	931	228	54	701
Railway-crossing gate	F. M. Spaulding	446,083	Feb. 10	933	228	54	701
Railway crossing. Street	V. Angerer	449,433	Mar. 31	3533	890	54	1822
Railway-crossings. Automatic signal for	A. W. Hall	444,700	Jan. 13	1122	280	54	230
Railway drawing-head	S. W. Hildreth	449,477	Mar. 31	3605	907, 908	54	1836
Railway drawing-head	W. C. Peirce	447,200	Feb. 24	2799	692	54	1080
Railway. Electric	E. M. Bentley	444,740	Jan. 13	1196	310	54	242
Railway. Electric	T. A. Edison	448,778	Mar. 24	2472	618	54	1614
Railway. Electric	J. B. Entz	448,328	Mar. 17	1749	441, 442, 443	54	1470
Railway. Electric	R. M. Hunter	445,674	Feb. 3	268	70	54	565
Railway. Electric	R. M. Hunter	445,952	Feb. 3	708	172	54	651
Railway. Electric	R. M. Hunter	446,833	Feb. 17	2148	534	54	952
Railway. Electric	R. M. Hunter	446,834	Feb. 17	2150	534	54	952
Railway. Electric	R. M. Hunter	447,283	Feb. 24	2941	731	54	1110
Railway. Electric	R. M. Hunter	448,523	Mar. 17	2045	512	54	1525
Railway. Electric	R. M. Hunter	448,618	Mar. 17	2199	551	54	1555
Railway. Electric	R. M. Hunter	448,653	Mar. 24	2267	569	54	1574
Railway. Electric	W. H. Knight	447,332	Mar. 3	81	22	54	1153
Railway. Electric	N. Seibert	446,475	Feb. 17	1603	393	54	843
Railway. Electric	L. H. Goodwin	445,467	Jan. 27	2351	611	54	485
Railway. Elevated	M. Jacobs	448,571	Mar. 17	2118	530	54	1539
Railway. Elevated	J. N. Valley	446,272	Feb. 10	1277	313	54	764
Railway. Elevated	J. N. Valley	446,273	Feb. 10	1279	313	54	765
Railway. Elevated	D. B. Weaver	447,172	Feb. 24	2751	680, 681	54	1071
Railway-frog	M. A. Dudley	447,235	Feb. 24	2865	711	54	1094
Railway-frog	G. N. Moats and C. R. Crawshaw	445,839	Feb. 3	542	132	54	617
Railway-frogs. Guard-rail or foot-guard for	J. E. Bowes and L. H. Harris	444,518	Jan. 13	849	221	54	177
Railway-gate	A. J. McDonald	447,080	Feb. 24	2577	639	54	1039
Railway-gate motor	A. J. McDonald and R. B. Brent	447,079	Feb. 24	2577	639	54	1039
Railway-joint	A. Preiss	448,257	Mar. 17	1612	411	54	1443
Railway motor. Electric	C. J. Van Depoele	448,561	Mar. 17	2096	525, 526	54	1536
Railway. Overhead	J. W. Moyer and G. E. Jackson	448,157	Mar. 10	1428	364	54	1399
Railway. Pneumatic	E. L. Sharpneck and J. W. Bailey	449,594	Mar. 31	3777	948	54	1867
Railway rail and chair. Street	W. H. Wright	446,589	Feb. 17	1772	437	54	877
Railway rail and sleeper or stringer	L. Bergmark	448,628	Mar. 24	2231	560	54	1568
Railway-rail-cleaning machine	J. Seror	444,675	Jan. 13	1087	281, 282	54	223
Railway-rail crossing	J. F. Hudec	445,781	Feb. 3	442	110	54	598
Railway-rail joint	A. Neutascher	444,251	Jan. 6	435	109	54	85
Railway-rail joint	J. B. Walker	446,763	Feb. 17	2040	508	54	929
Railway rail tie and track fastener	W. G. Sears	444,909	Jan. 20	1509	388	54	311
Railway-rails. Combined support and fastening for	T. J. Bush	446,982	Feb. 10	1291	316	54	767
Railway-rails from spreading. Device to prevent	C. Keeler	445,449	Jan. 27	2330	605	54	480
Railway-signal	E. C. Carter	448,773	Mar. 24	2461	615	54	1612
Railway-signal	N. B. Cregier	444,819	Jan. 20	1310	341	54	273
Railway-signal	W. P. Hall	447,318	Mar. 3	58	16	54	1128
Railway-signal. Electric	W. S. and M. C. Cook	446,546	Feb. 17	1710	419, 420	54	864
Railway signal. Electric	E. T. Harvey	446,917	Feb. 24	2314	575	54	990
Railway-signal. Electric	W. W. Rosenfield	447,906	Mar. 10	1042	261, 262	54	1322
Railway signal. Electric	S. Tompkins	449,639	Mar. 31	3865	968	54	1884
Railway signal-torch	W. C. Beckwith	448,906	Mar. 24	2664	669	54	1650
Railway-signals. Automatic circuit-closing device for	I. W. Loy and R. O'Toole	445,564	Feb. 3	69	16	54	525
Railway-signals. Track-instrument for	M. S. Conley	446,403	Feb. 10	1486	366	54	896
Railway signaling apparatus	J. M. Brobard	445,918	Feb. 3	656	160	54	641
Railway-scraper	O. F. Jordan and R. Potts	447,777	Mar. 10	818	203	54	1280
Railway stock-guard	S. L. Shellenberger	446,793	Feb. 17	2084	519	54	949
Railway-switch	O. Bixler	448,112	Mar. 10	1361	348	54	1385
Railway-switch	A. M. Grubbs	444,633	Jan. 13	1015	264	54	209
Railway-switch	M. Hynes	446,750	Feb. 17	2021	504	54	925
Railway-switch	E. S. Kase and A. F. Borden	448,923	Mar. 24	2686	676	54	1656
Railway-switch. Automatic	J. R. Wigginton	448,171	Mar. 10	1450	370, 371	54	1403
Railway-switches. Appliance for moving	L. Washington and W. H. Roberts	446,904	Feb. 24	2295	571	54	986
Railway system. Electric	C. J. Van Depoele	447,215	Feb. 24	2826	701, 702	54	1086
Railway system. Electric	C. J. Van Depoele	448,563	Mar. 17	2104	527, 528	54	1537
Railway system. Electrical	S. F. B. Morse	449,227	Mar. 31	3155	795	54	1753
Railway-tie	J. W. Hollin and T. B. Smith	444,439	Jan. 13	717	189	54	150
Railway-tie	H. I. Jeffers	445,274	Jan. 27	2084	538	54	431
Railway-tie	H. I. Jeffers	445,275	Jan. 27	2085	538	54	431
Railway-tie	E. Robinson	447,356	Mar. 3	127	35	54	1141
Railway-tie	D. Y. Wilson	445,325	Jan. 27	2149	556, 557	54	445
Railway tie and chair. Metallic	H. P. Sweet	446,899	Feb. 24	2286	569	54	985
Railway-tie and fastener	D. Y. Wilson	445,326	Jan. 27	2151	557	54	445

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Railway-tie. Metallic	E. D. De Clements	446,405	Feb. 10	1490	366	54	807
Railway tie. Street	C. A. Beach	448,005	Mar. 10	1211	308	54	1355
Railway ties or sleepers. Construction of	C. D. Kubach	445,063	Jan. 20	1750	451	54	358
Railway time-signal	C. Barry	444,327	Jan. 6	541	140	54	108
Railway time-signal	F. B. Ide	449,584	Mar. 31	3760	944, 945	54	1864
Railway time-signal	F. Robinson	444,506	Jan. 13	833	216, 217	54	174
Railway time-signal	J. Wayland	447,989	Mar. 10	1188	301, 302	54	1350
Railway-track	L. Chilson	446,161	Feb. 10	1080	265	54	726
Railway-track gate	W. P. Elliott	447,463	Mar. 3	318	80	54	1178
Railway-track-laying apparatus	D. F. Holman	444,051	Jan. 6	104	27	54	94
Railway-track lifter	H. D. Brown	449,308	Mar. 31	3297	833	54	1778
Railway track. Street	T. G. Gribble	446,446	Feb. 17	1560	383, 384	54	834
Railway tracks. Constructing street	T. G. Gribble	449,117	Mar. 31	2988	755	54	1723
Railway-trains. Tail light for	A. W. Berne	448,315	Mar. 17	1723	436	54	1465
Railway trolley. Electric	H. H. Blades	444,893	Jan. 20	1471	380	54	304
Railway trolley. Electric	R. Eickemeyer	448,831	Mar. 24	2545	639	54	1628
Railway trolley. Electric	S. B. Short	446,931	Feb. 24	2333	579	54	993
Railway trolley. Electric	M. J. Wightman	448,172	Mar. 10	1452	371	54	1403
Railway trolley. Electric	M. J. Wightman	448,173	Mar. 10	1457	372	54	1405
Railway-trolley guard. Electric	A. W. Mitchell	449,236	Mar. 31	3153	795	54	1753
Railway-trolley guard. Electric	A. W. Mitchell	449,490	Mar. 31	3022	941	54	1839
Railway work. Motor-suspension for	E. W. Rice, Jr.	448,260	Mar. 17	1615	412	54	1403
Railways. Automatic trolley-catcher for electric	B. J. Parsons	449,569	Mar. 31	3731	937	54	1859
Railways. Conductor-switch for electric	F. J. Sprague and J. F. S. Branth	445,515	Jan. 27	2425	632, 633	54	498
Railways. Contact device for electric	E. M. Bentley	445,634	Feb. 3	181	47	54	547
Railways. Contact device for electric	E. M. Bentley	446,420	Feb. 17	1515	373	54	825
Railways. Contact-trolley for electric	J. B. Cahoon and I. F. Baker	446,428	Feb. 17	1532	377	54	828
Railways. Controlling-switch for electric	F. B. Rae	446,613	Feb. 17	1801	445	54	882
Railways. Coupling for the trolley-wires of electric	S. H. Short	445,841	Feb. 3	545	133	54	618
Railways. Current-collecting device for electric	R. M. Hunter	444,397	Jan. 6	649	169	54	127
Railways. Current-collecting device for electric	R. M. Hunter	444,566	Jan. 13	928	241	54	192
Railways. Electric signal for	E. C. Wiley	445,106	Jan. 20	1813	468	54	369
Railways. Electric signal system for	E. C. Wiley	446,313	Feb. 10	1343	327	54	778
Railways. Electric signaling apparatus for	E. D. Graff	448,856	Mar. 24	2593	651, 652	54	1637
Railways for dressed meats. Switch for overhead	W. C. Jarvis	445,060	Jan. 20	1747	450	54	357
Railways. Overhead crossing appliance for electric	I. H. Farnham	448,711	Mar. 24	2363	592	54	1594
Railways. Rack-rail for rack	P. Simons	444,641	Jan. 13	1031	266	54	212
Railways. System for cable	L. Cutshaw	449,466	Mar. 31	3587	903, 904	54	1832
Railways. Trolley for electric	W. J. Cavert and W. P. Wiswall	447,632	Mar. 3	586	145	54	1298
Railways. Trolley-wire support for electric	J. S. Hughes	445,142	Jan. 20	1872	484, 485	54	381
Railways. Turn-out for electric	R. M. Hunter	445,409	Jan. 27	2273	590	54	470
Railways. Underground conduit for electric	R. A. Stewart	448,461	Mar. 17	1952	491	54	1508
Rake: *See* Hay-rake.							
Rake	S. Swope	446,482	Feb. 17	1614	396	54	846
Ram. Hydraulic	G. Yellott	447,550	Mar. 3	464	114	54	1205
Rand-trimmer	J. W. Plummer	449,232	Mar. 31	3162	795	54	1755
Range	I. Rubel	445,289	Jan. 27	2098	542	54	433
Range	C. F. Walther	444,281	Jan. 6	475	121	54	94
Range and position finder	I. N. Lewis	447,335	Mar. 3	85	23, 24, 25	54	1134
Range. Combined cooking and heating	A. P. Broomell	445,037	Jan. 20	1702	438	54	348
Range-finder. Electrical	B. A. Fiske	444,217	Jan. 6	385	96	54	77
Range-finding and sighting apparatus	H. Andrews and J. A. Norton	444,406	Jan. 6	665	173	54	131
Range. Portable	D. H. Erdman	445,109	Jan. 20	1818	470	54	370
Ratchet-wrench	W. H. Haire	449,476	Mar. 31	3603	907	54	1835
Ratchet-wrench and boring-bit. Combined	C. H. Myers	446,075	Feb. 10	922	225	54	699
Ratchet wrench and drill	C. H. Myers	446,073	Feb. 10	920	225	54	699
Ratchet-wrench and screw-driver. Combined	C. H. Myers	446,072	Feb. 10	919	224	54	698
Razor-guard	P. D. Murphy and C. O. Chaplin	448,159	Mar. 10	1436	367	54	1400
Razor-strop	C. L. Holland	447,184	Feb. 24	2769	685	54	1075
Razor-strop	J. R. Torrey	447,213	Feb. 24	2924	700	54	1086
Razor-strop	L. C. Manrer	448,752	Mar. 24	2435		54	1607
Razors. Composition for sharpening	W. Gratznowsky	446,062	Feb. 10	904	220	54	696
Reclining-chair							
Recorder: *See* Cash-recorder. Time-recorder.							
Reel: *See* Fishing-reel. Ticket-reel. Harvester-reel. Twine-reel. Hose-reel. Wire-reel.							
Reel	E. C. Cornwell	444,818	Jan. 20	1309	341	54	273
Reel or swift	E. G. Shreve	445,414	Jan. 27	2280	592	54	471
Reels. Cop-spindle for	I. Walker	447,800	Mar. 10	871	216	54	1290
Reeling-machine	E. E. Bradley	449,360	Mar. 31	3402	855, 856	54	1795
Reflector	I. Peral	445,379	Jan. 27	2224	576, 577	54	460
Reflector. Electric-lamp	F. Cooley	449,403	Mar. 31	3478	875	54	1811
Refrigerator	D. Gaul	447,403	Mar. 3	215	56, 57	54	1158
Refrigerator	O. Kutsche	447,467	Mar. 3	337	84	54	1181
Register: *See* Cash-register. Fare-recording register. Cash and sales register. Grain-register. Hot-air register. Fare-register. Weigher-register.							
Register-sheet	E. J. Richard	446,952	Feb. 24	2360	587	54	998

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Registering and recording apparatus for tram-cars and omnibuses	T. Gregory	444,883	Jan. 20	1458	377, 378	54	301
Registering-gate	E. R. Guerra	447,680	Mar. 3	646	160, 161	54	1240
Registering mechanism or counter actuated by electric currents.	R. Jewell	444,358	Jan. 6	585	151	54	116
Regulator: *See* Dynamo-regulator. Pressure-regulator. Electric-circuit regulator. Temperature-regulator. Thermostatic regulator. Electric-machine regulator. Vehicle-regulator. Watch-regulator. Electric-motor regulator. Water-closet-valve regulator. Feed-regulator. Weigher-regulator. Furnace-regulator. Windmill-regulator.							
Rein-button	M. F. Berry and N. Stafford	444,874	Jan. 20	1442	375	54	298
Rein-holder	J. D. Shurmon	447,981	Mar. 10	1176	298	54	1347
Rein-support	J. W. Beyron	447,656	Mar. 3	617	152	54	1234
Rein-supporting ring. Harness	M. C. Gamble	447,044	Feb. 24	2524	626	54	1028
Repeater	F. W. Cole	445,797	Feb. 3	474	116, 117	54	604
Repeater	F. W. Cole	449,574	Mar. 31	3737	940	54	1860
Reservoirs. Device for disposing of surplus water impounded in	E. P. Roberts	447,083	Feb. 24	2582	647	54	1040
Resistance-board. Segmental	G. D. Hand and O. P. Sells	448,338	Mar. 17	1770	448	54	1474
Resonator. Molecular sound	G. F. Shaver	444,464	Jan. 13	759	198	54	159
Reticule or pocket-book	A. Aldrich	444,414	Jan. 13	685	179	54	143
Retort-charging device	K. M. Mitchell	444,268	Jan. 6	458	116, 117	54	91
Retort-furnace for deoxidizing ore	J. H. Lancaster and M. R. Conley	447,779	Mar. 10	820	203, 204	54	1280
Reversible-seat chair. Coin-controlled	L. M. Erb	448,012	Mar. 10	1228	312	54	1357
Revolver. Double-action	H. Love	445,511	Jan. 27	2419	631	54	497
Revolver-lock	C. A. Weeks and C. Foehl	447,219	Feb. 24	2804	703	54	1088
Revolvers. Base-pin and cylinder-brake for	C. Foehl and C. A. Weeks	444,823	Jan. 20	1323	343	54	276
Rheostat	J. O'Meara	447,494	Mar. 3	384	94	54	1190
Rheostat	E. Weston	446,490	Feb. 17	1694	398	54	848
Rheostat. Adjustable	S. H. Short	448,682	Mar. 24	2310	579	54	1583
Rheostatic switch	J. H. Lehman	444,707	Jan. 13	1129	291	54	231
Ribbon-clasp	J. E. Davenny	449,467	Mar. 31	3593	905	54	1833
Riding-habit	H. Rossberg	445,293	Jan. 27	1973	510	54	410
Riding-habit	W. Shingleton	444,942	Jan. 20	1565	401	54	321
Rifling-machine	C. W. Sponsel	446,898	Feb. 24	2278	567, 568, 569	54	984
Ring: *See* Finger-ring. Rein-supporting ring. Hat-packing ring.							
Rivet	I. G. Platt	446,466	Feb. 17	1588	390	54	841
Rivet-set	W. A. Wilson	446,048	Feb. 10	880	215	54	691
Riveting-machine	G. H. Pegram	445,935	Feb. 3	683	167	54	645
Riveting-machine	G. H. Pegram	445,936	Feb. 3	686	167	54	646
Road-bed drain and safety-tie. Metallic	H. P. Sweet	446,900	Feb. 24	2287	569	54	985
Road making and repairing machine	M. G. Bunnell	448,708	Mar. 24	2354	590, 591	54	1592
Road or field roller	E. Pratt	444,198	Jan. 6	359	89	54	72
Roaster	W. D. Stillman	446,033	Feb. 10	858	208	54	687
Roasting and smelting furnace	W. Heckert, W. J. Thomas, and F. L. Heckert.	446,971	Feb. 24	2394	596	54	1004
Rock-drill	A. W. and Z. W. Daw	447,666	Mar. 3	627	155, 156	54	1236
Rock-drill. Electric	W. M. Schlesinger	449,090	Mar. 24	2937	744, 745	54	1704
Rock-drill. Multiple	C. J. Van Depoele	447,214	Feb. 24	2825	701	54	1086
Rock for paving purposes. Apparatus for treating viscous	A. W. Hyde	447,711	Mar. 3	692	172, 173	54	1249
Rock-reamer	H. B. Morrison	444,008	Jan. 6	41	12	54	11
Rod: *See* Connecting-rod. Lightning-rod.							
Rod-mill	T. W. Fitch	444,049	Jan. 6	102	26	54	23
Roller: *See* Feed-roller. Road or field roller. Graining-roller. Shade-roller. Land-roller. Wringer-roller.							
Roller-mill	E. G. Dewald	447,765	Mar. 10	795	198	54	1276
Roller-mills, &c. Feed-regulator for	C. A. Corey	448,853	Mar. 24	2585	649	54	1636
Rolling axles. Machine for	W. J. Parmelee	444,233	Jan. 6	437	110	54	86
Rolling girder-rails. Rolls for	H. W. Thomas	449,013	Mar. 24	2822	715	54	1681
Rolling metals. Machine for die	W. P. and J. W. Bettendorf	445,874	Feb. 3	593	145	54	628
Rolling-mill	H. Aiken	444,389	Jan. 6	637	165	54	125
Rolling-mill	H. Aiken	449,511	Mar. 31	3650	918	54	1845
Rolling-mill	J. M. Price	448,073	Mar. 10	1307	334, 335	54	1374
Rolling-pin	C. Deiner	448,476	Mar. 17	1980	497	54	1513
Rolling-pin and cake-cutter. Combined	E. T. Baldwin and J. H. Stimpson	448,311	Mar. 17	1717	435	54	1464
Rolling wire	H. A. Williams	446,497	Feb. 17	1637	401	54	851
Rolling wire. Roll for	H. A. Williams	446,498	Feb. 17	1640	401	54	851
Roof	R. P. and E. D. Brouner	448,244	Mar. 17	1584	404	54	1438
Roof	O. Link	448,529	Mar. 17	2054	514	54	1527
Roof for hot-houses	J. D. Scovel	444,254	Jan. 6	438	110	54	86
Roofing and lining felt	J. A. Smith	449,636	Mar. 31	3862	967	54	1884
Roofing fabrics. Apparatus for coating or saturating and finishing	H. Bormann	448,873	Mar. 24	2617	658	54	1641
Roofing material	J. N. Hopper	446,775	Feb. 17	2055	512	54	932

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Roofing-paper	H. Cunningham	446,145	Feb. 10	1043	.....	54	721
Roofing. Sheet-metal	J. L. Dickelman	446,217	Feb. 10	1168	286	54	743
Roofing, &c. Water-proof and fire-proof material for	A. Blank	448,495	Mar. 24	2009	502	54	1518
Rope-clamp	P. Yorke	448,902	Mar. 24	2659	668	54	1649
Rope-fastener. Guy-	A. L. Seelbach	446,020	Feb. 10	830	199	54	682
Rope-hook	J. K. Miller	447,618	Mar. 3	568	140	54	1225
Rope-sheave. Sectional	J. W. Harris and T. J. Thomas	449,322	Mar. 31	3331	840 / 841	54	1783
Rope-socket	P. Yorke	448,903	Mar. 24	2661	668	54	1650
Rope transmission	T. S. Miller	444,919	Jan. 20	1526	392	54	314
Rotary compound steam-engine	S. E. S. Chapleau	444,087	Jan. 6	168	42	54	36
Rotary cutter. Reversible	J. Barnes	449,571	Mar. 31	3733	938	54	1860
Rotary engine	W. G. and A. W. Billings	447,535	Mar. 3	442	108 / 109	54	1201
Rotary engine	W. and L. Carter	448,121	Mar. 10	1372	351 / 352	54	1388
Rotary engine	M. P. Elgen	448,213	Mar. 17	1536	393	54	1429
Rotary engine	L. J. Everest	446,061	Feb. 10	903	219	54	695
Rotary engine	E. H. Gollings	448,607	Mar. 17	2183	545 / 546	54	1551
Rotary engine	J. W. Hayes	444,894	Jan. 20	1341	348 / 349	54	279
Rotary engine	M. Johnson	447,831	Mar. 10	914	228 / 229	54	1208
Rotary engine	W. J. Kendig	449,325	Mar. 31	3335	841	54	1784
Rotary engine	T. W. Kincaid	444,938	Jan. 20	1557	399	54	319
Rotary engine	G. H. Weston	449,148	Mar. 31	3036	768	54	1731
Rotary engine	S. G. Brosius	445,038	Jan. 20	1705	438 / 439	54	348
Rotary steam-engine	S. G. Brosius	445,039	Jan. 20	1708	439 / 440	54	349
Rotary steam-engine	W. H. Easton	445,851	Feb. 3	561	137	54	621
Roundabout	J. Frueh	446,182	Feb. 10	1110	272	54	732
Roundabout	A. W. Ullven	444,585	Jan. 13	953	247	54	197
Roundabout	G. Kay, F. Wilkinson, and R. Fisher	448,241	Mar. 17	1581	403 / 404	54	1437
Roundabout	T. C. Lidster	448,056	Mar. 10	1288	329	54	1370
Roundabout	W. R. Smith	447,497	Mar. 3	388	94	54	1191
Rubber boot	H. Bontelspacher	448,197	Mar. 17	1510	385	54	1424
Rubber. Hand-	R. B. Fyler	445,369	Jan. 27	9212	574	54	458
Rubber. Hand-	J. F. W. Dorman	445,426	Jan. 27	2300	596 / 597	54	475
Rubber, &c. Power-press for vulcanizing	E. H. Gosewisch	449,116	Mar. 31	2986	754	54	1722
Ruching	O. Stuart	444,028	Jan. 6	71	19	54	17
Rudder-lock	W. H. Blake, 2d, and E. T. Bradley.	447,657	Mar. 3	617	152	54	1234
Rule. Flexible	J. L. Gordon	444,698	Jan. 13	1119	289	54	229
Ruler and blotting-pad holder. Combined	W. H. Atkinson	445,009	Jan. 20	1666	427	54	341
Ruler and paper-cutter. Combined	L. S. Bigelow	445,518	Jan. 27	2429	634	54	490
Ruling machine. Paper-	A. J. Carleton	449,614	Mar. 31	3821	958	54	1876
Ruling machine. Paper-	J. Hope, Jr	448,922	Mar. 24	2685	676	54	1656
Ruling machine. Steel and lithograph plate	D. B. Baker	444,418	Jan. 13	691	180	54	144
Sad-iron	H. M. Cooley	445,927	Feb. 3	671	164	54	643
Sad-iron	H. Koepp	445,184	Jan. 27	1946	502 / 503	54	404
Sad-iron	D. H. Murphy	446,533	Feb. 17	1696	416	54	861
Sad-iron	C. E. Carpenter	448,317	Mar. 17	1725	437	54	1465
Sad-iron. Electric	A. F. Chable and E. M. Roberts	447,445	Mar. 3	285	72	54	1171
Sad-iron heater	A. Jacoby	444,584	Jan. 13	952	247	54	197
Sad-iron heater	W. O. Miller	444,761	Jan. 13	1232	320	54	249
Saddle. Harness-	W. H. Forker	447,723	Mar. 3	714	179	54	1253
Saddle. Riding-	J. J. E. H. Payne	444,197	Jan. 6	357	88, 89	54	72
Safe	J. White	447,709	Mar. 3	688	171	54	1248
Safe	F. M. Williams	446,941	Feb. 24	2748	683	54	996
Safe-armor	F. M. Williams	446,940	Feb. 24	2747	683	54	995
Safe-bolt-retracting device	W. Corliss	447,488	Mar. 3	371	91	54	1188
Safe or vault	T. O. Perry	447,413	Mar. 3	232	59	54	1161
Safety-coupling	N. E. Hales and L. F. Reese	444,234	Jan. 6	412	102	54	81
Safety-pin	H. N. Hopkins and E. H. Bryant	447,186	Feb. 24	2771	686	54	1075
Safety-switch	W. D. Arnett	444,417	Jan. 13	689	180	54	144
Sage brush. Machine for destroying	G. Skinner	449,004	Mar. 24	2811	712	54	1679
Sail	G. D. Morse and M. and D. W. Chase	447,343	Mar. 3	101	27 / 28 / 29	54	1137
Salesman and change-maker. Automatic	H. Lüttke and L. Scholvien	444,004	Jan. 6	33	.....	54	10
Salicylate of phenyldimethylpyrazolone	B. Peitzsch	446,267	Feb. 10	1270	.....	54	763
Salts. Treating Stassfurt	H. Noee	445,857	Feb. 3	570	139	54	623
Sample-case	C. J. Menges	444,887	Jan. 20	1463	379	54	302
Sampler	F. J. Hoyt	449,417	Mar. 31	3506	882 / 883	54	1817
Sand and gravel cleaning machine	E. H. Callaway	448,408	Mar. 17	1873	471	54	1493
Sand and gravel heater	A. Ball	447,287	Mar. 3	5	1, 2	54	1119
Sand-band	A. Ball	447,288	Mar. 3	6	2, 3	54	1119
Sand-band	F. S. Rolfe	447,391	Mar. 3	137	37	54	1144
Sand-band	C. Presscott and M. H. Bennett	447,102	Feb. 24	2738	678	54	1068
Sand-screen	V. Brotz	449,435	Mar. 31	3535	891 / 892	54	1822
Sandpapering-machine	A. K. Davenport	445,749	Feb. 3	385	98	54	589
Sandpapering-machine	E. D. Swift	444,155	Jan. 6	290	69, 70	54	59
Sandpapering-machine	W. J. Maddox	448,721	Mar. 24	2381	597	54	1597
Sandpapering, rubbing, and polishing machine	S. N. Goldy	444,097	Jan. 6	184	46	54	38
Sash-balance	F. P. Johnson	449,538	Mar. 31	3689	926	54	1852
Sash-balance	J. P. Magney	445,376	Jan. 27	2220	576	54	459
Sash-balance	W. H. Noakes	449,130	Mar. 31	3041	761	54	1726
Sash-bar machine	J. G. Kerneckel	444,534	Jan. 13	873	227	54	182
Sash-cord fastener	J. Knecht	444,393	Jan. 6	593	152	54	118
Sash-cord guide	J. R. Walsh	445,578	Feb. 3	90	21	54	529
Sash-cord guide	B. Baldwin	447,753	Mar. 10	771	191	54	1271
Sash-fastener	J. N. Beall	445,033	Jan. 20	1693	435	54	347
Sash-fastener	W. E. Dixon	447,068	Feb. 24	2563	636	54	1036
Sash-fastener	C. A. Frisbie	446,969	Feb. 24	2391	595	54	1004
Sash-fastener	I. Giles	447,404	Mar. 3	217	57	54	1158
Sash-fastener	J. C. Howe	448,882	Mar. 24	2629	660	54	1643
Sash-fastener	A. Ayers	448,108	Mar. 10	1356	347	54	1384
Sash-holder	J. M. Brohard	448,498	Mar. 17	2012	503	54	1519
Sash-holder	W. M. Hazel	448,339	Mar. 17	1771	448	54	1474
Sash-holder	E. W. Whittaker	449,020	Mar. 24	2830	717	54	1683
Sash. Tennis-	L. H. McClellan	449,562	Mar. 31	3723	935	54	1858
Sash. Window-	F. Mesker and T. O. Arbegust	448,354	Mar. 17	1790	452	54	1477
Sash. Window-	E. W. Gilman	448,426	Mar. 17	1901	477	54	1499
Satchel-harness. Telescopic	H. Hirschauer	448,341	Mar. 17	1774	.....	54	1474
Sausage. Preparing	C. W. Hottman	444,052	Jan. 6	109	27	54	24
Sausage-stuffing machine	J. Bowles	445,239	Jan. 27	2025	522	54	420
Saw	T. L. Slaughter	449,005	Mar. 24	2812	712	54	1679
Saw. Circular	J. W. Webb	447,218	Feb. 24	2634	703	54	1088
Saw cleaner. Gin-	J. H. Leith	444,446	Jan. 13	724	190	54	152
Saw dressing and jointing device	W. H. Parry	445,858	Feb. 3	571	139 / 140	54	623
Saw filing and setting machine	W. H. Rice	444,851	Jan. 20	1368	354	54	284
Saw-guide	A. Hettel	446,568	Feb. 17	1745	429	54	871
Saw guide. Band-	C. E. Wright	446,127	Feb. 10	1008	249	54	716
Saw guide. Band-	F. H. Abbott	444,870	Jan. 20	1436	373	54	297
Saw-gumming machine	R. F. Pratt	444,848	Jan. 20	1365	353	54	283
Saw-jointer	I. N. Kendall	447,953	Mar. 10	1118	281 / 282	54	1337
Saw mill. Band-	E. S. Richards	446,293	Feb. 10	1316	321	54	772
Saw mill. Band-	J. G. Stoner	444,321	Jan. 6	532	138 / 139	54	107
Saw-mill carriages. Feed mechanism for	W. C. Hall and W. U. Sweetser	446,346	Feb. 10	1392	340	54	788
Saw-mill carriages. Log-turner for	W. A. Pannebaker	446,979	Feb. 24	2407	599	54	1007
Saw-mill dog	T. S. Wilkin	444,965	Jan. 20	1603	409 / 410	54	328
Saw mill. Gang-	T. S. Wilkin	446,197	Feb. 10	1133	278	54	736
Saw mill. Gang-	T. S. Wilkin	447,092	Feb. 24	2583	643	54	1042
Saw mill. Gang-	W. J. Gladish	446,443	Feb. 17	1556	382	54	833
Saw-mill set-works	E. Reynolds, A. J. Shaw, and W. H. Trout.	448,544	Mar. 17	2072	519 / 520	54	1531
Saw-mill set-works	J. T. Farrow	446,832	Feb. 17	2147	534	54	952
Saw-mills. Attachment for automatically advancing the knees of	E. G. Hobler	448,038	Mar. 10	1264	322	54	1364
Saw. Pole or wood	A. Fager	447,722	Mar. 3	713	178	54	1253
Saw-set	J. Taylor	444,163	Jan. 6	301	72, 73	54	61
Saw setting and filing machine	A. Harman	447,322	Mar. 3	66	18	54	1130
Saw setting and indicating device	L. L. Northup	448,742	Mar. 24	2416	604	54	1604
Saw-setting machine	J. Hanchett	445,504	Jan. 27	2410	629	54	495
Saw-swage	D. B. Hanson	447,111	Feb. 24	2626	651	54	1049
Saw-swage	E. Hoag	445,179	Jan. 27	1938	500	54	402
Saw-swage	J. B. Rhodes	449,431	Mar. 31	3530	889	54	1821
Saw-swaging machine	R. Knehne	449,369	Mar. 31	3421	860	54	1799
Saw-table gage	W. E. Brooke	446,810	Feb. 17	2111	525	54	944
Saw-tooth	J. B. Rhodes	445,339	Jan. 27	2173	563	54	450
Saw-tooth swage	R. J. Edwards	444,696	Jan. 13	1116	288	54	229
Saws. Automatic lubricator for	L. E. Paine	448,162	Mar. 10	1439	368	54	1401
Saws. Weather-board-sawing attachment for circular	B. E. and A. F. Harreld	445,505	Jan. 27	2412	629	54	495
Sawing-machine	P. Putnam	447,903	Mar. 10	1039	260 / 261	54	1322
Sawing-machine	W. H. H. Spradlin	447,982	Mar. 10	1176	298	54	1347
Sawing-machine, Band	D. C. Markham	448,059	Mar. 24	2278	571	54	1576
Sawing-machine boring attachment	E. F. Barnes	448,195	Mar. 17	1508	384	54	1424
Sawing-machine. Power-feed	W. J. Edwards	447,812	Mar. 10	885	220 / 221	54	1293
Sawing machine. Scroll-	J. Laird	444,071	Jan. 6	145	36	54	32
Sawing machine. Se'f-feed rip-	L. E. Paine	448,163	Mar. 10	1440	368	54	1401
Sawing machine. Wood-	G. L. Cummings	446,510	Feb. 17	1659	405	54	854
Scaffold-bracket	S. Van Vliet	446,602	Feb. 17	2101	523	54	942
Scaffold-poles. Apparatus for securing together	J. C. Montgomerie	447,838	Mar. 10	1032	233	54	1301
Scaffold. Portable	A. T. Nygren	447,898	Mar. 10	1031	259	54	1320
Scaffolding. Adjustable bracket for	M. P. Holmes	446,682	Feb. 17	1917	477	54	904
Scale and indicator. Automatic weighing-	A. B. Röver	446,208	Feb. 10	1149	281 / 282	54	739
Scale. Automatic electric weighing-	J. V. Davis	449,468	Mar. 31	3593	905	54	1833
Scale-beam	S. Kethledge	448,437	Mar. 17	1921	483	54	1502
Scale-board dishes. Machine for forming and placing metal pieces on	T. J. Haden	447,316	Mar. 3	52	13, 14	54	1128
Scale. Coin-controlled weighing-	J. M. S. Blauvelt	448,200	Mar. 17	1513	386	54	1425
Scale. Coin-operated platform weighing-	N. M. Lowe	449,626	Mar. 31	3850	964	54	1881
Scale. Drill and tap	B. H. Pomeroy	447,475	Mar. 3	352	87	54	1184
Scale. Grain-	A. W. Butts	448,316	Mar. 17	1724	436	54	1465
Scale. Grain-	G. C. Flagg	448,761	Mar. 24	2446	611	54	1609
Scale. Grain-	J. H. Stromyer	445,825	Feb. 3	525	126	54	614
Scale poise. Platform-	G. Lundberg	447,691	Mar. 3	665	166	54	1244
Scale. Weighing-	J. P. West	446,309	Feb. 10	1337	325	54	777
Scale. Weighing and price	J. W. Culmer	448,911	Mar. 24	2671	671 / 672	54	1652
Scale. Weighing and price	O. O. Ozias and E. Canby	448,837	Mar. 24	2553	641	54	1629
Scale-weight	A. C. Mott	447,136	Feb. 24	2695	668	54	1060
Scales. Corner-stand for weighing-	H. O. Hem	448,615	Mar. 17	2496	550	54	1554

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Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Scales for railway-cars. Weighing-	E. Duplessis	444,378	Jan. 6	614	158	54	121
Scales. Spring-	G. H. Chatillon	444,093	Jan. 6	177	44	54	37
Scales. Wagon-	L. G. Clawson	445,269	Jan. 27	2077	536	54	429
Scalpel	S. Yankauer	445,237	Jan. 27	2022	521	54	419
Scoop	R. J. Masbach	447,868	Mar. 10	1010	254	54	1316
Scoop	W. Wells and J. Vowles	448,393	Mar. 17	1853	466	54	1489
Scoop. Weighing-	L. Bartlett	446,179	Feb. 10	1108	271	54	731
Scraper. Road-	W. H. Crittenden	448,412	Mar. 17	1879	472	54	1494
Scraping and grading machine	J. W. Denton	448,415	Mar. 17	1885	473, 474	54	1495
Screen:							
See Folding screen. Sand screen. Gas-pipe screen. Window-screen. Ore-screen.							
Screen	J. A. Boughan	447,934	Mar. 10	1090	274	54	1331
Screen	F. F. Landis	446,687	Feb. 17	1925	480	54	905
Screen	A. A. Palm	444,252	Jan. 6	436	110	54	85
Screen	J. J. Rieder	448,370	Mar. 17	1812	457	54	1481
Screen	W. E. Selleck	445,089	Jan. 20	1781	459	54	364
Screen	C. A. Higbee	447,775	Mar. 10	816	202	54	1279
Screw-cutting machine	H. E. Coy	448,638	Mar. 24	2243	563	54	1570
Screw-driver. Push	E. Brown	447,277	Feb. 24	2033	729	54	1108
Screw. Felly-	H. K. Jones	446,741	Feb. 17	2008	500	54	922
Screw. Felly-	H. K. Jones	448,347	Mar. 17	1782	450	54	1476
Screw-machine	C. M. Spencer	447,017	Feb. 24	2467	614, 615	54	1018
Screw-machine slotting attachment	A. H. Eddy	447,010	Feb. 24	2450	610, 611	54	1015
Screw-protector. Set-	H. B. Walmsley	447,742	Mar. 3	748	187	54	1260
Screw. Temper-	L. D. Mason	446,994	Feb. 24	2427	604	54	1011
Screw-threaded rolled forgings. Method of and apparatus for making	G. F. Simonds	446,932	Feb. 24	2334	579	54	993
Screw. Wood-	G. T. Chapman	449,037	Mar. 24	2859	727	54	1689
Screw-wrench	J. Ryan	447,163	Feb. 24	2739	678	54	1068
Screws. Die for swaging the threads of gimlet-pointed	H. K. Jones	444,554	Jan. 13	906	236	54	188
Seal-lock	O. P. Hix	447,489	Mar. 3	375	92	54	1189
Seal-lock	E. Meise	445,597	Feb. 3	120	30	54	535
Seal-lock	R. M. Scully	444,322	Jan. 6	534	139	54	107
Seal-lock	W. Walker	448,700	Mar. 24	2341	587	54	1590
Seal-making machine. Clay-	A. G. Burton	444,232	Jan. 6	409	101, 102	54	81
Seaming machine. Die-	F. A. Walsh	445,739	Feb. 3	367	95	54	585
Seaming machine. Die-	F. A. Walsh	445,740	Feb. 3	368	95	54	586
Seaming-tongs. Roofer's	E. S. Meals	444,498	Jan. 13	820	214	54	172
Seat:							
See Bicycle-seat. Tooth-seat. Car-seat. Vehicle-seat. Carriage-seat. Vehicle jump-seat. Desk-seat. Velocipede-seat. Locomotive-cab seat.							
Seat-spring for cushioned seats	W. Westermann	447,142	Feb. 24	2704	670	54	1062
Secondary battery	C. F. Brush	445,422	Jan. 27	2293	595	54	474
Secondary battery	H. T. Cheswright	445,542	Feb. 3	21	6	54	515
Secondary battery	S. C. C. Currie	447,279	Feb. 24	2035	730	54	1108
Secondary battery	A. M. F. Laurent-Cély and I. A. Timmis.	446,527	Feb. 17	1685	412, 413	54	859
Sectional boiler	J. H. Mills	449,379	Mar. 31	3434	865, 866	54	1802
Seed-drill	J. M. King	448,349	Mar. 17	1784	451	54	1476
Seed. Machine for removing lint from cotton-	O. T. Bigg	446,321	Feb. 10	1354	330	54	780
Seed-recleaner. Clover-	J. Welty and A. A. Leach	447,801	Mar. 10	872	217	54	1290
Seed-sheller	C. A. Lees and S. W. Lester	444,838	Jan. 20	1351	350	54	281
Seeds and spices. Comminuting	H. R. Pomeroy	444,847	Jan. 20	1364	333	54	283
Seeder and harrow. Combined	W. C. Burrell	447,664	Mar. 10	972	244	54	1309
Seeding-machine	D. M. Baldwin	444,573	Jan. 13	939	243, 244	54	194
Self-closing can	S. O. Myers	444,301	Jan. 6	502	131	54	100
Selvage of cotton pile goods	R. Middleton and H. T. Jones	445,228	Jan. 27	2014	519	54	417
Semaphore. Electric	F. Stitzel and C. Weinedel	445,653	Feb. 3	216	58, 59, 60	54	554
Semaphore-operating apparatus	N. J. Smith	446,479	Feb. 17	1608	394, 395	54	845
Semaphore-signal. Pneumatic	J. Wayland	447,988	Mar. 10	1185	301	54	1349
Separable boat	J. Aspden	449,241	Mar. 31	3176	801	54	1757
Separator:							
See Centrifugal separator. Magnetic separator. Grain-separator. Ore-separator. Steam-separator.							
Separator	E. S. Bennett	448,189	Mar. 10	1482	378	54	1409
Separator	J. H. Bisaner	448,198	Mar. 17	1510	385	54	1424
Separator	W. L. Card	448,472	Mar. 17	1970	495, 496	54	1511
Separator	A. Cook and W. L. Harvey	445,133	Jan. 20	1852	479, 480	54	377
Separator	F. H. Wheelan	448,394	Mar. 17	1854	466	54	1489
Settee and bed. Combined	R. D. Cody	444,529	Jan. 13	864	224, 225	54	180
Sewage-treating apparatus	C. W. Chancellor	448,122	Mar. 10	1374	352	54	1388
Sewer-trap	C. C. Funk	444,747	Jan. 13	1205	312	54	244
Sewerage system	J. C. McGowan	448,988	Mar. 24	2781	703, 704	54	1674

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sewing and beating out seams. Machine for	E. B. Allen	449,101	Mar. 31	2959	740	54	1717
Sewing looped fabrics. Machine for	J. Soper	444,859	Jan. 20	1420	368, 369	54	293
Sewing-machine	F. Chase	445,924	Feb. 3	663	162, 163	54	642
Sewing-machine	F. Chase	445,925	Feb. 3	668	163, 164	54	643
Sewing-machine	H. H. Cummings	447,008	Feb. 24	2446	608, 609	54	1015
Sewing-machine	W. F. Dial	446,830	Feb. 17	2143	533	54	951
Sewing-machine	L. C. Emerson	444,565	Jan. 13	927	241	54	192
Sewing-machine	M. Gardner	447,306	Mar. 3	32	8, 9	54	1124
Sewing-machine	M. Gardner	447,307	Mar. 3	35	9, 10	54	1124
Sewing-machine	M. Gardner	447,402	Mar. 3	211	55, 56	54	1157
Sewing-machine	M. Gardner	449,539	Mar. 31	3690	927	54	1852
Sewing-machine	D. Jones	444,242	Jan. 6	376	93, 94	54	75
Sewing-machine	M. Kramer	444,758	Jan. 13	1223	317, 318	54	248
Sewing-machine	A. M. Leslie	444,759	Jan. 13	1224	318, 319	54	248
Sewing-machine	L. Muther	445,122	Jan. 20	1835	475	54	374
Sewing-machine	C. E. Wheeler	446,398	Feb. 10	1467	361	54	804
Sewing-machine attachment-holder	H. C. Goodrich and F. Henry	448,225	Mar. 17	1557	397, 398	54	1432
Sewing-machine attachment-holder	J. R. Hebert	445,950	Feb. 3	706	172	54	651
Sewing-machine attachment-holder	E. J. Toof	444,542	Jan. 13	884	229	54	184
Sewing-machine attachments. Drawer for	N. A. Hull	444,151	Jan. 6	282	68	54	58
Sewing-machine binder	E. H. Craige	446,843	Feb. 17	2164	538	54	955
Sewing machine. Boot or shoe	A. Eppler, Jr.	447,872	Mar. 10	985	246, 247, 248, 249, 250	54	1311
Sewing-machine. Button-hole	J. Q. A. Houghton	449,074	Mar. 24	2912	739	54	1699
Sewing-machine. Button-hole	J. Q. A. Houghton	449,075	Mar. 24	2913	739	54	1699
Sewing-machine. Button-hole	R. Spahn	444,467	Jan. 13	763	199	54	160
Sewing-machine. Button-hole	H. J. Williams	448,397	Mar. 17	1857	467	54	1490
Sewing-machine button-hole attachment	E. Fletcher	446,736	Feb. 17	2001	499	54	921
Sewing-machine button-hole attachment	J. H. Palmer	444,846	Jan. 20	1362	353	54	283
Sewing-machine button-hole attachment	A. P. Gerald	446,581	Feb. 17	1761	434	54	874
Sewing-machine cabinet	F. M. Baker	445,361	Jan. 27	2204	571	54	456
Sewing-machine cording attachment	T. S. Huntington	445,953	Feb. 3	710	173	54	652
Sewing-machine embroidery attachment	W. H. Hanna	445,468	Jan. 27	2352	611	54	485
Sewing-machine feeding device	M. Gardner	447,401	Mar. 3	208	54, 55	54	1157
Sewing-machine feeding mechanism	W. A. Mack	447,251	Feb. 24	2887	717	54	1098
Sewing-machine feeding mechanism	F. L. Clark	446,964	Feb. 24	2383	593	54	1002
Sewing-machine motor	G. S. Hill	447,729	Mar. 3	723	181	54	1254
Sewing-machine needle-guide	W. A. Mack	447,252	Feb. 24	2889	717	54	1099
Sewing-machine presser-foot	E. J. Toof	445,912	Feb. 3	648	159	54	639
Sewing-machine presser-foot	R. G. Woodward	446,575	Feb. 17	1753	431	54	873
Sewing-machine presser-foot	J. N. Touchstone	447,160	Feb. 24	2747	680	54	1070
Sewing-machine quilting-frame	W. A. Estaver	449,142	Mar. 31	2981	753	54	1722
Sewing-machine ruffler	J. E. Bertrand	445,655	Feb. 3	224	61	54	556
Sewing-machine shuttle	A. M. Leslie	445,656	Feb. 3	226	61	54	556
Sewing-machine shuttle	W. A. Mack	444,756	Jan. 13	1219	317	54	247
Sewing-machine shuttle-actuating mechanism	C. H. Lewy	447,253	Feb. 24	2890	719	54	1099
Sewing-machine spool-rack	E. Poole	448,528	Mar. 17	2053	514	54	1527
Sewing-machine spool-rack	H. H. Cummings	444,766	Jan. 13	1237	321	54	250
Sewing-machine take-up	J. H. Cutten	447,009	Feb. 24	2449	610	54	1015
Sewing-machine thread-guard	M. V. Palmer	447,280	Feb. 24	2937	730	54	1109
Sewing-machine thread-unwinder	J. E. Bertrand	446,465	Feb. 17	1587	390	54	840
Sewing-machine thread-waxing device	E. J. Toof	445,657	Feb. 3	227	61	54	556
Sewing-machine tuck-marker	E. A. Sauber	448,695	Mar. 24	2331	585	54	1588
Sewing-machines. Bosom-plaiting attachment for	A. E. Johnson and C. H. Porter	449,385	Mar. 31	3445	867	54	1804
Sewing-machines. Channel-cutting and flap-turning attachment for	L. Bercher	444,895	Jan. 20	1473	381	54	304
Sewing-machines. Fan attachment for	J. E. Bertrand	445,843	Feb. 3	548	133	54	618
Sewing-machines. Puncturing implement for	F. Kern	444,419	Jan. 13	692	180	54	145
Sewing-machines. Shuttle-actuating mechanism for duplex-needle	R. K. Clark	447,880	Mar. 10	998	252	54	1313
Sewing-machines. Thread unwinding and tension device for	M. E. Harris	444,208	Jan. 6	371	92	54	74
Sewing-stand	H. du Fresne	448,484	Mar. 17	1994	499	54	1515
Shade-adjuster	J. N. Wiggin and J. E. Rathbun	449,579	Mar. 31	3753	942	54	1863
Shade fabrics. Machinery for handling printed	T. W. Pritchard	449,305	Mar. 31	3292	832, 833	54	1777
Shade or globe holder	J. W. Meyer	449,171	Mar. 31	3066	775	54	1737
Shade or map exhibitor. Window-	J. A. Turner	446,743	Feb. 17	2010	501	54	922
Shade-roller	T. J. Dennis	447,705	Mar. 3	685	170	54	1248
Shade-roller bracket	R. W. Jones and H. C. Weber	446,640	Feb. 17	1850	459	54	891
Shade. Window-	S. Hartshorn	446,456	Feb. 17	1577	382	54	838
Shades to rollers. Attaching window-	G. Hannah	444,832	Jan. 20	1338	347	54	279
Shaft-bearings. Electric alarm for	F. Simonson	449,411	Mar. 31	3493	878	54	1814
Shaft-collar	G. C. Pyle	448,087	Mar. 10	1329	340	54	1378
Shaft-coupling	W. B. Turner	446,123	Feb. 10	1000	246	54	714
Shaft-coupling	J. S. Campbell	447,925	Mar. 10	1076	269	54	1329
Shaft-coupling	F. G. McColm	449,068	Mar. 24	2906	737	54	1698
Shaft. Flexible	W. T. Carroll	448,725	Mar. 24	2388	598	54	1598
Shaft locking device	J. J. Barker	444,814	Jan. 20	1305	339	54	272
Shaft reversing mechanism. Counter-	R. Gracey	445,277	Jan. 27	2086	538	54	431
Shaft-support for vehicles	R. D. Woodford and G. C. Raymond	448,611	Mar. 17	2192	548	54	1553
Shaft. Vehicle-	J. Macphail	445,697	Feb. 3	155	41	54	541
Shaping-machine	J. Macphail	447,468	Mar. 3	399	85	54	1181
Sheaf-carrier							

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Shears: *See* Billet-shears. Sheep-shears. Clipping-shears.							
Shears	H. Aiken	448,192	Mar. 17	1503	383	54	1423
Shears	G. W. Baker	444,970	Jan. 20	1610	412	54	330
Shears	E. Krusius	444,983	Jan. 20	1629	418	54	334
Shears	J. Lachanme and J. Pasteyer	445,700	Feb. 3	306	81	54	573
Shears	T. O'Neill	445,818	Feb. 3	513	123	54	612
Sheave	J. W. Strother	448,557	Mar. 17	2090	524	54	1535
Sheep-shears	F. Y. Wolseley	448,286	Mar. 17	1679	424	54	1455
Sheep-shears, horse-clippers, and similar instruments. Holder for cutters and combs for	B. M. Abell	444,413	Jan. 13	683	179	54	143
Sheet-metal articles. Means for ornamenting	D. Block	445,388	Jan. 27	2237	580	54	462
Sheet-metal cabinet	C. Willis	446,241	Feb. 10	1230	300 / 301	54	755
Sheet-metal-cutting machine	J. R. Spangler	448,380	Mar. 17	1828	461	54	1484
Sheet metal-edging machine	J. A. Kurtz	449,624	Mar. 31	3848	963	54	1881
Sheet-metal-flanging machine	C. R. Peasleo	445,589	Feb. 3	113	28	54	593
Sheet-metal-folding machine	E. Püttmann	446,191	Feb. 10	1123	.....	54	734
Sheet metal for ceilings, &c. Decorating	G. D. Herboldshimer	447,515	Mar. 3	410	100	54	1195
Sheet metal. Machine for trimming and compressing	W. A. Turner	445,603	Feb. 3	129	34	54	536
Sheet-metal stamping and perforating machine	D. Stone	444,861	Jan. 20	1424	370	54	294
Sheet-metal-stamping apparatus	M. C. Chambers	445,439	Jan. 27	2313	600	54	478
Sheet-metal vessel or pot	L. Stockstrom	448,094	Mar. 10	1334	341	54	1379
Shelf. Book-	M. Heffernan	448,919	Mar. 24	2682	675	54	1655
Shelf-bracket, &c. Combined	J. W. Hine	445,951	Feb. 3	707	172	54	651
Shelf-fastening	B. F. Roberts	446,472	Feb. 17	1597	392	54	842
Shelving. Adjustable	C. T. Cayley and R. S. Courtman	447,229	Feb. 24	2853	708	54	1091
Shell	H. P. Merriam	444,536	Jan. 13	875	227 / 228	54	182
Shell. Explosive	H. P. Merriam	444,537	Jan. 13	877	228	54	183
Shell for high explosives							
Sheller: *See* Corn-sheller. Seed-sheller.							
Shingle and picket sawing machine	J. B. Nolin and M. G. Young	446,534	Feb. 17	1697	416	54	862
Shingle or shake machine	C. W. Babcock	445,742	Feb. 3	372	96	54	586
Shingle-painting machine	C. Cuno	444,902	Jan. 20	1484	383 / 384	54	306
Shingles. Coating	N. B. Holway	448,343	Mar. 17	1777	449	54	1475
Shipping-can	W. M. Brown	444,659	Jan. 13	1054	274	54	216
Shipping-can	W. M. Brown	444,660	Jan. 13	1055	274 / 275	54	217
Shipping-can	W. M. Brown	444,689	Jan. 13	1108	286	54	227
Shipping-can	T. Raftery	448,074	Mar. 10	1309	335	54	1375
Ship's fender	H. Follett	449,472	Mar. 31	3598	906	54	1834
Ship's rigging	G. Benger	448,812	Mar. 24	2519	631	54	1623
Shirt	S. L. Hyman	448,042	Mar. 10	1269	323	54	1365
Shirt	S. Miller	444,525	Jan. 13	857	223	54	179
Shirt	S. H. Halstead	447,408	Mar. 3	224	58	54	1160
Shirt and drawers. Combined	W. S. Herndon and L. C. Buckland	448,715	Mar. 24	2372	593	54	1595
Shirt-starching machine	J. K. Miller	447,619	Mar. 3	569	141	54	1225
Shock-compressor	J. C. Vail	444,787	Jan. 13	1202	327	54	254
Shock-compressor	C. A. Merrill and F. Stowe	444,888	Jan. 20	1465	379	54	303
Shoe	G. Schultz	449,500	Mar. 31	3635	915	54	1842
Shoe	G. L. Shepard	449,389	Mar. 31	3452	869	54	1806
Shoe	G. E. Hadlund	446,063	Feb. 10	905	220	54	696
Shoe-expander	A. S. French	444,824	Jan. 20	1324	343	54	276
Shoe-fastener	F. Jenner	446,779	Feb. 17	2058	513	54	933
Shoe-fastening	P. A. Raymond	449,273	Mar. 31	3226	815	54	1767
Shoe-fastening	G. W. Ludlow	446,135	Feb. 10	1030	252	54	718
Shoe-maker's bench	C. E. Howland	449,416	Mar. 31	3505	882	54	1817
Shoe-protector	A. Hanson	446,146	Feb. 10	1044	256	54	721
Shoe-tip	H. W. Merrill	448,247	Mar. 17	1587	405	54	1439
Shoe-tip	E. Waldschmidt	447,263	Feb. 24	2908	723	54	1103
Shoe-upper	H. A. Webster	445,359	Jan. 27	2201	571	54	456
Shoe-uppers. Machine for cleaning	E. B. Stimpson	446,158	Feb. 10	1064	261 / 262	54	725
Shoes. Clamp for holding vamps and quarters for	B. A. McFadden	449,564	Mar. 31	3726	936	54	1858
Shoes, gloves, &c. Attachment for	A. E. Wicks	445,580	Feb. 3	93	22	54	529
Shoes. Inserting gores in	G. F. Brott	448,206	Mar. 17	1526	391	54	1437
Shoes. Making	G. T. Haring	446,867	Feb. 24	2214	550	54	973
Shot-screening machine	H. Heyder	447,464	Mar. 3	324	81	54	1179
Shoulder-brace	J. T. Dwyer	447,669	Mar. 3	632	157	54	1237
Shoulder-strap bag or knapsack. Combined	J. T. Omlor	449,568	Mar. 31	3730	937	54	1859
Shovel: *See* Cultivator-shovel.							
Shovel-protector	J. M. Sweeney	445,129	Jan. 20	1846	478	54	376
Show-case	C. E. Gould	446,642	Feb. 17	1854	460	54	892
Show-case for spool-thread	B. G. Casler	444,815	Jan. 20	1306	339 / 340	54	272
Show-rack for store-windows, &c	J. E. Briggs	446,982	Feb. 24	2410	600	54	1008
Show-rack. Window	E. Brockmann	444,575	Jan. 13	942	244	54	195
Show-stand	E. Brockmann	447,658	Mar. 3	618	153	54	1235
Show-stand	T. W. Bartholomew	447,290	Mar. 3	10	4	54	1120
Shutter-bower	R. B. Walling	443,810	Jan. 27	1983	512	54	411
Shutter-bower	R. J. Berdan	447,488	Feb. 10	742	182	54	667
Shutter-fastener	G. H. Burrows	445,366	Jan. 27	2209	573	54	457
Shutter-fastener	W. J. Monks	447,543	Mar. 3	455	112	54	1203
Shutter-fastener	J. F. Newhall	445,299	Jan. 27	2109	546	54	436
Shutter-worker	C. R. Wells and B. K. Lewis	449,508	Mar. 31	3646	917	54	1844
Shutter-worker	G. J. Cline	448,473	Mar. 17	1957	496	54	1512
Sickle-grinder	J. F. Jaquet and W. McAnslan	446,752	Feb. 17	2024	505	54	925
Sidewalk	J. Karle	445,784	Feb. 3	444	111	54	599
Sifter. Ash-	E. W. Humphreys	448,818	Mar. 24	2524	633	54	1625

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Invention.	Name.	No.	Date	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sifter or screen	J. B. White	449,342	Mar. 31	3307	849	54	1789
Sight-feed lubricator	E. Lunkenheimer	446,963	Feb. 24	2426	604	54	1011
Sign. Changeable	A. L. Larkin	445,838	Feb. 3	541	132	54	617
Sign-letter	G. J. B. Rodwell	444,507	Jan. 13	896	217	54	174
Signs. Manufacturing sheet-metal	R. A. Busch	446,427	Feb. 17	1530	377	54	928
Signal: *See* Block-signal. Railway alarm-signal. Electric-light signal. Railway time-signal. Railway-signal. Semaphore-signal.							
Signal apparatus	M. Campbell	445,794	Feb. 3	465	114	54	602
Signal apparatus. Municipal	B. J. Noyes	447,060	Feb. 24	2549	633	54	1033
Signal apparatus. Municipal	B. J. Noyes	447,061	Feb. 24	2551	634	54	1034
Signal apparatus. Municipal	B. J. Noyes	447,869	Mar. 10	982	246	54	1311
Signal-box	F. W. Cole	447,062	Feb. 24	2552	634	54	1034
Signal-box	B. J. Noyes	444,144	Jan. 6	273	65, 66	54	56
Signal-box	J. C. Wilson	448,398	Mar. 17	1859	467	54	1490
Signal-box	J. C. Wilson	448,399	Mar. 17	1860	468	54	1490
Signal-box	J. C. Wilson	448,400	Mar. 17	1861	468	54	1491
Signal box. Non-interference	F. W. Cole	445,799	Feb. 3	485	117 / 118	54	606
Signal-box. Non-interference	F. W. Cole	449,575	Mar. 31	3745	941	54	1861
Signal-box. Non-interference	F. W. Cole	449,576	Mar. 31	3747	941	54	1862
Signal-box. Non-interference	M. G. Crane	445,545	Feb. 3	25	7	54	516
Signal-box. Non-interference	F. W. Cole	445,795	Feb. 3	466	115	54	602
Signal-box. Successive non-interference	F. W. Cole	445,798	Feb. 3	482	117	54	605
Signal-box. Successive non-interference	F. W. Cole	445,800	Feb. 3	487	118	54	606
Signal-box. Successive non-interference	F. W. Cole	445,801	Feb. 3	489	118 / 119	54	607
Signal-box. Successive non-interference	F. W. Cole	445,802	Feb. 3	493	119	54	608
Signal-box. Successive non-interference	F. W. Cole	448,069	Mar. 10	1304	333	54	1373
Signal-light	T. Parry	444,108	Jan. 6	204	50	54	42
Signaling apparatus	I. H. Farnham	444,991	Jan. 20	1639	420	54	336
Signaling apparatus	O. Morgan and J. Crowley	446,275	Feb. 10	1282	314	54	765
Signaling apparatus. Air	G. B. Williams	448,031	Mar. 10	1250	318 / 319	54	1362
Signaling apparatus. Electric railway	E. L. Harrison	447,058	Feb. 24	2543	632	54	1032
Signaling apparatus. Police	B. J. Noyes	447,059	Feb. 24	2546	632 / 633	54	1033
Signaling apparatus. Police	B. J. Noyes	445,538	Feb. 3	13	3, 4	54	513
Signaling device. Electric	S. J. Burrell and W. H. Markland	448,772	Mar. 24	2460	.....	54	1612
Silicate compound	M. W. Beylikgy	449,267	Mar. 31	3218	812 / 813	54	1765
Siphon intermittent device	A. W. Maraun	446,421	Feb. 17	1516	373	54	822
Skate	S. S. Black	445,375	Jun. 27	2219	575	54	459
Skirt-form	T. Leavis	445,685	Feb. 3	283	75	54	568
Skylight	G. Bickelhaupt	446,777	Feb. 17	20056	512	54	932
Slate	E. C. Hudson	445,660	Feb. 3	232	62	54	557
Slate-frame	S. Marks	448,054	Mar. 10	1285	328	54	1369
Slaughtering animals. Derrick for	W. F. Kingery and J. B. Cavanaugh	448,413	Mar. 17	1880	472 / 473	54	1494
Slaughtering apparatus	T. H. Curtis	444,405	Jan. 6	664	173	54	131
Sleigh	D. G. Wyeth	448,754	Mar. 24	2436	609	54	1607
Sleigh-runner	J. Radley	448,430	Mar. 17	1907	480	54	1500
Sleigh-runner. Attachable	J. E. Hobbs and B. M. Wentworth	447,847	Mar. 10	946	237	54	1304
Slicer	J. Spillinger	445,163	Jan. 27	1911	493 / 494	54	397
Sliding gate	W. H. Cox	448,466	Mar. 17	1963	493	54	1510
Sliding gate	J. M. Vanover	446,149	Feb. 10	1049	258	54	722
Slime, &c. Sizing apparatus for	C. A. E. Meinicke	445,381	Jan. 27	2227	577	54	460
Smelting-furnace. Cupola	C. Sahler	448,530	Mar. 17	2055	514	54	1527
Smoke-consumer	J. C. Lowdon and J. Dixon	447,367	Mar. 3	149	40, 41	54	1146
Smoke-consuming apparatus	F. T. Schmidt	444,967	Jan. 20	1606	410	54	329
Smoke-deflector	J. Wisdom	447,653	Mar. 3	614	151	54	1234
Smoking-pipe	J. Arbtin	447,792	Mar. 10	856	213	54	1287
Smoking-pipe	D. M. Poulin	447,049	Feb. 24	2531	628	54	1038
Smoothing-iron	J. H. Toof	449,491	Mar. 31	3623	912	54	1839
Snap-hook	W. T. Morris	447,567	Mar. 3	486	119	54	1209
Snap-hook	G. M. Hubbard	444,717	Jan. 13	1144	294	54	233
Snap-hook	G. M. Stont	444,872	Jan. 20	1440	374	54	297
Snap-hook	I. F. Baker and R. Booth	446,286	Feb. 10	1295	315	54	768
Snow-broom	A. Gardiner	446,773	Feb. 17	2052	511	54	931
Snow-plow	J. W. Haughawout	444,871	Jan. 20	1437	374	54	297
Snow-plow. Rotary	I. F. Baker and R. Booth	448,656	Mar. 24	2273	569 / 570	54	1576
Snow-sweeper	J. B. Lawton and J. A. Mergenthal	445,769	Feb. 3	422	105	54	595
Soap compressing and stamping machine	G. S. Chamberlin	448,275	Mar. 17	1648	419	54	1450
Soap. Device for grating and delivering	H. F. Stowell	445,701	Feb. 3	308	81	54	573
Soap holder and distributer	J. H. Lee	445,958	Feb. 3	720	176	54	653
Soap holder and rubber	F. J. Lockwood	447,645	Mar. 3	606	149	54	1232
Soap-powder holder	R. N. Reed	448,161	Mar. 10	1439	.....	54	1401
Solar reflecting-camera	G. F. Pabst	445,771	Feb. 3	427	106	54	596
Solder	M. W. Dewey	445,770	Feb. 3	422	105 / 106	54	595
Soldering and cementing cans by electricity. Apparatus for	M. W. Dewey	448,055	Mar. 10	1286	329	54	1369
Soldering and cementing cans. Electric	C. Lehmann and E. Brunhoff	446,154	Feb. 10	1059	260	54	724
Soldering-iron. Self-heating	F. S. Robinson	446,162	Feb. 10	1061	266	54	727
Soldering-irons. Heating	A. D. Coleman	444,831	Jan. 20	1337	347	54	278
Soldering machine. Can-	T. A. Hand	446,454	Feb. 17	1574	387	54	837
Soldering machine. Can-	J. G. Hodgson	448,345	Mar. 17	1779	449 / 450	54	1475
Soldering machine. Can-	J. S. Hull	444,226	Jan. 6	402	100	54	80
Soldering machine. Can-	E. Thomson	445,956	Feb. 3	716	175	54	653
Soldering machine. Dip-	E. G. Lanterback	449,278	Mar. 31	3208	809	54	1763
Soldering. Method of and apparatus for electric	A. Robinson						

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Soldering-tool	E. L. Barber	446,765	Feb. 17	2043	509	54	929
Sole-channeling machine	M. L. Keith	448,436	Mar. 17	1918	482, 483	54	1502
Sole-cutting machine	M. E. Knight and H. B. Steele	444,982	Jan. 20	1623	415, 416, 417, 418	54	333
Sole-edge-inking device	C. K. Bradford	445,158	Jan. 27	1905	492	54	396
Sole-fitting machine	M. L. Keith	448,435	Mar. 17	1916	482	54	1501
Sole-machine	C. A. Wentworth	447,389	Mar. 3	186	49	54	1153
Sole-molding machine	J. W. Richmond	447,739	Mar. 3	739	185, 186	54	1257
Sole-rounding machine	G. Julian	446,686	Feb. 17	1922	479, 480	54	904
Sole-trimmer. Rotary	W. Polley	446,013	Feb. 10	820	198	54	680
Soles, &c. Machine for cutting	A. M. Stickney	446,555	Feb. 17	1728	423, 424	54	868
Sounds. Method of and apparatus for determining the direction of	N. P. Otis and W. H. Underwood	448,252	Mar. 17	1599	407, 408, 409	54	1440
Spark-arrester	G. R. Anderson	449,512	Mar. 31	3654	918	54	1845
Spark-arrester	G. F. Evans	448,216	Mar. 17	1541	394	54	1430
Spark-arrester for smoke-pipes	W. B. Hale and R. E. Duringer	448,918	Mar. 24	2681	675	54	1655
Spark-arrester. Locomotive	E. B. Gibbs. (Reissue)	11,146	Feb. 17	2168	539	54	956
Spectacles. Bifocal	G. H. Cline	447,128	Feb. 24	2646	657	54	1053
Spectacle-frame temple	B. I. Price	444,505	Jan. 13	832	216	54	174
Spectacle-frame. Trial	G. Johnston	444,495	Jan. 13	817	213	54	171
Spectacle or eyeglass shade	J. F. Strange	448,276	Mar. 17	1650	419	54	1451
Speculum	W. E. Clough	447,761	Mar. 10	786	195	54	1274
Speed-controlling device	W. C. Baird	449,063	Mar. 24	2897	735	54	1696
Speed-measure	G. Berry	449,398	Mar. 31	3469	874	54	1809
Speed-regulating mechanism. Rotative	A. Scott	444,136	Jan. 6	259	62	54	53
Spewing-box for use on board ship	H. Scheller	445,086	Jan. 20	1778	458	54	363
Spike-extractor or lifting-jack. Convertible	C. M. Edwards	444,427	Jan. 13	701	183	54	146
Spindle-driving bands. Tension-regulating device for	W. Dootson	447,301	Mar. 3	27	8	54	1123
Spinning and doubling cotton or other fibrous substances. Mule and twiner for	W. H. Rhodes	448,077	Mar. 10	1313	336	54	1375
Spinning and twisting machines. Washer for	J. Walker	447,388	Mar. 3	185	49	54	1153
Spinning-frames or other machines. Indicator for	A. R. Clarkson	448,123	Mar. 10	1376	352	54	1388
Spinning-frames. Spindle supporting and driving device for	J. Duffy	445,500	Jan. 27	2404	622	54	494
Spinning-machine spindle-driving device	S. James and J. K. Sanders	446,751	Feb. 17	2022	505	54	925
Spinning-machine spindle-driving mechanism	C. W. Jones	448,239	Mar. 17	1578	403	54	1437
Spinning-spindle step-bearing	J. W. Wattles	449,341	Mar. 31	3366	848	54	1789
Spinning-spindle support	E. S. Draper	447,400	Mar. 3	206	54	54	1157
Spinning-spindle support	J. W. Parkin	446,207	Feb. 10	1149	281	54	739
Spinning-spindle support	R. White	446,999	Feb. 24	2433	605	54	1012
Spinning tubes	J. H. Bevington	444,721	Jan. 13	1148	295, 296	54	234
Spirals. Apparatus for forming	H. H. Warren	446,042	Feb. 10	872	212	54	689
Spool-cabinet	J. C. Kinney	445,263	Jan. 27	2069	534	54	427
Spool-holder	J. E. Blackmore	444,113	Jan. 6	213	51	54	43
Spool-holder	E. S. Jackson	448,799	Mar. 24	2499	626	54	1620
Spooling-machines. Yarn-cleaner for	J. M. Curtice	448,622	Mar. 17	2217	555	54	1559
Spring: *See* Bolster-spring. Buckboard-spring. Door-spring. Seat-spring. Vehicle-spring. Watch-case spring.							
Spring-holding bracket	C. Kade	448,240	Mar. 17	1579	403	54	1437
Spring-motor	C. A. Loring	445,561	Feb. 3	67	16	54	525
Spring-motor	D. B. Merry and W. M. Shelman	444,073	Jan. 6	150	37	54	32
Spring-motor	E. S. Reed	444,906	Jan. 20	1495	386	54	308
Spring-motor	E. S. Reed	444,907	Jan. 20	1499	387	54	309
Spring-motor	E. S. Reed	444,908	Jan. 20	1501	387, 388	54	309
Spring-motor	E. S. Reed and C. T. Painter	444,905	Jan. 20	1492	386	54	308
Spring-motor	B. Reichelt	449,384	Mar. 31	3444	866, 867	54	1804
Sprinkler: *See* Automatic sprinkler. Water-sprinkler. Lawn-sprinkler.							
Spur	G. J. Bancroft	444,407	Jan. 6	667	174	54	132
Square and bevel. Combined	A. G. Chase	445,389	Jan. 27	2237	581	54	462
Stables. Combined partitioned and box stall for	G. F. Davis	447,561	Mar. 3	479	117	54	1207
Stair-pad	T. S. Sperry	446,213	Feb. 10	1163	285	54	742
Stake-pocket	H. W. Avery	444,375	Jan. 6	612	157	54	121
Stalks. Machine for breaking	A. A. Guichard	448,230	Mar. 17	1564	399	54	1434
Stallion-shield	I. W. Benedict	448,757	Mar. 24	2439	610	54	1608
Stamp	C. H. Shaw	447,912	Mar. 10	1056	264	54	1325
Stamp-affixing machine	W. H. King	449,544	Mar. 31	3698	929, 930	54	1853
Stamp. Automatic time-	H. A. Chase	445,161	Jan. 27	1908	493	54	397
Stamp. Electric time-	W. B. Martindale and E. R. Malmborg	449,081	Mar. 24	2921	741	54	1701
Stamp. Hand-	J. T. Fox	448,606	Mar. 17	2182	545	54	1551
Stamp. Hand-	H. Howard	449,076	Mar. 24	2914	739, 740	54	1699
Stamp. Hand-	E. Reynolds	446,587	Feb. 17	1769	436, 437	54	876
Stamp-mill cam	A. Ramage	446,693	Feb. 17	1932	492	54	905
Stamp or label	A. C. Fletcher	444,344	Jan. 6	564	145	54	112
Stamp pads. Inker for rubber	G. J. B. Rodwell	446,889	Feb. 24	2261	562	54	981
Stamp. Perforating	A. Von Braudis	447,089	Feb. 24	2580	642	54	1041
Stamp. Self-inking	C. S. Burton	449,309	Mar. 31	3298	824	54	1779

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stamp. Thumb-	W. A. Smith	446,540	Feb. 17	1704	418	54	863
Stamp. Time-registering	E. W. Morton	445,570	Feb. 3	75	18	54	526
Stamp-vending apparatus. Postage-	L. S. Darr	446,434	Feb. 17	1538	378	54	830
Stamps. Apparatus for attaching adhesive	C. W. Tobey	447,212	Feb. 24	2816	697, 698, 699, 700	54	1084
Stamps. Device for moistening and affixing postage	W. W. Hamilton	445,993	Feb. 10	799	194	54	677
Stamps or other articles. Holder for postage	B. F. Carpenter	447,663	Mar. 3	623	155	54	1236
Stamps sold and canceled, &c. Register for	J. M. Ferrell	448,645	Mar. 24	2256	566	54	1572
Stanchion	J. McBride	446,264	Feb. 10	1266	310	54	762
Stand: *See* Barrel-stand. Bicycle-stand. Boiler-stand. Book-stand. Dental-service stand. Garment-stand. Sewing-stand. Show-stand. Switch-stand.							
Staple	H. H. Jester	446,523	Feb. 17	1678	409	54	858
Staple-clinching device. Wire-	E. Grunich	447,314	Mar. 3	50	13	54	1127
Stapling-machine	W. S. Hamm	447,681	Mar. 3	647	161, 162	54	1241
Stapling-machine	H. R. Heyl	444,178	Jan. 6	328	80	54	66
Starch. Making	J. H. C. Van Deinse and M. J. Reisseger.	444,127	Jan. 6	248	60	54	51
Starch-table. Continuous automatic	J. A. Ostenberg	447,790	Mar. 10	841	211	54	1284
Station-indicator	J. F. Hartigan	448,147	Mar. 10	1413	361	54	1396
Station-indicator	F. Moore	448,982	Mar. 24	2770	700, 701, 244, 245	54	1671
Station-indicator	F. S. Wilson	446,120	Feb. 10	992	244	54	712
Station-indicator. Electrical	E. S. Ely	445,773	Feb. 3	432	107	54	596
Station or street indicator	W. S. Mallard	447,617	Mar. 3	565	139, 140	54	1224
Stave-bending machine	F. and J. Brenner	447,295	Mar. 3	16	6	54	1121
Steak-pounder	W. H. Tyson	446,485	Feb. 17	1618	396	54	847
Steam and hot-water generator	D. A. Dickinson	449,150	Mar. 31	3037	768	54	1731
Steam-boiler	R. Bottsford	445,689	Feb. 3	288	76	54	569
Steam-boiler	H. B. Buckland	449,244	Mar. 31	3180	802	54	1758
Steam-boiler	N. B. Clark and F. B. King	446,093	Feb. 10	950	233, 234	54	704
Steam-boiler	C. F. Garland	447,308	Mar. 3	41	11	54	1125
Steam-boiler	M. Levi	447,248	Feb. 24	2883	716	54	1098
Steam-boiler	J. Mac Cormack and H. L. Van Zile	446,785	Feb. 17	2065	514	54	934
Steam-boiler	J. O. Maguire	444,959	Jan. 20	1598	408	54	327
Steam-boiler	W. A. Morse	448,983	Mar. 24	2773	701	54	1672
Steam-boiler	T. Nesom	445,410	Jan. 27	2276	590	54	470
Steam-boiler	J. J. Tonkin	448,867	Mar. 24	2613	656	54	1640
Steam-boiler	A. Ball	444,549	Jan. 13	897	233	54	186
Steam. Conveying	R. W. Basom	445,967	Feb. 10	739	181	54	607
Steam-engine	C. A. Blume and D. Lamm	447,292	Mar. 3	12	4, 5	54	1120
Steam-engine	E. W. Curtiss	449,308	Mar. 31	3130	789	54	1748
Steam-engine	F. M. Garland	448,917	Mar. 24	2680	674	54	1654
Steam-engine	W. E. Good	448,184	Mar. 10	1474	375, 376	54	1408
Steam-engine	I. Kentnowski	449,422	Mar. 31	3517	885, 886	54	1819
Steam-engine	A. McPherson	446,838	Feb. 17	2157	536	54	953
Steam-engine	G. C. Pyle	444,904	Jan. 20	1490	384, 385	54	307
Steam-engine	W. Wright	445,334	Jan. 27	2167	561	54	448
Steam-engine	J. Baird	447,929	Mar. 10	1081	271	54	1330
Steam-engine. Compound	J. Baird	448,001	Mar. 10	1204	305, 306	54	1353
Steam-engine. Compound	J. H. Eickershoff	447,671	Mar. 3	633	157	54	1237
Steam-engine. Compound	J. A. Groshon	444,828	Jan. 20	1331	345, 346	54	277
Steam-engine. Direct-acting	J. A. Groshon	444,829	Jan. 20	1333	346, 347	54	278
Steam-engine. Direct-acting	J. A. Groshon	446,582	Feb. 17	1762	434, 435	54	875
Steam-engine. Duplex	E. Hill	448,429	Mar. 17	1905	478, 479	54	1499
Steam-generating apparatus	E. Fales	445,884	Feb. 3	610	150	54	631
Steam generation. Apparatus for instantaneous	H. F. C. Huss	445,222	Jan. 27	2004	516	54	415
Steam-generator	J. J. Bush	447,865	Mar. 10	974	244	54	1310
Steam-generator	J. J. Bush	447,866	Mar. 10	977	245	54	1310
Steam-generator	S. S. Fleming	445,760	Feb. 3	403	102	54	592
Steam-generator	F. M. Ashley	445,488	Jan. 27	2385	620	54	491
Steam-generator alarm	W. C. Koetzner and E. C. Livingston.	446,223	Feb. 10	1175	288	54	744
Steam generator and flusher	E. Fales	448,947	Mar. 24	2782	686, 687	54	1662
Steam. Method of and apparatus for generating	C. E. Manning	445,472	Jan. 27	2357	612	54	485
Steam-separator	C. A. Snizman	444,214	Jan. 6	379	94, 95	54	76
Steam-trap	S. Gibson	447,678	Mar. 3	644	160	54	1240
Steamer. Dumpling-	S. Fox	448,814	Mar. 24	2521	631	54	1624
Steel bending and forging apparatus	S. Fox	448,815	Mar. 24	2522	632	54	1624
Steel bending and forging apparatus	J. Mackintire	449,547	Mar. 31	3703	.....	54	1854
Steel. Composition for use in the manufacture of	W. B. Middleton	448,534	Mar. 17	2060	.....	54	1528
Steel. Treating	J. B. Jardine	444,580	Jan. 13	948	245, 246	54	196
Steering apparatus	W. Rymer	448,263	Mar. 17	1620	413	54	1445
Steering apparatus	F. E. Sickels	444,024	Jan. 6	65	17	54	16
Steering-gear. Steam and hand	J. H. Croskey and D. C. Ripley	445,241	Jan. 27	2028	.....	54	420
Stencil. Sand-blast							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stenographers and short-hand writers. Machine for use by	F. E. Granger	444,953	Jan. 20	1591	406	54	325
Step	S. P. Williams	448,566	Mar. 17	2110	528	54	1538
Step. Folding	J. S. Jordan and J. E. Eller	446,385	Feb. 10	1445	355	54	799
Stereopticon	A. T. Thompson	446,238	Feb. 10	1225	299, 300	54	755
Stereotype-mold	C. Sears	446,930	Feb. 24	2332	579	54	993
Stereotype-molds. Frame for holding	H. Schimanský and L. Passelt	446,695	Feb. 17	1934	482	54	906
Stereotype-plate holder	H. Fletsch, Jr	449,039	Mar. 24	2861	727	54	1690
Stereotype-plates. Backing-block for	H. Dalziel	444,949	Jan. 20	1574	404	54	323
Stirrup	G. A. Kerns	444,298	Jan. 6	499	130	54	99
Stirrup	N. Pearson and S. Olsson	445,411	Jan. 27	2277	594	54	471
Stocking and making the same	O. L. Merrow and A. E. Sanborn	445,352	Jan. 27	2195	569	54	454
Stoker. Automatic	A. M. Gow	449,157	Mar. 31	3046	770	54	1733
Stoker. Mechanical	J. B. Ward	446,274	Feb. 10	1260	313	54	765
Stone. Artificial	E. C. Brice	449,067	Mar. 24	2905	.....	54	1698
Stone. Artificial	L. Enricht	449,152	Mar. 31	3039	.....	54	1732
Stone. Artificial building	E. H. Lewis	448,968	Mar. 24	2755	695	54	1668
Stone-channeler	W. P. Seates and J. F. Woods	448,928	Mar. 24	2693	679	54	1657
Stone composition. Artificial	L. Enricht	449,151	Mar. 31	3039	.....	54	1732
Stone-dressing machine	J. Kellow	445,644	Feb. 3	293	54	54	552
Stone. Manufacture of artificial	L. Enricht	449,214	Mar. 31	3037	.....	54	1750
Stone. Manufacture of artificial	J. L. Rowland	448,675	Mar. 24	2300	577	54	1581
Stone or cement. Artificial	L. Enricht	448,512	Mar. 17	2030	.....	54	1523
Stone or cement. Artificial	L. Enricht	448,513	Mar. 17	2031	.....	54	1523
Stone or cement. Artificial	L. Enricht	448,514	Mar. 17	2031	.....	54	1523
Stone or cement. Artificial	L. Enricht	449,619	Mar. 31	3839	.....	54	1879
Stone planing machine	E. Smallwood	447,372	Mar. 3	156	42, 43	54	1147
Stone-motion for machines	I. S. Craig	448,578	Mar. 17	2126	533	54	1541
Stone-motion mechanism	W. L. Clouse	447,557	Mar. 3	473	116	54	1206
Stopper: *See* Bottle-stopper.							
Stopping apparatus	F. Simonson	448,589	Mar. 17	2146	538	54	1545
Store-service apparatus	J. R. Haight	447,178	Feb. 24	2760	682	54	1073
Store-service apparatus	J. Whittemore	444,680	Jan. 13	1094	283, 284	54	224
Stove	C. O. Graves	449,218	Mar. 31	3142	792	54	1750
Stove attachment. Cooking	M. N. Cole	446,430	Feb. 17	1534	377	54	829
Stove-back. Adjustable	T. L. Bosart	445,421	Jan. 27	2291	594	54	474
Stove. Broiling	A. J. Doty	447,750	Mar. 3	758	189	54	1262
Stove. Cooking	A. W. Walker	447,548	Mar. 3	461	113	54	1204
Stove. Cooking and heating	J. Baker	446,413	Feb. 17	1506	371	54	823
Stove. Feed-cooking	A. L. Montague and H. S. Bailey	446,879	Feb. 24	2238	557	54	977
Stove for heating cars	R. F. Harris	446,517	Feb. 17	1671	407	54	856
Stove. Gas	E. Bourne	448,747	Mar. 24	2424	606	54	1605
Stove. Gas	C. H. Evans	448,579	Mar. 17	2127	533, 534	54	1542
Stove. Gas	C. W. McCutchen	444,056	Jan. 6	114	28	54	25
Stove. Hygienic	F. W. Merriam	444,841	Jan. 20	1356	351	54	281
Stove. Oil	J. Goldstein and I. Block	444,748	Jan. 13	1205	313	54	244
Stove. Oil	J. Van Alen and C. W. McCutchen	444,059	Jan. 6	123	30	54	27
Stove. Oil	L. T. Wilcox	449,343	Mar. 31	3368	849	54	1790
Stove-pipe fastener	F. A. Snow	447,168	Feb. 24	2745	679	54	1070
Stove-pipe thimble	E. G. West	449,060	Mar. 24	2894	734	54	1696
Stove-shelf	A. A. Gaston	446,115	Feb. 10	985	242	54	711
Stove-top	P. Haerst	445,729	Feb. 3	351	91	54	581
Stove. Vapor	C. M. Hollingsworth	448,652	Mar. 24	2265	568	54	1574
Stove. Water-back gas cooking	H. Ruppel	449,179	Mar. 31	3085	778	54	1740
Stoves. Box or casing for street-car	J. Spear	449,008	Mar. 24	2817	713	54	1680
Stoves. Cooking, toasting, and shielding device for	I. Smith	447,373	Mar. 3	158	44	54	1147
Stoves. Oil-feeding device for vapor	C. M. Hollingsworth	448,236	Mar. 17	1572	401	54	1436
Strainer	F. I. Maule	444,246	Jan. 6	430	108	54	84
Strainer. Coffee or tea	H. Hennig	446,680	Feb. 17	1916	477	54	903
Strap: *See* Parcel-strap.							
Strap	E. B. Stimpson	447,917	Mar. 10	1064	266	54	1326
Strap and buckle shield	G. H. Nicholls	447,158	Feb. 24	2733	676	54	1067
Street and station indicator. Electrical	F. H. Soden	448,378	Mar. 17	1822	459, 460	54	1483
Strap-trimming tool	H. F. Osborne	444,012	Jan. 6	46	13	54	12
Straw-stacker	J. M. Smith	446,955	Feb. 24	2363	588	54	999
Straw-stacker	O. Stage	444,732	Jan. 13	1182	305, 306	54	240
Street-cleaning machine	H. R. Wolfe	448,900	Mar. 24	2657	667	54	1649
Street-sweeper	A. J. Whittier	446,046	Feb. 10	877	214	54	691
Street-sweeping machine	W. Auberlin	444,683	Jan. 13	1100	284, 285	54	225
Street-sweeping machine	S. M. Skirving and A. J. B. Berger	444,025	Jan. 6	66	18	54	16
Street-sweeping machine	A. H. Smith	447,528	Mar. 3	435	107	54	1199
Street-washer box	G. W. Aldrich	447,503	Mar. 3	394	96	54	1192
Striking-bag	H. B. Cook	445,747	Feb. 3	382	97	54	588
Striking-machine. Coin-controlled indicating	C. J. Means	447,890	Mar. 10	1011	255	54	1316
Stub holder. Adjustable	H. W. Field and H. A. Fowler	444,429	Jan. 13	703	184	54	147
Stuff-gates. Mechanism for operating	A. A. Kellogg	444,535	Jan. 13	908	236	54	189
Stuffing-box for piston-rods	E. Hill	444,668	Jan. 13	1076	279	54	220
Stuffing-box for steam-hammers	T. H. Mirkil, Jr	447,340	Mar. 3	97	26	54	1136
Stump-extractor	F. W. Gruellich	449,041	Mar. 24	2863	728	54	1690
Stump-extractor	L. Kring and J. Banghman	445,676	Feb. 3	270	71	54	566
Stump-extractor	B. Montross	446,224	Feb. 10	1177	288	54	745
Stump-puller	W. Smith	449,596	Mar. 31	3753	949	54	1869
Stump-puller	R. S. Warren and W. A. Easley	445,460	Jan. 27	2342	609	54	483
Stump-puller spool	T. C. Cunningham and L. A. Funk	449,207	Mar. 31	3129	789	54	1748
Sucker-rod elevator	S. Clover	444,332	Jan. 6	547	142	54	109
Sugar. Manufacture of	G. Adant	444,107	Jan. 6	199	49	54	41

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Sulky	J. W. Kelley	449,542	Mar. 31	3695	929	54	1858
Sulky	H. B. Paul	444,921	Jan. 20	1529	393	54	314
Sulky	G. E. Tripp	445,758	Feb. 3	401	102	54	592
Sulphite-lye. Apparatus for making	A. Wendler and J. Spiro	446,652	Feb. 17	1869	464	54	895
Supporter: *See* Garment-supporter. Pantaloons-supporter. Hose-supporter. Uterine supporter.							
Supporting-lock. Automatic	J. A. Lounsbury	448,970	Mar. 24	2758	696	54	1669
Suppository	E. G. Eberhardt	445,984	Feb. 10	776	190	54	674
Suppository-mold	E. L. Cushing	448,133	Mar. 10	1394	356	54	1392
Surface-gage	G. E. Neuberth	448,863	Mar. 24	2608	655	54	1639
Surface-gage	F. A. Welles	444,865	Jan. 20	1428	372	54	295
Surgical explorer	F. K. Hesse	448,150	Mar. 10	1419	362	54	1397
Surgical pump	W. C. Carroll and B. F. Hales	444,690	Jan. 13	1109	287	54	227
Surveying-instrument	J. N. Gee	445,886	Feb. 3	611	151	54	632
Surveyor's plotting-instrument	P. O'Marra	446,882	Feb. 24	2243	558	54	978
Suspender-clasp	C. R. Harris	444,353	Jan. 6	577	148	54	115
Suspender-clasp	C. R. Harris	448,519	Mar. 17	2039	510	54	1524
Suspender-clasp	H. A. Hayden	447,876	Mar. 10	993	251	54	1313
Suspender-fastening	E. Gutmann	445,553	Feb. 3	40	11	54	519
Suspenders	F. H. Richards	446,840	Feb. 17	2161	537	54	954
Suspenders	W. J. Stewart	449,141	Mar. 31	3026	765	54	1729
Suspenders	I. Bushong	445,658	Feb. 3	222	62	54	557
Suspension apparatus	E. P. Pflueger	448,071	Mar. 10	1306	334	54	1374
Sweat-pad fastening	C. H. Wentz	445,590	Feb. 3	114	29	54	533
Sweat-pad fastener	O. D. Thompson and H. F. Smith	447,381	Mar. 3	170	46, 47	54	1150
Sweeper	J. W. Gorham	447,819	Mar. 10	894	223	54	1294
Swinging gate							
Switch; *See* Car-switch. Electric snap-switch. Electric switch. Electric starting switch. Electric-line switch. Railway-switch. Electric-motor switch. Rheostatic switch. Safety-switch.							
Switch	M. N. Jones	444,220	Jan. 6	389	97	54	78
Switch and signal apparatus	G. Westinghouse, Jr., and J. G. Schreuder.	446,159	Feb. 10	1065	262, 263, 264	54	725
Switch and signal apparatus. Hydraulic		449,240	Mar. 31	3174	801	54	1757
Switch-operating mechanism	J. A. Zinn	444,426	Jan. 13	699	182, 183	54	146
Switch-stand	J. N. and C. F. Duval	447,424	Mar. 3	245	62	54	1163
Switch-stand	W. A. Bock	449,017	Mar. 24	2826	716	54	1682
Switch-tongue adjuster	J. H. Wallace	449,558	Mar. 31	3717	933	54	1857
Swivel	I. Mowder	449,324	Mar. 31	3334	841	54	1784
Syringe	H. E. Kelley	445,813	Feb. 3	508	122	54	611
Syringe	H. G. Leisenring	446,125	Feb. 10	1006	248	54	715
Syringe. Electro-therapeutic	E. Schirmer	449,651	Mar. 31	3884	972	54	1887
Syringe-tube sinker	E. Bartsch	447,574	Mar. 3	409	123	54	1211
Syringe. Vaginal	D. B. Martin	447,410	Mar. 3	228	59	54	1160
Table; *See* Billet-receiving table. Inclining table. Board or game table. Ironing-table. Brick or tile table. Portable table. Grape-trimming and packing table. Starch-table.	L. D. McIntosh						
Table	J. S. Borden	444,191	Jan. 6	349	85	54	70
Table-leaf support	L. G. Cash	447,758	Mar. 10	779	193	54	1273
Table-leg. Shaft-bearing	S. Arnold	446,576	Feb. 17	1754	432	54	873
Tablet ornament	L. B. Prahar	447,622	Mar. 3	573	142	54	1225
Tachometer. Magnetic	J. Waring	446,488	Feb. 17	1621	397	54	847
Tack-driver	H. H. and J. S. Barnes	444,685	Jan. 13	1103	285	54	226
Tack-driving machine	J. E. Crisp and G. W. Copeland	446,631	Feb. 17	1830	453	54	887
Tacking-machine	J. P. Smith	445,322	Jan. 27	2146	555, 556	54	444
Tag	H. Baumgarten	444,739	Jan. 13	1196	309	54	242
Tag	A. C. North	445,731	Feb. 3	353	92	54	582
Tag	W. R. Dean and W. H. Barnett	445,441	Jan. 27	2315	601	54	478
Tag-fastener	M. Isaacs	447,688	Mar. 3	660	163	54	1243
Tag-fastener	P. J. Schreiber	444,371	Jan. 6	608	156	54	120
Tag-fastener	A. R. Tiffany	444,403	Jan. 6	659	170, 171	54	130
Tag-wiring machine	M. E. Stockwell	445,508	Jan. 27	2415	630	54	496
Tally-sheet	J. and W. N. Hutchings	444,068	Jan. 6	141	35	54	31
Tan-bark. Apparatus for making extracts from							
Tank: *See* Flush-tank. Water-tank. Flushing-tank.							
Tanks or reservoirs. Feeder for	W. S. Griffith	447,406	Mar. 3	221	57	54	1159
Tanks or reservoirs. Feeder for	W. S. Griffith	447,407	Mar. 3	222	58	54	1159
Tanning process	W. E. Hedges	447,427	Mar. 3	250	.....	54	1164
Tape. Woven	C. C. Hoyt	445,141	Jan. 20	1872	484	54	381
Tappet	W. N. Nolan	444,649	Jan. 13	1041	271	54	214
Tapping device	J. H. Rathbun	445,615	Feb. 3	152	40	54	541
Tapping mains. Machine for	J. Brankey	447,001	Feb. 24	2436	606	54	1013
Target. Automatic-signaling	A. T. M. Johnson	444,494	Jan. 13	813	211, 212, 213	54	170
Target. Self-indicating	J. Paterson	449,270	Mar. 31	3823	813, 814	54	1766
Target-trap	C. and M. Swan	444,373	Jan. 6	609	157	54	120
Target-trap. Self-feeding	G. H. Hockey	446,519	Feb. 17	1672	408	54	887
Tedder-frame and rake-head	W. H. Hall	448,232	Mar. 17	1566	400	54	1434
Telegraph	T. A. Edison	448,779	Mar. 24	2473	619	54	1615
Telegraph apparatus	J. A. Parker	447,198	Feb. 24	2796	691	54	1080

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Telegraph. Autographic	H. Etheridge	445,715	Feb. 3	327	86	54	577
Telegraph-key	J. Doggett	445,442	Jan. 27	2315	601	54	478
Telegraph-pole brace	H. Ogden	448,786	Mar. 24	2482	621	54	1616
Telegraph-transmitter	H. G. Robbins	449,174	Mar. 31	3070	776	54	1738
Telegraph-transmitter	S. W. Smith	447,166	Feb. 24	2742	679	54	1069
Telegraphs. Automatic switch for autographic	H. Etheridge	445,716	Feb. 3	329	87	54	577
Telegraphs. Electro-mechanical indicator for fire-alarm	T. F. Gaynor	445,991	Feb. 10	789	192, 193	54	676
Telegraphy	R. G. Brown	446,424	Feb. 17	1523	375, 376	54	827
Telegraphy	R. G. Brown	446,425	Feb. 17	1526	376	54	828
Telegraphy. Railway-car	W. S. and M. C. Cook	447,943	Mar. 10	1100	276	54	1333
Telephone	S. D. Field	448,329	Mar. 17	1751	444	54	1470
Telephone	W. Humans	449,254	Mar. 31	3203	808	54	1763
Telephone	E. J. P. Mercadier	447,194	Feb. 24	2789	690	54	1078
Telephone	E. Noriega	445,475	Jan. 27	2360	613	54	486
Telephone box or cabinet	B. A. Stevens	445,721	Feb. 3	337	89	54	579
Telephone-call	D. H. Rice	446,614	Feb. 17	1804	445, 446, 447	54	883
Telephone circuit and apparatus	J. J. Carty	449,106	Mar. 31	2966	750, 751	54	1718
Telephone enunciator or indicator	G. R. Lawrence	444,780	Jan. 13	1253	325	54	253
Telephone-exchange apparatus	F. G. Beach	447,485	Mar. 3	364	90	54	1187
Telephone-exchange. Automatic	A. B. Strowger	447,918	Mar. 10	1065	267	54	1326
Telephone exchange. Mechanical	G. F. Shaver	444,462	Jan. 13	757	197	54	158
Telephone exchange. Mechanical	G. F. Shaver	444,463	Jan. 13	758	198	54	159
Telephone lines. Device for inserting branch lines on mechanical	G. F. Shaver	444,461	Jan. 13	756	197	54	158
Telephone sound-transmitter	A. E. Schatz	449,180	Mar. 31	3086	778	54	1740
Telephone-switch system	C. C. Gould	447,426	Mar. 3	346	83	54	1164
Telephone-toll apparatus	W. Gray	448,024	Mar. 10	1243	316	54	1361
Telephone transmission	J. W. McDonough	446,188	Feb. 10	1120	274	54	733
Telephone-transmitter	T. Ocyan	448,726	Mar. 24	2389	598	54	1598
Telephones. Induction-preventive for	T. F. Wright and E. G. Wilson	447,858	Mar. 10	962	241	54	1307
Telephonic auditory apparatus	G. V. Benjamin	448,627	Mar. 24	2230	559	54	1568
Telescopic joint	E. C. Davis and T. Baldwin	445,440	Jan. 27	2314	600, 601	54	478
Tellurian	J. K. Rassweiler	448,075	Mar. 10	1310	335	54	1375
Tellurian	W. H. Shera	446,022	Feb. 10	832	200	54	682
Temperature-regulator	L. F. Easton. (Reissue)	11,148	Mar. 3	765	190	54	1263
Temperature-regulator	J. F. McElroy	445,378	Jan. 27	2222	576	54	460
Temperature-regulator. Electric	J. V. Stout	448,274	Mar. 17	1645	419	54	1450
Tennis-court marker	H. T. Kingsbury	444,384	Jan. 6	626	162	54	123
Tenon-cutting machine	B. A. Haines	447,772	Mar. 10	806	200	54	1278
Tension device	J. H. Sparks and W. S. Brown	446,842	Feb. 17	2163	538	54	955
Tent	A. S. Comstock	444,605	Jan. 13	979	253, 254	54	202
Terret and hitching-strap holder	O. E. Lawson	447,958	Mar. 10	1132	284	54	1339
Testing-machine. Recording	T. Olsen	445,476	Jan. 27	2362	614, 615	54	487
Tether	F. M. Powell and W. H. Vickery	445,454	Jan. 27	2336	607	54	482
Tether-pin	L. P. Carl	444,661	Jan. 13	1057	275	54	217
Thermometer. Clinical	J. Wall	446,140	Feb. 10	1033	254	54	719
Thermometer for sad-irons	A. Nicolaus	448,066	Mar. 10	1301	332	54	1353
Thermometer-graduating machine	J. D. Hall	449,442	Mar. 31	3544	893	54	1824
Thermometer. Oven	D. G. Cooper	447,129	Feb. 24	2647	657	54	1053
Thermometer-printing machine	J. D. Hall	449,444	Mar. 31	3549	894	54	1825
Thermometer-tube-filling apparatus	J. D. Hall	449,443	Mar. 31	3547	893	54	1824
Thermostat	A. M. Barron	446,846	Feb. 24	2173	541	54	965
Thermostatic regulator	E. C. Merrill	446,583	Feb. 17	1764	435	54	875
Thill-coupling	P. Broadbooks	448,707	Mar. 24	2353	589	54	1592
Thill-coupling	W. L. Bryan	448,499	Mar. 17	2013	503	54	1519
Thill-coupling	C. E. Carpenter	446,325	Feb. 10	1357	331	54	781
Thill-coupling	N. M. Compton and W. H. Longeoy	444,333	Jan. 6	547	142	54	110
Thill-coupling	F. N. Kelsey	449,367	Mar. 31	3420	860	54	1799
Thill-coupling	D. McCready	447,786	Mar. 10	834	209	54	1283
Thill-coupling	W. A. McNeal	446,837	Feb. 17	2156	535	54	953
Thill-coupling	L. C. Mills	444,299	Jan. 6	499	130	54	100
Thill-coupling	A. Paul	446,005	Feb. 10	812	196	54	679
Thill-coupling	H. C. Rose and T. J. Thompson	449,235	Mar. 31	3105	798	54	1755
Thill-coupling	W. M. Strother	447,439	Mar. 3	277	70	54	1170
Thill-coupling	T. Watts	448,284	Mar. 17	1671	423	54	1454
Thill-couplings. Anti-rattler for	A. H. Terry	446,036	Feb. 10	863	209	54	688
Thrashers. Chaff-separator for	G. E. Minges	448,357	Mar. 17	1792	453	54	1478
Thrashers. Grain-separating mechanism for traveling	L. H. Hill	445,112	Jan. 20	1822	471	54	371
Thrashers. Sieve attachment for	H. L. Windler	444,129	Jan. 6	252	60	54	52
Thrashing-cylinder	C. Frantz	449,438	Mar. 31	3539	892	54	1823
Thrashing-machine	G. Frick	447,043	Feb. 24	2520	625, 626	54	1028
Thrashing-machine	A. R. Gustafson	446,643	Feb. 17	1854	460	54	892
Thrashing-machine	A. R. Gustafson	446,644	Feb. 17	1856	460, 461	54	892
Thrashing-machine	A. R. Gustafson	446,645	Feb. 17	1858	461, 462	54	893
Thrashing-machine	F. F. Landis	447,032	Feb. 24	2499	621, 622	54	1024
Thrashing-machine	E. McDonald	446,234	Feb. 10	1193	292, 293	54	748
Thrashing-machine conveyer	C. J. Hartley	446,598	Feb. 17	1781	440	54	878
Thrashing-machines. Attachment for the separators of	L. and A. Y. Gray	448,957	Mar. 24	2738	690	54	1665
Thrashing-machines. Straw-stacking attachment for	A. P. Miller	449,556	Mar. 31	3715	933	54	1856

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Threshold	A. Bussert	448,501	Mar. 17	2015	504	54	1519
Ticket-holder	B. S. Hoyt	444,593	Jan. 13	963	230	54	200
Ticket. Railway mileage	M. Y. Campbell	445,368	Jan. 27	2211	573	54	458
Ticket-reel	M. Everett	444,342	Jan. 6	562	144	54	112
Ticket. Strip	J. M. Harper	444,149	Jan. 6	281	67	54	57
Tide and wave power apparatus	N. O. Bond	446,422	Feb. 17	1518	374	54	826
Tide motor	G. M. Copeland	446,057	Feb. 10	898	218	54	694
Tidy-holder	P. G. Leistner	448,967	Mar. 24	2754	695	54	1668
Tie: *See* Bag-tie. Bale-tie. Rail-tie. Railway-tie. Railway-rail tie.							
Tie-wires. Separating cross-head	G. B. Baer	445,828	Feb. 3	528	128	54	614
Tile. Building	J. Pajeau	449,133	Mar. 31	3015	763	54	1727
Tile for copings	J. Lynch	448,972	Mar. 24	2761	697	54	1670
Tile. Roofing	E. Bennett	449,397	Mar. 31	3408	874	54	1809
Tiles. Lens for illuminating	P. H. Jackson	446,350	Feb. 10	1396	341	54	789
Till-lock	C. T. Jearles	448,962	Mar. 24	2745	692, 693	54	1667
Till-lock	B. H. Mead	444,708	Jan. 13	1131	292	54	232
Tilting-chair	W. Schrage	446,080	Feb. 10	929	227	54	700
Timber-bending machine	W. Ranke and W. Yergens	447,202	Feb. 24	2801	692, 693	54	1081
Timber-hangers. Machine for making	J. Grant	445,149	Jan. 20	1886	487, 488	54	384
Timber-hangers. Machine for making	J. Russell	445,007	Jan. 20	1661	425, 426, 427	54	340
Timbers. Clasp for connecting	H. A. Salisbury	448,082	Mar. 10	1321	338	54	1377
Time-alarm. Electric	J. J. Gallagher	448,712	Mar. 24	2368	592	54	1595
Time-lock. Electric	M. I. Flowers	446,907	Feb. 24	2387	594	54	1003
Time-lock. Electric	J. H. Kaiser and A. B. Ledwith	447,409	Mar. 3	225	58, 59	54	1160
Time-recorder	F. E. Tyng	448,560	Mar. 17	2093	525	54	1535
Tire. Bicycle	L. D. Whittemore, Jr.	447,993	Mar. 10	1194	302	54	1351
Tire for cycles. Wheel	J. B. Dunlop. (Reissue)	11,153	Mar. 24	2052	748	54	1707
Tire for vehicle-wheels	C. Challiner	449,281	Mar. 31	3245	821, 822	54	1770
Tire for vehicles. Rubber	A. Straus	449,502	Mar. 31	3637	915	54	1842
Tire for wheels. Rubber	D. P. Jefferies and A. W. Grant	449,650	Mar. 31	3883	971	54	1887
Tire-setters. Gage for	J. B. West	444,165	Jan. 6	307	74	54	62
Tire-setting machine	J. B. West	444,166	Jan. 6	309	74	54	63
Tire-setting machine	J. B. West	444,175	Jan. 6	324	79	54	66
Tire-tightener	L. P. Hewitt and S. W. Buence	446,869	Feb. 24	2221	552	54	974
Tire-tightener	W. Hogan	444,492	Jan. 13	810	210	54	169
Tire-tightener	A. M. Reeves	449,234	Mar. 31	3164	797	54	1755
Tire-tightener	H. Widdows	447,390	Mar. 3	189	50	54	1154
Tire-tightener	W. E. Bartlett	448,793	Mar. 24	2493	624	54	1618
Tire. Wheel	T. B. Jeffery	444,069	Jan. 6	142	35	54	31
Tire. Wheel	J. Faske	446,856	Feb. 24	2195	546, 547	54	970
Tires and fellies of wheels of road-vehicles. Machine for drilling the	H. Winterwerber	447,095	Feb. 24	2597	644, 645	54	1043
Tobacco and other substances. Machine for cutting	W. J. Cussen	445,881	Feb. 3	606	149	54	631
Tobacco bag or pouch	J. Lewis	447,615	Mar. 3	558	138	54	1223
Tobacco-box	J. C. Frost	446,441	Feb. 17	1553	381	54	832
Tobacco-casing apparatus	W. H. Snow	448,595	Mar. 17	2156	.....	54	1547
Tobacco. Curing	H. T. Reed	448,672	Mar. 24	2287	576	54	1580
Tobacco-cutter. Pocket	J. T. Ashworth	448,746	Mar. 24	2422	606	54	1605
Tobacco gum or retainer	I. Reich	447,699	Mar. 3	675	168	54	1246
Tobacco-hanger	W. J. Sculthorp	447,242	Feb. 24	2875	714	54	1096
Tobacco-hanger	P. J. Bernard	449,031	Mar. 24	2849	724	54	1687
Tobacco-knife	R. W. Coffee	446,811	Feb. 17	2112	525, 526	54	944
Tobacco-leaves. Machine for removing stems from	R. W. Coffee	445,270	Jan. 27	2079	536, 537	54	429
Tobacco. Machine for treating leaf	W. J. Cussen	444,291	Jan. 6	491	128	54	98
Tobacco-pouch	W. J. Cussen	444,292	Jan. 6	492	128	54	98
Tobacco-pouch	W. J. Cussen	444,293	Jan. 6	493	129	54	98
Tobacco-pouch	W. J. Cussen	447,103	Feb. 24	2609	648	54	1046
Tobacco-pouch	H. Bingham	445,438	Jan. 27	2312	.....	54	478
Tobacco-smoking mixture	J. T. Carter	446,247	Feb. 10	1237	302, 303	54	737
Tobacco-spraying machine	R. W. Coffee	445,637	Feb. 3	186	50, 51	54	548
Tobacco-stemming machine	T. H. Ellington	449,469	Mar. 31	3595	905	54	1833
Tobacco-stick	B. S. Kearney	446,231	Feb. 10	1188	291	54	747
Tobacco-stringer	J. R. Williams	449,394	Mar. 31	3461	871, 872	54	1808
Tobacco stripping and booking machine	L. H. Miller	448,925	Mar. 24	2690	.....	54	1656
Tobacco substitute	O. J. Sefton	444,023	Jan. 6	64	17	54	15
Toe-weight and quarter-boot fastener	W. C. Moore and W. E. Garrard	448,663	Mar. 24	2282	572	54	1578
Toilet-case	K. Conway	444,743	Jan. 13	1200	.....	54	243
Toilet-cream	C. V. Greenamyer	444,778	Jan. 13	1251	324	54	252
Tongs and wrenches. Bench-clamp for pipe	C. F. Spery	444,923	Jan. 20	1531	393	54	315
Tongs. Pipe	O. J. Snyder	446,237	Feb. 10	1223	299	54	734
Tongue attachment	J. H. Jordan and J. M. Cook	448,433	Mar. 17	1913	481	54	1500
Tongue-support	J. W. Lindquist	445,024	Jan. 20	1681	432	54	344
Tongue-support	W. D. Napier	446,152	Feb. 10	1056	259	54	723
Tongue-support	J. Caldwell	445,972	Feb. 10	746	183	54	668
Tool. Compound	E. W. Fant, W. B. Anderson, and S. W. Richard.	447,052	Feb. 24	2534	630	54	1031
Tool-handle attachment	J. Weiss	447,707	Mar. 3	687	170	54	1248
Tool-handle fastening	M. Daily	445,976	Feb. 10	752	184	54	669
Tool-handles. Device for securing	S. P. Graham	449,246	Mar. 31	3182	803	54	1759
Tool holder. Boring	A. Newell	446,462	Feb. 17	1584	389	54	840
Tool-post							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Tooth. Artificial	A. Page and S. S. Bloom	445,230	Jan. 27	2015	519	54	418
Tooth. Artificial	A. Page and S. S. Bloom	445,231	Jan. 27	2016	519	54	418
Tooth. Artificial	J. F. Wright	448,745	Mar. 24	2421	605	54	1605
Tooth-pick	C. C. Freeman	448,647	Mar. 24	2260	567	54	1573
Tooth-powder box	I. W. Lyon	445,067	Jan. 20	1735	452	54	359
Tooth-seat	E. E. Whipple	445,104	Jan. 20	1810	467	54	369
Torch-lamp for firemen and petrolmen	A. Prier	444,767	Jan. 13	1238	321	54	250
Tower	T. Reichard	447,477	Mar. 3	355	88	54	1184
Toy	E. Del Valle	447,284	Feb. 24	2043	731	54	1111
Toy	J. M. McMaster	447,411	Mar. 3	230	59	54	1160
Toy	C. S. Morris	448,539	Mar. 17	2066	517	54	1530
Toy	S. P. Simpson	447,164	Feb. 24	2740	678	54	1069
Toy bridge	H. C. Zenke	447,422	Mar. 3	243	62	54	1163
Toy buzzer	G. T. Fallis	447,638	Mar. 3	594	147	54	1229
Toy fence	W. Windus	444,681	Jan. 13	1098	284	54	225
Toy. Figure	H. Y. Dickinson	444,088	Jan. 6	170	43	54	46
Toy game	F. W. Batdorf	444,112	Jan. 6	212	51	54	43
Toy gun	C. A. Ellis	446,333	Feb. 10	1373	335	54	784
Toy. Mechanical	H. Hargreaves	445,554	Feb. 3	42	11	54	519
Toy money-bank. Registering	E. R. Ives and C. A. Hotchkiss	445,754	Feb. 3	393	100	54	591
Toy. Musical	A. L. Brown	446,201	Feb. 10	1142	279	54	737
Toy or game	E. J. Bond	446,054	Feb. 10	894	217	54	693
Toy parachute	S. W. Kelley	444,441	Jan. 13	719	188	54	150
Toy puzzle	W. W. Brown	447,631	Mar. 3	585	144	54	1228
Toy. Soap-bubble	W. C. Farrand	445,807	Feb. 3	502	121	54	610
Toy. Sounding	D. W. Watrous	449,146	Mar. 31	3034	767	54	1731
Track-layer	H. Birkby	447,754	Mar. 10	772	191, 192	54	1271
Track-sweeper	W. H. Briggs	445,219	Jan. 27	2001	515	54	415
Traction-engine	G. G. Schroeder	447,978	Mar. 10	1168	296, 297	54	1346
Traction-engine or road-roller	M. E. Hershey	444,980	Jan. 20	1621	414	54	332
Tram or leveling device for leveling or tramming rolls. Test-	J. P. Adams	446,764	Feb. 17	2041	509	54	929
Trammel-head	R. G. Hansdörfer	447,642	Mar. 3	602	148	54	1231
Tramways. Bucket-clip for wire-rope	C. T. Finlayson	444,408	Jan. 6	668	174	54	132
Tramways or railways. Rolling-stock for	C. Zipernowsky	445,583	Feb. 3	103	24, 25	54	531
Transit-instrument	C. Sutphen	444,602	Jan. 13	973	252	54	201
Transmitter-circuit	A. C. White	447,220	Feb. 24	2835	703	54	1088
Transom-lifter	J. L. Baker	447,174	Feb. 24	2754	681	54	1072
Transom-lifter	G. W. Hamilton	446,865	Feb. 24	2211	549, 550	54	972
Transom-lifter	A. L. Pennock	449,429	Mar. 31	3527	888	54	1820
Transportation. Method of	W. C. Andrews	449,102	Mar. 31	2960	750	54	1718
Transportation. Method of and apparatus for	P. E. McDonnell	446,786	Feb. 17	2066	515	54	934
Transportation system. Electric	S. S. Wheeler and C. S. Bradley	448,598	Mar. 17	2167	541, 542	54	1548
Trap: *See* Animal-trap. Gopher-trap. Hog-trap. Insect-trap. Mole-trap. Plumber's trap. Sewer-trap. Steam-trap. Target-trap.							
Traps. Inserting springs in	E. S. Hotchkiss	449,534	Mar. 31	3680	925	54	1850
Tray	A. Wiggers	447,221	Feb. 24	2838	703	54	1088
Tree-prop. Extensible	G. F. Andrews	445,151	Jan. 27	1896	489	54	395
Tree-protector	C. F. Geries	445,887	Feb. 3	613	151	54	632
Tree protector. Fruit-	D. Cripps	445,048	Jan. 20	1728	445	54	353
Tree protector. Fruit-	W. T. Yandow	448,738	Mar. 24	2411	603	54	1602
Trees. Cultivating fruit-	T. Crakes	446,602	Feb. 17	1881	467	54	897
Trees. Machine for budding	W. M. Rowell	449,591	Mar. 31	3772	946	54	1866
Tricycle	S. Elliott	446,670	Feb. 17	1890	469, 470	54	899
Tricycle	S. Elliott	446,671	Feb. 17	1893	470	54	900
Tricycle	D. L. Klahr	447,331	Mar. 3	79	21, 22	54	1133
Tricycle	O. A. Bremer	446,912	Feb. 24	2306	573	54	989
Trigger. Set-							
Trimmer: *See* Knitting-machine trimmer. Rand-trimmer. Solo-trimmer. Wick-trimmer.							
Trolley-carriage and conductor	C. J. Luco	447,885	Mar. 10	1005	253	54	1315
Trolley. Elastic	C. A. Lieb	444,447	Jan. 13	725	190	54	152
Trolley-line cross-over	S. H. Short	447,208	Feb. 24	2810	695	54	1083
Trolley-wire clamp or support	W. Vogler	445,103	Jan. 20	1809	467	54	369
Trolley-wire hanger	C. H. Macloskie and W. E. Baker	446,985	Feb. 24	2415	601	54	1009
Trolley-wire holder	E. W. Sharp	445,908	Feb. 3	641	157, 158	54	638
Trough: *See* Water-trough. Watering-trough.							
Trousers-protector	T. B. Ashford	448,509	Mar. 17	2171	542	54	1549
Trousers-stretcher	A. B. Cogswell	447,868	Mar. 10	980	245	54	1341
Trousers stretcher and hanger	J. A. Trant	445,090	Jan. 20	1803	465	54	367
Truck. Car-	J. B. Johnson	447,430	Mar. 3	258	65	54	1166
Truck. Car-	H. F. Probert	446,392	Feb. 10	1456	357	54	802
Truck driving mechanism. Car-	C. W. Hunt	447,114	Feb. 24	2630	652, 653	54	1050
Truck. Electric-motor	E. O. Blackwell	448,199	Mar. 17	1511	385, 386	54	1425
Truck. Electric-motor	E. O. Blackwell	449,197	Mar. 31	3115	786	54	1746
Truck. Electric-motor	E. P. Faries	445,051	Jan. 20	1729	445	54	354
Truck for cars. Motor-	J. A. Brill	445,308	Jan. 27	2123	549, 550	54	439
Truck for railway-cars	L. Pfingst and S. A. Bemis	449,382	Mar. 31	3440	866	54	1803

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Truck for suspended cars	R. C. Forsyth	449,318	Mar. 31	3382	837, 838	54	1782
Truck for vehicles for ropeways	T. Otto	444,109	Jan. 6	208	50	54	43
Truck jack. Railway-	J. C. Carbine	446,378	Feb. 10	1434	352	54	797
Truck lubricator. Locomotive-	W. McIntosh	447,081	Feb. 24	2580	640	54	1039
Truck. Radial car-	W. Robinson	444,181	Jan. 6	333	80, 81	54	67
Truck. Stove-	G. H. Rogers and A. J. Barber	444,020	Jan. 6	55	15	54	14
Trucks. Swing-bolster check for car-	W. Robinson	444,183	Jan. 6	337	82	54	68
Trunk	J. S. Daggett	446,812	Feb. 17	2116	526	54	945
Trunk	F. J. Palica	444,941	Jan. 20	1564	401	54	321
Trunk	W. G. Russell, Jr	446,890	Feb. 24	2262	562	54	981
Trunk	G. W. Snaman, Jr	448,554	Mar. 17	2086	523	54	1534
Trunk and bed. Combined	A. M. Nelson	446,690	Feb. 17	1928	481	54	906
Trunk and folding bed. Combined	W. R. Sutley	447,025	Mar. 3	578	143	54	1226
Trunk attachment	J. G. Krieger	447,057	Feb. 24	2541	631	54	1032
Trunk-lock	G. L. S. Hayes	445,400	Jan. 27	2361	587	54	467
Trunk or wardrobe. Convertible	R. Topham	444,736	Jan. 13	1190	308	54	241
Trunk-slat	H. C. Silckney	447,378	Mar. 3	166	45	54	1149
Truss	T. E. Wheeler	444,899	Jan. 20	1479	382	54	305
Truss	P. Yost	445,666	Feb. 3	240	65	54	559
Truss	J. Garcia	449,473	Mar. 31	3599	906	54	1834
Truss-pad	A. Owen	444,599	Jan. 13	971	251	54	201
Trusses. Electric appliance for							
Tub: *See* Bath-tub. Wash-tub.							
Tube: *See* Boiler water-tube. Glass-blowing tube. Spinning-tube. Wick-tube.							
Tube	H. Denney	444,233	Jan. 6	412	102	54	81
Tube-blanks. Apparatus for making	J. Robertson	447,583	Mar. 3	511	125, 126	54	1213
Tube-making machine	T. C. Belding	445,517	Jan. 27	2427	633, 634	54	498
Tubes. Machine for cutting paper	G. P. Salisbury	447,740	Mar. 3	740	186, 187	54	1258
Tubes. Making	A. Lawrence	445,854	Feb. 3	566	138	54	622
Tubing. Apparatus for making	P. Patterson	444,568	Jan. 13	932	240	54	193
Tubing. Machine for making	J. Robertson	447,582	Mar. 3	508	125	54	1213
Tubular boiler	H. Skinner	448,890	Mar. 24	2640	663	54	1645
Tubular boiler. Downdraft	D. V. O'Brien	449,381	Mar. 31	3429	865	54	1803
Tubular receptacles. Machine for ornamenting	L. T. Sheffield and T. M. Sinclair	448,678	Mar. 24	2304	578	54	1582
Tug	O. A. Crabbs and S. Emens	447,050	Feb. 24	2532	629	54	1030
Tug	E. A. Hall and A. H. Hamilton	446,674	Feb. 17	1909	474	54	902
Tug. Hame-	H. J. Demers	446,733	Feb. 17	1938	498	54	920
Tug. Hame-	M. J. Young and C. Robinson	447,995	Mar. 10	1196	303	54	1352
Tug. Harness-	G. F. Grout	448,026	Mar. 10	1245	317	54	1361
Tug. Shaft-	T. W. Davies and G. M. Downey	445,920	Feb. 3	674	165	54	643
Tug. Shaft-	G. C. Paine	446,390	Feb. 10	1454	357	54	801
Tug. Thill-	D. M. Schell	446,694	Feb. 17	1933	482	54	906
Turbines. Water-conductor for	J. Graham	446,287	Feb. 10	1297	317	54	769
Tuning-pegs. Retaining device for	R. C. Bookser	448,872	Mar. 24	2616	657	54	1641
Tunnel	H. Moeser	447,735	Mar. 3	733	183, 184	54	1256
Tunneling apparatus. Pneumatic	W. H. Paine	445,194	Jan. 27	1962	507	54	467
Tunneling-machine. Subaqueous	L. Grover	444,244	Jan. 6	426	107	54	84
Turfing implement	C. E. Coe	448,845	Mar. 24	2572	646	54	1633
Turn-buckle	W. B. Middleton	447,077	Feb. 24	2575	639	54	1038
Turn-buckle	C. H. Williams	445,625	Feb. 3	168	44	54	545
Turn-buckle blanks. Roll for rolling	W. B. Middleton	447,237	Feb. 24	2868	712	54	1094
Turning-machine	A. G. Bannister and N. Heinz	445,032	Jan. 20	1692	435	54	346
Twine	F. R. Williams and G. H. Cram	448,174	Mar. 10	1460	372	54	1405
Twine-holder	R. O. Nottingham	446,691	Feb. 17	1929	481	54	906
Twine. Machine for making compound paper and jute	J. W. Perkins	446,926	Feb. 24	2327	578	54	992
Twine-reel	J. B. Holmes	447,153	Feb. 24	2724	675	54	1065
Twine-reel	F. C. Werner	444,866	Jan. 20	1430	372	54	295
Twist-drills. Process of and dies for making	T. Hooker	447,450	Mar. 3	296	75	54	1173
Type-bar hanger	G. F. Stillman	448,690	Mar. 24	2326	583	54	1587
Type-bar and manufacturing the same	W. Baker	446,414	Feb. 17	1508	371	54	819
Type-composing mechanism	P. T. Dodge	444,294	Jan. 6	494	128	54	98
Type-containing channel	A. A. Low	445,702	Feb. 3	309	82	54	573
Type-distributing holder	A. B. Adams	447,124	Feb. 24	2642	655, 656	54	1052
Type-distributing machine	J. Patten	446,235	Feb. 10	1195	293, 294, 295, 296, 297, 298	54	748
Type-founder's matrix	A. F. Allen	449,062	Mar. 24	2896	735	54	1696
Type setting or composing machine	E. C. Standiford and S. A. Hyers	448,735	Mar. 24	2404	601, 602	54	1601
Type to type-bars. Tool for clamping	H. Abbott	449,190	Mar. 31	3104	782	54	1743
Type-writer drop-cabinet	W. C. Behrens	446,943	Feb. 24	2349	584	54	996
Type-writers. Blank book for	J. H. Fitzgerald	446,095	Feb. 10	1254	294	54	704
Type-writing machine	L. E. Baker	445,152	Jan. 27	1897	489	54	395
Type-writing machine	W. J. Barron	444,873	Jan. 20	1441	375	54	298
Type-writing machine	D. C. Boruff	444,119	Jan. 6	222	54	54	46
Type-writing machine	T. F. Bourne	446,850	Feb. 24	2180	543, 544	54	967
Type-writing machine	A. T. Brown	445,350	Jan. 27	2189	567	54	453
Type-writing machine	C. M. Clinton and J. McNamara	448,934	Mar. 24	2700	681, 682	54	1658
Type-writing machine	C. M. Clinton and J. McNamara	449,616	Mar. 31	3826	959, 960	54	1876

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Type-writing machine	H. E. Curtis	446,432	Feb. 17	1536	378	54	829
Type-writing machine	W. S. Dodge	446,381	Feb. 10	1437	353	54	798
Type-writing machine	W. W. Evans	445,398	Jan. 27	2254	585, 586	54	466
Type-writing machine	M. Fisher	448,760	Mar. 24	2442	611	54	1608
Type-writing machine	G. I. Francis	448,646	Mar. 24	2257	566	54	1573
Type-writing machine	B. Granville	446,676	Feb. 17	1904	473, 474	54	902
Type-writing machine	J. J. Green	444,750	Jan. 13	1207	313, 314	54	244
Type-writing machine	E. M. Hamilton	444,490	Jan. 13	806	209	54	168
Type-writing machine	E. M. Hamilton	444,491	Jan. 13	808	210	54	169
Type-writing machine	A. E. Harnsberger	447,773	Mar. 10	808	200, 201, 202	54	1278
Type-writing machine	E. S. Higgins and H. C. Jenkins	448,037	Mar. 10	1257	321, 322	54	1364
Type-writing machine	W. B. Hohenshell and E. H. Overholt.	444,636	Jan. 13	1017	265, 266	54	210
Type-writing machine	C. E. Merritt	448,348	Mar. 17	1589	406	54	1439
Type-writing machine	M. G. Merritt	444,889	Jan. 20	1465	379	54	303
Type-writing machine	B. T. Mulligan	449,560	Mar. 31	3719	934	54	1857
Type-writing machine	J. H. Osgood	447,789	Mar. 10	839	210	54	1284
Type-writing machine	C. A. Penuington	448,255	Mar. 17	1609	411	54	1442
Type-writing machine	J. W. Pierce	446,638	Feb. 17	1843	457, 458	54	890
Type-writing machine	A. B. Reid	449,296	Mar. 31	3271	829	54	1774
Type-writing machine	J. Richardson	448,996	Mar. 24	2793	707	54	1676
Type-writing machine	G. F. Robertson	448,079	Mar. 10	1314	337, 338	54	1376
Type-writing machine	J. R. Robinson	447,357	Mar. 3	128	35	54	1142
Type-writing machine	S. J. Seifried	446,394	Feb. 10	1459	358, 359	54	802
Type-writing machine	C. J. A. Sjoberg	445,198	Jan. 20	1844	477, 478	54	376
Type-writing machine	C. Spiro	445,333	Jan. 27	2164	561	54	448
Type-writing machine	C. Spiro	447,438	Mar. 3	272	69	54	1169
Type-writing machine	D. C. Stover	446,719	Feb. 17	1969	491, 492	54	914
Type-writing machine	D. C. Stover	446,720	Feb. 17	1976	492, 493	54	915
Type-writing machine	H. H. Unz	449,640	Mar. 31	3871	969	54	1885
Type-writing machine	R. W. Whitney	445,213	Jan. 27	1986	512, 513	54	412
Type-writing machine	F. E. Wilder	447,720	Mar. 3	709	177, 178	54	1252
Type-writing machine	A. Woodruff	445,214	Jan. 27	1989	513	54	413
Type-writing machine	H. A. Wright	449,021	Mar. 24	2830	717, 718	54	1663
Type-writing machine	G. W. N. Yost	447,859	Mar. 10	964	242	54	1307
Type-writing machine. Electric	E. J. Silkman	448,271	Mar. 17	1633	416, 417, 418	54	1447
Type-writing machines. Inking-ribbon-spool mounting for	H. Ray	445,265	Jan. 27	2072	534	54	428
Type-writing-machines. Paper-carrying attachment for	W. B. Wright	448,288	Mar. 17	1677	425	54	1455
Type-writing machines. Platen for	H. Abbott	449,191	Mar. 31	3105	783	54	1744
Type-writing machines. Reverse-movement attachment for	H. O. Hooper	445,406	Jan. 27	2269	589	54	468
Type-writing machines. Ribbon-feed-reversing mechanism for	J. Pusey	446,886	Feb. 24	2252	561	54	979
Type-writing machines. Type-bar for	S. N. Gallup	445,170	Jan. 27	1922	496	54	400
Type-writing machines. Type cleaner for	W. S. Boyd	445,519	Jan. 27	2430	634	54	499
Type-writing machines. Type-cleaning brush for	F. Van Fleet	447,141	Feb. 24	2703	670	54	1061
Type-writing machines. Type lever and hanger for	W. H. Briggs	448,875	Mar. 24	2622	658	54	1642
Umbrella	A. Weigand	445,707	Feb. 3	317	84	54	575
Umbrella and cane. Combined	A. L. Brice	448,203	Mar. 17	1523	390	54	1426
Umbrella-bracket	A. A. Sherman	444,769	Jan. 13	1241	322	54	251
Umbrella or other sticks. Machine for slotting and boring	J. B. Jesson and J. K. Weed	445,145	Jan. 20	1880	485, 486	54	383
Umbrella or parasol	J. F. Judy and N. H. Wilson	444,359	Jan. 6	587	151	54	117
Umbrella or parasol	C. J. Swart	446,542	Feb. 17	1706	419	54	893
Umbrella rack or stand	C. R. Risdon	449,173	Mar. 31	3069	776	54	1738
Unloading apparatus	R. S. Kirkpatrick	449,448	Mar. 31	3559	897	54	1827
Upper-machine	C. H. Farrington	446,674	Feb. 17	1901	472	54	901
Urinal	J. W. Plain	444,074	Jan. 6	152	38	54	33
Urinals. Discharge-pipe for	L. J. Griffin	446,345	Feb. 10	1391	339	54	788
Utensil. Combination household	S. Welch	449,147	Mar. 31	3034	767	54	1731
Uterine supporter	P. Yost	445,665	Feb. 3	239	65	54	558
Vacuum-engine	L. A. Brott	448,907	Mar. 24	2665	669, 670	54	1651
Vacuum-pan	F. H. Flottmann	447,673	Mar. 3	636	158	54	1238
Valve	G. W. Burr	444,156	Jan. 6	293	70	54	60
Valve	W. H. Crawford	446,659	Feb. 10	900	218	54	695
Valve	A. T. Waldron	447,590	Mar. 3	523	128	54	1215
Valve	C. E. Mason	447,962	Mar. 10	1137	286	54	1340
Valve and faucet. Lock-	J. H. McGowan	446,002	Feb. 10	809	196	54	678
Valve. Back-pressure	T. R. Keyworth, Jr.	449,351	Mar. 31	3380	852	54	1792
Valve. Ball cock-	W. Crighton	449,578	Mar. 31	3750	942	54	1862
Valve. Center-seal and by-pass	J. H. King	449,123	Mar. 31	2997	757	54	1725
Valve. Cut-off	J. V. Stout	448,273	Mar. 17	1643	418, 419	54	1449
Valve. Electrically-controlled	G. A. Boyden	445,132	Jan. 20	1850	479	54	377

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Valve. Float-	H. P. Cope	444,335	Jan. 6	554	143	54	110
Valve for air-brakes. Automatic	A. P. Massey	447,337	Mar. 3	92	26	54	1136
Valve for automatic brake mechanisms. Triple	F. Moore	445,963	Feb. 3	729	178	54	655
Valve for compound engines. Starting-	W. B. Yeo	449,457	Mar. 31	3572	900	54	1829
Valve for expansion-pipes. Safety-	A. Bryant and W. J. Crow	449,243	Mar. 31	3179	802	54	1758
Valve for steam-engines. Balanced	H. Canfield	448,876	Mar. 24	2623	659	54	1642
Valve for steam-engines. Oscillating	J. Cheek	446,056	Feb. 10	897	218	54	694
Valve for steam-engines. Rotary	S. Grant, Jr	444,066	Jan. 6	137	34	54	30
Valve for tanks. Float-	J. C. Beckman and H. G. Hubener	449,242	Mar. 31	3178	801	54	1758
Valve for water, steam, &c	W. Thomson	447,211	Feb. 24	2815	696, 697	54	1084
Valve-gear	M. Greenwood	445,810	Feb. 3	505	121	54	610
Valve-gear	M. Greenwood	446,406	Feb. 10	1490	367	54	807
Valve-gear. Engine	E. J. Woolf	444,563	Jan. 13	923	240, 241	54	191
Valve gear for steam-engines. Safety-	N. T. Greene	444,699	Jan. 13	1120	289	54	229
Valve-gear. Hydraulic	E. S. Matthews	446,836	Feb. 17	2153	535	54	953
Valve-handle	J. B. and W. Heighington	447,684	Mar. 3	655	162	54	1242
Valve. Relief-	C. Callahan	445,041	Jan. 20	1718	441, 442	54	351
Valve. Relief-	T. W. Moran	444,782	Jan. 13	1257	326	54	253
Valve. Rotary	F. Schneider	449,181	Mar. 31	3087	778	54	1740
Valve. Safety-	I. F. Kearns	447,523	Mar. 3	424	104	54	1197
Valve. Safety-	E. B. Kunkle	446,757	Feb. 17	2032	506	54	927
Valve. Safety-	J. Lottus	446,782	Feb. 17	2061	513	54	933
Valve. Safety-	W. McShane	448,065	Mar. 10	1300	332	54	1372
Valve. Safety-	J. J. Wade	447,387	Mar. 3	183	49	54	1153
Valve. Sewer-flush check-	W. R. Hinsdale	444,438	Jan. 13	715	187, 188	54	149
Valve. Slide-	G. S. Bell	448,626	Mar. 24	2229	559	54	1568
Valve. Steam-	A. L. Ide	447,490	Mar. 3	375	92	54	1189
Valve. Steam-engine	J. E. Waterous	449,504	Mar. 31	3639	916	54	1843
Valve. Steam-engine	F. W. Williams	448,490	Mar. 17	2001	501	54	1517
Valves. Device for setting engine-	N. Crank	445,464	Jan. 27	2347	610	54	484
Vapor-bath apparatus	O. Pehrsson	445,432	Jan. 27	2307	598, 599	54	477
Vapor-bath. Folding	G. S. Grimston. (Reissue)	11,149	Mar. 10	1488	379	54	1411
Vapor-burner	D. S. Regan	448,369	Mar. 17	1810	456, 457	54	1481
Vapor-engine	J. Patten	447,258	Feb. 24	2896	719, 720	54	1101
Vapors from foaming concentrated solutions. Method of and apparatus for separating	J. P. Robert	446,953	Feb. 24	2361	587	54	998
Vaporizer	G. M. Sherman	444,349	Jan. 6	530	138	54	106
Vaporizer and burner. Hydrocarbon	T. A. Lathrop	445,925	Jan. 27	2011	517	54	417
Vat: *See* Dyeing-vat.	J. Hansen	449,321	Mar. 31	3330	840	54	1783
Vat and churn	A. G. and E. J. Kylo	446,167	Feb. 10	1090	268	54	728
Vegetable-cutter	T. Van Kannel	448,895	Mar. 24	2649	665	54	1647
Vegetables or fruit. Apparatus for scalding	G. W. Coonse and O. E. Harris	446,172	Feb. 10	1098	269	54	730
Vehicle	F. F. Landis	445,022	Jan. 20	1679	432	54	344
Vehicle	E. Enderes	448,913	Mar. 24	2677	673	54	1654
Vehicle-brake	J. P. Gregory	447,512	Mar. 3	408	99	54	1194
Vehicle-brake	C. Nittinger	446,464	Feb. 17	1587	390	54	840
Vehicle-brake	J. H. Cook	447,446	Mar. 3	287	73	54	1171
Vehicle-cleaning device	G. H. and G. H. Hutton, Jr	449,365	Mar. 31	3416	859	54	1798
Vehicle. Convertible	J. L. Dolson	446,437	Feb. 17	1546	379	54	831
Vehicle-gearing	C. Comstock	449,095	Mar. 24	2946	747	54	1706
Vehicle jump-seat	H. F. Crawford and R. C. Lambert	444,130	Jan. 6	252	61	54	52
Vehicle-propelling mechanism	M. A. Libbey	447,616	Mar. 3	559	138, 139	54	1223
Vehicle regulator. Electrically-propelled	S. H. Short	445,654	Feb. 3	222	60	54	555
Vehicle running-gear	S. E. Baughman	446,415	Feb. 17	1509	371, 372	54	824
Vehicle running-gear	E. Funk	447,109	Feb. 24	2619	650	54	1048
Vehicle running-gear	E. O. Pease	449,427	Mar. 31	3525	887	54	1820
Vehicle running-gear	R. Reader and C. W. Weinland	444,103	Jan. 6	194	48	54	40
Vehicle running-gear	J. M. Johnson	446,754	Feb. 17	2028	505	54	926
Vehicle-seat	T. J. Kerstetter	445,853	Feb. 3	565	138	54	622
Vehicle-seat	W. H. H. Wright	447,928	Mar. 10	1080	270	54	1329
Vehicle-seat. Spring	G. H. and G. H. Hutton, Jr	449,419	Mar. 31	3509	883, 884	54	1818
Vehicle-seats. Jointed iron for	E. Cook	445,974	Feb. 10	750	184	54	669
Vehicle-spring	D. M. and T. H. Parry	447,005	Feb. 24	2443	607	54	1014
Vehicle-spring	G. E. Raymond	448,543	Mar. 17	2071	519	54	1531
Vehicle-spring	G. Norwood and J. J. Rose	444,526	Jan. 13	858	223	54	179
Vehicle spring-connection	G. E. Bartholomew	446,656	Feb. 17	1874	465	54	896
Vehicle spring-gear	J. S. Cochennour and N. T. Remy	446,203	Feb. 10	1443	280	54	738
Vehicle-spring support	C. F. Zoller and L. S. Burrows	447,097	Feb. 24	2599	645	54	1044
Vehicle-top	C. C. Frick and N. P. Wood	448,015	Mar. 10	1231	313	54	1358
Vehicle. Two-wheeled	J. W. Hewitt	445,556	Feb. 3	45	12	54	520
Vehicle. Two-wheeled	J. Stahl	447,499	Mar. 3	300	95	54	1191
Vehicle. Two-wheeled	J. N. Clouse	449,205	Mar. 31	3125	788	54	1748
Vehicle-wheel	R. E. Jeffery	446,559	Feb. 17	1733	425, 426	54	869
Vehicle-wheel	A. H. Overman	446,692	Feb. 17	1930	481	54	906
Vehicle-wheel	E. Tannewitz	444,410	Jan. 6	673	175	54	133
Vehicle-wheel	E. Woolson	446,910	Feb. 24	2304	573	54	988
Vehicle-wheel	J. A. Miller	445,451	Jan. 27	2304	606	54	481
Vehicle-wrench	A. McCulloch	449,084	Mar. 24	2932	742	54	1703
Vehicles. Combined step and fender for	C. J. Walser	448,897	Mar. 24	2653	666	54	1648
Vehicles. Horse-detacher for	J. J. Barker	449,027	Mar. 24	2845	723	54	1686
Vehicles. Thill-support for	F. Archer and A. S. Bowley	447,099	Feb. 24	2603	646	54	1045
Velocipede	H. Briggs	448,204	Mar. 17	1524	390	54	1427

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Velocipede	H. F. Crawford and R. C. Lambert	444,131	Jan. 6	254	61	54	52
Velocipede	J. Edelstein	449,111	Mar. 31	2980	752, 753	54	1721
Velocipede	G. A. Egg	444,341	Jan. 6	561	144	54	112
Velocipede	S. Elliott	446,672	Feb. 17	1897	471	54	900
Velocipede	F. C. Foster	448,952	Mar. 24	2731	689	54	1664
Velocipede	J. A. Holmes	447,542	Mar. 3	454	112	54	1203
Velocipede	W. E. Hurrell	448,580	Mar. 17	2129	534	54	1542
Velocipede	T. W. Jamison	447,246	Feb. 24	2880	715	54	1097
Velocipede	T. B. Jeffery	448,655	Mar. 24	2271	569	54	1575
Velocipede	T. B. Jeffery	449,220	Mar. 31	3145	793	54	1751
Velocipede	E. G. Latta	444,037	Jan. 13	1021	266	54	210
Velocipede	E. G. Latta	447,434	Mar. 3	266	67	54	1168
Velocipede	E. G. Latta	448,442	Mar. 17	1928	485, 486	54	1503
Velocipede	G. D. Leechman	447,835	Mar. 10	921	231	54	1299
Velocipede	C. E. McGlinchey	445,125	Jan. 20	1839	476	54	374
Velocipede	W. Phillips	445,574	Feb. 3	86	20	54	528
Velocipede	J. O. Rathbun	449,383	Mar. 31	3443	866	54	1804
Velocipede	C. A. Rouveyre	444,620	Jan. 13	999	260	54	206
Velocipede	A. W. Schieding	449,498	Mar. 31	3632	914	54	1842
Velocipede	J. Schindler	447,478	Mar. 3	356	88	54	1185
Velocipede	H. Semple	447,741	Mar. 3	746	187	54	1259
Velocipede	G. Singer	444,141	Jan. 6	269	64	54	55
Velocipede	F. W. Zimer	445,618	Feb. 3	156	41	54	541
Velocipede brake-holder	J. Krieger and A. Dallmer	445,118	Jan. 20	1829	474	54	372
Velocipede-handle	H. Waterson	445,914	Feb. 3	650	159	54	640
Velocipede-pedal	G. W. Cushman	447,145	Feb. 24	2708	671	54	1062
Velocipede. Railway-	F. Brady	447,935	Mar. 10	1092	274	54	1332
Velocipede-saddle	W. J. Edwards	448,739	Mar. 24	2412	603	54	1603
Velocipede-saddle	J. A. Little	446,387	Feb. 10	1450	356	54	801
Velocipede-seat	W. J. Lloyd and W. Priest	448,969	Mar. 24	2756	696	54	1669
Velocipede-wheel	J. W. Hall	447,822	Mar. 10	900	224	54	1295
Velocipedes. Luggage-carrier for	C. H. Lamson	444,089	Jan. 6	171	43	54	37
Velocipedes. Manufacturing pedal-cranks for	F. Southard	445,303	Jan. 27	2116	548	54	437
Velocipedes. Steering device for	R. W. Riess	448,850	Mar. 24	2580	648	54	1635
Vending apparatus	T. Bergmann	447,862	Mar. 10	968	243	54	1308
Vending-machine	O. A. Wheeler	447,037	Feb. 24	2510	623, 624	54	1026
Vending-machine	C. L. Wickham	446,047	Feb. 10	878	214, 215	54	691
Vending-machine. Coin-controlled	F. J. Wood	447,267	Feb. 24	2919	725	54	1105
Vending-machines. Coin-chute for	C. H. Thompson	446,303	Feb. 10	1330	324	54	775
Veneer-cutting machine	E. Densmore	446,585	Feb. 17	1767	436	54	876
Veneered lumber	W. E. Brock	444,042	Jan. 6	96	25	54	22
Veneering lumber. Mold for	W. E. Brock	445,605	Feb. 3	137	35, 36	54	538
Ventilating apparatus	G. H. Burrows	445,878	Feb. 3	599	147, 148	54	629
Ventilating buildings. Apparatus for	C. A. Kimpton	444,444	Jan. 13	722	189	54	151
Ventilator: *See* Aerial ventilator. Car-ventilator.							
Ventilator	M. G. Tousley	446,824	Feb. 17	2133	530	54	949
Ventilator-cap	J. Dellinger	445,592	Jan. 27	2438	635	54	500
Vessels, &c. Apparatus for applying sheathing to the hulls of	F. Ewing, Jr	445,502	Jan. 27	2409	628	54	495
Vessels. Coating for the protection of bottoms of	R. A. Chesebrough	447,941	Mar. 10	1098	.....	54	1331
Vessels. Elastic fender for	G. O. Stein	445,910	Feb. 3	644	158	54	638
Vessels. Iron-clad or other	J. F. Hodgetts	445,345	Jan. 27	2181	565	54	452
Vessels. Shelter for watchmen on	H. L. Meadows	447,193	Feb. 24	2788	690	54	1078
Violin	H. Heyder	446,450	Feb. 17	1566	385	54	835
Violin attachment	E. Grill	448,329	Mar. 17	1563	399	54	1434
Violin tuning-peg	R. C. Booksser	444,972	Jan. 20	1612	412	54	330
Vise	J. O. Barrett	444,326	Jan. 6	539	140	54	108
Vise	G. W. McKenzie	447,580	Mar. 3	506	124	54	1212
Vise. Blacksmith's	A. K. Hathaway	446,348	Feb. 10	1394	340	54	789
Vise-clamp	F. Krebs	445,506	Jan. 27	2413	630	54	496
Vise. Hand-	G. W. Miller	448,452	Mar. 17	1942	489	54	1506
Vise. Pipe-	R. R. Rouse	446,078	Feb. 10	927	226	54	700
Visual indicator. Electric	F. W. Cole	445,796	Feb. 3	469	115, 116	54	603
Voltaic insole	M. E. Thomas	444,735	Jan. 13	1190	308	54	241
Voting-booth	C. S. Babcock and D. A. Gourlay	447,239	Feb. 24	2871	712, 713	54	1095
Vulcanizer	J. Fergus	449,470	Mar. 31	3596	906	54	1834
Vulcanizing apparatus	R. W. Barney	446,216	Feb. 10	1167	286	54	742
Vulcanizing apparatus	A. H. Stoddard	447,480	Mar. 3	357	89	54	1185
Vulcanizing wood. Apparatus for	J. P. Witherow and G. Curtis	446,500	Feb. 17	1642	402	54	851
Vulcanizing wood. Process of and apparatus for	J. P. Witherow	446,501	Feb. 17	1646	402	54	851
Wagon	P. and J. W. Brown	445,829	Feb. 3	599	138	54	615
Wagon	P. and J. W. Brown	445,877	Feb. 3	598	147	54	629
Wagon	W. C. Murphy	446,562	Feb. 17	1737	427	54	869
Wagon-bed lifter and wire-stretcher. Combined	H. Wilson	445,437	Jan. 27	2312	600	54	478
Wagon-beds. Rub-iron for	G. A. Nelson	449,425	Mar. 31	3522	887	54	1820
Wagon-brake	O. T. Baker	446,565	Feb. 17	1742	428, 429	54	870
Wagon-brake	J. T. and W. D. Gabbert	447,448	Mar. 3	290	73	54	1172
Wagon-brake	J. L. and A. L. Patton	444,369	Jan. 6	606	156	54	120
Wagon-brake	R. Raby	444,318	Jan. 6	530	138	54	106
Wagon. Delivery-	H. S. Tuthill	447,440	Mar. 3	278	70	54	1170
Wagon dump and elevator	J. S. Kidd	447,190	Feb. 24	2783	688, 689	54	1077
Wagon dump and elevator	J. S. Kidd	447,191	Feb. 24	2786	689	54	1078
Wagon. Dumping-	J. T. Dougiue	445,981	Feb 10	757	185, 186	54	671

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Wagon. Dumping-	J. W. Dunham and G. W. and F. P. Kisinger.	449,212	Mar. 31	3134	790	54	1749
Wagon. Dumping-	J. A. Head	447,774	Mar. 10	815	202	54	1279
Wagon. Dumping-	J. A. Klees	449,265	Mar. 31	3215	811	54	1765
Wagon. Dumping-	W. E. Welch	446,308	Feb. 10	1336	325	54	776
Wagon. Farm-	J. Herby	444,356	Jan. 6	581	149	54	116
Wagon-jack	C. C. Bower and A. B. Evans	447,756	Mar. 10	777	193	54	1272
Wagon-jack	J. W. Garrett	444,347	Jan. 6	570	146	54	113
Wagon or carriage wrench	D. Cram	445,258	Jan. 27	2064	532	54	426
Wagon running-gear	H. J. Gouldberg	444,827	Jan. 20	1329	345	54	277
Wagon-spring brace	S. Trumbore	444,469	Jan. 13	766	199	54	160
Wagon. Tobacco-	M. F. C. O'Brien	447,546	Mar. 3	459	113	54	1204
Wagon-wrench	W. G. Smith	444,571	Jan. 13	937	243	54	194
Wagons. Platform-spring for road-	C. W. Saladee	448,790	Mar. 24	2488	622	54	1617
Waist and skirt. Combined	E. Lee	444,003	Jan. 6	29	9	54	9
Waistband	F. Spitz	446,270	Feb. 10	1274	312	54	763
Wall and ceiling polish	T. J. Neavitt	446,265	Feb. 10	1268	.....	54	762
Wall-paper	N. R. Streeter	444,213	Jan. 6	378	94	54	75
Wardrobe-hook	W. B. Comstock	445,948	Feb. 3	703	171	54	651
Wash-board	M. Scott	444,022	Jan. 6	63	17	54	15
Wash-boiler	E. Detrich and W. J. Walker	448,507	Mar. 17	2024	506	54	1521
Wash-boiler	J. F. Rowell	447,584	Mar. 3	516	126	54	1214
Wash-boiler	J. Reid	448,864	Mar. 24	2609	655	54	1640
Wash-out closet. Porcelain	W. A. Greene	444,531	Jan. 13	867	225	54	181
Wash-stand, desk, and closet. Combined	J. Kellow	445,643	Feb. 3	202	53	54	552
Wash-tub							
Washer: *See* Axle-washer. Ore-washer. Barrel-washer. Window-washer. Bottle-washer.							
Washers, &c. Holder for	F. E. Boss	444,328	Jan. 6	541	140	54	108
Washing compound	H. Ervin	448,421	Mar. 17	1895	.....	54	1497
Washing-machine	J. N. Bunch	448,118	Mar. 10	1367	350	54	1387
Washing-machine	J. H. Carpenter	444,813	Jan. 20	1304	339	54	272
Washing-machine	A. G. Christman	444,421	Jan. 13	694	181	54	145
Washing-machine	W. L. Dearth	448,134	Mar. 10	1396	356	54	1393
Washing-machine	G. H. Jantz	448 654	Mar. 24	2270	569	54	1575
Washing-machine	J. E. Lamborn and R. Rickards	448,526	Mar. 17	2051	513	54	1527
Washing-machine	W. J. Norwood	444,010	Jan. 6	43	12	54	12
Washing-machine	A. Ogle	445,338	Jan. 27	2172	563	54	450
Washing-machine	J. Schrib	446,144	Feb. 10	1042	256	54	720
Washing-machine	J. H. Slack	448,377	Mar. 17	1821	459	54	1483
Washing-machine	S. J. Stokes	445,458	Jan. 27	2340	608	54	482
Washing-machine	L. F. and N. Stont	449,600	Mar. 31	3787	950	54	1869
Washing-machine	T. J. Thorp	447,520	Mar. 3	418	102, 103	54	1196
Washing-machine	W. H. Turnbull	444,737	Jan. 13	1193	308, 309	54	242
Washing-machine	W. R. Turner, M. Hamilton, and A. T. Long.	444,964	Jan. 20	1602	409	54	328
Washing-machine	E. E. Unangst	446,800	Feb. 17	2096	522	54	941
Washing-machine	G. P. Walter	446,958	Feb. 24	2370	589, 590	54	1000
Washing-machine	G. W. Wheatly	446,906	Feb. 24	2298	572	54	987
Waste-pipe	T. Keely	444,297	Jan. 6	498	130	54	99
Watch-bow fastener	E. Klahn	449,255	Mar. 31	3204	808	54	1763
Watch-case	E. F. Hefferman	446,737	Feb. 17	2003	499	54	921
Watch-case pendant	D. E. Grant	445,172	Jan. 27	1924	497	54	400
Watch-case pendant	B. Schiff and L. Mayer	447,908	Mar. 10	1050	262	54	1324
Watch-case pendant	J. Pallweber	447,473	Mar. 3	349	87	54	1183
Watch-case spring	E. A. Lauten	449,370	Mar. 31	3424	860	54	1800
Watch-case. Traveler's	J. Jacobson	444,894	Jan. 20	1472	381	54	304
Watch-dials. Making	E. M. Fasoldt	448,191	Mar. 10	1486	379	54	1411
Watch-mainspring	E. E. Coble	449,310	Mar. 31	3300	824	54	1779
Watch-maker's pliers	R. L. Peabody	447,474	Mar. 3	350	87	54	1183
Watch. Pendant-set	B. Reber	447,973	Mar. 10	1161	294	54	1344
Watch. Repeating-	C. Nobs	444,458	Jan. 13	747	195	54	156
Watch-regulator	A. Chopard	448,877	Mar. 24	2024	659	54	1643
Watch. Stem winding and setting	J. Johnson	445,182	Jan. 27	1942	502	54	403
Watch. Stem winding and setting	R. Bragge	448,930	Mar. 24	2695	680	54	1657
Watch. Stop-	E. Kuhn	445,064	Jan. 20	1751	451	54	358
Watch. Stop-	C. Schlatter	448,540	Mar. 17	2079	522	54	1533
Watch. Stop-	J. Villon	448,896	Mar. 24	2651	665	54	1648
Watches. Jewel-support for balance-staffs of	F. Terstegen. (Reissue)	11,151	Mar. 10	1494	381	54	1412
Watches or other time-pieces. Repeating mechanism for	S. E. Roberts and J. E. Lathe	444,713	Jan. 13	1137	293	54	233
Water-alarm for steam-boilers	J. Reynolds	448,995	Mar. 24	2792	706	54	1676
Water-back	A. A. Hesser	446,518	Feb. 17	1672	408	54	856
Water-bag. India-rubber	J. G. Bryan	448,908	Mar. 24	2667	670	54	1651
Water-closet	J. M. Holloway	445,892	Feb. 3	619	152	54	633
Water-closet	W. S. Cooper	444,243	Jan. 6	425	107	54	83
Water-closet bowl	C. G. Zeilman	444,310	Jan. 6	516	134, 135	54	103
Water-closet cistern	A. J. Niles	445,191	Jan. 27	1956	506	54	406
Water-closet. Portable	A. J. Niles	449,426	Mar. 31	3523	887	54	1820
Water-closet. Portable	W. S. Cooper	445,424	Jan. 27	2296	595, 596	54	474
Water-closet reservoir	C. A. Blessing	446,808	Feb. 17	2107	524	54	943
Water-closet siphon-valve flushing apparatus	J. Buckley	444,528	Jan. 13	863	224	54	180
Water-closet-valve regulator	C. Lightbody	448,784	Mar. 24	2480	620	54	1616
Water-closets. Atomizer for	F. L. Mentel	448,800	Mar. 24	2500	626	54	1620
Water-closets. Flushing-tank for	G. A. Setzer	444,399	Jan. 6	653	169	54	129
Water-coil boiler	G. O. Barbour	446,506	Feb. 17	1653	403	54	853
Water-conductor iron							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Water-cooler	A. T. Beacham	445,667	Feb. 3	241	65, 66	54	559
Water-elevator	J. Fagoaga	449,252	Mar. 31	3201	807	54	1762
Water-gage	I. A. Fuller	444,295	Jan. 6	496	129	54	99
Water-glass. Dissolving	P. Sievert	445,091	Jan. 20	1785	.....	54	365
Water-heater	T. E. Spencer	446,301	Feb. 10	1328	323	54	774
Water-heating device	R. P. White	449,509	Mar. 31	3647	917	54	1844
Water-meter	H. B. Williams	447,595	Mar. 3	529	130	54	1217
Water-meter. Piston	J. A. Mosher and C. McMahon	445,070	Jan. 20	1758	453	54	359
Water-meter recording mechanism	H. B. Williams	447,594	Mar. 3	528	130	54	1216
Water-motor	S. Golden	445,551	Feb. 3	35	10	54	518
Water-motor	S. Smyth	445,705	Feb. 3	342	83	54	574
Water-motor	W. J. O. Bryon, Jr.	446,426	Feb. 17	1598	376	54	898
Water or air cylinder	J. and O. N. Dahlquist	447,810	Mar. 10	882	220	54	1292
Water-power wheel	H. A. Schlesinger	446,294	Feb. 10	1318	.....	54	773
Water-proof material. Preparing	V. M. Dorsey	448,416	Mar. 17	1887	474	54	1496
Water-purifier	B. F. Field. (Reissue)	11,143	Feb. 10	1500	370	54	810
Water-purifier and scale-arrester	W. Anderson	444,772	Jan. 13	1244	323	54	251
Water-purifying apparatus	F. A. Bunnell	445,537	Feb. 3	12	3	54	513
Water-purifying apparatus	T. J. Hoyt	445,780	Feb. 3	441	109	54	598
Water-sprinkler	W. S. Kisinger	447,778	Mar. 10	819	203	54	1280
Water-supply apparatus	C. Monjeau	444,007	Jan. 6	38	11	54	11
Water-tank	F. F. Wilcox	448,870	Mar. 24	2615	657	54	1641
Water-tank. Portable	J. M. Sausser	445,413	Jan. 27	2279	591	54	471
Water-trough	B. Koeppe	449,481	Mar. 31	3611	909	54	1837
Water upon hogs. Apparatus for sprinkling	A. W. Street	444,143	Jan. 6	271	65	54	56
Water-wheel	F. M. Bookwalter	445,844	Feb. 3	549	134	54	619
Water-wheel	F. M. Bookwalter	445,845	Feb. 3	551	134	54	619
Water-wheel	F. M. Bookwalter	447,294	Mar. 3	15	5	54	1121
Water-wheel	R. E. Gray	447,725	Mar. 3	717	{179 / 180}	54	1253
Water-wheel	F. Trump	447,850	Mar. 10	949	238	54	1305
Watering hogs. Apparatus for	G. F. Runnels	448,262	Mar. 17	1620	413	54	1444
Watering stock. Device for	C. E. Buckley	445,920	Feb. 3	659	161	54	641
Watering-trough	M. N. Bronse	446,628	Feb. 17	1827	451	54	887
Watering trough. Automatic stock	C. A. Yont	444,911	Jan. 20	1512	389	54	311
Watering-trough for stock	J. Allis	444,324	Jan. 6	537	139	54	107
Waterways. Apparatus for scouring	E. G. Holden	449,479	Mar. 31	3608	{908 / 909}	54	1836
Way-billing articles for shipment. Apparatus for	O. H. Thiel	447,922	Mar. 10	1072	269	54	1328
Weather-strip	J. Fisher	444,523	Jan. 13	254	222	54	178
Weather-strip	J. H. Hummel	446,520	Feb. 17	1675	409	54	857
Weather-strip	J. H. McIntire	446,609	Feb. 17	1796	444	54	881
Weather-strip	W. C. Rockwell	448,997	Mar. 24	2800	708	54	1677
Weather-strip	C. S. Tingle	445,459	Jan. 27	2242	609	54	483
Weather-strip for freight-car doors	W. R. Betham	449,399	Mar. 31	3471	874	54	1809
Weather-stripping	W. H. Cosper	445,544	Feb. 3	24	6	54	516
Web fabrics. Machine for guiding the edges of	L. Hollingworth	449,623	Mar. 31	3844	{962 / 963}	54	1880
Weed-cutter. Self-cleaning	F. E. Lux	447,781	Mar. 10	826	205	54	1281
Weeding-machine	V. H. Hallock	444,609	Jan. 13	983	{255 / 256}	54	203
Weigher. Grain	C. H. Cooley	447,715	Mar. 3	701	175	54	1250
Weigher. Grain	C. H. Cooley and F. H. Richards	447,762	Mar. 10	788	{195 / 196 / 197}	54	1274
Weigher register. Grain	F. H. Richards	447,719	Mar. 3	706	{176 / 177}	54	1251
Weigher regulator. Grain	C. H. Cooley	447,721	Mar. 3	712	178	54	1252
Weigher. Regulator grain	F. H. Richards	447,354	Mar. 3	121	{32 / 33 / 34}	54	1141
Weighing and packing machine	G. D. Van Hoesen	447,385	Mar. 3	175	48	54	1151
Weighing and packing machine. Automatic	J. A. Ostenberg	446,266	Feb. 10	1268	311	54	702
Weighing apparatus. Liquid	J. P. Baldwin	446,844	Feb. 24	2171	541	54	965
Weighing-machine. Automatic	H. E. Smyser	449,276	Mar. 31	3247	819	54	1769
Weighing mechanism. Grain	S. E. Brown	449,402	Mar. 31	3477	875	54	1811
Welding and swaging links. Die for	F. Krein and J. Flaig	445,346	Jan. 27	2182	565	54	452
Welding apparatus. Electric	M. W. Dewey	447,104	Feb. 24	2610	649	54	1046
Welding apparatus. Portable electric	E. E. Ries	444,855	Jan. 20	1410	367	54	292
Welding compound	W. W. Brown and M. C. Reynolds	444,044	Jan. 6	98	.....	54	22
Welding. Electric	E. Thomson	444,926	Jan. 20	1535	394	54	315
Welding. Electric	E. Thomson	444,927	Jan. 20	1537	394	54	316
Welding. Electric	E. Thomson	444,928	Jan. 20	1539	395	54	316
Welding. Electric	E. Thomson	444,946	Jan. 20	1569	402	54	322
Welding. Electric	E. Thomson	449,357	Mar. 31	3391	874	54	1794
Welding machines. Burr-preventer for electric	H. Lemp and L. M. Schmidt	446,974	Feb. 24	2498	597	54	1005
Welding. Method of and apparatus for electric	P. Patterson	444,569	Jan. 13	934	242	54	193
Welding tubing. Apparatus for	J. O. Rice	447,646	Mar. 3	606	149	54	1232
Well	T. H. Logan	444,839	Jan. 20	1352	350	54	281
Well borer. Artesian	C. F. Whipple	447,592	Mar. 3	525	{128 / 129}	54	1216
Well-boring machine	M. B. Miller	444,221	Jan. 6	390	97, 98	54	78
Well-drilling machine	W. Webber	446,588	Feb. 17	1770	437	54	876
Well-drilling machine	A. Cameron	449,613	Mar. 31	3821	958	54	1875
Well-sinking. Expansion-drill for	C. W. Robison	448,165	Mar. 10	1443	369	54	1402
Well tool. Deep	M. Turton	445,100	Jan. 20	1804	466	54	368
Wells. Apparatus for removing paraffine from pipes of oil	H. F. Seybert	448,085	Mar. 10	1325	339	54	1278
Wells. Device for spraying oil from the tubing of oil	J. L. Addison	449,459	Mar. 31	3576	901	54	1829
Wells. Groove-cutting machine for oil or gas	J. H. King	447,882	Mar. 10	999	252	54	1314
Wheat-drill	O. L. Peterson	445,076	Jan. 20	1768	{455 / 456}	54	361
Wheat heater	A. H. Brockman	445,536	Feb. 3	10	3	54	513

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Wheel: *See* Balance-wheel, Car-wheel, Cog-wheel, Current-wheel, Dental-engine driving-wheel, Fifth-wheel, Plow-wheel, Vehicle-wheel, Velocipede-wheel, Water-wheel, Water-power wheel, Wind-wheel.	S. Elliott	444,485	Jan. 13	792	206	54	166
Wheel	B. H. Gedge	444,430	Jan. 13	704	184	54	147
Wheel	J. G. McAlpine	447,893	Mar. 10	1018	256	54	1318
Wheel	A. Snoddy	447,797	Mar. 10	869	216	54	1289
Wheel	A. H. Overman	446,189	Feb. 10	1121	274	54	734
Wheel-rim. Hollow	E. Murgatroyd	449,269	Mar. 31	3222	813	54	1766
Wheel scotching device. Cart	L. D. Smith	448,553	Mar. 17	2086	523	54	1534
Wheel-wrench	B. B. Allen	448,105	Mar. 10	1352	346	54	1381
Whiffletree	J. M. Blondell	449,647	Mar. 31	3880	971	54	1887
Whiffletree	W. H. Sholl	446,156	Feb. 10	1061	261	54	724
Whiffletree	N. P. Steffenson	446,615	Feb. 17	1807	447	54	883
Whiffletree	J. J. Kocher	444,646	Jan. 13	1039	270	54	213
Whiffletree-coupling	S. Bailey	448,193	Mar. 17	1505	384	54	1423
Whiffletree-hook	W. W. Chandler	444,420	Jan. 13	693	180	54	145
Whiffletree-hook	J. R. Davis	445,804	Feb. 3	409	120	54	609
Whiffletree-hook	F. Grant	448,650	Mar. 24	2203	568	54	1574
Whip	H. Mullen	444,250	Jan. 6	434	109	54	85
Whip	E. D. Odell and A. Jones	445,126	Jan. 20	1841	476	54	375
Whip-socket	F. Madlener	444,152	Jan. 6	284	68	54	58
Whisky. Apparatus for treating	R. T. Crane	448,127	Mar. 10	1386	354	54	1390
Whistle. Steam	C. Roseberry	448,789	Mar. 24	2487	622	54	1617
Wick-trimmer	D. L. Whittingham	445,789	Feb. 3	454	113	54	600
Wick-tube for lamps or oil-stoves	M. C. Chapman	447,066	Feb. 24	2359	{635 / 636}	54	1035
Wind-engine	J. M. Lowe	446,783	Feb. 17	2062	514	54	934
Wind-wheel	F. Miller	449,489	Mar. 31	3621	911	54	1839
Wind-wheel	M. C. Robbins	449,589	Mar. 31	3768	946	54	1866
Wind-wheel	E. N. Wickes	448,868	Mar. 24	2613	656	54	1641
Winding-drum	J. D. Daniel	447,764	Mar. 10	795	197	54	1276
Windlass	E. H. Whitney	446,825	Feb. 17	2134	530	54	949
Windlass and capstan. Combined ship's	E. H. Whitney	448,828	Mar. 24	2541	638	54	1627
Windlass. Ship	D. Bird	445,034	Jan. 20	1694	435	54	347
Windmill	G. S. Chapman	444,793	Jan. 13	1270	320	54	256
Windmill	W. M. Craig	446,630	Feb. 17	1829	452	54	887
Windmill	E. A. Dana	446,542	Feb. 17	1661	405	54	854
Windmill	E. L. Kenoyer	448,348	Mar. 17	1783	{450 / 451}	54	1476
Windmill	W. Palmer, Jr.	445,573	Feb. 3	83	19, 20	54	527
Windmill	A. Van Ness	444,262	Jan. 6	449	{113 / 114}	54	89
Windmill	C. O. Weidman	446,307	Feb. 10	1335	325	54	776
Windmill	U. Yoder	447,096	Feb. 24	2598	645	54	1044
Windmill pump attachment	W. L. Matthews	448,531	Mar. 17	2056	514	54	1528
Windmill-regulator	C. and W. Silvester	446,627	Feb. 17	1825	451	54	886
Windmill-regulator	D. C. Stover and O. J. Ziegler	447,139	Feb. 24	2698	669	54	1060
Windmill-regulator	H. Robinson	446,744	Feb. 17	2011	501	54	923
Windmill-tower	O. M. Edwards. (Reissue)	11,154	Mar. 24	2954	748	54	1708
Window	G. R. Roth	447,362	Mar. 3	138	38	54	1144
Window	S. C. Taylor	445,384	Jan. 27	2231	558	54	461
Window	J. Lowendahl	444,840	Jan. 20	1354	351	54	281
Window-bead fastener	F. Mesker and T. O. Arbegust	448,355	Mar. 17	1791	452	54	1477
Window-frame	A. Gebrwald	447,309	Mar. 3	43	11	54	1125
Window-scaffold	C. H. Benoit and A. Pillot	447,423	Mar. 3	244	62	54	1163
Window-screen	H. N. Swartz	448,965	Mar. 24	2751	694	54	1668
Window-screen	F. Walker	444,734	Jan. 13	1188	307	54	241
Window-screen	L. R. Pomeroy	448,467	Mar. 17	1964	494	54	1510
Window-screen. Adjustable	J. B. Phillips	444,409	Jan. 6	670	174	54	132
Window-screen frame	L. T. Wilson	445,026	Jan. 20	1684	433	54	345
Window-screen. Rolling	J. W. Dixon	446,242	Feb. 10	1232	301	54	756
Window-washer	M. Sansoney	448,758	Mar. 24	2440	610	54	1608
Winker attachment	E. A. Stephens	449,497	Mar. 31	3631	914	54	1841
Winker-fork	P. L. Salmon	445,736	Feb. 3	363	93	54	584
Wire-cloth-drying apparatus	G. Lispenard	448,868	Mar. 24	2636	662	54	1645
Wire-covering machine	J. McCahey	445,120	Jan. 20	1801	{474 / 475}	54	373
Wire-covering machine	O. Arnold	445,598	Feb. 3	122	31, 32	54	535
Wire-cutter	H. K. Porter	447,999	Mar. 10	1202	305	54	1352
Wire-cutter	G. F. Evans	444,541	Jan. 13	883	229	54	184
Wire-drawing machine	G. F. Evans	448,214	Mar. 17	1539	394	54	1429
Wire-drawing machine	A. M. Reeves	448,215	Mar. 17	1540	394	54	1429
Wire fabric for mats	C. M. Kiler	448,489	Mar. 17	2000	501	54	1516
Wire fastener and tightener	C. L. Betts	445,330	Jan. 27	2157	550	54	447
Wire frame	C. R. Smith	445,155	Jan. 27	1902	491	54	396
Wire. Making plated	I. F. Peck	448,594	Mar. 17	2155	539	54	1547
Wire. Making seamless plated	C. R. Smith	449,428	Mar. 31	3526	888	54	1820
Wire. Manufacturing seamless gold-plated	C. R. Smith	449,183	Mar. 31	3090	779	54	1741
Wire. Manufacturing seamless hollow	C. R. Smith	449,182	Mar. 31	3088	779	54	1741
Wire. Producing seamless compound	L. L. Burdon	446,619	Feb. 17	1812	448	54	884
Wire-reel	G. E. Dixon	444,314	Jan. 6	522	136	54	105
Wire-reel	E. A. Vannatta	446,487	Feb. 17	1620	397	54	847
Wire. Reel for winding and unwinding	D. Grove	444,219	Jan. 6	388	96	54	77
Wire-rope machine	J. Wilson	447,392	Mar. 3	192	50	54	1154
Wire rope. Making clamps for	P. Yorke	448,904	Mar. 24	2692	668	54	1650
Wire. Seamless compound gold and silver	L. L. Burdon	446,618	Feb. 17	1811	448	54	883
Wire. Seamless plated	G. U. Meyer	445,514	Feb. 3	509	122	54	611

Alphabetical list of inventions, January to March, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wire-stapling machine	W. E. Harper	445,139	Jan. 20	1862	482, 483	54	379
Wire-stapling machine	W. E. Harper	445,140	Jan. 20	1866	483, 484	54	380
Wire-stapling machine	H. C. Herr	447,428	Mar. 3	251	63, 64	54	1165
Wire-stretcher	D. Ball	444,036	Jan. 6	86	29	54	20
Wire-stretcher	J. B. Cleaveland	448,635	Mar. 24	2240	502	54	1570
Wire-stretcher	F. O. Reed	444,075	Jan. 6	153	38	54	33
Wire-stretcher	M. J. Ridder and V. Hartmann	446,790	Feb. 17	2074	517	54	936
Wire-stretcher	E. F. Miller	446,688	Feb. 17	1926	480	54	905
Wire-tightener	J. N. Parker	447,436	Mar. 3	270	68	54	1169
Wire-tightener	E. Beals	444,808	Jan. 20	1298	337	54	271
Wire-twisting tool	A. Newkirk	445,280	Jan. 27	2089	539	54	432
Wires. Device for tightening	W. P. Hawley	445,767	Feb. 3	419	105	54	595
Wood-fiber digester	E. J. Fletcher	446,914	Feb. 24	2308	574	54	989
Wood-polishing machine	J. L. Perry	447,047	Feb. 24	2328	627, 628	54	1029
Wood surfaces. Finishing	A. Bryce	446,962	Feb. 24	2379	592	54	1002
Wood-worker. Variety	H. J. Colburn	448,320	Mar. 17	1731	438	54	1466
Wood-working machine	E. H. Gibson	445,446	Jan. 27	2321	602, 603	54	479
Wook-working machine	G. W. Walton	448,388	Mar. 17	1843	463	54	1487
Wood-working tool	W. H. Johnson	445,276	Jan. 27	2086	538	54	431
Woolen pipe	C. W. Dwelle	444,339	Jan. 6	558	144	54	111
Worsted and woolen fabrics, &c. Machinery for finishing	J. Kirk and B. Lee	448,439	Mar. 17	1924	483, 484	54	1503
Wrapper-paster	C. Y. Knight	449,124	Mar. 31	2999	757	54	1725
Wrench. *See* Bicycle-spoke-nipple wrench. Buggy-wrench. Fence-wrench. Monkey-wrench. Nut and pipe wrench. Pipe-wrench. Pivoted-jaw wrench. Ratchet-wrench. Screw-wrench. Vehicle-wrench. Wagon-wrench. Wagon or carriage wrench. Wheel-wrench.							
Wrench	H. T. Briggs	448,114	Mar. 10	1363	349	54	1386
Wrench	F. S. Cook	447,665	Mar. 3	625	155	54	1236
Wrench	B. E. Farris	448,013	Mar. 10	1230	312	54	1358
Wrench	R. Haberthür and J. M. Stowell	448,958	Mar. 24	2739	691	54	1665
Wrench	A. Hamelehle	448,146	Mar. 10	1412	361	54	1396
Wrench	H. Hammond	449,410	Mar. 31	3491	878	54	1814
Wrench	S. Hussey	444,937	Jan. 20	1556	399	54	319
Wrench	T. D. Keith	447,952	Mar. 10	1117	281	54	1336
Wrench	E. H. Kinsey	445,020	Jan. 20	1677	431	54	344
Wrench	P. W. Lownes	446,220	Feb. 10	1171	287	54	743
Wrench	H. Marshal	444,450	Jan. 13	729	191	54	153
Wrench	J. Mattan	446,143	Feb. 10	1039	255	54	720
Wrench	G. L. McCauley	449,257	Mar. 31	3207	809	54	1763
Wrench	E. C. Mead	445,185	Jan. 27	1948	503	54	404
Wrench	J. B. Perault	445,356	Jan. 27	2199	570	54	455
Wrench	W. J. Pugh	446,291	Feb. 10	1303	318	54	770
Wrench	W. J. Shea and C. Birkery	444,111	Jan. 6	211	50	54	43
Wrench	J. H. Stiles	447,379	Mar. 3	167	46	54	1149
Wrench	T. F. Vandegrift	444,171	Jan. 6	319	77	54	65
Wrench	T. F. Vandegrift	444,511	Jan. 13	840	218	54	175
Wrenches. Protector for jaws of	C. C. Conroy	448,124	Mar. 10	1378	353	54	1389
Wringer. *See* Clothes-wringer. Mop-wringer.							
Wringer-roller	C. A. Kohl	449,545	Mar. 31	3701	930	54	1854
Yarn guide and clearer	J. M. Curtice	448,296	Mar. 17	1693	428	54	1459
Yarn-spooler	G. O. Wickers and J. H. Stone	444,562	Jan. 13	921	240	54	191
Yoke. Neck	L. M. Cleveland	448,295	Mar. 17	1692	428	54	1459
Yoke. Neck	H. De Witt	446,665	Feb. 17	1883	468	54	897
Yoke. Neck	J. Kleppinger and W. H. Mead	446,742	Feb. 17	2009	501	54	922
Yoke. Ox	W. J. Ackerman	448,104	Mar. 10	1351	346	54	1383
Zinc ores. Treating	W. West	444,997	Jan. 20	1649	422	54	338
Zinc. Refining	J. W. Richards	448,802	Mar. 24	2505	.....	54	1621
Zither	G. B. Durkee	447,948	Mar. 10	1111	279	54	1335

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Advertising-card	A. Hoperaft	20,524	Feb. 17	54	821
Album	L. A. Lipman	20,568	Mar. 10	54	1269
Altar. Family-	H. B. Hallock	20,522	Feb. 17	54	821
Altar. Family-	G. Shicklnna	20,492	Jan. 27	54	394
Badge	D. L. Auld	29,528	Feb. 24	54	963
Badge	W. H. Brooks	20,440	Jan. 6	54	2
Badge	C. F. Irons	20,645	Mar. 31	54	1716
Badge	E. W. Lawson	20,453	Jan. 6	54	2
Badge	M. K. Light	20,455	Jan. 6	54	2
Badge	C. B. McElroy and T. W. Minshull	20,580	Mar 10	54	1270
Badge	L. E. Stilz	20,511	Feb. 10	54	666
Badge	T. J. Collins	20,535	Mar. 3	54	1117
Barber's chair	J. A. Doty	20,641	Mar. 31	54	1716
Basket. Fruit-	L. Zimskind	20,458	Jan. 6	54	2
Bedstead	J. Bigelow	20,640	Mar. 31	54	1716
Belt. Apparel-	J. Lambert	20,571	Mar. 10	54	1270
Belt. Waist-	H. Coleman, Jr	20,629	Mar. 24	54	1566
Bottle	J. L. Dawes	20,656	Mar. 31	54	1717
Bottle	D. D. Harr	20,588	Mar. 17	54	1422
Bottle	E. A. Kramer	20,567	Mar. 10	54	1269
Bottle	W. T. Murphy	20,469	Jan. 6	54	2
Bottle	J. W. Nicholson	20,527	Feb. 24	54	963
Bottle	A. Rheinstrom	20,581	Mar. 10	54	1270
Bottle	W. C. Estes	20,519	Feb. 10	54	666
Box	C. A. Tatum	20,585	Mar. 17	54	1422
Breast-pump	E. P. Beach	20,518	Feb. 10	54	666
Brooch or similar article	C. E. Thompson	20,486	Jan. 20	54	269
Brush	G. W. Wilson	20,578	Mar. 10	54	1270
Brush	A. F. Jackson	20,472	Jan. 6	54	2
Brushes, &c. Back for	C. R. Harris	20,544	Mar. 3	54	1117
Buckle. Suspender-	L. Stein	20,491	Jan. 27	54	394
Burial-casket	E. Harrington	20,517	Feb. 10	54	666
Button	G. L. Crowell, Jr	20,442	Jan. 6	54	2
Calendar-stand	G. W. Walton	20,562	Mar. 3	54	1117
Can	H. O. Schmidt	20,549 to 20,561	Mar. 3	54	1117
Carpet	R. F. Doherty	20,592	Mar. 24	54	1565
Carpet	J. L. Folsom	20,593	Mar. 24	54	1565
Carpet	T. L. Lawton	20,454	Jan. 6	54	2
Carpet	T. L. Lawton	20,462	Jan. 6	54	2
Carpet	J. B. Moffat	20,596	Mar. 24	54	1565
Carpet	H. W. Parton	20,597 to 20,612	Mar. 24	54	1565
Carpet	P. Pignot	20,613 to 20,618	Mar. 24	54	1565
Carpet	H. Schrader	20,470	Jan. 6	54	2
Carpet	G. J. Stengel	20,619 to 20,624	Mar. 24	54	1565
Carpet	W. Thomas	20,626 to 20,628	Mar. 24	54	1566
Carpet button. Stair-	D. Walker and F. H. Howard	20,540	Mar. 3	54	1117
Carpet fastener. Stair-	D. Walker	20,499 to 20,501	Feb. 3	54	510
Chair	J. G. Wilson	20,575	Mar. 10	54	1270
Check. Bank-	J. L. Copp	20,488	Jan. 20	54	269
Cigar-lighter	B. D. Milliken	20,497	Feb. 3	54	510
Collar or ruffle	J. Wightman	20,569	Mar. 10	54	1270
Collar-pad fasteners. Roll-spring of	E. F. Pflueger	20,456	Jan. 6	54	2
Cuff	P. R. Lewis	20,634	Mar. 24	54	1566
Curling-stone	W. Karl	20,595	Feb. 17	54	821
Curtain or portière	A. Markgraf	20,637	Mar. 24	54	1566
Dental cabinet	T. J. Collins	20,582	Mar. 17	54	1422
Dental cabinet	T. J. Collins	20,643	Mar. 31	54	1716
Dish	E. Gérard	20,521	Feb. 17	54	821
Dish	C. E. Haviland	20,631 to 20,633	Mar. 24	54	1566
Dish	J. E. McBride	20 487	Jan. 20	54	269
Dish. Covered	D. F. Haynes	20,451	Jan. 6	54	2
Draw-pull	W. J. Swan	20,498	Feb. 3	54	510
Electric-wire pole	J. R. Fletcher	20,449	Jan. 6	54	2
Embroidery	P. Kleeberg	20,577	Mar. 10	54	1270
Embroidery	P. Kleeberg	20,632	Mar. 31	54	1717
Embroidery-pattern	P. Kleeberg	20,473	Jan. 6	54	2
Ewer or jug	D. F. Haynes	20,450	Jan. 6	54	2

Alphabetical list of designs, January to March, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Fence-strand	E. F. Hathaway	20,512 / 20,513	Feb. 10	54	666
Flower-frame	N. Steffens	20,533 / 20,534	Feb. 24	54	963
Flower-frame	N. Steffens	20,638	Mar. 24	54	1566
Flower-pot	T. S. Balsley	20,523	Feb. 17	54	821
Furnace	F. Kerman, Jr., and W. H. Landers	20,648	Mar. 31	54	1717
Game-board	E. C. Sherman	20,478	Jan. 13	54	142
Garment-protector	O. F. Ostergren and A. K. Schaap	20,518	Mar. 3	54	1117
Glass or other ware. Ornamentation of	J. Hoare	20,504	Feb. 3	54	510
Glassware. Ornamentation of	J. Billard	20,570	Mar. 10	54	1270
Glove-fastener cap	J. R. Smith	20,463	Jan. 6	54	2
Glove-fastener socket	E. J. Kruetzer	20,461	Jan. 6	54	2
Grate	C. P. Peterson	20,573	Mar. 10	54	1270
Handle for forks, spoons, or similar ware	C. E. Galt	20,545	Mar. 3	54	1117
Handle for knives, &c	K. A. Hathaway	20,647	Mar. 31	54	1716
Handle for spoons, &c	W. A. Bates	20,576	Mar. 10	54	1270
Handle for spoons, &c	H. L. Dolo	20,543	Mar. 3	54	1117
Handle for spoons, &c	W. B. Durgin	20,542	Mar. 3	54	1117
Handle for spoons, &c	W. B. Durgin	20,591	Mar. 24	54	1565
Handle for spoons, &c	L. R. Horton	20,594 / 20,595	Mar. 24	54	1565
Handle for spoons, &c	W. B. Jones	20,509	Feb. 10	54	666
Handle for spoons, &c	R. Leding	20,649	Mar. 31	54	1717
Handle for spoons, &c	C. Osborne	20,466	Jan. 6	54	2
Handle for spoons, &c	F. H. Sloan	20,625	Mar. 24	54	1565
Handle for spoons, forks, &c	W. B. Durgin	20,641	Mar. 31	54	1716
Handle socket and plate	M. Bremer	20,475	Jan. 13	54	142
Head-wear	A. Brahadt	20,441	Jan. 6	54	2
Horse-blanket	C. A. Turner	20,539	Mar. 3	54	1117
Hose-reel bracket	S. J. Meeker	20,530	Feb. 24	54	963
Jewel-setting	L. Mann	20,477	Jan. 13	54	142
Jug	W. C. King	20,505	Feb. 3	54	510
Lace-pin	A. Epple	20,587	Mar. 17	54	1422
Lamp. Electric-arc	J. Beesley and A. B. Benjamin	20,489	Jan. 20	54	269
Lamp-shade	A. Howard	20,651	Mar. 31	54	1717
Latch	D. D. Nolley	20,480	Jan. 13	54	142
Match or ash receiver	H. L. Liebe	20,532	Feb. 24	54	963
Match-safe	L. Z. Anderson	20,526	Feb. 24	54	963
Match-safe	E. A. Bliss	20,586	Mar. 17	54	1422
Metal bar	A. W. Spooner	20,507	Feb. 3	54	510
Neckearfs. Ornamentation of	S. Finkelstein	20,642	Mar. 31	54	1716
Observatory	E. Eitel	20,529	Feb. 24	54	963
Oil-box	A. Schmid	20,481	Jan. 13	54	142
Oil-can casing	A. J. Duncan	20,639	Mar. 24	54	1566
Panel	A. B. Cameron	20,445 / 20,446	Jan. 6	54	2
Panel for ceilings, &c	F. F. Bischoff	20,502	Feb. 3	54	510
Paper, &c. Wrapping	H. W. Burtch	20,654	Mar. 31	54	1717
Plate, &c	C. E. Haviland	20,630	Mar. 24	54	1566
Pot or jar	C. W. Meinecke	20,490	Jan. 27	54	394
Radiator	D. Colestock	20,443 / 20,444	Jan. 6	54	2
Radiator	T. C. Joy	20,471	Jan. 6	54	2
Radiator	T. C. Joy	20,583	Mar. 17	54	1422
Radiator	J. R. Reed	20,574	Mar. 10	54	1270
Radiator	J. R. Reed	20,565	Mar. 3	54	1117
Radiator loop-pipe	J. F. Brayer and E. J. King	20,482	Jan. 13	54	142
Range back and shelf	E. F. Daily	20,447	Jan. 6	54	2
Rein-holder	L. L. Sagendorph	20,531	Feb. 24	54	963
Roofing-plate	A. Petzold	20,474	Jan. 6	54	2
Ring	E. P. Beach	20,508	Feb. 10	54	666
Scarf-pin	F. P. Jones	20,452	Jan. 6	54	2
School-seat	J. W. Oftelie	20,572	Mar. 10	54	1270
Sign-plate	C. E. Trowbridge	20,538	Mar. 3	54	1117
Spinning-ring	E. C. Baumgras	20,655	Mar. 31	54	1717
Spoon	W. B. Durgin	20,541	Mar. 3	54	1117
Spoon, &c	E. Harris	20,657 / 20,658	Mar. 31	54	1717
Spoon	J. H. Johnston	20,493 to 20,496	Feb. 3	54	510
Spoon, &c	R. Leding	20,650	Mar. 31	54	1717
Spoon, &c	C. Osborne	20,636	Mar. 24	54	1566
Spoon, &c	F. H. Sloan	20,537	Mar. 3	54	1117
Spoon	W. L. Wilks	20,510	Feb. 10	54	666
Spoon or fork	E. Schall	20,584	Mar. 17	54	1422
Spoon or fork handle	H. B. Swart	20,653	Mar. 31	54	1717
Stove. Cooking	H. C. Bascom	20,464	Jan. 6	54	2
Stove. Cooking	G. H. Phillips	20,468	Jan. 6	54	2
Stove. Heating	H. C. Bascom	20,465	Jan. 6	54	2
Stove. Heating	G. H. Phillips	20,467	Jan. 6	54	2
Stove. Oil or gas	J. Goldstein and I. Block	20,503	Feb. 3	54	510
Stove-shelf and support	J. F. Brayer and E. J. King	20,459	Jan. 6	54	2
Suspender-clasp	A. Bernstein	20,439	Jan. 6	54	2
Terret. Hip	G. L. Buck	20,479	Jan. 13	54	142
Thimble	H. A. Weihman	20,590	Mar. 17	54	1422
Tile. Roofing	G. H. Babcock	20,635	Mar. 24	54	1566
Toy bank	R. Frisbie	20,579	Mar. 10	54	1270
Toy bank	R. Frisbie	20,646	Mar. 31	54	1716
Toy. Child's	M. M. Herrick	20,484	Jan. 20	54	269
Type. Font of printing	C. H. Beeler, Jr	20,563	Mar. 3	54	1117
Type. Font of printing	C. S. Hazlett and J. West	20,514	Feb. 10	54	666
Type. Font of printing	C. E. Heyer	20,506	Feb. 3	54	510

Alphabetical list of designs, January to March, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Type. Font of printing	H. Ihlenburg	20,546 / 20,547	Mar. 3	54	1117
Type. Font of printing	W. W. Jackson	20,589	Mar. 17	54	1422
Type. Font of printing	J. Schmohl and E. Lauschke	20,515 / 20,516	Feb. 10	54	666
Vessel with perforated cover. Closed	N. Kopp	20,566	Mar. 10	54	1269
Wall-paper	C. P. Roos	20,457	Jan. 6	54	2
Washing-machine box	H. H. Dennis	20,536	Mar. 3	54	1117
Watch-bridge	A. Philippe	20,483	Jan. 13	54	142
Watch-case	J. C. Dueber	20,476	Jan. 13	54	142
Watch-charm	T. Tugby	20,485	Jan. 20	54	269
Watch-maker's sign	L. S. Grout	20,460	Jan. 6	54	2
Water-closet bowl	W. S. Cooper	20,520	Feb. 17	54	821
Wrenches. Bar or stock of	R. C. Ellrich	20,448	Jan. 6	54	2

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Accordions	E. Kalbe	19,041	Feb. 17	54	822
Alcohol. Species of wood	Hansen & Smith	18,977	Feb. 10	54	666
Ale	C. H. Graves & Sons	19,119	Mar. 3	54	1118
Ale	W. Rutledge	18,956	Feb. 10	54	666
Alum	Orient Manufacturing Company	18,810	Jan. 6	54	3
Ammonia preparations for medical purposes	Chemische Fabrik auf Aktien, (vorm. E. Schering.)	19,064	Feb. 24	54	964
Antipyretics	Firm of J. D. Riedel	19,043	Feb. 17	54	822
Axle-grease	B. Derbake	19,139	Mar. 3	54	1118
Bacon	F. Whittaker & Sons	18,963	Feb. 10	54	666
Baking-powder	G. D. Arbuckle	18,829	Jan. 13	54	142
Baking-powder	F. F. Jaques	18,978	Feb. 10	54	666
Baking-powder	E. F. Jones Chemical Company	19,072	Feb. 24	54	964
Beef, hog, and sheep products, including lard. Fresh and cured	F. Whittaker & Sons	19,102	Feb. 24	54	964
Beef. Liquid extract of	C. W. and R. B. Robison	18,957	Feb. 10	54	666
Beer	National Brewing Company	18,997	Feb. 10	54	667
Beer	National Brewing Company	18,998	Feb. 10	54	667
Beer. Bottled lager	E. Benswanger	18,933	Feb. 3	54	511
Beer. Lager	Knoxville Brewing Company	19,010	Feb. 10	54	667
Belting. Leather	Main Belting Company	18,807	Jan. 6	54	3
Beverage containing ginger	W. C. Hickox	18,953	Feb. 10	54	666
Bicycles and tricycles	A. G. Spalding & Bros	19,172	Mar. 10	54	1270
Bicycles and tricycles	A. G. Spalding & Bros	19,173	Mar. 10	54	1270
Bicycles, tricycles, and other cycles	G. L. Morris and W. T. Wilson	19,157	Mar. 10	54	1270
Bicycles, tricycles, and parts thereof	Eagle Bicycle Manufacturing Company.	19,220	Mar. 24	54	1566
Biscuits, crackers, wafers, cakes, and kindred articles	New York Biscuit Company	18,894	Jan. 20	54	270
Bitters	G. S. Fleming	18,915	Feb. 3	54	510
Bitters. Pale orange	J. H. Membrey	19,092	Feb. 24	54	964
Blacking. Liquid shoe and harness	A. Castaing	18,780	Jan. 6	54	2
Blue. Washing	Webb Manufacturing Company	18,820	Jan. 6	54	3
Boiler-scales. Compound for removing	Diamond Compound Co	19,105	Mar. 3	54	1117
Books and indexes. Letter	R. R. Vernon	19,136	Mar. 3	54	1118
Boots and shoes	Norman & Bennett	18,934	Feb. 3	54	511
Boots and shoes	Rice & Hutchins	18,971	Feb. 10	54	666
Boots, shoes, and lasts	H. E. Smith & Co	18,935	Feb. 3	54	511
Boots, shoes, and shoe-laces	J. K. Krieg & Co	18,868	Jan. 20	54	270
Boots, shoes, and slippers	M. Woodbury	18,974	Feb. 10	54	666
Braids	H. Newman	19,216	Mar. 24	54	1566
Brandy	E. R. Martin & Co	18,920	Feb. 3	54	510
Brandy	E. R. Martin & Co	18,921	Feb. 3	54	510
Brandy	E. R. Martin & Co	18,922	Feb. 3	54	510
Brandy	E. R. Martin & Co	18,923	Feb. 3	54	510
Brandy	E. R. Martin & Co	18,982	Feb. 10	54	667
Brass and copper sheets, tubing, and wire	Bridgeport Brass Company	18,843	Jan. 13	54	142
Bronze. Manganese	B. H. Cramp & Co	18,824	Jan. 13	54	142
Buckskin underwear. Perforated	D. C. Hall	19,055	Feb. 17	54	822
Butter	Reist, Nissly & Co	18,812	Jan. 6	54	3
Butter and butterine	Armour Packing Co	19,174	Mar. 17	54	1422
Button-fasteners	Anchor Button Fastener Company	19,061	Feb. 24	54	963
Buttons. Glass and jet	L. Prange	18,776	Jan. 6	54	2
Buttons. Jet	L. Prange	18,874	Jan. 20	54	270
Buttons. Jet	L. Prange	18,875	Jan. 20	54	270
Buttons. Jet	L. Prange	18,876	Jan. 20	54	270
Cakes. Fancy	J. W. Ettel	18,800	Jan. 6	54	3
Candies	Costello & Co	18,836	Jan. 13	54	142
Candles	A. Mandel	18,870	Jan. 20	54	270
Canned and preserved foods and table delicacies	A. Eyquem	18,781	Jan. 6	54	2
Canned fish, fruits, and vegetables	Oyster Cultivation and Canning Company.	18,789	Jan. 6	54	3
Canned salmon	R. D. Hume	18,783	Jan. 6	54	2
Canned salmon	R. D. Hume	18,930	Feb. 3	54	511
Caramels and candies	Lancaster Caramel Co	18,942	Feb. 3	54	511
Card-clothing	Mechanical Fabric Company	18,887	Jan. 20	54	270
Cartridge shells and wads	Creedmoor Cartridge Company	19,058	Feb. 17	54	822
Cartridges for fire-arms	Creedmoor Cartridge Company	18,777	Jan. 6	54	2
Castor-oil	A. B. Richards Medicine Co	18,925	Feb. 3	54	510
Catsups, table-sauce, pickles, and relishes	Mullen-Blackledge Company	18,996	Feb. 10	54	667
Cement	Dickinson Bros. & King	19,020	Feb. 17	54	821
Cement	E. Lloyd	19,228	Mar. 24	54	1566
Cement and plaster	Silicon Wall Plaster and Manufacturing Company.	19,086	Feb. 24	54	964
Chains. Vest	D. C. Percival & Co	19,011	Feb. 10	54	667
Chains. Vest	D. C. Percival & Co	19,012	Feb. 10	54	667
Champagne	E. Perré & Co	18,790	Jan. 6	54	3
Champagnes	E. Irroy & Co	19,183	Mar. 17	54	1422
Chemicals. Certain named	Chemische Fabrik auf Actien, vormals E. Schering.	18,825	Jan. 13	54	142
Chemicals for increasing the combustion of fuel	Standard Coal and Fuel Company	19,081	Feb. 24	54	964
Cigarette-paper	W. Demuth & Co	18,900	Jan. 27	54	394

Alphabetical list of trade-marks, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Cigars	C. Alvarez	18,856	Jan. 20	54	270
Cigars	C. Alvarez	18,857	Jan. 20	54	270
Cigars	J. Alvarez & Co	19,262	Mar. 31	54	1718
Cigars	L. Arenal & Co	18,848	Jan. 20	54	269
Cigars	L. Arenal & Co	18,849	Jan. 20	54	269
Cigars	L. Arenal & Co	18,850	Jan. 20	54	270
Cigars	L. Arenal & Co	18,851	Jan. 20	54	270
Cigars	S. Azcano	18,964	Feb. 10	54	666
Cigars	S. Azcano	18,965	Feb. 10	54	666
Cigars	S. Azcano y Meana	19,263	Mar. 31	54	1718
Cigars	V. Bustillo & Brother	19,264	Mar. 31	54	1718
Cigars	V. Bustillo & Brother	19,267	Mar. 31	54	1718
Cigars	V. Bustillo & Brother	19,268	Mar. 31	54	1718
Cigars	V. Bustillo & Brother	19,269	Mar. 31	54	1718
Cigars	V. Bustillo & Brother	19,270	Mar. 31	54	1718
Cigars	V. Bustillo & Brother	19,271	Mar. 31	54	1718
Cigars	V. Bustillo & Brother	19,272	Mar. 31	54	1718
Cigars	B. Celorio & Co	18,858	Jan. 20	54	270
Cigars	B. Celorio & Co	18,859	Jan. 20	54	270
Cigars	Cortina & Gomez	18,853	Jan. 20	54	270
Cigars	Cortina & Gomez	18,854	Jan. 20	54	270
Cigars	Cortina & Gomez	18,855	Jan. 20	54	270
Cigars	J. Dzialyuski	18,860	Jan. 20	54	270
Cigars	Gabrio & Spitz	19,146	Mar. 3	54	1118
Cigars	F. Menendez y Martinez	18,871	Jan. 20	54	270
Cigars	F. Menendez y Martinez	18,872	Jan. 20	54	270
Cigars	F. Menendez y Martinez	18,873	Jan. 20	54	270
Cigars	J. D. Meyer	19,100	Feb. 24	54	964
Cigars	J. S. Murias & Co	19,265	Mar. 31	54	1718
Cigars	Richman & Peterson	18,970	Feb. 10	54	666
Cigars	J. Saavedra	18,877	Jan. 20	54	270
Cigars	J. Saavedra	18,878	Jan. 20	54	270
Cigars	J. Saavedra	18,879	Jan. 20	54	270
Cigars	J. Saavedra	18,880	Jan. 20	54	270
Cigars	J. Saavedra	18,881	Jan. 20	54	270
Cigars	J. Saavedra	18,861	Jan. 20	54	270
Cigars	B. Suarez y Gonzalez	18,862	Jan. 20	54	270
Cigars	B. Suarez y Gonzalez	19,266	Mar. 31	54	1718
Cigars	J. Villamil & Co	19,067	Feb. 24	54	964
Cigars	G. F. Davenport	19,117	Mar. 3	54	1118
Cigars and tobacco	J. Gener	19,118	Mar. 3	54	1118
Cigars, cigarettes, and manufactured tobacco	J. Gener	18,808	Jan. 6	54	3
Cigars, cigarettes, and manufactured tobacco	W. W. Morgan & Co	18,962	Feb. 10	54	666
Clothing. Children's	O. Wilensky	19,239	Mar. 31	54	1717
Clothing for men and boys	Macfarlane & Mordue	18,908	Jan. 27	54	394
Coal. Cannel	C. J. Van Houten & Zoon	19,048	Feb. 17	54	822
Cocoa	O. Washoe	18,907	Jan. 27	54	394
Cod-liver oil	New Orleans Coffee Company	19,104	Mar. 3	54	1117
Coffee	J. E. Burns	19,177	Mar. 17	54	1422
Coffee. Composition	Woolson Spice Company	18,863	Jan. 20	54	270
Coffee. Mocha, Java, and Rio	G. F. Gilman	19,180	Mar. 17	54	1422
Coffee, tea, and spices	F. A. Maurey-Deschamps	19,181	Mar. 17	54	1422
Combs	F. A. Maurey-Deschamps	19,030	Feb. 17	54	822
Combs. Toilet	Chase and Company Corporation	19,135	Mar. 3	54	1118
Confection-lozenges	P. Wunderle	18,802	Jan. 6	54	3
Confectionery	J. Grether	19,071	Feb. 24	54	964
Copper polish	Hulstkamp, Zoon & Molyn	19,103	Mar. 3	54	1117
Cordials	Armstrong, Cator & Co	18,917	Feb. 3	54	510
Corsets	A. F. Jammes	19,093	Feb. 24	54	964
Corsets	E. J. Swartwout	19,211	Mar. 24	54	1566
Corsets, waists, and shoulder-braces	Eddystone Manufacturing Company	18,896	Jan. 20	54	270
Cotton fabrics	J. W. Woods	18,940	Feb. 3	54	511
Cotton fabrics	A. M. Grenle	19,142	Mar. 3	54	1118
Cough-drops	F. A. Robbins	19,059	Feb. 17	54	822
Cough-drops and cough-drops	G. Young	19,091	Feb. 24	54	964
Crackers and biscuit	Landers, Frary & Clark	19,215	Mar. 24	54	1566
Cutlery for household use	Northfield Knife Company	18,795	Jan. 6	54	3
Cutlery, including shears, scissors, and razors	American Cutlery Company	18,778	Jan. 6	54	2
Cutlery. Table	B. F. Carver	18,893	Jan. 20	54	270
Deodorant. Toilet	Manitowoc Manufacturing Company.	19,259	Mar. 31	54	1718
Desks. School	Hyde Carpet Cleaner and Moth Exterminating Co.	19,160	Mar. 10	54	1270
Detergent composition resembling soap	Gesellschaft für Fabrikation Diaetetischer Produkte, Ed. Loeflund & Co.	19,227	Mar. 24	54	1566
Dietetic products. Certain named	Alvarez Disinfectants Company	19,013	Feb. 10	54	667
Disinfectant	R. K. Smither	18,886	Jan. 20	54	270
Disinfectant and insect-destroyer	J. H. Fithian	18,888	Jan. 20	54	270
Dress-goods	W. F. Read	18,957	Feb. 3	54	510
Dress-goods and umbrella-coverings	R. H. Elliott & Son	18,904	Jan. 27	54	394
Embalming-fluid	J. Wilson	19,199	Mar. 17	54	1422
Embrocation	E. Wunsch	18,980	Feb. 10	54	667
Embrocation for rheumatism, neuralgia, and similar ailments	Kampmann & Meyer	19,116	Mar. 3	54	1118
Embroidery materials, plush and chenille ornaments, and trimmings for upholstery.	Gulick & Co	19,225	Mar. 24	54	1566
Emulsions	Scott & Bowne	19,019	Feb. 17	54	821
Emulsions and like preparations	Ball Eughno Company	19,214	Mar. 24	54	1566
Engines. Automatic cut-off	J. T. Gilbert	19,080	Feb. 24	54	964
Extracts for foods. Flavoring	Smith, Hogg & Gardner	19,087	Feb. 24	54	964
Fabrics of cotton, wool, or mixed cotton and wool	A. S. Stiegerwald	19,090	Feb. 24	54	964
Face-powder and prepared chalk	C. Fisher	18,890	Jan. 20	54	270
Feather dusters	Thompson Milling Company	19,212	Mar. 24	54	1566
Flour	H. W. Fry	18,945	Feb. 3	54	511
Flour and meal	S. Mandel				
Flowers and feathers for millinery					

Alphabetical list of trade-marks, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Freezing fluids. Structures or processes for	F. B. Cochran	18,884	Jan. 20	54	270
Fringes	Kampmann & Meyer	18,969	Feb. 10	54	666
Game-counters	G. Kuehl	19,156	Mar. 10	54	1270
Game. Portable	J. S. Foster	18,801	Jan. 6	54	3
Games, puzzles, and toys	W. R. Graham	19,205	Mar. 24	54	1566
Garment called an ulster. Outside	Standard Clothing Company	18,959	Feb. 10	54	666
Garments of silk plush resembling seal-skin. Women's outer	A. E. Burkhardt	18,909	Jan. 27	54	394
Gin	O. A. Krauss	18,804	Jan. 6	54	3
Gin	A. C. A. Nolet	18,839	Jan. 13	54	142
Gloves	A. L. V. Wood	18,846	Jan. 13	54	142
Goods of wool, worsted, or hair	W. & H. Foster	19,069	Feb. 24	54	964
Grain	Pittman & Harrison	18,937	Feb. 3	54	511
Granite for ornamental and building purposes. Artificial	P. de Krystoflovitch	18,803	Jan. 6	54	3
Grapes and other fruits. Unfermented and undistilled products of	Brook Lawn Farm Company	18,815	Jan. 6	54	3
Grape-vines	Diamond White Grape Company	18,948	Feb. 3	54	511
Guitars, mandolins, zithers, banjos, and like stringed instruments.	M. Meyer & Brother Company	18,943	Feb. 3	54	511
Gum. Chewing	Adams & Sons	19,088	Feb. 24	54	964
Gum. Chewing	Royal Remedy and Extract Company	19,021	Feb. 17	54	821
Gypsum for paper-making. Pure	H. C. Hulbert	18,805	Jan. 20	54	270
Hair-restorative	J. T. Fay	19,242	Mar. 31	54	1717
Hair-restoratives	C. H. Pape	19,169	Mar. 10	54	1270
Hair-tonic	E. J. Hickey	19,195	Mar. 17	54	1422
Hair-tonic	W. P. T. Ragio	19,197	Mar. 17	54	1422
Hams, shoulders, sides, and bacon	Silberhorn Company	18,985	Feb. 10	54	667
Harrows and pulverizers	D. S. Morgan & Company	19,074	Feb. 24	54	964
Hats	W. T. Bowers	19,018	Feb. 17	54	821
Hats and caps	Gate City Hat Company	19,054	Feb. 17	54	822
Hats and caps	B. Kahn	19,155	Mar. 10	54	1270
Hats and caps	J. Vimenet	19,084	Feb. 24	54	964
Heaters. Portable	D. H. Erdman	19,115	Mar. 3	54	1118
Hooks for machine-belting	W. O. Talcott	18,973	Feb. 10	54	666
Hose, belting, and packing for machinery	Revere Rubber Company	19,078	Feb. 24	54	964
Hose made of woven and knitted fabric. Fire	Eureka Fire Hose Company	19,167	Mar. 10	54	1270
Hose-supporters	G. Frost & Co	19,235	Mar. 31	54	1717
Hosiery	J. H. Parker	18,924	Feb. 3	54	510
Hosiery	Pilling & Madeley	19,129	Mar. 3	54	1118
Hosiery	Wankenhose Company	18,814	Jan. 6	54	3
Hot-water heaters	Gurney Hot Water Heater Company	19,070	Feb. 24	54	964
Inks. Printing and lithographing	Kast & Ehinger	18,827	Jan. 13	54	142
Insect-powder	C. M. Schmidt	19,056	Feb. 17	54	822
Insoles. Electric	E. Wingren & Co	19,111	Mar. 3	54	1117
Iron, steel, and manufactures thereof	Carpenter Steel Company	19,049	Feb. 17	54	822
Jewelry. Imitation diamond	B. E. Arons	19,200	Mar. 24	54	1566
Journal compounds and lubricating oils and grease	C. H. Moore & Co	19,184	Mar. 17	54	1422
Knit shirts and drawers	Union Special Sewing Machine Company.	19,176	Mar. 17	54	1422
Kümmel	B. Hochstadter	18,929	Feb. 3	54	511
Ladies' and gentlemen's furnishings	H. Wolf	19,153	Mar. 10	54	1270
Lamp-black	G. L. Cabot	18,899	Jan. 27	54	394
Lamps. Incandescent electric	Sunbeam Incandescent Lamp Company.	18,931	Feb. 3	54	511
Lard	Silberhorn Company	18,984	Feb. 10	54	667
Liniment	P. M. Murray	19,233	Mar. 31	54	1717
Liniments for the cure of rheumatism, neuralgia, gout, and similar ailments.	J. H. Blume & Co	19,097	Feb. 24	54	964
Liquors. Compound for refining, purifying, and mellowing spirituous	W. & P. Thompson	19,024	Feb. 17	54	821
Litho-carbon. Articles treated or coated with	I. Taylor	19,083	Feb. 24	54	964
Malt liquors	A. M. Rickerby	19,207	Mar. 24	54	1566
Malt liquors	A. M. Rickerby	19,208	Mar. 24	54	1566
Matches. Safety	Bryant & May	19,178	Mar. 17	54	1422
Matches. Wax	Bryant & May	19,108	Mar. 3	54	1117
Matches. Wax	Bryant & May	19,137	Mar. 3	54	1118
Matches. Wax	Bryant & May	19,145	Mar. 3	54	1118
Matches. Wax	Bryant & May	19,179	Mar. 17	54	1422
Matches. Wax	C. Oskamp	19,234	Mar. 31	54	1717
Meal	Bowker Fertilizer Company	18,823	Jan. 13	54	142
Meal for live stock	Bowker Fertilizer Company	19,017	Feb. 17	54	821
Meal for live stock	C. A. Beckford	18,831	Jan. 13	54	142
Meat. Sliced cured	Evans, Loscher & Webb	18,914	Feb. 3	54	510
Medical preparation of sandal-wood and copaiba	H. M. Johnson	19,009	Feb. 10	54	667
Medicinal purposes. Liquid preparation for	G. A. Moore	19,035	Feb. 17	54	822
Medicine. Cough	Sun I See Oil Company	18,947	Feb. 3	54	511
Medicine for external application	G. W. Mowry	18,912	Jan. 27	54	394
Medicine for inhalation	Silvera & Lopez	18,889	Jan. 20	54	270
Medicines and tonics. External	T. Paino	19,037	Feb. 17	54	822
Medicines. Line of proprietary	R. Van Buskirk	19,110	Mar. 3	54	1117
Medicines. Line of proprietary	Yeatts & Troth	18,950	Feb. 3	54	511
Men's outfittings	Caledonia Mining and Manufacturing Company.	19,148	Mar. 10	54	1270
Metal. Powder for polishing	W. J. Ladd	18,905	Jan. 27	54	394
Metals. Compounds for cleaning and polishing	Woerner Preserving Company	18,793	Jan. 6	54	3
Mince-meat	J. Morgan	18,901	Jan. 27	54	394
Mineral water	Panacea Springs and Hotel Company	18,960	Feb. 10	54	666
Mineral water	M. J. Paillard & Co	18,775	Jan. 6	54	2
Music-boxes	C. G. Conn	18,939	Feb. 3	54	511
Musical instruments	L. D. Mitchell	19,149	Mar. 10	54	1270
Musical instruments known as xylophones and bells	Tode Bros	19,229	Mar. 24	54	1566
Mustard	W. E Compton	19,062	Feb. 24	54	963
Needles and fish-hooks	G. Printz & Co	19,196	Mar. 17	54	1422
Needles. Sewing	H. A. Jones	18,911	Jan. 27	54	394
Nursery products, including trees, plants, scions, and fruits	M. Liebman	19,073	Feb. 24	54	964
Oil. Cotton-seed					

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Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Oil. Illuminating	J. Ellis & Co	19,068	Feb. 24	54	964
Ointment	T. F. Christman	19,114	Mar. 3	54	1118
Ointment	C. H. Harder	18,936	Feb. 3	54	511
Ointments	B. D. Blackstone	18,869	Jan. 20	54	270
Oleaginous preparation for washing clothes	Lily White Washing Compound Company.				
Opera, marine, and field glasses and lenses	D. C. Percival & Co	19,023	Feb. 17	54	821
Outer clothing and overcoats	Bierman, Heidelberg & Co	19,040	Feb. 17	54	822
Packing for machinery	J. H. Billington	18,852	Jan. 20	54	270
Paint. Black	H. S. Fassett & Co	19,243	Mar. 31	54	1717
Paint. Carriage	Cary-Ogden Company	19,159	Mar. 10	54	1270
Paint. Mixed	A. Wilhelm Company	18,895	Jan. 20	54	270
Paint, wood, and metal. Preservative for	Linoide Manufacturing Company	18,805	Jan. 6	54	3
Paper bags	Union Bag and Paper Company	19,192	Mar. 17	54	1422
Paper. Printing and writing	Clarke & Courts	18,779	Jan. 6	54	2
Paper. Writing and type-writer	Wyckoff, Seamans & Benedict	18,844	Jan. 13	54	142
Paper. Writing and type-writer	Wyckoff, Seamans & Benedict	18,845	Jan. 13	54	142
Patterns for cutting garments	P. C. Perkins	19,042	Feb. 17	54	822
Pencils, pen-holders, and cases, erasers, leads, slates, chalks, and similar stationery.	J. Faber	19,098	Feb. 24	54	964
Perfumery and toilet-soap	Majestic Perfume Co	19,190	Mar. 17	54	1422
Perfumery, soaps, washes, and lotions	W. S. Thomson	19,094	Feb. 24	54	964
Petroleum. Refined	Arkell & Douglas	19,060	Feb. 24	54	963
Photographic cards	Scovill & Adams Company	18,892	Jan. 20	54	270
Pickled fruits and vegetables	Godney Pickle Company	19,053	Feb. 17	54	822
Pills	E. Kranth	19,232	Mar. 31	54	1717
Pipes, tobacco and snuff boxes, match-safes, cigar and cigarette holders, cigar-cases, and tobacco-pouches.	W. Demuth & Co	19,066	Feb. 24	54	964
Plasters and salves	C. A. Staab	19,147	Mar. 3	54	1118
Plows and cultivators	Mansur & Tebbetts Implement Company.	18,787	Jan. 6	54	3
Plushes	Contrexeville Manufacturing Company.	19,065	Feb. 24	54	964
Poison for vermin	Huskin & Todd	18,910	Jan. 27	54	394
Pomade for the complexion	M. N. Roberts	18,944	Feb. 3	54	511
Porcelain, crockery, earthenware, glass, and faience	E. Gérard, Dufraisseix & Morel	18,993	Feb. 10	54	667
Porcelain ornaments and toilet and table ware	Haviland & Co	19,257	Mar. 31	54	1717
Porcelain ornaments and toilet and table ware	Haviland & Co	19,258	Mar. 31	54	1718
Powder, fuses, caps, and other articles for blasting purposes	New York Powder Company	18,913	Jan. 27	54	394
Publications. Monthly	Noble & Haanel	18,809	Jan. 6	54	3
Ranges. Cooking	J. Tettelbach	18,891	Jan. 20	54	270
Razors	J. Sellers & Sons	19,143	Mar. 3	54	1118
Remedies. Certain named	Protection Papier Co	19,170	Mar. 10	54	1270
Remedies. Certain named	C. A. Purtle	19,057	Feb. 24	54	964
Remedies. Certain named	Warren-Brown Company	19,218	Mar. 24	54	1566
Remedies. Certain named	Warren-Brown Company	19,219	Mar. 24	54	1566
Remedies for diseases of the throat and lungs	A. O. Kring	19,121	Mar. 3	54	1118
Remedies for external and internal use. Vegetable	American Herbal Medicine Company.	18,822	Jan. 13	54	142
Remedy for blood and liver diseases	D. G. Potts	19,260	Mar. 31	54	1718
Remedy for catarrh and hay fever	Dalrymple, Warner & Co	18,976	Feb. 10	54	666
Remedy for certain named diseases	A. Bridgman	18,798	Jan. 6	54	3
Remedy for cholera and other stomach complaints	Hayward & Bro	19,031	Feb. 17	54	822
Remedy for constipation	E. A. Derby	19,204	Mar. 24	54	1566
Remedy for coughs, colds, and like diseases	E. S. Beshore	19,112	Mar. 3	54	1118
Remedy for coughs, colds, constipation, and diseases of the blood.	Prunine Medicine Company	18,791	Jan. 6	54	3
Remedy for diseases of the blood and liver	J. W. Jones	18,866	Jan. 20	54	270
Remedy for diseases of the blood, liver, and kidneys	T. Kemink	19,033	Feb. 17	54	822
Remedy for diseases of the liver	J. E. Hetherington	18,916	Feb. 3	54	510
Remedy for diseases of the stomach and children's diseases	Webb Manufacturing Company	18,821	Jan. 6	54	4
Remedy for diseases of the throat and lungs	C. Leslie & Co	19,122	Mar. 3	54	1118
Remedy for dropsy	J. Edwards	18,826	Jan. 13	54	142
Remedy for dyspepsia	G. B. Layton	18,918	Feb. 3	54	510
Remedy for epilepsy and other nervous diseases	S. A. Richmond	19,152	Mar. 10	54	1270
Remedy for hay-fever and catarrhal diseases	N. Tucker	18,938	Feb. 3	54	511
Remedy for headache and neuralgia	Kohler Manufacturing Company	18,785	Jan. 6	54	3
Remedy for headache, nervousness, and insomnia	E. T. Laidley	18,786	Jan. 6	54	3
Remedy for indigestion	Assimilene Manufacturing Co	19,039	Feb. 17	54	822
Remedy for liver and kidney diseases	Harter Medical Co	18,903	Jan. 27	54	394
Remedy for lung troubles and nervous diseases	Bell Medicine Co	19,016	Feb. 17	54	821
Remedy for nervous diseases	J. Robertson	18,958	Feb. 10	54	666
Remedy for rheumatism	H. Vosburgh	18,949	Feb. 3	54	511
Remedy for rheumatism and kindred ailments	M. Rosenberg	19,130	Mar. 3	54	1118
Remedy for rheumatism, neuralgia, and like diseases	J. D. Groves	19,231	Mar. 31	54	1717
Remedy for rheumatism, neuralgia, and similar ailments	R. H. Andrews	19,201	Mar. 24	54	1566
Remedy for skin diseases. Internal and external	P. A. Mandabach	19,123	Mar. 3	54	1118
Remedy for the blood	J. Potter & Co	19,217	Mar. 24	54	1566
Remedy for the cure of catarrh	P. M. Hunt	19,154	Mar. 10	54	1270
Remedy for the cure of stomach, blood, liver, and kidney troubles.	R. H. Andrews	19,202	Mar. 24	54	1566
Remedy for throat and lung diseases	Nonantum Worsted Company	19,036	Feb. 17	54	822
Remedy for toothache, neuralgia, and other nervous diseases	W. Tack	19,165	Mar. 10	54	1270
Remedy. Headache	W. H. and S. C. Sweeting	19,038	Feb. 17	54	822
Remedy. Kidney, liver, and bladder	Kilmer & Co	19,161	Mar. 10	54	1270
Ribbons	Giron Frères	19,213	Mar. 24	54	1566
Rice. Prepared	Crystal Rice Milling Company	19,241	Mar. 31	54	1717
Rock-candy flavored for use in cordials	J. U. O'Meara	19,126	Mar. 3	54	1118
Rubber for use in dentistry. Vulcanizable	James, Walker & Co	19,226	Mar. 24	54	1566
Rubber goods	C. Macintosh & Company	18,788	Jan. 6	54	3
Safety-pins	Consolidated Safety Pin Co	18,832	Jan. 13	54	142
Salt	Retsof Mining Company	19,141	Mar. 3	54	1118
Salve	G. E. Hoffman	19,032	Feb. 17	54	822
Salve and cough-sirup. Corn	Kohler Manufacturing Company	18,807	Jan. 20	54	270

Alphabetical list of trade-marks, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Salve. Corn	N. W. Stiles	19,210	Mar. 24	54	1566
Sarsaparilla beverage	J. Schweppe & Co	19,132	Mar. 3	54	1118
Seed. Bird	French, Richards & Co	19,256	Mar. 31	54	1717
Seeds, bulbs, plants, trees, and shrubbery	J. L. Childs	19,255	Mar. 31	54	1717
Sewing-machines and attachments	J. P. Page	19,128	Mar. 3	54	1118
Shaving-cream	W. H. Hall	19,168	Mar. 10	54	1270
Shawls. Woolen	F. T. Banch	19,254	Mar. 31	54	1717
Shears and scissors, and table, pocket, and shaving cutlery	A. J. Jordan	19,236	Mar. 31	54	1717
Shears and scissors, and table, pocket, and shaving cutlery	A. J. Jordan	19,237	Mar. 31	54	1717
Sheet-iron and steel, and lead-coated and tin plates, terne plates, and taggers.	E. P. & W. Baldwin	19,096	Feb. 24	54	964
Sheet-iron, tin and terne plates, and lead coated sheets	E. P. & W. Baldwin	18,967	Feb. 10	54	666
Sheet-iron, tin plates, and terne plates	Melingriffith Company	18,794	Jan. 6	54	3
Sheet-iron, tin plates, and terne plates	Melingriffith Company	18,816	Jan. 6	54	3
Sheet-iron, tin plates, and terne plates	Melingriffith Company	18,817	Jan. 6	54	3
Sheet-iron, tin plates, and terne plates	Melingriffith Company	18,818	Jan. 6	54	3
Sheet-iron, tin plates, and terne plates	Melingriffith Company	18,819	Jan. 6	54	3
Sheet-metal ware. Enameled	J. Baumann's Wittwe	19,095	Feb. 24	54	964
Shirts, collars, and cuffs. Men's	G. D. Eighmie	19,182	Mar. 17	54	1422
Shirts, drawers, and overalls	Middlesex Manufacturing Company	18,926	Feb. 3	54	510
Shirts, drawers, pantaloons, overalls, jerseys, suspenders, and neckties.	L. B. Smith	19,209	Mar. 24	54	1566
Shirts. Men's	S. Deutsch	19,052	Feb. 17	54	822
Silesia	A. G. Hyde & Sons	19,050	Feb. 17	54	822
Silk piece-goods	Lion Silk Association	18,806	Jan. 6	54	3
Silver. Articles made wholly or in part of	D. Low	18,838	Jan. 13	54	142
Silver. Articles made wholly or partly of	D. Low	19,099	Feb. 24	54	964
Skin diseases. Preparation for	D. D. Harr	18,782	Jan. 6	54	2
Snuff	A. Beck & Company	18,796	Jan. 6	54	3
Soap. Laundry	Kansas City Soap Company	19,140	Mar. 3	54	1118
Soap. Laundry	Procter & Gamble	19,188	Mar. 17	54	1422
Soap. Laundry	Procter & Gamble	19,189	Mar. 17	54	1422
Soap. Laundry	Water King Soap Company	19,144	Mar. 3	54	1118
Soap. Laundry and toilet	B. A. Lyndo & Son Company	18,954	Feb. 10	54	666
Soap, perfumery, cosmetics, and like toilet preparations	W. S. Thomson	19,151	Mar. 10	54	1270
Soap, perfumery, powder, and hair-restoratives. Toilet	L. F. Marshall	19,187	Mar. 17	54	1422
Soap. Toilet	Ostrom & Lincoln	19,240	Mar. 31	54	1717
Soap. Toilet and laundry	Colgate & Co	18,951	Feb. 10	54	666
Soaps and lotions. Toilet	E. Rimmer	19,244	Mar. 31	54	1717
Soda. Cooking	Southern Soda Works	18,828	Jan. 13	54	142
Soda-water	W. P. Sheldon	19,131	Mar. 3	54	1118
Soda-water, ginger-ale, and beverages containing honey	St. Louis Honey-Wine Co	18,882	Ja . 20	54	270
Soups. Prepared	Chapman & Meehan	18,799	Jan. 6	54	3
Spoons, forks, and articles known as flat ware	H. M. Hill & Co	19,221	Mar. 24	54	1566
Spoons, forks, and articles known as flat ware	L. Kimball & Son	19,222	Mar. 24	54	1566
Sprinklers. Automatic	R. Wood	19,252	Mar. 31	54	1717
Steam and hot-water heaters and furnaces	Superior Furnace Company	19,198	Mar. 17	54	1422
Steam-boilers	W. E. Kelly	18,941	Feb. 3	54	511
Stove furniture. Kitchen	A. G. Patton	19,127	Mar. 3	54	1118
Stove paste polish	H. C. Bombard	19,113	Mar. 3	54	1118
Stove-polish	J. R. Stoeckel	19,082	Feb. 24	54	964
Stoves and ranges. Cooking and heating	Bowie & Terhune	18,932	Feb. 3	54	511
Stoves. Heating and cooking	F. A. Klaine	19,238	Mar. 31	54	1717
Sugar. Phosphate for use in manufacturing	Provident Chemical Works	19,206	Mar. 24	54	1566
Suppositories for female diseases	Victor Medical Association	19,101	Feb. 24	54	964
Suppositories. Vaginal	E. B. Lambert	19,034	Feb. 17	54	822
Table-ware technically known as flat ware	W. H. Lyon	18,906	Jan. 27	54	394
Tablets for duplicating manuscript	L. Neuhaus	19,109	Mar. 3	54	1117
Tea. Japan	A. Ethridge & Co	18,885	Jan. 20	54	270
Teeth. Artificial	H. D. Justi	19,022	Feb. 17	54	821
Tennis-rackets	Wright & Ditson	19,186	Mar. 17	54	1422
Tin and terne plates	Birchgrove Steel Company	18,972	Feb. 10	54	666
Tin and terne plates	Birchgrove Steel Company	18,986	Feb. 10	54	667
Tin and terne plates	R. Crooks & Co	18,833	Jan. 13	54	142
Tin and terne plates	R. Crooks & Co	18,834	Jan. 13	54	142
Tin and terne plates	Gummey, Spering & Co	18,864	Jan. 20	54	270
Tin and terne plates	Gummey, Spering & Co	18,902	Jan. 27	54	394
Tin and terne plates	J. Williams & Co	19,240	Mar. 24	54	1566
Tin and terne plates and black plates of Bessemer steel	A. Baldwin & Company	18,966	Feb. 10	54	666
Tin-plate in sheets	Cwmfelin Tinplate Company	19,015	Feb. 10	54	667
Tin-plate in sheets	D. Edwards & Co	19,003	Feb. 10	54	667
Tin-plate in sheets	D. Edwards & Co	19,004	Feb. 10	54	667
Tin-plate in sheets	D. Edwards & Co	19,005	Feb. 10	54	667
Tin-plate in sheets	D. Edwards & Co	19,006	Feb. 10	54	667
Tin-plate in sheets	D. Edwards & Co	19,007	Feb. 10	54	667
Tin-plate in sheets	D. Edwards & Co	19,008	Feb. 10	54	667
Tin-plate in sheets	Port Talbot Tinplate Company	18,999	Feb. 10	54	667
Tin-plate in sheets	Port Talbot Tinplate Company	19,000	Feb. 10	54	667
Tin-plate in sheets	Port Talbot Tinplate Company	19,057	Feb. 17	54	822
Tin-plate in sheets	R. Rosser, Son & Co	18,995	Feb. 10	54	667
Tin-plate in sheets	D. Whitehouse	19,001	Feb. 10	54	667
Tin-plate in sheets	D. Whitehouse	19,002	Feb. 10	54	667
Tin-plate in sheets	D. Whitehouse	19,003	Feb. 10	54	667
Tin plates	Copper Miners Tinplate Company	19,246	Mar. 31	54	1717
Tin plates	Cwmfelin Tinplate Company	19,014	Feb. 10	54	667
Tin plates	Knight & Crowther	18,979	Feb. 10	54	667
Tin plates	Phillips, Nunes & Co	18,981	Feb. 10	54	667
Tin plates	Pontypool Iron and Tinplate Company.	19,250	Mar. 31	54	1717
Tin plates	Pontypool Iron and Tinplate Company.	19,251	Mar. 31	54	1717
Tin plates	R. Rosser, Son & Co	18,994	Feb. 10	54	667
Tin plates	Webb, Shakspeare & Williams	18,975	Feb. 10	54	666
Tin plates	Webb, Shakspeare & Williams	18,987	Feb. 10	54	667

Alphabetical list of trade-marks, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Tin plates	Webb, Shakspeare & Williams	18,988	Feb. 10	54	667
Tin plates	Webb, Shakspeare & Williams	18,989	Feb. 10	54	667
Tin plates	Webb, Shakspeare & Williams	18,990	Feb. 10	54	667
Tin plates	Webb, Shakspeare & Williams	18,991	Feb. 10	54	667
Tin plates	Webb, Shakspeare & Williams	19,193	Mar. 17	54	1422
Tin plates	Copper Miners Tinplate Company	19,245	Mar. 31	54	1717
Tin plates and terne plates	Pontypool Iron and Tinplate Company.	19,248	Mar. 31	54	1717
Tin plates and terne plates	Pontypool Iron and Tinplate Company.	19,249	Mar. 31	54	1717
Tin plates, terne plates, and black plates	A. Baldwin & Company	19,089	Feb. 24	54	964
Tin plates, terne plates, and black plates of Siemens steel	A. Baldwin & Company	19,175	Mar. 17	54	1422
Tin plates, terne plates, and tin taggers	Old Castle Iron and Tinplate Company.	19,025	Feb. 17	54	821
Tin plates, terne plates, and tin taggers	Old Castle Iron and Tinplate Company.	19,026	Feb. 17	54	821
Tin plates, terne plates, and tin taggers	Old Castle Iron and Tinplate Company.	19,027	Feb. 17	54	821
Tin plates, terne plates, and tin taggers	Old Castle Iron and Tinplate Company.	19,028	Feb. 17	54	821
Tin plates, terne plates, and tin taggers	Old Castle Iron and Tinplate Company.	19,029	Feb. 17	54	821
Tin plates, terne plates, and tin taggers	Old Castle Iron and Tinplate Company.	19,247	Mar. 31	54	1717
Tobacco. Manufactured	A. Beck & Company	18,797	Jan. 6	54	3
Tobacco. Smoking	A. Beck & Company	18,883	Jan. 20	54	270
Topical remedy	A. I. Babendreier	19,233	Mar. 31	54	1717
Toy torpedoes	Klneber Manufacturing Co	19,223	Mar. 24	54	1566
Toys known as talking-boards	Kennard Novelty Company	18,919	Feb. 3	54	510
Tracing-cloth	Ritchie & Eason	19,051	Feb. 17	54	822
Twine. Cotton	W. J. Hooper	18,847	Jan. 13	54	142
Twines, lines, cords, rope, and thread	Travers Bros	19,150	Mar. 10	54	1270
Type-writer ribbons	J. Underwood & Co	19,133	Mar. 3	54	1118
Type-writers. Ribbons for	J. Underwood & Co	19,134	Mar. 3	54	1118
Umbrellas and parasols. Tight-folding	Follmer, Clogg & Co	19,106	Mar. 3	54	1117
Underwear and hosiery	Dunham, Buckley & Co	19,138	Mar. 3	54	1118
Varnish-gums	W. H. Scheel	19,158	Mar. 10	54	1270
Varnishes, japans, oil-finish, and bronzing-liquid	Mayer & Loewenstein	19,185	Mar. 17	54	1422
Veterinary remedies	W. D. Harnist	18,928	Feb. 3	54	511
Veterinary remedies	J. E. Jayne	19,120	Mar. 3	54	1118
Watch-cases	Brooklyn Watch Case Company	19,203	Mar. 24	54	1566
Watch cases and movements	B. L. Strasburger & Co	19,046	Feb. 17	54	822
Watch cases and movements	B. L. Strasburger & Co	19,047	Feb. 17	54	822
Watch movements and cases	B. L. Strasburger & Co	19,044	Feb. 17	54	822
Watch movements and cases	B. L. Strasburger & Co	19,045	Feb. 17	54	822
Watch movements and cases	B. L. Strasburger & Co	19,079	Feb. 24	54	964
Watches	J. Racine & Co	18,841	Jan. 13	54	142
Watches	J. Racine & Co	18,842	Jan. 13	54	142
Water-proof fabrics and garments	Porous Waterproofing Co	19,191	Mar. 17	54	1422
Whips	A. C. Barnes & Co	18,897	Jan. 27	54	394
Whips	A. C. Barnes & Co	18,898	Jan. 27	54	394
Whisky	H. Corby	18,835	Jan. 13	54	142
Whisky	Edel Bros	19,166	Mar. 10	54	1270
Whisky	G. S. Fleming	18,952	Feb. 10	54	666
Whisky	C. Goldsborough	18,837	Jan. 13	54	142
Whisky	J. J. Hayes	19,107	Mar. 3	54	1117
Whisky	J. E. Pepper & Co	19,075	Feb. 24	54	964
Whisky	J. E. Pepper & Co	19,076	Feb. 24	54	964
Whisky	Rheinstrom Bros	18,983	Feb. 10	54	667
Whisky	Standard Distilling Co	19,171	Mar. 10	54	1270
Whisky	Stanton & Company	18,946	Feb. 3	54	511
Whisky	P. Van Schaack & Sons	18,961	Feb. 10	54	666
Whisky	E. Walters	19,085	Feb. 24	54	964
Whisky	L. Reuther	18,811	Jan. 6	54	3
Whisky and brandy	Barkhausen & Co	18,830	Jan. 13	54	142
Wines	P. Lebeault & Co	19,162	Mar. 10	54	1270
Wine. Medicated	P. Lebeault & Co	19,163	Mar. 10	54	1270
Wine. Medicated	P. Lebeault & Co	19,164	Mar. 10	54	1270
Wine. Medicated	H. S. Woodbury	19,261	Mar. 31	54	1718
Wines and alcoholic liquors	Metzger & Seligmann	18,955	Feb. 10	54	666
Wines and liquors	J. L. Morrison	19,125	Mar. 3	54	1118
Wire for stitching-machines	Electrical Supply Company	19,194	Mar. 17	54	1422
Wire for use in electrical work. Metallic	J. L. Morrison	19,124	Mar. 3	54	1118
Wire-stitching machines	Stanley Rule and Level Company	18,792	Jan. 6	54	3
Wood-workers' tools and machines	Russ, Eveleth & Ingalls	19,224	Mar. 24	54	1566
Worsted and muslin garments, underwear, and knit goods	Tilton Mills	18,813	Jan. 6	54	3
Woven wool fabrics	Capitol Manufacturing Company	19,063	Feb. 24	54	964
Wrenches, screw-drivers, tack-pullers, and similar tools	Henninger Bros	18,968	Feb. 10	54	666
Yeast cakes					

ALPHABETICAL LIST OF LABELS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
"Barker's Improved Chemical & Vegetable Horse, Cattle, & Poultry Powder."	Barker, Moore & Mein Medicine Company.	6,429	Feb. 3	54	511
"Blended Lager Beer"	A. M. Rickerby	6,439	Feb. 10	54	668
"Botanic Kidney Cure"	J. F. Seaman	6,481	Mar. 31	54	1718
"Buttered Baking Powder"	A. H. Pelonbet and J. L. Tobin	6,450	Feb. 17	54	822
"Buttermilk Toilet Soap"	L. Wilbert	6,415	Jan. 13	54	142
"Compound Rheumatic Oil"	H. M. Jewett	6,435	Feb. 3	54	511
"Compound Tolu and Lungwort Cough Syrup"	W. Price	6,449	Feb. 17	54	822
"Conday's Export Extract of Wild Cherry"	P. Conday	6,458	Feb. 17	54	822
"Culbert & Taylor Agents for Martini & Rossi." (For vermouth.)	Culbert & Taylor	6,430	Feb. 3	54	511
"Detchon's Compound Extract of Gravel Plant"	I. A. Detchon	6,418	Jan. 13	54	142
"Diamond White Grapes"	Diamond White Grape Company	6,468	Mar. 3	54	1118
"Diffusible Tonic"	Diffusible Tonic Company	6,434	Feb. 3	54	511
"Directions for using Clevenger's Hair Balsam"	Clevenger Hair Balsam Co	6,472	Mar. 10	54	1270
"Dr. A. S. Davis' Balm"	Davis Manufacturing Company	6,488	Mar. 31	54	1718
"Dr. A. S. Davis' Liniment for Horses"	Davis Manufacturing Company	6,489	Mar. 31	54	1718
"Dr. Groves Anodyne for Infants"	J. D. Groves	6,474	Mar. 10	54	1270
"Dr. Warren's Insomnia Cure"	J. N. Murdoch	6,425	Jan. 27	54	394
"Drawing Board Mucilage"	C. M. Higgins	6,437	Feb. 10	54	668
"Dry Plug Pure Tobacco." (For chewing and smoking)	C. N. Frame	6,446	Feb. 10	54	668
"Edwards' Cherry and Tolu Compound"	F. C. Joslyn & Co	6,427	Feb. 3	54	511
"Eldredge's Cough Remedy"	J. B. Eldredge & Co	6,466	Mar. 3	54	1118
"Fleming's Pure Rye"	G. S. Fleming	6,436	Feb. 10	54	668
"Florence County." (For plug-tobacco)	Florence Tobacco Manufacturing and Warehouse Company.	6,414	Jan. 13	54	142
"Fruit Julep." (For medicine)	W. D. Harnist	6,409	Jan. 6	54	4
"G. L. McGreevy's Compound Tonic"	G. L. McGreevy	6,475	Mar. 17	54	1422
"Golden Colored Pure Rye Whisky"	I. Dannenberg	6,461	Feb. 24	54	964
"Golden Seal Compound." (For medicine)	American Herbal Medicine Company.	6,410	Jan. 13	54	142
"Granular Effervescent Bromo Lithia"	W. R. Warner	6,417	Jan. 13	54	142
"Greensboro Nurseries"	J. A. Young	6,442	Feb. 10	54	668
"Half and Half." (For alcoholic beverages)	A. M. Rickerby	6,404	Jan. 6	54	4
"Henry Ost's Prepared Castor Oil"	H. Ost	6,465	Mar. 3	54	1118
"Highspire" (For whisky)	C. Goldsborough	6,416	Jan. 13	54	142
"Japanese Surfacing Lacquer"	Chicago Wood Finishing Company	6,422	Jan. 20	54	270
"Jelly of Roses." (For a toilet preparation)	A. J. Hoenny	6,441	Feb. 10	54	668
"Jos. Fleming & Son." (For spirituous liquors)	G. S. Fleming	6,445	Feb. 10	54	668
"Kimmel's Combination Copying Book"	W. Kimmel	6,443	Feb. 10	54	668
"Litzenbergs Horse Liniment"	W. Litzenberg	6,459	Feb. 17	54	822
"Long's Breakfast Flour"	C. T. Long	6,438	Feb. 10	54	668
"Marienbad Obesity Pills"	Burwell & Lacey	6,479	Mar. 24	54	1566
"Medicated and free from all Impurities, for Shaving and Shampooing, Fragrant and Refreshing." (For soap.)	Arnicarboline Co	6,452	Feb. 17	54	822
"Medicated Fragrant and Refreshing." (For soap)	Arnicarboline Co	6,453	Feb. 17	54	822
"Metal Polish"	J. C. Paul	6,423	Jan. 20	54	270
"Mineral and Vegetable Combination." (For burning purposes.)	C. W. Rooksby	6,454	Feb. 17	54	822
"Mixed Ale"	A. M. Rickerby	6,403	Jan. 6	54	4
"Mixed Beer"	A. M. Rickerby	6,440	Feb. 10	54	668
"Mixed Pickles"	Gedney Pickle Company	6,460	Feb. 17	54	822
"Mrs. Charlotte Bergman's Bacillus Destroyer and Lung Restorer."	C. Bergman	6,457	Feb. 17	54	822
"Mrs. Charlotte Bergman's Balsam"	C. Bergman	6,420	Jan. 20	54	270
"Mrs. Charlotte Bergman's Family Medicine"	C. Bergman	6,421	Jan. 20	54	270
"Mrs. Charlotte Bergman's Sore-Salve"	C. Bergman	6,419	Jan. 20	54	270
"Nervine"	Bell Medicine Co	6,448	Feb. 17	54	822
"Non-Alcoholic Extract of Vanilla"	A. C. Howell	6,467	Mar. 3	54	1118
"Ointment"	A. Spannbake	6,444	Feb. 10	54	668
"Quick Relief." (For medicine)	American Herbal Medicine Company.	6,411	Jan. 13	54	142
"R. L. Tudor's Patent Leather and Enameled Leather Softener."	R. L. Tudor	6,476	Mar. 17	54	1422
"Retsof Lump Rock Salt"	Retsof Mining Company	6,483	Mar. 31	54	1718
"Retsof Lump Salt"	Retsof Mining Company	6,482	Mar. 31	54	1718
"Retsof Pure Rock Salt"	Retsof Mining Company	6,484	Mar. 31	54	1718
"Retsof Pure Salt"	Retsof Mining Company	6,485	Mar. 31	54	1718
"Retsof Salt"	Retsof Mining Company	6,486	Mar. 31	54	1718
"Rinn's Cleansing Compound"	J. F. Rinn	6,478	Mar. 24	54	1566
"Seamless Tube Rubber Hose"	Cleveland Rubber Company	6,480	Mar. 24	54	1566
"Self-opener." (For satchels)	Mayer & Rnehlmann	6,451	Feb. 17	54	822
"South Carolina Choice." (For plug-tobacco)	Florence Tobacco Manufacturing and Warehouse Company.	6,413	Jan. 13	54	142
"Stearns' Ammoniated Food for House Plants"	F. H. Stearns	6,424	Jan. 27	54	394
"Stern's Cream." (For throat and lung diseases)	M. H. Stern	6,432	Feb. 3	54	511
"Stern's Oil." (For neuralgia and rheumatism)	M. H. Stern	6,431	Feb. 3	54	511
"Stern's Tonic"	M. H. Stern	6,433	Feb. 3	54	511
"Stretch's Penetrating Liniment"	D. E. Stretch	6,487	Mar. 31	54	1718
"Sundhets Salt." (For medical purposes)	A. Osterholm & Co	6,457	Feb. 17	54	822
"Syrup of Prunes." (For a medicine)	E. H. Bindley & Co	6,473	Mar. 10	54	1270

Alphabetical list of labels, January to March, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
"The Bartholomay Bavarian." (For lager-beer)	Bartholomay Brewery Company	6,406	Jan. 6	54	4
"The Bartholomay Bohemian." (For lager-beer)	Bartholomay Brewery Company	6,407	Jan. 6	54	4
"The Bartholomay Standard." (For lager-beer)	Bartholomay Brewery Company	6,408	Jan. 6	54	4
"The Oil that Lubricates Best"	Vacuum Oil Company	6,464	Feb. 24	54	964
"The Oil that Lubricates Most"	Vacuum Oil Company	6,463	Feb. 24	54	964
"The Oil which Lubricates Best"	Vacuum Oil Company	6,470	Mar. 3	54	1118
"The Oil which Lubricates Most"	Vacuum Oil Company	6,471	Mar. 3	54	1118
"The Oils that Lubricate Most"	Vacuum Oil Company	6,469	Mar. 3	54	1118
"The Old Essence Man's Extract of Lemon"	J. T. Gilbert	6,477	Mar. 24	54	1566
"The Perfect Fire Kindler"	E. R. Faulkner	6,462	Feb. 24	54	964
"The Soden Mineral Pastilles"	Soden Mineral Springs Company	6,405	Jan. 6	54	4
"Thorn's Vegetable Cough Cure"	Thorn's Medicine Co	6,447	Feb. 10	54	668
"Wadleigh's Kidney Remedy"	F. R. Wadleigh	6,455	Feb. 17	54	822
"White Pine and Mullein Cough Remedy"	R. L. Eves	6,412	Jan. 13	54	142
"White Pine Pectoral"	H. P. Marshall	6,428	Feb. 3	54	511
"Winter's Life Elixir Tonic and Antiperiodic"	J. B. Daniel	6,426	Feb. 3	54	511

DISCLAIMERS.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Vol.	Page.
Dry closets, &c	I. D. Smead	314,884	Mar. 31, 1885	Mar. 3, 1891	54	1270
Dry closets, &c	I. D. Smead	314,884	Mar. 31, 1885	Mar. 24, 1891	54	1718
Dry closets, &c	I. D. Smead	363,971	Mar. 31, 1885	Mar. 3, 1891	54	1270
Dry closets, &c	I. D. Smead	363,971	Mar. 31, 1885	Mar. 24, 1891	54	1718
Rubber-mat. (Design)	G. Woffenden	11,208	May 27, 1879	Feb. 6, 1891	54	822
Valve for pneumatic pipes or tubes	E. S. Boynton	401,680	Apr. 16, 1889	Jan. 21, 1891	54	511

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